



DPD

Dual high resolution differential pressure sensor with display

The DPD series are compact high resolution double differential pressure transmitters, which are equipped with two fully digital pressure transducers designed for a wide range of applications. Air velocity readout is available by connecting an external Pitot tube connection set. All parameters are accessible via Modbus RTU (3SModbus software or Sensistant). They also feature integrated K-factor and 2 analogue / modulating outputs (0–10 VDC / 0–20 mA / 0–100 % PWM).

Key features

- 2 analogue / modulating outputs - one for each sensor module
- Built-in digital high resolution differential pressure sensor
- Air velocity detection (by using an external PSET-PTX-200 Pitot tube connection set)
- Variety of operating ranges
- Selectable response time: 0,1–10 s
- Implemented K-factor
- Differential pressure, air volume⁽¹⁾ or air velocity⁽²⁾ readout via Modbus RTU
- Modbus registers reset function (to factory pre-set values)
- Selectable internal voltage source for PWM output: 3,3 / 12 VDC
- Modbus RTU communication
- Sensor calibration procedure
- Selectable minimum and maximum span
- Selectable analogue / modulating output type
- Aluminium pressure connection nozzles
- 4-digit 7-segment LED display for indicating differential pressure or air volume flow



Article codes

Codes	Power supply	Maximum power consumption	Nominal power consumption	Imax	Operating range
DPD-F-1K0	18–34 VDC	1,85 W	1,35 W	100 mA	0–1.000 Pa
DPD-F-2K0					0–2.000 Pa
DPD-F-4K0					0–4.000 Pa
DPD-F-10K					0–10.000 Pa
DPD-G-1K0	18–34 VDC /	1,85 W	1,35 W	105 mA	0–1.000 Pa
DPD-G-2K0					0–2.000 Pa
DPD-G-4K0	15–24 VAC ±10 %	3,4 W	2,5 W	230 mA	0–4.000 Pa
DPD-G-10K					0–10.000 Pa

Area of use

- Differential pressure, air velocity⁽¹⁾ or volume flow ⁽²⁾ measurement in HVAC applications
- Differential pressure / volume flow monitoring in clean rooms
- Clean air and non-aggressive, non-combustible gases

Technical specifications

2 selectable analogue / modulating outputs	0–10 VDC	$R_L \geq 50 \text{ k}\Omega$
	0–20 mA	$R_L \leq 500 \Omega$
	0–100 % PWM	PWM Frequency: 1 kHz, $R_L \geq 50 \text{ k}\Omega$
Minimum differential pressure range span	50 Pa	
Minimum volume flow range span	10 m ³ /h	
Minimum air velocity range span	1 m/s	
Operating modes	Differential pressure	
	Air volume	
	Air velocity	
Accuracy	±2 % of the operating range	
Protection standard	IP65 (according to EN 60529)	
Enclosure	ASA, grey (RAL9002)	
Ambient conditions	Temperature	-5–65 °C
	Rel. humidity	< 95 % rH (non-condensing)

⁽¹⁾ Only when K-factor of fan / drive is known. If K-factor is unknown, volume flow can be calculated via multiplying the duct cross-sectional area (A) by the air velocity (V) using the formula: $Q = A \cdot V$.

⁽²⁾ By using an external PSET-PTX-200 Pitot tube connection set

Modbus registers



The Sensistant Modbus configurator allows you to easily monitor and/or configure Modbus parameters.



The parameters of the unit can be monitored / configured through the 3SModbus software platform. You can download it from the following link:

<https://www.sentera.eu/en/3SModbusCenter>

For more information about the Modbus registers, please refer to the product Modbus Register Map.

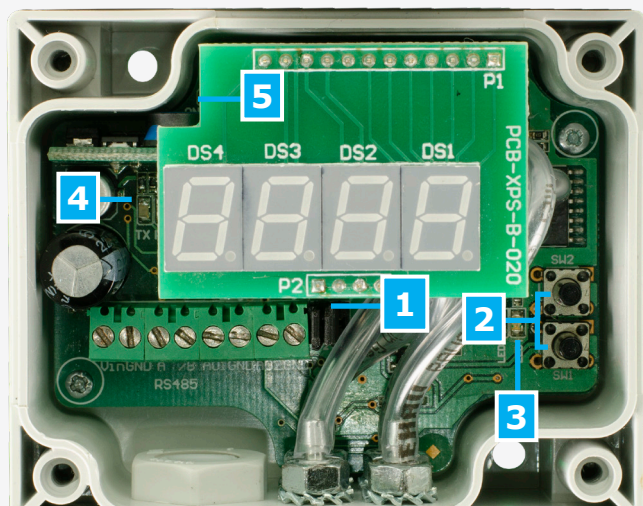
Standards

- EMC Directive 2014/30/EC:
 - EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
 - EN 61326-2-3:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements. Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
- WEEE Directive 2012/19/EC
- RoHS Directive 2011/65/EC





Settings and indications

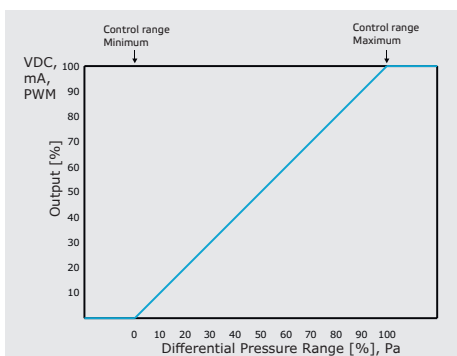


1 - Internal pull-up resistor jumpers (JP1 - for sensor 1, JP2 for sensor 2)		The relevant PWM output is connected to an internal +3,3 VDC or +12 VDC source**
2 - Sensor calibration and Modbus register reset tact switches (SW1, SW2)		The relevant PWM output has to be connected to external voltage source via external pull-up resistor
3 - Sensor calibration and Modbus registers reset indication	Blinking blue (as defined)	Modbus register factory reset or sensor calibration
4 - Modbus communication indication	Blinking green	Transmitting / receiving
5 - Operating LED indication	Solid on	Normal operation

* indicates closed position of the jumper.

** The voltage source depends on the value in holding register 54 and 74.

Operational diagram(s)



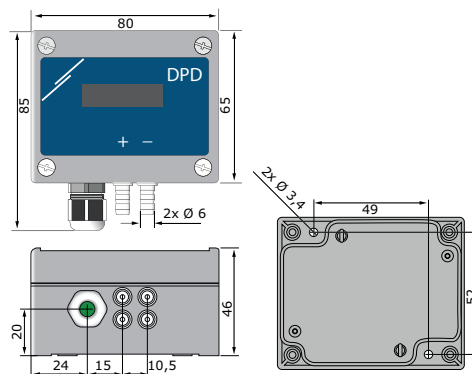
Wiring and connections

Article type	DPD-F	DPD-G	
Vin	18–34 VDC	18–34 VDC	13–26 VAC
GND	Ground	Common ground*	AC ~*
A	Modbus RTU (RS485), signal A		
/B	Modbus RTU (RS485), signal /B		
AO1	Analogue / modulating output 1 (0–10 VDC / 0–20 mA / PWM)		
GND	Ground AO1	Common ground*	
AO2	Analogue / modulating output 2 (0–10 VDC / 0–20 mA / PWM)		
GND	Ground AO2	Common ground*	
Connections	Cable cross section	1,5 mm ²	
	Cable gland clamping range	3–6 mm	
	Connecting tube diameter	6 mm	

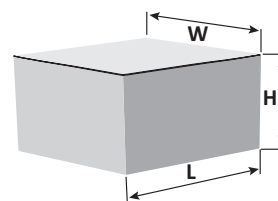
***Attention!** The -F version of the product is not suited for 3-wire connection. It has separate grounds for power supply and analogue output. Connecting both grounds together might result in incorrect measurements. Minimum 4 wires are required to connect -F type sensors.

The -G version is intended for 3-wire connection and features a 'common ground'. This means that the ground of the analogue output is internally connected with the ground of the power supply. For this reason, -G and -F types cannot be used together on the same network. Never connect the common ground of -G type articles to other devices powered by a DC voltage. Doing so might cause permanent damage to the connected devices.

Fixing and dimensions



Packaging



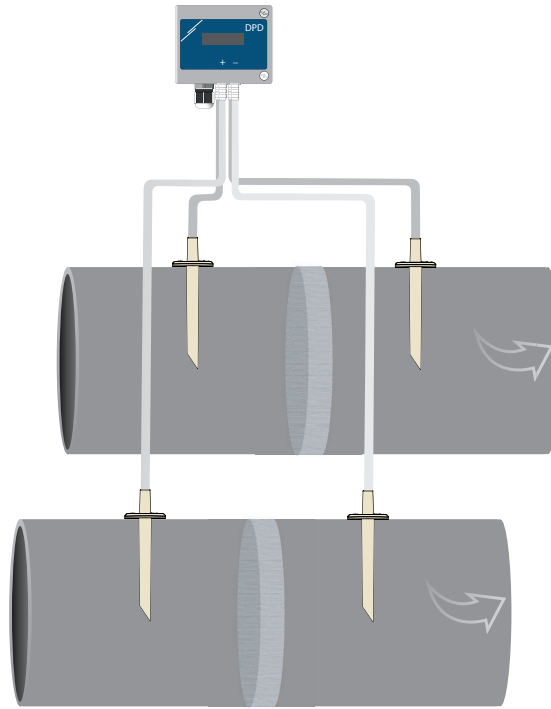
Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
DPD	Unit (1 pc.)	95	85	70	0,15 kg	0,21 kg
	Carton (10 pcs.)	495	185	87	1,50 kg	2,23 kg
	Box (60 pcs.)	590	380	280	9 kg	13,95 kg



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Application example: Measuring differential pressure [Pa] or air flow volume [m³/h] using PSET-PVC



Global trade item numbers (GTIN)

Packaging	DPD-F-1K0	DPD-F-2K0	DPD-F-4K0	DPD-F-10K
Unit	05401003001349	05401003001356	05401003001363	05401003001332
Carton	05401003300282	05401003300299	05401003300305	05401003300275
Box	05401003500286	05401003500293	05401003500309	05401003500279
Packaging	DPD-G-1K0	DPD-G-2K0	DPD-G-4K0	DPD-G-10K
Unit	05401003001387	05401003001394	05401003001400	05401003001370
Carton	05401003300329	05401003300336	05401003300343	05401003300312
Box	05401003500323	05401003500330	05401003500347	05401003500316