



QUICK START GUIDE

PM PLUS™ CONTROLLER

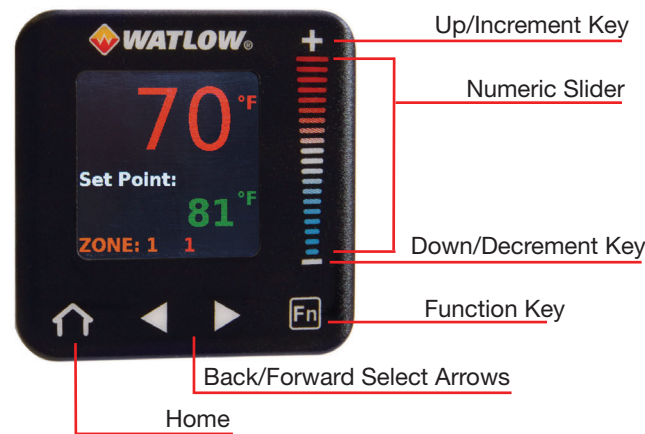
for configurations:

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

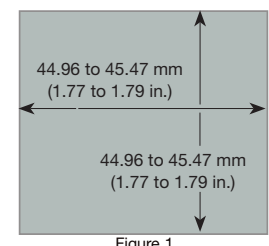
CONTROLLER INTERFACE



- 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

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).



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

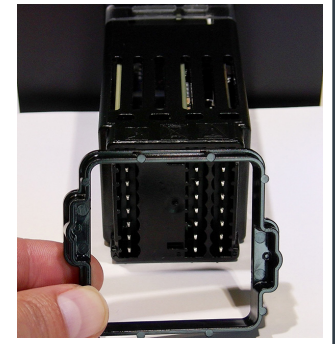


Figure 2



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.

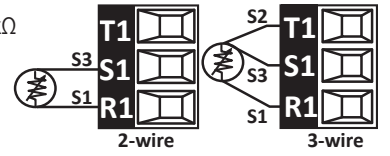


Figure 4: Thermocouple Wiring Example

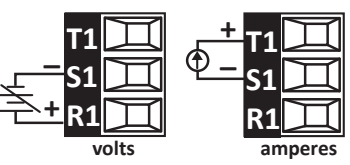
Thermocouple



Platinum 100Ω or 1000Ω RTD
20Ω max. round trip lead resistance



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



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

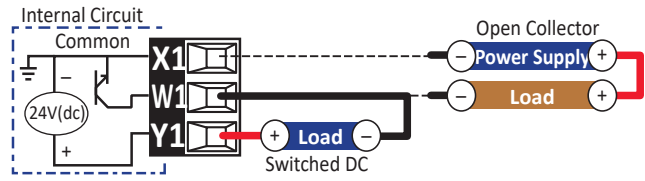
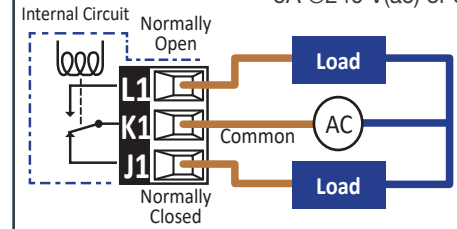
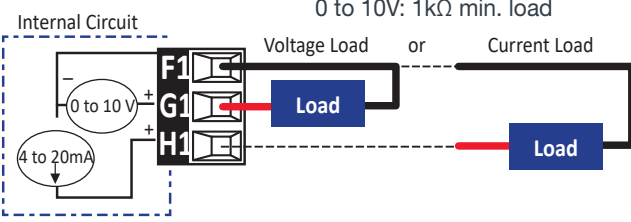


Figure 5: Switched DC Output Wiring

PM6 _ E - : 5A Form C Relay
5A @240 V(ac) or 30 V (dc)

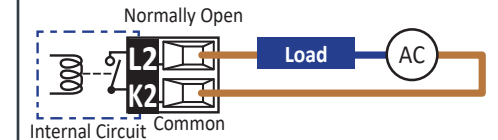


PM6 _ F - : Universal Process
0 to 20 mA: 800 Ω max. load
0 to 10V: 1kΩ min. load

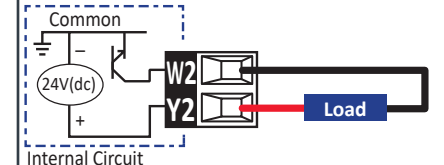


4 - WIRE OUTPUT 2

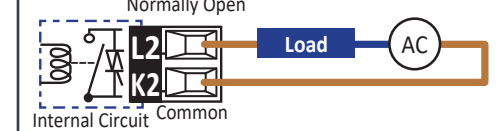
PM6 _ J - : 5A Form A Relay



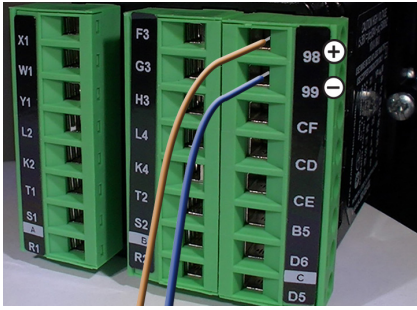
PM6 _ C - : Switched DC



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

- From Home, tap the *forward arrow* to go to **Operations**.
- Scroll to **Setup** using the +/- keys then press *forward arrow* to select it.
- Scroll to and select **Analog Input**.
- Scroll to and select **Sensor Type**.
- Scroll to and select your sensor type.
- If you select **Thermocouple**, a TC Linearization list opens. Use the +/- keys to find the correct type: J, K, N, R, S, or T.
- 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.



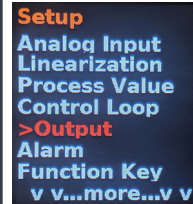
Repeat for remaining alarms

7 - SET UP OUTPUTS

Repeat for all outputs

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

- From Home, tap the *forward arrow* to go to **Operations**.
- Scroll to and select **Setup**.
- Scroll to and select the **Output** list.
- Scroll to **Output 1** and press *forward arrow* to select it.
- Scroll and select **Output Function**.
- 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.

Setup

Analog Input Linearization
 Process Value
 Control Loop
 Output
>Alarm
 Function Key
 v v...more...v v

Setup

>Alarm 1
 Alarm 2
 Alarm 3
 Alarm 4

Alarm Type

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

Alarm Sides

- Use the *back arrow* to return to **Alarm 1, 2, 3, or 4**.
- Scroll to and select **Alarm Sides**.
- Scroll to and select the desired sides option: **high**, **low**, or **both**.
- Use the *back arrow* to return to the **Alarm** list.
- 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 algorithm is enabled for PID control and the Cool algorithm 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.

Setup

Analog Input Linearization
 Process Value
>Control Loop
 Output
 Alarm
 Function Key
 v v...more...v v



Control Mode

- From Home, tap the *forward arrow* to go to **Operations**.
- Scroll to and select **Setup**.
- Scroll to and select **Control Loop**.
- Scroll to and select **Control Mode**.
- 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

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

Autotune

- From **Setup**, scroll to and select **Control Loop**.
- Scroll to and select **AutoTune**.
- Select **Yes**.

CE Series EZ-ZONE® PM
 WATLOW Electric Manufacturing Company
 1241 Bundy Blvd. Winona, MN 55967 USA

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

Designation: Series EZ-ZONE® PM (Panel Mount)
 Model Numbers: PM 0, 3, 4, 8 or 4-digit letter or number(1, 2, 3 or 4)(A, C, E, F or K)(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: 120 to 240 V ac, 50/60 Hz or 15 to 30 Vdc, 24 Vdc, 50/60 Hz
 Rated Power Consumption: 10 VA maximum PFK, PMS Models
 14 VA maximum PFK, PMS Models

EN 61326-1:2013
 IEC 61000-4-2:2008
 IEC 61000-4-3:2007 +A1:2008
 A2:2010
 IEC 61000-4-4:2012
 IEC 61000-4-5:2014 +A1:2017
 IEC 61000-4-6:2013
 Compliance 2015
 IEC 61004-11:2004 + A1:2017
 EN 61003-3:2014
 EN 61003-3-3:2013 + A1:2017
 SEMI F47-2012
 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

2014/53/EU Low Voltage Directive
 EN 61010-1:2010¹ Safety Requirements of electrical equipment for measurement, control and laboratory use, Part 1: General requirements
¹ 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 2014/53/EU RFI/EMC Directive Per 2014/53/EU WEEE Directive, RoHS Directive, REACH Directive, Models PML4, 8 or 9/E contains a type B/R122 coin cell battery which shall be recycled at end of life per 2006/66/EC Battery Directive as amended by 2013/24/EU Directive

Models PML6000C, (B, E, F, G, H, J, K)000000C where (X = any letter or number allowed above) include Bluetooth® wireless technology and have been reviewed to the following additional requirements.

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 (Industrial Immunity, Class A Emissions)
 EN 301 488-1 V2.1.1 Electromagnetic compatibility (EMC) standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/53/EU
 EN 301 488-1 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 V1.0.1 Electromagnetic compatibility and Radio spectrum Matters (ERM), Wireless 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&TE Directive
 EN 300 328 V2.1.1 Additional Receiver blocking test for cover requirements for 2014/53/EU, WLPAT Test Report 118448094E

EN 300 328 V2.1.1
 Contains Module FCC ID: V9912BY Part 15C
 WLPAT Test Report 118448094E
 - Japanese Radio Law (日本電波法)
 Type Approval: 上電電認 認許
 Output Power: Frequency Range: 2402.0 - 2480.0 Output Power 0.001 Watts
 Antenna gain: -0.5 dB PCB antenna

Signature of Authorized Representative
 Doug Kuehls, Director of Operations
 Winona, Minnesota, USA
 Date of Issue: May 2018

Repeat for remaining alarms