

# TEMPERATURE - HUMIDITY

*VAISALA HMP155*





SENSOR MEASURE	SIGNAL OUTPUT	ELECTRICAL SUPPLY	MODEL IN EOL MANAGER
Temperature	0...1 V	7...28 V	<b>VAISALA HMP45A</b>
Humidity	0...1 V	7...28 V	<b>VAISALA HMP45A</b>

## APPLICATION

The VAISALA HMP155 is especially designed for use in meteorological applications, such as synoptic and hydrological weather stations, aviation and road weather. It is also suitable in a wide range of instrumentation, for example, recorders, data loggers and laboratory equipment and monitoring.

## CONSTRUCTION AND MODE OF OPERATION

The VAISALA Temperature - Humidity HMP155 provides reliable humidity and temperature measurement. The VAISALA HMP155 has excellent stability and withstands well harsh environments. The probe structure is solid and the sensor is protected with a sintered Teflon filter, which gives maximum protection against liquid water, dust and dirt.

Measuring humidity reliably is challenging in environments where humidity is near saturation. Measurements may be corrupted by fog, mist, rain and heavy dew. A wet probe may not give an accurate measurement in the ambient air. As the sensor head is warmed continuously, the humidity level inside it stays below the ambient level. Thus, it also reduces the risk of condensation forming on the probe.

With its fast response time, the additional temperature probe for the VAISALA HMP155 is ideal for measurement in environments with changing temperatures.

Protecting the sensor from scattered and direct solar radiation and precipitation will increase its lifetime. Thus, it is recommended installing the VAISALA HMP155 in one of the following radiation shields: DTR503, DTR13, or a Stevenson screen. The probe can be calibrated using a pc with a USB cable, with the push buttons, or with the MI70 indicator.

## RADIATION SHIELD

The VAISALA RADIATION SHIELD SERIES DTR500 is solar radiation and precipitation shields supporting humidity probe installations in outdoor applications. They provide excellent ventilation while blocking both direct and reflected solar radiation. The special plastic used in the plates has excellent thermal characteristics: the white outer surface reflects radiation, the black inside absorbs accumulated heat. The shields can be easily installed on either a vertical pole, horizontal beam, or a flat surface.

## TECHNICAL DATA

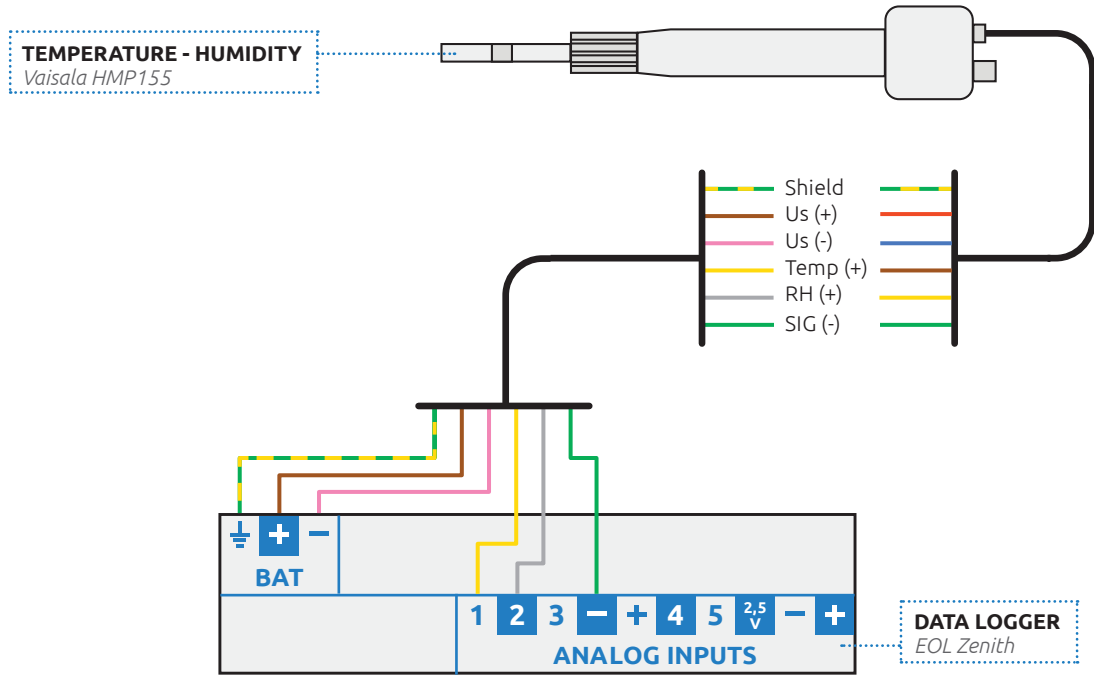
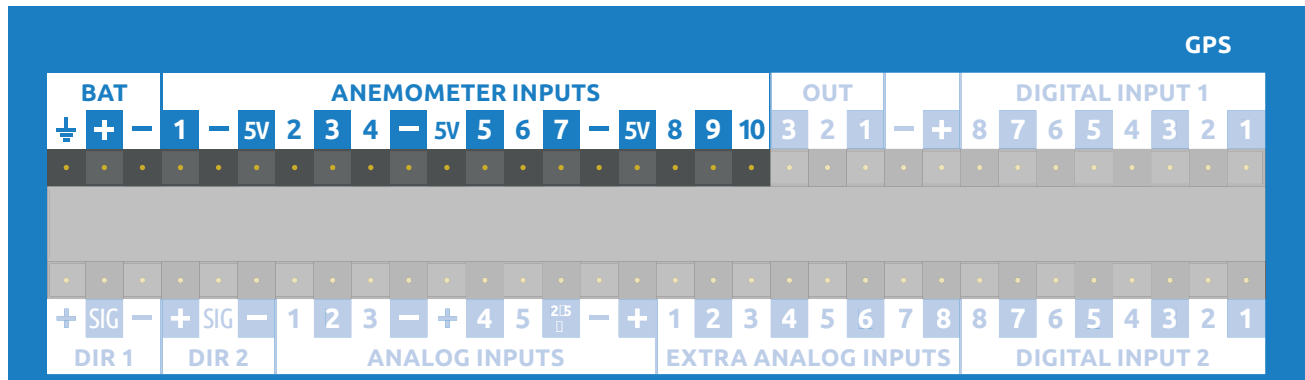
HUMIDITY	
CHARACTERISTIC	DESCRIPTION / VALUE
Measurement range	0...100% RH
Accuracy (incl. non-linearity, hysteresis and repeatability) at: +15...+25 °C -20...+40 °C -40...-20 °C +40...+60 °C +60...-40 °C	±1% RH (0...90% RH); ±1.7% RH (90...100% RH) ±(1.0 + 0.008 reading)% RH ±(1.2 + 0.012 reading)% RH ±(1.2 + 0.012 reading)% RH ±(1.4 + 0.032 reading)% RH
Factory calibration uncertainty (+20 °C)	±0.6% RH (0...40% RH) ±1.0% RH (40...97% RH)
Response time at +20 °C in still air with a sintered PTFE filter	63% → 20 s 90% → 60 s

TEMPERATURE	
CHARACTERISTIC	DESCRIPTION / VALUE
Measurement range	-80...+60 °C
Accuracy with voltage output	-80...+20 °C ±(0.226- 0.0028 temperature) °C
Passive (resistive) output according to IEC 751 1/3 Class B	±(0.1+ 0.00167 temperature) °C
Temperature sensor	Pt100 RTD 1/3 Class B IEC 751
Response time with additional temperature probe in 3 m/s air flow	63% → <20 s 90% → <35 s

OTHER DATA	
CHARACTERISTIC	DESCRIPTION / VALUE
Operating temperature range	-80...+60 °C
Storage temperature range	-80...+60 °C
Connection cables Cable material Wire size	3.5 m, 10 m, or 30 m PUR AWG26
Housing material Housing classification	PC IP66
Weight (probe)	86 g
Operating voltage	7...28 VDC
Voltage output resistive Pt100	0...1 V
Average current consumption (15 VDC, load 100 kΩ)	0...1 V output <3 mA During chemical purge maximum 110 mA With warmed probe maximum 150 mA
Settling time at power-up voltage output	2 s

## INSTRUCTIONS

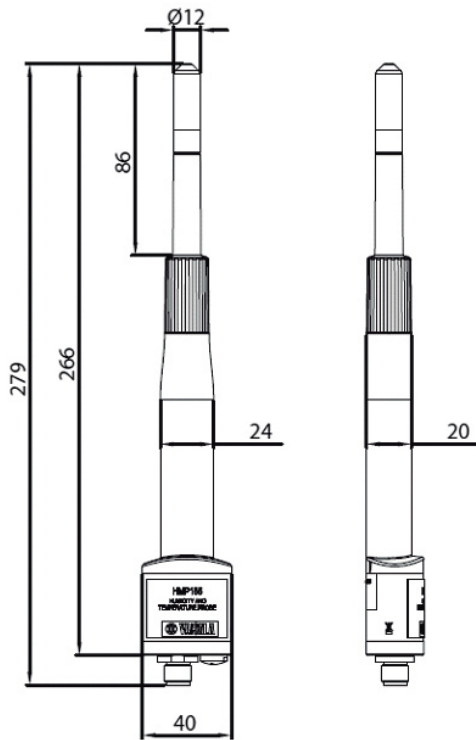
Use the following input channels on the logger to connect this sensor. See highlighted input channels marked here below. The wire colors used in the connection diagram below only applies in case the cable is supplied by Kintech Engineering.



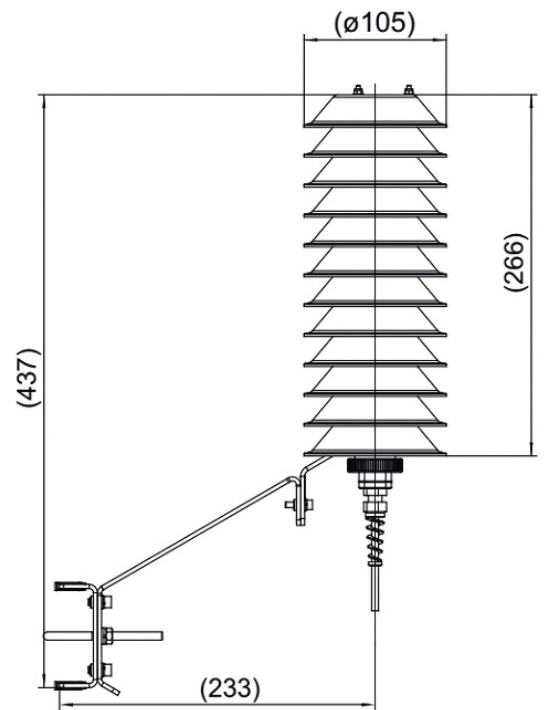
SENSOR PIN DESCRIPTION			DATA LOGGER INPUT CHANNEL	
Us (+)	Us (+)	Supply (+)	BAT	(+)
Us (-)	Us (-)	Supply (-)	BAT	(-)
Temp (+)	Temp (+)	Temperature (+)	ANALOG INPUTS	1
RH (-)	RH (+)	Rel. Humidity (+)	ANALOG INPUTS	2
SIG (-)	SIG (-)	Reference	ANALOG INPUTS	(-)
Shield	-	Shield	BAT	GND

KINTECH COLOR CODES		MANUFACTURER COLOR CODES	
	Brown		Blue
	Pink		Red
	Yellow		White
	Grey		Yellow
	Green		Green
	Yellow - Green		Black

SENSOR DIMENSIONS



DTR503A for HMP155



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## HOW TO CONFIGURE THIS SENSOR IN EOL MANAGER

Open EOL Manager and go to the data logger you are working on. Open the "inputs" tab and select the following type and model:

Output signal: 0...1V

- Section: Analog Inputs
- Type1: Temperature
- Model: VAISALA HMP45A
- Type2: Rel.Humidity
- Model: VAISALA HMP45HR

Output signal: 0...5V

- Section: Analog Inputs
- Type1: Voltmeter
- Model: Generic Voltmeter
- Type2: Voltmeter
- Model: Generic Voltmeter

**Calibration values:** Tick the "Std Cal" to use this sensors standard slope and offset. If you have an independent calibration certificate for this sensor insert the slope and offset values from this certificate.

## IMPORTANT

- After configuring the sensor in EOL Manager make sure to upload the configuration file to your EOL Zenith data logger. See the "Quick User Guide" how to upload configuration files to the data logger.
- All sensor wire shields must be connected to the data logger GND terminal.
- The data logger should always be connected to a separated ground rod. **Not** to the lightning rod of the tower.
- To store data such as Std Dev, Max and Min you should tick the corresponding boxes next to each anemometer channel when setting up your site file. Otherwise these parameters will not be stored.
- The "Temp (+)" wire and the "RH (+)" wire from the sensor should be connected to two separate "ANALOG" channels.
- Description example diagram shown before:

TEMPERATURE - HUMIDITY VAISALA HMP155	DATA LOGGER EOL ZENITH
Temp (+)	ANL 1
RH (+)	ANL 2

- Sensor accuracy is  $\pm 1\%$  in the measuring range  $+15...+25$  °C and  $0...90\%$  rh. Recorded data outside of this mentioned measuring range might be invalid.
- Depending on the output voltage range (0...1V or 0...5V), please use the below Slope and Offsets when configuring the sensor in EOL Manager:

OUTPUT SIGNAL	TEMP. RANGE	RH. RANGE	SLOPE	OFFSET
0...1 V	-40...+60°C (Std. Cal.)		100	-40
	-80...+60°C		140	-80
		0...100% RH	100	0

OUTPUT SIGNAL	TEMP. RANGE	RH. RANGE	SLOPE	OFFSET
0...5 V	-40...+60°C		20	-40
		0...100% RH	20	0

Cable recommendation:

Sensor	Signal cable 6x0.5 mm <sup>2</sup>
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They can however be distributed on all "ANALOG" and "EXTRA ANALOG" channels according to needs.

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