

# FlexTemp 2321 Universal Transmitter

4...20 mA transmitter with HART® communication.

RTD, T/C, mV and R inputs

Isolation voltage 2 kV<sub>ac</sub>

Configuration via FlexProgrammer  
or HART® configurator

Accuracy < 0.1°C (Pt100)

Configurable linearisation,  
damping and status indication

Current-trim and sensor-trim

Local, remote or fixed compensation  
for "cold junction" (CJC)



## Description

FlexTemp 2321 is a 4...20 mA loop-powered, configurable universal transmitter with galvanic isolation between input and output. The input can be configured for RTD or T/C sensors, resistance, current or voltage signals.

Either 2-, 3- or 4-wire connection can be selected for the resistance input. The built-in temperature sensor or a remote Pt100 sensor can be used to compensate for "cold junction" (CJC) if thermocouples are connected.

The HART® communication feature on-line process calibration and adjustment, transmitter configuration and multiple process control in 2-wire networks.

The configuration can be established from a standard HART® configurator or the dedicated FlexProgrammer configuring tool connected to a PC.



## Technical Data

### Input

<b>Digital accuracy</b>	See „Measuring ranges“
<b>CJC-compensation</b>	Local < 0.7°C
<b>RTD measuring current</b>	0.2 mA, continuously
<b>Cable resistance</b>	
2-wire	Max. 30 Ohm/wire {1}
3-/4-wire	T > 600°C: Max. 10 Ohm/wire
3-/4-wire	T < 600°C: Max. 30 Ohm/wire
<b>Protection</b>	+/- 35 V <sub>dc</sub>
<b>Suppression</b>	50 and 60 Hz
<b>Resolution</b>	16 bit
<b>Repeatability</b>	< 0.05°C

### Output

<b>Signal span</b>	4...20 mA, 2-wire {1} 20...4 mA, 2-wire {1}
<b>Accuracy</b>	< 0.1% of signal span
<b>Supply range</b>	8...35 V <sub>dc</sub>
<b>Ripple immunity</b>	3 V <sub>rms</sub>
<b>Load equation</b>	$R_L < (V_{cc} - 8)/23$ [kOhm]
<b>Up/Down scaling limits</b>	23 mA/3.5 mA {1}
<b>Damping</b>	0...15 sec. {1}
<b>Response time (t<sub>90</sub>)</b>	Pt100 1.0 sec. ; T/C 1.6 sec.
<b>Resolution</b>	12 bit

### HART® data

<b>Protocol</b>	HCF standard, Rev.5
<b>Features {1}</b>	Read serial number Read/Change user ID Read/Change configuration Read input signal value Read output signal value Input signal logging 2-point sensor-trim 2-point current-trim

### Environmental conditions

<b>Operating temperature</b>	-40...85°C
<b>Storage temperature</b>	-55...90°C
<b>Humidity</b>	< 90% RH, non-condensing
<b>Vibrations</b>	Lloyds Register, test 2

### EMC data

<b>Generic standards</b>	EN 61000-6-3, EN61000-6-2
<b>Product standard</b>	EN 61326

### Mechanical data

<b>Dimensions</b>	62 x 88 x 24 mm
<b>Protection class</b>	Housing: IP 30; Terminals: IP 10

### Other data

<b>Isolation</b>	50 V <sub>ac</sub> ; test 2 kV <sub>ac</sub>
<b>Temperature drift</b>	Typ. 0.003% per °C Max. 0.01% per °C
<b>Power-on time</b>	1.8...3.9 sec.
<b>Standard</b>	NE43

### Test conditions

<b>Configuration</b>	Pt100; 0...100°C
<b>Amb. temperature</b>	23°C +/- 2°C

### Disposal of product and packing

According to national laws or by returning to Bourdon-Haenni

### Note

- {1} Configurable  
{2} The max. temperature is lower for RTD-elements in the range 500...1000, i.e. Pt1000 max. 350°C.

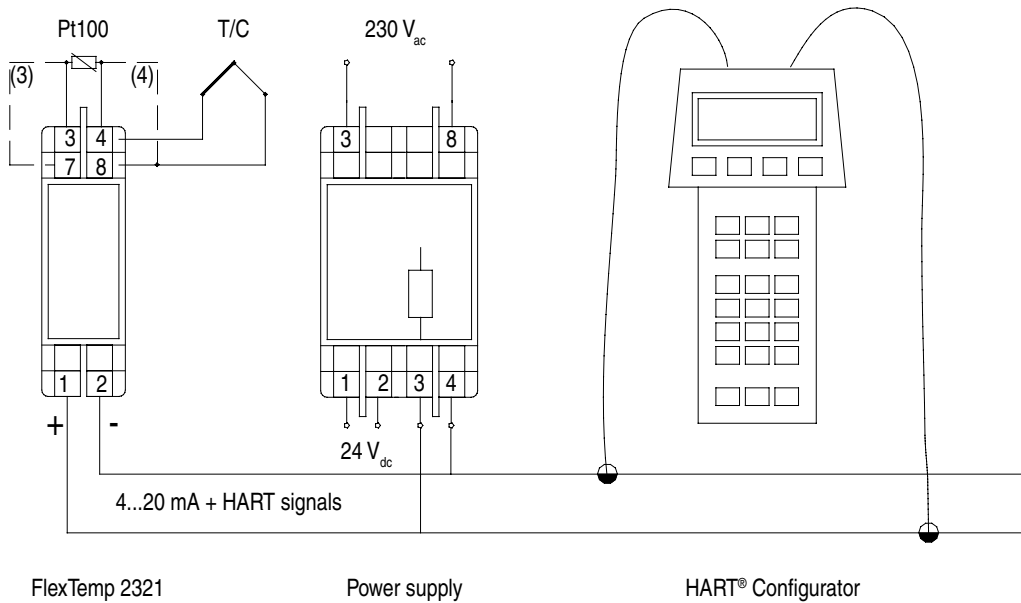
## Measuring Ranges

Type	Standard	Range	Min. span	Accuracy	Resolution
Pt25...Pt1000	DIN/EN/IEC 60751	-200...850°C {2}	10°C	0.1°C	0.1°C
Pt25...Pt1000	a = 0.003902	-200...850°C {2}	10°C	0.1°C	0.1°C
Pt25...Pt1000	a = 0.003916	-200...850°C {2}	10°C	0.1°C	0.1°C
Ni25...Ni1000	DIN 43760	-50...250°C {2}	10°C	0.1°C	0.1°C
Cu25...Cu1000	0.428 Ohm/°C	-50...200°C	10°C	0.1°C	0.1°C
B(PtRh30-Pt)	IEC 584	100...1820°C	50°C	2°C	0.1°C
E(NiCr-CuNi)	IEC 584	-270...900°C	50°C	1°C	0.1°C
J(Fe-CuNi)	IEC 584	-210...1200°C	50°C	1°C	0.1°C
K(NiCr-Ni)	IEC 584	-250...1370°C	50°C	1°C	0.1°C
L(Fe-CuNi)	DIN 43710	-200...900°C	50°C	1°C	0.1°C
N(NiCrSi-NiSi)	IEC 584	-200...1300°C	50°C	1°C	0.1°C
R(PtRh13-Pt)	IEC 584	-50...1750°C	100°C	2°C	0.1°C
S(PtRh10-Pt)	IEC 584	-50...1750°C	100°C	2°C	0.1°C
T(Cu-CuNi)	IEC 584	-250...400°C	40°C	1°C	0.1°C
U(Cu-CuNi)	DIN 43710	-200...600°C	50°C	1°C	0.1°C
W5-Re (Type C)	ASTM 988	0...2300°C	100°C	2°C	0.1°C
W3-Re (Type D)	ASTM 988	0...2300°C	100°C	2°C	0.1°C
Lin. voltage		-10...70 mV	2 mV	0.04 mV	0.1 mV
Lin. voltage		-0.1...1.1 V	20 mV	0.4 mV	1 mV
Lin. resistance		0...390 Ohm	5 Ohm	0.05 Ohm	0.01 Ohm
Lin. resistance		0...2200 Ohm	25 Ohm	0.25 Ohm	0.1 Ohm

## Ordering Details - FlexTemp 2321

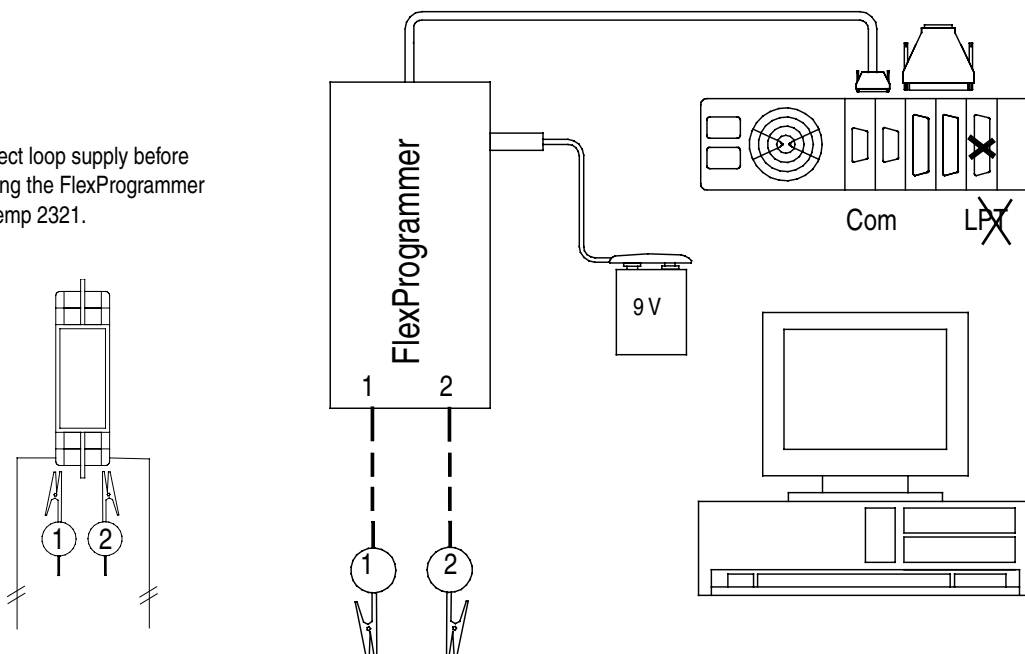
		2321 000x (x)
<b>Type</b>	5...8' digit	
Standard version		1
<b>Configuration</b>	9' digit	
Configuration according to customer specifications		C

## Application Example

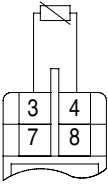
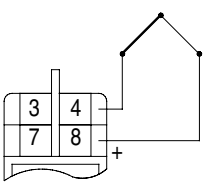
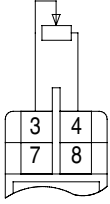
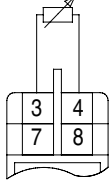
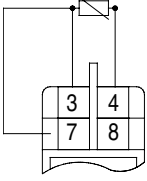
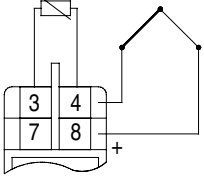
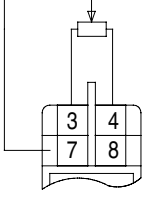
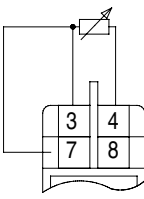
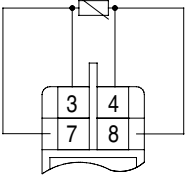
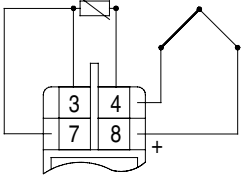
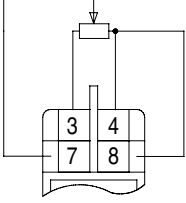
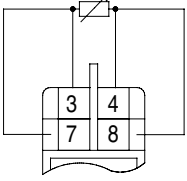


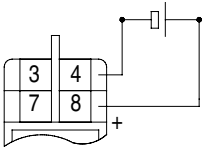
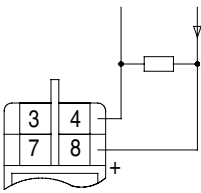
## Configuration

Note:  
Disconnect loop supply before  
connecting the FlexProgrammer  
to FlexTemp 2321.



# Electrical Installation

RTD	T/C	Potentiometer	Resistance
 <p>No cable-compensation {3}</p>	 <p>Internal CJC-compensation</p>	 <p>No compensation {3}</p>	 <p>No compensation {3}</p>
 <p>3-wire cable-compensation</p>	 <p>External CJC-compensation No cable compensation {3}</p>	 <p>3-wire compensation for transfer resistance {4}</p>	 <p>3-wire cable compensation</p>
 <p>4-wire cable-compensation</p>	 <p>External CJC-compensation 3-wire cable compensation</p>	 <p>4-wire compensation for transfer resistance {4}</p>	 <p>4-wire cable compensation</p>
Current measurement	Voltage measurement	Notes	



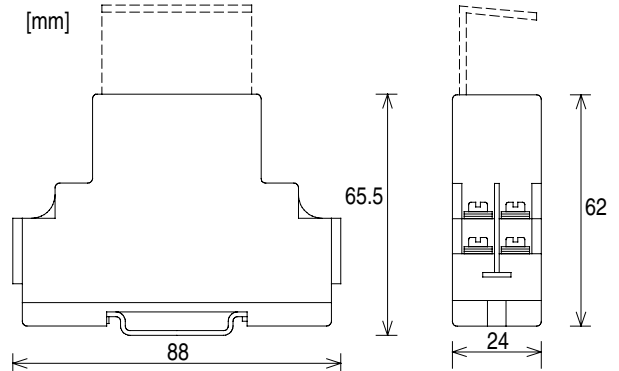
{3} Configurable compensation for cable resistance  
 {4} Transfer resistance between element and wiper

## Accessories

FlexProgrammer configuration set,  
 type number 82 23-903 comprises:  
 FlexProgrammer with 9 pole RS232C cable  
 Software CD  
 Battery plug  
 Cable with test plugs



## Dimensional drawings



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