

Hygrophil DTP, type 1500-50

- Optical dew-point sensor for online measurement
- Exact measuring of pressure dew-point
- Direct installation into compressed-air supply lines



Description

The optical dew-point sensor Hygrophil DTP works according to the absolutely novel and patented method of internal total reflection. This prevents many disadvantages of conventional dew-point sensors. As the sensor can be installed directly into the compressed-air line, it determines the exact pressure dew-point.

For the indication of the measurement variable, it is equipped with an LC display. The sensor can be configured on site via three pushbuttons. An current output (0/4-20 mA) and an RS232 interface permit the process connection and the registration of the measured values.

Two galvanically separated switching outputs can be adjusted to function as limit switches.

Application

The optical dew-point sensor Hygrophil DTP is designed for the application in compressed-air networks.

It can be used for online measurements directly in the range from 0 to 16 bar overpressure.

As it directly determines the primary measurement variable "pressure dew-point", a conversion in case of varying pressure conditions is not required.

Due to its short response time, it can be used for monitoring, controlling and regulating tasks.

It goes without saying that the sensor can also be used for applications under normal pressure.

The sensor can be installed into the sensor retraction tool, which guarantees an interruption-free service of the sensor.

Function

The sensor Hygrophil DTP is an optical dew-point sensor working in accordance with the principle of internal total reflection.

A light beam is coupled into a glass pane under a certain angle.

This light is totally reflected in the glass pane and is guided to a photodetector. If the glass pane is cooled via a Peltier element, this causes condensation, and the light that has been coupled in is coupled out by the condensate.

The light is not guided to the photodetector any longer. The temperature under which this takes place is measured via a platinum sensor and represents the dew-point temperature.

All electronic and optical components are on the side facing away from the measurement gas, which permits the realisation of a very compact structural shape.

Technical data

Measurement range

Range of application DT	-30 ... +60°C (with pre-cooling)
Maximal cooling compared to shaft temperature (measuring gas temperature)	- 40 K
Range of RH	2% ... 100%
Precision of DT	± 0,5 K
Settling time from +15°C DT to -10°C DT	approx. 60 sec (95%)
Settling time from -10°C DT to +15°C DT	approx. 90 sec (95%)

Electrical data

Power supply	12 ... 24 V DC max. 250 mA (12V)
Analog output (can be configured to different calculated and measured values)	0/4 ... 20 mA aktive, resolution 0,1% max. burden 400 Ω (DT, RH, TT, ΔT)
Interface	RS 232, 9600 baud, 8 bit, no parity, 1 stop bit
Switching output configurable	2 x 0,2A , 30 V DC, passive

Display

LCD, reflective (can be configured to different calculated or measured values)	8 digits 14 segment (DT, RH, TT, ΔT)
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Keyboard

3 short-stroke keys behind a foil

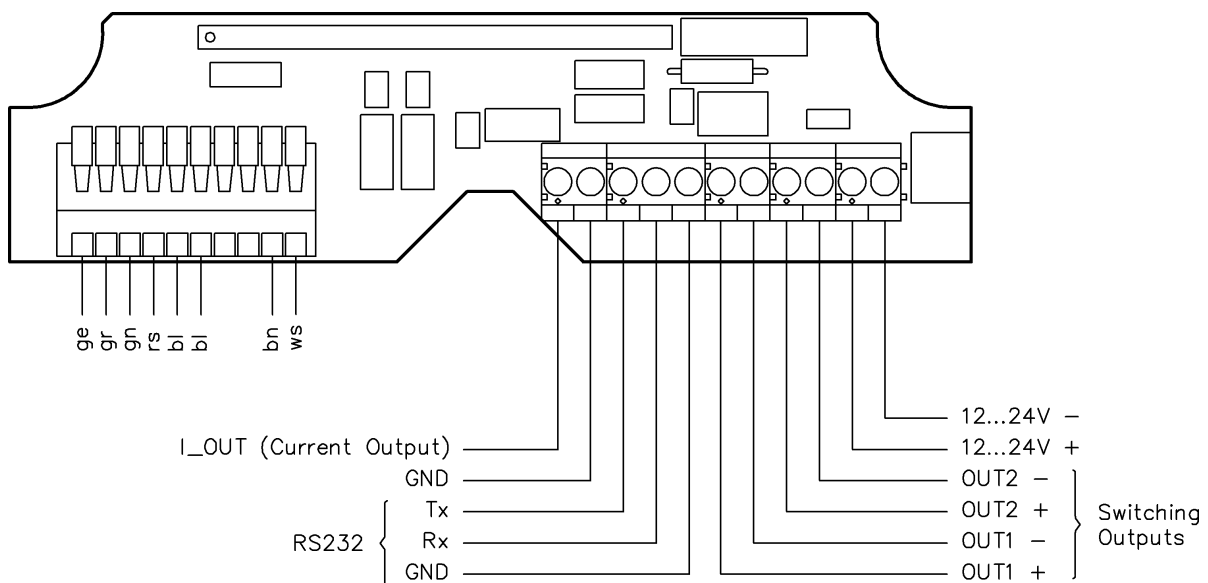
Ambient conditions

Operating temperature of electronics	-20 ... +50°C
Operating temperature of sensor	-30 ... +60°C
Pressure range of sensor	0,2 ... 16 bar

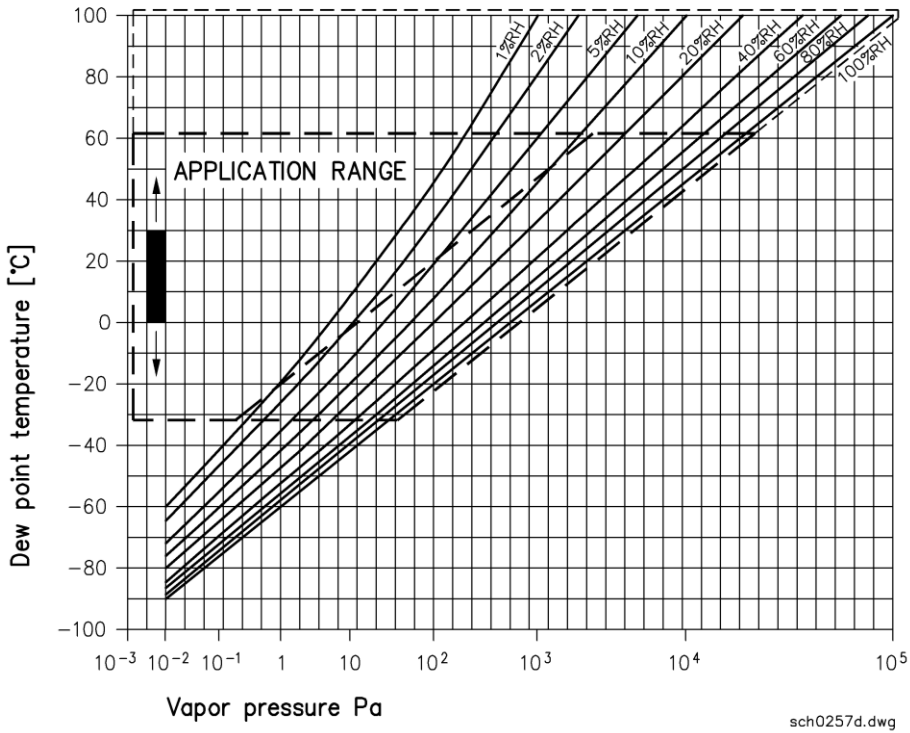
Mechanical data

Dimensions	See dimensional drawing
Material of casing	Aluminium, coated
Material of sensor shaft	Copper, nickel-plated 10μ
Protection type of casing	IP 65

Connections



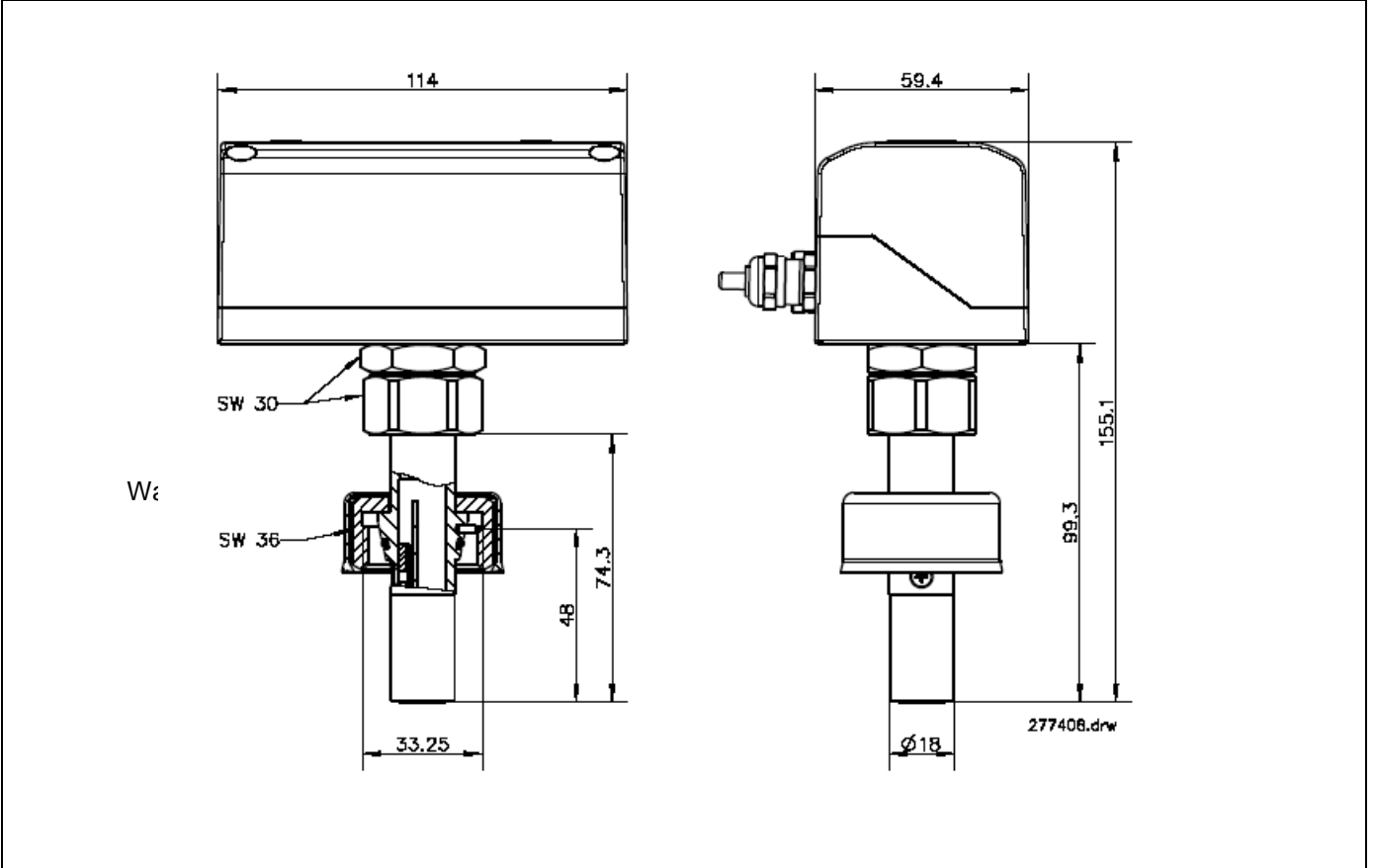
Measurement range of Hygrophil DTP



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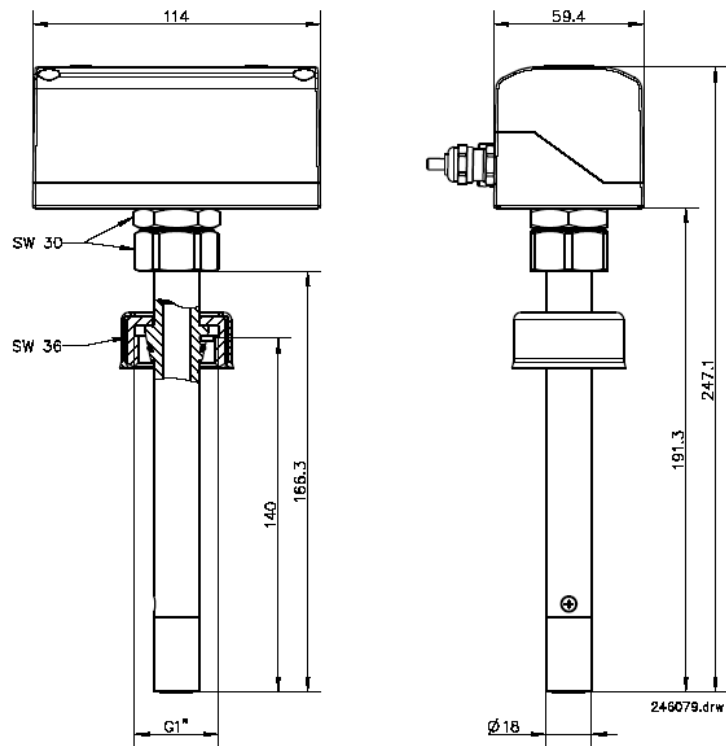
Ordering details

Designation	Order no.
Hygrophil DTP Postberg type 1500-50, shaft: 48 mm	277408



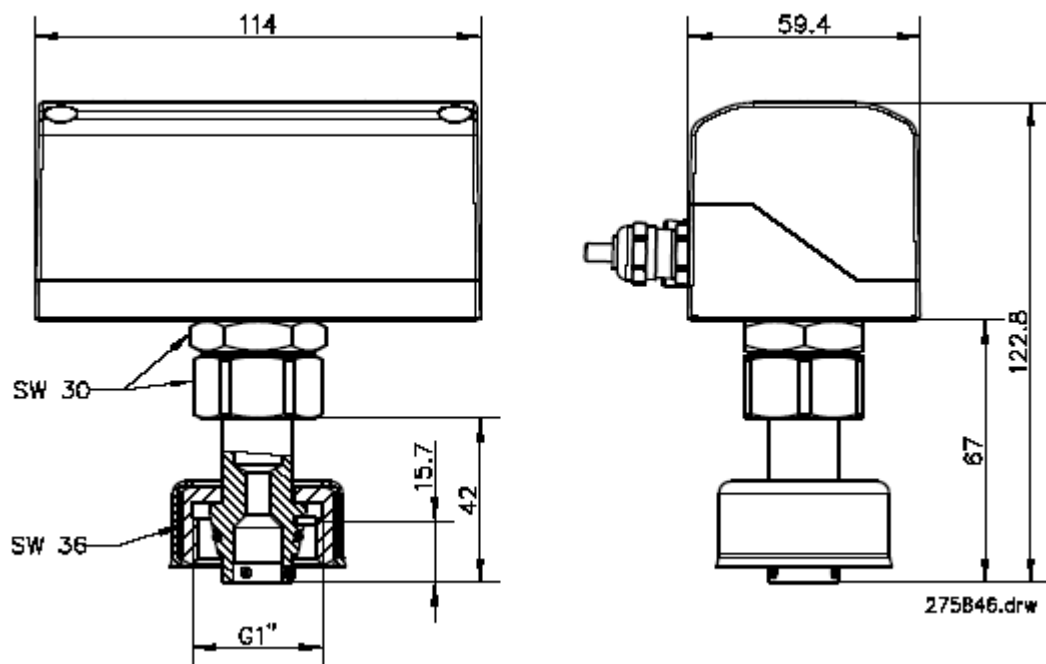
Hygrophil DTP Postberg type 1500-50, shaft: 140 mm

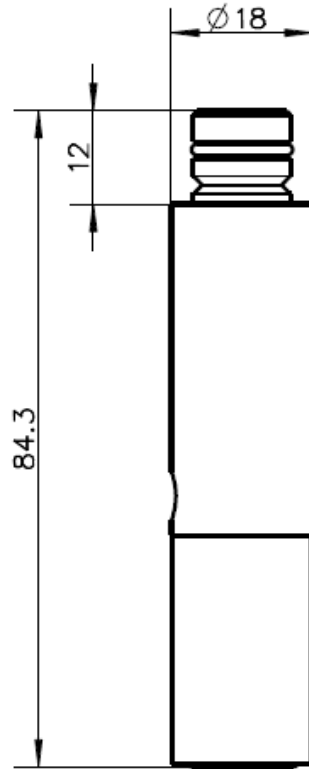
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Hygrophil DTP electronic (Postberg) type 1500-101

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