

# Pressure Transmitter / Switch OMNI-P



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

## Characteristics

The OMNI-P 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.

A sensor with a flush-front stainless steel membrane is used as the transformer. The stainless steel membrane transmits the applied pressure via an oil filling to a mono-silicon membrane with a sputtered piezo-resistant measuring bridge made from polysilicon. Because the membrane fits flush, there is a minimal risk of contamination.

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.

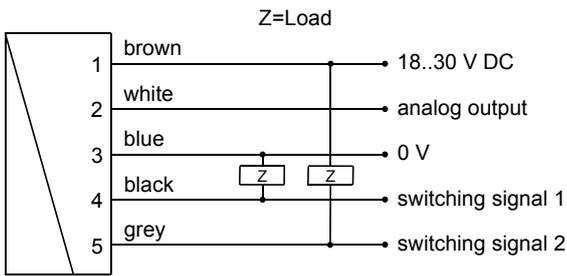


## Technical data

<b>Sensor</b>	thin film pressure measurement bridge on silicon membrane	
<b>Process connection</b>	male thread G 1/2 A	
<b>Metering ranges</b>	(relative pressure, pressure difference from environment) in bar	
	Range	Overload pressure
	0.. 1.0	4
	0.. 2.5	10
	0.. 6.0	24
	0.. 10.0	40
	0.. 25.0	100
	0.. 60.0	240
	0..100.0	400
	0..250.0	600
	0..400.0	600
	other metering ranges, Absolute pressure measurement (not less than 10 mbar abs.) available on request	
<b>Measurement accuracy</b>	1 % of the full scale value, from 60 °C 0.02 %/°C	
<b>Repeatability</b>	±0.5 % of full scale value	
<b>Dynamics</b>	measurement cycle 32 ms, display cycle 0.5 sec.	
<b>Working temperature</b>	-20..+70 °C (with gooseneck max. 120 °C)	
<b>Storage temperature</b>	-20..+80 °C	
<b>Materials medium-contact</b>	stainless steel 1.4301	
<b>Materials non-medium-contact</b>	Housing	Stainless steel 1.4305 Mineral glass, hardened
	Programming ring	POM
	Magnet	Samarium-Cobalt
<b>Supply voltage</b>	18..30 V DC	
<b>Power consumption</b>	< 1 W	
<b>Analog output</b>	0/4..20 mA or 0/2..10 V	
<b>Switching output</b>	2 x transistor output "push-pull" (resistant to short circuits and polarity reversal) I <sub>out</sub> = 100 mA max.	
<b>Hysteresis</b>	adjustable, for Min-switch, position of the hysteresis above the limit value, and for Max-switch, below the limit value	
<b>Display</b>	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.	
<b>Electrical connection</b>	for round plug connector M12x1, 5-pole	
<b>Ingress protection</b>	IP 67	
<b>Weight</b>	approx. 0.2 kg	
<b>Conformity</b>	CE	

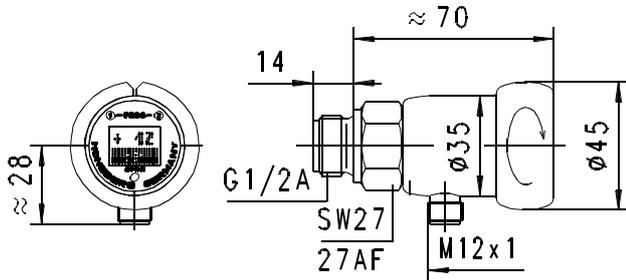
**Product Information**

**Wiring**



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**



**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 protective plastic cap is to be removed from the pressure membrane. The pressure membrane is very sensitive; a deformed membrane has a negative effect on the accuracy or causes damage to the sensor.

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 overload limits).

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 greater 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: e.g. l/min or m³/h
- Output: 0..20 mA or 4..20 mA
- 0/4 mA (flow rate corresponding to 0/4 mA)
- 20 mA (flow rate corresponding to 20 mA)

**Edit, using position 2**

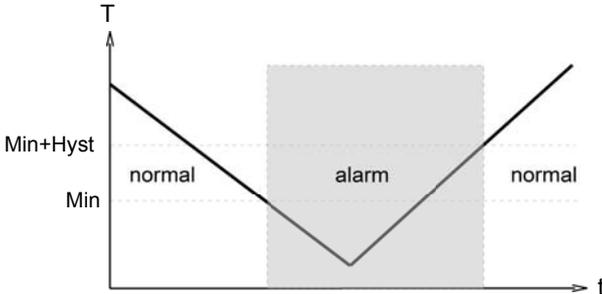
If the currently visible parameter is to be modified:

- 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.

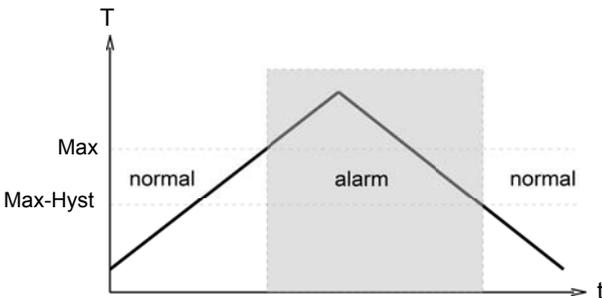
**Product Information**

The limit switches S1 and S2 can be used to monitor minima or maxima.

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.



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. Overload of the switching output is detected, indicated on the display ("Check S 1 / S 2"), and the switching output is switched off.

**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..26 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 mode is accessed by means of code 311.

**Overload display**

Overload of the switching output is detected, indicated on the display, and the switching output is set to high impedance.

**Default setting**

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

Starting from the normal display (currently measured value with unit), if 1 (STEP) is selected repeatedly, then the display shows the following information:

**Display of the parameters, using position 1**

- Switching values S1 and S2: Switching values in the selected unit.
- Hysteresis direction of S1 and S2:  
 Max = Hysteresis less than S1 or S2

- Max = Hysteresis greater than S 1 or S 2
- Hystereses Hyst 1 and Hyst 2:
- Hysteresis values of the switching values in the set unit
- After entering code 111, further parameters can be defined (this should take place only if necessary)
- Filter: Selectable filter constant in seconds (affects display and output)
- Unit: e.g. bar or psi ...
- Output: 0..20 mA or 4..20 mA
- 0/4 mA: Displayed value for 0/4 mA
- 20 mA: Displayed value for 20 mA

**Edit, using position 2**

- If the **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. In this way, every digit can be modified. If there is no action within 5 seconds, the device returns to the normal display range without accepting the modification.

**Saving the changes using position 1**

After leaving the last value, turn once to position 1; this accepts the modification.

**Ordering code**

OMNI-P  1.  2.  3.  4.  5.  6.

○ = Option

<b>1. Metering range</b>	
001	0.. 1.0 bar
002	0.. 2.5 bar
006	0.. 6.0 bar
010	0.. 10.0 bar
025	0.. 25.0 bar
060	0.. 60.0 bar
100	0.. 100.0 bar
250	0.. 250.0 bar
400	0.. 400.0 bar
<b>2. Pressure type</b>	
R	relative pressure
A	absolute pressure
<b>3. Connection material</b>	
K	stainless steel
<b>4. Mechanical connection</b>	
015	male thread G 1/2 A
<b>5. Electrical connection</b>	
S	for round plug connector M12x1, 5-pole
<b>6. Optional</b>	
H	<input type="checkbox"/> model with gooseneck

**Accessories**

- Cable/round plug connector (KB...) see additional information "Accessories"
- Device configurator ECI-1