Temperature Controllers

Model TEC-4300 Specifications (1/4 DIN)

Power Input
Standard: 90 - 264 VAC, 47-63 Hz, 15 VA, 7W maximum
Optional: 11 - 26 VAC / VDC, 15 VA, 7W maximum

Signal Input
Input 1
Resolution: 18 bits  Sampling Rate: 5 samples / second
Accuracy: ±24% of span typical
Maximum Rating: -2 VDC minimum, 12 VDC maximum (1 minute for mA input)
Temperature Effect: ±1.5 μV / °C for all inputs except mA input ±3.0 μV / °C for mA input
Sensor Lead Resistance Effect: T/C: 0.2μV/ohm
3-wire RTD: 2.6Ω/ohm of resistance difference of two leads
Burn-out Current: 200mA
Common Mode Rejection Ratio (CMRR): 120 dB
Normal Mode Rejection Ratio (NMRR): 55 dB
Sensor Break Detection: Sensor open for TC, RTD and mV inputs; sensor short for RTD input; below 1 mA for 4-20 mA input;
below 0.25V for 1-5V input; unavailable for other inputs
Sensor Break Response Time: Within 4 seconds for TC, RTD and mV inputs; 0.1 second for 4-20 mA and 1-5 V inputs

Input 2
Resolution: 18 bits  Sampling Rate: 1.66 times per second
Sensor Break Response Time: 0.5 second
Types: Current Transducer
mA: -3 to 27 mA
V: -1.3 to 11.5 VDC

Input 3
Event Input Functions: Select 2nd setpoint, and/or PID, disable output 1 and/or output 2, remote lockout

Output 1 or Output 2
Relay Rating: 240 VAC, 2 Amp
Pulsed Voltage: Source voltage 5V, Current limiting resistance 66Ω

Linear Output — Characteristics
Type  Tolerance  Zero Tolerance  Span Capacity  Load
4-20 mA  3.6-4.0 mA  20-21 mA  5kΩ max
0-20 mA  0 mA  20-21 mA  5kΩ max
0-5 VDC  0 VDC  5-5.25 VDC  10 Ω min
1-5 VDC  0.9-1.0 VDC  5-5.25 VDC  10 Ω min
0-10 VDC  0 VDC  10-10.5 VDC  10 Ω min

Resolution: 15 bit analog to digital converter
Isolation Breakdown Voltage: 1000 VAC
Solid State Relay (Triac) Output
Rating: 1A / 240 VAC
Inrush Current: 20A for 1 cycle
Min. Load Current: 50 mA rms
Max. Off-state Leakage: 3 mA rms
Max. On-state Voltage: 1.5 VAC rms
Insulation Resistance: 1000 Megohms minimum at 500 VDC
Dielectric Strength: 2500 VAC for 1 minute

Alarm 1 / Alarm 2
Relay: 2 Amp, 240 VAC  Alarm 1: SPDT  Alarm 2: SPST (NO)
Alarm Functions:
Dwell timer  PV1-PV2 High / Low Alarm
Deviation Band High / Low Alarm  Loop Break Alarm
PV2 High / Low Alarm  Sensor Break Alarm
Alarm Mode: Normal, Latching, Hold, Latching / Hold
Dwell Timer: 0 - 6553.5 minutes

Data Communications
Interface: RS-232 (1 unit), RS-485 (up to 247 units)
Protocol: Modbus Protocol – RTU mode

User Interface
Dual 4-digit LED Display: 0.55” (14 mm) Red Process Display
Keypad: 3 keys
0.40” (10 mm) Green Setpoint Display
Programming Port: For automatic setup, calibration and testing

Control Mode
Output 1: Reverse (heating) or direct (cooling) action
Output 2: PID cooling control, cooling P band 255% of PB
On-Off: 0.1 - 100.0°F hysteresis control (P band = 0)
P or PD: 0 - 100.0% offset adjustment
PID: Fuzzy logic modified
Proportional band: 0.1 - 932°F (500°C)
Integral: 0 - 1000 seconds
Derivative: 0 - 360 seconds
Cycle Time: 0.1 - 100 seconds
Manual Control: Heat (MV1) and Cool (MV2)
Auto-tuning: Cold start and warm start
Failure Mode: Auto-transfer to manual mode with sensor break or A-D converter damage
Ramping Control: 0 - 900°F/min or 0 - 900°F/hr ramp rate
Power Limit: 0 - 100% for output 1 and output 2
Remote Setpoint: Programmable range for voltage or current input
Digital Filter: Time constant: settable from 0.2 to 60 seconds

Analog Retransmission
Analog Retransmission Functions: PV1, PV2, PV1-PV2, PV2-PV1, Setpoint, MV1, MV2, PV-SV deviation value
Output Span: 4-20 / 0-20 mA, 0-1, 0-5, 1-5, 0-10 VDC
Accuracy : ±0.05 % of span, ±0.0025 %/°C

Environmental and Physical
Operating Temperature: 14 to 122°F (-10 to 50°C)
Humidity: 0 to 90% RH, non-condensing
Dielectric Strength: 2000 VAC, 50/60 Hz for 1 minute
Dimensions: 3-3/4” x 3-3/4” x 2-9/16” (96 x 96 x 65 mm) HxWxD
Depth behind panel: 2” (53 mm)
Panel Cutout: 3-5/8” x 3-5/8” (92 x 92 mm) HxW
Weight: 0.56 lb. (255 grams)

Approval Standards
Safety: UL873, CSA C22.2 No. 24-93
EN61010-1 (IEC1010-1)

Stock and Common Part Numbers
(Power Input: 90-264 VAC, no alarm 2, no data com)

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<th>Alarm 1</th>
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