Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

iTEMP® HART® TMT142

Universal temperature transmitter for resistance thermometers, thermocouples, resistance transmitters and voltage transmitters, adjustable via HART®protocol

Application

- Temperature field transmitter with HART® protocol for converting various input signals to an analog, scalable 4 to 20 mA output signal
- Input:
  Resistance thermometer (RTD)
  Thermocouples (TC)
  Resistance transmitter (W)
  Voltage transmitter (mV)
- HART® protocol for local operation using handheld terminal (DXR375) or remotely via a PC
- Optional stainless steel housing for explosion proof applications

Your benefits

- Universally programmable with HART® protocol for various input signals
- Illuminated display, rotatable
- Operation, visualization and maintenance with PC, e.g. using FieldCare or ReadWin® 2000 operating software
- Two-wire technology, analog output 4 to 20 mA
- Undervoltage detection
- Highly accurate over entire operating temperature range
- Sensor monitoring:
  Failure conditioning, corrosion detection to NAMUR NE 89
- Failure conditioning in event of sensor breakage or sensor short-circuit, adjustable to NAMUR NE 43
- EMC to NAMUR NE 21, CE
- Approvals:
  ATEX (EEx ia, EEx d and dust ignition-proof), FM and CSA (IS, NI, XP and DIP)
- Galvanic isolation
- Output simulation
- Min./max. process value recorded
- Customized measuring range setup or expanded setup, see questionnaire, page 12

TI107R/24/ae

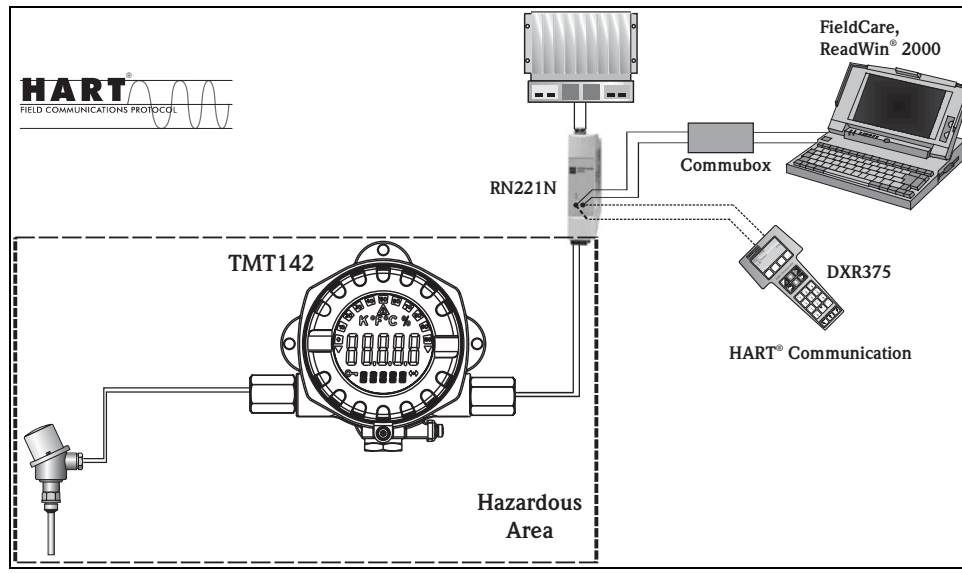
Endress+Hauser
People for Process Automation

Function and system design

Measuring principle

Electronic recording, conversion and display of input signals in industrial temperature measurement.

Measuring system



Example of an application of the field transmitter

The iTEMP® HART® temperature field transmitter TMT142 is a two-wire transmitter with an analogue output, an input for resistance thermometers and resistance transmitters in 2-wire, 3-wire or 4-wire connection, thermocouples and voltage transmitters. The LC display shows the current measured value digitally and as a bar graph with an indicator for limit value violation. The TMT142 can be operated via the HART® protocol using a handheld terminal (DXR375) or PC (FieldCare or ReadWin® 2000 operating software).

Corrosion detection

Sensor connection line corrosion can corrupt the measured value. For this reason, the device gives you the opportunity to detect corrosion for thermocouples and resistance thermometers with a 4-wire connection before measured value corruption takes place.

Input

Measured variable

Temperature (temperature linear transmission behaviour), resistance and voltage

Measuring range

The transmitter records different measuring ranges depending on the sensor connection and input signals (see 'Type of input').

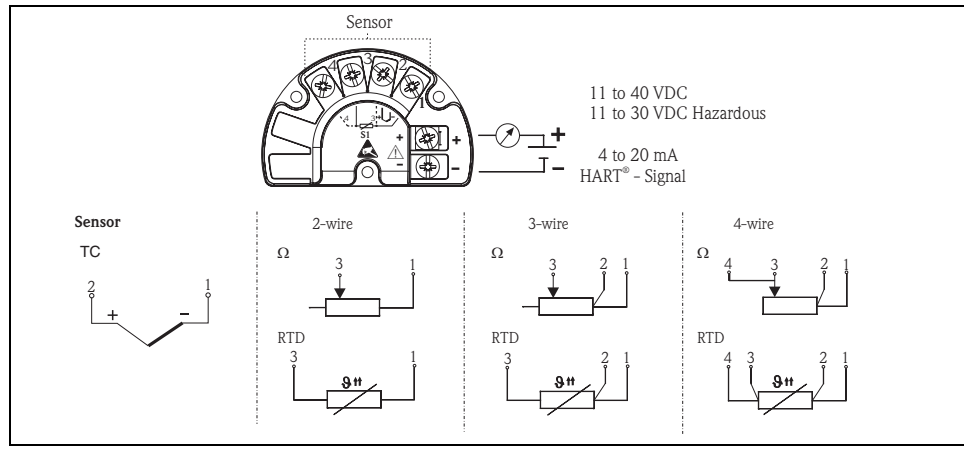
Input	Designation	Measuring range limits	Min. span
Resistance thermometer (RTD)			
To IEC 60751	Pt100	-200 to 850 °C (-328 to 1562 °F)	10 K (18 °F)
(α = 0.00385)	Pt200	-200 to 850 °C (-328 to 1562 °F)	10 K (18 °F)
	Pt500	-200 to 250 °C (-328 to 482 °F)	10 K (18 °F)
	Pt1000	-200 to 250 °C (-238 to 482 °F)	10 K (18 °F)
To JIS C1604-81 (α = 0.003916)	Pt100	-200 to 649 °C (-328 to 1200 °F)	10 K (18 °F)
To DIN 43760	Ni100	-60 to 250 °C (-76 to 482 °F)	10 K (18 °F)
(α = 0.006180)	Ni1000	-60 to 150 °C (-76 to 302 °F)	10 K (18 °F)
To Edison Copper Winding No.15 (α = 0.004274)	Cu10	-100 to 260 °C (-148 to 500 °F)	10 K (18 °F)
To SAMA (α = 0.003923)	Pt100	-100 to 700 °C (-148 to 1292 °F)	10 K (18 °F)
To Edison Curve (α = 0.006720)	Ni120	-70 to 270 °C (-94 to 518 °F)	10 K (18 °F)
To GOST	Pt50	-200 to 1100 °C (-328 to 2012 °F)	10 K (18 °F)
(α = 0.003911)	Pt100	-200 to 850 °C (-328 to 1562 °F)	10 K (18 °F)
To GOST (α = 0.004278)	Cu50, Cu100	-200 to 200 °C (-328 to 392 °F)	10 K (18 °F)
	Polynomial RTD	-200 to 850 °C (-328 to 1562 °F)	10 K (18 °F)
	Pt100 (Callendar - van Dusen)	-200 to 850 °C (-328 to 1562 °F)	10 K (18 °F)
	■ Type of connection: 2-wire, 3-wire or 4-wire connection ■ With 2-wire circuit, compensation of wire resistance possible (0 to 30 Ω) ■ With 3-wire and 4-wire connection, sensor wire resistance to max. 50 Ω per wire ■ Sensor current: ≤ 0.3 mA		
Resistance transmitter	Resistance Ω	10 to 400 Ω 10 to 2000 Ω	10 Ω 100 Ω
Thermocouples (TC)			
To NIST monograph 175, IEC 584	Type B (PtRh30-PtRh6)[1]	0 to +1820 °C (32 to 3308 °F)	500 K (900 °F)
	Type E (NiCr-CuNi)	-270 to +1000 °C (-454 to 1832 °F)	50 K (90 °F)
	Type J (Fe-CuNi)	-210 to +1200 °C (-346 to 2192 °F)	50 K (90 °F)
	Type K (NiCr-Ni)	-270 to +1372 °C (-454 to 2501 °F)	50 K (90 °F)
	Type N (NiCrSi-NiSi)	-270 to +1300 °C (-454 to 2372 °F)	50 K (90 °F)
	Type R (PtRh13-Pt)	-50 to +1768 °C (-58 to 3214 °F)	500 K (900 °F)
	Type S (PtRh10-Pt)	-50 to +1768 °C (-58 to 3214 °F)	500 K (900 °F)
	Type T (Cu-CuNi)	-270 to +400 °C (-454 to 752 °F)	50 K (90 °F)
to ASTM E988	Type C (W5Re-W26Re)	0 to +2320 °C (32 to 4208 °F)	500 K (900 °F)
	Type D (W3Re-W25Re)	0 to +2495 °C (32 to 4523 °F)	500 K (900 °F)
to DIN 43710	Type L (Fe-CuNi)	-200 to +900 °C (-328 to 1652 °F)	50 K (90 °F)
	Type U (Cu-CuNi)	-200 to +600 °C (-328 to 1112 °F)	50 K (90 °F)
	■ Internal cold junction (Pt100) ■ Accuracy of cold junction: ± 1 K ■ Max. sensor resistance 10 kΩ (if sensor resistance is greater than 10 kΩ, error message as per NAMUR NE 89)		
Voltage transmitter (mV)	Millivolt transmitter (mV)	-20 to 100 mV	5 mV

1) Increasing inaccuracy for temperatures < 300 °C (< 572 °F)

Output

Output signal	Analog 4 to 20 mA, 20 to 4 mA
Signal on alarm	■ Underranging: Linear drop to 3.8 mA ■ Overranging: Linear rise to 20.5 mA ■ Sensor break; sensor short-circuit (not for thermocouples TC): ≤ 3.6 mA or ≥ 21.0 mA (configurable 21.6 mA to 23 mA)
Load	Max. ($V_{power\ supply}$ – 11 V) / 0.022 A (current output)
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Filter	1st order digital filter: 0 to 60 s
Galvanic isolation	U = 2 kV AC (input/output)
Input current required	≤ 3.5 mA
Current limit	≤ 23 mA
Switch-on delay	4 s (during switch-on operation I_a= 4 mA)

Power supply

Electrical connection	
Supply voltage	U_b= 11 to 40 V (8 to 40 V without display), reverse polarity protection Warning! Power must be fed to the device from an 11 to 40 VDC power supply in accordance with NEC Class 02 (low voltage/current) with short-circuit power limit to 8 A/150 VA.
Cable entry	See "Product structure"
Residual ripple	Perm. residual ripple U_{ss} ≤ 3 V at U_b ≥ 13.5 V, $f_{max.}$ = 1 kHz

Accuracy

Response time

1 s

Reference operating conditions

Calibration temperature: +25 °C ± 5 K; (+77 °F ± 9 °F)

Maximum measured error

	Designation	Accuracy		
		Digital		D/A[1]
Resistance thermometer (RTD)	Cu100, Pt100, Ni100, Ni120 Pt500 Cu50, Pt50, Pt1000, Ni1000 Cu10, Pt200	0.2 K (0.36 °F) 0.6 K (1.08 °F) 0.4 K (0.72 °F) 2 K (3.6 °F)	0.1 K (0.18 °F)[2] 0.3 K (0.54 °F)[2] 0.2 K (0.36 °F)[2] 1 K (1.8 °F)[2]	0.02% 0.02% 0.02% 0.02%
Thermocouples (TC)	K, J, T, E, L, U N, C, D S, B, R	typ. 0.5 K (0.9 °F) typ. 1 K (0.18 °F) typ. 2 K (3.6 °F)	typ. 0.25 K (0.45 °F)[2] typ. 0.5 K (0.9 °F)[2] typ. 1 K (1.8 °F)[2]	0.02% 0.02% 0.02%

1) % relates to the set span. Accuracy = digital + D/A accuracy

2) Only with the "Advanced Electronics" option

	Measuring range	Accuracy		
		Digital		D/A[1]
Resistance transmitter (Ω)	10 to 400 Ω 10 to 2000 Ω	± 0.08 Ω ± 1.6 Ω	± 0.04 Ω[2] ± 0.8 Ω[2]	0.02% 0.02%
Voltage transmitter (mV)	-20 to 100 mV	± 20 µV	± 10 µV[2]	0.02%

1) % relates to the set span. Accuracy = digital + D/A accuracy

2) Only with the "Advanced Electronics" option

Physical input range of the sensors	
10 to 400 Ω	Cu10, Cu50, Cu100, polynomial RTD, Pt50, Pt100, Ni100, Ni120
10 to 2000 Ω	Pt200, Pt500, Pt1000, Ni1000
-20 to 100 mV	Thermocouple type: C, D, E, J, K, L, N
-5 to 30 mV	Thermocouple type: B, R, S, T, U

Repeatability

0.03% of the physical input range (15 Bit)
Resolution A/D conversion: 18 Bit

With the "Advanced Electronics" option:
0.015% of the physical input range (16 Bit)

Influence of supply voltage

≤ ±0.005%/V deviation from 24 V, related to the full scale value

Long-term stability

≤ 0.1 K (0.18 °F)/year or ≤ 0.05%/year
Data under reference conditions. % relates to the set span. The larger value applies.

Influence of ambient temperature (temperature drift)

Total temperature drift = input temperature drift + output temperature drift

Effect on the accuracy when ambient temperature changes by 1 K (1.8 °F)		
Input 10 to 400 Ω	0.002% of measured value	0.001% of measured value[1)]
Input 10 to 2000 Ω	0.002% of measured value	0.001% of measured value[1]
Input -20 to 100 mV	typ. 0.002% of measured value (maximum value = 1.5 x typ.)	typ. 0.001% of measured value[1] (maximum value = 1.5 x typ.)
Input -5 to 30 mV	typ. 0.002% of measured value (maximum value = 1.5 x typ.)	typ. 0.001% of measured value[1] (maximum value = 1.5 x typ.)
Output 4 to 20 mA	typ. 0.002% of measured value (maximum value = 1.5 x typ.)	typ. 0.001% of span[1] (maximum value = 1.5 x typ.)

1) Only with the "Advanced Electronics" option

Typical sensor resistance change when process temperature changes by 1 K (1.8 °F):				
Cu10: 0.04 Ω	Pt200: 0.8 Ω	Ni120: 0.7 Ω	Cu50: 0.2 Ω	Pt50: 0.2 Ω
Cu100, Pt100: 0.4 Ω	Pt500: 2 Ω	Pt1000: 4 Ω	Ni100: 0.6 Ω	Ni1000: 6 Ω

Typical change in thermoelectric voltage when process temperature changes by 1 K (1.8 °F):					
B: 10 µV	C: 20 µV	D: 20 µV	E: 75 µV	J: 55 µV	K: 40 µV
L: 55 µV	N: 35 µV	R: 12 µV	S: 12 µV	T: 50 µV	U: 60 µV

Examples for calculating the accuracy:

- **Example 1 (without the "Advanced Electronics" option):**
  Input temperature drift $\Delta\vartheta$ = 10 K (18 °F), Pt100, span 0 to 100 °C (32 to 212 °F)
  Maximum process value: 100 °C (212 °F)
  Measured resistance value: 138.5 Ω (see IEC751)
  Typ. influence in Ω: (0.002% of 138.5 Ω) * 10 = 0.0277 Ω
  Conversion Ω to °C: 0.0277 Ω / 0.4 Ω/K = 0.07 K (0.013 °F)
- **Example 2 (without the "Advanced Electronics" option):**
  Input temperature drift $\Delta\vartheta$ = 10 K (18 °F), thermocouple type K with span 0 to 600 °C (32 to 1112 °F)
  Maximum process value: 600 °C (1112 °F)
  Measured thermoelectric voltage: 24905 µV (see IEC584)
  Typ. influence in µV: (0.002% of 24905 µV) * 10 = 5 µV
  Conversion Ω to °C: 5 µV / 40 µV/K = 0.12 K (0.216 °F)
- **Example 3 (without the "Advanced Electronics" option):**
  Output temperature drift $\Delta\vartheta$ = 10 K (18 °F), measuring range 0 to 100 °C (32 to 212 °F)
  Span: 100 K (180 °F)
  Typical influence: (0.002% of 100 K) * 10 = 0.02 K; (0.002% of 180 °F) * 10 = 0.036 °F
- **Example 4 (with the "Advanced Electronics" option):**
  Max. possible measured error $\Delta\vartheta$ = 10 K (18 °F), Pt100, measuring range 0 to 100 °C (32 to 212 °F)
  Measured error Pt100: 0.1 K (0.18 °F)
  Output measured error: 0.02 K (0.02% of 100 K); 0.04 °F (0.02% of 180 °F)
  Input temperature drift: 0.03 K (0.05 °F)
  Output temperature drift: 0.01 K * 1.5 = 0.015 K; (0.018 °F * 1.5 = 0.027 °F)
  Max. possible error (total of errors): 0.165 K (0.297 °F)

$\Delta\vartheta$ = deviation of ambient temperature from the reference operating condition

Total measuring point error = max. possible measured error + temperature sensor error

Influence of cold junction

Pt100 DIN IEC 751 Cl. B (internal cold junction with thermocouples TC)

Installation

Installation instructions

Mounting location
Direct mounting on the temperature sensor or indirect mounting using mounting bracket (see 'Accessories').

Environment

Ambient temperature limits

- Without display: -40 to +85 °C (-40 °F to +185 °F)
- With display: -40 to +80 °C (-40 °F to +176 °F)

For use in hazardous areas, see Ex certificate

Note!
The display can react slowly for temperatures < -20 °C (< -4 °F). Readability of the display cannot be guaranteed at temperatures < -30 °C (-22 °F).

Storage temperature

- Without display: -40 to +100 °C (-40 °F to +212 °F)
- With display: -40 to +85 °C (-40 °F to +185 °F)

Altitude

Up to 2000 m (6560 ft) above sea level according to IEC 61010-1, CSA 1010.1-92

Climate class

As per EN 60 654-1, Class C

Degree of protection

IP 67, NEMA 4x

Shock and vibration resistance

3g / 2 to 150 Hz as per IEC 60 068-2-6

Electromagnetic compatibility (EMC)

Interference immunity and interference emission as per EN 61 326-1 (IEC 1326) and NAMUR NE 21
0.08 to 2 GHz 10 V/m; 1.4...2 GHz 30 V/m to EN 61000-4-3

Condensation

Permitted

Installation category

I

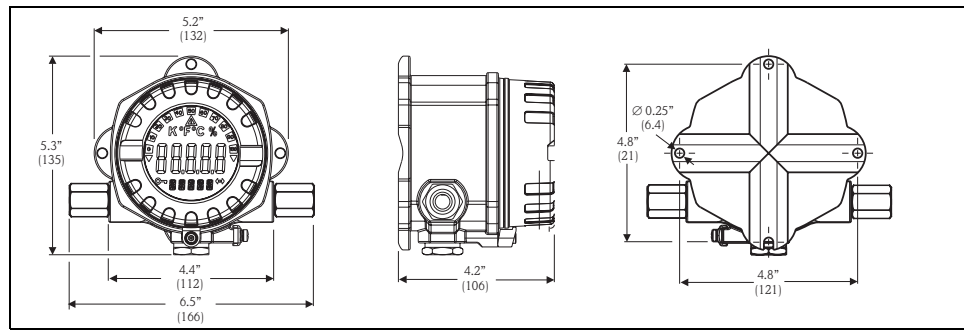
Pollution degree

2

Mechanical construction

Design, dimensions

Die cast aluminum housing for general purpose or optional stainless steel housing



Dimensions in inches (mm)

Weight

- Approx. 1.6 kg (3.53 lb) (aluminum housing)
- Approx. 4.2 kg (9.26 lb) (stainless steel housing)

Material

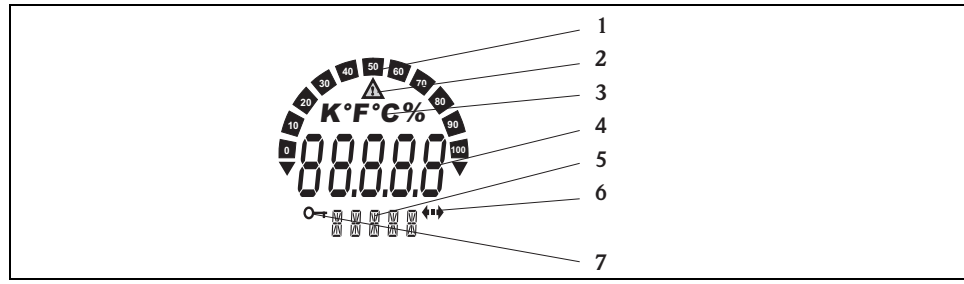
Housing	Nameplate
Die-cast aluminum housing AlSi10Mg with powder coating on polyester basis	Aluminum AlMgl, anodized in black
Stainless steel 1.4435 (AISI 316L)	1.4301 (AISI 304)

Terminals

Cables / wires up to max. 2.5 mm^2 (AWG 13) plus ferrule

Human interface

Display elements



LC display of the field transmitter (illuminated, can be rotated in 90 stages)

Item 1: Bar graph display in 0 % stages with indicators for overranging/underranging
Item 2: 'Caution' display
Item 3: Unit display K, °F, °C or %
Item 4: Measured value display (digit height 20.5 mm / 0.81")
Item 5: Status and information display
Item 6: 'Communication' display
Item 7: 'Programming disabled' display

Operating elements

No operating elements are present directly on the display. The device parameters of the field transmitter are configured using the DXR375 handheld terminal or a PC with Commubox FXA191 and operating software (e.g. FieldCare or ReadWin® 2000).

Remote operation

Configuration: See 'Operating elements'
Interface: HART® communication via transmitter power supply (e.g. RN221N; see 'Measuring system').
Configurable device parameters (selection): Sensor type and type of connection, engineering units (°C/°F), measuring ranges, internal/external cold junction, compensation of wire resistance with 2-wire connection, failure mode, output signal (4 to 20/20 to 4 mA), digital filter (damping), offset, TAG+descriptor (8+16 characters), output simulation, customized linearisation, recording of min./max. process value, analog output: channel 1 (C1)

Certificates and approvals

CE mark

The device meets the statutory requirements of the EC directives. Endress+Hauser confirms successful testing of the device by affixing to it the CE mark.

Ex approval

Information about currently available Ex versions (ATEX, FM, CSA, etc.) can be supplied by your E+H Sales Centre on request. All explosion protection data are given in a separate documentation which is available upon request.

UL

Recognized component to UL 3111-1

Other standards and guidelines

- IEC 60529: Degrees of protection through housing (IP code)
- IEC 61010: Protection measures for electrical equipment for measurement, control, regulation and laboratory procedures
- IEC 1326: Electromagnetic compatibility (EMC requirements)
- NAMUR: Association for Standards for Control and Regulation in the Chemical Industry

CSA GP

CSA General Purpose

Ordering information

Product structure

TMT142	iTEMP® HART® field transmitter TMT142

Approval

A	Version for non hazardous areas	
B	ATEX	II1G EEx ia IIC T4/T5/T6
C	FM	IS, NI I/1+2/A-D
D	CSA	IS, NI I/1+2/A-D
E	ATEX	II2G EEx d IIC T6
F	FM	XP, NI, DIP I,II,III/1+2/A-G
G	CSA	XP, NI, DIP I,II,III/1+2/A-G
L	ATEX	II3G EEx nA IIC T4/T5/T6
N	ATEX	II1/2D
O	CSA	General Purpose
P	IECEx	Ex ia IIC T6/T5/T4
R	IECEx	Ex d IIC T6/T5/T4
T	ATEX	II1/2GD EEx ia IIC T4/T5/T6

Housing

1	Alu w/o display
2	Alu + display
3	316L, w/o display
4	316L, + display

Cable entry

1	3x thread NPT1/2
2	3x thread M20x1.5
5	1x thread M24x1.5 + 2x M20x1.5
6	2x cable gland M20x1.5

Mounting bracket

1	Not selected
3	Pipe 2", 316L

Configuration connection

A	Factory setup
2	RTD 2-wire
3	RTD 3-wire
4	RTD 4-wire
1	Thermocouple TC

Configuration sensor type

A	Factory setup
B	Type B, 0...1820 °C, min. span 500K (32 to 3308 °F, min. sp. 900 °F)
C	Type C, 0 ..2320 °C, min. span 500K (32 to 4208 °F, min. sp. 900 °F)
D	Type D, 0...2495 °C, min. span 500K (32 to 4523 °F, min. sp. 900 °F)
E	Type E, -200...1000 °C, min. span 50K (-328 to 1832 °F, min. sp. 90 °F)
J	Type J, -200...1200 °C, min. span 50K (-328 to 2192 °F, min. sp. 90 °F)
K	Type K, -200...1372 °C, min. span 50K (-328 to 2501 °F, min. sp. 90 °F)
L	Type L, -200..900 °C, min. span 50K (-328 to 1652 °F, min. sp. 90 °F)
N	Type N, -270...1300 °C, min. span 50K (-454 to 2372 °F, min. sp. 90 °F)
R	Type R, -0...1768 °C, min. span 50K (32 to 3214 °F, min. sp. 90 °F)
S	Type S, -0...1768 °C, min. span 50K (32 to 3214 °F, min. sp. 90 °F)
T	Type T, -270...400 °C, min. span 50K (-454 to 752 °F, min. sp. 90 °F)
U	Type U, -200...600 °C, min. span 50K (-328 to 1112 °F, min. sp. 90 °F)
V	Voltage transmitter -20..100mV, min. span 5mV
1	Pt100, -200...850 °C, min. span 10K (-328 to 1562 °F, min. sp. 18 °F) to IEC 751 (a = 0.00385)
2	Ni100, -60...250 °C, min. span 10K (-76 to 482 °F, min. sp. 18 °F)
3	Pt500, -200...250 °C, min. span 10K (-328 to 482 °F, min. sp. 18 °F)
4	Pt100, -200...649 °C, min. span 10K (-328 to 1200 °F, min. sp. 18 °F)
5	Pt1000, -200...250 °C, min. span 10K (-328 to 482 °F, min. sp. 18 °F)
6	Ni1000, -60...150 °C, min. span 10K (-76 to 302 °F, min. sp. 18 °F)
7	Resist. transmitter 10...400 Ohm, min. span 10 Ohm
8	Resist. transmitter 10...2000 Ohm, min. span 100 Ohm

TMT142-	⇐ **order code (part 1)**

Configuration	
A	Factory setup Pt100/3-wire/0 to 100 °C (32 to 212 °F)
B	Measuring range, see additional spec.
C	TC config. range, see questionnaire
D	RTD config. range, see questionnaire

Additional option	
A	Not selected
B	Works calibration certificate*, 6 point
C	Advanced electronic
D	Advanced electronic + 6 point works calibration certificate*
K	Standard model, North American region
S	Standard model, China
T	Advanced electronic, China

Sensor input	
A	1 x input

Version	
1	Standard

TMT142-	**A**	**1**	⇐ **order code (complete)**

* The factory calibration certificate is an evaluation and documentation of 6 fixed resistance values over the complete measuring range.

Customized options

Order No. 51003527	TAG print/configuration 8 char
Order No. 51003546	Descriptor print/configuration 16 char
Order No. 51002393	Metal TAG

Questionnaire

Questionnaire Endress+Hauser iTEMP temperature transmitter
Customer specific setup / Kundenspezifische Einstellung

Standard setup / Standardeinstellung

Sensor 1 (S1)

TC ( ) B ( ) C ( ) D ( ) E ( ) J
( ) K ( ) L ( ) N ( ) R ( ) S
( ) T ( ) U

RTD **( ) Pt100** ( ) Pt500 ( ) Pt1000
( ) Ni100 ( ) Ni500 ( ) Ni1000

( ) mV ( ) 10...400 Ohm ( ) 10...2000 Ohm

( ) 2 wire **( ) 3 wire** ( ) 4 wire

Unit / Einheit **( ) °C** ( ) °F ( ) K ( ) °R ( ) mV ( ) Ohm

Range / Messbereich (not / nicht PROFIBUS-PA)
Low scale Anfang
High scale Ende
Bitte beachten!: Messbereich und min. Spanne (s. Techn. Daten)
Note!: Range and min. span (s. Techn. data)

Bus address / Busadresse (only / nur PROFIBUS-PA) **[0...126]**

Expanded setup / Erweiterte Einstellung

Reference junction / Vergleichsstelle **( ) intern** ( ) extern [0...80°C; 32...176°F] (only / nur TC)

Compensation wire resistance / Kompensation Leitungswiderstand S1 [**0**...30 Ohm] (only / nur RTD 2 wire)

Failure mode / Fehlerverhalten ( ) ≤ 3.6 mA **( ) ≥ 21.0 mA** (not / nicht PROFIBUS-PA)

Output / Ausgang **( ) 4...20 mA** ( ) 20...4 mA (not / nicht PROFIBUS-PA)

Filter [**0**, 1, 2,..., 60s]

Offset S1 [-10... **0**...+10 K/-18...0...+18 °F]

Line voltage filter/Netzspannungsfilter **( ) 50 Hz** ( ) 60 Hz

TAG

(8 char. TAG + 16 char. Descriptor)

DESCRIPTOR

Endress+Hauser
People for Process Automation

Accessories

Mounting bracket	■ Mounting bracket, stainless steel pipe 1.5-3", 316L Order No. 51007995
Cable gland	■ Cable gland M20x1.5 Order No. 51004949 ■ Cable gland NPT 1/2" D4-8.5, IP68 Order No. 51006845 ■ Cable entry adapter M20x1.5 to NPT 1/2" Order No. 51004387
Overvoltage protection	■ Surge arrester HAW569 Order code: HAW569-A11A for non-hazardous areas Order code: HAW569-B11A for Ex areas ATEX 2(1)G EEx ia IIC
Active barrier	■ Active barrier RN221 for non-hazardous areas or as Ex version Order code: RN221-... see "Documentation"

Documentation

- ❑ Field of activities brochure 'Temperature measurement' (FA006T/09/en)
- ❑ Installation instructions, FieldCare configuration software (BA031S/04/a4)
- ❑ Technical Information 'Fieldgate FXA520' (TI369F/00/en)
- ❑ Supplementary Ex documentation:
  ATEX II2G EEx d: XA048R/09/a3
  ATEX II1/2D: XA049R/09/a3
  ATEX II1G: XA050R/09/a3
  ATEX II3G: XA052R/09/a3
  ATEX II1/2GD: XA066R/09/a3
- ❑ Technical Information 'Active barrier RN221' (TI073R/09/en)
- ❑ Technical Information 'Surge arrester HAW569' (TI103R/09/en)

United States	Canada	Mexico
Endress+Hauser, Inc. 2350 Endress Place Greenwood, IN 46143 Tel. 317-535-7138 Sales 888-ENDRESS Service 800-642-8737 fax 317-535-8498 inquiry@us.endress.com www.us.endress.com	Endress+Hauser Canada 1075 Sutton Drive Burlington, ON L7L 5Z8 Tel. 905-681-9292 800-668-3199 Fax 905-681-9444 www.ca.endress.com	Endress+Hauser, México, S.A. de C.V. Av. Gustavo Baz No. 43 Fracc. Bosques de Echegaray Naucalpan de Juárez, C.P. 53310, Estado de México México Tel: (52) 55-5371-1110 Fax (52) 55-5371-1128 eh.mexico@mx.endress.com

TI107R/24/ae/02.07

Endress+Hauser

People for Process Automation