

Type EU41

Application

Temperature transmitter (4-20mA) for temperature measurement in liquid and gaseous media.

They are used for signal processing of li-near resistors, thermocouples and resistance thermometers and are very easy to mount on a standard rail.

Special fields of application are:

- Food industry
- Heating, air-conditioning, ventilation technology
- Environmental engineering
- Process engineering
- Petrochemistry

Main features

- 2-wire technology 4-20 mA
- Application range for all common thermocouples according to DIN EN 60584
- Resistance thermometers acc. to DIN EN60751(IEC 751, DIN 43760)
- HF insensitive
- EMC-resistant
- High measuring accuracy
- Very small temperature drift
- Programmable via PC
- With moisture protection
- Sensor error alarm

Configuration

The EU41 transmitter is configured for the respective task using the configuration set and a PC.

The configuration can be done offline or on-line at any location.

The EU41 is also available with a factory setting according to the specified specification (see ordering code). The configuration is stored in an EEPROM.



Configuration set TZ41

The TZ41 configuration set consists of the programming software, the adapter and the serial connection cable.

The data exchange between the transmitter and the PC takes place in both directions, so that the configuration and serial number of the transmitter can be retrieved from each PC with the configuration set.

Inputs

Resistance input

For Pt100/Ni100 with temperature ranges according to EN60751 and DIN43760, as well as linear resistors up to max. 2 k Ω . Measurement line compensation up to max. 20 Ω possible.

Thermocouple input

For common thermocouples according to the standard DIN EN 60584. As comparison junction compensation you can select the internally installed Pt100 or set a constant external temperature.

Outputs

Standard: 4-20mA (also reversible 20-4 mA). Setting according to NAMUR NE43 of max. or min. value in case of sensor failure or short circuit of connection cable. The device is protected against operation with reverse polarity.

Technical data

General

supply voltage _____ 24 V DC
 Permissible operating voltage _____ 12-35V DC

 independent power requirement _____ < 3,5 mA
 current limitation _____ < 23,0 mA switch-
 on delay _____ 4 s
 sensor break _____ < 3,6mA > 21,0mA
 _____ configurable
 Influence of voltage change _____ negligible
 circuit type _____ 2-wire technology
 current output _____ 4-20 mA
 _____ or 20-4 mA
 load resistance _____ (Vref-8V) / 0,022 A
 long-term stability _____ < 0.1 K / Jahr
 linearity error _____ < 0,1 %
 temperature drift _____ 0,01 % / K
 Calibration temperature (target) _____ 23 °C ± 5 %
 Configurable range start _____ < 50% final value
 Galvanic isolation (I/O) _____ 2 kV AC
 damping (programmable) _____ 0-8 s
 Perm. ambient temperature _____ -40...+85°C
 climate class _____ Kl. C , EN60654-1
 weight _____ 40 g
 degree of protection _____ IP20/IP00
 EMV _____ nach EN 61326-1
 _____ and NAMUR NE21
 vibration strength _____ 4g / 2... 150 HZ

Thermocouple input (TC)

Typ	Min. temperature	Max. temperature	Min. Temp.Range
K	-200 °C	1820 °C	50 K
J	-200 °C	1200 °C	50 K
T	-200 °C	400 °C	50 K
E	-200 °C	915 °C	50 K
L	-200 °C	900 °C	50 K
U	-200 °C	600 °C	50 K
N	-270 °C	1300 °C	50 K
C	0 °C	2320 °C	500 K
D	0 °C	2495 °C	500 K
S	0 °C	1768 °C	500 K
B	0 °C	1820 °C	500 K
R	0 °C	1768 °C	500 K

cold junction _____ internal Pt100 or
 _____ extern (0...80°C)
 cold junction accuracy _____ +/- 1 K
 sensor current _____ 350 nA
 measurement accuracy
 Typ K, J, T, E, L, U _____ typ. 0,5 K
 Typ N, C, D _____ typ. 1,0 K
 Typ S, B, R _____ typ. 2,0 K

Resistance thermometer input

Typ	Min. Temperature	Max. Temperature	Min. Temp.-Range
Pt100	-200°C	850°C	10K
Pt500	-200°C	250°C	10K
Pt1000	-200°C	250°C	10K
Ni100	-60°C	180°C	10K
Ni500	-60°C	150°C	10K
Ni1000	-60°C	150°C	10K

measurement accuracy

Pt100, Ni 100 _____ 0,2 K or 0,08 %Pt500,
 Ni500 _____ 0,5 K or 0,20 %Pt1000,
 Ni1000 _____ 0,3 K or 0,12 %

Measuring current at sensor

(nominal) _____ < 0,6 mA

max. sensor cable resistance

(per conductor) _____ 40 Ω

Line compensation with 2-wire _____ max. 20 Ω

Resistance input (linear)

Min. measuring range _____ 10 Ω

Max. measuring range _____ 2000 Ω

measurement accuracy

10...400 Ω _____ 0,1 Ω oder 0,08 %

10...2000 Ω _____ 1,5 Ω oder 0,12 %

Voltage transmitter

Min. measuring range _____ -10 mV

Max. measuring range _____ 100 mV

measurement accuracy _____ +/- 20 µV o. 0,08 %

Setting options of the transmitter via the configuration set

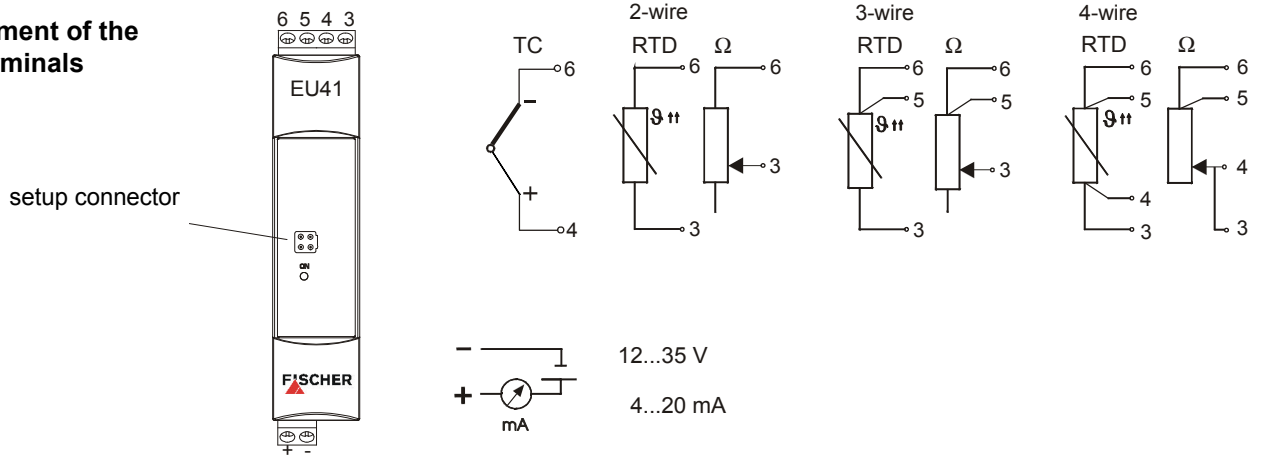
Input

Resistance thermometers	Linear resistor	Thermocouples	Voltage transmitter (mV)
Pt100, Pt500, Pt1000 acc. to DIN EN 60751 Ni100, Ni500, Ni1000 acc. to DIN 43760	10 Ω ... 2 kΩ	Type B, C, D, E, J, K, L, N R, S, T, U acc. to DIN EN 60584	-10 mV ... 100 mV
2 wire, 3 wire oder 4 wire circuit			
measuring range ___ - ___ °C	measuring range ___ - ___ Ω	measuring range ___ - ___ °C	measuring range ___ - ___ mV
Advanced Settings			
Compensation Line resistance : ___ Ω (0...20 Ω) (only for 2-wire resistance thermometers)		cold junction: (only for thermocouples)	internal external ___ °C (0...80 °C)
Measuring point number (TAG): _____ (max 8 characters)			

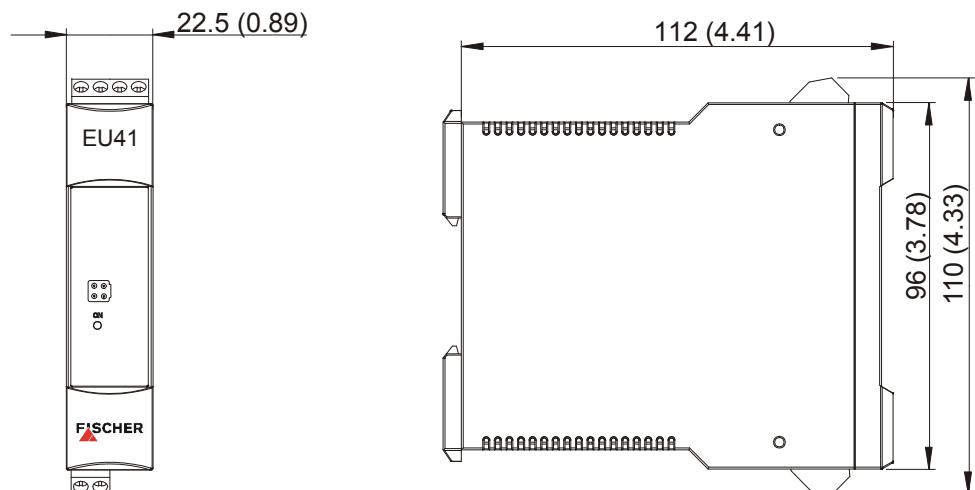
Output

error message < 3,6 mA (NAMUR) > 21,0 mA (NAMUR)	signal 4-20 mA 20-4 mA	damping 0-8 sec.
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Arrangement of the input terminals



Dimensions (mm)



Ordering code

Digital Temperature Transmitter Type EU41

0	1						
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Version

Standard> 0

Galvanic isolation

yes> 1

Configuration

without (Pt100/3-wire / 0-100°C)> 0 0 0 0 0

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Sensor

Pt100> 1
 Ni100> 2
 Pt500> 3
 Ni500> 4
 Pt1000> 5
 Ni1000> 6
 Linear resistor> 7
 Voltage transmitter> 8
 Thermocouple Typ B> B
 Thermocouple Typ C> C
 Thermocouple Typ D> D
 Thermocouple Typ E> E
 Thermocouple Typ J> J
 Thermocouple Typ K> K
 Thermocouple Typ L> L
 Thermocouple Typ N> N
 Thermocouple Typ R> R
 Thermocouple Typ S> S
 Thermocouple Typ T> T
 Thermocouple Typ U> U

Linearization

yes> 1

Eingang

with resistance thermometers
 Input R/Pt100/Ni100-2-wire (please specify the line resistance max. 20Ω)> 1
 Input R/Pt100/Ni100-3-wire> 2
 Input R/Pt100/Ni100-4-wire> 3
 for thermocouples
 internal comparison junction> 4
 constant external reference junction (please specify the reference temperature (0...80°C)> 8

Output

4-20 mA> 1
 20-4 mA> 2

Error message

< 3,6 mA (NAMUR)> 2
 > 21,0 mA (NAMUR)> 3

Operating voltage

24V DC> 9

Measuring range _____ - _____ °C / mV / Ω

Accessories: Configuration set TZ41