HART Programmable Transmitter TRH

- **2000 VAC input / output isolation**
- **Universal programmable input**
- **User-selectable 8 RTD types and 8 thermocouples**
- **Accepts various linear voltage and resistive signals**
- **Programmable input and output features**
- **Built-in digital filter**
- **Manual output control**
- **Programming via HART protocol**
- **Free configuration software**
- **Intrinsically safe version**

CE

HART
FIELD COMMUNICATIONS PROTOCOL

The intelligent isolated transmitter TRH is a programmable 2-wire HART device with 2000 V input/output isolation level. It is available in case prepared for mounting in 33 mm sensor heads, plastic protection box, and different Ex housings. The transmitter allows the user to program various input and output features including input signal type and range, output offset and calibration, reaction at sensor failure, fixed output current, digital filter, etc. TRH can be ordered with intrinsically safe option for Ex applications. The transmitter is easy to program via HART modem over the current loop using free configuration software "HartTemp". Thanks to its large capabilities and low price, TRH can be very useful in various industrial field applications requiring signal isolation and HART communication.

Technical specifications

Input

Input	(programmable)
Pt100; 3(4)-wire	min. -200...max. 850 °C
Pt500 (Pt1000); 3(4)-wire [5]	min. -200...max. 250 °C
Cu50 (Cu100); 3(4)-wire	min. -50...max. 150 °C
Ni100; 3(4)-wire	min. -60...max. 180 °C
Ni500 (Ni1000); 3(4)-wire [5]	min. -60...max. 180 (150) °C
RTD minimum range width	10 °C
Thermocouple "T"	min. -270...max. 400 °C
Thermocouple "E"	min. -270...max. 1000 °C
Thermocouple "J"	min. -210...max. 1200 °C
Thermocouple "K"	min. -270...max. 1372 °C
Thermocouple "N"	min. -270...max. 1300 °C
Thermocouple "S"("R")	min. -50...max. 1768 °C
Thermocouple "B"	min. 0...max. 1820 °C
T/C minimum range width	50 °C (500 °C for noble T/C)
Linear voltage [mV]	-10...75 mV, -100...100 mV [5]
Linear voltage [V]	-0.5...0.5 V [5], -1...2 V [5]
Minimum range [mV]	5 mV (20 mV for 2 V range)
Linear resistive	min. 0...max. 400(2000) Ω
Minimum range [Ω]	10 Ω (20 Ω for 2 k range)
Input / output isolation	2000 VAC for 1 min

Output

Output	(programmable)
Output range	4...20 mA, 2-wire
Linearly proportional to	measured value
Resolution	0.3 µA
Response time	1 s
Switch-on delay	≤ 5 s
Digital filter	programmable
Output calibration	configuration software
Output manual control	0...100% via configuration software
Sensor failure reaction	≤ 3.8 mA, ≥ 20.5 mA

Accuracy

Accuracy	
Measurement error	
- Pt500, Ni500	0.2 % from span
- Pt1000, Ni1000, Cu100, 0...2 kΩ	0.12 % from span
- other input types	0.08 % from span
Non-linearity	within measurement error
Temperature drift	negligible
Load and power supply influence	negligible
Long-term stability	≤ 0.05% from span per 1 year
Cold junction compensation	internal, automatic

Power supply

Power supply	
Supply voltage	7.5...45 VDC
Maximum line load	750 Ω at 24V/20mA

Interface

Interface	
Communication	HART protocol over current loop
Configuration software	"HartTemp", free

Operating conditions

Operating conditions	
Ambient temperature	-40...85 °C
Ambient humidity	0...90 %RH
Shocks and vibrations	4g, 2...150 Hz, according to EN 60068

Design and materials

Design and materials		
Case material	PC plastic with epoxy potting	
Wiring	screw terminals	
Mounting	in head [1,2,3]	in box [2]
Dimensions	ø44x24 mm	80x80x60 mm
Weight	approx. 34 g	approx. 170 g
Protection class	IP00	IP65
Intrinsic safety	Ex ia IIC T4	Ex ia IIC T4

[1] Head type "B" or any other with 33 mm distance between centers of the female threaded openings
[2] May be mounted on rail by a special snap-on accessory, which is ordered separately (see 'Accessories').
[3] May be mounted in different, separately ordered Ex housings for field applications (see 'Accessories').

Ordering code   TRH - G12 - #1.#2

Code	Feature or option	Code values
G12	Mounting	**B** - in head [1,2], **D** - in box IP65 (box included) [2], **E** - in Ex housing (includes mounting kit only) [4]
#1	Intrinsic safety	**X** - none [5], **E** - Ex ia IIC T4 certified
#2	Customized input and/or range	**X** - none, **Z** - custom input signal/range (specify!) [5]

[4] Does not include housing!
[5] Contact COMECO