GE CCM Driver Help

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GE CCM Driver Help

Help version 1.017

CONTENTS

Overview

The GE CCM Driver provides an easy and reliable way to connect GE CCM controllers to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications. It is intended for use with GE Programmable Logic Controllers.

Device Setup

Supported Devices

Series 90-30 311/313, 331/341
Series 90-70 731/732, 771/772, 781/782
Series Six CCM2
Series Five CCM2

Communication Protocol

GE CCM (Master/Slave mode)

Note: Although the PLC device can be configured to operate in Master/Slave or Peer to Peer mode, the driver can only support Master/Slave communications.

Supported Communication Parameters

Baud Rate: 300, 600, 1200, 2400, 9600, 19200
Parity: Odd, None
Data Bits: 8
Stop Bits: 1

Note: Not all devices support the listed configurations.

Ethernet Encapsulation

This driver supports Ethernet Encapsulation, which allows the driver to communicate with serial devices attached to an Ethernet network using a terminal server. It can be enabled through the COM ID dialog in Channel Properties. For more information, refer to the OPC Server's help documentation.

Device IDs

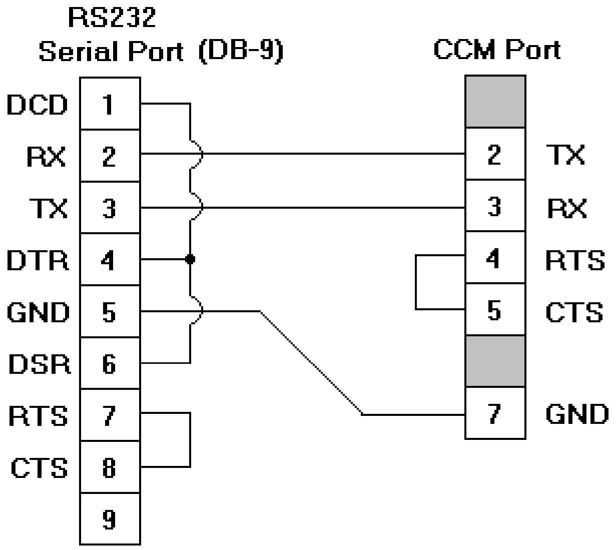
Slave Network IDs ranging from 1 to 90.

Flow Control

When using an RS232/RS485 converter, the type of flow control that is required depends on the converter's needs. Some do not require any flow control whereas others require RTS flow. Consult the converter's documentation in order to determine its flow requirements. An RS485 converter that provides automatic flow control is recommended.

Note: When using the manufacturer's supplied communications cable, it is sometimes necessary to choose a flow control setting of **RTS** or **RTS Always** under the Channel Properties.

Cable Connections



Modem Setup

This driver supports modem functionality. For more information, please refer to the topic "Modem Support" in the OPC Server Help documentation.

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
BCD	Two byte packed BCD Value range is 0-9999. Behavior is undefined for values beyond this range.
LBCD	Four byte packed BCD Value range is 0-99999999. Behavior is undefined for values beyond this range.
Float	32 bit floating point value. The driver interprets two consecutive registers as a floating point value by making the second register the high word and the first register the low word.

Address Descriptions

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

311
313
331
341
731
732
771
772
781
782
Series Six
Series Five

311 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I512 I1 to I505 (every 8th bit) I1 to I497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q512 Q1 to Q505 (every 8th bit) Q1 to Q497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R512 R1 to R511 R1.b to R512.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the specific data type.

String Access to Registers

Register space can be accessed as string data by appending and specifying the "M" data type. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

313 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I512 I1 to I505 (every 8th bit) I1 to I497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q512 Q1 to Q505 (every 8th bit) Q1 to Q497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R1024 R1 to R1023 R1.b to R1024.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

331 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I512 I1 to I505 (every 8th bit) I1 to I497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q512 Q1 to Q505 (every 8th bit) Q1 to Q497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R2048 R1 to R2047 R1.b to R2048.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

341 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I512 I1 to I505 (every 8th bit) I1 to I497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q512 Q1 to Q505 (every 8th bit) Q1 to Q497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R9999 R1 to R9998 R1.b to R9999.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

731 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I512 I1 to I505 (every 8th bit) I1 to I497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q512 Q1 to Q505 (every 8th bit) Q1 to Q497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float.An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

732 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I512 I1 to I505 (every 8th bit) I1 to I497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q512 Q1 to Q505 (every 8th bit) Q1 to Q497 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

771 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I2048 I1 to I2041 (every 8th bit) I1 to I2033 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q2048 Q1 to Q2041 (every 8th bit) Q1 to Q2033 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

772 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I2048 I1 to I2041 (every 8th bit) I1 to I2033 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q2048 Q1 to Q2041 (every 8th bit) Q1 to Q2033 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

781 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I12288 I1 to I12281 (every 8th bit) I1 to I12273 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q12288 Q1 to Q12281 (every 8th bit) Q1 to Q12273 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

782 Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I12288 I1 to I12281 (every 8th bit) I1 to I12273 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q12288 Q1 to Q12281 (every 8th bit) Q1 to Q12273 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short
L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1,R2,R3,R4

Example 2
R16 [3][4] includes the following Word addresses:
R16,R17,R18,R19
R20,R21,R22,R23
R24,R25,R26,R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

Series Six Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I12288 I1 to I1017 (every 8th bit) I1 to I1009 (every 8th bit) I1025 to I12273 (every 16th bit)	**Boolean*** Byte Word, Short, BCD Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q12288 Q1 to Q1017 (every 8th bit) Q1 to Q1009 (every 8th bit) Q1025 to Q12273 (every 16th bit)	**Boolean*** Byte Word, Short, BCD Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write
Expanded I/O Inputs	Ih+n (h = hex 0-F) (n = decimal 1-1024)** Ih-n (h = hex 0-F) (n = decimal 1-1024)	**Boolean**	Read/Write
Expanded I/O Outputs	Qh+n (h = hex 0-F) (n = decimal 1-1024)** Qh-n (h = hex 0-F) (n = decimal 1-1024)	**Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.
**I0+n maps to In and Q0+n maps to Qn, where n = 1 to 1024.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short

L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

Series Five Addressing

The default data types are shown in **bold**.

Device Address	Range	Data Type	Access
Discrete Inputs	I1 to I1024 I1 to I1017 (every 8th bit) I1 to I1009 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Discrete Outputs	Q1 to Q1024 Q1 to Q1017 (every 8th bit) Q1 to Q1009 (every 8th bit)	**Boolean*** Byte Word, Short, BCD	Read/Write
Register References	R1 to R16384 R1 to R16383 R1.b to R16384.b (b is bit number 0 to 15)	**Word**, Short, BCD DWord, Long, LBCD, Float **Boolean**	Read/Write

*When an array specification is given, the default data type Boolean becomes Byte.

Note: All device addresses can be prefixed with a % sign if needed (such as %R100). This can aid the conversion from other OPC servers or communications drivers.

Default Data Type Override

The default data types for each device type are shown in the table above. To override the default data type for register references, append a data type indicator to the device address. The possible data type indicators are as follows.

F = Float
S = Short

L = Long
M = String
(BCD) = BCD

Examples

R100 F = Accesses R100 as a floating point value.
R300 L = Accesses R300 as a long.
R400-R410 M = Accesses R400-R410 as a string with a length of 22 bytes.

Note: There must be a space between the register number and the data type indicator.

String Access to Registers

Register space can be accessed as string data by appending the "M" data indicator. The length of the string is based on how the device address reference is entered. Examples are as follows.

R100-R120 M = Accesses Register R100 as string with a length of 42 bytes.
R400 M = Accesses Register R400 as a string with a length of 4 bytes.
R405-R405 M = Accesses Register R405 as a string with a length of 2 bytes.

Note: The maximum string length is 128 bytes.

Array Support

The following data types support arrays: Byte, Word, Short, DWord, Long and Float. An array is a collection of contiguous elements of a given data type. The maximum array size is 32 DWords (Longs and Floats), 64 Words (Shorts) or 128 Bytes for a total of 1024 bits. For information on the two ways to specify an array, refer to the examples below.

Example 1
R1 [4] includes the following Word addresses:
R1, R2, R3, R4

Example 2
R16 [3][4] includes the following Word addresses:
R16, R17, R18, R19
R20, R21, R22, R23
R24, R25, R26, R27
3 rows x 4 columns = 12 words
12 x 16 (word) = 192 total bits

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
Device address '<address>' is not supported by model '<model name>'
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>'

Serial Communications

COMn does not exist
Error opening COMn
COMn is in use by another application
Unable to set comm parameters on COMn
Communications error on '<channel name>' [<error mask>]

Device Status Messages

Device '<device name>' is not responding
Unable to write to '<address>' on device '<device name>
Unable to write to tag '<address>' on device '<device name>'. Invalid request
Unable to read tag '<address>' on device '<device name>'. Invalid request
Unable to read '<count>' bytes starting at '<address>' on device '<device name>'. Invalid request
Unable to write to tag '<address>' on device '<device name>'. Framing error
Unable to read tag '<address>' on device '<device name>'. Framing error
Unable to read '<count>' bytes starting at '<address>' on device '<device name>'. Framing error

Device Specific Messages

Invalid tag in block starting at '<address>' in device '<device>'

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
Device address '<address>' is not supported by model '<model name>'
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 dynamically 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 dynamically 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 dynamically 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.

Device address '<address>' is not supported by model '<model name>'

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically references a location that is valid for the communications protocol but not supported by the target device.

Solution:
Verify that the address is correct; if it is not, re-enter it in the client application. Also verify that the selected model name for the device is correct.

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

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically 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 dynamically 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 dynamically 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 dynamically 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.

Address '<address>' is not valid on device '<device name>'

Error Type:
Warning

Possible Cause:
A device model name has been changed such that the specified address is no longer valid.

Solution:
Either choose another model that supports the specified address or modify (remove) the invalid address.

Serial Communications

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

Serial Communications

COMn does not exist
Error opening COMn
COMn is in use by another application
Unable to set comm parameters on COMn
Communications error on '<channel name>' [<error mask>]

COMn is in use by another application

Error Type:
Fatal

Possible Cause:
The serial port assigned to a device is being used by another application.

Solution:
Verify that the correct port has been assigned to the channel.

Error opening COMn

Error Type:
Fatal

Possible Cause:
The specified COM port could not be opened due an internal hardware or software problem on the target computer.

Solution:
Verify that the COM port is functional and may be accessed by other Windows applications.

COMn does not exist

Error Type:
Fatal

Possible Cause:

The specified COM port is not present on the target computer.

Solution:
Verify that the proper COM port has been selected.

Unable to set comm parameters on COMn

Error Type:
Fatal

Possible Cause:
The serial parameters for the specified COM port are not valid.

Solution:
Verify the serial parameters and make any necessary changes.

Communications error on '<channel name>' [<error mask>]

Error Type:
Serious

Error Mask Definitions:
B = Hardware break detected.
F = Framing error.
E = I/O error.
O = Character buffer overrun.
R = RX buffer overrun.
P = Received byte parity error.
T = TX buffer full.

Possible Cause:
1. The serial connection between the device and the Host PC is bad.
2. The communications parameters for the serial connection are incorrect.

Solution:
1. Verify the cabling between the PC and the PLC device.
2. Verify that the specified communications parameters match those of the device.

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>'
Unable to write to tag '<address>' on device '<device name>'. Invalid request
Unable to read tag '<address>' on device '<device name>'. Invalid request
Unable to read '<count>' bytes starting at '<address>' on device '<device name>'. Invalid request
Unable to write to tag '<address>' on device '<device name>'. Framing error
Unable to read tag '<address>' on device '<device name>'. Framing error
Unable to read '<count>' bytes starting at '<address>' on device '<device name>'. Framing error

Device '<device name>' not responding

Error Type:
Serious

Possible Cause:
1. The serial connection between the device and the Host PC is broken.
2. The communications parameters for the serial connection are incorrect.
3. The named device may have been assigned an incorrect Network ID.
4. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device setting.

Solution:
1. Verify the cabling between the PC and the PLC device.

2. Verify the specified communications parameters match those of the device.
3. Verify that the Network ID given to the named device matches that of the actual device.
4. Increase the Request Timeout setting so that the entire response can be handled.

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

Error Type:
Serious

Possible Cause:
1. The serial connection between the device and the Host PC is broken.
2. The communications parameters for the serial connection are incorrect.
3. The named device may have been assigned an incorrect Network ID.

Solution:
1. Verify the cabling between the PC and the PLC device.
2. Verify the specified communications parameters match those of the device.
3. Verify that the Network ID given to the named device matches that of the actual device.

Unable to write to tag '<address>' on device '<device name>'. Invalid request

Error Type:
Serious

Possible Cause	Solution
The Device ID in packet does not match the ID of the device.	Verify that the correct Device ID has been specified in Device Properties.
Invalid memory type.	1. Verify that the memory type for the address in question is correct for the specified model. 2. Consult the device manufacturer's help documentation for memory types/ranges.
1. Invalid address for specified memory type. 2. Transfer across a memory boundary.	1. Verify that the offset for the address in question is correct for the specified model. 2. Verify that no request exceeds the range for that memory type. 3. Consult the device manufacturer's help documentation for memory types/ranges.
1. Incorrect header checksum. 2. Missing or invalid start of header (SOH) or end transmission block (ETB). 3. Invalid header character. 4. Invalid address for specified memory type.	1. Check all hardware (including cabling) for faults, loose connections and proximity to noisy sources. 2. Verify proper communication settings (such as parity, flow control, baud rate and stop bits). Correct the settings in Channel Properties accordingly.

Unable to read tag '<address>' on device '<device name>'. Invalid request.

Error Type:
Serious

Possible Cause	Solution
The Device ID in packet does not match the ID of the device.	Verify that the correct Device ID has been specified in Device Properties.
Invalid memory type.	1. Verify that the memory type for the address in question is correct for the specified model. 2. Consult the device manufacturer's help documentation for memory types/ranges.
1. Invalid address for specified memory type. 2. Transfer across a memory boundary.	1. Verify that the offset for the address in question is correct for the specified model. 2. Verify that no request exceeds the range for that memory type. 3. Consult the device manufacturer's help documentation for memory types/ranges.
1. Incorrect header checksum. 2. Missing or invalid start of header (SOH) or end transmission block (ETB). 3. Invalid header character.	1. Check all hardware (including cabling) for faults, loose connections and proximity to noisy sources. 2. Verify proper communication settings (such as parity, flow control, baud rate and stop bits). Correct the settings in Channel Properties accordingly.

4. Invalid address for specified memory type.	

Unable to read '<count>' bytes starting at '<address>' on device '<device name>'. Invalid request

Error Type:
Serious

Possible Cause	Solution
The Device ID in packet does not match the ID of the device.	Verify that the correct Device ID has been specified in Device Properties.
Invalid memory type.	1. Verify that the memory type for the address in question is correct for the specified model. 2. Consult the device manufacturer's help documentation for memory types/ranges.
1. Invalid address for specified memory type. 2. Transfer across a memory boundary.	1. Verify that the offset for the address in question is correct for the specified model. 2. Verify that no request exceeds the range for that memory type. 3. Consult the device manufacturer's help documentation for memory types/ranges.
1. Incorrect header checksum. 2. Missing or invalid start of header (SOH) or end transmission block (ETB). 3. Invalid header character. 4. Invalid address for specified memory type.	1. Check all hardware (including cabling) for faults, loose connections and proximity to noisy sources. 2. Verify proper communication settings (such as parity, flow control, baud rate and stop bits). Correct the settings in Channel Properties accordingly.

Unable to write to tag '<address>' on device '<device name>'. Framing error

Error Type:
Serious

Possible Cause:
1. Misalignment of packets due to connection/disconnection between PC and device.
2. Faulty hardware and/or cables.
3. Incorrect communication settings.

Solution:
1. Check all hardware (including cabling) for faults, loose connections and proximity to noisy sources.
2. Verify proper communication settings (such as parity, flow control, baud rate and stop bits). Correct the settings in Channel Properties accordingly.

Note:
Framing errors occur when a frame of incorrect size is received or when the received frame doesn't pass a validity (checksum) test.

Unable to read tag '<address>' on device '<device name>'. Framing error

Error Type:
Serious

Possible Cause:
1. Misalignment of packets due to connection/disconnection between PC and device.
2. Faulty hardware and/or cables.
3. Incorrect communication settings.

Solution:
1. Check all hardware (including cabling) for faults, loose connections and proximity to noisy sources.
2. Verify proper communication settings (such as parity, flow control, baud rate and stop bits). Correct the settings in Channel Properties accordingly.

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Framing errors occur when a frame of incorrect size is received or when the received frame doesn't pass a validity (checksum) test.

Unable to read '<count>' bytes starting at '<address>' on device '<device name>'. Framing error

Error Type:
Serious

Possible Cause:
1. Misalignment of packets due to connection/disconnection between PC and device.
2. Faulty hardware and/or cables.
3. Incorrect communication settings.

Solution:
1. Check all hardware (including cabling) for faults, loose connections and proximity to noisy sources.
2. Verify proper communication settings (such as parity, flow control, baud rate and stop bits). Correct the settings in Channel Properties accordingly.

Note:
Framing errors occur when a frame of incorrect size is received or when the received frame doesn't pass a validity (checksum) test.

Device Specific Messages

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

Device Specific Messages
Invalid tag in block starting at '<address>' in device '<device>'

Invalid tag in block starting at '<address>' in device '<device>'

Error Type:
Warning

Possible Cause:
The driver has attempted to access a tag that is not supported in the current device.

Solution:
Check that the memory register tables in the device programming software for the range of registers of the type <address> that are supported in the current device. Verify that all tags of this type entered in the client application are valid.

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