

Features

- Temperature accuracy up to ± 0.1 °C (± 0.18 °F)
- Temperature measurement range $-70 \dots +180$ °C ($-94 \dots +356$ °F)
- Modbus® RTU over RS-485
- Compatible with Vaisala Indigo products and Insight PC software
- Traceable 2-point calibration certificate with calibration points at $+20$ and $+70$ °C ($+68$ and $+158$ °F)

Vaisala Temperature Probe TMP1 is designed for demanding temperature measurements in industrial applications such as pharmaceutical industry and calibration laboratories, where accuracy and robustness are essential.

Flexible connectivity

The probe can be used as a standalone digital Modbus RTU transmitter over an RS-485 serial bus, and it can also be connected to Indigo transmitters and the Indigo80 handheld indicator. For easy-to-use access to field calibration, device analytics, and configuration functionality, the probe can be connected to Vaisala Insight software for Windows®. For more information, see www.vaisala.com/insight.

Vaisala Indigo product family

Indigo transmitters extend the capabilities of Indigo-compatible measurement probes. The transmitters can display measurements on the spot as

well as transmit them to automation systems through analog signals, digital outputs, and relays. Cable length between probe and transmitter can be extended to up to 30 meters.

The Indigo80 handheld indicator is ideal for spot-checking and process monitoring, as well as for configuring, troubleshooting, calibrating, and adjusting the probe. For more information, see www.vaisala.com/indigo.

Relative humidity measurements in high humidities

When the TMP1 probe is connected to a control system in parallel with HMP7 Relative Humidity and Temperature Probe, it is possible to have relative

humidity measurement in actual process temperature while using probe heating in the relative humidity probe. Probe heating helps to avoid condensation in situations where the dew point temperature of the process is close to the ambient temperature.

When the humidity probe is heated above dew point temperature, condensation can be avoided and the relative humidity in the actual process temperature can be back-calculated based on the true process temperature measurement received from TMP1.



Technical data

Measurement performance

Measurement range	-70 ... +180 °C (-94 ... +356 °F)
Sensor	Pt100 RTD Class F0.1 IEC 60751

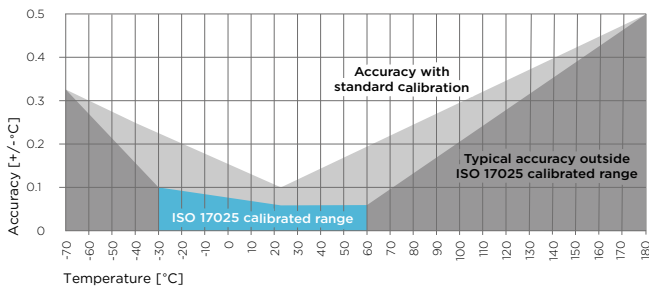
Standard calibration ¹⁾

Accuracy at +23 °C (+73.4 °F)	±0.1 °C (±0.18 °F)
Factory calibration uncertainty ²⁾	±0.1 °C (±0.18 °F) at +23 °C (+73.4 °F)

Optional ISO 17025 calibration ³⁾

Accuracy at +23 °C (+73.4 °F) ¹⁾	±0.06 °C (±0.108 °F)
Calibration uncertainty ²⁾	±0.03 °C (±0.054 °F)

- 1) Defined against calibration reference. Including non-linearity, hysteresis, and repeatability.
 2) Defined as ±2 standard deviation limits. Small variations possible; see calibration certificate.
 3) Accuracy depends on selected calibration points. Accuracy with ISO 17025 calibration is defined here using a 5-point calibration in the following points: -30, -10, 0, +30, and +60 °C. For more information on calibration services offered by Vaisala, see vaisala.com/calibration.



TMP1 temperature measurement accuracy over full range

Operating environment

Operating temperature of probe body	-40 ... +80 °C (-40 ... +176 °F)
Operating temperature of probe head	-70 ... +180 °C (-94 ... +356 °F)
Operating environment	Suitable for outdoor use

IP rating

Probe body	IP66
Probe head and cable	IPX8/IPX9

Inputs and outputs

Operating voltage	15 ... 30 V DC
Current consumption	10 mA typical
Digital output	RS-485, non-isolated
Protocols	Modbus RTU
Output parameters	Temperature (°C) Water vapor saturation pressure (hPa)

Compliance

EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) amended by 2015/863
Electromagnetic compatibility (EMC)	EN 61326-1, industrial environment
Type approvals	DNV GL certificate no. TAA00002YT
Compliance marks	CE, China RoHS, RCM

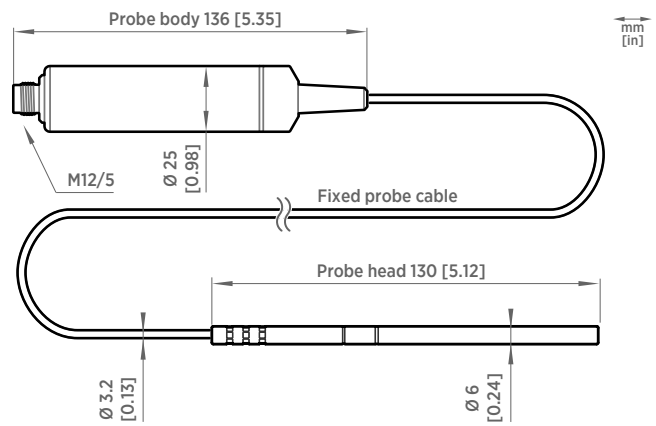


Mechanical specifications

Connector	M12 5-pin A-coded male
Weight	224 g (7.9 oz)
Probe cable length	2 m (6.56 ft) or 10 m (32.8 ft)

Materials

Probe	AISI 316L
Probe body	AISI 316L
Cable jacket	FEP



TMP1 probe dimensions

Accessories

Duct installation kit for temperature probe	215003
Swagelok® for 6 mm probe, 1/8" ISO thread	SWG6ISO18
Swagelok® for 6 mm probe, 1/8" NPT thread	SWG6NPT18
Indigo USB adapter ¹⁾	USB2

¹⁾ Vaisala Insight software for Windows available at www.vaisala.com/insight.



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