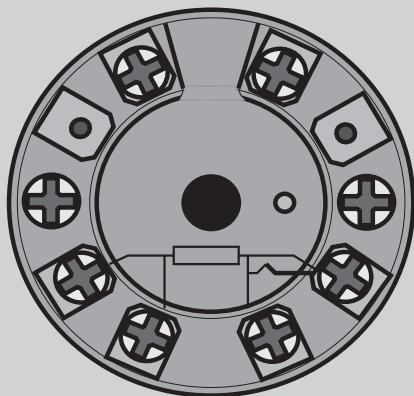




UNIFLEX HRT

Programmable 2-wire head-transmitter with HART communication

Resistance transducer, Thermocouple, Voltage

Temperature linear or linear to specification

Configuration via PC or by means of
HART communicator

Galvanical isolation

Explosion protected EEx ia IIC T5

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 based upon the HART protocol.

By means of a PC and the standard programming kit or a HART-Communicator, 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 hazardous 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]	Smalles 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		
N	-200...+1300		
R	-50...+1750	100	2
S			
B	+100...+1820	50	
C (W5)	0...+2300	100	
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

$$R_{Load} = \frac{U_{Supply} - 12[V]}{0,022[A]} - R_{Lead}[\Omega]$$

Output signal limitation

programmable 3,8 mA, 22 mA

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

Fig.1 Dimensions (mm)

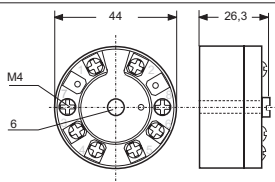


Fig 2 Connection resistance thermometer

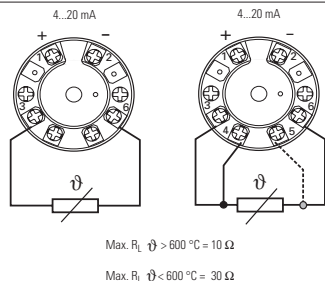


Fig 3 Connection thermocouple

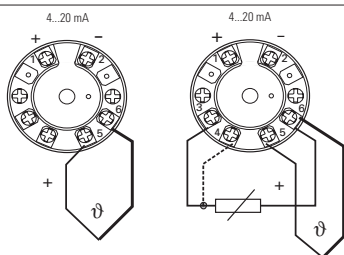


Fig 4 Connection potentiometer

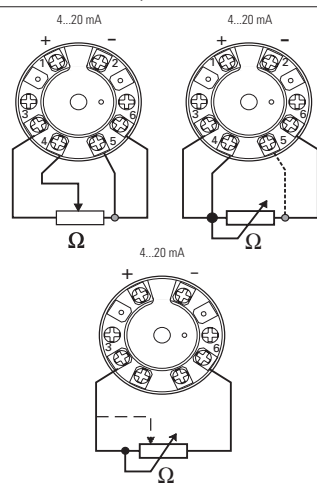
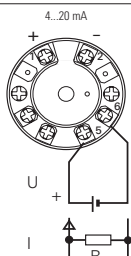


Fig 5 Connection voltage, current



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)	$\pm 0,1 \text{ K} \pm 0,1 \%$
TC	$\pm 1 \text{ K} \pm 0,1 \%$
TC (R; S; B; C; D)	$\pm 2 \text{ K} \pm 0,1 \%$

DISPLAY

A red LED indicates if power is on

COMMUNICATION

Protocol HART 5.1

Bus operation via multi drop up to 15 participants. Consumption 4 mA per unit for digital operation.

POWER SUPPLY

Supply voltage: $\geq 12 \dots \leq 35 \text{ V}$

Ex-version: $\geq 12 \dots \leq 28 \text{ V}$

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: $-40 \dots + 85 \text{ °C}$

Storage: $-35 \dots + 85 \text{ °C}$

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

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

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 EN 50 014 and 50 020
EEx ia IIC T5

Certificate of conformity
DEMKO 97D.119471X

GENERAL

Dimensions: $\varnothing 44 \text{ mm}$, h 27 mm

Protection type: housing IP55,
terminals IP10

Electrical connection: Screw terminals

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	9404-202-09221
Configured to specification	9404-202-09271
EEx Transmitter	
Without configuration	9404-202-09231
Configured to specification	9404-202-09281

ACCESSORIES

Description	Order-no.
Programmer UNICONVERTER	
Adapter for connection to serial interface RS232 C of a PC, compatible to IBM PC XT.	9404-202-09301
Transmitter Power Supply	
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 HART**

See separate data sheet



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