

EE04

Miniature Humidity and Temperature Transmitter

The high quality, compact EE04 humidity and temperature transmitters are optimised for OEM applications. Highest performance with respect to accuracy and long term stability is combined with low costs for large quantities. The SMD humidity sensor HC103 series, state of the art electronics and dedicated housing are offering an excellent price / performance ratio.

An optional filter assures optimal protection against dirt. For use in high pollution or corrosive environment the sensors and electronics can be protected with a special E+E coating. There is an EE04 version model available with extra air slots on the side allowing for very fast response times.

The linear output voltage for relative humidity can easily be processed further. The temperature output signal is provided by a voltage divider with passive NTC sensor. Fast and easy installation is possible by using the provided mounting flange.



EE04-FTB

EE04-FTO
with extra air slots
on the side

Typical Applications

- air conditioning in automobiles
- humidifiers and dehumidifiers
- copy machines
- warehouses
- home appliances

Features

- small dimensions
- excellent price / performance ratio
- high long term stability
- easy installation
- low power consumption
- traceable calibration

Technical Data

Measuring Quantities

Relative Humidity

Humidity sensor	HC103		
Working range	0...95%RH with coating 0...100%		
Accuracy at 25°C (77°F)	± 3%RH (40...60%RH) ± 5%RH (0...95%RH) Traceable to intern. standards, administrated by NIST, PTB, BEV...		
Humidity output	linear analogue voltage 0...100%RH. Δ 0.1xU _v ...0.9xU _v e.g.: for U _v = 5VDC : 0...100%RH = 0.5V...4.5V (50%RH = 2.5V)		
Load resistor R _{load}	> 5kOhm		
Response time τ _{es} at 25°C (77°F)	type B:	< 45s (without filter and without coating)	
	type O:	< 30s (without filter and without coating)	

Temperature

Temperature output Voltage divider: NTC (10kOhm at 25°C/77°F) with pull down resistor (10kOhm)

Calculation T_[°C] out of output voltage

$$R_{NTC} = \frac{10000 \times U_v}{U_{out}} - 10000 \quad T_{[K]} = \frac{3496}{11.726 + \ln\left(\frac{R_{NTC}}{10000}\right)} \quad T_{[°C]} = T_{[K]} - 273.15$$

Calculation output voltage out of T_[°C]

$$T_{[K]} = T_{[°C]} + 273.15 \quad R_{NTC} = 10000 \times e^{\left(\frac{3496}{T_{[K]}} - 11.726\right)} \quad U_{out} = \frac{10000 \times U_v}{(R_{NTC} + 10000)}$$

Working temperature -40...85°C (-40...185°F)

General Data

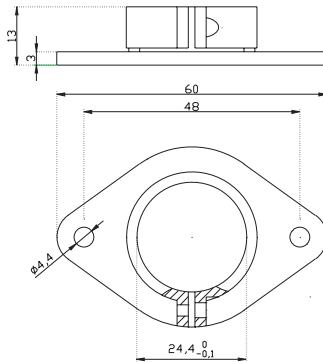
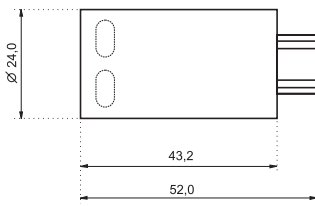
Voltage supply (U _v)	5V DC ±10%
Current consumption	typical 1.4mA without load < 3.5mA at maximal load
Sensor protection	grid / metal grid filter or coating
CE compatibility according ¹⁾	EN61326-1 EN61326-2-3 Industrial Environment



1) EE04 is not protected against surge

Dimensions (mm)

1 mm = 0.03937" / 1" = 25.4 mm

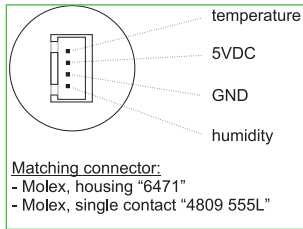


Protection class:

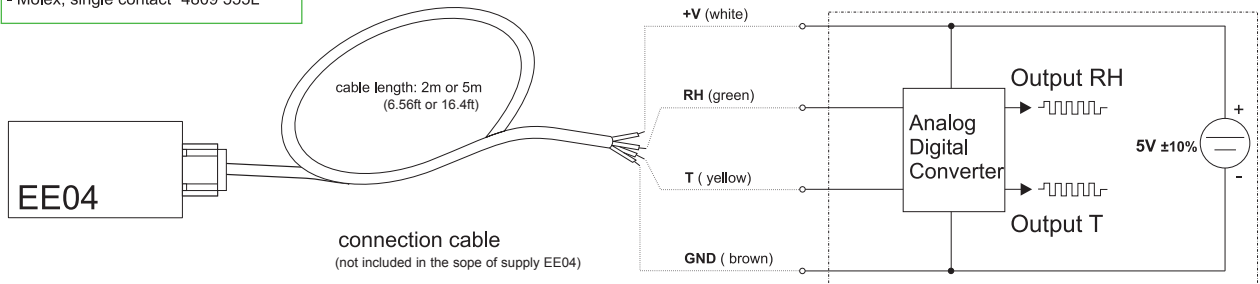
Sensor side: IP50 (type B)
IP20 (type B and O)
Connector side: IP30

Housing material: PPO - GF20
UL94HB approved

Connection Diagram



The circuitry shows the typical A/D conversion of the analogue output signals. A reference voltage or calibration is not required. The voltage supply can vary in the range 5V ±10%.



Ordering Guide

MODEL	TYPE	HUMIDITY OUTPUT	T-SENSOR	FILTER (for type B only)	COATING (for (3) only)
humidity+temperature (FT)	duct (B) duct with extra air slots on the side (O)	linear 0,1...0,9 x U _v (4)	NTC, 10k at 25°C (A)	only grid, no filter (3) metal grid filter above grid (6)	with coating (HC) without coating (-)
EE04-					

Accessories

connection cable 2m (6.6ft) (HA010305)
5m (16.4ft) (HA010306)

Order Example

EE04-FTB4A3-HC
model:
Type:
output:
T-sensor:
filter:
coating:
humidity and temperature
duct
linear 0.1 - 0.9 x U_v,
NTC
only grid, no filter
with coating