gclib

2.4.0

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Chapter 1

Galil Communications Library (gclib)

The Galil Communications Library (gclib) is a thread-safe C API that allows users to connect to and communicate with Galil controllers. Galil provides multiple wrappers around gclib, allowing for use in C++, Python, Java, C#, Visual Basic, or LabVIEW projects.

1.1 Installation

All languages require the underlying C library to be installed.

Windows Linux

Note

gcaps is a service that is included in the gclib and gdk installers. It allows multiple gclib clients to share a single controller connection, which can be especially useful for unsolicited data.

1.2 Quickstart

Follow the instructions to build a simple example program using gclib.

- **C/C++**
  - **Windows**
    1. Install CMake.
    2. Install one of the supported compilers:
       - MSVC 14.0 (Visual Studio 2015) or later
       - MinGW 8.1 or later
    3. Compile and run the Hello World example:

```
> cmake -S "%GCLIB_ROOT%\examples\c" -B build
> cd build
> cmake --build .
> .\hello-world.exe
gclib version is 2.4.0
Hello World!
```

  - **Linux**
    1. Install CMake and gcc.

RHEL / CentOS Stream / Fedora / Rocky	Ubuntu / Debian / Raspberry Pi OS
`$ sudo dnf install cmake gcc`	`$ sudo apt install cmake gcc`

2. Compile and run the Hello World program:

```
$ cmake -S /usr/share/gclib/examples/c -B build
$ cd build
$ cmake --build .
$ ./hello-world
gclib version is 2.4.0
Hello World!
```

- **Python**
  - **Windows**

```
> py -m pip install https://www.galil.com/sw/pub/python/gclib-1.0.0-py3-none-any.whl
> copy "%GCLIB_ROOT%\examples\python\*" .
> py
»> import gclib
»> gclib.py().GVersion()
'py.2.4.0 2.4.0'
```

  - **Linux**

```
$ python3 -m venv gclib
$ source gclib/bin/activate
(gclib) $ pip install https://www.galil.com/sw/pub/python/gclib-1.0.0-py3-none-any.whl
(gclib) $ cp /usr/share/gclib/examples/python/* .
(gclib) $ python
»> import gclib
»> gclib.py().GVersion()
'py.2.4.0 2.4.0'
```

- **Java** To compile Java programs, ensure the JDK is installed, as the JRE does not provide a Java compiler.
  - **Windows**

```
> curl -O https://www.galil.com/sw/pub/java/gclib-java-1.0.0.tar
> tar -xvf gclib-java-1.0.0.tar
> cd gclib-java-1.0.0
> set CLASSPATH=.;.\*;lib\*
> robocopy "%GCLIB_ROOT%\examples\java" examples
> javac examples\* -d .
> java HelloWorld
gclib version is 2.4.0 2.4.0
Hello World!
```

  - **Linux**

```
$ curl -O https://www.galil.com/sw/pub/java/gclib-java-1.0.0.tar
$ tar -xvf gclib-java-1.0.0.tar
$ cd gclib-java-1.0.0
$ export CLASSPATH=.:./*:lib/*
$ javac /usr/share/gclib/examples/java/* -d .
$ java HelloWorld
gclib version is 2.4.0 2.4.0
Hello World!
```

- **C#**

```
> curl -O https://www.galil.com/sw/pub/dotnet/gclib-dotnet.1.0.0.nupkg
> dotnet nuget add source %cd% --name gclib
> robocopy /e "%GCLIB_ROOT%\examples\cs" examples
> cd examples
> dotnet run --project HelloWorld
gclib version is 2.4.0 2.4.0
Hello World!
```

- **VB**

```
> curl -O https://www.galil.com/sw/pub/dotnet/gclib-dotnet.1.0.0.nupkg
> dotnet nuget add source %cd% --name gclib
> robocopy /e "%GCLIB_ROOT%\examples\vb" examples
> cd examples
> dotnet run --project HelloWorld
gclib version is 2.4.0 2.4.0
Hello World!
```

- **LabVIEW**

Download

1. Right click the downloaded file and choose "Add to VIPM Library".

2. Choose "Add To Library & Install" when prompted.
3. Search for `gclib` in the package list, then double click on it to bring up the package info.
   - To see all available functions, click "Show in Palettes"
   - To see all example VIs, click "Show Examples"

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Next
Examples

Chapter 2

Examples

2.1 Controller Addresses

A core feature of gclib is the ability to connect to a controller over ethernet, serial, or PCI, using a single connection API.

- **C/C++** Use `gclib_addresses()` to see the different addresses that are available.
  - **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    char addresses[1024];

    gclib_addresses(addresses, sizeof(addresses));
    printf("Address, Model, Serial\n%s\n", addresses);
}
```

  - **Output**

```
> .\addresses.exe
Address, Model, Serial
192.168.0.40, DMC4040 Rev 1.3i, 10601
COM5, DMC-41x3
GALILPCI0
```

  If using an ethernet controller that doesn't have an IP address yet, it will show up in `gclib_ip_requests()`. Use `gclib_assign_ip()` to give the controller an IP. If successful, the controller will begin showing up in `gclib_addresses()` under the new address.

  - **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    char result[1024];

    gclib_ip_requests(result, sizeof(result));
    printf("Address, Model, Serial\n%s\n", result);

    gclib_assign_ip("00:50:4C:20:29:69", "192.168.0.40");
}
```

  - **Output**

```
> .\ip-requests.exe
Address, Model, Serial
00:50:4C:20:29:69, DMC4000, 10601
```

- **Python**

  Use `gclib.py.GAddresses()` to see the different addresses that are available.

```
>> import gclib
>> gclib.py().GAddresses()
{'192.168.0.40': ' DMC4040 Rev 1.3i', 'GALILPCI1': '', 'COM5': ''}
```

  If using an ethernet controller that doesn't have an IP address yet, it will show up in `gclib.py.GIpRequests()`. Use `gclib.py.GAssign()` to give the controller an IP. If successful, the controller will begin showing up in `gclib.py.GAddresses()` under the new address.

```
>> gclib.py().GIpRequests()
{'DMC4000-10601': '00:50:4C:20:29:69'}
>> gclib.py().GAssign('192.168.0.40', '00:50:4C:20:29:69')
```

- **Java** Use `gclibjava.GclibJava.GAddresses()` to see the different addresses that are available.

  - **Code**

```
import gclibjava.*;

public class Addresses {
    public static void main(String[] args) throws GclibJavaException {
        System.out.println(String.format(new GclibJava().GAddresses()));
    }
}
```

  - **Output**

```
> java Addresses
192.168.0.40, DMC4040 Rev 1.3i, 192.168.0.1, Ethernet
GALILPCI1
COM5
```

  If using an ethernet controller that doesn't have an IP address yet, it will show up in `gclibjava.GclibJava.GIpRequest`. Use `gclibjava.GclibJava.GAssign()` to give the controller an IP. If successful, the controller will begin showing up in `gclibjava.GclibJava.GAddresses()` under the new address.

  - **Code**

```
import gclibjava.*;

public class IpRequests {
    public static void main(String[] args) throws GclibJavaException {
        GclibJava gclib = new GclibJava();
        System.out.println(gclib.GIpRequests());
        gclib.GAssign("192.168.0.40", "00:50:4C:20:29:69");
    }
}
```

  - **Output**

```
> java IpRequests
DMC4000, 10601, 00:50:4C:20:29:69, Ethernet, 192.168.0.1, 0.0.0.0
```

- **C#** Use `gclib.GAddresses()` to see the different addresses that are available.

  - **Code**

```
string[] addresses = new gclib().GAddresses();
System.Console.WriteLine(string.Join("\n", addresses));
```

  - **Output**

```
> dotnet run --project Addresses
192.168.0.40, DMC4040 Rev 1.3i, 192.168.0.1, Ethernet
GALILPCI1
COM5
```

  If using an ethernet controller that doesn't have an IP address yet, it will show up in `gclib.GIpRequests()`. Use `gclib.GAssign()` to give the controller an IP. If successful, the controller will begin showing up in `gclib.GAddresses()` under the new address.

  - **Code**

```
gclib connection = new gclib();
string[] ipRequests = connection.GIpRequests();
System.Console.WriteLine(string.Join("\n", ipRequests));
connection.GAssign("192.168.0.40", "00:50:4C:20:29:69");
```

  - **Output**

```
> dotnet run --project IpRequests
DMC4000, 10601, 00:50:4C:20:29:69, Ethernet, 192.168.0.1, 0.0.0.0
```

- **VB** Use `Gclib.GAddresses()` to see the different addresses that are available.
  - **Code**

```
Module Program
    Sub Main(args As string())
        System.Console.WriteLine(string.Join(Environment.NewLine, new Gclib().GAddresses()))
    End Sub
End Module
```

  - **Output**

```
> dotnet run --project Addresses
192.168.0.40, DMC4040 Rev 1.3i, 192.168.0.1, Ethernet
GALILPCI1
COM5
```

  If using an ethernet controller that doesn't have an IP address yet, it will show up in `Gclib.GIpRequests()`. Use `Gclib.GAssign()` to give the controller an IP. If successful, the controller will begin showing up in `Gclib.GAddresses()` under the new address.

  - **Code**

```
Module Program
    Sub Main(args As String())
        Dim Gclib As new Gclib()
        System.Console.WriteLine(string.Join(Environment.NewLine, Gclib.GIpRequests()))
        Gclib.GAssign("192.168.0.40", "00:50:4C:20:29:69")
    End Sub
End Module
```

  - **Output**

```
> dotnet run IpRequests
DMC4000, 10601, 00:50:4C:20:29:69, Ethernet, 192.168.0.1, 0.0.0.0
```

- **LabVIEW** Use `G Addresses` to see the different addresses that are available.

  Addresses.vi

  - **Front Panel**
  - **Block Diagram**

  If using an ethernet controller that doesn't have an IP address yet, it will show up in `G Ip Requests`. Use `G Assign` to give the controller an IP. If successful, the controller will begin showing up in `G Addresses` under the new address. IP Requests.vi

  - **Front Panel**
  - **Block Diagram**

2.2 Connection Management

- **C/C++** To use a controller with gclib, first pass the address to `gclib_open()` to receive a handle to the connection, which will be used in all gclib calls which operate on that connection. After you are done, close the connection with `gclib_close()`.

  Note

  If you need to change the baud rate, call `gclib_set_baud_rate()` after `gclib_open()`.

  - **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    gclib_handle h = 0;
    char address[32], revision[1024];
    uint32_t serial;

    gclib_open(&h, argv[1]);
    gclib_address(h, address, sizeof(address));
    gclib_revision_information(h, revision, sizeof(revision));
    gclib_serial_number(h, &serial);
    printf("Address: %s\nRevision: %s\nSerial: %i\n", address, revision, serial);
    gclib_close(&h);
}
```

- **Output**

```
> .\connection.exe 192.168.0.40
Address: 192.168.0.40
Revision: DMC4040 Rev 1.3i
Serial: 10601
```

Attention

If the program exits before calling `gclib_close()`, the controller may be left in an inconsistent state.

- **Python** To use a controller with gclib, first create a `gclib.py()` object, then pass an address to `gclib.py.GOpen()`.

```
>> connection = gclib.py()
>> connection.GOpen('192.168.0.40')
```

Now we can use `gclib.py.GInfo()` to show basic info about the open connection.

```
>> connection.GInfo()
192.168.0.40, DMC4040 Rev 1.3i, 10601
```

After you are done with the connection, close it with `gclib.py.GClose()`.

```
>> connection.GClose()
```

Attention

If the program exits before calling `gclib.py.GClose()`, the controller may be left in an inconsistent state.

- **Java** To use a controller with gclib, first create a `gclibjava.GclibJava()` object, then pass an address to `gclibjava.GclibJava.GOpen()`. After you are done, close the connection with `gclibjava.GclibJava.GClose()`.

- **Code**

```
import gclibjava.*;

public class Connection {
    public static void main(String[] args) throws GclibJavaException {
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);
        System.out.println(connection.GInfo());
        connection.GClose();
    }
}
```

- **Output**

```
> java Connection 192.168.0.40
192.168.0.40, DMC4040 Rev 1.3i, 10601
```

Attention

If the program exits before calling `GClose()`, the controller may be left in an inconsistent state.

- **C#** To use a controller with gclib, first create a `gclib()` object, then pass an address to `gclib.GOpen()`. After you are done, close the connection with `gclib.GClose()`.

- **Code**

```
gclib connection = new gclib();
connection.GOpen(args[0]);
System.Console.WriteLine(connection.GInfo());
connection.GClose();
```

- **Output**

```
> dotnet run --project Connection 192.168.0.40
192.168.0.40, DMC4040 Rev 1.3i, 10601
```

Attention

If the program exits before calling `gclib.GClose()`, the controller may be left in an inconsistent state.

- **VB** To use a controller with gclib, first create a `Gclib()` object, then pass an address to `Gclib.GOpen()`. After you are done, close the connection with `Gclib.GClose()`.

  – **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As new Gclib()
        connection.GOpen(args(0))
        System.Console.WriteLine(connection.GInfo())
        connection.GClose()
    End Sub
End Module
```

  – **Output**

```
> dotnet run --project Connection 192.168.0.40
192.168.0.40, DMC4040 Rev 1.3i, 10601
```

Attention

If the program exits before calling `Gclib.GClose()`, the controller may be left in an inconsistent state.

- **LabVIEW** To use a controller with gclib, first pass the address to `G Open` to receive a handle to the connection. This handle will be used in future library calls such as `G Info`, which we use to display some information about the open connection. After you are done, close the connection with `G Close`.

  Connection.vi

  – **Front Panel**

  – **Block Diagram**

Attention

If the program exits before calling `G Close`, the controller may be left in an inconsistent state.

2.3 Commands

- **C/C++** To issue commands, use `gclib_command()` with an open connection. The following example uses `gclib_command()` to implement a basic terminal.

  – **Code**

```
#include <gclibo.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    gclib_handle h = NULL;
    char command[80];
    char response[1024];

    gclib_open(&h, argv[1]);
    gclib_revision_information(h, response, sizeof(response));
    printf("Connected to %s. Press %s to exit.\n:", response,
        #ifdef WIN32
            "Ctrl+Z then Enter"
        #else
            "Ctrl+D"
        #endif
    );
    while (fgets(command, sizeof(command), stdin)) {
        gclib_command(h, command, response, sizeof(response));
        printf("%s%s:", response, strlen(response) ? "\n" : "");
    }
    gclib_close(&h);
    printf("\n");
    return 0;
}
```

  - **Output**

```
> .\commands.exe 192.168.0.40
Connected to DMC4040 Rev 1.3i. Press Ctrl+Z then Enter to exit.
:MG "Hello World"
Hello World
:^Z
```

- **Python** To issue commands, use `gclib.py.GCommand()` with an open connection.

```
»> connection.GOpen('192.168.0.40')
»> connection.GCommand('Hello World')
'Hello World'
```

- **Java** To issue commands, use `gclibjava.GclibJava.GCommand()` with an open connection. The following example uses `gclibjava.GclibJava.GCommand()` to implement a basic terminal.

  - **Code**

```
import gclibjava.*;

import java.util.NoSuchElementException;
import java.util.Scanner;

public class Commands {
    public static void main(String[] args) throws GclibJavaException {
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);
        System.out.println(connection.GInfo());
        System.out.print(":");
        Scanner scanner = new Scanner(System.in);
        try {
            while (true) {
                String result = connection.GCommand(scanner.nextLine());
                System.out.print(result.equals(":") ? result : result + "\r\n:");
            }
        } catch (NoSuchElementException e) {}
        scanner.close();
        connection.GClose();
    }
}
```

  - **Output**

```
> java Commands 192.168.0.40
Connected to 192.168.0.40, DMC4040 Rev 1.3i, 10601
Use Ctrl+C to exit.
:MG "Hello World"
Hello World
:^C
```

- **C#** To issue commands, use `gclib.GCommand()` with an open connection. The following example uses `gclib.GCommand()` to implement a basic terminal.

  - **Code**

```
gclib connection = new gclib();
connection.GOpen(args[0]);
System.Console.WriteLine(connection.GInfo());
System.Console.Write(':');
while (true) {
    string result = connection.GCommand(System.Console.ReadLine());
    System.Console.Write(result.Length == 0 ? ":" : result + "\r\n:");
}
connection.GClose();
```

  - **Output**

```
> dotnet run --project Commands 192.168.0.40
Connected to 192.168.0.40, DMC4040 Rev 1.3i, 10601
Use Ctrl+C to exit.
:MG "Hello World"
Hello World
:^C
```

- **VB** To issue commands, use `Gclib.GCommand()` with an open connection. The following example uses `Gclib.GCommand()` to implement a basic terminal.

  - **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As new Gclib()
        connection.GOpen(args(0))
        System.Console.WriteLine(connection.GInfo())
```

```
        System.Console.Write(":")
        While (true)
            Dim result As String = connection.GCommand(System.Console.ReadLine())
            System.Console.Write(If(result.Length = 0, ":", result + Environment.NewLine + ":"))
        End While
        connection.GClose()
    End Sub
End Module
```

– **Output**

```
> dotnet run --project Commands 192.168.0.40
Connected to 192.168.0.40, DMC4040 Rev 1.3i, 10601
Use Ctrl+C to exit.
:MG "Hello World"
Hello World
:^C
```

- **LabVIEW** To issue commands, use `G Command` with an open connection.

  Commands.vi

  – **Front Panel**

  – **Block Diagram**

2.4 Errors

- **C/C++** All gclib functions provide a `gclib_result` value to indicate the error, with zero (`GCLIB_SUCCESS`) indicating success. Use `gclib_error()` to get a string description of the error.

  – **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    gclib_handle h;
    char buf[128];

    gclib_open(&h, argv[1]);

    gclib_result ret = gclib_command(h, "invalid", NULL, 0);
    if (ret == GCLIB_COMMAND_ERROR) {
        printf("Error: %s\n", gclib_error(h));
        gclib_command(h, "TC1", buf, sizeof(buf));
        printf("TC1 returned: %s\n", buf);
    }

    gclib_close(&h);
}
```

  – **Output**

```
> .\errors.exe 192.168.0.40
Command "invalid" caused error code 1
TC1 returned: 1 Unrecognized command
```

- **Python** If a gclib call is unsuccessful, a `gclib.GclibError` will be thrown with a description of the error.

```
>> connection.GCommand('invalid')
Traceback (most recent call last):
...
gclib.GclibError: question mark returned by controller
```

- **Java** If a gclib call is unsuccessful, a `gclibjava.GclibJavaException()` will be thrown with the error code and description.

  – **Code**

```
import gclibjava.*;

public class Errors {
    public static void main(String[] args) throws GclibJavaException {
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);
```

```
        try {
            connection.GCommand("invalid");
        } catch (GclibJavaException e) {
            System.out.println(String.format("Command 'invalid' returned %d: %s",
e.getErrorCode(), e.getMessage()));
        }
        connection.GClose();
    }
}
```

- **Output**

```
> java Errors 192.168.0.40
Command "invalid" returned -10000: "question mark returned by controller"
```

- **C#** If a gclib call is unsuccessful, an exception will be thrown with the error code and description.
  - **Code**

```
gclib connection = new gclib();
connection.GOpen(args[0]);
try {
    System.Console.WriteLine(connection.GCommand("invalid"));
} catch (System.Exception e) {
    System.Console.WriteLine("Command 'invalid' returned " + e.Message);
}
connection.GClose();
```

  - **Output**

```
> dotnet run --project Errors 192.168.0.40
Command "invalid" returned -10000: "question mark returned by controller"
```

- **VB** If a gclib call is unsuccessful, an exception will be thrown with the error code and description.
  - **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As new Gclib()
        connection.GOpen(args(0))
        Try
            connection.GCommand("invalid")
        Catch e As System.Exception
            System.Console.WriteLine("Command 'invalid' returned " + e.Message)
        End Try
        connection.GClose()
    End Sub
End Module
```

  - **Output**

```
> dotnet run --project Errors 192.168.0.40
Command "invalid" returned -10000: "question mark returned by controller"
```

- **LabVIEW** Standard error chaining is supported by gclib. See `gclib_errors.h` for a full list of error codes. Errors.vi
  - **Front Panel**
  - **Block Diagram**

2.5 Program & Arrays

- **C/C++** Use `gclib_program()` to get the controller's program, and use `gclib_set_program()` to set it.
  - **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    gclib_handle h;
```

```
    char program[1024];

    gclib_open(&h, argv[1]);

    gclib_set_program(h,
        "#AUTO\n"
        "MG \"Hello World\"\n"
        "EN", NULL);
    gclib_program(h, program, sizeof(program));
    printf("%s\n", program);

    gclib_close(&h);
}
```

– **Output**

```
> .\program.exe 192.168.0.40
MG "Hello World"
```

Use `gclib_array()` to get an array from the controller, and use `gclib_set_array()` to set it. Use the `start` and `end` arguments to transfer only a subset of the array.

– **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    gclib_handle h;
    char array[128];

    gclib_open(&h, argv[1]);
    gclib_command(h, "DM test[5]", NULL, 0);

    gclib_set_array(h, "test", "1,2,3,4,5", 0, 4);
    gclib_array(h, "test", array, sizeof(array), 1, 3);
    printf("%s\n", array);

    gclib_command(h, "DA test[5]", NULL, 0);
    gclib_close(&h);
}
```

– **Output**

```
> .\arrays.exe 192.168.0.40
2.0000, 3.0000, 4.0000
```

- **Python** Use `gclib.py.GProgramUpload()` to get the controller's program, and use `gclib.py.GProgramDownloa` to set it.

```
»> connection.GProgramDownload('MG "Hello World"')
»> connection.GProgramUpload()
'MG "Hello World"'
```

Use `gclib.py.GArrayUpload()` and `gclib.py.GArrayDownload()` similarly for arrays. Use the `first` and `last` arguments to transfer only part of the array.

```
»> connection.GCommand('DM test[5]')
»> connection.GArrayDownload('test', 0, 4, [1, 2, 3, 4, 5])
»> connection.GArrayUpload('test', 1, 3)
[2.0, 3.0, 4.0]
```

- **Java** Use `gclibjava.GclibJava.GProgramUpload()` to get the controller's program, and use `gclibjava.GclibJava.GProgramDownload()` to set it. See the gclib Program Preprocessor for advanced usage.

– **Code**

```
import gclibjava.*;

public class Program {
    public static void main(String[] args) throws GclibJavaException {
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);
        connection.GProgramDownload("MG \"Hello World\"");
        System.out.println(connection.GProgramUpload());
        connection.GClose();
    }
}
```

– **Output**

```
> java Program 192.168.0.40
MG "Hello World"
```

Use gclibjava.GclibJava.GArrayUpload() to get an array from the controller, and use gclibjava.GclibJava.GArrayDownload() to set it.

- **Code**

```
import gclibjava.*;

public class Arrays {
    public static void main(String[] args) throws GclibJavaException {
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);
        connection.GCommand("DM test[5]");
        connection.GArrayDownload("test", java.util.Arrays.asList(1.0, 2.0, 3.0, 4.0, 5.0));
        System.out.println(connection.GArrayUpload("test"));
        connection.GClose();
    }
}
```

- **Output**

```
> java Arrays 192.168.0.40
2.0000, 3.0000, 4.0000
```

- **C#** Use gclib.GProgramUpload() to get the controller's program, and use gclib.GProgramDownload() to set it. See the gclib Program Preprocessor for advanced usage.

  - **Code**

```
gclib connection = new gclib();
connection.GOpen(args[0]);
connection.GProgramDownload("MG \"Hello World\"");
System.Console.WriteLine(connection.GProgramUpload());
connection.GClose();
```

  - **Output**

```
> dotnet run --project Program 192.168.0.40
MG "Hello World"
```

  Use gclib.GArrayUpload() to get an array from the controller, and use gclib.GArrayDownload() to set it.

  - **Code**

```
gclib connection = new gclib();
connection.GOpen(args[0]);
connection.GCommand("DM test[5]");
List<double> test = new List<double>{1, 2, 3, 4, 5};
connection.GArrayDownload("test", ref test);
System.Console.WriteLine(string.Join(", ", connection.GArrayUpload("test")));
connection.GClose();
```

  - **Output**

```
> dotnet run --project Arrays 192.168.0.40
2.0000, 3.0000, 4.0000
```

- **VB** Use Gclib.GProgramUpload() to get the controller's program, and use Gclib.GProgramDownload() to set it. See the gclib Program Preprocessor for advanced usage.

  - **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As Gclib  = new Gclib()
        connection.GOpen(args(0))
        connection.GCommand("DM test[5]")
        connection.GProgramDownload("MG ""Hello World""")
        System.Console.WriteLine(connection.GProgramUpload())
        connection.GClose()
    End Sub
End Module
```

  - **Output**

```
> dotnet run --project Program 192.168.0.40
MG "Hello World"
```

  Use Gclib.GArrayUpload() to get an array from the controller, and use Gclib.GArrayDownload() to set it.

  - **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As Gclib  = new Gclib()
        connection.GOpen(args(0))
        connection.GCommand("DM test[5]")
        connection.GArrayDownload("test", new List(Of Double)({1, 2, 3, 4, 5}))
        System.Console.WriteLine(string.Join(", ", connection.GArrayUpload("test")))
        connection.GClose()
    End Sub
End Module
```

  - **Output**

```
> dotnet run --project Arrays 192.168.0.40
2.0000, 3.0000, 4.0000
```

- **LabVIEW** Use `G Program Upload` to get the controller's program, and use `G Program Download` to set it. See the gclib Program Preprocessor for advanced usage.

  Program.vi

  - **Front Panel**

  - **Block Diagram**

  Use `G Array Upload` to get an array from the controller, and use `G Array Download` to set it.

  - Use the `first` and `last` inputs to transfer only part of the array.

  Arrays.vi

  - **Front Panel**

  - **Block Diagram**

2.6 Unsolicited Data

- **C/C++** The unsolicited data API can be used in blocking mode or callback mode.

  Blocking mode is simpler to use, but has tradeoffs. If you want unsolicited data as soon as it arrives, you must block the thread to wait for it, which may not be ideal. If you want to keep the thread running, then you must periodically check for queued unsolicited data, which can add unwanted latency.

  Callback mode allows your thread to stay running while enabling immediate response to unsolicited data. When data arrives, your callback function will be invoked on a separate, dedicated thread. Due to this, callback mode can be more complicated to use if you are not familiar with thread synchronization.

  - **Blocking** For synchronous usage, subscribe without providing a callback or user data pointer.

```
gclib_subscribe_messages(h, NULL, NULL);
```

    Once subscribed, you can then wait a specified amount of time for unsolicited data to arrive.

```
// Time out if message doesn't arrive within one second
gclib_message(h, message_buf, sizeof(message_buf), 1000);
```

    * **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    gclib_handle h;
    char buf[32];

    gclib_open(&h, argv[1]);

    gclib_subscribe_messages(h, NULL, NULL);
    gclib_subscribe_interrupts(h, NULL, NULL);
```

```
    gclib_subscribe_data_records(h, NULL, NULL);

    gclib_set_interrupts(h, GCLIB_PROGRAM_STOPPED, 0, 0);
    gclib_set_data_records(h, 8);

    gclib_set_program(h, "MG \"Hello World\"; EN", NULL);
    gclib_command(h, "XQ", NULL, 0);

    gclib_message(h, buf, sizeof(buf), -1);
    printf("Got message: %s\n", buf);

    gclib_interrupt_t interrupt;
    gclib_interrupt(h, &interrupt, -1);
    printf("Got interrupt status byte: %i\n", interrupt.status);

    gclib_data_record_handle data_record;
    gclib_data_record(h, &data_record, -1);
    printf("Got data record, sample %i\n", gclib_data_record_sample(data_record));

    gclib_set_data_records(h, 0);
    gclib_close(&h);
}
```

* **Output**

```
> .\unsolicited.exe 192.168.0.40
Got message Hello World
Got data record, sample 39306
Got interrupt 240
```

– **Callback** For asynchronous usage, subscribe with a callback function and an arbitrary data pointer (which can be `NULL`). Each time unsolicited data arrives, your callback will be invoked and the pointer will be passed to it.

```
void handle_message(void*, const char* message) {
    printf("Message received: %s", message);
};
gclib_subscribe_messages(h, handle_message, NULL);
```

Attention

The callback will be invoked on a separate thread. Be sure to protect any shared data!

* **Code**

```
#include <gclib.h>
#include <stdio.h>
#include "sleep.h"

void handle_message(void* user_data, const char* message) {
    printf("Got message: %s\n", message);
}
void handle_interrupt(void* user_data, gclib_interrupt_t interrupt) {
    printf("Got interrupt status byte: %i\n", interrupt.status);
}
void handle_data_record(void* user_data, gclib_data_record_handle data_record) {
    printf("Got data record, sample %i\n", gclib_data_record_sample(data_record));
}

int main(int argc, char* argv[]) {
    gclib_handle h;
    gclib_open(&h, argv[1]);

    gclib_subscribe_messages(h, handle_message, NULL);
    gclib_subscribe_interrupts(h, handle_interrupt, NULL);
    gclib_subscribe_data_records(h, handle_data_record, NULL);

    gclib_set_interrupts(h, GCLIB_PROGRAM_STOPPED, 0, 0);
    gclib_set_data_records(h, 200);

    char buf[16];
    gclib_set_program(h, "WT 100; MG \"Hello World\"; EN", NULL);
    gclib_command(h, "XQ", NULL, 0);

    msleep(300);
    gclib_close(&h);
}
```

* **Output**

```
> .\callback.exe 192.168.0.40
Got message Hello World
Got data record, sample 39306
Got interrupt 240
```

For a full list of data record fields, see the Data Record API.

Note

Controllers with default settings will not generate interrupts or data records. Use `gclib_set_interrupts()` and `gclib_set_data_records()` to configure your controller if needed.

- **Python**

```
>> connection.GClose()
>> connection.GOpen('192.168.0.40 --subscribe ALL')
```

Use `gclib.py.GMessage()` to get unsolicited messages from the controller, and `gclib.py.GInterrupt()` to get event interrupts. If there is no data available, these methods will block up to five seconds before timing out.

```
>> connection.GProgramDownload('MG "Hello World"; UI0; EN')
>> connection.GCommand('XQ')
''
>> connection.GMessage()
'Hello World\r\n'
>> connection.GInterrupt()
240
```

- **Java** Use `gclibjava.GclibJava.GMessage()` to get unsolicited messages from the controller, `gclibjava.GclibJava.GInterrupt()` to get event interrupts, and `gclibjava.GclibJava.GRecord()` to get data records. If there is no data available, these methods will block up to five seconds before timing out.

  - **Code**

```
import gclibjava.*;

public class Unsolicited {
    public static void main(String[] args) throws GclibJavaException {
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);

        connection.GProgramDownload("MG \"Hello World\"; UI0; EN");
        connection.GCommand("XQ");

        System.out.println("Got message " + connection.GMessage());
        System.out.println("Got interrupt " + connection.GInterrupt());

        connection.GClose();
    }
}
```

  - **Output**

```
> java Unsolicited "192.168.0.40 --subscribe ALL"
Got message Hello World
Got data record 39306
Got interrupt 240
```

- **C#** Use `gclib.GMessage()` to get unsolicited messages from the controller, `gclib.GInterrupt()` to get event interrupts, and `gclib.GRecord()` to get data records. If there is no data available, these methods will block up to five seconds before timing out.

  - **Code**

```
using Galil;
Gclib connection = new Gclib();

connection.GOpen(args[0] + " --subscribe ALL");
connection.GProgramDownload("MG \"Hello World\"; UI0; EN");
connection.GCommand("XQ");
System.Console.Write("Got message " + connection.GMessage());
System.Console.WriteLine("Got interrupt " + connection.GInterrupt());

connection.GCommand("DR8");
System.Console.WriteLine("Got data record " +
connection.GRecord<Gclib.GDataRecord4000>(true).sample_number);
connection.GCommand("DR0");
connection.GClose();
```

  - **Output**

```
> dotnet run --project Unsolicited 192.168.0.40
Got message Hello World
Got data record 39306
Got interrupt 240
```

- **VB** Use `Gclib.GMessage()` to get unsolicited messages from the controller, `Gclib.GInterrupt()` to get event interrupts, and `Gclib.GRecord()` to get data records. If there is no data available, these methods will block up to five seconds before timing out.

  - **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As new Gclib()

        connection.GOpen(args(0) + " --subscribe ALL")
        connection.GProgramDownload("MG ""Hello World""; UI0; EN")
        connection.GCommand("XQ")
        System.Console.Write("Got message " + connection.GMessage())
        System.Console.WriteLine("Got interrupt {0}", connection.GInterrupt().ToString())

        connection.GCommand("DR8")
        System.Console.WriteLine("Got data record {0}", connection.GRecord(Of
Gclib.GDataRecord4000)(true).sample_number)
        connection.GCommand("DR0")
        connection.GClose()
    End Sub
End Module
```

  - **Output**

```
> dotnet run --project Unsolicited 192.168.0.40
Got message Hello World
Got data record 39306
Got interrupt 240
```

- **LabVIEW** Use `G Message` to get unsolicited messages from the controller, `G Interrupt` to get event interrupts, and `G Record` to get data records. If there is no data available, these methods will block up to five seconds before timing out.

  For `G Record`, note that memory must be allocated using the 'Initialize Array' node to store the data record packet. This memory space is filled with the information in the data record packet and then parsed using the 'Index Array' and 'Join Numbers' nodes.

  Unsolicited.vi

  - **Front Panel**

  - **Block Diagram**

2.7 Galil Connect

Galil Connect allows gclib to issue commands through a remote gcaps server. This makes debugging closed or distant systems much easier.

- **C/C++** On the device hosting the remote gcaps server, use `gclib_set_published()`.

  - **Code**

```
#include <gclib.h>
#include <stdio.h>
#include <stdbool.h>

int main(int argc, char* argv[]) {
    gclib_set_published(argv[1]);
    printf("Published remote gcaps server \"%s\"\n", argv[1]);
}
```

  - **Output**

```
> .\server.exe pi
Published remote gcaps server "pi"
```

  On the client, use `gclib_list_servers()` to view all available gcaps servers. Pass a server name to `gclib_set_server()` for future gclib calls to be routed through that gcaps server. When done, pass `NULL` to `gclib_set_server()` to disconnect from the remote gcaps server.

- **Code**

```
#include <gclib.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    char buf[1024];
    gclib_handle h;

    gclib_list_servers(buf, sizeof(buf));
    printf("Available servers:\n%s\n", buf);
    gclib_set_server(argv[1]);

    gclib_addresses(buf, sizeof(buf));
    printf("\nAddresses reported by %s:\n%s", argv[1], buf);
    gclib_open(&h, argv[2]);
    gclib_revision_information(h, buf, sizeof(buf));
    printf("\nConnected to %s\n", buf);
    gclib_close(&h);

    gclib_set_server(NULL);
}
```

- **Output**

```
> .\client.exe pi COM5
Available servers:
pi

Addresses reported by pi:
COM5

Connected to COM5, DMC31010 Rev 1.4f, 12345
```

- **Python**

  On the device hosting the remote gcaps server (in this example a Raspberry Pi), use `gclib.py.GPublishServer()`.

```
>> connection.GPublishServer('pi', True, True)
```

  On the client, use `gclib.py.GListServers()` to view all available gcaps servers. Pass a server name to `gclib.py.GSetServer()` for future gclib calls to be routed through that gcaps server. When done, pass the special string "Local" to `gclib.py.GSetServer()` to disconnect from the remote gcaps server.

```
>> connection.GListServers()
'pi'
>> connection.GSetServer('pi')
>> connection.GAddresses()
{'COM5': ''}
>> connection.GOpen("COM5")
>> connection.GInfo()
'COM5, DMC31010 Rev 1.4f, 12345'
>> connection.GClose()
>> connection.GSetServer('Local')
```

- **Java** On the device hosting the remote gcaps server (in this example a Raspberry Pi), use `gclibjava.GclibJava.GPublishServer()`.

  - **Code**

```
import gclibjava.*;

public class Server {
    public static void main(String[] args) throws GclibJavaException {
        new GclibJava().GPublishServer(args[0], 1, 1);
        System.out.println("Published remote gcaps server " + args[0]);
    }
}
```

  - **Output**

```
> java Server pi
Published gcaps server "pi"
```

  On the client, use `gclibjava.GclibJava.GListServers()` to view all available gcaps servers. Pass a server name to `gclibjava.GclibJava.GSetServer()` for future gclib calls to be routed through that gcaps server. When done, pass the special string "Local" to `gclibjava.GclibJava.GSetServer()` to disconnect from the remote gcaps server.

  - **Code**

```
import gclibjava.*;

public class Client {
    public static void main(String[] args) throws GclibJavaException {
```

```
            GclibJava connection = new GclibJava();
            System.out.println(connection.GListServers());
            connection.GSetServer(args[0]);

            System.out.println("Addresses reported by pi: " + connection.GAddresses());
            connection.GOpen(args[1]);
            System.out.println(connection.GInfo());
            connection.GClose();

            connection.GSetServer("Local");
        }
    }
```

- **Output**

```
> java Client pi COM5
Available servers:
pi

Addresses reported by pi:
COM5

Connected to COM5, DMC31010 Rev 1.4f, 12345
```

- **C#** On the device hosting the remote gcaps server (in this example a Raspberry Pi), use `gclib.GPublishServer()`.

  - **Code**

```
gclib connection = new gclib();
connection.GPublishServer(args[0], true, true);
System.Console.WriteLine("Published remote gcaps server " + args[0]);
```

  - **Output**

```
> dotnet run --project Server pi
Published gcaps server "pi"
```

  On the client, use `gclib.GListServers()` to view all available gcaps servers. Pass a server name to `gclib.GSetServer()` for future gclib calls to be routed through that gcaps server.

  - **Code**

```
gclib connection = new gclib();
System.Console.WriteLine("Available servers:" + Environment.NewLine +
string.Join(Environment.NewLine, connection.GListServers()));
connection.GSetServer(args[0]);
System.Console.WriteLine(Environment.NewLine + "Addresses reported by pi: " + Environment.NewLine
+ string.Join(Environment.NewLine, connection.GAddresses()));
connection.GOpen(args[1]);
System.Console.WriteLine(Environment.NewLine + "Connected to " + connection.GInfo());
connection.GSetServer("Local");
```

  - **Output**

```
> dotnet run --project Client pi COM5
Available servers:
pi

Addresses reported by pi:
COM5

Connected to COM5, DMC31010 Rev 1.4f, 12345
```

- **VB** On the device hosting the remote gcaps server (in this example a Raspberry Pi), use `Gclib.GPublishServer()`.

  - **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As new Gclib()
        connection.GPublishServer(args(0), true, true)
        System.Console.WriteLine("Published remote gcaps server " + args(0))
    End Sub
End Module
```

  - **Output**

```
> dotnet run --project Server pi
Published gcaps server "pi"
```

  On the client, use `Gclib.GListServers()` to view all available gcaps servers. Pass a server name to `Gclib.GSetServer()` for future gclib calls to be routed through that gcaps server.

- **Code**

```
Module Program
    Sub Main(args As String())
        Dim connection As new Gclib()
        System.Console.WriteLine("Available servers: " + Environment.NewLine +
String.Join(Environment.NewLine, connection.GListServers()))
        connection.GSetServer(args(0))
        System.Console.WriteLine(Environment.NewLine + "Addresses reported by pi: " +
Environment.NewLine + String.Join(Environment.NewLine, connection.GAddresses()))
        connection.GOpen(args(1))
        System.Console.WriteLine(Environment.NewLine + "Connected to " + connection.GInfo())
        connection.GSetServer("Local")
    End Sub
End Module
```

- **Output**

```
> dotnet run --project Client pi COM5
Available servers:
pi

Addresses reported by pi:
COM5

Connected to COM5, DMC31010 Rev 1.4f, 12345
```

- **LabVIEW** On the device hosting the remote gcaps server (in this example a Raspberry Pi), use `G Publish Server`.

  Server.vi

  - **Front Panel**

  - **Block Diagram**

  On the client, use `G List Servers` to view all available gcaps servers. Pass a server name to `G Set Server` for future gclib calls to be routed through that gcaps server. When done, pass the special string "Local" to `G Set Server` to disconnect from the remote gcaps server.

  Client.vi

  - **Front Panel**

  - **Block Diagram**

2.8 Example Project: Record and Replay

This project contains two example programs.

- **C/C++** The 'Record' example uses `RA` in continuous mode along with `GArrayUpload()` to allow recording movement for an arbitrary amount of time. It produces a file with the recorded positions of all axes.

  - **Code**

```
#include <gclib.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include "sleep.h"

void check(gclib_result ret, gclib_handle h) {
    char error[128];
    if (ret == GCLIB_SUCCESS) {
        return;
    } else if (ret == GCLIB_COMMAND_ERROR) {
        gclib_command(h, "TC1", error, sizeof(error));
        printf("%s\n", error);
```

```
    }

    fprintf(stderr, "Error %i: %s\n", ret, gclib_error(h));
    gclib_close(&h);
    exit(ret);
}

int main(int argc, char* argv[]) {
    if (argc != 3) {
        fprintf(stderr, "Usage: record.exe ADDRESS SECONDS\n");
        return 1;
    }

    char* buf = (char*)malloc(16384);

    gclib_result ret = GCLIB_SUCCESS;
    union GDataRecord record;
    size_t bytesReturned;

    gclib_handle h = NULL;
    if (gclib_open(&h, argv[1]) != GCLIB_SUCCESS) {
        fprintf(stderr, "Failed to open connection to controller");
        exit(1);
    }

    char arrayName[5];
    sprintf(arrayName, "posA");

    gclib_command(h, "MO", NULL, 0);
    gclib_command(h, "DM posA[1000]", NULL, 0);
    gclib_command(h, "RA posA[]", NULL, 0);
    gclib_command(h, "RD _TPA", NULL, 0);
    gclib_command(h, "RC 1,-1000", NULL, 0);

    size_t start = 0, end;
    char* positions = (char*)malloc(16384);
    char* token;
    int count;
    time_t startTime = time(NULL);
    FILE* file = fopen("positions.txt", "w");
    while (difftime(time(NULL), startTime) < atof(argv[2])) {
        msleep(500);
        gclib_command(h, "MG_RD", buf, 16384);
        end = atoi(buf);
        check(gclib_array(h, arrayName, positions, 16384, start, end < start ? 0 : end), h);
        printf("%zu\n", strlen(positions));
        if (end < start) {
            check(gclib_array(h, arrayName, buf, 16384, 0, end), h);
            printf("%zu\n", strlen(buf));
            strcat(positions, ", ");
            strcat(positions, buf);
        }
        count = end - start;
        if (end < start)
            count += 1000;
        for (int i = 0; i < count; i++) {
            token = strtok( i == 0 ? positions : NULL, " ,");
            if (token == NULL)
                break;
            fprintf(file, "%s", token);
            fputc('\n', file);
        }
        start = end;
    }
    fclose(file);

    gclib_command(h, "RC 0", NULL, 0);
    gclib_close(&h);
}
```

– Output

```
> .\record.exe 192.168.0.40 5
```

The 'Replay' example uses the file produced by 'Record' along with CM to accurately reproduce the recorded movement. Note that all axes must be properly set up for motion.

– Code

```
#include <gclib.h>
#include <stdio.h>
#include <stdlib.h>
#include "sleep.h"

void check(gclib_result ret, gclib_handle h) {
    char error[128];
    if (ret == GCLIB_SUCCESS)
```

```
            return;
        if (ret == GCLIB_COMMAND_ERROR) {
            gclib_command(h, "TC1", error, sizeof(error));
            printf("%s\n", error);
        }
        fprintf(stderr, "Error %i: %s\n", ret, gclib_error(h));
        gclib_close(&h);
        exit(ret);
    }

    int main(int argc, char* argv[]) {
        if (argc != 2) {
            fprintf(stderr, "Usage: replay.exe ADDRESS\n");
            return 0;
        }

        char* buf = (char*)malloc(16384);

        GCon h = NULL;
        if (gclib_open(&h, argv[1]) != GCLIB_SUCCESS) {
            fprintf(stderr, "Failed to open connection to controller");
            exit(1);
        }

        gclib_command(h, "MG_CM", NULL, 0);
        int contourSpace = atof(buf);

        gclib_command(h, "SH A", NULL, 0);
        gclib_command(h, "CM A", NULL, 0);
        gclib_command(h, "DT -1", NULL, 0);

        FILE* f = fopen("positions.txt", "r");
        if (f == NULL) {
            fprintf(stderr, "Failed to open positions.txt");
            return 1;
        }

        int lastPosition;
        int position;
        fgets(buf, 16384, f);
        lastPosition = atof(buf);
        while (fgets(buf, 16384, f)) {
            position = atof(buf);
            sprintf(buf, "CD %i", position - lastPosition);
            lastPosition = position;
            if (gclib_command(h, buf, NULL, 0) == GCLIB_COMMAND_ERROR) {
                check(gclib_command(h, "MG_TC", buf, 16384), h);
                if ((int)atof(buf) == 32) {
                    gclib_command(h, "MG_DT", buf, 16384);
                    if ((int)atof(buf) == -1)
                        gclib_command(h, "DT 1", NULL, 0);
                    msleep(100);
                }
            }
        }

        do {
            gclib_command(h, "MG_CM", buf, 0);
        } while ((int)atof(buf) < contourSpace);
        fclose(f);

        gclib_command(h, "CD 0=0", NULL, 0);
        gclib_command(h, "MO", NULL, 0);
        gclib_close(&h);
    }
```

– Output

```
> .\replay.exe 192.168.0.40
```

- **Python** The 'Record' example uses RA in continuous mode along with `gclib.py.GProgramUpload()` to allow recording movement for an arbitrary amount of time. It produces a file with the recorded positions of all axes.

– Code

```
import gclib
import sys
import time

def main():
    if (len(sys.argv) != 3):
        print(f"Usage: record.py ADDRESS SECONDS", file=sys.stderr)
        return

    connection = gclib.py()
```

```
    try:
        connection.GOpen(sys.argv[1])

        connection.GCommand('MO')
        connection.GCommand('DM posA[1000]')
        connection.GCommand('RA posA[]')
        connection.GCommand('RD _TPA')
        connection.GCommand('RC 1,-1000') # Assuming TM1000, record at 2ms intervals (1ms on
DMC30010 / EDD37010 / RIO47000)

        start = 0
        end = -1
        positions = None
        startTime = time.time()
        f = open("positions.txt", "w")
        while (time.time() - startTime < float(sys.argv[2])):
            time.sleep(0.5); # Assumes TM1000
            end = int(float(connection.GCommand("MG_RD")))
            positions = connection.GArrayUpload('posA', start, -1 if end < start else end)
            if end < start:
                positions += connection.GArrayUpload('posA', 0, end)
            for i in range(end - start if end > start else 1000 - start + end):
                f.write(str(positions[i]) + '\n')
            start = end
        f.close()
    except gclib.GclibError as e:
        print(e)
    connection.GCommand("RC 0")
    connection.GClose()

if __name__ == '__main__':
    main()
```

– **Output**

```
> python record.py 192.168.0.40 5
```

The 'Replay' example uses the file produced by 'Record' along with CM to accurately reproduce the recorded movement. Note that all axes must be properly set up for motion.

– **Code**

```
import gclib
import sys
import time

def main():
    if len(sys.argv) != 2:
        print(f'Usage: replay.py ADDRESS', file=sys.stderr)
        return 1

    connection = gclib.py()
    try:
        connection.GOpen(sys.argv[1])
        connection.GCommand('SH A')
        connection.GCommand('CM A')
        connection.GCommand('DT -1')

        contourSpace = int(float(connection.GCommand('MG_CM')))

        f = open("positions.txt", "r")

        lastPosition = None
        for line in f.read().splitlines():
            position = int(float(line))
            if lastPosition:
                movement = position - lastPosition
                try:
                    connection.GCommand(f'CD {str(movement)}')
                except gclib.GclibError:
                    if (connection.GCommand('TC1') != '32 Segment buffer full'):
                        raise
                    if (int(float(connection.GCommand('MG_DT'))) == -1):
                        connection.GCommand('DT 1')
                    time.sleep(0.1)
            lastPosition = position
        f.close()

        while int(float(connection.GCommand('MG_CM'))) < contourSpace:
            time.sleep(0.5)

    except gclib.GclibError as e:
        print(e)
    except OSError:
        print('Failed to open positions.txt')
    connection.GCommand('CD 0=0')
    connection.GCommand('MO')
```

```
    connection.GClose()

if __name__ == '__main__':
    main()
```

– **Output**

```
> python replay.py 192.168.0.40
```

- **Java** The 'Record' example uses RA in continuous mode along with gclibjava.GclibJava.GProgramUpload() to allow recording movement for an arbitrary amount of time. It produces a file with the recorded positions of all axes.

– **Code**

```
import gclibjava.*;

import java.util.NoSuchElementException;
import java.util.Scanner;
import java.util.List;
import java.util.ArrayList;
import java.util.Collections;
import java.io.FileWriter;
import java.io.IOException;

public class Record {
    public static void main(String[] args) throws GclibJavaException, IOException,
InterruptedException {
        if (args.length != 2) {
            System.out.println("Usage: Record ADDRESS SECONDS");
            return;
        }
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);

        connection.GCommand("MO");
        connection.GCommand("DM posA[1000]");
        connection.GCommand("RA posA[]");
        connection.GCommand("RD _TPA");
        connection.GCommand("RC 1,-1000"); // Assuming TM1000, record at 2ms intervals (1ms on
DMC30010 / EDD37010 / RIO47000)

        List<Double> array = new ArrayList<Double>();
        long startTime = System.currentTimeMillis();
        short start = 0, end;

        try(FileWriter fw = new FileWriter("positions.txt")) {
            while (System.currentTimeMillis() - startTime < Float.parseFloat(args[1]) * 1000) {
                Thread.sleep(500);
                end = (short)Float.parseFloat(connection.GCommand("MG_RD"));
                array = connection.GArrayUpload("posA", start, end < start ? (short)-1 : end);
                if (end < start) {
                    array.addAll(connection.GArrayUpload("posA", 0, end));
                }
                for (int i = 0; i < (end > start ? end - start : 1000 - start + end); i++) {
                    fw.write(array.get(i).toString() + System.lineSeparator());
                }
                start = end;
            }
        }
        connection.GCommand("RC 0");
        connection.GClose();
    }
}
```

– **Output**

```
> java record 192.168.0.40 5
```

The 'Replay' example uses the file produced by 'Record' along with CM to accurately reproduce the recorded movement. Note that all axes must be properly set up for motion.

– **Code**

```
import gclibjava.*;

import java.util.NoSuchElementException;
import java.util.Scanner;
import java.util.List;
import java.util.ArrayList;
import java.util.Collections;
import java.io.FileReader;
import java.io.BufferedReader;
import java.io.IOException;
```

```
import java.io.FileNotFoundException;

public class Replay {
    public static void main(String[] args) throws GclibJavaException, IOException,
InterruptedException {
        if (args.length != 1) {
            System.out.println("Usage: Replay ADDRESS");
            System.exit(1);
        }
        GclibJava connection = new GclibJava();
        connection.GOpen(args[0]);

        connection.GCommand("SH A");
        connection.GCommand("CM A");
        connection.GCommand("DT -1");

        int contourSpace = (int)Float.parseFloat(connection.GCommand("MG_CM"));

        long startTime = System.currentTimeMillis();
        try(BufferedReader br = new BufferedReader(new FileReader("positions.txt"))) {
            String line = br.readLine();
            Float position;
            Float lastPosition = null;
            String movement;
            while (line != null) {
                position = Float.parseFloat(line);
                if (lastPosition == null) {
                    lastPosition = position;
                    continue;
                }
                movement = String.valueOf((int)(position - lastPosition));
                try {
                    connection.GCommand("CD " + movement);
                } catch (GclibJavaException e) {
                    if (!(e.getErrorCode() == -10000 &&
connection.GCommand("TC1").startsWith("32")))
                        throw e;
                    if ((int)Float.parseFloat(connection.GCommand("MG_DT")) == -1)
                        connection.GCommand("DT 1");
                    Thread.sleep(500);
                }
                lastPosition = position;
                line = br.readLine();
            }
        } catch (FileNotFoundException e) {
            System.out.println("Failed to open positions.txt");
            System.exit(1);
        }

        while ((int)Float.parseFloat(connection.GCommand("MG_CM")) < contourSpace)
            Thread.sleep(500);

        connection.GCommand("CD 0=0");
        connection.GCommand("MO");
        connection.GClose();
    }
}
```

– Output

```
> java replay 192.168.0.40
```

- **C#** The 'Record' example uses `RA` in continuous mode along with `Gclib.GProgramUpload()` to allow recording movement for an arbitrary amount of time. It produces a file with the recorded positions of all axes.

– Code

```
if (args.Length != 2) {
    System.Console.WriteLine("Usage: record.exe ADDRESS SECONDS");
    return 1;
}

gclib connection = new gclib();
try {
    connection.GOpen(args[0]);

    connection.GCommand("MO");
    connection.GCommand("DM posA[1000]");
    connection.GCommand("RA posA[]");
    connection.GCommand("RD _TPA");
    connection.GCommand("RC 1,-1000"); // Assuming TM1000, record at 2ms intervals (1ms on
DMC30010 / EDD37010 / RIO47000)

    List<double> positions = new List<double>();
    int startTime = DateTime.Now.Second;
    short start = 0, end;
    using (StreamWriter file = new StreamWriter("positions.txt")) {
```

```
        while (DateTime.Now.Second - startTime < float.Parse(args[1])) {
            System.Threading.Thread.Sleep(500);
            end = (short)float.Parse(connection.GCommand("MG_RD"));
            positions = connection.GArrayUpload("posA", start, end < start ? (short)-1 : end);
            if (end < start)
                positions.AddRange(connection.GArrayUpload("posA", 0, end));
            for (int i = 0; i < (end > start ? end - start : 1000 - start + end); i++)
                file.WriteLine(positions[i].ToString());
            start = end;
        }
    }
} catch (System.Exception e) {
    if (e.Message.StartsWith("-10000"))
        System.Console.WriteLine(connection.GCommand("TC1"));
    else
        System.Console.WriteLine(e.Message);
}
connection.GCommand("RC 0");
connection.GClose();
return 0;
```

– **Output**

```
> dotnet run --project Record 192.168.0.40 5
```

The 'Replay' example uses the file produced by 'Record' along with CM to accurately reproduce the recorded movement. Note that all axes must be properly set up for motion.

– **Code**

```
if (args.Length != 1) {
    System.Console.WriteLine("Usage: record.exe ADDRESS");
    return 1;
}

gclib connection = new gclib();
try {
    connection.GOpen(args[0]);

    connection.GCommand("SH A");
    connection.GCommand("CM A");
    connection.GCommand("DT -1"); // Assuming TM1000, record at 2ms intervals (1ms on DMC30010 /
EDD37010 / RIO47000)

    int contourSpace = (int)float.Parse(connection.GCommand("MG_CM"));

    int startTime = DateTime.Now.Second;
    try {
        using (StreamReader sr = new StreamReader("positions.txt")) {
            string? line = sr.ReadLine();
            int position;
            int? lastPosition = null;
            while (line != null) {
                position = int.Parse(line);
                if (lastPosition == null) {
                    lastPosition = position;
                    continue;
                }
                try {
                    connection.GCommand($"CD {position - lastPosition}");
                } catch (System.Exception e) {
                    if (!(e.Message.StartsWith("-10000") &&
connection.GCommand("TC1").StartsWith("32")))
                        throw;
                    if ((int)float.Parse(connection.GCommand("MG_DT")) == -1)
                        connection.GCommand("DT 1");
                    System.Threading.Thread.Sleep(500);
                }
                lastPosition = position;
                line = sr.ReadLine();
            }
        }
    } catch (System.Exception) {
        Console.WriteLine("Failed to open positions.txt");
    }
    while ((int)float.Parse(connection.GCommand("MG_CM")) < contourSpace)
        System.Threading.Thread.Sleep(500);
} catch (System.Exception e) {
    if (e.Message.StartsWith("-10000"))
        System.Console.WriteLine(connection.GCommand("TC1"));
    else
        System.Console.WriteLine(e.Message);
}
connection.GCommand("CD 0=0");
connection.GCommand("MO");
connection.GClose();
return 0;
```

- **Output**

```
> dotnet run --project Replay 192.168.0.40
```

- **VB** The 'Record' example uses RA in continuous mode along with Gclib.GProgramUpload() to allow recording movement for an arbitrary amount of time. It produces a file with the recorded positions of all axes.

  - **Code**

```
Module Program
    Function Main(args As String()) As Integer
        If args.Length <> 2
            System.Console.WriteLine("Usage: record.exe ADDRESS SECONDS")
            Return 1
        End If

        Dim connection As new gclib()
        Try
            connection.GOpen(args(0))

            connection.GCommand("MO")
            connection.GCommand("DM posA[1000]")
            connection.GCommand("RA posA[]")
            connection.GCommand("RD _TPA")
            connection.GCommand("RC 1,-1000") ' Assuming TM1000, record at 2ms intervals (1ms on
DMC30010 / EDD37010 / RIO47000)

            Dim positions As List(Of Double)
            Dim startTime As Date = Now
            Dim endTime As Date = DateAdd("s", Single.Parse(args(1)), startTime)
            Dim first As Short = 0
            Dim last As Short
            first = 0
            Using writer As System.IO.StreamWriter = New System.IO.StreamWriter("positions.txt")
                While Now < endTime
                    System.Threading.Thread.Sleep(500)
                    last = Single.Parse(connection.GCommand("MG_RD"))
                    positions = connection.GArrayUpload("posA", first, If(last < first, -1,
last))
                    If (last < first)
                        positions.AddRange(connection.GArrayUpload("posA", 0, last))
                    End If
                    For i = 0 To If(last > first, last - first, 1000 - first + last)
                        writer.WriteLine(positions(i).ToString())
                    Next
                    first = last
                End While
            End Using
        Catch e as System.Exception
            If e.Message.StartsWith("-10000")
                System.Console.WriteLine(connection.GCommand("TC1"))
            Else
                System.Console.WriteLine(e.Message)
            End If
        End Try
        connection.GCommand("RC 0")
        connection.GClose()
        Return 0
    End Function
End Module
```

  - **Output**

```
> dotnet run --project record 192.168.0.40 5
```

The 'Replay' example uses the file produced by 'Record' along with CM to accurately reproduce the recorded movement. Note that all axes must be properly set up for motion.

  - **Code**

```
Module Program
    Function Main(args As String()) As Integer
        If args.Length <> 1
            System.Console.WriteLine("Usage: record.exe ADDRESS")
            Return 1
        End If

        Dim connection As new gclib()
        Try
            connection.GOpen(args(0))

            connection.GCommand("SH A")
            connection.GCommand("CM A")
```

```
            connection.GCommand("DT -1") ' Assuming TM1000, record at 2ms intervals (1ms on
DMC30010 / EDD37010 / RIO47000)

            Dim contourSpace As Integer = Single.Parse(connection.GCommand("MG_CM"))

            Dim startTime As Integer = DateTime.Now.Second
            Try
                Using sr As System.IO.StreamReader = new System.IO.StreamReader("positions.txt")
                    Dim line As String = sr.ReadLine()
                    Dim position As Integer
                    Dim lastPosition As Integer? = Nothing
                    While line <> Nothing
                        position = Integer.Parse(line)
                        If lastPosition Is Nothing
                            lastPosition = position
                            Continue While
                        End If
                        Try
                            connection.GCommand($"CD {position - lastPosition}")
                        Catch E As System.Exception
                            If Not(E.Message.StartsWith("-10000") And
connection.GCommand("TC1").StartsWith("32"))
                                Throw
                            End If
                            If CType(Single.Parse(connection.GCommand("MG_DT")), Integer) = -1
                                connection.GCommand("DT 1")
                            End If
                            System.Threading.Thread.Sleep(500)
                        End Try
                        lastPosition = position
                        line = sr.ReadLine()
                    End While
                End Using
            Catch E As System.Exception
                Console.WriteLine("Failed to open positions.txt")
                Console.WriteLine(e.Message)
            End Try

            While CType(Single.Parse(connection.GCommand("MG_CM")), Integer) < contourSpace
                System.Threading.Thread.Sleep(500)
            End While

        Catch e As System.Exception
            If (e.Message.StartsWith("-10000"))
                System.Console.WriteLine(connection.GCommand("TC1"))
            Else
                System.Console.WriteLine(e.Message)
            End If
        End Try
        connection.GCommand(String.Format("CD 0=0"))
        connection.GCommand("MO")
        connection.GClose()
        Return 0
    End Function
End Module
```

– Output

```
> dotnet run --project replay 192.168.0.40
```

Chapter 3

GalilTools

To provide maximum compatibility, gclib ships with an open source wrapper implementation of the GCL (GalilTools Communication Library). Users wanting to upgrade to gclib that have source built on Galil.h can use this wrapper to minimize source changes. This wrapper is also indicated for users that want the same function calls as Galil.h, but don't want the usage of QT as in galil1.dll.

This wrapper is intended for existing applications already using the library distributed with GalilTools (galil1.dll) or the previous *STL* library (galil2.dll). New applications should be written with gclib.

3.1 Windows

3.1.1 Compile galil2.dll with MSVC 2013

The following instructions were performed on *Visual Studio Professional 2013* and can be extended to other Visual Studio versions. For brevity, the instructions assume the default installation location of **C:\Program Files (x86)\Galil\gclib** and a build type of **x86 (win32)**.

3.1.2 Launch the compiler command prompt

- Open *VS2013 x86 Native Tools Command Prompt*.
- Navigate to a convenient, writable location, e.g. *C:\temp*.

3.1.3 Set an environment variable for the base path

```
C:\temp>set base=C:\Program Files (x86)\Galil\gclib
```

3.1.4 Compile the source code

Note the quotes.

```
C:\temp>cl -c "%base%\source\wrappers\gcl\*.cpp" -I "%base%\include" -EHsc -MD
```

3.1.5 Link the source code

Note the quotes.

```
C:\temp>link /DLL gcl_datarecord.obj gcl_galil.obj "%base%\lib\dynamic\x86\gclib.lib" "%base%\lib\dynamic\x86\
```

The output files *galil2.dll* and *galil2.lib* can now be used in a project using the GCL.

3.1.6 Test

Help the loader find the right dlls.

```
C:\temp>set PATH=%PATH%;%BASE%\dll\x86
```

Link the simple example.

```
C:\temp>link gcl_simple.obj "%base%\lib\dynamic\x86\gclib.lib" "%base%\lib\dynamic\x86\gclibo.lib" galil2.lib
```

Run the example.

```
C:\temp>simple.exe
Galil2.dll wrapper, gclib 106.75.180
10.1.3.169, DMC4020 Rev 1.2c, 291
```

3.2 Linux

3.2.1 Copy files

```
$ cp -r /usr/share/gclib/src/wrappers/gcl .
$ cd gcl
$ ls
Galil.h             gcl_galil.cpp  gcl_simple.cpp
gcl_datarecord.cpp  gcl_galil.h    makefile
```

3.2.2 Make and install

```
$ make
gcl open source wrapper for gclib
  Compiling wrapper, libgalil.so.2.0
g++ -c -fPIC -std=c++11 gcl_datarecord.cpp  gcl_galil.cpp
  Linking wrapper into shared library.
g++ -shared -o libgalil.so.2.0 *.o -Wl,-soname=libgalil.so.2
strip --strip-unneeded libgalil.so.2.0
  Cleaning up.
$ sudo make install
Installing libgalil.so.2.0
install -m 755 libgalil.so.2.0 /usr/lib
install -m 644 Galil.h /usr/lib
ldconfig
ln -s /usr/lib/libgalil.so.2 /usr/lib/libgalil.so
$ make clean
Cleaning project...
```

3.2.3 Test

```
$ g++ gcl_simple.cpp -lgalil -lgclib -lgclibo -o simple
$ ./simple
Galil2.dll wrapper, gclib 95.71.164
10.1.3.169, DMC4020 Rev 1.2c, 291
```

Chapter 4

License

- gclib is licensed under the MIT-0 License.
- gclib and gcaps use OpenSSL, which is licensed under the Apache 2.0 License.
  - The Java wrapper uses JNA, which is also licensed under the Apache 2.0 License.
- This documentation uses the doxygen-awesome-css theme, which is covered by the MIT License.

Chapter 5

Program Preprocessor

gclib's program downloader provides a preprocessor for DMC code. The preprocessor modifies the program prior to download providing a number of language features not present in native DMC code.
The preprocessor is invoked in the following two ways.

1. With both GProgramDownload() and GProgramDownloadFile() via the `preprocessor` argument. Downloading code with null for the preprocessor argument uses defaults.
2. From within DMC code via in-band preprocessor directives.

5.1 The `preprocessor` argument

GProgramDownload() and GProgramDownloadFile() can be called with a string passed to the `preprocessor` argument. The program will be modified based on this string prior to download. See *Preprocessor Options* below for syntax.

5.2 In-band Operation

DMC code can be written with special markup to signal the preprocessor to take actions prior to download.
For example, the following program will invoke the in-band preprocessor. The specifics are described below.

```
## Author: Zaphod Beeblebrox
## Project: Total Perspective Vortex
//the above 4 hashmarks enable the preprocessor
##option "--min 4" //use a minimum of level four compression
REM REM-style comments are supported at all times
PRA=1000
BGA
AMA
EN
```

5.2.1 The `REM` Comment

Lines beginning with the string `REM` are removed prior to download. `REM` comments are always removed regardless of whether the other preprocessor options are enabled or not.

5.2.2 Double Hash

Most preprocessor statements begin with a double hash, `##`. When proceeded by a space, the double hash acts like a `REM` comment.
When proceeded by a character other than space, `##` is interpreted as a preprocessor directive. For example, see `##option` below.

Note

Double hash lines are removed from the program only when the preprocessor is enabled with a quad hash.

5.2.3 Quad Hash to enable

In order to enable the in-band preprocessor, the first two lines of the DMC program must start with a double hash. This syntax of using two lines with double hashmarks is called a *quad hash*.
Content may follow the hash marks. For example, a good code writing style is to use double hash comments as a comment header showing author, project name, etc.

5.2.4 C-style comments

With the preprocessor enabled, C-style comments may be used with the // prefix. These comments are very similar to REM comments. The primary advantage of using this comment over REM is that // comments may occur anywhere in a line. This is helpful for line comments such as the following.

```
SIA= 1,25,25,0<4>1 //SSI 25 bits total, all single turn, no status
```

Strings containing // are not interpreted as comments.

Note

// comments are removed from the program only when the preprocessor is enabled with a quad hash.

5.2.5 Preprocessor Directives

Note

Directives are only followed when the preprocessor is enabled with a quad hash.

5.2.5.1 ##option

The option directive allows passing switches directly to the preprocessor with the same syntax as the preprocessor argument in GProgramDownload() and GProgramDownloadFile(). The syntax of the option directive is the following.

```
##option "{preprocessor switches}"
```

For example, the following line will disable compression in the program.

```
##option "--max 0"
```

See *Preprocessor Options* below for other switches.

5.2.5.2 ##include

The include directive provides a way to include the contents of another DMC file in the current program. This is useful for reusing code such as automatic subroutines, homing operations, or controller initilization routines.
The contents of the file will be inserted in place of the include line. The insertion occurs prior to code compression.
The syntax of the include directive is the following.

```
##include "{filename}"
```

For example,

```
##include "c:\galil\initialize.dmc"
##include "homing.dmc"
```

To write more portable code, use the include directive with just the file name, no absolute path. The path to find the file on the system is set depending on usage.

1. In the Galil Design Kit, specify the include path in GDK's settings with the --search or -I switch as defined below.
2. When downloading code via GProgramDownload() or GProgramDownloadFile(), use the --search or -I switch in the preprocessor argument.
3. Finally, if the file is in the executable search path, the file will be found. However, one of the previous two options is more reliable.

5.2.5.3 ##gclib

Galil Design Kit uses the ##gclib directive in GDK Macros. gclib ignores this directive.

5.2.6 In-band Support

In addition to gclib, `Galil Design Kit` supports the preprocessor. Proper preprocessor usage will be colored in the Editor's syntax highlighter. If the quad hash is not present, preprocessor syntax will be colored differently to indicate improper usage.
The preprocessor is not supported in software prior to GDK/gclib. DMC code downloads using the in-band preprocessor in prior generation software (e.g. GalilTools or SmartTerm) will fail with a TC code of 61, *Duplicate or bad label*.

5.3 Preprocessor Options

5.3.1 Compression, `--min`, `--max`

- Default uses minimum compression needed to fit the program.
- `--max` *n* provides compression up to and including level *n*. Only the necessary compression will be performed up to level *n*.
- `--min` *n* will compress at least up to and including *n*. *n* defined as with `--max`.

5.3.1.1 Compression Levels, *n*

- Level 0 (mandatory)
  1. Remove lines beginning with `REM`.
  2. Remove trailing semicolons.
     (a) Comment blank lines with '.
     (b) Remove white space (space/tab) in front of # (label declarations).
     (c) Remove white space after commands.
     (d) Line ends changed to carriage return.
     (e) Replace leading tabs with double space.
     (f) Replace non-leading tabs with single space.
  3. A backslash (`\`) character on a line other than a preprocessor line will result in an error.
- Level 1
  1. Remove unnecessary spaces. Strings, comments ('), and no-ops (NO) are not changed.
- Level 2
  1. Remove comments (') but not no-ops (NO).
- Level 3
  1. Remove no-ops (NO).
- Level 4
  1. Break apart compound lines that are too long.
  2. Compact lines of code to maximize line usage.
  3. Use backtick to support long lines where applicable.

5.3.2 Code insertion, `--insert`

- Default begins at line zero and overwrites anything present.
- `--insert` *arg* invokes the insert option of the firmware's *DL* command. *arg* can be one of the following.
  1. Line number, e.g. `100`. Program insertion will occur on the line after the line specified.
  2. Variable name, e.g. `myvar`. Program insertion will occur on the line after the line equal to the value of the variable.

3. Label callout, e.g. `#mylabel`. Program insertion will occur on the line after the label.
4. A lone `#` symbol. Program insertion will occur on the line after the last line in the program buffer.

- Compression directives `--max` and `--min` are followed.
  - All original code following the point of insertion is cleared.
  - Not all products support the `--insert` operation, e.g. DMC-30010. See the DL command for support.

Warning

It is the user's responsibility to ensure that the code will fit in the inserted location. The preprocessor will not check line numbers when executing the `--insert` option.

5.3.3 Include Search Paths, `--search`, `-I`

- The `##include` directive will attempt to open its string argument directly. The open will succeed if the argument is the absolute path, or if the argument is in the executable's path, e.g. in the same directory.
- `--search` *path* allows the user to specify a directory or directories to be searched for the `include` file in case the first open fails.
  - For historical reasons, `-I` is shorthand for `--search`.
- Multiple directories may be specified with multiple `-I` directives.
- For in-band code, `-I` must be specified prior to the include.
- A common use for `-I` is to specify only the filename in the DMC source code and use the `preprocessor` argument during download to specify the path to the files. This allows the files to be moved without a change to source code.
- Search order
  1. The `##include` argument is checked first as-is.
  2. Then each `-I` argument in the `preprocessor` argument, in the order specified.
  3. Then `##option` directives in the DMC file, in the order specified.
- If the search path contains spaces, enclose the path in double quotes, escaped with a backslash. See example below.

5.3.3.1 In-band Example

```
##option "-I /code/dmc/homing"
##option "-I \"/code/dmc/other code\""
##include "auto.dmc"
//executable's directory will be checked
//then c:\code\dmc\homing
//then c:\code\dmc\other code
```

5.3.4 Macro Definition, `--define`, `-D`

- `--define` provides a way to substitute one token for another. This is useful for writing code that is generic until program download. Wherever the token is found in code, it is substituted by the replacement. The replacement occurs right before code compression.
- `-D` is shorthand for `--define`.
- The token should consist of a starting backslash character, followed by upper or lower case alphanumeric characters, underscores, and an ending backslash.
- The common usage for this feature is to write code with a token, and then call the program download with the `-D` switch.

In this example, an axis is defined at download time. Specifying the following for the preprocessor argument

```
--define \ax\:A
```

would cause the following code

```
SH\ax\
JG\ax\=1000
BG\ax\
```

to be downloaded as

```
SHA
JGA=1000
BGA
```

This causes the *A* axis to be addressed.

Note

The macro `\pid\` is reserved for exclusive use by GDK.

5.3.5 Conditional Directives, `--ifdef`, `--ifndef`

To specify a preprocessor directive should be executed only if a macro is defined, use `--ifdef`.

```
##option "--ifdef \minify\ --min 4" //maximally compress code if minify macro set
```

To specify a preprocessor directive should be executed only if a macro is NOT defined, use `--ifndef`.

```
##option "--ifndef \axis\ -D \axis\:A" //Default to axis A
```

5.4 GDK Support

- See the `preprocessor` text box in the *Editor* settings page to set the desired preprocessor setting for developing in GDK's editor.

Chapter 6

Deprecated List

Member GAddresses (GCStringOut addresses, GSize addresses_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_addresses()` instead.

Member GArrayDownload (GCon g, const GCStringIn array_name, GOption first, GOption last, GCStringIn buffer)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_array()` instead.

Member GArrayDownloadFile (GCon g, GCStringIn file_path)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GArrayUpload (GCon g, const GCStringIn array_name, GOption first, GOption last, GOption delim, GBufOut buffer, GSize buffer_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_array()` instead.

Member GArrayUploadFile (GCon g, GCStringIn file_path, GCStringIn names)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GAssign (GCStringIn ip, GCStringIn mac)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_assign_ip()` instead.

Member GClose (GCon g)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_close()` instead.

Member GCmd (GCon g, GCStringIn command)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GCmdD (GCon g, GCStringIn command, double *value)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GCmdI (GCon g, GCStringIn command, int *value)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GCmdT (GCon g, GCStringIn command, GCStringOut trimmed_response, GSize response_len, GCStringOut *front)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GCommand (GCon g, GCStringIn command, GBufOut buffer, GSize buffer_len, GSize *bytes_returned)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_command()` instead.

Member GError (GReturn rc, GCStringOut error, GSize error_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GFirmwareDownload (GCon g, GCStringIn filepath)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_firmware()` instead.

Member GInfo (GCon g, GCStringOut info, GSize info_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_address()`, `gclib_revision_information()`, and `gclib_serial_number()` instead.

Member GInterrupt (GCon g, GStatus *status_byte)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_interrupt()` instead.

Member GIpRequests (GCStringOut requests, GSize requests_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_ip_requests()` instead.

Member GListServers (GCStringOut servers, GSize servers_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_list_servers()` instead.

Member GMessage (GCon g, GCStringOut buffer, GSize buffer_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_message()` instead.

Member GMotionComplete (GCon g, GCStringIn axes)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GOpen (GCStringIn connection_string, GCon *g)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_open()` instead.

Member GProgramDownload (GCon g, GCStringIn program, GCStringIn preprocessor)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_program()` instead.

Member GProgramDownloadFile (GCon g, GCStringIn file_path, GCStringIn preprocessor)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GProgramUpload (GCon g, GBufOut buffer, GSize buffer_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_program()` instead.

Member GProgramUploadFile (GCon g, GCStringIn file_path)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GPublishServer (GCStringIn name, GOption publish, GOption save)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_published()` instead.

Member GRead (GCon g, GBufOut buffer, GSize buffer_len, GSize *bytes_read)

This function only exists for ABI compatibility, and will be removed in a future gclib version.

Member GRecord (GCon g, union GDataRecord *record, GOption method)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_data_record()` instead.

Member GRecordRate (GCon g, double period_ms)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_data_records()` instead.

Member GRemoteConnections (GCStringOut connections, GSize connections_length)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GServerStatus (GCStringOut status, GSize status_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_server()` instead.

Member GSetServer (GCStringIn server_name)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_server()` instead.

Member GSetupDownloadFile (GCon g, GCStringIn file_path, GOption options, GCStringOut info, GSize info_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GSleep (unsigned int timeout_ms)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GTimeout (GCon g, short timeout_ms)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GUtility (GCon g, GOption request, GMemory memory1, GMemory memory2)

This function only exists for ABI compatibility, and will be removed in a future gclib version.

Member GVersion (GCStringOut ver, GSize ver_len)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_version()` and `gclib_gcaps_version()` instead.

Member GWaitForBool (GCon g, GCStringIn predicate, int trials)

This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Member GWrite (GCon g, GBufIn buffer, GSize buffer_len)

This function only exists for ABI compatibility, and will be removed in a future gclib version.

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Chapter 12

Topic Documentation

12.1 .NET (C# / VB)

Topics

- Connection

  Discover available controllers and open connections.
- Controller

  Manage a Galil controller.
- Galil Connect

  Host or connect to a remote gcaps instance.

Functions

- string gclib.GVersion ()

  Used to get the gclib version.

12.1.1 Detailed Description

12.1.2 Function Documentation

12.1.2.1 GVersion()

```
string gclib.GVersion ()  [inline]
```

Used to get the gclib version.

Returns

The library version, e.g. "104.73.179". A null string indicates an error was returned from the library.

Wrapper around gclib GVersion(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo↩_8h.html#a1784b39416b77af20efc98a05f8ce475
Definition at line 616 of file gclib.cs.

12.1.3 Connection

Discover available controllers and open connections.

Classes

- class gclib

  Provides a class that binds to gclib's unmanaged dll.

Functions

- string[ ] gclib.GAddresses ()

  Return a string array of available connection addresses.
- void gclib.GAssign (string ip, string mac)

  Assigns IP address over the Ethernet to a controller at a given MAC address.
- void gclib.GClose ()

  Used to close a connection to Galil hardware.
- string gclib.GInfo ()

  Provides a useful connection string.
- string[ ] gclib.GIpRequests ()

  Provides a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
- void gclib.GOpen (string address)

  Used to open a connection to Galil hardware.
- void gclib.GTimeout (Int16 timeout_ms)

  Set the timeout of communication transactions.

12.1.3.1 Detailed Description

Discover available controllers and open connections.

12.1.3.2 Function Documentation

12.1.3.2.1 GAddresses()

```
string[] gclib.GAddresses ()  [inline]
```

Return a string array of available connection addresses.

Returns

String array containing all available Galil Ethernet controllers, PCI controllers, and COM ports.

Wrapper around gclib GAddresses(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a6a6114683ed5749519b64f19512c24d6 An empty array is returned on error.
Definition at line 79 of file gclib.cs.

12.1.3.2.2 GAssign()

```
void gclib.GAssign (
            string ip,
            string mac)  [inline]
```

Assigns IP address over the Ethernet to a controller at a given MAC address.

Parameters

ip	The ip address to assign. The hardware should not yet have an IP address.
mac	The MAC address of the hardware.

Wrapper around gclib GAssign(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#acc996b7c22cfed8e5573d096ef1ab759

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 206 of file gclib.cs.

12.1.3.2.3 GClose()

```
void gclib.GClose ()  [inline]
```

Used to close a connection to Galil hardware.
Wrapper around gclib GClose(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a24a437bcde9637b0db4b94176563a052 Be sure to call GClose() whenever a connection is finished.
Definition at line 222 of file gclib.cs.

12.1.3.2.4 GInfo()

```
string gclib.GInfo ()  [inline]
```

Provides a useful connection string.
Wrapper around gclib GInfo(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a08abfcff8a1a85a01987859473167518

Returns

String containing connection information, e.g. "192.168.0.43, DMC4020 Rev 1.2c, 291". A null string indicates an error was returned from the library.

Definition at line 333 of file gclib.cs.

12.1.3.2.5 GIpRequests()

```
string[] gclib.GIpRequests ()  [inline]
```

Provides a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.

Returns

Each line of the returned data will be of the form "model, serial_number, mac".

Wrapper around gclib GIpRequests(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a0afb4c82642a4ef86f997c39a5518952 An empty array is returned on error. Call will take roughly 5 seconds to return.
Definition at line 377 of file gclib.cs.

12.1.3.2.6 GOpen()

```
void gclib.GOpen (
            string address)  [inline]
```

Used to open a connection to Galil hardware.

Parameters

address	Address string including any connection switches. See gclib documentation for GOpen().

Wrapper around gclib GOpen(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#aef4aec8a85630eed029b7a46aea7db54

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 439 of file gclib.cs.

12.1.3.2.7 GTimeout()

```
void gclib.GTimeout (
            Int16 timeout_ms)  [inline]
```

Set the timeout of communication transactions.
Use -1 to set the original timeout from GOpen().

Parameters

timeout_ms	New timeout in miliseconds.

Wrapper around gclib GTimeout(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a179aa2d1b8e2227944cc06a7ceaf5640
Definition at line 605 of file gclib.cs.

12.1.4 Controller

Manage a Galil controller.

Topics

- Communication

  Send commands.
- Memory

  Manage controller memory, such as program and arrays.
- Unsolicited Data

  Receive messages and interrupts.

Functions

- void gclib.GMotionComplete (string axes)

  Blocking call that returns once all axes specified have completed their motion.

12.1.4.1 Detailed Description

Manage a Galil controller.

12.1.4.2 Function Documentation

12.1.4.2.1 GMotionComplete()

```
void gclib.GMotionComplete (
            string axes)  [inline]
```

Blocking call that returns once all axes specified have completed their motion.

Parameters

axes	A string containing a multiple-axes mask. Every character in the string should be a valid argument to MG_BGm, i.e. XYZWABCDEFGHST.

Wrapper around gclib GMotionComplete(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a19c22087944298797070644197f397a

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 421 of file gclib.cs.

12.1.4.3 Communication

Send commands.

Functions

- string gclib.GCommand (string Command, bool Trim=true)

  Used for command-and-response transactions.
- Int16 gclib.GCmdI (string Command)

  Used for command-and-response transactions.
- double gclib.GCmdD (string Command)

  Used for command-and-response transactions.

12.1.4.3.1 Detailed Description

Send commands.

12.1.4.3.2 Function Documentation

12.1.4.3.2.1 GCommand()

```
string gclib.GCommand (
            string Command,
            bool Trim = true)  [inline]
```

Used for command-and-response transactions.

Parameters

Command	The command to send to the controller. Do not append a carriage return. Use only ASCII-based commmands.
Trim	If true, the response will be trimmed of the trailing colon and any leading or trailing whitespace.

Returns

The command's response.

Wrapper around gclib GCommand(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a5ac031e76efc965affdd73a1bec084a8

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 241 of file gclib.cs.

12.1.4.3.2.2 GCmdI()

```
Int16 gclib.GCmdI (
            string Command)  [inline]
```

Used for command-and-response transactions.

Parameters

Command	The command to send to the controller. Do not append a carriage return. Use only ASCII-based commmands.

Returns

The command's response parsed as an integer.

Wrapper around gclib GCmdI(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a5ac031e76efc965affdd73a1bec084a8
Definition at line 273 of file gclib.cs.

12.1.4.3.2.3 GCmdD()

```
double gclib.GCmdD (
            string Command)  [inline]
```

Used for command-and-response transactions.

Parameters

Command	The command to send to the controller. Do not append a carriage return. Use only ASCII-based commmands.

Returns

The command's response parsed as a double.

Wrapper around gclib GCmdD(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a5ac031e76efc965affdd73a1bec084a8
Definition at line 287 of file gclib.cs.

12.1.4.4 Memory

Manage controller memory, such as program and arrays.

Functions

- void gclib.GArrayDownload (string array_name, ref List< double > data, Int16 first=-1, Int16 last=-1)

  Downloads array data to a pre-dimensioned array in the controller's array table.
- void gclib.GArrayDownloadFile (string Path)

  Allows downloading of a program array file to the controller.
- List< double > gclib.GArrayUpload (string array_name, Int16 first=-1, Int16 last=-1)

  Uploads array data from the controller's array table.
- void gclib.GArrayUploadFile (string Path, string Names)

  Allows uploading of a program array file from the controller to an array CSV file.
- void gclib.GFirmwareDownload (string filepath)

  Upgrade firmware.
- void gclib.GProgramDownload (string program, string preprocessor="")

  Allows downloading of a DMC program from a string buffer.
- void gclib.GProgramDownloadFile (string file_path, string preprocessor="")

  Allows downloading of a DMC program from file.
- string gclib.GProgramUpload ()

  Allows uploading of a DMC program to a string.
- void gclib.GProgramUploadFile (string file_path)

  Allows uploading of a DMC program to a file.
- string[ ] gclib.GSetupDownloadFile (string path, Int32 options)

  Allows downloading of a Galil compressed backup (gcb) file to the controller.

12.1.4.4.1 Detailed Description

Manage controller memory, such as program and arrays.

12.1.4.4.2 Function Documentation

12.1.4.4.2.1 GArrayDownload()

```
void gclib.GArrayDownload (
            string array_name,
            ref List< double > data,
            Int16 first = -1,
            Int16 last = -1)  [inline]
```

Downloads array data to a pre-dimensioned array in the controller's array table.

Parameters

array_name	String containing the name of the array to download. Must match the array name used in DM.
data	A list of doubles, to be downloaded.
first	The first element of the array for sub-array downloads.
last	The last element of the array for sub-array downloads.

Wrapper around gclib GArrayDownload(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a6ea5ae6d167675e4c27ccfaf2f240f8a The array must already exist on the controller, see DM and LA.

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 104 of file gclib.cs.

12.1.4.4.2.2 GArrayDownloadFile()

```
void gclib.GArrayDownloadFile (
            string Path)  [inline]
```

Allows downloading of a program array file to the controller.

Parameters

Path	The full filepath of the array csv file.

Wrapper around gclib GArrayDownload(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a14b448ab8c7e6cf495865af301be398e

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 132 of file gclib.cs.

12.1.4.4.2.3 GArrayUpload()

```
List< double > gclib.GArrayUpload (
            string array_name,
            Int16 first = -1,
            Int16 last = -1)  [inline]
```

Uploads array data from the controller's array table.

Parameters

array_name	String containing the name of the array to upload.
first	The first element of the array for sub-array uploads.
last	The last element of the array for sub-array uploads.

Returns

The desired array as a list of doubles.

Wrapper around gclib GArrayUpload(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#af215806ec26ba06ed3f174ebeeafa7a7

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 153 of file gclib.cs.

12.1.4.4.2.4 GArrayUploadFile()

```
void gclib.GArrayUploadFile (
            string Path,
            string Names)  [inline]
```

Allows uploading of a program array file from the controller to an array CSV file.

Parameters

Path	The full filepath of the array csv file to save.
Names	A space separated list of the array names to upload. A null string uploads all arrays in the array table (LA).

Wrapper around gclib GArrayUpload(). http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#af215806ec26ba06ed3f174ebeeafa7a7

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 187 of file gclib.cs.

12.1.4.4.2.5 GFirmwareDownload()

```
void gclib.GFirmwareDownload (
            string filepath)  [inline]
```

Upgrade firmware.

Parameters

filepath	The full filepath of the firmware hex file.

Wrapper around gclib GFirmwareDownload(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a1878a2285ff17897fa4fb20182ba6fdf

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 318 of file gclib.cs.

12.1.4.4.2.6 GProgramDownload()

```
void gclib.GProgramDownload (
            string program,
            string preprocessor = "")  [inline]
```

Allows downloading of a DMC program from a string buffer.

Parameters

program	The program to download.

preprocessor	Preprocessor directives. Use nullstring for none.

Wrapper around gclib GProgramDownload(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#acafe19b2dd0537ff458e3c8afe3acfeb

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 460 of file gclib.cs.

12.1.4.4.2.7 GProgramDownloadFile()

```
void gclib.GProgramDownloadFile (
            string file_path,
            string preprocessor = "")  [inline]
```

Allows downloading of a DMC program from file.

Parameters

file_path	The full filepath of the DMC file.
preprocessor	Preprocessor directives. Use nullstring for none.

Wrapper around gclib GProgramDownloadFile(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a8e44e2e321df9e7b8c538bf2d640633f

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 479 of file gclib.cs.

12.1.4.4.2.8 GProgramUpload()

```
string gclib.GProgramUpload ()  [inline]
```

Allows uploading of a DMC program to a string.
Wrapper around gclib GProgramUpload(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a80a653ce387a2bd16bde2793c6de77e9

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 496 of file gclib.cs.

12.1.4.4.2.9 GProgramUploadFile()

```
void gclib.GProgramUploadFile (
            string file_path)  [inline]
```

Allows uploading of a DMC program to a file.

Parameters

file_path	The full filepath of the DMC file to save.

Wrapper around gclib GProgramUploadFile(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#a38c5565afc11762fa19d37fbaa3c9aa3

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 518 of file gclib.cs.

12.1.4.4.2.10 GSetupDownloadFile()

```
string[] gclib.GSetupDownloadFile (
            string path,
            Int32 options)  [inline]
```

Allows downloading of a Galil compressed backup (gcb) file to the controller.

Parameters

path	The full filepath of the gcb file.
options	A bit mask indicating which sectors of the gcb file to restore to the controller.

Returns

The controller information stored in the gcb file.

Wrapper around gclib GSetupDownloadFile(),
If options is specified as 0, the return string will have a number appended corresponding to a bit mask of the available gcb sectors

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 658 of file gclib.cs.

12.1.4.5 Unsolicited Data

Receive messages and interrupts.

Functions

- byte gclib.GInterrupt ()

  Provides access to PCI and UDP interrupts from the controller.
- string gclib.GMessage ()

  Provides access to unsolicited messages.
- T gclib.GRecord< T > (bool async)

  Used for retrieving data records from the controller.
- void gclib.GRecordRate (double period_ms)

  Sets the asynchronous data record to a user-specified period via DR.

12.1.4.5.1 Detailed Description

Receive messages and interrupts.

12.1.4.5.2 Function Documentation

12.1.4.5.2.1 GInterrupt()

```
byte gclib.GInterrupt ()  [inline]
```

Provides access to PCI and UDP interrupts from the controller.

Returns

The status byte from the controller. Zero will be returned if a status byte is not read.

Wrapper around gclib GInterrupt(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a5bcf802404a96343e7593d247b67f132 -s ALL or -s EI must be specified in the address argument of GOpen() to receive interrupts.
Definition at line 354 of file gclib.cs.

12.1.4.5.2.2 GMessage()

```
string gclib.GMessage ()  [inline]
```

Provides access to unsolicited messages.

Returns

String containing all messages received by controller.

Wrapper around gclib GMessage(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#aabc5eaa09ddeca55ab8ee048b916cbcd An empty string is returned on error. -s ALL or -s MG must be specified in the address argument of GOpen() to receive messages.
Definition at line 399 of file gclib.cs.

12.1.4.5.2.3 GRecord< T >()

```
T gclib.GRecord< T > (
            bool async)  [inline]
```

Used for retrieving data records from the controller.

Returns

A struct containing the information from the retrieved data record.

Parameters

async	False to user QR, True to use DR.

Wrapper around gclib GRecord(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#a1f39cd57dcfa55d065c972a020b1f8ee To use async, -s ALL or -s DR must be specified in the address argument of GOpen(), and the records must be started via DR or RecordRate().

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Type Constraints

T* : *struct

T* : *GDataRecord

Definition at line 565 of file gclib.cs.

12.1.4.5.2.4 GRecordRate()

```
void gclib.GRecordRate (
            double period_ms)  [inline]
```

Sets the asynchronous data record to a user-specified period via DR.

Parameters

period_ms	Period, in milliseconds, to set up for the asynchronous data record.

Wrapper around gclib GRecordRate(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html#ada86dc9d33ac961412583881963a1b8a Takes TM and product type into account and sets the DR period to the period requested by the user, if possible.

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 588 of file gclib.cs.

12.1.5 Galil Connect

Host or connect to a remote gcaps instance.

Functions

- void gclib.GSetServer (string server_name)

  Connects gclib to a new gcaps server.
- string gclib.GServerStatus ()

  Retrieves the name of your local gcaps server and whether or not it is currently published.
- string[ ] gclib.GListServers ()

  Retrieves a list of gcaps servers that are advertising themselves on the local network.
- void gclib.GPublishServer (string server_name, bool publish, bool save)

  Publishes or removes local gcaps server from the network.
- string[ ] gclib.GRemoteConnections ()

  Returns a list of IP Addresses that currently have an open connection to your hardware.

12.1.5.1 Detailed Description

Host or connect to a remote gcaps instance.

12.1.5.2 Function Documentation

12.1.5.2.1 GSetServer()

```
void gclib.GSetServer (
            string server_name)  [inline]
```

Connects gclib to a new gcaps server.

Parameters

server_name	Name of the server to connect.

Wrapper around gclib GSetServer(), Call GSetServer("Local") to connect gclib back to local gcaps server

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 690 of file gclib.cs.

12.1.5.2.2 GServerStatus()

```
string gclib.GServerStatus ()  [inline]
```

Retrieves the name of your local gcaps server and whether or not it is currently published.

Returns

A string in the form "<server_name>, <isPublished>"

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 706 of file gclib.cs.

12.1.5.2.3 GListServers()

```
string[] gclib.GListServers ()  [inline]
```

Retrieves a list of gcaps servers that are advertising themselves on the local network.

Returns

A list of available gcaps server names

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 722 of file gclib.cs.

12.1.5.2.4 GPublishServer()

```
void gclib.GPublishServer (
            string server_name,
            bool publish,
            bool save)  [inline]
```

Publishes or removes local gcaps server from the network.

Parameters

server_name	Name to publish server under.
publish	True=publish server, False=remove server.
save	Save this configuration for future server reboots.

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 745 of file gclib.cs.

12.1.5.2.5 GRemoteConnections()

```
string[] gclib.GRemoteConnections ()  [inline]
```

Returns a list of IP Addresses that currently have an open connection to your hardware.

Returns

Returns a list of IP Addresses that currently have an open connection to your hardware.

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 759 of file gclib.cs.

12.2 C

Topics

- Connection

  Discover available controllers and open connections
- Controller

  Manage a Galil controller

Classes

- struct gclib_interrupt_t

  An interrupt generated by the controller.

Typedefs

- typedef struct Context * gclib_handle

  A handle to an open connection given by `gclib_open()` for use in future API calls.
- typedef struct DataRecord * gclib_data_record_handle

  A handle to a data record, for use in Data Record API calls.
- typedef enum gclib_result gclib_result

  All gclib function return values.
- typedef enum gclib_interrupt_type gclib_interrupt_type

  All interrupt status types.
- typedef struct gclib_interrupt_t gclib_interrupt_t

  An interrupt generated by the controller.
- typedef enum gclib_digital_input_flags gclib_digital_input_flags

  Flags to enable or disable `GCLIB_DIGITAL_INPUT_LOW` interrupts per digital input, for use in `gclib_set_interrupts()`.
- typedef enum gclib_axis_flags gclib_axis_flags

  Flags for building an axis mask, for example in `gclib_set_interrupts()`.

Enumerations

- enum gclib_result {
  GCLIB_SUCCESS , GCLIB_INVALID_ARGUMENT , GCLIB_INTERNAL_ERROR , GCLIB_TIMEOUT ,
  GCLIB_COMMAND_ERROR , GCLIB_BUFFER_TOO_SMALL , GCLIB_NOT_CONNECTED , GCLIB_NOT_SUBSCRIBED
  }

  All gclib function return values.
- enum gclib_interrupt_type {
  GCLIB_NO_INTERRUPTS = 0 , GCLIB_USER_INTERRUPT = 0 , GCLIB_MOTION_COMPLETE = 1 << 0
  , GCLIB_ALL_AXES_MOTION_COMPLETE = 1 << 8 ,
  GCLIB_EXCESS_POSITION_ERROR = 1 << 9 , GCLIB_LIMIT_SWITCH = 1 << 10 , GCLIB_WATCHDOG_TIMER
  = 1 << 11 , GCLIB_PROGRAM_STOPPED = 1 << 13 ,
  GCLIB_COMMAND_DONE = 1 << 14 , GCLIB_DIGITAL_INPUT_LOW = 1 << 15 , GCLIB_ALL_INTERRUPTS
  = (1 << 16) - 1 }

  All interrupt status types.

- enum gclib_digital_input_flags {
  GCLIB_NO_DIGITAL_INPUTS = 0 , GCLIB_DIGITAL_INPUT_1 = 1 << 0 , GCLIB_DIGITAL_INPUT_2 = 1 << 1 , GCLIB_DIGITAL_INPUT_3 = 1 << 2 ,
  GCLIB_DIGITAL_INPUT_4 = 1 << 3 , GCLIB_DIGITAL_INPUT_5 = 1 << 4 , GCLIB_DIGITAL_INPUT_6 = 1 << 5 , GCLIB_DIGITAL_INPUT_7 = 1 << 6 ,
  GCLIB_DIGITAL_INPUT_8 = 1 << 7 , GCLIB_ALL_DIGITAL_INPUTS = (1 << 8) - 1 }

  Flags to enable or disable `GCLIB_DIGITAL_INPUT_LOW` interrupts per digital input, for use in `gclib_set_interrupts()`.
- enum gclib_axis_flags {
  GCLIB_NO_AXES = 0 , GCLIB_AXIS_A = 1 << 0 , GCLIB_AXIS_B = 1 << 1 , GCLIB_AXIS_C = 1 << 2 , GCLIB_AXIS_D = 1 << 3 , GCLIB_AXIS_E = 1 << 4 , GCLIB_AXIS_F = 1 << 5 , GCLIB_AXIS_G = 1 << 6 ,
  GCLIB_AXIS_H = 1 << 7 , GCLIB_ALL_AXES = (1 << 8) - 1 }

  Flags for building an axis mask, for example in `gclib_set_interrupts()`.

Functions

- gclib_result gclib_version (char *version, size_t len)

  Get library version.
- gclib_result gclib_gcaps_version (char *gcaps_version, size_t len)

  Get library version used by current gcaps server.

Variables

- gclib_interrupt_type gclib_interrupt_t::type
- char gclib_interrupt_t::axis

  If `type` is `GCLIB_MOTION_COMPLETE`, holds the axis that triggered the interrupt.
- uint8_t gclib_interrupt_t::digital_input

  If `type` is `GCLIB_DIGITAL_INPUT_LOW`, holds the digital input that triggered the interrupt.
- uint8_t gclib_interrupt_t::user_interrupt

  If `type` is `GCLIB_USER_INTERRUPT`, holds the user input that was triggered.
- union {
  char gclib_interrupt_t::axis
  If `type` is `GCLIB_MOTION_COMPLETE`, holds the axis that triggered the interrupt.
  uint8_t gclib_interrupt_t::digital_input
  If `type` is `GCLIB_DIGITAL_INPUT_LOW`, holds the digital input that triggered the interrupt.
  uint8_t gclib_interrupt_t::user_interrupt
  If `type` is `GCLIB_USER_INTERRUPT`, holds the user input that was triggered.
  };
- uint8_t gclib_interrupt_t::status

  The raw status byte generated by the controller. See the `EI command reference` for all possible values.

12.2.1 Detailed Description

12.2.2 Typedef Documentation

12.2.2.1 gclib_handle

```
typedef struct Context* gclib_handle
```

A handle to an open connection given by `gclib_open()` for use in future API calls.
Definition at line 23 of file gclib.h.

12.2.2.2 gclib_data_record_handle

```
typedef struct DataRecord* gclib_data_record_handle
```

A handle to a data record, for use in Data Record API calls.
Definition at line 25 of file gclib.h.

12.2.2.3 gclib_result

`typedef enum gclib_result gclib_result`
All gclib function return values.
See `gclib_error()` for a more detailed error string.

12.2.2.4 gclib_interrupt_type

`typedef enum gclib_interrupt_type gclib_interrupt_type`
All interrupt status types.
Used in `gclib_set_interrupts()` to configure which interrupts should be generated by the controller, and in `gclib_interrupt_t` once an interrupt has been read from the controller.

12.2.2.5 gclib_interrupt_t

`typedef struct gclib_interrupt_t gclib_interrupt_t`
An interrupt generated by the controller.

12.2.2.6 gclib_digital_input_flags

`typedef enum gclib_digital_input_flags gclib_digital_input_flags`
Flags to enable or disable `GCLIB_DIGITAL_INPUT_LOW` interrupts per digital input, for use in `gclib_set_interrupts()`.

12.2.2.7 gclib_axis_flags

`typedef enum gclib_axis_flags gclib_axis_flags`
Flags for building an axis mask, for example in `gclib_set_interrupts()`.

12.2.3 Enumeration Type Documentation

12.2.3.1 gclib_result

`enum gclib_result`
All gclib function return values.
See `gclib_error()` for a more detailed error string.

Enumerator

GCLIB_SUCCESS	
GCLIB_INVALID_ARGUMENT	
GCLIB_INTERNAL_ERROR	
GCLIB_TIMEOUT	
GCLIB_COMMAND_ERROR	
GCLIB_BUFFER_TOO_SMALL	
GCLIB_NOT_CONNECTED	
GCLIB_NOT_SUBSCRIBED	

Definition at line 29 of file gclib.h.

12.2.3.2 gclib_interrupt_type

`enum gclib_interrupt_type`
All interrupt status types.
Used in `gclib_set_interrupts()` to configure which interrupts should be generated by the controller, and in `gclib_interrupt_t` once an interrupt has been read from the controller.

Enumerator

GCLIB_NO_INTERRUPTS	

Enumerator

GCLIB_USER_INTERRUPT	
GCLIB_MOTION_COMPLETE	
GCLIB_ALL_AXES_MOTION_COMPLETE	
GCLIB_EXCESS_POSITION_ERROR	Must be reenabled with `gclib_set_interrupts()` after occurrence.
GCLIB_LIMIT_SWITCH	Must be reenabled with `gclib_set_interrupts()` after each occurrence.
GCLIB_WATCHDOG_TIMER	
GCLIB_PROGRAM_STOPPED	If multiple threads are running, this interrupt is only triggered when all threads are finished.
GCLIB_COMMAND_DONE	
GCLIB_DIGITAL_INPUT_LOW	Must be reenabled with `gclib_set_interrupts()` after each occurrence.
GCLIB_ALL_INTERRUPTS	

Definition at line 41 of file gclib.h.

12.2.3.3 gclib_digital_input_flags

`enum gclib_digital_input_flags`

Flags to enable or disable `GCLIB_DIGITAL_INPUT_LOW` interrupts per digital input, for use in `gclib_set_interrupts()`.

Enumerator

GCLIB_NO_DIGITAL_INPUTS	
GCLIB_DIGITAL_INPUT_1	
GCLIB_DIGITAL_INPUT_2	
GCLIB_DIGITAL_INPUT_3	
GCLIB_DIGITAL_INPUT_4	
GCLIB_DIGITAL_INPUT_5	
GCLIB_DIGITAL_INPUT_6	
GCLIB_DIGITAL_INPUT_7	
GCLIB_DIGITAL_INPUT_8	
GCLIB_ALL_DIGITAL_INPUTS	

Definition at line 65 of file gclib.h.

12.2.3.4 gclib_axis_flags

`enum gclib_axis_flags`

Flags for building an axis mask, for example in `gclib_set_interrupts()`.

Enumerator

GCLIB_NO_AXES	
GCLIB_AXIS_A	
GCLIB_AXIS_B	
GCLIB_AXIS_C	
GCLIB_AXIS_D	
GCLIB_AXIS_E	
GCLIB_AXIS_F	
GCLIB_AXIS_G	
GCLIB_AXIS_H	

GCLIB_ALL_AXES	

Definition at line 78 of file gclib.h.

12.2.4 Function Documentation

12.2.4.1 gclib_version()

```
gclib_result gclib_version (
            char * version,
            size_t len)
```

Get library version.

Parameters

version	Output buffer for gclib library version.
len	Length of output buffer.

Returns

GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.4.2 gclib_gcaps_version()

```
gclib_result gclib_gcaps_version (
            char * gcaps_version,
            size_t len)
```

Get library version used by current gcaps server.

Parameters

gcaps_version	Output buffer for gcaps library version.
len	Length of output buffer.

Returns

GCLIB_NOT_CONNECTED if unable to reach gcaps

12.2.5 Variable Documentation

12.2.5.1 type

```
gclib_interrupt_type gclib_interrupt_t::type
```

Definition at line 56 of file gclib.h.

12.2.5.2 axis [1/2]

```
char gclib_interrupt_t::axis
```

If `type` is GCLIB_MOTION_COMPLETE, holds the axis that triggered the interrupt.
Definition at line 58 of file gclib.h.

12.2.5.3 [] [2/2]

```
char { ... } ::axis
```

If `type` is GCLIB_MOTION_COMPLETE, holds the axis that triggered the interrupt.
Definition at line 58 of file gclib.h.

12.2.5.4 digital_input [1/2]

`uint8_t gclib_interrupt_t::digital_input`
If `type` is GCLIB_DIGITAL_INPUT_LOW, holds the digital input that triggered the interrupt.
Definition at line 59 of file gclib.h.

12.2.5.5 [] [2/2]

`uint8_t { ... } ::digital_input`
If `type` is GCLIB_DIGITAL_INPUT_LOW, holds the digital input that triggered the interrupt.
Definition at line 59 of file gclib.h.

12.2.5.6 user_interrupt [1/2]

`uint8_t gclib_interrupt_t::user_interrupt`
If `type` is GCLIB_USER_INTERRUPT, holds the user input that was triggered.
Definition at line 60 of file gclib.h.

12.2.5.7 [] [2/2]

`uint8_t { ... } ::user_interrupt`
If `type` is GCLIB_USER_INTERRUPT, holds the user input that was triggered.
Definition at line 60 of file gclib.h.

12.2.5.8 [union]

`union { ... } gclib_interrupt_t`

12.2.5.9 status

`uint8_t gclib_interrupt_t::status`
The raw status byte generated by the controller. See the EI command reference for all possible values.
Definition at line 62 of file gclib.h.

12.2.6 Connection

Discover available controllers and open connections

Topics

- Galil Connect

  Connect to or host a remote gcaps server.

Typedefs

- typedef enum gclib_connection_t gclib_connection_t

  Connection type, as returned by `gclib_connection_type()`.

Enumerations

- enum gclib_connection_t { GCLIB_ETHERNET = 1 , GCLIB_SERIAL , GCLIB_PCI }

  Connection type, as returned by `gclib_connection_type()`.

Functions

- gclib_result gclib_addresses (char *addresses, size_t len)

  Show address, model, and serial of detected controllers, where available.
- gclib_result gclib_ip_requests (char *ip_requests, size_t len)

  Show MAC address, model, and serial of all controllers requesting IP addresses, comma-separated.

- gclib_result gclib_assign_ip (const char *mac, const char *ip)

  Assign IP to a controller.
- void gclib_force_gcaps (bool on)

  Force future library calls to use either gcaps or direct connections.
- gclib_result gclib_open (gclib_handle *h, const char *address)

  Open a connection to a controller.
- gclib_result gclib_set_baud_rate (gclib_handle h, size_t baud_rate)

  Set baud rate of serial connection.
- gclib_result gclib_close (gclib_handle *h)

  Close connection to controller.
- const char * gclib_error (gclib_handle h)

  Get library error string.
- gclib_result gclib_address (gclib_handle h, char *address, size_t len)

  Get connection address.
- gclib_result gclib_connection_type (gclib_handle h, gclib_connection_t *type)

  Get connection type.

12.2.6.1 Detailed Description

Discover available controllers and open connections

12.2.6.2 Typedef Documentation

12.2.6.2.1 gclib_connection_t

```
typedef enum gclib_connection_t gclib_connection_t
```

Connection type, as returned by `gclib_connection_type()`.

12.2.6.3 Enumeration Type Documentation

12.2.6.3.1 gclib_connection_t

```
enum gclib_connection_t
```

Connection type, as returned by `gclib_connection_type()`.

Enumerator

GCLIB_ETHERNET	
GCLIB_SERIAL	
GCLIB_PCI	

Definition at line 276 of file gclib.h.

12.2.6.4 Function Documentation

12.2.6.4.1 gclib_addresses()

```
gclib_result gclib_addresses (
            char * addresses,
            size_t len)
```

Show address, model, and serial of detected controllers, where available.
Detected controllers are newline-separated. Each line is comma-separated.
Available information by connection type:

- Ethernet connections show address, model, and serial.
- USB connections show address and model.
- Serial and PCI connections show address only.

Example output:

```
192.168.0.40, DMC4040 Rev 1.3i, 10601
COM5, DMC-41x3
GALILPCI0
```

Parameters

addresses	Output buffer
len	Length of output buffer

Returns

GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.6.4.2 gclib_ip_requests()

```
gclib_result gclib_ip_requests (
            char * ip_requests,
            size_t len)
```

Show MAC address, model, and serial of all controllers requesting IP addresses, comma-separated.
Use gclib_assign_ip() to assign an IP address to controllers returned by this method.
Example output:

```
00:50:4c:20:29:69, DMC4000, 10601
00:50:4c:58:12:34, DMC2105, 4660
```

Parameters

ip_requests	Output buffer. Example output:
len	Length of output buffer

Returns

GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.6.4.3 gclib_assign_ip()

```
gclib_result gclib_assign_ip (
            const char * mac,
            const char * ip)
```

Assign IP to a controller.

Parameters

mac	The MAC address of the controller requesting an IP. Provided by gclib_ip_requests().
ip	The IP address to assign. Pass NULL to assign a random IP.

Returns

GCLIB_INVALID_ARGUMENT if MAC or IP is invalid, or if assigned IP puts controller in an unreachable subnet.

12.2.6.4.4 gclib_force_gcaps()

```
void gclib_force_gcaps (
            bool on)
```

Force future library calls to use either gcaps or direct connections.
The default behavior of gclib is to prefer gcaps, but fall back to direct operations when gcaps is not running. This method allows disabling the default behavior process-wide, but cannot be undone.

Parameters

on	If `true`, all future gclib calls will fail if gcaps not found, rather than falling back to direct operations. If `false`, gcaps will not be used for any future gclib calls.

12.2.6.4.5 gclib_open()

```
gclib_result gclib_open (
            gclib_handle * h,
            const char * address)
```

Open a connection to a controller.

Opens a connection through gcaps, if available. Otherwise, a direct connection will be opened. If fallback is not desirable, see `gclib_force_gcaps()`.

If opening a serial connection, the baud rate will default to `115200`. Call `gclib_set_baud_rate()` if necessary before attempting communications.

Parameters

h	Handle that will be needed for future gclib calls operating on this controller.
address	Address of controller, obtained from `gclib_addresses()`.

Returns

`GCLIB_NOT_CONNECTED` if unable to open connection.

12.2.6.4.6 gclib_set_baud_rate()

```
gclib_result gclib_set_baud_rate (
            gclib_handle h,
            size_t baud_rate)
```

Set baud rate of serial connection.

Parameters

h	Handle to an open connection.
baud_rate	Baud rate to use for serial connection.

Returns

`GCLIB_NOT_CONNECTED` if unable to communicate with controller after setting baud rate.

12.2.6.4.7 gclib_close()

```
gclib_result gclib_close (
            gclib_handle * h)
```

Close connection to controller.

Parameters

h	Handle to an open connection. Will be set to `NULL` on success.

Returns

`GCLIB_INVALID_ARGUMENT` if `h` does not appear to be a valid handle to an open connection.

12.2.6.4.8 gclib_error()

```
const char * gclib_error (
            gclib_handle h)
```

Get library error string.

Warning

The string returned is an internal error string, which may change between releases.

Parameters

h	Handle to an open connection.

Returns

The last error string generated by the library.

12.2.6.4.9 gclib_address()

```
gclib_result gclib_address (
            gclib_handle h,
            char * address,
            size_t len)
```

Get connection address.

Parameters

h	Handle to an open connection.
address	Output buffer for connection address.
len	Size of output buffer.

Returns

GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.6.4.10 gclib_connection_type()

```
gclib_result gclib_connection_type (
            gclib_handle h,
            gclib_connection_t * type)
```

Get connection type.

Parameters

h	Handle to an open connection.
type	Will be set to the type of the connection.

Returns

GCLIB_INVALID_ARGUMENT if h does not refer to an open connection.

12.2.6.5 Galil Connect

Connect to or host a remote gcaps server.

Functions

- gclib_result gclib_list_servers (char *servers, size_t len)

  List available gcaps servers separated by newline.
- gclib_result gclib_server (char *name, size_t len)

  Current gcaps server.
- gclib_result gclib_set_server (const char *name)

  Set gcaps server.
- gclib_result gclib_published (char *name, size_t len)

  Provides published status of local gcaps server.
- gclib_result gclib_set_published (const char *name)

  Set published status of local gcaps server.

12.2.6.5.1 Detailed Description

Connect to or host a remote gcaps server.
While connected, applicable gclib functions will run on the remote gcaps server. This can be useful for accessing closed or distant systems.

12.2.6.5.2 Function Documentation

12.2.6.5.2.1 gclib_list_servers()

```
gclib_result gclib_list_servers (
            char * servers,
            size_t len)
```

List available gcaps servers separated by newline.

Parameters

servers	Output buffer.
len	Length of output buffer.

Returns

GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.6.5.2.2 gclib_server()

```
gclib_result gclib_server (
            char * name,
            size_t len)
```

Current gcaps server.
If connected to the local gcaps server, returns an empty string.

Parameters

name	Output buffer.
len	Length of output buffer.

Returns

GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.6.5.2.3 gclib_set_server()

```
gclib_result gclib_set_server (
            const char * name)
```

Set gcaps server.

Parameters

name	Name of gcaps server, obtained from `gclib_list_servers()`. Pass `NULL` to use the local gcaps server.

Returns

`GCLIB_INVALID_ARGUMENT` if `name` does not appear to be a valid server.

12.2.6.5.2.4 gclib_published()

```
gclib_result gclib_published (
            char * name,
            size_t len)
```

Provides published status of local gcaps server.

Parameters

name	If published, will contain name of local gcaps server. `NULL` otherwise.
len	Length of `name` buffer.

Returns

`GCLIB_NOT_CONNECTED` if unable to reach gcaps.

12.2.6.5.2.5 gclib_set_published()

```
gclib_result gclib_set_published (
            const char * name)
```

Set published status of local gcaps server.

Parameters

name	Name of server to publish. If `NULL`, server will be unpublished.

Returns

`GCLIB_NOT_CONNECTED` if unable to reach gcaps.

12.2.7 Controller

Manage a Galil controller

Topics

- Data Record

  Used to get values from a data record handle.
- Memory

  Manage controller firmware, program, and arrays.
- Unsolicited Data

  Get unsolicited messages, interrupts, or data records, in blocking or callback mode.

Functions

- gclib_result gclib_revision_information (gclib_handle h, char *rev_info, size_t len)

  Get revision information (^R^V) from controller.
- gclib_result gclib_serial_number (gclib_handle h, uint32_t *serial_number)

  Get serial number from controller.
- gclib_result gclib_command (gclib_handle h, const char *command, char *buf, size_t len)

  Issues a command to the controller and provides the response.
- void gclib_set_compat ()
- gclib_result gclib_set_timeout (gclib_handle h, size_t timeout)

12.2.7.1 Detailed Description

Manage a Galil controller

12.2.7.2 Function Documentation

12.2.7.2.1 gclib_revision_information()

```
gclib_result gclib_revision_information (
            gclib_handle h,
            char * rev_info,
            size_t len)
```

Get revision information (^R^V) from controller.

Parameters

h	Handle to an open connection.
rev_info	Output buffer for revision information.
len	Size of output buffer.

Returns

- GCLIB_INVALID_ARGUMENT if handle is NULL.
- GCLIB_NOT_CONNECTED if not connected.
- GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.7.2.2 gclib_serial_number()

```
gclib_result gclib_serial_number (
            gclib_handle h,
            uint32_t * serial_number)
```

Get serial number from controller.

Parameters

h	Handle to an open connection.
serial_number	Will be set to the serial number of the controller, or 0 on failure.

Returns

GCLIB_INTERNAL_ERROR if serial number could not be retrieved.

12.2.7.2.3 gclib_command()

```
gclib_result gclib_command (
            gclib_handle h,
            const char * command,
            char * buf,
            size_t len)
```

Issues a command to the controller and provides the response.
Note that a single command cannot be longer than 80 characters, similar to a program line.

Parameters

h	Handle to an open connection.
command	Command to be sent to the controller. Will be terminated with a carriage return.
buf	Output buffer for controller response.
len	Length of output buffer.

Returns

- GCLIB_TIMEOUT if no response is received from the controller.
- GCLIB_COMMAND_ERROR if the controller responds with ?
- `GCLIB_BUFFER_TOO_SMALL if the command response cannot fit in the provided buffer.

12.2.7.2.4 gclib_set_compat()

```
void gclib_set_compat ()
```

12.2.7.2.5 gclib_set_timeout()

```
gclib_result gclib_set_timeout (
            gclib_handle h,
            size_t timeout)
```

12.2.7.3 Data Record

Used to get values from a data record handle.

Topics

- Amp

  Amp error statuses.
- Axis

  Axis-specific values, such as position or torque.
- Coordinated Move

  Coordinated move values, relevant for LM and CM modes of motion.

Typedefs

- typedef enum gclib_mode_of_motion_t gclib_mode_of_motion_t

  The controller's current mode of motion, given by gclib_data_record_mode_of_motion().
- typedef enum gclib_ethernet_status_t gclib_ethernet_status_t

  The current status of an ethernet handle, given by gclib_data_record_ethernet_status().

Enumerations

- enum gclib_mode_of_motion_t {
  GCLIB_NO_MOTION , GCLIB_CONTOUR , GCLIB_POSITION_ABSOLUTE , GCLIB_POSITION_RELATIVE ,
  GCLIB_FIND_EDGE , GCLIB_FIND_INDEX , GCLIB_HOME , GCLIB_VECTOR_MOVE ,
  GCLIB_LINEAR_MOVE = GCLIB_VECTOR_MOVE }

  The controller's current mode of motion, given by `gclib_data_record_mode_of_motion()`.
- enum gclib_ethernet_status_t {
  HANDLE_FREE = 0 , UDP_SLAVE = 1 , TCP_SLAVE = 2 , UDP_MASTER = -1 ,
  TCP_MASTER = -2 , ESTABLISHING_UDP = -5 , ESTABLISHING_TCP = -6 }

  The current status of an ethernet handle, given by `gclib_data_record_ethernet_status()`.

Functions

- uint16_t gclib_data_record_sample (gclib_data_record_handle h)

  The sample in which this data record was generated.
- bool gclib_data_record_input (gclib_data_record_handle h, size_t index)

  Get an input.
- bool gclib_data_record_output (gclib_data_record_handle h, size_t index)

  Get an output.
- uint8_t gclib_data_record_input_bank (gclib_data_record_handle h, size_t index)

  Get a bank of inputs.
- uint8_t gclib_data_record_output_bank (gclib_data_record_handle h, size_t index)

  Get a bank of outputs.
- uint8_t gclib_data_record_error_code (gclib_data_record_handle h)

  Get the error code.
- uint32_t gclib_data_record_contour_segment_count (gclib_data_record_handle h)

  Get the contour segment count.
- uint16_t gclib_data_record_contour_buffer_available (gclib_data_record_handle h)

  Get remaining contour buffer.
- bool gclib_data_record_thread_running (gclib_data_record_handle h, size_t thread)

  Returns true if a given thread is running.
- gclib_ethernet_status_t gclib_data_record_ethernet_status (gclib_data_record_handle h, char handle)

  Get ethernet handle status.
- gclib_result gclib_data_record_bytes (gclib_data_record_handle h, char *data_record, size_t len)

  Copy data record to user buffer.

12.2.7.3.1 Detailed Description

Used to get values from a data record handle.
For obtaining data records, see `gclib_subscribe_data_records()`.

12.2.7.3.2 Typedef Documentation

12.2.7.3.2.1 gclib_mode_of_motion_t

```
typedef enum gclib_mode_of_motion_t gclib_mode_of_motion_t
```

The controller's current mode of motion, given by `gclib_data_record_mode_of_motion()`.

12.2.7.3.2.2 gclib_ethernet_status_t

```
typedef enum gclib_ethernet_status_t gclib_ethernet_status_t
```

The current status of an ethernet handle, given by `gclib_data_record_ethernet_status()`.

12.2.7.3.3 Enumeration Type Documentation

12.2.7.3.3.1 gclib_mode_of_motion_t

`enum gclib_mode_of_motion_t`
The controller's current mode of motion, given by `gclib_data_record_mode_of_motion()`.

Enumerator

GCLIB_NO_MOTION	
GCLIB_CONTOUR	
GCLIB_POSITION_ABSOLUTE	
GCLIB_POSITION_RELATIVE	
GCLIB_FIND_EDGE	
GCLIB_FIND_INDEX	
GCLIB_HOME	
GCLIB_VECTOR_MOVE	
GCLIB_LINEAR_MOVE	

Definition at line 601 of file gclib.h.

12.2.7.3.3.2 gclib_ethernet_status_t

`enum gclib_ethernet_status_t`
The current status of an ethernet handle, given by `gclib_data_record_ethernet_status()`.

Enumerator

HANDLE_FREE	
UDP_SLAVE	
TCP_SLAVE	
UDP_MASTER	
TCP_MASTER	
ESTABLISHING_UDP	
ESTABLISHING_TCP	

Definition at line 614 of file gclib.h.

12.2.7.3.4 Function Documentation

12.2.7.3.4.1 gclib_data_record_sample()

```
uint16_t gclib_data_record_sample (
            gclib_data_record_handle h)
```
The sample in which this data record was generated.

12.2.7.3.4.2 gclib_data_record_input()

```
bool gclib_data_record_input (
            gclib_data_record_handle h,
            size_t index)
```
Get an input.
Generally, controllers have 8 inputs and outputs per axis bank.

Note

Inputs are active low, meaning this function returns `true` if current is NOT flowing.

Parameters

h	A data record handle.
index	The index of the input to check. Starts at `1`.

Returns

`true` if input is active.

12.2.7.3.4.3 gclib_data_record_output()

```
bool gclib_data_record_output (
            gclib_data_record_handle h,
            size_t index)
```

Get an output.

12.2.7.3.4.4 gclib_data_record_input_bank()

```
uint8_t gclib_data_record_input_bank (
            gclib_data_record_handle h,
            size_t index)
```

Get a bank of inputs.

12.2.7.3.4.5 gclib_data_record_output_bank()

```
uint8_t gclib_data_record_output_bank (
            gclib_data_record_handle h,
            size_t index)
```

Get a bank of outputs.

12.2.7.3.4.6 gclib_data_record_error_code()

```
uint8_t gclib_data_record_error_code (
            gclib_data_record_handle h)
```

Get the error code.

12.2.7.3.4.7 gclib_data_record_contour_segment_count()

```
uint32_t gclib_data_record_contour_segment_count (
            gclib_data_record_handle h)
```

Get the contour segment count.

12.2.7.3.4.8 gclib_data_record_contour_buffer_available()

```
uint16_t gclib_data_record_contour_buffer_available (
            gclib_data_record_handle h)
```

Get remaining contour buffer.

12.2.7.3.4.9 gclib_data_record_thread_running()

```
bool gclib_data_record_thread_running (
            gclib_data_record_handle h,
            size_t thread)
```

Returns true if a given thread is running.

12.2.7.3.4.10 gclib_data_record_ethernet_status()

```
gclib_ethernet_status_t gclib_data_record_ethernet_status (
            gclib_data_record_handle h,
            char handle)
```

Get ethernet handle status.

Parameters

h	data record handle.
handle	The ethernet handle to check, `A` - `H`.

Returns

`gclib_ethernet_status_t` The ethernet handle status.

12.2.7.3.4.11 gclib_data_record_bytes()

```
gclib_result gclib_data_record_bytes (
            gclib_data_record_handle h,
            char * data_record,
            size_t len)
```

Copy data record to user buffer.
Useful if your device has a nonstandard data record.

Parameters

h	data record handle.
data_record	pointer to user buffer.
len	size of user buffer.

Returns

`GCLIB_BUFFER_TOO_SMALL` if output does not fit in buffer.

12.2.7.3.5 Amp

Amp error statuses.

Functions

- bool gclib_data_record_over_current (gclib_data_record_handle h, size_t amp)

  Returns over current status.
- bool gclib_data_record_over_voltage (gclib_data_record_handle h, size_t amp)

  Returns over voltage status.
- bool gclib_data_record_over_temp (gclib_data_record_handle h, size_t amp)

  Returns over temperature status.
- bool gclib_data_record_under_voltage (gclib_data_record_handle h, size_t amp)

  Returns under voltage status.
- bool gclib_data_record_electronic_lock_out (gclib_data_record_handle h, size_t amp)

  Returns electronic lockout (ELO) status for a bank.

12.2.7.3.5.1 Detailed Description

Amp error statuses.
Amp errors are latched, and will need to be cleared with `AZ` once the underlying issue has been resolved. See the `command reference` for details.

12.2.7.3.5.2 Function Documentation

gclib_data_record_over_current()

```
bool gclib_data_record_over_current (
            gclib_data_record_handle h,
            size_t amp)
```

Returns over current status.

gclib_data_record_over_voltage()

```
bool gclib_data_record_over_voltage (
            gclib_data_record_handle h,
            size_t amp)
```

Returns over voltage status.

gclib_data_record_over_temp()

```
bool gclib_data_record_over_temp (
            gclib_data_record_handle h,
            size_t amp)
```

Returns over temperature status.

gclib_data_record_under_voltage()

```
bool gclib_data_record_under_voltage (
            gclib_data_record_handle h,
            size_t amp)
```

Returns under voltage status.

gclib_data_record_electronic_lock_out()

```
bool gclib_data_record_electronic_lock_out (
            gclib_data_record_handle h,
            size_t amp)
```

Returns electronic lockout (ELO) status for a bank.

12.2.7.3.6 Axis

Axis-specific values, such as position or torque.

Functions

- bool gclib_data_record_motor_off (gclib_data_record_handle h, char axis)

  Get motor off status.
- bool gclib_data_record_latch_armed (gclib_data_record_handle h, char axis)

  Get latch armed.
- bool gclib_data_record_final_deceleration (gclib_data_record_handle h, char axis)

  Returns true when axis is in final deceleration.
- bool gclib_data_record_stopping (gclib_data_record_handle h, char axis)

  Returns true if axis is stopping.
- bool gclib_data_record_slewing (gclib_data_record_handle h, char axis)

  Returns true if axis is slewing.
- gclib_mode_of_motion_t gclib_data_record_mode_of_motion (gclib_data_record_handle h, char axis)

  Returns the mode of motion being profiled.
- bool gclib_data_record_negative_direction_move (gclib_data_record_handle h, char axis)

  Returns true if axis velocity is negative.
- bool gclib_data_record_moving (gclib_data_record_handle h, char axis)

Returns true if motion is being profiled.

- int gclib_data_record_home_phase (gclib_data_record_handle h, char axis)

  Returns home phase when in GCLIB_HOME mode.
- bool gclib_data_record_stepper_mode (gclib_data_record_handle h, char axis)

  Returns true if axis is configured as a stepper motor.
- bool gclib_data_record_home_input (gclib_data_record_handle h, char axis)

  Returns the state of the home input.
- bool gclib_data_record_reverse_limit (gclib_data_record_handle h, char axis)

  Returns the state of the reverse limit.
- bool gclib_data_record_forward_limit (gclib_data_record_handle h, char axis)

  Returns the state of the forward limit.
- bool gclib_data_record_latch_input (gclib_data_record_handle h, char axis)

  Returns the state of the latch input.
- bool gclib_data_record_latch_occurred (gclib_data_record_handle h, char axis)

  Returns whether the latch was triggered.
- uint8_t gclib_data_record_stop_code (gclib_data_record_handle h, char axis)

  Returns a code indicating why the motor has stopped. See the SC command reference for details.
- int32_t gclib_data_record_reference_position (gclib_data_record_handle h, char axis)

  Returns the reference position.
- int32_t gclib_data_record_position (gclib_data_record_handle h, char axis)

  Returns the position.
- int32_t gclib_data_record_position_error (gclib_data_record_handle h, char axis)

  Returns the position error.
- int32_t gclib_data_record_aux_position (gclib_data_record_handle h, char axis)

  Returns the auxiliary position.
- int32_t gclib_data_record_velocity (gclib_data_record_handle h, char axis)

  Returns the velocity.
- double gclib_data_record_torque (gclib_data_record_handle h, char axis)

  Returns the torque.
- double gclib_data_record_analog_input (gclib_data_record_handle h, char axis)

  Returns the analog input.
- uint8_t gclib_data_record_halls (gclib_data_record_handle h, char axis)

  Returns the hall state.
- int32_t gclib_data_record_variable (gclib_data_record_handle h, char axis)

  Returns the value of a user variable for an axis.
- bool gclib_data_record_hall_error (gclib_data_record_handle h, char axis)

  Returns true if the amplifier for this axis has triggered a hall error.
- bool gclib_data_record_peak_current (gclib_data_record_handle h, char axis)

  Returns true if the amplifier for this axis has triggered a peak current error.

12.2.7.3.6.1 Detailed Description

Axis-specific values, such as position or torque.

12.2.7.3.6.2 Function Documentation

gclib_data_record_motor_off()

```
bool gclib_data_record_motor_off (
            gclib_data_record_handle h,
            char axis)
```

Get motor off status.

gclib_data_record_latch_armed()

```
bool gclib_data_record_latch_armed (
            gclib_data_record_handle h,
            char axis)
```

Get latch armed.

gclib_data_record_final_deceleration()

```
bool gclib_data_record_final_deceleration (
            gclib_data_record_handle h,
            char axis)
```

Returns true when axis is in final deceleration.

gclib_data_record_stopping()

```
bool gclib_data_record_stopping (
            gclib_data_record_handle h,
            char axis)
```

Returns true if axis is stopping.

gclib_data_record_slewing()

```
bool gclib_data_record_slewing (
            gclib_data_record_handle h,
            char axis)
```

Returns true if axis is slewing.

gclib_data_record_mode_of_motion()

```
gclib_mode_of_motion_t gclib_data_record_mode_of_motion (
            gclib_data_record_handle h,
            char axis)
```

Returns the mode of motion being profiled.

gclib_data_record_negative_direction_move()

```
bool gclib_data_record_negative_direction_move (
            gclib_data_record_handle h,
            char axis)
```

Returns true if axis velocity is negative.

gclib_data_record_moving()

```
bool gclib_data_record_moving (
            gclib_data_record_handle h,
            char axis)
```

Returns true if motion is being profiled.

gclib_data_record_home_phase()

```
int gclib_data_record_home_phase (
            gclib_data_record_handle h,
            char axis)
```

Returns home phase when in GCLIB_HOME mode.

gclib_data_record_stepper_mode()

```
bool gclib_data_record_stepper_mode (
            gclib_data_record_handle h,
            char axis)
```

Returns true if axis is configured as a stepper motor.

gclib_data_record_home_input()

```
bool gclib_data_record_home_input (
            gclib_data_record_handle h,
            char axis)
```

Returns the state of the home input.

gclib_data_record_reverse_limit()

```
bool gclib_data_record_reverse_limit (
            gclib_data_record_handle h,
            char axis)
```

Returns the state of the reverse limit.

gclib_data_record_forward_limit()

```
bool gclib_data_record_forward_limit (
            gclib_data_record_handle h,
            char axis)
```

Returns the state of the forward limit.

gclib_data_record_latch_input()

```
bool gclib_data_record_latch_input (
            gclib_data_record_handle h,
            char axis)
```

Returns the state of the latch input.

gclib_data_record_latch_occurred()

```
bool gclib_data_record_latch_occurred (
            gclib_data_record_handle h,
            char axis)
```

Returns whether the latch was triggered.

gclib_data_record_stop_code()

```
uint8_t gclib_data_record_stop_code (
            gclib_data_record_handle h,
            char axis)
```

Returns a code indicating why the motor has stopped. See the SC command reference for details.

gclib_data_record_reference_position()

```
int32_t gclib_data_record_reference_position (
            gclib_data_record_handle h,
            char axis)
```

Returns the reference position.

gclib_data_record_position()

```
int32_t gclib_data_record_position (
            gclib_data_record_handle h,
            char axis)
```

Returns the position.

gclib_data_record_position_error()

```
int32_t gclib_data_record_position_error (
            gclib_data_record_handle h,
            char axis)
```

Returns the position error.

gclib_data_record_aux_position()

```
int32_t gclib_data_record_aux_position (
            gclib_data_record_handle h,
            char axis)
```

Returns the auxiliary position.

gclib_data_record_velocity()

```
int32_t gclib_data_record_velocity (
            gclib_data_record_handle h,
            char axis)
```

Returns the velocity.

gclib_data_record_torque()

```
double gclib_data_record_torque (
            gclib_data_record_handle h,
            char axis)
```

Returns the torque.

gclib_data_record_analog_input()

```
double gclib_data_record_analog_input (
            gclib_data_record_handle h,
            char axis)
```

Returns the analog input.

gclib_data_record_halls()

```
uint8_t gclib_data_record_halls (
            gclib_data_record_handle h,
            char axis)
```

Returns the hall state.

gclib_data_record_variable()

```
int32_t gclib_data_record_variable (
            gclib_data_record_handle h,
            char axis)
```

Returns the value of a user variable for an axis.

gclib_data_record_hall_error()

```
bool gclib_data_record_hall_error (
            gclib_data_record_handle h,
            char axis)
```

Returns true if the amplifier for this axis has triggered a hall error.

gclib_data_record_peak_current()

```
bool gclib_data_record_peak_current (
            gclib_data_record_handle h,
            char axis)
```

Returns true if the amplifier for this axis has triggered a peak current error.

12.2.7.3.7 Coordinated Move

Coordinated move values, relevant for LM and CM modes of motion.

Functions

- uint16_t gclib_data_record_coordinated_move_segment_count (gclib_data_record_handle h, char plane)

  Returns the segment count for the current move.
- uint16_t gclib_data_record_coordinated_move_status (gclib_data_record_handle h, char plane)

  Returns the coordinated move status word.
- bool gclib_data_record_coordinated_move_final_deceleration (gclib_data_record_handle h, char plane)

  Returns true if in final deceleration.
- bool gclib_data_record_coordinated_move_stopping (gclib_data_record_handle h, char plane)

  Returns true if stopping.
- bool gclib_data_record_coordinated_move_slewing (gclib_data_record_handle h, char plane)

  Returns true if slewing.
- bool gclib_data_record_coordinated_move_moving (gclib_data_record_handle h, char plane)

  Returns true if moving.
- int32_t gclib_data_record_coordinated_move_distance (gclib_data_record_handle h, char plane)

  Returns the distance covered in the current move.
- uint16_t gclib_data_record_coordinated_move_buffer_available (gclib_data_record_handle h, char plane)

  Returns the available buffer space.

12.2.7.3.7.1 Detailed Description

Coordinated move values, relevant for LM and CM modes of motion.

12.2.7.3.7.2 Function Documentation

gclib_data_record_coordinated_move_segment_count()

```
uint16_t gclib_data_record_coordinated_move_segment_count (
            gclib_data_record_handle h,
            char plane)
```

Returns the segment count for the current move.

gclib_data_record_coordinated_move_status()

```
uint16_t gclib_data_record_coordinated_move_status (
            gclib_data_record_handle h,
            char plane)
```

Returns the coordinated move status word.

gclib_data_record_coordinated_move_final_deceleration()

```
bool gclib_data_record_coordinated_move_final_deceleration (
            gclib_data_record_handle h,
            char plane)
```

Returns true if in final deceleration.

gclib_data_record_coordinated_move_stopping()

```
bool gclib_data_record_coordinated_move_stopping (
            gclib_data_record_handle h,
            char plane)
```

Returns true if stopping.

gclib_data_record_coordinated_move_slewing()

```
bool gclib_data_record_coordinated_move_slewing (
            gclib_data_record_handle h,
            char plane)
```

Returns true if slewing.

gclib_data_record_coordinated_move_moving()

```
bool gclib_data_record_coordinated_move_moving (
            gclib_data_record_handle h,
            char plane)
```

Returns true if moving.

gclib_data_record_coordinated_move_distance()

```
int32_t gclib_data_record_coordinated_move_distance (
            gclib_data_record_handle h,
            char plane)
```

Returns the distance covered in the current move.

gclib_data_record_coordinated_move_buffer_available()

```
uint16_t gclib_data_record_coordinated_move_buffer_available (
            gclib_data_record_handle h,
            char plane)
```

Returns the available buffer space.

12.2.7.4 Memory

Manage controller firmware, program, and arrays.

Functions

- gclib_result gclib_program (gclib_handle h, char ∗program, size_t len)

  Get the controller's current program.
- gclib_result gclib_set_program (gclib_handle h, const char ∗program, const char ∗insert)

  Set the program on the controller.
- gclib_result gclib_array (gclib_handle h, const char ∗name, char ∗buf, size_t len, size_t start, size_t end)

  Get an array from the controller.
- gclib_result gclib_set_array (gclib_handle h, const char ∗name, const char ∗buf, size_t start, size_t end)

  Set an array on the controller.
- gclib_result gclib_set_firmware (gclib_handle h, const char ∗file_path)

  Set the firmware on the controller.

12.2.7.4.1 Detailed Description

Manage controller firmware, program, and arrays.

12.2.7.4.2 Function Documentation

12.2.7.4.2.1 gclib_program()

```
gclib_result gclib_program (
            gclib_handle h,
            char * program,
            size_t len)
```

Get the controller's current program.

Parameters

h	Handle to an open connection.
program	Output buffer for program.
len	Length of output buffer.

Returns

GCLIB_BUFFER_TOO_SMALL if program does not fit in buffer.

12.2.7.4.2.2 gclib_set_program()

```
gclib_result gclib_set_program (
            gclib_handle h,
            const char * program,
            const char * insert)
```

Set the program on the controller.

Parameters

h	Handle to an open connection.
program	Program to write to controller memory. Lines may be separated by \r, \r\n, or \n.
insert	Either a line number or a label name to start downloading from.

Returns

GCLIB_INVALID_ARGUMENT if program is not accepted by controller (for example, if a program is already running).

12.2.7.4.2.3 gclib_array()

```
gclib_result gclib_array (
            gclib_handle h,
            const char * name,
            char * buf,
            size_t len,
            size_t start,
            size_t end)
```

Get an array from the controller.

Parameters

h	Handle to an open connection.

Parameters

name	Array name on controller.
buf	Output buffer for comma-separated array values.
len	Length of output buffer.
start	Index to start reading array.
end	Index to stop reading array.

Returns

GCLIB_INVALID_ARGUMENT if array does not exist on controller.

12.2.7.4.2.4 gclib_set_array()

```
gclib_result gclib_set_array (
            gclib_handle h,
            const char * name,
            const char * buf,
            size_t start,
            size_t end)
```

Set an array on the controller.
Array will be automatically dimensioned unless one of the following is true:

- Start or end are nonzero
- Controller is currently recording arrays
- Modbus array write is enabled

Parameters

h	Handle to open connection.
name	Array name on controller (will be dimensioned if not present).
buf	Array buffer. Elements may be separated by `,`, `\r`, or `\r\n`. Do not use spaces.
start	Index to start writing over an existing array. Leave 0 to
end	Index to stop writing over an existing array.

Returns

GCLIB_INVALID_ARGUMENT if array does not exist but cannot be automatically dimensioned, or start / end are invalid for array.

12.2.7.4.2.5 gclib_set_firmware()

```
gclib_result gclib_set_firmware (
            gclib_handle h,
            const char * file_path)
```

Set the firmware on the controller.

Parameters

h	Handle to open connection.
file_path	Path to firmware file.

Returns

GCLIB_INVALID_ARGUMENT if firmware file cannot be opened, or is rejected by the controller.

12.2.7.5 Unsolicited Data

Get unsolicited messages, interrupts, or data records, in blocking or callback mode.

Functions

- gclib_result gclib_set_interrupts (gclib_handle h, gclib_interrupt_type interrupt_mask, gclib_axis_flags motion_complete_axes, gclib_digital_input_flags digital_inputs)

  Configure which interrupts will be generated by the controller.
- gclib_result gclib_set_data_records (gclib_handle h, size_t period_ms)

  Configure controller data records.
- gclib_result gclib_subscribe_messages (gclib_handle h, void(callback)(void ∗user_data, const char ∗message), void ∗user_data)

  Subscribe to unsolicited messages.
- gclib_result gclib_subscribe_interrupts (gclib_handle h, void(callback)(void ∗user_data, gclib_interrupt_t interrupt), void ∗user_data)

  Subscribe to interrupts.
- gclib_result gclib_subscribe_data_records (gclib_handle h, void(callback)(void ∗user_data, gclib_data_record_handle data_record), void ∗user_data)

  Subscribe to data records.
- gclib_result gclib_subscribe_progress (gclib_handle h, void(callback)(void ∗user_data, size_t current, size_t max), void ∗user_data)

  Subscribe to progress for `gclib_set_program()`, `gclib_set_array()`, and `gclib_set_firmware()`.
- gclib_result gclib_unsubscribe (gclib_handle h, void ∗callback)

  Unsubscribe from messages, interrupts, data records, or progress.
- gclib_result gclib_message (gclib_handle h, char ∗message, size_t len, int timeout)

  Get a queued unsolicited message, or wait up to `timeout` ms for one to arrive.
- gclib_result gclib_interrupt (gclib_handle h, gclib_interrupt_t ∗interrupt, int timeout)

  Get a queued interrupt, or wait up to `timeout` ms for one to arrive.
- gclib_result gclib_data_record (gclib_handle h, gclib_data_record_handle ∗data_record, int timeout)

  Get a queued data record, or wait up to `timeout` ms for one to arrive.

12.2.7.5.1 Detailed Description

Get unsolicited messages, interrupts, or data records, in blocking or callback mode.

12.2.7.5.1.1 Blocking Mode

Blocking mode is simpler to use, but has tradeoffs. If you want unsolicited data as soon as it arrives, you must block the thread to wait for it, which may not be ideal. If you want to keep the thread running, then you must periodically check for queued unsolicited data, which can add unwanted latency.
To subscribe in blocking mode, simply do not pass a callback or data pointer when you subscribe. These methods will begin queueing any unsolicited data sent by the controller.

```
gclib_subscribe_messages(h, NULL, NULL);
gclib_subscribe_interrupts(h, NULL, NULL);
gclib_subscribe_data_records(h, NULL, NULL);
```

12.2.7.5.1.2 Callback Mode

Callback mode allows your thread to stay running while enabling immediate response to unsolicited data. When data arrives, your callback function will be invoked on a separate, dedicated thread. Due to this, callback mode can be more complicated to use if you are not familiar with thread synchronization.
To subscribe in callback mode, pass a callback function and an optional data pointer when you subscribe. When unsolicited data arrives, your callback will be invoked and passed the data pointer. Use this to allow the callback function access to any data it needs, and to allow data to persist between callbacks.

```
void handle_message(void* user_data, const char* message) {
    printf("Message received: %s\n", message);
}
```

```
void handle_interrupt(void* user_data, gclib_interrupt_t interrupt) {
    printf("Interrupt received, type %i, raw status byte %i": interrupt.type, interrupt.status);
}
void handle_data_record(void* user_data, gclib_data_record_handle data_record) {
    printf("Data record received, sample %i", gclib_data_record_sample(data_record));
}

gclib_subscribe_messages(h, handle_messages, user_data);
gclib_subscribe_interrupts(h, handle_interrupts, user_data);
gclib_subscribe_data_records(h, handle_data_records, user_data);
```

User Data

The user data pointer can be used to pass arbitrary data to the callback function. The following example uses a struct to provide the callback access to the gclib handle itself, a count to increment when messages are received, and an atomic bool to signal when the program is ready to exit. Note that the handle is safe to use concurrently, and the count doesn't need to be atomic (since it is only used in the callback thread). As soon as the tenth message is received, the program is stopped and the connection is closed from the callback method, and the main thread is signaled to exit.

```
#include <gclib.h>
#include <stdio.h>
#include <stdatomic.h>
#include "sleep.h"

struct context {
    gclib_handle h; // gclib is thread-safe
    int count; // Only used in the callback thread
    atomic_bool done; // Used in both threads
};
void handle_message(void* user_data, const char* message) {
    struct context* ctx = user_data;
    ctx->count = ctx->count + 1;
    printf("Received message #%i at TIME %i\n", ctx->count, (int)atof(message));
    if (ctx->count == 10) {
        gclib_command(ctx->h, "ST", NULL, 0);
        gclib_close(&ctx->h);
        ctx->done = true;
    }
};

int main(int argc, char* argv[]) {
    struct context ctx = {NULL, 0, 0};
    gclib_open(&ctx.h, argv[1]);
    gclib_subscribe_messages(ctx.h, handle_message, &ctx);
    gclib_set_program(ctx.h, "#msg\nMGTIME\nWT100\nJP#msg\nEN", NULL);
    gclib_command(ctx.h, "XQ", NULL, 0);
    while (!ctx.done) {
        msleep(100 * 1000); // Do work
    }
}
```

12.2.7.5.2 Function Documentation

12.2.7.5.2.1 gclib_set_interrupts()

```
gclib_result gclib_set_interrupts (
            gclib_handle h,
            gclib_interrupt_type interrupt_mask,
            gclib_axis_flags motion_complete_axes,
            gclib_digital_input_flags digital_inputs)
```

Configure which interrupts will be generated by the controller.
By default, the controller will not generate any interrupts.
Controllers can be configured to send only an exact list of desired interrupts, to avoid unnecessary processing and network traffic.
Example usage:

```
gclib_set_interrupts(h, GCLIB_ALL_INTERRUPTS, 0, 0); // Enable all interrupts.
gclib_set_interrupts(h,
    GCLIB_MOTION_COMPLETE | GCLIB_DIGITAL_INPUT_LOW, // Only enable two interrupts
    GCLIB_AXIS_A | GCLIB_AXIS_F, // Only trigger GCLIB_MOTION_COMPLETE on axis A or F
    GCLIB_DIGITAL_INPUT_1 | GCLIB_DIGITAL_INPUT_4); // Only trigger GCLIB_DIGITAL_INPUT_LOW on digital input
      1 and 4.
gclib_set_interrupts(h, 0, 0, 0); // Disable interrupts
```

See `gclib_subscribe_interrupts()` to enable receiving interrupts from the controller.

Parameters

h	Handle to an open connection.
interrupt_mask	Bitmask of desired interrupts. Use GCLIB_NO_INTERRUPTS (0) to disable interrupts. Note that User Interrupts cannot be disabled.
axis_mask	When GCLIB_MOTION_COMPLETE is in interrupt_mask, this axis mask controls which axes will trigger a GCLIB_MOTION_COMPLETE interrupt. interrupts. If 0, all axes will be selected.
digital_input_mask	When GCLIB_DIGITAL_INPUT_LOW is in interrupt_mask, this bitmask selects which digital inputs will trigger an interrupt. If 0, all digital inputs will be selected.

Returns

GCLIB_TIMEOUT if no response from controller after configuring interrupts.

12.2.7.5.2.2 gclib_set_data_records()

```
gclib_result gclib_set_data_records (
            gclib_handle h,
            size_t period_ms)
```

Configure controller data records.
By default, data records are not sent by the controller.
See gclib_subscribe_data_records() to enable receiving data records from the controller.

Parameters

h	Handle to an open connection.
period_ms	Period between data records. Pass 0 to disable data records.

Returns

GCLIB_TIMEOUT if no response from controller after configuring data records.

12.2.7.5.2.3 gclib_subscribe_messages()

```
gclib_result gclib_subscribe_messages (
            gclib_handle h,
            void(callback)(void *user_data, const char *message) ,
            void * user_data)
```

Subscribe to unsolicited messages.
This method registers a callback to be run every time an unsolicited message is received from the controller.

Note

The callback will be invoked on a separate, dedicated thread. Be careful when accessing any shared state.

When a callback is not provided, messages are instead queued for later retrieval by gclib_message().
On ethernet connections, a handle is opened for unsolicited data (if not already open) and the controller is configured to use it for messages.

Parameters

h	Handle to an open connection.
callback	Pass a callback function to get messages asynchronously, or NULL if you would like to use the gclib_message() blocking API.
user_data	An arbitrary pointer that will be passed to your callback function. Can be used to provide state that persists between callbacks.

Returns

GCLIB_NOT_SUBSCRIBED if unable to subscribe to messages.

12.2.7.5.2.4 gclib_subscribe_interrupts()

```
gclib_result gclib_subscribe_interrupts (
            gclib_handle h,
            void(callback)(void *user_data, gclib_interrupt_t interrupt) ,
            void * user_data)
```

Subscribe to interrupts.
This method registers a callback to be run every time an interrupt is received from the controller. See gclib_set_interrupts() to enable and configure controller interrupts.

Note

The callback will be invoked on a separate, dedicated thread. Be careful when accessing any shared state.

When a callback is not provided, interrupts are instead queued for later retrieval by gclib_interrupt().
On ethernet connections, a handle is opened for unsolicited data (if not already open) and the controller is configured to use it for interrupts.

Parameters

h	Handle to an open connection.
callback	Pass a callback function to get interrupts asynchronously, or NULL if you would like to use the gclib_interrupt() blocking API.
user_data	An arbitrary pointer that will be passed to your callback function. Can be used to provide state that persists between callbacks.

Returns

GCLIB_NOT_SUBSCRIBED if unable to subscribe to interrupts.

12.2.7.5.2.5 gclib_subscribe_data_records()

```
gclib_result gclib_subscribe_data_records (
            gclib_handle h,
            void(callback)(void *user_data, gclib_data_record_handle data_record) ,
            void * user_data)
```

Subscribe to data records.
This method registers a callback to be run every time a data record is received from the controller. See gclib_set_data_records() to enable data records and configure how often they will be generated by the controller.

Note

The callback will be invoked on a separate, dedicated thread. Be careful when accessing any shared state.

When a callback is not provided, data records are instead queued for later retrieval by gclib_data_record().
On ethernet connections, a handle is opened for unsolicited data (if not already open) and the controller is configured to use it for data records.

Parameters

h	Handle to an open connection.
callback	Pass a callback function to get data records asynchronously, or NULL if you would like to use the gclib_data_record() blocking API.
user_data	An arbitrary pointer that will be passed to your callback function. Can be used to provide state that persists between callbacks.

Returns

GCLIB_NOT_SUBSCRIBED if unable to subscribe to data records.

12.2.7.5.2.6 gclib_subscribe_progress()

```
gclib_result gclib_subscribe_progress (
            gclib_handle h,
            void(callback)(void *user_data, size_t current, size_t max) ,
            void * user_data)
```

Subscribe to progress for gclib_set_program(), gclib_set_array(), and gclib_set_firmware().

Note

The callback will be invoked on a separate, dedicated thread. Be careful when accessing any shared state.

Parameters

h	Handle to an open connection.
callback	A callback function that will get called anytime part of a large write is completed.
user_data	An arbitrary pointer that will be passed to your callback function. Can be used to provide state that persists between callbacks.

Returns

GCLIB_INVALID_ARGUMENT if **callback** is NULL.

12.2.7.5.2.7 gclib_unsubscribe()

```
gclib_result gclib_unsubscribe (
            gclib_handle h,
            void * callback)
```

Unsubscribe from messages, interrupts, data records, or progress.

Parameters

h	Handle to an open connection.
callback	The callback function that was previously used to subscribe. If NULL, all subscriptions will be cleared.

Returns

GCLIB_INVALID_ARGUMENT if **callback** doesn't match any existing subscription.

12.2.7.5.2.8 gclib_message()

```
gclib_result gclib_message (
            gclib_handle h,
            char * message,
            size_t len,
            int timeout)
```

Get a queued unsolicited message, or wait up to timeout ms for one to arrive.

Parameters

h	Handle to an open connection.
message	Output buffer for the message.
len	Length of output buffer.
timeout	Timeout value in milliseconds. If -1, wait forever.

Returns

- GCLIB_TIMEOUT if no message arrives for timeout ms.
- GCLIB_BUFFER_TOO_SMALL if output does not fit in buffer.

12.2.7.5.2.9 gclib_interrupt()

```
gclib_result gclib_interrupt (
            gclib_handle h,
            gclib_interrupt_t * interrupt,
            int timeout)
```

Get a queued interrupt, or wait up to timeout ms for one to arrive.

Parameters

h	Handle to an open connection.
interrupt	Output interrupt.
timeout	Timeout value in milliseconds. If −1, wait forever.

Returns

GCLIB_TIMEOUT if no interrupt arrives after timeout ms.

12.2.7.5.2.10 gclib_data_record()

```
gclib_result gclib_data_record (
            gclib_handle h,
            gclib_data_record_handle * data_record,
            int timeout)
```

Get a queued data record, or wait up to timeout ms for one to arrive.
The returned handle remains valid until the next call to gclib_data_record().

Parameters

h	Handle to an open connection.
data_record	Output data record handle.
timeout	Timeout value in milliseconds. If −1, wait forever.

Returns

GCLIB_TIMEOUT if no data record arrives after timeout ms.

12.3 C (Legacy)

For backwards compatibility with gclib 2.2.1 and below.

Topics

- Connection

  Discover available controllers and open connections.
- Controller

  Manage a Galil controller.
- Galil Connect

  Host or connect to a remote gcaps instance.

Functions

- GCLIB_DEPRECATED void GSleep (unsigned int timeout_ms)
- GCLIB_DEPRECATED GReturn GVersion (GCStringOut ver, GSize ver_len)

  Uses GUtility(), G_UTIL_VERSION and G_UTIL_GCAPS_VERSION to provide the library and gcaps version numbers.
- GCLIB_DEPRECATED void GError (GReturn rc, GCStringOut error, GSize error_len)

  Provides a human-readable description string for return codes.

12.3.1 Detailed Description

For backwards compatibility with gclib 2.2.1 and below.

12.3.2 Function Documentation

12.3.2.1 GSleep()

```
GCLIB_DEPRECATED void GSleep (
            unsigned int timeout_ms)
```

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Parameters

timeout_ms	The timeout, in milliseconds, to block before returning.

See GWaitForBool() for an example.

12.3.2.2 GVersion()

```
GCLIB_DEPRECATED GReturn GVersion (
            GCStringOut ver,
            GSize ver_len)
```

Uses GUtility(), G_UTIL_VERSION and G_UTIL_GCAPS_VERSION to provide the library and gcaps version numbers.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_version()` and `gclib_gcaps_version()` instead.

Parameters

ver	Buffer to hold the output string. Buffer will be null terminated, even if the data must be truncated to do so.
ver_len	Length of buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

The version number of gclib is provided first. If the gcaps server can be found, its version will be provided after a space.
Example with gcaps version.

```
154.190.329 1.0.0.82
```

Example with gclib version only.

```
154.190.329
```

Note

GVersion() will take up to 1 second to look for gcaps.

12.3.2.3 GError()

```
GCLIB_DEPRECATED void GError (
            GReturn rc,
            GCStringOut error,
            GSize error_len)
```

Provides a human-readable description string for return codes.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Parameters

rc	The return code to lookup.
error	The buffer to fill with the error text. Buffer will be null terminated, even if the data must be truncated to do so.
error_len	The length of the error buffer.

12.3.3 Connection

Discover available controllers and open connections.

Functions

- GCLIB_DEPRECATED GReturn GOpen (GCStringIn connection_string, GCon ∗g)

  Open a connection to a Galil Controller.
- GCLIB_DEPRECATED GReturn GClose (GCon g)

  Closes a connection to a Galil Controller.
- GCLIB_DEPRECATED GReturn GAddresses (GCStringOut addresses, GSize addresses_len)

  Uses GUtility(), G_UTIL_GCAPS_ADDRESSES or G_UTIL_ADDRESSES to provide a listing of all available connection addresses.
- GCLIB_DEPRECATED GReturn GInfo (GCon g, GCStringOut info, GSize info_len)

  Uses GUtility() and G_UTIL_INFO to provide a useful connection string.
- GCLIB_DEPRECATED GReturn GTimeout (GCon g, short timeout_ms)

  Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.
- GCLIB_DEPRECATED GReturn GIpRequests (GCStringOut requests, GSize requests_len)

  Uses GUtility(), G_UTIL_GCAPS_IPREQUEST or G_UTIL_IPREQUEST to provide a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
- GCLIB_DEPRECATED GReturn GAssign (GCStringIn ip, GCStringIn mac)

  Uses GUtility(), G_UTIL_GCAPS_ASSIGN or G_UTIL_ASSIGN to assign an IP address over the Ethernet to a controller at a given MAC address.

12.3.3.1 Detailed Description

Discover available controllers and open connections.

12.3.3.2 Function Documentation

12.3.3.2.1 GOpen()

```
GCLIB_DEPRECATED GReturn GOpen (
            GCStringIn connection_string,
            GCon * g)
```

Open a connection to a Galil Controller.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_open()` instead.

Parameters

connection_string	Null-terminated connection string. See table below.
g	Pointer to user's GCon variable. On success, the library will fill the user's variable with the handle to use for the rest of the connection. A valid g value is nonzero.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

address switch	Meaning	Arguments (default), other options	Examples
--address	**Simple address to hardware**	*IP address*, *PCI*, *COM port*	--address COM1
-a	shorthand for --address	See *Address Ranges* below	-a GALILPCI1
{no switch}	--address is implicit for any lone token		192.168.0.42
--baud	**Baud rate**	(115200), *valid baud...*	COM2 --baud 19200
-b	shorthand for --baud		COM3 -b 38400
--command	**Command-and-response socket protocol**	(TCP), UDP	192.168.0.42 --command TCP
-c	shorthand for --command		192.168.0.42 -c UDP
--direct	**Connect directly to hardware instead of via** gcaps		-a GALILPCI2 --direct
-d	shorthand for --direct		GALILPCI2 -d
--subscribe	**Subscribe to messages, data records, and/or interrupts**	(NONE), MG, DR, EI, ALL	192.168.0.42 --subscribe MG
-s	shorthand for --subscribe		192.168.0.42 -s DR -s EI
--timeout	**timeout in ms**	(5000), *0-65535*	192.168.0.42 --timeout 5000
-t	shorthand for --timeout		GALILPCI2 -t 500
--unsolicited	**Unsolicited socket protocol**	(UDP), NONE	192.168.0.42 --unsolicited NONE
-u	shorthand for --unsolicited		192.168.1.42 -u UDP
The following address switches are deprecated and will be unavailable starting July 1st, 2020.			
--p1	**Primary port for command-and-response traffic**	(23), *valid port number*	192.168.0.42 --p1 5000
--p2	**Secondary port for unsolicited traffic**	(60007), *valid port number*	192.168.0.42 --p2 5000

Operating System	Address Range	Notes
Windows	COM1 - COM256	RS232 and USB-to-serial
Linux	/dev/ttyS0 - /dev/ttyS255	RS232
Linux	/dev/ttyUSB0 - /dev/ttyUSB255	USB-to-serial, e.g. DMC-4103
Windows	GALILPCI1 - GALILPCI8	PCI

Linux	/dev/galilpci0 - /dev/galilpci7	PCI

When connecting to a network device, if the command-and-response socket is opened successfully but the unsolicited socket fails, GOpen() will still complete successfully. This allows connection to a Galil controller when only one Ethernet handle is available. Unsolicited traffic will not be accessible in this case.

12.3.3.2.2 GClose()

```
GCLIB_DEPRECATED GReturn GClose (
            GCon g)
```

Closes a connection to a Galil Controller.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_close()` instead.

Attention

gclib requires that `GClose()` be called whenever a program is finished with a controller. This includes when a program closes. A rule of thumb is that for every `GOpen()` call on a given connection, a `GClose()` call should be found on every code path. Failing to call GClose() may cause controller resources to not be released or can hang the process if there are outstanding asynchronous operations.

Parameters

g	Connection's handle.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.3.2.3 GAddresses()

```
GCLIB_DEPRECATED GReturn GAddresses (
            GCStringOut addresses,
            GSize addresses_len)
```

Uses GUtility(), G_UTIL_GCAPS_ADDRESSES or G_UTIL_ADDRESSES to provide a listing of all available connection addresses.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_addresses()` instead.

Note

Serial ports are listed, e.g. COM1. Upon open, it may be necessary to specify a baud rate for the controller, e.g. `--baud 19200`. Default baud is 115200. See GOpen().

Parameters

addresses	Buffer to hold the output string. Buffer will be null terminated, even if the data must be truncated to do so. See below for more information.
addresses_len	Length of buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

If gcaps is available, the listing will come from the server via G_UTIL_GCAPS_ADDRESSES. In the absence of the server, gclib will use G_UTIL_ADDRESSES to generate the list.

- Ethernet controllers will be listed as *ip_address, revision_report, network_adapter_name, network_adapter_ip_address*. If an IP address is unreachable via ping, the address will be in parentheses.
- PCI controllers will be listed by their identifier, e.g. GALILPCI1.
- Serial ports will be listed by their identifier, e.g. COM1.

```
10.1.3.91, DMC4020 Rev 1.2e, LAN, 10.1.3.10
192.168.0.63, DMC4040 Rev 1.2f, Static, 192.168.0.41
(192.0.0.42), RIO47102 Rev 1.1j, Static, 192.168.0.41
GALILPCI1
COM1
COM2
```

Note

GAddresses() will take up to 1 second to look for gcaps.

12.3.3.2.4 GInfo()

```
GCLIB_DEPRECATED GReturn GInfo (
            GCon g,
            GCStringOut info,
            GSize info_len)
```

Uses GUtility() and G_UTIL_INFO to provide a useful connection string.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_address()`, `gclib_revision_information()`, and `gclib_serial_number()` instead.

Parameters

g	Connection's handle.
info	Buffer to hold the output string. Buffer will be null terminated, even if the data must be truncated to do so.
info_len	Length of buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

The response is *address, revision_report, serial_number*. For example:

```
COM2, RIO47102 Rev 1.1j, 37290
```

12.3.3.2.5 GTimeout()

```
GCLIB_DEPRECATED GReturn GTimeout (
            GCon g,
            short timeout_ms)
```

Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Parameters

g	Connection's handle.
timeout_ms	The value to be used for the timeout. Use `G_USE_INITIAL_TIMEOUT` to set the timeout back to the initial GOpen() value, `--timeout`.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.3.2.6 GIpRequests()

```
GCLIB_DEPRECATED GReturn GIpRequests (
            GCStringOut requests,
            GSize requests_len)
```

Uses GUtility(), G_UTIL_GCAPS_IPREQUEST or G_UTIL_IPREQUEST to provide a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_ip_requests()` instead.

Parameters

requests	The buffer to hold the list of requesting controllers. Data will be null terminated, even if the data must be truncated to do so. See below for more information.
requests_len	The length of the requests buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

GIpRequests() will block up to 5 seconds while listening for requests.
If gcaps is available, the listing will come from the server via G_UTIL_GCAPS_IPREQUEST. In the absence of the server, gclib will use G_UTIL_IPREQUEST to generate the list. GIpRequests() will take up to 1 second to look for gcaps. When not using gcaps, Linux/OS X users must be root to use GIpRequests() and have UDP access to bind and listen on port 67.
Each line of the returned data will be of the form *model, serial_number, MAC_address, network_adapter_name, network_adapter_ip_address, remembered_ip_assignment*. See GAssign() for more infomation about remembered IP assignments. The following is an example output.

```
DMC2000, 34023, 00:50:4C:00:84:E7, enp5s0, 192.168.42.92, 192.168.42.200
DMC2105, 7, 00:50:4C:58:00:07, enp5s0, 192.168.42.92, 0.0.0.0
DMC2105, 13, 00:50:4C:58:00:0D, enp5s0, 192.168.42.92, 0.0.0.0
```

12.3.3.2.7 GAssign()

```
GCLIB_DEPRECATED GReturn GAssign (
            GCStringIn ip,
            GCStringIn mac)
```

Uses GUtility(), G_UTIL_GCAPS_ASSIGN or G_UTIL_ASSIGN to assign an IP address over the Ethernet to a controller at a given MAC address.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_assign_ip()` instead.

Parameters

ip	The null-terminated ip address to assign. The hardware should not yet have an IP address.
mac	The null-terminated MAC address of the hardware.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

On Linux and Mac, the desired IP address will be pinged prior to the assignment. If the ping is returned, GAssign() will return G_GCLIB_UTILITY_IP_TAKEN.
If gcaps is available, the assign will be performed from the server via G_UTIL_GCAPS_ASSIGN. gcaps will remember the assignment and will automatically assign the desired IP address should the controller ever request one again, e.g. after a controller master reset. To clear the remembered IP address from gcaps, call GAssign() with a blank string in place of the ip address. To remove all remembered ip addresses, specfify a blank string for the mac address.
In the absence of the server, gclib will use G_UTIL_ASSIGN to assign. GAssign() will take up to 1 second to look for gcaps. When not using gcaps, Linux/OS X users must be root to use GAssign() and have UDP access to send on port 68.

12.3.4 Controller

Manage a Galil controller.

Topics

- Communication
  Send commands.
- Memory
  Manage controller memory, such as program and arrays.
- Unsolicited Data
  Receive messages, interrupts, and data records.

Functions

- GCLIB_DEPRECATED GReturn GWaitForBool (GCon g, GCStringIn predicate, int trials)
  Blocking call that returns when the controller evaluates the predicate as true.
- GCLIB_DEPRECATED GReturn GMotionComplete (GCon g, GCStringIn axes)
  Blocking call that returns once all axes specified have completed their motion.

12.3.4.1 Detailed Description

Manage a Galil controller.

12.3.4.2 Function Documentation

12.3.4.2.1 GWaitForBool()

```
GCLIB_DEPRECATED GReturn GWaitForBool (
            GCon g,
            GCStringIn predicate,
            int trials)
```

Blocking call that returns when the controller evaluates the predicate as true.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Polls the message command (MG) to check the value of predicate. Polling will continue until the controller responds with a nonzero value or the number of polling trials is reached.
The amount of time until the function fails with G_GCLIB_POLLING_FAILED is roughly (trials ∗ POLLINGINTERVAL) milliseconds.

Parameters

g	Connection's handle.
predicate	A null-terminated string containing the predicate to be polled. The predicate will be enclosed in parentheses and used in the command `MG (predicate)` to return the value.
trials	The number of polling cycles to perform looking for a nonzero value. Use -1 to poll indefinitely.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

See GMotionComplete() for an example.

12.3.4.2.2 GMotionComplete()

```
GCLIB_DEPRECATED GReturn GMotionComplete (
            GCon g,
            GCStringIn axes)
```

Blocking call that returns once all axes specified have completed their motion.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Note

This function uses a profiled motion indicator, not the position of the encoder. E.G. see the difference between AM (profiled) and MC (encoder-based).

Although using the _BGm operand is the most generally compatible method, there are higher-performance ways to check for motion complete by using the data record, or interrupts. See examples x_dr_motioncomplete() and x_ei_motioncomplete().

Parameters

g	Connection's handle.
axes	A null-terminated string containing a multiple-axes mask. Every character in the string should be a valid argument to MG_BGm, i.e. XYZWABCDEFGHST.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.3 Communication

Send commands.

Functions

- GCLIB_DEPRECATED GReturn GCommand (GCon g, GCStringIn command, GBufOut buffer, GSize buffer_len, GSize *bytes_returned)

  Performs a command-and-response transaction on the connection.
- GCLIB_DEPRECATED GReturn GCmd (GCon g, GCStringIn command)

  Wrapper around GCommand for use when the return value is not desired.
- GCLIB_DEPRECATED GReturn GCmdT (GCon g, GCStringIn command, GCStringOut trimmed_response, GSize response_len, GCStringOut *front)

  Wrapper around GCommand that trims the response.
- GCLIB_DEPRECATED GReturn GCmdI (GCon g, GCStringIn command, int *value)

  Wrapper around GCommand that provides the return value of a command parsed into an int.
- GCLIB_DEPRECATED GReturn GCmdD (GCon g, GCStringIn command, double *value)

  Wrapper around GCommand that provides the return value of a command parsed into a double.

12.3.4.3.1 Detailed Description

Send commands.

12.3.4.3.2 Function Documentation

12.3.4.3.2.1 GCommand()

```
GCLIB_DEPRECATED GReturn GCommand (
            GCon g,
            GCStringIn command,
            GBufOut buffer,
            GSize buffer_len,
            GSize * bytes_returned)
```

Performs a *command-and-response* transaction on the connection.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_command()` instead.

Parameters

g	Connection's handle.
command	Null-terminated command string to send to the controller. The library will append a carriage return to the command string.
buffer	Buffer for the response. Will be filled with the response from the controller. The data will be null terminated unless the function returns `G_BAD_LOST_DATA` due to the buffer being too small to hold the data.
buffer_len	The size of the response buffer.
bytes_returned	The size of the data returned from the controller. This does not include null termination. This argument may be null if the value is not desired.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.3.2.2 GCmd()

```
GCLIB_DEPRECATED GReturn GCmd (
            GCon g,
            GCStringIn command)
```

Wrapper around GCommand for use when the return value is not desired.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

The returned data is still checked for error, e.g. `?` or timeout, but is not brought out through the prototype.

Parameters

g	Connection's handle.
command	Null-terminated command string to send to the controller.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.3.2.3 GCmdT()

```
GCLIB_DEPRECATED GReturn GCmdT (
            GCon g,
            GCStringIn command,
            GCStringOut trimmed_response,
            GSize response_len,
            GCStringOut * front)
```

Wrapper around GCommand that trims the response.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

For use when the return value is desired, is ASCII (not binary), and the response should be trimmed of trailing colon, whitespace, and optionally leading space.

Parameters

g	Connection's handle.
command	Null-terminated command string to send to the controller.
trimmed_response	The trimmed response from the controller. Trailing space is trimmed by null terminating any trailing spaces, carriage returns, or line feeds.
response_len	The length of the trimmed_response buffer.
front	If non-null, upon return ∗front will point to the first non-space character in trimmed_response. This allows trimming the front of the string without modifying the user's buffer pointer, which may be allocated on the heap.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.3.2.4 GCmdI()

```
GCLIB_DEPRECATED GReturn GCmdI (
            GCon g,
            GCStringIn command,
            int * value)
```

Wrapper around GCommand that provides the return value of a command parsed into an int.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Use this function to get most values including TP, RP, TE, Digital I/O states, etc.

Parameters

g	Connection's handle.
command	Null-terminated command string to send to the controller.
value	Pointer to an int that will be filled with the return value.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.3.2.5 GCmdD()

```
GCLIB_DEPRECATED GReturn GCmdD (
            GCon g,
            GCStringIn command,
            double * value)
```

Wrapper around GCommand that provides the return value of a command parsed into a double.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Use this function to retrieve the full Galil 4.2 range, e.g. for a variable value with fractional data, or the value of an Analog input or Output.

Parameters

g	Connection's handle.
command	Null-terminated command string to send to the controller.
value	Pointer to a double that will be filled with the return value.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4 Memory

Manage controller memory, such as program and arrays.

Functions

- GCLIB_DEPRECATED GReturn GProgramDownload (GCon g, GCStringIn program, GCStringIn preprocessor)

  Downloads a program to the controller's program buffer.
- GCLIB_DEPRECATED GReturn GProgramUpload (GCon g, GBufOut buffer, GSize buffer_len)

  Uploads a program from the controller's program buffer.
- GCLIB_DEPRECATED GReturn GArrayDownload (GCon g, const GCStringIn array_name, GOption first, GOption last, GCStringIn buffer)

  Downloads array data to a pre-dimensioned array in the controller's array table.
- GCLIB_DEPRECATED GReturn GArrayUpload (GCon g, const GCStringIn array_name, GOption first, GOption last, GOption delim, GBufOut buffer, GSize buffer_len)

  Uploads array data from the controller's array table.
- GCLIB_DEPRECATED GReturn GFirmwareDownload (GCon g, GCStringIn filepath)

  Upgrade firmware.
- GCLIB_DEPRECATED GReturn GProgramDownloadFile (GCon g, GCStringIn file_path, GCStringIn preprocessor)

  Program download from file.
- GCLIB_DEPRECATED GReturn GProgramUploadFile (GCon g, GCStringIn file_path)

  Program upload to file.
- GCLIB_DEPRECATED GReturn GArrayDownloadFile (GCon g, GCStringIn file_path)

  Array download from file.
- GCLIB_DEPRECATED GReturn GArrayUploadFile (GCon g, GCStringIn file_path, GCStringIn names)

  Array upload to file.
- GCLIB_DEPRECATED GReturn GSetupDownloadFile (GCon g, GCStringIn file_path, GOption options, GCStringOut info, GSize info_len)

  Download a saved controller configuration from a file.

12.3.4.4.1 Detailed Description

Manage controller memory, such as program and arrays.

12.3.4.4.2 Function Documentation

12.3.4.4.2.1 GProgramDownload()

```
GCLIB_DEPRECATED GReturn GProgramDownload (
            GCon g,
            GCStringIn program,
            GCStringIn preprocessor)
```

Downloads a program to the controller's program buffer.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_program()` instead.

Parameters

g	Connection's handle.
program	Null-terminated program for download.
preprocessor	Options string for preprocessing the program before sending it to the controller. Null allows the library to use defaults for the download. See the Program Preprocessor documentation for options.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.2 GProgramUpload()

```
GCLIB_DEPRECATED GReturn GProgramUpload (
            GCon g,
            GBufOut buffer,
            GSize buffer_len)
```

Uploads a program from the controller's program buffer.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_program()` instead.

Parameters

g	Connection's handle.
buffer	Buffer to receive the controller's program. The data will be null terminated unless function returns `G_BAD_LOST_DATA` due to the buffer being too small to hold the data.
buffer_len	The length of the receive buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.3 GArrayDownload()

```
GCLIB_DEPRECATED GReturn GArrayDownload (
            GCon g,
            const GCStringIn array_name,
            GOption first,
            GOption last,
            GCStringIn buffer)
```

Downloads array data to a pre-dimensioned array in the controller's array table.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_array()` instead.

Warning

The array must already exist on the controller and be sufficient dimension to hold the desired array data, e.g. via `DM`.

Parameters

g	Connection's handle.
array_name	Null-terminated string containing the name of the array to download. Must match the array name used in `DM`.
first	The first element of the array for sub-array downloads. `G_BOUNDS` to omit.
last	The last element of the array for sub-array downloads. `G_BOUNDS` to omit.
buffer	Buffer containing the null-terminated data to be sent to the controller. The array data may be separated with *carriage return*, *carriage return + line feed*, or a *comma*. No spaces.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.4 GArrayUpload()

```
GCLIB_DEPRECATED GReturn GArrayUpload (
            GCon g,
            const GCStringIn array_name,
            GOption first,
            GOption last,
            GOption delim,
            GBufOut buffer,
            GSize buffer_len)
```

Uploads array data from the controller's array table.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_array()` instead.

Parameters

g	Connection's handle.
array_name	Null-terminated string containing the name of the array to upload.
first	The first element of the array for sub-array uploads. `G_BOUNDS` to omit.
last	The last element of the array for sub-array uploads. `G_BOUNDS` to omit.
delim	Sets the delimeter between array elements in the returned data, `G_CR` specifies carriage return, `G_COMMA` specifies comma.

buffer	Buffer to receive the uploaded data. The data will be null terminated unless function returns G_BAD_LOST_DATA due to the buffer being too small to hold the data.
buffer_len	The length of the receive buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.5 GFirmwareDownload()

```
GCLIB_DEPRECATED GReturn GFirmwareDownload (
            GCon g,
            GCStringIn filepath)
```

Upgrade firmware.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_firmware()` instead.

Parameters

g	Connection's handle.
filepath	The full file path to the Galil-supplied firmware hex file. See http://www.galil.com/downloads/firmware

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.6 GProgramDownloadFile()

```
GCLIB_DEPRECATED GReturn GProgramDownloadFile (
            GCon g,
            GCStringIn file_path,
            GCStringIn preprocessor)
```

Program download from file.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Parameters

g	Connection's handle.
file_path	Null-terminated string containing the path to the program file.
preprocessor	Options string for preprocessing the program before sending it to the controller. See GProgramDownload().

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.7 GProgramUploadFile()

```
GCLIB_DEPRECATED GReturn GProgramUploadFile (
            GCon g,
            GCStringIn file_path)
```

Program upload to file.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Parameters

g	Connection's handle.
file_path	Null-terminated string containing the path to the program file, file will be overwritten if it exists.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.8 GArrayDownloadFile()

```
GCLIB_DEPRECATED GReturn GArrayDownloadFile (
            GCon g,
            GCStringIn file_path)
```

Array download from file.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Downloads a csv file containing array data at `file_path`. If the arrays don't exist, they will be dimensioned.

Parameters

g	Connection's handle.
file_path	Null-terminated string containing the path to the array file.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.9 GArrayUploadFile()

```
GCLIB_DEPRECATED GReturn GArrayUploadFile (
            GCon g,
            GCStringIn file_path,
            GCStringIn names)
```

Array upload to file.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Uploads the entire controller array table or a subset and saves the data as a csv file specified by `file_path`.

Parameters

g	Connection's handle.
file_path	Null-terminated string containing the path to the array file, file will be overwritten if it exists.
names	Null-terminated string containing the arrays to upload, delimited with space. "" or null uploads all arrays listed in LA.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.4.4.2.10 GSetupDownloadFile()

```
GCLIB_DEPRECATED GReturn GSetupDownloadFile (
            GCon g,
            GCStringIn file_path,
            GOption options,
            GCStringOut info,
            GSize info_len)
```

Download a saved controller configuration from a file.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Parameters

g	Connection's handle.
file_path	Null-terminated string containing the path to the gcb file.
options	Bit mask to determine what configuration data to download. See below for all options.
info	Optional pointer to a buffer to store the controller info. If no info is needed, specify as NULL.
info_len	Length of optional info buffer. If no info is needed, specify as NULL.

Returns

The success status or error code of the function. If the options parameter is set to 0, the return value will be a bit mask indicating which sectors in the specified GCB are not empty. Otherwise, see gclib_errors.h for possible error values.

Note

By default, GSetupDownloadFile() will stop immediately if an error is encountered downloading data. This can be overridden in the options parameter. For example, you may want to override the error if you have a backup from an 8-axis controller and want to restore the parameters for the first 4 axes to a 4-axis controller.

If both info and info_len are not NULL, the controller information will be provided regardless of the options parameter. The options parameter is a bit mask. If options is set to 0, GSetupDownloadFile() will return a bit mask indicating which sectors in the specified GCB are not empty. The following contains a list of all currently available options:

Bit	Value	Function	Description
1	0x0002	Restore parameters	**KPA**, **KIA**, **KDA**, etc...
3	0x0008	Restore variables	Variables are listed by the **LV** command
4	0x0010	Restore arrays	Arrays are listed by the **LA** command
5	0x0020	Restore program	The program is listed by the **LS** command
31	0x8000	Ignore errors	Ignore invalid parameter errors and continue restoring data. GSetupDownloadFile() will still stop immediately if a connection issue or other fatal error is encountered

Usage example:

```
GCon g;
GOption opt = 0;

GCStringOut info;
GSize info_len = 4096;

GReturn rc = G`
// Call GSetupDownloadFile() with options set to 0 so we can get the non-empty sector bit mask
opt = GSetupDownloadFile(g, "C:\\path\\to\\gcb\\file.gcb", 0, NULL, NULL);

info = (GCStringOut)malloc(sizeof(GCStringOut) * info_len);

// Call GSetupDownloadFile() with the bit mask returned in the previous function call
```

```
rc = GSetupDownloadFile(g, "C:\\path\\to\\gcb\\file.gcb", opt, info, info_len);

printf("Info:\n\n%s", info);

GClose(g);

free(info);
return rc;
```

12.3.4.5 Unsolicited Data

Receive messages, interrupts, and data records.

Functions

- GCLIB_DEPRECATED GReturn GRecord (GCon g, union GDataRecord *record, GOption method)

  Provides a fresh copy of the controller's data record. Data is cast into a union, GDataRecord.
- GCLIB_DEPRECATED GReturn GMessage (GCon g, GCStringOut buffer, GSize buffer_len)

  Provides access to unsolicited messages from the controller.
- GCLIB_DEPRECATED GReturn GInterrupt (GCon g, GStatus *status_byte)

  Provides access to PCI and UDP interrupts from the controller.
- GCLIB_DEPRECATED GReturn GRecordRate (GCon g, double period_ms)

  Sets the asynchronous data record to a user-specified period via DR.

12.3.4.5.1 Detailed Description

Receive messages, interrupts, and data records.

12.3.4.5.2 Function Documentation

12.3.4.5.2.1 GRecord()

```
GCLIB_DEPRECATED GReturn GRecord (
            GCon g,
            union GDataRecord * record,
            GOption method)
```

Provides a fresh copy of the controller's data record. Data is cast into a union, GDataRecord.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_data_record()` instead.

Parameters

g	Connection's handle.
record	A pointer to the user's DataRecord union to hold the copy.
method	Determines the method for acquiring the data. • G_QR: QR is used via command-and-response. • G_DR: DR is used for asynchronous acquisition.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

When using G_DR, the asynchronous data record must already be set up.

- `-s DR` must be used in the GOpen() `address` string to subscribe to records. The driver will automatically set the second argument of DR, where applicable.

- GRecordRate() should be issued to set DR to an appropriate interval, n. The interval must be no faster than the rate at which GRecord() is called.
- If GRecord() is called more slowly than the data record rate, stale data will be returned until GRecord() has been called once for each record sent by the controller.

GRecord() will block until the data record is received, or the transaction times out.

Note

If this function is called with a timeout of zero and the G_DR method, a non-blocking read is performed. If a data record has been processed since the last time the function was called, this data will be returned. If there is not a processed data reecord, but there is data waiting in the socket or PCI FIFO, one read will be performed to process the waiting data. If new data is still not found after these two attempts, G_GCLIB_↩ NON_BLOCKING_READ_EMPTY will be returned.

12.3.4.5.2.2 GMessage()

```
GCLIB_DEPRECATED GReturn GMessage (
            GCon g,
            GCStringOut buffer,
            GSize buffer_len)
```

Provides access to unsolicited messages from the controller.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use gclib_message() instead.

To use this function, -s MG must be used in the GOpen() address string to subscribe to messages. Unsolicited bytes must be flagged by the high-bit setting, CW 1. The driver will automatically set this when subscribing to messages. The user should not overwrite this setting.
Unsolicited messages are data generated by the controller that are not in response to a command, a data record, or an interrupt. Examples follow.

1. Data generated by the MG command from embedded code. MG sent from the host is solicited.
2. Any command in an embedded program that returns data, e.g. TP, RP, var=?
3. A run time error in an embedded program, e.g. ?55 i=var

Note

Messages are unframed byte streams. There is no guarantee that the user will get complete messages or single messages in a call to GMessage(). If multiple messages have been sent from the controller since the last call to GMessage(), they will all be placed in the buffer, separated by newline characters.

Parameters

g	Connection's handle.
buffer	The buffer to write the message data. The buffer will be null terminated.
buffer_len	The length of the user's buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

GMessage() will block until a message is received, or the function times out.

Note

If this function is called with a timeout of zero, a non-blocking read is performed. If message data has been processed since the last time the function was called, this data will be returned. If there is no processed message data, but there is data waiting in the socket or PCI FIFO, one read will be performed to process the waiting data. If new data is still not found after these two attempts, G_GCLIB_NON_BLOCKING_READ_↩ EMPTY will be returned.

Warning

When sending message streams through gcaps, the following non-printable bytes are illegal, `$00-$07` and `$10-$17`. These bytes may be routed to a third party device such as am HMI or display panel. See MG and CF.

12.3.4.5.2.3 GInterrupt()

```
GCLIB_DEPRECATED GReturn GInterrupt (
            GCon g,
            GStatus * status_byte)
```

Provides access to PCI and UDP interrupts from the controller.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_interrupt()` instead.

Interrupts can be generated automatically by the firmware on important events via `EI` (Enable Interrupt) or by the user in embedded DMC code via `UI` (User Interrupt). To use this function, `-s EI` must be used in the GOpen() address string to subscribe to interrupts.

Parameters

g	Connection's handle.
status_byte	A pointer to a GStatus to receive the status byte.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

GInterrupt() will block until an interrupt is received, or the function times out.

Note

If this function is called with a timeout of zero, a non-blocking read is performed. If interrupt data is waiting in the interrupt queue, the oldest byte will be popped off the queue. If there is no interrupt data queued, but there is data waiting in the socket or PCI FIFO, one read will be performed to process the waiting data. If new data is still not found after these two attempts, G_GCLIB_NON_BLOCKING_READ_EMPTY will be returned.

12.3.4.5.2.4 GRecordRate()

```
GCLIB_DEPRECATED GReturn GRecordRate (
            GCon g,
            double period_ms)
```

Sets the asynchronous data record to a user-specified period via `DR`.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_data_records()` instead.

Takes TM and product type into account and sets the `DR` period to the period requested by the user, if possible.

Parameters

g	Connection's handle.
period_ms	Period, in milliseconds, to set up for the asynchronous data record.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.5 Galil Connect

Host or connect to a remote gcaps instance.

Functions

- GCLIB_DEPRECATED GReturn GSetServer (GCStringIn server_name)

  Uses GUtility(), G_UTIL_GCAPS_SET_SERVER to set the new active server.
- GCLIB_DEPRECATED GReturn GListServers (GCStringOut servers, GSize servers_len)

  Uses GUtility(), G_UTIL_GCAPS_LIST_SERVERS to provide a list of all available gcaps services on the local network.
- GCLIB_DEPRECATED GReturn GPublishServer (GCStringIn name, GOption publish, GOption save)

  Uses GUtility(), G_UTIL_GCAPS_PUBLISH_SERVER to publish local gcaps server to the local network.
- GCLIB_DEPRECATED GReturn GServerStatus (GCStringOut status, GSize status_len)

  Uses GUtility(), G_UTIL_GCAPS_SERVER_STATUS to get information on the local server name and if it is published to the local network.
- GCLIB_DEPRECATED GReturn GRemoteConnections (GCStringOut connections, GSize connections_length)

  Uses GUtility(), G_UTIL_GCAPS_REMOTE_CONNECTIONS to get a list of remote addresses connected to the local server.

12.3.5.1 Detailed Description

Host or connect to a remote gcaps instance.

12.3.5.2 Function Documentation

12.3.5.2.1 GSetServer()

```
GCLIB_DEPRECATED GReturn GSetServer (
            GCStringIn server_name)
```

Uses GUtility(), G_UTIL_GCAPS_SET_SERVER to set the new active server.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_server()` instead.

Note

This function is only available on Windows 10 and Linux.

Parameters

server_name	The name of the server to set as your new active server.

Use this function in conjunction with GListServers(). Choose a name received from GListServers() to set as your new active server.
After setting a new active server, all gclib calls will route through that new active server, unless explicitly noted otherwise.
To set your active server back to your local server, simply pass "Local" to GSetServer():

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.5.2.2 GListServers()

```
GCLIB_DEPRECATED GReturn GListServers (
            GCStringOut servers,
            GSize servers_len)
```

Uses GUtility(), G_UTIL_GCAPS_LIST_SERVERS to provide a list of all available gcaps services on the local network.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_list_servers()` instead.

Note

This function is only available on Windows 10 and Linux.

Parameters

servers	The buffer to hold the list of available gcaps servers
servers_len	The length of the servers buffer

This function is used to find a list of available gcaps servers that have made themselves "Discoverable".
The list of available servers are separated by a newline '\n' character.

Attention

This function will always use your local gcaps server, regardless of which server you have set as your active server.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.5.2.3 GPublishServer()

```
GCLIB_DEPRECATED GReturn GPublishServer (
            GCStringIn name,
            GOption publish,
            GOption save)
```

Uses GUtility(), G_UTIL_GCAPS_PUBLISH_SERVER to publish local gcaps server to the local network.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_set_published()` instead.

Note

This function is only available on Windows 10 and Linux.

Parameters

name	The name of the server to publish or remove
publish	Option to publish or remove server from network
save	Option to save this configuration for future reboots

This function is used to make your local gcaps server "Discoverable" or "Invisible"
publish Option:
Set to 1 to publish server to the network and make "Discoverable"
Set to 0 to remove server from the network and make "Invisible"
save Option:
Set to 1 to save the configuration for future reboots of the server
Set to 0 to use this configuration once, and not overwrite previous server settings

Attention

This function will always use your local gcaps server, regardless of which server you have set as your active server.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.5.2.4 GServerStatus()

```
GCLIB_DEPRECATED GReturn GServerStatus (
            GCStringOut status,
            GSize status_len)
```

Uses GUtility(), G_UTIL_GCAPS_SERVER_STATUS to get information on the local server name and if it is published to the local network.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release. Use `gclib_server()` instead.

Note

This function is only available on Windows 10 and Linux.

Parameters

status	The buffer to hold the status of the local gcaps server
status_len	The length of the status buffer

This function is used to find the status of your local gcaps server. Use this function to determine the name your server is currently using, and whether or not your gcaps server is currently set to "Discoverable" or "Invisible"
The status buffer will be filled in the form of "[Server Name], [Discoverable]"
For example, for a server with the name "Example Server" that is set to "Discoverable", the status buffer would contain "Example Server, true".

Attention

This function will always use your local gcaps server, regardless of which server you have set as your active server.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.3.5.2.5 GRemoteConnections()

```
GCLIB_DEPRECATED GReturn GRemoteConnections (
            GCStringOut connections,
            GSize connections_length)
```

Uses GUtility(), G_UTIL_GCAPS_REMOTE_CONNECTIONS to get a list of remote addresses connected to the local server.

Deprecated This function is part of the deprecated C (Legacy) API, which will be removed in a future release.

Note

This function is only available on Windows 10 and Linux.

Parameters

connections	The buffer to hold the list of remote IP addresses currently connected to your hardware
connections_len	The length of the connections buffer

This function is used to find a list of IP Addresses of machines that currently have open connections to your local hardware. If another user sets your local server as their active server, and then opens a connection to your hardware, their IP Address will appear in this list.
The list of IP addresses are separated by a newline '\n' character.

Attention

This function will always use your local gcaps server, regardless of which server you have set as your active server.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

12.4 Java

Topics

- Connection

  Discover available controllers and open connections.
- Controller

  Manage a Galil controller.
- Galil Connect

  Host or connect to a remote gcaps instance.

Functions

- void gclibjava.GclibJava.GSleep (int timeout_ms)

  Uses GUtility() and G_UTIL_SLEEP to provide a blocking sleep call which can be useful for timing-based chores.
- String gclibjava.GclibJava.GVersion () throws GclibJavaException

  Uses GUtility(), G_UTIL_VERSION and G_UTIL_GCAPS_VERSION to provide the library and gcaps version numbers.

12.4.1 Detailed Description

12.4.2 Function Documentation

12.4.2.1 GSleep()

```
void gclibjava.GclibJava.GSleep (
            int timeout_ms)  [inline]
```

Uses GUtility() and G_UTIL_SLEEP to provide a blocking sleep call which can be useful for timing-based chores. In GclibJava, this is primarily a debugging call.

Parameters

timeout_ms	Sleep time in milliseconds.

Definition at line 552 of file GclibJava.java.

12.4.2.2 GVersion()

```
String gclibjava.GclibJava.GVersion () throws GclibJavaException  [inline]
```

Uses GUtility(), G_UTIL_VERSION and G_UTIL_GCAPS_VERSION to provide the library and gcaps version numbers.

Returns

A String containing the version, e.g. 189.224.370 1.0.0.125

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 579 of file GclibJava.java.

12.4.3 Connection

Discover available controllers and open connections.

Functions

- void gclibjava.GclibJava.GClose ()

  Closes a connection to a Galil Controller.
- void gclibjava.GclibJava.GOpen (String address) throws GclibJavaException

  Open a connection to a Galil Controller.
- String gclibjava.GclibJava.GAddresses () throws GclibJavaException

  Uses GUtility(), G_UTIL_GCAPS_ADDRESSES or G_UTIL_ADDRESSES to provide a listing of all available connection addresses.
- void gclibjava.GclibJava.GAssign (String ipAddress, String macAddress) throws GclibJavaException

  Uses GUtility(), G_UTIL_GCAPS_ASSIGN or G_UTIL_ASSIGN to assign an IP address over the Ethernet to a controller at a given MAC address.
- String gclibjava.GclibJava.GInfo () throws GclibJavaException

  Uses GUtility() and G_UTIL_INFO to provide a useful connection string.
- String gclibjava.GclibJava.GIpRequests () throws GclibJavaException

  Uses GUtility(), G_UTIL_GCAPS_IPREQUEST or G_UTIL_IPREQUEST to provide a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
- void gclibjava.GclibJava.GTimeout (short timeout_ms) throws GclibJavaException

  Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.

12.4.3.1 Detailed Description

Discover available controllers and open connections.

12.4.3.2 Function Documentation

12.4.3.2.1 GClose()

```
void gclibjava.GclibJava.GClose ()  [inline]
```

Closes a connection to a Galil Controller.
Definition at line 204 of file GclibJava.java.

12.4.3.2.2 GOpen()

```
void gclibjava.GclibJava.GOpen (
            String address) throws GclibJavaException  [inline]
```

Open a connection to a Galil Controller.

Parameters

address	address string. See `GOpen()` for details.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 301 of file GclibJava.java.

12.4.3.2.3 GAddresses()

```
String gclibjava.GclibJava.GAddresses () throws GclibJavaException  [inline]
```

Uses GUtility(), G_UTIL_GCAPS_ADDRESSES or G_UTIL_ADDRESSES to provide a listing of all available connection addresses.

Returns

String containing the available addresses.

10.1.3.91, DMC4020 Rev 1.2e, LAN, 10.1.3.10 192.168.0.63, DMC4040 Rev 1.2f, Static, 192.168.0.41 (192.0.↩ 0.42), RIO47102 Rev 1.1j, Static, 192.168.0.41 10.1., RIO47102 Rev 1.1j, Static, 192.168.0.41 GALILPCI1 COM1 COM2

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 409 of file GclibJava.java.

12.4.3.2.4 GAssign()

```
void gclibjava.GclibJava.GAssign (
            String ipAddress,
            String macAddress) throws GclibJavaException  [inline]
```

Uses GUtility(), G_UTIL_GCAPS_ASSIGN or G_UTIL_ASSIGN to assign an IP address over the Ethernet to a controller at a given MAC address.

Parameters

ipAddress	The IP address to assign.
macAddress	The MAC address of the hardware.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 469 of file GclibJava.java.

12.4.3.2.5 GInfo()

```
String gclibjava.GclibJava.GInfo () throws GclibJavaException  [inline]
```

Uses GUtility() and G_UTIL_INFO to provide a useful connection string.

Returns

A String containing the info, e.g. 192.168.0.42, DMC30010 Rev 1.2i, 6969

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 482 of file GclibJava.java.

12.4.3.2.6 GIpRequests()

```
String gclibjava.GclibJava.GIpRequests () throws GclibJavaException  [inline]
```

Uses GUtility(), G_UTIL_GCAPS_IPREQUEST or G_UTIL_IPREQUEST to provide a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.

Returns

String containing hardware requesting IP addresses.

DMC4000, 291, 00:50:4C:20:01:23, LAN, 10.1.3.10 RIO47000, 37290, 00:50:4C:28:91:AA, Static, 192.168.0.41

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 499 of file GclibJava.java.

12.4.3.2.7 GTimeout()

```
void gclibjava.GclibJava.GTimeout (
            short timeout_ms) throws GclibJavaException  [inline]
```

Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.

Parameters

timeout_ms	The value to be used for the timeout. Use -1 to set the timeout back to the initial GOpen() value, –timeout.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 565 of file GclibJava.java.

12.4.4 Controller

Manage a Galil controller.

Topics

- Memory

  Manage controller memory, such as program and arrays.
- Unsolicited Data

  Receive messages and interrupts.

Functions

- String gclibjava.GclibJava.GCommand (String command) throws GclibJavaException

  Performs a command-and-response transaction on the connection.

12.4.4.1 Detailed Description

Manage a Galil controller.

12.4.4.2 Function Documentation

12.4.4.2.1 GCommand()

```
String gclibjava.GclibJava.GCommand (
            String command) throws GclibJavaException  [inline]
```

Performs a command-and-response transaction on the connection.

Parameters

command	command string to send to the controller. The library will append a carriage return to the command string.

Returns

The response from the controller.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 220 of file GclibJava.java.

12.4.4.3 Memory

Manage controller memory, such as program and arrays.

Functions

- void gclibjava.GclibJava.GArrayDownload (String arrayName, List< Double > data) throws GclibJavaException

  Downloads array data to a pre-dimensioned array in the controller's array table.
- void gclibjava.GclibJava.GArrayDownload (String arrayName, List< Double > data, int first, int last) throws GclibJavaException

  Downloads array data to a pre-dimensioned array in the controller's array table.
- List< Double > gclibjava.GclibJava.GArrayUpload (String arrayName) throws GclibJavaException

  Uploads array data from the controller's array table.
- List< Double > gclibjava.GclibJava.GArrayUpload (String arrayName, int first, int last) throws GclibJavaException

  Uploads array data from the controller's array table.
- void gclibjava.GclibJava.GFirmwareDownload (String filePath) throws GclibJavaException

  Upgrade firmware.
- void gclibjava.GclibJava.GProgramDownload (String program, String preprocessor) throws GclibJavaException

  Downloads a program to the controller's program buffer.
- void gclibjava.GclibJava.GProgramDownload (String program) throws GclibJavaException

  Downloads a program using default preprocessor options.
- String gclibjava.GclibJava.GProgramUpload () throws GclibJavaException

  Uploads a program from the controller's program buffer.

- void gclibjava.GclibJava.GArrayDownloadFile (String filePath) throws GclibJavaException

  Array download from file.
- void gclibjava.GclibJava.GArrayUploadFile (String filePath, String names) throws GclibJavaException

  Array upload to file.
- void gclibjava.GclibJava.GArrayUploadFile (String filePath) throws GclibJavaException

  Overload of GArrayUploadFile to upload all arrays.
- void gclibjava.GclibJava.GProgramDownloadFile (String filePath, String preprocessor) throws GclibJavaException

  Program download from file.
- void gclibjava.GclibJava.GProgramDownloadFile (String filePath) throws GclibJavaException

  Overload of GProgramDownloadFile to use default preprocessor options.
- void gclibjava.GclibJava.GProgramUploadFile (String filePath) throws GclibJavaException

  Program upload to file.

12.4.4.3.1 Detailed Description

Manage controller memory, such as program and arrays.

12.4.4.3.2 Function Documentation

12.4.4.3.2.1 GArrayDownload() [1/2]

```
void gclibjava.GclibJava.GArrayDownload (
            String arrayName,
            List< Double > data) throws GclibJavaException  [inline]
```

Downloads array data to a pre-dimensioned array in the controller's array table.

Parameters

arrayName	String containing the name of the array to download. Must match the array name used in DM.
data	List containing the array data. The length of data may not be larger than the array dimensioned.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 110 of file GclibJava.java.

12.4.4.3.2.2 GArrayDownload() [2/2]

```
void gclibjava.GclibJava.GArrayDownload (
            String arrayName,
            List< Double > data,
            int first,
            int last) throws GclibJavaException  [inline]
```

Downloads array data to a pre-dimensioned array in the controller's array table.

Parameters

arrayName	String containing the name of the array to download. Must match the array name used in DM.
data	List containing the array data. The length of data may not be larger than the array dimensioned.
first	Index of array to begin downloading to.
last	Index of array to end downloading.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 132 of file GclibJava.java.

12.4.4.3.2.3 GArrayUpload() [1/2]

```
List< Double > gclibjava.GclibJava.GArrayUpload (
            String arrayName) throws GclibJavaException  [inline]
```

Uploads array data from the controller's array table.

Parameters

arrayName	String containing the name of the array to upload.

Returns

A List of Doubles, containing the array data.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 150 of file GclibJava.java.

12.4.4.3.2.4 GArrayUpload() [2/2]

```
List< Double > gclibjava.GclibJava.GArrayUpload (
            String arrayName,
            int first,
            int last) throws GclibJavaException  [inline]
```

Uploads array data from the controller's array table.

Parameters

arrayName	String containing the name of the array to upload.
first	Index of array to begin uploading.
last	Index of array to end uploading.

Returns

A List of Doubles, containing the array data.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 182 of file GclibJava.java.

12.4.4.3.2.5 GFirmwareDownload()

```
void gclibjava.GclibJava.GFirmwareDownload (
            String filePath) throws GclibJavaException  [inline]
```

Upgrade firmware.

Parameters

filePath	The full file path to the Galil-supplied firmware hex file. See http://www.galil.com/downloads/firmware

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 243 of file GclibJava.java.

12.4.4.3.2.6 GProgramDownload() [1/2]

```
void gclibjava.GclibJava.GProgramDownload (
            String program,
            String preprocessor) throws GclibJavaException  [inline]
```

Downloads a program to the controller's program buffer.

Parameters

program	Program for download.
preprocessor	Options string for preprocessing the program before sending it to the controller.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 321 of file GclibJava.java.

12.4.4.3.2.7 GProgramDownload() [2/2]

```
void gclibjava.GclibJava.GProgramDownload (
            String program) throws GclibJavaException  [inline]
```

Downloads a program using default preprocessor options.

Parameters

program	Program for download.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 332 of file GclibJava.java.

12.4.4.3.2.8 GProgramUpload()

```
String gclibjava.GclibJava.GProgramUpload () throws GclibJavaException  [inline]
```

Uploads a program from the controller's program buffer.

Returns

The uploaded program.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 344 of file GclibJava.java.

12.4.4.3.2.9 GArrayDownloadFile()

```
void gclibjava.GclibJava.GArrayDownloadFile (
            String filePath) throws GclibJavaException  [inline]
```

Array download from file.
Downloads a csv file containing array data at file_path. If the arrays don't exist, they will be dimensioned.

Parameters

filePath	String containing the path to the array file.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 423 of file GclibJava.java.

12.4.4.3.2.10 GArrayUploadFile() [1/2]

```
void gclibjava.GclibJava.GArrayUploadFile (
            String filePath,
            String names) throws GclibJavaException  [inline]
```

Array upload to file.
Uploads the entire controller array table or a subset and saves the data as a csv file specified by file_path.

Parameters

filePath	String containing the path to the array file. File will be overwritten if it exists.
names	String containing the arrays to upload, delimited with space. "" uploads all arrays listed in LA.

Exceptions

gclibjava.GclibJavaException	If an error is generated by gclib.

Definition at line 441 of file GclibJava.java.

12.4.4.3.2.11 GArrayUploadFile() [2/2]

```
void gclibjava.GclibJava.GArrayUploadFile (
            String filePath) throws GclibJavaException  [inline]
```

Overload of GArrayUploadFile to upload all arrays.

Parameters

filePath	String containing the path to the array file. File will be overwritten if it exists.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 454 of file GclibJava.java.

12.4.4.3.2.12 GProgramDownloadFile() [1/2]

```
void gclibjava.GclibJava.GProgramDownloadFile (
            String filePath,
            String preprocessor) throws GclibJavaException  [inline]
```

Program download from file.

Parameters

filePath	String containing the path to the program file.
preprocessor	Options string for preprocessing the program before sending it to the controller.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 514 of file GclibJava.java.

12.4.4.3.2.13 GProgramDownloadFile() [2/2]

```
void gclibjava.GclibJava.GProgramDownloadFile (
            String filePath) throws GclibJavaException  [inline]
```

Overload of GProgramDownloadFile to use default preprocessor options.

Parameters

filePath	String containing the path to the program file.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 526 of file GclibJava.java.

12.4.4.3.2.14 GProgramUploadFile()

```
void gclibjava.GclibJava.GProgramUploadFile (
            String filePath) throws GclibJavaException  [inline]
```

Program upload to file.

Parameters

filePath	String containing the path to the program file, file will be overwritten if it exists.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 539 of file GclibJava.java.

12.4.4.4 Unsolicited Data

Receive messages and interrupts.

Functions

- byte gclibjava.GclibJava.GInterrupt () throws GclibJavaException

  Provides access to PCI and UDP interrupts from the controller.
- String gclibjava.GclibJava.GMessage () throws GclibJavaException

  Provides access to unsolicited messages from the controller.

12.4.4.4.1 Detailed Description

Receive messages and interrupts.

12.4.4.4.2 Function Documentation

12.4.4.4.2.1 GInterrupt()

`byte gclibjava.GclibJava.GInterrupt () throws GclibJavaException [inline]`

Provides access to PCI and UDP interrupts from the controller.
Interrupts can be generated automatically by the firmware on important events via EI (Enable Interrupt) or by the user in embedded DMC code via UI (User Interrupt). To use this function, -s EI must be used in the GOpen() address string to subscribe to interrupts.

Returns

The status byte of the interrupt.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 260 of file GclibJava.java.

12.4.4.4.2.2 GMessage()

`String gclibjava.GclibJava.GMessage () throws GclibJavaException [inline]`

Provides access to unsolicited messages from the controller.
To use this function, -s MG must be used in the GOpen() address string to subscribe to messages. Unsolicited bytes must be flagged by the high-bit setting, CW 1. The driver will automatically set this when subscribing to messages. The user should not overwrite this setting.
Unsolicited messages are data generated by the controller that are not in response to a command, a data record, or an interrupt.
GMessage() will block until a message is received, or the function times out.
Messages are unframed byte streams. There is no guarantee that the user will get complete messages or single messages in a call to GMessage().

Returns

the message received.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 288 of file GclibJava.java.

12.4.5 Galil Connect

Host or connect to a remote gcaps instance.

Functions

- void gclibjava.GclibJava.GSetServer (String server_name) throws GclibJavaException

  Connects gclib to a new gcaps server.
- String gclibjava.GclibJava.GServerStatus () throws GclibJavaException

  Retrieves the name of your local gcaps server and whether or not it is currently published Retrieves a list of gcaps servers that are advertising themselves on the local network.
- String gclibjava.GclibJava.GListServers () throws GclibJavaException

  Retrieves a list of gcaps servers that are advertising themselves on the local network.
- void gclibjava.GclibJava.GPublishServer (String server_name, int publish, int save) throws GclibJavaException

  Publishes or removes local gcaps server from the network.
- String gclibjava.GclibJava.GRemoteConnections () throws GclibJavaException

  Returns a list of IP Addresses that currently have an open connection to your hardware.

12.4.5.1 Detailed Description

Host or connect to a remote gcaps instance.

12.4.5.2 Function Documentation

12.4.5.2.1 GSetServer()

```
void gclibjava.GclibJava.GSetServer (
            String server_name) throws GclibJavaException  [inline]
```

Connects gclib to a new gcaps server.

Parameters

server_name	Name to publish server under.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 592 of file GclibJava.java.

12.4.5.2.2 GServerStatus()

```
String gclibjava.GclibJava.GServerStatus () throws GclibJavaException  [inline]
```

Retrieves the name of your local gcaps server and whether or not it is currently published Retrieves a list of gcaps servers that are advertising themselves on the local network.

Returns

A string in the form "<server_name>, <isPublished>"

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 605 of file GclibJava.java.

12.4.5.2.3 GListServers()

```
String gclibjava.GclibJava.GListServers () throws GclibJavaException  [inline]
```

Retrieves a list of gcaps servers that are advertising themselves on the local network.

Returns

A list of available gcaps server names.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 618 of file GclibJava.java.

12.4.5.2.4 GPublishServer()

```
void gclibjava.GclibJava.GPublishServer (
            String server_name,
            int publish,
            int save) throws GclibJavaException  [inline]
```

Publishes or removes local gcaps server from the network.

Parameters

server_name	Name to publish server under.
publish	True=publish server, False=remove server.
save	Save this configuration for future server reboots.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 633 of file GclibJava.java.

12.4.5.2.5 GRemoteConnections()

```
String gclibjava.GclibJava.GRemoteConnections () throws GclibJavaException  [inline]
```

Returns a list of IP Addresses that currently have an open connection to your hardware.

Returns

a list of IP Addresses that currently have an open connection to your hardware.

Exceptions

GclibJavaException	If an error is generated by gclib.

Definition at line 645 of file GclibJava.java.

12.5 Python

Topics

- Connection

  Discover available controllers and open connections.

- Controller

  Manage a Galil controller.
- Galil Connect

  Host or connect to a remote gcaps instance.

Classes

- class gclib.GclibError

  Error class for non-zero gclib return codes.

Functions

- gclib.py.GSleep (self, val)

  Provides a blocking sleep call which can be useful for timing-based chores.
- gclib.py.GVersion (self)

  Provides the gclib version number.

12.5.1 Detailed Description

12.5.2 Function Documentation

12.5.2.1 GSleep()

```
gclib.py.GSleep (
              self,
              val)
```

Provides a blocking sleep call which can be useful for timing-based chores.
Definition at line 206 of file gclib.py.

12.5.2.2 GVersion()

```
gclib.py.GVersion (
              self)
```

Provides the gclib version number.
Please include the output of this function on all support cases.
Definition at line 214 of file gclib.py.

12.5.3 Connection

Discover available controllers and open connections.

Functions

- gclib.py.GOpen (self, address)

  Opens a connection a galil controller.
- gclib.py.GClose (self)

  Closes a connection to a Galil Controller.
- gclib.py.GInfo (self)

  Provides a useful connection string.
- gclib.py.GIpRequests (self)

  Provides a dictionary of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
- gclib.py.GAssign (self, ip, mac)

  Assigns IP address over the Ethernet to a controller at a given MAC address.
- gclib.py.GAddresses (self)

  Provides a dictionary of all available connection addresses.
- gclib.py.GTimeout (self, timeout)

Set the library timeout.

- gclib.py.timeout (self)

  Convenience property read access to timeout value.

- gclib.py.timeout (self, timeout)

  Convenience property write access to timeout value.

12.5.3.1 Detailed Description

Discover available controllers and open connections.

12.5.3.2 Function Documentation

12.5.3.2.1 GOpen()

```
gclib.py.GOpen (
              self,
              address)
```

Opens a connection a galil controller.
See the gclib docs for address string formatting.
Definition at line 174 of file gclib.py.

12.5.3.2.2 GClose()

```
gclib.py.GClose (
              self)
```

Closes a connection to a Galil Controller.
Definition at line 184 of file gclib.py.

12.5.3.2.3 GInfo()

```
gclib.py.GInfo (
              self)
```

Provides a useful connection string.
Please include the output of this function on all support cases.
Definition at line 258 of file gclib.py.

12.5.3.2.4 GIpRequests()

```
gclib.py.GIpRequests (
              self)
```

Provides a dictionary of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
Returns a dictionary mapping 'model-serial' --> 'mac address' e.g. {'DMC4000-783': '00:50:4c:20:03:0f', 'DMC4103-9998': '00:50:4c:38:27:0e'}
Linux/OS X users must be root to use GIpRequests() and have UDP access to bind and listen on port 67.
Definition at line 266 of file gclib.py.

12.5.3.2.5 GAssign()

```
gclib.py.GAssign (
              self,
              ip,
              mac)
```

Assigns IP address over the Ethernet to a controller at a given MAC address.
Linux/OS X users must be root to use GAssign() and have UDP access to send on port 68.
Definition at line 286 of file gclib.py.

12.5.3.2.6 GAddresses()

```
gclib.py.GAddresses (
            self)
```

Provides a dictionary of all available connection addresses.
Returns a dictionary mapping 'address' -> 'revision reports', where possible e.g. {}
Definition at line 297 of file gclib.py.

12.5.3.2.7 GTimeout()

```
gclib.py.GTimeout (
            self,
            timeout)
```

Set the library timeout.
Set to -1 to use the initial library timeout, as specified in GOpen.
Definition at line 413 of file gclib.py.

12.5.3.2.8 timeout() [1/2]

```
gclib.py.timeout (
            self)
```

Convenience property read access to timeout value.
If -1, gclib uses the initial library timeout, as specified in GOpen.
Definition at line 424 of file gclib.py.

12.5.3.2.9 timeout() [2/2]

```
gclib.py.timeout (
            self,
            timeout)
```

Convenience property write access to timeout value.
Set to -1 to use the initial library timeout, as specified in GOpen.
Definition at line 431 of file gclib.py.

12.5.4 Controller

Manage a Galil controller.

Topics

- Memory

  Manage controller memory, such as program and arrays.
- Unsolicited Data

  Receive messages and interrupts.

Functions

- gclib.py.GCommand (self, command)

  Performs a command-and-response transaction on the connection.
- gclib.py.GMotionComplete (self, axes)

  Blocking call that returns once all axes specified have completed their motion.

12.5.4.1 Detailed Description

Manage a Galil controller.

12.5.4.2 Function Documentation

12.5.4.2.1 GCommand()

```
gclib.py.GCommand (
            self,
            command)
```

Performs a command-and-response transaction on the connection.
Trims the response.
Definition at line 194 of file gclib.py.

12.5.4.2.2 GMotionComplete()

```
gclib.py.GMotionComplete (
            self,
            axes)
```

Blocking call that returns once all axes specified have completed their motion.
Definition at line 458 of file gclib.py.

12.5.4.3 Memory

Manage controller memory, such as program and arrays.

Functions

- gclib.py.GProgramDownload (self, program, preprocessor="")

  Downloads a program to the controller's program buffer.
- gclib.py.GProgramUpload (self)

  Uploads a program from the controller's program buffer.
- gclib.py.GProgramDownloadFile (self, file_path, preprocessor="")

  Program download from file.
- gclib.py.GProgramUploadFile (self, file_path)

  Program upload to file.
- gclib.py.GArrayDownload (self, name, first, last, array_data)

  Downloads array data to a pre-dimensioned array in the controller's array table.
- gclib.py.GArrayUploadFile (self, file_path, names=[])

  Uploads the entire controller array table or a subset and saves the data as a csv file specified by file_path.
- gclib.py.GArrayDownloadFile (self, file_path)

  Downloads a csv file containing array data at file_path.
- gclib.py.GArrayUpload (self, name, first, last)

  Uploads array data from the controller's array table.
- gclib.py.GFirmwareDownload (self, file_path)

  Upgrade firmware.
- gclib.py.GSetupDownloadFile (self, file_path, options)

  Downloads specified sectors from a Galil compressed backup (gcb) file to a controller.

12.5.4.3.1 Detailed Description

Manage controller memory, such as program and arrays.

12.5.4.3.2 Function Documentation

12.5.4.3.2.1 GProgramDownload()

```
gclib.py.GProgramDownload (
            self,
```

```
                program,
                preprocessor = "")
```

Downloads a program to the controller's program buffer.
See the gclib docs for preprocessor options.
Definition at line 316 of file gclib.py.

12.5.4.3.2.2 GProgramUpload()

```
gclib.py.GProgramUpload (
                self)
```

Uploads a program from the controller's program buffer.
Definition at line 328 of file gclib.py.

12.5.4.3.2.3 GProgramDownloadFile()

```
gclib.py.GProgramDownloadFile (
                self,
                file_path,
                preprocessor = "")
```

Program download from file.
See the gclib docs for preprocessor options.
Definition at line 337 of file gclib.py.

12.5.4.3.2.4 GProgramUploadFile()

```
gclib.py.GProgramUploadFile (
                self,
                file_path)
```

Program upload to file.
Definition at line 348 of file gclib.py.

12.5.4.3.2.5 GArrayDownload()

```
gclib.py.GArrayDownload (
                self,
                name,
                first,
                last,
                array_data)
```

Downloads array data to a pre-dimensioned array in the controller's array table.
array_data should be a list of values (e.g. int or float)
Definition at line 357 of file gclib.py.

12.5.4.3.2.6 GArrayUploadFile()

```
gclib.py.GArrayUploadFile (
                self,
                file_path,
                names = [])
```

Uploads the entire controller array table or a subset and saves the data as a csv file specified by file_path.
names is optional and should be a list of array names on the controller.
Definition at line 372 of file gclib.py.

12.5.4.3.2.7 GArrayDownloadFile()

```
gclib.py.GArrayDownloadFile (
                self,
                file_path)
```

Downloads a csv file containing array data at file_path.
Definition at line 389 of file gclib.py.

12.5.4.3.2.8 GArrayUpload()

```
gclib.py.GArrayUpload (
              self,
              name,
              first,
              last)
```

Uploads array data from the controller's array table.
Definition at line 399 of file gclib.py.

12.5.4.3.2.9 GFirmwareDownload()

```
gclib.py.GFirmwareDownload (
              self,
              file_path)
```

Upgrade firmware.
Definition at line 439 of file gclib.py.

12.5.4.3.2.10 GSetupDownloadFile()

```
gclib.py.GSetupDownloadFile (
              self,
              file_path,
              options)
```

Downloads specified sectors from a Galil compressed backup (gcb) file to a controller.
Returns a dictionary with the controller information stored in the gcb file. If options is specified as 0, an additional "options" key will be in the dictionary indicating the info sectors available in the gcb
Definition at line 476 of file gclib.py.

12.5.4.4 Unsolicited Data

Receive messages and interrupts.

Functions

- gclib.py.GMessage (self)

  Provides access to unsolicited messages from the controller.
- gclib.py.GInterrupt (self)

  Provides access to PCI and UDP interrupts from the controller.

12.5.4.4.1 Detailed Description

Receive messages and interrupts.

12.5.4.4.2 Function Documentation

12.5.4.4.2.1 GMessage()

```
gclib.py.GMessage (
              self)
```

Provides access to unsolicited messages from the controller.
Definition at line 449 of file gclib.py.

12.5.4.4.2.2 GInterrupt()

```
gclib.py.GInterrupt (
              self)
```

Provides access to PCI and UDP interrupts from the controller.
Definition at line 467 of file gclib.py.

12.5.5 Galil Connect

Host or connect to a remote gcaps instance.

Functions

- gclib.py.GServerStatus (self)

  Provides the local server name and whether it is published to the local network.
- gclib.py.GSetServer (self, server_name)

  Set the new active server.
- gclib.py.GListServers (self)

  Provide a list of all available gcaps servers on the local network.
- gclib.py.GPublishServer (self, server_name, publish, save)

  Publish local gcaps server to the network.
- gclib.py.GRemoteConnections (self)

  Shows all remote addresses that are connected to the local server.

12.5.5.1 Detailed Description

Host or connect to a remote gcaps instance.

12.5.5.2 Function Documentation

12.5.5.2.1 GServerStatus()

```
gclib.py.GServerStatus (
            self)
```

Provides the local server name and whether it is published to the local network.
Definition at line 221 of file gclib.py.

12.5.5.2.2 GSetServer()

```
gclib.py.GSetServer (
            self,
            server_name)
```

Set the new active server.
Definition at line 228 of file gclib.py.

12.5.5.2.3 GListServers()

```
gclib.py.GListServers (
            self)
```

Provide a list of all available gcaps servers on the local network.
Definition at line 236 of file gclib.py.

12.5.5.2.4 GPublishServer()

```
gclib.py.GPublishServer (
            self,
            server_name,
            publish,
            save)
```

Publish local gcaps server to the network.
Definition at line 243 of file gclib.py.

12.5.5.2.5 GRemoteConnections()

```
gclib.py.GRemoteConnections (
              self)
```

Shows all remote addresses that are connected to the local server.
Definition at line 251 of file gclib.py.

Chapter 13

Namespace Documentation

13.1 gclib Namespace Reference

Classes

- class GclibError

  Error class for non-zero gclib return codes.
- interface GDataRecord
- struct GDataRecord1802

  Data record struct for DMC-1802 controllers.
- struct GDataRecord1806

  Data record struct for DMC-1806 controller.
- struct GDataRecord2103

  Data record struct for DMC-2103 controllers.
- struct GDataRecord30000

  Data record struct for DMC-30010 controllers.
- struct GDataRecord4000

  Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
- struct GDataRecord47000_ENC

  Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
- struct GDataRecord47162

  Data record struct for RIO-47162.
- struct GDataRecord47300_24EX

  Data record struct for RIO-47300 with 24EX I/O daughter board.
- struct GDataRecord47300_ENC

  Data record struct for RIO-47300. Includes encoder fields.
- struct GDataRecord52000

  Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
- class py

  Represents a single Python connection to a Galil Controller or PLC.

Functions

- _rc (return_code)

  Checks return codes from gclib and raises a python error if result is exceptional.

13.1.1 Function Documentation

13.1.1.1 _rc()

```
gclib._rc (
              return_code)  [protected]
```

Checks return codes from gclib and raises a python error if result is exceptional.
Definition at line 139 of file gclib.py.

13.2 Package gclibjava

Classes

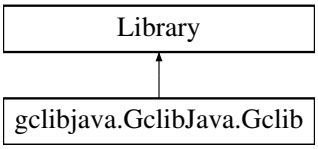
- class GclibJava
- class GclibJavaException

Chapter 14

Class Documentation

14.1 gclibjava.GclibJava.Gclib Interface Reference

The JNA interface to the gclib library.
Inheritance diagram for gclibjava.GclibJava.Gclib:



Public Member Functions

- int GArrayDownload (Pointer g, String arrayName, int first, int last, String buffer)
- int GArrayUpload (Pointer g, String arrayName, int first, int last, int delim, byte[ ] response, int len)
- int GCommand (Pointer g, String command, byte[ ] response, int len, IntByReference bytesReturned)
- int GClose (Pointer g)
- int GFirmwareDownload (Pointer g, String filePath)
- int GInterrupt (Pointer g, ByteByReference statusByte)
- int GMessage (Pointer g, byte[ ] response, int len)
- int GOpen (String address, PointerByReference g)
- int GProgramDownload (Pointer g, String program, String preprocessor)
- int GProgramUpload (Pointer g, byte[ ] response, int len)

Public Attributes

- Gclib INSTANCE
- Gclib SYNC_INSTANCE

14.1.1 Detailed Description

The JNA interface to the gclib library.
http://galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html
Definition at line 73 of file GclibJava.java.

14.1.2 Member Function Documentation

14.1.2.1 GArrayDownload()

```
int gclibjava.GclibJava.Gclib.GArrayDownload (
            Pointer g,
            String arrayName,
```

```
            int first,
            int last,
            String buffer)
```

14.1.2.2 GArrayUpload()

```
int gclibjava.GclibJava.Gclib.GArrayUpload (
            Pointer g,
            String arrayName,
            int first,
            int last,
            int delim,
            byte[] response,
            int len)
```

14.1.2.3 GCommand()

```
int gclibjava.GclibJava.Gclib.GCommand (
            Pointer g,
            String command,
            byte[] response,
            int len,
            IntByReference bytesReturned)
```

14.1.2.4 GClose()

```
int gclibjava.GclibJava.Gclib.GClose (
            Pointer g)
```

14.1.2.5 GFirmwareDownload()

```
int gclibjava.GclibJava.Gclib.GFirmwareDownload (
            Pointer g,
            String filePath)
```

14.1.2.6 GInterrupt()

```
int gclibjava.GclibJava.Gclib.GInterrupt (
            Pointer g,
            ByteByReference statusByte)
```

14.1.2.7 GMessage()

```
int gclibjava.GclibJava.Gclib.GMessage (
            Pointer g,
            byte[] response,
            int len)
```

14.1.2.8 GOpen()

```
int gclibjava.GclibJava.Gclib.GOpen (
            String address,
            PointerByReference g)
```

14.1.2.9 GProgramDownload()

```
int gclibjava.GclibJava.Gclib.GProgramDownload (
            Pointer g,
            String program,
            String preprocessor)
```

14.1.2.10 GProgramUpload()

```
int gclibjava.GclibJava.Gclib.GProgramUpload (
            Pointer g,
            byte[] response,
            int len)
```

14.1.3 Member Data Documentation

14.1.3.1 INSTANCE

```
Gclib gclibjava.GclibJava.Gclib.INSTANCE
```

Initial value:

```
= (Gclib)
              Native.loadLibrary("gclib",
                      Gclib.class)
```

Definition at line 74 of file GclibJava.java.

14.1.3.2 SYNC_INSTANCE

```
Gclib gclibjava.GclibJava.Gclib.SYNC_INSTANCE
```

Initial value:

```
= (Gclib)
              Native.synchronizedLibrary(INSTANCE)
```

Definition at line 82 of file GclibJava.java.
The documentation for this interface was generated from the following file:

- GclibJava.java

14.2 gclib Class Reference

Provides a class that binds to gclib's unmanaged dll.

Public Member Functions

- string[] GAddresses ()

  Return a string array of available connection addresses.
- void GArrayDownload (string array_name, ref List< double > data, Int16 first=-1, Int16 last=-1)

  Downloads array data to a pre-dimensioned array in the controller's array table.
- void GArrayDownloadFile (string Path)

  Allows downloading of a program array file to the controller.
- List< double > GArrayUpload (string array_name, Int16 first=-1, Int16 last=-1)

  Uploads array data from the controller's array table.
- void GArrayUploadFile (string Path, string Names)

  Allows uploading of a program array file from the controller to an array CSV file.
- void GAssign (string ip, string mac)

  Assigns IP address over the Ethernet to a controller at a given MAC address.
- void GClose ()

  Used to close a connection to Galil hardware.
- string GCommand (string Command, bool Trim=true)

  Used for command-and-response transactions.
- Int16 GCmdI (string Command)

  Used for command-and-response transactions.
- double GCmdD (string Command)

  Used for command-and-response transactions.
- void GFirmwareDownload (string filepath)

  Upgrade firmware.

- string GInfo ()

  Provides a useful connection string.
- byte GInterrupt ()

  Provides access to PCI and UDP interrupts from the controller.
- string[ ] GIpRequests ()

  Provides a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
- string GMessage ()

  Provides access to unsolicited messages.
- void GMotionComplete (string axes)

  Blocking call that returns once all axes specified have completed their motion.
- void GOpen (string address)

  Used to open a connection to Galil hardware.
- void GProgramDownload (string program, string preprocessor="")

  Allows downloading of a DMC program from a string buffer.
- void GProgramDownloadFile (string file_path, string preprocessor="")

  Allows downloading of a DMC program from file.
- string GProgramUpload ()

  Allows uploading of a DMC program to a string.
- void GProgramUploadFile (string file_path)

  Allows uploading of a DMC program to a file.
- byte[ ] GRead ()

  Performs a read on the connection.
- T GRecord< T > (bool async)

  Used for retrieving data records from the controller.
- void GRecordRate (double period_ms)

  Sets the asynchronous data record to a user-specified period via DR.
- void GTimeout (Int16 timeout_ms)

  Set the timeout of communication transactions.
- string GVersion ()

  Used to get the gclib version.
- void GWrite (string buffer)

  Performs a write on the connection.
- string[ ] GSetupDownloadFile (string path, Int32 options)

  Allows downloading of a Galil compressed backup (gcb) file to the controller.
- void GSetServer (string server_name)

  Connects gclib to a new gcaps server.
- string GServerStatus ()

  Retrieves the name of your local gcaps server and whether or not it is currently published.
- string[ ] GListServers ()

  Retrieves a list of gcaps servers that are advertising themselves on the local network.
- void GPublishServer (string server_name, bool publish, bool save)

  Publishes or removes local gcaps server from the network.
- string[ ] GRemoteConnections ()

  Returns a list of IP Addresses that currently have an open connection to your hardware.

Public Attributes

- argtypes
- restype

Protected Attributes

- _gclib = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclib.dll')
- _gclibo = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclibo.dll')
- str _gclib_path = '/Applications/gclib/dylib/gclib.0.dylib'
- str _gclibo_path = '/Applications/gclib/dylib/gclibo.0.dylib'
- _GReturn = c_int
- _GCon = c_void_p
- _GCon_ptr = POINTER(_GCon)
- _GSize = c_ulong
- _GSize_ptr = POINTER(_GSize)
- _GCStringIn = c_char_p
- _GCStringOut = c_char_p
- _GOption = c_int
- _GStatus = c_ubyte
- _GStatus_ptr = POINTER(_GStatus)
- str _enc = "ASCII"
- int _buf_size = 500000
- _error_buf = create_string_buffer(128)

14.2.1 Detailed Description

Provides a class that binds to gclib's unmanaged dll.
Wraps each call and provides a more user-friendly interface for use in C#.
The Gclib class assumes the default installation of gclib, "C:\Program Files (x86)\Galil\gclib\". If the dlls are elsewhere, change the path strings GclibDllPath_, and GcliboDllPath_.
Definition at line 58 of file gclib.cs.

14.2.2 Member Function Documentation

14.2.2.1 GRead()

```
byte[] gclib.GRead ()  [inline]
```

Performs a read on the connection.

Returns

String containing the read data, or a nullstring if nothing was read or an error occured.

Wrapper around gclib GRead(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#adab6ec79b7e1bc7f0266684dd3434923
Definition at line 534 of file gclib.cs.

14.2.2.2 GWrite()

```
void gclib.GWrite (
            string buffer)  [inline]
```

Performs a write on the connection.

Parameters

buffer	The user's write buffer. To send a Galil command, a terminating carriage return is usually required.

Wrapper around gclib GWrite(), http://www.galil.com/sw/pub/all/doc/gclib/html/gclib_8h.html#abe28ebaecd5b3940adf4e145d40e5456

Exceptions

System.Exception	Will throw an exception if anything other than G_NO_ERROR is received from gclib.

Definition at line 637 of file gclib.cs.

14.2.3 Member Data Documentation

14.2.3.1 _gclib

```
gclib._gclib = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclib.dll')  [protected]
```
Definition at line 31 of file gclib.py.

14.2.3.2 _gclibo

```
gclib._gclibo = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclibo.dll')  [protected]
```
Definition at line 32 of file gclib.py.

14.2.3.3 _gclib_path

```
str gclib._gclib_path = '/Applications/gclib/dylib/gclib.0.dylib'  [protected]
```
Definition at line 78 of file gclib.py.

14.2.3.4 _gclibo_path

```
str gclib._gclibo_path = '/Applications/gclib/dylib/gclibo.0.dylib'  [protected]
```
Definition at line 79 of file gclib.py.

14.2.3.5 _GReturn

```
gclib._GReturn = c_int  [protected]
```
Definition at line 88 of file gclib.py.

14.2.3.6 _GCon

```
gclib._GCon = c_void_p  [protected]
```
Definition at line 89 of file gclib.py.

14.2.3.7 _GCon_ptr

```
gclib._GCon_ptr = POINTER(_GCon)  [protected]
```
Definition at line 90 of file gclib.py.

14.2.3.8 _GSize

```
gclib._GSize = c_ulong  [protected]
```
Definition at line 91 of file gclib.py.

14.2.3.9 _GSize_ptr

```
gclib._GSize_ptr = POINTER(_GSize)  [protected]
```
Definition at line 92 of file gclib.py.

14.2.3.10 _GCStringIn

```
gclib._GCStringIn = c_char_p  [protected]
```
Definition at line 93 of file gclib.py.

14.2.3.11 _GCStringOut

```
gclib._GCStringOut = c_char_p  [protected]
```
Definition at line 94 of file gclib.py.

14.2.3.12 _GOption

```
gclib._GOption = c_int  [protected]
```
Definition at line 95 of file gclib.py.

14.2.3.13 _GStatus

```
gclib._GStatus = c_ubyte  [protected]
```
Definition at line 96 of file gclib.py.

14.2.3.14 _GStatus_ptr

```
gclib._GStatus_ptr = POINTER(_GStatus)  [protected]
```
Definition at line 97 of file gclib.py.

14.2.3.15 argtypes

```
gclib.argtypes
```
Definition at line 101 of file gclib.py.

14.2.3.16 restype

```
gclib.restype
```
Definition at line 117 of file gclib.py.

14.2.3.17 _enc

```
str gclib._enc = "ASCII"  [protected]
```
Definition at line 135 of file gclib.py.

14.2.3.18 _buf_size

```
int gclib._buf_size = 500000  [protected]
```
Definition at line 136 of file gclib.py.

14.2.3.19 _error_buf

```
gclib._error_buf = create_string_buffer(128)  [protected]
```
Definition at line 137 of file gclib.py.
The documentation for this class was generated from the following files:

- gclib.cs
- gclib.py

14.3 gclib_interrupt_t Struct Reference

An interrupt generated by the controller.
`#include <gclib.h>`

Public Attributes

- gclib_interrupt_type type
- union {
  char gclib_interrupt_t::axis
  If `type` is `GCLIB_MOTION_COMPLETE`, holds the axis that triggered the interrupt.
  uint8_t gclib_interrupt_t::digital_input
  If `type` is `GCLIB_DIGITAL_INPUT_LOW`, holds the digital input that triggered the interrupt.
  uint8_t gclib_interrupt_t::user_interrupt
  If `type` is `GCLIB_USER_INTERRUPT`, holds the user input that was triggered.
  };

- uint8_t status

  The raw status byte generated by the controller. See the `EI command reference` for all possible values.

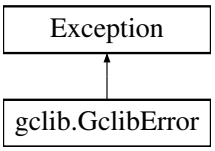
14.3.1 Detailed Description

An interrupt generated by the controller.
Definition at line 55 of file gclib.h.
The documentation for this struct was generated from the following file:

- gclib.h

14.4 gclib.GclibError Class Reference

Error class for non-zero gclib return codes.
Inheritance diagram for gclib.GclibError:



14.4.1 Detailed Description

Error class for non-zero gclib return codes.
Definition at line 146 of file gclib.py.
The documentation for this class was generated from the following file:

- gclib.py

14.5 gclibjava.GclibJava Class Reference

Classes

- interface Gclib

  The JNA interface to the gclib library.
- interface Gclibo

  The JNA interface to the open source, gclibo library.

Public Member Functions

- GclibJava ()

  Constructor adds gclib to JNA's path.
- void GArrayDownload (String arrayName, List< Double > data) throws GclibJavaException

  Downloads array data to a pre-dimensioned array in the controller's array table.
- void GArrayDownload (String arrayName, List< Double > data, int first, int last) throws GclibJavaException

  Downloads array data to a pre-dimensioned array in the controller's array table.
- List< Double > GArrayUpload (String arrayName) throws GclibJavaException

  Uploads array data from the controller's array table.
- List< Double > GArrayUpload (String arrayName, int first, int last) throws GclibJavaException

  Uploads array data from the controller's array table.
- void GClose ()

  Closes a connection to a Galil Controller.
- String GCommand (String command) throws GclibJavaException

  Performs a command-and-response transaction on the connection.
- void GFirmwareDownload (String filePath) throws GclibJavaException

  Upgrade firmware.
- byte GInterrupt () throws GclibJavaException

Provides access to PCI and UDP interrupts from the controller.

- String GMessage () throws GclibJavaException

  Provides access to unsolicited messages from the controller.
- void GOpen (String address) throws GclibJavaException

  Open a connection to a Galil Controller.
- void GProgramDownload (String program, String preprocessor) throws GclibJavaException

  Downloads a program to the controller's program buffer.
- void GProgramDownload (String program) throws GclibJavaException

  Downloads a program using default preprocessor options.
- String GProgramUpload () throws GclibJavaException

  Uploads a program from the controller's program buffer.
- String GAddresses () throws GclibJavaException

  Uses GUtility(), G_UTIL_GCAPS_ADDRESSES or G_UTIL_ADDRESSES to provide a listing of all available connection addresses.
- void GArrayDownloadFile (String filePath) throws GclibJavaException

  Array download from file.
- void GArrayUploadFile (String filePath, String names) throws GclibJavaException

  Array upload to file.
- void GArrayUploadFile (String filePath) throws GclibJavaException

  Overload of GArrayUploadFile to upload all arrays.
- void GAssign (String ipAddress, String macAddress) throws GclibJavaException

  Uses GUtility(), G_UTIL_GCAPS_ASSIGN or G_UTIL_ASSIGN to assign an IP address over the Ethernet to a controller at a given MAC address.
- String GInfo () throws GclibJavaException

  Uses GUtility() and G_UTIL_INFO to provide a useful connection string.
- String GIpRequests () throws GclibJavaException

  Uses GUtility(), G_UTIL_GCAPS_IPREQUEST or G_UTIL_IPREQUEST to provide a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
- void GProgramDownloadFile (String filePath, String preprocessor) throws GclibJavaException

  Program download from file.
- void GProgramDownloadFile (String filePath) throws GclibJavaException

  Overload of GProgramDownloadFile to use default preprocessor options.
- void GProgramUploadFile (String filePath) throws GclibJavaException

  Program upload to file.
- void GSleep (int timeout_ms)

  Uses GUtility() and G_UTIL_SLEEP to provide a blocking sleep call which can be useful for timing-based chores.
- void GTimeout (short timeout_ms) throws GclibJavaException

  Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.
- String GVersion () throws GclibJavaException

  Uses GUtility(), G_UTIL_VERSION and G_UTIL_GCAPS_VERSION to provide the library and gcaps version numbers.
- void GSetServer (String server_name) throws GclibJavaException

  Connects gclib to a new gcaps server.
- String GServerStatus () throws GclibJavaException

  Retrieves the name of your local gcaps server and whether or not it is currently published Retrieves a list of gcaps servers that are advertising themselves on the local network.
- String GListServers () throws GclibJavaException

  Retrieves a list of gcaps servers that are advertising themselves on the local network.
- void GPublishServer (String server_name, int publish, int save) throws GclibJavaException

  Publishes or removes local gcaps server from the network.
- String GRemoteConnections () throws GclibJavaException

  Returns a list of IP Addresses that currently have an open connection to your hardware.

Protected Member Functions

- void finalize () throws Throwable

  The last line of defense to close connection.

14.5.1 Detailed Description

Definition at line 36 of file GclibJava.java.

14.5.2 Constructor & Destructor Documentation

14.5.2.1 GclibJava()

```
gclibjava.GclibJava.GclibJava ()  [inline]
```

Constructor adds gclib to JNA's path.
Definition at line 45 of file GclibJava.java.

14.5.3 Member Function Documentation

14.5.3.1 finalize()

```
void gclibjava.GclibJava.finalize () throws Throwable  [inline], [protected]
```

The last line of defense to close connection.
Do NOT rely on finalize(), call GClose() explicitly.

Exceptions

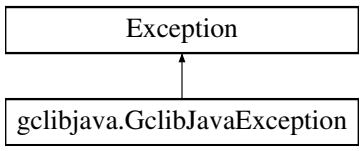
Throwable	super can throw.

Definition at line 56 of file GclibJava.java.
The documentation for this class was generated from the following file:

- GclibJava.java

14.6 gclibjava.GclibJavaException Class Reference

Inheritance diagram for gclibjava.GclibJavaException:



Public Member Functions

- GclibJavaException (int errorCode, String message)
- int getErrorCode ()

14.6.1 Detailed Description

Definition at line 6 of file GclibJavaException.java.

14.6.2 Constructor & Destructor Documentation

14.6.2.1 GclibJavaException()

```
gclibjava.GclibJavaException.GclibJavaException (
            int errorCode,
            String message)  [inline]
```

Definition at line 8 of file GclibJavaException.java.

14.6.3 Member Function Documentation

14.6.3.1 getErrorCode()

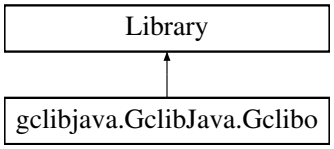
```
int gclibjava.GclibJavaException.getErrorCode ()  [inline]
```

Definition at line 12 of file GclibJavaException.java.
The documentation for this class was generated from the following file:

- GclibJavaException.java

14.7 gclibjava.GclibJava.Gclibo Interface Reference

The JNA interface to the open source, gclibo library.
Inheritance diagram for gclibjava.GclibJava.Gclibo:



Public Member Functions

- int GAddresses (byte[ ] response, int len)
- int GArrayDownloadFile (Pointer g, String filePath)
- int GArrayUploadFile (Pointer g, String filePath, String names)
- int GAssign (String ip, String mac)
- void GError (int rc, byte[ ] response, int len)
- int GInfo (Pointer g, byte[ ] response, int len)
- int GIpRequests (byte[ ] response, int len)
- int GProgramDownloadFile (Pointer g, String filePath, String preprocessor)
- int GProgramUploadFile (Pointer g, String filePath)
- void GSleep (int timeout_ms)
- int GTimeout (Pointer g, short timeout_ms)
- int GVersion (byte[ ] response, int len)
- int GSetServer (String server_name)
- int GServerStatus (byte[ ] response, int len)
- int GListServers (byte[ ] response, int len)
- int GPublishServer (String server_name, int publish, int save)
- int GRemoteConnections (byte[ ] response, int len)

Public Attributes

- Gclibo INSTANCE
- Gclibo SYNC_INSTANCE

14.7.1 Detailed Description

The JNA interface to the open source, gclibo library.
http://galil.com/sw/pub/all/doc/gclib/html/gclibo_8h.html
Definition at line 358 of file GclibJava.java.

14.7.2 Member Function Documentation

14.7.2.1 GAddresses()

```
int gclibjava.GclibJava.Gclibo.GAddresses (
            byte[] response,
            int len)
```

14.7.2.2 GArrayDownloadFile()

```
int gclibjava.GclibJava.Gclibo.GArrayDownloadFile (
            Pointer g,
            String filePath)
```

14.7.2.3 GArrayUploadFile()

```
int gclibjava.GclibJava.Gclibo.GArrayUploadFile (
            Pointer g,
            String filePath,
            String names)
```

14.7.2.4 GAssign()

```
int gclibjava.GclibJava.Gclibo.GAssign (
            String ip,
            String mac)
```

14.7.2.5 GError()

```
void gclibjava.GclibJava.Gclibo.GError (
            int rc,
            byte[] response,
            int len)
```

14.7.2.6 GInfo()

```
int gclibjava.GclibJava.Gclibo.GInfo (
            Pointer g,
            byte[] response,
            int len)
```

14.7.2.7 GIpRequests()

```
int gclibjava.GclibJava.Gclibo.GIpRequests (
            byte[] response,
            int len)
```

14.7.2.8 GProgramDownloadFile()

```
int gclibjava.GclibJava.Gclibo.GProgramDownloadFile (
            Pointer g,
            String filePath,
            String preprocessor)
```

14.7.2.9 GProgramUploadFile()

```
int gclibjava.GclibJava.Gclibo.GProgramUploadFile (
            Pointer g,
            String filePath)
```

14.7.2.10 GSleep()

```
void gclibjava.GclibJava.Gclibo.GSleep (
            int timeout_ms)
```

14.7.2.11 GTimeout()

```
int gclibjava.GclibJava.Gclibo.GTimeout (
            Pointer g,
            short timeout_ms)
```

14.7.2.12 GVersion()

```
int gclibjava.GclibJava.Gclibo.GVersion (
            byte[] response,
            int len)
```

14.7.2.13 GSetServer()

```
int gclibjava.GclibJava.Gclibo.GSetServer (
            String server_name)
```

14.7.2.14 GServerStatus()

```
int gclibjava.GclibJava.Gclibo.GServerStatus (
            byte[] response,
            int len)
```

14.7.2.15 GListServers()

```
int gclibjava.GclibJava.Gclibo.GListServers (
            byte[] response,
            int len)
```

14.7.2.16 GPublishServer()

```
int gclibjava.GclibJava.Gclibo.GPublishServer (
            String server_name,
            int publish,
            int save)
```

14.7.2.17 GRemoteConnections()

```
int gclibjava.GclibJava.Gclibo.GRemoteConnections (
            byte[] response,
            int len)
```

14.7.3 Member Data Documentation

14.7.3.1 INSTANCE

```
Gclibo gclibjava.GclibJava.Gclibo.INSTANCE
```

Initial value:

```
= (Gclibo)
            Native.loadLibrary("gclibo",
```

```
                                Gclibo.class)
```

Definition at line 359 of file GclibJava.java.

14.7.3.2 SYNC_INSTANCE

```
Gclibo gclibjava.GclibJava.Gclibo.SYNC_INSTANCE
```

Initial value:

```
= (Gclibo)
                Native.synchronizedLibrary(INSTANCE)
```

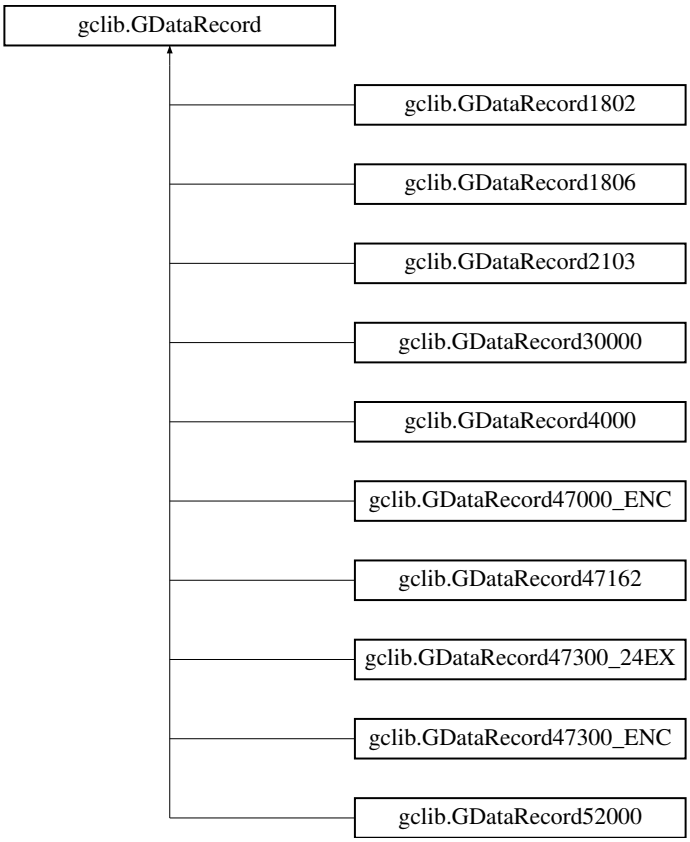
Definition at line 367 of file GclibJava.java.

The documentation for this interface was generated from the following file:

- GclibJava.java

14.8 gclib.GDataRecord Interface Reference

Inheritance diagram for gclib.GDataRecord:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

14.8.1 Detailed Description

Definition at line 905 of file gclib.cs.

14.8.2 Member Function Documentation

14.8.2.1 byte_array()

```
byte[] gclib.GDataRecord.byte_array ()
```

Returns the data record as a byte array and allows for access to individual bytes.
Implemented in gclib.GDataRecord1802, gclib.GDataRecord1806, gclib.GDataRecord2103, gclib.GDataRecord30000, gclib.GDataRecord4000, gclib.GDataRecord47000_ENC, gclib.GDataRecord47162, gclib.GDataRecord47300_24EX, gclib.GDataRecord47300_ENC, and gclib.GDataRecord52000.
The documentation for this interface was generated from the following file:

- gclib.cs

14.9 GDataRecord Union Reference

Data record union, containing all structs and a generic byte array accessor.
`#include <gclib_record.h>`

Public Attributes

- struct GDataRecord4000 dmc4000

  The DMC-4000 data record.
- struct GDataRecord4000 dmc4103

  The DMC-4103 data record.
- struct GDataRecord4000 dmc50000

  The DMC-50000 data record.
- struct GDataRecord52000 dmc52000

  The DMC-52000 data record.
- struct GDataRecord30000 dmc30000

  The DMC-30000 data record.
- struct GDataRecord2103 dmc2103

  The DMC-21x3 data record.
- struct GDataRecord1806 dmc1806

  The DMC-1806 data record.
- struct GDataRecord1802 dmc1802

  The DMC-1802 data record.
- struct GDataRecord47000_ENC rio47000

  The RIO-471xx & 472xx data record, including encoder support.
- struct GDataRecord47300_ENC rio47300

  The RIO 473xx data record, including encoder support.
- struct GDataRecord47300_24EX rio47300_24ex

  The RIO 473xx data record, with 24EXOUT/24EXIN support.
- struct GDataRecord47162 rio47162

  The RIO 47162 data record.
- unsigned char byte_array [GALILDATARECORDMAXLENGTH]

  Generic byte array for offsets.

14.9.1 Detailed Description

Data record union, containing all structs and a generic byte array accessor.
Named structs can be used to access typed data by name. Offsets into the data record can also be used by referencing the member `byte_array`.

```
//Getting the sample counter for the DMC-4000.
cout « data_record->dmc4000.sample_number « '\n'; //access by 4000 product
cout « * ((unsigned short *) (data_record->byte_array + 4)) « '\n'; //access by pointer arithmetic
```

Definition at line 1078 of file gclib_record.h.

14.9.2 Member Data Documentation

14.9.2.1 dmc4000

`struct GDataRecord4000 GDataRecord::dmc4000`
The DMC-4000 data record.
Definition at line 1080 of file gclib_record.h.

14.9.2.2 dmc4103

`struct GDataRecord4000 GDataRecord::dmc4103`
The DMC-4103 data record.
Definition at line 1081 of file gclib_record.h.

14.9.2.3 dmc50000

`struct GDataRecord4000 GDataRecord::dmc50000`
The DMC-50000 data record.
Definition at line 1082 of file gclib_record.h.

14.9.2.4 dmc52000

`struct GDataRecord52000 GDataRecord::dmc52000`
The DMC-52000 data record.
Definition at line 1084 of file gclib_record.h.

14.9.2.5 dmc30000

`struct GDataRecord30000 GDataRecord::dmc30000`
The DMC-30000 data record.
Definition at line 1086 of file gclib_record.h.

14.9.2.6 dmc2103

`struct GDataRecord2103 GDataRecord::dmc2103`
The DMC-21x3 data record.
Definition at line 1088 of file gclib_record.h.

14.9.2.7 dmc1806

`struct GDataRecord1806 GDataRecord::dmc1806`
The DMC-1806 data record.
Definition at line 1090 of file gclib_record.h.

14.9.2.8 dmc1802

`struct GDataRecord1802 GDataRecord::dmc1802`
The DMC-1802 data record.
Definition at line 1092 of file gclib_record.h.

14.9.2.9 rio47000

`struct GDataRecord47000_ENC GDataRecord::rio47000`
The RIO-471xx & 472xx data record, including encoder support.
Definition at line 1094 of file gclib_record.h.

14.9.2.10 rio47300

`struct GDataRecord47300_ENC GDataRecord::rio47300`
The RIO 473xx data record, including encoder support.
Definition at line 1095 of file gclib_record.h.

14.9.2.11 rio47300_24ex

`struct GDataRecord47300_24EX GDataRecord::rio47300_24ex`
The RIO 473xx data record, with 24EXOUT/24EXIN support.
Definition at line 1096 of file gclib_record.h.

14.9.2.12 rio47162

`struct GDataRecord47162 GDataRecord::rio47162`
The RIO 47162 data record.
Definition at line 1097 of file gclib_record.h.

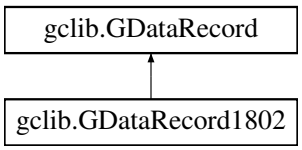
14.9.2.13 byte_array

`unsigned char GDataRecord::byte_array[GALILDATARECORDMAXLENGTH]`
Generic byte array for offsets.
Definition at line 1099 of file gclib_record.h.
The documentation for this union was generated from the following file:

- gclib_record.h

14.10 gclib.GDataRecord1802 Struct Reference

Data record struct for DMC-1802 controllers.
Inheritance diagram for gclib.GDataRecord1802:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB input_bank_2

  general input bank 2 (inputs 17-24).
- UB input_bank_3

  general input bank 3 (inputs 25-32).
- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).

- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- UB error_code

  error code.
- UB general_status

  general status
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

A axis motor position.

- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SW axis_a_torque

  A axis torque.
- UB axis_a_reserved_0

  Reserved.
- UB axis_a_reserved_1

  Reserved.
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SW axis_b_torque

  B axis torque.
- UB axis_b_reserved_0

  Reserved.
- UB axis_b_reserved_1

  Reserved.
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.

- SW axis_c_torque
  C axis torque.
- UB axis_c_reserved_0
  Reserved.
- UB axis_c_reserved_1
  Reserved.
- UW axis_d_status
  D axis status.
- UB axis_d_switches
  D axis switches.
- UB axis_d_stop_code
  D axis stop code.
- SL axis_d_reference_position
  D axis reference position.
- SL axis_d_motor_position
  D axis motor position.
- SL axis_d_position_error
  D axis position error.
- SL axis_d_aux_position
  D axis auxiliary position.
- SL axis_d_velocity
  D axis velocity.
- SW axis_d_torque
  D axis torque.
- UB axis_d_reserved_0
  Reserved.
- UB axis_d_reserved_1
  Reserved.

14.10.1 Detailed Description

Data record struct for DMC-1802 controllers.
The 18x2 Data record is the Same as 2103 except the following.

1. No header bytes. Software removes it from QR.
2. No analog in axis data.

Definition at line 1623 of file gclib.cs.

14.10.2 Member Function Documentation

14.10.2.1 byte_array()

```
byte[] gclib.GDataRecord1802.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1625 of file gclib.cs.

14.10.3 Member Data Documentation

14.10.3.1 sample_number

```
UW gclib.GDataRecord1802.sample_number
```

sample number.
Definition at line 1629 of file gclib.cs.

14.10.3.2 input_bank_0

`UB gclib.GDataRecord1802.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 1631 of file gclib.cs.

14.10.3.3 input_bank_1

`UB gclib.GDataRecord1802.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 1632 of file gclib.cs.

14.10.3.4 input_bank_2

`UB gclib.GDataRecord1802.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 1633 of file gclib.cs.

14.10.3.5 input_bank_3

`UB gclib.GDataRecord1802.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1634 of file gclib.cs.

14.10.3.6 input_bank_4

`UB gclib.GDataRecord1802.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1635 of file gclib.cs.

14.10.3.7 input_bank_5

`UB gclib.GDataRecord1802.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1636 of file gclib.cs.

14.10.3.8 input_bank_6

`UB gclib.GDataRecord1802.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1637 of file gclib.cs.

14.10.3.9 input_bank_7

`UB gclib.GDataRecord1802.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1638 of file gclib.cs.

14.10.3.10 input_bank_8

`UB gclib.GDataRecord1802.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1639 of file gclib.cs.

14.10.3.11 input_bank_9

`UB gclib.GDataRecord1802.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1640 of file gclib.cs.

14.10.3.12 output_bank_0

`UB gclib.GDataRecord1802.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1642 of file gclib.cs.

14.10.3.13 output_bank_1

`UB gclib.GDataRecord1802.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1643 of file gclib.cs.

14.10.3.14 output_bank_2

`UB gclib.GDataRecord1802.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1644 of file gclib.cs.

14.10.3.15 output_bank_3

`UB gclib.GDataRecord1802.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1645 of file gclib.cs.

14.10.3.16 output_bank_4

`UB gclib.GDataRecord1802.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1646 of file gclib.cs.

14.10.3.17 output_bank_5

`UB gclib.GDataRecord1802.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1647 of file gclib.cs.

14.10.3.18 output_bank_6

`UB gclib.GDataRecord1802.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1648 of file gclib.cs.

14.10.3.19 output_bank_7

`UB gclib.GDataRecord1802.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1649 of file gclib.cs.

14.10.3.20 output_bank_8

`UB gclib.GDataRecord1802.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1650 of file gclib.cs.

14.10.3.21 output_bank_9

`UB gclib.GDataRecord1802.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1651 of file gclib.cs.

14.10.3.22 error_code

`UB gclib.GDataRecord1802.error_code`
error code.
Definition at line 1653 of file gclib.cs.

14.10.3.23 general_status

`UB gclib.GDataRecord1802.general_status`
general status
Definition at line 1654 of file gclib.cs.

14.10.3.24 s_plane_segment_count

`UW gclib.GDataRecord1802.s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 1656 of file gclib.cs.

14.10.3.25 s_plane_move_status

`UW gclib.GDataRecord1802.s_plane_move_status`
coordinated move status for S plane.
Definition at line 1657 of file gclib.cs.

14.10.3.26 s_distance

`SL gclib.GDataRecord1802.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1658 of file gclib.cs.

14.10.3.27 t_plane_segment_count

`UW gclib.GDataRecord1802.t_plane_segment_count`
segment count of coordinated move for T plane.
Definition at line 1660 of file gclib.cs.

14.10.3.28 t_plane_move_status

`UW gclib.GDataRecord1802.t_plane_move_status`
Coordinated move status for T plane.
Definition at line 1661 of file gclib.cs.

14.10.3.29 t_distance

`SL gclib.GDataRecord1802.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 1662 of file gclib.cs.

14.10.3.30 axis_a_status

`UW gclib.GDataRecord1802.axis_a_status`
A axis status.
Definition at line 1664 of file gclib.cs.

14.10.3.31 axis_a_switches

`UB gclib.GDataRecord1802.axis_a_switches`
A axis switches.
Definition at line 1665 of file gclib.cs.

14.10.3.32 axis_a_stop_code

`UB gclib.GDataRecord1802.axis_a_stop_code`
A axis stop code.
Definition at line 1666 of file gclib.cs.

14.10.3.33 axis_a_reference_position

`SL gclib.GDataRecord1802.axis_a_reference_position`
A axis reference position.
Definition at line 1667 of file gclib.cs.

14.10.3.34 axis_a_motor_position

`SL gclib.GDataRecord1802.axis_a_motor_position`
A axis motor position.
Definition at line 1668 of file gclib.cs.

14.10.3.35 axis_a_position_error

`SL gclib.GDataRecord1802.axis_a_position_error`
A axis position error.
Definition at line 1669 of file gclib.cs.

14.10.3.36 axis_a_aux_position

`SL gclib.GDataRecord1802.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1670 of file gclib.cs.

14.10.3.37 axis_a_velocity

`SL gclib.GDataRecord1802.axis_a_velocity`
A axis velocity.
Definition at line 1671 of file gclib.cs.

14.10.3.38 axis_a_torque

`SW gclib.GDataRecord1802.axis_a_torque`
A axis torque.
Definition at line 1672 of file gclib.cs.

14.10.3.39 axis_a_reserved_0

`UB gclib.GDataRecord1802.axis_a_reserved_0`
Reserved.
Definition at line 1673 of file gclib.cs.

14.10.3.40 axis_a_reserved_1

`UB gclib.GDataRecord1802.axis_a_reserved_1`
Reserved.
Definition at line 1674 of file gclib.cs.

14.10.3.41 axis_b_status

`UW gclib.GDataRecord1802.axis_b_status`
B axis status.
Definition at line 1676 of file gclib.cs.

14.10.3.42 axis_b_switches

`UB gclib.GDataRecord1802.axis_b_switches`
B axis switches.
Definition at line 1677 of file gclib.cs.

14.10.3.43 axis_b_stop_code

`UB gclib.GDataRecord1802.axis_b_stop_code`
B axis stop code.
Definition at line 1678 of file gclib.cs.

14.10.3.44 axis_b_reference_position

`SL gclib.GDataRecord1802.axis_b_reference_position`
B axis reference position.
Definition at line 1679 of file gclib.cs.

14.10.3.45 axis_b_motor_position

`SL gclib.GDataRecord1802.axis_b_motor_position`
B axis motor position.
Definition at line 1680 of file gclib.cs.

14.10.3.46 axis_b_position_error

`SL gclib.GDataRecord1802.axis_b_position_error`
B axis position error.
Definition at line 1681 of file gclib.cs.

14.10.3.47 axis_b_aux_position

`SL gclib.GDataRecord1802.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1682 of file gclib.cs.

14.10.3.48 axis_b_velocity

`SL gclib.GDataRecord1802.axis_b_velocity`
B axis velocity.
Definition at line 1683 of file gclib.cs.

14.10.3.49 axis_b_torque

`SW gclib.GDataRecord1802.axis_b_torque`
B axis torque.
Definition at line 1684 of file gclib.cs.

14.10.3.50 axis_b_reserved_0

`UB gclib.GDataRecord1802.axis_b_reserved_0`
Reserved.
Definition at line 1685 of file gclib.cs.

14.10.3.51 axis_b_reserved_1

`UB gclib.GDataRecord1802.axis_b_reserved_1`
Reserved.
Definition at line 1686 of file gclib.cs.

14.10.3.52 axis_c_status

`UW gclib.GDataRecord1802.axis_c_status`
C axis status.
Definition at line 1688 of file gclib.cs.

14.10.3.53 axis_c_switches

`UB gclib.GDataRecord1802.axis_c_switches`
C axis switches.
Definition at line 1689 of file gclib.cs.

14.10.3.54 axis_c_stop_code

`UB gclib.GDataRecord1802.axis_c_stop_code`
C axis stop code.
Definition at line 1690 of file gclib.cs.

14.10.3.55 axis_c_reference_position

`SL gclib.GDataRecord1802.axis_c_reference_position`
C axis reference position.
Definition at line 1691 of file gclib.cs.

14.10.3.56 axis_c_motor_position

`SL gclib.GDataRecord1802.axis_c_motor_position`
C axis motor position.
Definition at line 1692 of file gclib.cs.

14.10.3.57 axis_c_position_error

`SL gclib.GDataRecord1802.axis_c_position_error`
C axis position error.
Definition at line 1693 of file gclib.cs.

14.10.3.58 axis_c_aux_position

`SL gclib.GDataRecord1802.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1694 of file gclib.cs.

14.10.3.59 axis_c_velocity

`SL gclib.GDataRecord1802.axis_c_velocity`
C axis velocity.
Definition at line 1695 of file gclib.cs.

14.10.3.60 axis_c_torque

`SW gclib.GDataRecord1802.axis_c_torque`
C axis torque.
Definition at line 1696 of file gclib.cs.

14.10.3.61 axis_c_reserved_0

`UB gclib.GDataRecord1802.axis_c_reserved_0`
Reserved.
Definition at line 1697 of file gclib.cs.

14.10.3.62 axis_c_reserved_1

`UB gclib.GDataRecord1802.axis_c_reserved_1`
Reserved.
Definition at line 1698 of file gclib.cs.

14.10.3.63 axis_d_status

`UW gclib.GDataRecord1802.axis_d_status`
D axis status.
Definition at line 1700 of file gclib.cs.

14.10.3.64 axis_d_switches

`UB gclib.GDataRecord1802.axis_d_switches`
D axis switches.
Definition at line 1701 of file gclib.cs.

14.10.3.65 axis_d_stop_code

`UB gclib.GDataRecord1802.axis_d_stop_code`
D axis stop code.
Definition at line 1702 of file gclib.cs.

14.10.3.66 axis_d_reference_position

`SL gclib.GDataRecord1802.axis_d_reference_position`
D axis reference position.
Definition at line 1703 of file gclib.cs.

14.10.3.67 axis_d_motor_position

`SL gclib.GDataRecord1802.axis_d_motor_position`
D axis motor position.
Definition at line 1704 of file gclib.cs.

14.10.3.68 axis_d_position_error

`SL gclib.GDataRecord1802.axis_d_position_error`
D axis position error.
Definition at line 1705 of file gclib.cs.

14.10.3.69 axis_d_aux_position

`SL gclib.GDataRecord1802.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1706 of file gclib.cs.

14.10.3.70 axis_d_velocity

`SL gclib.GDataRecord1802.axis_d_velocity`
D axis velocity.
Definition at line 1707 of file gclib.cs.

14.10.3.71 axis_d_torque

`SW gclib.GDataRecord1802.axis_d_torque`
D axis torque.
Definition at line 1708 of file gclib.cs.

14.10.3.72 axis_d_reserved_0

UB gclib.GDataRecord1802.axis_d_reserved_0
Reserved.
Definition at line 1709 of file gclib.cs.

14.10.3.73 axis_d_reserved_1

UB gclib.GDataRecord1802.axis_d_reserved_1
Reserved.
Definition at line 1710 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.11 GDataRecord1802 Struct Reference

#include <gclib_record.h>

Public Attributes

- UW sample_number
  sample number.
- UB input_bank_0
  general input bank 0 (inputs 1-8).
- UB input_bank_1
  general input bank 1 (inputs 9-16).
- UB input_bank_2
  general input bank 2 (inputs 17-24).
- UB input_bank_3
  general input bank 3 (inputs 25-32).
- UB input_bank_4
  general input bank 4 (inputs 33-40).
- UB input_bank_5
  general input bank 5 (inputs 41-48).
- UB input_bank_6
  general input bank 6 (inputs 49-56).
- UB input_bank_7
  general input bank 7 (inputs 57-64).
- UB input_bank_8
  general input bank 8 (inputs 65-72).
- UB input_bank_9
  general input bank 9 (inputs 73-80).
- UB output_bank_0
  general output bank 0 (outputs 1-8).
- UB output_bank_1
  general output bank 1 (outputs 9-16).
- UB output_bank_2
  general output bank 2 (outputs 17-24).
- UB output_bank_3
  general output bank 3 (outputs 25-32).
- UB output_bank_4
  general output bank 4 (outputs 33-40).
- UB output_bank_5

general output bank 5 (outputs 41-48).

- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- UB error_code

  error code.
- UB general_status

  general status
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SW axis_a_torque

  A axis torque.
- UB axis_a_reserved_0

  Reserved.
- UB axis_a_reserved_1

  Reserved.
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.

- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SW axis_b_torque

  B axis torque.
- UB axis_b_reserved_0

  Reserved.
- UB axis_b_reserved_1

  Reserved.
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SW axis_c_torque

  C axis torque.
- UB axis_c_reserved_0

  Reserved.
- UB axis_c_reserved_1

  Reserved.
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

D axis position error.

- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SW axis_d_torque

  D axis torque.
- UB axis_d_reserved_0

  Reserved.
- UB axis_d_reserved_1

  Reserved.

14.11.1 Detailed Description

Data record struct for DMC-1802 controllers.
The 18x2 Data record is the Same as 2103 except the following.

1. No header bytes. Software removes it from QR.
2. No analog in axis data.

Definition at line 723 of file gclib_record.h.

14.11.2 Member Data Documentation

14.11.2.1 sample_number

`UW GDataRecord1802::sample_number`
sample number.
Definition at line 728 of file gclib_record.h.

14.11.2.2 input_bank_0

`UB GDataRecord1802::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 730 of file gclib_record.h.

14.11.2.3 input_bank_1

`UB GDataRecord1802::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 731 of file gclib_record.h.

14.11.2.4 input_bank_2

`UB GDataRecord1802::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 732 of file gclib_record.h.

14.11.2.5 input_bank_3

`UB GDataRecord1802::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 733 of file gclib_record.h.

14.11.2.6 input_bank_4

`UB GDataRecord1802::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 734 of file gclib_record.h.

14.11.2.7 input_bank_5

`UB GDataRecord1802::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 735 of file gclib_record.h.

14.11.2.8 input_bank_6

`UB GDataRecord1802::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 736 of file gclib_record.h.

14.11.2.9 input_bank_7

`UB GDataRecord1802::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 737 of file gclib_record.h.

14.11.2.10 input_bank_8

`UB GDataRecord1802::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 738 of file gclib_record.h.

14.11.2.11 input_bank_9

`UB GDataRecord1802::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 739 of file gclib_record.h.

14.11.2.12 output_bank_0

`UB GDataRecord1802::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 741 of file gclib_record.h.

14.11.2.13 output_bank_1

`UB GDataRecord1802::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 742 of file gclib_record.h.

14.11.2.14 output_bank_2

`UB GDataRecord1802::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 743 of file gclib_record.h.

14.11.2.15 output_bank_3

`UB GDataRecord1802::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 744 of file gclib_record.h.

14.11.2.16 output_bank_4

`UB GDataRecord1802::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 745 of file gclib_record.h.

14.11.2.17 output_bank_5

UB GDataRecord1802::output_bank_5
general output bank 5 (outputs 41-48).
Definition at line 746 of file gclib_record.h.

14.11.2.18 output_bank_6

UB GDataRecord1802::output_bank_6
general output bank 6 (outputs 49-56).
Definition at line 747 of file gclib_record.h.

14.11.2.19 output_bank_7

UB GDataRecord1802::output_bank_7
general output bank 7 (outputs 57-64).
Definition at line 748 of file gclib_record.h.

14.11.2.20 output_bank_8

UB GDataRecord1802::output_bank_8
general output bank 8 (outputs 65-72).
Definition at line 749 of file gclib_record.h.

14.11.2.21 output_bank_9

UB GDataRecord1802::output_bank_9
general output bank 9 (outputs 73-80).
Definition at line 750 of file gclib_record.h.

14.11.2.22 error_code

UB GDataRecord1802::error_code
error code.
Definition at line 752 of file gclib_record.h.

14.11.2.23 general_status

UB GDataRecord1802::general_status
general status
Definition at line 753 of file gclib_record.h.

14.11.2.24 s_plane_segment_count

UW GDataRecord1802::s_plane_segment_count
segment count of coordinated move for S plane.
Definition at line 755 of file gclib_record.h.

14.11.2.25 s_plane_move_status

UW GDataRecord1802::s_plane_move_status
coordinated move status for S plane.
Definition at line 756 of file gclib_record.h.

14.11.2.26 s_distance

SL GDataRecord1802::s_distance
distance traveled in coordinated move for S plane.
Definition at line 757 of file gclib_record.h.

14.11.2.27 t_plane_segment_count

UW GDataRecord1802::t_plane_segment_count
segment count of coordinated move for T plane.
Definition at line 759 of file gclib_record.h.

14.11.2.28 t_plane_move_status

UW GDataRecord1802::t_plane_move_status
Coordinated move status for T plane.
Definition at line 760 of file gclib_record.h.

14.11.2.29 t_distance

SL GDataRecord1802::t_distance
distance traveled in coordinated move for T plane.
Definition at line 761 of file gclib_record.h.

14.11.2.30 axis_a_status

UW GDataRecord1802::axis_a_status
A axis status.
Definition at line 763 of file gclib_record.h.

14.11.2.31 axis_a_switches

UB GDataRecord1802::axis_a_switches
A axis switches.
Definition at line 764 of file gclib_record.h.

14.11.2.32 axis_a_stop_code

UB GDataRecord1802::axis_a_stop_code
A axis stop code.
Definition at line 765 of file gclib_record.h.

14.11.2.33 axis_a_reference_position

SL GDataRecord1802::axis_a_reference_position
A axis reference position.
Definition at line 766 of file gclib_record.h.

14.11.2.34 axis_a_motor_position

SL GDataRecord1802::axis_a_motor_position
A axis motor position.
Definition at line 767 of file gclib_record.h.

14.11.2.35 axis_a_position_error

SL GDataRecord1802::axis_a_position_error
A axis position error.
Definition at line 768 of file gclib_record.h.

14.11.2.36 axis_a_aux_position

SL GDataRecord1802::axis_a_aux_position
A axis auxiliary position.
Definition at line 769 of file gclib_record.h.

14.11.2.37 axis_a_velocity

SL GDataRecord1802::axis_a_velocity
A axis velocity.
Definition at line 770 of file gclib_record.h.

14.11.2.38 axis_a_torque

SW GDataRecord1802::axis_a_torque
A axis torque.
Definition at line 771 of file gclib_record.h.

14.11.2.39 axis_a_reserved_0

UB GDataRecord1802::axis_a_reserved_0
Reserved.
Definition at line 772 of file gclib_record.h.

14.11.2.40 axis_a_reserved_1

UB GDataRecord1802::axis_a_reserved_1
Reserved.
Definition at line 773 of file gclib_record.h.

14.11.2.41 axis_b_status

UW GDataRecord1802::axis_b_status
B axis status.
Definition at line 775 of file gclib_record.h.

14.11.2.42 axis_b_switches

UB GDataRecord1802::axis_b_switches
B axis switches.
Definition at line 776 of file gclib_record.h.

14.11.2.43 axis_b_stop_code

UB GDataRecord1802::axis_b_stop_code
B axis stop code.
Definition at line 777 of file gclib_record.h.

14.11.2.44 axis_b_reference_position

SL GDataRecord1802::axis_b_reference_position
B axis reference position.
Definition at line 778 of file gclib_record.h.

14.11.2.45 axis_b_motor_position

SL GDataRecord1802::axis_b_motor_position
B axis motor position.
Definition at line 779 of file gclib_record.h.

14.11.2.46 axis_b_position_error

SL GDataRecord1802::axis_b_position_error
B axis position error.
Definition at line 780 of file gclib_record.h.

14.11.2.47 axis_b_aux_position

SL GDataRecord1802::axis_b_aux_position
B axis auxiliary position.
Definition at line 781 of file gclib_record.h.

14.11.2.48 axis_b_velocity

SL GDataRecord1802::axis_b_velocity
B axis velocity.
Definition at line 782 of file gclib_record.h.

14.11.2.49 axis_b_torque

SW GDataRecord1802::axis_b_torque
B axis torque.
Definition at line 783 of file gclib_record.h.

14.11.2.50 axis_b_reserved_0

UB GDataRecord1802::axis_b_reserved_0
Reserved.
Definition at line 784 of file gclib_record.h.

14.11.2.51 axis_b_reserved_1

UB GDataRecord1802::axis_b_reserved_1
Reserved.
Definition at line 785 of file gclib_record.h.

14.11.2.52 axis_c_status

UW GDataRecord1802::axis_c_status
C axis status.
Definition at line 787 of file gclib_record.h.

14.11.2.53 axis_c_switches

UB GDataRecord1802::axis_c_switches
C axis switches.
Definition at line 788 of file gclib_record.h.

14.11.2.54 axis_c_stop_code

UB GDataRecord1802::axis_c_stop_code
C axis stop code.
Definition at line 789 of file gclib_record.h.

14.11.2.55 axis_c_reference_position

SL GDataRecord1802::axis_c_reference_position
C axis reference position.
Definition at line 790 of file gclib_record.h.

14.11.2.56 axis_c_motor_position

SL GDataRecord1802::axis_c_motor_position
C axis motor position.
Definition at line 791 of file gclib_record.h.

14.11.2.57 axis_c_position_error

SL GDataRecord1802::axis_c_position_error
C axis position error.
Definition at line 792 of file gclib_record.h.

14.11.2.58 axis_c_aux_position

SL GDataRecord1802::axis_c_aux_position
C axis auxiliary position.
Definition at line 793 of file gclib_record.h.

14.11.2.59 axis_c_velocity

SL GDataRecord1802::axis_c_velocity
C axis velocity.
Definition at line 794 of file gclib_record.h.

14.11.2.60 axis_c_torque

SW GDataRecord1802::axis_c_torque
C axis torque.
Definition at line 795 of file gclib_record.h.

14.11.2.61 axis_c_reserved_0

UB GDataRecord1802::axis_c_reserved_0
Reserved.
Definition at line 796 of file gclib_record.h.

14.11.2.62 axis_c_reserved_1

UB GDataRecord1802::axis_c_reserved_1
Reserved.
Definition at line 797 of file gclib_record.h.

14.11.2.63 axis_d_status

UW GDataRecord1802::axis_d_status
D axis status.
Definition at line 799 of file gclib_record.h.

14.11.2.64 axis_d_switches

UB GDataRecord1802::axis_d_switches
D axis switches.
Definition at line 800 of file gclib_record.h.

14.11.2.65 axis_d_stop_code

UB GDataRecord1802::axis_d_stop_code
D axis stop code.
Definition at line 801 of file gclib_record.h.

14.11.2.66 axis_d_reference_position

SL GDataRecord1802::axis_d_reference_position
D axis reference position.
Definition at line 802 of file gclib_record.h.

14.11.2.67 axis_d_motor_position

`SL GDataRecord1802::axis_d_motor_position`
D axis motor position.
Definition at line 803 of file gclib_record.h.

14.11.2.68 axis_d_position_error

`SL GDataRecord1802::axis_d_position_error`
D axis position error.
Definition at line 804 of file gclib_record.h.

14.11.2.69 axis_d_aux_position

`SL GDataRecord1802::axis_d_aux_position`
D axis auxiliary position.
Definition at line 805 of file gclib_record.h.

14.11.2.70 axis_d_velocity

`SL GDataRecord1802::axis_d_velocity`
D axis velocity.
Definition at line 806 of file gclib_record.h.

14.11.2.71 axis_d_torque

`SW GDataRecord1802::axis_d_torque`
D axis torque.
Definition at line 807 of file gclib_record.h.

14.11.2.72 axis_d_reserved_0

`UB GDataRecord1802::axis_d_reserved_0`
Reserved.
Definition at line 808 of file gclib_record.h.

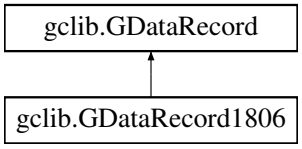
14.11.2.73 axis_d_reserved_1

`UB GDataRecord1802::axis_d_reserved_1`
Reserved.
Definition at line 809 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.12 gclib.GDataRecord1806 Struct Reference

Data record struct for DMC-1806 controller.
Inheritance diagram for gclib.GDataRecord1806:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB input_bank_2

  general input bank 2 (inputs 17-24).
- UB input_bank_3

  general input bank 3 (inputs 25-32).
- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).
- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- SW reserved_0

  Reserved.
- SW reserved_2

Reserved.

- SW reserved_4

  Reserved.
- SW reserved_6

  Reserved.
- SW reserved_8

  Reserved.
- SW reserved_10

  Reserved.
- SW reserved_12

  Reserved.
- SW reserved_14

  Reserved.
- UB reserved_16

  Reserved.
- UB reserved_17

  Reserved.
- UB reserved_18

  Reserved.
- UB reserved_19

  Reserved.
- UB reserved_20

  Reserved.
- UB reserved_21

  Reserved.
- UB reserved_22

  Reserved.
- UB reserved_23

  Reserved.
- UB error_code

  error code.
- UB thread_status

  thread status.
- UL reserved_24

  Reserved.
- UL contour_segment_count

  Segment Count for Contour Mode.
- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.

- SL t_distance

  distance traveled in coordinated move for T plane.
- UW t_plane_buffer_available

  Buffer space remaining, T Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SL axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UB axis_a_reserved_0

  Reserved.
- UB axis_a_reserved_1

  Reserved.
- SL axis_a_variable

  A User-defined variable (ZA).
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SL axis_b_torque

  B axis torque.
- UW axis_b_analog_in

  B axis analog input.
- UB axis_b_reserved_0

Reserved.

- UB axis_b_reserved_1

  Reserved.
- SL axis_b_variable

  B User-defined variable (ZA).
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SL axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UB axis_c_reserved_0

  Reserved.
- UB axis_c_reserved_1

  Reserved.
- SL axis_c_variable

  C User-defined variable (ZA).
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SL axis_d_torque

  D axis torque.
- UW axis_d_analog_in

  D axis analog input.

- UB axis_d_reserved_0

  Reserved.
- UB axis_d_reserved_1

  Reserved.
- SL axis_d_variable

  D User-defined variable (ZA).
- UW axis_e_status

  E axis status.
- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

  E axis motor position.
- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SL axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UB axis_e_reserved_0

  Reserved.
- UB axis_e_reserved_1

  Reserved.
- SL axis_e_variable

  E User-defined variable (ZA).
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

  F axis stop code.
- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.
- SL axis_f_velocity

  F axis velocity.
- SL axis_f_torque

  F axis torque.
- UW axis_f_analog_in

F axis analog input.

- UB axis_f_reserved_0

  Reserved.
- UB axis_f_reserved_1

  Reserved.
- SL axis_f_variable

  F User-defined variable (ZA).
- UW axis_g_status

  G axis status.
- UB axis_g_switches

  G axis switches.
- UB axis_g_stop_code

  G axis stop code.
- SL axis_g_reference_position

  G axis reference position.
- SL axis_g_motor_position

  G axis motor position.
- SL axis_g_position_error

  G axis position error.
- SL axis_g_aux_position

  G axis auxiliary position.
- SL axis_g_velocity

  G axis velocity.
- SL axis_g_torque

  G axis torque.
- UW axis_g_analog_in

  G axis analog input.
- UB axis_g_reserved_0

  Reserved.
- UB axis_g_reserved_1

  Reserved.
- SL axis_g_variable

  G User-defined variable (ZA).
- UW axis_h_status

  H axis status.
- UB axis_h_switches

  H axis switches.
- UB axis_h_stop_code

  H axis stop code.
- SL axis_h_reference_position

  H axis reference position.
- SL axis_h_motor_position

  H axis motor position.
- SL axis_h_position_error

  H axis position error.
- SL axis_h_aux_position

  H axis auxiliary position.
- SL axis_h_velocity

  H axis velocity.
- SL axis_h_torque

  H axis torque.

- UW axis_h_analog_in

  H axis analog input.
- UB axis_h_reserved_0

  Reserved.
- UB axis_h_reserved_1

  Reserved.
- SL axis_h_variable

  H User-defined variable (ZA).

14.12.1 Detailed Description

Data record struct for DMC-1806 controller.
The 18x6 Data record is the same as 4000 except the following.

1. No header bytes. Firmware strips it in DR. Software removes it from QR.
2. No Ethernet status (bytes 42-49).
3. No amplfifier status (bytes 52-55).
4. No axis-specific hall input status.

Definition at line 1302 of file gclib.cs.

14.12.2 Member Function Documentation

14.12.2.1 byte_array()

```
byte[] gclib.GDataRecord1806.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1304 of file gclib.cs.

14.12.3 Member Data Documentation

14.12.3.1 sample_number

```
UW gclib.GDataRecord1806.sample_number
```

sample number.
Definition at line 1307 of file gclib.cs.

14.12.3.2 input_bank_0

```
UB gclib.GDataRecord1806.input_bank_0
```

general input bank 0 (inputs 1-8).
Definition at line 1309 of file gclib.cs.

14.12.3.3 input_bank_1

```
UB gclib.GDataRecord1806.input_bank_1
```

general input bank 1 (inputs 9-16).
Definition at line 1310 of file gclib.cs.

14.12.3.4 input_bank_2

```
UB gclib.GDataRecord1806.input_bank_2
```

general input bank 2 (inputs 17-24).
Definition at line 1311 of file gclib.cs.

14.12.3.5 input_bank_3

`UB gclib.GDataRecord1806.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1312 of file gclib.cs.

14.12.3.6 input_bank_4

`UB gclib.GDataRecord1806.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1313 of file gclib.cs.

14.12.3.7 input_bank_5

`UB gclib.GDataRecord1806.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1314 of file gclib.cs.

14.12.3.8 input_bank_6

`UB gclib.GDataRecord1806.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1315 of file gclib.cs.

14.12.3.9 input_bank_7

`UB gclib.GDataRecord1806.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1316 of file gclib.cs.

14.12.3.10 input_bank_8

`UB gclib.GDataRecord1806.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1317 of file gclib.cs.

14.12.3.11 input_bank_9

`UB gclib.GDataRecord1806.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1318 of file gclib.cs.

14.12.3.12 output_bank_0

`UB gclib.GDataRecord1806.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1320 of file gclib.cs.

14.12.3.13 output_bank_1

`UB gclib.GDataRecord1806.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1321 of file gclib.cs.

14.12.3.14 output_bank_2

`UB gclib.GDataRecord1806.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1322 of file gclib.cs.

14.12.3.15 output_bank_3

`UB gclib.GDataRecord1806.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1323 of file gclib.cs.

14.12.3.16 output_bank_4

`UB gclib.GDataRecord1806.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1324 of file gclib.cs.

14.12.3.17 output_bank_5

`UB gclib.GDataRecord1806.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1325 of file gclib.cs.

14.12.3.18 output_bank_6

`UB gclib.GDataRecord1806.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1326 of file gclib.cs.

14.12.3.19 output_bank_7

`UB gclib.GDataRecord1806.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1327 of file gclib.cs.

14.12.3.20 output_bank_8

`UB gclib.GDataRecord1806.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1328 of file gclib.cs.

14.12.3.21 output_bank_9

`UB gclib.GDataRecord1806.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1329 of file gclib.cs.

14.12.3.22 reserved_0

`SW gclib.GDataRecord1806.reserved_0`
Reserved.
Definition at line 1331 of file gclib.cs.

14.12.3.23 reserved_2

`SW gclib.GDataRecord1806.reserved_2`
Reserved.
Definition at line 1332 of file gclib.cs.

14.12.3.24 reserved_4

`SW gclib.GDataRecord1806.reserved_4`
Reserved.
Definition at line 1333 of file gclib.cs.

14.12.3.25 reserved_6

`SW gclib.GDataRecord1806.reserved_6`
Reserved.
Definition at line 1334 of file gclib.cs.

14.12.3.26 reserved_8

`SW gclib.GDataRecord1806.reserved_8`
Reserved.
Definition at line 1335 of file gclib.cs.

14.12.3.27 reserved_10

`SW gclib.GDataRecord1806.reserved_10`
Reserved.
Definition at line 1336 of file gclib.cs.

14.12.3.28 reserved_12

`SW gclib.GDataRecord1806.reserved_12`
Reserved.
Definition at line 1337 of file gclib.cs.

14.12.3.29 reserved_14

`SW gclib.GDataRecord1806.reserved_14`
Reserved.
Definition at line 1338 of file gclib.cs.

14.12.3.30 reserved_16

`UB gclib.GDataRecord1806.reserved_16`
Reserved.
Definition at line 1340 of file gclib.cs.

14.12.3.31 reserved_17

`UB gclib.GDataRecord1806.reserved_17`
Reserved.
Definition at line 1341 of file gclib.cs.

14.12.3.32 reserved_18

`UB gclib.GDataRecord1806.reserved_18`
Reserved.
Definition at line 1342 of file gclib.cs.

14.12.3.33 reserved_19

`UB gclib.GDataRecord1806.reserved_19`
Reserved.
Definition at line 1343 of file gclib.cs.

14.12.3.34 reserved_20

`UB gclib.GDataRecord1806.reserved_20`
Reserved.
Definition at line 1344 of file gclib.cs.

14.12.3.35 reserved_21

`UB gclib.GDataRecord1806.reserved_21`
Reserved.
Definition at line 1345 of file gclib.cs.

14.12.3.36 reserved_22

`UB gclib.GDataRecord1806.reserved_22`
Reserved.
Definition at line 1346 of file gclib.cs.

14.12.3.37 reserved_23

`UB gclib.GDataRecord1806.reserved_23`
Reserved.
Definition at line 1347 of file gclib.cs.

14.12.3.38 error_code

`UB gclib.GDataRecord1806.error_code`
error code.
Definition at line 1349 of file gclib.cs.

14.12.3.39 thread_status

`UB gclib.GDataRecord1806.thread_status`
thread status.
Definition at line 1350 of file gclib.cs.

14.12.3.40 reserved_24

`UL gclib.GDataRecord1806.reserved_24`
Reserved.
Definition at line 1351 of file gclib.cs.

14.12.3.41 contour_segment_count

`UL gclib.GDataRecord1806.contour_segment_count`
Segment Count for Contour Mode.
Definition at line 1353 of file gclib.cs.

14.12.3.42 contour_buffer_available

`UW gclib.GDataRecord1806.contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 1354 of file gclib.cs.

14.12.3.43 s_plane_segment_count

`UW gclib.GDataRecord1806.s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 1356 of file gclib.cs.

14.12.3.44 s_plane_move_status

`UW gclib.GDataRecord1806.s_plane_move_status`
coordinated move status for S plane.
Definition at line 1357 of file gclib.cs.

14.12.3.45 s_distance

SL gclib.GDataRecord1806.s_distance
distance traveled in coordinated move for S plane.
Definition at line 1358 of file gclib.cs.

14.12.3.46 s_plane_buffer_available

UW gclib.GDataRecord1806.s_plane_buffer_available
Buffer space remaining, S Plane.
Definition at line 1359 of file gclib.cs.

14.12.3.47 t_plane_segment_count

UW gclib.GDataRecord1806.t_plane_segment_count
segment count of coordinated move for T plane.
Definition at line 1361 of file gclib.cs.

14.12.3.48 t_plane_move_status

UW gclib.GDataRecord1806.t_plane_move_status
Coordinated move status for T plane.
Definition at line 1362 of file gclib.cs.

14.12.3.49 t_distance

SL gclib.GDataRecord1806.t_distance
distance traveled in coordinated move for T plane.
Definition at line 1363 of file gclib.cs.

14.12.3.50 t_plane_buffer_available

UW gclib.GDataRecord1806.t_plane_buffer_available
Buffer space remaining, T Plane.
Definition at line 1364 of file gclib.cs.

14.12.3.51 axis_a_status

UW gclib.GDataRecord1806.axis_a_status
A axis status.
Definition at line 1366 of file gclib.cs.

14.12.3.52 axis_a_switches

UB gclib.GDataRecord1806.axis_a_switches
A axis switches.
Definition at line 1367 of file gclib.cs.

14.12.3.53 axis_a_stop_code

UB gclib.GDataRecord1806.axis_a_stop_code
A axis stop code.
Definition at line 1368 of file gclib.cs.

14.12.3.54 axis_a_reference_position

SL gclib.GDataRecord1806.axis_a_reference_position
A axis reference position.
Definition at line 1369 of file gclib.cs.

14.12.3.55 axis_a_motor_position

`SL gclib.GDataRecord1806.axis_a_motor_position`
A axis motor position.
Definition at line 1370 of file gclib.cs.

14.12.3.56 axis_a_position_error

`SL gclib.GDataRecord1806.axis_a_position_error`
A axis position error.
Definition at line 1371 of file gclib.cs.

14.12.3.57 axis_a_aux_position

`SL gclib.GDataRecord1806.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1372 of file gclib.cs.

14.12.3.58 axis_a_velocity

`SL gclib.GDataRecord1806.axis_a_velocity`
A axis velocity.
Definition at line 1373 of file gclib.cs.

14.12.3.59 axis_a_torque

`SL gclib.GDataRecord1806.axis_a_torque`
A axis torque.
Definition at line 1374 of file gclib.cs.

14.12.3.60 axis_a_analog_in

`UW gclib.GDataRecord1806.axis_a_analog_in`
A axis analog input.
Definition at line 1375 of file gclib.cs.

14.12.3.61 axis_a_reserved_0

`UB gclib.GDataRecord1806.axis_a_reserved_0`
Reserved.
Definition at line 1376 of file gclib.cs.

14.12.3.62 axis_a_reserved_1

`UB gclib.GDataRecord1806.axis_a_reserved_1`
Reserved.
Definition at line 1377 of file gclib.cs.

14.12.3.63 axis_a_variable

`SL gclib.GDataRecord1806.axis_a_variable`
A User-defined variable (ZA).
Definition at line 1378 of file gclib.cs.

14.12.3.64 axis_b_status

`UW gclib.GDataRecord1806.axis_b_status`
B axis status.
Definition at line 1380 of file gclib.cs.

14.12.3.65 axis_b_switches

`UB gclib.GDataRecord1806.axis_b_switches`
B axis switches.
Definition at line 1381 of file gclib.cs.

14.12.3.66 axis_b_stop_code

`UB gclib.GDataRecord1806.axis_b_stop_code`
B axis stop code.
Definition at line 1382 of file gclib.cs.

14.12.3.67 axis_b_reference_position

`SL gclib.GDataRecord1806.axis_b_reference_position`
B axis reference position.
Definition at line 1383 of file gclib.cs.

14.12.3.68 axis_b_motor_position

`SL gclib.GDataRecord1806.axis_b_motor_position`
B axis motor position.
Definition at line 1384 of file gclib.cs.

14.12.3.69 axis_b_position_error

`SL gclib.GDataRecord1806.axis_b_position_error`
B axis position error.
Definition at line 1385 of file gclib.cs.

14.12.3.70 axis_b_aux_position

`SL gclib.GDataRecord1806.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1386 of file gclib.cs.

14.12.3.71 axis_b_velocity

`SL gclib.GDataRecord1806.axis_b_velocity`
B axis velocity.
Definition at line 1387 of file gclib.cs.

14.12.3.72 axis_b_torque

`SL gclib.GDataRecord1806.axis_b_torque`
B axis torque.
Definition at line 1388 of file gclib.cs.

14.12.3.73 axis_b_analog_in

`UW gclib.GDataRecord1806.axis_b_analog_in`
B axis analog input.
Definition at line 1389 of file gclib.cs.

14.12.3.74 axis_b_reserved_0

`UB gclib.GDataRecord1806.axis_b_reserved_0`
Reserved.
Definition at line 1390 of file gclib.cs.

14.12.3.75 axis_b_reserved_1

`UB gclib.GDataRecord1806.axis_b_reserved_1`
Reserved.
Definition at line 1391 of file gclib.cs.

14.12.3.76 axis_b_variable

`SL gclib.GDataRecord1806.axis_b_variable`
B User-defined variable (ZA).
Definition at line 1392 of file gclib.cs.

14.12.3.77 axis_c_status

`UW gclib.GDataRecord1806.axis_c_status`
C axis status.
Definition at line 1394 of file gclib.cs.

14.12.3.78 axis_c_switches

`UB gclib.GDataRecord1806.axis_c_switches`
C axis switches.
Definition at line 1395 of file gclib.cs.

14.12.3.79 axis_c_stop_code

`UB gclib.GDataRecord1806.axis_c_stop_code`
C axis stop code.
Definition at line 1396 of file gclib.cs.

14.12.3.80 axis_c_reference_position

`SL gclib.GDataRecord1806.axis_c_reference_position`
C axis reference position.
Definition at line 1397 of file gclib.cs.

14.12.3.81 axis_c_motor_position

`SL gclib.GDataRecord1806.axis_c_motor_position`
C axis motor position.
Definition at line 1398 of file gclib.cs.

14.12.3.82 axis_c_position_error

`SL gclib.GDataRecord1806.axis_c_position_error`
C axis position error.
Definition at line 1399 of file gclib.cs.

14.12.3.83 axis_c_aux_position

`SL gclib.GDataRecord1806.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1400 of file gclib.cs.

14.12.3.84 axis_c_velocity

`SL gclib.GDataRecord1806.axis_c_velocity`
C axis velocity.
Definition at line 1401 of file gclib.cs.

14.12.3.85 axis_c_torque

`SL gclib.GDataRecord1806.axis_c_torque`
C axis torque.
Definition at line 1402 of file gclib.cs.

14.12.3.86 axis_c_analog_in

`UW gclib.GDataRecord1806.axis_c_analog_in`
C axis analog input.
Definition at line 1403 of file gclib.cs.

14.12.3.87 axis_c_reserved_0

`UB gclib.GDataRecord1806.axis_c_reserved_0`
Reserved.
Definition at line 1404 of file gclib.cs.

14.12.3.88 axis_c_reserved_1

`UB gclib.GDataRecord1806.axis_c_reserved_1`
Reserved.
Definition at line 1405 of file gclib.cs.

14.12.3.89 axis_c_variable

`SL gclib.GDataRecord1806.axis_c_variable`
C User-defined variable (ZA).
Definition at line 1406 of file gclib.cs.

14.12.3.90 axis_d_status

`UW gclib.GDataRecord1806.axis_d_status`
D axis status.
Definition at line 1408 of file gclib.cs.

14.12.3.91 axis_d_switches

`UB gclib.GDataRecord1806.axis_d_switches`
D axis switches.
Definition at line 1409 of file gclib.cs.

14.12.3.92 axis_d_stop_code

`UB gclib.GDataRecord1806.axis_d_stop_code`
D axis stop code.
Definition at line 1410 of file gclib.cs.

14.12.3.93 axis_d_reference_position

`SL gclib.GDataRecord1806.axis_d_reference_position`
D axis reference position.
Definition at line 1411 of file gclib.cs.

14.12.3.94 axis_d_motor_position

`SL gclib.GDataRecord1806.axis_d_motor_position`
D axis motor position.
Definition at line 1412 of file gclib.cs.

14.12.3.95 axis_d_position_error

SL gclib.GDataRecord1806.axis_d_position_error
D axis position error.
Definition at line 1413 of file gclib.cs.

14.12.3.96 axis_d_aux_position

SL gclib.GDataRecord1806.axis_d_aux_position
D axis auxiliary position.
Definition at line 1414 of file gclib.cs.

14.12.3.97 axis_d_velocity

SL gclib.GDataRecord1806.axis_d_velocity
D axis velocity.
Definition at line 1415 of file gclib.cs.

14.12.3.98 axis_d_torque

SL gclib.GDataRecord1806.axis_d_torque
D axis torque.
Definition at line 1416 of file gclib.cs.

14.12.3.99 axis_d_analog_in

UW gclib.GDataRecord1806.axis_d_analog_in
D axis analog input.
Definition at line 1417 of file gclib.cs.

14.12.3.100 axis_d_reserved_0

UB gclib.GDataRecord1806.axis_d_reserved_0
Reserved.
Definition at line 1418 of file gclib.cs.

14.12.3.101 axis_d_reserved_1

UB gclib.GDataRecord1806.axis_d_reserved_1
Reserved.
Definition at line 1419 of file gclib.cs.

14.12.3.102 axis_d_variable

SL gclib.GDataRecord1806.axis_d_variable
D User-defined variable (ZA).
Definition at line 1420 of file gclib.cs.

14.12.3.103 axis_e_status

UW gclib.GDataRecord1806.axis_e_status
E axis status.
Definition at line 1422 of file gclib.cs.

14.12.3.104 axis_e_switches

UB gclib.GDataRecord1806.axis_e_switches
E axis switches.
Definition at line 1423 of file gclib.cs.

14.12.3.105 axis_e_stop_code

`UB gclib.GDataRecord1806.axis_e_stop_code`
E axis stop code.
Definition at line 1424 of file gclib.cs.

14.12.3.106 axis_e_reference_position

`SL gclib.GDataRecord1806.axis_e_reference_position`
E axis reference position.
Definition at line 1425 of file gclib.cs.

14.12.3.107 axis_e_motor_position

`SL gclib.GDataRecord1806.axis_e_motor_position`
E axis motor position.
Definition at line 1426 of file gclib.cs.

14.12.3.108 axis_e_position_error

`SL gclib.GDataRecord1806.axis_e_position_error`
E axis position error.
Definition at line 1427 of file gclib.cs.

14.12.3.109 axis_e_aux_position

`SL gclib.GDataRecord1806.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1428 of file gclib.cs.

14.12.3.110 axis_e_velocity

`SL gclib.GDataRecord1806.axis_e_velocity`
E axis velocity.
Definition at line 1429 of file gclib.cs.

14.12.3.111 axis_e_torque

`SL gclib.GDataRecord1806.axis_e_torque`
E axis torque.
Definition at line 1430 of file gclib.cs.

14.12.3.112 axis_e_analog_in

`UW gclib.GDataRecord1806.axis_e_analog_in`
E axis analog input.
Definition at line 1431 of file gclib.cs.

14.12.3.113 axis_e_reserved_0

`UB gclib.GDataRecord1806.axis_e_reserved_0`
Reserved.
Definition at line 1432 of file gclib.cs.

14.12.3.114 axis_e_reserved_1

`UB gclib.GDataRecord1806.axis_e_reserved_1`
Reserved.
Definition at line 1433 of file gclib.cs.

14.12.3.115 axis_e_variable

SL gclib.GDataRecord1806.axis_e_variable
E User-defined variable (ZA).
Definition at line 1434 of file gclib.cs.

14.12.3.116 axis_f_status

UW gclib.GDataRecord1806.axis_f_status
F axis status.
Definition at line 1436 of file gclib.cs.

14.12.3.117 axis_f_switches

UB gclib.GDataRecord1806.axis_f_switches
F axis switches.
Definition at line 1437 of file gclib.cs.

14.12.3.118 axis_f_stop_code

UB gclib.GDataRecord1806.axis_f_stop_code
F axis stop code.
Definition at line 1438 of file gclib.cs.

14.12.3.119 axis_f_reference_position

SL gclib.GDataRecord1806.axis_f_reference_position
F axis reference position.
Definition at line 1439 of file gclib.cs.

14.12.3.120 axis_f_motor_position

SL gclib.GDataRecord1806.axis_f_motor_position
F axis motor position.
Definition at line 1440 of file gclib.cs.

14.12.3.121 axis_f_position_error

SL gclib.GDataRecord1806.axis_f_position_error
F axis position error.
Definition at line 1441 of file gclib.cs.

14.12.3.122 axis_f_aux_position

SL gclib.GDataRecord1806.axis_f_aux_position
F axis auxiliary position.
Definition at line 1442 of file gclib.cs.

14.12.3.123 axis_f_velocity

SL gclib.GDataRecord1806.axis_f_velocity
F axis velocity.
Definition at line 1443 of file gclib.cs.

14.12.3.124 axis_f_torque

SL gclib.GDataRecord1806.axis_f_torque
F axis torque.
Definition at line 1444 of file gclib.cs.

14.12.3.125 axis_f_analog_in

`UW gclib.GDataRecord1806.axis_f_analog_in`
F axis analog input.
Definition at line 1445 of file gclib.cs.

14.12.3.126 axis_f_reserved_0

`UB gclib.GDataRecord1806.axis_f_reserved_0`
Reserved.
Definition at line 1446 of file gclib.cs.

14.12.3.127 axis_f_reserved_1

`UB gclib.GDataRecord1806.axis_f_reserved_1`
Reserved.
Definition at line 1447 of file gclib.cs.

14.12.3.128 axis_f_variable

`SL gclib.GDataRecord1806.axis_f_variable`
F User-defined variable (ZA).
Definition at line 1448 of file gclib.cs.

14.12.3.129 axis_g_status

`UW gclib.GDataRecord1806.axis_g_status`
G axis status.
Definition at line 1450 of file gclib.cs.

14.12.3.130 axis_g_switches

`UB gclib.GDataRecord1806.axis_g_switches`
G axis switches.
Definition at line 1451 of file gclib.cs.

14.12.3.131 axis_g_stop_code

`UB gclib.GDataRecord1806.axis_g_stop_code`
G axis stop code.
Definition at line 1452 of file gclib.cs.

14.12.3.132 axis_g_reference_position

`SL gclib.GDataRecord1806.axis_g_reference_position`
G axis reference position.
Definition at line 1453 of file gclib.cs.

14.12.3.133 axis_g_motor_position

`SL gclib.GDataRecord1806.axis_g_motor_position`
G axis motor position.
Definition at line 1454 of file gclib.cs.

14.12.3.134 axis_g_position_error

`SL gclib.GDataRecord1806.axis_g_position_error`
G axis position error.
Definition at line 1455 of file gclib.cs.

14.12.3.135 axis_g_aux_position

SL gclib.GDataRecord1806.axis_g_aux_position
G axis auxiliary position.
Definition at line 1456 of file gclib.cs.

14.12.3.136 axis_g_velocity

SL gclib.GDataRecord1806.axis_g_velocity
G axis velocity.
Definition at line 1457 of file gclib.cs.

14.12.3.137 axis_g_torque

SL gclib.GDataRecord1806.axis_g_torque
G axis torque.
Definition at line 1458 of file gclib.cs.

14.12.3.138 axis_g_analog_in

UW gclib.GDataRecord1806.axis_g_analog_in
G axis analog input.
Definition at line 1459 of file gclib.cs.

14.12.3.139 axis_g_reserved_0

UB gclib.GDataRecord1806.axis_g_reserved_0
Reserved.
Definition at line 1460 of file gclib.cs.

14.12.3.140 axis_g_reserved_1

UB gclib.GDataRecord1806.axis_g_reserved_1
Reserved.
Definition at line 1461 of file gclib.cs.

14.12.3.141 axis_g_variable

SL gclib.GDataRecord1806.axis_g_variable
G User-defined variable (ZA).
Definition at line 1462 of file gclib.cs.

14.12.3.142 axis_h_status

UW gclib.GDataRecord1806.axis_h_status
H axis status.
Definition at line 1464 of file gclib.cs.

14.12.3.143 axis_h_switches

UB gclib.GDataRecord1806.axis_h_switches
H axis switches.
Definition at line 1465 of file gclib.cs.

14.12.3.144 axis_h_stop_code

UB gclib.GDataRecord1806.axis_h_stop_code
H axis stop code.
Definition at line 1466 of file gclib.cs.

14.12.3.145 axis_h_reference_position

SL gclib.GDataRecord1806.axis_h_reference_position
H axis reference position.
Definition at line 1467 of file gclib.cs.

14.12.3.146 axis_h_motor_position

SL gclib.GDataRecord1806.axis_h_motor_position
H axis motor position.
Definition at line 1468 of file gclib.cs.

14.12.3.147 axis_h_position_error

SL gclib.GDataRecord1806.axis_h_position_error
H axis position error.
Definition at line 1469 of file gclib.cs.

14.12.3.148 axis_h_aux_position

SL gclib.GDataRecord1806.axis_h_aux_position
H axis auxiliary position.
Definition at line 1470 of file gclib.cs.

14.12.3.149 axis_h_velocity

SL gclib.GDataRecord1806.axis_h_velocity
H axis velocity.
Definition at line 1471 of file gclib.cs.

14.12.3.150 axis_h_torque

SL gclib.GDataRecord1806.axis_h_torque
H axis torque.
Definition at line 1472 of file gclib.cs.

14.12.3.151 axis_h_analog_in

UW gclib.GDataRecord1806.axis_h_analog_in
H axis analog input.
Definition at line 1473 of file gclib.cs.

14.12.3.152 axis_h_reserved_0

UB gclib.GDataRecord1806.axis_h_reserved_0
Reserved.
Definition at line 1474 of file gclib.cs.

14.12.3.153 axis_h_reserved_1

UB gclib.GDataRecord1806.axis_h_reserved_1
Reserved.
Definition at line 1475 of file gclib.cs.

14.12.3.154 axis_h_variable

SL gclib.GDataRecord1806.axis_h_variable
H User-defined variable (ZA).
Definition at line 1476 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.13 GDataRecord1806 Struct Reference

Data record struct for DMC-1806 controller.
`#include <gclib_record.h>`

Public Attributes

- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB input_bank_2

  general input bank 2 (inputs 17-24).
- UB input_bank_3

  general input bank 3 (inputs 25-32).
- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).
- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).

- SW reserved_0

  Reserved.
- SW reserved_2

  Reserved.
- SW reserved_4

  Reserved.
- SW reserved_6

  Reserved.
- SW reserved_8

  Reserved.
- SW reserved_10

  Reserved.
- SW reserved_12

  Reserved.
- SW reserved_14

  Reserved.
- UB reserved_16

  Reserved.
- UB reserved_17

  Reserved.
- UB reserved_18

  Reserved.
- UB reserved_19

  Reserved.
- UB reserved_20

  Reserved.
- UB reserved_21

  Reserved.
- UB reserved_22

  Reserved.
- UB reserved_23

  Reserved.
- UB error_code

  error code.
- UB thread_status

  thread status.
- UL reserved_24

  Reserved.
- UL contour_segment_count

  Segment Count for Contour Mode.
- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW t_plane_segment_count

segment count of coordinated move for T plane.

- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW t_plane_buffer_available

  Buffer space remaining, T Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SL axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UB axis_a_reserved_0

  Reserved.
- UB axis_a_reserved_1

  Reserved.
- SL axis_a_variable

  A User-defined variable (ZA).
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SL axis_b_torque

  B axis torque.

- UW axis_b_analog_in

  B axis analog input.
- UB axis_b_reserved_0

  Reserved.
- UB axis_b_reserved_1

  Reserved.
- SL axis_b_variable

  B User-defined variable (ZA).
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SL axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UB axis_c_reserved_0

  Reserved.
- UB axis_c_reserved_1

  Reserved.
- SL axis_c_variable

  C User-defined variable (ZA).
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SL axis_d_torque

D axis torque.

- UW axis_d_analog_in

  D axis analog input.
- UB axis_d_reserved_0

  Reserved.
- UB axis_d_reserved_1

  Reserved.
- SL axis_d_variable

  D User-defined variable (ZA).
- UW axis_e_status

  E axis status.
- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

  E axis motor position.
- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SL axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UB axis_e_reserved_0

  Reserved.
- UB axis_e_reserved_1

  Reserved.
- SL axis_e_variable

  E User-defined variable (ZA).
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

  F axis stop code.
- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.
- SL axis_f_velocity

  F axis velocity.

- SL axis_f_torque

  F axis torque.
- UW axis_f_analog_in

  F axis analog input.
- UB axis_f_reserved_0

  Reserved.
- UB axis_f_reserved_1

  Reserved.
- SL axis_f_variable

  F User-defined variable (ZA).
- UW axis_g_status

  G axis status.
- UB axis_g_switches

  G axis switches.
- UB axis_g_stop_code

  G axis stop code.
- SL axis_g_reference_position

  G axis reference position.
- SL axis_g_motor_position

  G axis motor position.
- SL axis_g_position_error

  G axis position error.
- SL axis_g_aux_position

  G axis auxiliary position.
- SL axis_g_velocity

  G axis velocity.
- SL axis_g_torque

  G axis torque.
- UW axis_g_analog_in

  G axis analog input.
- UB axis_g_reserved_0

  Reserved.
- UB axis_g_reserved_1

  Reserved.
- SL axis_g_variable

  G User-defined variable (ZA).
- UW axis_h_status

  H axis status.
- UB axis_h_switches

  H axis switches.
- UB axis_h_stop_code

  H axis stop code.
- SL axis_h_reference_position

  H axis reference position.
- SL axis_h_motor_position

  H axis motor position.
- SL axis_h_position_error

  H axis position error.
- SL axis_h_aux_position

  H axis auxiliary position.
- SL axis_h_velocity

H axis velocity.

- SL axis_h_torque

  H axis torque.

- UW axis_h_analog_in

  H axis analog input.

- UB axis_h_reserved_0

  Reserved.

- UB axis_h_reserved_1

  Reserved.

- SL axis_h_variable

  H User-defined variable (ZA).

14.13.1 Detailed Description

Data record struct for DMC-1806 controller.
The 18x6 Data record is the same as 4000 except the following.

1. No header bytes. Firmware strips it in DR. Software removes it from QR.
2. No Ethernet status (bytes 42-49).
3. No amplfifier status (bytes 52-55).
4. No axis-specific hall input status.

Definition at line 405 of file gclib_record.h.

14.13.2 Member Data Documentation

14.13.2.1 sample_number

`UW GDataRecord1806::sample_number`
sample number.
Definition at line 409 of file gclib_record.h.

14.13.2.2 input_bank_0

`UB GDataRecord1806::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 411 of file gclib_record.h.

14.13.2.3 input_bank_1

`UB GDataRecord1806::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 412 of file gclib_record.h.

14.13.2.4 input_bank_2

`UB GDataRecord1806::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 413 of file gclib_record.h.

14.13.2.5 input_bank_3

`UB GDataRecord1806::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 414 of file gclib_record.h.

14.13.2.6 input_bank_4

`UB GDataRecord1806::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 415 of file gclib_record.h.

14.13.2.7 input_bank_5

`UB GDataRecord1806::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 416 of file gclib_record.h.

14.13.2.8 input_bank_6

`UB GDataRecord1806::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 417 of file gclib_record.h.

14.13.2.9 input_bank_7

`UB GDataRecord1806::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 418 of file gclib_record.h.

14.13.2.10 input_bank_8

`UB GDataRecord1806::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 419 of file gclib_record.h.

14.13.2.11 input_bank_9

`UB GDataRecord1806::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 420 of file gclib_record.h.

14.13.2.12 output_bank_0

`UB GDataRecord1806::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 422 of file gclib_record.h.

14.13.2.13 output_bank_1

`UB GDataRecord1806::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 423 of file gclib_record.h.

14.13.2.14 output_bank_2

`UB GDataRecord1806::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 424 of file gclib_record.h.

14.13.2.15 output_bank_3

`UB GDataRecord1806::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 425 of file gclib_record.h.

14.13.2.16 output_bank_4

`UB GDataRecord1806::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 426 of file gclib_record.h.

14.13.2.17 output_bank_5

`UB GDataRecord1806::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 427 of file gclib_record.h.

14.13.2.18 output_bank_6

`UB GDataRecord1806::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 428 of file gclib_record.h.

14.13.2.19 output_bank_7

`UB GDataRecord1806::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 429 of file gclib_record.h.

14.13.2.20 output_bank_8

`UB GDataRecord1806::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 430 of file gclib_record.h.

14.13.2.21 output_bank_9

`UB GDataRecord1806::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 431 of file gclib_record.h.

14.13.2.22 reserved_0

`SW GDataRecord1806::reserved_0`
Reserved.
Definition at line 433 of file gclib_record.h.

14.13.2.23 reserved_2

`SW GDataRecord1806::reserved_2`
Reserved.
Definition at line 434 of file gclib_record.h.

14.13.2.24 reserved_4

`SW GDataRecord1806::reserved_4`
Reserved.
Definition at line 435 of file gclib_record.h.

14.13.2.25 reserved_6

`SW GDataRecord1806::reserved_6`
Reserved.
Definition at line 436 of file gclib_record.h.

14.13.2.26 reserved_8

SW GDataRecord1806::reserved_8
Reserved.
Definition at line 437 of file gclib_record.h.

14.13.2.27 reserved_10

SW GDataRecord1806::reserved_10
Reserved.
Definition at line 438 of file gclib_record.h.

14.13.2.28 reserved_12

SW GDataRecord1806::reserved_12
Reserved.
Definition at line 439 of file gclib_record.h.

14.13.2.29 reserved_14

SW GDataRecord1806::reserved_14
Reserved.
Definition at line 440 of file gclib_record.h.

14.13.2.30 reserved_16

UB GDataRecord1806::reserved_16
Reserved.
Definition at line 442 of file gclib_record.h.

14.13.2.31 reserved_17

UB GDataRecord1806::reserved_17
Reserved.
Definition at line 443 of file gclib_record.h.

14.13.2.32 reserved_18

UB GDataRecord1806::reserved_18
Reserved.
Definition at line 444 of file gclib_record.h.

14.13.2.33 reserved_19

UB GDataRecord1806::reserved_19
Reserved.
Definition at line 445 of file gclib_record.h.

14.13.2.34 reserved_20

UB GDataRecord1806::reserved_20
Reserved.
Definition at line 446 of file gclib_record.h.

14.13.2.35 reserved_21

UB GDataRecord1806::reserved_21
Reserved.
Definition at line 447 of file gclib_record.h.

14.13.2.36 reserved_22

UB GDataRecord1806::reserved_22
Reserved.
Definition at line 448 of file gclib_record.h.

14.13.2.37 reserved_23

UB GDataRecord1806::reserved_23
Reserved.
Definition at line 449 of file gclib_record.h.

14.13.2.38 error_code

UB GDataRecord1806::error_code
error code.
Definition at line 451 of file gclib_record.h.

14.13.2.39 thread_status

UB GDataRecord1806::thread_status
thread status.
Definition at line 452 of file gclib_record.h.

14.13.2.40 reserved_24

UL GDataRecord1806::reserved_24
Reserved.
Definition at line 453 of file gclib_record.h.

14.13.2.41 contour_segment_count

UL GDataRecord1806::contour_segment_count
Segment Count for Contour Mode.
Definition at line 455 of file gclib_record.h.

14.13.2.42 contour_buffer_available

UW GDataRecord1806::contour_buffer_available
Buffer space remaining, Contour Mode.
Definition at line 456 of file gclib_record.h.

14.13.2.43 s_plane_segment_count

UW GDataRecord1806::s_plane_segment_count
segment count of coordinated move for S plane.
Definition at line 458 of file gclib_record.h.

14.13.2.44 s_plane_move_status

UW GDataRecord1806::s_plane_move_status
coordinated move status for S plane.
Definition at line 459 of file gclib_record.h.

14.13.2.45 s_distance

SL GDataRecord1806::s_distance
distance traveled in coordinated move for S plane.
Definition at line 460 of file gclib_record.h.

14.13.2.46 s_plane_buffer_available

UW GDataRecord1806::s_plane_buffer_available
Buffer space remaining, S Plane.
Definition at line 461 of file gclib_record.h.

14.13.2.47 t_plane_segment_count

UW GDataRecord1806::t_plane_segment_count
segment count of coordinated move for T plane.
Definition at line 463 of file gclib_record.h.

14.13.2.48 t_plane_move_status

UW GDataRecord1806::t_plane_move_status
Coordinated move status for T plane.
Definition at line 464 of file gclib_record.h.

14.13.2.49 t_distance

SL GDataRecord1806::t_distance
distance traveled in coordinated move for T plane.
Definition at line 465 of file gclib_record.h.

14.13.2.50 t_plane_buffer_available

UW GDataRecord1806::t_plane_buffer_available
Buffer space remaining, T Plane.
Definition at line 466 of file gclib_record.h.

14.13.2.51 axis_a_status

UW GDataRecord1806::axis_a_status
A axis status.
Definition at line 468 of file gclib_record.h.

14.13.2.52 axis_a_switches

UB GDataRecord1806::axis_a_switches
A axis switches.
Definition at line 469 of file gclib_record.h.

14.13.2.53 axis_a_stop_code

UB GDataRecord1806::axis_a_stop_code
A axis stop code.
Definition at line 470 of file gclib_record.h.

14.13.2.54 axis_a_reference_position

SL GDataRecord1806::axis_a_reference_position
A axis reference position.
Definition at line 471 of file gclib_record.h.

14.13.2.55 axis_a_motor_position

SL GDataRecord1806::axis_a_motor_position
A axis motor position.
Definition at line 472 of file gclib_record.h.

14.13.2.56 axis_a_position_error

SL GDataRecord1806::axis_a_position_error
A axis position error.
Definition at line 473 of file gclib_record.h.

14.13.2.57 axis_a_aux_position

SL GDataRecord1806::axis_a_aux_position
A axis auxiliary position.
Definition at line 474 of file gclib_record.h.

14.13.2.58 axis_a_velocity

SL GDataRecord1806::axis_a_velocity
A axis velocity.
Definition at line 475 of file gclib_record.h.

14.13.2.59 axis_a_torque

SL GDataRecord1806::axis_a_torque
A axis torque.
Definition at line 476 of file gclib_record.h.

14.13.2.60 axis_a_analog_in

UW GDataRecord1806::axis_a_analog_in
A axis analog input.
Definition at line 477 of file gclib_record.h.

14.13.2.61 axis_a_reserved_0

UB GDataRecord1806::axis_a_reserved_0
Reserved.
Definition at line 478 of file gclib_record.h.

14.13.2.62 axis_a_reserved_1

UB GDataRecord1806::axis_a_reserved_1
Reserved.
Definition at line 479 of file gclib_record.h.

14.13.2.63 axis_a_variable

SL GDataRecord1806::axis_a_variable
A User-defined variable (ZA).
Definition at line 480 of file gclib_record.h.

14.13.2.64 axis_b_status

UW GDataRecord1806::axis_b_status
B axis status.
Definition at line 482 of file gclib_record.h.

14.13.2.65 axis_b_switches

UB GDataRecord1806::axis_b_switches
B axis switches.
Definition at line 483 of file gclib_record.h.

14.13.2.66 axis_b_stop_code

UB GDataRecord1806::axis_b_stop_code
B axis stop code.
Definition at line 484 of file gclib_record.h.

14.13.2.67 axis_b_reference_position

SL GDataRecord1806::axis_b_reference_position
B axis reference position.
Definition at line 485 of file gclib_record.h.

14.13.2.68 axis_b_motor_position

SL GDataRecord1806::axis_b_motor_position
B axis motor position.
Definition at line 486 of file gclib_record.h.

14.13.2.69 axis_b_position_error

SL GDataRecord1806::axis_b_position_error
B axis position error.
Definition at line 487 of file gclib_record.h.

14.13.2.70 axis_b_aux_position

SL GDataRecord1806::axis_b_aux_position
B axis auxiliary position.
Definition at line 488 of file gclib_record.h.

14.13.2.71 axis_b_velocity

SL GDataRecord1806::axis_b_velocity
B axis velocity.
Definition at line 489 of file gclib_record.h.

14.13.2.72 axis_b_torque

SL GDataRecord1806::axis_b_torque
B axis torque.
Definition at line 490 of file gclib_record.h.

14.13.2.73 axis_b_analog_in

UW GDataRecord1806::axis_b_analog_in
B axis analog input.
Definition at line 491 of file gclib_record.h.

14.13.2.74 axis_b_reserved_0

UB GDataRecord1806::axis_b_reserved_0
Reserved.
Definition at line 492 of file gclib_record.h.

14.13.2.75 axis_b_reserved_1

UB GDataRecord1806::axis_b_reserved_1
Reserved.
Definition at line 493 of file gclib_record.h.

14.13.2.76 axis_b_variable

SL GDataRecord1806::axis_b_variable
B User-defined variable (ZA).
Definition at line 494 of file gclib_record.h.

14.13.2.77 axis_c_status

UW GDataRecord1806::axis_c_status
C axis status.
Definition at line 496 of file gclib_record.h.

14.13.2.78 axis_c_switches

UB GDataRecord1806::axis_c_switches
C axis switches.
Definition at line 497 of file gclib_record.h.

14.13.2.79 axis_c_stop_code

UB GDataRecord1806::axis_c_stop_code
C axis stop code.
Definition at line 498 of file gclib_record.h.

14.13.2.80 axis_c_reference_position

SL GDataRecord1806::axis_c_reference_position
C axis reference position.
Definition at line 499 of file gclib_record.h.

14.13.2.81 axis_c_motor_position

SL GDataRecord1806::axis_c_motor_position
C axis motor position.
Definition at line 500 of file gclib_record.h.

14.13.2.82 axis_c_position_error

SL GDataRecord1806::axis_c_position_error
C axis position error.
Definition at line 501 of file gclib_record.h.

14.13.2.83 axis_c_aux_position

SL GDataRecord1806::axis_c_aux_position
C axis auxiliary position.
Definition at line 502 of file gclib_record.h.

14.13.2.84 axis_c_velocity

SL GDataRecord1806::axis_c_velocity
C axis velocity.
Definition at line 503 of file gclib_record.h.

14.13.2.85 axis_c_torque

SL GDataRecord1806::axis_c_torque
C axis torque.
Definition at line 504 of file gclib_record.h.

14.13.2.86 axis_c_analog_in

UW GDataRecord1806::axis_c_analog_in
C axis analog input.
Definition at line 505 of file gclib_record.h.

14.13.2.87 axis_c_reserved_0

UB GDataRecord1806::axis_c_reserved_0
Reserved.
Definition at line 506 of file gclib_record.h.

14.13.2.88 axis_c_reserved_1

UB GDataRecord1806::axis_c_reserved_1
Reserved.
Definition at line 507 of file gclib_record.h.

14.13.2.89 axis_c_variable

SL GDataRecord1806::axis_c_variable
C User-defined variable (ZA).
Definition at line 508 of file gclib_record.h.

14.13.2.90 axis_d_status

UW GDataRecord1806::axis_d_status
D axis status.
Definition at line 510 of file gclib_record.h.

14.13.2.91 axis_d_switches

UB GDataRecord1806::axis_d_switches
D axis switches.
Definition at line 511 of file gclib_record.h.

14.13.2.92 axis_d_stop_code

UB GDataRecord1806::axis_d_stop_code
D axis stop code.
Definition at line 512 of file gclib_record.h.

14.13.2.93 axis_d_reference_position

SL GDataRecord1806::axis_d_reference_position
D axis reference position.
Definition at line 513 of file gclib_record.h.

14.13.2.94 axis_d_motor_position

SL GDataRecord1806::axis_d_motor_position
D axis motor position.
Definition at line 514 of file gclib_record.h.

14.13.2.95 axis_d_position_error

SL GDataRecord1806::axis_d_position_error
D axis position error.
Definition at line 515 of file gclib_record.h.

14.13.2.96 axis_d_aux_position

SL GDataRecord1806::axis_d_aux_position
D axis auxiliary position.
Definition at line 516 of file gclib_record.h.

14.13.2.97 axis_d_velocity

SL GDataRecord1806::axis_d_velocity
D axis velocity.
Definition at line 517 of file gclib_record.h.

14.13.2.98 axis_d_torque

SL GDataRecord1806::axis_d_torque
D axis torque.
Definition at line 518 of file gclib_record.h.

14.13.2.99 axis_d_analog_in

UW GDataRecord1806::axis_d_analog_in
D axis analog input.
Definition at line 519 of file gclib_record.h.

14.13.2.100 axis_d_reserved_0

UB GDataRecord1806::axis_d_reserved_0
Reserved.
Definition at line 520 of file gclib_record.h.

14.13.2.101 axis_d_reserved_1

UB GDataRecord1806::axis_d_reserved_1
Reserved.
Definition at line 521 of file gclib_record.h.

14.13.2.102 axis_d_variable

SL GDataRecord1806::axis_d_variable
D User-defined variable (ZA).
Definition at line 522 of file gclib_record.h.

14.13.2.103 axis_e_status

UW GDataRecord1806::axis_e_status
E axis status.
Definition at line 524 of file gclib_record.h.

14.13.2.104 axis_e_switches

UB GDataRecord1806::axis_e_switches
E axis switches.
Definition at line 525 of file gclib_record.h.

14.13.2.105 axis_e_stop_code

UB GDataRecord1806::axis_e_stop_code
E axis stop code.
Definition at line 526 of file gclib_record.h.

14.13.2.106 axis_e_reference_position

SL GDataRecord1806::axis_e_reference_position
E axis reference position.
Definition at line 527 of file gclib_record.h.

14.13.2.107 axis_e_motor_position

SL GDataRecord1806::axis_e_motor_position
E axis motor position.
Definition at line 528 of file gclib_record.h.

14.13.2.108 axis_e_position_error

SL GDataRecord1806::axis_e_position_error
E axis position error.
Definition at line 529 of file gclib_record.h.

14.13.2.109 axis_e_aux_position

SL GDataRecord1806::axis_e_aux_position
E axis auxiliary position.
Definition at line 530 of file gclib_record.h.

14.13.2.110 axis_e_velocity

SL GDataRecord1806::axis_e_velocity
E axis velocity.
Definition at line 531 of file gclib_record.h.

14.13.2.111 axis_e_torque

SL GDataRecord1806::axis_e_torque
E axis torque.
Definition at line 532 of file gclib_record.h.

14.13.2.112 axis_e_analog_in

UW GDataRecord1806::axis_e_analog_in
E axis analog input.
Definition at line 533 of file gclib_record.h.

14.13.2.113 axis_e_reserved_0

UB GDataRecord1806::axis_e_reserved_0
Reserved.
Definition at line 534 of file gclib_record.h.

14.13.2.114 axis_e_reserved_1

UB GDataRecord1806::axis_e_reserved_1
Reserved.
Definition at line 535 of file gclib_record.h.

14.13.2.115 axis_e_variable

SL GDataRecord1806::axis_e_variable
E User-defined variable (ZA).
Definition at line 536 of file gclib_record.h.

14.13.2.116 axis_f_status

`UW GDataRecord1806::axis_f_status`
F axis status.
Definition at line 538 of file gclib_record.h.

14.13.2.117 axis_f_switches

`UB GDataRecord1806::axis_f_switches`
F axis switches.
Definition at line 539 of file gclib_record.h.

14.13.2.118 axis_f_stop_code

`UB GDataRecord1806::axis_f_stop_code`
F axis stop code.
Definition at line 540 of file gclib_record.h.

14.13.2.119 axis_f_reference_position

`SL GDataRecord1806::axis_f_reference_position`
F axis reference position.
Definition at line 541 of file gclib_record.h.

14.13.2.120 axis_f_motor_position

`SL GDataRecord1806::axis_f_motor_position`
F axis motor position.
Definition at line 542 of file gclib_record.h.

14.13.2.121 axis_f_position_error

`SL GDataRecord1806::axis_f_position_error`
F axis position error.
Definition at line 543 of file gclib_record.h.

14.13.2.122 axis_f_aux_position

`SL GDataRecord1806::axis_f_aux_position`
F axis auxiliary position.
Definition at line 544 of file gclib_record.h.

14.13.2.123 axis_f_velocity

`SL GDataRecord1806::axis_f_velocity`
F axis velocity.
Definition at line 545 of file gclib_record.h.

14.13.2.124 axis_f_torque

`SL GDataRecord1806::axis_f_torque`
F axis torque.
Definition at line 546 of file gclib_record.h.

14.13.2.125 axis_f_analog_in

`UW GDataRecord1806::axis_f_analog_in`
F axis analog input.
Definition at line 547 of file gclib_record.h.

14.13.2.126 axis_f_reserved_0

UB GDataRecord1806::axis_f_reserved_0
Reserved.
Definition at line 548 of file gclib_record.h.

14.13.2.127 axis_f_reserved_1

UB GDataRecord1806::axis_f_reserved_1
Reserved.
Definition at line 549 of file gclib_record.h.

14.13.2.128 axis_f_variable

SL GDataRecord1806::axis_f_variable
F User-defined variable (ZA).
Definition at line 550 of file gclib_record.h.

14.13.2.129 axis_g_status

UW GDataRecord1806::axis_g_status
G axis status.
Definition at line 552 of file gclib_record.h.

14.13.2.130 axis_g_switches

UB GDataRecord1806::axis_g_switches
G axis switches.
Definition at line 553 of file gclib_record.h.

14.13.2.131 axis_g_stop_code

UB GDataRecord1806::axis_g_stop_code
G axis stop code.
Definition at line 554 of file gclib_record.h.

14.13.2.132 axis_g_reference_position

SL GDataRecord1806::axis_g_reference_position
G axis reference position.
Definition at line 555 of file gclib_record.h.

14.13.2.133 axis_g_motor_position

SL GDataRecord1806::axis_g_motor_position
G axis motor position.
Definition at line 556 of file gclib_record.h.

14.13.2.134 axis_g_position_error

SL GDataRecord1806::axis_g_position_error
G axis position error.
Definition at line 557 of file gclib_record.h.

14.13.2.135 axis_g_aux_position

SL GDataRecord1806::axis_g_aux_position
G axis auxiliary position.
Definition at line 558 of file gclib_record.h.

14.13.2.136 axis_g_velocity

SL GDataRecord1806::axis_g_velocity
G axis velocity.
Definition at line 559 of file gclib_record.h.

14.13.2.137 axis_g_torque

SL GDataRecord1806::axis_g_torque
G axis torque.
Definition at line 560 of file gclib_record.h.

14.13.2.138 axis_g_analog_in

UW GDataRecord1806::axis_g_analog_in
G axis analog input.
Definition at line 561 of file gclib_record.h.

14.13.2.139 axis_g_reserved_0

UB GDataRecord1806::axis_g_reserved_0
Reserved.
Definition at line 562 of file gclib_record.h.

14.13.2.140 axis_g_reserved_1

UB GDataRecord1806::axis_g_reserved_1
Reserved.
Definition at line 563 of file gclib_record.h.

14.13.2.141 axis_g_variable

SL GDataRecord1806::axis_g_variable
G User-defined variable (ZA).
Definition at line 564 of file gclib_record.h.

14.13.2.142 axis_h_status

UW GDataRecord1806::axis_h_status
H axis status.
Definition at line 566 of file gclib_record.h.

14.13.2.143 axis_h_switches

UB GDataRecord1806::axis_h_switches
H axis switches.
Definition at line 567 of file gclib_record.h.

14.13.2.144 axis_h_stop_code

UB GDataRecord1806::axis_h_stop_code
H axis stop code.
Definition at line 568 of file gclib_record.h.

14.13.2.145 axis_h_reference_position

SL GDataRecord1806::axis_h_reference_position
H axis reference position.
Definition at line 569 of file gclib_record.h.

14.13.2.146 axis_h_motor_position

SL GDataRecord1806::axis_h_motor_position
H axis motor position.
Definition at line 570 of file gclib_record.h.

14.13.2.147 axis_h_position_error

SL GDataRecord1806::axis_h_position_error
H axis position error.
Definition at line 571 of file gclib_record.h.

14.13.2.148 axis_h_aux_position

SL GDataRecord1806::axis_h_aux_position
H axis auxiliary position.
Definition at line 572 of file gclib_record.h.

14.13.2.149 axis_h_velocity

SL GDataRecord1806::axis_h_velocity
H axis velocity.
Definition at line 573 of file gclib_record.h.

14.13.2.150 axis_h_torque

SL GDataRecord1806::axis_h_torque
H axis torque.
Definition at line 574 of file gclib_record.h.

14.13.2.151 axis_h_analog_in

UW GDataRecord1806::axis_h_analog_in
H axis analog input.
Definition at line 575 of file gclib_record.h.

14.13.2.152 axis_h_reserved_0

UB GDataRecord1806::axis_h_reserved_0
Reserved.
Definition at line 576 of file gclib_record.h.

14.13.2.153 axis_h_reserved_1

UB GDataRecord1806::axis_h_reserved_1
Reserved.
Definition at line 577 of file gclib_record.h.

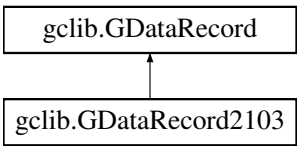
14.13.2.154 axis_h_variable

SL GDataRecord1806::axis_h_variable
H User-defined variable (ZA).
Definition at line 578 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.14 gclib.GDataRecord2103 Struct Reference

Data record struct for DMC-2103 controllers.
Inheritance diagram for gclib.GDataRecord2103:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB input_bank_2

  general input bank 2 (inputs 17-24).
- UB input_bank_3

  general input bank 3 (inputs 25-32).
- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).
- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).

- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- UB error_code

  error code.
- UB general_status

  general status
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SW axis_a_torque

  A axis torque.
- UW axis_a_analog_in

A axis analog input.

- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SW axis_b_torque

  B axis torque.
- UW axis_b_analog_in

  B axis analog input.
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SW axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.

- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SW axis_d_torque

  D axis torque.
- UW axis_d_analog_in

  D axis analog input.
- UW axis_e_status

  E axis status.
- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

  E axis motor position.
- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SW axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

  F axis stop code.
- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.
- SL axis_f_velocity

  F axis velocity.
- SW axis_f_torque

  F axis torque.
- UW axis_f_analog_in

  F axis analog input.
- UW axis_g_status

G axis status.

- UB axis_g_switches

  G axis switches.
- UB axis_g_stop_code

  G axis stop code.
- SL axis_g_reference_position

  G axis reference position.
- SL axis_g_motor_position

  G axis motor position.
- SL axis_g_position_error

  G axis position error.
- SL axis_g_aux_position

  G axis auxiliary position.
- SL axis_g_velocity

  G axis velocity.
- SW axis_g_torque

  G axis torque.
- UW axis_g_analog_in

  G axis analog input.
- UW axis_h_status

  H axis status.
- UB axis_h_switches

  H axis switches.
- UB axis_h_stop_code

  H axis stop code.
- SL axis_h_reference_position

  H axis reference position.
- SL axis_h_motor_position

  H axis motor position.
- SL axis_h_position_error

  H axis position error.
- SL axis_h_aux_position

  H axis auxiliary position.
- SL axis_h_velocity

  H axis velocity.
- SW axis_h_torque

  H axis torque.
- UW axis_h_analog_in

  H axis analog input.

14.14.1 Detailed Description

Data record struct for DMC-2103 controllers.
Definition at line 1481 of file gclib.cs.

14.14.2 Member Function Documentation

14.14.2.1 byte_array()

```
byte[] gclib.GDataRecord2103.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1483 of file gclib.cs.

14.14.3 Member Data Documentation

14.14.3.1 header_0

`UB gclib.GDataRecord2103.header_0`
1st Byte of Header.
Definition at line 1487 of file gclib.cs.

14.14.3.2 header_1

`UB gclib.GDataRecord2103.header_1`
2nd Byte of Header.
Definition at line 1488 of file gclib.cs.

14.14.3.3 header_2

`UB gclib.GDataRecord2103.header_2`
3rd Byte of Header.
Definition at line 1489 of file gclib.cs.

14.14.3.4 header_3

`UB gclib.GDataRecord2103.header_3`
4th Byte of Header.
Definition at line 1490 of file gclib.cs.

14.14.3.5 sample_number

`UW gclib.GDataRecord2103.sample_number`
sample number.
Definition at line 1492 of file gclib.cs.

14.14.3.6 input_bank_0

`UB gclib.GDataRecord2103.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 1494 of file gclib.cs.

14.14.3.7 input_bank_1

`UB gclib.GDataRecord2103.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 1495 of file gclib.cs.

14.14.3.8 input_bank_2

`UB gclib.GDataRecord2103.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 1496 of file gclib.cs.

14.14.3.9 input_bank_3

`UB gclib.GDataRecord2103.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1497 of file gclib.cs.

14.14.3.10 input_bank_4

`UB gclib.GDataRecord2103.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1498 of file gclib.cs.

14.14.3.11 input_bank_5

`UB gclib.GDataRecord2103.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1499 of file gclib.cs.

14.14.3.12 input_bank_6

`UB gclib.GDataRecord2103.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1500 of file gclib.cs.

14.14.3.13 input_bank_7

`UB gclib.GDataRecord2103.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1501 of file gclib.cs.

14.14.3.14 input_bank_8

`UB gclib.GDataRecord2103.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1502 of file gclib.cs.

14.14.3.15 input_bank_9

`UB gclib.GDataRecord2103.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1503 of file gclib.cs.

14.14.3.16 output_bank_0

`UB gclib.GDataRecord2103.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1505 of file gclib.cs.

14.14.3.17 output_bank_1

`UB gclib.GDataRecord2103.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1506 of file gclib.cs.

14.14.3.18 output_bank_2

`UB gclib.GDataRecord2103.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1507 of file gclib.cs.

14.14.3.19 output_bank_3

`UB gclib.GDataRecord2103.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1508 of file gclib.cs.

14.14.3.20 output_bank_4

`UB gclib.GDataRecord2103.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1509 of file gclib.cs.

14.14.3.21 output_bank_5

`UB gclib.GDataRecord2103.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1510 of file gclib.cs.

14.14.3.22 output_bank_6

`UB gclib.GDataRecord2103.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1511 of file gclib.cs.

14.14.3.23 output_bank_7

`UB gclib.GDataRecord2103.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1512 of file gclib.cs.

14.14.3.24 output_bank_8

`UB gclib.GDataRecord2103.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1513 of file gclib.cs.

14.14.3.25 output_bank_9

`UB gclib.GDataRecord2103.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1514 of file gclib.cs.

14.14.3.26 error_code

`UB gclib.GDataRecord2103.error_code`
error code.
Definition at line 1516 of file gclib.cs.

14.14.3.27 general_status

`UB gclib.GDataRecord2103.general_status`
general status
Definition at line 1517 of file gclib.cs.

14.14.3.28 s_plane_segment_count

`UW gclib.GDataRecord2103.s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 1519 of file gclib.cs.

14.14.3.29 s_plane_move_status

`UW gclib.GDataRecord2103.s_plane_move_status`
coordinated move status for S plane.
Definition at line 1520 of file gclib.cs.

14.14.3.30 s_distance

`SL gclib.GDataRecord2103.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1521 of file gclib.cs.

14.14.3.31 t_plane_segment_count

`UW gclib.GDataRecord2103.t_plane_segment_count`
segment count of coordinated move for T plane.
Definition at line 1523 of file gclib.cs.

14.14.3.32 t_plane_move_status

`UW gclib.GDataRecord2103.t_plane_move_status`
Coordinated move status for T plane.
Definition at line 1524 of file gclib.cs.

14.14.3.33 t_distance

`SL gclib.GDataRecord2103.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 1525 of file gclib.cs.

14.14.3.34 axis_a_status

`UW gclib.GDataRecord2103.axis_a_status`
A axis status.
Definition at line 1527 of file gclib.cs.

14.14.3.35 axis_a_switches

`UB gclib.GDataRecord2103.axis_a_switches`
A axis switches.
Definition at line 1528 of file gclib.cs.

14.14.3.36 axis_a_stop_code

`UB gclib.GDataRecord2103.axis_a_stop_code`
A axis stop code.
Definition at line 1529 of file gclib.cs.

14.14.3.37 axis_a_reference_position

`SL gclib.GDataRecord2103.axis_a_reference_position`
A axis reference position.
Definition at line 1530 of file gclib.cs.

14.14.3.38 axis_a_motor_position

`SL gclib.GDataRecord2103.axis_a_motor_position`
A axis motor position.
Definition at line 1531 of file gclib.cs.

14.14.3.39 axis_a_position_error

`SL gclib.GDataRecord2103.axis_a_position_error`
A axis position error.
Definition at line 1532 of file gclib.cs.

14.14.3.40 axis_a_aux_position

`SL gclib.GDataRecord2103.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1533 of file gclib.cs.

14.14.3.41 axis_a_velocity

`SL gclib.GDataRecord2103.axis_a_velocity`
A axis velocity.
Definition at line 1534 of file gclib.cs.

14.14.3.42 axis_a_torque

`SW gclib.GDataRecord2103.axis_a_torque`
A axis torque.
Definition at line 1535 of file gclib.cs.

14.14.3.43 axis_a_analog_in

`UW gclib.GDataRecord2103.axis_a_analog_in`
A axis analog input.
Definition at line 1536 of file gclib.cs.

14.14.3.44 axis_b_status

`UW gclib.GDataRecord2103.axis_b_status`
B axis status.
Definition at line 1538 of file gclib.cs.

14.14.3.45 axis_b_switches

`UB gclib.GDataRecord2103.axis_b_switches`
B axis switches.
Definition at line 1539 of file gclib.cs.

14.14.3.46 axis_b_stop_code

`UB gclib.GDataRecord2103.axis_b_stop_code`
B axis stop code.
Definition at line 1540 of file gclib.cs.

14.14.3.47 axis_b_reference_position

`SL gclib.GDataRecord2103.axis_b_reference_position`
B axis reference position.
Definition at line 1541 of file gclib.cs.

14.14.3.48 axis_b_motor_position

`SL gclib.GDataRecord2103.axis_b_motor_position`
B axis motor position.
Definition at line 1542 of file gclib.cs.

14.14.3.49 axis_b_position_error

`SL gclib.GDataRecord2103.axis_b_position_error`
B axis position error.
Definition at line 1543 of file gclib.cs.

14.14.3.50 axis_b_aux_position

`SL gclib.GDataRecord2103.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1544 of file gclib.cs.

14.14.3.51 axis_b_velocity

`SL gclib.GDataRecord2103.axis_b_velocity`
B axis velocity.
Definition at line 1545 of file gclib.cs.

14.14.3.52 axis_b_torque

`SW gclib.GDataRecord2103.axis_b_torque`
B axis torque.
Definition at line 1546 of file gclib.cs.

14.14.3.53 axis_b_analog_in

`UW gclib.GDataRecord2103.axis_b_analog_in`
B axis analog input.
Definition at line 1547 of file gclib.cs.

14.14.3.54 axis_c_status

`UW gclib.GDataRecord2103.axis_c_status`
C axis status.
Definition at line 1549 of file gclib.cs.

14.14.3.55 axis_c_switches

`UB gclib.GDataRecord2103.axis_c_switches`
C axis switches.
Definition at line 1550 of file gclib.cs.

14.14.3.56 axis_c_stop_code

`UB gclib.GDataRecord2103.axis_c_stop_code`
C axis stop code.
Definition at line 1551 of file gclib.cs.

14.14.3.57 axis_c_reference_position

`SL gclib.GDataRecord2103.axis_c_reference_position`
C axis reference position.
Definition at line 1552 of file gclib.cs.

14.14.3.58 axis_c_motor_position

`SL gclib.GDataRecord2103.axis_c_motor_position`
C axis motor position.
Definition at line 1553 of file gclib.cs.

14.14.3.59 axis_c_position_error

`SL gclib.GDataRecord2103.axis_c_position_error`
C axis position error.
Definition at line 1554 of file gclib.cs.

14.14.3.60 axis_c_aux_position

`SL gclib.GDataRecord2103.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1555 of file gclib.cs.

14.14.3.61 axis_c_velocity

`SL gclib.GDataRecord2103.axis_c_velocity`
C axis velocity.
Definition at line 1556 of file gclib.cs.

14.14.3.62 axis_c_torque

`SW gclib.GDataRecord2103.axis_c_torque`
C axis torque.
Definition at line 1557 of file gclib.cs.

14.14.3.63 axis_c_analog_in

`UW gclib.GDataRecord2103.axis_c_analog_in`
C axis analog input.
Definition at line 1558 of file gclib.cs.

14.14.3.64 axis_d_status

`UW gclib.GDataRecord2103.axis_d_status`
D axis status.
Definition at line 1560 of file gclib.cs.

14.14.3.65 axis_d_switches

`UB gclib.GDataRecord2103.axis_d_switches`
D axis switches.
Definition at line 1561 of file gclib.cs.

14.14.3.66 axis_d_stop_code

`UB gclib.GDataRecord2103.axis_d_stop_code`
D axis stop code.
Definition at line 1562 of file gclib.cs.

14.14.3.67 axis_d_reference_position

`SL gclib.GDataRecord2103.axis_d_reference_position`
D axis reference position.
Definition at line 1563 of file gclib.cs.

14.14.3.68 axis_d_motor_position

`SL gclib.GDataRecord2103.axis_d_motor_position`
D axis motor position.
Definition at line 1564 of file gclib.cs.

14.14.3.69 axis_d_position_error

`SL gclib.GDataRecord2103.axis_d_position_error`
D axis position error.
Definition at line 1565 of file gclib.cs.

14.14.3.70 axis_d_aux_position

`SL gclib.GDataRecord2103.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1566 of file gclib.cs.

14.14.3.71 axis_d_velocity

`SL gclib.GDataRecord2103.axis_d_velocity`
D axis velocity.
Definition at line 1567 of file gclib.cs.

14.14.3.72 axis_d_torque

`SW gclib.GDataRecord2103.axis_d_torque`
D axis torque.
Definition at line 1568 of file gclib.cs.

14.14.3.73 axis_d_analog_in

`UW gclib.GDataRecord2103.axis_d_analog_in`
D axis analog input.
Definition at line 1569 of file gclib.cs.

14.14.3.74 axis_e_status

`UW gclib.GDataRecord2103.axis_e_status`
E axis status.
Definition at line 1571 of file gclib.cs.

14.14.3.75 axis_e_switches

`UB gclib.GDataRecord2103.axis_e_switches`
E axis switches.
Definition at line 1572 of file gclib.cs.

14.14.3.76 axis_e_stop_code

`UB gclib.GDataRecord2103.axis_e_stop_code`
E axis stop code.
Definition at line 1573 of file gclib.cs.

14.14.3.77 axis_e_reference_position

`SL gclib.GDataRecord2103.axis_e_reference_position`
E axis reference position.
Definition at line 1574 of file gclib.cs.

14.14.3.78 axis_e_motor_position

`SL gclib.GDataRecord2103.axis_e_motor_position`
E axis motor position.
Definition at line 1575 of file gclib.cs.

14.14.3.79 axis_e_position_error

`SL gclib.GDataRecord2103.axis_e_position_error`
E axis position error.
Definition at line 1576 of file gclib.cs.

14.14.3.80 axis_e_aux_position

`SL gclib.GDataRecord2103.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1577 of file gclib.cs.

14.14.3.81 axis_e_velocity

`SL gclib.GDataRecord2103.axis_e_velocity`
E axis velocity.
Definition at line 1578 of file gclib.cs.

14.14.3.82 axis_e_torque

`SW gclib.GDataRecord2103.axis_e_torque`
E axis torque.
Definition at line 1579 of file gclib.cs.

14.14.3.83 axis_e_analog_in

`UW gclib.GDataRecord2103.axis_e_analog_in`
E axis analog input.
Definition at line 1580 of file gclib.cs.

14.14.3.84 axis_f_status

`UW gclib.GDataRecord2103.axis_f_status`
F axis status.
Definition at line 1582 of file gclib.cs.

14.14.3.85 axis_f_switches

`UB gclib.GDataRecord2103.axis_f_switches`
F axis switches.
Definition at line 1583 of file gclib.cs.

14.14.3.86 axis_f_stop_code

`UB gclib.GDataRecord2103.axis_f_stop_code`
F axis stop code.
Definition at line 1584 of file gclib.cs.

14.14.3.87 axis_f_reference_position

`SL gclib.GDataRecord2103.axis_f_reference_position`
F axis reference position.
Definition at line 1585 of file gclib.cs.

14.14.3.88 axis_f_motor_position

`SL gclib.GDataRecord2103.axis_f_motor_position`
F axis motor position.
Definition at line 1586 of file gclib.cs.

14.14.3.89 axis_f_position_error

`SL gclib.GDataRecord2103.axis_f_position_error`
F axis position error.
Definition at line 1587 of file gclib.cs.

14.14.3.90 axis_f_aux_position

`SL gclib.GDataRecord2103.axis_f_aux_position`
F axis auxiliary position.
Definition at line 1588 of file gclib.cs.

14.14.3.91 axis_f_velocity

SL gclib.GDataRecord2103.axis_f_velocity
F axis velocity.
Definition at line 1589 of file gclib.cs.

14.14.3.92 axis_f_torque

SW gclib.GDataRecord2103.axis_f_torque
F axis torque.
Definition at line 1590 of file gclib.cs.

14.14.3.93 axis_f_analog_in

UW gclib.GDataRecord2103.axis_f_analog_in
F axis analog input.
Definition at line 1591 of file gclib.cs.

14.14.3.94 axis_g_status

UW gclib.GDataRecord2103.axis_g_status
G axis status.
Definition at line 1593 of file gclib.cs.

14.14.3.95 axis_g_switches

UB gclib.GDataRecord2103.axis_g_switches
G axis switches.
Definition at line 1594 of file gclib.cs.

14.14.3.96 axis_g_stop_code

UB gclib.GDataRecord2103.axis_g_stop_code
G axis stop code.
Definition at line 1595 of file gclib.cs.

14.14.3.97 axis_g_reference_position

SL gclib.GDataRecord2103.axis_g_reference_position
G axis reference position.
Definition at line 1596 of file gclib.cs.

14.14.3.98 axis_g_motor_position

SL gclib.GDataRecord2103.axis_g_motor_position
G axis motor position.
Definition at line 1597 of file gclib.cs.

14.14.3.99 axis_g_position_error

SL gclib.GDataRecord2103.axis_g_position_error
G axis position error.
Definition at line 1598 of file gclib.cs.

14.14.3.100 axis_g_aux_position

SL gclib.GDataRecord2103.axis_g_aux_position
G axis auxiliary position.
Definition at line 1599 of file gclib.cs.

14.14.3.101 axis_g_velocity

`SL gclib.GDataRecord2103.axis_g_velocity`
G axis velocity.
Definition at line 1600 of file gclib.cs.

14.14.3.102 axis_g_torque

`SW gclib.GDataRecord2103.axis_g_torque`
G axis torque.
Definition at line 1601 of file gclib.cs.

14.14.3.103 axis_g_analog_in

`UW gclib.GDataRecord2103.axis_g_analog_in`
G axis analog input.
Definition at line 1602 of file gclib.cs.

14.14.3.104 axis_h_status

`UW gclib.GDataRecord2103.axis_h_status`
H axis status.
Definition at line 1604 of file gclib.cs.

14.14.3.105 axis_h_switches

`UB gclib.GDataRecord2103.axis_h_switches`
H axis switches.
Definition at line 1605 of file gclib.cs.

14.14.3.106 axis_h_stop_code

`UB gclib.GDataRecord2103.axis_h_stop_code`
H axis stop code.
Definition at line 1606 of file gclib.cs.

14.14.3.107 axis_h_reference_position

`SL gclib.GDataRecord2103.axis_h_reference_position`
H axis reference position.
Definition at line 1607 of file gclib.cs.

14.14.3.108 axis_h_motor_position

`SL gclib.GDataRecord2103.axis_h_motor_position`
H axis motor position.
Definition at line 1608 of file gclib.cs.

14.14.3.109 axis_h_position_error

`SL gclib.GDataRecord2103.axis_h_position_error`
H axis position error.
Definition at line 1609 of file gclib.cs.

14.14.3.110 axis_h_aux_position

`SL gclib.GDataRecord2103.axis_h_aux_position`
H axis auxiliary position.
Definition at line 1610 of file gclib.cs.

14.14.3.111 axis_h_velocity

SL gclib.GDataRecord2103.axis_h_velocity
H axis velocity.
Definition at line 1611 of file gclib.cs.

14.14.3.112 axis_h_torque

SW gclib.GDataRecord2103.axis_h_torque
H axis torque.
Definition at line 1612 of file gclib.cs.

14.14.3.113 axis_h_analog_in

UW gclib.GDataRecord2103.axis_h_analog_in
H axis analog input.
Definition at line 1613 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.15 GDataRecord2103 Struct Reference

Data record struct for DMC-2103 controllers.
`#include <gclib_record.h>`

Public Attributes

- UB header_0
  1st Byte of Header.
- UB header_1
  2nd Byte of Header.
- UB header_2
  3rd Byte of Header.
- UB header_3
  4th Byte of Header.
- UW sample_number
  sample number.
- UB input_bank_0
  general input bank 0 (inputs 1-8).
- UB input_bank_1
  general input bank 1 (inputs 9-16).
- UB input_bank_2
  general input bank 2 (inputs 17-24).
- UB input_bank_3
  general input bank 3 (inputs 25-32).
- UB input_bank_4
  general input bank 4 (inputs 33-40).
- UB input_bank_5
  general input bank 5 (inputs 41-48).
- UB input_bank_6
  general input bank 6 (inputs 49-56).
- UB input_bank_7
  general input bank 7 (inputs 57-64).
- UB input_bank_8

general input bank 8 (inputs 65-72).

- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- UB error_code

  error code.
- UB general_status

  general status
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.

- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SW axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SW axis_b_torque

  B axis torque.
- UW axis_b_analog_in

  B axis analog input.
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SW axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UW axis_d_status

  D axis status.
- UB axis_d_switches

D axis switches.

- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SW axis_d_torque

  D axis torque.
- UW axis_d_analog_in

  D axis analog input.
- UW axis_e_status

  E axis status.
- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

  E axis motor position.
- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SW axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

  F axis stop code.
- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.

- SL axis_f_velocity

  F axis velocity.
- SW axis_f_torque

  F axis torque.
- UW axis_f_analog_in

  F axis analog input.
- UW axis_g_status

  G axis status.
- UB axis_g_switches

  G axis switches.
- UB axis_g_stop_code

  G axis stop code.
- SL axis_g_reference_position

  G axis reference position.
- SL axis_g_motor_position

  G axis motor position.
- SL axis_g_position_error

  G axis position error.
- SL axis_g_aux_position

  G axis auxiliary position.
- SL axis_g_velocity

  G axis velocity.
- SW axis_g_torque

  G axis torque.
- UW axis_g_analog_in

  G axis analog input.
- UW axis_h_status

  H axis status.
- UB axis_h_switches

  H axis switches.
- UB axis_h_stop_code

  H axis stop code.
- SL axis_h_reference_position

  H axis reference position.
- SL axis_h_motor_position

  H axis motor position.
- SL axis_h_position_error

  H axis position error.
- SL axis_h_aux_position

  H axis auxiliary position.
- SL axis_h_velocity

  H axis velocity.
- SW axis_h_torque

  H axis torque.
- UW axis_h_analog_in

  H axis analog input.

14.15.1 Detailed Description

Data record struct for DMC-2103 controllers.
Definition at line 582 of file gclib_record.h.

14.15.2 Member Data Documentation

14.15.2.1 header_0

`UB GDataRecord2103::header_0`
1st Byte of Header.
Definition at line 587 of file gclib_record.h.

14.15.2.2 header_1

`UB GDataRecord2103::header_1`
2nd Byte of Header.
Definition at line 588 of file gclib_record.h.

14.15.2.3 header_2

`UB GDataRecord2103::header_2`
3rd Byte of Header.
Definition at line 589 of file gclib_record.h.

14.15.2.4 header_3

`UB GDataRecord2103::header_3`
4th Byte of Header.
Definition at line 590 of file gclib_record.h.

14.15.2.5 sample_number

`UW GDataRecord2103::sample_number`
sample number.
Definition at line 592 of file gclib_record.h.

14.15.2.6 input_bank_0

`UB GDataRecord2103::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 594 of file gclib_record.h.

14.15.2.7 input_bank_1

`UB GDataRecord2103::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 595 of file gclib_record.h.

14.15.2.8 input_bank_2

`UB GDataRecord2103::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 596 of file gclib_record.h.

14.15.2.9 input_bank_3

`UB GDataRecord2103::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 597 of file gclib_record.h.

14.15.2.10 input_bank_4

`UB GDataRecord2103::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 598 of file gclib_record.h.

14.15.2.11 input_bank_5

`UB GDataRecord2103::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 599 of file gclib_record.h.

14.15.2.12 input_bank_6

`UB GDataRecord2103::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 600 of file gclib_record.h.

14.15.2.13 input_bank_7

`UB GDataRecord2103::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 601 of file gclib_record.h.

14.15.2.14 input_bank_8

`UB GDataRecord2103::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 602 of file gclib_record.h.

14.15.2.15 input_bank_9

`UB GDataRecord2103::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 603 of file gclib_record.h.

14.15.2.16 output_bank_0

`UB GDataRecord2103::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 605 of file gclib_record.h.

14.15.2.17 output_bank_1

`UB GDataRecord2103::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 606 of file gclib_record.h.

14.15.2.18 output_bank_2

`UB GDataRecord2103::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 607 of file gclib_record.h.

14.15.2.19 output_bank_3

`UB GDataRecord2103::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 608 of file gclib_record.h.

14.15.2.20 output_bank_4

`UB GDataRecord2103::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 609 of file gclib_record.h.

14.15.2.21 output_bank_5

`UB GDataRecord2103::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 610 of file gclib_record.h.

14.15.2.22 output_bank_6

`UB GDataRecord2103::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 611 of file gclib_record.h.

14.15.2.23 output_bank_7

`UB GDataRecord2103::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 612 of file gclib_record.h.

14.15.2.24 output_bank_8

`UB GDataRecord2103::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 613 of file gclib_record.h.

14.15.2.25 output_bank_9

`UB GDataRecord2103::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 614 of file gclib_record.h.

14.15.2.26 error_code

`UB GDataRecord2103::error_code`
error code.
Definition at line 616 of file gclib_record.h.

14.15.2.27 general_status

`UB GDataRecord2103::general_status`
general status
Definition at line 617 of file gclib_record.h.

14.15.2.28 s_plane_segment_count

`UW GDataRecord2103::s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 619 of file gclib_record.h.

14.15.2.29 s_plane_move_status

`UW GDataRecord2103::s_plane_move_status`
coordinated move status for S plane.
Definition at line 620 of file gclib_record.h.

14.15.2.30 s_distance

`SL GDataRecord2103::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 621 of file gclib_record.h.

14.15.2.31 t_plane_segment_count

`UW GDataRecord2103::t_plane_segment_count`
segment count of coordinated move for T plane.
Definition at line 623 of file gclib_record.h.

14.15.2.32 t_plane_move_status

`UW GDataRecord2103::t_plane_move_status`
Coordinated move status for T plane.
Definition at line 624 of file gclib_record.h.

14.15.2.33 t_distance

`SL GDataRecord2103::t_distance`
distance traveled in coordinated move for T plane.
Definition at line 625 of file gclib_record.h.

14.15.2.34 axis_a_status

`UW GDataRecord2103::axis_a_status`
A axis status.
Definition at line 627 of file gclib_record.h.

14.15.2.35 axis_a_switches

`UB GDataRecord2103::axis_a_switches`
A axis switches.
Definition at line 628 of file gclib_record.h.

14.15.2.36 axis_a_stop_code

`UB GDataRecord2103::axis_a_stop_code`
A axis stop code.
Definition at line 629 of file gclib_record.h.

14.15.2.37 axis_a_reference_position

`SL GDataRecord2103::axis_a_reference_position`
A axis reference position.
Definition at line 630 of file gclib_record.h.

14.15.2.38 axis_a_motor_position

`SL GDataRecord2103::axis_a_motor_position`
A axis motor position.
Definition at line 631 of file gclib_record.h.

14.15.2.39 axis_a_position_error

`SL GDataRecord2103::axis_a_position_error`
A axis position error.
Definition at line 632 of file gclib_record.h.

14.15.2.40 axis_a_aux_position

`SL GDataRecord2103::axis_a_aux_position`
A axis auxiliary position.
Definition at line 633 of file gclib_record.h.

14.15.2.41 axis_a_velocity

SL GDataRecord2103::axis_a_velocity
A axis velocity.
Definition at line 634 of file gclib_record.h.

14.15.2.42 axis_a_torque

SW GDataRecord2103::axis_a_torque
A axis torque.
Definition at line 635 of file gclib_record.h.

14.15.2.43 axis_a_analog_in

UW GDataRecord2103::axis_a_analog_in
A axis analog input.
Definition at line 636 of file gclib_record.h.

14.15.2.44 axis_b_status

UW GDataRecord2103::axis_b_status
B axis status.
Definition at line 638 of file gclib_record.h.

14.15.2.45 axis_b_switches

UB GDataRecord2103::axis_b_switches
B axis switches.
Definition at line 639 of file gclib_record.h.

14.15.2.46 axis_b_stop_code

UB GDataRecord2103::axis_b_stop_code
B axis stop code.
Definition at line 640 of file gclib_record.h.

14.15.2.47 axis_b_reference_position

SL GDataRecord2103::axis_b_reference_position
B axis reference position.
Definition at line 641 of file gclib_record.h.

14.15.2.48 axis_b_motor_position

SL GDataRecord2103::axis_b_motor_position
B axis motor position.
Definition at line 642 of file gclib_record.h.

14.15.2.49 axis_b_position_error

SL GDataRecord2103::axis_b_position_error
B axis position error.
Definition at line 643 of file gclib_record.h.

14.15.2.50 axis_b_aux_position

SL GDataRecord2103::axis_b_aux_position
B axis auxiliary position.
Definition at line 644 of file gclib_record.h.

14.15.2.51 axis_b_velocity

SL GDataRecord2103::axis_b_velocity
B axis velocity.
Definition at line 645 of file gclib_record.h.

14.15.2.52 axis_b_torque

SW GDataRecord2103::axis_b_torque
B axis torque.
Definition at line 646 of file gclib_record.h.

14.15.2.53 axis_b_analog_in

UW GDataRecord2103::axis_b_analog_in
B axis analog input.
Definition at line 647 of file gclib_record.h.

14.15.2.54 axis_c_status

UW GDataRecord2103::axis_c_status
C axis status.
Definition at line 649 of file gclib_record.h.

14.15.2.55 axis_c_switches

UB GDataRecord2103::axis_c_switches
C axis switches.
Definition at line 650 of file gclib_record.h.

14.15.2.56 axis_c_stop_code

UB GDataRecord2103::axis_c_stop_code
C axis stop code.
Definition at line 651 of file gclib_record.h.

14.15.2.57 axis_c_reference_position

SL GDataRecord2103::axis_c_reference_position
C axis reference position.
Definition at line 652 of file gclib_record.h.

14.15.2.58 axis_c_motor_position

SL GDataRecord2103::axis_c_motor_position
C axis motor position.
Definition at line 653 of file gclib_record.h.

14.15.2.59 axis_c_position_error

SL GDataRecord2103::axis_c_position_error
C axis position error.
Definition at line 654 of file gclib_record.h.

14.15.2.60 axis_c_aux_position

SL GDataRecord2103::axis_c_aux_position
C axis auxiliary position.
Definition at line 655 of file gclib_record.h.

14.15.2.61 axis_c_velocity

SL GDataRecord2103::axis_c_velocity
C axis velocity.
Definition at line 656 of file gclib_record.h.

14.15.2.62 axis_c_torque

SW GDataRecord2103::axis_c_torque
C axis torque.
Definition at line 657 of file gclib_record.h.

14.15.2.63 axis_c_analog_in

UW GDataRecord2103::axis_c_analog_in
C axis analog input.
Definition at line 658 of file gclib_record.h.

14.15.2.64 axis_d_status

UW GDataRecord2103::axis_d_status
D axis status.
Definition at line 660 of file gclib_record.h.

14.15.2.65 axis_d_switches

UB GDataRecord2103::axis_d_switches
D axis switches.
Definition at line 661 of file gclib_record.h.

14.15.2.66 axis_d_stop_code

UB GDataRecord2103::axis_d_stop_code
D axis stop code.
Definition at line 662 of file gclib_record.h.

14.15.2.67 axis_d_reference_position

SL GDataRecord2103::axis_d_reference_position
D axis reference position.
Definition at line 663 of file gclib_record.h.

14.15.2.68 axis_d_motor_position

SL GDataRecord2103::axis_d_motor_position
D axis motor position.
Definition at line 664 of file gclib_record.h.

14.15.2.69 axis_d_position_error

SL GDataRecord2103::axis_d_position_error
D axis position error.
Definition at line 665 of file gclib_record.h.

14.15.2.70 axis_d_aux_position

SL GDataRecord2103::axis_d_aux_position
D axis auxiliary position.
Definition at line 666 of file gclib_record.h.

14.15.2.71 axis_d_velocity

SL GDataRecord2103::axis_d_velocity
D axis velocity.
Definition at line 667 of file gclib_record.h.

14.15.2.72 axis_d_torque

SW GDataRecord2103::axis_d_torque
D axis torque.
Definition at line 668 of file gclib_record.h.

14.15.2.73 axis_d_analog_in

UW GDataRecord2103::axis_d_analog_in
D axis analog input.
Definition at line 669 of file gclib_record.h.

14.15.2.74 axis_e_status

UW GDataRecord2103::axis_e_status
E axis status.
Definition at line 671 of file gclib_record.h.

14.15.2.75 axis_e_switches

UB GDataRecord2103::axis_e_switches
E axis switches.
Definition at line 672 of file gclib_record.h.

14.15.2.76 axis_e_stop_code

UB GDataRecord2103::axis_e_stop_code
E axis stop code.
Definition at line 673 of file gclib_record.h.

14.15.2.77 axis_e_reference_position

SL GDataRecord2103::axis_e_reference_position
E axis reference position.
Definition at line 674 of file gclib_record.h.

14.15.2.78 axis_e_motor_position

SL GDataRecord2103::axis_e_motor_position
E axis motor position.
Definition at line 675 of file gclib_record.h.

14.15.2.79 axis_e_position_error

SL GDataRecord2103::axis_e_position_error
E axis position error.
Definition at line 676 of file gclib_record.h.

14.15.2.80 axis_e_aux_position

SL GDataRecord2103::axis_e_aux_position
E axis auxiliary position.
Definition at line 677 of file gclib_record.h.

14.15.2.81 axis_e_velocity

SL GDataRecord2103::axis_e_velocity
E axis velocity.
Definition at line 678 of file gclib_record.h.

14.15.2.82 axis_e_torque

SW GDataRecord2103::axis_e_torque
E axis torque.
Definition at line 679 of file gclib_record.h.

14.15.2.83 axis_e_analog_in

UW GDataRecord2103::axis_e_analog_in
E axis analog input.
Definition at line 680 of file gclib_record.h.

14.15.2.84 axis_f_status

UW GDataRecord2103::axis_f_status
F axis status.
Definition at line 682 of file gclib_record.h.

14.15.2.85 axis_f_switches

UB GDataRecord2103::axis_f_switches
F axis switches.
Definition at line 683 of file gclib_record.h.

14.15.2.86 axis_f_stop_code

UB GDataRecord2103::axis_f_stop_code
F axis stop code.
Definition at line 684 of file gclib_record.h.

14.15.2.87 axis_f_reference_position

SL GDataRecord2103::axis_f_reference_position
F axis reference position.
Definition at line 685 of file gclib_record.h.

14.15.2.88 axis_f_motor_position

SL GDataRecord2103::axis_f_motor_position
F axis motor position.
Definition at line 686 of file gclib_record.h.

14.15.2.89 axis_f_position_error

SL GDataRecord2103::axis_f_position_error
F axis position error.
Definition at line 687 of file gclib_record.h.

14.15.2.90 axis_f_aux_position

SL GDataRecord2103::axis_f_aux_position
F axis auxiliary position.
Definition at line 688 of file gclib_record.h.

14.15.2.91 axis_f_velocity

SL GDataRecord2103::axis_f_velocity
F axis velocity.
Definition at line 689 of file gclib_record.h.

14.15.2.92 axis_f_torque

SW GDataRecord2103::axis_f_torque
F axis torque.
Definition at line 690 of file gclib_record.h.

14.15.2.93 axis_f_analog_in

UW GDataRecord2103::axis_f_analog_in
F axis analog input.
Definition at line 691 of file gclib_record.h.

14.15.2.94 axis_g_status

UW GDataRecord2103::axis_g_status
G axis status.
Definition at line 693 of file gclib_record.h.

14.15.2.95 axis_g_switches

UB GDataRecord2103::axis_g_switches
G axis switches.
Definition at line 694 of file gclib_record.h.

14.15.2.96 axis_g_stop_code

UB GDataRecord2103::axis_g_stop_code
G axis stop code.
Definition at line 695 of file gclib_record.h.

14.15.2.97 axis_g_reference_position

SL GDataRecord2103::axis_g_reference_position
G axis reference position.
Definition at line 696 of file gclib_record.h.

14.15.2.98 axis_g_motor_position

SL GDataRecord2103::axis_g_motor_position
G axis motor position.
Definition at line 697 of file gclib_record.h.

14.15.2.99 axis_g_position_error

SL GDataRecord2103::axis_g_position_error
G axis position error.
Definition at line 698 of file gclib_record.h.

14.15.2.100 axis_g_aux_position

SL GDataRecord2103::axis_g_aux_position
G axis auxiliary position.
Definition at line 699 of file gclib_record.h.

14.15.2.101 axis_g_velocity

SL GDataRecord2103::axis_g_velocity
G axis velocity.
Definition at line 700 of file gclib_record.h.

14.15.2.102 axis_g_torque

SW GDataRecord2103::axis_g_torque
G axis torque.
Definition at line 701 of file gclib_record.h.

14.15.2.103 axis_g_analog_in

UW GDataRecord2103::axis_g_analog_in
G axis analog input.
Definition at line 702 of file gclib_record.h.

14.15.2.104 axis_h_status

UW GDataRecord2103::axis_h_status
H axis status.
Definition at line 704 of file gclib_record.h.

14.15.2.105 axis_h_switches

UB GDataRecord2103::axis_h_switches
H axis switches.
Definition at line 705 of file gclib_record.h.

14.15.2.106 axis_h_stop_code

UB GDataRecord2103::axis_h_stop_code
H axis stop code.
Definition at line 706 of file gclib_record.h.

14.15.2.107 axis_h_reference_position

SL GDataRecord2103::axis_h_reference_position
H axis reference position.
Definition at line 707 of file gclib_record.h.

14.15.2.108 axis_h_motor_position

SL GDataRecord2103::axis_h_motor_position
H axis motor position.
Definition at line 708 of file gclib_record.h.

14.15.2.109 axis_h_position_error

SL GDataRecord2103::axis_h_position_error
H axis position error.
Definition at line 709 of file gclib_record.h.

14.15.2.110 axis_h_aux_position

SL GDataRecord2103::axis_h_aux_position
H axis auxiliary position.
Definition at line 710 of file gclib_record.h.

14.15.2.111 axis_h_velocity

`SL GDataRecord2103::axis_h_velocity`
H axis velocity.
Definition at line 711 of file gclib_record.h.

14.15.2.112 axis_h_torque

`SW GDataRecord2103::axis_h_torque`
H axis torque.
Definition at line 712 of file gclib_record.h.

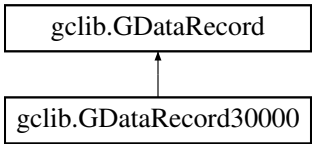
14.15.2.113 axis_h_analog_in

`UW GDataRecord2103::axis_h_analog_in`
H axis analog input.
Definition at line 713 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.16 gclib.GDataRecord30000 Struct Reference

Data record struct for DMC-30010 controllers.
Inheritance diagram for gclib.GDataRecord30000:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB output_bank_0

  general output bank 0 (outputs 1-8).

- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB error_code

  error code.
- UB thread_status

  thread status.
- UW input_analog_2

  Analog input 2. 1 is in axis data, see axis_a_analog_in.
- UW output_analog_1

  Analog output 1.
- UW output_analog_2

  Analog output 2.
- UL amplifier_status

  Amplifier Status.
- UL contour_segment_count

  Segment Count for Contour Mode.
- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SL axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UB axis_a_halls

  A Hall Input Status.
- UB axis_a_reserved

  Reserved.
- SL axis_a_variable

  A User-defined variable (ZA).

14.16.1 Detailed Description

Data record struct for DMC-30010 controllers.
Definition at line 1716 of file gclib.cs.

14.16.2 Member Function Documentation

14.16.2.1 byte_array()

```
byte[] gclib.GDataRecord30000.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1718 of file gclib.cs.

14.16.3 Member Data Documentation

14.16.3.1 header_0

```
UB gclib.GDataRecord30000.header_0
```

1st Byte of Header.
Definition at line 1722 of file gclib.cs.

14.16.3.2 header_1

```
UB gclib.GDataRecord30000.header_1
```

2nd Byte of Header.
Definition at line 1723 of file gclib.cs.

14.16.3.3 header_2

```
UB gclib.GDataRecord30000.header_2
```

3rd Byte of Header.
Definition at line 1724 of file gclib.cs.

14.16.3.4 header_3

```
UB gclib.GDataRecord30000.header_3
```

4th Byte of Header.
Definition at line 1725 of file gclib.cs.

14.16.3.5 sample_number

```
UW gclib.GDataRecord30000.sample_number
```

sample number.
Definition at line 1727 of file gclib.cs.

14.16.3.6 input_bank_0

```
UB gclib.GDataRecord30000.input_bank_0
```

general input bank 0 (inputs 1-8).
Definition at line 1729 of file gclib.cs.

14.16.3.7 input_bank_1

```
UB gclib.GDataRecord30000.input_bank_1
```

general input bank 1 (inputs 9-16).
Definition at line 1730 of file gclib.cs.

14.16.3.8 output_bank_0

UB gclib.GDataRecord30000.output_bank_0
general output bank 0 (outputs 1-8).
Definition at line 1732 of file gclib.cs.

14.16.3.9 output_bank_1

UB gclib.GDataRecord30000.output_bank_1
general output bank 1 (outputs 9-16).
Definition at line 1733 of file gclib.cs.

14.16.3.10 error_code

UB gclib.GDataRecord30000.error_code
error code.
Definition at line 1735 of file gclib.cs.

14.16.3.11 thread_status

UB gclib.GDataRecord30000.thread_status
thread status.
Definition at line 1736 of file gclib.cs.

14.16.3.12 input_analog_2

UW gclib.GDataRecord30000.input_analog_2
Analog input 2. 1 is in axis data, see axis_a_analog_in.
Definition at line 1738 of file gclib.cs.

14.16.3.13 output_analog_1

UW gclib.GDataRecord30000.output_analog_1
Analog output 1.
Definition at line 1740 of file gclib.cs.

14.16.3.14 output_analog_2

UW gclib.GDataRecord30000.output_analog_2
Analog output 2.
Definition at line 1741 of file gclib.cs.

14.16.3.15 amplifier_status

UL gclib.GDataRecord30000.amplifier_status
Amplifier Status.
Definition at line 1743 of file gclib.cs.

14.16.3.16 contour_segment_count

UL gclib.GDataRecord30000.contour_segment_count
Segment Count for Contour Mode.
Definition at line 1745 of file gclib.cs.

14.16.3.17 contour_buffer_available

UW gclib.GDataRecord30000.contour_buffer_available
Buffer space remaining, Contour Mode.
Definition at line 1746 of file gclib.cs.

14.16.3.18 s_plane_segment_count

`UW gclib.GDataRecord30000.s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 1748 of file gclib.cs.

14.16.3.19 s_plane_move_status

`UW gclib.GDataRecord30000.s_plane_move_status`
coordinated move status for S plane.
Definition at line 1749 of file gclib.cs.

14.16.3.20 s_distance

`SL gclib.GDataRecord30000.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1750 of file gclib.cs.

14.16.3.21 s_plane_buffer_available

`UW gclib.GDataRecord30000.s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 1751 of file gclib.cs.

14.16.3.22 axis_a_status

`UW gclib.GDataRecord30000.axis_a_status`
A axis status.
Definition at line 1753 of file gclib.cs.

14.16.3.23 axis_a_switches

`UB gclib.GDataRecord30000.axis_a_switches`
A axis switches.
Definition at line 1754 of file gclib.cs.

14.16.3.24 axis_a_stop_code

`UB gclib.GDataRecord30000.axis_a_stop_code`
A axis stop code.
Definition at line 1755 of file gclib.cs.

14.16.3.25 axis_a_reference_position

`SL gclib.GDataRecord30000.axis_a_reference_position`
A axis reference position.
Definition at line 1756 of file gclib.cs.

14.16.3.26 axis_a_motor_position

`SL gclib.GDataRecord30000.axis_a_motor_position`
A axis motor position.
Definition at line 1757 of file gclib.cs.

14.16.3.27 axis_a_position_error

`SL gclib.GDataRecord30000.axis_a_position_error`
A axis position error.
Definition at line 1758 of file gclib.cs.

14.16.3.28 axis_a_aux_position

`SL gclib.GDataRecord30000.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1759 of file gclib.cs.

14.16.3.29 axis_a_velocity

`SL gclib.GDataRecord30000.axis_a_velocity`
A axis velocity.
Definition at line 1760 of file gclib.cs.

14.16.3.30 axis_a_torque

`SL gclib.GDataRecord30000.axis_a_torque`
A axis torque.
Definition at line 1761 of file gclib.cs.

14.16.3.31 axis_a_analog_in

`UW gclib.GDataRecord30000.axis_a_analog_in`
A axis analog input.
Definition at line 1762 of file gclib.cs.

14.16.3.32 axis_a_halls

`UB gclib.GDataRecord30000.axis_a_halls`
A Hall Input Status.
Definition at line 1763 of file gclib.cs.

14.16.3.33 axis_a_reserved

`UB gclib.GDataRecord30000.axis_a_reserved`
Reserved.
Definition at line 1764 of file gclib.cs.

14.16.3.34 axis_a_variable

`SL gclib.GDataRecord30000.axis_a_variable`
A User-defined variable (ZA).
Definition at line 1765 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.17 GDataRecord30000 Struct Reference

Data record struct for DMC-30010 controllers.
`#include <gclib_record.h>`

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.

- UB header_3

  4th Byte of Header.
- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB error_code

  error code.
- UB thread_status

  thread status.
- UW input_analog_2

  Analog input 2. 1 is in axis data, see axis_a_analog_in.
- UW output_analog_1

  Analog output 1.
- UW output_analog_2

  Analog output 2.
- UL amplifier_status

  Amplifier Status.
- UL contour_segment_count

  Segment Count for Contour Mode.
- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

A axis velocity.

- SL axis_a_torque

  A axis torque.

- UW axis_a_analog_in

  A axis analog input.

- UB axis_a_halls

  A Hall Input Status.

- UB axis_a_reserved

  Reserved.

- SL axis_a_variable

  A User-defined variable (ZA).

14.17.1 Detailed Description

Data record struct for DMC-30010 controllers.
Definition at line 814 of file gclib_record.h.

14.17.2 Member Data Documentation

14.17.2.1 header_0

`UB GDataRecord30000::header_0`
1st Byte of Header.
Definition at line 819 of file gclib_record.h.

14.17.2.2 header_1

`UB GDataRecord30000::header_1`
2nd Byte of Header.
Definition at line 820 of file gclib_record.h.

14.17.2.3 header_2

`UB GDataRecord30000::header_2`
3rd Byte of Header.
Definition at line 821 of file gclib_record.h.

14.17.2.4 header_3

`UB GDataRecord30000::header_3`
4th Byte of Header.
Definition at line 822 of file gclib_record.h.

14.17.2.5 sample_number

`UW GDataRecord30000::sample_number`
sample number.
Definition at line 824 of file gclib_record.h.

14.17.2.6 input_bank_0

`UB GDataRecord30000::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 826 of file gclib_record.h.

14.17.2.7 input_bank_1

UB GDataRecord30000::input_bank_1
general input bank 1 (inputs 9-16).
Definition at line 827 of file gclib_record.h.

14.17.2.8 output_bank_0

UB GDataRecord30000::output_bank_0
general output bank 0 (outputs 1-8).
Definition at line 829 of file gclib_record.h.

14.17.2.9 output_bank_1

UB GDataRecord30000::output_bank_1
general output bank 1 (outputs 9-16).
Definition at line 830 of file gclib_record.h.

14.17.2.10 error_code

UB GDataRecord30000::error_code
error code.
Definition at line 832 of file gclib_record.h.

14.17.2.11 thread_status

UB GDataRecord30000::thread_status
thread status.
Definition at line 833 of file gclib_record.h.

14.17.2.12 input_analog_2

UW GDataRecord30000::input_analog_2
Analog input 2. 1 is in axis data, see axis_a_analog_in.
Definition at line 835 of file gclib_record.h.

14.17.2.13 output_analog_1

UW GDataRecord30000::output_analog_1
Analog output 1.
Definition at line 837 of file gclib_record.h.

14.17.2.14 output_analog_2

UW GDataRecord30000::output_analog_2
Analog output 2.
Definition at line 838 of file gclib_record.h.

14.17.2.15 amplifier_status

UL GDataRecord30000::amplifier_status
Amplifier Status.
Definition at line 840 of file gclib_record.h.

14.17.2.16 contour_segment_count

UL GDataRecord30000::contour_segment_count
Segment Count for Contour Mode.
Definition at line 842 of file gclib_record.h.

14.17.2.17 contour_buffer_available

`UW GDataRecord30000::contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 843 of file gclib_record.h.

14.17.2.18 s_plane_segment_count

`UW GDataRecord30000::s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 845 of file gclib_record.h.

14.17.2.19 s_plane_move_status

`UW GDataRecord30000::s_plane_move_status`
coordinated move status for S plane.
Definition at line 846 of file gclib_record.h.

14.17.2.20 s_distance

`SL GDataRecord30000::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 847 of file gclib_record.h.

14.17.2.21 s_plane_buffer_available

`UW GDataRecord30000::s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 848 of file gclib_record.h.

14.17.2.22 axis_a_status

`UW GDataRecord30000::axis_a_status`
A axis status.
Definition at line 850 of file gclib_record.h.

14.17.2.23 axis_a_switches

`UB GDataRecord30000::axis_a_switches`
A axis switches.
Definition at line 851 of file gclib_record.h.

14.17.2.24 axis_a_stop_code

`UB GDataRecord30000::axis_a_stop_code`
A axis stop code.
Definition at line 852 of file gclib_record.h.

14.17.2.25 axis_a_reference_position

`SL GDataRecord30000::axis_a_reference_position`
A axis reference position.
Definition at line 853 of file gclib_record.h.

14.17.2.26 axis_a_motor_position

`SL GDataRecord30000::axis_a_motor_position`
A axis motor position.
Definition at line 854 of file gclib_record.h.

14.17.2.27 axis_a_position_error

SL GDataRecord30000::axis_a_position_error
A axis position error.
Definition at line 855 of file gclib_record.h.

14.17.2.28 axis_a_aux_position

SL GDataRecord30000::axis_a_aux_position
A axis auxiliary position.
Definition at line 856 of file gclib_record.h.

14.17.2.29 axis_a_velocity

SL GDataRecord30000::axis_a_velocity
A axis velocity.
Definition at line 857 of file gclib_record.h.

14.17.2.30 axis_a_torque

SL GDataRecord30000::axis_a_torque
A axis torque.
Definition at line 858 of file gclib_record.h.

14.17.2.31 axis_a_analog_in

UW GDataRecord30000::axis_a_analog_in
A axis analog input.
Definition at line 859 of file gclib_record.h.

14.17.2.32 axis_a_halls

UB GDataRecord30000::axis_a_halls
A Hall Input Status.
Definition at line 860 of file gclib_record.h.

14.17.2.33 axis_a_reserved

UB GDataRecord30000::axis_a_reserved
Reserved.
Definition at line 861 of file gclib_record.h.

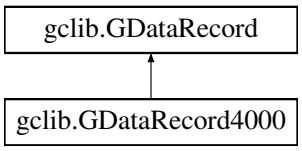
14.17.2.34 axis_a_variable

SL GDataRecord30000::axis_a_variable
A User-defined variable (ZA).
Definition at line 862 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.18 gclib.GDataRecord4000 Struct Reference

Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
Inheritance diagram for gclib.GDataRecord4000:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB input_bank_2

  general input bank 2 (inputs 17-24).
- UB input_bank_3

  general input bank 3 (inputs 25-32).
- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).
- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

general output bank 4 (outputs 33-40).

- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- SW reserved_0

  Reserved.
- SW reserved_2

  Reserved.
- SW reserved_4

  Reserved.
- SW reserved_6

  Reserved.
- SW reserved_8

  Reserved.
- SW reserved_10

  Reserved.
- SW reserved_12

  Reserved.
- SW reserved_14

  Reserved.
- UB ethernet_status_a

  Ethernet Handle A Status.
- UB ethernet_status_b

  Ethernet Handle B Status.
- UB ethernet_status_c

  Ethernet Handle C Status.
- UB ethernet_status_d

  Ethernet Handle D Status.
- UB ethernet_status_e

  Ethernet Handle E Status.
- UB ethernet_status_f

  Ethernet Handle F Status.
- UB ethernet_status_g

  Ethernet Handle G Status.
- UB ethernet_status_h

  Ethernet Handle H Status.
- UB error_code

  error code.
- UB thread_status

  thread status
- UL amplifier_status

  Amplifier Status.
- UL contour_segment_count

  Segment Count for Contour Mode.

- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW t_plane_buffer_available

  Buffer space remaining, T Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SL axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UB axis_a_halls

  A Hall Input Status.
- UB axis_a_reserved

  Reserved.
- SL axis_a_variable

  A User-defined variable (ZA).
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

B axis reference position.

- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SL axis_b_torque

  B axis torque.
- UW axis_b_analog_in

  B axis analog input.
- UB axis_b_halls

  B Hall Input Status.
- UB axis_b_reserved

  Reserved.
- SL axis_b_variable

  B User-defined variable (ZA).
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SL axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UB axis_c_halls

  C Hall Input Status.
- UB axis_c_reserved

  Reserved.
- SL axis_c_variable

  C User-defined variable (ZA).
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.

- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SL axis_d_torque

  D axis torque.
- UW axis_d_analog_in

  D axis analog input.
- UB axis_d_halls

  D Hall Input Status.
- UB axis_d_reserved

  Reserved.
- SL axis_d_variable

  D User-defined variable (ZA).
- UW axis_e_status

  E axis status.
- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

  E axis motor position.
- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SL axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UB axis_e_halls

  E Hall Input Status.
- UB axis_e_reserved

  Reserved.
- SL axis_e_variable

  E User-defined variable (ZA).
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

F axis stop code.

- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.
- SL axis_f_velocity

  F axis velocity.
- SL axis_f_torque

  F axis torque.
- UW axis_f_analog_in

  F axis analog input.
- UB axis_f_halls

  F Hall Input Status.
- UB axis_f_reserved

  Reserved.
- SL axis_f_variable

  F User-defined variable (ZA).
- UW axis_g_status

  G axis status.
- UB axis_g_switches

  G axis switches.
- UB axis_g_stop_code

  G axis stop code.
- SL axis_g_reference_position

  G axis reference position.
- SL axis_g_motor_position

  G axis motor position.
- SL axis_g_position_error

  G axis position error.
- SL axis_g_aux_position

  G axis auxiliary position.
- SL axis_g_velocity

  G axis velocity.
- SL axis_g_torque

  G axis torque.
- UW axis_g_analog_in

  G axis analog input.
- UB axis_g_halls

  G Hall Input Status.
- UB axis_g_reserved

  Reserved.
- SL axis_g_variable

  G User-defined variable (ZA).
- UW axis_h_status

  H axis status.
- UB axis_h_switches

  H axis switches.

- UB axis_h_stop_code

  H axis stop code.
- SL axis_h_reference_position

  H axis reference position.
- SL axis_h_motor_position

  H axis motor position.
- SL axis_h_position_error

  H axis position error.
- SL axis_h_aux_position

  H axis auxiliary position.
- SL axis_h_velocity

  H axis velocity.
- SL axis_h_torque

  H axis torque.
- UW axis_h_analog_in

  H axis analog input.
- UB axis_h_halls

  H Hall Input Status.
- UB axis_h_reserved

  Reserved.
- SL axis_h_variable

  H User-defined variable (ZA).

14.18.1 Detailed Description

Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
Definition at line 926 of file gclib.cs.

14.18.2 Member Function Documentation

14.18.2.1 byte_array()

```
byte[] gclib.GDataRecord4000.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 928 of file gclib.cs.

14.18.3 Member Data Documentation

14.18.3.1 header_0

```
UB gclib.GDataRecord4000.header_0
```

1st Byte of Header.
Definition at line 931 of file gclib.cs.

14.18.3.2 header_1

```
UB gclib.GDataRecord4000.header_1
```

2nd Byte of Header.
Definition at line 932 of file gclib.cs.

14.18.3.3 header_2

```
UB gclib.GDataRecord4000.header_2
```

3rd Byte of Header.
Definition at line 933 of file gclib.cs.

14.18.3.4 header_3

`UB gclib.GDataRecord4000.header_3`
4th Byte of Header.
Definition at line 934 of file gclib.cs.

14.18.3.5 sample_number

`UW gclib.GDataRecord4000.sample_number`
sample number.
Definition at line 936 of file gclib.cs.

14.18.3.6 input_bank_0

`UB gclib.GDataRecord4000.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 938 of file gclib.cs.

14.18.3.7 input_bank_1

`UB gclib.GDataRecord4000.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 939 of file gclib.cs.

14.18.3.8 input_bank_2

`UB gclib.GDataRecord4000.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 940 of file gclib.cs.

14.18.3.9 input_bank_3

`UB gclib.GDataRecord4000.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 941 of file gclib.cs.

14.18.3.10 input_bank_4

`UB gclib.GDataRecord4000.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 942 of file gclib.cs.

14.18.3.11 input_bank_5

`UB gclib.GDataRecord4000.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 943 of file gclib.cs.

14.18.3.12 input_bank_6

`UB gclib.GDataRecord4000.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 944 of file gclib.cs.

14.18.3.13 input_bank_7

`UB gclib.GDataRecord4000.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 945 of file gclib.cs.

14.18.3.14 input_bank_8

`UB gclib.GDataRecord4000.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 946 of file gclib.cs.

14.18.3.15 input_bank_9

`UB gclib.GDataRecord4000.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 947 of file gclib.cs.

14.18.3.16 output_bank_0

`UB gclib.GDataRecord4000.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 949 of file gclib.cs.

14.18.3.17 output_bank_1

`UB gclib.GDataRecord4000.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 950 of file gclib.cs.

14.18.3.18 output_bank_2

`UB gclib.GDataRecord4000.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 951 of file gclib.cs.

14.18.3.19 output_bank_3

`UB gclib.GDataRecord4000.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 952 of file gclib.cs.

14.18.3.20 output_bank_4

`UB gclib.GDataRecord4000.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 953 of file gclib.cs.

14.18.3.21 output_bank_5

`UB gclib.GDataRecord4000.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 954 of file gclib.cs.

14.18.3.22 output_bank_6

`UB gclib.GDataRecord4000.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 955 of file gclib.cs.

14.18.3.23 output_bank_7

`UB gclib.GDataRecord4000.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 956 of file gclib.cs.

14.18.3.24 output_bank_8

`UB gclib.GDataRecord4000.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 957 of file gclib.cs.

14.18.3.25 output_bank_9

`UB gclib.GDataRecord4000.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 958 of file gclib.cs.

14.18.3.26 reserved_0

`SW gclib.GDataRecord4000.reserved_0`
Reserved.
Definition at line 960 of file gclib.cs.

14.18.3.27 reserved_2

`SW gclib.GDataRecord4000.reserved_2`
Reserved.
Definition at line 961 of file gclib.cs.

14.18.3.28 reserved_4

`SW gclib.GDataRecord4000.reserved_4`
Reserved.
Definition at line 962 of file gclib.cs.

14.18.3.29 reserved_6

`SW gclib.GDataRecord4000.reserved_6`
Reserved.
Definition at line 963 of file gclib.cs.

14.18.3.30 reserved_8

`SW gclib.GDataRecord4000.reserved_8`
Reserved.
Definition at line 964 of file gclib.cs.

14.18.3.31 reserved_10

`SW gclib.GDataRecord4000.reserved_10`
Reserved.
Definition at line 965 of file gclib.cs.

14.18.3.32 reserved_12

`SW gclib.GDataRecord4000.reserved_12`
Reserved.
Definition at line 966 of file gclib.cs.

14.18.3.33 reserved_14

`SW gclib.GDataRecord4000.reserved_14`
Reserved.
Definition at line 967 of file gclib.cs.

14.18.3.34 ethernet_status_a

UB gclib.GDataRecord4000.ethernet_status_a
Ethernet Handle A Status.
Definition at line 969 of file gclib.cs.

14.18.3.35 ethernet_status_b

UB gclib.GDataRecord4000.ethernet_status_b
Ethernet Handle B Status.
Definition at line 970 of file gclib.cs.

14.18.3.36 ethernet_status_c

UB gclib.GDataRecord4000.ethernet_status_c
Ethernet Handle C Status.
Definition at line 971 of file gclib.cs.

14.18.3.37 ethernet_status_d

UB gclib.GDataRecord4000.ethernet_status_d
Ethernet Handle D Status.
Definition at line 972 of file gclib.cs.

14.18.3.38 ethernet_status_e

UB gclib.GDataRecord4000.ethernet_status_e
Ethernet Handle E Status.
Definition at line 973 of file gclib.cs.

14.18.3.39 ethernet_status_f

UB gclib.GDataRecord4000.ethernet_status_f
Ethernet Handle F Status.
Definition at line 974 of file gclib.cs.

14.18.3.40 ethernet_status_g

UB gclib.GDataRecord4000.ethernet_status_g
Ethernet Handle G Status.
Definition at line 975 of file gclib.cs.

14.18.3.41 ethernet_status_h

UB gclib.GDataRecord4000.ethernet_status_h
Ethernet Handle H Status.
Definition at line 976 of file gclib.cs.

14.18.3.42 error_code

UB gclib.GDataRecord4000.error_code
error code.
Definition at line 978 of file gclib.cs.

14.18.3.43 thread_status

UB gclib.GDataRecord4000.thread_status
thread status
Definition at line 979 of file gclib.cs.

14.18.3.44 amplifier_status

UL gclib.GDataRecord4000.amplifier_status
Amplifier Status.
Definition at line 980 of file gclib.cs.

14.18.3.45 contour_segment_count

UL gclib.GDataRecord4000.contour_segment_count
Segment Count for Contour Mode.
Definition at line 982 of file gclib.cs.

14.18.3.46 contour_buffer_available

UW gclib.GDataRecord4000.contour_buffer_available
Buffer space remaining, Contour Mode.
Definition at line 983 of file gclib.cs.

14.18.3.47 s_plane_segment_count

UW gclib.GDataRecord4000.s_plane_segment_count
segment count of coordinated move for S plane.
Definition at line 985 of file gclib.cs.

14.18.3.48 s_plane_move_status

UW gclib.GDataRecord4000.s_plane_move_status
coordinated move status for S plane.
Definition at line 986 of file gclib.cs.

14.18.3.49 s_distance

SL gclib.GDataRecord4000.s_distance
distance traveled in coordinated move for S plane.
Definition at line 987 of file gclib.cs.

14.18.3.50 s_plane_buffer_available

UW gclib.GDataRecord4000.s_plane_buffer_available
Buffer space remaining, S Plane.
Definition at line 988 of file gclib.cs.

14.18.3.51 t_plane_segment_count

UW gclib.GDataRecord4000.t_plane_segment_count
segment count of coordinated move for T plane.
Definition at line 990 of file gclib.cs.

14.18.3.52 t_plane_move_status

UW gclib.GDataRecord4000.t_plane_move_status
Coordinated move status for T plane.
Definition at line 991 of file gclib.cs.

14.18.3.53 t_distance

SL gclib.GDataRecord4000.t_distance
distance traveled in coordinated move for T plane.
Definition at line 992 of file gclib.cs.

14.18.3.54 t_plane_buffer_available

`UW gclib.GDataRecord4000.t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 993 of file gclib.cs.

14.18.3.55 axis_a_status

`UW gclib.GDataRecord4000.axis_a_status`
A axis status.
Definition at line 995 of file gclib.cs.

14.18.3.56 axis_a_switches

`UB gclib.GDataRecord4000.axis_a_switches`
A axis switches.
Definition at line 996 of file gclib.cs.

14.18.3.57 axis_a_stop_code

`UB gclib.GDataRecord4000.axis_a_stop_code`
A axis stop code.
Definition at line 997 of file gclib.cs.

14.18.3.58 axis_a_reference_position

`SL gclib.GDataRecord4000.axis_a_reference_position`
A axis reference position.
Definition at line 998 of file gclib.cs.

14.18.3.59 axis_a_motor_position

`SL gclib.GDataRecord4000.axis_a_motor_position`
A axis motor position.
Definition at line 999 of file gclib.cs.

14.18.3.60 axis_a_position_error

`SL gclib.GDataRecord4000.axis_a_position_error`
A axis position error.
Definition at line 1000 of file gclib.cs.

14.18.3.61 axis_a_aux_position

`SL gclib.GDataRecord4000.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1001 of file gclib.cs.

14.18.3.62 axis_a_velocity

`SL gclib.GDataRecord4000.axis_a_velocity`
A axis velocity.
Definition at line 1002 of file gclib.cs.

14.18.3.63 axis_a_torque

`SL gclib.GDataRecord4000.axis_a_torque`
A axis torque.
Definition at line 1003 of file gclib.cs.

14.18.3.64 axis_a_analog_in

`UW gclib.GDataRecord4000.axis_a_analog_in`
A axis analog input.
Definition at line 1004 of file gclib.cs.

14.18.3.65 axis_a_halls

`UB gclib.GDataRecord4000.axis_a_halls`
A Hall Input Status.
Definition at line 1005 of file gclib.cs.

14.18.3.66 axis_a_reserved

`UB gclib.GDataRecord4000.axis_a_reserved`
Reserved.
Definition at line 1006 of file gclib.cs.

14.18.3.67 axis_a_variable

`SL gclib.GDataRecord4000.axis_a_variable`
A User-defined variable (ZA).
Definition at line 1007 of file gclib.cs.

14.18.3.68 axis_b_status

`UW gclib.GDataRecord4000.axis_b_status`
B axis status.
Definition at line 1009 of file gclib.cs.

14.18.3.69 axis_b_switches

`UB gclib.GDataRecord4000.axis_b_switches`
B axis switches.
Definition at line 1010 of file gclib.cs.

14.18.3.70 axis_b_stop_code

`UB gclib.GDataRecord4000.axis_b_stop_code`
B axis stop code.
Definition at line 1011 of file gclib.cs.

14.18.3.71 axis_b_reference_position

`SL gclib.GDataRecord4000.axis_b_reference_position`
B axis reference position.
Definition at line 1012 of file gclib.cs.

14.18.3.72 axis_b_motor_position

`SL gclib.GDataRecord4000.axis_b_motor_position`
B axis motor position.
Definition at line 1013 of file gclib.cs.

14.18.3.73 axis_b_position_error

`SL gclib.GDataRecord4000.axis_b_position_error`
B axis position error.
Definition at line 1014 of file gclib.cs.

14.18.3.74 axis_b_aux_position

`SL gclib.GDataRecord4000.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1015 of file gclib.cs.

14.18.3.75 axis_b_velocity

`SL gclib.GDataRecord4000.axis_b_velocity`
B axis velocity.
Definition at line 1016 of file gclib.cs.

14.18.3.76 axis_b_torque

`SL gclib.GDataRecord4000.axis_b_torque`
B axis torque.
Definition at line 1017 of file gclib.cs.

14.18.3.77 axis_b_analog_in

`UW gclib.GDataRecord4000.axis_b_analog_in`
B axis analog input.
Definition at line 1018 of file gclib.cs.

14.18.3.78 axis_b_halls

`UB gclib.GDataRecord4000.axis_b_halls`
B Hall Input Status.
Definition at line 1019 of file gclib.cs.

14.18.3.79 axis_b_reserved

`UB gclib.GDataRecord4000.axis_b_reserved`
Reserved.
Definition at line 1020 of file gclib.cs.

14.18.3.80 axis_b_variable

`SL gclib.GDataRecord4000.axis_b_variable`
B User-defined variable (ZA).
Definition at line 1021 of file gclib.cs.

14.18.3.81 axis_c_status

`UW gclib.GDataRecord4000.axis_c_status`
C axis status.
Definition at line 1023 of file gclib.cs.

14.18.3.82 axis_c_switches

`UB gclib.GDataRecord4000.axis_c_switches`
C axis switches.
Definition at line 1024 of file gclib.cs.

14.18.3.83 axis_c_stop_code

`UB gclib.GDataRecord4000.axis_c_stop_code`
C axis stop code.
Definition at line 1025 of file gclib.cs.

14.18.3.84 axis_c_reference_position

SL gclib.GDataRecord4000.axis_c_reference_position
C axis reference position.
Definition at line 1026 of file gclib.cs.

14.18.3.85 axis_c_motor_position

SL gclib.GDataRecord4000.axis_c_motor_position
C axis motor position.
Definition at line 1027 of file gclib.cs.

14.18.3.86 axis_c_position_error

SL gclib.GDataRecord4000.axis_c_position_error
C axis position error.
Definition at line 1028 of file gclib.cs.

14.18.3.87 axis_c_aux_position

SL gclib.GDataRecord4000.axis_c_aux_position
C axis auxiliary position.
Definition at line 1029 of file gclib.cs.

14.18.3.88 axis_c_velocity

SL gclib.GDataRecord4000.axis_c_velocity
C axis velocity.
Definition at line 1030 of file gclib.cs.

14.18.3.89 axis_c_torque

SL gclib.GDataRecord4000.axis_c_torque
C axis torque.
Definition at line 1031 of file gclib.cs.

14.18.3.90 axis_c_analog_in

UW gclib.GDataRecord4000.axis_c_analog_in
C axis analog input.
Definition at line 1032 of file gclib.cs.

14.18.3.91 axis_c_halls

UB gclib.GDataRecord4000.axis_c_halls
C Hall Input Status.
Definition at line 1033 of file gclib.cs.

14.18.3.92 axis_c_reserved

UB gclib.GDataRecord4000.axis_c_reserved
Reserved.
Definition at line 1034 of file gclib.cs.

14.18.3.93 axis_c_variable

SL gclib.GDataRecord4000.axis_c_variable
C User-defined variable (ZA).
Definition at line 1035 of file gclib.cs.

14.18.3.94 axis_d_status

`UW gclib.GDataRecord4000.axis_d_status`
D axis status.
Definition at line 1037 of file gclib.cs.

14.18.3.95 axis_d_switches

`UB gclib.GDataRecord4000.axis_d_switches`
D axis switches.
Definition at line 1038 of file gclib.cs.

14.18.3.96 axis_d_stop_code

`UB gclib.GDataRecord4000.axis_d_stop_code`
D axis stop code.
Definition at line 1039 of file gclib.cs.

14.18.3.97 axis_d_reference_position

`SL gclib.GDataRecord4000.axis_d_reference_position`
D axis reference position.
Definition at line 1040 of file gclib.cs.

14.18.3.98 axis_d_motor_position

`SL gclib.GDataRecord4000.axis_d_motor_position`
D axis motor position.
Definition at line 1041 of file gclib.cs.

14.18.3.99 axis_d_position_error

`SL gclib.GDataRecord4000.axis_d_position_error`
D axis position error.
Definition at line 1042 of file gclib.cs.

14.18.3.100 axis_d_aux_position

`SL gclib.GDataRecord4000.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1043 of file gclib.cs.

14.18.3.101 axis_d_velocity

`SL gclib.GDataRecord4000.axis_d_velocity`
D axis velocity.
Definition at line 1044 of file gclib.cs.

14.18.3.102 axis_d_torque

`SL gclib.GDataRecord4000.axis_d_torque`
D axis torque.
Definition at line 1045 of file gclib.cs.

14.18.3.103 axis_d_analog_in

`UW gclib.GDataRecord4000.axis_d_analog_in`
D axis analog input.
Definition at line 1046 of file gclib.cs.

14.18.3.104 axis_d_halls

`UB gclib.GDataRecord4000.axis_d_halls`
D Hall Input Status.
Definition at line 1047 of file gclib.cs.

14.18.3.105 axis_d_reserved

`UB gclib.GDataRecord4000.axis_d_reserved`
Reserved.
Definition at line 1048 of file gclib.cs.

14.18.3.106 axis_d_variable

`SL gclib.GDataRecord4000.axis_d_variable`
D User-defined variable (ZA).
Definition at line 1049 of file gclib.cs.

14.18.3.107 axis_e_status

`UW gclib.GDataRecord4000.axis_e_status`
E axis status.
Definition at line 1051 of file gclib.cs.

14.18.3.108 axis_e_switches

`UB gclib.GDataRecord4000.axis_e_switches`
E axis switches.
Definition at line 1052 of file gclib.cs.

14.18.3.109 axis_e_stop_code

`UB gclib.GDataRecord4000.axis_e_stop_code`
E axis stop code.
Definition at line 1053 of file gclib.cs.

14.18.3.110 axis_e_reference_position

`SL gclib.GDataRecord4000.axis_e_reference_position`
E axis reference position.
Definition at line 1054 of file gclib.cs.

14.18.3.111 axis_e_motor_position

`SL gclib.GDataRecord4000.axis_e_motor_position`
E axis motor position.
Definition at line 1055 of file gclib.cs.

14.18.3.112 axis_e_position_error

`SL gclib.GDataRecord4000.axis_e_position_error`
E axis position error.
Definition at line 1056 of file gclib.cs.

14.18.3.113 axis_e_aux_position

`SL gclib.GDataRecord4000.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1057 of file gclib.cs.

14.18.3.114 axis_e_velocity

`SL gclib.GDataRecord4000.axis_e_velocity`
E axis velocity.
Definition at line 1058 of file gclib.cs.

14.18.3.115 axis_e_torque

`SL gclib.GDataRecord4000.axis_e_torque`
E axis torque.
Definition at line 1059 of file gclib.cs.

14.18.3.116 axis_e_analog_in

`UW gclib.GDataRecord4000.axis_e_analog_in`
E axis analog input.
Definition at line 1060 of file gclib.cs.

14.18.3.117 axis_e_halls

`UB gclib.GDataRecord4000.axis_e_halls`
E Hall Input Status.
Definition at line 1061 of file gclib.cs.

14.18.3.118 axis_e_reserved

`UB gclib.GDataRecord4000.axis_e_reserved`
Reserved.
Definition at line 1062 of file gclib.cs.

14.18.3.119 axis_e_variable

`SL gclib.GDataRecord4000.axis_e_variable`
E User-defined variable (ZA).
Definition at line 1063 of file gclib.cs.

14.18.3.120 axis_f_status

`UW gclib.GDataRecord4000.axis_f_status`
F axis status.
Definition at line 1065 of file gclib.cs.

14.18.3.121 axis_f_switches

`UB gclib.GDataRecord4000.axis_f_switches`
F axis switches.
Definition at line 1066 of file gclib.cs.

14.18.3.122 axis_f_stop_code

`UB gclib.GDataRecord4000.axis_f_stop_code`
F axis stop code.
Definition at line 1067 of file gclib.cs.

14.18.3.123 axis_f_reference_position

`SL gclib.GDataRecord4000.axis_f_reference_position`
F axis reference position.
Definition at line 1068 of file gclib.cs.

14.18.3.124 axis_f_motor_position

SL gclib.GDataRecord4000.axis_f_motor_position
F axis motor position.
Definition at line 1069 of file gclib.cs.

14.18.3.125 axis_f_position_error

SL gclib.GDataRecord4000.axis_f_position_error
F axis position error.
Definition at line 1070 of file gclib.cs.

14.18.3.126 axis_f_aux_position

SL gclib.GDataRecord4000.axis_f_aux_position
F axis auxiliary position.
Definition at line 1071 of file gclib.cs.

14.18.3.127 axis_f_velocity

SL gclib.GDataRecord4000.axis_f_velocity
F axis velocity.
Definition at line 1072 of file gclib.cs.

14.18.3.128 axis_f_torque

SL gclib.GDataRecord4000.axis_f_torque
F axis torque.
Definition at line 1073 of file gclib.cs.

14.18.3.129 axis_f_analog_in

UW gclib.GDataRecord4000.axis_f_analog_in
F axis analog input.
Definition at line 1074 of file gclib.cs.

14.18.3.130 axis_f_halls

UB gclib.GDataRecord4000.axis_f_halls
F Hall Input Status.
Definition at line 1075 of file gclib.cs.

14.18.3.131 axis_f_reserved

UB gclib.GDataRecord4000.axis_f_reserved
Reserved.
Definition at line 1076 of file gclib.cs.

14.18.3.132 axis_f_variable

SL gclib.GDataRecord4000.axis_f_variable
F User-defined variable (ZA).
Definition at line 1077 of file gclib.cs.

14.18.3.133 axis_g_status

UW gclib.GDataRecord4000.axis_g_status
G axis status.
Definition at line 1079 of file gclib.cs.

14.18.3.134 axis_g_switches

`UB gclib.GDataRecord4000.axis_g_switches`
G axis switches.
Definition at line 1080 of file gclib.cs.

14.18.3.135 axis_g_stop_code

`UB gclib.GDataRecord4000.axis_g_stop_code`
G axis stop code.
Definition at line 1081 of file gclib.cs.

14.18.3.136 axis_g_reference_position

`SL gclib.GDataRecord4000.axis_g_reference_position`
G axis reference position.
Definition at line 1082 of file gclib.cs.

14.18.3.137 axis_g_motor_position

`SL gclib.GDataRecord4000.axis_g_motor_position`
G axis motor position.
Definition at line 1083 of file gclib.cs.

14.18.3.138 axis_g_position_error

`SL gclib.GDataRecord4000.axis_g_position_error`
G axis position error.
Definition at line 1084 of file gclib.cs.

14.18.3.139 axis_g_aux_position

`SL gclib.GDataRecord4000.axis_g_aux_position`
G axis auxiliary position.
Definition at line 1085 of file gclib.cs.

14.18.3.140 axis_g_velocity

`SL gclib.GDataRecord4000.axis_g_velocity`
G axis velocity.
Definition at line 1086 of file gclib.cs.

14.18.3.141 axis_g_torque

`SL gclib.GDataRecord4000.axis_g_torque`
G axis torque.
Definition at line 1087 of file gclib.cs.

14.18.3.142 axis_g_analog_in

`UW gclib.GDataRecord4000.axis_g_analog_in`
G axis analog input.
Definition at line 1088 of file gclib.cs.

14.18.3.143 axis_g_halls

`UB gclib.GDataRecord4000.axis_g_halls`
G Hall Input Status.
Definition at line 1089 of file gclib.cs.

14.18.3.144 axis_g_reserved

`UB gclib.GDataRecord4000.axis_g_reserved`
Reserved.
Definition at line 1090 of file gclib.cs.

14.18.3.145 axis_g_variable

`SL gclib.GDataRecord4000.axis_g_variable`
G User-defined variable (ZA).
Definition at line 1091 of file gclib.cs.

14.18.3.146 axis_h_status

`UW gclib.GDataRecord4000.axis_h_status`
H axis status.
Definition at line 1093 of file gclib.cs.

14.18.3.147 axis_h_switches

`UB gclib.GDataRecord4000.axis_h_switches`
H axis switches.
Definition at line 1094 of file gclib.cs.

14.18.3.148 axis_h_stop_code

`UB gclib.GDataRecord4000.axis_h_stop_code`
H axis stop code.
Definition at line 1095 of file gclib.cs.

14.18.3.149 axis_h_reference_position

`SL gclib.GDataRecord4000.axis_h_reference_position`
H axis reference position.
Definition at line 1096 of file gclib.cs.

14.18.3.150 axis_h_motor_position

`SL gclib.GDataRecord4000.axis_h_motor_position`
H axis motor position.
Definition at line 1097 of file gclib.cs.

14.18.3.151 axis_h_position_error

`SL gclib.GDataRecord4000.axis_h_position_error`
H axis position error.
Definition at line 1098 of file gclib.cs.

14.18.3.152 axis_h_aux_position

`SL gclib.GDataRecord4000.axis_h_aux_position`
H axis auxiliary position.
Definition at line 1099 of file gclib.cs.

14.18.3.153 axis_h_velocity

`SL gclib.GDataRecord4000.axis_h_velocity`
H axis velocity.
Definition at line 1100 of file gclib.cs.

14.18.3.154 axis_h_torque

`SL gclib.GDataRecord4000.axis_h_torque`
H axis torque.
Definition at line 1101 of file gclib.cs.

14.18.3.155 axis_h_analog_in

`UW gclib.GDataRecord4000.axis_h_analog_in`
H axis analog input.
Definition at line 1102 of file gclib.cs.

14.18.3.156 axis_h_halls

`UB gclib.GDataRecord4000.axis_h_halls`
H Hall Input Status.
Definition at line 1103 of file gclib.cs.

14.18.3.157 axis_h_reserved

`UB gclib.GDataRecord4000.axis_h_reserved`
Reserved.
Definition at line 1104 of file gclib.cs.

14.18.3.158 axis_h_variable

`SL gclib.GDataRecord4000.axis_h_variable`
H User-defined variable (ZA).
Definition at line 1105 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.19 GDataRecord4000 Struct Reference

Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
`#include <gclib_record.h>`

Public Attributes

- UB header_0
  1st Byte of Header.
- UB header_1
  2nd Byte of Header.
- UB header_2
  3rd Byte of Header.
- UB header_3
  4th Byte of Header.
- UW sample_number
  sample number.
- UB input_bank_0
  general input bank 0 (inputs 1-8).
- UB input_bank_1
  general input bank 1 (inputs 9-16).
- UB input_bank_2
  general input bank 2 (inputs 17-24).
- UB input_bank_3

general input bank 3 (inputs 25-32).

- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).
- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- SW reserved_0

  Reserved.
- SW reserved_2

  Reserved.
- SW reserved_4

  Reserved.
- SW reserved_6

  Reserved.
- SW reserved_8

  Reserved.
- SW reserved_10

  Reserved.
- SW reserved_12

  Reserved.
- SW reserved_14

  Reserved.
- UB ethernet_status_a

  Ethernet Handle A Status.

- UB ethernet_status_b

  Ethernet Handle B Status.
- UB ethernet_status_c

  Ethernet Handle C Status.
- UB ethernet_status_d

  Ethernet Handle D Status.
- UB ethernet_status_e

  Ethernet Handle E Status.
- UB ethernet_status_f

  Ethernet Handle F Status.
- UB ethernet_status_g

  Ethernet Handle G Status.
- UB ethernet_status_h

  Ethernet Handle H Status.
- UB error_code

  error code.
- UB thread_status

  thread status
- UL amplifier_status

  Amplifier Status.
- UL contour_segment_count

  Segment Count for Contour Mode.
- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW t_plane_buffer_available

  Buffer space remaining, T Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

A axis position error.

- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SL axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UB axis_a_halls

  A Hall Input Status.
- UB axis_a_reserved

  Reserved.
- SL axis_a_variable

  A User-defined variable (ZA).
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SL axis_b_torque

  B axis torque.
- UW axis_b_analog_in

  B axis analog input.
- UB axis_b_halls

  B Hall Input Status.
- UB axis_b_reserved

  Reserved.
- SL axis_b_variable

  B User-defined variable (ZA).
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.

- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SL axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UB axis_c_halls

  C Hall Input Status.
- UB axis_c_reserved

  Reserved.
- SL axis_c_variable

  C User-defined variable (ZA).
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SL axis_d_torque

  D axis torque.
- UW axis_d_analog_in

  D axis analog input.
- UB axis_d_halls

  D Hall Input Status.
- UB axis_d_reserved

  Reserved.
- SL axis_d_variable

  D User-defined variable (ZA).
- UW axis_e_status

  E axis status.
- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

E axis motor position.

- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SL axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UB axis_e_halls

  E Hall Input Status.
- UB axis_e_reserved

  Reserved.
- SL axis_e_variable

  E User-defined variable (ZA).
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

  F axis stop code.
- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.
- SL axis_f_velocity

  F axis velocity.
- SL axis_f_torque

  F axis torque.
- UW axis_f_analog_in

  F axis analog input.
- UB axis_f_halls

  F Hall Input Status.
- UB axis_f_reserved

  Reserved.
- SL axis_f_variable

  F User-defined variable (ZA).
- UW axis_g_status

  G axis status.
- UB axis_g_switches

  G axis switches.
- UB axis_g_stop_code

  G axis stop code.
- SL axis_g_reference_position

  G axis reference position.

- SL axis_g_motor_position

  G axis motor position.
- SL axis_g_position_error

  G axis position error.
- SL axis_g_aux_position

  G axis auxiliary position.
- SL axis_g_velocity

  G axis velocity.
- SL axis_g_torque

  G axis torque.
- UW axis_g_analog_in

  G axis analog input.
- UB axis_g_halls

  G Hall Input Status.
- UB axis_g_reserved

  Reserved.
- SL axis_g_variable

  G User-defined variable (ZA).
- UW axis_h_status

  H axis status.
- UB axis_h_switches

  H axis switches.
- UB axis_h_stop_code

  H axis stop code.
- SL axis_h_reference_position

  H axis reference position.
- SL axis_h_motor_position

  H axis motor position.
- SL axis_h_position_error

  H axis position error.
- SL axis_h_aux_position

  H axis auxiliary position.
- SL axis_h_velocity

  H axis velocity.
- SL axis_h_torque

  H axis torque.
- UW axis_h_analog_in

  H axis analog input.
- UB axis_h_halls

  H Hall Input Status.
- UB axis_h_reserved

  Reserved.
- SL axis_h_variable

  H User-defined variable (ZA).

14.19.1 Detailed Description

Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
Definition at line 31 of file gclib_record.h.

14.19.2 Member Data Documentation

14.19.2.1 header_0

`UB GDataRecord4000::header_0`
1st Byte of Header.
Definition at line 36 of file gclib_record.h.

14.19.2.2 header_1

`UB GDataRecord4000::header_1`
2nd Byte of Header.
Definition at line 37 of file gclib_record.h.

14.19.2.3 header_2

`UB GDataRecord4000::header_2`
3rd Byte of Header.
Definition at line 38 of file gclib_record.h.

14.19.2.4 header_3

`UB GDataRecord4000::header_3`
4th Byte of Header.
Definition at line 39 of file gclib_record.h.

14.19.2.5 sample_number

`UW GDataRecord4000::sample_number`
sample number.
Definition at line 41 of file gclib_record.h.

14.19.2.6 input_bank_0

`UB GDataRecord4000::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 43 of file gclib_record.h.

14.19.2.7 input_bank_1

`UB GDataRecord4000::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 44 of file gclib_record.h.

14.19.2.8 input_bank_2

`UB GDataRecord4000::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 45 of file gclib_record.h.

14.19.2.9 input_bank_3

`UB GDataRecord4000::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 46 of file gclib_record.h.

14.19.2.10 input_bank_4

`UB GDataRecord4000::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 47 of file gclib_record.h.

14.19.2.11 input_bank_5

`UB GDataRecord4000::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 48 of file gclib_record.h.

14.19.2.12 input_bank_6

`UB GDataRecord4000::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 49 of file gclib_record.h.

14.19.2.13 input_bank_7

`UB GDataRecord4000::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 50 of file gclib_record.h.

14.19.2.14 input_bank_8

`UB GDataRecord4000::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 51 of file gclib_record.h.

14.19.2.15 input_bank_9

`UB GDataRecord4000::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 52 of file gclib_record.h.

14.19.2.16 output_bank_0

`UB GDataRecord4000::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 54 of file gclib_record.h.

14.19.2.17 output_bank_1

`UB GDataRecord4000::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 55 of file gclib_record.h.

14.19.2.18 output_bank_2

`UB GDataRecord4000::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 56 of file gclib_record.h.

14.19.2.19 output_bank_3

`UB GDataRecord4000::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 57 of file gclib_record.h.

14.19.2.20 output_bank_4

`UB GDataRecord4000::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 58 of file gclib_record.h.

14.19.2.21 output_bank_5

`UB GDataRecord4000::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 59 of file gclib_record.h.

14.19.2.22 output_bank_6

`UB GDataRecord4000::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 60 of file gclib_record.h.

14.19.2.23 output_bank_7

`UB GDataRecord4000::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 61 of file gclib_record.h.

14.19.2.24 output_bank_8

`UB GDataRecord4000::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 62 of file gclib_record.h.

14.19.2.25 output_bank_9

`UB GDataRecord4000::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 63 of file gclib_record.h.

14.19.2.26 reserved_0

`SW GDataRecord4000::reserved_0`
Reserved.
Definition at line 65 of file gclib_record.h.

14.19.2.27 reserved_2

`SW GDataRecord4000::reserved_2`
Reserved.
Definition at line 66 of file gclib_record.h.

14.19.2.28 reserved_4

`SW GDataRecord4000::reserved_4`
Reserved.
Definition at line 67 of file gclib_record.h.

14.19.2.29 reserved_6

`SW GDataRecord4000::reserved_6`
Reserved.
Definition at line 68 of file gclib_record.h.

14.19.2.30 reserved_8

`SW GDataRecord4000::reserved_8`
Reserved.
Definition at line 69 of file gclib_record.h.

14.19.2.31 reserved_10

SW GDataRecord4000::reserved_10
Reserved.
Definition at line 70 of file gclib_record.h.

14.19.2.32 reserved_12

SW GDataRecord4000::reserved_12
Reserved.
Definition at line 71 of file gclib_record.h.

14.19.2.33 reserved_14

SW GDataRecord4000::reserved_14
Reserved.
Definition at line 72 of file gclib_record.h.

14.19.2.34 ethernet_status_a

UB GDataRecord4000::ethernet_status_a
Ethernet Handle A Status.
Definition at line 74 of file gclib_record.h.

14.19.2.35 ethernet_status_b

UB GDataRecord4000::ethernet_status_b
Ethernet Handle B Status.
Definition at line 75 of file gclib_record.h.

14.19.2.36 ethernet_status_c

UB GDataRecord4000::ethernet_status_c
Ethernet Handle C Status.
Definition at line 76 of file gclib_record.h.

14.19.2.37 ethernet_status_d

UB GDataRecord4000::ethernet_status_d
Ethernet Handle D Status.
Definition at line 77 of file gclib_record.h.

14.19.2.38 ethernet_status_e

UB GDataRecord4000::ethernet_status_e
Ethernet Handle E Status.
Definition at line 78 of file gclib_record.h.

14.19.2.39 ethernet_status_f

UB GDataRecord4000::ethernet_status_f
Ethernet Handle F Status.
Definition at line 79 of file gclib_record.h.

14.19.2.40 ethernet_status_g

UB GDataRecord4000::ethernet_status_g
Ethernet Handle G Status.
Definition at line 80 of file gclib_record.h.

14.19.2.41 ethernet_status_h

`UB GDataRecord4000::ethernet_status_h`
Ethernet Handle H Status.
Definition at line 81 of file gclib_record.h.

14.19.2.42 error_code

`UB GDataRecord4000::error_code`
error code.
Definition at line 83 of file gclib_record.h.

14.19.2.43 thread_status

`UB GDataRecord4000::thread_status`
thread status
Definition at line 84 of file gclib_record.h.

14.19.2.44 amplifier_status

`UL GDataRecord4000::amplifier_status`
Amplifier Status.
Definition at line 85 of file gclib_record.h.

14.19.2.45 contour_segment_count

`UL GDataRecord4000::contour_segment_count`
Segment Count for Contour Mode.
Definition at line 87 of file gclib_record.h.

14.19.2.46 contour_buffer_available

`UW GDataRecord4000::contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 88 of file gclib_record.h.

14.19.2.47 s_plane_segment_count

`UW GDataRecord4000::s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 90 of file gclib_record.h.

14.19.2.48 s_plane_move_status

`UW GDataRecord4000::s_plane_move_status`
coordinated move status for S plane.
Definition at line 91 of file gclib_record.h.

14.19.2.49 s_distance

`SL GDataRecord4000::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 92 of file gclib_record.h.

14.19.2.50 s_plane_buffer_available

`UW GDataRecord4000::s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 93 of file gclib_record.h.

14.19.2.51 t_plane_segment_count

`UW GDataRecord4000::t_plane_segment_count`
segment count of coordinated move for T plane.
Definition at line 95 of file gclib_record.h.

14.19.2.52 t_plane_move_status

`UW GDataRecord4000::t_plane_move_status`
Coordinated move status for T plane.
Definition at line 96 of file gclib_record.h.

14.19.2.53 t_distance

`SL GDataRecord4000::t_distance`
distance traveled in coordinated move for T plane.
Definition at line 97 of file gclib_record.h.

14.19.2.54 t_plane_buffer_available

`UW GDataRecord4000::t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 98 of file gclib_record.h.

14.19.2.55 axis_a_status

`UW GDataRecord4000::axis_a_status`
A axis status.
Definition at line 100 of file gclib_record.h.

14.19.2.56 axis_a_switches

`UB GDataRecord4000::axis_a_switches`
A axis switches.
Definition at line 101 of file gclib_record.h.

14.19.2.57 axis_a_stop_code

`UB GDataRecord4000::axis_a_stop_code`
A axis stop code.
Definition at line 102 of file gclib_record.h.

14.19.2.58 axis_a_reference_position

`SL GDataRecord4000::axis_a_reference_position`
A axis reference position.
Definition at line 103 of file gclib_record.h.

14.19.2.59 axis_a_motor_position

`SL GDataRecord4000::axis_a_motor_position`
A axis motor position.
Definition at line 104 of file gclib_record.h.

14.19.2.60 axis_a_position_error

`SL GDataRecord4000::axis_a_position_error`
A axis position error.
Definition at line 105 of file gclib_record.h.

14.19.2.61 axis_a_aux_position

SL GDataRecord4000::axis_a_aux_position
A axis auxiliary position.
Definition at line 106 of file gclib_record.h.

14.19.2.62 axis_a_velocity

SL GDataRecord4000::axis_a_velocity
A axis velocity.
Definition at line 107 of file gclib_record.h.

14.19.2.63 axis_a_torque

SL GDataRecord4000::axis_a_torque
A axis torque.
Definition at line 108 of file gclib_record.h.

14.19.2.64 axis_a_analog_in

UW GDataRecord4000::axis_a_analog_in
A axis analog input.
Definition at line 109 of file gclib_record.h.

14.19.2.65 axis_a_halls

UB GDataRecord4000::axis_a_halls
A Hall Input Status.
Definition at line 110 of file gclib_record.h.

14.19.2.66 axis_a_reserved

UB GDataRecord4000::axis_a_reserved
Reserved.
Definition at line 111 of file gclib_record.h.

14.19.2.67 axis_a_variable

SL GDataRecord4000::axis_a_variable
A User-defined variable (ZA).
Definition at line 112 of file gclib_record.h.

14.19.2.68 axis_b_status

UW GDataRecord4000::axis_b_status
B axis status.
Definition at line 114 of file gclib_record.h.

14.19.2.69 axis_b_switches

UB GDataRecord4000::axis_b_switches
B axis switches.
Definition at line 115 of file gclib_record.h.

14.19.2.70 axis_b_stop_code

UB GDataRecord4000::axis_b_stop_code
B axis stop code.
Definition at line 116 of file gclib_record.h.

14.19.2.71 axis_b_reference_position

SL GDataRecord4000::axis_b_reference_position
B axis reference position.
Definition at line 117 of file gclib_record.h.

14.19.2.72 axis_b_motor_position

SL GDataRecord4000::axis_b_motor_position
B axis motor position.
Definition at line 118 of file gclib_record.h.

14.19.2.73 axis_b_position_error

SL GDataRecord4000::axis_b_position_error
B axis position error.
Definition at line 119 of file gclib_record.h.

14.19.2.74 axis_b_aux_position

SL GDataRecord4000::axis_b_aux_position
B axis auxiliary position.
Definition at line 120 of file gclib_record.h.

14.19.2.75 axis_b_velocity

SL GDataRecord4000::axis_b_velocity
B axis velocity.
Definition at line 121 of file gclib_record.h.

14.19.2.76 axis_b_torque

SL GDataRecord4000::axis_b_torque
B axis torque.
Definition at line 122 of file gclib_record.h.

14.19.2.77 axis_b_analog_in

UW GDataRecord4000::axis_b_analog_in
B axis analog input.
Definition at line 123 of file gclib_record.h.

14.19.2.78 axis_b_halls

UB GDataRecord4000::axis_b_halls
B Hall Input Status.
Definition at line 124 of file gclib_record.h.

14.19.2.79 axis_b_reserved

UB GDataRecord4000::axis_b_reserved
Reserved.
Definition at line 125 of file gclib_record.h.

14.19.2.80 axis_b_variable

SL GDataRecord4000::axis_b_variable
B User-defined variable (ZA).
Definition at line 126 of file gclib_record.h.

14.19.2.81 axis_c_status

`UW GDataRecord4000::axis_c_status`
C axis status.
Definition at line 128 of file gclib_record.h.

14.19.2.82 axis_c_switches

`UB GDataRecord4000::axis_c_switches`
C axis switches.
Definition at line 129 of file gclib_record.h.

14.19.2.83 axis_c_stop_code

`UB GDataRecord4000::axis_c_stop_code`
C axis stop code.
Definition at line 130 of file gclib_record.h.

14.19.2.84 axis_c_reference_position

`SL GDataRecord4000::axis_c_reference_position`
C axis reference position.
Definition at line 131 of file gclib_record.h.

14.19.2.85 axis_c_motor_position

`SL GDataRecord4000::axis_c_motor_position`
C axis motor position.
Definition at line 132 of file gclib_record.h.

14.19.2.86 axis_c_position_error

`SL GDataRecord4000::axis_c_position_error`
C axis position error.
Definition at line 133 of file gclib_record.h.

14.19.2.87 axis_c_aux_position

`SL GDataRecord4000::axis_c_aux_position`
C axis auxiliary position.
Definition at line 134 of file gclib_record.h.

14.19.2.88 axis_c_velocity

`SL GDataRecord4000::axis_c_velocity`
C axis velocity.
Definition at line 135 of file gclib_record.h.

14.19.2.89 axis_c_torque

`SL GDataRecord4000::axis_c_torque`
C axis torque.
Definition at line 136 of file gclib_record.h.

14.19.2.90 axis_c_analog_in

`UW GDataRecord4000::axis_c_analog_in`
C axis analog input.
Definition at line 137 of file gclib_record.h.

14.19.2.91 axis_c_halls

UB GDataRecord4000::axis_c_halls
C Hall Input Status.
Definition at line 138 of file gclib_record.h.

14.19.2.92 axis_c_reserved

UB GDataRecord4000::axis_c_reserved
Reserved.
Definition at line 139 of file gclib_record.h.

14.19.2.93 axis_c_variable

SL GDataRecord4000::axis_c_variable
C User-defined variable (ZA).
Definition at line 140 of file gclib_record.h.

14.19.2.94 axis_d_status

UW GDataRecord4000::axis_d_status
D axis status.
Definition at line 142 of file gclib_record.h.

14.19.2.95 axis_d_switches

UB GDataRecord4000::axis_d_switches
D axis switches.
Definition at line 143 of file gclib_record.h.

14.19.2.96 axis_d_stop_code

UB GDataRecord4000::axis_d_stop_code
D axis stop code.
Definition at line 144 of file gclib_record.h.

14.19.2.97 axis_d_reference_position

SL GDataRecord4000::axis_d_reference_position
D axis reference position.
Definition at line 145 of file gclib_record.h.

14.19.2.98 axis_d_motor_position

SL GDataRecord4000::axis_d_motor_position
D axis motor position.
Definition at line 146 of file gclib_record.h.

14.19.2.99 axis_d_position_error

SL GDataRecord4000::axis_d_position_error
D axis position error.
Definition at line 147 of file gclib_record.h.

14.19.2.100 axis_d_aux_position

SL GDataRecord4000::axis_d_aux_position
D axis auxiliary position.
Definition at line 148 of file gclib_record.h.

14.19.2.101 axis_d_velocity

SL GDataRecord4000::axis_d_velocity
D axis velocity.
Definition at line 149 of file gclib_record.h.

14.19.2.102 axis_d_torque

SL GDataRecord4000::axis_d_torque
D axis torque.
Definition at line 150 of file gclib_record.h.

14.19.2.103 axis_d_analog_in

UW GDataRecord4000::axis_d_analog_in
D axis analog input.
Definition at line 151 of file gclib_record.h.

14.19.2.104 axis_d_halls

UB GDataRecord4000::axis_d_halls
D Hall Input Status.
Definition at line 152 of file gclib_record.h.

14.19.2.105 axis_d_reserved

UB GDataRecord4000::axis_d_reserved
Reserved.
Definition at line 153 of file gclib_record.h.

14.19.2.106 axis_d_variable

SL GDataRecord4000::axis_d_variable
D User-defined variable (ZA).
Definition at line 154 of file gclib_record.h.

14.19.2.107 axis_e_status

UW GDataRecord4000::axis_e_status
E axis status.
Definition at line 156 of file gclib_record.h.

14.19.2.108 axis_e_switches

UB GDataRecord4000::axis_e_switches
E axis switches.
Definition at line 157 of file gclib_record.h.

14.19.2.109 axis_e_stop_code

UB GDataRecord4000::axis_e_stop_code
E axis stop code.
Definition at line 158 of file gclib_record.h.

14.19.2.110 axis_e_reference_position

SL GDataRecord4000::axis_e_reference_position
E axis reference position.
Definition at line 159 of file gclib_record.h.

14.19.2.111 axis_e_motor_position

SL GDataRecord4000::axis_e_motor_position
E axis motor position.
Definition at line 160 of file gclib_record.h.

14.19.2.112 axis_e_position_error

SL GDataRecord4000::axis_e_position_error
E axis position error.
Definition at line 161 of file gclib_record.h.

14.19.2.113 axis_e_aux_position

SL GDataRecord4000::axis_e_aux_position
E axis auxiliary position.
Definition at line 162 of file gclib_record.h.

14.19.2.114 axis_e_velocity

SL GDataRecord4000::axis_e_velocity
E axis velocity.
Definition at line 163 of file gclib_record.h.

14.19.2.115 axis_e_torque

SL GDataRecord4000::axis_e_torque
E axis torque.
Definition at line 164 of file gclib_record.h.

14.19.2.116 axis_e_analog_in

UW GDataRecord4000::axis_e_analog_in
E axis analog input.
Definition at line 165 of file gclib_record.h.

14.19.2.117 axis_e_halls

UB GDataRecord4000::axis_e_halls
E Hall Input Status.
Definition at line 166 of file gclib_record.h.

14.19.2.118 axis_e_reserved

UB GDataRecord4000::axis_e_reserved
Reserved.
Definition at line 167 of file gclib_record.h.

14.19.2.119 axis_e_variable

SL GDataRecord4000::axis_e_variable
E User-defined variable (ZA).
Definition at line 168 of file gclib_record.h.

14.19.2.120 axis_f_status

UW GDataRecord4000::axis_f_status
F axis status.
Definition at line 170 of file gclib_record.h.

14.19.2.121 axis_f_switches

UB GDataRecord4000::axis_f_switches
F axis switches.
Definition at line 171 of file gclib_record.h.

14.19.2.122 axis_f_stop_code

UB GDataRecord4000::axis_f_stop_code
F axis stop code.
Definition at line 172 of file gclib_record.h.

14.19.2.123 axis_f_reference_position

SL GDataRecord4000::axis_f_reference_position
F axis reference position.
Definition at line 173 of file gclib_record.h.

14.19.2.124 axis_f_motor_position

SL GDataRecord4000::axis_f_motor_position
F axis motor position.
Definition at line 174 of file gclib_record.h.

14.19.2.125 axis_f_position_error

SL GDataRecord4000::axis_f_position_error
F axis position error.
Definition at line 175 of file gclib_record.h.

14.19.2.126 axis_f_aux_position

SL GDataRecord4000::axis_f_aux_position
F axis auxiliary position.
Definition at line 176 of file gclib_record.h.

14.19.2.127 axis_f_velocity

SL GDataRecord4000::axis_f_velocity
F axis velocity.
Definition at line 177 of file gclib_record.h.

14.19.2.128 axis_f_torque

SL GDataRecord4000::axis_f_torque
F axis torque.
Definition at line 178 of file gclib_record.h.

14.19.2.129 axis_f_analog_in

UW GDataRecord4000::axis_f_analog_in
F axis analog input.
Definition at line 179 of file gclib_record.h.

14.19.2.130 axis_f_halls

UB GDataRecord4000::axis_f_halls
F Hall Input Status.
Definition at line 180 of file gclib_record.h.

14.19.2.131 axis_f_reserved

UB GDataRecord4000::axis_f_reserved
Reserved.
Definition at line 181 of file gclib_record.h.

14.19.2.132 axis_f_variable

SL GDataRecord4000::axis_f_variable
F User-defined variable (ZA).
Definition at line 182 of file gclib_record.h.

14.19.2.133 axis_g_status

UW GDataRecord4000::axis_g_status
G axis status.
Definition at line 184 of file gclib_record.h.

14.19.2.134 axis_g_switches

UB GDataRecord4000::axis_g_switches
G axis switches.
Definition at line 185 of file gclib_record.h.

14.19.2.135 axis_g_stop_code

UB GDataRecord4000::axis_g_stop_code
G axis stop code.
Definition at line 186 of file gclib_record.h.

14.19.2.136 axis_g_reference_position

SL GDataRecord4000::axis_g_reference_position
G axis reference position.
Definition at line 187 of file gclib_record.h.

14.19.2.137 axis_g_motor_position

SL GDataRecord4000::axis_g_motor_position
G axis motor position.
Definition at line 188 of file gclib_record.h.

14.19.2.138 axis_g_position_error

SL GDataRecord4000::axis_g_position_error
G axis position error.
Definition at line 189 of file gclib_record.h.

14.19.2.139 axis_g_aux_position

SL GDataRecord4000::axis_g_aux_position
G axis auxiliary position.
Definition at line 190 of file gclib_record.h.

14.19.2.140 axis_g_velocity

SL GDataRecord4000::axis_g_velocity
G axis velocity.
Definition at line 191 of file gclib_record.h.

14.19.2.141 axis_g_torque

SL GDataRecord4000::axis_g_torque
G axis torque.
Definition at line 192 of file gclib_record.h.

14.19.2.142 axis_g_analog_in

UW GDataRecord4000::axis_g_analog_in
G axis analog input.
Definition at line 193 of file gclib_record.h.

14.19.2.143 axis_g_halls

UB GDataRecord4000::axis_g_halls
G Hall Input Status.
Definition at line 194 of file gclib_record.h.

14.19.2.144 axis_g_reserved

UB GDataRecord4000::axis_g_reserved
Reserved.
Definition at line 195 of file gclib_record.h.

14.19.2.145 axis_g_variable

SL GDataRecord4000::axis_g_variable
G User-defined variable (ZA).
Definition at line 196 of file gclib_record.h.

14.19.2.146 axis_h_status

UW GDataRecord4000::axis_h_status
H axis status.
Definition at line 198 of file gclib_record.h.

14.19.2.147 axis_h_switches

UB GDataRecord4000::axis_h_switches
H axis switches.
Definition at line 199 of file gclib_record.h.

14.19.2.148 axis_h_stop_code

UB GDataRecord4000::axis_h_stop_code
H axis stop code.
Definition at line 200 of file gclib_record.h.

14.19.2.149 axis_h_reference_position

SL GDataRecord4000::axis_h_reference_position
H axis reference position.
Definition at line 201 of file gclib_record.h.

14.19.2.150 axis_h_motor_position

SL GDataRecord4000::axis_h_motor_position
H axis motor position.
Definition at line 202 of file gclib_record.h.

14.19.2.151 axis_h_position_error

SL GDataRecord4000::axis_h_position_error
H axis position error.
Definition at line 203 of file gclib_record.h.

14.19.2.152 axis_h_aux_position

SL GDataRecord4000::axis_h_aux_position
H axis auxiliary position.
Definition at line 204 of file gclib_record.h.

14.19.2.153 axis_h_velocity

SL GDataRecord4000::axis_h_velocity
H axis velocity.
Definition at line 205 of file gclib_record.h.

14.19.2.154 axis_h_torque

SL GDataRecord4000::axis_h_torque
H axis torque.
Definition at line 206 of file gclib_record.h.

14.19.2.155 axis_h_analog_in

UW GDataRecord4000::axis_h_analog_in
H axis analog input.
Definition at line 207 of file gclib_record.h.

14.19.2.156 axis_h_halls

UB GDataRecord4000::axis_h_halls
H Hall Input Status.
Definition at line 208 of file gclib_record.h.

14.19.2.157 axis_h_reserved

UB GDataRecord4000::axis_h_reserved
Reserved.
Definition at line 209 of file gclib_record.h.

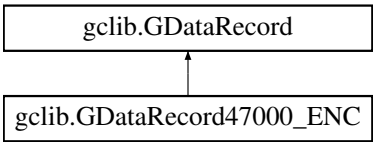
14.19.2.158 axis_h_variable

SL GDataRecord4000::axis_h_variable
H User-defined variable (ZA).
Definition at line 210 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.20 gclib.GDataRecord47000_ENC Struct Reference

Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
Inheritance diagram for gclib.GDataRecord47000_ENC:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  Sample number.
- UB error_code

  Error code.
- UB general_status

  General status.
- UW output_analog_0

  Analog output 0.
- UW output_analog_1

  Analog output 1.
- UW output_analog_2

  Analog output 2.
- UW output_analog_3

  Analog output 3.
- UW output_analog_4

  Analog output 4.
- UW output_analog_5

  Analog output 5.
- UW output_analog_6

  Analog output 6.
- UW output_analog_7

  Analog output 7.
- UW input_analog_0

  Analog input 0.
- UW input_analog_1

  Analog input 1.
- UW input_analog_2

  Analog input 2.
- UW input_analog_3

  Analog input 3.
- UW input_analog_4

Analog input 4.

- UW input_analog_5

  Analog input 5.
- UW input_analog_6

  Analog input 6.
- UW input_analog_7

  Analog input 7.
- UW output_bank_0

  Digital outputs 0-15;.
- UW input_bank_0

  Digital inputs 0-15;.
- UL pulse_count_0

  Pulse counter (see PC).
- SL zc_variable

  ZC User-defined variable (see ZC).
- SL zd_variable

  ZD User-defined variable (see ZD).
- SL encoder_0

  Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_1

  Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_2

  Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_3

  Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.

14.20.1 Detailed Description

Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
Definition at line 1770 of file gclib.cs.

14.20.2 Member Function Documentation

14.20.2.1 byte_array()

```
byte[] gclib.GDataRecord47000_ENC.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1772 of file gclib.cs.

14.20.3 Member Data Documentation

14.20.3.1 header_0

```
UB gclib.GDataRecord47000_ENC.header_0
```

1st Byte of Header.
Definition at line 1776 of file gclib.cs.

14.20.3.2 header_1

```
UB gclib.GDataRecord47000_ENC.header_1
```

2nd Byte of Header.
Definition at line 1777 of file gclib.cs.

14.20.3.3 header_2

UB gclib.GDataRecord47000_ENC.header_2
3rd Byte of Header.
Definition at line 1778 of file gclib.cs.

14.20.3.4 header_3

UB gclib.GDataRecord47000_ENC.header_3
4th Byte of Header.
Definition at line 1779 of file gclib.cs.

14.20.3.5 sample_number

UW gclib.GDataRecord47000_ENC.sample_number
Sample number.
Definition at line 1781 of file gclib.cs.

14.20.3.6 error_code

UB gclib.GDataRecord47000_ENC.error_code
Error code.
Definition at line 1782 of file gclib.cs.

14.20.3.7 general_status

UB gclib.GDataRecord47000_ENC.general_status
General status.
Definition at line 1783 of file gclib.cs.

14.20.3.8 output_analog_0

UW gclib.GDataRecord47000_ENC.output_analog_0
Analog output 0.
Definition at line 1785 of file gclib.cs.

14.20.3.9 output_analog_1

UW gclib.GDataRecord47000_ENC.output_analog_1
Analog output 1.
Definition at line 1786 of file gclib.cs.

14.20.3.10 output_analog_2

UW gclib.GDataRecord47000_ENC.output_analog_2
Analog output 2.
Definition at line 1787 of file gclib.cs.

14.20.3.11 output_analog_3

UW gclib.GDataRecord47000_ENC.output_analog_3
Analog output 3.
Definition at line 1788 of file gclib.cs.

14.20.3.12 output_analog_4

UW gclib.GDataRecord47000_ENC.output_analog_4
Analog output 4.
Definition at line 1789 of file gclib.cs.

14.20.3.13 output_analog_5

UW gclib.GDataRecord47000_ENC.output_analog_5
Analog output 5.
Definition at line 1790 of file gclib.cs.

14.20.3.14 output_analog_6

UW gclib.GDataRecord47000_ENC.output_analog_6
Analog output 6.
Definition at line 1791 of file gclib.cs.

14.20.3.15 output_analog_7

UW gclib.GDataRecord47000_ENC.output_analog_7
Analog output 7.
Definition at line 1792 of file gclib.cs.

14.20.3.16 input_analog_0

UW gclib.GDataRecord47000_ENC.input_analog_0
Analog input 0.
Definition at line 1794 of file gclib.cs.

14.20.3.17 input_analog_1

UW gclib.GDataRecord47000_ENC.input_analog_1
Analog input 1.
Definition at line 1795 of file gclib.cs.

14.20.3.18 input_analog_2

UW gclib.GDataRecord47000_ENC.input_analog_2
Analog input 2.
Definition at line 1796 of file gclib.cs.

14.20.3.19 input_analog_3

UW gclib.GDataRecord47000_ENC.input_analog_3
Analog input 3.
Definition at line 1797 of file gclib.cs.

14.20.3.20 input_analog_4

UW gclib.GDataRecord47000_ENC.input_analog_4
Analog input 4.
Definition at line 1798 of file gclib.cs.

14.20.3.21 input_analog_5

UW gclib.GDataRecord47000_ENC.input_analog_5
Analog input 5.
Definition at line 1799 of file gclib.cs.

14.20.3.22 input_analog_6

UW gclib.GDataRecord47000_ENC.input_analog_6
Analog input 6.
Definition at line 1800 of file gclib.cs.

14.20.3.23 input_analog_7

`UW gclib.GDataRecord47000_ENC.input_analog_7`
Analog input 7.
Definition at line 1801 of file gclib.cs.

14.20.3.24 output_bank_0

`UW gclib.GDataRecord47000_ENC.output_bank_0`
Digital outputs 0-15;.
Definition at line 1803 of file gclib.cs.

14.20.3.25 input_bank_0

`UW gclib.GDataRecord47000_ENC.input_bank_0`
Digital inputs 0-15;.
Definition at line 1805 of file gclib.cs.

14.20.3.26 pulse_count_0

`UL gclib.GDataRecord47000_ENC.pulse_count_0`
Pulse counter (see PC).
Definition at line 1807 of file gclib.cs.

14.20.3.27 zc_variable

`SL gclib.GDataRecord47000_ENC.zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1808 of file gclib.cs.

14.20.3.28 zd_variable

`SL gclib.GDataRecord47000_ENC.zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1809 of file gclib.cs.

14.20.3.29 encoder_0

`SL gclib.GDataRecord47000_ENC.encoder_0`
Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1811 of file gclib.cs.

14.20.3.30 encoder_1

`SL gclib.GDataRecord47000_ENC.encoder_1`
Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1812 of file gclib.cs.

14.20.3.31 encoder_2

`SL gclib.GDataRecord47000_ENC.encoder_2`
Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1813 of file gclib.cs.

14.20.3.32 encoder_3

`SL gclib.GDataRecord47000_ENC.encoder_3`
Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1814 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.21 GDataRecord47000_ENC Struct Reference

Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
`#include <gclib_record.h>`

Public Attributes

- UB header_0
  1st Byte of Header.
- UB header_1
  2nd Byte of Header.
- UB header_2
  3rd Byte of Header.
- UB header_3
  4th Byte of Header.
- UW sample_number
  Sample number.
- UB error_code
  Error code.
- UB general_status
  General status.
- UW output_analog_0
  Analog output 0.
- UW output_analog_1
  Analog output 1.
- UW output_analog_2
  Analog output 2.
- UW output_analog_3
  Analog output 3.
- UW output_analog_4
  Analog output 4.
- UW output_analog_5
  Analog output 5.
- UW output_analog_6
  Analog output 6.
- UW output_analog_7
  Analog output 7.
- UW input_analog_0
  Analog input 0.
- UW input_analog_1
  Analog input 1.
- UW input_analog_2
  Analog input 2.
- UW input_analog_3
  Analog input 3.
- UW input_analog_4
  Analog input 4.
- UW input_analog_5
  Analog input 5.

- UW input_analog_6

  Analog input 6.
- UW input_analog_7

  Analog input 7.
- UW output_bank_0

  Digital outputs 0-15;.
- UW input_bank_0

  Digital inputs 0-15;.
- UL pulse_count_0

  Pulse counter (see PC).
- SL zc_variable

  ZC User-defined variable (see ZC).
- SL zd_variable

  ZD User-defined variable (see ZD).
- SL encoder_0

  Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_1

  Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_2

  Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_3

  Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.

14.21.1 Detailed Description

Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
Definition at line 866 of file gclib_record.h.

14.21.2 Member Data Documentation

14.21.2.1 header_0

```
UB GDataRecord47000_ENC::header_0
```

1st Byte of Header.
Definition at line 871 of file gclib_record.h.

14.21.2.2 header_1

```
UB GDataRecord47000_ENC::header_1
```

2nd Byte of Header.
Definition at line 872 of file gclib_record.h.

14.21.2.3 header_2

```
UB GDataRecord47000_ENC::header_2
```

3rd Byte of Header.
Definition at line 873 of file gclib_record.h.

14.21.2.4 header_3

```
UB GDataRecord47000_ENC::header_3
```

4th Byte of Header.
Definition at line 874 of file gclib_record.h.

14.21.2.5 sample_number

`UW GDataRecord47000_ENC::sample_number`
Sample number.
Definition at line 876 of file gclib_record.h.

14.21.2.6 error_code

`UB GDataRecord47000_ENC::error_code`
Error code.
Definition at line 877 of file gclib_record.h.

14.21.2.7 general_status

`UB GDataRecord47000_ENC::general_status`
General status.
Definition at line 878 of file gclib_record.h.

14.21.2.8 output_analog_0

`UW GDataRecord47000_ENC::output_analog_0`
Analog output 0.
Definition at line 880 of file gclib_record.h.

14.21.2.9 output_analog_1

`UW GDataRecord47000_ENC::output_analog_1`
Analog output 1.
Definition at line 881 of file gclib_record.h.

14.21.2.10 output_analog_2

`UW GDataRecord47000_ENC::output_analog_2`
Analog output 2.
Definition at line 882 of file gclib_record.h.

14.21.2.11 output_analog_3

`UW GDataRecord47000_ENC::output_analog_3`
Analog output 3.
Definition at line 883 of file gclib_record.h.

14.21.2.12 output_analog_4

`UW GDataRecord47000_ENC::output_analog_4`
Analog output 4.
Definition at line 884 of file gclib_record.h.

14.21.2.13 output_analog_5

`UW GDataRecord47000_ENC::output_analog_5`
Analog output 5.
Definition at line 885 of file gclib_record.h.

14.21.2.14 output_analog_6

`UW GDataRecord47000_ENC::output_analog_6`
Analog output 6.
Definition at line 886 of file gclib_record.h.

14.21.2.15 output_analog_7

UW GDataRecord47000_ENC::output_analog_7
Analog output 7.
Definition at line 887 of file gclib_record.h.

14.21.2.16 input_analog_0

UW GDataRecord47000_ENC::input_analog_0
Analog input 0.
Definition at line 889 of file gclib_record.h.

14.21.2.17 input_analog_1

UW GDataRecord47000_ENC::input_analog_1
Analog input 1.
Definition at line 890 of file gclib_record.h.

14.21.2.18 input_analog_2

UW GDataRecord47000_ENC::input_analog_2
Analog input 2.
Definition at line 891 of file gclib_record.h.

14.21.2.19 input_analog_3

UW GDataRecord47000_ENC::input_analog_3
Analog input 3.
Definition at line 892 of file gclib_record.h.

14.21.2.20 input_analog_4

UW GDataRecord47000_ENC::input_analog_4
Analog input 4.
Definition at line 893 of file gclib_record.h.

14.21.2.21 input_analog_5

UW GDataRecord47000_ENC::input_analog_5
Analog input 5.
Definition at line 894 of file gclib_record.h.

14.21.2.22 input_analog_6

UW GDataRecord47000_ENC::input_analog_6
Analog input 6.
Definition at line 895 of file gclib_record.h.

14.21.2.23 input_analog_7

UW GDataRecord47000_ENC::input_analog_7
Analog input 7.
Definition at line 896 of file gclib_record.h.

14.21.2.24 output_bank_0

UW GDataRecord47000_ENC::output_bank_0
Digital outputs 0-15;.
Definition at line 898 of file gclib_record.h.

14.21.2.25 input_bank_0

`UW GDataRecord47000_ENC::input_bank_0`
Digital inputs 0-15;.
Definition at line 900 of file gclib_record.h.

14.21.2.26 pulse_count_0

`UL GDataRecord47000_ENC::pulse_count_0`
Pulse counter (see PC).
Definition at line 902 of file gclib_record.h.

14.21.2.27 zc_variable

`SL GDataRecord47000_ENC::zc_variable`
ZC User-defined variable (see ZC).
Definition at line 903 of file gclib_record.h.

14.21.2.28 zd_variable

`SL GDataRecord47000_ENC::zd_variable`
ZD User-defined variable (see ZD).
Definition at line 904 of file gclib_record.h.

14.21.2.29 encoder_0

`SL GDataRecord47000_ENC::encoder_0`
Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 906 of file gclib_record.h.

14.21.2.30 encoder_1

`SL GDataRecord47000_ENC::encoder_1`
Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 907 of file gclib_record.h.

14.21.2.31 encoder_2

`SL GDataRecord47000_ENC::encoder_2`
Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 908 of file gclib_record.h.

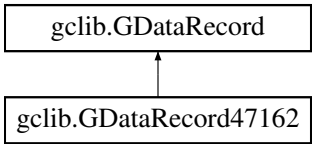
14.21.2.32 encoder_3

`SL GDataRecord47000_ENC::encoder_3`
Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 909 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.22 gclib.GDataRecord47162 Struct Reference

Data record struct for RIO-47162.
Inheritance diagram for gclib.GDataRecord47162:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  Sample number.
- UB error_code

  Error code.
- UB general_status

  General status.
- UW output_analog_0

  Analog output 0.
- UW output_analog_1

  Analog output 1.
- UW output_analog_2

  Analog output 2.
- UW output_analog_3

  Analog output 3.
- UW output_analog_4

  Analog output 4.
- UW output_analog_5

  Analog output 5.
- UW output_analog_6

  Analog output 6.
- UW output_analog_7

  Analog output 7.
- UW input_analog_0

  Analog input 0.
- UW input_analog_1

  Analog input 1.
- UW input_analog_2

  Analog input 2.
- UW input_analog_3

  Analog input 3.
- UW input_analog_4

Analog input 4.

- UW input_analog_5

  Analog input 5.
- UW input_analog_6

  Analog input 6.
- UW input_analog_7

  Analog input 7.
- UB output_byte_0

  Digital outputs 0-7.
- UB output_byte_1

  Digital outputs 8-15.
- UB output_byte_2

  Digital outputs 16-23.
- UB input_byte_0

  Digital inputs 0-7.
- UB input_byte_1

  Digital inputs 8-15.
- UB input_byte_2

  Digital inputs 16-23.
- UB input_byte_3

  Digital inputs 24-31.
- UB input_byte_4

  Digital inputs 32-39.
- UL pulse_count_0

  Pulse counter (see PC).
- SL zc_variable

  ZC User-defined variable (see ZC).
- SL zd_variable

  ZD User-defined variable (see ZD).
- SL encoder_0

  Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_1

  Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_2

  Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_3

  Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.

14.22.1 Detailed Description

Data record struct for RIO-47162.
Definition at line 1925 of file gclib.cs.

14.22.2 Member Function Documentation

14.22.2.1 byte_array()

```
byte[] gclib.GDataRecord47162.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1927 of file gclib.cs.

14.22.3 Member Data Documentation

14.22.3.1 header_0

`UB gclib.GDataRecord47162.header_0`
1st Byte of Header.
Definition at line 1930 of file gclib.cs.

14.22.3.2 header_1

`UB gclib.GDataRecord47162.header_1`
2nd Byte of Header.
Definition at line 1931 of file gclib.cs.

14.22.3.3 header_2

`UB gclib.GDataRecord47162.header_2`
3rd Byte of Header.
Definition at line 1932 of file gclib.cs.

14.22.3.4 header_3

`UB gclib.GDataRecord47162.header_3`
4th Byte of Header.
Definition at line 1933 of file gclib.cs.

14.22.3.5 sample_number

`UW gclib.GDataRecord47162.sample_number`
Sample number.
Definition at line 1935 of file gclib.cs.

14.22.3.6 error_code

`UB gclib.GDataRecord47162.error_code`
Error code.
Definition at line 1936 of file gclib.cs.

14.22.3.7 general_status

`UB gclib.GDataRecord47162.general_status`
General status.
Definition at line 1937 of file gclib.cs.

14.22.3.8 output_analog_0

`UW gclib.GDataRecord47162.output_analog_0`
Analog output 0.
Definition at line 1939 of file gclib.cs.

14.22.3.9 output_analog_1

`UW gclib.GDataRecord47162.output_analog_1`
Analog output 1.
Definition at line 1940 of file gclib.cs.

14.22.3.10 output_analog_2

`UW gclib.GDataRecord47162.output_analog_2`
Analog output 2.
Definition at line 1941 of file gclib.cs.

14.22.3.11 output_analog_3

UW gclib.GDataRecord47162.output_analog_3
Analog output 3.
Definition at line 1942 of file gclib.cs.

14.22.3.12 output_analog_4

UW gclib.GDataRecord47162.output_analog_4
Analog output 4.
Definition at line 1943 of file gclib.cs.

14.22.3.13 output_analog_5

UW gclib.GDataRecord47162.output_analog_5
Analog output 5.
Definition at line 1944 of file gclib.cs.

14.22.3.14 output_analog_6

UW gclib.GDataRecord47162.output_analog_6
Analog output 6.
Definition at line 1945 of file gclib.cs.

14.22.3.15 output_analog_7

UW gclib.GDataRecord47162.output_analog_7
Analog output 7.
Definition at line 1946 of file gclib.cs.

14.22.3.16 input_analog_0

UW gclib.GDataRecord47162.input_analog_0
Analog input 0.
Definition at line 1948 of file gclib.cs.

14.22.3.17 input_analog_1

UW gclib.GDataRecord47162.input_analog_1
Analog input 1.
Definition at line 1949 of file gclib.cs.

14.22.3.18 input_analog_2

UW gclib.GDataRecord47162.input_analog_2
Analog input 2.
Definition at line 1950 of file gclib.cs.

14.22.3.19 input_analog_3

UW gclib.GDataRecord47162.input_analog_3
Analog input 3.
Definition at line 1951 of file gclib.cs.

14.22.3.20 input_analog_4

UW gclib.GDataRecord47162.input_analog_4
Analog input 4.
Definition at line 1952 of file gclib.cs.

14.22.3.21 input_analog_5

`UW gclib.GDataRecord47162.input_analog_5`
Analog input 5.
Definition at line 1953 of file gclib.cs.

14.22.3.22 input_analog_6

`UW gclib.GDataRecord47162.input_analog_6`
Analog input 6.
Definition at line 1954 of file gclib.cs.

14.22.3.23 input_analog_7

`UW gclib.GDataRecord47162.input_analog_7`
Analog input 7.
Definition at line 1955 of file gclib.cs.

14.22.3.24 output_byte_0

`UB gclib.GDataRecord47162.output_byte_0`
Digital outputs 0-7.
Definition at line 1957 of file gclib.cs.

14.22.3.25 output_byte_1

`UB gclib.GDataRecord47162.output_byte_1`
Digital outputs 8-15.
Definition at line 1958 of file gclib.cs.

14.22.3.26 output_byte_2

`UB gclib.GDataRecord47162.output_byte_2`
Digital outputs 16-23.
Definition at line 1959 of file gclib.cs.

14.22.3.27 input_byte_0

`UB gclib.GDataRecord47162.input_byte_0`
Digital inputs 0-7.
Definition at line 1961 of file gclib.cs.

14.22.3.28 input_byte_1

`UB gclib.GDataRecord47162.input_byte_1`
Digital inputs 8-15.
Definition at line 1962 of file gclib.cs.

14.22.3.29 input_byte_2

`UB gclib.GDataRecord47162.input_byte_2`
Digital inputs 16-23.
Definition at line 1963 of file gclib.cs.

14.22.3.30 input_byte_3

`UB gclib.GDataRecord47162.input_byte_3`
Digital inputs 24-31.
Definition at line 1964 of file gclib.cs.

14.22.3.31 input_byte_4

UB gclib.GDataRecord47162.input_byte_4
Digital inputs 32-39.
Definition at line 1965 of file gclib.cs.

14.22.3.32 pulse_count_0

UL gclib.GDataRecord47162.pulse_count_0
Pulse counter (see PC).
Definition at line 1967 of file gclib.cs.

14.22.3.33 zc_variable

SL gclib.GDataRecord47162.zc_variable
ZC User-defined variable (see ZC).
Definition at line 1968 of file gclib.cs.

14.22.3.34 zd_variable

SL gclib.GDataRecord47162.zd_variable
ZD User-defined variable (see ZD).
Definition at line 1969 of file gclib.cs.

14.22.3.35 encoder_0

SL gclib.GDataRecord47162.encoder_0
Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1971 of file gclib.cs.

14.22.3.36 encoder_1

SL gclib.GDataRecord47162.encoder_1
Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1972 of file gclib.cs.

14.22.3.37 encoder_2

SL gclib.GDataRecord47162.encoder_2
Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1973 of file gclib.cs.

14.22.3.38 encoder_3

SL gclib.GDataRecord47162.encoder_3
Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1974 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.23 GDataRecord47162 Struct Reference

Data record struct for RIO-47162.
`#include <gclib_record.h>`

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  Sample number.
- UB error_code

  Error code.
- UB general_status

  General status.
- UW output_analog_0

  Analog output 0.
- UW output_analog_1

  Analog output 1.
- UW output_analog_2

  Analog output 2.
- UW output_analog_3

  Analog output 3.
- UW output_analog_4

  Analog output 4.
- UW output_analog_5

  Analog output 5.
- UW output_analog_6

  Analog output 6.
- UW output_analog_7

  Analog output 7.
- UW input_analog_0

  Analog input 0.
- UW input_analog_1

  Analog input 1.
- UW input_analog_2

  Analog input 2.
- UW input_analog_3

  Analog input 3.
- UW input_analog_4

  Analog input 4.
- UW input_analog_5

  Analog input 5.
- UW input_analog_6

  Analog input 6.
- UW input_analog_7

  Analog input 7.
- UB output_byte_0

  Digital outputs 0-7.
- UB output_byte_1

Digital outputs 8-15.

- UB output_byte_2

  Digital outputs 16-23.
- UB input_byte_0

  Digital inputs 0-7.
- UB input_byte_1

  Digital inputs 8-15.
- UB input_byte_2

  Digital inputs 16-23.
- UB input_byte_3

  Digital inputs 24-31.
- UB input_byte_4

  Digital inputs 32-39.
- UL pulse_count_0

  Pulse counter (see PC).
- SL zc_variable

  ZC User-defined variable (see ZC).
- SL zd_variable

  ZD User-defined variable (see ZD).
- SL encoder_0

  Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_1

  Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_2

  Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_3

  Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.

14.23.1 Detailed Description

Data record struct for RIO-47162.
Definition at line 1015 of file gclib_record.h.

14.23.2 Member Data Documentation

14.23.2.1 header_0

```
UB GDataRecord47162::header_0
```

1st Byte of Header.
Definition at line 1019 of file gclib_record.h.

14.23.2.2 header_1

```
UB GDataRecord47162::header_1
```

2nd Byte of Header.
Definition at line 1020 of file gclib_record.h.

14.23.2.3 header_2

```
UB GDataRecord47162::header_2
```

3rd Byte of Header.
Definition at line 1021 of file gclib_record.h.

14.23.2.4 header_3

UB GDataRecord47162::header_3
4th Byte of Header.
Definition at line 1022 of file gclib_record.h.

14.23.2.5 sample_number

UW GDataRecord47162::sample_number
Sample number.
Definition at line 1024 of file gclib_record.h.

14.23.2.6 error_code

UB GDataRecord47162::error_code
Error code.
Definition at line 1025 of file gclib_record.h.

14.23.2.7 general_status

UB GDataRecord47162::general_status
General status.
Definition at line 1026 of file gclib_record.h.

14.23.2.8 output_analog_0

UW GDataRecord47162::output_analog_0
Analog output 0.
Definition at line 1028 of file gclib_record.h.

14.23.2.9 output_analog_1

UW GDataRecord47162::output_analog_1
Analog output 1.
Definition at line 1029 of file gclib_record.h.

14.23.2.10 output_analog_2

UW GDataRecord47162::output_analog_2
Analog output 2.
Definition at line 1030 of file gclib_record.h.

14.23.2.11 output_analog_3

UW GDataRecord47162::output_analog_3
Analog output 3.
Definition at line 1031 of file gclib_record.h.

14.23.2.12 output_analog_4

UW GDataRecord47162::output_analog_4
Analog output 4.
Definition at line 1032 of file gclib_record.h.

14.23.2.13 output_analog_5

UW GDataRecord47162::output_analog_5
Analog output 5.
Definition at line 1033 of file gclib_record.h.

14.23.2.14 output_analog_6

UW GDataRecord47162::output_analog_6
Analog output 6.
Definition at line 1034 of file gclib_record.h.

14.23.2.15 output_analog_7

UW GDataRecord47162::output_analog_7
Analog output 7.
Definition at line 1035 of file gclib_record.h.

14.23.2.16 input_analog_0

UW GDataRecord47162::input_analog_0
Analog input 0.
Definition at line 1037 of file gclib_record.h.

14.23.2.17 input_analog_1

UW GDataRecord47162::input_analog_1
Analog input 1.
Definition at line 1038 of file gclib_record.h.

14.23.2.18 input_analog_2

UW GDataRecord47162::input_analog_2
Analog input 2.
Definition at line 1039 of file gclib_record.h.

14.23.2.19 input_analog_3

UW GDataRecord47162::input_analog_3
Analog input 3.
Definition at line 1040 of file gclib_record.h.

14.23.2.20 input_analog_4

UW GDataRecord47162::input_analog_4
Analog input 4.
Definition at line 1041 of file gclib_record.h.

14.23.2.21 input_analog_5

UW GDataRecord47162::input_analog_5
Analog input 5.
Definition at line 1042 of file gclib_record.h.

14.23.2.22 input_analog_6

UW GDataRecord47162::input_analog_6
Analog input 6.
Definition at line 1043 of file gclib_record.h.

14.23.2.23 input_analog_7

UW GDataRecord47162::input_analog_7
Analog input 7.
Definition at line 1044 of file gclib_record.h.

14.23.2.24 output_byte_0

`UB GDataRecord47162::output_byte_0`
Digital outputs 0-7.
Definition at line 1046 of file gclib_record.h.

14.23.2.25 output_byte_1

`UB GDataRecord47162::output_byte_1`
Digital outputs 8-15.
Definition at line 1047 of file gclib_record.h.

14.23.2.26 output_byte_2

`UB GDataRecord47162::output_byte_2`
Digital outputs 16-23.
Definition at line 1048 of file gclib_record.h.

14.23.2.27 input_byte_0

`UB GDataRecord47162::input_byte_0`
Digital inputs 0-7.
Definition at line 1050 of file gclib_record.h.

14.23.2.28 input_byte_1

`UB GDataRecord47162::input_byte_1`
Digital inputs 8-15.
Definition at line 1051 of file gclib_record.h.

14.23.2.29 input_byte_2

`UB GDataRecord47162::input_byte_2`
Digital inputs 16-23.
Definition at line 1052 of file gclib_record.h.

14.23.2.30 input_byte_3

`UB GDataRecord47162::input_byte_3`
Digital inputs 24-31.
Definition at line 1053 of file gclib_record.h.

14.23.2.31 input_byte_4

`UB GDataRecord47162::input_byte_4`
Digital inputs 32-39.
Definition at line 1054 of file gclib_record.h.

14.23.2.32 pulse_count_0

`UL GDataRecord47162::pulse_count_0`
Pulse counter (see PC).
Definition at line 1056 of file gclib_record.h.

14.23.2.33 zc_variable

`SL GDataRecord47162::zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1057 of file gclib_record.h.

14.23.2.34 zd_variable

SL GDataRecord47162::zd_variable
ZD User-defined variable (see ZD).
Definition at line 1058 of file gclib_record.h.

14.23.2.35 encoder_0

SL GDataRecord47162::encoder_0
Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1060 of file gclib_record.h.

14.23.2.36 encoder_1

SL GDataRecord47162::encoder_1
Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1061 of file gclib_record.h.

14.23.2.37 encoder_2

SL GDataRecord47162::encoder_2
Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1062 of file gclib_record.h.

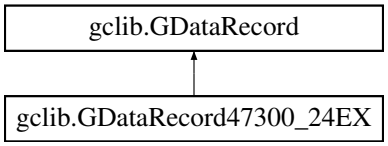
14.23.2.38 encoder_3

SL GDataRecord47162::encoder_3
Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1063 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.24 gclib.GDataRecord47300_24EX Struct Reference

Data record struct for RIO-47300 with 24EX I/O daughter board.
Inheritance diagram for gclib.GDataRecord47300_24EX:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.

- UB header_3
  4th Byte of Header.
- UW sample_number
  Sample number.
- UB error_code
  Error code.
- UB general_status
  General status.
- UW output_analog_0
  Analog output 0.
- UW output_analog_1
  Analog output 1.
- UW output_analog_2
  Analog output 2.
- UW output_analog_3
  Analog output 3.
- UW output_analog_4
  Analog output 4.
- UW output_analog_5
  Analog output 5.
- UW output_analog_6
  Analog output 6.
- UW output_analog_7
  Analog output 7.
- UW input_analog_0
  Analog input 0.
- UW input_analog_1
  Analog input 1.
- UW input_analog_2
  Analog input 2.
- UW input_analog_3
  Analog input 3.
- UW input_analog_4
  Analog input 4.
- UW input_analog_5
  Analog input 5.
- UW input_analog_6
  Analog input 6.
- UW input_analog_7
  Analog input 7.
- UW output_bank_0
  Digital outputs 0-15.
- UW output_bank_1
  Digital outputs 16-23.
- UW input_bank_0
  Digital inputs 0-15.
- UW input_bank_1
  Digital inputs 16-23.
- UL pulse_count_0
  Pulse counter (see PC)8.
- SL zc_variable

ZC User-defined variable (see ZC).

- SL zd_variable

  ZD User-defined variable (see ZD).

- UW output_bank_2

  Digital outputs 24-39. Data only valid for parts with 24EXOUT.

- UW output_back_3

  Digital outputs 40-47. Data only valid for parts with 24EXOUT.

- UW input_bank_2

  Digital inputs 24-39. Data only valid for parts with 24EXIN.

- UW input_bank_3

  Digital inputs 40-47. Data only valid for parts with 24EXIN.

14.24.1 Detailed Description

Data record struct for RIO-47300 with 24EX I/O daughter board.
Definition at line 1872 of file gclib.cs.

14.24.2 Member Function Documentation

14.24.2.1 byte_array()

```
byte[] gclib.GDataRecord47300_24EX.byte_array () [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1874 of file gclib.cs.

14.24.3 Member Data Documentation

14.24.3.1 header_0

```
UB gclib.GDataRecord47300_24EX.header_0
```

1st Byte of Header.
Definition at line 1878 of file gclib.cs.

14.24.3.2 header_1

```
UB gclib.GDataRecord47300_24EX.header_1
```

2nd Byte of Header.
Definition at line 1879 of file gclib.cs.

14.24.3.3 header_2

```
UB gclib.GDataRecord47300_24EX.header_2
```

3rd Byte of Header.
Definition at line 1880 of file gclib.cs.

14.24.3.4 header_3

```
UB gclib.GDataRecord47300_24EX.header_3
```

4th Byte of Header.
Definition at line 1881 of file gclib.cs.

14.24.3.5 sample_number

```
UW gclib.GDataRecord47300_24EX.sample_number
```

Sample number.
Definition at line 1883 of file gclib.cs.

14.24.3.6 error_code

`UB gclib.GDataRecord47300_24EX.error_code`
Error code.
Definition at line 1884 of file gclib.cs.

14.24.3.7 general_status

`UB gclib.GDataRecord47300_24EX.general_status`
General status.
Definition at line 1885 of file gclib.cs.

14.24.3.8 output_analog_0

`UW gclib.GDataRecord47300_24EX.output_analog_0`
Analog output 0.
Definition at line 1887 of file gclib.cs.

14.24.3.9 output_analog_1

`UW gclib.GDataRecord47300_24EX.output_analog_1`
Analog output 1.
Definition at line 1888 of file gclib.cs.

14.24.3.10 output_analog_2

`UW gclib.GDataRecord47300_24EX.output_analog_2`
Analog output 2.
Definition at line 1889 of file gclib.cs.

14.24.3.11 output_analog_3

`UW gclib.GDataRecord47300_24EX.output_analog_3`
Analog output 3.
Definition at line 1890 of file gclib.cs.

14.24.3.12 output_analog_4

`UW gclib.GDataRecord47300_24EX.output_analog_4`
Analog output 4.
Definition at line 1891 of file gclib.cs.

14.24.3.13 output_analog_5

`UW gclib.GDataRecord47300_24EX.output_analog_5`
Analog output 5.
Definition at line 1892 of file gclib.cs.

14.24.3.14 output_analog_6

`UW gclib.GDataRecord47300_24EX.output_analog_6`
Analog output 6.
Definition at line 1893 of file gclib.cs.

14.24.3.15 output_analog_7

`UW gclib.GDataRecord47300_24EX.output_analog_7`
Analog output 7.
Definition at line 1894 of file gclib.cs.

14.24.3.16 input_analog_0

UW gclib.GDataRecord47300_24EX.input_analog_0
Analog input 0.
Definition at line 1896 of file gclib.cs.

14.24.3.17 input_analog_1

UW gclib.GDataRecord47300_24EX.input_analog_1
Analog input 1.
Definition at line 1897 of file gclib.cs.

14.24.3.18 input_analog_2

UW gclib.GDataRecord47300_24EX.input_analog_2
Analog input 2.
Definition at line 1898 of file gclib.cs.

14.24.3.19 input_analog_3

UW gclib.GDataRecord47300_24EX.input_analog_3
Analog input 3.
Definition at line 1899 of file gclib.cs.

14.24.3.20 input_analog_4

UW gclib.GDataRecord47300_24EX.input_analog_4
Analog input 4.
Definition at line 1900 of file gclib.cs.

14.24.3.21 input_analog_5

UW gclib.GDataRecord47300_24EX.input_analog_5
Analog input 5.
Definition at line 1901 of file gclib.cs.

14.24.3.22 input_analog_6

UW gclib.GDataRecord47300_24EX.input_analog_6
Analog input 6.
Definition at line 1902 of file gclib.cs.

14.24.3.23 input_analog_7

UW gclib.GDataRecord47300_24EX.input_analog_7
Analog input 7.
Definition at line 1903 of file gclib.cs.

14.24.3.24 output_bank_0

UW gclib.GDataRecord47300_24EX.output_bank_0
Digital outputs 0-15.
Definition at line 1905 of file gclib.cs.

14.24.3.25 output_bank_1

UW gclib.GDataRecord47300_24EX.output_bank_1
Digital outputs 16-23.
Definition at line 1906 of file gclib.cs.

14.24.3.26 input_bank_0

UW gclib.GDataRecord47300_24EX.input_bank_0
Digital inputs 0-15.
Definition at line 1908 of file gclib.cs.

14.24.3.27 input_bank_1

UW gclib.GDataRecord47300_24EX.input_bank_1
Digital inputs 16-23.
Definition at line 1909 of file gclib.cs.

14.24.3.28 pulse_count_0

UL gclib.GDataRecord47300_24EX.pulse_count_0
Pulse counter (see PC)8.
Definition at line 1911 of file gclib.cs.

14.24.3.29 zc_variable

SL gclib.GDataRecord47300_24EX.zc_variable
ZC User-defined variable (see ZC).
Definition at line 1912 of file gclib.cs.

14.24.3.30 zd_variable

SL gclib.GDataRecord47300_24EX.zd_variable
ZD User-defined variable (see ZD).
Definition at line 1913 of file gclib.cs.

14.24.3.31 output_bank_2

UW gclib.GDataRecord47300_24EX.output_bank_2
Digital outputs 24-39. Data only valid for parts with 24EXOUT.
Definition at line 1915 of file gclib.cs.

14.24.3.32 output_back_3

UW gclib.GDataRecord47300_24EX.output_back_3
Digital outputs 40-47. Data only valid for parts with 24EXOUT.
Definition at line 1916 of file gclib.cs.

14.24.3.33 input_bank_2

UW gclib.GDataRecord47300_24EX.input_bank_2
Digital inputs 24-39. Data only valid for parts with 24EXIN.
Definition at line 1918 of file gclib.cs.

14.24.3.34 input_bank_3

UW gclib.GDataRecord47300_24EX.input_bank_3
Digital inputs 40-47. Data only valid for parts with 24EXIN.
Definition at line 1919 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.25 GDataRecord47300_24EX Struct Reference

Data record struct for RIO-47300 with 24EX I/O daughter board.

`#include <gclib_record.h>`

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  Sample number.
- UB error_code

  Error code.
- UB general_status

  General status.
- UW output_analog_0

  Analog output 0.
- UW output_analog_1

  Analog output 1.
- UW output_analog_2

  Analog output 2.
- UW output_analog_3

  Analog output 3.
- UW output_analog_4

  Analog output 4.
- UW output_analog_5

  Analog output 5.
- UW output_analog_6

  Analog output 6.
- UW output_analog_7

  Analog output 7.
- UW input_analog_0

  Analog input 0.
- UW input_analog_1

  Analog input 1.
- UW input_analog_2

  Analog input 2.
- UW input_analog_3

  Analog input 3.
- UW input_analog_4

  Analog input 4.
- UW input_analog_5

  Analog input 5.
- UW input_analog_6

  Analog input 6.
- UW input_analog_7

Analog input 7.

- UW output_bank_0

  Digital outputs 0-15.
- UW output_bank_1

  Digital outputs 16-23.
- UW input_bank_0

  Digital inputs 0-15.
- UW input_bank_1

  Digital inputs 16-23.
- UL pulse_count_0

  Pulse counter (see PC)8.
- SL zc_variable

  ZC User-defined variable (see ZC).
- SL zd_variable

  ZD User-defined variable (see ZD).
- UW output_bank_2

  Digital outputs 24-39. Data only valid for parts with 24EXOUT.
- UW output_back_3

  Digital outputs 40-47. Data only valid for parts with 24EXOUT.
- UW input_bank_2

  Digital inputs 24-39. Data only valid for parts with 24EXIN.
- UW input_bank_3

  Digital inputs 40-47. Data only valid for parts with 24EXIN.

14.25.1 Detailed Description

Data record struct for RIO-47300 with 24EX I/O daughter board.
Definition at line 964 of file gclib_record.h.

14.25.2 Member Data Documentation

14.25.2.1 header_0

```
UB GDataRecord47300_24EX::header_0
```

1st Byte of Header.
Definition at line 969 of file gclib_record.h.

14.25.2.2 header_1

```
UB GDataRecord47300_24EX::header_1
```

2nd Byte of Header.
Definition at line 970 of file gclib_record.h.

14.25.2.3 header_2

```
UB GDataRecord47300_24EX::header_2
```

3rd Byte of Header.
Definition at line 971 of file gclib_record.h.

14.25.2.4 header_3

```
UB GDataRecord47300_24EX::header_3
```

4th Byte of Header.
Definition at line 972 of file gclib_record.h.

14.25.2.5 sample_number

`UW GDataRecord47300_24EX::sample_number`
Sample number.
Definition at line 974 of file gclib_record.h.

14.25.2.6 error_code

`UB GDataRecord47300_24EX::error_code`
Error code.
Definition at line 975 of file gclib_record.h.

14.25.2.7 general_status

`UB GDataRecord47300_24EX::general_status`
General status.
Definition at line 976 of file gclib_record.h.

14.25.2.8 output_analog_0

`UW GDataRecord47300_24EX::output_analog_0`
Analog output 0.
Definition at line 978 of file gclib_record.h.

14.25.2.9 output_analog_1

`UW GDataRecord47300_24EX::output_analog_1`
Analog output 1.
Definition at line 979 of file gclib_record.h.

14.25.2.10 output_analog_2

`UW GDataRecord47300_24EX::output_analog_2`
Analog output 2.
Definition at line 980 of file gclib_record.h.

14.25.2.11 output_analog_3

`UW GDataRecord47300_24EX::output_analog_3`
Analog output 3.
Definition at line 981 of file gclib_record.h.

14.25.2.12 output_analog_4

`UW GDataRecord47300_24EX::output_analog_4`
Analog output 4.
Definition at line 982 of file gclib_record.h.

14.25.2.13 output_analog_5

`UW GDataRecord47300_24EX::output_analog_5`
Analog output 5.
Definition at line 983 of file gclib_record.h.

14.25.2.14 output_analog_6

`UW GDataRecord47300_24EX::output_analog_6`
Analog output 6.
Definition at line 984 of file gclib_record.h.

14.25.2.15 output_analog_7

UW GDataRecord47300_24EX::output_analog_7
Analog output 7.
Definition at line 985 of file gclib_record.h.

14.25.2.16 input_analog_0

UW GDataRecord47300_24EX::input_analog_0
Analog input 0.
Definition at line 987 of file gclib_record.h.

14.25.2.17 input_analog_1

UW GDataRecord47300_24EX::input_analog_1
Analog input 1.
Definition at line 988 of file gclib_record.h.

14.25.2.18 input_analog_2

UW GDataRecord47300_24EX::input_analog_2
Analog input 2.
Definition at line 989 of file gclib_record.h.

14.25.2.19 input_analog_3

UW GDataRecord47300_24EX::input_analog_3
Analog input 3.
Definition at line 990 of file gclib_record.h.

14.25.2.20 input_analog_4

UW GDataRecord47300_24EX::input_analog_4
Analog input 4.
Definition at line 991 of file gclib_record.h.

14.25.2.21 input_analog_5

UW GDataRecord47300_24EX::input_analog_5
Analog input 5.
Definition at line 992 of file gclib_record.h.

14.25.2.22 input_analog_6

UW GDataRecord47300_24EX::input_analog_6
Analog input 6.
Definition at line 993 of file gclib_record.h.

14.25.2.23 input_analog_7

UW GDataRecord47300_24EX::input_analog_7
Analog input 7.
Definition at line 994 of file gclib_record.h.

14.25.2.24 output_bank_0

UW GDataRecord47300_24EX::output_bank_0
Digital outputs 0-15.
Definition at line 996 of file gclib_record.h.

14.25.2.25 output_bank_1

UW GDataRecord47300_24EX::output_bank_1
Digital outputs 16-23.
Definition at line 997 of file gclib_record.h.

14.25.2.26 input_bank_0

UW GDataRecord47300_24EX::input_bank_0
Digital inputs 0-15.
Definition at line 999 of file gclib_record.h.

14.25.2.27 input_bank_1

UW GDataRecord47300_24EX::input_bank_1
Digital inputs 16-23.
Definition at line 1000 of file gclib_record.h.

14.25.2.28 pulse_count_0

UL GDataRecord47300_24EX::pulse_count_0
Pulse counter (see PC)8.
Definition at line 1002 of file gclib_record.h.

14.25.2.29 zc_variable

SL GDataRecord47300_24EX::zc_variable
ZC User-defined variable (see ZC).
Definition at line 1003 of file gclib_record.h.

14.25.2.30 zd_variable

SL GDataRecord47300_24EX::zd_variable
ZD User-defined variable (see ZD).
Definition at line 1004 of file gclib_record.h.

14.25.2.31 output_bank_2

UW GDataRecord47300_24EX::output_bank_2
Digital outputs 24-39. Data only valid for parts with 24EXOUT.
Definition at line 1006 of file gclib_record.h.

14.25.2.32 output_back_3

UW GDataRecord47300_24EX::output_back_3
Digital outputs 40-47. Data only valid for parts with 24EXOUT.
Definition at line 1007 of file gclib_record.h.

14.25.2.33 input_bank_2

UW GDataRecord47300_24EX::input_bank_2
Digital inputs 24-39. Data only valid for parts with 24EXIN.
Definition at line 1009 of file gclib_record.h.

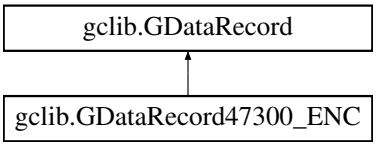
14.25.2.34 input_bank_3

UW GDataRecord47300_24EX::input_bank_3
Digital inputs 40-47. Data only valid for parts with 24EXIN.
Definition at line 1010 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.26 gclib.GDataRecord47300_ENC Struct Reference

Data record struct for RIO-47300. Includes encoder fields.
Inheritance diagram for gclib.GDataRecord47300_ENC:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  Sample number.
- UB error_code

  Error code.
- UB general_status

  General status.
- UW output_analog_0

  Analog output 0.
- UW output_analog_1

  Analog output 1.
- UW output_analog_2

  Analog output 2.
- UW output_analog_3

  Analog output 3.
- UW output_analog_4

  Analog output 4.
- UW output_analog_5

  Analog output 5.
- UW output_analog_6

  Analog output 6.
- UW output_analog_7

  Analog output 7.
- UW input_analog_0

  Analog input 0.

- UW input_analog_1

  Analog input 1.
- UW input_analog_2

  Analog input 2.
- UW input_analog_3

  Analog input 3.
- UW input_analog_4

  Analog input 4.
- UW input_analog_5

  Analog input 5.
- UW input_analog_6

  Analog input 6.
- UW input_analog_7

  Analog input 7.
- UW output_bank_0

  Digital outputs 0-15;.
- UW output_bank_1

  Digital outputs 16-23;.
- UW input_bank_0

  Digital inputs 0-15;.
- UW input_bank_1

  Digital inputs 16-23;.
- UL pulse_count_0

  Pulse counter (see PC).
- SL zc_variable

  ZC User-defined variable (see ZC).
- SL zd_variable

  ZD User-defined variable (see ZD).
- SL encoder_0

  Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_1

  Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_2

  Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_3

  Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.

14.26.1 Detailed Description

Data record struct for RIO-47300. Includes encoder fields.
Definition at line 1820 of file gclib.cs.

14.26.2 Member Function Documentation

14.26.2.1 byte_array()

```
byte[] gclib.GDataRecord47300_ENC.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1822 of file gclib.cs.

14.26.3 Member Data Documentation

14.26.3.1 header_0

`UB gclib.GDataRecord47300_ENC.header_0`
1st Byte of Header.
Definition at line 1826 of file gclib.cs.

14.26.3.2 header_1

`UB gclib.GDataRecord47300_ENC.header_1`
2nd Byte of Header.
Definition at line 1827 of file gclib.cs.

14.26.3.3 header_2

`UB gclib.GDataRecord47300_ENC.header_2`
3rd Byte of Header.
Definition at line 1828 of file gclib.cs.

14.26.3.4 header_3

`UB gclib.GDataRecord47300_ENC.header_3`
4th Byte of Header.
Definition at line 1829 of file gclib.cs.

14.26.3.5 sample_number

`UW gclib.GDataRecord47300_ENC.sample_number`
Sample number.
Definition at line 1831 of file gclib.cs.

14.26.3.6 error_code

`UB gclib.GDataRecord47300_ENC.error_code`
Error code.
Definition at line 1832 of file gclib.cs.

14.26.3.7 general_status

`UB gclib.GDataRecord47300_ENC.general_status`
General status.
Definition at line 1833 of file gclib.cs.

14.26.3.8 output_analog_0

`UW gclib.GDataRecord47300_ENC.output_analog_0`
Analog output 0.
Definition at line 1835 of file gclib.cs.

14.26.3.9 output_analog_1

`UW gclib.GDataRecord47300_ENC.output_analog_1`
Analog output 1.
Definition at line 1836 of file gclib.cs.

14.26.3.10 output_analog_2

`UW gclib.GDataRecord47300_ENC.output_analog_2`
Analog output 2.
Definition at line 1837 of file gclib.cs.

14.26.3.11 output_analog_3

UW gclib.GDataRecord47300_ENC.output_analog_3
Analog output 3.
Definition at line 1838 of file gclib.cs.

14.26.3.12 output_analog_4

UW gclib.GDataRecord47300_ENC.output_analog_4
Analog output 4.
Definition at line 1839 of file gclib.cs.

14.26.3.13 output_analog_5

UW gclib.GDataRecord47300_ENC.output_analog_5
Analog output 5.
Definition at line 1840 of file gclib.cs.

14.26.3.14 output_analog_6

UW gclib.GDataRecord47300_ENC.output_analog_6
Analog output 6.
Definition at line 1841 of file gclib.cs.

14.26.3.15 output_analog_7

UW gclib.GDataRecord47300_ENC.output_analog_7
Analog output 7.
Definition at line 1842 of file gclib.cs.

14.26.3.16 input_analog_0

UW gclib.GDataRecord47300_ENC.input_analog_0
Analog input 0.
Definition at line 1844 of file gclib.cs.

14.26.3.17 input_analog_1

UW gclib.GDataRecord47300_ENC.input_analog_1
Analog input 1.
Definition at line 1845 of file gclib.cs.

14.26.3.18 input_analog_2

UW gclib.GDataRecord47300_ENC.input_analog_2
Analog input 2.
Definition at line 1846 of file gclib.cs.

14.26.3.19 input_analog_3

UW gclib.GDataRecord47300_ENC.input_analog_3
Analog input 3.
Definition at line 1847 of file gclib.cs.

14.26.3.20 input_analog_4

UW gclib.GDataRecord47300_ENC.input_analog_4
Analog input 4.
Definition at line 1848 of file gclib.cs.

14.26.3.21 input_analog_5

`UW gclib.GDataRecord47300_ENC.input_analog_5`
Analog input 5.
Definition at line 1849 of file gclib.cs.

14.26.3.22 input_analog_6

`UW gclib.GDataRecord47300_ENC.input_analog_6`
Analog input 6.
Definition at line 1850 of file gclib.cs.

14.26.3.23 input_analog_7

`UW gclib.GDataRecord47300_ENC.input_analog_7`
Analog input 7.
Definition at line 1851 of file gclib.cs.

14.26.3.24 output_bank_0

`UW gclib.GDataRecord47300_ENC.output_bank_0`
Digital outputs 0-15;.
Definition at line 1853 of file gclib.cs.

14.26.3.25 output_bank_1

`UW gclib.GDataRecord47300_ENC.output_bank_1`
Digital outputs 16-23;.
Definition at line 1854 of file gclib.cs.

14.26.3.26 input_bank_0

`UW gclib.GDataRecord47300_ENC.input_bank_0`
Digital inputs 0-15;.
Definition at line 1856 of file gclib.cs.

14.26.3.27 input_bank_1

`UW gclib.GDataRecord47300_ENC.input_bank_1`
Digital inputs 16-23;.
Definition at line 1857 of file gclib.cs.

14.26.3.28 pulse_count_0

`UL gclib.GDataRecord47300_ENC.pulse_count_0`
Pulse counter (see PC).
Definition at line 1859 of file gclib.cs.

14.26.3.29 zc_variable

`SL gclib.GDataRecord47300_ENC.zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1860 of file gclib.cs.

14.26.3.30 zd_variable

`SL gclib.GDataRecord47300_ENC.zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1861 of file gclib.cs.

14.26.3.31 encoder_0

SL gclib.GDataRecord47300_ENC.encoder_0
Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1863 of file gclib.cs.

14.26.3.32 encoder_1

SL gclib.GDataRecord47300_ENC.encoder_1
Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1864 of file gclib.cs.

14.26.3.33 encoder_2

SL gclib.GDataRecord47300_ENC.encoder_2
Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1865 of file gclib.cs.

14.26.3.34 encoder_3

SL gclib.GDataRecord47300_ENC.encoder_3
Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 1866 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.27 GDataRecord47300_ENC Struct Reference

Data record struct for RIO-47300. Includes encoder fields.
`#include <gclib_record.h>`

Public Attributes

- UB header_0
  1st Byte of Header.
- UB header_1
  2nd Byte of Header.
- UB header_2
  3rd Byte of Header.
- UB header_3
  4th Byte of Header.
- UW sample_number
  Sample number.
- UB error_code
  Error code.
- UB general_status
  General status.
- UW output_analog_0
  Analog output 0.
- UW output_analog_1
  Analog output 1.
- UW output_analog_2
  Analog output 2.
- UW output_analog_3
  Analog output 3.

- UW output_analog_4

  Analog output 4.
- UW output_analog_5

  Analog output 5.
- UW output_analog_6

  Analog output 6.
- UW output_analog_7

  Analog output 7.
- UW input_analog_0

  Analog input 0.
- UW input_analog_1

  Analog input 1.
- UW input_analog_2

  Analog input 2.
- UW input_analog_3

  Analog input 3.
- UW input_analog_4

  Analog input 4.
- UW input_analog_5

  Analog input 5.
- UW input_analog_6

  Analog input 6.
- UW input_analog_7

  Analog input 7.
- UW output_bank_0

  Digital outputs 0-15;.
- UW output_bank_1

  Digital outputs 16-23;.
- UW input_bank_0

  Digital inputs 0-15;.
- UW input_bank_1

  Digital inputs 16-23;.
- UL pulse_count_0

  Pulse counter (see PC).
- SL zc_variable

  ZC User-defined variable (see ZC).
- SL zd_variable

  ZD User-defined variable (see ZD).
- SL encoder_0

  Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_1

  Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_2

  Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
- SL encoder_3

  Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.

14.27.1 Detailed Description

Data record struct for RIO-47300. Includes encoder fields.
Definition at line 914 of file gclib_record.h.

14.27.2 Member Data Documentation

14.27.2.1 header_0

UB GDataRecord47300_ENC::header_0
1st Byte of Header.
Definition at line 919 of file gclib_record.h.

14.27.2.2 header_1

UB GDataRecord47300_ENC::header_1
2nd Byte of Header.
Definition at line 920 of file gclib_record.h.

14.27.2.3 header_2

UB GDataRecord47300_ENC::header_2
3rd Byte of Header.
Definition at line 921 of file gclib_record.h.

14.27.2.4 header_3

UB GDataRecord47300_ENC::header_3
4th Byte of Header.
Definition at line 922 of file gclib_record.h.

14.27.2.5 sample_number

UW GDataRecord47300_ENC::sample_number
Sample number.
Definition at line 924 of file gclib_record.h.

14.27.2.6 error_code

UB GDataRecord47300_ENC::error_code
Error code.
Definition at line 925 of file gclib_record.h.

14.27.2.7 general_status

UB GDataRecord47300_ENC::general_status
General status.
Definition at line 926 of file gclib_record.h.

14.27.2.8 output_analog_0

UW GDataRecord47300_ENC::output_analog_0
Analog output 0.
Definition at line 928 of file gclib_record.h.

14.27.2.9 output_analog_1

UW GDataRecord47300_ENC::output_analog_1
Analog output 1.
Definition at line 929 of file gclib_record.h.

14.27.2.10 output_analog_2

UW GDataRecord47300_ENC::output_analog_2
Analog output 2.
Definition at line 930 of file gclib_record.h.

14.27.2.11 output_analog_3

UW GDataRecord47300_ENC::output_analog_3
Analog output 3.
Definition at line 931 of file gclib_record.h.

14.27.2.12 output_analog_4

UW GDataRecord47300_ENC::output_analog_4
Analog output 4.
Definition at line 932 of file gclib_record.h.

14.27.2.13 output_analog_5

UW GDataRecord47300_ENC::output_analog_5
Analog output 5.
Definition at line 933 of file gclib_record.h.

14.27.2.14 output_analog_6

UW GDataRecord47300_ENC::output_analog_6
Analog output 6.
Definition at line 934 of file gclib_record.h.

14.27.2.15 output_analog_7

UW GDataRecord47300_ENC::output_analog_7
Analog output 7.
Definition at line 935 of file gclib_record.h.

14.27.2.16 input_analog_0

UW GDataRecord47300_ENC::input_analog_0
Analog input 0.
Definition at line 937 of file gclib_record.h.

14.27.2.17 input_analog_1

UW GDataRecord47300_ENC::input_analog_1
Analog input 1.
Definition at line 938 of file gclib_record.h.

14.27.2.18 input_analog_2

UW GDataRecord47300_ENC::input_analog_2
Analog input 2.
Definition at line 939 of file gclib_record.h.

14.27.2.19 input_analog_3

UW GDataRecord47300_ENC::input_analog_3
Analog input 3.
Definition at line 940 of file gclib_record.h.

14.27.2.20 input_analog_4

UW GDataRecord47300_ENC::input_analog_4
Analog input 4.
Definition at line 941 of file gclib_record.h.

14.27.2.21 input_analog_5

`UW GDataRecord47300_ENC::input_analog_5`
Analog input 5.
Definition at line 942 of file gclib_record.h.

14.27.2.22 input_analog_6

`UW GDataRecord47300_ENC::input_analog_6`
Analog input 6.
Definition at line 943 of file gclib_record.h.

14.27.2.23 input_analog_7

`UW GDataRecord47300_ENC::input_analog_7`
Analog input 7.
Definition at line 944 of file gclib_record.h.

14.27.2.24 output_bank_0

`UW GDataRecord47300_ENC::output_bank_0`
Digital outputs 0-15;.
Definition at line 946 of file gclib_record.h.

14.27.2.25 output_bank_1

`UW GDataRecord47300_ENC::output_bank_1`
Digital outputs 16-23;.
Definition at line 947 of file gclib_record.h.

14.27.2.26 input_bank_0

`UW GDataRecord47300_ENC::input_bank_0`
Digital inputs 0-15;.
Definition at line 949 of file gclib_record.h.

14.27.2.27 input_bank_1

`UW GDataRecord47300_ENC::input_bank_1`
Digital inputs 16-23;.
Definition at line 950 of file gclib_record.h.

14.27.2.28 pulse_count_0

`UL GDataRecord47300_ENC::pulse_count_0`
Pulse counter (see PC).
Definition at line 952 of file gclib_record.h.

14.27.2.29 zc_variable

`SL GDataRecord47300_ENC::zc_variable`
ZC User-defined variable (see ZC).
Definition at line 953 of file gclib_record.h.

14.27.2.30 zd_variable

`SL GDataRecord47300_ENC::zd_variable`
ZD User-defined variable (see ZD).
Definition at line 954 of file gclib_record.h.

14.27.2.31 encoder_0

SL GDataRecord47300_ENC::encoder_0
Encoder channel 0. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 956 of file gclib_record.h.

14.27.2.32 encoder_1

SL GDataRecord47300_ENC::encoder_1
Encoder channel 1. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 957 of file gclib_record.h.

14.27.2.33 encoder_2

SL GDataRecord47300_ENC::encoder_2
Encoder channel 2. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 958 of file gclib_record.h.

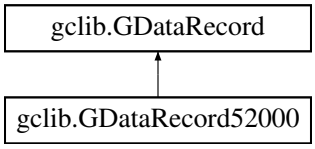
14.27.2.34 encoder_3

SL GDataRecord47300_ENC::encoder_3
Encoder channel 3. Data only valid for parts with -BISS, -QUAD, or -SSI.
Definition at line 959 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.28 gclib.GDataRecord52000 Struct Reference

Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
Inheritance diagram for gclib.GDataRecord52000:



Public Member Functions

- byte[ ] byte_array ()

  Returns the data record as a byte array and allows for access to individual bytes.

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  sample number.
- UB input_bank_0

general input bank 0 (inputs 1-8).

- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB input_bank_2

  general input bank 2 (inputs 17-24).
- UB input_bank_3

  general input bank 3 (inputs 25-32).
- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).
- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).
- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- SW reserved_0

  Reserved.
- SW reserved_2

  Reserved.
- SW reserved_4

  Reserved.
- SW reserved_6

  Reserved.
- SW reserved_8

  Reserved.
- SW reserved_10

  Reserved.

- SW reserved_12

  Reserved.
- UB ethercat_bank

  EtherCAT Bank Indicator.
- UB reserved_14

  Reserved.
- UB ethernet_status_a

  Ethernet Handle A Status.
- UB ethernet_status_b

  Ethernet Handle B Status.
- UB ethernet_status_c

  Ethernet Handle C Status.
- UB ethernet_status_d

  Ethernet Handle D Status.
- UB ethernet_status_e

  Ethernet Handle E Status.
- UB ethernet_status_f

  Ethernet Handle F Status.
- UB ethernet_status_g

  Ethernet Handle G Status.
- UB ethernet_status_h

  Ethernet Handle H Status.
- UB error_code

  error code.
- UB thread_status

  thread status
- UL amplifier_status

  Amplifier Status.
- UL contour_segment_count

  Segment Count for Contour Mode.
- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW t_plane_buffer_available

  Buffer space remaining, T Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

A axis switches.

- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SL axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UB axis_a_halls

  A Hall Input Status.
- UB axis_a_reserved

  Reserved.
- SL axis_a_variable

  A User-defined variable (ZA).
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SL axis_b_torque

  B axis torque.
- UW axis_b_analog_in

  B axis analog input.
- UB axis_b_halls

  B Hall Input Status.
- UB axis_b_reserved

  Reserved.
- SL axis_b_variable

  B User-defined variable (ZA).
- UW axis_c_status

  C axis status.

- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SL axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UB axis_c_halls

  C Hall Input Status.
- UB axis_c_reserved

  Reserved.
- SL axis_c_variable

  C User-defined variable (ZA).
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SL axis_d_torque

  D axis torque.
- UW axis_d_analog_in

  D axis analog input.
- UB axis_d_halls

  D Hall Input Status.
- UB axis_d_reserved

  Reserved.
- SL axis_d_variable

  D User-defined variable (ZA).
- UW axis_e_status

E axis status.

- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

  E axis motor position.
- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SL axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UB axis_e_halls

  E Hall Input Status.
- UB axis_e_reserved

  Reserved.
- SL axis_e_variable

  E User-defined variable (ZA).
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

  F axis stop code.
- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.
- SL axis_f_velocity

  F axis velocity.
- SL axis_f_torque

  F axis torque.
- UW axis_f_analog_in

  F axis analog input.
- UB axis_f_halls

  F Hall Input Status.
- UB axis_f_reserved

  Reserved.
- SL axis_f_variable

  F User-defined variable (ZA).

- UW axis_g_status
  G axis status.
- UB axis_g_switches
  G axis switches.
- UB axis_g_stop_code
  G axis stop code.
- SL axis_g_reference_position
  G axis reference position.
- SL axis_g_motor_position
  G axis motor position.
- SL axis_g_position_error
  G axis position error.
- SL axis_g_aux_position
  G axis auxiliary position.
- SL axis_g_velocity
  G axis velocity.
- SL axis_g_torque
  G axis torque.
- UW axis_g_analog_in
  G axis analog input.
- UB axis_g_halls
  G Hall Input Status.
- UB axis_g_reserved
  Reserved.
- SL axis_g_variable
  G User-defined variable (ZA).
- UW axis_h_status
  H axis status.
- UB axis_h_switches
  H axis switches.
- UB axis_h_stop_code
  H axis stop code.
- SL axis_h_reference_position
  H axis reference position.
- SL axis_h_motor_position
  H axis motor position.
- SL axis_h_position_error
  H axis position error.
- SL axis_h_aux_position
  H axis auxiliary position.
- SL axis_h_velocity
  H axis velocity.
- SL axis_h_torque
  H axis torque.
- UW axis_h_analog_in
  H axis analog input.
- UB axis_h_halls
  H Hall Input Status.
- UB axis_h_reserved
  Reserved.
- SL axis_h_variable
  H User-defined variable (ZA).

14.28.1 Detailed Description

Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
Definition at line 1110 of file gclib.cs.

14.28.2 Member Function Documentation

14.28.2.1 byte_array()

```
byte[] gclib.GDataRecord52000.byte_array ()  [inline]
```

Returns the data record as a byte array and allows for access to individual bytes.
Implements gclib.GDataRecord.
Definition at line 1112 of file gclib.cs.

14.28.3 Member Data Documentation

14.28.3.1 header_0

```
UB gclib.GDataRecord52000.header_0
```

1st Byte of Header.
Definition at line 1115 of file gclib.cs.

14.28.3.2 header_1

```
UB gclib.GDataRecord52000.header_1
```

2nd Byte of Header.
Definition at line 1116 of file gclib.cs.

14.28.3.3 header_2

```
UB gclib.GDataRecord52000.header_2
```

3rd Byte of Header.
Definition at line 1117 of file gclib.cs.

14.28.3.4 header_3

```
UB gclib.GDataRecord52000.header_3
```

4th Byte of Header.
Definition at line 1118 of file gclib.cs.

14.28.3.5 sample_number

```
UW gclib.GDataRecord52000.sample_number
```

sample number.
Definition at line 1120 of file gclib.cs.

14.28.3.6 input_bank_0

```
UB gclib.GDataRecord52000.input_bank_0
```

general input bank 0 (inputs 1-8).
Definition at line 1122 of file gclib.cs.

14.28.3.7 input_bank_1

```
UB gclib.GDataRecord52000.input_bank_1
```

general input bank 1 (inputs 9-16).
Definition at line 1123 of file gclib.cs.

14.28.3.8 input_bank_2

`UB gclib.GDataRecord52000.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 1124 of file gclib.cs.

14.28.3.9 input_bank_3

`UB gclib.GDataRecord52000.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1125 of file gclib.cs.

14.28.3.10 input_bank_4

`UB gclib.GDataRecord52000.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1126 of file gclib.cs.

14.28.3.11 input_bank_5

`UB gclib.GDataRecord52000.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1127 of file gclib.cs.

14.28.3.12 input_bank_6

`UB gclib.GDataRecord52000.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1128 of file gclib.cs.

14.28.3.13 input_bank_7

`UB gclib.GDataRecord52000.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1129 of file gclib.cs.

14.28.3.14 input_bank_8

`UB gclib.GDataRecord52000.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1130 of file gclib.cs.

14.28.3.15 input_bank_9

`UB gclib.GDataRecord52000.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1131 of file gclib.cs.

14.28.3.16 output_bank_0

`UB gclib.GDataRecord52000.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1133 of file gclib.cs.

14.28.3.17 output_bank_1

`UB gclib.GDataRecord52000.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1134 of file gclib.cs.

14.28.3.18 output_bank_2

`UB gclib.GDataRecord52000.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1135 of file gclib.cs.

14.28.3.19 output_bank_3

`UB gclib.GDataRecord52000.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1136 of file gclib.cs.

14.28.3.20 output_bank_4

`UB gclib.GDataRecord52000.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1137 of file gclib.cs.

14.28.3.21 output_bank_5

`UB gclib.GDataRecord52000.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1138 of file gclib.cs.

14.28.3.22 output_bank_6

`UB gclib.GDataRecord52000.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1139 of file gclib.cs.

14.28.3.23 output_bank_7

`UB gclib.GDataRecord52000.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1140 of file gclib.cs.

14.28.3.24 output_bank_8

`UB gclib.GDataRecord52000.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1141 of file gclib.cs.

14.28.3.25 output_bank_9

`UB gclib.GDataRecord52000.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1142 of file gclib.cs.

14.28.3.26 reserved_0

`SW gclib.GDataRecord52000.reserved_0`
Reserved.
Definition at line 1144 of file gclib.cs.

14.28.3.27 reserved_2

`SW gclib.GDataRecord52000.reserved_2`
Reserved.
Definition at line 1145 of file gclib.cs.

14.28.3.28 reserved_4

`SW gclib.GDataRecord52000.reserved_4`
Reserved.
Definition at line 1146 of file gclib.cs.

14.28.3.29 reserved_6

`SW gclib.GDataRecord52000.reserved_6`
Reserved.
Definition at line 1147 of file gclib.cs.

14.28.3.30 reserved_8

`SW gclib.GDataRecord52000.reserved_8`
Reserved.
Definition at line 1148 of file gclib.cs.

14.28.3.31 reserved_10

`SW gclib.GDataRecord52000.reserved_10`
Reserved.
Definition at line 1149 of file gclib.cs.

14.28.3.32 reserved_12

`SW gclib.GDataRecord52000.reserved_12`
Reserved.
Definition at line 1150 of file gclib.cs.

14.28.3.33 ethercat_bank

`UB gclib.GDataRecord52000.ethercat_bank`
EtherCAT Bank Indicator.
Definition at line 1151 of file gclib.cs.

14.28.3.34 reserved_14

`UB gclib.GDataRecord52000.reserved_14`
Reserved.
Definition at line 1152 of file gclib.cs.

14.28.3.35 ethernet_status_a

`UB gclib.GDataRecord52000.ethernet_status_a`
Ethernet Handle A Status.
Definition at line 1154 of file gclib.cs.

14.28.3.36 ethernet_status_b

`UB gclib.GDataRecord52000.ethernet_status_b`
Ethernet Handle B Status.
Definition at line 1155 of file gclib.cs.

14.28.3.37 ethernet_status_c

`UB gclib.GDataRecord52000.ethernet_status_c`
Ethernet Handle C Status.
Definition at line 1156 of file gclib.cs.

14.28.3.38 ethernet_status_d

`UB gclib.GDataRecord52000.ethernet_status_d`
Ethernet Handle D Status.
Definition at line 1157 of file gclib.cs.

14.28.3.39 ethernet_status_e

`UB gclib.GDataRecord52000.ethernet_status_e`
Ethernet Handle E Status.
Definition at line 1158 of file gclib.cs.

14.28.3.40 ethernet_status_f

`UB gclib.GDataRecord52000.ethernet_status_f`
Ethernet Handle F Status.
Definition at line 1159 of file gclib.cs.

14.28.3.41 ethernet_status_g

`UB gclib.GDataRecord52000.ethernet_status_g`
Ethernet Handle G Status.
Definition at line 1160 of file gclib.cs.

14.28.3.42 ethernet_status_h

`UB gclib.GDataRecord52000.ethernet_status_h`
Ethernet Handle H Status.
Definition at line 1161 of file gclib.cs.

14.28.3.43 error_code

`UB gclib.GDataRecord52000.error_code`
error code.
Definition at line 1163 of file gclib.cs.

14.28.3.44 thread_status

`UB gclib.GDataRecord52000.thread_status`
thread status
Definition at line 1164 of file gclib.cs.

14.28.3.45 amplifier_status

`UL gclib.GDataRecord52000.amplifier_status`
Amplifier Status.
Definition at line 1165 of file gclib.cs.

14.28.3.46 contour_segment_count

`UL gclib.GDataRecord52000.contour_segment_count`
Segment Count for Contour Mode.
Definition at line 1167 of file gclib.cs.

14.28.3.47 contour_buffer_available

`UW gclib.GDataRecord52000.contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 1168 of file gclib.cs.

14.28.3.48 s_plane_segment_count

`UW gclib.GDataRecord52000.s_plane_segment_count`
segment count of coordinated move for S plane.
Definition at line 1170 of file gclib.cs.

14.28.3.49 s_plane_move_status

`UW gclib.GDataRecord52000.s_plane_move_status`
coordinated move status for S plane.
Definition at line 1171 of file gclib.cs.

14.28.3.50 s_distance

`SL gclib.GDataRecord52000.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1172 of file gclib.cs.

14.28.3.51 s_plane_buffer_available

`UW gclib.GDataRecord52000.s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 1173 of file gclib.cs.

14.28.3.52 t_plane_segment_count

`UW gclib.GDataRecord52000.t_plane_segment_count`
segment count of coordinated move for T plane.
Definition at line 1175 of file gclib.cs.

14.28.3.53 t_plane_move_status

`UW gclib.GDataRecord52000.t_plane_move_status`
Coordinated move status for T plane.
Definition at line 1176 of file gclib.cs.

14.28.3.54 t_distance

`SL gclib.GDataRecord52000.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 1177 of file gclib.cs.

14.28.3.55 t_plane_buffer_available

`UW gclib.GDataRecord52000.t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 1178 of file gclib.cs.

14.28.3.56 axis_a_status

`UW gclib.GDataRecord52000.axis_a_status`
A axis status.
Definition at line 1180 of file gclib.cs.

14.28.3.57 axis_a_switches

`UB gclib.GDataRecord52000.axis_a_switches`
A axis switches.
Definition at line 1181 of file gclib.cs.

14.28.3.58 axis_a_stop_code

`UB gclib.GDataRecord52000.axis_a_stop_code`
A axis stop code.
Definition at line 1182 of file gclib.cs.

14.28.3.59 axis_a_reference_position

`SL gclib.GDataRecord52000.axis_a_reference_position`
A axis reference position.
Definition at line 1183 of file gclib.cs.

14.28.3.60 axis_a_motor_position

`SL gclib.GDataRecord52000.axis_a_motor_position`
A axis motor position.
Definition at line 1184 of file gclib.cs.

14.28.3.61 axis_a_position_error

`SL gclib.GDataRecord52000.axis_a_position_error`
A axis position error.
Definition at line 1185 of file gclib.cs.

14.28.3.62 axis_a_aux_position

`SL gclib.GDataRecord52000.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1186 of file gclib.cs.

14.28.3.63 axis_a_velocity

`SL gclib.GDataRecord52000.axis_a_velocity`
A axis velocity.
Definition at line 1187 of file gclib.cs.

14.28.3.64 axis_a_torque

`SL gclib.GDataRecord52000.axis_a_torque`
A axis torque.
Definition at line 1188 of file gclib.cs.

14.28.3.65 axis_a_analog_in

`UW gclib.GDataRecord52000.axis_a_analog_in`
A axis analog input.
Definition at line 1189 of file gclib.cs.

14.28.3.66 axis_a_halls

`UB gclib.GDataRecord52000.axis_a_halls`
A Hall Input Status.
Definition at line 1190 of file gclib.cs.

14.28.3.67 axis_a_reserved

`UB gclib.GDataRecord52000.axis_a_reserved`
Reserved.
Definition at line 1191 of file gclib.cs.

14.28.3.68 axis_a_variable

`SL gclib.GDataRecord52000.axis_a_variable`
A User-defined variable (ZA).
Definition at line 1192 of file gclib.cs.

14.28.3.69 axis_b_status

`UW gclib.GDataRecord52000.axis_b_status`
B axis status.
Definition at line 1194 of file gclib.cs.

14.28.3.70 axis_b_switches

`UB gclib.GDataRecord52000.axis_b_switches`
B axis switches.
Definition at line 1195 of file gclib.cs.

14.28.3.71 axis_b_stop_code

`UB gclib.GDataRecord52000.axis_b_stop_code`
B axis stop code.
Definition at line 1196 of file gclib.cs.

14.28.3.72 axis_b_reference_position

`SL gclib.GDataRecord52000.axis_b_reference_position`
B axis reference position.
Definition at line 1197 of file gclib.cs.

14.28.3.73 axis_b_motor_position

`SL gclib.GDataRecord52000.axis_b_motor_position`
B axis motor position.
Definition at line 1198 of file gclib.cs.

14.28.3.74 axis_b_position_error

`SL gclib.GDataRecord52000.axis_b_position_error`
B axis position error.
Definition at line 1199 of file gclib.cs.

14.28.3.75 axis_b_aux_position

`SL gclib.GDataRecord52000.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1200 of file gclib.cs.

14.28.3.76 axis_b_velocity

`SL gclib.GDataRecord52000.axis_b_velocity`
B axis velocity.
Definition at line 1201 of file gclib.cs.

14.28.3.77 axis_b_torque

`SL gclib.GDataRecord52000.axis_b_torque`
B axis torque.
Definition at line 1202 of file gclib.cs.

14.28.3.78 axis_b_analog_in

`UW gclib.GDataRecord52000.axis_b_analog_in`
B axis analog input.
Definition at line 1203 of file gclib.cs.

14.28.3.79 axis_b_halls

`UB gclib.GDataRecord52000.axis_b_halls`
B Hall Input Status.
Definition at line 1204 of file gclib.cs.

14.28.3.80 axis_b_reserved

`UB gclib.GDataRecord52000.axis_b_reserved`
Reserved.
Definition at line 1205 of file gclib.cs.

14.28.3.81 axis_b_variable

`SL gclib.GDataRecord52000.axis_b_variable`
B User-defined variable (ZA).
Definition at line 1206 of file gclib.cs.

14.28.3.82 axis_c_status

`UW gclib.GDataRecord52000.axis_c_status`
C axis status.
Definition at line 1208 of file gclib.cs.

14.28.3.83 axis_c_switches

`UB gclib.GDataRecord52000.axis_c_switches`
C axis switches.
Definition at line 1209 of file gclib.cs.

14.28.3.84 axis_c_stop_code

`UB gclib.GDataRecord52000.axis_c_stop_code`
C axis stop code.
Definition at line 1210 of file gclib.cs.

14.28.3.85 axis_c_reference_position

`SL gclib.GDataRecord52000.axis_c_reference_position`
C axis reference position.
Definition at line 1211 of file gclib.cs.

14.28.3.86 axis_c_motor_position

`SL gclib.GDataRecord52000.axis_c_motor_position`
C axis motor position.
Definition at line 1212 of file gclib.cs.

14.28.3.87 axis_c_position_error

`SL gclib.GDataRecord52000.axis_c_position_error`
C axis position error.
Definition at line 1213 of file gclib.cs.

14.28.3.88 axis_c_aux_position

SL gclib.GDataRecord52000.axis_c_aux_position
C axis auxiliary position.
Definition at line 1214 of file gclib.cs.

14.28.3.89 axis_c_velocity

SL gclib.GDataRecord52000.axis_c_velocity
C axis velocity.
Definition at line 1215 of file gclib.cs.

14.28.3.90 axis_c_torque

SL gclib.GDataRecord52000.axis_c_torque
C axis torque.
Definition at line 1216 of file gclib.cs.

14.28.3.91 axis_c_analog_in

UW gclib.GDataRecord52000.axis_c_analog_in
C axis analog input.
Definition at line 1217 of file gclib.cs.

14.28.3.92 axis_c_halls

UB gclib.GDataRecord52000.axis_c_halls
C Hall Input Status.
Definition at line 1218 of file gclib.cs.

14.28.3.93 axis_c_reserved

UB gclib.GDataRecord52000.axis_c_reserved
Reserved.
Definition at line 1219 of file gclib.cs.

14.28.3.94 axis_c_variable

SL gclib.GDataRecord52000.axis_c_variable
C User-defined variable (ZA).
Definition at line 1220 of file gclib.cs.

14.28.3.95 axis_d_status

UW gclib.GDataRecord52000.axis_d_status
D axis status.
Definition at line 1222 of file gclib.cs.

14.28.3.96 axis_d_switches

UB gclib.GDataRecord52000.axis_d_switches
D axis switches.
Definition at line 1223 of file gclib.cs.

14.28.3.97 axis_d_stop_code

UB gclib.GDataRecord52000.axis_d_stop_code
D axis stop code.
Definition at line 1224 of file gclib.cs.

14.28.3.98 axis_d_reference_position

SL gclib.GDataRecord52000.axis_d_reference_position
D axis reference position.
Definition at line 1225 of file gclib.cs.

14.28.3.99 axis_d_motor_position

SL gclib.GDataRecord52000.axis_d_motor_position
D axis motor position.
Definition at line 1226 of file gclib.cs.

14.28.3.100 axis_d_position_error

SL gclib.GDataRecord52000.axis_d_position_error
D axis position error.
Definition at line 1227 of file gclib.cs.

14.28.3.101 axis_d_aux_position

SL gclib.GDataRecord52000.axis_d_aux_position
D axis auxiliary position.
Definition at line 1228 of file gclib.cs.

14.28.3.102 axis_d_velocity

SL gclib.GDataRecord52000.axis_d_velocity
D axis velocity.
Definition at line 1229 of file gclib.cs.

14.28.3.103 axis_d_torque

SL gclib.GDataRecord52000.axis_d_torque
D axis torque.
Definition at line 1230 of file gclib.cs.

14.28.3.104 axis_d_analog_in

UW gclib.GDataRecord52000.axis_d_analog_in
D axis analog input.
Definition at line 1231 of file gclib.cs.

14.28.3.105 axis_d_halls

UB gclib.GDataRecord52000.axis_d_halls
D Hall Input Status.
Definition at line 1232 of file gclib.cs.

14.28.3.106 axis_d_reserved

UB gclib.GDataRecord52000.axis_d_reserved
Reserved.
Definition at line 1233 of file gclib.cs.

14.28.3.107 axis_d_variable

SL gclib.GDataRecord52000.axis_d_variable
D User-defined variable (ZA).
Definition at line 1234 of file gclib.cs.

14.28.3.108 axis_e_status

`UW gclib.GDataRecord52000.axis_e_status`
E axis status.
Definition at line 1236 of file gclib.cs.

14.28.3.109 axis_e_switches

`UB gclib.GDataRecord52000.axis_e_switches`
E axis switches.
Definition at line 1237 of file gclib.cs.

14.28.3.110 axis_e_stop_code

`UB gclib.GDataRecord52000.axis_e_stop_code`
E axis stop code.
Definition at line 1238 of file gclib.cs.

14.28.3.111 axis_e_reference_position

`SL gclib.GDataRecord52000.axis_e_reference_position`
E axis reference position.
Definition at line 1239 of file gclib.cs.

14.28.3.112 axis_e_motor_position

`SL gclib.GDataRecord52000.axis_e_motor_position`
E axis motor position.
Definition at line 1240 of file gclib.cs.

14.28.3.113 axis_e_position_error

`SL gclib.GDataRecord52000.axis_e_position_error`
E axis position error.
Definition at line 1241 of file gclib.cs.

14.28.3.114 axis_e_aux_position

`SL gclib.GDataRecord52000.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1242 of file gclib.cs.

14.28.3.115 axis_e_velocity

`SL gclib.GDataRecord52000.axis_e_velocity`
E axis velocity.
Definition at line 1243 of file gclib.cs.

14.28.3.116 axis_e_torque

`SL gclib.GDataRecord52000.axis_e_torque`
E axis torque.
Definition at line 1244 of file gclib.cs.

14.28.3.117 axis_e_analog_in

`UW gclib.GDataRecord52000.axis_e_analog_in`
E axis analog input.
Definition at line 1245 of file gclib.cs.

14.28.3.118 axis_e_halls

`UB gclib.GDataRecord52000.axis_e_halls`
E Hall Input Status.
Definition at line 1246 of file gclib.cs.

14.28.3.119 axis_e_reserved

`UB gclib.GDataRecord52000.axis_e_reserved`
Reserved.
Definition at line 1247 of file gclib.cs.

14.28.3.120 axis_e_variable

`SL gclib.GDataRecord52000.axis_e_variable`
E User-defined variable (ZA).
Definition at line 1248 of file gclib.cs.

14.28.3.121 axis_f_status

`UW gclib.GDataRecord52000.axis_f_status`
F axis status.
Definition at line 1250 of file gclib.cs.

14.28.3.122 axis_f_switches

`UB gclib.GDataRecord52000.axis_f_switches`
F axis switches.
Definition at line 1251 of file gclib.cs.

14.28.3.123 axis_f_stop_code

`UB gclib.GDataRecord52000.axis_f_stop_code`
F axis stop code.
Definition at line 1252 of file gclib.cs.

14.28.3.124 axis_f_reference_position

`SL gclib.GDataRecord52000.axis_f_reference_position`
F axis reference position.
Definition at line 1253 of file gclib.cs.

14.28.3.125 axis_f_motor_position

`SL gclib.GDataRecord52000.axis_f_motor_position`
F axis motor position.
Definition at line 1254 of file gclib.cs.

14.28.3.126 axis_f_position_error

`SL gclib.GDataRecord52000.axis_f_position_error`
F axis position error.
Definition at line 1255 of file gclib.cs.

14.28.3.127 axis_f_aux_position

`SL gclib.GDataRecord52000.axis_f_aux_position`
F axis auxiliary position.
Definition at line 1256 of file gclib.cs.

14.28.3.128 axis_f_velocity

SL gclib.GDataRecord52000.axis_f_velocity
F axis velocity.
Definition at line 1257 of file gclib.cs.

14.28.3.129 axis_f_torque

SL gclib.GDataRecord52000.axis_f_torque
F axis torque.
Definition at line 1258 of file gclib.cs.

14.28.3.130 axis_f_analog_in

UW gclib.GDataRecord52000.axis_f_analog_in
F axis analog input.
Definition at line 1259 of file gclib.cs.

14.28.3.131 axis_f_halls

UB gclib.GDataRecord52000.axis_f_halls
F Hall Input Status.
Definition at line 1260 of file gclib.cs.

14.28.3.132 axis_f_reserved

UB gclib.GDataRecord52000.axis_f_reserved
Reserved.
Definition at line 1261 of file gclib.cs.

14.28.3.133 axis_f_variable

SL gclib.GDataRecord52000.axis_f_variable
F User-defined variable (ZA).
Definition at line 1262 of file gclib.cs.

14.28.3.134 axis_g_status

UW gclib.GDataRecord52000.axis_g_status
G axis status.
Definition at line 1264 of file gclib.cs.

14.28.3.135 axis_g_switches

UB gclib.GDataRecord52000.axis_g_switches
G axis switches.
Definition at line 1265 of file gclib.cs.

14.28.3.136 axis_g_stop_code

UB gclib.GDataRecord52000.axis_g_stop_code
G axis stop code.
Definition at line 1266 of file gclib.cs.

14.28.3.137 axis_g_reference_position

SL gclib.GDataRecord52000.axis_g_reference_position
G axis reference position.
Definition at line 1267 of file gclib.cs.

14.28.3.138 axis_g_motor_position

`SL gclib.GDataRecord52000.axis_g_motor_position`
G axis motor position.
Definition at line 1268 of file gclib.cs.

14.28.3.139 axis_g_position_error

`SL gclib.GDataRecord52000.axis_g_position_error`
G axis position error.
Definition at line 1269 of file gclib.cs.

14.28.3.140 axis_g_aux_position

`SL gclib.GDataRecord52000.axis_g_aux_position`
G axis auxiliary position.
Definition at line 1270 of file gclib.cs.

14.28.3.141 axis_g_velocity

`SL gclib.GDataRecord52000.axis_g_velocity`
G axis velocity.
Definition at line 1271 of file gclib.cs.

14.28.3.142 axis_g_torque

`SL gclib.GDataRecord52000.axis_g_torque`
G axis torque.
Definition at line 1272 of file gclib.cs.

14.28.3.143 axis_g_analog_in

`UW gclib.GDataRecord52000.axis_g_analog_in`
G axis analog input.
Definition at line 1273 of file gclib.cs.

14.28.3.144 axis_g_halls

`UB gclib.GDataRecord52000.axis_g_halls`
G Hall Input Status.
Definition at line 1274 of file gclib.cs.

14.28.3.145 axis_g_reserved

`UB gclib.GDataRecord52000.axis_g_reserved`
Reserved.
Definition at line 1275 of file gclib.cs.

14.28.3.146 axis_g_variable

`SL gclib.GDataRecord52000.axis_g_variable`
G User-defined variable (ZA).
Definition at line 1276 of file gclib.cs.

14.28.3.147 axis_h_status

`UW gclib.GDataRecord52000.axis_h_status`
H axis status.
Definition at line 1278 of file gclib.cs.

14.28.3.148 axis_h_switches

`UB gclib.GDataRecord52000.axis_h_switches`
H axis switches.
Definition at line 1279 of file gclib.cs.

14.28.3.149 axis_h_stop_code

`UB gclib.GDataRecord52000.axis_h_stop_code`
H axis stop code.
Definition at line 1280 of file gclib.cs.

14.28.3.150 axis_h_reference_position

`SL gclib.GDataRecord52000.axis_h_reference_position`
H axis reference position.
Definition at line 1281 of file gclib.cs.

14.28.3.151 axis_h_motor_position

`SL gclib.GDataRecord52000.axis_h_motor_position`
H axis motor position.
Definition at line 1282 of file gclib.cs.

14.28.3.152 axis_h_position_error

`SL gclib.GDataRecord52000.axis_h_position_error`
H axis position error.
Definition at line 1283 of file gclib.cs.

14.28.3.153 axis_h_aux_position

`SL gclib.GDataRecord52000.axis_h_aux_position`
H axis auxiliary position.
Definition at line 1284 of file gclib.cs.

14.28.3.154 axis_h_velocity

`SL gclib.GDataRecord52000.axis_h_velocity`
H axis velocity.
Definition at line 1285 of file gclib.cs.

14.28.3.155 axis_h_torque

`SL gclib.GDataRecord52000.axis_h_torque`
H axis torque.
Definition at line 1286 of file gclib.cs.

14.28.3.156 axis_h_analog_in

`UW gclib.GDataRecord52000.axis_h_analog_in`
H axis analog input.
Definition at line 1287 of file gclib.cs.

14.28.3.157 axis_h_halls

`UB gclib.GDataRecord52000.axis_h_halls`
H Hall Input Status.
Definition at line 1288 of file gclib.cs.

14.28.3.158 axis_h_reserved

```
UB gclib.GDataRecord52000.axis_h_reserved
```

Reserved.
Definition at line 1289 of file gclib.cs.

14.28.3.159 axis_h_variable

```
SL gclib.GDataRecord52000.axis_h_variable
```

H User-defined variable (ZA).
Definition at line 1290 of file gclib.cs.
The documentation for this struct was generated from the following file:

- gclib.cs

14.29 GDataRecord52000 Struct Reference

Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
`#include <gclib_record.h>`

Public Attributes

- UB header_0

  1st Byte of Header.
- UB header_1

  2nd Byte of Header.
- UB header_2

  3rd Byte of Header.
- UB header_3

  4th Byte of Header.
- UW sample_number

  sample number.
- UB input_bank_0

  general input bank 0 (inputs 1-8).
- UB input_bank_1

  general input bank 1 (inputs 9-16).
- UB input_bank_2

  general input bank 2 (inputs 17-24).
- UB input_bank_3

  general input bank 3 (inputs 25-32).
- UB input_bank_4

  general input bank 4 (inputs 33-40).
- UB input_bank_5

  general input bank 5 (inputs 41-48).
- UB input_bank_6

  general input bank 6 (inputs 49-56).
- UB input_bank_7

  general input bank 7 (inputs 57-64).
- UB input_bank_8

  general input bank 8 (inputs 65-72).
- UB input_bank_9

  general input bank 9 (inputs 73-80).
- UB output_bank_0

  general output bank 0 (outputs 1-8).

- UB output_bank_1

  general output bank 1 (outputs 9-16).
- UB output_bank_2

  general output bank 2 (outputs 17-24).
- UB output_bank_3

  general output bank 3 (outputs 25-32).
- UB output_bank_4

  general output bank 4 (outputs 33-40).
- UB output_bank_5

  general output bank 5 (outputs 41-48).
- UB output_bank_6

  general output bank 6 (outputs 49-56).
- UB output_bank_7

  general output bank 7 (outputs 57-64).
- UB output_bank_8

  general output bank 8 (outputs 65-72).
- UB output_bank_9

  general output bank 9 (outputs 73-80).
- SW reserved_0

  Reserved.
- SW reserved_2

  Reserved.
- SW reserved_4

  Reserved.
- SW reserved_6

  Reserved.
- SW reserved_8

  Reserved.
- SW reserved_10

  Reserved.
- SW reserved_12

  Reserved.
- UB ethercat_bank

  EtherCAT Bank Indicator.
- UB reserved_14

  Reserved.
- UB ethernet_status_a

  Ethernet Handle A Status.
- UB ethernet_status_b

  Ethernet Handle B Status.
- UB ethernet_status_c

  Ethernet Handle C Status.
- UB ethernet_status_d

  Ethernet Handle D Status.
- UB ethernet_status_e

  Ethernet Handle E Status.
- UB ethernet_status_f

  Ethernet Handle F Status.
- UB ethernet_status_g

  Ethernet Handle G Status.
- UB ethernet_status_h

Ethernet Handle H Status.

- UB error_code

  error code.
- UB thread_status

  thread status
- UL amplifier_status

  Amplifier Status.
- UL contour_segment_count

  Segment Count for Contour Mode.
- UW contour_buffer_available

  Buffer space remaining, Contour Mode.
- UW s_plane_segment_count

  segment count of coordinated move for S plane.
- UW s_plane_move_status

  coordinated move status for S plane.
- SL s_distance

  distance traveled in coordinated move for S plane.
- UW s_plane_buffer_available

  Buffer space remaining, S Plane.
- UW t_plane_segment_count

  segment count of coordinated move for T plane.
- UW t_plane_move_status

  Coordinated move status for T plane.
- SL t_distance

  distance traveled in coordinated move for T plane.
- UW t_plane_buffer_available

  Buffer space remaining, T Plane.
- UW axis_a_status

  A axis status.
- UB axis_a_switches

  A axis switches.
- UB axis_a_stop_code

  A axis stop code.
- SL axis_a_reference_position

  A axis reference position.
- SL axis_a_motor_position

  A axis motor position.
- SL axis_a_position_error

  A axis position error.
- SL axis_a_aux_position

  A axis auxiliary position.
- SL axis_a_velocity

  A axis velocity.
- SL axis_a_torque

  A axis torque.
- UW axis_a_analog_in

  A axis analog input.
- UB axis_a_halls

  A Hall Input Status.
- UB axis_a_reserved

  Reserved.

- SL axis_a_variable

  A User-defined variable (ZA).
- UW axis_b_status

  B axis status.
- UB axis_b_switches

  B axis switches.
- UB axis_b_stop_code

  B axis stop code.
- SL axis_b_reference_position

  B axis reference position.
- SL axis_b_motor_position

  B axis motor position.
- SL axis_b_position_error

  B axis position error.
- SL axis_b_aux_position

  B axis auxiliary position.
- SL axis_b_velocity

  B axis velocity.
- SL axis_b_torque

  B axis torque.
- UW axis_b_analog_in

  B axis analog input.
- UB axis_b_halls

  B Hall Input Status.
- UB axis_b_reserved

  Reserved.
- SL axis_b_variable

  B User-defined variable (ZA).
- UW axis_c_status

  C axis status.
- UB axis_c_switches

  C axis switches.
- UB axis_c_stop_code

  C axis stop code.
- SL axis_c_reference_position

  C axis reference position.
- SL axis_c_motor_position

  C axis motor position.
- SL axis_c_position_error

  C axis position error.
- SL axis_c_aux_position

  C axis auxiliary position.
- SL axis_c_velocity

  C axis velocity.
- SL axis_c_torque

  C axis torque.
- UW axis_c_analog_in

  C axis analog input.
- UB axis_c_halls

  C Hall Input Status.
- UB axis_c_reserved

Reserved.

- SL axis_c_variable

  C User-defined variable (ZA).
- UW axis_d_status

  D axis status.
- UB axis_d_switches

  D axis switches.
- UB axis_d_stop_code

  D axis stop code.
- SL axis_d_reference_position

  D axis reference position.
- SL axis_d_motor_position

  D axis motor position.
- SL axis_d_position_error

  D axis position error.
- SL axis_d_aux_position

  D axis auxiliary position.
- SL axis_d_velocity

  D axis velocity.
- SL axis_d_torque

  D axis torque.
- UW axis_d_analog_in

  D axis analog input.
- UB axis_d_halls

  D Hall Input Status.
- UB axis_d_reserved

  Reserved.
- SL axis_d_variable

  D User-defined variable (ZA).
- UW axis_e_status

  E axis status.
- UB axis_e_switches

  E axis switches.
- UB axis_e_stop_code

  E axis stop code.
- SL axis_e_reference_position

  E axis reference position.
- SL axis_e_motor_position

  E axis motor position.
- SL axis_e_position_error

  E axis position error.
- SL axis_e_aux_position

  E axis auxiliary position.
- SL axis_e_velocity

  E axis velocity.
- SL axis_e_torque

  E axis torque.
- UW axis_e_analog_in

  E axis analog input.
- UB axis_e_halls

  E Hall Input Status.

- UB axis_e_reserved

  Reserved.
- SL axis_e_variable

  E User-defined variable (ZA).
- UW axis_f_status

  F axis status.
- UB axis_f_switches

  F axis switches.
- UB axis_f_stop_code

  F axis stop code.
- SL axis_f_reference_position

  F axis reference position.
- SL axis_f_motor_position

  F axis motor position.
- SL axis_f_position_error

  F axis position error.
- SL axis_f_aux_position

  F axis auxiliary position.
- SL axis_f_velocity

  F axis velocity.
- SL axis_f_torque

  F axis torque.
- UW axis_f_analog_in

  F axis analog input.
- UB axis_f_halls

  F Hall Input Status.
- UB axis_f_reserved

  Reserved.
- SL axis_f_variable

  F User-defined variable (ZA).
- UW axis_g_status

  G axis status.
- UB axis_g_switches

  G axis switches.
- UB axis_g_stop_code

  G axis stop code.
- SL axis_g_reference_position

  G axis reference position.
- SL axis_g_motor_position

  G axis motor position.
- SL axis_g_position_error

  G axis position error.
- SL axis_g_aux_position

  G axis auxiliary position.
- SL axis_g_velocity

  G axis velocity.
- SL axis_g_torque

  G axis torque.
- UW axis_g_analog_in

  G axis analog input.
- UB axis_g_halls

G Hall Input Status.

- UB axis_g_reserved

  Reserved.
- SL axis_g_variable

  G User-defined variable (ZA).
- UW axis_h_status

  H axis status.
- UB axis_h_switches

  H axis switches.
- UB axis_h_stop_code

  H axis stop code.
- SL axis_h_reference_position

  H axis reference position.
- SL axis_h_motor_position

  H axis motor position.
- SL axis_h_position_error

  H axis position error.
- SL axis_h_aux_position

  H axis auxiliary position.
- SL axis_h_velocity

  H axis velocity.
- SL axis_h_torque

  H axis torque.
- UW axis_h_analog_in

  H axis analog input.
- UB axis_h_halls

  H Hall Input Status.
- UB axis_h_reserved

  Reserved.
- SL axis_h_variable

  H User-defined variable (ZA).

14.29.1 Detailed Description

Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
Definition at line 214 of file gclib_record.h.

14.29.2 Member Data Documentation

14.29.2.1 header_0

```
UB GDataRecord52000::header_0
```

1st Byte of Header.
Definition at line 219 of file gclib_record.h.

14.29.2.2 header_1

```
UB GDataRecord52000::header_1
```

2nd Byte of Header.
Definition at line 220 of file gclib_record.h.

14.29.2.3 header_2

```
UB GDataRecord52000::header_2
```

3rd Byte of Header.
Definition at line 221 of file gclib_record.h.

14.29.2.4 header_3

`UB GDataRecord52000::header_3`
4th Byte of Header.
Definition at line 222 of file gclib_record.h.

14.29.2.5 sample_number

`UW GDataRecord52000::sample_number`
sample number.
Definition at line 224 of file gclib_record.h.

14.29.2.6 input_bank_0

`UB GDataRecord52000::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 226 of file gclib_record.h.

14.29.2.7 input_bank_1

`UB GDataRecord52000::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 227 of file gclib_record.h.

14.29.2.8 input_bank_2

`UB GDataRecord52000::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 228 of file gclib_record.h.

14.29.2.9 input_bank_3

`UB GDataRecord52000::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 229 of file gclib_record.h.

14.29.2.10 input_bank_4

`UB GDataRecord52000::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 230 of file gclib_record.h.

14.29.2.11 input_bank_5

`UB GDataRecord52000::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 231 of file gclib_record.h.

14.29.2.12 input_bank_6

`UB GDataRecord52000::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 232 of file gclib_record.h.

14.29.2.13 input_bank_7

`UB GDataRecord52000::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 233 of file gclib_record.h.

14.29.2.14 input_bank_8

`UB GDataRecord52000::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 234 of file gclib_record.h.

14.29.2.15 input_bank_9

`UB GDataRecord52000::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 235 of file gclib_record.h.

14.29.2.16 output_bank_0

`UB GDataRecord52000::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 237 of file gclib_record.h.

14.29.2.17 output_bank_1

`UB GDataRecord52000::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 238 of file gclib_record.h.

14.29.2.18 output_bank_2

`UB GDataRecord52000::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 239 of file gclib_record.h.

14.29.2.19 output_bank_3

`UB GDataRecord52000::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 240 of file gclib_record.h.

14.29.2.20 output_bank_4

`UB GDataRecord52000::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 241 of file gclib_record.h.

14.29.2.21 output_bank_5

`UB GDataRecord52000::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 242 of file gclib_record.h.

14.29.2.22 output_bank_6

`UB GDataRecord52000::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 243 of file gclib_record.h.

14.29.2.23 output_bank_7

`UB GDataRecord52000::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 244 of file gclib_record.h.

14.29.2.24 output_bank_8

`UB GDataRecord52000::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 245 of file gclib_record.h.

14.29.2.25 output_bank_9

`UB GDataRecord52000::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 246 of file gclib_record.h.

14.29.2.26 reserved_0

`SW GDataRecord52000::reserved_0`
Reserved.
Definition at line 248 of file gclib_record.h.

14.29.2.27 reserved_2

`SW GDataRecord52000::reserved_2`
Reserved.
Definition at line 249 of file gclib_record.h.

14.29.2.28 reserved_4

`SW GDataRecord52000::reserved_4`
Reserved.
Definition at line 250 of file gclib_record.h.

14.29.2.29 reserved_6

`SW GDataRecord52000::reserved_6`
Reserved.
Definition at line 251 of file gclib_record.h.

14.29.2.30 reserved_8

`SW GDataRecord52000::reserved_8`
Reserved.
Definition at line 252 of file gclib_record.h.

14.29.2.31 reserved_10

`SW GDataRecord52000::reserved_10`
Reserved.
Definition at line 253 of file gclib_record.h.

14.29.2.32 reserved_12

`SW GDataRecord52000::reserved_12`
Reserved.
Definition at line 254 of file gclib_record.h.

14.29.2.33 ethercat_bank

`UB GDataRecord52000::ethercat_bank`
EtherCAT Bank Indicator.
Definition at line 255 of file gclib_record.h.

14.29.2.34 reserved_14

`UB GDataRecord52000::reserved_14`
Reserved.
Definition at line 256 of file gclib_record.h.

14.29.2.35 ethernet_status_a

`UB GDataRecord52000::ethernet_status_a`
Ethernet Handle A Status.
Definition at line 258 of file gclib_record.h.

14.29.2.36 ethernet_status_b

`UB GDataRecord52000::ethernet_status_b`
Ethernet Handle B Status.
Definition at line 259 of file gclib_record.h.

14.29.2.37 ethernet_status_c

`UB GDataRecord52000::ethernet_status_c`
Ethernet Handle C Status.
Definition at line 260 of file gclib_record.h.

14.29.2.38 ethernet_status_d

`UB GDataRecord52000::ethernet_status_d`
Ethernet Handle D Status.
Definition at line 261 of file gclib_record.h.

14.29.2.39 ethernet_status_e

`UB GDataRecord52000::ethernet_status_e`
Ethernet Handle E Status.
Definition at line 262 of file gclib_record.h.

14.29.2.40 ethernet_status_f

`UB GDataRecord52000::ethernet_status_f`
Ethernet Handle F Status.
Definition at line 263 of file gclib_record.h.

14.29.2.41 ethernet_status_g

`UB GDataRecord52000::ethernet_status_g`
Ethernet Handle G Status.
Definition at line 264 of file gclib_record.h.

14.29.2.42 ethernet_status_h

`UB GDataRecord52000::ethernet_status_h`
Ethernet Handle H Status.
Definition at line 265 of file gclib_record.h.

14.29.2.43 error_code

`UB GDataRecord52000::error_code`
error code.
Definition at line 267 of file gclib_record.h.

14.29.2.44 thread_status

UB GDataRecord52000::thread_status
thread status
Definition at line 268 of file gclib_record.h.

14.29.2.45 amplifier_status

UL GDataRecord52000::amplifier_status
Amplifier Status.
Definition at line 269 of file gclib_record.h.

14.29.2.46 contour_segment_count

UL GDataRecord52000::contour_segment_count
Segment Count for Contour Mode.
Definition at line 271 of file gclib_record.h.

14.29.2.47 contour_buffer_available

UW GDataRecord52000::contour_buffer_available
Buffer space remaining, Contour Mode.
Definition at line 272 of file gclib_record.h.

14.29.2.48 s_plane_segment_count

UW GDataRecord52000::s_plane_segment_count
segment count of coordinated move for S plane.
Definition at line 274 of file gclib_record.h.

14.29.2.49 s_plane_move_status

UW GDataRecord52000::s_plane_move_status
coordinated move status for S plane.
Definition at line 275 of file gclib_record.h.

14.29.2.50 s_distance

SL GDataRecord52000::s_distance
distance traveled in coordinated move for S plane.
Definition at line 276 of file gclib_record.h.

14.29.2.51 s_plane_buffer_available

UW GDataRecord52000::s_plane_buffer_available
Buffer space remaining, S Plane.
Definition at line 277 of file gclib_record.h.

14.29.2.52 t_plane_segment_count

UW GDataRecord52000::t_plane_segment_count
segment count of coordinated move for T plane.
Definition at line 279 of file gclib_record.h.

14.29.2.53 t_plane_move_status

UW GDataRecord52000::t_plane_move_status
Coordinated move status for T plane.
Definition at line 280 of file gclib_record.h.

14.29.2.54 t_distance

SL GDataRecord52000::t_distance
distance traveled in coordinated move for T plane.
Definition at line 281 of file gclib_record.h.

14.29.2.55 t_plane_buffer_available

UW GDataRecord52000::t_plane_buffer_available
Buffer space remaining, T Plane.
Definition at line 282 of file gclib_record.h.

14.29.2.56 axis_a_status

UW GDataRecord52000::axis_a_status
A axis status.
Definition at line 284 of file gclib_record.h.

14.29.2.57 axis_a_switches

UB GDataRecord52000::axis_a_switches
A axis switches.
Definition at line 285 of file gclib_record.h.

14.29.2.58 axis_a_stop_code

UB GDataRecord52000::axis_a_stop_code
A axis stop code.
Definition at line 286 of file gclib_record.h.

14.29.2.59 axis_a_reference_position

SL GDataRecord52000::axis_a_reference_position
A axis reference position.
Definition at line 287 of file gclib_record.h.

14.29.2.60 axis_a_motor_position

SL GDataRecord52000::axis_a_motor_position
A axis motor position.
Definition at line 288 of file gclib_record.h.

14.29.2.61 axis_a_position_error

SL GDataRecord52000::axis_a_position_error
A axis position error.
Definition at line 289 of file gclib_record.h.

14.29.2.62 axis_a_aux_position

SL GDataRecord52000::axis_a_aux_position
A axis auxiliary position.
Definition at line 290 of file gclib_record.h.

14.29.2.63 axis_a_velocity

SL GDataRecord52000::axis_a_velocity
A axis velocity.
Definition at line 291 of file gclib_record.h.

14.29.2.64 axis_a_torque

SL GDataRecord52000::axis_a_torque
A axis torque.
Definition at line 292 of file gclib_record.h.

14.29.2.65 axis_a_analog_in

UW GDataRecord52000::axis_a_analog_in
A axis analog input.
Definition at line 293 of file gclib_record.h.

14.29.2.66 axis_a_halls

UB GDataRecord52000::axis_a_halls
A Hall Input Status.
Definition at line 294 of file gclib_record.h.

14.29.2.67 axis_a_reserved

UB GDataRecord52000::axis_a_reserved
Reserved.
Definition at line 295 of file gclib_record.h.

14.29.2.68 axis_a_variable

SL GDataRecord52000::axis_a_variable
A User-defined variable (ZA).
Definition at line 296 of file gclib_record.h.

14.29.2.69 axis_b_status

UW GDataRecord52000::axis_b_status
B axis status.
Definition at line 298 of file gclib_record.h.

14.29.2.70 axis_b_switches

UB GDataRecord52000::axis_b_switches
B axis switches.
Definition at line 299 of file gclib_record.h.

14.29.2.71 axis_b_stop_code

UB GDataRecord52000::axis_b_stop_code
B axis stop code.
Definition at line 300 of file gclib_record.h.

14.29.2.72 axis_b_reference_position

SL GDataRecord52000::axis_b_reference_position
B axis reference position.
Definition at line 301 of file gclib_record.h.

14.29.2.73 axis_b_motor_position

SL GDataRecord52000::axis_b_motor_position
B axis motor position.
Definition at line 302 of file gclib_record.h.

14.29.2.74 axis_b_position_error

SL GDataRecord52000::axis_b_position_error
B axis position error.
Definition at line 303 of file gclib_record.h.

14.29.2.75 axis_b_aux_position

SL GDataRecord52000::axis_b_aux_position
B axis auxiliary position.
Definition at line 304 of file gclib_record.h.

14.29.2.76 axis_b_velocity

SL GDataRecord52000::axis_b_velocity
B axis velocity.
Definition at line 305 of file gclib_record.h.

14.29.2.77 axis_b_torque

SL GDataRecord52000::axis_b_torque
B axis torque.
Definition at line 306 of file gclib_record.h.

14.29.2.78 axis_b_analog_in

UW GDataRecord52000::axis_b_analog_in
B axis analog input.
Definition at line 307 of file gclib_record.h.

14.29.2.79 axis_b_halls

UB GDataRecord52000::axis_b_halls
B Hall Input Status.
Definition at line 308 of file gclib_record.h.

14.29.2.80 axis_b_reserved

UB GDataRecord52000::axis_b_reserved
Reserved.
Definition at line 309 of file gclib_record.h.

14.29.2.81 axis_b_variable

SL GDataRecord52000::axis_b_variable
B User-defined variable (ZA).
Definition at line 310 of file gclib_record.h.

14.29.2.82 axis_c_status

UW GDataRecord52000::axis_c_status
C axis status.
Definition at line 312 of file gclib_record.h.

14.29.2.83 axis_c_switches

UB GDataRecord52000::axis_c_switches
C axis switches.
Definition at line 313 of file gclib_record.h.

14.29.2.84 axis_c_stop_code

UB GDataRecord52000::axis_c_stop_code
C axis stop code.
Definition at line 314 of file gclib_record.h.

14.29.2.85 axis_c_reference_position

SL GDataRecord52000::axis_c_reference_position
C axis reference position.
Definition at line 315 of file gclib_record.h.

14.29.2.86 axis_c_motor_position

SL GDataRecord52000::axis_c_motor_position
C axis motor position.
Definition at line 316 of file gclib_record.h.

14.29.2.87 axis_c_position_error

SL GDataRecord52000::axis_c_position_error
C axis position error.
Definition at line 317 of file gclib_record.h.

14.29.2.88 axis_c_aux_position

SL GDataRecord52000::axis_c_aux_position
C axis auxiliary position.
Definition at line 318 of file gclib_record.h.

14.29.2.89 axis_c_velocity

SL GDataRecord52000::axis_c_velocity
C axis velocity.
Definition at line 319 of file gclib_record.h.

14.29.2.90 axis_c_torque

SL GDataRecord52000::axis_c_torque
C axis torque.
Definition at line 320 of file gclib_record.h.

14.29.2.91 axis_c_analog_in

UW GDataRecord52000::axis_c_analog_in
C axis analog input.
Definition at line 321 of file gclib_record.h.

14.29.2.92 axis_c_halls

UB GDataRecord52000::axis_c_halls
C Hall Input Status.
Definition at line 322 of file gclib_record.h.

14.29.2.93 axis_c_reserved

UB GDataRecord52000::axis_c_reserved
Reserved.
Definition at line 323 of file gclib_record.h.

14.29.2.94 axis_c_variable

SL GDataRecord52000::axis_c_variable
C User-defined variable (ZA).
Definition at line 324 of file gclib_record.h.

14.29.2.95 axis_d_status

UW GDataRecord52000::axis_d_status
D axis status.
Definition at line 326 of file gclib_record.h.

14.29.2.96 axis_d_switches

UB GDataRecord52000::axis_d_switches
D axis switches.
Definition at line 327 of file gclib_record.h.

14.29.2.97 axis_d_stop_code

UB GDataRecord52000::axis_d_stop_code
D axis stop code.
Definition at line 328 of file gclib_record.h.

14.29.2.98 axis_d_reference_position

SL GDataRecord52000::axis_d_reference_position
D axis reference position.
Definition at line 329 of file gclib_record.h.

14.29.2.99 axis_d_motor_position

SL GDataRecord52000::axis_d_motor_position
D axis motor position.
Definition at line 330 of file gclib_record.h.

14.29.2.100 axis_d_position_error

SL GDataRecord52000::axis_d_position_error
D axis position error.
Definition at line 331 of file gclib_record.h.

14.29.2.101 axis_d_aux_position

SL GDataRecord52000::axis_d_aux_position
D axis auxiliary position.
Definition at line 332 of file gclib_record.h.

14.29.2.102 axis_d_velocity

SL GDataRecord52000::axis_d_velocity
D axis velocity.
Definition at line 333 of file gclib_record.h.

14.29.2.103 axis_d_torque

SL GDataRecord52000::axis_d_torque
D axis torque.
Definition at line 334 of file gclib_record.h.

14.29.2.104 axis_d_analog_in

UW GDataRecord52000::axis_d_analog_in
D axis analog input.
Definition at line 335 of file gclib_record.h.

14.29.2.105 axis_d_halls

UB GDataRecord52000::axis_d_halls
D Hall Input Status.
Definition at line 336 of file gclib_record.h.

14.29.2.106 axis_d_reserved

UB GDataRecord52000::axis_d_reserved
Reserved.
Definition at line 337 of file gclib_record.h.

14.29.2.107 axis_d_variable

SL GDataRecord52000::axis_d_variable
D User-defined variable (ZA).
Definition at line 338 of file gclib_record.h.

14.29.2.108 axis_e_status

UW GDataRecord52000::axis_e_status
E axis status.
Definition at line 340 of file gclib_record.h.

14.29.2.109 axis_e_switches

UB GDataRecord52000::axis_e_switches
E axis switches.
Definition at line 341 of file gclib_record.h.

14.29.2.110 axis_e_stop_code

UB GDataRecord52000::axis_e_stop_code
E axis stop code.
Definition at line 342 of file gclib_record.h.

14.29.2.111 axis_e_reference_position

SL GDataRecord52000::axis_e_reference_position
E axis reference position.
Definition at line 343 of file gclib_record.h.

14.29.2.112 axis_e_motor_position

SL GDataRecord52000::axis_e_motor_position
E axis motor position.
Definition at line 344 of file gclib_record.h.

14.29.2.113 axis_e_position_error

SL GDataRecord52000::axis_e_position_error
E axis position error.
Definition at line 345 of file gclib_record.h.

14.29.2.114 axis_e_aux_position

SL GDataRecord52000::axis_e_aux_position
E axis auxiliary position.
Definition at line 346 of file gclib_record.h.

14.29.2.115 axis_e_velocity

SL GDataRecord52000::axis_e_velocity
E axis velocity.
Definition at line 347 of file gclib_record.h.

14.29.2.116 axis_e_torque

SL GDataRecord52000::axis_e_torque
E axis torque.
Definition at line 348 of file gclib_record.h.

14.29.2.117 axis_e_analog_in

UW GDataRecord52000::axis_e_analog_in
E axis analog input.
Definition at line 349 of file gclib_record.h.

14.29.2.118 axis_e_halls

UB GDataRecord52000::axis_e_halls
E Hall Input Status.
Definition at line 350 of file gclib_record.h.

14.29.2.119 axis_e_reserved

UB GDataRecord52000::axis_e_reserved
Reserved.
Definition at line 351 of file gclib_record.h.

14.29.2.120 axis_e_variable

SL GDataRecord52000::axis_e_variable
E User-defined variable (ZA).
Definition at line 352 of file gclib_record.h.

14.29.2.121 axis_f_status

UW GDataRecord52000::axis_f_status
F axis status.
Definition at line 354 of file gclib_record.h.

14.29.2.122 axis_f_switches

UB GDataRecord52000::axis_f_switches
F axis switches.
Definition at line 355 of file gclib_record.h.

14.29.2.123 axis_f_stop_code

UB GDataRecord52000::axis_f_stop_code
F axis stop code.
Definition at line 356 of file gclib_record.h.

14.29.2.124 axis_f_reference_position

SL GDataRecord52000::axis_f_reference_position
F axis reference position.
Definition at line 357 of file gclib_record.h.

14.29.2.125 axis_f_motor_position

SL GDataRecord52000::axis_f_motor_position
F axis motor position.
Definition at line 358 of file gclib_record.h.

14.29.2.126 axis_f_position_error

SL GDataRecord52000::axis_f_position_error
F axis position error.
Definition at line 359 of file gclib_record.h.

14.29.2.127 axis_f_aux_position

SL GDataRecord52000::axis_f_aux_position
F axis auxiliary position.
Definition at line 360 of file gclib_record.h.

14.29.2.128 axis_f_velocity

SL GDataRecord52000::axis_f_velocity
F axis velocity.
Definition at line 361 of file gclib_record.h.

14.29.2.129 axis_f_torque

SL GDataRecord52000::axis_f_torque
F axis torque.
Definition at line 362 of file gclib_record.h.

14.29.2.130 axis_f_analog_in

UW GDataRecord52000::axis_f_analog_in
F axis analog input.
Definition at line 363 of file gclib_record.h.

14.29.2.131 axis_f_halls

UB GDataRecord52000::axis_f_halls
F Hall Input Status.
Definition at line 364 of file gclib_record.h.

14.29.2.132 axis_f_reserved

UB GDataRecord52000::axis_f_reserved
Reserved.
Definition at line 365 of file gclib_record.h.

14.29.2.133 axis_f_variable

SL GDataRecord52000::axis_f_variable
F User-defined variable (ZA).
Definition at line 366 of file gclib_record.h.

14.29.2.134 axis_g_status

`UW GDataRecord52000::axis_g_status`
G axis status.
Definition at line 368 of file gclib_record.h.

14.29.2.135 axis_g_switches

`UB GDataRecord52000::axis_g_switches`
G axis switches.
Definition at line 369 of file gclib_record.h.

14.29.2.136 axis_g_stop_code

`UB GDataRecord52000::axis_g_stop_code`
G axis stop code.
Definition at line 370 of file gclib_record.h.

14.29.2.137 axis_g_reference_position

`SL GDataRecord52000::axis_g_reference_position`
G axis reference position.
Definition at line 371 of file gclib_record.h.

14.29.2.138 axis_g_motor_position

`SL GDataRecord52000::axis_g_motor_position`
G axis motor position.
Definition at line 372 of file gclib_record.h.

14.29.2.139 axis_g_position_error

`SL GDataRecord52000::axis_g_position_error`
G axis position error.
Definition at line 373 of file gclib_record.h.

14.29.2.140 axis_g_aux_position

`SL GDataRecord52000::axis_g_aux_position`
G axis auxiliary position.
Definition at line 374 of file gclib_record.h.

14.29.2.141 axis_g_velocity

`SL GDataRecord52000::axis_g_velocity`
G axis velocity.
Definition at line 375 of file gclib_record.h.

14.29.2.142 axis_g_torque

`SL GDataRecord52000::axis_g_torque`
G axis torque.
Definition at line 376 of file gclib_record.h.

14.29.2.143 axis_g_analog_in

`UW GDataRecord52000::axis_g_analog_in`
G axis analog input.
Definition at line 377 of file gclib_record.h.

14.29.2.144 axis_g_halls

`UB GDataRecord52000::axis_g_halls`
G Hall Input Status.
Definition at line 378 of file gclib_record.h.

14.29.2.145 axis_g_reserved

`UB GDataRecord52000::axis_g_reserved`
Reserved.
Definition at line 379 of file gclib_record.h.

14.29.2.146 axis_g_variable

`SL GDataRecord52000::axis_g_variable`
G User-defined variable (ZA).
Definition at line 380 of file gclib_record.h.

14.29.2.147 axis_h_status

`UW GDataRecord52000::axis_h_status`
H axis status.
Definition at line 382 of file gclib_record.h.

14.29.2.148 axis_h_switches

`UB GDataRecord52000::axis_h_switches`
H axis switches.
Definition at line 383 of file gclib_record.h.

14.29.2.149 axis_h_stop_code

`UB GDataRecord52000::axis_h_stop_code`
H axis stop code.
Definition at line 384 of file gclib_record.h.

14.29.2.150 axis_h_reference_position

`SL GDataRecord52000::axis_h_reference_position`
H axis reference position.
Definition at line 385 of file gclib_record.h.

14.29.2.151 axis_h_motor_position

`SL GDataRecord52000::axis_h_motor_position`
H axis motor position.
Definition at line 386 of file gclib_record.h.

14.29.2.152 axis_h_position_error

`SL GDataRecord52000::axis_h_position_error`
H axis position error.
Definition at line 387 of file gclib_record.h.

14.29.2.153 axis_h_aux_position

`SL GDataRecord52000::axis_h_aux_position`
H axis auxiliary position.
Definition at line 388 of file gclib_record.h.

14.29.2.154 axis_h_velocity

`SL GDataRecord52000::axis_h_velocity`
H axis velocity.
Definition at line 389 of file gclib_record.h.

14.29.2.155 axis_h_torque

`SL GDataRecord52000::axis_h_torque`
H axis torque.
Definition at line 390 of file gclib_record.h.

14.29.2.156 axis_h_analog_in

`UW GDataRecord52000::axis_h_analog_in`
H axis analog input.
Definition at line 391 of file gclib_record.h.

14.29.2.157 axis_h_halls

`UB GDataRecord52000::axis_h_halls`
H Hall Input Status.
Definition at line 392 of file gclib_record.h.

14.29.2.158 axis_h_reserved

`UB GDataRecord52000::axis_h_reserved`
Reserved.
Definition at line 393 of file gclib_record.h.

14.29.2.159 axis_h_variable

`SL GDataRecord52000::axis_h_variable`
H User-defined variable (ZA).
Definition at line 394 of file gclib_record.h.
The documentation for this struct was generated from the following file:

- gclib_record.h

14.30 gclib.py Class Reference

Represents a single Python connection to a Galil Controller or PLC.

Public Member Functions

- __init__ (self)

  Constructor for the Connection class.
- __del__ (self)

  Destructor for the Connection class.
- GOpen (self, address)

  Opens a connection a galil controller.
- GClose (self)

  Closes a connection to a Galil Controller.
- GCommand (self, command)

  Performs a command-and-response transaction on the connection.
- GSleep (self, val)

  Provides a blocking sleep call which can be useful for timing-based chores.

- GVersion (self)

  Provides the gclib version number.
- GServerStatus (self)

  Provides the local server name and whether it is published to the local network.
- GSetServer (self, server_name)

  Set the new active server.
- GListServers (self)

  Provide a list of all available gcaps servers on the local network.
- GPublishServer (self, server_name, publish, save)

  Publish local gcaps server to the network.
- GRemoteConnections (self)

  Shows all remote addresses that are connected to the local server.
- GInfo (self)

  Provides a useful connection string.
- GIpRequests (self)

  Provides a dictionary of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
- GAssign (self, ip, mac)

  Assigns IP address over the Ethernet to a controller at a given MAC address.
- GAddresses (self)

  Provides a dictionary of all available connection addresses.
- GProgramDownload (self, program, preprocessor="")

  Downloads a program to the controller's program buffer.
- GProgramUpload (self)

  Uploads a program from the controller's program buffer.
- GProgramDownloadFile (self, file_path, preprocessor="")

  Program download from file.
- GProgramUploadFile (self, file_path)

  Program upload to file.
- GArrayDownload (self, name, first, last, array_data)

  Downloads array data to a pre-dimensioned array in the controller's array table.
- GArrayUploadFile (self, file_path, names=[])

  Uploads the entire controller array table or a subset and saves the data as a csv file specified by file_path.
- GArrayDownloadFile (self, file_path)

  Downloads a csv file containing array data at file_path.
- GArrayUpload (self, name, first, last)

  Uploads array data from the controller's array table.
- GTimeout (self, timeout)

  Set the library timeout.
- timeout (self)

  Convenience property read access to timeout value.
- timeout (self, timeout)

  Convenience property write access to timeout value.
- GFirmwareDownload (self, file_path)

  Upgrade firmware.
- GMessage (self)

  Provides access to unsolicited messages from the controller.
- GMotionComplete (self, axes)

  Blocking call that returns once all axes specified have completed their motion.
- GInterrupt (self)

  Provides access to PCI and UDP interrupts from the controller.
- GSetupDownloadFile (self, file_path, options)

  Downloads specified sectors from a Galil compressed backup (gcb) file to a controller.

Protected Member Functions

- _cc (self)

  Checks if connection is established, throws error if not.

Protected Attributes

- _gcon = _GCon(0)
- _buf = create_string_buffer(_buf_size)
- int _timeout = 5000

14.30.1 Detailed Description

Represents a single Python connection to a Galil Controller or PLC.
Definition at line 152 of file gclib.py.

14.30.2 Constructor & Destructor Documentation

14.30.2.1 __init__()

```
gclib.py.__init__ (
            self)
```

Constructor for the Connection class.
Initializes gclib's handle and read buffer.
Definition at line 157 of file gclib.py.

14.30.2.2 __del__()

```
gclib.py.__del__ (
            self)
```

Destructor for the Connection class.
Ensures close gets called to release Galil resource (Sockets, Kernel Driver, Com Port, etc).
Definition at line 164 of file gclib.py.

14.30.3 Member Function Documentation

14.30.3.1 _cc()

```
gclib.py._cc (
            self)  [protected]
```

Checks if connection is established, throws error if not.
Definition at line 169 of file gclib.py.

14.30.4 Member Data Documentation

14.30.4.1 _gcon

```
gclib.py._gcon = _GCon(0)  [protected]
```

Definition at line 159 of file gclib.py.

14.30.4.2 _buf

```
gclib.py._buf = create_string_buffer(_buf_size)  [protected]
```

Definition at line 160 of file gclib.py.

14.30.4.3 _timeout

```
int gclib.py._timeout = 5000  [protected]
```

Definition at line 161 of file gclib.py.
The documentation for this class was generated from the following file:

- gclib.py

Chapter 15

File Documentation

15.1 examples.md File Reference

15.2 gcl.md File Reference

15.3 license.md File Reference

15.4 preprocessor.md File Reference

15.5 /builds/software/gclib/doc/README.md File Reference

15.6 gclib.h File Reference

```
#include <string.h>
#include <stdlib.h>
#include <stdint.h>
#include <stdbool.h>
#include <stdarg.h>
#include "gclib_compat.h"
```

Classes

- struct gclib_interrupt_t

  An interrupt generated by the controller.

Typedefs

- typedef struct Context * gclib_handle

  A handle to an open connection given by `gclib_open()` for use in future API calls.
- typedef struct DataRecord * gclib_data_record_handle

  A handle to a data record, for use in Data Record API calls.
- typedef enum gclib_result gclib_result

  All gclib function return values.
- typedef enum gclib_interrupt_type gclib_interrupt_type

  All interrupt status types.
- typedef struct gclib_interrupt_t gclib_interrupt_t

  An interrupt generated by the controller.
- typedef enum gclib_digital_input_flags gclib_digital_input_flags

  Flags to enable or disable `GCLIB_DIGITAL_INPUT_LOW` interrupts per digital input, for use in `gclib_set_interrupts()`.

- typedef enum gclib_axis_flags gclib_axis_flags

  Flags for building an axis mask, for example in `gclib_set_interrupts()`.
- typedef enum gclib_connection_t gclib_connection_t

  Connection type, as returned by `gclib_connection_type()`.
- typedef enum gclib_mode_of_motion_t gclib_mode_of_motion_t

  The controller's current mode of motion, given by `gclib_data_record_mode_of_motion()`.
- typedef enum gclib_ethernet_status_t gclib_ethernet_status_t

  The current status of an ethernet handle, given by `gclib_data_record_ethernet_status()`.

Enumerations

- enum gclib_result {
  GCLIB_SUCCESS , GCLIB_INVALID_ARGUMENT , GCLIB_INTERNAL_ERROR , GCLIB_TIMEOUT ,
  GCLIB_COMMAND_ERROR , GCLIB_BUFFER_TOO_SMALL , GCLIB_NOT_CONNECTED , GCLIB_NOT_SUBSCRIBED
  }

  All gclib function return values.
- enum gclib_interrupt_type {
  GCLIB_NO_INTERRUPTS = 0 , GCLIB_USER_INTERRUPT = 0 , GCLIB_MOTION_COMPLETE = 1 << 0
  , GCLIB_ALL_AXES_MOTION_COMPLETE = 1 << 8 ,
  GCLIB_EXCESS_POSITION_ERROR = 1 << 9 , GCLIB_LIMIT_SWITCH = 1 << 10 , GCLIB_WATCHDOG_TIMER
  = 1 << 11 , GCLIB_PROGRAM_STOPPED = 1 << 13 ,
  GCLIB_COMMAND_DONE = 1 << 14 , GCLIB_DIGITAL_INPUT_LOW = 1 << 15 , GCLIB_ALL_INTERRUPTS
  = (1 << 16) - 1 }

  All interrupt status types.
- enum gclib_digital_input_flags {
  GCLIB_NO_DIGITAL_INPUTS = 0 , GCLIB_DIGITAL_INPUT_1 = 1 << 0 , GCLIB_DIGITAL_INPUT_2 = 1
  << 1 , GCLIB_DIGITAL_INPUT_3 = 1 << 2 ,
  GCLIB_DIGITAL_INPUT_4 = 1 << 3 , GCLIB_DIGITAL_INPUT_5 = 1 << 4 , GCLIB_DIGITAL_INPUT_6 =
  1 << 5 , GCLIB_DIGITAL_INPUT_7 = 1 << 6 ,
  GCLIB_DIGITAL_INPUT_8 = 1 << 7 , GCLIB_ALL_DIGITAL_INPUTS = (1 << 8) - 1 }

  Flags to enable or disable `GCLIB_DIGITAL_INPUT_LOW` interrupts per digital input, for use in `gclib_set_interrupts()`.
- enum gclib_axis_flags {
  GCLIB_NO_AXES = 0 , GCLIB_AXIS_A = 1 << 0 , GCLIB_AXIS_B = 1 << 1 , GCLIB_AXIS_C = 1 << 2 ,
  GCLIB_AXIS_D = 1 << 3 , GCLIB_AXIS_E = 1 << 4 , GCLIB_AXIS_F = 1 << 5 , GCLIB_AXIS_G = 1 <<
  6 ,
  GCLIB_AXIS_H = 1 << 7 , GCLIB_ALL_AXES = (1 << 8) - 1 }

  Flags for building an axis mask, for example in `gclib_set_interrupts()`.
- enum gclib_connection_t { GCLIB_ETHERNET = 1 , GCLIB_SERIAL , GCLIB_PCI }

  Connection type, as returned by `gclib_connection_type()`.
- enum gclib_mode_of_motion_t {
  GCLIB_NO_MOTION , GCLIB_CONTOUR , GCLIB_POSITION_ABSOLUTE , GCLIB_POSITION_RELATIVE
  ,
  GCLIB_FIND_EDGE , GCLIB_FIND_INDEX , GCLIB_HOME , GCLIB_VECTOR_MOVE ,
  GCLIB_LINEAR_MOVE = GCLIB_VECTOR_MOVE }

  The controller's current mode of motion, given by `gclib_data_record_mode_of_motion()`.
- enum gclib_ethernet_status_t {
  HANDLE_FREE = 0 , UDP_SLAVE = 1 , TCP_SLAVE = 2 , UDP_MASTER = -1 ,
  TCP_MASTER = -2 , ESTABLISHING_UDP = -5 , ESTABLISHING_TCP = -6 }

  The current status of an ethernet handle, given by `gclib_data_record_ethernet_status()`.

Functions

- gclib_result gclib_version (char *version, size_t len)

  Get library version.
- gclib_result gclib_gcaps_version (char *gcaps_version, size_t len)

Get library version used by current gcaps server.

- gclib_result gclib_addresses (char *addresses, size_t len)

  Show address, model, and serial of detected controllers, where available.
- gclib_result gclib_ip_requests (char *ip_requests, size_t len)

  Show MAC address, model, and serial of all controllers requesting IP addresses, comma-separated.
- gclib_result gclib_assign_ip (const char *mac, const char *ip)

  Assign IP to a controller.
- gclib_result gclib_list_servers (char *servers, size_t len)

  List available gcaps servers separated by newline.
- gclib_result gclib_server (char *name, size_t len)

  Current gcaps server.
- gclib_result gclib_set_server (const char *name)

  Set gcaps server.
- gclib_result gclib_published (char *name, size_t len)

  Provides published status of local gcaps server.
- gclib_result gclib_set_published (const char *name)

  Set published status of local gcaps server.
- void gclib_force_gcaps (bool on)

  Force future library calls to use either gcaps or direct connections.
- gclib_result gclib_open (gclib_handle *h, const char *address)

  Open a connection to a controller.
- gclib_result gclib_set_baud_rate (gclib_handle h, size_t baud_rate)

  Set baud rate of serial connection.
- gclib_result gclib_close (gclib_handle *h)

  Close connection to controller.
- const char * gclib_error (gclib_handle h)

  Get library error string.
- gclib_result gclib_address (gclib_handle h, char *address, size_t len)

  Get connection address.
- gclib_result gclib_connection_type (gclib_handle h, gclib_connection_t *type)

  Get connection type.
- gclib_result gclib_revision_information (gclib_handle h, char *rev_info, size_t len)

  Get revision information (^R^V) from controller.
- gclib_result gclib_serial_number (gclib_handle h, uint32_t *serial_number)

  Get serial number from controller.
- gclib_result gclib_command (gclib_handle h, const char *command, char *buf, size_t len)

  Issues a command to the controller and provides the response.
- gclib_result gclib_set_interrupts (gclib_handle h, gclib_interrupt_type interrupt_mask, gclib_axis_flags motion_complete_axes, gclib_digital_input_flags digital_inputs)

  Configure which interrupts will be generated by the controller.
- gclib_result gclib_set_data_records (gclib_handle h, size_t period_ms)

  Configure controller data records.
- gclib_result gclib_subscribe_messages (gclib_handle h, void(callback)(void *user_data, const char *message), void *user_data)

  Subscribe to unsolicited messages.
- gclib_result gclib_subscribe_interrupts (gclib_handle h, void(callback)(void *user_data, gclib_interrupt_t interrupt), void *user_data)

  Subscribe to interrupts.
- gclib_result gclib_subscribe_data_records (gclib_handle h, void(callback)(void *user_data, gclib_data_record_handle data_record), void *user_data)

  Subscribe to data records.

- gclib_result gclib_subscribe_progress (gclib_handle h, void(callback)(void *user_data, size_t current, size_t max), void *user_data)

  Subscribe to progress for `gclib_set_program()`, `gclib_set_array()`, and `gclib_set_firmware()`.
- gclib_result gclib_unsubscribe (gclib_handle h, void *callback)

  Unsubscribe from messages, interrupts, data records, or progress.
- gclib_result gclib_message (gclib_handle h, char *message, size_t len, int timeout)

  Get a queued unsolicited message, or wait up to `timeout` ms for one to arrive.
- gclib_result gclib_interrupt (gclib_handle h, gclib_interrupt_t *interrupt, int timeout)

  Get a queued interrupt, or wait up to `timeout` ms for one to arrive.
- gclib_result gclib_data_record (gclib_handle h, gclib_data_record_handle *data_record, int timeout)

  Get a queued data record, or wait up to `timeout` ms for one to arrive.
- gclib_result gclib_program (gclib_handle h, char *program, size_t len)

  Get the controller's current program.
- gclib_result gclib_set_program (gclib_handle h, const char *program, const char *insert)

  Set the program on the controller.
- gclib_result gclib_array (gclib_handle h, const char *name, char *buf, size_t len, size_t start, size_t end)

  Get an array from the controller.
- gclib_result gclib_set_array (gclib_handle h, const char *name, const char *buf, size_t start, size_t end)

  Set an array on the controller.
- gclib_result gclib_set_firmware (gclib_handle h, const char *file_path)

  Set the firmware on the controller.
- uint16_t gclib_data_record_sample (gclib_data_record_handle h)

  The sample in which this data record was generated.
- bool gclib_data_record_input (gclib_data_record_handle h, size_t index)

  Get an input.
- bool gclib_data_record_output (gclib_data_record_handle h, size_t index)

  Get an output.
- uint8_t gclib_data_record_input_bank (gclib_data_record_handle h, size_t index)

  Get a bank of inputs.
- uint8_t gclib_data_record_output_bank (gclib_data_record_handle h, size_t index)

  Get a bank of outputs.
- uint8_t gclib_data_record_error_code (gclib_data_record_handle h)

  Get the error code.
- uint32_t gclib_data_record_contour_segment_count (gclib_data_record_handle h)

  Get the contour segment count.
- uint16_t gclib_data_record_contour_buffer_available (gclib_data_record_handle h)

  Get remaining contour buffer.
- bool gclib_data_record_thread_running (gclib_data_record_handle h, size_t thread)

  Returns true if a given thread is running.
- gclib_ethernet_status_t gclib_data_record_ethernet_status (gclib_data_record_handle h, char handle)

  Get ethernet handle status.
- gclib_result gclib_data_record_bytes (gclib_data_record_handle h, char *data_record, size_t len)

  Copy data record to user buffer.
- bool gclib_data_record_motor_off (gclib_data_record_handle h, char axis)

  Get motor off status.
- bool gclib_data_record_latch_armed (gclib_data_record_handle h, char axis)

  Get latch armed.
- bool gclib_data_record_final_deceleration (gclib_data_record_handle h, char axis)

  Returns true when axis is in final deceleration.
- bool gclib_data_record_stopping (gclib_data_record_handle h, char axis)

  Returns true if axis is stopping.

- bool gclib_data_record_slewing (gclib_data_record_handle h, char axis)

  Returns true if axis is slewing.
- gclib_mode_of_motion_t gclib_data_record_mode_of_motion (gclib_data_record_handle h, char axis)

  Returns the mode of motion being profiled.
- bool gclib_data_record_negative_direction_move (gclib_data_record_handle h, char axis)

  Returns true if axis velocity is negative.
- bool gclib_data_record_moving (gclib_data_record_handle h, char axis)

  Returns true if motion is being profiled.
- int gclib_data_record_home_phase (gclib_data_record_handle h, char axis)

  Returns home phase when in `GCLIB_HOME` mode.
- bool gclib_data_record_stepper_mode (gclib_data_record_handle h, char axis)

  Returns true if axis is configured as a stepper motor.
- bool gclib_data_record_home_input (gclib_data_record_handle h, char axis)

  Returns the state of the home input.
- bool gclib_data_record_reverse_limit (gclib_data_record_handle h, char axis)

  Returns the state of the reverse limit.
- bool gclib_data_record_forward_limit (gclib_data_record_handle h, char axis)

  Returns the state of the forward limit.
- bool gclib_data_record_latch_input (gclib_data_record_handle h, char axis)

  Returns the state of the latch input.
- bool gclib_data_record_latch_occurred (gclib_data_record_handle h, char axis)

  Returns whether the latch was triggered.
- uint8_t gclib_data_record_stop_code (gclib_data_record_handle h, char axis)

  Returns a code indicating why the motor has stopped. See the `SC command reference` for details.
- int32_t gclib_data_record_reference_position (gclib_data_record_handle h, char axis)

  Returns the reference position.
- int32_t gclib_data_record_position (gclib_data_record_handle h, char axis)

  Returns the position.
- int32_t gclib_data_record_position_error (gclib_data_record_handle h, char axis)

  Returns the position error.
- int32_t gclib_data_record_aux_position (gclib_data_record_handle h, char axis)

  Returns the auxiliary position.
- int32_t gclib_data_record_velocity (gclib_data_record_handle h, char axis)

  Returns the velocity.
- double gclib_data_record_torque (gclib_data_record_handle h, char axis)

  Returns the torque.
- double gclib_data_record_analog_input (gclib_data_record_handle h, char axis)

  Returns the analog input.
- uint8_t gclib_data_record_halls (gclib_data_record_handle h, char axis)

  Returns the hall state.
- int32_t gclib_data_record_variable (gclib_data_record_handle h, char axis)

  Returns the value of a user variable for an axis.
- bool gclib_data_record_hall_error (gclib_data_record_handle h, char axis)

  Returns true if the amplifier for this axis has triggered a hall error.
- bool gclib_data_record_peak_current (gclib_data_record_handle h, char axis)

  Returns true if the amplifier for this axis has triggered a peak current error.
- bool gclib_data_record_over_current (gclib_data_record_handle h, size_t amp)

  Returns over current status.
- bool gclib_data_record_over_voltage (gclib_data_record_handle h, size_t amp)

  Returns over voltage status.
- bool gclib_data_record_over_temp (gclib_data_record_handle h, size_t amp)

Returns over temperature status.

- bool gclib_data_record_under_voltage (gclib_data_record_handle h, size_t amp)

  Returns under voltage status.
- bool gclib_data_record_electronic_lock_out (gclib_data_record_handle h, size_t amp)

  Returns electronic lockout (ELO) status for a bank.
- uint16_t gclib_data_record_coordinated_move_segment_count (gclib_data_record_handle h, char plane)

  Returns the segment count for the current move.
- uint16_t gclib_data_record_coordinated_move_status (gclib_data_record_handle h, char plane)

  Returns the coordinated move status word.
- bool gclib_data_record_coordinated_move_final_deceleration (gclib_data_record_handle h, char plane)

  Returns true if in final deceleration.
- bool gclib_data_record_coordinated_move_stopping (gclib_data_record_handle h, char plane)

  Returns true if stopping.
- bool gclib_data_record_coordinated_move_slewing (gclib_data_record_handle h, char plane)

  Returns true if slewing.
- bool gclib_data_record_coordinated_move_moving (gclib_data_record_handle h, char plane)

  Returns true if moving.
- int32_t gclib_data_record_coordinated_move_distance (gclib_data_record_handle h, char plane)

  Returns the distance covered in the current move.
- uint16_t gclib_data_record_coordinated_move_buffer_available (gclib_data_record_handle h, char plane)

  Returns the available buffer space.
- void gclib_set_compat ()
- gclib_result gclib_set_timeout (gclib_handle h, size_t timeout)

15.6.1 Detailed Description

Defines the interface for the Galil C Library (GCLIB).
Definition in file gclib.h.

15.7 gclib.h

Go to the documentation of this file.

```
00001
00003
00004 #pragma once
00005
00006 #ifdef __cplusplus
00007 extern "C" {
00008 #endif
00009
00010 #include <string.h>
00011 #include <stdlib.h>
00012 #include <stdint.h>
00013 #include <stdbool.h>
00014 #include <stdarg.h>
00015
00016 #include "gclib_compat.h"
00017
00018 #ifndef _WIN32
00019 #pragma GCC visibility push(default)
00020 #endif
00021
00023 typedef struct Context* gclib_handle;
00025 typedef struct DataRecord* gclib_data_record_handle;
00026
00029 typedef enum gclib_result {
00030     GCLIB_SUCCESS,
00031     GCLIB_INVALID_ARGUMENT,
00032     GCLIB_INTERNAL_ERROR,
00033     GCLIB_TIMEOUT,
00034     GCLIB_COMMAND_ERROR,
00035     GCLIB_BUFFER_TOO_SMALL,
00036     GCLIB_NOT_CONNECTED,
00037     GCLIB_NOT_SUBSCRIBED
00038 } gclib_result;
```

```
00041 typedef enum gclib_interrupt_type {
00042     GCLIB_NO_INTERRUPTS = 0,
00043     GCLIB_USER_INTERRUPT = 0, // Cannot be enabled or disabled
00044     GCLIB_MOTION_COMPLETE = 1 « 0,
00045     GCLIB_ALL_AXES_MOTION_COMPLETE = 1 « 8,
00046     GCLIB_EXCESS_POSITION_ERROR = 1 « 9,
00047     GCLIB_LIMIT_SWITCH = 1 « 10,
00048     GCLIB_WATCHDOG_TIMER = 1 « 11,
00049     GCLIB_PROGRAM_STOPPED = 1 « 13,
00050     GCLIB_COMMAND_DONE = 1 « 14,
00051     GCLIB_DIGITAL_INPUT_LOW = 1 « 15,
00052     GCLIB_ALL_INTERRUPTS = (1 « 16) - 1,
00053 } gclib_interrupt_type;
00055 typedef struct gclib_interrupt_t {
00056     gclib_interrupt_type type;
00057     union {
00058         char axis;
00059         uint8_t digital_input;
00060         uint8_t user_interrupt;
00061     };
00062     uint8_t status;
00063 } gclib_interrupt_t;
00065 typedef enum gclib_digital_input_flags {
00066     GCLIB_NO_DIGITAL_INPUTS = 0,
00067     GCLIB_DIGITAL_INPUT_1 = 1 « 0,
00068     GCLIB_DIGITAL_INPUT_2 = 1 « 1,
00069     GCLIB_DIGITAL_INPUT_3 = 1 « 2,
00070     GCLIB_DIGITAL_INPUT_4 = 1 « 3,
00071     GCLIB_DIGITAL_INPUT_5 = 1 « 4,
00072     GCLIB_DIGITAL_INPUT_6 = 1 « 5,
00073     GCLIB_DIGITAL_INPUT_7 = 1 « 6,
00074     GCLIB_DIGITAL_INPUT_8 = 1 « 7,
00075     GCLIB_ALL_DIGITAL_INPUTS = (1 « 8) - 1
00076 } gclib_digital_input_flags;
00078 typedef enum gclib_axis_flags {
00079     GCLIB_NO_AXES = 0,
00080     GCLIB_AXIS_A = 1 « 0,
00081     GCLIB_AXIS_B = 1 « 1,
00082     GCLIB_AXIS_C = 1 « 2,
00083     GCLIB_AXIS_D = 1 « 3,
00084     GCLIB_AXIS_E = 1 « 4,
00085     GCLIB_AXIS_F = 1 « 5,
00086     GCLIB_AXIS_G = 1 « 6,
00087     GCLIB_AXIS_H = 1 « 7,
00088     GCLIB_ALL_AXES = (1 « 8) - 1
00089 } gclib_axis_flags;
00090
00091
00098 gclib_result gclib_version(char* version, size_t len);
00099
00106 gclib_result gclib_gcaps_version(char* gcaps_version, size_t len);
00107
00111
00112
00132 gclib_result gclib_addresses(char* addresses, size_t len);
00133
00147 gclib_result gclib_ip_requests(char* ip_requests, size_t len);
00148
00157 gclib_result gclib_assign_ip(const char* mac, const char* ip);
00158
00164
00165
00172 gclib_result gclib_list_servers(char* servers, size_t len);
00173
00182 gclib_result gclib_server(char* name, size_t len);
00183
00191 gclib_result gclib_set_server(const char* name);
00192
00200 gclib_result gclib_published(char* name, size_t len);
00201
00207 gclib_result gclib_set_published(const char* name);
00208
00210
00211
00222 void gclib_force_gcaps(bool on);
00223
00237 gclib_result gclib_open(gclib_handle* h, const char* address);
00238
00246 gclib_result gclib_set_baud_rate(gclib_handle h, size_t baud_rate);
00247
00254 gclib_result gclib_close(gclib_handle* h);
00255
00265 const char* gclib_error(gclib_handle h);
00266
00274 gclib_result gclib_address(gclib_handle h, char* address, size_t len);
00276 typedef enum gclib_connection_t {
00277     GCLIB_ETHERNET = 1,
```

```
00278     GCLIB_SERIAL,
00279     GCLIB_PCI
00280 } gclib_connection_t;
00281
00288 gclib_result gclib_connection_type(gclib_handle h, gclib_connection_t* type);
00289
00294
00295
00306 gclib_result gclib_revision_information(gclib_handle h, char* rev_info, size_t len);
00307
00315 gclib_result gclib_serial_number(gclib_handle h, uint32_t* serial_number);
00316
00332 gclib_result gclib_command(gclib_handle h, const char* command, char* buf, size_t len);
00333
00334
00341
00342
00375 gclib_result gclib_set_interrupts(gclib_handle h, gclib_interrupt_type interrupt_mask,
      gclib_axis_flags motion_complete_axes, gclib_digital_input_flags digital_inputs);
00376
00389 gclib_result gclib_set_data_records(gclib_handle h, size_t period_ms);
00390
00413 gclib_result gclib_subscribe_messages(gclib_handle h, void(callback)(void* user_data, const char*
      message), void* user_data);
00414
00438 gclib_result gclib_subscribe_interrupts(gclib_handle h, void(callback)(void* user_data,
      gclib_interrupt_t interrupt), void* user_data);
00439
00463 gclib_result gclib_subscribe_data_records(gclib_handle h, void(callback)(void* user_data,
      gclib_data_record_handle data_record), void* user_data);
00464
00479 gclib_result gclib_subscribe_progress(gclib_handle h, void(callback)(void* user_data, size_t current,
      size_t max), void* user_data);
00480
00489 gclib_result gclib_unsubscribe(gclib_handle h, void* callback);
00490
00502 gclib_result gclib_message(gclib_handle h, char* message, size_t len, int timeout);
00503
00512 gclib_result gclib_interrupt(gclib_handle h, gclib_interrupt_t* interrupt, int timeout);
00513
00524 gclib_result gclib_data_record(gclib_handle h, gclib_data_record_handle* data_record, int timeout);
00525
00530
00531
00539 gclib_result gclib_program(gclib_handle h, char* program, size_t len);
00540
00550 gclib_result gclib_set_program(gclib_handle h, const char* program, const char* insert);
00551
00562 gclib_result gclib_array(gclib_handle h, const char* name, char* buf, size_t len, size_t start, size_t
      end);
00563
00580 gclib_result gclib_set_array(gclib_handle h, const char* name, const char* buf, size_t start, size_t
      end);
00581
00589 gclib_result gclib_set_firmware(gclib_handle h, const char* file_path);
00590
00592
00599
00601 typedef enum gclib_mode_of_motion_t {
00602     GCLIB_NO_MOTION,
00603     GCLIB_CONTOUR,
00604     GCLIB_POSITION_ABSOLUTE,
00605     GCLIB_POSITION_RELATIVE,
00606     GCLIB_FIND_EDGE,
00607     GCLIB_FIND_INDEX,
00608     GCLIB_HOME,
00609     GCLIB_VECTOR_MOVE,
00610     GCLIB_LINEAR_MOVE = GCLIB_VECTOR_MOVE
00611 } gclib_mode_of_motion_t;
00612
00614 typedef enum gclib_ethernet_status_t {
00615     HANDLE_FREE = 0,
00616     UDP_SLAVE = 1,
00617     TCP_SLAVE = 2,
00618     UDP_MASTER = -1,
00619     TCP_MASTER = -2,
00620     ESTABLISHING_UDP = -5,
00621     ESTABLISHING_TCP = -6
00622 } gclib_ethernet_status_t;
00623
00625 uint16_t gclib_data_record_sample(gclib_data_record_handle h);
00626
00638 bool gclib_data_record_input(gclib_data_record_handle h, size_t index);
00640 bool gclib_data_record_output(gclib_data_record_handle h, size_t index);
00642 uint8_t gclib_data_record_input_bank(gclib_data_record_handle h, size_t index);
00644 uint8_t gclib_data_record_output_bank(gclib_data_record_handle h, size_t index);
00646 uint8_t gclib_data_record_error_code(gclib_data_record_handle h);
```

```
00648 uint32_t gclib_data_record_contour_segment_count(gclib_data_record_handle h);
00650 uint16_t gclib_data_record_contour_buffer_available(gclib_data_record_handle h);
00652 bool gclib_data_record_thread_running(gclib_data_record_handle h, size_t thread);
00653
00660 gclib_ethernet_status_t gclib_data_record_ethernet_status(gclib_data_record_handle h, char handle);
00661
00671 gclib_result gclib_data_record_bytes(gclib_data_record_handle h, char* data_record, size_t len);
00675
00677 bool gclib_data_record_motor_off(gclib_data_record_handle h, char axis);
00679 bool gclib_data_record_latch_armed(gclib_data_record_handle h, char axis);
00681 bool gclib_data_record_final_deceleration(gclib_data_record_handle h, char axis);
00683 bool gclib_data_record_stopping(gclib_data_record_handle h, char axis);
00685 bool gclib_data_record_slewing(gclib_data_record_handle h, char axis);
00687 gclib_mode_of_motion_t gclib_data_record_mode_of_motion(gclib_data_record_handle h, char axis);
00689 bool gclib_data_record_negative_direction_move(gclib_data_record_handle h, char axis);
00691 bool gclib_data_record_moving(gclib_data_record_handle h, char axis);
00693 int gclib_data_record_home_phase(gclib_data_record_handle h, char axis);
00695 bool gclib_data_record_stepper_mode(gclib_data_record_handle h, char axis);
00697 bool gclib_data_record_home_input(gclib_data_record_handle h, char axis);
00699 bool gclib_data_record_reverse_limit(gclib_data_record_handle h, char axis);
00701 bool gclib_data_record_forward_limit(gclib_data_record_handle h, char axis);
00703 bool gclib_data_record_latch_input(gclib_data_record_handle h, char axis);
00705 bool gclib_data_record_latch_occurred(gclib_data_record_handle h, char axis);
00707 uint8_t gclib_data_record_stop_code(gclib_data_record_handle h, char axis);
00709 int32_t gclib_data_record_reference_position(gclib_data_record_handle h, char axis);
00711 int32_t gclib_data_record_position(gclib_data_record_handle h, char axis);
00713 int32_t gclib_data_record_position_error(gclib_data_record_handle h, char axis);
00715 int32_t gclib_data_record_aux_position(gclib_data_record_handle h, char axis);
00717 int32_t gclib_data_record_velocity(gclib_data_record_handle h, char axis);
00719 double gclib_data_record_torque(gclib_data_record_handle h, char axis);
00721 double gclib_data_record_analog_input(gclib_data_record_handle h, char axis);
00723 uint8_t gclib_data_record_halls(gclib_data_record_handle h, char axis);
00725 int32_t gclib_data_record_variable(gclib_data_record_handle h, char axis);
00727 bool gclib_data_record_hall_error(gclib_data_record_handle h, char axis);
00729 bool gclib_data_record_peak_current(gclib_data_record_handle h, char axis);
00736
00738 bool gclib_data_record_over_current(gclib_data_record_handle h, size_t amp);
00740 bool gclib_data_record_over_voltage(gclib_data_record_handle h, size_t amp);
00742 bool gclib_data_record_over_temp(gclib_data_record_handle h, size_t amp);
00744 bool gclib_data_record_under_voltage(gclib_data_record_handle h, size_t amp);
00746 bool gclib_data_record_electronic_lock_out(gclib_data_record_handle h, size_t amp);
00751
00753 uint16_t gclib_data_record_coordinated_move_segment_count(gclib_data_record_handle h, char plane);
00755 uint16_t gclib_data_record_coordinated_move_status(gclib_data_record_handle h, char plane);
00757 bool gclib_data_record_coordinated_move_final_deceleration(gclib_data_record_handle h, char plane);
00759 bool gclib_data_record_coordinated_move_stopping(gclib_data_record_handle h, char plane);
00761 bool gclib_data_record_coordinated_move_slewing(gclib_data_record_handle h, char plane);
00763 bool gclib_data_record_coordinated_move_moving(gclib_data_record_handle h, char plane);
00765 int32_t gclib_data_record_coordinated_move_distance(gclib_data_record_handle h, char plane);
00767 uint16_t gclib_data_record_coordinated_move_buffer_available(gclib_data_record_handle h, char plane);
00770
00771 // Undoc methods for gclibo
00772 void gclib_set_compat();
00773 gclib_result gclib_set_timeout(gclib_handle h, size_t timeout);
00774
00775 #ifdef __cplusplus
00776 }
00777 #endif
00778
00779 #ifndef _WIN32
00780 #pragma GCC visibility pop
00781 #endif
00782
```

15.8 gclib_compat.h File Reference

```
#include "gclib_record.h"
#include "gclib_errors.h"
```

Macros

- #define GCLIB_DEPRECATED
- #define G_DR 1

  Value for GRecord() `method` variable for acquiring a data record via DR mode.
- #define G_QR 0

  Value for GRecord() `method` variable for acquiring a data record via QR mode.
- #define G_BOUNDS -1

For functions that take range options, e.g. GArrayUpload(), use this value for full range.

- #define G_CR 0

  For GArrayUpload(), use this value in the delim field to delimit with carriage returns.

- #define G_COMMA 1

  For GArrayUpload(), use this value in the delim field to delimit with commas.

- #define G_PUBLISH_SERVER 1

  For GPublishServer(), use this value to publish server to local network.

- #define G_REMOVE_SERVER 0

  For GPublishServer(), use this value to remove server from local network.

- #define G_USE_INITIAL_TIMEOUT -1

  For GTimeout(), use this value to use initial GOpen() timeout (–timeout).

- #define G_SMALL_BUFFER 1024

  Most reads from Galil are small. This value will easily hold most, e.g. TH, TZ, etc.

- #define G_HUGE_BUFFER 524288

  Most reads from Galil hardware are small. This value will hold the largest array or program upload/download possible.

- #define G_LINE_BUFFER 80

  For writes, via command interpreter, to the Galil.

- #define G_UTIL_TIMEOUT 1

  GUtility(), Access to timeout.

- #define G_UTIL_TIMEOUT_OVERRIDE 2

  GUtility(), read/write access to timeout override.

- #define G_USE_INITIAL_TIMEOUT -1

  For GTimeout(), use this value to use initial GOpen() timeout (–timeout).

- #define G_UTIL_VERSION 128

  GUtility(), get a library version string.

- #define G_UTIL_INFO 129

  GUtility(), get a connection info string.

- #define G_UTIL_SLEEP 130

  GUtility(), specify an interval to sleep.

- #define G_UTIL_ADDRESSES 131

  GUtility(), get a list of available connections.

- #define G_UTIL_IPREQUEST 132

  GUtility(), get a list of hardware requesting IPs.

- #define G_UTIL_ASSIGN 133

  GUtility(), assign IP addresses over the network.

- #define G_UTIL_DEVICE_INITIALIZE 134

  GUtility(), sends CF, CW, EO etc. to initialize the connection. Useful after RS or other reset.

- #define G_UTIL_PING 135

  GUtility(), uses ICMP ping to determine if an IP address is reachable and assigned.

- #define G_UTIL_ERROR_CONTEXT 136

  GUtility(), provides additional error context, where available.

- #define G_UTIL_GCAPS_HOST 256
- #define G_UTIL_GCAPS_VERSION 257

  GUtility(), get the version of the gcaps server.

- #define G_UTIL_GCAPS_KEEPALIVE 258

  GUtility(), Deprecated 20210119. No longer functional.

- #define G_UTIL_GCAPS_ADDRESSES 259

  GUtility(), get a list of available connections from the gcaps server.

- #define G_UTIL_GCAPS_IPREQUEST 260

  GUtility(), get a list of hardware requesting IPs from the gcaps server.

- #define G_UTIL_GCAPS_ASSIGN 261

GUtility(), assign IP addresses over the network from the gcaps server.

- #define G_UTIL_GCAPS_PING 262

  GUtility(), uses ICMP ping to determine if an IP address is reachable and assigned. Ping sent from the gcaps server.
- #define G_UTIL_GCAPS_LIST_SERVERS 263

  GUtility(), get a list of all available gcaps servers on the local network.
- #define G_UTIL_GCAPS_PUBLISH_SERVER 264

  GUtility(), make local gcaps server discoverable by other gcaps servers on the local network.
- #define G_UTIL_GCAPS_SET_SERVER 265

  GUtility(), set the new active gcaps server.
- #define G_UTIL_GCAPS_SERVER_STATUS 266

  GUtility(), get information on the local server's name and if it is published to the local network.
- #define G_UTIL_GCAPS_REMOTE_CONNECTIONS 267

  GUtility(), get a list of remote addresses connected to local server.
- #define G_UTIL_GCAPS_SERVER_INFO 268
- #define G_UTIL_GCAPS_ADDRESSES_GET_REMEMBERED 269

  GUtility(), returns true if gcaps is remembering ip assignments.
- #define G_UTIL_GCAPS_ADDRESSES_SET_REMEMBERED 270

  GUtility(), sets if gcaps should remember ip assignments.

Typedefs

- typedef int GReturn

  Every function returns a value of type GReturn. See gclib_errors.h for possible values.
- typedef struct Context * GCon

  Connection handle. Unique for each connection in process. Assigned a non-zero value in GOpen().
- typedef unsigned int GSize

  Size of buffers, etc.
- typedef int GOption

  Option integer for various formatting, etc.
- typedef char * GCStringOut

  C-string output from the library. Implies null-termination.
- typedef const char * GCStringIn

  C-string input to the library. Implies null-termination.
- typedef char * GBufOut

  Data output from the library. No null-termination implied. Returned values may be null-terminated, see function documentation for details.
- typedef const char * GBufIn

  Data input to the library. No null-termination, function will have a GSize to indicate bytes to write .
- typedef unsigned char GStatus

  Interrupt status byte.
- typedef void * GMemory

  Pointer to untyped memory for use in GUtility().

Functions

- GCLIB_DEPRECATED GReturn GOpen (GCStringIn connection_string, GCon *g)

  Open a connection to a Galil Controller.
- GCLIB_DEPRECATED GReturn GClose (GCon g)

  Closes a connection to a Galil Controller.
- GCLIB_DEPRECATED GReturn GCommand (GCon g, GCStringIn command, GBufOut buffer, GSize buffer_len, GSize *bytes_returned)

  Performs a command-and-response transaction on the connection.

- GCLIB_DEPRECATED GReturn GProgramDownload (GCon g, GCStringIn program, GCStringIn preprocessor)

  Downloads a program to the controller's program buffer.
- GCLIB_DEPRECATED GReturn GProgramUpload (GCon g, GBufOut buffer, GSize buffer_len)

  Uploads a program from the controller's program buffer.
- GCLIB_DEPRECATED GReturn GArrayDownload (GCon g, const GCStringIn array_name, GOption first, GOption last, GCStringIn buffer)

  Downloads array data to a pre-dimensioned array in the controller's array table.
- GCLIB_DEPRECATED GReturn GArrayUpload (GCon g, const GCStringIn array_name, GOption first, GOption last, GOption delim, GBufOut buffer, GSize buffer_len)

  Uploads array data from the controller's array table.
- GCLIB_DEPRECATED GReturn GRecord (GCon g, union GDataRecord *record, GOption method)

  Provides a fresh copy of the controller's data record. Data is cast into a union, GDataRecord.
- GCLIB_DEPRECATED GReturn GMessage (GCon g, GCStringOut buffer, GSize buffer_len)

  Provides access to unsolicited messages from the controller.
- GCLIB_DEPRECATED GReturn GInterrupt (GCon g, GStatus *status_byte)

  Provides access to PCI and UDP interrupts from the controller.
- GCLIB_DEPRECATED GReturn GFirmwareDownload (GCon g, GCStringIn filepath)

  Upgrade firmware.
- GCLIB_DEPRECATED GReturn GRead (GCon g, GBufOut buffer, GSize buffer_len, GSize *bytes_read)

  Does nothing and returns G_GCLIB_ERROR.
- GCLIB_DEPRECATED GReturn GWrite (GCon g, GBufIn buffer, GSize buffer_len)

  Does nothing and returns G_GCLIB_ERROR.
- GCLIB_DEPRECATED GReturn GUtility (GCon g, GOption request, GMemory memory1, GMemory memory2)

  Does nothing and returns G_GCLIB_ERROR.

15.8.1 Macro Definition Documentation

15.8.1.1 GCLIB_DEPRECATED

```
#define GCLIB_DEPRECATED
```

Definition at line 35 of file gclib_compat.h.

15.8.1.2 G_DR

```
#define G_DR 1
```

Value for GRecord() `method` variable for acquiring a data record via DR mode.
Definition at line 50 of file gclib_compat.h.

15.8.1.3 G_QR

```
#define G_QR 0
```

Value for GRecord() `method` variable for acquiring a data record via QR mode.
Definition at line 51 of file gclib_compat.h.

15.8.1.4 G_BOUNDS

```
#define G_BOUNDS -1
```

For functions that take range options, e.g. GArrayUpload(), use this value for full range.
Definition at line 52 of file gclib_compat.h.

15.8.1.5 G_CR

```
#define G_CR 0
```

For GArrayUpload(), use this value in the delim field to delimit with carriage returns.
Definition at line 53 of file gclib_compat.h.

15.8.1.6 G_COMMA

```
#define G_COMMA 1
```

For GArrayUpload(), use this value in the delim field to delimit with commas.
Definition at line 54 of file gclib_compat.h.

15.8.1.7 G_PUBLISH_SERVER

```
#define G_PUBLISH_SERVER 1
```

For GPublishServer(), use this value to publish server to local network.
Definition at line 55 of file gclib_compat.h.

15.8.1.8 G_REMOVE_SERVER

```
#define G_REMOVE_SERVER 0
```

For GPublishServer(), use this value to remove server from local network.
Definition at line 56 of file gclib_compat.h.

15.8.1.9 G_USE_INITIAL_TIMEOUT [1/2]

```
#define G_USE_INITIAL_TIMEOUT -1
```

For GTimeout(), use this value to use initial GOpen() timeout (–timeout).
GUtility(), for timeout override. Set `G_UTIL_TIMEOUT_OVERRIDE` to this value to use initial GOpen() timeout (`--timeout`).
Definition at line 57 of file gclib_compat.h.

15.8.1.10 G_SMALL_BUFFER

```
#define G_SMALL_BUFFER 1024
```

Most reads from Galil are small. This value will easily hold most, e.g. TH, TZ, etc.
Definition at line 60 of file gclib_compat.h.

15.8.1.11 G_HUGE_BUFFER

```
#define G_HUGE_BUFFER 524288
```

Most reads from Galil hardware are small. This value will hold the largest array or program upload/download possible.
Definition at line 61 of file gclib_compat.h.

15.8.1.12 G_LINE_BUFFER

```
#define G_LINE_BUFFER 80
```

For writes, via command interpreter, to the Galil.
Definition at line 62 of file gclib_compat.h.

15.8.1.13 G_UTIL_TIMEOUT

```
#define G_UTIL_TIMEOUT 1
```

GUtility(), Access to timeout.
Definition at line 65 of file gclib_compat.h.

15.8.1.14 G_UTIL_TIMEOUT_OVERRIDE

```
#define G_UTIL_TIMEOUT_OVERRIDE 2
```

GUtility(), read/write access to timeout override.
Definition at line 66 of file gclib_compat.h.

15.8.1.15 G_USE_INITIAL_TIMEOUT [2/2]

```
#define G_USE_INITIAL_TIMEOUT -1
```

For GTimeout(), use this value to use initial GOpen() timeout (–timeout).
GUtility(), for timeout override. Set `G_UTIL_TIMEOUT_OVERRIDE` to this value to use initial GOpen() timeout (`--timeout`).
Definition at line 57 of file gclib_compat.h.

15.8.1.16 G_UTIL_VERSION

```
#define G_UTIL_VERSION 128
```

GUtility(), get a library version string.
Definition at line 68 of file gclib_compat.h.

15.8.1.17 G_UTIL_INFO

```
#define G_UTIL_INFO 129
```

GUtility(), get a connection info string.
Definition at line 69 of file gclib_compat.h.

15.8.1.18 G_UTIL_SLEEP

```
#define G_UTIL_SLEEP 130
```

GUtility(), specify an interval to sleep.
Definition at line 70 of file gclib_compat.h.

15.8.1.19 G_UTIL_ADDRESSES

```
#define G_UTIL_ADDRESSES 131
```

GUtility(), get a list of available connections.
Definition at line 71 of file gclib_compat.h.

15.8.1.20 G_UTIL_IPREQUEST

```
#define G_UTIL_IPREQUEST 132
```

GUtility(), get a list of hardware requesting IPs.
Definition at line 72 of file gclib_compat.h.

15.8.1.21 G_UTIL_ASSIGN

```
#define G_UTIL_ASSIGN 133
```

GUtility(), assign IP addresses over the network.
Definition at line 73 of file gclib_compat.h.

15.8.1.22 G_UTIL_DEVICE_INITIALIZE

```
#define G_UTIL_DEVICE_INITIALIZE 134
```

GUtility(), sends CF, CW, EO etc. to initialize the connection. Useful after RS or other reset.
Definition at line 74 of file gclib_compat.h.

15.8.1.23 G_UTIL_PING

```
#define G_UTIL_PING 135
```

GUtility(), uses ICMP ping to determine if an IP address is reachable and assigned.
Definition at line 75 of file gclib_compat.h.

15.8.1.24 G_UTIL_ERROR_CONTEXT

```
#define G_UTIL_ERROR_CONTEXT 136
```

GUtility(), provides additional error context, where available.
Definition at line 76 of file gclib_compat.h.

15.8.1.25 G_UTIL_GCAPS_HOST

```
#define G_UTIL_GCAPS_HOST 256
```
Definition at line 78 of file gclib_compat.h.

15.8.1.26 G_UTIL_GCAPS_VERSION

```
#define G_UTIL_GCAPS_VERSION 257
```
GUtility(), get the version of the gcaps server.
Definition at line 79 of file gclib_compat.h.

15.8.1.27 G_UTIL_GCAPS_KEEPALIVE

```
#define G_UTIL_GCAPS_KEEPALIVE 258
```
GUtility(), Deprecated 20210119. No longer functional.
Definition at line 80 of file gclib_compat.h.

15.8.1.28 G_UTIL_GCAPS_ADDRESSES

```
#define G_UTIL_GCAPS_ADDRESSES 259
```
GUtility(), get a list of available connections from the gcaps server.
Definition at line 81 of file gclib_compat.h.

15.8.1.29 G_UTIL_GCAPS_IPREQUEST

```
#define G_UTIL_GCAPS_IPREQUEST 260
```
GUtility(), get a list of hardware requesting IPs from the gcaps server.
Definition at line 82 of file gclib_compat.h.

15.8.1.30 G_UTIL_GCAPS_ASSIGN

```
#define G_UTIL_GCAPS_ASSIGN 261
```
GUtility(), assign IP addresses over the network from the gcaps server.
Definition at line 83 of file gclib_compat.h.

15.8.1.31 G_UTIL_GCAPS_PING

```
#define G_UTIL_GCAPS_PING 262
```
GUtility(), uses ICMP ping to determine if an IP address is reachable and assigned. Ping sent from the gcaps server.
Definition at line 84 of file gclib_compat.h.

15.8.1.32 G_UTIL_GCAPS_LIST_SERVERS

```
#define G_UTIL_GCAPS_LIST_SERVERS 263
```
GUtility(), get a list of all available gcaps servers on the local network.
Definition at line 85 of file gclib_compat.h.

15.8.1.33 G_UTIL_GCAPS_PUBLISH_SERVER

```
#define G_UTIL_GCAPS_PUBLISH_SERVER 264
```
GUtility(), make local gcaps server discoverable by other gcaps servers on the local network.
Definition at line 86 of file gclib_compat.h.

15.8.1.34 G_UTIL_GCAPS_SET_SERVER

```
#define G_UTIL_GCAPS_SET_SERVER 265
```
GUtility(), set the new active gcaps server.
Definition at line 87 of file gclib_compat.h.

15.8.1.35 G_UTIL_GCAPS_SERVER_STATUS

```
#define G_UTIL_GCAPS_SERVER_STATUS 266
```

GUtility(), get information on the local server's name and if it is published to the local network.
Definition at line 88 of file gclib_compat.h.

15.8.1.36 G_UTIL_GCAPS_REMOTE_CONNECTIONS

```
#define G_UTIL_GCAPS_REMOTE_CONNECTIONS 267
```

GUtility(), get a list of remote addresses connected to local server.
Definition at line 89 of file gclib_compat.h.

15.8.1.37 G_UTIL_GCAPS_SERVER_INFO

```
#define G_UTIL_GCAPS_SERVER_INFO 268
```

Definition at line 90 of file gclib_compat.h.

15.8.1.38 G_UTIL_GCAPS_ADDRESSES_GET_REMEMBERED

```
#define G_UTIL_GCAPS_ADDRESSES_GET_REMEMBERED 269
```

GUtility(), returns true if gcaps is remembering ip assignments.
Definition at line 91 of file gclib_compat.h.

15.8.1.39 G_UTIL_GCAPS_ADDRESSES_SET_REMEMBERED

```
#define G_UTIL_GCAPS_ADDRESSES_SET_REMEMBERED 270
```

GUtility(), sets if gcaps should remember ip assignments.
Definition at line 92 of file gclib_compat.h.

15.8.2 Typedef Documentation

15.8.2.1 GReturn

```
typedef int GReturn
```

Every function returns a value of type GReturn. See gclib_errors.h for possible values.
Definition at line 94 of file gclib_compat.h.

15.8.2.2 GCon

```
typedef struct Context* GCon
```

Connection handle. Unique for each connection in process. Assigned a non-zero value in GOpen().
Definition at line 95 of file gclib_compat.h.

15.8.2.3 GSize

```
typedef unsigned int GSize
```

Size of buffers, etc.
Definition at line 96 of file gclib_compat.h.

15.8.2.4 GOption

```
typedef int GOption
```

Option integer for various formatting, etc.
Definition at line 97 of file gclib_compat.h.

15.8.2.5 GCStringOut

```
typedef char* GCStringOut
```

C-string output from the library. Implies null-termination.
Definition at line 98 of file gclib_compat.h.

15.8.2.6 GCStringIn

```
typedef const char* GCStringIn
```

C-string input to the library. Implies null-termination.
Definition at line 99 of file gclib_compat.h.

15.8.2.7 GBufOut

```
typedef char* GBufOut
```

Data output from the library. No null-termination implied. Returned values may be null-terminated, see function documentation for details.
Definition at line 100 of file gclib_compat.h.

15.8.2.8 GBufIn

```
typedef const char* GBufIn
```

Data input to the library. No null-termination, function will have a GSize to indicate bytes to write .
Definition at line 101 of file gclib_compat.h.

15.8.2.9 GStatus

```
typedef unsigned char GStatus
```

Interrupt status byte.
Definition at line 102 of file gclib_compat.h.

15.8.2.10 GMemory

```
typedef void* GMemory
```

Pointer to untyped memory for use in GUtility().
Definition at line 103 of file gclib_compat.h.

15.8.3 Function Documentation

15.8.3.1 GRead()

```
GCLIB_DEPRECATED GReturn GRead (
            GCon g,
            GBufOut buffer,
            GSize buffer_len,
            GSize * bytes_read)
```

Does nothing and returns G_GCLIB_ERROR.

Deprecated This function only exists for ABI compatibility, and will be removed in a future gclib version.

15.8.3.2 GWrite()

```
GCLIB_DEPRECATED GReturn GWrite (
            GCon g,
            GBufIn buffer,
            GSize buffer_len)
```

Does nothing and returns G_GCLIB_ERROR.

Deprecated This function only exists for ABI compatibility, and will be removed in a future gclib version.

15.8.3.3 GUtility()

```
GCLIB_DEPRECATED GReturn GUtility (
            GCon g,
            GOption request,
            GMemory memory1,
            GMemory memory2)
```

Does nothing and returns G_GCLIB_ERROR.

Deprecated This function only exists for ABI compatibility, and will be removed in a future gclib version.

15.9 gclib_compat.h

Go to the documentation of this file.

```
00001
00022
00027 #ifndef GCLIB_COMPAT_H
00028 #define GCLIB_COMPAT_H
00029
00030 #ifdef _MSC_VER
00031 #define GCLIB_DEPRECATED __declspec(deprecated)
00032 #elif defined(__GNUC__) | defined(__clang__)
00033 #define GCLIB_DEPRECATED __attribute__((__deprecated__))
00034 #else
00035 #define GCLIB_DEPRECATED
00036 #endif
00037
00038 #include "gclib_record.h" // Galil data record structs and unions.
00039 #include "gclib_errors.h" // GReturn error code values and strings.
00040
00041 #ifdef __cplusplus
00042 extern "C" {
00043 #endif
00044
00045 #ifndef _WIN32
00046 #pragma GCC visibility push(default)
00047 #endif
00048
00049 // Constants for function arguments
00050 #define G_DR 1
00051 #define G_QR 0
00052 #define G_BOUNDS -1
00053 #define G_CR 0
00054 #define G_COMMA 1
00055 #define G_PUBLISH_SERVER 1
00056 #define G_REMOVE_SERVER 0
00057 #define G_USE_INITIAL_TIMEOUT -1
00058
00059 // Convenience constants
00060 #define G_SMALL_BUFFER 1024
00061 #define G_HUGE_BUFFER 524288
00062 #define G_LINE_BUFFER 80
00063
00064 //Constants for GUtility()
00065 #define G_UTIL_TIMEOUT 1
00066 #define G_UTIL_TIMEOUT_OVERRIDE 2
00067 #define G_USE_INITIAL_TIMEOUT -1
00068 #define G_UTIL_VERSION 128
00069 #define G_UTIL_INFO 129
00070 #define G_UTIL_SLEEP 130
00071 #define G_UTIL_ADDRESSES 131
00072 #define G_UTIL_IPREQUEST 132
00073 #define G_UTIL_ASSIGN 133
00074 #define G_UTIL_DEVICE_INITIALIZE 134
00075 #define G_UTIL_PING 135
00076 #define G_UTIL_ERROR_CONTEXT 136
00077
00078 #define G_UTIL_GCAPS_HOST 256
00079 #define G_UTIL_GCAPS_VERSION 257
00080 #define G_UTIL_GCAPS_KEEPALIVE 258
00081 #define G_UTIL_GCAPS_ADDRESSES 259
00082 #define G_UTIL_GCAPS_IPREQUEST 260
00083 #define G_UTIL_GCAPS_ASSIGN 261
00084 #define G_UTIL_GCAPS_PING 262
00085 #define G_UTIL_GCAPS_LIST_SERVERS 263
00086 #define G_UTIL_GCAPS_PUBLISH_SERVER 264
00087 #define G_UTIL_GCAPS_SET_SERVER 265
00088 #define G_UTIL_GCAPS_SERVER_STATUS 266
00089 #define G_UTIL_GCAPS_REMOTE_CONNECTIONS 267
00090 #define G_UTIL_GCAPS_SERVER_INFO 268
```

```
00091 #define G_UTIL_GCAPS_ADDRESSES_GET_REMEMBERED 269
00092 #define G_UTIL_GCAPS_ADDRESSES_SET_REMEMBERED 270
00093
00094 typedef int GReturn;
00095 typedef struct Context* GCon;
00096 typedef unsigned int GSize;
00097 typedef int GOption;
00098 typedef char* GCStringOut;
00099 typedef const char* GCStringIn;
00100 typedef char* GBufOut;
00101 typedef const char* GBufIn;
00102 typedef unsigned char GStatus;
00103 typedef void* GMemory;
00104
00106 GCLIB_DEPRECATED GReturn GOpen(GCStringIn connection_string, GCon* g);
00150
00152 GCLIB_DEPRECATED GReturn GClose(GCon g);
00166
00168 GCLIB_DEPRECATED GReturn GCommand(GCon g, GCStringIn command, GBufOut buffer, GSize buffer_len, GSize*
      bytes_returned);
00182
00184 GCLIB_DEPRECATED GReturn GProgramDownload(GCon g, GCStringIn program, GCStringIn preprocessor);
00196
00198 GCLIB_DEPRECATED GReturn GProgramUpload(GCon g, GBufOut buffer, GSize buffer_len);
00208
00210 GCLIB_DEPRECATED GReturn GArrayDownload(GCon g, const GCStringIn array_name, GOption first, GOption
      last, GCStringIn buffer);
00224
00226 GCLIB_DEPRECATED GReturn GArrayUpload(GCon g, const GCStringIn array_name, GOption first, GOption
      last, GOption delim, GBufOut buffer, GSize buffer_len);
00240
00242 GCLIB_DEPRECATED GReturn GRecord(GCon g, union GDataRecord* record, GOption method);
00266
00268 GCLIB_DEPRECATED GReturn GMessage(GCon g, GCStringOut buffer, GSize buffer_len);
00299
00301 GCLIB_DEPRECATED GReturn GInterrupt(GCon g, GStatus* status_byte);
00320
00322 GCLIB_DEPRECATED GReturn GFirmwareDownload(GCon g, GCStringIn filepath);
00331
00333 GCLIB_DEPRECATED GReturn GRead(GCon g, GBufOut buffer, GSize buffer_len, GSize* bytes_read);
00339 GCLIB_DEPRECATED GReturn GWrite(GCon g, GBufIn buffer, GSize buffer_len);
00345 GCLIB_DEPRECATED GReturn GUtility(GCon g, GOption request, GMemory memory1, GMemory memory2);
00350
00351 #ifdef __cplusplus
00352 } //extern "C"
00353 #endif
00354
00355 #ifndef _WIN32
00356 #pragma GCC visibility pop
00357 #endif
00358
00359 #endif // GCLIB_COMPAT_H
```

15.10 gclib_errors.h File Reference

Macros

- #define G_NO_ERROR 0

  Return value if function succeeded.
- #define G_NO_ERROR_S "no error"
- #define G_GCLIB_ERROR -1

  General library error. Indicates internal API caught an unexpected error. Contact Galil support if this error is returned, softwaresupport@galil.com.
- #define G_GCLIB_ERROR_S "gclib unexpected error"
- #define G_GCLIB_UTILITY_ERROR -2

  An invalid request value was specified to GUtility.
- #define G_GCLIB_UTILITY_ERROR_S "invalid request value or bad arguments were specified to GUtility()"
- #define G_GCLIB_UTILITY_IP_TAKEN -3

  The IP cannot be assigned because ping returned a reply.
- #define G_GCLIB_UTILITY_IP_TAKEN_S "ip address is already taken by a device on the network"
- #define G_GCLIB_NON_BLOCKING_READ_EMPTY -4

  GMessage, GInterrupt, and GRecord can be called with a zero timeout. If there wasn't data waiting in memory, this error is returned.

- #define G_GCLIB_NON_BLOCKING_READ_EMPTY_S "data was not waiting for a zero-timeout read"
- #define G_GCLIB_POLLING_FAILED -5

  GWaitForBool out of polling trials.
- #define G_GCLIB_POLLING_FAILED_S "exit condition not met in specified polling period"
- #define G_TIMEOUT -1100

  Operation timed out. Timeout is set by the –timeout option in GOpen() and can be overriden by GTimeout().
- #define G_TIMEOUT_S "device timed out"
- #define G_OPEN_ERROR -1101

  Device could not be opened. E.G. Serial port or PCI device already open.
- #define G_OPEN_ERROR_S "device failed to open"
- #define G_ALREADY_OPEN -1111

  Serial or PCI file has a flock placed on it, presumably by another gclib connection.
- #define G_ALREADY_OPEN_S "Serial or PCI port already open"
- #define G_READ_ERROR -1103

  Device read failed. E.G. Socket was closed by remote host. See G_UTIL_GCAPS_KEEPALIVE.
- #define G_READ_ERROR_S "device read error"
- #define G_WRITE_ERROR -1104

  Device write failed. E.G. Socket was closed by remote host. See G_UTIL_GCAPS_KEEPALIVE.
- #define G_WRITE_ERROR_S "device write error"
- #define G_INVALID_PREPROCESSOR_OPTIONS -1204

  GProgramDownload was called with a bad preprocessor directive.
- #define G_INVALID_PREPROCESSOR_OPTIONS_S "preprocessor did not recognize options"
- #define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND -1106

  GCommand() was called with an illegal command, e.g. ED, DL or QD.
- #define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND_S "illegal command passed to command call"
- #define G_DATA_RECORD_ERROR -1107

  Data record error, e.g. DR attempted on serial connection.
- #define G_DATA_RECORD_ERROR_S "data record error"
- #define G_UNSUPPORTED_FUNCTION -1109

  Function cannot be called on this bus. E.G. GInterrupt() on serial.
- #define G_UNSUPPORTED_FUNCTION_S "function not supported on this communication bus"
- #define G_FIRMWARE_LOAD_NOT_SUPPORTED -1110

  Firmware is not supported on this bus, e.g. Ethernet for the DMC-21x3 series.
- #define G_FIRMWARE_LOAD_NOT_SUPPORTED_S "firmware cannot be loaded on this communication bus to this hardware"
- #define G_ARRAY_NOT_DIMENSIONED -1200

  Array operation was called on an array that was not in the controller's array table, see LA command.
- #define G_ARRAY_NOT_DIMENSIONED_S "array not dimensioned on controller or wrong size"
- #define G_CONNECTION_NOT_ESTABLISHED -1201

  Function was called with no connection.
- #define G_CONNECTION_NOT_ESTABLISHED_S "connection to hardware not established"
- #define G_ILLEGAL_DATA_IN_PROGRAM -1202

  Data to download not valid, e.g. \ in data.
- #define G_ILLEGAL_DATA_IN_PROGRAM_S "illegal ASCII character in program"
- #define G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT -1203

  Program preprocessor could not compress the program within the user's constraints.
- #define G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT_S "program cannot be compressed to fit on the controller"
- #define G_BAD_RESPONSE_QUESTION_MARK -10000

  Operation received a ?, indicating controller has a TC error.
- #define G_BAD_RESPONSE_QUESTION_MARK_S "question mark returned by controller"

- #define G_BAD_VALUE_RANGE -10002

  Bad value or range, e.g. GCon g variable passed to function was bad.
- #define G_BAD_VALUE_RANGE_S "value passed to function was bad or out of range"
- #define G_BAD_FULL_MEMORY -10003

  Not enough memory for an operation, e.g. all connections allowed for a process already taken.
- #define G_BAD_FULL_MEMORY_S "operation could not complete because of a memory error"
- #define G_BAD_LOST_DATA -10004

  Lost data, e.g. GCommand() response buffer was too small for the controller's response.
- #define G_BAD_LOST_DATA_S "data was lost due to buffer or fifo limitations"
- #define G_BAD_FILE -10005

  Bad file path, bad file contents, or bad write.
- #define G_BAD_FILE_S "file was not found, contents are invalid, or write failed"
- #define G_BAD_ADDRESS -10006

  Bad address.
- #define G_BAD_ADDRESS_S "a bad address was specified in open"
- #define G_BAD_FIRMWARE_LOAD -10008

  Bad firmware upgrade.
- #define G_BAD_FIRMWARE_LOAD_S "Firmware upgrade failed"
- #define G_GCAPS_OPEN_ERROR -20000

  gcaps connection couldn't open. Server is not running or is not reachable.
- #define G_GCAPS_OPEN_ERROR_S "gcaps connection could not be opened"
- #define G_GCAPS_SUBSCRIPTION_ERROR -20002

  GMessage(), GRecord(), GInterrupt() called on a connection without –subscribe switch.
- #define G_GCAPS_SUBSCRIPTION_ERROR_S "function requires subscription not specified in GOpen()"

15.10.1 Detailed Description

Defines values for the Galil C Library return codes and error strings.
Definition in file gclib_errors.h.

15.10.2 Macro Definition Documentation

15.10.2.1 G_NO_ERROR

```
#define G_NO_ERROR 0
```

Return value if function succeeded.
Definition at line 9 of file gclib_errors.h.

15.10.2.2 G_NO_ERROR_S

```
#define G_NO_ERROR_S "no error"
```

Definition at line 10 of file gclib_errors.h.

15.10.2.3 G_GCLIB_ERROR

```
#define G_GCLIB_ERROR -1
```

General library error. Indicates internal API caught an unexpected error. Contact Galil support if this error is returned, softwaresupport@galil.com.
Definition at line 12 of file gclib_errors.h.

15.10.2.4 G_GCLIB_ERROR_S

```
#define G_GCLIB_ERROR_S "gclib unexpected error"
```

Definition at line 13 of file gclib_errors.h.

15.10.2.5 G_GCLIB_UTILITY_ERROR

```
#define G_GCLIB_UTILITY_ERROR -2
```

An invalid request value was specified to GUtility.
Definition at line 15 of file gclib_errors.h.

15.10.2.6 G_GCLIB_UTILITY_ERROR_S

```
#define G_GCLIB_UTILITY_ERROR_S "invalid request value or bad arguments were specified to
GUtility()"
```

Definition at line 16 of file gclib_errors.h.

15.10.2.7 G_GCLIB_UTILITY_IP_TAKEN

```
#define G_GCLIB_UTILITY_IP_TAKEN -3
```

The IP cannot be assigned because ping returned a reply.
Definition at line 18 of file gclib_errors.h.

15.10.2.8 G_GCLIB_UTILITY_IP_TAKEN_S

```
#define G_GCLIB_UTILITY_IP_TAKEN_S "ip address is already taken by a device on the network"
```

Definition at line 19 of file gclib_errors.h.

15.10.2.9 G_GCLIB_NON_BLOCKING_READ_EMPTY

```
#define G_GCLIB_NON_BLOCKING_READ_EMPTY -4
```

GMessage, GInterrupt, and GRecord can be called with a zero timeout. If there wasn't data waiting in memory, this error is returned.
Definition at line 21 of file gclib_errors.h.

15.10.2.10 G_GCLIB_NON_BLOCKING_READ_EMPTY_S

```
#define G_GCLIB_NON_BLOCKING_READ_EMPTY_S "data was not waiting for a zero-timeout read"
```

Definition at line 22 of file gclib_errors.h.

15.10.2.11 G_GCLIB_POLLING_FAILED

```
#define G_GCLIB_POLLING_FAILED -5
```

GWaitForBool out of polling trials.
Definition at line 24 of file gclib_errors.h.

15.10.2.12 G_GCLIB_POLLING_FAILED_S

```
#define G_GCLIB_POLLING_FAILED_S "exit condition not met in specified polling period"
```

Definition at line 25 of file gclib_errors.h.

15.10.2.13 G_TIMEOUT

```
#define G_TIMEOUT -1100
```

Operation timed out. Timeout is set by the –timeout option in GOpen() and can be overriden by GTimeout().
Definition at line 27 of file gclib_errors.h.

15.10.2.14 G_TIMEOUT_S

```
#define G_TIMEOUT_S "device timed out"
```

Definition at line 28 of file gclib_errors.h.

15.10.2.15 G_OPEN_ERROR

```
#define G_OPEN_ERROR -1101
```
Device could not be opened. E.G. Serial port or PCI device already open.
Definition at line 30 of file gclib_errors.h.

15.10.2.16 G_OPEN_ERROR_S

```
#define G_OPEN_ERROR_S "device failed to open"
```
Definition at line 31 of file gclib_errors.h.

15.10.2.17 G_ALREADY_OPEN

```
#define G_ALREADY_OPEN -1111
```
Serial or PCI file has a flock placed on it, presumably by another gclib connection.
Definition at line 33 of file gclib_errors.h.

15.10.2.18 G_ALREADY_OPEN_S

```
#define G_ALREADY_OPEN_S "Serial or PCI port already open"
```
Definition at line 34 of file gclib_errors.h.

15.10.2.19 G_READ_ERROR

```
#define G_READ_ERROR -1103
```
Device read failed. E.G. Socket was closed by remote host. See G_UTIL_GCAPS_KEEPALIVE.
Definition at line 36 of file gclib_errors.h.

15.10.2.20 G_READ_ERROR_S

```
#define G_READ_ERROR_S "device read error"
```
Definition at line 37 of file gclib_errors.h.

15.10.2.21 G_WRITE_ERROR

```
#define G_WRITE_ERROR -1104
```
Device write failed. E.G. Socket was closed by remote host. See G_UTIL_GCAPS_KEEPALIVE.
Definition at line 39 of file gclib_errors.h.

15.10.2.22 G_WRITE_ERROR_S

```
#define G_WRITE_ERROR_S "device write error"
```
Definition at line 40 of file gclib_errors.h.

15.10.2.23 G_INVALID_PREPROCESSOR_OPTIONS

```
#define G_INVALID_PREPROCESSOR_OPTIONS -1204
```
GProgramDownload was called with a bad preprocessor directive.
Definition at line 42 of file gclib_errors.h.

15.10.2.24 G_INVALID_PREPROCESSOR_OPTIONS_S

```
#define G_INVALID_PREPROCESSOR_OPTIONS_S "preprocessor did not recognize options"
```
Definition at line 43 of file gclib_errors.h.

15.10.2.25 G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND

```
#define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND -1106
```
GCommand() was called with an illegal command, e.g. ED, DL or QD.
Definition at line 45 of file gclib_errors.h.

15.10.2.26 G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND_S

```
#define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND_S "illegal command passed to command call"
```
Definition at line 46 of file gclib_errors.h.

15.10.2.27 G_DATA_RECORD_ERROR

```
#define G_DATA_RECORD_ERROR -1107
```
Data record error, e.g. DR attempted on serial connection.
Definition at line 48 of file gclib_errors.h.

15.10.2.28 G_DATA_RECORD_ERROR_S

```
#define G_DATA_RECORD_ERROR_S "data record error"
```
Definition at line 49 of file gclib_errors.h.

15.10.2.29 G_UNSUPPORTED_FUNCTION

```
#define G_UNSUPPORTED_FUNCTION -1109
```
Function cannot be called on this bus. E.G. GInterrupt() on serial.
Definition at line 51 of file gclib_errors.h.

15.10.2.30 G_UNSUPPORTED_FUNCTION_S

```
#define G_UNSUPPORTED_FUNCTION_S "function not supported on this communication bus"
```
Definition at line 52 of file gclib_errors.h.

15.10.2.31 G_FIRMWARE_LOAD_NOT_SUPPORTED

```
#define G_FIRMWARE_LOAD_NOT_SUPPORTED -1110
```
Firmware is not supported on this bus, e.g. Ethernet for the DMC-21x3 series.
Definition at line 54 of file gclib_errors.h.

15.10.2.32 G_FIRMWARE_LOAD_NOT_SUPPORTED_S

```
#define G_FIRMWARE_LOAD_NOT_SUPPORTED_S "firmware cannot be loaded on this communication bus
to this hardware"
```
Definition at line 55 of file gclib_errors.h.

15.10.2.33 G_ARRAY_NOT_DIMENSIONED

```
#define G_ARRAY_NOT_DIMENSIONED -1200
```
Array operation was called on an array that was not in the controller's array table, see LA command.
Definition at line 57 of file gclib_errors.h.

15.10.2.34 G_ARRAY_NOT_DIMENSIONED_S

```
#define G_ARRAY_NOT_DIMENSIONED_S "array not dimensioned on controller or wrong size"
```
Definition at line 58 of file gclib_errors.h.

15.10.2.35 G_CONNECTION_NOT_ESTABLISHED

```
#define G_CONNECTION_NOT_ESTABLISHED -1201
```
Function was called with no connection.
Definition at line 60 of file gclib_errors.h.

15.10.2.36 G_CONNECTION_NOT_ESTABLISHED_S

```
#define G_CONNECTION_NOT_ESTABLISHED_S "connection to hardware not established"
```
Definition at line 61 of file gclib_errors.h.

15.10.2.37 G_ILLEGAL_DATA_IN_PROGRAM

```
#define G_ILLEGAL_DATA_IN_PROGRAM -1202
```

Data to download not valid, e.g. \ in data.
Definition at line 63 of file gclib_errors.h.

15.10.2.38 G_ILLEGAL_DATA_IN_PROGRAM_S

```
#define G_ILLEGAL_DATA_IN_PROGRAM_S "illegal ASCII character in program"
```

Definition at line 64 of file gclib_errors.h.

15.10.2.39 G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT

```
#define G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT -1203
```

Program preprocessor could not compress the program within the user's constraints.
Definition at line 66 of file gclib_errors.h.

15.10.2.40 G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT_S

```
#define G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT_S "program cannot be compressed to fit on the
controller"
```

Definition at line 67 of file gclib_errors.h.

15.10.2.41 G_BAD_RESPONSE_QUESTION_MARK

```
#define G_BAD_RESPONSE_QUESTION_MARK -10000
```

Operation received a ?, indicating controller has a TC error.
Definition at line 69 of file gclib_errors.h.

15.10.2.42 G_BAD_RESPONSE_QUESTION_MARK_S

```
#define G_BAD_RESPONSE_QUESTION_MARK_S "question mark returned by controller"
```

Definition at line 70 of file gclib_errors.h.

15.10.2.43 G_BAD_VALUE_RANGE

```
#define G_BAD_VALUE_RANGE -10002
```

Bad value or range, e.g. GCon *g* variable passed to function was bad.
Definition at line 72 of file gclib_errors.h.

15.10.2.44 G_BAD_VALUE_RANGE_S

```
#define G_BAD_VALUE_RANGE_S "value passed to function was bad or out of range"
```

Definition at line 73 of file gclib_errors.h.

15.10.2.45 G_BAD_FULL_MEMORY

```
#define G_BAD_FULL_MEMORY -10003
```

Not enough memory for an operation, e.g. all connections allowed for a process already taken.
Definition at line 75 of file gclib_errors.h.

15.10.2.46 G_BAD_FULL_MEMORY_S

```
#define G_BAD_FULL_MEMORY_S "operation could not complete because of a memory error"
```

Definition at line 76 of file gclib_errors.h.

15.10.2.47 G_BAD_LOST_DATA

```
#define G_BAD_LOST_DATA -10004
```

Lost data, e.g. GCommand() response buffer was too small for the controller's response.
Definition at line 78 of file gclib_errors.h.

15.10.2.48 G_BAD_LOST_DATA_S

```
#define G_BAD_LOST_DATA_S "data was lost due to buffer or fifo limitations"
```
Definition at line 79 of file gclib_errors.h.

15.10.2.49 G_BAD_FILE

```
#define G_BAD_FILE -10005
```
Bad file path, bad file contents, or bad write.
Definition at line 81 of file gclib_errors.h.

15.10.2.50 G_BAD_FILE_S

```
#define G_BAD_FILE_S "file was not found, contents are invalid, or write failed"
```
Definition at line 82 of file gclib_errors.h.

15.10.2.51 G_BAD_ADDRESS

```
#define G_BAD_ADDRESS -10006
```
Bad address.
Definition at line 84 of file gclib_errors.h.

15.10.2.52 G_BAD_ADDRESS_S

```
#define G_BAD_ADDRESS_S "a bad address was specified in open"
```
Definition at line 85 of file gclib_errors.h.

15.10.2.53 G_BAD_FIRMWARE_LOAD

```
#define G_BAD_FIRMWARE_LOAD -10008
```
Bad firmware upgrade.
Definition at line 87 of file gclib_errors.h.

15.10.2.54 G_BAD_FIRMWARE_LOAD_S

```
#define G_BAD_FIRMWARE_LOAD_S "Firmware upgrade failed"
```
Definition at line 88 of file gclib_errors.h.

15.10.2.55 G_GCAPS_OPEN_ERROR

```
#define G_GCAPS_OPEN_ERROR -20000
```
gcaps connection couldn't open. Server is not running or is not reachable.
Definition at line 90 of file gclib_errors.h.

15.10.2.56 G_GCAPS_OPEN_ERROR_S

```
#define G_GCAPS_OPEN_ERROR_S "gcaps connection could not be opened"
```
Definition at line 91 of file gclib_errors.h.

15.10.2.57 G_GCAPS_SUBSCRIPTION_ERROR

```
#define G_GCAPS_SUBSCRIPTION_ERROR -20002
```
GMessage(), GRecord(), GInterrupt() called on a connection without –subscribe switch.
Definition at line 93 of file gclib_errors.h.

15.10.2.58 G_GCAPS_SUBSCRIPTION_ERROR_S

```
#define G_GCAPS_SUBSCRIPTION_ERROR_S "function requires subscription not specified in GOpen()"
```
Definition at line 94 of file gclib_errors.h.

15.11 gclib_errors.h

Go to the documentation of this file.

```
00001
00006 #ifndef I_0DD3687F_47D0_454B_ADB2_CBAB0ED46FCE
00007 #define I_0DD3687F_47D0_454B_ADB2_CBAB0ED46FCE
00008
00009 #define G_NO_ERROR 0
00010 #define G_NO_ERROR_S "no error"
00011
00012 #define G_GCLIB_ERROR -1
00013 #define G_GCLIB_ERROR_S "gclib unexpected error"
00014
00015 #define G_GCLIB_UTILITY_ERROR -2
00016 #define G_GCLIB_UTILITY_ERROR_S "invalid request value or bad arguments were specified to GUtility()"
00017
00018 #define G_GCLIB_UTILITY_IP_TAKEN -3
00019 #define G_GCLIB_UTILITY_IP_TAKEN_S "ip address is already taken by a device on the network"
00020
00021 #define G_GCLIB_NON_BLOCKING_READ_EMPTY -4
00022 #define G_GCLIB_NON_BLOCKING_READ_EMPTY_S "data was not waiting for a zero-timeout read"
00023
00024 #define G_GCLIB_POLLING_FAILED -5
00025 #define G_GCLIB_POLLING_FAILED_S "exit condition not met in specified polling period"
00026
00027 #define G_TIMEOUT -1100
00028 #define G_TIMEOUT_S "device timed out"
00029
00030 #define G_OPEN_ERROR -1101
00031 #define G_OPEN_ERROR_S "device failed to open"
00032
00033 #define G_ALREADY_OPEN -1111
00034 #define G_ALREADY_OPEN_S "Serial or PCI port already open"
00035
00036 #define G_READ_ERROR -1103
00037 #define G_READ_ERROR_S "device read error"
00038
00039 #define G_WRITE_ERROR -1104
00040 #define G_WRITE_ERROR_S "device write error"
00041
00042 #define G_INVALID_PREPROCESSOR_OPTIONS -1204
00043 #define G_INVALID_PREPROCESSOR_OPTIONS_S "preprocessor did not recognize options"
00044
00045 #define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND -1106
00046 #define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND_S "illegal command passed to command call"
00047
00048 #define G_DATA_RECORD_ERROR -1107
00049 #define G_DATA_RECORD_ERROR_S "data record error"
00050
00051 #define G_UNSUPPORTED_FUNCTION -1109
00052 #define G_UNSUPPORTED_FUNCTION_S "function not supported on this communication bus"
00053
00054 #define G_FIRMWARE_LOAD_NOT_SUPPORTED -1110
00055 #define G_FIRMWARE_LOAD_NOT_SUPPORTED_S "firmware cannot be loaded on this communication bus to this
     hardware"
00056
00057 #define G_ARRAY_NOT_DIMENSIONED -1200
00058 #define G_ARRAY_NOT_DIMENSIONED_S "array not dimensioned on controller or wrong size"
00059
00060 #define G_CONNECTION_NOT_ESTABLISHED -1201
00061 #define G_CONNECTION_NOT_ESTABLISHED_S "connection to hardware not established"
00062
00063 #define G_ILLEGAL_DATA_IN_PROGRAM -1202
00064 #define G_ILLEGAL_DATA_IN_PROGRAM_S "illegal ASCII character in program"
00065
00066 #define G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT -1203
00067 #define G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT_S "program cannot be compressed to fit on the controller"
00068
00069 #define G_BAD_RESPONSE_QUESTION_MARK -10000
00070 #define G_BAD_RESPONSE_QUESTION_MARK_S "question mark returned by controller"
00071
00072 #define G_BAD_VALUE_RANGE -10002
00073 #define G_BAD_VALUE_RANGE_S "value passed to function was bad or out of range"
00074
00075 #define G_BAD_FULL_MEMORY -10003
00076 #define G_BAD_FULL_MEMORY_S "operation could not complete because of a memory error"
00077
00078 #define G_BAD_LOST_DATA -10004
00079 #define G_BAD_LOST_DATA_S "data was lost due to buffer or fifo limitations"
00080
00081 #define G_BAD_FILE -10005
00082 #define G_BAD_FILE_S "file was not found, contents are invalid, or write failed"
00083
00084 #define G_BAD_ADDRESS -10006
00085 #define G_BAD_ADDRESS_S "a bad address was specified in open"
00086
```

```
00087 #define G_BAD_FIRMWARE_LOAD -10008
00088 #define G_BAD_FIRMWARE_LOAD_S "Firmware upgrade failed"
00089
00090 #define G_GCAPS_OPEN_ERROR -20000
00091 #define G_GCAPS_OPEN_ERROR_S "gcaps connection could not be opened"
00092
00093 #define G_GCAPS_SUBSCRIPTION_ERROR -20002
00094 #define G_GCAPS_SUBSCRIPTION_ERROR_S "function requires subscription not specified in GOpen()"
00095
00096 #endif //I_0DD3687F_47D0_454B_ADB2_CBAB0ED46FCE
```

15.12 gclib_record.h File Reference

`#include <stdint.h>`

Classes

- struct GDataRecord4000

  Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
- struct GDataRecord52000

  Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
- struct GDataRecord1806

  Data record struct for DMC-1806 controller.
- struct GDataRecord2103

  Data record struct for DMC-2103 controllers.
- struct GDataRecord1802
- struct GDataRecord30000

  Data record struct for DMC-30010 controllers.
- struct GDataRecord47000_ENC

  Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
- struct GDataRecord47300_ENC

  Data record struct for RIO-47300. Includes encoder fields.
- struct GDataRecord47300_24EX

  Data record struct for RIO-47300 with 24EX I/O daughter board.
- struct GDataRecord47162

  Data record struct for RIO-47162.
- union GDataRecord

  Data record union, containing all structs and a generic byte array accessor.

Macros

- #define GALILDATARECORDMAXLENGTH 512

  Max size for any Galil data record, equal to dual port ram size of PCI.

Typedefs

- typedef uint8_t UB
- typedef uint16_t UW
- typedef int16_t SW
- typedef int32_t SL
- typedef uint32_t UL

15.12.1 Detailed Description

Defines a union for data records. Each supported controller has a struct member in the union with named record types. Offsets into the data record can also be used by referencing the member `byte_array`.
Definition in file gclib_record.h.

15.12.2 Macro Definition Documentation

15.12.2.1 GALILDATARECORDMAXLENGTH

```
#define GALILDATARECORDMAXLENGTH 512
```

Max size for any Galil data record, equal to dual port ram size of PCI.
Definition at line 28 of file gclib_record.h.

15.12.3 Typedef Documentation

15.12.3.1 UB

```
typedef uint8_t UB
```

Definition at line 12 of file gclib_record.h.

15.12.3.2 UW

```
typedef uint16_t UW
```

Definition at line 13 of file gclib_record.h.

15.12.3.3 SW

```
typedef int16_t SW
```

Definition at line 14 of file gclib_record.h.

15.12.3.4 SL

```
typedef int32_t SL
```

Definition at line 15 of file gclib_record.h.

15.12.3.5 UL

```
typedef uint32_t UL
```

Definition at line 16 of file gclib_record.h.

15.13 gclib_record.h

Go to the documentation of this file.

```
00001
00006
00007 #ifndef I_210405D9_D9EF_484F_8258_BB29A1BBA217
00008 #define I_210405D9_D9EF_484F_8258_BB29A1BBA217
00009
00010 //typedefs to keep the layout of the structs clean and matching the Galil user manual docs
00011 #include <stdint.h>
00012 typedef uint8_t UB;  //unsigned byte
00013 typedef uint16_t UW; //unsigned word
00014 typedef int16_t SW;  //signed word
00015 typedef int32_t SL;  //signed long
00016 typedef uint32_t UL; //unsigned long
00017
00018 #if defined(_MSC_VER) || defined(__GNUC__) || defined(__BORLANDC__)
00019 #define PACKOK
00020 #endif
00021
00022 #ifdef PACKOK
00023 #pragma pack(1)
00024 #else
00025 #error "Need to set structure packing for compiler"
00026 #endif
00027
00028 #define GALILDATARECORDMAXLENGTH 512
00029
00031 struct GDataRecord4000
00032 {
00033
00034     /*Offset   type name        description*/
00035
00036     /*00*/      UB    header_0;
00037     /*01*/      UB    header_1;
```

```
00038     /*02*/      UB    header_2;
00039     /*03*/      UB    header_3;
00040
00041     /*04-05*/   UW    sample_number;
00042
00043     /*06*/      UB    input_bank_0;
00044     /*07*/      UB    input_bank_1;
00045     /*08*/      UB    input_bank_2;
00046     /*09*/      UB    input_bank_3;
00047     /*10*/      UB    input_bank_4;
00048     /*11*/      UB    input_bank_5;
00049     /*12*/      UB    input_bank_6;
00050     /*13*/      UB    input_bank_7;
00051     /*14*/      UB    input_bank_8;
00052     /*15*/      UB    input_bank_9;
00053
00054     /*16*/      UB    output_bank_0;
00055     /*17*/      UB    output_bank_1;
00056     /*18*/      UB    output_bank_2;
00057     /*19*/      UB    output_bank_3;
00058     /*20*/      UB    output_bank_4;
00059     /*21*/      UB    output_bank_5;
00060     /*22*/      UB    output_bank_6;
00061     /*23*/      UB    output_bank_7;
00062     /*24*/      UB    output_bank_8;
00063     /*25*/      UB    output_bank_9;
00064
00065     /*26-27*/   SW  reserved_0;
00066     /*28-29*/   SW    reserved_2;
00067     /*30-31*/   SW    reserved_4;
00068     /*32-33*/   SW    reserved_6;
00069     /*34-35*/   SW    reserved_8;
00070     /*36-37*/   SW    reserved_10;
00071     /*38-39*/   SW    reserved_12;
00072     /*40-41*/   SW    reserved_14;
00073
00074     /*42*/      UB    ethernet_status_a;
00075     /*43*/      UB    ethernet_status_b;
00076     /*44*/      UB    ethernet_status_c;
00077     /*45*/      UB    ethernet_status_d;
00078     /*46*/      UB    ethernet_status_e;
00079     /*47*/      UB    ethernet_status_f;
00080     /*48*/      UB    ethernet_status_g;
00081     /*49*/      UB    ethernet_status_h;
00082
00083     /*50*/      UB    error_code;
00084     /*51*/      UB    thread_status;
00085     /*52-55*/   UL    amplifier_status;
00086
00087     /*56-59*/   UL    contour_segment_count;
00088     /*60-61*/   UW    contour_buffer_available;
00089
00090     /*62-63*/   UW    s_plane_segment_count;
00091     /*64-65*/   UW    s_plane_move_status;
00092     /*66-69*/   SL    s_distance;
00093     /*70-71*/   UW    s_plane_buffer_available;
00094
00095     /*72-73*/   UW    t_plane_segment_count;
00096     /*74-75*/   UW    t_plane_move_status;
00097     /*76-79*/   SL    t_distance;
00098     /*80-81*/   UW    t_plane_buffer_available;
00099
00100     /*82-83*/   UW    axis_a_status;
00101     /*84*/      UB    axis_a_switches;
00102     /*85*/      UB    axis_a_stop_code;
00103     /*86-89*/   SL    axis_a_reference_position;
00104     /*90-93*/   SL    axis_a_motor_position;
00105     /*94-97*/   SL    axis_a_position_error;
00106     /*98-101*/  SL    axis_a_aux_position;
00107     /*102-105*/ SL    axis_a_velocity;
00108     /*106-109*/ SL    axis_a_torque;
00109     /*110-111*/ UW  axis_a_analog_in;
00110     /*112*/     UB    axis_a_halls;
00111     /*113*/     UB    axis_a_reserved;
00112     /*114-117*/ SL    axis_a_variable;
00113
00114     /*118-119*/ UW    axis_b_status;
00115     /*120*/     UB    axis_b_switches;
00116     /*121*/     UB    axis_b_stop_code;
00117     /*122-125*/ SL    axis_b_reference_position;
00118     /*126-129*/ SL    axis_b_motor_position;
00119     /*130-133*/ SL    axis_b_position_error;
00120     /*134-137*/ SL    axis_b_aux_position;
00121     /*138-141*/ SL    axis_b_velocity;
00122     /*142-145*/ SL    axis_b_torque;
00123     /*146-147*/ UW  axis_b_analog_in;
00124     /*148*/     UB    axis_b_halls;
```

```
00125     /*149*/     UB    axis_b_reserved;
00126     /*150-153*/ SL    axis_b_variable;
00127
00128     /*154-155*/ UW    axis_c_status;
00129     /*156*/     UB    axis_c_switches;
00130     /*157*/     UB    axis_c_stop_code;
00131     /*158-161*/ SL    axis_c_reference_position;
00132     /*162-165*/ SL    axis_c_motor_position;
00133     /*166-169*/ SL    axis_c_position_error;
00134     /*170-173*/ SL    axis_c_aux_position;
00135     /*174-177*/ SL    axis_c_velocity;
00136     /*178-181*/ SL    axis_c_torque;
00137     /*182-183*/ UW    axis_c_analog_in;
00138     /*184*/     UB    axis_c_halls;
00139     /*185*/     UB    axis_c_reserved;
00140     /*186-189*/ SL    axis_c_variable;
00141
00142     /*190-191*/ UW    axis_d_status;
00143     /*192*/     UB    axis_d_switches;
00144     /*193*/     UB    axis_d_stop_code;
00145     /*194-197*/ SL    axis_d_reference_position;
00146     /*198-201*/ SL    axis_d_motor_position;
00147     /*202-205*/ SL    axis_d_position_error;
00148     /*206-209*/ SL    axis_d_aux_position;
00149     /*210-213*/ SL    axis_d_velocity;
00150     /*214-217*/ SL    axis_d_torque;
00151     /*218-219*/ UW  axis_d_analog_in;
00152     /*220*/     UB    axis_d_halls;
00153     /*221*/     UB    axis_d_reserved;
00154     /*222-225*/ SL    axis_d_variable;
00155
00156     /*226-227*/ UW    axis_e_status;
00157     /*228*/     UB    axis_e_switches;
00158     /*229*/     UB    axis_e_stop_code;
00159     /*230-233*/ SL    axis_e_reference_position;
00160     /*234-237*/ SL    axis_e_motor_position;
00161     /*238-241*/ SL    axis_e_position_error;
00162     /*242-245*/ SL    axis_e_aux_position;
00163     /*246-249*/ SL    axis_e_velocity;
00164     /*250-253*/ SL    axis_e_torque;
00165     /*254-255*/ UW  axis_e_analog_in;
00166     /*256*/     UB    axis_e_halls;
00167     /*257*/     UB    axis_e_reserved;
00168     /*258-261*/ SL    axis_e_variable;
00169
00170     /*262-263*/ UW    axis_f_status;
00171     /*264*/     UB    axis_f_switches;
00172     /*265*/     UB    axis_f_stop_code;
00173     /*266-269*/ SL    axis_f_reference_position;
00174     /*270-273*/ SL    axis_f_motor_position;
00175     /*274-277*/ SL    axis_f_position_error;
00176     /*278-281*/ SL    axis_f_aux_position;
00177     /*282-285*/ SL    axis_f_velocity;
00178     /*286-289*/ SL    axis_f_torque;
00179     /*290-291*/ UW    axis_f_analog_in;
00180     /*292*/     UB    axis_f_halls;
00181     /*293*/     UB    axis_f_reserved;
00182     /*294-297*/ SL    axis_f_variable;
00183
00184     /*298-299*/ UW    axis_g_status;
00185     /*300*/     UB    axis_g_switches;
00186     /*301*/     UB    axis_g_stop_code;
00187     /*302-305*/ SL    axis_g_reference_position;
00188     /*306-309*/ SL    axis_g_motor_position;
00189     /*310-313*/ SL    axis_g_position_error;
00190     /*314-317*/ SL    axis_g_aux_position;
00191     /*318-321*/ SL    axis_g_velocity;
00192     /*322-325*/ SL    axis_g_torque;
00193     /*326-327*/ UW  axis_g_analog_in;
00194     /*328*/     UB    axis_g_halls;
00195     /*329*/     UB    axis_g_reserved;
00196     /*330-333*/ SL    axis_g_variable;
00197
00198     /*334-335*/ UW    axis_h_status;
00199     /*336*/     UB    axis_h_switches;
00200     /*337*/     UB    axis_h_stop_code;
00201     /*338-341*/ SL    axis_h_reference_position;
00202     /*342-345*/ SL    axis_h_motor_position;
00203     /*346-349*/ SL    axis_h_position_error;
00204     /*350-353*/ SL    axis_h_aux_position;
00205     /*354-357*/ SL    axis_h_velocity;
00206     /*358-361*/ SL    axis_h_torque;
00207     /*362-363*/ UW  axis_h_analog_in;
00208     /*364*/     UB    axis_h_halls;
00209     /*365*/     UB    axis_h_reserved;
00210     /*366-369*/ SL    axis_h_variable;
00211 }; //DataRecord4000
```

```
00212
00214 struct GDataRecord52000
00215 {
00216
00217     /*Offset   type name        description*/
00218
00219     /*00*/      UB    header_0;
00220     /*01*/      UB    header_1;
00221     /*02*/      UB    header_2;
00222     /*03*/      UB    header_3;
00223
00224     /*04-05*/   UW    sample_number;
00225
00226     /*06*/      UB    input_bank_0;
00227     /*07*/      UB    input_bank_1;
00228     /*08*/      UB    input_bank_2;
00229     /*09*/      UB    input_bank_3;
00230     /*10*/      UB    input_bank_4;
00231     /*11*/      UB    input_bank_5;
00232     /*12*/      UB    input_bank_6;
00233     /*13*/      UB    input_bank_7;
00234     /*14*/      UB    input_bank_8;
00235     /*15*/      UB    input_bank_9;
00236
00237     /*16*/      UB    output_bank_0;
00238     /*17*/      UB    output_bank_1;
00239     /*18*/      UB    output_bank_2;
00240     /*19*/      UB    output_bank_3;
00241     /*20*/      UB    output_bank_4;
00242     /*21*/      UB    output_bank_5;
00243     /*22*/      UB    output_bank_6;
00244     /*23*/      UB    output_bank_7;
00245     /*24*/      UB    output_bank_8;
00246     /*25*/      UB    output_bank_9;
00247
00248     /*26-27*/   SW  reserved_0;
00249     /*28-29*/   SW    reserved_2;
00250     /*30-31*/   SW    reserved_4;
00251     /*32-33*/   SW    reserved_6;
00252     /*34-35*/   SW    reserved_8;
00253     /*36-37*/   SW    reserved_10;
00254     /*38-39*/   SW    reserved_12;
00255     /*40*/      UB  ethercat_bank;
00256     /*41*/      UB    reserved_14;
00257
00258     /*42*/      UB    ethernet_status_a;
00259     /*43*/      UB    ethernet_status_b;
00260     /*44*/      UB    ethernet_status_c;
00261     /*45*/      UB    ethernet_status_d;
00262     /*46*/      UB    ethernet_status_e;
00263     /*47*/      UB    ethernet_status_f;
00264     /*48*/      UB    ethernet_status_g;
00265     /*49*/      UB    ethernet_status_h;
00266
00267     /*50*/      UB    error_code;
00268     /*51*/      UB    thread_status;
00269     /*52-55*/   UL    amplifier_status;
00270
00271     /*56-59*/   UL    contour_segment_count;
00272     /*60-61*/   UW    contour_buffer_available;
00273
00274     /*62-63*/   UW    s_plane_segment_count;
00275     /*64-65*/   UW    s_plane_move_status;
00276     /*66-69*/   SL    s_distance;
00277     /*70-71*/   UW    s_plane_buffer_available;
00278
00279     /*72-73*/   UW    t_plane_segment_count;
00280     /*74-75*/   UW    t_plane_move_status;
00281     /*76-79*/   SL    t_distance;
00282     /*80-81*/   UW    t_plane_buffer_available;
00283
00284     /*82-83*/   UW    axis_a_status;
00285     /*84*/      UB    axis_a_switches;
00286     /*85*/      UB    axis_a_stop_code;
00287     /*86-89*/   SL    axis_a_reference_position;
00288     /*90-93*/   SL    axis_a_motor_position;
00289     /*94-97*/   SL    axis_a_position_error;
00290     /*98-101*/  SL    axis_a_aux_position;
00291     /*102-105*/ SL    axis_a_velocity;
00292     /*106-109*/ SL    axis_a_torque;
00293     /*110-111*/ UW  axis_a_analog_in;
00294     /*112*/     UB    axis_a_halls;
00295     /*113*/     UB    axis_a_reserved;
00296     /*114-117*/ SL    axis_a_variable;
00297
00298     /*118-119*/ UW    axis_b_status;
00299     /*120*/     UB    axis_b_switches;
```

```
00300     /*121*/     UB    axis_b_stop_code;
00301     /*122-125*/ SL    axis_b_reference_position;
00302     /*126-129*/ SL    axis_b_motor_position;
00303     /*130-133*/ SL    axis_b_position_error;
00304     /*134-137*/ SL    axis_b_aux_position;
00305     /*138-141*/ SL    axis_b_velocity;
00306     /*142-145*/ SL    axis_b_torque;
00307     /*146-147*/ UW  axis_b_analog_in;
00308     /*148*/     UB    axis_b_halls;
00309     /*149*/     UB    axis_b_reserved;
00310     /*150-153*/ SL    axis_b_variable;
00311
00312     /*154-155*/ UW    axis_c_status;
00313     /*156*/     UB    axis_c_switches;
00314     /*157*/     UB    axis_c_stop_code;
00315     /*158-161*/ SL    axis_c_reference_position;
00316     /*162-165*/ SL    axis_c_motor_position;
00317     /*166-169*/ SL    axis_c_position_error;
00318     /*170-173*/ SL    axis_c_aux_position;
00319     /*174-177*/ SL    axis_c_velocity;
00320     /*178-181*/ SL    axis_c_torque;
00321     /*182-183*/ UW    axis_c_analog_in;
00322     /*184*/     UB    axis_c_halls;
00323     /*185*/     UB    axis_c_reserved;
00324     /*186-189*/ SL    axis_c_variable;
00325
00326     /*190-191*/ UW    axis_d_status;
00327     /*192*/     UB    axis_d_switches;
00328     /*193*/     UB    axis_d_stop_code;
00329     /*194-197*/ SL    axis_d_reference_position;
00330     /*198-201*/ SL    axis_d_motor_position;
00331     /*202-205*/ SL    axis_d_position_error;
00332     /*206-209*/ SL    axis_d_aux_position;
00333     /*210-213*/ SL    axis_d_velocity;
00334     /*214-217*/ SL    axis_d_torque;
00335     /*218-219*/ UW  axis_d_analog_in;
00336     /*220*/     UB    axis_d_halls;
00337     /*221*/     UB    axis_d_reserved;
00338     /*222-225*/ SL    axis_d_variable;
00339
00340     /*226-227*/ UW    axis_e_status;
00341     /*228*/     UB    axis_e_switches;
00342     /*229*/     UB    axis_e_stop_code;
00343     /*230-233*/ SL    axis_e_reference_position;
00344     /*234-237*/ SL    axis_e_motor_position;
00345     /*238-241*/ SL    axis_e_position_error;
00346     /*242-245*/ SL    axis_e_aux_position;
00347     /*246-249*/ SL    axis_e_velocity;
00348     /*250-253*/ SL    axis_e_torque;
00349     /*254-255*/ UW  axis_e_analog_in;
00350     /*256*/     UB    axis_e_halls;
00351     /*257*/     UB    axis_e_reserved;
00352     /*258-261*/ SL    axis_e_variable;
00353
00354     /*262-263*/ UW    axis_f_status;
00355     /*264*/     UB    axis_f_switches;
00356     /*265*/     UB    axis_f_stop_code;
00357     /*266-269*/ SL    axis_f_reference_position;
00358     /*270-273*/ SL    axis_f_motor_position;
00359     /*274-277*/ SL    axis_f_position_error;
00360     /*278-281*/ SL    axis_f_aux_position;
00361     /*282-285*/ SL    axis_f_velocity;
00362     /*286-289*/ SL    axis_f_torque;
00363     /*290-291*/ UW    axis_f_analog_in;
00364     /*292*/     UB    axis_f_halls;
00365     /*293*/     UB    axis_f_reserved;
00366     /*294-297*/ SL    axis_f_variable;
00367
00368     /*298-299*/ UW    axis_g_status;
00369     /*300*/     UB    axis_g_switches;
00370     /*301*/     UB    axis_g_stop_code;
00371     /*302-305*/ SL    axis_g_reference_position;
00372     /*306-309*/ SL    axis_g_motor_position;
00373     /*310-313*/ SL    axis_g_position_error;
00374     /*314-317*/ SL    axis_g_aux_position;
00375     /*318-321*/ SL    axis_g_velocity;
00376     /*322-325*/ SL    axis_g_torque;
00377     /*326-327*/ UW  axis_g_analog_in;
00378     /*328*/     UB    axis_g_halls;
00379     /*329*/     UB    axis_g_reserved;
00380     /*330-333*/ SL    axis_g_variable;
00381
00382     /*334-335*/ UW    axis_h_status;
00383     /*336*/     UB    axis_h_switches;
00384     /*337*/     UB    axis_h_stop_code;
00385     /*338-341*/ SL    axis_h_reference_position;
00386     /*342-345*/ SL    axis_h_motor_position;
```

```
00387     /*346-349*/ SL    axis_h_position_error;
00388     /*350-353*/ SL    axis_h_aux_position;
00389     /*354-357*/ SL    axis_h_velocity;
00390     /*358-361*/ SL    axis_h_torque;
00391     /*362-363*/ UW  axis_h_analog_in;
00392     /*364*/     UB    axis_h_halls;
00393     /*365*/     UB    axis_h_reserved;
00394     /*366-369*/ SL    axis_h_variable;
00395 }; //DataRecord52000
00396
00398
00405 struct GDataRecord1806
00406 {
00407     /*Offset   type name        description*/
00408
00409     /*00-01*/   UW    sample_number;
00410
00411     /*02*/      UB    input_bank_0;
00412     /*03*/      UB    input_bank_1;
00413     /*04*/      UB    input_bank_2;
00414     /*05*/      UB    input_bank_3;
00415     /*06*/      UB    input_bank_4;
00416     /*07*/      UB    input_bank_5;
00417     /*08*/      UB    input_bank_6;
00418     /*09*/      UB    input_bank_7;
00419     /*10*/      UB    input_bank_8;
00420     /*11*/      UB    input_bank_9;
00421
00422     /*12*/      UB    output_bank_0;
00423     /*13*/      UB    output_bank_1;
00424     /*14*/      UB    output_bank_2;
00425     /*15*/      UB    output_bank_3;
00426     /*16*/      UB    output_bank_4;
00427     /*17*/      UB    output_bank_5;
00428     /*18*/      UB    output_bank_6;
00429     /*19*/      UB    output_bank_7;
00430     /*20*/      UB    output_bank_8;
00431     /*21*/      UB    output_bank_9;
00432
00433     /*22-23*/   SW  reserved_0;
00434     /*24-25*/   SW    reserved_2;
00435     /*26-27*/   SW    reserved_4;
00436     /*28-29*/   SW    reserved_6;
00437     /*30-31*/   SW    reserved_8;
00438     /*32-33*/   SW    reserved_10;
00439     /*34-35*/   SW    reserved_12;
00440     /*36-37*/   SW    reserved_14;
00441
00442     /*38*/      UB    reserved_16;
00443     /*39*/      UB    reserved_17;
00444     /*40*/      UB    reserved_18;
00445     /*41*/      UB    reserved_19;
00446     /*42*/      UB    reserved_20;
00447     /*43*/      UB    reserved_21;
00448     /*44*/      UB    reserved_22;
00449     /*45*/      UB    reserved_23;
00450
00451     /*46*/      UB    error_code;
00452     /*47*/      UB    thread_status;
00453     /*48-51*/   UL    reserved_24;
00454
00455     /*52-55*/   UL    contour_segment_count;
00456     /*56-57*/   UW    contour_buffer_available;
00457
00458     /*58-59*/   UW    s_plane_segment_count;
00459     /*60-61*/   UW    s_plane_move_status;
00460     /*62-65*/   SL    s_distance;
00461     /*66-67*/   UW    s_plane_buffer_available;
00462
00463     /*68-69*/   UW    t_plane_segment_count;
00464     /*70-71*/   UW    t_plane_move_status;
00465     /*72-75*/   SL    t_distance;
00466     /*76-77*/   UW    t_plane_buffer_available;
00467
00468     /*78-79*/   UW    axis_a_status;
00469     /*80*/      UB    axis_a_switches;
00470     /*81*/      UB    axis_a_stop_code;
00471     /*82-85*/   SL    axis_a_reference_position;
00472     /*86-89*/   SL    axis_a_motor_position;
00473     /*90-93*/   SL    axis_a_position_error;
00474     /*94-97*/   SL    axis_a_aux_position;
00475     /*98-101*/  SL    axis_a_velocity;
00476     /*102-105*/ SL    axis_a_torque;
00477     /*106-107*/ UW  axis_a_analog_in;
00478     /*108*/     UB    axis_a_reserved_0;
00479     /*109*/     UB    axis_a_reserved_1;
00480     /*110-113*/ SL    axis_a_variable;
```

```
00481
00482     /*114-115*/ UW    axis_b_status;
00483     /*116*/     UB    axis_b_switches;
00484     /*117*/     UB    axis_b_stop_code;
00485     /*118-121*/ SL    axis_b_reference_position;
00486     /*122-125*/ SL    axis_b_motor_position;
00487     /*126-129*/ SL    axis_b_position_error;
00488     /*130-133*/ SL    axis_b_aux_position;
00489     /*134-137*/ SL    axis_b_velocity;
00490     /*138-141*/ SL    axis_b_torque;
00491     /*142-143*/ UW  axis_b_analog_in;
00492     /*144*/     UB    axis_b_reserved_0;
00493     /*145*/     UB    axis_b_reserved_1;
00494     /*146-149*/ SL    axis_b_variable;
00495
00496     /*150-151*/ UW    axis_c_status;
00497     /*152*/     UB    axis_c_switches;
00498     /*153*/     UB    axis_c_stop_code;
00499     /*154-157*/ SL    axis_c_reference_position;
00500     /*158-161*/ SL    axis_c_motor_position;
00501     /*162-165*/ SL    axis_c_position_error;
00502     /*166-169*/ SL    axis_c_aux_position;
00503     /*170-173*/ SL    axis_c_velocity;
00504     /*174-177*/ SL    axis_c_torque;
00505     /*178-179*/ UW    axis_c_analog_in;
00506     /*180*/     UB    axis_c_reserved_0;
00507     /*181*/     UB    axis_c_reserved_1;
00508     /*182-185*/ SL    axis_c_variable;
00509
00510     /*186-187*/ UW    axis_d_status;
00511     /*188*/     UB    axis_d_switches;
00512     /*189*/     UB    axis_d_stop_code;
00513     /*190-193*/ SL    axis_d_reference_position;
00514     /*194-197*/ SL    axis_d_motor_position;
00515     /*198-201*/ SL    axis_d_position_error;
00516     /*202-205*/ SL    axis_d_aux_position;
00517     /*206-209*/ SL    axis_d_velocity;
00518     /*210-213*/ SL    axis_d_torque;
00519     /*214-215*/ UW  axis_d_analog_in;
00520     /*216*/     UB    axis_d_reserved_0;
00521     /*217*/     UB    axis_d_reserved_1;
00522     /*218-221*/ SL    axis_d_variable;
00523
00524     /*222-223*/ UW    axis_e_status;
00525     /*224*/     UB    axis_e_switches;
00526     /*225*/     UB    axis_e_stop_code;
00527     /*226-229*/ SL    axis_e_reference_position;
00528     /*230-233*/ SL    axis_e_motor_position;
00529     /*234-237*/ SL    axis_e_position_error;
00530     /*238-241*/ SL    axis_e_aux_position;
00531     /*242-245*/ SL    axis_e_velocity;
00532     /*256-249*/ SL    axis_e_torque;
00533     /*250-251*/ UW  axis_e_analog_in;
00534     /*252*/     UB    axis_e_reserved_0;
00535     /*253*/     UB    axis_e_reserved_1;
00536     /*254-257*/ SL    axis_e_variable;
00537
00538     /*258-259*/ UW    axis_f_status;
00539     /*260*/     UB    axis_f_switches;
00540     /*261*/     UB    axis_f_stop_code;
00541     /*262-265*/ SL    axis_f_reference_position;
00542     /*266-269*/ SL    axis_f_motor_position;
00543     /*270-273*/ SL    axis_f_position_error;
00544     /*274-277*/ SL    axis_f_aux_position;
00545     /*278-281*/ SL    axis_f_velocity;
00546     /*282-285*/ SL    axis_f_torque;
00547     /*286-287*/ UW    axis_f_analog_in;
00548     /*288*/     UB    axis_f_reserved_0;
00549     /*289*/     UB    axis_f_reserved_1;
00550     /*290-293*/ SL    axis_f_variable;
00551
00552     /*294-295*/ UW    axis_g_status;
00553     /*296*/     UB    axis_g_switches;
00554     /*297*/     UB    axis_g_stop_code;
00555     /*298-301*/ SL    axis_g_reference_position;
00556     /*302-305*/ SL    axis_g_motor_position;
00557     /*306-309*/ SL    axis_g_position_error;
00558     /*310-313*/ SL    axis_g_aux_position;
00559     /*314-317*/ SL    axis_g_velocity;
00560     /*318-321*/ SL    axis_g_torque;
00561     /*322-323*/ UW  axis_g_analog_in;
00562     /*324*/     UB    axis_g_reserved_0;
00563     /*325*/     UB    axis_g_reserved_1;
00564     /*326-329*/ SL    axis_g_variable;
00565
00566     /*330-331*/ UW    axis_h_status;
00567     /*332*/     UB    axis_h_switches;
```

```
00568     /*333*/     UB    axis_h_stop_code;
00569     /*334-337*/ SL    axis_h_reference_position;
00570     /*338-341*/ SL    axis_h_motor_position;
00571     /*342-345*/ SL    axis_h_position_error;
00572     /*346-349*/ SL    axis_h_aux_position;
00573     /*350-353*/ SL    axis_h_velocity;
00574     /*354-357*/ SL    axis_h_torque;
00575     /*358-359*/ UW  axis_h_analog_in;
00576     /*360*/     UB    axis_h_reserved_0;
00577     /*361*/     UB    axis_h_reserved_1;
00578     /*362-365*/ SL    axis_h_variable;
00579 }; //DataRecord1806
00580
00582 struct GDataRecord2103
00583 {
00584
00585     /*Offset   type name        description*/
00586
00587     /*00*/      UB    header_0;
00588     /*01*/      UB    header_1;
00589     /*02*/      UB    header_2;
00590     /*03*/      UB    header_3;
00591
00592     /*04-05*/   UW    sample_number;
00593
00594     /*06*/      UB    input_bank_0;
00595     /*07*/      UB    input_bank_1;
00596     /*08*/      UB    input_bank_2;
00597     /*09*/      UB    input_bank_3;
00598     /*10*/      UB    input_bank_4;
00599     /*11*/      UB    input_bank_5;
00600     /*12*/      UB    input_bank_6;
00601     /*13*/      UB    input_bank_7;
00602     /*14*/      UB    input_bank_8;
00603     /*15*/      UB    input_bank_9;
00604
00605     /*16*/      UB    output_bank_0;
00606     /*17*/      UB    output_bank_1;
00607     /*18*/      UB    output_bank_2;
00608     /*19*/      UB    output_bank_3;
00609     /*20*/      UB    output_bank_4;
00610     /*21*/      UB    output_bank_5;
00611     /*22*/      UB    output_bank_6;
00612     /*23*/      UB    output_bank_7;
00613     /*24*/      UB    output_bank_8;
00614     /*25*/      UB    output_bank_9;
00615
00616     /*26*/      UB    error_code;
00617     /*27*/      UB    general_status;
00618
00619     /*28-29*/   UW    s_plane_segment_count;
00620     /*30-31*/   UW    s_plane_move_status;
00621     /*32-35*/   SL    s_distance;
00622
00623     /*36-37*/   UW    t_plane_segment_count;
00624     /*38-39*/   UW    t_plane_move_status;
00625     /*40-43*/   SL    t_distance;
00626
00627     /*44-45*/   UW    axis_a_status;
00628     /*46*/      UB    axis_a_switches;
00629     /*47*/      UB    axis_a_stop_code;
00630     /*48-51*/   SL    axis_a_reference_position;
00631     /*52-55*/   SL    axis_a_motor_position;
00632     /*56-59*/   SL    axis_a_position_error;
00633     /*60-63*/   SL    axis_a_aux_position;
00634     /*64-67*/   SL    axis_a_velocity;
00635     /*68-69*/   SW    axis_a_torque;
00636     /*70-71*/   UW  axis_a_analog_in;
00637
00638     /*72-73*/   UW    axis_b_status;
00639     /*74*/      UB    axis_b_switches;
00640     /*75*/      UB    axis_b_stop_code;
00641     /*76-79*/   SL    axis_b_reference_position;
00642     /*80-83*/   SL    axis_b_motor_position;
00643     /*84-87*/   SL    axis_b_position_error;
00644     /*88-91*/   SL    axis_b_aux_position;
00645     /*92-95*/   SL    axis_b_velocity;
00646     /*96-97*/   SW    axis_b_torque;
00647     /*98-99*/   UW  axis_b_analog_in;
00648
00649     /*100-101*/ UW    axis_c_status;
00650     /*102*/     UB    axis_c_switches;
00651     /*103*/     UB    axis_c_stop_code;
00652     /*104-107*/ SL    axis_c_reference_position;
00653     /*108-111*/ SL    axis_c_motor_position;
00654     /*112-115*/ SL    axis_c_position_error;
00655     /*116-119*/ SL    axis_c_aux_position;
```

```
00656     /*120-123*/ SL    axis_c_velocity;
00657     /*124-125*/ SW    axis_c_torque;
00658     /*126-127*/ UW    axis_c_analog_in;
00659
00660     /*128-129*/ UW    axis_d_status;
00661     /*130*/     UB    axis_d_switches;
00662     /*131*/     UB    axis_d_stop_code;
00663     /*132-135*/ SL    axis_d_reference_position;
00664     /*136-139*/ SL    axis_d_motor_position;
00665     /*140-143*/ SL    axis_d_position_error;
00666     /*144-147*/ SL    axis_d_aux_position;
00667     /*148-151*/ SL    axis_d_velocity;
00668     /*152-153*/ SW    axis_d_torque;
00669     /*154-155*/ UW  axis_d_analog_in;
00670
00671     /*156-157*/ UW    axis_e_status;
00672     /*158*/     UB    axis_e_switches;
00673     /*159*/     UB    axis_e_stop_code;
00674     /*160-163*/ SL    axis_e_reference_position;
00675     /*164-167*/ SL    axis_e_motor_position;
00676     /*168-171*/ SL    axis_e_position_error;
00677     /*172-175*/ SL    axis_e_aux_position;
00678     /*176-179*/ SL    axis_e_velocity;
00679     /*180-181*/ SW    axis_e_torque;
00680     /*182-183*/ UW  axis_e_analog_in;
00681
00682     /*184-185*/ UW    axis_f_status;
00683     /*186*/     UB    axis_f_switches;
00684     /*187*/     UB    axis_f_stop_code;
00685     /*188-191*/ SL    axis_f_reference_position;
00686     /*192-195*/ SL    axis_f_motor_position;
00687     /*196-199*/ SL    axis_f_position_error;
00688     /*200-203*/ SL    axis_f_aux_position;
00689     /*204-207*/ SL    axis_f_velocity;
00690     /*208-209*/ SW    axis_f_torque;
00691     /*210-211*/ UW    axis_f_analog_in;
00692
00693     /*212-213*/ UW    axis_g_status;
00694     /*214*/     UB    axis_g_switches;
00695     /*215*/     UB    axis_g_stop_code;
00696     /*216-219*/ SL    axis_g_reference_position;
00697     /*220-223*/ SL    axis_g_motor_position;
00698     /*224-227*/ SL    axis_g_position_error;
00699     /*228-231*/ SL    axis_g_aux_position;
00700     /*232-235*/ SL    axis_g_velocity;
00701     /*236-237*/ SW    axis_g_torque;
00702     /*238-239*/ UW  axis_g_analog_in;
00703
00704     /*240-241*/ UW    axis_h_status;
00705     /*242*/     UB    axis_h_switches;
00706     /*243*/     UB    axis_h_stop_code;
00707     /*244-247*/ SL    axis_h_reference_position;
00708     /*248-251*/ SL    axis_h_motor_position;
00709     /*252-255*/ SL    axis_h_position_error;
00710     /*256-259*/ SL    axis_h_aux_position;
00711     /*260-263*/ SL    axis_h_velocity;
00712     /*264-265*/ SW    axis_h_torque;
00713     /*266-267*/ UW  axis_h_analog_in;
00714 }; //DataRecord2013
00715
00718
00723 struct GDataRecord1802
00724 {
00725
00726     /*Offset   type name        description*/
00727
00728     /*00-01*/   UW    sample_number;
00729
00730     /*02*/      UB    input_bank_0;
00731     /*03*/      UB    input_bank_1;
00732     /*04*/      UB    input_bank_2;
00733     /*05*/      UB    input_bank_3;
00734     /*06*/      UB    input_bank_4;
00735     /*07*/      UB    input_bank_5;
00736     /*08*/      UB    input_bank_6;
00737     /*09*/      UB    input_bank_7;
00738     /*10*/      UB    input_bank_8;
00739     /*11*/      UB    input_bank_9;
00740
00741     /*12*/      UB    output_bank_0;
00742     /*13*/      UB    output_bank_1;
00743     /*14*/      UB    output_bank_2;
00744     /*15*/      UB    output_bank_3;
00745     /*16*/      UB    output_bank_4;
00746     /*17*/      UB    output_bank_5;
00747     /*18*/      UB    output_bank_6;
00748     /*19*/      UB    output_bank_7;
```

```
00749     /*20*/      UB    output_bank_8;
00750     /*21*/      UB    output_bank_9;
00751
00752     /*22*/      UB    error_code;
00753     /*23*/      UB    general_status;
00754
00755     /*24-25*/   UW    s_plane_segment_count;
00756     /*26-27*/   UW    s_plane_move_status;
00757     /*28-31*/   SL    s_distance;
00758
00759     /*32-33*/   UW    t_plane_segment_count;
00760     /*34-35*/   UW    t_plane_move_status;
00761     /*36-39*/   SL    t_distance;
00762
00763     /*40-41*/   UW    axis_a_status;
00764     /*42*/      UB    axis_a_switches;
00765     /*43*/      UB    axis_a_stop_code;
00766     /*44-47*/   SL    axis_a_reference_position;
00767     /*48-51*/   SL    axis_a_motor_position;
00768     /*52-55*/   SL    axis_a_position_error;
00769     /*56-59*/   SL    axis_a_aux_position;
00770     /*60-63*/   SL    axis_a_velocity;
00771     /*64-65*/   SW    axis_a_torque;
00772     /*66*/      UB    axis_a_reserved_0;
00773     /*67*/      UB    axis_a_reserved_1;
00774
00775     /*68-69*/   UW    axis_b_status;
00776     /*70*/      UB    axis_b_switches;
00777     /*71*/      UB    axis_b_stop_code;
00778     /*72-75*/   SL    axis_b_reference_position;
00779     /*76-79*/   SL    axis_b_motor_position;
00780     /*80-83*/   SL    axis_b_position_error;
00781     /*84-87*/   SL    axis_b_aux_position;
00782     /*88-91*/   SL    axis_b_velocity;
00783     /*92-93*/   SW    axis_b_torque;
00784     /*94*/      UB    axis_b_reserved_0;
00785     /*95*/      UB    axis_b_reserved_1;
00786
00787     /*96-97*/   UW    axis_c_status;
00788     /*98*/      UB    axis_c_switches;
00789     /*99*/      UB    axis_c_stop_code;
00790     /*100-103*/ SL    axis_c_reference_position;
00791     /*104-107*/ SL    axis_c_motor_position;
00792     /*108-111*/ SL    axis_c_position_error;
00793     /*112-115*/ SL    axis_c_aux_position;
00794     /*116-119*/ SL    axis_c_velocity;
00795     /*120-121*/ SW    axis_c_torque;
00796     /*122*/     UB    axis_c_reserved_0;
00797     /*123*/     UB    axis_c_reserved_1;
00798
00799     /*124-125*/ UW    axis_d_status;
00800     /*126*/     UB    axis_d_switches;
00801     /*127*/     UB    axis_d_stop_code;
00802     /*128-131*/ SL    axis_d_reference_position;
00803     /*132-135*/ SL    axis_d_motor_position;
00804     /*136-139*/ SL    axis_d_position_error;
00805     /*140-143*/ SL    axis_d_aux_position;
00806     /*144-147*/ SL    axis_d_velocity;
00807     /*148-149*/ SW    axis_d_torque;
00808     /*150*/     UB    axis_d_reserved_0;
00809     /*151*/     UB    axis_d_reserved_1;
00810
00811 }; //DataRecord1802
00812
00814 struct GDataRecord30000
00815 {
00816
00817     /*Offset   type name        description*/
00818
00819     /*00*/      UB    header_0;
00820     /*01*/      UB    header_1;
00821     /*02*/      UB    header_2;
00822     /*03*/      UB    header_3;
00823
00824     /*04-05*/   UW    sample_number;
00825
00826     /*06*/      UB    input_bank_0;
00827     /*07*/      UB    input_bank_1;
00828
00829     /*08*/      UB    output_bank_0;
00830     /*09*/      UB    output_bank_1;
00831
00832     /*10*/      UB    error_code;
00833     /*11*/      UB    thread_status;
00834
00835     /*12-13*/   UW    input_analog_2;
00836
```

```
00837     /*14-15*/   UW    output_analog_1;
00838     /*16-17*/   UW    output_analog_2;
00839
00840     /*18-21*/   UL    amplifier_status;
00841
00842     /*22-25*/   UL    contour_segment_count;
00843     /*26-27*/   UW    contour_buffer_available;
00844
00845     /*28-29*/   UW    s_plane_segment_count;
00846     /*30-31*/   UW    s_plane_move_status;
00847     /*32-35*/   SL    s_distance;
00848     /*36-37*/   UW    s_plane_buffer_available;
00849
00850     /*38-39*/   UW    axis_a_status;
00851     /*40*/      UB    axis_a_switches;
00852     /*41*/      UB    axis_a_stop_code;
00853     /*42-45*/   SL    axis_a_reference_position;
00854     /*46-49*/   SL    axis_a_motor_position;
00855     /*50-53*/   SL    axis_a_position_error;
00856     /*54-57*/   SL    axis_a_aux_position;
00857     /*58-61*/   SL    axis_a_velocity;
00858     /*62-65*/   SL    axis_a_torque;
00859     /*66-67*/   UW  axis_a_analog_in;
00860     /*68*/      UB    axis_a_halls;
00861     /*69*/      UB    axis_a_reserved;
00862     /*70-73*/   SL    axis_a_variable;
00863 }; //DataRecord30000
00864
00866 struct GDataRecord47000_ENC
00867 {
00868
00869     /*Offset   type name        description*/
00870
00871     /*00*/      UB    header_0;
00872     /*01*/      UB    header_1;
00873     /*02*/      UB    header_2;
00874     /*03*/      UB    header_3;
00875
00876     /*04-05*/   UW    sample_number;
00877     /*06*/      UB    error_code;
00878     /*07*/      UB    general_status;
00879
00880     /*08-09*/   UW    output_analog_0;
00881     /*10-11*/   UW    output_analog_1;
00882     /*12-13*/   UW    output_analog_2;
00883     /*14-15*/   UW    output_analog_3;
00884     /*16-17*/   UW    output_analog_4;
00885     /*18-19*/   UW    output_analog_5;
00886     /*20-21*/   UW    output_analog_6;
00887     /*22-23*/   UW    output_analog_7;
00888
00889     /*24-25*/   UW    input_analog_0;
00890     /*26-27*/   UW    input_analog_1;
00891     /*28-29*/   UW    input_analog_2;
00892     /*30-31*/   UW    input_analog_3;
00893     /*32-33*/   UW    input_analog_4;
00894     /*34-35*/   UW    input_analog_5;
00895     /*36-37*/   UW    input_analog_6;
00896     /*38-39*/   UW    input_analog_7;
00897
00898     /*40-41*/   UW    output_bank_0;
00899
00900     /*42-43*/   UW    input_bank_0;
00901
00902     /*44-47*/   UL    pulse_count_0;
00903     /*48-51*/   SL    zc_variable;
00904     /*52-55*/   SL    zd_variable;
00905
00906     /*56-59*/   SL    encoder_0;
00907     /*60-63*/   SL    encoder_1;
00908     /*64-67*/   SL    encoder_2;
00909     /*68-71*/   SL    encoder_3;
00910
00911 }; //GDataRecord47000_ENC
00912
00914 struct GDataRecord47300_ENC
00915 {
00916
00917     /*Offset   type name        description*/
00918
00919     /*00*/      UB    header_0;
00920     /*01*/      UB    header_1;
00921     /*02*/      UB    header_2;
00922     /*03*/      UB    header_3;
00923
00924     /*04-05*/   UW    sample_number;
00925     /*06*/      UB    error_code;
```

```
00926     /*07*/      UB    general_status;
00927
00928     /*08-09*/   UW    output_analog_0;
00929     /*10-11*/   UW    output_analog_1;
00930     /*12-13*/   UW    output_analog_2;
00931     /*14-15*/   UW    output_analog_3;
00932     /*16-17*/   UW    output_analog_4;
00933     /*18-19*/   UW    output_analog_5;
00934     /*20-21*/   UW    output_analog_6;
00935     /*22-23*/   UW    output_analog_7;
00936
00937     /*24-25*/   UW    input_analog_0;
00938     /*26-27*/   UW    input_analog_1;
00939     /*28-29*/   UW    input_analog_2;
00940     /*30-31*/   UW    input_analog_3;
00941     /*32-33*/   UW    input_analog_4;
00942     /*34-35*/   UW    input_analog_5;
00943     /*36-37*/   UW    input_analog_6;
00944     /*38-39*/   UW    input_analog_7;
00945
00946     /*40-41*/   UW    output_bank_0;
00947     /*42-43*/   UW    output_bank_1;
00948
00949     /*44-45*/   UW    input_bank_0;
00950     /*46-47*/   UW    input_bank_1;
00951
00952     /*48-51*/   UL    pulse_count_0;
00953     /*52-55*/   SL    zc_variable;
00954     /*56-59*/   SL    zd_variable;
00955
00956     /*60-63*/   SL    encoder_0;
00957     /*64-67*/   SL    encoder_1;
00958     /*68-71*/   SL    encoder_2;
00959     /*72-75*/   SL    encoder_3;
00960
00961 }; //GDataRecord47300_ENC
00962
00964 struct GDataRecord47300_24EX
00965 {
00966
00967     /*Offset   type name        description*/
00968
00969     /*00*/      UB    header_0;
00970     /*01*/      UB    header_1;
00971     /*02*/      UB    header_2;
00972     /*03*/      UB    header_3;
00973
00974     /*04-05*/   UW    sample_number;
00975     /*06*/      UB    error_code;
00976     /*07*/      UB    general_status;
00977
00978     /*08-09*/   UW    output_analog_0;
00979     /*10-11*/   UW    output_analog_1;
00980     /*12-13*/   UW    output_analog_2;
00981     /*14-15*/   UW    output_analog_3;
00982     /*16-17*/   UW    output_analog_4;
00983     /*18-19*/   UW    output_analog_5;
00984     /*20-21*/   UW    output_analog_6;
00985     /*22-23*/   UW    output_analog_7;
00986
00987     /*24-25*/   UW    input_analog_0;
00988     /*26-27*/   UW    input_analog_1;
00989     /*28-29*/   UW    input_analog_2;
00990     /*30-31*/   UW    input_analog_3;
00991     /*32-33*/   UW    input_analog_4;
00992     /*34-35*/   UW    input_analog_5;
00993     /*36-37*/   UW    input_analog_6;
00994     /*38-39*/   UW    input_analog_7;
00995
00996     /*40-41*/   UW    output_bank_0;
00997     /*42-43*/   UW    output_bank_1;
00998
00999     /*44-45*/   UW    input_bank_0;
01000     /*46-47*/   UW    input_bank_1;
01001
01002     /*48-51*/   UL    pulse_count_0;
01003     /*52-55*/   SL    zc_variable;
01004     /*56-59*/   SL    zd_variable;
01005
01006     /*60-61*/   UW output_bank_2;
01007     /*62-63*/   UW output_back_3;
01008
01009     /*64-65*/   UW input_bank_2;
01010     /*66-67*/   UW input_bank_3;
01011
01012 }; //GDataRecord47300_24EX
01013
```

```
01015 struct GDataRecord47162
01016 {
01017     /*Offset   type name        description*/
01018
01019     /*00*/      UB    header_0;
01020     /*01*/      UB    header_1;
01021     /*02*/      UB    header_2;
01022     /*03*/      UB    header_3;
01023
01024     /*04-05*/   UW    sample_number;
01025     /*06*/      UB    error_code;
01026     /*07*/      UB    general_status;
01027
01028     /*08-09*/   UW    output_analog_0;
01029     /*10-11*/   UW    output_analog_1;
01030     /*12-13*/   UW    output_analog_2;
01031     /*14-15*/   UW    output_analog_3;
01032     /*16-17*/   UW    output_analog_4;
01033     /*18-19*/   UW    output_analog_5;
01034     /*20-21*/   UW    output_analog_6;
01035     /*22-23*/   UW    output_analog_7;
01036
01037     /*24-25*/   UW    input_analog_0;
01038     /*26-27*/   UW    input_analog_1;
01039     /*28-29*/   UW    input_analog_2;
01040     /*30-31*/   UW    input_analog_3;
01041     /*32-33*/   UW    input_analog_4;
01042     /*34-35*/   UW    input_analog_5;
01043     /*36-37*/   UW    input_analog_6;
01044     /*38-39*/   UW    input_analog_7;
01045
01046     /*40*/      UB    output_byte_0;
01047     /*41*/      UB    output_byte_1;
01048     /*42*/      UB    output_byte_2;
01049
01050     /*43*/      UB    input_byte_0;
01051     /*44*/      UB    input_byte_1;
01052     /*45*/      UB    input_byte_2;
01053     /*46*/      UB    input_byte_3;
01054     /*47*/      UB    input_byte_4;
01055
01056     /*48-51*/   UL    pulse_count_0;
01057     /*52-55*/   SL    zc_variable;
01058     /*56-59*/   SL    zd_variable;
01059
01060     /*60-63*/   SL    encoder_0;
01061     /*64-67*/   SL    encoder_1;
01062     /*68-71*/   SL    encoder_2;
01063     /*72-75*/   SL    encoder_3;
01064
01065 }; //GDataRecord47162
01066
01068
01078 union GDataRecord
01079 {
01080     struct GDataRecord4000 dmc4000;
01081     struct GDataRecord4000 dmc4103;
01082     struct GDataRecord4000 dmc50000;
01083
01084     struct GDataRecord52000 dmc52000;
01085
01086     struct GDataRecord30000 dmc30000;
01087
01088     struct GDataRecord2103 dmc2103;
01089
01090     struct GDataRecord1806 dmc1806;
01091
01092     struct GDataRecord1802 dmc1802;
01093
01094     struct GDataRecord47000_ENC rio47000;
01095     struct GDataRecord47300_ENC rio47300;
01096     struct GDataRecord47300_24EX rio47300_24ex;
01097     struct GDataRecord47162 rio47162;
01098
01099     unsigned char byte_array[GALILDATARECORDMAXLENGTH];
01100 };
01101
01102
01103 #ifdef PACKOK
01104 #pragma pack() //return pack to default
01105 #else
01106 #error "Need to return structure packing for compiler"
01107 #endif
01108
01109 #endif //I_210405D9_D9EF_484F_8258_BB29A1BBA217
```

15.14 gclibo.h File Reference

```
#include "gclib.h"
```

Macros

- #define MALLOCBUF G_HUGE_BUFFER

  Malloc used for large program and array uploads.
- #define MAXPROG MALLOCBUF

  Maximum size for a program.
- #define MAXARRAY MALLOCBUF

  Maximum size for an array table upload.
- #define POLLINGINTERVAL 100

  Interval, in milliseconds, for polling commands, e.g. GWaitForBool().
- #define G_USE_GCAPS

  Use the GCAPS server in GAddresses(), GAssign(), GIpRequests(), and GVersion(). To avoid GCAPS, comment out this line and recompile, http://galil.com/sw/pub/all/doc/gclib/html/gclibo.html.

Functions

- GCLIB_DEPRECATED void GSleep (unsigned int timeout_ms)
- GCLIB_DEPRECATED GReturn GVersion (GCStringOut ver, GSize ver_len)

  Uses GUtility(), G_UTIL_VERSION and G_UTIL_GCAPS_VERSION to provide the library and gcaps version numbers.
- GCLIB_DEPRECATED GReturn GAddresses (GCStringOut addresses, GSize addresses_len)

  Uses GUtility(), G_UTIL_GCAPS_ADDRESSES or G_UTIL_ADDRESSES to provide a listing of all available connection addresses.
- GCLIB_DEPRECATED GReturn GInfo (GCon g, GCStringOut info, GSize info_len)

  Uses GUtility() and G_UTIL_INFO to provide a useful connection string.
- GCLIB_DEPRECATED GReturn GTimeout (GCon g, short timeout_ms)

  Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.
- GCLIB_DEPRECATED GReturn GCmd (GCon g, GCStringIn command)

  Wrapper around GCommand for use when the return value is not desired.
- GCLIB_DEPRECATED GReturn GCmdT (GCon g, GCStringIn command, GCStringOut trimmed_response, GSize response_len, GCStringOut *front)

  Wrapper around GCommand that trims the response.
- GCLIB_DEPRECATED GReturn GCmdI (GCon g, GCStringIn command, int *value)

  Wrapper around GCommand that provides the return value of a command parsed into an int.
- GCLIB_DEPRECATED GReturn GCmdD (GCon g, GCStringIn command, double *value)

  Wrapper around GCommand that provides the return value of a command parsed into a double.
- GCLIB_DEPRECATED GReturn GWaitForBool (GCon g, GCStringIn predicate, int trials)

  Blocking call that returns when the controller evaluates the predicate as true.
- GCLIB_DEPRECATED GReturn GMotionComplete (GCon g, GCStringIn axes)

  Blocking call that returns once all axes specified have completed their motion.
- GCLIB_DEPRECATED GReturn GRecordRate (GCon g, double period_ms)

  Sets the asynchronous data record to a user-specified period via DR.
- GCLIB_DEPRECATED GReturn GProgramDownloadFile (GCon g, GCStringIn file_path, GCStringIn preprocessor)

  Program download from file.
- GCLIB_DEPRECATED GReturn GProgramUploadFile (GCon g, GCStringIn file_path)

  Program upload to file.
- GCLIB_DEPRECATED GReturn GArrayDownloadFile (GCon g, GCStringIn file_path)

Array download from file.

- GCLIB_DEPRECATED GReturn GArrayUploadFile (GCon g, GCStringIn file_path, GCStringIn names)

  Array upload to file.

- GCLIB_DEPRECATED GReturn GIpRequests (GCStringOut requests, GSize requests_len)

  Uses GUtility(), G_UTIL_GCAPS_IPREQUEST or G_UTIL_IPREQUEST to provide a list of all Galil controllers requesting IP addresses via BOOT-P or DHCP.

- GCLIB_DEPRECATED GReturn GSetServer (GCStringIn server_name)

  Uses GUtility(), G_UTIL_GCAPS_SET_SERVER to set the new active server.

- GCLIB_DEPRECATED GReturn GListServers (GCStringOut servers, GSize servers_len)

  Uses GUtility(), G_UTIL_GCAPS_LIST_SERVERS to provide a list of all available gcaps services on the local network.

- GCLIB_DEPRECATED GReturn GPublishServer (GCStringIn name, GOption publish, GOption save)

  Uses GUtility(), G_UTIL_GCAPS_PUBLISH_SERVER to publish local gcaps server to the local network.

- GCLIB_DEPRECATED GReturn GServerStatus (GCStringOut status, GSize status_len)

  Uses GUtility(), G_UTIL_GCAPS_SERVER_STATUS to get information on the local server name and if it is published to the local network.

- GCLIB_DEPRECATED GReturn GRemoteConnections (GCStringOut connections, GSize connections_↩ length)

  Uses GUtility(), G_UTIL_GCAPS_REMOTE_CONNECTIONS to get a list of remote addresses connected to the local server.

- GCLIB_DEPRECATED GReturn GAssign (GCStringIn ip, GCStringIn mac)

  Uses GUtility(), G_UTIL_GCAPS_ASSIGN or G_UTIL_ASSIGN to assign an IP address over the Ethernet to a controller at a given MAC address.

- GCLIB_DEPRECATED void GError (GReturn rc, GCStringOut error, GSize error_len)

  Provides a human-readable description string for return codes.

- GCLIB_DEPRECATED GReturn GSetupDownloadFile (GCon g, GCStringIn file_path, GOption options, GCStringOut info, GSize info_len)

  Download a saved controller configuration from a file.

15.14.1 Macro Definition Documentation

15.14.1.1 MALLOCBUF

```
#define MALLOCBUF G_HUGE_BUFFER
```

Malloc used for large program and array uploads.
Definition at line 13 of file gclibo.h.

15.14.1.2 MAXPROG

```
#define MAXPROG MALLOCBUF
```

Maximum size for a program.
Definition at line 14 of file gclibo.h.

15.14.1.3 MAXARRAY

```
#define MAXARRAY MALLOCBUF
```

Maximum size for an array table upload.
Definition at line 15 of file gclibo.h.

15.14.1.4 POLLINGINTERVAL

```
#define POLLINGINTERVAL 100
```

Interval, in milliseconds, for polling commands, e.g. GWaitForBool().
Definition at line 16 of file gclibo.h.

15.14.1.5 G_USE_GCAPS

```
#define G_USE_GCAPS
```

Use the GCAPS server in GAddresses(), GAssign(), GIpRequests(), and GVersion(). To avoid GCAPS, comment out this line and recompile, http://galil.com/sw/pub/all/doc/gclib/html/gclibo.html.
Definition at line 17 of file gclibo.h.

15.15 gclibo.h

Go to the documentation of this file.

```
00001 #pragma once
00002
00003 #include "gclib.h"
00004
00005 #ifndef _WIN32
00006 #pragma GCC visibility push(default)
00007 #endif
00008
00009 #ifdef __cplusplus
00010 extern "C" {
00011 #endif
00012
00013 #define MALLOCBUF G_HUGE_BUFFER
00014 #define MAXPROG MALLOCBUF
00015 #define MAXARRAY MALLOCBUF
00016 #define POLLINGINTERVAL 100
00017 #define G_USE_GCAPS
00018
00019 GCLIB_DEPRECATED void GSleep(unsigned int timeout_ms);
00027
00029 GCLIB_DEPRECATED GReturn GVersion(GCStringOut ver, GSize ver_len);
00052
00054 GCLIB_DEPRECATED GReturn GAddresses(GCStringOut addresses, GSize addresses_len);
00085
00087 GCLIB_DEPRECATED GReturn GInfo(GCon g, GCStringOut info, GSize info_len);
00102
00103
00105 GCLIB_DEPRECATED GReturn GTimeout(GCon g, short timeout_ms);
00115
00116
00118 GCLIB_DEPRECATED GReturn GCmd(GCon g, GCStringIn command);
00131
00132
00134 GCLIB_DEPRECATED GReturn GCmdT(GCon g, GCStringIn command, GCStringOut trimmed_response, GSize
      response_len, GCStringOut* front);
00151
00152
00154 GCLIB_DEPRECATED GReturn GCmdI(GCon g, GCStringIn command, int* value);
00168
00169
00171 GCLIB_DEPRECATED GReturn GCmdD(GCon g, GCStringIn command, double* value);
00186
00188 GCLIB_DEPRECATED GReturn GWaitForBool(GCon g, GCStringIn predicate, int trials);
00211
00213 GCLIB_DEPRECATED GReturn GMotionComplete(GCon g, GCStringIn axes);
00229
00231 GCLIB_DEPRECATED GReturn GRecordRate(GCon g, double period_ms);
00244
00245
00247 GCLIB_DEPRECATED GReturn GProgramDownloadFile(GCon g, GCStringIn file_path, GCStringIn preprocessor);
00258
00259
00261 GCLIB_DEPRECATED GReturn GProgramUploadFile(GCon g, GCStringIn file_path);
00271
00272
00274 GCLIB_DEPRECATED GReturn GArrayDownloadFile(GCon g, GCStringIn file_path);
00287
00288
00290 GCLIB_DEPRECATED GReturn GArrayUploadFile(GCon g, GCStringIn file_path, GCStringIn names);
00304
00305
00307 GCLIB_DEPRECATED GReturn GIpRequests(GCStringOut requests, GSize requests_len);
00334
00336 GCLIB_DEPRECATED GReturn GSetServer(GCStringIn server_name);
00354
00356 GCLIB_DEPRECATED GReturn GListServers(GCStringOut servers, GSize servers_len);
00375
00377 GCLIB_DEPRECATED GReturn GPublishServer(GCStringIn name, GOption publish, GOption save);
00403
00405 GCLIB_DEPRECATED GReturn GServerStatus(GCStringOut status, GSize status_len);
00427
00428
```

```
00430 GCLIB_DEPRECATED GReturn GRemoteConnections(GCStringOut connections, GSize connections_length);
00452
00454 GCLIB_DEPRECATED GReturn GAssign(GCStringIn ip, GCStringIn mac);
00478
00480 GCLIB_DEPRECATED void GError(GReturn rc, GCStringOut error, GSize error_len);
00489
00491 GCLIB_DEPRECATED GReturn GSetupDownloadFile(GCon g, GCStringIn file_path, GOption options, GCStringOut
      info, GSize info_len);
00549
00550 #ifdef __cplusplus
00551 } //extern "C"
00552 #endif
00553
00554 #ifndef _WIN32
00555 #pragma GCC visibility pop
00556 #endif
```

15.16 gclib.cs File Reference

Classes

- class gclib

  Provides a class that binds to gclib's unmanaged dll.
- interface gclib.GDataRecord
- struct gclib.GDataRecord4000

  Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
- struct gclib.GDataRecord52000

  Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
- struct gclib.GDataRecord1806

  Data record struct for DMC-1806 controller.
- struct gclib.GDataRecord2103

  Data record struct for DMC-2103 controllers.
- struct gclib.GDataRecord1802

  Data record struct for DMC-1802 controllers.
- struct gclib.GDataRecord30000

  Data record struct for DMC-30010 controllers.
- struct gclib.GDataRecord47000_ENC

  Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
- struct gclib.GDataRecord47300_ENC

  Data record struct for RIO-47300. Includes encoder fields.
- struct gclib.GDataRecord47300_24EX

  Data record struct for RIO-47300 with 24EX I/O daughter board.
- struct gclib.GDataRecord47162

  Data record struct for RIO-47162.

Typedefs

- using UB = System.Byte
- using UW = System.UInt16
- using SW = System.Int16
- using SL = System.Int32
- using UL = System.UInt32
- using GReturn = System.Int32
- using GCon = System.IntPtr
- using GSize = System.UInt32
- using GOption = System.Int32
- using GCStringOut = System.Text.StringBuilder
- using GCStringIn = System.String
- using GBufOut = System.Text.StringBuilder
- using GBufIn = System.String
- using GStatus = System.Byte

15.16.1 Typedef Documentation

15.16.1.1 UB

```
using UB = System.Byte
```
Definition at line 34 of file gclib.cs.

15.16.1.2 UW

```
using UW = System.UInt16
```
Definition at line 35 of file gclib.cs.

15.16.1.3 SW

```
using SW = System.Int16
```
Definition at line 36 of file gclib.cs.

15.16.1.4 SL

```
using SL = System.Int32
```
Definition at line 37 of file gclib.cs.

15.16.1.5 UL

```
using UL = System.UInt32
```
Definition at line 38 of file gclib.cs.

15.16.1.6 GReturn

```
using GReturn = System.Int32
```
Definition at line 40 of file gclib.cs.

15.16.1.7 GCon

```
using GCon = System.IntPtr
```
Definition at line 41 of file gclib.cs.

15.16.1.8 GSize

```
using GSize = System.UInt32
```
Definition at line 42 of file gclib.cs.

15.16.1.9 GOption

```
using GOption = System.Int32
```
Definition at line 43 of file gclib.cs.

15.16.1.10 GCStringOut

```
using GCStringOut = System.Text.StringBuilder
```
Definition at line 44 of file gclib.cs.

15.16.1.11 GCStringIn

```
using GCStringIn = System.String
```
Definition at line 45 of file gclib.cs.

15.16.1.12 GBufOut

```
using GBufOut = System.Text.StringBuilder
```
Definition at line 46 of file gclib.cs.

15.16.1.13 GBufIn

```
using GBufIn = System.String
```

Definition at line 47 of file gclib.cs.

15.16.1.14 GStatus

```
using GStatus = System.Byte
```

Definition at line 48 of file gclib.cs.

15.17 gclib.cs

Go to the documentation of this file.

```
00001
00003
00025
00026 using System;
00027 using System.Collections.Generic;
00028 using System.Linq;
00029 using System.Text;
00030 using System.Threading.Tasks;
00031 using System.Runtime.InteropServices; //dll import
00032 using System.IO; //file.exists
00033
00034 using UB = System.Byte;  //unsigned byte
00035 using UW = System.UInt16; //unsigned word
00036 using SW = System.Int16;  //signed word
00037 using SL = System.Int32;  //signed long
00038 using UL = System.UInt32; //unsigned long
00039
00040 using GReturn = System.Int32;
00041 using GCon = System.IntPtr;
00042 using GSize = System.UInt32;
00043 using GOption = System.Int32;
00044 using GCStringOut = System.Text.StringBuilder;
00045 using GCStringIn = System.String;
00046 using GBufOut = System.Text.StringBuilder;
00047 using GBufIn = System.String;
00048 using GStatus = System.Byte;
00049
00058 public class gclib
00059 {
00060     #region "C# wrappers of gclib C calls"
00061
00062     #region "Private properties"
00063     private const int BufferSize_ = 500000; //size of "char *" buffer. Big enough to fit entire 4000
      program via UL/LS, or 24000 elements of array data.
00064     private GCStringOut Buffer_ = new System.Text.StringBuilder(BufferSize_); //used to pass a "char
      *" to gclib.
00065     private byte[] ByteArray_ = new byte[512]; //byte array to hold data record and response to GRead
00066     private GCon ConnectionHandle_; //keep track of the gclib connection handle.
00067     private bool ConnectionStatus_ = false; //keep track of the status of gclib's connection
00068     #endregion
00069
00070
00079     public string[] GAddresses()
00080     {
00081         GReturn rc = DllGAddresses(Buffer_, BufferSize_);
00082         if (rc == G_NO_ERROR)
00083         {
00084             char[] delimiters = new char[] { '\r', '\n' };
00085             return Buffer_.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
00086         }
00087         else
00088             return new string[0];
00089
00090     }
00091
00104     public void GArrayDownload(string array_name, ref List<double> data, Int16 first = -1, Int16 last
      = -1)
00105     {
00106         System.Text.StringBuilder ArrayData = new System.Text.StringBuilder(BufferSize_); //for
      converting to ASCII
00107         int len = data.Count();
00108         for (int i = 0; i <= len - 1; i++)
00109         {
00110             ArrayData.Append(data[i].ToString("F4")); //format to fixed point
00111             if (i < len - 1)
00112             {
00113                 ArrayData.Append(","); //delimiter
```

```
00114             }
00115         }
00116         GReturn rc = DllGArrayDownload(ConnectionHandle_, array_name, first, last,
      ArrayData.ToString());
00117         if (!(rc == G_NO_ERROR))
00118         {
00119             throw new System.Exception(GError(rc));
00120         }
00121     }
00122
00132     public void GArrayDownloadFile(string Path)
00133     {
00134         GReturn rc = DllGArrayDownloadFile(ConnectionHandle_, Path);
00135         if (rc != G_NO_ERROR)
00136         {
00137             throw new System.Exception(GError(rc));
00138         }
00139     }
00140
00153     public List<double> GArrayUpload(string array_name, Int16 first = -1, Int16 last = -1)
00154     {
00155         List<double> array = new List<double>();
00156         GReturn rc = DllGArrayUpload(ConnectionHandle_, array_name, first, last, 1, Buffer_,
      BufferSize_);
00157         //1 = comma delim
00158         if (!(rc == G_NO_ERROR))
00159         {
00160             throw new System.Exception(GError(rc));
00161         }
00162         char[] delimiters = new char[] { ',' };
00163
00164         string[] tokens = Buffer_.ToString().Split(delimiters,
      System.StringSplitOptions.RemoveEmptyEntries);
00165         double value = 0;
00166         foreach (string s in tokens)
00167         {
00168             if (!double.TryParse(s, out value))
00169             {
00170                 throw new System.Exception("Could not parse " + s + " into double");
00171             }
00172             array.Add(value);
00173         }
00174         return array;
00175     }
00176
00187     public void GArrayUploadFile(string Path, string Names)
00188     {
00189         GReturn rc = DllGArrayUploadFile(ConnectionHandle_, Path, Names);
00190         if (rc != G_NO_ERROR)
00191         {
00192             throw new System.Exception(GError(rc));
00193         }
00194     }
00195
00206     public void GAssign(string ip, string mac)
00207     {
00208         GReturn rc = DllGAssign(ip, mac);
00209         if (!(rc == G_NO_ERROR))
00210         {
00211             throw new System.Exception(GError(rc));
00212         }
00213     }
00214
00222     public void GClose()
00223     {
00224         if(ConnectionStatus_)
00225             DllGClose(ConnectionHandle_);
00226
00227         ConnectionStatus_ = false;
00228     }
00229
00241     public string GCommand(string Command, bool Trim = true)
00242     {
00243         GSize bytes_read = 0;
00244         GReturn rc = DllGCommand(ConnectionHandle_, Command, Buffer_, BufferSize_, ref bytes_read);
00245         if (rc != G_NO_ERROR)
00246         {
00247             throw new System.Exception(GError(rc));
00248         }
00249         if (Trim)
00250         {
00251             string r = Buffer_.ToString();
00252             if (r[r.Count() - 1] == ':')
00253             {
00254                 r = r.Substring(0, r.Count() - 1);
00255             }
00256             return r.Trim();
```

```
00257         }
00258         else
00259         {
00260             return Buffer_.ToString();
00261         }
00262     }
00263
00273     public Int16 GCmdI(string Command)
00274     {
00275         return Convert.ToInt16(Convert.ToDouble(GCommand(Command)));
00276     }
00277
00287     public double GCmdD(string Command)
00288     {
00289         return Convert.ToDouble(GCommand(Command));
00290     }
00291
00303     private string GError(GReturn ErrorCode)
00304     {
00305         DllGError(ErrorCode, Buffer_, BufferSize_);
00306         return ErrorCode.ToString() + " " + Buffer_.ToString() + "\n";
00307     }
00308
00318     public void GFirmwareDownload(string filepath)
00319     {
00320         GReturn rc = DllGFirmwareDownload(ConnectionHandle_, filepath);
00321         if (rc != G_NO_ERROR)
00322         {
00323             throw new System.Exception(GError(rc));
00324         }
00325     }
00326
00333     public string GInfo()
00334     {
00335         GReturn rc = DllGInfo(ConnectionHandle_, Buffer_, BufferSize_);
00336         if (rc == G_NO_ERROR)
00337         {
00338             return Buffer_.ToString();
00339         }
00340         else
00341         {
00342             return "";
00343         }
00344     }
00345
00354     public byte GInterrupt()
00355     {
00356         byte StatusByte = 0;
00357         GReturn rc = DllGInterrupt(ConnectionHandle_, ref StatusByte);
00358         if (rc == G_NO_ERROR)
00359         {
00360             return StatusByte;
00361         }
00362         else
00363         {
00364             return 0;
00365         }
00366     }
00367
00377     public string[] GIpRequests()
00378     {
00379         GReturn rc = DllGIpRequests(Buffer_, BufferSize_);
00380         if (rc == G_NO_ERROR)
00381         {
00382             char[] delimiters = new char[] { '\r', '\n' };
00383             return Buffer_.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
00384         }
00385         else
00386             return new string[0];
00387
00388     }
00389
00399     public string GMessage()
00400     {
00401         GReturn rc = DllGMessage(ConnectionHandle_, Buffer_, BufferSize_);
00402         if (rc == G_NO_ERROR)
00403         {
00404             return Buffer_.ToString();
00405         }
00406         else
00407         {
00408             return "";
00409         }
00410     }
00411
00421     public void GMotionComplete(string axes)
00422     {
```

```
00423         GReturn rc = DllGMotionComplete(ConnectionHandle_, axes);
00424         if (!(rc == G_NO_ERROR))
00425         {
00426             throw new System.Exception(GError(rc));
00427         }
00428     }
00429
00439     public void GOpen(string address)
00440     {
00441         GReturn rc = DllGOpen(address, ref ConnectionHandle_);
00442         if (rc != G_NO_ERROR)
00443         {
00444             throw new System.Exception(GError(rc));
00445         }
00446         else
00447             ConnectionStatus_ = true;
00448     }
00449
00460     public void GProgramDownload(string program, string preprocessor = "")
00461     {
00462         GReturn rc = DllGProgramDownload(ConnectionHandle_, program, preprocessor);
00463         if (rc != G_NO_ERROR)
00464         {
00465             throw new System.Exception(GError(rc));
00466         }
00467     }
00468
00479     public void GProgramDownloadFile(string file_path, string preprocessor = "")
00480     {
00481         GReturn rc = DllGProgramDownloadFile(ConnectionHandle_, file_path, preprocessor);
00482         if (rc != G_NO_ERROR)
00483         {
00484             throw new System.Exception(GError(rc));
00485         }
00486     }
00487
00496     public string GProgramUpload()
00497     {
00498         GReturn rc = DllGProgramUpload(ConnectionHandle_, Buffer_, BufferSize_);
00499         if (rc != G_NO_ERROR)
00500         {
00501             throw new System.Exception(GError(rc));
00502         }
00503         else
00504         {
00505             return Buffer_.ToString();
00506         }
00507     }
00508
00518     public void GProgramUploadFile(string file_path)
00519     {
00520         GReturn rc = DllGProgramUploadFile(ConnectionHandle_, file_path);
00521         if (rc != G_NO_ERROR)
00522         {
00523             throw new System.Exception(GError(rc));
00524         }
00525     }
00526
00534     public byte[] GRead()
00535     {
00536         GSize read = 0;
00537         GReturn rc = DllGRead(ConnectionHandle_, ByteArray_, (uint)ByteArray_.Length, ref read);
00538         if (rc == G_NO_ERROR)
00539         {
00540             byte[] ReturnData = new byte[read];
00541             //create an array of the correct size
00542             for (GSize i = 0; i <= read - 1; i++)
00543             {
00544                 ReturnData[i] = ByteArray_[i];
00545                 //copy over the data
00546             }
00547             return ReturnData;
00548         }
00549         else
00550             return new byte[0];
00551     }
00552
00565     public T GRecord<T>(bool async)
00566             where T : struct, GDataRecord
00567     {
00568         ushort method = 0;
00569         if (async)
00570             method = 1;
00571
00572         GReturn rc = DllGRecord(ConnectionHandle_, ByteArray_, method);
00573         if (rc != G_NO_ERROR)
00574             throw new System.Exception(GError(rc));
```

```
00575
00576         return ByteArrayToDataRecord<T>(ByteArray_);
00577     }
00578
00588     public void GRecordRate(double period_ms)
00589     {
00590         GReturn rc = DllGRecordRate(ConnectionHandle_, period_ms);
00591         if (!(rc == G_NO_ERROR))
00592         {
00593             throw new System.Exception(GError(rc));
00594         }
00595     }
00596
00605     public void GTimeout(Int16 timeout_ms)
00606     {
00607         DllGTimeout(ConnectionHandle_, timeout_ms);
00608     }
00609
00616     public string GVersion()
00617     {
00618         GReturn rc = DllGVersion(Buffer_, BufferSize_);
00619         if (rc == G_NO_ERROR)
00620         {
00621             return Buffer_.ToString();
00622         }
00623         else
00624         {
00625             return "";
00626         }
00627     }
00628
00637     public void GWrite(string buffer)
00638     {
00639         GReturn rc = DllGWrite(ConnectionHandle_, buffer, (uint) buffer.Length);
00640         if (!(rc == G_NO_ERROR))
00641         {
00642             throw new System.Exception(GError(rc));
00643         }
00644     }
00645
00658     public string[] GSetupDownloadFile(string path, Int32 options)
00659     {
00660         GReturn rc = DllGSetupDownloadFile(ConnectionHandle_, path, options, Buffer_, BufferSize_);
00661
00662         string ret_buf = Buffer_.ToString();
00663         ret_buf = ret_buf.Replace("\r\n", ", ");
00664
00665         if (options != 0)
00666         {
00667             if (rc != G_NO_ERROR)
00668             {
00669                 throw new System.Exception(GError(rc));
00670             }
00671         }
00672         else
00673         {
00674             ret_buf += "\"options\"," + rc + "\n";
00675         }
00676
00677         char[] delimiters = new char[] { '\n' };
00678         return ret_buf.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
00679     }
00680
00690     public void GSetServer(string server_name)
00691     {
00692         GReturn rc = DllGSetServer(server_name);
00693
00694         if(rc != G_NO_ERROR)
00695         {
00696             throw new System.Exception(GError(rc));
00697         }
00698     }
00699
00706     public string GServerStatus()
00707     {
00708         GReturn rc = DllGServerStatus(Buffer_, BufferSize_);
00709
00710         if(rc == G_NO_ERROR)
00711             return Buffer_.ToString();
00712         else
00713             throw new System.Exception(GError(rc));
00714     }
00715
00722     public string[] GListServers()
00723     {
00724         GReturn rc = DllGListServers(Buffer_, BufferSize_);
00725
```

```
00726         if(rc == G_NO_ERROR)
00727         {
00728             char[] delimiters = new char[] { '\n' };
00729             return Buffer_.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
00730         }
00731         else
00732         {
00733             throw new System.Exception(GError(rc));
00734         }
00735     }
00736
00745     public void GPublishServer(string server_name, bool publish, bool save)
00746     {
00747         GReturn rc = DllGPublishServer(server_name, Convert.ToInt16(publish), Convert.ToInt16(save));
00748
00749         if (rc != G_NO_ERROR)
00750             throw new System.Exception(GError(rc));
00751     }
00752
00759     public string[] GRemoteConnections()
00760     {
00761         GReturn rc = DllGRemoteConnections(Buffer_, BufferSize_);
00762
00763         if(rc == G_NO_ERROR)
00764         {
00765             char[] delimiters = new char[] { '\n' };
00766             return Buffer_.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
00767         }
00768         else
00769         {
00770             throw new System.Exception(GError(rc));
00771         }
00772     }
00773
00774     #endregion
00775
00776     #region "DLL Imports"
00777     //Import declarations for gclib functions. Functions are private to this class and are prefixed
      with "Dll" to distinguish from C# functions.
00778
00779     #region "Error Codes"
00784     private const Int32 G_NO_ERROR = 0;
00785     #endregion
00786
00787     [DllImport("gclibo", EntryPoint = "GAddresses", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00788     private static extern GReturn DllGAddresses(GCStringOut addresses, GSize addresses_len);
00789
00790     [DllImport("gclib", EntryPoint = "GArrayDownload", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00791     private static extern GReturn DllGArrayDownload(GCon g, GCStringIn array_name, GOption first,
      GOption last, GCStringIn buffer);
00792
00793     [DllImport("gclibo", EntryPoint = "GArrayDownloadFile", CharSet = CharSet.Ansi, CallingConvention
      = CallingConvention.StdCall)]
00794     private static extern GReturn DllGArrayDownloadFile(GCon g, GCStringIn path);
00795
00796     [DllImport("gclib", EntryPoint = "GArrayUpload", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00797     private static extern GReturn DllGArrayUpload(GCon g, GCStringIn array_name, GOption first,
      GOption last, GOption delim, GCStringOut buffer, GSize bufferLength);
00798
00799     [DllImport("gclibo", EntryPoint = "GArrayUploadFile", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00800     private static extern GReturn DllGArrayUploadFile(GCon g, GCStringIn path, GCStringIn names);
00801
00802     [DllImport("gclibo", EntryPoint = "GAssign", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00803     private static extern GReturn DllGAssign(GCStringIn ip, GCStringIn mac);
00804
00805     [DllImport("gclib", EntryPoint = "GClose", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00806     private static extern GReturn DllGClose(GCon g);
00807
00808     [DllImport("gclib", EntryPoint = "GCommand", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00809     private static extern GReturn DllGCommand(GCon g, GCStringIn command, GCStringOut buffer, GSize
      bufferLength, ref GSize bytesReturned);
00810
00811     [DllImport("gclibo", EntryPoint = "GError", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00812     private static extern void DllGError(GReturn error_code, GCStringOut errorbuf, GSize error_len);
00813
00814     [DllImport("gclib", EntryPoint = "GFirmwareDownload", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00815     private static extern GReturn DllGFirmwareDownload(GCon g, GCStringIn path);
00816
```

```
00817     [DllImport("gclibo", EntryPoint = "GInfo", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00818     private static extern GReturn DllGInfo(GCon g, GCStringOut info, GSize infoLength);
00819
00820     [DllImport("gclib", EntryPoint = "GInterrupt", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00821     private static extern GReturn DllGInterrupt(GCon g, ref GStatus status_byte);
00822
00823     [DllImport("gclibo", EntryPoint = "GIpRequests", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00824     private static extern GReturn DllGIpRequests(GCStringOut requests, GSize requests_len);
00825
00826     [DllImport("gclib", EntryPoint = "GMessage", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00827     private static extern GReturn DllGMessage(GCon g, GCStringOut buffer, GSize bufferLength);
00828
00829     [DllImport("gclibo", EntryPoint = "GMotionComplete", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00830     private static extern GReturn DllGMotionComplete(GCon g, GCStringIn axes);
00831
00832     [DllImport("gclib", EntryPoint = "GOpen", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00833     private static extern GReturn DllGOpen(GCStringIn address, ref GCon g);
00834
00835     [DllImport("gclib", EntryPoint = "GProgramDownload", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00836     private static extern GReturn DllGProgramDownload(GCon g, GCStringIn program, GCStringIn
      preprocessor);
00837
00838     [DllImport("gclibo", EntryPoint = "GProgramDownloadFile", CharSet = CharSet.Ansi,
      CallingConvention = CallingConvention.StdCall)]
00839     private static extern GReturn DllGProgramDownloadFile(GCon g, GCStringIn path, GCStringIn
      preprocessor);
00840
00841     [DllImport("gclib", EntryPoint = "GProgramUpload", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00842     private static extern GReturn DllGProgramUpload(GCon g, GCStringOut buffer, GSize bufferLength);
00843
00844     [DllImport("gclibo", EntryPoint = "GProgramUploadFile", CharSet = CharSet.Ansi, CallingConvention
      = CallingConvention.StdCall)]
00845     private static extern GReturn DllGProgramUploadFile(GCon g, GCStringIn path);
00846
00847     [DllImport("gclib", EntryPoint = "GRead", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00848     private static extern GReturn DllGRead(GCon g, byte[] record, GSize buffer_len, ref GSize
      bytes_read);
00849
00850     [DllImport("gclib", EntryPoint = "GRecord", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00851     private static extern GReturn DllGRecord(GCon g, byte[] record, GOption method);
00852
00853     [DllImport("gclibo", EntryPoint = "GRecordRate", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00854     private static extern GReturn DllGRecordRate(GCon g, double period_ms);
00855
00856     [DllImport("gclibo", EntryPoint = "GTimeout", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00857     private static extern void DllGTimeout(GCon g, GOption timeoutMs);
00858
00859     [DllImport("gclibo", EntryPoint = "GVersion", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00860     private static extern GReturn DllGVersion(GCStringOut ver, GSize ver_len);
00861
00862     [DllImport("gclib", EntryPoint = "GWrite", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00863     private static extern GReturn DllGWrite(GCon g, GCStringIn buffer, GSize buffer_len);
00864
00865     [DllImport("gclibo", EntryPoint = "GSetupDownloadFile", CharSet = CharSet.Ansi, CallingConvention
      = CallingConvention.StdCall)]
00866     private static extern GReturn DllGSetupDownloadFile(GCon g, GCStringIn file_path, GOption options,
      GCStringOut info, GSize info_len);
00867
00868     [DllImport("gclibo", EntryPoint = "GSetServer", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00869     private static extern GReturn DllGSetServer(GCStringIn server_name);
00870
00871     [DllImport("gclibo", EntryPoint = "GServerStatus", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00872     private static extern GReturn DllGServerStatus(GCStringOut status, GSize status_len);
00873
00874     [DllImport("gclibo", EntryPoint = "GListServers", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00875     private static extern GReturn DllGListServers(GCStringOut servers, GSize servers_len);
00876
00877     [DllImport("gclibo", EntryPoint = "GPublishServer", CharSet = CharSet.Ansi, CallingConvention =
      CallingConvention.StdCall)]
00878     private static extern GReturn DllGPublishServer(GCStringIn name, GOption publish, GOption save);
```

```
00879
00880     [DllImport("gclibo", EntryPoint = "GRemoteConnections", CharSet = CharSet.Ansi, CallingConvention
      = CallingConvention.StdCall)]
00881     private static extern GReturn DllGRemoteConnections(GCStringOut connections, GSize
      connections_len);
00882
00883     #endregion
00884
00885     #region "Data Record"
00886
00887     private T ByteArrayToDataRecord<T>(byte[] array)
00888         where T : struct, GDataRecord
00889     {
00890         GCHandle handle = GCHandle.Alloc(array, GCHandleType.Pinned);
00891         try
00892         {
00893             return Marshal.PtrToStructure<T>(handle.AddrOfPinnedObject());
00894         }
00895         catch
00896         {
00897             return default(T);
00898         }
00899         finally
00900         {
00901             handle.Free();
00902         }
00903     }
00904
00905     public interface GDataRecord
00906     {
00908         byte[] byte_array();
00909     }
00910
00911     private static byte[] StructToByteArray(GDataRecord record) //Returns this DataRecord as a byte[]
00912     {
00913         int size = Marshal.SizeOf(record);
00914         byte[] arr = new byte[size];
00915
00916         IntPtr ptr = Marshal.AllocHGlobal(size);
00917         Marshal.StructureToPtr(record, ptr, true);
00918         Marshal.Copy(ptr, arr, 0, size);
00919         Marshal.FreeHGlobal(ptr);
00920         return arr;
00921     }
00922
00923
00925     [StructLayout(LayoutKind.Sequential, Pack=1)]
00926     public struct GDataRecord4000 : GDataRecord
00927     {
00928         public byte[] byte_array() { return StructToByteArray(this); }
00929         /*Offset   type name        description*/
00930
00931         /*00*/      public UB header_0;
00932         /*01*/      public UB header_1;
00933         /*02*/      public UB header_2;
00934         /*03*/      public UB header_3;
00935
00936         /*04-05*/   public UW sample_number;
00937
00938         /*06*/      public UB input_bank_0;
00939         /*07*/      public UB input_bank_1;
00940         /*08*/      public UB input_bank_2;
00941         /*09*/      public UB input_bank_3;
00942         /*10*/      public UB input_bank_4;
00943         /*11*/      public UB input_bank_5;
00944         /*12*/      public UB input_bank_6;
00945         /*13*/      public UB input_bank_7;
00946         /*14*/      public UB input_bank_8;
00947         /*15*/      public UB input_bank_9;
00948
00949         /*16*/      public UB output_bank_0;
00950         /*17*/      public UB output_bank_1;
00951         /*18*/      public UB output_bank_2;
00952         /*19*/      public UB output_bank_3;
00953         /*20*/      public UB output_bank_4;
00954         /*21*/      public UB output_bank_5;
00955         /*22*/      public UB output_bank_6;
00956         /*23*/      public UB output_bank_7;
00957         /*24*/      public UB output_bank_8;
00958         /*25*/      public UB output_bank_9;
00959
00960         /*26-27*/   public SW  reserved_0;
00961         /*28-29*/   public SW     reserved_2;
00962         /*30-31*/   public SW     reserved_4;
00963         /*32-33*/   public SW reserved_6;
00964         /*34-35*/   public SW reserved_8;
00965         /*36-37*/   public SW reserved_10;
```

```
00966         /*38-39*/   public SW reserved_12;
00967         /*40-41*/   public SW reserved_14;
00968
00969         /*42*/      public UB ethernet_status_a;
00970         /*43*/      public UB ethernet_status_b;
00971         /*44*/      public UB ethernet_status_c;
00972         /*45*/      public UB ethernet_status_d;
00973         /*46*/      public UB ethernet_status_e;
00974         /*47*/      public UB ethernet_status_f;
00975         /*48*/      public UB ethernet_status_g;
00976         /*49*/      public UB ethernet_status_h;
00977
00978         /*50*/      public UB error_code;
00979         /*51*/      public UB thread_status;
00980         /*52-55*/   public UL amplifier_status;
00981
00982         /*56-59*/   public UL contour_segment_count;
00983         /*60-61*/   public UW contour_buffer_available;
00984
00985         /*62-63*/   public UW s_plane_segment_count;
00986         /*64-65*/   public UW s_plane_move_status;
00987         /*66-69*/   public SL s_distance;
00988         /*70-71*/   public UW s_plane_buffer_available;
00989
00990         /*72-73*/   public UW t_plane_segment_count;
00991         /*74-75*/   public UW t_plane_move_status;
00992         /*76-79*/   public SL t_distance;
00993         /*80-81*/   public UW t_plane_buffer_available;
00994
00995         /*82-83*/   public UW axis_a_status;
00996         /*84*/      public UB axis_a_switches;
00997         /*85*/      public UB axis_a_stop_code;
00998         /*86-89*/   public SL axis_a_reference_position;
00999         /*90-93*/   public SL axis_a_motor_position;
01000         /*94-97*/   public SL axis_a_position_error;
01001         /*98-101*/  public SL axis_a_aux_position;
01002         /*102-105*/ public SL axis_a_velocity;
01003         /*106-109*/ public SL     axis_a_torque;
01004         /*110-111*/ public UW  axis_a_analog_in;
01005         /*112*/     public UB axis_a_halls;
01006         /*113*/     public UB axis_a_reserved;
01007         /*114-117*/ public SL axis_a_variable;
01008
01009         /*118-119*/ public UW axis_b_status;
01010         /*120*/     public UB axis_b_switches;
01011         /*121*/     public UB axis_b_stop_code;
01012         /*122-125*/ public SL axis_b_reference_position;
01013         /*126-129*/ public SL axis_b_motor_position;
01014         /*130-133*/ public SL axis_b_position_error;
01015         /*134-137*/ public SL axis_b_aux_position;
01016         /*138-141*/ public SL axis_b_velocity;
01017         /*142-145*/ public SL axis_b_torque;
01018         /*146-147*/ public UW  axis_b_analog_in;
01019         /*148*/     public UB axis_b_halls;
01020         /*149*/     public UB axis_b_reserved;
01021         /*150-153*/ public SL axis_b_variable;
01022
01023         /*154-155*/ public UW axis_c_status;
01024         /*156*/     public UB axis_c_switches;
01025         /*157*/     public UB axis_c_stop_code;
01026         /*158-161*/ public SL axis_c_reference_position;
01027         /*162-165*/ public SL axis_c_motor_position;
01028         /*166-169*/ public SL axis_c_position_error;
01029         /*170-173*/ public SL axis_c_aux_position;
01030         /*174-177*/ public SL axis_c_velocity;
01031         /*178-181*/ public SL axis_c_torque;
01032         /*182-183*/ public UW     axis_c_analog_in;
01033         /*184*/     public UB axis_c_halls;
01034         /*185*/     public UB axis_c_reserved;
01035         /*186-189*/ public SL axis_c_variable;
01036
01037         /*190-191*/ public UW axis_d_status;
01038         /*192*/     public UB axis_d_switches;
01039         /*193*/     public UB axis_d_stop_code;
01040         /*194-197*/ public SL axis_d_reference_position;
01041         /*198-201*/ public SL axis_d_motor_position;
01042         /*202-205*/ public SL axis_d_position_error;
01043         /*206-209*/ public SL axis_d_aux_position;
01044         /*210-213*/ public SL axis_d_velocity;
01045         /*214-217*/ public SL axis_d_torque;
01046         /*218-219*/ public UW  axis_d_analog_in;
01047         /*220*/     public UB axis_d_halls;
01048         /*221*/     public UB axis_d_reserved;
01049         /*222-225*/ public SL axis_d_variable;
01050
01051         /*226-227*/ public UW axis_e_status;
01052         /*228*/     public UB axis_e_switches;
```

```
01053         /*229*/     public UB axis_e_stop_code;
01054         /*230-233*/ public SL axis_e_reference_position;
01055         /*234-237*/ public SL axis_e_motor_position;
01056         /*238-241*/ public SL axis_e_position_error;
01057         /*242-245*/ public SL axis_e_aux_position;
01058         /*246-249*/ public SL axis_e_velocity;
01059         /*250-253*/ public SL axis_e_torque;
01060         /*254-255*/ public UW  axis_e_analog_in;
01061         /*256*/     public UB axis_e_halls;
01062         /*257*/     public UB axis_e_reserved;
01063         /*258-261*/ public SL axis_e_variable;
01064
01065         /*262-263*/ public UW axis_f_status;
01066         /*264*/     public UB axis_f_switches;
01067         /*265*/     public UB axis_f_stop_code;
01068         /*266-269*/ public SL axis_f_reference_position;
01069         /*270-273*/ public SL axis_f_motor_position;
01070         /*274-277*/ public SL axis_f_position_error;
01071         /*278-281*/ public SL axis_f_aux_position;
01072         /*282-285*/ public SL axis_f_velocity;
01073         /*286-289*/ public SL axis_f_torque;
01074         /*290-291*/ public UW axis_f_analog_in;
01075         /*292*/     public UB axis_f_halls;
01076         /*293*/     public UB axis_f_reserved;
01077         /*294-297*/ public SL axis_f_variable;
01078
01079         /*298-299*/ public UW axis_g_status;
01080         /*300*/     public UB axis_g_switches;
01081         /*301*/     public UB axis_g_stop_code;
01082         /*302-305*/ public SL axis_g_reference_position;
01083         /*306-309*/ public SL axis_g_motor_position;
01084         /*310-313*/ public SL axis_g_position_error;
01085         /*314-317*/ public SL axis_g_aux_position;
01086         /*318-321*/ public SL axis_g_velocity;
01087         /*322-325*/ public SL axis_g_torque;
01088         /*326-327*/ public UW  axis_g_analog_in;
01089         /*328*/     public UB axis_g_halls;
01090         /*329*/     public UB axis_g_reserved;
01091         /*330-333*/ public SL axis_g_variable;
01092
01093         /*334-335*/ public UW axis_h_status;
01094         /*336*/     public UB axis_h_switches;
01095         /*337*/     public UB axis_h_stop_code;
01096         /*338-341*/ public SL axis_h_reference_position;
01097         /*342-345*/ public SL axis_h_motor_position;
01098         /*346-349*/ public SL axis_h_position_error;
01099         /*350-353*/ public SL axis_h_aux_position;
01100         /*354-357*/ public SL axis_h_velocity;
01101         /*358-361*/ public SL axis_h_torque;
01102         /*362-363*/ public UW  axis_h_analog_in;
01103         /*364*/     public UB axis_h_halls;
01104         /*365*/     public UB axis_h_reserved;
01105         /*366-369*/ public SL axis_h_variable;
01106     }; //DataRecord4000
01107
01109     [StructLayout(LayoutKind.Sequential, Pack=1)]
01110     public struct GDataRecord52000 : GDataRecord
01111     {
01112         public byte[] byte_array() { return StructToByteArray(this); }
01113         /*Offset   type name        description*/
01114
01115         /*00*/      public UB header_0;
01116         /*01*/      public UB header_1;
01117         /*02*/      public UB header_2;
01118         /*03*/      public UB header_3;
01119
01120         /*04-05*/   public UW sample_number;
01121
01122         /*06*/      public UB input_bank_0;
01123         /*07*/      public UB input_bank_1;
01124         /*08*/      public UB input_bank_2;
01125         /*09*/      public UB input_bank_3;
01126         /*10*/      public UB input_bank_4;
01127         /*11*/      public UB input_bank_5;
01128         /*12*/      public UB input_bank_6;
01129         /*13*/      public UB input_bank_7;
01130         /*14*/      public UB input_bank_8;
01131         /*15*/      public UB input_bank_9;
01132
01133         /*16*/      public UB output_bank_0;
01134         /*17*/      public UB output_bank_1;
01135         /*18*/      public UB output_bank_2;
01136         /*19*/      public UB output_bank_3;
01137         /*20*/      public UB output_bank_4;
01138         /*21*/      public UB output_bank_5;
01139         /*22*/      public UB output_bank_6;
01140         /*23*/      public UB output_bank_7;
```

```
01141         /*24*/      public UB output_bank_8;
01142         /*25*/      public UB output_bank_9;
01143
01144         /*26-27*/   public SW  reserved_0;
01145         /*28-29*/   public SW     reserved_2;
01146         /*30-31*/   public SW     reserved_4;
01147         /*32-33*/   public SW reserved_6;
01148         /*34-35*/   public SW reserved_8;
01149         /*36-37*/   public SW reserved_10;
01150         /*38-39*/   public SW reserved_12;
01151         /*40*/      public UB  ethercat_bank;
01152         /*41*/      public UB reserved_14;
01153
01154         /*42*/      public UB ethernet_status_a;
01155         /*43*/      public UB ethernet_status_b;
01156         /*44*/      public UB ethernet_status_c;
01157         /*45*/      public UB ethernet_status_d;
01158         /*46*/      public UB ethernet_status_e;
01159         /*47*/      public UB ethernet_status_f;
01160         /*48*/      public UB ethernet_status_g;
01161         /*49*/      public UB ethernet_status_h;
01162
01163         /*50*/      public UB error_code;
01164         /*51*/      public UB thread_status;
01165         /*52-55*/   public UL amplifier_status;
01166
01167         /*56-59*/   public UL contour_segment_count;
01168         /*60-61*/   public UW contour_buffer_available;
01169
01170         /*62-63*/   public UW s_plane_segment_count;
01171         /*64-65*/   public UW s_plane_move_status;
01172         /*66-69*/   public SL s_distance;
01173         /*70-71*/   public UW s_plane_buffer_available;
01174
01175         /*72-73*/   public UW t_plane_segment_count;
01176         /*74-75*/   public UW t_plane_move_status;
01177         /*76-79*/   public SL t_distance;
01178         /*80-81*/   public UW t_plane_buffer_available;
01179
01180         /*82-83*/   public UW axis_a_status;
01181         /*84*/      public UB axis_a_switches;
01182         /*85*/      public UB axis_a_stop_code;
01183         /*86-89*/   public SL axis_a_reference_position;
01184         /*90-93*/   public SL axis_a_motor_position;
01185         /*94-97*/   public SL axis_a_position_error;
01186         /*98-101*/  public SL axis_a_aux_position;
01187         /*102-105*/ public SL axis_a_velocity;
01188         /*106-109*/ public SL     axis_a_torque;
01189         /*110-111*/ public UW  axis_a_analog_in;
01190         /*112*/     public UB axis_a_halls;
01191         /*113*/     public UB axis_a_reserved;
01192         /*114-117*/ public SL axis_a_variable;
01193
01194         /*118-119*/ public UW axis_b_status;
01195         /*120*/     public UB axis_b_switches;
01196         /*121*/     public UB axis_b_stop_code;
01197         /*122-125*/ public SL axis_b_reference_position;
01198         /*126-129*/ public SL axis_b_motor_position;
01199         /*130-133*/ public SL axis_b_position_error;
01200         /*134-137*/ public SL axis_b_aux_position;
01201         /*138-141*/ public SL axis_b_velocity;
01202         /*142-145*/ public SL axis_b_torque;
01203         /*146-147*/ public UW  axis_b_analog_in;
01204         /*148*/     public UB axis_b_halls;
01205         /*149*/     public UB axis_b_reserved;
01206         /*150-153*/ public SL axis_b_variable;
01207
01208         /*154-155*/ public UW axis_c_status;
01209         /*156*/     public UB axis_c_switches;
01210         /*157*/     public UB axis_c_stop_code;
01211         /*158-161*/ public SL axis_c_reference_position;
01212         /*162-165*/ public SL axis_c_motor_position;
01213         /*166-169*/ public SL axis_c_position_error;
01214         /*170-173*/ public SL axis_c_aux_position;
01215         /*174-177*/ public SL axis_c_velocity;
01216         /*178-181*/ public SL axis_c_torque;
01217         /*182-183*/ public UW     axis_c_analog_in;
01218         /*184*/     public UB axis_c_halls;
01219         /*185*/     public UB axis_c_reserved;
01220         /*186-189*/ public SL axis_c_variable;
01221
01222         /*190-191*/ public UW axis_d_status;
01223         /*192*/     public UB axis_d_switches;
01224         /*193*/     public UB axis_d_stop_code;
01225         /*194-197*/ public SL axis_d_reference_position;
01226         /*198-201*/ public SL axis_d_motor_position;
01227         /*202-205*/ public SL axis_d_position_error;
```

```
01228         /*206-209*/ public SL axis_d_aux_position;
01229         /*210-213*/ public SL axis_d_velocity;
01230         /*214-217*/ public SL axis_d_torque;
01231         /*218-219*/ public UW  axis_d_analog_in;
01232         /*220*/     public UB axis_d_halls;
01233         /*221*/     public UB axis_d_reserved;
01234         /*222-225*/ public SL axis_d_variable;
01235
01236         /*226-227*/ public UW axis_e_status;
01237         /*228*/     public UB axis_e_switches;
01238         /*229*/     public UB axis_e_stop_code;
01239         /*230-233*/ public SL axis_e_reference_position;
01240         /*234-237*/ public SL axis_e_motor_position;
01241         /*238-241*/ public SL axis_e_position_error;
01242         /*242-245*/ public SL axis_e_aux_position;
01243         /*246-249*/ public SL axis_e_velocity;
01244         /*250-253*/ public SL axis_e_torque;
01245         /*254-255*/ public UW  axis_e_analog_in;
01246         /*256*/     public UB axis_e_halls;
01247         /*257*/     public UB axis_e_reserved;
01248         /*258-261*/ public SL axis_e_variable;
01249
01250         /*262-263*/ public UW axis_f_status;
01251         /*264*/     public UB axis_f_switches;
01252         /*265*/     public UB axis_f_stop_code;
01253         /*266-269*/ public SL axis_f_reference_position;
01254         /*270-273*/ public SL axis_f_motor_position;
01255         /*274-277*/ public SL axis_f_position_error;
01256         /*278-281*/ public SL axis_f_aux_position;
01257         /*282-285*/ public SL axis_f_velocity;
01258         /*286-289*/ public SL axis_f_torque;
01259         /*290-291*/ public UW axis_f_analog_in;
01260         /*292*/     public UB axis_f_halls;
01261         /*293*/     public UB axis_f_reserved;
01262         /*294-297*/ public SL axis_f_variable;
01263
01264         /*298-299*/ public UW axis_g_status;
01265         /*300*/     public UB axis_g_switches;
01266         /*301*/     public UB axis_g_stop_code;
01267         /*302-305*/ public SL axis_g_reference_position;
01268         /*306-309*/ public SL axis_g_motor_position;
01269         /*310-313*/ public SL axis_g_position_error;
01270         /*314-317*/ public SL axis_g_aux_position;
01271         /*318-321*/ public SL axis_g_velocity;
01272         /*322-325*/ public SL axis_g_torque;
01273         /*326-327*/ public UW  axis_g_analog_in;
01274         /*328*/     public UB axis_g_halls;
01275         /*329*/     public UB axis_g_reserved;
01276         /*330-333*/ public SL axis_g_variable;
01277
01278         /*334-335*/ public UW axis_h_status;
01279         /*336*/     public UB axis_h_switches;
01280         /*337*/     public UB axis_h_stop_code;
01281         /*338-341*/ public SL axis_h_reference_position;
01282         /*342-345*/ public SL axis_h_motor_position;
01283         /*346-349*/ public SL axis_h_position_error;
01284         /*350-353*/ public SL axis_h_aux_position;
01285         /*354-357*/ public SL axis_h_velocity;
01286         /*358-361*/ public SL axis_h_torque;
01287         /*362-363*/ public UW  axis_h_analog_in;
01288         /*364*/     public UB axis_h_halls;
01289         /*365*/     public UB axis_h_reserved;
01290         /*366-369*/ public SL axis_h_variable;
01291     }; //DataRecord52000
01292
01294
01301     [StructLayout(LayoutKind.Sequential, Pack=1)]
01302     public struct GDataRecord1806 : GDataRecord
01303     {
01304         public byte[] byte_array() { return StructToByteArray(this); }
01305         /*Offset   type name        description*/
01306
01307         /*00-01*/   public UW sample_number;
01308
01309         /*02*/      public UB input_bank_0;
01310         /*03*/      public UB input_bank_1;
01311         /*04*/      public UB input_bank_2;
01312         /*05*/      public UB input_bank_3;
01313         /*06*/      public UB input_bank_4;
01314         /*07*/      public UB input_bank_5;
01315         /*08*/      public UB input_bank_6;
01316         /*09*/      public UB input_bank_7;
01317         /*10*/      public UB input_bank_8;
01318         /*11*/      public UB input_bank_9;
01319
01320         /*12*/      public UB output_bank_0;
01321         /*13*/      public UB output_bank_1;
```

```
01322         /*14*/      public UB output_bank_2;
01323         /*15*/      public UB output_bank_3;
01324         /*16*/      public UB output_bank_4;
01325         /*17*/      public UB output_bank_5;
01326         /*18*/      public UB output_bank_6;
01327         /*19*/      public UB output_bank_7;
01328         /*20*/      public UB output_bank_8;
01329         /*21*/      public UB output_bank_9;
01330
01331         /*22-23*/   public SW  reserved_0;
01332         /*24-25*/   public SW     reserved_2;
01333         /*26-27*/   public SW     reserved_4;
01334         /*28-29*/   public SW reserved_6;
01335         /*30-31*/   public SW reserved_8;
01336         /*32-33*/   public SW reserved_10;
01337         /*34-35*/   public SW reserved_12;
01338         /*36-37*/   public SW reserved_14;
01339
01340         /*38*/      public UB reserved_16;
01341         /*39*/      public UB reserved_17;
01342         /*40*/      public UB reserved_18;
01343         /*41*/      public UB reserved_19;
01344         /*42*/      public UB reserved_20;
01345         /*43*/      public UB reserved_21;
01346         /*44*/      public UB reserved_22;
01347         /*45*/      public UB reserved_23;
01348
01349         /*46*/      public UB error_code;
01350         /*47*/      public UB thread_status;
01351         /*48-51*/   public UL reserved_24;
01352
01353         /*52-55*/   public UL contour_segment_count;
01354         /*56-57*/   public UW contour_buffer_available;
01355
01356         /*58-59*/   public UW s_plane_segment_count;
01357         /*60-61*/   public UW s_plane_move_status;
01358         /*62-65*/   public SL s_distance;
01359         /*66-67*/   public UW s_plane_buffer_available;
01360
01361         /*68-69*/   public UW t_plane_segment_count;
01362         /*70-71*/   public UW t_plane_move_status;
01363         /*72-75*/   public SL t_distance;
01364         /*76-77*/   public UW t_plane_buffer_available;
01365
01366         /*78-79*/   public UW axis_a_status;
01367         /*80*/      public UB axis_a_switches;
01368         /*81*/      public UB axis_a_stop_code;
01369         /*82-85*/   public SL axis_a_reference_position;
01370         /*86-89*/   public SL axis_a_motor_position;
01371         /*90-93*/   public SL axis_a_position_error;
01372         /*94-97*/   public SL axis_a_aux_position;
01373         /*98-101*/  public SL axis_a_velocity;
01374         /*102-105*/ public SL     axis_a_torque;
01375         /*106-107*/ public UW  axis_a_analog_in;
01376         /*108*/     public UB axis_a_reserved_0;
01377         /*109*/     public UB axis_a_reserved_1;
01378         /*110-113*/ public SL axis_a_variable;
01379
01380         /*114-115*/ public UW axis_b_status;
01381         /*116*/     public UB axis_b_switches;
01382         /*117*/     public UB axis_b_stop_code;
01383         /*118-121*/ public SL axis_b_reference_position;
01384         /*122-125*/ public SL axis_b_motor_position;
01385         /*126-129*/ public SL axis_b_position_error;
01386         /*130-133*/ public SL axis_b_aux_position;
01387         /*134-137*/ public SL axis_b_velocity;
01388         /*138-141*/ public SL axis_b_torque;
01389         /*142-143*/ public UW  axis_b_analog_in;
01390         /*144*/     public UB axis_b_reserved_0;
01391         /*145*/     public UB axis_b_reserved_1;
01392         /*146-149*/ public SL axis_b_variable;
01393
01394         /*150-151*/ public UW axis_c_status;
01395         /*152*/     public UB axis_c_switches;
01396         /*153*/     public UB axis_c_stop_code;
01397         /*154-157*/ public SL axis_c_reference_position;
01398         /*158-161*/ public SL axis_c_motor_position;
01399         /*162-165*/ public SL axis_c_position_error;
01400         /*166-169*/ public SL axis_c_aux_position;
01401         /*170-173*/ public SL axis_c_velocity;
01402         /*174-177*/ public SL axis_c_torque;
01403         /*178-179*/ public UW     axis_c_analog_in;
01404         /*180*/     public UB axis_c_reserved_0;
01405         /*181*/     public UB axis_c_reserved_1;
01406         /*182-185*/ public SL axis_c_variable;
01407
01408         /*186-187*/ public UW axis_d_status;
```

```
01409         /*188*/     public UB axis_d_switches;
01410         /*189*/     public UB axis_d_stop_code;
01411         /*190-193*/ public SL axis_d_reference_position;
01412         /*194-197*/ public SL axis_d_motor_position;
01413         /*198-201*/ public SL axis_d_position_error;
01414         /*202-205*/ public SL axis_d_aux_position;
01415         /*206-209*/ public SL axis_d_velocity;
01416         /*210-213*/ public SL axis_d_torque;
01417         /*214-215*/ public UW  axis_d_analog_in;
01418         /*216*/     public UB axis_d_reserved_0;
01419         /*217*/     public UB axis_d_reserved_1;
01420         /*218-221*/ public SL axis_d_variable;
01421
01422         /*222-223*/ public UW axis_e_status;
01423         /*224*/     public UB axis_e_switches;
01424         /*225*/     public UB axis_e_stop_code;
01425         /*226-229*/ public SL axis_e_reference_position;
01426         /*230-233*/ public SL axis_e_motor_position;
01427         /*234-237*/ public SL axis_e_position_error;
01428         /*238-241*/ public SL axis_e_aux_position;
01429         /*242-245*/ public SL axis_e_velocity;
01430         /*256-249*/ public SL axis_e_torque;
01431         /*250-251*/ public UW  axis_e_analog_in;
01432         /*252*/     public UB axis_e_reserved_0;
01433         /*253*/     public UB axis_e_reserved_1;
01434         /*254-257*/ public SL axis_e_variable;
01435
01436         /*258-259*/ public UW axis_f_status;
01437         /*260*/     public UB axis_f_switches;
01438         /*261*/     public UB axis_f_stop_code;
01439         /*262-265*/ public SL axis_f_reference_position;
01440         /*266-269*/ public SL axis_f_motor_position;
01441         /*270-273*/ public SL axis_f_position_error;
01442         /*274-277*/ public SL axis_f_aux_position;
01443         /*278-281*/ public SL axis_f_velocity;
01444         /*282-285*/ public SL axis_f_torque;
01445         /*286-287*/ public UW axis_f_analog_in;
01446         /*288*/     public UB axis_f_reserved_0;
01447         /*289*/     public UB axis_f_reserved_1;
01448         /*290-293*/ public SL axis_f_variable;
01449
01450         /*294-295*/ public UW axis_g_status;
01451         /*296*/     public UB axis_g_switches;
01452         /*297*/     public UB axis_g_stop_code;
01453         /*298-301*/ public SL axis_g_reference_position;
01454         /*302-305*/ public SL axis_g_motor_position;
01455         /*306-309*/ public SL axis_g_position_error;
01456         /*310-313*/ public SL axis_g_aux_position;
01457         /*314-317*/ public SL axis_g_velocity;
01458         /*318-321*/ public SL axis_g_torque;
01459         /*322-323*/ public UW  axis_g_analog_in;
01460         /*324*/     public UB axis_g_reserved_0;
01461         /*325*/     public UB axis_g_reserved_1;
01462         /*326-329*/ public SL axis_g_variable;
01463
01464         /*330-331*/ public UW axis_h_status;
01465         /*332*/     public UB axis_h_switches;
01466         /*333*/     public UB axis_h_stop_code;
01467         /*334-337*/ public SL axis_h_reference_position;
01468         /*338-341*/ public SL axis_h_motor_position;
01469         /*342-345*/ public SL axis_h_position_error;
01470         /*346-349*/ public SL axis_h_aux_position;
01471         /*350-353*/ public SL axis_h_velocity;
01472         /*354-357*/ public SL axis_h_torque;
01473         /*358-359*/ public UW  axis_h_analog_in;
01474         /*360*/     public UB axis_h_reserved_0;
01475         /*361*/     public UB axis_h_reserved_1;
01476         /*362-365*/ public SL axis_h_variable;
01477     }; //DataRecord1806
01478
01480     [StructLayout(LayoutKind.Sequential, Pack=1)]
01481     public struct GDataRecord2103 : GDataRecord
01482     {
01483         public byte[] byte_array() { return StructToByteArray(this); }
01484
01485         /*Offset   type name        description*/
01486
01487         /*00*/      public UB header_0;
01488         /*01*/      public UB header_1;
01489         /*02*/      public UB header_2;
01490         /*03*/      public UB header_3;
01491
01492         /*04-05*/   public UW sample_number;
01493
01494         /*06*/      public UB input_bank_0;
01495         /*07*/      public UB input_bank_1;
01496         /*08*/      public UB input_bank_2;
```

```
01497         /*09*/      public UB input_bank_3;
01498         /*10*/      public UB input_bank_4;
01499         /*11*/      public UB input_bank_5;
01500         /*12*/      public UB input_bank_6;
01501         /*13*/      public UB input_bank_7;
01502         /*14*/      public UB input_bank_8;
01503         /*15*/      public UB input_bank_9;
01504
01505         /*16*/      public UB output_bank_0;
01506         /*17*/      public UB output_bank_1;
01507         /*18*/      public UB output_bank_2;
01508         /*19*/      public UB output_bank_3;
01509         /*20*/      public UB output_bank_4;
01510         /*21*/      public UB output_bank_5;
01511         /*22*/      public UB output_bank_6;
01512         /*23*/      public UB output_bank_7;
01513         /*24*/      public UB output_bank_8;
01514         /*25*/      public UB output_bank_9;
01515
01516         /*26*/      public UB error_code;
01517         /*27*/      public UB general_status;
01518
01519         /*28-29*/   public UW s_plane_segment_count;
01520         /*30-31*/   public UW s_plane_move_status;
01521         /*32-35*/   public SL s_distance;
01522
01523         /*36-37*/   public UW t_plane_segment_count;
01524         /*38-39*/   public UW t_plane_move_status;
01525         /*40-43*/   public SL t_distance;
01526
01527         /*44-45*/   public UW axis_a_status;
01528         /*46*/      public UB axis_a_switches;
01529         /*47*/      public UB axis_a_stop_code;
01530         /*48-51*/   public SL axis_a_reference_position;
01531         /*52-55*/   public SL axis_a_motor_position;
01532         /*56-59*/   public SL axis_a_position_error;
01533         /*60-63*/   public SL axis_a_aux_position;
01534         /*64-67*/   public SL axis_a_velocity;
01535         /*68-69*/   public SW     axis_a_torque;
01536         /*70-71*/   public UW  axis_a_analog_in;
01537
01538         /*72-73*/   public UW axis_b_status;
01539         /*74*/      public UB axis_b_switches;
01540         /*75*/      public UB axis_b_stop_code;
01541         /*76-79*/   public SL axis_b_reference_position;
01542         /*80-83*/   public SL axis_b_motor_position;
01543         /*84-87*/   public SL axis_b_position_error;
01544         /*88-91*/   public SL axis_b_aux_position;
01545         /*92-95*/   public SL axis_b_velocity;
01546         /*96-97*/   public SW axis_b_torque;
01547         /*98-99*/   public UW  axis_b_analog_in;
01548
01549         /*100-101*/ public UW axis_c_status;
01550         /*102*/     public UB axis_c_switches;
01551         /*103*/     public UB axis_c_stop_code;
01552         /*104-107*/ public SL axis_c_reference_position;
01553         /*108-111*/ public SL axis_c_motor_position;
01554         /*112-115*/ public SL axis_c_position_error;
01555         /*116-119*/ public SL axis_c_aux_position;
01556         /*120-123*/ public SL axis_c_velocity;
01557         /*124-125*/ public SW axis_c_torque;
01558         /*126-127*/ public UW     axis_c_analog_in;
01559
01560         /*128-129*/ public UW axis_d_status;
01561         /*130*/     public UB axis_d_switches;
01562         /*131*/     public UB axis_d_stop_code;
01563         /*132-135*/ public SL axis_d_reference_position;
01564         /*136-139*/ public SL axis_d_motor_position;
01565         /*140-143*/ public SL axis_d_position_error;
01566         /*144-147*/ public SL axis_d_aux_position;
01567         /*148-151*/ public SL axis_d_velocity;
01568         /*152-153*/ public SW axis_d_torque;
01569         /*154-155*/ public UW  axis_d_analog_in;
01570
01571         /*156-157*/ public UW axis_e_status;
01572         /*158*/     public UB axis_e_switches;
01573         /*159*/     public UB axis_e_stop_code;
01574         /*160-163*/ public SL axis_e_reference_position;
01575         /*164-167*/ public SL axis_e_motor_position;
01576         /*168-171*/ public SL axis_e_position_error;
01577         /*172-175*/ public SL axis_e_aux_position;
01578         /*176-179*/ public SL axis_e_velocity;
01579         /*180-181*/ public SW axis_e_torque;
01580         /*182-183*/ public UW  axis_e_analog_in;
01581
01582         /*184-185*/ public UW axis_f_status;
01583         /*186*/     public UB axis_f_switches;
```

```
01584         /*187*/     public UB axis_f_stop_code;
01585         /*188-191*/ public SL axis_f_reference_position;
01586         /*192-195*/ public SL axis_f_motor_position;
01587         /*196-199*/ public SL axis_f_position_error;
01588         /*200-203*/ public SL axis_f_aux_position;
01589         /*204-207*/ public SL axis_f_velocity;
01590         /*208-209*/ public SW axis_f_torque;
01591         /*210-211*/ public UW axis_f_analog_in;
01592 
01593         /*212-213*/ public UW axis_g_status;
01594         /*214*/     public UB axis_g_switches;
01595         /*215*/     public UB axis_g_stop_code;
01596         /*216-219*/ public SL axis_g_reference_position;
01597         /*220-223*/ public SL axis_g_motor_position;
01598         /*224-227*/ public SL axis_g_position_error;
01599         /*228-231*/ public SL axis_g_aux_position;
01600         /*232-235*/ public SL axis_g_velocity;
01601         /*236-237*/ public SW axis_g_torque;
01602         /*238-239*/ public UW  axis_g_analog_in;
01603 
01604         /*240-241*/ public UW axis_h_status;
01605         /*242*/     public UB axis_h_switches;
01606         /*243*/     public UB axis_h_stop_code;
01607         /*244-247*/ public SL axis_h_reference_position;
01608         /*248-251*/ public SL axis_h_motor_position;
01609         /*252-255*/ public SL axis_h_position_error;
01610         /*256-259*/ public SL axis_h_aux_position;
01611         /*260-263*/ public SL axis_h_velocity;
01612         /*264-265*/ public SW axis_h_torque;
01613         /*266-267*/ public UW  axis_h_analog_in;
01614     }; //DataRecord2013
01615 
01622     [StructLayout(LayoutKind.Sequential, Pack=1)]
01623     public struct GDataRecord1802 : GDataRecord
01624     {
01625         public byte[] byte_array() { return StructToByteArray(this); }
01626 
01627         /*Offset   type name        description*/
01628 
01629         /*00-01*/   public UW sample_number;
01630 
01631         /*02*/      public UB input_bank_0;
01632         /*03*/      public UB input_bank_1;
01633         /*04*/      public UB input_bank_2;
01634         /*05*/      public UB input_bank_3;
01635         /*06*/      public UB input_bank_4;
01636         /*07*/      public UB input_bank_5;
01637         /*08*/      public UB input_bank_6;
01638         /*09*/      public UB input_bank_7;
01639         /*10*/      public UB input_bank_8;
01640         /*11*/      public UB input_bank_9;
01641 
01642         /*12*/      public UB output_bank_0;
01643         /*13*/      public UB output_bank_1;
01644         /*14*/      public UB output_bank_2;
01645         /*15*/      public UB output_bank_3;
01646         /*16*/      public UB output_bank_4;
01647         /*17*/      public UB output_bank_5;
01648         /*18*/      public UB output_bank_6;
01649         /*19*/      public UB output_bank_7;
01650         /*20*/      public UB output_bank_8;
01651         /*21*/      public UB output_bank_9;
01652 
01653         /*22*/      public UB error_code;
01654         /*23*/      public UB general_status;
01655 
01656         /*24-25*/   public UW s_plane_segment_count;
01657         /*26-27*/   public UW s_plane_move_status;
01658         /*28-31*/   public SL s_distance;
01659 
01660         /*32-33*/   public UW t_plane_segment_count;
01661         /*34-35*/   public UW t_plane_move_status;
01662         /*36-39*/   public SL t_distance;
01663 
01664         /*40-41*/   public UW axis_a_status;
01665         /*42*/      public UB axis_a_switches;
01666         /*43*/      public UB axis_a_stop_code;
01667         /*44-47*/   public SL axis_a_reference_position;
01668         /*48-51*/   public SL axis_a_motor_position;
01669         /*52-55*/   public SL axis_a_position_error;
01670         /*56-59*/   public SL axis_a_aux_position;
01671         /*60-63*/   public SL axis_a_velocity;
01672         /*64-65*/   public SW     axis_a_torque;
01673         /*66*/      public UB axis_a_reserved_0;
01674         /*67*/      public UB axis_a_reserved_1;
01675 
01676         /*68-69*/   public UW axis_b_status;
```

```
01677         /*70*/      public UB axis_b_switches;
01678         /*71*/      public UB axis_b_stop_code;
01679         /*72-75*/   public SL axis_b_reference_position;
01680         /*76-79*/   public SL axis_b_motor_position;
01681         /*80-83*/   public SL axis_b_position_error;
01682         /*84-87*/   public SL axis_b_aux_position;
01683         /*88-91*/   public SL axis_b_velocity;
01684         /*92-93*/   public SW axis_b_torque;
01685         /*94*/      public UB axis_b_reserved_0;
01686         /*95*/      public UB axis_b_reserved_1;
01687
01688         /*96-97*/   public UW axis_c_status;
01689         /*98*/      public UB axis_c_switches;
01690         /*99*/      public UB axis_c_stop_code;
01691         /*100-103*/ public SL axis_c_reference_position;
01692         /*104-107*/ public SL axis_c_motor_position;
01693         /*108-111*/ public SL axis_c_position_error;
01694         /*112-115*/ public SL axis_c_aux_position;
01695         /*116-119*/ public SL axis_c_velocity;
01696         /*120-121*/ public SW axis_c_torque;
01697         /*122*/     public UB axis_c_reserved_0;
01698         /*123*/     public UB axis_c_reserved_1;
01699
01700         /*124-125*/ public UW axis_d_status;
01701         /*126*/     public UB axis_d_switches;
01702         /*127*/     public UB axis_d_stop_code;
01703         /*128-131*/ public SL axis_d_reference_position;
01704         /*132-135*/ public SL axis_d_motor_position;
01705         /*136-139*/ public SL axis_d_position_error;
01706         /*140-143*/ public SL axis_d_aux_position;
01707         /*144-147*/ public SL axis_d_velocity;
01708         /*148-149*/ public SW axis_d_torque;
01709         /*150*/     public UB axis_d_reserved_0;
01710         /*151*/     public UB axis_d_reserved_1;
01711
01712     }; //DataRecord1802
01713
01715     [StructLayout(LayoutKind.Sequential, Pack=1)]
01716     public struct GDataRecord30000 : GDataRecord
01717     {
01718         public byte[] byte_array() { return StructToByteArray(this); }
01719
01720         /*Offset   type name        description*/
01721
01722         /*00*/      public UB header_0;
01723         /*01*/      public UB header_1;
01724         /*02*/      public UB header_2;
01725         /*03*/      public UB header_3;
01726
01727         /*04-05*/   public UW sample_number;
01728
01729         /*06*/      public UB input_bank_0;
01730         /*07*/      public UB input_bank_1;
01731
01732         /*08*/      public UB output_bank_0;
01733         /*09*/      public UB output_bank_1;
01734
01735         /*10*/      public UB error_code;
01736         /*11*/      public UB thread_status;
01737
01738         /*12-13*/   public UW input_analog_2;
01739
01740         /*14-15*/   public UW output_analog_1;
01741         /*16-17*/   public UW output_analog_2;
01742
01743         /*18-21*/   public UL amplifier_status;
01744
01745         /*22-25*/   public UL contour_segment_count;
01746         /*26-27*/   public UW contour_buffer_available;
01747
01748         /*28-29*/   public UW s_plane_segment_count;
01749         /*30-31*/   public UW s_plane_move_status;
01750         /*32-35*/   public SL s_distance;
01751         /*36-37*/   public UW s_plane_buffer_available;
01752
01753         /*38-39*/   public UW axis_a_status;
01754         /*40*/      public UB axis_a_switches;
01755         /*41*/      public UB axis_a_stop_code;
01756         /*42-45*/   public SL axis_a_reference_position;
01757         /*46-49*/   public SL axis_a_motor_position;
01758         /*50-53*/   public SL axis_a_position_error;
01759         /*54-57*/   public SL axis_a_aux_position;
01760         /*58-61*/   public SL axis_a_velocity;
01761         /*62-65*/   public SL     axis_a_torque;
01762         /*66-67*/   public UW  axis_a_analog_in;
01763         /*68*/      public UB axis_a_halls;
01764         /*69*/      public UB axis_a_reserved;
```

```
01765         /*70-73*/   public SL axis_a_variable;
01766     }; //DataRecord30000
01767
01769     [StructLayout(LayoutKind.Sequential, Pack=1)]
01770     public struct GDataRecord47000_ENC : GDataRecord
01771     {
01772         public byte[] byte_array() { return StructToByteArray(this); }
01773
01774         /*Offset   type name        description*/
01775
01776         /*00*/      public UB header_0;
01777         /*01*/      public UB header_1;
01778         /*02*/      public UB header_2;
01779         /*03*/      public UB header_3;
01780
01781         /*04-05*/   public UW sample_number;
01782         /*06*/      public UB error_code;
01783         /*07*/      public UB general_status;
01784
01785         /*08-09*/   public UW output_analog_0;
01786         /*10-11*/   public UW output_analog_1;
01787         /*12-13*/   public UW output_analog_2;
01788         /*14-15*/   public UW output_analog_3;
01789         /*16-17*/   public UW output_analog_4;
01790         /*18-19*/   public UW output_analog_5;
01791         /*20-21*/   public UW output_analog_6;
01792         /*22-23*/   public UW output_analog_7;
01793
01794         /*24-25*/   public UW input_analog_0;
01795         /*26-27*/   public UW input_analog_1;
01796         /*28-29*/   public UW input_analog_2;
01797         /*30-31*/   public UW input_analog_3;
01798         /*32-33*/   public UW input_analog_4;
01799         /*34-35*/   public UW input_analog_5;
01800         /*36-37*/   public UW input_analog_6;
01801         /*38-39*/   public UW input_analog_7;
01802
01803         /*40-41*/   public UW output_bank_0;
01804
01805         /*42-43*/   public UW input_bank_0;
01806
01807         /*44-47*/   public UL pulse_count_0;
01808         /*48-51*/   public SL zc_variable;
01809         /*52-55*/   public SL zd_variable;
01810
01811         /*56-59*/   public SL encoder_0;
01812         /*60-63*/   public SL encoder_1;
01813         /*64-67*/   public SL encoder_2;
01814         /*68-71*/   public SL encoder_3;
01815
01816     }; //GDataRecord47000_ENC
01817
01819     [StructLayout(LayoutKind.Sequential, Pack=1)]
01820     public struct GDataRecord47300_ENC : GDataRecord
01821     {
01822         public byte[] byte_array() { return StructToByteArray(this); }
01823
01824         /*Offset   type name        description*/
01825
01826         /*00*/      public UB header_0;
01827         /*01*/      public UB header_1;
01828         /*02*/      public UB header_2;
01829         /*03*/      public UB header_3;
01830
01831         /*04-05*/   public UW sample_number;
01832         /*06*/      public UB error_code;
01833         /*07*/      public UB general_status;
01834
01835         /*08-09*/   public UW output_analog_0;
01836         /*10-11*/   public UW output_analog_1;
01837         /*12-13*/   public UW output_analog_2;
01838         /*14-15*/   public UW output_analog_3;
01839         /*16-17*/   public UW output_analog_4;
01840         /*18-19*/   public UW output_analog_5;
01841         /*20-21*/   public UW output_analog_6;
01842         /*22-23*/   public UW output_analog_7;
01843
01844         /*24-25*/   public UW input_analog_0;
01845         /*26-27*/   public UW input_analog_1;
01846         /*28-29*/   public UW input_analog_2;
01847         /*30-31*/   public UW input_analog_3;
01848         /*32-33*/   public UW input_analog_4;
01849         /*34-35*/   public UW input_analog_5;
01850         /*36-37*/   public UW input_analog_6;
01851         /*38-39*/   public UW input_analog_7;
01852
01853         /*40-41*/   public UW output_bank_0;
```

```
01854         /*42-43*/   public UW output_bank_1;
01855
01856         /*44-45*/   public UW input_bank_0;
01857         /*46-47*/   public UW input_bank_1;
01858
01859         /*48-51*/   public UL pulse_count_0;
01860         /*52-55*/   public SL zc_variable;
01861         /*56-59*/   public SL zd_variable;
01862
01863         /*60-63*/   public SL encoder_0;
01864         /*64-67*/   public SL encoder_1;
01865         /*68-71*/   public SL encoder_2;
01866         /*72-75*/   public SL encoder_3;
01867
01868     }; //GDataRecord47300_ENC
01869
01871     [StructLayout(LayoutKind.Sequential, Pack=1)]
01872     public struct GDataRecord47300_24EX : GDataRecord
01873     {
01874         public byte[] byte_array() { return StructToByteArray(this); }
01875
01876         /*Offset   type name        description*/
01877
01878         /*00*/      public UB header_0;
01879         /*01*/      public UB header_1;
01880         /*02*/      public UB header_2;
01881         /*03*/      public UB header_3;
01882
01883         /*04-05*/   public UW sample_number;
01884         /*06*/      public UB error_code;
01885         /*07*/      public UB general_status;
01886
01887         /*08-09*/   public UW output_analog_0;
01888         /*10-11*/   public UW output_analog_1;
01889         /*12-13*/   public UW output_analog_2;
01890         /*14-15*/   public UW output_analog_3;
01891         /*16-17*/   public UW output_analog_4;
01892         /*18-19*/   public UW output_analog_5;
01893         /*20-21*/   public UW output_analog_6;
01894         /*22-23*/   public UW output_analog_7;
01895
01896         /*24-25*/   public UW input_analog_0;
01897         /*26-27*/   public UW input_analog_1;
01898         /*28-29*/   public UW input_analog_2;
01899         /*30-31*/   public UW input_analog_3;
01900         /*32-33*/   public UW input_analog_4;
01901         /*34-35*/   public UW input_analog_5;
01902         /*36-37*/   public UW input_analog_6;
01903         /*38-39*/   public UW input_analog_7;
01904
01905         /*40-41*/   public UW output_bank_0;
01906         /*42-43*/   public UW output_bank_1;
01907
01908         /*44-45*/   public UW input_bank_0;
01909         /*46-47*/   public UW input_bank_1;
01910
01911         /*48-51*/   public UL pulse_count_0;
01912         /*52-55*/   public SL zc_variable;
01913         /*56-59*/   public SL zd_variable;
01914
01915         /*60-61*/   public UW output_bank_2;
01916         /*62-63*/   public UW output_back_3;
01917
01918         /*64-65*/   public UW input_bank_2;
01919         /*66-67*/   public UW input_bank_3;
01920
01921     }; //GDataRecord47300_24EX
01922
01924     [StructLayout(LayoutKind.Sequential, Pack=1)]
01925     public struct GDataRecord47162 : GDataRecord
01926     {
01927         public byte[] byte_array() { return StructToByteArray(this); }
01928         /*Offset   type name        description*/
01929
01930         /*00*/      public UB header_0;
01931         /*01*/      public UB header_1;
01932         /*02*/      public UB header_2;
01933         /*03*/      public UB header_3;
01934
01935         /*04-05*/   public UW sample_number;
01936         /*06*/      public UB error_code;
01937         /*07*/      public UB general_status;
01938
01939         /*08-09*/   public UW output_analog_0;
01940         /*10-11*/   public UW output_analog_1;
01941         /*12-13*/   public UW output_analog_2;
01942         /*14-15*/   public UW output_analog_3;
```

```
01943         /*16-17*/   public UW output_analog_4;
01944         /*18-19*/   public UW output_analog_5;
01945         /*20-21*/   public UW output_analog_6;
01946         /*22-23*/   public UW output_analog_7;
01947
01948         /*24-25*/   public UW input_analog_0;
01949         /*26-27*/   public UW input_analog_1;
01950         /*28-29*/   public UW input_analog_2;
01951         /*30-31*/   public UW input_analog_3;
01952         /*32-33*/   public UW input_analog_4;
01953         /*34-35*/   public UW input_analog_5;
01954         /*36-37*/   public UW input_analog_6;
01955         /*38-39*/   public UW input_analog_7;
01956
01957         /*40*/      public UB output_byte_0;
01958         /*41*/      public UB output_byte_1;
01959         /*42*/      public UB output_byte_2;
01960
01961         /*43*/      public UB input_byte_0;
01962         /*44*/      public UB input_byte_1;
01963         /*45*/      public UB input_byte_2;
01964         /*46*/      public UB input_byte_3;
01965         /*47*/      public UB input_byte_4;
01966
01967         /*48-51*/   public UL pulse_count_0;
01968         /*52-55*/   public SL zc_variable;
01969         /*56-59*/   public SL zd_variable;
01970
01971         /*60-63*/   public SL encoder_0;
01972         /*64-67*/   public SL encoder_1;
01973         /*68-71*/   public SL encoder_2;
01974         /*72-75*/   public SL encoder_3;
01975
01976     }; //GDataRecord47162
01977
01978     #endregion
01979 }
```

15.18 GclibJava.java File Reference

```
import java.nio.charset.Charset;
import com.sun.jna.Library;
import com.sun.jna.Native;
import com.sun.jna.Pointer;
import com.sun.jna.ptr.PointerByReference;
import com.sun.jna.ptr.IntByReference;
import com.sun.jna.ptr.ByteByReference;
import java.util.ArrayList;
import java.util.List;
```

Classes

- class gclibjava.GclibJava
- interface gclibjava.GclibJava.Gclib

  The JNA interface to the gclib library.
- interface gclibjava.GclibJava.Gclibo

  The JNA interface to the open source, gclibo library.

Packages

- package gclibjava

15.18.1 Detailed Description

The initial version of the the gclib Java wrapper. All functions are subject to change in future releases of gclib.
Definition in file GclibJava.java.

15.19 GclibJava.java

Go to the documentation of this file.

```
00001
00021
00022 package gclibjava;
00023
00024 import java.nio.charset.Charset; //Charset for string conversions
00025
00026 //JNA imports
00027 import com.sun.jna.Library;
00028 import com.sun.jna.Native;
00029 import com.sun.jna.Pointer; //g
00030 import com.sun.jna.ptr.PointerByReference; //for GCon* in GOpen()
00031 import com.sun.jna.ptr.IntByReference; //for GSize* in GCommand()
00032 import com.sun.jna.ptr.ByteByReference; //for GStatus* in GInterrupt()
00033 import java.util.ArrayList;
00034 import java.util.List; //List<Double>
00035
00036 public class GclibJava {
00037
00038     Pointer gclibHandle; //handle for gclib's connection
00039     Boolean connected = false;  //we use a bool to indicate connection status
00040     byte[] trafficBuffer = new byte[524288]; //Most reads/writes to Galil hardware are small. This
      size will hold the largest array or program upload/download possible.
00041
00045     public GclibJava()
00046     {
00047     }
00048
00055     @Override
00056     protected void finalize() throws Throwable
00057     {
00058         try {
00059             if (connected)
00060                 GClose();
00061         } finally {
00062             super.finalize();
00063         }
00064     }
00065
00066     // ------------------------------------------------------------------------
00067     // JNA for gclib
00068     // ------------------------------------------------------------------------
00073     interface Gclib extends Library {
00074         Gclib INSTANCE = (Gclib)
00075                 Native.loadLibrary("gclib",
00076                         Gclib.class);
00077         /*
00078         Limit calls to one at a time
00079         Warning: gclibo library calls gclib. Therefore, calls to Gclib and
00080         Gclibo interfaces should not be concurrent.
00081         */
00082         Gclib SYNC_INSTANCE = (Gclib)
00083                 Native.synchronizedLibrary(INSTANCE);
00084
00085         int GArrayDownload(Pointer g, String arrayName, int first, int last, String buffer);
00086         int GArrayUpload(Pointer g, String arrayName, int first, int last, int delim, byte[] response,
      int len);
00087         int GCommand(Pointer g, String command, byte[] response, int len, IntByReference
      bytesReturned);
00088         int GClose(Pointer g);
00089         int GFirmwareDownload(Pointer g, String filePath);
00090         int GInterrupt(Pointer g, ByteByReference statusByte);
00091         int GMessage(Pointer g, byte[] response, int len);
00092         int GOpen(String address, PointerByReference g);
00093         int GProgramDownload(Pointer g, String program, String preprocessor);
00094         int GProgramUpload(Pointer g, byte[] response, int len);
00095     }
00096
00097     // ------------------------------------------------------------------------
00098     // gclib functions
00099     // ------------------------------------------------------------------------
00100
00110     public void GArrayDownload(String arrayName, List<Double> data) throws GclibJavaException
00111     {
00112         String buf = new String();
00113         buf = data.stream().map((d) -> d.toString() + ",").reduce(buf, String::concat);
00114
00115         ec(Gclib.SYNC_INSTANCE.GArrayDownload(gclibHandle, arrayName, -1, -1,
00116                 buf.substring(0, buf.length() - 1)));//remove trailing comma
00117     }
00118
00132     public void GArrayDownload(String arrayName, List<Double> data, int first, int last) throws
      GclibJavaException
00133     {
```

```
00134         String buf = new String();
00135         buf = data.stream().map((d) -> d.toString() + ",").reduce(buf, String::concat);
00136 
00137         ec(Gclib.SYNC_INSTANCE.GArrayDownload(gclibHandle, arrayName, first, last,
00138                 buf.substring(0, buf.length() - 1)));//remove trailing comma
00139     }
00140 
00150     public List<Double> GArrayUpload(String arrayName) throws GclibJavaException
00151     {
00152         ec(Gclib.SYNC_INSTANCE.GArrayUpload(gclibHandle, arrayName, -1, -1, 1, trafficBuffer,
    trafficBuffer.length));
00153         String[] elements = cstringToString(trafficBuffer).split(", ");
00154         List<Double> doubleList = new ArrayList();
00155         for (String s : elements)
00156         {
00157             try
00158             {
00159                 doubleList.add(Double.parseDouble(s));
00160             }
00161             catch (NumberFormatException e)
00162             {
00163                 throw new GclibJavaException( -10002, e.getMessage()); //G_BAD_VALUE_RANGE
00164             }
00165         }
00166         return doubleList;
00167     }
00168 
00182     public List<Double> GArrayUpload(String arrayName, int first, int last) throws GclibJavaException
00183     {
00184         ec(Gclib.SYNC_INSTANCE.GArrayUpload(gclibHandle, arrayName, first, last, 1, trafficBuffer,
    trafficBuffer.length));
00185         String[] elements = cstringToString(trafficBuffer).split(", ");
00186         List<Double> doubleList = new ArrayList();
00187         for (String s : elements)
00188         {
00189             try
00190             {
00191                 doubleList.add(Double.parseDouble(s));
00192             }
00193             catch (NumberFormatException e)
00194             {
00195                 throw new GclibJavaException( -10002, e.getMessage()); //G_BAD_VALUE_RANGE
00196             }
00197         }
00198         return doubleList;
00199     }
00200 
00204     public void GClose()
00205     {
00206         Gclib.SYNC_INSTANCE.GClose(gclibHandle);
00207         connected = false;
00208     }
00209 
00220     public String GCommand(String command) throws GclibJavaException
00221     {
00222         IntByReference ptrInt = new IntByReference(); //for bytes read
00223         ec(Gclib.SYNC_INSTANCE.GCommand(gclibHandle, command, trafficBuffer, trafficBuffer.length,
    ptrInt));
00224         String response = cstringToString(trafficBuffer);
00225 
00226         int index = response.lastIndexOf("\r\n:");
00227         if (index > 0)
00228             response = response.substring(0, index); //trim trailing crlf:
00229 
00230         return response;
00231     }
00232 
00243     public void GFirmwareDownload(String filePath) throws GclibJavaException
00244     {
00245         ec(Gclib.SYNC_INSTANCE.GFirmwareDownload(gclibHandle, filePath));
00246     }
00247 
00260     public byte GInterrupt() throws GclibJavaException
00261     {
00262         ByteByReference statusByte = new ByteByReference();
00263         ec(Gclib.SYNC_INSTANCE.GInterrupt(gclibHandle, statusByte));
00264         return statusByte.getValue();
00265     }
00266 
00288     public String GMessage() throws GclibJavaException
00289     {
00290         ec(Gclib.SYNC_INSTANCE.GMessage(gclibHandle, trafficBuffer, trafficBuffer.length));
00291         return cstringToString(trafficBuffer);
00292     }
00293 
00301     public void GOpen(String address) throws GclibJavaException
00302     {
```

```
00303         if (connected)
00304             GClose();
00305 
00306         PointerByReference ptrRef = new PointerByReference();
00307         ec(Gclib.SYNC_INSTANCE.GOpen(address, ptrRef));
00308         gclibHandle = ptrRef.getValue();
00309         connected = true;
00310     }
00311 
00321     public void GProgramDownload(String program, String preprocessor) throws GclibJavaException
00322     {
00323         ec(Gclib.SYNC_INSTANCE.GProgramDownload(gclibHandle, program, preprocessor));
00324     }
00332     public void GProgramDownload(String program) throws GclibJavaException
00333     {
00334         GProgramDownload(program, "");
00335     }
00336 
00344     public String GProgramUpload() throws GclibJavaException
00345     {
00346         ec(Gclib.SYNC_INSTANCE.GProgramUpload(gclibHandle, trafficBuffer, trafficBuffer.length));
00347         return cstringToString(trafficBuffer);
00348     }
00349 
00350     // ------------------------------------------------------------------------
00351     // JNA for gclibo
00352     // ------------------------------------------------------------------------
00353 
00358     interface Gclibo extends Library {
00359         Gclibo INSTANCE = (Gclibo)
00360             Native.loadLibrary("gclibo",
00361                                Gclibo.class);
00362        /*
00363         Limit calls to one at a time
00364         Warning: gclibo library calls gclib. Therefore, calls to Gclib and
00365         Gclibo interfaces should not be concurrent.
00366         */
00367         Gclibo SYNC_INSTANCE = (Gclibo)
00368                 Native.synchronizedLibrary(INSTANCE);
00369 
00370         int GAddresses(byte[] response, int len);
00371         int GArrayDownloadFile(Pointer g, String filePath);
00372         int GArrayUploadFile(Pointer g, String filePath, String names);
00373         int GAssign(String ip, String mac);
00374         void GError(int rc, byte[] response, int len);
00375         int GInfo(Pointer g, byte[] response, int len);
00376         int GIpRequests(byte[] response, int len);
00377         int GProgramDownloadFile(Pointer g, String filePath, String preprocessor);
00378         int GProgramUploadFile(Pointer g, String filePath);
00379         void GSleep(int timeout_ms);
00380         int GTimeout(Pointer g, short timeout_ms);
00381         int GVersion(byte[] response, int len);
00382         int GSetServer(String server_name);
00383         int GServerStatus(byte[] response, int len);
00384         int GListServers(byte[] response, int len);
00385         int GPublishServer(String server_name, int publish, int save);
00386         int GRemoteConnections(byte[] response, int len);
00387     }
00388 
00389     // ------------------------------------------------------------------------
00390     // gclibo functions
00391     // ------------------------------------------------------------------------
00392 
00409     public String GAddresses() throws GclibJavaException
00410     {
00411         ec(Gclibo.SYNC_INSTANCE.GAddresses(trafficBuffer, trafficBuffer.length));
00412         return cstringToString(trafficBuffer);
00413     }
00414 
00423     public void GArrayDownloadFile(String filePath) throws GclibJavaException
00424     {
00425         ec(Gclibo.SYNC_INSTANCE.GArrayDownloadFile(gclibHandle, filePath));
00426     }
00427 
00441     public void GArrayUploadFile(String filePath, String names) throws GclibJavaException
00442     {
00443         ec(Gclibo.SYNC_INSTANCE.GArrayUploadFile(gclibHandle, filePath, names));
00444     }
00445 
00454     public void GArrayUploadFile(String filePath) throws GclibJavaException
00455     {
00456         GArrayUploadFile(filePath, "");
00457     }
00458 
00469     public void GAssign(String ipAddress, String macAddress) throws GclibJavaException
00470     {
00471         ec(Gclibo.SYNC_INSTANCE.GAssign(ipAddress, macAddress));
```

```
00472     }
00473
00482     public String GInfo() throws GclibJavaException
00483     {
00484         ec(Gclibo.SYNC_INSTANCE.GInfo(gclibHandle, trafficBuffer, trafficBuffer.length));
00485         return cstringToString(trafficBuffer);
00486     }
00487
00499     public String GIpRequests() throws GclibJavaException
00500     {
00501         ec(Gclibo.SYNC_INSTANCE.GIpRequests(trafficBuffer, trafficBuffer.length));
00502         return cstringToString(trafficBuffer);
00503     }
00504
00514     public void GProgramDownloadFile(String filePath, String preprocessor) throws GclibJavaException
00515     {
00516         ec(Gclibo.SYNC_INSTANCE.GProgramDownloadFile(gclibHandle, filePath, preprocessor));
00517     }
00518
00526     public void GProgramDownloadFile(String filePath) throws GclibJavaException
00527     {
00528         GProgramDownloadFile(filePath, "");
00529     }
00530
00539     public void GProgramUploadFile(String filePath) throws GclibJavaException
00540     {
00541         ec(Gclibo.SYNC_INSTANCE.GProgramUploadFile(gclibHandle, filePath));
00542     }
00543
00552     public void GSleep(int timeout_ms)
00553     {
00554         Gclibo.SYNC_INSTANCE.GSleep(timeout_ms);
00555     }
00556
00565     public void GTimeout(short timeout_ms) throws GclibJavaException
00566     {
00567         ec(Gclibo.SYNC_INSTANCE.GTimeout(gclibHandle, timeout_ms));
00568     }
00569
00579     public String GVersion() throws GclibJavaException
00580     {
00581         ec(Gclibo.SYNC_INSTANCE.GVersion(trafficBuffer, trafficBuffer.length));
00582         return cstringToString(trafficBuffer);
00583     }
00584
00592     public void GSetServer(String server_name) throws GclibJavaException
00593     {
00594         ec(Gclibo.SYNC_INSTANCE.GSetServer(server_name));
00595     }
00596
00605     public String GServerStatus() throws GclibJavaException
00606     {
00607         ec(Gclibo.SYNC_INSTANCE.GServerStatus(trafficBuffer, trafficBuffer.length));
00608         return cstringToString(trafficBuffer);
00609     }
00610
00618     public String GListServers() throws GclibJavaException
00619     {
00620         ec(Gclibo.SYNC_INSTANCE.GListServers(trafficBuffer, trafficBuffer.length));
00621         return cstringToString(trafficBuffer);
00622     }
00623
00633     public void GPublishServer(String server_name, int publish, int save) throws GclibJavaException
00634     {
00635         ec(Gclibo.SYNC_INSTANCE.GPublishServer(server_name, publish, save));
00636     }
00637
00645     public String GRemoteConnections() throws GclibJavaException
00646     {
00647         ec(Gclibo.SYNC_INSTANCE.GRemoteConnections(trafficBuffer, trafficBuffer.length));
00648         return cstringToString(trafficBuffer);
00649     }
00650
00651     // ------------------------------------------------------------------------
00652     // Helper functions
00653     // ------------------------------------------------------------------------
00654
00655     //convert gclib's C strings to Java strings.
00656     String cstringToString(byte[] cbuf)
00657     {
00658         Charset charset = Charset.forName("UTF-8");
00659         int i;
00660         for (i = 0; i < cbuf.length && cbuf[i] != 0; i++){}//search for gclib's null terminator
00661         return new String(cbuf, 0, i, charset);
00662     }
00663
00664     //Error checker for gclib return code
```

```
00665     void ec(int returnCode) throws GclibJavaException
00666     {
00667         if (returnCode != 0)
00668         {
00669             //lookup human-readable string
00670             Gclibo.SYNC_INSTANCE.GError(returnCode, trafficBuffer, trafficBuffer.length);
00671             throw new GclibJavaException(returnCode, cstringToString(trafficBuffer));
00672         }
00673     }
00674
00675 }
```

15.20 GclibJavaException.java File Reference

Classes

- class gclibjava.GclibJavaException

Packages

- package gclibjava

15.21 GclibJavaException.java

Go to the documentation of this file.

```
00001
00003
00004 package gclibjava;
00005
00006 public class GclibJavaException extends Exception {
00007     int myErrorCode = 0;
00008     public GclibJavaException(int errorCode, String message) {
00009         super(message);
00010         myErrorCode = errorCode;
00011     }
00012     public int getErrorCode()
00013     {
00014         return myErrorCode;
00015     }
00016 }
```

15.22 gclib.py File Reference

Classes

- class gclib.GclibError

  Error class for non-zero gclib return codes.
- class gclib.py

  Represents a single Python connection to a Galil Controller or PLC.

Namespaces

- namespace gclib

Functions

- gclib._rc (return_code)

  Checks return codes from gclib and raises a python error if result is exceptional.

15.23 gclib.py

Go to the documentation of this file.

```
00001
00018
```

```
00019
00023 import platform #for distinguishing 'Windows', 'Linux', 'Darwin'
00024 from ctypes import *
00025 import os
00026
00027 if platform.system() == 'Windows':
00028     if '64 bit' in platform.python_compiler():
00029         WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/libcrypto-1_1-x64.dll')
00030         WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/libssl-1_1-x64.dll')
00031         _gclib = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclib.dll')
00032         _gclibo = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclibo.dll')
00033     else:
00034         WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x86/libcrypto-1_1.dll')
00035         WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x86/libssl-1_1.dll')
00036         _gclib = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x86/gclib.dll')
00037         _gclibo = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x86/gclibo.dll')
00038         #Reassign symbol name, Python doesn't like @ in function names
00039         #gclib calls
00040         setattr(_gclib, 'GArrayDownload', getattr(_gclib, '_GArrayDownload@20'))
00041         setattr(_gclib, 'GArrayUpload', getattr(_gclib, '_GArrayUpload@28'))
00042         setattr(_gclib, 'GClose', getattr(_gclib, '_GClose@4'))
00043         setattr(_gclib, 'GCommand', getattr(_gclib, '_GCommand@20'))
00044         setattr(_gclib, 'GFirmwareDownload', getattr(_gclib, '_GFirmwareDownload@8'))
00045         setattr(_gclib, 'GInterrupt', getattr(_gclib, '_GInterrupt@8'))
00046         setattr(_gclib, 'GMessage', getattr(_gclib, '_GMessage@12'))
00047         setattr(_gclib, 'GOpen', getattr(_gclib, '_GOpen@8'))
00048         setattr(_gclib, 'GProgramDownload', getattr(_gclib, '_GProgramDownload@12'))
00049         setattr(_gclib, 'GProgramUpload', getattr(_gclib, '_GProgramUpload@12'))
00050         #gclibo calls (open source component/convenience functions)
00051         setattr(_gclibo, 'GAddresses', getattr(_gclibo, '_GAddresses@8'))
00052         setattr(_gclibo, 'GArrayDownloadFile', getattr(_gclibo, '_GArrayDownloadFile@8'))
00053         setattr(_gclibo, 'GArrayUploadFile', getattr(_gclibo, '_GArrayUploadFile@12'))
00054         setattr(_gclibo, 'GAssign', getattr(_gclibo, '_GAssign@8'))
00055         setattr(_gclibo, 'GError', getattr(_gclibo, '_GError@12'))
00056         setattr(_gclibo, 'GInfo', getattr(_gclibo, '_GInfo@12'))
00057         setattr(_gclibo, 'GIpRequests', getattr(_gclibo, '_GIpRequests@8'))
00058         setattr(_gclibo, 'GMotionComplete', getattr(_gclibo, '_GMotionComplete@8'))
00059         setattr(_gclibo, 'GProgramDownloadFile', getattr(_gclibo, '_GProgramDownloadFile@12'))
00060         setattr(_gclibo, 'GSleep', getattr(_gclibo, '_GSleep@4'))
00061         setattr(_gclibo, 'GProgramUploadFile', getattr(_gclibo, '_GProgramUploadFile@8'))
00062         setattr(_gclibo, 'GTimeout', getattr(_gclibo, '_GTimeout@8'))
00063         setattr(_gclibo, 'GVersion', getattr(_gclibo, '_GVersion@8'))
00064         setattr(_gclibo, 'GSetupDownloadFile', getattr(_gclibo, '_GSetupDownloadFile@20'))
00065         setattr(_gclibo, 'GServerStatus', getattr(_gclibo, '_GServerStatus@8'))
00066         setattr(_gclibo, 'GSetServer', getattr(_gclibo, '_GSetServer@4'))
00067         setattr(_gclibo, 'GListServers', getattr(_gclibo, '_GListServers@8'))
00068         setattr(_gclibo, 'GPublishServer', getattr(_gclibo, '_GPublishServer@12'))
00069         setattr(_gclibo, 'GRemoteConnections', getattr(_gclibo, '_GRemoteConnections@8'))
00070
00071 elif platform.system() == 'Linux':
00072     cdll.LoadLibrary("libgclib.so.2")
00073     _gclib = CDLL("libgclib.so.2")
00074     cdll.LoadLibrary("libgclibo.so.2")
00075     _gclibo = CDLL("libgclibo.so.2")
00076
00077 elif platform.system() == 'Darwin': #OSX
00078     _gclib_path = '/Applications/gclib/dylib/gclib.0.dylib'
00079     _gclibo_path = '/Applications/gclib/dylib/gclibo.0.dylib'
00080     cdll.LoadLibrary(_gclib_path)
00081     _gclib = CDLL(_gclib_path)
00082     cdll.LoadLibrary(_gclibo_path)
00083     _gclibo = CDLL(_gclibo_path)
00084
00085
00086
00087 # Python "typedefs"
00088 _GReturn = c_int #type for a return code
00089 _GCon = c_void_p #type for a Galil connection handle
00090 _GCon_ptr = POINTER(_GCon) #used for argtypes declaration
00091 _GSize = c_ulong #type for a Galil size variable
00092 _GSize_ptr = POINTER(_GSize) #used for argtypes declaration
00093 _GCStringIn = c_char_p #char*. In C it's const.
00094 _GCStringOut = c_char_p #char*
00095 _GOption = c_int #type for option variables, e.g.    GArrayDownload
00096 _GStatus = c_ubyte #type for interrupt status bytes
00097 _GStatus_ptr = POINTER(_GStatus) #used for argtypes declaration
00098
00099 #Define arguments and result type (if not C int type)
00100 #gclib calls
00101 _gclib.GArrayDownload.argtypes = [_GCon, _GCStringIn, _GOption, _GOption, _GCStringIn]
00102 _gclib.GArrayUpload.argtypes = [_GCon, _GCStringIn, _GOption, _GOption, _GOption, _GCStringOut,
     _GSize]
00103 _gclib.GClose.argtypes = [_GCon]
00104 _gclib.GCommand.argtypes = [_GCon, _GCStringIn, _GCStringOut, _GSize, _GSize_ptr]
00105 _gclib.GFirmwareDownload.argtypes = [_GCon, _GCStringIn]
00106 _gclib.GInterrupt.argtypes = [_GCon, _GStatus_ptr]
00107 _gclib.GMessage.argtypes = [_GCon, _GCStringOut, _GSize]
```

```
00108 _gclib.GOpen.argtypes = [_GCStringIn, _GCon_ptr]
00109 _gclib.GProgramDownload.argtypes = [_GCon, _GCStringIn, _GCStringIn]
00110 _gclib.GProgramUpload.argtypes = [_GCon, _GCStringOut, _GSize]
00111 #gclibo calls (open source component/convenience functions)
00112 _gclibo.GAddresses.argtypes = [_GCStringOut, _GSize]
00113 _gclibo.GArrayDownloadFile.argtypes = [_GCon, _GCStringIn]
00114 _gclibo.GArrayUploadFile.argtypes = [_GCon, _GCStringIn, _GCStringIn]
00115 _gclibo.GAssign.argtypes = [_GCStringIn, _GCStringIn]
00116 _gclibo.GError.argtypes = [_GReturn, _GCStringOut, _GSize]
00117 _gclibo.GError.restype    = None
00118 _gclibo.GError.argtypes = [_GCon, _GCStringOut, _GSize]
00119 _gclibo.GIpRequests.argtypes = [_GCStringOut, _GSize]
00120 _gclibo.GMotionComplete.argtypes = [_GCon, _GCStringIn]
00121 _gclibo.GProgramDownloadFile.argtypes = [_GCon, _GCStringIn, _GCStringIn]
00122 _gclibo.GSleep.argtypes = [c_uint]
00123 _gclibo.GSleep.restype    = None
00124 _gclibo.GProgramUploadFile.argtypes = [_GCon, _GCStringIn]
00125 _gclibo.GTimeout.argtypes = [_GCon, c_int]
00126 _gclibo.GVersion.argtypes = [_GCStringOut, _GSize]
00127 _gclibo.GServerStatus.argtypes = [_GCStringOut, _GSize]
00128 _gclibo.GSetServer.argtypes = [_GCStringIn]
00129 _gclibo.GListServers.argtypes = [_GCStringOut, _GSize]
00130 _gclibo.GPublishServer.argtypes = [_GCStringIn, _GOption, _GOption]
00131 _gclibo.GRemoteConnections.argtypes = [_GCStringOut, _GSize]
00132 _gclibo.GSetupDownloadFile.argtypes = [_GCon, _GCStringIn, _GOption, _GCStringOut, _GSize]
00133
00134 #Set up some constants
00135 _enc = "ASCII" #byte encoding for going between python strings and c strings.
00136 _buf_size = 500000 #size of response buffer. Big enough to fit entire 4000 program via UL/LS, or 24000
     elements of array data.
00137 _error_buf = create_string_buffer(128)    #buffer for retrieving error code descriptions.
00138
00139 def _rc(return_code):
00140     """Checks return codes from gclib and raises a python error if result is exceptional."""
00141     if return_code != 0:
00142         _gclibo.GError(return_code, _error_buf, 128) #Get the library's error description
00143         raise GclibError(str(_error_buf.value.decode(_enc)))
00144     return
00145
00146 class GclibError(Exception):
00147     """@ingroup python
00148     Error class for non-zero gclib return codes.
00149     """
00150     pass
00151
00152 class py:
00153     """
00154     Represents a single Python connection to a Galil Controller or PLC.
00155     """
00156
00157     def __init__(self):
00158         """Constructor for the Connection class. Initializes gclib's handle and read buffer."""
00159         self._gcon = _GCon(0) #handle to connection
00160         self._buf = create_string_buffer(_buf_size)
00161         self._timeout = 5000
00162         return
00163
00164     def __del__(self):
00165         """Destructor for the Connection class. Ensures close gets called to release Galil resource
      (Sockets, Kernel Driver, Com Port, etc)."""
00166         self.GClose()
00167         return
00168
00169     def _cc(self):
00170         """Checks if connection is established, throws error if not."""
00171         if self._gcon.value == None:
00172             _rc(-1201) #G_CONNECTION_NOT_ESTABLISHED
00173
00174     def GOpen(self, address):
00175         """@ingroup py_connection
00176         Opens a connection a galil controller.
00177         See the gclib docs for address string formatting.
00178         """
00179         c_address = _GCStringIn(address.encode(_enc))
00180         _rc(_gclib.GOpen(c_address, byref(self._gcon)))
00181         return
00182
00183
00184     def GClose(self):
00185         """@ingroup py_connection
00186         Closes a connection to a Galil Controller.
00187         """
00188         if self._gcon.value != None:
00189             _rc(_gclib.GClose(self._gcon))
00190             self._gcon = _GCon(0)
00191         return
00192
```

```
00193
00194     def GCommand(self, command):
00195         """@ingroup py_controller
00196         Performs a command-and-response transaction on the connection.
00197         Trims the response.
00198         """
00199         self._cc()
00200         c_command = _GCStringIn(command.encode(_enc))
00201         _rc(_gclib.GCommand(self._gcon, c_command, self._buf, _buf_size, None))
00202         response = str(self._buf.value.decode(_enc))
00203         return response[:-3].strip() # trim trailing /r/n: and leading space
00204
00205
00206     def GSleep(self, val):
00207         """@ingroup python
00208         Provides a blocking sleep call which can be useful for timing-based chores.
00209         """
00210         _gclibo.GSleep(val)
00211         return
00212
00213
00214     def GVersion(self):
00215         """@ingroup python
00216         Provides the gclib version number. Please include the output of this function on all support
      cases.
00217         """
00218         _rc(_gclibo.GVersion(self._buf, _buf_size))
00219         return "py." + str(self._buf.value.decode(_enc))
00220
00221     def GServerStatus(self):
00222         """@ingroup py_remote
00223         Provides the local server name and whether it is published to the local network.
00224         """
00225         _rc(_gclibo.GServerStatus(self._buf, _buf_size))
00226         return str(self._buf.value.decode(_enc))
00227
00228     def GSetServer(self, server_name):
00229         """@ingroup py_remote
00230         Set the new active server.
00231         """
00232         c_server_name = _GCStringIn(server_name.encode(_enc))
00233         _rc(_gclibo.GSetServer(c_server_name))
00234         return
00235
00236     def GListServers(self):
00237         """@ingroup py_remote
00238         Provide a list of all available gcaps servers on the local network.
00239         """
00240         _rc(_gclibo.GListServers(self._buf, _buf_size))
00241         return str(self._buf.value.decode(_enc))
00242
00243     def GPublishServer(self, server_name, publish, save):
00244         """@ingroup py_remote
00245         Publish local gcaps server to the network.
00246         """
00247         c_server_name = _GCStringIn(server_name.encode(_enc))
00248         _rc(_gclibo.GPublishServer(c_server_name, publish, save))
00249         return
00250
00251     def GRemoteConnections(self):
00252         """@ingroup py_remote
00253         Shows all remote addresses that are connected to the local server.
00254         """
00255         _rc(_gclibo.GRemoteConnections(self._buf, _buf_size))
00256         return str(self._buf.value.decode(_enc))
00257
00258     def GInfo(self):
00259         """@ingroup py_connection
00260         Provides a useful connection string. Please include the output of this function on all support
      cases.
00261         """
00262         _rc(_gclibo.GInfo(self._gcon, self._buf, _buf_size))
00263         return str(self._buf.value.decode(_enc))
00264
00265
00266     def GIpRequests(self):
00267         """@ingroup py_connection
00268         Provides a dictionary of all Galil controllers requesting IP addresses via BOOT-P or DHCP.
00269
00270         Returns a dictionary mapping 'model-serial' --> 'mac address'
00271         e.g. {'DMC4000-783': '00:50:4c:20:03:0f', 'DMC4103-9998': '00:50:4c:38:27:0e'}
00272
00273         Linux/OS X users must be root to use GIpRequests() and have UDP access to bind and listen on
      port 67.
00274         """
00275         _rc(_gclibo.GIpRequests(self._buf, _buf_size)) #get the c string from gclib
00276         ip_req_dict = {}
```

```
00277         for line in str(self._buf.value.decode(_enc)).splitlines():
00278             line = line.replace(' ', '') #trim spaces throughout
00279             if (line == ""): continue
00280             fields = line.split(',')
00281             #fields go [model, serial number, mac]
00282             ip_req_dict[fields[0] + '-' + fields[1]] = fields[2] # e.g. DMC4000-783 maps to its MAC
    addr.
00283         return ip_req_dict
00284
00285
00286     def GAssign(self, ip, mac):
00287         """@ingroup py_connection
00288         Assigns IP address over the Ethernet to a controller at a given MAC address.
00289         Linux/OS X users must be root to use GAssign() and have UDP access to send on port 68.
00290         """
00291         c_ip = _GCStringIn(ip.encode(_enc))
00292         c_mac = _GCStringIn(mac.encode(_enc))
00293         _rc(_gclibo.GAssign(c_ip, c_mac))
00294         return
00295
00296
00297     def GAddresses(self):
00298         """@ingroup py_connection
00299         Provides a dictionary of all available connection addresses.
00300
00301         Returns a dictionary mapping 'address' -> 'revision reports', where possible
00302         e.g. {}
00303         """
00304         _rc(_gclibo.GAddresses(self._buf, _buf_size))
00305         addr_dict = {}
00306         for line in str(self._buf.value.decode(_enc)).splitlines():
00307             fields = line.split(',')
00308             if len(fields) >= 2:
00309                 addr_dict[fields[0]] = fields[1]
00310             else:
00311                 addr_dict[fields[0]] = ''
00312
00313         return addr_dict
00314
00315
00316     def GProgramDownload(self, program, preprocessor=""):
00317         """@ingroup py_memory
00318         Downloads a program to the controller's program buffer.
00319         See the gclib docs for preprocessor options.
00320         """
00321         self._cc()
00322         c_prog = _GCStringIn(program.encode(_enc))
00323         c_pre = _GCStringIn(preprocessor.encode(_enc))
00324         _rc(_gclib.GProgramDownload(self._gcon, c_prog, c_pre))
00325         return
00326
00327
00328     def GProgramUpload(self):
00329         """@ingroup py_memory
00330         Uploads a program from the controller's program buffer.
00331         """
00332         self._cc()
00333         _rc(_gclib.GProgramUpload(self._gcon, self._buf, _buf_size))
00334         return str(self._buf.value.decode(_enc))
00335
00336
00337     def GProgramDownloadFile(self, file_path, preprocessor=""):
00338         """@ingroup py_memory
00339         Program download from file.
00340         See the gclib docs for preprocessor options.
00341         """
00342         self._cc()
00343         c_path = _GCStringIn(file_path.encode(_enc))
00344         c_pre = _GCStringIn(preprocessor.encode(_enc))
00345         _rc(_gclibo.GProgramDownloadFile(self._gcon, c_path, c_pre))
00346         return
00347
00348     def GProgramUploadFile(self, file_path):
00349         """@ingroup py_memory
00350         Program upload to file.
00351         """
00352         self._cc()
00353         c_path = _GCStringIn(file_path.encode(_enc))
00354         _rc(_gclibo.GProgramUploadFile(self._gcon, c_path))
00355         return
00356
00357     def GArrayDownload(self, name, first, last, array_data):
00358         """@ingroup py_memory
00359         Downloads array data to a pre-dimensioned array in the controller's array table.
00360         array_data should be a list of values (e.g. int or float)
00361         """
00362         self._cc()
```

```
00363         c_name = _GCStringIn(name.encode(_enc))
00364         array_string = ""
00365         for val in array_data:
00366             array_string += str(val) + ","
00367         c_data = _GCStringIn(array_string[:-1].encode(_enc)) #trim trailing command
00368         _rc(_gclib.GArrayDownload(self._gcon, c_name, first, last, c_data))
00369         return
00370 
00371 
00372     def GArrayUploadFile(self, file_path, names = []):
00373         """@ingroup py_memory
00374         Uploads the entire controller array table or a subset and saves the data as a csv file
      specified by file_path.
00375         names is optional and should be a list of array names on the controller.
00376         """
00377         self._cc()
00378         c_path = _GCStringIn(file_path.encode(_enc))
00379         names_string = ”
00380         c_names = _GCStringIn(”.encode(_enc)) #in case empty list provided
00381         for name in names:
00382             names_string += name + ’ ’
00383 
00384         c_names = _GCStringIn(names_string[:-1].encode(_enc)) #trim trailing space
00385         _rc(_gclibo.GArrayUploadFile(self._gcon, c_path, c_names))
00386         return
00387 
00388 
00389     def GArrayDownloadFile(self, file_path):
00390         """@ingroup py_memory
00391         Downloads a csv file containing array data at file_path.
00392         """
00393         self._cc()
00394         c_path = _GCStringIn(file_path.encode(_enc))
00395         _rc(_gclibo.GArrayDownloadFile(self._gcon, c_path))
00396         return
00397 
00398 
00399     def GArrayUpload(self, name, first, last):
00400         """@ingroup py_memory
00401         Uploads array data from the controller’s array table.
00402         """
00403         self._cc()
00404         c_name = _GCStringIn(name.encode(_enc))
00405         _rc(_gclib.GArrayUpload(self._gcon, c_name, first, last, 1, self._buf, _buf_size)) #1 is comma
      delimiter
00406         string_list = str(self._buf.value.decode(_enc)).split(’,’)
00407         float_list = []
00408         for s in string_list:
00409             float_list.append(float(s))
00410         return float_list
00411 
00412 
00413     def GTimeout(self, timeout):
00414         """@ingroup py_connection
00415         Set the library timeout. Set to -1 to use the initial library timeout, as specified in GOpen.
00416         """
00417         self._cc()
00418         _rc(_gclibo.GTimeout(self._gcon, timeout))
00419         self._timeout = timeout
00420         return
00421 
00422 
00423     @property
00424     def timeout(self):
00425         """@ingroup py_connection
00426         Convenience property read access to timeout value. If -1, gclib uses the initial library
      timeout, as specified in GOpen.
00427         """
00428         return self._timeout
00429 
00430     @timeout.setter
00431     def timeout(self, timeout):
00432         """@ingroup py_connection
00433         Convenience property write access to timeout value. Set to -1 to use the initial library
      timeout, as specified in GOpen.
00434         """
00435         self.GTimeout(timeout)
00436         return
00437 
00438 
00439     def GFirmwareDownload(self, file_path):
00440         """@ingroup py_memory
00441         Upgrade firmware.
00442         """
00443         self._cc()
00444         c_path = _GCStringIn(file_path.encode(_enc))
00445         _rc(_gclib.GFirmwareDownload(self._gcon, c_path))
```

```
00446         return
00447
00448
00449     def GMessage(self):
00450         """@ingroup py_unsolicited
00451         Provides access to unsolicited messages from the controller.
00452         """
00453         self._cc()
00454         _rc(_gclib.GMessage(self._gcon, self._buf, _buf_size))
00455         return str(self._buf.value.decode(_enc))
00456
00457
00458     def GMotionComplete(self, axes):
00459         """@ingroup py_controller
00460         Blocking call that returns once all axes specified have completed their motion.
00461         """
00462         self._cc()
00463         c_axes = _GCStringIn(axes.encode(_enc))
00464         _rc(_gclibo.GMotionComplete(self._gcon, c_axes))
00465         return
00466
00467     def GInterrupt(self):
00468         """@ingroup py_unsolicited
00469         Provides access to PCI and UDP interrupts from the controller.
00470         """
00471         self._cc()
00472         status = _GStatus(0)
00473         _rc(_gclib.GInterrupt(self._gcon, byref(status)))
00474         return status.value
00475
00476     def GSetupDownloadFile(self, file_path, options):
00477         """@ingroup py_memory
00478         Downloads specified sectors from a Galil compressed backup (gcb) file to a controller.
00479
00480         Returns a dictionary with the controller information stored in the gcb file.
00481         If options is specified as 0, an additional "options" key will be in the dictionary indicating
      the info sectors available in the gcb
00482         """
00483         self._cc()
00484         c_path = _GCStringIn(file_path.encode(_enc))
00485
00486         rc = _gclibo.GSetupDownloadFile(self._gcon, c_path, options, self._buf, _buf_size)
00487         if (options != 0):
00488             _rc(rc)
00489
00490         info_dict = {}
00491         for line in str(self._buf.value.decode(_enc)).split("\"\n"):
00492             fields = line.split(',',1)
00493
00494             if (fields[0] == ""): continue
00495             elif len(fields) >= 2:
00496                 info_dict[fields[0].strip("\"\'")] = fields[1].strip("\"\'")
00497             else:
00498                 info_dict[fields[0].strip("\"\'")] = ''
00499
00500         if (options == 0):
00501             info_dict["options"] = rc
00502
00503         return info_dict
```

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