

PSM-1 Series

Pressure measurement

1 to 40 bar / 0 to 600 psi

Absolute and gauge pressure



Advantages

- Chemical resistant
Stainless steel 316L diaphragm
- High accuracy 0.1% of span (BFSL)
- 4-20 mA programmable current output
- 0-10 VDC programmable voltage output
- Temperature drift compensated
- Compact, robust 316 stainless steel design
- IP67 enclosure for harsh environments
- Optional solid-state setpoint relay for process control

Applications

- Water treatment and supply
- Oil and gas
- Wind turbines
- HVAC installations
- Chemical processing
- Semiconductor processing

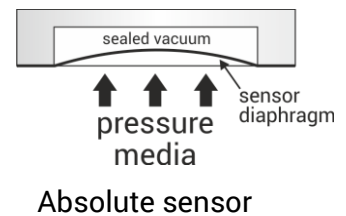


The PSM-1 series pressure transmitter is designed for gas, vapor and liquid measurement in a variety of industrial applications. Its modular compact design offers a unique combination of high measurement performance, flexible configuration and a robust stainless-steel design.

Sensor technology

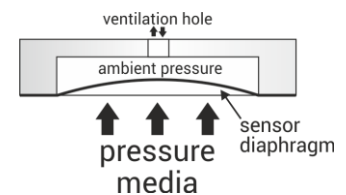
The PSM-1 is based on a stainless steel 316L diaphragm that converts the applied pressure to an electric signal. The sensor contains a silicon oil, which is used to transfer pressure from the diaphragm to the sensing element.

It is available as either an absolute sensor that measures relative to an integrated sealed reference vacuum or as a gauge sensor that measures relative to the ambient pressure.



Absolute sensor

The stainless steel 316L diaphragm offers excellent chemical resistance and compatibility with a wide range of aggressive gases, solvents and acids.



Gauge sensor

Measurement performance

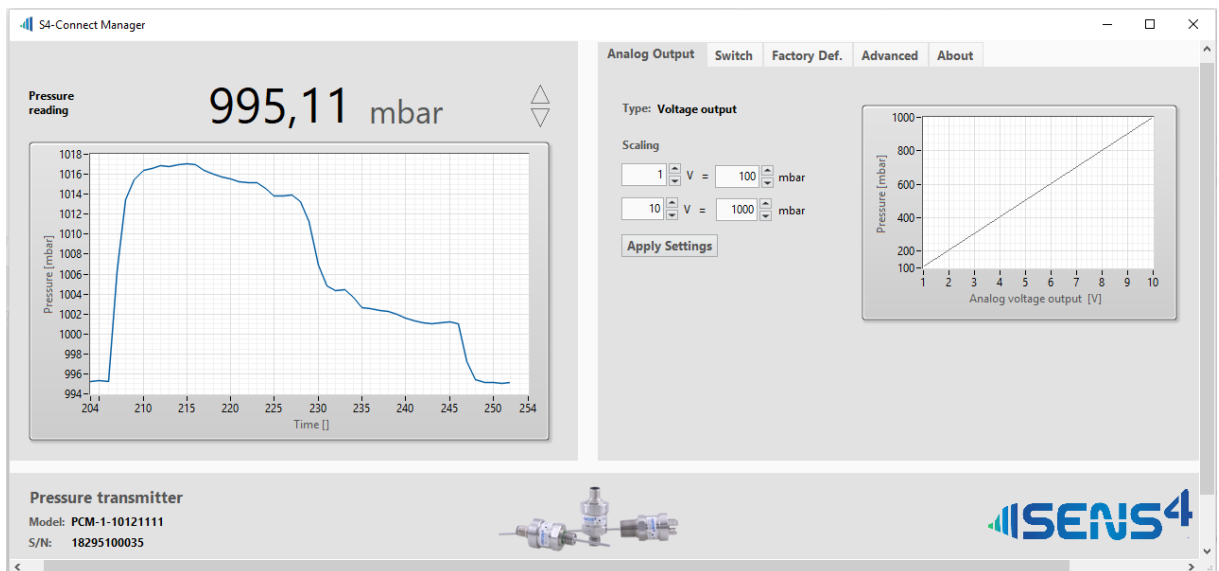
The PSM-1 is the choice for demanding applications where accuracy and reliability matters. The transmitters are individually calibrated and actively compensated for drift due to changes in ambient temperature. The multi-point calibration provides high basic accuracy throughout the measurement range.

Advanced enclosure design

The IP67 sealed 316 stainless steel enclosure with integrated hydrophobic membrane is designed for extreme environments. The innovative moisture control barrier prevents internal moisture accumulation and water condensation when changes in ambient pressure, temperature and humidity occur. Gauge pressure sensors measures relative to ambient pressure and the hydrophobic membrane provides pressure equalization when the ambient pressure changes, e.g. due to changes in the weather or altitude.

Programmable parameters with S4-Connect™

The innovative S4-Connect™ USB digital communication interface provides access to the powerful digital core. It enables digital communication over the power supply line, thus eliminating the need for additional connector pins and offers pin compatibility with industry standards.



The interface can be used for diagnostics, maintenance, service, calibration, setpoint configuration and setting of other customized parameters.

The S4-Connect™ interface can also be used for display of real time pressure measurements with a read-out resolution of up to 1/100,000 of the full-scale pressure.

The graphical user interface and real time readout can be a useful tool to qualify process pressure profiles and levels prior to installation.

Customized settings

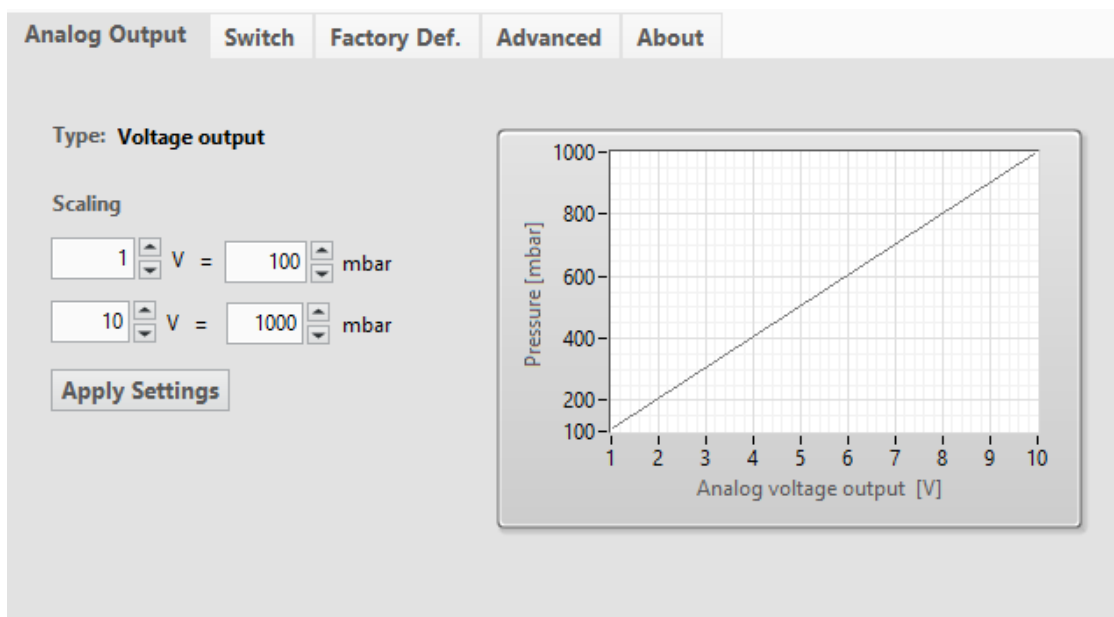
The transmitter can be delivered with a custom configuration to match specific application requirements. Examples of pre-configured options include measurement range, pressure unit, setpoint configuration and output signal scaling. Customized products will be assigned a unique part number for easy and simple future reordering.

Process control

The optional setpoint can be either used for control or surveillance of the measured pressure via a solid-state relay. The basic control uses on/off regulation with a programmable setpoint and hysteresis value.

Analog and digital options

The PSM-1 is available with analog 4-20 mA current output or 0-10 VDC voltage output. The analog output can be user scaled and configured using the S4-Connect™ interface.



Multivariable transmitter

The PSM-1 has a built-in precision temperature sensor that can be monitored using the S4-Connect™ interface and software. The temperature sensor can also be used to control the solid-state relay when the transmitter temperature exceeds a user programmed setpoint temperature value.

Technical data

Specifications

Measuring range (0 bar to full-scale)	1, 1.6, 2, 2.5, 4, 6, 10, 16, 20, 40 bar
Measuring range (0 psi to full-scale)	15, 20, 30, 50, 100, 200, 250, 500, 600 psi
Measuring principle	Piezo with stainless steel membrane
Accuracy, IEC 61298-2	+/- 0.1 % of full-scale (BFSL)
Thermal drift (offset; base 22°C)	+/- 0.01%/°C of full-scale (from +10 to +50°C)
Output signal (voltage version)	0-10 VDC (Programmable scaling)
Output resolution (voltage version)	16 bit / 150 nV
Output signal (current version)	4-20 mA ⁽¹⁾ (Programmable scaling)
Output resolution (current version)	16 bit / 244 nA
Solid state relay contact rating (optional)	250 mA, 50 VDC / VAC peak

Environment conditions

Operating ambient temperature	-40 to +100 °C
Media temperature	-40 to +150 °C
Storage ambient temperature	-40 to +125 °C
Maximum media pressure	See pressure limits table
Burst media pressure	See pressure limits table
Mounting position	Any
Protection rating, EN 60529/A2:2013	IP67 ⁽²⁾ , IP65 ⁽³⁾
Humidity, IEC 68-2-38	98%, non-condensing

Power supply

Supply voltage	12-30 VDC
Power consumption (voltage version)	240 mW (max)
Power consumption (current version)	600 mW (max)
Reverse polarity protection	Yes
Overvoltage protection	Yes
Internal fuse	100 mA (thermal recoverable)

Materials

Enclosure	SS 1.4404 / AISI 316L
Electrical connector DIN 175301-803A	PA Nylon
Electrical connector M12 IEC 61076-2-101	PA Nylon, Nickel plated Zinc alloy
Process connection (media wetted)	SS 1.4404 / AISI 316L
Sensor diaphragm (media wetted)	SS 1.4404 / AISI 316L
Sensor internal transmission fluid	Silicon oil
Process leak tightness (ISO 27895:2009)	<1·10 ⁻⁹ mbar·l/sec.

Approvals

CE	EN61000-6-2, EN 61000-6-3 Pressure directive 97/23/CE
RoHS compliance	Directive EU 2015/863

Contact sales@sens4.com for other approvals and certifications.

- (1) 4-20 mA NAMUR NE43 compliant signal.
- (2) IP67 for product versions with IEC 61076-2-101 M12 connector
- (3) IP65 for product versions with DIN EN 175301-803 A connector

Pressure limits table

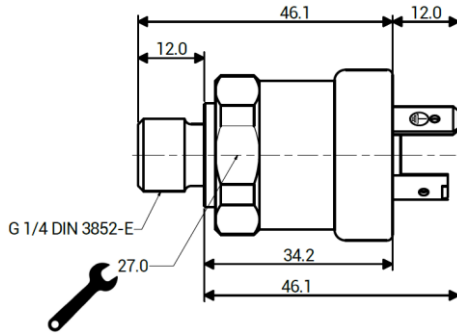
Full scale pressure	Maximum pressure ⁽⁴⁾	Burst pressure ⁽⁵⁾
1 bar	3 bar	4 bar
1.6 bar	6 bar	8 bar
2 bar	6 bar	8 bar
2.5 bar	6 bar	8 bar
4 bar	10 bar	13 bar
6 bar	20 bar	26 bar
10 bar	60 bar	80 bar
16 bar	60 bar	80 bar
20 bar	60 bar	80 bar
40 bar	100 bar	130 bar
15 psi	45 psi	60 psi
20 psi	90 psi	120 psi
30 psi	90 psi	120 psi
50 psi	150 psi	200 psi
100 psi	300 psi	400 psi
200 psi	900 psi	1,200 psi
250 psi	900 psi	1,200 psi
500 psi	1,500 psi	2,000 psi
600 psi	1,500 psi	2,000 psi

(4) The maximum pressure limit defines the upper limit of the pressure range that the pressure sensor is designed to operate within. Exceeding this limit may permanently damage the sensor element and cause an irrecoverable shift of repeatability, linearity and full-scale adjustment.

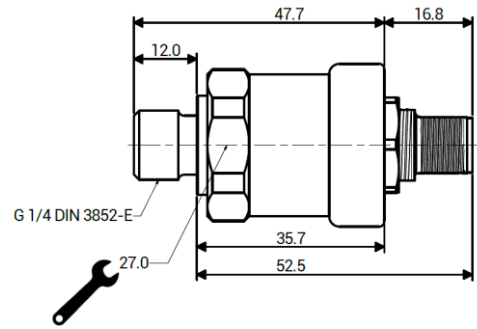
(5) The burst pressure is the maximum allowed pressure that can be exposed to the pressure port without rupturing the sensor diaphragm or transmitter structure. Ensure that the pressure media never exceeds the burst pressure.

Dimensions

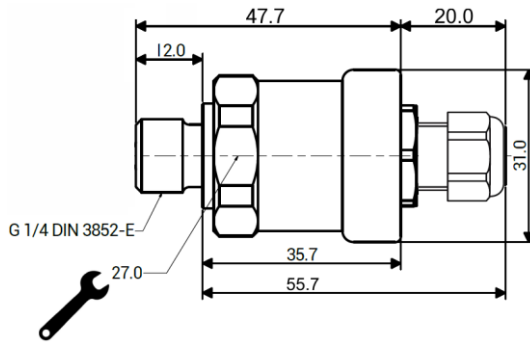
All dimensions in mm.



3 pin + PE DIN EN 175301-803 A



4 pin M12 connector IEC 61076-2-101



With fixed cable and flying leads

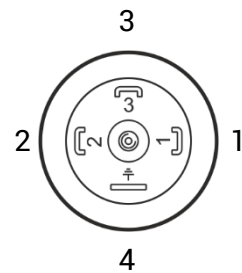
All dimensions are in mm unless otherwise stated – General tolerance ISO 2768-1 M

Connector pinout

4 pin DIN EN 175301-803 A, angular connector

1	Positive supply voltage (V+)
2	Supply voltage return (GND)
3	Signal output (S+) or not connected ⁽¹⁾
4	Shield
Chassis	Shield

(1) 3 wire version voltage output / 2 wire version not connected

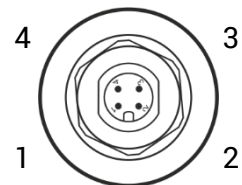


4 pin M12, IEC 61076-2-101

1	Positive supply voltage (V+)
2	Solid-state relay out or not connected ⁽²⁾
3	Supply voltage return (GND)
4	Signal output (S+) or not connected ⁽³⁾
Chassis	Shield

(2) Optional solid-state relay

(3) 3 wire version voltage output / 2 wire version not connected



Specifications are subject to change without further notice

Order guide:

PSM-1-		1	0	1	1	1	1	1	1
Process connection									
DIN 3852-E, G $\frac{1}{4}$ " A	1								
DIN 3852-E, G $\frac{1}{2}$ " A	2								
ANSI B1.20.1, $\frac{1}{4}$ " NPT	3								
ANSI B1.20.1, $\frac{1}{2}$ " NPT	4								
EN 837, G $\frac{1}{4}$ " B	5								
EN 837, G $\frac{1}{2}$ " B	6								
SAE J514E, 7/16"-20 UNF BOSS	7								
									Connection
									1 M12 x 1, 4 pin
									2 DIN175301-803 Form A
									3 Cable 1 meter (3.3 feet)
									4 Cable 3 meter (9.9 feet)
									5 Cable 5 meter (16.4 feet)
									6 M12 x 1, 4 pin, incl. mating conn.
									7 DIN175301-803 Form A, incl. mating conn.
									Setpoints
									0 None
									1 On/Off solid-state relay
									Digital interface
									1 S4-Connect™
									Analog Output
									1 0-10 VDC
									2 0-5 VDC
									3 1-10 VDC
									4 4-20 mA
									5 1-5 VDC
									6 1-6 VDC
									7 0.5-4.5 VDC
									Sensor type
									1 Gauge sensor
									2 Absolute sensor
Range									
0 ... 1 bar		0	1						
0 ... 1.6 bar		0	2						
0 ... 2 bar		0	3						
0 ... 2.5 bar		1	4						
0 ... 4 bar		0	5						
0 ... 6 bar		0	6						
0 ... 10 bar		0	7						
0 ... 16 bar		1	8						
0 ... 20 bar		0	9						
0 ... 40 bar		1	0						
0 ... 15 psi		1	2						
0 ... 20 psi		1	3						
0 ... 30 psi		1	4						
0 ... 50 psi		1	5						
0 ... 100 psi		1	6						
0 ... 200 psi		1	7						
0 ... 250 psi		1	8						
0 ... 500 psi		1	9						
0 ... 600 psi		2	0						

Other configurations

Please contact Sens4 for inquiries on configurations not listed above:

Email: sales@sens4.com or phone: +45 88447044

Accessories

Connectors	Part number
M12 x 1, 4 pin female metal connector	CON-FM12-001
3 + PE DIN EN 175301-803 A female	CON-FDN8-001
Cables	Part number
M12 x 1, 4 pin Connector with 3 m cable	CAB-M12-003
M12 x 1, 4 pin Connector with 5 m cable	CAB-M12-005
M12 x 1, 4 pin Connector with 10 m cable	CAB-M12-010
DIN Connector with 3 m cable	CAB-DIN1-003
DIN Connector with 5 m cable	CAB-DIN1-005
DIN Connector with 10 m cable	CAB-DIN1-010
Programming device	
S4-Connect™ programmer USB with M12 connector	PRG-S4-M12-01
S4-Connect™ programmer USB with DIN connector	PRG-S4-DIN-01
DAkKS Calibration certificate	
DAkKS certified calibration certificate	CAL-DAKKS1



We offer more than standard products

Sens4 offers customization of measurement products and solutions. We have invented a modular product concept that enables us to customize the product functions, features and appearance.

Through our private branding program, we also offer supply of transmitters with logo and product name according to customer specifications.

Contact the Sens4 team to inquire on customized pressure, vacuum and temperature measurement solutions: Email: sales@sens4.com or phone: +45 88447044.

About Sens4

Sens4 develops, manufactures, markets and distributes temperature, vacuum and pressure measuring equipment for industrial and scientific applications worldwide.

Our products are designed, engineered and manufactured in Denmark to the highest quality standards.

Our mission is to continuously endeavor to provide customer centric state-of-the-art measurement solutions.

Our passion | Your value™

