FlexTemp 2321 Universal Transmitter

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

RTD, T/C, mV and R inputs

Isolation voltage 2 kV_{ac}

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.

Baumer

Technical Data

Input

Digital accuracy	See „Measuring ranges“
CJC-compensation	Local < 0.7°C
RTD measuring current	0.2 mA, continuously
Cable resistance	
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
Protection	+/- 35 V_{dc}
Suppression	50 and 60 Hz
Resolution	16 bit
Repeatability	< 0.05°C

Output

Signal span	4...20 mA, 2-wire {1} 20...4 mA, 2-wire {1}
Characteristic	Linear or customised with max. 30 points {1}
Accuracy	< 0.1% of signal span
Supply range	8...35 V_{dc}
Ripple immunity	3 V_{rms}
Load equation	$R_L < (V_{cc} - 8)/23$ [kOhm]
Up/Down scaling limits	23 mA/3.5 mA {1}
Damping	0...15 sec. {1}
Response time (t_{90})	Pt100 1.0 sec. ; T/C 1.6 sec.
Resolution	12 bit

Environmental conditions

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

HART® data

Protocol	HCF standard, Rev.5
Features {1}	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

EMC data

Generic standards	EN 61000-6-3, EN61000-6-2
Product standard	EN 61326

Mechanical data

Dimensions	62 x 88 x 24 mm
Protection class	Housing: IP 30; Terminals: IP 10

Other data

Isolation	50 V_{ac} ; test 2 kV_{ac}
Temperature drift	Typ. 0.003% per °C
	Max. 0.01% per °C
Power-on time	1.8...3.9 sec.
Failure information	NE43

Test conditions

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

Disposal of product and packing

According to national laws or by returning to Baumer

Note

{1} Configurable

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

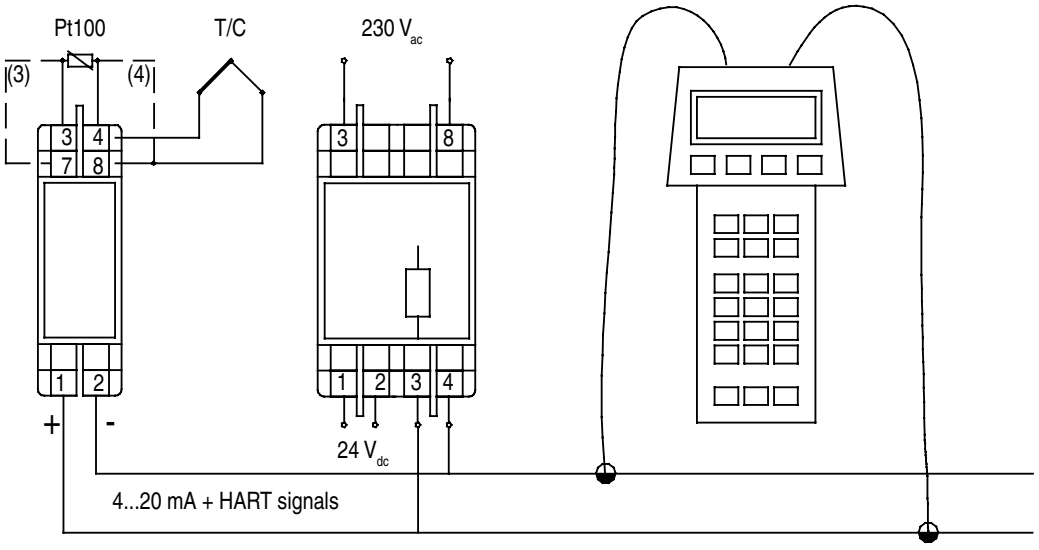
Measuring Ranges

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)
Type	**5...8´ digit**	
Standard version		1
Configuration	**9´ digit**	
Configuration according to customer specifications		**C**

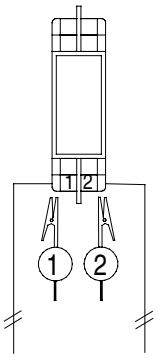
Application Example



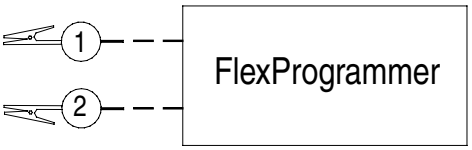
FlexTemp 2321 | Power supply | HART® Configurator

Configuration

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

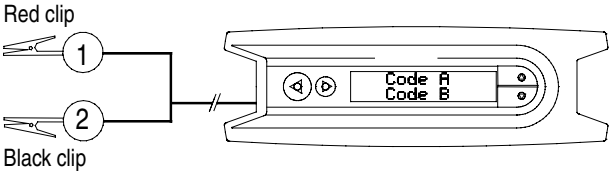


FlexProgrammer



FlexProgrammer 9701

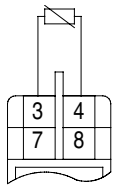
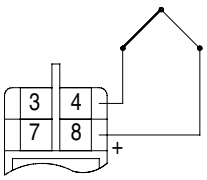
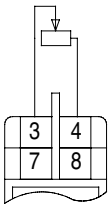
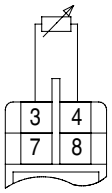
Red clip

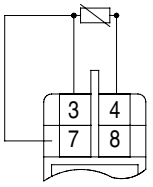
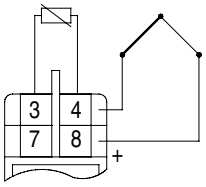
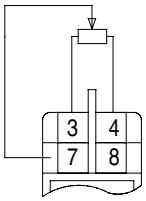
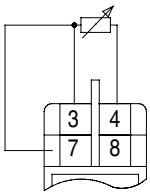


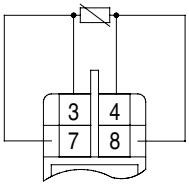
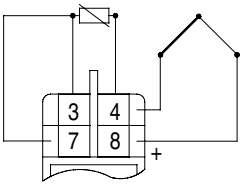
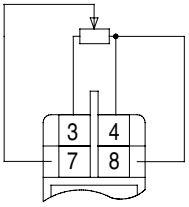
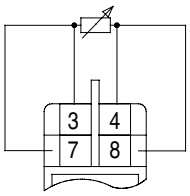
Black clip

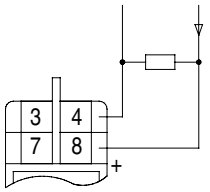
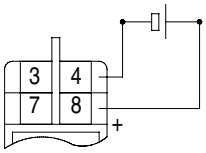
Note: Ambient temperature range 0...50°C

Electrical Installation

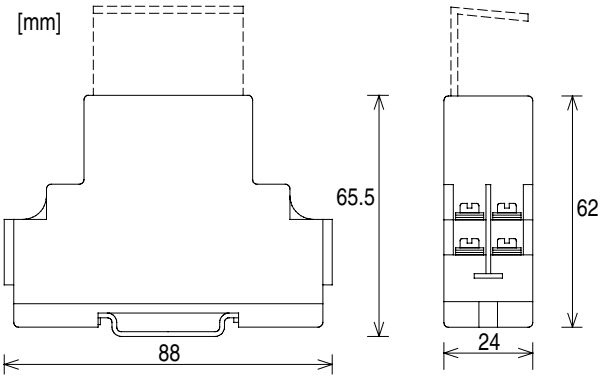
RTD	T/C	Potentiometer	Resistance
			
No cable-compensation {3}	Internal CJC-compensation	No compensation {3}	No compensation {3}

RTD	T/C	Potentiometer	Resistance
			
3-wire cable-compensation	External CJC-compensation No cable compensation {3}	3-wire compensation for transfer resistance {4}	3-wire cable compensation

RTD	T/C	Potentiometer	Resistance
			
4-wire cable-compensation	External CJC-compensation 3-wire cable compensation	4-wire compensation for transfer resistance {4}	4-wire cable compensation

Current measurement	Voltage measurement	Notes
		{3} Configurable compensation for cable resistance {4} Transfer resistance between element and wiper

Dimensional drawings



Accessories

The FlexProgrammer 9701 is a dedicated tool to configure all Baumer configurable products.

Type No. 9701-0001 complies:
FlexProgrammer interface unit
CD with the FlexProgram software and product drivers (DTM)
USB cable
Cable with 2 alligator clips