INSTALLATION AND MAINTENANCE INSTRUCTIONS
PCS1 – PRESSURE TRANSMITTERS

GENERAL

- These instructions must be carefully read before any work involving products supplied by VALSTEAM ADCA ENGINEERING S.A. is undertaken.

Note:

- Current regional safety regulations should be taken in to account and followed, while doing the installation and maintenance work.
- Handling, installation and maintenance work must be carried out by trained personnel. A supervisor must follow and check all activities.
- For the problems that cannot be solve with the help of this instructions, please contact the supplier or the manufacturer.
- The manufacturer reserves the right to change the design and material of this product without notice.

APPLICATION

The PCS1 series pressure transmitters are suitable for all industrial applications, especially in severe conditions where high temperatures, pressure peaks and high levels of shock and vibration are present.

They are extremely robust and reliable thanks to their state of the art SMD electronics and compact all stainless steel construction.

TRANSPORT AND STORAGE

ATTENTION

- The equipments should be protected from impacts and forces during transportation and storage.
- The equipment should be stored in a dry environment.
- The manufacturer does not assume the responsibility of damaged equipments due to inappropriate handling during the transportation and storage.

OPERATIONAL SAFETY

ATTENTION

- All operations concerning transportation, installation, and commissioning as well as maintenance, must be carried out by qualified, skilled personnel, and national regulations for the prevention of accidents must be observed.
- The removal of the devices casing during the guarantee contract period may cause its avoidance.
- Non-authorized removal of the casing, inappropriate use, incorrect installation or operation, create the risk of injury to personnel or damage to the device.

INSTALLATION

ATTENTION

- The system must be used only in accordance with the required protection level.
- The device must be protected against accidental knocks and used in accordance with the instrument's ambient characteristics and performance levels.

Note: When screwing the instrument in, the force required to do so must not be applied through the electrical connector or the cap ring. It should only be applied through the hexagonal body part and using a suitable tool.

The correct torque depends on the dimension of the process connection and the gasket used; in any case a torque force of 40 Nm must not be exceeded.

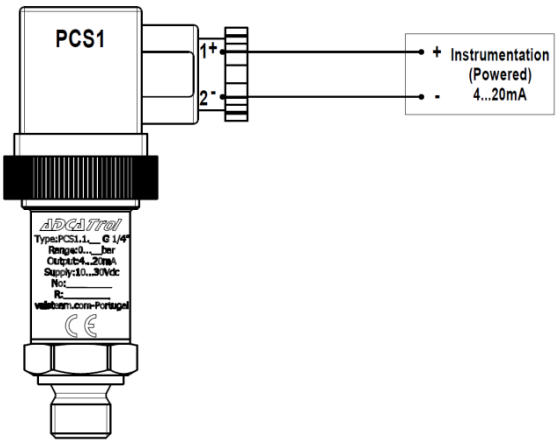
The correct sealing of the process connection with parallel threads must be done with the correct viton green o-ring provided with the device, on the flat surface of the sealing face.

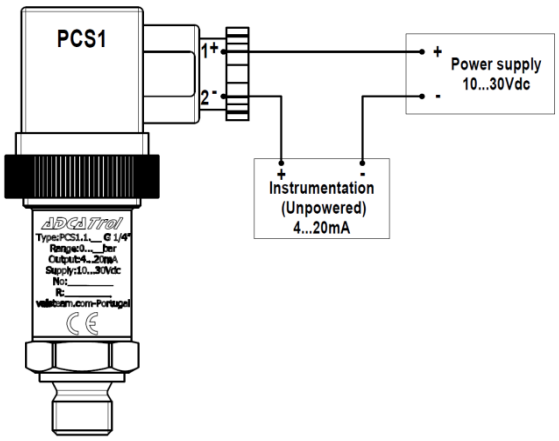
ELECTRICAL CONNECTIONS

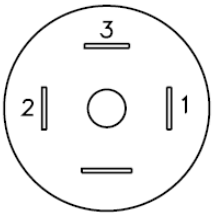
ATTENTION

- The device must be powered with non-distributed networks and always with cable connection lengths of less than 30 meters.
- The device must be grounded (normally through the machine body or equipment it is installed on).
- Use a shielded cable only. The cable shield must be grounded on the PLC side and left floating on the machine side.
- To prevent interferences, separate the power cables from the signal cables.

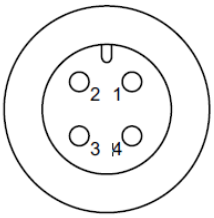
The figures below illustrate two ways of wiring the PCS1 pressure transmitters to the instrumentation and power supply, followed by the two available male connector type plugs.







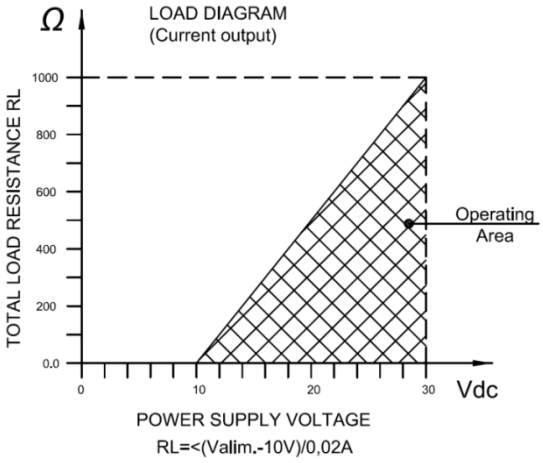
4 pin male M12x1 connector
Protection IP67



4 pin DIN type A connector
Protection IP67
(available under special request)

LOAD DIAGRAM

The figure below illustrates the load diagram of the device. The marked section corresponds to its operating area.



MAINTENANCE AND PERIODIC INSPECTIONS

Periodic maintenance should be carried out on the device, which includes:

- **Visual inspection of the status of the electrical and mechanical connections:**
  Frequency: Every two years.

- **Verification of any sort of obstruction on the pressurized channel/pipe:**
  This maintenance has the purpose of verifying that there are no occlusions that may lead to malfunction. The inspection is visual and should be done by removing the device from the process seat after the depressurization of the channel/pipe.
  Frequency: Every year.

- **Testing the sensor calibration:**
  This test is intended to check the calibration of the transducer curve of the device. It's done by applying a known pressure through the channel/pipe where the device is installed on and checking the output values.
  Frequency: Every four years.

ALARMS

The PCS1 pressure transmitters provide different kinds of output saturation (positive HIGH or negative LOW) depending on the failure.

The following table indicates the detected failures and their effect on the electrical output.

Failure	Output
Broken power supply and/or signal cable	LOW < 3.8 mA
Sensor is not connected	LOW < 3.8 mA
Failure of power supply	LOW < 3.8 mA
Broken bridge	LOW < 3.8 mA; HIGH > 22 mA

FAILURES AND TROUBLESHOOTING

The following table includes some useful information that may serve as aid in case of a failure or malfunction.

Failure	Possible cause	What to research
The sensor does not detect any pressure change.	• Obstruction of the pressurized channel/pipe. • Fault on electrical output stage.	1. Disconnect the device from the power supply and remove it from the process. 2. Verify eventual occlusion of the pressurized channel/pipe. 3. Clean any dirt/residues.
The sensor is in "HIGH" alarm mode.	• Broken bridge. • Detachment of pins. • Failure on the primary element.	1. Disconnect the device from the power supply and remove it from the process. 2. Check for any overheating on the electronic housing. 3. In case of overheating contact the manufacturer for further support.
The sensor is in "LOW" alarm mode.	• Broken power supply and/or signal cable. • Sensor is not connected. • Sensor is not being powered. • Broken bridge.	1. Disconnect the device from the power supply and remove it from the process. 2. Check if the power supply is properly connected and working. 3. Check if the power supply and/or signal cables are not

		broken. If necessary replace the power supply. 4. If the problem persists contact the manufacturer for further support.

TECHNICAL DATA

TECHNICAL DATA	
Non linearity (BFSL)	±0.15% FS; ±0.25% FS (max)
Hysteresis	±0.1% FS; ±0.15% FS (max)
Repeatability	±0.025% FS; ±0.05% FS (max)
Zero offset tolerance	±0.15% FS; ±0.25% FS (max)
Span offset tolerance	±0.15% FS; ±0.25% FS (max)
Accuracy at room temperature [1)]	< ±0.5% FS
Pressure ranges [2)]	See table
Resolution	Infinite
Overpressure (without degrading performance	See table
Pressure containment (burst test)	See table
Pressure media	Fluids compatible with stainless steel AISI 430F and 17-4 PH
Housing	Stainless steel AISI 304
Power supply	10...30 V dc
Dielectric strength	250 V dc
Zero output signal	4 mA
Full scale output signal	20 mA
Allowed load	See load diagram
Long term stability	<0.2% FS/per year
Operating temperature range (process)	-40...+125 ºC (-40...+257 ºF)
Operating temperature range (ambient)	-40...+105 ºC (-40...+221 ºF)
Compensated temperature range	-20...+85 ºC (-40...+185 ºF)
Storage temperature range	-40...+125 (-40...+257 ºF)
Temperature effects over compensated range (zero)	±0.01% FS/ºC; ±0.02% FS/ºC (max)
Temperature effects over compensated range (span)	±0.01% FS/ºC; ±0.02% FS/ºC (max)
Response time (10...90% FSO)	< 1 ms
Warm-up time [3)]	< 30 s
Mounting position effects	Negligible
Humidity	100% RH non-condensing
Weight	80g to 120g nominal
Mechanical shock	100g/11ms according to IEC 60068-2-27
Vibrations	20g max at 10...2000 Hz according to IEC 60068-2-6
Type of protection	IP65/IP67

Output short circuit and reverse polarity protection	Yes
EC Conformity	According to directive 2014/30/EU

FS= Full Scale.
1) Including Non-linearity, Hysteresis, Repeatability, Zero-offset and Span-offset (acc. to IEC 61298-2).
2) The operating pressure range is intended from 0.5% to 100% FS.
3) Time within which the rated performance is achieved.

PRESSURE RANGES									
Range (bar)	**0...6**	**0...10**	**0...16**	**0...25**	**0...40**	**0...100**	**0...250**	**0...400**	**0...600**
Overpressure (bar)	12	20	32	50	80	200	500	800	1200
Burst pressure (bar)	24	40	64	100	160	400	1000	1500	1500

ORDERING CODES

ORDERING CODES PCS1			
Group Designation	**PCS1**	**.1**	**.10**
Pressure transmitter	**PCS1**		
Electrical Connections			
4-pin DIN connector (EN 175301-803 Form A) IP65 [1)]		**.1**	
Measurement Range			
0...6 bar			**.6**
0...10 bar			**.10**
0...16 bar			**.16**
0...25 bar			**.25**
0...40 bar			**.40**
0...100 bar			**.100**
0...250 bar			**.250**
0...400 bar			**.400**
0...600 bar			**.600**

1) 4-pin male M12x1 connector IP67 is available under special request.

PRODUCT RETURNING

- Information regarding any hazards and precautions to be considered because of contaminating fluids and residues or mechanical damage that may represent a health, safety or environmental risk, must be provided in writing by the distributors and customers when returning products to Valsteam ADCA engineering.
- Health and safety data sheets regarding substances identified as hazardous or potentially hazardous must be provided with the information mention above.

- **LOSS OF WARRANTY: Total or partial disregard of above instructions involves loss of any right to warranty.**