

Weldable Resistance Thermometer -spherical weldable version- Type TP13 / TP15



FEATURES

- „FR“-HOUSING IN IP67
- WITH SINGLE- OR DOUBLE - PT100
- CIP-PROOFED INSTALLATION
- OPTIONAL DELIVERY WITH HEAD TRANSMITTER
- SHORT RESPONSE TIMES WITH TAPERED SENSOR TIPS
- DESIGNS:
 - WITH SPHERICAL WELDED PROTECTION SLEEVE
 - PLAIN PROBE WITH SPHERICAL WELDED SOCKET
- OPTIONAL IN „QUICKTEMP“- VERSIONS FOR QA-OBLIGATORY MEASURING POINTS

DESCRIPTION

The Weldable Resistance Thermometers **Type TP13 and TP15** are high-performance, robust and all-purpose devices for demanding applications within the temperature measuring.

The PT100 sensor is designed standardly in accuracy class A acc. to EN 60751. The measurement inserts consist of single- or double PT100 which are changeable. The use of measurement inserts has to be adjusted to the needs for temperature, length, flexibility, vibration-proofness and measuring accuracy. For control processes tapered sensor tips with extra short half-life-times are deliverable.

Safety and profitability aspects advise constructions with protective tubes in case of a possibly necessary change of the probes, so that replacements can be carried out quickly and comfortably, without decommissioning the plant or draining the tanks. Furthermore protective tubes guarantee the resistiveness against mechanical stress and chemical attacks, also to be designed for a quick response time.

For sensitive measuring points, like e.g. stipulated in the food and pharmaceutical industry, suitable hygienic designs and versions are available. Cleaning with all in these industries common media (CIP etc.) is possible. The construction in protection class IP67 guarantees reliability for closeness and long durability even under extreme operating conditions.

For measurement transmission purposes programmable transmitter 4...20 mA, in versions HART or Profibus PA, can be installed. Notably the QUICKTEMP-product family is recommendable for calibration obligatory measurement points.

Weldable Resistance Thermometer

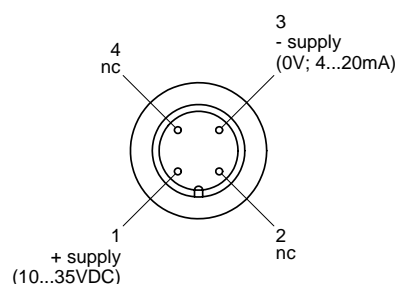
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TECHNICAL DATA

Design configuration	
Housing	field housing
Temperature sensor	PT 100 acc. EN 60751, changeable measurement insert (Standard), insert tube 1.4571
Measurement insert, electrical	1 x PT 100 in 2-, 3- or 4- wire connection, standard: 1 x 3- wire connection, 2 x PT 100 in 2- or 3-wire connection
Electrical connection	- M16 x 1,5 – cable gland, MS nickel-plated, - optional: M12 x 1 circular connector, 4-pins
Accuracy	- standard: tolerance class A acc. to EN 60751, - optional: tolerance class B 1/10, 1/5, 1/3, 1/2 DIN
Response time	T50 (measured in water): 6 sec. (dependent on design, d = 6 mm) < 4 sec. with tapered sensor tip on request
Measured medium temperature	T _{max} at sensor = -20... +200°C
Housing material	stainless steel 1.4301 (CrNiSt, standard-field housing)
Sensor material	stainless steel 1.4571, optional 316L = 1.4435 or 1.4404, optional: enhanced surface quality
Sensor diameter	standard: continuously plain, d = 6 mm, optional: tapered sensor tip, d = 4 mm (measurement insert replaceable) tapered sensor tip, d = 3 mm or 2 mm (measurement insert not replaceable)
Sensor length	- TP13: 50 mm, 100 mm, - TP15: 100 mm (standard), - variant lengths on request
Protection class	EN 60529, IP 67 with cable gland, optional with cable connection
Pressure admissible	PN = 10 bar, dependent on design and temperature
CE-conformity	EMC-rules are fulfilled, CE-sign
Process Connection	
	- TP13/TW29: with spherical weldable protection sleeve DN25, D = 6mm or 9mm - TP15/TW29: - with plain probe and adjustable, spherical, clamp screw joint DN25 - with adjustable clamp ring screw joint G ¼ B, G ½ B - with clamp ring, stainless steel, optional in PTFE, other on request
Accessories	
	(please order separately, see data sheet "RTD- overview field housing designs")
Assembly components	-- zeh / TP139 für TP13 / TW29...T147: spherical weldable protection sleeve, d = 9 mm, internal thread G ¼ for fitting lengths 25...100 mm -- zeh / TP136 für TP13 / TW29...T047: spherical weldable protection sleeve, d = 6 mm, internal thread G ¼ for fitting lengths 25...100 mm -- zem / TP15 für TP15 / TW29...T045: spherical clamp screw joint DN25, - with metallic clamp ring, adjustable, CrNiSt, G ¼ - with PEEK-clamp ring, adjustable, CrNiSt, M12 x 1,5 -- clamp screw joints for TP15 / TW29...T045: - G ¼ or G ½, with metallic clamp ring, adjustable, CrNiSt
Options	
Electrical connection	-- ceramic connection socket -- flexible connecting wires -- sheathed cable (shakeproof type) -- transmitter TE 42, programmable, 4...20 mA, 2- wire connection (standard) -- transmitter TE 41, programmable, galvanically isolated -- transmitter TE 52, HART -- transmitter TE 82, Profibus PA
Calibration	factory calibrated, calibration certificate (3-point or 5-point), with DKD-standard
Certificates	material certificate, acc. to EN 10204

ELECTRICAL CONNECTION

connection with transmitter *



* Connection without transmitter see field housing label

execution example: M12-circular connector

Response time for RTD (PT100 resistors)

The response time is not only determined by the dimensions of the protective tube, but extensively by the heat transmission:

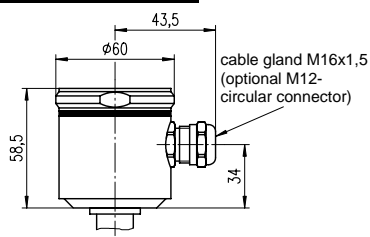
- medium, flow velocity, etc.
- heat capacity

Higher flow velocities and heat capacities reduce the response time significantly. The response time defines the period the measurement reaches 50% or 90% of the its final range value.

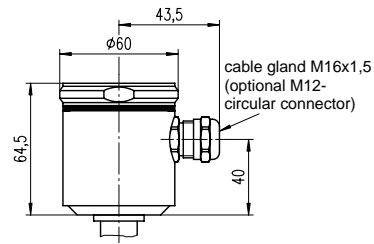
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Weldable Resistance Thermometer -spherical weldable version- Type TP13 / TP15

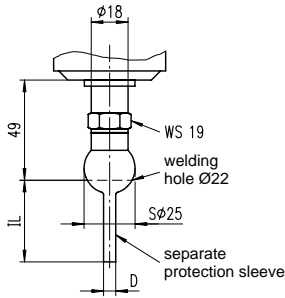
DIMENSIONAL DRAWINGS



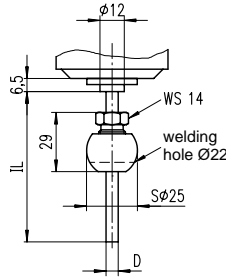
field-housing (stainless steel, IP67 EN 60529)
housing head H



field-housing (stainless steel, IP67 EN 60529)
housing head P (for Profibus)

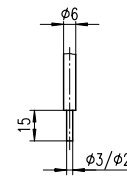


TP13 / TW29 ...
spherical weldable protection sleeve
zeh / TP136: D = 6 mm for T047
zeh / TP139: D = 9 mm for T147



TP15 / TW29 ... T045
plain probe
with spherical compression fitting DN25
zem / TP15
relocatable

note:
probe-Ø (D) = 6 mm (standard)
insertion length (IL) = 100 mm (standard)



option:
tapered tip Ø3/2mm

ORDER INFORMATION

Sensor Type, Tolerance Class, Connection	
A	1 x PT 100, class A, 2-wire
B	1 x PT 100, class A, 3-wire
C	1 x PT 100, class A, 4-wire
D	2 x PT 100, class A, 2-wire
E	2 x PT 100, class A, 3-wire

Connection Head	
H	field housing, 1.4301, M16 x 1,5
P	Profibus housing (enlarged field housing)
K	Form BUKH, polyamide PA (for double-transmitter)
1	Form B, aluminum-diecast
9	other

Insertion Length / Nominal Length	
05	50 mm
10	100 mm
20	160 mm
30	200 mm
50	250 mm
70	300 mm
80	400 mm
90	other

Output type / Measurement Range		
K0	00	RTD (Pt100) output
L0		transmitter 4-20 mA, 2-wire connection
	30	0 - 50° C
	40	0 - 100° C
	50	0 - 150° C
	60	0 - 200° C
	70	0 - 300° C
	80	0 - 400° C
	99	other measurement ranges

TP13/TW29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	T047 (d=6mm)
TP13/TW29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	T147 (d=9mm)
TP15/TW29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	T045

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ORDER INFORMATION for accessories / fittings

Options	(to be specified in plaintext)
Transmitter (programmable), not galvanically isolated	TE 4200
Transmitter (programmable), galvanically isolated	TE 4101
Transmitter (programmierbar), galvanically isolated EX	TE 4111 EX
Transmitter HART	TE 52
Transmitter Profibus PA	TE 82
Configuration-Set incl. adapter and software for TE 41/42	TZ 41/42
Tapered sensor tip, D = 3 mm or 4 mm	
Accuracy class 1/3 DIN B (per PT 100)	
Accuracy class 1/5 DIN B (per PT 100)	
Accuracy class 1/10 DIN B (per PT 100)	
Sheathed cable (shakeproof type)	
calibration certificate DKD (approval by certified DKD-laboratory)	
Measurement insert replaceable, d = 3 mm	
Neck tube L = 75 mm, d = 12 mm (other lengths to be specified)	
M12 x 1- connector, 4-pins	
QUICKTEMP with "easy connect" - adjustable with collar and tightening screw G ¼ -	

Accessories / Fittings for TP13	(please order separately)
Weldable protection sleeve, d = 9 mm for TP 13 / TW 29... <u>T14Z</u> , internal thread G ¼ for insertion length 25 ... 100 mm (lengths > 100 mm on request)	zeh / TP139
Weldable protection sleeve, d = 6 mm for TP 13 / TW 29... <u>T04Z</u> , internal thread G ¼ for insertion length 25 ... 100 mm (lengths > 100 mm on request)	zeh / TP136
Inspection certificate acc. to EN 10204 for welded protection sleeve - per order -	WZ 31 (3.1B)

Accessories / Fittings for TP15	(please order separately)
Spherical welded socket DN 25, for TP15 / TW29... <u>T045</u> , with metallic clamp ring, adjustable, CrNiSt, G ¼	zem / TP15 - Art.-No. 06402303
Spherical welded socket DN 25, for TP15 / TW29... <u>T045</u> , with PEEK- clamp ring, adjustable, CrNiSt, M12 x 1,5	zem / TP15 - Art.-No. 06402395
Spherical welded socket DN 25, for TP15 / TW29... <u>T045</u> , complete with PEEK- clamp ring and clamp screw M12 x1,5	zem / TP15 - Art.-No. 06402363
Spherical welded socket DN 25, for TP15 / TW29... <u>T045</u> , complete with Ermeto- clamp ring, CrNiSt and clamp screw M12x1,5	zem / TP15 - Art.-No. 06402364
Clamp ring screw joint G ¼ B, with metallic clamp ring, adjustable, CrNiSt	zem / G ¼ - Art.-No. 06100100
Clamp ring screw joint G ½ B, with metallic clamp ring, adjustable, CrNiSt	zem / G ½ - Art.-No. 06100110

Our products are constantly in further development, therefore subjects to modifications.

T-TP13-TP15-D-08-e-1/4