

# Configurable TC Temperature Transmitter DT 45800



Read these instructions before using the product and retain for future information.

## DT 45800

### ► Before Startup



When operating the signal converter, certain parts of the module can carry dangerous voltage! Ignoring the warnings can lead to serious injury and/or cause damage!

The signal converter should only be installed and put into operation by qualified staff. The staff must have studied the warnings in these operating instructions thoroughly.

The signal converter may not be put into operation if the housing is open.

In applications with high operating voltages sufficient distance and isolation as well as shock protection must be ensured.

Safe and trouble-free operation of this device can only be guaranteed if transport, storage and installation are carried out correctly and operation an maintenance are carried out with care.



Appropriate safety measures against electrostatic discharge (ESD) should be taken during range selection and assembly on the transmitter.

### ► Short description

The configurable transmitter is designed for operating various TC sensors. The measured values are converted temperature linear into a current or voltage standard signal.

The configuration can be done either via DIP switch or via a USB-interface with the PC configuration program DRAGOset. A wide variety of standard measuring ranges are available ready to use.

The 3-way isolation guarantees reliable decoupling of the sensor circuit from the processing circuit and prevents linked measurement circuits from influencing each other. The auxiliary power can be supplied via the connection terminals or type-specific via the optional In-Rail-Bus connector (see accessories).

### ► Configuration and startup

#### Configuring with DIP switch

Use the DIP switches to configure the device, according to table.

#### Configuring with software DRAGOset

Use the software DRAGOset to configure the device. Changes to the configuration and parameterization data can be performed both during operation with a connected measuring circuit and in a disconnected state.

The DRAGOset software is available for download free of charge at: [www.drago-automation.de](http://www.drago-automation.de)

The device is equipped with a programming socket on the front. Use the DRAGOset USB Converter only for connecting the device to the PC (Order no.: DZU1201). To change the configuration and parameterization DIP switch S1- 1, 2, 3 have to be set ON!

### Commissioning Function

The Commissioning Function with a stepped keystone signal on output supports a fast and simple testing of cabling and connection of downstream devices or measuring adjustment. Press the function button located behind the front cover for longer than 3 seconds. The Commissioning Function will be indicated with a yellow LED (quick double off).

Output value:

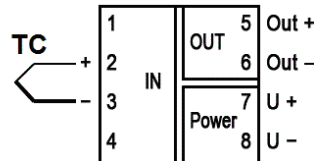
Output	0 %	↗	50 %	↗	100 %	↘	50 %	↘
Time	5 s	3 s	3 s	3 s	5 s	3 s	3 s	3 s

The stepped keystone signal is output continuously. Exit the Commissioning Function by pressing the button again for 3 seconds or power off.

### ► Mounting, Electrical Connection

The transmitter is mounted on standard 35 mm DIN rail

### Terminal assignments



### ► Technical Data

Type	Thermocouple	Standard	Measuring range	Span min.
K	NiCr-Ni	IEC 584	-200 ... +1350 °C	50 K
J	Fe-CuNi	IEC 584	-200 ... +1200 °C	50 K
A	W5Re-W20Re	GOST 8.585	0 ... +2500 °C	100 K
B	Pt30Rh-Pt6Rh	IEC 584	+250 ... +1800 °C	100 K
C	W5Re-W26Re	ASTM E988	0 ... +2300 °C	100 K
D	W3Re-W25Re	ASTM E988	0 ... +2300 °C	100 K
E	NiCr-CuNi	IEC 584	-200 ... +1000 °C	50 K
L	Fe-CuNi	DIN 43710	-200 ... +900 °C	50 K
N	NiCrSi-NiSi	IEC 584	-200 ... +1300 °C	50 K
R	Pt13Rh-Pt	IEC 584	-50 ... +1700 °C	50 K
S	Pt10Rh-Pt	IEC 584	-50 ... +1700 °C	50 K
T	Cu-CuNi	IEC 584	-200 ... +400 °C	50 K
U	Cu-CuNi	DIN 43710	-200 ... +600 °C	50 K

Range Setting See measuring range table, configurable via DIP switch or USB interface

Measuring error < 0.3 K + 0.08 % meas. val.

Cold junction compensation CJC ON / OFF

Error of Cold junction compensation < 1.5 K

Output Current Voltage

Output signal 0...20 mA 0...10 V

4...20 mA 0...5 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/message Sensor- / wire break, error signal configurable

### General data

Transmission error < 0.1 % full scale

Temperature coefficient<sup>2)</sup> < 100 ppm/K

Measurement rate 4 / s

Response time T99 250 ms

Test voltage 3 kV, 50 Hz, 1 min.

Input against output against power supply

Working voltage<sup>3)</sup> 600 V AC/DC for overvoltage category II and contamination class 2 acc. to EN 61010-1

Protection against dangerous body currents<sup>3)</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 9.6 V ... 31.2 V, approx. 0.8 W

EMV<sup>4)</sup> EN 61326-1

MTBF 353 years acc. to SN 29500 (stationary continuous operating, average ambient temperature 40 °C)

Construction 6.2 mm (0.244") housing, protection type: IP 20 mounting on 35 mm DIN rail acc. to EN 60715

Connection terminals - Screw terminals (plus-minus clamp screws)

(see order information) - Cage clamp terminals (Push-In)

Weight Approx. 70 g

1) Factory setting: Input: TC Type K, 0...100°C, CJC internal

Output: 0...20 mA, Characteristic rising, error signal 22 mA

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

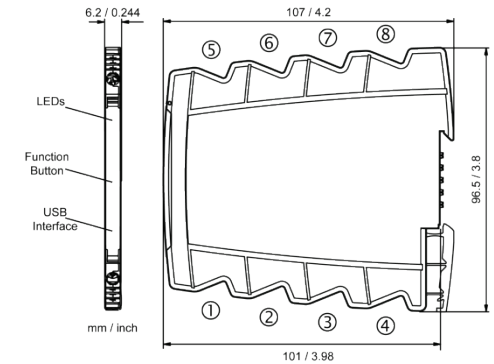
3) As far as relevant the standards and rules mentioned above are considered by development and production of our devices. In addition relevant assembly rules are to be considered by installation of our devices in other equipment's. For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent situated devices.

4) Minor deviations possible during interference

### ► Order Information

TC Temperature Transmitter	Order No.
Screw terminals	DT 45800 S
Screw terminals, In-Rail-Bus	DT 45800 B
Push-In terminals	DT 45804 S
Push-In terminals, In-Rail-Bus	DT 45804 B

### ► Dimensions



### ► Connection data

Connection	Screw terminals	Push-In terminals
Wire cross-section stranded ferruled	0.5 mm <sup>2</sup> - 2.5 mm <sup>2</sup> AWG 20 - 14	0.5 mm <sup>2</sup> - 1.5 mm <sup>2</sup> AWG 20 - 16
Wire cross-section solid wire	0.5 mm <sup>2</sup> - 2.5 mm <sup>2</sup> AWG 20 - 14	0.5 mm <sup>2</sup> - 2.5 mm <sup>2</sup> AWG 20 - 14
Stripped length	8 mm / 0.3 in	8 mm / 0.3 in
Screw terminal torque	0.6 Nm / 5 lbf in	-

### LIMITED WARRANTY

DRAGO Automation GmbH hereby warrants that the Product will be free from defects in materials or workmanship for a period of **five (5) years** from the date of delivery ("Limited Warranty"). This Limited Warranty is limited to repair or replacement at DRAGO's option and is effective only for the first end-user of the Product. This Limited Warranty applies only if the Product:

- is installed according to the instructions furnished by DRAGO;
- is connected to a proper power supply;
- is not misused or abused; and
- there is no evidence of tampering, mishandling, neglect, accidental damage, modification or repair without the approval of DRAGO or damage done to the Product by anyone other than DRAGO.

Delivery conditions are based upon the „GENERAL CONDITIONS FOR THE SUPPLY OF PRODUCTS AND SERVICES OF THE ELECTRICAL AND ELECTRONICS INDUSTRY“ recommended by the Zentralverband Elektrotechnik- und Elektronikindustrie (ZVEI) e.V. .

Subject to change!

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Set the input and output ranges with DIP switches (● = ON) as indicated in the following table:

DIP S1-					Input
1	2	3	4	5	Type
					K
●					J
	●				A
●	●				B
		●			C
●		●			D
	●	●			E
			●		L
●			●		N
	●		●		R
●	●		●		S
		●	●		T
●		●	●		U
●	●	●			PC (USB) Setting
					CJC ON
				●	CJC OFF

DIP S2-					Output
7	8	9	10		
				0 ... 20 mA	
●				4 ... 20 mA	
	●			0 ... 10 V	
●	●			0 ... 5 V	
				<b>Characteristic</b>	
				rising	
			●	falling	
				<b>Error Message</b>	
				signalize	
			●	not signalize	

DIP S1-						Start Value
6	7	8	9	10	°C	°F
●					-200	-328
	●				-175	-283
●	●				-150	-238
		●			-125	-193
●		●			-100	-148
	●	●			-75	-103
●	●	●			-50	-58
			●		-25	-13
					0	32
●			●		25	77
	●		●		50	122
●	●		●		75	167
		●	●		100	212
●		●	●		125	257
	●	●	●		150	302
●	●	●	●		175	347
			●		200	392
●			●		225	437
	●		●		250	482
●	●		●		275	527
		●	●		300	572
●		●	●		350	662
	●	●	●		400	752
●	●	●	●		450	842
			●	●	500	932
●			●	●	550	1022
	●		●	●	600	1112
●	●		●	●	650	1202
		●	●	●	700	1292
●		●	●	●	800	1472
	●	●	●	●	900	1652
●	●	●	●	●	1000	1832

DIP S2-						End Value	
1	2	3	4	5	6	°C	°F
●						-150	-238
	●					-125	-193
●	●					-100	-148
		●				-75	-103
●		●				-50	-58
	●	●				-25	-13
●	●	●				0	32
			●			25	77
●			●			50	122
	●		●			75	167
						100	212
●	●		●			125	257
		●	●			150	302
●		●	●			175	347
	●	●	●			200	392
●	●	●	●			225	437
			●			250	482
●			●			275	527
	●		●			300	572
●	●		●			325	617
		●	●			350	662
●		●	●			375	707
	●	●	●			400	752
●	●	●	●			425	797
			●	●		450	842
●			●	●		475	887
	●		●	●		500	932
●	●		●	●		525	977
		●	●	●		550	1022
●		●	●	●		575	1067
	●	●	●	●		600	1112
●	●	●	●	●		625	1157

DIP S2-						End Value	
1	2	3	4	5	6	°C	°F
					●	650	1202
●					●	675	1247
	●				●	700	1292
●	●				●	725	1337
		●			●	750	1382
●		●			●	775	1427
	●	●			●	800	1472
●	●				●	825	1517
			●		●	850	1562
●			●		●	875	1607
	●		●		●	900	1652
●	●		●		●	925	1697
		●	●		●	950	1742
●		●	●		●	975	1787
	●	●	●		●	1000	1832
●	●	●	●		●	1050	1922
			●	●	●	1100	2012
●			●	●	●	1150	2102
	●		●	●	●	1200	2192
●	●		●	●	●	1250	2282
		●	●	●	●	1300	2372
●		●	●	●	●	1350	2462
	●	●	●	●	●	1400	2552
●	●	●	●	●	●	1500	2642
			●	●	●	1600	2912
●			●	●	●	1700	3092
	●		●	●	●	1800	3272
●	●		●	●	●	1900	3452
		●	●	●	●	2000	3632
●		●	●	●	●	2200	3992
	●	●	●	●	●	2300	4172
●	●	●	●	●	●	2500	4532

● = ON, Factory settings: all switches in position OFF

**Error diagnostic function on output**

Characteristic	Error	Output	Underrange	Overrange	Sensor break / invalid setting
rising S2-9 OFF	signalize S2-10 = OFF	0 ... 20 mA 4 ... 20 mA 0 ... 10 V 0 ... 5 V	0 mA 3.8 mA 0 V 0 V	20.5 mA 20.5 mA 10.25 V 5.125 V	22 mA 22 mA 11 V 5.5 V
	not signalize S2-10 = ON	0 ... 20 mA 4 ... 20 mA 0 ... 10 V 0 ... 5 V	0 mA 4 mA 0 V 0 V	20 mA 20 mA 10 V 5 V	0 mA 4 mA 0 V 0 V
falling S2-9 ON	signalize S2-10 = OFF	0 ... 20 mA 4 ... 20 mA 0 ... 10 V 0 ... 5 V	20.5 mA 20.5 mA 10.25 V 5.125 V	0 mA 3.8 mA 0 V 0 V	22 mA 22 mA 11 V 5.5 V
	not signalize S2-10 = ON	0 ... 20 mA 4 ... 20 mA 0 ... 10 V 0 ... 5 V	20 mA 20 mA 10 V 5 V	0 mA 4 mA 0 V 0 V	0 mA 4 mA 0 V 0 V

**LED indication**

The transmitter has a green and a red/yellow LED on front panel.

LED	Announcement
green continuous	Power LED, normal operation
green flashing	Over/under range on input
yellow slow double flashing	Commissioning Function active
red flashing	Sensor break
red double flashing	Configuration error
red continuous	Device error, replacement is necessary