

HMP247T Dewpoint Transmitter for High Humidity Measurements



Vaisala HUMICAP® Dewpoint Transmitter HMP247T shown with the cover open.

Designed for air intake of power turbines

The Vaisala HUMICAP® Dewpoint Transmitter HMP247T was developed to monitor the air intake of gas and liquid-fuelled power turbines.

It is ideal for measuring in water vapor injection applications because the sensor has been optimized for high humidity environments by utilizing a patented, warmed sensing probe. Water vapor is added to the intake of the turbine to increase the mass flow which in turn increases compression and electrical power output.

Minimal maintenance

Power turbines also require exact water vapor injection in the chamber to reduce pollutant emissions. The HUMICAP® sensor technology is ideal because of its reliability in the field. The only suggested scheduled maintenance is annual calibration.

Patented, warmed sensor prevents condensation

The HMP247T provides fast and reliable dewpoint measurement, especially under high humidity conditions where dew would normally

form on the humidity sensor head and thereby cause errors in measurement. The patented warmed sensor head prevents condensation from forming on the sensor.

Protective enclosure

The HMP247T includes a white, painted aluminium enclosure with an installation kit for the probe. The HMP247 Dewpoint Transmitter is installed in the aluminium enclosure at the factory. The HMP247T can be equipped to be powered with either 24 VDC/VAC or with an internal 110/230 volt power supply unit.

The enclosure consists of an outer cover that protects the dewpoint transmitter from direct sun light and rain. The installation kit protects the probe from outer water splashes, keeps the sensor dry, and prevents any parts that could vibrate loose from entering the turbine.

Selection of configurations

The HMP247 is available with a selection of transmitter configurations. However the suggested configuration code for turbine applications is HMP247G1A1A2AA33A2A1B.

Features/Benefits

- Designed for high humidity applications
- Measurement range: -40...+100 °C
- Patented, warm sensor
- Incorporates HUMICAP® Sensor for excellent accuracy and long-term stability, negligible hysteresis and resistance to dust and most chemicals
- Outer cover provides protection from rain and direct sunlight
- NIST traceable (certificate included)

The HMP247T can be ordered separately for installation with the customer's existing HMP247 transmitter. The HMP247 transmitter should have the following features: parameters for analog outputs, dewpoint, and mixing ratio; serial interface RS232C; and no display.

HUMICAP® performance

The HMP240 Series Transmitters are fitted with the latest version of the HUMICAP®, a polymer sensor known for its accuracy, reliability and long-term stability. The sensor has a high tolerance for particulate abrasion and chemical contamination.

Vaisala HUMICAP® Dewpoint Transmitter HMP247

The HMP247 is designed for demanding industrial humidity measurement applications with a risk of condensation.

The stainless steel probe head is me-

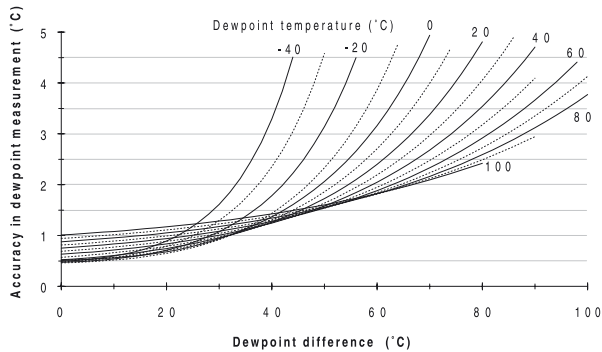


chanically very durable and preferred for most industrial applications. The HMP247 probe head is leak-proof up to 1 MPa.

Technical Data

Dewpoint temperature

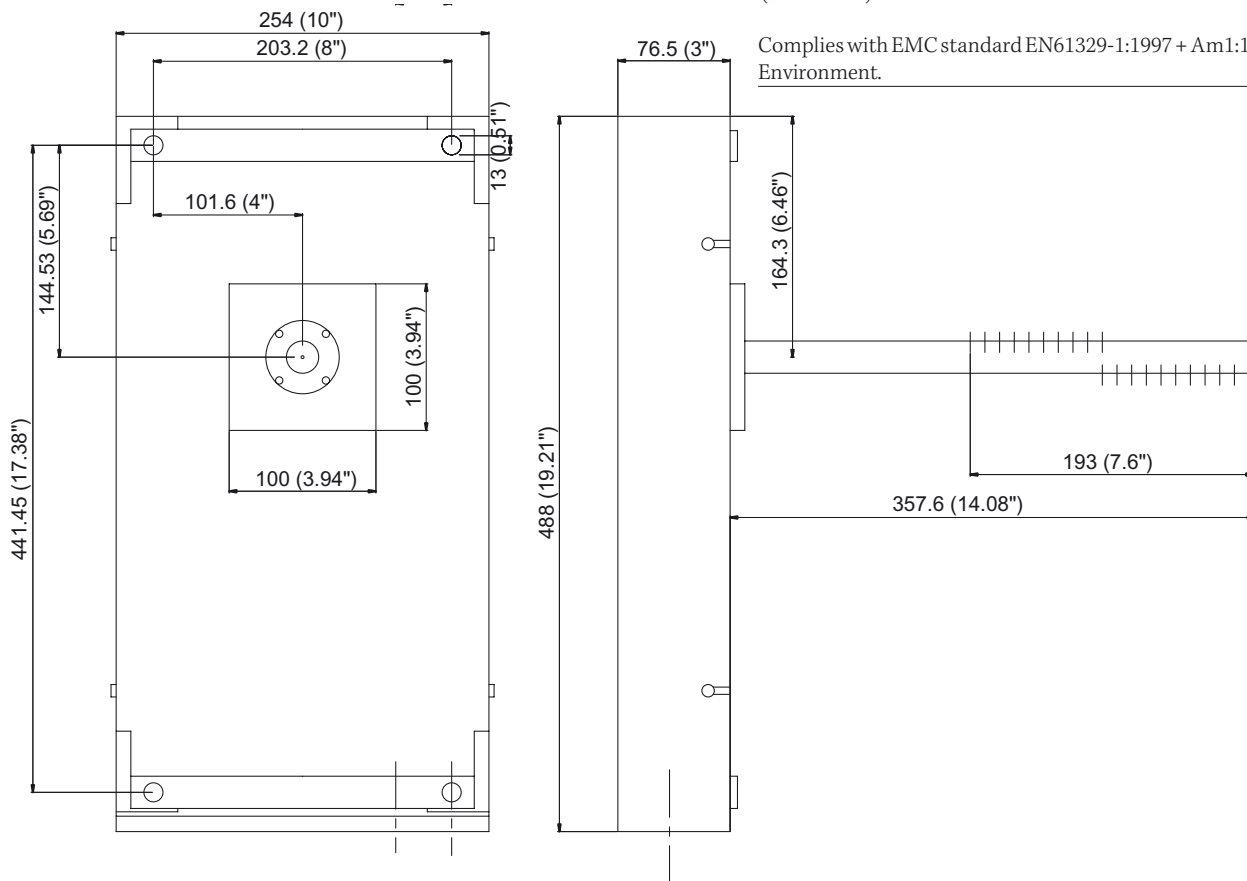
Measurement range -40...+100 °C (-40...+212 °F)
 Accuracy: find the intersection of the dewpoint temperature curve and the dewpoint difference reading (process temperature - dewpoint temperature) on the x-axis and read the accuracy in dewpoint measurement at the y-axis



Response time (90%) at +20 °C (68 °F) in still air (with sintered filter) 15 s
 Sensor HUMICAP® KC sensor

Dimensions

HMP247T Dimensions in mm (inch).



Outputs

Two analog outputs, 0...20 mA, 4...20 mA, selectable and scaleable 0...1 V, 0...5 V, 0...10 V
 Typical accuracy of analog output at +20 °C (+68 °F) ±0.05 % full scale
 Typical temperature dependence of analog output 0.005 % full scale/°C
 Serial output available RS 232C (Optional RS485)

General

Connections screw terminals for 0.5 mm² wires (AWG 20), stranded wires recommended
 Operating voltage 24 VDC/VAC (20...28 V) or 115/230 VAC (Must be specified at time of order)
 Recommended external load for current outputs < 500 ohm
 0...1 V output > 2 kohm (to ground)
 0...5 & 0...10 V outputs > 10 kohm (to ground)
 Operating temperature range for electronics -40...+60 °C
 with display cover 0...+50 °C (+32...122 °F)
 Storage temperature range -40...+70 °C (-40...158 °F)
 Housing material G-AlSi12 (DIN 1725)
 Housing classification IP65 (NEMA 4)
 Bushing for 7...10 mm diameter cables (8 x 0.5 mm² shielded cable)
 Humidity sensor protection PPS grid with steel netting (Ø 13.5 mm)
 Complies with EMC standard EN61329-1:1997 + Am1:1998; Industrial Environment.