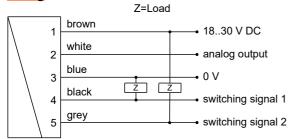**Senseca Germany GmbH**
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Product Information   **OMNI-P1**

Pressure Transmitter / Switch OMNI-P1

- **Analog output, two switching outputs**
- **Clear, easily legible, illuminated LCD display**
- **Modifiable units in the display**
- **Designed for industrial use**

Characteristics

The OMNI-P1 pressure transmitter / switch is intended for the measurement of static and dynamic pressures in liquids and gases. It consists of a pressure cell as a sensor, and an integrated transformer.

The sensor is an economical ceramic cell with a temperature compensated measuring bridge using thick film technology. It is protected from damage because of its non-flush construction, and is built extremely robustly.

The pressure present is shown in the display and output as an analog signal (0/4..20 mA or 0/2..10 V). In addition, if set limit values are fallen short of or exceeded, this can be signalled by means of two switching outputs and a red LED.

Because the complete upper part of the housing can be turned, it is possible to simply and infinitely adjust the display and the cable outlet.

By turning the programming ring to right or left, it is simple to modify the parameters (e.g. switching point, hysteresis...). To protect from unintended programming, it can be removed, turned through 180 °, and replaced, or completely removed, thus acting as a key.

Technical data

Sensor	ceramic cell with measuring bridge using thick film technology
Process connection	male thread G $\frac{1}{4}$ A, G $\frac{1}{2}$ A (optionally with female thread)

Measurement ranges and pressure resistance	Range*		Over-pressure**	Burst pressure
	bar	psi	bar	bar
	0.. 1	0… 14,5	5	6
	0.. 2	0… 29,0	5	6
	0.. 5	0… 72,5	7,5	15
	0.. 10	0… 145	15	30
	0.. 20	0… 290	30	60
	0.. 50	0… 725	75	150
	0..100	0…1450	150	250

*Optional measurement ranges on request
All pressure values relative (differential pressure to the environment)

**The pressure transmitters may be loaded with the specified overpressure < 1 sec.

Measurement accuracy	±1 % of final value; plus 0.05 %/K at < 0 °C and > 60 °C
Repeatability	±0.5 % of full scale value
Dynamics	measurement cycle 32 ms, display cycle 0.5 sec.
Working temperature	-20..+70 °C (with gooseneck max. 120 °C)
Storage temperature	-20..+80 °C
Supply voltage	18..30 V DC
Power consumption	< 1 W
Analog output	0/4..20 mA, 0/2..10 V via a 500 Ohm resistance after 0 V (impedance of the receiver > 100 kOhm)
Switching output	transistor output "push-pull" (resistant to short circuits and polarity reversal) I_{out} = 100 mA max.
Hysteresis	adjustable, for Min-switch, position of the hysteresis above the limit value, and for Max-switch, below the limit value
Display	backlit graphical LCD-Display (transreflective), extended temperature range -20..+70 °C, 32 x 16 pixels, background illumination, displays value and unit, flashing LED signal lamp with simultaneous message on the display.
Electrical connection	for round plug connector M12x1, 5-pole
Ingress protection	IP 67
Materials medium-contact	stainless steel 1.4571, ceramic Al_2O_3, FKM
Materials, non-medium-contact	stainless steel 1.4305 (housing), hardened mineral glass, POM (programming ring), Samarium-Cobalt (magnet)

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Product Information

Wiring

Z=Load

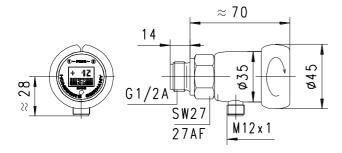|		
1	brown	18..30 V DC
2	white	analog output
3	blue	0 V
4	black	switching signal 1
5	grey	switching signal 2

Before the electrical installation, it must be ensured that the supply voltage corresponds to the data sheet.
It is recommended to use shielded wiring.
The push-pull outputs can be set as a PNP or an NPN output, as desired.

Dimensions

≈ 70

14

ø 35

ø 45

G 1/2 A

SW27

27 AF

M12 x 1

28

Gooseneck option

A gooseneck (optional) between the electronics head and the primary sensor provides freedom in the orientation of the sensor. This option simultaneously provides thermal decoupling between the two units

Handling and operation

Installation

The pressure sensors are screwed into a nozzle or a T-piece in the pipework, using a suitable sealing material (e.g. Klingerit). The installation of the pressure sensor should result in no significant reduction of the cross-section of the pipework. When tightening the pressure sensor, use only the hexagonal spanner (SW27) specifically provided. Avoid installation locations with high pressure surges (see burst pressure).

In the high temperature model with flexible gooseneck, the pressure transducer can be operated up to a media temperature of 120 °C. For this model, it should also be ensured that the head with plug is not exposed to temperatures greater than 70 °C.

Programming

The annular gap of the programming ring can be turned to positions 1 and 2. The following actions are possible:

Set to 1 = continue (STEP)
Set to 2 = modify (EDIT)

Neutral position between 1 and 2

The ring can be removed to act as a key, or turned through 180 ° and replaced to create a programming protector.
Operation is by dialog with the display messages, which makes its use very simple.
Starting from the normal display (currently measured value with unit), if 1 (STEP) is repeatedly selected, then the display shows the following information in this order:

Display of the parameters, using position 1

- Switching value S1 (switching point 1 in the selected unit)
- Switching characteristic of S1
- (MIN = monitoring of minimum value, hysteresis higher than switching value,
- MAX = monitoring of maximum value, hysteresis less than switching value)
- Hysteresis 1 (hysteresis value of S1 in the set unit)
- Switching value S2
- Switching characteristic of S2
- Hysteresis 2
- Code:
  After entering the code 111, further parameters can be defined:
- Filter (settling time of the display and output)
- Units (engineering units)
- Output: 0..20 mA or 4..20 mA
- 0/4 mA (value corresponding to 0/4 mA)
- 20 mA (value corresponding to 20 mA)

Edit, using position 2

If the currently visible parameter is to be modified:

- Turn the annular gap to position 2, so that a flashing cursor appears which displays the position which can be modified.
- By repeatedly turning to position 2, values are increased; by turning to position 1, the next digit is reached.
- Leave the parameter by turning to position 1 (until the cursor leaves the row); this accepts the modification
- If there is no action within 30 seconds, the device returns to the normal display range without accepting the modification.

The limit switches S1 and S2 can be used to monitor minimal or maximal.

With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is once more exceeded.
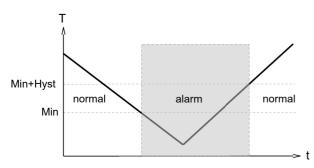
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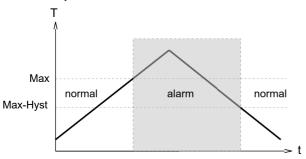www.senseca.com | info@senseca.com | WEEE Reg. No. DE 93889386

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With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.

The change to the alarm state is indicated by the integrated red LED and a cleartext in the display.
While in the normal state the switching outputs are at the level of the supply voltage; in the alarm state they are at 0 V, so that a wire break would also display as an alarm state at the signal receiver.

Simulation mode
To simplify commissioning, the sensor supports a simulation mode for the analog output. It is possible to create a programmable value in the range 0..21 mA at the output (without modifying the process variable). This allows the wiring run between the sensor and the downstream electronics to be tested during commissioning. This is mode is accessed by means of code 311.

Overload display
Overload of the switching output is detected, indicated on the display ("Check S1 / S2"), and the switching output is switched off.

Default setting
After setting the configuration parameters, they can be reset to factory values at any time, by means of code 989.

Ordering code

OMNI-P1 - [1.] [R] [K] [4.] [5.] [S] [7.]

1.   2.   3.   4.   5.   6.   7.

❍ = Option

1.	**Measurement range**	
	001	0.. 1 bar
	002	0.. 2 bar
	005	0.. 5 bar
	010	0.. 10 bar
	020	0.. 20 bar
	050	0.. 50 bar
	100	0..100 bar
	200	0..200 bar (on request)
	400	0..400 bar (on request)
2.	**Pressure type**	
	R	relative pressure
3.	**Connection material**	
	K	stainless steel
4.	**Mechanical connection**	
	015	male thread G $\frac{1}{2}$ A
	008 ❍	male thread G $\frac{1}{4}$ A
5.	**Analog output**	
	I	Current output 0/4..20 mA
	U ❍	Voltage output 0/2..10 V (optional)
6.	**Electrical connection**	
	S	for round plug connector M12x1, 5-pole
7.	**Optional**	
	H ❍	model with gooseneck
	O ❍	Tropic-model oil-filled version for heavy use or outdoor use

Accessories

- Cable/round plug connector (K05…, KB05...)
  see additional information "Accessories"
- Device configurator ECI-3