TPSM 40

SUBMERSIBLE PRESSURE SENSOR

Description	
Application	Level transmitter for continuous measurement of the hydrostatic level. Used in control of pumps, compressors, deep wells, rivers, lakes, monitoring of underground or open water, elevation and pumping stations, etc.
Differential character	Suitable for clean waters and liquids without impurities. Of general application. Diameter of the body 23 mm.
Technical data	
	SS AISI316L (1.4404)
Sensor	Ceramic aluminum oxide (AL^2O^3, 96%)
O-ring	Vitón. On demand: NBR, EPDM. The choice of material for the gasket depends on the fluid to be controlled and can cause restrictions in the temperature and pressure range.
Cable	Acrylic PVC
Cable exit protection	PVC and Polyolefin
Pressures	Relative
Measurement ranges	From 0/0,25 Bar to 0/40 Bar. Ranks on demand (see table)
Sensor resolution	From 0.01 to 0.014% SF
Combined sensor error	<= 0.3% FE (linearity, hysteresis and repeatability)
Response time	< 1 ms
Temperature	Operation: -5 .. + 70ºC / Ambient: -10 .. + 80ºC
Electrical protection	Polarity, overvoltage and short circuit
Normalized output signal	
Value	4..20 mA DC
Type	2 wires. Linear.
Power supply	10..35 VDC
Load resistance (max.)	Ra <= [Ub(Vdc)-10(Vdc)] / 0,02)Adc)
Constructive features	
Type of sensor	Ceramic
Process connection	Through the cable itself. See recommended attachment accessories on page 4.
Protection degree	IP68 (IEC60529). It incorporates permanent hermetic seal.
Electrical connection	3x0.34mm² hose cable, with atmospheric pressure compensation tube and Kevlar® guide, shielded. Burst load: 110 kg. Electrical resistance: 59 W/km at 20ºC. Standard length, 10 m. Other lengths on demand. Includes environmental protection filter (porosity 0.45?m).
Mounting position	Vertical
Weight	<970 gr. (transmitter assembly and 10 meters of cable).
Normative	CE: Directive EMC 2004/108/CE - EN61326.G1/B RoHS: 2011/65/EU
Operating ranges (bar)	

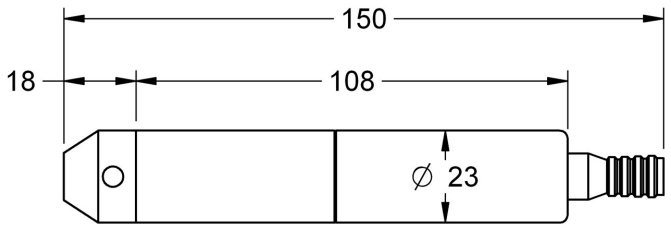
Range	0,25	0,3	0,5	0,75	1	1,25	1,5	1,75	2	2,5	4	6	10	16	25	40
Break pressure	1	1	1	1	2	2	2	2	5	5	5	10	20	20	50	50
Maximum pressure	2	2	2	2	5	5	5	5	12	12	12	20	50	50	120	120

INSTALLATION AND START-UP

Preconditions	Before installing the transmitter check that all the materials that will be in contact with the process are compatible in order to avoid deterioration. The ceramic sensor of the transmitter is a very fragile element so that special care will be taken in its handling, avoiding accidental knocks or falls. Under no circumstances should it be subjected to a pressure higher than that which it can withstand, since it would inevitably be damaged (water hammer, punctual overpressure due to unwanted effects, direct jets on the sensor, etc.).
Mechanical installation	Since the transmitter is installed using the electrical connection cable itself, special care should be taken not to damage it using flanges or other type of fastening that could bias or damage the cover and allow liquid access inside. At the same time, any lashing must be tightened excessively in order not to obstruct the atmospheric pressure compensation tube, as well as ensuring that no humidity or liquid can enter the system as this would seriously damage the level transmitter. See fastening accessories on page 4.
Cabling	Under no circumstances will a splice be made to the original cable in such a way that it could be submerged in the liquid. The atmospheric pressure compensation tube can not be cut and must be exposed freely at the highest point of the measuring height. To carry out the electrical connection, a two-conductor hose cable should be used, avoiding installing it in places where inductive interferences could occur as their effects could damage the electronic elements of the transmitter. In general, it is advisable to use shielded cable by connecting the mesh to the corresponding terminal.
Start up	Once the electrical connection has been made, apply voltage to the system (between 8 and 35 VDC). Verify with a suitable measuring instrument that in the absence of pressure, 4 mACC circulate through the current loop and 20 mACC with the maximum working pressure. When connecting several reading or control devices in the current loop, check that the sum of their internal resistances does not exceed the operating margins of the transmitter.
Protections	Depending on the installation location, the level transmitters may be subject to faults caused by environmental effects, atmospheric discharges, overvoltages, etc. It is very advisable to install protection elements against these effects (see page 4).

DIMENSIONS

Dimensions in mm



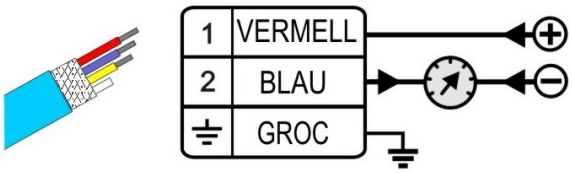
COMPOSITION OF THE REFERENCE

TPSM 40 A P □ □ □

Output	4 .. 20 mA	A	
Electrical connection	Cable	P	
Gas´et material	NBR	N	
	Viton	V	*
	EPDM	E	
Range	Value to control	???	
Units	m.c.a.	mca	
	bar	bar	

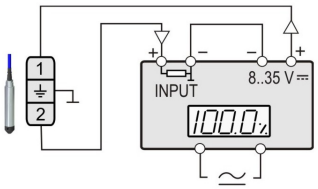
ELECTRICAL WIRING

Connection

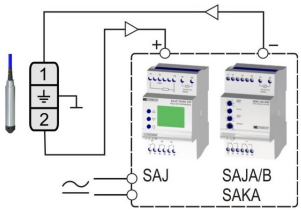


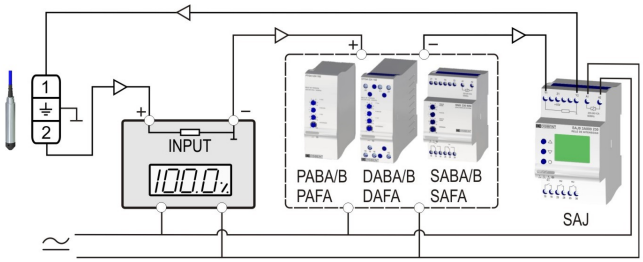
Observe the information on the mechanical and wiring installation described on page 2.

EXAMPLES OF INSTALLATION



Current loop supply 4-20 mA and value display.





Sensor supply and connection to several models through the 4-20 mA current loop.

CONTROL RELAYS

Amplifiers for 4-20 mA loop

SAJA / SAJB

- One set point
- Function high/low intensity
- Adjustable hysteresis
- Delay on detection
- Voltage +15VDC for the loop

SAKA

- Two set points
- Independent adjustment
- Voltage +15 VDC for the loop

SAJ

- Three independent set points for detection and/or replacement
- Direct reading in various magnitudes
- Function high/low intensity
- ON/OFF timer
- Voltage +15 VDC for the loop

Consult the characteristics of the control relays to choose the one that best suits your application and make the most of the possibilities of each of them.

ACCESSORIES

IPD		· Digital indication instrument · Three set points · 96 x 50 x 70 mm (panel) · 4-20 mA range · Loop power: 16..25 VDC
PS4		Protection of electronic elements powered by a maximum voltage of 35 VDC and subject to the effects of atmospheric discharges, overvoltages, etc.
PAC		· Clamp for fixing the cable · Prevents mechanical damage · Secure placement and senzilla · Body: polyamide. Steel wire. · Maximum traction: 500 kg
TPSM TB		· Adapter for the installation of any transmitter type TPSM. · Connection to process by screw cap from 1 / 2´´G. · Stainless steel or PVC. · Cable length on demand.