



Power Input

Standard: 90 to 250 VAC, 47–63 Hz, 12VA, 6W maximum
Optional: 11 to 40 VDC / 20 to 28 VAC, 47–63 Hz, 12VA, 6W maximum

Signal Input

Resolution: 18 Bits
Sampling Rate: 5 Times / Second (200msec)
Maximum Rating: -2VDC minimum, 12VDC maximum
Sensor Break Detection: Sensor open for Thermocouple and RTD inputs, sensor short for RTD input, below 1mA for 4-20mA input, below 0.25V for 1 - 5V input, not available for other inputs
Sensor break responding time: Within 4 seconds for Thermocouple and RTD inputs, 0.1 second for 4-20mA and 1 - 5V inputs

Remote Set Point Input

Type: Linear current, Linear voltage
Range: -3-27mA, -1.3-11.5V **Accuracy:** $\pm 0.05\%$
Input Impedance: Current: 2.5Ω , Voltage: $1.5M\Omega$
Resolution: 18 bits **Sampling Rate:** 1.66 times/second
Maximum Rating: 280mA maximum for Current Input, 12VDC maximum for Voltage Input
Sensor Break Detection: Below 1mA for 4-20mA input, below 0.25V for 1 - 5V input, not available for other inputs

Event Input

Number of Event Inputs: 6
Logic Low: -10V minimum, 0.8V maximum
Logic High: 2V minimum, 10V maximum

CT Input

CT type: TEC99998
Accuracy: $\pm 2\%$ of full scale reading, ± 1 digit maximum
Input Impedance: 294Ω
Measurement Range: 0-50A AC
Output of CT: 0-5V DC
CT Mounting: Wall (Screw) mount
Sampling Rate: 1 time/second

Output 1 / Output 2

Type: Relay, pulsed voltage, linear voltage and linear current
Relay Rating: 2A, 240V AC, 200000 life cycles for resistive load
Pulsed Voltage: Source voltage 5V, Current limiting resistance 66Ω
Linear Output Resolution: 15 Bits
Isolation Breakdown Voltage: 1000 V AC
Load Capacity of Linear Output: Linear current: 500Ω maximum, Linear voltage: $10K\Omega$ minimum

Alarm

Relay Type: Form A
Maximum Rating: 2A, 240VAC, 200000 life cycles for resistive load
Alarm Functions: Dwell Timer, Deviation Low, Deviation High, Deviation Band Low, Deviation Band High, Process High, Process Low
Alarm Mode: Latching, Hold, Normal, Latching/Hold
Dwell Timer: 0.1-4553.6 minutes

Data Communications

Interface: RS-485 **Protocol:** Modbus RTU
Address: 1-247 **Baud Rate:** 2.8 - 115.2 Kbits/sec
Parity Bit: None, Even or Odd **Stop Bit:** 1 or 2 Bits
Data Length: 7 or 8 Bits **Communication Buffer:** 160 bytes

Analog Retransmission

Output Signal: 4-20 mA, 0-20 mA, 0-10V
Resolution: 15 Bits **Accuracy:** $\pm 0.05\%$ of span $\pm 0.0025\%$ / $^{\circ}\text{C}$
Load Resistance: 0-500 Ω for current output, $10K\Omega$ minimum for voltage output
Isolation Breakdown: 1000VAC minimum
Linear Output Ranges: 0-22.2mA (0-20mA / 4-20mA), 0-5.55V (0-5V, 1-5V), 0-11.1V (0-10V)

User Interface

Keypad: 4 Keys **Display Type:** 4 digit LCD display
No. of Display: 3
Upper Display Size: 0.98" (25mm)
Lower Display Size: 0.55" (14mm)

Programming Port

Interface: Micro USB
PC Communication Function: Automatic Setup, Calibration and Firmware Upgrade

Control Mode

Output 1: Reverse (Heating) or Direct (Cooling) Action
Output 2: PID cooling control, Cooling P band 50~300% of PB, Dead band -36.0 ~ 36.0 % of PB
ON-OFF: 0.1-90.0 ($^{\circ}\text{F}$) hysteresis control (P band = 0)
P or PD: 0-100.0 % offset adjustment
PID: Fuzzy logic modified Proportional band 0.1 ~ 900.0 $^{\circ}\text{F}$, Integral time 0~3600 seconds, Derivative time 0-360.0 seconds
Cycle Time: 0.1-90.0 seconds
Manual Control: Heat (MV1) and Cool (MV2)
Failure Mode: Auto transfer to manual mode while sensor break or A-D Converter damage
Ramping Control: 0 to 900.0 $^{\circ}\text{F}$ / Minute or 0 to 900.0 $^{\circ}\text{F}$ / Hour Ramp Rate

Environmental and Physical Specifications

Operating Temperature: -10 $^{\circ}\text{C}$ to 50 $^{\circ}\text{C}$
Storage Temperature: -40 $^{\circ}\text{C}$ to 60 $^{\circ}\text{C}$
Humidity: 0 to 90 % RH (Non-Condensing)
Insulation Resistance: $20M\Omega$ minimum (@500V DC)
Dielectric Strength: 2000V AC, 50/60 Hz for 1 Minute
Vibration Resistance: 10 to 55 Hz, 10m/s² for 2 Hours
Shock Resistance: 200 m / s² (20g)
Moldings: Flame retardant polycarbonate
Mounting: Panel
Dimensions W x H x D: 3-3/4 x 3-3/4 x 2-3/8" (96 x 96 x 59 mm)
Depth Behind Panel: 2" (50 mm)
Cut Out Dimensions: 3-5/8 x 3-5/8" (92 x 92 mm)
Weight: 10 oz (290 g)
IP50 for the front panel, IP20 for rear terminals and housing.
All indoor use.

Rear Terminal Connections

