SENTERA
C O N T R O L S

HPSPM-LP
Differential pressure PI controller

The HPSPM-LP are high resolution differential pressure controllers (-125—125 Pa). The integrated PI control with anti-windup function offers the possibility to directly control EC motors / fans. They are equipped with a fully digital state-of-the-art pressure transducer designed for a wide range of applications. Zero point calibration and Modbus registers reset can be executed via a tactile switch. All parameters are accessible via Modbus RTU (3SModbus software or Sensistant).

Key features

- Built-in digital high resolution differential pressure sensor
- PI control with anti wind-up function and auto-tune function
- Active setpoint selection between differential pressure, volume flow or air velocity
- Air velocity control (by using an external PSET-PTX-200 Pitot tube connection set)
- Minimum and maximum output value selection
- Integrated K-factor
- Selectable response time: 0,1—10 s
- Differential pressure, volume flow[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
- Four LED indicators for the status of the controller and the controlled values
- Modbus RTU communication
- Zero-point calibration via tact switch
- Selectable minimum and maximum span
- Aluminium pressure connection nozzles

Article codes

Codes	Power supply	Connection	Maximum power consumption	Nominal power consumption	Imax	Operating range
HPSPM-LP	24 VDC, Power over Modbus	RJ45 connector on the PCB	0,96 W	0,72 W	40 mA	-125—125 Pa

Technical specifications

Power supply		24 VDC (Power over Modbus)
Output		Modbus RTU (RS485)
Operating modes		Differential pressure
		Volume flow[1]
		Air velocity[2]
Accuracy		±2 % of the operating range
Protection standard		IP65 (according to EN 60529)
Ambient conditions	Temperature	-5—65 °C
	Rel. humidity	< 95 % rH (non-condensing)

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

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Area of use

- Differential pressure, air velocity[1] or volume flow [2] measurement in HVAC applications
- Overpressurizing applications: clean rooms to avoid particle contamination or staircases for fire safety
- Underpressurizing applications: restaurant kitchens and biohazard laboratories
- Volume flow application: ensuring the minimum legal ventilation rate (m³/h) for buildings

Wiring and connections

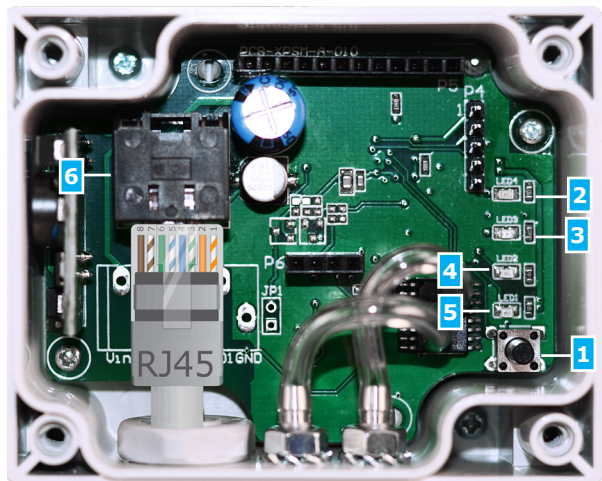|	
24 VDC	Supply voltage 24 VDC (max. 40 mA)
GND	Ground
A	Modbus RTU communication, signal A
/B	Modbus RTU communication, signal /B

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[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

Settings


|		
1 - Sensor calibration and Modbus register reset tact switch (SW1)		Push to start the Modbus RTU register factory reset or the sensor calibration
2 - Red LED4	Continuous	The differential pressure, air volume or air velocity has exceeded the minimum or maximum alarm threshold
	Blinking	Sensor element failure
3 - Yellow LED3	On	The differential pressure, air volume or air velocity has exceeded the minimum or maximum span threshold
4 - Green LED2	On	The actual differential pressure, air volume or air velocity is stabilized between the minimum span and maximum span
5 - Green LED1	On	Power OK; active Modbus RTU communication
6 - RJ45 Socket		Modbus RTU communication and 24 VDC power supply: Blinking green LED on the left indicates that data is transmitted; Blinking green LED on the right indicates that data is received

Operational diagrams
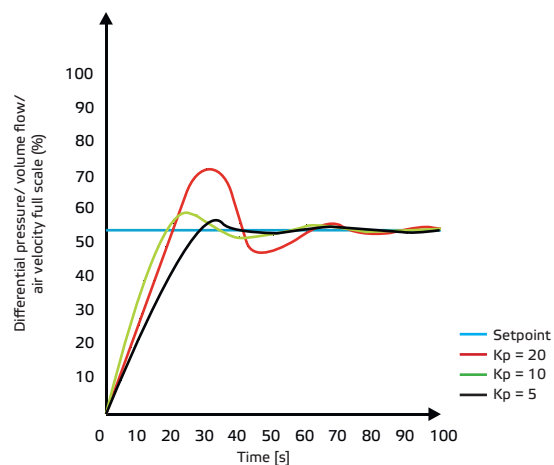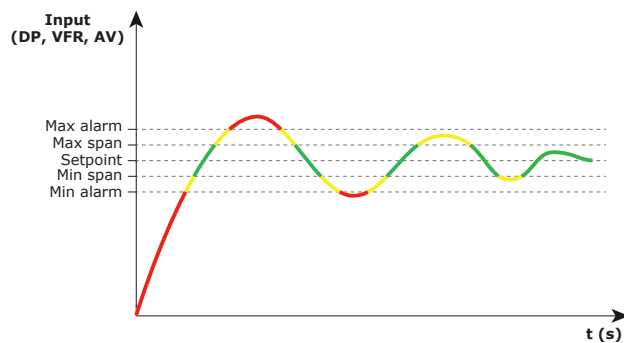
## Fixing and dimensions
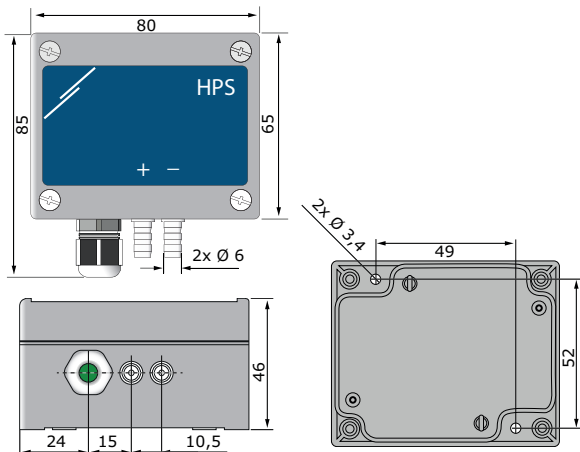
Modbus registers

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:
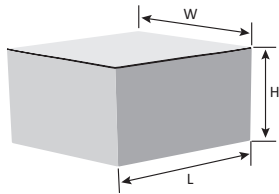https://www.sentera.eu/en/3SMCenter

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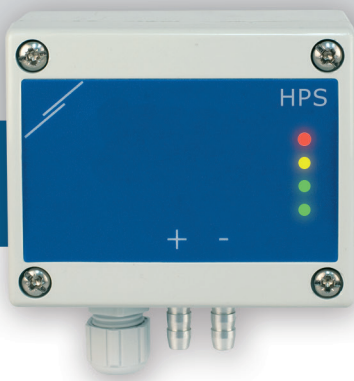
Packaging

Article code	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
HPSPM-LP	Unit (1 pc.)	95	85	70	0,12 kg	0,13 kg
	Carton (10 pcs.)	495	185	87	1,20 kg	1,30 kg
	Box (60 pcs.)	590	380	280	7,2 kg	7,8 kg

Global trade item numbers (GTIN)

Packaging	HPSPM-LP
Unit	05401003007990
Carton	05401003301234
Box	05401003501757

Application 1: Measuring differential pressure [Pa] or volume flow [m³/h] using PSET-PVC
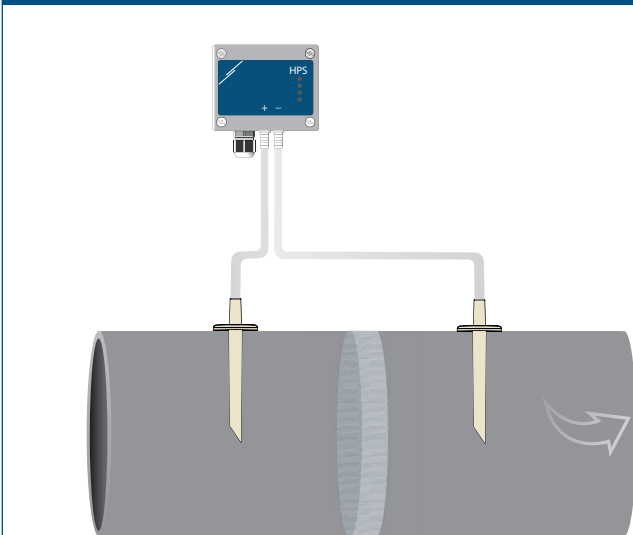
Application 2: Measuring supplied volume flow [m³/h] or air velocity [m/s] using PSET-PT