

Thermowell for temperature sensors *omnigrad TA 535*

Pipe thermowell for general applications
Hexagonal extension
Threaded process connection



TA 535 is a pipe thermowell with a hexagonal extension that can be employed in several industrial applications in which processes generate medium-high stress. It is generally fitted on pipes or tanks that employ threaded process connections. Its construction, capable of housing probes with a diameter of 6 mm, allows for the combination with TST/TSC 262, TST/TSC 280, TST/TSC 281, TST/TSC 288, TMT 162R/C.

Available with connections (thermometer and process sides) either NPT or Gas, it has an immersion length that can be chosen according to the demands of the process.

Features and benefits

- Connections to the thermometer:
 - 1/2" NPT
 - G 1/2"
- Several types of process connections can be selected as standard within the sales structure:
 - G 1/2"
 - G 3/4"
 - 1/2" NPT
 - 3/4" NPT
- The material certification 3.1.B can be selected as standard within the sales structure
- Different lengths for the hexagonal extension
- Made in SS 316L / 1.4404
- Several outer diameters can be selected as standard within the sales structure

Endress + Hauser

The Power of Know How



Areas of application

Suitable for several processes of the chemical, primary and energy industries; employed in all plants that require the installation of a protection pipe thermowell for sensors with a diameter of 6 mm.

Particularly suitable for plants in which the process pressure is not particularly high.

Function and system design

Equipment architecture

TA 535 is a thermowell made from a tube. Its outer diameter can be 9, 10 or 12 mm; the internal diameter of the thermowell makes it suitable to be used in combination with an insert with a diameter of 6 mm.

Available only in the straight version.

The hexagonal extension, available in several lengths, ends with a female thread that enables the thermowell to be connected to all those sensors that have a male thermowell connection. For more detailed information on the type of connections, see chapter "Structure of components".

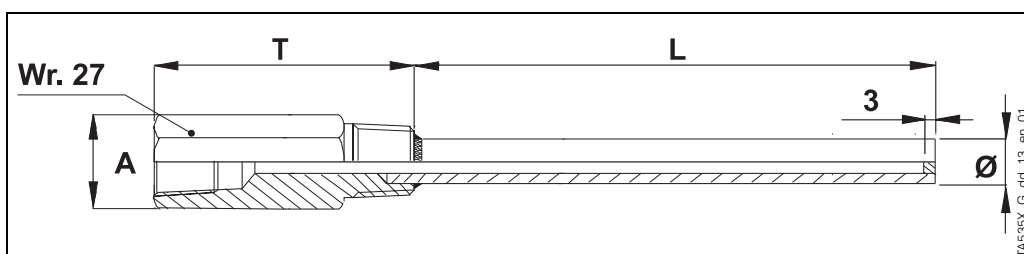


Fig. 1: Overall dimensions of TA 535

Material

Wetted part is in SS 316L/1.4404.

Weight

From 1 to 1.5 kg for standard options.

Performance

Operating conditions

Maximum process pressure

For pipes with a diameter of 9 and 10 mm:

- 5 Mpa (50 bar) at 20°C
- 3.3 Mpa (33 bar) at 250°C
- 2.4 Mpa (24 bar) at 400°C.

For tubes with a diameter of 12 mm:

- 7.5 Mpa (75 bar) at 20°C
- 5 Mpa (50 bar) at 250°C
- 3.5 Mpa (35 bar) at 400°C.

Maximum process temperature

- Thermowell stem 600°C

Maximum flow velocity

The maximum process fluid velocity supported by the thermowell decreases as the immersion length exposed to current increases.

Installation

Omnigrad TA 535 can be installed on pipes or on tanks by means of G 1/2", G 3/4", 1/2" NPT or 3/4" NPT threaded connections.

During installation, it is necessary to correctly determine the immersion length, because an incorrect evaluation could affect the accuracy of the sensor. For this reason, the immersion length must be at least 80 mm.

In the case of the installation in tubes with a reduced diameter, the axis line of the duct should be reached and if possible it should be slightly exceeded from the tip of the well (see Figure 2).

Installation of the well inclined and with its sensitive part counterposed to the normal flow of the process, may be a valid alternative to the most commonly used perpendicular one (see Figure 2).

Special attention should be paid in the case of the installation of processes with two-phase flows, since they may cause fluctuations in the detected temperature values.

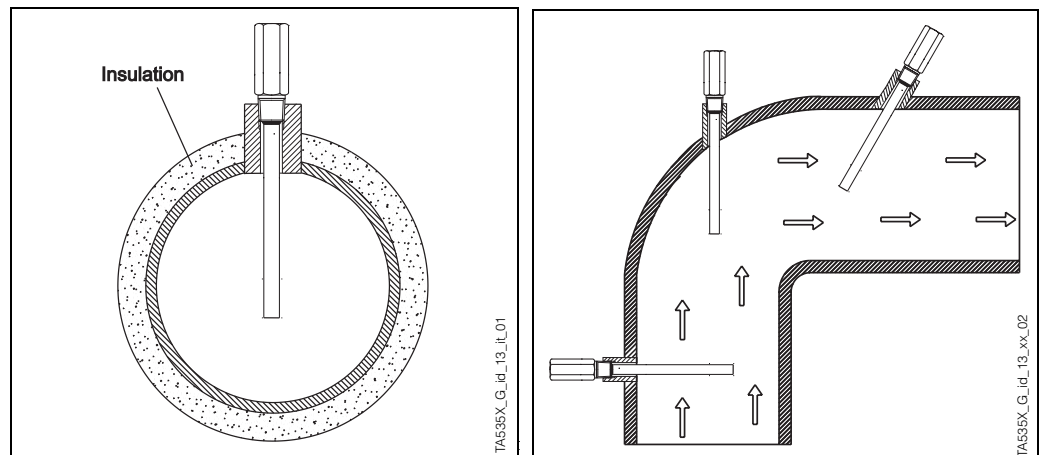
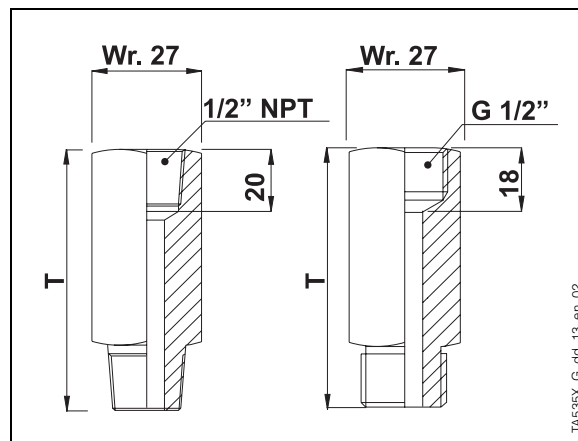


Fig. 2: Installation on pipes (left); installation options (right)

System components

Extension fitting



The extension fitting is made using a hexagonal bar (wrench 27 mm).

The threading for the connection to the sensor is available both in 1/2" NPT and G 1/2" version. The thermowell can therefore be fitted on all thermometers with a male fitting.

The sales structure offers the most common required extension lengths. It is however possible to select different dimensions for specific process requirements (refer to sections "Sales structure" at the end of this document).

Fig. 3: Extension dimensions

Stem

The immersion length can be selected according to specific requirements within the range offered by the sales structure (see section "Ordering information").

The internal diameter of the thermowell depends on the kind of tube used:

- Ø outer 9 mm - Ø internal 6.5 mm
- Ø outer 10 mm - Ø internal 6.4 mm
- Ø outer 12 mm - Ø internal 8 mm.

For tubes with an outer diameter of 9 or 10 mm, it is advisable to use inserts with a nominal diameter of 6 mm. For 12 mm tubes, it is possible to use inserts with a greater diameter. To accurately determine the immersion length of the sensor, it is important to consider the type of connection employed on the thermometer in use. To ensure a correct temperature detection, it is important to make sure that the tip of the insert touches the base of the thermowell.

TST 262 TSC 262	TST 264* TSC 264*	TST 280 TSC 280	TST 281 TSC 281	TST 288 TSC 288	TMT 162R TMT 162C
ML = A - 8	ML = A - 8	ML = A - 8	ML = A - 15	ML = A	ML = A - 8

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* Although this sensor is usually employed with bar-mounting thermowells, its fitting enables it to be used also with TA 535 thermowells

Process connection

The process connection of TA 535 is threaded only. The sales structure offers threads that are most frequently used with pipe thermowells; i.e. G 1/2", G 3/4", 1/2" NPT, 3/4" NPT.

Certificates & Approvals

Material certification

The material certification 3.1.B (in accordance with EN 10204) can be selected directly from the sales structure and refers to the parts of the thermowell in contact with the process fluid. The labeling on the thermowell allows the traceability of the used materials by means of the identification number of the product.

Further details

Maintenance

The Omnigrad TA 535 thermowell does not require specific maintenance.

Small orders (of about 10 units) and standard options can be delivered within 20 working days.

TA535	Thermometer connection					
	2	Thermometer connection 1/2" NPT				
	3	Thermometer connection G 1/2"				
Extension length						
	A	50 mm extension length				
	B	70 mm extension length				
	C	90 mm extension length				
	D	110 mm extension length				
	Y	... mm Special extension length				
Process connection thread						
	2	1/2" NPT process connection				
	3	G 1/2" process connection				
	4	3/4" NPT process connection				
	5	G 3/4" process connection				
Immersion length						
	(50...3700 mm)					
	9	Special immersion length				
Material, pipe diameter						
	GD	SS 316L / W 1.4404 - 9 mm diameter				
	HD	SS 316L / W 1.4404 - 10 mm diameter				
	KD	SS 316L / W 1.4404 - 12 mm diameter				
	YY	Material and diameter to be specified				
Plug and chain						
	A	Without plug and chain				
	B	SS 304 plug and chain				
Certificates						
	A	Without certificate				
	G	3.1.B EN 10204, for wetted parts labelled				
	Y	Certificate to specify				
Additional option						
	0	No additional option				
	1	Additional option to specify				
TA535-						complete ordering code

Supplementary Documentation

☐ General technical information on protection thermowells	TI 138T/02/en
☐ Technical information on thermometer sensor TST 262	TI 146T/02/en
☐ Technical information on thermometer sensor TST 264	TI 147T/02/en
☐ Technical information on thermometer sensor TST 280	TI 170T/02/en
☐ Technical information on thermometer sensor TST 281	TI 171T/02/en
☐ Technical information on thermometer sensor TST 288	TI 174T/02/en
☐ Technical information on thermometer sensor TMT 162R	TI 266T/02/en
☐ Technical information on thermometer sensor TSC 262	TI 165T/02/en
☐ Technical information on thermometer sensor TSC 264	TI 164T/02/en
☐ Technical information on thermometer sensor TSC 280	TI 202T/02/en
☐ Technical information on thermometer sensor TSC 281	TI 203T/02/en
☐ Technical information on thermometer sensor TSC 288	TI 204T/02/en
☐ Technical information on thermometer sensor TMT 162C	TI 267T/02/en

Subject to modification

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