PERFORMANCE MADE SMARTER



2-wire HART 7 temperature transmitter

5437A

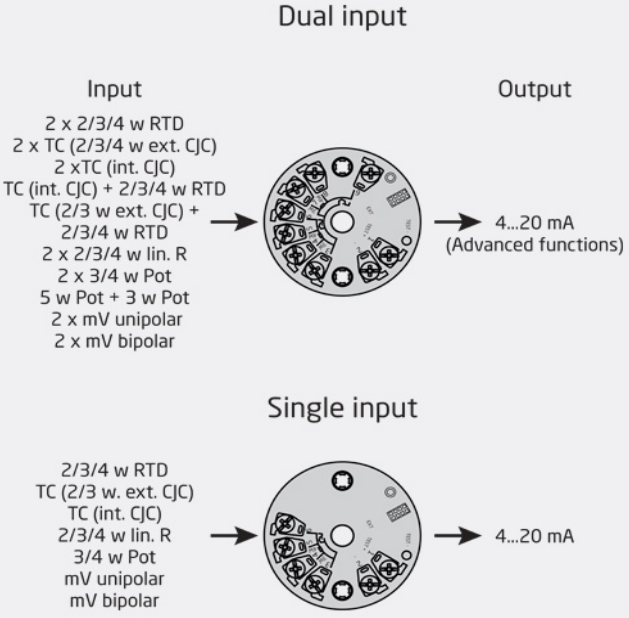
- RTD, TC, potentiometer, linear resistance and bipolar mV input
- Single or true dual inputs with sensor redundancy and drift detection
- Wide ambient operating temperature of -50 to +85°C
- Total accuracy from 0.014%
- 2.5 kVAC galvanic isolation
- Full assessment to IEC61508 : 2010 for use in SIL 2/3 applications

Application
- Temperature measurement of a wide range of TC and RTD types.
- Conversion of wide span linear resistance and potentiometer inputs.
- Conversion of bipolar mV signals to 4...20 mA.
- Integration into asset management schemes.
- Critical applications requiring superior accuracy and/or sensor redundancy and drift detection.

Technical characteristics
- True dual input transmitter. High density 7-terminal design accepts the widest range of dual input combinations.
- Sensor redundancy - output automatically switches to secondary sensor in event of primary sensor failure, maintaining uptime.
- Sensor drift detection - alerts when sensor differential exceeds user-defined limits, for maintenance optimization.
- Dynamic variable mapping for process data in addition to the primary variable e.g. dual input features such as average, differential and min./max. tracking.
- Groundbreaking digital and analog signal accuracy over full input span and ambient conditions.
- Extensive sensor matching including Callendar Van Dusen and custom linearizations.
- Programmable input limits and runtime metering ensure maximum process traceability and sensor out of range protection.
- IEC 61508 : 2010 full assessement up to SIL 3 together with enhanced EMC Functional Safety testing to IEC 61236-3-1.
- Failure rates for 5437xxSx correspond to Performance Level “d” according to ISO-13849.
- Meets NAMUR NE21, NE43, NE44, NE89, NE95, NE130 and NE107 compliant diagnostics information.

Mounting / installation
- For DIN form B sensor head mounting.
- Configuration via standard HART communication interfaces or by PR 5909 Loop Link.
- The 5437A can be mounted in zone 2 and 22 / Class I, Division 2, Groups A, B, C, D.

Applications



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Order:

Type	Inputs		SIL approval		Marine approval	
5437A	Single input (4 terminals)	: 1	SIL	: S	Yes	: M
	Dual input (7 terminals)	: 2	No SIL	: -	No	: -

Environmental Conditions

Operating temperature	-50°C to +85°C (standard)
Operating temperature	-40°C to +80°C (SIL)
Storage temperature	-50°C to +85°C
Calibration temperature	23...25°C
Relative humidity	< 99% RH (non-cond.)
Protection degree (encl./terminal)	IP68 / IP00

Mechanical specifications

Dimensions	Ø 44 x 21.45 mm
Center hole diameter	Ø 6.35 mm / ¼ in
Weight approx.	50 g
Wire size	1 x 1.5 mm^2 stranded wire
Screw terminal torque	0.4 Nm
Vibration	IEC 60068-2-6
2...25 Hz	±1.6 mm
25...100 Hz	±4 g

Common specifications

Supply

Supply voltage	7.5*...48** VDC
Internal power dissipation	≤ 850 mW
Additional min. supply voltage when using test terminals	0.8 V
Min. load resistance at >37 V supply	(Vsupply – 37) / 23 mA

Isolation voltage

Isolation voltage, test / working	2.5 kVAC / 55 VAC

Response time

Response time	75 ms
Programmable damping	0...60 s
Polarity protection	All inputs and outputs
Write protection	Jumper or software
Warm-up time	< 5 min. (1)
Start-up time	< 2.75 s
Programming	HART & PR 5909 Loop Link communications interface
Signal / noise ratio	> 60 dB
Long-term stability, better than	±0.05% of span / year (±0.18% of span / 5 years)
Signal dynamics, input	24 bit
Signal dynamics, output	18 bit
Effect of supply voltage change	< 0.005% of span / VDC
Accuracy	See manual for details
EMC immunity influence	< ±0.1% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst	< ±1%

Input specifications

RTD input

RTD type	Pt10...10000, Ni10...10000, Cu5...1000
Cable resistance per wire	50 Ω (max.)
Effect of sensor cable resistance (3-/4-wire)	< 0.002 Ω / Ω
Sensor current	< 0.15 mA
Sensor error detection	None, Shorted, Broken, Shorted or Broken

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
Sensor error detection	None, Shorted, Broken, Shorted or Broken

Linear resistance input

Measurement range / min. range (span)	0 Ω...100 kΩ / 25 Ω
Cable resistance per wire (max.)	50 Ω
Sensor current	< 0.15 mA
Effect of sensor cable resistance (3-/4-wire)	< 0.002 Ω / Ω
Sensor error detection	None, Broken

Potentiometer input

Potentiometer min....max	10 Ω...100 kΩ
Measurement range / min. range (span)	0...100% / 10%
Cable resistance per wire (max.)	50 Ω
Sensor current	< 0.15 mA
Effect of sensor cable resistance (4-/5-wire)	< 0.002 Ω / Ω
Sensor error detection	None, Shorted, Broken, Shorted or Broken

mV input

Measurement range	-800...+800 mV (bipolar)
Measurement range	-100...1700 mV
Min. measurement range (span)	2.5 mV
Input resistance	10 MΩ
Sensor error detection	None, Broken

Output specifications

Common output specifications

Normal range, programmable	3.8...20.5 / 20.5...3.8 mA
Extended range (output limits), programmable	3.5...23 / 23...3.5 mA
Updating time	10 ms
Load (@ current output)	≤ (Vsupply -7.5)/0.023 [Ω]
Load stability	< 0.01% of span / 100 Ω
Sensor error indication	Programmable 3.5…23 mA
NAMUR NE 43 Upscale/Downscale	> 21 mA / < 3.6 mA
HART protocol revisions	HART 7 and HART 5

Observed authority requirements

EMC	2014/30/EU
ATEX	2014/34/EU
RoHS	2011/65/EU
EAC	TR-CU 020/2011
EAC Ex	TR-CU 012/2011

Approvals

ATEX	DEKRA 18ATEX0135X
IECEx	IECEx DEK. 16.0029X
CSA	CSA 16.70066266
c FM us	FM16US0287X / FM16CA0146X
INMETRO	DEKRA 23.0002X
NEPSI	GYJ23.1227X
EAC Ex	EAEU KZ 7500361.01.01.08756
EU RO MR Type Approval	MRA0000023
SIL	SIL 2 / SIL 3 certified & fully assessed acc. to IEC 61508

NB

NAMUR NE95 report	Please contact us
* / **	See manual for details