

EE04 Series

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.



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

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) | |
| 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_{63} 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 | $R_{NTC} = \frac{10000 \times U_v}{U_{Out}} - 10000$ | $T_{[K]} = \frac{3496}{11,726 + \ln\left(\frac{R_{NTC}}{10000}\right)}$ | T _[°C] = T _[K] - 273,15 |
| Calculation output voltage out of T _[°C] | T _[K] = T _[°C] + 273,15 | $R_{NTC} = 10000 \times e^{\left(\frac{3496}{T_{[K]}} - 11,726\right)}$ | $U_{Out} = \frac{10000 \times U_v}{(R_{NTC} + 10000)}$ |
| Working temperature | -40...85°C (-40...185°F) | | |

General Data

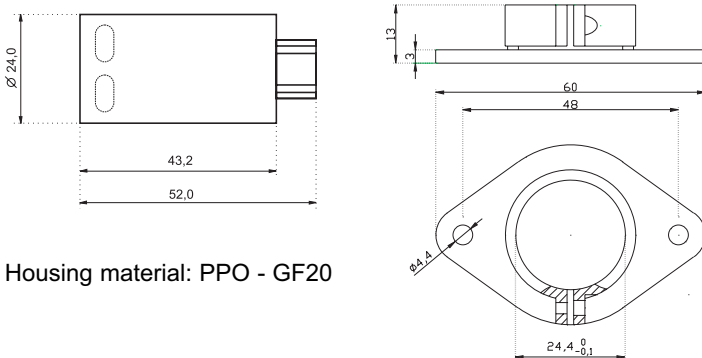
| | |
|--|---|
| Voltage supply (U _v) | 5V DC ±10% |
| Current consumption | typical 1.4mA without load < 3.5mA at maximal load |
| Sensor protection | grid / metal grid filter or coating |
| CE compatibility according ¹⁾ | EN 50081-1 EN 61000-6-2 |

1) EE04 is not protected against surge



Dimensions (mm)

1 mm = 0.03937" / 1" = 25.4 mm

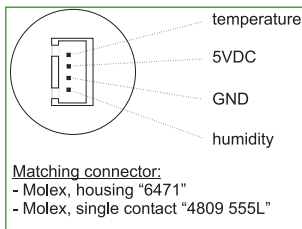


Housing material: PPO - GF20

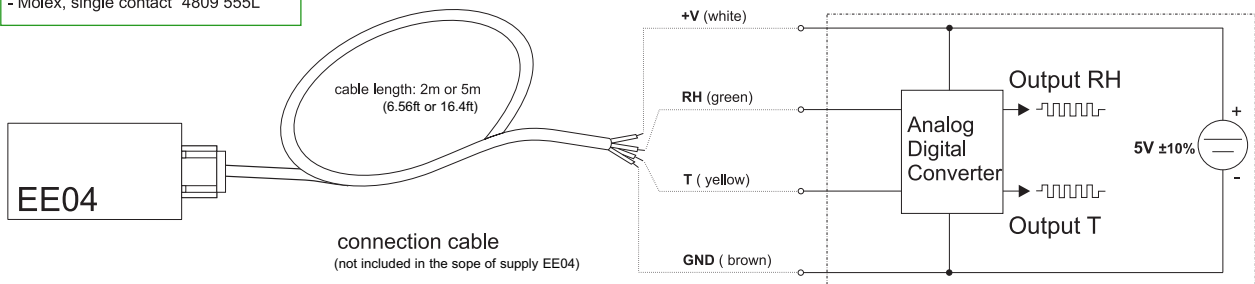
Protection class:

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

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