Omron Process Suite Driver

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Omron Process Suite Driver

Help version 1.026

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Overview

The Omron Process Suite Driver provides a reliable way to connect Omron Process Suite controllers to client applications; including HMI, SCADA, Historian, MES, ERP, and countless custom applications. It is intended for use with Omron temperature controllers.

Setup

Supported Devices

E5AX-A, E5AX-AH, E5AX-DAA, E5AX-PRR, E5AX-VAA
E5AF-A
E5AJ-A
E5EJ-A
E5CN (thermocouple), E5CN (platinum resistance thermometer)
E5GN (thermocouple), E5GN (platinum resistance thermometer)

Communication Protocol

Sysway

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 100 per channel.

Supported Communication Parameters

Baud Rate: 300, 600, 1200, 2400, 9600
Parity: Even
Data Bits: 7
Stop Bits: 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 set in channel properties. *For more information, refer to* ***Channel Properties***.

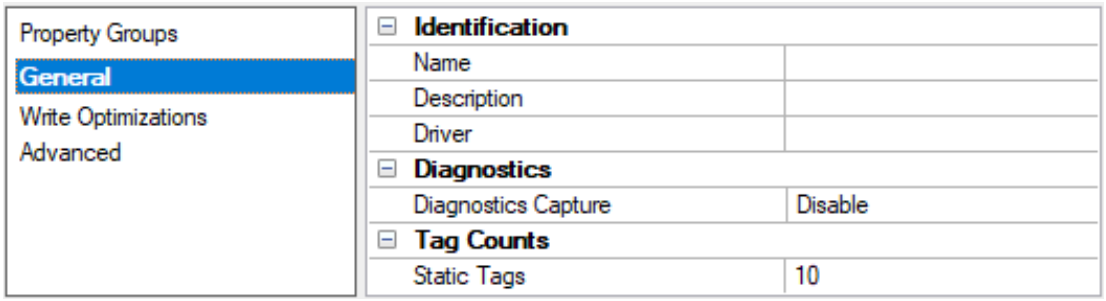
Flow Control

When using an RS232 / RS485 converter, the type of flow control that is required depends on 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** in the channel properties.

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 re-acquire 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 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 "Communication Diagnostics" and "Statistics Tags" in the server help.

Tag Counts

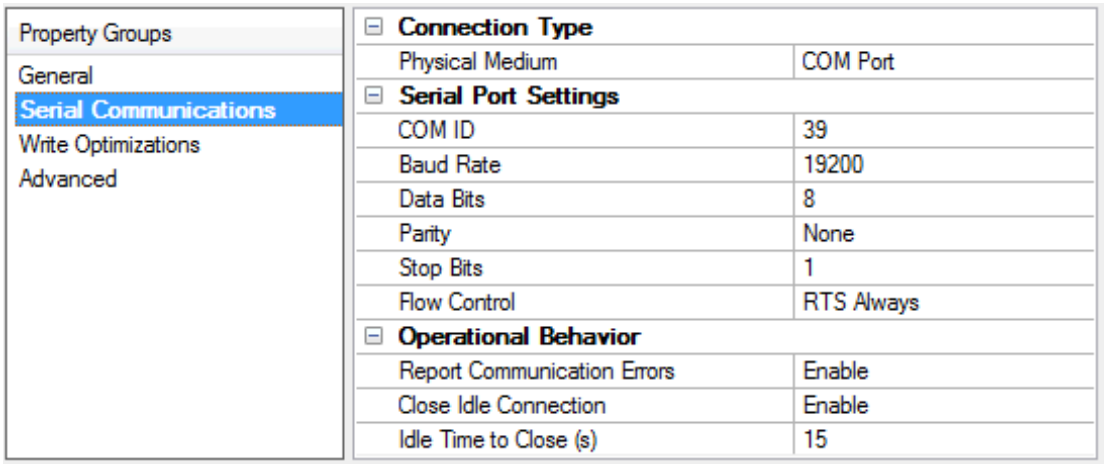
Static Tags: Provides the total number of defined static tags at this level (device or channel). This information can be helpful in troubleshooting and load balancing.

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** or **Ethernet 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 **Channel Properties — Serial Communications**)*.



Connection Type

Physical Medium: Choose the type of hardware device for data communications. Options include Modem, Ethernet Encapsulation, 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. **Ethernet Encap.**: Select if Ethernet Encapsulation is used for communications, which displays the **Ethernet Settings** section.
5. **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.

Ethernet Settings

Note: Not all serial drivers support Ethernet Encapsulation. If this group does not appear, the functionality is not supported.

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 "Using 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

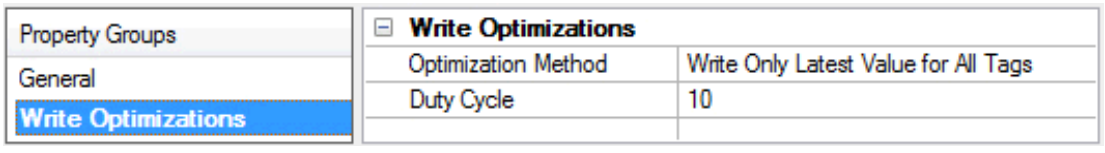
- **Modem**: Specify the installed modem to be used for communications.
- **Connect Timeout**: Specify the amount of time to wait for connections to be established before failing a read or write. The default is 60 seconds.
- **Modem Properties**: Configure the modem hardware. When clicked, it opens vendor-specific 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 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.



Write Optimizations

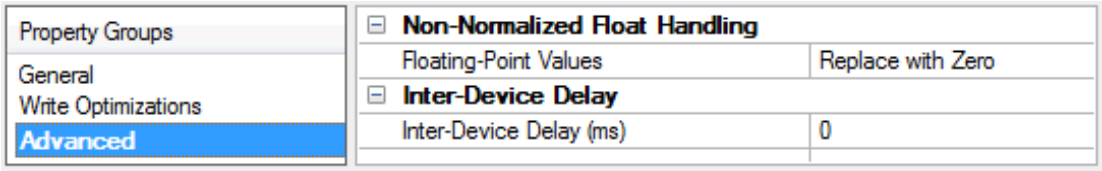
Optimization Method: Controls how write data is passed to the underlying communications driver. The options are:

- **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.



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.

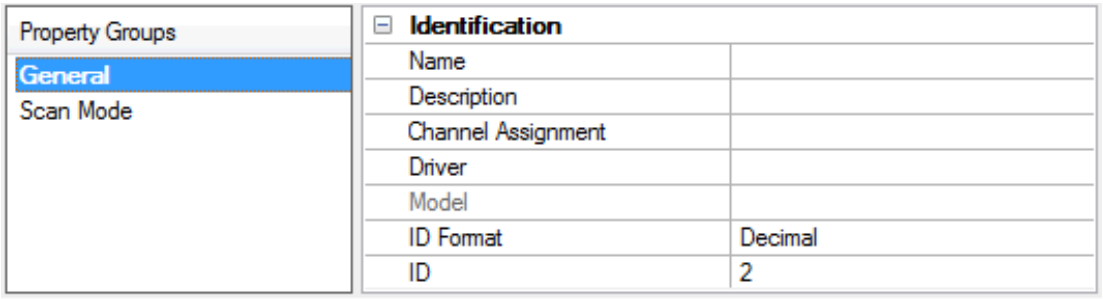
For more information on the floating-point values, refer to "How To ... Work with Non-Normalized Floating-Point Values" in the server help.

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.

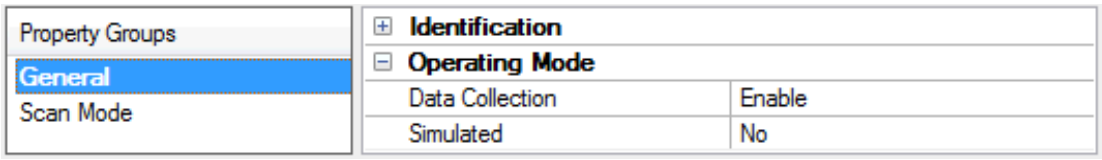
Model: Specify the type of device that is associated with this ID. The contents of the drop-down menu depend on the type of communications driver being used. Models that are not supported by a driver are disabled. If the communications driver supports multiple device models, the model selection can only 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.

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.

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.

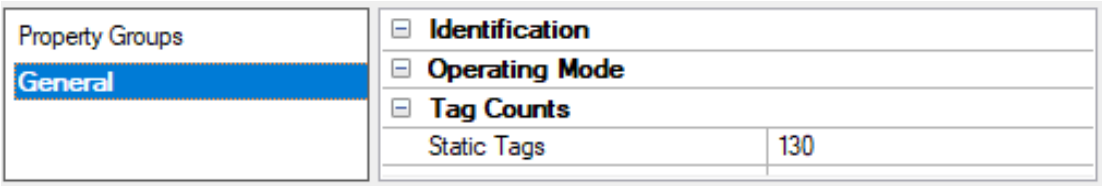
Simulated: Place the device into or out of Simulation Mode. In this mode, the driver does not attempt to communicate with the physical device, but the server continues to return valid OPC data. Simulated stops physical communications with the device, but allows OPC data to be returned to the OPC client 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. 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. 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.

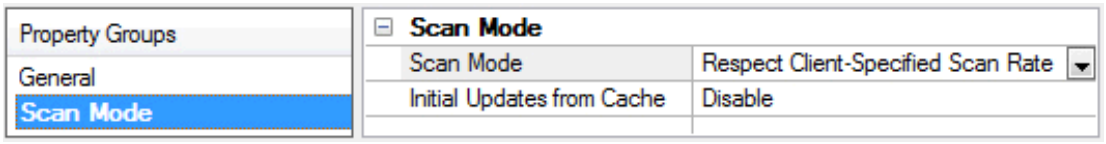
Tag Counts



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.



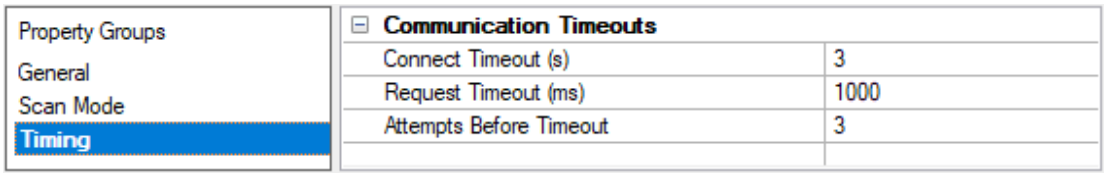
Scan Mode: Specify how tags in the device are scanned for updates sent to subscribing clients. Descriptions of the options are:

- **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.

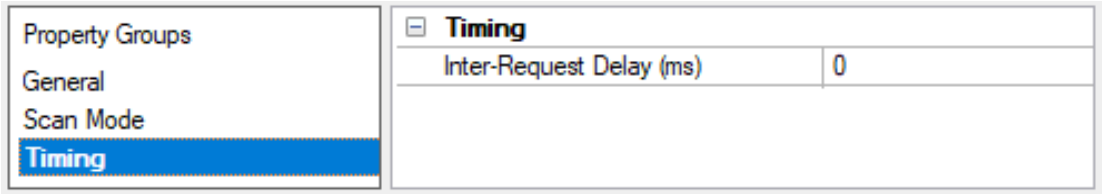
Request Timeout: Specify an interval used by all drivers to determine how long the driver waits for a response from the target device to complete. The valid range is 50 to 9999999 milliseconds (167 minutes). The default is usually 1000 milliseconds, but can vary depending on the driver. The default timeout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

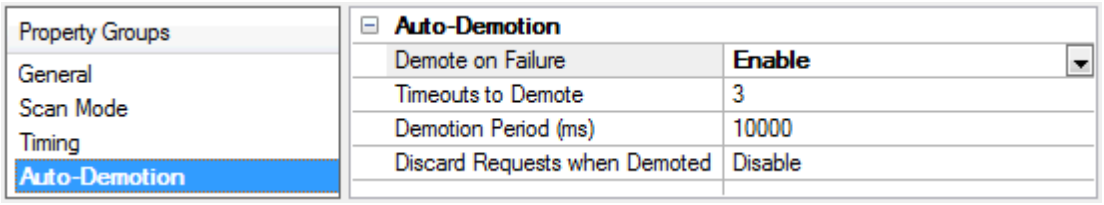
Inter-Request Delay: Specify how long the driver waits before sending the next request to the target device. It overrides the normal polling frequency of tags associated with the device, as well as one-time reads and writes. This delay can be useful when dealing with devices with slow turnaround times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



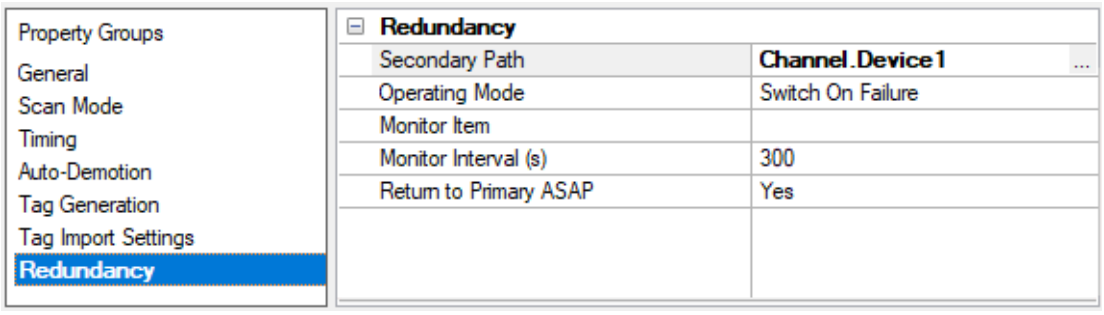
Demote on Failure: When enabled, the device is automatically taken off-scan until it is responding again.
Tip: Determine when a device is off-scan by monitoring its demoted state using the _AutoDemoted system tag.

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 — 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
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.

Address Descriptions

The following models are supported by this driver.

E5AF-A
E5AF-AH
E5AJ-A
E5AX-A
E5AX-AH
E5AX-DAA
E5AX-PRR
E5AX-VAA
E5CN-PT
E5CN-TC
E5EJ-A
E5GN-PT
E5GN-TC

Notes:

1. E5CN-PT is for platinum resistance thermometer. The actual model number may differ.
2. E5CN-TC is for thermocouple. The actual model number may differ.
3. E5GN-PT is for platinum resistance thermometer. The actual model number may differ.
4. E5GN-TC is for thermocouple. The actual model number may differ.

E5AF-A Address Description

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

Mnemonic	Description	Data type	Access
AL-1	Alarm 1 set temperature. (-999-9999 deg TC)*(-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.*	**Short**,	Read Only

Mnemonic	Description	Data type	Access
	(0-9)	Word	
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AT	Auto tuning in progress. Write TRUE to start AT. Write FALSE to stop AT. AT remains TRUE until the device completes the auto tuning procedure (or the user terminates it). Driver does not accept any write commands other than AT=FALSE during auto tuning.	**Bool**	Read/Write
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure. Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
FU	Fuzzy intensity. (0-99%)	**Short**, **Word**	Read/Write
FU-S-1	Fuzzy scale 1.	**Float**, DWord,	Read/Write

Mnemonic	Description	Data type	Access
	(0.2-999.9 deg)	Long	
FU-S-2	Fuzzy scale 2. (0.2-99.9 deg)	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.***** TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.***** (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.***** TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.***** TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only

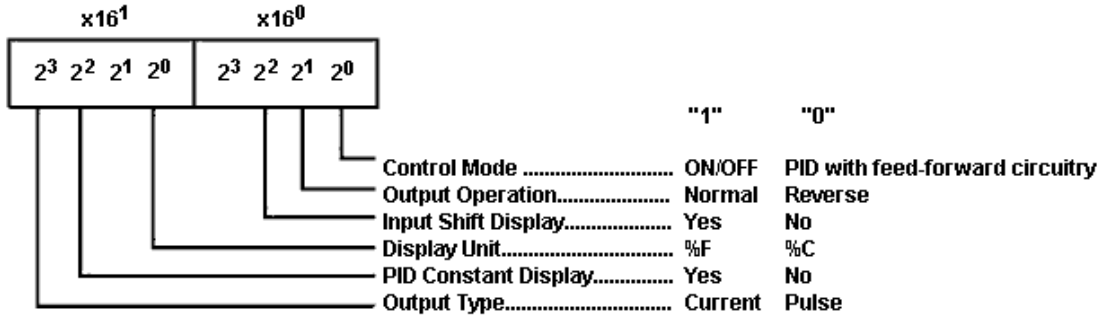
Mnemonic	Description	Data type	Access
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.** TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-999-9999 deg TC) (-99.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state.	**Bool**	Read Only

Mnemonic	Description	Data type	Access
	TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.		
SV	Set value temperature. Setting range: SL-L-SL-H	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5AF-AH Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-999-9999 deg TC)*(-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
AT	Auto tuning in progress. Write TRUE to start AT. Write FALSE to stop AT. AT remains TRUE until the device completes the auto tuning procedure (or the user terminates it). Driver does not accept any write commands other than AT=FALSE during auto tuning.	**Bool**	Read/Write
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.0-50 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
FU	(0-99%) Fuzzy intensity.	**Short, Word**	Read/Write
FU-S-1	Fuzzy scale 1. (0.2-999.9 deg)	**Float**, DWord, Long	Read/Write
FU-S-2	Fuzzy scale 2.	**Float**,	Read/Write

Mnemonic	Description	Data Type	Access
	(0.2-99.9 deg)	DWord, Long	
HB	Heater burnout set temperature. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only

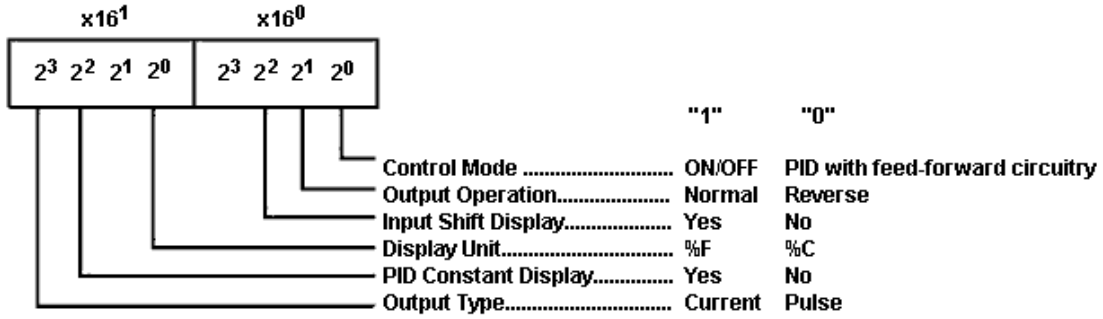
Mnemonic	Description	Data Type	Access
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-999-9999 deg TC) (-99.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**,	Read Only

Mnemonic	Description	Data Type	Access
		DWord, Long	
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5AJ-A Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-1999-9999 deg TC)*(-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only

Mnemonic	Description	Data Type	Access
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-1999-9999 deg TC) (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure. Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.2-50.0 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
HB	Heater burnout set temperature. (-1999-9999 deg TC) (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:**The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value.	**Float**, DWord,	Read/Write

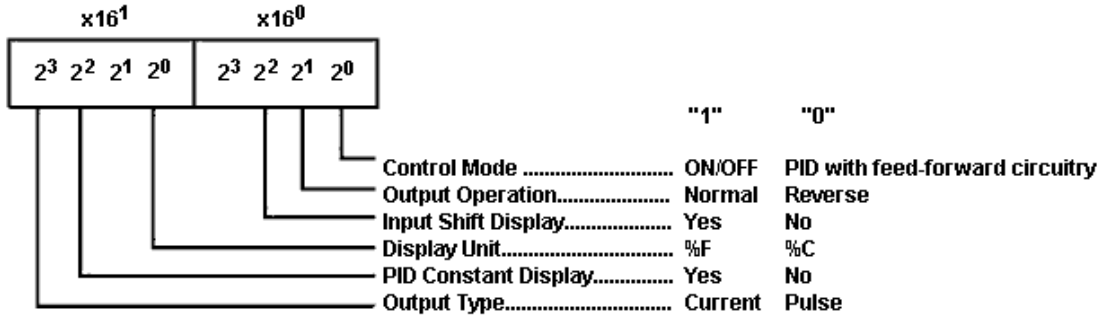
Mnemonic	Description	Data Type	Access
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-1999-9999 deg TC) (-199.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. (setting range: SL-L-SL-H)	**Float**, DWord, Long	Read/Write

Mnemonic	Description	Data Type	Access
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5AX-A Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-999-9999 deg TC)*(-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.*	**Short**, Word	Read Only

Mnemonic	Description	Data Type	Access
	(0-9)		
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AT	Auto tuning in progress. Write TRUE to start AT. Write FALSE to stop AT. AT remains TRUE until the device completes the auto tuning procedure (or the user terminates it). Driver does not accept any write commands other than AT=FALSE during auto tuning.	**Bool**	Read/Write
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure . Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value.	**Float**, DWord,	Read/Write

Mnemonic	Description	Data Type	Access
	(-999-9999 deg TC) (-99.9-999.9 deg Pt)	Long	
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only

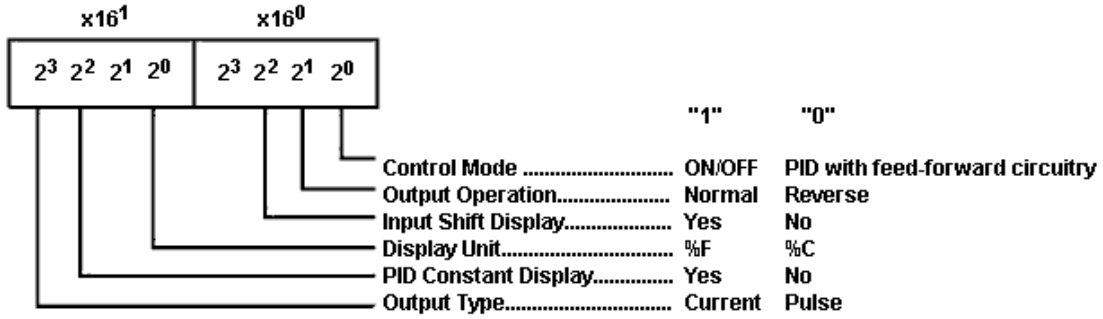
Mnemonic	Description	Data Type	Access
PV	Process value (measured temperature). (-999-9999 deg TC) (-99.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode"is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write

Mnemonic	Description	Data Type	Access
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5AX-AH Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-999-9999 deg TC)*(-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AT	Auto tuning in progress. Write TRUE to start AT. Write FALSE to stop AT. AT remains TRUE until the device completes the auto tuning procedure (or the user terminates it).	**Bool**	Read/Write

Mnemonic	Description	Data Type	Access
	Driver does not accept any write commands other than AT=FALSE during auto tuning.		
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure. Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.0-50.0 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
HB	Heater burnout set temperature. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write

Mnemonic	Description	Data Type	Access
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read Only

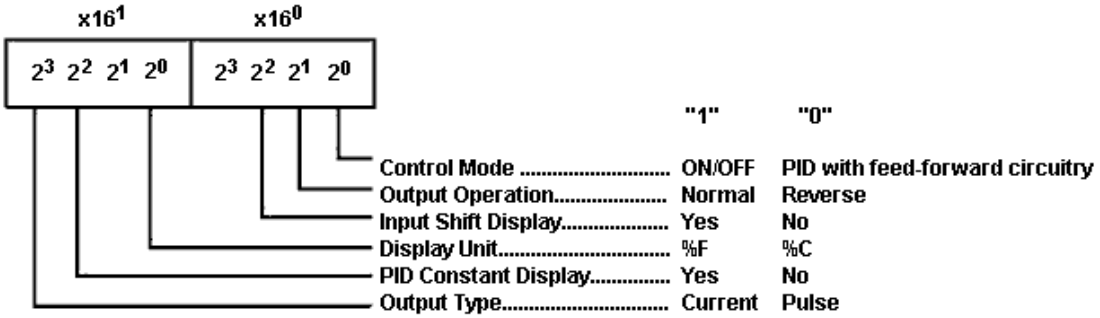
Mnemonic	Description	Data Type	Access
	Note: Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.		
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.

**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5AX-DAA Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-999-9999 deg TC)*(-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AT	Auto tuning in progress.	**Bool**	Read/Write

Mnemonic	Description	Data Type	Access
	Write TRUE to start AT. Write FALSE to stop AT. AT remains TRUE until the device completes the auto tuning procedure (or the user terminates it). Driver does not accept any write commands other than AT=FALSE during auto tuning.		
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure. Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
	FALSE = disabled		
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read Only

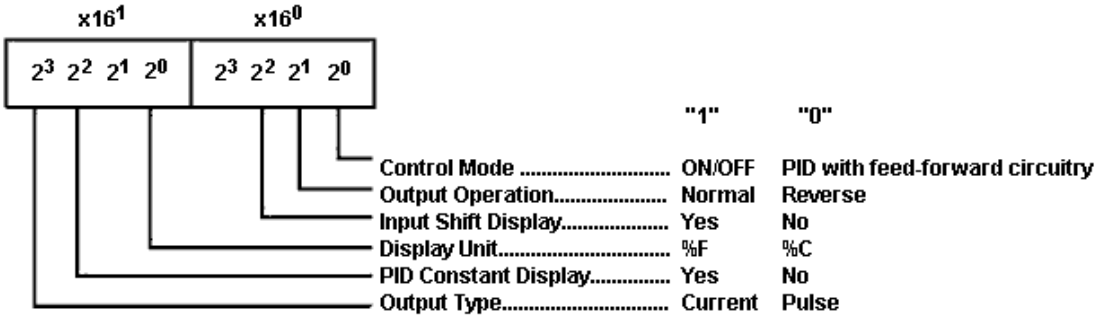
Mnemonic	Description	Data Type	Access
	Note: Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.		
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.

**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5AX-PRR Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-999-9999 deg TC)*(-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AT	Auto tuning in progress.	**Bool**	Read/Write

Mnemonic	Description	Data Type	Access
	Write TRUE to start AT. Write FALSE to stop AT. AT remains TRUE until the device completes the auto tuning procedure (or the user terminates it). Driver does not accept any write commands other than AT=FALSE during auto tuning.		
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure. Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-MD-S	Output mode shift. TRUE = manual FALSE = auto	**Bool**	Read/Write
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature).	**Float**, DWord,	Read Only

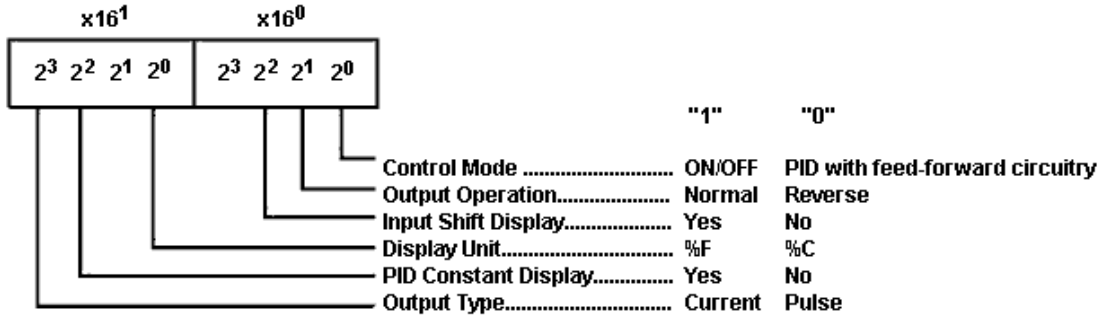
Mnemonic	Description	Data Type	Access
	(-999-9999 deg TC) (-99.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	Long	
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:**If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only

Mnemonic	Description	Data Type	Access
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5AX-VAA Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-999-9999 deg TC)*(-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AT	Auto tuning in progress. Write TRUE to start AT. Write FALSE to stop AT. AT remains TRUE until the device completes the auto tuning procedure (or the user terminates it).	**Bool**	Read/Write

Mnemonic	Description	Data Type	Access
	Driver does not accept any write commands other than AT=FALSE during auto tuning.		
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure. Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
C-DB	Dead band set temperature. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
C-SC	Cooling coefficient. (0.1-99.9)	**Float**, DWord, Long	Read/Write
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.*	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
	TRUE = enabled FALSE = disabled		
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-999-9999 deg TC) (-99.9-999.9 deg Pt)	**Float**, DWord, Long	Read Only

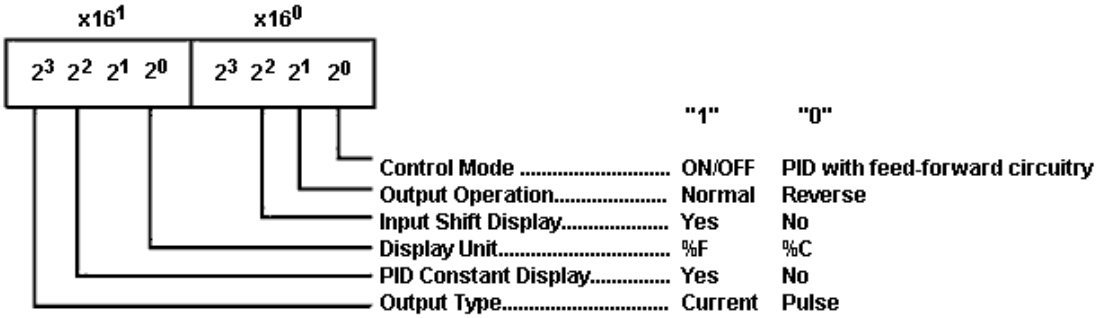
Mnemonic	Description	Data Type	Access
	Note: Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.		
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.

**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5CN-PT Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure.	**Bool**	Read/Write

Mnemonic	Description	Data Type	Access
	Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.		
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.2-50.0 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
HB	Heater burnout set temperature. (-1999-9999 deg TC) (-199.9-999.9 deg Pt	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-1999-9999 deg TC) (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.* (0-4)	**Short**, Word	Read Only

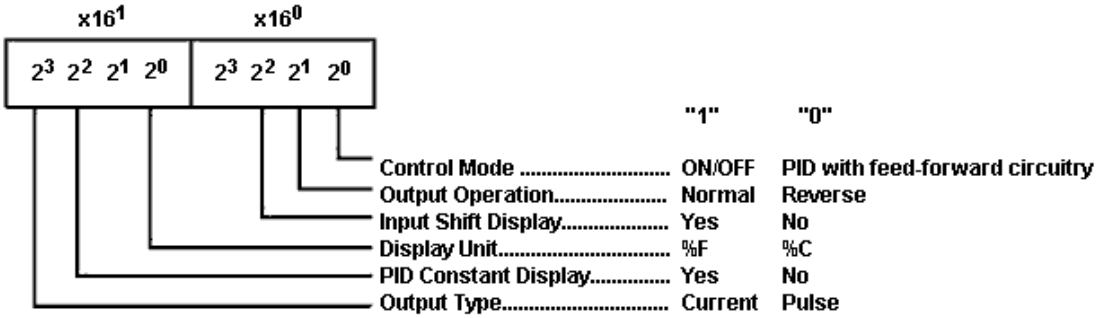
Mnemonic	Description	Data Type	Access
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-199.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable.	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
	TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.		
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5CN-TC Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure. Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write

Mnemonic	Description	Data Type	Access
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.2-50.0 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
HB	Heater burnout set temperature. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type. (0-16)*	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD	**Short**, Word	Read Only

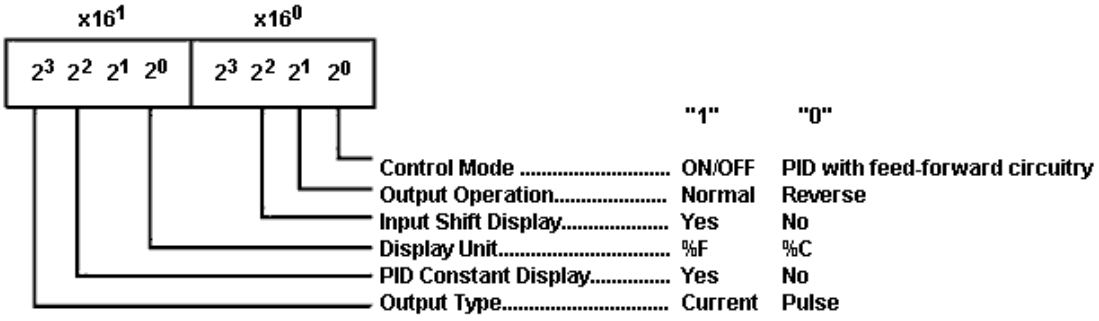
Mnemonic	Description	Data Type	Access
	CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL		
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-1999-9999 deg TC) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
	the front panel.		
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5EJ-A Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-1999-9999 deg TC)*(-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-1999-9999 deg TC) (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.2-50.0 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.*	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
	TRUE = "On/Off" FALSE = "2-degree of freedom PID"		
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
HB	Heater burnout set temperature. (-1999-9999 deg TC) (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.* (0-9)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.*	**Bool**	Read Only

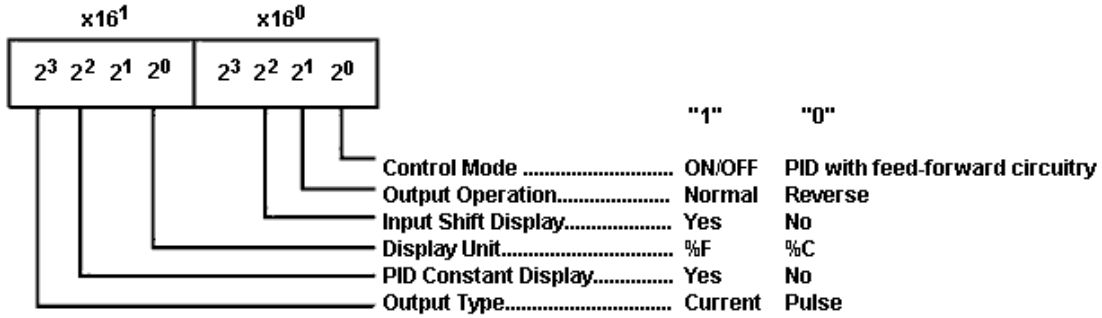
Mnemonic	Description	Data Type	Access
	TRUE = current FALSE = pulse		
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-1999-9999 deg TC) (-199.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SP-S-IN	Set point shift input state.	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
	TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.		
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5GN-PT Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on	**Bool**	Read Only

Mnemonic	Description	Data Type	Access
	FALSE = alarm off		
AL-2	Alarm 2 set temperature. (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.2-50.0 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
HB	Heater burnout set temperature. (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
I	Reset time set value.	**Short**, Word	Read/Write

Mnemonic	Description	Data Type	Access
	(0-3999 s)		
IN-S	Input shift set value. (-199.9-999.9 deg Pt)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
IN-T	Input (sensor) type.* (0-4)	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled	**Bool**	Read Only

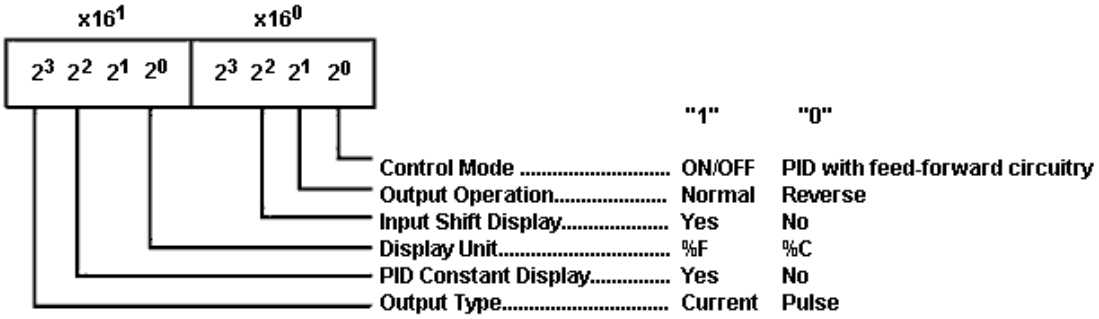
Mnemonic	Description	Data Type	Access
	FALSE = disabled		
PV	Process value (measured temperature). (-199.9-999.9 deg Pt) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure, heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.	**Float**, DWord, Long	Read Only
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write

Mnemonic	Description	Data Type	Access
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



E5GN-TC Address Description

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
AL-1-MD	Alarm 1 mode of operation.* (0-9)	**Short**, Word	Read Only
AL-1-OUT	Alarm 1 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
AL-2	Alarm 2 set temperature. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
AL-2-MD	Alarm 2 mode of operation.* (0-9)	**Short**, Word	Read Only

Mnemonic	Description	Data Type	Access
AL-2-OUT	Alarm 2 output status. TRUE = alarm on FALSE = alarm off	**Bool**	Read Only
BACKUP	Backup RAM to non-volatile memory. Write: Anything to initiate backup procedure Read: TRUE = non-volatile memory is not current FALSE = non-volatile memory is current **Note:** Device is unresponsive for approximately 500 ms during backup.	**Bool**	Read/Write
BURNOUT	Heater burnout detected. TRUE = heater burnout detected FALSE = heater OK	**Bool**	Read Only
CT	Heater current. (0.2-50.0 A)	**Float**, DWord, Long	Read Only
CTR-MD	Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"	**Bool**	Read Only
D	Rate time set value. (0-3999 s)	**Short**, Word	Read/Write
DSPL-UNIT	Display unit.* TRUE = degrees F FALSE = degrees C	**Bool**	Read Only
HB	Heater burnout set temperature. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
I	Reset time set value. (0-3999 s)	**Short**, Word	Read/Write
IN-S	Input shift set value. (-1999-9999 deg TC)	**Float**, DWord, Long	Read/Write
IN-S_DSPL	Input shift display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only

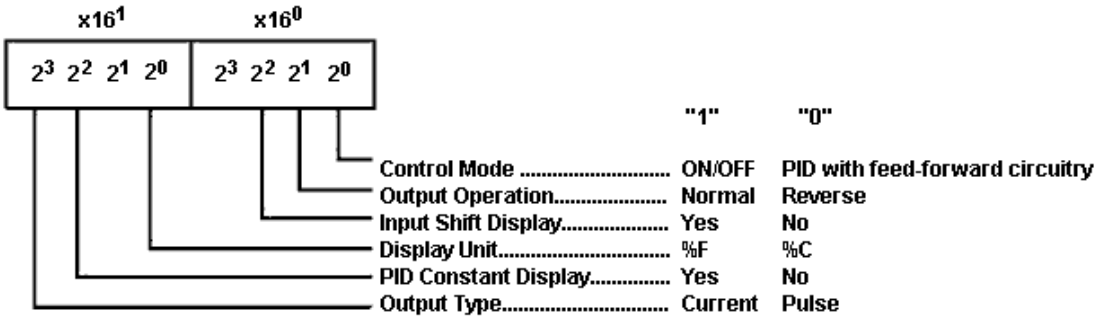
Mnemonic	Description	Data Type	Access
IN-T	Input (sensor) type. (0-16)*	**Short**, Word	Read Only
INITIALSTATUS	Initial Status tag For information on the INITIALSTATUS value, refer to the image below. **Note:** The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses: AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE O-OP PID-DSPL	**Short**, Word	Read Only
O	Output value. (0.0-100.0%)	**Float**, DWord, Long	Read Only
O-TYPE	Output type.* TRUE = current FALSE = pulse	**Bool**	Read Only
O-OP	Output mode of operation.* TRUE = normal (cooling) FALSE = reverse (heating)	**Bool**	Read Only
P	Proportional band set value. (0.0-999.9 deg)	**Float**, DWord, Long	Read/Write
PID-DSPL	PID display enable.* TRUE = enabled FALSE = disabled	**Bool**	Read Only
PV	Process value (measured temperature). (-1999-9999 deg TC) **Note:** Since hardware status information is passed back to the driver with the PV value, it is important that this memory location be monitored. If a hardware failure should occur (device failure,	**Float**, DWord, Long	Read Only

Mnemonic	Description	Data Type	Access
	heater burnout, sensor failure), it is detected and reported by the driver only during a PV read operation.		
RAM-MD	RAM mode enable. TRUE = RAM mode FALSE = backup mode The driver automatically forces the device into RAM mode to prevent wear on non-volatile memory. Users may backup the contents of RAM by issuing a BACKUP command. **Note:** If "Remote Mode" is not selected on the device's front panel, the driver cannot automatically force the device into RAM mode. The RMT button and RMT status indicator are located on the front panel.	**Bool**	Read Only
REMOTE	Remote Mode enable. TRUE = device in Remote Mode FALSE = device in Local Mode The driver is not able to write to the device unless Remote Mode is selected on the device front panel.	**Bool**	Read Only
SL-H	Set point limit (high).**	**Float**, DWord, Long	Read Only
SL-L	Set point limit (low).**	**Float**, DWord, Long	Read Only
SP-S-IN	Set point shift input state. TRUE = shift enabled FALSE = shift disabled State is forced TRUE by shorting appropriate terminals on device.	**Bool**	Read Only
SV	Set value temperature. Setting range: SL-L-SL-H.	**Float**, DWord, Long	Read/Write
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

*This is a hardware setting. For more information, refer to the device's help documentation.
**This value must be set on device front panel. For information on the valid ranges, refer to the device's help documentation.

Note: TC denotes temperature range for thermocouple sensor types. Pt denotes temperature range for platinum resistance thermometer sensor types. All stated temperature ranges are numerically equal for degrees F and C.

INITIALSTATUS Value Format



Event Log Messages

The following information concerns messages posted to the Event Log pane in the main user interface. Consult the OPC server help on filtering and sorting the Event Log detail view. Server help contains many common messages, so should also be searched. Generally, the type of message (informational, warning) and troubleshooting information is provided whenever possible.

Device error. RAM data error. | Address = '<address>'.

Error Type:
Error

Possible Cause:
There was an error writing to Random Access Memory (RAM).

Possible Solution:
Re-enter the data. If the problem persists, repair or replace the device.

Device error. A to D converter error. | Address = '<address>'.

Error Type:
Error

Possible Cause:
The device detected an analog to digital converter failure.

Possible Solution:
Repair or replace the device.

Device error. Sensor error. | Address = '<address>'.

Error Type:
Error

Possible Cause:
The device has detected a sensor failure.

Possible Solution:
Ensure that the sensor is in working order and is connected to the device properly.

Communications error. Device in local mode or auto tuning. | Address = '<address>'.

Error Type:
Warning

Possible Cause:
An attempt was made to write to the device while in Local Mode (or is auto tuning).

Possible Solution:

1. If the device is in Local Mode, switch it to Remote Mode from the front panel.
2. If the device is auto tuning, wait for the procedure to complete or terminate it (from the device front panel or by issuing a write AT=FALSE command).

Communications error. Parity. | Address = '<address>'.

Error Type:
Warning

Possible Cause:
The device received a frame of information containing an incorrect parity bit. There is noise in the cabling or faulty connections.

Possible Solution:
Verify that cables are properly shielded and that maximum length has not been exceeded (15m for RS-232C, 500m for RS-485). Verify that cables and connectors are electrically sound.

Communications error. Framing. | Address = '<address>'.

Error Type:
Warning

Possible Cause:
The device received a frame of information with a stop bit of 0. There is noise in the cabling or faulty connections.

Possible Solution:
Verify that cables are properly shielded and that maximum length has not been exceeded (15m for RS-232C, 500m for RS-485). Verify that cables and connectors are electrically sound.

Communications error. Register overrun. | Address = '<address>'.

Error Type:
Warning

Possible Cause:
An attempt was made to send new data to the device when its receive data register is already full.

Possible Solution:
Re-enter the data.

Communications error. Check sum. | Address = '<address>'.

Error Type:
Warning

Possible Cause:
The frame check sequence is in error. There is noise in the cabling or faulty connections.

Possible Solution:

Verify that cables are properly shielded and that maximum length has not been exceeded (15m for RS-232C, 500m for RS-485). Verify that cables and connectors are electrically sound.

Communications error. Format. | Address = '<address>'.

Error Type:

Warning

Possible Cause:

The device received a frame of information that is of the wrong length. There is noise in the cabling or faulty connections.

Possible Solution:

Verify that cables are properly shielded and that maximum length has not been exceeded (15m for RS-232C, 500m for RS-485). Verify that cables and connectors are electrically sound.

Communications error. Device rejected data. | Address = '<address>'.

Error Type:

Warning

Possible Cause:

Invalid data has been sent to the device. The device rejects data it does not recognize as valid, leaving the contents of the memory location unchanged. For example, the device would reject a write request for SV=100 if SL-H=50 had been previously set because SV must be less than SL-H.

Possible Solution:

Verify the value to be written makes sense for the memory location. Enter a valid correct value.

Device error. Overflow error. | Address = '<address>'.

Error Type:

Warning

Possible Cause:

1. Sensor failure.
2. The temperature being measured is higher than the upper limit of the device.
3. The shifted value of the temperature being measured is beyond the range of the device display.

Possible Solution:

1. Check the sensor connection and replace the sensor if needed.
2. Consider changing the input shift value or employing other hardware more suitable for the application.

Device Error. Underflow error. | Address = '<address>'.

Error Type:
Warning

Possible Cause:

1. The temperature being measured is lower than the lower limit of the device.
2. The shifted value of the temperature being measured is beyond the range of the device display.

Possible Solution:
Consider changing the input shift value or employing other hardware more suitable for the application.

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

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