

FlexTemp 2311 Universal Transmitter

4...20 mA transmitter

RTD, T/C, mV and R inputs

Isolation voltage 2 kV_{ac}

Configuration via FlexProgrammer

Accuracy better than 0.1°C (Pt100)

**Configurable linearisation,
damping and status indication**

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



Description

FlexTemp 2311 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 configuration can be established from the dedicated FlexProgrammer configuring tool connected to a PC.

Technical Data

Input

Digital accuracy	See „Measuring ranges“
CJC-compensation {1}	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	6.5...35 Vdc
Ripple immunity	3 V _{rms}
Load equation	$R_L \leq (V_{cc} - 6.5)/23$ [kOhm]
Up/Down scaling limits	23 mA/3.5 mA {1}
Damping	0...30 sec. {1}
Response time (t₉₀)	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

EMC data

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

Disposal of product and packing

According to national laws or by returning to Baumer

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

Note

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

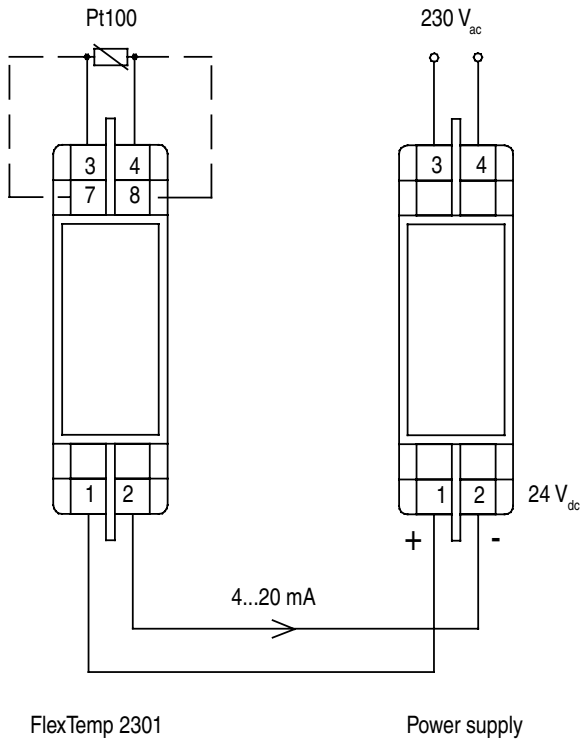
Measuring Ranges

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 2311

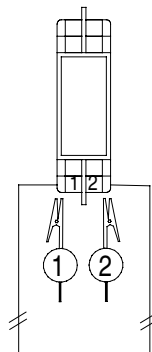
		2311 000x (x)
Type	5...8' digit	
Standard version		1
Configuration	9' digit	
Configuration according to customer specifications		C

Application Example

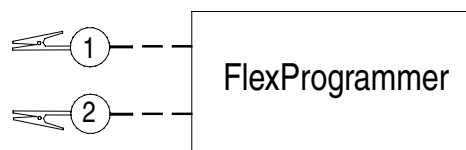


Configuration

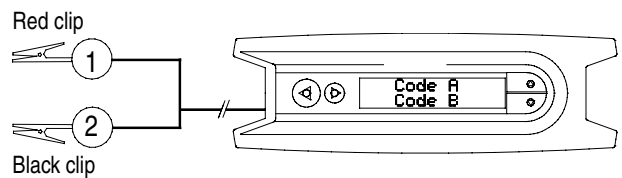
Note:
Disconnect loop supply before connecting the FlexProgrammer to FlexTemp 2311.



FlexProgrammer



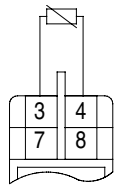
FlexProgrammer 9701



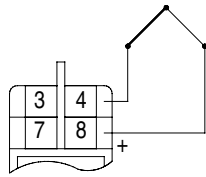
Note: Ambient temperature range 0...50°C

Electrical Installation

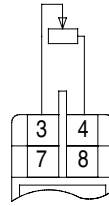
RTD	T/C	Potentiometer	Resistance
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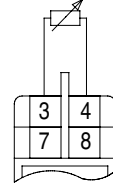
No cable-compensation {3}



Internal CJC-compensation

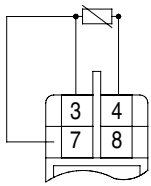


No compensation {3}

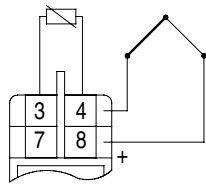


No compensation {3}

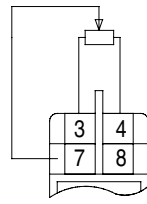
RTD	T/C	Potentiometer	Resistance
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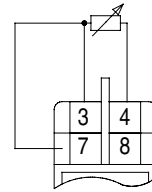
3-wire cable-compensation



External CJC-compensation
No cable compensation {3}

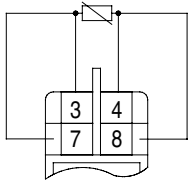


3-wire compensation for transfer resistance {4}

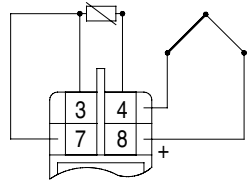


3-wire cable compensation

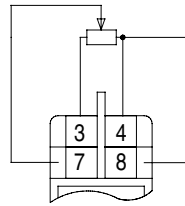
RTD	T/C	Potentiometer	Resistance
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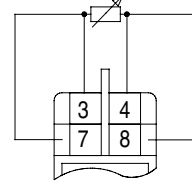
4-wire cable-compensation



External CJC-compensation
3-wire cable compensation

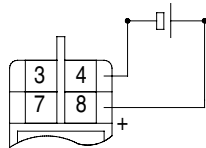
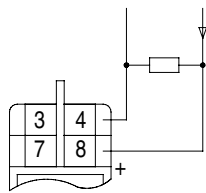


4-wire compensation for transfer resistance {4}



4-wire cable compensation

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

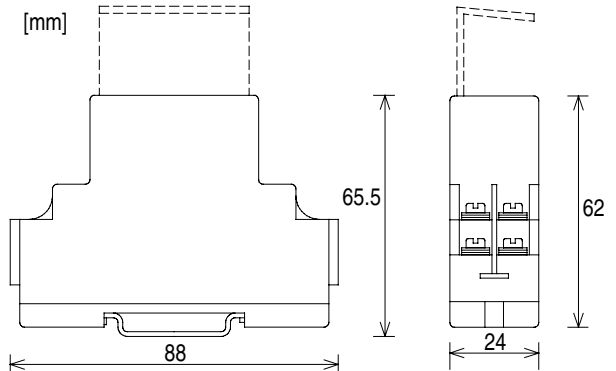
Accessories



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

Dimensional drawings



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