

# Thermo Westronics Serial Driver

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## Thermo Westronics Serial Driver

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Help version 1.016

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### Overview

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The Thermo Westronics Serial Driver provides a reliable way to connect Thermo Westronics Serial devices to OPC Client applications; including HMI, SCADA, Historian, MES, ERP, and countless custom applications. It is intended for use with Thermo Westronics serial devices.

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## Setup

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### Supported Devices

Series 1200 Recorder  
Series 1600 Recorder  
Series 3000 Recorder  
SM 100 Smart Multiplexer  
SV 100  
SV 180  
SV 180 (2.0)-version 2.0A or later

### Communication Protocol

Modbus RTU Protocol.

### Supported Communication Properties

Baud Rate: 300, 600, 1200, 2400, 4800, 9600, 19200  
Parity: Odd, Even, None  
Data Bits: 5, 6, 7, 8  
Stop Bits: 1,2

**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 may be invoked through the COM ID property group in Channel Properties. For more information, refer to the OPC Server's help documentation.

### Device ID (PLC Network Address)

Thermo Westronics Serial devices are assigned Device IDs in the range 1 to 255.

### Flow Control

When using an RS232/RS485 converter, the type of flow control that is required will depend upon the needs of the converter. Some converters 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.

The Thermo Westronics Serial Driver supports the RTS Manual flow control option. This selection allows the driver to be configured for operation with radio modems that require special RTS timing characteristics. For more information on RTS Manual flow, refer to the main OPC Server help file topic Channel Wizard.

### Channel Properties - General

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This server supports the use of simultaneous multiple communications drivers. Each protocol or driver used in a server project is called a channel. A server project may consist of many channels with the same communications driver or with unique communications drivers. A channel acts as the basic building block of an OPC link. This group is used to specify general channel properties, such as the identification attributes and operating mode.

Property Groups	[-] <b>Identification</b>	
<b>General</b>	Name	
Ethernet Communications	Description	
Write Optimizations	Driver	
Advanced	[-] <b>Diagnostics</b>	
	Diagnostics Capture	Disable

## Identification

**Name:** User-defined identity of this channel. In each server project, each channel name must be unique. Although names can be up to 256 characters, some client applications have a limited display window when browsing the OPC server's tag space. The channel name is part of the OPC browser information.

• For information on reserved characters, refer to "How To... Properly Name a Channel, Device, Tag, and Tag Group" in the server help.

**Description:** User-defined information about this channel.

• Many of these properties, including Description, have an associated system tag.

**Driver:** Selected protocol / driver for this channel. This property specifies the device driver that was selected during channel creation. It is a disabled setting in the channel properties.

• **Note:** With the server's online full-time operation, these properties can be changed at any time. This includes changing the channel name to prevent clients from registering data with the server. If a client has already acquired an item from the server before the channel name is changed, the items are unaffected. If, after the channel name has been changed, the client application releases the item and attempts to re-acquire using the old channel name, the item is not accepted. With this in mind, changes to the properties should not be made once a large client application has been developed. Utilize the User Manager to prevent operators from changing properties and restrict access rights to server features.

## Diagnostics

**Diagnostics Capture:** When enabled, this option makes the channel's diagnostic information available to OPC applications. Because the server's diagnostic features require a minimal amount of overhead processing, it is recommended that they be utilized when needed and disabled when not. The default is disabled.

• For more information, refer to "Communication Diagnostics" in the server help.

Not all drivers support diagnostics. To determine whether diagnostics are available for a particular driver, open the driver information and locate the "Supports device level diagnostics" statement.

## Channel Properties - Serial Communications

Serial communication properties are available to serial drivers and vary depending on the driver, connection type, and options selected. Below is a superset of the possible properties.

Click to jump to one of the sections: [Connection Type](#), [Serial Port Settings](#) or [Ethernet Settings](#), and [Operational Behavior](#).

• **Note:** With the server's online full-time operation, these properties can be changed at any time. Utilize the User Manager to restrict access rights to server features, as changes made to these properties can temporarily disrupt communications.

Property Groups	<input type="checkbox"/> <b>Connection Type</b>	
General	Physical Medium	COM Port
<b>Serial Communications</b>	Shared	No
Write Optimizations	<input type="checkbox"/> <b>Serial Port Settings</b>	
Advanced	COM ID	6
Communication Serialization	Baud Rate	9600
	Data Bits	8
	Parity	Even
	Stop Bits	1
	Flow Control	None
	<input type="checkbox"/> <b>Operational Behavior</b>	
	Report Comm. Errors	Enable
	Close Idle Connection	Enable
	Idle Time to Close (s)	15

## Connection Type

**Physical Medium:** Choose the type of hardware device for data communications. Options include COM Port, None, Modem, and Ethernet Encapsulation. The default is COM Port.

- **None:** Select None to indicate there is no physical connection, which displays the [Operation with no Communications](#) section.
- **COM Port:** Select Com Port to display and configure the [Serial Port Settings](#) section.
- **Modem:** Select Modem if phone lines are used for communications, which are configured in the [Modem Settings](#) section.
- **Ethernet Encap.:** Select if Ethernet Encapsulation is used for communications, which displays the [Ethernet Settings](#) section.
- **Shared:** Verify the connection is correctly identified as sharing the current configuration with another channel. This is a read-only property.

## Serial Port Settings

**COM ID:** Specify the Communications ID to be used when communicating with devices assigned to the channel. The valid range is 1 to 9991 to 16. The default is 1.

**Baud Rate:** Specify the baud rate to be used to configure the selected communications port.

**Data Bits:** Specify the number of data bits per data word. Options include 5, 6, 7, or 8.

**Parity:** Specify the type of parity for the data. Options include Odd, Even, or None.

**Stop Bits:** Specify the number of stop bits per data word. Options include 1 or 2.


**Flow Control:** Select how the RTS and DTR control lines are utilized. Flow control is required to communicate with some serial devices. Options are:

- **None:** This option does not toggle or assert control lines.
- **DTR:** This option asserts the DTR line when the communications port is opened and remains on.

- **RTS:** This option specifies that the RTS line is high if bytes are available for transmission. After all buffered bytes have been sent, the RTS line is low. This is normally used with RS232/RS485 converter hardware.
- **RTS, DTR:** This option is a combination of DTR and RTS.
- **RTS Always:** This option asserts the RTS line when the communication port is opened and remains on.
- **RTS Manual:** This option asserts the RTS line based on the timing properties entered for RTS Line Control. It is only available when the driver supports manual RTS line control (or when the properties are shared and at least one of the channels belongs to a driver that provides this support).

RTS Manual adds an **RTS Line Control** property with options as follows:

- **Raise:** This property specifies the amount of time that the RTS line is raised prior to data transmission. The valid range is 0 to 9999 milliseconds. The default is 10 milliseconds.
- **Drop:** This property specifies the amount of time that the RTS line remains high after data transmission. The valid range is 0 to 9999 milliseconds. The default is 10 milliseconds.
- **Poll Delay:** This property specifies the amount of time that polling for communications is delayed. The valid range is 0 to 9999. The default is 10 milliseconds.


 **Tip:** When using two-wire RS-485, "echoes" may occur on the communication lines. Since this communication does not support echo suppression, it is recommended that echoes be disabled or a RS-485 converter be used.

## Operational Behavior

- **Report Comm. Errors:** Enable or disable reporting of low-level communications errors. When enabled, low-level errors are posted to the Event Log as they occur. When disabled, these same errors are not posted even though normal request failures are. The default is Enable.
- **Close Idle Connection:** Choose to close the connection when there are no longer any tags being referenced by a client on the channel. The default is Enable.
- **Idle Time to Close:** Specify the amount of time that the server waits once all tags have been removed before closing the COM port. The default is 15 seconds.

## Ethernet Settings

Ethernet Encapsulation provides communication with serial devices connected to terminal servers on the Ethernet network. A terminal server is essentially a virtual serial port that converts TCP/IP messages on the Ethernet network to serial data. Once the message has been converted, users can connect standard devices that support serial communications to the terminal server. The terminal server's serial port must be properly configured to match the requirements of the serial device to which it is attached. *For more information, refer to "How To... Use Ethernet Encapsulation" in the server help.*

- **Network Adapter:** Indicate a network adapter to bind for Ethernet devices in this channel. Choose a network adapter to bind to or allow the OS to select the default.  
 *Specific drivers may display additional Ethernet Encapsulation properties. For more information, refer to Channel Properties - Ethernet Encapsulation.*

## Modem Settings

- **Modem:** Specify the installed modem to be used for communications.
- **Connect Timeout:** Specify the amount of time to wait for connections to be established before failing a read or write. The default is 60 seconds.



- **Modem Properties:** Configure the modem hardware. When clicked, it opens vendor-specific modem properties.
- **Auto-Dial:** Enables the automatic dialing of entries in the Phonebook. The default is Disable. *For more information, refer to "Modem Auto-Dial" in the server help.*
- **Report Comm. Errors:** Enable or disable reporting of low-level communications errors. When enabled, low-level errors are posted to the Event Log as they occur. When disabled, these same errors are not posted even though normal request failures are. The default is Enable.
- **Close Idle Connection:** Choose to close the modem connection when there are no longer any tags being referenced by a client on the channel. The default is Enable.
- **Idle Time to Close:** Specify the amount of time that the server waits once all tags have been removed before closing the modem connection. The default is 15 seconds.

### Operation with no Communications

- **Read Processing:** Select the action to be taken when an explicit device read is requested. Options include Ignore and Fail. Ignore does nothing; Fail provides the client with an update that indicates failure. The default setting is Ignore.

### Channel Properties - Write Optimizations

As with any OPC server, writing data to the device may be the application's most important aspect. The server intends to ensure that the data written from the client application gets to the device on time. Given this goal, the server provides optimization properties that can be used to meet specific needs or improve application responsiveness.

Property Groups	<input type="checkbox"/> <b>Write Optimizations</b>	
General	Optimization Method	Write Only Latest Value for All Tags
Ethernet Communications	Duty Cycle	10
<b>Write Optimizations</b>		

### Write Optimizations

**Optimization Method:** controls how write data is passed to the underlying communications driver. The options are:

- **Write All Values for All Tags:** This option forces the server to attempt to write every value to the controller. In this mode, the server continues to gather write requests and add them to the server's internal write queue. The server processes the write queue and attempts to empty it by writing data to the device as quickly as possible. This mode ensures that everything written from the client applications is sent to the target device. This mode should be selected if the write operation order or the write item's content must uniquely be seen at the target device.
- **Write Only Latest Value for Non-Boolean Tags:** Many consecutive writes to the same value can accumulate in the write queue due to the time required to actually send the data to the device. If the server updates a write value that has already been placed in the write queue, far fewer writes are needed to reach the same final output value. In this way, no extra writes accumulate in the server's queue. When the user stops moving the slide switch, the value in the device is at the correct value at virtually the same time. As the mode states, any value that is not a Boolean value is updated in the server's internal write queue and sent to the device at the next possible opportunity. This can greatly

improve the application performance.

- **Note:** This option does not attempt to optimize writes to Boolean values. It allows users to optimize the operation of HMI data without causing problems with Boolean operations, such as a momentary push button.
- **Write Only Latest Value for All Tags:** This option takes the theory behind the second optimization mode and applies it to all tags. It is especially useful if the application only needs to send the latest value to the device. This mode optimizes all writes by updating the tags currently in the write queue before they are sent. This is the default mode.

**Duty Cycle:** is used to control the ratio of write to read operations. The ratio is always based on one read for every one to ten writes. The duty cycle is set to ten by default, meaning that ten writes occur for each read operation. Although the application is performing a large number of continuous writes, it must be ensured that read data is still given time to process. A setting of one results in one read operation for every write operation. If there are no write operations to perform, reads are processed continuously. This allows optimization for applications with continuous writes versus a more balanced back and forth data flow.

● **Note:** It is recommended that the application be characterized for compatibility with the write optimization enhancements before being used in a production environment.

## Channel Properties - Advanced

This group is used to specify advanced channel properties. Not all drivers support all properties; so the Advanced group does not appear for those devices.

Property Groups	[-] <b>Non-Normalized Float Handling</b>	
General	Floating-Point Values	Replace with Zero
Write Optimizations	[-] <b>Inter-Device Delay</b>	
<b>Advanced</b>	Inter-Device Delay (ms)	0

**Non-Normalized Float Handling:** Non-normalized float handling allows users to specify how a driver handles non-normalized IEEE-754 floating point data. A non-normalized value is defined as Infinity, Not-a-Number (NaN), or as a Denormalized Number. The default is Replace with Zero. Drivers that have native float handling may default to Unmodified. Descriptions of the options are as follows:

- **Replace with Zero:** This option allows a driver to replace non-normalized IEEE-754 floating point values with zero before being transferred to clients.
- **Unmodified:** This option allows a driver to transfer IEEE-754 denormalized, normalized, non-number, and infinity values to clients without any conversion or changes.

● **Note:** This property is disabled if the driver does not support floating point values or if it only supports the option that is displayed. According to the channel's float normalization setting, only real-time driver tags (such as values and arrays) are subject to float normalization. For example, EFM data is not affected by this setting.

● *For more information on the floating point values, refer to "How To ... Work with Non-Normalized Floating Point Values" in the server help.*

**Inter-Device Delay:** Specify the amount of time the communications channel waits to send new requests to the next device after data is received from the current device on the same channel. Zero (0) disables the delay.

● **Note:** This property is not available for all drivers, models, and dependent settings.

## Device Properties - General

A device represents a single target on a communications channel. If the driver supports multiple controllers, users must enter a device ID for each controller.

Property Groups	Identification	
General	Name	
Scan Mode	Description	
Ethernet Encapsulation	Channel Assignment	
Timing	Driver	
Auto-Demotion	Model	
Redundancy	ID Format	Decimal
	ID	2
	Operating Mode	
	Data Collection	Enable
	Simulated	No

### Identification

**Name:** This property specifies the name of the device. It is a logical user-defined name that can be up to 256 characters long, and may be used on multiple channels.

**Note:** Although descriptive names are generally a good idea, some OPC client applications may have a limited display window when browsing the OPC server's tag space. The device name and channel name become part of the browse tree information as well. Within an OPC client, the combination of channel name and device name would appear as "ChannelName.DeviceName".

**For more information, refer to "How To... Properly Name a Channel, Device, Tag, and Tag Group" in server help.**

**Description:** User-defined information about this device.

Many of these properties, including Description, have an associated system tag.

**Channel Assignment:** User-defined name of the channel to which this device currently belongs.

**Driver:** Selected protocol driver for this device.

**Model:** This property specifies the specific type of device that is associated with this ID. The contents of the drop-down menu depends on the type of communications driver being used. Models that are not supported by a driver are disabled. If the communications driver supports multiple device models, the model selection can only be changed when there are no client applications connected to the device.

**Note:** If the communication driver supports multiple models, users should try to match the model selection to the physical device. If the device is not represented in the drop-down menu, select a model that conforms closest to the target device. Some drivers support a model selection called "Open," which allows users to communicate without knowing the specific details of the target device. For more information, refer to the driver help documentation.

**ID:** This property specifies the device's driver-specific station or node. The type of ID entered depends on the communications driver being used. For many communication drivers, the ID is a numeric value. Drivers that support a Numeric ID provide users with the option to enter a numeric value whose format can be

changed to suit the needs of the application or the characteristics of the selected communications driver. The ID format can be Decimal, Octal, and Hexadecimal.

● **Note:** If the driver is Ethernet-based or supports an unconventional station or node name, the device's TCP/IP address may be used as the device ID. TCP/IP addresses consist of four values that are separated by periods, with each value in the range of 0 to 255. Some device IDs are string based. There may be additional properties to configure within the ID field, depending on the driver. For more information, refer to the driver's help documentation.

## Operating Mode

**Data Collection:** This property controls the device's active state. Although device communications are enabled by default, this property can be used to disable a physical device. Communications are not attempted when a device is disabled. From a client standpoint, the data is marked as invalid and write operations are not accepted. This property can be changed at any time through this property or the device system tags.

**Simulated:** This option places the device into Simulation Mode. In this mode, the driver does not attempt to communicate with the physical device, but the server continues to return valid OPC data. Simulated stops physical communications with the device, but allows OPC data to be returned to the OPC client as valid data. While in Simulation Mode, the server treats all device data as reflective: whatever is written to the simulated device is read back and each OPC item is treated individually. The item's memory map is based on the group Update Rate. The data is not saved if the server removes the item (such as when the server is reinitialized). The default is No.

### ● Notes:

1. This System tag (\_Simulated) is read only and cannot be written to for runtime protection. The System tag allows this property to be monitored from the client.
2. In Simulation mode, the item's memory map is based on client update rate(s) (Group Update Rate for OPC clients or Scan Rate for native and DDE interfaces). This means that two clients that reference the same item with different update rates return different data.

● Simulation Mode is for test and simulation purposes only. It should never be used in a production environment.

## Device Properties - Scan Mode

The Scan Mode specifies the subscribed-client requested scan rate for tags that require device communications. Synchronous and asynchronous device reads and writes are processed as soon as possible; unaffected by the Scan Mode properties.

Property Groups	☐ <b>Scan Mode</b>	
General	Scan Mode	Respect Client-Specified Scan Rate ▾
Scan Mode	Initial Updates from Cache	Disable

**Scan Mode:** specifies how tags in the device are scanned for updates sent to subscribed clients. Descriptions of the options are:

- **Respect Client-Specified Scan Rate:** This mode uses the scan rate requested by the client.
- **Request Data No Faster than Scan Rate:** This mode specifies the maximum scan rate to be used. The valid range is 10 to 99999990 milliseconds. The default is 1000 milliseconds.
  - **Note:** When the server has an active client and items for the device and the scan rate value is increased, the changes take effect immediately. When the scan rate value is decreased, the changes do not take effect until all client applications have been disconnected.
- **Request All Data at Scan Rate:** This mode forces tags to be scanned at the specified rate for subscribed clients. The valid range is 10 to 99999990 milliseconds. The default is 1000 milliseconds.
- **Do Not Scan, Demand Poll Only:** This mode does not periodically poll tags that belong to the device nor perform a read to get an item's initial value once it becomes active. It is the client's responsibility to poll for updates, either by writing to the `_DemandPoll` tag or by issuing explicit device reads for individual items. *For more information, refer to "Device Demand Poll" in server help.*
- **Respect Tag-Specified Scan Rate:** This mode forces static tags to be scanned at the rate specified in their static configuration tag properties. Dynamic tags are scanned at the client-specified scan rate.

**Initial Updates from Cache:** When enabled, this option allows the server to provide the first updates for newly activated tag references from stored (cached) data. Cache updates can only be provided when the new item reference shares the same address, scan rate, data type, client access, and scaling properties. A device read is used for the initial update for the first client reference only. The default is disabled; any time a client activates a tag reference the server attempts to read the initial value from the device.

## Device Properties - Timing

The device Communications Timeouts properties allow the driver's response to error conditions to be tailored to fit the application's needs. In many cases, the environment requires changes to these properties for optimum performance. Factors such as electrically generated noise, modem delays, and poor physical connections can influence how many errors or timeouts a communications driver encounters. Communications Timeouts properties are specific to each configured device.

Property Groups	<input checked="" type="checkbox"/> <b>Communication Timeouts</b>	
General	Connect Timeout (s)	3
Scan Mode	Request Timeout (ms)	5000
Ethernet Encapsulation	Retry Attempts	3
<b>Timing</b>	<input checked="" type="checkbox"/> <b>Timing</b>	
Auto-Demotion	Inter-Request Delay (ms)	0

## Communications Timeouts

**Connect Timeout:** This property (which is used primarily by Ethernet based drivers) controls the amount of time required to establish a socket connection to a remote device. The device's connection time often takes longer than normal communications requests to that same device. The valid range is 1 to 30 seconds. The default is typically 3 seconds, but can vary depending on the driver's specific nature. If this setting is not supported by the driver, it is disabled.

● **Note:** Due to the nature of UDP connections, the connection timeout setting is not applicable when communicating via UDP.

**Request Timeout:** This property specifies an interval used by all drivers to determine how long the driver waits for a response from the target device to complete. The valid range is 50 to 9,999,999 milliseconds (167.6667 minutes). The default is usually 1000 milliseconds, but can vary depending on the driver. The

default timeout for most serial drivers is based on a baud rate of 9600 baud or better. When using a driver at lower baud rates, increase the timeout to compensate for the increased time required to acquire data.

**Retry Attempts:** This property specifies how many times the driver retries a communications request before considering the request to have failed and the device to be in error. The valid range is 1 to 10. The default is typically 3, but can vary depending on the driver's specific nature. The number of retries configured for an application depends largely on the communications environment.

## Timing

**Inter-Request Delay:** This property specifies how long the driver waits before sending the next request to the target device. It overrides the normal polling frequency of tags associated with the device, as well as one-time reads and writes. This delay can be useful when dealing with devices with slow turnaround times and in cases where network load is a concern. Configuring a delay for a device affects communications with all other devices on the channel. It is recommended that users separate any device that requires an inter-request delay to a separate channel if possible. Other communications properties (such as communication serialization) can extend this delay. The valid range is 0 to 300,000 milliseconds; however, some drivers may limit the maximum value due to a function of their particular design. The default is 0, which indicates no delay between requests with the target device.

● **Note:** Not all drivers support Inter-Request Delay. This setting does not appear if it is not supported by the driver.

## Device Properties - Auto-Demotion

The Auto-Demotion properties can temporarily place a device off-scan in the event that a device is not responding. By placing a non-responsive device offline for a specific time period, the driver can continue to optimize its communications with other devices on the same channel. After the time period has been reached, the driver re-attempts to communicate with the non-responsive device. If the device is responsive, the device is placed on-scan; otherwise, it restarts its off-scan time period.

Property Groups	Auto-Demotion	
General	Demote on Failure	Enable
Scan Mode	Timeouts to Demote	3
Timing	Demotion Period (ms)	10000
Auto-Demotion	Discard Requests when Demoted	Disable

**Demote on Failure:** When enabled, the device is automatically taken off-scan until it is responding again.

● **Tip:** Determine when a device is off-scan by monitoring its demoted state using the `_AutoDemoted` system tag.

**Timeouts to Demote:** Specify how many successive cycles of request timeouts and retries occur before the device is placed off-scan. The valid range is 1 to 30 successive failures. The default is 3.

**Demotion Period:** Indicate how long the device should be placed off-scan when the timeouts value is reached. During this period, no read requests are sent to the device and all data associated with the read requests are set to bad quality. When this period expires, the driver places the device on-scan and allows for another attempt at communications. The valid range is 100 to 3600000 milliseconds. The default is 10000 milliseconds.

**Discard Requests when Demoted:** Select whether or not write requests should be attempted during the off-scan period. Disable to always send write requests regardless of the demotion period. Enable to discard

writes; the server automatically fails any write request received from a client and does not post a message to the Event Log.

## Device Properties - Block Sizes

Property Groups	<input type="checkbox"/> <b>Coils</b>	
General	Output Coils	32
Scan Mode	Input Coils	32
Timing	<input type="checkbox"/> <b>Registers</b>	
Auto-Demotion	Internal Registers	32
<b>Block Sizes</b>	Holding Registers	32
Settings		
Redundancy		

### Coil Block Sizes

Coils can be read from 8 to 800 points (bits) at a time. A higher block size means more points will be read from the device in a single request. The block size can be reduced if data needs to be read from non-contiguous locations within the device.

### Register Block Sizes

Registers can be read from 1 to 56 locations (16 or 32-bit registers) at a time. A higher block size means more register values will be read from the device in a single request. The block size can be reduced if data needs to be read from non-contiguous locations within the device.

## Device Properties - Settings

### 1x32 Floating Point Format

Some Thermo Westronics devices, such as the SV100 and SV180, give the user the option of representing floating point data in either 1x32 or 2x16 format in Modbus communications. If the device has been configured to use the 1x32 format, make sure that this box is checked.

## Device Properties - Redundancy

Property Groups	<input type="checkbox"/> <b>Redundancy</b>	
General	Secondary Path	...
Scan Mode	Operating Mode	Switch On Failure
Timing	Monitor Item	
<b>Redundancy</b>	Monitor Interval (s)	300
	Return to Primary ASAP	Yes

Redundancy is available with the Media-Level Redundancy Plug-in.

• Consult the website, a sales representative, or the user manual for more information.

## 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
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.  The driver interprets two consecutive 16 bit registers as a floating point value by making the second register the high word and the first register the low word.
String	Zero terminated character array



## 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.

[Series 1200](#)

[Series 1600](#)

[Series 3000](#)

[SM100](#)

[SV100](#)

[SV180\\*](#)

[SV180 \(2.0\)\\*\\*](#)

\*Firmware prior to 2.0A.

\*\*Firmware 2.0A and later.

## Series 1200 Addressing

The Thermo Westronics Ethernet device driver automatically generates tags for many of the most important device properties. Tags can be manually created to access all device properties mapped to Modbus address locations within the device. The following table describes how to specify a Modbus address when creating a tag. The full range of addresses accepted by this driver may not be valid for a particular device.

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

### Modbus Addressing Decimal Format

Address	Range	Data Type	Access
Output Coils	000001-065536	<b>Boolean</b>	Read/Write
Input Coils	100001-165536	<b>Boolean</b>	Read Only
Internal Registers	300001-305000	<b>Word</b> , Short	Read Only
	300001.0-300001.15...305000.0-305000.15	<b>Boolean</b>	
	305001-306000	<b>DWord</b> , Long	
	306001-307000	<b>Word</b> , Short	
	306001.0-306001.15... 307000.0-307000.15	<b>Boolean</b>	
	307001-308000	<b>Float</b>	
	308001-365536	<b>Word</b> , Short	
	308001.0-308001.15...365536.0-365536.15	<b>Boolean</b>	
Holding Registers	400001-406000	<b>Word</b> , Short	Read/Write
	400001.0-400001.15...406000.0-406000.15	<b>Boolean</b>	
	406001-407000	<b>DWord</b> , Long	

Address	Range	Data Type	Access
	407001-408000	<b>Word</b> , Short	
	407001.0-407001.15... 408000.0-408000.15	<b>Boolean</b>	
	408001-409000	<b>Float</b>	
	409001-465536	<b>Word</b> , Short	
	409001.0-409001.15...465536.0-465536.15	<b>Boolean</b>	

### Modbus Addressing Hexadecimal Format

Address	Range	Data Type	Access
Output Coils	H000001-H010000	<b>Boolean</b>	Read/Write
Input Coils	H100001-H110000	<b>Boolean</b>	Read Only
Internal Registers	H300001-H301388	<b>Word</b> , Short	Read Only
	H300001.0-H300001.F...H301388.0-H301388.F	<b>Boolean</b>	
	H301389-H301770	<b>DWord</b> , Long	
	H301771-H301B58	<b>Word</b> , Short	
	H301771.0-H301771.F ...H301B58.0-H301B58.F	<b>Boolean</b>	
	H301B59-H301F40	<b>Float</b>	
	H301F41-H310000	<b>Word</b> , Short	
Holding Registers	H400001-H401770	<b>Word</b> , Short	Read/Write
	H400001.0-H400001.F...H401770.0-H401770.F	<b>Boolean</b>	
	H401771-H401B58	<b>DWord</b> , Long	
	H401B59-H401F40	<b>Word</b> , Short	
	H401B59.0-H401B59.F...H401F40.0-H401F40.F	<b>Boolean</b>	
	H401F41-H402328	<b>Float</b>	
	H402329-H410000	<b>Word</b> , Short	
H402329.0-H402329.F...H410000.0-H410000.F	<b>Boolean</b>		

### Array Support

Arrays are supported for 16-bit internal and holding register locations for all data types except Boolean and strings. There are two methods of addressing an array. Examples are given using holding register locations.

4xxxx [rows] [cols]  
 4xxxx [cols] (this method assumes rows is equal to one)

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

## Series 1600 Addressing

The Thermo Westronics Ethernet device driver automatically generates tags for many of the most important device properties. Tags can be manually created to access all device properties mapped to Modbus address locations within the device. The following table describes how to specify a Modbus address when creating a tag. The full range of addresses accepted by this driver may not be valid for a particular device.

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

### Modbus Addressing Decimal Format

Address	Range	Data Type	Access
Output Coils	000001-065536	<b>Boolean</b>	Read/Write
Input Coils	100001-165536	<b>Boolean</b>	Read Only
Internal Registers	300001-305000	<b>Word, Short</b>	Read Only
	300001.0-300001.15...305000.0-305000.15	<b>Boolean</b>	
	305001-306000	<b>DWord, Long</b>	
	306001-307000	<b>Word, Short</b>	
	306001.0-306001.15... 307000.0-307000.15	<b>Boolean</b>	
	307001-308000	<b>Float</b>	
	308001-365536	<b>Word, Short</b>	
	308001.0-308001.15...365536.0-365536.15	<b>Boolean</b>	
Holding Registers	400001-406000	<b>Word, Short</b>	Read/Write
	400001.0-400001.15...406000.0-406000.15	<b>Boolean</b>	
	406001-407000	<b>DWord, Long</b>	
	407001-408000	<b>Word, Short</b>	
	407001.0-407001.15 ...408000.0-408000.15	<b>Boolean</b>	
	408001-409000	<b>Float</b>	
	409001-465536	<b>Word, Short</b>	
	409001.0-409001.15 ...465536.0-465536.15	<b>Boolean</b>	

### Modbus Addressing Hexadecimal Format

Address	Range	Data Type	Access
Output Coils	H000001-H010000	<b>Boolean</b>	Read/Write
Input Coils	H100001-H110000	<b>Boolean</b>	Read Only
Internal Registers	H300001-H301388	<b>Word, Short</b>	Read Only
	H300001.0-H300001.F...H301388.0-H301388.F	<b>Boolean</b>	
	H301389-H301770	<b>DWord, Long</b>	
	H301771-H301B58	<b>Word, Short</b>	
	H301771.0-H301771.F...H301B58.0-H301B58.F	<b>Boolean</b>	
	H301B59-H301F40	<b>Float</b>	
	H301F41-H310000	<b>Word, Short</b>	
Holding Registers	H301F41.0-H301F41.F... H31000.0-H310000.F	<b>Boolean</b>	Read/Write
	H400001-H401770	<b>Word, Short</b>	
	H400001.0-H400001.F...H401770.0-H401770.F	<b>Boolean</b>	
	H401771-H401B58	<b>DWord, Long</b>	
	H401B59-H401F40	<b>Word, Short</b>	
	H401B59.0-H401B59.F... H401F40.0-H401F40.F	<b>Boolean</b>	
	H401F41-H402328	<b>Float</b>	
H402329-H410000	<b>Word, Short</b>		
H402329.0-H402329.F...H410000.0-H410000.F	<b>Boolean</b>		

### Array Support

Arrays are supported for 16-bit internal and holding register locations for all data types except Boolean and strings. There are two methods of addressing an array. Examples are given using holding register locations.

4xxxx [rows] [cols]

4xxxx [cols] (this method assumes rows is equal to one)

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

### Series 3000 Addressing

The Thermo Westronics Ethernet device driver automatically generates tags for many of the most important device properties. Tags can be manually created to access all device properties mapped to Modbus address locations within the device. The following table describes how to specify a Modbus address when creating a tag. The full range of addresses accepted by this driver may not be valid for a particular device.

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

### Modbus Addressing Decimal Format

Address	Range	Data Type	Access
Output Coils	000001-065536	<b>Boolean</b>	Read/Write
Input Coils	100001-165536	<b>Boolean</b>	Read Only
Internal Registers	300001-365536	<b>Word, Short</b>	Read Only
	300001.0-300001.15...365536.0-365536.15	<b>Boolean</b>	
Holding Registers	400001-465536	<b>Word, Short</b>	Read/Write
	400001.0-400001.15...465536.0-465536.15	<b>Boolean</b>	

### Modbus Addressing Hexadecimal Format

Address	Range	Data Type	Access
Output Coils	H000001-H010000	<b>Boolean</b>	Read/Write
Input Coils	H100001-H110000	<b>Boolean</b>	Read Only
Internal Registers	H300001-H310000	<b>Word, Short</b>	Read Only
	H300001.0-H300001.F...H310000.0-H310000.F	<b>Boolean</b>	
Holding Registers	H400001-H410000	<b>Word, Short</b>	Read/Write
	H400001.0-H400001.F...H410000.0-H410000.F	<b>Boolean</b>	

### Array Support

Arrays are supported for 16-bit internal and holding register locations for all data types except Boolean and strings. There are two methods of addressing an array. Examples are given using holding register locations.

4xxx [rows] [cols]

4xxx [cols] this method assumes rows is equal to one

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

### SM100 Addressing

The Thermo Westronics Ethernet device driver automatically generates tags for many of the most important device properties. Tags can be manually created to access all device properties mapped to Modbus address locations within the device. The following table describes how to specify a Modbus address when creating a tag. The full range of addresses accepted by this driver may not be valid for a particular device.

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

### Modbus Addressing Decimal Format

Address	Range	Data Type	Access
Output Coils	000001-065536	<b>Boolean</b>	Read/Write
Input Coils	100001-165536	<b>Boolean</b>	Read Only
Internal Registers	300001-365536	<b>Word, Short</b>	Read Only

Address	Range	Data Type	Access
	300010-300109	Float*	
	300001.0-300001.15...365536.0-365536.15	<b>Boolean</b>	
Holding Registers	400001-465536	<b>Word</b> , Short	Read/Write
	400010-400109	Float*	
	400001.0-400001.15...465536.0-465536.15	<b>Boolean</b>	

### Modbus Addressing Hexadecimal Format

Address	Range	Data Type	Access
Output Coils	H000001-H010000	<b>Boolean</b>	Read/Write
Input Coils	H100001-H110000	<b>Boolean</b>	Read Only
Internal Registers	H300001-H310000	<b>Word</b> , Short	Read Only
	H30000A-H30006D	Float*	
	H300001.0-H300001.F...H310000.0-H310000.F	<b>Boolean</b>	
Holding Registers	H400001-H410000	<b>Word</b> , Short	Read/Write
	H40000A-H40006D	Float*	
	H400001.0-H400001.F...H410000.0-H410000.F	<b>Boolean</b>	

\*When point data values are read as floats, the raw data (registers 400010 to 400109, or 300010 to 300109) is automatically scaled using the decimal placement data (registers 405037, 405047, 405057, etc.). Decimal placement data is read from the device on server project startup. It is assumed that the raw data will be a 16-bit signed integer (-32768 to 32767).

### Array Support

Arrays are supported for 16-bit internal and holding register locations for all data types except Boolean, float, and strings. There are two methods of addressing an array. Examples are given using holding register locations.

4xxx [rows] [cols]

4xxx [cols] (this method assumes rows is equal to one)

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

### SV100 Addressing

The Thermo Westronics Ethernet device driver automatically generates tags for many of the most important device properties. Tags can be manually created to access all device properties mapped to Modbus address locations within the device. The following table describes how to specify a Modbus address when creating a tag. The full range of addresses accepted by this driver may not be valid for a particular device.

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

**Modbus Addressing Decimal Format**

<b>Address</b>	<b>Range</b>	<b>Data Type</b>	<b>Access</b>
Output Coils	000001-065536	<b>Boolean</b>	Read/Write
Input Coils	100001-165536	<b>Boolean</b>	Read Only
Internal Registers	300001-305000	<b>Word, Short</b>	Read Only
	300001.0-300001.15...305000.0-305000.15	<b>Boolean</b>	
	305001-306000	<b>DWord, Long</b>	
	306001-307000	<b>Word, Short</b>	
	306001.0-306001.15...307000.0-307000.15	<b>Boolean</b>	
	307001-308000	<b>Float</b>	
	308001-365536	<b>Word, Short</b>	
Holding Registers	400001-406000	<b>Word, Short</b>	Read/Write
	400001.0-400001.15...406000.0-406000.15	<b>Boolean</b>	
	406001-407000	<b>DWord, Long</b>	
	407001-408000	<b>Word, Short</b>	
	407001.0-407001.15...408000.0-408000.15	<b>Boolean</b>	
	408001-409000	<b>Float</b>	
	409001-465536	<b>Word, Short</b>	
	409001.0-409001.15...465536.0-465536.15	<b>Boolean</b>	

**Modbus Addressing Hexadecimal Format**

<b>Address</b>	<b>Range</b>	<b>Data Type</b>	<b>Access</b>
Output Coils	H000001-H010000	<b>Boolean</b>	Read/Write
Input Coils	H100001-H110000	<b>Boolean</b>	Read Only
Internal Registers	H300001-H301388	<b>Word, Short</b>	Read Only
	H300001.0-H300001.F...H301388.0-H301388.F	<b>Boolean</b>	
	H301389-H301770	<b>DWord, Long</b>	
	H301771-H301B58	<b>Word, Short</b>	
	H301771.0-H301771.F...H301B58.0-H301B58.F	<b>Boolean</b>	

Address	Range	Data Type	Access
	H301B59-H301F40	<b>Float</b>	
	H301F41-H310000	<b>Word, Short</b>	
	H301F41.0-H301F41.F...H31000.0-H310000.F	<b>Boolean</b>	
Holding Registers	H400001-H401770	<b>Word, Short</b>	Read/Write
	H400001.0-H400001.F...H401770.0-H401770.F	<b>Boolean</b>	
	H401771-H401B58	<b>DWord, Long</b>	
	H401B59-H401F40	<b>Word, Short</b>	
	H401B59.0-H401B59.F...H401F40.0-H401F40.F	<b>Boolean</b>	
	H401F41-H402328	<b>Float</b>	
	H402329-H410000	<b>Word, Short</b>	
	H402329.0-H402329.F...H410000.0-H410000.F	<b>Boolean</b>	

### Array Support

Arrays are supported for 16-bit internal and holding register locations for all data types except Boolean and strings. There are two methods of addressing an array. Examples are given using holding register locations.

4xxxx [rows] [cols]

4xxxx [cols] this method assumes rows is equal to one

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

### SV180 Addressing

The Thermo Westronics Ethernet device driver automatically generates tags for many of the most important device properties. Tags can be manually created to access all device properties mapped to Modbus address locations within the device. The following table describes how to specify a Modbus address when creating a tag. The full range of addresses accepted by this driver may not be valid for a particular device.

**Important:** The SV180 model is for SV180 devices using firmware version prior to 2.0A. If the device uses firmware version 2.0A or later, select the [SV180 \(2.0\)](#) model.

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

### Modbus Addressing Decimal Format

Address	Range	Data Type	Access
Output Coils	000001-065536	<b>Boolean</b>	Read/Write
Input Coils	100001-165536	<b>Boolean</b>	Read Only
Internal Registers	300001-305000	<b>Word, Short</b>	Read Only



Address	Range	Data Type	Access
	300001.0-300001.15...305000.0-305000.15	<b>Boolean</b>	
	305001-306000	<b>DWord</b> , Long	
	306001-307000	<b>Word</b> , Short	
	306001.0-306001.15...307000.0-307000.15	<b>Boolean</b>	
	307001-308000	<b>Float</b>	
	308001-365536	<b>Word</b> , Short	
	308001.0-308001.15...365536.0-365536.15	<b>Boolean</b>	
Holding Registers	400001-405000	<b>Word</b> , Short	Read/Write
	400001.0-400001.15...405000.0-405000.15	<b>Boolean</b>	
	405001-406000	<b>DWord</b> , Long	
	406001-407000	<b>Word</b> , Short	
	406001.0-406001.15...407000.0-407000.15	<b>Boolean</b>	
	407001-408000	<b>Float</b>	
	408001-465536	<b>Word</b> , Short	
	408001.0-408001.1 ...465536.0-465536.15	<b>Boolean</b>	

### Modbus Addressing Hexadecimal Format

Address	Range	Data Type	Access
Output Coils	H000001-H010000	<b>Boolean</b>	Read/Write
Input Coils	H100001-H110000	<b>Boolean</b>	Read Only
Internal Registers	H300001-H301388	<b>Word</b> , Short	Read Only
	H300001.0-H300001.F...H301388.0-H301388.F	<b>Boolean</b>	
	H301389-H301770	<b>DWord</b> , Long	
	H301771-H301B58	<b>Word</b> , Short	
	H301771.0-H301771.F...H301B58.0-H301B58.F	<b>Boolean</b>	
	H301B59-H301F40	<b>Float</b>	
	H301F41-H310000	<b>Word</b> , Short	
	H301F41.0-H301F41.F...H310000.0-H310000.F	<b>Boolean</b>	

Address	Range	Data Type	Access
Holding Registers	H400001-H401388	<b>Word</b> , Short	Read/Write
	H400001.0-H400001.F...H401388.0-H401388.F	<b>Boolean</b>	
	H401389-H401770	<b>DWord</b> , Long	
	H401771-H401B58	<b>Word</b> , Short	
	H401771.0-H401771.F...H401B58.0-H401B58.F	<b>Boolean</b>	
	H401B59-H401F40	<b>Float</b>	
	H401F41-H410000	<b>Word</b> , Short	
	H401F41.0-H401F41.F...H410000.0-H410000.F	<b>Boolean</b>	

### Array Support

Arrays are supported for 16-bit internal and holding register locations for all data types except Boolean and strings. There are two methods of addressing an array. Examples are given using holding register locations.

4xxxx [rows] [cols]

4xxxx [cols] (this method assumes rows is equal to one)

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

### SV180 (2.0) Addressing

The Thermo Westronics Ethernet device driver automatically generates tags for many of the most important device properties. Tags can be manually created to access all device properties mapped to Modbus address locations within the device. The following table describes how to specify a Modbus address when creating a tag. The full range of addresses accepted by this driver may not be valid for a particular device.

**Important:** The SV180 (2.0) model is for SV180 devices using firmware version 2.0A or later. If the device uses an earlier firmware version, select the [SV180](#) model.

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

### Modbus Addressing Decimal Format

Address	Range	Data Type	Access
Output Coils	000001-065536	<b>Boolean</b>	Read/Write
Input Coils	100001-165536	<b>Boolean</b>	Read Only
Internal Registers	NA	NA	NA
Holding Registers	400001-465535*	<b>Float</b>	Read/Write

### Modbus Addressing Hexadecimal Format

Address	Range	Data Type	Access
Output Coils	H000001-H010000	<b>Boolean</b>	Read/Write

Address	Range	Data Type	Access
Input Coils	H100001-H110000	<b>Boolean</b>	Read Only
Internal Registers	NA	NA	NA
Holding Registers	H400001-H410000*	<b>Float</b>	Read/Write

\*Each value uses 2 registers when the device is configured to use the 2x16 floating point format. For example, Point 1 Data uses 400001 and 400002, Point 2 Data 2 uses 400003 and 400004 and etc. Tags should address the first register used for the value. Each value uses 1 register when the device is configured to use the 1x32 floating point format. For example, Point 1 Data 1 uses 400001, Point 2 Data uses 400002 and etc. For more information, refer to [Settings](#).

### Array Support

Arrays are supported for 16-bit internal and holding register locations for all data types except Boolean and strings. There are two methods of addressing an array. Examples are given using holding register locations.

4xxxx [rows] [cols]

4xxxx [cols] (this method assumes rows is equal to one)

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

## Error Descriptions

---

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

### Address Validation

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

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

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

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

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

[Device address '<address>' is not supported by model '<model name>'](#)

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

[Missing address](#)

### Serial Communications

[Communications error on '<channel name>' \[<error mask>\]](#)

[COMn does not exist](#)

[COMn is in use by another application](#)

[Error opening COMn](#)

[Unable to set comm properties on COMn](#)

### Device Status Messages

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

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

### Device-Specific Messages

[Bad address in block \[<start address> to <end address>\] on device '<device name>'](#)

[Bad array spanning \[<address>' to '<address>'\] on device '<device name>'](#)

[Failed to read SM100 decimal placement data](#)

## 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.

## 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.

---

**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>' 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.

---

**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.

### 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.

### 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.

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

---

**Error Type:**

Warning

**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 communication properties for the serial connection are incorrect.
3. There is a noise source disrupting communications somewhere in the cabling path between the PC and the device.

**Solution:**

1. Verify the cabling between the PC and the device.
2. Verify that the specified communication properties match those of the device.

3. Reroute cabling to avoid sources of electrical interference such as motors, generators or high voltage lines.

---

### **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 in the Channel Properties.

---

### **COMn is in use by another application**

---

**Error Type:**

Fatal

**Possible Cause:**

The serial port assigned to a channel is being used by another application.

**Solution:**

1. Verify that the correct port has been assigned to the channel.
2. Close any other applications that are using the requested COM port.

---

### **Error opening COMn**

---

**Error Type:**

Fatal

**Possible Cause:**

The specified COM port could not be opened due to 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.

---

### **Unable to set comm properties on COMn**

---

**Error Type:**

Fatal

**Possible Cause:**

The serial properties for the specified COM port are not valid.

**Solution:**

Verify the serial properties and make any necessary changes.

---

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

---

**Error Type:**

Serious

**Possible Cause:**

1. The serial connection between the device and the Host PC is broken.
2. The communication properties 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 device.
2. Verify that the specified communication properties 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 communication properties 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 device.
2. Verify that the specified communication properties match those of the device.
3. Verify that the Network ID given to the named device matches that of the actual device.

---

**Bad address in block [<start address> to <end address>] on device '<device name>'**

---

**Error Type:**

Serious

**Possible Cause:**

An attempt has been made to reference a nonexistent location in the specified device.



**Solution:**

Verify the tags assigned to addresses in the specified range on the device and eliminate ones that reference invalid locations.

**Bad array spanning ['<address>' to '<address>'] on device '<device name>'**

---

**Error Type:**

Fatal

**Possible Cause:**

An array of addresses was defined that spans past the end of the address space.

**Solution:**

Verify the size of the device's memory space and then redefine the array length accordingly.

**Failed to read SM100 decimal placement data**

---

**Error Type:**

Serious

**Possible Cause:**

The driver was not able to read the decimal placement data (registers 405037, 405047, etc.) needed to scale data point values to floats.

**Solution:**

Check the communication properties and cabling. Then, restart the server.

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