## Thermo Westronics Serial Driver

© 2024 PTC Inc. All Rights Reserved.

## **Table of Contents**

Thermo Westronics Serial Driver	. 1
Table of Contents	. 2
Thermo Westronics Serial Driver	4
Overview	4
Setup	. 4
Channel Properties — General	
Tag Counts	
Channel Properties — Serial Communications	8
Channel Properties — Write Optimizations	10
Channel Properties — Advanced	11
Device Properties — General	.11
Operating Mode	. 12
Tag Counts	13
Device Properties — Scan Mode	.13
Device Properties — Timing	14
Device Properties — Auto-Demotion	.15
Device Properties — Tag Generation	.16
Device Properties — Block Sizes	.19
Device Properties — Settings	.19
Device Properties — Redundancy	20
Data Types Description	.21
Address Descriptions	.22
Series 1200 Addressing	.22
Series 1600 Addressing	.24
Series 3000 Addressing	.26
SM100 Addressing	. 26
SV100 Addressing	
SV180 Addressing	
SV180 (2.0) Addressing	
Error Descriptions	
Address <address> is out of range for the specified device or register</address>	
Array size is out of range for address <address></address>	
Array support is not available for the specified address: <address></address>	
Data type <type> is not valid for device address <address></address></type>	
Device address <address> contains a syntax error</address>	
Device address <address> is not supported by model <model name=""></model></address>	

Device address <address> is read only</address>	35
Missing address	35
Communications error on <channel name=""> [<error mask="">]</error></channel>	35
COMn does not exist	36
COMn is in use by another application	36
Error opening COMn	36
Unable to set comm properties on COMn	36
Device <device name=""> is not responding</device>	37
Unable to write to <address> on device <device name=""></device></address>	37
Bad address in block [ <start address=""> to <end address="">] on device <device name=""></device></end></start>	37
Bad array spanning [ <address> to <address>] on device <device name=""></device></address></address>	38
Failed to read SM100 decimal placement data	38
dex	39

### **Thermo Westronics Serial Driver**

Help version 1.024

### **CONTENTS**

#### **Overview**

What is the Thermo Westronics Serial Driver?

#### Setup

How do I configure a device for use with this driver?

### **Data Types Description**

What data types does this driver support?

### **Address Descriptions**

How do I address a data location on a Thermo Westronics Serial device?

### **Error Descriptions**

What error messages does the Thermo Westronics Serial Driver produce?

### Overview

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.

### Setup

### **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.

#### **Channel and Device Limits**

The maximum number of channels supported by this driver is 100. The maximum number of devices supported by this driver is 31 per channel. The Device ID (PLC Network Address) is assigned in the range 1 to 255.

#### Flow Control

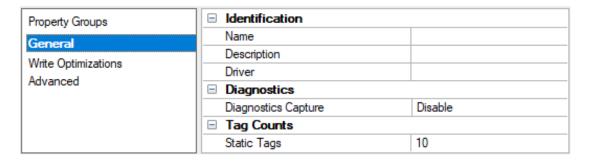
When using an RS232 / RS485 converter, the type of flow control that is required will depend upon the needs of the converter. Some converters do not require any flow control whereas others require RTS flow. Consult the converter's documentation to determine its flow requirements. An RS485 converter that 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**

This server supports the use of multiple simultaneous 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.



#### Identification

**Name**: Specify the 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. The property is required for creating a channel.

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

**Description**: Specify user-defined information about this channel.

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

**Driver**: Specify the protocol / driver for this channel. Specify the device driver that was selected during channel creation. It is a disabled setting in the channel properties. The property is required for creating a channel.

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 reacquire using the old channel name, the item is not accepted. Changes to the properties should not be made once a large client application has been developed. Utilize proper user role and privilege management to prevent operators from changing properties or accessing 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.

- **Note:** This property is not available if the driver does not support diagnostics.
- For more information, refer to Communication Diagnostics in the server help.

### **Diagnostics**

**Diagnostics Capture**: When enabled, this option allows the usage of statistics tags that provide feedback to client applications regarding the operation of the channel. 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.

- Note: This property is not available if the driver does not support diagnostics.
- For more information, refer to Statistics Tags in the server help.

### **Tag Counts**

**Static Tags**: Provides the total number of defined static tags at this level (device or channel). This information can be helpful in troubleshooting and load balancing.

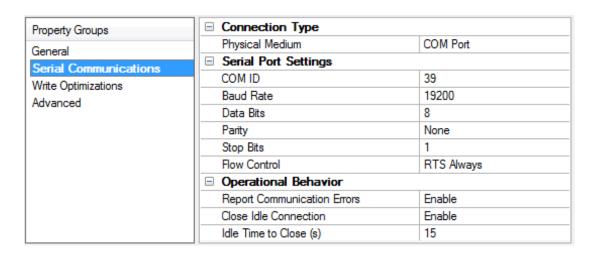
### **Channel Properties — Serial Communications**

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, and Operational Behavior.

### Notes:

- With the server's online full-time operation, these properties can be changed at any time. Utilize
  proper user role and privilege management to prevent operators from changing properties or
  accessing server features.
- Users must define the specific communication parameters to be used. Depending on the driver, channels may or may not be able to share identical communication parameters. Only one shared serial connection can be configured for a Virtual Network (see <u>Channel Properties</u> <u>Serial Communications</u>).



### **Connection Type**

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

- 1. **None**: Select None to indicate there is no physical connection, which displays the **Operation with no Communications** section.
- 2. **COM Port**: Select Com Port to display and configure the **Serial Port Settings** section.
- 3. **Modem**: Select Modem if phone lines are used for communications, which are configured in the **Modem Settings** section.
- 4. **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**: Specify 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**: Specify 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**: Specify 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 Communication 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.

### **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 Communication 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**

The server must ensure that the data written from the client application gets to the device on time. Given this goal, the server provides optimization properties to meet specific needs or improve application responsiveness.

Property Groups	☐ Write Optimizations	
General	Optimization Method	Write Only Latest Value for All Tags
,	Duty Cycle	10
Write Optimizations		

### **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	□ Non-Normalized Float Handling		
General	Floating-Point Values	Replace with Zero	
Write Optimizations	☐ Inter-Device Delay		
Advanced	Inter-Device Delay (ms)	0	

**Non-Normalized Float Handling**: 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. Non-normalized float handling allows users to specify how a driver handles non-normalized IEEE-754 floating point data. Descriptions of the options are as follows:

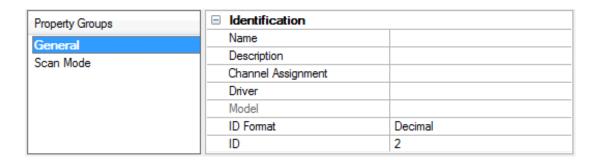
- **Replace with Zero**: This option allows a driver to replace non-normalized IEEE-754 floating point values with zero before being transferred to clients.
- **Unmodified**: This option allows a driver to transfer IEEE-754 denormalized, normalized, non-number, and infinity values to clients without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



#### Identification

**Name**: Specify 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**: Specify the user-defined information about this device.

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

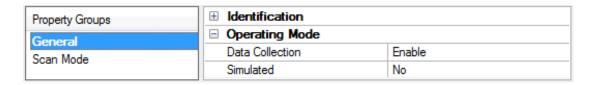
**Channel Assignment**: Specify the user-defined name of the channel to which this device currently belongs.

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

**Model**: Specify the type of device that is associated with this ID. The contents of the drop-down menu depend 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 documentation.
- **ID**: Specify 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 format is set by the driver by default. Options include Decimal, Octal, and Hexadecimal.

### **Operating Mode**



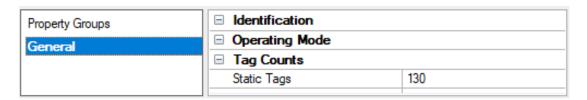
**Data Collection**: This property controls the device's active state. Although device communications are enabled by default, this property can be used to disable a physical device. Communications are not attempted when a device is disabled. From a client standpoint, the data is marked as invalid and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

**Simulated**: Place the device into or out of 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 data is not saved if the server removes the item (such as when the server is reinitialized). The default is No.

#### Notes:

- 1. Updates are not applied until clients disconnect and reconnect.
- 2. The 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.
- 3. 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.
- 4. When a device is simulated, updates may not appear faster than one (1) second in the client.
  - Simulation Mode is for test and simulation purposes only. It should never be used in a production environment.

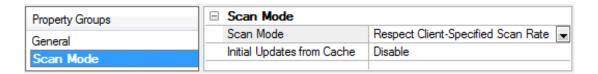
### **Tag Counts**



**Static Tags**: Provides the total number of defined static tags at this level (device or channel). This information can be helpful in troubleshooting and load balancing.

### **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.



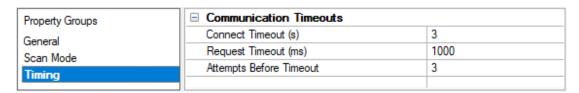
**Scan Mode**: Specify how tags in the device are scanned for updates sent to subscribing clients. Descriptions of the options are:

- 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 value set as the maximum scan rate. 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 OPC 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 Timing 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. Timing properties are specific to each configured device.



### **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.

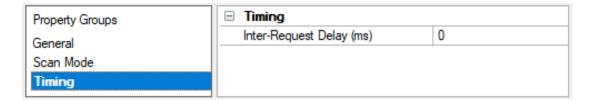
**Request Timeout**: Specify an interval used by all drivers to determine how long the driver waits for a response from the target device to complete. The valid range is 50 to 9999999 milliseconds (167 minutes). The default is usually 1000 milliseconds, but can vary depending on the driver. The default 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.

**Attempts Before Timeout**: Specify how many times the driver issues 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 attempts configured for an application depends largely on the communications environment. This property applies to both connection attempts and request attempts.

### **Timing**

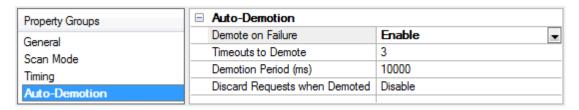
**Inter-Request Delay**: Specify how long the driver waits before sending the next request to the target device. It overrides the normal polling frequency of tags associated with the device, as well as one-time reads and writes. This delay can be useful when dealing with devices with slow turnaround 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 interrequest 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 available.



### **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.



**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.

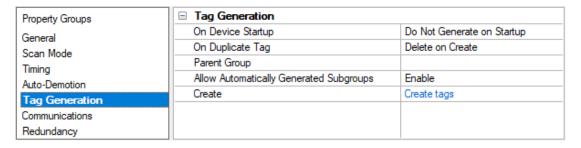
### **Device Properties — Tag Generation**

The automatic tag database generation features make setting up an application a plug-and-play operation. Select communications drivers can be configured to automatically build a list of tags that correspond to device-specific data. These automatically generated tags (which depend on the nature of the supporting driver) can be browsed from the clients.

• Not all devices and drivers support full automatic tag database generation and not all support the same data types. Consult the data types descriptions or the supported data type lists for each driver for specifics.

If the target device supports its own local tag database, the driver reads the device's tag information and uses the data to generate tags within the server. If the device does not natively support named tags, the driver creates a list of tags based on driver-specific information. An example of these two conditions is as follows:

- 1. If a data acquisition system supports its own local tag database, the communications driver uses the tag names found in the device to build the server's tags.
- 2. If an Ethernet I/O system supports detection of its own available I/O module types, the communications driver automatically generates tags in the server that are based on the types of I/O modules plugged into the Ethernet I/O rack.
- **Note**: Automatic tag database generation's mode of operation is completely configurable. *For more information, refer to the property descriptions below.*



**On Property Change**: If the device supports automatic tag generation when certain properties change, the **On Property Change** option is shown. It is set to **Yes** by default, but it can be set to **No** to control over when tag generation is performed. In this case, the **Create tags** action must be manually invoked to perform tag

generation. To invoke via the Configuration API service, access /config/v1/project/channels/{name}/devices/ {name}/services/TagGeneration.

**On Device Startup**: Specify when OPC tags are automatically generated. Descriptions of the options are as follows:

- **Do Not Generate on Startup**: This option prevents the driver from adding any OPC tags to the tag space of the server. This is the default setting.
- **Always Generate on Startup**: This option causes the driver to evaluate the device for tag information. It also adds tags to the tag space of the server every time the server is launched.
- **Generate on First Startup**: This option causes the driver to evaluate the target device for tag information the first time the project is run. It also adds any OPC tags to the server tag space as needed.
- **Note**: When the option to automatically generate OPC tags is selected, any tags that are added to the server's tag space must be saved with the project. Users can configure the project to automatically save from the **Tools** | **Options** menu.

**On Duplicate Tag**: When automatic tag database generation is enabled, the server needs to know what to do with the tags that it may have previously added or with tags that have been added or modified after the communications driver since their original creation. This setting controls how the server handles OPC tags that were automatically generated and currently exist in the project. It also prevents automatically generated tags from accumulating in the server.

For example, if a user changes the I/O modules in the rack with the server configured to **Always Generate on Startup**, new tags would be added to the server every time the communications driver detected a new I/O module. If the old tags were not removed, many unused tags could accumulate in the server's tag space. The options are:

- **Delete on Create**: This option deletes any tags that were previously added to the tag space before any new tags are added. This is the default setting.
- **Overwrite as Necessary**: This option instructs the server to only remove the tags that the communications driver is replacing with new tags. Any tags that are not being overwritten remain in the server's tag space.
- **Do not Overwrite**: This option prevents the server from removing any tags that were previously generated or already existed in the server. The communications driver can only add tags that are completely new.
- **Do not Overwrite, Log Error**: This option has the same effect as the prior option, and also posts an error message to the server's Event Log when a tag overwrite would have occurred.
- **Note:** Removing OPC tags affects tags that have been automatically generated by the communications driver as well as any tags that have been added using names that match generated tags. Users should avoid adding tags to the server using names that may match tags that are automatically generated by the driver.

**Parent Group**: This property keeps automatically generated tags from mixing with tags that have been entered manually by specifying a group to be used for automatically generated tags. The name of the group can be up to 256 characters. This parent group provides a root branch to which all automatically generated tags are added.

**Allow Automatically Generated Subgroups**: This property controls whether the server automatically creates subgroups for the automatically generated tags. This is the default setting. If disabled, the server gen-

erates the device's tags in a flat list without any grouping. In the server project, the resulting tags are named with the address value. For example, the tag names are not retained during the generation process.

• **Note**: If, as the server is generating tags, a tag is assigned the same name as an existing tag, the system automatically increments to the next highest number so that the tag name is not duplicated. For example, if the generation process creates a tag named "Al22" that already exists, it creates the tag as "Al23" instead.

**Create**: Initiates the creation of automatically generated OPC tags. If the device's configuration has been modified, **Create tags** forces the driver to reevaluate the device for possible tag changes. Its ability to be accessed from the System tags allows a client application to initiate tag database creation.

• Note: Create tags is disabled if the Configuration edits a project offline.

### **Device Properties — Block Sizes**

Property Groups	☐ Discretes	
General	Output Discretes	32
Scan Mode Timing	Input Discretes	32
	■ Registers	
Auto-Demotion	Output Registers	32
TCP/IP	Input Registers	32
Blocks		

### **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**

Property Groups	☐ Modbus Register Configuration	
General	Use 1x32 Floating Point Format	Enable
Scan Mode		
Timing		
Auto-Demotion		
Tag Generation		
Block Sizes		
Settings		
Redundancy		

### **Modbus Register Configuration**

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.

**1x32 Floating Point Format**: Enable if the device has been configured to use the 1x32 format.

## Device Properties — Redundancy

Property Groups	☐ Redundancy	
General	Secondary Path	Channel.Device1
Scan Mode	Operating Mode	Switch On Failure
	Monitor Item	
Timing	Monitor Interval (s)	300
Auto-Demotion	Return to Primary ASAP	Yes
Tag Generation		
Tag Import Settings		
Redundancy		

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

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

## **Data Types Description**

Data Type	Description
Boolean	Single bit
	Unsigned 16-bit value
Word	bit 0 is the low bit
	bit 15 is the high bit Signed 16-bit value
	Signed To-bit Value
Short	bit 0 is the low bit
	bit 14 is the high bit
	bit 15 is the sign bit
	Unsigned 32-bit value
DWord	bit 0 is the low bit
	bit 31 is the high bit
	Signed 32-bit value
Long	bit 0 is the low bit
	bit 30 is the high bit
	bit 31 is the sign bit
	32-bit floating point value.
Float	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	Null-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)\*\*

### **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	Boolean	Read/Write
Input Coils	100001-165536	Boolean	Read Only
	300001-305000	Word, Short	
	300001.0-300001.15305000.0-305000.15	Boolean	
	305001-306000	<b>DWord</b> , Long	
Internal Registers	306001-307000	Word, Short	Read Only
internal Registers	306001.0-306001.15 307000.0-307000.15	Boolean	
	307001-308000	Float	
	308001-365536	<b>Word</b> , Short	
	308001.0-308001.15365536.0-365536.15	Boolean	
Holding Registers	400001-406000	<b>Word</b> , Short	
	400001.0-400001.15406000.0-406000.15	Boolean	Read/Write
	406001-407000	<b>DWord</b> , Long	

<sup>\*</sup>Firmware prior to 2.0A

<sup>\*\*</sup>Firmware 2.0A and later

Address	Range	Data Type	Access
	407001-408000	<b>Word</b> , Short	
	407001.0-407001.15 408000.0-408000.15	Boolean	
	408001-409000	Float	
	409001-465536	<b>Word</b> , Short	
	409001.0-409001.15465536.0-465536.15	Boolean	

### **Modbus Addressing Hexadecimal Format**

Address	Range	Data Type	Access
Output Coils	H000001-H010000	Boolean	Read/Write
Input Coils	H100001-H110000	Boolean	Read Only
Internal Registers	H300001-H301388  H300001.0-H300001.FH301388.0-H301388.F  H301389-H301770  H301771-H301B58  H301771.0-H301771.FH301B58.0-H301B58.F  H301B59-H301F40  H301F41-H310000  H301F41.0-H301F41.FH31000.0-H310000.F	Word, Short  Boolean  DWord, Long  Word, Short  Boolean  Float  Word, Short	Read Only
Holding Registers	H400001-H401770  H400001.0-H400001.FH401770.0-H401770.F  H401771-H401B58  H401B59-H401F40  H401B59.0-H401B59.FH401F40.0-H401F40.F  H401F41-H402328  H402329-H410000  H402329.0-H402329.FH410000.0-H410000.F	Word, Short  Boolean  DWord, Long  Word, Short  Boolean  Float  Word, Short  Boolean	Read/Write

### **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	Boolean	Read/Write
Input Coils	100001-165536	Boolean	Read Only
	300001-305000 300001.0-300001.15305000.0-305000.15	Word, Short Boolean	
	305001-306000	<b>DWord</b> , Long	
Internal Registers	306001-307000	Word, Short	Read Only
G	306001.0-306001.15 307000.0-307000.15	Boolean	,
	307001-308000	Float	
	308001-365536	Word, Short	
	308001.0-308001.15365536.0-365536.15	Boolean	
Holding Registers	400001-406000 400001.0-400001.15406000.0-406000.15	Word, Short  Boolean	
	406001-407000	<b>DWord</b> , Long	
	407001-408000	Word, Short	Read/Write
	407001.0-407001.15408000.0-408000.15	Boolean	
	408001-409000	Float	
	409001-465536	<b>Word</b> , Short	

Address	Range	Data Type	Access
	409001.0-409001.15465536.0-465536.15	Boolean	

### **Modbus Addressing Hexadecimal Format**

Address	Range	Data Type	Access
Output Coils	H000001-H010000	Boolean	Read/Write
Input Coils	H100001-H110000	Boolean	Read Only
Internal Registers	H300001-H301388  H300001.0-H300001.FH301388.0-H301388.F  H301389-H301770  H301771-H301B58  H301771.0-H301771.FH301B58.0-H301B58.F  H301B59-H301F40  H301F41-H310000	Word, Short  Boolean  DWord, Long  Word, Short  Boolean  Float  Word, Short	Read Only
Holding Registers	H301F41.0-H301F41.F H31000.0-H310000.F H400001-H401770 H400001.0-H400001.FH401770.0-H401770.F H401771-H401B58 H401B59-H401F40 H401B59.0-H401B59.F H401F40.0-H401F40.F H401F41-H402328 H402329-H410000 H402329.0-H402329.FH410000.0-H410000.F	Word, Short  Boolean  DWord, Long  Word, Short  Boolean  Float  Word, Short  Boolean	Read/Write

### **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	Boolean	Read/Write
Input Coils	100001-165536	Boolean	Read Only
	300001-365536	Word, Short	
Internal Registers			Read Only
	300001.0-300001.15365536.0-365536.15	Boolean	
	400001-465536	Word, Short	
Holding Registers			Read/Write
	400001.0-400001.15465536.0-465536.15	Boolean	

### **Modbus Addressing Hexadecimal Format**

Address	Range	Data Type	Access
Output Coils	H000001-H010000	Boolean	Read/Write
Input Coils	H100001-H110000	Boolean	Read Only
	H300001-H310000	Word, Short	
Internal Registers			Read Only
	H300001.0-H300001.FH310000.0-H310000.F	Boolean	
	H400001-H410000	<b>Word</b> , Short	
Holding Registers			Read/Write
	H400001.0-H400001.FH410000.0-H410000.F	Boolean	

### **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.

### **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	Boolean	Read/Write
Input Coils	100001-165536	Boolean	Read Only
	300001-365536	Word, Short	
Internal Registers	300010-300109	Float*	Read Only
	300001.0-300001.15365536.0-365536.15	Boolean	
	400001-465536	Word, Short	
Holding Registers	400010-400109	Float*	Read/Write
	400001.0-400001.15465536.0-465536.15	Boolean	

### **Modbus Addressing Hexadecimal Format**

Address	Range	Data Type	Access
Output Coils	H000001-H010000	Boolean	Read/Write
Input Coils	H100001-H110000	Boolean	Read Only
Internal Registers	H300001-H310000 H30000A-H30006D	<b>Word</b> , Short Float*	Read Only
	H300001.0-H300001.FH310000.0-H310000.F	Boolean	
Holding Registers	H400001-H410000 H40000A-H40006D	<b>Word</b> , Short Float*	Read/Write
	H400001.0-H400001.FH410000.0-H410000.F	Boolean	

<sup>\*</sup>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.

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.

### **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**

Address	Range	Data Type	Access
Output Coils	000001-065536	Boolean	Read/Write
Input Coils	100001-165536	Boolean	Read Only
Internal Registers	300001-305000 300001.0-300001.15305000.0-305000.15 305001-306000	Word, Short  Boolean  DWord, Long	
	306001.0-306001.15307000.0-307000.15	Word, Short Boolean	Read Only
	307001-308000 308001-365536	Float Word, Short	
	308001.0-308001.15365536.0-365536.15	Boolean	
Holding Registers	400001-406000 400001.0-400001.15406000.0-406000.15 406001-407000 407001-408000	Word, Short  Boolean  DWord, Long  Word, Short	Dandavin
	407001.0-407001.15408000.0-408000.15 408001-409000 409001-465536 409001.0-409001.15465536.0-465536.15	Boolean Float Word, Short Boolean	Read/Write

### **Modbus Addressing Hexadecimal Format**

Address	Range	Data Type	Access
Output Coils	H000001-H010000	Boolean	Read/Write
Input Coils	H100001-H110000	Boolean	Read Only

Address	Range	Data Type	Access
	H300001-H301388	Word, Short	
	H300001.0-H300001.FH301388.0-H301388.F	Boolean	
	H301389-H301770	<b>DWord</b> , Long	
Internal Registers	H301771-H301B58	<b>Word</b> , Short	Read Only
internal Registers	H301771.0-H301771.FH301B58.0-H301B58.F	Boolean	Read Offig
	H301B59-H301F40	Float	
	H301F41-H310000	<b>Word</b> , Short	
	H301F41.0-H301F41.FH31000.0-H310000.F	Boolean	
	H400001-H401770	Word, Short	
	H400001.0-H400001.FH401770.0-H401770.F	Boolean	
	H401771-H401B58	<b>DWord</b> , Long	
Holding Dogistors	H401B59-H401F40	<b>Word</b> , Short	Read/Write
Holding Registers	H401B59.0-H401B59.FH401F40.0-H401F40.F	Boolean	Read/Write
	H401F41-H402328	Float	
	H402329-H410000	<b>Word</b> , Short	
	H402329.0-H402329.FH410000.0-H410000.F	Boolean	

### **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	Boolean	Read/Write
Input Coils	100001-165536	Boolean	Read Only
	300001-305000 300001.0-300001.15305000.0-305000.15	Word, Short Boolean	
Internal Degisters	305001-306000 306001-307000	<b>DWord</b> , Long <b>Word</b> , Short	Road Only
Internal Registers	306001.0-306001.15307000.0-307000.15	Boolean	Read Only
	307001-308000 308001-365536	<b>Word</b> , Short	
	308001.0-308001.15365536.0-365536.15	Boolean	
Holding Registers	400001-405000 400001.0-400001.15405000.0-405000.15	Word, Short Boolean	
	405001-406000 406001-407000	<b>DWord</b> , Long <b>Word</b> , Short	
	406001.0-406001.15407000.0-407000.15	Boolean	Read/Write
	407001-408000 408001-465536	Float Word, Short	
	408001.0-408001.1465536.0-465536.15	Boolean	

### **Modbus Addressing Hexadecimal Format**

Address	Range	Data Type	Access
Output Coils	H000001-H010000	Boolean	Read/Write
Input Coils	H100001-H110000	Boolean	Read Only
	H300001-H301388	Word, Short	
Internal Registers	H300001.0-H300001.FH301388.0-H301388.F	Boolean	Read Only

Address	Range	Data Type	Access
	H301389-H301770	<b>DWord</b> , Long	
	H301771-H301B58	<b>Word</b> , Short	
	H301771.0-H301771.FH301B58.0-H301B58.F	Boolean	
	H301B59-H301F40	Float	
	H301F41-H310000	<b>Word</b> , Short	
	H301F41.0-H301F41.FH310000.0-H310000.F	Boolean	
	H400001-H401388	Word, Short	
	H400001.0-H400001.FH401388.0-H401388.F	Boolean	
	H401389-H401770	<b>DWord</b> , Long	
Halfra Barbara	H401771-H401B58	<b>Word</b> , Short	D. JAM.
Holding Registers	H401771.0-H401771.FH401B58.0-H401B58.F	Boolean	Read/Write
	H401B59-H401F40	Float	
	H401F41-H410000	<b>Word</b> , Short	
	H401F41.0-H401F41.FH410000.0-H410000.F	Boolean	

### **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	Boolean	Read/Write
Input Coils	100001-165536	Boolean	Read Only
Internal Registers	NA	NA	NA
Holding Registers	400001-465535*	Float	Read/Write

### **Modbus Addressing Hexadecimal Format**

Address	Range	Data Type	Access
Output Coils	H000001-H010000	Boolean	Read/Write
Input Coils	H100001-H110000	Boolean	Read Only
Internal Registers	NA	NA	NA
Holding Registers	H400001-H410000*	Float	Read/Write

<sup>\*</sup>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.

### Index

### Α

Address <address> is out of range for the specified device or register 33
Address Descriptions 22
Allow Sub Groups 18
Array size is out of range for address <address> 33
Array support is not available for the specified address: <address> 34
Attempts Before Timeout 15
Auto-Demotion 15
Auto-Dial 10

#### В

Bad address in block [<start address> to <end address>] on device <device name> 37
Bad array spanning [<address> to <address>] on device <device name> 38
Baud Rate 8
Block Sizes 19
Boolean 21

### C

Channel Assignment 12
Channel Properties — Advanced 11
Channel Properties — General 6
Channel Properties — Serial Communications 8
Channel Properties — Write Optimizations 10
Close Idle Connection 9-10
COM ID 8
COM Port 8
Communications error on <channel name> [<error mask>] 35
Communications Timeouts 14
COMn does not exist 36
COMn is in use by another application 36
Connect Timeout 9, 14
Connection Type 8
Create 18

### D

Data Bits 9 Data Collection 13 Data type <type> is not valid for device address <address> 34 Data Types Description 21 Delete 17 Demote on Failure 15 **Demotion Period 16** Device <device name> is not responding 37 Device address <address> contains a syntax error 34 Device address <address> is not supported by model <model name> 34 Device address < address > is read only 35 Device ID 5 Device Properties — Auto-Demotion 15 Device Properties — General 11 Device Properties — Redundancy 20 Device Properties — Tag Generation 16 Device Properties — Timing 14 Diagnostics 6 Discard Requests when Demoted 16 Do Not Scan, Demand Poll Only 14 Driver 12 Drop 9 DTR 9 Duty Cycle 11 DWord 21 Ε

Error Descriptions 33 Error opening COMn 36

### F

Failed to read SM100 decimal placement data 38

Float 21

Flow Control 9

```
Framing 35
```

### G

General 11

Generate 17

### ı

ID 12

Identification 6, 12

Idle Time to Close 9-10

Initial Updates from Cache 14

Inter-Device Delay 11

### L

Long 21

### Μ

Mask 35

Missing address 35

Model 12

Modem 8-9

Modem Settings 9

### Ν

Name 12

Network 5

Non-Normalized Float Handling 11

None 8

### 0

On Device Startup 17

On Duplicate Tag 17

On Property Change 17

Operating Mode 12

Operation with no Communications 10

Operational Behavior 9

Optimization Method 10

Overrun 35

Overview 4

Overwrite 17

### Ρ

Parent Group 17

Parity 9, 35

Physical Medium 8

Poll Delay 9

### R

Raise 9

Read Processing 10

Redundancy 20

Replace with Zero 11

Report Communication Errors 9-10

Request Timeout 15

Respect Tag-Specified Scan Rate 14

RS-485 9

RTS 9

### S

Scan Mode 14

Serial Communications 8

Serial Port Settings 8

Series 1200 Addressing 22

Series 1600 Addressing 24

Series 3000 Addressing 26

Settings 19

Setup 4

Shared 8

Short 21

Simulated 13

SM100 Addressing 26

Stop Bits 9

String 21

SV100 28

SV180 29

SV180 (2.0) Addressing 31

### T

Tag Counts 7, 13

Tag Generation 16

Timeouts to Demote 16

Timing 14

### U

Unable to set comm properties on COMn 36
Unable to write tag <address> on device <device name> 37

Unmodified 11

### W

Word 21

Write All Values for All Tags 10

Write Only Latest Value for All Tags 11

Write Only Latest Value for Non-Boolean Tags 10