

HPD

Dual differential pressure transmitter



The HPD 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
- 2 built-in digital high resolution differential pressure sensors
- 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



Article codes

Codes	Power supply	Maximum power consumption	Nominal power consumption	Imax	Operating range
HPD-F-1K0	18–34 VDC	1,44 W	1,2 W	80 mA	0–1.000 Pa
HPD-F-2K0					0–2.000 Pa
HPD-F-4K0					0–4.000 Pa
HPD-F-10K					0–10.000 Pa
HPD-G-1K0	18–34 VDC /	1,17 W	1 W	65 mA	0–1.000 Pa
HPD-G-2K0					0–2.000 Pa
HPD-G-4K0					0–4.000 Pa
HPD-G-10K	15–24 VAC ±10 %	2,88 W	2,4 W	160 mA	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: $Q = A * V$

⁽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/3SMCenter>

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

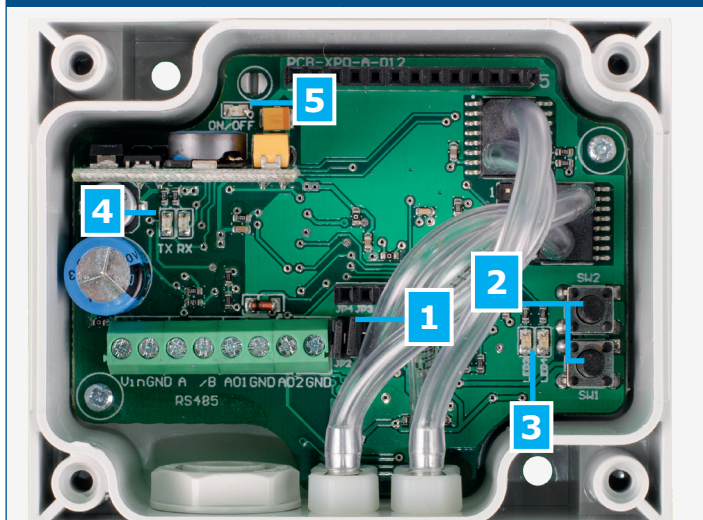




HPD

Dual differential pressure transmitter

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)		Push tact switch SW1 to start sensor 1 calibration / Modbus registers reset Push tact switch SW2 to start sensor 2 calibration / Modbus registers reset
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.

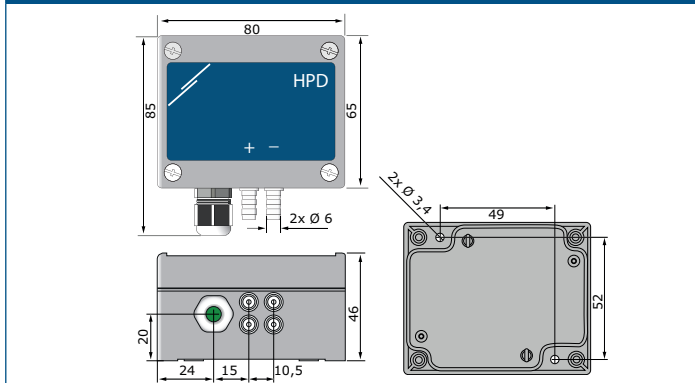
Wiring and connections

Article type	HPD-F	HPD-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	

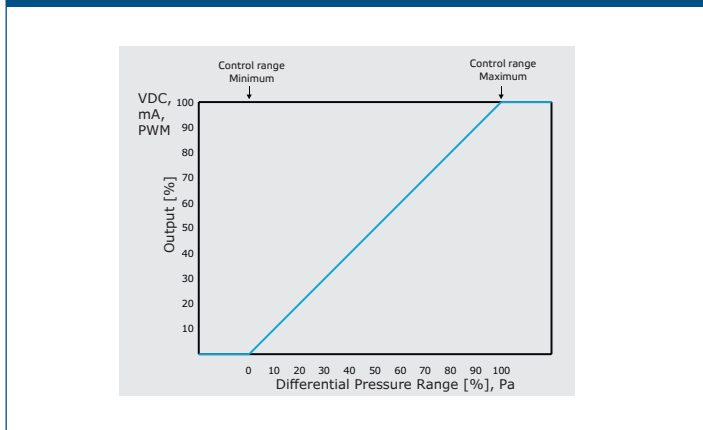
***Attention!** The -F version of the product is not suited for 3-wire connection. It has separate grounds for power supply and analogue output. Connecting both grounds together might result in incorrect measurements. Minimum 4 wires are required to connect -F type sensors.

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.

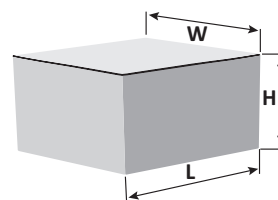
Fixing and dimensions



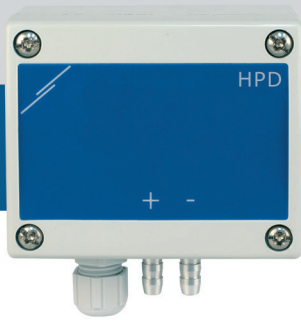
Operational diagram(s)



Packaging



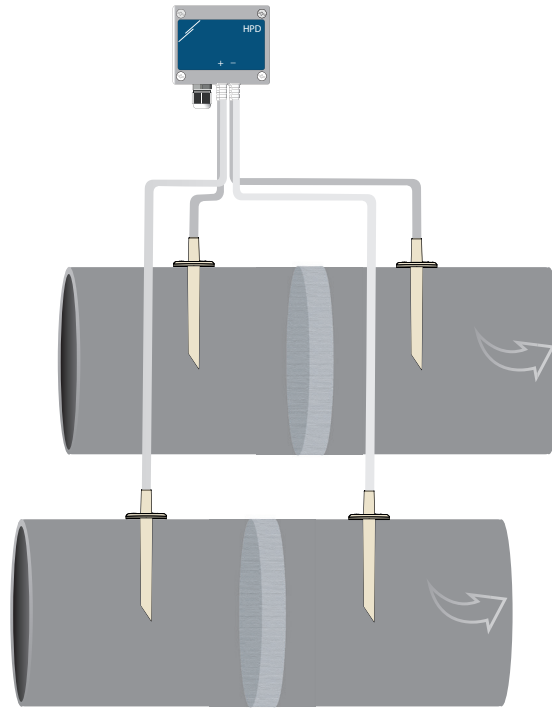
Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
HPD	Unit (1 pc.)	95	85	70	0,14 kg	0,20 kg
	Carton (10 pcs.)	495	185	87	1,40 kg	2,08 kg
	Box (60 pcs.)	590	380	280	8,4 kg	13,03 kg



HPD

Dual differential pressure transmitter

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



Global trade item numbers (GTIN)

Packaging	HPD-F-1K0	HPD-F-2K0	HPD-F-4K0	HPD-F-10K
Unit	05401003007488	05401003007495	05401003007501	05401003007471
Carton	05401003300923	05401003300930	05401003300947	05401003300916
Box	05401003501443	05401003501450	05401003501467	05401003501436
Packaging	HPD-G-1K0	HPD-G-2K0	HPD-G-4K0	HPD-G-10K
Unit	05401003007525	05401003007532	05401003007549	05401003007518
Carton	05401003300961	05401003300978	05401003300985	05401003300954
Box	05401003501481	05401003501498	05401003501504	05401003501474