

MS Series

# Temperature Stage Control Modules

## Description

The MS Series Temperature Controls are versatile, microprocessor-based, multifunction, programmable temperature controls. They are designed for single and multiple stage temperature control applications.

Depending on the model selected, the MS Series Controls can operate in the following modes:

- Direct mode
- Reverse mode
- Deadband mode
- Independent Setpoint mode

The MS Series Controls have large, easy-to-read, red LED displays. These compact controls are available in panel mount and DIN rail mount models. MS Series Controls use the A99B temperature sensors, which allow remote mounting of the display unit.

## Features

- programmable functions allow adjustment of control settings to meet application needs
- alarm management functions provide visible alarm codes on the display
- easily readable LED display shows temperature and functions quickly and clearly
- programming button lockout allows user to disable programming buttons to deter accidental or unauthorized changes
- accurate temperature sensors provide precise control performance with up to 300 feet of wiring (An adjustable offset is provided for longer wiring)
- self-test procedure checks control operation by cycling all outputs and testing all LEDs



**MS4 Series Panel and DIN Rail Mount, Multi-Stage, Electronic Temperature Controls**

## Applications

Application	MS1	MS2	MS4
Rooftop heating or cooling units	✓	✓	✓
Boiler or pump control	✓	✓	✓
Convenience store coolers	✓	✓	✓
Space temperature control	✓	✓	
Cooling tower pump control	✓		
Compressor or chiller staging		✓	✓
Reach-in Coolers		✓	✓
Supermarket display cases for produce		✓	✓
Restaurant and Convenience store walk-in coolers		✓	✓

## Selection Chart

Code Number	Description	Shipping Weight lb (g)
MS1DR24T-11C	MS1 Single Stage, DIN Rail Mount Temperature Control, A99BB-200C sensor included	0.75 lb (340 g)
MS2DR24T-11C	MS2 Two Stage, DIN Rail Mount Temperature Control, A99BB-200C sensor included	0.79 lb (360 g)
MS2PM24T-11C	MS2 Two Stage, Panel Mount Temperature Control, A99BB-200C sensor included	0.53 lb (240 g)
MS4DR24T-11C	MS4 Four Stage, DIN Rail Mount Temperature Control, 2 A99BB-200C sensors included	1.17 lb (530 g)
MS4PM24T-11C	MS4 Four Stage, Panel Mount Temperature Control, 2 A99BB-200C sensors included	0.90 lb (410 g)

## Accessories

Code Number	Description
A99BB-200C	Temperature Sensor: Range: -40 to 212°F (-40 to 100°C) Cable length and type: 6-1/2 ft (2 m) PVC
A99BB-300C	Temperature Sensor: Range: -40 to 212°F (-40 to 100°C) Cable length and type: 9-3/4 ft (3 m) PVC
A99BB-500C	Temperature Sensor: Range: -40 to 212°F (-40 to 100°C) Cable length and type: 16-3/8 ft (5 m) PVC
A99BB-600C	Temperature Sensor: Range: -40 to 212°F (-40 to 100°C) Cable length and type: 19-1/2 ft (6 m) PVC
A99BA-200C	Temperature Sensor: Range: -40 to 212°F (-40 to 100°C) Cable length and type: 6-1/2 ft (2 m) Shielded

## Temperature Stage Control Modules (Continued)

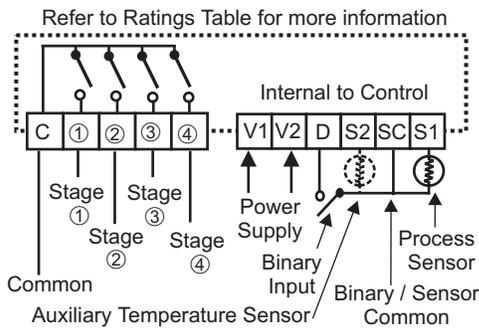
### Technical Specifications

MS Series Temperature Stage Control Modules		
Power Requirements		24 VAC, 50/60 Hz, Class 2 (20 - 30 VAC)
Power Consumption		5 VA @ 24 VAC
Accuracy		± 1.8°F (± 1°C)
Ambient Conditions	Operating	+14 to +140°F (-10 to +60°C); 0 to 95 % RH (non-condensing)
	Storage	-22 to +176°F (-30 to +80°C); 0 to 95 % RH (non-condensing)
Agency Listings		UL Recognized: File E194024, CCN XAPX2 Canadian UL Recognized: File E194024, CCN XAPX8
Dimensions (H x W x D)	Panel Mount	1.38 x 2.95 x 2.68 in. (35 x 75 x 68 mm)
	DIN Rail	4.65 x 2.76 x 2.07 in. (118 x 70 x 52.5 mm)

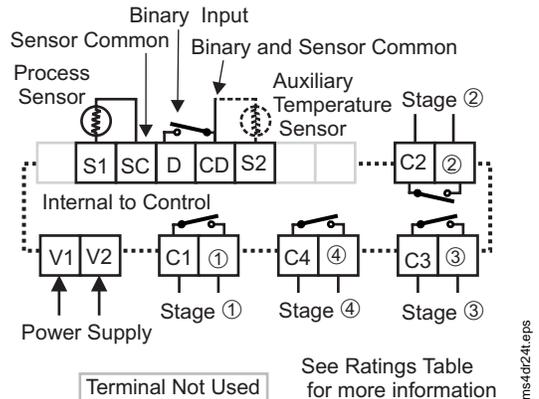
### Electrical Ratings

	120 VAC	240 VAC	24 VDC
Horsepower	1/4	1/2	---
Full Load Amperes	5.8	4.9	---
Locked Rotor Amperes	34.8	29.4	---
Inductive (Non-Motor) Amperes	8	8	8
Pilot Duty VA	275	450	---

Note: Relay outputs must not exceed 20 Amperes total connected load. Open collector transistors on the MS1 alarm circuits have a maximum rating of 40 VDC 100 mA. Alarms require separate power source.



**MS4PM24T Panel Mount Control Wiring**



**MS4DR24T Din Rail Mount Control Wiring**