

# CPS-D-A PRESSURE SENSOR WITH ILLUMINATED DISPLAY, 24V

Differential air pressure sensor with regulator function, for ventilation installations.

Freely selectable ranges, from -100 to +3500 Pa. Adjustable K factor for volume flow calculation.



## TECHNICAL DATA

<b>Supply voltage:</b>	24V AC/DC $\pm 10\%$
<b>Power consumption:</b>	43 mA
<b>Output signal:</b>	0-10V ( $>5 \text{ k}\Omega \text{ imp.}$ ) or 4-20 mA
<b>Averaged damping:</b>	3, 10 or 20 seconds.
<b>Pressure ranges:</b>	Adjustable from -100 to +3500 Pa, in increments of 50 Pa.
<b>Volume ranges:</b>	Adjustable from 0 to +32000, in increments of 100 up to 3500 and in increments of 500 over 3500.
<b>- Selectable units on the display:</b>	$\text{m}^3/\text{h}$ , $\text{m}^3/\text{sec.}$ or $\text{l}/\text{sec.}$
<b>- K factor:</b>	0-9999,99
<b>- Selectable calculation formulas volume/flow:</b>	$Kx\sqrt{\Delta p}$ (default) $1/Kx\sqrt{\Delta p}$ $\sqrt{\Delta p}/K$ $Kx\sqrt{(2/\rho)x\sqrt{\Delta p}}$ [ $\rho=1.2$ ]
<b>Pressure regulator</b>	
<b>- Set point:</b>	0-3000 Pa
<b>- Regulator speed:</b>	Adjustable 1-10
<b>- Output:</b>	0-10V DC alt. 10-0V DC
<b>- Adjustable min. output:</b>	0-99% ( $\leq$ max. output-signal -1%)
<b>- Adjustable max. output:</b>	1-100% ( $\geq$ min. output signal +1%)
<b>Accuracy:</b>	Normally $\pm 1\%$ of measured pressure (@ $< -100 \text{ Pa}$ / $> +100 \text{ Pa}$ )
<b>Display:</b>	Graphic LCD, backlit
<b>Ambient temp:</b>	-20 to +50°C
<b>Cable entry:</b>	1xM16, 5-10 mm cable
<b>Dimensions (WxHxD):</b>	78x90x40 mm
<b>Weight:</b>	98 g
<b>Protection class:</b>	IP54

## APPLICATION

CPS-D-A is designed for measuring differential pressure in ventilation installations.

## CHARACTERISTICS

- Freely selectable ranges (-100 till +3500 Pa)
- Regulator function, set point 0-3000 Pa
- Alerts at pressure outside the set range
- 14-bit resolution on pressure element
- Illuminated display
- The display shows the current output signal
- Flow calculation via K factor
- 4 different selectable calculation formulas
- Test function: Up button gives 10V/20 mA output signal  
Down button gives 0V/4 mA output signal
- High accuracy
- Installation-friendly enclosure
- Removable cable port and terminal block
- 3 signal damping settings
- Supplied with 2 m hose and 2 nipples

## FUNCTION

Pressure sensor CPS-D-A has an integrated differential pressure element that is temperature compensated for high accuracy and linearity. The pressure element and the output signal has high resolution which means that the pressure value is presented in increments of max 1 Pa over the entire measurement range (-100 till +3500 Pa).

Via a backlit display, the desired function is set; differential pressure sensor, volume / flow sensor or pressure regulator. The output signal (0-10V or 4-20 mA), K factor for volume flow calculation, measurement range / set point and required signal damping are also set via the display. Zero calibration of the pressure element is also carried out via the display. Basic display mode shows the current measured value (pressure or volume / flow), current output in volts or milliamps and set point at regulator function.

CPS-D-A is factory set for differential pressure measurement of range 0-500 Pa, 0-10V output signal and signal damping 10 sec. Freely adjustable ranges from -100 Pa to +3500 Pa, in increments of 50 Pa.

Via the K factor settings, CPS-D-A can measure the volume/flow over, e.g., fans or orifice plates. The selectable conversion formulas from differential pressure to volume is:  $q=Kx\sqrt{\Delta p}$  (default),  $1/Kx\sqrt{\Delta p}$ ,  $\sqrt{\Delta p}/K$  and  $Kx\sqrt{(2/\rho)x\sqrt{\Delta p}}$ . [ $\rho=1.2$ ].

K factor can be rounded up to two decimal places. The following units can also be set:  $\text{m}^3/\text{h}$ ,  $\text{m}^3/\text{s}$  and  $\text{l}/\text{s}$ . The unit setting is only a "display label" and not a mathematical calculation of the value. The ranges can be freely adjusted from 0 to 32000, in increments of 100 up to 3500 and in increments of 500 over 3500.

Output signal damping (averaging) is adjustable at 3 levels: 3, 10 and 20 seconds.

For pressure regulation, select "Reg." or "Reg. Inv." under "Function" in the menu. The pressure regulation can be chosen between the output 0-10V DC (Reg.) or 10-0V DC (Reg. Inv.). Adjust the minimum and maximum output (0-100%) in the "Out range" submenu.

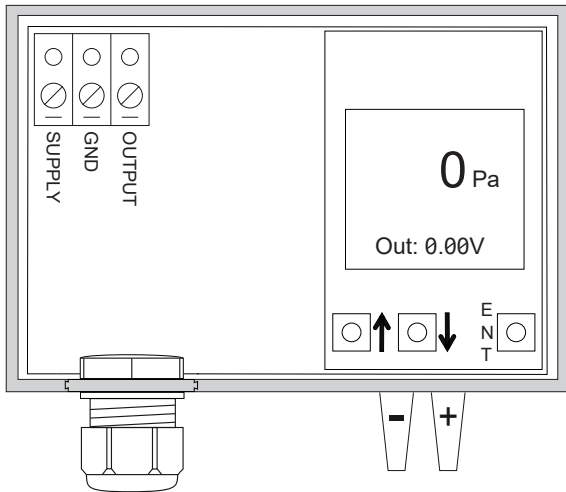
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Differential air pressure sensor with regulator function, for ventilation installations.  
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The terminal block and enclosure cable port (with a pre-mounted M16 cable gland) are removable for easier installation. The enclosure cover is hinged at the top, has a snap fastener at the bottom and catches to keep the cover in raised position.

## WIRING DIAGRAM



## MOUNTING

CPS-D-A is wall-mounted with the hose connectors pointing downwards. See figure 2. Install the CPS-D-A on a level surface. The terminal block and enclosure cable port (with a pre-mounted M16 cable gland) are removable for easier installation. See figure 1. The enclosure cover is hinged at the top, has a snap fastener at the bottom and catches to keep the cover in raised position.

## MAINTENANCE

CPS-D-A is normally maintenance-free. Zero pressure calibration can be carried out if necessary.

## ORDERING EXAMPLE

Item	Description
CPS-A	Pressure sensor, analogue -50 till 3500 Pa, 24V
CPS-D-A	Pressure sensor with display, analogue, -100 till 3500 Pa, 24V
CPS-D-A-9500	Pressure sensor with display, analogue, -100 till 9500 Pa, 24V
CPS-D-MB	Pressure sensor with display, Modbus, -100 till 3500 Pa, 24V