

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 for use in SIL 2 applications.
- Mounting on 1.5”-2” pipe bracket or on wall / bulkhead.

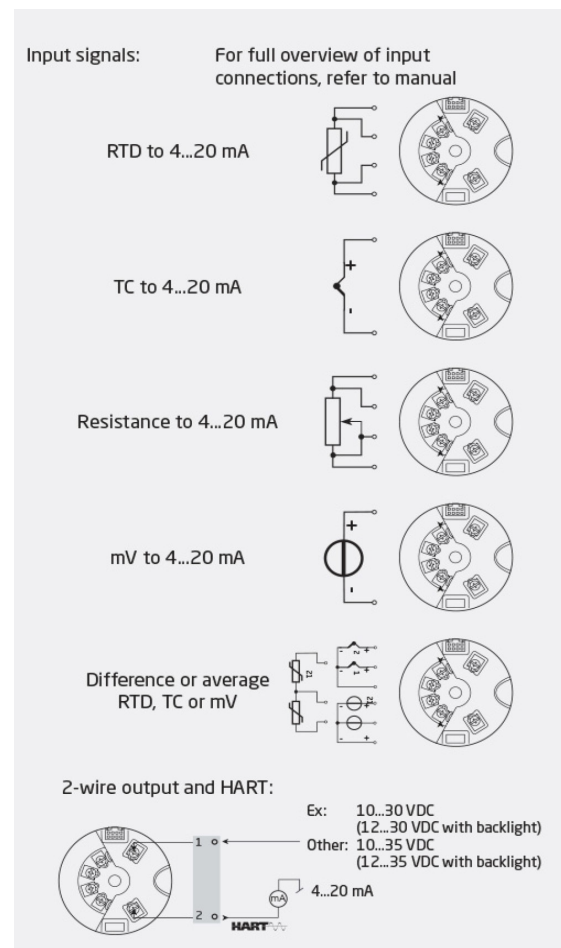
Application

- 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



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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 silicone rubber	A	M20x1.5 GH	:1	Epoxy	A	Yes	:1	General purpose
			No	Yes	:2	-20 to +85°C FKM rubber	B	1/2 NPT mod.	:2	Epoxy + polyurethane	B	No (comes with a connection kit)	:2	Hazardous area
			Yes	Yes	:3									

Environmental conditions

Operating temperature.....	-40°C to +85°C (with silicone O-ring)
Operating temperature.....	-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
2...25 Hz.....	±1.6 mm
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) ...30VDC
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

RTD input

RTD type Pt50, Pt100, Pt200, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000

Cable resistance per wire

(max.) 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)

Sensor current..... Nom. 0.2 mA

Linear resistance input

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

TC input

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

Cold junction compensation

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

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

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

*The transmitter is manufactured by PR electronics. All approvals listed are recognized under the PR name.

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