

# Mechanical temperature switches

**T1X/T2X**

with capillary for hazardous areas

## Features

- ▶ Single switch T1X and dual switch T2X with remote sensor
- ▶ Explosion proof housing
- ▶ Terminal clip integrated, set point adjustment in °C and °F under tamper protected cover
- ▶ Protection class: IP65, NEMA 4 / 7 / 9
- ▶ Optional:
  - for T1X: adjustable hysteresis (switch-back difference), S-micro switch
  - Special version for trace heating systems with ratings up to 32 A / 220 V (22/32A / 380 V AC) on request
- ▶ Approvals: Ex d, Ex ia, UL, CSA, SIL2 (IEC 61508)

## Adjustment ranges

-45 °C...+66 °C to +160 °C...+316 °C

## Applications

Temperature monitoring and control  
in chemical industry and oil industry, offshore



## Technical Data

|                                                                        |                                                                                                                                                                       |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Housing material:</b>                                               | Die-cast aluminium, painted                                                                                                                                           |
| <b>Temperature sensor material:</b>                                    | 304 stainless steel (1.4301)                                                                                                                                          |
| <b>Temperature sensor type:</b>                                        | Capillary, 1.8 m long (6 foot) (optional 3.6 m and 7.5 m) (12 and 25 foot), armoured<br>If not equipped with thermowell the sensor may only be used up to 21 bar max. |
| <b>Operation pressure:</b><br>without thermowell:<br>with thermowell:  | max. 21 bar (max. 300 psi)<br>see page "Accessories" table 1.4                                                                                                        |
| <b>Operation temperature:</b><br><b>Housing:</b><br><br><b>Sensor:</b> | -40°C...+75°C (-40°F...167°F)<br>except temp. code 601, 603:<br>-18°C...+75°C (0°F...167°F)<br>see table "Adjustment range" (Sensor temperature limits)               |
| <b>Electrical values:</b>                                              | All models are equipped with SPDT contacts.                                                                                                                           |
| <b>Micro switch type:</b>                                              | H, M, GH, GM, S                                                                                                                                                       |

|                               |                                                                                                                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Electrical connection:</b> | From the terminal block through a 1/2" NPT conduit connection (T1X) resp. a 3/4" NPT conduit connection (T2X) outside.                                                                                             |
| <b>Protection class:</b>      | IP65, NEMA 4 / 7 / 9                                                                                                                                                                                               |
| <b>Set point adjustment:</b>  | Turn adjustment knob clockwise to increase the actuation point                                                                                                                                                     |
| <b>Standards:</b>             | The equipment is in conformity with the following harmonised European standards:<br>EN 60014 1977 + A1 to A4 and<br>EN 500120 1977 + A1                                                                            |
| <b>Intrinsic safety:</b>      | The switches are also suitable for inherent safety applications. In this case we recommend gold contacts. Add "Exi" in case of ordering. Maximum rating according to ATEX:<br>Umax = 28 V I <sub>max</sub> = 50 mA |
| <b>Approvals:</b>             | Ex d, Ex ia, UL, CSA                                                                                                                                                                                               |
| <b>Weight:</b>                | T1X: approx. 2.1 kg;<br>T2X: approx. 2.9 kg                                                                                                                                                                        |

## Adjustment ranges

| Code adjustment range | Sensor temperature limits (°C) | Adjustment range (°C) | Hysteresis (°C)* for micro switch |            |            |
|-----------------------|--------------------------------|-----------------------|-----------------------------------|------------|------------|
|                       |                                |                       | H, GH                             | M, GM      | S          |
| 154                   | -73 ... +93                    | -45... +66            | 0.5... 1.1                        | 1.1... 2.2 | 2.2... 8.3 |
| 251                   | -73 ... +149                   | +10... +121           | 0.5... 1.1                        | 1.1... 2.2 | 2.2... 8.3 |
| 351                   | -73 ... +205                   | +66... +177           | 0.5... 1.1                        | 1.1... 2.2 | 2.2... 8.3 |
| 601                   | -18 ... +343                   | +149... +227          | 1.1... 2.2                        | 2.2... 3.3 | 1.6... 2.7 |
| 603                   | -18 ... +343                   | +160... +316          | 1.1... 2.2                        | 2.2... 3.3 | 1.6... 2.7 |

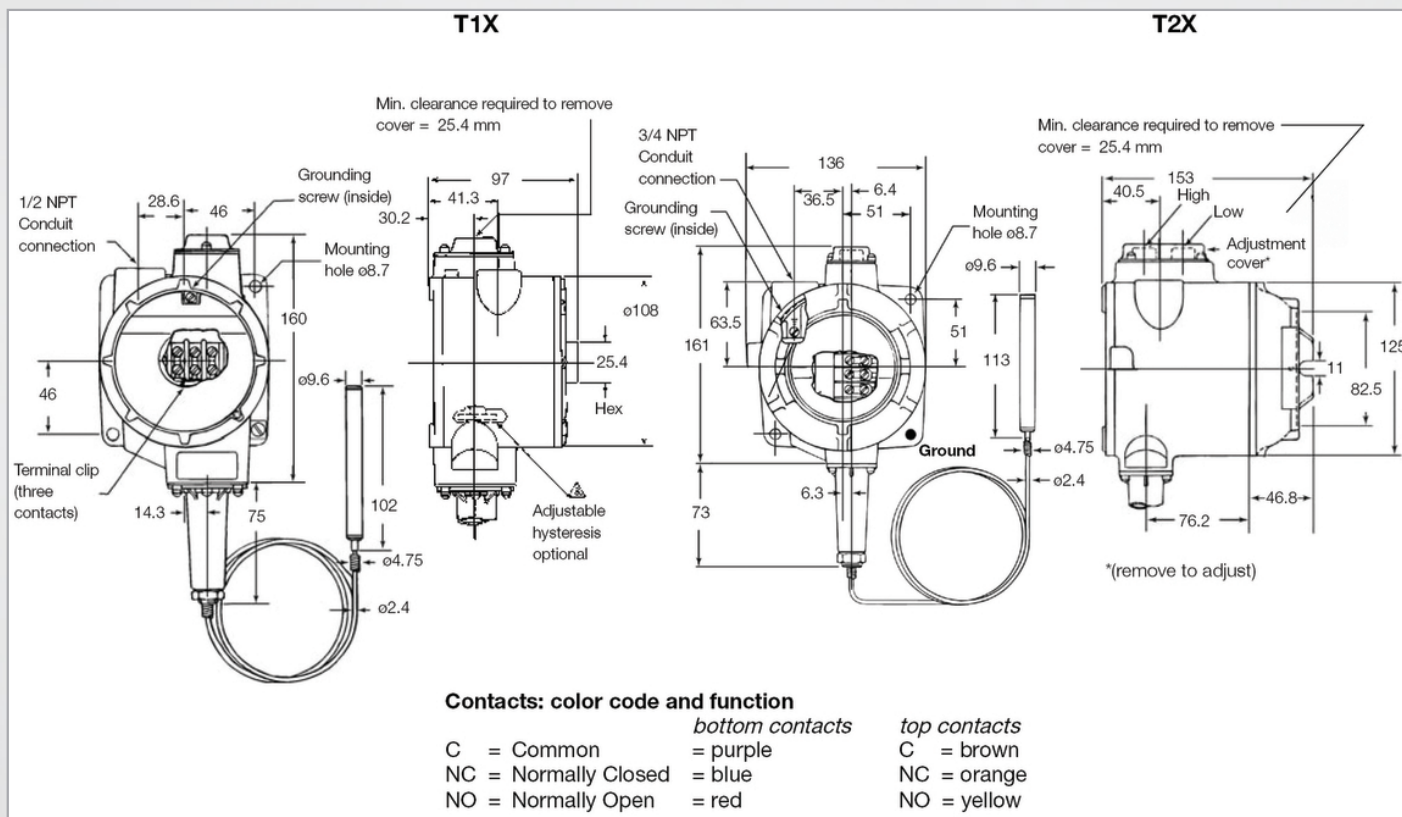
\* dependent on medium

# Temperature

## Mechanical temperature switches

**T1X/T2X**

### Dimensions (mm / inch)



### Electrical Ratings

| Micro switch | Special features                                                             | Volt AC<br>50/60 Hz | Ind. load<br>A | Res. load<br>A | Volt DC         | Ind. load<br>A       | Res. load<br>A     | Comments                                       |
|--------------|------------------------------------------------------------------------------|---------------------|----------------|----------------|-----------------|----------------------|--------------------|------------------------------------------------|
| H            | Micro switch with silver contacts                                            | 125<br>250<br>480   | 10<br>10<br>3  | 10<br>10<br>3  | 6<br>to<br>28   | 0.50                 | 0.5                | Small hysteresis;<br>High AC /<br>low DC loads |
| M            | Micro switch with silver contacts                                            | 125<br>250<br>480   | 10<br>10<br>3  | 10<br>10<br>3  | 12<br>24<br>250 | 5.00<br>1.00<br>0.25 | 15.0<br>2.0<br>0.4 | Medium hysteresis;<br>High AC and<br>DC loads  |
| GH           | Micro switch with gold contacts for low voltage and low current (e.g. "Exi") | 125                 | 1              | 1              | 24              | 1.00                 | 1.00               | Small hysteresis                               |
| GM           |                                                                              | 30                  | 0.1            | 0.1            | 30              | 0.1                  | 0.1                | Medium hysteresis                              |
| S            | Micro switch with silver contacts                                            | 480                 | 15             | 15             | 125             | 0.05                 | 0.4                | Adjustable hysteresis                          |

### Sensor lengths / Options

| Sensor lengths | (short term)                  | Options | (short term)                              |
|----------------|-------------------------------|---------|-------------------------------------------|
| S-A            | 1.8 m, armoured, SS (6 foot)  | EXI     | for intrinsically safe application, Ex ia |
| S-12-A         | 3.6 m, armoured, SS (12 foot) | EX      | Ex d protection                           |
| S-25-A         | 7.5 m, armoured, SS (25 foot) |         |                                           |

### Order Code

Example for order number

| Type              | Micro switch |    | Code Adjustment range |     | Sensor length |     | Option |     |
|-------------------|--------------|----|-----------------------|-----|---------------|-----|--------|-----|
| T1X               | -            | GH | -                     | 251 | -             | S-A | -      | EXI |
| T2X               |              |    |                       |     |               |     |        |     |
| Your order number |              |    |                       |     |               |     |        |     |
| T_X               | -            |    | -                     |     | -             |     | -      |     |