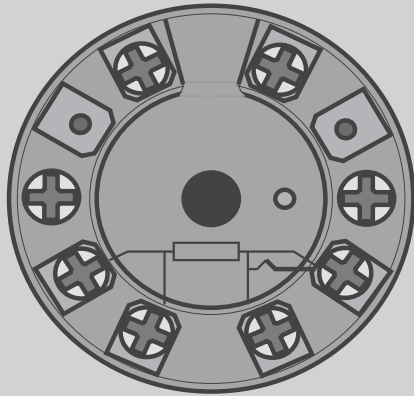




# UNIFLEX TISO / TISEX

## Programmable 2-wire head-transmitter



Resistance transducer, Thermocouple, Voltage  
 Temperature linear or linear to specification  
 Configuration via PC  
 Galvanical isolation  
 Explosion protected ATEX II 1 G

### GENERAL

This 2-wire transmitter is designed for mounting inside the standard connecting head of a temperature sensor. Its special feature is the bi-directional communication during configuration. By means of a PC and the standard programming kit, adjustment for the required sensor type, measuring range and parameters is performed. The input is generally isolated from the output. The intrinsically safe version is suitable for application within explosion hazarded areas.

### DESCRIPTION

The transmitter has signal inputs for thermocouples/voltage and for resistive sensors. With thermocouple measurement, a built-in temperature sensor enables internal cold junction compensation. An external sensor is optional. Resistive input is provided for Pt, Ni and Cu-type sensors. Measurement is possible in 2-, 3- and 4-wire connection. Current measurements are possible by means of an external shunt and voltage input.

### TECHNICAL DATA

#### INPUT

Resolution 15 bit (32 768 steps)  
 Measuring cycle: nominal 500 ms

#### RESISTANCE THERMOMETER

Smallest configurable step: 0,1 K  
 Sensor current: 0,2 mA,  
 Connection: 2-, 3 - or 4-wire

Sensor	Range [°C]	Smallest Span [K]	Error [K]
Pt25...Pt500	-250...+850	10	0,1
Pt501...Pt1000	-200...+350		
Ni25...Ni1000	-50...+250		
Cu25...Cu1000	-50...+200		

#### THERMOCOUPLE

Smallest configurable step 0,1 K

Sensor type	Range [°C]	Smallest Span [K]	Error [K]
T	-250...+400	40	1
U	-200...+600	50	
L	-200...+900		
J	-210...+1200		
E	-270...+900		
K	-250...+1370	100	2
N	-200...+1300		
R	-50...+1750		
S		50	
B	+100...+1820	100	
C (W5)	0...+2300		
D (W3)	0...+2300		

#### Temperature compensation

intern, built-in or external with Pt 100 sensor.  
 Error of TK: 0,1K/10K

#### VOLTAGE, RESISTORS

Signal	Range	Smallest Spanne	Error
mV	-10...+70	2	0,05
V	-0,1...+1,1	20 mV	0,5 mV
Ω	0...390	10	0,05
Ω	0...2200	50	0,25

#### Loop monitoring

built-in, upscale or downscale

**Damping:** adjustable 0...30 s

#### Permissible input interferences

(to DIN IEC 770 6.2.4)

**Common mode:** negligible

#### Series mode

370 mV for TC (type J 0...1000 °C)  
 460 mV for Pt100/Ω ( 0...100 °C)

### OUTPUT

**Standard signal:** 4...20 mA

**Signal direction:** direct, inverse

**Resolution:** 12 bit

#### LOAD

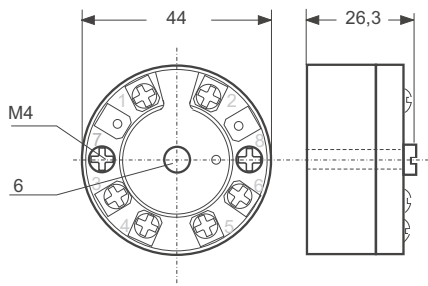
$$R_{Load} = \frac{U_{Supply} - 6,5[V]}{0,022[A]} - R_{Lead}[\Omega]$$

#### Output signal limitation

programmable 3,8 mA, 22 mA

**Loop monitoring:** programmable  
 upscale 23 mA / downscale 3,6 mA

Fig. 1 Dimensions (mm)



**Characteristic:** temperature linear or adjustable with up to 30 segments

**Conformity error:**  $\pm 0,1 \%$  fsd

**Measurement error**

(excluding conformity error)

Sensor	Error
Pt (temp. > -50 °C)	$\pm 0,1 K \pm 0,1 \%$
TC	$\pm 1 K \pm 0,1 \%$
TC (R; S; B; C; D)	$\pm 2 K \pm 0,1 \%$

**DISPLAY**

A red LED indicates if communication is active

**COMMUNICATION**

Via programming unit and serial interface of PC for configuration and parameter setting

**POWER SUPPLY**

**Supply voltage:**  $\geq 6,5... \leq 35 V$

**Ex-version:**  $\geq 6,5... \leq 28 V$

**Power supply effect**

On span start:  $\leq \pm 0,05 \%$  / 10 V

On span end:  $\leq \pm 0,01 \%$  / 10 V

**Permissible ripple:**  $3 V_{rms}$

**Behaviour with mains failure**

No loss of configuration data.

**ENVIRONMENTAL CONDITIONS**

**Temperature limits**

Operation: -40... + 85 °C

Storage: -35... + 85 °C

**Temperature effect:**  $\leq \pm 0,1 \%$  / 10 K

**Relative humidity:**  $\leq 98 \%$ ,

condensation

Fig 2 Connection resistance thermometer

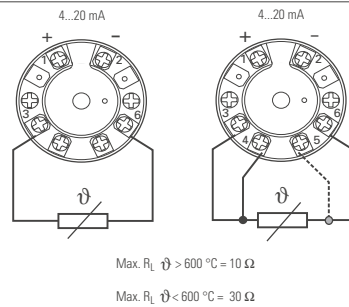
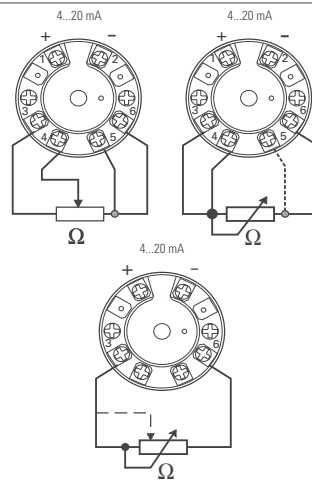


Fig 4 Connection potentiometer



**Vibration**

4 g 10 to 100 Hz to Lloyds register test 2

**Long term drift:**  $\pm 0,1 \%$  / 10 000 h

**ELECTROMAGNETIC COMPATIBILITY**

Complies with EN 50 081-1 and EN 50 082-2 for unlimited use in rural and industrial areas.

**EXPLOSION PROTECTION**

According to ATEX II 1G  
EEx ia IIC T5

**GENERAL**

**Dimensions:** Ø 44 mm, h 27 mm

Protection type: housing IP55,  
terminals IP10

**Electrical connection:** Screw terminals

Fig 3 Connection thermocouple

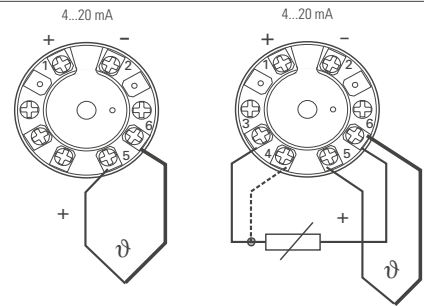
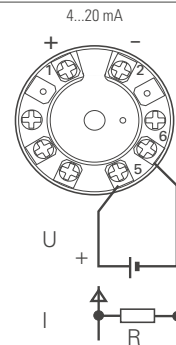


Fig 5 Connection voltage, current



**Weight:** 0,1 kg

**Mounting:** in standard connection head type B as A, as also derivatives.

**Mounting position:** not critical

**ORDERING DATA**

Description	Order-no.
Standard transmitter	
Without configuration	9404-202-09021
Configured to specification	9404-202-09071
EEx Transmitter	
Without configuration	BOR-8224-524
Configured to specification	BOR-8224-525

**ACCESSORIES**

Description	Order-no.
<b>Programmer UNICONVERTER</b>	
Adapter for connection to serial interface RS232 C of a PC, compatible to IBM PC XT.	9404-202-09301
<b>Transmitter Power Supply</b>	
230 VAC, standard	9404-202-08231
230 VAC HRT. 70 mA	9404-202-08401
115 VAC HRT. 70 mA	9404-202-08411

**Isolating transmitter power supply**

**EEx-TPS**

See separate data sheet



**Deutschland**

PMA Prozeß- und Maschinen- Automation GmbH  
Miramstrasse 87, D-34123 Kassel

Tel./Fax: (0561) 505 - 1307/1710  
E-mail: mailbox@pma-online.de  
Internet: http://www.pma-online.de

**Your local distributor**