

CPS-D-MB PRESSURE SENSOR WITH MODBUS, 24V

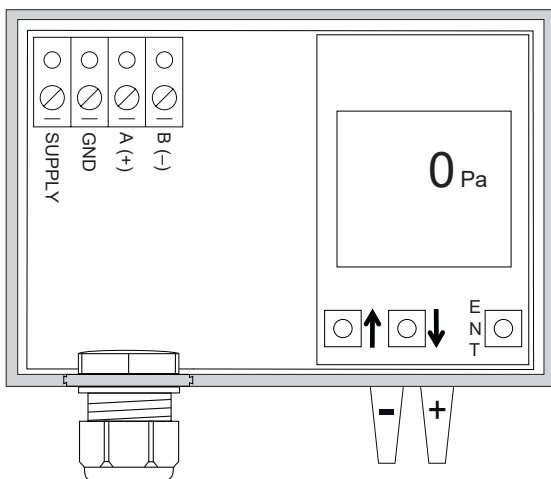
Differential air pressure sensor for ventilation installations. Illuminated display.
Adjustable K factor for volume flow calculation.



TECHNICAL DATA

Supply voltage:	24V AC/DC $\pm 10\%$
Power consumption:	46 mA
Pressure ranges:	-100 till +3500 Pa with a defined accuracy.
- Increased pressure range:	-999 to approx. 4450 Pa without defined accuracy.
Communication:	Modbus RTU via RS485
- Address:	1-247
- Speed (baud rate, kbps):	9.6 / 19.2 / 38.4 / 57.6
- Parity:	None, odd or even
- Stop bits:	1 or 2, regardless of selected parity
Accuracy:	Normally $\pm 1\%$ of measured pressure between -100 to +3500 Pa (@ < -100 Pa / $> +100$ Pa).
Display:	Graphic LCD, backlit
Ambient temp:	-20 to +50°C
Cable entry:	1xM16, 5-10 mm cable
Dimensions (WxHxD):	78x90x40 mm
Weight:	98 g
Protection class:	IP54

WIRING DIAGRAM



CHARACTERISTICS

- Modbus communication
- Modbus enables own text to be displayed
- 14-bit resolution on pressure element
- Illuminated display
- Flow calculation via K factor
- K factor adjustable at two decimal places
- Adjustable stop bits, regardless of selected parity
- High accuracy
- Installation-friendly enclosure
- Removable cable port and terminal block
- Supplied with 2 m hose and 2 nipples

FUNCTION

Pressure sensor CPS-D-MB has an integrated differential pressure element that is temperature compensated for high accuracy and linearity. The measured value is shown on the backlit display and can also be read via Modbus RTU. CPS-D-MB has no analogue signal.

Differential pressure or volume flow calculation is selected on the display, along with the K factor for volume flow calculation, zero calibration of the pressure element and the Modbus settings.

As CPS-D-MB has no analogue output signal, there is no setting for measurement ranges.

Via the K factor settings, CPS-D-MB can measure the volume/flow over, e.g., fans or orifice plates. The conversion formula from differential pressure to volume is: $q = k \times \sqrt{\Delta p}$.

K factor can be rounded up to two decimal places. The following units can also be set: m^3/h , m^3/s and l/s . The unit setting is only a "display label" and not a mathematical calculation of the value.

Basic display mode shows the current measured value. Modbus also enables own text to be displayed:

- At the bottom of the display is a row with room for 10 characters.
- Measured value (4 large characters) and any selected unit (2 characters).
- Predefined units (Pa, m^3/h , m^3/s and l/s) can also be used.

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.

APPLICATION

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

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MOUNTING

CPS-D-MB is wall-mounted with the hose connectors pointing downwards. For more information please refer to the installation instructions supplied with the product.

MAINTENANCE

CPS-D-MB 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-MB	Pressure sensor with display, Modbus, -100 till 3500 Pa, 24V

MODBUS REGISTER

Input Modbus register

Address	Function	Default value	Valid range	Unit
3x0001	Current pressure		-32768 to 32767	Pa
3x0002	Filtererd pressure (*5)		-32768 to 32767	Pa
3x0003	Current volume		-32768 to 32767	m ³ /h, m ³ /s or l/s
3x0004	Filtererd volume (*5)		-32768 to 32767	m ³ /h, m ³ /s or l/s

Holding Modbus register

Address	Function	Default value	Valid range	Unit
4x0001	Calibration in progress	0	0 or 1	
4x0002	Function	0	0 or 1	
4x0003	K-Factor base	100	0-9999	
4x0004	K-Factor digit	0	0-99	
4x0005	Unit (*1)	3	0 to 4	
4x0006	User defined unit, character #1 (*2)	32	See ASCII-table	
4x0007	User defined unit, character #2 (*2)	32	See ASCII-table	
4x0008	Override displayed value	0	0 or 1	
4x0009	Overridden value (*3)	-999	-999 to 9999	
4x0010	Override x10 (*3)	0	0 or 1	
4x0011	Show user defined text	0	0 or 1	
4x0012	User defined text, character #1 (*2,4)	67	See ASCII-table	
4x0013	User defined text, character #2 (*2,4)	97	See ASCII-table	
4x0014	User defined text, character #3 (*2,4)	108	See ASCII-table	
4x0015	User defined text, character #4 (*2,4)	101	See ASCII-table	
4x0016	User defined text, character #5 (*2,4)	99	See ASCII-table	
4x0017	User defined text, character #6 (*2,4)	116	See ASCII-table	
4x0018	User defined text, character #7 (*2,4)	114	See ASCII-table	
4x0019	User defined text, character #8 (*2,4)	111	See ASCII-table	
4x0020	User defined text, character #9 (*2,4)	32	See ASCII-table	
4x0021	User defined text, character #10 (*2,4)	32	See ASCII-table	
4x0022	Damping value x 3 = Total sec. (*6)	4	1-100	

Modbus register explanations

(*1) Unit: 0 = m³/h, 1 = m³/s, 2 = l/s, 3 = Pa, 4 = Used defined unit.

(*2) Ascii character code. See ASCII-table in the installation instruction of the product.

(*3) Override display value must be set to 1.

(*4) Address 4x0011 "Show user defined text" must be set to 1.

(*5) Damping/Averaging is set in address 4x0022 (default 12 seconds).

(*6) Damping/Averaging time: Value x 3 = damping time in seconds. Example: 4 x 3 = 12 seconds damping.