

Allen-Bradley Slave Ethernet Driver Help

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Allen-Bradley Slave Ethernet Driver Help

Help version 1.014

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Overview

The Allen-Bradley Slave Ethernet Driver provides an easy and reliable way to connect Allen-Bradley Slave Ethernet PLCs to OPC Client applications, including HMI, SCADA, Historian, MES, ERP, and countless custom applications.

Device Setup

The Allen-Bradley Slave Ethernet Driver acts as a single simulated Allen-Bradley PLC-2. Up to 256 devices may connect to the simulated PLC-2 at any time. Only PLC-2 Unprotected Reads and Writes to register memory are currently supported. For more information, refer to [Master Device Configuration](#).

Supported Devices

Allen-Bradley PLCs are programmed to send PLC-2 type commands. In this case, ControlLogix processors are not supported. For more information on command compatibility, refer to the hardware programming manual.

Note: Devices do not need to be PLC-2s. In order to communicate with this driver, however, they do require specialized ladder programming.

Communication Protocol

Allen-Bradley Ethernet

PLC Configuration

Devices on the network must be programmed to send Read and Write messages to the driver as well as handle returned data.

Sockets

Sockets used by incoming connections will be aged according to activity level. Sockets with little or no activity will be closed and reused as new attempts to connect are made.

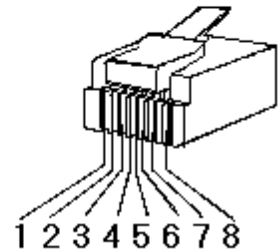
Cable Diagrams

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

Master Device Configuration

Allen-Bradley PLCs must be programmed to issue Read and Write commands to this driver in addition to handling returned data. For more information, consult the Allen-Bradley PLC programming documentation. Messages must be sent to both the IP address of the selected Ethernet adapter of the host computer and the port number configured for the simulated device. To access this dialog, click **Channel Properties | Network Interface**.

Supported Commands

PLC-2 Unprotected Read
PLC-2 Unprotected Write

Error Codes

This driver will respond to all messages it receives. If it cannot complete the request, it will return a response message with a non-zero error code in the STS status byte of the PCCC frame structure. Ladder programs should be written to handle these errors. The following error codes may be sent by the driver.

Error Code	Description
0x00	Request processed successfully.
0x10	Command not supported by driver.
0x20	Command supported by driver, but was found to have invalid parameters.
0x50	Address out of range.

Communications

TCP/IP Port

This parameter specifies the port number on which the driver should listen. Devices must be configured to connect to this port. Messages sent to all other ports will be ignored by the driver. Values may range from 0 to 65535. The standard Allen-Bradley default setting is 2222. Non-standard values may be necessary due to routing and firewall issues. Changing this value during runtime will cause the driver to drop all existing connections.

Options

This parameter is used to specify word order for 32 bit data types. To specify first word low, check the **First Word Low in 32 bit data types** box. To specify first word high, leave the check box empty. The default setting is first word high.

Data Types Description

Data Type	Description
Boolean	Single 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

The default data type for each address is shown in **bold**.

Address Type	Syntax and Range	Data Types	Access
Word Register	w where w is word number 0-1747.*	Word , Short, BCD	Read/Write
Word Register	w where w is start word number 0-1746.* Two adjacent word registers will be used to store these values. The first register will contain the high word.	DWord, Long, LBCD, Float	Read/Write
Word Register	w/b where w is word number 0-1747* and b is the bit number 0-17.*	Boolean	Read/Write

*Octal.

Array Support

Arrays are supported for all data types except Booleans. Array dimensions may range from 1 to 256 (decimal). One and two dimensional arrays are supported. The syntax is as follows:

```
w [rows] [cols]
w [cols]
```

Note: It is assumed that rows equal 1.

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](#)

Device Specific Messages

[Failure to initiate 'winsock.dll'](#)

[Failure to start unsolicited communications](#)

Address Validation

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

[Device address '<address>' is read only](#)

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.

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

Error Type:

Warning

Possible Cause:

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

Solution:

1. Verify that the address is correct; if it is not, re-enter it in the client application.
2. 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 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.

Device Specific Messages

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

Device Specific Messages

[Failure to initiate 'winsock.dll'](#)

[Failure to start unsolicited communications](#)

Failure to initiate 'winsock.dll'

Error Type:

Fatal

Possible Cause:

Could not negotiate with the operating system's winsock 1.1 functionality.

Solution:

Verify that the winsock.dll is properly installed on the system.

Failure to start unsolicited communications

Error Type:

Fatal

Possible Cause:

The driver was not able to create a listen socket for unsolicited communications. This is most often due to another application using the specified port. This error may also be related to low system resources.

Solution:

Check to see if any other application is using the port. Network monitor software can be used to diagnose this. Shut down the conflicting application and restart the OPC Server. In many cases, the conflicting application is free to pick any available port. If this is the case, make sure the server is always started first so that it may claim

the required port. The PLC programming software and the driver may not be able to be used simultaneously if they both need to use the same port.

See Also:

[Communications](#)

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