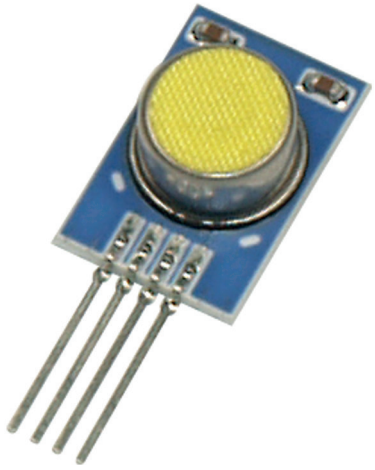
DATA SHEET

Digital humidity sensor HYT-221

Description



Characteristic features

- Measuring range 0 … 100 % RH, -40…125 °C
- Accuracy ±1.8 % RH, Temperature ±0.2 °C
- Waterproof membrane filter
- Precisely calibrated and temperature compensated
- Chemical resistant, dew formation resistant
- Mechanically robust
- Low Hysteresis, compensated Linearity error
- SIL-connections, plug-in type, RM 1.27 mm
- I²C, address 0x28 or alternative address
- Dimensions 15.3 x 10.2 x 5.3 mm
- RoHS conformance

Application

- Meteorology
- Industrial drying systems
- Medical devices
- Aviation
- Extreme sports

Humidity measurement	
Humidity measuring range [3]	0...100 % RH - see figure [3]
Humidity accuracy [1]	±1,8 % RH (10...80 % RH) see figure [1]
Reproducibility [2]	±0.2 % RH
Hysteresis	< ±1 % RH
Humidity resolution	0,02 % RH
Linearity error	< ±1 % RH
Response time t_{63}	< 12 sec
Tk Residual error	0,05 % RH / K (0...60 °C)
Long term drift	< 0,5 % RH / a
Measuring principle	Capacitive polymer humidity sensor

Temperature measurement	
Temperature measuring range	- 40...+125 °C
Temperature accuracy	±0,2 K (0...60 °C) see figure [2]
Reproducibility	±0,1 K
Response time t_{63}	< 10 sec
Temperature resolution	0,015 °C
Long term drift	< 0,05 K / a
Measuring principle	PTA (integrated)

Features

The HYT 221 – for critical application areas.
The round stainless steel casing can be easily fitted into housing openings and can be sealed against the wall with the use of O-ring. In combination with the waterproof membrane filter, it results into an assembly that is splash water proof and enables a sealed housing construction while providing a high dynamic responsiveness.
Precisely calibrated, the HYT 221 delivers an accuracy of ±1.8 % RH and ±0.2 °C. Like all representatives of the HYGROCHIP family, the sensor combines the advantages of a precise, capacitive polymer humidity sensor with the high integration density and functionality of an ASIC. The signal processing integrated in the sensor completely processes the measured data and directly delivers the physical parameters of relative humidity and temperature over the I²C compatible interface as digital values. The module is precisely calibrated by the manufacturer and is therefore fully inter-changeable without adjustment. Both the linearity error as well as temperature drift are corrected “OnChip” through computation resulting in an outstanding accuracy over a wide range of application. Due to mechanical robustness, high chemical stability,dew formation resistance as well as an excellent long term stability, the typical areas of application are humidity measurement in the sauna, applications in outdoor areas or industrial applications in the field of drying systems.

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Relative humidity accuracy

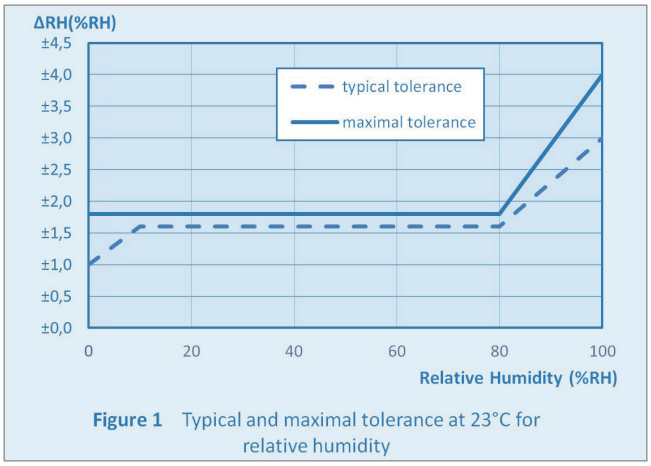


Figure 1 Typical and maximal tolerance at 23°C for relative humidity

[1] The accuracy is tested at 23 °C and 3.3 V operating voltage in the direction of rising humidity. The accuracy does not include Tk-Residual error, residual linearity error or Hysteresis effect. [2]The repeatability is measured in the same direction and does not consider the Hysteresis effect,. [3]The maximum dew point is brought down to 80 °C.

Temperature measurement accuracy

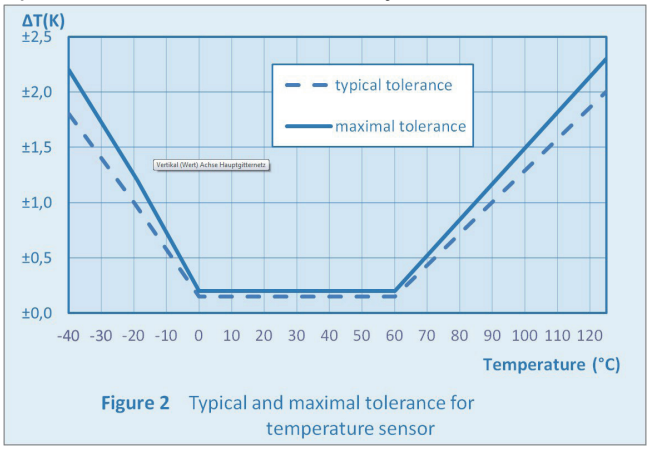


Figure 2 Typical and maximal tolerance for temperature sensor

Humidity application range

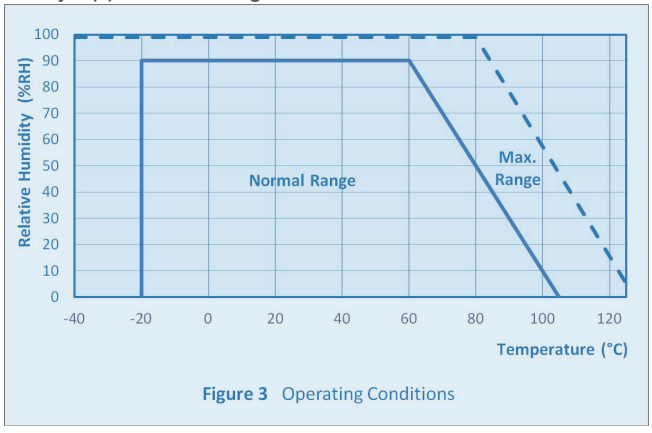
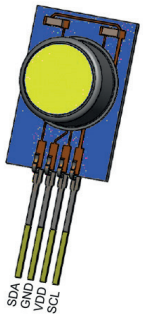


Figure 3 Operating Conditions

Operating data	
Operating voltage	2,7…5,5 V
Current consumption (Nominal)	< 22 µA at 1 Hz measuring rate 850 µA maximum
Current consumption (Sleep)	< 1 µA
Application temperature	-40...125 °C
Humidity application range	0...100 % RH
Digital interface	I²C, address 0x28 or alternative address

Limits	
Operating voltage	-0,3…6,0 V
Storage temperature	-50...150 °C

Mechanical dimensions



top view