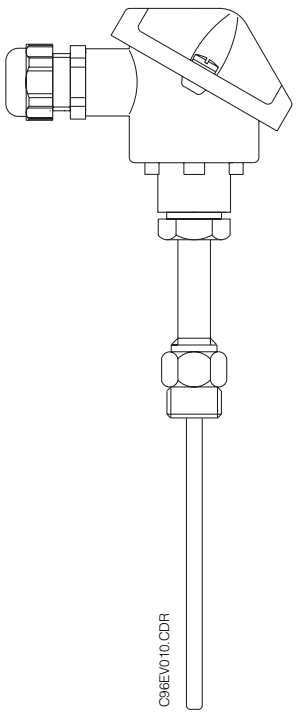
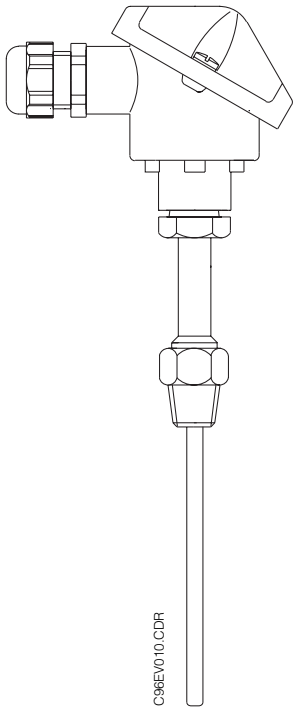
Technical
Information
TI 174T/02/en

RTD Thermometer
omnigrad TST288

Heavy duty - General purpose
M.I. replaceable inset
With extension neck
and male connection to thermowell



TST288
with G/M thread



TST288
with NPT thread

Description
TST288 RTD thermometer assembly includes a replaceable single or double Pt100 inset, in mineral insulated cable, which can be selected between standard or glass version (for high vibration level application).
From the TET family, the inset is available either with flying leads for head transmitter mounting or with terminal block.
The terminal head can be selected from a wide choice of standard items (see the Order key or TA20 Technical Information for more details).
TST288 is suitable for bar stock and welded tube thermowells with female connection (refer to TA500 series).

Application
TST288 in combination with a thermowell is a heavy duty RTD thermometer. It covers a wide variety of market requirements worldwide.
It is widely used in many heavy duty applications either in vessels or in pipes. Typical applications can be found in the chemical industry, petroleum refineries, power stations, boilers, incinerators and everywhere a standard mechanical resistance is sufficient.

Quality made by
Endress+Hauser
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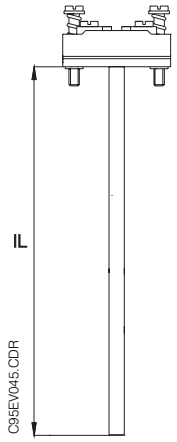
Endress+Hauser
Nothing beats know-how

Technical data



TET inset

Mineral Insulated Replaceable Inset

Sensing element: Platinum resistance, 1 or 2 x Pt100 Ω at 0°C
Tolerances: class A or B to IEC 751, 1/3 DIN B
Wiring: 3 or 4 wire connections
Insulation resistance: ≥ 100 MΩ , test voltage 250 V at ambient temperature
Electrical connections: flying leads or terminal block

Model	Sheath diameter (mm)	RTD element type	Operating temperature (°C)	Response time values [1] (s)	
				T_{50}	T_{90}
TET100	6	standard	-50 ÷ +600	3.5	8
TET102	6	glass	-50 ÷ +400	3.5	8
TET105	3	standard	-50 ÷ +400	3	6
TET107	3	glass	-50 ÷ +400	3	6
TET200	2 x 3	standard	-50 ÷ +400	3	6

Table A - Note **1** : according to IEC 751, in moving water at 0.4 m/s

Stem: mineral insulated cable
Sheath: AISI 316L / W.1.4404
Replacement: inset length IL is calculated as follows
IL = ML + N + 28 mm where
ML = Insertion length
N = Neck length

Thermowell connection

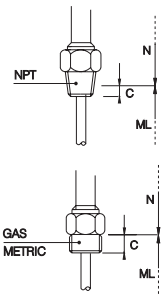
Engaging thread	Threaded	C (mm)
	1/2" NPT	8
	3/4" NPT	8.5
	1" NPT	10
	M14 x 1.5	14
	M18 x 1.5	14
	M20 x 1.5	14
	G 3/8"	13
	G 1/2"	20
	G 3/4"	20
	G 1"	25

Table B

Protecting tube

Version: TA500 thermowell series
Insertion length: insertion length ML is calculated as follows
ML = A - D where
A = Thermowell nominal length
D = Thermowell bottom thickness

Terminal head

Version: refer to Order key
Protection class: typical IP55
Electrical connections: PG11, PG16, 1/2" NPT depending on head version

Built-in transmitter

(*)	Features	Model
A	Transmitter 4-20mA, 0...+50°C	Analogue - Fixed range TMT137
B	Transmitter 4-20mA, 0...+100°C	
C	Transmitter 4-20mA, 0...+150°C	
D	Transmitter 4-20mA, 0...+200°C	
F	Analogue output without I/O isolation	PC Programmable TMD831
G	Analogue output with I/O isolation	
J	Hart, Analogue with I/O isolation	Hart protocol - TMD832
L	Profibus-PA with I/O isolation	Fieldbus - TMD834
0	None	Others
1	Ordered separately	
9	Built-in transmitter as specified	
	Product designation for built-in transmitter	

Table C - Note **(*)** : refer to Order key

Order key

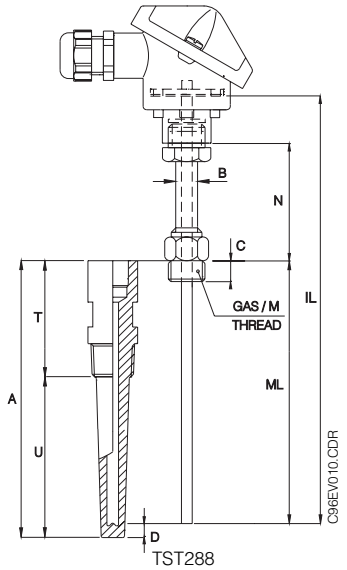
- Each TST288 RTD thermometer must be ordered with corresponding thermowell selected from TA500 series.
- For inset replacement see Technical data.
- Accuracy statement is referred to the replaceable inset only as defined by IEC 751 without any protecting thermowell which may introduce thermal drift due to process connection heat dissipation in conjunction to short immersion lenghts. For a correct temperature measurement the thermowell immersion length must be 20 times its diameter. Shorter immersion lengths can be supplied but the thermometer requires an external (thermowell connection, neck and connection head) thermal insulation.
- ***(2)*** for standard DIN 43763 Type D

(3) Max length 990 mm when standard **bar stock** thermowell is required.

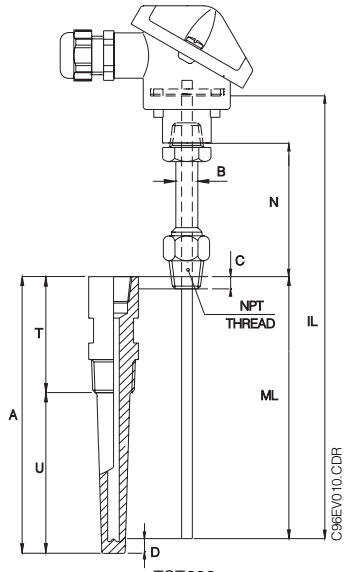
Max length 4000 mm when standard **pipe** thermowell is required.

Max length 50000 mm when **NO standard** thermowell is required.

(4) Contemporary selection of terminal block and built-in transmitter is allowed with TA20D head only.



TST288
with G/M thread



TST288
with NPT thread

TST288- RTD Thermometer - Heavy duty - General purpose
M.I. replaceable inset - With extension neck and male connection to thermowell

Thermowell connection
C - G 3/8"
D - G 1/2"
F - G 3/4"
H - G 1"
N - 1/2" NPT
P - 3/4" NPT
Q - 1" NPT
V - M14 x 1.5
W - M18 x 1.5 ***(2)***
Z - M20 x 1.5
Y - Special thermowell connection

Neck length N
B - N = 63 mm
C - N = 83 mm
D - N = 103 mm
E - N = 128 mm
F - N = 145 mm ***(2)***
G - N = 175 mm ***(2)***
X - N = ... mm neck length to specification (min.75mm-max.300mm)
Y - N = ... mm special neck length

Neck tube material and diameter B
G - AISI316Ti/W.1.4571, Ø 9 mm
J - AISI316Ti/W.1.4571, Ø 11 mm ***(2)***
L - AISI316Ti/W.1.4571, Ø 13 mm
Y - Special version

Insertion length ML
A - 100 mm
B - 140 mm ***(2)***
C - 200 mm ***(2)***
D - 260 mm ***(2)***
X - ..... mm length to specification (min.50mm-max.990mm) ***(3)***
Y - ..... mm special length

RTD inset material and diameter
1 - MgO cable AISI316L/W1.4404 - Ø 3 mm (TET105/107)
3 - MgO cable AISI316L/W1.4404 - Ø 6 mm (TET100/102)
8 - MgO cable AISI316L/W1.4404 - Double Ø 3 mm (for TET200 only)

Electrical connections
2 - Flying leads
3 - Terminal block ***(4)***

RTD Class and type of construction

TET100 & TET105 Standard RTD
B - standard RTD 1 Pt100, class B, 3 wires
D - standard RTD 2 Pt100, class B, 3 wires
E - standard RTD 1 Pt100, class B, 4 wires
H - standard RTD 1 Pt100, class A, 3 wires
L - standard RTD 2 Pt100, class A, 3 wires
M - standard RTD 1 Pt100, class A, 4 wires
P - standard RTD 1 Pt100, class 1/3 DIN, 3 wires
Q - standard RTD 2 Pt100, class 1/3 DIN, 3 wires
R - standard RTD 1 Pt100, class 1/3 DIN, 4 wire

TET200 Double Standard RTD
T - standard RTD, Double, class B, 3 wires
V - standard RTD, Double, class A, 3 wires

TET102 & TET107 Glass RTD
0 - glass RTD 1 Pt100, class B, 3 wires
1 - glass RTD 2 Pt100, class B, 3 wires
2 - glass RTD 1 Pt100, class B, 4 wires
3 - glass RTD 1 Pt100, class A, 3 wires
4 - glass RTD 2 Pt100, class A, 3 wires
5 - glass RTD 1 Pt100, class A, 4 wires
6 - glass RTD 1 Pt100, class 1/3 DIN, 3 wires
7 - glass RTD 2 Pt100, class 1/3 DIN, 3 wires
8 - glass RTD 1 Pt100, class 1/3 DIN, 4 wires
Y - RTD class and type to specification

Head type
A1 - TA20A, M24x1,5, Pg16, Al, IP55
A2 - TA20A, M24x1,5, 1/2" NPT, Al, IP55
A3 - TA20A, M24x1,5, Pg16, Al, IP68
B1 - TA20B, M24x1,5, Pg16, PA, IP55
C1 - TA20C, M24x1,5, Pg16, Al, IP65
C2 - TA20C, M24x1,5, 1/2" NPT, Al, IP65
D1 - TA20D, M24x1,5, Pg16, Al, IP55 ***(4)***
D2 - TA20D, M24x1,5, 1/2" NPT, Al, IP55 ***(4)***
E1 - TA20E, M24x1,5, Pg16, Al, IP55
F1 - TA20F, M24x1,5, Pg16, PP, IP55
U1 - TA20U, M24x1,5, Pg16, POM, IP65
W1 - TA20W, M24x1,5, Pg16, Al, IP65
W2 - TA20W, M24x1,5, 1/2" NPT, Al, IP55
X3 - TA20X, M24x1,5, Pg11, AISI, IP65
YY - Special as specified

Built-in transmitter *(4)*
Analogue, µP-PCP, Hart protocol or Profibus-PA type available: see Table C

TST288- | | | | | | | | | | **Complete Order Code**

Supplementary Documentation

- ☐ TET100 ∅ 6 mm M.I. inset
  Technical Information TI071T/02/en
- ☐ TET102 ∅ 6 mm M.I. inset
  Technical Information TI140T/02/en
- ☐ TET105 ∅ 3 mm M.I. inset
  Technical Information TI103T/02/en
- ☐ TET107 ∅ 3 mm M.I. inset
  Technical Information TI141T/02/en
- ☐ TET200 ∅ 2 x 3 mm M.I. inset
  Technical Information TI150T/02/en
- ☐ TA20 terminal heads
  Technical Information TI072T/02/en
- ☐ TA500 series specific product T.I.

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