



CTH 46 - CTD 43 / 46 CTD 43 Part number 89421108



- CTH 46**
- Heating / cooling function
 - Measurement and setpoint display
- CTD 43**
- Heating or cooling function
 - Measurement display
 - Measurement deviation display-Setpoint via LED
 - 1 configurable alarm
- CTD 46**
- Heating or cooling function
 - Measurement and setpoint display
 - 1 configurable alarm

Part numbers

| | Type | Output | Supply voltage |
|------------|--------|--------|----------------|
| 89 421 108 | CTD 43 | Relay | 100 →240 V AC |

Specifications

| | |
|--|--|
| 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 |
| Switch | the configuration and calibration are accessed via an internal switch, which can only be accessed when the equipment is disconnected |
| Insulation resistance conforming to IEC 348 | > 100 MΩ |
| Insulation voltage according to IEC 348 | 1500 V |
| Immunity to interference conforming to IEC 801-4 | Level 3 |
| 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 |
| Operating temperature range (°C) | 0 →+50 °C |
| Storage temperature range (°C) | -30 →+70 °C |
| Relative humidity (Rh no condensation) | 20 →85 % |
| Housing material | 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 |

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 type and standard range TC | L (0/800 °C) (0/999°F) J (0/800 °C) (0/999°F) K (0/999 °C) (0/999°F) N (0/999 °C) (0/999°F) |
| Input types and standard rangeRTD Pt100 | (-199/500 °C) (-19,9/99,9°F) (-199/999 °C) |

Output

| | |
|--|---|
| Type of output | discontinuous |
| Action type CTH 46 | heating-cooling |
| Action type CTD 43 - CTD 46 | heating or 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 |
| Main output cycle time | 1 s →200 s |
| 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

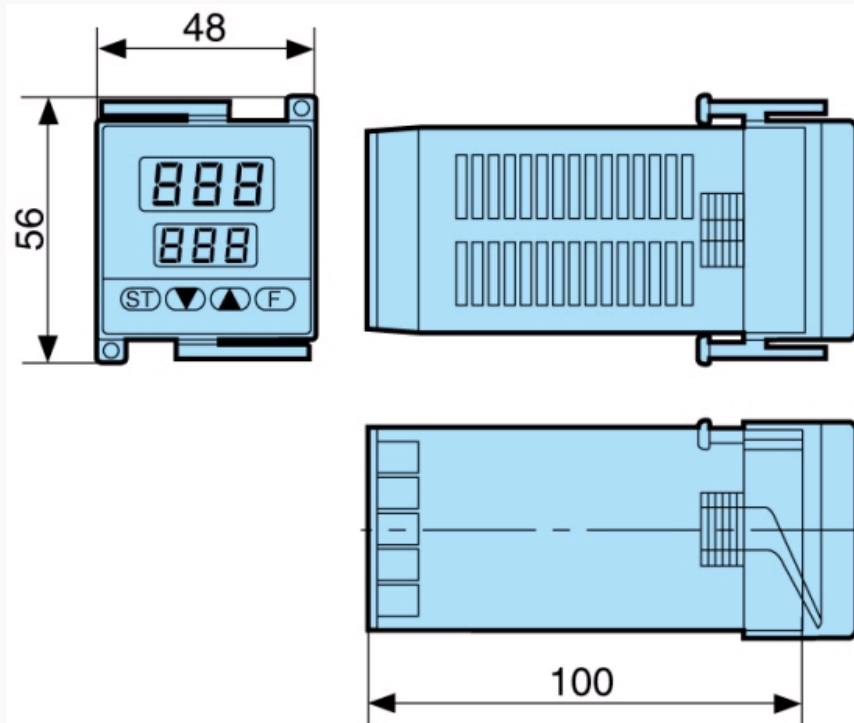
| | |
|--------------------------------------|---|
| Control algorithm | PID with auto-tune and adaptive tune : SMART |
| Control type CTD 43 CTD 46 | heating or cooling |
| Control type CTH 46 | heating-cooling |
| Sampling time | 500 ms |
| Proportional band Pb CTD 43 - CTD 46 | 1,0 % to 99,9 % of scale amplitude |
| Proportional band Pb CTH 46 | 1,5 % to 99,9 % of scale amplitude |
| Proportional band Pb | ▪ |
| Note : if Pb = 0 % discrete action | |
| 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) |
| Note : if ti > 20 min | |
| Derivative time td. | 1 s to 9 min 59 s |
| Note : if td=0 | |
| Cycle time heating | 1 s →200 s |
| Cycle time cooling (CTH46 only) | 1 s →200 s |
| Heat-cool control CTH 46 | rC x heat proportional band |
| Cool proportional band | |
| Heat-cool control | 0,20 →1,00 |
| rC : relative gain | |
| Heat-cool control CTH 46 | -20 % to + 50 % of the heat proportional band |
| dead.overlap 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 |

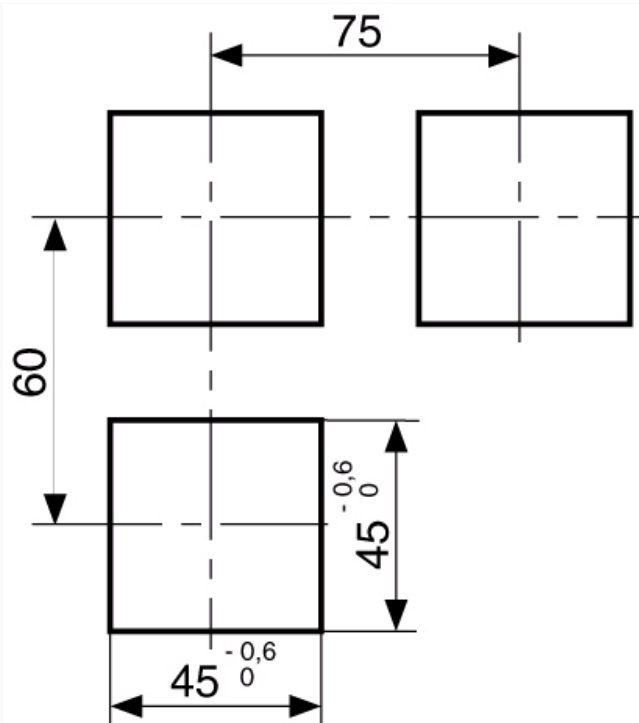
Dimensions (mm)

CTH/CTD



Dimensions (mm)

Panel cut-out

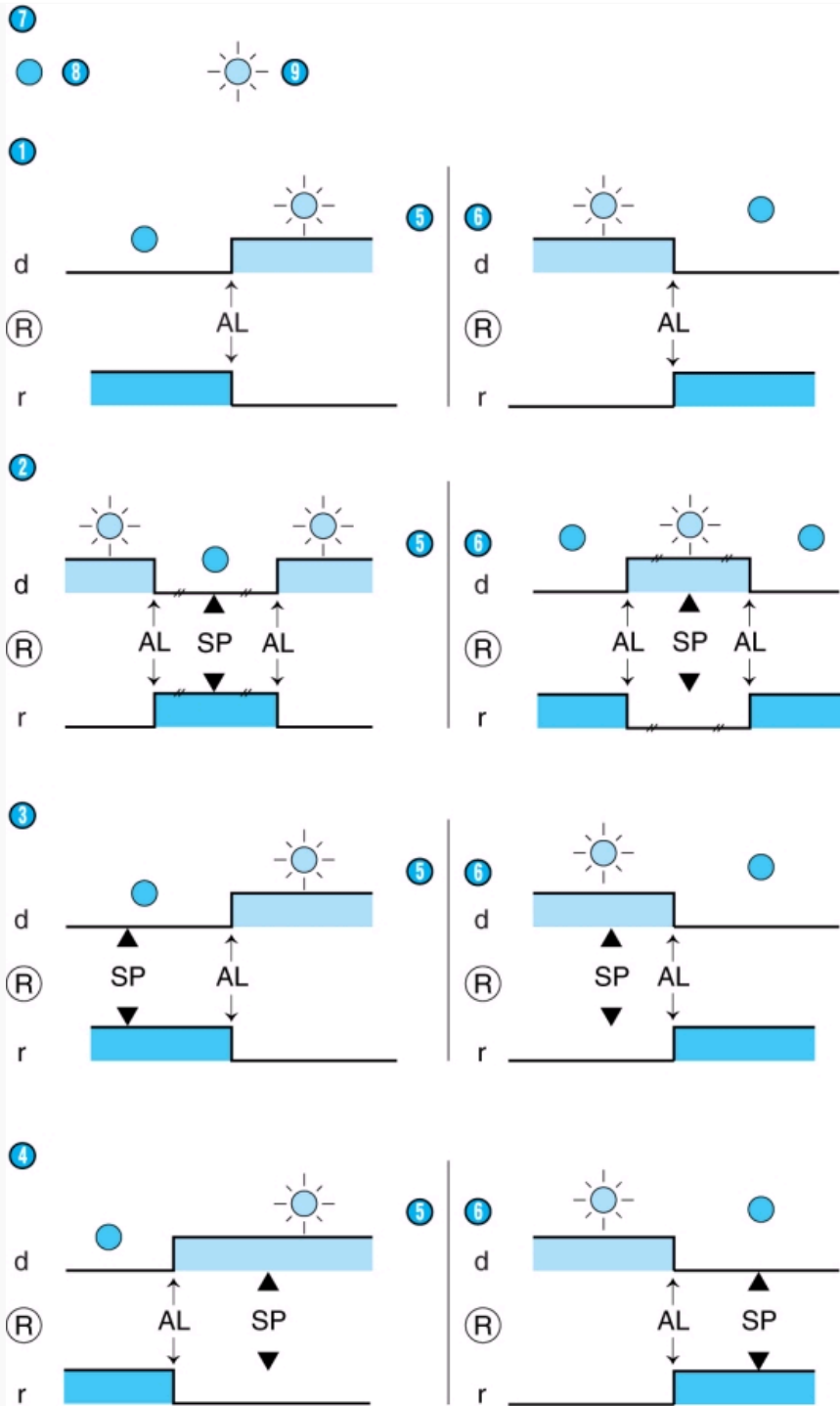


Panel cut-out

Curves

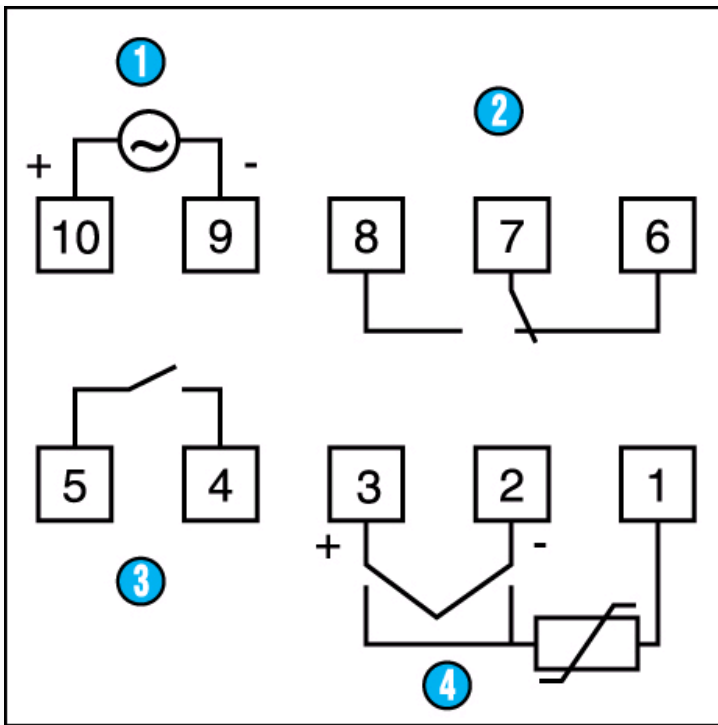
Operating modes

Summary of the various configurations



| N° | Legend |
|----|--------------------------|
| 1 | Absolute alarm |
| 2 | Band alarm |
| 3 | Positive deviation alarm |
| 4 | Negative position alarm |
| 5 | High |
| 6 | Low |

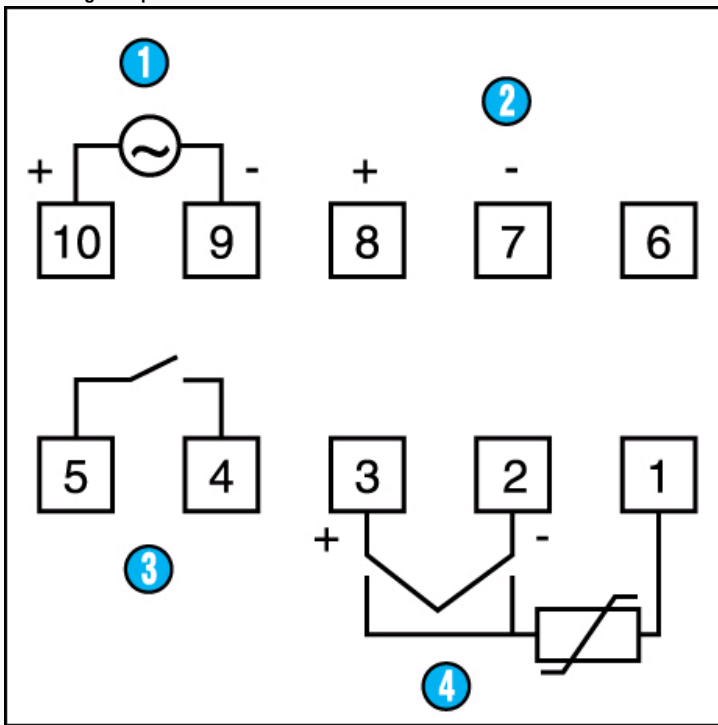
Connections
CTD 43 relay output



| N° | Legend |
|----|--|
| 1 | Supply |
| 2 | Main output 250 V AC / 3 A |
| 3 | Alarm output 250 V AC / 1 A |
| 4 | Thermocouple or resistance temperature detector connection |

Connections

CTD 43 logic output



| N° | Legend |
|----|-----------------------------------|
| 1 | Supply |
| 2 | Main output 0-24 V DC / 20 mA max |

| | |
|---|--|
| ① | Alarm output 250 V AC / 1 A |
| ② | Thermocouple or resistance temperature detector connection |