TEMPERATURE TRANSMITTER
PR5437A

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.

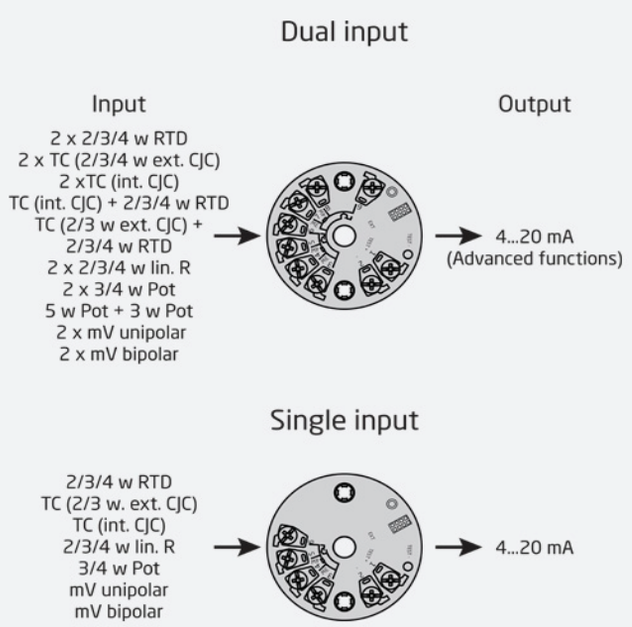
Technical characteristics

- 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.
- 5437xxSx is suitable for the use in systems up 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.

Application



Order

Type	Version	SIL approval	Marine approval
5437A	Single input (4 terminals) : 1 Dual input (7 terminals) : 1	SIL : S No SIL : -	Yes : M 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	:< 95% 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 mm² 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 / workin	: 2.5 kVAC / 55 VAC

Response time

Response time (programmable)	: 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	: 5 Ω (max.)
Sensor current	: Nom 0.2 mA
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

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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 18ATEX0135X
IECEx : IECEx DEK. 16.0029X
CSA : CSA 16.70066266
c FM us : FM16US0287X / FM16CA0146X
INMETRO : DEKRA 16.0008 X
NEPS : GYJ18.1054X
EAC Ex : RU C-DK.GB.98.V.00192
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