



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical information

Easytemp[®] TMR31, TMR35

Compact thermometer

Pt100, Class A. Optionally with integrated
4 to 20 mA transmitter, programmable via PC.



Application

The Easytemp[®] TMR31 and TMR35 compact thermometers are used to measure temperatures from -50 °C to 150 °C (-58 °F to 302 °F), or up to 200 °C (392 °F) with neck. The most common installation locations are tanks and pipes.

- TMR31 with process connections for general applications.
- TMR35 with process connections for hygienic applications.

Benefits at a glance

Quick installation and easy commissioning:

- Small, compact design made entirely of stainless steel
- M12 connector with IP 66/67 for an easy electrical connection
- 4-wire, Pt100 or PC-programmable transmitter with 4 to 20 mA output
- Configuration and visualization with ReadWin[®] 2000 PC operating software, which is free of charge
- Preset measuring range is available for order
- Variable insertion lengths from 40 mm to 600 mm (1.6 to 23.6 ")

Outstanding metrological properties thanks to innovative sensor technology:

- Extremely short response times
- Highly accurate even with short insertion lengths
- Thin-layer sensor element Pt100, accuracy class A (IEC 60751)

Safe operation with approvals and certificates:

- UL recognized component to UL 61010B-1
- Meets all EMC requirements according to NAMUR NE21
- Breakdown information in event of sensor break or sensor short-circuit, adjustable as per NAMUR NE43
- TMR35: Hygienic compatible design with 3-A approval
- GL (Germanischer Lloyd) ship building approval



Function and system design

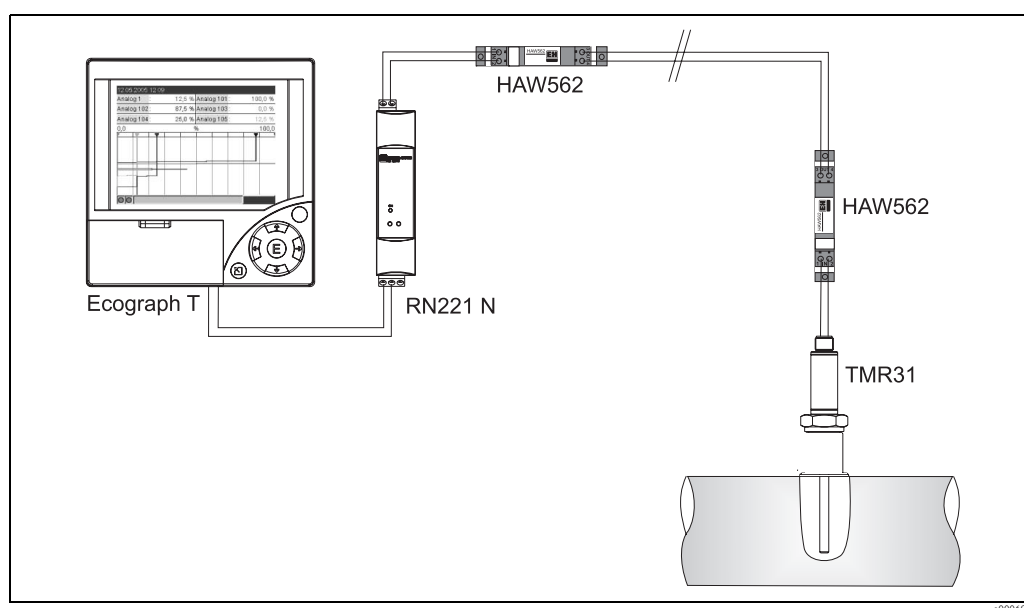
Measuring principle

Electronic recording and conversion of Pt100 input signals in industrial temperature measurement.

Measuring system

The compact thermometer uses a Pt100 (Class A) sensor element for measurement. The device is available with a Pt100 4-wire connection or, optionally, with an analog, temperature-linear 4 to 20 mA output signal. A built-in transmitter in the device converts the Pt100 input signal into the 4 to 20 mA signal and can be programmed using a PC via the M12 connector. The compact thermometer has different process connections for general (TMR31) and hygienic applications (TMR35).

The Easytemp® TMR31, TMR35 has a new kind of thin-layer sensor element that is soldered directly into the sensor tip. This innovative sensor design ensures ideal heat transfer from the process to the sensor element. This means that extremely fast response times and high levels of accuracy can be achieved even with short insertion lengths.



Measuring point layout (example) for Easytemp® compact thermometer TMR31 with additional Endress+Hauser components Ecograph T, active barrier RN221 N and HAW562 surge arrester

Multi Channel Recorder Ecograph T

Multi-channel recorder Ecograph T in 144x144 mm (5.7 x 5.7") panel-mounted housing for the electronic detection, display, recording, analysis, remote transmission and archiving of analog and digital input signals. Data recording system on CompactFlash card, multi-colored LCD display, 120 mm (4.72 ") screen size. Configuration and measured value display via interfaces (USB, Ethernet, RS232/485) and ReadWin® 2000 PC operating software.

Active barrier RN221 N

Active barrier with power supply for the safe separation of 4 to 20 mA standard signal circuits with optional intrinsically safe input. The current applied by the transmitter of the compact thermometer in the input circuit (4 to 20 mA) is transmitted linearly to the output.

Surge arrester HAW562

Protects consumer installations or measuring devices as well as signal lines and components against overvoltage which is induced by lightning striking in the distance or through switching operations. The HAW562 module acts as an overvoltage protection system in terminal block systems to protect signal lines and components and is installed on a module carrier (HAW560).

Input

Measuring principle Temperature (temperature-linear transmission behavior)

Measuring range

Designation	Measuring range limits	Min. span
Pt100 as per IEC 60751	-50 to 150 °C (-58 to 302 °F) without neck -50 to 200 °C (-58 to 392 °F) with neck	10 K (18 °F)

Output

Output signal

- Standard: Pt100, Class A, 4-wire
- Optional: 4 to 20 mA or 20 to 4 mA

Signal on alarm

Signal on alarm as per NAMUR NE43

- Underranging: Linear drop to 3.8 mA
- OVERRANGING: Linear rise to 20.5 mA
- Sensor break; sensor short-circuit:
≤ 3.6 mA or ≥ 21.0 mA (at settings ≥ 21.0 mA, 21.5 mA output is guaranteed)

Maximum load $(U_{\text{power supply}} - 10 \text{ V}) / 0.023 \text{ A}$ (current output)

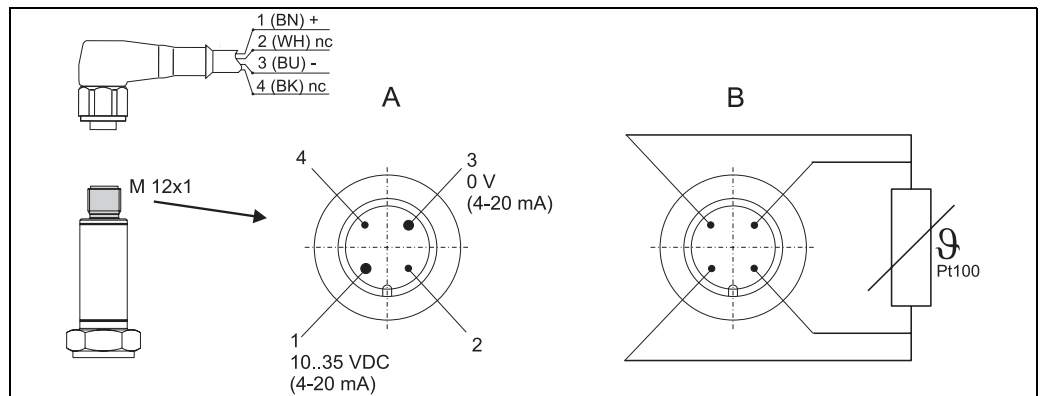
Min. current consumption ≤ 3.5 mA

Current limit ≤ 23 mA

Switch-on delay 2 s

Power supply

Electrical connection



Pos. A: with electronics, M12 plug, 4-pin

Pin 1: power supply 10 to 35 V DC; current output 4 to 20 mA (cable connection, wire color brown = BN)

Pin 2: connection of PC configuration cable - shortened pin (cable connection, wire color white = WH)

Pin 3: power supply 0 V DC; current output 4 to 20 mA (cable connection, wire color blue = BU)

Pin 4: connection of PC configuration cable - shortened pin (cable connection, wire color black = BK)

Pos. B: without electronics, Pt100, 4-wire connection

Supply voltage $U_b = 10 \text{ to } 35 \text{ V DC}$

Residual ripple Permitted residual ripple $U_{ss} \leq 3 \text{ V}$ at $U_b \geq 13 \text{ V}$, $f_{\text{max.}} = 1 \text{ kHz}$

Performance characteristics

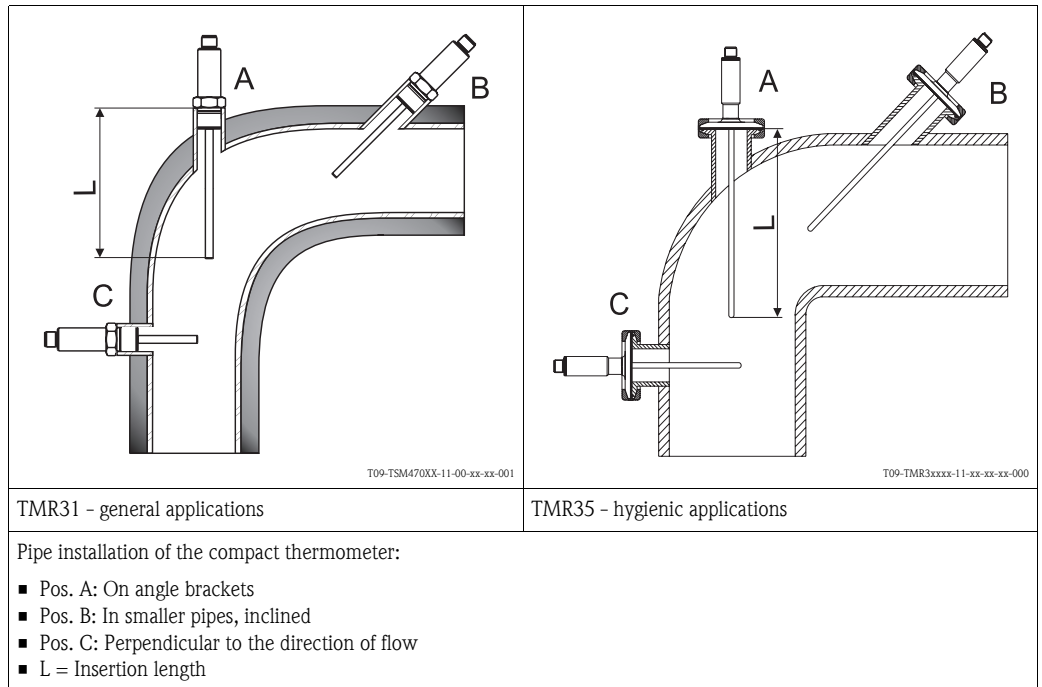
Response time	≤ 3 s				
Reference operating conditions	<ul style="list-style-type: none"> ■ Calibration temperature (ice bath) 0 °C (32 °F) for Pt100 sensor¹⁾ ■ Ambient temperature 25 °C \pm 5 °C (77 °F \pm 9 °F) for transmitter 				
Maximum measured error	<p>Electronics</p> <p>0.1 K (0.18 °F) or 0.08% % relates to the set span. The larger value applies.</p> <p>Sensor (Pt100) for version without transmitter</p> <ul style="list-style-type: none"> ■ Tolerance class A as per IEC 60751, operating temperature range -50 to 200 °C (-58 to 392 °F) with neck ■ Maximum measured error in °C = $0.15 + 0.002 \cdot T$ T = Numerical value of the temperature in °C without regard to the leading sign. <p>Total deviation of electronics + sensor</p> <ul style="list-style-type: none"> ■ Operating temperature range: -50 to 150 °C (-58 to 302 °F) without neck -50 to 200 °C (-58 to 392 °F) with neck ■ $0.25 \text{ K} + 0.002 \cdot T$ With calibration and sensor transmitter matching: ≤ 0.2 K over the entire measuring range 				
Long-term stability of electronics	≤ 0.1 K (0.18 °F)/year or $\leq 0.05\%$ /year Data under reference conditions. % relates to the set span. The larger value applies.				
Influence of ambient temperature (temperature drift)	<ul style="list-style-type: none"> ■ Pt100 resistance thermometer: $T_d = \pm(15 \text{ ppm/K} \cdot (\text{full scale value of measuring range} + 200) + 50 \text{ ppm/K} \cdot \text{set measuring range}) \cdot \Delta \vartheta$ $\Delta \vartheta$ = deviation of ambient temperature from the reference operating condition. 				
Influence of load	$\pm 0.02\%/100 \Omega$ Specifications refer to the full scale value of the measuring range.				
Transmitter response time	1 s				
Sensor response time	Measured as per IEC 60751, in water flowing at 0.4 m/s (1.3 ft/s)				
	<table border="1"> <thead> <tr> <th>t_{50}</th> <th>t_{90}</th> </tr> </thead> <tbody> <tr> <td>< 1.0 s</td> <td>< 2.0 s</td> </tr> </tbody> </table>	t_{50}	t_{90}	< 1.0 s	< 2.0 s
t_{50}	t_{90}				
< 1.0 s	< 2.0 s				
Influence of supply voltage	$\leq \pm 0.01\%/V$ deviation from 24 V Specifications in percent refer to the full scale value of the measuring range.				
Self-heating	Negligible small				
Sensor current	≤ 0.6 mA				

1) Note: For calibration of the compact thermometer a minimum insertion length of 50 mm (1.97") is required.

Installation conditions

Installation instructions

Mounting location



Note!

The insertion length of the compact thermometer can have a substantial influence on the accuracy. If the insertion length is insufficient, heat dissipation via the process connection and the container wall can cause measurement errors. To minimize errors caused by heat dissipation, a minimum insertion length of $L_{\min} = 40 \text{ mm (1.6")}$ is recommended.

Environment conditions

Ambient temperature limits	-40 to +85 °C (-40 to 185 °F)
Storage temperature	-40 to +85 °C (-40 to 185 °F)
Climate class	As per IEC 60654-1, Class C
Degree of protection	IP 66/67
Shock resistance	4g / 2 to 150 Hz as per IEC 60068-2-6
Vibration resistance	Refer to 'Shock resistance'

Electromagnetic compatibility (EMC)**CE Electromagnetic Compatibility Compliance**

The device meets all requirements listed under IEC 61326 Amendment 1, 1998 and NAMUR NE21

This recommendation is a uniform and practical way of determining whether the devices used in laboratories and process control are immune to interference with an objective to increase its functional safety.

ESD (Electrostatic discharge)	IEC 61000-4-2	6 kV cont., 8 kV air	
Electromagnetic fields	IEC 61000-4-3	0.08 to 2 GHz	10 V/m
Burst (fast transient)	IEC 61000-4-4	2 kV	
surge	IEC 61000-4-5	0.5 kV sym.	
Conducted RF	IEC 61000-4-6	0.01 to 80 MHz	10 V

Condensation

Permitted

Process conditions

Process temperature limits

The electronics of the TMR31 and TMR35 must be protected from temperatures above 85 °C (185 °F) by a neck of appropriate length. TMR31 and TMR35 compact thermometers without electronics (Pt100, 4-wire) do not require a neck.

- -50 to 150 °C (-58 to 302 °F) without neck
- -50 to 200 °C (-58 to 392 °F) with neck
- -50 to 200 °C (-58 to 392 °F) without electronics

Caution!

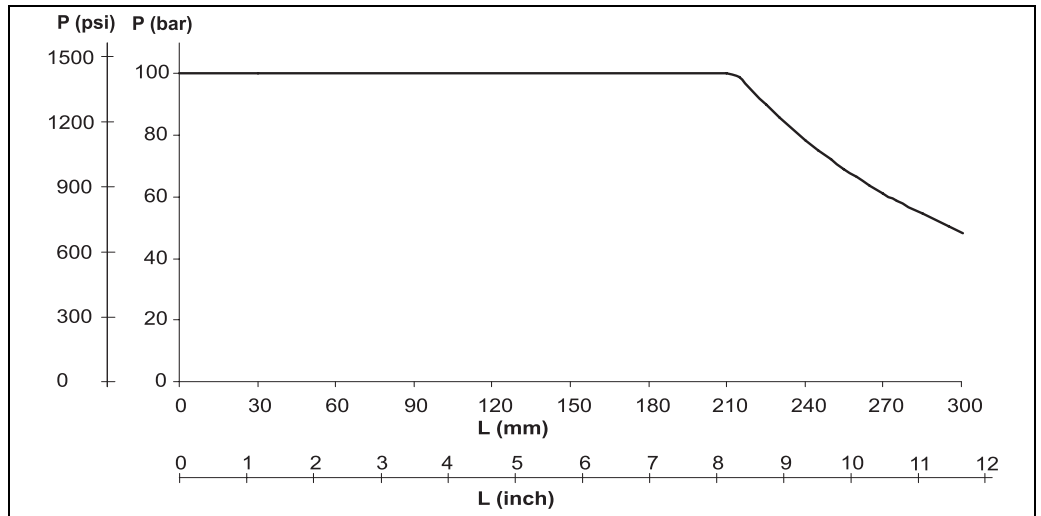
Restrictions depending on process connection and ambient temperature:

- For installation with adjustable insertion length (welding boss with sealing taper, Order No. **51004751**; collar welding boss Order No. **51004752**; compression fitting with sealing taper, Order No. **51004753**) provide a neck with an appropriate length.
- For TMR31 with process connection:

Max. ambient temperature	Max. process temperature	
	Without neck	With neck
Up to 25 °C (77 °F)	150 °C (302 °F)	200 °C (392 °F)
Up to 40 °C (104 °F)	135 °C (275 °F)	180 °C (356 °F)
Up to 60 °C (140 °F)	120 °C (248 °F)	160 °C (320 °F)
Up to 85 °C (185 °F)	100 °C (212 °F)	133 °C (271 °F)

Process pressure limits

Maximum permitted process pressure depending on the insertion length



Maximum permitted process pressure

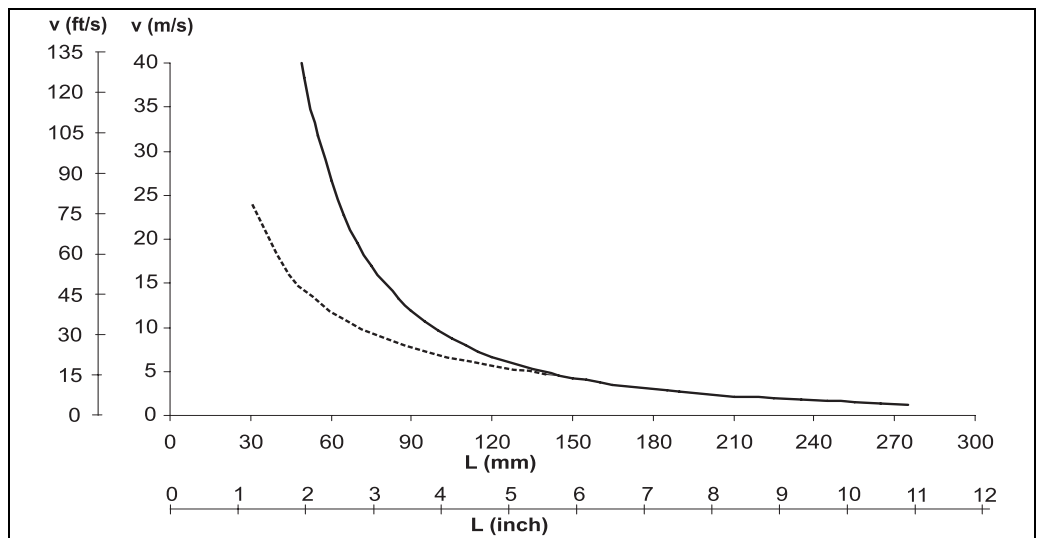
L = insertion length
 p = process pressure

The diagram takes into consideration not only the overpressure but also the pressure load caused by the flow, whereby a safety factor of 1.9 has been specified for operation with flow. The maximum permitted static operating pressure is lower at greater insertion lengths due to the increased bending load caused by the flow. The calculation assumes the maximum permitted medium velocity for the respective insertion length (see diagram below).

Caution!

The maximum process pressure for the conical metal-metal hygienic process connection (Option **MB**) is 16 bar (232 PSI)!

Permitted flow velocity depending on the insertion length



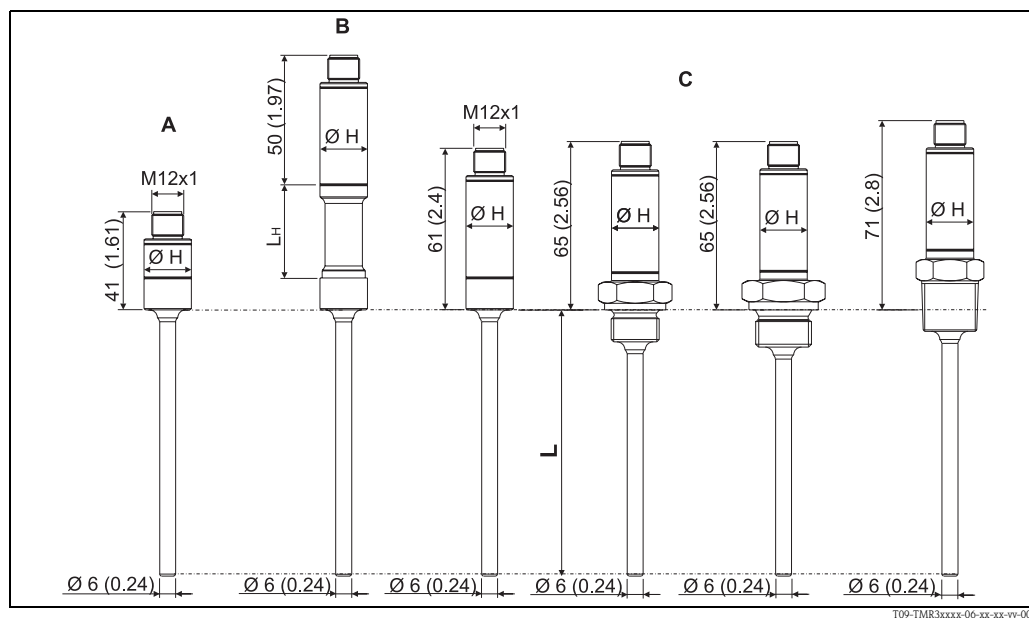
Permitted flow velocity

L = insertion length, during flow
 v = flow velocity
 Medium: — air; - - - - water

The permitted flow velocity is the minimum from resonance velocity (resonance distance 80%) and load or buckling caused by flow, which would lead to failure of the thermometer tube or to exceedance of the safety factor (1.9). Calculation was performed for the specified limit operating conditions of 200°C (392°F) and ≤100 bar (1450 PSI) process pressure.

Mechanical construction

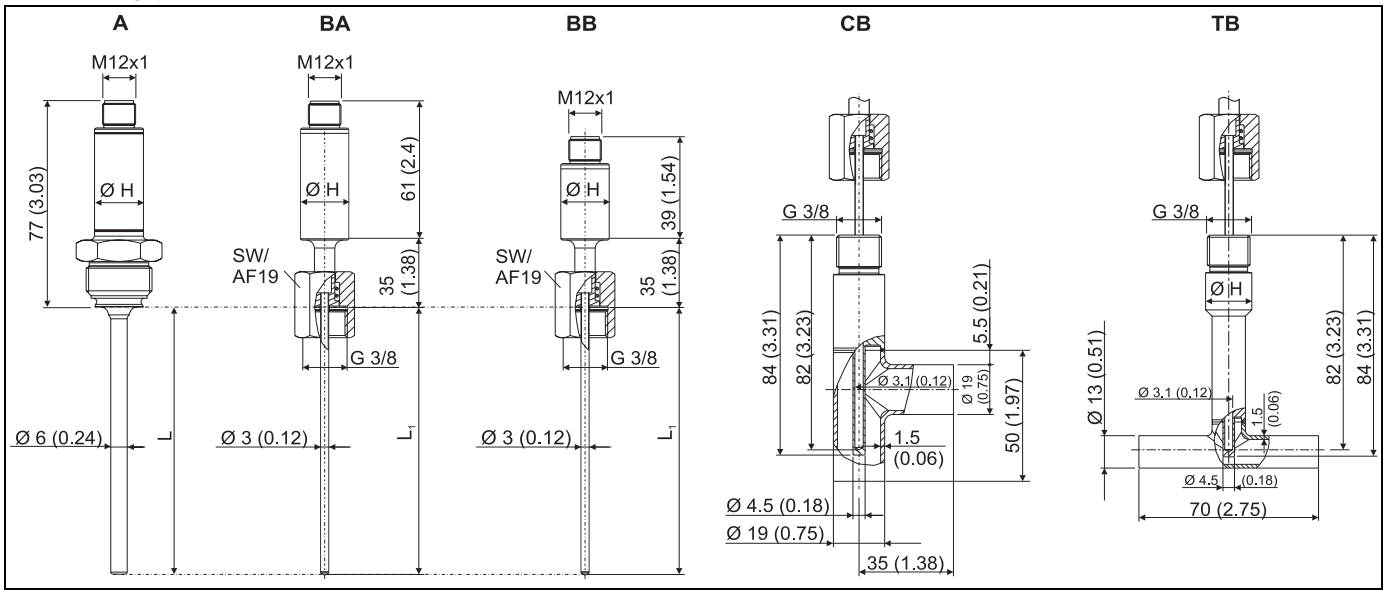
TMR31 design, dimensions



TMR31 - dimensions in mm (inch)

Item No.	TMR31 version
A	Short sleeve (without built-in transmitter)
B	With neck; L_H = neck length 35 mm or 50 mm (1.38" or 1.97")
C	Different process connection variants (see Process connection)
L	Insertion length L variable from 40 to 600 mm (1.6 to 23.6")
$\varnothing H$	Sleeve diameter 18 mm (0.71")

TMR35 design, dimensions



TMR35 - dimensions in mm (inch)

Item No.	TMR35 version	
A	Version with adapter concept for process connection	
BA	Version with spring-loaded cap-nut G3/8" for process connection	Insertion length $L_1 = 38 \text{ mm (1.5")}$
BB		Insertion length $L_1 = 83 \text{ mm (3.27")}$ - in the graphic is the version with short sleeve (without built-in electronics)
CB	R1 (see product structure)	Thermowell version corner piece DN15, insertion length = 83 mm (3.27")
TB		Thermowell version T-piece DN10, insertion length = 83 mm (3.27")
L	Insertion length L variable from 40 to 600 mm (1.6" to 23.6")	
$\varnothing H$	Sleeve diameter 18 mm (0.71")	

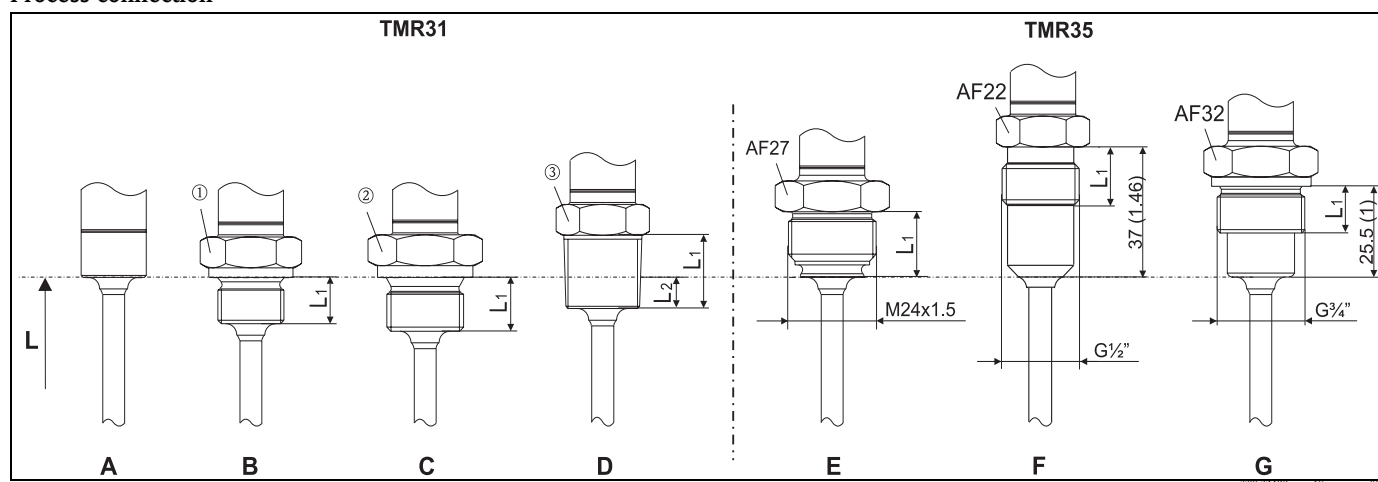
Weight

Version with L = 100 mm (3.94")	Weight
TMR31 with G $\frac{1}{2}$ ", ISO 228 process connection	116 g (4.1 oz)
TMR35 with ISO2852 DN25-38, with clamp process connection adapter (DB) 1 to 1 $\frac{1}{2}$ "	305 g (10.76 oz)

Material

- Transmitter housing: SS 304
- Parts in contact with process and process connection: SS 316L, $R_a \leq 0.8 \mu\text{m (31.5 \mu\text{inch})}$. Optionally for TMR35 $R_a \leq 0.4 \mu\text{m (15.74 \mu\text{inch})}$, electro-polished.

Process connection

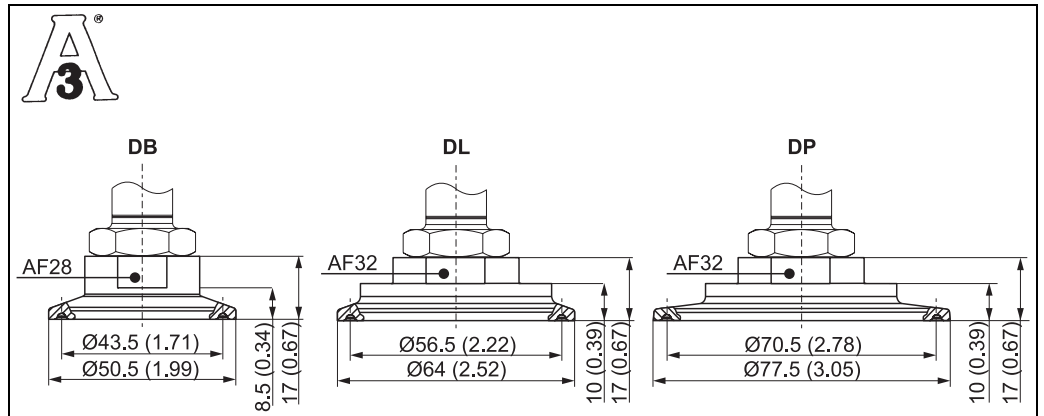


Insertion length L variable from 40 to 600 mm (1.6" to 23.6")

109-TMR3xxxx-17-xx-xx-es-000

Item-No.	Model	Version	Thread length L_1	Thread length L_2
A		Without process connection. Refer to chapter 'accessories' for matching welding bosses and compression fittings.	-	-
B		Metric thread process connection: <ul style="list-style-type: none"> ■ M14x1,5 (① = AF19) ■ M18x1,5 (① = AF24) 	12 mm (0.47")	-
C	TMR31	Inch thread process connection, cylindrical, as per ISO 228: <ul style="list-style-type: none"> ■ G$\frac{1}{4}$" (② = AF19) ■ G$\frac{1}{2}$" (② = AF27) 	<ul style="list-style-type: none"> ■ 12 mm (0.47") ■ 14 mm (0.55") 	-
D		Inch thread process connection, conical: <ul style="list-style-type: none"> ■ ANSI NPT $\frac{1}{4}$" (③ = AF19) ■ ANSI NPT $\frac{1}{2}$" (③ = AF27) ■ BSPT R$\frac{1}{2}$" (③ = AF22) 	<ul style="list-style-type: none"> ■ 14.3 mm (0.56") ■ 19 mm (0.75") ■ 19 mm (0.75") 	<ul style="list-style-type: none"> ■ 5.8 mm (0.23") ■ 8.1 mm (0.32") ■ 8.1 mm (0.32")
E		Adapter concept M24x1.5 thread for adapters with process connection (→ 11) for hygienic processes.	17 mm (0.67")	-
F	TMR35	Conical metal-metal for hygienic processes (option MB), G $\frac{1}{2}$ " thread. Suitable welding boss available as accessory (→ 15).	14 mm (0.55")	-
G		Process connection for hygienic processes (option AB), G $\frac{3}{4}$ " thread, material SS316L (1.4404). Suitable Liquiphant process fitting available as accessory (→ 15).	14.6 mm (0.6")	-

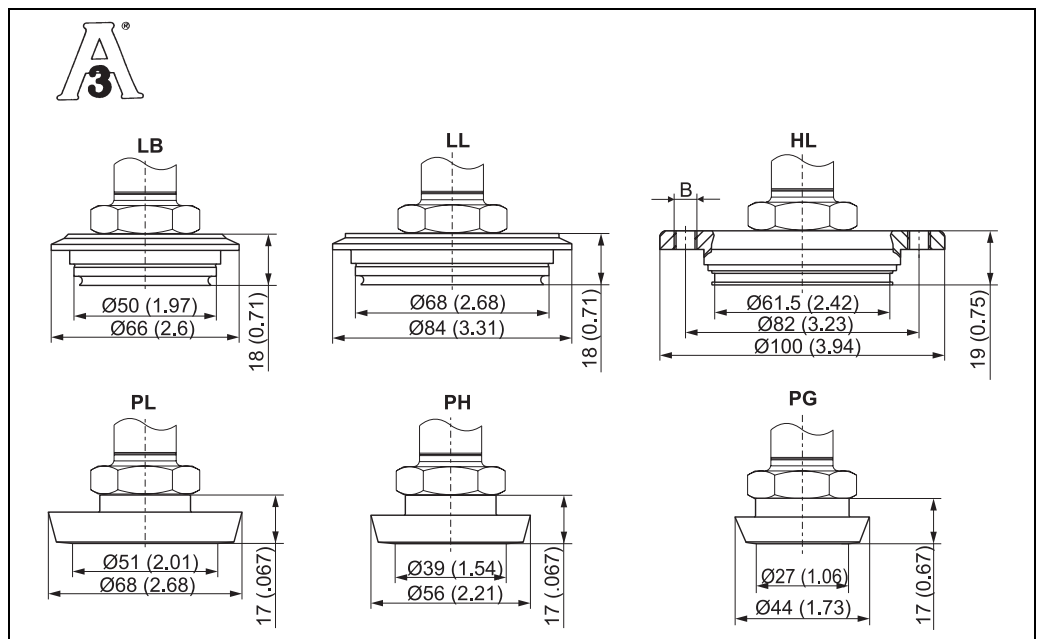
Adapters for clamp connections



Process connection versions (adapters)
 DB: clamp 1" to 1½" (ISO 2852) or DN25 to DN40 (DIN 32676)
 DL: clamp 2" (ISO 2852) or DN50 (DIN 32676)
 DP: clamp 2½" (ISO 2852)

Also refer to the "Ordering information" section
 All dimensions in mm (inch).

Adapters for hygienic connections



Process connection versions (adapters)
 LB: Varivent F pipe DN25-32, PN40
 LL: Varivent N pipe DN40-162, PN40
 HL: APV inline, DN50, PN40, 316L, (B = 6 x Ø8.6 (0.34") bores + 2 x M8 thread)
 PL: DIN 11851, DN50, PN40 (including cap-nut)
 PH: DIN 11851, DN40, PN40 (including cap-nut)
 PG: DIN 11851, DN25, PN40 (including cap-nut)

Also refer to the "Ordering information" section
 All dimensions in mm (inch).

Human interface

Display elements	No display elements are present directly on the device. The measured value and other displays can be called up using the ReadWin® 2000 PC software.
Operating elements	No operating elements are present directly on the display. The temperature transmitter is configured by remote operation, without an additional power supply using the ReadWin® 2000 PC software.
Remote operation	<p>Configuration Configuration kit TXU10-BA with PC operating program (ReadWin® 2000).</p> <p>Interface PC interface: TTL/USB connecting cable with plug connector.</p> <p>Configurable parameters Measurement dimension (°C/°F), Measuring range, fail-safe mode, output signal (4 to 20 mA / 20 to 4 mA), filter, offset, tag name (8 characters), output simulation.</p>

Certificates and approvals

CE-Mark	The device meets the legal requirements of the EC directives. Endress+Hauser confirms that the device has been successfully tested by applying the CE mark.
Hygiene standard	<p>The TMR35 compact thermometer fulfills the requirements of Sanitary Standard No. 74-03. Endress+Hauser confirms this by applying the 3-A symbol.</p> <p>Note! Does not apply for process connection options MB: 'Conical metal-to-metal' and R1: 'Spring-loaded cap-nut'</p>
GL	Ship building approval (Germanischer Lloyd)
Other standards and guidelines	<ul style="list-style-type: none"> ■ IEC 60529: Degree of protection provided by housing (IP code) ■ IEC 61010: Safety requirements for electrical equipment for measurement, control and laboratory use ■ IEC 61326: Electromagnetic compatibility (EMC requirements) ■ NAMUR Standards working group for measurement and control technology in the chemical industry
UL	<p>UL recognized component to UL 61010B-1</p> <p>Note! The UL applies only for the compact thermometers TMR31, TMR35 with electronics and 4 to 20 mA output signal.</p>

Ordering information

Product structure

Easytemp® TMR31 compact thermometer

Pt100/4-wire compact thermometer, Cl. A, PC-programmable, M12 connector, 4 to 20 mA analog output 4-wire, fail safe mode as per NAMUR NE43, process connection for general applications.

										Approval:	
										A	Version for non-hazardous areas
										Electrical connection:	
										1	Plug M12, IP66/67
										Output; Measuring range:	
										A	4 to 20 mA; 0 to 100 °C (32 to 212 °F)
										B	4 to 20 mA; 0 to 150 °C (32 to 302 °F)
										C	4 to 20 mA; -50 to 100 °C (-58 to 212 °F)
										D	4 to 20 mA; -50 to 150 °C (-58 to 302 °F)
										E	4 to 20 mA; -50 to 200 °C (-58 to 392 °F)
										X	4 to 20 mA; to be specified
										1	Pt100, DIN class A, 4-wire
										Neck; measuring range:	
										A	without
										B	35 mm (1.38")
										C	50 mm (1.97")
										Process Connection:	
										AA	Compr. fitting, 316L, L ≥ 100 mm (3.94") Insertion length
										AB	Thread ANSI NPT ¼", 316L
										AC	Thread ANSI NPT ½", 316L
										BA	Thread ISO 228 G¼", 316L
										BB	Thread ISO 228 G½", 316L
										JA	Thread BSPT R½", JIS 0203, 316L
										MA	Thread M14x1.5, 316L
										MB	Thread M18x1.5, 316L
										Insertion Length L; Diameter D:	
										AB	50 mm; 6 mm (1.97"; 0.24")
										AC	100 mm; 6 mm (3.94"; 0.24")
										AD	120 mm; 6 mm (4.72"; 0.24")
										AE	150 mm; 6 mm (5.9"; 0.24")
										AG	200 mm; 6 mm (7.87"; 0.24")
										AH	250 mm; 6 mm (9.84"; 0.24")
										AJ	300 mm; 6 mm (11.81"; 0.24")
										AX	... mm; 6 mm (40 to 300 mm) / ..."; 0.24" (1.6" to 11.81")
										BX	... mm; 6 mm (301 to 600 mm) / ..."; 0.24" (11.85" to 23.62")
										Material; surface roughness:	
										1	316L, R _a ≤ 0.8 µm (31.5 µinch)
										Material certificate:	
										A	Without
										B	EN10204-3.1 cast analysis, short form
										C	EN10204-3.1 cast analysis, long form
										D	EN10204-3.1 cast analysis + R, short form; R = surface roughness
										E	EN10204-3.1 cast analysis + R, long form; R = surface roughness
										Works Calibration:	
										A	without
										B	2-points 0 °C; 1x variable -20 to 150 °C (-4 to 302 °F)
										C	3-points 0 °C; 2x variable -20 to 150 °C (-4 to 302 °F)
										Version:	
										A	Standard
TMR31-	A	1						1		A	⇒ Order code

Easytemp® TMR35 compact thermometer

Pt100/4-wire compact thermometer, cl. A, PC-programmable, M12 connector, 4 to 20 mA analog output 4-wire, fail safe mode as per NAMUR NE43, hygienic applications. Conforms to 3-A 74-03 with process connections DB, DL, DP, HL, LB, LL, PG, PH, PL, AB.

Approval:									
	A	Version for non-hazardous areas							
Electrical connection:									
	1	Plug M12, IP66/67							
Output; Measuring range:									
	A	4 to 20 mA; 0 to 100 °C (32 to 212 °F)							
	B	4 to 20 mA; 0 to 150 °C (32 to 302 °F)							
	C	4 to 20 mA; -50 to 100 °C (-58 to 212 °F)							
	D	4 to 20 mA; -50 to 150 °C (-58 to 302 °F)							
	E	4 to 20 mA; -50 to 200 °C (-58 to 392 °F)							
	X	4 to 20 mA; to be specified							
	1	Pt100, DIN class A, 4-wire							
Neck:									
	A	without							
	B	35 mm (1.38")							
Process Connection:									
	AA	w/o adapter, M24x1.5							
	AB	Process fitting for Liquiphant G¾"/D6, weld-in adapter 316L, 3A							
	DB	Clamp ISO2852 DN25 to 38, 1 to 1½", 316L, 3-A							
	DL	Clamp ISO2852 DN40 to 51, 2", 316L, 3-A							
	DP	Clamp ISO2852 2½", 316L, 3-A							
	HL	APV-Inline DN50 PN40, 316L, 3-A							
	LB	Varivent F pipe DN25 to 32, PN40, 316L, 3-A							
	LL	Varivent N pipe DN40 to 162, PN40, 316L, 3-A							
	MB	Conical metal-to-metal G¾A, 316L							
	PG	DIN11851 DN25, PN40, 316L, 3-A							
	PH	DIN11851 DN40, PN40, 316L, 3-A							
	PL	DIN11851 DN50, PN40, 316L, 3-A							
	RI	Spring-loaded cap-nut for mounting in the thermowell G3/8"							
Insertion Length L; Diameter D:									
	AA	30 mm; 6 mm (1.18"; 0.24")							
	AB	50 mm; 6 mm (1.97"; 0.24")							
	AC	100 mm; 6 mm (3.94"; 0.24")							
	AE	150 mm; 6 mm (5.9"; 0.24")							
	AG	200 mm; 6 mm (7.87"; 0.24")							
	AX	... mm; 6 mm (40 to 300 mm) / ..."; 0.24", (1.57" to 11.81")							
	BA	38 mm; 3 mm (1.5"; 0.12")							
	BB	83 mm; 3 mm (3.27"; 0.12")							
	BX	... mm; 6 mm (301 to 600 mm) / ..."; 0.24", (11.85" to 23.62")							
	CB	DN15, L = 82 mm; 3 mm, (3.23"; 0.12") corner piece							
	TB	DN10, L = 82 mm; 3 mm, (3.23"; 0.12") T-piece							
Material; surface roughness:									
	1	316L, $R_a \leq 0.8 \mu\text{m}$ (31.5 μinch)							
	2	316L, $R_a \leq 0.4 \mu\text{m}$ (15.74 μinch)							
	3	316L, $R_a \leq 0.4 \mu\text{m}$ (15.74 μinch), electro-polished							
Material certificate:									
	A	Without							
	B	EN10204-3.1 cast analysis, short form							
	C	EN10204-3.1 cast analysis, long form							
	D	EN10204-3.1 cast analysis + R, short form; R = surface roughness							
	E	EN10204-3.1 cast analysis + R, long form; R = surface roughness							
Works Calibration:									
	A	without							
	B	2-points 0 °C; 1x variable -20 to 150 °C (-4 to 302 °F)							
	C	3-points 0 °C; 2x variable -20 to 150 °C (-4 to 302 °F)							
Version:									
	A	Standard							
TMR35-	A	1						A	\Rightarrow Order code

Accessories

All dimensions in mm (inches).
EN10204-3.1 = Material certificate (melt analysis)

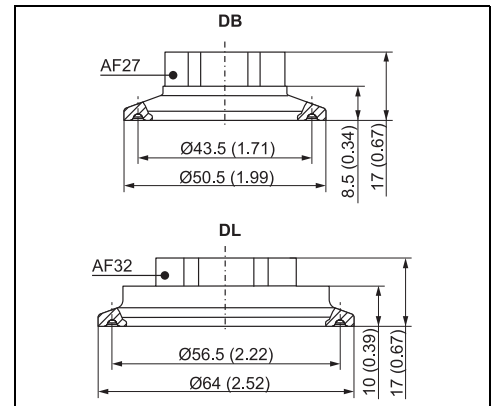
Clamp adapter

Order numbers for clamp adapter versions.

- Version DB (Clamp ISO2852 DN25 - 38):
order no. 52023994
- Version DL (Clamp ISO2852 DN40 - 51):
order no. 52023995

Optional with EN10204-3.1:

- Version DB (Clamp ISO2852 DN25 - 38):
order no. 52024001
- Version DL (Clamp ISO2852 DN40 - 51):
order no. 52024002



P01-PTx3xxxx-06-xx-xx-en-009

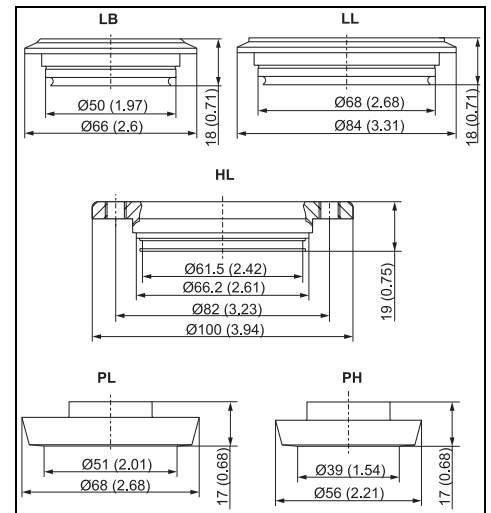
Hygiene adapter

Order numbers hygiene adapter versions.

- Version LB
(Varivent F pipe DN25 - 32, PN40):
Order no. 52023996
- Version LL
(Varivent N pipe DN40 - 162, PN40):
Order no. 52023997
- Version HL (APV-Inline DN50 PN40):
Order no. 52024000
- Version PH (DIN11851 DN40 PN40):
Order no. 52023999
- Version PL (DIN11851 DN40 PN40):
Order no. 52023998

Optional with EN10204-3.1:

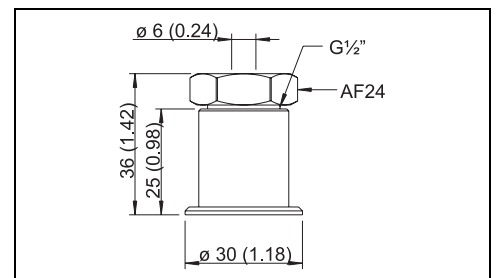
- Version LB
(Varivent F pipe DN25 - 32, PN40):
Order no. 52024003
- Version LL
(Varivent N pipe DN40 - 162, PN40):
Order no. 52024004
- Version HL (APV-Inline DN50 PN40):
Order no. 52024007
- Version PH (DIN11851 DN40 PN40):
Order no. 52024006
- Version PL (DIN11851 DN40 PN40):
Order no. 52024005



P01-PTx3xxxx-06-xx-xx-en-010

Welding boss with sealing taper

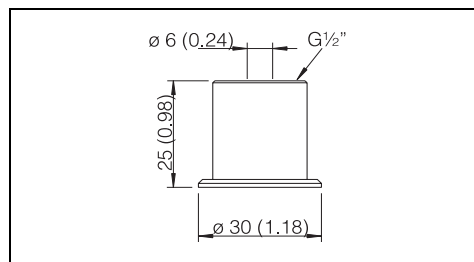
Collar welding boss moveable with sealing taper and pressure screw;
material of parts in contact with the process: 316L, PEEK, max. process pressure 10 bar (145 PSI)
Order number: 51004751



T09-TSM470AX-06-09-00-en-000

Collar welding boss

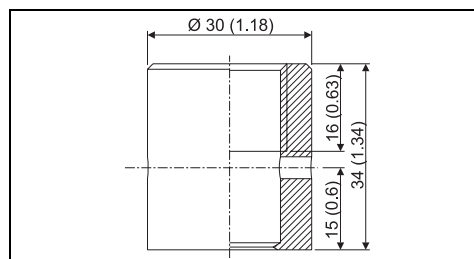
Material of parts in contact with process: 316L
Order no. 51004752



T09-TSM470BX-06-09-00-es-000

Welding boss with sealing taper (metal-metal)

Welding boss
Seal, metal-metal,
Material of parts in contact with process: 316L
Max. process pressure 16 bar (232 PSI)
Order no. 60021387



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Weld-in adapter G $\frac{3}{4}$ "

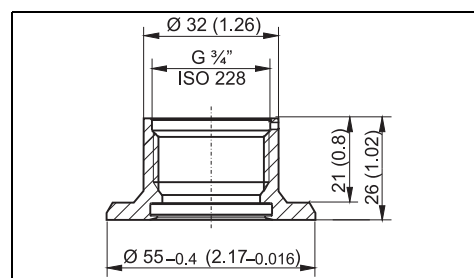
$\varnothing = 55$ mm (2.17 ") with flange for flush-mounted
Material: AISI 316L (1.4435)
FDA approved materials according to 21 CFR Part
177.1550/2600; approval: 3-A

Process pressure:

- max. 25 bar (363 PSI) at max. 150 °C (302 °F) or
- max. 40 bar (580 PSI) at max. 100 °C (212 °F)

Order number: 52001052
optional with EN10204-3.1:
Order number: 52011897

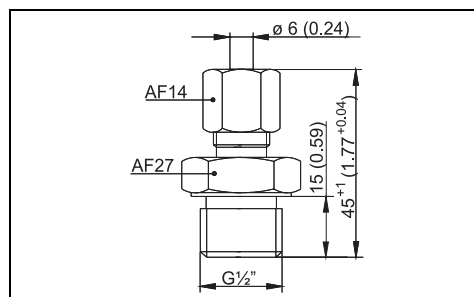
Silicone O-ring, $\varnothing 21,89 \times 2,62$
Material: VMQ70, FDA
Order number: 52014473 (5 pieces set) or
52001387 (single)



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Coupling

moveable coupling, G $\frac{1}{2}$ " process connection,
coupling and parts in contact with process: 316L
Order no. 51004753

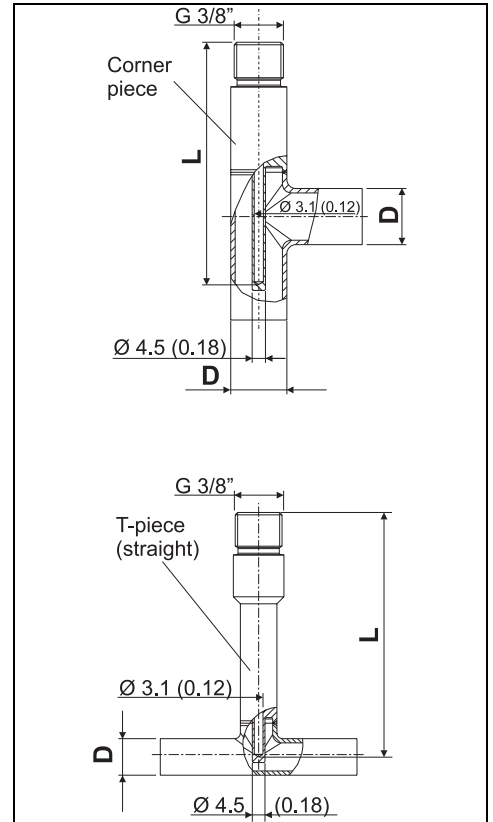


T09-TSM470AX-06-09-00-es-001

**Weld-in pipe + thermowell
TMR35F**

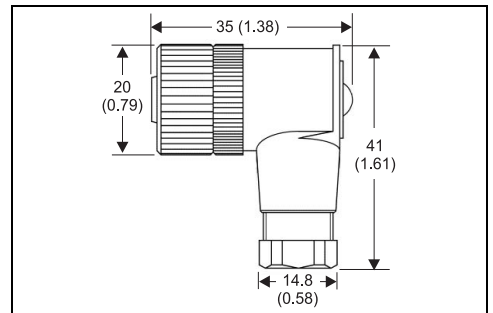
Product structure

		Connection thermometer:	
R1		Thread	3/8"
		Process connection (D):	
A		DN10, PN25, DIN 11865-A	
B		DN15, PN25, DIN 11865-A	
C		DN20, PN25, DIN 11865-A	
D		DN25, PN25, DIN 11865-A	
E		DN8, PN25, DIN 11865-A	
F		DN13, PN25, DIN 11865-B	
		Form:	
1		Corner piece	
2		T piece straight	
		Thermowell length (L); Ø:	
A		38 mm; 4,5 mm (1.5"; 0.18")	
B		83 mm; 4,5 mm (3.27"; 0.18")	
		Material:	
1		1.4435/316 L	
		Material certificate:	
1		not needed	
2		EN 10204 short form	
3		EN 10204	
		Test report:	
A		not needed	
TMR35F-	R1		1 A ⇒ order code



Coupling

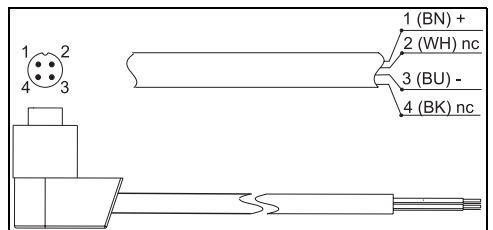
Coupling M12x1 for simple user installable assembly of the connecting cable; elbowed; connection to M12x1 housing connector IP 67, PG7
Order number: 51006327



T09-TTR3xxxx-06-09-xx-xx-001

Connecting cable (pre-assembled)

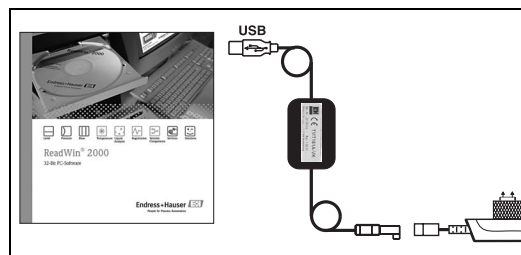
PVC cable, 4 x 0.34 mm² (22 AWG) with M12x1 coupling, elbowed, screw plug, length 5 m (16.4 ft), IP 67
Order number: 51005148
Core colours:
- 1 = BN brown
- 2 = WH white
- 3 = BU blue
- 4 = BK black



T09-TMR31XX-00-00-xx-xx-001

Configuration kit

- Configuration kit for PC-programmable transmitters – ReadWin® 2000 setup program and interface cable (4 pin plug) for PCs with USB port; with adapter for compact thermometers with M12x1 thread;
Order code: TXU10-BA
- ReadWin® 2000 can be downloaded free of charge directly from the internet at the following address:
www.endress.com/readwin



T09-TMR31 xXX-00-00-xx-xx-000

Documentation

- Operating manual "Easytemp® TMR31, TMR35" (BA215R/09)

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