PERFORMANCE MADE SMARTER



2-wire HART 7 temperature transmitter

6437D

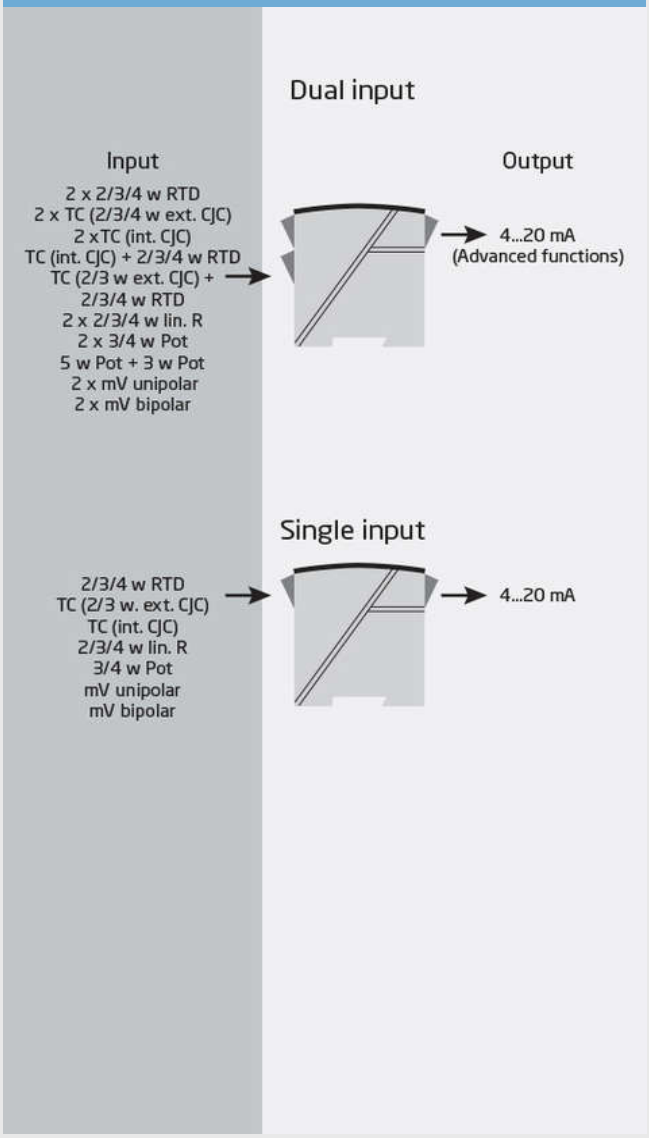
– RTD, TC, potentiometer, linear resistance and bipolar mV input
– Single or true dual inputs with sensor redundancy and drift detection
– Wide ambient operating temperature of -50 to +85°C
– Total accuracy from 0.014%
– 2.5 kVAC galvanic isolation
– Full assessment to IEC61508 : 2010 for use in SIL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

Application
- Temperature measurement of a wide range of TC and RTD types.
- Conversion of wide span linear resistance and potentiometer inputs to 4...20 mA.
- 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, 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 with runtime metering ensure maximum process traceability and sensor out of range protection.
- IEC 61508 : 2010 full assessment up to SIL 3 together with enhanced EMC Functional Safety testing to IEC 61236-3-1.
- 6437xxSx is suitable for the use in systems up to Performance Level “d” according to ISO-13849
- Meets NAMUR NE21, NE43, NE44, NE89 and NE107 compliant diagnostics information.

Mounting / installation / programming
- DIN rail mounting with up to 84 inputs per meter.
- Configuration via PReset using PR5909 Loop Link / HART modem, or by Asset Management tool (e.g. Pactware, AMS, HART communicator).
- The 6437D can be mounted in zone 0, 1, 2 and zone 21, 22 including M1 / Class I, Division 1, Groups A, B, C, D.

Applications



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Order

Type	Inputs		SIL approval		Marine approval	
6437D	Single input (4 terminals)	: 1	SIL	: S	Yes	: M
	Dual input (8 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..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 104 mm
Weight (single input / dual input)..... 150 g / 160 g
Wire size..... 0.13...2.08 mm^2 AWG 26...14 stranded wire
DIN rail type..... DIN EN 60715/35 mm
Screw terminal torque..... 0.5 Nm
Vibration..... IEC 60068-2-6
2...25 Hz..... ±1.6 mm
25...100 Hz..... ±4 g

Common specifications

Supply

Supply voltage..... 7.5*...30** VDC
Power dissipation, per channel..... ≤ 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 / 42 VAC

Response time

Response time..... 70 ms
Programmable damping..... 0...60 s

Polarity protection..... All inputs and outputs
Warm-up time..... < 5 min.
Start-up time..... < 2.75 s
Programming..... Loop Link & HART
Write protection..... Jumper or software
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
Basic accuracy, e.g. Pt100..... ≤ ±0.04°C
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
Basic accuracy, e.g. TC K..... ≤ ±0.25°C
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
Basic accuracy..... ≤ ±1.6 µA (0.01% of full output span)
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 & 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 16ATEX0047X
IECEx..... IECEx DEK. 16.0029X
CSA..... CSA 16.70066266
c FM us..... FM16US0287X / FM16CA0146X
INMETRO..... DEKRA 16.0008 X
NEPSI..... GYJ18.1057X
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

* / **	See manual for details