

# **GE Focas Ethernet Driver Help**

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## GE Focas Ethernet Driver Help

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Help version 1.025

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### Overview

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The GE Focas Ethernet Driver provides an easy and reliable way to connect GE Focas Ethernet controllers to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications. This driver is intended for use with GE Focas Programmable Logic Controllers. For more information on additional software required for use with this driver, refer to [Additional Software Requirements](#).

## Device Setup

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### Supported Devices

This driver can be used to communicate to controllers compatible with the Focas1 or Focas2 CNC/PMC data window control libraries. This includes, but is not limited to, the following.

Series 0i  
Series 15  
Series 15i  
Series 16  
Series 16i  
Series 18  
Series 18i  
Series 21  
Series 21i  
Series 30i  
Series 31i  
Series 32i  
Power Mate i  
Open Addressing

### Maximum Number of Channels and Devices

The maximum number of supported channels is 100. The maximum number of devices supported per channel is 20.

### Library Requirement

In order for this driver to communicate with the hardware, either of the following libraries must be installed on the system. For more information, refer to [Additional Software Requirements](#).

GE Open CNC Focas1/Ethernet Library  
GE Focas2 Library

**Note 1:** The Focas2 Library combines both Ethernet and HSSB capabilities. The Focas2 library must be purchased from GE. To do so, call 1-800-433-2682, choose CNC, PARTS to place the order, and then request A02B-0207-K737.

**Note 2:** This driver may be used to create projects without the library installed.

### Connection Timeout

This parameter specifies the time the driver will wait for a connection to be made with a device. The connect time may vary with each connection attempt, depending on the network load. The default setting is 3 seconds. The valid range is 1 to 60 seconds.

### Request Timeout

This parameter specifies the time the driver will wait on a response from the device before giving up and going on to the next request. Longer timeouts only affect performance if a device is not responding. The default setting is 1000 milliseconds. The valid range is 100 to 9999 milliseconds.

### Retry Attempts

This parameter specifies the number of times the driver will retry a message before giving up and going on to the next message. The default setting is 3 retries. The valid range is 1 to 10.

### Device IDs

Up to 20 devices may be defined on a given channel. Each device on the channel must be uniquely identified by its own IP address.

### See Also:

[Communications Parameters](#)  
[Unsolicited Transfer Control](#)  
[Unsolicited Data Areas](#)  
[Unsolicited Messaging](#)

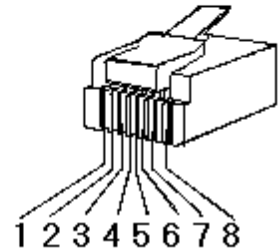
### Cable Diagrams

## Patch Cable (Straight Through)

TD + 1	OR/WHT	OR/WHT	1 TD +
TD - 2	OR	OR	2 TD -
RD + 3	GRN/WHT	GRN/WHT	3 RD +
4	BLU	BLU	4
5	BLU/WHT	BLU/WHT	5
RD - 6	GRN	GRN	6 RD -
7	BRN/WHT	BRN/WHT	7
8	BRN	BRN	8

RJ45 RJ45

10 BaseT



## Crossover Cable

TD + 1	OR/WHT	GRN/WHT	1 TD +
TD - 2	OR	GRN	2 TD -
RD + 3	GRN/WHT	OR/WHT	3 RD +
4	BLU	BLU	4
5	BLU/WHT	BLU/WHT	5
RD - 6	GRN	OR	6 RD -
7	BRN/WHT	BRN/WHT	7
8	BRN	BRN	8

RJ45 RJ45

8-pin RJ45

## Communications Parameters

### TCP/IP Port

This parameter specifies the TCP/IP port number the remote device is configured to use. The default port number is 8193.

### Maximum Request Size

This parameter specifies to the number of bytes that may be requested from a device at one time. To refine the driver's performance, configure the request size to one of the following settings: 32, 64, 128, 256, 512 bytes. The default value is 256 bytes.

## Unsolicited Transfer Control

### Slave Device

Check this box if the device is to receive unsolicited data from the CNC. All tags belonging to a slave device will read data cached in the driver – not directly from the CNC. Until a slave device receives its first unsolicited data update, its tags will show a value of zero. If this box is not checked, then all tags belonging to the device will read and write directly to the CNC. This box is not checked by default.

### Unsolicited Message Server Port

This parameter specifies the port the unsolicited message server application has been configured to use. The default value is 8196.

### Transfer Control Memory Type

This parameter specifies the PMC memory type of the registers used for unsolicited message transfer control. Only R (internal relay) or E (extended relay) can be chosen. The default value is R.

### Transfer Control Start Address

This parameter specifies the start address of the registers used for unsolicited message transfer control. This value may range from 0 to 7999, but the actual range of valid addresses will depend on the hardware. The default value is 0.

### Message Retries

This parameter specifies the number of times the CNC should retry sending unsolicited messages. The value may range from 0 to 10, with 3 being the default.

### Message Timeout

This parameter specifies the unsolicited message timeout, which is the number of seconds the CNC will wait for the driver to respond to an unsolicited message. The value may range from 0 to 30 seconds, with 10 seconds being the default.

### Message Alive Time

This parameter specifies the unsolicited message alive time, which is the number of seconds the CNC will retain an unsolicited message for the driver to read it. This must be less than the message timeout. The value may range from 0 to 30 seconds, with 5 seconds being the default.

**See Also:** [Unsolicited Messaging](#)

## Unsolicited Data Areas

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Up to 3 areas in PMC memory can be configured for unsolicited messaging. The data content of these areas is sent to the driver in each unsolicited message. Thus, these areas should be made as small as possible. To configure a new data area, click **Add**. To edit an existing area's properties select it and then click **Edit**. Alternatively, double-click on the area. To delete one or more areas, select and then click **Remove**.

All tags that are created for a slave device will be validated according to the configured data areas. For example, if a slave device is configured with a single area with D1000 to D1100, then a tag with address D1000 would be valid, but tags with addresses D1101 or C0001 would be invalid. All tags belonging to a slave device are Read Only.

When a data area is added and/or edited, the following parameters will need to be specified.

### PMC Address Type

This parameter specifies an area's PMC address type. Supported types include the following: G (signal to PMC->CNC), F (signal to CNC->PMC), Y (signal to PMC->machine), X (signal to machine->PMC), A (message demand), R (internal relay), T (changeable timer), K (keep relay), C (counter), and D (data table). The default value is D.

### Start Address

This parameter specifies an area's start address, and must be between 0 and 7999. The actual range of valid addresses depends on the hardware. The default value is 0.

### End Address

This parameter specifies an area's end address and must be between 0 and 7999. The actual range of valid addresses depends on the hardware. The total number of bytes must not exceed 1430, 1414, or 1398 for areas 1, 2, or 3 respectively. The default value is 0.

**See Also:** [Unsolicited Messaging](#)

## Unsolicited Messaging

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Before configuring a system for unsolicited messaging, it is important to understand how the various hardware and software components work together to transfer data. These components include one or more CNC controllers equipped with Fast Ethernet communications boards, firmware that supports unsolicited messaging and a ladder program to coordinate the transfer of unsolicited data. To receive unsolicited data, a host computer must be equipped with the OPC Server and its GE Focas Ethernet driver, the Focas1 Data Window Library software and the Unsolicited Message Server. Data can be read from the OPC Server with OPC or DDE client applications running on the host or remote computer. For more information, refer to [Additional Software Requirements](#).

During an unsolicited messaging session, the controller is in direct communication with the Unsolicited Message Server only. The message server notifies the driver when the controller makes a request to send unsolicited data. The Focas1 Data Window Library allows the driver to receive the unsolicited data via the message server. The library also enables the driver to communicate directly with the controllers to start and end unsolicited messaging sessions.

**Note:** If unsolicited messaging is not used, the driver uses the library to issue read and write requests directly to the controller. It is possible to use both types of communication with a controller simultaneously by creating a

slave and a non-slave device in the OPC Server project. For more information on configuring the driver, refer to [Unsolicited Transfer Control](#) and [Unsolicited Data Areas](#).

Ladder programs coordinate the transfer of unsolicited data from their respective controllers. Since these programs must be tailored to each application, we cannot go into specific detail on how they should be written. We will describe how the programs trigger the transmission of unsolicited data, detect when the transaction has been completed, and if it was successful.

During the transmission of an unsolicited message, the ladder program first places the contents of the message in a designated area of PMC memory. Once the message has been prepared, the ladder then controls the transmission of the data by setting and monitoring bits in the Unsolicited Transfer Control area of PMC memory.

To trigger the transmission of an unsolicited message, the ladder then sets the **REQ** (request to send) transfer control bit. Immediately after this bit is set, the controller will send an **Unsolicited data ready** notification to the message server. The message server relays the notification to the driver. The driver responds by issuing a **Read unsolicited message** command to message server. The driver will receive the unsolicited message data in response to this command. The driver will then reply to the data ready notification with a response code indicating the success or failure of the data read. The message server will then pass this response code down to the controller. When the controller receives the response code, it will copy it to the **RES\_CODE** memory area. Immediately following this, the controller will set the **RES** (response ready) bit to indicate completion of the transaction. The ladder program must be designed so that it will detect when the **RES** bit has been set. When the ladder detects that **RES** has been set, it can read the response code from **RES\_CODE** and react as needed. If the data fails to reach the driver, the controller will place its own response code that describes the problem in **RES\_CODE** and set the **RES** bit. After the ladder has read the response code, it must then clear the **REQ** bit to ready the system for the next message.

The areas of PMC memory that are to be included in unsolicited messages are defined using this driver. The driver transfers these area parameters to the controller when an unsolicited messaging session is started. Each time an unsolicited message is sent, data from the entire range of all areas is included. Thus, these areas should be made as small as possible. The ladder program must be written to use the exact address ranges specified in the driver configuration.

The transmission of unsolicited data is coordinated between the ladder program and communications board via 2 bytes of PMC R or E memory. This transfer control area is defined using this driver. These transfer control area parameters are sent to the controller, along with the data area parameters, when an unsolicited messaging session is started. The ladder program must be written to use the specific addresses specified in the driver configuration. The various bits in the transfer control area, with starting address xxxx, have the following locations and meanings:

bit	7	6	5	4	3	2	1	0	
	REQ			(reserved)					Rxxxx or Exxxx
	RES	COM		RES_CODE					Rxxxx+1 or Exxxx+1

**REQ** Rxxxx.7 (or Exxxx.7)

After the ladder program constructs a message, it must set this bit to 1. This signals the communications board to issue a notification that a new message is ready to be read.

**COM** Rxxxx+1.6 (or Exxxx+1.6)

The communications board sets this bit to 1 when message transmission has begun. The communications board sets this bit back to 0 immediately before it sets RES to 1 and places the response code in RES\_CODE.

**RES** Rxxxx+1.7 (or Exxxx+1.7)

The communications board sets this bit to 1 immediately after message transmission has been completed. When the ladder program detects that this bit is set to 1, it can read the response code from RES\_CODE. The ladder may then take different actions depending on the value of RES\_CODE. Once this is done, the ladder must set REQ back to 0. This will cause the communications board to clear RES\_CODE and set this bit back to 0. The communications board will then be ready to perform the next unsolicited transaction.

**RES\_CODE** Rxxxx+1.0 to Rxxxx+1.5 (or Exxxx+1.0 to Exxxx+1.5)

The result of the unsolicited transaction is placed here. It can be a code passed down from the driver, or a code set by the communications board if there was a communications failure. The possible values are:

RES_CODE	Meaning
0x00	Success. The communications board did not detect any failures in communication, and the driver reported that it processed the received data successfully.
0x01	The transmission control parameters are invalid or the unsolicited messaging session was not started.
0x02	The unsolicited message server is not running.
0x03	The CNC failed to transmit message.
0x04	The CNC failed to receive response.
0x05	The transmission retry count was exceeded.
0x06	The CNC failed to construct the message data.
0x07	The CNC received an invalid packet.
0x08	The CNC accepted termination of unsolicited messaging session.
0x10	The driver experienced a Focas1 Library error while reading message.
0x11	The driver found the message data to be invalid or experienced other problems while processing message data.
0x21	The PC application to receive the message does not exist, though the message was received by the PC. (The OPC Server or this driver is not running.)
0x22	The PC application to receive the message was not recognized by the unsolicited message server, though the message was received by the PC. (The unsolicited message server may need be restarted, or there may have been a problem when the driver was starting the unsolicited messaging session.)
0x23	The CNC failed in writing the received message to the PC.
0x24	The timeout period and retry count have expired.
0x25	Illegal data was included in the received message.

The driver stores the unsolicited data in a memory cache. The OPC Server makes this data visible to client applications via tags. The addresses of these tags must be the same as the source of the data in the controller. For example, if an unsolicited data area is configured to include the byte at D1000, then a tag with an address of D1000 must be used to view this data. These tags will show the last values sent to the driver, which may not necessarily be the current values in the controller. (Users would need additional tags belonging to a non-slave device to poll current values directly from the controller.) Slave device tags will show a value of zero until the driver receives its first unsolicited data update from the controller.

**Note 1:** In addition to data ready notifications, the Unsolicited Message Server also apprises the driver of other important events. These include CNC power up, CNC power down, Unsolicited Message Server shutdown, and communications error notifications. The driver has been designed to respond to each of these events in such a way that communication with the hardware will be maintained if possible.

**Note 2:** The device `_System._Error` tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

## Additional Software Requirements

### Winsock

The host computer must have Winsock version 1.1 or later installed. This is normally done by default when Windows is installed.

### Focas1/HSSB or Focas2 Library

This driver requires that either of the following libraries be installed on the system: GE Open CNC Focas1/Ethernet Library (GE part number A02B-0207-K732) or GE Focas2 Library (GE part number A02B-0207-K737). Although users do not need to have the library installed in order to create a server project, the project will not run without it. This software may be obtained from the GE distributor. Alternatively, call 1-800-433-2682.

**Note:** The Focas2 Library combines both Ethernet and HSSB capabilities.

### Unsolicited Message Server

In order to use the unsolicited messaging capability of this driver, the unsolicited message server application "UMsgServ.exe" (version 1.0.0.1 or later) needs to be installed. This is also available from the GE distributor. To install, copy the executable file to the system folder. Then, use the command prompt to type "UMsgServ.exe - Install." This causes the message server to be launched automatically each time the computer is started. The message server may be uninstalled by using the command prompt to type "UMsgServ.exe -Remove," and then deleting the executable file.

Once the message server is running, its icon will be visible in the system tray. To configure the TCP port number that the message server will listen on (as well as the message timeout and the maximum number of CNCs to which the server can listen) right-click on the icon and select **Setting**. The defaults are as follows:

**TCP port number** - 8196

**Message timeout** - 30 seconds

**Maximum number of CNCs** - 32

**Note:** In order for this driver to automatically restart the message server if needed, the executable must be located in the system folder.

### CNC Control Software

To use the controller's unsolicited messaging capabilities, the following software must be installed on the controller.

Model	Software
16i	B0F4/K1(M) or later B0H1/P5(M) or later
18i	DDF4/K1(M) or later BDH1/P5(M) or later
21i	BDF4/K1(M) or later DDH1/P5(M) or later

**Note:** The CNC parameter 904, bit 4 must be set to 1 to use unsolicited messaging. This can be done using the controller's programming software.

### Fast Ethernet Firmware

To use the controller's unsolicited messaging capabilities, the following firmware must be installed on the controller:

6567/E2 or later to be registered onto F-ROM of CNC.

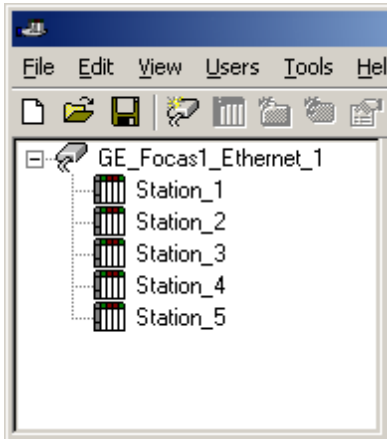
### Ladder

To use the controller's unsolicited messaging capabilities, a ladder program must be created that constructs and controls the transmission of unsolicited messages. For more information, refer to [Unsolicited Messaging](#).

## Optimizing Your GE Focas Ethernet Communications

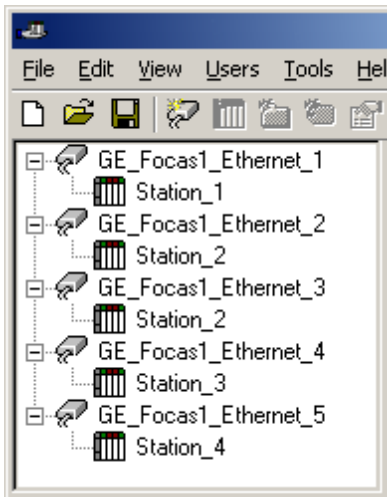
The GE Focas Ethernet driver has been designed to provide the best performance with the least amount of impact on the system's overall performance. While the GE Focas Ethernet driver is fast, there are a couple of guidelines that can be used in order to control and optimize the application and gain maximum performance.

Our server refers to communications protocols like GE Focas Ethernet as a channel. Each channel defined in the application represents a separate path of execution in the server. Once a channel has been defined, a series of devices must then be defined under that channel. Each of these devices represents a single GE Focas controller from which data will be collected. While this approach to defining the application will provide a high level of performance, it won't take full advantage of the GE Focas Ethernet driver or the network. An example of how the application may appear when configured using a single channel is shown below.



Each device appears under a single GE Focas Ethernet channel. In this configuration, the driver must move from one device to the next as quickly as possible in order to gather information at an effective rate. As more devices are added or more information is requested from a single device, the overall update rate begins to suffer.

If the GE Focas Ethernet driver could only define one single channel, then the example shown above would be the only option available; however, the GE Focas Ethernet driver can define up to 100 channels. Using multiple channels distributes the data collection workload by simultaneously issuing multiple requests to the network. An example of how the same application may appear when configured using multiple channels to improve performance is shown below.



Each device has now been defined under its own channel. In this new configuration, a single path of execution is dedicated to the task of gathering data from each device. If the application has 100 or fewer devices, it can be optimized exactly how it is shown here. The performance will improve even if the application has more than 100 devices. While 100 or fewer devices may be ideal, the application will still benefit from additional channels. Although by spreading the device load across all channels will cause the server to move from device to device again, it can now do so with far less devices to process on a single channel.

Request Size can also affect the GE Focas Ethernet driver's performance. Request size refers to the number of bytes that may be requested from a device at one time, and is available on every defined device. To refine the performance of this driver, configure the request size to one of the following settings: 32, 64, 128, 256 or 512 bytes. Depending on the model of GE Focas1 / Focas2 device being used, the setting chosen for request size can dramatically affect the application. The default value of 256 bytes is recommended. If the application consists of large requests for consecutively ordered data, try increasing the request size setting for the device. For more information, refer to [Device Setup](#).

## Data Types Description

---

Data Type	Description
Boolean	Single bit
Byte	Unsigned 8 bit value bit 0 is the low bit bit 7 is the high bit
Word	Unsigned 16 bit value bit 0 is the low bit bit 15 is the high bit
Short	Signed 16 bit value bit 0 is the low bit bit 14 is the high bit bit 15 is the sign bit
DWord	Unsigned 32 bit value bit 0 is the low bit bit 31 is the high bit
Long	Signed 32 bit value bit 0 is the low bit bit 30 is the high bit bit 31 is the sign bit
Float	32 bit floating point value
String	Null terminated ASCII string

## Address Descriptions

Address specifications may vary depending on the model in use. Select a link from the following list to obtain specific address information for the model of interest.

[Series 15i](#)

[Series 16i](#)

[Series 18i](#)

[Series 21i](#)

[Power Mate i](#)

[Open](#)

### Series 15i

The following addresses are supported for this model. Not all address ranges may be valid for the particular device being used. For more information, refer to the specific device's documentation. Click on the following links to jump to the specific section.

[CNC Data](#)

[Arrays](#)

[Strings](#)

### PMC Data

The default data types for dynamically defined DDE tags are shown in **bold**.

Address Type	Range	Data Type	Access
A (Message demand)	A00000-A00124 A00000-A00123 A00000-A00121 Axxxxx.0-Axxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
C (Counter)	C00000-C00199 C00000-C00198 C00000-C00196 Cxxxxx.0-Cxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
D (Data table)	D00000-D09999 D00000-D09998 D00000-D09996 Dxxxxx.0-Dxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
F (Signal to CNC->PMC)	F00000-F00511 F00000-F00510 F00000-F00508 Fxxxxx.0-Fxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
G (Signal to PMC->CNC)	G00000-G00511 G00000-G00510 G00000-G00508 Gxxxxx.0-Gxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
K (Keep relay)	K00000-K00909 K00000-K00908 K00000-K00906 Kxxxxx.0-Kxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
R (Internal relay)	R00000-R09199 R00000-R09198 R00000-R09196 Rxxxxx.0-Rxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
T (Changeable timer)	T00000-T00299 T00000-T00298 T00000-T00296 Txxxxx.0-Txxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
X (Signal to machine->PMC)	X00000-X00127 X00000-X00126 X00000-X00124 Xxxxxx.0-Xxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
Y (Signal to PMC->machine)	Y00000-Y00127	<b>Byte</b> , Char	Read/Write

	Y00000-Y00126 Y00000-Y00124 Yxxxxx.0-Yxxxxx.7	Word, Short DWord, Long, Float Boolean	
Custom Macro Value (common range)	#0100-#0999	<b>Float</b>	Read/Write
Custom Macro Value (local range)	#0001-#0033	<b>Float</b>	Read Only
Custom Macro Value (system range)	#1000-#9999	<b>Float</b>	Read/Write

## CNC Data

### [Status Info Tags](#)

### [Tool Offset](#)

### [Workpiece Zero Offset](#)

## Arrays

Arrays are supported for all PMC addresses, except for Custom Macros in the system range and where Boolean or string data types are used. Tool Offset data cannot be addressed as an array. The syntax for declaring an array is as follows:

*Mxxxx[cols]* with assumed row count of 1.

*Mxxxx[rows][cols]* where M is the address type and xxxxx is the byte offset of the first element in the array.

**Note:** For all arrays, the total number of bytes being requested cannot exceed the specified request size.

## Strings

All address types can be read and written to as ASCII strings. Each byte of memory will contain one ASCII character. The length of strings can range from 1 to 120 and is entered in place of the bit number. An additional character "M" is appended to the address to distinguish string addresses from bit addresses.

## Example

To address a string of length 100 characters, starting at D00200, enter: D00200.100 M.

**Note:** Use caution when modifying Word, Short, DWord, Long, and Float types. Since all addresses start at a byte offset within the device, it is possible for the memory associated with tags to overlap. For example, word tags D00000 and D00001 overlap at byte 1. Writing to D00000 will also modify the value held in D00001. It is recommended that you use these memory types such that each value to be read and written to by the driver occupy a unique range of memory in the device. For example, you might map 3 Word values to bytes D00000-D00001, D00002-D00003, and D00004-D00005. Tags to access these values would then have addresses D00000, D00002, and D00004 respectively, and a data type of Word.

## Series 16i

The following addresses are supported for this model. Not all address ranges may be valid for the particular device being used. For more information, refer to the specific device's documentation. Click on the following links to jump to the specific section.

### [CNC Data](#)

### [Arrays](#)

### [Strings](#)

### [Unsolicited Data](#)

## PMC Data

The default data types for dynamically defined DDE tags are shown in **bold**.

Address Type	Range	Data Type	Access
A (Message demand)	A00000-A00124 A00000-A00123 A00000-A00121 Axxxxx.0-Axxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
C (Counter)	C00000-C00199 C00000-C00198 C00000-C00196 Cxxxxx.0-Cxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
D (Data table)	D00000-D09999 D00000-D09998 D00000-D09996	<b>Byte</b> , Char Word, Short DWord, Long, Float	Read/Write

	Dxxxxx.0-Dxxxxx.7	Boolean	
E (Extended relay)	E00000-E07999 E00000-E07998 E00000-E07996 Exxxxx.0-Exxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
F (Signal to CNC->PMC)	F00000-F02511 F00000-F02510 F00000-F02508 Fxxxxx.0-Fxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
G (Signal to PMC->CNC)	G00000-G02511 G00000-G02510 G00000-G02508 Gxxxxx.0-Gxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
K (Keep relay)	K00000-K00909 K00000-K00908 K00000-K00906 Kxxxxx.0-Kxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
M (Input signal from other devices)	M00000-M00511 M00000-M00510 M00000-M00508 Mxxxxx.0-Mxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
N (Output signal from other devices)	N00000-N00511 N00000-N00510 N00000-N00508 Nxxxxx.0-Nxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
R (Internal relay)	R00000-R09119 R00000-R09118 R00000-R09116 Rxxxxx.0-Rxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
T (Changeable timer)	T00000-T00299 T00000-T00298 T00000-T00296 Txxxxx.0-Txxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
X (Signal to machine->PMC)	X00000-X00127 X00000-X00126 X00000-X00124 Xxxxxx.0-Xxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
Y (Signal to PMC->machine)	Y00000-Y00127 Y00000-Y00126 Y00000-Y00124 Yxxxxx.0-Yxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
Custom Macro Value (common range)	#0100-#0999	<b>Float</b>	Read/Write
Custom Macro Value (local range)	#0001-#0033	<b>Float</b>	Read Only
Custom Macro Value (system range)	#1000-#9999	<b>Float</b>	Read/Write

**CNC Data**

[Status Info Tags](#)

[Tool Offset](#)

[Workpiece Zero Offset](#)

**Arrays**

Arrays are supported for all PMC addresses, except for Custom Macros in the system range and where Boolean or string data types are used. Tool Offset data cannot be addressed as an array. The syntax for declaring an array is as follows:

*Mxxxxx[cols]* with assumed row count of 1.

*Mxxxxx[rows][cols]* where M is the address type and xxxxx is the byte offset of the first element in the array.

**Note:** For all arrays, the total number of bytes being requested cannot exceed the specified request size.

**Strings**

All address types can be read and written to as ASCII strings. Each byte of memory will contain one ASCII character. The length of strings can range from 1 to 120 and is entered in place of the bit number. An additional character "M" is appended to the address to distinguish string addresses from bit addresses.

#### Example

To address a string of length 100 characters, starting at D00200, enter D00200.100 M.

#### Unsolicited Data

If tags belong to a slave device, then their address types and ranges are validated according to the data areas configured for that device) For example, if the slave device is configured with a single area with D01000 to D01100, then a tag with address D01000 would be valid, but tags with addresses D01101 or C00001 would be invalid. All tags belonging to a slave device are Read Only. **See Also:** [Unsolicited Data Areas](#).

**Note:** Use caution when modifying Word, Short, DWord, Long, and Float types. Since all addresses start at a byte offset within the device, it is possible for the memory associated with tags to overlap. For example, word tags D00000 and D00001 overlap at byte 1. Writing to D00000 will also modify the value held in D00001. It is recommended that you use these memory types such that each value to be read and written to by the driver occupy a unique range of memory in the device. For example, you might map 3 Word values to bytes D00000-D00001, D00002-D00003, and D00004-D00005. Tags to access these values would then have addresses D00000, D00002, and D00004 respectively, and a data type of Word.

#### Series 18i

The following addresses are supported for this model. Not all address ranges may be valid for the particular device being used. For more information, refer to the specific device's documentation. Click on the following links to jump to the specific section.

#### [CNC Data](#)

#### [Arrays](#)

#### [Strings](#)

#### [Unsolicited Data](#)

#### PMC Data

The default data types for dynamically defined DDE tags are shown in **bold**.

Address Type	Range	Data Type	Access
A (Message demand)	A00000-A00124 A00000-A00123 A00000-A00121 Axxxx.0-Axxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
C (Counter)	C00000-C00199 C00000-C00198 C00000-C00196 Cxxxx.0-Cxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
D (Data table)	D00000-D09999 D00000-D09998 D00000-D09996 Dxxxx.0-Dxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
E (Extended relay)	E00000-E07999 E00000-E07998 E00000-E07996 Exxxxx.0-Exxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
F (Signal to CNC->PMC)	F00000-F02511 F00000-F02510 F00000-F02508 Fxxxx.0-Fxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
G (Signal to PMC->CNC)	G00000-G02511 G00000-G02510 G00000-G02508 Gxxxx.0-Gxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
K (Keep relay)	K00000-K00909 K00000-K00908 K00000-K00906 Kxxxx.0-Kxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write

M (Input signal from other devices)	M00000-M00511 M00000-M00510 M00000-M00508 Mxxxxx.0-Mxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
N (Output signal from other devices)	N00000-N00511 N00000-N00510 N00000-N00508 Nxxxxx.0-Nxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
R (Internal relay)	R00000-R09119 R00000-R09118 R00000-R09116 Rxxxxx.0-Rxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
T (Changeable timer)	T00000-T00299 T00000-T00298 T00000-T00296 Txxxxx.0-Txxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
X (Signal to machine->PMC)	X00000-X00127 X00000-X00126 X00000-X00124 Xxxxxx.0-Xxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
Y (Signal to PMC->machine)	Y00000-Y00127 Y00000-Y00126 Y00000-Y00124 Yxxxxx.0-Yxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
Custom Macro Value (common range)	#0100-#0999	<b>Float</b>	Read/Write
Custom Macro Value (local range)	#0001-#0033	<b>Float</b>	Read Only
Custom Macro Value (system range)	#1000-#9999	<b>Float</b>	Read/Write

## CNC Data

### [Status Info Tags](#)

### [Tool Offset](#)

### [Workpiece Zero Offset](#)

## Arrays

Arrays are supported for all PMC addresses, except for Custom Macros in the system range and where Boolean or string data types are used. Tool Offset data cannot be addressed as an array. The syntax for declaring an array is as follows:

*Mxxxxx[cols]* with assumed row count of 1.

*Mxxxxx[rows][cols]* where M is the address type and xxxxx is the byte offset of the first element in the array.

**Note:** For all arrays, the total number of bytes being requested cannot exceed the specified request size.

## Strings

All address types can be read and written to as ASCII strings. Each byte of memory will contain one ASCII character. The length of strings can range from 1 to 120 and is entered in place of the bit number. An additional character "M" is appended to the address to distinguish string addresses from bit addresses.

### Example

To address a string of length 100 characters, starting at D00200, enter D00200.100 M.

## Unsolicited Data

If tags belong to a slave device, then their address types and ranges are validated according to the data areas configured for that device. For example, if the slave device is configured with a single area with D01000 to D01100, then a tag with address D01000 would be valid, but tags with addresses D01101 or C00001 would be invalid. All tags belonging to a slave device are Read Only. **See Also:** [Unsolicited Data Areas](#).

**Note:** Use caution when modifying Word, Short, DWord, Long, and Float types. Since all addresses start at a byte offset within the device, it is possible for the memory associated with tags to overlap. For example, word tags D00000 and D00001 overlap at byte 1. Writing to D00000 will also modify the value held in D00001. It is recommended that you use these memory types such that each value to be read and written to by the driver occupy a unique range of memory in the device. For example, you might map 3 Word values to bytes D00000-D00001, D00002-D00003, and D00004-D00005. Tags to access these values would then have addresses D00000, D00002, and D00004 respectively, and a data type of Word.

## Series 21i

The following addresses are supported for this model. Not all address ranges may be valid for the particular device being used. For more information, refer to the specific device's documentation. Click on the following links to jump to the specific section.

### [CNC Data](#)

#### [Arrays](#)

#### [Strings](#)

#### [Unsolicited Data](#)

### PMC Data

The default data types for dynamically defined DDE tags are shown in **bold**.

Address Type	Range	Data Type	Access
A (Message demand)	A00000-A00124 A00000-A00123 A00000-A00121 Axxxxx.0-Axxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
C (Counter)	C00000-C00199 C00000-C00198 C00000-C00196 Cxxxxx.0-Cxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
D (Data table)	D00000-D09999 D00000-D09998 D00000-D09996 Dxxxxx.0-Dxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
E (Extended relay)	E00000-E07999 E00000-E07998 E00000-E07996 Exxxxx.0-Exxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
F (Signal to CNC->PMC)	F00000-F02511 F00000-F02510 F00000-F02508 Fxxxxx.0-Fxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
G (Signal to PMC->CNC)	G00000-G02511 G00000-G02510 G00000-G02508 Gxxxxx.0-Gxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
K (Keep relay)	K00000-K00909 K00000-K00908 K00000-K00906 Kxxxxx.0-Kxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
M (Input signal from other devices)	M00000-M00511 M00000-M00510 M00000-M00508 Mxxxxx.0-Mxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
N (Output signal from other devices)	N00000-N00511 N00000-N00510 N00000-N00508 Nxxxxx.0-Nxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
R (Internal relay)	R00000-R09119 R00000-R09118 R00000-R09116 Rxxxxx.0-Rxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
T (Changeable timer)	T00000-T00299 T00000-T00298 T00000-T00296 Txxxxx.0-Txxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
X (Signal to machine->PMC)	X00000-X00127 X00000-X00126 X00000-X00124	<b>Byte</b> , Char Word, Short DWord, Long, Float	Read Only

	Xxxxxx.0-Xxxxxx.7	Boolean	
Y (Signal to PMC->machine)	Y00000-Y00127 Y00000-Y00126 Y00000-Y00124 Yxxxxx.0-Yxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
Custom Macro Value (common range)	#0100-#0999	<b>Float</b>	Read/Write
Custom Macro Value (local range)	#0001-#0033	<b>Float</b>	Read Only
Custom Macro Value (system range)	#1000-#9999	<b>Float</b>	Read/Write

**CNC Data**

[Status Info Tags](#)

[Tool Offset](#)

[Workpiece Zero Offset](#)

**Arrays**

Arrays are supported for all PMC addresses, except for Custom Macros in the system range and where Boolean or string data types are used. Tool Offset data cannot be addressed as an array. The syntax for declaring an array is as follows:

*Mxxxxx[cols]* with assumed row count of 1.

*Mxxxxx[rows][cols]* where M is the address type and xxxxx is the byte offset of the first element in the array.

**Note:** For all arrays, the total number of bytes being requested cannot exceed the specified request size.

**Strings**

All address types can be read and written to as ASCII strings. Each byte of memory will contain one ASCII character. The length of strings can range from 1 to 120 and is entered in place of the bit number. An additional character "M" is appended to the address to distinguish string addresses from bit addresses.

**Example**

To address a string of length 100 characters, starting at D00200, enter D00200.100 M.

**Unsolicited Data**

If tags belong to a slave device, then their address types and ranges are validated according to the data areas configured for that device. For example, if the slave device is configured with a single area with D01000 to D01100, then a tag with address D01000 would be valid, but tags with addresses D01101 or C00001 would be invalid. All tags belonging to a slave device are Read Only. **See Also:** [Unsolicited Data Areas](#).

**Note:** Use caution when modifying Word, Short, DWord, Long, and Float types. Since all addresses start at a byte offset within the device, it is possible for the memory associated with tags to overlap. For example, word tags D00000 and D00001 overlap at byte 1. Writing to D00000 will also modify the value held in D00001. It is recommended that you use these memory types such that each value to be read and written to by the driver occupy a unique range of memory in the device. For example, you might map 3 Word values to bytes D00000-D00001, D00002-D00003, and D00004-D00005. Tags to access these values would then have addresses D00000, D00002, and D00004 respectively, and a data type of Word.

**Power Mate i**

The following addresses are supported for this model. Not all address ranges may be valid for the particular device being used. For more information, refer to the specific device's documentation. Click on the following links to jump to the specific section.

[CNC Data](#)

[Arrays](#)

[Strings](#)

**PMC Data**

The default data types for dynamically defined DDE tags are shown in **bold**.

Address Type	Range	Data Type	Access
A (Message demand)	A00000-A00124 A00000-A00123 A00000-A00121 Axxxxx.0-Axxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write

C (Counter)	C00000-C00199 C00000-C00198 C00000-C00196 Cxxxxx.0-Cxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
D (Data table)	D00000-D09999 D00000-D09998 D00000-D09996 Dxxxxx.0-Dxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
E (Extended relay)	E00000-E07999 E00000-E07998 E00000-E07996 Exxxxx.0-Exxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
F (Signal to CNC->PMC)	F00000-F02511 F00000-F02510 F00000-F02508 Fxxxxx.0-Fxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
G (Signal to PMC->CNC)	G00000-G02511 G00000-G02510 G00000-G02508 Gxxxxx.0-Gxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
K (Keep relay)	K00000-K00909 K00000-K00908 K00000-K00906 Kxxxxx.0-Kxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
M (Input signal from other devices)	M00000-M00511 M00000-M00510 M00000-M00508 Mxxxxx.0-Mxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
N (Output signal from other devices)	N00000-N00511 N00000-N00510 N00000-N00508 Nxxxxx.0-Nxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
R (Internal relay)	R00000-R09119 R00000-R09118 R00000-R09116 Rxxxxx.0-Rxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
T (Changeable timer)	T00000-T00299 T00000-T00298 T00000-T00296 Txxxxx.0-Txxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
X (Signal to machine->PMC)	X00000-X00127 X00000-X00126 X00000-X00124 Xxxxxx.0-Xxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
Y (Signal to PMC->machine)	Y00000-Y00127 Y00000-Y00126 Y00000-Y00124 Yxxxxx.0-Yxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
Custom Macro Value (common range)	#0100-#0999	<b>Float</b>	Read/Write
Custom Macro Value (local range)	#0001-#0033	<b>Float</b>	Read Only
Custom Macro Value (system range)	#1000-#9999	<b>Float</b>	Read/Write

## CNC Data

[Status Info Tags](#)

[Tool Offset](#)

[Workpiece Zero Offset](#)

## Arrays

Arrays are supported for all PMC addresses, except for Custom Macros in the system range and where Boolean or string data types are used. Tool Offset data cannot be addressed as an array. The syntax for declaring an array is as follows:

*Mxxxx[cols]* with assumed row count of 1.  
*Mxxxxx[rows][cols]* where M is the address type and xxxxx is the byte offset of the first element in the array.

**Note:** For all arrays, the total number of bytes being requested cannot exceed the specified request size.

**Strings**

All address types can be read and written to as ASCII strings. Each byte of memory will contain one ASCII character. The length of strings can range from 1 to 120 and is entered in place of the bit number. An additional character "M" is appended to the address to distinguish string addresses from bit addresses.

**Example**

To address a string of length 100 characters, starting at D00200, enter D00200.100 M.

**Note:** Use caution when modifying Word, Short, DWord, Long, and Float types. Since all addresses start at a byte offset within the device, it is possible for the memory associated with tags to overlap. For example, word tags D00000 and D00001 overlap at byte 1. Writing to D00000 will also modify the value held in D00001. It is recommended that you use these memory types such that each value to be read and written to by the driver occupy a unique range of memory in the device. For example, you might map 3 Word values to bytes D00000-D00001, D00002-D00003, and D00004-D00005. Tags to access these values would then have addresses D00000, D00002, and D00004 respectively, and a data type of Word.

**Open**

The following addresses are supported for this model. Not all address ranges may be valid for the particular device being used. For more information, refer to the specific device's documentation. Click on the following links to jump to the specific section.

- [CNC Data](#)
- [Arrays](#)
- [Strings](#)
- [Unsolicited Data](#)

**PMC Data**

The default data types for dynamically defined DDE tags are shown in **bold**.

Address Type	Range	Data Type	Access
A (Message demand)	A00000-A32767 A00000-A32766 A00000-A32764 Axxxxx.0-Axxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
C (Counter)	C00000-C32767 C00000-C32766 C00000-C32764 Cxxxxx.0-Cxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
D (Data table)	D00000-D32767 D00000-D32766 D00000-D32764 Dxxxxx.0-Dxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
E (Extended relay)	E00000-E32767 E00000-E32766 E00000-E32764 Exxxxx.0-Exxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
F (Signal to CNC->PMC)	F00000-F32767 F00000-F32766 F00000-F32764 Fxxxxx.0-Fxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
G (Signal to PMC->CNC)	G00000-G32767 G00000-G32766 G00000-G32764 Gxxxxx.0-Gxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
K (Keep relay)	K00000-K32767 K00000-K32766 K00000-K32764 Kxxxxx.0-Kxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write

M (Input signal from other devices)	M00000-M32767 M00000-M32766 M00000-M32764 Mxxxxx.0-Mxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
N (Output signal from other devices)	N00000-N32767 N00000-N32766 N00000-N32764 Nxxxxx.0-Nxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
R (Internal relay)	R00000-R32767 R00000-R32766 R00000-R32764 Rxxxxx.0-Rxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
T (Changeable timer)	T00000-T32767 T00000-T32766 T00000-T32764 Txxxxx.0-Txxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
X (Signal to machine->PMC)	X00000-X32767 X00000-X32766 X00000-X32764 Xxxxxx.0-Xxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read Only
Y (Signal to PMC->machine)	Y00000-Y32767 Y00000-Y32766 Y00000-Y32764 Yxxxxx.0-Yxxxxx.7	<b>Byte</b> , Char Word, Short DWord, Long, Float Boolean	Read/Write
Custom Macro Value (common range)	#0100-#0999	<b>Float</b>	Read/Write
Custom Macro Value (local range)	#0001-#0033	<b>Float</b>	Read Only
Custom Macro Value (system range)	#1000-#9999	<b>Float</b>	Read/Write

## CNC Data

### [Status Info Tags](#)

### [Tool Offset](#)

### [Workpiece Zero Offset](#)

## Arrays

Arrays are supported for all PMC addresses, except for Custom Macros in the system range and where Boolean or string data types are used. Tool Offset data cannot be addressed as an array. The syntax for declaring an array is as follows:

*Mxxxxx[cols]* with assumed row count of 1.

*Mxxxxx[rows][cols]* where M is the address type and xxxxx is the byte offset of the first element in the array.

**Note:** For all arrays, the total number of bytes being requested cannot exceed the specified request size.

## Strings

All address types can be read and written to as ASCII strings. Each byte of memory will contain one ASCII character. The length of strings can range from 1 to 120 and is entered in place of the bit number. An additional character "M" is appended to the address to distinguish string addresses from bit addresses.

### Example

To address a string of length 100 characters starting at D00200, enter D00200.100 M.

## Unsolicited Data

If tags belong to a slave device, then their address types and ranges are validated according to the data areas configured for that device. For example, if the slave device is configured with a single area with D01000 to D01100, then a tag with address D01000 would be valid, but tags with addresses D01101 or C00001 would be invalid. All tags belonging to a slave device are Read Only. **See Also:** [Unsolicited Data Areas](#).

**Note:** Use caution when modifying Word, Short, DWord, Long, and Float types. Since all addresses start at a byte offset within the device, it is possible for the memory associated with tags to overlap. For example, word tags D00000 and D00001 overlap at byte 1. Writing to D00000 will also modify the value held in D00001. It is recommended that you use these memory types such that each value to be read and written to by the driver occupy a unique range of memory in the device. For example, you might map 3 Word values to bytes D00000-D00001, D00002-D00003, and D00004-D00005. Tags to access these values would then have addresses D00000, D00002, and D00004 respectively, and a data type of Word.

**Status Info Tags**

**Series 15i**

Tag Name	Data Type	Access	Description
stainfo_alarm	Short	Read Only	Status of alarm.
stainfo_aut	Short	Read Only	Automatic mode selection.
stainfo_battery	Short	Read Only	Status of battery.
stainfo_dummy1	Short	Read Only	Reserved for future use.
stainfo_dummy2	Short	Read Only	Reserved for future use.
stainfo_edit	Short	Read Only	Status of program editing.
stainfo_emergency	Short	Read Only	Status of emergency.
stainfo_labelskip	Short	Read Only	Status of label skip.
stainfo_manual	Short	Read Only	Manual mode selection.
stainfo_motion	Short	Read Only	Status of axis movement, dwell.
stainfo_mstb	Short	Read Only	Status of M,S,T,B function.
stainfo_run	Short	Read Only	Status of automatic operation.
stainfo_warning	Short	Read Only	Status of warning.
stainfo_write	Short	Read Only	Status of writing backedup memory.

**Series 16i/18i/21i/Power Mate i/Open**

Tag Name	Data Type	Access	Description
stainfo_alarm	Short	Read Only	Status of alarm.
stainfo_aut	Short	Read Only	Automatic/Manual mode selection.
stainfo_edit	Short	Read Only	Status of program editing.
stainfo_emergency	Short	Read Only	Status of emergency.
stainfo_hdck	Short	Read Only	Status of manual handle re-trace.
stainfo_motion	Short	Read Only	Status of axis movement, dwell.
stainfo_mstb	Short	Read Only	Status of M,S,T,B function.
stainfo_run	Short	Read Only	Status of automatic operation.
stainfo_tmmode	Short	Read Only	T/M mode selection.

**Tool Offset**

**CNC Data**

Address Type	Range	Data Type	Access
Tool Offset	TOFS:nn:o  nn = Tool Number (01-64) o = Offset Type (0-9)	Long, DWord	Read/Write

**Tool Offset Types**

The meaning of the tool offset type depends upon the hardware. The following tables summarize the various off-set types.

	Cutter Radius	Tool Length
Wear	0	2
Geometry	1	3

**Lathe Series (T series)**

	X-Axis	Z-Axis	Nose R	Imaginary Tool Nose	Y-Axis
Wear	0	2	4	6	8
Geometry	1	3	5	7	9

**Tool Offset Values**

**Series 15, 150i**

6007#0 (OFE)	6004#0 (OFD)	6002#1 (OFC)	6002#0 (OFA)	Linear axis mm input [mm]	Linear axis inch input [inch]	Rotation axis [deg]

0	0	0	1	0.01	0.001	0.01
0	0	0	0	0.001	0.0001	0.001
0	0	1	0	0.0001	0.00001	0.0001
0	1	0	0	0.00001	0.000001	0.00001
1	0	0	0	0.000001	0.0000001	0.000001

### Series 16/18/21, 160/180/210, 160i/180i/210i, 0i, Power Mate, Open

	1004#1 (ISC)	1004#0 (ISA)	Linear axis mm input [mm]	Linear axis inch input [inch]	Rotation axis [deg]
IS-A*	0	1	0.01	0.001	0.01
IS-B	0	0	0.001	0.0001	0.001
IS-C**	1	0	0.0001	0.00001	0.0001

\*IS-A is effective for Power Mate i-H.

\*\*IS-C is effective for Power Mate i-D.

### Workpiece Zero Offset

Not all addresses will be valid for all device models.

#### CNC Data

Address Type	Range	Data Type	Access
Workpiece Zero Offset	ZOFS:aa:ooo  aa = axis (01-32) ooo = offset (000-306)	Long, DWord	Read/Write

### Workpiece Zero Offset Values

#### Series 150

	1009#1 (ISE)	1004#5 (ISD)	1004#1 (ISF)	1004#0 (ISR)	Linear axis mm input [mm]	Linear axis inch input [inch]	Rotation axis [deg]
IS-A	0	0	0	1	0.01	0.001	0.01
IS-B	0	0	0	0	0.001	0.0001	0.001
IS-C	0	0	1	0	0.0001	0.00001	0.0001
IS-D	0	1	0	0	0.00001	0.000001	0.00001
IS-E	1	0	0	0	0.000001	0.0000001	0.000001

#### Series 15, 150i

	1012#3 (ISE)	1012#2 (ISD)	1012#1 (ISC)	1012#0 (ISA)	Linear axis mm input [mm]	Linear axis inch input [inch]	Rotation axis [deg]
IS-A	0	0	0	1	0.01	0.001	0.01
IS-B	0	0	0	0	0.001	0.0001	0.001
IS-C	0	0	1	0	0.0001	0.00001	0.0001
IS-D	0	1	0	0	0.00001	0.000001	0.00001
IS-E	1	0	0	0	0.000001	0.0000001	0.000001

### Series 16/18/21, 160/180/210, 160i/180i/210i, 0i, Power Mate, Open

	1004#1 (ISC)	1004#0 (ISA)	Linear axis mm input [mm]	Linear axis inch input [inch]	Rotation axis [deg]
IS-A	0	1	0.01	0.001	0.01
IS-B	0	0	0.001	0.0001	0.001
IS-C	1	0	0.0001	0.00001	0.0001

#### Series 300i

	1013#3 (ISE)	1013#2 (ISD)	1013#1 (ISC)	1013#0 (ISA)	Linear axis mm input [mm]	Linear axis inch input [inch]	Rotation axis [deg]
IS-A	0	0	0	1	0.01	0.001	0.01
IS-B	0	0	0	0	0.001	0.0001	0.001

IS-C	0	0	1	0	0.0001	0.00001	0.0001
IS-D	0	1	0	0	0.00001	0.000001	0.00001
IS-E	1	0	0	0	0.000001	0.0000001	0.000001

## Error Descriptions

---

The following error/warning messages may be generated. Click on the link for a description of the message.

### Address Validation

#### [Missing address](#)

[Device address '<address>' contains a syntax error](#)

[Address '<address>' is out of range for the specified device or register](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is Read Only](#)

[Array size is out of range for address '<address>'](#)

[Array support is not available for the specified address: '<address>'](#)

### Device Status Messages

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

### General Driver Error Messages

[Unable to start the GE Focas Data Window Library services](#)

[Could not acquire library handle for device '<channel.device>'. FWLIB error: <code>](#)

[Could not set request timeout for device '<channel.device>'. FWLIB error: <code>](#)

[Read error occurred for address starting at '<address>' on device '<channel.device>'. FWLIB error: <code>](#)

[Write error occurred for address '<address>' on device '<channel.device>'. FWLIB error: <code>](#)

[Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'. End address can not be less than start address for area 'area-number'](#)

[Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'.](#)

[Invalid area order or duplicate area number](#)

[Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'. Maximum size of area 'area-number' is 'size' bytes](#)

[Could not read one or more vacant macros in range starting at '<address>' on device '<device>'](#)

### Slave Device Driver Error Messages

[Installed version of Focas1 Library does not support unsolicited communication. Device '<channel.device>' deactivated](#)

[Could not access necessary system resources for slave device: '<channel.device>'](#)

[Failed to connect slave device '<channel.device>'. Could not determine host IP address](#)

[Failed to connect slave device '<channel.device>'. Could not acquire library handle. FWLIB error: <code>](#)

[Failed to connect slave device '<channel.device>'. Could not set request timeout. FWLIB error: <code>](#)

[Failed to connect slave device '<channel.device>'. Could not set host IP](#)

[Failed to connect slave device '<channel.device>'. Could not set host port](#)

[Failed to connect slave device '<channel.device>'. Could not set transmission control PMC type](#)

[Failed to connect slave device '<channel.device>'. Could not set transmission control start address](#)

[Failed to connect slave device '<channel.device>'. Could not set message retries](#)

[Failed to connect slave device '<channel.device>'. Could not set message timeout](#)

[Failed to connect slave device '<channel.device>'. Could not set message alive time](#)

[Failed to connect slave device '<channel.device>'. Could not set number of data areas](#)

[Failed to connect slave device '<channel.device>'. Could not set data area type](#)

[Failed to connect slave device '<channel.device>'. Could not set data area start address](#)

[Failed to connect slave device '<channel.device>'. Could not set data area size](#)

[Failed to connect slave device '<channel.device>'. Could not set messaging parameters. FWLIB data error <code>](#)

[Failed to connect slave device '<channel.device>'. Could not set messaging parameters. FWLIB error: <code>](#)

[Failed to connect slave device '<channel.device>'. Could not start messaging session. FWLIB error: <code>](#)

[Received socket error notification from unsolicited message server](#)

[Received unsolicited message server shutdown notification](#)

[Received CNC power down notification from unsolicited message server. Reconnecting slave devices](#)

[Received CNC power up notification from unsolicited message server](#)

[Unsolicited message server does not seem to be running. Attempting to launch Attempt to launch unsolicited message server failed](#)

## **Focas1 Data Window Library Error Codes**

[Focas1 Data Window Library Error Codes](#)

### **Address Validation**

---

The following error/warning messages may be generated. Click on the link for a description of the message.

#### **Address Validation**

##### **[Missing address](#)**

[Device address '<address>' contains a syntax error](#)

[Address '<address>' is out of range for the specified device or register](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is Read Only](#)

[Array size is out of range for address '<address>'](#)

[Array support is not available for the specified address: '<address>'](#)

#### **Missing address**

---

##### **Error Type:**

Warning

##### **Possible Cause:**

A tag address that has been specified statically has no length.

##### **Solution:**

Re-enter the address in the client application.

#### **Device address '<address>' contains a syntax error**

---

##### **Error Type:**

Warning

##### **Possible Cause:**

A tag address that has been specified statically contains one or more invalid characters.

##### **Solution:**

Re-enter the address in the client application.

#### **Address '<address>' is out of range for the specified device or register**

---

##### **Error Type:**

Warning

##### **Possible Cause:**

A tag address that has been specified statically references a location that is beyond the range of supported locations for the device.

##### **Solution:**

Verify that the address is correct; if it is not, re-enter it in the client application.

#### **Data Type '<type>' is not valid for device address '<address>'**

---

##### **Error Type:**

Warning

##### **Possible Cause:**

A tag address that has been specified statically has been assigned an invalid data type.

##### **Solution:**

Modify the requested data type in the client application.

---

**Device address '<address>' is Read Only**

---

**Error Type:**

Warning

**Possible Cause:**

A tag address that has been specified statically has a requested access mode that is not compatible with what the device supports for that address.

**Solution:**

Change the access mode in the client application.

---

**Array size is out of range for address '<address>'**

---

**Error Type:**

Warning

**Possible Cause:**

A tag address that has been specified statically is requesting an array size that is too large for the address type or block size of the driver.

**Solution:**

Re-enter the address in the client application to specify a smaller value for the array or a different starting point.

---

**Array support is not available for the specified address: '<address>'**

---

**Error Type:**

Warning

**Possible Cause:**

A tag address that has been specified statically contains an array reference for an address type that doesn't support arrays.

**Solution:**

Re-enter the address in the client application to remove the array reference or correct the address type.

---

**Device Status Messages**

---

The following error/warning messages may be generated. Click on the link for a description of the message.

**Device Status Messages**

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

---

**Device '<device name>' is not responding**

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the host PC is broken.
2. The IP address assigned to the device is incorrect.

**Solution:**

1. Verify the cabling between the PC and the PLC device.
2. Verify that the IP address given to the named device matches that of the actual device.

---

**Unable to write to '<address>' on device '<device name>'**

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the host PC is broken.
2. The named device may have been assigned an incorrect IP address.

**Solution:**

1. Verify the cabling between the PC and the PLC device.
2. Verify that the IP address given to the named device matches that of the actual device.

**General Driver Error Messages**

---

The following error/warning messages may be generated. Click on the link for a description of the message.

**General Driver Error Messages****[Unable to start the GE Focas Data Window Library services](#)**

**[Could not acquire library handle for device '<channel.device>'. FWLIB error: <code>](#)**

**[Could not set request timeout for device '<channel.device>'. FWLIB error: <code>](#)**

**[Read error occurred for address starting at '<address>' on device '<channel.device>'. FWLIB error: <code>](#)**

**[Write error occurred for address '<address>' on device '<channel.device>'. FWLIB error: <code>](#)**

**[Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'.](#)**

**[Invalid area order or duplicate area number](#)**

**[Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'. End address can not be less than start address for area 'area-number'](#)**

**[Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'. Maximum size of area 'area-number' is 'size' bytes](#)**

**[Could not read one or more vacant macros in range starting at '<address>' on device '<device>'](#)**

**Unable to start the GE Focas Data Window Library services**

---

**Error Type:**

Fatal

**Possible Cause:**

The driver was unable to load the GE Focas Data Window Library.

**Solution:**

Make sure that the library is installed on the computer. Contact this software's GE distributor.

**Could not acquire library handle for device '<channel.device>'. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to connect to device failed.
2. Invalid device IP or port number.
3. The device may not be running.
4. The device may be busy processing other requests.
5. There may be a cabling problem

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to connect on a subsequent retry.

**See Also:**

**[Focas1 Data Window Library Error Codes](#)**

**Could not set request timeout for device '<channel.device>'. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to set request timeout failed.
2. Invalid timeout.
3. The device may be busy processing other requests.

4. There may be a cabling problem.

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to set the timeout on a subsequent retry.

**See Also:**

[Focas1 Data Window Library Error Codes](#)

---

**Read error occurred for address starting at '<address>' on device '<channel.device>'. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to read data failed.
2. Invalid PMC type.
3. Invalid address.
4. Invalid request size.
5. The device may be busy processing other requests.
6. There may be a cabling problem.

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to read the data on a subsequent retry.

**See Also:**

[Focas1 Data Window Library Error Codes](#)

---

**Write error occurred for address '<address>' on device '<channel.device>'. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to write data failed.
2. Invalid PMC type.
3. Invalid address.
4. Invalid request size.
5. The device may be busy processing other requests.
6. There may be a cabling problem.

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to write the data on a subsequent retry.

**See Also:**

[Focas1 Data Window Library Error Codes](#)

---

**Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'. End address can not be less than start address for area 'area-number'**

---

**Error Type:**

Fatal

**Possible Cause:**

The end address for the given unsolicited data area is greater than the start address.

**Solution:**

Make the end address greater than or equal to the start address.

---

**Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'. Invalid area order or duplicate area number**

---

**Error Type:**

Fatal

**Possible Cause:**

1. The unsolicited data areas are not listed in the correct order.
2. There are duplicate area numbers.

**Solution:**

1. Correct the ordering of the unsolicited data areas to be in the increasing order starting at 1.
2. Renumber the duplicate area number.

**See Also:**[Unsolicited Data Areas](#)

---

**Invalid XML document. Reason: Error loading 'Unsolicited Data Areas' for device 'device-name'. Maximum size of area 'area-number' is 'size' bytes**

---

**Error Type:**

Fatal

**Possible Cause:**

The maximum number of bytes for areas 1, 2, or 3 are 1430, 1414, or 1398 respectively. The range that has been defined for these areas is outside this limit.

**Solution:**

Correct the unsolicited data area size based on the limits above.

**See Also:**[Unsolicited Data Areas](#)

---

**Could not read one or more vacant macros in range starting at '<address>' on device '<device>'**

---

**Error Type:**

Warning

**Possible Cause:**

The macro number is not configured in the device.

**Solution:**

Check the tag address and device configuration.

---

**Slave Device Driver Error Messages**

---

The following error/warning messages may be generated. Click on the link for a description of the message.

**Slave Device Driver Error Messages**

[Installed version of Focas1 Library does not support unsolicited communication. Device '<channel.device>' deactivated](#)

[Could not access necessary system resources for slave device: '<channel.device>'](#)

[Failed to connect slave device '<channel.device>'. Could not determine host IP address](#)

[Failed to connect slave device '<channel.device>'. Could not acquire library handle. FWLIB error: <code>](#)

[Failed to connect slave device '<channel.device>'. Could not set request timeout. FWLIB error: <code>](#)

[Failed to connect slave device '<channel.device>'. Could not set host IP](#)

[Failed to connect slave device '<channel.device>'. Could not set host port](#)

[Failed to connect slave device '<channel.device>'. Could not set transmission control PMC type](#)

[Failed to connect slave device '<channel.device>'. Could not set transmission control start address](#)

[Failed to connect slave device '<channel.device>'. Could not set message retries](#)

[Failed to connect slave device '<channel.device>'. Could not set message timeout](#)

[Failed to connect slave device '<channel.device>'. Could not set message alive time](#)  
[Failed to connect slave device '<channel.device>'. Could not set number of data areas](#)  
[Failed to connect slave device '<channel.device>'. Could not set data area type](#)  
[Failed to connect slave device '<channel.device>'. Could not set data area start address](#)  
[Failed to connect slave device '<channel.device>'. Could not set data area size](#)  
[Failed to connect slave device '<channel.device>'. Could not set messaging parameters. FWLIB data error <code>](#)  
[Failed to connect slave device '<channel.device>'. Could not set messaging parameters. FWLIB error: <code>](#)  
[Failed to connect slave device '<channel.device>'. Could not start messaging session. FWLIB error: <code>](#)  
[Received socket error notification from unsolicited message server](#)  
[Received unsolicited message server shutdown notification](#)  
[Received CNC power down notification from unsolicited message server. Reconnecting slave devices](#)  
[Received CNC power up notification from unsolicited message server](#)  
[Unsolicited message server does not seem to be running. Attempting to launch](#)  
[Attempt to launch unsolicited message server failed](#)

### **Installed version of Focas Data Window Library does not support unsolicited communication. Device '<device>' deactivated**

---

**Error Type:**

Serious

**Possible Cause:**

The server project includes slave devices, but the version of the Focas1 Data Window Library software installed on the system does not support unsolicited communication.

**Solution:**

Contact the GE distributor for library update. The devices' firmware may also need to be upgraded.

**See Also:**

[Additional Software Requirements](#)

### **Could not access necessary system resources for slave device: '<channel.device>'**

---

**Error Type:**

Serious

**Possible Cause:**

The driver could not create data objects needed for unsolicited communications.

**Solution:**

Close down all unnecessary applications running on the host computer.

### **Failed to connect slave device '<channel.device>'. Could not determine host IP address**

---

**Error Type:**

Warning

**Possible Cause:**

Part of starting an unsolicited messaging session with a device includes informing the device of the IP of the host computer. This message will be posted if the driver fails to determine the default IP of the host computer.

**Solution:**

Make sure that an IP address is configured for the computer.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

---

**Failed to connect slave device '<channel.device>'. Could not acquire library handle. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to connect to device failed.
2. Invalid device IP or port number.
3. The device may not be running.
4. The device may be busy processing other requests.
5. There may be a cabling problem.

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to connect on a subsequent retry.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Focas1 Data Window Library Error Codes](#)

---

**Failed to connect slave device '<channel.device>'. Could not set request timeout. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to set request timeout failed.
2. Invalid timeout.
3. The device may be busy processing other requests.
4. There may be a cabling problem

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to set the timeout on a subsequent retry.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Focas1 Data Window Library Error Codes](#)

---

**Failed to connect slave device '<channel.device>'. Could not set host IP**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set host IP of Unsolicited Message Server failed.

**Solution:**

Check the IP of the host computer.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

---

**Failed to connect slave device '<channel.device>'. Could not set host port**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set host port of Unsolicited Message Server failed.

**Solution:**

Ensure that the specified port number is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not set transmission control PMC type**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set transmission control PMC type failed.

**Solution:**

Ensure that the specified PMC type is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not set transmission control start address**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set transmission control start address failed.

**Solution:**

Ensure that the specified start address is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not set message retries**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set transmission control message retries failed.

**Solution:**

Ensure that the specified retries value is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not set message timeout**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set unsolicited message timeout failed.

**Solution:**

Ensure that the specified timeout value is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not set message alive time**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set unsolicited message alive time failed.

**Solution:**

Ensure that the specified alive time value is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not set number of data areas**

---

**Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set number of unsolicited message data areas failed.

**Solution:**

Ensure that the device supports the number of data areas configured.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Data Areas](#)

**Failed to connect slave device '<channel.device>'. Could not set data area type****Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set unsolicited message data area type failed.

**Solution:**

Ensure that the specified type is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Data Areas](#)

**Failed to connect slave device '<channel.device>'. Could not set data area start address****Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set unsolicited message data area start address failed.

**Solution:**

Ensure that the specified start address is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Data Areas](#)

**Failed to connect slave device '<channel.device>'. Could not set data area size****Error Type:**

Warning

**Possible Cause:**

Call to Focas1 Data Window Library to set unsolicited message data area size failed.

**Solution:**

Ensure that the specified range of addresses is valid.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Data Areas](#)

---

**Failed to connect slave device '<channel.device>'. Could not set messaging parameters. FWLIB data error <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to set unsolicited messaging parameters failed due to a data related error.
2. Invalid transfer control parameters.
3. The device may not be running.
4. The device may be busy processing other requests.
5. There may be a cabling problem.

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to connect on a subsequent retry.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Focas1 Data Window Library Error Codes](#)

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not set messaging parameters. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to set unsolicited messaging parameters failed due to a non-data related error.
2. Invalid transfer control parameters.
3. The device may not be running.
4. The device may be busy processing other requests.
5. There may be a cabling problem.

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to connect on a subsequent retry.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Focas1 Data Window Library Error Codes](#)

[Unsolicited Transfer Control](#)

---

**Failed to connect slave device '<channel.device>'. Could not start messaging session. FWLIB error: <code>**

---

**Error Type:**

Warning

**Possible Cause:**

1. Call to Focas1 Data Window Library to start unsolicited messaging session failed.
2. Invalid transfer control parameters.
3. The device may not be running.
4. The device may be busy processing other requests.
5. There may be a cabling problem.

**Solution:**

The error code provided by the library should help diagnose the problem. If the problem is transient in nature, the driver should be able to connect on a subsequent retry.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Focas1 Data Window Library Error Codes](#)  
[Unsolicited Transfer Control](#)

---

**Received socket error notification from unsolicited message server**

---

**Error Type:**

Warning

**Possible Cause:**

The Unsolicited Message Server experienced a socket error for one or more of the connections to a device on the network.

**Solution:**

If the problem is transient, the driver should recover from this error by restarting all unsolicited messaging sessions. If not, investigate cabling, CNC power supply, and I/F board.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

---

**Received unsolicited message server shutdown notification**

---

**Error Type:**

Warning

**Possible Cause:**

The Unsolicited Message Server was shutdown while the driver was using it.

**Solution:**

This is for information only. The driver will automatically restart the message server. For the restart to succeed, the message server executable file "UMsgServ.exe" must be located in the host computer's system directory.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Messaging](#)

---

**Received CNC power down notification from unsolicited message server. Reconnecting slave devices**

---

**Error Type:**

Warning

**Possible Cause:**

The Unsolicited Message Server has notified the driver that with one of the devices it has started an unsolicited messaging session with no longer appears to be running. The likely reason is that the CNC was powered down. Network problems could also be responsible.

**Solution:**

Restart the CNC and check for networking problems such as cable breaks. The driver should automatically resume communication with the device.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**Received CNC power up notification from unsolicited message server**

---

**Error Type:**

Warning

**Possible Cause:**

The Unsolicited Message Server has notified the driver that one of the devices it has started an unsolicited messaging session with has been powered up. This message will likely follow a "[Received CNC power down notification](#)" message.

**Solution:**

This is for information only. The driver should automatically resume communication with the device.

**Unsolicited message server does not seem to be running. Attempting to launch**

---

**Error Type:**

Warning

**Possible Cause:**

The Unsolicited Message Server has stopped running, and was not shutdown normally.

**Solution:**

This is for information only. The driver will automatically restart the message server. For the restart to succeed, the message server executable file "UMsgServ.exe" must be located in the host computer's system folder.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**

[Unsolicited Messaging](#)

**Attempt to launch unsolicited message server failed**

---

**Error Type:**

Warning

**Possible Cause:**

The driver was not able to start the Unsolicited Message Server.

**Solution:**

In order for the restart to succeed, the message server executable file "UMsgServ.ext" must be located in the host computer's system folder.

**Note:**

The device "\_System.\_Error" tag will be set if the driver fails to start an unsolicited messaging session, or restart the session after detection of a communications problem. Tags belonging to a slave device in an error state will continue to show the last value received from the device or their initial value of zero.

**See Also:**[Unsolicited Messaging](#)**Focas1 Data Window Library Error Codes**

This driver uses the GE Focas1 Data Window Library software to communicate with devices on the network. When the library cannot complete a request made by this driver, it will return an error code describing the reason. These error codes are included in the relevant driver error messages. This table is provided to aid in diagnosing the hardware or software configuration problem causing these errors. For more information, refer to [Additional Software Requirements](#).

Error Code	Error Type	Meaning
-17	Protocol	Data from Ethernet board is incorrect.
-16	Socket	Investigate CNC power supply, Ethernet cable, and I/F board.
-15	DLL	There is no DLL file for CNC series.
-8	Handle	Invalid connection handle.
-7	Version	The CNC/PMC version does not match that of the library. Replace the library or the CNC/PMC control software.
-6	Unexpected	An unanticipated error occurred.
-2	Reset	The RESET or STOP button was pressed.
-1	Busy	The CNC was busy processing another request.  (This commonly occurs during slave device connect attempts. The driver will retry until a connection is made.)
0	Normal	Function was completed without error.
1 (CNC)	Function	Function was not executed or is not available.  (This can occur if the Unsolicited Message Server goes down while the driver is using it. The driver will attempt to restart the message server.)
1 (PMC)	No PMC	The PMC does not exist.
2	Length	Invalid data block length.
3 (CNC)	Number	Invalid data number.
3 (PMC)	Range	Invalid address range.
4 (CNC)	Attribute	Invalid data attribute.  (Could result from a bad address type or range for data read/write.)
4 (PMC)	Type	Invalid address type.
5	Data	Invalid data.
6	No Option	Invalid CNC option.
7	Protection	Write operation is prohibited.
8	Overflow	CNC tape memory is overflowed.
9	Parameter	CNC parameter is set incorrectly.
10	Buffer	The buffer is empty or full.  (This can occur if there are more slave devices than the Unsolicited Message Server is configured to handle.)
11	Path	Invalid path number.
12	Mode	Invalid CNC mode.
13	Reject	CNC rejected request.  (This can occur if an attempt is made to start multiple unsolicited messaging sessions with the same device.)
14	Data Server	Data server error occurred.
15	Alarm	Function cannot be executed due to an alarm in CNC.
16	Stop	CNC status is stop or emergency.
17	Password	Data is protected by the CNC data protection function.

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