Field Mounted HART Temperature Transmitter

TT7501

Features:

- RTD, TC, Ohm, and bipolar mV input and analog output
- High definition local operation interface (LOI) with 3 optical buttons
- Selectable red or white backlight
- Ex d explosion proof / flame proof in aluminum or 316 stainless steel version
- HART 7 functionality with HART 5 compatibility

High definition display:

- 0, 90, 180, and 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:

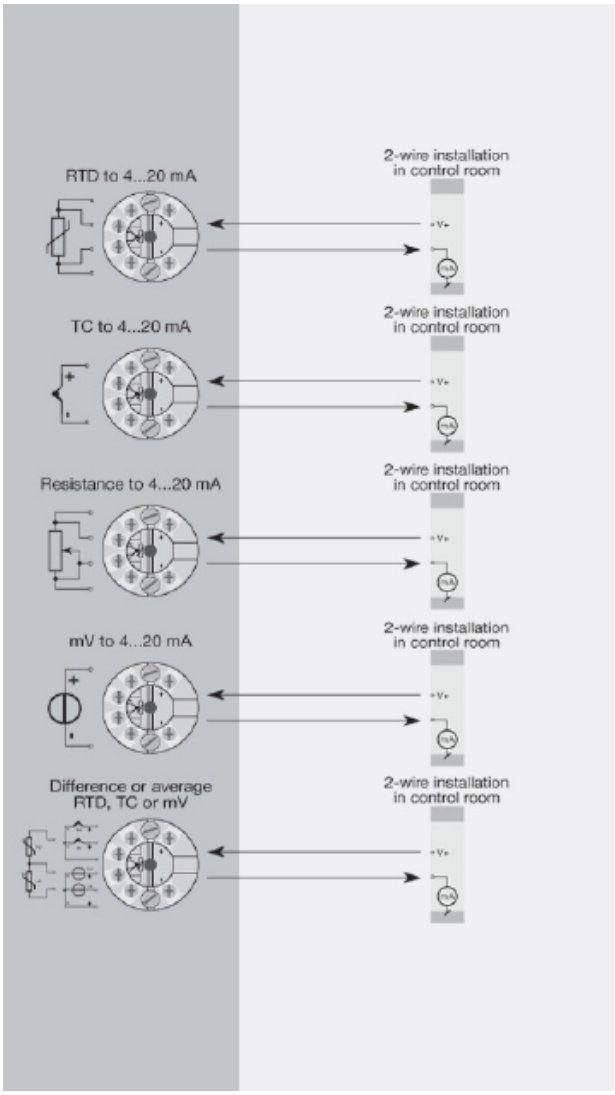
- From the LOI through TT guided menu
- Preset and HART modem
- HHC, DCS or AMS via HART

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



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Applications (continued):

- Conversion of linear resistance variation 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 multi-drop 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

Order

Type	Housing	Local operator interface		O-ring	Conduit thread (D1, D2 & D3)	Paint type	Transmitter	Approvals	Cover color
		Optical Buttons	Display						
TT7501	Low copper aluminum (AL) :A	No No Yes	No :1 Yes :2 Yes :3	-40 to +85°C silicone rubber :A -20 to +85°C FKM rubber :B	M20x1.5 6H :1 1/2 NPT mod. :2	Epoxy :A Epoxy + Polyurethane :B	Yes :1 No (comes with a connection kit) :2	General purpose :1 Hazardous area :2	Red : - Grey : GY
TT7501	316 Stainless steel (RF) :B	No Yes	Yes :2 Yes :3	-40 to +85°C silicone rubber :A -20 to +85°C FKM rubber :B	M20x1.5 6H :1 1/2 NPT mod. :2	None :N	Yes :1 No (comes with a connection kit) :2	General purpose :1 Hazardous area :2	Steel : -

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

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Mechanical Specifications

Dimensions	Ø 110 mm
Dimensions (HxWxD), aluminum	109.3 x 145 x 126 mm
Dimensions (HxWxD), stainless steel	107.5 x 145 x 124 mm
Weight approx., aluminum/stainless steel	1.3 / 2.8 kg
Wire size	0.13 x 1.5 mm² / AWG 26...16 stranded wire
Screw terminal torque	0.4 Nm
Vibration	IEC 60068-2-6
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)...30 VDC
Supply voltage, DC: Other	10 (12 — with backlight)… 35 VDC

Isolation voltage	
Isolation voltage, test / working	1.5 kVAC / 50 VAC

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

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Response time Continued...	
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 NE21, A criterion, burst	< ±1% of span

Input Specifications

Common input specifications	
Max. offset	50% of selected max. value

RTD input	
RTD type	Pt50/100/200/500/1000; Ni50/100/120/1000
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 NE43 Upscale/Downscale	23 mA / 3.5 mA

Common output specifications	
Updating time	440 ms
HART protocol revisions	HART 7 and HART 5

Observed authority requirements

EMC	2014/30/EU
EAC	TR-CU 020/2011

Approvals

EU RO Mutual Recognition Type Approval	MRA0000009
ATEX 2014/34/EU	DEKRA 15 ATEX 0058 X
IECEx	IECEx DEK 15.0039 X
FM	FM16US0009X / FM16CA0010X
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

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