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Temperature Transmitter

Features

- HART 5,6,7 COMPATIBLE
- UNIVERSAL INPUT, DUAL CHANNEL
- SIL HARDWARE SAFETY INTEGRITY
- FLASH TESTED TO 4 KV DC
- 4 to 20) mA OUTPUT

RS PRO DIN RAIL HART UNIVERSAL TEMPERATURE TRANSMITTER

RS Stock No.: 0458747



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Product Description

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Temperature Transmitter

This product is a HART 5 upwards, (generic device) compatible universal transmitter.
It accepts RTD, Thermocouple, Potentiometer or millivolt input signals and converts them to the industry standard (4 to 20) mA transmission signal.
Alternatively, HART multidrop mode can be selected.
The product is programmed using a standard USB lead and free configuration "USBSpeedlink" software.
Standard features (HART generic device) can also be programmed using HART communication.

ELECTRICAL INPUT		SPECIFICATIONS @20°C
Range + Options	**Accuracy**	**Stability**
Resistance		
(10 to 10000) Ω Excitation 200 uA Lead resistance (0 to 20) Ω (2,3 or 4 Wire connection)	(10 to 500) Ω ± 0.055 Ω, (500 to 2500) Ω ± 0.5 Ω, (2500 to 10500) Ω ±0.2 % of reading (+ Lead error on 2 wire)	(0 to 500) Ω 0.013 Ω/°C, (500 to 2500) Ω 0.063 Ω/°C, (2500 to 10500) Ω 0.27 Ω/°C
Slide wire		
(0 to 100) % Travel Wire resistance (1 to 100) KΩ	± 0.1 %	±0.001%/°C
mV		
(-205 to 205) mV DC (-1000 to 1000) mV DC	±0.02 mV ±10.0 mV	±0.005 mV/°C ±0.02 mV/°C

RTD INPUT		SPECIFICATIONS @20°C
RTD (2,3 or 4 wire Single/ 2 wire Dual Channel; isolated tip only for Dual operation)		
Type	**Range**	**Accuracy/ Stability**
Pt100 (IEC)	(-200 to 850) °C	0.2°C ± (°0.05% of reading) (Plus sensor error)
Pt500 (IEC)	(-200 to 850) °C	
Pt1000 (IEC)	(-200 to 600) °C	
Ni100	(-60 to 180) °C	
Ni120	(-70 to 180) °C	
Ni1000	(-40 to 150) °C	
Cu53	(-40 to 180) °C	
Cu100	(-80 to 260) °C	
Cu1000	(-80 to 260) °C	
Library contains more standards/types Including silicon sensors		
Temperature stability: - Refer to resistance stability values for thermal effect		

THERMOCOUPLE INPUT	SPECIFICATIONS @20°C
Thermocouple (Single/Dual Channel; isolated tip only for Dual operation)	

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Type	Range	Accuracy/ Stability
K	(-150 to 1370) °C	±0.1 % of full scale ± 0.5 °C (Plus sensor error)
J	(-200 to 1200) °C	
N	(-270 to 1300) °C	
E	(-260 to 1000) °C	
T	(-270 to 400) °C	±0.2 % of full scale ± 0.5 °C (Plus sensor error)
R	(0 to 1760) °C	±0.1 % of full scale ± 0.5 °C over range (800 to 1760) °C (Plus sensor error)
S	(0 to 1760) °C	
L	(-200 to 900) °C	±0.1 % of full scale ± 0.5 °C (Plus sensor error)
U	(-200 to 600) °C	
B	(0 to 1820) °C	
C	(0 to 2300) °C	
D	(0 to 2300) °C	
G	(0 to 2300) °C	
Library contains more standards/types		
Temperature stability: - Refer to mV stability values for thermal effect		

DUAL CHANNEL OPERATION

Thermocouples A & B	Functions; Average, Redundancy, A + B, A – B, Highest, Lowest
mV A & B	Functions; Average, A + B, A – B, Highest, Lowest
RTD A & B	Two wire connection. Functions; Average, A + B, A – B, Highest, Lowest

COLD JUNCTION (Ambient sensor) SPECIFICATIONS @20°C

Type/ Options	Range	Accuracy/ Stability/ Notes
Thermistor 10K Beta 3380	(-30 to 70) °C	±0.2 °C
Thermal drift	Zero at 20°C	±0.05 °C/°C

OUTPUT SPECIFICATIONS @20°C

Type/ Options	Range	Accuracy/ Stability/ Notes
Two wire current	(4 to 20) mA	(mA Out/ 2000) or 5 uA whichever is the greater
Thermal drift	Zero at 20°C	±1 uA/°C
User set minimum current	(3.5 to 4.0) mA	3.8 mA default
User set maximum current	(20 to 23.0) mA	20.5 mA default
User set error current	(3.5 to 23.0) mA	Any mA value within range
User pre-set current	(3.5 to 23.0) mA	For diagnostics
Loop effect	± 0.2 uA/V	
Loop supply	(10 to 30) V DC, > 35 mA	SELV
Max load	[(V supply – 10)/20] KΩ	700 Ω @ 24 V DC
Protection	Reverse and over voltage	

USB USER INTERFACE

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Type/ Options/ Function	Description	Notes
USB 2.0	Mini B USB	USB powers device for config Only. Power loop for live data.
Baud Rate	38,400	
Sensor configuration	Sensor type Sensor offset Sensor fail high or low Pre-set sensor value Set damping Set No. wires resistance Input Set fixed or auto cold junction	TC/mV/RTD/Ohms/Slide wire Dual TC/mV/RTD Dual use separate offsets Dual Share sensor fail For diagnostics 2, 3 or 4 wire
Profiler configuration	Set profiler input range Set profiler segments Enter profile X~Y values Set profiler output units Set the output process range TC & RTD input only set units	In sensor units (4 to 22) segments Profiler set up
Output signal	Select the process range for re-transmission Set minimum current Set maximum current Set the error current Trim 4.0 mA signal Trim 20 mA signal Pre-set Loop current	Set in profiler out units (3.5 to 4.0) mA (20 to 23.0) mA (3.5 to 23.0) mA (3.8 to 4.5) mA (19.5 to 20.5) mA (3.5 to 23.0) mA
Damping	User set process variable (PV) damping	(1 to 32) seconds to reach 70% of final value
Diagnostics	Read (PV, mA, ambient °C, error & power off) log points back from device Set the log period Clear log and start new log Export log data Detect open circuit sensor wire Calibration date, certificate number, calibrated by	Up to 150 points Log Rate (1 to 60) readings per hour
Live Data	Read process variable (PV) Read profiler input signal Read profiler output signal Read cold junction temperature Read % output Read mA output	
HART information	Read/write tag number Read/write tag date Set polling address Read/write description Read/write message Read/write final assembly number Read/write long tag	

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HART specification	Read manufacturers ID Read short ID Read HART revision Read device revision Read software revision Read hardware revision Read unique ID Read No. pre-ambles Read maximum No. variables Read No. of configuration changes Extended device status Extended manufacturers ID Extended distributes ID Device profile Device ID1, ID2 & ID3	

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HART INTERFACE		
Type Options Function	Description	Notes
HART Protocol 1200 baud FSK Version Hart 5 to 7 compatible Universal commands	1.Read primary variable (PV) 2.Read loop current and percentage of range 3.Read dynamic variables and Loop current 7.Read loop configuration 8.Read dynamic variable classifications 9.Read device variables with status 12.Read message 13.Read tag, descriptor and date 14.Read primary variable transducer Information 15.Read device information 16.Read final assembly number 17.Write message 18.Write tag, descriptor and date 19.Write final assembly number	
Additional universal commands	0. Read unique ID 6. Write polling address 11. Read unique ID associated with tag 21. Read unique ID associated with long tag	
Common practice commands	34. Write PV damping value 35. Write PV range 40. Enter/exit fixed current mode 41. Perform self-test 42. Perform device reset 44. Write PV units 45. Trim loop current zero 46. Trim loop current gain 49. Write primary variable transducer serial number 71. Lock device	

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GENERAL	
Function	**Description**
Isolation	Flash tested 5 seconds at 4 KV DC, working voltage 50 V AC
Reading update	200 ms
Response time	500 ms to reach 70% final value
Warm up	2 minutes
Start-up time	5 seconds

AMBIENT	
Temperature	Operating/storage (-30 to 70) °C
Humidity	Operating/storage (10 to 95) % Non-condensing
Installation enclosure	EN50022 DIN rail enclosure offering protection >= IP65
Configuration ambient	(10 to 30) °C
Temperature	Operating/storage (-30 to 70) °C

MECHANICAL	
Enclosure	DIN 43880
Material	Polyimide 6.6
Dimensions	(17.5 x 90 x 56.4) mm
Weight	Approximately 70 g
Colour	Grey

CONNECTIONS	
Output	Screw terminals 2.5 mm maximum Pins (4,5)
Input	Screw terminals 2.5 mm maximum Pins (7,8,9,12)
USB	Mini B USB
Output	Screw terminals 2.5 mm maximum Pins (4,5)

APPROVALS	
EMC	BS EN 61326 Industrial
Ingress protection	BS EN 60529
RoHS	Directive 2011/65/EO
SIL Accreditation	IEC 61508-2: 2010 clauses 7.4.4 and 7.4.5



