

# Temperature-Transmitter MU 500-Ex

Switch selectable temperature ranges for RTD, Pt100 or Pt1000



## Features

- Intrinsically safe input ATEX II (1) G [Ex ia] IIC  
ATEX II (1) D [Ex iaD]
- Pt100: 13 temperature ranges  
Pt1000: 16 temperature ranges
- Basic accuracy 0.2 %  
(0.1 % factory calibration for one range available)
- 2- or 3-wire connection
- Linearized outputs  
0/4 ... 20 mA and 0/2 ... 10 V DC
- Current burden max. 1000  $\Omega$
- Start-value and span adjustable
- Full 3-port isolation
- Supply voltage 10 ... 30 V AC/DC or  
85 ... 253 V AC/110 ... 125 V DC
- Power-on LED
- 22.5 mm case for DIN rail mounting



## General information

Temperature transmitters series MU500-Ex offer an intrinsically safe input and convert RTD sensor signals (Pt100 or Pt1000) into industry standard signals.

## Short information

- Temperature sensor For applications in gas hazardous areas Zone 0 and zone 1, standard temperature sensors can be used. Over all it must be ensured, that the sensors will meet chemical and mechanical demands and have the minimum protection of IP54 according to DIN EN60079-0.
- For applications in dust hazardous areas (Zone 20 and 21) special certified temperature sensors must be used.
- Range switching Measuring range and output signal can be configured by front mounted 10-steps rotary switch and 2 DIP-switches.
- Current output Burden max. 1000  $\Omega$ , e.g. direct operating with servo amplifiers is possible.

## Technical data

### Power supply

Supply voltage	: 85 ... 253 V AC/110 ... 125 V DC, 10 ... 30 V AC/DC
Frequency AC	: 40 ... 400 Hz
Power consumption	: < 3.3 VA
Working temperature	: -10 ... +60 °C
Rated voltage	: 253 V AC or 125 V DC (U <sub>m</sub> ) 250 V AC, degree of pollution 2 over-voltage catgoric III between input/output/supply
Test voltage	: 3 kV AC, between input/output/supply

### Explosion protection

EC-Type Certificate number : TÜV 03 ATEX 2283, 1. supplement  
 Marking

 II (1) G [Ex ia] IIC bzw. II (1) D [Ex iaD]

U <sub>0</sub>	: MU500-Ex...-51: 1.3 V	MU500-Ex...-53: 4.9 V
I <sub>0</sub>	: MU500-Ex...-51: <3 mA	MU500-Ex...-53: <3 mA
P <sub>0</sub> (characteristic linear)	: MU500-Ex...-51: <3 mW	MU500-Ex...-53: <3 mW
C <sub>0</sub>	: MU500-Ex...-51: 29 µF	MU500-Ex...-53: 2.2 µF
L <sub>0</sub>	: MU500-Ex...-51: 100 mH	MU500-Ex...-53: 100 mH
C <sub>i</sub> , L <sub>i</sub>	: 5 nF, 0 mH	

**The intrinsically safe circuit is galvanically separated from the non-intrinsically safe circuits up to a peak crest value of the voltage of 375 V.**

### Measuring input

Drive current	: Pt100 approx. 1 mA, Pt1000 approx. 0,25 mA (no self-heating)
Cable resistance	: max. 100 Ω, (inline installion of safety barriers possible) automatic compensation by 3-wire connection, with symmetric cable resistance.
Zero adjust	: Pt100 approx. ± 8 Ω, ( Δ 20°C), Pt1000 approx. ± 8 Ω ( Δ 2°C) (for 2-wire connection or error compensation)
Span adjust	: approx. +/-20 %
shorted or break of wire	: output takes max. value (voltage output > 12 V DC, current output > 25 mA DC)

### Outputs

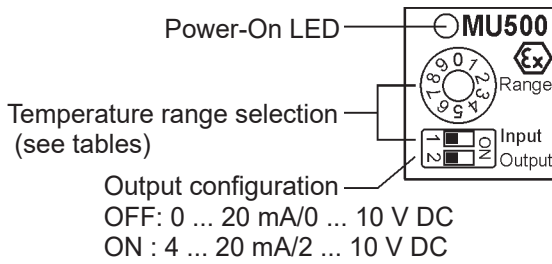
Current output	: 0 ... 20 mA, 4 ... 20 mA DC switch selectable, burden ≤ 1 kΩ
Voltage output	: 0 ... 10 V, 2 ... 10 V DC switch selectable, load max. 15 mA, short circuit protection (simultaneously with current output max. 5 mA)
Rated voltage	: 253 V AC or 125 V DC (U <sub>m</sub> )

<b>Accuracy</b>	: ≤ 0.2 % (≤ 0.1 % factory calibration for one range available)
Temperature coefficient	: ≤ 0.01 %/K
Current- and voltage output	: ≤ 0.1 %

### Case

Type	: Standard case material polycarbonate 8020 UL94V-1
Weight	: appr. 200 g
Protection	: Case IP40, terminals IP20 acc. to German BGV A3
Connection	: Screw terminals with pressure plate, max. 2.5 mm <sup>2</sup>
Mounting area	: Installation in dry, clean and well monitored area

## Front panel controls

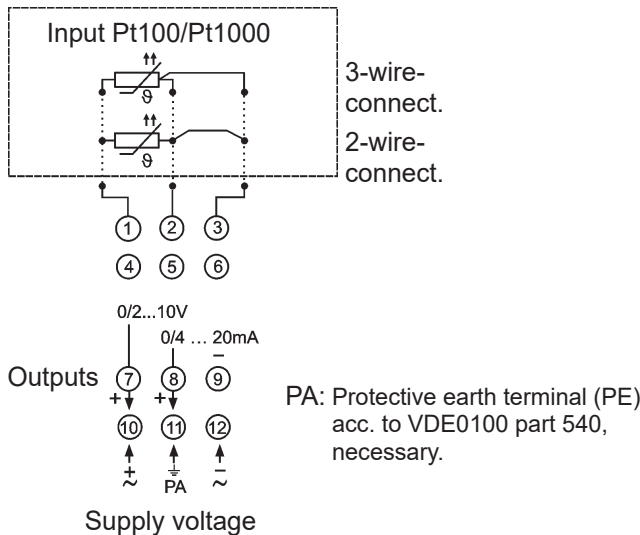


## Measuring ranges Pt100

Range [°C]	Rotary-switch range	DIP-switch Input
-50 ... 0	6	ON
-50 ... 50	7	ON
-30 ... 20	4	ON
-30 ... 70	5	ON
-20 ... 30	2	ON
-20 ... 80	3	ON
0 ... 50	0	ON
0 ... 100	1	ON
0 ... 150	8	ON
0 ... 200	9	ON
0 ... 300	1	OFF
0 ... 450	8	OFF
0 ... 600	9	OFF

## Connection diagram

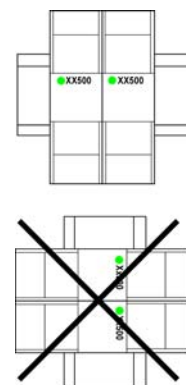
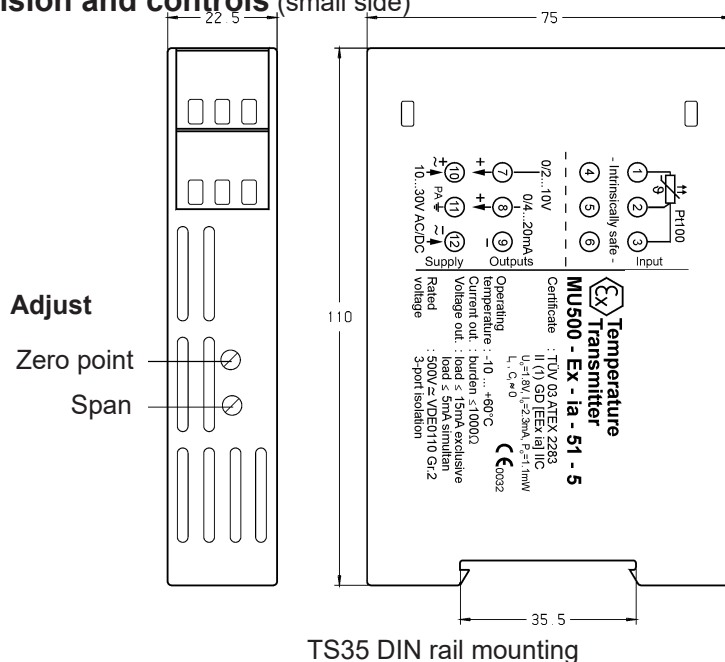
Connection from the Hazardous area



## Measuring ranges Pt1000

Range [°C]	Rotary-switch range	DIP-switch Input
-50 ... 0	2	OFF
-50 ... 50	3	OFF
-30 ... -20	6	ON
-30 ... -10	7	ON
-20 ... -10	4	ON
-20 ... 0	5	ON
-10 ... 0	2	ON
-10 ... 10	3	ON
0 ... 10	0	ON
0 ... 20	1	ON
0 ... 20	8	ON
0 ... 40	9	ON
0 ... 50	0	OFF
0 ... 100	1	OFF
0 ... 150	8	OFF
0 ... 200	9	OFF

## Dimension and controls (small side)



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

## Ordering code

MU500Ex- <sup>1.</sup> -  <sup>2.</sup> -  <sup>3.</sup>

### 1. Model

51 Pt100 13 measuring ranges switch selectable, see table

53 Pt1000 16 measuring ranges switch selectable, see table

### 2. Supply voltage

0 85 ... 253 V AC/110 ... 125 V DC

5 10 ... 30 V AC/DC

### 3. Options

00 without option