Digital temperature controllers CTH/CTD

CTD 43/46

CTH 46
- Heating / cooling function
- Measurement and setpoint display CTD 43

CTD 43
- Heating or cooling function
- Measurement display
- Measurement deviation display-Setpoint via LED
- 1 configurable alarm CTD 46

CTD 46
- Heating or cooling function
- Measurement and setpoint display
- 1 configurable alarm

Specifications

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<td>24 V AC DC</td>
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Connections

CTH 46 relay output

1. Supply
2. Main output 250 V AC / 3 A resistive
3. Cool output 250 V AC / 1 A resistive
4. 14-15: Input 50 mA AC (Current transformer connected for load break monitoring or selection of 2nd setpoint)

CTD 43 logic output

1. Supply
2. Main output 0-24 V DC / 20 mA max
3. Cool output 250 V AC / 1 A resistive
4. 14-15: Input 50 mA AC (Current transformer connected for load break monitoring or selection of 2nd setpoint)

CTD 46 logic output

1. Supply
2. Main output 0-24 V DC / 20 mA max
3. Alarm output 250 V AC / 1 A
4. Thermocouple or resistance temperature detector connection

To order, see page 6
General characteristics

Supply
100 to 240 VAC

Frequency (Hz)
50 / 60

Tolerance
-15 % +10 % Un

Consumption
5 VA

Display CTD 43
Measurement or setpoint : red LEDs, 3-digit, 7-segment, height 10 mm

Display CTH 47 / CTD 46
Measurement : red LEDs, 3-digit, 7-segment, height 10 mm
Setpoint : green LEDs, 3-digit, 7-segment, height 7.5 mm

Protection
Switch
the configuration and calibration are accessed via an internal switch, which can only be accessed when the equipment is disconnected

Physical details and protection
Insulation resistance conforming to IEC 348
> 100 MΩ

Insulation voltage according to IEC 348
1500 V

Immunity to interference conforming to IEC 801-2
8000 V

Accuracy
± 0.3 % of the full measurement scale at an ambient temperature of 25 °C at Un

Temperature limit operation (°C)
0 → +50 °C

Temperature limits stored (°C)
-30 → +70 °C

Relative humidity (Rh no condensation)
20 → 85 %

Housing
Material housing
self-extinguishing UL94 VO grade

Front panel
polycarbonate membrane

Protection class according to IEC 529 (IEC 70-1)
IP 54

Connection
screw terminals

Weight (g)
160

Approvals
UL/CSA

Characteristics
Inputs
Thermocouples J, K, and N
IEC 584-1

Thermocouples L
DIN 43710

Reference junction
Automatic cold junction compensation : 0 to 50 °C (Thermocouples)

Reference junction drift
0.1 °C / °C

Line resistance
100 Ω max

Calibration (IEC 584-1)
IEC 584 - 1

Resist temp. detector Pt 100 according to IEC 751
3-wire

Line resistance
< 4 Ω

Input types and standard range TC
L (0/800°C) (0/999°F) / J (0/800°C) (0/999°F)
K (0/800°C) (0/999°F) / N (0/999°C) (0/999°F)

Input types and standard range RTD PT100
(-199/500°C) (-19.9/99.9°F) (-199/999°C)

Output
Type of output
discontinuous

Action type CTH 46 - CTD 43 - CTD 46
heating-cooling

Limitation of output power : SOFT-START - heat action
adjustable from 0 to 100 %

Limitation of output power : SOFT-START-heat/cool action
adjustable from -100 to + 100 %

Main output changeover relay
3 A 250 V AC resistive

Main output – logic
Max. load : 700 Ω
Level 0 : < 0.5 V DC
Level 1 : 14 V DC ± 20 % @ 20 mA max
24 V DC ± 20 % @ 1 mA max

Cool output CTH 46 only
N/O-1 A contact, 250 V AC resistive

Alarm output CTD 43-CTD 46 only
N/O-1 A contact, 250 V AC resistive

Control characteristics
Control algorithm
PID with auto-tune and adaptive tune : SMART

Control type CTD 43 CTD 46
heating or cooling

Control type CTH 46
heating-cooling

Sampling time
500 ms

Proportional band Pb CTD 43 - CTD 46
1.0 % to 99.9 % of scale amplitude

Proportional band Pb CTH 46
1.5 % to 99.9 % of scale amplitude

Hysteresis (during discrete action)
0.1 % to 10 % of scale amplitude

Integral time ti
1 min 20 s to 20 min 0 s (10 s resolution)

Derivative time td. Note : if td=0
1 s to 9 min 59 s

Cycle time heating
1 s → 200 s

Cycle time cooling (CTH46 only)
1 s → 250 s

Heat-cool control CTH 46 : Cool proportional band
rC x heat proportional band

Heat-cool control : rC : relative gain
0.20 → 1.00

Heat-cool control CTH 46 : dead.overlap band
-20 % to + 50 % of the heat proportional band

Alarms (on CTD 43 and CTD 46 only)
Type of output
direct or reverse

Functions
absolute alarm, band alarm, deviation alarm

Reset to zero
manual

Inhibition
can be configured

Alarm threshold – absolute alarm
absolute value independent from SP

Alarm threshold – band alarm
value relative to SP, adjustable from 0 to 500 °C/F

Alarm threshold - deviation alarm
value relative to SP, adjustable from-199°C/F (negative deviation) to +500°C/F (positive deviation)

Alarm
0.1 to 10 % of scale amplitude
Dimensions

CTH / CTD

Panel cut-out

100

56

48

75

60

45

30

45