

# SIEMENS



[siemens.com/pressure](https://www.siemens.com/pressure)

## What is the right pressure device for my application?

The answer is easy - with our new guide for pressure measurements!

Every application has its own unique set of conditions that must be considered when applying pressure measurement to ensure effective, accurate and safe operations.

The variety of applications for pressure measurements is large, the selection of the devices accordingly difficult.

In our guide we have chosen the most common applications for pressure measurements and show you

- which measuring arrangements are possible
- which devices are possible in each case
- with which equipment features the devices can be used.

This application brochure presents the transmitter that is most frequently used by our customers in the process industry. In addition to the recommended transmitter, there are other products in the SITRANS P family that we can use to solve your specific measurement task. Please contact us for more information.

Both the SITRANS P320 and SITRANS P420 are precision pressure gauges with a variety of process connections. They have a wide measuring range from 20 mbar to 700 bar, consequently a wide variety of applications can be served. In addition, the new HMI meets the requirements of NAMUR NE107 by allowing the device status to be checked at a glance.

The innovative **“Remote Safety Handling”** function is a digital transmission of all safety-relevant functions, enabling central SIL commissioning and validation, e.g. out of the control room, without on-site handling of the device. The time saved by Remote Safety Handling ensures a significant cost reduction during the start-up of operation. Both devices are easy to install, as they feature automatic zero point calibration and guided commissioning, thus saving additional time and costs.

### Additional features of the SITRANS P420

When it comes to digitalization, the SITRANS P420 is on the cutting edge since its integrated **“Ready for Digitalization”** function allows up to 1500 measurement values to be stored directly in the pressure transmitter itself by means of trend recording. Threshold value monitoring as well as an event counter detect threshold value violations which then get displayed as specific messages on the device as well as in the control system.

The SITRANS P420 not only impresses with its innovative digital functions, but also with its extremely high measurement accuracy of 0.04%. The SITRANS P420 thus joins the SITRANS product portfolio as an advanced option and transmitter with increased accuracy.



Type	SITRANS P320	SITRANS P420
<b>Advanced</b>		
<b>Short description</b>	Digital pressure transmitter for measuring relative pressure, absolute pressure, differential pressure, flow and level	Digital pressure transmitter as "high performance" version of the P320 for relative and differential pressure measurements
<b>Pressure types</b>	Relative pressure, absolute pressure, differential pressure	Relative pressure, absolute pressure, differential pressure
<b>Measuring span</b>	1 mbar to 700 bar	1 mbar bis 700 bar
<b>Communication</b>	4... 20 mA/HART®, PROFIBUS PA, FOUNDATION Fieldbus *	4... 20 mA/HART®, PROFIBUS PA, FOUNDATION Fieldbus*
<b>Accuracy</b>	0,065 %	<b>0,04 %</b>
<b>Max. Turndown</b>	100:1	100:1
<b>Long term stability</b>	0,125 % / 5 years	0,125 % / 5 years
<b>Certificates / Approvals</b>	ATEX, Exia/ib, Exd, FM is/xp, CSA is/xp, NEPSI, SIL, ...	ATEX, Exia/ib, Exd, FM is/xp, CSA is/xp, NEPSI, SIL, ...
<b>Special features</b>	Remote Safety Handling	Remote Safety Handling, <b>Ready for Digitalization</b>
* In preparation	<a href="https://www.siemens.com/sitransp320">siemens.com/sitransp320</a>	<a href="https://www.siemens.com/sitransp420">siemens.com/sitransp420</a>

## Pressure, level and flow measurements with SITRANS P pressure transmitters

When selecting a pressure transmitter and its measuring arrangement, many points must be taken into account, such as pressure, temperature, state of aggregation (solid, liquid, gas, vapor), chemical compatibility and physical properties of the medium, zero point displacement of measurement, ambient temperature and mounting location.

### Choosing the right accessories

The choice of accessories such as mounting brackets and fittings is huge. Siemens offers a range of valves that are mounted directly in our factory and subjected to a pressure test together with the transmitter. This means you have the complete delivery and documentation from one source.

You can find further accessories in our catalogue for [Siemens process instrumentation FI01](#) or use the application questionnaire at the end of this brochure.

## The selection of the right filling liquid

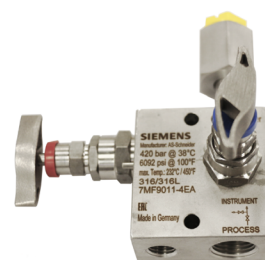
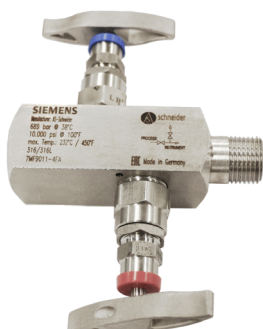
Both the measuring cells of the pressure transmitters and the diaphragm seals are filled with a liquid which serves to transmit the process pressure via the process diaphragm to the actual pressure sensor in the measuring cell.

The pressure transmitters are available with 3 different filling liquids:

- Silicone oil - first choice for all standard processes
- Inert filling liquid - Suitable for use with oxygen or other highly reactive media
- Neobee Oil - Approved for the food, beverage and pharmaceutical industry

The selection of filling fluids for diaphragm seals is much larger and depends very much on the application. For an overview and further information on the pressure/temperature curves of the filling fluids please refer to our catalogue for [Siemens Process Instrumentation FI01](#) or use the application questionnaire at the end of this brochure.

The following examples offer some guidelines and criteria that should be considered for the correct selection of pressure transmitters and the respective installation.

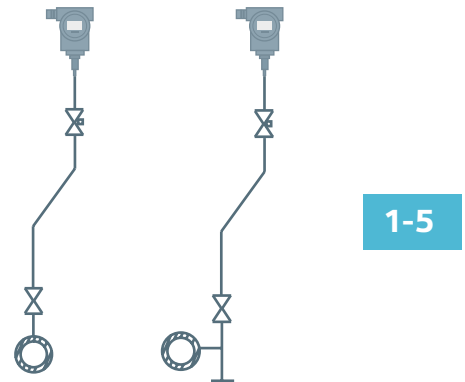


## Pressure measurements in pipelines

When measuring the pressure of a flowing substance in a pipeline, the measurement location should be chosen where the flow is undisturbed.

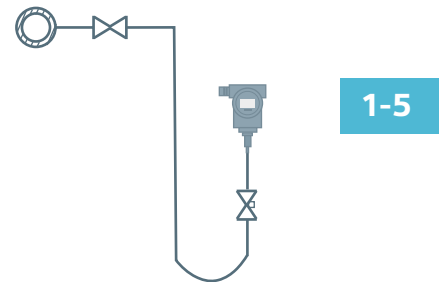
### Gaseous media

To allow the condensate produced to flow back into the pipeline, the pressure gauge must be positioned above the tapping point.



### Liquid media

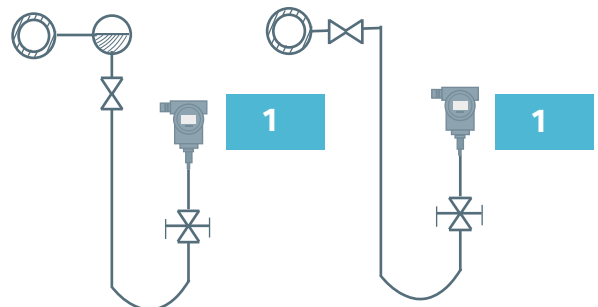
In order to allow gas accumulations within the measuring assembly to escape, the pressure gauge must be positioned below the tapping point.



### Vaporous media

The measuring line must be filled with condensate during the measurement, therefore, the pressure gauge must be placed below the tapping point. For measurements with a small measuring range, a compensation vessel must be provided, so that the disturbing influences on the pre-loaded liquid column (condensate column) are as small as possible due to the increased volume.


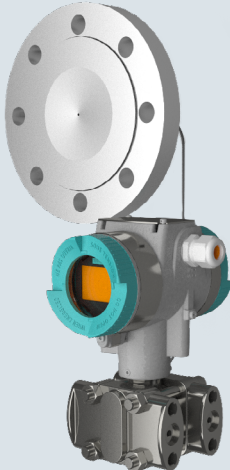
It must also be considered that the temperature at the transmitter is significantly reduced by the condensate column. Generally, a transmitter with a threaded connection and a max. medium temperature of 100°C is sufficient.



**Note:** As a rule of thumb 1m length of impulse line or a valve reduces the temperature of your measured medium at the measuring cell by ~100°C (@ ambient temperature of +20°C). The measured medium “sits” in the impulse line, it doesn’t flow. It therefore cools off to an ambient temperature relatively fast. (Source: Siemens Industry Online Support FAQs)

Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
1	<p>Non-aggressive liquids, gases and vapours</p> <p>Pressure transmitter with threaded connection</p> 	<p>Stainless steel 316L Alloy C22</p>	<p><u>Threads:</u> Thread G1/2A according DIN EN 837-1 1/2-14 NPT F 1/2-14 NPT M M20 x 1,5 M Oval flange with 7/16-20 UNF Oval flange with M10</p>	<p>-40 to 100 °C Silicone oil</p> <p>-20 to 100 °C Inert filling oil</p> <p>-10 to 100 °C Neobee-oil</p>
2	<p>Viscous media</p> <p>Pressure transmitter with diaphragm seal</p> 	<p>Stainless steel 316L Alloy C22</p>	<p><u>Flanges according:</u></p> <ul style="list-style-type: none"> <li>- DIN EN 1092-1 B1</li> <li>- ASME B16.5</li> </ul> <p><u>Hygienic connections according:</u></p> <ul style="list-style-type: none"> <li>- DIN 11851 Hygienic Flange</li> <li>- DIN 32676 Tri-Clamp</li> <li>- ISO 2852 Tri-Clamp</li> <li>- DIN 11864-1 threaded socket</li> <li>- DIN 11864-2 aseptic flange</li> <li>- DIN 11864-3 aseptic clamp</li> </ul> <p><u>Hygienic connections</u></p> <p><u>Manufacturerspecific:</u></p> <ul style="list-style-type: none"> <li>- Flange NEUMO Bioconnect</li> <li>- Clamp NEUMO Bioconnect</li> <li>- Flange NEUMO Biocontrol</li> </ul> <p><u>Hygienic connections special fabrication</u></p> <ul style="list-style-type: none"> <li>- Tank connection TG</li> <li>- DRD-flange</li> <li>- SMS-clamp</li> <li>- IDF-clamp</li> </ul> <p><u>Paper industry:</u></p> <ul style="list-style-type: none"> <li>- PMC</li> <li>- PMC Minibolt</li> </ul>	<p>-40 to 200 °C Silicone oil</p> <p>-20 to 100 °C Inert filling oil</p> <p>-10 to 200 °C Neobee-oil</p>

Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
3	<p>Viscous or aggressive media</p> <p>Pressure transmitter with remote seal in flange design</p> 	<p>Stainless steel 316L <u>optional with coating:</u> PTFE, ECTFE or PFA Monel 400 Hastelloy® C276 Hastelloy® C4 Hastelloy® C22 Tantal Titan Nickel 201 Duplex 2205 Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u> - <a href="#">DIN EN 1092-1 B1</a> - <a href="#">ASME B16.5</a> <a href="#">Thread B and NPT</a> <a href="#">Inline diaphragm seal</a> <a href="#">Hygienic versions</a> Optional with temperature decoupler</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 to 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarbonoil (for oxygen applications)</p> <p>-15 to 230 °C FDA compliant filling oil</p>
4	<p>Non-aggressive liquids, gases and vapours at low pressures</p> <p>Relative pressure transmitter of the differential pressure series</p> 	<p><u>Process membrane:</u> Stainless steel 316L Alloy C276 Tantalum Monel 400 Gold-plated</p> <p><u>Pressure caps:</u> Stainless steel 316 Alloy C22 Monel 400</p>	<p>Oval flange with 7/16-20 UNF Oval flange with M10</p>	<p>-40 to 100 °C Silicone oil</p> <p>-20 to 100 °C Inert filling oil</p> <p>-10 to 100 °C FDA compliant filling oil</p>

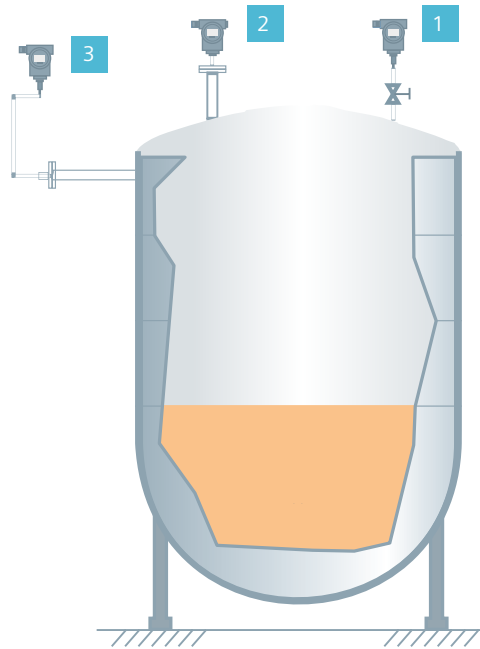
Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
5	<p>Viscous or aggressive media</p> <p>Pressure transmitter in flange design with flexible capillary tube</p> 	<p>Stainless steel 316L <u>optional with coating:</u> PTFE, ECTFE o. PFA Monel 400 Hastelloy® C276 Hastelloy® C4 Hastelloy® C22 Tantalum Titanium Nickel 201 Duplex 2205 Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u> - <a href="#">DIN EN 1092-1 B1</a> - <a href="#">ASME B16.5</a> <a href="#">Thread B and NPT</a> <a href="#">Inline diaphragm seal</a> <a href="#">Hygienic versions</a> Capillary tube length 1,0 m to 10,0 m</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 to 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarbonoil (for oxygen applications)</p> <p>-15 to 230 °C FDA compliant filling oil</p>
6	<p>Viscous or aggressive media with low pressures</p> <p>Differential pressure transmitter in flange design with flexible capillary tube</p> 	<p>Stainless steel 316L <u>optional with coating:</u> PTFE, ECTFE o. PFA Monel 400 Hastelloy® C276 Hastelloy® C4 Hastelloy® C22 Tantalum Titanium Nickel 201 Duplex 2205 Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u> - <a href="#">DIN EN 1092-1 B1</a> - <a href="#">ASME B16.5</a> <a href="#">Thread B and NPT</a> <a href="#">Inline diaphragm seal</a> <a href="#">Hygienic versions</a> Capillary tube length 1,0 m to 10,0 m</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 to 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarbonoil (for oxygen applications)</p> <p>-15 to 230 °C FDA compliant filling oil</p>


## Pressure measurements in closed containers

Whether you have limited space, potentially explosive atmospheres, special coatings, or simply a preference for special process connections, this section will show you what you can do with our pressure gauges of the SITRANS P family. When measuring pressure in closed vessels, it must be ensured, when gaseous media is present, that any condensate produced can flow back into the vessel.

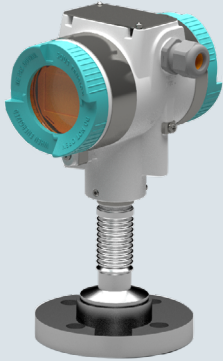

When vaporous media need to be measured, make sure that a condensate column protects the pressure transmitter against high temperatures. This can be achieved by the use of watertrap.

Alternatively, a pressure transmitter with attached isolating diaphragm seal and a high-temperature oil filling can be used.



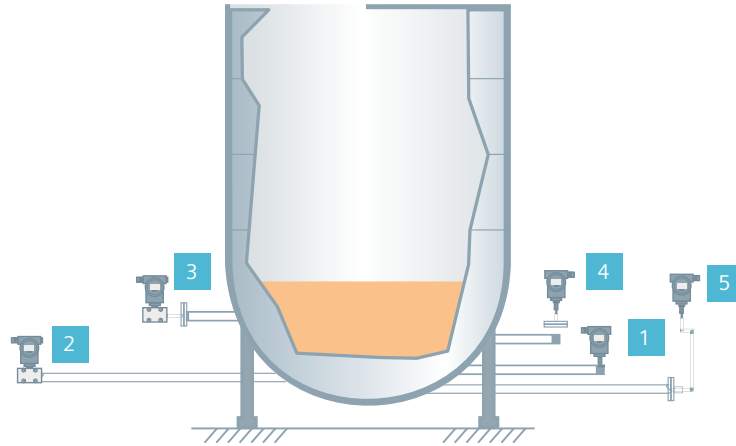
Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
1	<p>Non-aggressive liquids, gases and vapours</p> <p>Pressure transmitter with threaded connection</p> 	<p>Stainless steel 316L</p> <p>Alloy C22</p>	<p><u>Threads:</u></p> <p>Thread G1/2A according DIN EN 837-1</p> <p>½-14 NPT F</p> <p>½-14 NPT M</p> <p>M20 x 1,5 M</p> <p>Oval flange with 7/16-20 UNF</p> <p>Oval flange with M10</p>	<p>-40 to 100 °C Silicone oil</p> <p>-20 to 100 °C Inert filling oil</p> <p>-10 to 100 °C Neobee oil</p>






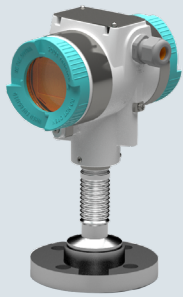

Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
2	<p>Viscous or aggressive media</p> <p>Pressure transmitter in flange design with temperature decoupler</p> 	<p>Stainless steel 316L</p> <p><u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA</p> <p>Monel 400</p> <p>Hastelloy® C276</p> <p>Hastelloy® C4</p> <p>Hastelloy® C22</p> <p>Tantalum</p> <p>Titanium</p> <p>Nickel 201</p> <p>Duplex 2205</p> <p>Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a></p> <p>- <a href="#">ASME B16.5</a></p> <p><a href="#">Thread B and NPT</a></p> <p><a href="#">Inline diaphragm seal</a></p> <p><a href="#">Hygienic versions</a></p> <p>Optional with temperature decoupler</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 to 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarbonoil (for oxygen applications)</p> <p>-15 to 230 °C FDA compliant filling oil</p>
3	<p>Viscous or aggressive media</p> <p>Pressure transmitter in flange design with flexible capillary tube</p> 	<p>Stainless steel 316L</p> <p><u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA</p> <p>Monel 400</p> <p>Hastelloy® C276</p> <p>Hastelloy® C4</p> <p>Hastelloy® C22</p> <p>Tantalum</p> <p>Titanium</p> <p>Nickel 201</p> <p>Duplex 2205</p> <p>Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a></p> <p>- <a href="#">ASME B16.5</a></p> <p><a href="#">Thread B and NPT</a></p> <p><a href="#">Hygienic versions</a></p> <p>Capillary tube length 1,0 m to 10,0 m</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 to 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarbonoil (for oxygen applications)</p> <p>-15 to 230 °C FDA compliant filling oil</p>

## SITRANS P320 and P420 for level measurement in open tanks and vessels

The filling level is determined by the pressure on the tank bottom. If the transmitter is located below the tapping point, the difference in height must be taken into account when adjusting the zero point.

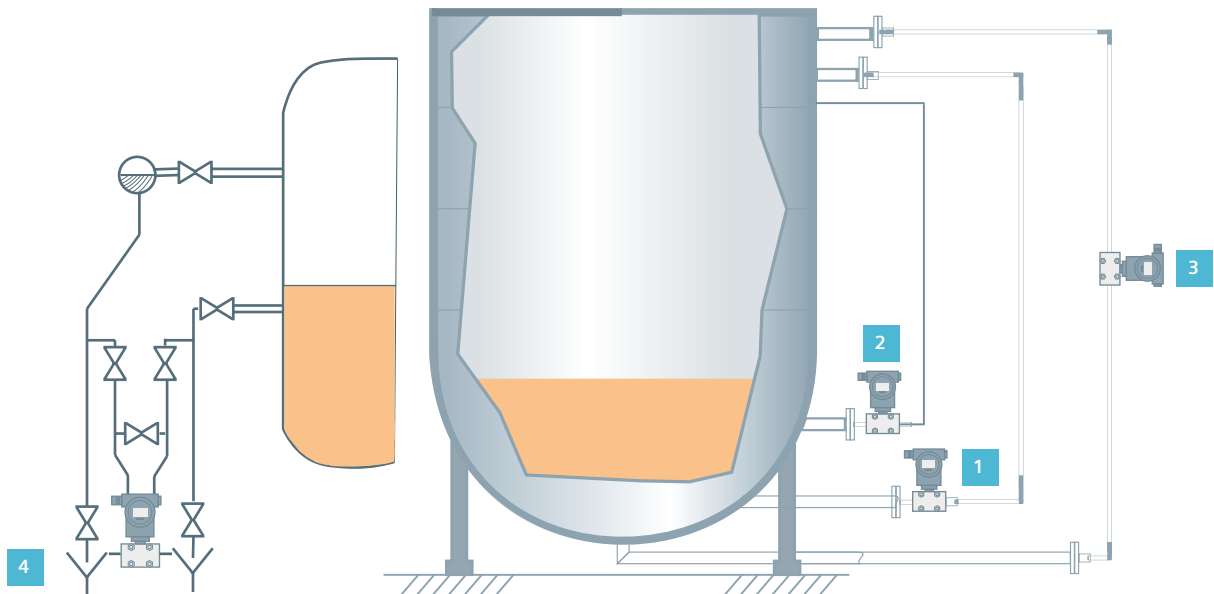


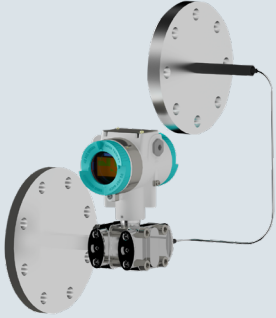
Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
1	<p>Non-aggressive liquids, gases and vapours</p> <p>Pressure transmitter with threaded connection</p> 	<p>Stainless steel 316L</p> <p>Alloy C22</p>	<p><u>Threads:</u></p> <p>Thread G1/2A according DIN EN 837-1</p> <p>½-14 NPT F</p> <p>½-14 NPT M</p> <p>M20 x 1,5 M</p> <p>Oval flange with 7/16-20 UNF</p> <p>Oval flange with M10</p>	<p>-40 to 100 °C Silicone oil</p> <p>-20 to 100 °C Inert filling oil</p> <p>-10 to 100 °C Neobee oil</p>
2	<p>Non-aggressive liquids, gases and vapours at low pressures</p> <p>Relative pressure transmitter of the differential pressure series</p> 	<p><u>Process membrane:</u></p> <p>Stainless steel 316L</p> <p>Alloy C276</p> <p>Tantalum</p> <p>Monel 400</p> <p>Gold-plated</p> <p><u>Pressure caps:</u></p> <p>Stainless steel 316</p> <p>Alloy C22</p> <p>Monel 400</p>	<p>Oval flange with 7/16-20 UNF</p> <p>Oval flange with M10</p>	<p>-40 to 100 °C Silicone oil</p> <p>-20 to 100 °C Inert filling oil</p> <p>-10 to 100 °C FDA compliant filling oil</p>

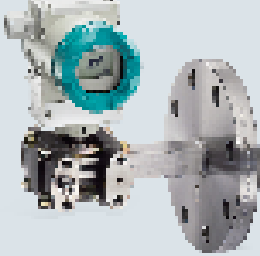
Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
3	<p>Aggressive liquids</p> <p>Differential pressure transmitter with diaphragm seal on plus side</p> 	<p>Stainless steel 316L <u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA Monel 400 Hastelloy® C276 Hastelloy® C4 Hastelloy® C22 Tantalum Titanium Nickel 201 Duplex 2205 Stainless steel 316L, gold-plated</p>	<p><u>Flanges according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a> - <a href="#">ASME B16.5</a></p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 tp 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarboil (for Oxygenapplication)</p> <p>-15 to 230 °C FDA compliant filling oil</p>
4	<p>Aggressive liquids</p> <p>Pressure transmitter in flanged design with temperature decoupler</p> <p>Mounting vertical</p> 	<p>Stainless steel 316L <u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA Monel 400 Hastelloy® C276 Hastelloy® C4 Hastelloy® C22 Tantalum Titanium Nickel 201 Duplex 2205 Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a> - <a href="#">ASME B16.5</a> <a href="#">Thread B and NPT</a> <a href="#">Hygienic versions</a></p> <p>Optional with temperature decoupler</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 tp 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarboil (for oxyge napplications)</p> <p>-15 to 230 °C FDA compliant filling oil</p>
5	<p>Aggressive liquids</p> <p>Pressure transmitter in flange design with flexible capillary tube</p> 	<p>Stainless steel 316L <u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA Monel 400 Hastelloy® C276 Hastelloy® C4 Hastelloy® C22 Tantalum Titanium Nickel 201 Duplex 2205 Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a> - <a href="#">ASME B16.5</a> <a href="#">Thread B and NPT</a> <a href="#">Hygienic versions</a></p> <p>Capillary tube length 1,0 m to 10,0 m</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 tp 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarboil (for oxygen applica- tions)</p> <p>-15 to 230 °C FDA compliant filling oil</p>

## SITRANS P320 and P420 for level measurement in closed vessels

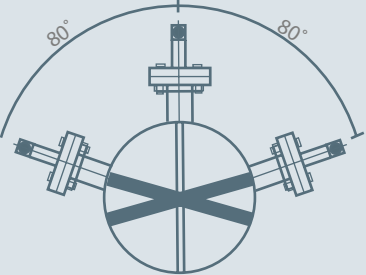
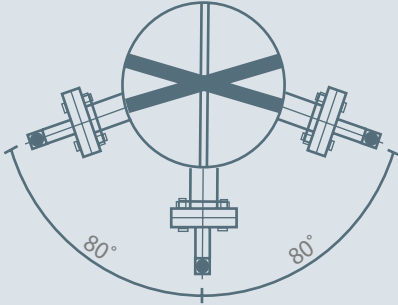
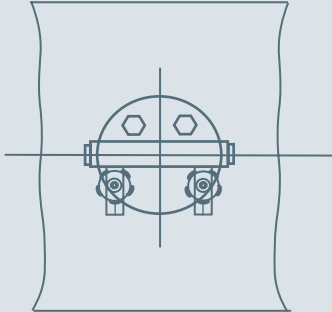
The pressure difference between the liquid column in the vessel and a reference column corresponds to the level.

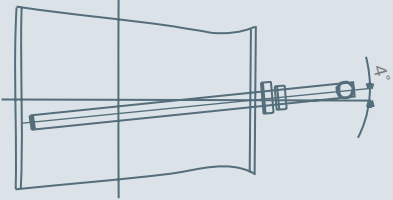
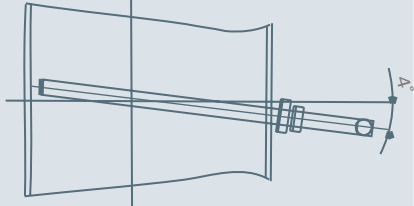
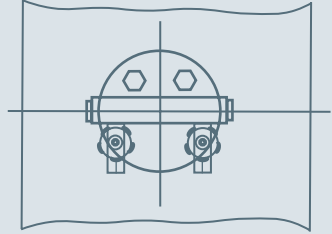



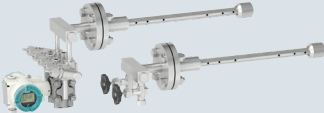

Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
1	<p>Viscous or aggressive media</p> <p>Differential pressure transmitter with diaphragm seal (fix connection on the plus side and a capillary tube on the minus side)</p> 	<p>Stainless steel 316L</p> <p><u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA</p> <p>Monel 400</p> <p>Hastelloy® C276</p> <p>Hastelloy® C4</p> <p>Hastelloy® C22</p> <p>Tantalum</p> <p>Titanium</p> <p>Nickel 201</p> <p>Duplex 2205</p> <p>Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a></p> <p>- <a href="#">ASME B16.5</a></p> <p>Capillary tube length 1,0 m to 10,0 m</p>	<p>-90 to 160 °C</p> <p>Silicone oil M5</p> <p>-40 to 300 °C</p> <p>Silicone oil M50</p> <p>-10 to 400 °C</p> <p>High temperature oil</p> <p>-30 to 175 °C</p> <p>Halocarboil (for oxygen applications)</p> <p>-15 to 230 °C</p> <p>FDA compliant filling oil</p>

Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
2	<p>Viscous media</p> <p>Differential pressure transmitter with diaphragm seal on plus side</p> 	<p>Stainless steel 316L <u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA</p> <p>Monel 400</p> <p>Hastelloy® C276</p> <p>Hastelloy® C4</p> <p>Hastelloy® C22</p> <p>Tantalum</p> <p>Titanium</p> <p>Nickel 201</p> <p>Duplex 2205</p> <p>Stainless steel 316L, gold-plated</p>	<p><u>Flange according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a></p> <p>- <a href="#">ASME B16.5</a></p> <p>Capillary tube length 1,0 m to 10,0 m</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 tp 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarbonoil (for Oxygenapplication)</p> <p>-15 to 230 °C FDA compliant filling oil</p>
3	<p>Viscous or aggressive media</p> <p>Pressure transmitter in flange design with flexible capillary tube</p> 	<p>Stainless steel 316L <u>optional with coating:</u></p> <p>PTFE, ECTFE o. PFA</p> <p>Monel 400</p> <p>Hastelloy® C276</p> <p>Hastelloy® C4</p> <p>Hastelloy® C22</p> <p>Tantalum</p> <p>Titanium</p> <p>Nickel 201</p> <p>Duplex 2205</p> <p>Stainless steel 316L, Gold-plated</p>	<p><u>Flange according:</u></p> <p>- <a href="#">DIN EN 1092-1 B1</a></p> <p>- <a href="#">ASME B16.5</a></p> <p><a href="#">Thread B and NPT</a></p> <p><a href="#">Hygienic versions</a></p> <p>Capillary tube length 1,0 m to 10,0 m</p>	<p>-90 to 160 °C Silicone oil M5</p> <p>-40 tp 300 °C Silicone oil M50</p> <p>-10 to 400 °C High temperature oil</p> <p>-30 to 175 °C Halocarbonoil (for Oxygenapplication)</p> <p>-15 to 230 °C FDA-compliant filling oil</p>
4	<p>Clean, boiling and non-boiling liquids</p> <p>Differential pressure transmitter</p> 	<p><u>Process membrane:</u></p> <p>Stainless steel 316L</p> <p>Alloy C276</p> <p>Tantalum</p> <p>Monel 400</p> <p>Gold-plated</p> <p><u>Pressure caps:</u></p> <p>Stainless steel 316L</p> <p>Alloy C22</p> <p>Monel 400</p>	<p>Oval flange with 7/16-20 UNF</p> <p>Oval flange with M10</p>	<p>-40 to 100 °C Silicone oil</p> <p>-20 to 100 °C Inert filling oil</p> <p>-10 to 100 °C FDA-compliant filling oil</p>

# Flow measurements with SITRANS P pressure transmitters and SITRANS FPS300 averaging pitot tube?

Gases	Liquids	Steam
		
<p>Installation of the sensor upward in the range between <math>-80^\circ</math> and <math>+80^\circ</math>.</p>	<p>Installation of the sensor downward in the range between <math>-80^\circ</math> and <math>+80^\circ</math>.</p>	<p>Installation of the sensor always horizontal.</p>

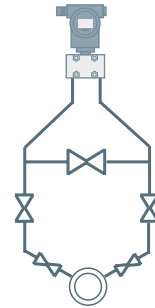
With vertical pipe run		
		
<p>Slightly inclined installation between <math>0^\circ</math> and <math>4^\circ</math> of the sensor so that the condensate can flow from the sensor head back into the process.</p>	<p>Slightly inclined installation between <math>0^\circ</math> and <math>4^\circ</math> of the sensor so that air and gas bubbles can flow back into the process (inclined opposed to gases).</p>	<p>Installation of the sensor always horizontal.</p>

Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
1	Differential pressure transmitter with averaging pitot tube for liquids and gas 	Stainless steel 316L Alloy C22	DN 40 - DN 4000 DIN EN 1092-1 to PN100 ASME B16.5 to Class 900  In compact and remote design	PED Applications: Stainless Steel sensor: - 100 °C to 450 °C 16Mo3: - 20 °C to 490 °C  Non-PED Applications: Stainless Steel sensor: - 100 °C to 600 °C Hastelloy: -20 °C to 700 °C
2	Differential pressure transmitter with averaging pitot tube for vapours 	Stainless steel 316L Alloyed heat-resistant steel 16Mo3	DN 40 - DN 2000 DIN EN 1092-1 to PN160 ASME B16.5 to Class 900  In compact and remote design	PED Applications: Stainless Steel sensor: - 100 °C to 450 °C 16Mo3: - 20 °C to 490 °C  Non-PED Applications: Stainless Steel sensor: - 100 °C to 600 °C Hastelloy: -20 °C to 700 °C
3	Differential pressure transmitter with averaging pitot tube for vapours 	Stainless steel 316L	DN 40 - DN 2000 DIN EN 1092-1 to PN40  In compact and remote design	PED Applications: Stainless Steel sensor: - 100 °C to 450 °C 16Mo3: - 20 °C to 490 °C  Non-PED Applications: Stainless Steel sensor: - 100 °C to 600 °C Hastelloy: -20 °C to 700 °C

# Flow measurement with SITRANS P pressure transmitters and SITRANS FPS200 orifice according to ISO 5167

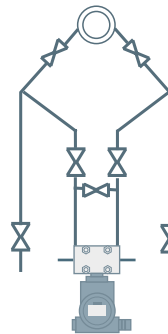
## Gaseous media

For dry gases, the differential pressure transmitter can be installed above or below the orifice plate, however the installation above orifice plate is preferred, especially with humid gases, so that the condensate produced can flow back into the pipeline.



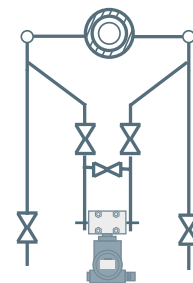
## Liquid media


When measuring liquids, the impulse pipes must be filled without gas inclusions. For this reason, the differential pressure transmitter is located below the orifice plate so that the impulse pipes are automatically degassed.



## Vaporous media

The impulse pipes must be filled with condensed process media.



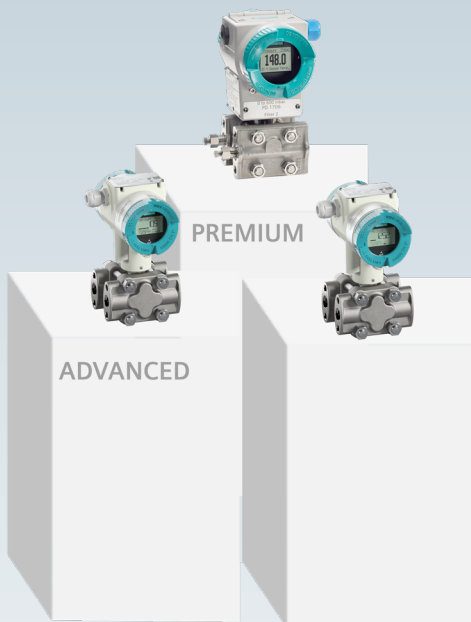
Nr.	Application Transmitter design	Wetted parts material	Process connection	Media temperature
1	<p>Differential pressure transmitter with annular chamber according ISO 5167</p> 	Stainless steel 316L	<p>DN 50 to DN 600 In compact and remote design</p>	<p>Stainless Steel: 1.4404 - 10 °C to 200 °C</p>



2	<p>Differential pressure transmitter with orifice and meter run according to ISO 5167</p> 	Stainless steel 316L	DN 10 to DN 50 In compact and remote design	Stainless Steel: 1.4404 - 10 °C to 200 °C
3	<p>Differential pressure transmitter with insertion orifice and flange according to ISO 5167</p> 	Stainless steel 316L	DN 50 to DN 600 In compact and remote design	Stainless Steel: 1.4404 - 10 °C to 200 °C



Our [PIA Life Cycle Portal](#) provides service and support throughout the entire product life cycle. During the design process we support you with tools for the calculation of averaging pitot tubes and orifices as well as the measuring span when using diaphragm seals and the total performance of pressure transmitters.



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# Selection Guide for SITRANS P320 / P420 – Intelligent Pressure Transmitters

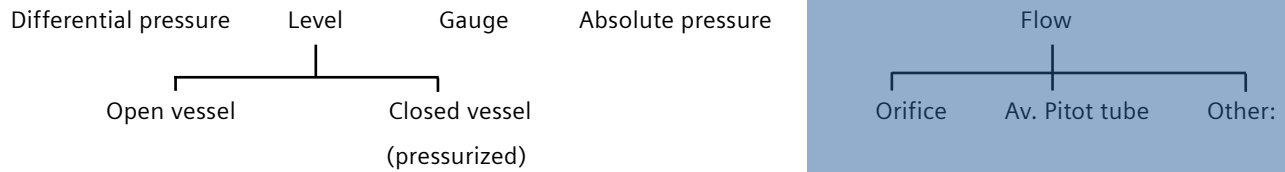
**Support:** <https://support.industry.siemens.com/cs/start?lc=de-WW>

**Instruction:** Please select the relevant options for your measuring task or specify via text field

## Customer information

Company	
Contact person	
Phone	
E-Mail	

## Value to be measured



## Process conditions

Measuring span from:                      to :                      BAR      PSI      in H2O      FTH2O      Other:

Max. operating pressure:                      BAR      PSI      in H2O      FTH2O      Other:

Min. Temp.:                      Max. Temp.:                      °F      °C

Medium:                      Liquid                      Gas

Nominal diameter:

Nominal pressure:

Flow from:                      to :                      m<sup>3</sup>/h      Other:

## Process connections

Submersible Sensor (LH 100, LH 300)

Thread:

G½ "      ½-NPT M      ½-NPT F      Oval flange ¼-18 NPT      Other:

Does the application require a diaphragm seal?      Yes      No

ND/DN:      1"/DN25      1 ½"/DN40      2"/DN50      3"/DN80      4"/DN100      5"/DN125      Other:

Flange:

EN ASME JIS AS Hygienic:

Other:

Direct connection

Flexible capillary tube with length:

Other:

Material of intra-media components:

Stainless steel 316L

Hastelloy C-276

Ceramic

Monel

Tantalum

Gold-plated

PTFE

ECTFE

PFA

### Housing, Display options and Communication

Die-cast aluminium housing

Stainless steel housing

is a display required

Measuring accuracy

$\leq 0,5\%$

$\leq 0,3\%$

$\leq 0,25\%$

$\leq 0,075\%$

Communication

4-20 mA HART

Profibus PA

Fieldbus Foundation

### Type of protection and approval body

Without Ex

Intrinsic safety

Explosion-proof

Other:

ATEX

CSA

FM

NEPSI

Other:

### Certificates and declarations

CRN

SIL 2/3

NSF 61

NACE

Marine approval

Hygienic approval

WHG overfill protection required

Material certificate / Certificate of origin (EN 10204-3.1)

Calibration certificate, if yes

3 points

5 points

Other:

### Is additional material required?

Integrated 2-, 3-, or 5-way-valve block

Mounting bracket in galvanized steel or stainless steel

Cable gland

Plastic

Brass

Stainless steel

Other:

