

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Overview



SITRANS TF320 in dual chamber enclosure



SITRANS TF320 in single chamber enclosure

- 2-wire temperature transmitter with and without HART communication interface
- Universal input for virtually any type of temperature sensor
- Can be configured via PC, HART 7 or optional local operation

Benefits

- Universally applicable as a temperature transmitter with galvanic isolation for:
 - Resistance thermometer (2-wire, 3-wire, 4-wire connection)
 - Thermocouples
 - Linear resistances, potentiometer and DC voltage sources
- Local operation of the temperature transmitter via display (single chamber enclosure) or control keys accessible from outside (dual chamber enclosure)
- Rugged single or dual chamber enclosure made of die-cast aluminum or stainless steel 316L
- Electronic compartment isolated (watertight) from terminal compartment in dual chamber enclosure
- Degree of protection IP66/68 (1.5 m/2 h)
- Electromagnetic compatibility according to DIN EN 61326 and NE21
- Test terminals for direct read-out of the output signal without breaking the current loop
- Remote installation option:
 - Measuring point is difficult to access
 - Measuring point is subjected to high temperatures
 - Measuring point is subjected to vibration through plant
 - Long neck pipes and thermowells must be avoided
- Mounted directly on sensors
- Temperature transmitters of the "intrinsically safe protection type, increased safety for zone 2, flameproof and dust-protected" type of protection can be installed in hazardous areas. The transmitter meets the requirements of the EU Directive 2014/34/EU (ATEX), the FM and CSA regulations as well as other national approvals, e.g. EACEx, NEPSI, KCs, Inmetro.
- SIL2/3 (with order note C20)

Application

SITRANS TF320 can be used everywhere where temperatures need to be measured under particularly adverse conditions and where a user-friendly local display is ideal. Which is why users from all industries have opted for this field device. The rugged enclosure protects the electronics. The stainless steel model is almost completely resistant to sea water and other aggressive substances. The inner workings offer high measuring accuracy, universal input and a wide range of diagnostic options.

Function

Configuration

The communication capability over the HART protocol V 7 permits parameterization using a PC or HART communicator (hand-held communicator). The SIMATIC PDM makes it easy.

For the SITRANS TF320 without HART functionality, parameters are assigned with the PC. A special modem and the software tool SIPROM T are available for this purpose.

The optional local operation on the device gives you the possibility to configure the device's most important functions very quickly.

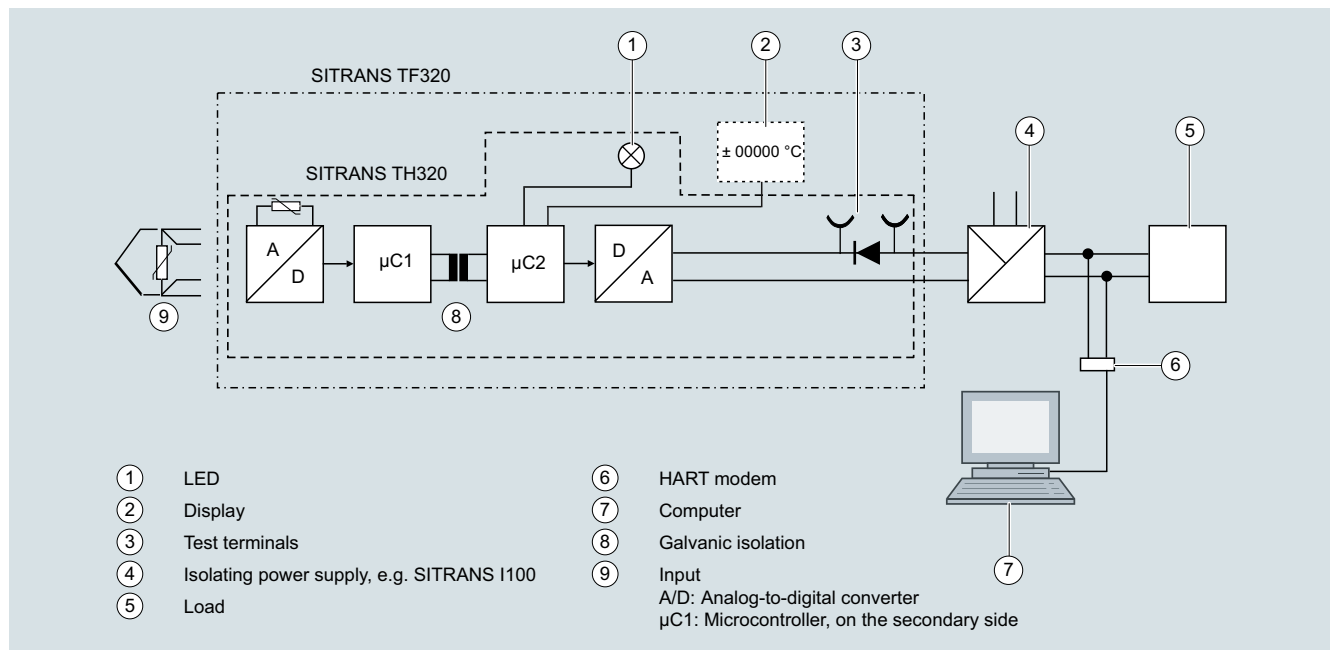
Principle of operation

SITRANS TF320 as temperature transmitter

The input signal, whether resistance thermometer (RTD), thermocouple (TC), Ω or mV signal, is amplified and linearized. Input and output side are galvanically isolated. An internal cold junction is integrated for measurements with thermocouples.

The device outputs a temperature-linear direct current from 4 to 20 mA. As well as the analog transmission of measured values from 4 to 20 mA, the HART version also supports digital communication for online diagnostics, measured value transmission, and configuration.

SITRANS TF320 automatically detects when a sensor should be interrupted or is indicating a short-circuit. The practical test terminals allow direct measurement of 4 to 20 mA signals over an ammeter without interrupting the output current loop.



Function block diagram SITRANS TF320 with integrated SITRANS TH320

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Technical specifications

General

Supply voltage ^{1) 2)}	
• Without explosion protection (non-Ex)	10.5 ... 48 V DC
• with explosion protection (Ex i)	10.5 ... 30 V DC
Additional minimum supply voltage when using test terminals	0.8 V
Maximum power loss	≤ 850 mW
Minimum load resistance at supply voltage > 37 V	(V _{supply} - 37 V)/23 mA
Insulation voltage, test/operation	
• Without explosion protection (non-Ex)	2.5 kV AC/55 V AC
• with explosion protection (Ex i)	2.5 kV AC/42 V AC
Polarity protection	All inputs and outputs
Write protection	Wire jumper (transmitter), switch (on display) or software
Warm-up time	< 5 min
Starting time	< 2.75 s
Programming	SIPROM T and HART
Signal-to-noise ratio	> 60 dB
Long-term stability	Better than: • ± 0.05% of measuring span/year • ± 0.18% of measuring span/5 years
Response time	4 ... 20 mA: ≤ 55 ms HART: ≤ 75 ms (typically 70 ms)
Programmable damping	0 ... 60 s
Signal dynamic	
• Input	24 bit
• Output	18 bit
Influence of change in supply voltage	< 0.005% of measuring span/V DC

Input

Resistance thermometer (RTD)

Input type	
• Pt10 ... 10000	• IEC 60751 • JIS C 1604-8 • GOST 6651_2009 • Callendar-Van Dusen
• Ni10 ... 10000	• DIN 43760-1987 • GOST 6651-2009/OIML R84:2003
• Cu5 ... 1000	• Edison Copper Winding No. 15 • GOST 6651-2009/OIML R84:2003
Type of connection	2-wire, 3-wire or 4-wire
Wire resistance per wire	Max. 50 Ω
Input current	< 0.15 mA
Effect of the wire resistance (with 3-wire and 4-wire connections)	< 0.002 Ω/Ω
Cable, wire-wire capacity	
• Pt1000, Pt10000 (IEC 60751 and JIS C 1604-8)	Max. 30 nF
• All other input types	Max. 50 nF
Fault detection, programmable	None, short-circuited, defective, short-circuited or defective
	Note When the low limit for the configured input type is below the constant detection limit for short-circuited inputs, the detection of short circuits is disabled regardless of the configuration of the fault detection.
Detection limit for short-circuited input	15 Ω
Fault detection time (RTD)	≤ 75 ms (typically 70 ms)
Fault detection time (for 3-wire and 4-wire)	≤ 2 000 ms

Thermocouples (TC)

Input type	
• B	IEC 60584-1
• E	IEC 60584-1
• J	IEC 60584-1
• K	IEC 60584-1
• L	DIN 43710
• Lr	GOST 3044-84
• N	IEC 60584-1
• R	IEC 60584-1
• S	IEC 60584-1
• T	IEC 60584-1
• U	DIN 43710
• W3	ASTM E988-96
• W5	ASTM E988-96
• LR	GOST 3044-84
Cold junction compensation (CJC)	Constant, internal or external over Pt100 or Ni100 RTD
• Temperature range internal CJC	-50 ... +100 °C (-58 ... +212 °F)
• Connection external CJC	2-wire or 3-wire
• External CJC, wire resistance per wire (for 3-wire and 4-wire connections)	50 Ω
• Effect of the wire resistance (with 3-wire and 4-wire connections)	< 0.002 Ω/Ω
• Input current external CJC	< 0.15 mA
• Temperature range external CJC	-50 ... +135 °C (-58 ... +275 °F)
• Cable, wire-wire capacity	Max. 50 nF
• Total wire resistance	Max. 10 kΩ
• Fault detection, programmable	None, short-circuited, defective, short-circuited or defective
	Note The short-circuited fault detection only applies to the CJC input.
• Fault detection time (TC)	≤ 75 ms (typically 70 ms)
• Fault detection time, external CJC (for 3-wire and 4-wire)	≤ 2 000 ms

Linear resistance

Input range	0 ... 100 kΩ
Minimum measuring span	25 Ω
Type of connection	2-wire, 3-wire or 4-wire
Wire resistance per wire	Max. 50 Ω
Input current	< 0.15 mA
Effect of the wire resistance (with 3-wire and 4-wire connections)	< 0.002 Ω/Ω
Cable, wire-wire capacity	
• R > 400 Ω	Max. 30 nF
• R ≤ 400 Ω	Max. 50 nF
Fault detection, programmable	None, defective

Potentiometers

Input range	10 Ω ... 100 kΩ
Minimum measuring span	25 Ω
Type of connection	2-wire, 3-wire or 4-wire
Wire resistance per wire	Max. 50 Ω
Input current	< 0.15 mA
Effect of the wire resistance (with 4-wire and 5-wire connections)	< 0.002 Ω/Ω
Cable, wire-wire capacity	
• R > 400 Ω	Max. 30 nF
• R ≤ 400 Ω	Max. 50 nF

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Fault detection, programmable	None, short-circuited, defective, short-circuited or defective Note When the configured potentiometer size is below the constant detection limit for short-circuited inputs, the detection of short circuits is disabled regardless of the configuration of the fault detection.
Detection limit for short-circuited input	15 Ω
Fault detection time, wiper arm (no short-circuit detection)	≤ 75 ms (typically 70 ms)
Fault detection time, element	≤ 2 000 ms
Fault detection time (for 4-wire and 5-wire)	≤ 2 000 ms
Supply voltage	
Measuring range	
• Unipolar	-100 ... 1700 mV
• Bipolar	-800 ... +800 mV
Minimum measuring span	2.5 mV
Input resistance	10 MΩ
Cable, wire-wire capacity	
• Input range: -100 ... 1700 mV	Max. 30 nF
• Input range: -20 ... 100 mV	Max. 50 nF
Fault detection, programmable	None, defective
Fault detection time	≤ 75 ms (typically 70 ms)
Output and HART communication	
Normal range, programmable	3.8 ... 20.5 mA/20.5 ... 3.8 mA
Extended range (output limits), programmable	3.5 ... 23 mA/23 ... 3.5 mA
Programmable input/output limits	
• Fault current	Enable/disable
• Fault current setting	3.5 ... 23 mA
Update time	10 ms
Load (with current output)	≤ (V _{Supply} - 10.5)/0.023 Ω
Load stability	< 0.01% of measuring span/100 Ω (measuring span = currently selected range)
Input error detection, programmable (detection of input short-circuits is ignored with TC and voltage inputs)	3.5 ... 23 mA
NAMUR NE43 Upscale	> 21 mA
NAMUR NE43 Downscale	< 3.6 mA
HART protocol versions	HART 7
Measuring accuracy	
Input accuracy	See "Input accuracy" table
Output accuracy	See "Output accuracy" table
Operating conditions	
Ambient temperature	
• Without local operation in single chamber enclosure	-50 ... +85 °C (-58 ... +185 °F)
• With local operation	-40 ... +85 °C (-40 ... +185 °F)
• For transmitters with functional safety	-40 ... +80 °C (-40 ... +176 °F)
Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
Reference temperature for sensor calibration	24 °C ±1.0 °C (75.2 °F ±1.8 °F)
Relative humidity	< 99% (no condensation)
Degree of protection	
• Temperature transmitter enclosure	IP66/IP67/IP68
• Terminals	IP00

Structural design

Weight

- Single chamber enclosure
- Dual chamber enclosure

0.85 kg (1.87 lb)
 • Aluminum: 1.3 kg (2.87 lb)
 • Stainless steel: 3.3 kg (7.28 lb)

Maximum core cross-section

- Single chamber enclosure
- Dual chamber enclosure

1.5 mm² (AWG 16)
 2.5 mm² (AWG 14)

Tightening torque for clamping screws

0.5 ... 0.6 Nm

Vibrations

- 2 ... 25 Hz
- 25 ... 100 Hz

IEC 60068-2-6
 ± 1.6 mm (0.07 inch)
 ± 4 g

Certificates and approvals

Explosion protection ATEX/IECEx and others

Certificates³⁾

IECEx DEK 19.0069X
 IECEx DEK 19.0070X
 DEKRA 19ATEX0106 X (Category 1)
 DEKRA 19ATEX0108X (Category 2)
 DEKRA 19ATEX0107X (Category 3)
 A5E50642461A-2021X (Category 3)

"Intrinsic safety ia/ib" type of protection

- ATEX

For use in Zone 0, 1, 2, 21
 II 1 G Ex ia IIC T6 ... T4 Ga
 II 2 (1) G Ex ib [ia Ga] IIC T6 ... T4 Gb
 II 2 (1) D Ex ib [ia Da] IIIC T100 °C Db
 Ex ia IIC T6 ... T4 Ga
 Ex ib [ia Ga] IIC T6 ... T4 Gb
 Ex ib [ia Da] IIIC T 100 °C Db

- IECEx and others

"Intrinsic safety ic" type of protection

- ATEX

For use in Zone 2, 22
 II 2 G Ex ic IIC T6 ... T4 Gc
 II 3 D Ex ic IIIC T100 °C Dc
 Ex ic IIC T6 ... T4 Gc
 Ex ic IIIC T100 °C Dc

- IECEx and others

"Non-sparking/increased safety nA/ec" type of protection

- ATEX

For use in Zone 2
 II 2 G Ex nA IIC T6 ... T4 Gc
 II 2 G Ex ec IIC T6 ... T4 Gc
 Ex nA IIC T6 ... T4 Gc
 Ex ec IIC T6 ... T4 Gc

- IECEx and others

"Flameproof enclosure db" type of protection

- ATEX

For use in Zone 1

- IECEx and others

"Protection by enclosure tb/tc" type of protection

- ATEX

II 2 G Ex db IIC T6 ... T4 Gb
 Ex db IIC T6 ... T4 Gb
 For use in Zone 21, 22
 II 2 D Ex tb IIC T100 °C Db
 II 3 D Ex tc IIIC T100 °C Dc

- IECEx and others

Ex tb IIC T100 °C Db
 Ex tc IIIC T100 °C Dc

¹⁾ Note that the minimum supply voltage must correspond to the value measured at the terminals of the SITRANS TF320.
 All external voltage drops must be taken into consideration.

²⁾ Protect the device from overvoltage with the help of a suitable power supply or suitable overvoltage protection equipment.

³⁾ Additional available certificates are listed on the Internet at <http://www.siemens.com/processinstrumentation/certificates>

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Measuring ranges/Minimum measuring span

RTD

Input type	Standard	Measuring range in °C (°F)	α_0 in °C ⁻¹ (°F ⁻¹)	Minimum measuring span in °C (°F)
Pt10 ... 10000	IEC 60751	-200 ... +850 (-328 ... +1 562)	0.003851 (0.002139)	10 (50)
	JIS C 1604-8	-200 ... +649 (-328 ... +1 200)	0.003916 (0.002176)	10 (50)
	GOST 6651_2009	-200 ... +850 (-328 ... +1 562)	0.003910 (0.002172)	10 (50)
	Callendar-Van Dusen	-200 ... +850 (-328 ... +1 562)	-	10 (50)
Ni10 ... 10000	DIN 43760-1987	-60 ... +250 (-76 ... +482)	0.006180 (0.003433)	10 (50)
	GOST 6651-2009/OIML R84:2003	-60 ... +180 (-76 ... +356)	0.006170 (0.003428)	10 (50)
Cu5 ... 1000	Edison Copper Winding No. 15	-200 ... +260 (-328 ... +500)	0.004270 (0.002372)	100 (212)
	GOST 6651-2009/OIML R84:2003	-180 ... +200 (-292 ... +392)	0.004280 (0.002378)	100 (212)
	GOST 6651-94	-50 ... +200 (-58 ... +392)	0.004260 (0.002367)	100 (212)

TC

Input type	Standard	Measuring range in °C (°F)	Minimum measuring span in °C (°F)
B	IEC 60584-1	0 (85) ... 1 820 (32 (185) ... 3 308)	100 (212)
E	IEC 60584-1	-200 ... +1 000 (-392 ... +1 832)	50 (122)
J	IEC 60584-1	-100 ... +1 200 (-212 ... +2 192)	50 (122)
K	IEC 60584-1	-180 ... +1 372 (-356 ... +2 502)	50 (122)
L	DIN 43710	-200 ... +900 (-392 ... +1 652)	50 (122)
Lr	GOST 3044-84	-200 ... +800 (-392 ... +1 472)	50 (122)
N	IEC 60584-1	-180 ... +1 300 (-356 ... +2 372)	50 (122)
R	IEC 60584-1	-50 ... +1 760 (-122 ... +3 200)	100 (212)
S	IEC 60584-1	-50 ... +1 760 (-122 ... +3 200)	100 (212)
T	IEC 60584-1	-200 ... +400 (-392 ... +752)	50 (122)
U	DIN 43710	-200 ... +600 (-392 ... +1 112)	50 (122)
W3	ASTM E988-96	0 ... 2 300 (32 ... 4 172)	100 (212)
W5	ASTM E988-96	0 ... 2 300 (32 ... 4 172)	100 (212)
LR	GOST 3044-84	-200 ... +800 (-392 ... +1472)	50 (122)

Input accuracy

Basic values

Input type	Basic accuracy	Temperature coefficient ¹⁾
RTD		
Pt10	$\leq \pm 0.8$ °C (1.44 °F)	$\leq \pm 0.020$ °C/°C (°F/°F)
Pt20	$\leq \pm 0.4$ °C (0.72 °F)	$\leq \pm 0.010$ °C/°C (°F/°F)
Pt50	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.004$ °C/°C (°F/°F)
Pt100	$\leq \pm 0.04$ °C (0.072 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt200	$\leq \pm 0.08$ °C (0.144 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt500	$T_{\max} < 180$ °C (356 °F) = $\leq \pm 0.08$ °C (0.144 °F) $T_{\max} > 180$ °C (356 °F) = $\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt1000	$\leq \pm 0.08$ °C (0.144 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt2000	$T_{\max} < 300$ °C (572 °F) = $\leq \pm 0.08$ °C (0.144 °F) $T_{\max} > 300$ °C (572 °F) = $\leq \pm 0.4$ °C (0.72 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt10000	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt x	Largest tolerance of neighboring points	Largest temperature coefficient of neighboring points
Ni10	$\leq \pm 1.6$ °C (2.88 °F)	$\leq \pm 0.020$ °C/°C (°F/°F)
Ni20	$\leq \pm 0.8$ °C (1.44 °F)	$\leq \pm 0.010$ °C/°C (°F/°F)
Ni50	$\leq \pm 0.32$ °C (0.576 °F)	$\leq \pm 0.004$ °C/°C (°F/°F)
Ni100	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni120	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni200	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni500	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni1000	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni2000	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Input type	Basic accuracy	Temperature coefficient ¹⁾
Ni10000	$\leq \pm 0.32\text{ °C}$ (0.576 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Ni x	Largest tolerance of neighboring points	Largest temperature coefficient of neighboring points
Cu5	$\leq \pm 1.6\text{ °C}$ (2.88 °F)	$\leq \pm 0.040\text{ °C/°C}$ (°F/°F)
Cu10	$\leq \pm 0.8\text{ °C}$ (1.44 °F)	$\leq \pm 0.020\text{ °C/°C}$ (°F/°F)
Cu20	$\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.010\text{ °C/°C}$ (°F/°F)
Cu50	$\leq \pm 0.16\text{ °C}$ (0.288 °F)	$\leq \pm 0.004\text{ °C/°C}$ (°F/°F)
Cu100	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu200	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu500	$\leq \pm 0.16\text{ °C}$ (0.288 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu1000	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu x	Largest tolerance of neighboring points	Largest temperature coefficient of neighboring points
Linear resistance		
0 ... 400 Ω	$\leq \pm 40\text{ m}\Omega$	$\leq \pm 2\text{ m}\Omega/\text{°C}$ (1.11 m Ω /°F)
0 ... 100 k Ω	$\leq \pm 4\text{ }\Omega$	$\leq \pm 0.2\text{ }\Omega/\text{°C}$ (0.11 Ω /°F)
Potentiometers		
0 ... 100%	< 0.05%	< $\pm 0.005\%$
Supply voltage		
mV: -20 ... 100 mV	$\leq \pm 5\text{ }\mu\text{V}$	$\leq \pm 0.2\text{ }\mu\text{V/°C}$ (0.11 $\mu\text{V/°F}$)
mV: -100 ... 1700 mV	$\leq \pm 0.1\text{ mV}$	$\leq \pm 36\text{ }\mu\text{V/°C}$ (20 $\mu\text{V/°F}$)
mV: $\pm 800\text{ mV}$	$\leq \pm 0.1\text{ mV}$	$\leq \pm 32\text{ }\mu\text{V/°C}$ (17.8 $\mu\text{V/°F}$)
TC		
E	$\leq \pm 0.2\text{ °C}$ (0.36 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
J	$\leq \pm 0.25\text{ °C}$ (0.45 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
K	$\leq \pm 0.25\text{ °C}$ (0.45 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
L	$\leq \pm 0.35\text{ °C}$ (0.63 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
N	$\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
T	$\leq \pm 0.25\text{ °C}$ (0.45 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
U	$< 0\text{ °C}$ (32 °F) $\leq \pm 0.8\text{ °C}$ (1.44 °F) $\geq 0\text{ °C}$ (32 °F) $\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
Lr	$\leq \pm 0.2\text{ °C}$ (0.36 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
R	$< 200\text{ °C}$ (392 °F) $\leq \pm 0.5\text{ °C}$ (0.9 °F) $\geq 200\text{ °C}$ (392 °F) $\leq \pm 1\text{ °C}$ (1.8 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
S	$< 200\text{ °C}$ (392 °F) $\leq \pm 0.5\text{ °C}$ (0.9 °F) $\geq 200\text{ °C}$ (392 °F) $\leq \pm 1\text{ °C}$ (1.8 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
W3	$\leq \pm 0.6\text{ °C}$ (1.08 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
W5	$\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
B ²⁾	$\leq \pm 1\text{ °C}$ (1.8 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
B ³⁾	$\leq \pm 3\text{ °C}$ (5.4 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
B ⁴⁾	$\leq \pm 8\text{ °C}$ (14.4 °F)	$\leq \pm 0.8\text{ °C/°C}$ (°F/°F)
B ⁵⁾	Not specified	Not specified
CJC (internal)	$< \pm 0.5\text{ °C}$ (0.9 °F)	Included in basic accuracy
CJC (external)	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)

¹⁾ Temperature coefficients correspond to the specified values or 0.002% of the input span, depending on which value is greater.

²⁾ Accuracy of the specification range > 400 °C (752 °F)

³⁾ Accuracy of the specification range > 160 °C (320 °F) < 400 °C (752 °F)

⁴⁾ Accuracy of the specification range > 85 °C (185 °F) < 160 °C (320 °F)

⁵⁾ Accuracy of the specification range < 85 °C (185 °F)

Output accuracy

Output type	Basic accuracy	Temperature coefficient
Analog output	$\leq \pm 1.6\text{ }\mu\text{A}$ (0.01% of the full output span)	$\leq \pm 0.48\text{ }\mu\text{A/K}$ ($\leq \pm 0.003\%$ of the full output span/K)

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Selection and ordering data

Single chamber enclosure

	Article No.		Article No.
SITRANS TF320 Temperature transmitter with single chamber enclosure for wall or pipe mounting, one configurable input and a galvanically isolated 2-wire output.	7NG034	SITRANS TF320 Temperature transmitter with single chamber enclosure for wall or pipe mounting, one configurable input and a galvanically isolated 2-wire output.	7NG034
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		Local operation	
Communication		Without local operation	0
With HART (4 ... 20 mA)	0	Local operation (closed lid)	1
Without HART (4 ... 20 mA)	7	Local operation (lid with glass window)	2
Primary value output		Options	Order code
Input 1	0	Add "-Z" to article number, specify order code and, if applicable, free text.	
Input 1, type		Cable gland included	
RTD		Plastic	A00
• Pt100 (IEC 60751), 3-wire	B	Metal	A01
• Pt100 (IEC 60751), 4-wire	C	Stainless steel	A02
• Pt1000 (IEC 60751), 3-wire	D	Stainless steel 316L/1.4404	A03
• Pt1000 (IEC 60751), 4-wire	E	CMP, for XP devices	A10
TC		CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
• Type B	F	CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
• Type E	G	Device plug Han mounted left	
• Type J	H	Device plug Han 7D (metal, straight)	A32
• Type K	J	Cable socket included	
• Type L	K	Metal, for device plug Han 7D and Han 8D	A41
• Type N	L	Device plug M12 mounted left	
• Type R	N	Stainless steel, without cable socket	A62
• Type S	P	Stainless steel, with cable socket	A63
• Type T	Q	Mounting cable glands/plugs	
Potentiometer, 4-wire	R	Cable gland mounted	A97
More types in Option Vxx	Y	Device plug for output, mounted right	A98
Input 2, type		Manufacturer's declarations	
Without input 2	A	Inspection certificate EN 10204-3.1: Manufacturer test certificate for transmitters (5 measured values)	C11
CJC configuration for TC		Certificates for Functional Safety	
None CJC	0	Functional Safety (IEC 61508) - SIL2/3	C20
Internal CJC	1	Device options	
External CJC RTD Pt100 (IEC 60751), 3-wire	3	PDF file with device settings	D10
External CJC RTD Ni100 (DIN 43760-87), 3-wire	6	Degree of protection IP66 / IP68 (not for device plugs M12 and Han)	D30
Material of non-wetted parts		Unlabeled TAG plate	D40
Die-cast aluminum enclosure	1	Without measuring range label on tag plate	D41
Enclosure made of stainless steel precision casting 1.4401 (similar to 316)	3	Nameplate and approval plate, stainless steel 1.4404/316L	D42
Type of protection (Ex)		Overvoltage protection up to 20 kV (external)	D71
General purpose	A	Jumper at device for write protection set	D81
Intrinsic safety (Ex i) / Non-incendive field wiring (NIFW)	B	Jumper at device for Safe state current >21 mA (instead of <3,6 mA) set (non SIL only)	D82
Flameproof enclosure (Ex d) / Explosion proof (XP)	C	General approval without Ex approval	
Dust ignition protection by enclosure zone 21/22 (Ex t) / Dust ignition proof (DIP) / Increased safety zone 2 (Ex ec) / Non-incendive (NI)	L	Worldwide (CE, RCM) except EAC, FM, KCC	E00
Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec)	S	Global	E01
Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec) / Dust ignition proof (DIP) / Explosion proof (XP) / Non-incendive (NI) / Non-incendive field wiring (NIFW)	T	EAC	E07
Electrical connection/cable entries		FM	E08
2x M20 x 1.5	F	Explosion protection certificates	
2x ½" NPT	M	ATEX (Europe)	E20
		FM (USA & Canada)	E22
		IECEx (World)	E23

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Options	Order code
Add "-Z" to article number, specify order code and, if applicable, free text.	
NEPSI (China)	E27
ECASEx (UAE)	E32
ATEX (Europe) and IECEx (Worldwide)	E47
ATEX & IECEx & FM	E49
Mounting system (only single chamber enclosures)	
Pipe mounting kit for single chamber enclosure, stainless steel 316L	H06
Wall mounting kit for single chamber enclosure, stainless steel 316L	H07
Noise damping	
Noise damping 60 Hz instead of 50 Hz	P10
Input 1: TC	
Type C W5	V01
Type D W3	V02
Type U	V03
Type Lr	V04
Input 1: RTD	
RTD Pt x IEC 60751 2-wire (wire resistance value defined in option Y51, RTD factor x defined in option Y21)	V60
Pt x (IEC), 3-wire, define RTD factor x in option Y21	V61
Pt x (IEC), 4-wire, define RTD factor x in option Y21	V62
Pt x (JIS C1604-81), 3-wire, define RTD factor x in option Y21	V64
Pt x (JIS C1604-81), 4-wire, define RTD factor x in option Y21	V65
Pt x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V67
Pt x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V68
Ni x (DIN 43760-87), 3-wire, define RTD factor x in option Y21	V70
Ni x (DIN 43760-87), 4-wire, define RTD factor x in option Y21	V71
Ni x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V73
Ni x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V74
Cu x (ECW-15), 3-wire, define RTD factor x in option Y21	V76
Cu x (ECW-15), 4-wire, define RTD factor x in option Y21	V77
Cu x (GOST 6651-94), 3-wire, define RTD factor x in option Y21	V79
Cu x (GOST 6651-94), 4-wire, define RTD factor x in option Y21	V80
Cu x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V82
Cu x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V83
Device settings	
Measuring range setting temperature input: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit (°C, °F, °Ra, K)	Y01
Long tag (device parameter, max. 32 characters), plate, stainless steel 316L/1.4404	Y15
Measuring point description (device parameter, max. 32 characters), stainless steel 316L/1.4404	Y16
Long tag (device parameter, max. 8 characters), adhesive label	Y17
Descriptor (device parameter, max. 16 characters), adhesive label	Y18

Options	Order code
Add "-Z" to article number, specify order code and, if applicable, free text.	
Input 1: RTD factor; e.g. factor "200" = Pt200, adhesive label	Y21
Value wire resistance input 1 in Ohm (0...100 Ohm)	Y51
Dual chamber enclosure	
	Article No.
SITRANS TF320 Temperature transmitter with dual chamber enclosure for wall or pipe mounting, one configurable input and a galvanically isolated 2-wire output.	7NG035
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Communication	
With HART (4 ... 20 mA)	0
Without HART (4 ... 20 mA)	7
Primary value output	
Input 1	0
Input 1, type	
RTD	
• Pt100 (IEC 60751), 3-wire	B
• Pt100 (IEC 60751), 4-wire	C
• Pt1000 (IEC 60751), 3-wire	D
• Pt1000 (IEC 60751), 4-wire	E
TC	
• Type B	F
• Type E	G
• Type J	H
• Type K	J
• Type L	K
• Type N	L
• Type R	N
• Type S	P
• Type T	Q
Potentiometer, 4-wire	R
More types in Option Vxx	Y
Input 2, type	
Without input 2	A
CJC configuration for TC	
Without CJC	0
Internal CJC	1
External CJC RTD Pt100 (IEC 60751), 3-wire	3
External CJC RTD Ni100 (DIN 43760-87), 3-wire	6
Material of non-wetted parts	
Die-cast aluminum enclosure	1
Enclosure made of stainless steel precision casting CF3M/1.4409 (similar to 316L)	2
Type of protection (Ex)	
General purpose	A
Intrinsic safety (Ex i) / Non-incendive field wiring (NIFW)	B
Flameproof enclosure (Ex d) / Explosion proof (XP)	C
Dust ignition protection by enclosure zone 21/22 (Ex t) / Dust ignition proof (DIP) / Increased safety zone 2 (Ex ec) / Non-incendive (NI)	L
Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec)	S
Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec) / Dust ignition proof (DIP) / Explosion proof (XP) / Non-incendive (NI) / Non-incendive field wiring (NIFW)	T

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

2

	Article No.	Options	Order code
SITRANS TF320 Temperature transmitter with dual chamber enclosure for wall or pipe mounting, one configurable input and a galvanically isolated 2-wire output.	7NG035	Device options	
Electrical connection/cable entries		PDF file with device settings	D10
2x M20 x 1.5		Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
2x ½" NPT		Degree of protection IP66 / IP68 (not for device plugs M12 and Han)	D30
Local operation		Unlabeled TAG plate	D40
Without local operation		Without measuring range label on tag plate	D41
Local operation (closed lid)		Stainless steel Ex plate 1.4404/316L	D42
Local operation (lid with glass window)		Overvoltage protection up to 20 kV (external)	D71
		Jumper at device for write protection set	D81
		Jumper at device for Safe state current >21 mA (instead of <3,6 mA) set (non SIL only)	D82
Options	Order code	General approval without Ex approval	
Add "-Z" to article number, specify order code and, if applicable, free text.		Worldwide (CE, RCM) except EAC, FM, KCC	E00
Cable gland included		Global	E01
Plastic	A00	EAC	E07
Metal	A01	FM	E08
Stainless steel	A02	Explosion protection certificates	
Stainless steel 316L/1.4404	A03	ATEX (Europe)	E20
CMP, for XP devices	A10	FM (USA & Canada)	E22
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11	IECEX (World)	E23
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12	NEPSI (China)	E27
Device plug Han mounted left		ECASEx (UAE)	E32
Device plug Han 7D (plastic, straight)	A30	ATEX (Europe) and IECEX (Worldwide)	E47
Device plug Han 7D (plastic, angled)	A31	ATEX & IECEX & FM	E49
Device plug Han 7D (metal, straight)	A32	Mounting brackets (only dual chamber enclosure)	
Device plug Han 7D (metal, angled)	A33	Wall/pipe mounting bracket for dual chamber enclosure, steel	H01
Device plug Han 8D (plastic, straight)	A34	Wall/pipe mounting bracket for dual chamber enclosure, stainless steel 304	H02
Device plug Han 8D (plastic, angled)	A35	Wall/pipe mounting bracket for dual chamber enclosure, stainless steel 316L	H03
Device plug Han 8D (metal, straight)	A36	Noise damping	
Device plug Han 8D (metal, angled)	A37	Noise damping 60 Hz instead of 50 Hz	P10
Cable socket included		Input 1: TC	
Plastic, for device plug Han 7D and Han 8D	A40	Type C W5	V01
Metal, for device plug Han 7D and Han 8D	A41	Type D W3	V02
Device plug M12 mounted left		Type U	V03
Stainless steel, without cable socket	A62	Type Lr	V04
Stainless steel, with cable socket	A63	Input 1: RTD	
Mounting cable glands/plugs		RTD Pt x IEC 60751 2-wire (wire resistance value defined in option Y51, RTD factor x defined in option Y21)	V60
Cable gland mounted	A97	Pt x (IEC), 3-wire, define RTD factor x in option Y21	V61
Device plug for output, mounted right	A98	Pt x (IEC), 4-wire, define RTD factor x in option Y21	V62
Manufacturer's declarations		Pt x (JIS C1604-81), 3-wire, define RTD factor x in option Y21	V64
Inspection certificate EN 10204-3.1: Manufacturer test certificate for transmitters (5 measured values)	C11	Pt x (JIS C1604-81), 4-wire, define RTD factor x in option Y21	V65
Certificates for Functional Safety		Pt x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V67
Functional Safety (IEC 61508) - SIL2/3	C20	Pt x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V68
		Ni x (DIN 43760-87), 3-wire, define RTD factor x in option Y21	V70
		Ni x (DIN 43760-87), 4-wire, define RTD factor x in option Y21	V71
		Ni x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V73
		Ni x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V74

Accessories

	Article No.
Additional accessories for assembly, connection and transmitter configuration, see page 2/251.	
Cable gland	
Cable gland, gray, non-Ex, M20	7MF7906-1AB
Cable gland, gray, non-Ex, NPT	7MF7906-1BB
Cable gland, metal, non-Ex, NPT	7MF7906-1BD
Cable gland, metal, non-Ex, M20	7MF7906-1AD
Cable gland, metal, Ex-d, NPT	7MF7906-1BE
Cable gland, metal, Ex-d, M20	7MF7906-1AE
Cable gland, 316L, non-Ex, NPT	7MF7906-1BH
Cable gland, 316L, non-Ex, M20	7MF7906-1AH
Cable gland, 316L, Ex-d, NPT	7MF7906-1BJ
Cable gland, 316L, Ex-d, M20	7MF7906-1AJ
Cable gland, E1FX Tri-Star ½-14 NPT, CMP	7MF7906-1NE
Cable gland, ½ NPT Capri ADE 4F cpl., CuZn	7MF7906-1PE
Cable gland, ½ NPT Capri ADE 4F cpl., stainless steel	7MF7906-1PJ
Plug and cable socket	
Plug Han 7D, plastic, straight	7MF7906-2AB
Plug Han 7D, plastic, angled	7MF7906-2AC
Plug Han 7D, metal, straight, blue	7MF7906-2AQ
Plug Han 7D, metal, straight, grey	7MF7906-2AN
Plug Han 7D, metal, angled, blue	7MF7906-2AR
Plug Han 7D, metal, angled, grey	7MF7906-2AP
Plug Han 8D, plastic, straight	7MF7906-2EB
Plug Han 8D, plastic, angled	7MF7906-2EC
Plug Han 8D, metal, straight, blue	7MF7906-2EQ
Plug Han 8D, metal, straight, grey	7MF7906-2EN
Plug Han 8D, metal, angled, blue	7MF7906-2ER
Plug Han 8D, metal, angled, grey	7MF7906-2EP
Cable socket, plastic, for plug Han 7D	7MF7906-2BB
Cable socket, plastic, for plug Han 8D	7MF7906-2FB
Cable socket, metal, for Han 7D blue	7MF7906-2BQ
Cable socket, metal, for Han 8D blue	7MF7906-2FQ
Cable socket, metal, for Han 7D grey	7MF7906-2BN
Cable socket, metal, for Han 8D grey	7MF7906-2FN
Plug M12 with cable socket, stainless steel	7MF7906-3AB
Overvoltage protection	
Overvoltage protection up to 20 kV, M20	7MF7906-3AC
Overvoltage protection up to 20 kV, NPT	7MF7906-3AD
Lid	
Closed lid aluminum, painted 2x, without glass window, with seal NBR	7MF7901-1BB
Closed lid aluminum, painted 2x, without glass window, with seal FVMQ	7MF7901-1BC
Lid aluminum 2x coated, with glass window, with seal NBR	7MF7901-1BG
Lid aluminum 2x coated, with glass window, with seal FVMQ	7MF7901-1BH
Closed lid stainless steel precision casting, without glass window, with seal NBR	7MF7901-2AB
Closed lid stainless steel precision casting, without glass window, with seal FVMQ	7MF7901-2AC
Lid stainless steel precision casting, with glass window, with seal NBR	7MF7901-2AG
Lid stainless steel precision casting, with glass window, with seal FVMQ	7MF7901-2AH

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF320 (HART, universal)

Ordering example

SITRANS TF320 (single chamber enclosure)

7NG0340-0BA01-0AF2-Z Y01+Y17+P10

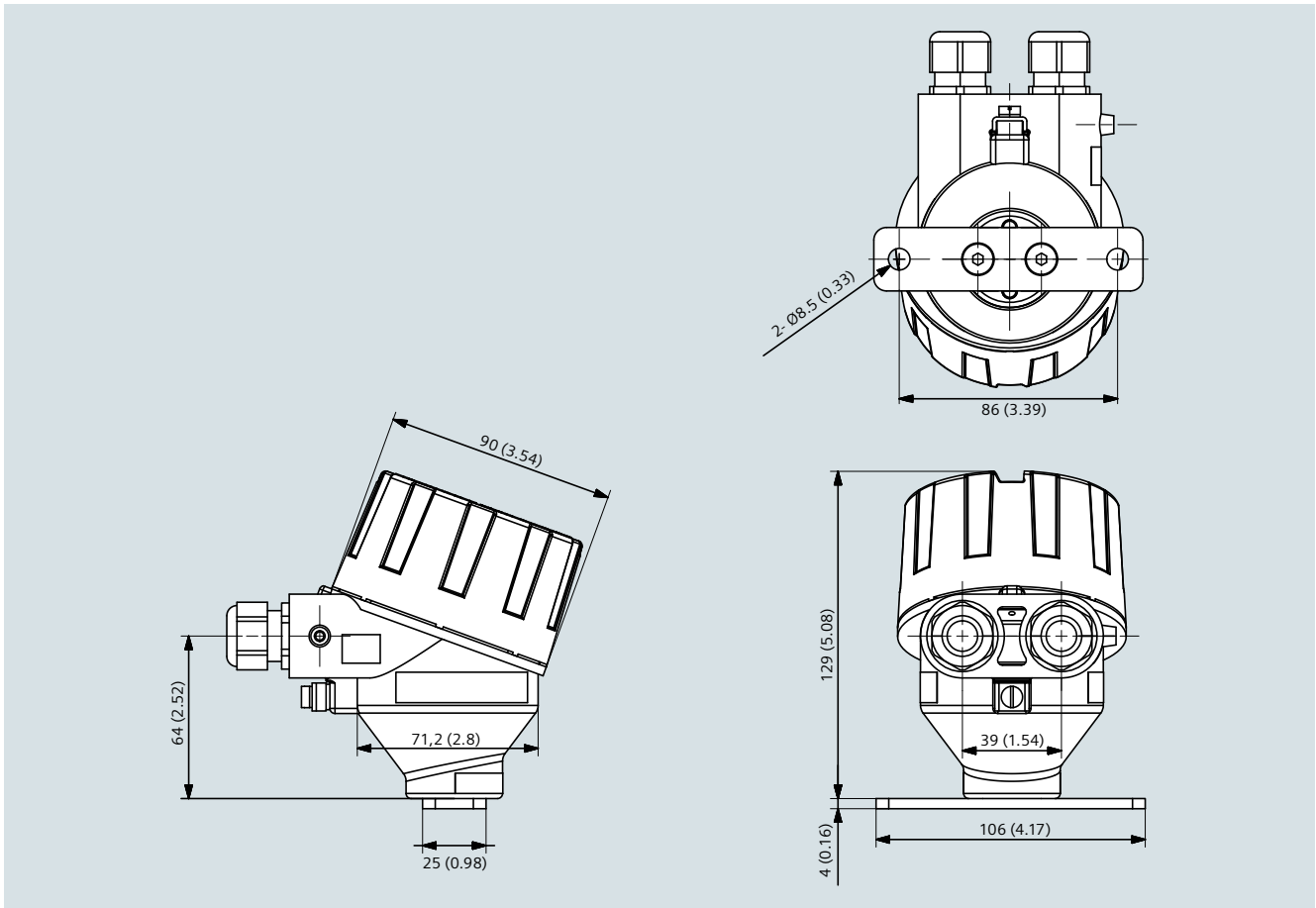
Y01: -10 ... +100 °C

Y17: TICA123

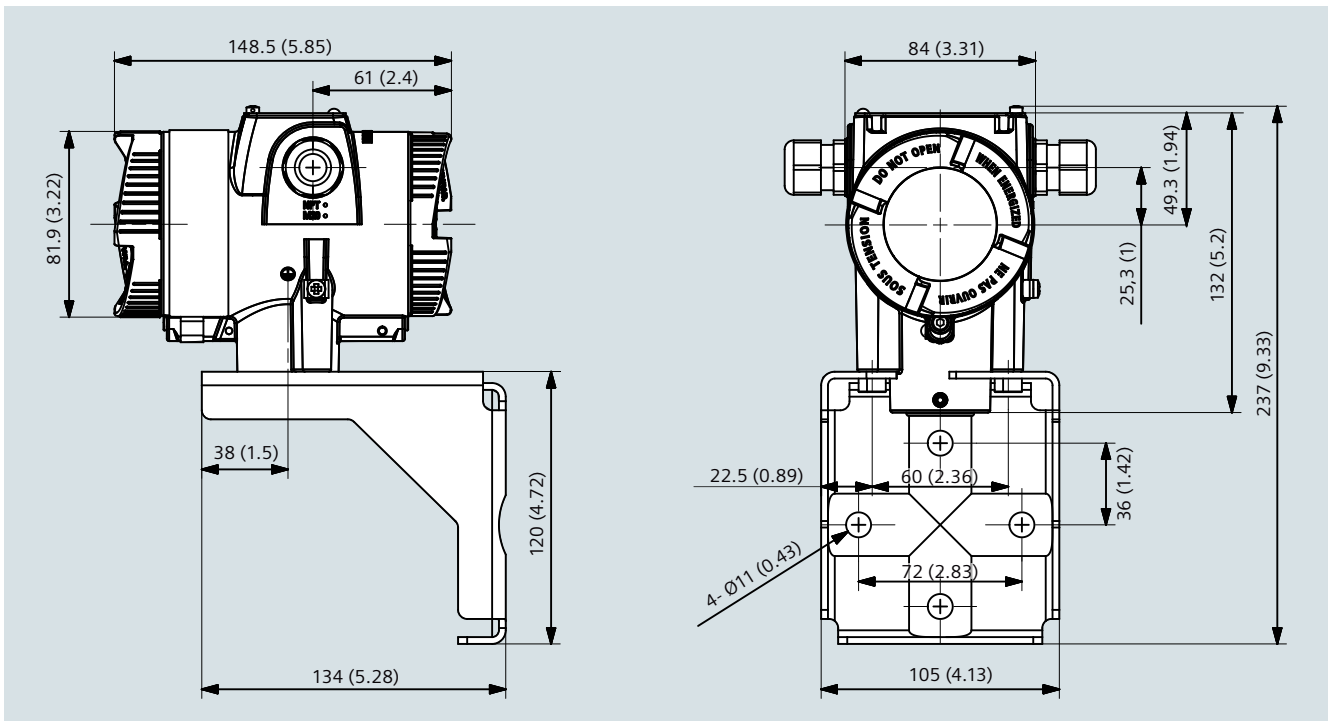
Factory setting

- Pt100 (IEC 60751) in 3-wire connection
- Measuring range: 0 ... 100 °C (32 ... 212 °F)
- Fault current
 - Input circuit wire break: 22.8 mA
 - Input circuit short circuit: 22.4 mA
 - Input monitoring wire break and short-circuit
- No trimming of input and output (offset)
- Damping 0.0 s

Dimensional drawings



SITRANS TF320, single chamber enclosure, dimensions in mm (inch)



SITRANS TF320, dual chamber enclosure, dimensions in mm (inch)

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

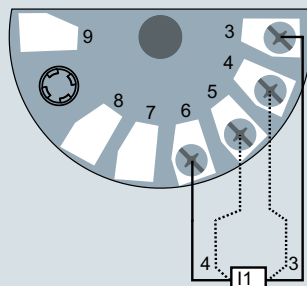
SITRANS TF320 (HART, universal)

Circuit diagrams

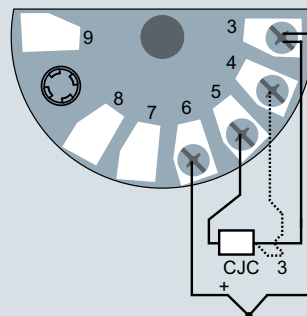
Connections

Input connection

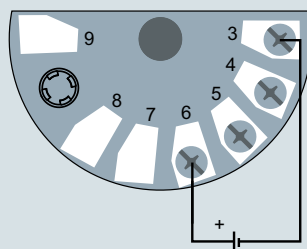
2



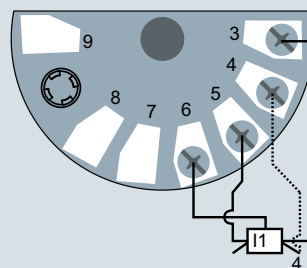
2-wire, 3-wire or 4-wire RTD or
linear resistance



TC (internal CJC or
external 2-wire or 3-wire CJC)



Voltage input
(unipolar or bipolar)



3-wire or 4-wire potentiometer

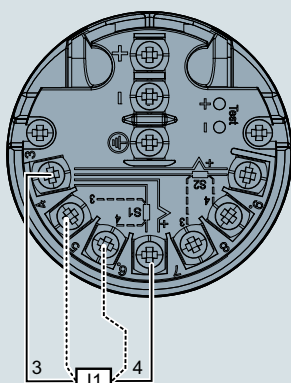
SITRANS TF320 in single chamber enclosure (7NG034*), input connection assignment

Temperature measurement

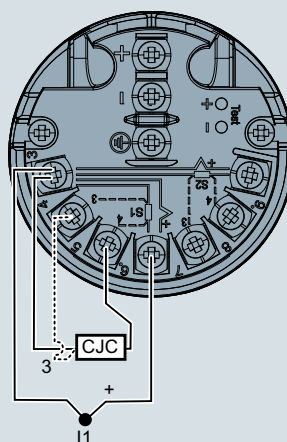
Temperature transmitters
Field transmitters/field indicator

SITRANS TF320 (HART, universal)

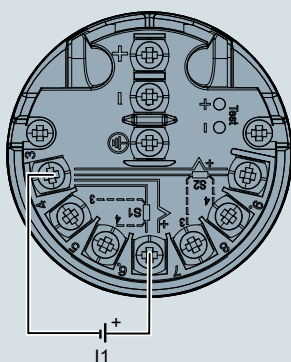
2



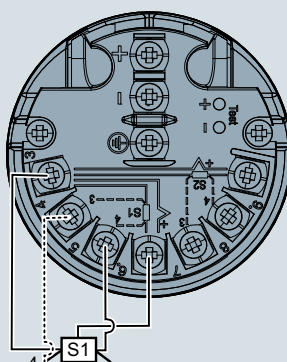
2-wire, 3-wire or 4-wire RTD or
linear resistance I1: Input 1



TC (internal CJC or
external 2-wire or 3-wire CJC)



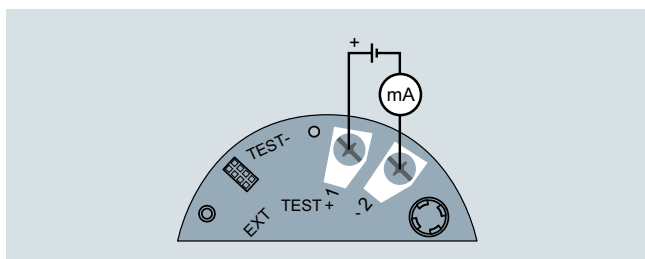
Voltage input
(unipolar or bipolar)



3-wire or 4-wire potentiometer

SITRANS TF320 in dual chamber enclosure (7NG035*), input connection assignment

Output connection



SITRANS TF320 in single chamber enclosure (7NG034*), output connection assignment

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Overview



SITRANS TF420 in dual chamber enclosure



SITRANS TF420 in single chamber enclosure

- 2-wire temperature transmitter with HART communication interface
- Universal input for virtually any type of temperature sensor
- Connection of two independent input circuits for redundant operation (high input availability)
- Input drift detection
- Can be configured via PC, HART 7 or optional local operation

Benefits

- Universally applicable as a temperature transmitter with galvanic isolation for:
 - Resistance thermometer (2-wire, 3-wire, 4-wire connection)
 - Thermocouples
 - Linear resistances, potentiometer and DC voltage sources
- Local operation of the temperature transmitter via display (single chamber enclosure) or control keys accessible from outside (dual chamber enclosure)
- Rugged single or dual chamber enclosure made of die-cast aluminum or stainless steel 316/316L
- Electronic compartment isolated (watertight) from terminal compartment in dual chamber enclosure
- Degree of protection IP66/68 (1.5 m/2 h)
- Electromagnetic compatibility according to DIN EN 61326 and NE21
- Test terminals for direct read-out of the output signal without breaking the current loop
- Remote installation option:
 - Measuring point is difficult to access
 - Measuring point is subjected to high temperatures
 - Measuring point is subjected to vibration through plant
 - Long neck pipes and thermowells must be avoided
- Mounted directly on sensors
- Temperature transmitters of the "intrinsically safe protection type, increased safety for zone 2, flameproof and dust-protected" type of protection can be installed in hazardous areas. The transmitter meets the requirements of the EU Directive 2014/34/EU (ATEX), the FM and CSA regulations as well as other national approvals, e.g. EACEx, NEPSI, KCs, Inmetro.
- SIL2/3 (with order note C20)

Application

SITRANS TF420 with its two sensor inputs can be used everywhere where temperatures need to be measured without interruption under particularly adverse conditions and where a convenient local display is ideal. Which is why users from all industries have opted for this field device. The rugged enclosure protects the electronics. The stainless steel model is almost completely resistant to sea water and other aggressive substances. The inner workings offer high measuring accuracy, universal input and a wide range of diagnostic options.

Function

Configuration

The communication capability over the HART protocol V 7 permits parameterization using a PC or HART communicator (hand-held communicator). The SIMATIC PDM makes it easy.

The optional local operation on the device gives you the possibility to configure the device's most important functions very quickly.

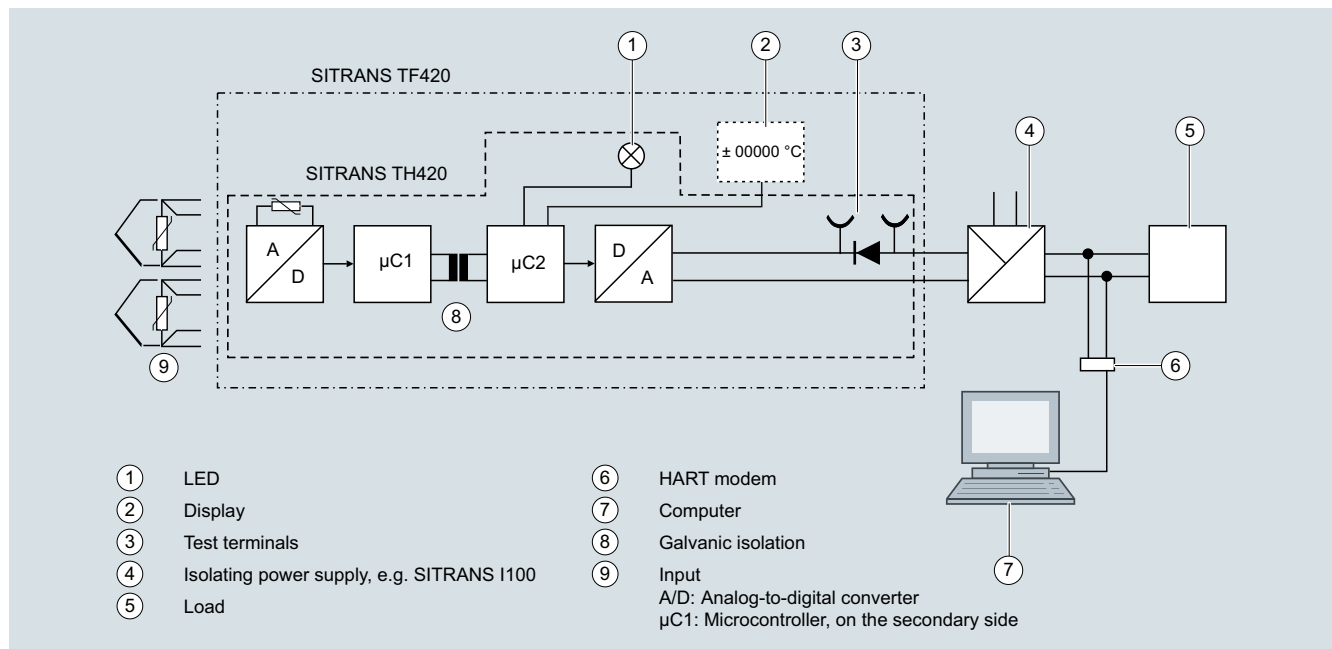
Principle of operation

SITRANS TF420 as temperature transmitter

Two sensor signals, whether resistance thermometers (RTD), thermocouples (TC), Ω or mV signals, are amplified and linearized. Input and output side are galvanically isolated. An internal cold junction is integrated for measurements with thermocouples.

The device outputs a temperature-linear direct current from 4 to 20 mA. As well as the analog transmission of measured values from 4 to 20 mA, the HART version also supports digital communication for online diagnostics, measured value transmission, and configuration.

SITRANS TF420 automatically detects when a sensor should be interrupted or is indicating a short-circuit. If the back-up functionality has been selected in the primary value display, the SITRANS TF420 automatically switches to the 2nd input without interrupting the measured value; e.g. primary value input 1 with input 2 as backup. The practical test terminals allow direct measurement of 4 to 20 mA signals over an ammeter without interrupting the output current loop.



Function block diagram SITRANS TF420 with integrated SITRANS TH420

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Technical specifications

General

Supply voltage ^{1) 2)}	
• Without explosion protection (non-Ex)	10.5 ... 48 V DC
• with explosion protection (Ex i)	10.5 ... 30 V DC
Additional minimum supply voltage when using test terminals	0.8 V
Maximum power loss	≤ 850 mW
Minimum load resistance at supply voltage > 37 V	(V _{supply} - 37 V)/23 mA
Insulation voltage, test/operation	
• Without explosion protection (non-Ex)	2.5 kV AC/55 V AC
• with explosion protection (Ex i)	2.5 kV AC/42 V AC
Polarity protection	All inputs and outputs
Write protection	Wire jumper (transmitter), switch (on display) or software
Warm-up time	< 5 min
Starting time	< 2.75 s
Programming	HART
Signal-to-noise ratio	> 60 dB
Long-term stability	Better than: • ± 0.05% of measuring span/year • ± 0.18% of measuring span/5 years
Response time	4 ... 20 mA: ≤ 55 ms HART: ≤ 75 ms (typically 70 ms)
Programmable damping	0 ... 60 s
Signal dynamic	
• Input	24 bit
• Output	18 bit
Influence of change in supply voltage	< 0.005% of measuring span/V DC

Input

Resistance thermometer (RTD)

Input type	
• Pt10 ... 10000	• IEC 60751 • JIS C 1604-8 • GOST 6651_2009 • Callendar-Van Dusen
• Ni10 ... 10000	• DIN 43760-1987 • GOST 6651-2009/OIML R84:2003
• Cu5 ... 1000	• Edison Copper Winding No. 15 • GOST 6651-2009/OIML R84:2003
Type of connection	2-wire, 3-wire or 4-wire
Wire resistance per wire	Max. 50 Ω
Input current	< 0.15 mA
Effect of the wire resistance (with 3-wire and 4-wire connections)	< 0.002 Ω/Ω
Cable, wire-wire capacity	
• Pt1000, Pt10000 (IEC 60751 and JIS C 1604-8)	Max. 30 nF
• All other input types	Max. 50 nF
Fault detection, programmable	None, short-circuited, defective, short-circuited or defective
	Note When the low limit for the configured input type is below the constant detection limit for short-circuited inputs, the detection of short circuits is disabled regardless of the configuration of the fault detection.
Detection limit for short-circuited input	15 Ω
Fault detection time (RTD)	≤ 75 ms (typically 70 ms)
Fault detection time (for 3-wire and 4-wire)	≤ 2 000 ms

Thermocouples (TC)

Input type	
• B	IEC 60584-1
• E	IEC 60584-1
• J	IEC 60584-1
• K	IEC 60584-1
• L	DIN 43710
• Lr	GOST 3044-84
• N	IEC 60584-1
• R	IEC 60584-1
• S	IEC 60584-1
• T	IEC 60584-1
• U	DIN 43710
• W3	ASTM E988-96
• W5	ASTM E988-96
• LR	GOST 3044-84
Cold junction compensation (CJC)	Constant, internal or external over Pt100 or Ni100 RTD
• Temperature range internal CJC	-50 ... +100 °C (-58 ... +212 °F)
• Connection external CJC	2-wire or 3-wire
• External CJC, wire resistance per wire (for 3-wire and 4-wire connections)	50 Ω
• Effect of the wire resistance (with 3-wire and 4-wire connections)	< 0.002 Ω/Ω
• Input current external CJC	< 0.15 mA
• Temperature range external CJC	-50 ... +135 °C (-58 ... +275 °F)
• Cable, wire-wire capacity	Max. 50 nF
• Total wire resistance	Max. 10 kΩ
• Fault detection, programmable	None, short-circuited, defective, short-circuited or defective
	Note The short-circuited fault detection only applies to the CJC input.
• Fault detection time (TC)	≤ 75 ms (typically 70 ms)
• Fault detection time, external CJC (for 3-wire and 4-wire)	≤ 2 000 ms

Linear resistance

Input range	10 Ω ... 100 kΩ
Minimum measuring span	25 Ω
Type of connection	2-wire, 3-wire or 4-wire
Wire resistance per wire	Max. 50 Ω
Input current	< 0.15 mA
Effect of the wire resistance (with 3-wire and 4-wire connections)	< 0.002 Ω/Ω
Cable, wire-wire capacity	
• R > 400 Ω	Max. 30 nF
• R ≤ 400 Ω	Max. 50 nF
Fault detection, programmable	None, defective

Potentiometers

Input range	0 ... 100 kΩ
Minimum measuring span	25 Ω
Type of connection	2-wire, 3-wire or 4-wire
Wire resistance per wire	Max. 50 Ω
Input current	< 0.15 mA
Effect of the wire resistance (with 4-wire and 5-wire connections)	< 0.002 Ω/Ω
Cable, wire-wire capacity	
• R > 400 Ω	Max. 30 nF
• R ≤ 400 Ω	Max. 50 nF

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Fault detection, programmable	None, short-circuited, defective, short-circuited or defective Note When the configured potentiometer size is below the constant detection limit for short-circuited inputs, the detection of short circuits is disabled regardless of the configuration of the fault detection.
Detection limit for short-circuited input	15 Ω
Fault detection time, wiper arm (no short-circuit detection)	≤ 75 ms (typically 70 ms)
Fault detection time, element	≤ 2 000 ms
Fault detection time (for 4-wire and 5-wire)	≤ 2 000 ms
Supply voltage	
Measuring range	
• Unipolar	-100 ... 1700 mV
• Bipolar	-800 ... +800 mV
Minimum measuring span	2.5 mV
Input resistance	10 MΩ
Cable, wire-wire capacity	
• Input range: -100 ... 1700 mV	Max. 30 nF
• Input range: -20 ... 100 mV	Max. 50 nF
Fault detection, programmable	None, defective
Fault detection time	≤ 75 ms (typically 70 ms)
Output and HART communication	
Normal range, programmable	3.8 ... 20.5 mA/20.5 ... 3.8 mA
Extended range (output limits), programmable	3.5 ... 23 mA/23 ... 3.5 mA
Programmable input/output limits	
• Fault current	Enable/disable
• Fault current setting	3.5 ... 23 mA
Update time	10 ms
Load (with current output)	≤ (V _{Supply} - 10.5)/0.023 Ω
Load stability	< 0.01% of measuring span/100 Ω (measuring span = currently selected range)
Input error detection, programmable (detection of input short-circuits is ignored with TC and voltage inputs)	3.5 ... 23 mA
NAMUR NE43 Upscale	> 21 mA
NAMUR NE43 Downscale	< 3.6 mA
HART protocol versions	HART 7
Measuring accuracy	
Input accuracy	See "Input accuracy" table
Output accuracy	See "Output accuracy" table
Operating conditions	
Ambient temperature	
• Without local operation in single chamber enclosure	-50 ... +85 °C (-58 ... +185 °F)
• With local operation	-40 ... +85 °C (-40 ... +185 °F)
• For transmitters with functional safety	-40 ... +80 °C (-40 ... +176 °F)
Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
Reference temperature for sensor calibration	24 °C ±1.0 °C (75.2 °F ±1.8 °F)
Relative humidity	< 99% (no condensation)
Degree of protection	
• Temperature transmitter enclosure	IP66/IP67/IP68
• Terminals	IP00

Structural design

Weight

- Single chamber enclosure
- Dual chamber enclosure

0.85 kg (1.87 lb)
 • Aluminum: 1.3 kg (2.87 lb)
 • Stainless steel: 3.3 kg (7.28 lb)

Maximum core cross-section

- Single chamber enclosure
- Dual chamber enclosure

1.5 mm² (AWG 16)
 2.5 mm² (AWG 14)

Tightening torque for clamping screws

0.5 ... 0.6 Nm

Vibrations

- 2 ... 25 Hz
- 25 ... 100 Hz

IEC 60068-2-6
 ± 1.6 mm (0.07 inch)
 ± 4 g

Certificates and approvals

Explosion protection ATEX/IECEx and others

Certificates³⁾

IECEx DEK 19.0069X
 IECEx DEK 19.0070X
 DEKRA 19ATEX0106 X (Category 1)
 DEKRA 19ATEX0108X (Category 2)
 DEKRA 19ATEX0107X (Category 3)
 A5E50642461A-2021X (Category 3)

"Intrinsic safety ia/ib" type of protection

- ATEX

For use in Zone 0, 1, 2, 21
 II 1 G Ex ia IIC T6 ... T4 Ga
 II 2 (1) G Ex ib [ia Ga] IIC T6 ... T4 Gb
 II 2 (1) D Ex ib [ia Da] IIIC T100 °C Db
 Ex ia IIC T6 ... T4 Ga
 Ex ib [ia Ga] IIC T6 ... T4 Gb
 Ex ib [ia Da] IIIC T 100 °C Db

- IECEx and others

"Intrinsic safety ic" type of protection

- ATEX

For use in Zone 2, 22
 II 2 G Ex ic IIC T6 ... T4 Gc
 II 3 D Ex ic IIIC T100 °C Dc
 Ex ic IIC T6 ... T4 Gc
 Ex ic IIIC T100 °C Dc

- IECEx and others

"Non-sparking/increased safety nA/ec" type of protection

- ATEX

For use in Zone 2
 II 2 G Ex nA IIC T6 ... T4 Gc
 II 2 G Ex ec IIC T6 ... T4 Gc
 Ex nA IIC T6 ... T4 Gc
 Ex ec IIC T6 ... T4 Gc
 For use in Zone 1

- IECEx and others

"Flameproof enclosure db" type of protection

- ATEX

II 2 G Ex db IIC T6 ... T4 Gb
 Ex db IIC T6 ... T4 Gb
 For use in Zone 21, 22

- IECEx and others

"Protection by enclosure tb/tc" type of protection

- ATEX

II 2 D Ex tb IIC T100 °C Db
 II 3 D Ex tc IIIC T100 °C Dc
 Ex tb IIC T100 °C Db
 Ex tc IIIC T100 °C Dc

- IECEx and others

¹⁾ Note that the minimum supply voltage must correspond to the value measured at the terminals of the SITRANS TF420.
 All external voltage drops must be taken into consideration.

²⁾ Protect the device from overvoltage with the help of a suitable power supply or suitable overvoltage protection equipment.

³⁾ Additional available certificates are listed on the Internet at <http://www.siemens.com/processinstrumentation/certificates>

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Measuring ranges/Minimum measuring span

RTD

Input type	Standard	Measuring range in °C (°F)	α_0 in °C ⁻¹ (°F ⁻¹)	Minimum measuring span in °C (°F)
Pt10 ... 10000	IEC 60751	-200 ... +850 (-328 ... +1 562)	0.003851 (0.002139)	10 (50)
	JIS C 1604-8	-200 ... +649 (-328 ... +1 200)	0.003916 (0.002176)	10 (50)
	GOST 6651_2009	-200 ... +850 (-328 ... +1 562)	0.003910 (0.002172)	10 (50)
	Callendar-Van Dusen	-200 ... +850 (-328 ... +1 562)	-	10 (50)
Ni10 ... 10000	DIN 43760-1987	-60 ... +250 (-76 ... +482)	0.006180 (0.003433)	10 (50)
	GOST 6651-2009/OIML R84:2003	-60 ... +180 (-76 ... +356)	0.006170 (0.003428)	10 (50)
Cu5 ... 1000	Edison Copper Winding No. 15	-200 ... +260 (-328 ... +500)	0.004270 (0.002372)	100 (212)
	GOST 6651-2009/OIML R84:2003	-180 ... +200 (-292 ... +392)	0.004280 (0.002378)	100 (212)
	GOST 6651-94	-50 ... +200 (-58 ... +392)	0.004260 (0.002367)	100 (212)

TC

Input type	Standard	Measuring range in °C (°F)	Minimum measuring span in °C (°F)
B	IEC 60584-1	0 (85) ... 1 820 (32 (185) ... 3 308)	100 (212)
E	IEC 60584-1	-200 ... +1 000 (-392 ... +1 832)	50 (122)
J	IEC 60584-1	-100 ... +1 200 (-212 ... +2 192)	50 (122)
K	IEC 60584-1	-180 ... +1 372 (-356 ... +2 502)	50 (122)
L	DIN 43710	-200 ... +900 (-392 ... +1 652)	50 (122)
Lr	GOST 3044-84	-200 ... +800 (-392 ... +1 472)	50 (122)
N	IEC 60584-1	-180 ... +1 300 (-356 ... +2 372)	50 (122)
R	IEC 60584-1	-50 ... +1 760 (-122 ... +3 200)	100 (212)
S	IEC 60584-1	-50 ... +1 760 (-122 ... +3 200)	100 (212)
T	IEC 60584-1	-200 ... +400 (-392 ... +752)	50 (122)
U	DIN 43710	-200 ... +600 (-392 ... +1 112)	50 (122)
W3	ASTM E988-96	0 ... 2 300 (32 ... 4 172)	100 (212)
W5	ASTM E988-96	0 ... 2 300 (32 ... 4 172)	100 (212)
LR	GOST 3044-84	-200 ... +800 (-392 ... +1472)	50 (122)

Input accuracy

Basic values

Input type	Basic accuracy	Temperature coefficient ¹⁾
RTD		
Pt10	$\leq \pm 0.8$ °C (1.44 °F)	$\leq \pm 0.020$ °C/°C (°F/°F)
Pt20	$\leq \pm 0.4$ °C (0.72 °F)	$\leq \pm 0.010$ °C/°C (°F/°F)
Pt50	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.004$ °C/°C (°F/°F)
Pt100	$\leq \pm 0.04$ °C (0.072 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt200	$\leq \pm 0.08$ °C (0.144 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt500	$T_{\max} < 180$ °C (356 °F) = $\leq \pm 0.08$ °C (0.144 °F) $T_{\max} > 180$ °C (356 °F) = $\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt1000	$\leq \pm 0.08$ °C (0.144 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt2000	$T_{\max} < 300$ °C (572 °F) = $\leq \pm 0.08$ °C (0.144 °F) $T_{\max} > 300$ °C (572 °F) = $\leq \pm 0.4$ °C (0.72 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt10000	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Pt x	Largest tolerance of neighboring points	Largest temperature coefficient of neighboring points
Ni10	$\leq \pm 1.6$ °C (2.88 °F)	$\leq \pm 0.020$ °C/°C (°F/°F)
Ni20	$\leq \pm 0.8$ °C (1.44 °F)	$\leq \pm 0.010$ °C/°C (°F/°F)
Ni50	$\leq \pm 0.32$ °C (0.576 °F)	$\leq \pm 0.004$ °C/°C (°F/°F)
Ni100	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni120	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni200	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni500	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni1000	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)
Ni2000	$\leq \pm 0.16$ °C (0.288 °F)	$\leq \pm 0.002$ °C/°C (°F/°F)

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Input type	Basic accuracy	Temperature coefficient ¹⁾
Ni10000	$\leq \pm 0.32\text{ °C}$ (0.576 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Ni x	Largest tolerance of neighboring points	Largest temperature coefficient of neighboring points
Cu5	$\leq \pm 1.6\text{ °C}$ (2.88 °F)	$\leq \pm 0.040\text{ °C/°C}$ (°F/°F)
Cu10	$\leq \pm 0.8\text{ °C}$ (1.44 °F)	$\leq \pm 0.020\text{ °C/°C}$ (°F/°F)
Cu20	$\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.010\text{ °C/°C}$ (°F/°F)
Cu50	$\leq \pm 0.16\text{ °C}$ (0.288 °F)	$\leq \pm 0.004\text{ °C/°C}$ (°F/°F)
Cu100	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu200	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu500	$\leq \pm 0.16\text{ °C}$ (0.288 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu1000	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)
Cu x	Largest tolerance of neighboring points	Largest temperature coefficient of neighboring points
Linear resistance		
0 ... 400 Ω	$\leq \pm 40\text{ m}\Omega$	$\leq \pm 2\text{ m}\Omega/\text{°C}$ (1.11 m Ω /°F)
0 ... 100 k Ω	$\leq \pm 4\text{ }\Omega$	$\leq \pm 0.2\text{ }\Omega/\text{°C}$ (0.11 Ω /°F)
Potentiometers		
0 ... 100%	< 0.05%	< $\pm 0.005\%$
Supply voltage		
mV: -20 ... 100 mV	$\leq \pm 5\text{ }\mu\text{V}$	$\leq \pm 0.2\text{ }\mu\text{V/°C}$ (0.11 μV /°F)
mV: -100 ... 1700 mV	$\leq \pm 0.1\text{ mV}$	$\leq \pm 36\text{ }\mu\text{V/°C}$ (20 μV /°F)
mV: $\pm 800\text{ mV}$	$\leq \pm 0.1\text{ mV}$	$\leq \pm 32\text{ }\mu\text{V/°C}$ (17.8 μV /°F)
TC		
E	$\leq \pm 0.2\text{ °C}$ (0.36 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
J	$\leq \pm 0.25\text{ °C}$ (0.45 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
K	$\leq \pm 0.25\text{ °C}$ (0.45 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
L	$\leq \pm 0.35\text{ °C}$ (0.63 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
N	$\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
T	$\leq \pm 0.25\text{ °C}$ (0.45 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
U	$< 0\text{ °C}$ (32 °F) $\leq \pm 0.8\text{ °C}$ (1.44 °F) $\geq 0\text{ °C}$ (32 °F) $\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.025\text{ °C/°C}$ (°F/°F)
Lr	$\leq \pm 0.2\text{ °C}$ (0.36 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
R	$< 200\text{ °C}$ (392 °F) $\leq \pm 0.5\text{ °C}$ (0.9 °F) $\geq 200\text{ °C}$ (392 °F) $\leq \pm 1\text{ °C}$ (1.8 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
S	$< 200\text{ °C}$ (392 °F) $\leq \pm 0.5\text{ °C}$ (0.9 °F) $\geq 200\text{ °C}$ (392 °F) $\leq \pm 1\text{ °C}$ (1.8 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
W3	$\leq \pm 0.6\text{ °C}$ (1.08 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
W5	$\leq \pm 0.4\text{ °C}$ (0.72 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
B ²⁾	$\leq \pm 1\text{ °C}$ (1.8 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
B ³⁾	$\leq \pm 3\text{ °C}$ (5.4 °F)	$\leq \pm 0.1\text{ °C/°C}$ (°F/°F)
B ⁴⁾	$\leq \pm 8\text{ °C}$ (14.4 °F)	$\leq \pm 0.8\text{ °C/°C}$ (°F/°F)
B ⁵⁾	Not specified	Not specified
CJC (internal)	$< \pm 0.5\text{ °C}$ (0.9 °F)	Included in basic accuracy
CJC (external)	$\leq \pm 0.08\text{ °C}$ (0.144 °F)	$\leq \pm 0.002\text{ °C/°C}$ (°F/°F)

4) Temperature coefficients correspond to the specified values or 0.002% of the input span, depending on which value is greater.

5) Accuracy of the specification range > 400 °C (752 °F)

6) Accuracy of the specification range > 160 °C (320 °F) < 400 °C (752 °F)

7) Accuracy of the specification range > 85 °C (185 °F) < 160 °C (320 °F)

8) Accuracy of the specification range < 85 °C (185 °F)

Output accuracy

Output type	Basic accuracy	Temperature coefficient
Average value measurement	Average of accuracy of input 1 and input 2	Average of temperature coefficient of input 1 and input 2
Differential measurement	Sum of accuracy of input 1 and input 2	Sum of temperature coefficient of input 1 and input 2
Analog output	$\leq \pm 1.6\text{ }\mu\text{A}$ (0.01% of the full output span)	$\leq \pm 0.48\text{ }\mu\text{A/K}$ ($\leq \pm 0.003\%$ of the full output span/K)

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Selection and ordering data

Single chamber enclosure

	Article No.	Order code		Article No.	Order code
SITRANS TF420 Temperature transmitter with single chamber enclosure for wall or pipe mounting, two separately configurable inputs and a galvanically isolated 2-wire output. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7NG044		SITRANS TF420 Temperature transmitter with single chamber enclosure for wall or pipe mounting, two separately configurable inputs and a galvanically isolated 2-wire output.	7NG044	
Communication With HART (4 ... 20 mA)	0		TC • Type B • Type E • Type J • Type K • Type L • Type N • Type R • Type S • Type T Potentiometer, 4-wire More types in option Wxx	F G H J K L N P Q R Y	
Primary value output Input 1 Input 1, input 2 as redundancy (hot backup) Input 2, input 1 as redundancy (hot backup) Average input 1 and input 2, both as redundancy (hot backup) Minimum input 1 and input 2, both as redundancy (hot backup) Maximum input 1 and input 2, both as redundancy (hot backup) Difference input 1 - input 2 Difference input 2 - input 1 Absolute difference More technical basic specifications with option Hxx only Minimum Input 1 and Input 2, w/o backup Maximum Input 1 and Input 2, w/o backup Average Input 1 and Input 2, w/o backup Input 2	0 1 2 3 4 5 6 7 8 9 9 9 9	H1 A H1 B H1 C H1 D	CJC configuration for TC Input 1: None CJC; Input 2: No CJC Input 1: Internal CJC; Input 2: Internal CJC Input 1: External CJC; input 2: External CJC; define type in option Jxx Input 1: External CJC; define type in option Jxx; input 2: Internal CJC Input 1: Internal CJC; Input 2: External CJC; define type in option Jxx Input 1: Internal CJC; Input 2: No CJC Input 1: External CJC (define type in option Jxx); input 2: No CJC	0 1 2 3 4 5 6	
Input 1, type RTD • Pt100 (IEC 60751), 3-wire • Pt100 (IEC 60751), 4-wire • Pt1000 (IEC 60751), 3-wire • Pt1000 (IEC 60751), 4-wire TC • Type B • Type E • Type J • Type K • Type L • Type N • Type R • Type S • Type T Potentiometer, 4-wire More types in Option Vxx	B C D E F G H J K L N P Q R Y		Material of non-wetted parts Die-cast aluminum enclosure Enclosure made of stainless steel precision casting 1.4401 (similar to 316)	1 3	
Input 2, type RTD • Pt100 (IEC 60751), 3-wire • Pt100 (IEC 60751), 4-wire • Pt1000 (IEC 60751), 3-wire • Pt1000 (IEC 60751), 4-wire	B C D E		Type of protection (Ex) General purpose Intrinsic safety (Ex i) / Non-incendive field wiring (NIFW) Flameproof enclosure (Ex d) / Explosion proof (XP) Dust ignition protection by enclosure zone 21/22 (Ex t) / Dust ignition proof (DIP) / Increased safety zone 2 (Ex ec) / Non-incendive (NI) Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec) Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec) / Dust ignition proof (DIP) / Explosion proof (XP) / Non-incendive (NI) / Non-incendive field wiring (NIFW)	A B C L S T	
			Electrical connection/cable entries 2x M20 x 1.5 2x ½" NPT	F M	
			Local operation Without local operation Local operation (closed lid) Local operation (lid with glass window)	0 1 2	

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Options	Order code
Add "-Z" to article number, specify order code and, if applicable, free text.	
Cable gland included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Cable gland accessories	
Dual hole insert included	A20
Device plug Han mounted left	
Device plug Han 7D (metal, straight)	A32
Cable socket included	
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Mounting cable glands/plugs	
Cable gland mounted	A97
Device plug for output, mounted right	A98
Manufacturer's declarations	
Inspection certificate EN 10204-3.1: Manufacturer test certificate for transmitters (5 measured values)	C11
Certificates for Functional Safety	
Functional Safety (IEC 61508) - SIL2/3	C20
Device options	
PDF file with device settings	D10
Degree of protection IP66 / IP68 (not for device plugs M12 and Han)	D30
Unlabeled TAG plate	D40
Without measuring range label on tag plate	D41
Nameplate and approval plate, stainless steel 1.4404/316L	D42
Overvoltage protection up to 20 kV (external)	D71
Jumper at device for write protection set	D81
Jumper at device for Safe state current >21 mA (instead of <3,6 mA) set (non SIL only)	D82
General approval without Ex approval	
Worldwide (CE, RCM) except EAC, FM, KCC	E00
Global	E01
EAC	E07
FM	E08
Explosion protection certificates	
ATEX (Europe)	E20
FM (USA & Canada)	E22
IECEX (World)	E23
NEPSI (China)	E27
ECASEX (UAE)	E32
ATEX (Europe) and IECEX (Worldwide)	E47
ATEX & IECEX & FM	E49
Mounting system (only single chamber enclosures)	
Pipe mounting kit for single chamber enclosure, stainless steel 316L	H06
Wall mounting kit for single chamber enclosure, stainless steel 316L	H07

Options	Order code
Add "-Z" to article number, specify order code and, if applicable, free text.	
External CJC types	
Pt100, IEC 60751, 3-wire	J02
Pt100, IEC 60751, 4-wire	J03
Ni100, DIN 43760-87, 3-wire	J05
Ni100, DIN 43760-87, 4-wire	J06
Noise damping	
Noise damping 60 Hz instead of 50 Hz	P10
Input 1: TC	
Type C W5	V01
Type D W3	V02
Type U	V03
Type Lr	V04
Input 1: RTD	
TD Pt x IEC 60751 2-wire (wire resistance value defined in option Y51, RTD factor x defined in option Y21)	V60
Pt x (IEC), 3-wire, define RTD factor x in option Y21	V61
Pt x (IEC), 4-wire, define RTD factor x in option Y21	V62
Pt x (JIS C1604-81), 3-wire, define RTD factor x in option Y21	V64
Pt x (JIS C1604-81), 4-wire, define RTD factor x in option Y21	V65
Pt x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V67
Pt x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V68
Ni x (DIN 43760-87), 3-wire, define RTD factor x in option Y21	V70
Ni x (DIN 43760-87), 4-wire, define RTD factor x in option Y21	V71
Ni x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V73
Ni x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V74
Cu x (ECW-15), 3-wire, define RTD factor x in option Y21	V76
Cu x (ECW-15), 4-wire, define RTD factor x in option Y21	V77
Cu x (GOST 6651-94), 3-wire, define RTD factor x in option Y21	V79
Cu x (GOST 6651-94), 4-wire, define RTD factor x in option Y21	V80
Cu x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V82
Cu x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V83
Input 2: TC	
TC type W5	W01
TC type W3	W02
TC Type U	W03
TC Type Lr	W04
Input 2: RTD	
RTD Pt x IEC 60751 2-wire (wire resistance value defined in option Y52, RTD factor x defined in option Y22)	W60
Device settings	
Measuring range setting temperature input: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit (°C, °F, °Ra, K)	Y01
Long tag (device parameter, max. 32 characters), plate, stainless steel 316L/1.4404	Y15
Measuring point description (device parameter, max. 32 characters), stainless steel 316L/1.4404	Y16
Long tag (device parameter, max. 8 characters), adhesive label	Y17

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Options	Order code
Add "-Z" to article number, specify order code and, if applicable, free text.	
Descriptor (device parameter, max. 16 characters), adhesive label	Y18
Input 1: RTD factor; e.g. factor "200" = Pt200, adhesive label	Y21
Input 2: RTD factor (e.g. factor = 200 => RTD Pt200), adhesive label	Y22
Value wire resistance input 1 in Ohm (0...100 Ohm)	Y51
Value wire resistance input 2 in Ohm (0...100 Ohm)	Y52

Dual chamber enclosure

	Article No.	Order code
SITRANS TF420 Temperature transmitter with dual chamber enclosure for wall or pipe mounting, two separately configurable inputs and a galvanically isolated 2-wire output.	7NG045	
Click on the Article No. for the online configuration in the PLM Life Cycle Portal.		
Communication		
With HART (4 ... 20 mA)	0	
Primary value output		
Input 1	0	
Input 1, input 2 as redundancy (hot backup)	1	
Input 2, input 1 as redundancy (hot backup)	2	
Average input 1 and input 2, both as redundancy (hot backup)	3	
Minimum input 1 and input 2, both as redundancy (hot backup)	4	
Maximum input 1 and input 2, both as redundancy (hot backup)	5	
Difference input 1 - input 2	6	
Difference input 2 - input 1	7	
Absolute difference	8	
More technical basic specifications with option Hxx only	9	
Minimum Input 1 and Input 2, w/o backup	9	H1 A
Maximum Input 1 and Input 2, w/o backup	9	H1 B
Average Input 1 and Input 2, w/o backup	9	H1 C
Input 2	9	H1 D
Input 1, type		
RTD		
• Pt100 (IEC 60751), 3-wire	B	
• Pt100 (IEC 60751), 4-wire	C	
• Pt1000 (IEC 60751), 3-wire	D	
• Pt1000 (IEC 60751), 4-wire	E	
TC		
• Type B	F	
• Type E	G	
• Type J	H	
• Type K	J	
• Type L	K	
• Type N	L	
• Type R	N	
• Type S	P	
• Type T	Q	
Potentiometer, 4-wire	R	
More types in Option Vxx	Y	

	Article No.	Order code
SITRANS TF420 Temperature transmitter with dual chamber enclosure for wall or pipe mounting, two separately configurable inputs and a galvanically isolated 2-wire output.	7NG045	
Input 2, type		
Without input 2	A	
RTD		
• Pt100 (IEC 60751), 3-wire	B	
• Pt100 (IEC 60751), 4-wire	C	
• Pt1000 (IEC 60751), 3-wire	D	
• Pt1000 (IEC 60751), 4-wire	E	
TC		
• Type B	F	
• Type E	G	
• Type J	H	
• Type K	J	
• Type L	K	
• Type N	L	
• Type R	N	
• Type S	P	
• Type T	Q	
Potentiometer, 4-wire	R	
More types in option Wxx	Y	
CJC configuration for TC		
Input 1: None CJC; Input 2: No CJC	0	
Input 1: Internal CJC; Input 2: Internal CJC	1	
Input 1: External CJC; input 2: External CJC; define type in option Jxx	2	
Input 1: External CJC; define type in option Jxx; input 2: Internal CJC	3	
Input 1: Internal CJC; Input 2: External CJC; define type in option Jxx	4	
Input 1: Internal CJC; Input 2: No CJC	5	
Input 1: External CJC (define type in option Jxx); input 2: No CJC	6	
Material of non-wetted parts		
Die-cast aluminum enclosure	1	
Enclosure made of stainless steel precision casting CF3M/1.4409 (similar to 316L)	2	
Type of protection (Ex)		
General purpose (non-Ex)		A
Intrinsic safety (Ex i) / Non-incendive field wiring (NIFW)		B
Flameproof enclosure (Ex d) / Explosion proof (XP)		C
Dust ignition protection by enclosure zone 21/22 (Ex t) / Dust ignition proof (DIP) / Increased safety zone 2 (Ex ec) / Non-incendive (NI)		L
Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec)		S
Flameproof enclosure (Ex d) / Intrinsic safety (Ex i) / Dust ignition protection by enclosure zone 21/22 (Ex t) / Increased safety zone 2 (Ex ec) / Dust ignition proof (DIP) / Explosion proof (XP) / Non-incendive (NI) / Non-incendive field wiring (NIFW)		T

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

	Article No.	Order code	Options	Order code
SITRANS TF420 Temperature transmitter with dual chamber enclosure for wall or pipe mounting, two separately configurable inputs and a galvanically isolated 2-wire output.	7NG045		Add "-Z" to article number, specify order code and, if applicable, free text.	
Electrical connection/cable entries			Without measuring range label on tag plate	D41
2x M20 x 1.5			Stainless steel Ex plate 1.4404/316L	D42
2x ½" NPT			Overvoltage protection up to 20 kV (external)	D71
Local operation			Jumper at device for write protection set	D81
Without local operation			Jumper at device for Safe state current >21 mA (instead of <3,6 mA) set (non SIL only)	D82
Local operation (closed lid)			General approval without Ex approval	
Local operation (lid with glass window)			Worldwide (CE, RCM) except EAC, FM, KCC	E00
			Global	E01
			EAC	E07
			FM	E08
Options		Order code	Explosion protection certificates	
Add "-Z" to article number, specify order code and, if applicable, free text.			ATEX (Europe)	E20
Cable gland included			FM (USA & Canada)	E22
Plastic		A00	IECEX (World)	E23
Metal		A01	NEPSI (China)	E27
Stainless steel		A02	ECASEx (UAE)	E32
Stainless steel 316L/1.4404		A03	ATEX (Europe) and IECEx (Worldwide)	E47
CMP, for XP devices		A10	ATEX & IECEx & FM	E49
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm		A11	Mounting brackets (only dual chamber enclosure)	
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm		A12	Wall/pipe mounting bracket for dual chamber enclosure, steel	H01
Cable entry accessories			Wall/pipe mounting bracket for dual chamber enclosure, stainless steel 304	H02
Dual hole insert included		A20	Wall/pipe mounting bracket for dual chamber enclosure, stainless steel 316L	H03
Device plug Han mounted left			External CJC types	
Device plug Han 7D (plastic, straight)		A30	Pt100, IEC 60751, 3-wire	J02
Device plug Han 7D (plastic, angled)		A31	Pt100, IEC 60751, 4-wire	J03
Device plug Han 7D (metal, straight)		A32	Ni100, DIN 43760-87, 3-wire	J05
Device plug Han 7D (metal, angled)		A33	Ni100, DIN 43760-87, 4-wire	J06
Device plug Han 8D (plastic, straight)		A34	Noise damping	
Device plug Han 8D (plastic, angled)		A35	Noise damping 60 Hz instead of 50 Hz	P10
Device plug Han 8D (metal, straight)		A36	Input 1: TC	
Device plug Han 8D (metal, angled)		A37	Type C W5	V01
Cable socket included			Type D W3	V02
Plastic, for device plug Han 7D and Han 8D		A40	Type U	V03
Metal, for device plug Han 7D and Han 8D		A41	Type Lr	V04
Device plug M12 mounted left			Input 1: RTD	
Stainless steel, without cable socket		A62	RTD Pt x IEC 60751 2-wire (wire resistance value defined in option Y51, RTD factor x defined in option Y21)	V60
Stainless steel, with cable socket		A63	Pt x (IEC), 3-wire, define RTD factor x in option Y21	V61
Mounting cable glands/plugs			Pt x (IEC), 4-wire, define RTD factor x in option Y21	V62
Cable gland mounted		A97	Pt x (JIS C1604-81), 3-wire, define RTD factor x in option Y21	V64
Device plug for output, mounted right		A98	Pt x (JIS C1604-81), 4-wire, define RTD factor x in option Y21	V65
Manufacturer's declarations			Pt x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V67
Inspection certificate EN 10204-3.1: Manufacturer test certificate for transmitters (5 measured values)		C11	Pt x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V68
Certificates for Functional Safety			Ni x (DIN 43760-87), 3-wire, define RTD factor x in option Y21	V70
Functional Safety (IEC 61508) - SIL2/3		C20	Ni x (DIN 43760-87), 4-wire, define RTD factor x in option Y21	V71
Device options			Ni x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V73
PDF file with device settings		D10		
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid		D20		
Degree of protection IP66 / IP68 (not for device plugs M12 and Han)		D30		
Unlabeled TAG plate		D40		

Temperature measurement

Temperature transmitters

Field transmitters/field indicator

SITRANS TF420 (HART, universal)

Options	Order code	Article No.
Add "-Z" to article number, specify order code and, if applicable, free text.		
Ni x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V74	7MF7900-1AB
Cu x (ECW-15), 3-wire, define RTD factor x in option Y21	V76	7MF7900-1AC
Cu x (ECW-15), 4-wire, define RTD factor x in option Y21	V77	7MF7900-1AH
Cu x (GOST 6651-94), 3-wire, define RTD factor x in option Y21	V79	7MF7900-1AJ
Cu x (GOST 6651-94), 4-wire, define RTD factor x in option Y21	V80	
Cu x (GOST 6651-2009), 3-wire, define RTD factor x in option Y21	V82	
Cu x (GOST 6651-2009), 4-wire, define RTD factor x in option Y21	V83	
Input 2: TC		
TC type W5	W01	
TC type W3	W02	
TC Type U	W03	
TC Type Lr	W04	
Input 2: RTD		
RTD Pt x IEC 60751 2-wire (wire resistance value defined in option Y52, RTD factor x defined in option Y22)	W60	
Device settings		
Measuring range setting temperature input: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit (°C, °F, °Ra, K)	Y01	
Long tag (device parameter, max. 32 characters), plate, stainless steel 316L/1.4404	Y15	
Measuring point description (device parameter, max. 32 characters), stainless steel 316L/1.4404	Y16	
Long tag (device parameter, max. 8 characters), adhesive label	Y17	
Descriptor (device parameter, max. 16 characters), adhesive label	Y18	
Input 1: RTD factor; e.g. factor "200" = Pt200, adhesive label	Y21	
Input 2: RTD factor (e.g. factor = 200 => RTD Pt200), adhesive label	Y22	
Value wire resistance input 1 in Ohm (0...100 Ohm)	Y51	
Value wire resistance input 2 in Ohm (0...100 Ohm)	Y52	
Accessories		
	Article No.	
Additional accessories for assembly, connection and transmitter configuration, see page 2/251.		
Modems		
Modem with USB interface and SIPROM T software	7NG3092-8KN	
HART modem with USB interface	7MF4997-1DB	
Thread adapter		
Thread adapter M20x1.5 (male thread) to ½-14 NPT (female thread)	7MP1990-0BA00	
Thread adapter M20x1.5 (male thread) to G½ (female thread)	7MP1990-0BB00	
Local operation		
Local operation for temperature transmitter in dual chamber enclosure	7MF7902-1AD	
Mounting system for local operation 7MF7902-1AD in single chamber enclosure	7MF7902-1AS	
Mounting brackets (only dual chamber enclosure)		
Wall/pipe mounting bracket for dual chamber enclosure, steel, 5/16-24UNF		7MF7900-1AB
Wall/pipe mounting bracket for dual chamber enclosure, steel, M8		7MF7900-1AC
Wall/pipe mounting bracket for dual chamber enclosure, stainless steel 316L, 5/16-24UNF		7MF7900-1AH
Wall/pipe mounting bracket for dual chamber enclosure, stainless steel 316L, M8		7MF7900-1AJ
Mounting system (only single chamber enclosures)		
Pipe mounting kit for single chamber enclosure, stainless steel 316L		7MF7900-1AK
Wall mounting kit for single chamber enclosure, stainless steel 316L		7MF7900-1AL
Cable gland		
Cable gland, gray, non-Ex, M20		7MF7906-1AB
Cable gland, gray, non-Ex, NPT		7MF7906-1BB
Cable gland, metal, non-Ex, NPT		7MF7906-1BD
Cable gland, metal, non-Ex, M20		7MF7906-1AD
Cable gland, metal, Ex-d, NPT		7MF7906-1BE
Cable gland, metal, Ex-d, M20		7MF7906-1AE
Cable gland, 316L, non-Ex, NPT		7MF7906-1BH
Cable gland, 316L, non-Ex, M20		7MF7906-1AH
Cable gland, 316L, Ex-d, NPT		7MF7906-1BJ
Cable gland, 316L, Ex-d, M20		7MF7906-1AJ
Cable gland, E1FX Tri-Star 1/2-14NPT, CMP		7MF7906-1NE
Cable gland, ½ NPT Capri ADE 4F cpl., CuZn		7MF7906-1PE
Cable gland, ½ NPT Capri ADE 4F cpl., stainless steel		7MF7906-1PJ
Dual hole gasket for 2 cables in cable gland		7MF7906-1WN
Plug and cable socket		
Plug Han 7D, plastic, straight		7MF7906-2AB
Plug Han 7D, plastic, angled		7MF7906-2AC
Plug Han 7D, metal, straight, blue		7MF7906-2AQ
Plug Han 7D, metal, straight, grey		7MF7906-2AN
Plug Han 7D, metal, angled, blue		7MF7906-2AR
Plug Han 7D, metal, angled, grey		7MF7906-2AP
Plug Han 8D, plastic, straight		7MF7906-2EB
Plug Han 8D, plastic, angled		7MF7906-2EC
Plug Han 8D, metal, straight, blue		7MF7906-2EQ
Plug Han 8D, metal, straight, grey		7MF7906-2EN
Plug Han 8D, metal, angled, blue		7MF7906-2ER
Plug Han 8D, metal, angled, grey		7MF7906-2EP
Cable socket, plastic, for plug Han 7D		7MF7906-2BB
Cable socket, plastic, for plug Han 8D		7MF7906-2FB
Cable socket, metal, for Han 7D blue		7MF7906-2BQ
Cable socket, metal, for Han 8D blue		7MF7906-2FQ
Cable socket, metal, for Han 7D grey		7MF7906-2BN
Cable socket, metal, for Han 8D grey		7MF7906-2FN
Plug M12 with cable socket, stainless steel		7MF7906-3AB

	Article No.
Overvoltage protection	
Overvoltage protection up to 20 kV, M20	7MF7906-3AC
Overvoltage protection up to 20 kV, NPT	7MF7906-3AD
Lid	
Closed lid aluminum, painted 2x, without glass window, with seal NBR	7MF7901-1BB
Closed lid aluminum, painted 2x, without glass window, with seal FVMQ	7MF7901-1BC
Lid aluminum 2x coated, with glass window, with seal NBR	7MF7901-1BG
Lid aluminum 2x coated, with glass window, with seal FVMQ	7MF7901-1BH
Closed lid stainless steel precision casting, without glass window, with seal NBR	7MF7901-2AB
Closed lid stainless steel precision casting, without glass window, with seal FVMQ	7MF7901-2AC
Lid stainless steel precision casting, with glass window, with seal NBR	7MF7901-2AG
Lid stainless steel precision casting, with glass window, with seal FVMQ	7MF7901-2AH

Ordering example

SITRANS TF420 (single chamber enclosure)

7NG0450-0BA02-0AF2-Z Y01+Y17+P10

Y01: -10 ... +100 °C (32 ... 212 °F)

Y17: TICA123

Factory setting

- Input 1: Pt100 (IEC 751); 3-wire connection
- Input 2: not configured (inactive)
- Measuring range: 0 ... 100 °C (32 ... 212 °F)
- Fault current
 - Input circuit wire break: 22.8 mA
 - Input circuit short circuit: 22.4 mA
 - Input circuit drift: 22 mA (active when input 2 is active)
 - Input monitoring wire break and short-circuit
- No trimming of input and output (offset)

Damping 0.0 s

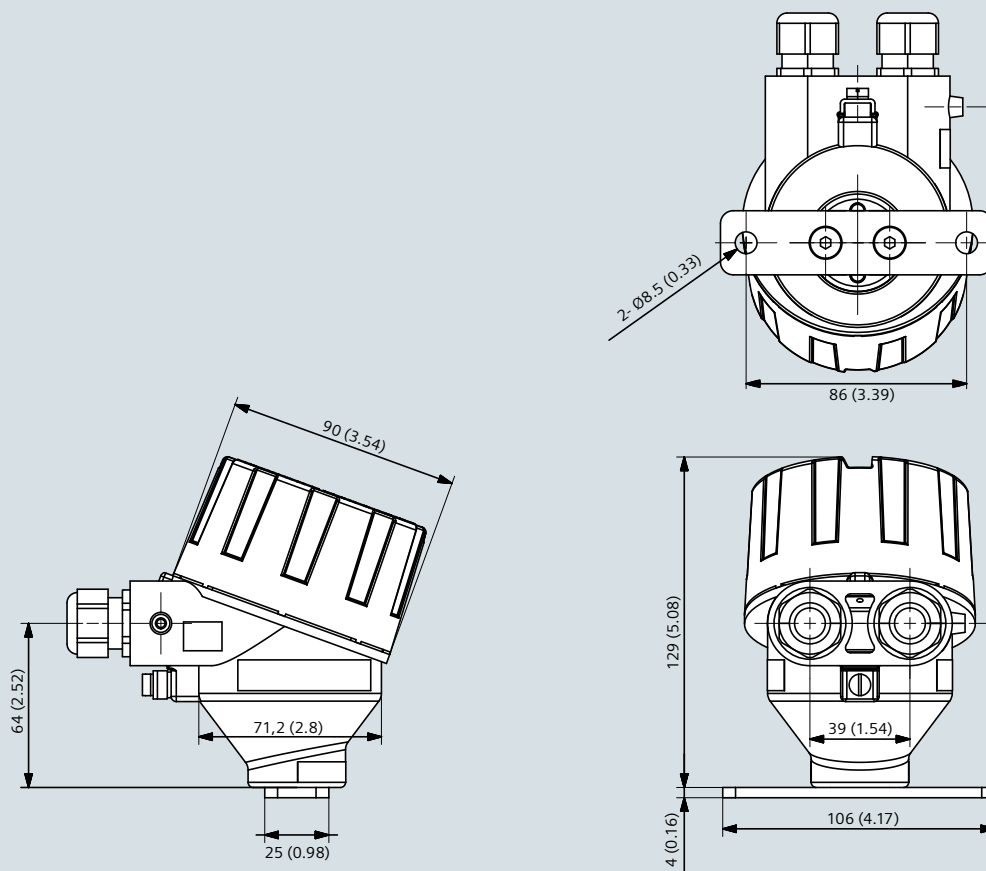
Temperature measurement

Temperature transmitters

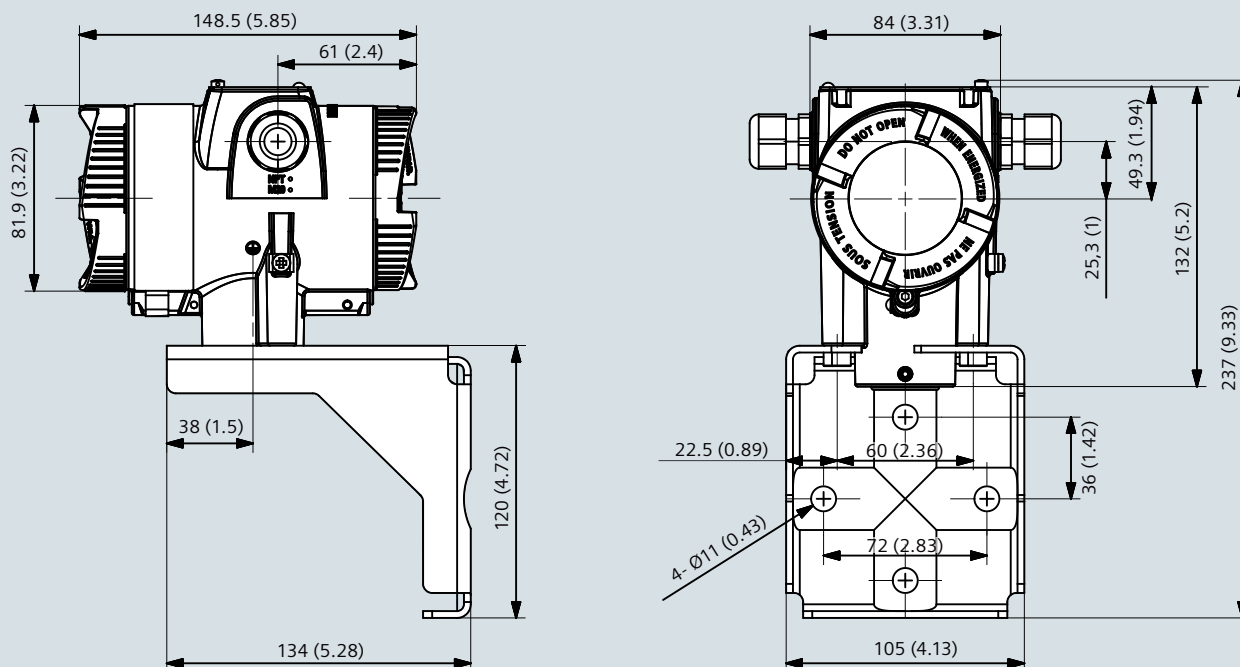
Field transmitters/field indicator

SITRANS TF420 (HART, universal)**Dimensional drawings**

2



SITRANS TF420, single chamber enclosure, dimensions in mm (inch)

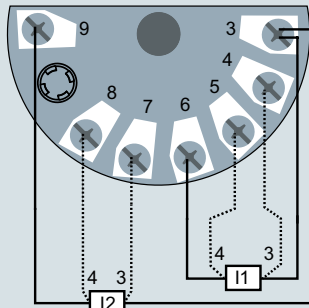


SITRANS TF420, dual chamber enclosure, dimensions in mm (inch)

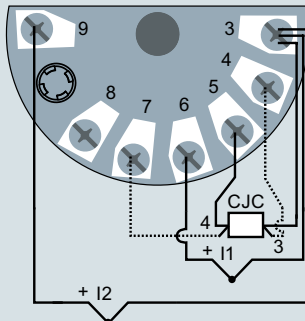
Circuit diagrams

Connections

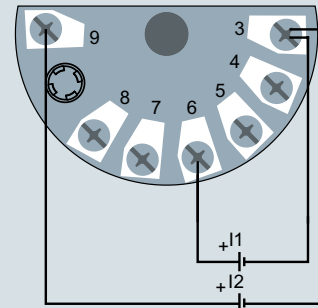
Input connection



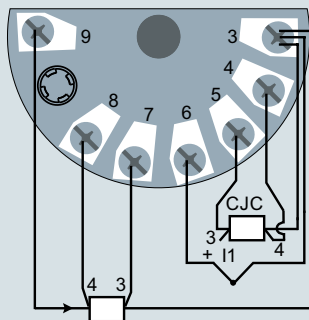
Input 1 and/or input 2:
2-wire, 3-wire or 4-wire RTD or
linear resistance



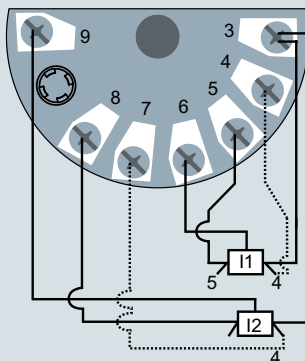
Input 1 and/or input 2:
TC (internal CJC or
external 2-wire, 3-wire or
4-wire CJC)



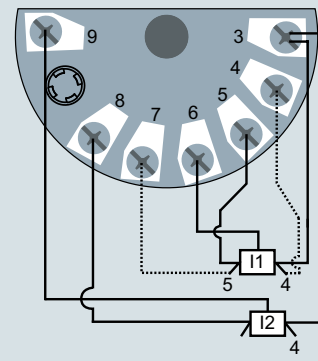
Input 1 and/or input 2:
Voltage input
(unipolar or bipolar)



Input 1: TC (internal CJC or
external 2-wire or 3-wire CJC)
Input 2: 2-wire, 3-wire or 4-wire RTD



Input 1 and/or Input 2:
3-wire or 4-wire potentiometer



Input 1: 5-wire potentiometer
Input 2: 3-wire potentiometer

SITRANS TF420 in single chamber enclosure (7NG044*), input connection assignment

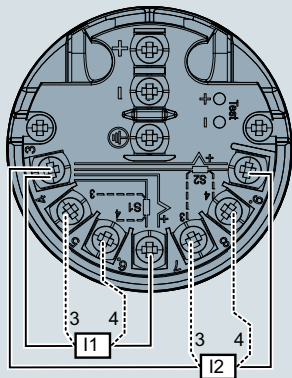
Temperature measurement

Temperature transmitters

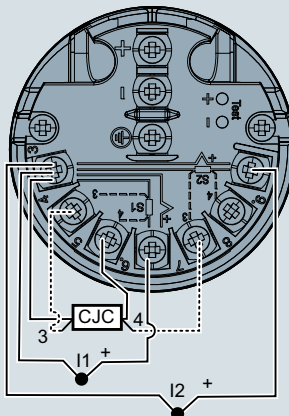
Field transmitters/field indicator

SITRANS TF420 (HART, universal)

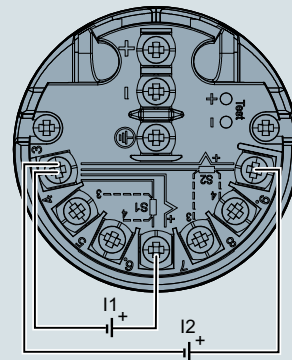
2



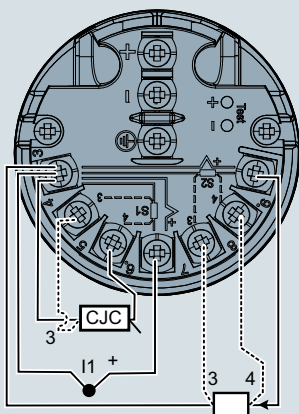
Input 1 (I1) and/or input 2 (I2):
2-wire, 3-wire or 4-wire RTD or
linear resistance



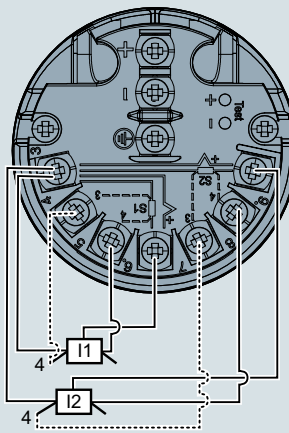
Input 1 (I1) and/or input 2 (I2):
TC (internal CJC or
external 2-wire, 3-wire or
4-wire CJC)



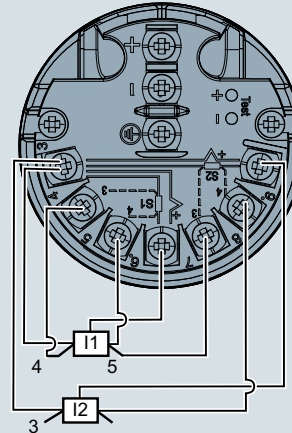
Input 1 (I1) and/or input 2 (I2):
Voltage input
(unipolar or bipolar)



Input 1: TC (internal CJC or
external 2-wire or 3-wire CJC)
Input 2: 2-wire, 3-wire or 4-wire RTD



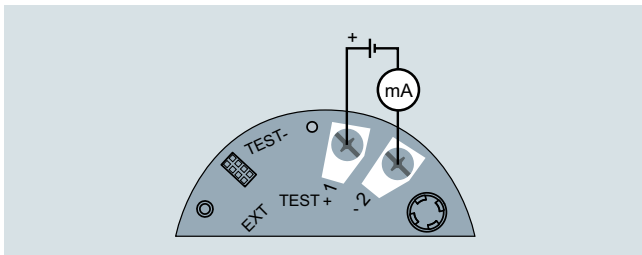
Input 1 (I1) and/or input 2 (I2):
3-wire or 4-wire potentiometer



Input 1 (I1): 5-wire potentiometer
Input 2 (I2): 3-wire potentiometer

SITRANS TF420 in dual chamber enclosure (7NG045*), input connection assignment

Output connection



SITRANS TF420 in single chamber enclosure (7NG044*), output connection assignment