

# PM24 Series Controller Specifications

## Overview

The PM24 is a smart process/temperature indicator with two standard relay output alarms. It is used for monitoring and temperature control, as well as for reading analog signals in industrial processes and laboratories.

Universal inputs on the PM24 are all standard, so you can select the input signal from the front panel, without internal dipswitches, jumpers or hardware changes. It accepts seven types of thermocouples and two types of Pt100 RTDs, with selectable °F/°C for all temperature sensors. The linear input accepts 4-20 mA, 0-50 mV and 0-10 Volt signals. The module also accepts and linearizes nine types of 4-20 mA input signals from non-linear thermocouples and RTD field transmitters. The voltage and current inputs are fully scalable to engineering units from -1,999 to 9,999 digital units, with a selectable decimal point, which makes the PM24 perfect for use with pressure transmitters, pH, flow level, strain-gage, and other linear process inputs.

## Features

- Process and temperature multi-sensor selectable input, without dipswitches or hardware change
- Accepts seven types of thermocouples, two types of Pt100 RTD temperature sensors, and DC mA, mV, and Volt signals
- Pt100 RTD input with 0.1° or 1° temperature resolution
- Selectable °F/°C for all temperature sensors
- Linearizes 9 types of “non-linear 4-20mA” input signals from field non-linear temperature transmitters
- Two standard SPST output relay alarms with 11 function modes: process high/low, deviation high/low, differential, sensor break, and alarm inhibition at power-up
- Input sensor break alarm in any condition
- Fast 100ms (10Hz) sampling input improves the alarm loop control
- Universal power supply from 90 to 260 VAC

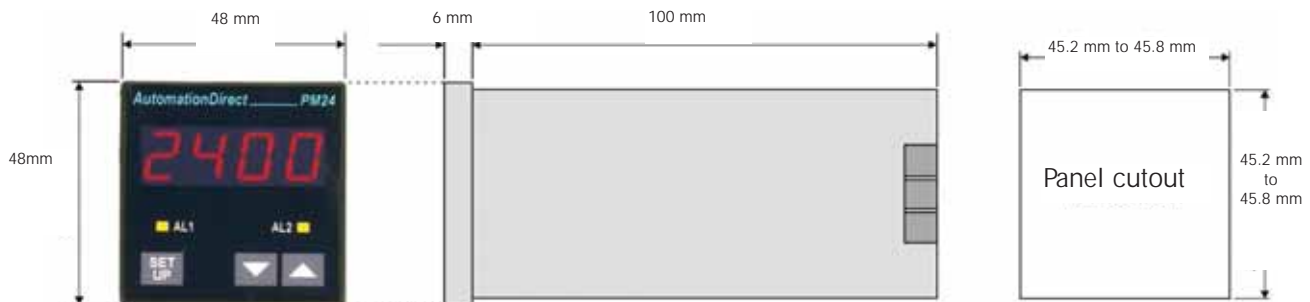
Specifications		
<b>Controller Series</b>	PM24 Series	
<b>Dimensions</b>	48x48x106 mm (1/16 DIN), weight 200g (approximate)	
<b>Panel Cutout</b>	45.5x45.5mm (+/-0.3 mm)	
<b>Terminal Connection</b>	Screws accepting 16-24 AWG wires or 6.3 mm fork lug	
<b>Power</b>	90 to 260 VAC - 7VA maximum	
<b>Operating Environment</b>	0 to 50°C (32° to 122°F), humidity: 10 to 90% RH, non-condensing	
<b>Instrument Case</b>	1/16 DIN size, flame-retardant ABS plastic case	
<b>Warm-up Time</b>	15 minutes maximum	
<b>Input</b>	<b>Display Resolution</b>	0.1°F/C or 1°F/C (Pt100 RTD); 1°F/C (thermocouples)
	<b>Input Sample Rate</b>	10 per second (100 ms)
	<b>Accuracy</b>	Thermocouples J, K, N, T and E: 0.2% of span ±1°C ± 1 digit Thermocouples R and S: 0.25% of span ±3°C ± 1 digit Pt100, mA mV and Volts: 0.2% of span ± 1 digit
	<b>Impedance</b>	0-50mV and thermocouples: >10 MΩ 0-10 Volts DC: >1 MΩ 4-20 mA DC: 100Ω
<b>Output</b>	<b>Pt100 Measurement</b>	DIN 43760 standard (α=0.00385) 3-wire circuit, cable resistance compensation Excitation current: 170µA
	<b>Resistive</b>	2 - SPST Relays: 3A @ 250VAC/3A @ 125VAC/3A @ 30VDC
	<b>Inductive</b>	2 - SPST Relays: 2A @ 250VAC/2A @ 30VDC

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Part Number Selection Guide								
Part Number	Input Power	PV Universal Sensor Input	Remote SP Analog Input	Digital Input	Discrete Output	Analog Output	Pulse Output	Price
<b>PM24-2000-AC</b>	90-260VAC	Table 1	None	None	2 mechanical relays	None	None	<--->
Accessories								
Part Number	Description							Price
<b>PANEL-16</b>	Mounting clip for 1/16th DIN timers and temperature/process controllers. Package of 5 clips. (One clip included with each controller)							<--->

Table 1 - Selectable Input types	
Input Type	Range
Thermocouple J (1°C resolution)	-166 to 1400°F (-110 to 760°C)
Thermocouple K (1°C resolution)	-238 to 2498°F (-150 to 1370°C)
Thermocouple S (1°C resolution)	32 to 3200°F (0 to 1760°C)
Thermocouple T (1°C resolution)	-256 to 752°F (-160 to 400 °C)
Thermocouple E (1°C resolution)	-130 to 1328°F (-90 to 720°C)
Thermocouple N (1°C resolution)	-238 to 2372°F (-150 to 1300°C)
Thermocouple R (1°C resolution)	32 to 3200°F (0 to 1760°C)
RTD Pt100 (0.1°C resolution)	-199.9 to 986.0°F (-199.9 to 530°C)
RTD Pt100 (1°C resolution)	-326 to 986°F (-199 to 530°C)
4 to 20 mA	Linearized J: -166 to 1400°F (-110 to 760°C)
4 to 20 mA	Linearized K: -238 to 2498°F (-150 to 1370°C)
4 to 20 mA	Linearized S: 32 to 3200°F (0 to 1760°C)
4 to 20 mA	Linearized T: -256 to 752°F (-160 to 400 °C)
4 to 20 mA	Linearized E: -130 to 1328°F (-90 to 720°C)
4 to 20 mA	Linearized N: -238 to 2372°F (-150 to 1300°C)
4 to 20 mA	Linearized R: 32 to 3200°F (0 to 1760°C)
4 to 20 mA	Linearized Pt100: -199.9 to 986.0°F (-199.9 to 530.0°C)
4 to 20 mA	Linearized Pt100: -326 to 986°F (-199 to 530°C)
0 to 50mV	Linear. Programmable range from -1999 to 9999
4 to 20 mA	Linear. Programmable range from -1999 to 9999
0 to 10V	Linear. Programmable range from -1999 to 9999

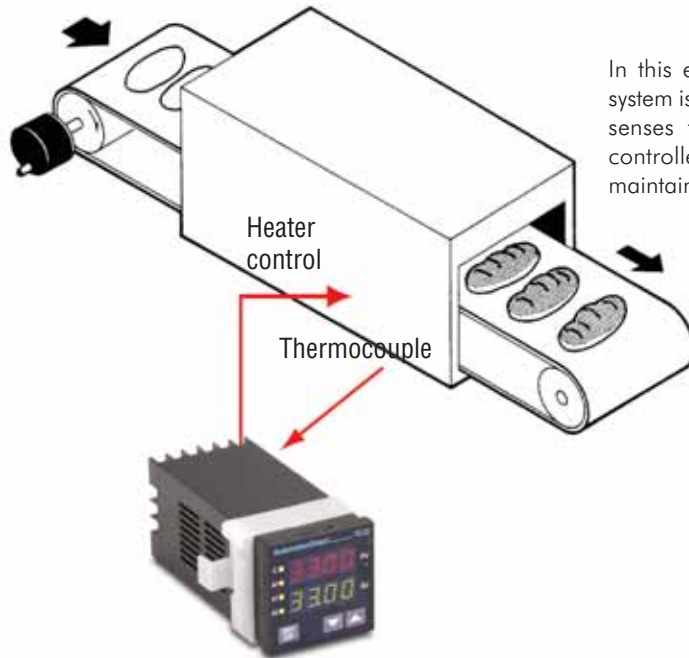
## Main dimensions and panel cutout



# Temperature / Process Controllers

Temperature/Process Controllers Selection Guide			
<b>Description</b>	<b>On/Off Controller PM Series</b> On/Off controller with two mechanical relays. Universal inputs include T/C, RTD, mA, mV, V. Fully scalable display	<b>Temperature Controller TC Series</b> Temperature controller with two mechanical relays and one 4-20mA output. Inputs include T/C and RTD. Autotune PID control with ramp and soak profile	<b>Process Controller PC35 Series</b> Process controller with two mechanical relays and one 4-20mA output. Inputs include T/C, RTD, mA, mV, V. Autotune PID control with 49 segment ramp/soak profile
<b>Input (Universal PV)</b>	T/C, RTD, mA, mV, V	T/C, RTD	T/C, RTD, mA, mV, V
<b>Input (Digital)</b>	N/A	N/A	Optional: One
<b>Outputs (Control, Alarm)</b>	Two mechanical relays	Two mechanical relays or one mechanical relay Optional: One 4-20mA output Optional: DC pulse output	Two mechanical or two solid state relays Optional: One 4-20mA output Optional: DC pulse output
<b>Output Relay Ratings</b>	Mechanical 3A @ 250VAC	Mechanical 3A @ 250VAC	Mechanical 3A @ 250VAC Solid state 1A @ 240VAC
<b>4-20 mA Load Rating</b>	N/A	500Ω @ 12VDC	500Ω @ 24VDC
<b>Input Power</b>	90-260VAC	90-260VAC	90-260VAC
<b>Control Routines</b>	On/off control	PID, autotune, on/off control, Time proportioned	PID, autotune, time proportioned, ON, OFF
<b>Security</b>	Three level function protection via keypad	N/A	Seven level function protection via keypad
<b>Enclosure Rating</b>	NEMA 1 - faceplate	NEMA 1 - faceplate	Nema 1 - faceplate
<b>Prices starting at</b>	<--->	<--->	<--->
<i>Note: The manual for these products is available online. Please visit our Web site at <a href="http://www.automationdirect.com">www.automationdirect.com</a>.</i>			

## Application example: oven temperature control



In this example, an oven control system is shown. The thermocouple senses the temperature and the controller adjusts the heater to maintain a constant temperature.