

## CTH 46 - CTD 43 / 46 CTD 46 Part number 89422102



### 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 |
|------------|--------|--------|----------------|
| 89 422 102 | CTD 46 | Relay  | 24 V ACDC      |

## 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<br>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)<br>J (0/800 °C) (0/999°F)<br>K (0/999 °C) (0/999°F)<br>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                                       | 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<br>Level 0 : < 0,5 V DC |

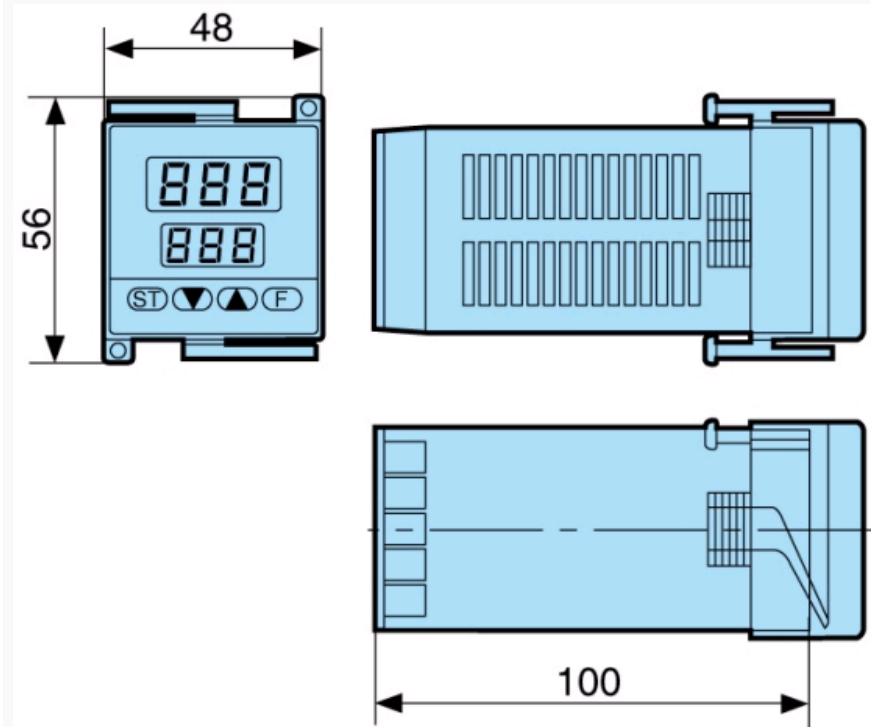
|                                 |                                                                    |
|---------------------------------|--------------------------------------------------------------------|
|                                 | Level 1 :<br>14 V DC± 20 % @ 20 mA max<br>24 V DC± 20 % @ 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<br>. band alarm<br>. 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                                                                          |

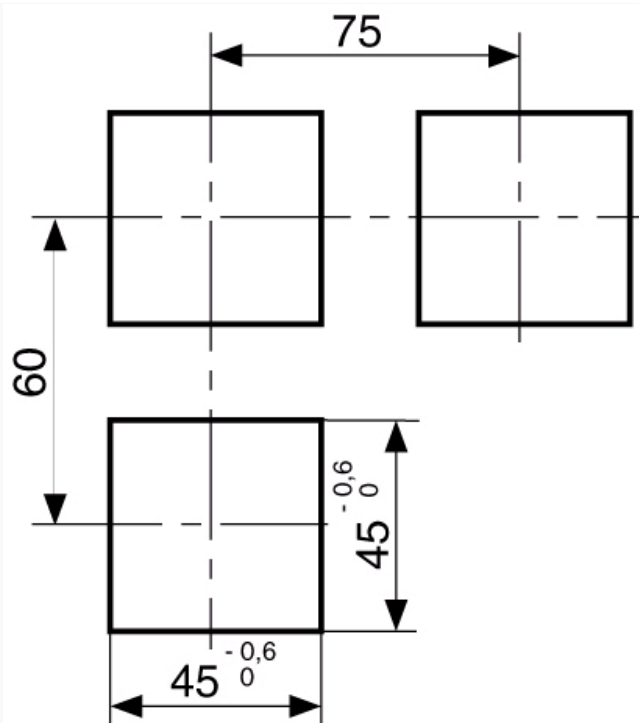
Dimensions (mm)

CTH/CTD



Dimensions (mm)

Panel cut-out

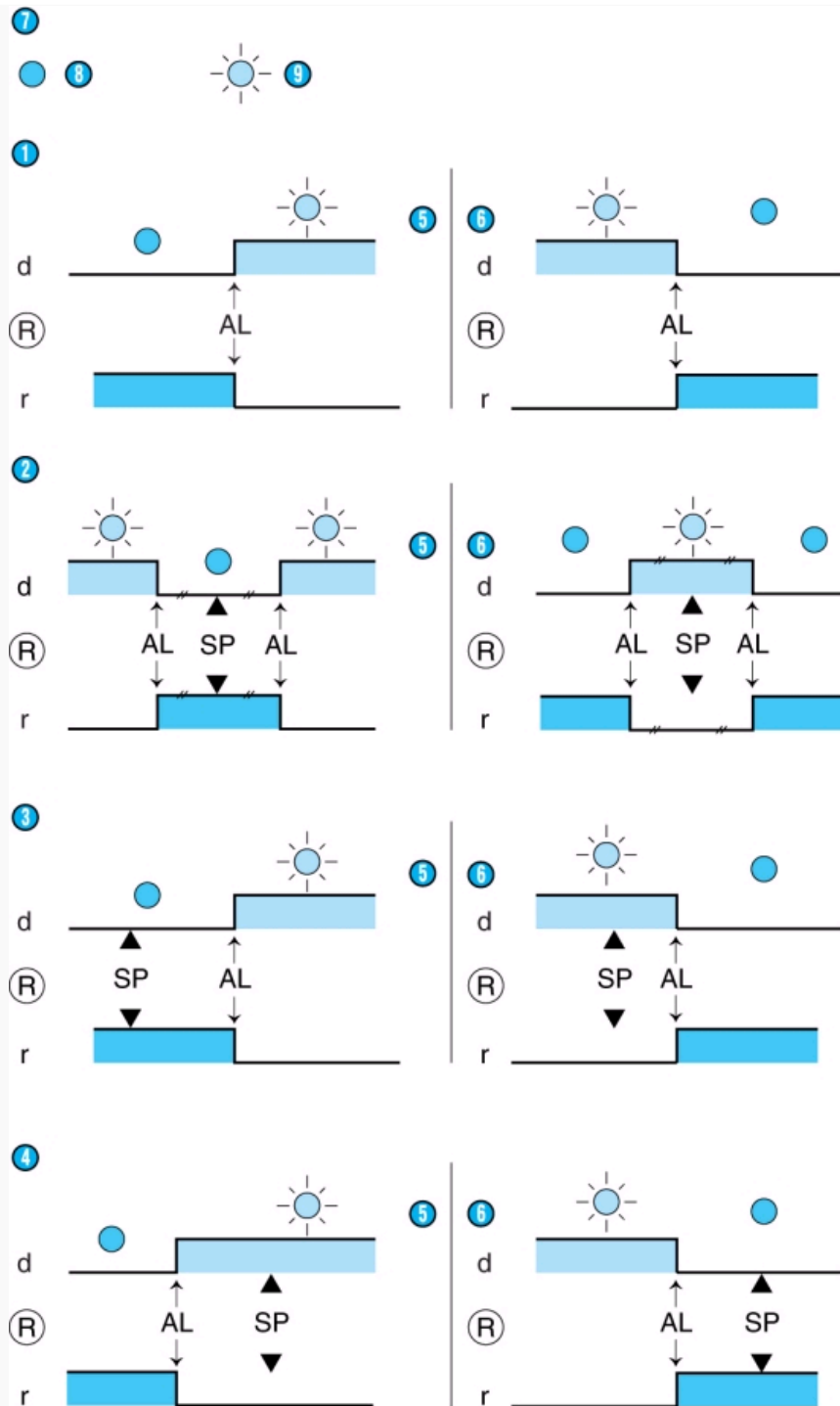


Panel cut-out

#### Curves

Modes de fonctionnement

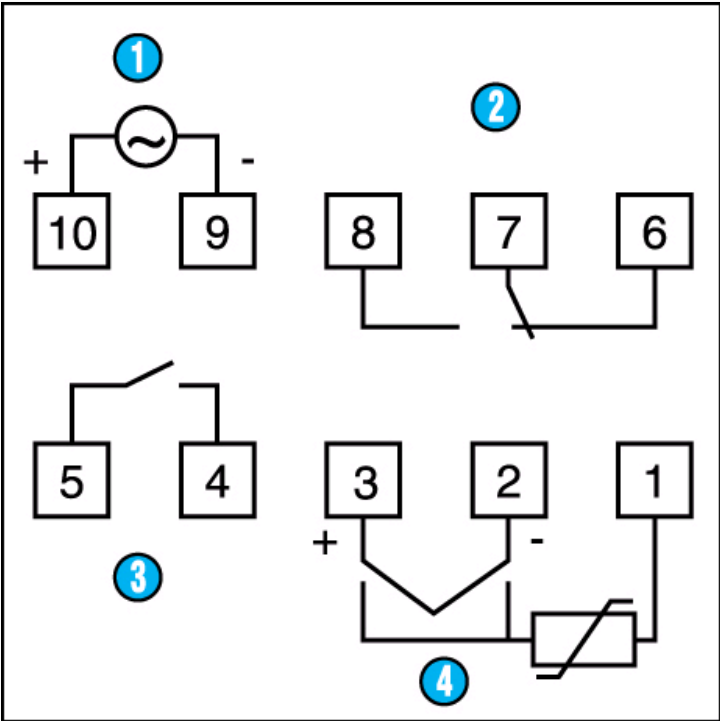
Résumé des différentes configurations



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

#### Connections

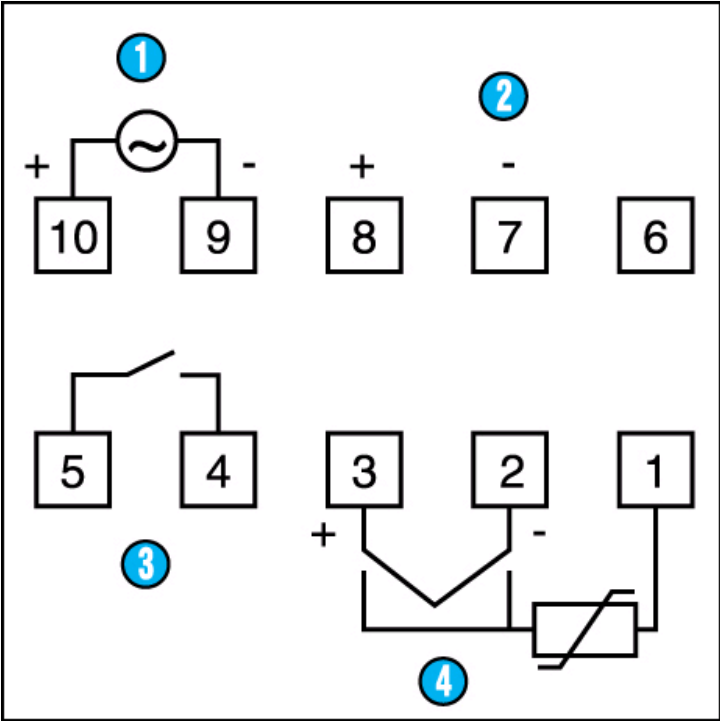
CTD 46 relay output



| N° | Legend                                                                                                                    |
|----|---------------------------------------------------------------------------------------------------------------------------|
| 1  | Supply                                                                                                                    |
| 2  | Main output 250 V AC / 3 A                                                                                                |
| 3  | Alarm output 250 V AC / 1 A                                                                                               |
| 4  | 14-15 : Input 50 mA AC (Current transformer connected for load break monitoring or selection of 2 <sup>nd</sup> setpoint) |

Connections

CTD 46 logic output



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

|                                                                                  |                                                                                                                           |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
|    | Alarm output 250 V AC / 1 A                                                                                               |
|  | 14-15 : Input 50 mA AC (Current transformer connected for load break monitoring or selection of 2 <sup>nd</sup> setpoint) |

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