

Thermocouple-Transmitter TC 500

Programmable for Thermocouple Type J, K, S

Features

- Input frontside programmable for Thermocouple
Typ J (Fe-CuNi) in range -100 ... 800 °C
Typ K (NiCr-Ni) in range -150 ... 1200 °C
Typ S (Pt10Rh-Pt) in range 0 ... 1600 °C
- Measuring range programmable from the side by 4 rotary switches in 25°C steps fine adjust ±5% with 2 trim pots
- Integrated cold junction compensation
- Output 0/4 ... 20 mA or 0/2 ... 10 V DC temperature linear
- Current burden max. 500 Ω
- Power-on and operating mode indicated by a 2-colour LED
- Full 3-port isolation



General information

Thermocouple transmitter TC500 converts thermovoltages into standard industry signals 0/4...20 mA or 0/2...10 V DC. The measuring range is programmable with rotary switches at the side.

Short information

- | | |
|-----------------|--|
| Configuration | Thermocouple type and output signal 0/4 ... 20 mA or 0/2 ... 10 V can be selected by 3 front side DIP-switches. |
| Measuring range | The measuring ranges are programmable with 4 rotary switches, separate for start- and end-value in range -150 ... 1600 °C. Intermediate steps and tolerances are adjustable ±5 % by 2 trim pots at the small side. |

Technical data

Power supply

Supply voltage	: 230 V AC $\pm 10\%$ or 24 V DC $\pm 15\%$
Frequency AC	: 47...63 Hz
Power consumption	: < 3.5 VA
Operating temperature	: -10...+60 °C (14 ... 140 °F)
Rated voltage	: 500 V AC acc. to VDE 0110 Gr. 2 between input / output / supply voltage
Test voltage	: 4 kV DC between input / output / supply voltage
CE-conformity	: EN55022, EN60555-2, IEC61000-4-4/5/11/13

Measuring input

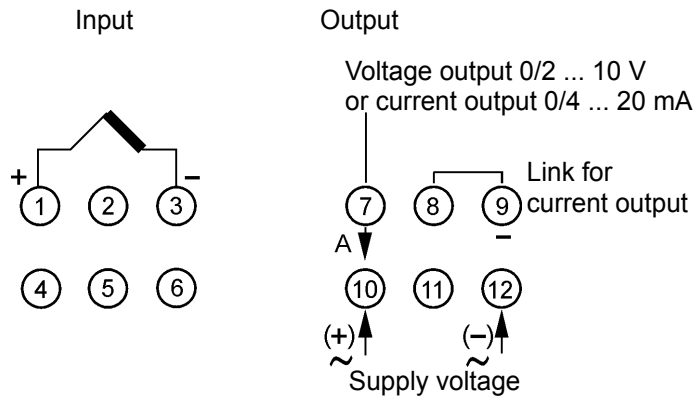
Thermocouple	
Type J	: Fe-CuNi in range -100 ... 800 °C
Type K	: NiCr-Ni in range -150 ... 1200 °C
Type S	: Pt10Rh-Pt in range 0 ... 1600 °C

Outputs

Current output	: 0...20 mA, 4...20 mA switch selectable, burden $\leq 500 \Omega$
Voltage output	: 0...10 V, 2...10 V switch selectable, load max 10 mA, short circuit protection
Start value	: adjustable appr. $\pm 5\%$
End value	: adjustable appr. $\pm 5\%$
Break of sensor	: outputs move to end value (+ 1 %, overflow indication)
Short of sensor	: no indication (output takes value of terminal temperature)
Accuracy	: $\leq 0.15\%$, 1 °C
Temperature coefficient	: $\leq 0.01\%/K$

Case	: Standard Polycarbonate 8020 UL94V-1
Weight	: appr. 200 g
Protection	: Case IP30, terminals IP20 acc. to BGV A3
Connection	: Screw terminal with cover plate, max. 2.5 mm ²

Connection diagram

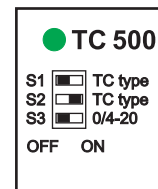


Input and output configuration

Selection of thermocouple and output with front side DIP-switch S1 - S3

DIP-switch	Input thermo couple			Output	
	J	K	S	0 mA/0 V	4 mA/2 V
S1	OFF	OFF	ON	-	-
S2	OFF	ON	OFF	-	-
S3	-	-	-	OFF	ON

Front controls



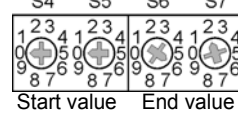
Measuring range configuration

Start value and End value of the measuring range can be programmed with rotary switch S4 - S7 from the side in 25 °C - steps.

Formula for DIP-switch of start- and end-value:

value < 0: $(\text{value}/25)+100$; value = 0: **00**; value ≥ 0: $\text{value}/25$

Rotary switches at the side



Example 1: MR -50 ... 300°C

Start value : -50°C value < 0: $(-50/25)+100=98$ switch S4 = **9**, switch S5 = **8**
 End value : 300°C value ≥ 0: $300/25=12$ switch S6 = **1**, switch S7 = **2**

Example 2: MR 0 ... 400 °C

Start value : 0 °C value = 0: **00** switch S4 = **0**, switch S5 = **0**
 End value : 400 °C value ≥ 0: $400/25=16$ switch S6 = **1**, switch S7 = **6**

Beispiele:

Messbereich	S4	S5	S6	S7
0 ... 100 °C	0	0	0	4
0 ... 600 °C*	0	0	2	4
100 ... 1200 °C	0	4	4	8
-50 ... 500 °C	9	8	2	0

* state of delivery

Intermediate steps and tolerances for 0-point and end value are adjustable ±5% by 2 trim pots at the small side.

Decreasing characteristic

For a decreasing output characteristic switches S4, S5 becomes the end value and S6, S7 start value!

Output adjustment

Adjustment of the output signal with rotary switches S4-S7 is also possible.

In switch position 0000 of S4-S7, a constant output signal for the 0-point will be generated. 0-point adjustment is possible with trim pot "→0←" at the small side for 0 resp. 2 V / 4 mA.

In switch position 9999 of S4-S7, a constant output signal for the end value will be generated.

With trim pot "▲" at the small side adjustment of the output to 10 V resp. 20 mA is possible.

LED Function

Additional functions of the power-LED in configuration mode and self monitoring.

LED-function:

Green continuous

Normal operation

Green flashing

Simulation mode for output adjustment

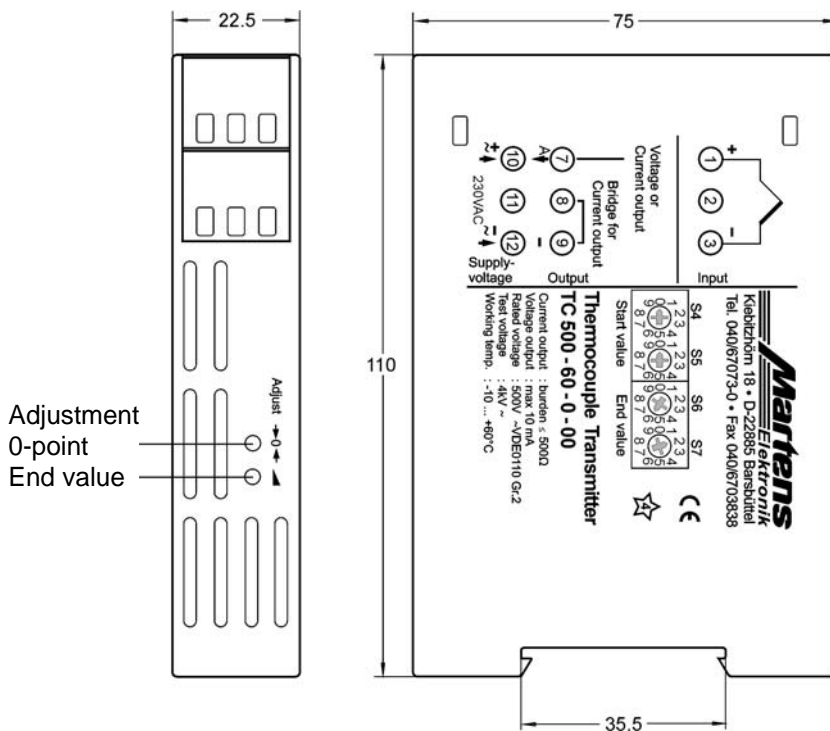
Red flashing

Break of sensor, input signal out of range or DIP-switch position incorrect

Red continuous

Program error, factory repair service required

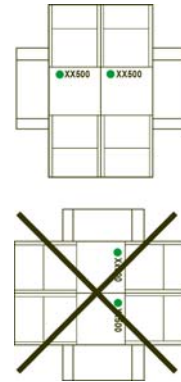
Dimensions / Position of rotary switches



TS35 DIN rail mounting
 acc. to DIN 46277 and DIN EN 50022

Caution!

Mounting of multiple units without distance is only permitted in horizontal orientation.



Ordering code

TC500 - 1. - 2. - 3.

1. Input

60 Thermo couple J, K, S programmable
 Output 0/4 ... 20 mA or 0/2 ... 10 V DC

2. Supply voltage

0 230 V AC ± 10 %
 5 24V DC ± 15 %

3. Options

00 without option