

Field mounted HART temperature transmitter

7501



- RTD, TC, Ohm, and bipolar mV input and analog output
- High definition local operator interface (LOI) with 3 optical buttons
- Selectable red or white backlight
- Ex d explosion proof / flame proof
- HART 7 functionality with HART 5 compatibility



High definition display

- 0, 90, 180, & 270 degree position adjustments.
- Monitoring, programming and diagnostics view.
- Extensive diagnostics with flashing red or white backlight
- Supports 7 languages.

Local operator interface (LOI)

- 3 optical buttons; up, down and enter.
- Dynamically adaptive to wear or accumulation of dirt.
- Immune to interference from ambient light sources.
- Useable with or without gloves.

Configuration

- From the LOI through PR guided menu.
- PReset and HART modem.
- HHC, DCS or AMS via HART.

Mounting / installation

- For installation in zone 0, 1, 2 and zone 20, 21, 22 and in Class 1, Division 1 and 2 applications.
- Hardware assessed with SFF value of 69%.
- Mounting on 1.5"-2" pipe bracket or on wall / bulkhead.

Application

- Linearized temperature measurement with TC and RTD sensors e.g. Pt100 and Ni100.
- HART communication and 4...20 mA analog PV output for individual, difference or average temperature measurement of up to two RTD or TC input sensors.
- Conversion of linear resistance to a standard analog current signal, e.g from valves or Ohmic level sensors.
- Amplification of bipolar mV signals to standard 4...20 mA current signals.
- Up to 63 transmitters (HART 7) can be connected in a multidrop communication setup.

Technical characteristics

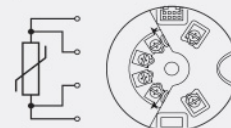
- NAMUR NE43 and NE89.
- HART protocol revision can be changed by user configuration to either HART 5 or HART 7 protocol.

Connections

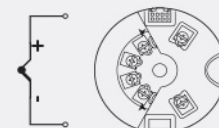
Input signals:

For full overview of input connections, refer to manual

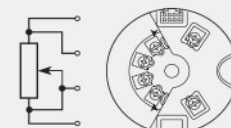
RTD to 4...20 mA



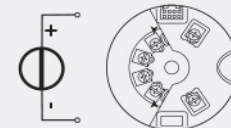
TC to 4...20 mA



Resistance to 4...20 mA



mV to 4...20 mA



Difference or average RTD, TC or mV



2-wire output and HART:



Ex: 10...30 VDC
(12...30 VDC with backlight)
Other: 10...35 VDC
(12...35 VDC with backlight)

4...20 mA

HART

Order

Type	Housing	Local operator interface			O-ring	Conduit thread	Paint type	Transmitter	Approvals
		Optical buttons	Display						
7501	Low copper aluminum : A	No	No	: 1	-40 to +85°C : A	M20x1.5 6H : 1	Epoxy : A	Yes : 1	General purpose : 1 Hazardous area : 2
		No	Yes	: 2	silicone rubber	½ NPT mod. : 2	Epoxy + polyurethane : B	No (comes with a connection kit) : 2	
		Yes	Yes	: 3	-20 to +85°C : B	FKM rubber			

Example: 7501A3B1A12

Environmental Conditions

Specifications range.....	-40°C to +85°C (with silicone O-ring)
Specifications range.....	-20°C to +85°C (with FKM O-ring)
Storage temperature.....	-40°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	0...100% RH (condensing)
Protection degree.....	IP54 / IP66 / IP68 / type 4X

Mechanical specifications

Dimensions.....	Ø 110 mm
Dimensions (HxWxD).....	109 x 145 x 125.5 mm
Weight approx.....	1.3 kg
Wire size.....	0.13 x 1.5 mm ² / AWG 26...16 stranded wire
Screw terminal torque.....	0.4 Nm
Vibration.....	IEC 60068-2-6 : 2007
Vibration: 2...25 Hz.....	±1.6 mm
Vibration: 25...100 Hz.....	±4 g
Display resolution.....	96 x 64 pixels
Number of digits.....	5
Backlight.....	Selectable ON/OFF
Backlight color.....	Selectable white or red

Common specifications

Supply

Supply voltage, DC: Ex ia, intrinsically safe.....	10 (12 - with backlight)...30 VDC
Supply voltage, DC: Other.....	10 (12 - with backlight)...35 VDC

Isolation voltage

Isolation voltage, test / working.....	1.5 kVAC / 50 VAC
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Response time

Response time (programmable).....	1...60 s
Signal / noise ratio.....	> 60 dB
Programming.....	HART
Start-up time, transmitter to display.....	Max. 5 s
Long-term stability, better than.....	±0.1% of span / Year
Accuracy.....	Better than 0.05% of selected range
Signal dynamics, input.....	22 bit
Signal dynamics, output.....	16 bit
EMC immunity influence.....	< ±0.1% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.....	< ±1% of span

Input specifications

Common input specifications

Max. offset.....	50% of selected max. value
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RTD input

RTD type.....	Pt50, Pt100, Pt200, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000
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Cable resistance per wire (max.).....	5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
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Sensor current.....	Nom. 0.2 mA
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Linear resistance input

Linear resistance min...max.....	0 Ω...7000 Ω
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TC input

Thermocouple type.....	B, E, J, K, L, N, R, S, T, U, W3, W5, LR
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Cold junction compensation

(CJC).....	Constant, internal or external via a Pt100 or Ni100 sensor
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Voltage input

Measurement range.....	-800...+800 mV
Min. measurement range (span).....	2.5 mV
Input resistance.....	10 MΩ

Output specifications

Current output

Signal range.....	4...20 mA
Min. signal range.....	16 mA
Load (@ current output).....	≤ (Vsupply - 10) / 0.023 [Ω]
Load resistance, with backlight.....	≤ (Vsupply - 12) / 0.023 [Ω]
Sensor error indication.....	Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.....	23 mA / 3.5 mA

Common output specifications

Updating time.....	440 ms
HART protocol revisions.....	HART 5 and HART 7

Observed authority requirements

EMC.....	2014/30/EU
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Approvals

EAC.....	TR-CU 020/2011
EU RO Mutual Recognition Type Approval.....	MRA0000009
ATEX 2014/34/EU.....	DEKRA 15 ATEX 0058 X
IECEX.....	IECEX DEK 15.0039 X
FM.....	3055380
CSA.....	70024231
EAC Ex TR-CU 012/2011.....	RU C-DK.GB08.V.01316
INMETRO.....	DEKRA 15.0014 X
NEPSI.....	GYJ15.1336X, GYJ15.1337X and GYJ15.1338X