2-Wire Transmitter with HART® Protocol

Model 5335D

- RTD, TC, Ohm, or mV Input
- Extremely High Measurement Accuracy
- HART® Communication
- 1.5 kVAC Galvanic Isolation
- Complies with European ATEX and CSA/FM Requirements for Hazardous Location Installation

Application:

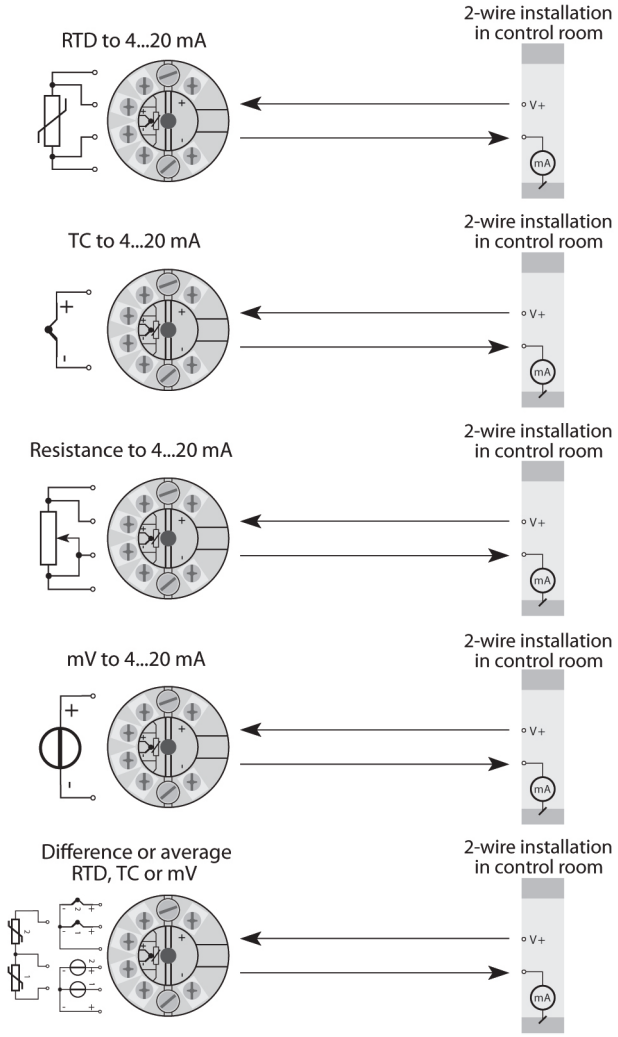
- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Difference or average temperature measurement of 2 sensor inputs.
- Conversion of linear resistance variation to a standard analog current signal.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.
- Connection of up to 15 transmitters to a digital 2-wire signal with HART® communication.

Technical Characteristics:

- Within seconds the user can program a 5335D to measure temperatures within all standard ranges.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- Continuous check of vital stored data.
- Sensor error detection according to the guidelines in NAMUR NE 89.

Mounting/Installation:

- DIN Form B sensor head compatible.
- Supplied with 2 x M4 screws on a 33 mm (1.3") BC (optional 6-32 screws available).



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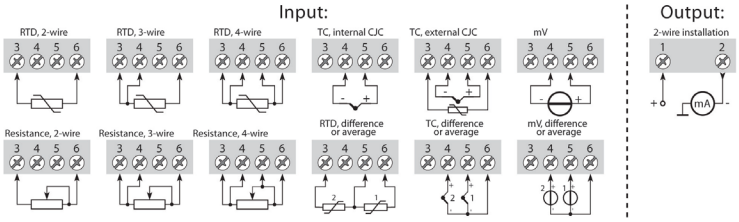
Specifications



Order: 5335D

Electrical Specifications

Specifications Range:

-40°C to +85°C

Common Specifications:

Supply voltage ..... 8.0...30 VDC
Voltage drop ..... 8.0 VDC
Isolation voltage, test / operation ..... 1.5 kVAC / 50 VAC
Warm-up time ..... 5 min.
Communications interface ..... Loop Link & HART®
Signal / noise ratio ..... Min. 60 dB
Signal dynamics, input ..... 22 bit
Signal dynamics, output ..... 16 bit
Calibration temperature ..... 20...28°C

Accuracy, the greater of general and basic values:

General Values		
Input Type	Absolute Accuracy	Temperature Coefficient
All	≤ ±0.05% of span	≤ ±0.005% of span / °C

Basic Values		
Input Type	Basic Accuracy	Temperature Coefficient
Pt100 and Pt1000	≤ ± 0.1°C	≤ ±0.005°C/°C
Ni100	≤ ± 0.2°C	≤ ±0.005°C / °C
Lin. R	≤ ± 0.1 Ω	≤ ± 5 mΩ/°C
Volt	≤ ±10 µV	≤ ± 0.5 µV/°C
TC type: E, J, K, L, N, T, U	≤ ±0.5°C	≤ ±0.025°C/°C
TC type: B, R, S, W3, W5	≤ ±1°C	≤ ±0.1°C/°C

EMC immunity influence ..... < ±0.1% of span
Extended EMC immunity:
NAMUR NE 21, A criterion, burst ..... < ±1% of span

Vibration ..... IEC 60068-2-6 Test FC
Lloyd's specification no. 1 ..... 4 g / 2...100 Hz
Max. wire size ..... 1 x 1.5 mm² (16 AWG) stranded wire
Humidity ..... < 95% RH (non-cond.)
Dimensions ..... Ø 44 x 20.2 mm

Protection degree (encl. / terminal) ..... IP68 / IP00

Electrical Specifications, Input:

Max. offset ..... 50% of selected max. value

RTD and Linear Resistance Input:

RTD Type	Min. Value	Max. Value	Min. Span	Standard
Pt100	-200°C	+850°C	10°C	IEC 60751
Ni100	-60°C	+250°C	10°C	DIN 43760
Lin. R	0 Ω	7000 Ω	10 Ω	------

Cable resistance per wire (max.) ..... 5 Ω
Sensor current ..... Nom. 0.2 mA

Voltage input:

Measurement range ..... -800...+800 mV
Min. span ..... 2.5 mV
Input resistance ..... 10 MΩ

TC Input:

Type	Min. Temperature	Max. Temperature	Min. Span	Standard
B	+400°C	+1820°C	100°C	IEC584
E	-100°C	+1000°C	50°C	IEC584
J	-100°C	+1200°C	50°C	IEC584
K	-180°C	+1372°C	50°C	IEC584
L	-100°C	+900°C	50°C	DIN 43710
N	-180°C	+1300°C	50°C	IEC584
R	-50°C	+1760°C	100°C	IEC584
S	-50°C	+1760°C	100°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	50°C	DIN 43710
W3	0°C	+2300°C	100°C	ASTM E988-90
W5	0°C	+2300°C	100°C	ASTM E988-90

Cold junction compensation ..... < ±1.0°C

Current Output:

Signal range ..... 4...20 mA
Min. signal range ..... 16 mA
Updating time ..... 440 ms
Load resistance ..... ≤ (Vsupply - 8) / 0.023 [Ω]

Sensor Error Detection:

Programmable ..... 3.5...23 mA

EEx / I.S. Approval*:

KEMA 03ATEX1537 X ..... Ex II 1 GD, T80°C...T105 °C
EEx ia IIC T6 / T4
Max. amb. temperature for T1...T4 ..... 85°C
Max. amb. temperature for T5 og T6 ..... 60°C
ATEX, applicable in zone ..... 0, 1, 2, 20, 21 or 22
FM, applicable in* ..... IS, Cl. I, Div. 1, Gr. A, B, C, D
IS, Cl. I, Zone 0, AEx ia IIC
FM Installation Drawing No. 5300Q502
CSA, applicable in* ..... IS, Cl. I, Div. 1, Gr. A, B, C, D
Ex ia IIC
IS, Cl. I, Zone 0, AEx ia IIC
CSA, Installation Drawing No. 533XQC03
INMETRO 09/UL-BRCO-0002* ..... BR-Ex ia IIC T4 or T6 or
-40°C ≤ Tamb.≤ +85°C, or
-40°C ≤ Tamb.≤ +60°C

Ex / I.S. Data*:

U_i ..... : 30 VDC
I_i ..... : 120 mADC
P_i ..... : 0.84 W
L_i ..... : 10 µH
C_i ..... : 1.0 nF

Marine Approval*:

Det Norske Veritas, Ships & Offshore ..... Stand. for Certic. No. 2.4

GOST R Approval*: ..... Certificate available upon request.

Observed Authority Requirements:	Standard:
EMC 2004/108/EC	EN 61326-1
ATEX 94/9/EC	EN 50014, EN 50020, EN 50281-1-1, EN 50284
FM	3600, 3611, 3610
CSA, CAN / CSA	C22.2 No. 157, E60079-11, UL 913
INMETRO	IEC 60079-0, IEC 60079-11

Of span = Of the presently selected range

Loop Link = PC compatible programming software

IS = Intrinsically Safe

*The transmitter is manufactured by PR electronics. All approvals listed are recognized under the PR name.

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