EE1900

Humidity Measurement Module for OEM Applications

The EE1900 humidity module is optimised for the measurement of relative humidity (RH) or dew point temperature (Td) in climate chambers. With outstanding temperature compensation across the working range from -70 °C to 180 °C (-94 °F to 356 °F) and the choice of stainless steel and plastic (PPS) probes, the module is suitable for a wide range of applications.

The excellent measuring accuracy of the EE1900 rests on the innovative E+E humidity and temperature sensing element HMC01.
The proprietary E+E coating protects the sensor from dust, dirt and corrosive agents. Therefore, the EE1900 module features excellent long term stability even in harsh environment.

In applications with chemical contamination, the EE1900 stands out by the **A**utomatic Sensor **R**e**C**overy (ARC) function. The controlled, strong heating outgases the chemicals from the sensing element to ensure reliable and stable measurements.

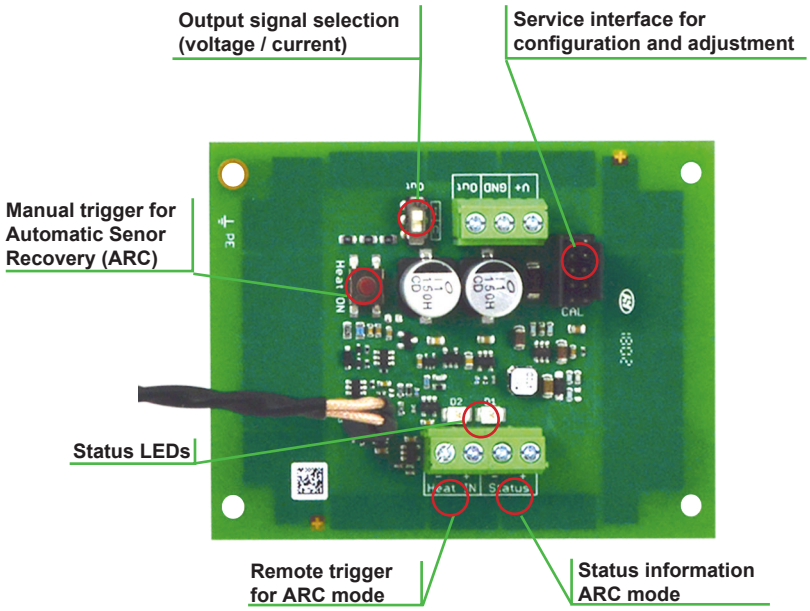
The analogue output of the EE1900 can be set to current or voltage with a slide switch. The service interface and the free EE-PCS configuration software allow for output scaling and adjustment of the humidity measurement.

The high-quality, flexible probe cable up to 3 m facilitates mounting of the EE1900. The electronics board is available in two sizes, for easy integration into existing climate chambers and other machines.

Features

HMC01 Sensor

» Automatic Sensor Recovery
» Protected by E+E proprietary coating



Protective sensor coating

The E+E proprietary sensor coating is a protective layer applied to the active surface and leads of the sensing element. The coating substantially extends the lifetime and the measurement performance of the EE1900 in corrosive environment. Additionally, it improves the sensor's long term stability in dusty, dirty or oily applications by preventing stray impedances caused by deposits on the active sensor surface.

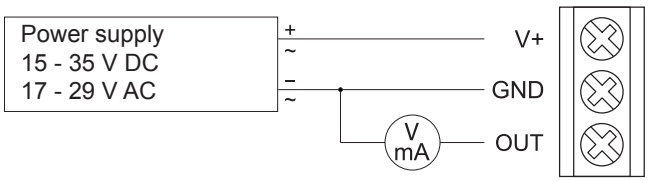
Technical Data

Sensor	HMC01
Measured values	
Relative humidity (RH)	
Working range	0…100 % RH
Accuracy[1] (incl. hysteresis, non-linearity and repeatability)	
-20...40 °C (-4...104 °F)	± 2 % RH (≤90 % RH) / ± 2.5 % RH (>90 % RH)
-40...180 °C (-40...356 °F)	± 2.5 % RH (≤90 % RH) / ± 3.5 % RH (>90 % RH)
Dew point (Td)	
Working range	-20...80 °C Td (-4...176 °F Td)
Accuracy	± 2 °C (± 3.6 °F) for | $T_{ambient}$ - Td | < 20 °C (36 °F)
General	
Response time RH $t_{10/90}$ at 20°C (68 °F)	typ. 15 sec with stainless steel grid filter[2]
Supply voltage	15 - 35 V DC and 17 - 29 AC
Current consumption	
for DC supply	< 32 mA
for AC supply	< 60 mA_{eff}
Output signal	0-1 / 5 /10 V -1 mA < I_L < 1 mA 0 / 4-20 mA (3 wire) R_L < 500 Ω
ARC status signal	optocoupler, open/closed
Working range electronics	-40…60 °C (-40...140 °F) / 0...90% RH non-condensing
Working range probe	-70...180 °C (-94...356 °F) / 0...100 % RH
Storage conditions	-40…60°C (-40...140 °F) / 0...90% RH non-condensing
Electrical connection	screw terminals up to max. 1.5 mm² (AWG 16)
Electromagnetic compatibility	Component for OEM equipment tested according to EN61000-4-3 and EN61000-4-6

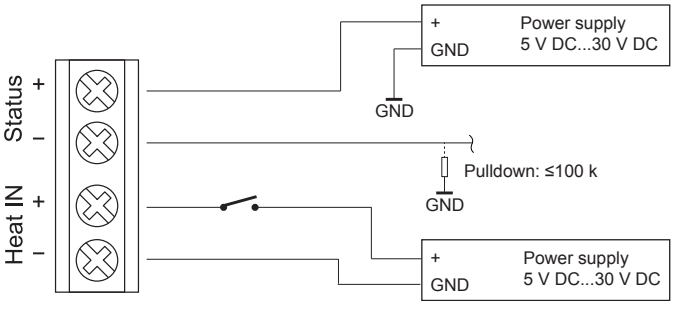
1) The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).
2) Other filters see data sheet "Accessories".

Connection Diagramm

Supply



ARC - Automatic Sensor ReCovery



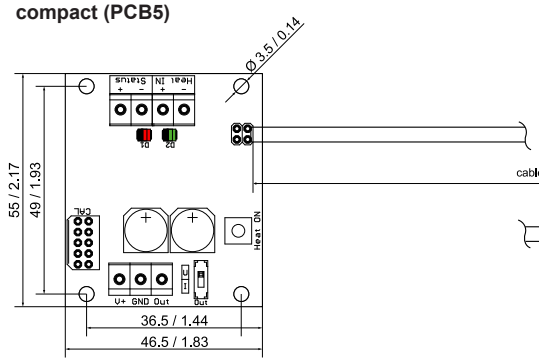
Current consumption in ARC mode

Supply	Consumption
15 V DC	~120 mA (max.)
24 V DC	~80 mA (max.)
35 V DC	~55 mA (max.)
17 V AC	~210 mA_{eff} (max.)
24 V AC	~160 mA_{eff} (max.)
29 V AC	~140 mA_{eff} (max.)

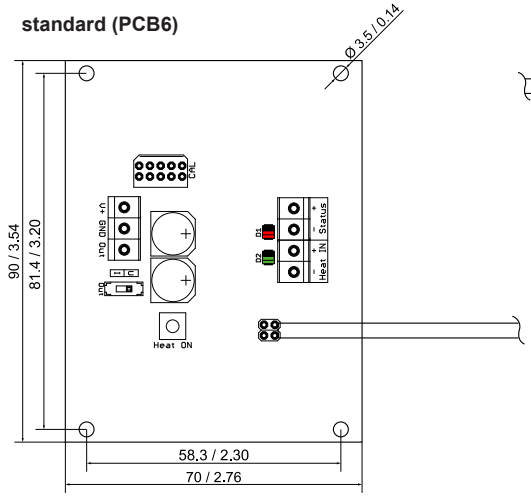
Dimensions (mm/inch)

Electronics boards

compact (PCB5)

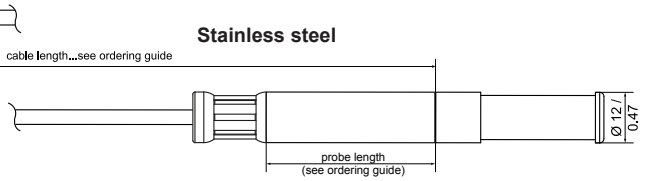


standard (PCB6)

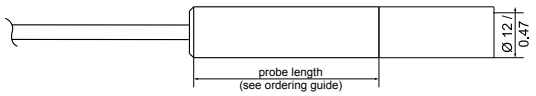


Sensing probes

Stainless steel



Plastic (PPS)



Ordering Guide

		EE1900
PCB size	standard (90 x 70 mm (3.54 x 2.76 ")) compact (55 x 46.5 mm (2.17 x 1.83 "))	PCB6 PCB5
Probe material	Plastic (PPS) Stainless steel	no code PM2
Probe length	45 mm (1.77") (only for plastic probe) 65 mm (2.56") (only for stainless steel probe) 200 mm (7.84")	no code L65 L200
Cable length	0.5 m (1.64 ft) 1.5 m (4.92 ft) 3 m (9.84 ft)	no code K1.5 K3
E+E sensor coating	without coating with coating	no code C1
Filter	Stainless steel grid filter Stainless steel sintered filter PTFE Filter H2O2 Filter	F9 F4 no code F12
Output	Relative humidity (% RH) Dew point temperature (°C) Dew point temperature (°F)	no code MA52 MA53
Output signal	0-1 V 0-5 V 0-10 V 0-20 mA 4-20 mA	GA1 GA2 no code GA5 GA6
Output scale low	0 *Value*	no code SAL *Value*
Output scale high	100 *Value*	no Code SAH *Value*

Order Example

EE1900-PCB5

PCB size:	55 x 46.5 mm (2.17 x 1.83 ")
Probe material:	platstic (PPS)
Probe length:	45 mm
Cable length:	0.5 m
E+E Sensor coating	without coating
Filter:	PTFE Filter
Output:	relative humidity (% RH)
Output signal:	0-10 V
Scaling 1 low:	0
Scaling 1 high:	100

Scope of supply

- EE1900 according to ordering guide
- Inspection certificate according to DIN EN 10204 – 3.1

Accessories (see datasheet „Accessories“)

- Mounting flange 12 mm	HA010201
- Configuration cable with USB adapter	HA011017
- Stainless steel wall mounting clip Ø12 mm	HA010225