

# senso-P<sup>+</sup>

## Differential pressure display, monitor and transmitter with alarm signal



### Features

- easy-to-read main display thanks to large numerals and residual-light reflecting display technology
- Display of differential pressure in Pa up to a maximum of 1000 Pa or display of the degree of filter contamination in %
- Displays the alarm value in Pa
- Displays the current measuring range
- Red LED flashes when alarm value is exceeded
- Programmable alarm value, measuring range and type of electrical output
- Power: 24V AC at 50/60 Hz or 24V DC

### Technical data

Housing:	High impact ABS
Colour front panel:	beige
Colour housing body:	anthracite
Protection:	IP 54 IP 64 with supplementary seal
Operating temperature:	-10 to +40 °C
Storage temperature:	-20 to +60 °C
Relative humidity:	max. 75 %, non-condensing
Dimensions body:	112 x 58 [Ø x T]
Dimension front panel:	184 x 139 x 20 mm [L x W x H]
Flexible tube connection:	5 to 6 mm internal diameter
Working range:	0-1000 Pa
Measurement range:	Selectable in 250 Pa steps
Burst pressure:	75 kPa
Protection class:	II (IEC 60536)
Tolerance:	± 1.5 % of the measuring range
Long-term stability:	≤ ± 0,5 % V. EW/a
Approbations:	EMV: EN50081-1, EN50082-2
Power supply:	24V DC, at 50/60 Hz or 24V DC, -20 % +5 %
Analogue outputs:	0-10 V, 0,1 mA or (0) 4-20 mA, max. load 600Ω
Digital outputs:	Relay contact 240V 2A or 12/24V 5mA
Cable connection:	Max. 2 PG M16 with cable clamp

### Function

The differential pressure to be measured is fed using flexible tubing via the connection nipples to the Piezo-measuring device, electronically interpreted and shown on the LCD display.

The unit can be set up and programmed using the three buttons behind the front panel.

Using the bottom button, the dimension displayed can also be changed from Pa to %. The alarm value then corresponds to 100 % filter contamination, for example.

### Specification

The **SENSO-P<sup>+</sup>** consists of a round measurement instrument and a front panel.

The measurement instrument is optimised for mounting in air-handling units and switchboards. The two connections for pressure measurement are located at the back of the instrument in recesses to prevent mechanical damage. They are labelled with + (overpressure) and - (underpressure).

A threaded bushing is provided in the centre of the housing. The fixing clamp is attached using the threaded bolt and the wing-nut supplied. The wing-nut is secured against loosening. Of the cable bushings on the back of the housing, one is broken out and prepared for the screwing-in of the cable clamp. An O-ring integrated in the flange of the measurement instrument seals it against the panel in which it is mounted. In order to ensure correct mounting, an arrow can be found on the back of the device that must point upwards.

In the front part of the instrument an LCD display which reflects residual light can be found, together with the electronics motherboard, the red LED, the three function buttons as well as the two screw terminal blocks for the electrical wiring.

After the unit has been mounted and any programming done, the front panel can then be clipped onto it. Three guide-grooves ensure that this is only possible when correctly oriented. The front panel can be removed by pulling it with both hands and/or using a screwdriver.

## Activation and operation

All electrical connections must be made before applying the supply of power. To start the installation and programming of the Senso-P+ the 24V supply should be connected. Take care that the "+24V" and "GND" connections are not transposed. The device is immediately ready for operation (displays on the LCD are active).

The setting of the units displayed and the programming are carried out using the three buttons that are accessible when the front panel is removed.

### Setting the units displayed

By pressing the bottom button during normal operation for a short time, the units displayed change from Pa to % and back again. If, for example, % is chosen, the degree of filter pollution is shown in % of the alarm value defined.

### Programming the SENSO-P+

By pressing the lower button for a long time, the unit goes into programming mode (menu). By pressing this button repeatedly, the menu items change as follows:

#### Limit - Range - mA.

When the appropriate menu item flashes, the top left (-) and top right (+) buttons can be used to adjust the programmed values:  
 Short press → single step,  
 Long press → increasing rate of change.

The high-alarm value in Pa and one of the four measuring ranges (0-250 Pa, 0-500 Pa, 0-750 Pa or 0-1000 Pa) should be selected, as well as either 0-20 mA or 4-20 mA if current output is chosen for data transmission.

#### Save (OK)

If the button is not pressed within 5 sec., the value currently shown is automatically stored and programming mode is left.

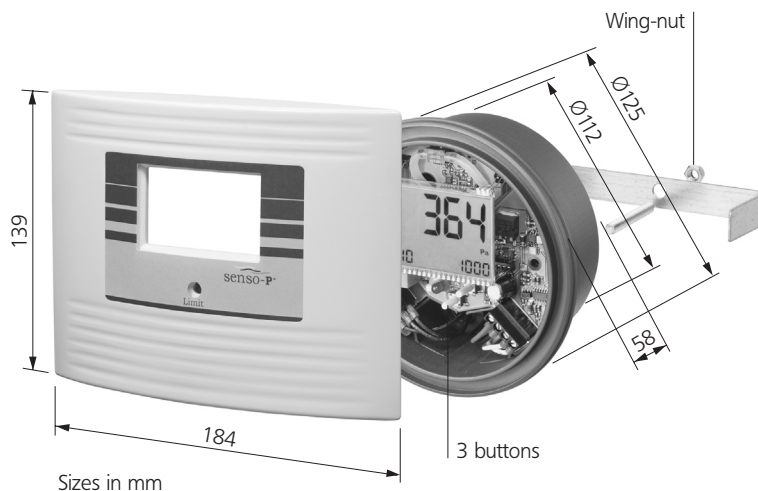
#### Zero-point correction

If no differential pressure is applied and the power supply is removed for a short time, the device calibrates itself automatically.

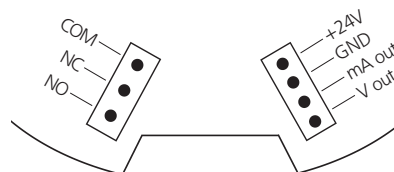
#### Scope of delivery

The standard version comprises the measurement instrument, a front panel, a threaded bolt, a mounting bracket, a wing-nut, two PG M16 cable bushings and the fitting instructions. The operating instructions can be found inside the front panel.

## SENSO-P+ assembly



## Electrical connections



## Fitting

A 115 mm Ø hole is drilled in the sandwich plate or the control cabinet door and the measurement instrument is slid into the aperture from the front side. The correct alignment of the instrument is indicated by an upwards-pointing arrow on the rear of instrument. Using a screwdriver, the threaded bolt is firmly screwed into the threaded bushing; the mounting bracket is placed over it and secured with the wing-nut. When connecting the pressure tubing, great care should be taken that the correct polarity is adhered to (+ overpressure, - underpressure). The front panel can then be snapped on.

## Overview of the SENSO range of products

Model	Display range	Units	Alarm value	Voltage	Analogue output	Relay contact
SENSO-P	0÷1000 Pa, 0÷100 %	Pa, %	exceeds	2 pcs. Mignon AA	-	-
SENSO-P+	0÷250 Pa 0÷500 Pa 0÷750 Pa 0÷1000 Pa -50÷ +50 Pa* 0÷100 %	Pa, %	exceeds	24 V, 50÷60 Hz 24 V DC	4÷20 mA 0÷20 mA 0÷10 V, 0,1 mA	EPU 8 A at 240 V
SENSO-V	100÷99'999	m³/h, l/s, ft³/min	falls below	2 pcs. Mignon AA	-	-
SENSO-V+	100÷99'999	m³/h, l/s, ft³/min	falls below	24 V, 50÷60 Hz 24 V DC	4÷20 mA, 0÷20 mA 0÷10 V, 0,1 mA	EPU 8 A at 240 V

\* special version

Technical details subject to change