gclib

2.2.1

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Chapter 1

Galil Communications Library (gclib)

The Galil Communications Library (gclib) is a 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`

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 2.2.1 2.2.1
       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 2.2.1 2.2.1
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.2.2.1 2.2.1'
```
  - **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.2.2.1 2.2.1'
```
- **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 2.2.1 2.2.1
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 2.2.1 2.2.1
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 2.2.1 2.2.1
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 2.2.1 2.2.1
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"

  Looking for older versions?

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 `GAddresses()` to see the different addresses that are available.
  - **Code**
    ```
    #include <gclibo.h>
    #include <stdio.h>

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

        GAddresses(addresses, G_SMALL_BUFFER);
        printf("%s", addresses);
    }
    ```
  - **Output**
    ```
    > .\addresses.exe
    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 `GIpRequests()`. Use `GAssign()` to give the controller an IP. If successful, the controller will begin showing up in `GAddresses()` under the new address.

  - **Code**
    ```
    #include <gclibo.h>
    #include <stdio.h>

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

        GIpRequests(result, G_SMALL_BUFFER);
        printf("%s\n", result);

        GAssign("192.168.0.40", "00:50:4C:20:29:69");
    }
    ```
  - **Output**
    ```
    > .\ip-requests.exe
    DMC4000, 10601, 00:50:4C:20:29:69, Ethernet, 192.168.0.1, 0.0.0.0
    ```

- **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.GIp↩Requests()`. 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 `GOpen()` to receive a handle to the connection. This handle will be used in future library calls such as `GInfo()`, which we use to display some information about the open connection. After you are done, close the connection with `GClose()`.

  - **Code**

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

int main(int argc, char* argv[]) {
    GCon g = 0;
    char info[G_SMALL_BUFFER];

    GOpen(argv[1], &g);
    GInfo(g, info, G_SMALL_BUFFER);
    printf("%s\n", info);
    GClose(g);
}
```

  - **Output**

```
> .\connection.exe 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.

- **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 `GCommand()` with an open connection. The following example uses `GCommand()` to implement a basic terminal.

  - **Code**

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

int main(int argc, char* argv[]) {
    GCon g = NULL;
    char command[G_SMALL_BUFFER];
    char response[G_SMALL_BUFFER];

    GOpen(argv[1], &g);
    GInfo(g, response, G_SMALL_BUFFER);
    printf("Connected to %s\n", response);
    printf("Use Ctrl+C to exit.\n:");
    while (1) {
        fgets(command, sizeof(command), stdin);
        GCommand(g, command, response, G_SMALL_BUFFER, NULL);
        printf("%s", response);
    }
    GClose(g);
}
```

  - **Output**

```
> .\commands.exe 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
```

- **Python** To issue commands, use `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 `GReturn` value to indicate the error, with `G_NO_ERROR` (0) indicating that the function was successful. Pass a `GReturn` value to `GError()` to get a string description of the error. See `gclib_errors.h` for a full list of error codes.
  - **Code**
    ```
    #include <gclibo.h>
    #include <stdio.h>

    int main(int argc, char* argv[]) {
        GCon g = NULL;
        char buf[G_SMALL_BUFFER];

        GOpen(argv[1], &g);

        GReturn ret = GCommand(g, "invalid", NULL, 0, NULL);
        GError(ret, buf, G_SMALL_BUFFER);
        printf("Command \"invalid\" returned %i: \"%s\"\n", ret, buf);

        GClose(g);
    }
    ```
  - **Output**
    ```
    > .\errors.exe 192.168.0.40
    Command "invalid" returned -10000: "question mark returned by controller"
    ```
- **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 `GProgramUpload()` to get the controller's program, and use `GProgramDownload()` to set it. See the gclib Program Preprocessor for advanced usage.
  - **Code**
```
#include <gclibo.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    GCon g = NULL;
    char program[G_HUGE_BUFFER];

    GOpen(argv[1], &g);

    GProgramDownload(g, "MG \"Hello World\"", NULL);
    GProgramUpload(g, program, G_HUGE_BUFFER);
    printf("%s\n", program);

    GClose(g);
}
```
  - **Output**
```
> .\program.exe 192.168.0.40
MG "Hello World"
```

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

  - Use the `first` and `last` arguments to transfer only part of the array.
  - Use `G_CR` or `G_COMMA` for carriage return or comma delimiting, respectively.
  - **Code**
```
#include <gclibo.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    GCon g = NULL;
    char array[G_HUGE_BUFFER];

    GOpen(argv[1], &g);
    GCommand(g, "DM test[5]", NULL, 0, NULL);
```

```
    GArrayDownload(g, "test", 0, 4, "1,2,3,4,5");
    GArrayUpload(g, "test", 1, 3, G_COMMA, array, G_HUGE_BUFFER);
    printf("%s\n", array);

    GCommand(g, "DA test[5]", NULL, 0, NULL);
    GClose(g);
}
```

– **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.GProgram↩Download()` 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

To listen for unsolicited data, add `--subscribe ALL` to your connection string. See `GOpen()` documentation for details.

Note

Subscribing to unsolicited data does not enable interrupts or turn on data records; it only ensures that gclib will be able to receive them. See `EI` and `DR` documentation for details.

- **C/C++** Use `GMessage()` to get unsolicited messages from the controller, `GInterrupt()` to get event interrupts, and `GRecord()` to get data records. If there is no data available, these methods will block up to five seconds before timing out.
  - **Code**
    ```
    #include <gclibo.h>
    #include <stdio.h>
    #include <string.h>

    int main(int argc, char* argv[]) {
        GCon g = NULL;
        char buf[G_HUGE_BUFFER];

        sprintf(buf, "%s --subscribe ALL", argv[1]);
        GOpen(buf, &g);

        GProgramDownload(g, "MG \"Hello World\"; UI0; EN", NULL);
        GCommand(g, "XQ", NULL, 0, NULL);
        GMessage(g, buf, G_HUGE_BUFFER);
        printf("Got message %s", buf);

        GStatus status = 0;
        GInterrupt(g, &status);
        printf("Got interrupt %i\n", status);

        union GDataRecord record;
        GCommand(g, "DR8", NULL, 0, NULL);
        GRecord(g, &record, G_DR);
        printf("Got data record %i\n", record.dmc4000.sample_number);
        GCommand(g, "DR0", NULL, 0, NULL);

        GClose(g);
    }
    ```
  - **Output**
    ```
    > .\unsolicited.exe 192.168.0.40
    Got message Hello World
    Got data record 39306
    Got interrupt 240
    ```
- **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
```

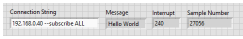
  – **Output**

```
> 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 (in this example a Raspberry Pi), use `GPublishServer()`.

  - **Code**
```
#include <gclibo.h>
#include <stdio.h>
#include <stdbool.h>

int main(int argc, char* argv[]) {
    GPublishServer(argv[1], true, true);
    printf("Published remote gcaps server \"%s\"\n", argv[1]);
}
```
  - **Output**
```
> .\server.exe pi
Published gcaps server "pi"
```

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

  - **Code**
```
#include <gclibo.h>
#include <stdio.h>

int main(int argc, char* argv[]) {
    char buf[G_SMALL_BUFFER];
    GCon g;

    GListServers(buf, G_SMALL_BUFFER);
    printf("Available servers:\n%s\n", buf);
    GSetServer(argv[1]);

    GAddresses(buf, G_SMALL_BUFFER);
    printf("\nAddresses reported by pi:\n%s", buf);
    GOpen(argv[2], &g);
    GInfo(g, buf, G_SMALL_BUFFER);
    printf("\nConnected to %s\n", buf);
    GClose(g);

    GSetServer("Local");
}
```
  - **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 <gclibo.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>

char* buf;

void check(GReturn ret, GCon g) {
    if (ret == G_NO_ERROR)
        return;
    if (ret == G_BAD_RESPONSE_QUESTION_MARK) {
        GCommand(g, "TC1", buf, G_HUGE_BUFFER, NULL);
        printf("%s\n", buf);
    }

    GError(ret, buf, G_HUGE_BUFFER);
    fprintf(stderr, "Error %i: %s\n", ret, buf);
    GClose(g);
    exit(ret);
}

void command(GCon g, const char* command, char* response) {
    if (response == NULL) {
        check(GCmd(g, command), g);
    } else {
        check(GCommand(g, command, response, G_HUGE_BUFFER, NULL), g);
    }
}

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

    buf = malloc(G_HUGE_BUFFER);

    GReturn ret = G_NO_ERROR;
    union GDataRecord record;
    GSize bytesReturned;

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

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

    command(g, "MO", NULL);
    command(g, "DM posA[1000]", NULL);
    command(g, "RA posA[]", NULL);
    command(g, "RD _TPA", NULL);
```

```
    command(g, "RC 1,-1000", NULL);

    size_t start = 0, end;
    char* positions = (char*)malloc(G_HUGE_BUFFER);
    char* token;
    int count;
    time_t startTime = time(NULL);
    FILE* file = fopen("positions.txt", "w");
    while (difftime(time(NULL), startTime) < atof(argv[2])) {
        GSleep(500);
        command(g, "MG_RD", buf);
        end = atoi(buf);
        check(GArrayUpload(g, arrayName, start, end < start ? -1 : end, G_COMMA, positions,
G_HUGE_BUFFER), g);
        if (end < start) {
            check(GArrayUpload(g, arrayName, 0, end, G_COMMA, buf, G_HUGE_BUFFER), g);
            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);

    command(g, "RC 0", NULL);
    GClose(g);
}
```

– **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 <gclibo.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>

char* buf;

void check(GReturn ret, GCon g) {
    if (ret == G_NO_ERROR)
        return;
    if (ret == G_BAD_RESPONSE_QUESTION_MARK) {
        GCommand(g, "TC1", buf, G_HUGE_BUFFER, NULL);
        printf("%s\n", buf);
    }

    GError(ret, buf, G_HUGE_BUFFER);
    fprintf(stderr, "Error %i: %s\n", ret, buf);
    GClose(g);
    exit(ret);
}

void command(GCon g, const char* command, char* response) {
    if (response == NULL) {
        check(GCmd(g, command), g);
    } else {
        check(GCommand(g, command, response, G_HUGE_BUFFER, NULL), g);
    }
}

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

    buf = (char*)malloc(G_HUGE_BUFFER);

    GCon g = NULL;
    if (GOpen(argv[1], &g) != G_NO_ERROR) {
        fprintf(stderr, "Failed to open connection to controller");
        exit(1);
```

```
    }

    command(g, "MG_CM", NULL);
    int contourSpace = atof(buf);

    command(g, "SH A", NULL);
    command(g, "CM A", NULL);
    command(g, "DT -1", NULL);

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

    int lastPosition;
    int position;
    fgets(buf, G_HUGE_BUFFER, f);
    lastPosition = atof(buf);
    while (fgets(buf, G_HUGE_BUFFER, f)) {
        position = atof(buf);
        sprintf(buf, "CD %i", position - lastPosition);
        lastPosition = position;
        if (GCmd(g, buf) == G_BAD_RESPONSE_QUESTION_MARK) {
            check(GCmdT(g, "TC1", buf, G_HUGE_BUFFER, NULL), g);
            if (strcmp(buf, "32 Segment buffer full") == 0) {
                command(g, "MG_DT", buf);
                if ((int)atof(buf) == -1)
                    command(g, "DT 1", NULL);
                GSleep(100);
            }
        }
    }

    do {
        command(g, "MG_CM", buf);
    } while ((int)atof(buf) < contourSpace);
    fclose(f);

    command(g, "CD 0=0", NULL);
    command(g, "MO", NULL);
    GClose(g);
}
```

– **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

gcaps

The Galil Asynchronous Proxy Server (gcaps) is a service that allows multiple gclib connections to share a single controller connection. This allows multiple clients to receive unsolicited data at once.

3.1 Thread safety

While multiple threads cannot safely use the same gclib connection handle, each thread can safely open a new gcaps connection to the same controller.

Chapter 4

Legacy Compatibility

- GalilTools included the GCL (GalilTools Communication Library). gclib ships with an open source wrapper implementation of the GCL.
- DMC32 OSU is intended for existing applications that used software based on the legacy DMCWIN32 library for Windows XP and earlier.

4.1 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.

4.1.1 Windows

4.1.1.1 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)**.

4.1.1.2 Launch the compiler command prompt

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

4.1.1.3 Set an environment variable for the base path

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

4.1.1.4 Compile the source code

Note the quotes.

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

4.1.1.5 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.

4.1.1.6 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
```

4.1.2 Linux

4.1.2.1 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
```

4.1.2.2 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...
```

4.1.2.3 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
```

4.2 DMC32 OSU

Note

gclib provides the communications foundation for the *DMC32 Operating System Upgrade (OSU)* project.

DMC32 OSU is intended for existing applications that used software based on the legacy DMCWIN32 library for Windows XP and earlier. If such an application must be upgraded to Windows 7 ‡, 8, 8.1, or 10 DMC32 OSU may be used on these O.S. upgrades.
‡ Galil's support for Windows 7 has ended. Please click here for more information.

4.2.0.1 Galil's Windows XP support statement, http://www.galil.com/about/xp-support

- For more information refer to the documentation, http://www.galil.com/sw/pub/all/doc/dmc32osu/html/i
html
- See the release notes for changes, http://www.galil.com/sw/pub/all/rn/dmc32osu.↩
html
- The installer is available for download from Galil's website, http://www.galil.com/sw/pub/win/dmc32osu/gali
_dmc32_osu_exe.html

Chapter 5

License

- The gclib binaries are covered under the `Galil Closed Source License`.
- The open source portion (gclibo), examples, and wrappers are covered under the `Galil Open Source 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 6

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.

6.1 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.

6.2 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
```

6.2.1 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.

6.2.2 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.

6.2.3 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.

6.2.4 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.

6.2.5 Preprocessor Directives

Note

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

6.2.5.1 ##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.

6.2.5.2 ##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.

6.2.5.3 ##gclib

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

6.2.6 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.*

6.3 Preprocessor Options

6.3.1 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`.

6.3.1.1 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.

6.3.2 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.

6.3.3 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.

6.3.3.1 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
```

6.3.4 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.

6.3.5 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
```

6.4 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 7

Deprecated List

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

This function will be removed in a future gclib version. `Contact Galil` for needs not met by the other gclib functions.

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

This function will be removed in a future gclib version. `Contact Galil` for needs not met by the other gclib functions.

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

This function will be removed in a future gclib version. `Contact Galil` for needs not met by the other gclib functions.

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Chapter 12

Topic Documentation

12.1 C

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_DLL_EXPORTED void GCALL GSleep (unsigned int timeout_ms)

  Uses GUtility() and G_UTIL_SLEEP to provide a blocking sleep call which can be useful for timing-based chores.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED void GCALL GError (GReturn rc, GCStringOut error, GSize error_len)

  Provides a human-readable description string for return codes.

12.1.1 Function Documentation

12.1.1.1 GSleep()

```
GCLIB_DLL_EXPORTED void GCALL GSleep (
            unsigned int timeout_ms)
```

Uses GUtility() and G_UTIL_SLEEP to provide a blocking sleep call which can be useful for timing-based chores.

Parameters

timeout_ms	The timeout, in milliseconds, to block before returning.

See GWaitForBool() for an example.

12.1.1.2 GVersion()

```
GCLIB_DLL_EXPORTED GReturn GCALL GVersion (
            GCStringOut ver,
            GSize ver_len)
```

Uses GUtility(), G_UTIL_VERSION and G_UTIL_GCAPS_VERSION to provide the library and gcaps version numbers.

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.

See x_examples.cpp for an example.

12.1.1.3 GError()

```
GCLIB_DLL_EXPORTED void GCALL GError (
            GReturn rc,
            GCStringOut error,
            GSize error_len)
```

Provides a human-readable description string for return codes.

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.

See x_examples.cpp for an example.

12.1.2 Connection

Discover available controllers and open connections

Functions

- GCLIB_DLL_EXPORTED GReturn GCALL GOpen (GCStringIn address, GCon *g)

  Open a connection to a Galil Controller.
- GCLIB_DLL_EXPORTED GReturn GCALL GClose (GCon g)

  Closes a connection to a Galil Controller.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GInfo (GCon g, GCStringOut info, GSize info_len)

  Uses GUtility() and G_UTIL_INFO to provide a useful connection string.
- GCLIB_DLL_EXPORTED GReturn GCALL GTimeout (GCon g, short timeout_ms)

Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.

- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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.

12.1.2.1 Function Documentation

12.1.2.1.1 GOpen()

```
GCLIB_DLL_EXPORTED GReturn GCALL GOpen (
            GCStringIn address,
            GCon * g)
```

Open a connection to a Galil Controller.

Parameters

address	Null-terminated address 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`

address switch	Meaning	Arguments (default), other options	Examples
-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.

12.1.2.1.2 GClose()

```
GCLIB_DLL_EXPORTED GReturn GCALL GClose (
            GCon g)
```

Closes a connection to a Galil Controller.

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. The latter can occur, for example, if a call to GRead() times out and the process exits without calling GClose(). In this case, GRead() still has an outstanding asynchronous read pending. GClose() will terminate this operation allowing the process to exit correctly.

Parameters

g	Connection's handle.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

See x_examples.cpp for an example.

12.1.2.1.3 GAddresses()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.

See x_examples.cpp for an example.

12.1.2.1.4 GInfo()

```
GCLIB_DLL_EXPORTED GReturn GCALL GInfo (
            GCon g,
            GCStringOut info,
            GSize info_len)
```

Uses GUtility() and G_UTIL_INFO to provide a useful connection string.

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
```

See x_examples.cpp for an example.

12.1.2.1.5 GTimeout()

```
GCLIB_DLL_EXPORTED GReturn GCALL GTimeout (
            GCon g,
            short timeout_ms)
```

Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.

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.

See x_gcommand.cpp and x_gread_gwrite.cpp for examples.

12.1.2.1.6 GIpRequests()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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
```

See x_examples.cpp for an example.

12.1.2.1.7 GAssign()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.
See x_examples.cpp for an example.

12.1.3 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_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GUtility (GCon g, GOption request, GMemory memory1, GMemory memory2)

  Provides read/write access to driver settings and convenience features based on the request variable.
- GCLIB_DLL_EXPORTED GReturn GCALL GWaitForBool (GCon g, GCStringIn predicate, int trials)

  Blocking call that returns when the controller evaluates the predicate as true.
- GCLIB_DLL_EXPORTED GReturn GCALL GMotionComplete (GCon g, GCStringIn axes)

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

12.1.3.1 Function Documentation

12.1.3.1.1 GUtility()

```
GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GUtility (
            GCon g,
            GOption request,
            GMemory memory1,
            GMemory memory2)
```

Provides read/write access to driver settings and convenience features based on the request variable.

Deprecated This function will be removed in a future gclib version. `Contact Galil` for needs not met by the other gclib functions.

Note

The open source library, gclibo.h, has wrappers for most of these utilities.

Parameters

g	Connection's handle.
request	Defines the request. Input/Output and type of memory are implicit in the value of request. The following lists the supported request values.

- G_UTIL_TIMEOUT Read initial timeout value, as specified in GOpen() via `--timeout` switch.
  - `memory1` is output and must be an `unsigned short*`.
  - `memory2` is ignored, use null.
- G_UTIL_TIMEOUT_OVERRIDE See GTimeout(). Write/Read override timeout value.
  - `memory1` is input. If nonnull, value must be a `short*` holding the override, in milliseconds, for the timeout. Write `G_USE_INITIAL_TIMEOUT` to use initial timeout. If null, no write occurs.
  - `memory2` is output. If nonnul, value must be a `short*` which will be filled with the current override. `G_USE_INITIAL_TIMEOUT` indicates initial timeout used. If null, no read occurs. `memory2` is processed before 'memory1`.
- G_UTIL_VERSION See GVersion(). Returns the library version. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is output, and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.
- G_UTIL_INFO See GInfo(). Returns information about the connection.
  - `memory1` is output and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.
- G_UTIL_SLEEP See GSleep(). Platform-independent, non-busy, sleep. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is input and must be an `unsigned int*`, units are milliseconds.
  - `memory2` is ignored, use null.
- G_UTIL_ADDRESSES see GAddresses(). Provides a \n delimited listing of all available IP addresses, PCI addresses, and COM ports. A valid connection (g) is not necessary, i.e. g may be null. The suffix `-d` will be appended to each address to indicate these addresses are available via direct connection. See `G_UTIL_GCAPS_ADDRESSES` for addresses through gcaps.
  - `memory1` is output and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.
- G_UTIL_IPREQUEST see GIpRequests(). Listens and returns a \n delimited listing of Galil MAC addresses sending BOOT-P or DHCP requests. The function will listen, and block, for roughly 5 seconds. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is output and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.

- G_UTIL_ASSIGN see GAssign(). Provides a method to assign an IP address given a Galil MAC address. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is input and must be a `char*` containing the null terminated address that is to be assigned. e.g. `"192.168.0.43"`.
  - `memory2` is input and must be a `char*` containing the null terminated controller MAC address. e.g. `"00:50:4C:20:01:23"`.
- G_UTIL_DEVICE_INITIALIZE Provides a method to reinitialize a connection after a reset, e.g. an RS command. Depending on the device type, the appropriate commands will be sent to configure the communication bus for optimal performance.
  - `memory1` is ignored, use null.
  - `memory2` is ignored, use null.
- G_UTIL_PING Uses ICMP ping to determine if an IP address is reachable and assigned. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is input and must be a `char*` containing the null terminated address that is to be pinged. e.g. `"192.168.0.43"`.
  - `memory2` is output and must be an `int*`. The value will be set to zero if the ping times out, and nonzero if a ping reply is returned.
- G_UTIL_ERROR_CONTEXT More error detail for the last error on GCon, where available. The internal error message is cleared upon read.
  - `memory1` is output and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.

12.1.3.1.1.1 The following request values are for use with a gcaps server.

- G_UTIL_GCAPS_VERSION see GVersion(). Returns the gcaps server version. A valid connection (g) is not necessary, i.e. g may be null. This operation will connect to the server to determine the version.
  - `memory1` is output and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.
- G_UTIL_GCAPS_ADDRESSES see GAddresses(). Provides a \n delimited listing of all available IP addresses, PCI addresses, and COM ports as available from the gcaps server. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is output and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.
- G_UTIL_GCAPS_IPREQUEST see GIpRequests(). Connects to gcaps and returns a \n delimited listing of Galil MAC addresses sending BOOT-P or DHCP requests. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is output and must be a `char*`. Data will be null terminated, even if the data must be truncated to do so.
  - `memory2` is input and must be an `unsigned int*` holding the length of the buffer in `memory1`.
- G_UTIL_GCAPS_ASSIGN see GAssign(). Provides a method to assign an IP address through gcaps given a Galil MAC address. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is input and must be a `char*` containing the null terminated address that is to be assigned. e.g. `"192.168.0.43"`.

  - `memory2` is input and must be a `char*` containing the null terminated controller MAC address. e.g. `"00:50:4C:20:01:23"`.

- G_UTIL_GCAPS_PING Uses ICMP ping to determine if an IP address is reachable and assigned. Ping sent from the gcaps server. A valid connection (g) is not necessary, i.e. g may be null.
  - `memory1` is input and must be a `char*` containing the null terminated address that is to be pinged. e.g. `"192.168.0.43"`.
  - `memory2` is output and must be an `int*`. The value will be set to zero if the ping times out, and nonzero if a ping reply is returned.

Parameters

memory1	An untyped pointer to data required for request. The data type is defined by the request variable.
memory2	An untyped pointer to data required for request. The data type is defined by the request variable.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

See the following functions from gclibo, the open source portion, for implementation of several GUtility() requests.:

- GAddresses()
- GAssign()
- GInfo()
- GIpRequests()
- GSleep()
- GTimeout()
- GVersion()

12.1.3.1.2 GWaitForBool()

```
GCLIB_DLL_EXPORTED GReturn GCALL GWaitForBool (
            GCon g,
            GCStringIn predicate,
            int trials)
```

Blocking call that returns when the controller evaluates the predicate as true.
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.

12.1.3.1.3 GMotionComplete()

```
GCLIB_DLL_EXPORTED GReturn GCALL GMotionComplete (
            GCon g,
            GCStringIn axes)
```

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

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.

See x_gmotioncomplete.cpp for an example.

12.1.3.2 Communication

Send commands

Functions

- GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GRead (GCon g, GBufOut buffer, GSize buffer_len, GSize *bytes_read)

  Performs a read on the connection.
- GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GWrite (GCon g, GBufIn buffer, GSize buffer_len)

  Performs a write on the connection.
- GCLIB_DLL_EXPORTED GReturn GCALL GCommand (GCon g, GCStringIn command, GBufOut buffer, GSize buffer_len, GSize *bytes_returned)

  Performs a command-and-response transaction on the connection.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmd (GCon g, GCStringIn command)

  Wrapper around GCommand for use when the return value is not desired.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmdT (GCon g, GCStringIn command, GCStringOut trimmed↩_response, GSize response_len, GCStringOut *front)

  Wrapper around GCommand that trims the response.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmdI (GCon g, GCStringIn command, int *value)

  Wrapper around GCommand that provides the return value of a command parsed into an int.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmdD (GCon g, GCStringIn command, double *value)

  Wrapper around GCommand that provides the return value of a command parsed into a double.

12.1.3.2.1 Function Documentation

12.1.3.2.1.1 GRead()

```
GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GRead (
            GCon g,
            GBufOut buffer,
            GSize buffer_len,
            GSize * bytes_read)
```

Performs a read on the connection.

Deprecated This function will be removed in a future gclib version. `Contact Galil` for needs not met by the other gclib functions.

Parameters

g	Connection's handle.
buffer	The user's read buffer.
buffer_len	The length of the user's read buffer.
bytes_read	Pointer to a GSize which will be filled with the number of bytes read upon return.

Returns

The success status or error code of the function. See gclib_errors.h for possible values.

Unsolicited messages may be returned in the read data. The high bit of each message byte will be set unless the user changes the CW setting. Interrupts and Data Records are always filtered from a read.
See x_gread_gwrite.cpp for an example.

12.1.3.2.1.2 GWrite()

```
GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GWrite (
            GCon g,
            GBufIn buffer,
            GSize buffer_len)
```

Performs a write on the connection.

Deprecated This function will be removed in a future gclib version. `Contact Galil` for needs not met by the other gclib functions.

Parameters

g	Connection's handle.
buffer	The user's write buffer. To send a Galil command, a terminating carriage return is usually required.
buffer_len	The length of the data in the buffer.

Returns

The success status or error code of the function. See gclib_errors.h for possible values. If G_NO_ERROR is returned, all bytes were written.

Warning

This function is deprecated and will be removed in a future gclib version. Please contact Galil for needs not covered by the other gclib functions.

See x_gread_gwrite.cpp for an example.

12.1.3.2.1.3 GCommand()

```
GCLIB_DLL_EXPORTED GReturn GCALL GCommand (
            GCon g,
            GCStringIn command,
            GBufOut buffer,
            GSize buffer_len,
            GSize * bytes_returned)
```

Performs a *command-and-response* transaction on the connection.

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.

See x_gcommand.cpp for an example.

12.1.3.2.1.4 GCmd()

```
GCLIB_DLL_EXPORTED GReturn GCALL GCmd (
            GCon g,
            GCStringIn command)
```

Wrapper around GCommand for use when the return value is not desired.
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.

See x_gcommand.cpp for an example.

12.1.3.2.1.5 GCmdT()

```
GCLIB_DLL_EXPORTED GReturn GCALL GCmdT (
            GCon g,
            GCStringIn command,
            GCStringOut trimmed_response,
            GSize response_len,
            GCStringOut * front)
```

Wrapper around GCommand that trims the response.
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.

See x_gcommand.cpp for an example.

12.1.3.2.1.6 GCmdI()

```
GCLIB_DLL_EXPORTED GReturn GCALL GCmdI (
            GCon g,
            GCStringIn command,
            int * value)
```

Wrapper around GCommand that provides the return value of a command parsed into an int.
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.

See x_gcommand.cpp for an example.

12.1.3.2.1.7 GCmdD()

```
GCLIB_DLL_EXPORTED GReturn GCALL GCmdD (
            GCon g,
            GCStringIn command,
            double * value)
```

Wrapper around GCommand that provides the return value of a command parsed into a double.
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.

See x_gcommand.cpp for an example.

12.1.3.3 Memory

Manage controller memory, such as program and arrays

Functions

- GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownload (GCon g, GCStringIn program, GCStringIn preprocessor)

  Downloads a program to the controller's program buffer.
- GCLIB_DLL_EXPORTED GReturn GCALL GProgramUpload (GCon g, GBufOut buffer, GSize buffer_len)

  Uploads a program from the controller's program buffer.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GFirmwareDownload (GCon g, GCStringIn filepath)

  Upgrade firmware.
- GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownloadFile (GCon g, GCStringIn file_path, GCStringIn preprocessor)

  Program download from file.
- GCLIB_DLL_EXPORTED GReturn GCALL GProgramUploadFile (GCon g, GCStringIn file_path)

  Program upload to file.
- GCLIB_DLL_EXPORTED GReturn GCALL GArrayDownloadFile (GCon g, GCStringIn file_path)

  Array download from file.
- GCLIB_DLL_EXPORTED GReturn GCALL GArrayUploadFile (GCon g, GCStringIn file_path, GCStringIn names)

  Array upload to file.
- GCLIB_DLL_EXPORTED GReturn GCALL GSetupDownloadFile (GCon g, GCStringIn file_path, GOption options, GCStringOut info, GSize info_len)

  Download a saved controller configuration from a file.

12.1.3.3.1 Function Documentation

12.1.3.3.1.1 GProgramDownload()

```
GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownload (
            GCon g,
            GCStringIn program,
            GCStringIn preprocessor)
```

Downloads a program to the controller's program buffer.

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.

See x_programs.cpp for an example.

12.1.3.3.1.2 GProgramUpload()

```
GCLIB_DLL_EXPORTED GReturn GCALL GProgramUpload (
            GCon g,
            GBufOut buffer,
            GSize buffer_len)
```

Uploads a program from the controller's program buffer.

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.

See x_programs.cpp for an example.

12.1.3.3.1.3 GArrayDownload()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.

See x_arrays.cpp for an example.

12.1.3.3.1.4 GArrayUpload()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.

See x_arrays.cpp for an example.

12.1.3.3.1.5 GFirmwareDownload()

```
GCLIB_DLL_EXPORTED GReturn GCALL GFirmwareDownload (
            GCon g,
            GCStringIn filepath)
```

Upgrade firmware.

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.

```
ec(GInfo(g, buf, sizeof(buf))); //get conntroller info
cout « buf « '\n'; //print the info
ec(GFirmwareDownload(g, "F:/1806.dmc/dmc-1806-r11a.hex"));
ec(GInfo(g, buf, sizeof(buf))); //get the info again
cout « buf « '\n';
// example output:
// GALILPCI1, DMC1846 Rev 1.1a-CM, 4232
// GALILPCI1, DMC1846 Rev 1.1a, 4232
```

12.1.3.3.1.6 GProgramDownloadFile()

```
GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownloadFile (
            GCon g,
            GCStringIn file_path,
            GCStringIn preprocessor)
```

Program download from file.

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.

See x_programs.cpp for an example.

12.1.3.3.1.7 GProgramUploadFile()

```
GCLIB_DLL_EXPORTED GReturn GCALL GProgramUploadFile (
            GCon g,
            GCStringIn file_path)
```

Program upload to file.

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.

See x_programs.cpp for an example.

12.1.3.3.1.8 GArrayDownloadFile()

```
GCLIB_DLL_EXPORTED GReturn GCALL GArrayDownloadFile (
            GCon g,
            GCStringIn file_path)
```

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

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.

See x_arrays.cpp for an example.

12.1.3.3.1.9 GArrayUploadFile()

```
GCLIB_DLL_EXPORTED GReturn GCALL GArrayUploadFile (
            GCon g,
            GCStringIn file_path,
            GCStringIn names)
```

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

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.

See x_arrays.cpp for an example.

12.1.3.3.1.10 GSetupDownloadFile()

```
GCLIB_DLL_EXPORTED GReturn GCALL GSetupDownloadFile (
            GCon g,
            GCStringIn file_path,
            GOption options,
            GCStringOut info,
            GSize info_len)
```

Download a saved controller configuration from a file.

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 = GOpen("192.168.0.50", &g);
if (rc) return rc;

// 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;
```

12.1.3.4 Unsolicited Data

Receive messages, interrupts, and data records

Functions

- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GMessage (GCon g, GCStringOut buffer, GSize buffer_len)

  Provides access to unsolicited messages from the controller.
- GCLIB_DLL_EXPORTED GReturn GCALL GInterrupt (GCon g, GStatus *status_byte)

  Provides access to PCI and UDP interrupts from the controller.
- GCLIB_DLL_EXPORTED GReturn GCALL GRecordRate (GCon g, double period_ms)

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

12.1.3.4.1 Function Documentation

12.1.3.4.1.1 GRecord()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.

See x_grecord.cpp for an example. See x_nonblocking.cpp for an example of non-blocking usage.

12.1.3.4.1.2 GMessage()

```
GCLIB_DLL_EXPORTED GReturn GCALL GMessage (
            GCon g,
            GCStringOut buffer,
            GSize buffer_len)
```

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. 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.

See x_gmessage.cpp for an example. See x_nonblocking.cpp for an example of non-blocking usage.

12.1.3.4.1.3 GInterrupt()

```
GCLIB_DLL_EXPORTED GReturn GCALL GInterrupt (
            GCon g,
            GStatus * status_byte)
```

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.

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.

See x_ginterrupt.cpp for an example. See x_nonblocking.cpp for an example of non-blocking usage.

12.1.3.4.1.4 GRecordRate()

```
GCLIB_DLL_EXPORTED GReturn GCALL GRecordRate (
            GCon g,
            double period_ms)
```

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

See x_grecord.cpp for an example.

12.1.4 Galil Connect

Host or connect to a remote gcaps instance

Functions

- GCLIB_DLL_EXPORTED GReturn GCALL GSetServer (GCStringIn server_name)

  Uses GUtility(), G_UTIL_GCAPS_SET_SERVER to set the new active server.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GPublishServer (GCStringIn name, GOption publish, GOption save)

  Uses GUtility(), G_UTIL_GCAPS_PUBLISH_SERVER to publish local gcaps server to the local network.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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.

12.1.4.1 Function Documentation

12.1.4.1.1 GSetServer()

```
GCLIB_DLL_EXPORTED GReturn GCALL GSetServer (
            GCStringIn server_name)
```

Uses GUtility(), G_UTIL_GCAPS_SET_SERVER to set the new active server.

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.

12.1.4.1.2 GListServers()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.

12.1.4.1.3 GPublishServer()

```
GCLIB_DLL_EXPORTED GReturn GCALL GPublishServer (
            GCStringIn name,
            GOption publish,
            GOption save)
```

Uses GUtility(), G_UTIL_GCAPS_PUBLISH_SERVER to publish local gcaps server to the local network.

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.

12.1.4.1.4 GServerStatus()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.

12.1.4.1.5 GRemoteConnections()

```
GCLIB_DLL_EXPORTED GReturn GCALL 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.

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.

12.2 .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.

12.2.1 Function Documentation

12.2.1.1 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.

12.2.2 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.

12.2.2.1 Function Documentation

12.2.2.1.1 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.

12.2.2.1.2 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.

12.2.2.1.3 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.

12.2.2.1.4 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.

12.2.2.1.5 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.

12.2.2.1.6 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.

12.2.2.1.7 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.

12.2.3 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.

12.2.3.1 Function Documentation

12.2.3.1.1 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#a19c22087944298797070644419 7f397a

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.

12.2.3.2 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.

12.2.3.2.1 Function Documentation

12.2.3.2.1.1 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.

12.2.3.2.1.2 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.

12.2.3.2.1.3 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.

12.2.3.3 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.

12.2.3.3.1 Function Documentation

12.2.3.3.1.1 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.

12.2.3.3.1.2 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.

12.2.3.3.1.3 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.

12.2.3.3.1.4 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.

12.2.3.3.1.5 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.

12.2.3.3.1.6 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.

12.2.3.3.1.7 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.

12.2.3.3.1.8 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.

12.2.3.3.1.9 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.

12.2.3.3.1.10 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.

12.2.3.4 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.

12.2.3.4.1 Function Documentation

12.2.3.4.1.1 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.

12.2.3.4.1.2 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.

12.2.3.4.1.3 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.

12.2.3.4.1.4 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#ada86dc9d33ac96141258388196 3a1b8a 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.

12.2.4 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.

12.2.4.1 Function Documentation

12.2.4.1.1 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.

12.2.4.1.2 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.

12.2.4.1.3 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.

12.2.4.1.4 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.

12.2.4.1.5 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.

12.3 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.

12.3.1 Function Documentation

12.3.1.1 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.

12.3.1.2 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.

12.3.2 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.

12.3.2.1 Function Documentation

12.3.2.1.1 GClose()

```
void gclibjava.GclibJava.GClose () [inline]
```

Closes a connection to a Galil Controller.
Definition at line 204 of file GclibJava.java.

12.3.2.1.2 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.

12.3.2.1.3 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.

12.3.2.1.4 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.

12.3.2.1.5 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.

12.3.2.1.6 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.

12.3.2.1.7 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.

12.3.3 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.

12.3.3.1 Function Documentation

12.3.3.1.1 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.

12.3.3.2 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.

12.3.3.2.1 Function Documentation

12.3.3.2.1.1 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.

12.3.3.2.1.2 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.

12.3.3.2.1.3 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.

12.3.3.2.1.4 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.

12.3.3.2.1.5 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.

12.3.3.2.1.6 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.

12.3.3.2.1.7 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.

12.3.3.2.1.8 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.

12.3.3.2.1.9 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.

12.3.3.2.1.10 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.

12.3.3.2.1.11 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.

12.3.3.2.1.12 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.

12.3.3.2.1.13 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.

12.3.3.2.1.14 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.

12.3.3.3 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.

12.3.3.3.1 Function Documentation

12.3.3.3.1.1 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.

12.3.3.3.1.2 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.

12.3.4 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.

12.3.4.1 Function Documentation

12.3.4.1.1 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.

12.3.4.1.2 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.

12.3.4.1.3 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.

12.3.4.1.4 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.

12.3.4.1.5 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.

12.4 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.

12.4.1 Function Documentation

12.4.1.1 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.

12.4.1.2 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.

12.4.2 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.

12.4.2.1 Function Documentation

12.4.2.1.1 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.

12.4.2.1.2 GClose()

```
gclib.py.GClose (
            self)
```

Closes a connection to a Galil Controller.
Definition at line 184 of file gclib.py.

12.4.2.1.3 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.

12.4.2.1.4 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.

12.4.2.1.5 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.

12.4.2.1.6 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.

12.4.2.1.7 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.

12.4.2.1.8 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.

12.4.2.1.9 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.

12.4.3 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.

12.4.3.1 Function Documentation

12.4.3.1.1 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.

12.4.3.1.2 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.

12.4.3.2 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.

12.4.3.2.1 Function Documentation

12.4.3.2.1.1 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.

12.4.3.2.1.2 GProgramUpload()

```
gclib.py.GProgramUpload (
            self)
```

Uploads a program from the controller's program buffer.
Definition at line 328 of file gclib.py.

12.4.3.2.1.3 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.

12.4.3.2.1.4 GProgramUploadFile()

```
gclib.py.GProgramUploadFile (
              self,
              file_path)
```

Program upload to file.
Definition at line 348 of file gclib.py.

12.4.3.2.1.5 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.

12.4.3.2.1.6 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.

12.4.3.2.1.7 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.

12.4.3.2.1.8 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.

12.4.3.2.1.9 GFirmwareDownload()

```
gclib.py.GFirmwareDownload (
            self,
            file_path)
```

Upgrade firmware.
Definition at line 439 of file gclib.py.

12.4.3.2.1.10 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.

12.4.3.3 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.

12.4.3.3.1 Function Documentation

12.4.3.3.1.1 GMessage()

```
gclib.py.GMessage (
            self)
```

Provides access to unsolicited messages from the controller.
Definition at line 449 of file gclib.py.

12.4.3.3.1.2 GInterrupt()

```
gclib.py.GInterrupt (
            self)
```

Provides access to PCI and UDP interrupts from the controller.
Definition at line 467 of file gclib.py.

12.4.4 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.

12.4.4.1 Function Documentation

12.4.4.1.1 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.

12.4.4.1.2 GSetServer()

```
gclib.py.GSetServer (
            self,
            server_name)
```

Set the new active server.
Definition at line 228 of file gclib.py.

12.4.4.1.3 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.

12.4.4.1.4 GPublishServer()

```
gclib.py.GPublishServer (
            self,
            server_name,
            publish,
            save)
```

Publish local gcaps server to the network.
Definition at line 243 of file gclib.py.

12.4.4.1.5 GRemoteConnections()

```
gclib.py.GRemoteConnections (
            self)
```

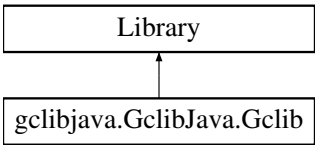
Shows all remote addresses that are connected to the local server.
Definition at line 251 of file gclib.py.

Chapter 13

Class Documentation

13.1 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

13.1.1 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.

13.1.2 Member Data Documentation

13.1.2.1 INSTANCE

```
Gclib gclibjava.GclibJava.Gclib.INSTANCE
```

Initial value:

```
= (Gclib)
                Native.loadLibrary("gclib",
```

```
                        Gclib.class)
```

Definition at line 74 of file GclibJava.java.

13.1.2.2 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

13.2 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)

13.2.1 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.

13.2.2 Member Function Documentation

13.2.2.1 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.

13.2.2.2 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.

13.2.3 Member Data Documentation

13.2.3.1 _gclib

```
gclib._gclib = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclib.dll') [protected]
```

Definition at line 31 of file gclib.py.

13.2.3.2 _gclibo

```
gclib._gclibo = WinDLL(os.environ["GCLIB_ROOT"] + '/dll/x64/gclibo.dll') [protected]
```

Definition at line 32 of file gclib.py.

13.2.3.3 _gclib_path

```
str gclib._gclib_path = '/Applications/gclib/dylib/gclib.0.dylib'  [protected]
```
Definition at line 78 of file gclib.py.

13.2.3.4 _gclibo_path

```
str gclib._gclibo_path = '/Applications/gclib/dylib/gclibo.0.dylib'  [protected]
```
Definition at line 79 of file gclib.py.

13.2.3.5 _GReturn

```
gclib._GReturn = c_int  [protected]
```
Definition at line 88 of file gclib.py.

13.2.3.6 _GCon

```
gclib._GCon = c_void_p  [protected]
```
Definition at line 89 of file gclib.py.

13.2.3.7 _GCon_ptr

```
gclib._GCon_ptr = POINTER(_GCon)  [protected]
```
Definition at line 90 of file gclib.py.

13.2.3.8 _GSize

```
gclib._GSize = c_ulong  [protected]
```
Definition at line 91 of file gclib.py.

13.2.3.9 _GSize_ptr

```
gclib._GSize_ptr = POINTER(_GSize)  [protected]
```
Definition at line 92 of file gclib.py.

13.2.3.10 _GCStringIn

```
gclib._GCStringIn = c_char_p  [protected]
```
Definition at line 93 of file gclib.py.

13.2.3.11 _GCStringOut

```
gclib._GCStringOut = c_char_p  [protected]
```
Definition at line 94 of file gclib.py.

13.2.3.12 _GOption

```
gclib._GOption = c_int  [protected]
```
Definition at line 95 of file gclib.py.

13.2.3.13 _GStatus

```
gclib._GStatus = c_ubyte  [protected]
```
Definition at line 96 of file gclib.py.

13.2.3.14 _GStatus_ptr

```
gclib._GStatus_ptr = POINTER(_GStatus)  [protected]
```
Definition at line 97 of file gclib.py.

13.2.3.15 argtypes

`gclib.argtypes`
Definition at line 101 of file gclib.py.

13.2.3.16 restype

`gclib.restype`
Definition at line 117 of file gclib.py.

13.2.3.17 _enc

`str gclib._enc = "ASCII"  [protected]`
Definition at line 135 of file gclib.py.

13.2.3.18 _buf_size

`int gclib._buf_size = 500000  [protected]`
Definition at line 136 of file gclib.py.

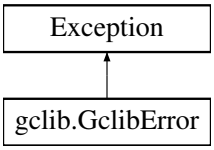
13.2.3.19 _error_buf

`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

13.3 gclib.GclibError Class Reference

Error class for non-zero gclib return codes.
Inheritance diagram for gclib.GclibError:



13.3.1 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

13.4 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.

13.4.1 Detailed Description

Definition at line 36 of file GclibJava.java.

13.4.2 Constructor & Destructor Documentation

13.4.2.1 GclibJava()

`gclibjava.GclibJava.GclibJava () [inline]`

Constructor adds gclib to JNA's path.
Definition at line 45 of file GclibJava.java.

13.4.3 Member Function Documentation

13.4.3.1 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

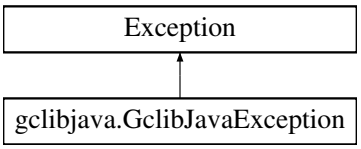
Throwable	super can throw.

Definition at line 56 of file GclibJava.java.
The documentation for this class was generated from the following file:

- GclibJava.java

13.5 gclibjava.GclibJavaException Class Reference

Inheritance diagram for gclibjava.GclibJavaException:



Public Member Functions

- GclibJavaException (int errorCode, String message)
- int getErrorCode ()

13.5.1 Detailed Description

Definition at line 6 of file GclibJavaException.java.

13.5.2 Constructor & Destructor Documentation

13.5.2.1 GclibJavaException()

```
gclibjava.GclibJavaException.GclibJavaException (
            int errorCode,
            String message)  [inline]
```

Definition at line 8 of file GclibJavaException.java.

13.5.3 Member Function Documentation

13.5.3.1 getErrorCode()

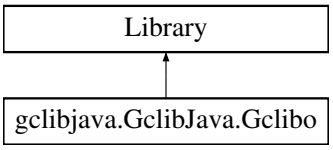
```
int gclibjava.GclibJavaException.getErrorCode ()  [inline]
```

Definition at line 12 of file GclibJavaException.java.
The documentation for this class was generated from the following file:

- GclibJavaException.java

13.6 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

13.6.1 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.

13.6.2 Member Data Documentation

13.6.2.1 INSTANCE

```
Gclibo gclibjava.GclibJava.Gclibo.INSTANCE
```

Initial value:

```
= (Gclibo)
            Native.loadLibrary("gclibo",
                               Gclibo.class)
```

Definition at line 359 of file GclibJava.java.

13.6.2.2 SYNC_INSTANCE

```
Gclibo gclibjava.GclibJava.Gclibo.SYNC_INSTANCE
```

Initial value:

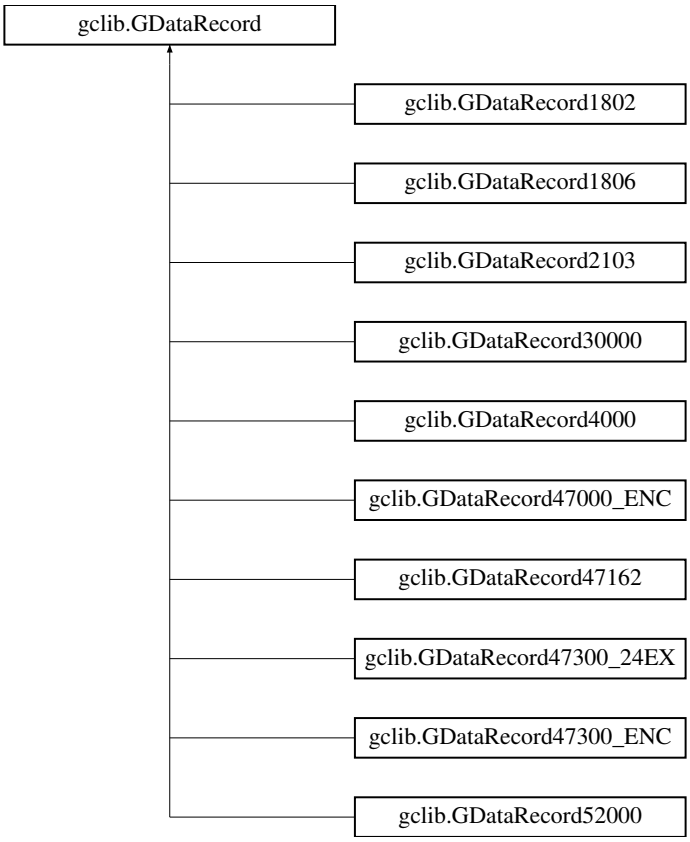
```
= (Gclibo)
                Native.synchronizedLibrary(INSTANCE)
```

Definition at line 367 of file GclibJava.java.
The documentation for this interface was generated from the following file:

- GclibJava.java

13.7 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.

13.7.1 Detailed Description

Definition at line 905 of file gclib.cs.

13.7.2 Member Function Documentation

13.7.2.1 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

13.8 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.

13.8.1 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.

13.8.2 Member Data Documentation

13.8.2.1 dmc4000

`struct GDataRecord4000 GDataRecord::dmc4000`

The DMC-4000 data record.
Definition at line 1080 of file gclib_record.h.

13.8.2.2 dmc4103

`struct GDataRecord4000 GDataRecord::dmc4103`

The DMC-4103 data record.
Definition at line 1081 of file gclib_record.h.

13.8.2.3 dmc50000

`struct GDataRecord4000 GDataRecord::dmc50000`

The DMC-50000 data record.
Definition at line 1082 of file gclib_record.h.

13.8.2.4 dmc52000

`struct GDataRecord52000 GDataRecord::dmc52000`
The DMC-52000 data record.
Definition at line 1084 of file gclib_record.h.

13.8.2.5 dmc30000

`struct GDataRecord30000 GDataRecord::dmc30000`
The DMC-30000 data record.
Definition at line 1086 of file gclib_record.h.

13.8.2.6 dmc2103

`struct GDataRecord2103 GDataRecord::dmc2103`
The DMC-21x3 data record.
Definition at line 1088 of file gclib_record.h.

13.8.2.7 dmc1806

`struct GDataRecord1806 GDataRecord::dmc1806`
The DMC-1806 data record.
Definition at line 1090 of file gclib_record.h.

13.8.2.8 dmc1802

`struct GDataRecord1802 GDataRecord::dmc1802`
The DMC-1802 data record.
Definition at line 1092 of file gclib_record.h.

13.8.2.9 rio47000

`struct GDataRecord47000_ENC GDataRecord::rio47000`
The RIO-471xx & 472xx data record, including encoder support.
Definition at line 1094 of file gclib_record.h.

13.8.2.10 rio47300

`struct GDataRecord47300_ENC GDataRecord::rio47300`
The RIO 473xx data record, including encoder support.
Definition at line 1095 of file gclib_record.h.

13.8.2.11 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.

13.8.2.12 rio47162

`struct GDataRecord47162 GDataRecord::rio47162`
The RIO 47162 data record.
Definition at line 1097 of file gclib_record.h.

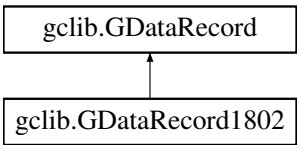
13.8.2.13 byte_array

`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

13.9 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 Member Functions inherited from gclib.GDataRecord

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.

13.9.1 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.

13.9.2 Member Function Documentation

13.9.2.1 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.

13.9.3 Member Data Documentation

13.9.3.1 sample_number

```
UW gclib.GDataRecord1802.sample_number
```

sample number.
Definition at line 1629 of file gclib.cs.

13.9.3.2 input_bank_0

```
UB gclib.GDataRecord1802.input_bank_0
```

general input bank 0 (inputs 1-8).
Definition at line 1631 of file gclib.cs.

13.9.3.3 input_bank_1

```
UB gclib.GDataRecord1802.input_bank_1
```

general input bank 1 (inputs 9-16).
Definition at line 1632 of file gclib.cs.

13.9.3.4 input_bank_2

```
UB gclib.GDataRecord1802.input_bank_2
```

general input bank 2 (inputs 17-24).
Definition at line 1633 of file gclib.cs.

13.9.3.5 input_bank_3

`UB gclib.GDataRecord1802.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1634 of file gclib.cs.

13.9.3.6 input_bank_4

`UB gclib.GDataRecord1802.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1635 of file gclib.cs.

13.9.3.7 input_bank_5

`UB gclib.GDataRecord1802.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1636 of file gclib.cs.

13.9.3.8 input_bank_6

`UB gclib.GDataRecord1802.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1637 of file gclib.cs.

13.9.3.9 input_bank_7

`UB gclib.GDataRecord1802.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1638 of file gclib.cs.

13.9.3.10 input_bank_8

`UB gclib.GDataRecord1802.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1639 of file gclib.cs.

13.9.3.11 input_bank_9

`UB gclib.GDataRecord1802.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1640 of file gclib.cs.

13.9.3.12 output_bank_0

`UB gclib.GDataRecord1802.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1642 of file gclib.cs.

13.9.3.13 output_bank_1

`UB gclib.GDataRecord1802.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1643 of file gclib.cs.

13.9.3.14 output_bank_2

`UB gclib.GDataRecord1802.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1644 of file gclib.cs.

13.9.3.15 output_bank_3

`UB gclib.GDataRecord1802.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1645 of file gclib.cs.

13.9.3.16 output_bank_4

`UB gclib.GDataRecord1802.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1646 of file gclib.cs.

13.9.3.17 output_bank_5

`UB gclib.GDataRecord1802.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1647 of file gclib.cs.

13.9.3.18 output_bank_6

`UB gclib.GDataRecord1802.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1648 of file gclib.cs.

13.9.3.19 output_bank_7

`UB gclib.GDataRecord1802.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1649 of file gclib.cs.

13.9.3.20 output_bank_8

`UB gclib.GDataRecord1802.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1650 of file gclib.cs.

13.9.3.21 output_bank_9

`UB gclib.GDataRecord1802.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1651 of file gclib.cs.

13.9.3.22 error_code

`UB gclib.GDataRecord1802.error_code`
error code.
Definition at line 1653 of file gclib.cs.

13.9.3.23 general_status

`UB gclib.GDataRecord1802.general_status`
general status
Definition at line 1654 of file gclib.cs.

13.9.3.24 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.

13.9.3.25 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.

13.9.3.26 s_distance

`SL gclib.GDataRecord1802.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1658 of file gclib.cs.

13.9.3.27 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.

13.9.3.28 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.

13.9.3.29 t_distance

`SL gclib.GDataRecord1802.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 1662 of file gclib.cs.

13.9.3.30 axis_a_status

`UW gclib.GDataRecord1802.axis_a_status`
A axis status.
Definition at line 1664 of file gclib.cs.

13.9.3.31 axis_a_switches

`UB gclib.GDataRecord1802.axis_a_switches`
A axis switches.
Definition at line 1665 of file gclib.cs.

13.9.3.32 axis_a_stop_code

`UB gclib.GDataRecord1802.axis_a_stop_code`
A axis stop code.
Definition at line 1666 of file gclib.cs.

13.9.3.33 axis_a_reference_position

`SL gclib.GDataRecord1802.axis_a_reference_position`
A axis reference position.
Definition at line 1667 of file gclib.cs.

13.9.3.34 axis_a_motor_position

`SL gclib.GDataRecord1802.axis_a_motor_position`
A axis motor position.
Definition at line 1668 of file gclib.cs.

13.9.3.35 axis_a_position_error

`SL gclib.GDataRecord1802.axis_a_position_error`
A axis position error.
Definition at line 1669 of file gclib.cs.

13.9.3.36 axis_a_aux_position

`SL gclib.GDataRecord1802.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1670 of file gclib.cs.

13.9.3.37 axis_a_velocity

`SL gclib.GDataRecord1802.axis_a_velocity`
A axis velocity.
Definition at line 1671 of file gclib.cs.

13.9.3.38 axis_a_torque

`SW gclib.GDataRecord1802.axis_a_torque`
A axis torque.
Definition at line 1672 of file gclib.cs.

13.9.3.39 axis_a_reserved_0

`UB gclib.GDataRecord1802.axis_a_reserved_0`
Reserved.
Definition at line 1673 of file gclib.cs.

13.9.3.40 axis_a_reserved_1

`UB gclib.GDataRecord1802.axis_a_reserved_1`
Reserved.
Definition at line 1674 of file gclib.cs.

13.9.3.41 axis_b_status

`UW gclib.GDataRecord1802.axis_b_status`
B axis status.
Definition at line 1676 of file gclib.cs.

13.9.3.42 axis_b_switches

`UB gclib.GDataRecord1802.axis_b_switches`
B axis switches.
Definition at line 1677 of file gclib.cs.

13.9.3.43 axis_b_stop_code

`UB gclib.GDataRecord1802.axis_b_stop_code`
B axis stop code.
Definition at line 1678 of file gclib.cs.

13.9.3.44 axis_b_reference_position

`SL gclib.GDataRecord1802.axis_b_reference_position`
B axis reference position.
Definition at line 1679 of file gclib.cs.

13.9.3.45 axis_b_motor_position

`SL gclib.GDataRecord1802.axis_b_motor_position`
B axis motor position.
Definition at line 1680 of file gclib.cs.

13.9.3.46 axis_b_position_error

`SL gclib.GDataRecord1802.axis_b_position_error`
B axis position error.
Definition at line 1681 of file gclib.cs.

13.9.3.47 axis_b_aux_position

`SL gclib.GDataRecord1802.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1682 of file gclib.cs.

13.9.3.48 axis_b_velocity

`SL gclib.GDataRecord1802.axis_b_velocity`
B axis velocity.
Definition at line 1683 of file gclib.cs.

13.9.3.49 axis_b_torque

`SW gclib.GDataRecord1802.axis_b_torque`
B axis torque.
Definition at line 1684 of file gclib.cs.

13.9.3.50 axis_b_reserved_0

`UB gclib.GDataRecord1802.axis_b_reserved_0`
Reserved.
Definition at line 1685 of file gclib.cs.

13.9.3.51 axis_b_reserved_1

`UB gclib.GDataRecord1802.axis_b_reserved_1`
Reserved.
Definition at line 1686 of file gclib.cs.

13.9.3.52 axis_c_status

`UW gclib.GDataRecord1802.axis_c_status`
C axis status.
Definition at line 1688 of file gclib.cs.

13.9.3.53 axis_c_switches

`UB gclib.GDataRecord1802.axis_c_switches`
C axis switches.
Definition at line 1689 of file gclib.cs.

13.9.3.54 axis_c_stop_code

`UB gclib.GDataRecord1802.axis_c_stop_code`
C axis stop code.
Definition at line 1690 of file gclib.cs.

13.9.3.55 axis_c_reference_position

`SL gclib.GDataRecord1802.axis_c_reference_position`
C axis reference position.
Definition at line 1691 of file gclib.cs.

13.9.3.56 axis_c_motor_position

`SL gclib.GDataRecord1802.axis_c_motor_position`
C axis motor position.
Definition at line 1692 of file gclib.cs.

13.9.3.57 axis_c_position_error

`SL gclib.GDataRecord1802.axis_c_position_error`
C axis position error.
Definition at line 1693 of file gclib.cs.

13.9.3.58 axis_c_aux_position

`SL gclib.GDataRecord1802.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1694 of file gclib.cs.

13.9.3.59 axis_c_velocity

`SL gclib.GDataRecord1802.axis_c_velocity`
C axis velocity.
Definition at line 1695 of file gclib.cs.

13.9.3.60 axis_c_torque

`SW gclib.GDataRecord1802.axis_c_torque`
C axis torque.
Definition at line 1696 of file gclib.cs.

13.9.3.61 axis_c_reserved_0

`UB gclib.GDataRecord1802.axis_c_reserved_0`
Reserved.
Definition at line 1697 of file gclib.cs.

13.9.3.62 axis_c_reserved_1

`UB gclib.GDataRecord1802.axis_c_reserved_1`
Reserved.
Definition at line 1698 of file gclib.cs.

13.9.3.63 axis_d_status

`UW gclib.GDataRecord1802.axis_d_status`
D axis status.
Definition at line 1700 of file gclib.cs.

13.9.3.64 axis_d_switches

`UB gclib.GDataRecord1802.axis_d_switches`
D axis switches.
Definition at line 1701 of file gclib.cs.

13.9.3.65 axis_d_stop_code

`UB gclib.GDataRecord1802.axis_d_stop_code`
D axis stop code.
Definition at line 1702 of file gclib.cs.

13.9.3.66 axis_d_reference_position

`SL gclib.GDataRecord1802.axis_d_reference_position`
D axis reference position.
Definition at line 1703 of file gclib.cs.

13.9.3.67 axis_d_motor_position

`SL gclib.GDataRecord1802.axis_d_motor_position`
D axis motor position.
Definition at line 1704 of file gclib.cs.

13.9.3.68 axis_d_position_error

`SL gclib.GDataRecord1802.axis_d_position_error`
D axis position error.
Definition at line 1705 of file gclib.cs.

13.9.3.69 axis_d_aux_position

`SL gclib.GDataRecord1802.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1706 of file gclib.cs.

13.9.3.70 axis_d_velocity

`SL gclib.GDataRecord1802.axis_d_velocity`
D axis velocity.
Definition at line 1707 of file gclib.cs.

13.9.3.71 axis_d_torque

`SW gclib.GDataRecord1802.axis_d_torque`
D axis torque.
Definition at line 1708 of file gclib.cs.

13.9.3.72 axis_d_reserved_0

`UB gclib.GDataRecord1802.axis_d_reserved_0`
Reserved.
Definition at line 1709 of file gclib.cs.

13.9.3.73 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

13.10 GDataRecord1802 Struct Reference

Data record struct for DMC-1802 controllers.

```
#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.

13.10.1 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 723 of file gclib_record.h.

13.10.2 Member Data Documentation

13.10.2.1 sample_number

`UW GDataRecord1802::sample_number`
sample number.
Definition at line 728 of file gclib_record.h.

13.10.2.2 input_bank_0

`UB GDataRecord1802::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 730 of file gclib_record.h.

13.10.2.3 input_bank_1

`UB GDataRecord1802::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 731 of file gclib_record.h.

13.10.2.4 input_bank_2

`UB GDataRecord1802::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 732 of file gclib_record.h.

13.10.2.5 input_bank_3

`UB GDataRecord1802::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 733 of file gclib_record.h.

13.10.2.6 input_bank_4

`UB GDataRecord1802::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 734 of file gclib_record.h.

13.10.2.7 input_bank_5

`UB GDataRecord1802::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 735 of file gclib_record.h.

13.10.2.8 input_bank_6

`UB GDataRecord1802::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 736 of file gclib_record.h.

13.10.2.9 input_bank_7

`UB GDataRecord1802::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 737 of file gclib_record.h.

13.10.2.10 input_bank_8

`UB GDataRecord1802::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 738 of file gclib_record.h.

13.10.2.11 input_bank_9

`UB GDataRecord1802::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 739 of file gclib_record.h.

13.10.2.12 output_bank_0

`UB GDataRecord1802::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 741 of file gclib_record.h.

13.10.2.13 output_bank_1

`UB GDataRecord1802::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 742 of file gclib_record.h.

13.10.2.14 output_bank_2

`UB GDataRecord1802::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 743 of file gclib_record.h.

13.10.2.15 output_bank_3

`UB GDataRecord1802::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 744 of file gclib_record.h.

13.10.2.16 output_bank_4

`UB GDataRecord1802::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 745 of file gclib_record.h.

13.10.2.17 output_bank_5

`UB GDataRecord1802::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 746 of file gclib_record.h.

13.10.2.18 output_bank_6

`UB GDataRecord1802::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 747 of file gclib_record.h.

13.10.2.19 output_bank_7

`UB GDataRecord1802::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 748 of file gclib_record.h.

13.10.2.20 output_bank_8

`UB GDataRecord1802::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 749 of file gclib_record.h.

13.10.2.21 output_bank_9

`UB GDataRecord1802::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 750 of file gclib_record.h.

13.10.2.22 error_code

`UB GDataRecord1802::error_code`
error code.
Definition at line 752 of file gclib_record.h.

13.10.2.23 general_status

`UB GDataRecord1802::general_status`
general status
Definition at line 753 of file gclib_record.h.

13.10.2.24 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.

13.10.2.25 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.

13.10.2.26 s_distance

`SL GDataRecord1802::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 757 of file gclib_record.h.

13.10.2.27 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.

13.10.2.28 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.

13.10.2.29 t_distance

`SL GDataRecord1802::t_distance`
distance traveled in coordinated move for T plane.
Definition at line 761 of file gclib_record.h.

13.10.2.30 axis_a_status

`UW GDataRecord1802::axis_a_status`
A axis status.
Definition at line 763 of file gclib_record.h.

13.10.2.31 axis_a_switches

`UB GDataRecord1802::axis_a_switches`
A axis switches.
Definition at line 764 of file gclib_record.h.

13.10.2.32 axis_a_stop_code

`UB GDataRecord1802::axis_a_stop_code`
A axis stop code.
Definition at line 765 of file gclib_record.h.

13.10.2.33 axis_a_reference_position

`SL GDataRecord1802::axis_a_reference_position`
A axis reference position.
Definition at line 766 of file gclib_record.h.

13.10.2.34 axis_a_motor_position

`SL GDataRecord1802::axis_a_motor_position`
A axis motor position.
Definition at line 767 of file gclib_record.h.

13.10.2.35 axis_a_position_error

`SL GDataRecord1802::axis_a_position_error`
A axis position error.
Definition at line 768 of file gclib_record.h.

13.10.2.36 axis_a_aux_position

`SL GDataRecord1802::axis_a_aux_position`
A axis auxiliary position.
Definition at line 769 of file gclib_record.h.

13.10.2.37 axis_a_velocity

`SL GDataRecord1802::axis_a_velocity`
A axis velocity.
Definition at line 770 of file gclib_record.h.

13.10.2.38 axis_a_torque

`SW GDataRecord1802::axis_a_torque`
A axis torque.
Definition at line 771 of file gclib_record.h.

13.10.2.39 axis_a_reserved_0

`UB GDataRecord1802::axis_a_reserved_0`
Reserved.
Definition at line 772 of file gclib_record.h.

13.10.2.40 axis_a_reserved_1

`UB GDataRecord1802::axis_a_reserved_1`
Reserved.
Definition at line 773 of file gclib_record.h.

13.10.2.41 axis_b_status

`UW GDataRecord1802::axis_b_status`
B axis status.
Definition at line 775 of file gclib_record.h.

13.10.2.42 axis_b_switches

`UB GDataRecord1802::axis_b_switches`
B axis switches.
Definition at line 776 of file gclib_record.h.

13.10.2.43 axis_b_stop_code

`UB GDataRecord1802::axis_b_stop_code`
B axis stop code.
Definition at line 777 of file gclib_record.h.

13.10.2.44 axis_b_reference_position

`SL GDataRecord1802::axis_b_reference_position`
B axis reference position.
Definition at line 778 of file gclib_record.h.

13.10.2.45 axis_b_motor_position

`SL GDataRecord1802::axis_b_motor_position`
B axis motor position.
Definition at line 779 of file gclib_record.h.

13.10.2.46 axis_b_position_error

`SL GDataRecord1802::axis_b_position_error`
B axis position error.
Definition at line 780 of file gclib_record.h.

13.10.2.47 axis_b_aux_position

`SL GDataRecord1802::axis_b_aux_position`
B axis auxiliary position.
Definition at line 781 of file gclib_record.h.

13.10.2.48 axis_b_velocity

`SL GDataRecord1802::axis_b_velocity`
B axis velocity.
Definition at line 782 of file gclib_record.h.

13.10.2.49 axis_b_torque

`SW GDataRecord1802::axis_b_torque`
B axis torque.
Definition at line 783 of file gclib_record.h.

13.10.2.50 axis_b_reserved_0

`UB GDataRecord1802::axis_b_reserved_0`
Reserved.
Definition at line 784 of file gclib_record.h.

13.10.2.51 axis_b_reserved_1

`UB GDataRecord1802::axis_b_reserved_1`
Reserved.
Definition at line 785 of file gclib_record.h.

13.10.2.52 axis_c_status

`UW GDataRecord1802::axis_c_status`
C axis status.
Definition at line 787 of file gclib_record.h.

13.10.2.53 axis_c_switches

`UB GDataRecord1802::axis_c_switches`
C axis switches.
Definition at line 788 of file gclib_record.h.

13.10.2.54 axis_c_stop_code

`UB GDataRecord1802::axis_c_stop_code`
C axis stop code.
Definition at line 789 of file gclib_record.h.

13.10.2.55 axis_c_reference_position

`SL GDataRecord1802::axis_c_reference_position`
C axis reference position.
Definition at line 790 of file gclib_record.h.

13.10.2.56 axis_c_motor_position

`SL GDataRecord1802::axis_c_motor_position`
C axis motor position.
Definition at line 791 of file gclib_record.h.

13.10.2.57 axis_c_position_error

`SL GDataRecord1802::axis_c_position_error`
C axis position error.
Definition at line 792 of file gclib_record.h.

13.10.2.58 axis_c_aux_position

`SL GDataRecord1802::axis_c_aux_position`
C axis auxiliary position.
Definition at line 793 of file gclib_record.h.

13.10.2.59 axis_c_velocity

`SL GDataRecord1802::axis_c_velocity`
C axis velocity.
Definition at line 794 of file gclib_record.h.

13.10.2.60 axis_c_torque

`SW GDataRecord1802::axis_c_torque`
C axis torque.
Definition at line 795 of file gclib_record.h.

13.10.2.61 axis_c_reserved_0

`UB GDataRecord1802::axis_c_reserved_0`
Reserved.
Definition at line 796 of file gclib_record.h.

13.10.2.62 axis_c_reserved_1

`UB GDataRecord1802::axis_c_reserved_1`
Reserved.
Definition at line 797 of file gclib_record.h.

13.10.2.63 axis_d_status

`UW GDataRecord1802::axis_d_status`
D axis status.
Definition at line 799 of file gclib_record.h.

13.10.2.64 axis_d_switches

`UB GDataRecord1802::axis_d_switches`
D axis switches.
Definition at line 800 of file gclib_record.h.

13.10.2.65 axis_d_stop_code

`UB GDataRecord1802::axis_d_stop_code`
D axis stop code.
Definition at line 801 of file gclib_record.h.

13.10.2.66 axis_d_reference_position

`SL GDataRecord1802::axis_d_reference_position`
D axis reference position.
Definition at line 802 of file gclib_record.h.

13.10.2.67 axis_d_motor_position

`SL GDataRecord1802::axis_d_motor_position`
D axis motor position.
Definition at line 803 of file gclib_record.h.

13.10.2.68 axis_d_position_error

`SL GDataRecord1802::axis_d_position_error`
D axis position error.
Definition at line 804 of file gclib_record.h.

13.10.2.69 axis_d_aux_position

`SL GDataRecord1802::axis_d_aux_position`
D axis auxiliary position.
Definition at line 805 of file gclib_record.h.

13.10.2.70 axis_d_velocity

`SL GDataRecord1802::axis_d_velocity`
D axis velocity.
Definition at line 806 of file gclib_record.h.

13.10.2.71 axis_d_torque

`SW GDataRecord1802::axis_d_torque`
D axis torque.
Definition at line 807 of file gclib_record.h.

13.10.2.72 axis_d_reserved_0

`UB GDataRecord1802::axis_d_reserved_0`
Reserved.
Definition at line 808 of file gclib_record.h.

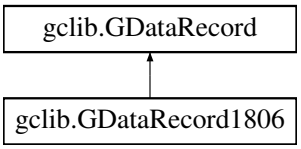
13.10.2.73 axis_d_reserved_1

`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

13.11 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 Member Functions inherited from gclib.GDataRecord

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).

13.11.1 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.

13.11.2 Member Function Documentation

13.11.2.1 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.

13.11.3 Member Data Documentation

13.11.3.1 sample_number

`UW gclib.GDataRecord1806.sample_number`
sample number.
Definition at line 1307 of file gclib.cs.

13.11.3.2 input_bank_0

`UB gclib.GDataRecord1806.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 1309 of file gclib.cs.

13.11.3.3 input_bank_1

`UB gclib.GDataRecord1806.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 1310 of file gclib.cs.

13.11.3.4 input_bank_2

`UB gclib.GDataRecord1806.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 1311 of file gclib.cs.

13.11.3.5 input_bank_3

`UB gclib.GDataRecord1806.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1312 of file gclib.cs.

13.11.3.6 input_bank_4

`UB gclib.GDataRecord1806.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1313 of file gclib.cs.

13.11.3.7 input_bank_5

`UB gclib.GDataRecord1806.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1314 of file gclib.cs.

13.11.3.8 input_bank_6

`UB gclib.GDataRecord1806.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1315 of file gclib.cs.

13.11.3.9 input_bank_7

`UB gclib.GDataRecord1806.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1316 of file gclib.cs.

13.11.3.10 input_bank_8

`UB gclib.GDataRecord1806.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1317 of file gclib.cs.

13.11.3.11 input_bank_9

`UB gclib.GDataRecord1806.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1318 of file gclib.cs.

13.11.3.12 output_bank_0

`UB gclib.GDataRecord1806.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1320 of file gclib.cs.

13.11.3.13 output_bank_1

`UB gclib.GDataRecord1806.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1321 of file gclib.cs.

13.11.3.14 output_bank_2

`UB gclib.GDataRecord1806.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1322 of file gclib.cs.

13.11.3.15 output_bank_3

`UB gclib.GDataRecord1806.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1323 of file gclib.cs.

13.11.3.16 output_bank_4

`UB gclib.GDataRecord1806.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1324 of file gclib.cs.

13.11.3.17 output_bank_5

`UB gclib.GDataRecord1806.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1325 of file gclib.cs.

13.11.3.18 output_bank_6

`UB gclib.GDataRecord1806.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1326 of file gclib.cs.

13.11.3.19 output_bank_7

`UB gclib.GDataRecord1806.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1327 of file gclib.cs.

13.11.3.20 output_bank_8

`UB gclib.GDataRecord1806.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1328 of file gclib.cs.

13.11.3.21 output_bank_9

`UB gclib.GDataRecord1806.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1329 of file gclib.cs.

13.11.3.22 reserved_0

`SW gclib.GDataRecord1806.reserved_0`
Reserved.
Definition at line 1331 of file gclib.cs.

13.11.3.23 reserved_2

`SW gclib.GDataRecord1806.reserved_2`
Reserved.
Definition at line 1332 of file gclib.cs.

13.11.3.24 reserved_4

`SW gclib.GDataRecord1806.reserved_4`
Reserved.
Definition at line 1333 of file gclib.cs.

13.11.3.25 reserved_6

`SW gclib.GDataRecord1806.reserved_6`
Reserved.
Definition at line 1334 of file gclib.cs.

13.11.3.26 reserved_8

`SW gclib.GDataRecord1806.reserved_8`
Reserved.
Definition at line 1335 of file gclib.cs.

13.11.3.27 reserved_10

`SW gclib.GDataRecord1806.reserved_10`
Reserved.
Definition at line 1336 of file gclib.cs.

13.11.3.28 reserved_12

`SW gclib.GDataRecord1806.reserved_12`
Reserved.
Definition at line 1337 of file gclib.cs.

13.11.3.29 reserved_14

`SW gclib.GDataRecord1806.reserved_14`
Reserved.
Definition at line 1338 of file gclib.cs.

13.11.3.30 reserved_16

`UB gclib.GDataRecord1806.reserved_16`
Reserved.
Definition at line 1340 of file gclib.cs.

13.11.3.31 reserved_17

`UB gclib.GDataRecord1806.reserved_17`
Reserved.
Definition at line 1341 of file gclib.cs.

13.11.3.32 reserved_18

`UB gclib.GDataRecord1806.reserved_18`
Reserved.
Definition at line 1342 of file gclib.cs.

13.11.3.33 reserved_19

`UB gclib.GDataRecord1806.reserved_19`
Reserved.
Definition at line 1343 of file gclib.cs.

13.11.3.34 reserved_20

`UB gclib.GDataRecord1806.reserved_20`
Reserved.
Definition at line 1344 of file gclib.cs.

13.11.3.35 reserved_21

`UB gclib.GDataRecord1806.reserved_21`
Reserved.
Definition at line 1345 of file gclib.cs.

13.11.3.36 reserved_22

`UB gclib.GDataRecord1806.reserved_22`
Reserved.
Definition at line 1346 of file gclib.cs.

13.11.3.37 reserved_23

`UB gclib.GDataRecord1806.reserved_23`
Reserved.
Definition at line 1347 of file gclib.cs.

13.11.3.38 error_code

`UB gclib.GDataRecord1806.error_code`
error code.
Definition at line 1349 of file gclib.cs.

13.11.3.39 thread_status

`UB gclib.GDataRecord1806.thread_status`
thread status.
Definition at line 1350 of file gclib.cs.

13.11.3.40 reserved_24

`UL gclib.GDataRecord1806.reserved_24`
Reserved.
Definition at line 1351 of file gclib.cs.

13.11.3.41 contour_segment_count

`UL gclib.GDataRecord1806.contour_segment_count`
Segment Count for Contour Mode.
Definition at line 1353 of file gclib.cs.

13.11.3.42 contour_buffer_available

`UW gclib.GDataRecord1806.contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 1354 of file gclib.cs.

13.11.3.43 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.

13.11.3.44 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.

13.11.3.45 s_distance

`SL gclib.GDataRecord1806.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1358 of file gclib.cs.

13.11.3.46 s_plane_buffer_available

`UW gclib.GDataRecord1806.s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 1359 of file gclib.cs.

13.11.3.47 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.

13.11.3.48 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.

13.11.3.49 t_distance

`SL gclib.GDataRecord1806.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 1363 of file gclib.cs.

13.11.3.50 t_plane_buffer_available

`UW gclib.GDataRecord1806.t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 1364 of file gclib.cs.

13.11.3.51 axis_a_status

`UW gclib.GDataRecord1806.axis_a_status`
A axis status.
Definition at line 1366 of file gclib.cs.

13.11.3.52 axis_a_switches

`UB gclib.GDataRecord1806.axis_a_switches`
A axis switches.
Definition at line 1367 of file gclib.cs.

13.11.3.53 axis_a_stop_code

`UB gclib.GDataRecord1806.axis_a_stop_code`
A axis stop code.
Definition at line 1368 of file gclib.cs.

13.11.3.54 axis_a_reference_position

`SL gclib.GDataRecord1806.axis_a_reference_position`
A axis reference position.
Definition at line 1369 of file gclib.cs.

13.11.3.55 axis_a_motor_position

`SL gclib.GDataRecord1806.axis_a_motor_position`
A axis motor position.
Definition at line 1370 of file gclib.cs.

13.11.3.56 axis_a_position_error

`SL gclib.GDataRecord1806.axis_a_position_error`
A axis position error.
Definition at line 1371 of file gclib.cs.

13.11.3.57 axis_a_aux_position

`SL gclib.GDataRecord1806.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1372 of file gclib.cs.

13.11.3.58 axis_a_velocity

`SL gclib.GDataRecord1806.axis_a_velocity`
A axis velocity.
Definition at line 1373 of file gclib.cs.

13.11.3.59 axis_a_torque

`SL gclib.GDataRecord1806.axis_a_torque`
A axis torque.
Definition at line 1374 of file gclib.cs.

13.11.3.60 axis_a_analog_in

`UW gclib.GDataRecord1806.axis_a_analog_in`
A axis analog input.
Definition at line 1375 of file gclib.cs.

13.11.3.61 axis_a_reserved_0

`UB gclib.GDataRecord1806.axis_a_reserved_0`
Reserved.
Definition at line 1376 of file gclib.cs.

13.11.3.62 axis_a_reserved_1

`UB gclib.GDataRecord1806.axis_a_reserved_1`
Reserved.
Definition at line 1377 of file gclib.cs.

13.11.3.63 axis_a_variable

`SL gclib.GDataRecord1806.axis_a_variable`
A User-defined variable (ZA).
Definition at line 1378 of file gclib.cs.

13.11.3.64 axis_b_status

`UW gclib.GDataRecord1806.axis_b_status`
B axis status.
Definition at line 1380 of file gclib.cs.

13.11.3.65 axis_b_switches

`UB gclib.GDataRecord1806.axis_b_switches`
B axis switches.
Definition at line 1381 of file gclib.cs.

13.11.3.66 axis_b_stop_code

`UB gclib.GDataRecord1806.axis_b_stop_code`
B axis stop code.
Definition at line 1382 of file gclib.cs.

13.11.3.67 axis_b_reference_position

`SL gclib.GDataRecord1806.axis_b_reference_position`
B axis reference position.
Definition at line 1383 of file gclib.cs.

13.11.3.68 axis_b_motor_position

`SL gclib.GDataRecord1806.axis_b_motor_position`
B axis motor position.
Definition at line 1384 of file gclib.cs.

13.11.3.69 axis_b_position_error

`SL gclib.GDataRecord1806.axis_b_position_error`
B axis position error.
Definition at line 1385 of file gclib.cs.

13.11.3.70 axis_b_aux_position

`SL gclib.GDataRecord1806.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1386 of file gclib.cs.

13.11.3.71 axis_b_velocity

`SL gclib.GDataRecord1806.axis_b_velocity`
B axis velocity.
Definition at line 1387 of file gclib.cs.

13.11.3.72 axis_b_torque

`SL gclib.GDataRecord1806.axis_b_torque`
B axis torque.
Definition at line 1388 of file gclib.cs.

13.11.3.73 axis_b_analog_in

`UW gclib.GDataRecord1806.axis_b_analog_in`
B axis analog input.
Definition at line 1389 of file gclib.cs.

13.11.3.74 axis_b_reserved_0

`UB gclib.GDataRecord1806.axis_b_reserved_0`
Reserved.
Definition at line 1390 of file gclib.cs.

13.11.3.75 axis_b_reserved_1

`UB gclib.GDataRecord1806.axis_b_reserved_1`
Reserved.
Definition at line 1391 of file gclib.cs.

13.11.3.76 axis_b_variable

`SL gclib.GDataRecord1806.axis_b_variable`
B User-defined variable (ZA).
Definition at line 1392 of file gclib.cs.

13.11.3.77 axis_c_status

`UW gclib.GDataRecord1806.axis_c_status`
C axis status.
Definition at line 1394 of file gclib.cs.

13.11.3.78 axis_c_switches

`UB gclib.GDataRecord1806.axis_c_switches`
C axis switches.
Definition at line 1395 of file gclib.cs.

13.11.3.79 axis_c_stop_code

`UB gclib.GDataRecord1806.axis_c_stop_code`
C axis stop code.
Definition at line 1396 of file gclib.cs.

13.11.3.80 axis_c_reference_position

`SL gclib.GDataRecord1806.axis_c_reference_position`
C axis reference position.
Definition at line 1397 of file gclib.cs.

13.11.3.81 axis_c_motor_position

`SL gclib.GDataRecord1806.axis_c_motor_position`
C axis motor position.
Definition at line 1398 of file gclib.cs.

13.11.3.82 axis_c_position_error

`SL gclib.GDataRecord1806.axis_c_position_error`
C axis position error.
Definition at line 1399 of file gclib.cs.

13.11.3.83 axis_c_aux_position

`SL gclib.GDataRecord1806.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1400 of file gclib.cs.

13.11.3.84 axis_c_velocity

`SL gclib.GDataRecord1806.axis_c_velocity`
C axis velocity.
Definition at line 1401 of file gclib.cs.

13.11.3.85 axis_c_torque

`SL gclib.GDataRecord1806.axis_c_torque`
C axis torque.
Definition at line 1402 of file gclib.cs.

13.11.3.86 axis_c_analog_in

`UW gclib.GDataRecord1806.axis_c_analog_in`
C axis analog input.
Definition at line 1403 of file gclib.cs.

13.11.3.87 axis_c_reserved_0

`UB gclib.GDataRecord1806.axis_c_reserved_0`
Reserved.
Definition at line 1404 of file gclib.cs.

13.11.3.88 axis_c_reserved_1

`UB gclib.GDataRecord1806.axis_c_reserved_1`
Reserved.
Definition at line 1405 of file gclib.cs.

13.11.3.89 axis_c_variable

`SL gclib.GDataRecord1806.axis_c_variable`
C User-defined variable (ZA).
Definition at line 1406 of file gclib.cs.

13.11.3.90 axis_d_status

`UW gclib.GDataRecord1806.axis_d_status`
D axis status.
Definition at line 1408 of file gclib.cs.

13.11.3.91 axis_d_switches

`UB gclib.GDataRecord1806.axis_d_switches`
D axis switches.
Definition at line 1409 of file gclib.cs.

13.11.3.92 axis_d_stop_code

`UB gclib.GDataRecord1806.axis_d_stop_code`
D axis stop code.
Definition at line 1410 of file gclib.cs.

13.11.3.93 axis_d_reference_position

`SL gclib.GDataRecord1806.axis_d_reference_position`
D axis reference position.
Definition at line 1411 of file gclib.cs.

13.11.3.94 axis_d_motor_position

`SL gclib.GDataRecord1806.axis_d_motor_position`
D axis motor position.
Definition at line 1412 of file gclib.cs.

13.11.3.95 axis_d_position_error

`SL gclib.GDataRecord1806.axis_d_position_error`
D axis position error.
Definition at line 1413 of file gclib.cs.

13.11.3.96 axis_d_aux_position

`SL gclib.GDataRecord1806.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1414 of file gclib.cs.

13.11.3.97 axis_d_velocity

`SL gclib.GDataRecord1806.axis_d_velocity`
D axis velocity.
Definition at line 1415 of file gclib.cs.

13.11.3.98 axis_d_torque

`SL gclib.GDataRecord1806.axis_d_torque`
D axis torque.
Definition at line 1416 of file gclib.cs.

13.11.3.99 axis_d_analog_in

`UW gclib.GDataRecord1806.axis_d_analog_in`
D axis analog input.
Definition at line 1417 of file gclib.cs.

13.11.3.100 axis_d_reserved_0

`UB gclib.GDataRecord1806.axis_d_reserved_0`
Reserved.
Definition at line 1418 of file gclib.cs.

13.11.3.101 axis_d_reserved_1

`UB gclib.GDataRecord1806.axis_d_reserved_1`
Reserved.
Definition at line 1419 of file gclib.cs.

13.11.3.102 axis_d_variable

`SL gclib.GDataRecord1806.axis_d_variable`
D User-defined variable (ZA).
Definition at line 1420 of file gclib.cs.

13.11.3.103 axis_e_status

`UW gclib.GDataRecord1806.axis_e_status`
E axis status.
Definition at line 1422 of file gclib.cs.

13.11.3.104 axis_e_switches

`UB gclib.GDataRecord1806.axis_e_switches`
E axis switches.
Definition at line 1423 of file gclib.cs.

13.11.3.105 axis_e_stop_code

`UB gclib.GDataRecord1806.axis_e_stop_code`
E axis stop code.
Definition at line 1424 of file gclib.cs.

13.11.3.106 axis_e_reference_position

`SL gclib.GDataRecord1806.axis_e_reference_position`
E axis reference position.
Definition at line 1425 of file gclib.cs.

13.11.3.107 axis_e_motor_position

`SL gclib.GDataRecord1806.axis_e_motor_position`
E axis motor position.
Definition at line 1426 of file gclib.cs.

13.11.3.108 axis_e_position_error

`SL gclib.GDataRecord1806.axis_e_position_error`
E axis position error.
Definition at line 1427 of file gclib.cs.

13.11.3.109 axis_e_aux_position

`SL gclib.GDataRecord1806.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1428 of file gclib.cs.

13.11.3.110 axis_e_velocity

`SL gclib.GDataRecord1806.axis_e_velocity`
E axis velocity.
Definition at line 1429 of file gclib.cs.

13.11.3.111 axis_e_torque

`SL gclib.GDataRecord1806.axis_e_torque`
E axis torque.
Definition at line 1430 of file gclib.cs.

13.11.3.112 axis_e_analog_in

`UW gclib.GDataRecord1806.axis_e_analog_in`
E axis analog input.
Definition at line 1431 of file gclib.cs.

13.11.3.113 axis_e_reserved_0

`UB gclib.GDataRecord1806.axis_e_reserved_0`
Reserved.
Definition at line 1432 of file gclib.cs.

13.11.3.114 axis_e_reserved_1

`UB gclib.GDataRecord1806.axis_e_reserved_1`
Reserved.
Definition at line 1433 of file gclib.cs.

13.11.3.115 axis_e_variable

`SL gclib.GDataRecord1806.axis_e_variable`
E User-defined variable (ZA).
Definition at line 1434 of file gclib.cs.

13.11.3.116 axis_f_status

`UW gclib.GDataRecord1806.axis_f_status`
F axis status.
Definition at line 1436 of file gclib.cs.

13.11.3.117 axis_f_switches

`UB gclib.GDataRecord1806.axis_f_switches`
F axis switches.
Definition at line 1437 of file gclib.cs.

13.11.3.118 axis_f_stop_code

`UB gclib.GDataRecord1806.axis_f_stop_code`
F axis stop code.
Definition at line 1438 of file gclib.cs.

13.11.3.119 axis_f_reference_position

`SL gclib.GDataRecord1806.axis_f_reference_position`
F axis reference position.
Definition at line 1439 of file gclib.cs.

13.11.3.120 axis_f_motor_position

`SL gclib.GDataRecord1806.axis_f_motor_position`
F axis motor position.
Definition at line 1440 of file gclib.cs.

13.11.3.121 axis_f_position_error

`SL gclib.GDataRecord1806.axis_f_position_error`
F axis position error.
Definition at line 1441 of file gclib.cs.

13.11.3.122 axis_f_aux_position

`SL gclib.GDataRecord1806.axis_f_aux_position`
F axis auxiliary position.
Definition at line 1442 of file gclib.cs.

13.11.3.123 axis_f_velocity

`SL gclib.GDataRecord1806.axis_f_velocity`
F axis velocity.
Definition at line 1443 of file gclib.cs.

13.11.3.124 axis_f_torque

`SL gclib.GDataRecord1806.axis_f_torque`
F axis torque.
Definition at line 1444 of file gclib.cs.

13.11.3.125 axis_f_analog_in

`UW gclib.GDataRecord1806.axis_f_analog_in`
F axis analog input.
Definition at line 1445 of file gclib.cs.

13.11.3.126 axis_f_reserved_0

`UB gclib.GDataRecord1806.axis_f_reserved_0`
Reserved.
Definition at line 1446 of file gclib.cs.

13.11.3.127 axis_f_reserved_1

`UB gclib.GDataRecord1806.axis_f_reserved_1`
Reserved.
Definition at line 1447 of file gclib.cs.

13.11.3.128 axis_f_variable

`SL gclib.GDataRecord1806.axis_f_variable`
F User-defined variable (ZA).
Definition at line 1448 of file gclib.cs.

13.11.3.129 axis_g_status

`UW gclib.GDataRecord1806.axis_g_status`
G axis status.
Definition at line 1450 of file gclib.cs.

13.11.3.130 axis_g_switches

`UB gclib.GDataRecord1806.axis_g_switches`
G axis switches.
Definition at line 1451 of file gclib.cs.

13.11.3.131 axis_g_stop_code

`UB gclib.GDataRecord1806.axis_g_stop_code`
G axis stop code.
Definition at line 1452 of file gclib.cs.

13.11.3.132 axis_g_reference_position

`SL gclib.GDataRecord1806.axis_g_reference_position`
G axis reference position.
Definition at line 1453 of file gclib.cs.

13.11.3.133 axis_g_motor_position

`SL gclib.GDataRecord1806.axis_g_motor_position`
G axis motor position.
Definition at line 1454 of file gclib.cs.

13.11.3.134 axis_g_position_error

`SL gclib.GDataRecord1806.axis_g_position_error`
G axis position error.
Definition at line 1455 of file gclib.cs.

13.11.3.135 axis_g_aux_position

`SL gclib.GDataRecord1806.axis_g_aux_position`
G axis auxiliary position.
Definition at line 1456 of file gclib.cs.

13.11.3.136 axis_g_velocity

`SL gclib.GDataRecord1806.axis_g_velocity`
G axis velocity.
Definition at line 1457 of file gclib.cs.

13.11.3.137 axis_g_torque

`SL gclib.GDataRecord1806.axis_g_torque`
G axis torque.
Definition at line 1458 of file gclib.cs.

13.11.3.138 axis_g_analog_in

`UW gclib.GDataRecord1806.axis_g_analog_in`
G axis analog input.
Definition at line 1459 of file gclib.cs.

13.11.3.139 axis_g_reserved_0

`UB gclib.GDataRecord1806.axis_g_reserved_0`
Reserved.
Definition at line 1460 of file gclib.cs.

13.11.3.140 axis_g_reserved_1

`UB gclib.GDataRecord1806.axis_g_reserved_1`
Reserved.
Definition at line 1461 of file gclib.cs.

13.11.3.141 axis_g_variable

`SL gclib.GDataRecord1806.axis_g_variable`
G User-defined variable (ZA).
Definition at line 1462 of file gclib.cs.

13.11.3.142 axis_h_status

`UW gclib.GDataRecord1806.axis_h_status`
H axis status.
Definition at line 1464 of file gclib.cs.

13.11.3.143 axis_h_switches

`UB gclib.GDataRecord1806.axis_h_switches`
H axis switches.
Definition at line 1465 of file gclib.cs.

13.11.3.144 axis_h_stop_code

`UB gclib.GDataRecord1806.axis_h_stop_code`
H axis stop code.
Definition at line 1466 of file gclib.cs.

13.11.3.145 axis_h_reference_position

`SL gclib.GDataRecord1806.axis_h_reference_position`
H axis reference position.
Definition at line 1467 of file gclib.cs.

13.11.3.146 axis_h_motor_position

`SL gclib.GDataRecord1806.axis_h_motor_position`
H axis motor position.
Definition at line 1468 of file gclib.cs.

13.11.3.147 axis_h_position_error

`SL gclib.GDataRecord1806.axis_h_position_error`
H axis position error.
Definition at line 1469 of file gclib.cs.

13.11.3.148 axis_h_aux_position

`SL gclib.GDataRecord1806.axis_h_aux_position`
H axis auxiliary position.
Definition at line 1470 of file gclib.cs.

13.11.3.149 axis_h_velocity

`SL gclib.GDataRecord1806.axis_h_velocity`
H axis velocity.
Definition at line 1471 of file gclib.cs.

13.11.3.150 axis_h_torque

`SL gclib.GDataRecord1806.axis_h_torque`
H axis torque.
Definition at line 1472 of file gclib.cs.

13.11.3.151 axis_h_analog_in

`UW gclib.GDataRecord1806.axis_h_analog_in`
H axis analog input.
Definition at line 1473 of file gclib.cs.

13.11.3.152 axis_h_reserved_0

`UB gclib.GDataRecord1806.axis_h_reserved_0`
Reserved.
Definition at line 1474 of file gclib.cs.

13.11.3.153 axis_h_reserved_1

`UB gclib.GDataRecord1806.axis_h_reserved_1`
Reserved.
Definition at line 1475 of file gclib.cs.

13.11.3.154 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

13.12 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).

13.12.1 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 405 of file gclib_record.h.

13.12.2 Member Data Documentation

13.12.2.1 sample_number

`UW GDataRecord1806::sample_number`
sample number.
Definition at line 409 of file gclib_record.h.

13.12.2.2 input_bank_0

`UB GDataRecord1806::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 411 of file gclib_record.h.

13.12.2.3 input_bank_1

`UB GDataRecord1806::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 412 of file gclib_record.h.

13.12.2.4 input_bank_2

`UB GDataRecord1806::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 413 of file gclib_record.h.

13.12.2.5 input_bank_3

`UB GDataRecord1806::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 414 of file gclib_record.h.

13.12.2.6 input_bank_4

`UB GDataRecord1806::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 415 of file gclib_record.h.

13.12.2.7 input_bank_5

`UB GDataRecord1806::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 416 of file gclib_record.h.

13.12.2.8 input_bank_6

`UB GDataRecord1806::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 417 of file gclib_record.h.

13.12.2.9 input_bank_7

`UB GDataRecord1806::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 418 of file gclib_record.h.

13.12.2.10 input_bank_8

`UB GDataRecord1806::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 419 of file gclib_record.h.

13.12.2.11 input_bank_9

`UB GDataRecord1806::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 420 of file gclib_record.h.

13.12.2.12 output_bank_0

`UB GDataRecord1806::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 422 of file gclib_record.h.

13.12.2.13 output_bank_1

`UB GDataRecord1806::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 423 of file gclib_record.h.

13.12.2.14 output_bank_2

`UB GDataRecord1806::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 424 of file gclib_record.h.

13.12.2.15 output_bank_3

`UB GDataRecord1806::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 425 of file gclib_record.h.

13.12.2.16 output_bank_4

`UB GDataRecord1806::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 426 of file gclib_record.h.

13.12.2.17 output_bank_5

`UB GDataRecord1806::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 427 of file gclib_record.h.

13.12.2.18 output_bank_6

`UB GDataRecord1806::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 428 of file gclib_record.h.

13.12.2.19 output_bank_7

`UB GDataRecord1806::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 429 of file gclib_record.h.

13.12.2.20 output_bank_8

`UB GDataRecord1806::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 430 of file gclib_record.h.

13.12.2.21 output_bank_9

`UB GDataRecord1806::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 431 of file gclib_record.h.

13.12.2.22 reserved_0

`SW GDataRecord1806::reserved_0`
Reserved.
Definition at line 433 of file gclib_record.h.

13.12.2.23 reserved_2

`SW GDataRecord1806::reserved_2`
Reserved.
Definition at line 434 of file gclib_record.h.

13.12.2.24 reserved_4

`SW GDataRecord1806::reserved_4`
Reserved.
Definition at line 435 of file gclib_record.h.

13.12.2.25 reserved_6

`SW GDataRecord1806::reserved_6`
Reserved.
Definition at line 436 of file gclib_record.h.

13.12.2.26 reserved_8

`SW GDataRecord1806::reserved_8`
Reserved.
Definition at line 437 of file gclib_record.h.

13.12.2.27 reserved_10

`SW GDataRecord1806::reserved_10`
Reserved.
Definition at line 438 of file gclib_record.h.

13.12.2.28 reserved_12

`SW GDataRecord1806::reserved_12`
Reserved.
Definition at line 439 of file gclib_record.h.

13.12.2.29 reserved_14

`SW GDataRecord1806::reserved_14`
Reserved.
Definition at line 440 of file gclib_record.h.

13.12.2.30 reserved_16

`UB GDataRecord1806::reserved_16`
Reserved.
Definition at line 442 of file gclib_record.h.

13.12.2.31 reserved_17

`UB GDataRecord1806::reserved_17`
Reserved.
Definition at line 443 of file gclib_record.h.

13.12.2.32 reserved_18

`UB GDataRecord1806::reserved_18`
Reserved.
Definition at line 444 of file gclib_record.h.

13.12.2.33 reserved_19

`UB GDataRecord1806::reserved_19`
Reserved.
Definition at line 445 of file gclib_record.h.

13.12.2.34 reserved_20

`UB GDataRecord1806::reserved_20`
Reserved.
Definition at line 446 of file gclib_record.h.

13.12.2.35 reserved_21

`UB GDataRecord1806::reserved_21`
Reserved.
Definition at line 447 of file gclib_record.h.

13.12.2.36 reserved_22

`UB GDataRecord1806::reserved_22`
Reserved.
Definition at line 448 of file gclib_record.h.

13.12.2.37 reserved_23

`UB GDataRecord1806::reserved_23`
Reserved.
Definition at line 449 of file gclib_record.h.

13.12.2.38 error_code

`UB GDataRecord1806::error_code`
error code.
Definition at line 451 of file gclib_record.h.

13.12.2.39 thread_status

`UB GDataRecord1806::thread_status`
thread status.
Definition at line 452 of file gclib_record.h.

13.12.2.40 reserved_24

`UL GDataRecord1806::reserved_24`
Reserved.
Definition at line 453 of file gclib_record.h.

13.12.2.41 contour_segment_count

`UL GDataRecord1806::contour_segment_count`
Segment Count for Contour Mode.
Definition at line 455 of file gclib_record.h.

13.12.2.42 contour_buffer_available

`UW GDataRecord1806::contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 456 of file gclib_record.h.

13.12.2.43 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.

13.12.2.44 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.

13.12.2.45 s_distance

`SL GDataRecord1806::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 460 of file gclib_record.h.

13.12.2.46 s_plane_buffer_available

`UW GDataRecord1806::s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 461 of file gclib_record.h.

13.12.2.47 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.

13.12.2.48 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.

13.12.2.49 t_distance

`SL GDataRecord1806::t_distance`
distance traveled in coordinated move for T plane.
Definition at line 465 of file gclib_record.h.

13.12.2.50 t_plane_buffer_available

`UW GDataRecord1806::t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 466 of file gclib_record.h.

13.12.2.51 axis_a_status

`UW GDataRecord1806::axis_a_status`
A axis status.
Definition at line 468 of file gclib_record.h.

13.12.2.52 axis_a_switches

`UB GDataRecord1806::axis_a_switches`
A axis switches.
Definition at line 469 of file gclib_record.h.

13.12.2.53 axis_a_stop_code

`UB GDataRecord1806::axis_a_stop_code`
A axis stop code.
Definition at line 470 of file gclib_record.h.

13.12.2.54 axis_a_reference_position

`SL GDataRecord1806::axis_a_reference_position`
A axis reference position.
Definition at line 471 of file gclib_record.h.

13.12.2.55 axis_a_motor_position

`SL GDataRecord1806::axis_a_motor_position`
A axis motor position.
Definition at line 472 of file gclib_record.h.

13.12.2.56 axis_a_position_error

`SL GDataRecord1806::axis_a_position_error`
A axis position error.
Definition at line 473 of file gclib_record.h.

13.12.2.57 axis_a_aux_position

`SL GDataRecord1806::axis_a_aux_position`
A axis auxiliary position.
Definition at line 474 of file gclib_record.h.

13.12.2.58 axis_a_velocity

`SL GDataRecord1806::axis_a_velocity`
A axis velocity.
Definition at line 475 of file gclib_record.h.

13.12.2.59 axis_a_torque

`SL GDataRecord1806::axis_a_torque`
A axis torque.
Definition at line 476 of file gclib_record.h.

13.12.2.60 axis_a_analog_in

`UW GDataRecord1806::axis_a_analog_in`
A axis analog input.
Definition at line 477 of file gclib_record.h.

13.12.2.61 axis_a_reserved_0

`UB GDataRecord1806::axis_a_reserved_0`
Reserved.
Definition at line 478 of file gclib_record.h.

13.12.2.62 axis_a_reserved_1

`UB GDataRecord1806::axis_a_reserved_1`
Reserved.
Definition at line 479 of file gclib_record.h.

13.12.2.63 axis_a_variable

`SL GDataRecord1806::axis_a_variable`
A User-defined variable (ZA).
Definition at line 480 of file gclib_record.h.

13.12.2.64 axis_b_status

`UW GDataRecord1806::axis_b_status`
B axis status.
Definition at line 482 of file gclib_record.h.

13.12.2.65 axis_b_switches

`UB GDataRecord1806::axis_b_switches`
B axis switches.
Definition at line 483 of file gclib_record.h.

13.12.2.66 axis_b_stop_code

`UB GDataRecord1806::axis_b_stop_code`
B axis stop code.
Definition at line 484 of file gclib_record.h.

13.12.2.67 axis_b_reference_position

`SL GDataRecord1806::axis_b_reference_position`
B axis reference position.
Definition at line 485 of file gclib_record.h.

13.12.2.68 axis_b_motor_position

`SL GDataRecord1806::axis_b_motor_position`
B axis motor position.
Definition at line 486 of file gclib_record.h.

13.12.2.69 axis_b_position_error

`SL GDataRecord1806::axis_b_position_error`
B axis position error.
Definition at line 487 of file gclib_record.h.

13.12.2.70 axis_b_aux_position

`SL GDataRecord1806::axis_b_aux_position`
B axis auxiliary position.
Definition at line 488 of file gclib_record.h.

13.12.2.71 axis_b_velocity

`SL GDataRecord1806::axis_b_velocity`
B axis velocity.
Definition at line 489 of file gclib_record.h.

13.12.2.72 axis_b_torque

`SL GDataRecord1806::axis_b_torque`
B axis torque.
Definition at line 490 of file gclib_record.h.

13.12.2.73 axis_b_analog_in

`UW GDataRecord1806::axis_b_analog_in`
B axis analog input.
Definition at line 491 of file gclib_record.h.

13.12.2.74 axis_b_reserved_0

`UB GDataRecord1806::axis_b_reserved_0`
Reserved.
Definition at line 492 of file gclib_record.h.

13.12.2.75 axis_b_reserved_1

`UB GDataRecord1806::axis_b_reserved_1`
Reserved.
Definition at line 493 of file gclib_record.h.

13.12.2.76 axis_b_variable

`SL GDataRecord1806::axis_b_variable`
B User-defined variable (ZA).
Definition at line 494 of file gclib_record.h.

13.12.2.77 axis_c_status

`UW GDataRecord1806::axis_c_status`
C axis status.
Definition at line 496 of file gclib_record.h.

13.12.2.78 axis_c_switches

`UB GDataRecord1806::axis_c_switches`
C axis switches.
Definition at line 497 of file gclib_record.h.

13.12.2.79 axis_c_stop_code

`UB GDataRecord1806::axis_c_stop_code`
C axis stop code.
Definition at line 498 of file gclib_record.h.

13.12.2.80 axis_c_reference_position

`SL GDataRecord1806::axis_c_reference_position`
C axis reference position.
Definition at line 499 of file gclib_record.h.

13.12.2.81 axis_c_motor_position

`SL GDataRecord1806::axis_c_motor_position`
C axis motor position.
Definition at line 500 of file gclib_record.h.

13.12.2.82 axis_c_position_error

`SL GDataRecord1806::axis_c_position_error`
C axis position error.
Definition at line 501 of file gclib_record.h.

13.12.2.83 axis_c_aux_position

`SL GDataRecord1806::axis_c_aux_position`
C axis auxiliary position.
Definition at line 502 of file gclib_record.h.

13.12.2.84 axis_c_velocity

`SL GDataRecord1806::axis_c_velocity`
C axis velocity.
Definition at line 503 of file gclib_record.h.

13.12.2.85 axis_c_torque

`SL GDataRecord1806::axis_c_torque`
C axis torque.
Definition at line 504 of file gclib_record.h.

13.12.2.86 axis_c_analog_in

`UW GDataRecord1806::axis_c_analog_in`
C axis analog input.
Definition at line 505 of file gclib_record.h.

13.12.2.87 axis_c_reserved_0

`UB GDataRecord1806::axis_c_reserved_0`
Reserved.
Definition at line 506 of file gclib_record.h.

13.12.2.88 axis_c_reserved_1

`UB GDataRecord1806::axis_c_reserved_1`
Reserved.
Definition at line 507 of file gclib_record.h.

13.12.2.89 axis_c_variable

`SL GDataRecord1806::axis_c_variable`
C User-defined variable (ZA).
Definition at line 508 of file gclib_record.h.

13.12.2.90 axis_d_status

`UW GDataRecord1806::axis_d_status`
D axis status.
Definition at line 510 of file gclib_record.h.

13.12.2.91 axis_d_switches

`UB GDataRecord1806::axis_d_switches`
D axis switches.
Definition at line 511 of file gclib_record.h.

13.12.2.92 axis_d_stop_code

`UB GDataRecord1806::axis_d_stop_code`
D axis stop code.
Definition at line 512 of file gclib_record.h.

13.12.2.93 axis_d_reference_position

`SL GDataRecord1806::axis_d_reference_position`
D axis reference position.
Definition at line 513 of file gclib_record.h.

13.12.2.94 axis_d_motor_position

`SL GDataRecord1806::axis_d_motor_position`
D axis motor position.
Definition at line 514 of file gclib_record.h.

13.12.2.95 axis_d_position_error

`SL GDataRecord1806::axis_d_position_error`
D axis position error.
Definition at line 515 of file gclib_record.h.

13.12.2.96 axis_d_aux_position

`SL GDataRecord1806::axis_d_aux_position`
D axis auxiliary position.
Definition at line 516 of file gclib_record.h.

13.12.2.97 axis_d_velocity

`SL GDataRecord1806::axis_d_velocity`
D axis velocity.
Definition at line 517 of file gclib_record.h.

13.12.2.98 axis_d_torque

`SL GDataRecord1806::axis_d_torque`
D axis torque.
Definition at line 518 of file gclib_record.h.

13.12.2.99 axis_d_analog_in

`UW GDataRecord1806::axis_d_analog_in`
D axis analog input.
Definition at line 519 of file gclib_record.h.

13.12.2.100 axis_d_reserved_0

`UB GDataRecord1806::axis_d_reserved_0`
Reserved.
Definition at line 520 of file gclib_record.h.

13.12.2.101 axis_d_reserved_1

`UB GDataRecord1806::axis_d_reserved_1`
Reserved.
Definition at line 521 of file gclib_record.h.

13.12.2.102 axis_d_variable

`SL GDataRecord1806::axis_d_variable`
D User-defined variable (ZA).
Definition at line 522 of file gclib_record.h.

13.12.2.103 axis_e_status

`UW GDataRecord1806::axis_e_status`
E axis status.
Definition at line 524 of file gclib_record.h.

13.12.2.104 axis_e_switches

`UB GDataRecord1806::axis_e_switches`
E axis switches.
Definition at line 525 of file gclib_record.h.

13.12.2.105 axis_e_stop_code

`UB GDataRecord1806::axis_e_stop_code`
E axis stop code.
Definition at line 526 of file gclib_record.h.

13.12.2.106 axis_e_reference_position

`SL GDataRecord1806::axis_e_reference_position`
E axis reference position.
Definition at line 527 of file gclib_record.h.

13.12.2.107 axis_e_motor_position

`SL GDataRecord1806::axis_e_motor_position`
E axis motor position.
Definition at line 528 of file gclib_record.h.

13.12.2.108 axis_e_position_error

`SL GDataRecord1806::axis_e_position_error`
E axis position error.
Definition at line 529 of file gclib_record.h.

13.12.2.109 axis_e_aux_position

`SL GDataRecord1806::axis_e_aux_position`
E axis auxiliary position.
Definition at line 530 of file gclib_record.h.

13.12.2.110 axis_e_velocity

`SL GDataRecord1806::axis_e_velocity`
E axis velocity.
Definition at line 531 of file gclib_record.h.

13.12.2.111 axis_e_torque

`SL GDataRecord1806::axis_e_torque`
E axis torque.
Definition at line 532 of file gclib_record.h.

13.12.2.112 axis_e_analog_in

`UW GDataRecord1806::axis_e_analog_in`
E axis analog input.
Definition at line 533 of file gclib_record.h.

13.12.2.113 axis_e_reserved_0

`UB GDataRecord1806::axis_e_reserved_0`
Reserved.
Definition at line 534 of file gclib_record.h.

13.12.2.114 axis_e_reserved_1

`UB GDataRecord1806::axis_e_reserved_1`
Reserved.
Definition at line 535 of file gclib_record.h.

13.12.2.115 axis_e_variable

`SL GDataRecord1806::axis_e_variable`
E User-defined variable (ZA).
Definition at line 536 of file gclib_record.h.

13.12.2.116 axis_f_status

`UW GDataRecord1806::axis_f_status`
F axis status.
Definition at line 538 of file gclib_record.h.

13.12.2.117 axis_f_switches

`UB GDataRecord1806::axis_f_switches`
F axis switches.
Definition at line 539 of file gclib_record.h.

13.12.2.118 axis_f_stop_code

`UB GDataRecord1806::axis_f_stop_code`
F axis stop code.
Definition at line 540 of file gclib_record.h.

13.12.2.119 axis_f_reference_position

`SL GDataRecord1806::axis_f_reference_position`
F axis reference position.
Definition at line 541 of file gclib_record.h.

13.12.2.120 axis_f_motor_position

`SL GDataRecord1806::axis_f_motor_position`
F axis motor position.
Definition at line 542 of file gclib_record.h.

13.12.2.121 axis_f_position_error

`SL GDataRecord1806::axis_f_position_error`
F axis position error.
Definition at line 543 of file gclib_record.h.

13.12.2.122 axis_f_aux_position

`SL GDataRecord1806::axis_f_aux_position`
F axis auxiliary position.
Definition at line 544 of file gclib_record.h.

13.12.2.123 axis_f_velocity

`SL GDataRecord1806::axis_f_velocity`
F axis velocity.
Definition at line 545 of file gclib_record.h.

13.12.2.124 axis_f_torque

`SL GDataRecord1806::axis_f_torque`
F axis torque.
Definition at line 546 of file gclib_record.h.

13.12.2.125 axis_f_analog_in

`UW GDataRecord1806::axis_f_analog_in`
F axis analog input.
Definition at line 547 of file gclib_record.h.

13.12.2.126 axis_f_reserved_0

`UB GDataRecord1806::axis_f_reserved_0`
Reserved.
Definition at line 548 of file gclib_record.h.

13.12.2.127 axis_f_reserved_1

`UB GDataRecord1806::axis_f_reserved_1`
Reserved.
Definition at line 549 of file gclib_record.h.

13.12.2.128 axis_f_variable

`SL GDataRecord1806::axis_f_variable`
F User-defined variable (ZA).
Definition at line 550 of file gclib_record.h.

13.12.2.129 axis_g_status

`UW GDataRecord1806::axis_g_status`
G axis status.
Definition at line 552 of file gclib_record.h.

13.12.2.130 axis_g_switches

`UB GDataRecord1806::axis_g_switches`
G axis switches.
Definition at line 553 of file gclib_record.h.

13.12.2.131 axis_g_stop_code

`UB GDataRecord1806::axis_g_stop_code`
G axis stop code.
Definition at line 554 of file gclib_record.h.

13.12.2.132 axis_g_reference_position

`SL GDataRecord1806::axis_g_reference_position`
G axis reference position.
Definition at line 555 of file gclib_record.h.

13.12.2.133 axis_g_motor_position

`SL GDataRecord1806::axis_g_motor_position`
G axis motor position.
Definition at line 556 of file gclib_record.h.

13.12.2.134 axis_g_position_error

`SL GDataRecord1806::axis_g_position_error`
G axis position error.
Definition at line 557 of file gclib_record.h.

13.12.2.135 axis_g_aux_position

`SL GDataRecord1806::axis_g_aux_position`
G axis auxiliary position.
Definition at line 558 of file gclib_record.h.

13.12.2.136 axis_g_velocity

`SL GDataRecord1806::axis_g_velocity`
G axis velocity.
Definition at line 559 of file gclib_record.h.

13.12.2.137 axis_g_torque

`SL GDataRecord1806::axis_g_torque`
G axis torque.
Definition at line 560 of file gclib_record.h.

13.12.2.138 axis_g_analog_in

`UW GDataRecord1806::axis_g_analog_in`
G axis analog input.
Definition at line 561 of file gclib_record.h.

13.12.2.139 axis_g_reserved_0

`UB GDataRecord1806::axis_g_reserved_0`
Reserved.
Definition at line 562 of file gclib_record.h.

13.12.2.140 axis_g_reserved_1

`UB GDataRecord1806::axis_g_reserved_1`
Reserved.
Definition at line 563 of file gclib_record.h.

13.12.2.141 axis_g_variable

`SL GDataRecord1806::axis_g_variable`
G User-defined variable (ZA).
Definition at line 564 of file gclib_record.h.

13.12.2.142 axis_h_status

`UW GDataRecord1806::axis_h_status`
H axis status.
Definition at line 566 of file gclib_record.h.

13.12.2.143 axis_h_switches

`UB GDataRecord1806::axis_h_switches`
H axis switches.
Definition at line 567 of file gclib_record.h.

13.12.2.144 axis_h_stop_code

`UB GDataRecord1806::axis_h_stop_code`
H axis stop code.
Definition at line 568 of file gclib_record.h.

13.12.2.145 axis_h_reference_position

`SL GDataRecord1806::axis_h_reference_position`
H axis reference position.
Definition at line 569 of file gclib_record.h.

13.12.2.146 axis_h_motor_position

`SL GDataRecord1806::axis_h_motor_position`
H axis motor position.
Definition at line 570 of file gclib_record.h.

13.12.2.147 axis_h_position_error

`SL GDataRecord1806::axis_h_position_error`
H axis position error.
Definition at line 571 of file gclib_record.h.

13.12.2.148 axis_h_aux_position

`SL GDataRecord1806::axis_h_aux_position`
H axis auxiliary position.
Definition at line 572 of file gclib_record.h.

13.12.2.149 axis_h_velocity

`SL GDataRecord1806::axis_h_velocity`
H axis velocity.
Definition at line 573 of file gclib_record.h.

13.12.2.150 axis_h_torque

`SL GDataRecord1806::axis_h_torque`
H axis torque.
Definition at line 574 of file gclib_record.h.

13.12.2.151 axis_h_analog_in

`UW GDataRecord1806::axis_h_analog_in`
H axis analog input.
Definition at line 575 of file gclib_record.h.

13.12.2.152 axis_h_reserved_0

`UB GDataRecord1806::axis_h_reserved_0`
Reserved.
Definition at line 576 of file gclib_record.h.

13.12.2.153 axis_h_reserved_1

`UB GDataRecord1806::axis_h_reserved_1`
Reserved.
Definition at line 577 of file gclib_record.h.

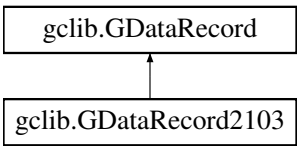
13.12.2.154 axis_h_variable

`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

13.13 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 Member Functions inherited from gclib.GDataRecord

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.

13.13.1 Detailed Description

Data record struct for DMC-2103 controllers.
Definition at line 1481 of file gclib.cs.

13.13.2 Member Function Documentation

13.13.2.1 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.

13.13.3 Member Data Documentation

13.13.3.1 header_0

`UB gclib.GDataRecord2103.header_0`
1st Byte of Header.
Definition at line 1487 of file gclib.cs.

13.13.3.2 header_1

`UB gclib.GDataRecord2103.header_1`
2nd Byte of Header.
Definition at line 1488 of file gclib.cs.

13.13.3.3 header_2

`UB gclib.GDataRecord2103.header_2`
3rd Byte of Header.
Definition at line 1489 of file gclib.cs.

13.13.3.4 header_3

`UB gclib.GDataRecord2103.header_3`
4th Byte of Header.
Definition at line 1490 of file gclib.cs.

13.13.3.5 sample_number

`UW gclib.GDataRecord2103.sample_number`
sample number.
Definition at line 1492 of file gclib.cs.

13.13.3.6 input_bank_0

`UB gclib.GDataRecord2103.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 1494 of file gclib.cs.

13.13.3.7 input_bank_1

`UB gclib.GDataRecord2103.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 1495 of file gclib.cs.

13.13.3.8 input_bank_2

`UB gclib.GDataRecord2103.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 1496 of file gclib.cs.

13.13.3.9 input_bank_3

`UB gclib.GDataRecord2103.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1497 of file gclib.cs.

13.13.3.10 input_bank_4

`UB gclib.GDataRecord2103.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1498 of file gclib.cs.

13.13.3.11 input_bank_5

`UB gclib.GDataRecord2103.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1499 of file gclib.cs.

13.13.3.12 input_bank_6

`UB gclib.GDataRecord2103.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1500 of file gclib.cs.

13.13.3.13 input_bank_7

`UB gclib.GDataRecord2103.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1501 of file gclib.cs.

13.13.3.14 input_bank_8

`UB gclib.GDataRecord2103.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1502 of file gclib.cs.

13.13.3.15 input_bank_9

`UB gclib.GDataRecord2103.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1503 of file gclib.cs.

13.13.3.16 output_bank_0

`UB gclib.GDataRecord2103.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1505 of file gclib.cs.

13.13.3.17 output_bank_1

`UB gclib.GDataRecord2103.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1506 of file gclib.cs.

13.13.3.18 output_bank_2

`UB gclib.GDataRecord2103.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1507 of file gclib.cs.

13.13.3.19 output_bank_3

`UB gclib.GDataRecord2103.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1508 of file gclib.cs.

13.13.3.20 output_bank_4

`UB gclib.GDataRecord2103.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1509 of file gclib.cs.

13.13.3.21 output_bank_5

`UB gclib.GDataRecord2103.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1510 of file gclib.cs.

13.13.3.22 output_bank_6

`UB gclib.GDataRecord2103.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1511 of file gclib.cs.

13.13.3.23 output_bank_7

`UB gclib.GDataRecord2103.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1512 of file gclib.cs.

13.13.3.24 output_bank_8

`UB gclib.GDataRecord2103.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1513 of file gclib.cs.

13.13.3.25 output_bank_9

`UB gclib.GDataRecord2103.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1514 of file gclib.cs.

13.13.3.26 error_code

`UB gclib.GDataRecord2103.error_code`
error code.
Definition at line 1516 of file gclib.cs.

13.13.3.27 general_status

`UB gclib.GDataRecord2103.general_status`
general status
Definition at line 1517 of file gclib.cs.

13.13.3.28 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.

13.13.3.29 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.

13.13.3.30 s_distance

`SL gclib.GDataRecord2103.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1521 of file gclib.cs.

13.13.3.31 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.

13.13.3.32 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.

13.13.3.33 t_distance

`SL gclib.GDataRecord2103.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 1525 of file gclib.cs.

13.13.3.34 axis_a_status

`UW gclib.GDataRecord2103.axis_a_status`
A axis status.
Definition at line 1527 of file gclib.cs.

13.13.3.35 axis_a_switches

`UB gclib.GDataRecord2103.axis_a_switches`
A axis switches.
Definition at line 1528 of file gclib.cs.

13.13.3.36 axis_a_stop_code

`UB gclib.GDataRecord2103.axis_a_stop_code`
A axis stop code.
Definition at line 1529 of file gclib.cs.

13.13.3.37 axis_a_reference_position

`SL gclib.GDataRecord2103.axis_a_reference_position`
A axis reference position.
Definition at line 1530 of file gclib.cs.

13.13.3.38 axis_a_motor_position

`SL gclib.GDataRecord2103.axis_a_motor_position`
A axis motor position.
Definition at line 1531 of file gclib.cs.

13.13.3.39 axis_a_position_error

`SL gclib.GDataRecord2103.axis_a_position_error`
A axis position error.
Definition at line 1532 of file gclib.cs.

13.13.3.40 axis_a_aux_position

`SL gclib.GDataRecord2103.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1533 of file gclib.cs.

13.13.3.41 axis_a_velocity

`SL gclib.GDataRecord2103.axis_a_velocity`
A axis velocity.
Definition at line 1534 of file gclib.cs.

13.13.3.42 axis_a_torque

`SW gclib.GDataRecord2103.axis_a_torque`
A axis torque.
Definition at line 1535 of file gclib.cs.

13.13.3.43 axis_a_analog_in

`UW gclib.GDataRecord2103.axis_a_analog_in`
A axis analog input.
Definition at line 1536 of file gclib.cs.

13.13.3.44 axis_b_status

`UW gclib.GDataRecord2103.axis_b_status`
B axis status.
Definition at line 1538 of file gclib.cs.

13.13.3.45 axis_b_switches

`UB gclib.GDataRecord2103.axis_b_switches`
B axis switches.
Definition at line 1539 of file gclib.cs.

13.13.3.46 axis_b_stop_code

`UB gclib.GDataRecord2103.axis_b_stop_code`
B axis stop code.
Definition at line 1540 of file gclib.cs.

13.13.3.47 axis_b_reference_position

`SL gclib.GDataRecord2103.axis_b_reference_position`
B axis reference position.
Definition at line 1541 of file gclib.cs.

13.13.3.48 axis_b_motor_position

`SL gclib.GDataRecord2103.axis_b_motor_position`
B axis motor position.
Definition at line 1542 of file gclib.cs.

13.13.3.49 axis_b_position_error

`SL gclib.GDataRecord2103.axis_b_position_error`
B axis position error.
Definition at line 1543 of file gclib.cs.

13.13.3.50 axis_b_aux_position

`SL gclib.GDataRecord2103.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1544 of file gclib.cs.

13.13.3.51 axis_b_velocity

`SL gclib.GDataRecord2103.axis_b_velocity`
B axis velocity.
Definition at line 1545 of file gclib.cs.

13.13.3.52 axis_b_torque

`SW gclib.GDataRecord2103.axis_b_torque`
B axis torque.
Definition at line 1546 of file gclib.cs.

13.13.3.53 axis_b_analog_in

`UW gclib.GDataRecord2103.axis_b_analog_in`
B axis analog input.
Definition at line 1547 of file gclib.cs.

13.13.3.54 axis_c_status

`UW gclib.GDataRecord2103.axis_c_status`
C axis status.
Definition at line 1549 of file gclib.cs.

13.13.3.55 axis_c_switches

`UB gclib.GDataRecord2103.axis_c_switches`
C axis switches.
Definition at line 1550 of file gclib.cs.

13.13.3.56 axis_c_stop_code

`UB gclib.GDataRecord2103.axis_c_stop_code`
C axis stop code.
Definition at line 1551 of file gclib.cs.

13.13.3.57 axis_c_reference_position

`SL gclib.GDataRecord2103.axis_c_reference_position`
C axis reference position.
Definition at line 1552 of file gclib.cs.

13.13.3.58 axis_c_motor_position

`SL gclib.GDataRecord2103.axis_c_motor_position`
C axis motor position.
Definition at line 1553 of file gclib.cs.

13.13.3.59 axis_c_position_error

`SL gclib.GDataRecord2103.axis_c_position_error`
C axis position error.
Definition at line 1554 of file gclib.cs.

13.13.3.60 axis_c_aux_position

`SL gclib.GDataRecord2103.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1555 of file gclib.cs.

13.13.3.61 axis_c_velocity

`SL gclib.GDataRecord2103.axis_c_velocity`
C axis velocity.
Definition at line 1556 of file gclib.cs.

13.13.3.62 axis_c_torque

`SW gclib.GDataRecord2103.axis_c_torque`
C axis torque.
Definition at line 1557 of file gclib.cs.

13.13.3.63 axis_c_analog_in

`UW gclib.GDataRecord2103.axis_c_analog_in`
C axis analog input.
Definition at line 1558 of file gclib.cs.

13.13.3.64 axis_d_status

`UW gclib.GDataRecord2103.axis_d_status`
D axis status.
Definition at line 1560 of file gclib.cs.

13.13.3.65 axis_d_switches

`UB gclib.GDataRecord2103.axis_d_switches`
D axis switches.
Definition at line 1561 of file gclib.cs.

13.13.3.66 axis_d_stop_code

`UB gclib.GDataRecord2103.axis_d_stop_code`
D axis stop code.
Definition at line 1562 of file gclib.cs.

13.13.3.67 axis_d_reference_position

`SL gclib.GDataRecord2103.axis_d_reference_position`
D axis reference position.
Definition at line 1563 of file gclib.cs.

13.13.3.68 axis_d_motor_position

`SL gclib.GDataRecord2103.axis_d_motor_position`
D axis motor position.
Definition at line 1564 of file gclib.cs.

13.13.3.69 axis_d_position_error

`SL gclib.GDataRecord2103.axis_d_position_error`
D axis position error.
Definition at line 1565 of file gclib.cs.

13.13.3.70 axis_d_aux_position

`SL gclib.GDataRecord2103.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1566 of file gclib.cs.

13.13.3.71 axis_d_velocity

`SL gclib.GDataRecord2103.axis_d_velocity`
D axis velocity.
Definition at line 1567 of file gclib.cs.

13.13.3.72 axis_d_torque

`SW gclib.GDataRecord2103.axis_d_torque`
D axis torque.
Definition at line 1568 of file gclib.cs.

13.13.3.73 axis_d_analog_in

`UW gclib.GDataRecord2103.axis_d_analog_in`
D axis analog input.
Definition at line 1569 of file gclib.cs.

13.13.3.74 axis_e_status

`UW gclib.GDataRecord2103.axis_e_status`
E axis status.
Definition at line 1571 of file gclib.cs.

13.13.3.75 axis_e_switches

`UB gclib.GDataRecord2103.axis_e_switches`
E axis switches.
Definition at line 1572 of file gclib.cs.

13.13.3.76 axis_e_stop_code

`UB gclib.GDataRecord2103.axis_e_stop_code`
E axis stop code.
Definition at line 1573 of file gclib.cs.

13.13.3.77 axis_e_reference_position

`SL gclib.GDataRecord2103.axis_e_reference_position`
E axis reference position.
Definition at line 1574 of file gclib.cs.

13.13.3.78 axis_e_motor_position

`SL gclib.GDataRecord2103.axis_e_motor_position`
E axis motor position.
Definition at line 1575 of file gclib.cs.

13.13.3.79 axis_e_position_error

`SL gclib.GDataRecord2103.axis_e_position_error`
E axis position error.
Definition at line 1576 of file gclib.cs.

13.13.3.80 axis_e_aux_position

`SL gclib.GDataRecord2103.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1577 of file gclib.cs.

13.13.3.81 axis_e_velocity

`SL gclib.GDataRecord2103.axis_e_velocity`
E axis velocity.
Definition at line 1578 of file gclib.cs.

13.13.3.82 axis_e_torque

`SW gclib.GDataRecord2103.axis_e_torque`
E axis torque.
Definition at line 1579 of file gclib.cs.

13.13.3.83 axis_e_analog_in

`UW gclib.GDataRecord2103.axis_e_analog_in`
E axis analog input.
Definition at line 1580 of file gclib.cs.

13.13.3.84 axis_f_status

`UW gclib.GDataRecord2103.axis_f_status`
F axis status.
Definition at line 1582 of file gclib.cs.

13.13.3.85 axis_f_switches

`UB gclib.GDataRecord2103.axis_f_switches`
F axis switches.
Definition at line 1583 of file gclib.cs.

13.13.3.86 axis_f_stop_code

`UB gclib.GDataRecord2103.axis_f_stop_code`
F axis stop code.
Definition at line 1584 of file gclib.cs.

13.13.3.87 axis_f_reference_position

`SL gclib.GDataRecord2103.axis_f_reference_position`
F axis reference position.
Definition at line 1585 of file gclib.cs.

13.13.3.88 axis_f_motor_position

`SL gclib.GDataRecord2103.axis_f_motor_position`
F axis motor position.
Definition at line 1586 of file gclib.cs.

13.13.3.89 axis_f_position_error

`SL gclib.GDataRecord2103.axis_f_position_error`
F axis position error.
Definition at line 1587 of file gclib.cs.

13.13.3.90 axis_f_aux_position

`SL gclib.GDataRecord2103.axis_f_aux_position`
F axis auxiliary position.
Definition at line 1588 of file gclib.cs.

13.13.3.91 axis_f_velocity

`SL gclib.GDataRecord2103.axis_f_velocity`
F axis velocity.
Definition at line 1589 of file gclib.cs.

13.13.3.92 axis_f_torque

`SW gclib.GDataRecord2103.axis_f_torque`
F axis torque.
Definition at line 1590 of file gclib.cs.

13.13.3.93 axis_f_analog_in

`UW gclib.GDataRecord2103.axis_f_analog_in`
F axis analog input.
Definition at line 1591 of file gclib.cs.

13.13.3.94 axis_g_status

`UW gclib.GDataRecord2103.axis_g_status`
G axis status.
Definition at line 1593 of file gclib.cs.

13.13.3.95 axis_g_switches

`UB gclib.GDataRecord2103.axis_g_switches`
G axis switches.
Definition at line 1594 of file gclib.cs.

13.13.3.96 axis_g_stop_code

`UB gclib.GDataRecord2103.axis_g_stop_code`
G axis stop code.
Definition at line 1595 of file gclib.cs.

13.13.3.97 axis_g_reference_position

`SL gclib.GDataRecord2103.axis_g_reference_position`
G axis reference position.
Definition at line 1596 of file gclib.cs.

13.13.3.98 axis_g_motor_position

`SL gclib.GDataRecord2103.axis_g_motor_position`
G axis motor position.
Definition at line 1597 of file gclib.cs.

13.13.3.99 axis_g_position_error

`SL gclib.GDataRecord2103.axis_g_position_error`
G axis position error.
Definition at line 1598 of file gclib.cs.

13.13.3.100 axis_g_aux_position

`SL gclib.GDataRecord2103.axis_g_aux_position`
G axis auxiliary position.
Definition at line 1599 of file gclib.cs.

13.13.3.101 axis_g_velocity

`SL gclib.GDataRecord2103.axis_g_velocity`
G axis velocity.
Definition at line 1600 of file gclib.cs.

13.13.3.102 axis_g_torque

`SW gclib.GDataRecord2103.axis_g_torque`
G axis torque.
Definition at line 1601 of file gclib.cs.

13.13.3.103 axis_g_analog_in

`UW gclib.GDataRecord2103.axis_g_analog_in`
G axis analog input.
Definition at line 1602 of file gclib.cs.

13.13.3.104 axis_h_status

`UW gclib.GDataRecord2103.axis_h_status`
H axis status.
Definition at line 1604 of file gclib.cs.

13.13.3.105 axis_h_switches

`UB gclib.GDataRecord2103.axis_h_switches`
H axis switches.
Definition at line 1605 of file gclib.cs.

13.13.3.106 axis_h_stop_code

`UB gclib.GDataRecord2103.axis_h_stop_code`
H axis stop code.
Definition at line 1606 of file gclib.cs.

13.13.3.107 axis_h_reference_position

`SL gclib.GDataRecord2103.axis_h_reference_position`
H axis reference position.
Definition at line 1607 of file gclib.cs.

13.13.3.108 axis_h_motor_position

`SL gclib.GDataRecord2103.axis_h_motor_position`
H axis motor position.
Definition at line 1608 of file gclib.cs.

13.13.3.109 axis_h_position_error

`SL gclib.GDataRecord2103.axis_h_position_error`
H axis position error.
Definition at line 1609 of file gclib.cs.

13.13.3.110 axis_h_aux_position

`SL gclib.GDataRecord2103.axis_h_aux_position`
H axis auxiliary position.
Definition at line 1610 of file gclib.cs.

13.13.3.111 axis_h_velocity

`SL gclib.GDataRecord2103.axis_h_velocity`
H axis velocity.
Definition at line 1611 of file gclib.cs.

13.13.3.112 axis_h_torque

`SW gclib.GDataRecord2103.axis_h_torque`
H axis torque.
Definition at line 1612 of file gclib.cs.

13.13.3.113 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

13.14 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.

13.14.1 Detailed Description

Data record struct for DMC-2103 controllers.
Definition at line 582 of file gclib_record.h.

13.14.2 Member Data Documentation

13.14.2.1 header_0

`UB GDataRecord2103::header_0`
1st Byte of Header.
Definition at line 587 of file gclib_record.h.

13.14.2.2 header_1

`UB GDataRecord2103::header_1`
2nd Byte of Header.
Definition at line 588 of file gclib_record.h.

13.14.2.3 header_2

`UB GDataRecord2103::header_2`
3rd Byte of Header.
Definition at line 589 of file gclib_record.h.

13.14.2.4 header_3

`UB GDataRecord2103::header_3`
4th Byte of Header.
Definition at line 590 of file gclib_record.h.

13.14.2.5 sample_number

`UW GDataRecord2103::sample_number`
sample number.
Definition at line 592 of file gclib_record.h.

13.14.2.6 input_bank_0

`UB GDataRecord2103::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 594 of file gclib_record.h.

13.14.2.7 input_bank_1

`UB GDataRecord2103::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 595 of file gclib_record.h.

13.14.2.8 input_bank_2

`UB GDataRecord2103::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 596 of file gclib_record.h.

13.14.2.9 input_bank_3

`UB GDataRecord2103::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 597 of file gclib_record.h.

13.14.2.10 input_bank_4

`UB GDataRecord2103::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 598 of file gclib_record.h.

13.14.2.11 input_bank_5

`UB GDataRecord2103::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 599 of file gclib_record.h.

13.14.2.12 input_bank_6

`UB GDataRecord2103::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 600 of file gclib_record.h.

13.14.2.13 input_bank_7

`UB GDataRecord2103::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 601 of file gclib_record.h.

13.14.2.14 input_bank_8

`UB GDataRecord2103::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 602 of file gclib_record.h.

13.14.2.15 input_bank_9

`UB GDataRecord2103::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 603 of file gclib_record.h.

13.14.2.16 output_bank_0

`UB GDataRecord2103::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 605 of file gclib_record.h.

13.14.2.17 output_bank_1

`UB GDataRecord2103::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 606 of file gclib_record.h.

13.14.2.18 output_bank_2

`UB GDataRecord2103::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 607 of file gclib_record.h.

13.14.2.19 output_bank_3

`UB GDataRecord2103::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 608 of file gclib_record.h.

13.14.2.20 output_bank_4

`UB GDataRecord2103::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 609 of file gclib_record.h.

13.14.2.21 output_bank_5

`UB GDataRecord2103::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 610 of file gclib_record.h.

13.14.2.22 output_bank_6

`UB GDataRecord2103::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 611 of file gclib_record.h.

13.14.2.23 output_bank_7

`UB GDataRecord2103::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 612 of file gclib_record.h.

13.14.2.24 output_bank_8

`UB GDataRecord2103::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 613 of file gclib_record.h.

13.14.2.25 output_bank_9

`UB GDataRecord2103::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 614 of file gclib_record.h.

13.14.2.26 error_code

`UB GDataRecord2103::error_code`
error code.
Definition at line 616 of file gclib_record.h.

13.14.2.27 general_status

`UB GDataRecord2103::general_status`
general status
Definition at line 617 of file gclib_record.h.

13.14.2.28 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.

13.14.2.29 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.

13.14.2.30 s_distance

`SL GDataRecord2103::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 621 of file gclib_record.h.

13.14.2.31 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.

13.14.2.32 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.

13.14.2.33 t_distance

`SL GDataRecord2103::t_distance`
distance traveled in coordinated move for T plane.
Definition at line 625 of file gclib_record.h.

13.14.2.34 axis_a_status

`UW GDataRecord2103::axis_a_status`
A axis status.
Definition at line 627 of file gclib_record.h.

13.14.2.35 axis_a_switches

`UB GDataRecord2103::axis_a_switches`
A axis switches.
Definition at line 628 of file gclib_record.h.

13.14.2.36 axis_a_stop_code

`UB GDataRecord2103::axis_a_stop_code`
A axis stop code.
Definition at line 629 of file gclib_record.h.

13.14.2.37 axis_a_reference_position

`SL GDataRecord2103::axis_a_reference_position`
A axis reference position.
Definition at line 630 of file gclib_record.h.

13.14.2.38 axis_a_motor_position

`SL GDataRecord2103::axis_a_motor_position`
A axis motor position.
Definition at line 631 of file gclib_record.h.

13.14.2.39 axis_a_position_error

`SL GDataRecord2103::axis_a_position_error`
A axis position error.
Definition at line 632 of file gclib_record.h.

13.14.2.40 axis_a_aux_position

`SL GDataRecord2103::axis_a_aux_position`
A axis auxiliary position.
Definition at line 633 of file gclib_record.h.

13.14.2.41 axis_a_velocity

`SL GDataRecord2103::axis_a_velocity`
A axis velocity.
Definition at line 634 of file gclib_record.h.

13.14.2.42 axis_a_torque

`SW GDataRecord2103::axis_a_torque`
A axis torque.
Definition at line 635 of file gclib_record.h.

13.14.2.43 axis_a_analog_in

`UW GDataRecord2103::axis_a_analog_in`
A axis analog input.
Definition at line 636 of file gclib_record.h.

13.14.2.44 axis_b_status

`UW GDataRecord2103::axis_b_status`
B axis status.
Definition at line 638 of file gclib_record.h.

13.14.2.45 axis_b_switches

`UB GDataRecord2103::axis_b_switches`
B axis switches.
Definition at line 639 of file gclib_record.h.

13.14.2.46 axis_b_stop_code

`UB GDataRecord2103::axis_b_stop_code`
B axis stop code.
Definition at line 640 of file gclib_record.h.

13.14.2.47 axis_b_reference_position

`SL GDataRecord2103::axis_b_reference_position`
B axis reference position.
Definition at line 641 of file gclib_record.h.

13.14.2.48 axis_b_motor_position

`SL GDataRecord2103::axis_b_motor_position`
B axis motor position.
Definition at line 642 of file gclib_record.h.

13.14.2.49 axis_b_position_error

`SL GDataRecord2103::axis_b_position_error`
B axis position error.
Definition at line 643 of file gclib_record.h.

13.14.2.50 axis_b_aux_position

`SL GDataRecord2103::axis_b_aux_position`
B axis auxiliary position.
Definition at line 644 of file gclib_record.h.

13.14.2.51 axis_b_velocity

`SL GDataRecord2103::axis_b_velocity`
B axis velocity.
Definition at line 645 of file gclib_record.h.

13.14.2.52 axis_b_torque

`SW GDataRecord2103::axis_b_torque`
B axis torque.
Definition at line 646 of file gclib_record.h.

13.14.2.53 axis_b_analog_in

`UW GDataRecord2103::axis_b_analog_in`
B axis analog input.
Definition at line 647 of file gclib_record.h.

13.14.2.54 axis_c_status

`UW GDataRecord2103::axis_c_status`
C axis status.
Definition at line 649 of file gclib_record.h.

13.14.2.55 axis_c_switches

`UB GDataRecord2103::axis_c_switches`
C axis switches.
Definition at line 650 of file gclib_record.h.

13.14.2.56 axis_c_stop_code

`UB GDataRecord2103::axis_c_stop_code`
C axis stop code.
Definition at line 651 of file gclib_record.h.

13.14.2.57 axis_c_reference_position

`SL GDataRecord2103::axis_c_reference_position`
C axis reference position.
Definition at line 652 of file gclib_record.h.

13.14.2.58 axis_c_motor_position

`SL GDataRecord2103::axis_c_motor_position`
C axis motor position.
Definition at line 653 of file gclib_record.h.

13.14.2.59 axis_c_position_error

`SL GDataRecord2103::axis_c_position_error`
C axis position error.
Definition at line 654 of file gclib_record.h.

13.14.2.60 axis_c_aux_position

`SL GDataRecord2103::axis_c_aux_position`
C axis auxiliary position.
Definition at line 655 of file gclib_record.h.

13.14.2.61 axis_c_velocity

`SL GDataRecord2103::axis_c_velocity`
C axis velocity.
Definition at line 656 of file gclib_record.h.

13.14.2.62 axis_c_torque

`SW GDataRecord2103::axis_c_torque`
C axis torque.
Definition at line 657 of file gclib_record.h.

13.14.2.63 axis_c_analog_in

`UW GDataRecord2103::axis_c_analog_in`
C axis analog input.
Definition at line 658 of file gclib_record.h.

13.14.2.64 axis_d_status

`UW GDataRecord2103::axis_d_status`
D axis status.
Definition at line 660 of file gclib_record.h.

13.14.2.65 axis_d_switches

`UB GDataRecord2103::axis_d_switches`
D axis switches.
Definition at line 661 of file gclib_record.h.

13.14.2.66 axis_d_stop_code

`UB GDataRecord2103::axis_d_stop_code`
D axis stop code.
Definition at line 662 of file gclib_record.h.

13.14.2.67 axis_d_reference_position

`SL GDataRecord2103::axis_d_reference_position`
D axis reference position.
Definition at line 663 of file gclib_record.h.

13.14.2.68 axis_d_motor_position

`SL GDataRecord2103::axis_d_motor_position`
D axis motor position.
Definition at line 664 of file gclib_record.h.

13.14.2.69 axis_d_position_error

`SL GDataRecord2103::axis_d_position_error`
D axis position error.
Definition at line 665 of file gclib_record.h.

13.14.2.70 axis_d_aux_position

`SL GDataRecord2103::axis_d_aux_position`
D axis auxiliary position.
Definition at line 666 of file gclib_record.h.

13.14.2.71 axis_d_velocity

`SL GDataRecord2103::axis_d_velocity`
D axis velocity.
Definition at line 667 of file gclib_record.h.

13.14.2.72 axis_d_torque

`SW GDataRecord2103::axis_d_torque`
D axis torque.
Definition at line 668 of file gclib_record.h.

13.14.2.73 axis_d_analog_in

`UW GDataRecord2103::axis_d_analog_in`
D axis analog input.
Definition at line 669 of file gclib_record.h.

13.14.2.74 axis_e_status

`UW GDataRecord2103::axis_e_status`
E axis status.
Definition at line 671 of file gclib_record.h.

13.14.2.75 axis_e_switches

`UB GDataRecord2103::axis_e_switches`
E axis switches.
Definition at line 672 of file gclib_record.h.

13.14.2.76 axis_e_stop_code

`UB GDataRecord2103::axis_e_stop_code`
E axis stop code.
Definition at line 673 of file gclib_record.h.

13.14.2.77 axis_e_reference_position

`SL GDataRecord2103::axis_e_reference_position`
E axis reference position.
Definition at line 674 of file gclib_record.h.

13.14.2.78 axis_e_motor_position

`SL GDataRecord2103::axis_e_motor_position`
E axis motor position.
Definition at line 675 of file gclib_record.h.

13.14.2.79 axis_e_position_error

`SL GDataRecord2103::axis_e_position_error`
E axis position error.
Definition at line 676 of file gclib_record.h.

13.14.2.80 axis_e_aux_position

`SL GDataRecord2103::axis_e_aux_position`
E axis auxiliary position.
Definition at line 677 of file gclib_record.h.

13.14.2.81 axis_e_velocity

`SL GDataRecord2103::axis_e_velocity`
E axis velocity.
Definition at line 678 of file gclib_record.h.

13.14.2.82 axis_e_torque

`SW GDataRecord2103::axis_e_torque`
E axis torque.
Definition at line 679 of file gclib_record.h.

13.14.2.83 axis_e_analog_in

`UW GDataRecord2103::axis_e_analog_in`
E axis analog input.
Definition at line 680 of file gclib_record.h.

13.14.2.84 axis_f_status

`UW GDataRecord2103::axis_f_status`
F axis status.
Definition at line 682 of file gclib_record.h.

13.14.2.85 axis_f_switches

`UB GDataRecord2103::axis_f_switches`
F axis switches.
Definition at line 683 of file gclib_record.h.

13.14.2.86 axis_f_stop_code

`UB GDataRecord2103::axis_f_stop_code`
F axis stop code.
Definition at line 684 of file gclib_record.h.

13.14.2.87 axis_f_reference_position

`SL GDataRecord2103::axis_f_reference_position`
F axis reference position.
Definition at line 685 of file gclib_record.h.

13.14.2.88 axis_f_motor_position

`SL GDataRecord2103::axis_f_motor_position`
F axis motor position.
Definition at line 686 of file gclib_record.h.

13.14.2.89 axis_f_position_error

`SL GDataRecord2103::axis_f_position_error`
F axis position error.
Definition at line 687 of file gclib_record.h.

13.14.2.90 axis_f_aux_position

`SL GDataRecord2103::axis_f_aux_position`
F axis auxiliary position.
Definition at line 688 of file gclib_record.h.

13.14.2.91 axis_f_velocity

`SL GDataRecord2103::axis_f_velocity`
F axis velocity.
Definition at line 689 of file gclib_record.h.

13.14.2.92 axis_f_torque

`SW GDataRecord2103::axis_f_torque`
F axis torque.
Definition at line 690 of file gclib_record.h.

13.14.2.93 axis_f_analog_in

`UW GDataRecord2103::axis_f_analog_in`
F axis analog input.
Definition at line 691 of file gclib_record.h.

13.14.2.94 axis_g_status

`UW GDataRecord2103::axis_g_status`
G axis status.
Definition at line 693 of file gclib_record.h.

13.14.2.95 axis_g_switches

`UB GDataRecord2103::axis_g_switches`
G axis switches.
Definition at line 694 of file gclib_record.h.

13.14.2.96 axis_g_stop_code

`UB GDataRecord2103::axis_g_stop_code`
G axis stop code.
Definition at line 695 of file gclib_record.h.

13.14.2.97 axis_g_reference_position

`SL GDataRecord2103::axis_g_reference_position`
G axis reference position.
Definition at line 696 of file gclib_record.h.

13.14.2.98 axis_g_motor_position

`SL GDataRecord2103::axis_g_motor_position`
G axis motor position.
Definition at line 697 of file gclib_record.h.

13.14.2.99 axis_g_position_error

`SL GDataRecord2103::axis_g_position_error`
G axis position error.
Definition at line 698 of file gclib_record.h.

13.14.2.100 axis_g_aux_position

`SL GDataRecord2103::axis_g_aux_position`
G axis auxiliary position.
Definition at line 699 of file gclib_record.h.

13.14.2.101 axis_g_velocity

`SL GDataRecord2103::axis_g_velocity`
G axis velocity.
Definition at line 700 of file gclib_record.h.

13.14.2.102 axis_g_torque

`SW GDataRecord2103::axis_g_torque`
G axis torque.
Definition at line 701 of file gclib_record.h.

13.14.2.103 axis_g_analog_in

`UW GDataRecord2103::axis_g_analog_in`
G axis analog input.
Definition at line 702 of file gclib_record.h.

13.14.2.104 axis_h_status

`UW GDataRecord2103::axis_h_status`
H axis status.
Definition at line 704 of file gclib_record.h.

13.14.2.105 axis_h_switches

`UB GDataRecord2103::axis_h_switches`
H axis switches.
Definition at line 705 of file gclib_record.h.

13.14.2.106 axis_h_stop_code

`UB GDataRecord2103::axis_h_stop_code`
H axis stop code.
Definition at line 706 of file gclib_record.h.

13.14.2.107 axis_h_reference_position

`SL GDataRecord2103::axis_h_reference_position`
H axis reference position.
Definition at line 707 of file gclib_record.h.

13.14.2.108 axis_h_motor_position

`SL GDataRecord2103::axis_h_motor_position`
H axis motor position.
Definition at line 708 of file gclib_record.h.

13.14.2.109 axis_h_position_error

`SL GDataRecord2103::axis_h_position_error`
H axis position error.
Definition at line 709 of file gclib_record.h.

13.14.2.110 axis_h_aux_position

`SL GDataRecord2103::axis_h_aux_position`
H axis auxiliary position.
Definition at line 710 of file gclib_record.h.

13.14.2.111 axis_h_velocity

`SL GDataRecord2103::axis_h_velocity`
H axis velocity.
Definition at line 711 of file gclib_record.h.

13.14.2.112 axis_h_torque

`SW GDataRecord2103::axis_h_torque`
H axis torque.
Definition at line 712 of file gclib_record.h.

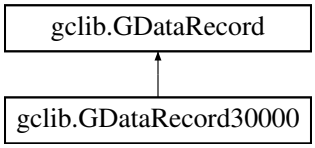
13.14.2.113 axis_h_analog_in

`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

13.15 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 Member Functions inherited from gclib.GDataRecord

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).

13.15.1 Detailed Description

Data record struct for DMC-30010 controllers.
Definition at line 1716 of file gclib.cs.

13.15.2 Member Function Documentation

13.15.2.1 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.

13.15.3 Member Data Documentation

13.15.3.1 header_0

`UB gclib.GDataRecord30000.header_0`
1st Byte of Header.
Definition at line 1722 of file gclib.cs.

13.15.3.2 header_1

`UB gclib.GDataRecord30000.header_1`
2nd Byte of Header.
Definition at line 1723 of file gclib.cs.

13.15.3.3 header_2

`UB gclib.GDataRecord30000.header_2`
3rd Byte of Header.
Definition at line 1724 of file gclib.cs.

13.15.3.4 header_3

`UB gclib.GDataRecord30000.header_3`
4th Byte of Header.
Definition at line 1725 of file gclib.cs.

13.15.3.5 sample_number

`UW gclib.GDataRecord30000.sample_number`
sample number.
Definition at line 1727 of file gclib.cs.

13.15.3.6 input_bank_0

`UB gclib.GDataRecord30000.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 1729 of file gclib.cs.

13.15.3.7 input_bank_1

`UB gclib.GDataRecord30000.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 1730 of file gclib.cs.

13.15.3.8 output_bank_0

`UB gclib.GDataRecord30000.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1732 of file gclib.cs.

13.15.3.9 output_bank_1

`UB gclib.GDataRecord30000.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1733 of file gclib.cs.

13.15.3.10 error_code

`UB gclib.GDataRecord30000.error_code`
error code.
Definition at line 1735 of file gclib.cs.

13.15.3.11 thread_status

`UB gclib.GDataRecord30000.thread_status`
thread status.
Definition at line 1736 of file gclib.cs.

13.15.3.12 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.

13.15.3.13 output_analog_1

`UW gclib.GDataRecord30000.output_analog_1`
Analog output 1.
Definition at line 1740 of file gclib.cs.

13.15.3.14 output_analog_2

`UW gclib.GDataRecord30000.output_analog_2`
Analog output 2.
Definition at line 1741 of file gclib.cs.

13.15.3.15 amplifier_status

`UL gclib.GDataRecord30000.amplifier_status`
Amplifier Status.
Definition at line 1743 of file gclib.cs.

13.15.3.16 contour_segment_count

`UL gclib.GDataRecord30000.contour_segment_count`
Segment Count for Contour Mode.
Definition at line 1745 of file gclib.cs.

13.15.3.17 contour_buffer_available

`UW gclib.GDataRecord30000.contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 1746 of file gclib.cs.

13.15.3.18 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.

13.15.3.19 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.

13.15.3.20 s_distance

`SL gclib.GDataRecord30000.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1750 of file gclib.cs.

13.15.3.21 s_plane_buffer_available

`UW gclib.GDataRecord30000.s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 1751 of file gclib.cs.

13.15.3.22 axis_a_status

`UW gclib.GDataRecord30000.axis_a_status`
A axis status.
Definition at line 1753 of file gclib.cs.

13.15.3.23 axis_a_switches

`UB gclib.GDataRecord30000.axis_a_switches`
A axis switches.
Definition at line 1754 of file gclib.cs.

13.15.3.24 axis_a_stop_code

`UB gclib.GDataRecord30000.axis_a_stop_code`
A axis stop code.
Definition at line 1755 of file gclib.cs.

13.15.3.25 axis_a_reference_position

`SL gclib.GDataRecord30000.axis_a_reference_position`
A axis reference position.
Definition at line 1756 of file gclib.cs.

13.15.3.26 axis_a_motor_position

`SL gclib.GDataRecord30000.axis_a_motor_position`
A axis motor position.
Definition at line 1757 of file gclib.cs.

13.15.3.27 axis_a_position_error

`SL gclib.GDataRecord30000.axis_a_position_error`
A axis position error.
Definition at line 1758 of file gclib.cs.

13.15.3.28 axis_a_aux_position

`SL gclib.GDataRecord30000.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1759 of file gclib.cs.

13.15.3.29 axis_a_velocity

`SL gclib.GDataRecord30000.axis_a_velocity`
A axis velocity.
Definition at line 1760 of file gclib.cs.

13.15.3.30 axis_a_torque

`SL gclib.GDataRecord30000.axis_a_torque`
A axis torque.
Definition at line 1761 of file gclib.cs.

13.15.3.31 axis_a_analog_in

`UW gclib.GDataRecord30000.axis_a_analog_in`
A axis analog input.
Definition at line 1762 of file gclib.cs.

13.15.3.32 axis_a_halls

`UB gclib.GDataRecord30000.axis_a_halls`
A Hall Input Status.
Definition at line 1763 of file gclib.cs.

13.15.3.33 axis_a_reserved

`UB gclib.GDataRecord30000.axis_a_reserved`
Reserved.
Definition at line 1764 of file gclib.cs.

13.15.3.34 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

13.16 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).

13.16.1 Detailed Description

Data record struct for DMC-30010 controllers.
Definition at line 814 of file gclib_record.h.

13.16.2 Member Data Documentation

13.16.2.1 header_0

`UB GDataRecord30000::header_0`
1st Byte of Header.
Definition at line 819 of file gclib_record.h.

13.16.2.2 header_1

`UB GDataRecord30000::header_1`
2nd Byte of Header.
Definition at line 820 of file gclib_record.h.

13.16.2.3 header_2

`UB GDataRecord30000::header_2`
3rd Byte of Header.
Definition at line 821 of file gclib_record.h.

13.16.2.4 header_3

`UB GDataRecord30000::header_3`
4th Byte of Header.
Definition at line 822 of file gclib_record.h.

13.16.2.5 sample_number

`UW GDataRecord30000::sample_number`
sample number.
Definition at line 824 of file gclib_record.h.

13.16.2.6 input_bank_0

`UB GDataRecord30000::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 826 of file gclib_record.h.

13.16.2.7 input_bank_1

`UB GDataRecord30000::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 827 of file gclib_record.h.

13.16.2.8 output_bank_0

`UB GDataRecord30000::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 829 of file gclib_record.h.

13.16.2.9 output_bank_1

`UB GDataRecord30000::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 830 of file gclib_record.h.

13.16.2.10 error_code

`UB GDataRecord30000::error_code`
error code.
Definition at line 832 of file gclib_record.h.

13.16.2.11 thread_status

`UB GDataRecord30000::thread_status`
thread status.
Definition at line 833 of file gclib_record.h.

13.16.2.12 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.

13.16.2.13 output_analog_1

`UW GDataRecord30000::output_analog_1`
Analog output 1.
Definition at line 837 of file gclib_record.h.

13.16.2.14 output_analog_2

`UW GDataRecord30000::output_analog_2`
Analog output 2.
Definition at line 838 of file gclib_record.h.

13.16.2.15 amplifier_status

`UL GDataRecord30000::amplifier_status`
Amplifier Status.
Definition at line 840 of file gclib_record.h.

13.16.2.16 contour_segment_count

`UL GDataRecord30000::contour_segment_count`
Segment Count for Contour Mode.
Definition at line 842 of file gclib_record.h.

13.16.2.17 contour_buffer_available

`UW GDataRecord30000::contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 843 of file gclib_record.h.

13.16.2.18 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.

13.16.2.19 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.

13.16.2.20 s_distance

`SL GDataRecord30000::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 847 of file gclib_record.h.

13.16.2.21 s_plane_buffer_available

`UW GDataRecord30000::s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 848 of file gclib_record.h.

13.16.2.22 axis_a_status

`UW GDataRecord30000::axis_a_status`
A axis status.
Definition at line 850 of file gclib_record.h.

13.16.2.23 axis_a_switches

`UB GDataRecord30000::axis_a_switches`
A axis switches.
Definition at line 851 of file gclib_record.h.

13.16.2.24 axis_a_stop_code

`UB GDataRecord30000::axis_a_stop_code`
A axis stop code.
Definition at line 852 of file gclib_record.h.

13.16.2.25 axis_a_reference_position

`SL GDataRecord30000::axis_a_reference_position`
A axis reference position.
Definition at line 853 of file gclib_record.h.

13.16.2.26 axis_a_motor_position

`SL GDataRecord30000::axis_a_motor_position`
A axis motor position.
Definition at line 854 of file gclib_record.h.

13.16.2.27 axis_a_position_error

`SL GDataRecord30000::axis_a_position_error`
A axis position error.
Definition at line 855 of file gclib_record.h.

13.16.2.28 axis_a_aux_position

`SL GDataRecord30000::axis_a_aux_position`
A axis auxiliary position.
Definition at line 856 of file gclib_record.h.

13.16.2.29 axis_a_velocity

`SL GDataRecord30000::axis_a_velocity`
A axis velocity.
Definition at line 857 of file gclib_record.h.

13.16.2.30 axis_a_torque

`SL GDataRecord30000::axis_a_torque`
A axis torque.
Definition at line 858 of file gclib_record.h.

13.16.2.31 axis_a_analog_in

`UW GDataRecord30000::axis_a_analog_in`
A axis analog input.
Definition at line 859 of file gclib_record.h.

13.16.2.32 axis_a_halls

`UB GDataRecord30000::axis_a_halls`
A Hall Input Status.
Definition at line 860 of file gclib_record.h.

13.16.2.33 axis_a_reserved

`UB GDataRecord30000::axis_a_reserved`
Reserved.
Definition at line 861 of file gclib_record.h.

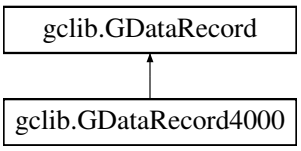
13.16.2.34 axis_a_variable

`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

13.17 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 Member Functions inherited from gclib.GDataRecord

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).

13.17.1 Detailed Description

Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
Definition at line 926 of file gclib.cs.

13.17.2 Member Function Documentation

13.17.2.1 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.

13.17.3 Member Data Documentation

13.17.3.1 header_0

`UB gclib.GDataRecord4000.header_0`
1st Byte of Header.
Definition at line 931 of file gclib.cs.

13.17.3.2 header_1

`UB gclib.GDataRecord4000.header_1`
2nd Byte of Header.
Definition at line 932 of file gclib.cs.

13.17.3.3 header_2

`UB gclib.GDataRecord4000.header_2`
3rd Byte of Header.
Definition at line 933 of file gclib.cs.

13.17.3.4 header_3

`UB gclib.GDataRecord4000.header_3`
4th Byte of Header.
Definition at line 934 of file gclib.cs.

13.17.3.5 sample_number

`UW gclib.GDataRecord4000.sample_number`
sample number.
Definition at line 936 of file gclib.cs.

13.17.3.6 input_bank_0

`UB gclib.GDataRecord4000.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 938 of file gclib.cs.

13.17.3.7 input_bank_1

`UB gclib.GDataRecord4000.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 939 of file gclib.cs.

13.17.3.8 input_bank_2

`UB gclib.GDataRecord4000.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 940 of file gclib.cs.

13.17.3.9 input_bank_3

`UB gclib.GDataRecord4000.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 941 of file gclib.cs.

13.17.3.10 input_bank_4

`UB gclib.GDataRecord4000.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 942 of file gclib.cs.

13.17.3.11 input_bank_5

`UB gclib.GDataRecord4000.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 943 of file gclib.cs.

13.17.3.12 input_bank_6

`UB gclib.GDataRecord4000.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 944 of file gclib.cs.

13.17.3.13 input_bank_7

`UB gclib.GDataRecord4000.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 945 of file gclib.cs.

13.17.3.14 input_bank_8

`UB gclib.GDataRecord4000.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 946 of file gclib.cs.

13.17.3.15 input_bank_9

`UB gclib.GDataRecord4000.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 947 of file gclib.cs.

13.17.3.16 output_bank_0

`UB gclib.GDataRecord4000.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 949 of file gclib.cs.

13.17.3.17 output_bank_1

`UB gclib.GDataRecord4000.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 950 of file gclib.cs.

13.17.3.18 output_bank_2

`UB gclib.GDataRecord4000.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 951 of file gclib.cs.

13.17.3.19 output_bank_3

`UB gclib.GDataRecord4000.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 952 of file gclib.cs.

13.17.3.20 output_bank_4

`UB gclib.GDataRecord4000.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 953 of file gclib.cs.

13.17.3.21 output_bank_5

`UB gclib.GDataRecord4000.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 954 of file gclib.cs.

13.17.3.22 output_bank_6

`UB gclib.GDataRecord4000.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 955 of file gclib.cs.

13.17.3.23 output_bank_7

`UB gclib.GDataRecord4000.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 956 of file gclib.cs.

13.17.3.24 output_bank_8

`UB gclib.GDataRecord4000.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 957 of file gclib.cs.

13.17.3.25 output_bank_9

`UB gclib.GDataRecord4000.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 958 of file gclib.cs.

13.17.3.26 reserved_0

`SW gclib.GDataRecord4000.reserved_0`
Reserved.
Definition at line 960 of file gclib.cs.

13.17.3.27 reserved_2

`SW gclib.GDataRecord4000.reserved_2`
Reserved.
Definition at line 961 of file gclib.cs.

13.17.3.28 reserved_4

`SW gclib.GDataRecord4000.reserved_4`
Reserved.
Definition at line 962 of file gclib.cs.

13.17.3.29 reserved_6

`SW gclib.GDataRecord4000.reserved_6`
Reserved.
Definition at line 963 of file gclib.cs.

13.17.3.30 reserved_8

`SW gclib.GDataRecord4000.reserved_8`
Reserved.
Definition at line 964 of file gclib.cs.

13.17.3.31 reserved_10

`SW gclib.GDataRecord4000.reserved_10`
Reserved.
Definition at line 965 of file gclib.cs.

13.17.3.32 reserved_12

`SW gclib.GDataRecord4000.reserved_12`
Reserved.
Definition at line 966 of file gclib.cs.

13.17.3.33 reserved_14

`SW gclib.GDataRecord4000.reserved_14`
Reserved.
Definition at line 967 of file gclib.cs.

13.17.3.34 ethernet_status_a

`UB gclib.GDataRecord4000.ethernet_status_a`
Ethernet Handle A Status.
Definition at line 969 of file gclib.cs.

13.17.3.35 ethernet_status_b

`UB gclib.GDataRecord4000.ethernet_status_b`
Ethernet Handle B Status.
Definition at line 970 of file gclib.cs.

13.17.3.36 ethernet_status_c

`UB gclib.GDataRecord4000.ethernet_status_c`
Ethernet Handle C Status.
Definition at line 971 of file gclib.cs.

13.17.3.37 ethernet_status_d

`UB gclib.GDataRecord4000.ethernet_status_d`
Ethernet Handle D Status.
Definition at line 972 of file gclib.cs.

13.17.3.38 ethernet_status_e

`UB gclib.GDataRecord4000.ethernet_status_e`
Ethernet Handle E Status.
Definition at line 973 of file gclib.cs.

13.17.3.39 ethernet_status_f

`UB gclib.GDataRecord4000.ethernet_status_f`
Ethernet Handle F Status.
Definition at line 974 of file gclib.cs.

13.17.3.40 ethernet_status_g

`UB gclib.GDataRecord4000.ethernet_status_g`
Ethernet Handle G Status.
Definition at line 975 of file gclib.cs.

13.17.3.41 ethernet_status_h

`UB gclib.GDataRecord4000.ethernet_status_h`
Ethernet Handle H Status.
Definition at line 976 of file gclib.cs.

13.17.3.42 error_code

`UB gclib.GDataRecord4000.error_code`
error code.
Definition at line 978 of file gclib.cs.

13.17.3.43 thread_status

`UB gclib.GDataRecord4000.thread_status`
thread status
Definition at line 979 of file gclib.cs.

13.17.3.44 amplifier_status

`UL gclib.GDataRecord4000.amplifier_status`
Amplifier Status.
Definition at line 980 of file gclib.cs.

13.17.3.45 contour_segment_count

`UL gclib.GDataRecord4000.contour_segment_count`
Segment Count for Contour Mode.
Definition at line 982 of file gclib.cs.

13.17.3.46 contour_buffer_available

`UW gclib.GDataRecord4000.contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 983 of file gclib.cs.

13.17.3.47 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.

13.17.3.48 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.

13.17.3.49 s_distance

`SL gclib.GDataRecord4000.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 987 of file gclib.cs.

13.17.3.50 s_plane_buffer_available

`UW gclib.GDataRecord4000.s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 988 of file gclib.cs.

13.17.3.51 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.

13.17.3.52 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.

13.17.3.53 t_distance

`SL gclib.GDataRecord4000.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 992 of file gclib.cs.

13.17.3.54 t_plane_buffer_available

`UW gclib.GDataRecord4000.t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 993 of file gclib.cs.

13.17.3.55 axis_a_status

`UW gclib.GDataRecord4000.axis_a_status`
A axis status.
Definition at line 995 of file gclib.cs.

13.17.3.56 axis_a_switches

`UB gclib.GDataRecord4000.axis_a_switches`
A axis switches.
Definition at line 996 of file gclib.cs.

13.17.3.57 axis_a_stop_code

`UB gclib.GDataRecord4000.axis_a_stop_code`
A axis stop code.
Definition at line 997 of file gclib.cs.

13.17.3.58 axis_a_reference_position

`SL gclib.GDataRecord4000.axis_a_reference_position`
A axis reference position.
Definition at line 998 of file gclib.cs.

13.17.3.59 axis_a_motor_position

`SL gclib.GDataRecord4000.axis_a_motor_position`
A axis motor position.
Definition at line 999 of file gclib.cs.

13.17.3.60 axis_a_position_error

`SL gclib.GDataRecord4000.axis_a_position_error`
A axis position error.
Definition at line 1000 of file gclib.cs.

13.17.3.61 axis_a_aux_position

`SL gclib.GDataRecord4000.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1001 of file gclib.cs.

13.17.3.62 axis_a_velocity

`SL gclib.GDataRecord4000.axis_a_velocity`
A axis velocity.
Definition at line 1002 of file gclib.cs.

13.17.3.63 axis_a_torque

`SL gclib.GDataRecord4000.axis_a_torque`
A axis torque.
Definition at line 1003 of file gclib.cs.

13.17.3.64 axis_a_analog_in

`UW gclib.GDataRecord4000.axis_a_analog_in`
A axis analog input.
Definition at line 1004 of file gclib.cs.

13.17.3.65 axis_a_halls

`UB gclib.GDataRecord4000.axis_a_halls`
A Hall Input Status.
Definition at line 1005 of file gclib.cs.

13.17.3.66 axis_a_reserved

`UB gclib.GDataRecord4000.axis_a_reserved`
Reserved.
Definition at line 1006 of file gclib.cs.

13.17.3.67 axis_a_variable

`SL gclib.GDataRecord4000.axis_a_variable`
A User-defined variable (ZA).
Definition at line 1007 of file gclib.cs.

13.17.3.68 axis_b_status

`UW gclib.GDataRecord4000.axis_b_status`
B axis status.
Definition at line 1009 of file gclib.cs.

13.17.3.69 axis_b_switches

`UB gclib.GDataRecord4000.axis_b_switches`
B axis switches.
Definition at line 1010 of file gclib.cs.

13.17.3.70 axis_b_stop_code

`UB gclib.GDataRecord4000.axis_b_stop_code`
B axis stop code.
Definition at line 1011 of file gclib.cs.

13.17.3.71 axis_b_reference_position

`SL gclib.GDataRecord4000.axis_b_reference_position`
B axis reference position.
Definition at line 1012 of file gclib.cs.

13.17.3.72 axis_b_motor_position

`SL gclib.GDataRecord4000.axis_b_motor_position`
B axis motor position.
Definition at line 1013 of file gclib.cs.

13.17.3.73 axis_b_position_error

`SL gclib.GDataRecord4000.axis_b_position_error`
B axis position error.
Definition at line 1014 of file gclib.cs.

13.17.3.74 axis_b_aux_position

`SL gclib.GDataRecord4000.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1015 of file gclib.cs.

13.17.3.75 axis_b_velocity

`SL gclib.GDataRecord4000.axis_b_velocity`
B axis velocity.
Definition at line 1016 of file gclib.cs.

13.17.3.76 axis_b_torque

`SL gclib.GDataRecord4000.axis_b_torque`
B axis torque.
Definition at line 1017 of file gclib.cs.

13.17.3.77 axis_b_analog_in

`UW gclib.GDataRecord4000.axis_b_analog_in`
B axis analog input.
Definition at line 1018 of file gclib.cs.

13.17.3.78 axis_b_halls

`UB gclib.GDataRecord4000.axis_b_halls`
B Hall Input Status.
Definition at line 1019 of file gclib.cs.

13.17.3.79 axis_b_reserved

`UB gclib.GDataRecord4000.axis_b_reserved`
Reserved.
Definition at line 1020 of file gclib.cs.

13.17.3.80 axis_b_variable

`SL gclib.GDataRecord4000.axis_b_variable`
B User-defined variable (ZA).
Definition at line 1021 of file gclib.cs.

13.17.3.81 axis_c_status

`UW gclib.GDataRecord4000.axis_c_status`
C axis status.
Definition at line 1023 of file gclib.cs.

13.17.3.82 axis_c_switches

`UB gclib.GDataRecord4000.axis_c_switches`
C axis switches.
Definition at line 1024 of file gclib.cs.

13.17.3.83 axis_c_stop_code

`UB gclib.GDataRecord4000.axis_c_stop_code`
C axis stop code.
Definition at line 1025 of file gclib.cs.

13.17.3.84 axis_c_reference_position

`SL gclib.GDataRecord4000.axis_c_reference_position`
C axis reference position.
Definition at line 1026 of file gclib.cs.

13.17.3.85 axis_c_motor_position

`SL gclib.GDataRecord4000.axis_c_motor_position`
C axis motor position.
Definition at line 1027 of file gclib.cs.

13.17.3.86 axis_c_position_error

`SL gclib.GDataRecord4000.axis_c_position_error`
C axis position error.
Definition at line 1028 of file gclib.cs.

13.17.3.87 axis_c_aux_position

`SL gclib.GDataRecord4000.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1029 of file gclib.cs.

13.17.3.88 axis_c_velocity

`SL gclib.GDataRecord4000.axis_c_velocity`
C axis velocity.
Definition at line 1030 of file gclib.cs.

13.17.3.89 axis_c_torque

`SL gclib.GDataRecord4000.axis_c_torque`
C axis torque.
Definition at line 1031 of file gclib.cs.

13.17.3.90 axis_c_analog_in

`UW gclib.GDataRecord4000.axis_c_analog_in`
C axis analog input.
Definition at line 1032 of file gclib.cs.

13.17.3.91 axis_c_halls

`UB gclib.GDataRecord4000.axis_c_halls`
C Hall Input Status.
Definition at line 1033 of file gclib.cs.

13.17.3.92 axis_c_reserved

`UB gclib.GDataRecord4000.axis_c_reserved`
Reserved.
Definition at line 1034 of file gclib.cs.

13.17.3.93 axis_c_variable

`SL gclib.GDataRecord4000.axis_c_variable`
C User-defined variable (ZA).
Definition at line 1035 of file gclib.cs.

13.17.3.94 axis_d_status

`UW gclib.GDataRecord4000.axis_d_status`
D axis status.
Definition at line 1037 of file gclib.cs.

13.17.3.95 axis_d_switches

`UB gclib.GDataRecord4000.axis_d_switches`
D axis switches.
Definition at line 1038 of file gclib.cs.

13.17.3.96 axis_d_stop_code

`UB gclib.GDataRecord4000.axis_d_stop_code`
D axis stop code.
Definition at line 1039 of file gclib.cs.

13.17.3.97 axis_d_reference_position

`SL gclib.GDataRecord4000.axis_d_reference_position`
D axis reference position.
Definition at line 1040 of file gclib.cs.

13.17.3.98 axis_d_motor_position

`SL gclib.GDataRecord4000.axis_d_motor_position`
D axis motor position.
Definition at line 1041 of file gclib.cs.

13.17.3.99 axis_d_position_error

`SL gclib.GDataRecord4000.axis_d_position_error`
D axis position error.
Definition at line 1042 of file gclib.cs.

13.17.3.100 axis_d_aux_position

`SL gclib.GDataRecord4000.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1043 of file gclib.cs.

13.17.3.101 axis_d_velocity

`SL gclib.GDataRecord4000.axis_d_velocity`
D axis velocity.
Definition at line 1044 of file gclib.cs.

13.17.3.102 axis_d_torque

`SL gclib.GDataRecord4000.axis_d_torque`
D axis torque.
Definition at line 1045 of file gclib.cs.

13.17.3.103 axis_d_analog_in

`UW gclib.GDataRecord4000.axis_d_analog_in`
D axis analog input.
Definition at line 1046 of file gclib.cs.

13.17.3.104 axis_d_halls

`UB gclib.GDataRecord4000.axis_d_halls`
D Hall Input Status.
Definition at line 1047 of file gclib.cs.

13.17.3.105 axis_d_reserved

`UB gclib.GDataRecord4000.axis_d_reserved`
Reserved.
Definition at line 1048 of file gclib.cs.

13.17.3.106 axis_d_variable

`SL gclib.GDataRecord4000.axis_d_variable`
D User-defined variable (ZA).
Definition at line 1049 of file gclib.cs.

13.17.3.107 axis_e_status

`UW gclib.GDataRecord4000.axis_e_status`
E axis status.
Definition at line 1051 of file gclib.cs.

13.17.3.108 axis_e_switches

`UB gclib.GDataRecord4000.axis_e_switches`
E axis switches.
Definition at line 1052 of file gclib.cs.

13.17.3.109 axis_e_stop_code

`UB gclib.GDataRecord4000.axis_e_stop_code`
E axis stop code.
Definition at line 1053 of file gclib.cs.

13.17.3.110 axis_e_reference_position

`SL gclib.GDataRecord4000.axis_e_reference_position`
E axis reference position.
Definition at line 1054 of file gclib.cs.

13.17.3.111 axis_e_motor_position

`SL gclib.GDataRecord4000.axis_e_motor_position`
E axis motor position.
Definition at line 1055 of file gclib.cs.

13.17.3.112 axis_e_position_error

`SL gclib.GDataRecord4000.axis_e_position_error`
E axis position error.
Definition at line 1056 of file gclib.cs.

13.17.3.113 axis_e_aux_position

`SL gclib.GDataRecord4000.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1057 of file gclib.cs.

13.17.3.114 axis_e_velocity

`SL gclib.GDataRecord4000.axis_e_velocity`
E axis velocity.
Definition at line 1058 of file gclib.cs.

13.17.3.115 axis_e_torque

`SL gclib.GDataRecord4000.axis_e_torque`
E axis torque.
Definition at line 1059 of file gclib.cs.

13.17.3.116 axis_e_analog_in

`UW gclib.GDataRecord4000.axis_e_analog_in`
E axis analog input.
Definition at line 1060 of file gclib.cs.

13.17.3.117 axis_e_halls

`UB gclib.GDataRecord4000.axis_e_halls`
E Hall Input Status.
Definition at line 1061 of file gclib.cs.

13.17.3.118 axis_e_reserved

`UB gclib.GDataRecord4000.axis_e_reserved`
Reserved.
Definition at line 1062 of file gclib.cs.

13.17.3.119 axis_e_variable

`SL gclib.GDataRecord4000.axis_e_variable`
E User-defined variable (ZA).
Definition at line 1063 of file gclib.cs.

13.17.3.120 axis_f_status

`UW gclib.GDataRecord4000.axis_f_status`
F axis status.
Definition at line 1065 of file gclib.cs.

13.17.3.121 axis_f_switches

`UB gclib.GDataRecord4000.axis_f_switches`
F axis switches.
Definition at line 1066 of file gclib.cs.

13.17.3.122 axis_f_stop_code

`UB gclib.GDataRecord4000.axis_f_stop_code`
F axis stop code.
Definition at line 1067 of file gclib.cs.

13.17.3.123 axis_f_reference_position

`SL gclib.GDataRecord4000.axis_f_reference_position`
F axis reference position.
Definition at line 1068 of file gclib.cs.

13.17.3.124 axis_f_motor_position

`SL gclib.GDataRecord4000.axis_f_motor_position`
F axis motor position.
Definition at line 1069 of file gclib.cs.

13.17.3.125 axis_f_position_error

`SL gclib.GDataRecord4000.axis_f_position_error`
F axis position error.
Definition at line 1070 of file gclib.cs.

13.17.3.126 axis_f_aux_position

`SL gclib.GDataRecord4000.axis_f_aux_position`
F axis auxiliary position.
Definition at line 1071 of file gclib.cs.

13.17.3.127 axis_f_velocity

`SL gclib.GDataRecord4000.axis_f_velocity`
F axis velocity.
Definition at line 1072 of file gclib.cs.

13.17.3.128 axis_f_torque

`SL gclib.GDataRecord4000.axis_f_torque`
F axis torque.
Definition at line 1073 of file gclib.cs.

13.17.3.129 axis_f_analog_in

`UW gclib.GDataRecord4000.axis_f_analog_in`
F axis analog input.
Definition at line 1074 of file gclib.cs.

13.17.3.130 axis_f_halls

`UB gclib.GDataRecord4000.axis_f_halls`
F Hall Input Status.
Definition at line 1075 of file gclib.cs.

13.17.3.131 axis_f_reserved

`UB gclib.GDataRecord4000.axis_f_reserved`
Reserved.
Definition at line 1076 of file gclib.cs.

13.17.3.132 axis_f_variable

`SL gclib.GDataRecord4000.axis_f_variable`
F User-defined variable (ZA).
Definition at line 1077 of file gclib.cs.

13.17.3.133 axis_g_status

`UW gclib.GDataRecord4000.axis_g_status`
G axis status.
Definition at line 1079 of file gclib.cs.

13.17.3.134 axis_g_switches

`UB gclib.GDataRecord4000.axis_g_switches`
G axis switches.
Definition at line 1080 of file gclib.cs.

13.17.3.135 axis_g_stop_code

`UB gclib.GDataRecord4000.axis_g_stop_code`
G axis stop code.
Definition at line 1081 of file gclib.cs.

13.17.3.136 axis_g_reference_position

`SL gclib.GDataRecord4000.axis_g_reference_position`
G axis reference position.
Definition at line 1082 of file gclib.cs.

13.17.3.137 axis_g_motor_position

`SL gclib.GDataRecord4000.axis_g_motor_position`
G axis motor position.
Definition at line 1083 of file gclib.cs.

13.17.3.138 axis_g_position_error

`SL gclib.GDataRecord4000.axis_g_position_error`
G axis position error.
Definition at line 1084 of file gclib.cs.

13.17.3.139 axis_g_aux_position

`SL gclib.GDataRecord4000.axis_g_aux_position`
G axis auxiliary position.
Definition at line 1085 of file gclib.cs.

13.17.3.140 axis_g_velocity

`SL gclib.GDataRecord4000.axis_g_velocity`
G axis velocity.
Definition at line 1086 of file gclib.cs.

13.17.3.141 axis_g_torque

`SL gclib.GDataRecord4000.axis_g_torque`
G axis torque.
Definition at line 1087 of file gclib.cs.

13.17.3.142 axis_g_analog_in

`UW gclib.GDataRecord4000.axis_g_analog_in`
G axis analog input.
Definition at line 1088 of file gclib.cs.

13.17.3.143 axis_g_halls

`UB gclib.GDataRecord4000.axis_g_halls`
G Hall Input Status.
Definition at line 1089 of file gclib.cs.

13.17.3.144 axis_g_reserved

`UB gclib.GDataRecord4000.axis_g_reserved`
Reserved.
Definition at line 1090 of file gclib.cs.

13.17.3.145 axis_g_variable

`SL gclib.GDataRecord4000.axis_g_variable`
G User-defined variable (ZA).
Definition at line 1091 of file gclib.cs.

13.17.3.146 axis_h_status

`UW gclib.GDataRecord4000.axis_h_status`
H axis status.
Definition at line 1093 of file gclib.cs.

13.17.3.147 axis_h_switches

`UB gclib.GDataRecord4000.axis_h_switches`
H axis switches.
Definition at line 1094 of file gclib.cs.

13.17.3.148 axis_h_stop_code

`UB gclib.GDataRecord4000.axis_h_stop_code`
H axis stop code.
Definition at line 1095 of file gclib.cs.

13.17.3.149 axis_h_reference_position

`SL gclib.GDataRecord4000.axis_h_reference_position`
H axis reference position.
Definition at line 1096 of file gclib.cs.

13.17.3.150 axis_h_motor_position

`SL gclib.GDataRecord4000.axis_h_motor_position`
H axis motor position.
Definition at line 1097 of file gclib.cs.

13.17.3.151 axis_h_position_error

`SL gclib.GDataRecord4000.axis_h_position_error`
H axis position error.
Definition at line 1098 of file gclib.cs.

13.17.3.152 axis_h_aux_position

`SL gclib.GDataRecord4000.axis_h_aux_position`
H axis auxiliary position.
Definition at line 1099 of file gclib.cs.

13.17.3.153 axis_h_velocity

`SL gclib.GDataRecord4000.axis_h_velocity`
H axis velocity.
Definition at line 1100 of file gclib.cs.

13.17.3.154 axis_h_torque

`SL gclib.GDataRecord4000.axis_h_torque`
H axis torque.
Definition at line 1101 of file gclib.cs.

13.17.3.155 axis_h_analog_in

`UW gclib.GDataRecord4000.axis_h_analog_in`
H axis analog input.
Definition at line 1102 of file gclib.cs.

13.17.3.156 axis_h_halls

`UB gclib.GDataRecord4000.axis_h_halls`
H Hall Input Status.
Definition at line 1103 of file gclib.cs.

13.17.3.157 axis_h_reserved

`UB gclib.GDataRecord4000.axis_h_reserved`
Reserved.
Definition at line 1104 of file gclib.cs.

13.17.3.158 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

13.18 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).

13.18.1 Detailed Description

Data record struct for DMC-4000 controllers, including 4000, 4200, 4103, and 500x0.
Definition at line 31 of file gclib_record.h.

13.18.2 Member Data Documentation

13.18.2.1 header_0

`UB GDataRecord4000::header_0`
1st Byte of Header.
Definition at line 36 of file gclib_record.h.

13.18.2.2 header_1

`UB GDataRecord4000::header_1`
2nd Byte of Header.
Definition at line 37 of file gclib_record.h.

13.18.2.3 header_2

`UB GDataRecord4000::header_2`
3rd Byte of Header.
Definition at line 38 of file gclib_record.h.

13.18.2.4 header_3

`UB GDataRecord4000::header_3`
4th Byte of Header.
Definition at line 39 of file gclib_record.h.

13.18.2.5 sample_number

`UW GDataRecord4000::sample_number`
sample number.
Definition at line 41 of file gclib_record.h.

13.18.2.6 input_bank_0

`UB GDataRecord4000::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 43 of file gclib_record.h.

13.18.2.7 input_bank_1

`UB GDataRecord4000::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 44 of file gclib_record.h.

13.18.2.8 input_bank_2

`UB GDataRecord4000::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 45 of file gclib_record.h.

13.18.2.9 input_bank_3

`UB GDataRecord4000::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 46 of file gclib_record.h.

13.18.2.10 input_bank_4

`UB GDataRecord4000::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 47 of file gclib_record.h.

13.18.2.11 input_bank_5

`UB GDataRecord4000::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 48 of file gclib_record.h.

13.18.2.12 input_bank_6

`UB GDataRecord4000::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 49 of file gclib_record.h.

13.18.2.13 input_bank_7

`UB GDataRecord4000::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 50 of file gclib_record.h.

13.18.2.14 input_bank_8

`UB GDataRecord4000::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 51 of file gclib_record.h.

13.18.2.15 input_bank_9

`UB GDataRecord4000::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 52 of file gclib_record.h.

13.18.2.16 output_bank_0

`UB GDataRecord4000::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 54 of file gclib_record.h.

13.18.2.17 output_bank_1

`UB GDataRecord4000::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 55 of file gclib_record.h.

13.18.2.18 output_bank_2

`UB GDataRecord4000::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 56 of file gclib_record.h.

13.18.2.19 output_bank_3

`UB GDataRecord4000::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 57 of file gclib_record.h.

13.18.2.20 output_bank_4

`UB GDataRecord4000::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 58 of file gclib_record.h.

13.18.2.21 output_bank_5

`UB GDataRecord4000::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 59 of file gclib_record.h.

13.18.2.22 output_bank_6

`UB GDataRecord4000::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 60 of file gclib_record.h.

13.18.2.23 output_bank_7

`UB GDataRecord4000::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 61 of file gclib_record.h.

13.18.2.24 output_bank_8

`UB GDataRecord4000::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 62 of file gclib_record.h.

13.18.2.25 output_bank_9

`UB GDataRecord4000::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 63 of file gclib_record.h.

13.18.2.26 reserved_0

`SW GDataRecord4000::reserved_0`
Reserved.
Definition at line 65 of file gclib_record.h.

13.18.2.27 reserved_2

`SW GDataRecord4000::reserved_2`
Reserved.
Definition at line 66 of file gclib_record.h.

13.18.2.28 reserved_4

`SW GDataRecord4000::reserved_4`
Reserved.
Definition at line 67 of file gclib_record.h.

13.18.2.29 reserved_6

`SW GDataRecord4000::reserved_6`
Reserved.
Definition at line 68 of file gclib_record.h.

13.18.2.30 reserved_8

`SW GDataRecord4000::reserved_8`
Reserved.
Definition at line 69 of file gclib_record.h.

13.18.2.31 reserved_10

`SW GDataRecord4000::reserved_10`
Reserved.
Definition at line 70 of file gclib_record.h.

13.18.2.32 reserved_12

`SW GDataRecord4000::reserved_12`
Reserved.
Definition at line 71 of file gclib_record.h.

13.18.2.33 reserved_14

`SW GDataRecord4000::reserved_14`
Reserved.
Definition at line 72 of file gclib_record.h.

13.18.2.34 ethernet_status_a

`UB GDataRecord4000::ethernet_status_a`
Ethernet Handle A Status.
Definition at line 74 of file gclib_record.h.

13.18.2.35 ethernet_status_b

`UB GDataRecord4000::ethernet_status_b`
Ethernet Handle B Status.
Definition at line 75 of file gclib_record.h.

13.18.2.36 ethernet_status_c

`UB GDataRecord4000::ethernet_status_c`
Ethernet Handle C Status.
Definition at line 76 of file gclib_record.h.

13.18.2.37 ethernet_status_d

`UB GDataRecord4000::ethernet_status_d`
Ethernet Handle D Status.
Definition at line 77 of file gclib_record.h.

13.18.2.38 ethernet_status_e

`UB GDataRecord4000::ethernet_status_e`
Ethernet Handle E Status.
Definition at line 78 of file gclib_record.h.

13.18.2.39 ethernet_status_f

`UB GDataRecord4000::ethernet_status_f`
Ethernet Handle F Status.
Definition at line 79 of file gclib_record.h.

13.18.2.40 ethernet_status_g

`UB GDataRecord4000::ethernet_status_g`
Ethernet Handle G Status.
Definition at line 80 of file gclib_record.h.

13.18.2.41 ethernet_status_h

`UB GDataRecord4000::ethernet_status_h`
Ethernet Handle H Status.
Definition at line 81 of file gclib_record.h.

13.18.2.42 error_code

`UB GDataRecord4000::error_code`
error code.
Definition at line 83 of file gclib_record.h.

13.18.2.43 thread_status

`UB GDataRecord4000::thread_status`
thread status
Definition at line 84 of file gclib_record.h.

13.18.2.44 amplifier_status

`UL GDataRecord4000::amplifier_status`
Amplifier Status.
Definition at line 85 of file gclib_record.h.

13.18.2.45 contour_segment_count

`UL GDataRecord4000::contour_segment_count`
Segment Count for Contour Mode.
Definition at line 87 of file gclib_record.h.

13.18.2.46 contour_buffer_available

`UW GDataRecord4000::contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 88 of file gclib_record.h.

13.18.2.47 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.

13.18.2.48 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.

13.18.2.49 s_distance

`SL GDataRecord4000::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 92 of file gclib_record.h.

13.18.2.50 s_plane_buffer_available

`UW GDataRecord4000::s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 93 of file gclib_record.h.

13.18.2.51 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.

13.18.2.52 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.

13.18.2.53 t_distance

`SL GDataRecord4000::t_distance`
distance traveled in coordinated move for T plane.
Definition at line 97 of file gclib_record.h.

13.18.2.54 t_plane_buffer_available

`UW GDataRecord4000::t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 98 of file gclib_record.h.

13.18.2.55 axis_a_status

`UW GDataRecord4000::axis_a_status`
A axis status.
Definition at line 100 of file gclib_record.h.

13.18.2.56 axis_a_switches

`UB GDataRecord4000::axis_a_switches`
A axis switches.
Definition at line 101 of file gclib_record.h.

13.18.2.57 axis_a_stop_code

`UB GDataRecord4000::axis_a_stop_code`
A axis stop code.
Definition at line 102 of file gclib_record.h.

13.18.2.58 axis_a_reference_position

`SL GDataRecord4000::axis_a_reference_position`
A axis reference position.
Definition at line 103 of file gclib_record.h.

13.18.2.59 axis_a_motor_position

`SL GDataRecord4000::axis_a_motor_position`
A axis motor position.
Definition at line 104 of file gclib_record.h.

13.18.2.60 axis_a_position_error

`SL GDataRecord4000::axis_a_position_error`
A axis position error.
Definition at line 105 of file gclib_record.h.

13.18.2.61 axis_a_aux_position

`SL GDataRecord4000::axis_a_aux_position`
A axis auxiliary position.
Definition at line 106 of file gclib_record.h.

13.18.2.62 axis_a_velocity

`SL GDataRecord4000::axis_a_velocity`
A axis velocity.
Definition at line 107 of file gclib_record.h.

13.18.2.63 axis_a_torque

`SL GDataRecord4000::axis_a_torque`
A axis torque.
Definition at line 108 of file gclib_record.h.

13.18.2.64 axis_a_analog_in

`UW GDataRecord4000::axis_a_analog_in`
A axis analog input.
Definition at line 109 of file gclib_record.h.

13.18.2.65 axis_a_halls

`UB GDataRecord4000::axis_a_halls`
A Hall Input Status.
Definition at line 110 of file gclib_record.h.

13.18.2.66 axis_a_reserved

`UB GDataRecord4000::axis_a_reserved`
Reserved.
Definition at line 111 of file gclib_record.h.

13.18.2.67 axis_a_variable

`SL GDataRecord4000::axis_a_variable`
A User-defined variable (ZA).
Definition at line 112 of file gclib_record.h.

13.18.2.68 axis_b_status

`UW GDataRecord4000::axis_b_status`
B axis status.
Definition at line 114 of file gclib_record.h.

13.18.2.69 axis_b_switches

`UB GDataRecord4000::axis_b_switches`
B axis switches.
Definition at line 115 of file gclib_record.h.

13.18.2.70 axis_b_stop_code

`UB GDataRecord4000::axis_b_stop_code`
B axis stop code.
Definition at line 116 of file gclib_record.h.

13.18.2.71 axis_b_reference_position

`SL GDataRecord4000::axis_b_reference_position`
B axis reference position.
Definition at line 117 of file gclib_record.h.

13.18.2.72 axis_b_motor_position

`SL GDataRecord4000::axis_b_motor_position`
B axis motor position.
Definition at line 118 of file gclib_record.h.

13.18.2.73 axis_b_position_error

`SL GDataRecord4000::axis_b_position_error`
B axis position error.
Definition at line 119 of file gclib_record.h.

13.18.2.74 axis_b_aux_position

`SL GDataRecord4000::axis_b_aux_position`
B axis auxiliary position.
Definition at line 120 of file gclib_record.h.

13.18.2.75 axis_b_velocity

`SL GDataRecord4000::axis_b_velocity`
B axis velocity.
Definition at line 121 of file gclib_record.h.

13.18.2.76 axis_b_torque

`SL GDataRecord4000::axis_b_torque`
B axis torque.
Definition at line 122 of file gclib_record.h.

13.18.2.77 axis_b_analog_in

`UW GDataRecord4000::axis_b_analog_in`
B axis analog input.
Definition at line 123 of file gclib_record.h.

13.18.2.78 axis_b_halls

`UB GDataRecord4000::axis_b_halls`
B Hall Input Status.
Definition at line 124 of file gclib_record.h.

13.18.2.79 axis_b_reserved

`UB GDataRecord4000::axis_b_reserved`
Reserved.
Definition at line 125 of file gclib_record.h.

13.18.2.80 axis_b_variable

`SL GDataRecord4000::axis_b_variable`
B User-defined variable (ZA).
Definition at line 126 of file gclib_record.h.

13.18.2.81 axis_c_status

`UW GDataRecord4000::axis_c_status`
C axis status.
Definition at line 128 of file gclib_record.h.

13.18.2.82 axis_c_switches

`UB GDataRecord4000::axis_c_switches`
C axis switches.
Definition at line 129 of file gclib_record.h.

13.18.2.83 axis_c_stop_code

`UB GDataRecord4000::axis_c_stop_code`
C axis stop code.
Definition at line 130 of file gclib_record.h.

13.18.2.84 axis_c_reference_position

`SL GDataRecord4000::axis_c_reference_position`
C axis reference position.
Definition at line 131 of file gclib_record.h.

13.18.2.85 axis_c_motor_position

`SL GDataRecord4000::axis_c_motor_position`
C axis motor position.
Definition at line 132 of file gclib_record.h.

13.18.2.86 axis_c_position_error

`SL GDataRecord4000::axis_c_position_error`
C axis position error.
Definition at line 133 of file gclib_record.h.

13.18.2.87 axis_c_aux_position

`SL GDataRecord4000::axis_c_aux_position`
C axis auxiliary position.
Definition at line 134 of file gclib_record.h.

13.18.2.88 axis_c_velocity

`SL GDataRecord4000::axis_c_velocity`
C axis velocity.
Definition at line 135 of file gclib_record.h.

13.18.2.89 axis_c_torque

`SL GDataRecord4000::axis_c_torque`
C axis torque.
Definition at line 136 of file gclib_record.h.

13.18.2.90 axis_c_analog_in

`UW GDataRecord4000::axis_c_analog_in`
C axis analog input.
Definition at line 137 of file gclib_record.h.

13.18.2.91 axis_c_halls

`UB GDataRecord4000::axis_c_halls`
C Hall Input Status.
Definition at line 138 of file gclib_record.h.

13.18.2.92 axis_c_reserved

`UB GDataRecord4000::axis_c_reserved`
Reserved.
Definition at line 139 of file gclib_record.h.

13.18.2.93 axis_c_variable

`SL GDataRecord4000::axis_c_variable`
C User-defined variable (ZA).
Definition at line 140 of file gclib_record.h.

13.18.2.94 axis_d_status

`UW GDataRecord4000::axis_d_status`
D axis status.
Definition at line 142 of file gclib_record.h.

13.18.2.95 axis_d_switches

`UB GDataRecord4000::axis_d_switches`
D axis switches.
Definition at line 143 of file gclib_record.h.

13.18.2.96 axis_d_stop_code

`UB GDataRecord4000::axis_d_stop_code`
D axis stop code.
Definition at line 144 of file gclib_record.h.

13.18.2.97 axis_d_reference_position

`SL GDataRecord4000::axis_d_reference_position`
D axis reference position.
Definition at line 145 of file gclib_record.h.

13.18.2.98 axis_d_motor_position

`SL GDataRecord4000::axis_d_motor_position`
D axis motor position.
Definition at line 146 of file gclib_record.h.

13.18.2.99 axis_d_position_error

`SL GDataRecord4000::axis_d_position_error`
D axis position error.
Definition at line 147 of file gclib_record.h.

13.18.2.100 axis_d_aux_position

`SL GDataRecord4000::axis_d_aux_position`
D axis auxiliary position.
Definition at line 148 of file gclib_record.h.

13.18.2.101 axis_d_velocity

`SL GDataRecord4000::axis_d_velocity`
D axis velocity.
Definition at line 149 of file gclib_record.h.

13.18.2.102 axis_d_torque

`SL GDataRecord4000::axis_d_torque`
D axis torque.
Definition at line 150 of file gclib_record.h.

13.18.2.103 axis_d_analog_in

`UW GDataRecord4000::axis_d_analog_in`
D axis analog input.
Definition at line 151 of file gclib_record.h.

13.18.2.104 axis_d_halls

`UB GDataRecord4000::axis_d_halls`
D Hall Input Status.
Definition at line 152 of file gclib_record.h.

13.18.2.105 axis_d_reserved

`UB GDataRecord4000::axis_d_reserved`
Reserved.
Definition at line 153 of file gclib_record.h.

13.18.2.106 axis_d_variable

`SL GDataRecord4000::axis_d_variable`
D User-defined variable (ZA).
Definition at line 154 of file gclib_record.h.

13.18.2.107 axis_e_status

`UW GDataRecord4000::axis_e_status`
E axis status.
Definition at line 156 of file gclib_record.h.

13.18.2.108 axis_e_switches

`UB GDataRecord4000::axis_e_switches`
E axis switches.
Definition at line 157 of file gclib_record.h.

13.18.2.109 axis_e_stop_code

`UB GDataRecord4000::axis_e_stop_code`
E axis stop code.
Definition at line 158 of file gclib_record.h.

13.18.2.110 axis_e_reference_position

`SL GDataRecord4000::axis_e_reference_position`
E axis reference position.
Definition at line 159 of file gclib_record.h.

13.18.2.111 axis_e_motor_position

`SL GDataRecord4000::axis_e_motor_position`
E axis motor position.
Definition at line 160 of file gclib_record.h.

13.18.2.112 axis_e_position_error

`SL GDataRecord4000::axis_e_position_error`
E axis position error.
Definition at line 161 of file gclib_record.h.

13.18.2.113 axis_e_aux_position

`SL GDataRecord4000::axis_e_aux_position`
E axis auxiliary position.
Definition at line 162 of file gclib_record.h.

13.18.2.114 axis_e_velocity

`SL GDataRecord4000::axis_e_velocity`
E axis velocity.
Definition at line 163 of file gclib_record.h.

13.18.2.115 axis_e_torque

`SL GDataRecord4000::axis_e_torque`
E axis torque.
Definition at line 164 of file gclib_record.h.

13.18.2.116 axis_e_analog_in

`UW GDataRecord4000::axis_e_analog_in`
E axis analog input.
Definition at line 165 of file gclib_record.h.

13.18.2.117 axis_e_halls

`UB GDataRecord4000::axis_e_halls`
E Hall Input Status.
Definition at line 166 of file gclib_record.h.

13.18.2.118 axis_e_reserved

`UB GDataRecord4000::axis_e_reserved`
Reserved.
Definition at line 167 of file gclib_record.h.

13.18.2.119 axis_e_variable

`SL GDataRecord4000::axis_e_variable`
E User-defined variable (ZA).
Definition at line 168 of file gclib_record.h.

13.18.2.120 axis_f_status

`UW GDataRecord4000::axis_f_status`
F axis status.
Definition at line 170 of file gclib_record.h.

13.18.2.121 axis_f_switches

`UB GDataRecord4000::axis_f_switches`
F axis switches.
Definition at line 171 of file gclib_record.h.

13.18.2.122 axis_f_stop_code

`UB GDataRecord4000::axis_f_stop_code`
F axis stop code.
Definition at line 172 of file gclib_record.h.

13.18.2.123 axis_f_reference_position

`SL GDataRecord4000::axis_f_reference_position`
F axis reference position.
Definition at line 173 of file gclib_record.h.

13.18.2.124 axis_f_motor_position

`SL GDataRecord4000::axis_f_motor_position`
F axis motor position.
Definition at line 174 of file gclib_record.h.

13.18.2.125 axis_f_position_error

`SL GDataRecord4000::axis_f_position_error`
F axis position error.
Definition at line 175 of file gclib_record.h.

13.18.2.126 axis_f_aux_position

`SL GDataRecord4000::axis_f_aux_position`
F axis auxiliary position.
Definition at line 176 of file gclib_record.h.

13.18.2.127 axis_f_velocity

`SL GDataRecord4000::axis_f_velocity`
F axis velocity.
Definition at line 177 of file gclib_record.h.

13.18.2.128 axis_f_torque

`SL GDataRecord4000::axis_f_torque`
F axis torque.
Definition at line 178 of file gclib_record.h.

13.18.2.129 axis_f_analog_in

`UW GDataRecord4000::axis_f_analog_in`
F axis analog input.
Definition at line 179 of file gclib_record.h.

13.18.2.130 axis_f_halls

`UB GDataRecord4000::axis_f_halls`
F Hall Input Status.
Definition at line 180 of file gclib_record.h.

13.18.2.131 axis_f_reserved

`UB GDataRecord4000::axis_f_reserved`
Reserved.
Definition at line 181 of file gclib_record.h.

13.18.2.132 axis_f_variable

`SL GDataRecord4000::axis_f_variable`
F User-defined variable (ZA).
Definition at line 182 of file gclib_record.h.

13.18.2.133 axis_g_status

`UW GDataRecord4000::axis_g_status`
G axis status.
Definition at line 184 of file gclib_record.h.

13.18.2.134 axis_g_switches

`UB GDataRecord4000::axis_g_switches`
G axis switches.
Definition at line 185 of file gclib_record.h.

13.18.2.135 axis_g_stop_code

`UB GDataRecord4000::axis_g_stop_code`
G axis stop code.
Definition at line 186 of file gclib_record.h.

13.18.2.136 axis_g_reference_position

`SL GDataRecord4000::axis_g_reference_position`
G axis reference position.
Definition at line 187 of file gclib_record.h.

13.18.2.137 axis_g_motor_position

`SL GDataRecord4000::axis_g_motor_position`
G axis motor position.
Definition at line 188 of file gclib_record.h.

13.18.2.138 axis_g_position_error

`SL GDataRecord4000::axis_g_position_error`
G axis position error.
Definition at line 189 of file gclib_record.h.

13.18.2.139 axis_g_aux_position

`SL GDataRecord4000::axis_g_aux_position`
G axis auxiliary position.
Definition at line 190 of file gclib_record.h.

13.18.2.140 axis_g_velocity

`SL GDataRecord4000::axis_g_velocity`
G axis velocity.
Definition at line 191 of file gclib_record.h.

13.18.2.141 axis_g_torque

`SL GDataRecord4000::axis_g_torque`
G axis torque.
Definition at line 192 of file gclib_record.h.

13.18.2.142 axis_g_analog_in

`UW GDataRecord4000::axis_g_analog_in`
G axis analog input.
Definition at line 193 of file gclib_record.h.

13.18.2.143 axis_g_halls

`UB GDataRecord4000::axis_g_halls`
G Hall Input Status.
Definition at line 194 of file gclib_record.h.

13.18.2.144 axis_g_reserved

`UB GDataRecord4000::axis_g_reserved`
Reserved.
Definition at line 195 of file gclib_record.h.

13.18.2.145 axis_g_variable

`SL GDataRecord4000::axis_g_variable`
G User-defined variable (ZA).
Definition at line 196 of file gclib_record.h.

13.18.2.146 axis_h_status

`UW GDataRecord4000::axis_h_status`
H axis status.
Definition at line 198 of file gclib_record.h.

13.18.2.147 axis_h_switches

`UB GDataRecord4000::axis_h_switches`
H axis switches.
Definition at line 199 of file gclib_record.h.

13.18.2.148 axis_h_stop_code

`UB GDataRecord4000::axis_h_stop_code`
H axis stop code.
Definition at line 200 of file gclib_record.h.

13.18.2.149 axis_h_reference_position

`SL GDataRecord4000::axis_h_reference_position`
H axis reference position.
Definition at line 201 of file gclib_record.h.

13.18.2.150 axis_h_motor_position

`SL GDataRecord4000::axis_h_motor_position`
H axis motor position.
Definition at line 202 of file gclib_record.h.

13.18.2.151 axis_h_position_error

`SL GDataRecord4000::axis_h_position_error`
H axis position error.
Definition at line 203 of file gclib_record.h.

13.18.2.152 axis_h_aux_position

`SL GDataRecord4000::axis_h_aux_position`
H axis auxiliary position.
Definition at line 204 of file gclib_record.h.

13.18.2.153 axis_h_velocity

`SL GDataRecord4000::axis_h_velocity`
H axis velocity.
Definition at line 205 of file gclib_record.h.

13.18.2.154 axis_h_torque

`SL GDataRecord4000::axis_h_torque`
H axis torque.
Definition at line 206 of file gclib_record.h.

13.18.2.155 axis_h_analog_in

`UW GDataRecord4000::axis_h_analog_in`
H axis analog input.
Definition at line 207 of file gclib_record.h.

13.18.2.156 axis_h_halls

`UB GDataRecord4000::axis_h_halls`
H Hall Input Status.
Definition at line 208 of file gclib_record.h.

13.18.2.157 axis_h_reserved

`UB GDataRecord4000::axis_h_reserved`
Reserved.
Definition at line 209 of file gclib_record.h.

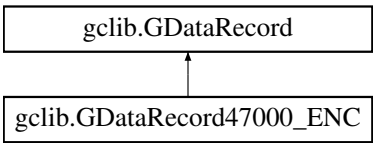
13.18.2.158 axis_h_variable

`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

13.19 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 Member Functions inherited from gclib.GDataRecord

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.

13.19.1 Detailed Description

Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
Definition at line 1770 of file gclib.cs.

13.19.2 Member Function Documentation

13.19.2.1 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.

13.19.3 Member Data Documentation

13.19.3.1 header_0

```
UB gclib.GDataRecord47000_ENC.header_0
```

1st Byte of Header.
Definition at line 1776 of file gclib.cs.

13.19.3.2 header_1

`UB gclib.GDataRecord47000_ENC.header_1`
2nd Byte of Header.
Definition at line 1777 of file gclib.cs.

13.19.3.3 header_2

`UB gclib.GDataRecord47000_ENC.header_2`
3rd Byte of Header.
Definition at line 1778 of file gclib.cs.

13.19.3.4 header_3

`UB gclib.GDataRecord47000_ENC.header_3`
4th Byte of Header.
Definition at line 1779 of file gclib.cs.

13.19.3.5 sample_number

`UW gclib.GDataRecord47000_ENC.sample_number`
Sample number.
Definition at line 1781 of file gclib.cs.

13.19.3.6 error_code

`UB gclib.GDataRecord47000_ENC.error_code`
Error code.
Definition at line 1782 of file gclib.cs.

13.19.3.7 general_status

`UB gclib.GDataRecord47000_ENC.general_status`
General status.
Definition at line 1783 of file gclib.cs.

13.19.3.8 output_analog_0

`UW gclib.GDataRecord47000_ENC.output_analog_0`
Analog output 0.
Definition at line 1785 of file gclib.cs.

13.19.3.9 output_analog_1

`UW gclib.GDataRecord47000_ENC.output_analog_1`
Analog output 1.
Definition at line 1786 of file gclib.cs.

13.19.3.10 output_analog_2

`UW gclib.GDataRecord47000_ENC.output_analog_2`
Analog output 2.
Definition at line 1787 of file gclib.cs.

13.19.3.11 output_analog_3

`UW gclib.GDataRecord47000_ENC.output_analog_3`
Analog output 3.
Definition at line 1788 of file gclib.cs.

13.19.3.12 output_analog_4

`UW gclib.GDataRecord47000_ENC.output_analog_4`
Analog output 4.
Definition at line 1789 of file gclib.cs.

13.19.3.13 output_analog_5

`UW gclib.GDataRecord47000_ENC.output_analog_5`
Analog output 5.
Definition at line 1790 of file gclib.cs.

13.19.3.14 output_analog_6

`UW gclib.GDataRecord47000_ENC.output_analog_6`
Analog output 6.
Definition at line 1791 of file gclib.cs.

13.19.3.15 output_analog_7

`UW gclib.GDataRecord47000_ENC.output_analog_7`
Analog output 7.
Definition at line 1792 of file gclib.cs.

13.19.3.16 input_analog_0

`UW gclib.GDataRecord47000_ENC.input_analog_0`
Analog input 0.
Definition at line 1794 of file gclib.cs.

13.19.3.17 input_analog_1

`UW gclib.GDataRecord47000_ENC.input_analog_1`
Analog input 1.
Definition at line 1795 of file gclib.cs.

13.19.3.18 input_analog_2

`UW gclib.GDataRecord47000_ENC.input_analog_2`
Analog input 2.
Definition at line 1796 of file gclib.cs.

13.19.3.19 input_analog_3

`UW gclib.GDataRecord47000_ENC.input_analog_3`
Analog input 3.
Definition at line 1797 of file gclib.cs.

13.19.3.20 input_analog_4

`UW gclib.GDataRecord47000_ENC.input_analog_4`
Analog input 4.
Definition at line 1798 of file gclib.cs.

13.19.3.21 input_analog_5

`UW gclib.GDataRecord47000_ENC.input_analog_5`
Analog input 5.
Definition at line 1799 of file gclib.cs.

13.19.3.22 input_analog_6

`UW gclib.GDataRecord47000_ENC.input_analog_6`
Analog input 6.
Definition at line 1800 of file gclib.cs.

13.19.3.23 input_analog_7

`UW gclib.GDataRecord47000_ENC.input_analog_7`
Analog input 7.
Definition at line 1801 of file gclib.cs.

13.19.3.24 output_bank_0

`UW gclib.GDataRecord47000_ENC.output_bank_0`
Digital outputs 0-15;.
Definition at line 1803 of file gclib.cs.

13.19.3.25 input_bank_0

`UW gclib.GDataRecord47000_ENC.input_bank_0`
Digital inputs 0-15;.
Definition at line 1805 of file gclib.cs.

13.19.3.26 pulse_count_0

`UL gclib.GDataRecord47000_ENC.pulse_count_0`
Pulse counter (see PC).
Definition at line 1807 of file gclib.cs.

13.19.3.27 zc_variable

`SL gclib.GDataRecord47000_ENC.zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1808 of file gclib.cs.

13.19.3.28 zd_variable

`SL gclib.GDataRecord47000_ENC.zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1809 of file gclib.cs.

13.19.3.29 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.

13.19.3.30 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.

13.19.3.31 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.

13.19.3.32 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

13.20 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.

13.20.1 Detailed Description

Data record struct for RIO-471xx and RIO-472xx PLCs. Includes encoder fields.
Definition at line 866 of file gclib_record.h.

13.20.2 Member Data Documentation

13.20.2.1 header_0

`UB GDataRecord47000_ENC::header_0`
1st Byte of Header.
Definition at line 871 of file gclib_record.h.

13.20.2.2 header_1

`UB GDataRecord47000_ENC::header_1`
2nd Byte of Header.
Definition at line 872 of file gclib_record.h.

13.20.2.3 header_2

`UB GDataRecord47000_ENC::header_2`
3rd Byte of Header.
Definition at line 873 of file gclib_record.h.

13.20.2.4 header_3

`UB GDataRecord47000_ENC::header_3`
4th Byte of Header.
Definition at line 874 of file gclib_record.h.

13.20.2.5 sample_number

`UW GDataRecord47000_ENC::sample_number`
Sample number.
Definition at line 876 of file gclib_record.h.

13.20.2.6 error_code

`UB GDataRecord47000_ENC::error_code`
Error code.
Definition at line 877 of file gclib_record.h.

13.20.2.7 general_status

`UB GDataRecord47000_ENC::general_status`
General status.
Definition at line 878 of file gclib_record.h.

13.20.2.8 output_analog_0

`UW GDataRecord47000_ENC::output_analog_0`
Analog output 0.
Definition at line 880 of file gclib_record.h.

13.20.2.9 output_analog_1

`UW GDataRecord47000_ENC::output_analog_1`
Analog output 1.
Definition at line 881 of file gclib_record.h.

13.20.2.10 output_analog_2

`UW GDataRecord47000_ENC::output_analog_2`
Analog output 2.
Definition at line 882 of file gclib_record.h.

13.20.2.11 output_analog_3

`UW GDataRecord47000_ENC::output_analog_3`
Analog output 3.
Definition at line 883 of file gclib_record.h.

13.20.2.12 output_analog_4

`UW GDataRecord47000_ENC::output_analog_4`
Analog output 4.
Definition at line 884 of file gclib_record.h.

13.20.2.13 output_analog_5

`UW GDataRecord47000_ENC::output_analog_5`
Analog output 5.
Definition at line 885 of file gclib_record.h.

13.20.2.14 output_analog_6

`UW GDataRecord47000_ENC::output_analog_6`
Analog output 6.
Definition at line 886 of file gclib_record.h.

13.20.2.15 output_analog_7

`UW GDataRecord47000_ENC::output_analog_7`
Analog output 7.
Definition at line 887 of file gclib_record.h.

13.20.2.16 input_analog_0

`UW GDataRecord47000_ENC::input_analog_0`
Analog input 0.
Definition at line 889 of file gclib_record.h.

13.20.2.17 input_analog_1

`UW GDataRecord47000_ENC::input_analog_1`
Analog input 1.
Definition at line 890 of file gclib_record.h.

13.20.2.18 input_analog_2

`UW GDataRecord47000_ENC::input_analog_2`
Analog input 2.
Definition at line 891 of file gclib_record.h.

13.20.2.19 input_analog_3

`UW GDataRecord47000_ENC::input_analog_3`
Analog input 3.
Definition at line 892 of file gclib_record.h.

13.20.2.20 input_analog_4

`UW GDataRecord47000_ENC::input_analog_4`
Analog input 4.
Definition at line 893 of file gclib_record.h.

13.20.2.21 input_analog_5

`UW GDataRecord47000_ENC::input_analog_5`
Analog input 5.
Definition at line 894 of file gclib_record.h.

13.20.2.22 input_analog_6

`UW GDataRecord47000_ENC::input_analog_6`
Analog input 6.
Definition at line 895 of file gclib_record.h.

13.20.2.23 input_analog_7

`UW GDataRecord47000_ENC::input_analog_7`
Analog input 7.
Definition at line 896 of file gclib_record.h.

13.20.2.24 output_bank_0

`UW GDataRecord47000_ENC::output_bank_0`
Digital outputs 0-15;.
Definition at line 898 of file gclib_record.h.

13.20.2.25 input_bank_0

`UW GDataRecord47000_ENC::input_bank_0`
Digital inputs 0-15;.
Definition at line 900 of file gclib_record.h.

13.20.2.26 pulse_count_0

`UL GDataRecord47000_ENC::pulse_count_0`
Pulse counter (see PC).
Definition at line 902 of file gclib_record.h.

13.20.2.27 zc_variable

`SL GDataRecord47000_ENC::zc_variable`
ZC User-defined variable (see ZC).
Definition at line 903 of file gclib_record.h.

13.20.2.28 zd_variable

`SL GDataRecord47000_ENC::zd_variable`
ZD User-defined variable (see ZD).
Definition at line 904 of file gclib_record.h.

13.20.2.29 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.

13.20.2.30 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.

13.20.2.31 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.

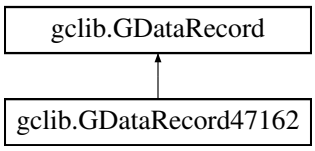
13.20.2.32 encoder_3

`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

13.21 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 Member Functions inherited from gclib.GDataRecord

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.

13.21.1 Detailed Description

Data record struct for RIO-47162.
Definition at line 1925 of file gclib.cs.

13.21.2 Member Function Documentation

13.21.2.1 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.

13.21.3 Member Data Documentation

13.21.3.1 header_0

`UB gclib.GDataRecord47162.header_0`
1st Byte of Header.
Definition at line 1930 of file gclib.cs.

13.21.3.2 header_1

`UB gclib.GDataRecord47162.header_1`
2nd Byte of Header.
Definition at line 1931 of file gclib.cs.

13.21.3.3 header_2

`UB gclib.GDataRecord47162.header_2`
3rd Byte of Header.
Definition at line 1932 of file gclib.cs.

13.21.3.4 header_3

`UB gclib.GDataRecord47162.header_3`
4th Byte of Header.
Definition at line 1933 of file gclib.cs.

13.21.3.5 sample_number

`UW gclib.GDataRecord47162.sample_number`
Sample number.
Definition at line 1935 of file gclib.cs.

13.21.3.6 error_code

`UB gclib.GDataRecord47162.error_code`
Error code.
Definition at line 1936 of file gclib.cs.

13.21.3.7 general_status

`UB gclib.GDataRecord47162.general_status`
General status.
Definition at line 1937 of file gclib.cs.

13.21.3.8 output_analog_0

`UW gclib.GDataRecord47162.output_analog_0`
Analog output 0.
Definition at line 1939 of file gclib.cs.

13.21.3.9 output_analog_1

`UW gclib.GDataRecord47162.output_analog_1`
Analog output 1.
Definition at line 1940 of file gclib.cs.

13.21.3.10 output_analog_2

`UW gclib.GDataRecord47162.output_analog_2`
Analog output 2.
Definition at line 1941 of file gclib.cs.

13.21.3.11 output_analog_3

`UW gclib.GDataRecord47162.output_analog_3`
Analog output 3.
Definition at line 1942 of file gclib.cs.

13.21.3.12 output_analog_4

`UW gclib.GDataRecord47162.output_analog_4`
Analog output 4.
Definition at line 1943 of file gclib.cs.

13.21.3.13 output_analog_5

`UW gclib.GDataRecord47162.output_analog_5`
Analog output 5.
Definition at line 1944 of file gclib.cs.

13.21.3.14 output_analog_6

`UW gclib.GDataRecord47162.output_analog_6`
Analog output 6.
Definition at line 1945 of file gclib.cs.

13.21.3.15 output_analog_7

`UW gclib.GDataRecord47162.output_analog_7`
Analog output 7.
Definition at line 1946 of file gclib.cs.

13.21.3.16 input_analog_0

`UW gclib.GDataRecord47162.input_analog_0`
Analog input 0.
Definition at line 1948 of file gclib.cs.

13.21.3.17 input_analog_1

`UW gclib.GDataRecord47162.input_analog_1`
Analog input 1.
Definition at line 1949 of file gclib.cs.

13.21.3.18 input_analog_2

`UW gclib.GDataRecord47162.input_analog_2`
Analog input 2.
Definition at line 1950 of file gclib.cs.

13.21.3.19 input_analog_3

`UW gclib.GDataRecord47162.input_analog_3`
Analog input 3.
Definition at line 1951 of file gclib.cs.

13.21.3.20 input_analog_4

`UW gclib.GDataRecord47162.input_analog_4`
Analog input 4.
Definition at line 1952 of file gclib.cs.

13.21.3.21 input_analog_5

`UW gclib.GDataRecord47162.input_analog_5`
Analog input 5.
Definition at line 1953 of file gclib.cs.

13.21.3.22 input_analog_6

`UW gclib.GDataRecord47162.input_analog_6`
Analog input 6.
Definition at line 1954 of file gclib.cs.

13.21.3.23 input_analog_7

`UW gclib.GDataRecord47162.input_analog_7`
Analog input 7.
Definition at line 1955 of file gclib.cs.

13.21.3.24 output_byte_0

`UB gclib.GDataRecord47162.output_byte_0`
Digital outputs 0-7.
Definition at line 1957 of file gclib.cs.

13.21.3.25 output_byte_1

`UB gclib.GDataRecord47162.output_byte_1`
Digital outputs 8-15.
Definition at line 1958 of file gclib.cs.

13.21.3.26 output_byte_2

`UB gclib.GDataRecord47162.output_byte_2`
Digital outputs 16-23.
Definition at line 1959 of file gclib.cs.

13.21.3.27 input_byte_0

`UB gclib.GDataRecord47162.input_byte_0`
Digital inputs 0-7.
Definition at line 1961 of file gclib.cs.

13.21.3.28 input_byte_1

`UB gclib.GDataRecord47162.input_byte_1`
Digital inputs 8-15.
Definition at line 1962 of file gclib.cs.

13.21.3.29 input_byte_2

`UB gclib.GDataRecord47162.input_byte_2`
Digital inputs 16-23.
Definition at line 1963 of file gclib.cs.

13.21.3.30 input_byte_3

`UB gclib.GDataRecord47162.input_byte_3`
Digital inputs 24-31.
Definition at line 1964 of file gclib.cs.

13.21.3.31 input_byte_4

`UB gclib.GDataRecord47162.input_byte_4`
Digital inputs 32-39.
Definition at line 1965 of file gclib.cs.

13.21.3.32 pulse_count_0

`UL gclib.GDataRecord47162.pulse_count_0`
Pulse counter (see PC).
Definition at line 1967 of file gclib.cs.

13.21.3.33 zc_variable

`SL gclib.GDataRecord47162.zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1968 of file gclib.cs.

13.21.3.34 zd_variable

`SL gclib.GDataRecord47162.zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1969 of file gclib.cs.

13.21.3.35 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.

13.21.3.36 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.

13.21.3.37 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.

13.21.3.38 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

13.22 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.

13.22.1 Detailed Description

Data record struct for RIO-47162.
Definition at line 1015 of file gclib_record.h.

13.22.2 Member Data Documentation

13.22.2.1 header_0

`UB GDataRecord47162::header_0`
1st Byte of Header.
Definition at line 1019 of file gclib_record.h.

13.22.2.2 header_1

`UB GDataRecord47162::header_1`
2nd Byte of Header.
Definition at line 1020 of file gclib_record.h.

13.22.2.3 header_2

`UB GDataRecord47162::header_2`
3rd Byte of Header.
Definition at line 1021 of file gclib_record.h.

13.22.2.4 header_3

`UB GDataRecord47162::header_3`
4th Byte of Header.
Definition at line 1022 of file gclib_record.h.

13.22.2.5 sample_number

`UW GDataRecord47162::sample_number`
Sample number.
Definition at line 1024 of file gclib_record.h.

13.22.2.6 error_code

`UB GDataRecord47162::error_code`
Error code.
Definition at line 1025 of file gclib_record.h.

13.22.2.7 general_status

`UB GDataRecord47162::general_status`
General status.
Definition at line 1026 of file gclib_record.h.

13.22.2.8 output_analog_0

`UW GDataRecord47162::output_analog_0`
Analog output 0.
Definition at line 1028 of file gclib_record.h.

13.22.2.9 output_analog_1

`UW GDataRecord47162::output_analog_1`
Analog output 1.
Definition at line 1029 of file gclib_record.h.

13.22.2.10 output_analog_2

`UW GDataRecord47162::output_analog_2`
Analog output 2.
Definition at line 1030 of file gclib_record.h.

13.22.2.11 output_analog_3

`UW GDataRecord47162::output_analog_3`
Analog output 3.
Definition at line 1031 of file gclib_record.h.

13.22.2.12 output_analog_4

`UW GDataRecord47162::output_analog_4`
Analog output 4.
Definition at line 1032 of file gclib_record.h.

13.22.2.13 output_analog_5

`UW GDataRecord47162::output_analog_5`
Analog output 5.
Definition at line 1033 of file gclib_record.h.

13.22.2.14 output_analog_6

`UW GDataRecord47162::output_analog_6`
Analog output 6.
Definition at line 1034 of file gclib_record.h.

13.22.2.15 output_analog_7

`UW GDataRecord47162::output_analog_7`
Analog output 7.
Definition at line 1035 of file gclib_record.h.

13.22.2.16 input_analog_0

`UW GDataRecord47162::input_analog_0`
Analog input 0.
Definition at line 1037 of file gclib_record.h.

13.22.2.17 input_analog_1

`UW GDataRecord47162::input_analog_1`
Analog input 1.
Definition at line 1038 of file gclib_record.h.

13.22.2.18 input_analog_2

`UW GDataRecord47162::input_analog_2`
Analog input 2.
Definition at line 1039 of file gclib_record.h.

13.22.2.19 input_analog_3

`UW GDataRecord47162::input_analog_3`
Analog input 3.
Definition at line 1040 of file gclib_record.h.

13.22.2.20 input_analog_4

`UW GDataRecord47162::input_analog_4`
Analog input 4.
Definition at line 1041 of file gclib_record.h.

13.22.2.21 input_analog_5

`UW GDataRecord47162::input_analog_5`
Analog input 5.
Definition at line 1042 of file gclib_record.h.

13.22.2.22 input_analog_6

`UW GDataRecord47162::input_analog_6`
Analog input 6.
Definition at line 1043 of file gclib_record.h.

13.22.2.23 input_analog_7

`UW GDataRecord47162::input_analog_7`
Analog input 7.
Definition at line 1044 of file gclib_record.h.

13.22.2.24 output_byte_0

`UB GDataRecord47162::output_byte_0`
Digital outputs 0-7.
Definition at line 1046 of file gclib_record.h.

13.22.2.25 output_byte_1

`UB GDataRecord47162::output_byte_1`
Digital outputs 8-15.
Definition at line 1047 of file gclib_record.h.

13.22.2.26 output_byte_2

`UB GDataRecord47162::output_byte_2`
Digital outputs 16-23.
Definition at line 1048 of file gclib_record.h.

13.22.2.27 input_byte_0

`UB GDataRecord47162::input_byte_0`
Digital inputs 0-7.
Definition at line 1050 of file gclib_record.h.

13.22.2.28 input_byte_1

`UB GDataRecord47162::input_byte_1`
Digital inputs 8-15.
Definition at line 1051 of file gclib_record.h.

13.22.2.29 input_byte_2

`UB GDataRecord47162::input_byte_2`
Digital inputs 16-23.
Definition at line 1052 of file gclib_record.h.

13.22.2.30 input_byte_3

`UB GDataRecord47162::input_byte_3`
Digital inputs 24-31.
Definition at line 1053 of file gclib_record.h.

13.22.2.31 input_byte_4

`UB GDataRecord47162::input_byte_4`
Digital inputs 32-39.
Definition at line 1054 of file gclib_record.h.

13.22.2.32 pulse_count_0

`UL GDataRecord47162::pulse_count_0`
Pulse counter (see PC).
Definition at line 1056 of file gclib_record.h.

13.22.2.33 zc_variable

`SL GDataRecord47162::zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1057 of file gclib_record.h.

13.22.2.34 zd_variable

`SL GDataRecord47162::zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1058 of file gclib_record.h.

13.22.2.35 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.

13.22.2.36 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.

13.22.2.37 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.

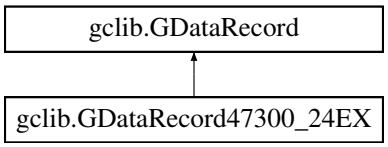
13.22.2.38 encoder_3

`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

13.23 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 Member Functions inherited from gclib.GDataRecord

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.

13.23.1 Detailed Description

Data record struct for RIO-47300 with 24EX I/O daughter board.
Definition at line 1872 of file gclib.cs.

13.23.2 Member Function Documentation

13.23.2.1 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.

13.23.3 Member Data Documentation

13.23.3.1 header_0

`UB gclib.GDataRecord47300_24EX.header_0`
1st Byte of Header.
Definition at line 1878 of file gclib.cs.

13.23.3.2 header_1

`UB gclib.GDataRecord47300_24EX.header_1`
2nd Byte of Header.
Definition at line 1879 of file gclib.cs.

13.23.3.3 header_2

`UB gclib.GDataRecord47300_24EX.header_2`
3rd Byte of Header.
Definition at line 1880 of file gclib.cs.

13.23.3.4 header_3

`UB gclib.GDataRecord47300_24EX.header_3`
4th Byte of Header.
Definition at line 1881 of file gclib.cs.

13.23.3.5 sample_number

`UW gclib.GDataRecord47300_24EX.sample_number`
Sample number.
Definition at line 1883 of file gclib.cs.

13.23.3.6 error_code

`UB gclib.GDataRecord47300_24EX.error_code`
Error code.
Definition at line 1884 of file gclib.cs.

13.23.3.7 general_status

`UB gclib.GDataRecord47300_24EX.general_status`
General status.
Definition at line 1885 of file gclib.cs.

13.23.3.8 output_analog_0

`UW gclib.GDataRecord47300_24EX.output_analog_0`
Analog output 0.
Definition at line 1887 of file gclib.cs.

13.23.3.9 output_analog_1

`UW gclib.GDataRecord47300_24EX.output_analog_1`
Analog output 1.
Definition at line 1888 of file gclib.cs.

13.23.3.10 output_analog_2

`UW gclib.GDataRecord47300_24EX.output_analog_2`
Analog output 2.
Definition at line 1889 of file gclib.cs.

13.23.3.11 output_analog_3

`UW gclib.GDataRecord47300_24EX.output_analog_3`
Analog output 3.
Definition at line 1890 of file gclib.cs.

13.23.3.12 output_analog_4

`UW gclib.GDataRecord47300_24EX.output_analog_4`
Analog output 4.
Definition at line 1891 of file gclib.cs.

13.23.3.13 output_analog_5

`UW gclib.GDataRecord47300_24EX.output_analog_5`
Analog output 5.
Definition at line 1892 of file gclib.cs.

13.23.3.14 output_analog_6

`UW gclib.GDataRecord47300_24EX.output_analog_6`
Analog output 6.
Definition at line 1893 of file gclib.cs.

13.23.3.15 output_analog_7

`UW gclib.GDataRecord47300_24EX.output_analog_7`
Analog output 7.
Definition at line 1894 of file gclib.cs.

13.23.3.16 input_analog_0

`UW gclib.GDataRecord47300_24EX.input_analog_0`
Analog input 0.
Definition at line 1896 of file gclib.cs.

13.23.3.17 input_analog_1

`UW gclib.GDataRecord47300_24EX.input_analog_1`
Analog input 1.
Definition at line 1897 of file gclib.cs.

13.23.3.18 input_analog_2

`UW gclib.GDataRecord47300_24EX.input_analog_2`
Analog input 2.
Definition at line 1898 of file gclib.cs.

13.23.3.19 input_analog_3

`UW gclib.GDataRecord47300_24EX.input_analog_3`
Analog input 3.
Definition at line 1899 of file gclib.cs.

13.23.3.20 input_analog_4

`UW gclib.GDataRecord47300_24EX.input_analog_4`
Analog input 4.
Definition at line 1900 of file gclib.cs.

13.23.3.21 input_analog_5

`UW gclib.GDataRecord47300_24EX.input_analog_5`
Analog input 5.
Definition at line 1901 of file gclib.cs.

13.23.3.22 input_analog_6

`UW gclib.GDataRecord47300_24EX.input_analog_6`
Analog input 6.
Definition at line 1902 of file gclib.cs.

13.23.3.23 input_analog_7

`UW gclib.GDataRecord47300_24EX.input_analog_7`
Analog input 7.
Definition at line 1903 of file gclib.cs.

13.23.3.24 output_bank_0

`UW gclib.GDataRecord47300_24EX.output_bank_0`
Digital outputs 0-15.
Definition at line 1905 of file gclib.cs.

13.23.3.25 output_bank_1

`UW gclib.GDataRecord47300_24EX.output_bank_1`
Digital outputs 16-23.
Definition at line 1906 of file gclib.cs.

13.23.3.26 input_bank_0

`UW gclib.GDataRecord47300_24EX.input_bank_0`
Digital inputs 0-15.
Definition at line 1908 of file gclib.cs.

13.23.3.27 input_bank_1

`UW gclib.GDataRecord47300_24EX.input_bank_1`
Digital inputs 16-23.
Definition at line 1909 of file gclib.cs.

13.23.3.28 pulse_count_0

`UL gclib.GDataRecord47300_24EX.pulse_count_0`
Pulse counter (see PC)8.
Definition at line 1911 of file gclib.cs.

13.23.3.29 zc_variable

`SL gclib.GDataRecord47300_24EX.zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1912 of file gclib.cs.

13.23.3.30 zd_variable

`SL gclib.GDataRecord47300_24EX.zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1913 of file gclib.cs.

13.23.3.31 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.

13.23.3.32 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.

13.23.3.33 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.

13.23.3.34 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

13.24 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.

13.24.1 Detailed Description

Data record struct for RIO-47300 with 24EX I/O daughter board.
Definition at line 964 of file gclib_record.h.

13.24.2 Member Data Documentation

13.24.2.1 header_0

`UB GDataRecord47300_24EX::header_0`
1st Byte of Header.
Definition at line 969 of file gclib_record.h.

13.24.2.2 header_1

`UB GDataRecord47300_24EX::header_1`
2nd Byte of Header.
Definition at line 970 of file gclib_record.h.

13.24.2.3 header_2

`UB GDataRecord47300_24EX::header_2`
3rd Byte of Header.
Definition at line 971 of file gclib_record.h.

13.24.2.4 header_3

`UB GDataRecord47300_24EX::header_3`
4th Byte of Header.
Definition at line 972 of file gclib_record.h.

13.24.2.5 sample_number

`UW GDataRecord47300_24EX::sample_number`
Sample number.
Definition at line 974 of file gclib_record.h.

13.24.2.6 error_code

`UB GDataRecord47300_24EX::error_code`
Error code.
Definition at line 975 of file gclib_record.h.

13.24.2.7 general_status

`UB GDataRecord47300_24EX::general_status`
General status.
Definition at line 976 of file gclib_record.h.

13.24.2.8 output_analog_0

`UW GDataRecord47300_24EX::output_analog_0`
Analog output 0.
Definition at line 978 of file gclib_record.h.

13.24.2.9 output_analog_1

`UW GDataRecord47300_24EX::output_analog_1`
Analog output 1.
Definition at line 979 of file gclib_record.h.

13.24.2.10 output_analog_2

`UW GDataRecord47300_24EX::output_analog_2`
Analog output 2.
Definition at line 980 of file gclib_record.h.

13.24.2.11 output_analog_3

`UW GDataRecord47300_24EX::output_analog_3`
Analog output 3.
Definition at line 981 of file gclib_record.h.

13.24.2.12 output_analog_4

`UW GDataRecord47300_24EX::output_analog_4`
Analog output 4.
Definition at line 982 of file gclib_record.h.

13.24.2.13 output_analog_5

`UW GDataRecord47300_24EX::output_analog_5`
Analog output 5.
Definition at line 983 of file gclib_record.h.

13.24.2.14 output_analog_6

`UW GDataRecord47300_24EX::output_analog_6`
Analog output 6.
Definition at line 984 of file gclib_record.h.

13.24.2.15 output_analog_7

`UW GDataRecord47300_24EX::output_analog_7`
Analog output 7.
Definition at line 985 of file gclib_record.h.

13.24.2.16 input_analog_0

`UW GDataRecord47300_24EX::input_analog_0`
Analog input 0.
Definition at line 987 of file gclib_record.h.

13.24.2.17 input_analog_1

`UW GDataRecord47300_24EX::input_analog_1`
Analog input 1.
Definition at line 988 of file gclib_record.h.

13.24.2.18 input_analog_2

`UW GDataRecord47300_24EX::input_analog_2`
Analog input 2.
Definition at line 989 of file gclib_record.h.

13.24.2.19 input_analog_3

`UW GDataRecord47300_24EX::input_analog_3`
Analog input 3.
Definition at line 990 of file gclib_record.h.

13.24.2.20 input_analog_4

`UW GDataRecord47300_24EX::input_analog_4`
Analog input 4.
Definition at line 991 of file gclib_record.h.

13.24.2.21 input_analog_5

`UW GDataRecord47300_24EX::input_analog_5`
Analog input 5.
Definition at line 992 of file gclib_record.h.

13.24.2.22 input_analog_6

`UW GDataRecord47300_24EX::input_analog_6`
Analog input 6.
Definition at line 993 of file gclib_record.h.

13.24.2.23 input_analog_7

`UW GDataRecord47300_24EX::input_analog_7`
Analog input 7.
Definition at line 994 of file gclib_record.h.

13.24.2.24 output_bank_0

`UW GDataRecord47300_24EX::output_bank_0`
Digital outputs 0-15.
Definition at line 996 of file gclib_record.h.

13.24.2.25 output_bank_1

`UW GDataRecord47300_24EX::output_bank_1`
Digital outputs 16-23.
Definition at line 997 of file gclib_record.h.

13.24.2.26 input_bank_0

`UW GDataRecord47300_24EX::input_bank_0`
Digital inputs 0-15.
Definition at line 999 of file gclib_record.h.

13.24.2.27 input_bank_1

`UW GDataRecord47300_24EX::input_bank_1`
Digital inputs 16-23.
Definition at line 1000 of file gclib_record.h.

13.24.2.28 pulse_count_0

`UL GDataRecord47300_24EX::pulse_count_0`
Pulse counter (see PC)8.
Definition at line 1002 of file gclib_record.h.

13.24.2.29 zc_variable

`SL GDataRecord47300_24EX::zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1003 of file gclib_record.h.

13.24.2.30 zd_variable

`SL GDataRecord47300_24EX::zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1004 of file gclib_record.h.

13.24.2.31 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.

13.24.2.32 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.

13.24.2.33 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.

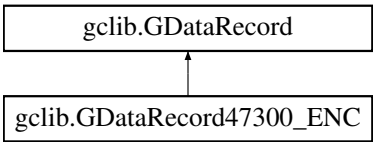
13.24.2.34 input_bank_3

`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

13.25 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 Member Functions inherited from gclib.GDataRecord

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.

13.25.1 Detailed Description

Data record struct for RIO-47300. Includes encoder fields.
Definition at line 1820 of file gclib.cs.

13.25.2 Member Function Documentation

13.25.2.1 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.

13.25.3 Member Data Documentation

13.25.3.1 header_0

`UB gclib.GDataRecord47300_ENC.header_0`
1st Byte of Header.
Definition at line 1826 of file gclib.cs.

13.25.3.2 header_1

`UB gclib.GDataRecord47300_ENC.header_1`
2nd Byte of Header.
Definition at line 1827 of file gclib.cs.

13.25.3.3 header_2

`UB gclib.GDataRecord47300_ENC.header_2`
3rd Byte of Header.
Definition at line 1828 of file gclib.cs.

13.25.3.4 header_3

`UB gclib.GDataRecord47300_ENC.header_3`
4th Byte of Header.
Definition at line 1829 of file gclib.cs.

13.25.3.5 sample_number

`UW gclib.GDataRecord47300_ENC.sample_number`
Sample number.
Definition at line 1831 of file gclib.cs.

13.25.3.6 error_code

`UB gclib.GDataRecord47300_ENC.error_code`
Error code.
Definition at line 1832 of file gclib.cs.

13.25.3.7 general_status

`UB gclib.GDataRecord47300_ENC.general_status`
General status.
Definition at line 1833 of file gclib.cs.

13.25.3.8 output_analog_0

`UW gclib.GDataRecord47300_ENC.output_analog_0`
Analog output 0.
Definition at line 1835 of file gclib.cs.

13.25.3.9 output_analog_1

`UW gclib.GDataRecord47300_ENC.output_analog_1`
Analog output 1.
Definition at line 1836 of file gclib.cs.

13.25.3.10 output_analog_2

`UW gclib.GDataRecord47300_ENC.output_analog_2`
Analog output 2.
Definition at line 1837 of file gclib.cs.

13.25.3.11 output_analog_3

`UW gclib.GDataRecord47300_ENC.output_analog_3`
Analog output 3.
Definition at line 1838 of file gclib.cs.

13.25.3.12 output_analog_4

`UW gclib.GDataRecord47300_ENC.output_analog_4`
Analog output 4.
Definition at line 1839 of file gclib.cs.

13.25.3.13 output_analog_5

`UW gclib.GDataRecord47300_ENC.output_analog_5`
Analog output 5.
Definition at line 1840 of file gclib.cs.

13.25.3.14 output_analog_6

`UW gclib.GDataRecord47300_ENC.output_analog_6`
Analog output 6.
Definition at line 1841 of file gclib.cs.

13.25.3.15 output_analog_7

`UW gclib.GDataRecord47300_ENC.output_analog_7`
Analog output 7.
Definition at line 1842 of file gclib.cs.

13.25.3.16 input_analog_0

`UW gclib.GDataRecord47300_ENC.input_analog_0`
Analog input 0.
Definition at line 1844 of file gclib.cs.

13.25.3.17 input_analog_1

`UW gclib.GDataRecord47300_ENC.input_analog_1`
Analog input 1.
Definition at line 1845 of file gclib.cs.

13.25.3.18 input_analog_2

`UW gclib.GDataRecord47300_ENC.input_analog_2`
Analog input 2.
Definition at line 1846 of file gclib.cs.

13.25.3.19 input_analog_3

`UW gclib.GDataRecord47300_ENC.input_analog_3`
Analog input 3.
Definition at line 1847 of file gclib.cs.

13.25.3.20 input_analog_4

`UW gclib.GDataRecord47300_ENC.input_analog_4`
Analog input 4.
Definition at line 1848 of file gclib.cs.

13.25.3.21 input_analog_5

`UW gclib.GDataRecord47300_ENC.input_analog_5`
Analog input 5.
Definition at line 1849 of file gclib.cs.

13.25.3.22 input_analog_6

`UW gclib.GDataRecord47300_ENC.input_analog_6`
Analog input 6.
Definition at line 1850 of file gclib.cs.

13.25.3.23 input_analog_7

`UW gclib.GDataRecord47300_ENC.input_analog_7`
Analog input 7.
Definition at line 1851 of file gclib.cs.

13.25.3.24 output_bank_0

`UW gclib.GDataRecord47300_ENC.output_bank_0`
Digital outputs 0-15;.
Definition at line 1853 of file gclib.cs.

13.25.3.25 output_bank_1

`UW gclib.GDataRecord47300_ENC.output_bank_1`
Digital outputs 16-23;.
Definition at line 1854 of file gclib.cs.

13.25.3.26 input_bank_0

`UW gclib.GDataRecord47300_ENC.input_bank_0`
Digital inputs 0-15;.
Definition at line 1856 of file gclib.cs.

13.25.3.27 input_bank_1

`UW gclib.GDataRecord47300_ENC.input_bank_1`
Digital inputs 16-23;.
Definition at line 1857 of file gclib.cs.

13.25.3.28 pulse_count_0

`UL gclib.GDataRecord47300_ENC.pulse_count_0`
Pulse counter (see PC).
Definition at line 1859 of file gclib.cs.

13.25.3.29 zc_variable

`SL gclib.GDataRecord47300_ENC.zc_variable`
ZC User-defined variable (see ZC).
Definition at line 1860 of file gclib.cs.

13.25.3.30 zd_variable

`SL gclib.GDataRecord47300_ENC.zd_variable`
ZD User-defined variable (see ZD).
Definition at line 1861 of file gclib.cs.

13.25.3.31 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.

13.25.3.32 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.

13.25.3.33 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.

13.25.3.34 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

13.26 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.

13.26.1 Detailed Description

Data record struct for RIO-47300. Includes encoder fields.
Definition at line 914 of file gclib_record.h.

13.26.2 Member Data Documentation

13.26.2.1 header_0

`UB GDataRecord47300_ENC::header_0`
1st Byte of Header.
Definition at line 919 of file gclib_record.h.

13.26.2.2 header_1

`UB GDataRecord47300_ENC::header_1`
2nd Byte of Header.
Definition at line 920 of file gclib_record.h.

13.26.2.3 header_2

`UB GDataRecord47300_ENC::header_2`
3rd Byte of Header.
Definition at line 921 of file gclib_record.h.

13.26.2.4 header_3

`UB GDataRecord47300_ENC::header_3`
4th Byte of Header.
Definition at line 922 of file gclib_record.h.

13.26.2.5 sample_number

`UW GDataRecord47300_ENC::sample_number`
Sample number.
Definition at line 924 of file gclib_record.h.

13.26.2.6 error_code

`UB GDataRecord47300_ENC::error_code`
Error code.
Definition at line 925 of file gclib_record.h.

13.26.2.7 general_status

`UB GDataRecord47300_ENC::general_status`
General status.
Definition at line 926 of file gclib_record.h.

13.26.2.8 output_analog_0

`UW GDataRecord47300_ENC::output_analog_0`
Analog output 0.
Definition at line 928 of file gclib_record.h.

13.26.2.9 output_analog_1

`UW GDataRecord47300_ENC::output_analog_1`
Analog output 1.
Definition at line 929 of file gclib_record.h.

13.26.2.10 output_analog_2

`UW GDataRecord47300_ENC::output_analog_2`
Analog output 2.
Definition at line 930 of file gclib_record.h.

13.26.2.11 output_analog_3

`UW GDataRecord47300_ENC::output_analog_3`
Analog output 3.
Definition at line 931 of file gclib_record.h.

13.26.2.12 output_analog_4

`UW GDataRecord47300_ENC::output_analog_4`
Analog output 4.
Definition at line 932 of file gclib_record.h.

13.26.2.13 output_analog_5

`UW GDataRecord47300_ENC::output_analog_5`
Analog output 5.
Definition at line 933 of file gclib_record.h.

13.26.2.14 output_analog_6

`UW GDataRecord47300_ENC::output_analog_6`
Analog output 6.
Definition at line 934 of file gclib_record.h.

13.26.2.15 output_analog_7

`UW GDataRecord47300_ENC::output_analog_7`
Analog output 7.
Definition at line 935 of file gclib_record.h.

13.26.2.16 input_analog_0

`UW GDataRecord47300_ENC::input_analog_0`
Analog input 0.
Definition at line 937 of file gclib_record.h.

13.26.2.17 input_analog_1

`UW GDataRecord47300_ENC::input_analog_1`
Analog input 1.
Definition at line 938 of file gclib_record.h.

13.26.2.18 input_analog_2

`UW GDataRecord47300_ENC::input_analog_2`
Analog input 2.
Definition at line 939 of file gclib_record.h.

13.26.2.19 input_analog_3

`UW GDataRecord47300_ENC::input_analog_3`
Analog input 3.
Definition at line 940 of file gclib_record.h.

13.26.2.20 input_analog_4

`UW GDataRecord47300_ENC::input_analog_4`
Analog input 4.
Definition at line 941 of file gclib_record.h.

13.26.2.21 input_analog_5

`UW GDataRecord47300_ENC::input_analog_5`
Analog input 5.
Definition at line 942 of file gclib_record.h.

13.26.2.22 input_analog_6

`UW GDataRecord47300_ENC::input_analog_6`
Analog input 6.
Definition at line 943 of file gclib_record.h.

13.26.2.23 input_analog_7

`UW GDataRecord47300_ENC::input_analog_7`
Analog input 7.
Definition at line 944 of file gclib_record.h.

13.26.2.24 output_bank_0

`UW GDataRecord47300_ENC::output_bank_0`
Digital outputs 0-15;.
Definition at line 946 of file gclib_record.h.

13.26.2.25 output_bank_1

`UW GDataRecord47300_ENC::output_bank_1`
Digital outputs 16-23;.
Definition at line 947 of file gclib_record.h.

13.26.2.26 input_bank_0

`UW GDataRecord47300_ENC::input_bank_0`
Digital inputs 0-15;.
Definition at line 949 of file gclib_record.h.

13.26.2.27 input_bank_1

`UW GDataRecord47300_ENC::input_bank_1`
Digital inputs 16-23;.
Definition at line 950 of file gclib_record.h.

13.26.2.28 pulse_count_0

`UL GDataRecord47300_ENC::pulse_count_0`
Pulse counter (see PC).
Definition at line 952 of file gclib_record.h.

13.26.2.29 zc_variable

`SL GDataRecord47300_ENC::zc_variable`
ZC User-defined variable (see ZC).
Definition at line 953 of file gclib_record.h.

13.26.2.30 zd_variable

`SL GDataRecord47300_ENC::zd_variable`
ZD User-defined variable (see ZD).
Definition at line 954 of file gclib_record.h.

13.26.2.31 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.

13.26.2.32 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.

13.26.2.33 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.

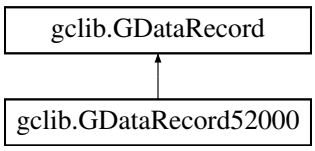
13.26.2.34 encoder_3

`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

13.27 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 Member Functions inherited from gclib.GDataRecord

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).

13.27.1 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.

13.27.2 Member Function Documentation

13.27.2.1 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.

13.27.3 Member Data Documentation

13.27.3.1 header_0

`UB gclib.GDataRecord52000.header_0`
1st Byte of Header.
Definition at line 1115 of file gclib.cs.

13.27.3.2 header_1

`UB gclib.GDataRecord52000.header_1`
2nd Byte of Header.
Definition at line 1116 of file gclib.cs.

13.27.3.3 header_2

`UB gclib.GDataRecord52000.header_2`
3rd Byte of Header.
Definition at line 1117 of file gclib.cs.

13.27.3.4 header_3

`UB gclib.GDataRecord52000.header_3`
4th Byte of Header.
Definition at line 1118 of file gclib.cs.

13.27.3.5 sample_number

`UW gclib.GDataRecord52000.sample_number`
sample number.
Definition at line 1120 of file gclib.cs.

13.27.3.6 input_bank_0

`UB gclib.GDataRecord52000.input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 1122 of file gclib.cs.

13.27.3.7 input_bank_1

`UB gclib.GDataRecord52000.input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 1123 of file gclib.cs.

13.27.3.8 input_bank_2

`UB gclib.GDataRecord52000.input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 1124 of file gclib.cs.

13.27.3.9 input_bank_3

`UB gclib.GDataRecord52000.input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 1125 of file gclib.cs.

13.27.3.10 input_bank_4

`UB gclib.GDataRecord52000.input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 1126 of file gclib.cs.

13.27.3.11 input_bank_5

`UB gclib.GDataRecord52000.input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 1127 of file gclib.cs.

13.27.3.12 input_bank_6

`UB gclib.GDataRecord52000.input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 1128 of file gclib.cs.

13.27.3.13 input_bank_7

`UB gclib.GDataRecord52000.input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 1129 of file gclib.cs.

13.27.3.14 input_bank_8

`UB gclib.GDataRecord52000.input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 1130 of file gclib.cs.

13.27.3.15 input_bank_9

`UB gclib.GDataRecord52000.input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 1131 of file gclib.cs.

13.27.3.16 output_bank_0

`UB gclib.GDataRecord52000.output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 1133 of file gclib.cs.

13.27.3.17 output_bank_1

`UB gclib.GDataRecord52000.output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 1134 of file gclib.cs.

13.27.3.18 output_bank_2

`UB gclib.GDataRecord52000.output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 1135 of file gclib.cs.

13.27.3.19 output_bank_3

`UB gclib.GDataRecord52000.output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 1136 of file gclib.cs.

13.27.3.20 output_bank_4

`UB gclib.GDataRecord52000.output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 1137 of file gclib.cs.

13.27.3.21 output_bank_5

`UB gclib.GDataRecord52000.output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 1138 of file gclib.cs.

13.27.3.22 output_bank_6

`UB gclib.GDataRecord52000.output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 1139 of file gclib.cs.

13.27.3.23 output_bank_7

`UB gclib.GDataRecord52000.output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 1140 of file gclib.cs.

13.27.3.24 output_bank_8

`UB gclib.GDataRecord52000.output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 1141 of file gclib.cs.

13.27.3.25 output_bank_9

`UB gclib.GDataRecord52000.output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 1142 of file gclib.cs.

13.27.3.26 reserved_0

`SW gclib.GDataRecord52000.reserved_0`
Reserved.
Definition at line 1144 of file gclib.cs.

13.27.3.27 reserved_2

`SW gclib.GDataRecord52000.reserved_2`
Reserved.
Definition at line 1145 of file gclib.cs.

13.27.3.28 reserved_4

`SW gclib.GDataRecord52000.reserved_4`
Reserved.
Definition at line 1146 of file gclib.cs.

13.27.3.29 reserved_6

`SW gclib.GDataRecord52000.reserved_6`
Reserved.
Definition at line 1147 of file gclib.cs.

13.27.3.30 reserved_8

`SW gclib.GDataRecord52000.reserved_8`
Reserved.
Definition at line 1148 of file gclib.cs.

13.27.3.31 reserved_10

`SW gclib.GDataRecord52000.reserved_10`
Reserved.
Definition at line 1149 of file gclib.cs.

13.27.3.32 reserved_12

`SW gclib.GDataRecord52000.reserved_12`
Reserved.
Definition at line 1150 of file gclib.cs.

13.27.3.33 ethercat_bank

`UB gclib.GDataRecord52000.ethercat_bank`
EtherCAT Bank Indicator.
Definition at line 1151 of file gclib.cs.

13.27.3.34 reserved_14

`UB gclib.GDataRecord52000.reserved_14`
Reserved.
Definition at line 1152 of file gclib.cs.

13.27.3.35 ethernet_status_a

`UB gclib.GDataRecord52000.ethernet_status_a`
Ethernet Handle A Status.
Definition at line 1154 of file gclib.cs.

13.27.3.36 ethernet_status_b

`UB gclib.GDataRecord52000.ethernet_status_b`
Ethernet Handle B Status.
Definition at line 1155 of file gclib.cs.

13.27.3.37 ethernet_status_c

`UB gclib.GDataRecord52000.ethernet_status_c`
Ethernet Handle C Status.
Definition at line 1156 of file gclib.cs.

13.27.3.38 ethernet_status_d

`UB gclib.GDataRecord52000.ethernet_status_d`
Ethernet Handle D Status.
Definition at line 1157 of file gclib.cs.

13.27.3.39 ethernet_status_e

`UB gclib.GDataRecord52000.ethernet_status_e`
Ethernet Handle E Status.
Definition at line 1158 of file gclib.cs.

13.27.3.40 ethernet_status_f

`UB gclib.GDataRecord52000.ethernet_status_f`
Ethernet Handle F Status.
Definition at line 1159 of file gclib.cs.

13.27.3.41 ethernet_status_g

`UB gclib.GDataRecord52000.ethernet_status_g`
Ethernet Handle G Status.
Definition at line 1160 of file gclib.cs.

13.27.3.42 ethernet_status_h

`UB gclib.GDataRecord52000.ethernet_status_h`
Ethernet Handle H Status.
Definition at line 1161 of file gclib.cs.

13.27.3.43 error_code

`UB gclib.GDataRecord52000.error_code`
error code.
Definition at line 1163 of file gclib.cs.

13.27.3.44 thread_status

`UB gclib.GDataRecord52000.thread_status`
thread status
Definition at line 1164 of file gclib.cs.

13.27.3.45 amplifier_status

`UL gclib.GDataRecord52000.amplifier_status`
Amplifier Status.
Definition at line 1165 of file gclib.cs.

13.27.3.46 contour_segment_count

`UL gclib.GDataRecord52000.contour_segment_count`
Segment Count for Contour Mode.
Definition at line 1167 of file gclib.cs.

13.27.3.47 contour_buffer_available

`UW gclib.GDataRecord52000.contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 1168 of file gclib.cs.

13.27.3.48 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.

13.27.3.49 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.

13.27.3.50 s_distance

`SL gclib.GDataRecord52000.s_distance`
distance traveled in coordinated move for S plane.
Definition at line 1172 of file gclib.cs.

13.27.3.51 s_plane_buffer_available

`UW gclib.GDataRecord52000.s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 1173 of file gclib.cs.

13.27.3.52 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.

13.27.3.53 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.

13.27.3.54 t_distance

`SL gclib.GDataRecord52000.t_distance`
distance traveled in coordinated move for T plane.
Definition at line 1177 of file gclib.cs.

13.27.3.55 t_plane_buffer_available

`UW gclib.GDataRecord52000.t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 1178 of file gclib.cs.

13.27.3.56 axis_a_status

`UW gclib.GDataRecord52000.axis_a_status`
A axis status.
Definition at line 1180 of file gclib.cs.

13.27.3.57 axis_a_switches

`UB gclib.GDataRecord52000.axis_a_switches`
A axis switches.
Definition at line 1181 of file gclib.cs.

13.27.3.58 axis_a_stop_code

`UB gclib.GDataRecord52000.axis_a_stop_code`
A axis stop code.
Definition at line 1182 of file gclib.cs.

13.27.3.59 axis_a_reference_position

`SL gclib.GDataRecord52000.axis_a_reference_position`
A axis reference position.
Definition at line 1183 of file gclib.cs.

13.27.3.60 axis_a_motor_position

`SL gclib.GDataRecord52000.axis_a_motor_position`
A axis motor position.
Definition at line 1184 of file gclib.cs.

13.27.3.61 axis_a_position_error

`SL gclib.GDataRecord52000.axis_a_position_error`
A axis position error.
Definition at line 1185 of file gclib.cs.

13.27.3.62 axis_a_aux_position

`SL gclib.GDataRecord52000.axis_a_aux_position`
A axis auxiliary position.
Definition at line 1186 of file gclib.cs.

13.27.3.63 axis_a_velocity

`SL gclib.GDataRecord52000.axis_a_velocity`
A axis velocity.
Definition at line 1187 of file gclib.cs.

13.27.3.64 axis_a_torque

`SL gclib.GDataRecord52000.axis_a_torque`
A axis torque.
Definition at line 1188 of file gclib.cs.

13.27.3.65 axis_a_analog_in

`UW gclib.GDataRecord52000.axis_a_analog_in`
A axis analog input.
Definition at line 1189 of file gclib.cs.

13.27.3.66 axis_a_halls

`UB gclib.GDataRecord52000.axis_a_halls`
A Hall Input Status.
Definition at line 1190 of file gclib.cs.

13.27.3.67 axis_a_reserved

`UB gclib.GDataRecord52000.axis_a_reserved`
Reserved.
Definition at line 1191 of file gclib.cs.

13.27.3.68 axis_a_variable

`SL gclib.GDataRecord52000.axis_a_variable`
A User-defined variable (ZA).
Definition at line 1192 of file gclib.cs.

13.27.3.69 axis_b_status

`UW gclib.GDataRecord52000.axis_b_status`
B axis status.
Definition at line 1194 of file gclib.cs.

13.27.3.70 axis_b_switches

`UB gclib.GDataRecord52000.axis_b_switches`
B axis switches.
Definition at line 1195 of file gclib.cs.

13.27.3.71 axis_b_stop_code

`UB gclib.GDataRecord52000.axis_b_stop_code`
B axis stop code.
Definition at line 1196 of file gclib.cs.

13.27.3.72 axis_b_reference_position

`SL gclib.GDataRecord52000.axis_b_reference_position`
B axis reference position.
Definition at line 1197 of file gclib.cs.

13.27.3.73 axis_b_motor_position

`SL gclib.GDataRecord52000.axis_b_motor_position`
B axis motor position.
Definition at line 1198 of file gclib.cs.

13.27.3.74 axis_b_position_error

`SL gclib.GDataRecord52000.axis_b_position_error`
B axis position error.
Definition at line 1199 of file gclib.cs.

13.27.3.75 axis_b_aux_position

`SL gclib.GDataRecord52000.axis_b_aux_position`
B axis auxiliary position.
Definition at line 1200 of file gclib.cs.

13.27.3.76 axis_b_velocity

`SL gclib.GDataRecord52000.axis_b_velocity`
B axis velocity.
Definition at line 1201 of file gclib.cs.

13.27.3.77 axis_b_torque

`SL gclib.GDataRecord52000.axis_b_torque`
B axis torque.
Definition at line 1202 of file gclib.cs.

13.27.3.78 axis_b_analog_in

`UW gclib.GDataRecord52000.axis_b_analog_in`
B axis analog input.
Definition at line 1203 of file gclib.cs.

13.27.3.79 axis_b_halls

`UB gclib.GDataRecord52000.axis_b_halls`
B Hall Input Status.
Definition at line 1204 of file gclib.cs.

13.27.3.80 axis_b_reserved

`UB gclib.GDataRecord52000.axis_b_reserved`
Reserved.
Definition at line 1205 of file gclib.cs.

13.27.3.81 axis_b_variable

`SL gclib.GDataRecord52000.axis_b_variable`
B User-defined variable (ZA).
Definition at line 1206 of file gclib.cs.

13.27.3.82 axis_c_status

`UW gclib.GDataRecord52000.axis_c_status`
C axis status.
Definition at line 1208 of file gclib.cs.

13.27.3.83 axis_c_switches

`UB gclib.GDataRecord52000.axis_c_switches`
C axis switches.
Definition at line 1209 of file gclib.cs.

13.27.3.84 axis_c_stop_code

`UB gclib.GDataRecord52000.axis_c_stop_code`
C axis stop code.
Definition at line 1210 of file gclib.cs.

13.27.3.85 axis_c_reference_position

`SL gclib.GDataRecord52000.axis_c_reference_position`
C axis reference position.
Definition at line 1211 of file gclib.cs.

13.27.3.86 axis_c_motor_position

`SL gclib.GDataRecord52000.axis_c_motor_position`
C axis motor position.
Definition at line 1212 of file gclib.cs.

13.27.3.87 axis_c_position_error

`SL gclib.GDataRecord52000.axis_c_position_error`
C axis position error.
Definition at line 1213 of file gclib.cs.

13.27.3.88 axis_c_aux_position

`SL gclib.GDataRecord52000.axis_c_aux_position`
C axis auxiliary position.
Definition at line 1214 of file gclib.cs.

13.27.3.89 axis_c_velocity

`SL gclib.GDataRecord52000.axis_c_velocity`
C axis velocity.
Definition at line 1215 of file gclib.cs.

13.27.3.90 axis_c_torque

`SL gclib.GDataRecord52000.axis_c_torque`
C axis torque.
Definition at line 1216 of file gclib.cs.

13.27.3.91 axis_c_analog_in

`UW gclib.GDataRecord52000.axis_c_analog_in`
C axis analog input.
Definition at line 1217 of file gclib.cs.

13.27.3.92 axis_c_halls

`UB gclib.GDataRecord52000.axis_c_halls`
C Hall Input Status.
Definition at line 1218 of file gclib.cs.

13.27.3.93 axis_c_reserved

`UB gclib.GDataRecord52000.axis_c_reserved`
Reserved.
Definition at line 1219 of file gclib.cs.

13.27.3.94 axis_c_variable

`SL gclib.GDataRecord52000.axis_c_variable`
C User-defined variable (ZA).
Definition at line 1220 of file gclib.cs.

13.27.3.95 axis_d_status

`UW gclib.GDataRecord52000.axis_d_status`
D axis status.
Definition at line 1222 of file gclib.cs.

13.27.3.96 axis_d_switches

`UB gclib.GDataRecord52000.axis_d_switches`
D axis switches.
Definition at line 1223 of file gclib.cs.

13.27.3.97 axis_d_stop_code

`UB gclib.GDataRecord52000.axis_d_stop_code`
D axis stop code.
Definition at line 1224 of file gclib.cs.

13.27.3.98 axis_d_reference_position

`SL gclib.GDataRecord52000.axis_d_reference_position`
D axis reference position.
Definition at line 1225 of file gclib.cs.

13.27.3.99 axis_d_motor_position

`SL gclib.GDataRecord52000.axis_d_motor_position`
D axis motor position.
Definition at line 1226 of file gclib.cs.

13.27.3.100 axis_d_position_error

`SL gclib.GDataRecord52000.axis_d_position_error`
D axis position error.
Definition at line 1227 of file gclib.cs.

13.27.3.101 axis_d_aux_position

`SL gclib.GDataRecord52000.axis_d_aux_position`
D axis auxiliary position.
Definition at line 1228 of file gclib.cs.

13.27.3.102 axis_d_velocity

`SL gclib.GDataRecord52000.axis_d_velocity`
D axis velocity.
Definition at line 1229 of file gclib.cs.

13.27.3.103 axis_d_torque

`SL gclib.GDataRecord52000.axis_d_torque`
D axis torque.
Definition at line 1230 of file gclib.cs.

13.27.3.104 axis_d_analog_in

`UW gclib.GDataRecord52000.axis_d_analog_in`
D axis analog input.
Definition at line 1231 of file gclib.cs.

13.27.3.105 axis_d_halls

`UB gclib.GDataRecord52000.axis_d_halls`
D Hall Input Status.
Definition at line 1232 of file gclib.cs.

13.27.3.106 axis_d_reserved

`UB gclib.GDataRecord52000.axis_d_reserved`
Reserved.
Definition at line 1233 of file gclib.cs.

13.27.3.107 axis_d_variable

`SL gclib.GDataRecord52000.axis_d_variable`
D User-defined variable (ZA).
Definition at line 1234 of file gclib.cs.

13.27.3.108 axis_e_status

`UW gclib.GDataRecord52000.axis_e_status`
E axis status.
Definition at line 1236 of file gclib.cs.

13.27.3.109 axis_e_switches

`UB gclib.GDataRecord52000.axis_e_switches`
E axis switches.
Definition at line 1237 of file gclib.cs.

13.27.3.110 axis_e_stop_code

`UB gclib.GDataRecord52000.axis_e_stop_code`
E axis stop code.
Definition at line 1238 of file gclib.cs.

13.27.3.111 axis_e_reference_position

`SL gclib.GDataRecord52000.axis_e_reference_position`
E axis reference position.
Definition at line 1239 of file gclib.cs.

13.27.3.112 axis_e_motor_position

`SL gclib.GDataRecord52000.axis_e_motor_position`
E axis motor position.
Definition at line 1240 of file gclib.cs.

13.27.3.113 axis_e_position_error

`SL gclib.GDataRecord52000.axis_e_position_error`
E axis position error.
Definition at line 1241 of file gclib.cs.

13.27.3.114 axis_e_aux_position

`SL gclib.GDataRecord52000.axis_e_aux_position`
E axis auxiliary position.
Definition at line 1242 of file gclib.cs.

13.27.3.115 axis_e_velocity

`SL gclib.GDataRecord52000.axis_e_velocity`
E axis velocity.
Definition at line 1243 of file gclib.cs.

13.27.3.116 axis_e_torque

`SL gclib.GDataRecord52000.axis_e_torque`
E axis torque.
Definition at line 1244 of file gclib.cs.

13.27.3.117 axis_e_analog_in

`UW gclib.GDataRecord52000.axis_e_analog_in`
E axis analog input.
Definition at line 1245 of file gclib.cs.

13.27.3.118 axis_e_halls

`UB gclib.GDataRecord52000.axis_e_halls`
E Hall Input Status.
Definition at line 1246 of file gclib.cs.

13.27.3.119 axis_e_reserved

`UB gclib.GDataRecord52000.axis_e_reserved`
Reserved.
Definition at line 1247 of file gclib.cs.

13.27.3.120 axis_e_variable

`SL gclib.GDataRecord52000.axis_e_variable`
E User-defined variable (ZA).
Definition at line 1248 of file gclib.cs.

13.27.3.121 axis_f_status

`UW gclib.GDataRecord52000.axis_f_status`
F axis status.
Definition at line 1250 of file gclib.cs.

13.27.3.122 axis_f_switches

`UB gclib.GDataRecord52000.axis_f_switches`
F axis switches.
Definition at line 1251 of file gclib.cs.

13.27.3.123 axis_f_stop_code

`UB gclib.GDataRecord52000.axis_f_stop_code`
F axis stop code.
Definition at line 1252 of file gclib.cs.

13.27.3.124 axis_f_reference_position

`SL gclib.GDataRecord52000.axis_f_reference_position`
F axis reference position.
Definition at line 1253 of file gclib.cs.

13.27.3.125 axis_f_motor_position

`SL gclib.GDataRecord52000.axis_f_motor_position`
F axis motor position.
Definition at line 1254 of file gclib.cs.

13.27.3.126 axis_f_position_error

`SL gclib.GDataRecord52000.axis_f_position_error`
F axis position error.
Definition at line 1255 of file gclib.cs.

13.27.3.127 axis_f_aux_position

`SL gclib.GDataRecord52000.axis_f_aux_position`
F axis auxiliary position.
Definition at line 1256 of file gclib.cs.

13.27.3.128 axis_f_velocity

`SL gclib.GDataRecord52000.axis_f_velocity`
F axis velocity.
Definition at line 1257 of file gclib.cs.

13.27.3.129 axis_f_torque

`SL gclib.GDataRecord52000.axis_f_torque`
F axis torque.
Definition at line 1258 of file gclib.cs.

13.27.3.130 axis_f_analog_in

`UW gclib.GDataRecord52000.axis_f_analog_in`
F axis analog input.
Definition at line 1259 of file gclib.cs.

13.27.3.131 axis_f_halls

`UB gclib.GDataRecord52000.axis_f_halls`
F Hall Input Status.
Definition at line 1260 of file gclib.cs.

13.27.3.132 axis_f_reserved

`UB gclib.GDataRecord52000.axis_f_reserved`
Reserved.
Definition at line 1261 of file gclib.cs.

13.27.3.133 axis_f_variable

`SL gclib.GDataRecord52000.axis_f_variable`
F User-defined variable (ZA).
Definition at line 1262 of file gclib.cs.

13.27.3.134 axis_g_status

`UW gclib.GDataRecord52000.axis_g_status`
G axis status.
Definition at line 1264 of file gclib.cs.

13.27.3.135 axis_g_switches

`UB gclib.GDataRecord52000.axis_g_switches`
G axis switches.
Definition at line 1265 of file gclib.cs.

13.27.3.136 axis_g_stop_code

`UB gclib.GDataRecord52000.axis_g_stop_code`
G axis stop code.
Definition at line 1266 of file gclib.cs.

13.27.3.137 axis_g_reference_position

`SL gclib.GDataRecord52000.axis_g_reference_position`
G axis reference position.
Definition at line 1267 of file gclib.cs.

13.27.3.138 axis_g_motor_position

`SL gclib.GDataRecord52000.axis_g_motor_position`
G axis motor position.
Definition at line 1268 of file gclib.cs.

13.27.3.139 axis_g_position_error

`SL gclib.GDataRecord52000.axis_g_position_error`
G axis position error.
Definition at line 1269 of file gclib.cs.

13.27.3.140 axis_g_aux_position

`SL gclib.GDataRecord52000.axis_g_aux_position`
G axis auxiliary position.
Definition at line 1270 of file gclib.cs.

13.27.3.141 axis_g_velocity

`SL gclib.GDataRecord52000.axis_g_velocity`
G axis velocity.
Definition at line 1271 of file gclib.cs.

13.27.3.142 axis_g_torque

`SL gclib.GDataRecord52000.axis_g_torque`
G axis torque.
Definition at line 1272 of file gclib.cs.

13.27.3.143 axis_g_analog_in

`UW gclib.GDataRecord52000.axis_g_analog_in`
G axis analog input.
Definition at line 1273 of file gclib.cs.

13.27.3.144 axis_g_halls

`UB gclib.GDataRecord52000.axis_g_halls`
G Hall Input Status.
Definition at line 1274 of file gclib.cs.

13.27.3.145 axis_g_reserved

`UB gclib.GDataRecord52000.axis_g_reserved`
Reserved.
Definition at line 1275 of file gclib.cs.

13.27.3.146 axis_g_variable

`SL gclib.GDataRecord52000.axis_g_variable`
G User-defined variable (ZA).
Definition at line 1276 of file gclib.cs.

13.27.3.147 axis_h_status

`UW gclib.GDataRecord52000.axis_h_status`
H axis status.
Definition at line 1278 of file gclib.cs.

13.27.3.148 axis_h_switches

`UB gclib.GDataRecord52000.axis_h_switches`
H axis switches.
Definition at line 1279 of file gclib.cs.

13.27.3.149 axis_h_stop_code

`UB gclib.GDataRecord52000.axis_h_stop_code`
H axis stop code.
Definition at line 1280 of file gclib.cs.

13.27.3.150 axis_h_reference_position

`SL gclib.GDataRecord52000.axis_h_reference_position`
H axis reference position.
Definition at line 1281 of file gclib.cs.

13.27.3.151 axis_h_motor_position

`SL gclib.GDataRecord52000.axis_h_motor_position`
H axis motor position.
Definition at line 1282 of file gclib.cs.

13.27.3.152 axis_h_position_error

`SL gclib.GDataRecord52000.axis_h_position_error`
H axis position error.
Definition at line 1283 of file gclib.cs.

13.27.3.153 axis_h_aux_position

`SL gclib.GDataRecord52000.axis_h_aux_position`
H axis auxiliary position.
Definition at line 1284 of file gclib.cs.

13.27.3.154 axis_h_velocity

`SL gclib.GDataRecord52000.axis_h_velocity`
H axis velocity.
Definition at line 1285 of file gclib.cs.

13.27.3.155 axis_h_torque

`SL gclib.GDataRecord52000.axis_h_torque`
H axis torque.
Definition at line 1286 of file gclib.cs.

13.27.3.156 axis_h_analog_in

`UW gclib.GDataRecord52000.axis_h_analog_in`
H axis analog input.
Definition at line 1287 of file gclib.cs.

13.27.3.157 axis_h_halls

`UB gclib.GDataRecord52000.axis_h_halls`
H Hall Input Status.
Definition at line 1288 of file gclib.cs.

13.27.3.158 axis_h_reserved

`UB gclib.GDataRecord52000.axis_h_reserved`
Reserved.
Definition at line 1289 of file gclib.cs.

13.27.3.159 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

13.28 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).

13.28.1 Detailed Description

Data record struct for DMC-52000 controller. Same as DMC-4000, with bank indicator added at byte 40.
Definition at line 214 of file gclib_record.h.

13.28.2 Member Data Documentation

13.28.2.1 header_0

`UB GDataRecord52000::header_0`
1st Byte of Header.
Definition at line 219 of file gclib_record.h.

13.28.2.2 header_1

`UB GDataRecord52000::header_1`
2nd Byte of Header.
Definition at line 220 of file gclib_record.h.

13.28.2.3 header_2

`UB GDataRecord52000::header_2`
3rd Byte of Header.
Definition at line 221 of file gclib_record.h.

13.28.2.4 header_3

`UB GDataRecord52000::header_3`
4th Byte of Header.
Definition at line 222 of file gclib_record.h.

13.28.2.5 sample_number

`UW GDataRecord52000::sample_number`
sample number.
Definition at line 224 of file gclib_record.h.

13.28.2.6 input_bank_0

`UB GDataRecord52000::input_bank_0`
general input bank 0 (inputs 1-8).
Definition at line 226 of file gclib_record.h.

13.28.2.7 input_bank_1

`UB GDataRecord52000::input_bank_1`
general input bank 1 (inputs 9-16).
Definition at line 227 of file gclib_record.h.

13.28.2.8 input_bank_2

`UB GDataRecord52000::input_bank_2`
general input bank 2 (inputs 17-24).
Definition at line 228 of file gclib_record.h.

13.28.2.9 input_bank_3

`UB GDataRecord52000::input_bank_3`
general input bank 3 (inputs 25-32).
Definition at line 229 of file gclib_record.h.

13.28.2.10 input_bank_4

`UB GDataRecord52000::input_bank_4`
general input bank 4 (inputs 33-40).
Definition at line 230 of file gclib_record.h.

13.28.2.11 input_bank_5

`UB GDataRecord52000::input_bank_5`
general input bank 5 (inputs 41-48).
Definition at line 231 of file gclib_record.h.

13.28.2.12 input_bank_6

`UB GDataRecord52000::input_bank_6`
general input bank 6 (inputs 49-56).
Definition at line 232 of file gclib_record.h.

13.28.2.13 input_bank_7

`UB GDataRecord52000::input_bank_7`
general input bank 7 (inputs 57-64).
Definition at line 233 of file gclib_record.h.

13.28.2.14 input_bank_8

`UB GDataRecord52000::input_bank_8`
general input bank 8 (inputs 65-72).
Definition at line 234 of file gclib_record.h.

13.28.2.15 input_bank_9

`UB GDataRecord52000::input_bank_9`
general input bank 9 (inputs 73-80).
Definition at line 235 of file gclib_record.h.

13.28.2.16 output_bank_0

`UB GDataRecord52000::output_bank_0`
general output bank 0 (outputs 1-8).
Definition at line 237 of file gclib_record.h.

13.28.2.17 output_bank_1

`UB GDataRecord52000::output_bank_1`
general output bank 1 (outputs 9-16).
Definition at line 238 of file gclib_record.h.

13.28.2.18 output_bank_2

`UB GDataRecord52000::output_bank_2`
general output bank 2 (outputs 17-24).
Definition at line 239 of file gclib_record.h.

13.28.2.19 output_bank_3

`UB GDataRecord52000::output_bank_3`
general output bank 3 (outputs 25-32).
Definition at line 240 of file gclib_record.h.

13.28.2.20 output_bank_4

`UB GDataRecord52000::output_bank_4`
general output bank 4 (outputs 33-40).
Definition at line 241 of file gclib_record.h.

13.28.2.21 output_bank_5

`UB GDataRecord52000::output_bank_5`
general output bank 5 (outputs 41-48).
Definition at line 242 of file gclib_record.h.

13.28.2.22 output_bank_6

`UB GDataRecord52000::output_bank_6`
general output bank 6 (outputs 49-56).
Definition at line 243 of file gclib_record.h.

13.28.2.23 output_bank_7

`UB GDataRecord52000::output_bank_7`
general output bank 7 (outputs 57-64).
Definition at line 244 of file gclib_record.h.

13.28.2.24 output_bank_8

`UB GDataRecord52000::output_bank_8`
general output bank 8 (outputs 65-72).
Definition at line 245 of file gclib_record.h.

13.28.2.25 output_bank_9

`UB GDataRecord52000::output_bank_9`
general output bank 9 (outputs 73-80).
Definition at line 246 of file gclib_record.h.

13.28.2.26 reserved_0

`SW GDataRecord52000::reserved_0`
Reserved.
Definition at line 248 of file gclib_record.h.

13.28.2.27 reserved_2

`SW GDataRecord52000::reserved_2`
Reserved.
Definition at line 249 of file gclib_record.h.

13.28.2.28 reserved_4

`SW GDataRecord52000::reserved_4`
Reserved.
Definition at line 250 of file gclib_record.h.

13.28.2.29 reserved_6

`SW GDataRecord52000::reserved_6`
Reserved.
Definition at line 251 of file gclib_record.h.

13.28.2.30 reserved_8

`SW GDataRecord52000::reserved_8`
Reserved.
Definition at line 252 of file gclib_record.h.

13.28.2.31 reserved_10

`SW GDataRecord52000::reserved_10`
Reserved.
Definition at line 253 of file gclib_record.h.

13.28.2.32 reserved_12

`SW GDataRecord52000::reserved_12`
Reserved.
Definition at line 254 of file gclib_record.h.

13.28.2.33 ethercat_bank

`UB GDataRecord52000::ethercat_bank`
EtherCAT Bank Indicator.
Definition at line 255 of file gclib_record.h.

13.28.2.34 reserved_14

`UB GDataRecord52000::reserved_14`
Reserved.
Definition at line 256 of file gclib_record.h.

13.28.2.35 ethernet_status_a

`UB GDataRecord52000::ethernet_status_a`
Ethernet Handle A Status.
Definition at line 258 of file gclib_record.h.

13.28.2.36 ethernet_status_b

`UB GDataRecord52000::ethernet_status_b`
Ethernet Handle B Status.
Definition at line 259 of file gclib_record.h.

13.28.2.37 ethernet_status_c

`UB GDataRecord52000::ethernet_status_c`
Ethernet Handle C Status.
Definition at line 260 of file gclib_record.h.

13.28.2.38 ethernet_status_d

`UB GDataRecord52000::ethernet_status_d`
Ethernet Handle D Status.
Definition at line 261 of file gclib_record.h.

13.28.2.39 ethernet_status_e

`UB GDataRecord52000::ethernet_status_e`
Ethernet Handle E Status.
Definition at line 262 of file gclib_record.h.

13.28.2.40 ethernet_status_f

`UB GDataRecord52000::ethernet_status_f`
Ethernet Handle F Status.
Definition at line 263 of file gclib_record.h.

13.28.2.41 ethernet_status_g

`UB GDataRecord52000::ethernet_status_g`
Ethernet Handle G Status.
Definition at line 264 of file gclib_record.h.

13.28.2.42 ethernet_status_h

`UB GDataRecord52000::ethernet_status_h`
Ethernet Handle H Status.
Definition at line 265 of file gclib_record.h.

13.28.2.43 error_code

`UB GDataRecord52000::error_code`
error code.
Definition at line 267 of file gclib_record.h.

13.28.2.44 thread_status

`UB GDataRecord52000::thread_status`
thread status
Definition at line 268 of file gclib_record.h.

13.28.2.45 amplifier_status

`UL GDataRecord52000::amplifier_status`
Amplifier Status.
Definition at line 269 of file gclib_record.h.

13.28.2.46 contour_segment_count

`UL GDataRecord52000::contour_segment_count`
Segment Count for Contour Mode.
Definition at line 271 of file gclib_record.h.

13.28.2.47 contour_buffer_available

`UW GDataRecord52000::contour_buffer_available`
Buffer space remaining, Contour Mode.
Definition at line 272 of file gclib_record.h.

13.28.2.48 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.

13.28.2.49 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.

13.28.2.50 s_distance

`SL GDataRecord52000::s_distance`
distance traveled in coordinated move for S plane.
Definition at line 276 of file gclib_record.h.

13.28.2.51 s_plane_buffer_available

`UW GDataRecord52000::s_plane_buffer_available`
Buffer space remaining, S Plane.
Definition at line 277 of file gclib_record.h.

13.28.2.52 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.

13.28.2.53 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.

13.28.2.54 t_distance

`SL GDataRecord52000::t_distance`
distance traveled in coordinated move for T plane.
Definition at line 281 of file gclib_record.h.

13.28.2.55 t_plane_buffer_available

`UW GDataRecord52000::t_plane_buffer_available`
Buffer space remaining, T Plane.
Definition at line 282 of file gclib_record.h.

13.28.2.56 axis_a_status

`UW GDataRecord52000::axis_a_status`
A axis status.
Definition at line 284 of file gclib_record.h.

13.28.2.57 axis_a_switches

`UB GDataRecord52000::axis_a_switches`
A axis switches.
Definition at line 285 of file gclib_record.h.

13.28.2.58 axis_a_stop_code

`UB GDataRecord52000::axis_a_stop_code`
A axis stop code.
Definition at line 286 of file gclib_record.h.

13.28.2.59 axis_a_reference_position

`SL GDataRecord52000::axis_a_reference_position`
A axis reference position.
Definition at line 287 of file gclib_record.h.

13.28.2.60 axis_a_motor_position

`SL GDataRecord52000::axis_a_motor_position`
A axis motor position.
Definition at line 288 of file gclib_record.h.

13.28.2.61 axis_a_position_error

`SL GDataRecord52000::axis_a_position_error`
A axis position error.
Definition at line 289 of file gclib_record.h.

13.28.2.62 axis_a_aux_position

`SL GDataRecord52000::axis_a_aux_position`
A axis auxiliary position.
Definition at line 290 of file gclib_record.h.

13.28.2.63 axis_a_velocity

`SL GDataRecord52000::axis_a_velocity`
A axis velocity.
Definition at line 291 of file gclib_record.h.

13.28.2.64 axis_a_torque

`SL GDataRecord52000::axis_a_torque`
A axis torque.
Definition at line 292 of file gclib_record.h.

13.28.2.65 axis_a_analog_in

`UW GDataRecord52000::axis_a_analog_in`
A axis analog input.
Definition at line 293 of file gclib_record.h.

13.28.2.66 axis_a_halls

`UB GDataRecord52000::axis_a_halls`
A Hall Input Status.
Definition at line 294 of file gclib_record.h.

13.28.2.67 axis_a_reserved

`UB GDataRecord52000::axis_a_reserved`
Reserved.
Definition at line 295 of file gclib_record.h.

13.28.2.68 axis_a_variable

`SL GDataRecord52000::axis_a_variable`
A User-defined variable (ZA).
Definition at line 296 of file gclib_record.h.

13.28.2.69 axis_b_status

`UW GDataRecord52000::axis_b_status`
B axis status.
Definition at line 298 of file gclib_record.h.

13.28.2.70 axis_b_switches

`UB GDataRecord52000::axis_b_switches`
B axis switches.
Definition at line 299 of file gclib_record.h.

13.28.2.71 axis_b_stop_code

`UB GDataRecord52000::axis_b_stop_code`
B axis stop code.
Definition at line 300 of file gclib_record.h.

13.28.2.72 axis_b_reference_position

`SL GDataRecord52000::axis_b_reference_position`
B axis reference position.
Definition at line 301 of file gclib_record.h.

13.28.2.73 axis_b_motor_position

`SL GDataRecord52000::axis_b_motor_position`
B axis motor position.
Definition at line 302 of file gclib_record.h.

13.28.2.74 axis_b_position_error

`SL GDataRecord52000::axis_b_position_error`
B axis position error.
Definition at line 303 of file gclib_record.h.

13.28.2.75 axis_b_aux_position

`SL GDataRecord52000::axis_b_aux_position`
B axis auxiliary position.
Definition at line 304 of file gclib_record.h.

13.28.2.76 axis_b_velocity

`SL GDataRecord52000::axis_b_velocity`
B axis velocity.
Definition at line 305 of file gclib_record.h.

13.28.2.77 axis_b_torque

`SL GDataRecord52000::axis_b_torque`
B axis torque.
Definition at line 306 of file gclib_record.h.

13.28.2.78 axis_b_analog_in

`UW GDataRecord52000::axis_b_analog_in`
B axis analog input.
Definition at line 307 of file gclib_record.h.

13.28.2.79 axis_b_halls

`UB GDataRecord52000::axis_b_halls`
B Hall Input Status.
Definition at line 308 of file gclib_record.h.

13.28.2.80 axis_b_reserved

`UB GDataRecord52000::axis_b_reserved`
Reserved.
Definition at line 309 of file gclib_record.h.

13.28.2.81 axis_b_variable

`SL GDataRecord52000::axis_b_variable`
B User-defined variable (ZA).
Definition at line 310 of file gclib_record.h.

13.28.2.82 axis_c_status

`UW GDataRecord52000::axis_c_status`
C axis status.
Definition at line 312 of file gclib_record.h.

13.28.2.83 axis_c_switches

`UB GDataRecord52000::axis_c_switches`
C axis switches.
Definition at line 313 of file gclib_record.h.

13.28.2.84 axis_c_stop_code

`UB GDataRecord52000::axis_c_stop_code`
C axis stop code.
Definition at line 314 of file gclib_record.h.

13.28.2.85 axis_c_reference_position

`SL GDataRecord52000::axis_c_reference_position`
C axis reference position.
Definition at line 315 of file gclib_record.h.

13.28.2.86 axis_c_motor_position

`SL GDataRecord52000::axis_c_motor_position`
C axis motor position.
Definition at line 316 of file gclib_record.h.

13.28.2.87 axis_c_position_error

`SL GDataRecord52000::axis_c_position_error`
C axis position error.
Definition at line 317 of file gclib_record.h.

13.28.2.88 axis_c_aux_position

`SL GDataRecord52000::axis_c_aux_position`
C axis auxiliary position.
Definition at line 318 of file gclib_record.h.

13.28.2.89 axis_c_velocity

`SL GDataRecord52000::axis_c_velocity`
C axis velocity.
Definition at line 319 of file gclib_record.h.

13.28.2.90 axis_c_torque

`SL GDataRecord52000::axis_c_torque`
C axis torque.
Definition at line 320 of file gclib_record.h.

13.28.2.91 axis_c_analog_in

`UW GDataRecord52000::axis_c_analog_in`
C axis analog input.
Definition at line 321 of file gclib_record.h.

13.28.2.92 axis_c_halls

`UB GDataRecord52000::axis_c_halls`
C Hall Input Status.
Definition at line 322 of file gclib_record.h.

13.28.2.93 axis_c_reserved

`UB GDataRecord52000::axis_c_reserved`
Reserved.
Definition at line 323 of file gclib_record.h.

13.28.2.94 axis_c_variable

`SL GDataRecord52000::axis_c_variable`
C User-defined variable (ZA).
Definition at line 324 of file gclib_record.h.

13.28.2.95 axis_d_status

`UW GDataRecord52000::axis_d_status`
D axis status.
Definition at line 326 of file gclib_record.h.

13.28.2.96 axis_d_switches

`UB GDataRecord52000::axis_d_switches`
D axis switches.
Definition at line 327 of file gclib_record.h.

13.28.2.97 axis_d_stop_code

`UB GDataRecord52000::axis_d_stop_code`
D axis stop code.
Definition at line 328 of file gclib_record.h.

13.28.2.98 axis_d_reference_position

`SL GDataRecord52000::axis_d_reference_position`
D axis reference position.
Definition at line 329 of file gclib_record.h.

13.28.2.99 axis_d_motor_position

`SL GDataRecord52000::axis_d_motor_position`
D axis motor position.
Definition at line 330 of file gclib_record.h.

13.28.2.100 axis_d_position_error

`SL GDataRecord52000::axis_d_position_error`
D axis position error.
Definition at line 331 of file gclib_record.h.

13.28.2.101 axis_d_aux_position

`SL GDataRecord52000::axis_d_aux_position`
D axis auxiliary position.
Definition at line 332 of file gclib_record.h.

13.28.2.102 axis_d_velocity

`SL GDataRecord52000::axis_d_velocity`
D axis velocity.
Definition at line 333 of file gclib_record.h.

13.28.2.103 axis_d_torque

`SL GDataRecord52000::axis_d_torque`
D axis torque.
Definition at line 334 of file gclib_record.h.

13.28.2.104 axis_d_analog_in

`UW GDataRecord52000::axis_d_analog_in`
D axis analog input.
Definition at line 335 of file gclib_record.h.

13.28.2.105 axis_d_halls

`UB GDataRecord52000::axis_d_halls`
D Hall Input Status.
Definition at line 336 of file gclib_record.h.

13.28.2.106 axis_d_reserved

`UB GDataRecord52000::axis_d_reserved`
Reserved.
Definition at line 337 of file gclib_record.h.

13.28.2.107 axis_d_variable

`SL GDataRecord52000::axis_d_variable`
D User-defined variable (ZA).
Definition at line 338 of file gclib_record.h.

13.28.2.108 axis_e_status

`UW GDataRecord52000::axis_e_status`
E axis status.
Definition at line 340 of file gclib_record.h.

13.28.2.109 axis_e_switches

`UB GDataRecord52000::axis_e_switches`
E axis switches.
Definition at line 341 of file gclib_record.h.

13.28.2.110 axis_e_stop_code

`UB GDataRecord52000::axis_e_stop_code`
E axis stop code.
Definition at line 342 of file gclib_record.h.

13.28.2.111 axis_e_reference_position

`SL GDataRecord52000::axis_e_reference_position`
E axis reference position.
Definition at line 343 of file gclib_record.h.

13.28.2.112 axis_e_motor_position

`SL GDataRecord52000::axis_e_motor_position`
E axis motor position.
Definition at line 344 of file gclib_record.h.

13.28.2.113 axis_e_position_error

`SL GDataRecord52000::axis_e_position_error`
E axis position error.
Definition at line 345 of file gclib_record.h.

13.28.2.114 axis_e_aux_position

`SL GDataRecord52000::axis_e_aux_position`
E axis auxiliary position.
Definition at line 346 of file gclib_record.h.

13.28.2.115 axis_e_velocity

`SL GDataRecord52000::axis_e_velocity`
E axis velocity.
Definition at line 347 of file gclib_record.h.

13.28.2.116 axis_e_torque

`SL GDataRecord52000::axis_e_torque`
E axis torque.
Definition at line 348 of file gclib_record.h.

13.28.2.117 axis_e_analog_in

`UW GDataRecord52000::axis_e_analog_in`
E axis analog input.
Definition at line 349 of file gclib_record.h.

13.28.2.118 axis_e_halls

`UB GDataRecord52000::axis_e_halls`
E Hall Input Status.
Definition at line 350 of file gclib_record.h.

13.28.2.119 axis_e_reserved

`UB GDataRecord52000::axis_e_reserved`
Reserved.
Definition at line 351 of file gclib_record.h.

13.28.2.120 axis_e_variable

`SL GDataRecord52000::axis_e_variable`
E User-defined variable (ZA).
Definition at line 352 of file gclib_record.h.

13.28.2.121 axis_f_status

`UW GDataRecord52000::axis_f_status`
F axis status.
Definition at line 354 of file gclib_record.h.

13.28.2.122 axis_f_switches

`UB GDataRecord52000::axis_f_switches`
F axis switches.
Definition at line 355 of file gclib_record.h.

13.28.2.123 axis_f_stop_code

`UB GDataRecord52000::axis_f_stop_code`
F axis stop code.
Definition at line 356 of file gclib_record.h.

13.28.2.124 axis_f_reference_position

`SL GDataRecord52000::axis_f_reference_position`
F axis reference position.
Definition at line 357 of file gclib_record.h.

13.28.2.125 axis_f_motor_position

`SL GDataRecord52000::axis_f_motor_position`
F axis motor position.
Definition at line 358 of file gclib_record.h.

13.28.2.126 axis_f_position_error

`SL GDataRecord52000::axis_f_position_error`
F axis position error.
Definition at line 359 of file gclib_record.h.

13.28.2.127 axis_f_aux_position

`SL GDataRecord52000::axis_f_aux_position`
F axis auxiliary position.
Definition at line 360 of file gclib_record.h.

13.28.2.128 axis_f_velocity

`SL GDataRecord52000::axis_f_velocity`
F axis velocity.
Definition at line 361 of file gclib_record.h.

13.28.2.129 axis_f_torque

`SL GDataRecord52000::axis_f_torque`
F axis torque.
Definition at line 362 of file gclib_record.h.

13.28.2.130 axis_f_analog_in

`UW GDataRecord52000::axis_f_analog_in`
F axis analog input.
Definition at line 363 of file gclib_record.h.

13.28.2.131 axis_f_halls

`UB GDataRecord52000::axis_f_halls`
F Hall Input Status.
Definition at line 364 of file gclib_record.h.

13.28.2.132 axis_f_reserved

`UB GDataRecord52000::axis_f_reserved`
Reserved.
Definition at line 365 of file gclib_record.h.

13.28.2.133 axis_f_variable

`SL GDataRecord52000::axis_f_variable`
F User-defined variable (ZA).
Definition at line 366 of file gclib_record.h.

13.28.2.134 axis_g_status

`UW GDataRecord52000::axis_g_status`
G axis status.
Definition at line 368 of file gclib_record.h.

13.28.2.135 axis_g_switches

`UB GDataRecord52000::axis_g_switches`
G axis switches.
Definition at line 369 of file gclib_record.h.

13.28.2.136 axis_g_stop_code

`UB GDataRecord52000::axis_g_stop_code`
G axis stop code.
Definition at line 370 of file gclib_record.h.

13.28.2.137 axis_g_reference_position

`SL GDataRecord52000::axis_g_reference_position`
G axis reference position.
Definition at line 371 of file gclib_record.h.

13.28.2.138 axis_g_motor_position

`SL GDataRecord52000::axis_g_motor_position`
G axis motor position.
Definition at line 372 of file gclib_record.h.

13.28.2.139 axis_g_position_error

`SL GDataRecord52000::axis_g_position_error`
G axis position error.
Definition at line 373 of file gclib_record.h.

13.28.2.140 axis_g_aux_position

`SL GDataRecord52000::axis_g_aux_position`
G axis auxiliary position.
Definition at line 374 of file gclib_record.h.

13.28.2.141 axis_g_velocity

`SL GDataRecord52000::axis_g_velocity`
G axis velocity.
Definition at line 375 of file gclib_record.h.

13.28.2.142 axis_g_torque

`SL GDataRecord52000::axis_g_torque`
G axis torque.
Definition at line 376 of file gclib_record.h.

13.28.2.143 axis_g_analog_in

`UW GDataRecord52000::axis_g_analog_in`
G axis analog input.
Definition at line 377 of file gclib_record.h.

13.28.2.144 axis_g_halls

`UB GDataRecord52000::axis_g_halls`
G Hall Input Status.
Definition at line 378 of file gclib_record.h.

13.28.2.145 axis_g_reserved

`UB GDataRecord52000::axis_g_reserved`
Reserved.
Definition at line 379 of file gclib_record.h.

13.28.2.146 axis_g_variable

`SL GDataRecord52000::axis_g_variable`
G User-defined variable (ZA).
Definition at line 380 of file gclib_record.h.

13.28.2.147 axis_h_status

`UW GDataRecord52000::axis_h_status`
H axis status.
Definition at line 382 of file gclib_record.h.

13.28.2.148 axis_h_switches

`UB GDataRecord52000::axis_h_switches`
H axis switches.
Definition at line 383 of file gclib_record.h.

13.28.2.149 axis_h_stop_code

`UB GDataRecord52000::axis_h_stop_code`
H axis stop code.
Definition at line 384 of file gclib_record.h.

13.28.2.150 axis_h_reference_position

`SL GDataRecord52000::axis_h_reference_position`
H axis reference position.
Definition at line 385 of file gclib_record.h.

13.28.2.151 axis_h_motor_position

`SL GDataRecord52000::axis_h_motor_position`
H axis motor position.
Definition at line 386 of file gclib_record.h.

13.28.2.152 axis_h_position_error

`SL GDataRecord52000::axis_h_position_error`
H axis position error.
Definition at line 387 of file gclib_record.h.

13.28.2.153 axis_h_aux_position

`SL GDataRecord52000::axis_h_aux_position`
H axis auxiliary position.
Definition at line 388 of file gclib_record.h.

13.28.2.154 axis_h_velocity

`SL GDataRecord52000::axis_h_velocity`
H axis velocity.
Definition at line 389 of file gclib_record.h.

13.28.2.155 axis_h_torque

`SL GDataRecord52000::axis_h_torque`
H axis torque.
Definition at line 390 of file gclib_record.h.

13.28.2.156 axis_h_analog_in

`UW GDataRecord52000::axis_h_analog_in`
H axis analog input.
Definition at line 391 of file gclib_record.h.

13.28.2.157 axis_h_halls

`UB GDataRecord52000::axis_h_halls`
H Hall Input Status.
Definition at line 392 of file gclib_record.h.

13.28.2.158 axis_h_reserved

`UB GDataRecord52000::axis_h_reserved`
Reserved.
Definition at line 393 of file gclib_record.h.

13.28.2.159 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

13.29 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

13.29.1 Detailed Description

Represents a single Python connection to a Galil Controller or PLC.
Definition at line 152 of file gclib.py.

13.29.2 Constructor & Destructor Documentation

13.29.2.1 __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.

13.29.2.2 __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.

13.29.3 Member Function Documentation

13.29.3.1 _cc()

```
gclib.py._cc (
            self) [protected]
```

Checks if connection is established, throws error if not.
Definition at line 169 of file gclib.py.

13.29.4 Member Data Documentation

13.29.4.1 _gcon

```
gclib.py._gcon = _GCon(0) [protected]
```

Definition at line 159 of file gclib.py.

13.29.4.2 _buf

```
gclib.py._buf = create_string_buffer(_buf_size) [protected]
```

Definition at line 160 of file gclib.py.

13.29.4.3 _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 14

File Documentation

14.1 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

  Data record struct for DMC-1802 controllers.
- 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

14.1.1 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.

14.1.2 Macro Definition Documentation

14.1.2.1 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.

14.1.3 Typedef Documentation

14.1.3.1 UB

`typedef uint8_t UB`
Definition at line 12 of file gclib_record.h.

14.1.3.2 UW

`typedef uint16_t UW`
Definition at line 13 of file gclib_record.h.

14.1.3.3 SW

`typedef int16_t SW`
Definition at line 14 of file gclib_record.h.

14.1.3.4 SL

`typedef int32_t SL`
Definition at line 15 of file gclib_record.h.

14.1.3.5 UL

`typedef uint32_t UL`
Definition at line 16 of file gclib_record.h.

14.2 gclib_record.h

Go to the documentation of this file.

```
00001
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
```

```
struct GDataRecord4000
{

    /*Offset   type name        description*/

    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;

    /*06*/      UB  input_bank_0;
    /*07*/      UB  input_bank_1;
    /*08*/      UB  input_bank_2;
    /*09*/      UB  input_bank_3;
    /*10*/      UB  input_bank_4;
    /*11*/      UB  input_bank_5;
    /*12*/      UB  input_bank_6;
    /*13*/      UB  input_bank_7;
    /*14*/      UB  input_bank_8;
    /*15*/      UB  input_bank_9;

    /*16*/      UB  output_bank_0;
    /*17*/      UB  output_bank_1;
    /*18*/      UB  output_bank_2;
    /*19*/      UB  output_bank_3;
    /*20*/      UB  output_bank_4;
    /*21*/      UB  output_bank_5;
    /*22*/      UB  output_bank_6;
    /*23*/      UB  output_bank_7;
    /*24*/      UB  output_bank_8;
    /*25*/      UB  output_bank_9;

    /*26-27*/   SW  reserved_0;
    /*28-29*/   SW  reserved_2;
    /*30-31*/   SW  reserved_4;
    /*32-33*/   SW  reserved_6;
    /*34-35*/   SW  reserved_8;
    /*36-37*/   SW  reserved_10;
    /*38-39*/   SW  reserved_12;
    /*40-41*/   SW  reserved_14;

    /*42*/      UB  ethernet_status_a;
    /*43*/      UB  ethernet_status_b;
    /*44*/      UB  ethernet_status_c;
    /*45*/      UB  ethernet_status_d;
    /*46*/      UB  ethernet_status_e;
    /*47*/      UB  ethernet_status_f;
    /*48*/      UB  ethernet_status_g;
    /*49*/      UB  ethernet_status_h;

    /*50*/      UB  error_code;
    /*51*/      UB  thread_status;
    /*52-55*/   UL  amplifier_status;

    /*56-59*/   UL  contour_segment_count;
    /*60-61*/   UW  contour_buffer_available;

    /*62-63*/   UW  s_plane_segment_count;
    /*64-65*/   UW  s_plane_move_status;
    /*66-69*/   SL  s_distance;
    /*70-71*/   UW  s_plane_buffer_available;

    /*72-73*/   UW  t_plane_segment_count;
    /*74-75*/   UW  t_plane_move_status;
    /*76-79*/   SL  t_distance;
    /*80-81*/   UW  t_plane_buffer_available;

    /*82-83*/   UW  axis_a_status;
    /*84*/      UB  axis_a_switches;
    /*85*/      UB  axis_a_stop_code;
    /*86-89*/   SL  axis_a_reference_position;
    /*90-93*/   SL  axis_a_motor_position;
    /*94-97*/   SL  axis_a_position_error;
    /*98-101*/  SL  axis_a_aux_position;
    /*102-105*/ SL  axis_a_velocity;
    /*106-109*/ SL  axis_a_torque;
    /*110-111*/ UW  axis_a_analog_in;
    /*112*/     UB  axis_a_halls;
    /*113*/     UB  axis_a_reserved;
    /*114-117*/ SL  axis_a_variable;

    /*118-119*/ UW  axis_b_status;
    /*120*/     UB  axis_b_switches;
    /*121*/     UB  axis_b_stop_code;
```

```
    /*122-125*/ SL  axis_b_reference_position;
    /*126-129*/ SL  axis_b_motor_position;
    /*130-133*/ SL  axis_b_position_error;
    /*134-137*/ SL  axis_b_aux_position;
    /*138-141*/ SL  axis_b_velocity;
    /*142-145*/ SL  axis_b_torque;
    /*146-147*/ UW  axis_b_analog_in;
    /*148*/     UB  axis_b_halls;
    /*149*/     UB  axis_b_reserved;
    /*150-153*/ SL  axis_b_variable;

    /*154-155*/ UW  axis_c_status;
    /*156*/     UB  axis_c_switches;
    /*157*/     UB  axis_c_stop_code;
    /*158-161*/ SL  axis_c_reference_position;
    /*162-165*/ SL  axis_c_motor_position;
    /*166-169*/ SL  axis_c_position_error;
    /*170-173*/ SL  axis_c_aux_position;
    /*174-177*/ SL  axis_c_velocity;
    /*178-181*/ SL  axis_c_torque;
    /*182-183*/ UW  axis_c_analog_in;
    /*184*/     UB  axis_c_halls;
    /*185*/     UB  axis_c_reserved;
    /*186-189*/ SL  axis_c_variable;

    /*190-191*/ UW  axis_d_status;
    /*192*/     UB  axis_d_switches;
    /*193*/     UB  axis_d_stop_code;
    /*194-197*/ SL  axis_d_reference_position;
    /*198-201*/ SL  axis_d_motor_position;
    /*202-205*/ SL  axis_d_position_error;
    /*206-209*/ SL  axis_d_aux_position;
    /*210-213*/ SL  axis_d_velocity;
    /*214-217*/ SL  axis_d_torque;
    /*218-219*/ UW  axis_d_analog_in;
    /*220*/     UB  axis_d_halls;
    /*221*/     UB  axis_d_reserved;
    /*222-225*/ SL  axis_d_variable;

    /*226-227*/ UW  axis_e_status;
    /*228*/     UB  axis_e_switches;
    /*229*/     UB  axis_e_stop_code;
    /*230-233*/ SL  axis_e_reference_position;
    /*234-237*/ SL  axis_e_motor_position;
    /*238-241*/ SL  axis_e_position_error;
    /*242-245*/ SL  axis_e_aux_position;
    /*246-249*/ SL  axis_e_velocity;
    /*250-253*/ SL  axis_e_torque;
    /*254-255*/ UW  axis_e_analog_in;
    /*256*/     UB  axis_e_halls;
    /*257*/     UB  axis_e_reserved;
    /*258-261*/ SL  axis_e_variable;

    /*262-263*/ UW  axis_f_status;
    /*264*/     UB  axis_f_switches;
    /*265*/     UB  axis_f_stop_code;
    /*266-269*/ SL  axis_f_reference_position;
    /*270-273*/ SL  axis_f_motor_position;
    /*274-277*/ SL  axis_f_position_error;
    /*278-281*/ SL  axis_f_aux_position;
    /*282-285*/ SL  axis_f_velocity;
    /*286-289*/ SL  axis_f_torque;
    /*290-291*/ UW  axis_f_analog_in;
    /*292*/     UB  axis_f_halls;
    /*293*/     UB  axis_f_reserved;
    /*294-297*/ SL  axis_f_variable;

    /*298-299*/ UW  axis_g_status;
    /*300*/     UB  axis_g_switches;
    /*301*/     UB  axis_g_stop_code;
    /*302-305*/ SL  axis_g_reference_position;
    /*306-309*/ SL  axis_g_motor_position;
    /*310-313*/ SL  axis_g_position_error;
    /*314-317*/ SL  axis_g_aux_position;
    /*318-321*/ SL  axis_g_velocity;
    /*322-325*/ SL  axis_g_torque;
    /*326-327*/ UW  axis_g_analog_in;
    /*328*/     UB  axis_g_halls;
    /*329*/     UB  axis_g_reserved;
    /*330-333*/ SL  axis_g_variable;

    /*334-335*/ UW  axis_h_status;
    /*336*/     UB  axis_h_switches;
    /*337*/     UB  axis_h_stop_code;
    /*338-341*/ SL  axis_h_reference_position;
    /*342-345*/ SL  axis_h_motor_position;
    /*346-349*/ SL  axis_h_position_error;
```

```
    /*350-353*/ SL  axis_h_aux_position;
    /*354-357*/ SL  axis_h_velocity;
    /*358-361*/ SL  axis_h_torque;
    /*362-363*/ UW  axis_h_analog_in;
    /*364*/     UB  axis_h_halls;
    /*365*/     UB  axis_h_reserved;
    /*366-369*/ SL  axis_h_variable;
}; //DataRecord4000

struct GDataRecord52000
{

    /*Offset   type name        description*/

    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;

    /*06*/      UB  input_bank_0;
    /*07*/      UB  input_bank_1;
    /*08*/      UB  input_bank_2;
    /*09*/      UB  input_bank_3;
    /*10*/      UB  input_bank_4;
    /*11*/      UB  input_bank_5;
    /*12*/      UB  input_bank_6;
    /*13*/      UB  input_bank_7;
    /*14*/      UB  input_bank_8;
    /*15*/      UB  input_bank_9;

    /*16*/      UB  output_bank_0;
    /*17*/      UB  output_bank_1;
    /*18*/      UB  output_bank_2;
    /*19*/      UB  output_bank_3;
    /*20*/      UB  output_bank_4;
    /*21*/      UB  output_bank_5;
    /*22*/      UB  output_bank_6;
    /*23*/      UB  output_bank_7;
    /*24*/      UB  output_bank_8;
    /*25*/      UB  output_bank_9;

    /*26-27*/   SW  reserved_0;
    /*28-29*/   SW  reserved_2;
    /*30-31*/   SW  reserved_4;
    /*32-33*/   SW  reserved_6;
    /*34-35*/   SW  reserved_8;
    /*36-37*/   SW  reserved_10;
    /*38-39*/   SW  reserved_12;
    /*40*/      UB  ethercat_bank;
    /*41*/      UB  reserved_14;

    /*42*/      UB  ethernet_status_a;
    /*43*/      UB  ethernet_status_b;
    /*44*/      UB  ethernet_status_c;
    /*45*/      UB  ethernet_status_d;
    /*46*/      UB  ethernet_status_e;
    /*47*/      UB  ethernet_status_f;
    /*48*/      UB  ethernet_status_g;
    /*49*/      UB  ethernet_status_h;

    /*50*/      UB  error_code;
    /*51*/      UB  thread_status;
    /*52-55*/   UL  amplifier_status;

    /*56-59*/   UL  contour_segment_count;
    /*60-61*/   UW  contour_buffer_available;

    /*62-63*/   UW  s_plane_segment_count;
    /*64-65*/   UW  s_plane_move_status;
    /*66-69*/   SL  s_distance;
    /*70-71*/   UW  s_plane_buffer_available;

    /*72-73*/   UW  t_plane_segment_count;
    /*74-75*/   UW  t_plane_move_status;
    /*76-79*/   SL  t_distance;
    /*80-81*/   UW  t_plane_buffer_available;

    /*82-83*/   UW  axis_a_status;
    /*84*/      UB  axis_a_switches;
    /*85*/      UB  axis_a_stop_code;
    /*86-89*/   SL  axis_a_reference_position;
    /*90-93*/   SL  axis_a_motor_position;
    /*94-97*/   SL  axis_a_position_error;
    /*98-101*/  SL  axis_a_aux_position;
    /*102-105*/ SL  axis_a_velocity;
```

```
    /*106-109*/ SL  axis_a_torque;
    /*110-111*/ UW  axis_a_analog_in;
    /*112*/     UB  axis_a_halls;
    /*113*/     UB  axis_a_reserved;
    /*114-117*/ SL  axis_a_variable;

    /*118-119*/ UW  axis_b_status;
    /*120*/     UB  axis_b_switches;
    /*121*/     UB  axis_b_stop_code;
    /*122-125*/ SL  axis_b_reference_position;
    /*126-129*/ SL  axis_b_motor_position;
    /*130-133*/ SL  axis_b_position_error;
    /*134-137*/ SL  axis_b_aux_position;
    /*138-141*/ SL  axis_b_velocity;
    /*142-145*/ SL  axis_b_torque;
    /*146-147*/ UW  axis_b_analog_in;
    /*148*/     UB  axis_b_halls;
    /*149*/     UB  axis_b_reserved;
    /*150-153*/ SL  axis_b_variable;

    /*154-155*/ UW  axis_c_status;
    /*156*/     UB  axis_c_switches;
    /*157*/     UB  axis_c_stop_code;
    /*158-161*/ SL  axis_c_reference_position;
    /*162-165*/ SL  axis_c_motor_position;
    /*166-169*/ SL  axis_c_position_error;
    /*170-173*/ SL  axis_c_aux_position;
    /*174-177*/ SL  axis_c_velocity;
    /*178-181*/ SL  axis_c_torque;
    /*182-183*/ UW  axis_c_analog_in;
    /*184*/     UB  axis_c_halls;
    /*185*/     UB  axis_c_reserved;
    /*186-189*/ SL  axis_c_variable;

    /*190-191*/ UW  axis_d_status;
    /*192*/     UB  axis_d_switches;
    /*193*/     UB  axis_d_stop_code;
    /*194-197*/ SL  axis_d_reference_position;
    /*198-201*/ SL  axis_d_motor_position;
    /*202-205*/ SL  axis_d_position_error;
    /*206-209*/ SL  axis_d_aux_position;
    /*210-213*/ SL  axis_d_velocity;
    /*214-217*/ SL  axis_d_torque;
    /*218-219*/ UW  axis_d_analog_in;
    /*220*/     UB  axis_d_halls;
    /*221*/     UB  axis_d_reserved;
    /*222-225*/ SL  axis_d_variable;

    /*226-227*/ UW  axis_e_status;
    /*228*/     UB  axis_e_switches;
    /*229*/     UB  axis_e_stop_code;
    /*230-233*/ SL  axis_e_reference_position;
    /*234-237*/ SL  axis_e_motor_position;
    /*238-241*/ SL  axis_e_position_error;
    /*242-245*/ SL  axis_e_aux_position;
    /*246-249*/ SL  axis_e_velocity;
    /*250-253*/ SL  axis_e_torque;
    /*254-255*/ UW  axis_e_analog_in;
    /*256*/     UB  axis_e_halls;
    /*257*/     UB  axis_e_reserved;
    /*258-261*/ SL  axis_e_variable;

    /*262-263*/ UW  axis_f_status;
    /*264*/     UB  axis_f_switches;
    /*265*/     UB  axis_f_stop_code;
    /*266-269*/ SL  axis_f_reference_position;
    /*270-273*/ SL  axis_f_motor_position;
    /*274-277*/ SL  axis_f_position_error;
    /*278-281*/ SL  axis_f_aux_position;
    /*282-285*/ SL  axis_f_velocity;
    /*286-289*/ SL  axis_f_torque;
    /*290-291*/ UW  axis_f_analog_in;
    /*292*/     UB  axis_f_halls;
    /*293*/     UB  axis_f_reserved;
    /*294-297*/ SL  axis_f_variable;

    /*298-299*/ UW  axis_g_status;
    /*300*/     UB  axis_g_switches;
    /*301*/     UB  axis_g_stop_code;
    /*302-305*/ SL  axis_g_reference_position;
    /*306-309*/ SL  axis_g_motor_position;
    /*310-313*/ SL  axis_g_position_error;
    /*314-317*/ SL  axis_g_aux_position;
    /*318-321*/ SL  axis_g_velocity;
    /*322-325*/ SL  axis_g_torque;
    /*326-327*/ UW  axis_g_analog_in;
    /*328*/     UB  axis_g_halls;
```

```
    /*329*/     UB  axis_g_reserved;
    /*330-333*/ SL  axis_g_variable;

    /*334-335*/ UW  axis_h_status;
    /*336*/     UB  axis_h_switches;
    /*337*/     UB  axis_h_stop_code;
    /*338-341*/ SL  axis_h_reference_position;
    /*342-345*/ SL  axis_h_motor_position;
    /*346-349*/ SL  axis_h_position_error;
    /*350-353*/ SL  axis_h_aux_position;
    /*354-357*/ SL  axis_h_velocity;
    /*358-361*/ SL  axis_h_torque;
    /*362-363*/ UW  axis_h_analog_in;
    /*364*/     UB  axis_h_halls;
    /*365*/     UB  axis_h_reserved;
    /*366-369*/ SL  axis_h_variable;
}; //DataRecord52000


struct GDataRecord1806
{
    /*Offset   type name        description*/

    /*00-01*/   UW  sample_number;

    /*02*/      UB  input_bank_0;
    /*03*/      UB  input_bank_1;
    /*04*/      UB  input_bank_2;
    /*05*/      UB  input_bank_3;
    /*06*/      UB  input_bank_4;
    /*07*/      UB  input_bank_5;
    /*08*/      UB  input_bank_6;
    /*09*/      UB  input_bank_7;
    /*10*/      UB  input_bank_8;
    /*11*/      UB  input_bank_9;

    /*12*/      UB  output_bank_0;
    /*13*/      UB  output_bank_1;
    /*14*/      UB  output_bank_2;
    /*15*/      UB  output_bank_3;
    /*16*/      UB  output_bank_4;
    /*17*/      UB  output_bank_5;
    /*18*/      UB  output_bank_6;
    /*19*/      UB  output_bank_7;
    /*20*/      UB  output_bank_8;
    /*21*/      UB  output_bank_9;

    /*22-23*/   SW  reserved_0;
    /*24-25*/   SW  reserved_2;
    /*26-27*/   SW  reserved_4;
    /*28-29*/   SW  reserved_6;
    /*30-31*/   SW  reserved_8;
    /*32-33*/   SW  reserved_10;
    /*34-35*/   SW  reserved_12;
    /*36-37*/   SW  reserved_14;

    /*38*/      UB  reserved_16;
    /*39*/      UB  reserved_17;
    /*40*/      UB  reserved_18;
    /*41*/      UB  reserved_19;
    /*42*/      UB  reserved_20;
    /*43*/      UB  reserved_21;
    /*44*/      UB  reserved_22;
    /*45*/      UB  reserved_23;

    /*46*/      UB  error_code;
    /*47*/      UB  thread_status;
    /*48-51*/   UL  reserved_24;

    /*52-55*/   UL  contour_segment_count;
    /*56-57*/   UW  contour_buffer_available;

    /*58-59*/   UW  s_plane_segment_count;
    /*60-61*/   UW  s_plane_move_status;
    /*62-65*/   SL  s_distance;
    /*66-67*/   UW  s_plane_buffer_available;

    /*68-69*/   UW  t_plane_segment_count;
    /*70-71*/   UW  t_plane_move_status;
    /*72-75*/   SL  t_distance;
    /*76-77*/   UW  t_plane_buffer_available;

    /*78-79*/   UW  axis_a_status;
    /*80*/      UB  axis_a_switches;
    /*81*/      UB  axis_a_stop_code;
    /*82-85*/   SL  axis_a_reference_position;
    /*86-89*/   SL  axis_a_motor_position;
```

```
    /*90-93*/   SL  axis_a_position_error;
    /*94-97*/   SL  axis_a_aux_position;
    /*98-101*/  SL  axis_a_velocity;
    /*102-105*/ SL  axis_a_torque;
    /*106-107*/ UW  axis_a_analog_in;
    /*108*/     UB  axis_a_reserved_0;
    /*109*/     UB  axis_a_reserved_1;
    /*110-113*/ SL  axis_a_variable;

    /*114-115*/ UW  axis_b_status;
    /*116*/     UB  axis_b_switches;
    /*117*/     UB  axis_b_stop_code;
    /*118-121*/ SL  axis_b_reference_position;
    /*122-125*/ SL  axis_b_motor_position;
    /*126-129*/ SL  axis_b_position_error;
    /*130-133*/ SL  axis_b_aux_position;
    /*134-137*/ SL  axis_b_velocity;
    /*138-141*/ SL  axis_b_torque;
    /*142-143*/ UW  axis_b_analog_in;
    /*144*/     UB  axis_b_reserved_0;
    /*145*/     UB  axis_b_reserved_1;
    /*146-149*/ SL  axis_b_variable;

    /*150-151*/ UW  axis_c_status;
    /*152*/     UB  axis_c_switches;
    /*153*/     UB  axis_c_stop_code;
    /*154-157*/ SL  axis_c_reference_position;
    /*158-161*/ SL  axis_c_motor_position;
    /*162-165*/ SL  axis_c_position_error;
    /*166-169*/ SL  axis_c_aux_position;
    /*170-173*/ SL  axis_c_velocity;
    /*174-177*/ SL  axis_c_torque;
    /*178-179*/ UW  axis_c_analog_in;
    /*180*/     UB  axis_c_reserved_0;
    /*181*/     UB  axis_c_reserved_1;
    /*182-185*/ SL  axis_c_variable;

    /*186-187*/ UW  axis_d_status;
    /*188*/     UB  axis_d_switches;
    /*189*/     UB  axis_d_stop_code;
    /*190-193*/ SL  axis_d_reference_position;
    /*194-197*/ SL  axis_d_motor_position;
    /*198-201*/ SL  axis_d_position_error;
    /*202-205*/ SL  axis_d_aux_position;
    /*206-209*/ SL  axis_d_velocity;
    /*210-213*/ SL  axis_d_torque;
    /*214-215*/ UW  axis_d_analog_in;
    /*216*/     UB  axis_d_reserved_0;
    /*217*/     UB  axis_d_reserved_1;
    /*218-221*/ SL  axis_d_variable;

    /*222-223*/ UW  axis_e_status;
    /*224*/     UB  axis_e_switches;
    /*225*/     UB  axis_e_stop_code;
    /*226-229*/ SL  axis_e_reference_position;
    /*230-233*/ SL  axis_e_motor_position;
    /*234-237*/ SL  axis_e_position_error;
    /*238-241*/ SL  axis_e_aux_position;
    /*242-245*/ SL  axis_e_velocity;
    /*256-249*/ SL  axis_e_torque;
    /*250-251*/ UW  axis_e_analog_in;
    /*252*/     UB  axis_e_reserved_0;
    /*253*/     UB  axis_e_reserved_1;
    /*254-257*/ SL  axis_e_variable;

    /*258-259*/ UW  axis_f_status;
    /*260*/     UB  axis_f_switches;
    /*261*/     UB  axis_f_stop_code;
    /*262-265*/ SL  axis_f_reference_position;
    /*266-269*/ SL  axis_f_motor_position;
    /*270-273*/ SL  axis_f_position_error;
    /*274-277*/ SL  axis_f_aux_position;
    /*278-281*/ SL  axis_f_velocity;
    /*282-285*/ SL  axis_f_torque;
    /*286-287*/ UW  axis_f_analog_in;
    /*288*/     UB  axis_f_reserved_0;
    /*289*/     UB  axis_f_reserved_1;
    /*290-293*/ SL  axis_f_variable;

    /*294-295*/ UW  axis_g_status;
    /*296*/     UB  axis_g_switches;
    /*297*/     UB  axis_g_stop_code;
    /*298-301*/ SL  axis_g_reference_position;
    /*302-305*/ SL  axis_g_motor_position;
    /*306-309*/ SL  axis_g_position_error;
    /*310-313*/ SL  axis_g_aux_position;
    /*314-317*/ SL  axis_g_velocity;
```

```
    /*318-321*/ SL  axis_g_torque;
    /*322-323*/ UW  axis_g_analog_in;
    /*324*/     UB  axis_g_reserved_0;
    /*325*/     UB  axis_g_reserved_1;
    /*326-329*/ SL  axis_g_variable;

    /*330-331*/ UW  axis_h_status;
    /*332*/     UB  axis_h_switches;
    /*333*/     UB  axis_h_stop_code;
    /*334-337*/ SL  axis_h_reference_position;
    /*338-341*/ SL  axis_h_motor_position;
    /*342-345*/ SL  axis_h_position_error;
    /*346-349*/ SL  axis_h_aux_position;
    /*350-353*/ SL  axis_h_velocity;
    /*354-357*/ SL  axis_h_torque;
    /*358-359*/ UW  axis_h_analog_in;
    /*360*/     UB  axis_h_reserved_0;
    /*361*/     UB  axis_h_reserved_1;
    /*362-365*/ SL  axis_h_variable;
}; //DataRecord1806

struct GDataRecord2103
{

    /*Offset   type name        description*/

    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;

    /*06*/      UB  input_bank_0;
    /*07*/      UB  input_bank_1;
    /*08*/      UB  input_bank_2;
    /*09*/      UB  input_bank_3;
    /*10*/      UB  input_bank_4;
    /*11*/      UB  input_bank_5;
    /*12*/      UB  input_bank_6;
    /*13*/      UB  input_bank_7;
    /*14*/      UB  input_bank_8;
    /*15*/      UB  input_bank_9;

    /*16*/      UB  output_bank_0;
    /*17*/      UB  output_bank_1;
    /*18*/      UB  output_bank_2;
    /*19*/      UB  output_bank_3;
    /*20*/      UB  output_bank_4;
    /*21*/      UB  output_bank_5;
    /*22*/      UB  output_bank_6;
    /*23*/      UB  output_bank_7;
    /*24*/      UB  output_bank_8;
    /*25*/      UB  output_bank_9;

    /*26*/      UB  error_code;
    /*27*/      UB  general_status;

    /*28-29*/   UW  s_plane_segment_count;
    /*30-31*/   UW  s_plane_move_status;
    /*32-35*/   SL  s_distance;

    /*36-37*/   UW  t_plane_segment_count;
    /*38-39*/   UW  t_plane_move_status;
    /*40-43*/   SL  t_distance;

    /*44-45*/   UW  axis_a_status;
    /*46*/      UB  axis_a_switches;
    /*47*/      UB  axis_a_stop_code;
    /*48-51*/   SL  axis_a_reference_position;
    /*52-55*/   SL  axis_a_motor_position;
    /*56-59*/   SL  axis_a_position_error;
    /*60-63*/   SL  axis_a_aux_position;
    /*64-67*/   SL  axis_a_velocity;
    /*68-69*/   SW  axis_a_torque;
    /*70-71*/   UW  axis_a_analog_in;

    /*72-73*/   UW  axis_b_status;
    /*74*/      UB  axis_b_switches;
    /*75*/      UB  axis_b_stop_code;
    /*76-79*/   SL  axis_b_reference_position;
    /*80-83*/   SL  axis_b_motor_position;
    /*84-87*/   SL  axis_b_position_error;
    /*88-91*/   SL  axis_b_aux_position;
    /*92-95*/   SL  axis_b_velocity;
    /*96-97*/   SW  axis_b_torque;
    /*98-99*/   UW  axis_b_analog_in;
```

```
    /*100-101*/ UW  axis_c_status;
    /*102*/     UB  axis_c_switches;
    /*103*/     UB  axis_c_stop_code;
    /*104-107*/ SL  axis_c_reference_position;
    /*108-111*/ SL  axis_c_motor_position;
    /*112-115*/ SL  axis_c_position_error;
    /*116-119*/ SL  axis_c_aux_position;
    /*120-123*/ SL  axis_c_velocity;
    /*124-125*/ SW  axis_c_torque;
    /*126-127*/ UW  axis_c_analog_in;

    /*128-129*/ UW  axis_d_status;
    /*130*/     UB  axis_d_switches;
    /*131*/     UB  axis_d_stop_code;
    /*132-135*/ SL  axis_d_reference_position;
    /*136-139*/ SL  axis_d_motor_position;
    /*140-143*/ SL  axis_d_position_error;
    /*144-147*/ SL  axis_d_aux_position;
    /*148-151*/ SL  axis_d_velocity;
    /*152-153*/ SW  axis_d_torque;
    /*154-155*/ UW  axis_d_analog_in;

    /*156-157*/ UW  axis_e_status;
    /*158*/     UB  axis_e_switches;
    /*159*/     UB  axis_e_stop_code;
    /*160-163*/ SL  axis_e_reference_position;
    /*164-167*/ SL  axis_e_motor_position;
    /*168-171*/ SL  axis_e_position_error;
    /*172-175*/ SL  axis_e_aux_position;
    /*176-179*/ SL  axis_e_velocity;
    /*180-181*/ SW  axis_e_torque;
    /*182-183*/ UW  axis_e_analog_in;

    /*184-185*/ UW  axis_f_status;
    /*186*/     UB  axis_f_switches;
    /*187*/     UB  axis_f_stop_code;
    /*188-191*/ SL  axis_f_reference_position;
    /*192-195*/ SL  axis_f_motor_position;
    /*196-199*/ SL  axis_f_position_error;
    /*200-203*/ SL  axis_f_aux_position;
    /*204-207*/ SL  axis_f_velocity;
    /*208-209*/ SW  axis_f_torque;
    /*210-211*/ UW  axis_f_analog_in;

    /*212-213*/ UW  axis_g_status;
    /*214*/     UB  axis_g_switches;
    /*215*/     UB  axis_g_stop_code;
    /*216-219*/ SL  axis_g_reference_position;
    /*220-223*/ SL  axis_g_motor_position;
    /*224-227*/ SL  axis_g_position_error;
    /*228-231*/ SL  axis_g_aux_position;
    /*232-235*/ SL  axis_g_velocity;
    /*236-237*/ SW  axis_g_torque;
    /*238-239*/ UW  axis_g_analog_in;

    /*240-241*/ UW  axis_h_status;
    /*242*/     UB  axis_h_switches;
    /*243*/     UB  axis_h_stop_code;
    /*244-247*/ SL  axis_h_reference_position;
    /*248-251*/ SL  axis_h_motor_position;
    /*252-255*/ SL  axis_h_position_error;
    /*256-259*/ SL  axis_h_aux_position;
    /*260-263*/ SL  axis_h_velocity;
    /*264-265*/ SW  axis_h_torque;
    /*266-267*/ UW  axis_h_analog_in;
}; //DataRecord2013


struct GDataRecord1802
{

    /*Offset   type name        description*/

    /*00-01*/   UW  sample_number;

    /*02*/      UB  input_bank_0;
    /*03*/      UB  input_bank_1;
    /*04*/      UB  input_bank_2;
    /*05*/      UB  input_bank_3;
    /*06*/      UB  input_bank_4;
    /*07*/      UB  input_bank_5;
    /*08*/      UB  input_bank_6;
    /*09*/      UB  input_bank_7;
    /*10*/      UB  input_bank_8;
    /*11*/      UB  input_bank_9;

```

```
    /*12*/      UB  output_bank_0;
    /*13*/      UB  output_bank_1;
    /*14*/      UB  output_bank_2;
    /*15*/      UB  output_bank_3;
    /*16*/      UB  output_bank_4;
    /*17*/      UB  output_bank_5;
    /*18*/      UB  output_bank_6;
    /*19*/      UB  output_bank_7;
    /*20*/      UB  output_bank_8;
    /*21*/      UB  output_bank_9;

    /*22*/      UB  error_code;
    /*23*/      UB  general_status;

    /*24-25*/   UW  s_plane_segment_count;
    /*26-27*/   UW  s_plane_move_status;
    /*28-31*/   SL  s_distance;

    /*32-33*/   UW  t_plane_segment_count;
    /*34-35*/   UW  t_plane_move_status;
    /*36-39*/   SL  t_distance;

    /*40-41*/   UW  axis_a_status;
    /*42*/      UB  axis_a_switches;
    /*43*/      UB  axis_a_stop_code;
    /*44-47*/   SL  axis_a_reference_position;
    /*48-51*/   SL  axis_a_motor_position;
    /*52-55*/   SL  axis_a_position_error;
    /*56-59*/   SL  axis_a_aux_position;
    /*60-63*/   SL  axis_a_velocity;
    /*64-65*/   SW  axis_a_torque;
    /*66*/      UB  axis_a_reserved_0;
    /*67*/      UB  axis_a_reserved_1;

    /*68-69*/   UW  axis_b_status;
    /*70*/      UB  axis_b_switches;
    /*71*/      UB  axis_b_stop_code;
    /*72-75*/   SL  axis_b_reference_position;
    /*76-79*/   SL  axis_b_motor_position;
    /*80-83*/   SL  axis_b_position_error;
    /*84-87*/   SL  axis_b_aux_position;
    /*88-91*/   SL  axis_b_velocity;
    /*92-93*/   SW  axis_b_torque;
    /*94*/      UB  axis_b_reserved_0;
    /*95*/      UB  axis_b_reserved_1;

    /*96-97*/   UW  axis_c_status;
    /*98*/      UB  axis_c_switches;
    /*99*/      UB  axis_c_stop_code;
    /*100-103*/ SL  axis_c_reference_position;
    /*104-107*/ SL  axis_c_motor_position;
    /*108-111*/ SL  axis_c_position_error;
    /*112-115*/ SL  axis_c_aux_position;
    /*116-119*/ SL  axis_c_velocity;
    /*120-121*/ SW  axis_c_torque;
    /*122*/     UB  axis_c_reserved_0;
    /*123*/     UB  axis_c_reserved_1;

    /*124-125*/ UW  axis_d_status;
    /*126*/     UB  axis_d_switches;
    /*127*/     UB  axis_d_stop_code;
    /*128-131*/ SL  axis_d_reference_position;
    /*132-135*/ SL  axis_d_motor_position;
    /*136-139*/ SL  axis_d_position_error;
    /*140-143*/ SL  axis_d_aux_position;
    /*144-147*/ SL  axis_d_velocity;
    /*148-149*/ SW  axis_d_torque;
    /*150*/     UB  axis_d_reserved_0;
    /*151*/     UB  axis_d_reserved_1;

}; //DataRecord1802

struct GDataRecord30000
{

    /*Offset   type name        description*/

    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;

    /*06*/      UB  input_bank_0;
    /*07*/      UB  input_bank_1;

```

```
    /*08*/      UB  output_bank_0;
    /*09*/      UB  output_bank_1;

    /*10*/      UB  error_code;
    /*11*/      UB  thread_status;

    /*12-13*/   UW  input_analog_2;

    /*14-15*/   UW  output_analog_1;
    /*16-17*/   UW  output_analog_2;

    /*18-21*/   UL  amplifier_status;

    /*22-25*/   UL  contour_segment_count;
    /*26-27*/   UW  contour_buffer_available;

    /*28-29*/   UW  s_plane_segment_count;
    /*30-31*/   UW  s_plane_move_status;
    /*32-35*/   SL  s_distance;
    /*36-37*/   UW  s_plane_buffer_available;

    /*38-39*/   UW  axis_a_status;
    /*40*/      UB  axis_a_switches;
    /*41*/      UB  axis_a_stop_code;
    /*42-45*/   SL  axis_a_reference_position;
    /*46-49*/   SL  axis_a_motor_position;
    /*50-53*/   SL  axis_a_position_error;
    /*54-57*/   SL  axis_a_aux_position;
    /*58-61*/   SL  axis_a_velocity;
    /*62-65*/   SL  axis_a_torque;
    /*66-67*/   UW  axis_a_analog_in;
    /*68*/      UB  axis_a_halls;
    /*69*/      UB  axis_a_reserved;
    /*70-73*/   SL  axis_a_variable;
}; //DataRecord30000

struct GDataRecord47000_ENC
{

    /*Offset   type name        description*/

    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;
    /*06*/      UB  error_code;
    /*07*/      UB  general_status;

    /*08-09*/   UW  output_analog_0;
    /*10-11*/   UW  output_analog_1;
    /*12-13*/   UW  output_analog_2;
    /*14-15*/   UW  output_analog_3;
    /*16-17*/   UW  output_analog_4;
    /*18-19*/   UW  output_analog_5;
    /*20-21*/   UW  output_analog_6;
    /*22-23*/   UW  output_analog_7;

    /*24-25*/   UW  input_analog_0;
    /*26-27*/   UW  input_analog_1;
    /*28-29*/   UW  input_analog_2;
    /*30-31*/   UW  input_analog_3;
    /*32-33*/   UW  input_analog_4;
    /*34-35*/   UW  input_analog_5;
    /*36-37*/   UW  input_analog_6;
    /*38-39*/   UW  input_analog_7;

    /*40-41*/   UW  output_bank_0;

    /*42-43*/   UW  input_bank_0;

    /*44-47*/   UL  pulse_count_0;
    /*48-51*/   SL  zc_variable;
    /*52-55*/   SL  zd_variable;

    /*56-59*/   SL  encoder_0;
    /*60-63*/   SL  encoder_1;
    /*64-67*/   SL  encoder_2;
    /*68-71*/   SL  encoder_3;

}; //GDataRecord47000_ENC

struct GDataRecord47300_ENC
{

    /*Offset   type name        description*/
```

```
    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;
    /*06*/      UB  error_code;
    /*07*/      UB  general_status;

    /*08-09*/   UW  output_analog_0;
    /*10-11*/   UW  output_analog_1;
    /*12-13*/   UW  output_analog_2;
    /*14-15*/   UW  output_analog_3;
    /*16-17*/   UW  output_analog_4;
    /*18-19*/   UW  output_analog_5;
    /*20-21*/   UW  output_analog_6;
    /*22-23*/   UW  output_analog_7;

    /*24-25*/   UW  input_analog_0;
    /*26-27*/   UW  input_analog_1;
    /*28-29*/   UW  input_analog_2;
    /*30-31*/   UW  input_analog_3;
    /*32-33*/   UW  input_analog_4;
    /*34-35*/   UW  input_analog_5;
    /*36-37*/   UW  input_analog_6;
    /*38-39*/   UW  input_analog_7;

    /*40-41*/   UW  output_bank_0;
    /*42-43*/   UW  output_bank_1;

    /*44-45*/   UW  input_bank_0;
    /*46-47*/   UW  input_bank_1;

    /*48-51*/   UL  pulse_count_0;
    /*52-55*/   SL  zc_variable;
    /*56-59*/   SL  zd_variable;

    /*60-63*/   SL  encoder_0;
    /*64-67*/   SL  encoder_1;
    /*68-71*/   SL  encoder_2;
    /*72-75*/   SL  encoder_3;

}; //GDataRecord47300_ENC

struct GDataRecord47300_24EX
{

    /*Offset   type name        description*/

    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;
    /*06*/      UB  error_code;
    /*07*/      UB  general_status;

    /*08-09*/   UW  output_analog_0;
    /*10-11*/   UW  output_analog_1;
    /*12-13*/   UW  output_analog_2;
    /*14-15*/   UW  output_analog_3;
    /*16-17*/   UW  output_analog_4;
    /*18-19*/   UW  output_analog_5;
    /*20-21*/   UW  output_analog_6;
    /*22-23*/   UW  output_analog_7;

    /*24-25*/   UW  input_analog_0;
    /*26-27*/   UW  input_analog_1;
    /*28-29*/   UW  input_analog_2;
    /*30-31*/   UW  input_analog_3;
    /*32-33*/   UW  input_analog_4;
    /*34-35*/   UW  input_analog_5;
    /*36-37*/   UW  input_analog_6;
    /*38-39*/   UW  input_analog_7;

    /*40-41*/   UW  output_bank_0;
    /*42-43*/   UW  output_bank_1;

    /*44-45*/   UW  input_bank_0;
    /*46-47*/   UW  input_bank_1;

    /*48-51*/   UL  pulse_count_0;
    /*52-55*/   SL  zc_variable;
    /*56-59*/   SL  zd_variable;

```

```
    /*60-61*/   UW output_bank_2;
    /*62-63*/   UW output_back_3;

    /*64-65*/   UW input_bank_2;
    /*66-67*/   UW input_bank_3;

}; //GDataRecord47300_24EX

struct GDataRecord47162
{
    /*Offset   type name        description*/

    /*00*/      UB  header_0;
    /*01*/      UB  header_1;
    /*02*/      UB  header_2;
    /*03*/      UB  header_3;

    /*04-05*/   UW  sample_number;
    /*06*/      UB  error_code;
    /*07*/      UB  general_status;

    /*08-09*/   UW  output_analog_0;
    /*10-11*/   UW  output_analog_1;
    /*12-13*/   UW  output_analog_2;
    /*14-15*/   UW  output_analog_3;
    /*16-17*/   UW  output_analog_4;
    /*18-19*/   UW  output_analog_5;
    /*20-21*/   UW  output_analog_6;
    /*22-23*/   UW  output_analog_7;

    /*24-25*/   UW  input_analog_0;
    /*26-27*/   UW  input_analog_1;
    /*28-29*/   UW  input_analog_2;
    /*30-31*/   UW  input_analog_3;
    /*32-33*/   UW  input_analog_4;
    /*34-35*/   UW  input_analog_5;
    /*36-37*/   UW  input_analog_6;
    /*38-39*/   UW  input_analog_7;

    /*40*/      UB  output_byte_0;
    /*41*/      UB  output_byte_1;
    /*42*/      UB  output_byte_2;

    /*43*/      UB  input_byte_0;
    /*44*/      UB  input_byte_1;
    /*45*/      UB  input_byte_2;
    /*46*/      UB  input_byte_3;
    /*47*/      UB  input_byte_4;

    /*48-51*/   UL  pulse_count_0;
    /*52-55*/   SL  zc_variable;
    /*56-59*/   SL  zd_variable;

    /*60-63*/   SL  encoder_0;
    /*64-67*/   SL  encoder_1;
    /*68-71*/   SL  encoder_2;
    /*72-75*/   SL  encoder_3;

}; //GDataRecord47162


union GDataRecord
{
    struct GDataRecord4000 dmc4000;
    struct GDataRecord4000 dmc4103;
    struct GDataRecord4000 dmc50000;

    struct GDataRecord52000 dmc52000;

    struct GDataRecord30000 dmc30000;

    struct GDataRecord2103 dmc2103;

    struct GDataRecord1806 dmc1806;

    struct GDataRecord1802 dmc1802;

    struct GDataRecord47000_ENC rio47000;
    struct GDataRecord47300_ENC rio47300;
    struct GDataRecord47300_24EX rio47300_24ex;
    struct GDataRecord47162 rio47162;

    unsigned char byte_array[GALILDATARECORDMAXLENGTH];
};


#ifdef PACKOK
```

```
#pragma pack() //return pack to default
#else
#error "Need to return structure packing for compiler"
#endif

#endif //I_210405D9_D9EF_484F_8258_BB29A1BBA217
```

14.3 gclib.h File Reference

```
#include "gclib_record.h"
#include "gclib_errors.h"
```

Macros

- #define GCLIB_DLL_EXPORTED
- #define GCLIB_DEPRECATED
- #define GCALL
- #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_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

  GUtility(), for timeout override. Set `G_UTIL_TIMEOUT_OVERRIDE` to 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.
- #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.

Typedefs

- typedef int GReturn

  Every function returns a value of type GReturn. See gclib_errors.h for possible values.
- typedef void * 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_DLL_EXPORTED GReturn GCALL GOpen (GCStringIn address, GCon ∗g)

  Open a connection to a Galil Controller.
- GCLIB_DLL_EXPORTED GReturn GCALL GClose (GCon g)

  Closes a connection to a Galil Controller.
- GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GRead (GCon g, GBufOut buffer, GSize buffer_len, GSize ∗bytes_read)

  Performs a read on the connection.
- GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GWrite (GCon g, GBufIn buffer, GSize buffer_len)

  Performs a write on the connection.
- GCLIB_DLL_EXPORTED GReturn GCALL GCommand (GCon g, GCStringIn command, GBufOut buffer, GSize buffer_len, GSize ∗bytes_returned)

  Performs a command-and-response transaction on the connection.
- GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownload (GCon g, GCStringIn program, GCStringIn preprocessor)

  Downloads a program to the controller's program buffer.
- GCLIB_DLL_EXPORTED GReturn GCALL GProgramUpload (GCon g, GBufOut buffer, GSize buffer_len)

  Uploads a program from the controller's program buffer.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GMessage (GCon g, GCStringOut buffer, GSize buffer_len)

  Provides access to unsolicited messages from the controller.
- GCLIB_DLL_EXPORTED GReturn GCALL GInterrupt (GCon g, GStatus ∗status_byte)

  Provides access to PCI and UDP interrupts from the controller.
- GCLIB_DLL_EXPORTED GReturn GCALL GFirmwareDownload (GCon g, GCStringIn filepath)

  Upgrade firmware.
- GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GUtility (GCon g, GOption request, GMemory memory1, GMemory memory2)

  Provides read/write access to driver settings and convenience features based on the request variable.

14.3.1 Detailed Description

Defines the interface for the Galil C Library (GCLIB).
Definition in file gclib.h.

14.3.2 Macro Definition Documentation

14.3.2.1 GCLIB_DLL_EXPORTED

```
#define GCLIB_DLL_EXPORTED
```

Definition at line 37 of file gclib.h.

14.3.2.2 GCLIB_DEPRECATED

```
#define GCLIB_DEPRECATED
```

Definition at line 45 of file gclib.h.

14.3.2.3 GCALL

```
#define GCALL
```

Definition at line 54 of file gclib.h.

14.3.2.4 G_DR

```
#define G_DR 1
```

Value for GRecord() `method` variable for acquiring a data record via DR mode.
Definition at line 64 of file gclib.h.

14.3.2.5 G_QR

```
#define G_QR 0
```

Value for GRecord() `method` variable for acquiring a data record via QR mode.
Definition at line 65 of file gclib.h.

14.3.2.6 G_BOUNDS

```
#define G_BOUNDS -1
```

For functions that take range options, e.g. GArrayUpload(), use this value for full range.
Definition at line 66 of file gclib.h.

14.3.2.7 G_CR

```
#define G_CR 0
```

For GArrayUpload(), use this value in the delim field to delimit with carriage returns.
Definition at line 67 of file gclib.h.

14.3.2.8 G_COMMA

```
#define G_COMMA 1
```

For GArrayUpload(), use this value in the delim field to delimit with commas.
Definition at line 68 of file gclib.h.

14.3.2.9 G_PUBLISH_SERVER

```
#define G_PUBLISH_SERVER 1
```

For GPublishServer(), use this value to publish server to local network.
Definition at line 69 of file gclib.h.

14.3.2.10 G_REMOVE_SERVER

```
#define G_REMOVE_SERVER 0
```

For GPublishServer(), use this value to remove server from local network.
Definition at line 70 of file gclib.h.

14.3.2.11 G_UTIL_TIMEOUT

```
#define G_UTIL_TIMEOUT 1
```

GUtility(), Access to timeout.
Definition at line 73 of file gclib.h.

14.3.2.12 G_UTIL_TIMEOUT_OVERRIDE

```
#define G_UTIL_TIMEOUT_OVERRIDE 2
```

GUtility(), read/write access to timeout override.
Definition at line 74 of file gclib.h.

14.3.2.13 G_USE_INITIAL_TIMEOUT

```
#define G_USE_INITIAL_TIMEOUT -1
```

GUtility(), for timeout override. Set `G_UTIL_TIMEOUT_OVERRIDE` to this value to use initial GOpen() timeout (`--timeout`).
Definition at line 75 of file gclib.h.

14.3.2.14 G_UTIL_VERSION

```
#define G_UTIL_VERSION 128
```

GUtility(), get a library version string.
Definition at line 76 of file gclib.h.

14.3.2.15 G_UTIL_INFO

```
#define G_UTIL_INFO 129
```

GUtility(), get a connection info string.
Definition at line 77 of file gclib.h.

14.3.2.16 G_UTIL_SLEEP

```
#define G_UTIL_SLEEP 130
```

GUtility(), specify an interval to sleep.
Definition at line 78 of file gclib.h.

14.3.2.17 G_UTIL_ADDRESSES

```
#define G_UTIL_ADDRESSES 131
```

GUtility(), get a list of available connections.
Definition at line 79 of file gclib.h.

14.3.2.18 G_UTIL_IPREQUEST

```
#define G_UTIL_IPREQUEST 132
```

GUtility(), get a list of hardware requesting IPs.
Definition at line 80 of file gclib.h.

14.3.2.19 G_UTIL_ASSIGN

```
#define G_UTIL_ASSIGN 133
```

GUtility(), assign IP addresses over the network.
Definition at line 81 of file gclib.h.

14.3.2.20 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 82 of file gclib.h.

14.3.2.21 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 83 of file gclib.h.

14.3.2.22 G_UTIL_ERROR_CONTEXT

```
#define G_UTIL_ERROR_CONTEXT 136
```

GUtility(), provides additional error context, where available.
Definition at line 84 of file gclib.h.

14.3.2.23 G_UTIL_GCAPS_HOST

```
#define G_UTIL_GCAPS_HOST 256
```

Definition at line 86 of file gclib.h.

14.3.2.24 G_UTIL_GCAPS_VERSION

```
#define G_UTIL_GCAPS_VERSION 257
```

GUtility(), get the version of the gcaps server.
Definition at line 87 of file gclib.h.

14.3.2.25 G_UTIL_GCAPS_KEEPALIVE

```
#define G_UTIL_GCAPS_KEEPALIVE 258
```

GUtility(), Deprecated 20210119. No longer functional.
Definition at line 88 of file gclib.h.

14.3.2.26 G_UTIL_GCAPS_ADDRESSES

```
#define G_UTIL_GCAPS_ADDRESSES 259
```

GUtility(), get a list of available connections from the gcaps server.
Definition at line 89 of file gclib.h.

14.3.2.27 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 90 of file gclib.h.

14.3.2.28 G_UTIL_GCAPS_ASSIGN

```
#define G_UTIL_GCAPS_ASSIGN 261
```

GUtility(), assign IP addresses over the network from the gcaps server.
Definition at line 91 of file gclib.h.

14.3.2.29 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 92 of file gclib.h.

14.3.2.30 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 93 of file gclib.h.

14.3.2.31 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 94 of file gclib.h.

14.3.2.32 G_UTIL_GCAPS_SET_SERVER

```
#define G_UTIL_GCAPS_SET_SERVER 265
```

GUtility(), set the new active gcaps server.
Definition at line 95 of file gclib.h.

14.3.2.33 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 96 of file gclib.h.

14.3.2.34 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 97 of file gclib.h.

14.3.2.35 G_UTIL_GCAPS_SERVER_INFO

```
#define G_UTIL_GCAPS_SERVER_INFO 268
```

Definition at line 98 of file gclib.h.

14.3.2.36 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 99 of file gclib.h.

14.3.2.37 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 100 of file gclib.h.

14.3.2.38 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 103 of file gclib.h.

14.3.2.39 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 104 of file gclib.h.

14.3.2.40 G_LINE_BUFFER

```
#define G_LINE_BUFFER 80
```

For writes, via command interpreter, to the Galil.
Definition at line 105 of file gclib.h.

14.3.3 Typedef Documentation

14.3.3.1 GReturn

`typedef int GReturn`
Every function returns a value of type GReturn. See gclib_errors.h for possible values.
Definition at line 107 of file gclib.h.

14.3.3.2 GCon

`typedef void* GCon`
Connection handle. Unique for each connection in process. Assigned a non-zero value in GOpen().
Definition at line 108 of file gclib.h.

14.3.3.3 GSize

`typedef unsigned int GSize`
Size of buffers, etc.
Definition at line 109 of file gclib.h.

14.3.3.4 GOption

`typedef int GOption`
Option integer for various formatting, etc.
Definition at line 110 of file gclib.h.

14.3.3.5 GCStringOut

`typedef char* GCStringOut`
C-string output from the library. Implies null-termination.
Definition at line 111 of file gclib.h.

14.3.3.6 GCStringIn

`typedef const char* GCStringIn`
C-string input to the library. Implies null-termination.
Definition at line 112 of file gclib.h.

14.3.3.7 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 113 of file gclib.h.

14.3.3.8 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 114 of file gclib.h.

14.3.3.9 GStatus

`typedef unsigned char GStatus`
Interrupt status byte.
Definition at line 115 of file gclib.h.

14.3.3.10 GMemory

```
typedef void* GMemory
```

Pointer to untyped memory for use in GUtility().
Definition at line 116 of file gclib.h.

14.4 gclib.h

Go to the documentation of this file.

```
00001
00026 #ifndef I_D48432D9_1FA3_4C7D_B44C_05F8B9000ADF
00027 #define I_D48432D9_1FA3_4C7D_B44C_05F8B9000ADF
00028
00029 //set library visibility for gcc and msvc
00030 #if BUILDING_GCLIB && HAVE_VISIBILITY
00031 #define GCLIB_DLL_EXPORTED __attribute__((__visibility__("default")))
00032 #elif BUILDING_GCLIB && defined _MSC_VER
00033 #define GCLIB_DLL_EXPORTED __declspec(dllexport)
00034 #elif defined _MSC_VER
00035 #define GCLIB_DLL_EXPORTED __declspec(dllimport)
00036 #else
00037 #define GCLIB_DLL_EXPORTED
00038 #endif
00039
00040 #ifdef _MSC_VER
00041 #define GCLIB_DEPRECATED __declspec(deprecated)
00042 #elif defined(__GNUC__) | defined(__clang__)
00043 #define GCLIB_DEPRECATED __attribute__((__deprecated__))
00044 #else
00045 #define GCLIB_DEPRECATED
00046 #endif
00047
00048 #include "gclib_record.h" // Galil data record structs and unions.
00049 #include "gclib_errors.h" // GReturn error code values and strings.
00050
00051 #ifdef _WIN32
00052 #define GCALL __stdcall
00053 #else
00054 #define GCALL
00055 #endif
00056
00057 //#define G_USE_GCOMPOUND //!< GCompound() is not part of the standard gclib release. Contact Galil
      Applications for a special build, http://galil.com/contact.
00058
00059 #ifdef __cplusplus
00060 extern "C" {
00061 #endif
00062
00063     //Constants for function arguments
00064 #define G_DR 1
00065 #define G_QR 0
00066 #define G_BOUNDS -1
00067 #define G_CR 0
00068 #define G_COMMA 1
00069 #define G_PUBLISH_SERVER 1
00070 #define G_REMOVE_SERVER 0
00071
00072     //Constants for GUtility()
00073 #define G_UTIL_TIMEOUT 1
00074 #define G_UTIL_TIMEOUT_OVERRIDE 2
00075 #define G_USE_INITIAL_TIMEOUT -1
00076 #define G_UTIL_VERSION 128
00077 #define G_UTIL_INFO 129
00078 #define G_UTIL_SLEEP 130
00079 #define G_UTIL_ADDRESSES 131
00080 #define G_UTIL_IPREQUEST 132
00081 #define G_UTIL_ASSIGN 133
00082 #define G_UTIL_DEVICE_INITIALIZE 134
00083 #define G_UTIL_PING 135
00084 #define G_UTIL_ERROR_CONTEXT 136
00085
00086 #define G_UTIL_GCAPS_HOST 256
00087 #define G_UTIL_GCAPS_VERSION 257
00088 #define G_UTIL_GCAPS_KEEPALIVE 258
00089 #define G_UTIL_GCAPS_ADDRESSES 259
00090 #define G_UTIL_GCAPS_IPREQUEST 260
00091 #define G_UTIL_GCAPS_ASSIGN 261
00092 #define G_UTIL_GCAPS_PING 262
00093 #define G_UTIL_GCAPS_LIST_SERVERS 263
00094 #define G_UTIL_GCAPS_PUBLISH_SERVER 264
00095 #define G_UTIL_GCAPS_SET_SERVER 265
00096 #define G_UTIL_GCAPS_SERVER_STATUS 266
00097 #define G_UTIL_GCAPS_REMOTE_CONNECTIONS 267
```

```
#define G_UTIL_GCAPS_SERVER_INFO 268
#define G_UTIL_GCAPS_ADDRESSES_GET_REMEMBERED 269
#define G_UTIL_GCAPS_ADDRESSES_SET_REMEMBERED 270

    //Convenience constants
#define G_SMALL_BUFFER 1024
#define G_HUGE_BUFFER 524288
#define G_LINE_BUFFER 80

    typedef int GReturn;
    typedef void* GCon;
    typedef unsigned int GSize;
    typedef int GOption;
    typedef char* GCStringOut;
    typedef const char* GCStringIn;
    typedef char* GBufOut;
    typedef const char* GBufIn;
    typedef unsigned char GStatus;
    typedef void* GMemory;

    GCLIB_DLL_EXPORTED GReturn GCALL GOpen(GCStringIn address, GCon* g);
    GCLIB_DLL_EXPORTED GReturn GCALL GClose(GCon g);
    GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GRead(GCon g, GBufOut buffer, GSize buffer_len, GSize* bytes_read);
    GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GWrite(GCon g, GBufIn buffer, GSize buffer_len);
    GCLIB_DLL_EXPORTED GReturn GCALL GCommand(GCon g, GCStringIn command, GBufOut buffer, GSize buffer_len, GSize* bytes_returned);
    GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownload(GCon g, GCStringIn program, GCStringIn preprocessor);
    GCLIB_DLL_EXPORTED GReturn GCALL GProgramUpload(GCon g, GBufOut buffer, GSize buffer_len);
    GCLIB_DLL_EXPORTED GReturn GCALL GArrayDownload(GCon g, const GCStringIn array_name, GOption first, GOption last, GCStringIn buffer);
    GCLIB_DLL_EXPORTED GReturn GCALL GArrayUpload(GCon g, const GCStringIn array_name, GOption first, GOption last, GOption delim, GBufOut buffer, GSize buffer_len);
    GCLIB_DLL_EXPORTED GReturn GCALL GRecord(GCon g, union GDataRecord* record, GOption method);
    GCLIB_DLL_EXPORTED GReturn GCALL GMessage(GCon g, GCStringOut buffer, GSize buffer_len);
    GCLIB_DLL_EXPORTED GReturn GCALL GInterrupt(GCon g, GStatus* status_byte);
    GCLIB_DLL_EXPORTED GReturn GCALL GFirmwareDownload(GCon g, GCStringIn filepath);
    GCLIB_DLL_EXPORTED GCLIB_DEPRECATED GReturn GCALL GUtility(GCon g, GOption request, GMemory memory1, GMemory memory2);
#ifdef G_USE_GCOMPOUND
    GCLIB_DLL_EXPORTED GReturn GCALL GCompound(GCon g, GCStringIn buffer);
#endif

#ifdef __cplusplus
} //extern "C"
#endif

#endif //I_D48432D9_1FA3_4C7D_B44C_05F8B9000ADF
```

14.5 gclibo.h File Reference

`#include "gclib.h"`

Macros

- #define GCLIB_DLL_EXPORTED
- #define GCALL /* nothing */
- #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_DLL_EXPORTED void GCALL GSleep (unsigned int timeout_ms)

  Uses GUtility() and G_UTIL_SLEEP to provide a blocking sleep call which can be useful for timing-based chores.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GInfo (GCon g, GCStringOut info, GSize info_len)

  Uses GUtility() and G_UTIL_INFO to provide a useful connection string.
- GCLIB_DLL_EXPORTED GReturn GCALL GTimeout (GCon g, short timeout_ms)

  Uses GUtility() and G_UTIL_TIMEOUT_OVERRIDE to set the library timeout.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmd (GCon g, GCStringIn command)

  Wrapper around GCommand for use when the return value is not desired.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmdT (GCon g, GCStringIn command, GCStringOut trimmed↩_response, GSize response_len, GCStringOut *front)

  Wrapper around GCommand that trims the response.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmdI (GCon g, GCStringIn command, int *value)

  Wrapper around GCommand that provides the return value of a command parsed into an int.
- GCLIB_DLL_EXPORTED GReturn GCALL GCmdD (GCon g, GCStringIn command, double *value)

  Wrapper around GCommand that provides the return value of a command parsed into a double.
- GCLIB_DLL_EXPORTED GReturn GCALL GWaitForBool (GCon g, GCStringIn predicate, int trials)

  Blocking call that returns when the controller evaluates the predicate as true.
- GCLIB_DLL_EXPORTED GReturn GCALL GMotionComplete (GCon g, GCStringIn axes)

  Blocking call that returns once all axes specified have completed their motion.
- GCLIB_DLL_EXPORTED GReturn GCALL GRecordRate (GCon g, double period_ms)

  Sets the asynchronous data record to a user-specified period via `DR`.
- GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownloadFile (GCon g, GCStringIn file_path, GCStringIn preprocessor)

  Program download from file.
- GCLIB_DLL_EXPORTED GReturn GCALL GProgramUploadFile (GCon g, GCStringIn file_path)

  Program upload to file.
- GCLIB_DLL_EXPORTED GReturn GCALL GArrayDownloadFile (GCon g, GCStringIn file_path)

  Array download from file.
- GCLIB_DLL_EXPORTED GReturn GCALL GArrayUploadFile (GCon g, GCStringIn file_path, GCStringIn names)

  Array upload to file.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GSetServer (GCStringIn server_name)

  Uses GUtility(), G_UTIL_GCAPS_SET_SERVER to set the new active server.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL GPublishServer (GCStringIn name, GOption publish, GOption save)

  Uses GUtility(), G_UTIL_GCAPS_PUBLISH_SERVER to publish local gcaps server to the local network.
- GCLIB_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED GReturn GCALL 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_DLL_EXPORTED void GCALL GError (GReturn rc, GCStringOut error, GSize error_len)

  Provides a human-readable description string for return codes.
- GCLIB_DLL_EXPORTED GReturn GCALL GSetupDownloadFile (GCon g, GCStringIn file_path, GOption options, GCStringOut info, GSize info_len)

  Download a saved controller configuration from a file.

14.5.1 Detailed Description

Open-source convenience functions for Galil C Lib. Please email `softwarefeedback@galil.com` with suggestions for useful/missing functions.
Definition in file gclibo.h.

14.5.2 Macro Definition Documentation

14.5.2.1 GCLIB_DLL_EXPORTED

```
#define GCLIB_DLL_EXPORTED
```

Definition at line 17 of file gclibo.h.

14.5.2.2 GCALL

```
#define GCALL /* nothing */
```

Definition at line 25 of file gclibo.h.

14.5.2.3 MALLOCBUF

```
#define MALLOCBUF G_HUGE_BUFFER
```

Malloc used for large program and array uploads.
Definition at line 32 of file gclibo.h.

14.5.2.4 MAXPROG

```
#define MAXPROG MALLOCBUF
```

Maximum size for a program.
Definition at line 33 of file gclibo.h.

14.5.2.5 MAXARRAY

```
#define MAXARRAY MALLOCBUF
```

Maximum size for an array table upload.
Definition at line 34 of file gclibo.h.

14.5.2.6 POLLINGINTERVAL

```
#define POLLINGINTERVAL 100
```

Interval, in milliseconds, for polling commands, e.g. GWaitForBool().
Definition at line 35 of file gclibo.h.

14.5.2.7 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 36 of file gclibo.h.

14.6 gclibo.h

Go to the documentation of this file.

```
00001
00006 #ifndef I_007AD0AF_C956_4B96_ADE2_AD04FAFFEE99
00007 #define I_007AD0AF_C956_4B96_ADE2_AD04FAFFEE99
00008
00009 //set library visibility for gcc and msvc
00010 #if BUILDING_GCLIB && HAVE_VISIBILITY
00011 #define GCLIB_DLL_EXPORTED __attribute__((__visibility__("default")))
00012 #elif BUILDING_GCLIB && defined _MSC_VER
00013 #define GCLIB_DLL_EXPORTED __declspec(dllexport)
00014 #elif defined _MSC_VER
00015 #define GCLIB_DLL_EXPORTED __declspec(dllimport)
00016 #else
00017 #define GCLIB_DLL_EXPORTED
00018 #endif
00019
00020 #include "gclib.h" //Galil's C Library
00021
00022 #ifdef _WIN32
00023 #define GCALL __stdcall
00024 #else
00025 #define GCALL  /* nothing */
00026 #endif
00027
00028 #ifdef __cplusplus
00029 extern "C" {
00030 #endif
00031
00032 #define MALLOCBUF G_HUGE_BUFFER
00033 #define MAXPROG MALLOCBUF
00034 #define MAXARRAY MALLOCBUF
00035 #define POLLINGINTERVAL 100
00036 #define G_USE_GCAPS
00037
00039     GCLIB_DLL_EXPORTED void GCALL GSleep(unsigned int timeout_ms);
00049     GCLIB_DLL_EXPORTED GReturn GCALL GVersion(GCStringOut ver, GSize ver_len);
00074     GCLIB_DLL_EXPORTED GReturn GCALL GAddresses(GCStringOut addresses, GSize addresses_len);
00107     GCLIB_DLL_EXPORTED GReturn GCALL GInfo(GCon g, GCStringOut info, GSize info_len);
00125     GCLIB_DLL_EXPORTED GReturn GCALL GTimeout(GCon g, short timeout_ms);
00138     GCLIB_DLL_EXPORTED GReturn GCALL GCmd(GCon g, GCStringIn command);
00153     GCLIB_DLL_EXPORTED GReturn GCALL GCmdT(GCon g, GCStringIn command, GCStringOut trimmed_response,
      GSize response_len, GCStringOut* front);
00172     GCLIB_DLL_EXPORTED GReturn GCALL GCmdI(GCon g, GCStringIn command, int* value);
00188     GCLIB_DLL_EXPORTED GReturn GCALL GCmdD(GCon g, GCStringIn command, double* value);
00204     GCLIB_DLL_EXPORTED GReturn GCALL GWaitForBool(GCon g, GCStringIn predicate, int trials);
00227     GCLIB_DLL_EXPORTED GReturn GCALL GMotionComplete(GCon g, GCStringIn axes);
00245     GCLIB_DLL_EXPORTED GReturn GCALL GRecordRate(GCon g, double period_ms);
00260     GCLIB_DLL_EXPORTED GReturn GCALL GProgramDownloadFile(GCon g, GCStringIn file_path, GCStringIn
      preprocessor);
00274     GCLIB_DLL_EXPORTED GReturn GCALL GProgramUploadFile(GCon g, GCStringIn file_path);
00287     GCLIB_DLL_EXPORTED GReturn GCALL GArrayDownloadFile(GCon g, GCStringIn file_path);
00302     GCLIB_DLL_EXPORTED GReturn GCALL GArrayUploadFile(GCon g, GCStringIn file_path, GCStringIn names);
00318     GCLIB_DLL_EXPORTED GReturn GCALL GIpRequests(GCStringOut requests, GSize requests_len);
00347     GCLIB_DLL_EXPORTED GReturn GCALL GSetServer(GCStringIn server_name);
00366     GCLIB_DLL_EXPORTED GReturn GCALL GListServers(GCStringOut servers, GSize servers_len);
00386     GCLIB_DLL_EXPORTED GReturn GCALL GPublishServer(GCStringIn name, GOption publish, GOption save);
00413     GCLIB_DLL_EXPORTED GReturn GCALL GServerStatus(GCStringOut status, GSize status_len);
00437     GCLIB_DLL_EXPORTED GReturn GCALL GRemoteConnections(GCStringOut connections, GSize
      connections_length);
00460     GCLIB_DLL_EXPORTED GReturn GCALL GAssign(GCStringIn ip, GCStringIn mac);
00486     GCLIB_DLL_EXPORTED void GCALL GError(GReturn rc, GCStringOut error, GSize error_len);
00496 #ifndef G_OMIT_GSETUPDDOWNLOADFILE
00498     GCLIB_DLL_EXPORTED GReturn GCALL GSetupDownloadFile(GCon g, GCStringIn file_path, GOption options,
      GCStringOut info, GSize info_len);
00557 #endif //G_OMIT_GSETUPDDOWNLOADFILE
00558
00559 #ifdef GCLIB_LOGGING
00560     void LogMsg(const char* msg);
00561 #endif
00562
00563 #ifdef __cplusplus
00564 } //extern "C"
00565 #endif
```

```
00566
00567 #endif //I_007AD0AF_C956_4B96_ADE2_AD04FAFFEE99
```

14.7 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

14.7.1 Typedef Documentation

14.7.1.1 UB

```
using UB = System.Byte
```

Definition at line 34 of file gclib.cs.

14.7.1.2 UW

```
using UW = System.UInt16
```

Definition at line 35 of file gclib.cs.

14.7.1.3 SW

```
using SW = System.Int16
```

Definition at line 36 of file gclib.cs.

14.7.1.4 SL

```
using SL = System.Int32
```

Definition at line 37 of file gclib.cs.

14.7.1.5 UL

```
using UL = System.UInt32
```

Definition at line 38 of file gclib.cs.

14.7.1.6 GReturn

```
using GReturn = System.Int32
```

Definition at line 40 of file gclib.cs.

14.7.1.7 GCon

```
using GCon = System.IntPtr
```

Definition at line 41 of file gclib.cs.

14.7.1.8 GSize

```
using GSize = System.UInt32
```

Definition at line 42 of file gclib.cs.

14.7.1.9 GOption

```
using GOption = System.Int32
```

Definition at line 43 of file gclib.cs.

14.7.1.10 GCStringOut

```
using GCStringOut = System.Text.StringBuilder
```

Definition at line 44 of file gclib.cs.

14.7.1.11 GCStringIn

```
using GCStringIn = System.String
```

Definition at line 45 of file gclib.cs.

14.7.1.12 GBufOut

```
using GBufOut = System.Text.StringBuilder
```

Definition at line 46 of file gclib.cs.

14.7.1.13 GBufIn

```
using GBufIn = System.String
```

Definition at line 47 of file gclib.cs.

14.7.1.14 GStatus

```
using GStatus = System.Byte
```

Definition at line 48 of file gclib.cs.

14.8 gclib.cs

Go to the documentation of this file.

```
00001
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
```

```
    public void GArrayDownloadFile(string Path)
    {
        GReturn rc = DllGArrayDownloadFile(ConnectionHandle_, Path);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
    }

    public List<double> GArrayUpload(string array_name, Int16 first = -1, Int16 last = -1)
    {
        List<double> array = new List<double>();
        GReturn rc = DllGArrayUpload(ConnectionHandle_, array_name, first, last, 1, Buffer_,
BufferSize_);
        //1 = comma delim
        if (!(rc == G_NO_ERROR))
        {
            throw new System.Exception(GError(rc));
        }
        char[] delimiters = new char[] { ',' };

        string[] tokens = Buffer_.ToString().Split(delimiters,
System.StringSplitOptions.RemoveEmptyEntries);
        double value = 0;
        foreach (string s in tokens)
        {
            if (!double.TryParse(s, out value))
            {
                throw new System.Exception("Could not parse " + s + " into double");
            }
            array.Add(value);
        }
        return array;
    }

    public void GArrayUploadFile(string Path, string Names)
    {
        GReturn rc = DllGArrayUploadFile(ConnectionHandle_, Path, Names);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
    }

    public void GAssign(string ip, string mac)
    {
        GReturn rc = DllGAssign(ip, mac);
        if (!(rc == G_NO_ERROR))
        {
            throw new System.Exception(GError(rc));
        }
    }

    public void GClose()
    {
        if(ConnectionStatus_)
            DllGClose(ConnectionHandle_);

        ConnectionStatus_ = false;
    }

    public string GCommand(string Command, bool Trim = true)
    {
        GSize bytes_read = 0;
        GReturn rc = DllGCommand(ConnectionHandle_, Command, Buffer_, BufferSize_, ref bytes_read);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
        if (Trim)
        {
            string r = Buffer_.ToString();
            if (r[r.Count() - 1] == ':')
            {
                r = r.Substring(0, r.Count() - 1);
            }
            return r.Trim();
        }
        else
        {
            return Buffer_.ToString();
        }
    }

    public Int16 GCmdI(string Command)
    {
        return Convert.ToInt16(Convert.ToDouble(GCommand(Command)));
```

```
    }

    public double GCmdD(string Command)
    {
        return Convert.ToDouble(GCommand(Command));
    }

    private string GError(GReturn ErrorCode)
    {
        DllGError(ErrorCode, Buffer_, BufferSize_);
        return ErrorCode.ToString() + " " + Buffer_.ToString() + "\n";
    }

    public void GFirmwareDownload(string filepath)
    {
        GReturn rc = DllGFirmwareDownload(ConnectionHandle_, filepath);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
    }

    public string GInfo()
    {
        GReturn rc = DllGInfo(ConnectionHandle_, Buffer_, BufferSize_);
        if (rc == G_NO_ERROR)
        {
            return Buffer_.ToString();
        }
        else
        {
            return "";
        }
    }

    public byte GInterrupt()
    {
        byte StatusByte = 0;
        GReturn rc = DllGInterrupt(ConnectionHandle_, ref StatusByte);
        if (rc == G_NO_ERROR)
        {
            return StatusByte;
        }
        else
        {
            return 0;
        }
    }

    public string[] GIpRequests()
    {
        GReturn rc = DllGIpRequests(Buffer_, BufferSize_);
        if (rc == G_NO_ERROR)
        {
            char[] delimiters = new char[] { '\r', '\n' };
            return Buffer_.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
        }
        else
            return new string[0];

    }

    public string GMessage()
    {
        GReturn rc = DllGMessage(ConnectionHandle_, Buffer_, BufferSize_);
        if (rc == G_NO_ERROR)
        {
            return Buffer_.ToString();
        }
        else
        {
            return "";
        }
    }

    public void GMotionComplete(string axes)
    {
        GReturn rc = DllGMotionComplete(ConnectionHandle_, axes);
        if (!(rc == G_NO_ERROR))
        {
            throw new System.Exception(GError(rc));
        }
    }

    public void GOpen(string address)
    {
        GReturn rc = DllGOpen(address, ref ConnectionHandle_);
```

```
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
        else
            ConnectionStatus_ = true;
    }

    public void GProgramDownload(string program, string preprocessor = "")
    {
        GReturn rc = DllGProgramDownload(ConnectionHandle_, program, preprocessor);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
    }

    public void GProgramDownloadFile(string file_path, string preprocessor = "")
    {
        GReturn rc = DllGProgramDownloadFile(ConnectionHandle_, file_path, preprocessor);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
    }

    public string GProgramUpload()
    {
        GReturn rc = DllGProgramUpload(ConnectionHandle_, Buffer_, BufferSize_);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
        else
        {
            return Buffer_.ToString();
        }
    }

    public void GProgramUploadFile(string file_path)
    {
        GReturn rc = DllGProgramUploadFile(ConnectionHandle_, file_path);
        if (rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
    }

    public byte[] GRead()
    {
        GSize read = 0;
        GReturn rc = DllGRead(ConnectionHandle_, ByteArray_, (uint)ByteArray_.Length, ref read);
        if (rc == G_NO_ERROR)
        {
            byte[] ReturnData = new byte[read];
            //create an array of the correct size
            for (GSize i = 0; i <= read - 1; i++)
            {
                ReturnData[i] = ByteArray_[i];
                //copy over the data
            }
            return ReturnData;
        }
        else
            return new byte[0];
    }

    public T GRecord<T>(bool async)
            where T : struct, GDataRecord
    {
        ushort method = 0;
        if (async)
            method = 1;

        GReturn rc = DllGRecord(ConnectionHandle_, ByteArray_, method);
        if (rc != G_NO_ERROR)
            throw new System.Exception(GError(rc));

        return ByteArrayToDataRecord<T>(ByteArray_);
    }

    public void GRecordRate(double period_ms)
    {
        GReturn rc = DllGRecordRate(ConnectionHandle_, period_ms);
        if (!(rc == G_NO_ERROR))
        {
            throw new System.Exception(GError(rc));
```

```
        }
    }

    public void GTimeout(Int16 timeout_ms)
    {
        DllGTimeout(ConnectionHandle_, timeout_ms);
    }

    public string GVersion()
    {
        GReturn rc = DllGVersion(Buffer_, BufferSize_);
        if (rc == G_NO_ERROR)
        {
            return Buffer_.ToString();
        }
        else
        {
            return "";
        }
    }

    public void GWrite(string buffer)
    {
        GReturn rc = DllGWrite(ConnectionHandle_, buffer, (uint) buffer.Length);
        if (!(rc == G_NO_ERROR))
        {
            throw new System.Exception(GError(rc));
        }
    }

    public string[] GSetupDownloadFile(string path, Int32 options)
    {
        GReturn rc = DllGSetupDownloadFile(ConnectionHandle_, path, options, Buffer_, BufferSize_);

        string ret_buf = Buffer_.ToString();
        ret_buf = ret_buf.Replace("\r\n", ", ");

        if (options != 0)
        {
            if (rc != G_NO_ERROR)
            {
                throw new System.Exception(GError(rc));
            }
        }
        else
        {
            ret_buf += "\"options\"," + rc + "\n";
        }

        char[] delimiters = new char[] { '\n' };
        return ret_buf.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
    }

    public void GSetServer(string server_name)
    {
        GReturn rc = DllGSetServer(server_name);

        if(rc != G_NO_ERROR)
        {
            throw new System.Exception(GError(rc));
        }
    }

    public string GServerStatus()
    {
        GReturn rc = DllGServerStatus(Buffer_, BufferSize_);

        if(rc == G_NO_ERROR)
            return Buffer_.ToString();
        else
            throw new System.Exception(GError(rc));
    }

    public string[] GListServers()
    {
        GReturn rc = DllGListServers(Buffer_, BufferSize_);

        if(rc == G_NO_ERROR)
        {
            char[] delimiters = new char[] { '\n' };
            return Buffer_.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
        }
        else
        {
            throw new System.Exception(GError(rc));
        }
    }
```

```
    public void GPublishServer(string server_name, bool publish, bool save)
    {
        GReturn rc = DllGPublishServer(server_name, Convert.ToInt16(publish), Convert.ToInt16(save));

        if (rc != G_NO_ERROR)
            throw new System.Exception(GError(rc));
    }

    public string[] GRemoteConnections()
    {
        GReturn rc = DllGRemoteConnections(Buffer_, BufferSize_);

        if(rc == G_NO_ERROR)
        {
            char[] delimiters = new char[] { '\n' };
            return Buffer_.ToString().Split(delimiters, System.StringSplitOptions.RemoveEmptyEntries);
        }
        else
        {
            throw new System.Exception(GError(rc));
        }
    }

    #endregion

    #region "DLL Imports"
    //Import declarations for gclib functions. Functions are private to this class and are prefixed with "Dll" to distinguish from C# functions.

    #region "Error Codes"
    private const Int32 G_NO_ERROR = 0;
    #endregion

    [DllImport("gclibo", EntryPoint = "GAddresses", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGAddresses(GCStringOut addresses, GSize addresses_len);

    [DllImport("gclib", EntryPoint = "GArrayDownload", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGArrayDownload(GCon g, GCStringIn array_name, GOption first, GOption last, GCStringIn buffer);

    [DllImport("gclibo", EntryPoint = "GArrayDownloadFile", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGArrayDownloadFile(GCon g, GCStringIn path);

    [DllImport("gclib", EntryPoint = "GArrayUpload", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGArrayUpload(GCon g, GCStringIn array_name, GOption first, GOption last, GOption delim, GCStringOut buffer, GSize bufferLength);

    [DllImport("gclibo", EntryPoint = "GArrayUploadFile", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGArrayUploadFile(GCon g, GCStringIn path, GCStringIn names);

    [DllImport("gclibo", EntryPoint = "GAssign", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGAssign(GCStringIn ip, GCStringIn mac);

    [DllImport("gclib", EntryPoint = "GClose", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGClose(GCon g);

    [DllImport("gclib", EntryPoint = "GCommand", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGCommand(GCon g, GCStringIn command, GCStringOut buffer, GSize bufferLength, ref GSize bytesReturned);

    [DllImport("gclibo", EntryPoint = "GError", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern void DllGError(GReturn error_code, GCStringOut errorbuf, GSize error_len);

    [DllImport("gclib", EntryPoint = "GFirmwareDownload", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGFirmwareDownload(GCon g, GCStringIn path);

    [DllImport("gclibo", EntryPoint = "GInfo", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGInfo(GCon g, GCStringOut info, GSize infoLength);

    [DllImport("gclib", EntryPoint = "GInterrupt", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGInterrupt(GCon g, ref GStatus status_byte);

    [DllImport("gclibo", EntryPoint = "GIpRequests", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
```

```
    private static extern GReturn DllGIpRequests(GCStringOut requests, GSize requests_len);

    [DllImport("gclib", EntryPoint = "GMessage", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGMessage(GCon g, GCStringOut buffer, GSize bufferLength);

    [DllImport("gclibo", EntryPoint = "GMotionComplete", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGMotionComplete(GCon g, GCStringIn axes);

    [DllImport("gclib", EntryPoint = "GOpen", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGOpen(GCStringIn address, ref GCon g);

    [DllImport("gclib", EntryPoint = "GProgramDownload", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGProgramDownload(GCon g, GCStringIn program, GCStringIn preprocessor);

    [DllImport("gclibo", EntryPoint = "GProgramDownloadFile", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGProgramDownloadFile(GCon g, GCStringIn path, GCStringIn preprocessor);

    [DllImport("gclib", EntryPoint = "GProgramUpload", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGProgramUpload(GCon g, GCStringOut buffer, GSize bufferLength);

    [DllImport("gclibo", EntryPoint = "GProgramUploadFile", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGProgramUploadFile(GCon g, GCStringIn path);

    [DllImport("gclib", EntryPoint = "GRead", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGRead(GCon g, byte[] record, GSize buffer_len, ref GSize bytes_read);

    [DllImport("gclib", EntryPoint = "GRecord", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGRecord(GCon g, byte[] record, GOption method);

    [DllImport("gclibo", EntryPoint = "GRecordRate", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGRecordRate(GCon g, double period_ms);

    [DllImport("gclibo", EntryPoint = "GTimeout", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern void DllGTimeout(GCon g, GOption timeoutMs);

    [DllImport("gclibo", EntryPoint = "GVersion", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGVersion(GCStringOut ver, GSize ver_len);

    [DllImport("gclib", EntryPoint = "GWrite", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGWrite(GCon g, GCStringIn buffer, GSize buffer_len);

    [DllImport("gclibo", EntryPoint = "GSetupDownloadFile", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGSetupDownloadFile(GCon g, GCStringIn file_path, GOption options, GCStringOut info, GSize info_len);

    [DllImport("gclibo", EntryPoint = "GSetServer", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGSetServer(GCStringIn server_name);

    [DllImport("gclibo", EntryPoint = "GServerStatus", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGServerStatus(GCStringOut status, GSize status_len);

    [DllImport("gclibo", EntryPoint = "GListServers", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGListServers(GCStringOut servers, GSize servers_len);

    [DllImport("gclibo", EntryPoint = "GPublishServer", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGPublishServer(GCStringIn name, GOption publish, GOption save);

    [DllImport("gclibo", EntryPoint = "GRemoteConnections", CharSet = CharSet.Ansi, CallingConvention = CallingConvention.StdCall)]
    private static extern GReturn DllGRemoteConnections(GCStringOut connections, GSize connections_len);

    #endregion

    #region "Data Record"

```

```
    private T ByteArrayToDataRecord<T>(byte[] array)
        where T : struct, GDataRecord
    {
        GCHandle handle = GCHandle.Alloc(array, GCHandleType.Pinned);
        try
        {
            return Marshal.PtrToStructure<T>(handle.AddrOfPinnedObject());
        }
        catch
        {
            return default(T);
        }
        finally
        {
            handle.Free();
        }
    }

    public interface GDataRecord
    {
        byte[] byte_array();
    }

    private static byte[] StructToByteArray(GDataRecord record) //Returns this DataRecord as a byte[]
    {
        int size = Marshal.SizeOf(record);
        byte[] arr = new byte[size];

        IntPtr ptr = Marshal.AllocHGlobal(size);
        Marshal.StructureToPtr(record, ptr, true);
        Marshal.Copy(ptr, arr, 0, size);
        Marshal.FreeHGlobal(ptr);
        return arr;
    }


    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord4000 : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }
        /*Offset   type name        description*/

        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;

        /*06*/      public UB   input_bank_0;
        /*07*/      public UB   input_bank_1;
        /*08*/      public UB   input_bank_2;
        /*09*/      public UB   input_bank_3;
        /*10*/      public UB   input_bank_4;
        /*11*/      public UB   input_bank_5;
        /*12*/      public UB   input_bank_6;
        /*13*/      public UB   input_bank_7;
        /*14*/      public UB   input_bank_8;
        /*15*/      public UB   input_bank_9;

        /*16*/      public UB   output_bank_0;
        /*17*/      public UB   output_bank_1;
        /*18*/      public UB   output_bank_2;
        /*19*/      public UB   output_bank_3;
        /*20*/      public UB   output_bank_4;
        /*21*/      public UB   output_bank_5;
        /*22*/      public UB   output_bank_6;
        /*23*/      public UB   output_bank_7;
        /*24*/      public UB   output_bank_8;
        /*25*/      public UB   output_bank_9;

        /*26-27*/   public SW  reserved_0;
        /*28-29*/   public SW   reserved_2;
        /*30-31*/   public SW   reserved_4;
        /*32-33*/   public SW   reserved_6;
        /*34-35*/   public SW   reserved_8;
        /*36-37*/   public SW   reserved_10;
        /*38-39*/   public SW   reserved_12;
        /*40-41*/   public SW   reserved_14;

        /*42*/      public UB   ethernet_status_a;
        /*43*/      public UB   ethernet_status_b;
        /*44*/      public UB   ethernet_status_c;
        /*45*/      public UB   ethernet_status_d;
        /*46*/      public UB   ethernet_status_e;
        /*47*/      public UB   ethernet_status_f;
        /*48*/      public UB   ethernet_status_g;
```

```
        /*49*/      public UB   ethernet_status_h;

        /*50*/      public UB   error_code;
        /*51*/      public UB   thread_status;
        /*52-55*/   public UL   amplifier_status;

        /*56-59*/   public UL   contour_segment_count;
        /*60-61*/   public UW   contour_buffer_available;

        /*62-63*/   public UW   s_plane_segment_count;
        /*64-65*/   public UW   s_plane_move_status;
        /*66-69*/   public SL   s_distance;
        /*70-71*/   public UW   s_plane_buffer_available;

        /*72-73*/   public UW   t_plane_segment_count;
        /*74-75*/   public UW   t_plane_move_status;
        /*76-79*/   public SL   t_distance;
        /*80-81*/   public UW   t_plane_buffer_available;

        /*82-83*/   public UW   axis_a_status;
        /*84*/      public UB   axis_a_switches;
        /*85*/      public UB   axis_a_stop_code;
        /*86-89*/   public SL   axis_a_reference_position;
        /*90-93*/   public SL   axis_a_motor_position;
        /*94-97*/   public SL   axis_a_position_error;
        /*98-101*/  public SL   axis_a_aux_position;
        /*102-105*/ public SL   axis_a_velocity;
        /*106-109*/ public SL   axis_a_torque;
        /*110-111*/ public UW  axis_a_analog_in;
        /*112*/     public UB   axis_a_halls;
        /*113*/     public UB   axis_a_reserved;
        /*114-117*/ public SL   axis_a_variable;

        /*118-119*/ public UW   axis_b_status;
        /*120*/     public UB   axis_b_switches;
        /*121*/     public UB   axis_b_stop_code;
        /*122-125*/ public SL   axis_b_reference_position;
        /*126-129*/ public SL   axis_b_motor_position;
        /*130-133*/ public SL   axis_b_position_error;
        /*134-137*/ public SL   axis_b_aux_position;
        /*138-141*/ public SL   axis_b_velocity;
        /*142-145*/ public SL   axis_b_torque;
        /*146-147*/ public UW  axis_b_analog_in;
        /*148*/     public UB   axis_b_halls;
        /*149*/     public UB   axis_b_reserved;
        /*150-153*/ public SL   axis_b_variable;

        /*154-155*/ public UW   axis_c_status;
        /*156*/     public UB   axis_c_switches;
        /*157*/     public UB   axis_c_stop_code;
        /*158-161*/ public SL   axis_c_reference_position;
        /*162-165*/ public SL   axis_c_motor_position;
        /*166-169*/ public SL   axis_c_position_error;
        /*170-173*/ public SL   axis_c_aux_position;
        /*174-177*/ public SL   axis_c_velocity;
        /*178-181*/ public SL   axis_c_torque;
        /*182-183*/ public UW   axis_c_analog_in;
        /*184*/     public UB   axis_c_halls;
        /*185*/     public UB   axis_c_reserved;
        /*186-189*/ public SL   axis_c_variable;

        /*190-191*/ public UW   axis_d_status;
        /*192*/     public UB   axis_d_switches;
        /*193*/     public UB   axis_d_stop_code;
        /*194-197*/ public SL   axis_d_reference_position;
        /*198-201*/ public SL   axis_d_motor_position;
        /*202-205*/ public SL   axis_d_position_error;
        /*206-209*/ public SL   axis_d_aux_position;
        /*210-213*/ public SL   axis_d_velocity;
        /*214-217*/ public SL   axis_d_torque;
        /*218-219*/ public UW  axis_d_analog_in;
        /*220*/     public UB   axis_d_halls;
        /*221*/     public UB   axis_d_reserved;
        /*222-225*/ public SL   axis_d_variable;

        /*226-227*/ public UW   axis_e_status;
        /*228*/     public UB   axis_e_switches;
        /*229*/     public UB   axis_e_stop_code;
        /*230-233*/ public SL   axis_e_reference_position;
        /*234-237*/ public SL   axis_e_motor_position;
        /*238-241*/ public SL   axis_e_position_error;
        /*242-245*/ public SL   axis_e_aux_position;
        /*246-249*/ public SL   axis_e_velocity;
        /*250-253*/ public SL   axis_e_torque;
        /*254-255*/ public UW  axis_e_analog_in;
        /*256*/     public UB   axis_e_halls;
        /*257*/     public UB   axis_e_reserved;
```

```
        /*258-261*/ public SL   axis_e_variable;

        /*262-263*/ public UW   axis_f_status;
        /*264*/     public UB   axis_f_switches;
        /*265*/     public UB   axis_f_stop_code;
        /*266-269*/ public SL   axis_f_reference_position;
        /*270-273*/ public SL   axis_f_motor_position;
        /*274-277*/ public SL   axis_f_position_error;
        /*278-281*/ public SL   axis_f_aux_position;
        /*282-285*/ public SL   axis_f_velocity;
        /*286-289*/ public SL   axis_f_torque;
        /*290-291*/ public UW   axis_f_analog_in;
        /*292*/     public UB   axis_f_halls;
        /*293*/     public UB   axis_f_reserved;
        /*294-297*/ public SL   axis_f_variable;

        /*298-299*/ public UW   axis_g_status;
        /*300*/     public UB   axis_g_switches;
        /*301*/     public UB   axis_g_stop_code;
        /*302-305*/ public SL   axis_g_reference_position;
        /*306-309*/ public SL   axis_g_motor_position;
        /*310-313*/ public SL   axis_g_position_error;
        /*314-317*/ public SL   axis_g_aux_position;
        /*318-321*/ public SL   axis_g_velocity;
        /*322-325*/ public SL   axis_g_torque;
        /*326-327*/ public UW  axis_g_analog_in;
        /*328*/     public UB   axis_g_halls;
        /*329*/     public UB   axis_g_reserved;
        /*330-333*/ public SL   axis_g_variable;

        /*334-335*/ public UW   axis_h_status;
        /*336*/     public UB   axis_h_switches;
        /*337*/     public UB   axis_h_stop_code;
        /*338-341*/ public SL   axis_h_reference_position;
        /*342-345*/ public SL   axis_h_motor_position;
        /*346-349*/ public SL   axis_h_position_error;
        /*350-353*/ public SL   axis_h_aux_position;
        /*354-357*/ public SL   axis_h_velocity;
        /*358-361*/ public SL   axis_h_torque;
        /*362-363*/ public UW  axis_h_analog_in;
        /*364*/     public UB   axis_h_halls;
        /*365*/     public UB   axis_h_reserved;
        /*366-369*/ public SL   axis_h_variable;
    }; //DataRecord4000

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord52000 : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }
        /*Offset   type name        description*/

        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;

        /*06*/      public UB   input_bank_0;
        /*07*/      public UB   input_bank_1;
        /*08*/      public UB   input_bank_2;
        /*09*/      public UB   input_bank_3;
        /*10*/      public UB   input_bank_4;
        /*11*/      public UB   input_bank_5;
        /*12*/      public UB   input_bank_6;
        /*13*/      public UB   input_bank_7;
        /*14*/      public UB   input_bank_8;
        /*15*/      public UB   input_bank_9;

        /*16*/      public UB   output_bank_0;
        /*17*/      public UB   output_bank_1;
        /*18*/      public UB   output_bank_2;
        /*19*/      public UB   output_bank_3;
        /*20*/      public UB   output_bank_4;
        /*21*/      public UB   output_bank_5;
        /*22*/      public UB   output_bank_6;
        /*23*/      public UB   output_bank_7;
        /*24*/      public UB   output_bank_8;
        /*25*/      public UB   output_bank_9;

        /*26-27*/   public SW  reserved_0;
        /*28-29*/   public SW   reserved_2;
        /*30-31*/   public SW   reserved_4;
        /*32-33*/   public SW   reserved_6;
        /*34-35*/   public SW   reserved_8;
        /*36-37*/   public SW   reserved_10;
        /*38-39*/   public SW   reserved_12;
```

```
        /*40*/      public UB  ethercat_bank;
        /*41*/      public UB   reserved_14;

        /*42*/      public UB   ethernet_status_a;
        /*43*/      public UB   ethernet_status_b;
        /*44*/      public UB   ethernet_status_c;
        /*45*/      public UB   ethernet_status_d;
        /*46*/      public UB   ethernet_status_e;
        /*47*/      public UB   ethernet_status_f;
        /*48*/      public UB   ethernet_status_g;
        /*49*/      public UB   ethernet_status_h;

        /*50*/      public UB   error_code;
        /*51*/      public UB   thread_status;
        /*52-55*/   public UL   amplifier_status;

        /*56-59*/   public UL   contour_segment_count;
        /*60-61*/   public UW   contour_buffer_available;

        /*62-63*/   public UW   s_plane_segment_count;
        /*64-65*/   public UW   s_plane_move_status;
        /*66-69*/   public SL   s_distance;
        /*70-71*/   public UW   s_plane_buffer_available;

        /*72-73*/   public UW   t_plane_segment_count;
        /*74-75*/   public UW   t_plane_move_status;
        /*76-79*/   public SL   t_distance;
        /*80-81*/   public UW   t_plane_buffer_available;

        /*82-83*/   public UW   axis_a_status;
        /*84*/      public UB   axis_a_switches;
        /*85*/      public UB   axis_a_stop_code;
        /*86-89*/   public SL   axis_a_reference_position;
        /*90-93*/   public SL   axis_a_motor_position;
        /*94-97*/   public SL   axis_a_position_error;
        /*98-101*/  public SL   axis_a_aux_position;
        /*102-105*/ public SL   axis_a_velocity;
        /*106-109*/ public SL   axis_a_torque;
        /*110-111*/ public UW  axis_a_analog_in;
        /*112*/     public UB   axis_a_halls;
        /*113*/     public UB   axis_a_reserved;
        /*114-117*/ public SL   axis_a_variable;

        /*118-119*/ public UW   axis_b_status;
        /*120*/     public UB   axis_b_switches;
        /*121*/     public UB   axis_b_stop_code;
        /*122-125*/ public SL   axis_b_reference_position;
        /*126-129*/ public SL   axis_b_motor_position;
        /*130-133*/ public SL   axis_b_position_error;
        /*134-137*/ public SL   axis_b_aux_position;
        /*138-141*/ public SL   axis_b_velocity;
        /*142-145*/ public SL   axis_b_torque;
        /*146-147*/ public UW  axis_b_analog_in;
        /*148*/     public UB   axis_b_halls;
        /*149*/     public UB   axis_b_reserved;
        /*150-153*/ public SL   axis_b_variable;

        /*154-155*/ public UW   axis_c_status;
        /*156*/     public UB   axis_c_switches;
        /*157*/     public UB   axis_c_stop_code;
        /*158-161*/ public SL   axis_c_reference_position;
        /*162-165*/ public SL   axis_c_motor_position;
        /*166-169*/ public SL   axis_c_position_error;
        /*170-173*/ public SL   axis_c_aux_position;
        /*174-177*/ public SL   axis_c_velocity;
        /*178-181*/ public SL   axis_c_torque;
        /*182-183*/ public UW   axis_c_analog_in;
        /*184*/     public UB   axis_c_halls;
        /*185*/     public UB   axis_c_reserved;
        /*186-189*/ public SL   axis_c_variable;

        /*190-191*/ public UW   axis_d_status;
        /*192*/     public UB   axis_d_switches;
        /*193*/     public UB   axis_d_stop_code;
        /*194-197*/ public SL   axis_d_reference_position;
        /*198-201*/ public SL   axis_d_motor_position;
        /*202-205*/ public SL   axis_d_position_error;
        /*206-209*/ public SL   axis_d_aux_position;
        /*210-213*/ public SL   axis_d_velocity;
        /*214-217*/ public SL   axis_d_torque;
        /*218-219*/ public UW  axis_d_analog_in;
        /*220*/     public UB   axis_d_halls;
        /*221*/     public UB   axis_d_reserved;
        /*222-225*/ public SL   axis_d_variable;

        /*226-227*/ public UW   axis_e_status;
        /*228*/     public UB   axis_e_switches;
```

```
        /*229*/     public UB   axis_e_stop_code;
        /*230-233*/ public SL   axis_e_reference_position;
        /*234-237*/ public SL   axis_e_motor_position;
        /*238-241*/ public SL   axis_e_position_error;
        /*242-245*/ public SL   axis_e_aux_position;
        /*246-249*/ public SL   axis_e_velocity;
        /*250-253*/ public SL   axis_e_torque;
        /*254-255*/ public UW  axis_e_analog_in;
        /*256*/     public UB   axis_e_halls;
        /*257*/     public UB   axis_e_reserved;
        /*258-261*/ public SL   axis_e_variable;

        /*262-263*/ public UW   axis_f_status;
        /*264*/     public UB   axis_f_switches;
        /*265*/     public UB   axis_f_stop_code;
        /*266-269*/ public SL   axis_f_reference_position;
        /*270-273*/ public SL   axis_f_motor_position;
        /*274-277*/ public SL   axis_f_position_error;
        /*278-281*/ public SL   axis_f_aux_position;
        /*282-285*/ public SL   axis_f_velocity;
        /*286-289*/ public SL   axis_f_torque;
        /*290-291*/ public UW   axis_f_analog_in;
        /*292*/     public UB   axis_f_halls;
        /*293*/     public UB   axis_f_reserved;
        /*294-297*/ public SL   axis_f_variable;

        /*298-299*/ public UW   axis_g_status;
        /*300*/     public UB   axis_g_switches;
        /*301*/     public UB   axis_g_stop_code;
        /*302-305*/ public SL   axis_g_reference_position;
        /*306-309*/ public SL   axis_g_motor_position;
        /*310-313*/ public SL   axis_g_position_error;
        /*314-317*/ public SL   axis_g_aux_position;
        /*318-321*/ public SL   axis_g_velocity;
        /*322-325*/ public SL   axis_g_torque;
        /*326-327*/ public UW  axis_g_analog_in;
        /*328*/     public UB   axis_g_halls;
        /*329*/     public UB   axis_g_reserved;
        /*330-333*/ public SL   axis_g_variable;

        /*334-335*/ public UW   axis_h_status;
        /*336*/     public UB   axis_h_switches;
        /*337*/     public UB   axis_h_stop_code;
        /*338-341*/ public SL   axis_h_reference_position;
        /*342-345*/ public SL   axis_h_motor_position;
        /*346-349*/ public SL   axis_h_position_error;
        /*350-353*/ public SL   axis_h_aux_position;
        /*354-357*/ public SL   axis_h_velocity;
        /*358-361*/ public SL   axis_h_torque;
        /*362-363*/ public UW  axis_h_analog_in;
        /*364*/     public UB   axis_h_halls;
        /*365*/     public UB   axis_h_reserved;
        /*366-369*/ public SL   axis_h_variable;
    }; //DataRecord52000


    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord1806 : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }
        /*Offset   type name        description*/

        /*00-01*/   public UW   sample_number;

        /*02*/      public UB   input_bank_0;
        /*03*/      public UB   input_bank_1;
        /*04*/      public UB   input_bank_2;
        /*05*/      public UB   input_bank_3;
        /*06*/      public UB   input_bank_4;
        /*07*/      public UB   input_bank_5;
        /*08*/      public UB   input_bank_6;
        /*09*/      public UB   input_bank_7;
        /*10*/      public UB   input_bank_8;
        /*11*/      public UB   input_bank_9;

        /*12*/      public UB   output_bank_0;
        /*13*/      public UB   output_bank_1;
        /*14*/      public UB   output_bank_2;
        /*15*/      public UB   output_bank_3;
        /*16*/      public UB   output_bank_4;
        /*17*/      public UB   output_bank_5;
        /*18*/      public UB   output_bank_6;
        /*19*/      public UB   output_bank_7;
        /*20*/      public UB   output_bank_8;
        /*21*/      public UB   output_bank_9;

        /*22-23*/   public SW  reserved_0;
```

```
        /*24-25*/   public SW   reserved_2;
        /*26-27*/   public SW   reserved_4;
        /*28-29*/   public SW   reserved_6;
        /*30-31*/   public SW   reserved_8;
        /*32-33*/   public SW   reserved_10;
        /*34-35*/   public SW   reserved_12;
        /*36-37*/   public SW   reserved_14;

        /*38*/      public UB   reserved_16;
        /*39*/      public UB   reserved_17;
        /*40*/      public UB   reserved_18;
        /*41*/      public UB   reserved_19;
        /*42*/      public UB   reserved_20;
        /*43*/      public UB   reserved_21;
        /*44*/      public UB   reserved_22;
        /*45*/      public UB   reserved_23;

        /*46*/      public UB   error_code;
        /*47*/      public UB   thread_status;
        /*48-51*/   public UL   reserved_24;

        /*52-55*/   public UL   contour_segment_count;
        /*56-57*/   public UW   contour_buffer_available;

        /*58-59*/   public UW   s_plane_segment_count;
        /*60-61*/   public UW   s_plane_move_status;
        /*62-65*/   public SL   s_distance;
        /*66-67*/   public UW   s_plane_buffer_available;

        /*68-69*/   public UW   t_plane_segment_count;
        /*70-71*/   public UW   t_plane_move_status;
        /*72-75*/   public SL   t_distance;
        /*76-77*/   public UW   t_plane_buffer_available;

        /*78-79*/   public UW   axis_a_status;
        /*80*/      public UB   axis_a_switches;
        /*81*/      public UB   axis_a_stop_code;
        /*82-85*/   public SL   axis_a_reference_position;
        /*86-89*/   public SL   axis_a_motor_position;
        /*90-93*/   public SL   axis_a_position_error;
        /*94-97*/   public SL   axis_a_aux_position;
        /*98-101*/  public SL   axis_a_velocity;
        /*102-105*/ public SL   axis_a_torque;
        /*106-107*/ public UW  axis_a_analog_in;
        /*108*/     public UB   axis_a_reserved_0;
        /*109*/     public UB   axis_a_reserved_1;
        /*110-113*/ public SL   axis_a_variable;

        /*114-115*/ public UW   axis_b_status;
        /*116*/     public UB   axis_b_switches;
        /*117*/     public UB   axis_b_stop_code;
        /*118-121*/ public SL   axis_b_reference_position;
        /*122-125*/ public SL   axis_b_motor_position;
        /*126-129*/ public SL   axis_b_position_error;
        /*130-133*/ public SL   axis_b_aux_position;
        /*134-137*/ public SL   axis_b_velocity;
        /*138-141*/ public SL   axis_b_torque;
        /*142-143*/ public UW  axis_b_analog_in;
        /*144*/     public UB   axis_b_reserved_0;
        /*145*/     public UB   axis_b_reserved_1;
        /*146-149*/ public SL   axis_b_variable;

        /*150-151*/ public UW   axis_c_status;
        /*152*/     public UB   axis_c_switches;
        /*153*/     public UB   axis_c_stop_code;
        /*154-157*/ public SL   axis_c_reference_position;
        /*158-161*/ public SL   axis_c_motor_position;
        /*162-165*/ public SL   axis_c_position_error;
        /*166-169*/ public SL   axis_c_aux_position;
        /*170-173*/ public SL   axis_c_velocity;
        /*174-177*/ public SL   axis_c_torque;
        /*178-179*/ public UW   axis_c_analog_in;
        /*180*/     public UB   axis_c_reserved_0;
        /*181*/     public UB   axis_c_reserved_1;
        /*182-185*/ public SL   axis_c_variable;

        /*186-187*/ public UW   axis_d_status;
        /*188*/     public UB   axis_d_switches;
        /*189*/     public UB   axis_d_stop_code;
        /*190-193*/ public SL   axis_d_reference_position;
        /*194-197*/ public SL   axis_d_motor_position;
        /*198-201*/ public SL   axis_d_position_error;
        /*202-205*/ public SL   axis_d_aux_position;
        /*206-209*/ public SL   axis_d_velocity;
        /*210-213*/ public SL   axis_d_torque;
        /*214-215*/ public UW  axis_d_analog_in;
        /*216*/     public UB   axis_d_reserved_0;
```

```
        /*217*/     public UB   axis_d_reserved_1;
        /*218-221*/ public SL   axis_d_variable;

        /*222-223*/ public UW   axis_e_status;
        /*224*/     public UB   axis_e_switches;
        /*225*/     public UB   axis_e_stop_code;
        /*226-229*/ public SL   axis_e_reference_position;
        /*230-233*/ public SL   axis_e_motor_position;
        /*234-237*/ public SL   axis_e_position_error;
        /*238-241*/ public SL   axis_e_aux_position;
        /*242-245*/ public SL   axis_e_velocity;
        /*256-249*/ public SL   axis_e_torque;
        /*250-251*/ public UW  axis_e_analog_in;
        /*252*/     public UB   axis_e_reserved_0;
        /*253*/     public UB   axis_e_reserved_1;
        /*254-257*/ public SL   axis_e_variable;

        /*258-259*/ public UW   axis_f_status;
        /*260*/     public UB   axis_f_switches;
        /*261*/     public UB   axis_f_stop_code;
        /*262-265*/ public SL   axis_f_reference_position;
        /*266-269*/ public SL   axis_f_motor_position;
        /*270-273*/ public SL   axis_f_position_error;
        /*274-277*/ public SL   axis_f_aux_position;
        /*278-281*/ public SL   axis_f_velocity;
        /*282-285*/ public SL   axis_f_torque;
        /*286-287*/ public UW   axis_f_analog_in;
        /*288*/     public UB   axis_f_reserved_0;
        /*289*/     public UB   axis_f_reserved_1;
        /*290-293*/ public SL   axis_f_variable;

        /*294-295*/ public UW   axis_g_status;
        /*296*/     public UB   axis_g_switches;
        /*297*/     public UB   axis_g_stop_code;
        /*298-301*/ public SL   axis_g_reference_position;
        /*302-305*/ public SL   axis_g_motor_position;
        /*306-309*/ public SL   axis_g_position_error;
        /*310-313*/ public SL   axis_g_aux_position;
        /*314-317*/ public SL   axis_g_velocity;
        /*318-321*/ public SL   axis_g_torque;
        /*322-323*/ public UW  axis_g_analog_in;
        /*324*/     public UB   axis_g_reserved_0;
        /*325*/     public UB   axis_g_reserved_1;
        /*326-329*/ public SL   axis_g_variable;

        /*330-331*/ public UW   axis_h_status;
        /*332*/     public UB   axis_h_switches;
        /*333*/     public UB   axis_h_stop_code;
        /*334-337*/ public SL   axis_h_reference_position;
        /*338-341*/ public SL   axis_h_motor_position;
        /*342-345*/ public SL   axis_h_position_error;
        /*346-349*/ public SL   axis_h_aux_position;
        /*350-353*/ public SL   axis_h_velocity;
        /*354-357*/ public SL   axis_h_torque;
        /*358-359*/ public UW  axis_h_analog_in;
        /*360*/     public UB   axis_h_reserved_0;
        /*361*/     public UB   axis_h_reserved_1;
        /*362-365*/ public SL   axis_h_variable;
    }; //DataRecord1806

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord2103 : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }

        /*Offset   type name        description*/

        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;

        /*06*/      public UB   input_bank_0;
        /*07*/      public UB   input_bank_1;
        /*08*/      public UB   input_bank_2;
        /*09*/      public UB   input_bank_3;
        /*10*/      public UB   input_bank_4;
        /*11*/      public UB   input_bank_5;
        /*12*/      public UB   input_bank_6;
        /*13*/      public UB   input_bank_7;
        /*14*/      public UB   input_bank_8;
        /*15*/      public UB   input_bank_9;

        /*16*/      public UB   output_bank_0;
        /*17*/      public UB   output_bank_1;
```

```
        /*18*/      public UB   output_bank_2;
        /*19*/      public UB   output_bank_3;
        /*20*/      public UB   output_bank_4;
        /*21*/      public UB   output_bank_5;
        /*22*/      public UB   output_bank_6;
        /*23*/      public UB   output_bank_7;
        /*24*/      public UB   output_bank_8;
        /*25*/      public UB   output_bank_9;

        /*26*/      public UB   error_code;
        /*27*/      public UB   general_status;

        /*28-29*/   public UW   s_plane_segment_count;
        /*30-31*/   public UW   s_plane_move_status;
        /*32-35*/   public SL   s_distance;

        /*36-37*/   public UW   t_plane_segment_count;
        /*38-39*/   public UW   t_plane_move_status;
        /*40-43*/   public SL   t_distance;

        /*44-45*/   public UW   axis_a_status;
        /*46*/      public UB   axis_a_switches;
        /*47*/      public UB   axis_a_stop_code;
        /*48-51*/   public SL   axis_a_reference_position;
        /*52-55*/   public SL   axis_a_motor_position;
        /*56-59*/   public SL   axis_a_position_error;
        /*60-63*/   public SL   axis_a_aux_position;
        /*64-67*/   public SL   axis_a_velocity;
        /*68-69*/   public SW   axis_a_torque;
        /*70-71*/   public UW  axis_a_analog_in;

        /*72-73*/   public UW   axis_b_status;
        /*74*/      public UB   axis_b_switches;
        /*75*/      public UB   axis_b_stop_code;
        /*76-79*/   public SL   axis_b_reference_position;
        /*80-83*/   public SL   axis_b_motor_position;
        /*84-87*/   public SL   axis_b_position_error;
        /*88-91*/   public SL   axis_b_aux_position;
        /*92-95*/   public SL   axis_b_velocity;
        /*96-97*/   public SW   axis_b_torque;
        /*98-99*/   public UW  axis_b_analog_in;

        /*100-101*/ public UW   axis_c_status;
        /*102*/     public UB   axis_c_switches;
        /*103*/     public UB   axis_c_stop_code;
        /*104-107*/ public SL   axis_c_reference_position;
        /*108-111*/ public SL   axis_c_motor_position;
        /*112-115*/ public SL   axis_c_position_error;
        /*116-119*/ public SL   axis_c_aux_position;
        /*120-123*/ public SL   axis_c_velocity;
        /*124-125*/ public SW   axis_c_torque;
        /*126-127*/ public UW   axis_c_analog_in;

        /*128-129*/ public UW   axis_d_status;
        /*130*/     public UB   axis_d_switches;
        /*131*/     public UB   axis_d_stop_code;
        /*132-135*/ public SL   axis_d_reference_position;
        /*136-139*/ public SL   axis_d_motor_position;
        /*140-143*/ public SL   axis_d_position_error;
        /*144-147*/ public SL   axis_d_aux_position;
        /*148-151*/ public SL   axis_d_velocity;
        /*152-153*/ public SW   axis_d_torque;
        /*154-155*/ public UW  axis_d_analog_in;

        /*156-157*/ public UW   axis_e_status;
        /*158*/     public UB   axis_e_switches;
        /*159*/     public UB   axis_e_stop_code;
        /*160-163*/ public SL   axis_e_reference_position;
        /*164-167*/ public SL   axis_e_motor_position;
        /*168-171*/ public SL   axis_e_position_error;
        /*172-175*/ public SL   axis_e_aux_position;
        /*176-179*/ public SL   axis_e_velocity;
        /*180-181*/ public SW   axis_e_torque;
        /*182-183*/ public UW  axis_e_analog_in;

        /*184-185*/ public UW   axis_f_status;
        /*186*/     public UB   axis_f_switches;
        /*187*/     public UB   axis_f_stop_code;
        /*188-191*/ public SL   axis_f_reference_position;
        /*192-195*/ public SL   axis_f_motor_position;
        /*196-199*/ public SL   axis_f_position_error;
        /*200-203*/ public SL   axis_f_aux_position;
        /*204-207*/ public SL   axis_f_velocity;
        /*208-209*/ public SW   axis_f_torque;
        /*210-211*/ public UW   axis_f_analog_in;

        /*212-213*/ public UW   axis_g_status;
```

```
        /*214*/     public UB   axis_g_switches;
        /*215*/     public UB   axis_g_stop_code;
        /*216-219*/ public SL   axis_g_reference_position;
        /*220-223*/ public SL   axis_g_motor_position;
        /*224-227*/ public SL   axis_g_position_error;
        /*228-231*/ public SL   axis_g_aux_position;
        /*232-235*/ public SL   axis_g_velocity;
        /*236-237*/ public SW   axis_g_torque;
        /*238-239*/ public UW  axis_g_analog_in;

        /*240-241*/ public UW   axis_h_status;
        /*242*/     public UB   axis_h_switches;
        /*243*/     public UB   axis_h_stop_code;
        /*244-247*/ public SL   axis_h_reference_position;
        /*248-251*/ public SL   axis_h_motor_position;
        /*252-255*/ public SL   axis_h_position_error;
        /*256-259*/ public SL   axis_h_aux_position;
        /*260-263*/ public SL   axis_h_velocity;
        /*264-265*/ public SW   axis_h_torque;
        /*266-267*/ public UW  axis_h_analog_in;
    }; //DataRecord2013

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord1802 : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }

        /*Offset   type name        description*/

        /*00-01*/   public UW   sample_number;

        /*02*/      public UB   input_bank_0;
        /*03*/      public UB   input_bank_1;
        /*04*/      public UB   input_bank_2;
        /*05*/      public UB   input_bank_3;
        /*06*/      public UB   input_bank_4;
        /*07*/      public UB   input_bank_5;
        /*08*/      public UB   input_bank_6;
        /*09*/      public UB   input_bank_7;
        /*10*/      public UB   input_bank_8;
        /*11*/      public UB   input_bank_9;

        /*12*/      public UB   output_bank_0;
        /*13*/      public UB   output_bank_1;
        /*14*/      public UB   output_bank_2;
        /*15*/      public UB   output_bank_3;
        /*16*/      public UB   output_bank_4;
        /*17*/      public UB   output_bank_5;
        /*18*/      public UB   output_bank_6;
        /*19*/      public UB   output_bank_7;
        /*20*/      public UB   output_bank_8;
        /*21*/      public UB   output_bank_9;

        /*22*/      public UB   error_code;
        /*23*/      public UB   general_status;

        /*24-25*/   public UW   s_plane_segment_count;
        /*26-27*/   public UW   s_plane_move_status;
        /*28-31*/   public SL   s_distance;

        /*32-33*/   public UW   t_plane_segment_count;
        /*34-35*/   public UW   t_plane_move_status;
        /*36-39*/   public SL   t_distance;

        /*40-41*/   public UW   axis_a_status;
        /*42*/      public UB   axis_a_switches;
        /*43*/      public UB   axis_a_stop_code;
        /*44-47*/   public SL   axis_a_reference_position;
        /*48-51*/   public SL   axis_a_motor_position;
        /*52-55*/   public SL   axis_a_position_error;
        /*56-59*/   public SL   axis_a_aux_position;
        /*60-63*/   public SL   axis_a_velocity;
        /*64-65*/   public SW   axis_a_torque;
        /*66*/      public UB   axis_a_reserved_0;
        /*67*/      public UB   axis_a_reserved_1;

        /*68-69*/   public UW   axis_b_status;
        /*70*/      public UB   axis_b_switches;
        /*71*/      public UB   axis_b_stop_code;
        /*72-75*/   public SL   axis_b_reference_position;
        /*76-79*/   public SL   axis_b_motor_position;
        /*80-83*/   public SL   axis_b_position_error;
        /*84-87*/   public SL   axis_b_aux_position;
        /*88-91*/   public SL   axis_b_velocity;
        /*92-93*/   public SW   axis_b_torque;
        /*94*/      public UB   axis_b_reserved_0;
        /*95*/      public UB   axis_b_reserved_1;
```

```
        /*96-97*/   public UW   axis_c_status;
        /*98*/      public UB   axis_c_switches;
        /*99*/      public UB   axis_c_stop_code;
        /*100-103*/ public SL   axis_c_reference_position;
        /*104-107*/ public SL   axis_c_motor_position;
        /*108-111*/ public SL   axis_c_position_error;
        /*112-115*/ public SL   axis_c_aux_position;
        /*116-119*/ public SL   axis_c_velocity;
        /*120-121*/ public SW   axis_c_torque;
        /*122*/     public UB   axis_c_reserved_0;
        /*123*/     public UB   axis_c_reserved_1;

        /*124-125*/ public UW   axis_d_status;
        /*126*/     public UB   axis_d_switches;
        /*127*/     public UB   axis_d_stop_code;
        /*128-131*/ public SL   axis_d_reference_position;
        /*132-135*/ public SL   axis_d_motor_position;
        /*136-139*/ public SL   axis_d_position_error;
        /*140-143*/ public SL   axis_d_aux_position;
        /*144-147*/ public SL   axis_d_velocity;
        /*148-149*/ public SW   axis_d_torque;
        /*150*/     public UB   axis_d_reserved_0;
        /*151*/     public UB   axis_d_reserved_1;

    }; //DataRecord1802

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord30000 : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }

        /*Offset   type name        description*/

        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;

        /*06*/      public UB   input_bank_0;
        /*07*/      public UB   input_bank_1;

        /*08*/      public UB   output_bank_0;
        /*09*/      public UB   output_bank_1;

        /*10*/      public UB   error_code;
        /*11*/      public UB   thread_status;

        /*12-13*/   public UW   input_analog_2;

        /*14-15*/   public UW   output_analog_1;
        /*16-17*/   public UW   output_analog_2;

        /*18-21*/   public UL   amplifier_status;

        /*22-25*/   public UL   contour_segment_count;
        /*26-27*/   public UW   contour_buffer_available;

        /*28-29*/   public UW   s_plane_segment_count;
        /*30-31*/   public UW   s_plane_move_status;
        /*32-35*/   public SL   s_distance;
        /*36-37*/   public UW   s_plane_buffer_available;

        /*38-39*/   public UW   axis_a_status;
        /*40*/      public UB   axis_a_switches;
        /*41*/      public UB   axis_a_stop_code;
        /*42-45*/   public SL   axis_a_reference_position;
        /*46-49*/   public SL   axis_a_motor_position;
        /*50-53*/   public SL   axis_a_position_error;
        /*54-57*/   public SL   axis_a_aux_position;
        /*58-61*/   public SL   axis_a_velocity;
        /*62-65*/   public SL   axis_a_torque;
        /*66-67*/   public UW  axis_a_analog_in;
        /*68*/      public UB   axis_a_halls;
        /*69*/      public UB   axis_a_reserved;
        /*70-73*/   public SL   axis_a_variable;
    }; //DataRecord30000

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord47000_ENC : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }

        /*Offset   type name        description*/

```

```
        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;
        /*06*/      public UB   error_code;
        /*07*/      public UB   general_status;

        /*08-09*/   public UW   output_analog_0;
        /*10-11*/   public UW   output_analog_1;
        /*12-13*/   public UW   output_analog_2;
        /*14-15*/   public UW   output_analog_3;
        /*16-17*/   public UW   output_analog_4;
        /*18-19*/   public UW   output_analog_5;
        /*20-21*/   public UW   output_analog_6;
        /*22-23*/   public UW   output_analog_7;

        /*24-25*/   public UW   input_analog_0;
        /*26-27*/   public UW   input_analog_1;
        /*28-29*/   public UW   input_analog_2;
        /*30-31*/   public UW   input_analog_3;
        /*32-33*/   public UW   input_analog_4;
        /*34-35*/   public UW   input_analog_5;
        /*36-37*/   public UW   input_analog_6;
        /*38-39*/   public UW   input_analog_7;

        /*40-41*/   public UW   output_bank_0;

        /*42-43*/   public UW   input_bank_0;

        /*44-47*/   public UL   pulse_count_0;
        /*48-51*/   public SL   zc_variable;
        /*52-55*/   public SL   zd_variable;

        /*56-59*/   public SL   encoder_0;
        /*60-63*/   public SL   encoder_1;
        /*64-67*/   public SL   encoder_2;
        /*68-71*/   public SL   encoder_3;

    }; //GDataRecord47000_ENC

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord47300_ENC : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }

        /*Offset   type name        description*/

        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;
        /*06*/      public UB   error_code;
        /*07*/      public UB   general_status;

        /*08-09*/   public UW   output_analog_0;
        /*10-11*/   public UW   output_analog_1;
        /*12-13*/   public UW   output_analog_2;
        /*14-15*/   public UW   output_analog_3;
        /*16-17*/   public UW   output_analog_4;
        /*18-19*/   public UW   output_analog_5;
        /*20-21*/   public UW   output_analog_6;
        /*22-23*/   public UW   output_analog_7;

        /*24-25*/   public UW   input_analog_0;
        /*26-27*/   public UW   input_analog_1;
        /*28-29*/   public UW   input_analog_2;
        /*30-31*/   public UW   input_analog_3;
        /*32-33*/   public UW   input_analog_4;
        /*34-35*/   public UW   input_analog_5;
        /*36-37*/   public UW   input_analog_6;
        /*38-39*/   public UW   input_analog_7;

        /*40-41*/   public UW   output_bank_0;
        /*42-43*/   public UW   output_bank_1;

        /*44-45*/   public UW   input_bank_0;
        /*46-47*/   public UW   input_bank_1;

        /*48-51*/   public UL   pulse_count_0;
        /*52-55*/   public SL   zc_variable;
        /*56-59*/   public SL   zd_variable;

        /*60-63*/   public SL   encoder_0;
```

```
        /*64-67*/   public SL   encoder_1;
        /*68-71*/   public SL   encoder_2;
        /*72-75*/   public SL   encoder_3;

    }; //GDataRecord47300_ENC

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord47300_24EX : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }

        /*Offset   type name        description*/

        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;
        /*06*/      public UB   error_code;
        /*07*/      public UB   general_status;

        /*08-09*/   public UW   output_analog_0;
        /*10-11*/   public UW   output_analog_1;
        /*12-13*/   public UW   output_analog_2;
        /*14-15*/   public UW   output_analog_3;
        /*16-17*/   public UW   output_analog_4;
        /*18-19*/   public UW   output_analog_5;
        /*20-21*/   public UW   output_analog_6;
        /*22-23*/   public UW   output_analog_7;

        /*24-25*/   public UW   input_analog_0;
        /*26-27*/   public UW   input_analog_1;
        /*28-29*/   public UW   input_analog_2;
        /*30-31*/   public UW   input_analog_3;
        /*32-33*/   public UW   input_analog_4;
        /*34-35*/   public UW   input_analog_5;
        /*36-37*/   public UW   input_analog_6;
        /*38-39*/   public UW   input_analog_7;

        /*40-41*/   public UW   output_bank_0;
        /*42-43*/   public UW   output_bank_1;

        /*44-45*/   public UW   input_bank_0;
        /*46-47*/   public UW   input_bank_1;

        /*48-51*/   public UL   pulse_count_0;
        /*52-55*/   public SL   zc_variable;
        /*56-59*/   public SL   zd_variable;

        /*60-61*/   public UW output_bank_2;
        /*62-63*/   public UW output_back_3;

        /*64-65*/   public UW input_bank_2;
        /*66-67*/   public UW input_bank_3;

    }; //GDataRecord47300_24EX

    [StructLayout(LayoutKind.Sequential, Pack=1)]
    public struct GDataRecord47162 : GDataRecord
    {
        public byte[] byte_array() { return StructToByteArray(this); }
        /*Offset   type name        description*/

        /*00*/      public UB   header_0;
        /*01*/      public UB   header_1;
        /*02*/      public UB   header_2;
        /*03*/      public UB   header_3;

        /*04-05*/   public UW   sample_number;
        /*06*/      public UB   error_code;
        /*07*/      public UB   general_status;

        /*08-09*/   public UW   output_analog_0;
        /*10-11*/   public UW   output_analog_1;
        /*12-13*/   public UW   output_analog_2;
        /*14-15*/   public UW   output_analog_3;
        /*16-17*/   public UW   output_analog_4;
        /*18-19*/   public UW   output_analog_5;
        /*20-21*/   public UW   output_analog_6;
        /*22-23*/   public UW   output_analog_7;

        /*24-25*/   public UW   input_analog_0;
        /*26-27*/   public UW   input_analog_1;
        /*28-29*/   public UW   input_analog_2;
        /*30-31*/   public UW   input_analog_3;
        /*32-33*/   public UW   input_analog_4;
```

```
        /*34-35*/   public UW   input_analog_5;
        /*36-37*/   public UW   input_analog_6;
        /*38-39*/   public UW   input_analog_7;

        /*40*/      public UB   output_byte_0;
        /*41*/      public UB   output_byte_1;
        /*42*/      public UB   output_byte_2;

        /*43*/      public UB   input_byte_0;
        /*44*/      public UB   input_byte_1;
        /*45*/      public UB   input_byte_2;
        /*46*/      public UB   input_byte_3;
        /*47*/      public UB   input_byte_4;

        /*48-51*/   public UL   pulse_count_0;
        /*52-55*/   public SL   zc_variable;
        /*56-59*/   public SL   zd_variable;

        /*60-63*/   public SL   encoder_0;
        /*64-67*/   public SL   encoder_1;
        /*68-71*/   public SL   encoder_2;
        /*72-75*/   public SL   encoder_3;

    }; //GDataRecord47162

    #endregion
}
```

14.9 GclibJava.java File Reference

`import java.nio.charset.Charset;`

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.

14.9.1 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.

14.10 GclibJava.java

Go to the documentation of this file.

```
00001
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     {
```

```
    }

    @Override
    protected void finalize() throws Throwable
    {
        try {
            if (connected)
                GClose();
        } finally {
            super.finalize();
        }
    }

    // ---------------------------------------------------------------------------
    // JNA for gclib
    // ---------------------------------------------------------------------------
    interface Gclib extends Library {
        Gclib INSTANCE = (Gclib)
                Native.loadLibrary("gclib",
                        Gclib.class);
        /*
        Limit calls to one at a time
        Warning: gclibo library calls gclib. Therefore, calls to Gclib and
        Gclibo interfaces should not be concurrent.
        */
        Gclib SYNC_INSTANCE = (Gclib)
                Native.synchronizedLibrary(INSTANCE);

        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);
    }

    // ---------------------------------------------------------------------------
    // gclib functions
    // ---------------------------------------------------------------------------

    public void GArrayDownload(String arrayName, List<Double> data) throws GclibJavaException
    {
        String buf = new String();
        buf = data.stream().map((d) -> d.toString() + ",").reduce(buf, String::concat);

        ec(Gclib.SYNC_INSTANCE.GArrayDownload(gclibHandle, arrayName, -1, -1,
                buf.substring(0, buf.length() - 1)));//remove trailing comma
    }

    public void GArrayDownload(String arrayName, List<Double> data, int first, int last) throws GclibJavaException
    {
        String buf = new String();
        buf = data.stream().map((d) -> d.toString() + ",").reduce(buf, String::concat);

        ec(Gclib.SYNC_INSTANCE.GArrayDownload(gclibHandle, arrayName, first, last,
                buf.substring(0, buf.length() - 1)));//remove trailing comma
    }

    public List<Double> GArrayUpload(String arrayName) throws GclibJavaException
    {
        ec(Gclib.SYNC_INSTANCE.GArrayUpload(gclibHandle, arrayName, -1, -1, 1, trafficBuffer, trafficBuffer.length));
        String[] elements = cstringToString(trafficBuffer).split(", ");
        List<Double> doubleList = new ArrayList();
        for (String s : elements)
        {
            try
            {
                doubleList.add(Double.parseDouble(s));
            }
            catch (NumberFormatException e)
            {
                throw new GclibJavaException( -10002, e.getMessage()); //G_BAD_VALUE_RANGE
            }
        }
        return doubleList;
    }

    public List<Double> GArrayUpload(String arrayName, int first, int last) throws GclibJavaException
    {
```

```
        ec(Gclib.SYNC_INSTANCE.GArrayUpload(gclibHandle, arrayName, first, last, 1, trafficBuffer, trafficBuffer.length));
        String[] elements = cstringToString(trafficBuffer).split(", ");
        List<Double> doubleList = new ArrayList();
        for (String s : elements)
        {
            try
            {
                doubleList.add(Double.parseDouble(s));
            }
            catch (NumberFormatException e)
            {
                throw new GclibJavaException( -10002, e.getMessage()); //G_BAD_VALUE_RANGE
            }
        }
        return doubleList;
    }

    public void GClose()
    {
        Gclib.SYNC_INSTANCE.GClose(gclibHandle);
        connected = false;
    }

    public String GCommand(String command) throws GclibJavaException
    {
        IntByReference ptrInt = new IntByReference(); //for bytes read
        ec(Gclib.SYNC_INSTANCE.GCommand(gclibHandle, command, trafficBuffer, trafficBuffer.length, ptrInt));
        String response = cstringToString(trafficBuffer);

        int index = response.lastIndexOf("\r\n:");
        if (index > 0)
            response = response.substring(0, index); //trim trailing crlf:

        return response;
    }

    public void GFirmwareDownload(String filePath) throws GclibJavaException
    {
        ec(Gclib.SYNC_INSTANCE.GFirmwareDownload(gclibHandle, filePath));
    }

    public byte GInterrupt() throws GclibJavaException
    {
        ByteByReference statusByte = new ByteByReference();
        ec(Gclib.SYNC_INSTANCE.GInterrupt(gclibHandle, statusByte));
        return statusByte.getValue();
    }

    public String GMessage() throws GclibJavaException
    {
        ec(Gclib.SYNC_INSTANCE.GMessage(gclibHandle, trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    public void GOpen(String address) throws GclibJavaException
    {
        if (connected)
            GClose();

        PointerByReference ptrRef = new PointerByReference();
        ec(Gclib.SYNC_INSTANCE.GOpen(address, ptrRef));
        gclibHandle = ptrRef.getValue();
        connected = true;
    }

    public void GProgramDownload(String program, String preprocessor) throws GclibJavaException
    {
        ec(Gclib.SYNC_INSTANCE.GProgramDownload(gclibHandle, program, preprocessor));
    }
    public void GProgramDownload(String program) throws GclibJavaException
    {
        GProgramDownload(program, "");
    }

    public String GProgramUpload() throws GclibJavaException
    {
        ec(Gclib.SYNC_INSTANCE.GProgramUpload(gclibHandle, trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    // ---------------------------------------------------------------------------
    // JNA for gclibo
    // ---------------------------------------------------------------------------

    interface Gclibo extends Library {
```

```
        Gclibo INSTANCE = (Gclibo)
            Native.loadLibrary("gclibo",
                               Gclibo.class);
       /*
        Limit calls to one at a time
        Warning: gclibo library calls gclib. Therefore, calls to Gclib and
        Gclibo interfaces should not be concurrent.
        */
        Gclibo SYNC_INSTANCE = (Gclibo)
                Native.synchronizedLibrary(INSTANCE);

        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);
    }

    // ---------------------------------------------------------------------------
    // gclibo functions
    // ---------------------------------------------------------------------------

    public String GAddresses() throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GAddresses(trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    public void GArrayDownloadFile(String filePath) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GArrayDownloadFile(gclibHandle, filePath));
    }

    public void GArrayUploadFile(String filePath, String names) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GArrayUploadFile(gclibHandle, filePath, names));
    }

    public void GArrayUploadFile(String filePath) throws GclibJavaException
    {
        GArrayUploadFile(filePath, "");
    }

    public void GAssign(String ipAddress, String macAddress) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GAssign(ipAddress, macAddress));
    }

    public String GInfo() throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GInfo(gclibHandle, trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    public String GIpRequests() throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GIpRequests(trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    public void GProgramDownloadFile(String filePath, String preprocessor) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GProgramDownloadFile(gclibHandle, filePath, preprocessor));
    }

    public void GProgramDownloadFile(String filePath) throws GclibJavaException
    {
        GProgramDownloadFile(filePath, "");
    }

    public void GProgramUploadFile(String filePath) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GProgramUploadFile(gclibHandle, filePath));
    }

```

```
    public void GSleep(int timeout_ms)
    {
        Gclibo.SYNC_INSTANCE.GSleep(timeout_ms);
    }

    public void GTimeout(short timeout_ms) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GTimeout(gclibHandle, timeout_ms));
    }

    public String GVersion() throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GVersion(trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    public void GSetServer(String server_name) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GSetServer(server_name));
    }

    public String GServerStatus() throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GServerStatus(trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    public String GListServers() throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GListServers(trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    public void GPublishServer(String server_name, int publish, int save) throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GPublishServer(server_name, publish, save));
    }

    public String GRemoteConnections() throws GclibJavaException
    {
        ec(Gclibo.SYNC_INSTANCE.GRemoteConnections(trafficBuffer, trafficBuffer.length));
        return cstringToString(trafficBuffer);
    }

    // ---------------------------------------------------------------------------
    // Helper functions
    // ---------------------------------------------------------------------------

    //convert gclib's C strings to Java strings.
    String cstringToString(byte[] cbuf)
    {
        Charset charset = Charset.forName("UTF-8");
        int i;
        for (i = 0; i < cbuf.length && cbuf[i] != 0; i++){}//search for gclib's null terminator
        return new String(cbuf, 0, i, charset);
    }

    //Error checker for gclib return code
    void ec(int returnCode) throws GclibJavaException
    {
        if (returnCode != 0)
        {
            //lookup human-readable string
            Gclibo.SYNC_INSTANCE.GError(returnCode, trafficBuffer, trafficBuffer.length);
            throw new GclibJavaException(returnCode, cstringToString(trafficBuffer));
        }
    }

}
```

14.11 GclibJavaException.java File Reference

Classes

- class gclibjava.GclibJavaException

14.12 GclibJavaException.java

Go to the documentation of this file.

```
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 }
```

14.13 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.

Functions

- gclib._rc (return_code)

  Checks return codes from gclib and raises a python error if result is exceptional.

14.13.1 Function Documentation

14.13.1.1 _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.

14.14 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'))
```

```
        setattr(_gclibo, 'GArrayUploadFile', getattr(_gclibo, '_GArrayUploadFile@12'))
        setattr(_gclibo, 'GAssign', getattr(_gclibo, '_GAssign@8'))
        setattr(_gclibo, 'GError', getattr(_gclibo, '_GError@12'))
        setattr(_gclibo, 'GInfo', getattr(_gclibo, '_GInfo@12'))
        setattr(_gclibo, 'GIpRequests', getattr(_gclibo, '_GIpRequests@8'))
        setattr(_gclibo, 'GMotionComplete', getattr(_gclibo, '_GMotionComplete@8'))
        setattr(_gclibo, 'GProgramDownloadFile', getattr(_gclibo, '_GProgramDownloadFile@12'))
        setattr(_gclibo, 'GSleep', getattr(_gclibo, '_GSleep@4'))
        setattr(_gclibo, 'GProgramUploadFile', getattr(_gclibo, '_GProgramUploadFile@8'))
        setattr(_gclibo, 'GTimeout', getattr(_gclibo, '_GTimeout@8'))
        setattr(_gclibo, 'GVersion', getattr(_gclibo, '_GVersion@8'))
        setattr(_gclibo, 'GSetupDownloadFile', getattr(_gclibo, '_GSetupDownloadFile@20'))
        setattr(_gclibo, 'GServerStatus', getattr(_gclibo, '_GServerStatus@8'))
        setattr(_gclibo, 'GSetServer', getattr(_gclibo, '_GSetServer@4'))
        setattr(_gclibo, 'GListServers', getattr(_gclibo, '_GListServers@8'))
        setattr(_gclibo, 'GPublishServer', getattr(_gclibo, '_GPublishServer@12'))
        setattr(_gclibo, 'GRemoteConnections', getattr(_gclibo, '_GRemoteConnections@8'))

elif platform.system() == 'Linux':
    cdll.LoadLibrary("libgclib.so.2")
    _gclib = CDLL("libgclib.so.2")
    cdll.LoadLibrary("libgclibo.so.2")
    _gclibo = CDLL("libgclibo.so.2")

elif platform.system() == 'Darwin': #OSX
    _gclib_path = '/Applications/gclib/dylib/gclib.0.dylib'
    _gclibo_path = '/Applications/gclib/dylib/gclibo.0.dylib'
    cdll.LoadLibrary(_gclib_path)
    _gclib = CDLL(_gclib_path)
    cdll.LoadLibrary(_gclibo_path)
    _gclibo = CDLL(_gclibo_path)



# Python "typedefs"
_GReturn = c_int #type for a return code
_GCon = c_void_p #type for a Galil connection handle
_GCon_ptr = POINTER(_GCon) #used for argtypes declaration
_GSize = c_ulong #type for a Galil size variable
_GSize_ptr = POINTER(_GSize) #used for argtypes declaration
_GCStringIn = c_char_p #char*. In C it's const.
_GCStringOut = c_char_p #char*
_GOption = c_int #type for option variables, e.g.    GArrayDownload
_GStatus = c_ubyte #type for interrupt status bytes
_GStatus_ptr = POINTER(_GStatus) #used for argtypes declaration

#Define arguments and result type (if not C int type)
#gclib calls
_gclib.GArrayDownload.argtypes = [_GCon, _GCStringIn, _GOption, _GOption, _GCStringIn]
_gclib.GArrayUpload.argtypes = [_GCon, _GCStringIn, _GOption, _GOption, _GOption, _GCStringOut,
    _GSize]
_gclib.GClose.argtypes = [_GCon]
_gclib.GCommand.argtypes = [_GCon, _GCStringIn, _GCStringOut, _GSize, _GSize_ptr]
_gclib.GFirmwareDownload.argtypes = [_GCon, _GCStringIn]
_gclib.GInterrupt.argtypes = [_GCon, _GStatus_ptr]
_gclib.GMessage.argtypes = [_GCon, _GCStringOut, _GSize]
_gclib.GOpen.argtypes = [_GCStringIn, _GCon_ptr]
_gclib.GProgramDownload.argtypes = [_GCon, _GCStringIn, _GCStringIn]
_gclib.GProgramUpload.argtypes = [_GCon, _GCStringOut, _GSize]
#gclibo calls (open source component/convenience functions)
_gclibo.GAddresses.argtypes = [_GCStringOut, _GSize]
_gclibo.GArrayDownloadFile.argtypes = [_GCon, _GCStringIn]
_gclibo.GArrayUploadFile.argtypes = [_GCon, _GCStringIn, _GCStringIn]
_gclibo.GAssign.argtypes = [_GCStringIn, _GCStringIn]
_gclibo.GError.argtypes = [_GReturn, _GCStringOut, _GSize]
_gclibo.GError.restype    = None
_gclibo.GError.argtypes = [_GCon, _GCStringOut, _GSize]
_gclibo.GIpRequests.argtypes = [_GCStringOut, _GSize]
_gclibo.GMotionComplete.argtypes = [_GCon, _GCStringIn]
_gclibo.GProgramDownloadFile.argtypes = [_GCon, _GCStringIn, _GCStringIn]
_gclibo.GSleep.argtypes = [c_uint]
_gclibo.GSleep.restype    = None
_gclibo.GProgramUploadFile.argtypes = [_GCon, _GCStringIn]
_gclibo.GTimeout.argtypes = [_GCon, c_int]
_gclibo.GVersion.argtypes = [_GCStringOut, _GSize]
_gclibo.GServerStatus.argtypes = [_GCStringOut, _GSize]
_gclibo.GSetServer.argtypes = [_GCStringIn]
_gclibo.GListServers.argtypes = [_GCStringOut, _GSize]
_gclibo.GPublishServer.argtypes = [_GCStringIn, _GOption, _GOption]
_gclibo.GRemoteConnections.argtypes = [_GCStringOut, _GSize]
_gclibo.GSetupDownloadFile.argtypes = [_GCon, _GCStringIn, _GOption, _GCStringOut, _GSize]

#Set up some constants
_enc = "ASCII" #byte encoding for going between python strings and c strings.
_buf_size = 500000 #size of response buffer. Big enough to fit entire 4000 program via UL/LS, or 24000
    elements of array data.
_error_buf = create_string_buffer(128)    #buffer for retrieving error code descriptions.
```

```python

def _rc(return_code):
    """Checks return codes from gclib and raises a python error if result is exceptional."""
    if return_code != 0:
        _gclibo.GError(return_code, _error_buf, 128) #Get the library's error description
        raise GclibError(str(_error_buf.value.decode(_enc)))
    return

class GclibError(Exception):
    """@ingroup python
    Error class for non-zero gclib return codes.
    """
    pass

class py:
    """
    Represents a single Python connection to a Galil Controller or PLC.
    """

    def __init__(self):
        """Constructor for the Connection class. Initializes gclib's handle and read buffer."""
        self._gcon = _GCon(0) #handle to connection
        self._buf = create_string_buffer(_buf_size)
        self._timeout = 5000
        return

    def __del__(self):
        """Destructor for the Connection class. Ensures close gets called to release Galil resource (Sockets, Kernel Driver, Com Port, etc)."""
        self.GClose()
        return

    def _cc(self):
        """Checks if connection is established, throws error if not."""
        if self._gcon.value == None:
            _rc(-1201) #G_CONNECTION_NOT_ESTABLISHED

    def GOpen(self, address):
        """@ingroup py_connection
        Opens a connection a galil controller.
        See the gclib docs for address string formatting.
        """
        c_address = _GCStringIn(address.encode(_enc))
        _rc(_gclib.GOpen(c_address, byref(self._gcon)))
        return


    def GClose(self):
        """@ingroup py_connection
        Closes a connection to a Galil Controller.
        """
        if self._gcon.value != None:
            _rc(_gclib.GClose(self._gcon))
            self._gcon = _GCon(0)
        return


    def GCommand(self, command):
        """@ingroup py_controller
        Performs a command-and-response transaction on the connection.
        Trims the response.
        """
        self._cc()
        c_command = _GCStringIn(command.encode(_enc))
        _rc(_gclib.GCommand(self._gcon, c_command, self._buf, _buf_size, None))
        response = str(self._buf.value.decode(_enc))
        return response[:-3].strip() # trim trailing /r/n: and leading space


    def GSleep(self, val):
        """@ingroup python
        Provides a blocking sleep call which can be useful for timing-based chores.
        """
        _gclibo.GSleep(val)
        return


    def GVersion(self):
        """@ingroup python
        Provides the gclib version number. Please include the output of this function on all support cases.
        """
        _rc(_gclibo.GVersion(self._buf, _buf_size))
        return "py." + str(self._buf.value.decode(_enc))

    def GServerStatus(self):
        """@ingroup py_remote
```

```
        Provides the local server name and whether it is published to the local network.
        """
        _rc(_gclibo.GServerStatus(self._buf, _buf_size))
        return str(self._buf.value.decode(_enc))

    def GSetServer(self, server_name):
        """@ingroup py_remote
        Set the new active server.
        """
        c_server_name = _GCStringIn(server_name.encode(_enc))
        _rc(_gclibo.GSetServer(c_server_name))
        return

    def GListServers(self):
        """@ingroup py_remote
        Provide a list of all available gcaps servers on the local network.
        """
        _rc(_gclibo.GListServers(self._buf, _buf_size))
        return str(self._buf.value.decode(_enc))

    def GPublishServer(self, server_name, publish, save):
        """@ingroup py_remote
        Publish local gcaps server to the network.
        """
        c_server_name = _GCStringIn(server_name.encode(_enc))
        _rc(_gclibo.GPublishServer(c_server_name, publish, save))
        return

    def GRemoteConnections(self):
        """@ingroup py_remote
        Shows all remote addresses that are connected to the local server.
        """
        _rc(_gclibo.GRemoteConnections(self._buf, _buf_size))
        return str(self._buf.value.decode(_enc))

    def GInfo(self):
        """@ingroup py_connection
        Provides a useful connection string. Please include the output of this function on all support cases.
        """
        _rc(_gclibo.GInfo(self._gcon, self._buf, _buf_size))
        return str(self._buf.value.decode(_enc))


    def GIpRequests(self):
        """@ingroup py_connection
        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.
        """
        _rc(_gclibo.GIpRequests(self._buf, _buf_size)) #get the c string from gclib
        ip_req_dict = {}
        for line in str(self._buf.value.decode(_enc)).splitlines():
            line = line.replace(' ', '') #trim spaces throughout
            if (line == ""): continue
            fields = line.split(',')
            #fields go [model, serial number, mac]
            ip_req_dict[fields[0] + '-' + fields[1]] = fields[2] # e.g. DMC4000-783 maps to its MAC addr.
        return ip_req_dict


    def GAssign(self, ip, mac):
        """@ingroup py_connection
        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.
        """
        c_ip = _GCStringIn(ip.encode(_enc))
        c_mac = _GCStringIn(mac.encode(_enc))
        _rc(_gclibo.GAssign(c_ip, c_mac))
        return


    def GAddresses(self):
        """@ingroup py_connection
        Provides a dictionary of all available connection addresses.

        Returns a dictionary mapping 'address' -> 'revision reports', where possible
        e.g. {}
        """
        _rc(_gclibo.GAddresses(self._buf, _buf_size))
        addr_dict = {}
        for line in str(self._buf.value.decode(_enc)).splitlines():
```

```
            fields = line.split(',')
            if len(fields) >= 2:
                addr_dict[fields[0]] = fields[1]
            else:
                addr_dict[fields[0]] = ''

        return addr_dict


    def GProgramDownload(self, program, preprocessor=""):
        """@ingroup py_memory
        Downloads a program to the controller's program buffer.
        See the gclib docs for preprocessor options.
        """
        self._cc()
        c_prog = _GCStringIn(program.encode(_enc))
        c_pre = _GCStringIn(preprocessor.encode(_enc))
        _rc(_gclib.GProgramDownload(self._gcon, c_prog, c_pre))
        return


    def GProgramUpload(self):
        """@ingroup py_memory
        Uploads a program from the controller's program buffer.
        """
        self._cc()
        _rc(_gclib.GProgramUpload(self._gcon, self._buf, _buf_size))
        return str(self._buf.value.decode(_enc))


    def GProgramDownloadFile(self, file_path, preprocessor=""):
        """@ingroup py_memory
        Program download from file.
        See the gclib docs for preprocessor options.
        """
        self._cc()
        c_path = _GCStringIn(file_path.encode(_enc))
        c_pre = _GCStringIn(preprocessor.encode(_enc))
        _rc(_gclibo.GProgramDownloadFile(self._gcon, c_path, c_pre))
        return

    def GProgramUploadFile(self, file_path):
        """@ingroup py_memory
        Program upload to file.
        """
        self._cc()
        c_path = _GCStringIn(file_path.encode(_enc))
        _rc(_gclibo.GProgramUploadFile(self._gcon, c_path))
        return

    def GArrayDownload(self, name, first, last, array_data):
        """@ingroup py_memory
        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)
        """
        self._cc()
        c_name = _GCStringIn(name.encode(_enc))
        array_string = ""
        for val in array_data:
            array_string += str(val) + ","
        c_data = _GCStringIn(array_string[:-1].encode(_enc)) #trim trailing command
        _rc(_gclib.GArrayDownload(self._gcon, c_name, first, last, c_data))
        return


    def GArrayUploadFile(self, file_path, names = []):
        """@ingroup py_memory
        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.
        """
        self._cc()
        c_path = _GCStringIn(file_path.encode(_enc))
        names_string = ''
        c_names = _GCStringIn(''.encode(_enc)) #in case empty list provided
        for name in names:
            names_string += name + ' '

        c_names = _GCStringIn(names_string[:-1].encode(_enc)) #trim trailing space
        _rc(_gclibo.GArrayUploadFile(self._gcon, c_path, c_names))
        return


    def GArrayDownloadFile(self, file_path):
        """@ingroup py_memory
        Downloads a csv file containing array data at file_path.
        """
```

```
        self._cc()
        c_path = _GCStringIn(file_path.encode(_enc))
        _rc(_gclibo.GArrayDownloadFile(self._gcon, c_path))
        return


    def GArrayUpload(self, name, first, last):
        """@ingroup py_memory
        Uploads array data from the controller's array table.
        """
        self._cc()
        c_name = _GCStringIn(name.encode(_enc))
        _rc(_gclib.GArrayUpload(self._gcon, c_name, first, last, 1, self._buf, _buf_size)) #1 is comma delimiter
        string_list = str(self._buf.value.decode(_enc)).split(',')
        float_list = []
        for s in string_list:
            float_list.append(float(s))
        return float_list


    def GTimeout(self, timeout):
        """@ingroup py_connection
        Set the library timeout. Set to -1 to use the initial library timeout, as specified in GOpen.
        """
        self._cc()
        _rc(_gclibo.GTimeout(self._gcon, timeout))
        self._timeout = timeout
        return


    @property
    def timeout(self):
        """@ingroup py_connection
        Convenience property read access to timeout value. If -1, gclib uses the initial library timeout, as specified in GOpen.
        """
        return self._timeout

    @timeout.setter
    def timeout(self, timeout):
        """@ingroup py_connection
        Convenience property write access to timeout value. Set to -1 to use the initial library timeout, as specified in GOpen.
        """
        self.GTimeout(timeout)
        return


    def GFirmwareDownload(self, file_path):
        """@ingroup py_memory
        Upgrade firmware.
        """
        self._cc()
        c_path = _GCStringIn(file_path.encode(_enc))
        _rc(_gclib.GFirmwareDownload(self._gcon, c_path))
        return


    def GMessage(self):
        """@ingroup py_unsolicited
        Provides access to unsolicited messages from the controller.
        """
        self._cc()
        _rc(_gclib.GMessage(self._gcon, self._buf, _buf_size))
        return str(self._buf.value.decode(_enc))


    def GMotionComplete(self, axes):
        """@ingroup py_controller
        Blocking call that returns once all axes specified have completed their motion.
        """
        self._cc()
        c_axes = _GCStringIn(axes.encode(_enc))
        _rc(_gclibo.GMotionComplete(self._gcon, c_axes))
        return

    def GInterrupt(self):
        """@ingroup py_unsolicited
        Provides access to PCI and UDP interrupts from the controller.
        """
        self._cc()
        status = _GStatus(0)
        _rc(_gclib.GInterrupt(self._gcon, byref(status)))
        return status.value

    def GSetupDownloadFile(self, file_path, options):
```

```
        """@ingroup py_memory
        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
        """
        self._cc()
        c_path = _GCStringIn(file_path.encode(_enc))

        rc = _gclibo.GSetupDownloadFile(self._gcon, c_path, options, self._buf, _buf_size)
        if (options != 0):
            _rc(rc)

        info_dict = {}
        for line in str(self._buf.value.decode(_enc)).split("\"\n"):
            fields = line.split(',',1)

            if (fields[0] == ""): continue
            elif len(fields) >= 2:
                info_dict[fields[0].strip("\"\'")] = fields[1].strip("\"\'")
            else:
                info_dict[fields[0].strip("\"\'")] = ''

        if (options == 0):
            info_dict["options"] = rc

        return info_dict
```

14.15 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()"

14.15.1 Detailed Description

Defines values for the Galil C Library return codes and error strings.
Definition in file gclib_errors.h.

14.15.2 Macro Definition Documentation

14.15.2.1 G_NO_ERROR

```
#define G_NO_ERROR 0
```

Return value if function succeeded.
Definition at line 9 of file gclib_errors.h.

14.15.2.2 G_NO_ERROR_S

```
#define G_NO_ERROR_S "no error"
```

Definition at line 10 of file gclib_errors.h.

14.15.2.3 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.

14.15.2.4 G_GCLIB_ERROR_S

```
#define G_GCLIB_ERROR_S "gclib unexpected error"
```

Definition at line 13 of file gclib_errors.h.

14.15.2.5 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.

14.15.2.6 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.

14.15.2.7 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.

14.15.2.8 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.

14.15.2.9 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.

14.15.2.10 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.

14.15.2.11 G_GCLIB_POLLING_FAILED

```
#define G_GCLIB_POLLING_FAILED -5
```

GWaitForBool out of polling trials.
Definition at line 24 of file gclib_errors.h.

14.15.2.12 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.

14.15.2.13 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.

14.15.2.14 G_TIMEOUT_S

```
#define G_TIMEOUT_S "device timed out"
```

Definition at line 28 of file gclib_errors.h.

14.15.2.15 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.

14.15.2.16 G_OPEN_ERROR_S

```
#define G_OPEN_ERROR_S "device failed to open"
```

Definition at line 31 of file gclib_errors.h.

14.15.2.17 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.

14.15.2.18 G_ALREADY_OPEN_S

```
#define G_ALREADY_OPEN_S "Serial or PCI port already open"
```

Definition at line 34 of file gclib_errors.h.

14.15.2.19 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.

14.15.2.20 G_READ_ERROR_S

```
#define G_READ_ERROR_S "device read error"
```

Definition at line 37 of file gclib_errors.h.

14.15.2.21 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.

14.15.2.22 G_WRITE_ERROR_S

```
#define G_WRITE_ERROR_S "device write error"
```

Definition at line 40 of file gclib_errors.h.

14.15.2.23 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.

14.15.2.24 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.

14.15.2.25 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.

14.15.2.26 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.

14.15.2.27 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.

14.15.2.28 G_DATA_RECORD_ERROR_S

```
#define G_DATA_RECORD_ERROR_S "data record error"
```

Definition at line 49 of file gclib_errors.h.

14.15.2.29 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.

14.15.2.30 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.

14.15.2.31 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.

14.15.2.32 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.

14.15.2.33 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.

14.15.2.34 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.

14.15.2.35 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.

14.15.2.36 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.

14.15.2.37 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.

14.15.2.38 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.

14.15.2.39 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.

14.15.2.40 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.

14.15.2.41 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.

14.15.2.42 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.

14.15.2.43 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.

14.15.2.44 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.

14.15.2.45 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.

14.15.2.46 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.

14.15.2.47 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.

14.15.2.48 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.

14.15.2.49 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.

14.15.2.50 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.

14.15.2.51 G_BAD_ADDRESS

```
#define G_BAD_ADDRESS -10006
```

Bad address.
Definition at line 84 of file gclib_errors.h.

14.15.2.52 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.

14.15.2.53 G_BAD_FIRMWARE_LOAD

```
#define G_BAD_FIRMWARE_LOAD -10008
```

Bad firmware upgrade.
Definition at line 87 of file gclib_errors.h.

14.15.2.54 G_BAD_FIRMWARE_LOAD_S

```
#define G_BAD_FIRMWARE_LOAD_S "Firmware upgrade failed"
```

Definition at line 88 of file gclib_errors.h.

14.15.2.55 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.

14.15.2.56 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.

14.15.2.57 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.

14.15.2.58 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.

14.16 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"
```

```
#define G_ALREADY_OPEN -1111
#define G_ALREADY_OPEN_S "Serial or PCI port already open"

#define G_READ_ERROR -1103
#define G_READ_ERROR_S "device read error"

#define G_WRITE_ERROR -1104
#define G_WRITE_ERROR_S "device write error"

#define G_INVALID_PREPROCESSOR_OPTIONS -1204
#define G_INVALID_PREPROCESSOR_OPTIONS_S "preprocessor did not recognize options"

#define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND -1106
#define G_COMMAND_CALLED_WITH_ILLEGAL_COMMAND_S "illegal command passed to command call"

#define G_DATA_RECORD_ERROR -1107
#define G_DATA_RECORD_ERROR_S "data record error"

#define G_UNSUPPORTED_FUNCTION -1109
#define G_UNSUPPORTED_FUNCTION_S "function not supported on this communication bus"

#define G_FIRMWARE_LOAD_NOT_SUPPORTED -1110
#define G_FIRMWARE_LOAD_NOT_SUPPORTED_S "firmware cannot be loaded on this communication bus to this hardware"

#define G_ARRAY_NOT_DIMENSIONED -1200
#define G_ARRAY_NOT_DIMENSIONED_S "array not dimensioned on controller or wrong size"

#define G_CONNECTION_NOT_ESTABLISHED -1201
#define G_CONNECTION_NOT_ESTABLISHED_S "connection to hardware not established"

#define G_ILLEGAL_DATA_IN_PROGRAM -1202
#define G_ILLEGAL_DATA_IN_PROGRAM_S "illegal ASCII character in program"

#define G_UNABLE_TO_COMPRESS_PROGRAM_TO_FIT -1203
#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
#define G_BAD_RESPONSE_QUESTION_MARK_S "question mark returned by controller"

#define G_BAD_VALUE_RANGE -10002
#define G_BAD_VALUE_RANGE_S "value passed to function was bad or out of range"

#define G_BAD_FULL_MEMORY -10003
#define G_BAD_FULL_MEMORY_S "operation could not complete because of a memory error"

#define G_BAD_LOST_DATA -10004
#define G_BAD_LOST_DATA_S "data was lost due to buffer or fifo limitations"

#define G_BAD_FILE -10005
#define G_BAD_FILE_S "file was not found, contents are invalid, or write failed"

#define G_BAD_ADDRESS -10006
#define G_BAD_ADDRESS_S "a bad address was specified in open"

#define G_BAD_FIRMWARE_LOAD -10008
#define G_BAD_FIRMWARE_LOAD_S "Firmware upgrade failed"

#define G_GCAPS_OPEN_ERROR -20000
#define G_GCAPS_OPEN_ERROR_S "gcaps connection could not be opened"

#define G_GCAPS_SUBSCRIPTION_ERROR -20002
#define G_GCAPS_SUBSCRIPTION_ERROR_S "function requires subscription not specified in GOpen()"

#endif //I_0DD3687F_47D0_454B_ADB2_CBAB0ED46FCE
```

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