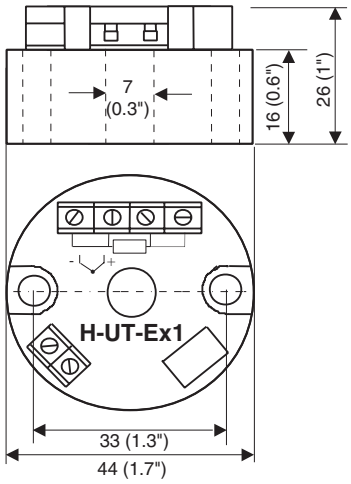
Temperature head transmitter

HUT-Ex

Features

- Installation acc. to DIN terminal heads from Form B
- Low installations costs
- Interference immune measurement value transfer by direct mounting at the terminal head
- Temperature linear output signal
- A device for thermocouples and resistance thermometers
- Parameterisation via PC

Dimensions



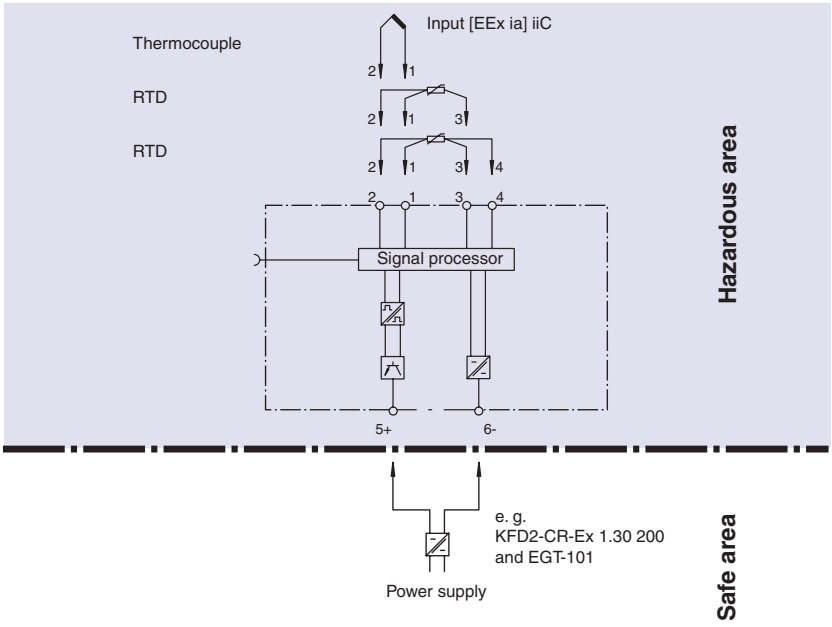
Function

The H-UT-Ex1 linearises the signal from resistance thermometers and thermocouples and provides a 4 mA ... 20 mA current output. The input circuit is galvanically isolated from the output circuit.

The device is intrinsically safe in accordance with EEx ia IIC. The H-UT-Ex1 may be configured in situ with a programming socket to operate over the desired temperature range with a Pt100, Pt1000, Ni100, Ni1000, or with a thermocouple type B, E, J, K, L, N, R, S or T.

The transmitter is polarity protected and will not be damaged by connecting the power supply with the wrong polarity, but the output will be 0 mA. The maximum load in the output loop depends on the supply voltage, see data.

Electrical connection



Release date 2007-11-21 13:43 Date of issue 2007-11-21 T38930_ENG.xml

Supply	
Rated voltage	8 ... 30 V DC
Input	
Connection	terminals 1, 2, 3, 4: resistance thermometers Pt100 acc. to DIN IEC 751, Pt1000, Ni100, Ni1000, thermocouple type B, E, J, K, L, N, R, S, T, U; customer specified characteristic curve connection to sensor: 3- or 4-wire connection for resistance thermometers, 2-wire connection for thermocouple
Current	approx. 0.4 mA
Output	
Connection	terminals 5+, 6-
Output rated operating current	4 ... 20 mA, temperature linear
Output signal	min. 3 mA at sensor failure: adjustable between 3.6 ... 21.6 mA, at sensor short circuit: adjustable between 3.6 ... 21.6 mA
Transfer characteristics	
Measuring time	≤ 0.5 ms
Deviation	maximum of: ambient temperature 0 ... 50 °C (273 ... 323 K): 0.005 %/K or 0.005 %/°C of the output signal range ambient temperature < 0 °C (273 K) or > 50 °C (323 K): 0.01 %/K or 0.01 %/°C of the output signal range whichever is higher
Linearity	≤ 0.1 % of the span RTD, ≤ 0.2 % T/C
Compensation error	failure of cold junction compensation: 0.5 °C (273.5 K)
Calibration error	≤ 0.1 % of the final value or < 0.2 °C (273.2 K) RTD, < 0.1 % (RT = 23 °C (296 K), U_s = 20 V)
Electrical isolation	
Input/output	safe electrical isolation acc. to EN 50020, voltage peak value 1500 V AC/1 min
Operating conditions	
Ambient conditions	
Ambient temperature	-40 ... 85 °C (233 ... 358 K)
Ambient temperature limits	The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate.
Storage temperature	-40 ... 85 °C (233 ... 358 K)
Mechanical specifications	
Dimensions	Ø44 x 26 mm (1.7 x 1 in)
Certificates and approvals	
Ex approval	DEMKO 03 ATEX 134473 X , for additional certificates see www.pepperl-fuchs.com
Type of protection	⟨Ex⟩ II 1G EEx ia IIC T4 ... T6
General information	
Directive conformity	
Directive 94/9 EC (ATEX)	EN 50014, EN 50020, EN 50284
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity and instructions have to be observed. For information see www.pepperl-fuchs.com.

Installation instructions

- When used with a RTD, the H-UT-Ex1 may be configured to provide 3- or 4-wire connection. When used with a thermocouple, the H-UT-EX1 may be configured to provide cold junction compensation or it can operate in external cold junction thermostat (Reference temperature 0 °C (273 K)).
- The programming via PC must be done in safe area and must not be done in the hazardous area.
- Adjustment/calibration: For the configuration, the programming kit H-PK, consisting of adapter, software and system manual, is required and is executed by means of a PC via adapter to the programmming socket. The control display of the configuration software corresponds to VDI/VDE GMA 2187.

Accessories

H-PK, programming kit consisting of adapter, software, 9 V battery and system manual

Necessary for parameterisation without transmitter power supply.

Release date 2007-11-21 13:43 Date of issue 2007-11-21 T38930_ENG.xml

Connection and installation

1. Connect power supply and output according to figure 1.
2. Connect the input according to figures 2 ... 9.

Fig. 1

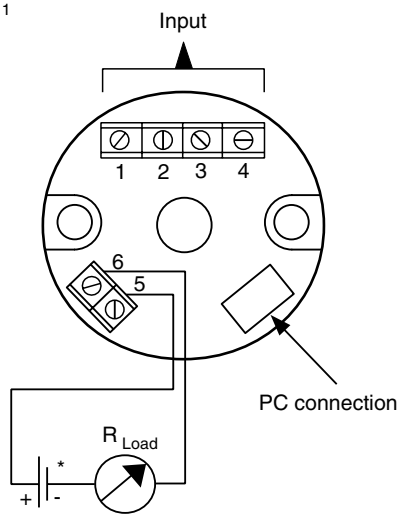
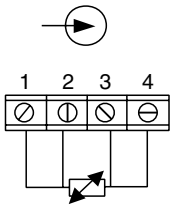
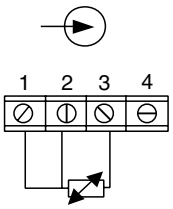


Fig. 2



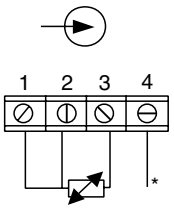
Pt100, Pt1000,
Ni100, Ni1000
4-wire connection

Fig. 3



Pt100, Pt1000,
Ni100, Ni1000
3-wire connection

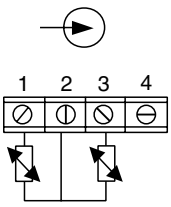
Fig. 4



Pt100 "SmartSense"
3-wire connection

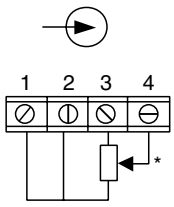
*SmartSense wire

Fig. 5



Pt100
Difference
temperature
$T_1 > T_2$

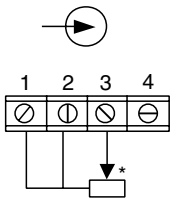
Fig. 6



Potentiometer
4-wire connection

*Max input

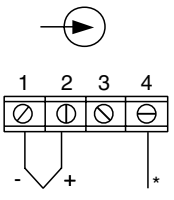
Fig. 7



Potentiometer
3-wire connection

*Max input

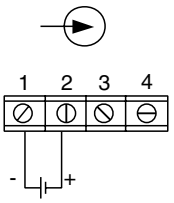
Fig. 8



T/C

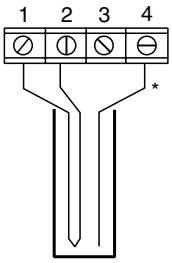
*SmartSense wire

Fig. 9



mV

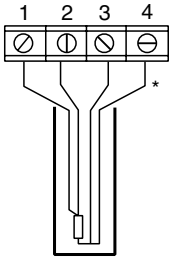
Fig. 10



T/C
SmartSense
temperature sensor

*additional SmartSense wire

Fig. 11



Pt100
3-wire connection
SmartSense
temperature sensor

*additional SmartSense wire

Release date 2007-11-21 13:43 Date of issue 2007-11-21 T38930_ENG.xml