SAMPLE GAS DEHUMIDIFIER DH6

Ozone Resistant Sample Gas Dehumidifier

FEATURES

- Thermoelectric cooling device for removal of water vapor in a sample gas, namely ozone sample gas
- Flow-through cold trap
- Automatic removal of condensate
- Warnings for instrument failures

APPLICATIONS

- Photometric measurement of moist sample gases
- Photometric measurement of moist ozone gas (off-gas, vent-gas)
- Withdrawal of moist sample gas from a reactor vessel
- Reduction of water vapor, or other vapor, in a sample gas for gas measurements

The Sample Gas Dehumidifier DH6 is a flow through cold trap for removing water vapor (or other vapors) from a sample gas e.g. before photometric measurement of its ozone content.

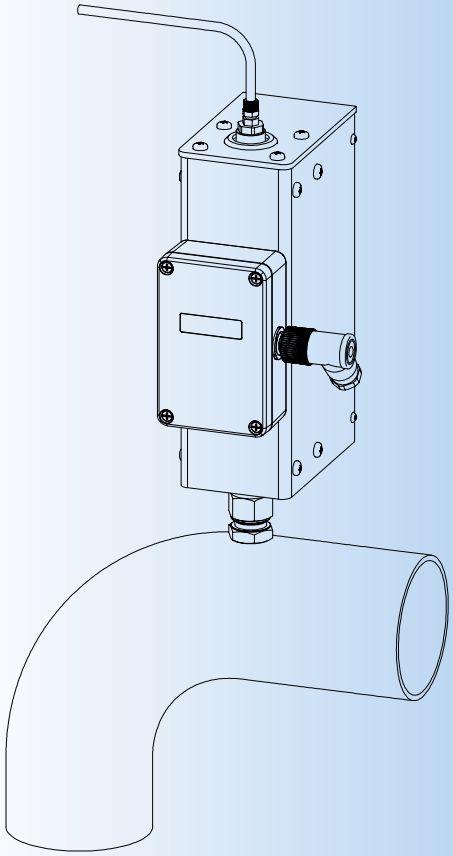
The heat exchanger is a perpendicularly oriented stainless steel tube, cooled from the outside by a Peltier-thermoelectric cooling system. The temperature of the tube is automatically held constant at a temperature of 1 to 15 °C. This temperature set-point can be manually set by the user. The actual temperature is shown continuously by a digital display.

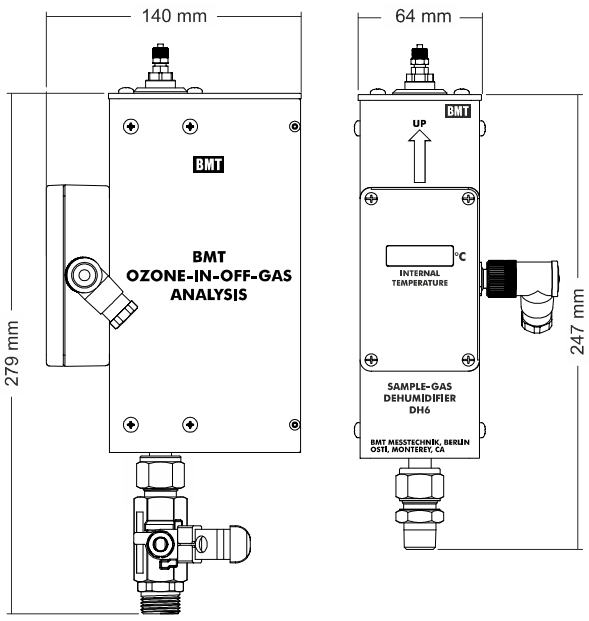
The inner surface of the tube can be covered with a thin PTFE layer to protect delicate gases from getting in contact with the stainless steel tube (model DH6-LC, for dehumidifying very low concentrated ozone gas).

The tube has to be fitted tightly into the reactor vessel from which the sample gas has to be withdrawn. When the sample gas (typical flow rate 0.3 to 0.5 l/min) is passing the tube upwards, the water vapor will condensate on the cold inner surface of the tube. The condensate now will flow back into the reactor vessel (see drawing next page).

The Sample Gas Dehumidifier DH6 thus avoids mechanisms which otherwise would be necessary for removing the condensate from the cooler (dryer) from time to time.

SPECIFICATIONS	
principle	Peltier-electric cooling system, no moving parts
flow rate	0.3 to 0.5 l/min
MTBF	40.000 h (fan)
proof pressure	min. 1 bar gauge
pressure drop	approx. 0.1 mbar @ 0.5 l/min, DH6-LC with filter: 6 mbar @ 0.5 l/min
ambient temperature	0 - 40°C (non-condensing)
cooling power	4.5 W @ ΔT ($T_{ambient} - T_{set}$) = 20 K
power-on to operational	max 10 minutes @ ΔT ($T_{ambient} - T_{set}$) = 20 K and recommended flow rate
materials in contact	SS, PTFE, PVDF
inlet gas port	tube with OD 12 mm, 3/8" NPT thread, with PTFE seals
outlet gas port	for FEP tubing 3 x 5 mm (1/8" x 3/16"), or for FEP tubing 4x6 mm (1/4" x 5/32") or Swagelok 6 mm or ¼"
display	4 digits LED
power	24 VDC, 40W (via separate power supply), reverse polarity protected
relay outputs	30 V, 1 A
dimensions (W x H x D)	64 x 279 x 140 mm
weight	1.5 kg
protection	IP 55 (including fan)





Cooler DH6

For mounting, the dryer is delivered together with a SS Swagelok fitting (ID 12 mm, 3/8" NPT thread, with PTFE seals), which accepts the DH6 to be plugged in for easy removal.

A shot-off ball valve SOBV can be provided as an option.

Cleaning of the gas path is possible from the top.

A screw driver for setting the desired temperature is provided.

A broad spectrum of ozone measurement products and field proven accessories is also available, e.g.:

- OZONE ANALYZER BMT 965 OG
  for off-gas measurement, available with a DH6
- OZONE MONITOR BMT 932 for TLV monitoring

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