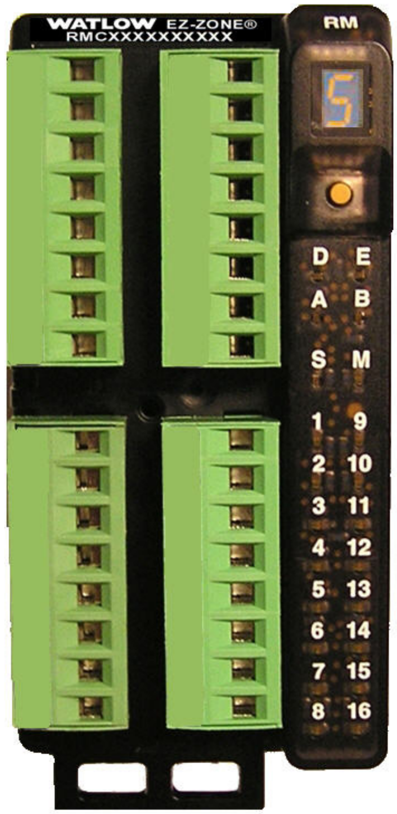
EZ-ZONE® RMC (Control) Module

User's Guide



Control Module

WATLOW®

Powered by Possibility

TOTAL CUSTOMER SATISFACTION
3 Year Warranty

ISO 9001
Registered Company
Winona, Minnesota USA

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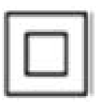
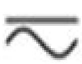
0600-0070-0000 Rev. E

Made in the U.S.A.

March 2016

Safety Information

- We use note, caution and warning symbols throughout this book to draw your attention to important operational and safety information.
- A "NOTE" marks a short message to alert you to an important detail.
- A "CAUTION" safety alert appears with information that is important for protecting your equipment and performance. Be especially careful to read and follow all cautions that apply to your application.
- A "WARNING" safety alert appears with information that is important for protecting you, others and equipment from damage. Pay very close attention to all warnings that apply to your application.
- The safety alert symbol, ⚠ (an exclamation point in a triangle) precedes a general CAUTION or WARNING statement.
- The electrical hazard symbol, (a lightning bolt in a triangle) precedes an electric shock hazard CAUTION or WARNING safety statement. Further explanations follow:

Symbol	Explanation
	CAUTION – Warning or Hazard that needs further explanation than label on unit can provide. Consult User's Guide for further information.
	ESD Sensitive product, use proper grounding and handling techniques when installing or servicing product.
	Unit protected by double/reinforced insulation for shock hazard prevention.
	Do not throw in trash, use proper recycling techniques or consult manufacturer for proper disposal.
	Enclosure made of Polycarbonate material. Use proper recycling techniques or consult manufacturer for proper disposal.
	Unit can be powered with either alternating current (ac) voltage or direct current (dc) voltage.
c UL us 93RL LISTED PROCESS CONTROL EQUIPMENT	Unit is a Listed device per Underwriters Laboratories®. It has been evaluated to United States and Canadian requirements for Process Control Equipment. UL 61010 and CSA C22.2 No. 61010. File E185611 QUYX, QUYX7. See: www.ul.com
c UL us 2S81 LISTED PROC. CONT. EQ. FOR HAZARDOUS LOCATIONS	Unit is a Listed device per Underwriters Laboratories®. It has been evaluated to United States and Canadian requirements for Hazardous Locations Class 1 Division II Groups A, B, C and D. ANSI/ISA 12.12.01-2007. File E184390 QUZW, QUZW7. See: www.ul.com

	Unit is compliant with European Union directives. See Declaration of Conformity for further details on Directives and Standards used for Compliance.
	Unit has been reviewed and approved by Factory Mutual as a Temperature Limit Device per FM Class 3545 standard. See: www.fmglobal.com
	Unit has been reviewed and approved by CSA International for use as Temperature Indicating-Regulating Equipment per CSA C22.2 No. 24. See: www.csa-international.org

Warranty

The EZ-ZONE® RMC (Control) module is manufactured by ISO 9001-registered processes and is backed by a three-year warranty to the first purchaser for use, providing that the units have not been misapplied. Since Watlow has no control over their use, and sometimes misuse, we cannot guarantee against failure. Watlows' obligations hereunder, at Watlows' option, are limited to replacement, repair or refund of purchase price, and parts which upon examination prove to be defective within the warranty period specified. This warranty does not apply to damage resulting from transportation, alteration, misuse or abuse. The purchaser must use Watlow parts to maintain all listed ratings.

Technical Assistance

If you encounter a problem with your Watlow controller, review your configuration information to verify that your selections are consistent with your application: inputs, outputs, alarms, limits, etc. If the problem persists, you can get technical assistance from your local Watlow representative (see back cover), by e-mailing your questions to wintechsupport@watlow.com or by dialing +1 (507) 494-5656 between 7 a.m. and 5 p.m., Central Standard Time (CST). Ask for for an Applications Engineer. Please have the following information available when calling:

- Complete model number
- All configuration information
- User's Guide
- Factory Page

Return Material Authorization (RMA)

1. Call Watlow Customer Service, (507) 454-5300, for a Return Material Authorization (RMA) number before returning any item for repair. If you do not know why the product failed, contact an Application Engineer or Product Manager. All RMA's require:

- Ship-to address
- Bill-to address
- Contact name
- Phone number
- Method of return shipment
- Your P.O. number
- Detailed description of the problem

- Any special instructions
- Name and phone number of person returning the product.

2. Prior approval and an RMA number from the Customer Service Department is required when returning any product for credit, repair or evaluation. Make sure the RMA number is on the outside of the carton and on all paperwork returned. Ship on a Freight Prepaid basis.
3. After we receive your return, we will examine it and try to verify the reason for returning it.
4. In cases of manufacturing defect, we will enter a repair order, replacement order or issue credit for material returned. In cases of customer misuse, we will provide repair costs and request a purchase order to proceed with the repair work.
5. To return products that are not defective, goods must be in new condition, in the original boxes and they must be returned within 120 days of receipt. A 20 percent restocking charge is applied for all returned stock controls and accessories.
6. If the unit cannot be repaired, you will receive a letter of explanation. and be given the option to have the unit returned to you at your expense or to have us scrap the unit.
7. Watlow reserves the right to charge for no trouble found (NTF) returns.

EZ-ZONE RM is covered by U.S. Patent No. 6,005,577 and Patents Pending

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1 Chapter 1: Overview

Available EZ-ZONE RM System Literature and Resources

Document Title and Part Number	Description
EZ-ZONE Rail Mount Access (RMA) User's Guide, part number: 0600-0072-0000	Describes how to connect the RM system into an industrial network, how to use data logging, module backup and the real-time clock.
EZ-ZONE Rail Mount Expansion (RME) User's Guide, part number: 0600-0073-0000	When additional I/O is needed the Expansion module fills the gap. This document describes common usage and the various types of I/O available.
EZ-ZONE Rail Mount High Density (RMH) User's Guide, part number: 0600-0074-0000	This module extends the density of the standard RM modules (number of control loops and I/O points). The User Guide describes common usage, communications and the number I/O points available.
EZ-ZONE Rail Mount Scanner (RMS) User's Guide, part number: 0600-0071-0000	This module adds monitoring points to the RM system. This document describes common usage and the various types of I/O available.
EZ-ZONE Rail Mount Limit (RML) User's Guide, part number: 0600-0075-0000	This module will protect against unwanted thermal runaway and over temperature conditions. The User Guide describes configuration, programming and communications capabilities.
EZ-ZONE Remote User Interface (RUI) User's Guide, part number: 0600-0060-0000	The RUI provides a visual LED display to the RM configuration and setup menus. This document illustrates and describes connections and also describes the Home Page for each RM module as viewed from the RUI.
EZ-ZONE RM Specification Sheet, part number: WIN-EZRM-0414	Describes RM hardware options, features, benefits and technical specifications.
Watlow Support Tools DVD, part number: 0601-0001-0000	Contains all related user documents, tutorial videos, application notes, utility tools, etc...

The DVD described above ships with the product and as stated contains all of the literature above as well as much more. If the DVD is not available one can be acquired by contacting Watlow Customer Service at 1-507-454-5300.

As an alternative to the DVD, all of the user documentation described above can also be found on the Watlow website. Click on the following link to find your document of choice: http://www.watlow.com/literature/index.cfm. Once there, simply type in the desired part number (or name) into the search box and download free copies.

Your Comments are Appreciated

In an effort to continually improve our technical literature and ensure that we are providing information that is useful to you, we would very much appreciate your comments and suggestions. Please send any comments you may have to the following e-mail address: TechlitComments@watlow.com

Introduction

The EZ-ZONE® Rail Mount Control module (RMC) takes the pain out of solving your thermal loop requirements whether it be for a single loop, multi-loop, stand-alone or distributed control applications.

It just got a whole lot easier to solve the thermal requirements of your system. The RMC module is provided in a space-saving, rail-mount package and is highly scalable where you only pay for what you need. For those applications that require the ability to configure/monitor the control over a network, Modbus RTU communications is an option. Other communications protocols are also available (e.g., EtherNet/IP, DeviceNet, Modbus TCP and Profibus DP) when used in conjunction with an RM Access (RMA) module or when using a Remote User Interface/Gateway (RUI/GTW).

Standard Features and Benefits

Integrated PID and over/under safety limit controller in one package

- Provides two mounting options (DIN rail, chassis mount)
- Reduces wiring time and termination complexity compared to connecting discrete products
- Reduces panel space and installation cost
- Increases user and equipment safety for over/under temperature conditions

Integrated power controller output

- Includes the patented NO-ARC, which drives up to 15 amp resistive loads directly
- Reduces component count and cost of ownership
- Saves panel space and simplifies wiring

Current monitoring (traditional or algorithm)

- Detects heater current flow and provides alarm indication of a failed output device or heater load
- For use in single phase loads

Communication Capabilities

- Supports network connectivity to a PC or PLC
- Watlow Standard Bus or Modbus® RTU
- Provides plug and play capabilities with Remote User Interface (RUI's) and RMA module
- Free standard bus communications port and free PC software EZ-ZONE Configurator and Composer

Additional Control Integration Options

- Provides a sequencer function
- Includes programmable timer functions
- Includes programmable counter functions
- Allows for simple math and logic programming options

Advanced PID Control Algorithm

- Offers TRU-TUNE®+ adaptive control to provide tighter control for demanding applications
- Provides auto-tune for fast, efficient startup

Integrated Thermal Loop Diagnostics

- Users can easily tell that the entire thermal system is functioning properly
- Provides complete system diagnostics that are far superior to simple discrete level diagnostics
- Allows for flexible synergistic use of hardware, such as using one loop's sensor as a backup to another loop in the event of sensor failure.
- Helps prevent load loss or allow for maintenance to be scheduled when more convenient.
- Provides notification of system problems to help reduce maintenance and service costs

Off-the-Shelf Designed System Solution

- Improves system reliability with a factory integrated solution that minimizes inter-module connections and potential problems at screw termination points.
- Reduces installation cost
- Eliminates compatibility headaches often encountered with using many different components and brands

Controller Handles High Ambient Temperatures

- Operates in an unprecedented temperature range of -18 to 65°C (0 to 149°F) for cabinets and panel enclosures with elevated temperature levels

Memory for Saving and Restoring User-Defined Parameter Default Settings

- Allows customers to save and restore their own defined defaults for machine parameter settings
- Reduces service calls and downtime due to inadvertent end user parameter adjustments

RMC Modules Allow for Greater Design Flexibility

- Allows PID loops to be added in increments of one.
- Saves money because you do not pay for any more than you need and don’t settle for any less functionality than you need

Synergistic Module Control (SMC)

- Allows outputs selected for control (heat/cool), alarms or events to be located in any physical module, regardless of which module is connected to the input sensor

Split-Rail Control (SRC)

- Allows modules to be mounted together or mounted remotely from one another (maximum distance 200 feet or 61 meters)
- Shares control operation via Synergistic Module Control (SMC) capability
- Allows individual modules to be mounted closer to the physical input and output devices to which they are wired
- Improves system reliability and lowers wiring costs

Factory Mutual (FM) Approved Safety Limit

- Increases user and equipment safety for over/under temperature conditions
- Supports SEMI S2 specification

Agency Approvals: UL® listed, CE, RoHS, W.E.E.E. FM, SEMI F47-0200, Class 1 Div. 2 Rating on Selected Models

- Assures prompt product acceptance
- Reduces panel builder's documentation and agency costs

Removable Connectors

- Assures reliable wiring and reduces service calls
- Simplifies installation

Profile Capability

- Allows ramp/soak programming
- Provides 25 profiles and 400 total steps

Remote Set Point Operation

- Supports efficient set point manipulation from a remote device such as a master control or PLC
- Allows one or more loops to be programmed to control based on another loop's set point eliminating the cost of purchasing additional retransmit and remote set point hardware

Retransmit

- Supports industry needs for process recording

Three-Year Warranty

- Demonstrates Watlow's reliability and product support

A Conceptual View of the RMC Module

The flexibility of the RMC software and hardware allows a large range of configurations. Acquiring a better understanding of the controller's overall functionality and capabilities while at the same time planning out how the controller can be used will deliver maximum effectiveness in your application.

The RMC can be connected at the system level to as many as 17 modules, one of which can be an Access module and the others (16 maximum) can be any combination of available modules. The user will define each address via the button on the face of each module. Each installed RMC module must have a unique Standard Bus address ranging from 1-9, A-F, where the factory defaults for each is Standard Bus address 1.

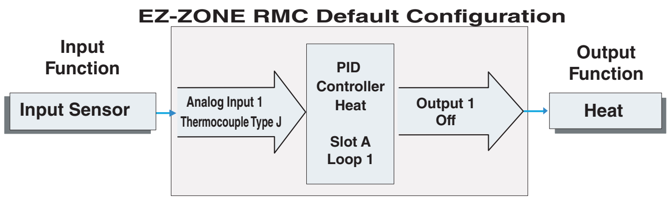
Getting Started Quickly

The RMC (Controller) can be ordered with up to four PID loops with default loop configurations (all loops) out of the box as follows:

- Analog Input functions set to thermocouple, type J
- Control loops 1-4 use Analog Inputs 1-4
- Heat algorithm set for PID, Cool algorithm set to off
- Outputs set to off
- Control mode set to Auto
- Set point set to 75 °F

To enable a loop for heat simply follow the steps below:

1. Navigate to the Setup Page
2. Once on the Setup Page navigate to the Output Menu and then the output of choice
3. Change the default setting of Off to Heat Power
4. Select the desired loop instance



Note:

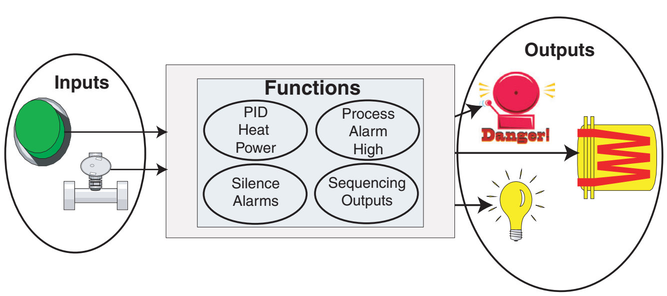
Zones can communicate with one another over the backplane (local and split rail). Once the system is configured and running, changing zone addresses without careful deliberation may cause disruption in operation.

Some of the user selectable ordering options are listed below:

1. Class 2 or SELV (Safety Extra Low Voltage) equivalent Power Supplies:
   - 90-264 Vac to 24Vdc @ 31 watts
   - 90-264 Vac to 24Vdc @ 60 watts
   - 90-264 Vac to 24Vdc @ 91 watts
2. RMC Module can provide:
   - 1 to 4 control loops, limits or CT inputs
   - 1 to 9 inputs (various types)
   - 1 to 12 outputs (various types)
   - Modbus RTU communications

As can be seen above the RMC module is fully scalable with regards to power requirements, number of loops, inputs, and outputs.

It is useful to think of the controller in three parts: inputs, functions and outputs. Information flows from an input to a function to an output when the controller is properly configured. An RMC module can carry out several functions at the same time, e.g., PID control, monitoring for several different alarm situations, monitoring and acting upon Digital Inputs and driving output devices such as heaters, audible alarms, lights. Each process needs to be thought out carefully and the controller's inputs, functions and outputs set up properly.



Functions

Functions use input signals to calculate a value. A function may be as simple as reading a digital input to set a state to true or false, or reading a temperature to set an alarm state to on or off. Alternatively, if a failure with the primary sensing device should occur, sensor backup could be utilized to avoid an unwanted shutdown.

To set up a function, one of the first things that must be considered is the function source and instance. For example, if the control is equipped with Digital Inputs (source) and it was decided to use DI 9 (instance) it can then be associated with an Action to reset an individual alarm or all alarms.

To configure a Digital Input as described above:

1. Navigate to the Setup Page and then to the Digital I/O menu.
2. Select the desired instance and set the direction to input voltage or input dry contact.
3. Navigate to the Setup Page and then the Action menu.
4. Set the Action Function to Alarm
5. Select which alarm instance will be reset (0 equals all)
6. Select the Source Function to Digital I/O
7. Select the Source Instance (step 2 above)
8. Select the Source Zone (0 equals the module being configured).
9. Select the Transmitter Active Level to execute the desired function.

This configuration is now complete. When the selected digital input is active, the alarm or all alarms that are latched without a currently existing alarm condition will be reset. If a specific alarm instance (1 - 8) is selected (step 5) it will be that instance alone that will be reset.

Note:

Alarms will reset automatically when the condition that caused the alarm goes back to a non-alarm state if the Latching prompt is set to non-latching (Setup Page, Alarm Menu).

Keep in mind that a function is a user-programmed internal process that does not execute any action outside of the controller. To have any effect outside of the controller, an output must be configured to respond to a function.

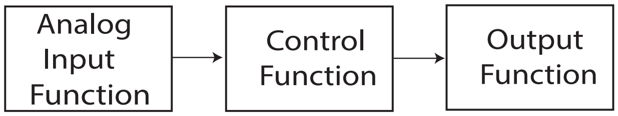
Inputs

The inputs provide the information that any given programmed function can act upon. In a simple form, this information may come from an operator pushing a button, or as part of a more complex function it may represent a remote set point being received from another zone.

Each analog input can be configured for thermistors, thermocouples, or RTDs to read the process variable. It can also read mV/volts, current or resistance, enabling usage of various devices to read humidity, air pressure, operator inputs and other values. The settings in the Analog Input Menu (Setup Page) for each analog input must be configured to match the device connected to that input.

Each digital input reads whether a device is active or inactive. A RM system can be equipped with multiple digital I/O. Each I/O point must be configured to function as either an input or output with the direction parameter in the digital I/O Menu (Setup Page).

Another concept that needs to be understood is the difference between an input tied to a real-world device such as a thermocouple and one that is tied to an internal function.

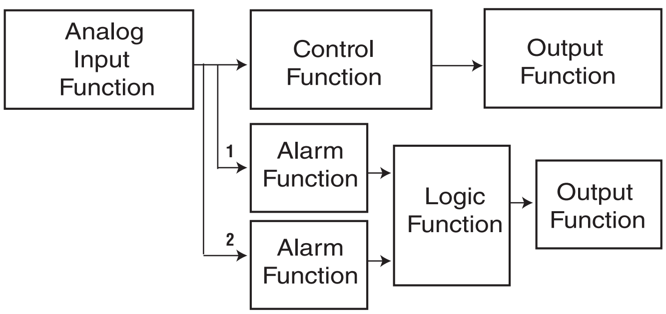


In the example above the analog input function on the left is tied directly to the control function where its internal output is routed to a real-world output.

With a slight modification of the graphic above the example below now ties the real-world inputs directly to the control and alarm functions. For the sake of this example the following is true:

- Two unique high process alarms are configured for analog inputs 1 and 2
- The logic block is configured as an OR function
- The output function is tied to the internal output of the logical OR function

When either process alarm is true (analog input value is greater than the alarm high set point, the real-world output will be driven on.



Outputs

Outputs can perform various functions or actions in response to information provided by a function such as: heat power from the output of the control, using a digital output to serve as a profile event, drive a light on or off, unlocking a door or turning on a buzzer.

Assign an output to a function in the Output Menu or Digital I/O Menu. Then select which instance of that function will drive the selected output. For example, you might assign an output to respond to an internal output of a compare function or to retransmit the value of analog input 2 (instance 2).

You can assign more than one output to respond to a single instance of a function. For example, alarm 2 could be used to trigger a light connected to output 1 and a siren connected to digital output 5.

What is a Profile

A profile is a set of instructions consisting of a sequence of steps. When a profile runs, the controller automatically executes its steps in sequence. The step type determines what action the controller performs. Steps can change temperatures and other process values gradually over time, maintain the temperatures and process values for specific periods, or repeat a sequence of steps numerous times. At each step the profile can activate or deactivate outputs that control other equipment. Also a step can have the controller wait for specific conditions before proceeding such as, waiting for a switch closure and/or a specific process value to be detected by a sensor.

Input Events and Output Events

Input and output events are internal states that are used exclusively by profiles. The source of an event input can come from a real-world digital input or an output from another function. Likewise, event outputs may control a physical output such as an output function block or be used as an input to another function.

Actions

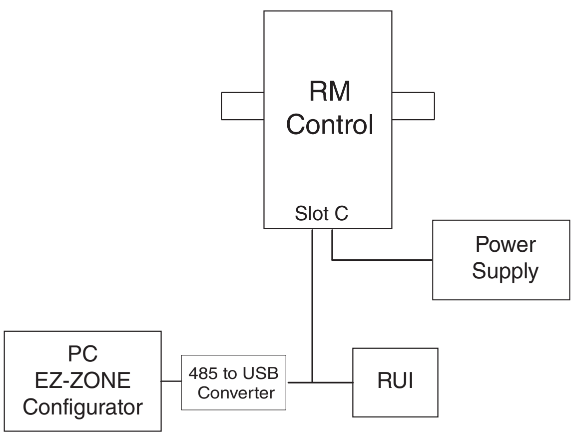
Based on a given input (Digital I/O, Event output, Logic function, etc..) the Action function can cause other functions to occur. To name a few, starting and stopping a profile, silencing alarms, turn control loops off and placing alarms in non-alarm state.

A Conceptual View of RM Hardware Configurations

Due to the scalability and flexibility in the RM system a user has several options available in the way that the hardware can be connected. Listed below are a few examples.

RMC Module Connected to a Remote User Interface (RUI) and a PC

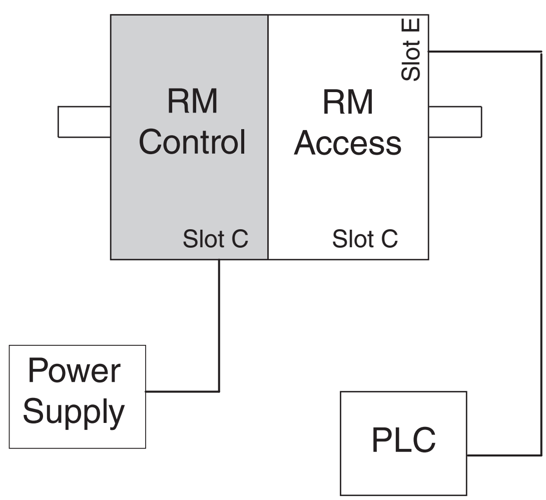
In this configuration the RUI and PC are connected to the RMC module via Watlow's Standard Bus where both will be able to talk directly to the RMC module. The PC running EZ-ZONE Configurator software and the RUI can be used to configure and then monitor the RMC module.



RMC Module Connected to a Programmable Logic Controller (PLC) on a DIN Rail

In this configuration the PLC can be connected to the RMC module via the Access module using one or more available protocols:

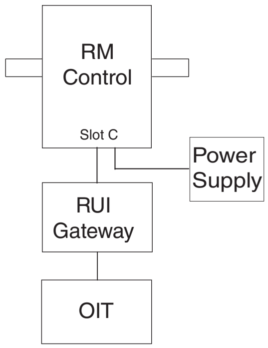
1. EtherNet/IP and or Modbus TCP
2. DeviceNet
3. Modbus RTU



RMC Module Connected to an Operator Interface Terminal (OIT) through an RUI/Gateway

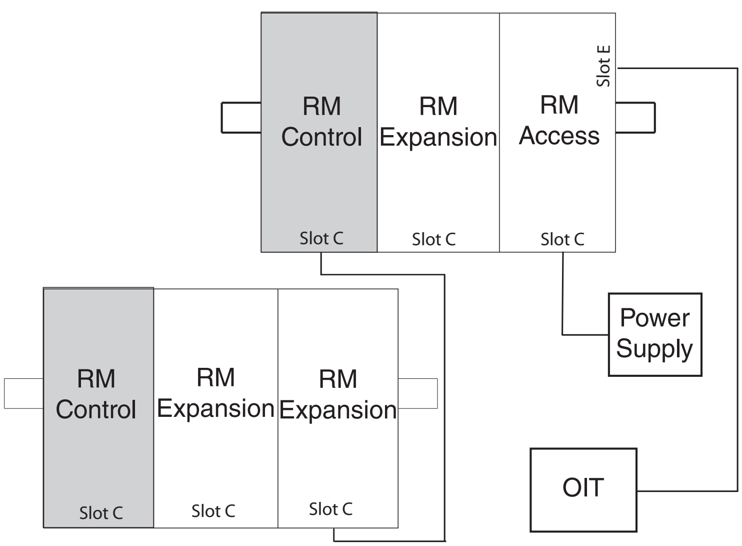
In this configuration the OIT can be running any of a number of protocols communicating to the RM system through Watlow's RUI/Gateway. Available protocols for the RUI/Gateway follow:

1. EtherNet/IP and or Modbus TCP
2. DeviceNet
3. Modbus RTU



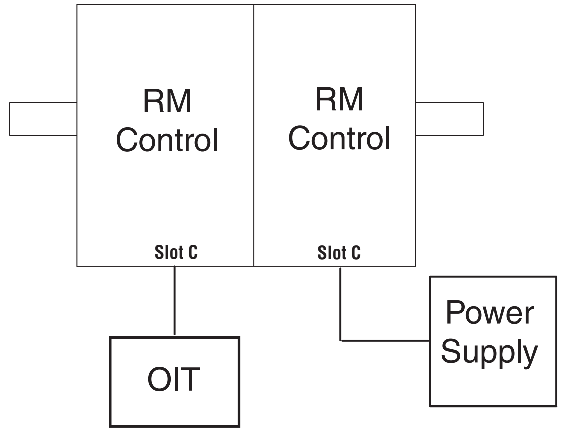
RM System Connected to a Split Rail with OIT

In this configuration both the Inter-module Bus (backplane communications) and Standard Bus are connected between rails to allow for remote capabilities. It is recommended that the split rail connection not exceed 200 feet. In this configuration the OIT can communicate with all modules (maximum 16 modules any combination with one Access module).



RM Control Module Connected to an OIT Running Modbus RTU

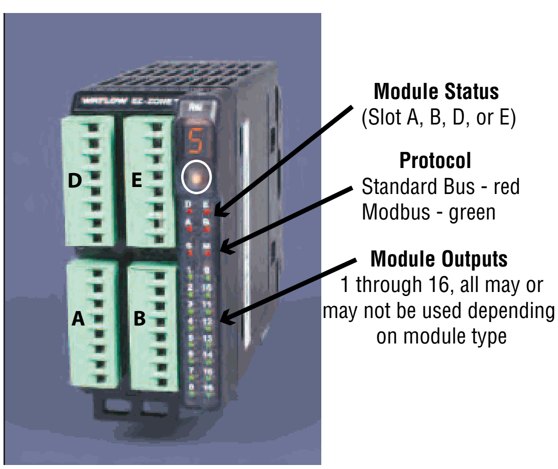
In this configuration the control module connected to the OIT is equipped with the Modbus RTU protocol (RMCxxxxxxxxx1xx). It is important to note that Modbus communications takes place between the OIT and the control it is connected to. All modules must be set for the same protocol with the Modbus wiring connected to one module.



Module Orientation

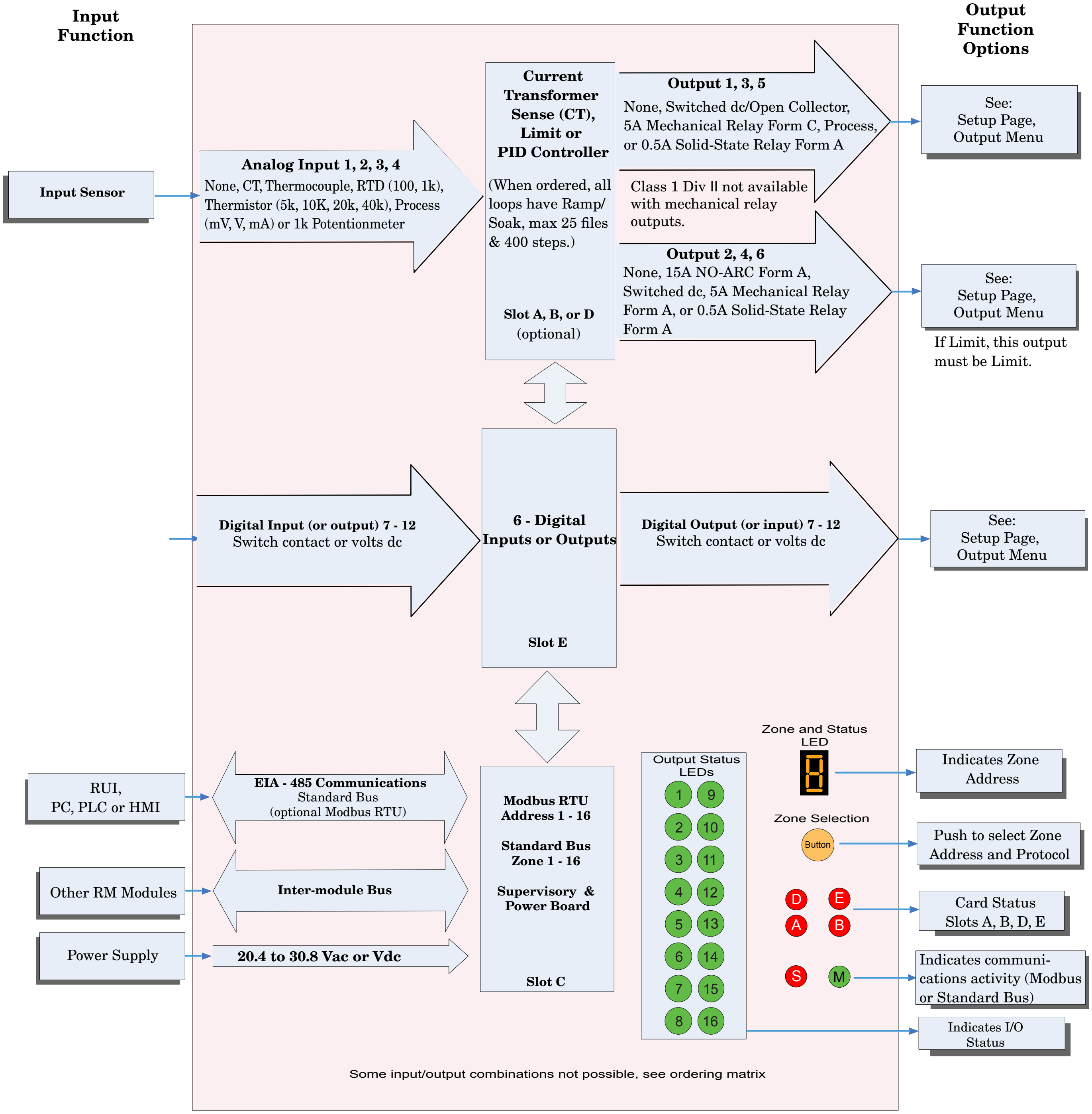
The picture below represents one of six possible RM modules. All six will have four slots on the face (slot A, B, D, and E) and one on the bottom (slot C) not shown. All of these slots are not always used on all modules. On the face of the module there is a button (white circle) under the Zone address (5) that when pushed and held has the following functions:

1. For any module, push and hold for approximately 2 seconds. The address will intensify indicating that it can now be changed. Release and repeatedly press to change to the desired unique address.
2. For the control module, if equipped with the Modbus protocol (RMCxxxxxxxxx1xx) pushing and holding this button for approximately 6 seconds will cause the display to reflect P for protocol. Releasing the button and then pushing it again (within 6 seconds), the display will toggle between n (Modbus) and S (Standard Bus). Valid addresses for Modbus and Standard bus range from 1 -16 (1-9, A is 10, b is 11, C is 12, d is 13, E is 14, F is 15, and h is 16). The Access module is shipped at address J or 17.

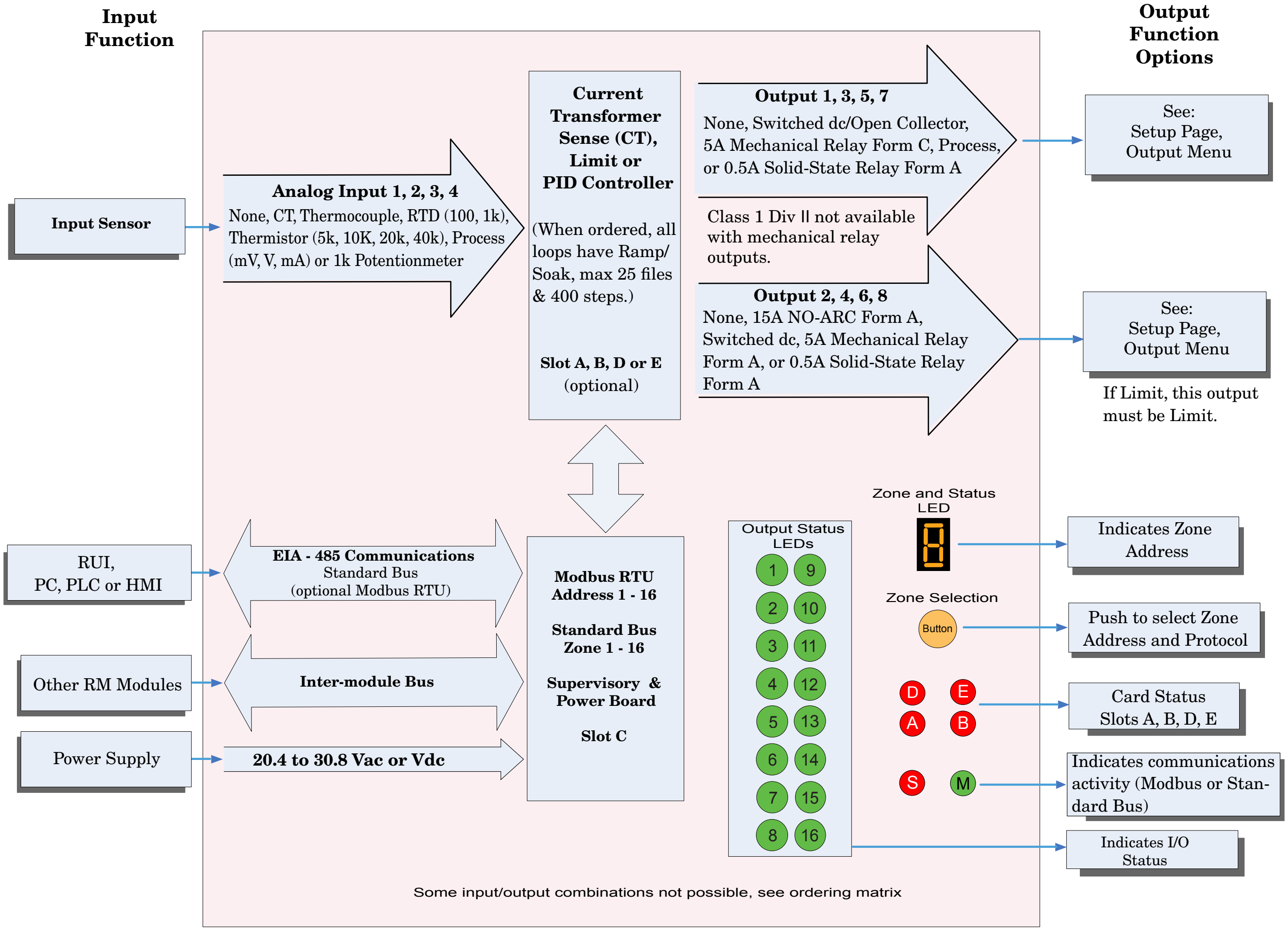


Note:
For correct operation and accuracy, the module must be mounted in a vertical orientation as shown.

EZ-ZONE RM-Control Module - System Diagram with 6-Digital Input/Output card in slot E



EZ-ZONE RM-Control Module - System Diagram without 6-Digital Input/Output card in slot E



Chapter 2: Install and Wire

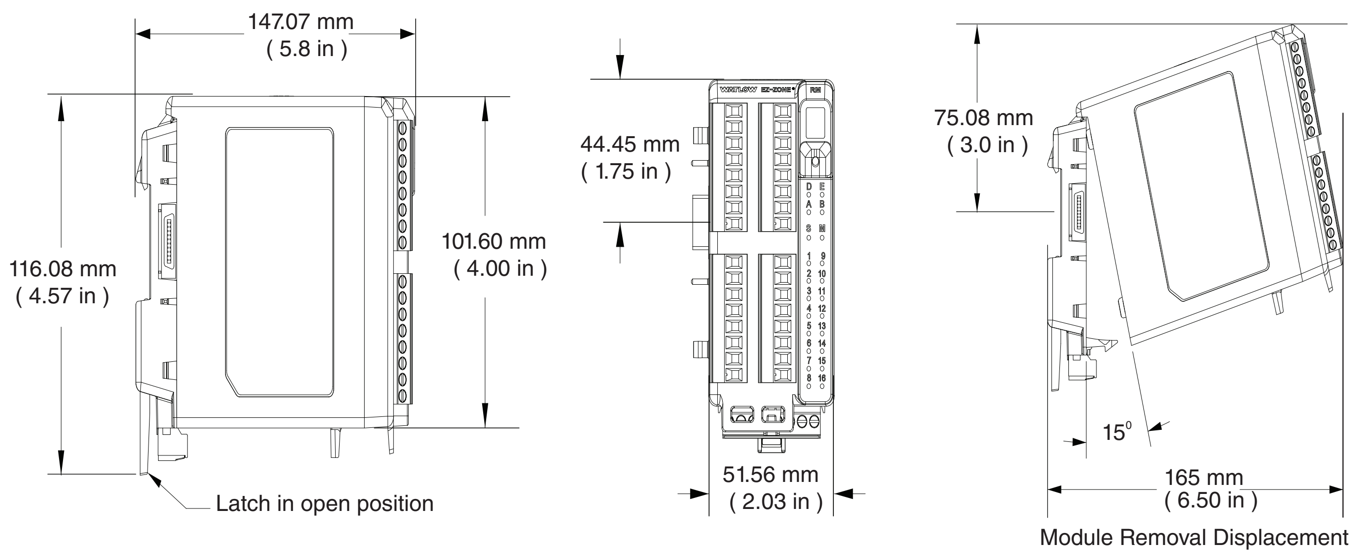
Dimensions

As can be seen below the dimensions of the RMC module will change slightly based on the type of connector used.

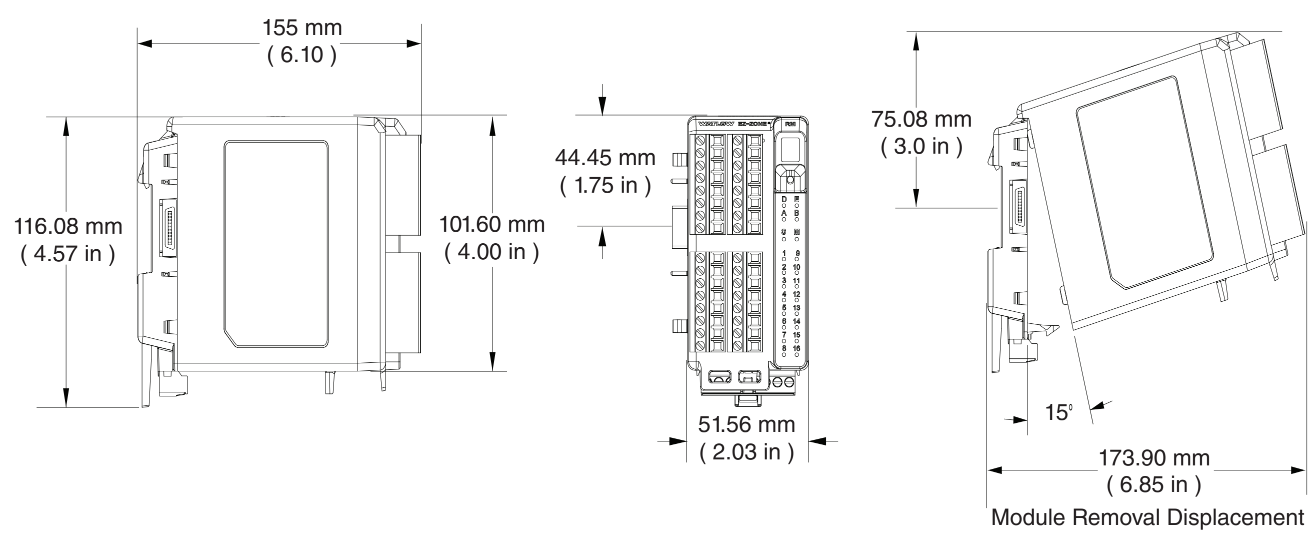
Note:

Modules should always be mounted vertically. For easy removal and placement of modules it is recommended that there be a 76.2 mm (3.00 in) clearance on the top and bottom of each module.

Module Removal Clearance **Standard Connectors**

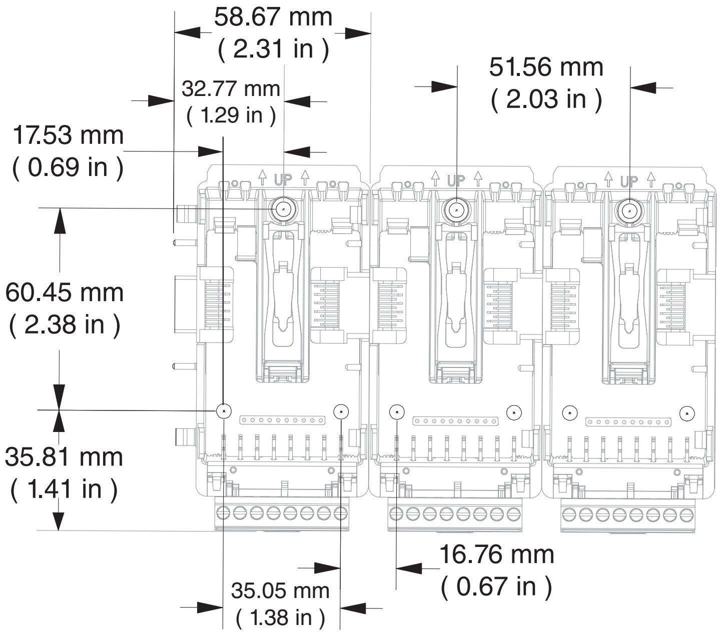


Module Removal Clearance **Straight Connectors**



Dimensions (cont.)

Chassis Mount Front View (Module Removed) - Screw Connection Pattern



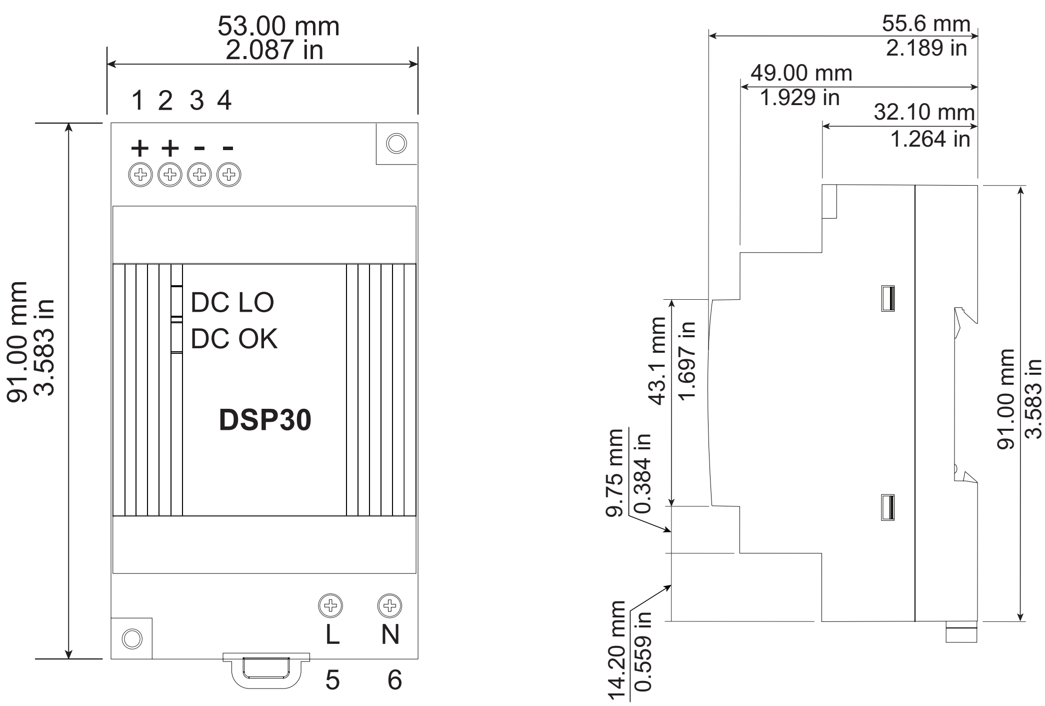
The view above is representative of the modular backplane without the module.

Recommended chassis mount hardware:

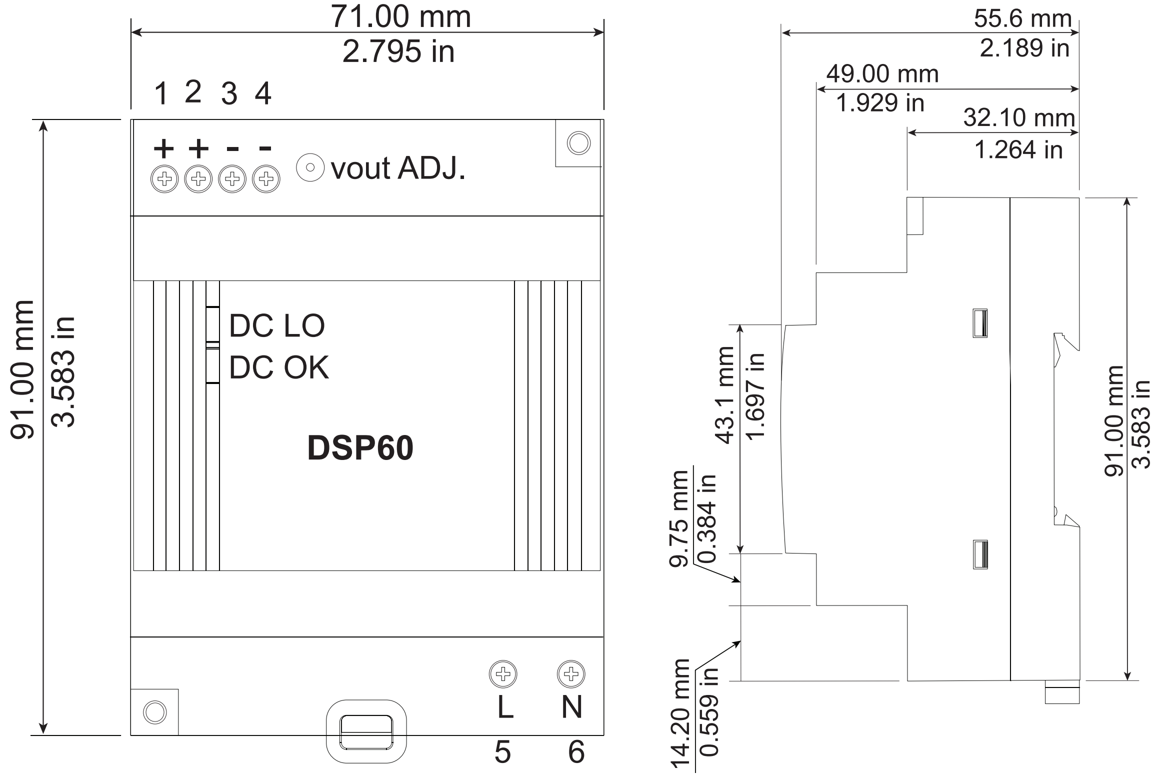
1. #8 screw, 3/4" long
2. Torque to 10 -15 in-lb
3. No washers of any kind

Power Supplies

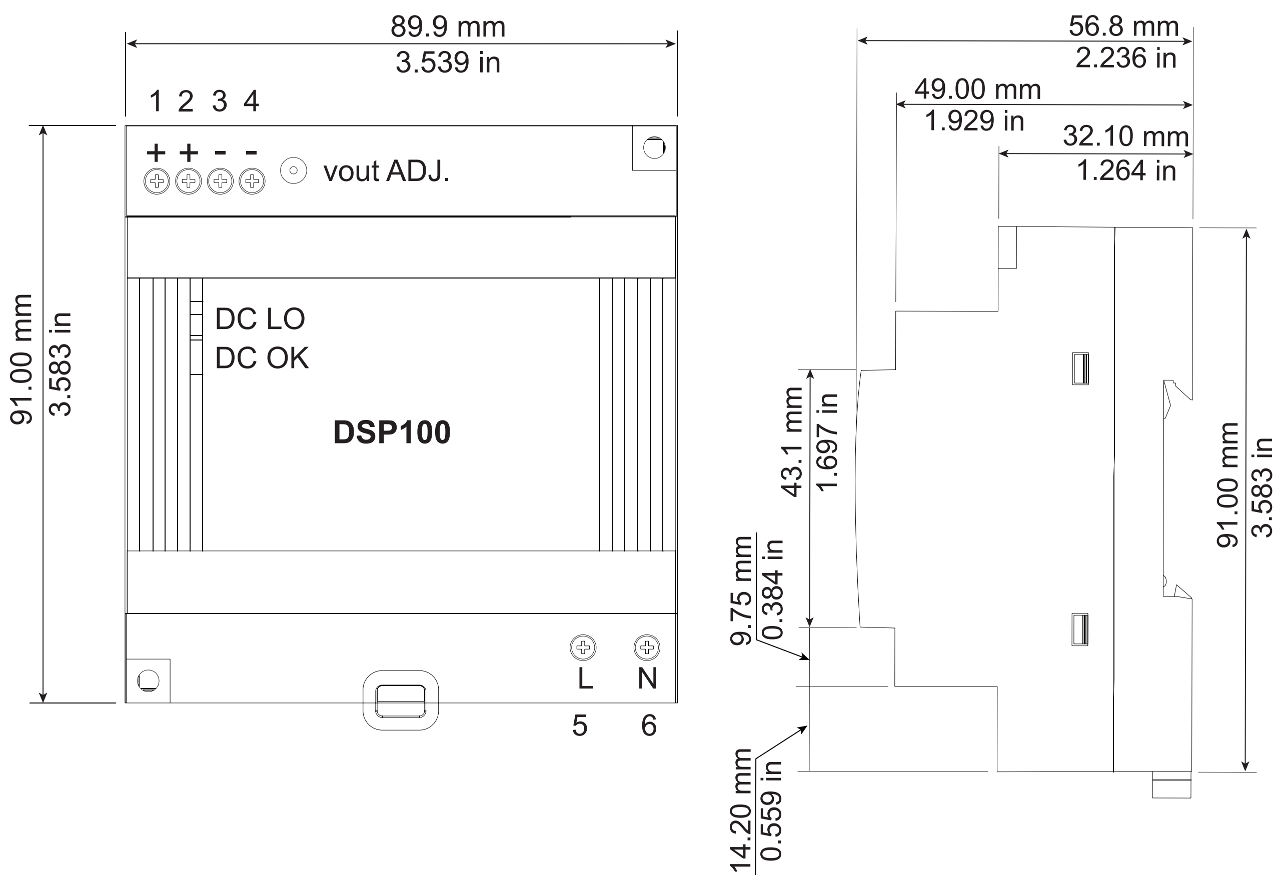
DSP 30



DSP 60



DSP 100



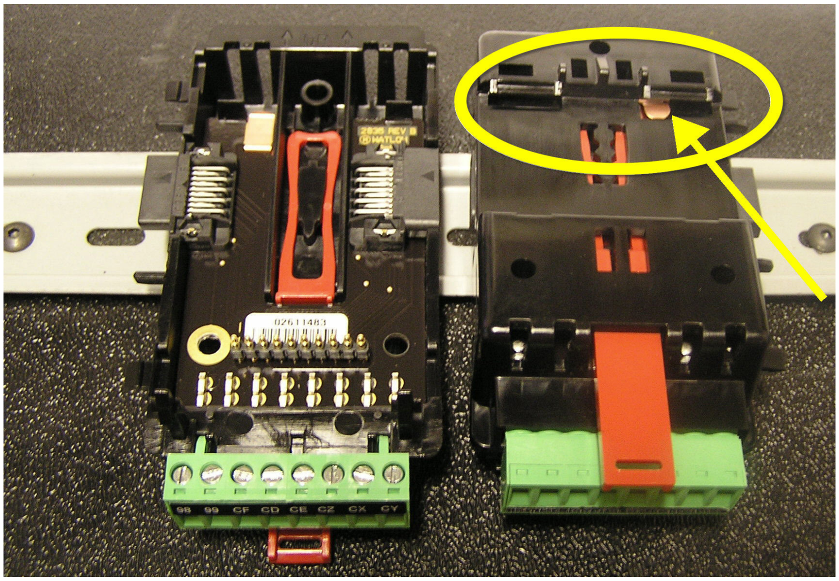
Power Supply Specifications				
		DSP 30	**DSP60**	**DSP100**
AC Input Voltage Range	VAC	90 - 264VAC, Class II double insulated (No ground connection required)		
Input Frequency	Hz	47 - 63Hz		
DC Input Voltage range	VDC	120 - 370VDC		
Inrush Current (115 / 230VAC)	A	25 / 50A	30 / 60A	30 / 60A
Output Voltage Accuracy	%	±1% of Nominal		
Over voltage Protection	V	120 - 145%		
LED Indicators	- - - -	Green LED = On, Red LED = DC Output Low		
Operating Temperature	- - - -	-25 to +71°C (Derate linearly 2.5%/°C from 55 to 71°C)		
Storage Temperature	- - - -	-25 to +85°C		
Operating Humidity	- - - -	20 - 95% RH (non condensing)		
Vibration (Operating)	- - - -	IEC 60068-2-6 (Mounting by rail: Random wave, 10-500 Hz, 2G, ea. along X, Y, Z axes 10 min/ cycle, 60 min)		
Safety Agency Approvals		UL1310 Class 2(1), UL508 Listed, UL60950-1, EN60950-1, CE		

For a comprehensive listing of these specifications point your browser to : http://us.tdk-lambda.com/lp/products/dsp-series.htm

RMC Installation and Removal on a DIN Rail

Modular Backplane Connector

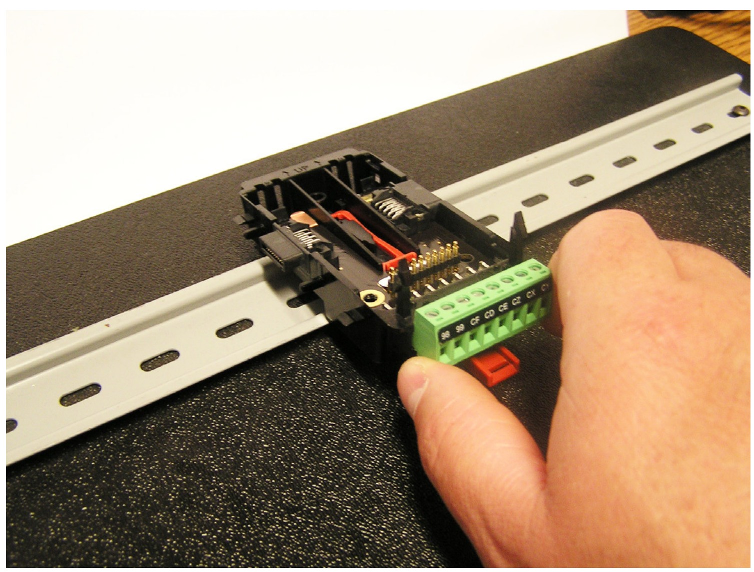
The picture on the right shows the Modular Backplane Connector, both front and rear view. The rear view is bringing in to focus a metal clip. If the DIN rail is grounded the Modular Backplane Connector and the module connected to it will be also (recommended).



Installing the Modular Backplane Connector

To install the backplane follow the steps below:

1. Hook backplane assembly to upper edge of DIN rail, (see rear view above, backplane hook detail that mates with upper rail edge is circled)
2. Next, rotate back plane assembly downward to engage the lower edge of the rail. (Note: Din Rail clipping distance ranges from 1.366 -1.389 inches. The back plane assembly will not latch onto the rail successfully if the rail is out of dimension).
3. For final positioning and locking, the red tab is to be pushed upward to further engage the bottom edge of the rail with an over center snap action latch. (The red locking tab protrudes from the bottom side of the back plane assembly).



Note:

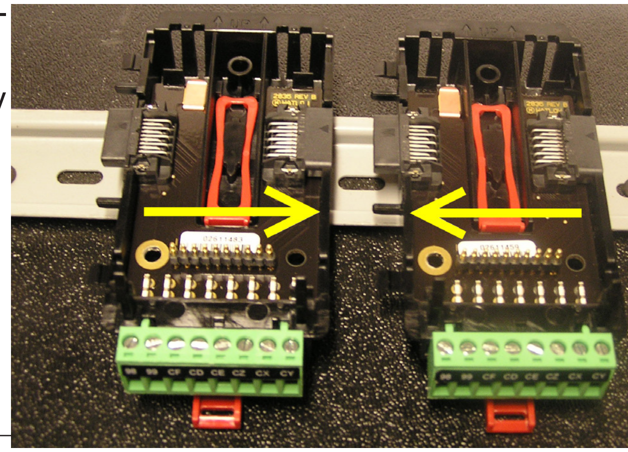
For easy removal and placement of modules it is recommended that there be a 76.2 mm (3.00 in) clearance on the top, bottom and front of each module.

Installing Multiple Modular Backplane Connectors

Multiple modules are easily aligned and latched together. Each module includes matched mating geometry that facilitates accurate and consistent interconnections.

To install backplane connectors follow the steps below:

1. Attach individual modules to the rail separately.
2. Laterally slide the modules together until they touch.
3. When the multi-module system is attached and laterally positioned to the desired placement the locking tab should be engaged to secure the control system to the rail.

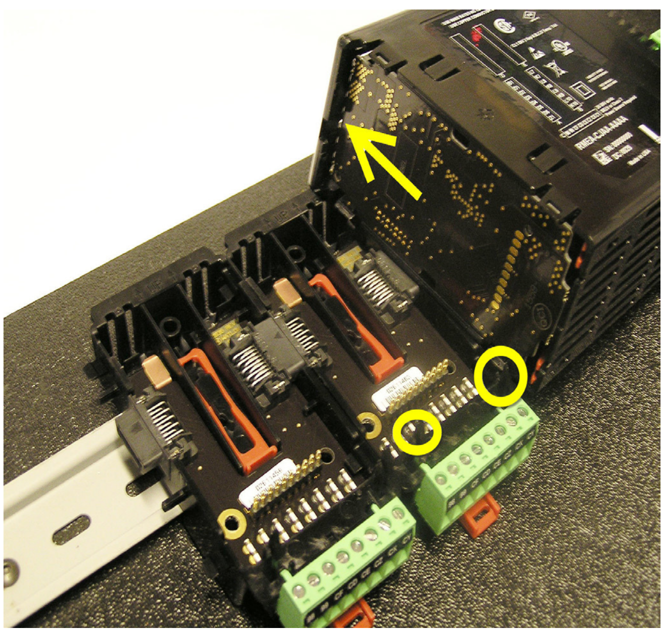


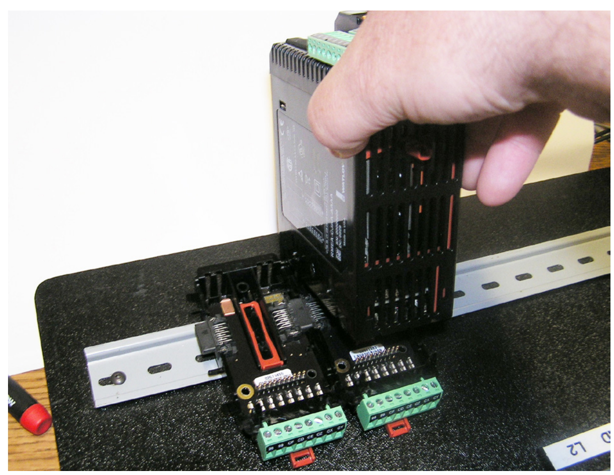
Module Installation

In the picture to the right notice that the arrow is pointing at the top lip of the module (on side).

To install modules on the backplane follow the steps below:

1. Slide the lip of the module over the top of the Modular Backplane Connector and then push down on the rear of the module. The module will then slide over the two posts just above the green connector (see pictures below).

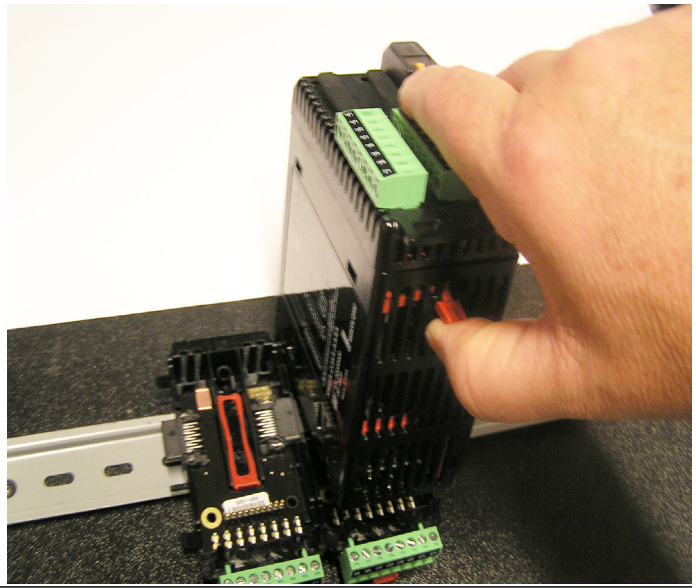




Module Removal

To remove a module from the backplane follow the steps below:

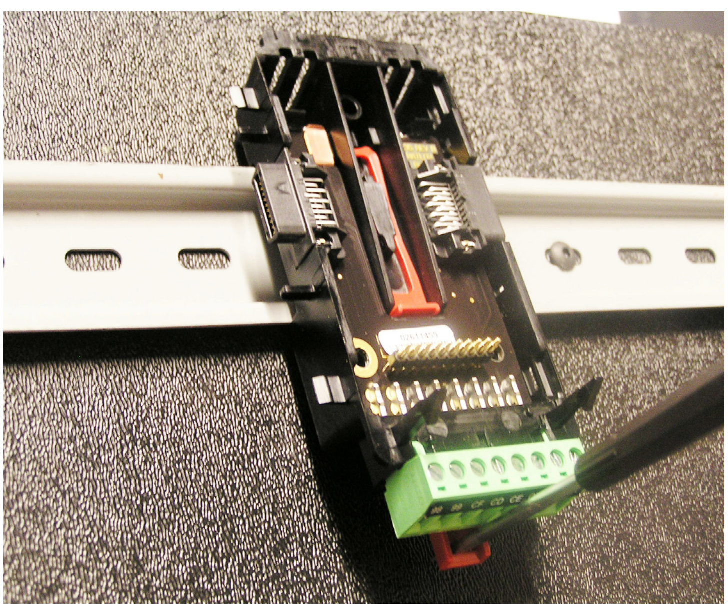
1. Find the red tab protruding from the bottom of the module and pull back on it as shown to the right.
2. Pull back on the red tab, the two mounting posts will then release the module.
3. Lift the module up and slide it up; this will release the module lip from the backplane.



Backplane Removal from DIN Rail

To remove a modular backplane connector from the DIN rail follow the steps below:

1. Insert a screw driver into the red locking tab just behind the green connector.
2. Apply downward pressure on the tab by lifting the screwdriver upwards.
3. When released, the tab will move downward and the connector can then be lifted up off of the DIN rail.



Wiring

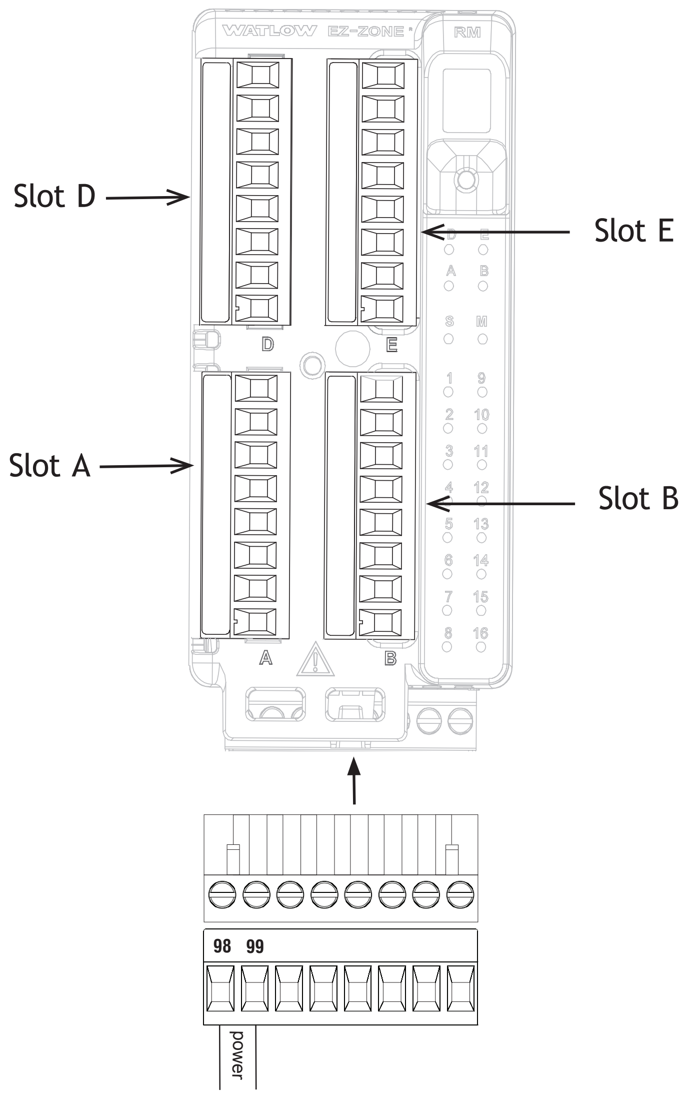
Controller Module (RMCxxxxxxxxxxxx)					
Slot A	**Slot B**	**Slot D**	**Slot E**	**Terminal Function**	**Configuration**
Inputs				Universal, RTD, Potentiometer and Thermistor Inputs 1 - 4	
1	2	3	4		
T1 S1 R1	T2 S2 R2	T3 S3 R3	T4 S4 R4	T_ (RTD) or current +S_ (RTD), thermocouple -, current -, potentiometer, thermistor or volts - R_ (RTD), thermocouple +, volts +, potentiometer wiper or thermistor	Universal/Thermistor Input Part # Digits 4, 6, 8, 10 Input 1: RMC[**1,2,3,4,5,6**]xxxxxxxxxxx Input 2: RMCxx[**1,2,5,6**]xxxxxxxxx Input 3: RMCxxxx[**1,2,5,6**]xxxxxxx Input 4: RMCxxxxxx[**1,2,5,6**]xxxxx
				Current Transformer Inputs 1 - 4	
T1 S1	T2 S2	T3 S3	T4 S4	mA ac mA ac	Current Transformer Part # Digits 4, 6, 8, 10 Input 1: RMC[**7**]xxxxxxxxxxx Input 2: RMCxx[7]xxxxxxxxx Input 3: RMCxxxx[**7**]xxxxxxx Input 4: RMCxxxxxx[**7**]xxxxx
				Digital Inputs 7 - 12	
			B7 D7 D8 D9 D10 D11 D12 Z7	Common dc +input dc +input dc +input dc +input dc +input dc +input Internal Supply	Digital Inputs/Outputs Part # Digit 11 Slot A: Option not valid Slot B: Option not valid Slot D: Option not valid Slot E: RMCxxxxxxx[**C**]xxxx
Outputs				Switched dc / Open Collector Outputs 1, 3, 5 and 7	
1 | 2	3 | 4	5 | 6	7 | 8		
X1 W1 Y1	X3 W3 Y3	X5 W5 Y5	X7 W7 Y7	common dc- (open collector) dc+	Switched DC/Open Collector Part # Digits 5, 7, 9, 11 Output 1: RMCx[**U,D,E,F,G**]xxxxxxxxxx Output 3: RMCxxx[**U,D,E,F,G**]xxxxxxxx Output 5: RMCxxxxx[**U,D,E,F,G**]xxxxxx Output 7: RMCxxxxxxx[**U,D,E,F,G**]xxxx

Controller Module (RMCxxxxxxxxxxxx)									
Slot A		**Slot B**		**Slot D**		**Slot E**		**Terminal Function**	**Configuration**
Outputs (cont.)								Switched dc Outputs 2, 4, 6 and 8	
	W2 Y2		W4 Y4		W6 Y6		W8 Y8	dc- dc+	Switched DC Part # Digits 5, 7, 9, 11 Output 2: RMCx[**E,K,P**]xxxxxxxxxx Output 4: RMCxxx[**E,K,P**]xxxxxxxx Output 6: RMCxxxxx[**E,K,P**]xxxxxx Output 8: RMCxxxxxxx(**E,K,P**]xxxx
								Universal Process Outputs 1, 3, 5 and 7	
F1 G1 H1		F3 G3 H3		F5 G5 H5		F7 G7 H7		voltage or current - voltage + current +	Universal Process Part # Digits 5, 7, 9, 11 Output 1: RMCx[**N,P,R,S**]xxxxxxxxxx Output 3: RMCxxx[**N,P,R,S**]xxxxxxxx Output 5: RMCxxxxx[**N,P,R,S**]xxxxxx Output 7: RMCxxxxxxx[**N,P,R,S**]xxxx
								Form C - Mechanical Relay Outputs 1, 3, 5 and 7	
L1 K1 J1		L3 K3 J3		L5 K5 J5		L7 K7 J7		normally open common normally closed	Mechanical Relay 5 A, Form C Part # Digits 5, 7, 9, 11 Output 1: RMCx[**H,J,K,L,M**] xxxxxxxxxx Output 3: RMCxxx[**H,J,K,L,M**] xxxxxxxx Output 5: RMCxxxxx[**H,J,K,L,M**] xxxxxx Output 7: RMCxxxxxxx[**H,J,K,L,M**] xxxx
								NO-ARC Form A - Mechanical Relay Outputs 2, 4, 6 and 8	
	L2 K2		L4 K4		L6 K6		L8 K8	normally open common	NO-ARC 15 A, Form A Part # Digits 5, 7, 9, 11 Output 2: RMCx[**D,J,Y**]xxxxxxxxxx Output 4: RMCxxx[**D,J,Y**]xxxxxxxx Output 6: RMCxxxxx[**D,J,Y**]xxxxxx Output 8: RMCxxxxxxx[**D,J,Y**]xxxx
								Form A - Mechanical Relay Outputs 2, 4, 6 and 8	
	L2 K2		L4 K4		L6 K6		L8 K8	normally open common	Mechanical Relay 5 A, Form A Part # Digits 5, 7, 9, 11 Output 2: RMCx[**B,F,L,R**]xxxxxxxxxx Output 4: RMCxxx[**B,F,L,R**]xxxxxxxx Output 6: RMCxxxxx[**B,F,L,R**]xxxxxx Output 8: RMCxxxxxxx[**B,F,L,R**]xxxx

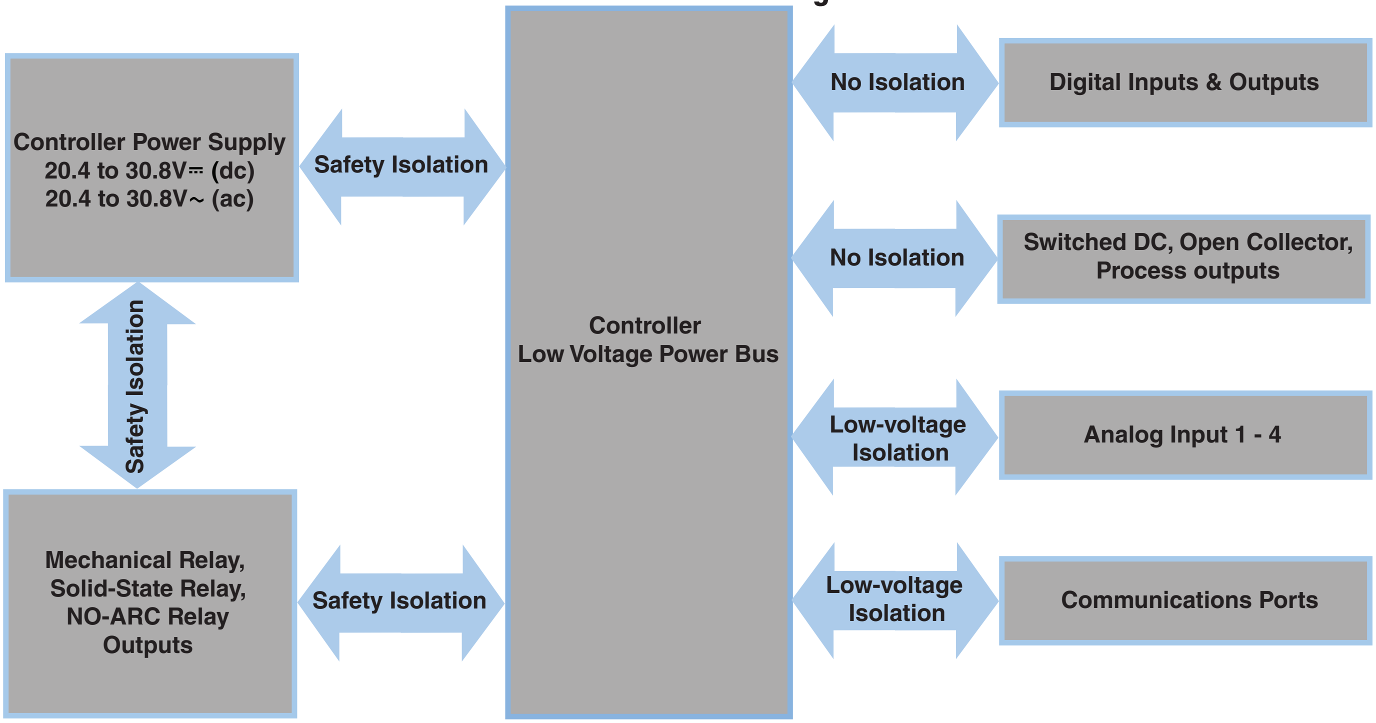
Controller Module (RMCxxxxxxxxxxxx)									
Slot A		Slot B		Slot D		Slot E		Terminal Function	Configuration
Outputs (cont.)								Solid State Relay Outputs 1 - 8	
L1 K1	L2 K2	L3 K3	L4 K4	L5 K5	L6 K6	L7 K7	L8 K8	normally open common	Solid-State Relay 0.5 A, Form A Part # Digits 5, 7, 9, 11 Output 1: RMCx[G,M,S,T,Y,Z] xxxxxxxxxx Output 2: RMCx[G,M,S,T,Y,Z] xxxxxxxxxx Output 3: RMCxxx[G,M,S,T,Y,Z] xxxxxxxx Output 4: RMCxxx[G,M,S,T,Y,Z] xxxxxxxx Output 5: RMCxxxxx[G,M,S,T,Y,Z] xxxxxx Output 6: RMCxxxxx[G,M,S,T,Y,Z] xxxxxx Output 7: RMCxxxxxxx[G,M,S,T,Y,Z] xxxx Output 8: RMCxxxxxxx[G,M,S,T,Y,Z] xxxx
								Digital Outputs 7 - 12	
						B7 D7 D8 D9 D10 D11 D12 Z7		Common open collector/ switched dc open collector/ switched dc open collector/ switched dc open collector/ switched dc open collector/ switched dc open collector/ switched dc Internal Supply	Digital Inputs/Outputs Part # Digit 11 Slot A: Option not valid Slot B: Option not valid Slot D: Option not valid Slot E: RMCxxxxxxx[**C**]xxxx

Power and Communications		
Slot C	Terminal Function	Configuration
98 99	Power input: ac or dc+ Power input: ac or dc-	All
CF CD CE	Standard Bus EIA-485 common Standard Bus EIA-485 T-/R- Standard Bus EIA-485 T+/R+	Standard Bus Part # Digit 13 RMCxxxxxxxxxAxx
CC CA CB	Standard Bus or Modbus RTU EIA-485 common Standard Bus or Modbus RTU EIA-485 T-/R- Standard Bus or Modbus RTU EIA-485 T+/R+	Standard Bus or Modbus Part # Digit 13 RMCxxxxxxxxx1xx
CZ CX CY	Inter-module Bus Inter-module Bus Inter-module Bus	Inter-module Bus

RMC Front View
Standard Connector



RMC Module Isolation Diagram



Low-voltage Isolation: 42V peak
Safety Isolation: 1,528V~ (ac)

Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

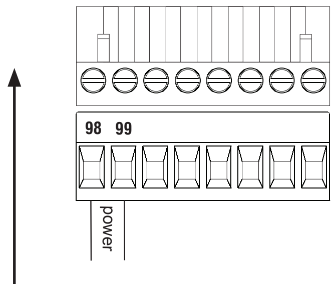
Warning: ⚠

Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Controller Module Wiring (RMCxxxxxxxxxxxx)

Low Power

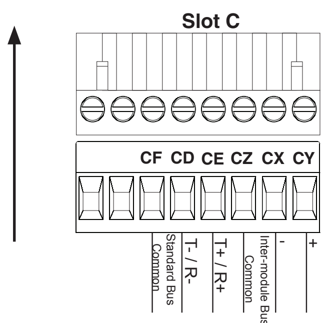
RMC - All Model Numbers



- 20.4 to 30.8 V ~ (ac) / ⎓ (dc) 14VA
- 47 to 63 Hz
- Controller module power consumption, 7 Watts maximum
- 31 Watts maximum power available for P/S part #:0847-0299-0000
- 60 Watts maximum power available for P/S part #:0847-0300-0000
- 91 Watts maximum power available for P/S part #:0847-0301-0000
- Class 2 or Safety Extra Low Voltage (SELV) power source required to meet UL compliance standards

Communications

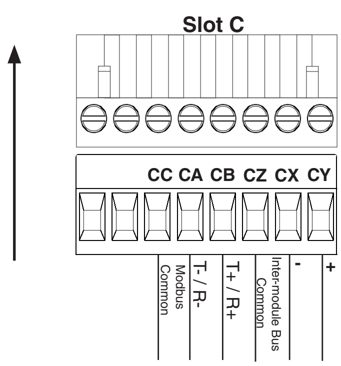
RMC Part # Digit 13 is A



- CF, CD, CE - Standard Bus EIA485 Communications
- CZ, CX, CY - Inter-module Bus EIA485 Communications
- Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network

Communications

RMC Part # Digit 13 is 1



- CC, CA, CB - Modbus and Standard Bus EIA485 Communications (selectable via push button under zone address)
- CZ, CX, CY - Inter-module Bus EIA485 Communications
- Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network

Modbus-IDA Terminal	EIA/TIA-485 Name	Watlow Terminal Label	Function
DO	A	CA or CD	T-/R-
D1	B	CB or CE	T+/R+
common	common	CC or CF	common

Warning: ⚠
Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:
Maximum wire size termination and torque rating:
- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:
Adjacent terminals may be labeled differently, depending on the model number·

Note:
To prevent damage to the controller, do not connect wires to unused terminals.

Note:
Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

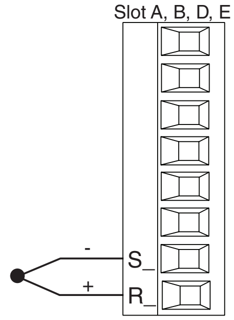
Note:
If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠
Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Input 1, 2, 3, 4 Thermocouple

RMC Part # Digits 4, 6, 8, 10

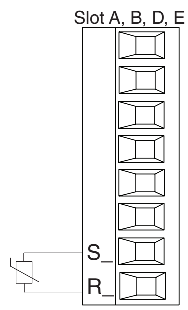


- >20 MΩ input impedance
- 3 microampere open-sensor detection
- Thermocouples are polarity sensitive. The negative lead (usually red) must be connected to S terminal
- To reduce errors, the extension wire for thermocouples must be of the same alloy as the thermocouple.

  Input 1: RMC(1,3,5)xxxxxxxxxxx
  Input 2: RMCxx(1,5)xxxxxxxxx
  Input 3: RMCxxxx(1,5)xxxxxxx
  Input 4: RMCxxxxxx(1,5)xxxxx

Input 1, 2, 3, 4 Thermistor

RMC Part # Digits 4, 6, 8, 10

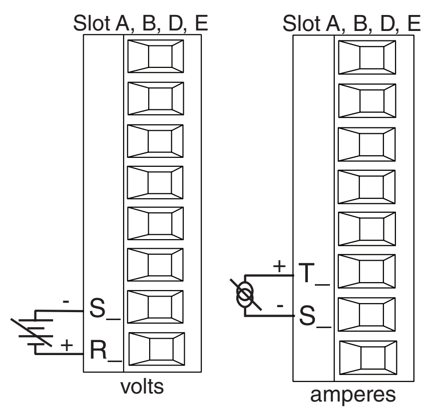


- >20 MΩ input impedance

  Input 1: RMC(2,4,6)xxxxxxxxxxx
  Input 2: RMCxx(2,6)xxxxxxxxx
  Input 3: RMCxxxx(2,6)xxxxxxx
  Input 4: RMCxxxxxx(2,6)xxxxx

Input 1, 2, 3, 4 Process

RMC Part # Digits 4, 6, 8, 10



- 0 to 20 mA @ 100 Ω input impedance
- 0 to 10V⎓ (dc) @ 20 kΩ input impedance
- 0 to 50 mV⎓ (dc) @ 20 MΩ input impedance
- Scalable

  Input 1: RMC(1,3,5)xxxxxxxxxxx
(S1-/R1+),(T1+/S1-)
Input 2: RMCxx(1,5)xxxxxxxxx
(S2-/R2+),(T2+/S2-)
Input 3: RMCxxxx(1,5)xxxxxxx
(S3-/R3+),(T3-S3-R3)
Input 4: RMCxxxxxx(1,5)xxxxx
(S4-/R4+),(T4+/S4-)

Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

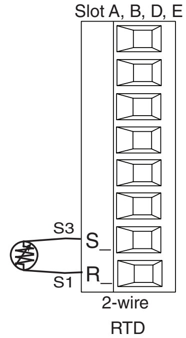
Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

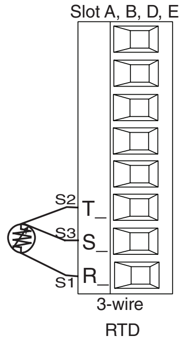
Warning: ⚠

Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Input 1, 2, 3, 4 RTD

RMC Part # Digits 4, 6, 8, 10





- Platinum, 100 and 1,000 Ω @ 0°C
- Calibration to DIN curve (0.00385 Ω/Ω/°C)
- 20 Ω total lead resistance
- RTD excitation current of 0.09 mA typical. Each ohm of lead resistance may affect the reading by 0.03°C for 100 Ω.
- For 3-wire RTDs, the S1 lead (usually white) must be connected to R terminal
- For best accuracy use a 3-wire RTD to compensate for lead-length resistance. All three lead wires must have the same resistance.

  Input 1: RMC(1,3,5)xxxxxxxxxxx (S1,R1),(T1-S1-R1)

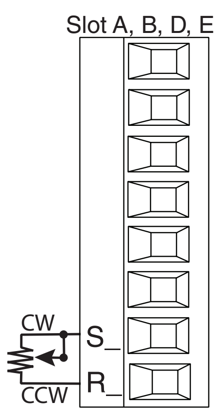
  Input 2: RMCxx(1,5)xxxxxxxxx (S2,R2),(T2-S2-R2)

  Input 3: RMCxxxx(1,5)xxxxxxx (S3,R3),(T3-S3-R3)

  Input 4: RMCxxxxxx**(1,5)**xxxxx (S4,R4),(T4-S4-R4)

Input 1, 2, 3, 4 Potentiometer

RMC Part # Digits 4, 6, 8, 10



- Use a 1 kΩ potentiometer.

  Input 1: RMC(1,3,5)xxxxxxxxxxx (S1/R1)

  Input 2: RMCxx(1,5)xxxxxxxxx (S2/R2)

  Input 3: RMCxxxx(1,5)xxxxxxx (S3/R3)

  Input 4: RMCxxxxxx(1,5)xxxxx (S4/R4)

Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

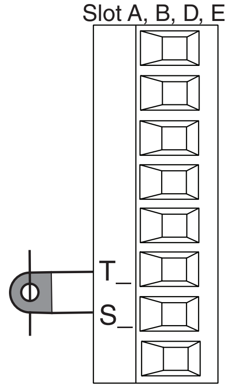
Warning: ⚠

Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Suppressor Note:

Switching pilot duty inductive loads (relay coils, solenoids, etc.) with the mechanical relay, solid state relay or open collector output options requires use of an R.C. suppressor.

Input 1, 2, 3, 4 Current Transformer RMC Part # Digits 4, 6, 8, 10



- Input range is 0 to 50 mA (ac).
- Current transformer part number: 16-0246
- 100 Ω input impedance
- Response time: 1 second maximum
- Accuracy +/-1 mA typical

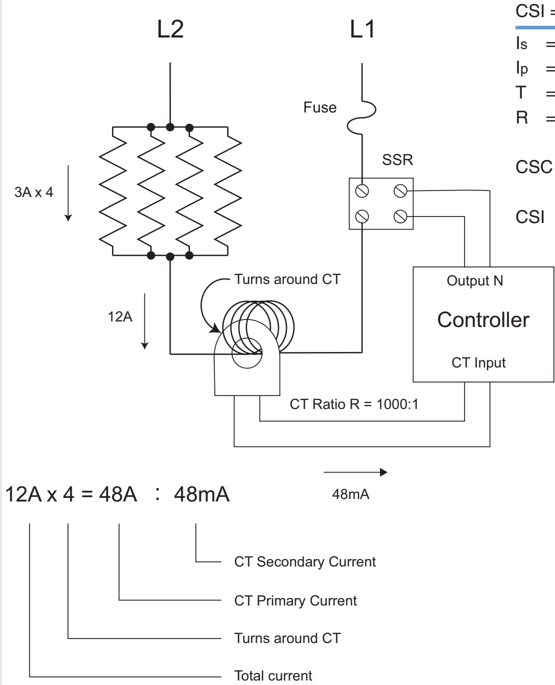
  Input 1: RMC(7)xxxxxxxxxxx (T1/S1)

  Input 2: RMCxx(7)xxxxxxxxx (T2/S2)

  Input 3: RMCxxxx(7)xxxxxxx (T3/S3)

  Input 4: RMCxxxxxx(7)xxxxx (T4/S4)

Example: Using a Current Transformer



$I_s = I_pT/R = 50mA$

$CSC = I_{p(full\ scale)} = 50mA(R)/T$

CSI = Output N

- I_s = Current in secondary of current transformer
- I_p = Current in primary of current transformer
- T = Number of turns through the primary of the transformer
- R = Number of turns in the secondary of the current transformer (Turns ratio, assuming one primary turn)
- CSC = Current Scaling (parameter found in Current Menu of Setup Page)
- CSI = Current Source Instance (parameter found in Current Menu of Setup Page)

Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.57 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

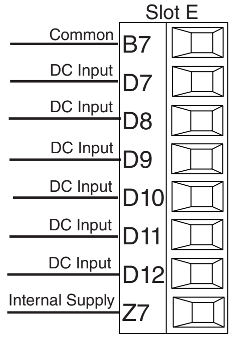
Warning: ⚠

Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Warning: ⚠

Explosion Hazard - Dry contact closure Digital Inputs shall not be used in Class I Division 2 Hazardous Locations unless switch used is approved for this application.

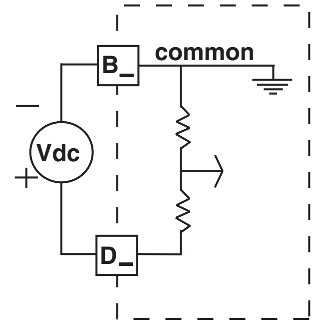
Digital Inputs 7 through 12 RMC Part # Digit 11 is C



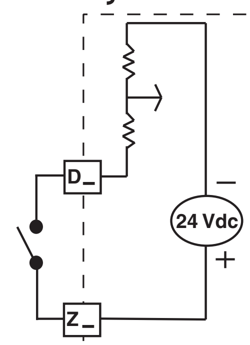
Digital Input Event Conditions

- Dry Contact
  - Input inactive when > 100KΩ
  - Input active when < 50Ω
- Voltage
  - Input inactive when < 2V
  - Input active when > 3V
- Six user configurable Digital Inputs/outputs per slot
  - Slot E DIO 7-12

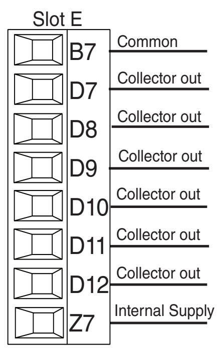
Voltage Input



Dry Contact

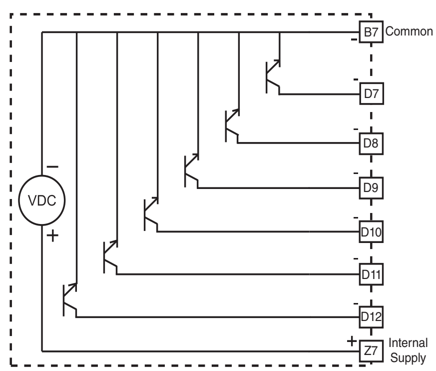


Digital Inputs/Outputs 7 through 12 RMC Part # Digit 11 is C



- Maximum switched voltage is 32V⎓ (dc)
- Internal supply provides a constant power output of 750mW
- Maximum output sink current per output is 1.5A (external class 2 or *SELV supply required)
- Total sink current for all outputs not to exceed 8A
- Do not connect outputs in parallel

*Safety Extra Low Voltage



Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm^2 (30 to 12 AWG) single-wire termination or two 1.31 mm^2 (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

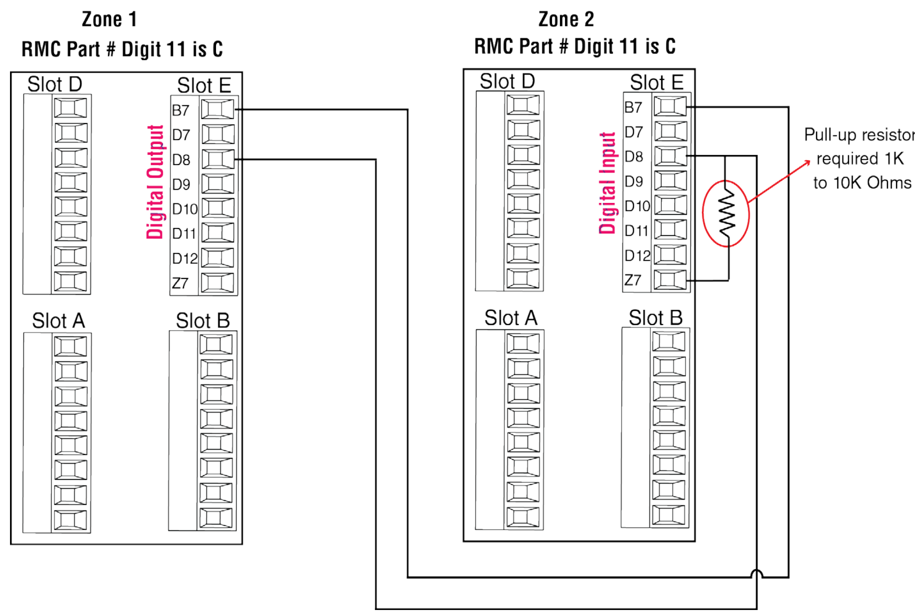
Warning: ⚠

Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠

Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Connecting a Digital Output from One Zone to a Digital Input of Another Zone (Zone 1 to Zone 2 in this example)

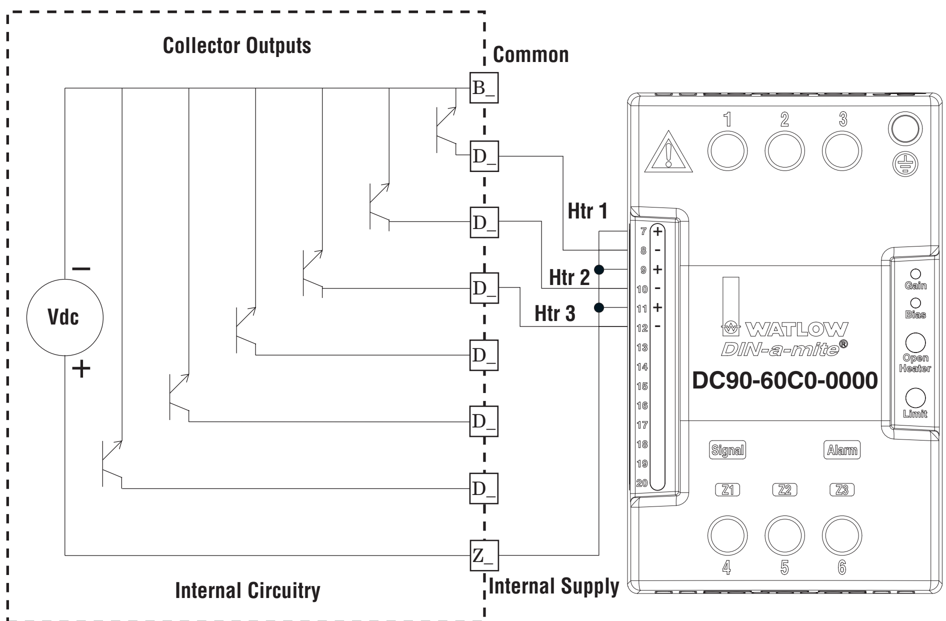


In the example above, digital output D8 from Zone 1 is connected to digital input D8 of Zone 2.

Note:

As shown in the graphic above, for this configuration, a pull-up resistor is required.

Switched DC Wiring Example Using DO 7-12



Warning: ⚠
Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:
Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm^2 (30 to 12 AWG) single-wire termination or two 1.31 mm^2 (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:
Adjacent terminals may be labeled differently, depending on the model number.

Note:
To prevent damage to the controller, do not connect wires to unused terminals.

Note:
Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:
If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠
Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

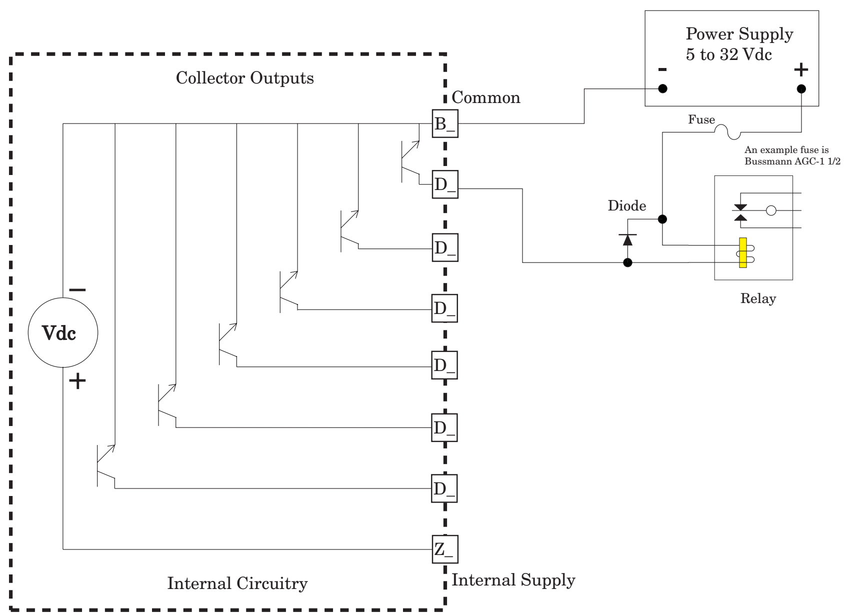
Quencharc Note:
Switching pilot duty inductive loads (relay coils, solenoids, etc.) with the mechanical relay, solid state relay or open collector output options requires use of an R.C. suppressor.

Note:

As a switched DC output; this output is a constant current output delivering 750 mW, current limited to 400 mA. The internal supply does have a maximum open circuit voltage of 22 VDC and minimum open circuit voltage of 19 VDC. Pin Z7 is shared to all digital outputs. This type of output is meant to drive solid state relays, not mechanical relays.

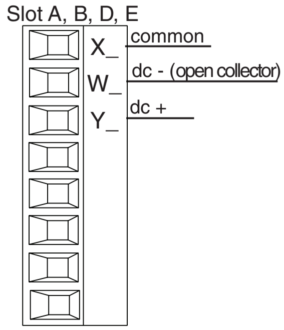
As an open collector output, use an external power supply with the negative wired to B7, the positive to the coil of a pilot mechanical relay and the other side of the coil wired to D_. Each open collector output can sink 1.5 A with the total for all open collector outputs not exceeding 8 amperes. Ensure that a kickback diode is reversed wired across the relay coil to prevent damage to the internal transistor.

Open Collector Wiring Example Using DO 7-12



Output 1, 3, 5, 7 Switched DC/Open Collector

RMC Part # Digit 5, 7, 9, 11 is U, D, E, F or G



Switched DC

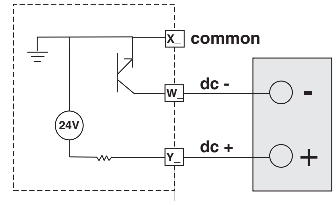
- 30 mA dc maximum supply current
- short circuit limited to <50 mA
- 22 to 32V⎓ (dc) open circuit voltage
- Use dc- and dc+ to drive external solid-state relay.
- DIN-A-MITE compatible

Open Collector

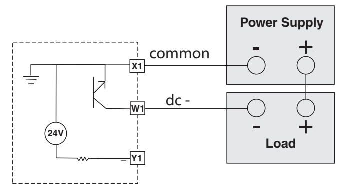
- 100 mA maximum output current sink
- 30V⎓ (dc) maximum supply voltage
- Any switched dc output can use the common terminal.
- Use an external class 2 or *SELV power supply to control a dc load, with the load positive to the positive of the power supply, the load negative to the open collector and common to the power supply negative.

*Safety Extra Low Voltage

Switched DC



Open Collector



Warning: ⚠
Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:
Maximum wire size termination and torque rating:
- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.57 Nm (5.0 in-lb.) torque

Note:
Adjacent terminals may be labeled differently, depending on the model number.

Note:
To prevent damage to the controller, do not connect wires to unused terminals.

Note:
Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:
If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠
Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Quencharc Note:
Switching pilot duty inductive loads (relay coils, solenoids, etc.) with the mechanical relay, solid state relay or open collector output options requires use of an R.C. suppressor.

Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.57 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠

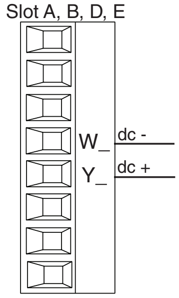
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Quencharc Note:

Switching pilot duty inductive loads (relay coils, solenoids, etc.) with the mechanical relay, solid state relay or open collector output options requires use of an R.C. suppressor.

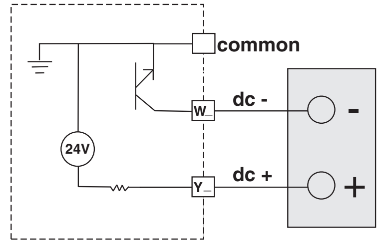
Output 2, 4, 6, 8 Switched DC

RMC Part # Digit 5, 7, 9, 11 is U, D, E, F or G



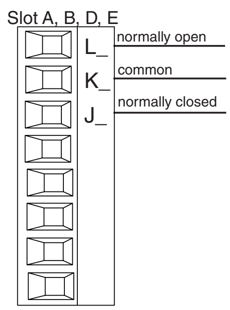
Switched DC

- 30 mA dc maximum supply current
- short circuit limited to <50 mA
- 22 to 32V⎓ (dc) open circuit voltage
- Use dc- and dc+ to drive external solid-state relay.
- DIN-A-MITE compatible



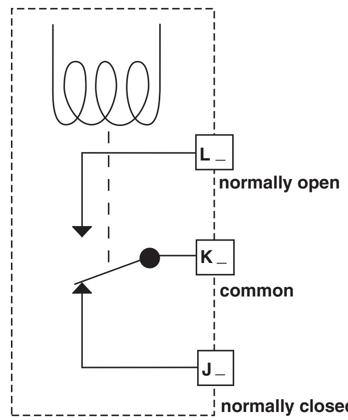
Output 1, 3, 5, 7 Mechanical Relay, Form C

RMC Part # Digit 5, 7, 9, 11 is H, J, K, L or M



- 5 A at 240V~ (ac) or 30V⎓ (dc) maximum resistive load
- 20 mA at 24V minimum load
- 125 VA pilot duty at 120/240V~ (ac), 25 VA at 24V~ (ac)
- 100,000 cycles at rated load
- Output does not supply power.
- For use with ac or dc

See Quencharc note.



Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.57 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number·

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠

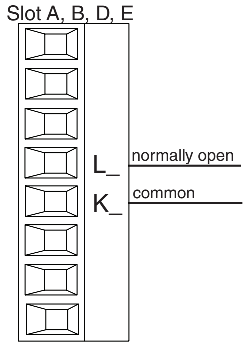
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Quencharc Note:

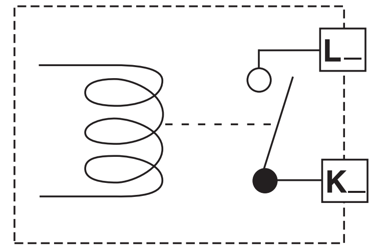
Switching pilot duty inductive loads (relay coils, solenoids, etc.) with the mechanical relay, solid state relay or open collector output options requires use of an R.C. suppressor.

Output 2, 4, 6, 8 Mechanical Relay, Form A

RMC Part # Digit 5, 7, 9, 11 is B, F, L or R

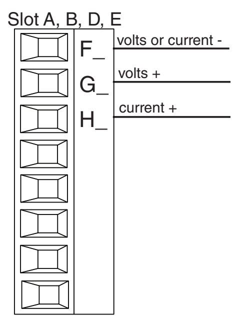


- 5 A at 240V~ (ac) or 30V⎓ (dc) maximum resistive load
- 20 mA at 24V minimum inductive load
- 125 VA pilot duty at 120/240V ~(ac), 25 VA at 24V ~(ac)
- 100,000 cycles at rated load
- Output does not supply power.
- for use with ac or dc
- See Quencharc note.

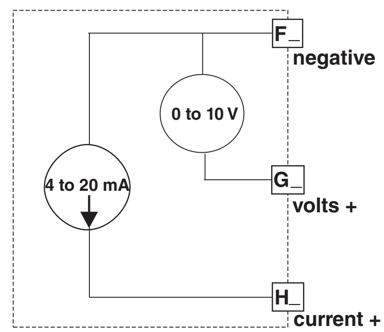


Output 1, 3, 5, 7 Universal Process

RMC Part # Digit 5, 7, 9, 11 is N, P, R, or S



- 0 to 20 mA into 800 Ω maximum load
- 0 to 10V⎓ (dc) into 1 kΩ minimum load
- scalable
- output supplies power
- cannot use voltage and current outputs at same time
- Output may be used as retransmit or control.



Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.57 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠

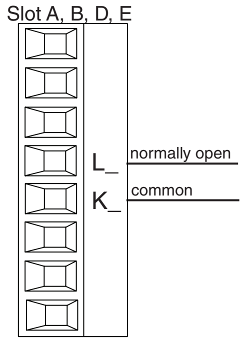
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Quencharc Note:

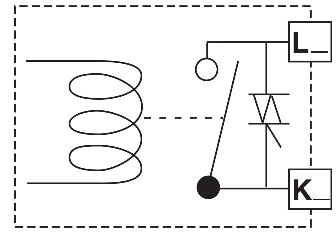
Switching pilot duty inductive loads (relay coils, solenoids, etc.) with the mechanical relay, solid state relay or open collector output options requires use of an R.C. suppressor.

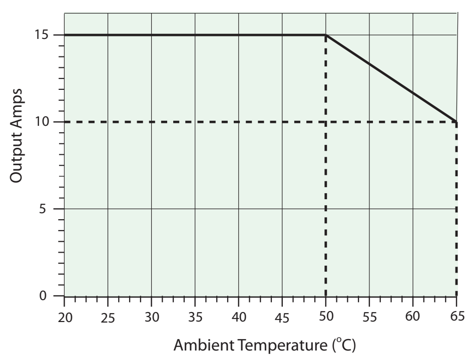
Output 2, 4, 6, 8 NO-ARC Relay, Form A

RMC Part # Digit 5, 7, 9, 11 is D, J or Y



- 15 A at 85 to 264V~ (ac) resistive load only
- 2,000,000 cycle rating for NO-ARC circuit (preliminary)
- 100 mA minimum load
- 2 mA maximum off state leakage
- Do not use on dc loads.
- Output does not supply power.
- Do not drive another relay or solenoid with this output type.





Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

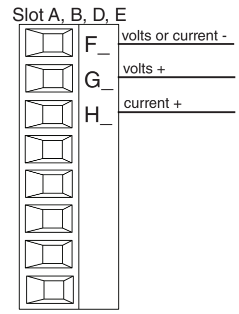
Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠

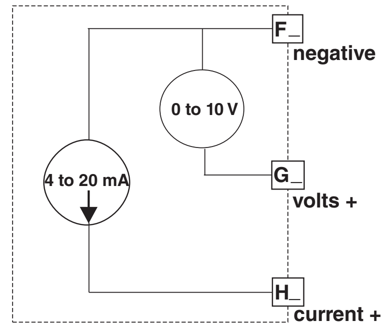
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

Output 1, 3, 5, 7 Universal Process

RMC Part # Digit 5, 7, 9, 11 is N, P, R, or S

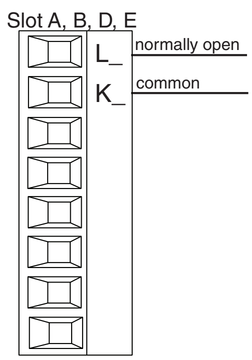


- 0 to 20 mA into 800 Ω maximum load
- 0 to 10V⎓ (dc) into 1 kΩ minimum load
- Scalable
- Output supplies power
- Cannot use voltage and current outputs at same time
- Output may be used as retransmit or control.

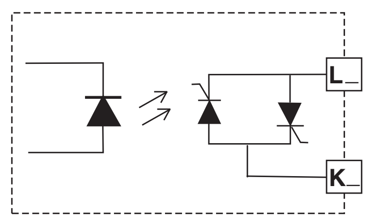


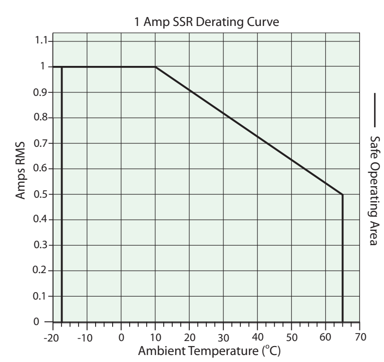
Outputs 1, 3, 5, 7 Solid-State Relay, Form A

RMC Part # Digit 5, 7, 9, 11 is G, M, S, T, Y or Z



- 1 A at 20 to 264V~ (ac) maximum resistive load
- 20 VA 120/240V~ (ac) pilot duty
- Optical isolation, without contact suppression
- Maximum off state leakage of 105 microamperes
- Output does not supply power.
- Do not use on dc loads.
- Minimum holding current of 10 mA.
- See Quencharc note.





Warning: ⚠

Use National Electric (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

Note:

Maximum wire size termination and torque rating:

- 0.0507 to 3.30 mm² (30 to 12 AWG) single-wire termination or two 1.31 mm² (16 AWG)
- 0.56 Nm (5.0 in-lb.) torque

Note:

Adjacent terminals may be labeled differently, depending on the model number.

Note:

To prevent damage to the controller, do not connect wires to unused terminals.

Note:

Maintain electrical isolation between digital input-outputs, switched dc/open collector outputs and process outputs to prevent ground loops.

Note:

If the last two digits of the part number are "12", this equipment is suitable for use in CLASS I, DIVISION 2, Groups A, B, C and D or Non-Hazardous locations only. Temperature Code T4

Warning: ⚠

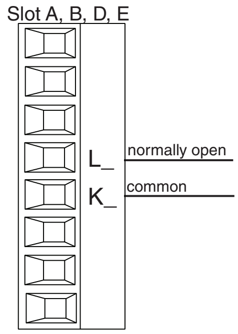
Explosion Hazard – Substitution of component may impair suitability for CLASS I, DIVISION 2.

Warning: ⚠

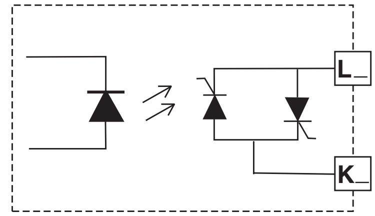
Explosion Hazard - Do not disconnect while the circuit is live or unless the area is known to be free of ignitable concentrations of flammable substances.

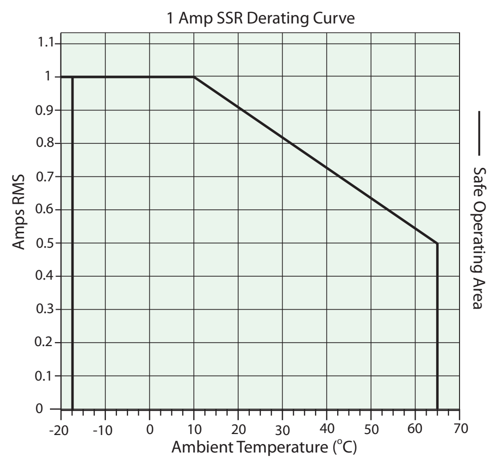
Outputs 2, 4, 6, 8 Solid-State Relay, Form A

RMC Part # Digit 5, 7, 9, 11 is G, M, S, T, Y or Z



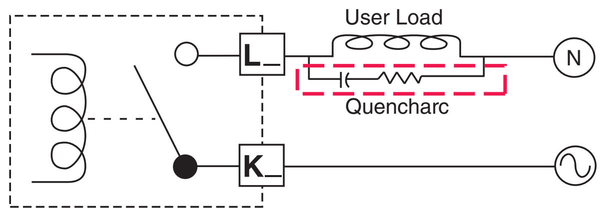
- 1 A at 20 to 264V~ (ac) maximum resistive load
- 20 VA 120/240V~ (ac) pilot duty
- Optical isolation, without contact suppression
- maximum off state leakage of 105 microamperes
- Output does not supply power.
- Do not use on dc loads.
- Minimum holding current of 10 mA.
- See Quencharc note.



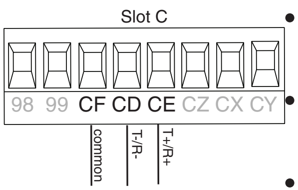


Quencharc Wiring Example

In this example the Quencharc circuit (Watlow part# 0804-0147-0000) is used to protect the RMC internal circuitry from the counter electro-magnetic force from the inductive user load when de-engergized. It is recommended that this or an equivalent Quencharc be used when connecting inductive loads to RMC outputs.



Standard Bus EIA-485 Communications



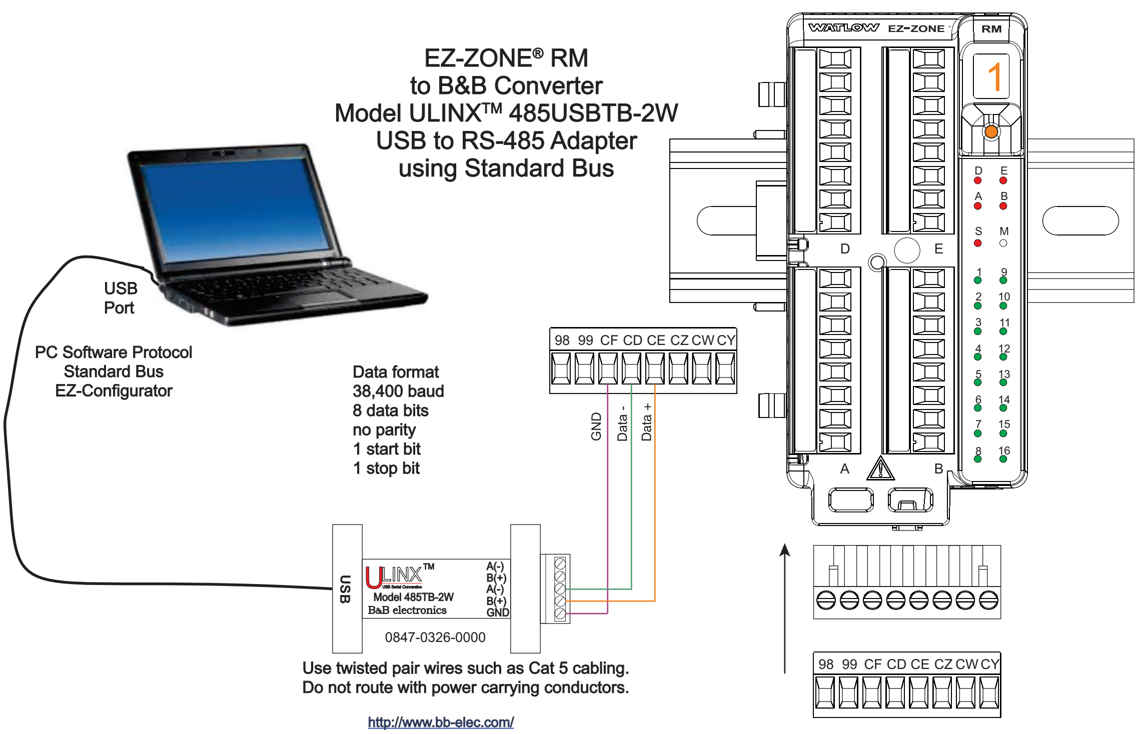
- Wire T-/R- to the A terminal of the EIA-485 port.
- Wire T+/R+ to the B terminal of the EIA-485 port.
- Wire common to the common terminal of the EIA-485 port.
- Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network.
- A 120 Ω termination resistor may be required across T+/R+ and T-/R-, placed on the last controller on the network.
- Do not connect more than 16 EZ-ZONE RM controllers on a network.
- Maximum network length: 1,200 meters (4,000 feet)
- 1/8th unit load on EIA-485 bus

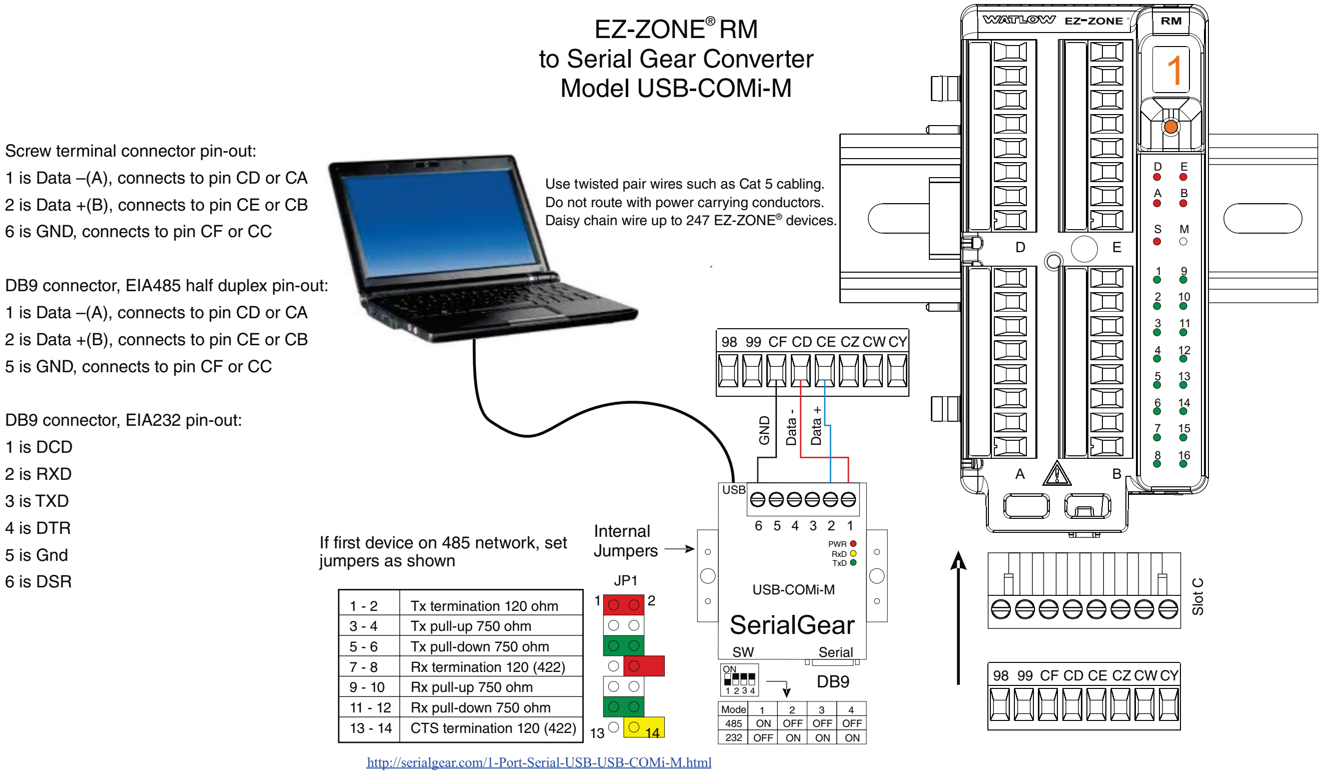
RMCxxxxxxxx(**A**)xx

***** All models include Standard Bus communications

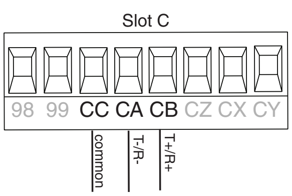
Note:

Do not leave a USB to EIA-485 converter connected to Standard Bus without power (i.e., disconnecting the USB end from the computer while leaving the converter connected on Standard Bus). Disturbance on the Standard Bus may occur.





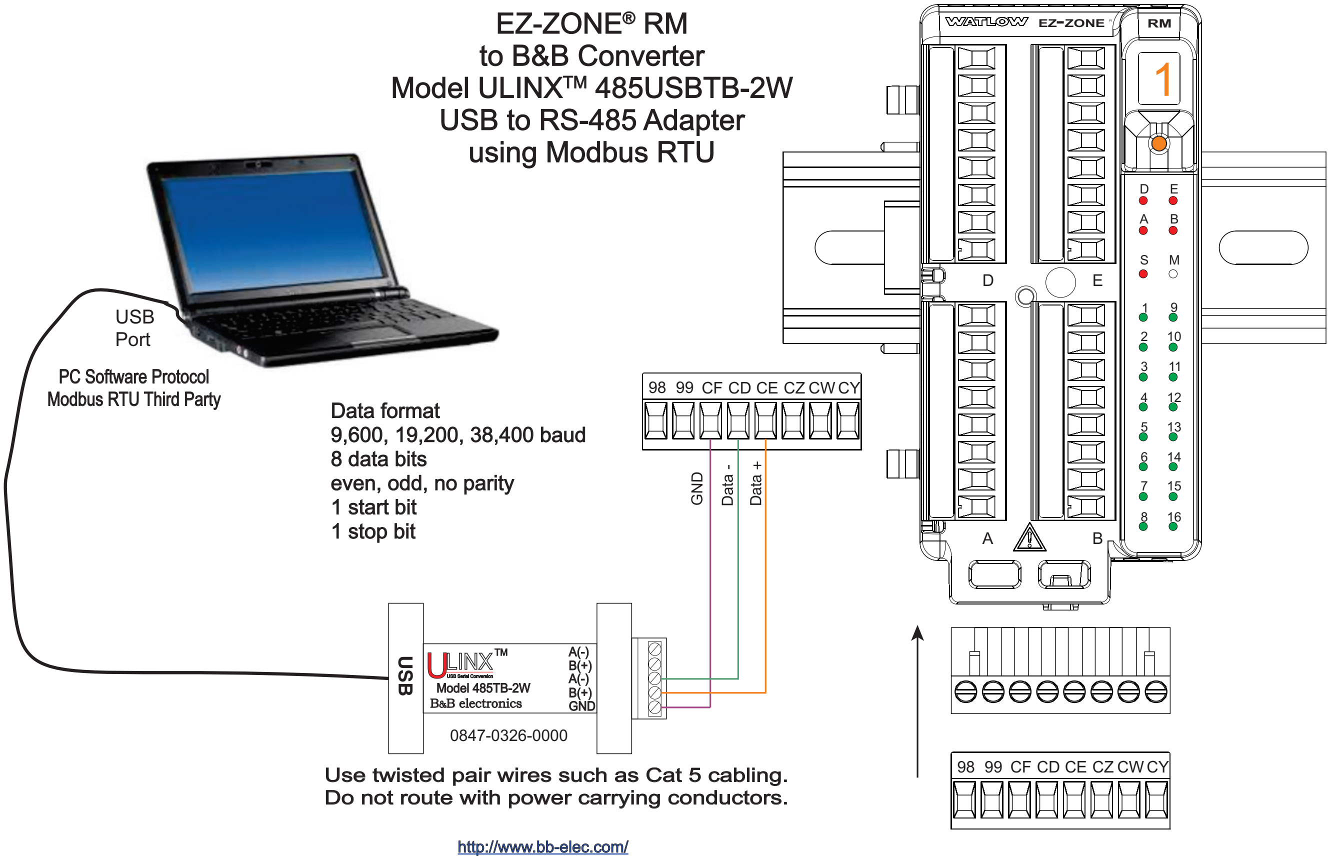
Modbus RTU or Standard Bus EIA-485 Communcations



- Wire T-/R- to the A terminal of the EIA-485 port.
- Wire T+/R+ to the B terminal of the EIA-485 port.
- Wire common to the common terminal of the EIA-485 port.
- Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network.
- A termination resistor may be required. Place a 120 Ω resistor across T+/R+ and T-/R- of last controller on network.
- Only one protocol per port is available at a time: either Modbus RTU or Standard Bus.
- Do not connect more than 16 EZ-ZONE controllers on a Standard Bus network.
- Maximum number of EZ-ZONE controllers on a Modbus network is 247.
- Maximum network length: 1,200 meters (4,000 feet)
- 1/8th unit load on EIA-485 bus

RMCxxxxxxxx(1)xx

Modbus-IDA Terminal	EIA/TIA-485 Name	Watlow Terminal Label	Function
DO	A	CA or CD	T-/R-
D1	B	CB or CE	T+/R+
common	common	CC or CF	common



Note:

Do not leave a USB to EIA-485 converter connected to Standard Bus without power (i.e., disconnecting the USB end from the computer while leaving the converter connected on Standard Bus). Disturbance on the Standard Bus may occur.

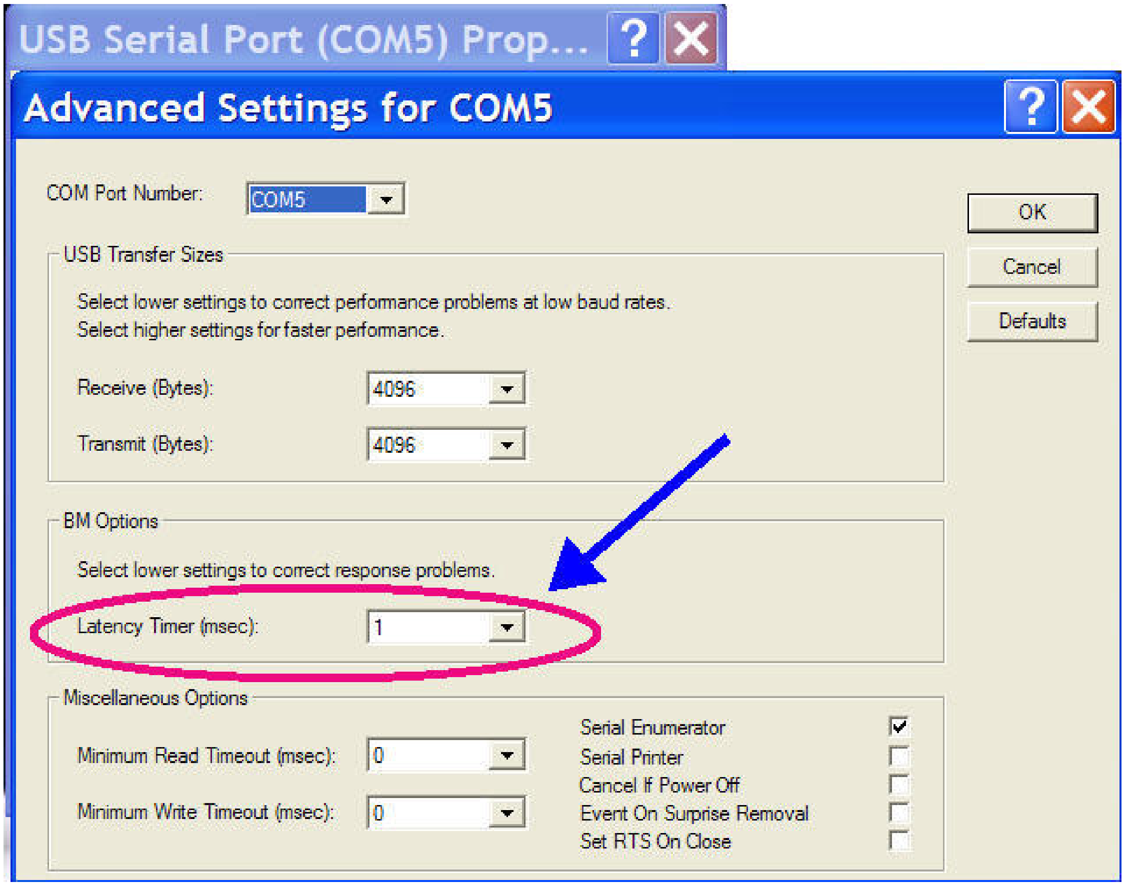
Note:

When connecting the USB converter to the PC it is suggested that the Latency Timer be changed from the default of 16 msec to 1 msec. Failure to make this change may cause communication loss between the PC running EZ-ZONE Configurator software and the control.

To modify Latency Timer settings follow the steps below:

1. Navigate to Device Manager on the PC.
2. Double click on Ports.
3. Right click on the USB serial port in use and select Properties.
4. Click the tab labeled Port settings and then click the Advance button.

Graphic below shows the advanced settings dialog box for the com port in use.


USB Serial Port (COM5) Prop...
Advanced Settings for COM5
COM Port Number:
COM5
OK
Cancel
Defaults
USB Transfer Sizes
Select lower settings to correct performance problems at low baud rates.
Select higher settings for faster performance.
Receive (Bytes):
4096
Transmit (Bytes):
4096
BM Options
Select lower settings to correct response problems.
Latency Timer (msec):
1
Miscellaneous Options
Minimum Read Timeout (msec):
0
Minimum Write Timeout (msec):
0
Serial Enumerator
Serial Printer
Cancel If Power Off
Event On Surprise Removal
Set RTS On Close

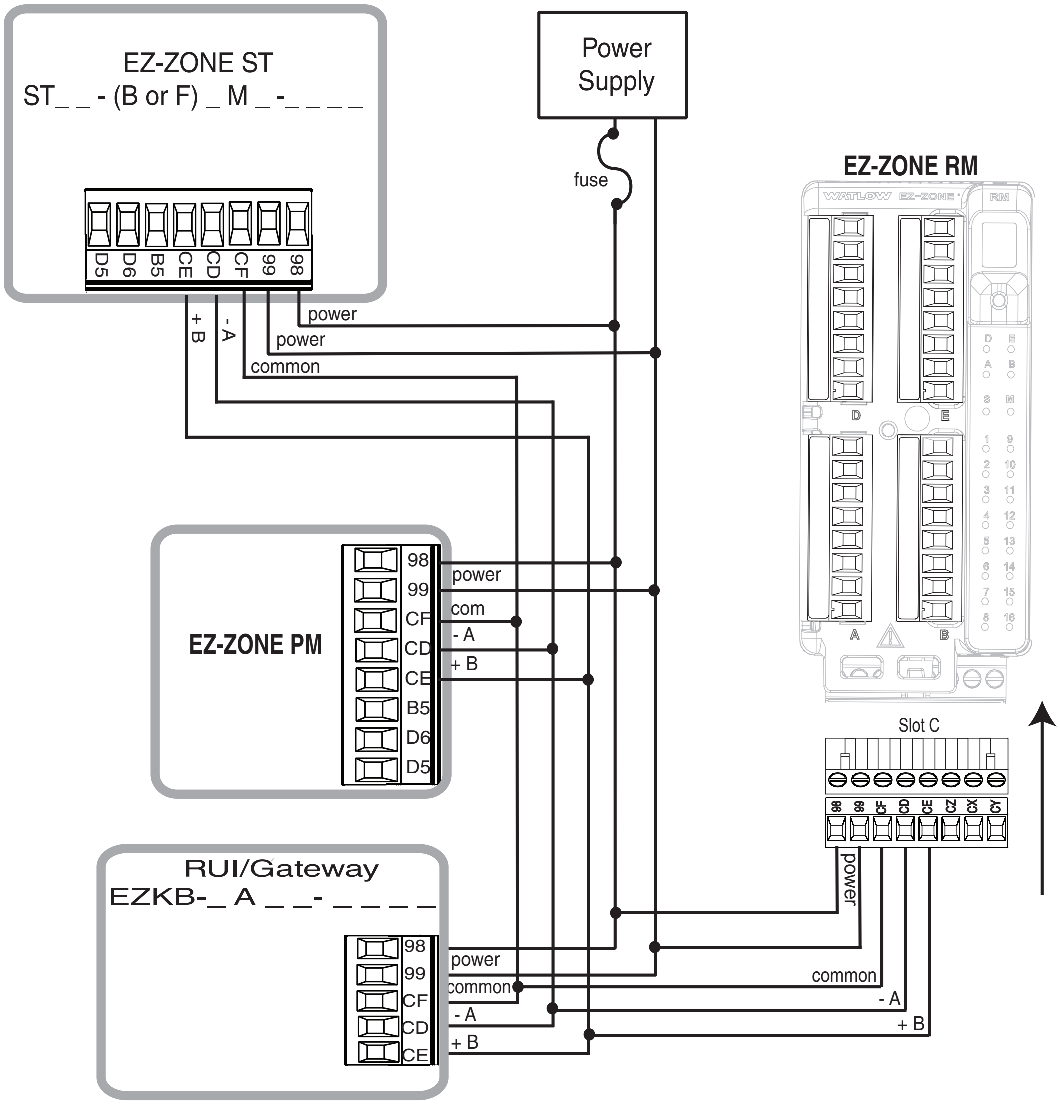
Wiring a Serial EIA-485 Network

Do not route network wires with power wires. Connect network wires in daisy-chain fashion when connecting multiple devices in a network. A termination resistor may be required. Place a 120 Ω resistor across T+/R+ and T-/R- of the last controller on a network. Only one protocol per port is available at a time: either Modbus RTU or Standard Bus.

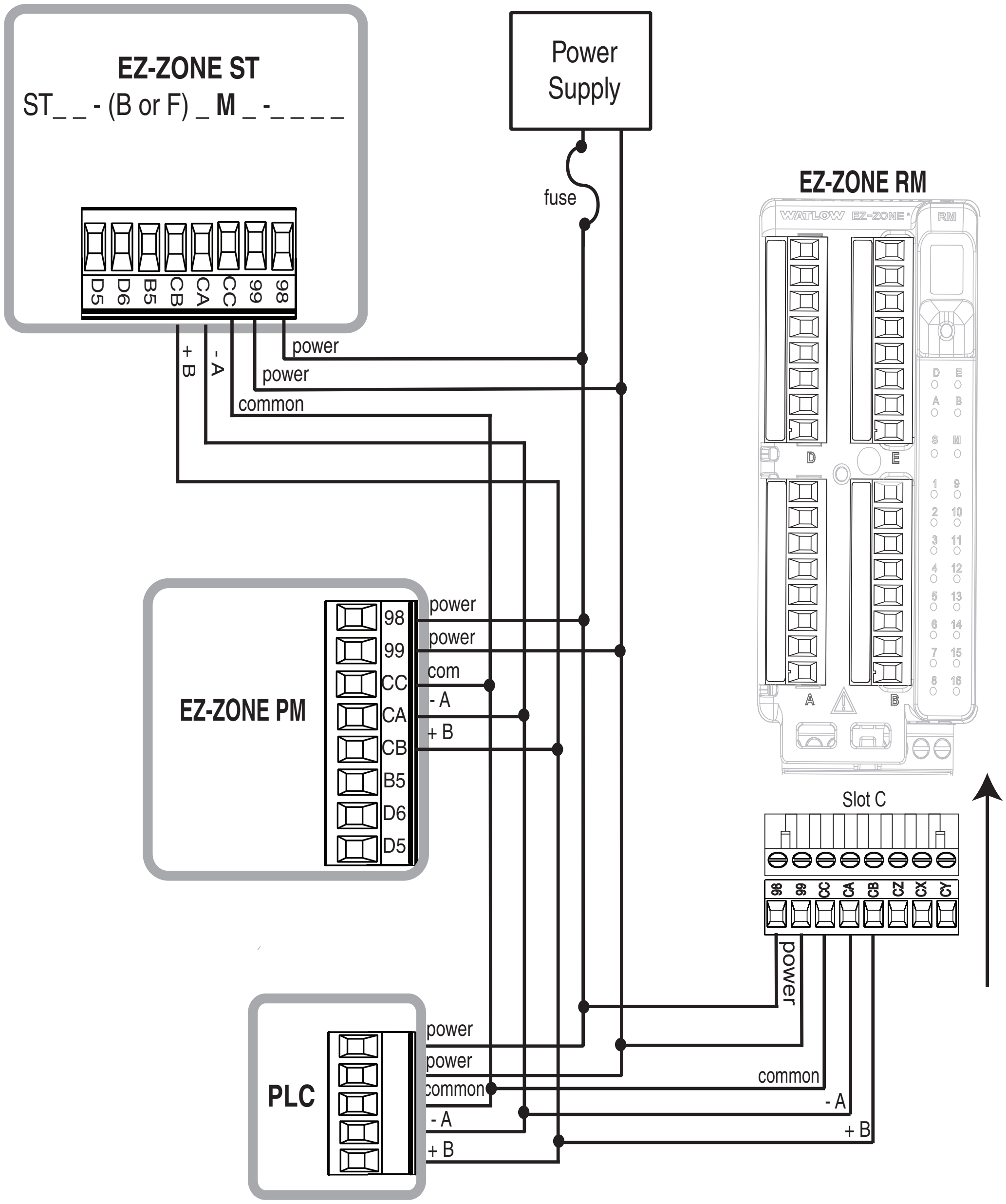
Note:

Termination resistors when used, require a termination resistor at both ends of the network.

A Network Using Watlow's Standard Bus and an RUI/Gateway



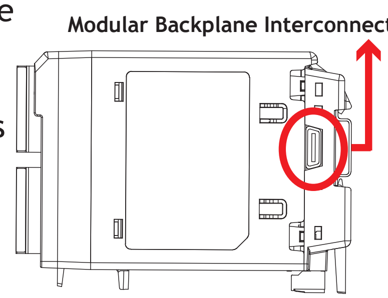
A Network Using Modbus RTU



Connecting the Modules

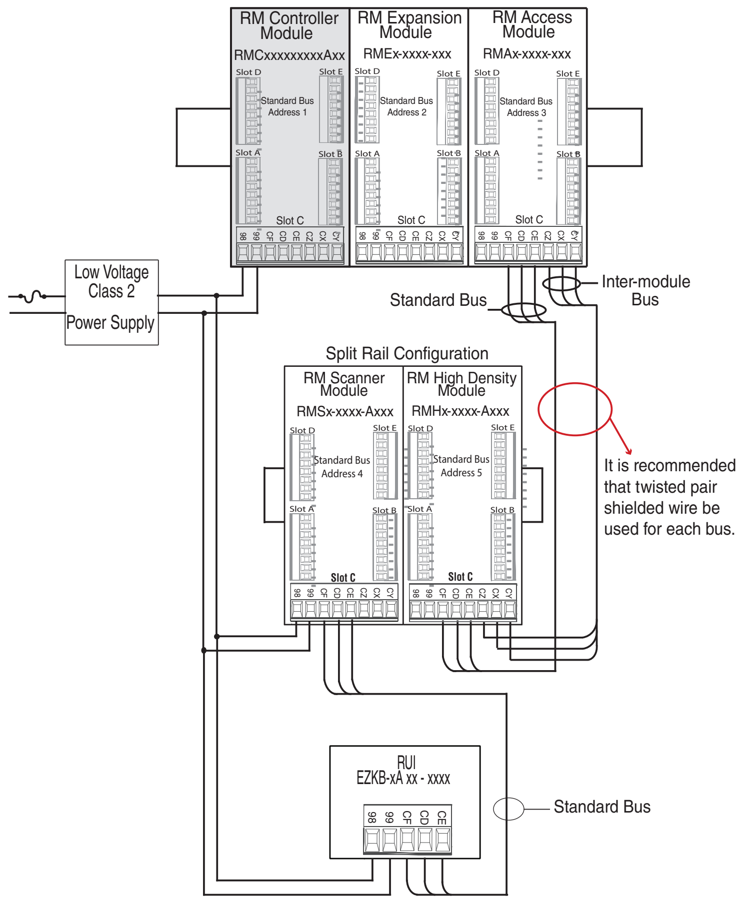
RM System Connections

The RMC module can be installed as a stand-alone module or it can be interconnected on the DIN rail as shown below. When modules are connected together as shown, power and communications are shared between modules over the modular backplane interconnection (red circle). Therefore, bringing the necessary power and communications wiring to any one module (connector in slot C) is sufficient. The modular backplane interconnect comes standard with every module ordered and is generic in nature, meaning any of the RM modules can use it.



Notice in the split rail system diagram that a single power supply is being used across both DIN rails. One notable consideration when designing the hardware layout would be the available power supplied and the loading affect of all of the modules used. Watlow provides three options for power supplies listed below:

1. 90-264 Vac to 24Vdc @ 31 watts (Part #: 0847-0299-0000)
2. 90-264 Vac to 24Vdc @ 60 watts (Part #: 0847-0300-0000)
3. 90-264 Vac to 24Vdc @ 91 watts (Part #: 0847-0301-0000)



With regards to the modular loading affect, maximum power for each is listed below:

1. **RMCxxxxxxxxxxxx @ 7 watts / 14VA**
2. RMEx-xxxx-xxxx @ 7 watts / 14VA
3. RMAx-xxxx-xxxx @ 4 watts / 9VA
4. RMLx-xxxx-xxxx @ 7 watts / 14VA
5. RMHx-xxxx-xxxx @ 7 watts / 14VA
6. RMSx-xxxx-xxxx @ 7 watts / 14VA

So, in the split rail system diagram, the maximum current draw on the supply would be 38 Watts.

- 1 RMC modules consumes 7W
- 1 RME modules consumes 7W
- 1 RMA module consumes 4W
- 1 RMS modules consumes 7W
- 1 RMH modules consumes 7W
- 1 Remote User Interface consumes 6W

With this power requirement the second or third power supply could be used.

Another hardware configuration scenario that could present itself (graphic not shown) would be a configuration that requires more than one supply. Lets make some assumptions pertaining to the split rail system diagram shown above. The power supply used is the 91W supply. The top DIN rail now has the following modules:

- 2 RMC modules consumes 14W
- 1 RMA consumes 4W
- 11 RME modules consumes 77W

As it can now be understood, the total power requirement exceeds 91W. In this case, another power supply would be required. To incorporate another supply in this system simply disconnect pins 99 and 98 on the remote DIN rail and connect another appropriately sized power supply to those same pins.

When using a split rail configuration ensure that the interconnections for the Inter-module Bus and Standard Bus do not exceed 200 feet. Standard Bus and the Inter-module Buses are different protocols and both are required for split rail configurations. Without having both connected, communications between modules would not be possible.

Note:

Unit is not provided with a disconnect, use of an external disconnect is required. It should be located in close proximity to the unit and be labeled as the disconnect for the unit.

Note:

Connecting power supplies in parallel is not allowed. When power consumption is greater than 91 watts use a split rail configuration.

Conventions Used in the Menu Pages

To better understand the menu pages that follow review the naming conventions used. When encountered throughout this document, the word "default" implies as shipped from the factory. Each page (Operations, Setup, Profile and Factory) and their associated menus have identical headers defined below:

Header Name	Definition
Display	Visually displayed information from the control.
Parameter Name	Describes the function of the given parameter.
Range	Defines options available for this prompt, i.e., min/max values (numerical), yes/no, etc... (further explanation below).
Default	Values as delivered from the factory.
Modbus Relative Address	Identifies unique parameters using either the Modbus RTU or Modbus TCP protocols (further explanation below).
CIP (Common Industrial Protocol)	If used in conjunction with an RMA module identifies unique parameters using either the DeviceNet or EtherNet/IP protocol (further explanation below).
Profibus Index	If used in conjunction with an RMA module identifies unique parameters using Profibus DP protocol (further explanation below).
Parameter ID	Identifies unique parameters used with other software such as, LabVIEW.
Data Type and Access (R/W)	uint = Unsigned 16 bit integer dint = Signed 32-bit, long string = ASCII (8 bits per character) float = IEEE 754 32-bit RWES = **R**eadable **W**ritable **E**EPROM (saved) **U**ser Set (saved)

Display

When the RMC module is used in conjunction with the RUI (optional equipment) visual information from the control is displayed to the observer using a fairly standard 7 segment display. Due to the use of this technology, several characters displayed need some interpretation, see the list below:

1 = 1	7 = 7	c, C = c	i = i	o = o	u = u
2 = 2	8 = 8	d = d	J = J	P = P	u = v
3 = 3	9 = 9	E = E	H = K	q = q	uJ = W
4 = 4	0 = 0	F = F	L = L	r = r	y = y
5 = 5	A = A	g = g	nn = M	S = S	Z = Z
6 = 6	b = b	h = h	n = n	t = t	

Range

Within this column notice that on occasion there will be numbers found within parenthesis. This number represents the enumerated value for that particular selection. Range selections can be made simply by writing the enumerated value of choice using any of the available communications protocols. As an example, turn to the Control Module Setup Page and look at the Analog Input menu and then the Sensor Type. To turn the sensor off using Modbus, simply write the value of 62 (off) to register 368 and send that value to the control.

Note:

With firmware release 9.0 and above, two new parameters (Minimum and Maximum) were added to allow ranges to be opened up to display full values. Unsigned integer may take on a range of 0 to 65,535 and floating point may take on a range of -3.4E+38 to 3.4E+38. Prior to revision 9.0, ranges were clamped to accommodate the seven segment LED display of the RUI. Both of these new parameters can be found in the Setup Page under the Global Menu.

Communication Protocols

All modules come with the standard offering of Watlow's Standard Bus protocol used primarily for inter-module communications as well as for configuration using EZ-ZONE Configurator or Composer software (free download from Watlow's web site (http://www.watlow.com). Along with Standard Bus, the RMC module can also be ordered with Modbus RTU (only one protocol can be active at any given time). The RMA module has options for several different protocols listed below:

- Modbus RTU 232/485
- EtherNet/IP, Modbus TCP
- DeviceNet
- Profibus DP

To learn more about the RM Access module click on the link below. Once there simply type in RM in the Keyword field. http://www.watlow.com/literature/manuals.cfm

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Modbus RTU Protocol

All Modbus registers are 16-bits and as displayed in this manual are relative addresses (actual). Some legacy software packages limit available Modbus registers to 40000 to 49999 (5 digits). Many applications today require access to all available Modbus registers which range from 400001 to 465535 (6 digits). Watlow controls support 6 digit Modbus registers.

Note:

In this User's Guide all values shown representing Modbus addresses are added to 400,001 or 40,001 to acquire the absolute address.

For parameters listed as float, notice that only one (low order) of the two registers is listed, this is true throughout this document. By default, the low order word contains the two low bytes of the 32-bit parameter. As an example, look in the Controller Operations Page for the Analog Input Value. Find the column identified in the header as Modbus and notice that it lists register 360 under Map 1. Because this parameter is a float it is actually represented by registers 360 (low order bytes) and 361 (high order bytes). The Modbus specification does not dictate which register should be high or low order so Watlow provides the user the ability to swap this order (Setup Page, Communications Menu) from the default low/high to high/low.

Note:

With the release of firmware revision 9.00 and above, new functions where introduced into this product line. With the introduction of these new functions there was a reorganization of Modbus registers. Notice the reference to Map 1 and Map 2 registers in the column identified as Modbus Relative Address in each of the tables that follow. Select Map 1 or Map 2 in the Setup Page under the Communications Menu. This setting, Map 1 or Map 2, will apply across the controller.

It should also be noted that most of the cells in the Modbus column contain wording pertaining to an offset for Map 1 and Map 2. Several parameters in the controller contain more than one instance; such as, Profiles (25), Alarms (8), Analog inputs (4), etc... The Modbus register shown always represents instance one. Take for an example the Silence Alarm parameter found in the Setup Page under the Alarm Menu. Instance one of Map 1 is shown as address 1766 and +60 is identified as the offset to the next instance for Map 1 and Map 2. If there was a desire to silence the alarm for instance 3, simply add 120 to 1766 to find its address, in this case, the instance 3 address for Alarm Silence is 1886 and write the value of 0 to it.

RMC _ _ _ _ _ _ _ _ _ _ **[1]** _ _

or

RMA _ - A **[2, 3]** _ _ - A A _

or

EZKB - x [2,3] _ _ - _ _ _ _

To learn more about the Modbus protocol point your browser to http://www.modbus.org.

3 Chapter 3: Operations Pages

Control Module Operation Page Parameters

To navigate to the Operations Page using the RUI, follow the steps below:

1. From the Home Page, press both the Up and Down keys for three seconds. Ai will appear in the upper display and oPEr will appear in the lower display.
2. Press the Up or Down key to view available menus.
3. Press the Advance Key to enter the menu of choice.
4. If a submenu exists (more than one instance), press the Up or Down key to select and then press the Advance Key to enter.
5. Press the Up or Down key to move through available menu prompts.
6. Press the Infinity Key to move backwards through the levels: parameter to submenu, submenu to menu, menu to Home Page.
7. Press and hold the Infinity Key for two seconds to return to the Home Page.

On the following pages, top level menus are identified with a yellow background color.

Note:
Some of these menus and parameters may not appear, depending on the controller's options. See model number information in the Appendix for more information. If there is only one instance of a menu, no submenus will appear.

Note:
Some of the listed parameters may not be visible. Parameter visibility is dependent upon controller part number.

Ai
oPEr **Analog Input Menu**
 |
Ai Analog Input (1 to 4)
 Ain Analog Input Value
 i.Er Input Error
 i.CA Calibration Offset

Pu
oPEr **Process Value Menu**
 |
Pu Process Value (1 to 4)
 Su.A Source Value A
 Su.b Source Value B
 Su.C Source Value C
 Su.d Source Value D
 Su.E Source Value E
 oFSt Offset
 o.u Output Value

dio
oPEr **Digital Input/Output Menu**
 |
dio Digital Input/Output (7 to 12)
 do.S Output State
 di.S Input State

ACt
oPEr **Action Menu**
 |
ACt Action (1 to 8)
 Ei.S Event Status

LiM
oPEr **Limit Menu**
 |
LiM Limit (1 to 4)
 LL.S Low Limit Set Point
 Lh.S High Limit Set Point
 LCr Clear Limit *
 L.St Limit Status *

Mon
oPEr **Monitor Menu**
 |
Mon Monitor (1 to 4)
 C.MA Control Mode Active
 h.Pr Heat Power
 C.Pr Cool Power

C.SP Closed-Loop Set Point
Pu.A Process Value Active

LooP
oPEr **Control Loop Menu**
1
LooP Control Loop (1 to 4)
r.En Remote Set Point
C.M Control Mode
AtSP Autotune Set Point
AUt Autotune
C.SP Set Point
id.S Idle Set Point
h.Pb Heat Proportional Band
h.hY On / Off Heat Hysteresis
C.Pb Cool Proportional Band
C.hY On / Off Cool Hysteresis
ti Time Integral
td Time Derivative
db Dead Band
o.SP Manual Power

ALM
oPEr **Alarm Menu**
1
ALM Alarm (1 to 8)
A.Lo Low Set Point
A.hi High Set Point
A.CLr Clear Alarm *
A.Sir Silence Alarm *
A.St Alarm State *

CUrr
oPEr **Current Menu**
1
CUrr Current (1 to 4)
C.hi High Set Point
C.Lo Low Set Point
Ld.Cu Load Current RMS
C.Er Current Error
h.Er Heater Error

Lnr
oPEr **Linearization Menu**
1
Lnr Linearization (1 to 4)
Su.A Source Value A
oFSt Offset
o.u Output Value

CPE
oPEr **Compare Menu**
1
CPE Compare (1 to 4)
Su.A Source Value A
Su.b Source Value B
o.u Output Value

tMr
oPEr **Timer Menu**
1
tMr Timer (1 to 4)
Su.A Source Value A
Su.b Source Value B
E.t Elapsed Time
o.u Output Value

Ctr
oPEr **Counter Menu**
1
Ctr Counter (1 to 4)
Cnt Count
Su.A Source Value A
Su.b Source Value B
o.u Output Value

LgC
oPEr **Logic Menu**
1
LgC Logic (1 to 16)
Su.A Source Value A
Su.b Source Value B
Su.C Source Value C
Su.d Source Value D
Su.E Source Value E
Su.F Source Value F
Su.g Source Value G
Su.h Source Value H
o.u Output Value

MAt
oPEr **Math Menu**
1
MAt Math (1 to 8)
Su.A Source Value A
Su.b Source Value B
Su.C Source Value C
Su.d Source Value D
Su.E Source Value E
oFSt Offset
o.u Output Value

SoF
oPEr **Special Output Function Menu**
1
SoF Special Output Function (1 to 4)
Su.A Source Value A
Su.b Source Value B
ou.1 Output Value 1
ou.2 Output Value 2
ou.3 Output Value 3
ou.4 Output Value 4

P.StA
oPEr **Profile Status Menu**
1
P.StA Profile Status 1
P.Str Profile Start
PASr Profile Action Request
StP Current Step
Sub.S Current Sub Step
S.tYP Step Type
t.SP1 Target Set Point Loop 1
t.SP2 Target Set Point Loop 2
t.SP3 Target Set Point Loop 3
t.SP4 Target Set Point Loop 4
P.SP1 Produced Set Point 1
P.SP2 Produced Set Point 2

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.

P.SP3	Produced Set Point 3
P.SP4	Produced Set Point 4
hour	Hours
Min	Minutes
SEC	Seconds
Ent1	Event 1
Ent2	Event 2
Ent3	Event 3
Ent4	Event 4
Ent5	Event 5
Ent6	Event 6
Ent7	Event 7
Ent8	Event 8
JC	Jump Count Remaining

Note:
Some values will be rounded off to fit in the four-character RUI display. Full values can be read with other interfaces. In firmware 9.0 and above, a user may specify ranges greater than may displayed by an RUI. If greater or less than an RUI can display, the display will show Value High VAL.H or Value Low VAL.L .

RMC Module • Operations Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
Ai oPEr **Analog Input Menu**								
Ain Ain	*Analog Input (1 to 4)* **Analog Input Value** View the process value. **Note:** Ensure that the Error Status (below) indicates no error (61) when reading this value using a field bus protocol. If an error exists, the last known value prior to the error occurring will be returned.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** Map 1 Map 2 360 420 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 1	0	4001	float R
i.Er i.Er	*Analog Input (1 to 4)* **Input Error** View the cause of the most recent error. If the AttN message is Er.i1, Er.i2, Er.i3 or Er.i4, this parameter will display the cause of the input error.	nonE None (61) OPEn Open (65) Shrt Shorted (127) E.Mn Measurement Error (140) E.CAL Bad Calibration Data (139) Er.Ab Ambient Error (9) E.rtd RTD Error (141) FAiL Fail (32)	- - - -	***Instance 1*** Map 1 Map 2 362 422 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 2	1	4002	uint R
i.CA i.CA	*Analog Input (1 to 4)* **Calibration Offset** Offset the input reading to compensate for lead wire resistance or other factors that cause the input reading to vary from the actual process value.	-1,999.000 to 9,999.000°F or units -1,110.555 to 5,555.000°C	0.0	***Instance 1*** Map 1 Map 2 382 442 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0xC (12)	2	4012	float RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
No Display	Analog Input (1 to 4) Clear Error Clear latched input when input error condition no longer exists.	Clear Error (1221)	- - - -	***Instance 1*** Map 1 Map 2 416 476 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x1D (29)	- - - -	4029	uint RW
Pu oPEr **Process Value Menu**								
Su.A Su.A	*Process Value (1 to 4)* **Source Value A** View the value of Source A.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** Map 1 Map 2 3430 4270 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x10 (16)	- - - -	26016	float R
Su.b Su.b	*Process Value (1 to 4)* **Source Value B** View the value of Source B.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** Map 1 Map 2 3432 4272 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x11 (17)	- - - -	26017	float R
Su.C Su.C	*Process Value (1 to 4)* **Source Value C** View the value of Source C.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** Map 1 Map 2 3434 4274 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x12 (18)	- - - -	26018	float R
Su.d Su.d	*Process Value (1 to 4)* **Source Value D** View the value of Source D.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** Map 1 Map 2 3436 4276 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x13 (19)	- - - -	26019	float R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Su.E	*Process Value (1 to 4)* **Source Value E** View the value of Source E.	oFF Off (62) on On (63)	- - - -	***Instance 1*** Map 1 Map 2 3438 4278 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x14 (20)	- - - -	26020	float R
oFSt	*Process Value (1 to 4)* **Offset** Set an offset to be applied to this function's output.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0	***Instance 1*** Map 1 Map 2 3444 4284 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x17 (23)	- - - -	26023	float RWES
o.u	*Process Value (1 to 4)* **Output Value** View the value of this function block's output.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** Map 1 Map 2 3442 4282 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x16 (22)	- - - -	26022	float R
No Display	*Process Value (1 to 4)* **Error** View reported cause for Process output malfunction.	None (61) Open (65) Shorted (127) Measurement error (140) Bad calibration data (139) Ambient error (9) RTD error (14) Fail (32) Math error (1423) Not sourced (246) Stale (1617)	- - - -	***Instance 1*** Map 1 Map 2 3452 4292 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x1B (27)	- - - -	26027	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
d io oPEr **Digital Input/Output Menu**								
do.S do.S	*Digital Output (7 to 12)* **Output State** View the state of this output.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 1212 1792 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to C (12) 7	90	6007	uint R
d i.S di.S	*Digital Input (7 to 12)* **Input State** View this event input state.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 1220 1800 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to C (12) 0xB (11)	- - - -	6011	uint R
No Display	*Digital Input (7 to 12)* **Error** View reported cause for input malfunction.	None (61) Open (65) Shorted (127) Measurement error (140) Bad calibration data (139) Ambient error (9) RTD error (14) Fail (32) Math error (1423) Not sourced (246) Stale (1617)	- - - -	***Instance 1*** *Map 1 Map 2* 1228 1808 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to C (12) 0x0F (15)	- - - -	6015	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
ACt oPEr **Action Menu**								
E i.S Ei.S	*Action (1 to 8)* **Event Status** View this input state.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 1588 2428 *Map 1 and Map 2 Offset to next instance equals +20*	0x6E (110) 1 to 8 5	140	10005	uint R
L iM oPEr **Limit Menu**								
LL.S LL.S	*Limit (1 to 4)* **Low Limit Set Point** Set the low process value that will trigger the limit.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 724 824 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +60*	0x70 (112) 1 to 4 3	38	12003	float RWES
Lh.S Lh.S	*Limit (1 to 4)* **High Limit Set Point** Set the high process value that will trigger the limit.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 726 826 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +60*	0x70 (112) 1 to 4 4	39	12004	float RWES
No Display	*Limit (1 - 4)* **Limit State** Clear limit once limit condition is cleared.	Off (62) None (61) Limit High (51) Limit Low (52) Error (28)	- - - -	***Instance 1*** *Map 1 Map 2* 730 830 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +60*	0x70 (112) 1 6	- - - -	12006	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Operations Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
LCr LCr	*Limit (1-4)* **Clear Limit *** Clear limit once limit condition is cleared.	Clear (0) No Change (255)	- - - -	***Instance 1*** *Map 1 Map 2* 720 820 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +60*	0x70 (112) 1 1	- - - -	12001	uint W
L.St L.St	*Limit (1 to 4)* **Limit Status *** Reflects whether or not the limit is in a safe or failed mode.	FAIL Fail (32) SAFE Safe (1667)	- - - -	***Instance 1*** *Map 1 Map 2* 744 844 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +60*	0x70 (112) 1 to 4 0x0D (13)	- - - -	12013	uint R
Mon oPEr **Monitor Menu**								
C.MA C.MA	*Monitor (1 to 4)* **Control Mode Active** View the current control mode.	oFF Off (62) AUto Auto (10) MAn Manual (54)	- - - -	***Instance 1*** *Map 1 Map 2* 2222 3062 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 2	- - - -	8002	uint R
h.Pr h.Pr	*Monitor (1 to 4)* **Heat Power** View the current heat output level.	0.0 to 100.0%	- - - -	***Instance 1*** *Map 1 Map 2* 2244 3084 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xD (13)	- - - -	8011	float R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
C.Pr C.Pr	*Monitor (1 to 4)* **Cool Power** View the current cool output level.	-100.0 to 0.0%	- - - -	***Instance 1*** *Map 1 Map 2* 2246 3086 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xE (14)	- - - -	8014	float R
C.SP C.SP	*Monitor (1 to 4)* **Closed-Loop Set Point** View the set point currently in effect.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	- - - -	- - - -	- - - -	8029	float R
Pu.A Pv.A	*Monitor (1 to 4)* **Filtered Process Value** View the current filtered process value using the control input.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	- - - -	- - - -	- - - -	8031	float R
No Display	*Monitor (1 to 4)* **Autotune Status** Read the present status of Autotune.	Off (62) Waiting for cross 1 positive (119) Waiting for cross 1 negative (120) Waiting for cross 2 positive (121) Waiting for cross 2 negative (122) Waiting for cross 3 positive (123) Waiting for cross 3 negative (150) Measuring maximum peak (151) Measuring minimum peak (152) Calculating (153) Complete (18) Timeout (118)	- - - -	***Instance 1*** *Map 1 Map 2* 2272 3112 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 27	- - - -	8027	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
LooP oPEr **Control Loop Menu**								
r.En r.En	*Control Loop (1 to 4)* **Remote Set Point** Enable this loop to switch control to the remote set point.	no No (59) YES Yes (106)	No	***Instance 1*** *Map 1 Map 2* 2540 3380 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x15 (21)	48	7021	uint RWES
C.M C.M	*Control Loop (1 to 4)* **Control Mode** Select the method that this loop will use to control.	oFF Off (62) AUto Auto (10) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 2220 3060 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 1	63	8001	uint RWES
A.tSP A.tSP	*Control Loop (1 to 4)* **Autotune Set Point** Set the set point that the autotune will use, as a percentage of the current set point.	50.0 to 200.0%	90.0	***Instance 1*** *Map 1 Map 2* 2258 3098 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x14 (20)	- - - -	8025	float RWES
AUt AUt	*Control Loop (1 to 4)* **Autotune** Start an autotune. While the autotune is active, the Home Page will display Attn tUn1, tUn2, tUn3, or tUn4. When the autotune is complete, the message will clear automatically.	no No (59) YES Yes (106)	No	***Instance 1*** *Map 1 Map 2* 2260 3100 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x15 (21)	64	8026	uint RW
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
C.SP C.SP	*Control Loop (1 to 4)* **Set Point** Set the closed loop set point that the controller will automatically control to.	Low Set Point to Maximum Set Point (Setup Page)	75.0°F or units 24.0°C	***Instance 1*** *Map 1 Map 2* 2500 3340 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 1	49	7001	float RWES
id.S id.S	*Control Loop (1 to 4)* **Idle Set Point** Define a set point that can be triggered by an event state.	Low Set Point to High Set Point (Setup Page)	75.0°F or units 24.0°C	***Instance 1*** *Map 1 Map 2* 2516 3356 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 9	50	7009	float RWES
h.Pb h.Pb	*Control Loop (1 to 4)* **Heat Proportional Band** Set the PID proportional band for the heat outputs.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	25.0°F or units 14.0°C	***Instance 1*** *Map 1 Map 2* 2230 3070 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 6	65	8009	float RWES
h.hy h.hy	*Control Loop (1 to 4)* **On / Off Heat Hysteresis** Set the control switching hysteresis for on-off control. This determines how far into the "on" region the process value needs to move before the output turns on.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	3.0°F or units 2.0°C	***Instance 1*** *Map 1 Map 2* 2240 3080 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xB (11)	66	8010	float RWES
C.Pb C.Pb	*Control Loop (1 to 4)* **Cool Proportional Band** Set the PID proportional band for the cool outputs.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	25.0°F or units 14.0°C	***Instance 1*** *Map 1 Map 2* 2232 3072 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 7	67	8012	float RWES

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RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
C.hy C.hy	*Control Loop (1 to 4)* **On / Off Cool Hysteresis** Set the control switching hysteresis for on-off control. This determines how far into the "on" region the process value needs to move before the output turns on.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	3.0°F or units 2.0°C	***Instance 1*** *Map 1 Map 2* 2242 3082 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xC (12)	68	8013	float RWES
ti ti	*Control Loop (1 to 4)* **Time Integral** Set the PID integral for the outputs.	0 to 9,999 seconds per repeat	180 seconds per repeat	***Instance 1*** *Map 1 Map 2* 2234 3074 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 8	69	8006	float RWES
td td	*Control Loop (1 to 4)* **Time Derivative** Set the PID derivative time for the outputs.	0 to 9,999 seconds	0 seconds	***Instance 1*** *Map 1 Map 2* 2236 3076 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 9	70	8007	float RWES
db db	*Control Loop (1 to 4)* **Dead Band** Set the offset to the proportional band. With a negative value, both heating and cooling outputs are active when the process value is near the set point. A positive value keeps heating and cooling outputs from fighting each other.	-1,000.0 to 1,000.0°F or units -556 to 556°C	0.0	***Instance 1*** *Map 1 Map 2* 2238 3078 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xA (10)	71	8008	float RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
o.SP o.SP	*Control Loop (1 to 4)* **Manual Power** Set a fixed level of output power when in manual (open-loop) mode.	-100 to 100% (heat and cool) 0 to 100% (heat only) -100 to 0% (cool only)	0.0	***Instance 1*** *Map 1 Map 2* 2502 3342 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 2	51	7002	float RWES
No Display	*Control Loop (1 to 4)* **Error State** Read to see if loop is in an error state.	None (61) Open Loop (1274) Reversed Loop (1275)	- - - -	***Instance 1*** *Map 1 Map 2* 2268 3108 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x19(25)	- - - -	8048	uint R
No Display	*Control Loop (1 to 4)* **Clear Error** Write to this register to clear loop error.	Clear (129) Ignore (204)	Ignore	***Instance 1*** *Map 1 Map 2* 2270 3110 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x1A(26)	- - - -	8049	uint W
No Display	*Control Loop (1 to 4)* **Loop Output Power** View the loop output power.	-100.0 to 100.0	- - - -	***Instance 1*** *Map 1 Map 2* 2248 3088 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x0F (15)	- - - -	8033	float R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
RMC Module • Operations Page								
ALM oPEr **Alarm Menu**								
A.Lo A.Lo	*Alarm (1 to 8)* **Low Set Point** If Type (Setup Page, Alarm Menu) is set to: **process** - set the process value that will trigger a low alarm. **deviation** - set the span of units from the set point that will trigger a low alarm. A negative set point represents a value below closed loop set point. A positive set point represents a value above closed loop set point.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	32.0°F or units 0.0°C	***Instance 1*** *Map 1 Map 2* 1742 2582 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 2	18	9002	float RWES
A.hi A.hi	*Alarm (1 to 8)* **High Set Point** If Type (Setup Page, Alarm Menu) is set to: **process** - set the process value that will trigger a high alarm. **deviation** - set the span of units from the set point that will trigger a low alarm. A negative set point represents a value below closed loop set point. A positive set point represents a value above closed loop set point.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	300.0°F or units 150.0°C	***Instance 1*** *Map 1 Map 2* 1740 2580 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 1	19	9001	float RWES

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RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
A.CLr A.CLr	*Alarm (1 to 8)* **Clear Alarm** Write to this register to clear an alarm	0	- - - -	***Instance 1*** *Map 1 Map 2* 1764 2604 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0xD (13)	32	9013	uint W
A.Sir A.Sir	*Alarm (1 to 8)* **Silence Alarm** Write to this register to silence an alarm	0	- - - -	***Instance 1*** *Map 1 Map 2* 1766 2606 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0xE (14)	33	9014	uint W
A.St A.St	*Alarm (1 to 8)* **Alarm State** Current state of alarm	Str Startup (88) nonE None (61) bLo Blocked (12) AL.L Alarm low (8) AL.h Alarm high (7) AL.E Error (28)	- - - -	***Instance 1*** *Map 1 Map 2* 1756 2596 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 9	- - - -	9009	uint R
No Display	*Alarm (1 to 8)* **Alarm Clearable** Read to see if alarm can be cleared.	No (59) Yes (106)	- - - -	***Instance 1*** *Map 1 Map 2* 1762 2602 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0xC (12)	- - - -	9012	uint R
No Display	*Alarm (1 to 8)* **Silenced** Read to see if alarm is active but has been silenced by Silence Alarm.	Yes (106) No (59)	- - - -	***Instance 1*** *Map 1 Map 2* 1760 2600 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 4 0x0B (11)	- - - -	9011	uint R
No Display	*Alarm (1 to 8)* **Latched** Read to see if alarm is currently latched.	Yes (106) No (59)	- - - -	***Instance 1*** *Map 1 Map 2* 1758 2598 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 4 0x0A (10)	- - - -	9010	uint R

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RMC Module • Operations Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
CUrr oPEr **Current Menu**				**Note:** To use the current sensing feature, Time Base (Setup Page, Output Menu) must be set to 0.7 seconds or more.				
C.hi C.hi	*Current (1 to 4)* **High Set Point** Set the current value that will trigger a high heater error state.	-1,999.000 to 9,999.000	50.0	***Instance 1*** *Map 1 Map 2* 1394 2034 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 8	- - - -	15008	float RWES
C.Lo C.Lo	*Current (1 to 4)* **Low Set Point** Set the current value that will trigger a low heater error state.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 1396 2036 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 9	- - - -	15009	float RWES
Ld.Cu Ld.Cu	*Current (1 to 4)* **Current** The measured current value with scaling and offset applied when associated output is on.	0 to 9,999.000	- - - -	***Instance 1*** *Map 1 Map 2* 1392 2032 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 7	- - - -	15007	float R
No Display	*Current (1 to 4)* **Sample and Hold Current** Samples and holds the last valid current reading, this transmitter will reset on a controller power cycle.	0 to 9,999.000	- - - -	***Instance 1*** *Map 1 Map 2* 1380 2020 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 1	- - - -	15001	float R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
C.Er C.Er	*Current (1 to 4)* **Current Error** View the cause of the most recent load fault.	nonE None (61) Shrt Shorted (127) oPEn Open (65)	- - - -	***Instance 1*** *Map 1 Map 2* 1382 2022 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 2	- - - -	15002	uint R
h.Er h.Er	*Current (1 to 4)* **Heater Error** View the cause of the most recent load fault monitored by the current transformer.	nonE None (61) high High (37) Lobd Low (53)	- - - -	***Instance 1*** *Map 1 Map 2* 1384 2024 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 3	- - - -	15003	uint R
No Display	*Current (1 to 4)* **Actual Power** Power delivered to output monitored by CT.	0.0 to 100.0%	- - - -	***Instance 1*** *Map 1 Map 2* 1418 2058 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 0x14 (20)	- - - -	15020	float R
No Display	*Current (1 to 4)* **Error Status** View the cause of the most recent load fault	None (61) Fail (32)	- - - -	***Instance 1*** *Map 1 Map 2* 1420 2060 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 21	- - - -	15021	uint R

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RMC Module • Operations Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
Lnr oPEr **Linearization Menu**								
Su.A Su.A	*Linearization (1 to 4)* **Source Value A** View the value of Source A.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4526 6326 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 4	- - - -	34004	float R
oFSt oFSt	*Linearization (1 to 4)* **Offset** Set an offset to be applied to this function's output.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0	***Instance 1*** *Map 1 Map 2* 4530 6330 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 6	- - - -	34006	float RWES
o.u o.v	*Linearization (1 to 4)* **Output Value** View the value of this function's output.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4532 6332 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 7	- - - -	34007	float R
No Display	*Linearization (1 to 4)* **Error** View reported cause for Linearization output malfunction.	None (61) Open (65) Shorted (127) Measurement error (140) Bad calibration data (139) Ambient error (9) RTD error (14) Fail (32) Math error (1423) Not sourced (246) Stale (1617) Can't process (1659)	- - - -	***Instance 1*** *Map 1 Map 2* 4574 6374 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x1C (28)	- - - -	34028	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
CPE oPEr Compare Menu								
Su.A Su.A	*Compare (1 to 4)* **Source Value A** View the value of Source A.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4012 5812 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 7	- - - -	28007	float R
Su.b Su.b	*Compare (1 to 4)* **Source Value B** View the value of Source B.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4014 5814 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 8	- - - -	28008	float R
o.v o.v	*Compare (1 to 4)* **Output Value** View the value of this function's output.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 4018 5818 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 0xA (10)	- - - -	28010	uint R
No Display	*Compare (1 to 4)* **Error** Read reported cause for compare error	None (61) Open (65) Shorted (127) Measurement Error (140) Bad Cal Data (139) Ambient Error (9) RTD Error (141) Fail (32) Math Error (1423) Not Sourced (246) Stale (1617)	- - - -	***Instance 1*** *Map 1 Map 2* 4024 5824 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 0x0D (13)	- - - -	28013	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
tMr oPEr **Timer Menu**								
Su.A Su.A	*Timer (1 to 4)* **Source Value A** View the value of Source A.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 4322 6132 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 7	- - - -	31007	uint R
Su.b Su.b	*Timer (1 to 4)* **Source Value B** View the value of Source B.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 4334 6134 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 8	- - - -	31008	uint R
E.t E.t	*Timer (1 to 4)* **Elapsed Time** View the value of this function's elapsed time.	0 to 9,999.000 seconds	- - - -	***Instance 1*** *Map 1 Map 2* 4350 6150 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 0x10 (16)	- - - -	31016	float R
o.v o.v	*Timer (1 to 4)* **Output Value** View the value of this function's output.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 4338 6138 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 0xA (10)	- - - -	31010	uint R
No Display	*Timer (1 to 4)* **Error** Read reported cause for timer error	None (61) Open (65) Shorted (127) Measurement Error (140) Bad Cal Data (139) Ambient Error (9) RTD Error (141) Fail (32) Math Error (1423) Not Sourced (246) Stale (1617)	- - - -	***Instance 1*** *Map 1 Map 2* 4354 6154 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 0x12 (18)	- - - -	31018	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Ctr oPEr **Counter Menu**								
Cnt Cnt	*Counter (1 to 4)* **Count** View the function's total count.	0 to 9,999	- - - -	***Instance 1*** *Map 1 Map 2* 4188 5988 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 0xF (15)	217	30015	uint R
Su.A Su.A	*Counter (1 to 4)* **Source Value A** View the value of Source A.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 4172 5972 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 7	- - - -	30007	uint R
Su.b Su.b	*Counter (1 to 4)* **Source Value B** View the value of Source B.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 4174 5974 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 8	- - - -	30008	uint R
o.u o.v	*Counter (1 to 4)* **Output Value** View the value of this function's output.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 4178 5978 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 0xA (10)	- - - -	30010	uint R
No Display	*Counter (1 to 4)* **Error** Read reported cause for counter error	None (61) Open (65) Shorted (127) Measurement Error (140) Bad Cal Data (139) Ambient Error (9) RTD Error (141) Fail (32) Math Error (1423) Not Sourced (246) Stale (1617)	- - - -	***Instance 1*** *Map 1 Map 2* 4190 5990 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 0x10 (16)	- - - -	30016	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
L9C oPEr **Logic Menu**								
Su.A Su.A	*Logic (1 to 16)* **Source Value A** View the value of Source A.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3728 4568 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x19 (25)	- - - -	27025	uint R
Su.b Su.b	*Logic (1 to 16)* **Source Value B** View the value of Source B.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3730 4570 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x1A (26)	- - - -	27026	uint R
Su.C Su.C	*Logic (1 to 16)* **Source Value C** View the value of Source C.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3732 4572 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x1B (27)	- - - -	27027	uint R
Su.d Su.d	*Logic (1 to 16)* **Source Value D** View the value of Source D.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3734 4574 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x1C (28)	- - - -	27028	uint R
Su.E Su.E	*Logic (1 to 16)* **Source Value E** View the value of Source E.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3736 4576 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x1D (29)	- - - -	27029	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Su.F Su.F	*Logic (1 to 16)* **Source Value F** View the value of Source F.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3738 4578 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x1E (30)	- - - -	27030	uint R
Su.9 Su.g	*Logic (1 to 16)* **Value Source G** View the value of Source G.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3740 4580 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x1F (31)	- - - -	27031	uint R
Su.h Su.h	*Logic (1 to 16)* **Source Value H** View the value of Source H.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3742 4582 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x20 (32)	- - - -	27032	uint R
o.u o.v	*Logic (1 to 16)* **Output Value** View the value of this function's output.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 3746 4586 *Map 1 and Map 2 Offset to next instance equals +80*	7F (127) 1 to 16 0x22 (34)	- - - -	27034	uint R
No Display	*Logic (1 to 16)* **Error** Read reported cause for logic error	None (61) Open (65) Shorted (127) Measurement Error (140) Bad Cal Data (139) Ambient Error (9) RTD Error (141) Fail (32) Math Error (1423) Not Sourced (246) Stale (1617)	- - - -	***Instance 1*** *Map 1 Map 2* 3750 4590 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 16 0x24 (36)	- - - -	27036	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
mAt oPEr **Math Menu**								
Su.A Su.A	*Math (1 to 8)* **Source Value A** View the value of Source A.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 2870 3710 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x10 (16)	- - - -	25016	float R
Su.b Su.b	*Math (1 to 8)* **Source Value B** View the value of Source B.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 2872 3712 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x11 (17)	- - - -	25017	float R
Su.C Su.C	*Math (1 to 8)* **Source Value C** View the value of Source C.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 2874 3714 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x12 (18)	- - - -	25018	float R
Su.d Su.d	*Math (1 to 8)* **Source Value D** View the value of Source D.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 2876 3716 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x13 (19)	- - - -	25019	float R
Su.E Su.E	*Math (1 to 8)* **Source Value E** View the value of Source E.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 2878 3718 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x14 (20)	- - - -	25020	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
oFSt oFSt	*Math (1 to 8)* **Offset** Set an offset to be applied to this function's output.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0	***Instance 1*** *Map 1 Map 2* 2884 3724 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x17 (23)	- - - -	25023	float RWES
o.v o.v	*Math (1 to 8)* **Output Value** View the value of this function's output.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 2882 3722 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x16 (22)	- - - -	25022	float R
No Display	*Math (1 to 8)* **Error** Read reported cause for logic error	None (61) Open (65) Shorted (127) Measurement Error (140) Bad Cal Data (139) Ambient Error (9) RTD Error (141) Fail (32) Math Error (1423) Not Sourced (246) Stale (1617)	- - - -	***Instance 1*** *Map 1 Map 2* 2896 3736 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x1D (29)	- - - -	25029	uint R
SoF oPEr **Special Output Function Menu**								
Su.A Su.A	*Special Output Function (1 to 4)* **Source Value A** View the value of Source A.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4972 6932 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 7	- - - -	35007	float R
Su.b Su.b	*Special Output Function (1 to 4)* **Source Value B** View the value of Source B.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4974 6934 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 8	- - - -	35008	float R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
o.u 1 o.v1	*Special Output Function (1 to 4)* **Output Value 1** View the value of this function's Output 1.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4978 6938 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0xA (10)	- - - -	35010	float R
No Display	*Special Output Function (1 to 4)* **Error 1** View reported cause for output malfunction.	None (61) Open (65) Shorted (127) Measurement error (140) Bad calibration data (139) Ambient error (9) RTD error (14) Fail (32) Math error (1423) Not sourced (246) Stale (1617) Can't process (1659)	- - - -	***Instance 1*** *Map 1 Map 2* 4980 6940 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x0B (11)	- - - -	35011	uint R
o.u 2 o.v2	*Special Output Function (1 to 4)* **Output Value 2** View the value of this function's Output 2.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4982 6942 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0xC (12)	- - - -	35012	float R
No Display	*Special Output Function (1 to 4)* **Error 2** View reported cause for output malfunction.	None (61) Open (65) Shorted (127) Measurement error (140) Bad calibration data (139) Ambient error (9) RTD error (14) Fail (32) Math error (1423) Not sourced (246) Stale (1617) Can't process (1659)	- - - -	***Instance 1*** *Map 1 Map 2* 4984 6944 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x0D (13)	- - - -	35013	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
o.u 3 o.v3	*Special Output Function (1 to 4)* **Output Value 3** View the value of this function's Output 3.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4986 6946 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0xE (14)	- - - -	35014	float R
No Display	*Special Output Function (1 to 4)* **Error 3** View reported cause for output malfunction.	None (61) Open (65) Shorted (127) Measurement error (140) Bad calibration data (139) Ambient error (9) RTD error (14) Fail (32) Math error (1423) Not sourced (246) Stale (1617) Can't process (1659)	- - - -	***Instance 1*** *Map 1 Map 2* 4988 6948 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x0F (15)	- - - -	35015	uint R
o.u 4 o.v4	*Special Output Function (1 to 4)* **Output Value 4** View the value of this function's Output 4.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 4990 6950 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x10 (16)	- - - -	35016	float R
No Display	*Special Output Function (1 to 4)* **Error 4** View reported cause for output malfunction.	None (61) Open (65) Shorted (127) Measurement error (140) Bad calibration data (139) Ambient error (9) RTD error (14) Fail (32) Math error (1423) Not sourced (246) Stale (1617) Can't process (1659)	- - - -	***Instance 1*** *Map 1 Map 2* 4992 6952 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x11 (17)	- - - -	35017	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
P.StA oPEr **Profile Status Menu**	* Some parameters in the Profile Status Menu can be changed for the currently running profile, but should only be changed by knowledgeable personnel and with caution. Changing parameters via the Profile Status Menu will not change the stored profile but will have an immediate impact on the profile that is running. Changes made to profile parameters in the Profiling Pages will be saved and will also have an immediate impact on the running profile.							
P.Str P.Str	*Profile Status* **Profile Start**	1 to 250	1	***Instance 1*** *Map 1* *Map 2* 5280 7240	0x7A (122) 1 1	204	22001	uint W
P.ACr PACr	*Profile Status* **Profile Action Request**	nonE None (61) StEP Step (89) End Terminate (148) rESU Resume (147) PAUS Pause (146) ProF Profile (77)	None	***Instance 1*** *Map 1* *Map 2* 5300 7260	0x7A (122) 1 0xB (11)	205	22011	uint W
StP StP	*Profile Status* **Current Step** View the currently running step.	0 to 250 0 (none)	- - - -	***Instance 1*** *Map 1* *Map 2* 5286 7246	0x7A (122) 1 4	- - - -	22004	uint R
Sub.S SUb.S	*Profile Status* **Current Sub Step** View the current ly running subroutine.	0 to 150 0 (none)	- - - -	***Instance 1*** *Map 1* *Map 2* 5388 7348	0x7A (122) 1 0x37 (55)	- - - -	22055	uint R
S.tyP S.typ	*Profile Status* **Step Type** View the currently running step type.	UStP Unused Step (50) ti Time (143) rAtE Ramp Rate (81) SoAH Soak (87) CLoC Wait For Time (1543) WJPE Wait For Process or Event (1542) StAt Instant Change (1515) Subr Subroutine Step (1516) JL Jump (116) End End (27)	- - - -	***Instance 1*** *Map 1* *Map 2* 5304 7264	0x7A (122) 1 0xD (13)	- - - -	22013	uint R

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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
t.SP1 [t.SP1	*Profile Status* ***Target Set Point Loop 1** View or change the target set point of the current step.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5302 7262	0x7A (122) 1 0xC (12)	- - - -	22012	float RW
t.SP2 t.SP2	*Profile Status* ***Target Set Point Loop 2** View or change the target set point of the current step.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5374 7334	0x7A (122) 1 0x30 (48)	- - - -	22048	float RW
t.SP3 t.SP3	*Profile Status* ***Target Set Point Loop 3** View or change the target set point of the current step.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5376 7336	0x7A (122) 1 0x31 (49)	- - - -	22049	float RW
t.SP4 t.SP4	*Profile Status* ***Target Set Point Loop 4** View or change the target set point of the current step.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5378 7338	0x7A (122) 1 0x32 (50)	- - - -	22050	float RW
P.SP1 P.SP1	*Profile Status* **Produced Set Point 1** Display the current set point, even if the profile is ramping.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 5288 7248	- - - -	- - - -	22005	float R
P.SP2 P.SP2	*Profile Status* **Produced Set Point 2** Display the current set point, even if the profile is ramping.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 5380 7340	- - - -	- - - -	22051	float R
P.SP3 P.SP3	*Profile Status* **Produced Set Point 3** Display the current set point, even if the profile is ramping.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 5382 7342	- - - -	- - - -	22052	float R

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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
P.SP4	*Profile Status* **Produced Set Point 4** Display the current set point, even if the profile is ramping.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 5384 7344	- - - -	- - - -	22053	float R
No Display	*Profile Status* **Produced Control Mode 1** Display the current control mode.	Off (62) Auto (10) Manual (54)	- - - -	***Instance 1*** *Map 1 Map 2* 5366 7326	0x7A (122) 1 0x2C (44)	- - - -	22044	uint R
No Display	*Profile Status* **Produced Control Mode 2** Display the current control mode.	Off (62) Auto (10) Manual (54)	- - - -	***Instance 1*** *Map 1 Map 2* 5368 7328	0x7A (122) 1 0x2D (45)	- - - -	22045	uint R
No Display	*Profile Status* **Produced Control Mode 3** Display the current control mode.	Off (62) Auto (10) Manual (54)	- - - -	***Instance 1*** *Map 1 Map 2* 5370 7330	0x7A (122) 1 0x2E (46)	- - - -	22046	uint R
No Display	*Profile Status* **Produced Control Mode 4** Display the current control mode.	Off (62) Auto (10) Manual (54)	- - - -	***Instance 1*** *Map 1 Map 2* 5372 7332	0x7A (122) 1 0x2F (47)	- - - -	22047	uint R
hoUr hoUr	*Profile Status* **Hours** Step time remaining in hours.	0 to 99	0	***Instance 1*** *Map 1 Map 2* 5434 7394	0x7A (122) 1 0x4E (78)	- - - -	22078	uint RW
Min Min	*Profile Status* **Minutes** Step time remaining in minutes.	0 to 59	0	***Instance 1*** *Map 1 Map 2* 5432 7392	0x7A (122) 1 0x4D (77)	- - - -	22077	uint RW
SEC SEC	*Profile Status* **Seconds** Step time remaining in seconds.	0 to 59	0	***Instance 1*** *Map 1 Map 2* 5430 7390	0x7A (122) 1 0x4C (76)	- - - -	22076	uint RW
No Display	*Profile Status* **Wait for Event Source Value 1** Read the present state of event input 1.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 5346 7306	0x7A (122) 1 0x22 (34)	- - - -	22034	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
No Display	*Profile Status* **Wait for Event Source Value 2** Read the present state of event input 1.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 5348 7308	0x7A (122) 1 0x23 (35)	- - - -	22035	uint R
No Display	*Profile Status* **Wait for Event Source Value 3** Read the present state of event input 1.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 5350 7310	0x7A (122) 1 0x24 (36)	- - - -	22036	uint R
No Display	*Profile Status* **Wait for Event Source Value 4** Read the present state of event input 1.	oFF Off (62) on On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 5352 7312	0x7A (122) 1 0x25 (37)	- - - -	22037	uint R
No Display	*Profile Status* **Wait for Analog Source Value 1** Read the present value of analog source 1.	-1999.000 to 9999.000	- - - -	***Instance 1*** *Map 1 Map 2* 5414 7374	0x7A (122) 1 0x44 (68)	- - - -	22068	float R
No Display	*Profile Status* **Wait for Analog Source Value 2** Read the present value of analog source 2.	-1999.000 to 9999.000	- - - -	***Instance 1*** *Map 1 Map 2* 5416 7376	0x7A (122) 1 0x45 (69)	- - - -	22069	float R
No Display	*Profile Status* **Wait for Analog Source Value 3** Read the present value of analog source 3.	-1999.000 to 9999.000	- - - -	***Instance 1*** *Map 1 Map 2* 5418 7378	0x7A (122) 1 0x46 (70)	- - - -	22070	float R
No Display	*Profile Status* **Wait for Analog Source Value 4** Read the present value of analog source 4.	-1999.000 to 9999.000	- - - -	***Instance 1*** *Map 1 Map 2* 5420 7380	0x7A (122) 1 0x47 (71)	- - - -	22071	float R
Ent1 Ent1	*Profile Status* ***Event 1** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5306 7266	0x7A (122) 1 0xE (14)	- - - -	22014	uint RW

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Operations Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Ent2 Ent2	*Profile Status* ***Event 2** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5308 7268	0x7A (122) 1 0xF (15)	- - - -	22015	uint RW
Ent3 Ent3	*Profile Status* ***Event 3** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5310 7270	0x7A (122) 1 0x10 (16)	- - - -	22016	uint RW
Ent4 Ent4	*Profile Status* ***Event 4** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5312 7272	0x7A (122) 1 0x11 (17)	- - - -	22017	uint RW
Ent5 Ent5	*Profile Status* ***Event 5** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5314 7274	0x7A (122) 1 0x12 (18)	- - - -	22018	uint RW
Ent6 Ent6	*Profile Status* ***Event 6** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5316 7276	0x7A (122) 1 0x13 (19)	- - - -	22019	uint RW
Ent7 Ent7	*Profile Status* ***Event 7** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5318 7278	0x7A (122) 1 0x14 (20)	- - - -	22020	uint RW
Ent8 Ent8	*Profile Status* ***Event 8** View or change the event output states.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5320 7280	0x7A (122) 1 0x15 (21)	- - - -	22021	uint RW
JC JC	*Profile Status* **Jump Count Remaining** View the jump counts remaining for the current loop. In a profile with nested loops, this may not indicate the actual jump counts remaining.	0 to 9,999	- - - -	***Instance 1*** *Map 1 Map 2* 5298 7258	0x7A (122) 1 0xA (10)	- - - -	22010	uint R
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Operations Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
No Display	*Profile Status* **Current File** Indicates current file being executed.	1 to 25 0 (none)	- - - -	***Instance 1*** *Map 1 Map 2* 5284 7244	0x7A (122) 1 3	- - - -	22003	uint R
No Display	*Profile Status* **Profile State** Read current Profile state.	Off (62) Running (149) Pause (146)	- - - -	***Instance 1*** *Map 1 Map 2* 5282 7242	0x7A (122) 1 2	- - - -	22002	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

4

Chapter 4: Setup Pages

Control Module Setup Page Parameters

To navigate to the Setup Page using the RUI, follow the steps below:

1. From the Home Page, press and hold both the Up and Down keys for six seconds. Ai will appear in the upper display and SEt will appear in the lower display.

Note:

If keys are released when oPEr is displayed, press the Infinity Key or reset key to exit and repeat until SEt is displayed.

2. Press the Up or Down key to view available menus.
3. Press the Advance Key to enter the menu of choice.
4. If a submenu exists (more than one instance), press the Up or Down key to select and then press the Advance Key to enter.
5. Press the Up or Down key to move through available menu prompts.
6. Press the Infinity Key to move backwards through the levels: parameter to submenu, submenu to menu, menu to Home Page.
7. Press and hold the Infinity Key for two seconds to return to the Home Page.

On the following pages, top level menus are identified with a yellow background color.

Note:

Some of these menus and parameters may not appear, depending on the controller's options. See model number information in the Appendix for more information. If there is only one instance of a menu, no submenus will appear.

Note:

Some of the listed parameters may not be visible. Parameter visibility is dependent upon controller part number.

Ai
SEt **Analog Input Menu**
1
Ai Analog Input 1 to 4
- SEn Sensor Type
- Lin TC Linearization
- rtL RTD Leads
- Unit Units
- S.Lo Scale Low
- S.hi Scale High
- r.Lo Range Low
- r.hi Range High
- P.EE Process Error Enable
- P.EL Process Error Low Value
- t.C Thermistor Curve
- r.r Resistance Range
- Co.A Custom Coefficient A
- Co.b Custom Coefficient B
- Co.C Custom Coefficient C
- FiL Filter
- i.Er Input Error Latching
- dEC Display Precision
- i.CA Calibration Offset *
- Ain Analog Input Value *
- i.Er Input Error *

Pu
SEt **Process Value**
1
Pu Process Value 1 to 4
- Fn Function
- SFn.A Source Function A
- Si.A Source Instance A
- SFn.b Source Function B
- Si.b Source Instance B
- SZ.b Source Zone B
- SFn.C Source Function C
- Si.C Source Instance C
- SZ.C Source Zone C

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.

SFn.d Source Function D
S i.d Source Instance D
SZ.d Source Zone D
SFn.E Source Function E
S i.E Source Instance E
SZ.E Source Zone E
C.P Cross Over Point
C.b Cross Over Band
P.unt Pressure Units
A.unt Altitude Units
b.Pr Barometric Pressure
F il Filter

dio
SEt Digital Input/Output Menu
1
dio Digital Input/Output 7 to 12
dir Direction
Fn Function
Fi Output Function Instance
SZ.A Output Source Zone
o.Ct Time Base Type
o.tb Fixed Time Base
o.Lo Low Power Scale
o.hi High Power Scale

ACt
SEt Action Menu
1
ACt Action 1 to 8
Fn Action Function
Fi Function Instance
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
LEv Active Level

Lim
SEt Limit Menu
1
Lim Limit 1 to 4
L.Sd Sides
L.hY Hysteresis
SP.Lh Maximum Set Point
SP.LL Minimum Set Point
Lh.S High Limit Set Point *
LL.S Low Limit Set Point *
SFn.A Source Function A*
S i.A Source Instance A*
SZ.A Source Zone A *
L.Clr Clear Limit *
L.St Limit Status *

LooP
SEt Control Loop Menu
1
LooP Control Loop 1 to 4
SFn.A Source Function A
iS.A Source Instance A
h.Ag Heat Algorithm
C.Ag Cool Algorithm
C.Cr Cool Output Curve
h.Pb Heat Proportional Band *
h.hY On / Off Heat Hysteresis *
C.Pb Cool Proportional Band *
C.hY On / Off Cool Hysteresis *
ti Time Integral *
td Time Derivative *
db Dead Band *
t.tun TRU-TUNE+® Enable
t.bnd TRU-TUNE+ Band
t.gn TRU-TUNE+ Gain
A.tSP Autotune Set Point *
t.Agr Autotune Aggressiveness
P.dL Peltier Delay
r.En Remote Set Point
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
r.tY Remote Set Point Type
UFA Auto-to-Manual Power
FAiL Input Error Power
MAn Fixed Power
L.dE Open Loop Detect Enable
L.dt Open Loop Detect Time
L.dd Open Loop Detect Deviation
rP Ramp Action
r.SC Ramp Scale
r.rt Ramp Rate
Pro.E Profiling Enable
L.SP Minimum Set Point
h.SP Maximum Set Point
C.SP Set Point*
id.SP Idle Set Point *
SP.Lo Minimum Manual Power
SP.hi Maximum Manual Power
o.SP Manual Power *
C.M Control Mode *

otPt
SEt Output Menu
1
otPt Output 1 to 8
Fn Function
Fi Output Function Instance
SZ.A Source Zone A
o.Ct Time Base Type
o.tP Fixed Time Base
o.Lo Low Power Scale
o.hi High Power Scale
otPt Output 1, 3, 5 or 7 process
o.tY Output Type
Fn Function
Fi Output Function Instance
SZ.A Source Zone A
S.Lo Scale Low

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.

S.hi Scale High
r.Lo Range Low
r.hi Range High
o.CA Calibration Offset

ALM
SEt Alarm Menu
1
ALM Alarm 1 to 8
A.ty Type
Sr.A Alarm Source
iS.A Alarm Source Instance
SZ.A Alarm Source Zone
LooP Control Loop
A.hy Hysteresis
A.Lg Logic
A.Sd Sides
A.Lo Low Set Point *
A.hi High Set Point *
A.LA Latching
A.bL Blocking
A.Si Silencing
A.dSP Display
A.dL Delay Time
A.CLr Clear Alarm *
A.Sir Silence Alarm *
A.St Alarm State *

CUrr
SEt Current Menu
1
CUrr Current 1 to 4
C.Sd Sides
CU.r Indicate Reading
C.dt Detection Threshold
C.SC Input Scaling
C.oFS Heater Offset
C.Si Monitored Output
Er99 Monitored Zone

Lnr
SEt Linearization Menu
1
Lnr Linearization 1 to 4
Fn Function
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
Unit Units
iP.1 Input Point 1
oP.1 Output Point 1
iP.2 Input Point 2
oP.2 Output Point 2
iP.3 Input Point 3
oP.3 Output Point 3
iP.4 Input Point 4
oP.4 Output Point 4
iP.5 Input Point 5
oP.5 Output Point 5
iP.6 Input Point 6
oP.6 Output Point 6
iP.7 Input Point 7
oP.7 Output Point 7
iP.8 Input Point 8
oP.8 Output Point 8
iP.9 Input Point 9
oP.9 Output Point 9
iP.10 Input Point 10
oP.10 Output Point 10

CPE
SEt Compare Menu
1
CPE Compare 1 to 4
Fn Function
toL Tolerance
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
Er.h Error Handling

tMr
SEt Timer Menu
1
tMr Timer 1 to 4
Fn Function
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
SAS.A Run Active Level
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
SAS.b Reset Active Level State B
ti Time
LEv Transmitter Active Level

Ctr
SEt Counter Menu
1
Ctr Counter 1 to 4
Fn Function
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
SAS.A Count Active Level
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
SAS.b Reset Active Level
LoAd Load Value
tr9t Target Value
LAt Latching

LgC
SEt Logic Menu
1
LgC Logic 1 to 4
Fn Function
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
SFn.C Source Function C
S i.C Source Instance C
SZ.C Source Zone C
SFn.d Source Function D
S i.d Source Instance D
SZ.d Source Zone D
SFn.E Source Function E
S i.E Source Instance E
SZ.E Source Zone E
SFn.F Source Function F
S i.F Source Instance F
SZ.F Source Zone F

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.

SFn.g Source Function G
S i.g Source Instance G
SZ.g Source Zone G
SFn.h Source Function H
S i.h Source Instance H
SZ.H Source Zone H
Er.h Error Handling

mAt

SEt Math Menu

1

mAt Math 1 to 8

Fn Function
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
SFn.C Source Function C
S i.C Source Instance C
SZ.C Source Zone C
SFn.d Source Function D
S i.d Source Instance D
SZ.d Source Zone D
SFn.E Source Function E
S i.E Source Instance E
SZ.E Source Zone E
S.Lo Scale Low
S.hi Scale High
Unit Units
r.Lo Range Low
r.hi Range High
P.unt Pressure Units
A.unt Altitude Units
FiL Filter

SoF

SEt Special Output Function Menu

1

SoF Special Output Function 1 to 4

Fn Function
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
Pon.A Input A Turn On
PoF.A Input A Turn Off
Pon.b Input B Turn On
PoF.b Input B Turn Off
on.t On Time
oF.t Off Time
t.t Valve Travel Time
db Dead Band
oS.1 Output 1 Size
oS.2 Output 2 Size
oS.3 Output 3 Size
oS.4 Output 4 Size
t.dL Time Delay
ot.L Output Order

uAr

SEt Variable Menu

1

uAr Variable 1 to 16

tYPE Data Type
Unit Units
dig Digital
AnLg Analog

gLbL

.SEt Global Menu

gLbL Global

C_F Display Units
AC.LF AC Line Frequency
mAH Maximum
min Minimum
Sutb Synchronized Variable Time Base
dPrS Display Pairs
USr.S Save Settings As
USr.r Restore Settings From

Pro

SEt Profile Menu

Pro Profile

r.tYP Ramping Type
P.tYP Profile Type
gSE Guaranteed Soak Enable
gSd1 Guaranteed Soak Deviation 1
gSd2 Guaranteed Soak Deviation 2
gSd3 Guaranteed Soak Deviation 3
gSd4 Guaranteed Soak Deviation 4
Cm.E Control Mode Enable
wd.m Wait for Mode
SFn.A Source Function A
S i.A Source Instance A
SZ.A Source Zone A
SFn.b Source Function B
S i.b Source Instance B
SZ.b Source Zone B
SFn.C Source Function C
S i.C Source Instance C
SZ.C Source Zone C
SFn.d Source Function D
S i.d Source Instance D
SZ.d Source Zone D
SFn.E Source Function E
S i.E Source Instance E
SZ.E Source Zone E
SFn.F Source Function F
S i.F Source Instance F
SZ.F Source Zone F
SFn.g Source Function G
S i.g Source Instance G
SZ.g Source Zone G
SFn.H Source Function H
S i.H Source Instance H
SZ.H Source Zone H

Com

SEt Communications Menu

Com Communications

bAUd Baud Rate
PAr Parity
m.hL Modbus Word Order
C_F Display Units
mAP Data Map
nu.S Non-volatile Save

Note:

Some values will be rounded off to fit in the four-character RUI display. Full values can be read with other interfaces. In firmware 9.0 and above, a user may specify ranges greater than may displayed by an RUI. If greater or less than an RUI can display, the display will show Value High uAL.H or Value Low uAL.L .

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
A i SEt **Analog Input Menu**								
SEn SEn	*Analog Input (1 to 4)* **Sensor Type** Set the analog sensor type to match the device wired to this input. **Note:** There is no open sensor protection for process inputs.	oFF Off (62) tC Thermocouple (95) mu Millivolts (56) uoLt Volts dc (104) mA Milliamps dc (112) r0.1H RTD 100 Ω (113) r1.0H RTD 1,000 Ω (114) Pot Potentiometer 1 kΩ (155) thEr Thermistor (229)	Thermocouple or Thermistor	***Instance 1*** *Map 1 Map 2* 368 428 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 5	3	4005	uint RWES
L in Lin	*Analog Input (1 to 4)* **TC Linearization** Set the linearization to match the thermocouple wired to this input.	b B (11) H K (48) C C (15) n N (58) d D (23) r R (80) E E (26) S S (84) F F (30) t T (93) J J (46)	J	***Instance 1*** *Map 1 Map 2* 370 430 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 6	4	4006	uint RWES
rt.L rt.L	*Analog Input (1 to 4)* **RTD Leads** Set to match the number of leads on the RTD wired to this input.	2 2 (1) 3 3 (2)	2	***Instance 1*** *Map 1 Map 2* 372 432 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 7	- - - -	4007	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Un it Unit	*Analog Input (1 to 4)* **Units** Set the type of units the sensor will measure.	A.tP Absolute Temperature (1540) rh Relative Humidity (1538) Pro Process (75) PWr Power (73)	Process	***Instance 1*** *Map 1 Map 2* 442 502 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x2A (42)	5	4042	uint RWES
S.Lo S.Lo	*Analog Input (1 to 4)* **Scale Low** Set the low scale for process inputs. This value, in millivolts, volts or milliamps, will correspond to the Range Low output of this function block.	-100.0 to 1,000.0	0.0	***Instance 1*** *Map 1 Map 2* 388 448 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0xF (15)	6	4015	float RWES
S.hi S.hi	*Analog Input (1 to 4)* **Scale High** Set the high scale for process inputs. This value, in millivolts, volts or milliamperes, will correspond to the Range High output of this function block.	-100.0 to 1,000.0	20.0	***Instance 1*** *Map 1 Map 2* 390 450 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x10 (16)	7	4016	float RWES
r.Lo r.Lo	*Analog Input (1 to 4)* **Range Low** Set the low range for this function block's output.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 392 452 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x11 (17)	8	4017	float RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
r.hi r.hi	*Analog Input (1 to 4)* **Range High** Set the high range for this function block's output.	-1,999.000 to 9,999.000	9,999	***Instance 1*** *Map 1 Map 2* 394 454 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x12 (18)	9	4018	float RWES
P.EE P.EE	*Analog Input (1 to 4)* **Process Error Enable** Turn the Process Error Low feature on or off.	oFF Off (62) LoWd Low (53)	Off	***Instance 1*** *Map 1 Map 2* 418 478 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x1E (30)	10	4030	uint RWES
P.EL P.EL	*Analog Input (1 to 4)* **Process Error Low Value** If the process value drops below this value, it will trigger an input error.	-100.0 to 1,000.0	0.0	***Instance 1*** *Map 1 Map 2* 420 480 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x1F (31)	11	4031	float RWES
t.C t.C	*Analog Input (1 to 4)* **Thermistor Curve** Select a curve to apply to the thermistor input.	A Curve A (1451) b Curve B (1452) C Curve C (1453) CUSt Custom (180)	Curve A	***Instance 1*** *Map 1 Map 2* 434 494 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x26 (38)	- - - -	4038	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
r.r r.r	*Analog Input (1 to 4)* **Resistance Range** Set the maximum resistance of the thermistor input.	5 5K (1448) 10 10K (1360) 20 20K (1361) 40 40K (1449)	40K	***Instance 1*** *Map 1 Map 2* 432 492 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x25 (37)	- - - -	4037	uint RWES
Co.A Co.A	*Analog Input (1 to 4)* **Custom Coefficient A** Enter custom Thermistor coefficients.	-3.4e38 to 3.4e38	0	- - - -	- - - -	- - - -	4039	float RWES
Co.b Co.b	*Analog Input (1 to 4)* **Custom Coefficient B** Enter custom Thermistor coefficients.	-3.4e38 to 3.4e38	0	- - - -	- - - -	- - - -	4040	float RWES
Co.C Co.C	*Analog Input (1 to 4)* **Custom Coefficient C** Enter custom Thermistor coefficients.	-3.4e38 to 3.4e38	0	- - - -	- - - -	- - - -	4041	float RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
F iL FiL	*Analog Input (1 to 4)* **Filter** Filtering smooths out the process signal to both the display and the input. Increase the time to increase filtering. **Note:** Filter does not apply to the Limit sensor but does apply to all other functions.	0.0 to 60.0 seconds	0.5	***Instance 1*** *Map 1 Map 2* 386 446 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0xE (14)	12	4014	float RWES
i.Er i.Er	*Analog Input (1 to 4)* **Input Error Latching** Turn input error latching on or off. If latching is on, errors must be manually cleared.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 414 474 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x1C (28)	- - - -	4028	uint RWES
dEC dEC	*Analog Input (1 to 4)* **Display Precision** Set the precision of the displayed value.	0 Whole (105) 0.0 Tenths (94) 0.00 Hundredths (40) 0.000 Thousandths (96)	Whole	***Instance 1*** *Map 1 Map 2* 398 458 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x14 (20)	- - - -	4020	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
i.CA i.CA	*Analog Input (1 to 4)* **Calibration Offset *** Offset the input reading to compensate for lead wire resistance or other factors that cause the input reading to vary from the actual process value.	-1,999.000 to 9,999.000°F or units -1,110.555 to 5,555.000°C	0.0	***Instance 1*** *Map 1 Map 2* 382 442 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0xC (12)	2	4012	float RWES
Ain Ain	*Analog Input (1 to 4)* **Value *** View the process value. Note: Ensure that the Error Status (below) indicates no error (61) when reading this value using a field bus protocol. If an error exists, the last known value prior to the error occurring will be returned.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	- - - -	***Instance 1*** *Map 1 Map 2* 360 420 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 1	0	4001	float R
i.Er i.Er	*Analog Input (1 to 4)* **Input Error *** View the cause of the most recent error.	nonE None (61) OPEn Open (65) Shrt Shorted (127) E.M Measurement Error (140) E.CAL Bad Calibration Data (139) Er.Ab Ambient Error (9) E.rtd RTD Error (141) FAiL Fail (32)	- - - -	***Instance 1*** *Map 1 Map 2* 362 422 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 2	1	4002	uint R

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Pu SEt **Process Value Menu**								
Fn Fn	*Process Value (1 to 4)* **Function** Set the function that will be applied to the source or sources.	oFF Off (62) S.bA Sensor Backup (1201) Au9 Average (1367) C.o Crossover (1368) u.d.b Wet Bulb Dry Bulb (1369) S.o Switch Over (1370) diFF Differential (1373) rAti Ratio (1374) Add Add (1375) MUL Multiply (1376) A.diF Absolute Difference (1377) Min Minimum (1378) MAH Maximum (1379) root Square Root (1380) uSLA Vaisala RH Compensation (1648) ALt Pressure to Altitude (1649)	Off	***Instance 1*** *Map 1 Map 2* 3440 4280 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x15 (21)	123	26021	uint RWES
SFn.A SFn.A	*Process Value (1 to 4)* **Source Function A** Set the type of function that will be used for this source.	nonE None (61) Ai Analog Input (142) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) uAr Variable (245)	Analog Input	***Instance 1*** *Map 1 Map 2* 3400 4240 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 1	- - - -	26001	uint RWES
Si.A Si.A	*Process Value (1 to 4)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3410 4250 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 6	- - - -	26006	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.b SFn.b	*Process Value (1 to 4)* **Source Function B** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input, (142) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3402 4242 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 2	- - - -	26002	uint RWES
S i.b Si.b	*Process Value (1 to 4)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3412 4262 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 7	- - - -	26007	uint RWES
SZ.b SZ.b	*Process Value (1 to 4)* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3422 4242 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0xC(12)	- - - -	26012	uint RWES
SFn.C SFn.C	Process Value (1 to 4) Source Function C Set the type of function that will be used for this source.	nonE None (61) A i Analog Input, (142) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3404 4244 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 3	- - - -	26003	uint RWES
S i.C Si.C	*Process Value (1 to 4)* **Source Instance C** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3414 4254 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 8	- - - -	26008	uint RWES
SZ.C SZ.C	*Process Value (1 to 4)* **Source Zone C** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3424 4264 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x0D (13)	- - - -	26013	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.d SFn.d	*Process Value (1 to 4)* **Source Function D** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input, (142) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3406 4246 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 4	- - - -	26004	uint RWES
S i.d Si.d	*Process Value (1 to 4)* **Source Instance D** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3416 4256 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 9	- - - -	26009	uint RWES
SZ.E SZ.E	*Process Value (1 to 4)* **Source Zone D** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3426 4264 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x0E (14)	- - - -	26014	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.E SFn.E	*Process Value (1 to 4)* **Source Function E** Set the type of function that will be used by this source to trigger a switch between Source A and Source B.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.G Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LGC Logic (239) tMr Timer (244) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3408 4248 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 5	- - - -	26005	uint RWES
Si.E Si.E	*Process Value (1 to 4)* **Source Instance E** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3418 4258 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0xA (10)	- - - -	26010	uint RWES
SZ.E SZ.E	*Process Value (1 to 4)* **Source Zone E** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3428 4268 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0xF (15)	- - - -	26015	uint RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
C.P C.P	*Process Value (1 to 4)* **Cross Over Point** When the value of source A is <= cross over point - crossover band divided by 2 then the output value will use source A.	-1999.000 to 9999.000	100.0	***Instance 1*** *Map 1 Map 2* 3446 4286 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x18 (24)		26024	float RWES
C.b C.b	*Process Value (1 to 4)* **Cross Over Band** The source will transition between Source A and Source B when within this band at a progressive rate	-1999.000 to 9999.000	10.0	***Instance 1*** *Map 1 Map 2* 3448 4288 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x19 (25)		26025	float RWES
P.unt P.unt	*Process Value (1 - 4)* **Pressure Units** If Process Value function is set for Pressure to Altitude units, define units of measure for conversion.	PSi Pounds per Square Inch (1671) PASc Pascal (1674) AtM Atmosphere (1675) Mbr Millibar (1672) torr Torr (1673)	PSI	Instance 1 *Map 1 Map 2* 3454 4294 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 2 0x1C (28)	- - - -	26028	uint RWES
A.unt A.unt	*Process Value (1 - 4)* **Altitude Units** If Process Value function is set for Pressure to Altitude units, define units of measure for conversion.	HFt Kilofeet (1677) Ft Feet (1676)	HFt	Instance 1 *Map 1 Map 2* 3456 4296 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 2 0x1D (29)	- - - -	26029	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
b.Pr b.Pr	*Process Value (1 - 4)* **Barometric Pressure** If Process Value function is set for Wet Bulb / Dry Bulb, define pressure value used for humidity calculation.	10.0 to 16.0	14.7	Instance 1 *Map 1 Map 2* 3458 4298 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 2 0x1E (30)	- - - -	26030	float RWES
F iL FiL	*Process Value (1 to 4)* **Filter** Filtering smooths out the output signal of this function block. Increase the time to increase filtering.	0.0 to 60.0 seconds	0.0	***Instance 1*** *Map 1 Map 2* 3450 4290 *Map 1 and Map 2 Offset to next instance equals +70*	0x7E (126) 1 to 4 0x1A (26)	- - - -	26026	float RWES
d io SEt **Digital Input/Output Menu**								
d ir dir	*Digital Input/ Output (7 to 12)* **Direction** Set this function to operate as an input or output.	OtPt Output (68) in Input Voltage (193) iCon Input Dry Contact (44)	Output	***Instance 1*** *Map 1 Map 2* 1200 1780 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 1	82	6001	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Fn Fn	*Digital Output (7 to 12)* **Function** Select what function will drive this output.	oFF Off (62) Ai Analog Input (142) ALM Alarm (6) C.Pr Cool Power (161) h.Pr Heat Power (160) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) uAr Variable (245) h.Er Heater Error (184)	Off	***Instance 1*** *Map 1 Map 2* 1208 1788 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x 6A (106) 7 to 12 5	83	6005	uint RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
F i Fi	*Digital Output (7 to 12)* **Output Function Instance** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 1210 1790 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 6	84	6006	uint RWES
S2.A SZ.A	*Digital Output (7 to 12)* **Output Source Zone** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 1222 1802 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 0x0C (12)	- - - -	6012	uint RWES
o.Ct o.Ct	*Digital Output (7 to 12)* **Time Base Type** Set the output control type. This parameter is only used with PID control, but can be set anytime.	Ftb Fixed Time Base (34) vtb Variable Time Base (103)	Fixed Time Base	***Instance 1*** *Map 1 Map 2* 1204 1782 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 2	85	6002	uint RWES
o.tb o.tb	*Digital Output (7 to 12)* **Fixed Time Base** Set the time base for fixed-time-base control.	0.1 to 60.0 seconds	1.0	***Instance 1*** *Map 1 Map 2* 1202 1784 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 3	86	6003	float RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
o.Lo	*Digital Output (7 to 12)* **Low Power Scale** The power output will never be less than the value specified and will represent the value at which output scaling begins.	0.0 to 100.0	0.0	***Instance 1*** *Map 1 Map 2* 1216 1796 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 9	87	6009	float RWES
o.hi	*Digital Output (7 to 12)* **High Power Scale** The power output will never be greater than the value specified and will represent the value at which output scaling stops.	0.0 to 100.0	100.0	***Instance 1*** *Map 1 Map 2* 1218 1798 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 0x0A (10)	88	6010	float RWES
No Display	*Digital Output (7 to 12)* **Output Source Value**	Minimum to Maximum display value	- - - -	***Instance 1*** *Map 1 Map 2* 1224 1804 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 7 to 12 0x0D (13)	- - - -	6013	float R

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
ACt SEt **Action Menu**								
Fn Fn	*Action (1 to 8)* **Function** Set the action that will be triggered by this function. **Note:** The Limit Reset function is not available in this menu for firmware revision 6.0 and above. To reset a tripped limit see the section entitled "Resetting a Tripped Limit".	nonE None (61) USr.r User Set Restore (227) ALM Alarm (6) SiL Silence Alarms (108) AoF Control Loops Off and Alarms to Non-alarm State (220) F.AL Force Alarm to Occur (218) idLE Idle Set Point (107) tUnE Tune (98) MAn Manual (54) oFF Switch Control Loop Off (90) r.En Remote Set Point (216) t.dA TRU-TUNE+® Disable (219) P.diS Profile Disable (206) P.hoL Profile Hold/ Resume (207) ProF Start Profile (196) P.StS Profile Start/ Stop (208)	None	***Instance 1*** *Map 1 Map 2* 1584 2424 *Map 1 and Map 2 Offset to next instance equals +20*	0x6E (110) 1 to 8 3	138	10003	uint RWES
Fi Fi	*Action (1 to 8)* **Function Instance** Set the instance of the function selected above.	0 to 25	0	***Instance 1*** *Map 1 Map 2* 1586 2426 *Map 1 and Map 2 Offset to next instance equals +20*	0x6E (110) 1 to 8 4	139	10004	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.A SFn.A	*Action (1 to 8)* **Source Function A** Set the event or function that will trigger the action.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) LgC Logic (239) tMr Timer (244) uAr Variable (245) h.Er Heater Error (184)	None	***Instance 1*** *Map 1 Map 2* 1590 2430 *Map 1 and Map 2 Offset to next instance equals +20*	0x6E (110) 1 to 8 6	- - - -	10006	uint RWES
Si.A Si.A	*Action (1 to 8)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 1582 2422 *Map 1 and Map 2 Offset to next instance equals +20*	0x6E (110) 1 to 8 2	- - - -	10002	uint RWES
SZ.A SZ.A	*Action (1 to 8)* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 1592 2432 *Map 1 and Map 2 Offset to next instance equals +20*	0x6E (110) 1 to 8 7	- - - -	10007	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
LEv LEv	*Action (1 to 8)* **Active Level** Set the action that will be considered a true state.	LobJ Low (53) high High (37)	High	***Instance 1*** *Map 1 Map 2* 1580 2420 *Map 1 and Map 2 Offset to next instance equals +20*	0x6E (110) 1 to 8 1	137	10001	uint RWES
L iM SEt **Limit Menu**								
L.Sd L.Sd	*Limit (1 to 4)* **Sides** Select which side or sides of the process value will be monitored.	both Both (13) high High (37) LobJ Low (53)	Both	***Instance 1*** *Map 1 Map 2* 728 828 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 5	40	12005	uint RWES
L.hy L.hy	*Limit (1 to 4)* **Hysteresis** Set the hysteresis for the limit function. This determines how far into the safe range the process value must move before the limit can be cleared.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	3.0°F or units 2.0°C	***Instance 1*** *Map 1 Map 2* 722 822 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 2	41	12002	float RWES
SP.Lh SP.Lh	*Limit (1 to 4)* **Maximum Set Point** Set the high end of the limit set point range.	-1,999.000 to 9,999.000	9,999.000	***Instance 1*** *Map 1 Map 2* 736 836 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 9	42	12009	float RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SP.LL SP.LL	*Limit (1 to 4)* **Minimum Set Point** Set the low end of the limit set point range.	-1,999.000 to 9,999.000	-1,999.000	***Instance 1*** *Map 1 Map 2* 738 838 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 0xA (10)	43	12010	float RWES
Lh.S Lh.S	*Limit (1 to 4)* **High Set Point *** Set the high process value that will trigger the limit.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 726 826 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 4	39	12004	float RWES
LL.S LL.S	*Limit (1 to 4)* **Low Set Point *** Set the low process value that will trigger the limit.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 724 824 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 3	38	12003	float RWES
SFn.A SFn.A	*Limit (1 to 4)* **Source Function A *** Set the source for the limit reset function.	nonE None (61) dio Digital I/O (1142) FUn Function Key (1001) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 748 848 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 0x0F (15)	- - - -	12015	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
5 i.A Si.A	*Limit (1 to 4)* **Source Instance A *** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* - - - - 850 *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 0x10 (16)	- - - -	12016	uint RWES
5Z.A SZ.A	*Limit (1 to 4)* **Source Zone A *** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* - - - - 852 *Map 2 Offset to next instance equals +50*	0x6B (107) 1 to 4 0x11 (17)	- - - -	12017	uint RWES
L.Cr LCr	*Limit (1 to 4)* **Clear Limit *** Clear limit once limit condition is safe.	Clear (0) No Change (255)	- - - -	***Instance 1*** *Map 1 Map 2* 720 820 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 1	- - - -	12001	uint W
L.St L.St	*Limit (1 to 4)* **Status *** Reflects whether or not the limit is in a safe or failed mode.	FAiL Fail (32) SAFE Safe (1667)	- - - -	***Instance 1*** *Map 1 Map 2* 744 844 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +50*	0x70 (112) 1 to 4 0x0D (13)	- - - -	12013	uint R
LooP SEt **Control Loop Menu**								
SFn.A SFn.A	*Control Loop (1 to 4)* **Source Function A** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input, (142) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) uAr Variable (245)	Analog Input	***Instance 1*** *Map 1 Map 2* 2276 3116 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x1D (29)	- - - -	8050	RWE

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
iS.A iS.A	*Control Loop (1 to 4)* **Source Instance A** Source Instance A follows the Control Loop and is not changeable	1 to 250	- - - -	- - - -	- - - -	- - - -	8021	R
h.Ag h.Ag	*Control Loop (1 to 4)* **Heat Algorithm** Set the heat control method.	oFF Off (62) P id PID (71) on.oF On-Off (64)	PID	***Instance 1*** *Map 1 Map 2* 2224 3064 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 3	72	8003	uint RWES
C.Ag C.Ag	*Control Loop (1 to 4)* **Cool Algorithm** Set the cool control method.	oFF Off (62) P id PID (71) on.oF On-Off (64)	Off	***Instance 1*** *Map 1 Map 2* 2226 3066 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 4	73	8004	uint RWES
C.Cr C.Cr	*Control Loop (1 to 4)* **Cool Output Curve** Select a cool output curve to change the responsiveness of the system.	oFF Off (62) Cr.A Non-linear Curve 1 (214) Cr.b Non-linear Curve 2 (215)	Off	***Instance 1*** *Map 1 Map 2* 2228 3068 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 5	- - - -	8038	uint RWES
h.Pb h.Pb	*Control Loop (1 to 4)* **Heat Proportional Band *** Set the PID proportional band for the heat outputs.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	25.0°F or units 14.0°C	***Instance 1*** *Map 1 Map 2* 2230 3070 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 6	65	8009	float RWES

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RMC Module • Setup Page

Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
h.hy h.hy	*Control Loop (1 to 4)* **On / Off Heat Hysteresis *** Set the control switching hysteresis for on-off control. This determines how far into the "on" region the process value needs to move before the output turns on.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	3.0°F or units 2.0°C	***Instance 1*** *Map 1 Map 2* 2240 3080 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xB (11)	66	8010	float RWES
C.Pb C.Pb	*Control Loop (1 to 4)* **Cool Proportional Band *** Set the PID proportional band for the cool outputs.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	25.0°F or units 14.0°C	***Instance 1*** *Map 1 Map 2* 2232 3072 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 7	67	8012	float RWES
C.hy C.hy	*Control Loop (1 to 4)* **On / Off Cool Hysteresis *** Set the control switching hysteresis for on-off control. This determines how far into the "on" region the process value needs to move before the output turns on.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	3.0°F or units 2.0°C	***Instance 1*** *Map 1 Map 2* 2242 3082 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xC (12)	68	8013	float RWES
ti ti	*Control Loop (1 to 4)* **Time Integral *** Set the PID integral for the outputs.	0 to 9,999 seconds per repeat	180 seconds per repeat	***Instance 1*** *Map 1 Map 2* 2234 3074 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 8	69	8006	float RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
t d td	*Control Loop (1 to 4)* **Time Derivative *** Set the PID derivative time for the outputs.	0 to 9,999 seconds	0 seconds	***Instance 1*** *Map 1 Map 2* 2236 3076 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 9	70	8007	float RWES
d b db	*Control Loop (1 to 4)* **Dead Band *** Set the offset to the proportional band. With a negative value, both heating and cooling outputs are active when the process value is near the set point. A positive value keeps heating and cooling outputs from fighting each other.	-1,000.0 to 1,000.0°F or units -556 to 556°C	0.0	***Instance 1*** *Map 1 Map 2* 2238 3078 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0xA (10)	71	8008	float RWES
t.t U n t.tUn	*Control Loop (1 to 4)* **TRU-TUNE+® Enable** Enable or disable the TRU-TUNE+® adaptive tuning feature.	n o No (59) Y E S Yes (106)	No	***Instance 1*** *Map 1 Map 2* 2250 3090 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 10 (16)	- - - -	8022	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
t.bnd t.bnd	*Control Loop (1 to 4)* **TRU-TUNE+® Band** Set the range, centered on the set point, within which TRU-TUNE+® will be in effect. Use this function only if the controller is unable to adaptive tune automatically.	0 to 100	0	***Instance 1*** *Map 1 Map 2* 2252 3092 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x11 (17)	- - - -	8034	uint RWES
t.gn t.gn	*Control Loop (1 to 4)* **TRU-TUNE+® Gain** Select the responsiveness of the TRU-TUNE+® adaptive tuning calculations. More responsiveness may increase overshoot.	1 to 6	3	***Instance 1*** *Map 1 Map 2* 2254 3094 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x12 (18)	- - - -	8035	uint RWES
A.tSP A.tSP	*Control Loop (1 to 4)* **Autotune Set Point *** Set the set point that the autotune will use, as a percentage of the current set point.	50.0 to 200.0%	90.0	***Instance 1*** *Map 1 Map 2* 2258 3098 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x14 (20)	- - - -	8025	float RWES
t.AGr t.Agr	*Control Loop (1 to 4)* **Autotune Aggressiveness** Select the aggressiveness of the autotuning calculations.	Undr Under damped (99) Crit Critical damped (21) oUEr Over damped (69)	Critical	***Instance 1*** *Map 1 Map 2* 2256 3096 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x13 (19)	- - - -	8024	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
P.dL P.dL	*Control Loop (1 to 4)* **Peltier Delay** Set a value that will cause a delay when switching from heat PID mode to cool PID mode.	0.0 to 5.0 seconds	0.0	***Instance 1*** *Map 1 Map 2* 2274 3114 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x1C (28)	- - - -	8051	float RWES
r.En r.En	*Control Loop (1 to 4)* **Remote Set Point** Set whether this loop will use a remote set point.	no No (59) YES Yes (106)	No	***Instance 1*** *Map 1 Map 2* 2540 3380 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x15 (21)	48	7021	uint RWES
SFn.b SFn.b	*Control Loop (1 to 4)* **Source Function B** Set the function that will provide the remote set point.	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pv Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) vAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 2544 3384 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x17 (23)	- - - -	7023	uint RWES
S i.b Si.b	*Control Loop (1 to 4)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 2546 3386 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x18 (24)	- - - -	7024	uint RWES
SZ.b SZ.b	*Control Loop (1 to 4)* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 2550 3390 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x1A (26)	- - - -	7026	uint RWES
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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
r.ty r.ty	*Control Loop (1 to 4)* **Remote Set Point Type** Set what type of set point will be used.	AUto Auto (10) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 2542 3382 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x16 (22)	- - - -	7022	uint RWES
UFA UFA	*Control Loop (1 to 4)* **Auto-to-Manual Power** Select what the controller outputs will do when the user switches control to manual mode.	oFF Off, sets output power to 0% (62) bPLS Bumpless transfer, maintains same output power, if it was less than 75% and stable, otherwise 0% (14) MAn Fixed Power, sets output power to Fixed Power setting (54) USEr User, sets output power to last open-loop set point the user entered (100)	User	***Instance 1*** *Map 1 Map 2* 2522 3362 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0xC (12)	- - - -	7012	uint RWES
FAiL FAiL	*Control Loop (1 to 4)* **Input Error Power** Select what the controller outputs will do when an input error switches control to manual mode.	oFF Off, sets output power to 0% (62) bPLS Bumpless transfer, maintains same output power, if it was less than 75% and stable, otherwise 0% (14) MAn Manual Power, sets output power to Fixed Power setting (54) USEr User, sets output power to last open-loop set point the user entered (100)	User	***Instance 1*** *Map 1 Map 2* 2524 3364 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0xD (13)	- - - -	7013	uint RWES
MAn MAn	*Control Loop (1 to 4)* **Fixed Power** Set the manual output power level that will take effect if an input error failure occurs while User Failure Action is set to Fixed Power.	Set Point Open Loop Limit Low to Set Point Open Loop Limit High (Setup Page)	0.0	***Instance 1*** *Map 1 Map 2* 2520 3360 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0xB (11)	- - - -	7011	float RWES
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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
L.dE L.dE	*Control Loop (1 to 4)* **Open Loop Detect Enable** Select Yes to detect conditions that prevent the process from changing in specified time frame when PID power is at 100%. An open loop detect error will disable the control loop.	no No (59) YES Yes (106)	No	***Instance 1*** *Map 1 Map 2* 2262 3102 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x16 (22)	74	8039	uint RWES
L.dt L.dt	*Control Loop (1 to 4)* **Open Loop Detect Time** Process must deviate by the Open Loop Detect Deviation value for this specified time while PID power is at 100% to prevent an open loop error.	0 to 3,600 seconds	240	***Instance 1*** *Map 1 Map 2* 2264 3104 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x17 (23)	75	8040	uint RWES
L.dd L.dd	*Control Loop (1 to 4)* **Open Loop Detect Deviation** Set the value that the process must deviate from the set point to trigger an open-loop error.	-1,999.000 to 9,999.000°F or units -1,110.555 to 5,555.000°C	10.0°F or units 6.0°C	***Instance 1*** *Map 1 Map 2* 2266 3106 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x18 (24)	76	8041	float RWES
No Display	*Control Loop (1 to 4)* **Loop Error** Reflects the loop error status.	None (61) Open Loop (1274) Reversed Sensor (1275)	- - - -	***Instance 1*** *Map 1 Map 2* 2268 3108 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 0x19 (25)	- - - -	8048	float RWES
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
rP rP	*Control Loop (1 to 4)* **Ramp Action** Select when the controller's set point will ramp to the defined end set point.	oFF Off (62) Str Startup (88) StPt Set Point Change (85) both Both (13)	Off	***Instance 1*** *Map 1 Map 2* 2526 3366 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0xE (14)	56	7014	uint RWES
r.SC r.SC	*Control Loop (1 to 4)* **Ramp Scale** Select the scale of the ramp rate.	hoUr Hours (39) Min Minutes (57)	Minutes	***Instance 1*** *Map 1 Map 2* 2528 3368 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0xF (15)	57	7015	uint RWES
r.rt r.rt	*Control Loop (1 to 4)* **Ramp Rate** Set the rate for the set point ramp. Set the time units for the rate with the Ramp Scale parameter.	0.0 to 9,999.000°F or units 0.0 to 5,555.000°C	1.0°F or units 1.0°C	***Instance 1*** *Map 1 Map 2* 2532 3372 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x11 (17)	58	7017	float RWES
Pro.E Pro.E	*Control Loop (1 to 4)* **Profiling Enable** Enable this loop to run profiles.	no No (59) YES Yes (106)	No	***Instance 1*** *Map 1 Map 2* 2552 3392 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 0x1B (27)	- - - -	7027	uint RWES
L.SP L.SP	*Control Loop (1 to 4)* **Minimum Set Point** Set the minimum value of the closed loop set point range.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	-1,999°F or units -1,128°C	***Instance 1*** *Map 1 Map 2* 2504 3344 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 3	- - - -	7003	float RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
h.SP h.SP	*Control Loop (1 to 4)* **Maximum Set Point** Set the maximum value of the closed loop set point range.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	9,999°F or units 5,537°C	***Instance 1*** *Map 1 Map 2* 2506 3346 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 4	- - - -	7004	float RWES
C.SP C.SP	*Control Loop (1 to 4)* **Set Point *** Set the set point that the controller will automatically control to.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	75.0°F or units 24.0°C	***Instance 1*** *Map 1 Map 2* 2500 3340 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 1	49	7001	float RWES
id.S id.S	*Control Loop (1 to 4)* **Idle Set Point *** Set a closed loop set point that can be triggered by an event state.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	75.0°F or units 24.0°C	***Instance 1*** *Map 1 Map 2* 2516 3356 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 9	50	7009	float RWES
SP.Lo SP.Lo	*Control Loop (1 to 4)* **Minimum Power** Set the minimum value of the open-loop set point range.	-100.0 to 100.0%	-100	***Instance 1*** *Map 1 Map 2* 2508 3348 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 5	54	7005	float RWES
SP.hi SP.hi	*Control Loop (1 to 4)* **Maximum Power** Set the maximum value of the open-loop set point range.	-100.0 to 100.0%	100	***Instance 1*** *Map 1 Map 2* 2510 3350 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 6	55	7006	float RWES
o.SP o.SP	*Control Loop (1 to 4)* **Manual Power *** Set a fixed level of output power when in manual (open-loop) mode.	-100.0 to 100.0% (heat and cool) 0 to 100.0% (heat only) -100.0 to 0% (cool only)	0.0	***Instance 1*** *Map 1 Map 2* 2502 3342 *Map 1 and Map 2 Offset to next instance equals +80*	0x6B (107) 1 to 4 2	51	7002	float RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
C.M	*Control Loop (1 to 4)* **Control Mode *** Select the method that this loop will use to control.	oFF Off (62) AUto Auto (10) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 2220 3060 *Map 1 and Map 2 Offset to next instance equals +70*	0x97 (151) 1 to 4 1	63	8001	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
otPt SEt **Output Menu**								
Fn Fn	*Output Digital (1 to 8)* **Function** Select what function will drive this output. **Note:** Limit function is available only for the slot in which the Limit resides.	oFF Off (62) Ai Analog Input (142) ALM Alarm (6) C.Pr Cool Power (161) h.Pr Heat Power (160) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) uAr Variable (245) h.Er Heater Error (184)	off	***Instance 1*** *Map 1 Map 2* 1028 1548 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 5	96	6005	uint RWES
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
F i Fi	*Output Digital (1 to 8)* **Output Function Instance** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 1030 1550 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 4 6	- - - -	6006	uint RWES
S2.A SZ.A	*Output Digital (1 to 8)* **Output Source Zone** Set the instance of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 1042 1562 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 0xC (12)	- - - -	6012	uint RWES
o.Ct o.Ct	*Output Digital (1 to 8)* **Time Base Type** Set the output control type. This parameter is only used with PID control, but can be set anytime.	Ftb Fixed Time Base (34) vtb Variable Time Base (103)	Fixed Time Base	***Instance 1*** *Map 1 Map 2* 1022 1542 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 2	- - - -	6002	uint RWES
o.tb o.tb	*Output Digital (1 to 8)* **Fixed Time Base** Set the time base for fixed-time-base control.	0.1 to 60.0 seconds (solid-state relay or switched dc) 5.0 to 60.0 seconds (mechanical relay or NO-ARC power control)	1.0 sec. [SSR & sw dc] 20.0 sec. [mech, relay, NO-ARC]	***Instance 1*** *Map 1 Map 2* 1024 1544 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 3	- - - -	6003	float RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
o.Lo o.Lo	*Output Digital (1 to 8)* **Low Power Scale** The power output will never be less than the value specified and will represent the value at which output scaling begins.	0.0 to 100.0%	0.0%	***Instance 1*** *Map 1 Map 2* 1036 1556 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 9	- - - -	6009	float RWES
o.hi o.hi	*Output Digital (1 to 8)* **High Power Scale** The power output will never be greater than the value specified and will represent the value at which output scaling stops.	0.0 to 100.0%	100.0%	***Instance 1*** *Map 1 Map 2* 1038 1558 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 0x0A (10)	- - - -	6010	float RWES
No Display	*Output Digital (1 to 8)* **Output State** View the value of this function block's output.	Off (62) On (63)	- - - -	***Instance 1*** *Map 1 Map 2* 1032 1552 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 7	- - - -	6007	uint R
No Display	*Output Digital (1 to 8)* **Output Source Value** View the value of this function block's input.	Minimum to Maximum display value	- - - -	***Instance 1*** *Map 1 Map 2* 1044 1564 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 to 8 0x0D (13)	- - - -	6013	float R

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
o.ty o.ty	*Output Process (1, 3, 5 or 7)* **Output Type** Select whether the process output will operate in volts or milliamps.	volt Volts (104) mA Milliamps (112)	Volts	***Instance 1*** *Map 1 Map 2* 840 1060 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 1	95	18001	uint RWES
Fn Fn	*Output Process (1, 3, 5 or 7)* **Function** Set the type of function that will drive this output.	oFF Off (62) Ai Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pv Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) vAr Variable (245) WAt Wattage (1697) Ld.Vo Load Voltage (1698) Ld.r Load Resistance (1183)	Off	***Instance 1*** *Map 1 Map 2* 842 1062 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 2	96	18002	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
F i Fi	*Output Process (1, 3, 5 or 7)* **Output Function Instance** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 846 1066 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 4	98	18004	uint RWES
S2.A SZ.A	*Output Process (1, 3, 5 or 7)* **Output Source Zone** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* - - - - 1096 *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 0x13 (19)	- - - -	18019	uint RWES
S.Lo S.Lo	*Output Process (1, 3, 5 or 7)* **Scale Low** Set the scale low for process output in electrical units. This value, in volts or milliamps, will correspond to 0% PID power output or the range low value.	-100.0 to 100.0	0.00	***Instance 1*** *Map 1 Map 2* 856 1076 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 9	99	18009	float RWES
S.hi S.hi	*Output Process (1, 3, 5 or 7)* **Scale High** Set the scale high for process output in electrical units. This value, in volts or milliamps, will correspond to 0% PID power output or the range high value.	-100.0 to 100.0	10.00	***Instance 1*** *Map 1 Map 2* 858 1078 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 0xA (10)	100	18010	float RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
r.Lo r.Lo	*Output Process (1, 3, 5 or 7)* **Range Low** Use to set the minimum value in process units. This will correspond with the Scale Low value.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18°C	***Instance 1*** *Map 1 Map 2* 860 1080 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 0xB (11)	101	18011	float RWES
r.hi r.hi	*Output Process (1, 3, 5 or 7)* **Range High** Use to set the maximum value in process units. This will correspond with the Scale High value.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	100 F or units 38 C	***Instance 1*** *Map 1 Map 2* 862 1082 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 0xC (12)	102	18012	float RWES
o.CA o.CA	*Output Process (1, 3, 5 or 7)* **Calibration Offset** Set an offset value for a process output.	-1,999.000 to 9,999.000°F or units -1,110.555 to 5,555.000°C	0.0°F or units 0.0°C	***Instance 1*** *Map 1 Map 2* 852 1072 *Map 1 Offset to next instance equals +48* *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 7	105	18007	float RWES
No Display	*Output Process (1, 3, 5 or 7)* **Analog Source Value** View the value of this function block's input.	-1,999.000 to 9,999.000°F or units -1,110.555 to 5,555.000°C	- - - -	***Instance 1*** *Map 1 Map 2* - - - - 1092 *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 0x11 (17)	- - - -	18018	float R
No Display	*Output Process (1, 3, 5 or 7)* **Analog Output Value** View the value of this function block's output.	0 to 20.00	- - - -	***Instance 1*** *Map 1 Map 2* - - - - 1090 *Map 2 Offset to next instance equals +120*	0x76 (118) 1 to 4 0x10 (16)	- - - -	18016	float R

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
ALM SEt Alarm Menu								
A.ty A.ty	*Alarm (1 to 8)* **Type** Select whether the alarm trigger is a fixed value or will track the set point.	oFF Off (62) Pr.AL Process Alarm (76) dE.AL Deviation Alarm (24)	Off	***Instance 1*** *Map 1 Map 2* 1768 2608 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0x0F (15)	20	9015	uint RWES
Sr.A Sr.A	*Alarm (1 to 8)* **Alarm Source** Select what will trigger this alarm.	nonE None (61) A i Analog Input (142) CUrr Current (22) PLdr PID Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) uAr Variable (245) Cu.r Current Read is Sample Hold (179) LJAt Wattage (1697) Ld.Uo Load Voltage (1698) Ld.r Load Resistance (1183)	None	***Instance 1*** *Map 1 Map 2* 1772 2612 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0x11 (17)	21	9017	uint RWES
iS.A iS.A	*Alarm (1 to 8)* **Alarm Source Instance** Set the instance of the function selected above.	1 or 250	1	***Instance 1*** *Map 1 Map 2* 1774 2614 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0x12 (18)	22	9018	uint RWES
SZ.A SZ.A	*Alarm (1 to 8)* **Alarm Source Zone** Set the zone of the function selected above.	0 or 24	0	***Instance 1*** *Map 1 Map 2* 1788 2628 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0x19 (25)	- - - -	9025	uint RWES
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
LooP LooP	*Alarm (1 to 4)* **Control Loop** Set the instance of the Set Point Closed, Control Loop, that will be referenced by the deviation alarm.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 1784 2624 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0x17 (23)	23	9023	uint RWES
A.hy A.hy	*Alarm (1 to 8)* **Hysteresis** Set the hysteresis for an alarm. This determines how far into the safe region the process value needs to move before the alarm can be cleared.	0.001 to 9,999.000°F or units 0.001 to 5,555.000°C	1.0°F or units 1.0°C	***Instance 1*** *Map 1 Map 2* 1744 2584 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 3	24	9003	float RWES
A.L9 A.Lg	*Alarm (1 to 8)* **Logic** Select what the output condition will be during the alarm state.	AL.C Close On Alarm (17) AL.o Open On Alarm (66)	Close On Alarm	***Instance 1*** *Map 1 Map 2* 1748 2588 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 5	25	9005	uint RWES
A.Sd A.Sd	*Alarm (1 to 8)* **Sides** Select which side or sides will trigger this alarm.	both Both (13) hi9h High (37) LobJ Low (53)	Both	***Instance 1*** *Map 1 Map 2* 1746 2586 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 4	26	9004	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
A.Lo A.Lo	*Alarm (1 to 8)* **Low Set Point *** If Alarm Type (Setup Page, Alarm Menu) is set to: **Process** - set the process value that will trigger a low alarm. **Deviation** - set the span of units from the closed loop set point that will trigger a low alarm. A negative set point represents a value below closed loop set point. A positive set point represents a value above closed loop set point.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	32.0°F or units 0.0°C	***Instance 1*** *Map 1 Map 2* 1742 2582 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 2	18	9002	float RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
A.hi A.hi	*Alarm (1 to 8)* **High Set Point *** If Alarm Type (Setup Page, Alarm Menu) is set to: **Process** - set the process value that will trigger a high alarm. **Deviation** - set the span of units from the closed loop set point that will trigger a low alarm. A negative set point represents a value below closed loop set point. A positive set point represents a value above closed loop set point.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	300.0°F or units 150.0°C	***Instance 1*** *Map 1 Map 2* 1740 2580 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 1	19	9001	float RWES
A.LA A.LA	*Alarm (1 to 8)* **Latching** Turn alarm latching on or off. A latched alarm has to be turned off by the user.	nLAt Non-Latching (60) LAt Latching (49)	Non-Latching	***Instance 1*** *Map 1 Map 2* 1752 2592 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 7	27	9007	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
A.bL	*Alarm (1 to 8)* **Blocking** Select when an alarm will be blocked. After startup and/ or after the set point changes, the alarm will be blocked until the process value enters the normal range.	oFF Off (62) Str Startup (88) StPt Set Point (85) both Both (13)	Off	***Instance 1*** *Map 1 Map 2* 1754 2594 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 8	28	9008	uint RWES
A.Si	*Alarm (1 to 8)* **Silencing** Turn alarm silencing on to allow the user to disable this alarm.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 1750 2590 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 6	29	9006	uint RWES
A.dSP	*Alarm (1 to 8)* **Display** Display an alarm message when an alarm is active.	oFF Off (62) on On (63)	On	***Instance 1*** *Map 1 Map 2* 1770 2610 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0x10 (16)	30	9016	uint RWES
A.dL	*Alarm (1 to 8)* **Delay Time** Set the span of time that the alarm will be delayed after the process value exceeds the alarm set point.	0 to 9,999 seconds	0	***Instance 1*** *Map 1 Map 2* 1780 2620 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0x15 (21)	31	9021	uint RWES
A.CLr	*Alarm (1 to 8)* **Clear Alarm *** Write to this register to clear an alarm	0	- - - -	***Instance 1*** *Map 1 Map 2* 1764 2604 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0xD (13)	32	9013	uint W

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
A.Sir	*Alarm (1 to 8)* **Silence Alarm *** Write to this register to silence an alarm	0	- - - -	***Instance 1*** *Map 1 Map 2* 1766 2606 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 0xE (14)	33	9014	uint W
A.St	*Alarm (1 to 8)* **State *** Current state of alarm	Startup (88) None (61) Blocked (12) Alarm low (8) Alarm high (7) Error (28)	- - - -	***Instance 1*** *Map 1 Map 2* 1756 2596 *Map 1 and Map 2 Offset to next instance equals +60*	0x6D (109) 1 to 8 9	- - - -	9009	uint R
Current Menu				**Note:** For further description and usage tips see the CT Application Note in this User's Guide.				
C.Sd	*Current (1 to 4)* **Sides** Use Current Sides to select which side of the current to monitor.	Off (62) High (37) Low (53) Both (13)	off	***Instance 1*** *Map 1 Map 2* 1388 2028 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 5	145	15005	uint RWES
CU.r	*Current (1 to 4)* **Indicate Reading** Use Indicate Reading to display solid-state relay (SSR) failure and heater failure messages on the RUI (remote user interface).	No (59) Yes (106)	no	***Instance 1*** *Map 1 Map 2* 1386 2026 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 4	146	15004	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
C.dt C.dt	*Current (1 to 4)* **Detection Threshold** Current Detection Threshold is for factory use only.	3 to 59	9	***Instance 1*** *Map 1 Map 2* 1402 2042 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 0xC (12)	147	15012	uint RWES
C.SC C.SC	*Current (1 to 4)* **Input Scaling** Use Input Scaling to adjust scaling to match the transformer's high range, in amperes.	0 to 9,999.000	50.0	***Instance 1*** *Map 1 Map 2* 1422 2062 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 0x16 (22)	148	15022	float RWES
C.oFS C.oFS	*Current (1 to 4)* **Heater Offset** Heater Current Offset is used to calibrate the current reading with an offset value.	-9,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 1400 2040 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 0xB (11)	149	15011	float RWES
C.Si C.Si	*Current (1 to 4)* **Monitored Output** With Monitored Output, set the output on which the current will be monitored.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 1416 2056 *Map 1 Offset to next instance equals +50* *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 0x13 (19)	150	15019	uint RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Er99	*Current (1 to 4)* **Monitored Zone** With Monitored Zone, set the zone in which the current output will be monitored.	0 to 24	0	***Instance 1*** *Map 1 Map 2* - - - - 2090 *Map 2 Offset to next instance equals +100*	0x73 (115) 1 to 4 0x24 (36)	- - - -	15036	uint RWES
Lnr SEt Linearization Menu								
Fn	*Linearization (1 to 4)* **Function** Set how this function will linearize Source A.	oFF Off (62) intr Interpolated (1482) StPd Stepped (1483)	Off	***Instance 1*** *Map 1 Map 2* 4528 6328 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 5	- - - -	34005	uint RWES
SFn.A	*Linearization (1 to 4)* **Source Function A** Set the type of function that will be used for this source.	nonE None (61) Ai Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 4520 6320 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 1	155	34001	uint RWES
Si.A	*Linearization (1 to 4)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4522 6322 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 2	- - - -	34002	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
S2.A SZ.A	*Linearization (1 to 4)* **Source Zone A** Set the zone of the function selected above.	0 or 24	0	***Instance 1*** *Map 1 Map 2* 4524 6324 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 3	- - - -	34003	uint RWES
Un it Unit	*Linearization (1 to 4)* **Units** Set the units of the output value.	Src Source (1539) nonE None (61) A.tP Absolute Temperature (1540) r.tP Relative Temperature (1541) PWr Power (73) Pro Process (75) rh Relative Humidity (1538)	Source	***Instance 1*** *Map 1 Map 2* 4576 6376 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x1D (29)	156	34029	uint RWES
iP.1 ip.1	*Linearization (1 to 4)* **Input Point 1** Set the value that will be mapped to output 1.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 4534 6334 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 8	157	34008	float RWES
oP.1 op.1	*Linearization (1 to 4)* **Output Point 1** Set the value that will be mapped to input 1.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 4554 6354 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x12 (18)	158	34018	float RWES
iP.2 ip.2	*Linearization (1 to 4)* **Input Point 2** Set the value that will be mapped to output 2.	-1,999.000 to 9,999.000	1.0	***Instance 1*** *Map 1 Map 2* 4536 6336 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 9	159	34009	float RWES
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
oP.2 op.2	*Linearization (1 to 4)* **Output Point 2** Set the value that will be mapped to input 2.	-1,999.000 to 9,999.000	1.0	***Instance 1*** *Map 1 Map 2* 4556 6356 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x13 (19)	160	34019	float RWES
iP.3 ip.3	*Linearization (1 to 4)* **Input Point 3** Set the value that will be mapped to output 3.	-1,999.000 to 9,999.000	2.0	***Instance 1*** *Map 1 Map 2* 4538 6338 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0xA (10)	161	34010	float RWES
oP.3 op.3	*Linearization (1 to 4)* **Output Point 3** Set the value that will be mapped to input 3.	-1,999.000 to 9,999.000	2.0	***Instance 1*** *Map 1 Map 2* 4558 6358 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x14 (20)	162	34020	float RWES
iP.4 ip.4	*Linearization (1 to 4)* **Input Point 4** Set the value that will be mapped to output 4.	-1,999.000 to 9,999.000	3.0	***Instance 1*** *Map 1 Map 2* 4540 6340 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0xB (11)	163	34011	float RWES
oP.4 op.4	*Linearization (1 to 4)* **Output Point 4** Set the value that will be mapped to input 4.	-1,999.000 to 9,999.000	3.0	***Instance 1*** *Map 1 Map 2* 4560 6360 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x15 (21)	164	34021	float RWES
iP.5 ip.5	*Linearization (1 to 4)* **Input Point 5** Set the value that will be mapped to output 5.	-1,999.000 to 9,999.000	4.0	***Instance 1*** *Map 1 Map 2* 4542 6342 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0xC (12)	165	34012	float RWES
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
oP.5 op.5	*Linearization (1 to 4)* **Output Point 5** Set the value that will be mapped to input 5.	-1,999.000 to 9,999.000	4.0	***Instance 1*** *Map 1 Map 2* 4562 6362 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x16 (22)	166	34022	float RWES
iP.6 ip.6	*Linearization (1 to 4)* **Input Point 6** Set the value that will be mapped to output 6.	-1,999.000 to 9,999.000	5.0	***Instance 1*** *Map 1 Map 2* 4544 6344 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0xD (13)	167	34013	float RWES
oP.6 op.6	*Linearization (1 to 4)* **Output Point 6** Set the value that will be mapped to input 6.	-1,999.000 to 9,999.000	5.0	***Instance 1*** *Map 1 Map 2* 4564 6364 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x17 (23)	168	34023	float RWES
iP.7 ip.7	*Linearization (1 to 4)* **Input Point 7** Set the value that will be mapped to output 7.	-1,999.000 to 9,999.000	6.0	***Instance 1*** *Map 1 Map 2* 4546 6346 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 E (14)	169	34014	float RWES
oP.7 op.7	*Linearization (1 to 4)* **Output Point 7** Set the value that will be mapped to input 7.	-1,999.000 to 9,999.000	6.0	***Instance 1*** *Map 1 Map 2* 4566 6366 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x18 (24)	170	34024	float RWES
iP.8 ip.8	*Linearization (1 to 4)* **Input Point 8** Set the value that will be mapped to output 8.	-1,999.000 to 9,999.000	7.0	***Instance 1*** *Map 1 Map 2* 4548 6348 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0xF (15)	171	34015	float RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
oP.8 op.8	*Linearization (1 to 4)* **Output Point 8** Set the value that will be mapped to input 8.	-1,999.000 to 9,999.000	7.0	***Instance 1*** *Map 1 Map 2* 4568 6368 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x19 (25)	172	34025	float RWES
iP.9 ip.9	*Linearization (1 to 4)* **Input Point 9** Set the value that will be mapped to output 9.	-1,999.000 to 9,999.000	8.0	***Instance 1*** *Map 1 Map 2* 4550 6350 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x10 (16)	173	34016	float RWES
oP.9 op.9	*Linearization (1 to 4)* **Output Point 9** Set the value that will be mapped to input 9.	-1,999.000 to 9,999.000	8.0	***Instance 1*** *Map 1 Map 2* 4570 6370 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x1A (26)	174	34026	float RWES
iP.10 ip.10	*Linearization (1 to 4)* **Input Point 10** Set the value that will be mapped to output 10.	-1,999.000 to 9,999.000	9.0	***Instance 1*** *Map 1 Map 2* 4552 6352 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x11 (17)	175	34017	float RWES
oP.10 op.10	*Linearization (1 to 4)* **Output Point 10** Set the value that will be mapped to input 10.	-1,999.000 to 9,999.000	9.0	***Instance 1*** *Map 1 Map 2* 4572 6372 *Map 1 and Map 2 Offset to next instance equals +70*	0x86 (134) 1 to 4 0x1B (27)	176	34027	float RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
CPE SEt **Compare Menu**								
Fn Fn	*Compare (1 to 4)* **Function** Set operator that will be used to compare Source A to Source B.	oFF Off (62) gt Greater Than (1435) Lt Less Than (1436) E Equal To (1437) nE Not Equal To (1438) goE Greater or Equal (1439) LoE Less or Equal (1440)	Off	***Instance 1*** *Map 1 Map 2* 4016 5816 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 9	223	28009	uint RWES
toL toL	*Compare (1 to 4)* **Tolerance** If the difference between Source A and Source B is less than this value the two will appear to be equal.	0 to 9,999.000	0.1	***Instance 1*** *Map 1 Map 2* 4020 5820 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 0xB (11)	230	28011	float RWES
SFn.A SFn.A	*Compare (1 to 4)* **Source Function A** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245) WAt Wattage (1697) Ld.Vo Load Voltage (1698) Ld.r Load Resistance (1183)	None	***Instance 1*** *Map 1 Map 2* 4000 5800 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 1	- - - -	28001	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
S i.A Si.A	*Compare (1 to 4)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4004 5804 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 3	- - - -	28003	uint RWES
S2.A SZ.A	*Compare (1 to 4)* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4008 5808 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 5	- - - -	28005	uint RWES
SFn.b SFn.b	*Compare (1 to 4)* **Source Function B** Set the type of function that will be used for this source. This represents the timer reset signal.	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PLUr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245) UUAt Wattage (1697) Ld.Uo Load Voltage (1698) Ld.r Load Resistance (1183)	None	***Instance 1*** *Map 1 Map 2* 4002 5802 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 2	- - - -	28002	uint RWES
S i.b Si.b	*Compare (1 to 4)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4006 5806 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 4	- - - -	28004	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S2.b SZ.b	*Compare (1 to 4)* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4010 5810 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 6	- - - -	28006	uint RWES
Er.h Er.h	*Compare (1 to 4)* **Error Handling** Use Error Handling to select the output value and error output state of this function if it receives an error signal from one or more sources and it cannot determine the output value.	t.9 True Good (1476) t.b True Bad (1477) F.9 False Good (1478) F.b False Bad (1479)	False Bad	***Instance 1*** *Map 1 Map 2* 4022 5862 *Map 1 and Map 2 Offset to next instance equals +40*	0x80 (128) 1 to 4 0xC (12)	- - - -	28012	uint RWES
tMr SEt **Timer Menu**								
Fn Fn	*Timer (1 to 4)* **Function** Set how the timer will function.	oFF Off (62) on.P On Pulse (1471) dEL Delay (1472) o.S One Shot (1473) rEt Retentive (1474)	Off	***Instance 1*** *Map 1 Map 2* 4336 6136 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 9	223	31009	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.A SFn.A	*Timer (1 to 4)* **Source Function A** Set the type of function that will be used for this source. This represents the timer run signal.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heater Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 4320 6120 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 1	- - - -	31001	uint RWES
Si.A Si.A	*Timer (1 to 4)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4324 6124 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 3	- - - -	31003	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SZ.A SZ.A	*Timer (1 to 4)* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4328 6128 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 5	- - - -	31005	uint RWES
SAS.A SAS.A	*Timer (1 to 4)* **Run Active Level** Set what state will be read as on.	high High (37) LoWd Low (53)	High	***Instance 1*** *Map 1 Map 2* 4340 6140 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 0xB (11)	- - - -	31011	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.b SFn.b	*Timer (1 to 4)* **Source Function B** Set the type of function that will be used to reset a retentive timer.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heater Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 4322 6122 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 2	- - - -	31002	uint RWES
Si.b Si.b	*Timer (1 to 4)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4326 6126 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 4	- - - -	31004	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S2.b SZ.b	*Timer (1 to 4)* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4330 6130 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 6	- - - -	31006	uint RWES
SAS.b SAS.b	*Timer (1 to 4)* **Reset Active Level** Set what state will be read as on.	high High (37) Lowd Low (53)	High	***Instance 1*** *Map 1 Map 2* 4342 6142 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 0xC (12)	- - - -	31012	uint RWES
ti ti	*Timer (1 to 4)* **Time** Set the time span that will be measured in tenths of a second.	0 to 9,999.000	0.1	***Instance 1*** *Map 1 Map 2* 4344 6144 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 0xD (13)	224	31013	float RWES
LEu LEv	*Timer (1 to 4)* **Transmitter Active Level** Set which output state will indicate on.	high High (37) Lowd Low (53)	High	***Instance 1*** *Map 1 Map 2* 4346 6146 *Map 1 and Map 2 Offset to next instance equals +50*	0x83 (131) 1 to 4 0xE (14)	- - - -	31014	uint RWES
Ctr SEt **Counter Menu**								
Fn Fn	*Counter (1 to 4)* **Function** Set whether the counter increments or decrements the count value. Decrementing 0 returns 9,999. Incrementing 9,999 returns 0.	UP Up (1456) dn Down (1457)	Up	***Instance 1*** *Map 1 Map 2* 4176 5976 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 9	- - - -	30009	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.A SFn.A	*Counter (1 to 4)* **Source Function A** Set the type of function that will be used for the counter clock signal.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) tMr Timer (244) h.Er Heater Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 4160 5960 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 1	- - - -	30001	uint RWES
Si.A Si.A	*Counter (1 to 4)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4164 5964 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 3	- - - -	30003	uint RWES
SZ.A SZ.A	*Counter (1 to 4)* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4168 5968 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 5	- - - -	30005	uint RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SAS.A SAS.A	*Counter (1 to 4)* **Count Active Level** Set what output state will indicate on.	both Both (130) high High (37) Low Low (53)	High	***Instance 1*** *Map 1 Map 2* 4180 5980 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 0xB (11)	- - - -	30011	uint RWES
SFn.b SFn.b	*Counter (1 to 4)* **Source Function B** Set the type of function that will be used for the counter load signal.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) tMr Timer (244) h.Er Heater Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 4162 5962 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 2	- - - -	30002	uint RWES
Si.b Si.b	*Counter (1 to 4)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4166 5966 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 4	- - - -	30004	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
5Z.b SZ.b	*Counter (1 to 4)* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4170 5970 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 6	- - - -	30006	uint RWES
5A5.b SAS.b	*Counter (1 to 4)* **Reset Active Level** Set what output state will indicate on.	h i9h High (37) Lo6d Low (53) 8oth Both (130)	High	***Instance 1*** *Map 1 Map 2* 4182 5982 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 0x0C (12)	- - - -	30012	uint RWES
LoAd LoAd	*Counter (1 to 4)* **Load Value** Set the counter's initial value.	0 to 9,999	0	***Instance 1*** *Map 1 Map 2* 4184 5984 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 (13)	215	30013	uint RWES
tr9t trgt	*Counter (1 to 4)* **Target Value** Set the value that will turn the output value on.	0 to 9,999	9,999	***Instance 1*** *Map 1 Map 2* 4186 5986 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 0xE (14)	216	30014	uint RWES
LAt LAt	*Counter (1 to 4)* **Latching** Output latched.	no No (59) YES Yes (106)	No	***Instance 1*** *Map 1 Map 2* 4192 5992 *Map 1 and Map 2 Offset to next instance equals +40*	0x82 (130) 1 to 4 0x11 (17)	218	30017	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
L9C SEt **Logic Menu**								
Fn Fn	*Logic (1 to 4)* **Function** Set the operator that will be used to compare the sources.	oFF Off (62) And And (1426) nAnd Nand (1427) or Or (1442) nor Nor (1443) E Equal To (1437) nE Not Equal To (1438) LAt Latch (1444) r.SFF RS Flip-Flop (1693)	Off	***Instance 1*** *Map 1 Map 2* 3744 4584 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x21 (33)	235	27033	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.A SFn.A	*Logic (1 to 4)* **Source Function A** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heator Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3680 4520 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 1	- - - -	27001	uint RWES
S i.A Si.A	*Logic (1 to 4)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3696 4536 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 9	- - - -	27009	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SZ.A SZ.A	*Logic (1 to 4)* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3712 4552 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x11 (17)	- - - -	27017	uint RWES
SFn.b SFn.b	*Logic (1 to 4)* **Source Function B** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.9 Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) L9C Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heater Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3682 4522 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 2	- - - -	27002	uint RWES

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S i.b Si.b	*Logic (1 to 4)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3698 4538 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0xA (10)	- - - -	27010	uint RWES
S2.b SZ.b	*Logic (1 to 4)* **Source Zone B** Set the zone of the function selected above	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3714 4554 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x12 (18)	- - - -	27018	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.C SFn.C	*Logic (1 to 4)* **Source Function C** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heator Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3684 4524 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 3	- - - -	27003	uint RWES
Si.C Si.C	*Logic (1 to 4)* **Source Instance C** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3700 4540 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0xB (11)	- - - -	27011	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SZ.C SZ.C	*Logic (1 to 4)* **Source Zone C** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3716 4556 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x13 (19)	- - - -	27019	uint RWES
SFn.d SFn.d	*Logic (1 to 4)* **Source Function D** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heator Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3686 4526 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 4	- - - -	27004	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
S i.d Si.d	*Logic (1 to 4)* **Source Instance D** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3702 4542 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0xC (12)	- - - -	27012	uint RWES
S2.d SZ.d	*Logic (1 to 4)* **Source Zone D** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3718 4558 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x14 (20)	- - - -	27020	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.E SFn.E	*Logic (1 to 4)* **Source Function E** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heator Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3688 4528 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 5	- - - -	27005	uint RWES
Si.E Si.E	*Logic (1 to 4)* **Source Instance E** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3704 4544 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 D (13)	- - - -	27013	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SZ.E SZ.E	*Logic (1 to 4)* **Source Zone E** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3720 4560 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x15 (21)	- - - -	27021	uint RWES
SFn.F SFn.F	*Logic (1 to 4)* **Source Function F** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heater Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3690 4530 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 6	- - - -	27006	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S i.F Si.F	*Logic (1 to 4)* **Source Instance F** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3706 4546 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0xE (14)	- - - -	27014	uint RWES
S2.F SZ.F	*Logic (1 to 4)* **Source Zone F** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3722 4560 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x16 (22)	- - - -	27022	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.g SFn.g	*Logic (1 to 4)* **Source Function G** Set the type of function that will be used for this source.	none None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) LgC Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heator Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3692 4532 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 7	- - - -	27007	uint RWES
Si.g Si.g	*Logic (1 to 4)* **Source Instance G** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3708 4548 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0xF (15)	- - - -	27015	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S2.9 SZ.g	*Logic (1 to 4)* **Source Zone G** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3724 4564 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x17 (23)	- - - -	27023	uint RWES
SFn.h SFn.h	*Logic (1 to 4)* **Source Function H** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.9 Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LiM Limit (126) L9C Logic (239) SoF.1 Special Function Output 1 (1532) SoF.2 Special Function Output 2 (1533) SoF.3 Special Function Output 3 (1534) SoF.4 Special Function Output 4 (1535) tMr Timer (244) h.Er Heator Error (184) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 3694 4534 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 8	- - - -	27008	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
S i.h Si.h	*Logic (1 to 4)* **Source Instance H** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 3710 4550 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x10 (16)	- - - -	27016	uint RWES
S2.h SZ.h	*Logic (1 to 4)* **Source Zone H** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 3726 4566 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x18 (24)	- - - -	27024	uint RWES
Er.h Er.h	*Logic (1 to 4)* **Error Handling** Use to select the output value and error output state of this function if it receives an error signal from one or more sources and it cannot determine the output value.	t.9 True Good (1476) t.b True Bad (1477) F.9 False Good (1478) F.b False Bad (1479)	False Bad	***Instance 1*** *Map 1 Map 2* 3748 4588 *Map 1 and Map 2 Offset to next instance equals +80*	0x7F (127) 1 to 4 0x23 (35)	- - - -	27035	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
mAt SEt **Math Menu**								
Fn Fn	*Math (1 to 8)* **Function** Set the operator that will be applied to the sources.	oFF Off (62) AuG Average (1367) P.SC Process Scale (1371) d.SC Deviation Scale (1372) So Switch Over (1370) diFF Differential (1373) rAti Ratio (1374) Add Add (1375) mUL Multiply (1376) A.diF Absolute Difference (1377) min Minimum (1378) mAH Maximum (1379) root Square Root (1380) hoLd Sample and Hold (1381) ALt Pressure to Altitude (1649) dEW Dew Point (1650)	Off	***Instance 1*** *Map 1 Map 2* 2880 3720 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x15 (21)	128	25021	uint RWES
SFn.A SFn.A	*Math (1 to 8)* **Source Function A** Set the type of function that will be used for this source.	nonE None (61) Ai Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) mAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245) WAt Wattage (1697) Ld.Vo Load Voltage (1698) Ld.r Load Resistance (1183)	None	***Instance 1*** *Map 1 Map 2* 2840 3680 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 1	- - - -	25001	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
S i.A Si.A	*Math (1 to 8)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 2850 3690 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 6	- - - -	25006	uint RWES
S2.A SZ.A	*Math (1 to 8)* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 2860 3700 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0xB (11)	- - - -	25011	uint RWES
SFn.b SFn.b	*Math (1 to 8)* **Source Function B** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pv Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) vAr Variable (245) WAt Wattage (1697) Ld.Vo Load Voltage (1698) Ld.r Load Resistance (1183)	None	***Instance 1*** *Map 1 Map 2* 2842 3682 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 2	- - - -	25002	uint RWES
S i.b Si.b	*Math (1 to 8)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 2852 3692 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 7	- - - -	25007	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SZ.b	*Math (1 to 8)* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 2862 3702 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0xC (12)	- - - -	25012	uint RWES
SFn.C	*Math (1 to 8)* **Source Function C** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245) WAt Wattage (1697) Ld.Uo Load Voltage (1698) Ld.r Load Resistance (1183)	None	***Instance 1*** *Map 1 Map 2* 2844 3684 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 3	- - - -	25003	uint RWES
Si.C	*Math (1 to 8)* **Source Instance C** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 2854 3694 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 8	- - - -	25008	uint RWES
SZ.C	*Math (1 to 8)* **Source Zone C** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 2864 3704 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0xD (13)	- - - -	25013	uint RWES
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.d SFn.d	*Math (1 to 8)* **Source Function D** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245) WAt Wattage (1697) Ld.Vo Load Voltage (1698) Ld.r Load Resistance (1183)	None	***Instance 1*** *Map 1 Map 2* 2846 3686 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 4	- - - -	25004	uint RWES
S i.d Si.d	*Math (1 to 8)* **Source Instance D** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 2856 3696 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 9	- - - -	25009	uint RWES
SZ.d SZ.d	*Math (1 to 8)* **Source Zone D** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 2866 3706 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0xE (14)	- - - -	25014	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ** **
SFn.E SFn.E	*Math (1 to 8)* **Source Function E** Set the type of function that will be used for this source.	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) tMr Timer (244) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 2848 3688 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 5	- - - -	25005	uint RWES
S i.E Si.E	*Math (1 to 8)* **Source Instance E** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 2858 3698 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0xA (10)	- - - -	25010	uint RWES
SZ.E SZ.E	*Math (1 to 8)* **Source Zone E** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 2868 3708 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0xF (15)	- - - -	25015	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page							
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
S.Lo S.Lo	*Math (1 to 8)* **Scale Low** If Math function is set to Process Scale, this will scale Source A low value to Range Low setting.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 2886 3726 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x18 (24)	129	25024	float RWES
S.hi S.hi	*Math (1 to 8)* **Scale High** If Math function is set to Process Scale, this will scale Source A high value to Range High setting.	-1,999.000 to 9,999.000	1.0	***Instance 1*** *Map 1 Map 2* 2888 3728 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x19 (25)	130	25025	float RWES
Unit Unit	*Math (1 to 8)* **Units** Set units for Source.	SrC Source (1539) nonE None (61) A.tP Absolute Temperature (1540) r.tP Relative Temperature (1541) PWr Power (73) Pro Process (75) rh Relative Humidity (1538)	Source	***Instance 1*** *Map 1 Map 2* 2902 3742 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x20 (32)	- - - -	25032	uint RWES
r.Lo r.Lo	*Math (1 to 8)* **Range Low** If Math function is set to Process Scale, this will output Source A Scale Low value to Range Low setting.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 2890 3730 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x1A (26)	131	25026	float RWES
r.hi r.hi	*Math (1 to 8)* **Range High** If Math function is set to Process Scale, this will output Source A Scale High value to Range High setting.	-1,999.000 to 9,999.000	1.0	***Instance 1*** *Map 1 Map 2* 2892 3732 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x1B (27)	132	25027	float RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
P.unt P.unt	*Math (1 to 8)* **Pressure Units** If Math function is set for Pressure to Altitude units, set units of measure for conversion.	PS i Pressure Units (1671) PASc Pascal (1674) AtM Atmosphere (1675) Mbr mbar (1672) torr Torr (1673)	Pressure Units	***Instance 1*** *Map 1 Map 2* 2898 3738 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x1E (30)	- - - -	25030	uint RWES
A.unt A.unt	*Math (1 to 8)* **Altitude Units** If Math function is set for Pressure to Altitude units, set units of measure for conversion.	HFt Kilofeet (1671) Ft Feet (1674)	Kilofeet	***Instance 1*** *Map 1 Map 2* 2900 3740 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x1F (31)	- - - -	25031	uint RWES
F iL FiL	*Math (1 to 8)* **Filter** Filtering smooths out the output signal of this function block. Increase the time to increase filtering.	0.0 to 60.0 seconds	0.0	***Instance 1*** *Map 1 Map 2* 2894 3734 *Map 1 and Map 2 Offset to next instance equals +70*	0x7D (125) 1 to 8 0x1C (28)	- - - -	25028	float RWES
SoF SEt **Special Output Function Menu**								
Fn Fn	*Special Output (1 to 4)* **Function** Set the function to match the device it will operate.	oFF Off (62) CoC Compressor Control (1506) uAC Motorized Valve (1508) SEC Sequencer (1507)	Off	***Instance 1*** *Map 1 Map 2* 4976 6936 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 9	181	35009	uint RWES
SFn.A SFn.A	*Special Output (1 to 4)* **Source Function A** Set the type of function that will be used for this source.	nonE None (61) A i Analog Input (142) C.Pr Cool Power (161) h.Pr Heat Power (160) PLJr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SoF.1 Special Function Output 1 (1532) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 4960 6920 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 1	182	35001	uint RWES

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S i.A Si.A	*Special Output (1 to 4)* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4964 6924 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 3	183	35003	uint RWES
S2.A SZ.A	*Special Output (1 to 4)* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4968 6928 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 5	- - - -	35005	uint RWES
SFn.b SFn.b	*Special Output (1 to 4)* **Source Function B** Set the type of function that will be used for this source.	nonE None (61) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 4962 6922 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 2	184	35002	uint RWES
S i.b Si.b	*Special Output (1 to 4)* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 4966 6926 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 4	185	35004	uint RWES
S2.b SZ.b	*Special Output (1 to 4)* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 4970 6930 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 6	- - - -	35006	uint RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
Pon.A Pon.A	*Special Output (1 to 4)* **Input A Turn On** If Function is set to Compressor Control: Use Source A for a first loop to inform the function whether the compressor will soon be required. Set Power On Level 1 and Power Off Level 1 to the Source A values that will switch the compressor on and off.	-100.0 to 100.0%	0	***Instance 1*** *Map 1 Map 2* 4994 6954 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x12 (18)	186	35018	float RWES
PoF.A PoF.A	*Special Output (1 to 4)* **Input A Turn Off**	-100.0 to 100.0%	5	***Instance 1*** *Map 1 Map 2* 4996 6956 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x13 (19)	187	35019	float RWES
Pon.b Pon.b	*Special Output (1 to 4)* **Input B Turn On** If Function is set to Compressor Control: Use Source B for a second loop to inform the function whether the compressor will soon be required. Set Power On Level 2 and Power Off Level 2 to the Source B values that will switch the compressor on and off.	-100.0 to 100.0%	0	***Instance 1*** *Map 1 Map 2* 4998 6958 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x14 (20)	188	35020	float RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
PoF.b PoF.b	*Special Output (1 to 4)* **Input B Turn Off**	-100.0 to 100.0%	5	***Instance 1*** *Map 1 Map 2* 5000 6960 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x15 (21)	189	35021	float RWES
on.t on.t	*Special Output (1 to 4)* **Minimum On Time** If Function is set to Compressor Control: Set Minimum On Time and Minimum Off Time to the minimum span of time, in seconds, that the compressor will be on or off.	0 to 9,999 seconds	20	***Instance 1*** *Map 1 Map 2* 5002 6962 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x16 (22)	190	35022	uint RWES
oF.t oF.t	*Special Output (1 to 4)* **Minimum Off Time**	0 to 9,999 seconds	20	***Instance 1*** *Map 1 Map 2* 5004 6964 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x17 (23)	191	35023	uint RWES
t.t t.t	*Special Output (1 to 4)* **Valve Travel Time** If Function is set to Motorized Valve: Source A will determine the valve position. Set this time in seconds representing the time that it will take the valve to travel between fully closed and fully open.	10 to 9,999 seconds	120	***Instance 1*** *Map 1 Map 2* 5006 6966 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x18 (24)	192	35024	uint RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
db db	*Special Output (1 to 4)* **Dead Band** If Function is set to Motorized Valve: Set to the minimum valve adjustment as a percentage, representing the movement of the valve in a single action. A small value improves accuracy and depletes valve life where a large value reduces the number of adjustments (less accurate) and the wear on the mechanism.	1.0 to 100.0%	2	***Instance 1*** *Map 1 Map 2* 5008 6968 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x19 (25)	193	35025	float RWES
o.S1 o.S1	*Special Output (1 to 4)* **Output 1 Size** If Function is set to Sequencer: Set Output 1 Size, as a percentage of the total capacity of all output devices, or vernier output. This value must be larger than the values set for outputs 2 through 4.	0 to 9,999	10	***Instance 1*** *Map 1 Map 2* 5014 6974 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x1C (28)	- - - -	35028	float RWES

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
o.S2	*Special Output (1 to 4)* **Output 2 Size** If Function is set to Sequencer: Set the size of outputs 2 through 4 to represent a percentage of the total output capacity. Outputs 2 through 4 will control using the ON-OFF algorithm.	0 to 9,999	0	***Instance 1*** *Map 1 Map 2* 5016 6976 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x1D (29)	- - - -	35029	float RWES
o.S3	*Special Output (1 to 4)* **Output 3 Size**	0 to 9,999	0	***Instance 1*** *Map 1 Map 2* 5018 6978 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x1E (30)	- - - -	35030	float RWES
o.S4	*Special Output (1 to 4)* **Output 4 Size**	0 to 9,999	0	***Instance 1*** *Map 1 Map 2* 5020 6980 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x1F (31)	- - - -	35031	float RWES
t.dL	*Special Output (1 to 4)* **Time Delay** If Function is set to Sequencer: Set in seconds to represent the minimum span of time that must elapse between the turn on of one (on-off) output to the next.	0 to 9,999 seconds	0	***Instance 1*** *Map 1 Map 2* 5010 6970 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x1A (26)	- - - -	35026	uint RWES

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RMC Module • Setup Page									
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****	
ot.o ot.o	*Special Output (1 to 4)* **Output Order** If Function is set to Sequencer: Set to Linear to turn the on-off outputs on in the same order every time. Select Progressive to rotate the order to balance usage and wear on contactors and heaters.	L in Linear (1509) Pro Progressive (1510)	Linear	***Instance 1*** *Map 1 Map 2* 5012 6972 *Map 1 and Map 2 Offset to next instance equals +80*	0x87 (135) 1 to 4 0x1B (27)	- - - -	35027	uint RWES	
uAr SEt **Variable Menu**									
tYPE tyPE	*Variable 1 to 16* **Data Type** Set the variable's data type.	AnLG Analog (1215) dig Digital (1220)	Analog	***Instance 1*** *Map 1 Map 2* 4800 6600 *Map 1 and Map 2 Offset to next instance equals +20*	0x66 (102) 1 to 16 1	210	2001	uint RWES	
Unit Unit	*Variable 1 to 16* **Units** Set the variable's units.	A.tP Absolute Temperature (1540) r.tP Relative Temperature (1541) PWr Power (73) Pro Process (75) rh Relative Humidity (1538) nonE None (61)	Absolute Temperature	***Instance 1*** *Map 1 Map 2* 4812 6612 *Map 1 and Map 2 Offset to next instance equals +20*	0x66 (102) 1 to 16 7	- - - -	2007	uint RWES	
dig dig	*Variable 1 to 16* **Digital** Set the variable's value.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 4802 6602 *Map 1 and Map 2 Offset to next instance equals +20*	0x66 (102) 1 to 16 2	211	2002	uint RWES	

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
AnLg AnLg	*Variable 1 to 16* **Analog** Set the variable's value.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 4804 6604 *Map 1 and Map 2 Offset to next instance equals +20*	0x66 (102) 1 to 16 3	212	2003	float RWES
9LbL SEt **Global Menu**								
C_F C_F	*Global* **Display Units** Select which scale to use for temperature.	F °F (30) C °C (15)	°F	***Instance 1*** *Map 1 Map 2* 43348 45308	0x67 (103) 1 5	- - - -	3005	uint RWES
AC.LF AC.LF	*Global* **AC Line Frequency** Set the frequency to the applied ac line power source.	50 50 Hz (3) 60 60 Hz (4)	60 Hz	***Instance 1*** *Map 1 Map 2* 1026 1546 *Map 1 Offset to next instance equals +30* *Map 2 Offset to next instance equals +40*	0x6A (106) 1 4	- - - -	6004	uint RWES
MAH MAX	*Global* **Maximum Display Value** Allows ranges to be opened up to display full values. Prior to firmware revision 9.0, ranges were clamped to accommodate the seven segment LED display of the RUI. Typically used with external display devices/software like HMIs and SpecView.	Floating Point [-3.4E+38 to 3.4E+38] Unsigned integer [0 to 65,535]	9999.0	***Instance 1*** *Map 1 Map 2* - - - - 45388	0x67 (103) 1 0x2D (45)	- - - -	3045	float RW
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Min	*Global* **Minimum Display Value** Allows ranges to be opened up to display full values. Prior to firmware revision 9.0, ranges were clamped to accommodate the seven segment LED display of the RUI. Typically used with external display devices/software like HMIs and SpecView.	Floating Point [-3.4E+38 to 3.4E+38] Unsigned integer [0 to 65,535]	-1,999.0	***Instance 1*** *Map 1 Map 2* - - - - 45386	0x67 (103) 1 0x2C (44)	- - - -	3044	float RW
Sutb	*Global* **Synchronized Variable Time Base** Used to acquire tighter accuracy when running a profile. A setting of +0.01 would equate to approximately +9 seconds/day (faster) where a setting of -0.01 would equate to approximately -9 seconds/day (slower).	-2.00 to 2.00 Percent	0.00	***Instance 1*** *Map 1 Map 2* - - - - 94	0x65 (101) 1 0x30 (48)	- - - -	1048	float RWE
dPrS	*Global* **Display Pairs** Defines the number of Display Pairs.	1 to 10	1	***Instance 1*** *Map 1 Map 2* - - - - 45354	0x67 (103) 1 0x1C (28)	- - - -	3028	uint RWES

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
USr.S USr.S	*Global* **Save Settings As** Save all of this controller's settings to the selected set that have a Data Type of RWES	SEt 1 User Set 1 (101) nonE None (61) * Starting with firmware release 6, there is only one user set.	None	***Instance 1*** *Map 1 Map 2* 24 24	0x65 (101) 1 0x0E (14)	118	1014	uint RWE
USr.r USr.r	*Global* **Restore Settings From** Replace all of this controller's settings with another set.	FCty Factory (31) nonE None (61) SEt 1 User Set 1 (101) * Starting with firmware release 6, there is only one user set.	None	***Instance 1*** *Map 1 Map 2* 26 26	0x65 (101) 1 0xD (13)	117	1013	uint RWE
Pro SEt **Profile Menu**								
r.tyP r.tyP	*Profile* **Ramping Type** Use to have the ramping set point change at a set Rate or over a set interval of Time as profile steps.	rAtE Rate (81) ti Time (143)	Time	***Instance 1*** *Map 1 Map 2* 5354 7314	0x7A (122) 1 0x26 (38)	- - - -	22038	uint RWE
P.tyP P.tyP	*Profile* **Profile Type** Set the profile startup to be based on a set point or a process value.	StPt Set Point (85) Pro Process (75)	Set Point	***Instance 1*** *Map 1 Map 2* 5294 7254	0x7A (122) 1 8	- - - -	22008	uint RWE
gSE gSE	*Profile* **Guaranteed Soak Enable** Enables the guaranteed soak deviation function in profiles.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5290 7250	0x7A (122) 1 6	- - - -	22006	uint RWE

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
gSd1 gSd1	*Profile* **Guaranteed Soak Deviation 1** Set the value of the deviation band that will be used in all profile step types. The process value for control loop 1 must enter the deviation band before the step can proceed. .	0.0 to 9,999.000°F or units 0.0 to 5,555.000°C	10.0°F or units 6.0°C	***Instance 1*** *Map 1* *Map 2* 5292 7252	0x7A (122) 1 7	- - - -	22007	float RWE
gSd2 gSd2	*Profile* **Guaranteed Soak Deviation 2** Set the value of the deviation band that will be used in all profile step types. The process value for control loop 2 must enter the deviation band before the step can proceed.	0.0 to 9,999.000°F or units 0.0 to 5,555.000°C	10.0°F or units 6.0°C	***Instance 1*** *Map 1* *Map 2* 5360 7320	0x7A (122) 1 0x29 (41)	- - - -	22041	float RWE
gSd3 gSd3	*Profile* **Guaranteed Soak Deviation 3** Set the value of the deviation band that will be used in all profile step types. The process value for control loop 3 must enter the deviation band before the step can proceed.	0.0 to 9,999.000°F or units 0.0 to 5,555.000°C	10.0°F or units 6.0°C	***Instance 1*** *Map 1* *Map 2* 5362 7322	0x7A (122) 1 0x2A (42)	- - - -	22042	float RWE

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
gSd4 gSd4	*Profile* **Guaranteed Soak Deviation 4** Set the value of the deviation band that will be used in all profile step types. The process value for control loop 4 must enter the deviation band before the step can proceed.	0.0 to 9,999.000°F or units 0.0 to 5,555.000°C	10.0°F or units 6.0°C	***Instance 1*** *Map 1* *Map 2* 5364 7324	0x7A (122) 1 0x2B (43)	- - - -	22043	float RWE
CM.E CM.E	*Profile* **Control Mode Enable** Use to allow the loops control mode to be programmed in profile steps.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1* *Map 2* 5356 7316	0x7A (122) 1 0x27 (39)	- - - -	22039	uint RWE
W.M W.M	*Profile* **Wait for Mode** Use to determine how the wait-for conditions must be satisfied: *Complete* requires that all of the conditions must be true at the same time. *Once* requires that all of the conditions were true at some time during the wait period.	OncE Once (1583) CPLt Complete (18)	Complete	***Instance 1*** *Map 1* *Map 2* 5358 7318	0x7A (122) 1 0x28 (40)	- - - -	22040	uint RWE
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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.A SFn.A	*Profile* **Source Function A** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as "Wait Event 1".	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) d io Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) tMr Timer (244) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5322 7282	0x7A (122) 1 0x16 (22)	- - - -	22022	uint RWE
S i.A Si.A	*Profile* **Source Instance A** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5330 7290	0x7A (122) 1 0x1A (26)	- - - -	22026	uint RWE
SZ.A SZ.A	*Profile* **Source Zone A** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5338 7298	0x7A (122) 1 0x1E (30)	- - - -	22030	uint RWE

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RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.b SFn.b	*Profile* **Source Function B** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as " Wait Event 2"	none None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.g Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) LgC Logic (239) tMr Timer (244) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5324 7284	0x7A (122) 1 0x17 (23)	- - - -	22023	uint RWE
S i.b Si.b	*Profile* **Source Instance B** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5332 7292	0x7A (122) 1 0x1B (27)	- - - -	22027	uint RWE
SZ.b SZ.b	*Profile* **Source Zone B** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5340 7300	0x7A (122) 1 0x1F (31)	- - - -	22031	uint RWE
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SFn.C SFn.C	*Profile* **Source Function C** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as " Wait Event 3"	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.9 Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) L9C Logic (239) tMr Timer (244) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5326 7286	0x7A (122) 1 0x18 (24)	- - - -	22024	uint RWE
Si.C Si.C	*Profile* **Source Instance C** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5334 7294	0x7A (122) 1 0x1C (28)	- - - -	22028	uint RWE
SZ.C SZ.C	*Profile* **Source Zone C** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5342 7302	0x7A (122) 1 0x20 (32)	- - - -	22032	uint RWE
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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.d SFn.d	*Profile* **Source Function D** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as " Wait Event 4"	nonE None (61) ALM Alarm (6) CPE Compare (230) Ctr Counter (231) dio Digital I/O (1142) Ent.A Profile Event Out A (233) Ent.b Profile Event Out B (234) Ent.C Profile Event Out C (235) Ent.d Profile Event Out D (236) Ent.E Profile Event Out E (247) Ent.F Profile Event Out F (248) Ent.9 Profile Event Out G (249) Ent.h Profile Event Out H (250) FUn Function Key (1001) L9C Logic (239) tMr Timer (244) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5328 7288	0x7A (122) 1 0x19 (25)	- - - -	22025	uint RWE
S i.d Si.d	*Profile* **Source Instance D** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5336 7296	0x7A (122) 1 0x1D (29)	- - - -	22029	uint RWE
SZ.d SZ.d	*Profile* **Source Zone D** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5344 7304	0x7A (122) 1 0x21 (33)	- - - -	22033	uint RWE

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RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
SFn.E SFn.E	*Profile* **Source Function E** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as " Wait For Process 1"	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5390 7350	0x7A (122) 1 0x38 (56)	- - - -	22056	uint RWE
S i.E Si.E	*Profile* **Source Instance E** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5398 7358	0x7A (122) 1 0x3C (60)	- - - -	22060	uint RWE
SZ.E SZ.E	*Profile* **Source Zone E** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5406 7366	0x7A (122) 1 0x40 (64)	- - - -	22064	uint RWE
SFn.F SFn.F	*Profile* **Source Function F** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as "Wait For Process 2"	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5392 7352	0x7A (122) 1 0x39 (57)	- - - -	22057	uint RWE
S i.F Si.F	*Profile* **Source Instance F** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5400 7360	0x7A (122) 1 0x3D (61)	- - - -	22061	uint RWE
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SZ.F	*Profile* **Source Zone F** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5408 7368	0x7A (122) 1 0x41 (65)	- - - -	22065	uint RWE
SFn.g	*Profile* **Source Function G** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as "Wait For Process 3"	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5394 7354	0x7A (122) 1 0x3A (58)	- - - -	22058	uint RWE
Si.g	*Profile* **Source Instance G** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5402 7362	0x7A (122) 1 0x3E (62)	- - - -	22062	uint RWE
SZ.g	*Profile* **Zone Source G** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5410 7370	0x7A (122) 1 0x42 (66)	- - - -	22066	uint RWE
SFn.h	*Profile* **Source Function H** Set the type of function that will be used for this source. Source will be used in profile step type "Wait for Process or Event" as "Wait For Process 4"	nonE None (61) A i Analog Input (142) CUrr Current (22) C.Pr Cool Power (161) h.Pr Heat Power (160) PWr Power (73) Lnr Linearization (238) MAt Math (240) Pu Process Value (241) SP.C Set Point Closed (242) SP.o Set Point Open (243) uAr Variable (245)	None	***Instance 1*** *Map 1 Map 2* 5396 7356	0x7A (122) 1 0x3B (59)	- - - -	22059	uint RWE

* These parameters/prompts are available in these menus with firmware revisions 6.0 and above.
** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S i.h Si.h	*Profile* **Source Instance H** Set the instance of the function selected above.	1 to 250	1	***Instance 1*** *Map 1 Map 2* 5404 7364	0x7A (122) 1 0x3F (63)	- - - -	22063	uint RWE
S2.h SZ.h	*Profile* **Source Zone H** Set the zone of the function selected above.	0 to 24	0	***Instance 1*** *Map 1 Map 2* 5412 7372	0x7A (122) 1 0x43 (67)	- - - -	22067	uint RWE
CoM SEt **Communications Menu**								
bAUd bAUd	*Communications* **Baud Rate** Modbus RTU baud rate selection. **Note:** This applies if 13th digit in part number is equal to one.	9600 9,600 (188) 19.2 19,200 (189) 38.4 38,400 (190)	9,600	***Instance 1*** *Map 1 Map 2* 2824 3664	0x96 (150) 1 3	- - - -	17002	uint RWE
PAr PAr	*Communications* **Parity** Modbus RTU parity selection. **Note:** This applies if 13th digit in part number is equal to one.	nonE None (61) EuEn Even (191) odd Odd (192)	None	***Instance 1*** *Map 1 Map 2* 2826 3666	0x96 (150) 1 4	- - - -	17003	uint RWE
M.hL M.hL	*Communications* **Modbus Word Order** Select the word order of the two 16-bit words in the floating-point values. **Note:** This applies if 13th digit in part number is equal to one.	h iLo Word High Low (1330) Loh i Word Low High (1331)	Low High	***Instance 1*** *Map 1 Map 2* 2828 3668	0x96 (150) 1 5	- - - -	17043	uint RWE
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP - Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
C_F C_F	*Communications* **Display Units** Select which scale to use for temperature passed when using Modbus **Note:** This applies if 13th digit in part number is equal to one.	F °F (30) C °C (15)	°F	***Instance 1*** *Map 1 Map 2* 2830 3670	0x96 (150) 1 6	199	17050	uint RWE
MAP Map	*Communications (1 or 2)* **Data Map** If set to 1 the control will use RM legacy mapping. If set to 2 the control will use new mapping to accommodate new functions.	1 to 2	1	- - - -	- - - -	- - - -	17059	uint RWE
nV.S nV.S	*Communications* **Non-volatile Save** If set to Yes all values written to the control will be saved in EEPROM. **Note:** This applies if 13th digit in part number is equal to one.	YES Yes (106) no No (59)	Yes	***Instance 1*** *Map 1 Map 2* 2834 3674	0x96 (150) 1 to 2 8	198	17051	uint RWE
No Display	*Communications* **Protocol** Select the communications protocol.	Standard Bus (1286) Modbus RTU Word (1057)	If model number digit 13 = 1 [Modbus] If model number digit 13 = A [Standard Bus]	***Instance 1*** *Map 1 Map 2* 2832 3672	0x96 (150) 1 to 2 7	- - - -	17009	uint RWE
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Setup Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP - Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
No Display	*Communications* **Modbus Address** Select the Modbus address. **Note:** This applies if 13th digit in part number is equal to one.	1 to 247	1	***Instance 1*** *Map 1 Map 2* 2822 3662	0x96 (150) 1 1	- - - -	17007	uint RWE
* These parameters/prompts are available in these menus with firmware revisions 6.0 and above. ** R: Read, W: Write, E: EEPROM, S: User Set								

5 Chapter 5: Profiling Page

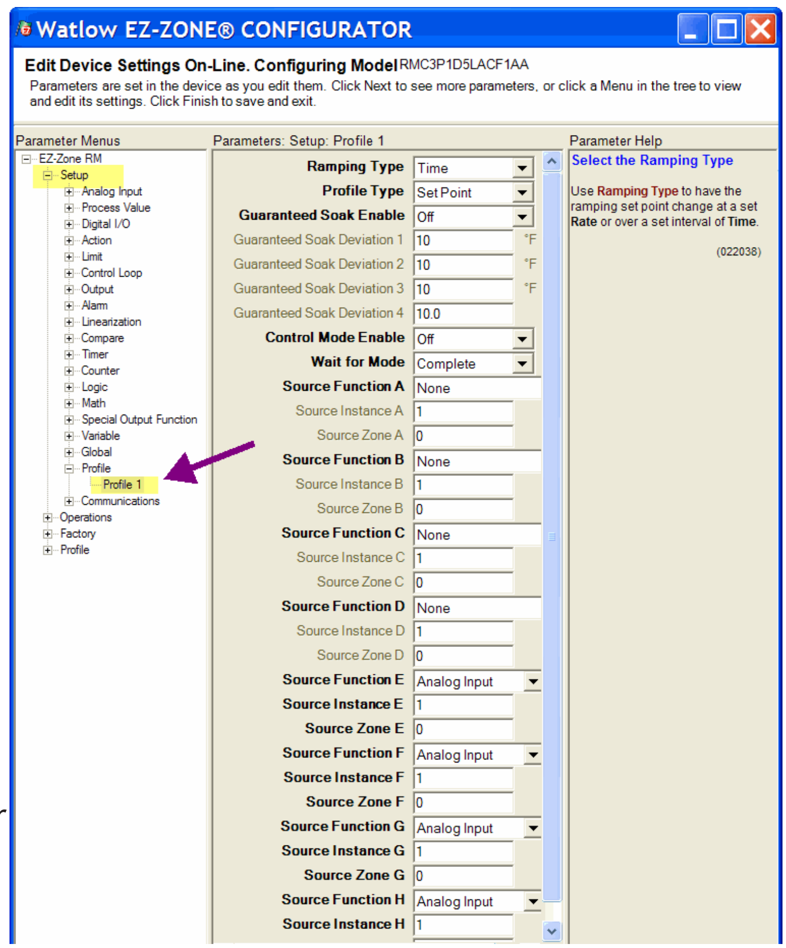
How to Setup and Start a Profile

First, consider some foundational profile setup features that once configured, will then be available for all profiles.

Note:

It should also be noted that to execute a profile for any given loop of control, profiles must be enabled for each loop; this can be found in the Loop Menu of the Setup Page.

The screen shot below (EZ-ZONE Configurator software) graphically shows the settings that will apply to all profiles; e.g., if Guaranteed Soak is not enabled here this feature will not be available in any individual profile configuration.



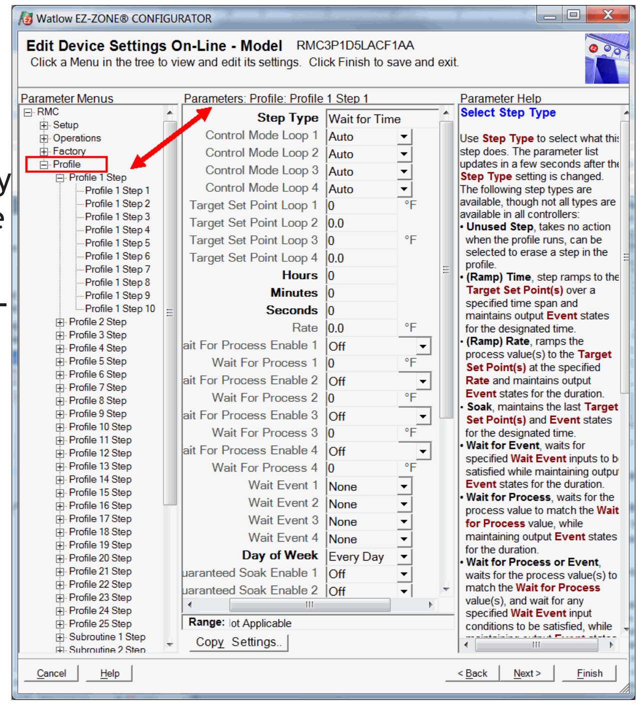
Some of those features that apply to all profiles are listed below with a brief description of their function.

- **Ramping Type** (Time or Ramp Rate) which changes the profile set point based on a set interval of time or set rate.
- **Profile Type** (Set Point or Process) determines whether a step (any step changing the set point) of a profile will begin by using the process value (Process) or the last closed-loop set point (Set Point).
- **Guaranteed Soak Enable**, when set to On makes this feature available in all profiles. If Guaranteed Soak Enable is on, use Guaranteed Soak Deviation 1 to 4 to set the value for the corresponding loop. Set the deviation or band above or below the working set point where this condition must be met before the profile can proceed.
- **Control Mode Enable** if changed to on, will allow the loops control mode to be changed through the profile.
- **Wait for Mode** determines how the wait-for conditions must be satisfied:
  - *Complete* requires that all of the conditions must be true at the same time.
  - *Once* requires that all of the conditions were true at some time during the wait period.

Note:

Changes made to profile parameters in the Profiling Pages will be saved and will also have an immediate impact on the running profile. Some parameters in the Profile Status Menu can be changed for the currently running profile, but should only be changed by knowledgeable personnel and with caution. Changing parameters via the Profile Status Menu will not change the stored profile but will have an immediate impact on the profile that is running.

Once these global profile features are configured, the next step will require navigation to the Profiling Page. Here, each desired ramp and soak profile will be configured.



To navigate to the Profile Page using the RUI, follow the steps below:

1. From the Home Page, press and hold the Advance Key for four seconds. The profile prompt (`ProF`) will appear in the lower display and the profile number (e.g. `P1`) appears in the upper display.
2. Press the Up or Down key to change to another profile.
3. Press the Advance Key to move to the selected profiles first step.
4. Press the Up or Down keys to move through the steps.
5. Press the Advance Key to move through the selected step settings.
6. Press the Up or Down keys to change the steps settings.
7. Press the Infinity Key at any time to return to the step number prompt.
8. Press the Infinity Key again to return to the profile number prompt.
9. From any point press and hold the Infinity Key for two seconds to return to the Home Page.

If using EZ-ZONE Configurator software, simply click on the Profile Page in the left hand column (red box), as shown in the screen shot above.

Prior to moving on, it would be beneficial to point out (see graphic on previous page) that if it is desired to configure a wait-for (process or event) step within any given profile that Source Functions A through D would be used for digital wait-for events where Source Functions E through H would be used for wait-for process. The source functions must be defined in the Profile Menu of the Setup Page to be available when configuring each individual profile on the Profiling Page. Notice in the screen shot above some fields or parameters are not selectable (grayed out) due to the selections made for the profile features in the Profile Page of the Setup menu.

Note:

To maintain controllability when a profile comes to completion, an End step should always be the last step. The user can then select whether the controller reverts back to user settings prior to running the profile, set control mode to off or hold the last profile settings prior to executing the End step.

Profiling Parameters

P1 to P25 Profile 1 to 25

S1 to S15 Subroutine 1 to 15

ProF

- 1 to 250
  - S.tYP Step Type
  - C.M1 Control Mode Loop 1
  - C.M2 Control Mode Loop 2
  - C.M3 Control Mode Loop 3
  - C.M4 Control Mode Loop 4
  - t.SP1 Target Set Point Loop 1
  - t.SP2 Target Set Point Loop 2
  - t.SP3 Target Set Point Loop 3
  - t.SP4 Target Set Point Loop 4
  - hoUr Hours
  - Min Minutes
  - SEC Seconds
  - rAtE Rate
  - P.E1 Wait For Process 1 Condition
  - W.P1 Wait For Process 1 Value
  - P.E2 Wait For Process 2 Condition
  - W.P2 Wait For Process 2 Value
  - P.E3 Wait For Process 3 Condition
  - W.P3 Wait For Process 3 Value
  - P.E4 Wait For Process 4 Condition
  - W.P4 Wait For Process 4 Value
  - W.E1 Wait Event 1
  - W.E2 Wait Event 2
  - W.E3 Wait Event 3
  - W.E4 Wait Event 4
  - doW Day of Week
  - gSE1 Guaranteed Soak Enable 1
  - gSE2 Guaranteed Soak Enable 2
  - gSE3 Guaranteed Soak Enable 3
  - gSE4 Guaranteed Soak Enable 4
  - SS Subroutine Step

SC Subroutine Count

JS Jump Step

JC Jump Count

End End Type

Ent1 Event 1

Ent2 Event 2

Ent3 Event 3

Ent4 Event 4

Ent5 Event 5

Ent6 Event 6

Ent7 Event 7

Ent8 Event 8

Profiling Parameters (cont.)

Subroutine Step 1 (to 150)

S.tYP Step Type
C.M1 Control Mode Loop 1
C.M2 Control Mode Loop 2
C.M3 Control Mode Loop 3
C.M4 Control Mode Loop 4
t.SP1 Target Set Point Loop 1
t.SP2 Target Set Point Loop 2
t.SP3 Target Set Point Loop 3
t.SP4 Target Set Point Loop 4
hoUr Hours
Min Minutes
SEC Seconds
rAtE Ramp Rate
P.E1 Wait For Process 1 Condition
WP1 Wait For Process 1 Value
P.E2 Wait For Process 2 Condition
WP2 Wait For Process 2 Value
P.E3 Wait For Process 3 Condition
WP3 Wait For Process 3 Value
P.E4 Wait For Process 4 Condition
WP4 Wait For Process 4 Value
W.E1 Wait Event 1
W.E2 Wait Event 2
W.E3 Wait Event 3
W.E4 Wait Event 4
doW Day of Week
gSE1 Guaranteed Soak Enable 1
gSE2 Guaranteed Soak Enable 2
gSE3 Guaranteed Soak Enable 3
gSE4 Guaranteed Soak Enable 4
SS Subroutine Step
SC Subroutine Count
JS Jump Step
JC Jump Count
End End Type
Ent1 Event 1
Ent2 Event 2
Ent3 Event 3
Ent4 Event 4
Ent5 Event 5
Ent6 Event 6
Ent7 Event 7
Ent8 Event 8

RMC Module • Profiling Page

Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
S.tYP S.typ	*Step (1 to 250)* **Step Type** Select a step type.	UStP Unused Step (50) SoAH Soak (87) W.PE Wait For Process or Event (1542) CLoc Wait For Time (1543) StAt Instant Change (1515) Subr Subroutine Step (1516) JL Jump (116) End End (27) ti Time (143) rAtE Ramp Rate (81)	Unused	***Instance 1*** *Map 1 Map 2* 5440 7400 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 1	- - - -	21001	uint RWE
C.M1 C.M1	*Step (1 to 250)* **Control Mode Loop 1** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 5486 7446 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x18 (24)	- - - -	21024	uint RWE
C.M2 C.M2	*Step (1 to 250)* **Control Mode Loop 2** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 5488 7448 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x19 (25)	- - - -	21025	uint RWE
C.M3 C.M3	*Step (1 to 250)* **Control Mode Loop 3** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 5490 7450 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x1A (26)	- - - -	21026	uint RWE
C.M4 C.M4	*Step (1 to 250)* **Control Mode Loop 4** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 5492 7452 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x1B (27)	- - - -	21027	uint RWE

** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Profiling Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
t.SP1	*Step (1 to 250)* **Target Set Point Loop 1** If step type is Time or Instant Change - enter set point for this loop. If Ramp Rate step, enter set point for loops 1, 2, 3 and 4.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 5442 7402 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 2	- - - -	21002	float RWE
t.SP2	*Step (1 to 250)* **Target Set Point Loop 2** If step type is Time or Instant Change - enter set point for this loop.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 5494 7454 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 121 1 to (250) 0x1C (28)	- - - -	21028	float RWE
t.SP3	*Step (1 to 250)* **Target Set Point Loop 3** If step type is Time or Instant Change - enter set point for this loop.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 5496 7456 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x1D (29)	- - - -	21029	float RWE
t.SP4	*Step (1 to 250)* **Target Set Point Loop 4** If step type is Time or Instant Change - enter set point for this loop.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 5498 7458 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x1E (30)	- - - -	21030	float RWE
hoUr	*Step (1 to 250)* **Hours** If step type is Time, enter time over which set point changes. If Soak or Instant Change Step, enter time to maintain this step.	0 to 9999	0	***Instance 1*** *Map 1 Map 2* 5444 7404 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 3	- - - -	21003	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Profiling Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
[M.in] Min	*Step (1 to 250)* **Minutes** If step type is Time, enter time over which set point changes. If Soak or Instant Change Step, enter time to maintain this step.	0 to 59	0	***Instance 1*** *Map 1 Map 2* 5446 7406 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 4	- - - -	21004	uint RWE
[SEC] SEC	*Step (1 to 250)* **Seconds** If step type is Time, enter time over which set point changes. If Soak or Instant Change Step, enter time to maintain this step.	0 to 59	0	***Instance 1*** *Map 1 Map 2* 5448 7408 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 5	- - - -	21005	uint RWE
[rAtE] rAtE	*Step (1 to 250)* **Rate** If step type is Ramp Rate, select the rate for ramping in degrees or units per minute.	0 to 9,999.000°F or units per minute 0 to 5,555.000°C per minute	0.0	***Instance 1*** *Map 1 Map 2* 5450 7410 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 6	- - - -	21006	float RWE
[P.E1] P.E1	*Step (1 to 250)* **Wait For Process 1 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	[oFF] Off (62) [L.t] Less Than (1436) [9.t] Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 5510 7470 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x24 (36)	- - - -	21036	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Profiling Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
W.P1	*Step (1 to 250)* **Wait For Process 1 Value** Enter a value that must be satisfied which is specified by Source E in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5560 7420 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0xB (11)	- - - -	21011	float RWE
P.E2	*Step (1 to 250)* **Wait For Process 2 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	oFF Off (62) L.t Less Than (1436) g.t Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 5512 7472 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x25 (37)	- - - -	21037	uint RWE
W.P2	*Step (1 to 250)* **Wait For Process 2 Value** Enter a value that must be satisfied which is specified by Source F in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5500 7460 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x1F (31)	- - - -	21031	float RWE
P.E3	*Step (1 to 250)* **Wait For Process 3 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	oFF Off (62) L.t Less Than (1436) g.t Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 5514 7474 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x26 (38)	- - - -	21038	uint RWE

** R: Read, W: Write, E: EEPROM, S: User Set

RMC Module • Profiling Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
W.P3	*Step (1 to 250)* **Wait For Process 3 Value** Enter a value that must be satisfied which is specified by Source G in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5502 7462 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x20 (32)	- - - -	21032	float RWE
P.E4	*Step (1 to 250)* **Wait For Process 4 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	oFF Off (62) L.t Less Than (1436) 9.t Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 5516 7476 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x27 (39)	- - - -	21039	uint RWE
W.P4]	*Step (1 to 250)* **Wait For Process 4 Value** Enter a value that must be satisfied which is specified by Source H in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 5504 7464 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x21 (33)	- - - -	21033	float RWE
WE.1	*Step (1 to 250)* **Wait Event 1** Select a state that must be satisfied which is specified by Source A in Profile Setup.	nonE None (61) on On (63) oFF Off (62)	None	***Instance 1*** *Map 1 Map 2* 5456 7416 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 9	- - - -	21009	uint RWE
WE.2	*Step (1 to 250)* **Wait Event 2** Select a state that must be satisfied which is specified by Source B in Profile Setup.	nonE None (61) on On (63) oFF Off (62)	None	***Instance 1*** *Map 1 Map 2* 5458 7418 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0xA (10)	- - - -	21010	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Profiling Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
[wE.3] WE.3	*Step (1 to 250)* **Wait Event 3** Select a state that must be satisfied which is specified by Source C in Profile Setup.	[nonE] None (61) [on] On (63) [oFF] Off (62)	None	***Instance 1*** *Map 1 Map 2* 5482 7442 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x16 (22)	- - - -	21022	uint RWE
[wE.4] WE.4	*Step (1 to 250)* **Wait Event 4** Select a state that must be satisfied which is specified by Source D in Profile Setup.	[nonE] None (61) [on] On (63) [oFF] Off (62)	None	***Instance 1*** *Map 1 Map 2* 5484 7444 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x18 (24)	- - - -	21023	uint RWE
[dow] doW	*Step (1 to 250)* **Day of Week** If step type is Wait for Time, select day of week for profile to proceed.	[Ed] Every Day (1567) [wd] Week Days (1566) [mon] Monday (1559) [tuE] Tuesday (1560) [wEd] Wednesday (1561) [thUr] Thursday (1562) [Fri] Friday (1563) [SAt] Saturday (1564) [Sun] Sunday (1565)	Every Day	***Instance 1*** *Map 1 Map 2* 5520 7480 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x29 (41)	- - - -	21041	uint RWE
[gSE1] gSE1	*Step (1 to 250)* **Guaranteed Soak Enable 1** Select if profile should pause while process 1 deviates from deviation band.	[oFF] Off (62) [on] On (63)	Off	***Instance 1*** *Map 1 Map 2* 5522 7482 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x2A (42)	- - - -	21042	uint RWE
[gSE2] gSE2	*Step (1 to 250)* **Guaranteed Soak Enable 2** Select if profile should pause while process 2 deviates from deviation band.	[oFF] Off (62) [on] On (63)	Off	***Instance 1*** *Map 1 Map 2* 5524 7484 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x2B(43)	- - - -	21043	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Profiling Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
gSE3 gSE3	*Step (1 to 250)* **Guaranteed Soak Enable 3** Select if profile should pause while process 3 deviates from deviation band.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5526 7486 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x2C (44)	- - - -	21044	uint RWE
gSE4 gSE4	*Step (1 to 250)* **Guaranteed Soak Enable 4** Select if profile should pause while process 4 deviates from deviation band.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 5528 7488 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x2D (45)	- - - -	21045	uint RWE
SS SS	*Step (1 to 250)* **Subroutine Step** If step type is Subroutine, specify subroutine step to jump to next.	1 to 15	1	***Instance 1*** *Map 1 Map 2* 5506 7466 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x22 (34)	- - - -	21034	uint RWE
SC SC	*Step (1 to 250)* **Subroutine Count** If step type is Subroutine, specify number of times to execute subroutine steps.	1 to 9,999	1	***Instance 1*** *Map 1 Map 2* 5508 7468 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x23 (35)	- - - -	21035	uint RWE
JS JS	*Step (1 to 250)* **Jump Step** If step type is Jump, select a step to jump next.	Step-1 (Minimum of 1)	1	***Instance 1*** *Map 1 Map 2* 5462 7422 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0xC (12)	- - - -	21012	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
JC JC	*Step (1 to 250)* **Jump Count** If step type is Jump, set the number of jumps. A value of 0 creates an infinite loop. Loops can be nested four deep.	0 to 9,999	1	***Instance 1*** *Map 1 Map 2* 5464 7424 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0xD (13)	- - - -	21013	uint RWE
End End	*Step (1 to 250)* **End Type** If step type is End, select what the controller will do when this profile ends.	oFF Control Mode set to Off (62) HoLd Hold last closed-loop set point in the profile (47)* USEr User, reverts to previous set point (100) * End Hold does not affect the control mode, only the closed loop set point. The profile will return to the control mode prior to starting the profile.	User	***Instance 1*** *Map 1 Map 2* 5466 7426 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0xE (14)	- - - -	21014	uint RWE
Ent1 Ent1	*Step (1 to 250)* **Event 1** Select whether output programmed as Profile Event Out A is on, unchanged or off during this step.	oFF Off (62) UC9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5452 7412 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 7	- - - -	21007	uint RWE
Ent2 Ent2	*Step (1 to 250)* **Event 2** Select whether output programmed as Profile Event Out B is on, unchanged or off during this step.	oFF Off (62) UC9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5454 7414 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 8	- - - -	21008	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Ent3 Ent3	*Step (1 to 250)* **Event 3** Select whether output programmed as Profile Event Out C is on, unchanged or off during this step.	oFF Off (62) Uc9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5470 7430 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x10 (16)	- - - -	21016	uint RWE
Ent4 Ent4	*Step (1 to 250)* **Event 4** Select whether output programmed as Profile Event Out D is on, unchanged or off during this step.	oFF Off (62) Uc9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5472 7432 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x11 (17)	- - - -	21017	uint RWE
Ent5 Ent5	*Step (1 to 250)* **Event 5** Select whether output programmed as Profile Event Out E is on, unchanged or off during this step.	oFF Off (62) Uc9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5474 7434 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x12 (18)	- - - -	21018	uint RWE
Ent6 Ent6	*Step (1 to 250)* **Event 6** Select whether output programmed as Profile Event Out F is on, unchanged or off during this step.	oFF Off (62) Uc9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5476 7436 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x13 (19)	- - - -	21019	uint RWE
Ent7 Ent7	*Step (1 to 250)* **Event 7** Select whether output programmed as Profile Event Out G is on, unchanged or off during this step.	oFF Off (62) Uc9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5478 7438 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x14 (20)	- - - -	21020	uint RWE
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Ent8 Ent8	*Step (1 to 250)* **Event 8** Select whether output programmed as Profile Event Out H is on, unchanged or off during this step.	oFF Off (62) Uc9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 5480 7440 *Map 1 and Map 2 Offset to next instance equals +100*	0x79 (121) 1 to (250) 0x15 (21)	- - - -	21021	uint RWE
S.tyP S.typ	*Subroutine Step (1 to 150)* **Step Type** Select a step type.	USTP Unused Step (50) SoAH Soak (87) WPE Wait For Process or Event (1542) CLoc Wait For Time (1543) StAt Instant Change (1515) End End (27) ti Time (143) rAtE Ramp Rate (81)	Unused	***Instance 1*** *Map 1 Map 2* 30440 32400 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 1	- - - -	5001	uint RWE
C.M1 C.M1	*Subroutine Step (1 to 150)* **Control Mode Loop 1** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 30442 32402 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 2	- - - -	5002	uint RWE
C.M2 C.M2	*Subroutine Step (1 to 150)* **Control Mode Loop 2** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 30444 32404 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 3	- - - -	5003	uint RWE
C.M3 C.M3	*Subroutine Step (1 to 150)* **Control Mode Loop 3** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 30446 32406 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 4	- - - -	5004	uint RWE
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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
C.M4	*Subroutine Step (1 to 150)* **Control Mode Loop 4** Set the control mode for this loop.	AUto Auto (10) oFF Off (62) MAn Manual (54)	Auto	***Instance 1*** *Map 1 Map 2* 30448 32408 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 5	- - - -	5005	uint RWE
t.SP1	*Subroutine Step (1 to 150)* **Target Set Point Loop 1** If step type is Time or Instant Change - enter set point for this loop. If Ramp Rate step, enter set point for loops 1, 2, 3 and 4.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 30450 32410 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 6	- - - -	5006	float RWE
t.SP2	*Subroutine Step (1 to 150)* **Target Set Point Loop 2** If step type is Time or Instant Change - enter set point for this loop.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 30452 32412 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 7	- - - -	5007	float RWE
t.SP3	*Subroutine Step (1 to 150)* **Target Set Point Loop 3** If step type is Time or Instant Change - enter set point for this loop.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 30454 32414 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 8	- - - -	5008	float RWE
t.SP4	*Subroutine Step (1 to 150)* **Target Set Point Loop 4** If step type is Time or Instant Change - enter set point for this loop.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0	***Instance 1*** *Map 1 Map 2* 30456 32416 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 9	- - - -	5009	float RWE

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Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
hoUr hoUr	*Subroutine Step (1 to 150)* **Hours** If step type is Time, enter time over which set point changes. If Soak or Instant Change Step, enter time to maintain this step. If step type is Wait for Time, enter time to wait on.	0 to 23	0	***Instance 1*** *Map 1 Map 2* 30458 32418 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0xA (10)	- - - -	5010	uint RWE
Min Min	*Subroutine Step (1 to 150)* **Minutes** If step type is Time, enter time over which set point changes. If Soak or Instant Change Step, enter time to maintain this step. If step type is Wait for Time, enter time to wait on.	0 to 59	0	***Instance 1*** *Map 1 Map 2* 30460 32420 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0xB (11)	- - - -	5011	uint RWE
SEC SEC	*Subroutine Step (1 to 150)* **Seconds** If step type is Time, enter time over which set point changes. If Soak or Instant Change Step, enter time to maintain this step. If step type is Wait for Time, enter time to wait on.	0 to 59	0	***Instance 1*** *Map 1 Map 2* 30462 32422 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0xC (12)	- - - -	5012	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Profiling Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
rAtE rAtE	*Subroutine Step (1 to 150)* **Rate** If step type is Ramp Rate, select the rate for ramping in degrees or units per minute.	0 to 9,999.000°F or units per minute 0 to 5,555.000°C per minute	0.0	***Instance 1*** *Map 1 Map 2* 30464 32424 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0xD (13)	- - - -	5013	float RWE
P.E1 P.E1	*Subroutine Step (1 to 150)* **Wait For Process 1 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	oFF Off (62) L.t Less Than (1436) g.t Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 30490 32450 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x1A (26)	- - - -	5026	uint RWE
W.P1 W.P1	*Subroutine Step (1 to 150)* **Wait For Process 1 Value** Enter a value that must be satisfied which is specified by Source E in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 30498 32458 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x1E (30)	- - - -	5030	float RWE
P.E2 P.E2	*Subroutine Step (1 to 150)* **Wait For Process 2 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	oFF Off (62) L.t Less Than (1436) g.t Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 30492 32452 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x1B (27)	- - - -	5027	uint RWE
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
W.P2	*Subroutine Step (1 to 150)* **Wait For Process 2 Value** Enter a value that must be satisfied which is specified by Source F in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 30500 32460 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x1F (31)	- - - -	5031	float RWE
P.E3	*Subroutine Step (1 to 150)* **Wait For Process 3 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	oFF Off (62) L.t Less Than (1436) g.t Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 30494 32454 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x1C (28)	- - - -	5028	uint RWE
W.P3	*Subroutine Step (1 to 150)* **Wait For Process 3 Value** Enter a value that must be satisfied which is specified by Source G in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 30502 32462 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (250) 0x20 (32)	- - - -	5032	float RWE
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
P.E4 P.E4	*Subroutine Step (1 to 150)* **Wait For Process 4 Condition** If step type is Wait for Process or Event, select whether process value must be Less Than or Greater Than the value of Wait for Process to satisfy the wait-for condition.	oFF Off (62) L.t Less Than (1436) 9.t Greater Than (1435)	Off	***Instance 1*** *Map 1 Map 2* 30496 32456 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (250) 0x1D (29)	- - - -	5029	uint RWE
W.P4 W.P4	*Subroutine Step (1 to 150)* **Wait For Process 4 Value** Enter a value that must be satisfied which is specified by Source H in Profile Setup.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	***Instance 1*** *Map 1 Map 2* 30504 32464 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (250) 0x21 (33)	- - - -	5033	float RWE
WE.1 WE.1	*Subroutine Step (1 to 150)* **Wait Event 1** Enter a state that must be satisfied which is specified by Source A in Profile Setup.	nonE None (61) on On (63) oFF Off (62)	None	***Instance 1*** *Map 1 Map 2* 30482 32442 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x16 (22)	- - - -	5022	uint RWE
WE.2 WE.2	*Subroutine Step (1 to 150)* **Wait Event 2** Enter a state that must be satisfied which is specified by Source B in Profile Setup.	nonE None (61) on On (63) oFF Off (62)	None	***Instance 1*** *Map 1 Map 2* 30484 32444 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x17 (23)	- - - -	5023	uint RWE
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
WE.3	*Subroutine Step (1 to 150)* **Wait Event 3** Enter a state that must be satisfied which is specified by Source C in Profile Setup.	nonE None (61) on On (63) oFF Off (62)	None	***Instance 1*** *Map 1 Map 2* 30486 32446 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x18 (24)	- - - -	5024	uint RWE
WE.4	*Subroutine Step (1 to 150)* **Wait Event 4** Enter a state that must be satisfied which is specified by Source D in Profile Setup.	nonE None (61) on On (63) oFF Off (62)	None	***Instance 1*** *Map 1 Map 2* 30488 32448 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x19 (25)	- - - -	5025	uint RWE
doW	*Subroutine Step (1 to 150)* **Day of Week** If step type is Wait for Time, select day of week for profile to proceed.	Ed Every Day (1567) wd Week Days (1566) Mon Monday (1559) tuE Tuesday (1560) wEd Wednesday (1561) thur Thursday (1562) Fri Friday (1563) SAt Saturday (1564) Sun Sunday (1565)	Every Day	***Instance 1*** *Map 1 Map 2* 30508 32468 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x23 (35)	- - - -	5035	uint RWE
gSE1	*Subroutine Step (1 to 150)* **Guaranteed Soak Enable 1** Select if profile should pause while process 1 deviates from deviation band.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 30510 32470 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x24 (36)	- - - -	5036	uint RWE
gSE2	*Subroutine Step (1 to 150)* **Guaranteed Soak Enable 2** Select if profile should pause while process 2 deviates from deviation band.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 30512 32472 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x25 (37)	- - - -	5037	uint RWE
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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
gSE3 gSE3	*Subroutine Step (1 to 150)* **Guaranteed Soak Enable 3** Select if profile should pause while process 3 deviates from deviation band.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 30514 32474 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x26 (38)	- - - -	5038	uint RWE
gSE4 gSE4	*Subroutine Step (1 to 150)* **Guaranteed Soak Enable 4** Select if profile should pause while process 4 deviates from deviation band.	oFF Off (62) on On (63)	Off	***Instance 1*** *Map 1 Map 2* 30516 32476 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x27 (39)	- - - -	5039	uint RWE
Ent1 Ent1	*Subroutine Step (1 to 150)* **Event 1** Select whether output programmed as Profile Event Out A is on, unchanged or off during this step.	UcGd Unchanged (1557) oFF Off (62) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30466 32426 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0xE (14)	- - - -	5014	uint RWE
Ent2 Ent2	*Subroutine Step (1 to 150)* **Event 2** Select whether output programmed as Profile Event Out B is on, unchanged or off during this step.	oFF Off (62) UcGd Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30468 32428 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0xF (15)	- - - -	5015	uint RWE
Ent3 Ent3	*Subroutine Step (1 to 150)* **Event 3** Select whether output programmed as Profile Event Out C is on, unchanged or off during this step.	oFF Off (62) UcGd Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30470 32430 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x10 (16)	- - - -	5016	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Ent4 Ent4	*Subroutine Step (1 to 150)* **Event 4** Select whether output programmed as Profile Event Out D is on, unchanged or off during this step.	oFF Off (62) UC9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30472 32432 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x11 (17)	- - - -	5017	uint RWE
Ent5 Ent5	*Subroutine Step (1 to 150)* **Event 5** Select whether output programmed as Profile Event Out E is on, unchanged or off during this step.	oFF Off (62) UC9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30474 32434 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x12 (18)	- - - -	5018	uint RWE
Ent6 Ent6	*Subroutine Step (1 to 150)* **Event 6** Select whether output programmed as Profile Event Out F is on, unchanged or off during this step.	oFF Off (62) UC9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30476 32436 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x13 (19)	- - - -	5019	uint RWE
Ent7 Ent7	*Subroutine Step (1 to 150)* **Event 7** Select whether output programmed as Profile Event Out G is on, unchanged or off during this step.	oFF Off (62) UC9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30478 32438 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x14 (20)	- - - -	5020	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

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Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
Ent8 Ent8	*Subroutine Step (1 to 150)* **Event 8** Select whether output programmed as Profile Event Out H is on, unchanged or off during this step.	oFF Off (62) UC9d Unchanged (1557) on On (63)	Unchanged	***Instance 1*** *Map 1 Map 2* 30480 32440 *Map 1 and Map 2 Offset to next instance equals +86*	0x69 (105) 1 to (150) 0x15 (21)	- - - -	5021	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

Display	Step Type Description	Parameters in Step Type
USt P UStP	*Step Types* **Unused Step** This is an empty step that can be used to plan for future steps to be inserted or temporarily deactivate a step in a profile. Change step type back when the step should be active again.	- - - -
t i ti	*Step Types* **Time** If Ramping Type in Setup Profile is set for Time, control loop 1 to 4 may be part of the profile and all enabled control loops follow independent set points over the specified time. The state of up to 8 event outputs may be set or maintained.	CM.1 Control Mode Loop 1 CM.2 Control Mode Loop 2 CM.3 Control Mode Loop 3 CM.4 Control Mode Loop 4 t.SP1 Target Set Point Loop 1 t.SP2 Target Set Point Loop 2 t.SP3 Target Set Point Loop 3 t.SP4 Target Set Point Loop 4 hoUr Hours Min Minutes SEC Seconds gSE1 Guaranteed Soak Enable 1 gSE2 Guaranteed Soak Enable 2 gSE3 Guaranteed Soak Enable 3 gSE4 Guaranteed Soak Enable 4 Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8
rAtE rAtE	*Step Types* **Rate** If Ramping Type in Setup Profile is set for Ramp Rate, control loop 1 must be part of the profile and all other enabled control loops follow the same set point and ramp rate in degrees or units per minute. Ensure all control loops have the same units of measure. The state of up to 8 event outputs may be set or maintained.	CM.1 Control Mode Loop 1 CM.2 Control Mode Loop 2 CM.3 Control Mode Loop 3 CM.4 Control Mode Loop 4 t.SP1 Target Set Point Loop 1 gSE1 Guaranteed Soak Enable 1 gSE2 Guaranteed Soak Enable 2 gSE3 Guaranteed Soak Enable 3 gSE4 Guaranteed Soak Enable 4 rAtE Rate Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8

Display	Step Type Description	Parameters in Step Type
SoAk SoAk	*Step Types* **Soak** A Soak Step maintains the last Target Set Points for the designated time. The state of up to 8 event outputs may be set or maintained.	CM.1 Control Mode Loop 1 CM.2 Control Mode Loop 2 CM.3 Control Mode Loop 3 CM.4 Control Mode Loop 4 hoUr Hours Min Minutes SEC Seconds gSE1 Guaranteed Soak Enable 1 gSE2 Guaranteed Soak Enable 2 gSE3 Guaranteed Soak Enable 3 gSE4 Guaranteed Soak Enable 4 Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8
CLoc CLoc	*Step Types* **Wait For Time** A Wait for Time Step is available with an Access module having the real-time calendar clock feature. This allows the program to wait for a specified day and time before proceeding to the next step. Used to have the profile execute steps everyday or only weekdays. The state of up to 8 event outputs may be set or maintained.	hoUr Hours Min Minutes SEC Seconds doW Day of Week Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8
W.PE W.PE	*Step Types* **Wait For** A Wait For Process or Event Step will wait for four process values to match the Wait for Process Values (1 to 4), and/or for the four Wait For Event states (1 to 4) to match the specified state. The state of up to 8 event outputs may be set or maintained.	P.E1 Wait For Process 1 Condition WP.1 Wait For Process 1 Value P.E2 Wait For Process 2 Condition WP.2 Wait For Process 2 Value P.E3 Wait For Process 3 Condition WP.3 Wait For Process 3 Value P.E4 Wait For Process 4 Condition WP.4 Wait For Process 4 Value WE.1 Wait Event 1 WE.2 Wait Event 2 WE.3 Wait Event 3 WE.4 Wait Event 4 Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8

Display	Step Type Description	Parameters in Step Type
StAt StAt	*Step Types* **State** A State Step changes set points instantly to the specified values then maintains the Target Set Points for the designated time. The state of up to 8 event outputs may be set or maintained.	CM.1 Control Mode Loop 1 CM.2 Control Mode Loop 2 CM.3 Control Mode Loop 3 CM.4 Control Mode Loop 4 tg.S1 Target Set Point Loop 1 tg.S2 Target Set Point Loop 2 tg.S3 Target Set Point Loop 3 tg.S4 Target Set Point Loop 4 GSE1 Guaranteed Soak Enable 1 GSE2 Guaranteed Soak Enable 2 GSE3 Guaranteed Soak Enable 3 GSE4 Guaranteed Soak Enable 4 hoUr Hours Min Minutes SEC Seconds Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8
Subr Subr	*Step Types* **Subroutine Step** A Subroutine Step jumps to a set of subroutine steps that are common to many profiles. This allows efficiency by utilizing several steps to be accessed and called upon. Once the subroutine is complete, control is passed back to the main profile at the next step. The state of up to 8 event outputs may be set or maintained. This step type not available in subroutine.	SS Subroutine Step SC Subroutine Count Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8
JL JL	*Step Types* **Jump** A Jump step will repeat previous steps a number of times designated in Jump Count. Jumps can be nested up to four deep. The state of up to 8 event outputs may be set or maintained. This step type not available in subroutine. Note: Use the Subroutine step type to jump forward to a set of common steps.	JS Jump Step JC Jump Count Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8

Display	Step Type Description	Parameters in Step Type
End End	*Step Types* **End** An End Step will end the profile and set the control modes and set points to match the End Type. The state of up to 8 event outputs may be set or maintained. The event outputs will not be set off unless specifically stated in this step. If a profile does not have an End Step, the profile continues until step 250, then stops and maintains the last set points and control modes. In Subroutines, the End Step returns control back to the next profile step following the call.	End End Type Ent1 Event 1 Ent2 Event 2 Ent3 Event 3 Ent4 Event 4 Ent5 Event 5 Ent6 Event 6 Ent7 Event 7 Ent8 Event 8

Chapter 6: Factory Pages

Control Module Factory Page Parameters

To navigate to the Factory Page using the RUI, follow the steps below:

1. From the Home Page, press and hold both the Advance and Infinity keys for six seconds.
2. Press the Up or Down key to view available menus.
3. Press the Advance Key to enter the menu of choice.
4. If a submenu exists (more than one instance), press the Up or Down key to select and then press the Advance Key to enter.
5. Press the Up or Down key to move through available menu prompts.
6. Press the Infinity Key to move backwards through the levels: parameter to submenu, submenu to menu, menu to Home Page.
7. Press and hold the Infinity Key for two seconds to return to the Home Page.

On the following pages, top level menus are identified with a yellow background color.

Note:
Some of these menus and parameters may not appear, depending on the controller's options. See model number information in the Appendix for more information. If there is only one instance of a menu, no submenus will appear.

Note:
Some of the listed parameters may not be visible. Parameter visibility is dependent upon controller part number.

CUSt
FCty **Custom Setup Menu**
1 to 20
CUSt Custom Setup
PAr Parameter
iid Instance ID

LoC
FCty **Security Setting Menu**
LoC Security Setting
LoC.o Operations Page
LoC.P Profiling Page
PAS.E Password Enable
rLoC Read Lock
SLoC Write Security
LoC.L Locked Access Level
roLL Rolling Password
PAS.u User Password
PAS.A Administrator Password

ULoC
FCty **Security Setting Menu**
LoC Security Setting
CodE Public Key
PASS Password

diAg
FCty **Diagnostics Menu**
diAg Diagnostics
Pn Part Number
rEu Software Revision
S.bld Software Build Number
Sn Serial Number
dAtE Date of Manufacture

CAL
FCty **Calibration Menu**
1 to 4
CAL Calibration 1 to 4
Mu Electrical Measurement
ELi.o Electrical Input Offset
ELi.S Electrical Input Slope
ELo.o Electrical Output Offset
ELo.S Electrical Output Slope

RMC Module • Factory Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
CUSt FCtY **Custom Setup Menu**								
PAr Par	*Custom Menu* **Parameter 1 to 20** Select the parameters that will appear in the Home Page. The Parameter 1 value will appear in the upper display of the Home Page. It cannot be changed with the Up and Down Keys in the Home Page. The Parameter 2 value will appear in the lower display in the Home Page. It can be changed with the Up and Down Keys, if the parameter is a writable one. Scroll through the other Home Page parameters with the Advance Key .	nonE None L.St Limit Status L.hY Hysteresis L.hS High Limit Set Point LL.S Low Limit Set Point 9Sd1 Guaranteed Soak Deviation 1 P.ACr Profile Action Request P.Str Profile Start idLE Idle Set Point t.tun TRU-TUNE+® Enable r.rt Ramp Rate C.hY On / Off Cool Hysteresis C.Pb Cool Proportional Band h.hY On / Off Heat Hysteresis h.Pb Heat Proportional Band db Dead Band td Time Derivative ti Time Integral C.Pr Cool Power h.Pr Heat Power C.M Control Mode AUt Autotune oP Open Loop Set Point AC.SP Active Set Point AC.Pu Active Process Value StPt Set Point CUSt Custom A.hY Hysteresis A.hi High Set point A.Lo Low Set point USr.r Restore Settings From C_F Display Units i.CA Calibration Offset Pro Process		- - - -	- - - -	- - - -	14005	uint RWES
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Factory Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
iid	*Custom Setup (1 to 20)* **Instance ID** Select the instance of the parameter selected above to be displayed.	1 to 24	- - - -	- - - -	- - - -	- - - -	14003	uint RWES
LoC FCty **Security Setting Menu**								
LoC.o	*Security Setting* **Operations Page** Use to change the required security level clearance required to gain access to the Operations Page.	1 to 3	2	***Instance 1*** *Map 1 Map 2* 43342 45302	0x67 (103) 1 2	- - - -	3002	unit RWE
LoC.P	*Security Setting* **Profiling Page** Use to change the required security level clearance required to gain access to the Profiling Page.	1 to 3	3	***Instance 1*** *Map 1 Map 2* 43354 45314	0x67 (103) 1 8	- - - -	3008	uint RWE
PAS.E	*Security Setting* **Password Enable** Turn Password Enable ON if a Password access feature is desired. This is in addition to Read Lock or Write Security.	oFF Off on On	Off	- - - -	- - - -	- - - -	- - - -	- - - -
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Factory Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
rLoC rLoC	*Security Setting* **Read Lock** Set the read security clearance level. The user can access the selected level and all lower levels. Applies regardless of Password Enable setting. Set the Read Lock clearance level. The user can have read access to the selected level and all lower levels. If the Write Security level is higher than the Read Lock, the Read Lock level takes priority.	1 to 5	5	***Instance 1*** *Map 1* *Map 2* 43358 45318	0x67 (103) 1 0x0A (10)	- - - -	3010	uint RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Factory Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
SLoC SLoC	*Security Setting* **Write Security** Set the write security clearance level. The user can access the selected level and all lower levels. Applies regardless of Password Enable setting. Set the Write Security clearance level. The user can have write access to the selected level and all lower levels. If the Write Security level is higher than the Read Lock, the Read Lock level takes priority.	0 to 5	5	***Instance 1*** *Map 1 Map 2* 43360 45320	0x67 (103) 1 0x0B (11)	- - - -	3011	uint RWE
LoC.L LoC.L	*Security Setting* **Locked Access Level** Determines user level menu visibility when Password is enabled. See Features section under Password Security. This setting is in addition to Read Lock and Write Security. Consider using only Locked Access Level and Set Read Lock and Write Security to 5.	1 to 5	5	- - - -	- - - -	- - - -	- - - -	- - - -
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Factory Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
roLL roLL	*Security Setting* **Rolling Password** Applies if Password Enable is ON. When power is cycled a new Public Key will be displayed.	oFF Off on On	Off	- - - -	- - - -	- - - -	- - - -	- - - -
PAS.u PAS.u	*Security Setting* **User Password** Applies if Password Enable is ON. Used to acquire access to menus made available through the Locked Access Level setting. Do not forget the password as it is required to change Locked Access Level, Read Lock or Write Security.	10 to 999	63	- - - -	- - - -	- - - -	- - - -	- - - -
PAS.A PAS.A	*Security Setting* **Administrator Password** Applies if Password Enable is ON. Used to acquire access to menus made available through the Locked Access Level setting. Do not forget the password as it is required to change Locked Access Level, Read Lock, Write Security and the ability to change the Passwords.	10 to 999	156	- - - -	- - - -	- - - -	- - - -	- - - -
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Factory Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
ULoC FCtY **Security Setting Menu**								
CodE CodE	*Security Setting* **Public Key** If Rolling Password is turned ON, generates a random number when power is cycled. If Rolling Password is OFF, a fixed number will be displayed. The Public Key is only required if the assigned Password is unknown. Provide the key to the OEM or technical support to gain access.	Customer Specific	0	- - - -	- - - -	- - - -	- - - -	- - - -
PASS PASS	*Security Setting* **Password** Applies if Password Enable is set to ON. Enter the 4-digit assigned password. If unknown, contact your supervisor, the OEM or technical support to gain access.	-1999 to 9999	0	- - - -	- - - -	- - - -	- - - -	- - - -
d iAg FCtY **Diagnostics Menu**								
Pn Pn	*Diagnostics Menu* **Part Number** Display this controller's part number.	24	- - - -	***Instance 1*** *Map 1* *Map 2* 16 16	0x65 (101) 1 9	115	1009	string RWE
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Factory Page								
Display	**Parameter Name Description**	**Range**	**Default**	**Modbus Relative Address**	**CIP Class Instance Attribute hex (dec)**	**Profibus Index**	**Parameter ID**	**Data Type and Access ****
rEu rEv	*Diagnostics Menu* **Software Revision** Display this controller's firmware revision number.	5	- - - -	***Instance 1*** *Map 1 Map 2* 4 4	0x65 (101) 1 to 5 0x11 (17)	116	1003	32-bit R
S.bLd S.bLd	*Diagnostics Menu* **Software Build Number** Display the firmware build number.	0 to 2,147,483,647	- - - -	***Instance 1*** *Map 1 Map 2* 8 8	0x65 (101) 1 to 5 5	- - - -	1005	32-bit R
Sn Sn	*Diagnostics Menu* **Serial Number** Display the serial number.	0 to 2,147,483,647	- - - -	***Instance 1*** *Map 1 Map 2* 12 12	0x65 (101) 1 7	- - - -	1007	32-bit RWE
dAtE dAtE	*Diagnostics Menu* **Date of Manufacture** Display the date code.	0 to 2,147,483,647	- - - -	***Instance 1*** *Map 1 Map 2* 14 14	0x65 (101) 1 8	- - - -	1008	32-bit RWE
No Display	*Diagnostics Menu* **Hardware ID** Read the hardware ID.	23 or 116	- - - -	***Instance 1*** *Map 1 Map 2* 0 0	0x65 (101) 1 1	- - - -	1001	32-bit R
CAL FCty **Calibration Menu**								
Mu Mv	*Calibration Menu (1 to 4)* **Electrical Measurement** Read the raw electrical value for this input in the units corresponding to the Sensor Type (Setup Page, Analog Input Menu) setting.	-3.4e38 to 3.4e38	- - - -	***Instance 1*** *Map 1 Map 2* 400 460 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0x15 (21)	- - - -	4021	float R
** R: Read, W: Write, E: EEPROM, S: User Set								

RMC Module • Factory Page								
Display	Parameter Name Description	Range	Default	Modbus Relative Address	CIP Class Instance Attribute hex (dec)	Profibus Index	Parameter ID	Data Type and Access **
EL i.o ELi.o	*Calibration Menu (1 to 4)* **Electrical Input Offset** Change this value to calibrate the low end of the input range.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 378 438 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0xA (10)	- - - -	4010	float RWES
EL i.S ELi.S	*Calibration Menu (1 to 4)* **Electrical Input Slope** Adjust this value to calibrate the slope of the input value.	-1,999.000 to 9,999.000	1.0	***Instance 1*** *Map 1 Map 2* 380 440 *Map 1 Offset to next instance equals +90* *Map 2 Offset to next instance equals +100*	0x68 (104) 1 to 4 0xB (11)	- - - -	4011	float RWES
ELo.o ELo.o	*Calibration Menu (1, 3, 5, 7)* **Electrical Output Offset** Change this value to calibrate the low end of the output range.	-1,999.000 to 9,999.000	0.0	***Instance 1*** *Map 1 Map 2* 848 1068 *Map 1 Offset to next instance equals +24* *Map 2 Offset to next instance equals +60*	0x76 (118) 1 to 4 5	- - - -	18005	float RWES
ELo.S ELo.S	*Calibration Menu (1, 3, 5, 7)* **Electrical Output Slope** Adjust this value to calibrate the slope of the output value.	-1,999.000 to 9,999.000	1.0	***Instance 1*** *Map 1 Map 2* 850 1070 *Map 1 Offset to next instance equals +24* *Map 2 Offset to next instance equals +60*	0x76 (118) 1 to 4 6	- - - -	18006	float RWES

** R: Read, W: Write, E: EEPROM, S: User Set

7

Chapter 7: Features

7

Chapter 7: Features (cont.)

7

Chapter 7: Features (cont.)

Saving and Restoring Settings Using an RUI

Recording setup and operations parameter settings for future reference is very important. If you unintentionally change these, you will need to program the correct settings back into the controller to return the equipment to operational condition.

After you program the controller and verify proper operation, use Save Settings As USr.S (Setup Page, Global Menu) to save the settings into either of two files in a special section of memory.

Note:
Starting with firmware release 6, there is only one user set.

If the settings in the controller are altered and you want to return the controller to the saved values, use Restore Settings From USr.r (Setup Page, Global Menu) to recall the previously saved settings. A digital input or the Function Key via the Action Block can also be configured to restore parameters.

CAUTION: ⚠

If an Action is programmed for User Set Restore, the operator may select Factory Restore and the Digital Input or Function Key may no longer be programmed for User Setting Restore.

Note:
Restoring to factory defaults will overwrite the entirety of the module memory; this would include any customized assemblies used with any of the available communications protocols.

Note:
Only perform the above procedure when you are sure that all the correct settings are programmed into the controller. Saving the settings overwrites any previously saved collection of settings. Be sure to document all the controller settings.

Tuning the PID Parameters

Autotune

When an autotune is performed on the RMC module, the Set Point is used to calculate the tuning set point.

For example, if the active set point is 200° and autotune Set Point A.t.SP (Operations Page, Loop Menu) is set to 90 percent, the auto-tune function utilizes 180° for tuning. Changing the set point after an autotune has been started has no affect on the current tuning process. Set point changes can occur while the control is auto tuning. When the autotune is initially started it will use the current set point and will disregard all set point changes until the tuning process is complete. Once complete, the controller will then use the new set point. This is why it is a good idea to enter the active set point before initiating an autotune.

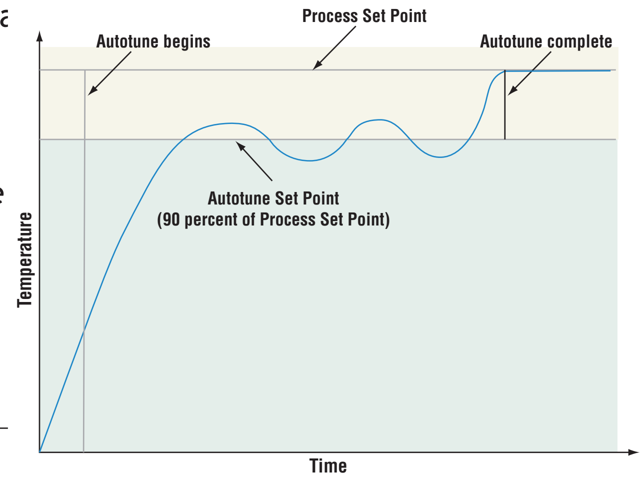
Auto tuning calculates the optimum heating and/or cooling PID parameter settings based on the systems response. Autotuning can be enabled whether or not TRU-TUNE+® is enabled. The PID settings generated by the autotune will be used until the autotune feature is rerun, the PID values are manually adjusted or TRU-TUNE+® is enabled.

Note:
Do not perform an autotune while a profile is running.

To initiate an autotune follow the steps below:

1. Using an RUI, from the Home Page, push the up or down keys to enter the desired Set Point or one that is in the middle of the expected range of set points that you want to tune for.
2. Navigate to the Operations Page, Loop Menu (push and hold the up and down arrow for approximately 3 seconds) and select the Autotune Set Point A.tSP. The Autotune Set Point is expressed as a percent of the Closed Loop Set Point.
3. Set Autotune Request AUt to YES. If the autotune cannot be completed in 60 minutes, the autotune will time-out and the original settings will take effect.

Once started, the lower RUI display will flash between the loop being tuned (tUn1 to tU16) and the set point while the autotuning is underway. The temperature must cross the Autotune Set Point five times to complete the autotuning process. Once complete, the controller controls at the normal set point, using the new para



If you need to adjust the tuning procedures aggressiveness, use Autotune Aggressiveness t.AGr (Setup Page, Loop Menu). Select Under Damped Undr to bring the process value to the set point quickly. Select over damped oUEr to bring the process value to the set point with minimal overshoot. Select critical damped Crit to balance a rapid response with minimal overshoot.

Manual Tuning

In some applications, the autotune process may not provide PID parameters for the process characteristics you desire. If that is the case, you may want to tune the controller manually.

To tune the controller manually follow these steps:

1. Apply power to the controller and establish a set point typically used in your process.
2. Go to the Operations Page, Loop Menu, and set Heat Proportional Band h.Pb and/or Cool Proportional Band C.Pb to 5. Set Time Integral ti to 0. Set Time Derivative td to 0.
3. When the system stabilizes, watch the process value. If it fluctuates, increase the Heat Proportional Band or Cool Proportional Band value in 3 to 5° increments until it stabilizes, allowing time for the system to settle between adjustments.
4. When the process has stabilized, watch Heat Power h.Pr or Cool Power C.Pr (Operations Page, Monitor Menu). It should be stable ±2%. At this point, the process temperature should also be stable, but it will have stabilized before reaching the set point. The difference between the set point and actual process value can be eliminated with Integral.
5. Start with an Integral value of 6,000 and allow 10 minutes for the process temperature to reach the set point. If it has not, reduce the setting by half and wait another 10 minutes. Continue reducing the setting by half every 10 minutes until the process value equals the set point. If the process becomes unstable, the Integral value is too small. Increase the value until the process stabilizes.
6. Increase Derivative to 0.1. Then increase the set point by 11° to 17°C. Monitor the system's approach to the set point. If the process value overshoots the set point, increase Derivative to 0.2. Increase the set point by 11° to 17°C and watch the approach to the new set

point. If you increase Derivative too much, the approach to the set point will be very sluggish. Repeat as necessary until the system rises to the new set point without overshoot or sluggishness.

For additional information about autotune and PID control, see related features in this chapter.

Autotuning with TRU-TUNE+®

The TRU-TUNE+ adaptive algorithm will optimize the controller's PID values to improve control of dynamic processes. TRU-TUNE+ monitors the Process Value and adjusts the control parameters automatically to keep your process at set point during set point and load changes. When the controller is in the adaptive control mode, it determines the appropriate output signal and, over time, adjusts control parameters to optimize responsiveness and stability. The TRU-TUNE+ feature does not function for on-off control.

The preferred and quickest method for tuning a loop is to establish initial control settings and continue with the adaptive mode to fine tune the settings.

Setting a controller's control mode to tune starts this two-step tuning process. (See Autotuning in this chapter.) This predictive tune determines initial, rough settings for the PID parameters. Then the loop automatically switches to the adaptive mode which fine tunes the PID parameters.

Once the Process Value has been at set point for a suitable period (about 30 minutes for a fast process to roughly two hours for a slower process) and if no further tuning of the PID parameters is desired or needed, TRU-TUNE+ may be turned off. However, keeping the controller in the adaptive mode allows it to automatically adjust to load changes and compensate for differing control characteristics at various set points for processes that are not entirely linear.

Once the PID parameters have been set by the TRU-TUNE+ adaptive algorithm, the process, if shut down for any reason, can be restarted in the adaptive control mode.

Turn TRU-TUNE+ on or off with TRU-TUNE+ Enable t.tUn (Setup Page, Loop Menu).

Use TRU-TUNE+ Band t.bnd (Setup Page, Loop Menu) to set the range above and below the set point in which adaptive tuning will be active. Adjust this parameter only in the unlikely event that the controller is unable to stabilize at the set point with TRU-TUNE+ Band set to auto (0). This may occur with very fast processes. In that case, set TRU-TUNE+ Band to a large value, such as 100.

Use TRU-TUNE+ Gain t.gn (Setup Page, Loop Menu) to adjust the responsiveness of the adaptive tuning calculations. Six settings range from 1, with the most aggressive response and most potential overshoot (highest gain), to 6, with the least aggressive response and least potential for overshoot (lowest gain). The default setting, 3, is recommended for loops with thermocouple feedback and moderate response and overshoot potential.

Autotuning a PID Loop

Follow the steps below:

1. Sensor Type SEn (Setup Page, Analog Input Menu), and scaling, if required;
2. Function Fn (Setup Page, Output Menu) and scaling, if required.
3. Enter the desired set point or one that is in the middle of the expected range of set points that you want to tune for.

4. Enable TRU-TUNE+.
5. Initiate an autotune. (See Autotuning in this chapter.)

When autotuning is complete, the PID parameters should provide good control. As long as the loop is in the adaptive control mode, TRU-TUNE+ continuously tunes to provide the best possible PID control for the process.

WARNING! ⚠

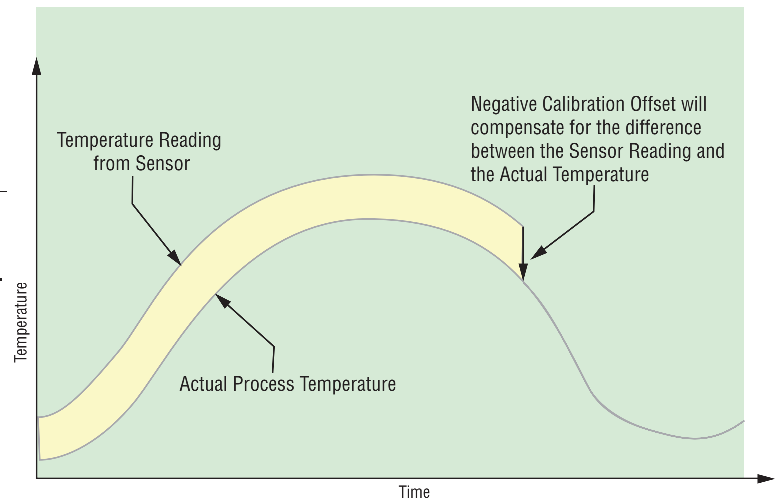
During autotuning, the controller sets the output to 100 percent and attempts to drive the Process Value toward the set point. Enter a set point and heat and cool power limits that are within the safe operating limits of your system.

Inputs

Calibration Offset

Calibration offset allows a user to compensate for an inaccurate sensor, lead resistance or other factors that affect the input value. A positive offset increases the input value, and a negative offset decreases the input value.

The input offset value can be viewed or changed with Calibration Offset i.CA (Operations Page, Analog Input Menu).



Calibration

Before performing any calibration procedure, verify that the displayed readings are not within published specifications by inputting a known value from a precision source to the analog input. Next, subtract the displayed value with the known value and compare this difference to the published accuracy range specification for that type of input.

Use of the Calibration Offset i.CA parameter found in the Operations Page oPEr, Analog Input Menu A i shifts the readings across the entire displayed range by the offset value. Use this parameter to compensate for sensor error or sensor placement error. Typically this value is set to zero.

Equipment required while performing calibration:

Obtain a precision source for millivolts, volts, milliamperes or resistance depending on the sensor type to be calibrated. Use copper wire only to connect the precision source to the controller's input. Keep leads between the precision source and controller as short as possible to minimize error. In addition, a precision volt/ohm meter capable of reading values to 4 decimal places or better is recommended. Prior to calibration, connect this volt/ohm meter to the precision source to verify accuracy.

Actual input values do NOT have to be exactly the recommended values, but it IS critical that the actual value of the signal connected to the controller be accurately known to at least four digits.

Calibration of Analog Inputs:

To calibrate an analog input, you will need to provide a source of two electrical signals or resistance values near the extremes of the range that the application is likely to utilize. See recommended values below:

Sensor Type	Precision Source Low	Precision Source High
thermocouple	0.000 mV	50.000 mV
millivolts	0.000 mV	50.000 mV
volts	0.000V	10.000V
milliamps	0.000 mA	20.000 mA
100 Ω RTD	50.00 Ω	350.0 Ω
1,000 Ω RTD	500.0 Ω	3,500 Ω
thermistor 5 kΩ	50.00	5,000
thermistor 10 kΩ	150.0	10,000
thermistor 20 kΩ	1,800	20,000
thermistor 40 kΩ	1,700	40,000
potentiometer	0.000	1,200

Note:

The user may only calibrate one sensor type. If the calibrator interferes with open thermocouple detection, set Sensor Type SEn in Setup Page SEt, Analog Input Menu A i to millivolt mu instead of Thermocouple tC to avoid interference between the calibrator and open thermocouple detect circuit for the duration of the calibration process. Be sure to set sensor type back to the thermocouple type utilized.

To calibrate an Analog Input:

1. Disconnect the sensor from the controller.
2. Record the Calibration Offset i.CA parameter value in the Operations Page oPEr, Analog Input Menu A i then set value to zero.
3. Wire the precision source to the appropriate controller input terminals to be calibrated. Do not have any other wires connected to the input terminals. Please refer to the Install and Wiring section of this manual for the appropriate connections.
4. Ensure the controller sensor type is programmed to the appropriate Sensor Type SEn to be utilized in the Setup Page SEt, Analog Input Menu A i.
5. Enter Factory Page FCty, Calibration Menu CAL via RUI or EZ-ZONE Configurator Software.
6. Select the Calibration CAL input instance to be calibrated. This corresponds to the analog input to be calibrated.
7. Set Electrical Input Slope ELi.S to 1.000 and Electrical Input Offset ELi.o to 0.000 (this will cancel any prior user calibration values)
8. Input a Precision Source Low value. Read Electrical Measurement value mu of controller via EZ-Configurator or RUI. This will be referred to as Electrical Measured Low. Record low value _______________
9. Input a Precision Source High value.
10. Read Electrical Measurement value mu of controller via EZ-Configurator or RUI. This will be referred to as Electrical Measured High. Record high value _______________

11. Calculated Electrical Input Slope = (Precision High – Precision Low) / (Electrical Measured High – Electrical Measured Low). Calculated Slope value ____________
12. Calculated Electrical Input Offset = Precision Low – (Electrical Input Slope * Measured Low). Calculated Offset value ____________
13. Enter the calculated Electrical Input Slope EL i.S and Electrical Input Offset EL i.o into the controller.
14. Exit calibration menu.
15. Validate calibration process by utilizing a calibrator to the analog input.
16. Enter calibration offset as recorded in step 2 if required to compensate for sensor error.

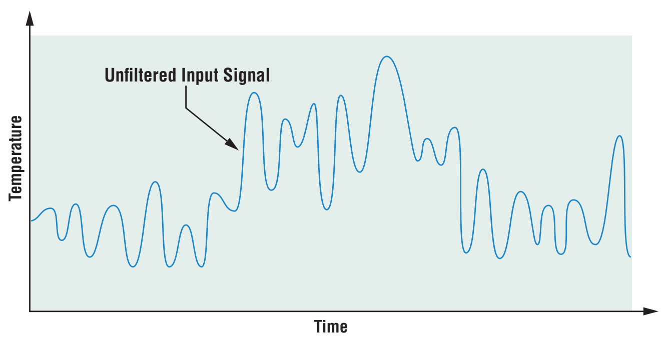
Note:

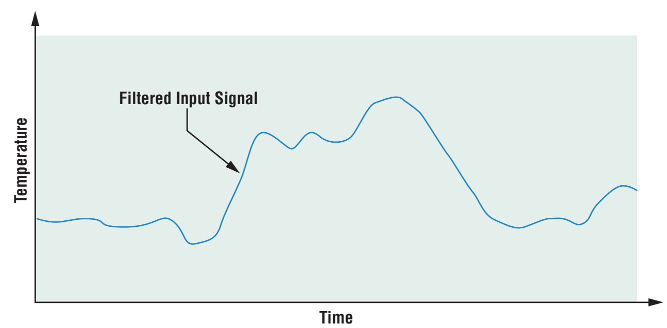
Setting Electrical Input Slope EL i.S to 1.000 and Electrical Input Offset EL i.o to 0.000, restores factory calibration as shipped from factory.

Filter Time Constant

Filtering smooths an input signal by applying a first-order filter time constant to the signal. Filtering the displayed value makes it easier to monitor. Filtering the signal may improve the performance of PID control in a noisy or very dynamic system.

Adjust the filter time interval with Filter Time F iL (Setup Page, Analog Input Menu). Example: With a filter value of 0.5 seconds, if the process input value instantly changes from 0 to 100 and remained at 100, the display will indicate 100 after five time constants of the filter value or 2.5 seconds.





Sensor Selection

You need to configure the controller to match the input device, which is normally a thermocouple, RTD or process transmitter. Select the sensor type with Sensor Type SEn (Setup Page, Analog Input Menu).

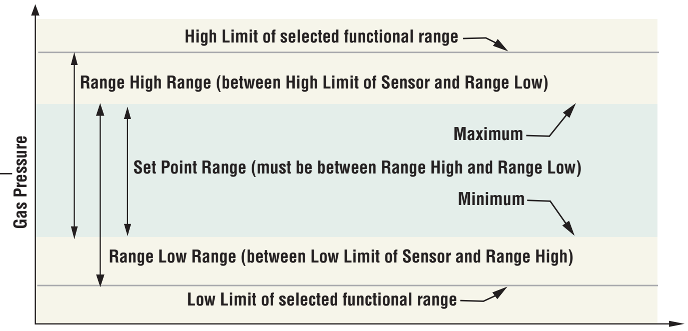
Sensor Backup

The Process Value function can be set for sensor backup which would maintain closed-loop control after an input failure by switching the control input to another input sensor of choice. Turn sensor backup on or off via the Setup Page, Process Value Menu. Source Function A must select a backup sensor from the same module (zone) where Source Function B through D can select a sensor as the backup from another zone (module).

Set Point Low Limit and High Limit

The controller constrains the set point to a value between a minimum and maximum. Set the set point limits with Minimum L.SP and Maximum h.SP (Setup Page, Loop Menu).

As shown to the right, there are two sets of set points, minimum and maximum (closed-loop set point) and minimum and maximum (open-loop set point, manual power).



Range Low and Range High

Scale High and Scale Low

When an analog input is selected as process voltage or process current input, you must choose the value of voltage or current to be the low and high ends. For example, when using a 4 to 20 mA input, the scale low value would be 4.00 mA and the scale high value would be 20.00 mA. Commonly used scale ranges are: 0 to 20 mA, 4 to 20 mA, 0 to 5V, 1 to 5V and 0 to 10V.

You can create a scale range representing other units for special applications. You can reverse scales from high values to low values for analog input signals that have a reversed action. For example, if 50 psi causes a 4 mA signal and 10 psi causes a 20 mA signal.

Scale low and high low values do not have to match the bounds of the measurement range. These along with range low and high provide for process scaling and can include values not measurable by the controller. Regardless of scaling values, the measured value will be constrained by the electrical measurements of the hardware.

Select the low and high values with Scale Low S.Lo and Scale High S.hi. Select the displayed range with Range Low r.Lo and Range High r.hi (Setup Page, Analog Input Menu).

Range High and Range Low

With a process input, you must choose a value to represent the low and high ends of the current or voltage range. Choosing these values allows the controller's display to be scaled into the actual working units of measurement. For example, the analog input from a humidity transmitter could represent 0 to 100 percent relative humidity as a process signal of 4 to 20 mA. Low scale would be set to 0 to represent 4 mA and high scale set to 100 to represent 20 mA. The indication on the display would then represent percent humidity and range from 0 to 100 percent with an input of 4 to 20 mA. Select the low and high values with Range Low r.Lo and Range High r.hi (Setup Page, Analog Input Menu).

Receiving a Remote Set Point

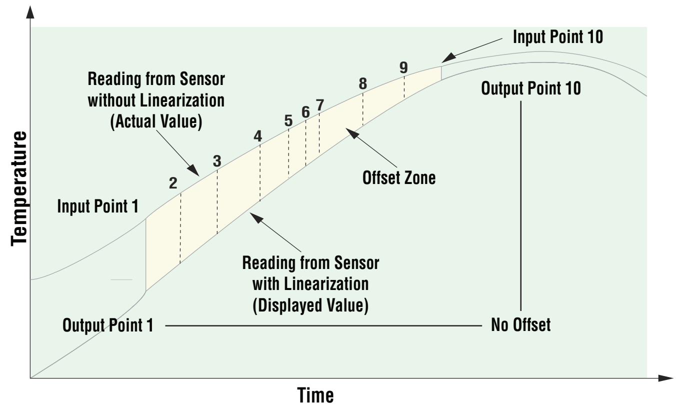
The remote set point feature allows the controller to use a thermocouple, RTD, 1k potentiometer or process signal (from any RM module) as the second input to establish the set point, which allows its set point to be manipulated by an external source. A common application would use one ramping controller with a set-point retransmit output to ramp multiple controllers using the remote set point. Or you could use an analog output from a PLC to send set point values to an EZ-ZONE RMC. The controller must have at least two process inputs to use the remote set point feature.

You may select between local and remote set points at the front panel, with an event input, from a remote computer using the communications feature or from an external switch using an event input. Make sure all input and output impedances are compatible.

Switch to the remote set point with Remote Enable r.En (Operations Page, Loop Menu). Select whether the remote set point controls an open or closed-loop set point with Remote Set Point Type r.tY (Setup Page, Loop Menu). Assign the function of switching to a remote set point to an Action Function Fn (Setup Page, Action Menu) such as the EZ Key or a Digital Input.

Ten Point Linearization

The linearization function allows a user to re-linearize a value read from an analog source. The function selections are Off, Interpolated and Stepped. When set to Off the output will match the Source A value plus offset. There are 10 data points used to compensate for differences between the source value read (input point) and the desired value (output point). Multiple data points enable compensation for non-linear differences between the sensor readings and target process values over the thermal or process system operating range. Sensor reading differences can be caused by sensor placement, tolerances, an inaccurate sensor or lead resistance.



The user specifies the unit of measurement and then each data point by entering an input point value and a corresponding output point value. Each data point must be incrementally higher than the previous point. The linearization function will interpolate data points linearly in between specified data points.

Outputs

NO-ARC Relay

A NO-ARC relay provides a significant improvement in the life of the output relay over conventional relays. Conventional mechanical relays have an expected life of 100,000 cycles at the rated full-load current. The shorter life for conventional relays is due to the fact that when contacts open while current is flowing metal degradation occurs. This action produces unavoidable electrical arcing causing metal to transfer from one contact to the other. The arcing conditions continue on each subsequent contact opening until over time the resistance through the contacts increases causing the contacts to increase in temperature. Eventually, the contacts will weld together and the relay remains in the on state.

The Watlow NO-ARC relay is a hybrid relay. It uses a mechanical relay for the current load and a triac (solid-state switch) to carry the turn-on and turn-off currents. NO-ARC relays extend the life of the relay more than two million cycles at the rated full-load current offering significantly longer life cycle. For acceptable usage note the precautions below.

Do not use:

- Hybrid relays for limit contactors. A limit or safety device must provide a positive mechanical break on all hot legs simultaneously
- DC loads with hybrid relays. The triacs used for arc suppression will turn off only with ac line voltage

- Hybrid switches to drive any inductive loads, such as relay coils, transformers or solenoids;
- Cycle times less than five seconds on hybrid switches
- On loads that exceed 264V ac through relay
- On loads that exceed 15 amperes load
- On loads less than 100 mA
- NO-ARC relays in series with other NO-ARC relays

Duplex

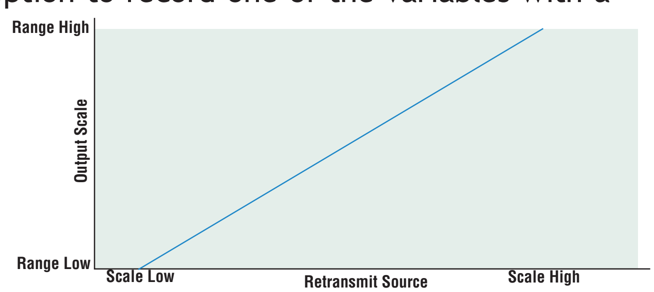
Certain systems require that a single process output control both heating and cooling outputs. An EZ-ZONE® RMC equipped with a process output can function as two separate outputs.

With a 4 to 20mA output the heating output will operate from 12 to 20mA (0 to +100 percent) and the cooling output will operate from 12 to 4mA (0 to -100 percent). In some cases this type of output is required by the device that the RMC controls, such as a three-way valve that opens one way with a 12 to 20mA signal and opens the other way with a 4 to 12mA signal. This feature reduces the overall system cost by using a single output to act as two outputs.

Outputs 1, 3, 5 and 7 (depending on ordering options) can be ordered as process outputs. Select Power Pwdr as the Output Function Fn (Setup Page, Output Menu). For this example, set the Output Type o.tY to milliamps mA. Range Low r.Lo to -100.00, Range High r.hi to +100.00, Scale Low S.Lo to 4mA and Scale High S.hi to 20.00 mA.

Retransmitting a Process Value or Set Point

The retransmit feature allows a process output to provide an analog signal that represents the set point or process value. The signal may serve as a remote set point for another controller or as an input for a chart recorder documenting system performance over time. In choosing the type of retransmit signal the operator must take into account the input impedance of the device to be retransmitted to and the required signal type, either voltage or milliamperes. Typically, applications might use the retransmit option to record one of the variables with a chart recorder or to generate a set point for other controls in a multi-zone application. Outputs 1, 3, 5 and 7 can be ordered as process outputs. Assign an analog source to Output Function to accomplish retransmit of a process or set point value.

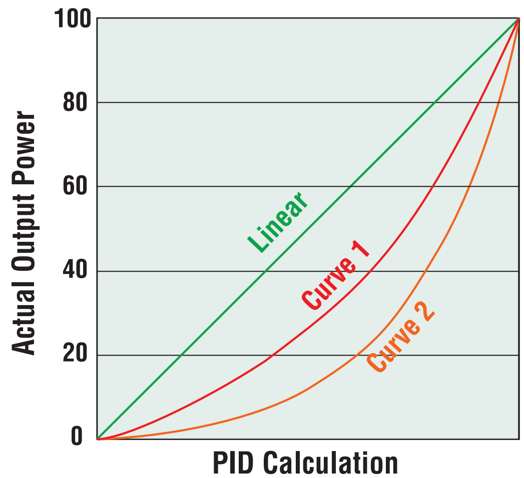


Retransmit

Set the range of the process output with Scale Low S.Lo and Scale High S.hi. Scale the retransmit source to the process output with Range Low r.Lo and Range High r.hi. When the retransmit source is at the Range Low value, the retransmit output will be at its Scale Low value. When the retransmit source is at the Range High value, the retransmit output will be at its Scale High value.

Cool Output Curve

A nonlinear output curve may improve performance when the response of the output device is nonlinear. If a cool output uses one of the nonlinear curves, a PID calculation yields a lower actual output level than a linear output would provide. These output curves are used in plastics extruder applications: Curve 1 for oil-cooled extruders and Curve 2 for water-cooled extruders. Select a nonlinear cool output curve with Cool Output Curve [C.Cr] (Setup Menu, Loop Menu).



Control Methods

Output Configuration

Controller outputs can be configured as a heat output, a cool output, an alarm output or deactivated and driven by any available control loop. No dependency limitations have been placed on the available combinations. The outputs can be configured in any combination. For instance, all three could be set to cool.

Heat and cool outputs use the set point and Operations parameters to determine the output value. All heat and cool outputs use the same set point value. Heat and cool each have their own set of control parameters. All heat outputs use the same set of heat control parameters and all cool outputs use the same set of cool output parameters. Each alarm output has its own set of configuration parameters and set points, allowing independent operation.

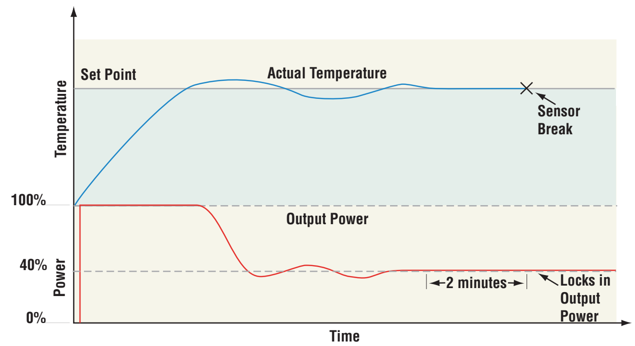
Auto (closed loop) and Manual (open loop) Control

The controller has two basic modes of operation, auto mode and manual mode. Auto mode allows the controller to decide whether to perform closed-loop control or to follow the settings of Input Error Power [FAIL] (Setup Page, Loop Menu). The manual mode only allows open-loop control. The RMC module is normally used in the auto mode. The manual mode is usually only used for specialty applications or for troubleshooting. Manual mode is open-loop control that allows the user to directly set the power level to the controller’s output load. No adjustments of the output power level occur based on temperature or set point in this mode.

In auto mode, the controller monitors the input to determine if closed-loop control is possible. The controller checks to make certain a functioning sensor is providing a valid input signal. If a valid input signal is present, the controller will perform closed-loop control. Closed-loop control uses a process sensor to determine the difference between the process value and the closed loop set point. Then the controller applies power to a control output load to reduce that difference. If a valid input signal is not present, the controller will indicate an input error message in the upper display and AttN in the lower display and respond to the failure according to the setting of Input Error Power FAiL. You can configure the controller to perform a "bumpless" transfer bPLS, switch power to output a preset fixed level MAn, or turn the output power off.

Bumpless transfer will allow the controller to transfer to the manual mode using the last power value calculated in the auto mode if the process had stabilized at a ±5 percent output power level for the time interval of Time Integral or 10 seconds, which ever is larger (Operations Page, Loop), prior to sensor failure, and that power level is less than 75 percent.

Reverse Bumpless functionality will take effect when the control is changed from Manual to Auto mode. The control will preload the Fixed Power value into the Integral Term, which will allow for a bumpless transition. The normal PID action will then take over to control the output to the Set Point value.



Bumpless Transfer

Input Error Latching iEr (Setup Page, Analog Input Menu) determines the controller's response once a valid input signal returns to the controller. If latching is on, then the controller will continue to indicate an input error until the error is cleared. To clear a latched alarm, press the Advance Key then the Up Key.

If latching is off, the controller will automatically clear the input error and return to reading the temperature. If the controller was in the auto mode when the input error occurred, it will resume closed-loop control. If the controller was in manual mode when the error occurred, the controller will remain in open-loop control.

The Manual Control Indicator Light % is on when the controller is operating in manual mode. If using an RUI, switching between modes is easy if the Control Mode C.M1 parameter is selected to appear in the Home Page.

Note:

The number following C.M as shown above and below, is dependent on the controller part number and represents a specific control loop (1 to 4).

To transfer to manual mode from auto mode, press the Advance Key until C.M1 appears in the lower display. The upper display will display AUto for auto mode. Use the Up or Down keys to select MAn. The manual set point value will be recalled from the last manual operation.

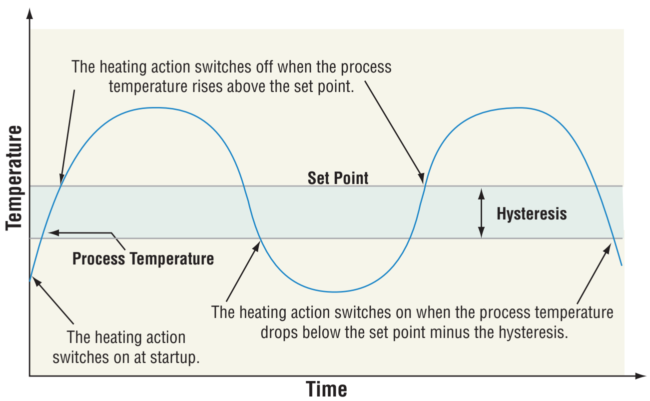
To transfer to auto mode from manual mode, press the Advance Key until C.M1 appears in the lower display. The upper display will display MAn for manual mode. Use the Up or Down keys to select AUto. The automatic set point value will be recalled from the last automatic operation. Changes take effect after three seconds or immediately upon pressing either the Advance Key or the Infinity Key.

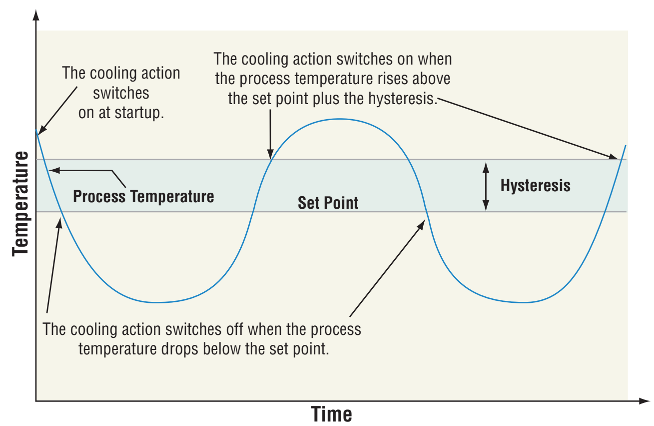
On-Off Control

On-off control switches the output either full on or full off, depending on the input, set point and hysteresis values. The hysteresis value indicates the amount the process value must deviate from the set point to turn on the output. Increasing the value decreases the number of times the output will cycle. Decreasing hysteresis improves controllability. With hysteresis set to 0, the process value would stay closer to the set point, but the output would switch on and off more frequently, and may result in the output "chattering." On-off control can be selected with Heat Algorithm h.Ag or Cool Algorithm C.Ag (Setup Page, Loop Menu). On-off hysteresis can be set with On / Off Heat Hysteresis h.hy or On / Off Cool Hysteresis C.hy (Operations Page, Loop Menu).

Note:

Input Error Power Mode FAiL does not function in on-off control mode. The output goes off.

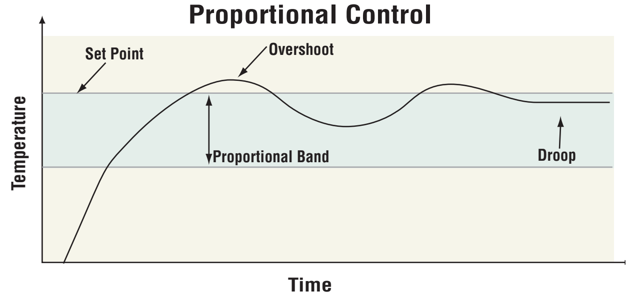




Proportional (P) Control

Some processes need to maintain a temperature or process value closer to the set point than on-off control can provide. Proportional control provides closer control by adjusting the output when the temperature or process value is within a proportional band. When the value is in the band, the controller adjusts the output based on how close the process value is to the set point.

Proportional Control



The closer the process value is to the set point, the lower the output power. This is similar to backing off on the gas pedal of a car as you approach a stop sign. It keeps the temperature or process value from swinging as widely as it would with simple on-off control. However, when the system settles down, the temperature or process value tends to "droop" short of the set point.

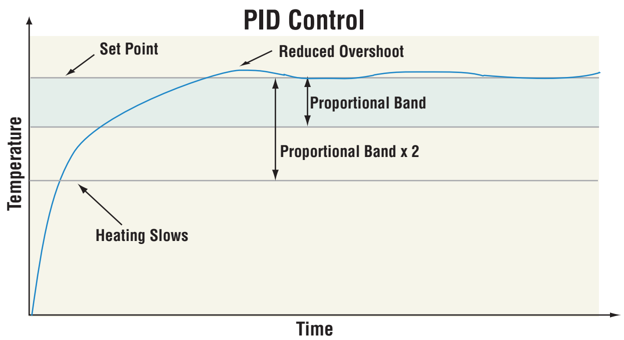
With proportional control the output power level equals (set point minus process value) divided by the proportional band value. In an application with one output assigned to heating and another assigned to cooling, each will have a separate proportional parameter. The heating parameter takes effect when the process temperature is lower than the set point, and the cooling parameter takes effect when the process temperature is higher than the set point. Adjust the proportional band with Heat Proportional Band h.Pb or Cool Proportional Band C.Pb (Operations Page, Loop Menu).

Proportional plus Integral (PI) Control

The droop caused by proportional control can be corrected by adding integral (reset) control. When the system settles down, the integral value is tuned to bring the temperature or process value closer to the set point. Integral determines the speed of the correction, but this may increase the overshoot at startup or when the set point is changed. Too much integral action will make the system unstable. Adjust the integral with Time Integral t i (Operations Page, Loop Menu).

Proportional, Integral and Derivative (PID) Control

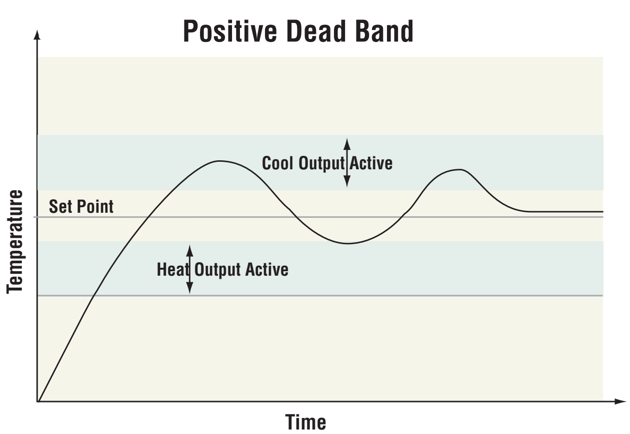
Use derivative (rate) control to minimize the overshoot in a PI-controlled system. Derivative (rate) adjusts the output based on the rate of change in the temperature or process value. Too much derivative (rate) will make the system sluggish. Adjust the derivative with Time Derivative td (Operations Page, Loop Menu).



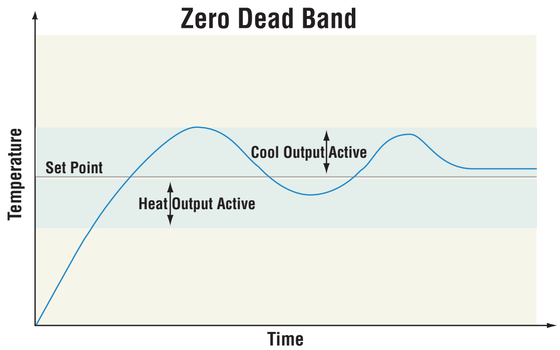
Dead Band

In a PID application the dead bands above and below the set point can save an application's energy and wear by maintaining process temperature within acceptable ranges. Use Dead Band to set an offset for the proportional band. With a negative value both the heating and cooling outputs are active when the process value is near the set point. A positive value prevents heating and cooling outputs from being on at the same time.

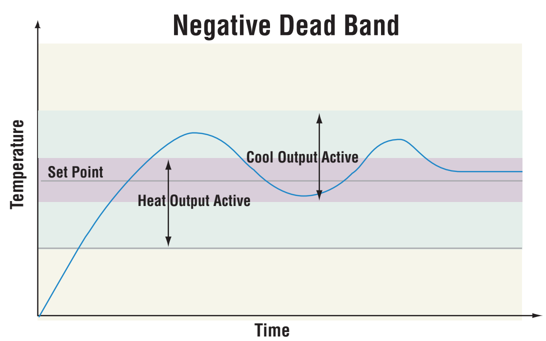
Proportional action ceases when the process value is within the dead band. Integral action continues to bring the process temperature to the set point.



When the **dead band value is zero**, the heating output activates when the temperature drops below the set point, and the cooling output switches on when the temperature exceeds the set point.



When the **dead band value is a negative value,** both heating and cooling outputs are active when the temperature is near the set point. Adjust the dead band with Dead Band db (Operations Page, Loop Menu).

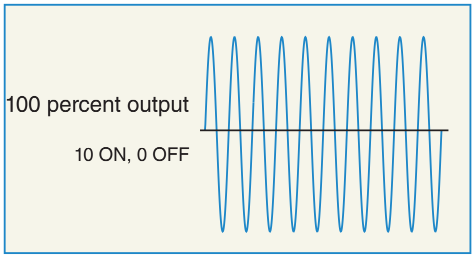


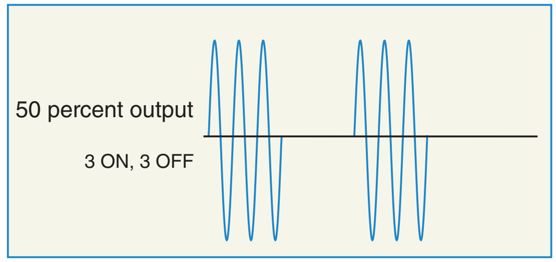
Variable Time Base

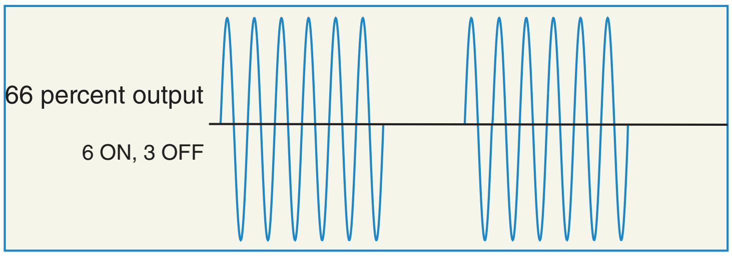
Variable time base is the preferred method for controlling a resistive load, providing a very short time base for longer heater life. Unlike phase-angle firing, variable-time-base switching does not limit the current and voltage applied to the heater.

With variable time base outputs, the PID algorithm calculates an output between 0 and 100%, but the output is distributed in groupings of three ac line cycles. For each group of three ac line cycles, the controller decides whether the power should be on or off. There is no fixed cycle time since the decision is made for each group of cycles. When used in conjunction with a zero cross (burst fire) device, such as a solid-state power controller, switching is done only at the zero cross of the ac line, which helps reduce electrical noise (RFI).

Variable time base should be used with solid-state power controllers, such as a solid-state relay (SSR) or silicon controlled rectifier (SCR) power controller. Do not use a variable time base output for controlling electromechanical relays, mercury displacement relays, inductive loads or heaters with unusual resistance characteristics. The combination of variable time base output and a solid-state relay can inexpensively approach the effect of analog, phase-angle fired control. Select the AC Line Frequency AC.LF (Setup Page, Global Menu), 50 or 60 Hz.





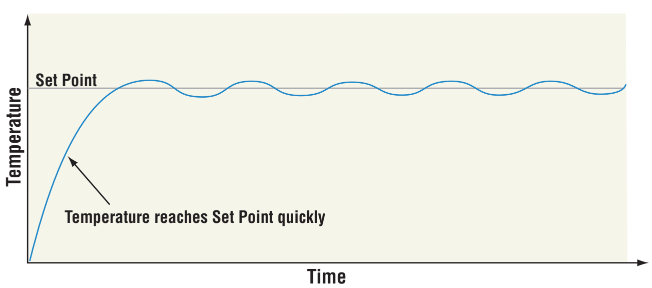


Single Set Point Ramping

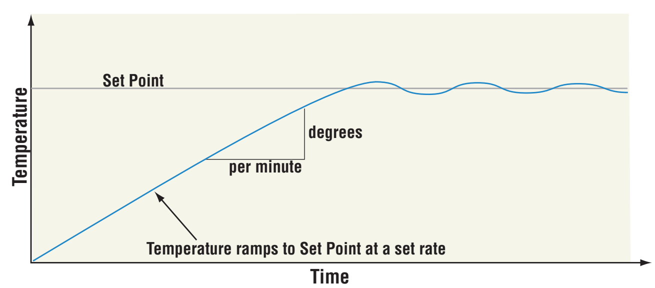
Ramping protects materials and systems that cannot tolerate rapid temperature changes. The value of the ramp rate is the maximum degrees per minute or hour that the system temperature can change. Ramping to set point starts from the process value and increments or decrements to the set point at the defined rate. Select Ramp Action r.P (Setup Page, Loop Menu):

- Ramping not active - oFF
- Ramp at startup - Str
- Ramp at a set point change - StPt
- Ramp at startup or when the set point changes - both

Select whether the rate is in degrees per minute or degrees per hour with Ramp Scale r.SC. Set the ramping rate with Ramp Rate r.rt (Setup Page, Loop Menu).



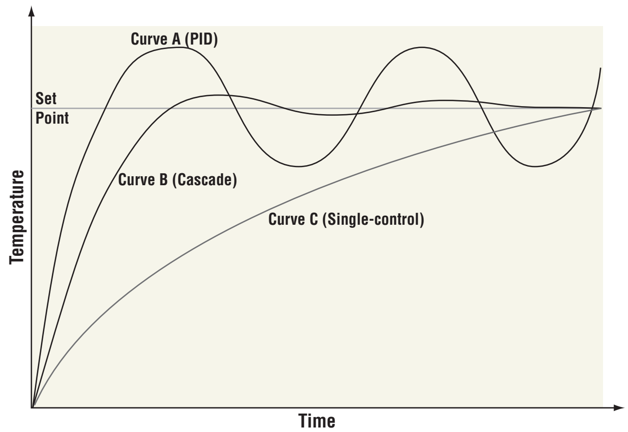
Heating System without Ramping



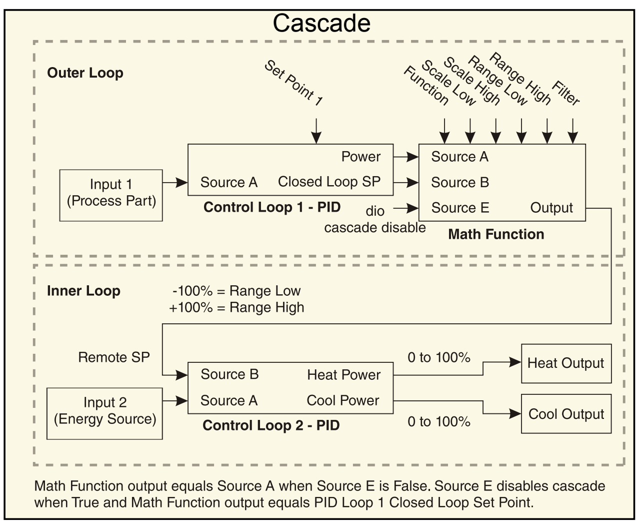
Heating System with Ramping

Cascade Control

Cascade control is a control strategy in which one control loop provides the set point for another loop. It allows the process or part temperature to be reached quickly while minimizing overshoot. Cascade is used to optimize the performance of thermal systems with long lag times. The graph on the next page illustrates a thermal system with a long lag time. Curve A represents a single loop control system with PID parameters that allow a maximum heat up rate. Too much energy is introduced and the set point is overshot. In most systems with long lag time, the process value may never settle out to an acceptable error. Curve C represents a single control system tuned to minimize overshoot. This results in unacceptable heat up rates, taking hours to reach the final value. Curve B shows a cascade system that limits the energy introduced into the system, allowing an optimal heat up rate with minimal overshoot. Cascade control uses two control loops (outer and inner) to control the process. The outer loop (analog input 2) monitors the process or part temperature, which is then compared to the closed loop set point. The result of the comparison, the error signal, is acted on by the PID settings in the cascade outer loop, which then generates a power level for the outer loop. The set point for the inner loop is determined by the outer loop power level. The inner loop input (any input) monitors the energy source (heating and cooling), which is compared to the inner loop set point generated by the outer loop. The result of the comparison, the error signal, is acted on by the PID settings in the cascade inner loop, which generates an output power level between -100% to +100%. If the power level is positive the heat will be on; if the power level is negative the cool will come on. Power from the energy sources are supplied by the outputs of choice.



Cascade



Compressor Control

A typical use scenario for compressor control is for cooling and/or dehumidification. The application may have one or two loops of control which utilize the compressor to accomplish the cooling and/or dehumidification (negative power levels). Because the compressor is a mechanical device, it is desirable to minimize unwanted starts and stops. Either loop can attempt to start or stop the compressor, but this algorithm will make the determination when it should or should not run. Because you may not turn the compressor off until the loop is in the heat or humidify region, the input values (Source Function A and B) to the compressor algorithm must be loop power (+/- 100%).

The compressor will turn on and off under the following conditions:

Loop 1

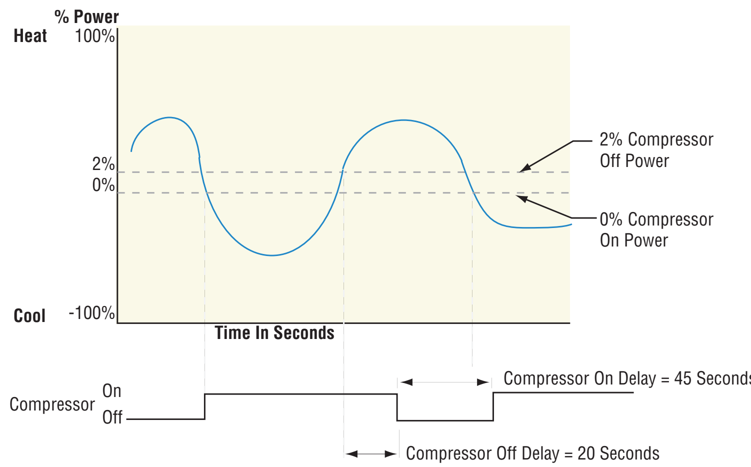
Off - When Source A Value >= Power Off Level 1

On - When Source A Value <= Power On Level 1

Loop 2

Off - When Source B Value >= Power Off Level 2

On - When Source B Value <= Power On Level 2



To prevent unwanted on/off cycling and compressor wear, there are two settings (Minimum On and Minimum Off Time) that allow the user to define how fast a compressor may be turned off and back on again. The rules for these settings follow:

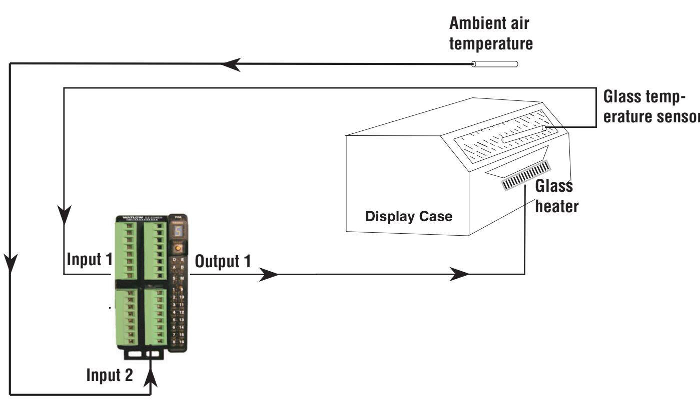
- Minimum On Time specifies minimum compressor OFF time.
- Minimum Off Time specifies minimum compressor ON time.

Lastly, the Time Delay setting is used to avoid having the compressor remain on indefinitely in the event the loop control modes are set to off, such as when a profile ends. The rule for the Time Delay setting follows:

Off - Source A Value **and** Source B Value = 0.0% for a period longer than Time Delay

Differential Control

After configuring the appropriate inputs and their associated internal functions Differential Control allows the RMC to drive an output based on the difference between those analog inputs.

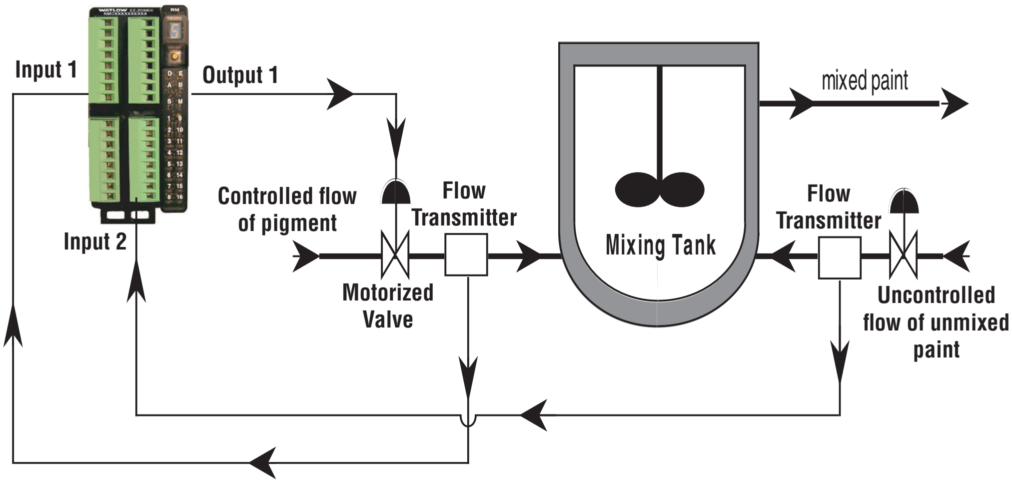


Ratio Control

Ratio control is commonly used to ensure that two or more flows are kept at the same ratio even if the flows are changing; especially useful in applications that mix materials.

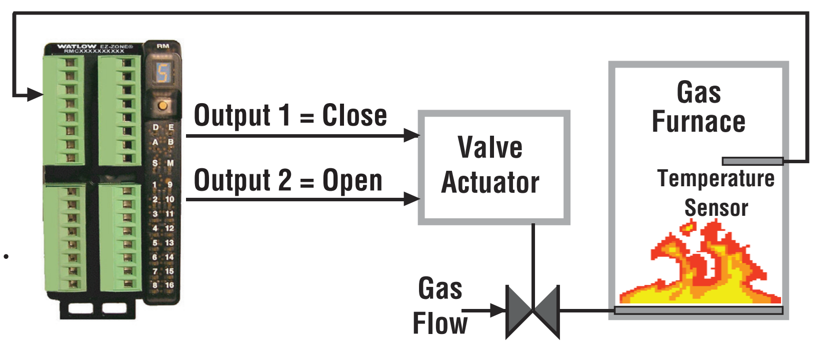
Applications of ratio control:

- Blending two or more flows to produce a mixture with specified composition.
- Blending two or more flows to produce a mixture with specified physical properties.
- Maintaining correct air and fuel mixture to combustion.



Motorized Valve Control

A motorized valve is used is to regulate the flow of fluid which in turn impacts the loop process value. A valve is opened or closed by closing contacts to drive the value in the intended direction. This feature is configured by selecting Motorized Valve as the function in the Setup Page, Special Output Function menu. Source Function A is selected for either Heat or Cool Power then entering the Valve Travel Time and Deadband.



Lastly, program the outputs which will open and close the valve. The algorithm will calculate Dead Time which is the minimum on time that the valve will travel once it is turned on in either the closed or open direction. Dead Time = Valve Dead Band / 100 * Valve Travel Time.

Open Loop Detection

When Open Loop Detection is enabled L.dE, the controller will look for the power output to be at 100%. Once there, the control will then begin to monitor the Open Loop Detect Deviation L.dd as it relates to the value entered for the Open Loop Detect Time L.dt. If the specified time period expires and the deviation does not occur, an Open Loop Error will be triggered. Once the Open Loop Error condition exists the control mode will go off.

Note:

All prompts identified in this section can be found in the Loop Menu of the Setup Page.

Alarms

Alarms are activated when the output level, process value or temperature leaves a defined range. A user can configure how and when an alarm is triggered, what action it takes and whether it turns off automatically when the alarm condition is over. Configure alarm outputs in the Setup Page before setting alarm set points. Alarms do not have to be assigned to an output. Alarms can be monitored and controlled through the front panel or by using software.

Process and Deviation Alarms

A process alarm uses one or two absolute set points to define an alarm condition.

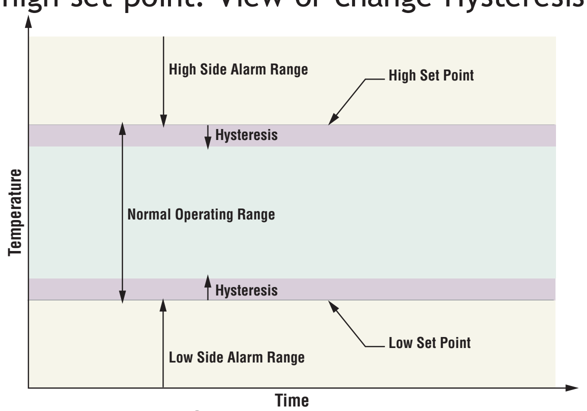
A deviation alarm uses one or two set points that are defined relative to the control set point. High and low alarm set points are calculated by adding or subtracting offset values from the control set point. If the set point changes, the window defined by the alarm set points automatically moves with it. Select the Type A.ty via the Setup Page, Alarm Menu.

Alarm Set Points

The high set point defines the process value or temperature that will trigger a high side alarm. The low set point defines the temperature that will trigger a low side alarm. For deviation alarms, a negative set point represents a value below closed loop set point. A positive set point represents a value above closed loop set point. View or change alarm set points with Alarm Low A.Lo and High Set Points A.hi (Operations Page, Alarm Menu).

Hysteresis

An alarm state is triggered when the process value reaches the alarm high or low set point. Hysteresis defines how far the process must return into the normal operating range before the alarm can be cleared. Hysteresis is a zone inside each alarm set point. This zone is defined by adding the hysteresis value to the low set point or subtracting the hysteresis value from the high set point. View or change Hysteresis A.hy via the Setup Page, Alarm Menu.



Alarm Set Points and Hysteresis

Latching

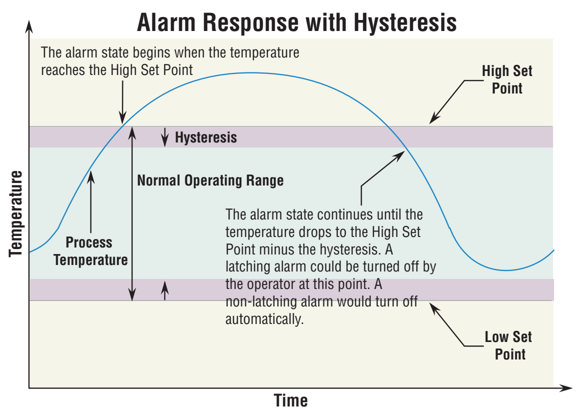
A latched alarm will remain active after the alarm condition has passed. It can only be deactivated by the user and only when the alarm condition no longer exists.

If using an RUI an active message, such as an alarm message, will cause the display to toggle between the normal settings and the active message in the upper display and Attn in the lower display.

To clear a latched alarm:

1. Push the Advance Key to display ignr in the upper display and the message source in the lower display.
2. Use the Up or Down keys to scroll through possible responses, such as Clear CLr or Silence SiL.
3. Push the Advance or Infinity key to execute the action.

Without an RUI, a latched alarm can be reset by cycling power to the module or configuring an Action function within the control to perform a reset. Do this by setting the Action Function to alarm and trigger the Action to occur through Source Function A. An alarm that is not latched (self-clearing) will deactivate automatically when the alarm condition has passed. Turn Latching A.LA on or off via the Setup Page, Alarm Menu.



Silencing

If silencing is on the operator can disable the alarm output while the controller is in an alarm state. The process value or temperature has to enter the normal operating range beyond the hysteresis zone to activate the alarm output function again.

If using an RUI an active message, such as an alarm message, will cause the display to toggle between the normal settings and the active message in the upper display and Attn in the lower display.

To silence an alarm:

1. Push the Advance Key to display ignr in the upper display and the message source in the lower display.
2. Use the Up and Down keys to scroll through possible responses, such as Clear CLr or Silence SiL.
3. Push the Advance or Infinity key to execute the action.

Without an RUI, silencing aa alarm can be accomplished by configuring an Action function within the control to silence the alarm. Do this by setting the Action Function to Silence and trigger the Action to occur through Source Function A. Turn Silencing A.Si on or off via the Setup Page, Alarm Menu.

Blocking

Blocking allows a system to warm up after it has been started up. With blocking on, an alarm is not triggered when the process temperature is initially lower than the low set point or higher than the high set point. The process temperature has to enter the normal operating range beyond the hysteresis zone to activate the alarm function.

If the RMC module has an output that is functioning as a deviation alarm, the alarm is blocked when the set point is changed, until the process value re-enters the normal operating range. Turn Blocking A.bL on or off via the Setup Page, Alarm Menu.

Note:
If using current as the alarm source, see the application note below under "Current Sensing".

Resetting a Tripped Limit

When a limit controller is ordered (RMC[5,6] _ [5,6] _ [5,6] _ [5,6] _ _ _ _ _) output 2 (digit 4), output 4 (digit 6), output 6 (digit 8) or output 8 (digit 10) will always be a Form A (normally open) Mechanical Relay and it will always be internally tied to the limit function. When the limit is in a safe state the internal coil for this relay will be energized, therefore the relay will be closed. When a condition occurs that causes the limit to trip, the internal coil will de-energize causing the relay to latch open. When the condition that caused the limit to trip has been resolved, the relay will remain latched open until reset. The process to reset a latched limit can be different from control to control and is dependent upon the controller firmware version.

To check the firmware revision of your control do one of the following:

If using an RUI:

1. Navigate to the RMC Factory Page by simultaneously pushing and holding the Advance Key and the Infinity for approximately 8 seconds and then use the up or down arrow key to navigate to the Diagnostic Menu. Once there, push the Advance Key twice where the revision rEu will be shown in the lower display and the upper display will indicate the current firmware revision.

If using EZ-ZONE Configurator software:

1. Make the connection to the RMC module.
2. Once the connection is made on the left hand side of the screen under "Parameter Menus" click the **plus** sign next to the Factory page.
3. Double-click the **Diagnostics** menu to see the RMC firmware revision.

To reset a tripped limit prior to firmware release 6.0 follow the steps below:

1. Push the Advance Key and then push the Up or Down keys and select Clear CLr.
2. Configure an Action Function to Limit Reset assigning the Source Function to a digital input (navigate to the Setup Page under the Action Menu).
3. Use a field bus protocol, i.e., Modbus, EtherNet/IP, etc...where a value of zero would be written to the associated address (to find the appropriate address, navigate to the Operations Page and then the Limit Menu. Under the Limit Menu look for Clear Limit).
4. Cycle the power to the controller.

To reset a tripped limit with firmware release 6.0 and above follow the steps below:

1. Push the Advance Key and then push the Up or Down keys and select Clear CLr.
2. Follow the steps below:
   - 2a. Navigate to the Setup Page and then the Limit Menu
   - 2b. Set Source Function A to the desired device that will reset the limit (Digital I/O, Vari able or Function Key)
   - 2c. Define the Source Instance and Zone
3. Use a field bus protocol, i.e., Modbus, EtherNet/IP, where a value of zero would be written to the associated address (navigate to the Operations Page and look for Clear Limit under the Limit Menu to find appropriate address).
4. Cycle the power to the controller.

Current Sensing

Open Heater Circuit Detection

Current Error C.Er (Operations Page, Current Menu) detects an open load circuit if no current is flowing through the current transformer when the output associated with the current sense input is active and the load is supposed to be on.

Shorted Heater Circuit Detection

Current Error detects a shorted load circuit if current is flowing through the current transformer when the output is inactive and the load is supposed to be off.

Set the current detect set points with High Set Point C.hi and Low Set Point C.Lo (Operations Page, Current Menu).

View the current level and most recent faults with Read, Current Error C.Er (Operations Page, Current Menu) and Heater Error h.Er (Operations Page, Current Menu).

CT Application Note:

If two CTs are wired in series for three phase applications, there is a summation of the two currents that are slightly out of phase. The user must scale the reading for this summation as the RM is not intended for 3 phase current measurement. If using the CT as an alarm source, ensure that the alarm is pointing to the correct source for the current measurement (Load Current RMS (Ld.Cu) parameter). In addition, if using more than one CT, always wire them in series.

Open Loop Detection

When Open Loop Detection is enabled L.dE, the controller will look for the power output to be at 100%. Once there, the control will then begin to monitor the Open Loop Detect Deviation L.dd as it relates to the value entered for the Open Loop Detect Time L.dt. If the specified time period expires and the deviation does not occur, an Open Loop Error will be triggered. Once the Open Loop Error condition exists the control mode will go off.

Note:

All prompts identified in this section can be found in the Loop Menu of the Setup Page.

Using Password Security

It is sometimes desirable to apply a higher level of security when using an RUI with any of the RM modules where a limited number of menus are visible while also not providing access to others without a security password. Without the appropriate password those menus will remain inaccessible. If Password Enabled PAS.E in the Factory Page under the LoC Menu is set to on, an overriding Password Security will be in effect. When in effect, the only Pages that a User without a password has visibility to are defined in the Locked Access Level LoC.L prompt. On the other hand, a User with a password would have visibility restricted by the Read Lockout Security rLoC. As an example, with Password Enabled and the Locked Access Level LoC.L set to 1 and rLoC is set to 3, the available Pages for a User without a password would be limited to the Home and Factory Pages (locked level 1). If the User password is entered all pages would be accessible with the exception of the Setup Page as defined by level 3 access.

How to Enable Password Security

Go to the Factory Page by holding down the Infinity key and the Advance key for approximately six seconds. Once there, push the Down key one time to get to the LoC menu. Again push the Advance key until the Password Enabled PAS.E prompt is visible. Lastly, push either the up or down key to turn it on. Once on, 4 new prompts will appear:

1. LoC.L, Locked Access Level (1 to 5) corresponding to the lockout table above.
2. roLL, Rolling Password will change the Customer Code every time power is cycled.
3. PAS.u, User Password which is needed for a User to acquire access to the control.
4. PAS.A, Administrator Password which is needed to acquire administrative access to the control.

The Administrator can either change the User and or the Administrator password or leave them in the default state. Once Password Security is enabled they will no longer be visible to anyone other than the Administrator. As can be seen in the formula that follows either the User or Administrator will need to know what those passwords are to acquire a higher level of access to the control. Back out of this menu by pushing the Infinity key. Once out of the menu, the Password Security will be enabled.

How to Acquire Access to the Control

To acquire access to any inaccessible Pages or Menus, go to the Factory Page and enter the ULoC menu. Once there follow the steps below:

Note:

If Password Security (Password Enabled PAS.E is On) is enabled the two prompts mentioned below in the first step will not be visible. If unknown, call the individual or company that originally setup the control.

1. Acquire either the User Password PAS.u or the Administrator Password PAS.A.
2. Push the Advance key one time where the Code CodE prompt will be visible.

Note:

a. If the the Rolling Password is off push the Advance key one more time where the Password PASS prompt will be displayed. Proceed to either step 7a or 8a. Pushing the Up or Down arrow keys enter either the User or Administrator Password. Once entered, push and hold the Infinity key for two seconds to return to the Home Page.

b. If the Rolling Password roLL was turned on proceed on through steps 3 - 9.

3. Assuming the Code CodE prompt (Public Key) is still visible on the face of the control simply push the Advance key to proceed to the Password PASS prompt. If not find your way back to the Factory Page as described above.
4. Execute the calculation defined below (7b or 8b) for either the User or Administrator.
5. Enter the result of the calculation in the upper display play by using the Up and Down arrow keys or use EZ-ZONE Confgurator Software.
6. Exit the Factory Page by pushing and holding the Infinity key for two seconds.

Formulas used by the User and the Administrator to calculate the Password follows:

Passwords equal:

7. User
   a. If Rolling Password roLL is Off, Password PASS equals User Password PAS.u.
   b. If Rolling Password roLL is On, Password PASS equals:
      (PAS.u x code) Mod 929 + 70
8. Administrator
   a. If Rolling Password roLL is Off, Password PASS equals Administrator Password PAS.A.
   b. If Rolling Password roLL is On, Password PASS equals:
      (PAS.A x code) Mod 997 + 1000

Differences Between a User Without Password, User With Password and Administrator

- User **without** a password is restricted by the Locked Access Level LoC.L.
- A User **with** a password is restricted by the Read Lockout Security rLoC never having access to the Lock Menu LoC.
- An Administrator is restricted according to the Read Lockout Security rLoC however, the Administrator has access to the Lock Menu where the Read Lockout can be changed.

Modbus - Using Programmable Memory Blocks

When using the Modbus protocol, the RM module features a block of addresses that can be configured by the user to provide direct access to a list of 40 user configured parameters. This allows the user easy access to this customized list by reading from or writing to a contiguous block of registers.

To acquire a better understanding of the tables found in the back of this manual (See Appendix: (Modbus Programmable Memory Blocks) please read through the text below which defines the column headers used.

Assembly Definition Addresses

- Fixed addresses used to define the parameter that will be stored in the "Working Addresses", which may also be referred to as a pointer. The value stored in these addresses will reflect (point to) the Modbus address of a parameter within the RM control.

Assembly Working Addresses

- Fixed addresses directly related to their associated "Assembly Definition Addresses" (i.e., Assembly Working Addresses 200 & 201 will assume the parameter pointed to by Assembly Definition Addresses 40 & 41).

When the Modbus address of a target parameter is stored in an "Assembly Definition Address" its corresponding working address will return that parameter's actual value. If it's a writable parameter, writing to its working register will change the parameter’s actual value.

As an example, Modbus registers 726 and 727 contain the Limit 1 High Set Point (See Operations Page, Limit Menu). If the value 726 and 727 is loaded into Assembly Definition Address 110 and 111 respectively (by default these registers are configured as Alarm 8 State), the Limit 1 High Set Point will now be stored in Modbus registers 270 and 271.

The table (See Appendix: Modbus Programmable Memory Blocks) identified as "Assembly Definition Addresses and Assembly Working Addresses" reflects the assemblies and their associated addresses.

Software Configuration

To enable a user to configure the RM module using a personal computer (PC), Watlow has provided two different programs free of charge for your use.

- EZ-ZONE Configurator (text based), originally released with the EZ-ZONE family of con trols.
- Composer (graphic based), released September 2014.

Note:
RM modules must have firmware revision 9.0 and above to be used with Composer software.

Both programs can be acquired directly from the DVD (Controller Support Tools) which shipped with the controller. Insert the DVD into your DVD drive and select and then install the preferred software. Alternatively, if you are viewing this document electronically and have a connection to the internet, simply click on the link below and type either Configurator or Composer into the Keyword field and then click Search to download the software free of charge. http://www.watlow.com/literature/software.cfm

EZ-ZONE Configurator Software

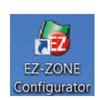
Installing the Software

To install the software:

1. Double-click the filename " EZCv6.exe.
2. After reading the license agreement click the **I accept the terms in the License Agreement** radio button and then click on the **Next** button to proceed.
3. Once the installation is complete, click the **Finish** button.

Starting EZ-ZONE Configurator software:

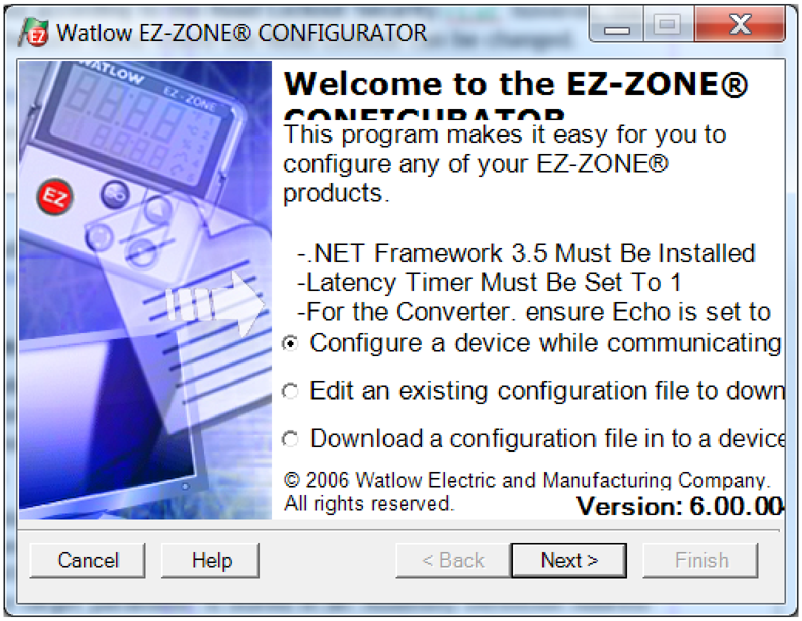
1. Double-click the EZ-ZONE Configurator icon on the desktop.



Or

2. On the task bar, click **Start** and type ez-zone configurator.exe in the search box and then press **Enter**.
3. Once the executable is found double-click the file to run.

The first screen that will appear is shown below.

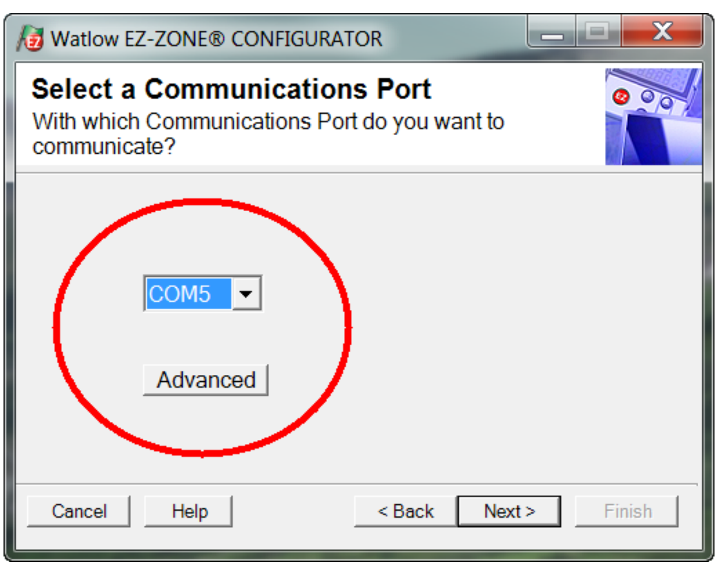


If the PC is already physically connected to the RMC module click the next button to go on-line.

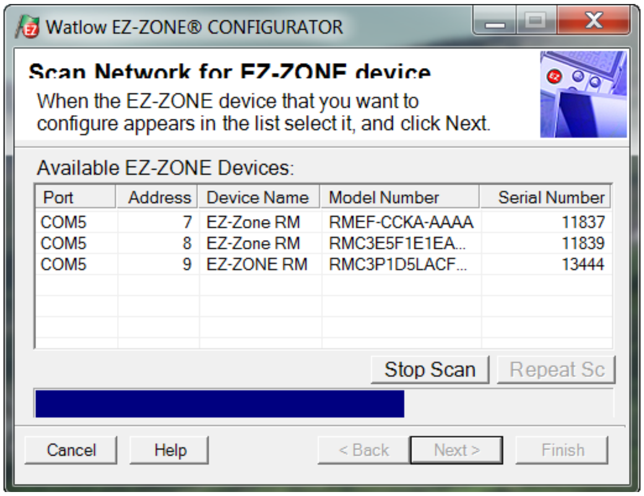
Note:

When establishing communications from PC to the RMC module an interface converter will be required. The Standard Bus network uses EIA-485 as the interface. Most PCs today would require a USB to EIA-485 converter. However, some PCs may still be equipped with EIA-232 ports, therefore an EIA-232 to EIA-485 converter would be required.

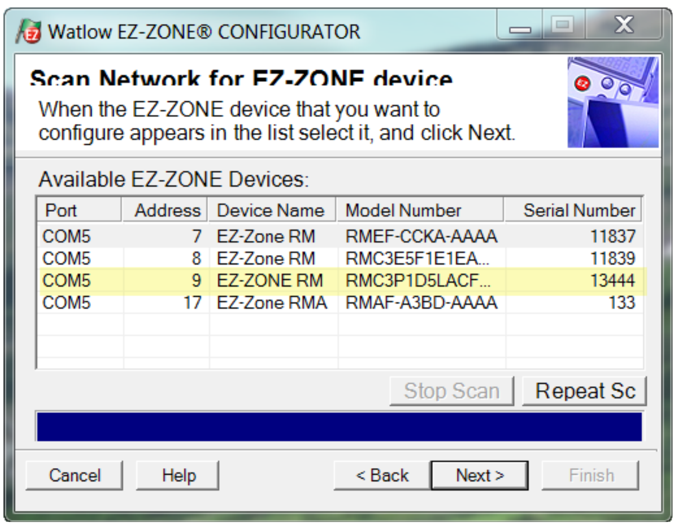
As can be seen in the above screen shot the software provides the user with the option of downloading a previously saved configuration as well as the ability to create a configuration off-line to download later. The screen shots that follow will take the user on-line. After clicking the next button above, it is necessary to define the communications port on the PC to use.



The available options allow the user to click on a drop down box to select a specific known communications port. Clicking on the Advanced button allows the user to define the number of EZ-ZONE devices to look for on the network. After clicking the Next button above, the software will then begin scanning for devices on the network as the screen shot below displays.

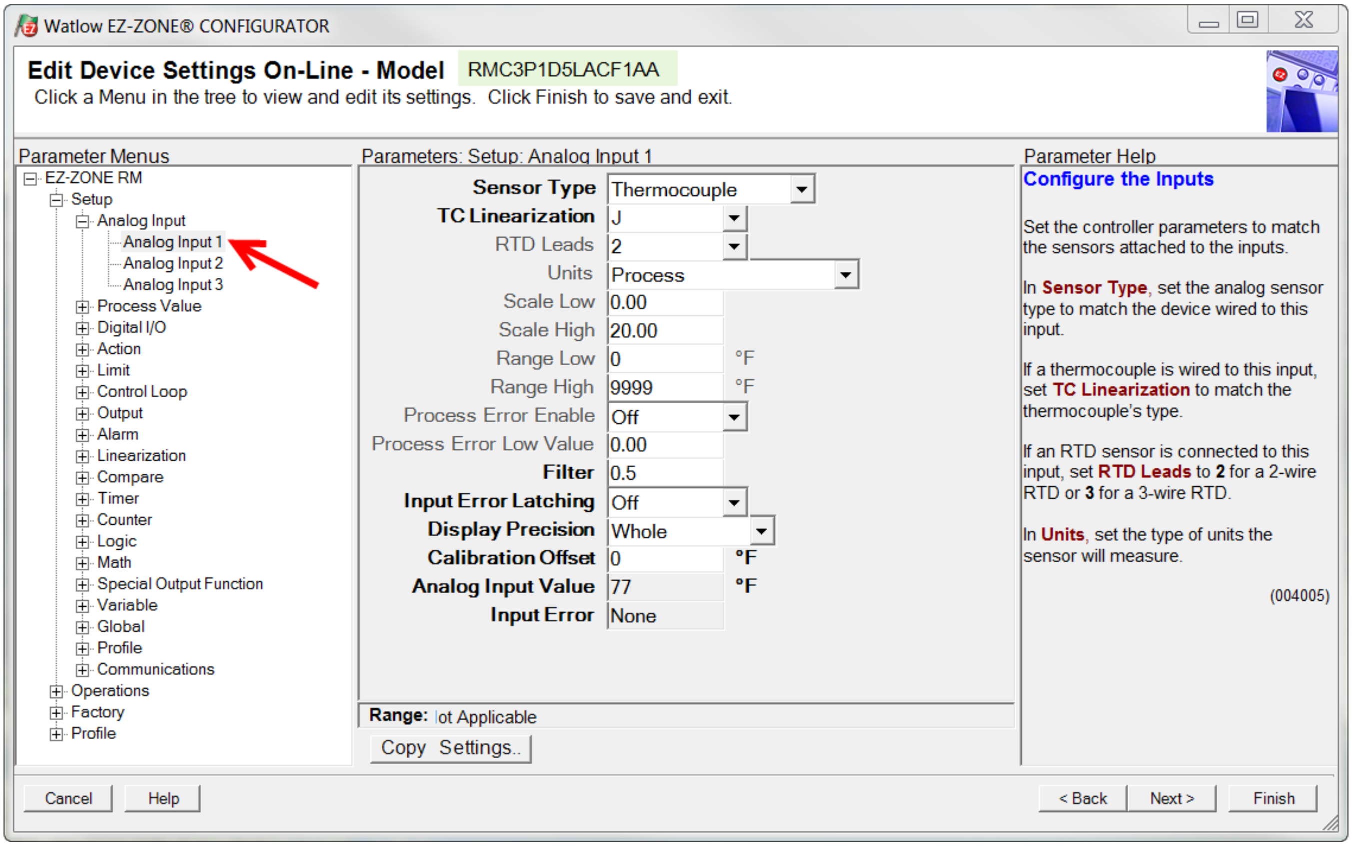


When complete the software will display all of the available devices found on the network as shown below.



Using EZ-ZONE Configurator Software

In the previous screen shot the RMC is shown highlighted to bring greater clarity to the control in focus. Any EZ-ZONE device on the network will appear in this window and would be available for the purpose of configuration or monitoring. After clicking on the control of choice simply click the next button once again. The next screen appears below.



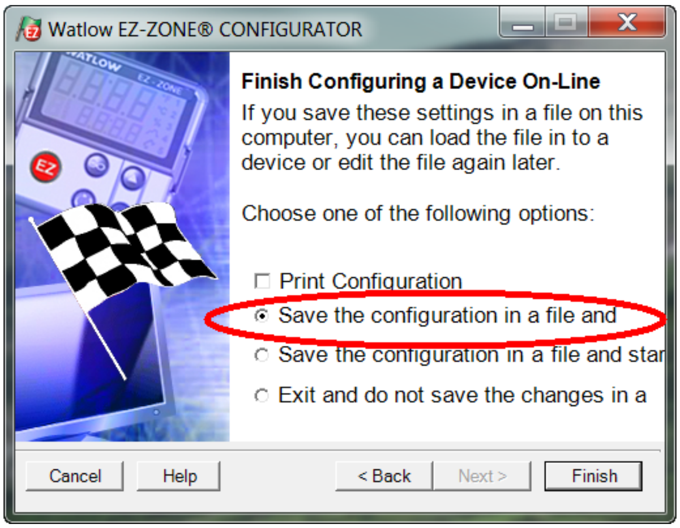
In the screen shot above notice that the device part number is clearly displayed at the top of the page (green highlight added for emphasis). When multiple EZ-ZONE devices are on the network it is important that the part number be noted prior to configuring so as to avoid making unwanted configuration changes to another control.

Looking closely at the left hand column (Parameter Menus) notice that it displays all of the available menus and associated parameters within the control. The menu structure as laid out within this software follows:

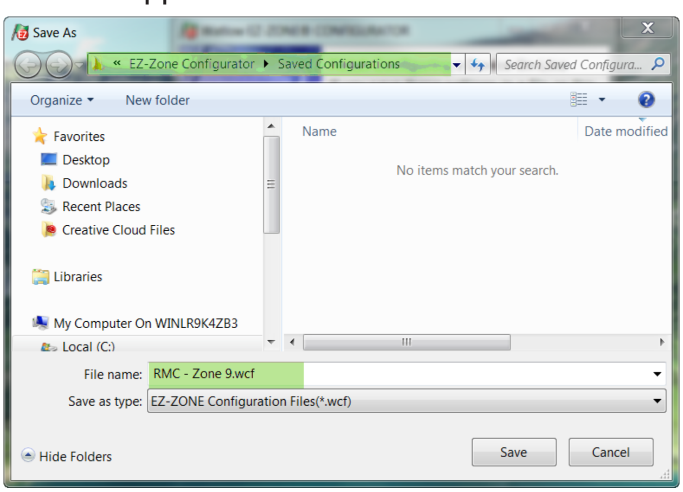
- Setup
- Operations
- Factory
- Profile

Navigating from one menu to the next is easy and clearly visible. Simply slide the scroll bar up or down to display the menu and parameter of choice. As an alternative, clicking on the negative symbol next to Setup will collapse the Setup Menu where the Operations Menu will appear next and perhaps deliver more clarity for the area of focus by not displaying unwanted menus and parameters. Once the focus is brought to an individual parameter (single click of mouse) as is the case for Analog Input 1 in the left column, all that can be setup related to that parameter will appear in the center column. The grayed out fields in the center column simply mean that this does not apply for the type of sensor selected. As an example, notice that when TC Linearization is selected, RTD Leads does not apply and is therefore grayed out. To speed up the process of configuration notice that at the bottom of the center column there is an option to copy settings. If Analog Input 1, 2 and 3 are the same type of sensor click on "Copy Settings" where a copy from/to dialog box will appear allowing for quick duplication of all settings.

Notice too, that by clicking on any of those items in the center column that context sensitive help will appear for that particular item in the right hand column. Lastly, when the configuration is complete click the "Finish" button at the bottom right of the previous screen shot. The screen that follows this action can be seen below.



Although the RMC module now contains the configuration (because the previous discussion focused on doing the configuration on-line) it is suggested that after the configuration process is completed that the user save this file on the PC for future use. If for some reason someone inadvertently changed a setting without understanding the impact it would be easy and perhaps faster to download a saved configuration back to the control versus trying to figure out what was changed. Of course, there is an option to exit without saving a copy to the local hard drive. After selecting Save above, click the "Finish" button once again. The screen below will than appear.



When saving the configuration note the location where the file will be placed (Saved in) and enter the file name (File name) as well. The default path for saved files follows:

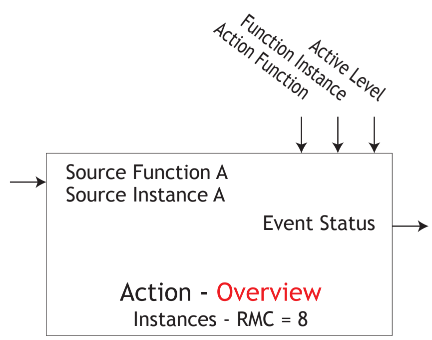
\My Documents\Watlow\EZ-ZONE CONFIGURATOR\Saved Configurations The user can save the file to any folder of choice.

Function Block Descriptions

Each of the next several pages graphically shows each of the RMC function blocks. Note that as you view each, you will find text that is black and text that appears gray. The gray text represents inputs that are not currently available based on the functions defined use (red text). For instance, when the defined use of the Analog Input function is set for RTD, TC Linearization will appear gray. Ranges specified are in units or degrees F, if expressed in degrees C, the range will be smaller.

Action Function

The Action Function will cause the action selected to occur with in the module where the action function resides when Source Function A = ON and Active Level = High. Based on a given input (Digital I/O, Event output, Logic function, etc..) the Action function can cause other functions to occur. To name a few, starting and stopping a profile, silencing alarms, turn control loops off and placing alarms in non-alarm state.



Act Action Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
Fn	Action Function [10003] : None, User Set Restore, Alarm, Silence Alarms, Control Loops Off and Alarms to Non-alarm State, Force Alarm to Occur, Idle Set Point, Tune, Manual, Switch Control Loop Off, Remote Set Point, TRU-TUNE+ Disable, Profile Disable, Profile Hold/Resume, Start Profile, Profile Start/Stop
F i	Function Instance [10004] : 0 to 25
SFn.A	Source Function A [10006] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Timer, Variable, Heater Error
S iA	Source Instance A [10002] : 1 to 250
SZ.A	Source Zone A [10007] : 0 to 24
LEu	Active Level [10001] : High, Low

Act Action Menu
oPEr Operations Page

E.iS	Event Status [10005] : On, Off

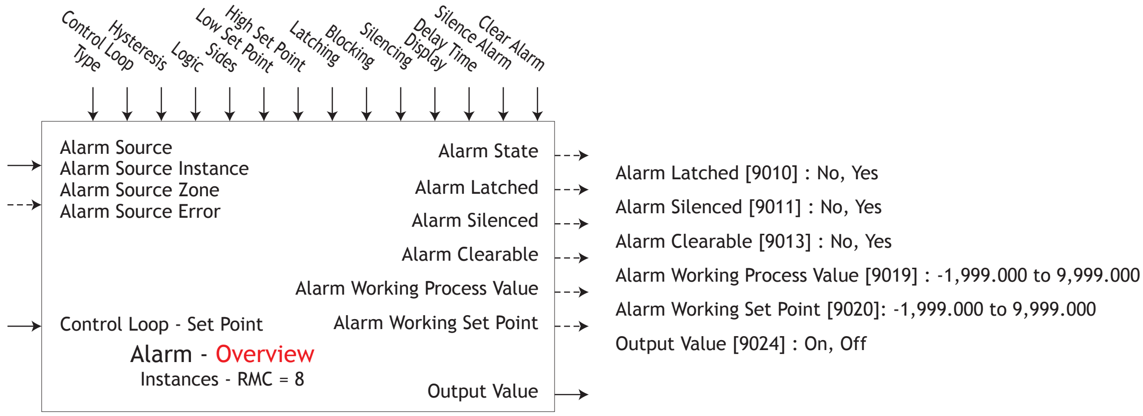
Note: Action Function selection is module type and part number dependant.

Alarm Function

Alarms are activated when the output level, process value or temperature leaves a defined range. A user can configure how and when an alarm is triggered, what action it takes and whether it turns off automatically when the alarm condition is over.

Configure alarm outputs in the Setup Page before setting alarm set points.

Alarms do not have to be assigned to an output. Alarms can be monitored and controlled through the front panel or by using software.



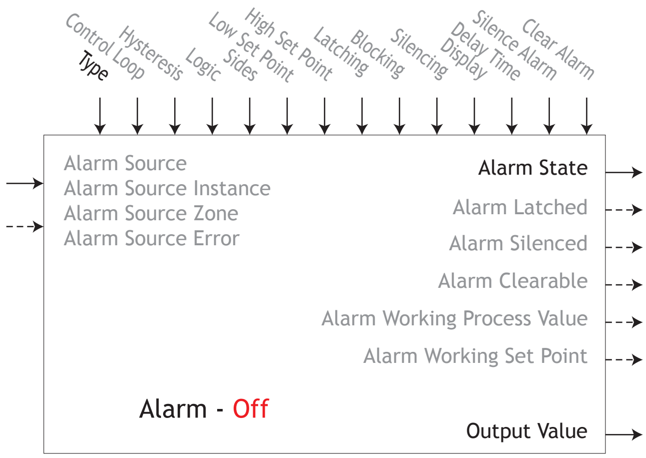
ALM Alarm Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
A.ty	Type [9015] : Off, Deviation, Process
Sr.A	Alarm Source [9017] : None, Analog Input, Current, Power, Linearization, Math, Process Value, Variable, Current Read, Wattage, Load Voltage, Load Load Resistance
iS.A	Alarm Source Instance [9018] : 1 to 250
S2.A	Alarm Source Zone [9025] : 0 to 24
LooP	Control Loop [9023] : 1 to 250
A.hy	Hysteresis [9003] : 0.001 to 9,999.000
A.Lg	Logic [9005] : Close on Alarm, Open on Alarm
A.Sd	Sides [9004] : Both, High, Low
A.Lo	Low Set Point [9002] : -1,999.000 to 9,999.000
A.hi	High Set Point [9001] : -1,999.000 to 9,999.000
LAt	Latching [9007] : Non-Latching, Latching
A.bL	Blocking [9008] : Off, Startup, Set Point, Both
A.Si	Silencing [9006] : Off, On
A.dSP	Display [9016] : Off, On
A.dL	Delay Time [9021] : 0 to 9,999 seconds
A.CLr	Clear Alarm [9026] : Ignore, Clear
A.Sir	Silence Alarm [9027] : Ignore, Silence Alarms
A.St	Alarm State [9009] : Startup, None, Blocked, Alarm Low, Alarm High, Error

ALM Alarm Menu
oPEr Operations Page

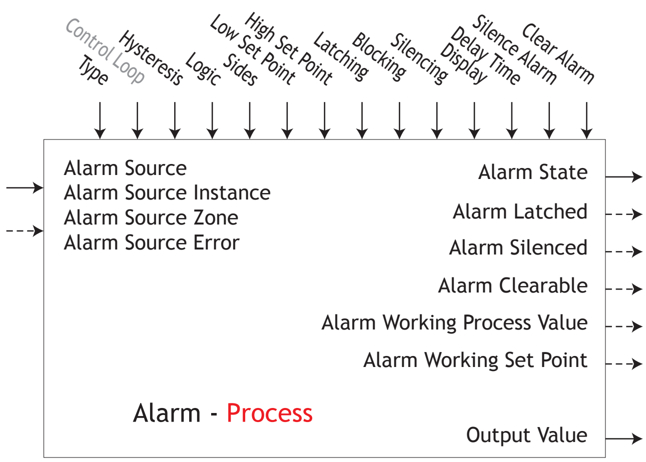
A.Lo	Low Set Point [9002] : -1,999.000 to 9,999.000
A.hi	High Set Point [9001]: -1,999.000 to 9,999.000
A.CLr	Clear Alarm [9026] : Ignore, Clear
A.Sir	Silence Alarm [9027] : Ignore, Silence Alarms
A.St	Alarm State [9009] : Startup, None, Blocked, Alarm Low, Alarm High, Error

Alarm (cont.)



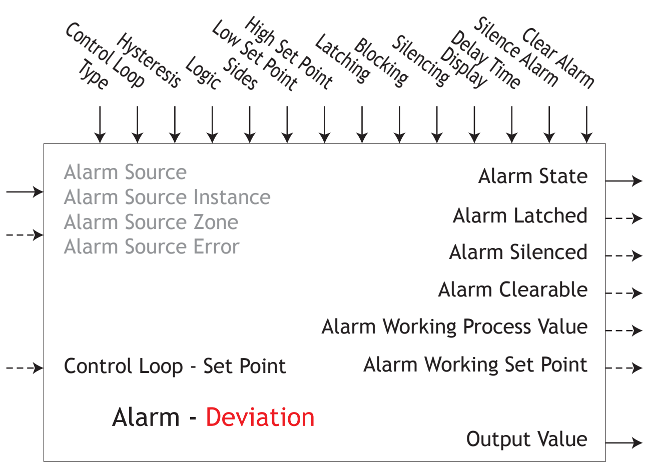
IF Type = Off THEN
Output Value = OFF
Alarm State = None
Alarm Indication = None

When function = Off THEN
Output Value = OFF
Alarm State = None
Alarm Indication = None



IF Alarm Type = Process THEN
Output Value changes state when Alarm Source exceeds Alarm Set Points.

When function = Process THEN
Output Value = True when <= Low Set Point or >= High Set Point



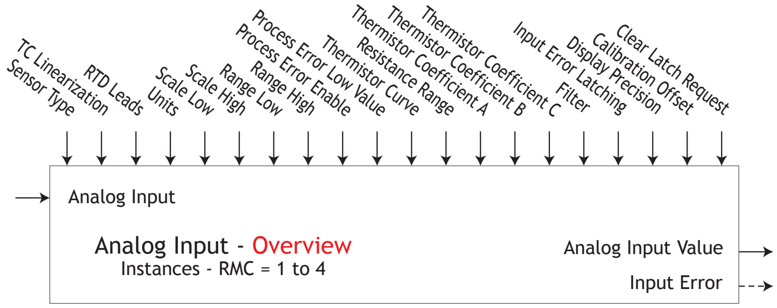
IF Type = Deviation THEN
Output Value changes state when Control Loop Source value exceeds the sum of Closed Loop Set Point plus Alarm Set Points . The Control Loop parameter defines which loop to obtain the closed loop set point value.

When function = Deviation THEN
Output Value = True when Alarm Source - Closed Loop Set Point <= Low Set Point or Alarm Source + Closed High Set Point >= High Set Point

Analog Input Function

Note:

This function configures and connects physical inputs to internal functions. Configure the sensor type to match what is connected. For process inputs such as potentiometer, voltage, or milliampere, set the electrical span using scale low/high and engineering representation range using range low/high. Apply the corresponding units of measure.



A i — Analog Input Menu
SEt — Setup Page

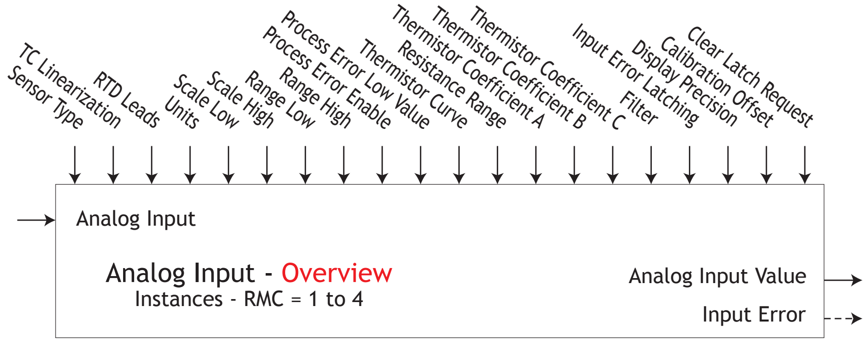
	Parameter Name [Parameter ID] : Range or Choices
SEn	Sensor Type [4005] : Off, Thermocouple, Millivolts, Volts, Milliamps, RTD 100 Ohm, RTD 1000 Ohm, 1K Potentiometer, Thermistor (optional)
L in	TC Linearization [4006] : B, C, D, E, F, J, K, N, R, S, T
rtL	RTD Leads [4007] : 2, 3
Un it	Units [4042] : Absolute Temperature, Power, Process, Relative Humidity
S.Lo	Scale Low [4015] : -100.00 to 1000.00
S.hi	Scale High [4016] : -100.00 to 1000.00
r.Lo	Range Low [4017] : -1,999.000 to 9,999.000
r.hi	Range High [4018] : -1,999.000 to 9,999.000
P.EE	Process Error Enable [4030] : Off, Low
P.EL	Process Error Low Value [4031] : -100.00 to 1,000.00
t.C	Thermistor Curve [4038] : Curve A, Curve B, Curve C, Custom
Co.A	Thermistor Coefficient A [4039] : -1,999.000 to 9,999.000
Co.b	Thermistor Coefficient B [4040] : -1,999.000 to 9,999.000
Co.C	Thermistor Coefficient C [4041] : -1,999.000 to 9,999.000
r.r	Resistance Range [4037] : 5k, 10k, 20k, 40k
F iL	Filter [4014] : 0.0 to 60.0 seconds
i.Er	Input Error Latching [4028] : Off, On
dEC	Display Precision [4020] : Whole, Tenths, Hundredths, Thousandths
i.CA	Calibration Offset [4012] : -1,999.000 to 9,999.000
A in	Analog Input Value [4001] : -1,999.000 to 9,999.000
i.Er	Input Error [4002] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Not Sourced

A i — Analog Input Menu
oPEr — Operations Page

A in	Analog Input Value [4001] : -1,999.000 to 9,999.000
i.Er	Input Error [4002] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Not Sourced
i.CA	Calibration Offset [4012] : -1,999.000 to 9,999.000

Clear Latch Request [4029] : Clear, Ignore

Analog Input (cont.)



Ai Analog Input Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
SEn	Sensor Type [4005] : Off, Thermocouple, Millivolts, Volts, Milliamps, RTD 100 Ohm, RTD 1000 Ohm, 1K Potentiometer, Thermistor (optional)
Lin	TC Linearization [4006] : B, C, D, E, F, J, K, N, R, S, T
rtL	RTD Leads [4007] : 2, 3
Unit	Units [4042] : Absolute Temperature, Power, Process, Relative Humidity
S.Lo	Scale Low [4015] : -100.00 to 1000.00
S.hi	Scale High [4016] : -100.00 to 1000.00
r.Lo	Range Low [4017] : -1,999.000 to 9,999.000
r.hi	Range High [4018] : -1,999.000 to 9,999.000
P.EE	Process Error Enable [4030] : Off, Low
P.EL	Process Error Low Value [4031] : -100.00 to 1,000.00
t.C	Thermistor Curve [4038] : Curve A, Curve B, Curve C, Custom
Co.A	Thermistor Coefficient A [4039] : -1,999.000 to 9,999.000
Co.b	Thermistor Coefficient B [4040] : -1,999.000 to 9,999.000
Co.C	Thermistor Coefficient C [4041] : -1,999.000 to 9,999.000
r.r	Resistance Range [4037] : 5k, 10k, 20k, 40k
FiL	Filter [4014] : 0.0 to 60.0 seconds
i.Er	Input Error Latching [4028] : Off, On
dEC	Display Precision [4020] : Whole, Tenths, Hundredths, Thousandths
i.CA	Calibration Offset [4012] : -1,999.000 to 9,999.000
Ain	Analog Input Value [4001] : -1,999.000 to 9,999.000
i.Er	Input Error [4002] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Not Sourced

Ai Analog Input Menu
oPEr Operations Page

Ain	Analog Input Value [4001] : -1,999.000 to 9,999.000
i.Er	Input Error [4002] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Not Sourced
i.CA	Calibration Offset [4012] : -1,999.000 to 9,999.000

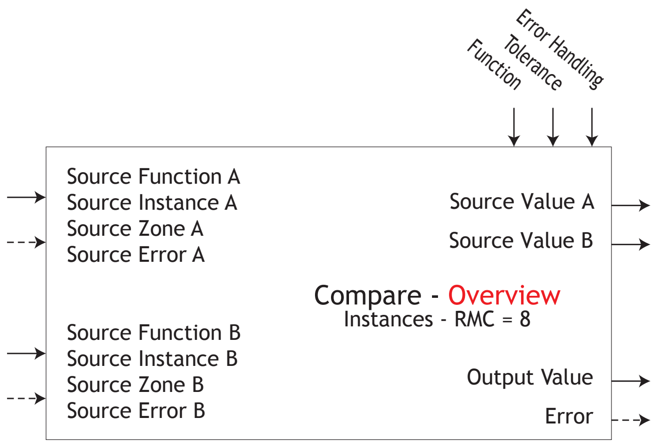
Clear Latch Request [4029] : Clear, Ignore

Compare Function

Use the compare function to compare two analog values (A and B) for a condition such as are they equal. If the compare condition is met, the output turns on.

The tolerance is expressed in the same units as Source A and Requires Source A and Source B to be without errors for function to work.

Error [28013] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale



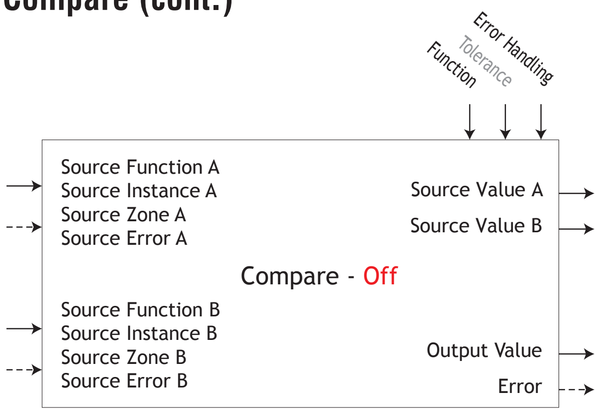
CPE Compare Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [28009] : Off, Greater Than, Less Than, Equal To, Not Equal To, Greater or Equal, Less or Equal
toL	Tolerance [28011] : 0.0 to 9,999.000 units or F
SFn.A	Source Function A [28001] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable, Wattage, Load Voltage, Load Resistance
S iA	Source Instance A [28003] : 1 to 250
SZ.A	Source Zone A [28005] : 0 to 24
SFn.b	Source Function B [28002] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable, Wattage, Load Voltage, Load Resistance
S ib	Source Instance B [28004] : 1 to 250
SZ.b	Source Zone B [28006] : 0 to 24
Er.h	Error Handling [28012] : False Bad, False Good, True Bad, True Good

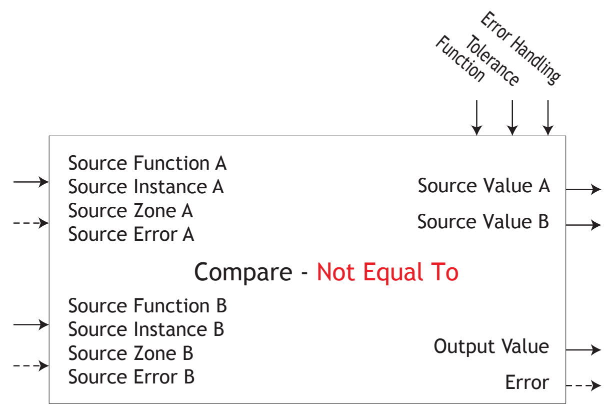
CPE Compare Menu
oPEr Operations Page

Su.A	Source Value A [28007] : -1,999.000 to 9,999.000 units or F
Su.b	Source Value B [28008] : -1,999.000 to 9,999.000 units or F
o.u	Output Value [28010] : Off, On

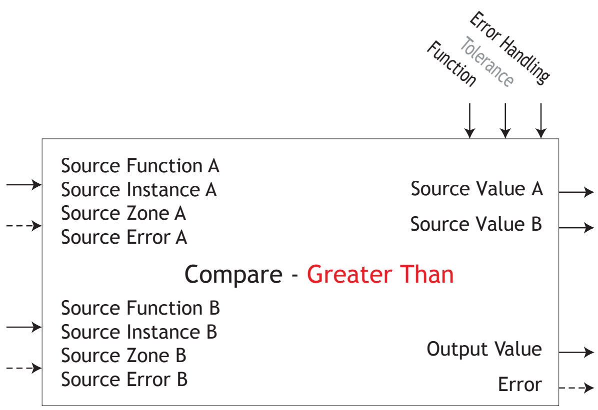
Compare (cont.)



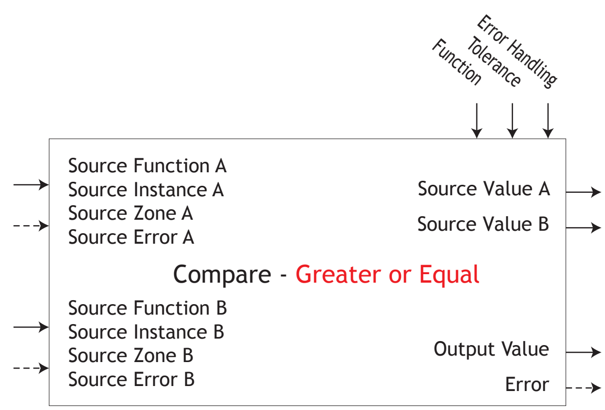
No Compare, Output Value = OFF



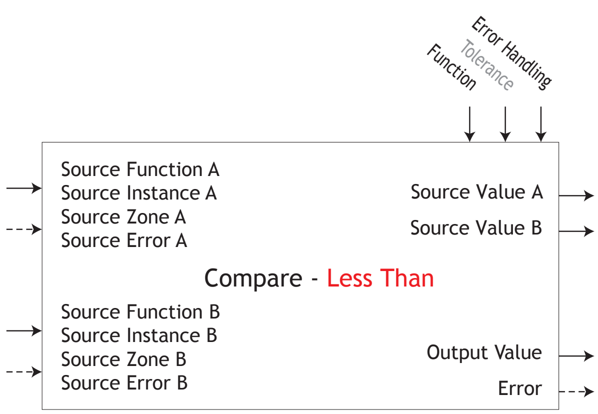
A not equal B, Output Value = ON



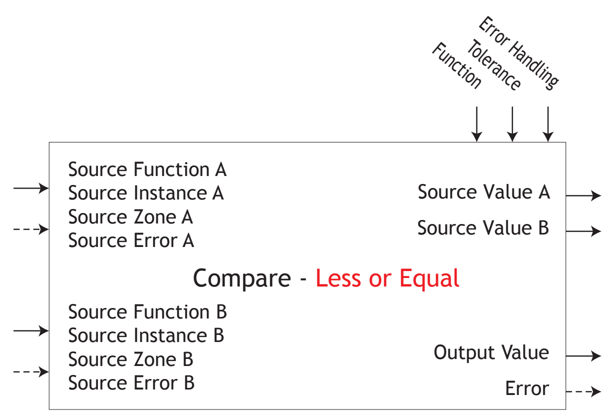
A>B, Output Value = ON



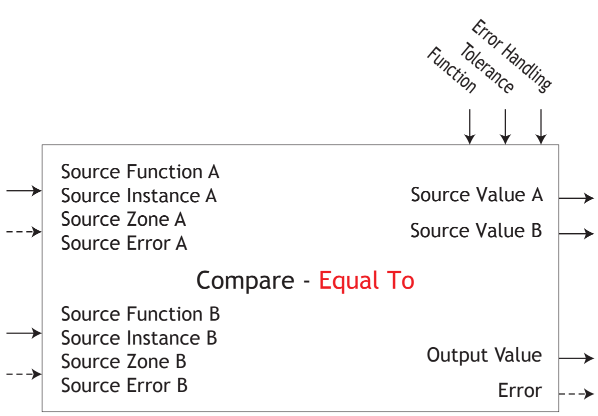
A>=B, Output Value = ON



A<B, Output Value = ON

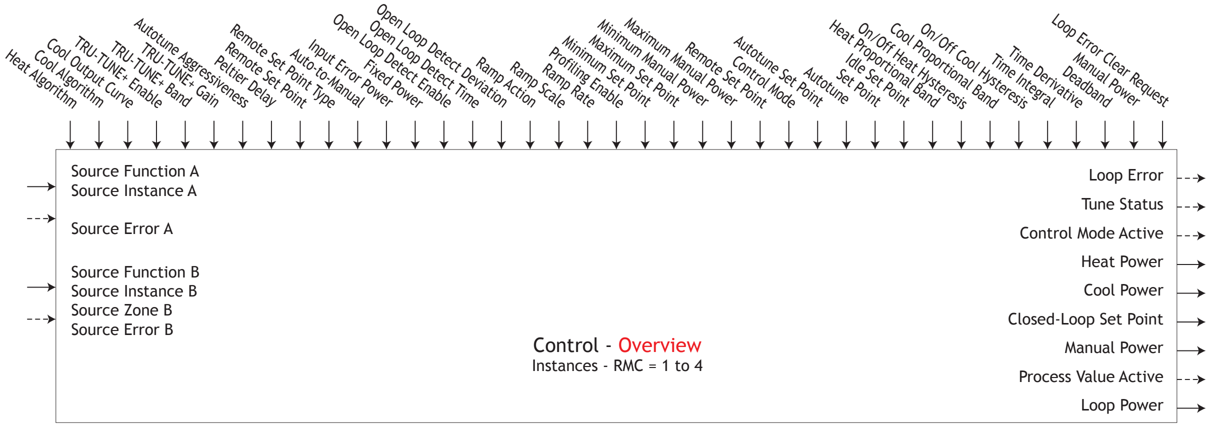


A<=B, Output Value = ON



A=B, Output Value = ON

Control Loop Function



LooP Loop Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
SFn.A	Source Function A [8050] :None, Process Value, Analog Input, Linearization, Math, Variable
iS.A	Source Instance A [8021] : (not changeable)*
h.Ag	Heat Algorithm [8003] : Off, PID, On/Off
C.Ag	Cool Algorithm [8004] : Off, PID, On/Off
C.Cr	Cool Output Curve [8038] : Off, Non-linear curve 1, Non-linear curve 2
h.Pb	Heat Proportional Band [8009] : 0.001 to 9,999.000
h.hy	On/Off Heat Hysteresis [8010] : 0.001 to 9,999.000
C.Pb	Cool Proportional Band [8012] : 0.001 to 9,999.000
C.hy	On/Off Cool Hysteresis [8013] : 0.001 to 9,999.000
ti	Time Integral [8006] : 0 to 9,999 seconds
td	Time Derivative [8007] : 0 to 9,999 seconds
db	Deadband [8008] : -1,000.0 to 1,000.0
t.tUn	TRU-TUNE+ Enable [8022] : No, Yes
t.bnd	TRU-TUNE+ Band [8034] : 0 to 100
t.gn	TRU-TUNE+ Gain [8035] : 1 to 6
AtSP	Autotune Set Point [8025] : 50 to 200 %
t.Agr	Autotune Aggressiveness [8024] : Under, Critical, Over
P.dL	Peltier Delay [8051] : 0.0 to 5.0
r.En	Remote Set Point [7021] : No, Yes
SFn.b	Source Function B [7023] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable
Si.b	Source Instance B [7024] : 1 to 250
SZ.b	Source Zone B [7026] : 0 to 24
r.ty	Remote Set Point Type [7022] : Auto, Manual
UFA	Auto-to-Manual [7012] : Off, Bumpless Transfer, Fixed Power, User
FAiL	Input Error Power [7013] : Off, Bumpless Transfer, Fixed Power, User
MAn	Fixed Power [7011] : -100.0 to 100.0 %
L.dE	Open Loop Detect Enable [8039] : No, Yes
L.dt	Open Loop Detect Time [8040] : 0 to 3,600 seconds
L.dd	Open Loop Detect Deviation [8041] : -1,999.000 to 9,999.000
rP	Ramp Action [7014] : Off, Startup, Set Point, Both
r.SC	Ramp Scale [7015] : Hours, Minutes
r.rt	Ramp Rate [7017] : 0.000 to 9,999.000
ProE	Profiling Enable [7027] : No, Yes
L.SP	Minimum Set Point [7003] : -1,999.000 to 9,999.000
h.SP	Maximum Set Point [7004] : -1,999.000 to 9,999.000
C.SP	Set Point [7001] : -1,999.000 to 9,999.000
id.S	Idle Set Point [7009] : -1,999.000 to 9,999.000
SP.Lo	Minimum Manual Power [7005] : -100.0 to 100.0 %
SP.hi	Maximum Manual Power [7006] : -100.0 to 100.0 %
o.SP	Manual Power [7002] : -100.0 to 100.0 %
C.M	Control Mode [8001] : Off, Auto, Manual

MOn Monitor Menu
oPEr Operations Page

	Parameter Name [Parameter ID] : Range or Choices
iS.A	Control Mode Active [8002] : Off, Auto, Manual
h.Ag	Heat Power [8011] : 0.0 to 100.0 %
C.Pr	Cool Power [8014] : 0.0 to 100.0 %
C.SP	Closed-Loop Set Point [8026] : -1,999.000 to 9,999.000
Pu.A	Process Value Active [8031] : -1,999.000 to 9,999.000

LooP Loop Menu
oPEr Operations Page

r.En	Remote Set Point [7021] : No, Yes
C.M	Control Mode [8001] : Off, Auto, Manual
AtSP	Autotune Set Point [8025] : 50 to 200 %
Aut	Autotune [8026] : No, Yes
C.SP	Set Point [7001] : -1,999.000 to 9,999.000
id.S	Idle Set Point [7009] : -1,999.000 to 9,999.000
h.Pb	Heat Proportional Band [8009] : 0.001 to 9,999.000
h.hy	On/Off Heat Hysteresis [8010] : 0.001 to 9,999.000
C.Pb	Cool Proportional Band [8012] : 0.001 to 9,999.000
C.hy	On/Off Cool Hysteresis [8013] : 0.001 to 9,999.000
ti	Time Integral [8006] : 0 to 9,999 seconds
td	Time Derivative [8007] : 0 to 9,999 seconds
db	Deadband [8008] : -1,000.000 to 1,000.000
o.SP	Manual Power [7002] : -100.0 to 100.0 %

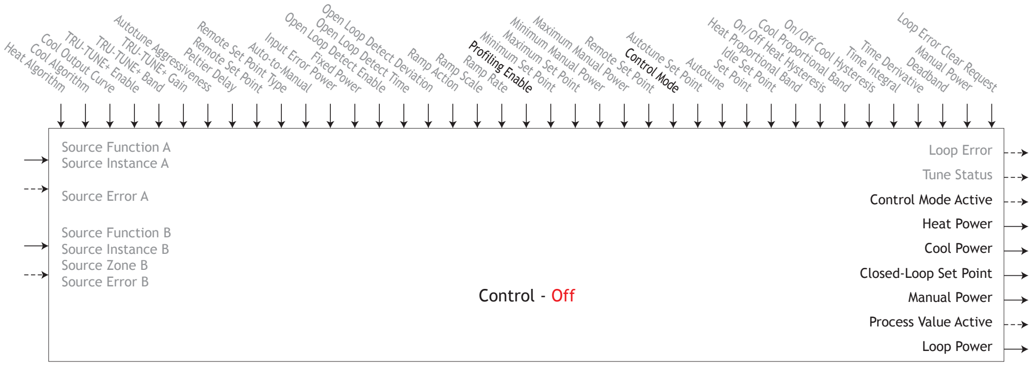
Loop Power [8033] : -100.0 to 100.0 %

Loop Error [8048]: None, Open Loop, Reversed Sensor

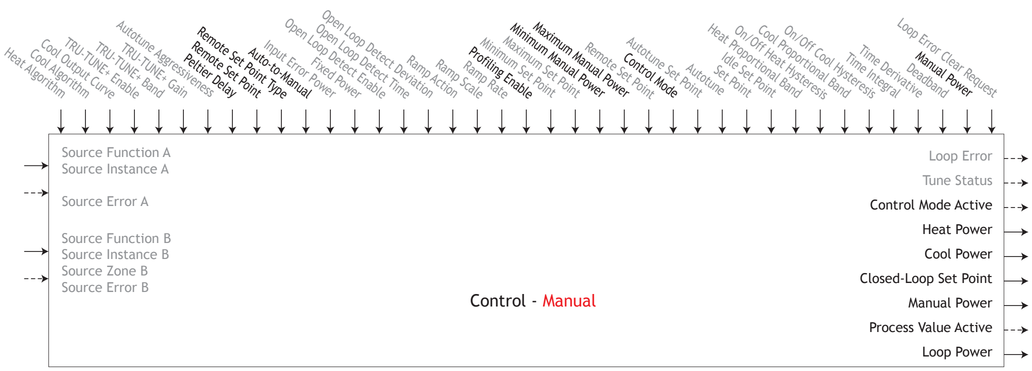
Clear Error [8049] : Ignore, Clear

Tune Status [8027] : Off, Cross 1 Positive, Cross 1 Negative, Cross 2 Positive, Cross 2 Negative, Cross 3 Positive, Cross 3 Negative, Measuring Max, Measuring Min, Calculating, Complete, Timeout

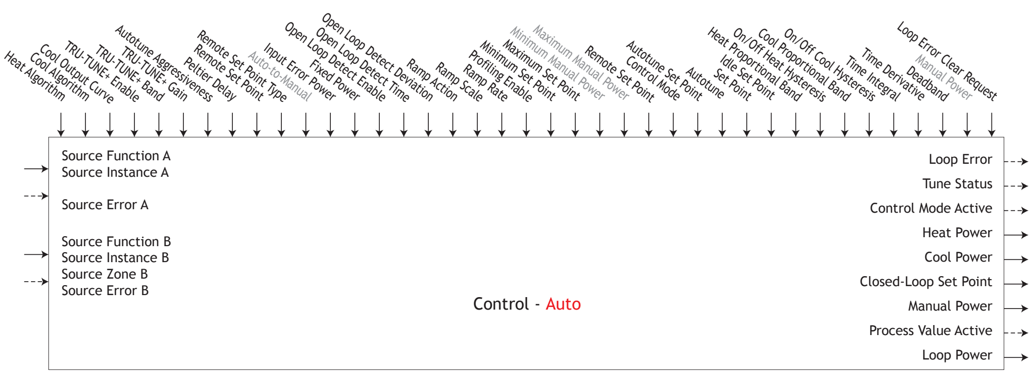
Control Loop (cont.)



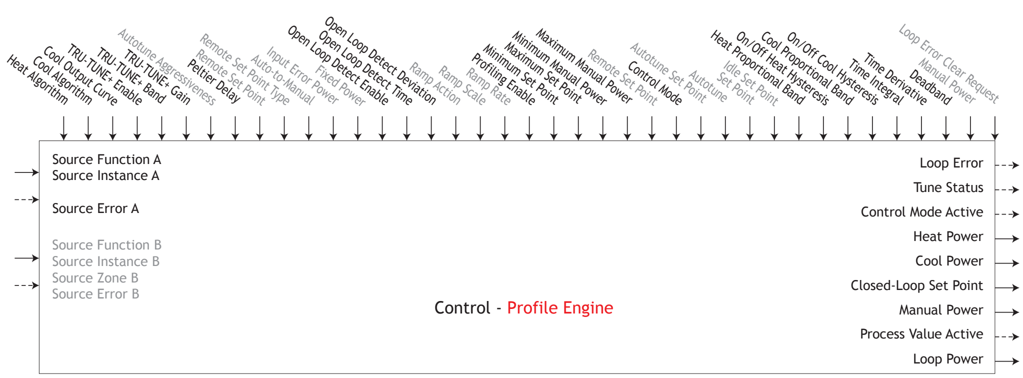
If Control Mode = Off : Heat Power, Cool Power and Loop Power = 0%



If Control Mode = Manual :
Manual Power = user entered value
Heat Power, Cool Power and Loop Power = Manual Power



If Control Mode = Auto :
Set Point = user entered value
Heat Power, Cool Power and Loop Power = PID calculated power

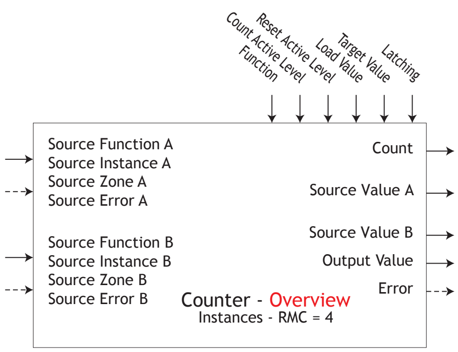


If Control Mode = Profiling :
Set Point = Profile Step
Heat Power, Cool Power and Loop Power = PID calculated power

Counter Function

Counters increment up or down from a preset value. When the count is equal to the target, the output value will be active.

- Function selects whether the counter increments or decrements the count value. Decrementing to 0 returns 9,999; incrementing to 9,999 returns 0.
- Source Function A selects which type of function increments the Count.
- Source Instance A and Source Zone A select which source to use.
- Count Active Level selects which state increments the Count.
- Source Function B selects which type of function resets the Count to the Load Value .
- Source Instance B and Source Zone B selects which source to use.
- Reset Active Level selects which state resets the Count.
- Load Value sets the counter's initial value. Count is set to this value each time the controller is powered up and each time the counter is reset.
- Target Value sets the value at which the output turns on.
- Latching sets the behavior for the output when Count exceeds the Target Value.
- Error [30016] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale



CtR Counter Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [30009] : Up, Down
SFn.A	Source Function A [30001] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable, Heater Error
S i.A	Source Instance A [30003] : 1 to 250
SZ.A	Source Zone A [30005] : 0 to 24
SAS.A	Count Active Level [30011] : High, Low, Both
SFn.b	Source Function B [30002] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable, Heater Error
S i.b	Source Instance B [30004] : 1 to 250
SZ.b	Source Zone B [30006] : 0 to 24
SAS.b	Reset Active Level [30012] : High, Low, Both
LoAd	Load Value [30013] : 0 to 9,999
trgt	Target Value [30014] : 0 to 9,999
LAt	Latching [30017] : No, Yes

CtR Counter Menu
oPEr Operations Page

Cnt	Count [30015] : 0 to 9,999
Su.A	Source Value A [30007] : Off, On
Su.b	Source Value B [30008] : Off, On
o.u	Output Value [30010] : Off, On

Custom Function

Parameter
Instance ID

Custom - Overview
Instances - RMC = 20

CUSt Custom Menu
FAct Factory Page

	Parameter Name [Parameter ID] : Range or Choices
PAr	Parameter [14005] : None, Process, Calibration Offset, Display Units, User Settings Restore, Alarm Low Set Point, Alarm High Set Point, Alarm Hysteresis, Set Point, Active Process Value, Active Set Point, Open-Loop Set Point, Autotune, Control Mode, Heat Power, Cool Power, Time Integral, Time Derivative, Dead band, Heat Proportional Band, Heat Hysteresis, Cool Proportional Band, Cool Hysteresis, Ramp Rate, TRU-TUNE+ Enable, Idle Set Point, Custom, Profile Start, Profile Action Request, Guaranteed Soak Deviation 1, Current, Limit Low Set Point, Limit High Set Point, Limit Hysteresis, Limit Status
iid	Instance ID [14003] : 1 to 24

Use custom menu to set the user defined parameters to display at the Home Page of an RUI/Gateway.

Diagnostic Function

Part Number
Software Revision
Software Build Number
Serial Number
Date of Manufacture
Hardware ID
Device Status
Device Name

Diagnostics - Overview
Instances - RMC = 1

diAg Diagnostics Menu
FAct Factory Page

	Parameter Name [Parameter ID] : Range or Choices
Pn	Part Number [1009] :
rEu	Software Revision [1003] : 9.00, ...
S.bLd	Software Build Number [1005] :
Sn	Serial Number [1007] : xxxxxx
dAtE	Date of Manufacture [1008] : YWW

Hardware ID [1001] : 116 (RMC)

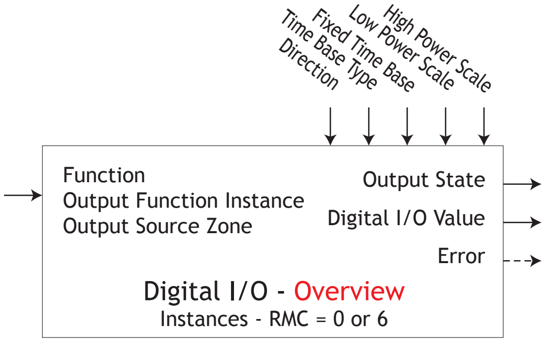
Device Name [1011] : EZ-ZONE RM

Device Status [1016] : OK, Fail

Digital Input/Output Function

The Output Value is determined by Function connection and Direction.

- Error [6015] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail,Math Error, Not Sourced, Stale



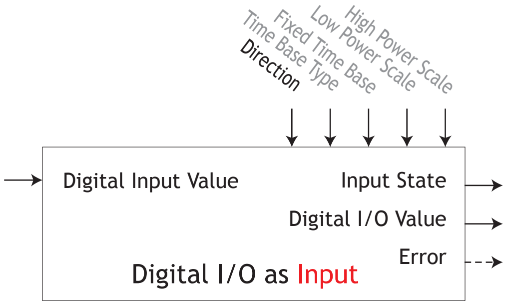
d io Digital I/O Menu
SEt Setup Page

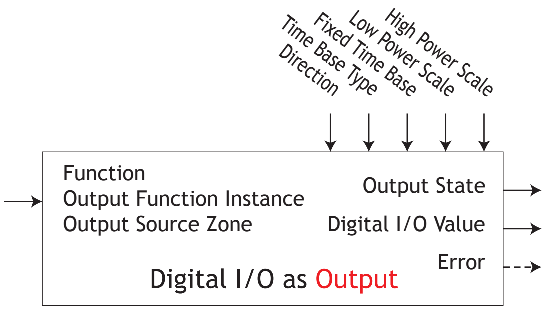
	Parameter Name [Parameter ID] : Range or Choices
dir	Direction [6001] : Output, Input Voltage, Input Dry Contact
Fn	Function [6005] : Off, Analog Input, Alarm, Cool Power, Heat Power, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Linearization, Math, Process Value, Special Function Output 1 to 4, Timer, Variable
F i	Output Function Instance [6006] : 1 to 24
S2.A	Output Source Zone [6012] : 0 to 16
o.Ct	Time Base Type [6002] : Fixed Time Base, Variable Time Base
o.tb	Fixed Time Base [6003] : 0.1 to 60.0 seconds
o.Lo	Low Power Scale [6009] : 0.0 to 100.0 %
o.hi	High Power Scale [6010] : 0.0 to 100.0 %

d io Digital I/O Menu
SEt Operations Page

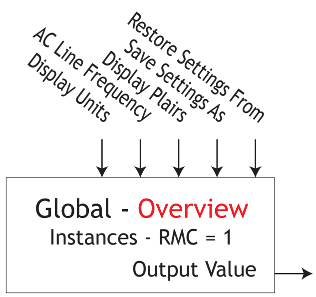
d i.S	Input State [6011] : On, Off
do.S	Output State [6007] : On, Off

Digital Input/Output (cont.)





Global Function



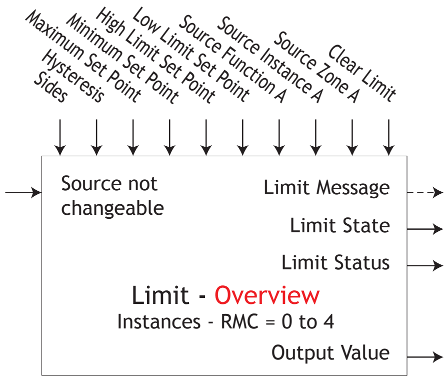
9LbL Global Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
C_F	Display Units [3005] : F, C
AC.LF	AC Line Frequency [1034] : 50 Hz, 60 Hz
d.Pr5	Display Pairs [3028] : 1 to 10
USr.5	Save Settings As [1014] : None, User Set 1
USr.r	Restore Settings From [1013] : None, User Set 1, Factory

Limit Function

This function configures the internal limit function using a dedicated analog input and output. The output changes state when Source A (analog input) exceeds the limit set points or Source A itself is in error. The limit, when tripped, must be manually cleared to reset the output and clear the message. An analog input and output is dedicated to each limit loop and located in the same module. A mechanical relay is assigned within the same module to the limit function.

- Limit State [12006] : Off, None, Limit High, Limit Low, Error
- Output Value [12007] : On, Off



LiM Limit Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
L.Sd	Sides [12005] : Both, High, Low
L.hY	Limit Hysteresis [12002] : 0.001 to 9,999.000
SP.Lh	Maximum Set Point [12009] : -1,999.000 to 9,999.000
SP.LL	Minimum Set Point [12010] : -1,999.000 to 9,999.000
Lh.S	High Limit Set Point [12004] : -1,999.000 to 9,999.000
LL.S	Low Limit Set Point [12003] : -1,999.000 to 9,999.000
SFn.A	Source Function A [12015] : None, Digital I/O, Function Key, Variable
SiA	Source Instance A [12016] : 1 to 24
SZ.A	Source Zone A [12017] : 0 to 16
LCr	Clear Limit [12014] : Ignore, Clear
LSt	Limit Status [12013] : Fail, Safe

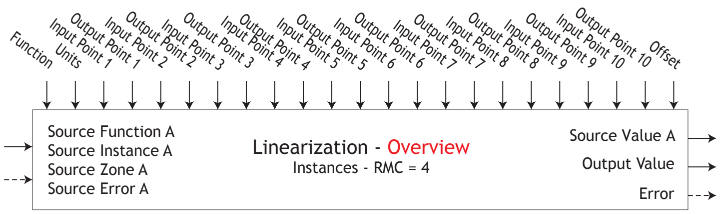
LiM Limit Menu
oPEr Operations Page

LL.S	Low Limit Set Point [12003] : -1,999.000 to 9,999.000
Lh.S	High Limit Set Point [12004] : -1,999.000 to 9,999.000
LCr	Clear Limit [12014] : Ignore, Clear
LSt	Limit Status [12013] : Fail, Safe

Linearization Function

This function will take an analog Source A and re-linearize using a 10-point offset, then add Offset and produce an Output Value.

- Error: None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale



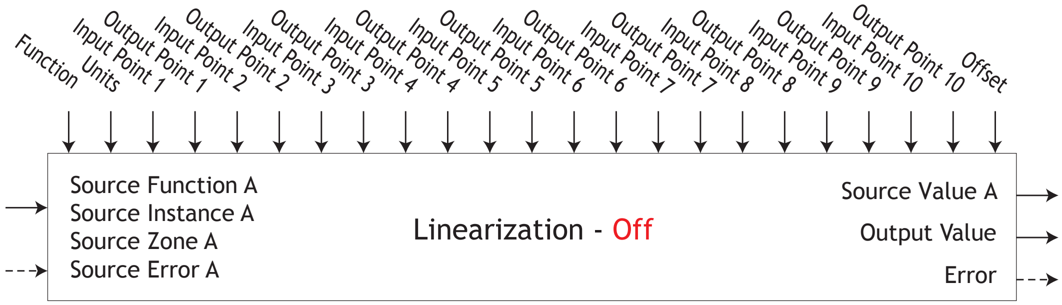
Lnr Linearization Menu
SEt Setup Page

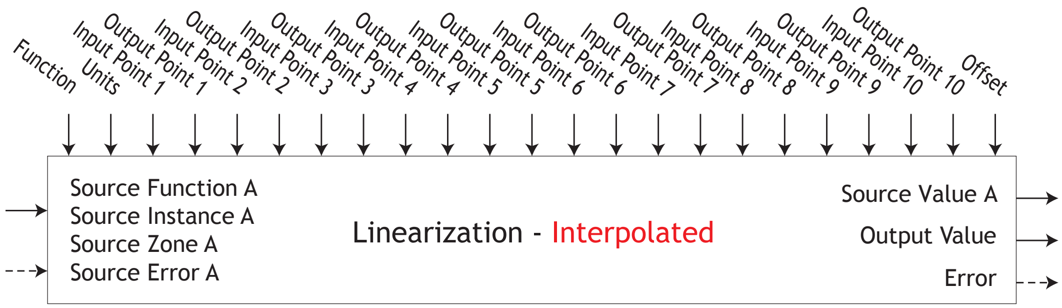
	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [34005] : Off, Interpolated, Stepped
SFn.A	Source Function A [34001] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable
S iA	Source Instance A [34002] : 1 to 24
SZA	Source Zone A [34003] : 0 to 16
Unit	Units [34029] : Source, None, Absolute Temperature, Relative Temperature, Power, Process, Relative Humidity
iP. 1	Input Point 1 [34008] : -1,999.000 to 9,999.000
oP. 1	Output Point 1 [34018] : -1,999.000 to 9,999.000
iP.2	Input Point 2 [34009] : -1,999.000 to 9,999.000
oP.2	Output Point 2 [34019] : -1,999.000 to 9,999.000
iP.3	Input Point 3 [34010] : -1,999.000 to 9,999.000
oP.3	Output Point 3 [34020] : -1,999.000 to 9,999.000
iP.4	Input Point 4 [34011] : -1,999.000 to 9,999.000
oP.4	Output Point 4 [34021] : -1,999.000 to 9,999.000
iP.5	Input Point 5 [34012] : -1,999.000 to 9,999.000
oP.5	Output Point 5 [34022] : -1,999.000 to 9,999.000
iP.6	Input Point 6 [34013] : -1,999.000 to 9,999.000
oP.6	Output Point 6 [34023] : -1,999.000 to 9,999.000
iP.7	Input Point 7 [34014] : -1,999.000 to 9,999.000
oP.7	Output Point 7 [34024] : -1,999.000 to 9,999.000
iP.8	Input Point 8 [34015] : -1,999.000 to 9,999.000
oP.8	Output Point 8 [34025] : -1,999.000 to 9,999.000
iP.9	Input Point 9 [34016] : -1,999.000 to 9,999.000
oP.9	Output Point 9 [34026] : -1,999.000 to 9,999.000
iP. 10	Input Point 10 [34017] : -1,999.000 to 9,999.000
iP. 10	Output Point 10 [34027] : -1,999.000 to 9,999.000

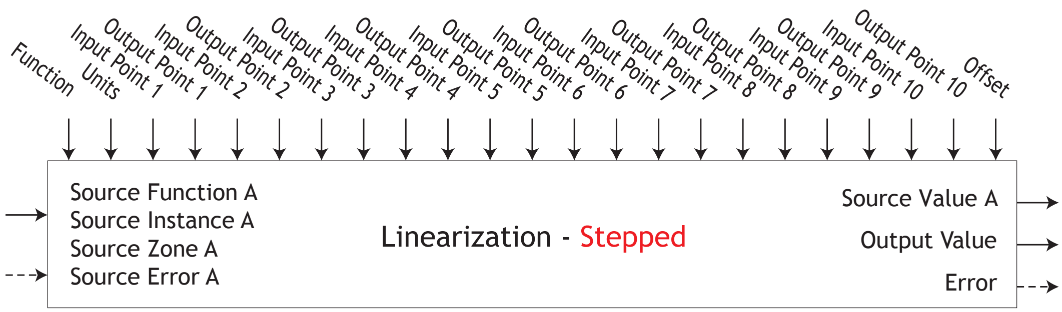
Lnr Linearization Menu
oPEr Operations Page

SuA	Source Value A [34004] : -1,999.000 to 9,999.000
oFSt	Offset [34006] : -1,999.000 to 9,999.000
o.u	Output Value [34007] : -1,999.000 to 9,999.000

Linearization (cont.)

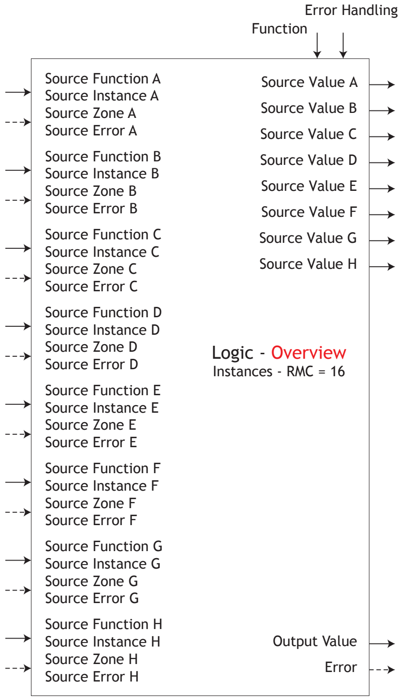






Logic Function

- Error [27036] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale



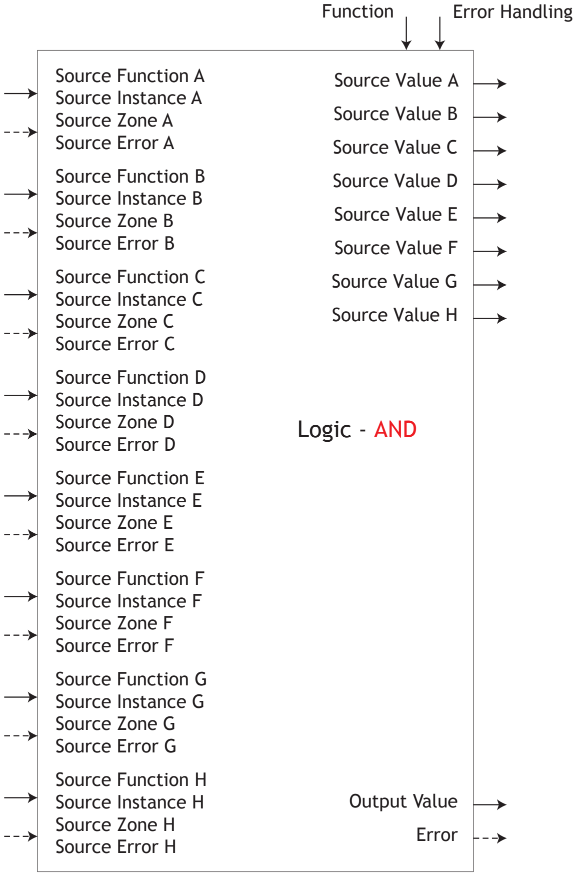
	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [27033] : Off, AND, OR, Equal To, NAND, NOR, Not Equal To, Latch, RS FlipFlop
SFn.A	Source Function A [27001] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.iA	Source Instance A [27009] : 1 to 250
SZ.A	Source Zone A [27017] : 0 to 24
SFn.b	Source Function B [27002] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.ib	Source Instance B [27010] : 1 to 250
SZ.b	Source Zone B [27018] : 0 to 24
SFn.C	Source Function C [27003] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.iC	Source Instance C [27011] : 1 to 250
SZ.C	Source Zone C [27019] : 0 to 24
SFn.d	Source Function D [27004] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.id	Source Instance D [27012] : 1 to 250
SZ.d	Source Zone D [27020] : 0 to 24
SFn.E	Source Function E [27005] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.iE	Source Instance E [27013] : 1 to 250
SZ.E	Source Zone E [27021] : 0 to 24
SFn.F	Source Function F [27006] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.iF	Source Instance F [27014] : 1 to 250
SZ.F	Source Zone F [27022] : 0 to 24
SFn.g	Source Function G [27007] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.ig	Source Instance G [27015] : 1 to 250
SZ.g	Source Zone G [27023] : 0 to 250
SFn.h	Source Function H [27008] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Limit, Logic, Special Function Output 1 to 4, Timer, Variable, Heater Error
S.ih	Source Instance H [27016] : 1 to 250
SZ.h	Source Zone H [27024] : 0 to 24
Er.h	Error Handling [27035] : True Good, True Bad, False Good, False Bad

L9C SEt — Logic Menu Setup Page

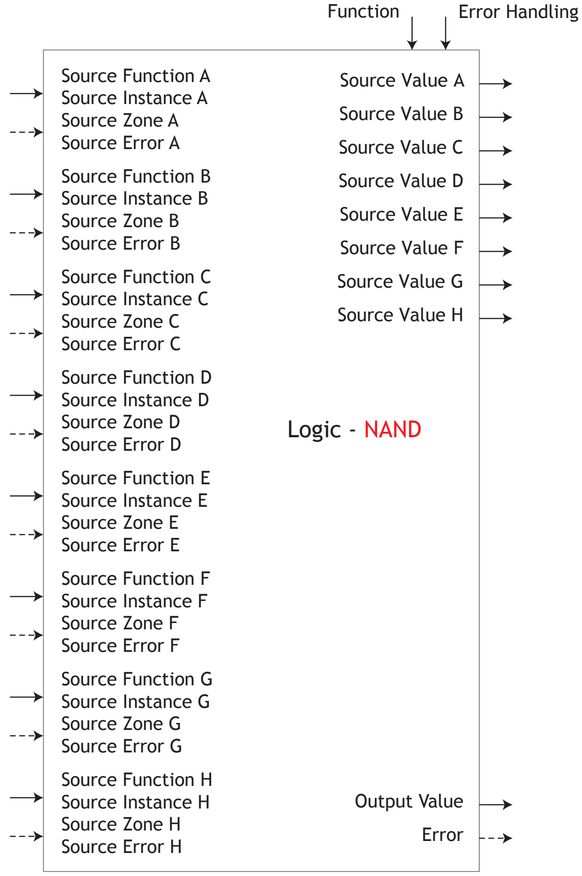
L9C oPEr — Logic Menu Operations Page

Su.A	Source Value A [27025] : Off, On
Su.b	Source Value B [27026] : Off, On
Su.C	Source Value C [27027] : Off, On
Su.d	Source Value D [27028] : Off, On
Su.E	Source Value E [27029] : Off, On
Su.F	Source Value F [27030] : Off, On
Su.g	Source Value G [27031] : Off, On
Su.h	Source Value H [27032] : Off, On
o.u	Output Value [27034] : Off, On

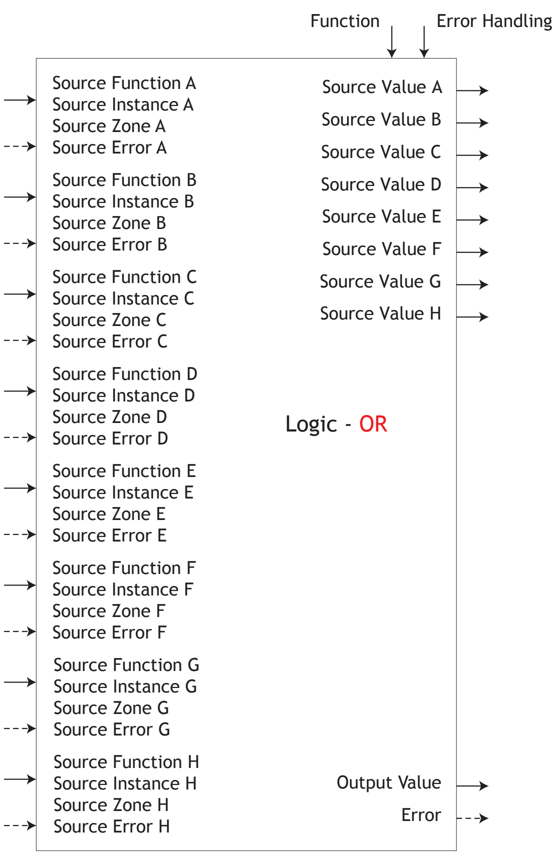
Logic (cont.)



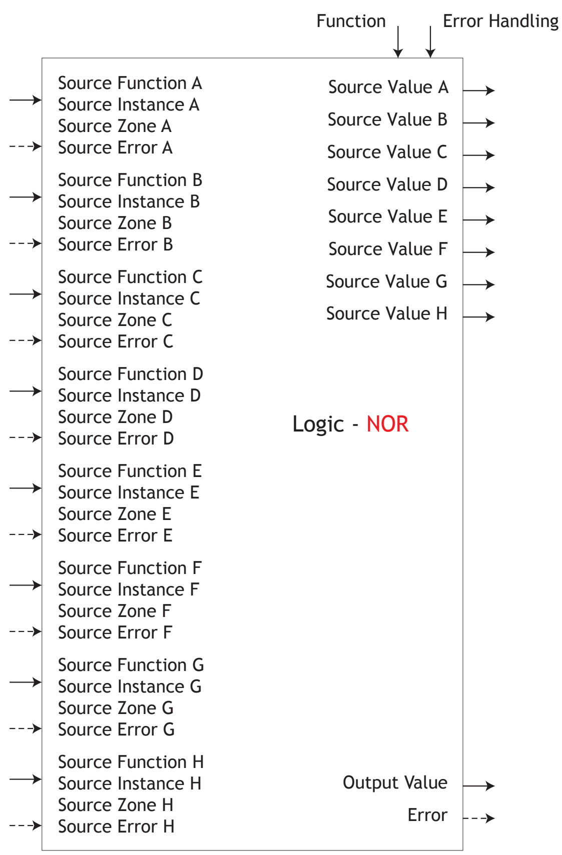
A * B * C * D * E * F * G * H = ON



$\overline{A * B * C * D * E * F * G * H} = ON$

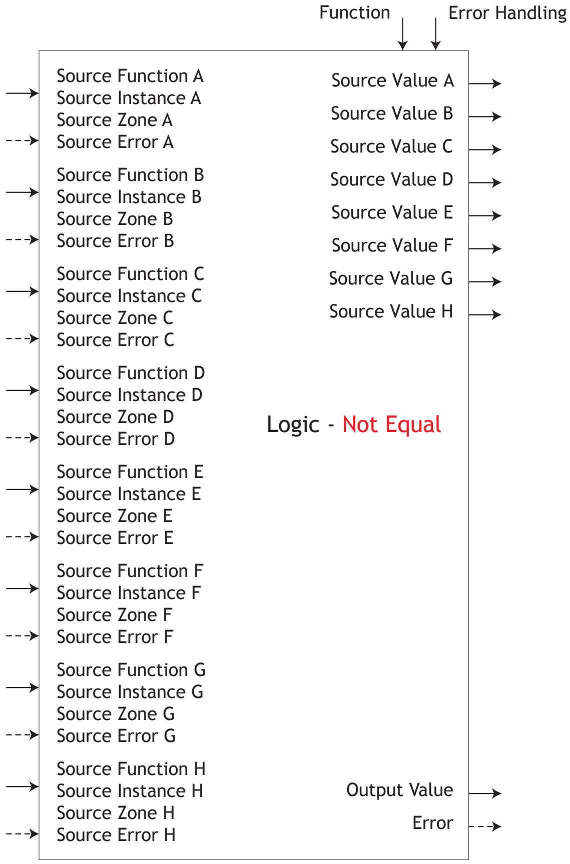


A + B + C + D + E + F + G + H = ON

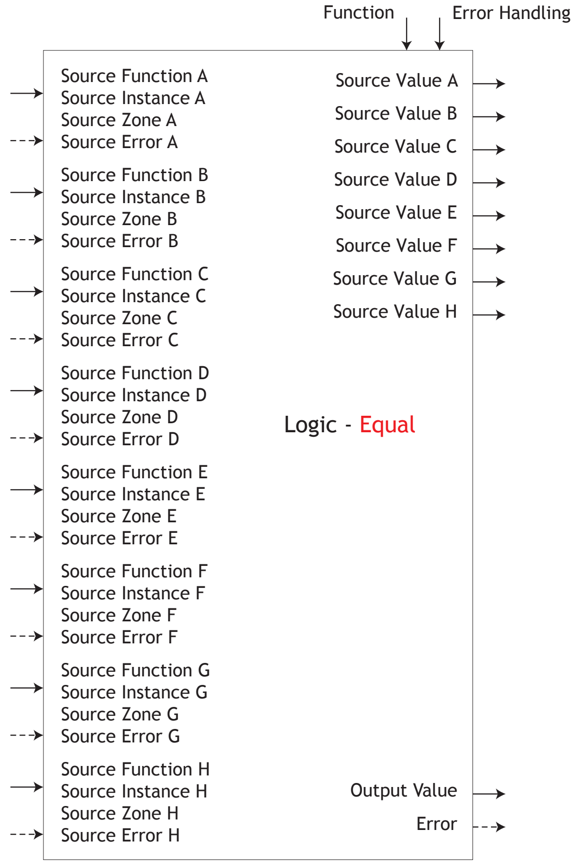


$\overline{A + B + C + D + E + F + G + H} = ON$

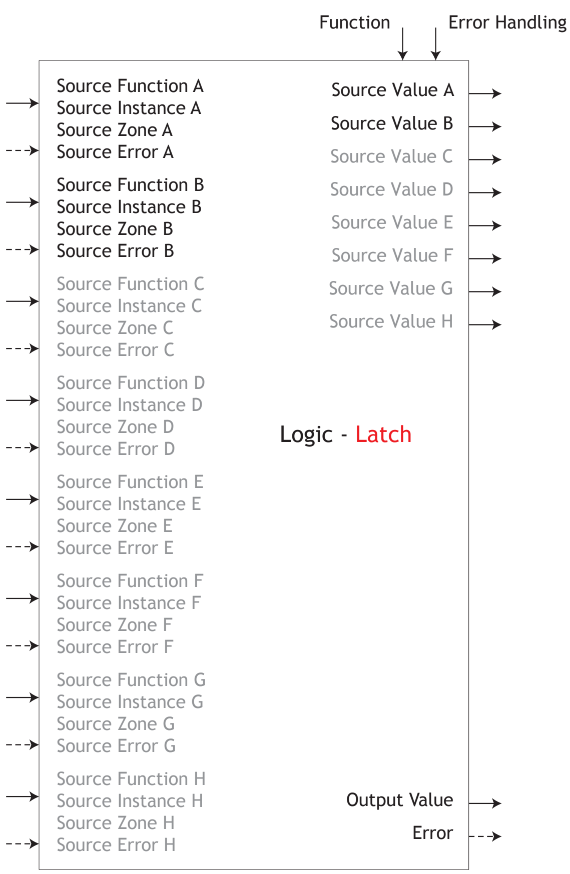
Logic (cont.)



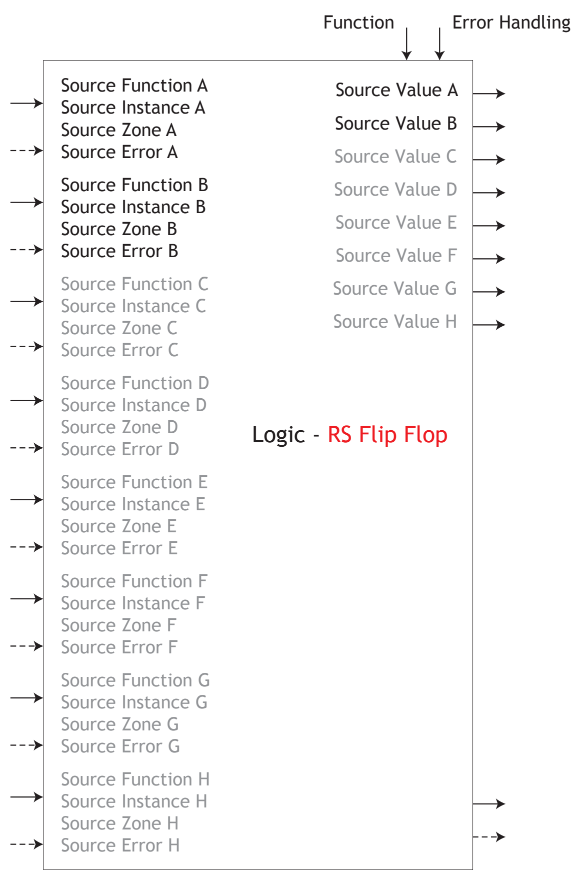
If A ≠ B ≠ C ≠ D ≠ E ≠ F ≠ G ≠ H then ON



If A = B = C = D = E = F = G = H then ON

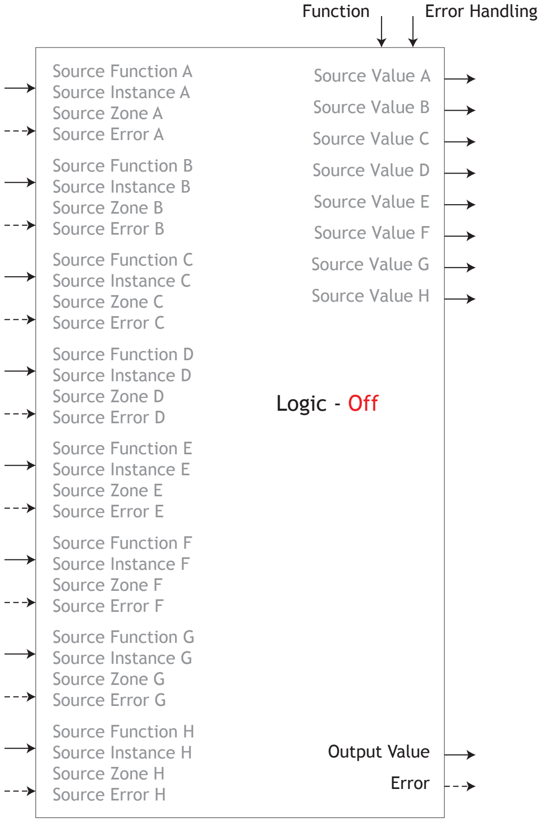


Output Value follows A, unless B = ON
Latch Output while B = ON



A Sets Output Value ON, B Resets Output Value OFF

Logic (cont.)

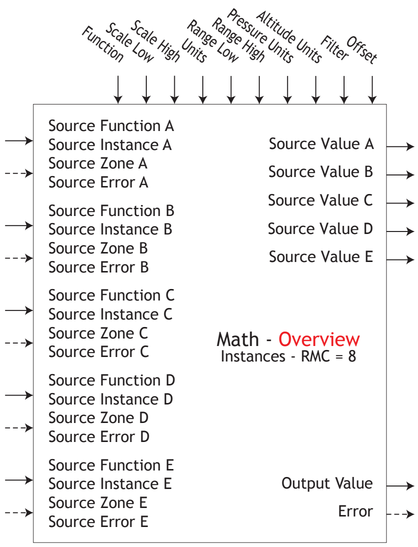


Output Value = Off

Math Function

The Math function block accepts multiple inputs and performs a programmed math function to derive an output value with Filter and Offset values applied. It is assumed that no input error conditions apply. Some math operations must be performed in the user's units. Functions may combine multiple inputs. Those inputs may have incompatible units from a logical point of view. As a result, unless otherwise indicated, the presentation of the output value is the same as Source A. This accommodates temperatures being multiplied, divided and offset by constants and process inputs. Only inputs pointed to a source are used in the calculations.

- Error [25029]: None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale



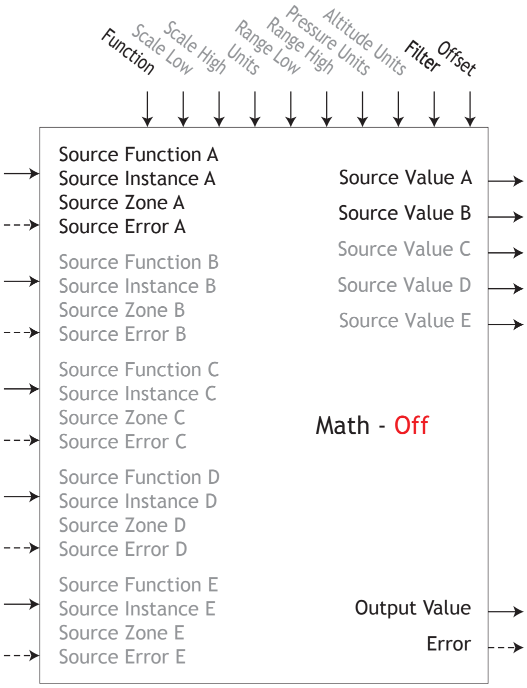
	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [25021] : Off, Average, Process Scale, Deviation Scale, Switch Over, Differential, Ratio, Add, Multiply, Absolute Difference, Minimum, Maximum, Square Root, Sample and Hold, Pressure to Altitude, Dewpoint
SFn.A	Source Function A [25001] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable, Wattage, Load Voltage, Load Resistance
S.iA	Source Instance A [25006] : 1 to 250
SZ.A	Source Zone A [25011] : 0 to 24
SFn.b	Source Function B [25005] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable, Wattage, Load Voltage, Load Resistance
S.ib	Source Instance B [25007] : 1 to 250
SZ.b	Source Zone B [25012] : 0 to 24
SFn.C	Source Function C [25003] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable, Wattage, Load Voltage, Load Resistance
S.iC	Source Instance C [25008] : 1 to 250
SZ.C	Source Zone C [25013] : 0 to 24
SFn.d	Source Function D [25004] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable, Wattage, Load Voltage, Load Resistance
S.id	Source Instance D [25009] : 1 to 250
SZ.d	Source Zone D [25014] : 0 to 24
SFn.E	Source Function E [25005] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable
S.iE	Source Instance E [25010] : 1 to 250
SZ.E	Source Zone E [25015] : 0 to 24
S.Lo	Scale Low [25024] : -1,999.0 to 9,999.0
S.hi	Scale High [25025] : -1,999.0 to 9,999.0
Unit	Unit [25032] Source, None, Absolute Temperature, Relative Temperature, Power, Process, Relative Humidity
r.Lo	Range Low [25026] : -1,999.0 to 9,999.0
r.hi	Range High [25027] : -1,999.0 to 9,999.0
P.unt	Pressure Units [25030] : PSI, Torr, mBar, Atmosphere, Pascal
A.unt	Altitude Units [25031] : Feet, Kilofeet
FiL	Filter [25028] : 0.0 to 60.0 seconds

MAt Math Menu
SEt Setup Page

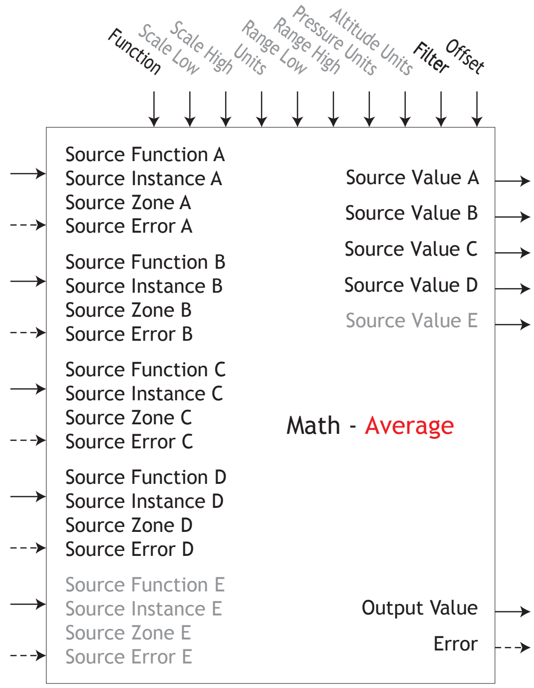
Su.A	Source Value A [25016] : -1,999.000 to 9,999.000
Su.b	Source Value B [25017] : -1,999.000 to 9,999.000
Su.C	Source Value C [25018] : -1,999.000 to 9,999.000
Su.d	Source Value D [25019] : -1,999.000 to 9,999.000
Su.E	Source Value E [25020] : Off, On
o.u	Output Value [25022] : -1,999.000 to 9,999.000
oFSt	Offset [25023] : -1,999.000 to 9,999.000

MAt Math Menu
oPEr Operations Page

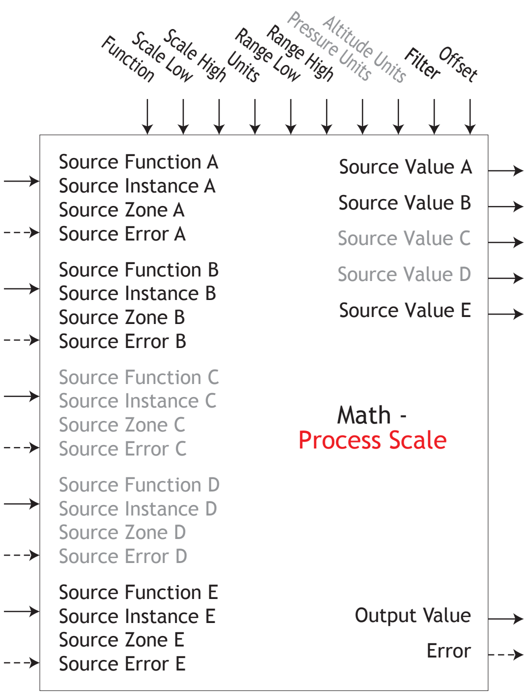
Math (cont.)



Output Value = Filter [A + Offset]
Display units follows Source A

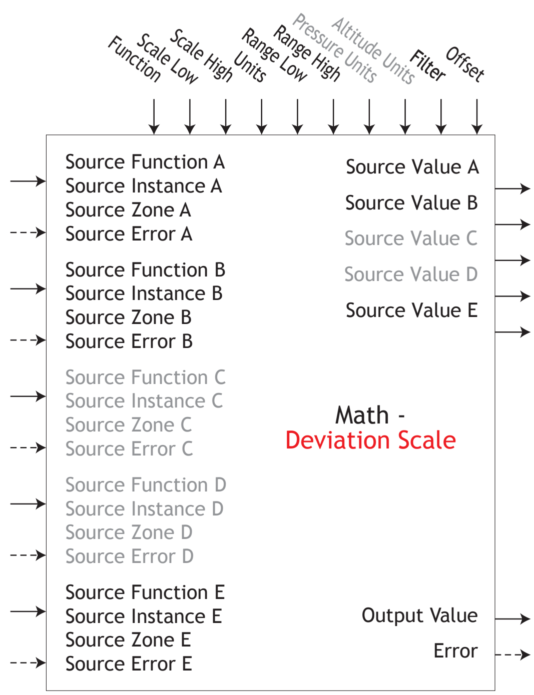


Output Value = Filter [(Average (A + B + C + D)) + Offset]
Display units follows the last source that is temperature else follow Source A



If B = OFF, Output Value = Filter [(Range High - Range Low) / (Scale High - Scale Low) * (A - Scale Low) + Range Low + Offset]
If B = ON, Output Value = Filter [B + Offset]

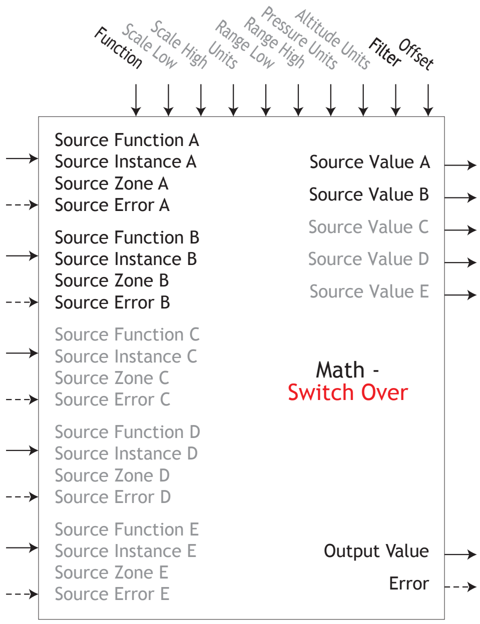
Scale Low/High and Range Low/High follows Source A display units when Units is set to Source, else follow Units setting.



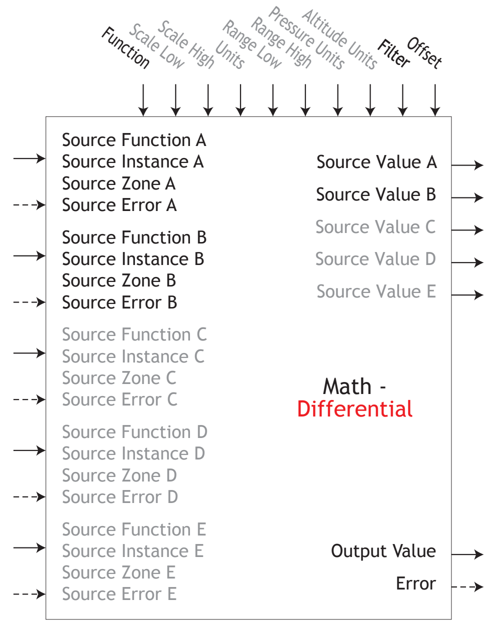
If B = OFF, Output Value = Filter [((Range High - Range Low) / (Scale High - Scale Low)) * (A - Scale Low) + Range Low + B + Offset]
If B = ON, Output Value = Filter [B + Offset]

Scale Low/High and Range Low/High follows Source A display units when Units is set to Source, else follow Units setting.

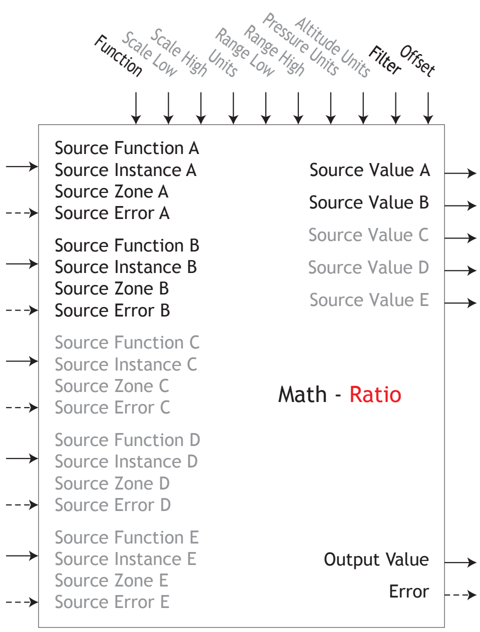
Math (cont.)



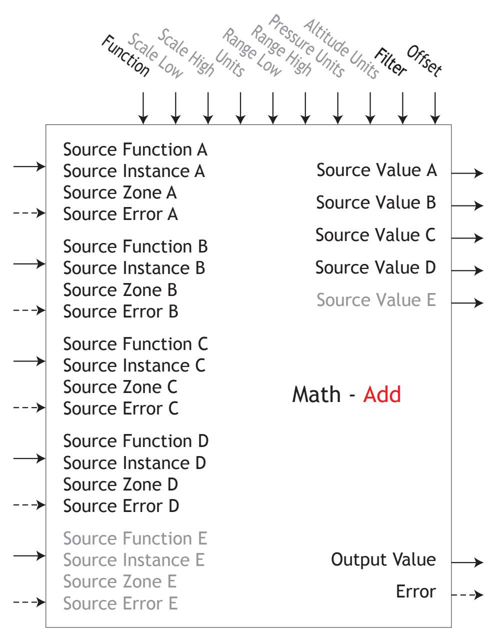
If B = OFF, Output Value = Filter [A + Offset]
If B = ON, Output Value = Filter [B + Offset]
Display units follows active source.



Output Value = Filter [(A - B) + Offset]
Display units follows Source A plus relative Source B

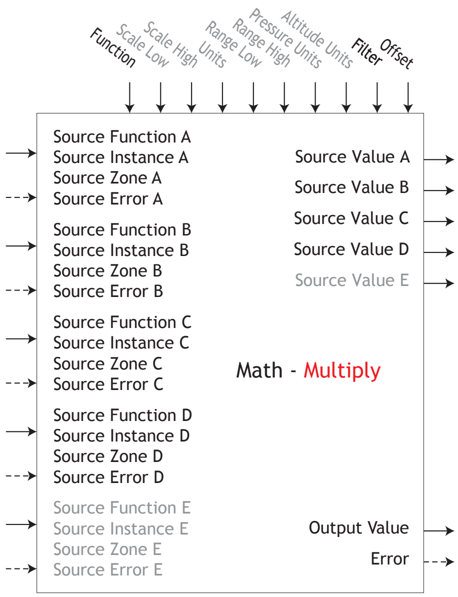


Output Value = Filter [(A / B) + Offset]
If display units of Source A = Source B, no display units on output value, else follow Source A

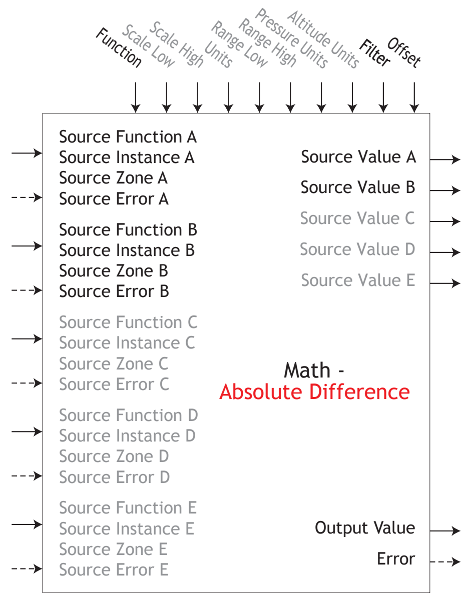


Output Value = Filter [(A + B + C + D) + Offset]
Display units follows last temperature source else follow Source A

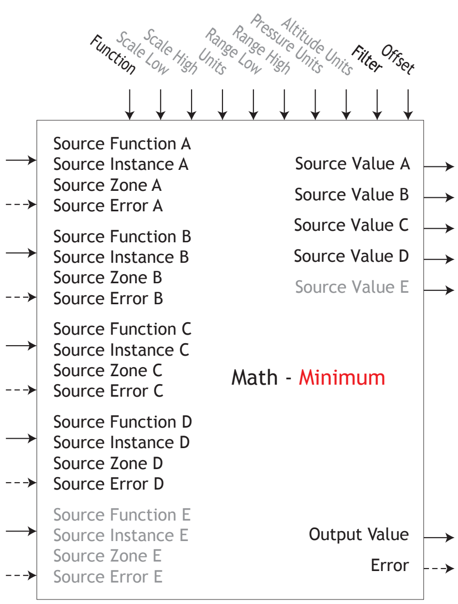
Math (cont.)



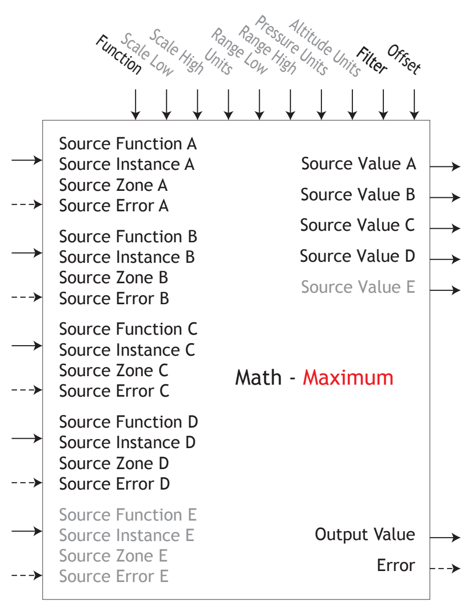
Output Value = Filter [(A * B * C * D) + Offset]
Display units follows last temperature source else follow Source A



Output Value = Filter [| A - B | + Offset]
Display units follow Source A plus relative Source B

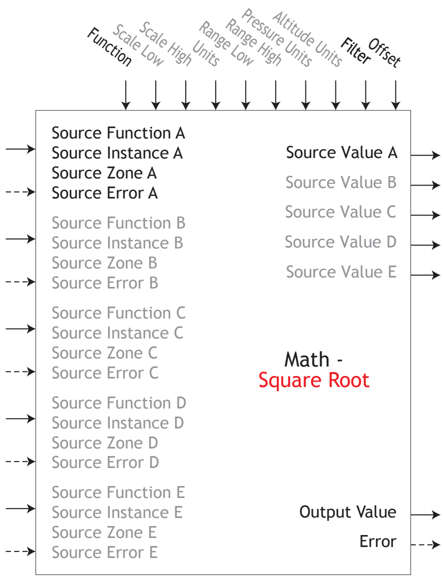


Output Value = Filter [Minimum Value (A : B : C : D) + Offset]
Display units follows Source with minimum value.

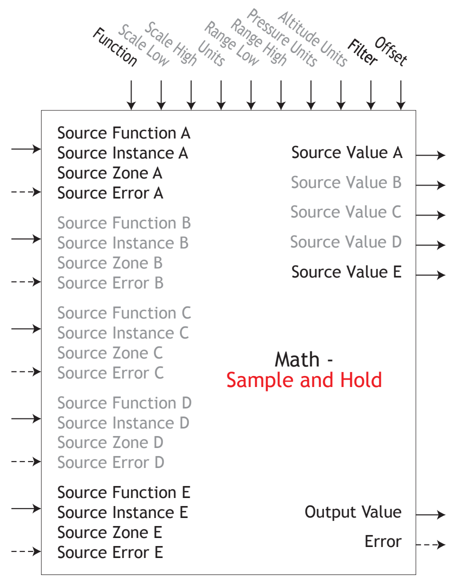


Output Value = Filter [Maximum Value (A : B : C : D) + Offset]
Display units follows Source with maximum value.

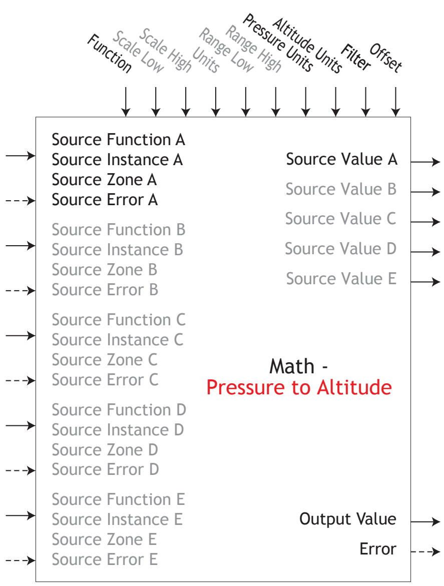
Math (cont.)



Output Value = Filter [Sqr Root A + Offset]
Display units follows Source A

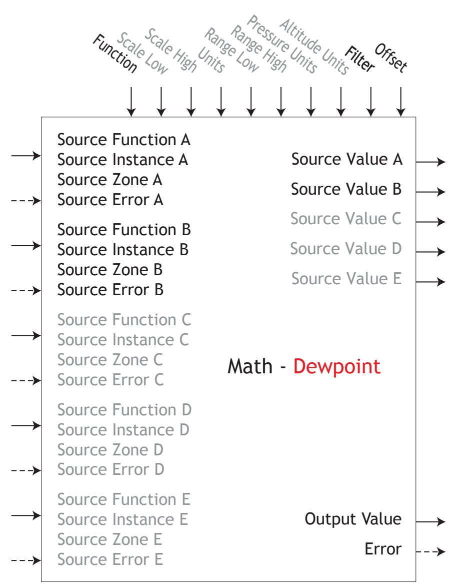


If E = OFF, Output Value = Filter [A + Offset]
If E = ON, Output Value = Filter [last value of A + Offset]
Display units follows Source A



Output Value = Filter [Convert Source A in Pressure to Altitude + Offset]

Note: Pressure Altitude calculation is based on the International Standard Atmosphere 1976. Source A is a pressure signal and needs to be in PSI units for the calculation. The calculation is accurate from sea level to 90,000 feet. It can be used beyond this range in both directions, but with loss of accuracy. The standard is based on an altitude of 0 feet (sea level) pressure of 14.6967 PSI and a temperature of 59 degrees F. Result of calculation is in feet.



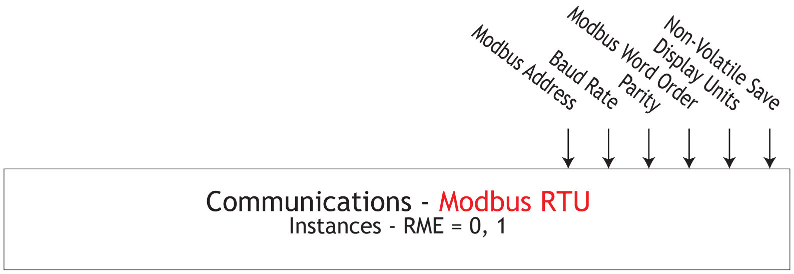
Output Value = Filter [427.26 * (CP * B / 8.8618) / (17.27- (CP * B / 8.8618)) + 32 + Offset]

Source A is used for Calculated Pressure or CP ;

Note: For dewpoint, Source A is temperature (F) and Source B is RH (%). Saturation pressure calculation is identical to that used in wet/dry bulb. Result is in degrees F.

Modbus® Function

Configure the Modbus RTU serial communication settings using these parameters.



CoM Communications Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
bAUd	Baud Rate [17002] : 19600, 19200, 38400
PAr	Parity [17003] : None, Even, Odd
M.hL	Modbus Word Order [17043] : Word Low High, Word High Low
C_F	Display Units [17050] : F, C
nU.S	Non-Volatile Save [17051] : No, Yes

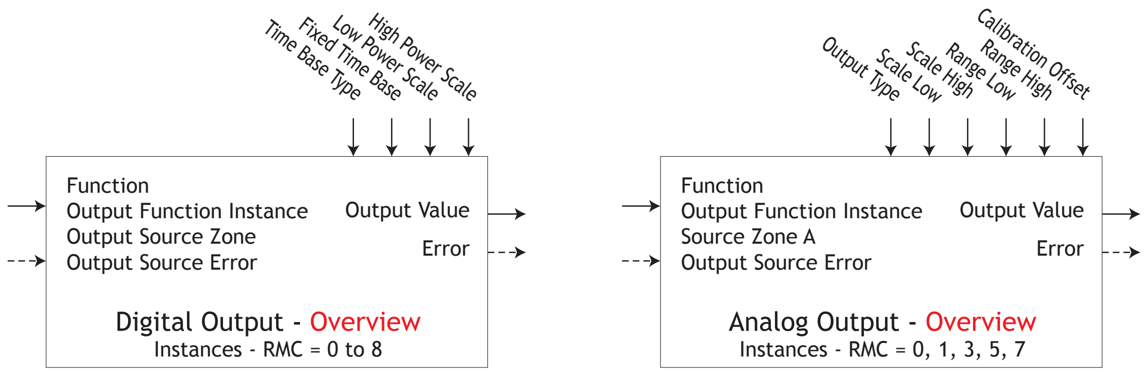
Output Function

This function configures and connects physical outputs to internal functions.

Note:

Digital Outputs not included on these sheets

- Output Value [18019] : 0 to 10.0 volts or 0 to 20.00 milliamperes
- Output Value [6011] : On, Off
- Error: None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale

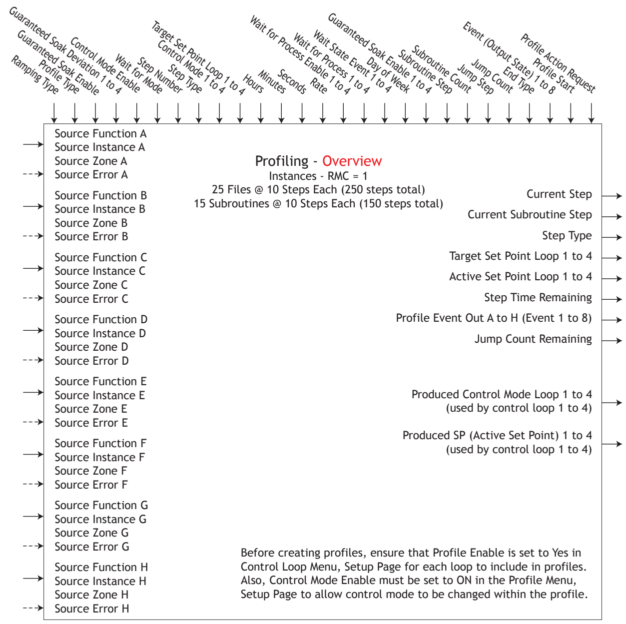


otPt Output Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [6005] : Off, Analog Input, Alarm, Cool Power, Heat Power, Compare, Counter, Digital I/O. Profile Event Out A to H, Function Key, Logic, Linearization, Math, Process Value, Special Function Output 1 to 4, Timer, Variable, Heater Error, Limit
Fi	Output Function Instance [6006] : 1 to 250
S2	Output Source Zone [6012] : 0 to 24
o.Ct	Time Base Type [6002] : Fixed Time Base, Variable Time Base
o.tb	Fixed Time Base [6003] : 0.1 to 60.0 seconds
o.Lo	Low Power Scale [6009] : 0 to 100 %
o.hi	High Power Scale [6010] : 0 to 100 %
o.tY	Output Type [18001] : Volts, Milliamps
Fn	Function [18002] : Off, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Special Function Output 1 to 4, Variable, Wattage, Load Voltage, Load Resistance
Fi	Output Function Instance [18004] : 1 to 250
S2.A	Source Zone A [18019] : 0 to 24
S.Lo	Scale Low [18009] : 0.0 to 20.00
S.hi	Scale High [18010] : 0.0 to 20.00
r.Lo	Range Low [18011] : -1,999.000 to 9,999.000
r.hi	Range High [18012] : -1,999.000 to 9,999.000
o.CA	Calibration Offset [18007] : -1,999.000 to 9,999.000

Profile Function

The the RMC module supports up to 25 profiles with each having up to 10 steps each. In some applications there is a need to execute a profile multiple times with varying frequency within multiple Profiles. When and if this need arises, rather than creating the same steps over and over again, it would be wise to think of using a Subroutine. There can be a maximum of 15 Subroutines having up to 10 steps each. Subroutines can be called from within any Profile. The logic is, create it just once and execute it as needed from any given profile.



Pro Profile Menu
SEt Setup Page

P.StA Profile Status Menu
oPEr Operations Page

	Parameter Name [Parameter ID] : Range or Choices
rtYP	Ramping Type [22038] : Ramp Rate, Time
PtYP	Profile Type [22008] : Set Point, Process
gSE	Guaranteed Soak Enable [22006] : Off, On
gSd1	Guaranteed Soak Deviation 1 [22007] : 0 to 9,999.000
gSd2	Guaranteed Soak Deviation 2 [22041] : 0 to 9,999.000
gSd3	Guaranteed Soak Deviation 3 [22042] : 0 to 9,999.000
gSd4	Guaranteed Soak Deviation 4 [22043] : 0 to 9,999.000
CMtE	Control Mode Enable [22039] : Off, On
WFM	Wait for Mode [22040] : Once, Complete
SFnA	Source Function A (Wait Event Input 1) [22022] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable
SiA	Source Instance A [22026] : 1 to 250
SZA	Source Zone A [22030] : 0 to 24
SFnb	Source Function B (Wait Event Input 2) [22023] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable
Sib	Source Instance B [22027] : 1 to 250
SZb	Source Zone B [22031] : 0 to 24
SFnC	Source Function C (Wait Event Input 3) [22024] : NNone, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable
SiC	Source Instance C [22028] : 1 to 250
SZC	Source Zone C [22032] : 0 to 24
SFnd	Source Function D (Wait Event Input 4) [22025] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable
Sid	Source Instance D [22029] : 1 to 250
SZd	Source Zone D [22033] : 0 to 24
SFnE	Source Function E (Wait Analog 1) [22056] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable
SiE	Source Instance E [22060] : 1 to 250
SZE	Source Zone E [22064] : 0 to 24
SFnF	Source Function F (Wait Analog 2) [22057] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable
SiF	Source Instance F [22061] : 1 to 250
SZF	Source Zone F [22065] : 0 to 24
SFng	Source Function G (Wait Analog 3) [22058] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable
Sig	Source Instance G [22062] : 1 to 250
SZg	Source Zone G [22066] : 0 to 24
SFnh	Source Function H (Wait Analog 4) [22059] : None, Analog Input, Current, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Set Point Closed, Set Point Open, Variable
Sih	Source Instance H [22063] : 1 to 250
SZh	Source Zone H [22067] : 0 to 24

	Parameter Name [Parameter ID] : Range or Choices
P.Str	Profile Start [22001] : 1 to 25
P.ACr	Profile Action Request [22011] : None, Profile, Pause, Resume, Terminate
StP	Current Step [22004] : 0 to 250
SUbS	Current Subroutine Step [22055] : 0 to 150
StYP	Current Step Type [22013] : Unused Step, Soak, Wait For, Wait for Time, State, Subroutine Step, Jump, End, Time, Ramp Rate
tSP1	Target Set Point Loop 1 [22012] :
tSP2	Target Set Point Loop 2 [22048] :
tSP3	Target Set Point Loop 3 [22049] :
tSP4	Target Set Point Loop 4 [22050] :
P.SP1	Produced SP 1 [22005] : -1,999.000 to 9,999.000
P.SP2	Produced SP 2 [22051] : -1,999.000 to 9,999.000
P.SP3	Produced SP 3 [22052] : -1,999.000 to 9,999.000
P.SP4	Produced SP 4 [22053] : -1,999.000 to 9,999.000
hoUr	Hours (Step Time Remaining) [22078] : 0 to 99 hours
Min	Minutes (Step Time Remaining) [22077] : 0 to 59 minutes
SEC	Seconds (Step Time Remaining) [22076] : 0 to 59 seconds
Ent1	Event (State Output) 1 [22014] : Off, On
Ent2	Event (State Output) 2 [22015] : Off, On
Ent3	Event (State Output) 3 [22016] : Off, On
Ent4	Event (State Output) 4 [22017] : Off, On
Ent5	Event (State Output) 5 [22018] : Off, On
Ent6	Event (State Output) 6 [22019] : Off, On
Ent7	Event (State Output) 7 [22020] : Off, On
Ent8	Event (State Output) 8 [22021] : Off, On
JC	Jump Count Remaining [22010] : 0 to 9,999

Current File [22003] : 0 to 25
Profile State [22002] : Off, Running, Pause
Produced Control Mode 1 [22044] : Off, Auto, Manual
Produced Control Mode 2 [22045] : Off, Auto, Manual
Produced Control Mode 3 [22046] : Off, Auto, Manual
Produced Control Mode 4 [22047] : Off, Auto, Manual
Wait for Event Value 1 [22034] : Off, On
Wait for Event Value 2 [22035] : Off, On
Wait for Event Value 3 [22036] : Off, On
Wait for Event Value 4 [22037] : Off, On
Wait for Analog Source Value 1 [22068] : -1,999.000 to 9,999.000
Wait for Analog Source Value 2 [22069] : -1,999.000 to 9,999.000
Wait for Analog Source Value 3 [22070] : -1,999.000 to 9,999.000
Wait for Analog Source Value 4 [22071] : -1,999.000 to 9,999.000
Current Time of Day [22074] : 0 to 86399
Current Day of Week [22075] : Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

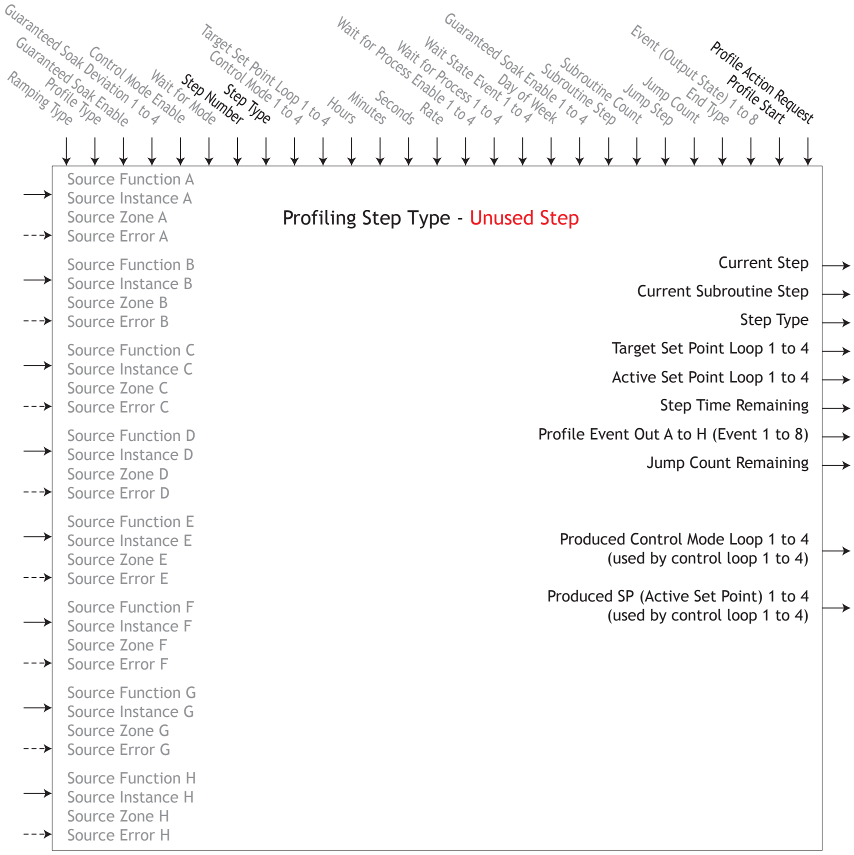
Profile (cont.)

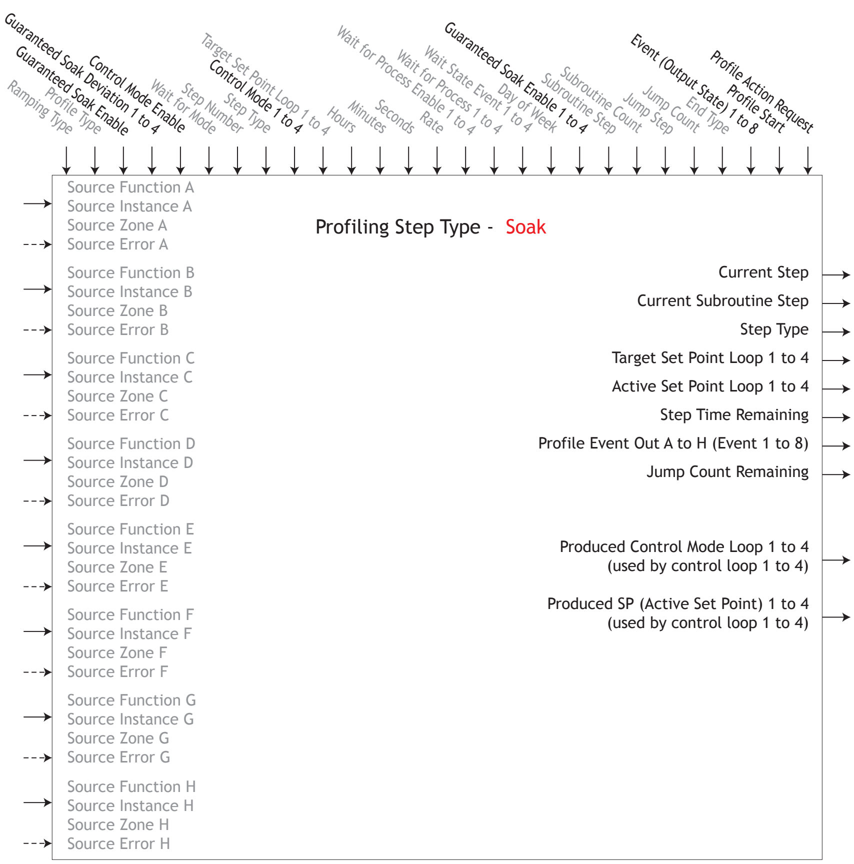
P_ Profile Menu
ProF Profiling Page

	Parameter Name [Parameter ID] : Range or Choices
StPt	Step Number [21001] : 1 to 250
StYP	Step Type [21001] : Unused Step, Soak, Wait For, Wait for Time, State, Subroutine Step, Jump, End, Time, Ramp Rate
CM1	Control Mode Loop 1 [21024] : Off, Auto, Manual
CM2	Control Mode Loop 2 [21025] : Off, Auto, Manual
CM3	Control Mode Loop 3 [21026] : Off, Auto, Manual
CM4	Control Mode Loop 4 [21027] : Off, Auto, Manual
tSP1	Target Set Point Loop 1 [21002] : -1,999.000 to 9,999.000
tSP2	Target Set Point Loop 2 [21028] : -1,999.000 to 9,999.000
tSP3	Target Set Point Loop 3 [21029] : -1,999.000 to 9,999.000
tSP4	Target Set Point Loop 4 [21030] : -1,999.000 to 9,999.000
hoUr	Hours [21003] : 0 to 99
Min	Minutes [21004] : 0 to 59
SEC	Seconds [21005] : 0 to 59
rAtE	Rate [21006] : 0 to 9,999.000
P.E1	Step Wait For Process Enable 1 [21036] : Off, Greater Than, Less Than
P.E2	Step Wait For Process Enable 2 [21037] : Off, Greater Than, Less Than
P.E3	Step Wait For Process Enable 3 [21038] : Off, Greater Than, Less Than
P.E4	Step Wait For Process Enable 4 [21039] : Off, Greater Than, Less Than
wP1	Wait For Process 1 [21011] : -1,999.000 to 9,999.000
wP2	Wait For Process 2 [21031] : -1,999.000 to 9,999.000
wP3	Wait For Process 3 [21032] : -1,999.000 to 9,999.000
wP4	Wait For Process 4 [21033] : -1,999.000 to 9,999.000
wE.1	Wait Event 1 [21009] : None, Off, On
wE.2	Wait Event 2 [21010] : None, Off, On
wE.3	Wait Event 3 [21022] : None, Off, On
wE.4	Wait Event 4 [21024] : None, Off, On
dow	Day of Week [21041] : Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Week Days, Every Day
gSE1	Guaranteed Soak Enable 1 [21042] : Off, On
gSd2	Guaranteed Soak Enable 2 [21043] : Off, On
gSd3	Guaranteed Soak Enable 3 [21044] : Off, On
gSd4	Guaranteed Soak Enable 4 [21045] : Off, On
SS	Subroutine Step [21034] : 1 to 15
SC	Subroutine Count [21035] : 1 to 9,999
JS	Jump Step [21012] : 1 to 250
JC	Jump Count [21013] : 0 to 9,999
End	End Type [21014] : Off, Hold, User
Ent1	Event 1 [21007] : Off, On, Unchanged
Ent2	Event 2 [21008] : Off, On, Unchanged
Ent3	Event 3 [21016] : Off, On, Unchanged
Ent4	Event 4 [21017] : Off, On, Unchanged
Ent5	Event 5 [21018] : Off, On, Unchanged
Ent6	Event 6 [21019] : Off, On, Unchanged
Ent7	Event 7 [21020] : Off, On, Unchanged
Ent8	Event 8 [21021] : Off, On, Unchanged

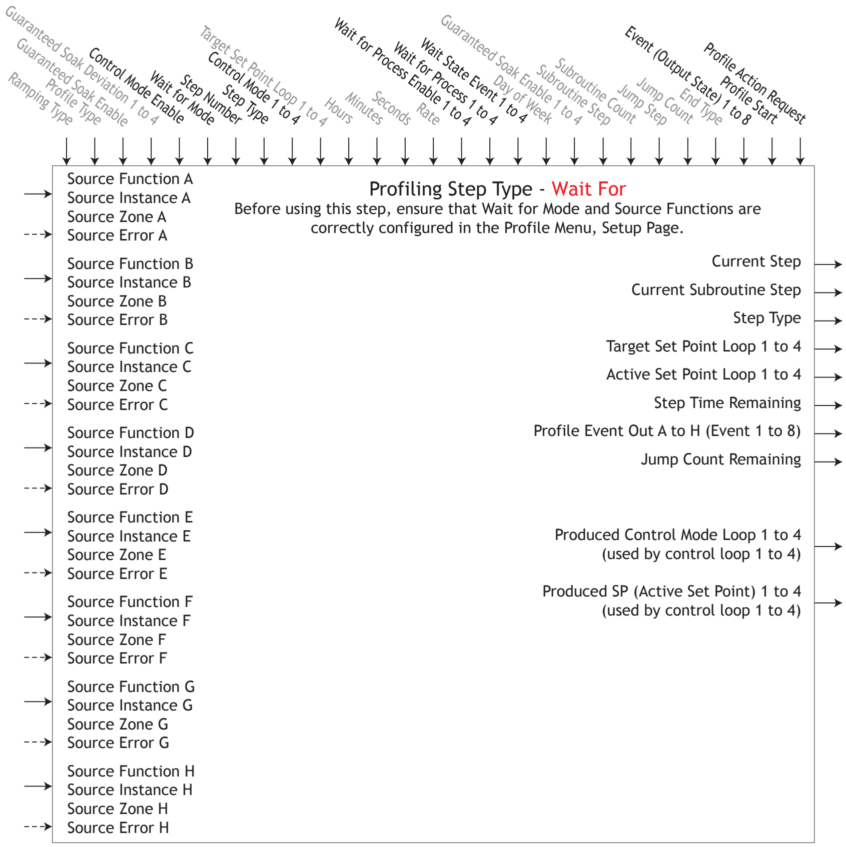
Before creating profiles, ensure that Profile Enable is set to Yes (Control Loop Menu, Setup Page) for any loop to include in profiles. Also, Control Mode Enable must be set to ON (Profile Menu, Setup Page) to allow control mode to be changed within the profile.

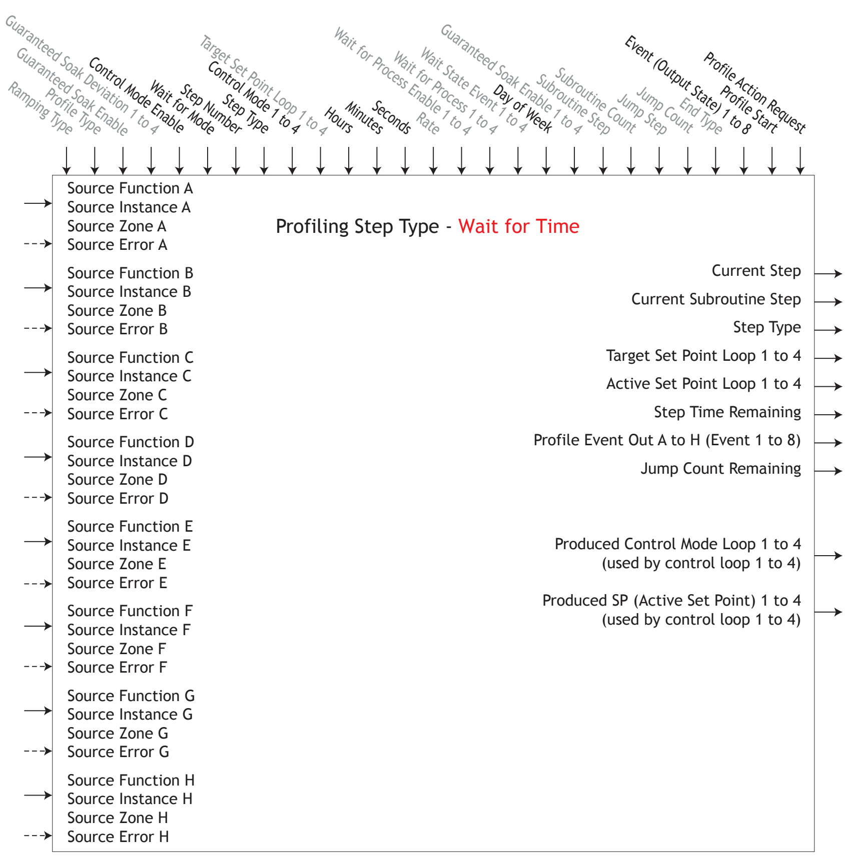
Profile (cont.)



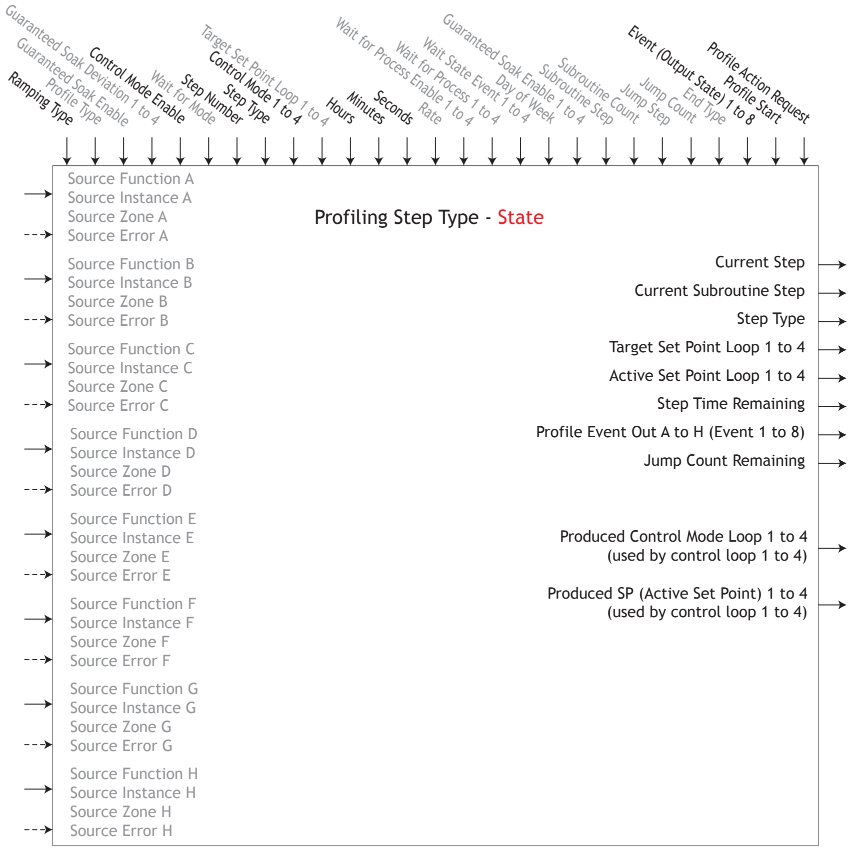


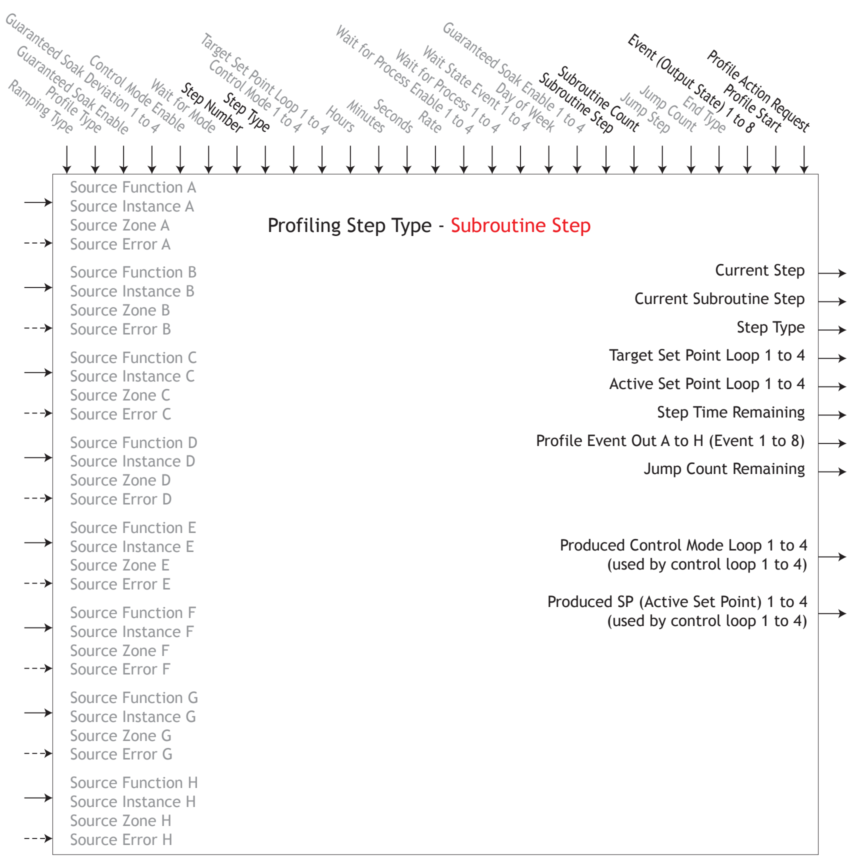
Profile (cont.)



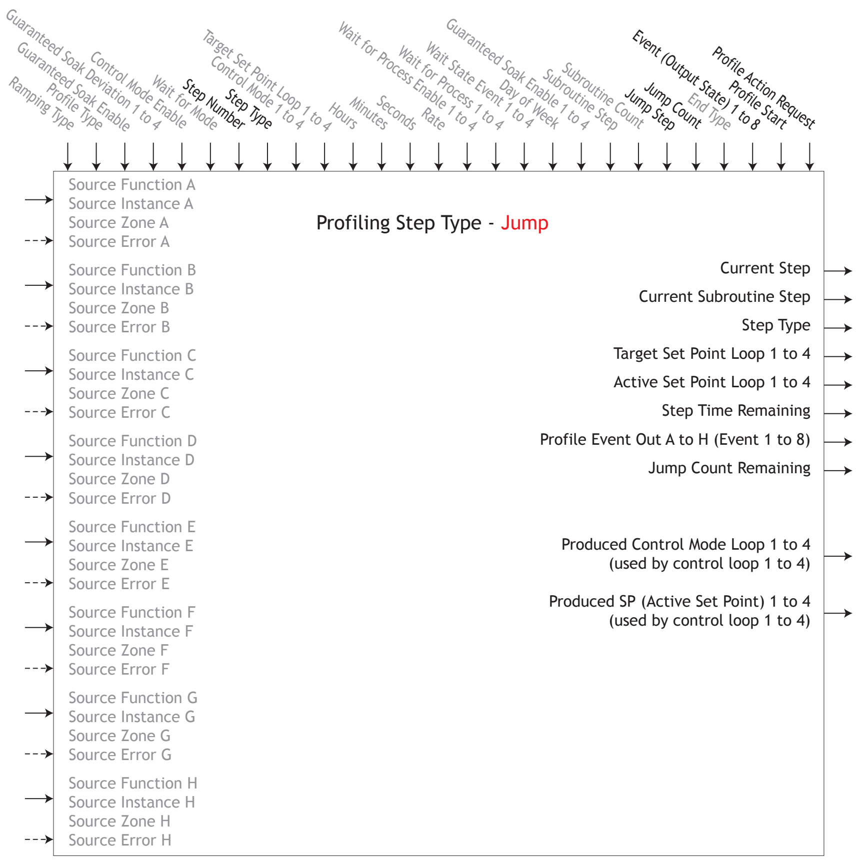


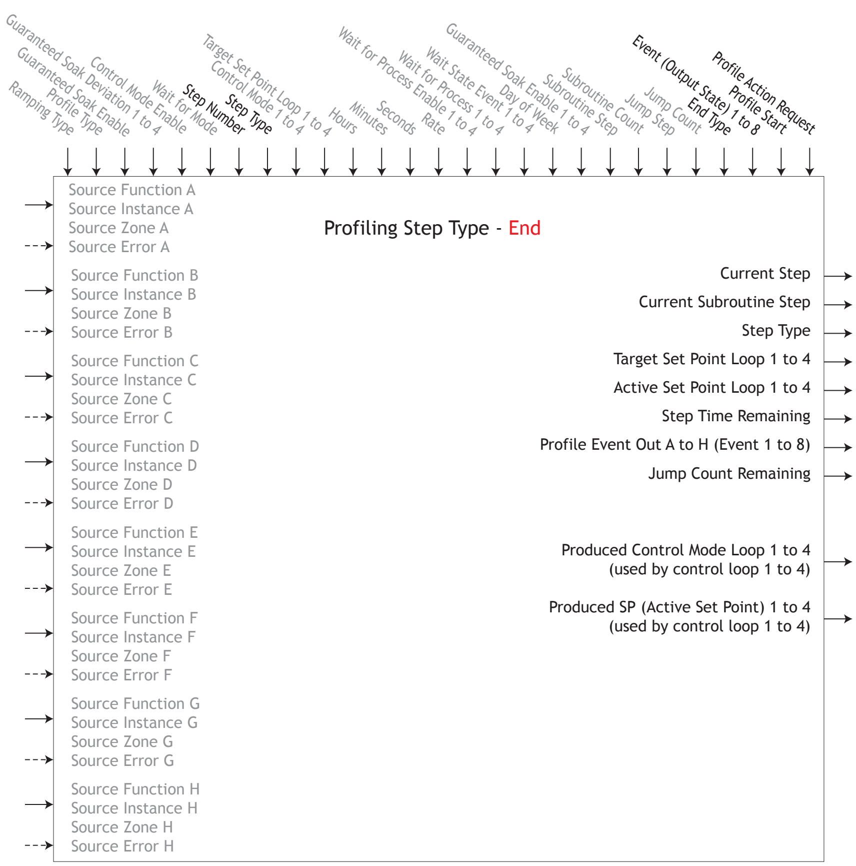
Profile (cont.)



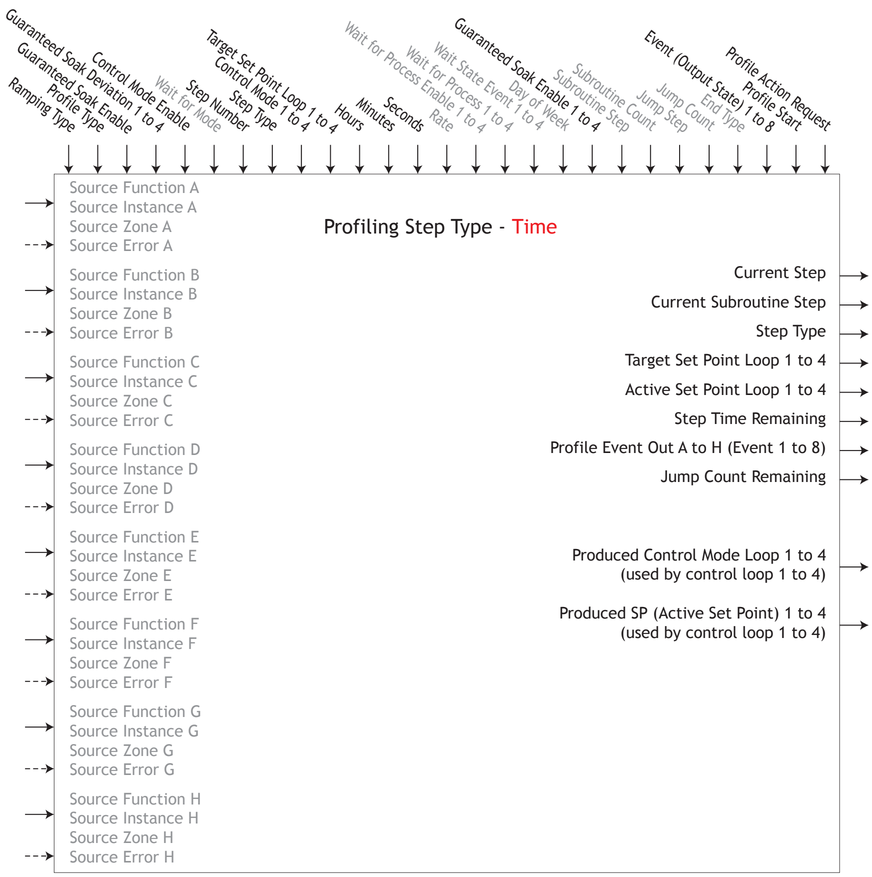


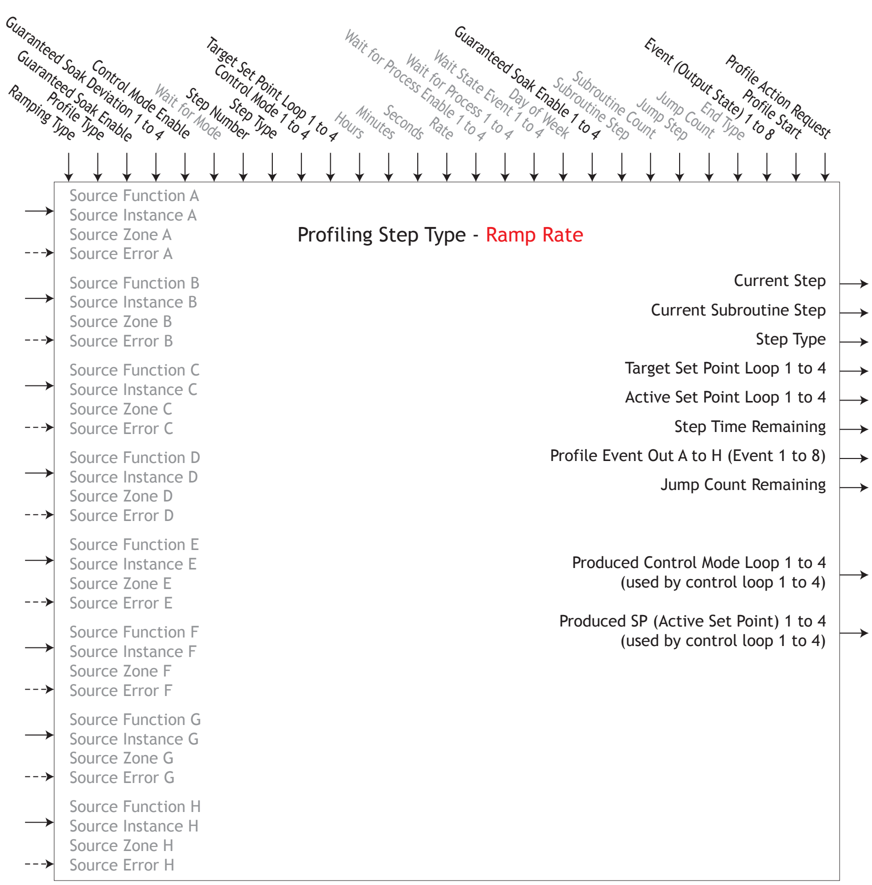
Profile (cont.)





Profile (cont.)

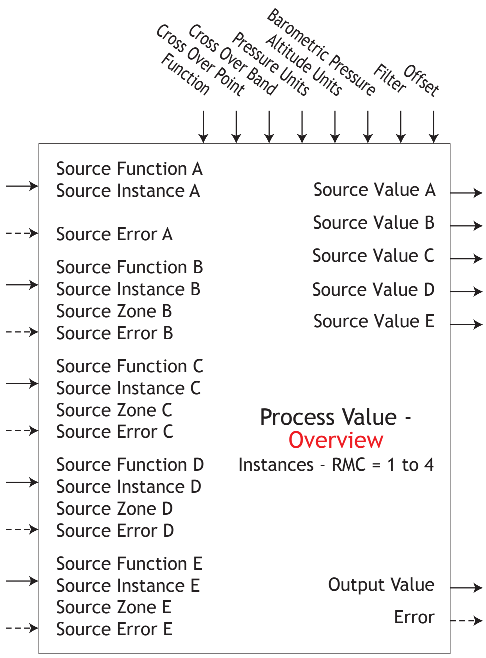




Process Value Function

The Process Value (PV) function block accepts multiple inputs and performs a programmed math function to derive an output value with Filter and Offset values applied. It is assumed that no input error conditions apply. Some PV operations must be performed in the user's units. Functions may combine multiple inputs. Those inputs may have incompatible units from a logical point of view. As a result, unless otherwise indicated, the presentation of the output value is the same as Source A. This accommodates temperatures being multiplied, divided and offset by constants and process inputs. Only inputs pointed to a source are used in the calculations.

- Error [26027] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale



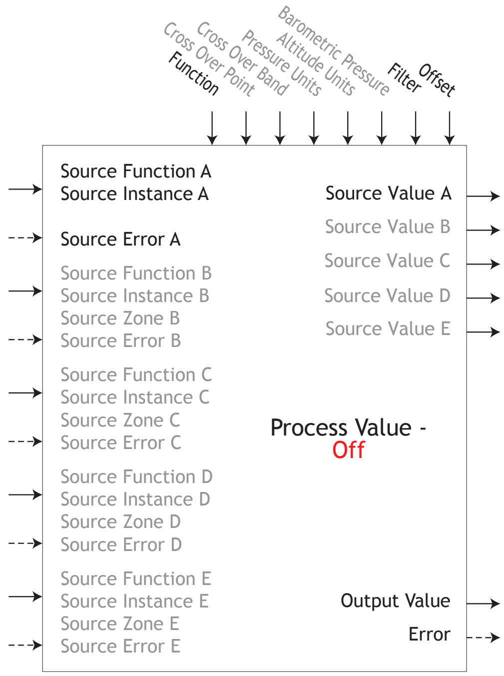
Pu Process Value Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [26021] : Off, Sensor Backup, Average, Crossover, Wet Bulb/Dry Bulb, Switch Over, Differential, Ratio, Add, Multiply, Absolute Difference, Minimum, Maximum, Square Root, Vaisala RH Compensation, Pressure to Altitude
SFn.A	Source Function A [26001] : None, Analog Input, Linearization, Math, Process Value, Variable
S iA	Source Instance A [26006] : 1 to 4
SFn.b	Source Function B [26002] : None, Analog Input, Linearization, Math, Process Value, Variable
S ib	Source Instance B [26007] : 1 to 250
SZ.b	Source Zone B [26012] : 0 to 24
SFn.C	Source Function C [26003] : None, Analog Input, Linearization, Math, Process Value, Variable
S iC	Source Instance C [26008] : 1 to 250
SZ.C	Source Zone C [26013] : 0 to 24
SFn.d	Source Function D [26004] : None, Analog Input, Linearization, Math, Process Value, Variable
S id	Source Instance D [26009] : 1 to 250
SZ.d	Source Zone D [26014] : 0 to 24
SFn.E	Source Function E [26005] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Timer, Variable
S iE	Source Instance E [26010] : 1 to 250
SZ.E	Source Zone E [26015] : 0 to 24
C.P	Cross Over Point [26024] : -1,999.000 to 9,999.000
C.b	Cross Over Band [26025] : -1,999.000 to 9,999.000
P.unt	Pressure Units [26028] : PSI, Torr, mBar, Atmosphere, Pascal
A.unt	Altitude Units [26029] : Feet, Kilofeet
b.Pr	Barometric Pressure [26030] : 10.0 to 16.0
F iL	Filter [26026] : 0.0 to 60.0 seconds

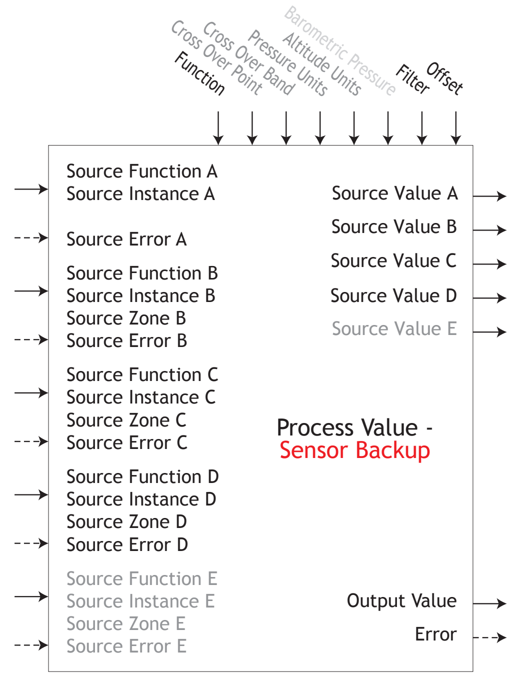
Pu Process Value Menu
oPEr Operations Page

Su.A	Source Value A [26016] : -1,999.000 to 9,999.000
Su.b	Source Value B [26017] : -1,999.000 to 9,999.000
Su.C	Source Value C [26018] : -1,999.000 to 9,999.000
Su.d	Source Value D [26019] : -1,999.000 to 9,999.000
Su.E	Source Value E [26020] : Off, On
o.u	Offset [26023] : -1,999.000 to 9,999.000
oFSt	Output Value [26022] : -1,999.000 to 9,999.000

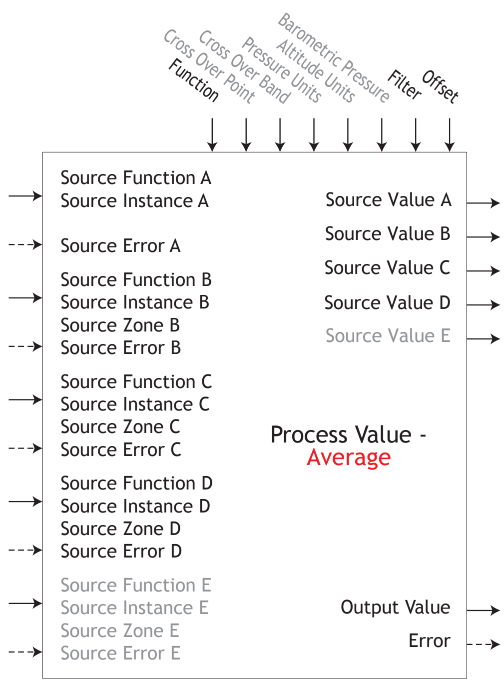
Process Value (cont.)



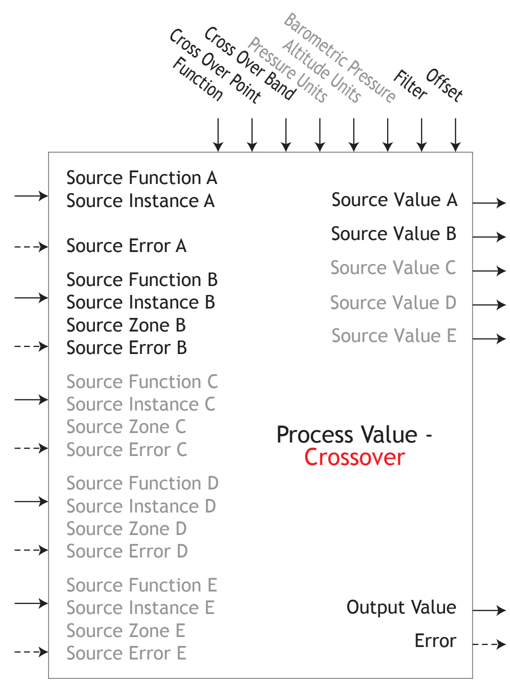
Output Value = Filter [A + Offset]
Display units follows Source A



Output Value = Filter [first assigned Source without an error + Offset]

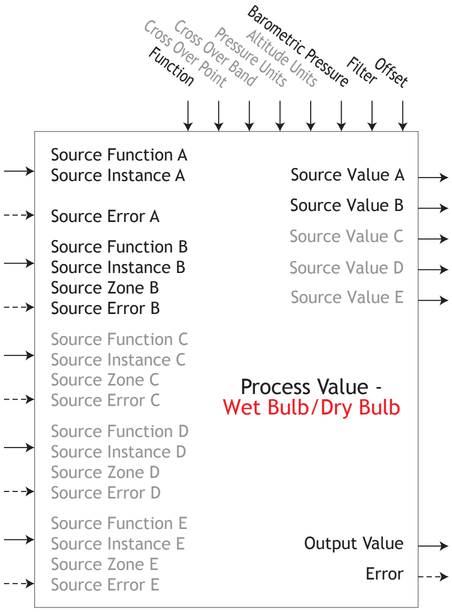


Output Value = Filter [(Average (A + B + C + D)) + Offset]
Display units follows the last source that is temperature else follow Source A

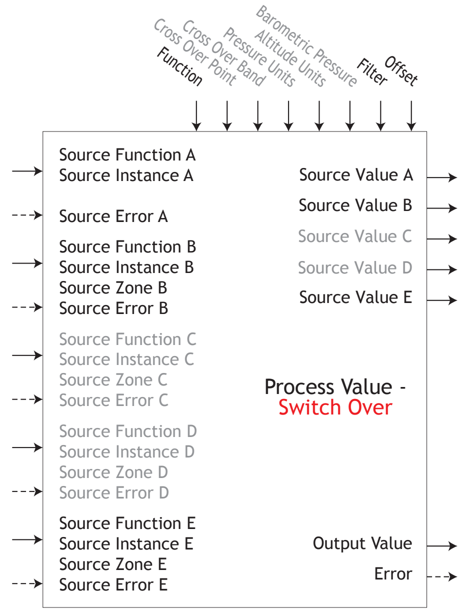


If A <= Cross Over Point - (Cross Over Band / 2) THEN Output Value = Filter [(A + Offset)]
If A >= Cross Over Point + (Cross Over Band / 2) THEN Output Value = Filter[(B + Offset)]
Output Value = Filter [((A * X) + (B * (1-X))) + Offset]
Where variable X = (Cross Over Point + (Cross Over Band / 2) - A) / Cross Over Band

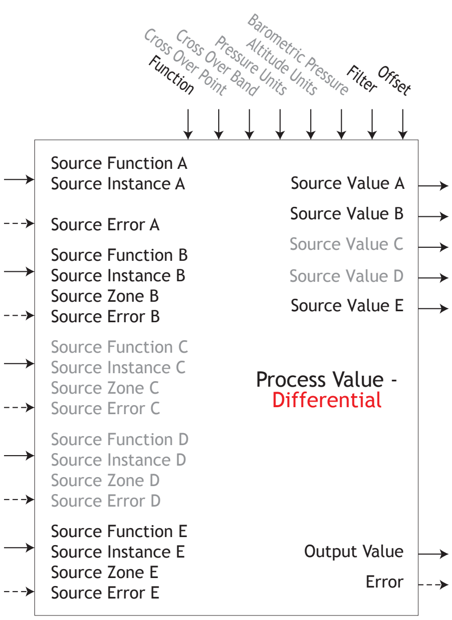
Process Value (cont.)



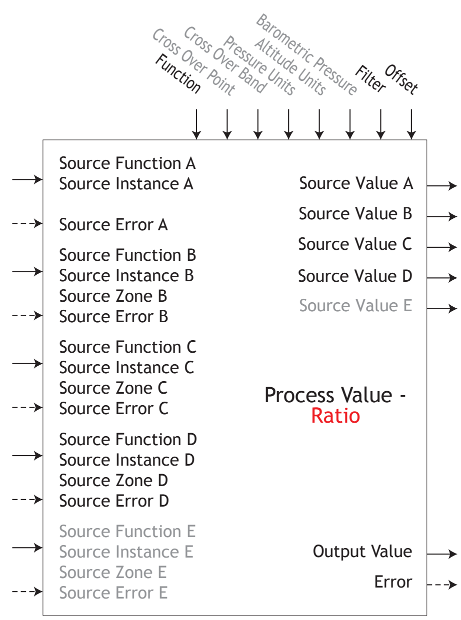
Output Value = Filter [Calculated Humidity + Offset] where Source A is the Dry Bulb and Source B is the Wet Bulb
Note: Wet/Dry bulb temperatures are in degrees F and pressures are in PSI. Output Value is % relative humidity. Useful temperature range is 10 to 350F



If B = OFF, Output Value = Filter [A + Offset]
If B = ON, Output Value = Filter [B + Offset]
Display units follows active source.

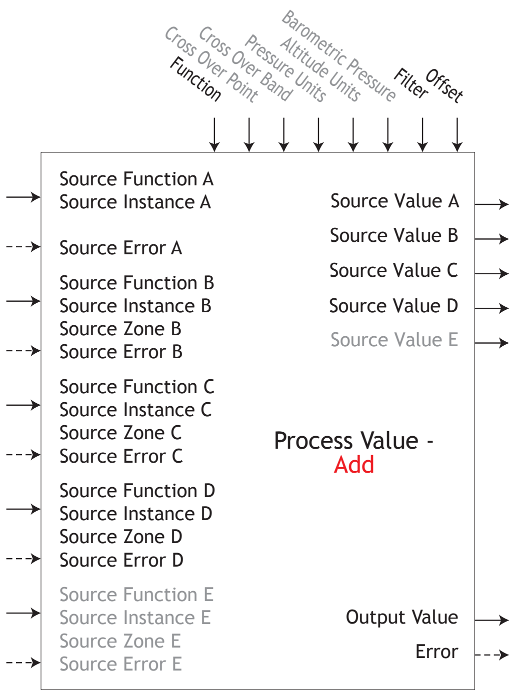


Output Value = Filter [(A - B) + Offset]
Display units follows Source A plus relative Source B

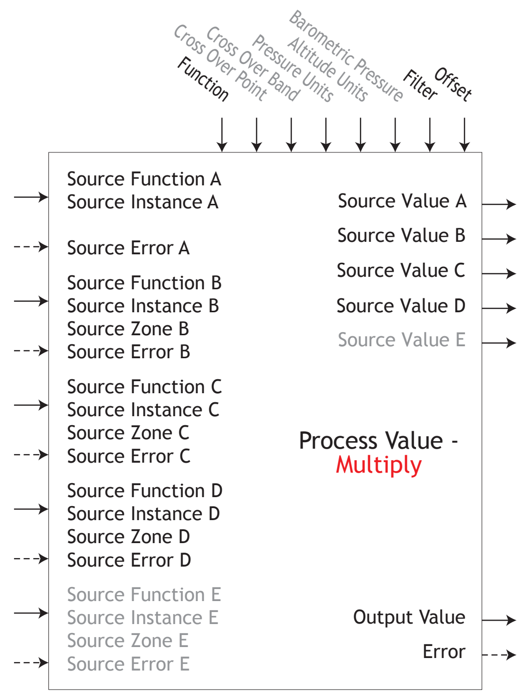


Output Value = Filter [(A / B) + Offset]
If display units of Source A = Source B, no display units on output value, else follow Source A

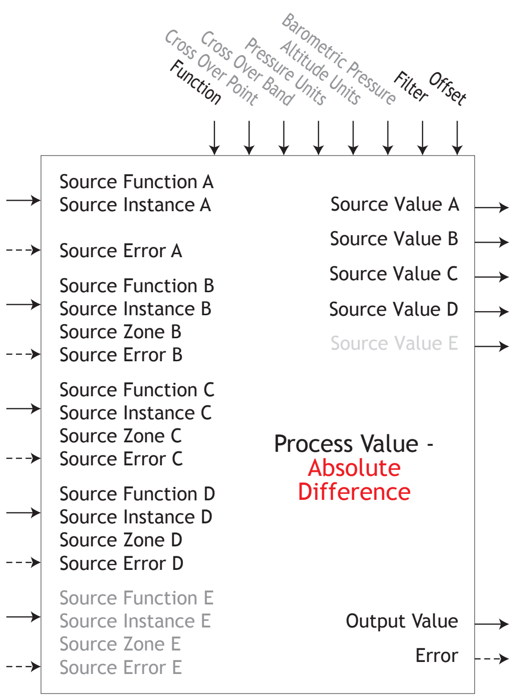
Process Value (cont.)



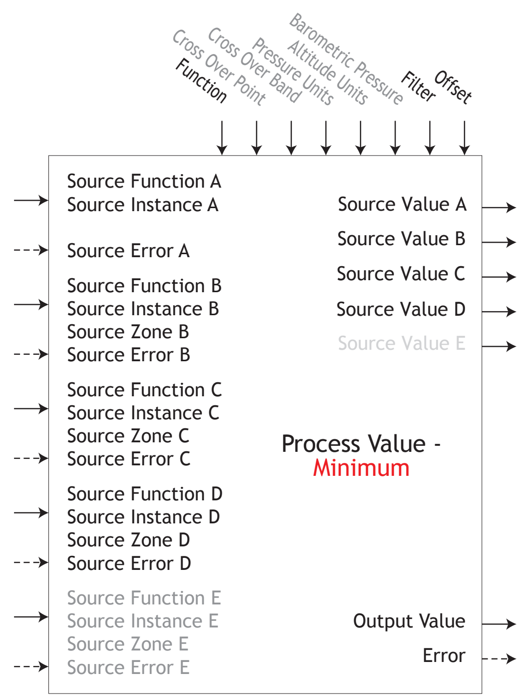
Output Value = Filter [(A + B + C + D) + Offset]
Display units follows last temperature source else follow Source A



Output Value = Filter [(A * B * C * D) + Offset]
Display units follows last temperature source else follow Source A

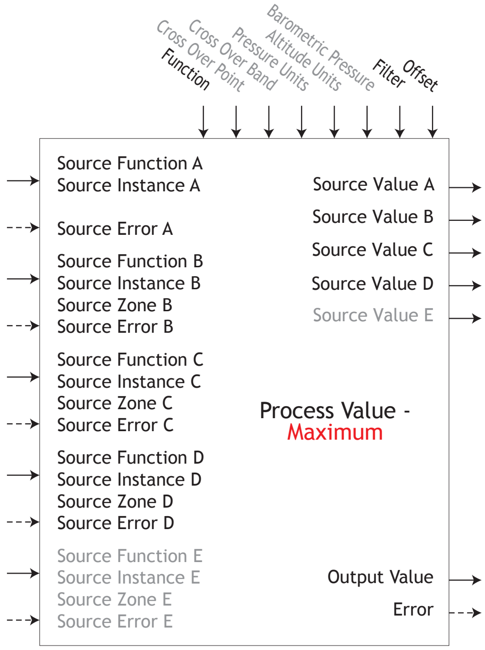


Output Value = Filter [| A - B | + Offset]
Display units follow Source A plus relative Source B

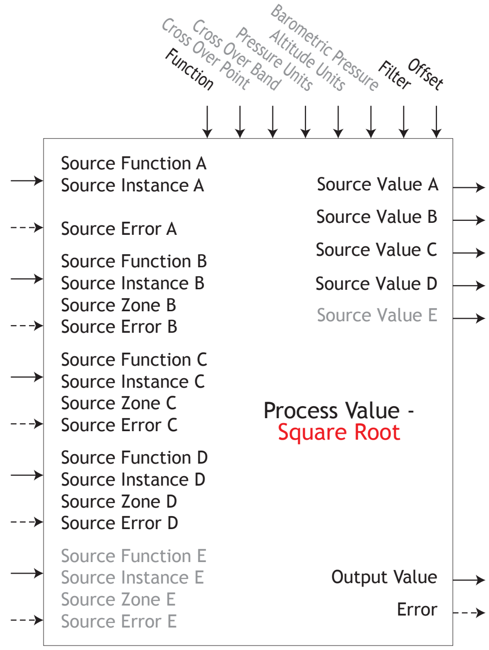


Output Value = Filter [Minimum Value (A : B : C : D) + Offset]
Display units follows Source with minimum value.

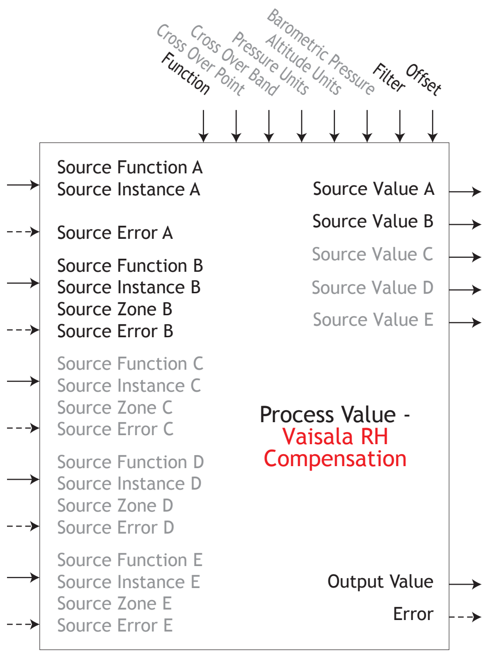
Process Value (cont.)



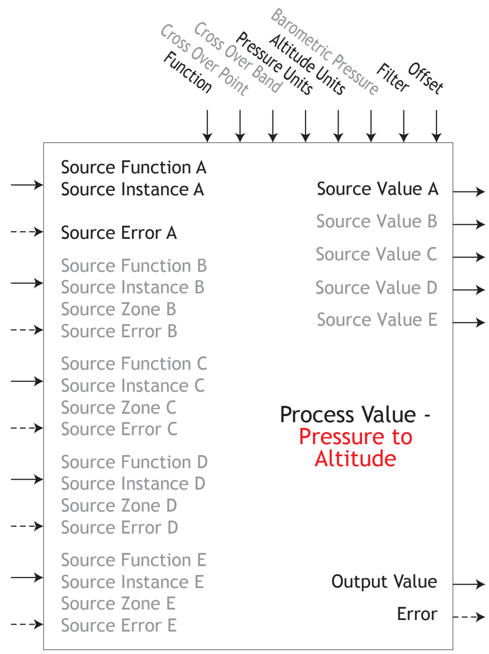
Output Value = Filter [Maximum Value (A : B : C : D) + Offset]
Display units follows Source with maximum value.



Output Value = Filter [Sqr Root A + Offset]
Display units follows Source A



Output Value = Filter [Calculated RH compensated for temperature + Offset].
Note: Source A is RH measured value from an uncompensated Vaisala RH sensor. Source B is temperature of the RH sensor in degrees F. The result is a "corrected" RH measured value. This calculation is effective over the temperature range of -75F to 350F.

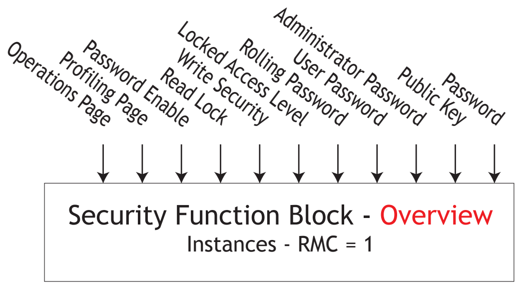


Output Value = Filter [Convert Source A in Pressure to Altitude + Offset]

Note: Pressure Altitude calculation is based on the International Standard Atmosphere 1976. Source A is a pressure signal and needs to be in PSI units for the calculation. The calculation is accurate from sea level to 90,000 feet. The standard is based on an altitude of 0 feet (sea level) pressure of 14.6967 PSI and a temperature of 59 degrees F. Result of calculation is in feet.

Security Function

If Password is enabled, the user must enter the Password to get to menus that have been blocked due to lock level settings. Rolling passwords required a new password each time the power has been cycled to the controller. It will be different for every controller. The administrator password is required to change the security settings even if the user enters their password to override the security settings.



LoC Lock Menu
FAct Factory Page

	Parameter Name [Parameter ID] : Range or Choices
LoC.o	Operations Page [3002] : 1 to 3
LoC.P	Profiling Page [3008] : 1 to 3
PAS.E	Password Enable [3015] : Off, On
r.LoC	Read Lock [3010] : 1 to 5
S.LoC	Write Security [3011] : 1 to 5
LoC.L	Locked Access Level [3016] : 1 to 5
roL.L	Rolling Password [3019] : Off, On
PAS.u	User Password [3017] : 10 to 999
PAS.A	Administrator Password [3018] : 10 to 999

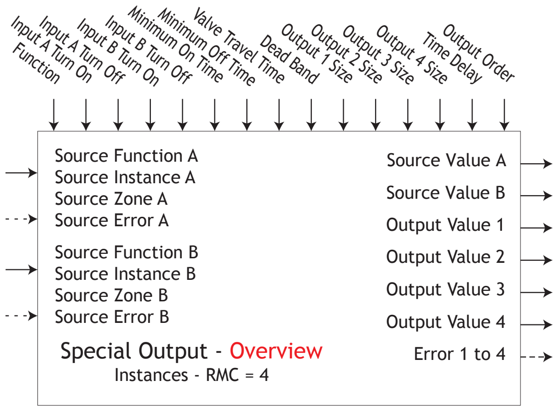
ULoC Unlock Menu
FAct Factory Page

CodE	Public Key [3020] : 0 to 9999
PASS	Password [3022] : 10 to 999

Special Output Function

This function is used to configure outputs when used with compressors, motorized valves or sequencers.

- Error 1 [35011], Error 2 [35013], Error 3 [35015], Error 4 [35017] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale



SoF Special Output Function Menu
SEt Setup Page

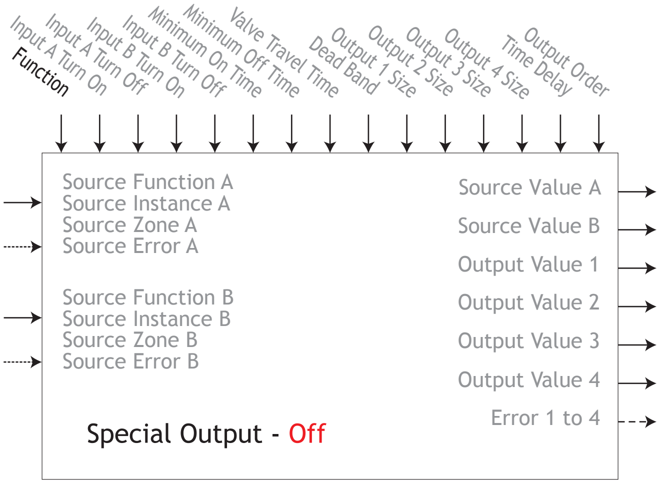
	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [35009] : Off, Compressor Control, Motorized Valve, Sequencer
SFn.A	Source Function A [35001] : None, Analog Input, Cool Power, Heat Power, Power, Linearization, Math, Process Value, Special Function Output 1, Variable
S i.A	Source Instance A [35003] : 1 to 250
S2.A	Source Zone A [35005] : 0 to 24
SFn.b	Source Function B [35002] : None, Cool Power, Heat Power, Power, Linearization, Math, Variable
S i.b	Source Instance B [35004] : 1 to 250
S2.b	Source Zone B [35006] : 0 to 24
Pon.A	Input A Turn On [35018] : -100.0 to 100.0 %
PoF.A	Input A Turn Off [35019] : -100.0 to 100.0 %
Pon.b	Input B Turn On [35020] : -100.0 to 100.0 %
PoF.b	Input B Turn Off [35021] : -100.0 to 100.0 %
on.t	Minimum On Time [35022] : 0 to 9,999 seconds
oF.t	Minimum Off Off Time [35023] : 0 to 9,999 seconds
t.t	Valve Travel Time [35024] : 10 to 9,999 seconds
db	Dead Band [35025] : 1.0 to 100.0 %
o.S1	Output 1 Size [35028] : 0 to 9,999
o.S2	Output 2 Size [35029] : 0 to 9,999
o.S3	Output 3 Size [35030] : 0 to 9,999
o.S4	Output 4 Size [35031] : 0 to 9,999
t.dL	Time Delay [35026] : 0 to 9,999 seconds
ot.o	Output Order [35027] : Linear, Progressive

SoF Special Output Function Menu
oPEr Operations Page

Su.A	Source Value A [35007] : -1,999.000 to 9,999.000
Su.b	Source Value B [35008] : -1,999.000 to 9,999.000
o.u1	Output Value 1 [35010] : -1,999.000 to 9,999.000 %
o.u2	Output Value 2 [35012] : -1,999.000 to 9,999.000 %
o.u3	Output Value 3 [35014] : -1,999.000 to 9,999.000 %
o.u4	Output Value 4 [35016] : -1,999.000 to 9,999.000 %

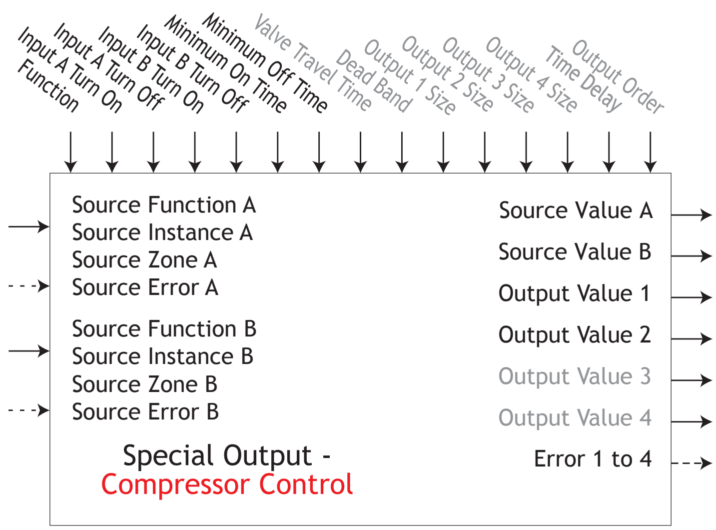
Special Output (cont.)

OFF



Compressor

Compressor Control is not typically used to control an application's process value directly. Rather these parameters are used to allow one or two control loops to use a compressor, to switch on the compressor in anticipation of its use and to control cycling of the compressor to reduce wear.



A typical use scenario for compressor control is for cooling and/or dehumidification. The application may have one or two loops of control which utilize the compressor to accomplish the cooling and/or dehumidification (negative power levels). Because the compressor is a mechanical device, it is desirable to minimize starts and stops. Either loop can attempt to start or stop the compressor, but this algorithm will make the determination when it should or should not run. Because you may not turn the compressor off until the loop is in the heat or humidify region, the input values to the compressor algorithm must be loop power (+/-100%).

- Use Source Function A to select the type of function that will inform whether the compressor will soon be required for the first loop.
- Use Source Function B to select the type of function that will inform whether the compressor will soon be required for the second loop.
- Use Source Instance A and B and Source Zone A and B to select which source to use.
- Set Input A Turn On and Input A Turn Off to the Source A values that will switch the compressor on and off.
- Set Input B Turn On and Input B Turn Off to the Source B values that will switch the compressor on and off.

Special Output (cont.)

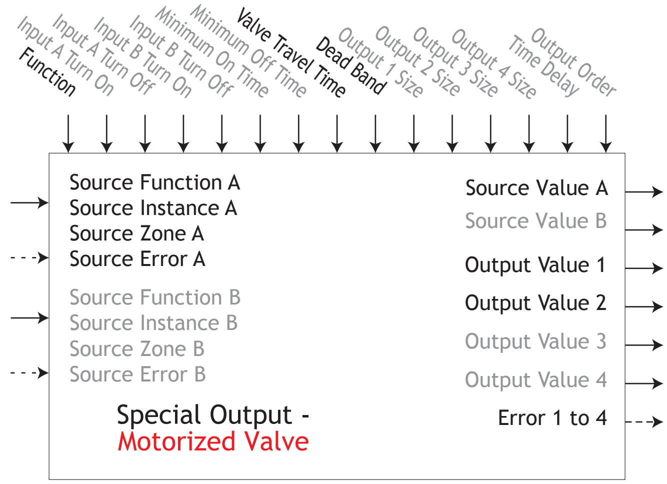
- Set Minimum On Time and Minimum Off Time to the minimum span of time, in seconds, that the compressor will be on or off.
- Set Time Delay to the maximum amount of time, in seconds, that the output to the compressor remains on while both inputs are 0%.

Motorized Valve

A motorized valve is used is to regulate the flow of fluid which in turn impacts the loop process value. A valve is closed via Output Value 1 or opened via Output Value 2 by closing contacts connected to these output values to drive the valve in the intended direction. This feature is configured by selecting Motorized Valve as the function (Setup Page, Special Output Function menu).

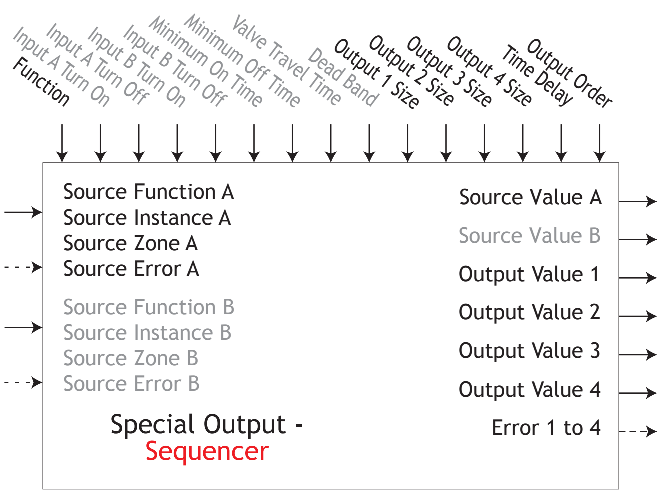
Lastly, program the outputs which will open and close the valve. The algorithm will calculate Dead Time which is the minimum on time that the valve will travel once it is turned on in either the closed or open direction. Dead Time = Valve Dead Band / 100 * Valve Travel Time.

- Source Function A is selected for either Heat or Cool Power then entering the Valve Travel Time and Deadband.



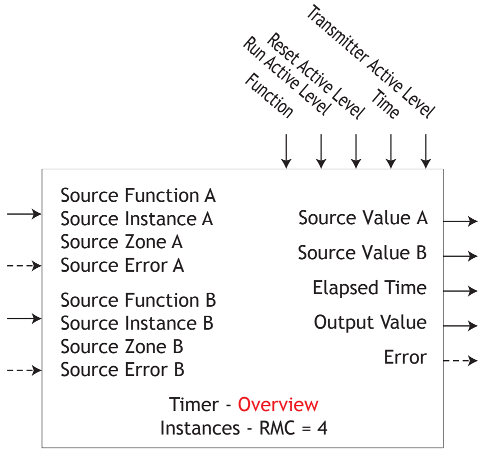
Sequencer

A sequencer takes a single input power signal and splits it up into multiple output signals. Each output represents a portion of the total output capacity. The primary output which is often referred to as the vernier output represents a larger portion of the total output capacity than any of the other outputs. The vernier output is always a proportional signal while the other outputs are ON/OFF.



Timer Function

- Error [31018] = None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale
- Running [31015] = Off, ON



tMr Timer Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
Fn	Function [31009] : Off, On Pulse, Delay, One Shot, Retentive
SFn.A	Source Function A [31001] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Special Function Output 1 to 4, Timer, Variable
S i.A	Source Instance A [31003] : 1 to 250
SZ.A	Source Zone A [31005] : 0 to 24
SAS.A	Run Active Level [31011] : High (rising), Low (falling)
SFn.b	Source Function B [31002] : None, Alarm, Compare, Counter, Digital I/O, Profile Event Out A to H, Function Key, Logic, Special Function Output 1 to 4, Timer, Variable
S i.b	Source Instance B [3104] : 1 to 250
SZ.b	Source Zone B [31006] : 0 to 24
SAS.b	Reset Active Level [31012] : High (rising), Low (falling)
t i	Time [31013] : 0.0 to 9,999.0 seconds
LEv	Active Level [31014] : High, Low

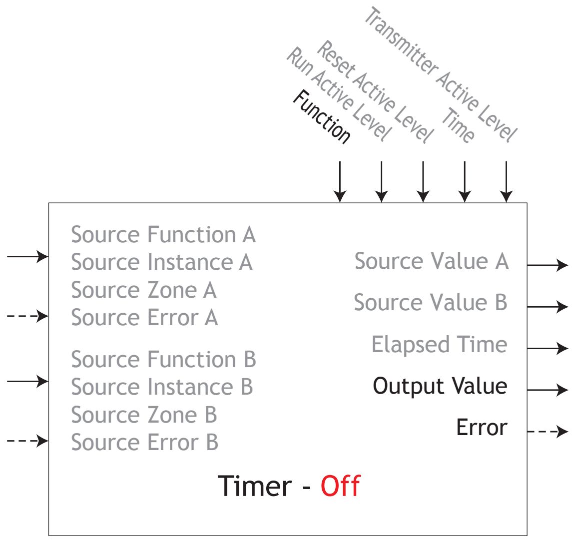
tMr Timer Menu
oPEr Operations Page

Sv.A	Source Value A [31007] : Off, On
Sv.b	Source Value B [31008] : Off, On
E.t	Elapsed Time [31016] : 0.0 to 9,999.0 seconds
o.v	Output Value [31010] : Off, On

Timer (cont.)

Off

Output Value = OFF

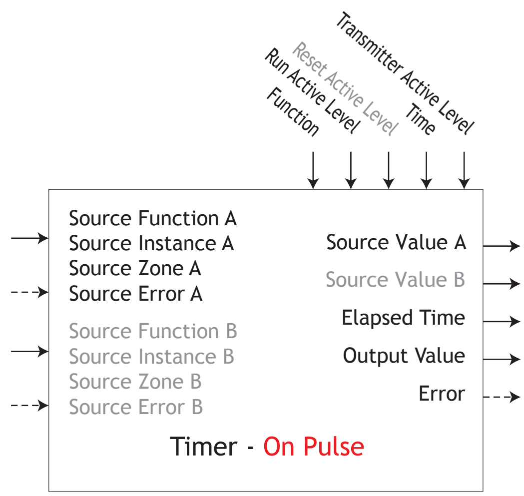


Timer (cont.)

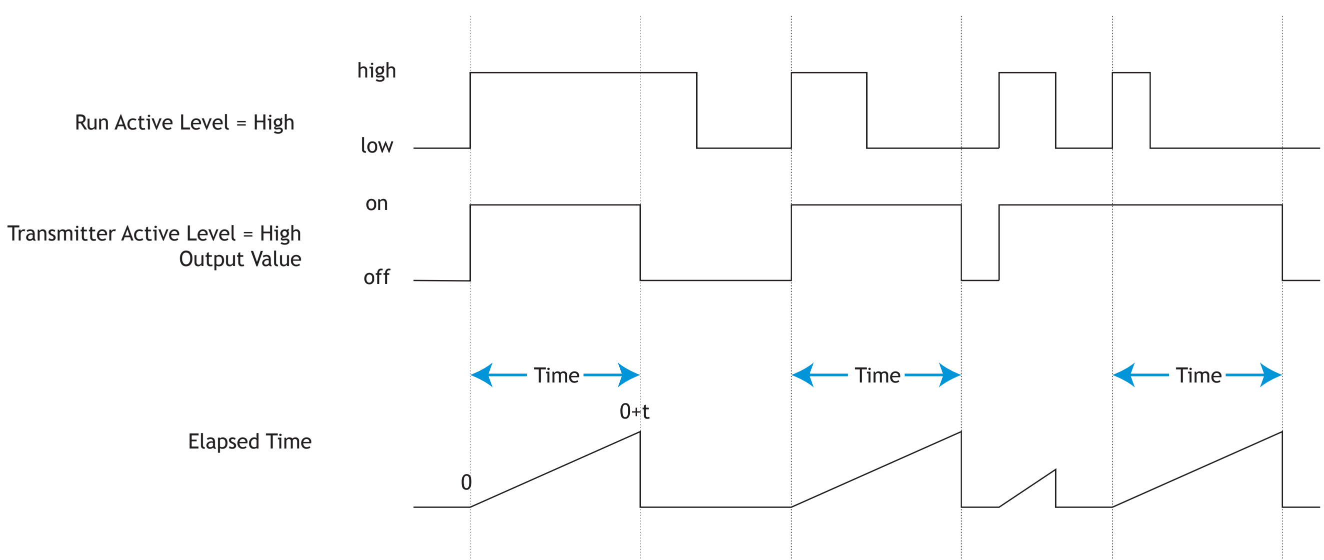
On Pulse

An On Pulse Timer is used to produce an output pulse of a constant duration. It can be used as a minimum on time for compressor control or other devices that do not want excessive cycling. Use Function to select On Pulse.

- On Pulse timers output a pulse of a set duration that is triggered or restarted by the level of Source A.
- Source Function A selects the type of source used for the input.
- Source Instance A and Source Zone A selects which source to use.
- Run Active Level sets which state makes the timer run or reset.
- Time sets the time duration of the output pulse.
- Transmitter Active Level sets which output state indicates the elapsed time is greater than or equal to the Time setting.



Timing Diagram of On Pulse with active state rising edge

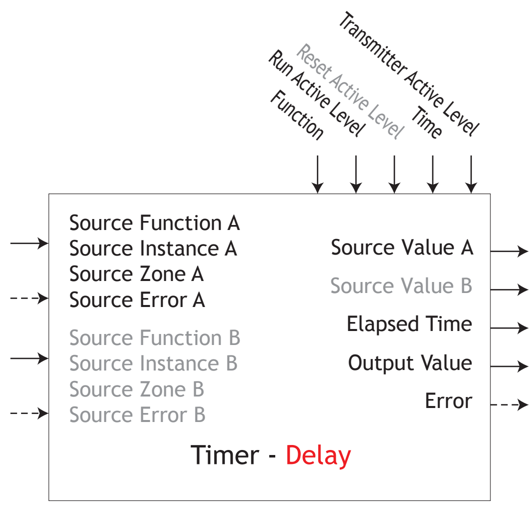


Timer (cont.)

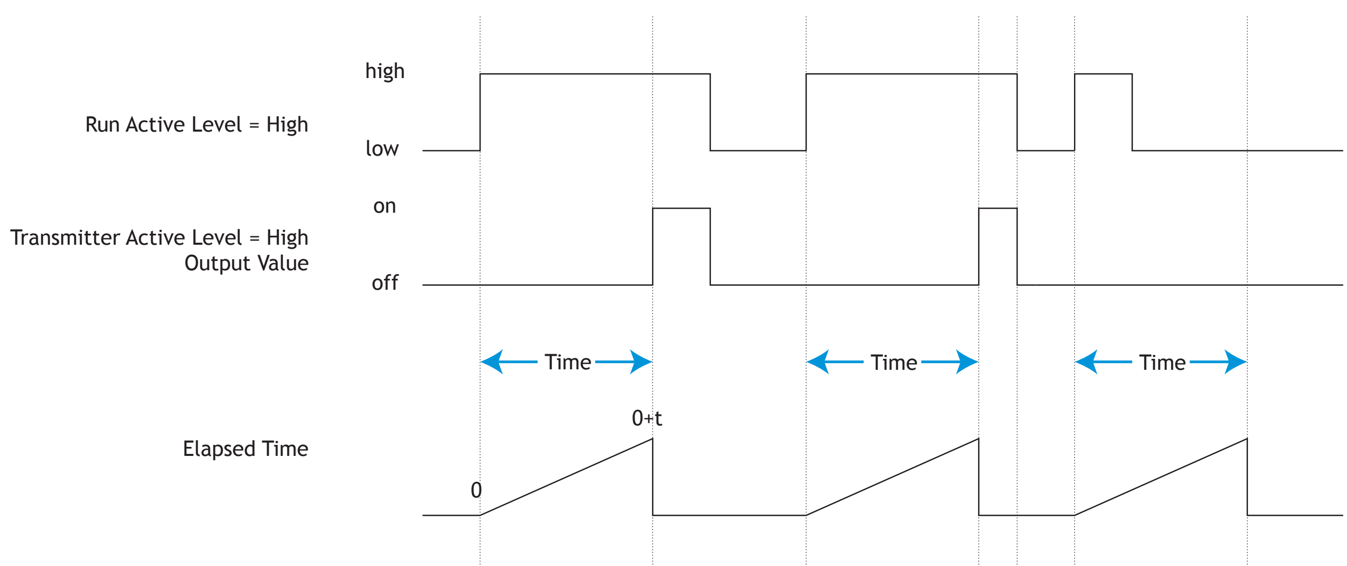
Delay

A delay timer is used to cause a delaying action. The delay can be made to happen on either the leading or trailing edge. This can be used to keep short input pulses from propagating or to have a secondary action occur at a known amount of time after the primary action; such as, turning on successive output devices.

- Use Function to select Delay.
- Delay timers will delay the response of a signal presented to Source A and then switch the output value.
- Source Function A selects the type of source used for the input.
- Source Instance A and Source Zone A selects which source to use.
- Run Active Level sets which state makes the timer run or reset.
- Overlap of run signal to time signal determines output value on time. If run signal is less than time signal, output does not activate.
- Transmitter Active Level sets which output state indicates the run time is greater than the Time setting.



Timing Diagram of Delay with active state rising edge

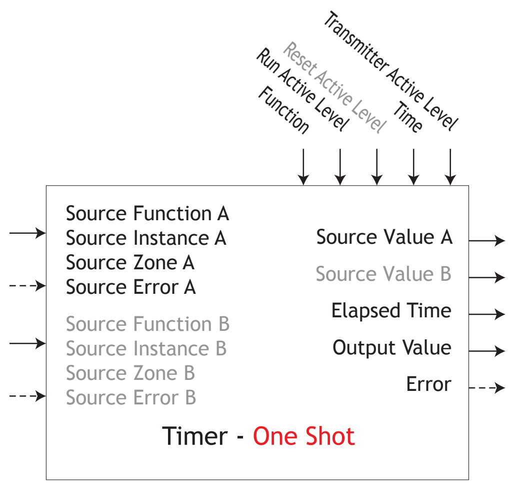


Timer (cont.)

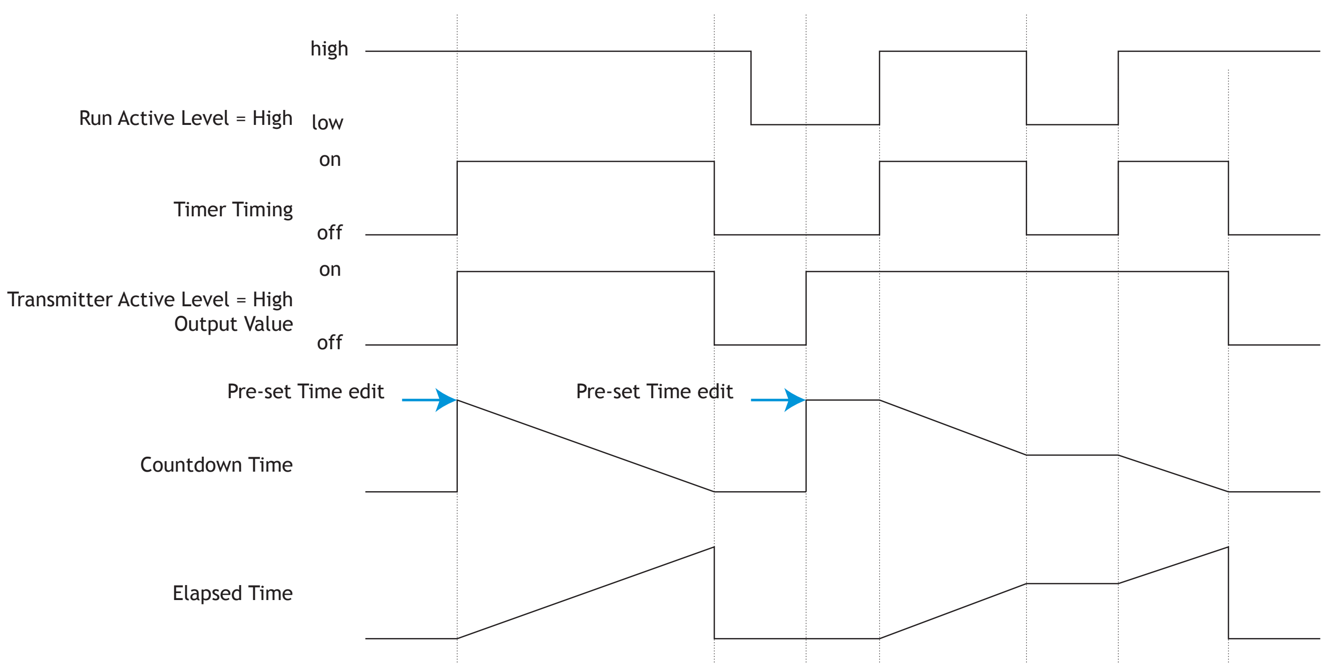
One Shot

The One Shot timer functions like a simple oven timer. The time value gets set by the user and it counts down to zero without retaining the original time (hence the name one-shot). This is intended to be used in applications where the user will manually set different times for each process.

- Use Function to select One Shot.
- One Shot timers count down while Source A is active; otherwise it holds. Preset of Time clears once time is elapsed.
- Source Function A selects the type of source used for the input.
- Source Instance A and Source Zone A selects which source to use.
- Run Active Level sets which state makes the timer count down.
- Transmitter Active Level sets which output state indicates the the timer is in countdown operation.



Timing Diagram of One Shot with active state rising edge

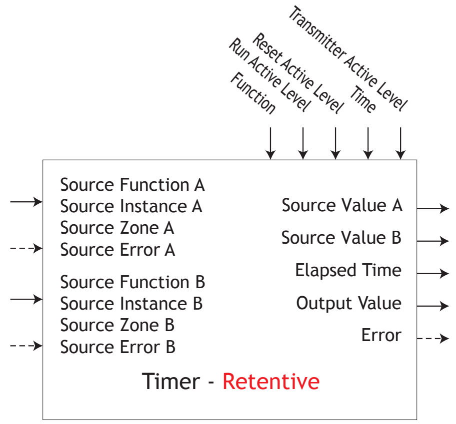


Timer (cont.)

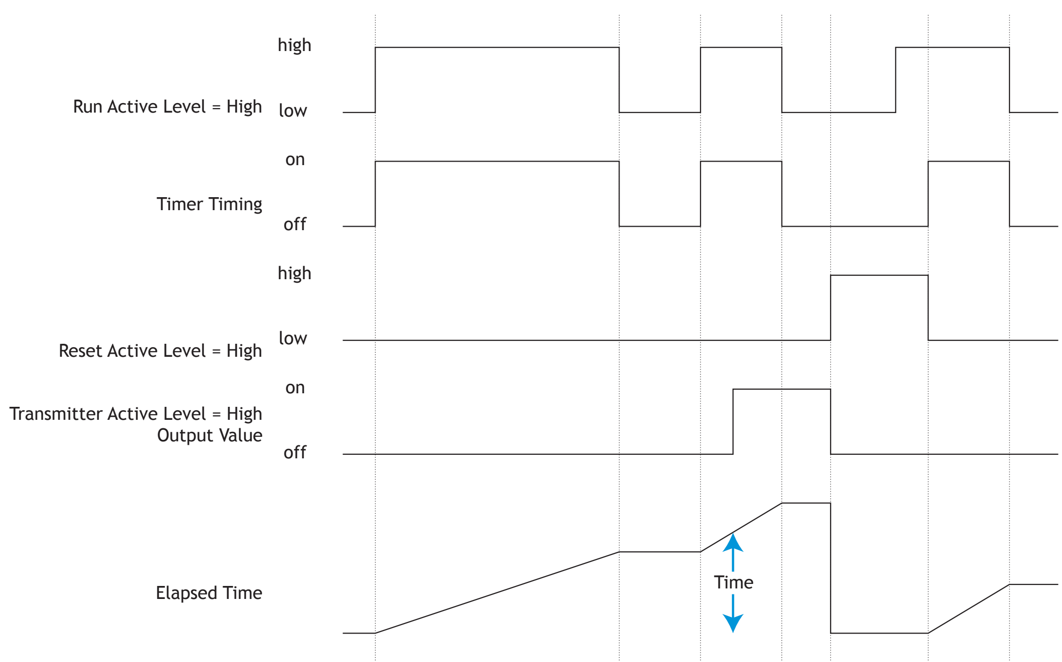
Retentive

A retentive timer is used to keep track of how much time something has been in a particular state. For example, this can be used to time how long something has been in an alarm state or how long it has been since a profile or step ran. The output can be used to trigger an event if the elapsed time has grown excessive.

- Use Function to select Retentive.
- Retentive timers count up from 0 to the Time parameter while Source A is active; otherwise it holds. It can be reset by Source B. The Elapsed time will continue to count up until the maximum value is reached and then rolls over unless a reset pulse is generated.
- Source Function A selects the type of source used for the input.
- Source Instance A and Source Zone A selects which source to use.
- Run Active Level sets which state makes the timer countdown.
- Transmitter Active Level sets which output state indicates the the timer is in countdown operation.



Timing Diagram of Retentive with all active state rising edge

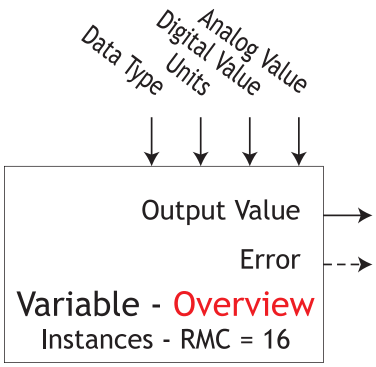


Variable Function

A variable function block is used to store a user supplied value and provide a source input to another function block with that value. As an example, you could use a variable function value as one input to a compare function. The other input to the compare function would determine the output value based on the user's supplied value.

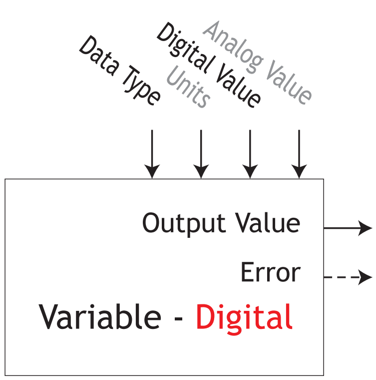
This function simply passes the stored value to its output.

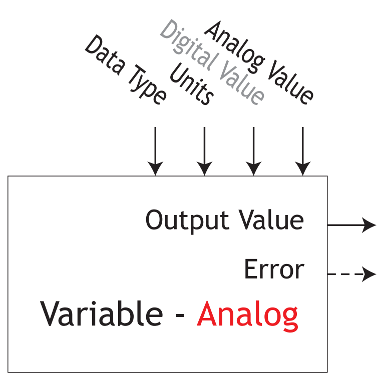
- Error [2005] : None, Open, Shorted, Measurement Error, Bad Cal Data, Ambient Error, RTD Error, Fail, Math Error, Not Sourced, Stale
- Output Value [2004] : -1,999.000 to 9,999.000 or On or Off



uAr Variable Menu
SEt Setup Page

	Parameter Name [Parameter ID] : Range or Choices
tYPE	Data Type [2001] : Analog, Digital
Un it	Units [2007] : None, Absolute Temperature, Relative Temperature, Power, Process, Relative Humidity
d iG	Digital Value [2002] : On, Off
AnLG	Analog Value [2003] : -1,999.000 to 9,999.000





Chapter 9: Appendix

Troubleshooting Alarms, Errors and Control Issues

Indication	Description	Possible Cause(s)	Corrective Action
Alarm won't clear or reset	Alarm will not clear or reset with keypad or digital input	• Latching is active • Alarm set to incorrect output • Alarm is set to incorrect source • Sensor input is out of alarm set point range • Alarm set point is incorrect • Alarm is set to incorrect type • Digital input function is incorrect	• Reset alarm when process is within range or disable latching • Set output to correct alarm source instance • Set alarm source to correct input instance • Correct cause of sensor input out of alarm range • Set alarm set point to correct trip point • Set alarm to correct type: process, deviation or power • Set digital input function and source instance
Alarm won't occur	Alarm will not activate output	• Silencing is active • Blocking is active • Alarm is set to incorrect output • Alarm is set to incorrect source • Alarm set point is incorrect • Alarm is set to incorrect type	• Disable silencing, if required • Disable blocking, if required • Set output to correct alarm source instance • Set alarm source to correct input instance • Set alarm set point to correct trip point • Set alarm to correct type: process, deviation or power
Alarm Error AL.E1 AL.E2 AL.E3 AL.E4	Alarm state cannot be determined due to lack of sensor input	• Sensor improperly wired or open • Incorrect setting of sensor type • Calibration corrupt	• Correct wiring or replace sensor • Match setting to sensor used • Check calibration of controller

Indication	Description	Possible Cause(s)	Corrective Action
Alarm Low AL.L1 AL.L2 AL.L3 AL.L4	Sensor input below low alarm set point	• Temperature is less than alarm set point • Alarm is set to latching and an alarm occurred in the past • Incorrect alarm set point • Incorrect alarm source	• Check cause of under temperature • Clear latched alarm • Establish correct alarm set point • Set alarm source to proper setting
Alarm High AL.h1 AL.h2 AL.h3 AL.h4	Sensor input above high alarm set point	• Temperature is greater than alarm set point • Alarm is set to latching and an alarm occurred in the past • Incorrect alarm set point • Incorrect alarm source	• Check cause of over temperature • Clear latched alarm • Establish correct alarm set point • Set alarm source to proper setting
Error Input Er.i1 Er.i2 Er.i3 Er.i4 Er.Ab	Sensor does not provide a valid signal to controller	• Sensor improperly wired or open • Incorrect setting of sensor type • Calibration corrupt	• Correct wiring or replace sensor • Match setting to sensor used • Check calibration of controller
Ambient Error Er.Ab	Sensor does not provide a valid signal to controller	• Ambient error - cold junction circuitry not working	• Return to factory for repair
Limit won’t clear or reset	Limit will not clear or reset with keypad or digital input	• Sensor input is out of limit set point range • Limit set point is incorrect • Digital input function is incorrect	• Correct cause of sensor input out of limit range • Set limit set point to correct trip point • Set digital input function and source instance
Limit Error Li.E1 Li.E2 Li.E3 Li.E4	Limit state cannot be determined due to lack of sensor input, limit will trip	• Sensor improperly wired or open • Incorrect setting of sensor type • Calibration corrupt	• Correct wiring or replace sensor • Match setting to sensor used • Check calibration of controller

Indication	Description	Possible Cause(s)	Corrective Action
Limit Low Li.L1 Li.L2 Li.L3 Li.L4	Sensor input below low limit set point	• Temperature is less than limit set point • Limit outputs latch and require reset • Incorrect alarm set point	• Check cause of under temperature • Clear limit • Establish correct limit set point
Limit High Li.h1	Sensor input above high limit set point	• Temperature is greater than limit set point • Limit outputs latch and require reset • Incorrect alarm set point	• Check cause of over temperature • Clear limit • Establish correct limit set point
Loop Open Error LP.o1 LP.o2 LP.o3 LP.o4	Open Loop Detect is active and the process value did not deviate by a user-selected value in a user specified period with PID power at 100%.	• Setting of Open Loop Detect Time incorrect • Setting of Open Loop Detect Deviation incorrect • Thermal loop is open • Open Loop Detect function not required but activated	• Set correct Open Loop Detect Time for application • Set correct Open Loop Deviation value for application • Determine cause of open thermal loop: misplaced sensors, load failure, loss of power to load, etc. • Deactivate Open Loop Detect feature
Loop Reversed Error LP.r1 LP.r2 LP.r3 LP.r4	Open Loop Detect is active and the process value is headed in the wrong direction when the output is activated based on deviation value and user-selected value.	• Setting of Open Loop Detect Time incorrect • Setting of Open Loop Detect Deviation incorrect • Output programmed for incorrect function • Thermocouple sensor wired in reverse polarity	• Set correct Open Loop Detect Time for application • Set correct Open Loop Deviation value for application • Set output function correctly • Wire thermocouple correctly, (red wire is negative)

Indication	Description	Possible Cause(s)	Corrective Action
Ramping rP1 rP2 rP3 rP4	Controller is ramping to new set point	• Ramping feature is activated	• Disable ramping feature if not required
Autotuning tUn1 tUn2 tUn3 tUn4	Controller is autotuning the control loop	• User started the autotune function • Digital input is set to start autotune	• Wait until autotune completes or disable autotune feature • Set digital input to function other than autotune, if desired
No heat/cool action	Output does not activate load	• Output function is incorrectly set • Control mode is incorrectly set • Output is incorrectly wired • Load, power or fuse is open • Control set point is incorrect • Incorrect controller model for application	• Set output function correctly • Set control mode appropriately (Open vs Closed Loop) • Correct output wiring • Correct fault in system • Set control set point in appropriate control mode and check source of set point: remote, idle, profile, closed loop, open loop • Obtain correct controller model for application
No Display	No display indication or LED illumination	• Power to controller is off • Fuse open • Breaker tripped • Safety interlock switch open • Separate system limit control activated • Wiring error • Incorrect voltage to controller	• Turn on power • Replace fuse • Reset breaker • Close interlock switch • Reset limit • Correct wiring issue • Apply correct voltage, check part number

Indication	Description	Possible Cause(s)	Corrective Action
No Serial Communication	Cannot establish serial communications with the controller	• Address parameter incorrect • Incorrect protocol selected • Baud rate incorrect • Parity incorrect • Wiring error • EIA-485 converter issue • Incorrect computer or PLC communications port • Incorrect software setup • Wires routed with power cables • Termination resistor may be required	• Set unique addresses on network • Match protocol between devices • Match baud rate between devices • Match parity between devices • Correct wiring issue • Check settings or replace converter • Set correct communication port • Correct software setup to match controller • Route communications wires away from power wires • Place 120 Ω resistor across EIA-485 on last controller
Process doesn't control to set point	Process is unstable or never reaches set point	• Controller not tuned correctly • Control mode is incorrectly set • Control set point is incorrect	• Perform autotune or manually tune system • Set control mode appropriately (Open vs Closed Loop) • Set control set point in appropriate control mode and check source of set point: remote, idle, profile, closed loop, open loop
Temperature runway	Process value continues to increase or decrease past set point.	• Controller output incorrectly programmed • Thermocouple reverse wired • Controller output wired incorrectly • Short in heater • Power controller connection to controller defective • Controller output defective	• Verify output function is correct (heat or cool) • Correct sensor wiring (red wire negative) • Verify and correct wiring • Replace heater • Replace or repair power controller • Replace or repair controller

Indication	Description	Possible Cause(s)	Corrective Action
Device Error 100 rEtn	Controller displays internal malfunction message at power up.	• Controller defective • Sensor input over driven	• Replace or repair controller • Check sensors for ground loops, reverse wiring or out of range values.
Heater Error h.Er	Heater Error	• Current through load is above current trip set point • Current through load is below current trip set point	• Check that the load current is proper. Correct cause of over current and/or ensure current trip set point is correct. • Check that the load current is proper. Correct cause of undercurrent and/or ensure current trip set point is correct.
Current Error C.Er	Load current incorrect.	• Shorted solid-state or mechanical relay • Open solid-state or mechanical relay • Current transformer load wire associated to wrong output • Defective current transformer or controller • Noisy electrical lines	• Replace relay • Replace relay • Route load wire through current transformer from correct output, and go to the C.S i Source Output Instance parameter (Setup Page, Current Menu) to select the output that is driving the load. • Replace or repair sensor or controller • Route wires appropriately, check for loose connections, add line filters
Remote User Interface (RUI) menus inaccessible	Unable to access SEt, oPEr, FCtY or ProF menus or particular prompts in Home Page	• Security set to incorrect level • Digital input set to lockout keypad • Custom parameters incorrect	• Check LoC settings in Factory Page and enter appropriate password in ULoC setting in Factory Page • Change state of digital input • Change custom parameters in Factory Page
RUI value to low uAL.L	Value to low to be displayed in 4 digit LED display <-1999	• Incorrect setup	• Check scaling of source data

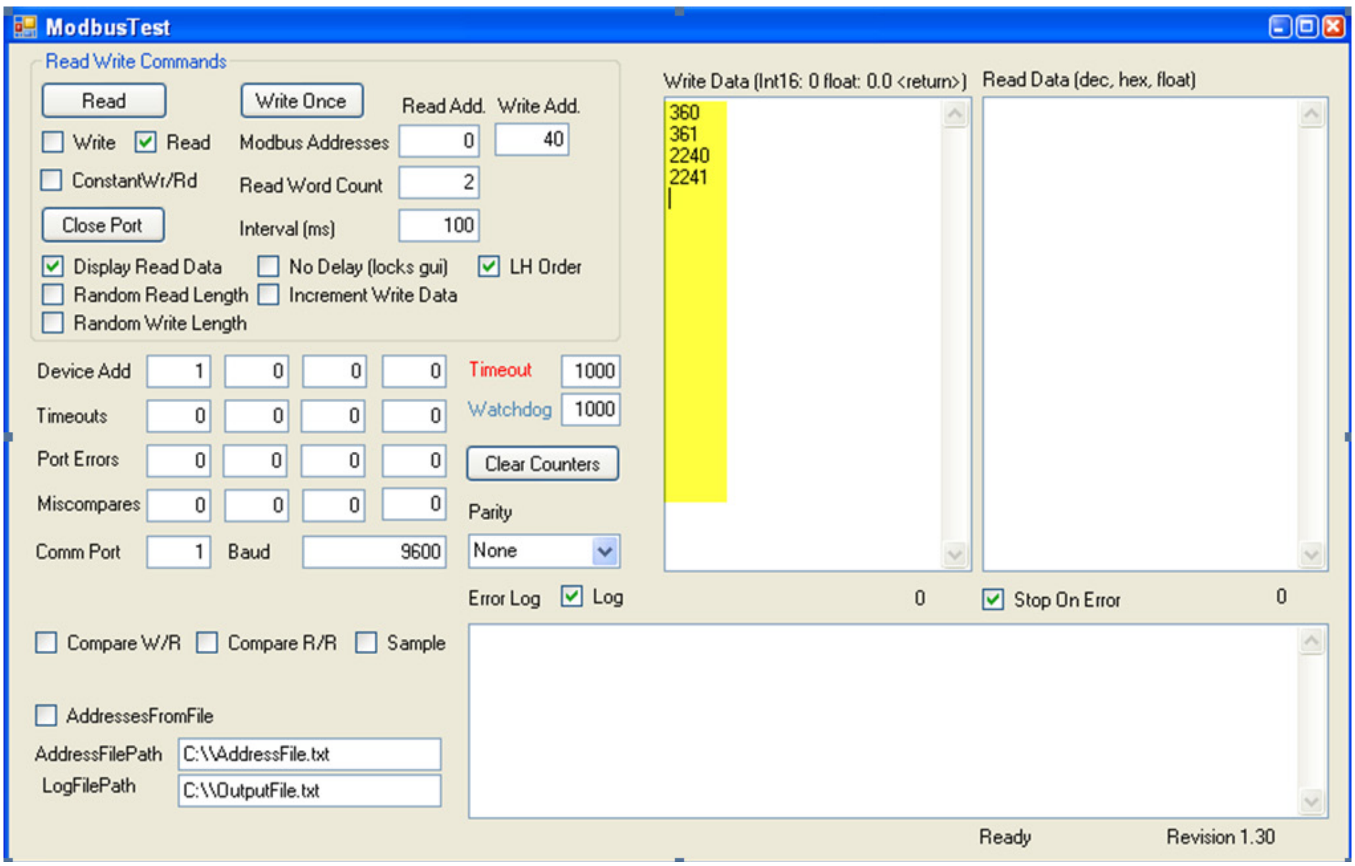
Indication	Description	Possible Cause(s)	Corrective Action
RUI value to high uAL.h	Value to high to be displayed in 4 digit LED display >9999	• Incorrect setup	• Check scaling of source data

Detection of and Rules Around Abnormal Sensor Conditions	
Inputs	**Detection of Abnormal Conditions**
Thermocouple	
Shorted	No direct detection, Open loop firmware detection.
Open	Yes, Parasitic pull-up
Reversed	Yes, firmware detection
Current Source	
Shorted	Range limiting only
Open	Range limiting only
Reversed	Range limiting only
Voltage Source	
Open	Range limiting only
Shorted	Range limiting only
Reversed	Range limiting only
RTD	
S1 open	Yes, pulled up.
S2 open	Not implemented.
S3 open	Yes, pulled up.
S1 short to S2	Yes, pulled up
S1 short to S3	Yes, pulled down to under range.
S2 shorted to S3	Not implemented, Possible, monitor S2 voltage.
S1 and S2 open	Yes, pulled down to under range.
S1 and S3 open	Yes, S1 pulled up.
S2 and S3 open	Yes pulled up.
Thermistor	
S1 open	Yes, pulled up to sensor over range.
S3 open	Yes, pulled up to sensor over range.
S1 short to S3	Yes, pulled down to sensor under range.
S1 and S3 open	Yes, S1 pulled up to sensor over range.

Modbus - Programmable Memory Blocks

The Modbus assembly contains 40 pointers (80 registers) to the parameters of your choosing starting at Modbus register 40 (shown on the following page). The pointers are 32-bits long and stored in two sequential registers. As an example, if we want to move an alias to the analog input of the RMC (register 360) into register 40, we perform a multiple write command (0x10 function) of 360 into register 40 and 361 into register 41 as a single multi-write command.

Once the parameters of choice have been defined and written to the pointer registers, the working registers 200 to 279 then represent those parameters. Therefore, as in the example above, if 360 is in register 40 and 361 in register 41, register 200 & 201 contains the 32-bit floating point result for analog input 1.



The screen shot above was taken from a program that can be found on the Watlow Support Tools DVD (shipped with the product) as well as on the Watlow website. On the DVD, it can be found under "Utility Tools" and is identified as "Modbus RTU Diagnostic Program for EZ-ZONE PM, RM and ST". A similar program can be found here as well for a connection utilizing Ethernet TCP.

If it is easier to go to the web to acquire this software click on the link below and type "modbus" in the search field where both versions can be found with the same name. http://www.watlow.com/literature/software.cfm

Assembly Pointer Registers and Assembly Working Registers

Pointer Registers	Working Registers
40 & 41	200 & 201
42 & 43	202 & 203
44 & 45	204 & 205
46 & 47	206 & 207
48 & 49	208 & 209
50 & 51	210 & 211
52 & 53	212 & 213
54 & 55	214 & 215
56 & 57	216 & 217
58 & 59	218 & 219
60 & 61	220 & 221
62 & 63	222 & 223
64 & 65	224 & 225
66 & 67	226 & 227
68 & 69	228 & 229
70 & 71	230 & 231
72 & 73	232 & 233
74 & 75	234 & 235
76 & 77	236 & 237
78 & 79	238 & 239
80 & 81	240 & 241
82 & 83	242 & 243
84 & 85	244 & 245
86 & 87	246 & 247
88 & 89	248 & 249
90 & 91	250 & 251
92 & 93	252 & 253
94 & 95	254 & 255
96 & 97	256 & 257
98 & 99	256 & 259
100 & 101	260 & 261
102 & 103	262 & 263
104 & 105	264 & 265
106 & 107	266 & 267
108 & 109	268 & 269
110 & 111	270 & 271
112 & 113	272 & 273
114 & 115	274 & 275
116 & 117	276 & 277
118 & 119	278 & 279

Modbus Default Assembly Structure 40-119

Assembly Definition Addresses Default Pointers		Assembly Working Addresses	
Registers 40 & 41	Pointer 1 = 0 & 1 Loop 1 - Set Point	Registers 200 & 201	Value of Pointer 1
Registers 42 & 43	Pointer 2 = 0 & 1 Loop 2 - Set Point	Registers 202 & 203	Value of Pointer 2
Registers 44 & 45	Pointer 3 = 0 & 1 Loop 3 - Set Point	Registers 204 & 205	Value of Pointer 3
Registers 46 & 47	Pointer 4 = 0 & 1 Loop 4 - Set Point	Registers 206 & 207	Value of Pointer 4
Registers 48 & 49	Pointer 5 = 0 & 1 Loop 1 - Manual Power	Registers 208 & 209	Value of Pointer 5
Registers 50 & 51	Pointer 6 = 0 & 1 Loop 2 - Manual Power	Registers 210 & 211	Value of Pointer 6
Registers 52 & 53	Pointer 7 = 0 & 1 Loop 3 - Manual Power	Registers 212 & 213	Value of Pointer 7
Registers 54 & 55	Pointer 8 = 0 & 1 Loop 4 - Manual Power	Registers 214 & 215	Value of Pointer 8
Registers 56 & 57	Pointer 9 = 0 & 1 Control Mode 1	Registers 216 & 217	Value of Pointer 9
Registers 58 & 59	Pointer 10 = 0 & 1 Control Mode 2	Registers 218 & 219	Value of Pointer 10
Registers 60 & 61	Pointer 11 = 0 & 1 Control Mode 3	Registers 220 & 221	Value of Pointer 11
Registers 62 & 63	Pointer 12 = 0 & 1 Control Mode 4	Registers 222 & 223	Value of Pointer 12
Registers 64 & 65	Pointer 13 = 0 & 1 Alarm 1 High Set Point	Registers 224 & 225	Value of Pointer 13
Registers 66 & 67	Pointer 14 = 0 & 1 Alarm 2 High Set Point	Registers 226 & 227	Value of Pointer 14
Registers 68 & 69	Pointer 15 = 0 & 1 Alarm 3 High Set Point	Registers 228 & 229	Value of Pointer 15
Registers 70 & 71	Pointer 16 = 0 & 1 Alarm 4 High Set Point	Registers 230 & 231	Value of Pointer 16
Registers 72 & 73	Pointer 17 = 0 & 1 Alarm 1 Low Set Point	Registers 232 & 233	Value of Pointer 17
Registers 74 & 75	Pointer 18 = 0 & 1 Alarm 2 Low Set Point	Registers 234 & 235	Value of Pointer 18
Registers 76 & 77	Pointer 19 = 0 & 1 Alarm 3 Low Set Point	Registers 236 & 237	Value of Pointer 19
Registers 78 & 79	Pointer 20 = 0 & 1 Alarm 4 Low Set Point	Registers 238 & 239	Value of Pointer 20

Assembly Pointer Registers Default Pointers		Assembly Working Registers	
Registers 80 & 81	Pointer 21 = 0 & 1 Not Defined	Registers 240 & 241	Value of Pointer 21
Registers 82 & 83	Pointer 22 = 0 & 1 Not Defined	Registers 242 & 243	Value of Pointer 22
Registers 84 & 85	Pointer 23 = 0 & 1 Not Defined	Registers 244 & 245	Value of Pointer 23
Registers 86 & 87	Pointer 24 = 0 & 1 Not Defined	Registers 246 & 247	Value of Pointer 24
Registers 88 & 89	Pointer 25 = 0 & 1 Not Defined	Registers 248 & 249	Value of Pointer 25
Registers 90 & 91	Pointer 26 = 0 & 1 Not Defined	Registers 250 & 251	Value of Pointer 26
Registers 92 & 93	Pointer 27 = 0 & 1 Not Defined	Registers 252 & 253	Value of Pointer 27
Registers 94 & 95	Pointer 28 = 0 & 1 Not Defined	Registers 254 & 256	Value of Pointer 28
Registers 96 & 97	Pointer 29 = 0 & 1 Not Defined	Registers 256 & 257	Value of Pointer 29
Registers 98 & 99	Pointer 30 = 0 & 1 Not Defined	Registers 258 & 259	Value of Pointer 30
Registers 100 & 101	Pointer 31 = 0 & 1 Not Defined	Registers 260 & 261	Value of Pointer 31
Registers 102 & 103	Pointer 32 = 0 & 1 Not Defined	Registers 262 & 263	Value of Pointer 32
Registers 104 & 105	Pointer 33 = 0 & 1 Not Defined	Registers 264 & 265	Value of Pointer 33
Registers 106 & 107	Pointer 34 = 0 & 1 Not Defined	Registers 266 & 267	Value of Pointer 34
Registers 108 & 109	Pointer 35 = 0 & 1 Not Defined	Registers 268 & 269	Value of Pointer 35
Registers 110 & 111	Pointer 36 = 0 & 1 Not Defined	Registers 270 & 271	Value of Pointer 36
Registers 112 & 113	Pointer 37 = 0 & 1 Not Defined	Registers 272 & 273	Value of Pointer 37
Registers 114 & 115	Pointer 38 = 0 & 1 Not Defined	Registers 274 & 275	Value of Pointer 38
Registers 116 & 117	Pointer 39 = 0 & 1 Not Defined	Registers 276 & 277	Value of Pointer 39
Registers 118 & 119	Pointer 40 = 0 & 1 Not Defined	Registers 278 & 279	Value of Pointer 40

Control Module Specifications

Line Voltage/Power

- 20.4 to 30.8V≂ (ac/dc), 50/60Hz, ±5 percent
- Power consumption: 7 W, 14VA
- Any external power supply used should comply with a class 2 or SELV rating. (Safety Extra Low Voltage)
- Data retention upon power failure via nonvolatile memory
- Compliant with Semi F47-0200, Figure R1-1 voltage sag requirements

Available Power Supplies

- AC/DC Power supply converter 90-264V~ (ac) to 24V⎓ (dc) volts.
- P/N 0847-0299-0000: 31 W
- P/N 0847-0300-0000: 60 W
- P/N 0847-0301-0000: 91 W

Environment

- 0 to 149°F (-18 to 65°C) operating temperature
- -40 to 185°F (-40 to 85°C) storage temperature
- 0 to 90 percent RH, non-condensing
- RM modules are considered to be open type equipment needing to be installed in a fire and shock protection enclosure, such as a NEMA Type 1 enclosure; unless all circuit connections are Class 2 or SELV

Agency Approvals

- UL®/EN 61010 listed; c-UL C22.2 #61010 File E185611 QUYX, QUYX7
- ANSI/ISA 12.12.01-2007 Hazardous Locations Class 1, Div. 2-Group A, B, C, D Temperature code T4 (optional) File E184390 QUZW, QUZW7
- EN 60529 IP20; RM modules
- UL® 50, Type 4X Indoor use, EN 60529 IP66; 1/16 DIN RUI, NEMA 4X
- RoHS by design, W.E.E.E.
- FM Class 3545 on limit control versions
- CE

Serial Communications

- The RMC module ships with isolated standard bus protocol for configuration and communication connection to all other EZ-ZONE products, Modbus RTU is optional.

Optional User Interface

- Seven-segment address LED, programmed via push-button switch
- Communication activity, 2 LEDs
- Error condition of each loop, 4 LEDs
- Output status indication, 16 LEDs

Maximum RM System Configuration

- Sixteen (16) modules, 152 loops. Maximum system capacity (all RM modules) is 16 with one RM Access (RMA) module.

Mounting

- DIN-rail specification EN50022, 35 x 7.5 mm (1.38 x 0.30 in.)
- Can be DIN-rail mounted or chassis mounted with customer-supplied fasteners

Dimensions		Weight
155.0 mm (6.10 in)	116.08 mm (4.57 in)	Controller: 453.59 g (16 oz.)

Wiring Termination—Touch-Safe Terminals

- Right angle and front screw type terminal blocks (slots A, B, D, E)
  - Input, power and controller output terminals, touch-safe removable 12 to 30 AWG
- Wire strip length 7.6 mm (0.30 in.)
- Torque 0.56 Nm (5.0 lb.-in.) right angle, 0.5 Nm (4.51 lb-in) front terminal block
- Dimensional Drawing
- Use solid or stranded copper conductors only

Connector	Dimension “A” (mm/in.)
Standard	148 (5.80)
Straight	155 (6.10)
Ring Terminal	166 (6.50)

Optional Accessories

Remote User Interface (RUI)

- 1/16 DIN
- Dual 4 digit, 7-segment LED displays
- Keys: Advance, infinity, up, down keys, plus an EZ-KEY programmable function key
- Typical display update rate 1Hz

EZ-ZONE RMC Product Documentation

- User Manual, printed hard copy, P/N 0600-0070-0000
- Watlow Support Tools CD, P/N 0601-0001-0000

Process PID or over-temperature limit mode options

- User selectable heat/cool, on-off, P, PI, PD, PID or alarm action, not valid for limit controllers
- Auto-tune with TRU-TUNE+ adaptive control
- Control sampling rates: Input 10Hz, Output 10Hz

Profile Ramp and Soak

- • 25 profiles, 15 sub-routines and 400 total steps
- • Option for battery back-up and real-time clock via the access module.

Accuracy

- Calibration accuracy and sensor conformity: ±0.1% of span, ±1°C at the calibrated ambient temperature and rated line voltage
- Types R, S, B; 0.2%
- Type T below -50°C; 0.2%
- Calibration ambient temperature at 25°C ±3°C (77°F ±5°F)

- Accuracy span: 540°C (1000°F) min.
- Temperature stability: ±0.1°C/°C (±0.1°F/°F) rise in ambient max.

Universal Input

- Thermocouple, grounded or ungrounded sensors
  - >20MΩ input impedance
- Max. 2KΩ source resistance
- RTD 2- or 3-wire, platinum, 100Ω and 1000Ω @ 0°C (32°F) calibration to DIN curve (0.00385 Ω/Ω/°C)
- Process, 0-20mA @100Ω, or 0-10V⎓ (dc) @ 20kΩ input impedance; scalable, 0-50mV

  Voltage Input Ranges
  - Accuracy ±10mV ±1 LSD at standard conditions
  - Temperature stability ±100 PPM/°C maximum

  Milliamp Input Ranges
  - Accuracy ±20μA ±1 LSD at standard conditions
  - Temperature stability ±100 PPM/°C maximum

  Resolution Input Ranges
  - 0 to 10V: 200 μV nominal
  - 0 to 20 mA: 0.5 mA nominal
- Potentiometer: 0 to 1,200Ω
- Inverse scaling
- Current: input range is 0 to 50mA, 100Ω input impedance
- Response time: 1 second max., accuracy ±1mA typical

Input Type	Max Error @ 25 Deg C	Accuracy Range Low	Accuracy Range High	Units
J	±1.75	0	750	Deg C
K	±2.45	-200	1250	Deg C
T	±1.55	-200	350	Deg C
N	±2.25	0	1250	Deg C
E	±2.10	-200	900	Deg C
R	±3.9	0	1450	Deg C
S	±3.9	0	1450	Deg C
B	±2.66	870	1700	Deg C
C	±3.32	0	2315	Deg C
D	±3.32	0	2315	Deg C
F (PTII)	±2.34	0	1343	Deg C
RTD, 100 ohm	±2.00	-200	800	Deg C
RTD, 1000 ohm	±2.00	-200	800	DegC
mV	±0.05	-50	50	mV
Volts	±0.01	0	10	Volts
mAdc	±0.02	0	20	mAmps DC
mAac	±5	0	50	mAmps AC

Input Type	Max Error @ 25 Deg C	Accuracy Range Low	Accuracy Range High	Units
Potentiometer, 1K range	±1	0	1000	Ohms
Resistance, 5K range	±5	0	5000	Ohms
Resistance, 10K range	±10	0	10000	Ohms
Resistance, 20K range	±20	0	20000	Ohms
Resistance, 40K range	±40	0	40000	Ohms

Operating Range			
Input Type	**Range Low**	**Range High**	**Units**
J	-210	1200	Deg C
K	-270	1371	Deg C
T	-270	400	Deg C
N	-270	1300	Deg C
E	-270	1000	Deg C
R	-50	1767	Deg C
S	-50	1767	Deg C
B	0	1816	Deg C
C	0	2315	Deg C
D	0	2315	Deg C
F (PTII)	0	1343	Deg C
RTD (100 ohm)	-200	800	Deg C
RTD (1000 ohm)	-200	800	Deg C
mV	0	50	mV
Volts	0	10	Volts
mAdc	0	20	mAmps DC
mAac	0	50	mAmps AC
Potentiometer, 1K range	0	1200	Ohms
Resistance, 5K range	0	5000	Ohms
Resistance, 10K range	0	10000	Ohms
Resistance, 20K range	0	20000	Ohms
Resistance, 40K range	0	40000	Ohms

Thermistor Input				
Input Type	**Max Error @ 25 Deg C**	**Accuracy Range Low**	**Accuracy Range High**	**Units**
Thermistor, 5K range	±5	0	5000	Ohms
Thermistor, 10K range	±10	0	10000	Ohms
Thermistor, 20K range	±20	0	20000	Ohms
Thermistor, 40K range	±40	0	40000	Ohms

- 0 to 40KΩ, 0 to 20KΩ, 0 to 10KΩ, 0 to 5KΩ
- 2.252KΩ and 10KΩ base at 25°C
- Linearization curves built in
- Third party Thermistor compatibility requirements

Base R @ 25C	Alpha Techniques	Beta THERM	YSI	Thermistor Curve
2.252K	Curve A	2.2K3A	004	A
10K	Curve A	10K3A	016	B
10K	Curve C	10K4A	006	C

Digital Input

- **DC voltage**
  - Max. input 36V @ 3mA
  - Min. high state 3V at 0.25mA
  - Max. low state 2V
- **Dry contact**
  - Min. open resistance 10KΩ
  - Max. closed resistance 50Ω
  - Max. short circuit 13mA

- Digital input update rate 10Hz

Single Input Current Measurement Input

- Accepts 0-50mA (ac) signal (user programmable range)
- Displayed operating range and resolution can be scaled and are user programmable

Output Hardware

- Switched dc:
  - Max. 32V⎓ (dc) open circuit
  - Max. current 30mA per single output
  - Max. current 40mA per paired outputs (1 & 2, 3 & 4, 5 & 6, 7 & 8)
- Open Collector
  - Max. 30V⎓ (dc) @ 100mA max. current sink
- Solid state relay (SSR), Form A, 1A at 10°C, derated to 0.5A at 65°C @ 24V~ (ac) min., 264V~ (ac) max., opto-isolated, without contact suppression
- Minimum holding current of 10mA

Output Hardware (cont.)

- Electromechanical relay, Form C, 5A, 24 to 240V~ (ac) or 30V⎓ (dc) max., resistive load, 100,000 cycles at rated load. Requires a min. load of 20mA at 24V. 125VA pilot duty
- Electromechanical relay, Form A, 5A, 24 to 240V~ (ac) or 30V⎓ (dc) max., resistive load, 100,000 cycles at rated load. Requires a min. load of 20mA at 24V, 125VA pilot duty
- NO-ARC relay, Form A, 15A @ 50°C derated to 10A @ 65°C; 85 to 264V~ (ac), no V⎓ (dc), resistive load, 2 million cycles at rated load
- Universal process/retransmit, output range selectable:
- Digital outputs
  - Update rate 10Hz
  - Switched DC
    - » Output voltage 20V⎓ (dc)
    - » Max. supply current source 40mA at 20V⎓ (dc)
  - Open Collector
    - » Switched voltage max.: 32V⎓ (dc)
    - » Max. switched current per output: 1.5A
    - » Max. switched current for all 6 outputs combined: 8A
- Universal process/retransmit, Output range selectable:
  - 0 to 10V ⎓(dc) into a min. 1,000Ω load
  - 0 to 20mA into max. 800Ω load

  Resolution
    - » dc ranges: 2.5mV nominal
    - » mA ranges: 5 µA nominal

  Calibration Accuracy
    - » dc ranges: ±15 mV
    - » mA ranges: ±30 µA

  Temperature Stability
    - » 100 ppm/°C

Programmable Application Blocks

Actions (events) 8 total

Alarms 8 total

Control Loop 4 total

Compare 4 total

- Off, greater than, less than, equal, not equal, greater than or equal, less than or equal

Counters 4 total

- Counts up or down loads, predetermined value on load signal. Output is active when count value equals predetermined target value

Logic 16 total

- Off, and, nand, or, nor, equal, not equal, Latch

Linearization 4 total

- Interpolated or stepped relationship

Programmable Application Blocks (cont.)

Math 8 total

- Off, average, process scale, deviation scale, differential (subtraction), ratio (divide), add, multiply, absolute difference, min., max., square root, sample and hold

Process Value 4 total

- Off, sensor backup, average, crossover, wet/dry bulb, switch over, differential (subtraction), ratio (divide), add, multiply, absolute difference, min., max., square root

Special Output Function 4 total

- *Compressor* turns on-off compressor for one or two loops (cool and dehumidify with single compressor)
- *Motorized Valve* turns on-off motor open/closed outputs to cause valve to represent desired power level
- *Sequencer* turns on-off up to four outputs to distribute a single power across all outputs with linear and progressive load wearing

Timers 4 total

- *On Pulse* produces output of fixed time on active edge of timer run signal
- *Delay* output is a delayed start of timer run, off at same time
- *One Shot* oven timer
- *Retentive* measures timer run signal, output on when accumulated time exceeds target

Variable 16 total

- User value for digital or analog variable

RM Ordering Information

Control module requires a Class 2 or SELV power supply 20.4 to 30.8 V ~(ac) / ⎓ (dc), communication port for configuration with EZ-ZONE Configurator software.

Code Number

①② EZ-ZONE Rail Mount	③ Control Module	④ Input 1 Primary Function	⑤ Outputs 1 & 2 Hardware Options	⑥ Input 2	⑦ Outputs 3 & 4 Hardware Options	⑧ Input 3	⑨ Outputs 5 & 6 Hardware Options	⑩ Input 4	⑪ Outputs 7 & 8 Hardware Options	⑫ Connector Style	⑬ Enhanced Options	⑭⑮ Additional Options
RM	C											

④ Input 1

1 = Control with universal input
2 = Control with thermistor input
3 = Ramp/Soak control with universal input (R/S applies to all loops in module)
4 = Ramp/Soak control with thermistor input (R/S applies to all loops in module)
5 = Limit with universal input (Only valid Output 1 and 2, options will be B, F, L)
6 = Limit with thermistor input (Only valid Output 1 and 2, options will be B, F, L)
7 = Current transformer input (NOT valid Output 1 and 2, options are N, P, R, S)
9 = Custom

⑤ Output 1 and 2 Hardware Options

	Output 1	Output 2
A	= None	None
B	= None	Mechanical relay 5A, Form A
U	= Switched dc/open collector	None
D	= Switched dc/open collector	NO-ARC 15A power control
E	= Switched dc/open collector	Switched dc
F	= Switched dc/open collector	Mechanical relay 5A, Form A
G	= Switched dc/open collector	SSR Form A, 0.5A
H	= Mechanical relay 5A, Form C	None
J	= Mechanical relay 5A, Form C	NO-ARC 15A power control
K	= Mechanical relay 5A, Form C	Switched dc
L	= Mechanical relay 5A, Form C	Mechanical relay 5A, Form A
M	= Mechanical relay 5A, Form C	SSR Form A, 0.5A
N	= Universal process	None
P	= Universal process	Switched dc
R	= Universal process	Mechanical relay 5A, Form A
S	= Universal process	SSR Form A, 0.5A
T	= None	SSR Form A, 0.5A
Y	= SSR Form A, 0.5A	NO-ARC 15A power control
Z	= SSR Form A, 0.5A	SSR Form A, 0.5A

⑥ Input 2

A = None
1 = Control with universal input
2 = Control with thermistor input
5 = Limit with universal input (Only valid Output 3 and 4, options will be B, F ,L)
6 = Limit with thermistor input (Only valid Output 3 and 4, options will be B, F, L)
7 = Current transformer input (Not valid Output 3 and 4, options are N, P, R, S)
R = Auxillary 2nd Input (Universal Input)
P = Auxillary 2nd Input (Thermistor Input)

⑦ Output 3 and 4 Hardware Options

	Output 3	Output 4
A	= None	None
B	= None	Mechanical relay 5A, Form A
U	= Switched dc/open collector	None
D	= Switched dc/open collector	NO-ARC 15A power control
E	= Switched dc/open collector	Switched dc
F	= Switched dc/open collector	Mechanical relay 5A, Form A
G	= Switched dc/open collector	SSR Form A, 0.5A
H	= Mechanical relay 5A, Form C	None
J	= Mechanical relay 5A, Form C	NO-ARC 15A power control
K	= Mechanical relay 5A, Form C	Switched dc
L	= Mechanical relay 5A, Form C	Mechanical relay 5A, Form A
M	= Mechanical relay 5A, Form C	SSR Form A, 0.5A
N	= Universal process	None
P	= Universal process	Switched dc
R	= Universal process	Mechanical relay 5A, Form A
S	= Universal process	SSR Form A, 0.5A
T	= None	SSR Form A, 0.5A
Y	= SSR Form A, 0.5A	NO-ARC 15A power control
Z	= SSR Form A, 0.5A	SSR Form A, 0.5A

⑧ Input 3

A = None
1 = Control with universal input
2 = Control with thermistor input
5 = Limit with universal input (Only valid Output 5 and 6, options will be B, F, L)
6 = Limit with thermistor input (Only valid Output 5 and 6, options will be B, F, L)
7 = Current transformer input (Not valid Output 5 and 6, options are N, P, R, S)
R = Auxillary 2nd Input (Universal Input)
P = Auxillary 2nd Input (Thermistor Input)

⑨ Output 5 and 6 Hardware Options

	Output 5	Output 6
A	= None	None
B	= None	Mechanical relay 5A, Form A
U	= Switched dc/open collector	None
D	= Switched dc/open collector	NO-ARC 15A power control
E	= Switched dc/open collector	Switched dc
F	= Switched dc/open collector	Mechanical relay 5A, Form A
G	= Switched dc/open collector	SSR Form A, 0.5A
H	= Mechanical relay 5A, Form C	None
J	= Mechanical relay 5A, Form C	NO-ARC 15A power control
K	= Mechanical relay 5A, Form C	Switched dc
L	= Mechanical relay 5A, Form C	Mechanical relay 5A, Form A
M	= Mechanical relay 5A, Form C	SSR Form A, 0.5A
N	= Universal process	None
P	= Universal process	Switched dc
R	= Universal process	Mechanical relay 5A, Form A
S	= Universal process	SSR Form A, 0.5A
T	= None	SSR Form A, 0.5A
Y	= SSR Form A, 0.5A	NO-ARC 15A power control
Z	= SSR Form A, 0.5A	SSR Form A, 0.5A

⑩ Input 4

A = None
1 = Control with universal input
2 = Control with thermistor input
5 = Limit with universal input (Only valid Output 7 and 8, options will be B, F, L)
6 = Limit with thermistor input (Only valid Output 7 and 8, options will be B, F, L)
7 = Current transformer input (Not valid Output 7 and 8, options are N, P, R, S)
R = Auxillary 2nd Input (Universal Input)
P = Auxillary 2nd Input (Thermistor Input)

⑪ Output 7 and 8 Hardware Options

	Output 7	Output 8
A	= None	None
B	= None	Mechanical relay 5A, Form A
U	= Switched dc/open collector	None
D	= Switched dc/open collector	NO-ARC 15A power control
E	= Switched dc/open collector	Switched dc
F	= Switched dc/open collector	Mechanical relay 5A, Form A
G	= Switched dc/open collector	SSR Form A, 0.5A
H	= Mechanical relay 5A, Form C	None
J	= Mechanical relay 5A, Form C	NO-ARC 15A power control
K	= Mechanical relay 5A, Form C	Switched dc
L	= Mechanical relay 5A, Form C	Mechanical relay 5A, Form A
M	= Mechanical relay 5A, Form C	SSR Form A, 0.5A
N	= Universal process	None
P	= Universal process	Switched dc
R	= Universal process	Mechanical relay 5A, Form A
S	= Universal process	SSR Form A, 0.5A
T	= None	SSR Form A, 0.5A
Y	= SSR Form A, 0.5A	NO-ARC 15A power control
Z	= SSR Form A, 0.5A	SSR Form A, 0.5A
C	= 6 digital inputs/outputs (Valid option only if Input 4 selection = A)	

⑫ Connector Style

A = Right angle screw connector (standard)
F = Front screw connector

⑬ Enhanced Options

A = Standard bus
1 = Standard bus and Modbus® RTU 485

⑭⑮ Additional Options

Firmware, Overlays, Parameter Settings

AA = Standard
AB = Replacement connectors hardware only for the entered model number
12 = Class 1, Div. 2 (not available with integrated limit controller or mechanical relay options)
XX = Custom, Locked Firmware

Declaration of Conformity

EZ Zone Series RM

WATLOW Electric Manufacturing Company ISO 9001 since 1996.
1241 Bundy Blvd.
Winona, MN 55987 USA

Declares that the following Series RM (Rail Mount) products:

Model Numbers:	**RM** followed by additional letters or numbers describing use of up to four module options of various inputs and outputs or communications.
Classification:	Temperature control, Installation Category II, Pollution degree 2
Voltage and Frequency:	SELV 24 to 28 V≂ ac 50/60 Hz or dc
Power Consumption:	RMA models 4 Watts, any other RM model 7 Watts
Environmental Rating:	IP20

Meet the essential requirements of the following European Union Directives by using the relevant standards show below to indicate compliance.

2004/108/EC Electromagnetic Compatibility Directive

EN 61326-1	**2013**	**Electrical equipment for measurement, control and laboratory use – EMC requirements, Industrial Immunity, Class A Emissions (*Not for use in a Class B environment without additional filtering).***
EN 61000-4-2	2009	Electrostatic Discharge Immunity
EN 61000-4-3	2010	Radiated Field Immunity
EN 61000-4-4	2012	Electrical Fast-Transient / Burst Immunity
EN 61000-4-5	2006	Surge Immunity (Reviewed to IEC 61000-4-5 2014)
EN 61000-4-6	2014	Conducted Immunity
EN 61000-4-11	2004	Voltage Dips, Short Interruptions and Voltage Variations Immunity
EN 61000-3-2	2009	Harmonic Current Emissions (Reviewed to IEC 61000-3-2 2014)
EN 61000-3-3[1]	2013	Voltage Fluctuations and Flicker
SEMI F47	2000	Specification for Semiconductor Sag Immunity Figure R1-1

[1]NOTE: To comply with flicker requirements cycle time may need to be up to 160 seconds if load current is at 15A, or the maximum source impedance needs to be < 0.13Ω. Control power input of RM models comply with 61000-3-3 requirements.

2006/95/EC Low-Voltage Directive

EN 61010-1	**2011**	**Safety Requirements of electrical equipment for measurement, control and laboratory use. Part 1: General requirements**

Compliant with 2011/65/EU RoHS Directive

Per 2012/19/EU W.E.E.E Directive Please Recycle Properly

Joe Millanes	Winona, Minnesota, USA
Name of Authorized Representative	Place of Issue
Director of Operations	September 2014
Title of Authorized Representative	Date of Issue

Signature of Authorized Representative

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