CHILLED MIRROR HYGROMETER MODEL OEM-2017

BULLETIN OEM-2017

General Description

The OEM-2017 Hygrometer uses the well known chilled mirror principle to determine the absolute humidity of any gas in terms of its dew- or frost-point temperature. It was specifically designed for the Original Equipment Manufacturer, as well as laboratory, field, and industrial process applications.

The control electronics maintain the single stage thermoelectrically-cooled mirror at the equilibrium dew or frost point temperature. A platinum resistance thermometer (PRT) monitors the mirror temperature. Depending on the actual dew point, settling time from ambient may take a few seconds to one minute.

Features

- Hard chromium mirror provides extra durability in industrial applications
- Rugged anodized aluminum sensor
- Runs from a single voltage DC supply
- High performance at an attractive price

Applications

Humidity sensors are used in industrial, laboratory, and process-control applications to ensure product quality, including:

- Building HVAC or air quality monitoring
- Industrial on-line process control for pharmaceutical, plate glass, paper, and injection-molding production
- Food production monitoring for dried foods and dry snack processing
- Monitoring of storage environments and special purpose rooms such as museums, warehouses, computer, and clean rooms
- Manufacturing process control for fabrication of sensitive electronic components such as semiconductors

Maintenance

Unlike polymer-type sensors that must be discarded when they become contaminated, the OEM-2017 is designed to be cleaned. To ensure proper operation of the sensor, the mirror should be periodically inspected and cleaned with alcohol. In general, cleaning frequency depends on the cleanliness of the gas sample, but is typically done in the range of weeks-to-months.

OEM-2017 Chilled Mirror Hygrometer

Mounting Configuration

The OEM-2017 sensor operates from –40°C to +50°C and consists of these components:

- Chilled Mirror Sensor with sample block
- Electronic Control Card
- Prewired cable for sensor power

The sensor mounts via two 0.187 holes 1.99" B.C. The outer cylindrical housing, referred to as the sample block, fits over the sensor. The holes on the sample block line up with the holes on the sensor so that the gas sample can flow over the mirror. Flow rates should be maintained between 0.5 and 1.5 standard cubic feet per hour (SCFH) or, if duct-mounted, approximately 10 feet per minute. The 6.0" x 4.5" control card is typically installed in a dry, weatherproof housing such as a NEMA-4X enclosure. Four 0.120" diameter mounting holes are 5.5" x 4.0" on center.

The card requires +12Vdc, 200 mA nominal and 1 Amp maximum. A four-wire connection to the platinum resistance thermometer (PRT) is provided. While it is possible to use a two-wire resistance measurement, we highly recommend using a four-wire measurement to accurately measure the mirror temperature. TO minimize self-heating errors, excitation current must be limited to < 1mA. Many data loggers or laboratory-quality ohmmeters accept a four-wire resistance measurement. An optional 4-20mA output is also available for use in control or

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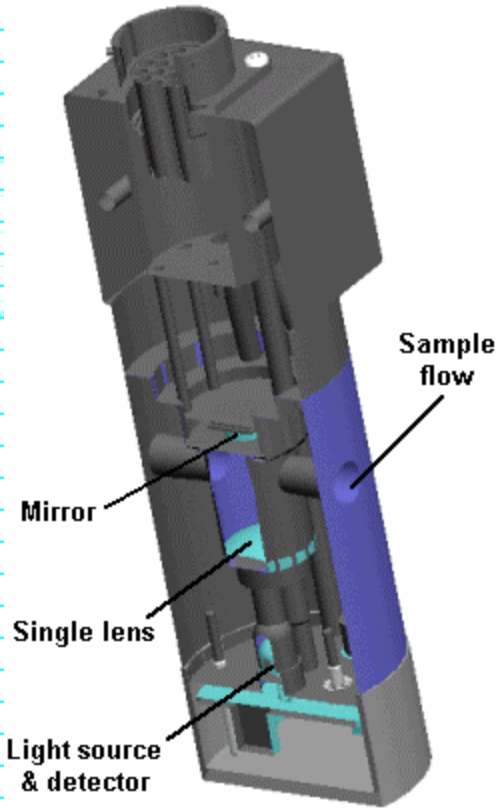
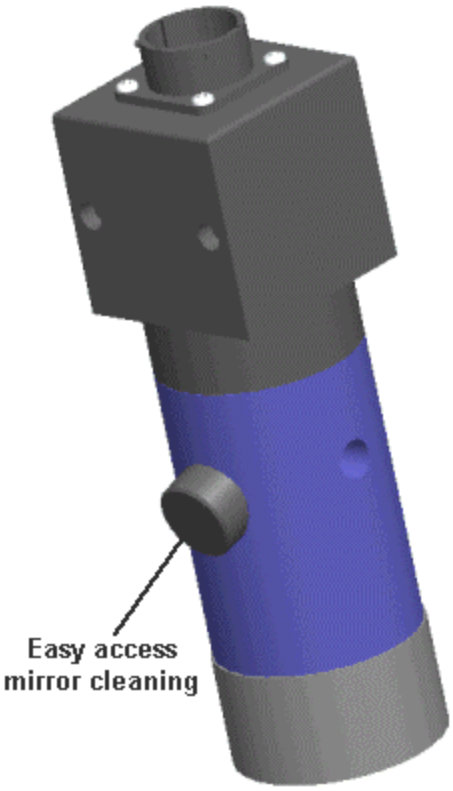
SCADA applications.

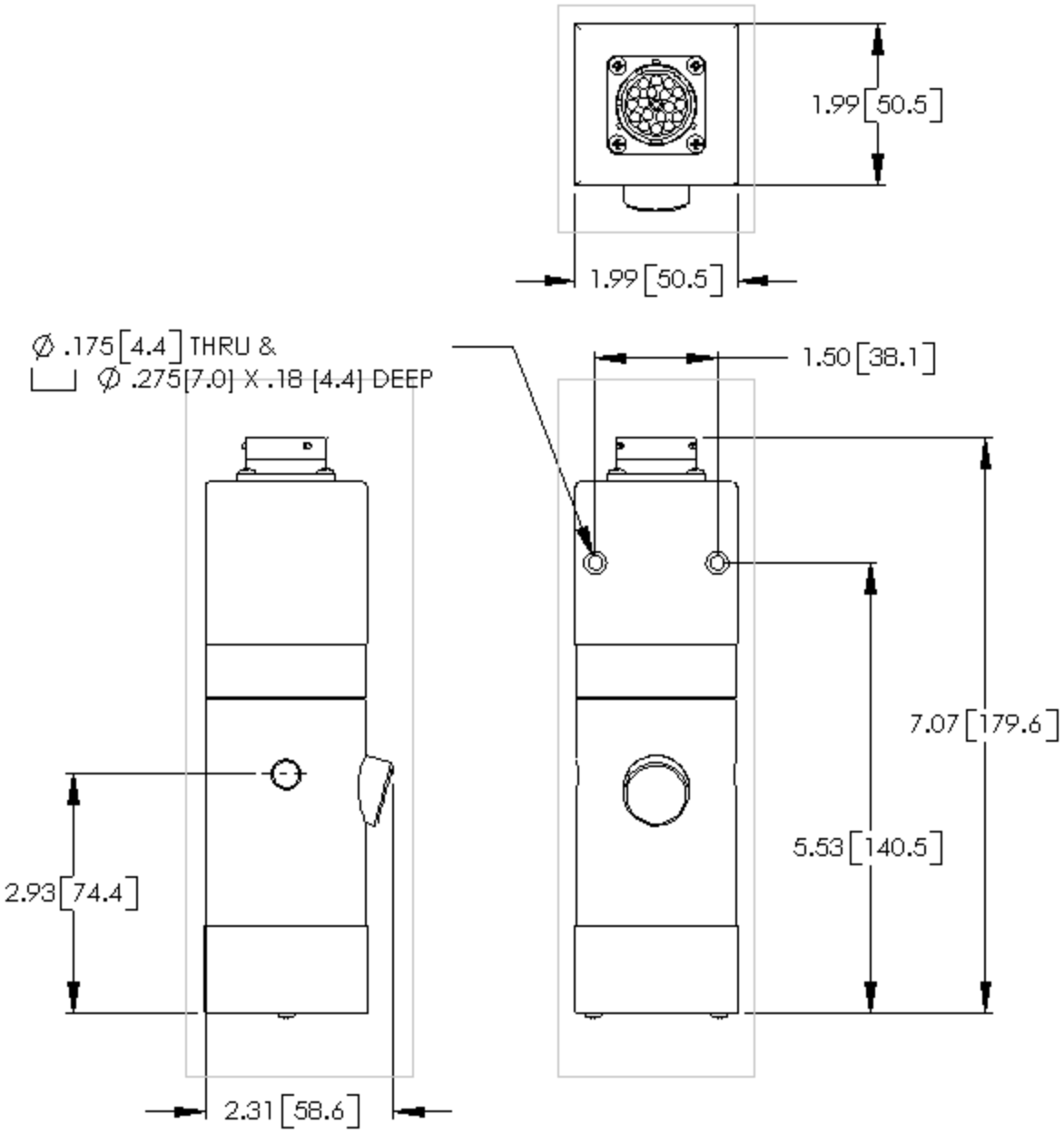


OEM-2017 cross section



OEM-2017 showing location for easy access mirror cleaning

Mechanical Interface



Dimensions in inches (cm)

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Specifications

Dew/frost point range	40° C depression; from room ambient temperature of 22°C, dew/frost point measurements can be made to approx. -18°C
Accuracy	At the PRT terminals: ±0.625°C Maximum PRT current Is 1mA.
Sensitivity	±0.01 °C
Repeatability	±0.01 °C
Hysteresis	None
Response time	35 seconds (typical)
Power Supply	+11 to +14 VDC
Gas contacts	Anodized aluminum, Viton, chromium, diallyl phthalate
Output signals	Resistance: 4 wire 100 Ω PRT , <1mA excitation current max. (4-20 mA analog output optional)
Temperature regimes	-40°C to +50°C operating -60°C to +60°C storage

Note: The OEM-2017 is typically sold in quantities of 25 units or more to original equipment manufacturers. However, single sensors can be purchased at an increased price. Please contact your local sales representative or YES technical sales for application guidance.

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