

Humidity and Temperature Transmitter User's manual

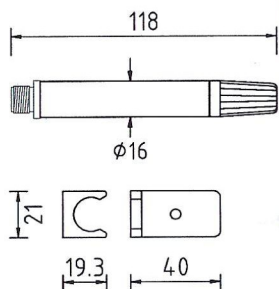
Warning

- If the process temperature is much higher than the environment, it will cause the measuring inaccuracy.
- Do not remove the sensor cover and not touch or wipe the sensing element.
- Do not connect 110V or 220V to the sensor.
- In a stressful environment, be sure to secure the device to avoid a pop-up accident.
- Mount the probe with horizontally for prevent water onto the sensor.
- Do excess the power supply voltage, this may permanently harm the sensor.

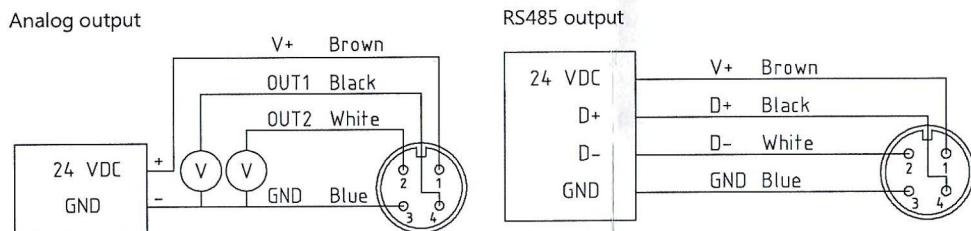
Analog output

- Analog output with two channels, OUT1 and OUT2.
- RS485 Modbus RTU default setting as ID1, 9600, N81

DIMENSIONS (mm)



CONNECTION DIAGRAM



PHYSICAL QUANTITY OUTPUT RANGE

Item	Metric	Imperial
Temperature <u>T</u>	-40 ... 100 °C	-40... 212 °F
Relative Humidity <u>RH</u>	0 ... 100 %	0 ... 100 %
Dew point <u>Td</u>	-20 ... 100 °C	-4 ... 212 °F
Frost/dew point <u>Tf</u>	-20 ... 100 °C	-4 ... 212 °F
Wet bulb temperature <u>Tw</u>	-40 ... 100 °C	-40 ... 212 °F
Water vapor pressure <u>E</u>	0 ... 1013 mbar	0 ... 14.7 psi
Mixing ratio <u>R</u>	0 ... 30000 g/kg	0 ... 210000 gr/lb
Absolute humidity <u>A</u>	0 ... 550 g/m ³	0 ... 240 gr/ft ³
Enthalpy <u>S</u>	-40 ... 40000 kJ/kg	-10 ... 20000 BTU/lb

TECHNICAL DATA

Humidity		Psychrometric calculations (option)	
Measurement range	0 ... 100 %RH	(Td) dew point temperature, (A) absolute humidity, (Tf) frost/dew point temperature, (R) mixing ratio, (S) enthalpy, (Tw) wet bulb temperature, (E) water vapor pressure	
Accuracy (including non-linearity, hysteresis, and repeatability)	±1.5/2/3 %RH@25°C (20 ... 80%RH)		
Temperature coefficient (from 0°C to 80°C)	typ. ±0.02%RH/°C		
Humidity Hysteresis	±1%RH		
Long term drift ¹	< 0.25%RH/year		
Response time T63 ²	8 second (at 1m/s air flow)		
Temperature		Power supply	
Measurement range	-40 ... 100 °C	Analog output 0...1V	5...28VDC
Accuracy (including non-linearity, hysteresis, and repeatability)	±0.2°C@25°C ±0.7°C (-40 ... 5°C) ±0.3°C (5 ... 60°C) ±0.9°C (60 ... 100°C)	Analog output 0...5V / 10V	15...28VDC
Long term drift ³	< 0.02°C/year	RS485 output	12...28VDC
Analog output (two channels)		Power consume	
Voltage version	0 ... 1 V / 5 V / 10 V	Voltage version	typ. 3mA
Accuracy of analog outputs at +25 °C	±0.1% full scale	RS485 version	typ. 3mA
Temperature dependence	±0.005%/°C full scale	Mechanics	
External loads voltage output 0 ... 1 V output RL > 2k ohm 0 ... 5 V and 0 ... 10 V outputs RL > 10k ohm		Filter material	PC, Polycarbonate
		Probe material	brass nickel-plated
		Probe pressure	10bar
		Housing classification	IP65
		Cable	M12 4-pin 2M female
		Operation Temperature range	
			-40 ... 100 °C (-40 ... 212 °F)
		Electromagnetic compatibility	
		EN61326-1:2013 Emission	
		CISPR11:2009+A1:2010 Group 1 Class B	
		EN61326-1:2013 Immunity	
		IEC 61000-4-2:2008	
		IEC 61000-4-3:2006+A1:2007+A2:2010	
		IEC 61000-4-8:2009	
		RS485 Modbus RTU	
		ID	1...247
		Baud rate	9600/19200/38400/57600/115200
		Data format	N81/N82/E81/E82/O81/O82

¹ Typical value for operation in normal RH/T operating range. Max. value is < 0.5%RH/year. Value may be higher in environments with vaporized solvents, outgassing tapes, adhesives, packaging materials, etc.

² Time for achieving 63% of a step function, valid at 25°C and 1m/s airflow.

³ Max. value is < 0.04°C/year.