



SPS

Differential pressure transmitter

The SPS series are very compact multi-range differential pressure transmitters. They provide an analogue / modulating output and eight selectable measuring windows. The transmitters have an implemented state-of-the-art monolithic silicon pressure sensor and are equipped with Modbus RTU communication. These make the units suitable for a wide range of applications. The SPS piezoresistive transmitters are calibrated and temperature & pressure compensated. They feature a high degree of reliability and accuracy.

Key features

- Long-term stability and accuracy
- 1 analogue or PWM (open collector) output
- 8 selectable operating ranges
- Modbus RTU (RS485) communication
- Differential pressure or air volume mode* / readout via Modbus
- Modbus register reset function (factory preset values)
- Implemented K-factor (for air volume measurement)
- Sensor calibration procedure
- Selectable response time
- Aluminium pressure connection nozzles

* Only when K-factor of the fan is known (consult the datasheets)

Technical specifications

| | | |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Outputs | 1 analogue output (0–10 VDC / 0–20 mA) / 1 modulating output PWM (open collector) | |
| Maximum power consumption | SPS-F | 0,96 W |
| | SPS-G | 1,2 W |
| Nominal or average power consumption in normal operation | SPS-F | 0,72 W |
| | SPS-G | 0,9 W |
| Imax | SPS-F | 40 mA |
| | SPS-G | 50 mA |
| Consumption | No load: | 18–34 VDC supply: 10–20 mA 15–24 VAC supply: 10–15 mA |
| Operating pressure ranges | SPS-X-2K0 | 0–100 Pa / 0–250 Pa 0–500 Pa / 0–750 Pa 0–1.000 Pa / 0–2.000 Pa -50–50 Pa / -100–100 Pa |
| | SPS-X-6K0 | 0–1.000 Pa / 0–1.500 Pa 0–2.000 Pa / 0–2.500 Pa 0–3.000 Pa / 0–4.000 Pa 0–5.000 Pa / 0–6.000 Pa |
| Operating modes | Differential pressure Air volume* | |
| Response time | 0,5 / 1 / 2 / 5 s | |
| Accuracy (analog voltage output) | ±3 % | |
| Long-term stability | ±1 % per year | |
| Protection standard | IP65 (according to EN 60529) | |
| Ambient conditions | Temperature | 10–60 °C |
| | Rel. humidity | < 95 % rH (non-condensing) |

* Only when K-factor of the fan is known (consult the datasheets)

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.



Article codes

| | Supply | Connections |
|------------------|------------------------|-------------|
| SPS-G-2K0 | 13–26 VAC 18–34 VDC | 3-wire |
| SPS-F-2K0 | 18–34 VDC | 4-wire |
| SPS-G-6K0 | 13–26 VAC 18–34 VDC | 3-wire |
| SPS-F-6K0 | 18–34 VDC | 4-wire |

Area of use

- Fan / pressure control, VAV (Variable Air Volume) and CAV* (Constant Air Volume) modes
- Valve and damper control (actuators)
- Pressure / airflow monitoring in clean rooms
- Clean air and non-aggressive, non-combustible gases

* Only when K-factor of the fan is known (consult the datasheets)

Wiring and connections

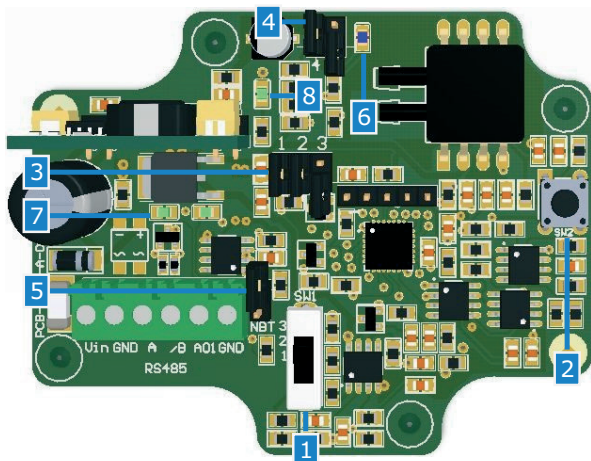
| | |
|--------------------|--------------------------------------------------------------------------------------|
| Vin | Positive DC voltage / AC ~ |
| GND | Ground / AC ~ |
| A | Modbus RTU (RS485) signal A |
| /B | Modbus RTU (RS485) signal /B |
| AO1 | Analogue / modulating output PWM (open collector) |
| GND | Ground |
| Connections | Cable cross section: max. 0,75 mm ² Cable gland clamping range: 3–6 mm |

Caution: If a G-type article is using the same AC power supply source (transformer) as F-type article, a **SHORT CIRCUIT** may result when the power supply and analog signal terminals are connected to the same common ground! In this case always connect different article types to separate AC transformers or use the same article version.

If an AC power supply is used with any of the units in a Modbus network, the GND terminal should **NOT BE CONNECTED** to other units on the network or via the CNVT- USB- RS485 converter. This may cause permanent damage to the communication semiconductors and/or the computer!



Settings



| | | |
|---------------------------------------|-----------------------------------------------|-------------------------------|
| 5 - Network bus resistor jumper (NBT) | | SPS is the first or last unit |
| | Continuously blinking | Normal operation |
| 6 - Blue LED6 | Blinking twice (by pushing SW2) | Start sensor calibration |
| | Blinking twice, then 3 times (by pushing SW2) | Start Modbus register reset |
| 7 - Modbus communication indication | Blinking green | Transmitting / receiving |
| 8 - Power indication | Constantly green LED | ON |

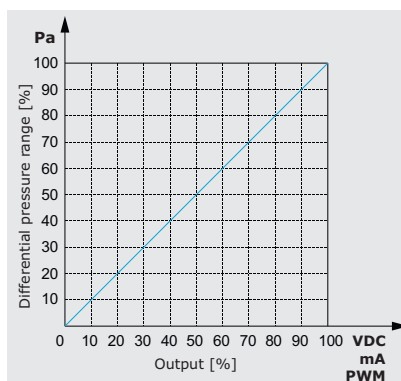
indicates closed position of the jumper.)

Standards

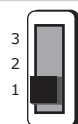
- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/35/EC
- RoHS Directive 2011/65/EU



Operational diagram(s)



1 - Analogue output mode selection switch (SW1)



1: 0–10 VDC
2: 0–20 mA
3: PWM (open collector)

2 - Tact switch (SW2) for sensor calibration and Modbus register reset



Push to start sensor calibration (LED6 blinking twice)
Push to start Modbus register reset (LED6 blinking twice, then 3 times)

3 - Range selection jumpers



SPS-X-2K0

0–100 Pa

0–250 Pa

0–500 Pa

0–750 Pa

SPS-X-6K0

0–1.000 Pa

0–1.500 Pa

0–2.000 Pa

0–2.500 Pa



SPS-X-2K0

0–1.000 Pa

0–2.000 Pa

-50–50 Pa

-100–100 Pa

SPS-X-6K0

0–3.000 Pa

0–4.000 Pa

0–5.000 Pa

0–6.000 Pa

4 - Response time selection jumpers



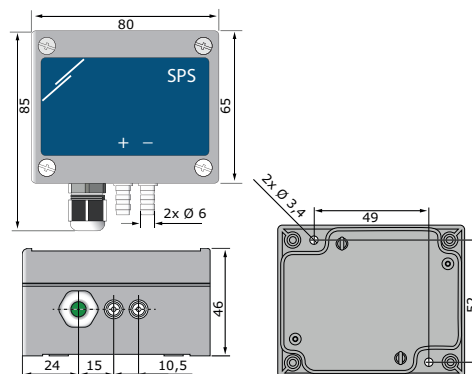
0,5 s

1 s (default)

2 s

5 s

Fixing and dimensions

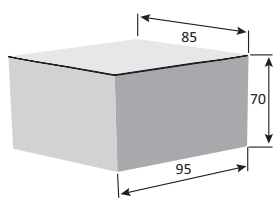




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Packaging



| Article | Packaging | Length [mm] | Width [mm] | Height [mm] | Net weight | Gross weight |
|---------|------------------|-------------|------------|-------------|------------|--------------|
| SPS | Unit (1 pc.) | 95 | 85 | 70 | 0,12 kg | 0,15 kg |
| | Carton (10 pcs.) | 492 | 182 | 84 | 1,20 kg | 1,63 kg |
| | Box (60 pcs.) | 590 | 380 | 280 | 7,2 kg | 10,39 kg |