EZ-ZONE[®] PM Express User's Guide



Limit Controller







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Made in the U.S.A.

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 electrical hazard symbol, (a lightning bolt in a triangle) precedes an electric shock hazard CAUTION or WARNING safety statement. Further explanations follow:

Symbol	nbol Explanation	
Â	CAUTION – Warning or Hazard that needs further explanation than label on unit can provide. Consult users manual 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.	
滾	Do not throw in trash, use proper recycling techniques or consult manufacturer for proper disposal.	
\sim	Unit can be powered with either alternating current (ac) voltage or direct current (dc) voltage.	
CULUSTED PRACESS CONTRAL 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	
CE	Unit is compliant with European Union directives. See Declaration of Conformity for further details on Directives and Standards used for Compliance.	
FM	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

This EZ-ZONE[®] PM 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. Watlow's obligations hereunder, at Watlow's 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

You can get assistance from your local Watlow representative (see back cover), send an email with your questions to: wintechsupport@watlow.com or dial +1 (507) 494-5656 between 7 a.m. and 5 p.m. Central Standard Time (CST) and ask for an Applications Engineer. Please have the following information available when calling:

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

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Product Overview

The EZ-ZONE PM Express single loop Limit controller is available in 1/4, 8th, 16th or 32nd DIN panel-mount packages. Ordering options include high or low voltage units with up to two outputs.

Installation and Wiring

1/32 DIN (PM3) Dimensions





EZ-ZONE PM Limit Express



Install & Wiring

1/8 DIN (PM9) Horizontal Dimensions







Installation



- Make the panel cutout using the mounting template dimensions in this chapter. Insert the case assembly into the panel cutout.
- While pressing the case assembly firmly against the panel, slide the mounting collar over the back of the controller.

If the installation does not require a NEMA 4X seal, slide the mounting collar up to the back of the panel tight enough to eliminate the spacing between the gasket and the panel.





Slide the mounting collar over the back of the controller.

Place the blade of a screwdriver in the notch of the mount-ing collar assembly.

 For a NEMA 4X seal, place the blade of a screwdriver in the notch of the mounting collar assembly and push toward the panel while applying pressure to the face of the controller. Don't be afraid to apply enough pressure to properly install the controller.

The seal system is compressed more by mating the mounting collar tighter to the front panel (see picture). If you can move the case assembly back and forth in the cutout, you do not have a proper seal. The tabs on each side of the mounting collar have teeth that latch into the ridges on the sides of the controller. Each tooth is staggered at a different depth from the front so that only one of the tabs, on each side, is locked onto the ridges at a time.

Removing the Mounted Controller from Its Case

 From the controller's face, pull out the tab on each side until you hear it click.





Pull out the tab on each side until you hear it click.

Grab the unit above and below the face and pull forward.

- Once the sides are released, grab the unit above and below the face with two hands and pull the unit out. If it is difficult to pull the unit out, remove the connectors from the back of the controller. This should make it easier to remove.
- A Warning:

All electrical power to the controller and controlled circuits must be disconnected before removing the controller from the front panel or disconnecting other wiring.

Returning the Controller to its Case

- Ensure that the orientation of the controller is correct and slide it back into the housing.
- 2. Using your thumbs push on either side of the controller until both latches click.

Note:

The controller is keyed so if it feels that it will not slide back in do not force it. Check the orientation again and reinsert after correcting.

Chemical Compatibility

This product is compatible with acids, weak alkalis, alcohols, gamma radiation and ultraviolet radiation. This product is not compatible with strong alkalis, organic solvents, fuels, aromatic hydrocarbons, chlorinated hydrocarbons, esters and keytones.

Terminal Definitions

Slot C		Terminal Function	Model
98 99		power input: ac or dc+ power input: ac or dc-	PM _L AAAAB
CF CD CE		Standard Bus EIA-485 common Standard Bus EIA-485 T-/R- Standard Bus EIA-485 T+/R+	PM _L AAAAB
Slot A			
Inp	ut 1		
T1 S1 R1		S2 (RTD) or current +, S3 (RTD), thermocouple -, current - or volts -, thermistor S1 (RTD), thermocouple + or volts +, thermistor	Universal Sensor input 1: all configurations
Outputs			Configuration
Out	puts	Terminal Function	Connyuration
Out 1	puts 2	Terminal Function	Configuration
0ut 1 X1 W1 Y1	2	Terminal Function	Switched dc/open collector, output 1: PM _L_ (C) AAAB
0ut 1 X1 V1 Y1 L1 K1 J1	2	Terminal Function common (Any switched dc output can use.) dc- (open collector) dc+ normally open common normally closed	Switched dc/open collector, output 1: PM _L_ (C) AAAB Mechanical Relay 5 A, Form C, output 1: PM _L_ (E) AAAB

Note:

In the graphics below notice that the Slot A connector does not show labeling for the outputs. Labeling for Slot A outputs is based on the controller part number.



A 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) singlewire termination or two 1.31 mm2 (16 AWG)
- 0.56 Nm (5.0 lb.-in.) torque

Slot C		
Ц	98	power fuse
Ц	99	power
Ц	CF	
Ц	CD	
\square	CE	
\square		
Ц		
\square		
Powe	r	

Power

- 47 to 63 Hz
- 10VA maximum power consumption (PM3 and PM6)
- 14VA maximum power consumption (PM4, 8 and 9)

Low Power

- 12 to 40V (dc)
- 20 to 28V~ (ac) Semi Sig F47

High Power

- 85 to 264V~ (ac)
- •100 to 240V~ (ac) Semi Sig F47

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:

In the drawings below for each input notice that the Slot A connector labeling is identified.

Note:

When using a 2 wire RTD, jumper S1 and T1 together

Inputs

All inputs shown below represent input 1 (the only input) and are to be connected to slot A of the Limit Control.



Process Volts and Amperes

- 4 to 20 mA @ 100 Ω input impedance
- 0 to 10V= (dc) @ 20 kΩ input impedance
- Scalable

Resistance Temperature Detector (RTD)

- Platinum, 100 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 3-wire RTDs, the S1 lead must be connected to R1.
- For best accuracy use a 3-wire RTD to compensate for lead-length resistance. All three lead wires must have the same resistance.

Thermocouple

- 2 KΩ maximum source resistance
- >20 MΩ input impedance
- 3 microampere open-sensor detection
- Thermocouples are polarity sensitive. The negative lead must be connected to S1.
- To reduce errors, the extension wire for thermocouples must be of the same alloy as the thermocouple.

Thermistor

- >20 MΩ input impedance
- · 3 microampere open-sensor detection

Outputs

Please note all outputs are connected exclusively to slot A. Output availability is based on the part number of your Limit Control.

Note:

In the drawings below for each output notice that the Slot A connector labeling is identified with the corresponding part number below.



Quencharc Note:

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

Outputs (cont.)

Switched DC

- 22 to 32V=(dc) @ 30mA 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 compatibility is for output 1 only.
 - single-pole: up to 4 in parallel or 4 in series
 - 2-pole: up to 2 in parallel or 2 in series
 - 3-pole: up to 2 in series

Open Collector

- 100 mA maximum output current sink
- 30V- (dc) maximum supply voltage
- Use an external 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.

See Quencharc note.

Mechanical Relay Form C

- 5 A at 240V~ (ac) or 30V= (dc) maximum resistive load, output 1
- 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.

Mechanical Relay Form A

- 5 A at 240V~ (ac) or 30V= (dc) maximum resistive load, output 2
- · 20 mV at 24V minimum load
- 125 VA pilot duty @ 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 (previous page).

Keys & Displays 16th DIN LIMIT Controller

Zone Display:

When ZonE (found in the Factory Page) is set to on, indicates the controller zone.

- 1 to 9 = zones 1 to 9
- **R** = zone 10 **F** = zone 14
- F = zone 15 **b** = zone 11 **b** = zone 16
- **7** = zone 12
- **d** = zone 13

Lower Display:

Indicates the current state of the limit FR .L or SRFE.

EZ Kev:

Performs reset function

RESET Kev:

Press to reset limit after a trip condition has been cleared

Upper Display:

On power up, displays the process value, otherwise displays the value of the parameter in the lower display.

PM6

пп

1.0.0

Advance Kev: 🔘

Advances through

parameter prompts.

EZ-ZONE

Temperature Units Indicator Liahts:

Indicates whether the temperature is displayed in Fahrenheit or Celsius

Output Activity:

Number lights indicate activity of outputs 1 and 2.

Communications Activity:

Flashes when another device Sis communicating with this controller.

Up and Down Kevs: O O

When in a menu scrolls through available options for any given prompt. In other menus can change set points and modify the upper display to a higher or lower value

Upon power-up, the upper display will briefly indicate the firmware revision and the lower display will show PMb. The "b" in this case, reflects the B in the model number.

32nd DIN LIMIT Controller

With a few exceptions, all of the key functions described above for the 16th DIN LIMIT apply to the 32nd DIN LIMIT controller as well.

Left Display:

On power up, displays the process. value, otherwise displays the value of the parameter in the right display.



Note:

As shown in the graphics on the following page the PM4. 8 and 9 controls will include two "EZ" buttons (EZ1 and EZ2). The button identified as EZ1 is equivalent to the EZ button described above where the button identified as EZ2 has no functionality. Assuming the issue that caused the limit to trip has been rectified pushing the EZ1 will reset the limit as described for the Reset button above. All other buttons found on these controls. maintain the same functionality as described above for the 16th DIN.

Keys & Displays for 1/8th or 1/4 DIN PID Controllers



PM9 VATLOV EZ-ZONE OF F 1



Responding to a Displayed Message

An active message will cause the display to toggle between the normal settings and the active message in the upper or left display and **(REEn**) in the lower or right display.

Your response will depend on the message and the controller settings. If the message is generated by a latched alarm or limit condition, the message can be silenced $\begin{bmatrix} r_{L} & r \end{bmatrix}$ or cleared $\begin{bmatrix} r_{L} & r \end{bmatrix}$ by simply pushing the reset key stars when the condition no longer exists.

<u>RLL</u> Alarm 1 Low (sensor input below low alarm set point)

<u>RLF</u> Alarm 1 High (sensor input above high alarm set point) Alarm Error 1 **<u>RLE**</u> Alarm 1 Error (alarm state cannot be determined due to lack of sensor input)

Er. *I* Error Input 1 (sensor is not providing a valid signal to the control)

<u>L.L.</u> Limit Low 1 (sensor input below low limit set point)

Limit High 1(sensor input above high limit set point)

Li mit Error 1 (limit state cannot be determined due to lack of sensor input, limit will trip Upon power up of the control, using the advance key will scroll through the various prompts found in the Operations Menu. At any point within the Operations menu to return to the default display push the Reset cass key.

Operations Menu



Operations Menu			
Display Parameter Name Description			
[LL. 5 [LL.S]	Limit Low Set Point Set the low process value that will trig- ger the limit. Appears if: Limit sides set to low or both.		
[Lh.S]	Limit High Set Point Set the high process value that will trig- ger the limit. Appears if: Limit sides set to high or both.		
A.Lo [A.Lo]	Alarm Low Set Point Process - set the process value that will trigger a low alarm. Appears if: Alarm Type (A.ty) is set to Process Alarm		
[A.hi]	Alarm High Set Point Process - set the process value that will trigger a high alarm. Appears if: Alarm Type (A.ty) is set to Process Alarm		
[i.CA]	Calibration Offset Set an offset value for a process output. Appears if: Always		

Range Defaults are shown bold
-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C Units, 32°F or 0°C
-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C Units, 300°F or 150°C
-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C Units, 32.0°F or 0.0°C
-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C Units, 300.0°F or 150.0°C
-1,999.000 to 9,999.000°F or units -1,110.555 to 5,555.000°C 0.0

To enter the Setup Menu push and hold the up and down arrow keys for approximately 3 seconds. Once there, push the green advance key to scroll through to the prompt of choice and then use the up and down arrow keys to change the range. At any point within the Setup menu to return to the default display push the Reset cess key.



	Setup Menu			
vh	Display	Parameter Name Description		
	[LoC]	Lockout Menu Set the security clearance level. The user can access the selected level and all lower levels. Appears if: Always		
	5E n [SEn]	Sensor Type Set the analog sensor type to match the device wired to this input. Appears if: Always.		
	[Lin]	Linearization Set the linearization to match the thermo- couple type wired to this input. For example, select H for a type K thermocouple. Appears if: Sensor Type is set to Thermo- couple.		
	<u>E.</u> [t.C]	Thermistor Curve Select a curve to apply to the thermistor input.		
	[r.r]	Resistance Range Set the maximum resistance of the thermis- tor input.		
	E [dEC]	Decimal Set the precision of the displayed value. Appears if: Always.		
	[C_F]	Display Units Select which units will be displayed. Appears if: Always.		
	r.Lo [r.Lo]	Limit Set Point - Range Low Sets the low limit of the set point adjustment using a T/C and RTD; scales for process inputs. Appears if: Always.		

Range (Defaults are shown bold)
1 to 5 1 Operations Menu (read only)* 2 Operations Menu (Set point R/W) * 3 Operations Menu (Set point R/W, Control Mode R/W)* 4 Operations Menu R/W access)* 5 Operations Menu and Setup Menu full R/W access *You can change the security level at any level ELC Thermocouple PTR Milliamps dc
b B J E T c C H K d D n N E E r R F F S S
Image: Curve A, Image: Curve B, Image: Curve C Image: Curve A, Image: Curve B, Image: Curve C Image: Curve B, Image: Curve B, Image: Curve C
5] 5K, 10] 10K, 20] 20K, 40] 40K
D Whole DD Tenths DDD Hundredths
F ℃ C
-1,999.00 to 9,999.000 °F or Units -1,110.555 to 5,555.000 °C 0.0

To enter the Setup Menu push and hold the up and down arrow keys for approximately 3 seconds. Once there, push the green advance key to scroll through to the prompt of choice and then use the up and down arrow keys to change the range. At any point within the Setup menu to return to the default display push the Reset cess key.



	Setup Menu (cont.)			
	Display	Parameter Name Description		
	r.h i [r.hi]	Limit Set Point - Range High Sets the high limit of the set point adjust- ment using a T/C and RTD; scales for process inputs. Appears if: Always.		
	F n [fn1]	Function of Output 1 Select which function will drive this output. Appears if: Always.		
	Fn2 [fn2]	Function of Output 2 Select which function will drive this output. Appears if: Always.		
	L.5 <i>d</i> [L.Sd]	Limit Sides Select which side or sides of the process value will be monitored. Appears if: Always.		
ı	[L.hy]	Limit Hysteresis Set the hysteresis for the limit function. This determines how far into the safe range the process value must move before the limit turns the output back on. Appears if: Always.		
	A.ty]	Alarm Type Select how the alarm will or will not track the set point. Appears if: Always.		
	[A.hy]	Alarm Hysteresis Set the hysteresis for an alarm. This deter- mines how far into the safe region the pro- cess value needs to move before the alarm can be cleared. Appears if: When alarm type is set to process.		
	R.L. 9 [A.Lg]	Alarm Logic Select what the output condition will be dur- ing the alarm state. Appears if: Always		

Range (Defaults are shown bold)
-1,999.00 to 9,999.000 °F or Units -1,110.555 to 5,537.000 °C
OFF Off, [_, , , , , ,] Limit*, [, , , , , ,] Alarm Note: Switched DC/Open Collector option should only be used to control an external mechanical relay if Limit function is selected.
<u> し </u>
both both High Loud Low
0.001 to 9,999.0°F or units 0.001 to 5,555.0°C Units, 3.0°F or 2°C
 DEF Off PrAL Process Alarm
0.001 to 9,999.000°F or units 0.001 to 5,537.000°C Units, 1.0°F or 1.0°C
RL Close on Alarm RL O Open on alarm

To enter the Setup Menu push and hold the up and down arrow keys for approximately 3 seconds. Once there, push the green advance key to scroll through to the prompt of choice and then use the up and down arrow keys to change the range. At any point within the Setup menu to return to the default display push the Reset associated keys.



Setup Menu (cont.)			
	Display	Parameter Name Description	
	[A.LA] [A.LA]	Alarm Latching Turn alarm latching on or off. A latched alarm has to be turned off by the user. Appears if: When alarm type is set to process.	
	[A. bL]	Alarm 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. Appears if: When alarm type is set to process.	
	R.5 , [A.Si]	Alarm Silencing Turn alarm silencing on to allow the user to disable the output tied (configured) to this alarm Appears if: Always.	
' 1	A.dSP [A.dSP]	Alarm Display Display an alarm message when an alarm is active. Appears if: When alarm type is set to process.	
	[PAr1]	Upper or Left Display Select parameter to display. Appears if: Always.	
	[PAr2]	Lower or Right Display Select parameter to display. Appears if: Always.	
	<i>Rd</i> .5 [Ad.S]	Zone Address - Standard Bus Com- munication Set zone address from 1-16. Appears if: Always.	

	Range (Defaults are shown bold)		
	Image: Contract of the second seco		
	oFF Off SEr Startup SEPE Set Point bobh Both		
	off Off on On		
	off Off on On		
	Active Process Value Cone None		
	L 5,E Limit State L 5,5 Limit High Set Point L 1,5 Limit Low Set Point Done None		
	1-16 1		

Specifications

Line Voltage/Power

- · All voltage levels represent minimums and maximums
- 85 to 264V~(ac), 47 to 63Hz
- 20 to 28V~(ac), +10/-15 percent; 50/60Hz, ±5 percent
- 12 to 40V=(dc)
- 10VA maximum power consumption (PM3 and PM6)
- 14VA maximum power consumption (PM4, 8 and 9)
- · Data retention upon power failure via nonvolatile memory
- Compliant with SEMI F47-0200, Figure R1-1 voltage sag requirements @ 24V~(ac) or higher

Environment

- -18 to 65°C (0 to 149°F) operating temperature
- -40 to 85°C (-40 to 185°F) storage temperature
- · 0 to 90 percent RH, non-condensing

Accuracy

- Calibration accuracy and sensor conformity: ±0.1 percent of span, ±1°C @ the calibrated ambient temperature and rated line voltage
- Type S, 0.2 percent
- Type T, below -50°C; 0.2 percent
- Calibration ambient temperature @ 25°C ±3°C (77°F ±5°F)
- Accuracy span: 540°C (1000°F) minimum
- Temperature stability: ±0.1°C/°C (±0.1°F/°F) rise in ambient maximum

Agency Approvals

- cULus[®] UL/EN/CSA C22.2 No. 61010-1 Listed File E185611
- cULus[®] ANSI/ISA 12.12.01-2007, CSA-C22.2 No.213-1987, Class 1 Division 2 Groups A, B, C and D, Temperature Code T4A, File E184390 (optional)
- UL® 50, 4X indoor locations, NEMA 4X, IP65 front seal
- CSA C22.2 No. 24 File 158031 (1/32 and 1/16 DIN sizes)
- · CE, RoHS by design, W.E.E.E.
- FM Class 3545 File 3029084
- SEMI F47-0200

Serial Communications

- Isolated communications
- Standard Bus Configuration Protocol

Wiring Termination—Touch-Safe Terminals

- · Input, power and controller output terminals are touch safe removable 12 to 22 AWG
- Use 75°C, Cu conductor only

Universal Input

- · Thermocouple, grounded or ungrounded sensors
- >20MΩinput impedance
- Maximum of 2KΩ source resistance (applies to T/C only)
- RTD 2- or 3-wire, platinum, 100Ω @ 0°C calibration to DIN curve (0.00385 Ω/Ω/°C)
- Process, 4-20mA @ 100Ω, or 0-10V=(dc) @ 20kΩ input impedance; scalable

Specifications (cont.)

Thermistor Input (Not included with Universal Input)

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 40KW, 0 to 20KW, 0 to 10KW, 0 to 5KW
- 2.252K\Omega and 10K\Omega base at 77°F (25°C)
- Linearization curves built in
- Third party Thermistor compatibility requirements

Base R @ 25C	Alpha Techniques	Beta THERM	YSI	Prompt
2.252K	Curve A	2.2K3A	004	А
10K	Curve A	10K3A	016	В
10K	Curve C	10K4A	006	С

Functional Operating Range

- Type B: -50 to 1816°C (-58 to 3301°F)
- Type C: 0 to 2315°C (32 to 4199°F)
- Type D: 0 to 2315°C (-328 to 4199°F)
- Type E: -270 to 1000°C (-454 to 1832°F)
- Type F: 0 to 1343°C (32 to 2449°F)
- Type J: -210 to 1200°C (-346 to 2192°F)
- Type K: -270 to 1371°C (-454 to 2500°F)
- Type N: -200 to 1300°C (-328 to 2372°F)
- Type R: -50 to 1767°C (-58 to 3213°F)
- Type S: -50 to 1767°C (-58 to 3213°F)
- Type T: -270 to 400°C (-454 to 752°F)
- RTD (DIN): -200 to 800°C (-328 to 1472°F)
- Process: -1999 to 9999 units

Specifications (cont.)

Output Hardware

- Świtched dc 22 to 32V=(dc) @ 30mA
- Open collector, maximum sink current 100 mA, @ 30V=(dc)
- Electromechanical relay, Form C, 5A, 24 to 240V~(ac) or 30V=(dc) maximum, resistive load, 100,000 cycles at rated load
- Electromechanical relay, Form A, 5A, 24 to 240V~(ac) or 30V=(dc) maximum, resistive load, 100,000 cycles at rated load

Operator Interface

- Dual 4 digit, 7 segment LED displays
- Typical display update rate 1Hz
- Advance, RESET, up and down keys plus an EZ-Key/s (not available in 1/32 DIN)

Ordering Part Number (Part number digits 1 through 14)

PMXLXXX-AAAABXX

All Models include: *Universal Sensor Input, Standard Bus Configuration Communications *Dual line Red over Green 7 Segment displays

Package Size (Digit #3)

- 3 = 1/32 DIN 6 = 1/16 DIN 8 = 1/8 DIN vertical
- 9 = 1/8 DIN horizontal
- 4 = 1/4 DIN

Primary Function (Digit #4)

L = Limit Controller w/ Universal Input

Power Supply (Digit #5)

1 = 100-240 VAC 3 = 12-28 VAC/DC

Output 1 and 2 Hardware Options (Digits #6 and #7)

Output 1	Output 2
AJ = None	Mechanical relay 5A, Form A
CJ = Switched dc/open collector	Mechanical relay 5A, Form A
EJ = Mechanical Relay 5 Amp form C	Mechanical relay 5A, Form A

Future Options (Digits #8 thru #11)

AAAA = None

Menu Type (Digits #12)

B = Express

Additional Options (Digits #13 and #14)

- AA = Standard EZ-ZONE face plate
- AB = EZ-ZONE logo and no Watlow name
- AC = No logo and no Watlow name
- AG = Conformal coating

EZ-ZONE PM Limit Express

XX = Custom firmware.overlavs.parameters settings

Declaration of Conformity

Series EZ-ZONE[®] PM

CE

WATLOW Electric Manufacturing Company

1241 Bundy Blvd. Winona, MN 55987 USA

Declares that the following product:

Designation:	Series EZ-ZONE® PM (Panel Mount)
Model Numbers:	PM (3, 6, 8, 9 or 4)(Any Letter or number) - (1, 2, 3 or 4)(A, C, E, F or
	K) (A, C, H, J or K)(Any letter or number) – (Any letter or number)(A, C,
	E, F or K)(A, C, H, J or K) (Any three letters or numbers)
Classification:	Temperature control, Installation Category II, Pollution degree 2, IP65
Rated Voltage and Frequency:	100 to 240 V~ (ac 50/60 Hz) or 15 to 36 V dc/ 24 V~ac 50/60 Hz
Rated Power Consumption:	10 VA maximum PM3, PM6 Models.
	14 VA maximum PM8, PM9, PM4 Models

Meets the essential requirements of the following European Union Directives by using the relevant standards show below to indicate compliance.

2014/30/EU Electromagnetic Compatibility Directive		
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use - EMC	
	requirements (Industrial Immunity, Class B Emissions).	
IEC 61000-4-2:2008	Electrostatic discharge immunity	
IEC 61000-4-3:2007	Radiated, radio-frequency electromagnetic field immunity 10V/M 80-1000	
+A1/2008, A2/2010	MHz, 3 V/M 1.4–2.7 GHz	
IEC 61000-4-4:2012	Electrical fast-transient / burst immunity	
IEC 61000-4-5:2014	Surge immunity	
IEC 61000-4-6:2013 +	Immunity to conducted disturbances induced by radio-frequency fields	
Corrigendum 2015		
IEC 61000-4-11:2004 +	Voltage dips, short interruptions and voltage variations immunity	
interpretation 2010		
EN 61000-3-2:2014	Limits for harmonic current emissions for equipment ≤ 16 Amps per phase	
EN 61000-3-31:2013	Voltage fluctuations and flicker ≤ 16 Amps per phase	
SEMI F47-0812	Specification for semiconductor sag immunity Figure R1-1	
¹ For mechanical relay load	ds, cycle time may need to be extended up to 160 seconds to meet flicker	
and the second state of the second later of	a load author ad and an una farmadana a	

requirements depending on load switched and source impedance.

EN 61010-1:20102

2014/35/EU Low-Voltage Directive Safety Requirements of electrical equipment for measurement, control and laboratory use. Part 1: General requirements

² Compliance with 3rd Edition requirements with use of external surge suppressor installed on 230 Vac- power line units. Recommend minimum 1000 V peak to maximum 2000 V peak, 70 joules or better part be used.

Compliant with 2011/65/EU RoHS2 Directive

Per 2012/19/EU W.E.E.E Directive Recycle Properly.

Joe Millanes Name of Authorized Representative

Director of Operations Title of Authorized Representative Winona, Minnesota, USA Place of Issue

April 20, 2016 Date of Issue

e of Authorized Representative

CE DOC EZ-ZONE PM-04-16

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