

XMP10 Series Humidity and Temperature Probes



Features

- Miniature-size humidity and temperature probe
- Up to ± 1 %RH measurement accuracy
- Temperature measurement option also available
- Modbus® RTU / voltage analog outputs
- Standard M8 connector
- IP65-rated probe body, metal and plastic options
- Compatible with Vaisala Origo10 transmitters

Vaisala XMP10 Series comprises miniature, probe-style humidity and temperature transmitters which deliver excellent measurement performance in a compact form. XMP10 can function as the sensing element in transmitters or operate independently as a versatile stand-alone device, sending values through analog or Modbus RTU outputs. XMP10 supports easy daisy-chaining via Modbus RTU, which enables the creation of multipoint measurement systems. XMP10's compact design makes it an ideal component for a wide range of OEM applications.

Benefits

- High-accuracy humidity and temperature measurements in a compact form
- Wide parameter range: Relative humidity, temperature, dew/frost point, wet bulb temperature, absolute humidity, mixing ratio, and enthalpy
- Versatile use as a stand-alone device, and in multipoint systems and transmitters
- M8 connector for easy Modbus RTU daisy-chaining
- Effortless to install, calibrate, and maintain

Multiple measurements in compact form

XMP10 probes deliver excellent measurement performance in a compact form. The probes feature temperature and humidity measurements, with optional calculated parameters including dew/frost point temperature, wet bulb temperature, absolute humidity, mixing ratio, and enthalpy.

XMP10 probes can be ordered with a metal or plastic probe body. Both housing options are classified as IP65, making the probes ideal for rough conditions.

Flexible connectivity

XMP10 probes support Modbus RTU and analog output options. They can be used independently as a stand-alone device, daisy-chained to create a multipoint measurement system, or as the measurement probe in transmitters. When used with transmitters, XMP10 always uses a digital connection (Modbus RTU).

For easy access to configuration and device analytics functionalities, XMP10 probes can be connected to Vaisala Insight PC software or Indigo80 handheld indicator. For more information, see vaisala.com/indigo80 and vaisala.com/insight.

Technical data

Probe models

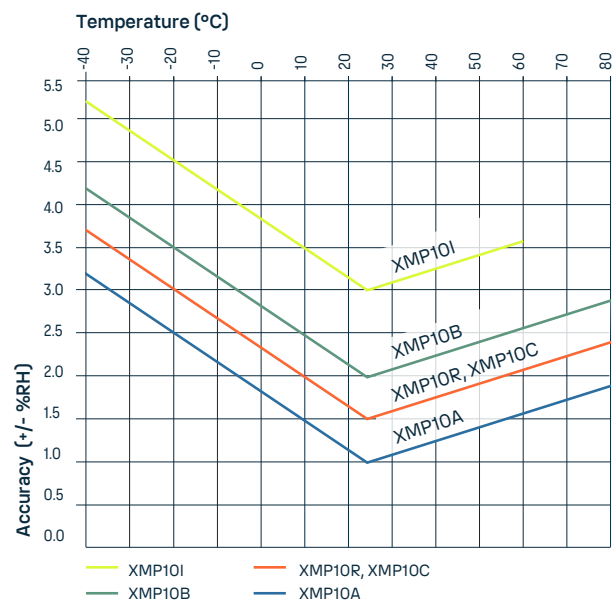
Model order code	Output parameter	Features
XMP10A	RH + T	±1.0 %RH accuracy ¹⁾ , HUMICAP® 180R sensor
XMP10R	RH + T	±1.5 %RH accuracy ¹⁾ , HUMICAP® 180R sensor
XMP10B	RH + T	±2.0 %RH accuracy ¹⁾ , HUMICAP® 180R sensor
XMP10I	RH + T	±3.0 %RH accuracy ¹⁾ , INTERCAP® sensor
XMP10C	RH + T	±1.5 %RH accuracy ¹⁾ , HUMICAP® 180V sensor with catalytic protection
XMP10T	T	Pt1000 RTD sensor

¹⁾ Accuracy 0–90 %RH at +23 °C (+73.4 °F) defined against SI-traceable reference, including non-linearity, hysteresis, and repeatability.

Measurement performance

Relative humidity	
Measurement range	0–100 %RH
Humidity sensor types	HUMICAP® 180R HUMICAP® 180V INTERCAP®
Factory calibration uncertainty	±1.1 %RH (0–90 %RH) ±1.8 %RH (90–100 %RH)
Stability	< 0.5 %RH/year in optimal conditions
T ₆₃ response time ¹⁾	12 s
T ₉₀ response time ¹⁾	27 s
Temperature	
Measurement range with HUMICAP® 180R / 180V sensor and metal probe body	–40 ... +80 °C (–40 ... +176 °F)
Measurement range with HUMICAP® 180R / 180V sensor and plastic probe body	–40 ... +60 °C (–40 ... +140 °F)
Measurement range with INTERCAP® sensor	–40 ... +60 °C (–40 ... +140 °F)
Accuracy, probes with analog outputs:	
at 0 ... +40 °C (+32 ... +104 °F)	±0.2 °C (±0.36 °F)
at –40 ... 0 °C (–40 ... +32 °F) and +40 ... +80 °C (+104 ... +176 °F)	±0.4 °C (±0.72 °F)
Accuracy, probes with digital outputs:	
at +15 ... +25 °C (+59 ... +77 °F)	±0.1 °C (±0.18 °F)
at 0 ... +15 °C (+ 32 ... +59 °F) and +25 ... +40 °C (+77 ... +104 °F)	±0.15 °C (±0.27 °F)
at –40 ... 0 °C (–40 ... +32 °F) and +40 ... +80 °C (+104 ... +176 °F)	±0.4 °C (±0.72 °F)
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751
Analog outputs	
Accuracy at +20 °C (+68 °F)	±0.2 % of FS
Temperature dependence	±0.01 % of FS/°C (±0.006 % of FS/°F)

¹⁾ With metal probe body and plastic grid filter with electroplating.



When RH > 90 %RH, accuracy is reduced by 1 %RH compared to the graph.

XMP10 humidity measurement accuracy as a function of temperature

Operating environment

Operating temperature with HUMICAP® 180R / 180V sensor and metal probe body –40 ... +80 °C (–40 ... +176 °F)

Operating temperature with HUMICAP® 180R / 180V sensor and plastic probe body –40 ... +60 °C (–40 ... +140 °F)

Operating temperature with INTERCAP® sensor –40 ... +60 °C (–40 ... +140 °F)

Operating humidity 0–100 %RH, non-condensing

Pollution degree Pollution degree 2

IP rating ¹⁾ IP65

Storage temperature –40 ... +60 °C (–40 ... +140 °F)

Storage humidity 0–100 %RH, non-condensing

¹⁾ Excluding the filter and sensor head.

Compliance

EU directives and regulations EMC, REACH, RoHS

Electromagnetic compatibility (EMC): ¹⁾

EMC immunity IEC/EN 61326-1, industrial environment

EMC emissions CISPR 11 / EN 55011, Class B
FCC part 15 B, Class B
ICES-3 / NMB-3 (Class B)

Compliance marks CE, China RoHS, RCM

¹⁾ Compliance is specified for installations using shielded cables.

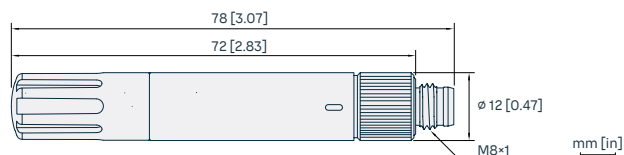
Inputs and outputs

Power consumption	Typical: 3.5 mW (avg. power at 15 V) Max: 20 mW (peak power at 28 V)
Operating voltage ¹⁾	
With 1 V / 2.5 V output	5–28 V DC
With 5 V output	8–28 V DC
With loop power converter	8–28 V DC
With digital output	5–28 V DC
Start-up time	
Probes with analog outputs	4 s at 13.5–16.5 V DC operating voltage 2 s at other valid operating voltages
Probes with digital outputs	2 s
Outputs	
2 channels	0–1 / 0–2.5 / 0–5 / 1–5 V DC
1-channel loop-power converter (separate module, recommended for humidity output only due to conversion accuracy)	4–20 mA
Digital output (probes with digital output)	RS-485 2-wire half duplex, supports Modbus RTU
External loads	
0–1 V	R _L min. 10 kΩ
Other voltage outputs	R _L min. 50 kΩ
Output parameters	
Relative humidity, temperature, dew/frost point temperature, wet bulb temperature, absolute humidity, mixing ratio, enthalpy	

¹⁾ Use lowest available operating voltage to minimize heating.

Mechanical specifications

Cable connector	M8 4-pin male (IEC 60947-5-2)
Materials	
Metal probe body	Stainless steel (AISI 316)
Filters for metal probe body	DRW255306SP: AISI 316L ASM214606SP: AISI 316L, PTFE 260647: AISI 316 / EN 1.4401 DRW263049: Metallized PC-ABS ASM215841: Metallized C-ABS, PTFE
Plastic probe body	PC+GF, white
Filters for plastic probe body	DRW240185SP: PC + GF ASM210856SP: PC + GF, PTFE DRW256380SP: PTFE
M8 locking wheel	Zinc alloy with nickel-plating
Cable	Polyurethane or FEP
Weight	
With metal probe body	20.7 g
With plastic probe body	14.1 g



XMP10 probe dimensions

Spare parts and accessories

Sensors	
Vaisala HUMICAP® 180R	HUMICAP180R
Vaisala HUMICAP® 180V	HUMICAP180V
Vaisala INTERCAP®	15778HM (1 pc) INTERCAPSET-10PCS (10 pcs)
Sensor protection, filters for metal probe body	
Plastic grid with electroplating	DRW263049
Plastic grid with electroplating and membrane	ASM215841
Slotted MIM filter	DRW255306SP
Slotted MIM filter with membrane	ASM214606SP
Stainless steel sintered filter	260647
Sensor protection, filters for plastic probe body	
Grid filter	DRW240185SP
Plastic grid with PTFE membrane	ASM210856SP
Porous PTFE filter	DRW256380SP
Probe installation	
Duct installation kit	ASM216258SP
Radiation shield kit	DTR504A
Probe mounting clamp set, 1 pc	225501SP
Probe mounting clamp set, 10 pcs	226067
Probe mounting flange	226061
Probe holder, 5 pcs	ASM213382SP
Connection adapters	
4–20-mA loop power converter	UI-CONVERTER-ICB
Mounting bracket for converter	225979
USB cable for PC connection	219690
Connection cable for Indigo80 handheld indicator	262195SP
Connection cables with open wires	
+60 °C 0.3 m (+140 °F 1 ft)	HMP50Z032SP
+60 °C 1.2 m (+140 °F 4 ft)	HMP50Z120
+60 °C 3 m (+140 °F 9.8 ft)	HMP50Z300SP
+60 °C 5 m (+140 °F 16.5 ft)	HMP50Z500SP
+60 °C 10 m (+140 °F 33 ft)	HMP50Z1000SP
+80 °C 1.5 m (+176 °F 5 ft)	225777SP
+80 °C 3 m (+176 °F 10 ft)	225229SP
+80 °C 15 m (+176 °F 49 ft)	236407SP
+80 °C 20 m (+176 °F 49 ft)	235859SP
+80 °C 1.5 m (+176 °F 5 ft), 90° connector	231519SP
+80 °C 3 m (+176 °F 10 ft), 90° connector	231520SP
+80 °C 5 m (+176 °F 16.5 ft), 90° connector	231521SP
+180 °C 1.5 m (+356 °F 5 ft) FEP	238025
+180 °C 3 m (+356 °F 10 ft) FEP	226902SP
–30 ... +90 °C 2 m (–22 ... 194 °F 6.5 ft), M8 snap-on connector	211598

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