WATLOW

QUICK START GUIDE

PM PLUS™ CONTROLLER

for configurations:
PM6 _ _ [E,F,C] [J,C,H] - _ AAA [P,V] _ _

For assistance contact Watlow: www.watlow.com
1-800-WATLOW2 (1-800-928-5692)
wintechsupport@watlow.com

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CONTROLLER INTERFACE

- Scroll up or down lists using the + or - keys.
- Increase or decrease numeric parameters with the slider.
- Select items or move to lists using the forward arrow.
- Return to the previous selection with the back arrow.
- Return to the home screen from any screen with the Home button.

1 - MOUNT TO PANEL

NOTE: Mounting requires access to the back of the panel.

1. Make the panel cutout using the measurements in figure 1.
2. Remove the green terminal connectors and the mounting collar assembly.
3. Insert the controller into the panel cutout from the front.
4. Orient the collar base so the flat side faces front and the screw openings are on the sides (see figure 2), then slide the base over the back of the controller.
5. Slide the mounting bracket over the controller with the screws aligned to the collar base. Push the bracket gently but firmly until the hooks snap into the slots in the case.
6. Tighten the two #6-19 x 1.5 in. screws with a Phillips screwdriver until the device is flush to the panel (3 to 4 in-lbs torque).
7. Reinstall the terminal connectors to their original locations. (Or first connect field wiring as indicated in this guide and then reinstall the connectors).

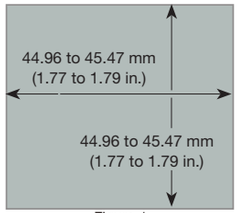


Figure 1

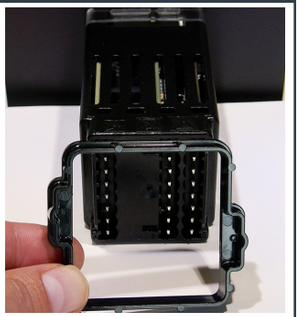


Figure 2

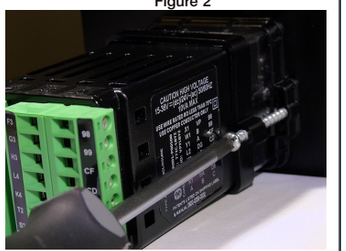


Figure 3

2 - CONNECT THE SENSOR INPUT

Connect your sensor as indicated in the diagram for your sensor input. Figure 4 is an example illustrating the connection shown for a Thermocouple.

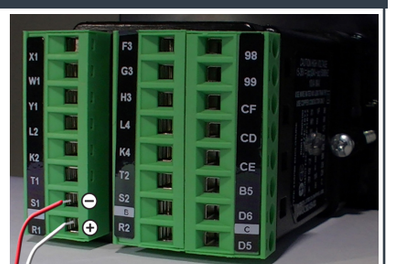
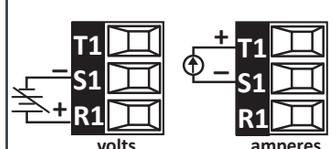


Figure 4: Thermocouple Wiring Example

Thermocouple

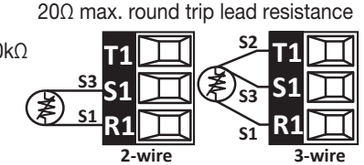
Process Voltage or Current

Voltage: 0 to 50 mV or 0 to 10V@ 20kΩ
Current: 0 to 20 mA @ 100Ω



Platinum 100Ω or 1000Ω RTD

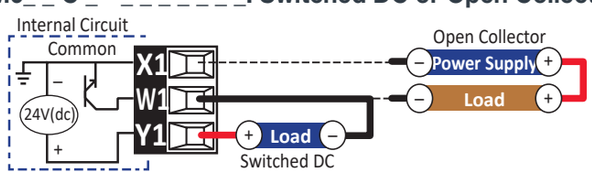
20Ω max. round trip lead resistance



3 - WIRE OUTPUT 1

Refer to the wiring diagram for your configuration code and connect to the slots indicated.

PM6_ _ C _ - _ _ _ _ _ _ : Switched DC or Open Collector



PM6_ _ E _ - _ _ _ _ _ _ : 5A Form C Relay

5A @240 V(ac) or 30 V (dc)

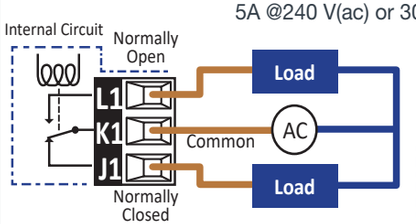
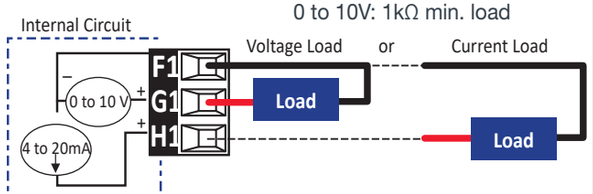


Figure 5: Switched DC Output Wiring

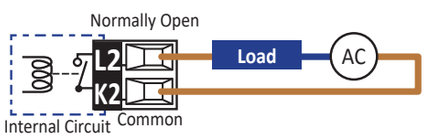
PM6_ _ F _ - _ _ _ _ _ _ : Universal Process

0 to 20 mA: 800 Ω max. load
0 to 10V: 1kΩ min. load

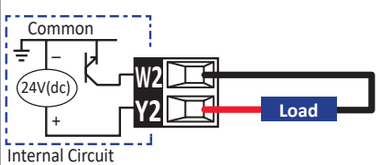


4 - WIRE OUTPUT 2

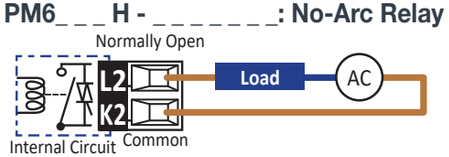
PM6_ _ _ J - _ _ _ _ _ _ : 5A Form A Relay



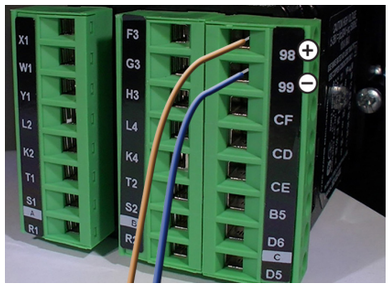
PM6_ _ _ C - _ _ _ _ _ _ : Switched DC



PM6_ _ _ H - _ _ _ _ _ _ : No-Arc Relay



5 - CONNECT POWER



Connect the power source for your configuration code:

PM6 _ [1,2,3,4] _ _ - _ _ _ _ _ _ _

1 or 2:120-240 V (ac)
3 or 4: 24 V (ac or dc)

CAUTION
Do not connect high voltage to a controller that requires low voltage.

6 - SET UP THE SENSOR INPUT

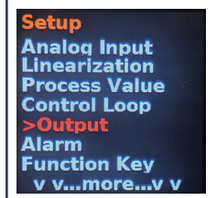
Sensor Types
- thermocouple
- millivolts
- volts
- milliamp
- 100Ω RTD
- 1000Ω RTD
- potentiometer
- analog input off

1. From **Home**, tap the ***forward arrow*** to go to **Operations**.
2. Scroll to **Setup** using the ***+/- keys*** then press ***forward arrow*** to select it.
3. Scroll to and select **Analog Input**.
4. Scroll to and select **Sensor Type**.
5. Scroll to and select your sensor type.
6. If you select ***Thermocouple***, a TC Linearization list opens. Use the ***+/- keys*** to find the correct type: J, K, N, R, S, or T.
7. If you select ***100Ω*** or ***1000Ω RTD***, press *back arrow* to return to **Sensor Type**, scroll to and select **RTD Leads**, then select **2** or **3**, as needed for your sensor.

7 - SET UP OUTPUTS

Repeat for all outputs

Output Functions
- heat control
- cool control
- event a
- event b
- alarm
- output off



1. From **Home**, tap the ***forward arrow*** to go to **Operations**.
2. Scroll to and select **Setup**.
3. Scroll to and select **the Output** list.
4. Scroll to **Output 1** and press ***forward arrow*** to select it.
5. Scroll and select **Output Function**.
6. Scroll up or down the list to select the output function, then use the back arrow to return to the **Output** list and select the settings for that Output function:

- For alarm outputs, select **Output Function Instance**, then select **Alarm Instance 1 - 4**.
- For heat or cool outputs, set the Time Base.
  - For a **Fixed Time Base,** select **Output Time Base** and use the ***numeric slider*** to set the time base cycle.
  - If you have a Switched DC or Open Collector and prefer a **Variable Time Base**, select **Output Low Power Scale** and set it with the ***numeric slider.*** Use the ***back arrow*** to return to **Output**, select **Output High Power Scale,** and set it with the ***numeric slider.***

8 - SET UP ALARM TYPES / SIDES

Alarm Types

process: alarm set points are set directly

deviation: alarm set points are relative to the control loop's set point.

Off: no alarm occurs

Alarm Sides

high: alarm when process is above high alarm set point.

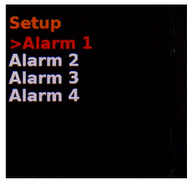
low: alarm when process is below low alarm set point.

both: high and low alarms are active.

Alarm sides allow you to set a high alarm, a low alarm, or both.

Alarm Type

1. From **Home**, tap the ***forward arrow*** to go to **Operations**, then scroll to and select **Setup**.
2. Scroll to and select **Alarm**.
3. Scroll to and select Alarm **1**, **2**, **3**, or **4**.
4. Scroll to and select **Alarm Type.**
5. Scroll to and select the type: **process**, **deviation**, or **off**



Alarm Sides

6. Use the ***back arrow*** to return to **Alarm 1**, **2**, **3**, or **4**.
7. Scroll to and select **Alarm Sides**.
8. Scroll to and select the desired sides option: **high**, **low**, or **both**.
9. Use the ***back arrow*** to return to the **Alarm** list.
10. Scroll to the **Alarm High Set Point** or **Alarm Low Set Point**, as necessary for your sides selection.

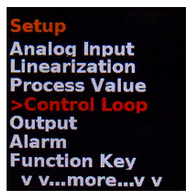
Repeat for remaining alarms

9 - CONTROL LOOP MODE, SET POINT, AUTOTUNE

NOTES: By default the control loop Heat algorithim is enabled for PID control and the Cool algorithim is OFF. To enable, go to Control Loop.

CAUTION: Autotune turns on the loop's heat output until the process value exceeds 90% of the set point, then turns the output off and repeats this. When finished the loop controls at the set point. Before starting Autotune, consider if it is safe to do so.

The system must be operational for autotuning to select PID settings.



Control Mode

1. From **Home**, tap the ***forward arrow*** to go to **Operations**.
2. Scroll to and select **Setup**.
3. Scroll to and select **Control Loop.**
4. Scroll to and select **Control Mode**.
5. Select **Off, Auto,** or **Manual**.
   Auto: loop adjusts output so process matches set point.
   Manual: user sets control loop output in percent power.
   Off: no control loop output

Control Loop Set Point

1. Press the **Home** button to return to the Home screen.
2. Use the ***numeric slider*** or the ***+/-keys*** to choose the set point.

Autotune

1. From **Setup**, scroll to and select **Control Loop.**
2. Scroll to and select **AutoTune**.
3. Select **Yes**.

Series EZ-ZONE® PM
WATLOW Electric Manufacturing Company
1241 Bundy Blvd. Winona, MN 55987 USA

Declares that the following product meets the essential requirements of the following European Union Directives by using the relevant standards show below to indicate compliance.

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 Vmdc or 24 Vac 50/60 Hz
Rated Power Consumption:	10 VA maximum PM3, PM6 Models 14 VA maximum PM3, PM8, PM4 Models
	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 +A1:2008, A2:2010	Radiated, radio-frequency electromagnetic field immunity 10V/M 80–1000 MHz, 3 V/M 1.4–2.7 GHz
IEC 61000-4-4:2012	Electrical fast-transient / burst immunity
IEC 61000-4-5:2014 +A1:2017	Surge immunity
IEC 61000-4-6:2013 + Corrigendum 2015	Immunity to conducted disturbances induced by radio-frequency fields
IEC 61000-4-11:2004 + A1:2017	Voltage dips, short interruptions and voltage variations immunity
EN 61000-3-2:2014	Limits for harmonic current emissions for equipment ≤ 16 Amps per phase
EN 61000-3-3:2013 + A1:2017	Voltage fluctuations and flicker ≤ 16 Amps per phase
SEMI F47-0212	Specification for semiconductor sag immunity Figure R1-1

For mechanical relay loads, cycle time may need to be extended up to 100 seconds to meet flicker requirements depending on load switched and source impedance.

2014/35/EU Low-Voltage Directive

EN 61010-1:2010* Safety Requirements of electrical equipment for measurement, control and laboratory use. Part 1: General requirements

* 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. Please Recycle Properly. Models PM(4, 8 or 9)E contain a type BR1225 coin cell battery which shall be recycled at end of life per 2006/66/EC Battery Directive as amended by 2013/56/EU Directive.

Models PM(XXXXX – (B, E, F, G, H, J, K)XXXXXX where (X = any letter or number allowed above) include *Bluetooth®* wireless technology and have been reviewed to the following additional requirements.

2014/53/EU Radio Equipment Directive (RED)

EN 61010-1:2010	Safety Requirements of electrical equipment for measurement, control and laboratory use. Part 1: General requirements
EN 61326-1:2013	Covering the essential requirements of article 3.1(a) or Directive 2014/53/EU Electrical equipment for measurement, control and laboratory use – EMC requirements (Industrial Immunity, Class A Emissions). *CAUTION: This equipment not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.*
EN 301 489-1 V2.1.1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU
EN 301 489-17 V3.1.1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU.
EN 300 328 V1.9.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
EN 300 328 V2.1.1	NVLAP Test Report 102825451HA Additional Receiver blocking test for to cover requirements for 2014/53/EU. NVLAP Test Report 11649468H-E

Contains Module FCC ID: VPYLBZY Part 15C 2.
Contains Module IC: 772C-LBZY RSS 210

- Japanese Radio Law（日本電波法）
  Type certification（工事設計 認証）
  R001-P00500

Output Power: Frequency Range 2402.0 - 2480.0 Output Power 0.001 Watts
Antenna gain: -0.6 dBi PCB antenna

Doug Kuzma, Director of Operations	Winona, Minnesota, USA	May 2018
Name and Title of Authorized Representative	Place of Issue	Date of Issue

Signature of Authorized Representative

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