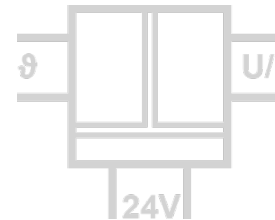


# TC Temperature Transmitter DT 45800

Temperature Measuring with Thermocouple Sensors,  
configurable via DIP Switch or USB



The TC Temperature Transmitter DT 45800 is used for measure industrial process signals. It converts Thermocouple sensor signals to isolated standard signals.

Due to the easy setting of the calibrated measuring ranges via DIP switch the Transmitter is suitable for flexible use.

With the USB Programming-Kit DRAGOset the Transmitter can be configured and all data can be stored by a PC. In mode of programming no additionally auxiliary power is required.

The Commissioning Function, switchable on front panel, generates an output reference signal for testing and adjusting of the downstream signal path.

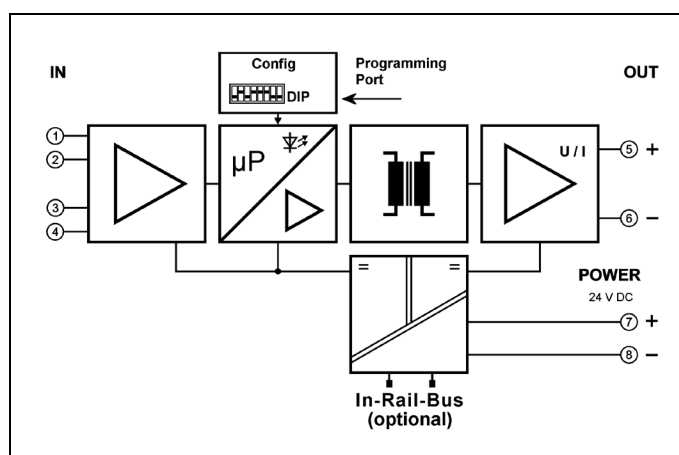
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The status of power supply and sensor connection will be displayed by a LED on front.



- **Measuring input for all TC temperature sensors**  
more than 1800 standard ranges ready to use
- **Easy configurable via DIP switches**  
or via USB interface without auxiliary power supply
- **Switchable service functions**  
for an easy commissioning
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)



Block Diagram



6mm

## Technical Data

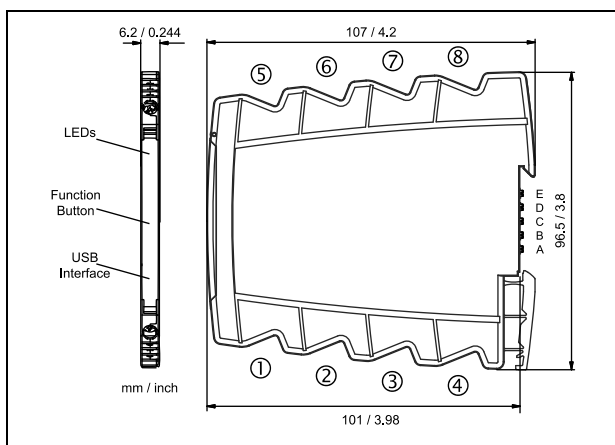
| Input                                            |                                                                                                                                                                                     |                     |                                                 |                                                         |           |                             |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------|---------------------------------------------------------|-----------|-----------------------------|
| Thermocouple                                     | Sensor                                                                                                                                                                              |                     | Standard                                        | Measuring range                                         | Span min. | Measuring error             |
| Type K                                           | NiCr-Ni                                                                                                                                                                             |                     | IEC 584                                         | -200 to +1350 °C                                        | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type J                                           | Fe-CuNi                                                                                                                                                                             |                     | IEC 584                                         | -200 to +1200 °C                                        | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type A                                           | W5Re-W20Re                                                                                                                                                                          |                     | GOST 8.585                                      | 0 to +2500 °C                                           | 100 K     | < 0.3 K + 0.08 % meas. Val. |
| Type B                                           | Pt30Rh-Pt6Rh                                                                                                                                                                        |                     | IEC 584                                         | +250 to +1800 °C                                        | 100 K     | < 0.3 K + 0.08 % meas. Val. |
| Type C                                           | W5Re-W26Re                                                                                                                                                                          |                     | ASTM E988                                       | 0 to +2300 °C                                           | 100 K     | < 0.3 K + 0.08 % meas. Val. |
| Type D                                           | W3Re-W25Re                                                                                                                                                                          |                     | ASTM E988                                       | 0 to +2300 °C                                           | 100 K     | < 0.3 K + 0.08 % meas. Val. |
| Type E                                           | NiCr-CuNi                                                                                                                                                                           |                     | IEC 584                                         | -200 to +1000 °C                                        | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type L                                           | Fe-CuNi                                                                                                                                                                             |                     | DIN 43710                                       | -200 to +900 °C                                         | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type N                                           | NiCrSi-NiSi                                                                                                                                                                         |                     | IEC 584                                         | -200 to +1300 °C                                        | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type R                                           | Pt13Rh-Pt                                                                                                                                                                           |                     | IEC 584                                         | -50 to +1700 °C                                         | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type S                                           | Pt10Rh-Pt                                                                                                                                                                           |                     | IEC 584                                         | -50 to +1700 °C                                         | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type T                                           | Cu-CuNi                                                                                                                                                                             |                     | IEC 584                                         | -200 to +400 °C                                         | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Type U                                           | Cu-CuNi                                                                                                                                                                             |                     | DIN 43710                                       | -200 to +600 °C                                         | 50 K      | < 0.3 K + 0.08 % meas. Val. |
| Cold junction compensation                       | Internal / OFF                                                                                                                                                                      |                     |                                                 | Error of Cold junction compensation < 1.5 K             |           |                             |
| Output                                           | Current                                                                                                                                                                             |                     |                                                 | Voltage                                                 |           |                             |
| Output signal                                    | 0 to 20 mA                                                                                                                                                                          |                     | 4 to 20 mA                                      | 0 to 5 V                                                |           | 0 to 10 V                   |
| Load                                             | ≤ 12 V (600 Ω at 20 mA)                                                                                                                                                             |                     |                                                 | ≤ 5 mA (2 kΩ at 10 V)                                   |           |                             |
| Residual ripple                                  | < 10 mV <sub>rms</sub>                                                                                                                                                              |                     |                                                 |                                                         |           |                             |
| Transfer range                                   | 0 to 102.5 % (3.8 to 20.5 mA at output 4 to 20 mA)                                                                                                                                  |                     |                                                 | Transfer characteristic rising / falling                |           |                             |
| Error signal                                     | Sensor/wire break, error signal programmable                                                                                                                                        |                     |                                                 |                                                         |           |                             |
| General data                                     |                                                                                                                                                                                     |                     |                                                 |                                                         |           |                             |
| Transmission error                               | < 0.1 % full scale                                                                                                                                                                  |                     |                                                 | Temperature coefficient <sup>1)</sup> < 100 ppm/K       |           |                             |
| Sampling rate / Response time T <sub>99</sub>    | 4/s / 250 ms                                                                                                                                                                        |                     |                                                 |                                                         |           |                             |
| Test voltage                                     | 3 kV AC, 50 Hz, 1 min.                                                                                                                                                              |                     | Input against output against power supply       |                                                         |           |                             |
| Working voltage <sup>2)</sup> (basic insulation) | 600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1                                                                                                   |                     |                                                 |                                                         |           |                             |
| Protection against electric shocks <sup>2)</sup> | Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and output and power supply |                     |                                                 |                                                         |           |                             |
| Ambient temperature                              | Operation -25 °C to +70 °C (-13 to +158 °F)                                                                                                                                         |                     |                                                 | Transport and storage -40 °C to +85 °C (-40 to +185 °F) |           |                             |
| Power supply                                     | 24 V DC                                                                                                                                                                             |                     | voltage range 9.6 V to 31.2 V DC, approx. 0.8 W |                                                         |           |                             |
| EMC <sup>3)</sup>                                | EN 61326-1                                                                                                                                                                          |                     |                                                 |                                                         |           |                             |
| Approvals                                        | ATEX                                                                                                                                                                                | DEMKO 16 ATEX 1685X |                                                 | Ex II 3 G Ex nA IIC T4 Gc                               |           |                             |
|                                                  | IECEX                                                                                                                                                                               | IECEX UL 16.0055X   |                                                 | Ex nA IIC T4 Gc                                         |           |                             |
|                                                  | UL                                                                                                                                                                                  | E478692 USA/Canada  |                                                 | Class I, Division 2 Groups A, B, C, D T4                |           |                             |
| Construction                                     | 6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715                                                                                        |                     |                                                 |                                                         |           |                             |
| Weight                                           | Approx. 70 g                                                                                                                                                                        |                     |                                                 |                                                         |           |                             |

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

### Dimensions



### Terminal assignments

- |   |                                             |
|---|---------------------------------------------|
| 1 |                                             |
| 2 | + Input TC                                  |
| 3 | - Input TC                                  |
| 4 |                                             |
| 5 | + Output                                    |
| 6 | - Output                                    |
| 7 | + Power supply (connected to In-Rail-Bus D) |
| 8 | - Power supply (connected to In-Rail-Bus C) |

### Connection

Captive plus-minus clamp screws  
 Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
 Stripped length 8 mm / 0.3 in  
 Screw terminal torque 0.6 Nm / 5 lbf in  
 Optional power connection via In-Rail-Bus (see accessories)

Subject to change!

### Product line

| Device                                                                                        | Order No.  |
|-----------------------------------------------------------------------------------------------|------------|
| TC Temperature Transmitter, configurable via DIP switch and USB                               | DT 45800 S |
| TC Temperature Transmitter, configurable via DIP switch and USB, In-Rail-Bus for power supply | DT 45800 B |