# Omron Process Suite Driver

© 2016 PTC Inc. All Rights Reserved.

# Table of Contents

Omron Process Suite Driver	1
Table of Contents	2
Omron Process Suite Driver	4
Overview	4
Setup	5
Channel Properties	5
Channel Properties - General	6
Channel Properties - Serial Communications	7
Channel Properties - Write Optimizations	9
Channel Properties - Advanced	10
Driver Device Properties	11
Device Properties - Identification	11
Device Properties - Operating Mode	12
Device Properties - Scan Mode	12
Device Properties - Timing	13
Device Properties - Auto-Demotion	14
Device Properties - Redundancy	15
Modem Setup	15
Data Types Description	16
Address Descriptions	17
E5AF-A Address Description	17
E5AF-AH Address Description	21
E5AJ-A Address Description	25
E5AX-A Address Description	29
E5AX-AH Address Description	33
E5AX-DAA Address Description	36
E5AX-PRR Address Description	40
E5AX-VAA Address Description	44
E5CN-PT Address Description	
E5CN-TC Address Description	
E5EJ-A Address Description	
E5GN-PT Address Description	
E5GN-TC Address Description	
Event Log Messages	
Device error. RAM data error.   Address = ' <address>'.</address>	

Index	72
Device Error. Underflow error.   Address = ' <address>'.</address>	70
Device error. Overflow error.   Address = ' <address>'.</address>	70
Communications error. Device rejected data.   Address = ' <address>'.</address>	70
Communications error. Format.   Address = ' <address>'.</address>	7C
Communications error. Check sum.   Address = ' <address>'.</address>	69
Communications error. Register overrun.   Address = ' <address>'.</address>	69
Communications error. Framing.   Address = ' <address>'.</address>	69
Communications error. Parity.   Address = ' <address>'.</address>	69
Communications error. Device in local mode or auto tuning.   Address = ' <address>'</address>	68
Device error. Sensor error.   Address = ' <address>'.</address>	68
Device error. A to D converter error.   Address = ' <address>'.</address>	68

## **Omron Process Suite Driver**

Help version 1.019

#### **CONTENTS**

## **Overview**

What is the Omron Process Suite Driver?

#### **Device Setup**

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

## **Data Types Description**

What data types does this driver support?

## **Address Descriptions**

How do I address a data location on an Omron temperature controller?

## **Event Log Messages**

What messages does this driver produce?

## 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

### **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 the server help documentation.

#### 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 in order to determine its flow requirements. An RS485 converter that provides automatic flow control is recommended.

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

#### **Channel Properties**

#### **Device Properties**

## **Channel Properties**

This server supports the use of simultaneous multiple communications drivers. Each protocol or driver used in a server project is called a channel. A server project may consist of many channels with the same communications driver or with unique communications drivers. A channel acts as the basic building block of an OPC link.

The properties associated with a channel are broken in to logical groupings. While some groups are specific to a given driver or protocol, the following are the common groups:

#### **General**

Ethernet or Serial Communications
Write Optimization
Advanced

## **Channel Properties - General**

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

Property Groups	☐ Identification	
General	Name	
Serial Communications Write Optimizations	Description	
	Driver	
Advanced	☐ Diagnostics	
Advanced	Diagnostics Capture I	Disable

### **Identification**

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

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

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

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

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

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

#### **Diagnostics**

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

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

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

## **Channel Properties - Serial Communications**

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

Click to jump to one of the sections: <u>Connection Type</u>, <u>Serial Port Settings</u> or <u>Ethernet Settings</u>, and <u>Operational Behavior</u>.

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

Property Groups	☐ Connection Type		
General	Physical Medium	COM Port	•
	Shared	No	
Serial Communications Write Optimizations	■ Serial Port Settings		
Advanced	COM ID	6	
Communication Serialization	Baud Rate	9600	
Communication Senaization	Data Bits	8	
	Parity	Even	
	Stop Bits	1	
	Flow Control	None	
	□ Operational Behavior	'	
	Report Comm. Errors	Enable	
	Close Idle Connection	Enable	
	Idle Time to Close (s)	15	

## **Connection Type**

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

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

#### **Serial Port Settings**

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

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

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

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

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

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

- None: This option does not toggle or assert control lines.
- **DTR**: This option asserts the DTR line when the communications port is opened and remains on.
- **RTS**: This option specifies that the RTS line is high if bytes are available for transmission. After all buffered bytes have been sent, the RTS line is low. This is normally used with RS232/RS485 converter hardware.
- RTS, DTR: This option is a combination of DTR and RTS.
- **RTS Always**: This option asserts the RTS line when the communication port is opened and remains on.
- **RTS Manual**: This option asserts the RTS line based on the timing properties entered for RTS Line Control. It is only available when the driver supports manual RTS line control (or when the properties are shared and at least one of the channels belongs to a driver that provides this support). RTS Manual adds an **RTS Line Control** property with options as follows:
  - **Raise**: This property specifies the amount of time that the RTS line is raised prior to data transmission. The valid range is 0 to 9999 milliseconds. The default is 10 milliseconds.
  - **Drop**: This property specifies the amount of time that the RTS line remains high after data transmission. The valid range is 0 to 9999 milliseconds. The default is 10 milliseconds.
  - **Poll Delay**: This property specifies the amount of time that polling for communications is delayed. The valid range is 0 to 9999. The default is 10 milliseconds.

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

#### **Operational Behavior**

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

#### **Ethernet Settings**

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

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

## Operation with no Communications

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

## **Channel Properties - Write Optimizations**

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

Property Groups	☐ Write Optimizations		
General	Optimization Method Write Only Latest Value for All Tag		
Serial Communications	Duty Cycle	10	
Write Optimizations			

#### Write Optimizations

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

• Write All Values for All Tags: This option forces the server to attempt to write every value to the controller. In this mode, the server continues to gather write requests and add them to the server's internal write queue. The server processes the write queue and attempts to empty it by writing data to the device as quickly as possible. This mode ensures that everything written from the client

applications is sent to the target device. This mode should be selected if the write operation order or the write item's content must uniquely be seen at the target device.

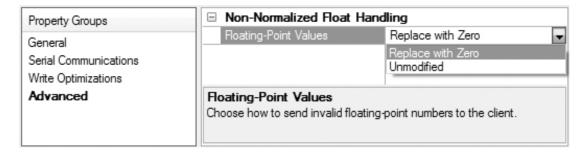
- Write Only Latest Value for Non-Boolean Tags: Many consecutive writes to the same value can accumulate in the write queue due to the time required to actually send the data to the device. If the server updates a write value that has already been placed in the write queue, far fewer writes are needed to reach the same final output value. In this way, no extra writes accumulate in the server's queue. When the user stops moving the slide switch, the value in the device is at the correct value at virtually the same time. As the mode states, any value that is not a Boolean value is updated in the server's internal write queue and sent to the device at the next possible opportunity. This can greatly improve the application performance.
  - **Note:** This option does not attempt to optimize writes to Boolean values. It allows users to optimize the operation of HMI data without causing problems with Boolean operations, such as a momentary push button.
- Write Only Latest Value for All Tags: This option takes the theory behind the second optimization mode and applies it to all tags. It is especially useful if the application only needs to send the latest value to the device. This mode optimizes all writes by updating the tags currently in the write queue before they are sent. This is the default mode.

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

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

## **Channel Properties - Advanced**

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



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

• **Replace with Zero**: This option allows a driver to replace non-normalized IEEE-754 floating point values with zero before being transferred to clients.

• **Unmodified**: This option allows a driver to transfer IEEE-754 denormalized, normalized, nonnumber, 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.lin

For more information on the floating point values, refer to <u>How To ... Work with Non-Normalized Floating</u>

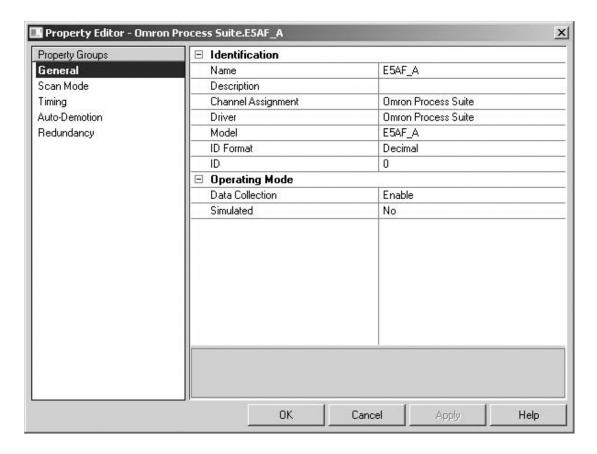
Point Values in the server help.

## **Driver Device Properties**

Device properties are organized into groups. Click on a link below for details about the settings in that group.

Identification
Operating Mode
Scan Mode
Communication Timeouts
Auto-Demotion
Redundancy

# **Device Properties - Identification**



Name: User-defined identity of this device.

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

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

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

**Model**: The specific version of the device. For a list of models that support the FINS Communications Service, refer to the manufacturer's website.

**ID**: The ID specifies the unique ID used to communicate with other devices. The valid range is 0-99.

## **Device Properties - Operating Mode**

☐ Operating Mode	
Data Collection	Enable
Simulated	No

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

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



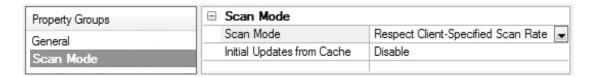
#### Notes:

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

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

#### **Device Properties - Scan Mode**

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



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

- Respect Client-Specified Scan Rate: This mode uses the scan rate requested by the client.
- **Request Data No Faster than Scan Rate**: This mode specifies the maximum scan rate to be used. The valid range is 10 to 99999990 milliseconds. The default is 1000 milliseconds.

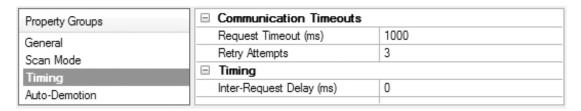
**Note:** When the server has an active client and items for the device and the scan rate value is increased, the changes take effect immediately. When the scan rate value is decreased, the changes do not take effect until all client applications have been disconnected.

- **Request All Data at Scan Rate**: This mode forces tags to be scanned at the specified rate for subscribed clients. The valid range is 10 to 99999990 milliseconds. The default is 1000 milliseconds.
- **Do Not Scan, Demand Poll Only**: This mode does not periodically poll tags that belong to the device nor perform a read to get an item's initial value once it becomes active. It is the client's responsibility to poll for updates, either by writing to the \_DemandPoll tag or by issuing explicit device reads for individual items. For more information, refer to **Device Demand Poll**.
- **Respect Tag-Specified Scan Rate**: This mode forces static tags to be scanned at the rate specified in their static configuration <u>Tag Properties</u>). Dynamic tags are scanned at the client-specified scan rate.

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

#### **Device Properties - Timing**

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



#### **Communications Timeouts**

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

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

**Request Timeout**: This property specifies an interval used by all drivers to determine how long the driver waits for a response from the target device to complete. The valid range is 50 to 9,999,999 milliseconds (167.6667 minutes). The default is usually 1000 milliseconds, but can vary depending on the driver. The default timeout for most serial drivers is based on a baud rate of 9600 baud or better. When using a driver at lower baud rates, increase the timeout to compensate for the increased time required to acquire data.

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

#### **Timing**

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

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

## **Device Properties - Auto-Demotion**

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

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

**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 <u>AutoDemoted</u>

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

Property Groups	☐ Redundancy	
General	Secondary Path	
Scan Mode	Operating Mode	Switch On Failure
	Monitor Item	
Timing	Monitor Interval (s)	300
Auto-Demotion	Return to Primary ASAP	Yes
Tag Generation		100
Redundancy		

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



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

#### Modem Setup

This driver supports modem functionality. For more information, refer to the Modem Support topic in the server help documentation.

# **Data Types Description**

Data Type	Description
Boolean	Single bit
Word	Unsigned 16-bit value
	bit 0 is the low bit
	bit 15 is the high bit
Short	Signed 16-bit value
	bit 0 is the low bit
	bit 14 is the high bit
	bit 15 is the sign bit
DWord	Unsigned 32-bit value
	bit 0 is the low bit
	bit 31 is the high bit
Long	Signed 32-bit value
	bit 0 is the low bit
	bit 30 is the high bit
	bit 31 is the sign bit
Float	32-bit floating point value.
	The driver interprets two consecutive 16-bit registers as a floating-point value by making the second register the high word and the first register the low word.

# **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** 



- 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**

Mnemonic	Description	Data	Access
A1 4		type	D 1047 '
AL-1	Alarm 1 set temperature.	Float,	Read/Write
		DWord,	
	(-999-9999 deg TC)*(-99.9-999.9 deg Pt)	Long	
AL-1-MD	Alarm 1 mode of operation.*	Short,	Read Only
		Word	
	(0-9)		
AL-1-OUT	Alarm 1 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
AL-2	Alarm 2 set temperature.	Float,	Read/Write
		DWord,	
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
AL-2-MD	Alarm 2 mode of operation.*	Short,	Read Only
		Word	

Mnemonic	Description	Data type	Access
	(0-9)	1760	
AL-2-OUT	Alarm 2 output status.	Bool	Read Only
	TRUE = alarm on FALSE = alarm off		
AT	Auto tuning in progress.	Bool	Read/Write
	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.	Bool	Read/Write
	Write: Anything to initiate backup procedure. Read:		
	TRUE = non-volatile memory is not current		
	FALSE = non-volatile memory is current		
	<b>Note:</b> Device is unresponsive for approximately 500 ms		
DUDNICUT	during backup.	   D !	D. J.O.I
BURNOUT	Heater burnout detected.	Bool	Read Only
	TRUE = heater burnout detected		
	FALSE = heater OK		
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE = "On/Off"		
	FALSE = "2-degree of freedom PID"		
D	Rate time set value.	<b>Short</b> , Word	Read/Write
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F		
	FALSE = degrees C		
FU	Fuzzy intensity.	Short, Word	Read/Write
	(0-99%)		
FU-S-1	Fuzzy scale 1.	Float, DWord,	Read/Write
FILC 2	(0.2-999.9 deg)	Long	D = = -104/ '/
FU-S-2	Fuzzy scale 2.	Float,	Read/Write

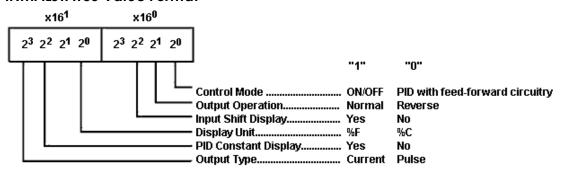
Mnemonic	Description	Data type	Access
		DWord,	
	(0.2-99.9 deg)	Long	
I	Reset time set value.	Short,	Read/Write
	(0-3999 s)	Word	
IN-S	Input shift set value.	Float,	Read/Write
		DWord,	
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TDUE - makind		
	TRUE = enabled FALSE = disabled		
IN-T		Short,	Read Only
IIN-I	Input (sensor) type.*	Word	Read Only
	(0-9)	Word	
INITIAI STATUS	Initial Status tag	Short,	Read Only
1141111/12517(105	Timed Status tag	Word	I nedd Orny
	For information on the INITIALSTATUS value, refer to the image		
	below.		
	<b>Note:</b> 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		
0	Output value.	Float,	Read Only
		DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TDUE		
	TRUE = current  FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
O-OF	Output mode of operation."	BOOI	nead Offiy
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
P	Proportional band set value.	Float,	Read/Write
	·	DWord,	,-
	(0.0-999.9 deg)	Long	

Mnemonic	Description	Data type	Access
PID-DSPL	PID display enable.*	Bool	Read Only
	TRUE = enabled		
D) /	FALSE = disabled	Floor	D. J.O.J.
PV	Process value (measured temperature).	<b>Float</b> , DWord,	Read Only
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
	<b>Note:</b> 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.	<u>.</u>	5 101
RAM-MD	RAM mode enable.	Bool	Read Only
	TRUE = RAM mode		
	FALSE = backup mode		
	These suckup 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.		
	<b>Note:</b> 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.	Bool	Read Only
	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.		
SL-H	Set point limit (high).**	Float,	Read Only
		DWord,	
		Long	
SL-L	Set point limit (low).**	Float,	Read Only
		DWord,	
		Long	
SP-S-IN	Set point shift input state.	Bool	Read Only
	TRUE = shift enabled		
	FALSE = shift disabled		
	State is forced TRUE by shorting appropriate terminals on device.		
	James is forced thou by shorting appropriate terminals of device.		

Mnemonic	Description	Data type	Access
SV	Set value temperature.	Float,	Read/Write
	Setting range: SL-L-SL-H	DWord,	
		Long	
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

## **INITIALSTATUS Value Format**



# **E5AF-AH Address Description**

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

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

Mnemonic	Description	Data Type	Access
	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.	Bool	Read/Write
	Write: Anything to initiate backup procedure		
	Read:		
	TRUE = non-volatile memory is not current  FALSE = non-volatile memory is current		
	<b>Note:</b> Device is unresponsive for approximately 500 ms during backup.		
BURNOUT	Heater burnout detected.	Bool	Read Only
	TRUE = heater burnout detected  FALSE = heater OK		
СТ	Heater current.	Float,	Read Only
	(0.0-50 A)	DWord, Long	
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE = "On/Off"  FALSE = "2-degree of freedom PID"		
D	Rate time set value.	Short, Word	Read/Write
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F FALSE = degrees C		
FU	(0-99%)	Short, Word	Read/Write
	Fuzzy intensity.		
FU-S-1	Fuzzy scale 1.	<b>Float</b> , DWord,	Read/Write
	(0.2-999.9 deg)	Long	
FU-S-2	Fuzzy scale 2.	Float, DWord,	Read/Write
	(0.2-99.9 deg)	Long	
НВ	Heater burnout set temperature.	Float, DWord,	Read/Write
	(-999-9999 deg TC)	Long	

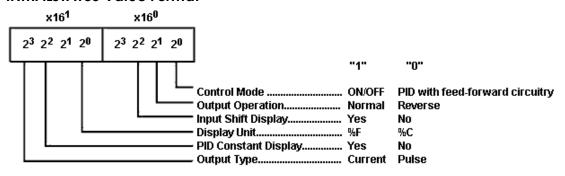
Mnemonic	Description	Data Type	Access
	(-99.9-999.9 deg Pt)		
I	Reset time set value.	Short, Word	Read/Write
	(0-3999 s)		
IN-S	Input shift set value.	Float, DWord,	Read/Write
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
IN-T	Input (sensor) type.*	Short,	Read Only
		Word	
	(0-9)		
INITIALSTATUS	Initial Status tag	Short,	Read Only
		Word	
	For information on the INITIALSTATUS value, refer to the image		
	below.		
	<b>Note:</b> 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		
0	Output value.	Float,	Read Only
	(0.0.400.00)	DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
P	Proportional band set value.	Float,	Read/Write
	(0.0-999.9 deg)	DWord, Long	

Mnemonic	Description	Data Type	Access
PID-DSPL	PID display enable.*	Bool	Read Only
	TDUE		
	TRUE = enabled FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
ΓV	rrocess value (measured temperature).	DWord,	Read Offig
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
	<b>Note:</b> 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.	Bool	Read Only
	TOUE DAMA		
	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.		
	<b>Note:</b> 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.	Bool	Read Only
	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.		
SL-H	Set point limit (high).**	Float,	Read Only
		DWord,	
		Long	
SL-L	Set point limit (low).**	Float,	Read Only
		DWord,	
		Long	
SP-S-IN	Set point shift input state.	Bool	Read Only
	TRUE - shift anabled		
	TRUE = shift enabled		
	FALSE = shift disabled		
	State is forced TRUE by shorting appropriate terminals on device.		
	State is forced TRUE by shorting appropriate terminals on device.		

Mnemonic	Description	Data Type	Access
SV	Set value temperature.	Float,	Read/Write
		DWord,	
	Setting range: SL-L-SL-H.	Long	
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

## **INITIALSTATUS Value Format**



# **E5AJ-A Address Description**

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature.	Float,	Read/Write
		DWord,	
	(-1999-9999 deg TC)*(-199.9-999.9 deg Pt)	Long	
AL-1-MD	Alarm 1 mode of operation.*	Short,	Read Only
		Word	
	(0-9)		
AL-1-OUT	Alarm 1 output status.	Bool	Read Only
	TRUE		
	TRUE = alarm on		
	FALSE = alarm off		
AL-2	Alarm 2 set temperature.	Float,	Read/Write
		DWord,	
	(-1999-9999 deg TC)	Long	
	(-199.9-999.9 deg Pt)		

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

Mnemonic	Description	Data Type	Access
AL-2-MD	Alarm 2 mode of operation.*	Short, Word	Read Only
	(0-9)		
AL-2-OUT	Alarm 2 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
BACKUP	Backup RAM to non-volatile memory.	Bool	Read/Write
	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		
BURNOUT	during backup.  Heater burnout detected.	Bool	Read Only
2011001			
	TRUE = heater burnout detected		
	FALSE = heater OK	ļ	
СТ	Heater current.	<b>Float</b> , DWord,	Read Only
	(0.2-50.0 A)	Long	
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE NO. (Offi		
	TRUE = "On/Off"  FALSE = "2-degree of freedom PID"		
D	Rate time set value.	Short,	Read/Write
		Word	
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F		
	FALSE = degrees C		
НВ	Heater burnout set temperature.	Float,	Read/Write
	(-1999-9999 deg TC)	DWord, Long	
	(-199.9-999.9 deg Pt)		
I	Reset time set value.	Short,	Read/Write
	(0-3999 s)	Word	
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		

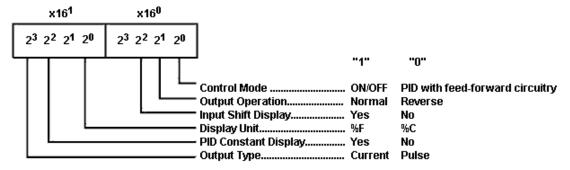
Mnemonic	Description	Data Type	Access
	FALSE = disabled		
IN-T	Input (sensor) type.*	<b>Short</b> , Word	Read Only
	(0-9)		
INITIALSTATUS	Initial Status tag	Short,	Read Only
	For information on the INITIALSTATUS value, refer to the image below.	Word	
	<b>Note:</b> The INITIALSTATUS value is read during 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		
0	Output value.	Float,	Read Only
		DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)  FALSE = reverse (heating)		
Р	Proportional band set value.	Float, DWord,	Read/Write
DID DCDI	(0.0-999.9 deg)	Long	Dood Only
PID-DSPL	PID display enable.*  TRUE = enabled	Bool	Read Only
	FALSE = disabled		
PV	Process value (measured temperature).	<b>Float</b> , DWord,	Read Only
	(-1999-9999 deg TC)	Long	
	(-199.9-999.9 deg Pt)		

Mnemonic	Description	Data Type	Access
	<b>Note:</b> 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.	Bool	Read Only
	TRUE = RAM mode		
	FALSE = backup mode		
	17.1352 33.6Kap 11.535		
	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.	Bool	Read Only
	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.		
SP-S-IN	Set point shift input state.	Bool	Read Only
	TDUE - 1:6 11-1		
	TRUE = shift enabled  FALSE = shift disabled		
	FALSE - STILL disabled		
	State is forced TRUE by shorting appropriate terminals on		
	device.		
SV	Set value temperature.	Float,	Read/Write
		DWord,	
	(setting range: SL-L-SL-H)	Long	
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

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

## **INITIALSTATUS Value Format**



# **E5AX-A Address Description**

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

Mnemonic	Description	Data Type	Access
BACKUP	Backup RAM to non-volatile memory.	Bool	Read/Write
	Write: Anything to initiate backup procedure .		
	Read:		
	TRUE = non-volatile memory is not current  FALSE = non-volatile memory is current		
	<b>Note:</b> Device is unresponsive for approximately 500 ms during backup.		
BURNOUT	Heater burnout detected.	Bool	Read Only
	TRUE = heater burnout detected		
	FALSE = heater OK		
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE = "On/Off"		
	FALSE = "2-degree of freedom PID"		
D	Rate time set value.	Short,	Read/Write
	Trate time set value.	Word	inead/write
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F		
	FALSE = degrees C		
I	Reset time set value.	Short, Word	Read/Write
	(0-3999 s)		
IN-S	Input shift set value.	<b>Float</b> , DWord,	Read/Write
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
IN-T	Input (sensor) type.*	Short, Word	Read Only
	(0-9)		
INITIALSTATUS	Initial Status tag	Short, Word	Read Only
	For information on the INITIALSTATUS value, refer to the image below.		

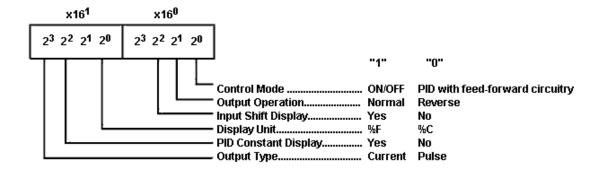
Mnemonic	Description	Data Type	Access
	<b>Note:</b> The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses:		
	AL-1-MD AL-2-MD CTR-MD DSPL-UNIT IN-S_DSPL IN-T O-TYPE		
	O-OP PID-DSPL		
0	Output value.	Float, DWord,	Read Only
O-TYPE	(0.0-100.0%) Output type.*	Long Bool	Read Only
	TRUE = current FALSE = pulse	300.	neud Giny
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)  FALSE = reverse (heating)		
Р	Proportional band set value. (0.0-999.9 deg)	Float, DWord,	Read/Write
PID-DSPL	PID display enable.*	Long Bool	Read Only
	TRUE = enabled FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
	(-999-9999 deg TC)	DWord, Long	
	(-99.9-999.9 deg Pt)		
	<b>Note:</b> 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.	Bool	Read Only
	TRUE = RAM mode  FALSE = backup mode		

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

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

## **INITIALSTATUS Value Format**

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



# **E5AX-AH Address Description**

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature.	<b>Float</b> , DWord,	Read/Write
	(-999-9999 deg TC)*(-99.9-999.9 deg Pt)	Long	
AL-1-MD	Alarm 1 mode of operation.*	<b>Short</b> , Word	Read Only
	(0-9)	<del> </del>	
AL-1-OUT	Alarm 1 output status.  TRUE = alarm on  FALSE = alarm off	Bool	Read Only
AT	Auto tuning in progress.	Bool	Read/Write
	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.	Bool	Read/Write
	Write: Anything to initiate backup procedure.		
	Read:		
	TRUE = non-volatile memory is not current FALSE = non-volatile memory is current		
	<b>Note:</b> Device is unresponsive for approximately 500 ms during backup.		
BURNOUT	Heater burnout detected.	Bool	Read Only
DOMINOUT	Treater surrout detected.	5001	Incad Only
	TRUE = heater burnout detected		

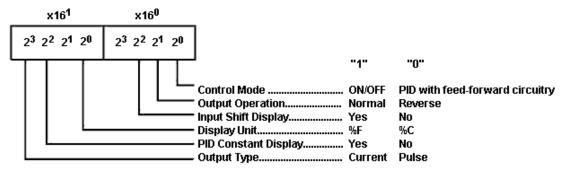
Mnemonic	Description	Data Type	Access
	FALSE = heater OK		
СТ	Heater current. (0.0-50.0 A)	Float, DWord, Long	Read Only
CTR-MD	Control mode of operation.*	Bool	Read Only
D	TRUE = "On/Off"  FALSE = "2-degree of freedom PID"  Rate time set value.	Short,	Read/Write
	(0-3999 s)	Word	Read/Write
DSPL-UNIT	Display unit.*  TRUE = degrees F	Bool	Read Only
	FALSE = degrees C		
НВ	Heater burnout set temperature. (-999-9999 deg TC)	Float, DWord, Long	Read/Write
	(-99.9-999.9 deg Pt)		
I	Reset time set value.	Short, Word	Read/Write
	(0-3999 s)		
IN-S	Input shift set value. (-999-9999 deg TC)	Float, DWord, Long	Read/Write
	(-99.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*  TRUE = enabled  FALSE = disabled	Bool	Read Only
IN-T	Input (sensor) type.* (0-9)	<b>Short</b> , Word	Read Only
INITIALSTATUS	Initial Status tag	Short, Word	Read Only
	For information on the INITIALSTATUS value, refer to the image below.	Word	
	<b>Note:</b> The INITIALSTATUS value is read during initial device setup communications and when reading the following addresses:		
	AL-1-MD CTR-MD		

Mnemonic	Description	Data	Access
	DODI LINUT	Туре	
	DSPL-UNIT IN-S DSPL		
	IN-5_DSPL IN-T		
	O-TYPE		
	0-0P		
	PID-DSPL		
0	Output value.	Float,	Read Only
	Output value.	DWord,	Read Offig
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
0-1112	Output type.	5001	i ilicad Orliy
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	output mode of operation.	5001	ricud Orliy
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
P	Proportional band set value.	Float,	Read/Write
	Troportional band sectiones.	DWord,	ricad, write
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only
			1.000
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
		DWord,	
	(-999-9999 deg TC)	Long	
	(-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.		
RAM-MD	RAM mode enable.	Bool	Read Only
	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.		

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

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

### **INITIALSTATUS Value Format**



# **E5AX-DAA Address Description**

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

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature.	Float,	Read/Write
	( 000 0000 do - TC)*( 00 0 000 0 do - P*)	DWord,	
AL-1-MD	(-999-9999 deg TC)*(-99.9-999.9 deg Pt)	Long	Dood Only
AL-1-MD	Alarm 1 mode of operation.*	<b>Short</b> , Word	Read Only
	(0-9)	1	
AL-1-OUT	Alarm 1 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
AL-2	Alarm 2 set temperature.	Float,	Read/Write
		DWord,	
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
AL-2-MD	Alarm 2 mode of operation.*	Short,	Read Only
		Word	
	(0-9)		
AL-2-OUT	Alarm 2 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
AT	Auto tuning in progress.	Bool	Read/Write
	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.	Bool	Read/Write
	Write: Anything to initiate backup procedure.		
	Read:		
	TRUE = non-volatile memory is not current		
	FALSE = non-volatile memory is current		
	<b>Note:</b> Device is unresponsive for approximately 500 ms		
	during backup.		
BURNOUT	Heater burnout detected.	Bool	Read Only

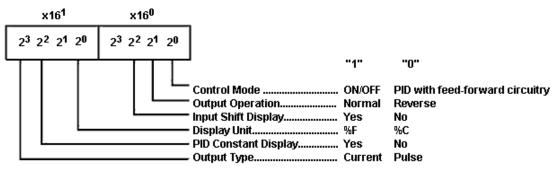
Mnemonic	Description	Data Type	Access
	TRUE = heater burnout detected		
	FALSE = heater OK		
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE = "On/Off"		
	FALSE = "2-degree of freedom PID"		
D	Rate time set value.	<b>Short</b> , Word	Read/Write
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F		
	FALSE = degrees C		
I	Reset time set value.	Short,	Read/Write
		Word	
	(0-3999 s)		
IN-S	Input shift set value.	Float,	Read/Write
	( 000 0000 dog TC)	DWord,	
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
IN-T	Input (sensor) type.*	<b>Short</b> , Word	Read Only
	(0-9)		
INITIALSTATUS	Initial Status tag	<b>Short</b> , Word	Read Only
	For information on the INITIALSTATUS value, refer to the image below.		
	<b>Note:</b> 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		
0	Output value.	Float,	Read Only

Mnemonic	Description	Data Type	Access
		DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
Р	Proportional band set value.	<b>Float</b> , DWord,	Read/Write
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
	(-999-9999 deg TC)	DWord, Long	
	(-99.9-999.9 deg Pt)		
	<b>Note:</b> 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		
RAM-MD	reported by the driver only during a PV read operation.  RAM mode enable.	Bool	Read Only
NAIVI-IVID	real mode enable.	5001	Read Offig
	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.		
	<b>Note:</b> 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.	Bool	Read Only
	TRUE = device in Remote Mode		
	FALSE = device in Local Mode		
	The driver is not able to write to the device unless Remote Mode		

Mnemonic	Description	Data Type	Access
	is selected on the device front panel.		
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

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

# **INITIALSTATUS Value Format**



# **E5AX-PRR Address Description**

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature.	<b>Float</b> , DWord,	Read/Write

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

Mnemonic	Description	Data Type	Access
	(-999-9999 deg TC)*(-99.9-999.9 deg Pt)	Long	
AL-1-MD	Alarm 1 mode of operation.*	Short, Word	Read Only
	(0-9)		
AL-1-OUT	Alarm 1 output status.	Bool	Read Only
	TRUE = alarm on FALSE = alarm off		
AL-2	Alarm 2 set temperature.	<b>Float</b> , DWord,	Read/Write
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
AL-2-MD	Alarm 2 mode of operation.*	Short, Word	Read Only
	(0-9)		
AL-2-OUT	Alarm 2 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
AT	Auto tuning in progress.	Bool	Read/Write
	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.	Bool	Read/Write
	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		
BURNOUT	during backup.  Heater burnout detected.	Bool	Pand Only
DOVINOU		BOOI	Read Only
	TRUE = heater burnout detected		
CTR-MD	FALSE = heater OK  Control mode of operation.*	Bool	Read Only
CIKIND	conditional of operation.	5001	Ticad Offiy

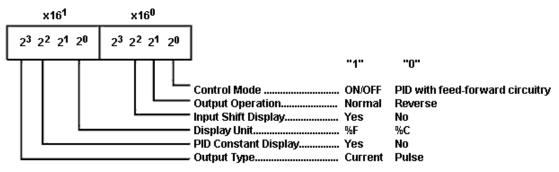
Mnemonic	Description	Data Type	Access
	TRUE = "On/Off"		
	FALSE = "2-degree of freedom PID"		
D	Rate time set value.	<b>Short</b> , Word	Read/Write
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F		
	FALSE = degrees C		
I	Reset time set value.	Short, Word	Read/Write
	(0-3999 s)		
IN-S	Input shift set value. (-999-9999 deg TC)	Float, DWord, Long	Read/Write
	(-99.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled FALSE = disabled		
IN-T	Input (sensor) type.*	Short,	Read Only
	(0-9)	Word	
INITIALSTATUS	Initial Status tag	Short, Word	Read Only
	For information on the INITIALSTATUS value, refer to the image below.		
	<b>Note:</b> 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		
0	Output value.	Float, DWord,	Read Only
	(0.0-100.0%)	Long	
O-MD-S	Output mode shift.	Bool	Read/Write

Mnemonic	Description	Data Type	Access
	TRUE = manual		
	544.65		
O T)/DE	FALSE = auto	D I	D. J.O.J.
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
P	Proportional band set value.	<b>Float</b> , DWord,	Read/Write
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only
TID-D3FL	The display enable.	5001	I Read Offig
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
		DWord,	
	(-999-9999 deg TC)	Long	
	(00 0 000 0 dog Dt)		
	(-99.9-999.9 deg Pt)		
	Notes Cines hardways status information is passed has let		
	<b>Note:</b> 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.	Bool	Read Only
	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.	Bool	Read Only
	TDUE - davisa in Pameta Mada		
	TRUE = device in Remote Mode  FALSE = device in Local Mode		

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

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

# **INITIALSTATUS Value Format**



# **E5AX-VAA Address Description**

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature.	Float,	Read/Write

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

Mnemonic	Description	Data Type	Access
		DWord,	
	(-999-9999 deg TC)*(-99.9-999.9 deg Pt)	Long	
AL-1-MD	Alarm 1 mode of operation.*	<b>Short</b> , Word	Read Only
	(0-9)		
AL-1-OUT	Alarm 1 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
AT	Auto tuning in progress.	Bool	Read/Write
	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).		
	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.	Bool	Read/Write
	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.		
BURNOUT	Heater burnout detected.	Bool	Read Only
	TRUE = heater burnout detected		
	FALSE = heater OK		
C-DB	Dead band set temperature.	Float,	Read/Write
	(	DWord,	
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE = "On/Off"		
	FALSE = "2-degree of freedom PID"		
C-SC	Cooling coefficient.	<b>Float</b> , DWord,	Read/Write
	(0.1-99.9)	Long	
D	Rate time set value.	Short,	Read/Write

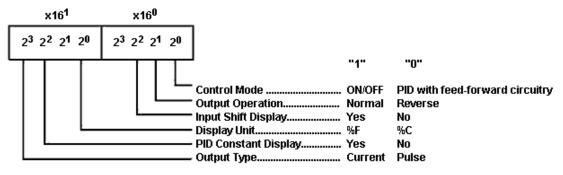
Mnemonic	Description	Data	Access
	·	Туре	
	(0-3999 s)	Word	
DSPL-UNIT	Display unit.*	Bool	Read Only
DSPL-UNII	Display utilt."	ВООІ	Read Only
	TRUE = degrees F		
	FALSE = degrees C		
I	Reset time set value.	Short,	Read/Write
		Word	
IN C	(0-3999 s)	Plant	D 100/
IN-S	Input shift set value.	<b>Float</b> , DWord,	Read/Write
	(-999-9999 deg TC)	Long	
	( 333 333 deg re,	120118	
	(-99.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled	ļ.,	
IN-T	Input (sensor) type.*	Short,	Read Only
	(0-9)	Word	
INITIALSTATUS		Short,	Read Only
	anital status tag	Word	nead only
	For information on the INITIALSTATUS value, refer to the image		
	below.		
	<b>Note:</b> 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	Plant	D. J.O.I.
0	Output value.	<b>Float</b> , DWord,	Read Only
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only

Mnemonic	Description	Data Type	Access
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
Р	Proportional band set value.	<b>Float</b> , DWord,	Read/Write
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	<b>Float</b> , DWord,	Read Only
	(-999-9999 deg TC)	Long	
	(-99.9-999.9 deg Pt)		
	<b>Note:</b> 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.	Bool	Read Only
	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.		
	<b>Note:</b> 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.	Bool	Read Only
	TRUE = device in Remote Mode		
	FALSE = device in Local Mode		
	The driver is not able to write to the device unless Remote Mode		
	·		
SL-H	Set point limit (high).**	Float,	Read Only
SI-I	Set point limit (low) **	<del>-</del>	Read Only
	See point infine (1000).	1	cad Offiny
		Long	
SL-H SL-L	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.	DWord, Long Float, DWord,	Read Or

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

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

#### **INITIALSTATUS Value Format**



# **E5CN-PT Address Description**

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

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

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

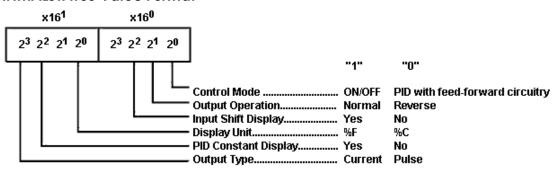
Mnemonic	Description	Data Type	Access
	(0-3999 s)		
IN-S	Input shift set value.	<b>Float</b> , DWord,	Read/Write
	(-1999-9999 deg TC)	Long	
	(-199.9-999.9 deg Pt)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
IN-T	Input (sensor) type.*	Short,	Read Only
		Word	
	(0-4)		
INITIALSTATUS	Initial Status tag	Short,	Read Only
		Word	
	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		
0	Output value.	Float,	Read Only
	(0.0.100.00)	DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
P	Proportional band set value.	Float,	Read/Write
	Tropol donar barra set value.	DWord,	
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only

Mnemonic	Description	Data Type	Access
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	<b>Float</b> , DWord,	Read Only
	(-199.9-999.9 deg Pt)	Long	
	<b>Note:</b> 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.	Bool	Read Only
	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.	Bool	Read Only
	TRUE = device in Remote Mode		
	FALSE = device in Local Mode		
	The driver is not able to visite to the device visites and Devecto Mode.		
	The driver is not able to write to the device unless Remote Mode is selected on the device front panel.		
SL-H	Set point limit (high).**	Float,	Read Only
JE-II	Set point infint (riight).	DWord,	I Keda Orliy
		Long	
SL-L	Set point limit (low).**	Float,	Read Only
		DWord,	
		Long	
SP-S-IN	Set point shift input state.	Bool	Read Only
	TRUE = shift enabled		
	FALSE = shift disabled		
	State is forced TRUE by shorting appropriate terminals on device.		
SV	Set value temperature.	Float,	Read/Write
	Sotting range CL   CL	DWord,	
	Setting range: SL-L-SL-H.	Long	

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

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

# **INITIALSTATUS Value Format**



# **E5CN-TC Address Description**

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

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

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.  BURNOUT Heater burnout detected.  TRUE = heater burnout detected FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (1-1999-9999 deg TC)  IN-S Input shift set value.  Fioat, DWord, Long  Read/Writh DWord, Long	Mnemonic	Description	Data Type	Access
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.  BURNOUT Heater burnout detected.  TRUE = heater burnout detected FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0.3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (1999-9999 deg TC)  In Reset time set value.  (0.3999 s)  IN-S Input shift set value.  (1999-9999 deg TC) Input shift display enable.*  Read Only TRUE = nabled  Read Only Read On				
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.  BURNOUT Heater burnout detected.  TRUE = heater burnout detected FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value. (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (1-1999-9999 deg TC)  In Reset time set value. (0-3999 s)  IN-S Input shift set value. (1-1999-9999 deg TC)  Input shift display enable.*  Float, DWord, Long  Read Only  Read Only  Float, DWord, Long  IN-S_DSPL Input shift display enable.*  Bool Read Only  Read Only  Read Only  Read Only  Read Only  Read/Write  R		FALSE = alarm off		
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 bk burnout detected FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE ="2-degree of freedom PID"  D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature. (1-1999-9999 deg TC)  IN-S Input shift set value.  Float, DWord, Long  IN-S_DSPL Input shift display enable.*  Bool Read Only  Read/Writ  Word  Read/Writ  Read/Writ  Read/Writ  Read/Writ  Read/Writ  Read/Writ  DWord, Long  Rea	BACKUP	Backup RAM to non-volatile memory.	Bool	Read/Write
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  CT Heater current. (0.2-50.0 A)  CTR-MD Control mode of operation.* TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value. (0-3999 s)  DSPL-UNIT Display unit.* TRUE = degrees F FALSE = degrees C  Heater burnout set temperature.  Heater burnout set temperature. Float, DWord, (-1999-9999 deg TC)  In Reset time set value. (0-3999 s)  IN-S  Input shift display enable.* TRUE = enabled  Read Only  Read Only  Read/Writ DWord, Long  Read/Writ DWord  Read/Writ DWord  Read/Writ DWord  Read/Writ DWord  Read/Wr		Write: Anything to initiate backup procedure.		
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  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0.3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (1-1999-9999 deg TC)  I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  (1-1999-9999 deg TC)  Input shift set value.  (1-1999-9999 deg TC)  Input shift display enable.*  TRUE = enabled		Read:		
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  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0.3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (1-1999-9999 deg TC)  I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  (1-1999-9999 deg TC)  Input shift set value.  (1-1999-9999 deg TC)  Input shift display enable.*  TRUE = enabled		TRUE = non-volatile memory is not current		
during backup.  BURNOUT Heater burnout detected.  TRUE = heater burnout detected FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (-1999-9999 deg TC)  IN-S Input shift set value.  (1-1999-9999 deg TC)  Input shift display enable.*  TRUE = enabled  Read Only  Read Only  Read Only  Read/Writ  DWord, Long  Read/Writ				
BURNOUT Heater burnout detected.  TRUE = heater burnout detected FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (-1999-9999 deg TC)  IN-S Input shift set value.  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Read Only  Read Only  Read Only  Read Only  Read Only  Read Only  Float, DWord, Long  Float, DWord, Long  Read/Writ  DWord, Long  IN-S_DSPL Input shift display enable.*  TRUE = enabled		<b>Note:</b> Device is unresponsive for approximately 500 ms		
TRUE = heater burnout detected FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value. (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  Float, DWord, Long  I Reset time set value. (0-3999 s)  IN-S Input shift set value. (1-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = nabled  Float, DWord, Long  Read/Writ DWord, Lon		during backup.		
FALSE = heater OK  CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (-1999-9999 deg TC)  I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  (1999-9999 deg TC)  Input shift display enable.*  TRUE = enabled  Float, DWord, Long  Read/Writh DWor	BURNOUT	Heater burnout detected.	Bool	Read Only
CT Heater current.  (0.2-50.0 A)  CTR-MD Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (-1999-9999 deg TC)  I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  Input shift display enable.*  TRUE = enabled  Float, DWord, Long  Read/Writh DWord, Long  Read/W		TRUE = heater burnout detected		
DWord, Long		FALSE = heater OK		
(0.2-50.0 A)  CTR-MD  Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D  Rate time set value. (0-3999 s)  DSPL-UNIT  Display unit.*  TRUE = degrees F FALSE = degrees C  HB  Heater burnout set temperature.  I  Reset time set value. (0-3999 s)  Float, DWord, Long  I  Reset time set value. (1-1999-9999 deg TC)  IN-S  Input shift set value. Input shift display enable.*  TRUE = enabled  Read Only  Read Only  Read Only  Read Only  Read/Writ  Bool  Read Only  Read/Writ  Bool  Read/Writ  DWord, Long  Read/Writ	СТ	Heater current.		Read Only
CTR-MD  Control mode of operation.*  TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D  Rate time set value.  (0-3999 s)  DSPL-UNIT  Display unit.*  TRUE = degrees F FALSE = degrees C  HB  Heater burnout set temperature.  (-1999-9999 deg TC)  I  Reset time set value.  Short, DWord, Long  Read/Writ DWord, Long  IN-S  Input shift set value.  Float, DWord, Long  Read/Writ DWord, Long  IN-S_DSPL  Input shift display enable.*  Bool  Read Only		(0.0.50.0.4)		
TRUE = "On/Off" FALSE = "2-degree of freedom PID"  D Rate time set value. (0-3999 s)  DSPL-UNIT Display unit.* TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature. (-1999-9999 deg TC)  I Reset time set value. Short, Word (0-3999 s)  IN-S Input shift set value. Float, DWord, Long Read/Writ Word (1-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.* TRUE = enabled  Float, DWord, Long Read/Writ	CTD MD			D. J.O.I
FALSE = "2-degree of freedom PID"  D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (-1999-9999 deg TC)  I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  Input shift set value.  Float, DWord, Long  Read/Write DWord, Word  (1-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Short, Word  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  Bool Read Only  Read Only	CTR-MD	Control mode of operation.*	Rooi	Read Only
D Rate time set value.  (0-3999 s)  DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  (-1999-9999 deg TC)  I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  (-1999-9999 deg TC)  Input shift set value.  Float, DWord, Word  (0-3999 s)  IN-S Input shift set value.  Float, DWord, Long  Read/Write  Float, DWord, Long  Read/Write  Float, DWord, Long  Read/Write  Float, DWord, Long  IN-S_DSPL Input shift display enable.*  Bool Read Only  TRUE = enabled		TRUE = "On/Off"		
DSPL-UNIT   Display unit.*   Bool   Read Only		FALSE = "2-degree of freedom PID"		
DSPL-UNIT Display unit.*  TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  I Reset time set value.  Float, DWord, Long  I Reset time set value.  Float, DWord, Long  I Reset time set value.  Float, DWord, Long  Read/Write  Short, Word  (0-3999 s)  IN-S Input shift set value.  Float, DWord, Long  IN-S_DSPL Input shift display enable.*  Bool Read Only  TRUE = enabled	D	Rate time set value.		Read/Write
DSPL-UNIT  Display unit.*  TRUE = degrees F FALSE = degrees C  HB  Heater burnout set temperature.  Float, DWord, Long  I  Reset time set value.  (0-3999 s)  IN-S  Input shift set value.  Input shift display enable.*  TRUE = enabled  Read Only		(0-3999 s)	Word	
TRUE = degrees F FALSE = degrees C  HB Heater burnout set temperature.  Float, DWord, Long  I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  Float, Word  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Float, DWord, Long  Read/Write Bool Read Only	DSDI -I INIT		Rool	Paad Only
FALSE = degrees C  HB Heater burnout set temperature.  Float, DWord, Long  I Reset time set value.  Short, Word  (0-3999 s)  IN-S Input shift set value.  Float, DWord, Ead/Writh DWord  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled	DSI L-OIVII	Display unit.	5001	i icad Orliy
HB Heater burnout set temperature.  (-1999-9999 deg TC)  Reset time set value.  (0-3999 s)  IN-S Input shift set value.  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Float, DWord, Long  Read/Write  Float, DWord, Long  Float, D		TRUE = degrees F		
I Reset time set value.  Short, Word  (0-3999 s)  IN-S Input shift set value.  Float, DWord, Long  Float, DWord, Long  IN-S_DSPL Input shift display enable.*  TRUE = enabled		FALSE = degrees C		
I Reset time set value.  Short, Word  (0-3999 s)  IN-S Input shift set value.  Float, DWord, Long  IN-S_DSPL Input shift display enable.*  TRUE = enabled	НВ	Heater burnout set temperature.		Read/Write
I Reset time set value.  (0-3999 s)  IN-S Input shift set value.  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Short, Word  Float, DWord, Long  Read/Write  Float, DWord, Long  Read Only		(4000,0000, 1, 75)		
IN-S Input shift set value.  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Word  Float, DWord, Long  Read/Writ				D. JAA/di
IN-S Input shift set value.  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Float, DWord, Long  Read/Write  Float, DWord, Long  Read Only	1	Reset time set value.		Read/Write
IN-S Input shift set value.  (-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Float, DWord, Long  Read/Write DWord, Long		(0-3999 s)	11014	
(-1999-9999 deg TC)  IN-S_DSPL Input shift display enable.*  TRUE = enabled  Read Only	IN-S		Float,	Read/Write
IN-S_DSPL Input shift display enable.*  TRUE = enabled Read Only				
TRUE = enabled				
	IN-S_DSPL	Input shift display enable.*	Bool	Read Only
FALSE = disabled		TRUE = enabled		
		FALSE = disabled		
IN-T Input (sensor) type. Short, Word	IN-T	Input (sensor) type.		Read Only
(0-16)*		(0-16)*	VVOIG	

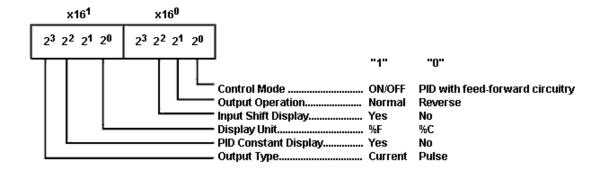
Mnemonic	Description	Data Type	Access
INITIALSTATUS	Initial Status tag	Short,	Read Only
		Word	
	For information on the INITIALSTATUS value, refer to the image below.		
	below.		
	<b>Note:</b> The INITIALSTATUS value is read during initial device		
	setup communications and when reading the following		
	addresses:		
	AL-1-MD		
	AL-2-MD		
	CTR-MD		
	DSPL-UNIT		
	IN-S_DSPL IN-T		
	O-TYPE		
	O-OP		
	PID-DSPL		
0	Output value.	Float,	Read Only
		DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
Р	Proportional band set value.	Float,	Read/Write
		DWord,	
DID DCDI	(0.0-999.9 deg)	Long	D 101
PID-DSPL	PID display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
	, , ,	DWord,	
	(-1999-9999 deg TC)	Long	
	<b>Note:</b> 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		
DANA NAS	reported by the driver only during a PV read operation.		D 101
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.	Bool	Read Only
	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.		
SL-H	Set point limit (high).**	<b>Float</b> , DWord,	Read Only
		Long	
SL-L	Set point limit (low).**	Float,	Read Only
		DWord, Long	
SP-S-IN	Set point shift input state.	Bool	Read Only
	TRUE = shift enabled		
	FALSE = shift disabled		
	State is forced TRUE by shorting appropriate terminals on device.		
SV	Set value temperature.	Float,	Read/Write
		DWord,	
ADCERR	Setting range: SL-L-SL-H.  A/D Converter Error/Failure	Long Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

# **INITIALSTATUS Value Format**

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



# **E5EJ-A Address Description**

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

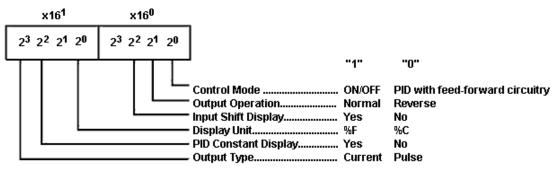
Mnemonic	Description	Data Type	Access
BURNOUT	Heater burnout detected.	Bool	Read Only
	TDUE haster becomes to detected		
	TRUE = heater burnout detected  FALSE = heater OK		
СТ	Heater current.	Float,	Read Only
		DWord,	
	(0.2-50.0 A)	Long	
CTR-MD	Control mode of operation.*	Bool	Read Only
	TDUE 110 (000)		
	TRUE = "On/Off"  FALSE = "2-degree of freedom PID"		
D	Rate time set value.	Short,	Read/Write
	nate time set value.	Word	inead/write
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F		
	FALSE = degrees C		
НВ	Heater burnout set temperature.	<b>Float</b> , DWord,	Read/Write
	(-1999-9999 deg TC)	Long	
	(1999 9999 deg 10)	20116	
	(-199.9-999.9 deg Pt)		
I	Reset time set value.	Short,	Read/Write
		Word	
	(0-3999 s)		
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
IN-T	Input (sensor) type.*	Short,	Read Only
		Word	
	(0-9)		
INITIALSTATUS	Initial Status tag	Short,	Read Only
	For information on the INITIAL CTATUC color materials the instance	Word	
	For information on the INITIALSTATUS value, refer to the image below.		
	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		

Mnemonic	Description	Data Type	Access
	IN-T		
	O-TYPE		
	O-OP		
	PID-DSPL		
0	Output value.	Float,	Read Only
		DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
Р	Proportional band set value.	Float,	Read/Write
		DWord,	
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only
			,
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
. •	Trocess value (measured temperature).	DWord,	ricad Orny
	(-1999-9999 deg TC)	Long	
	( 1333 3333 446 1 47		
	(-199.9-999.9 deg Pt)		
	( 1212 2212 236 14)		
	Nata Cias handuras status information in general hands		
	<b>Note:</b> 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		
5	reported by the driver only during a PV read operation.		
RAM-MD	RAM mode enable.	Bool	Read Only
	TDUE - DAM reads		
	TRUE = RAM mode		
	FALSE = backup mode		
	The driver automatically forces the device into PAM made to		
	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.		
	Contents of twill by issuing a BACKOF Collinatio.		
	<b>Note:</b> 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.		

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

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

# **INITIALSTATUS Value Format**



# **E5GN-PT Address Description**

Mnemonic	Description	Data Type	Access
AL-1	Alarm 1 set temperature.	Float,	Read/Write
		DWord,	

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

Mnemonic	Description	Data Type	Access
	(-199.9-999.9 deg Pt)	Long	
AL-1-MD	Alarm 1 mode of operation.*	<b>Short</b> , Word	Read Only
	(0-9)		
AL-1-OUT	Alarm 1 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
AL-2	Alarm 2 set temperature.	<b>Float</b> , DWord,	Read/Write
	(-199.9-999.9 deg Pt)	Long	
AL-2-MD	Alarm 2 mode of operation.*	Short, Word	Read Only
	(0-9)		
AL-2-OUT	Alarm 2 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
BACKUP	Backup RAM to non-volatile memory.	Bool	Read/Write
	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.		
BURNOUT	Heater burnout detected.	Bool	Read Only
	TRUE = heater burnout detected  FALSE = heater OK		
CT	Heater current.	Float,	Read Only
		DWord,	
	(0.2-50.0 A)	Long	
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE = "On/Off"		
	FALSE = "2-degree of freedom PID"		
D	Rate time set value.	Short, Word	Read/Write
	(0-3999 s)		
DSPL-UNIT	Display unit.*	Bool	Read Only
	TRUE = degrees F		
	FALSE = degrees C		

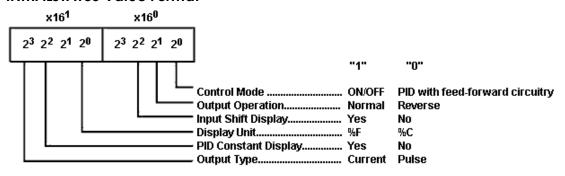
Mnemonic	Description	Data Type	Access
НВ	Heater burnout set temperature.	Float,	Read/Write
		DWord,	
	(-199.9-999.9 deg Pt)	Long	
I	Reset time set value.	Short,	Read/Write
		Word	
	(0-3999 s)		
IN-S	Input shift set value.	Float,	Read/Write
	(400,000,000,000,000,000,000,000,000,000	DWord,	
IN C BCBI	(-199.9-999.9 deg Pt)	Long	D 101
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
IN-T		Short,	Read Only
IIN-I	Input (sensor) type.*	Word	Read Only
	(0-4)	VVOIG	
INITIALSTATUS	Initial Status tag	Short,	Read Only
INITIALSTATOS	I i i i i i i i i i i i i i i i i i i i	Word	I Keau Offiny
	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:		
	addi esses.		
	AL-1-MD		
	AL-2-MD		
	CTR-MD		
	DSPL-UNIT		
	IN-S_DSPL		
	IN-T		
	O-TYPE		
	O-OP		
	PID-DSPL		
0	Output value.	Float,	Read Only
	(a a 400 00V)	DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	·	Bool	Pond Only
0-07	Output mode of operation.*	BUUI	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
P	Proportional band set value.	Float,	Read/Write
•	Troportional baria set value.	DWord,	\cau/\viite

Mnemonic	Description	Data Type	Access
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	<b>Float</b> , DWord,	Read Only
	(-199.9-999.9 deg Pt)	Long	
	<b>Note:</b> 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.	Bool	Read Only
	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		
REMOTE	the front panel.  Remote Mode enable.	Bool	Read Only
KENIOTE	Remote Mode enable.	B001	Read Offig
	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.		
SL-H	Set point limit (high).**	Float,	Read Only
		DWord,	
		Long	
SL-L	Set point limit (low).**	Float,	Read Only
		DWord,	
CD C INI	Cot point shift input state	Long	Donal Cala
SP-S-IN	Set point shift input state.	Bool	Read Only
	TRUE = shift enabled		
	FALSE = shift disabled		
	State is forced TRUE by shorting appropriate terminals on device.		

Mnemonic	Description	Data Type	Access
SV	Set value temperature.	Float,	Read/Write
		DWord,	
	Setting range: SL-L-SL-H.	Long	
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

# **INITIALSTATUS Value Format**



# **E5GN-TC Address Description**

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

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

Mnemonic	Description	Data Type	Access
	(0-9)		
AL-2-OUT	Alarm 2 output status.	Bool	Read Only
	TRUE = alarm on		
	FALSE = alarm off		
BACKUP	Backup RAM to non-volatile memory.	Bool	Read/Write
	Write: Anything to initiate backup procedure		
	Read:		
	TRUE = non-volatile memory is not current		
	FALSE = non-volatile memory is current		
	<b>Note:</b> Device is unresponsive for approximately 500 ms		
	during backup.		
BURNOUT	Heater burnout detected.	Bool	Read Only
	TRUE = heater burnout detected		
	FALSE = heater OK		
CT	Heater current.	Float,	Read Only
		DWord,	
	(0.2-50.0 A)	Long	
CTR-MD	Control mode of operation.*	Bool	Read Only
	TRUE = "On/Off"		
	FALSE = "2-degree of freedom PID"		
D	Rate time set value.	Short,	Read/Write
	(0.2000 c)	Word	
DSPL-UNIT	(0-3999 s) Display unit.*	Bool	Read Only
551 2 51111			Thead only
	TRUE = degrees F		
	FALSE = degrees C		
НВ	Heater burnout set temperature.	<b>Float</b> , DWord,	Read/Write
	(-1999-9999 deg TC)	Long	
I	Reset time set value.	Short,	Read/Write
	(0-3999 s)	Word	
IN-S	Input shift set value.	Float,	Read/Write
		DWord,	
	(-1999-9999 deg TC)	Long	
IN-S_DSPL	Input shift display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		

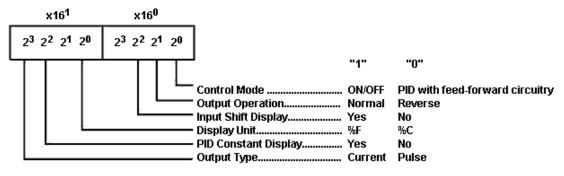
Mnemonic	Description	Data Type	Access
IN-T	Input (sensor) type.	<b>Short</b> , Word	Read Only
	(0-16)*		
INITIALSTATUS	Initial Status tag	Short, Word	Read Only
	For information on the INITIALSTATUS value, refer to the image		
	below.		
	<b>Note:</b> The INITIALSTATUS value is read during initial device		
	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-TYPE O-OP		
	PID-DSPL		
0	Output value.	Float,	Read Only
		DWord,	
	(0.0-100.0%)	Long	
O-TYPE	Output type.*	Bool	Read Only
	TRUE = current		
	FALSE = pulse		
O-OP	Output mode of operation.*	Bool	Read Only
	TRUE = normal (cooling)		
	FALSE = reverse (heating)		
Р	Proportional band set value.	Float,	Read/Write
		DWord,	
	(0.0-999.9 deg)	Long	
PID-DSPL	PID display enable.*	Bool	Read Only
	TRUE = enabled		
	FALSE = disabled		
PV	Process value (measured temperature).	Float,	Read Only
		DWord,	
	(-1999-9999 deg TC)	Long	
	<b>Note:</b> 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		

Mnemonic	Description	Data Type	Access
	reported by the driver only during a PV read operation.		
RAM-MD	RAM mode enable.	Bool	Read Only
	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		
DEMOTE	the front panel.	Bool	Dood Only
REMOTE	Remote Mode enable.	B001	Read Only
	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.		
SL-H	Set point limit (high).**	Float,	Read Only
		DWord,	
SL-L	Set point limit (low).**	Long Float,	Read Only
JL-L	Set point innit (low).	DWord,	Read Offig
		Long	
SP-S-IN	Set point shift input state.	Bool	Read Only
	TRUE = shift enabled		
	FALSE = shift disabled		
	State is forced TRUE by shorting appropriate terminals on device.		
SV	Set value temperature.	Float,	Read/Write
	5.41.	DWord,	
ADCERR	Setting range: SL-L-SL-H.	Long	Dood Oak
ADCERR	A/D Converter Error/Failure	Boolean	Read Only
SENSERR	Abnormal Input/Sensor Error	Boolean	Read Only
RAMERR	RAM Data Error	Boolean	Read Only

<sup>\*</sup>This is a hardware setting. For more information, refer to the device's help documentation.

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

# **INITIALSTATUS Value Format**



# **Event Log Messages**

The following information concerns messages posted to the Event Log pane in the main user interface. Consult the 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.

# Index

#### Α

Address Descriptions 17
Advanced Channel Properties 10
Auto Dial 9

#### В

Baud Rate 5, 7 Boolean 16

# C

Channel Assignment 12
Channel Properties 5
Channel Properties - General 6
Channel Properties - Write Optimizations 9
Close Idle Connection 8-9
COM ID 7

Communication Parameters 5

Communication Protocol 5

Communications error. Check sum. | Address = '<address>'. 69

Communications error. Device in local mode or auto tuning. | Address = '<address>'. 68

Communications error. Device rejected data. | Address = '<address>'. 70

Communications error. Format. | Address = '<address>'. 70

Communications error. Framing. | Address = '<address>'. 69

Communications error. Parity. | Address = '<address>'. 69

Communications error. Register overrun. | Address = '<address>'. 69

Communications Timeouts 13-14

Connect Timeout 13

Connection Type 7

#### D

Data Bits 5, 7

Data Collection 12

Data Types Description 16

Demote on Failure 14

**Demotion Period 15** 

Device error. A to D converter error. | Address = '<address>'. 68

Device error. Overflow error. | Address = '<address>'. 70

Device error. RAM data error. | Address = '<address>'. 68

Device error. Sensor error. | Address = '<address>'. 68

Device Error. Underflow error. | Address = '<address>'. 70

Device Properties 11

Device Properties - Auto-Demotion 14

Diagnostics 6

Discard Requests when Demoted 15

Do Not Scan, Demand Poll Only 13

Driver 6, 12

Duty Cycle 10

DWord 16

#### Ε

E5AF-A Address Description 17

E5AF-AH Address Description 21

E5AJ-A Address Description 25

E5AX-A Address Description 29

E5AX-AH Address Description 33

E5AX-DAA Address Description 36

E5AX-PRR Address Description 40

E5AX-VAA Address Description 44

E5CN-PT Address Description 48

E5CN-TC Address Description 52

E5EJ-A Address Description 56

E5GN-PT Address Description 59

E5GN-TC Address Description 63

Ethernet Encapsulation 5

Event Log Messages 68

# F

Float 16

Flow Control 5, 8

# I

ID 12
Identification 11
Idle Time to Close 8-9
IEEE-754 floating point 10
Initial Updates from Cache 13
Inter-Request Delay 14

# L

Long 16

# M

Model 12 Modem 9 Modem Setup 15

# Ν

Network 5 Network Adapter 8 Non-Normalized Float Handling 10

# 0

Operating Mode 12
Operational Behavior 8
Optimization Method 9
Overview 4

# Ρ

Parity 5, 7
Physical Medium 7
Platinum resistance thermometer 17

#### Protocol 5

# R

Read Processing 9
Redundancy 15
Report Comm. Errors 8-9
Request All Data at Scan Rate 13
Request Data No Faster than Scan Rate 13
Request Timeout 14
Respect Client-Specified Scan Rate 13
Respect Tag-Specified Scan Rate 13
Retry Attempts 14

# S

Scan Mode 13
Serial Communications 7
Serial Port Settings 7
Setup 5
Short 16
Signed 16
Simulated 12
Stop Bits 5, 8
Supported Device 5

# T

Thermocouple 17
Timeouts to Demote 15

# U

Unsigned 16

#### W

Word 16

Write All Values for All Tags 9
Write Only Latest Value for All Tags 10
Write Only Latest Value for Non-Boolean Tags 10
Write Optimizations 9