Manuals+ — User Manuals Simplified.

WATLOW PM6 PM Plus Controller User Guide

Contents

WATLOW PM6 PM Plus Controller

CONTROLLER INTERFACE

- Up/Increment Key
- Numeric Slider
- Down/Decrement Key
- Function Key
- Back/Forward Select Arrows
- Home
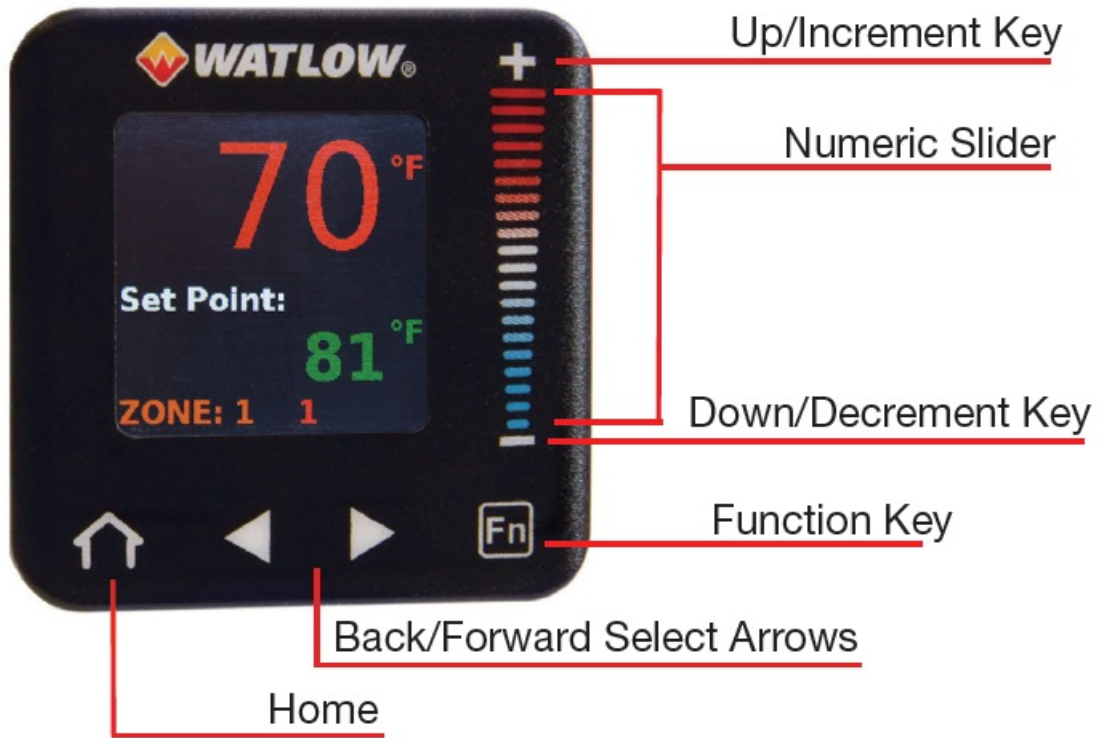
- Scroll up or down lists using the + or – keys.
- Increase or decrease numeric parameters with the slider

- 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.

MOUNT TO PANEL

1. Make the panel cutout using the measurements in figure 1.

44.96 to 45.47 mm
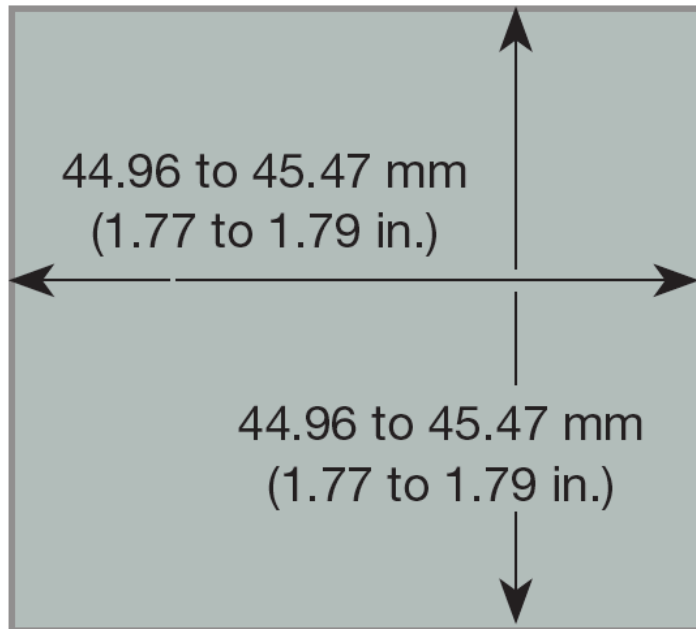(1.77 to 1.79 in.)

44.96 to 45.47 mm
(1.77 to 1.79 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.
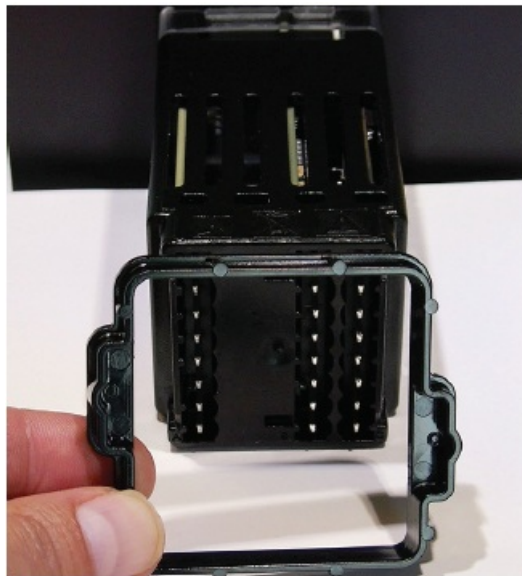

Figure 2

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 inlbs 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 3

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.
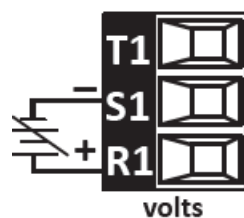

Figure 4: Thermocouple Wiring Example

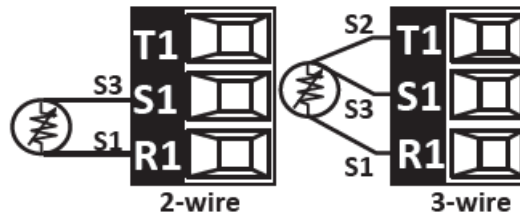**Thermocouple**

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

volts   amperes

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

2-wire   3-wire

WIRE OUTPUT 1

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

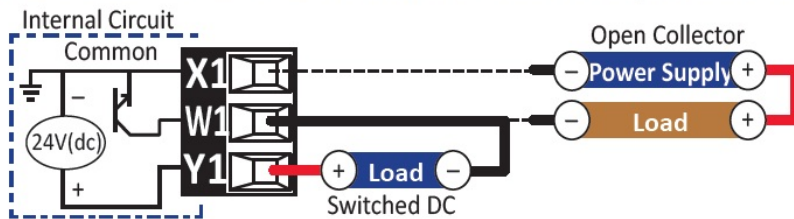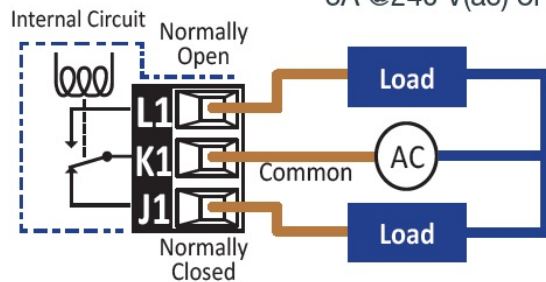## PM6_ _ C _ - _ _ _ _ _ _ _ : Switched DC or Open Collector

PM6_ _ E _ - _ _ _ _ _ _ _ : 5A Form C Relay
5A @240 V(ac) or 30 V (dc)

Figure 5: Switched DC Output Wiring
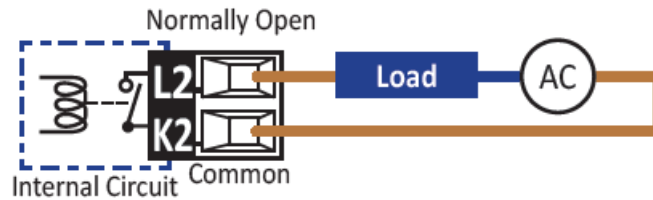
PM6_ _ F _ - _ _ _ _ _ _ _ : Universal Process
0 to 20 mA: 800 Ω max. load
0 to 10V: 1kΩ min. load
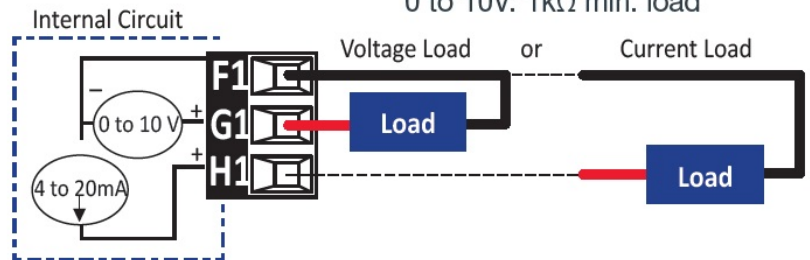
WIRE OUTPUT 2

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

Normally Open

Internal Circuit · Common

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

Common

24V(dc)

Internal Circuit

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

Normally Open

Internal Circuit · Common
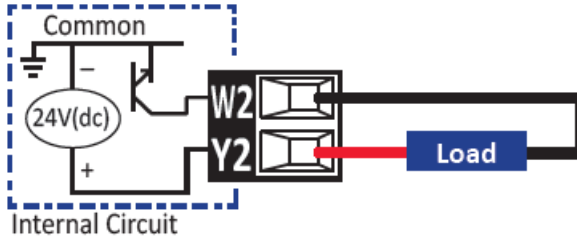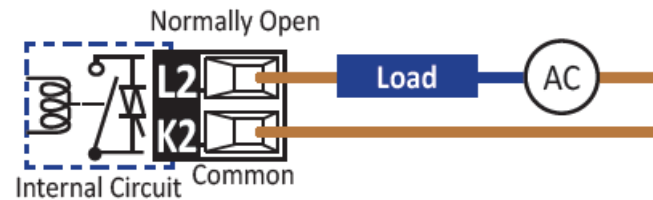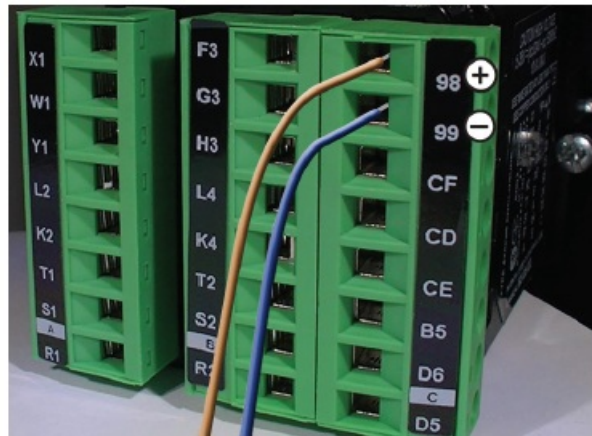
CONNECT POWER

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.

SET UP THE SENSOR INPUT

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.

SET UP OUTPUTS

Output Functions

- heat control
- cool control
- event a
- event b
- alarm
- output off
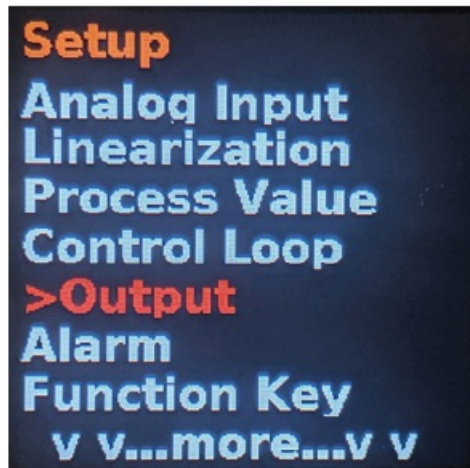
1. From Home, tap the forward arrow to go to Operations.
2. Scroll to and select Setup.
3. Scroll to and select the Output list.
4. Scroll to Output 1 and press forward arrow to select it.
5. Scroll and select Output Function.
6. Scroll up or down the list to select the output function, then use the 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.

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
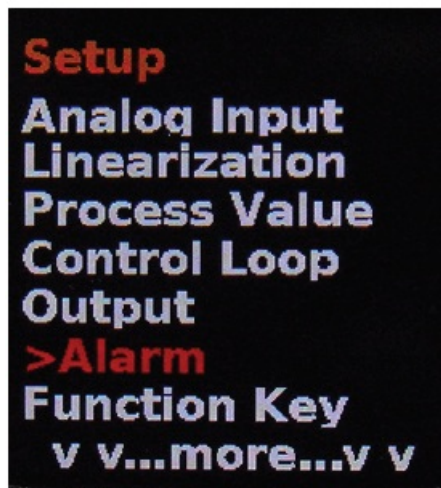**Alarm Sides**
high: alarm when process is above high alarm set point.
low: alarm when process is below low alarm set point.
both: high and low alarms are active.
Alarm sides allow you to set a high alarm, a low alarm, or both.

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.

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.

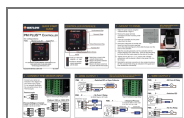2. Scroll to and select AutoTune.

3. Select Yes.

Please reference the electronic User Guide for Third Party Software Licensing statements.
For assistance contact Watlow: **www.watlow.com**
1-800-WATLOW2 (1-800-928-5692)
wintechsupport@watlow.com

Documents / Resources

	WATLOW PM6 PM Plus Controller [pdf] User Guide PM6 PM Plus Controller, PM6, PM Plus Controller, Plus Controller, Controller

References

- ◈ **Global Supplier of Industrial Electric Thermal Solutions | Watlow**