

## Pressure Transmitter

# MPS510



## OVERVIEW

### Operation

MPS510 series pressure transmitters are suitable for liquids, dirty fluids pressure measuring and controlling in the moderate and high viscous media, with sensor probe working very well with long term stability at the high temperature of 125°C

### Features

- Compact design
- Protection type IP65 or IP67 as optional
- Corrosion resistant stainless steel design
- Wide measuring range
- Simple installation
- Various output signal
- Flush Diaphragm
- High viscosity resistance

### Application

- dirty fluids pressure measuring and controlling
- chemical industry

## OPERATING DATA

<b>Temperature Limit</b>	-40...125°C
<b>Compensated Temp. Limit</b>	0...80°C
<b>Stability</b>	0.15% of FS/year
<b>Accuracy</b>	±0.5% FS for MPS510 ±0.2% FS for MPS511
<b>Over Pressure</b>	Full scale range up to 16 bar-2.5x Above 16 to 400bar - 2x
<b>Repeatability</b>	±0.05 % of Full scale
<b>Zero Balance</b>	±5 % of Full scale

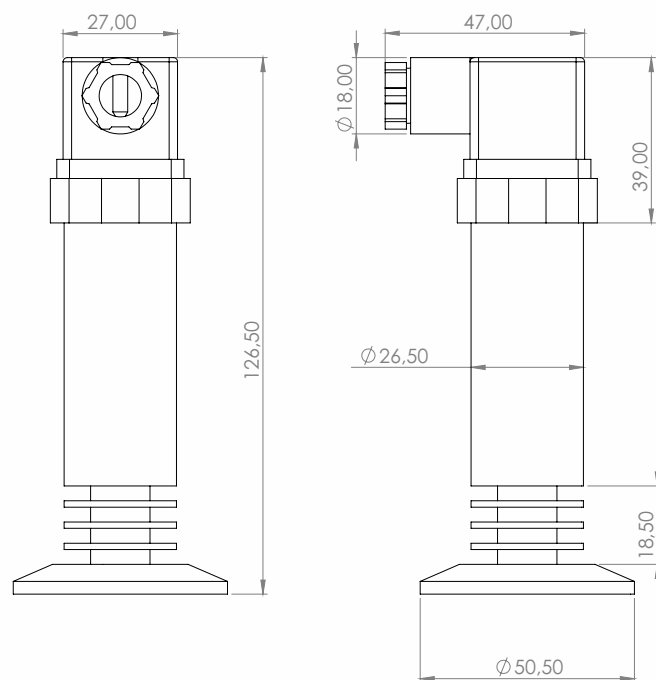
## MEASURING RANGES

**Max Pressure Range** 0-400 bar

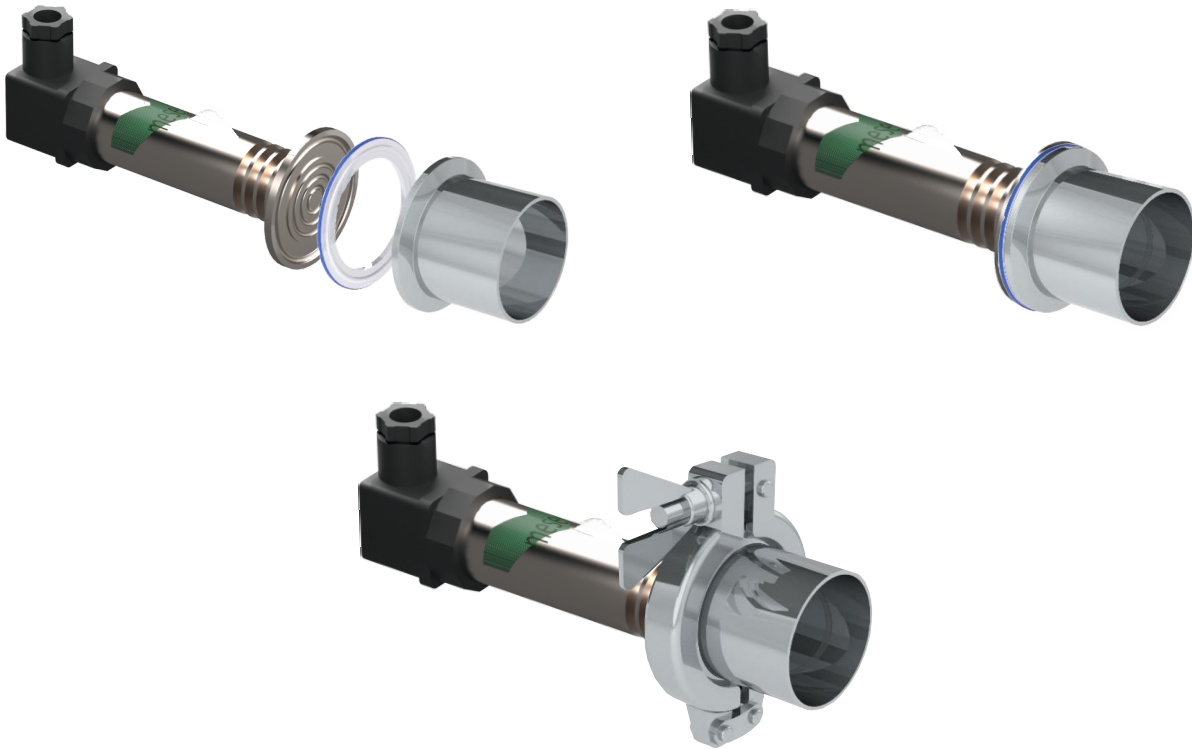
## MATERIALS

<b>Wetted Parts</b>	AISI316
<b>Body Tube</b>	AISI304
<b>Others</b>	On request

## TECHNICAL DRAWINGS AND DIMENSIONS



## ■ INSTALLATION



The Tri Clamp fittings can be confusing for those not familiar with them, but if you remember these few simple guidelines working with and sizing them will be a much easier task:

1. Tri Clamp is the common name for sanitary fittings with a clamp end ferrule
2. Tri Clamp size is determined by the OD (outside diameter) of the tubing, not the diameter of the ferrule flange
3. For smaller OD tubing (1/2" & 3/4") and (1" & 1.5"), the Tri Clamp ferrules sizes are combined for each pair
4. Compatible sizes can be joined directly, but different OD tubes will affect flow; also always use the larger gasket size
5. Please double check everything to avoid errors in ordering and assembly

Sanitary clamp end connections were commonly known as "Tri-Clover," a brand and registered trademark of Alfa-Laval, the major manufacturer of these connection types for over 50 years. Later, Ladish Co. took over the brand "Tri-Clover" and rebranded them as "Tri Clamp." Tri Clamp specifically, was originally used to describe the Tri-Clover 3-segment clamps, but now the name "Tri Clamp" is universally used as a way of referring to these types of sanitary clamps across the industry.

### **Determining the Correct Tri-clamp Size**

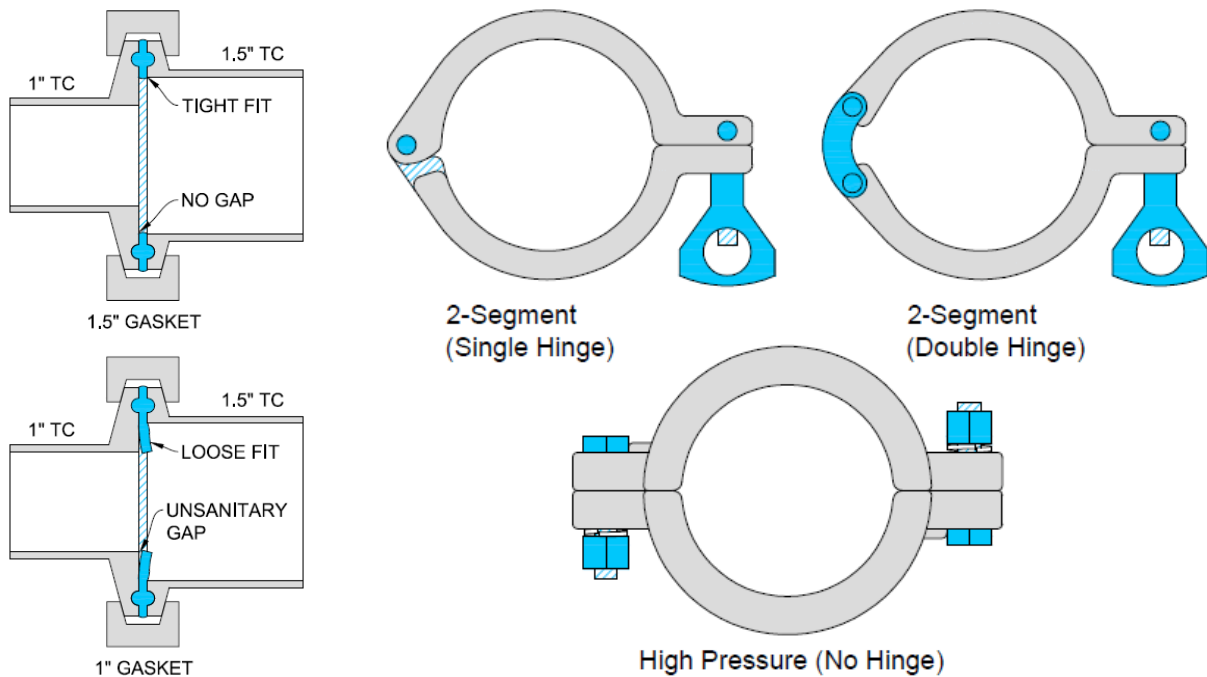
The most important factor to remember is that Tri Clamp size is determined by the outside diameter (OD) of the tubing, and NOT the outside diameter of the flange. This distinction is important because the Tri Clamp flange, which follows a standard, is approximately 1/2" larger than the tubing and is the most common point of confusion. Thus a 1.5" Tri Clamp fitting, will have a flange that is 1.984" (almost 2" on a tape measure), and if we go by the flange measurement and order a 2" Tri clamp to match, we find our newly arrived fitting is about 1/2" too large.

Another significant point of confusion comes from the smaller OD tubing. The 1/2" and 3/4" tubes both share the 3/4" Tri Clamp ferrule (0.984" flange), and the same is true for the 1" and 1.5" tubes which share the 1.5" Tri Clamp ferrule (1.984" flange) - two clamp sizes for 4 different fittings. As a result, two pairs of different sized tubing are compatible and can be connected together, but we encourage you to read the next section to get a more thorough understanding of how to do this properly and the effect it will have.

## Understanding the Joining and Gasket Selection for Compatible Sizes

Because you can directly join each pair of smaller compatible sizes, it is important to be aware of the effect this has on the material flowing through the tubing. The different sized tubing will behave just like an end cap reducer that has an abrupt size change, but without the explicit need for a reducer. On larger tubing (2"+) you would need a reducer specifically to transition sizes. This can be accomplished with either an end cap reducer, or a concentric/eccentric reducer both of which are tapered and allow a more gradual transition between sizes. The smaller compatible sizes also have concentric/eccentric reducers that avoid the abrupt size change.

The second important consideration is the gasket. On larger tubing (2"+) using the appropriately sized gaskets is pretty straightforward, and when clamped these gaskets have minimal intrusion into the flow of material. However, that is not as easily the case when joining a larger tube OD directly to a smaller tube OD of a compatible clamp size. The correct gasket will be sized to the larger of the two tubes. For example: When joining a 1.5" tube to a 1" tube, if a 1" gasket is used, you run risk of unsanitary conditions around the unclamped section of a 1" gasket loosely held against the face of the 1.5" tube flange. The correct gasket choice is a 1.5" gasket. The same is true when combining 1/2" and 3/4" tubing, which should be joined by a 3/4" gasket. The only time a 1/2" or a 1" gasket are used is when you are combining two 1/2" or two 1" OD tubes, respectively.



## Clamp Style Selection

Our Tri Clamp fitting clamps come in three main types: a 2-segment (single hinge), a 2-segment (double hinge), and a high pressure bolted no hinge version. The single hinge design is the choice clamp for most of our customers, and is considered cost-effective for most applications. The double hinge design costs a bit more and is much more flexible so they are easier to install in tight spaces that the single hinge may not be able to be used in. Since the majority of our customers choose the single hinge clamp, we only carry a limited selection of the double hinge variant. Both of these designs have similar pressure ratings, and can handle similar installation clearances.

The high pressure bolted version is not hinged, but instead both segments are bolted together. The bolts are kept from rotating during installation by a shoulder that is part of the clamp casting. They are held together using a lock washer and brass nut; brass is chosen because it is naturally resistant to galling and seizing on stainless steel bolts. These are more suited to a permanent or semi-permanent application where frequent service is not needed or high pressure safety supersedes ease of service.

## CONNECTION

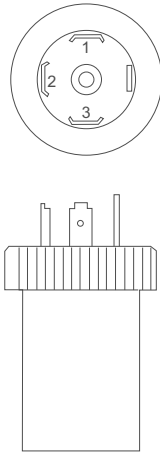
**Standart**  
**Others**

1/2", 3/4", 1" NPT or G  
On request

## ELECTRICAL DATA

<b>Output</b>	2 wires, 4-20 mA
<b>Power Supply</b>	10-36 VDC power
<b>Option</b>	0-5 VDC or 0-10 VDC Supply should be 14 VDC min
<b>Electrical Connection</b> <b>Others</b>	DIN 43650A, pin connector, cable connection on request
<b>Enclosure</b>	IP65, IP67 on request

## WIRING



2 wire	Pin 1	+Excitation
	Pin 2	+Output
	Pin 3	Pending
3 wire	Pin 1	+Excitation
	Pin 2	-Excitation
	Pin 3	+Output

## MEASURING RANGES

Code	Range	Code	Range	Code	Range
001	0...25 mBar	009	0...1 Bar	017	0...40 Bar
002	0...40 mBar	010	0...1,6 Bar	018	0...60 Bar
003	0...60 mBar	011	0...2,5 Bar	019	0...100 Bar
004	0...100 mBar	012	0...4 Bar	020	0...160 Bar
005	0...160 mBar	013	0...6 Bar	021	0...250 Bar
006	0...250 mBar	014	0...10 Bar	022	0...400 Bar
007	0...400 mBar	015	0...16 Bar		
008	0...600 mBar	016	0...25 Bar	XXX	Special Ranges

## ORDERING

MPS510					Pressure Transmitter
Output	420				4-20 mA
	010				0-10 VDC
Measuring Range		XXX			Please see "measuring range table"
Measuring Type			01		Relative
			02		Absolute
Process Connection (tri-clamp)			01		1"
			02		1 1/2"
			03		2"
			04		DIN DN25
			05		DIN DN40
			06		DIN DN50
Electrical Connection				PIN	Pin Connector M12
				DIN	DIN43650A
				010	Cable length 10m
Hazardous Area				N	None
				Xi	II 1/2G Ex ia IIC T4 Gb(Ga)

