HYGROCHIP
DIGITAL HUMIDITY SENSOR HYT-221

HUMIDITY

TEMPERATURE

FLOW

CONDUCTIVITY

RoHS

Characteristic Features

▸ **Measuring range 0 … 100% rH, -40 … 125°C**
▸ **Low drift**
▸ **Stable at high humidity**
▸ **Splash water proof with protection filter**
▸ **I²C protocol for humidity and temperature**
  (address 0x28 or alternative address)
▸ **Accuracy ±1.8% rH, ±0.2°C**
▸ **Temperature compensated**

Typical Areas of Application

▸ **Meteorology**
▸ **Industrial drying systems**
▸ **Medical devices**
▸ **Agriculture**

Features

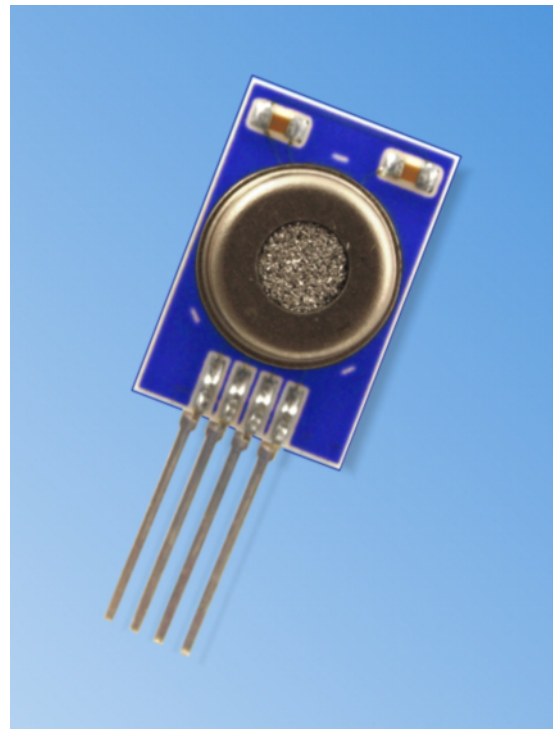**The HYT 221 – for critical application areas**

The round stainless steel casing can be easily fitted into housing openings and can be sealed against the wall with the use of an O-ring. Combined with the waterproof metal 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 interchangeable without adjustment.

Both the linearity error as well as the temperature drift are corrected "OnChip" through computation resulting in an outstanding accuracy over a wide range of applications. Due to mechanical robustness, high chemical stability, dew formation resistance as well as excellent long term stability, the typical areas of application are humidity measurement in saunas, applications in outdoor areas or industrial applications in the field of drying systems.

Further variants and the full spectrum of the HYGROCHIP product series can be found at:
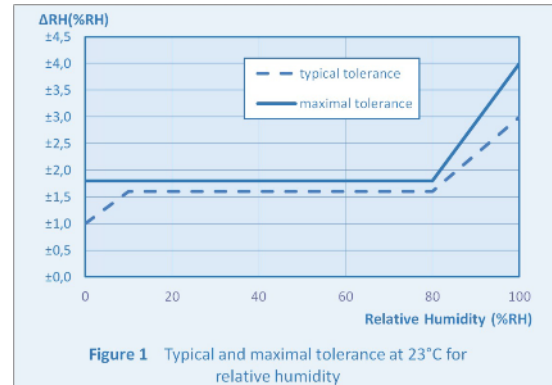
http://www.hygrochip.com

IST
INNOVATIVE SENSOR TECHNOLOGY

HYGROCHIP
DIGITAL HUMIDITY SENSOR HYT-221

Technical Data

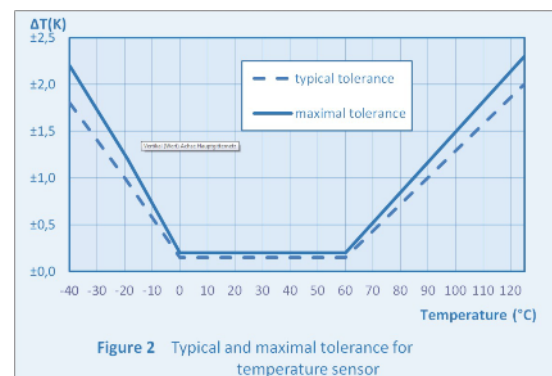| Humidity Measurement	
Humidity measuring range [1]	0 ... 100% rH see Figure 3
Humidity accuracy [2] (Maximum tolerance)	±1.8% rH (0 ... 80% rH) see Figure 1
Accuracy humidity 0 .. 10% RH (0 ... 50 ° C) (Typical tolerance)	±(1% rF + 8% a_w) a_w = rF / 100%
Reproducibility [3]	±0.2% rH
Hysterisis	< ±1% rH
Humidity resolution	0.02% rH
Linearity error	< ±1% rH
Response time t_{63}	< 12 sec with membrane filter
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	±0.2K (0 ... 60°C) see Figure 2
Reproducibility	±0.1K
Temperature resolution	0.015°C
Response time t_{63}	< 12 sec with filter
Long term drift	< 0.05K / a
Measuring principle	PTAT (integrated)

Relative Humidity Accuracy

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

[1] The maximum dew point is limited to 80°C.

[2] The accuracy is tested at 23°C and 3.3V operating voltage in the direction of rising humidity. The accuracy does not include Tk-Residual error, residual linearity error or hysterisis effect.

[3] The repeatability is measured in the same direction and does not consider the hysterisis effect.

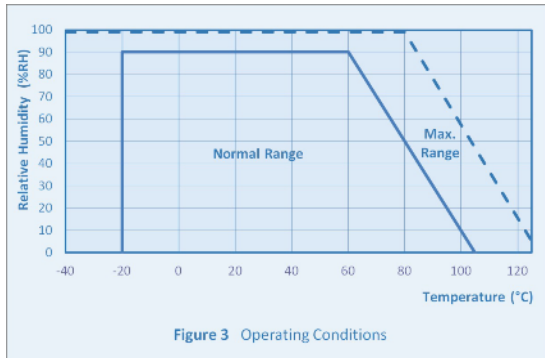## Temperature Measurement Accuracy

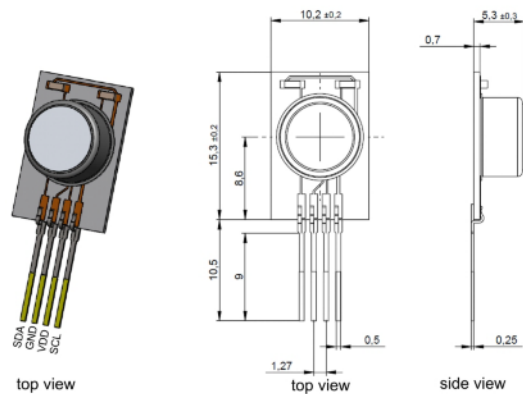**Figure 2** Typical and maximal tolerance for temperature sensor

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Humidity Application Range

Figure 3 Operating Conditions

Mechanical Dimensions

Operating Data	
Operating voltage	2.7 … 5.5V
Current consumption (Nominal)	< 22µA at 1Hz measuring rate 850µA maximum
Current consumption (Sleep)	< 1µA
Application temperature	-40°C ... 125°C
Humidity application range	0 ... 100% rH
Digital interface	I²C, address 0x28 or alternative address

Limits	
Operating voltage	-0.3 … 6.0V
Storage temperature	-20°C ... 80°C

IST
INNOVATIVE SENSOR TECHNOLOGY

ISO 9001

DHHYT221_E1.0

IST AG, Industriestrasse 2, CH-9630 Wattwil, Switzerland, Phone (+)41 71 987 73 73, Fax (+)41 71 987 73 77
e-mail info@ist-ag.com, www.ist-ag.com

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