PERFORMANCE MADE SMARTER

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 in aluminum or 316 stainless steel version
- HART 7 functionality with HART 5 compatibility

High defintion 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 21, 22 and in Class 1, Division 1 and 2 applications.
- The 7501 provides the required failure data (SFF and PFDAVG) for SIL applications as per IEC 61508 / IEC 61511.
- 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.

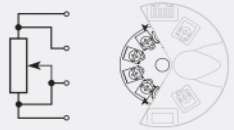
Applications

Input signals: For full overview of input connections, refer to manual

RTD to 4...20 mA

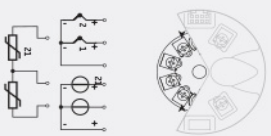
TC to 4...20 mA

Resistance to 4...20 mA

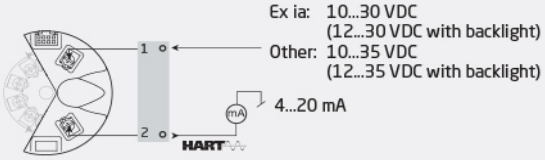


mV to 4...20 mA

Difference or average RTD, TC or mV



2-wire output and HART:



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Order

Type	Housing	Local operator interface: Optical buttons	Local operator interface: Display	O-ring	Conduit thread (D1, D2 & D3)	Paint type	Transmitter	Approvals	Cover color	Additional approvals	
7501	Low copper aluminum (AL) : A	No	No : 1	-40 to +85°C silicone rubber : A	M20x1.5 6H : 1	Epoxy : A	Yes : 1	General purpose : 1	Red : -	Marine	: M
		No	Yes : 2	-20 to +85°C FKM rubber : B	½ NPT mod. : 2	Epoxy + polyurethane : B	No (comes with a connection kit) : 2	Hazardous area : 2			
		Yes	Yes : 3								
		Yes	Yes : 3				Yes : 1	Hazardous area : 2	Gray : GY		
7501	316 Stainless steel (RF) : B	No	Yes : 2	-40 to +85°C silicone rubber : A	M20x1.5 6H : 1	None : N	Yes : 1	General purpose : 1	Steel : -	Marine	: M
		Yes	Yes : 3	-20 to +85°C FKM rubber : B	½ NPT mod. : 2		No (comes with a connection kit) : 2	Hazardous area : 2			

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
Corrosion class 7501AxxxBxxxx / durability	C5-I/M / 5...15 years

Mechanical specifications

Dimensions	Ø 110 mm
Dimensions (HxWxD), aluminum	109.3 x 145 x 126 mm
Dimensions (HxWxD), stainless steel	107.4 x 145 x 124 mm
Weight approx., aluminum / stainless steel	1.3 / 2.8 kg
Wire size	0.13 x1.5 mm^2 / 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
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	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 & UK SI 2016/1091
ATEX	2014/34/EU & UK SI 2016/1107
RoHS	2011/65/EU & UK SI 2012/3032
EAC	TR-CU 020/2011
EAC Ex	TR-CU 012/2011

Approvals

ATEX	DEKRA 15ATEX0058X
IECEx	IECEx DEK 15.0039 X
c FM us	FM16US0009X / FM16CA0010X
CSA	70024231
INMETRO	DEKRA 23.0012 X
NEPSI	GYJ26.1029X
EU RO MR Type Approval	MRA0000009
EAC Ex	EAEU KZ 7500361.01.01.08756
SIL	Hardware assessed for use in SIL applications