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
- High accuracy across a wide ambient operating temperature of -50 to +85°C
- 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.

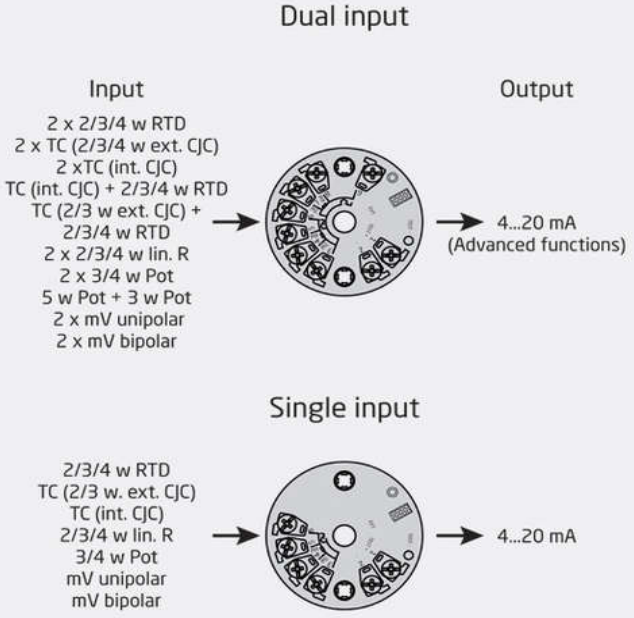
Technical characteristics

- 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 certification up to SIL 3 together with enhanced EMC Functional Safety testing to IEC 61236-3-1.
- Meets NAMUR NE21, NE43, NE44, NE89 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 20.2 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..... 70 ms
Programmable damping..... 0...60 s

Polarity protection..... All inputs and outputs
Write protection..... Jumper or software
Warm-up time..... < 5 min.
Start-up time..... < 2.75 s
Programming..... Loop Link & HART
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
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
Sensor error detection..... None, Shorted, Broken, Shorted or Broken

mV input

Measurement range..... -800...+800 mV (bipolar)
Measurement range..... -100 to 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
EAC..... Pending
RoHS..... 2011/65/EU

Approvals

ATEX 2014/34/EU..... DEKRA 16ATEX0047X
IECEx..... IECEx DEK. 16.0029X
CSA..... 70066266
FM..... FM16US0287X / FM16CA0146X
INMETRO..... DEKRA 16.0008X
NEPSI..... GYJ18.1054X
SIL..... SIL 2 / SIL 3 certified & fully assessed acc. to IEC 61508

NB

* / **..... See manual for details