

# FlexTop 2211 Universal Transmitter

4...20 mA transmitter

RTD, T/C, mV and R inputs

Isolation voltage 3.75 kV<sub>ac</sub>

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)

Transmitter temperature alarm

Ex approvals:

Demko EEx ia IIC T5/T6, ATEX II 1G

FM Class I, Div 1, Groups A, B, C, D

FM Class II, Div 1, Groups E, F, G



## Description

FlexTop 2211 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.

FlexTop 2211 is embedded in silicone which makes it resistant to humid environments.

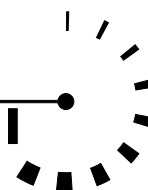
The configuration can be established from the dedicated FlexProgrammer configuring tool connected to a PC.

FlexTop 2211 has a 6 mm center hole for fast sensor replacement and spring loaded mounting screws which ensure a safe fastening even in vibrating environments.

A built-in temperature surveillance system gives alarm if ambient temperature limits are exceeded.

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**HAENNI**

made to measure



## Technical Data

### Input

<b>Digital accuracy</b>	See „Measuring ranges“
<b>CJC-compensation {1}</b>	Local < 0.5°C Remote < 0.2°C
<b>RTD measuring current</b>	0.2 mA, continuously
<b>Cable resistance (3-/4-wire)</b>	T > 600°C: Max. 20 Ohm/wire {1} T < 600°C: Max. 30 Ohm/wire {1}
<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>	6.5...35 Vdc
<b>Ripple immunity</b>	3 V <sub>rms</sub>
<b>Load equation</b>	$R_L \leq (V_{cc} - 6.5)/23$ [kOhm]
<b>Up/Down scaling limits</b>	23 mA/3.5 mA {1}
<b>Damping</b>	0...30 sec. {1}
<b>Response time (t<sub>90</sub>)</b>	Pt100 1.0 sec. ; T/C 1.6 sec.
<b>Resolution</b>	12 bit

### Environmental conditions

<b>Operating temperature</b>	-40...85°C
<b>Storage temperature</b>	-55...90°C
<b>Humidity</b>	< 98% RH, condensing
<b>Vibrations</b>	Lloyds Register, test 2

### EMC data

<b>Immunity</b>	EN 61326
<b>Emission</b>	EN 61326
<b>NAMUR</b>	NE 21

### Approval (Demko) EEx ia IIC T5/T6, ATEX II 1G

<b>Supply range</b>	6.5...30 V <sub>dc</sub>
<b>Internal inductivity</b>	$L_i \leq 15 \mu\text{H}$
<b>Internal capacity</b>	$C_i \leq 5 \text{nF}$
<b>Barrier data</b>	$U \leq 30 \text{V}_{dc}$ ; $I \leq 0.1 \text{A}$ ; $P \leq 0.75 \text{W}$
<b>Temperature class</b>	T1...T5: -40 < T <sub>amb</sub> < 85°C T6: -40 < T <sub>amb</sub> < 50°C

### Approval FM (Application Manual 2211-8900)

<b>Explosion proof</b>	Class I, Div 1, Groups A, B, C, D
<b>Non incandive</b>	Class I, Div 2, Groups A, B, C, D
<b>Dust proof</b>	Class II, Div 1, Groups E, F, G
<b>Fibres</b>	Class III, Div 1
<b>Temperature class</b>	T1...T5: -40 < T <sub>amb</sub> < 85°C T6: -40 < T <sub>amb</sub> < 50°C

### Mechanical data

<b>Dimensions</b>	ø44 x 26.3 mm
<b>Protection class</b>	Housing: IP 55 Terminals: IP 10

### Other data

<b>Isolation</b>	3.75 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.

### Test conditions

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

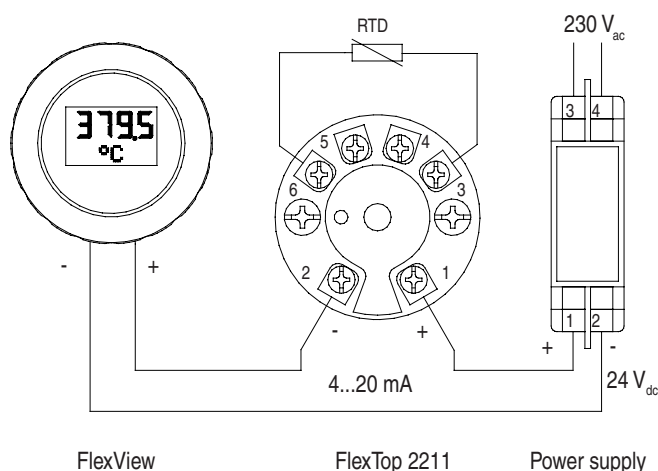
### Disposal of product and packing

According to national laws or by returning to Bourdon-Haenni

### Note

{1} Configurable

## Example of Application



## Measuring Ranges

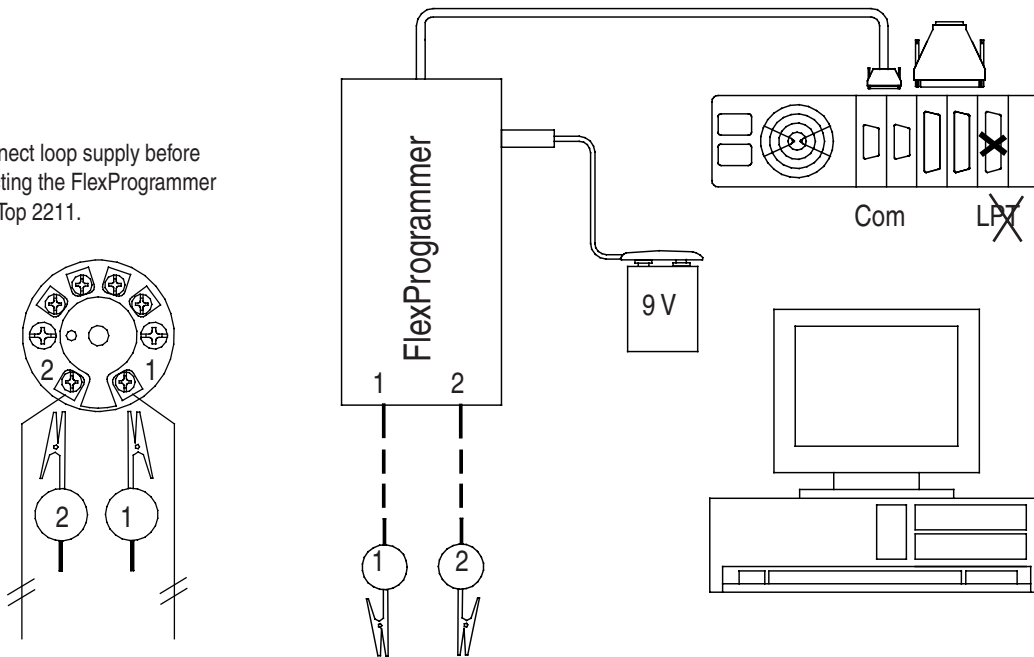
Type	Standard	Range	Min. span	Accuracy	Resolution
Pt25...Pt1000	DIN/EN/IEC 60751	-200...850°C {2}	10°C	0.1°C	0.1°C
Pt25...Pt1000	a = 0.003902	-200...850°C {2}	10°C	0.1°C	0.1°C
Pt25...Pt1000	a = 0.003916	-200...850°C {2}	10°C	0.1°C	0.1°C
Ni25...Ni1000	DIN 43760	-50...250°C {2}	10°C	0.1°C	0.1°C
Cu25...Cu1000	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

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

## Configuration

Note:

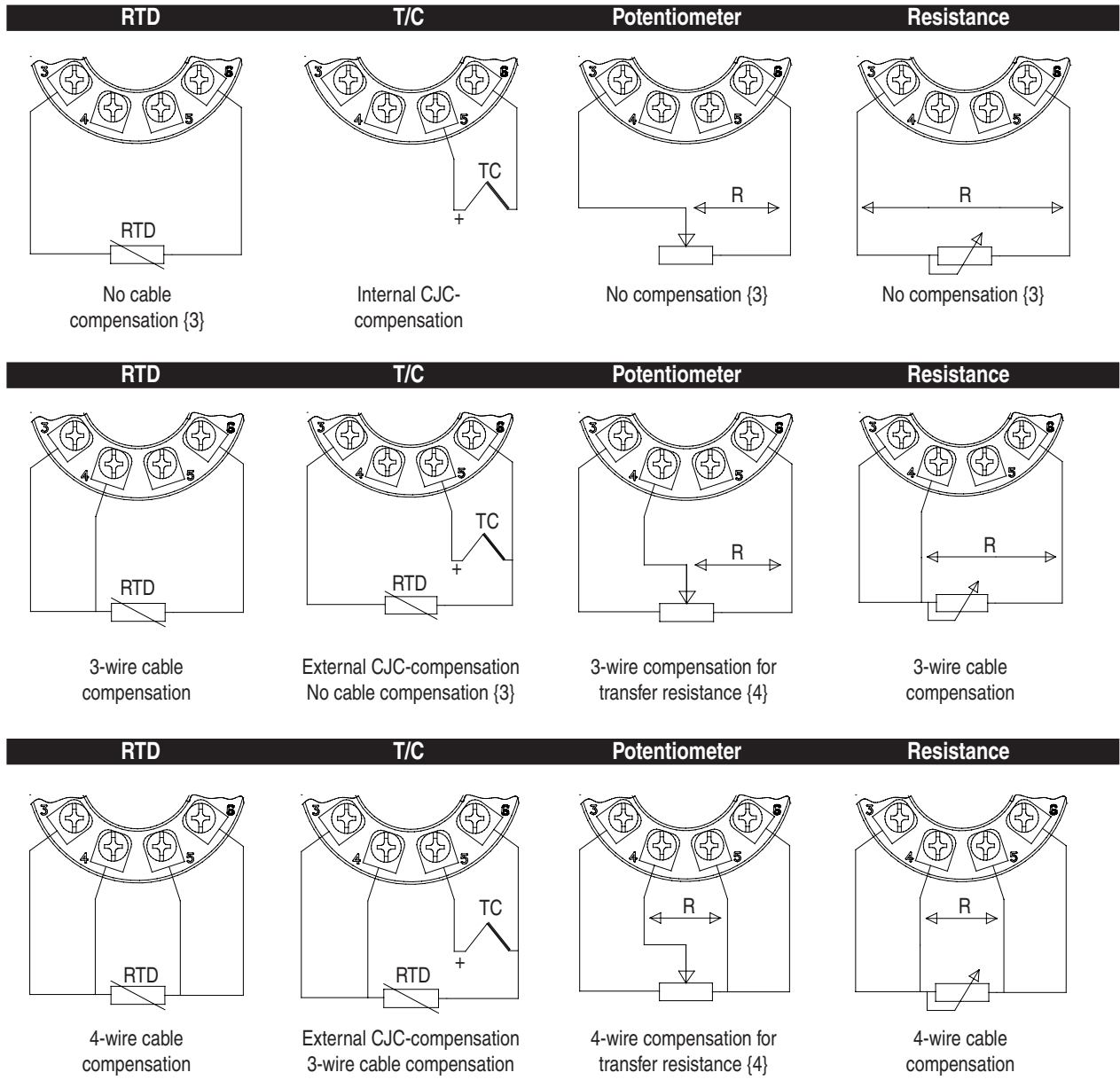
Disconnect loop supply before connecting the FlexProgrammer to FlexTop 2211.



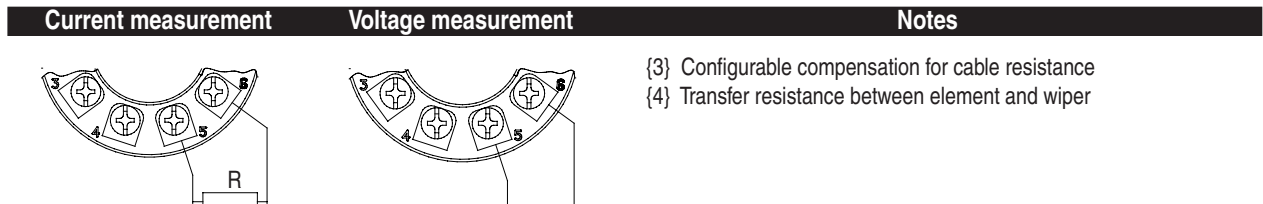
## Ordering Details - FlexTop 2211

Type	2211 000x (x)
Standard version, non-ex	5...8' digit 1
Demko EEx ia IIC T5/T6, ATEX II 1G and FM Class I, II and III	2
Configuration	9' digit
Configuration according to customer specifications	C

# Electrical Installation



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## Accessories

- FlexProgrammer configuration set, type number 82 23-903 comprises:
- FlexProgrammer with 9 pole RS232C cable
- 3.5" Program diskettes
- Battery plug
- Cable with test plugs

