



HYGROCHIP

DIGITAL HUMIDITY SENSOR

HYT-271

Characteristic features

- ▶ Measuring range 0 ... 100 % rH, -40 ... 125°C
- ▶ Accuracy ± 1.8 % rH, ± 0.2 °C
- ▶ Digital I²C Interface to μ C
- ▶ Precisely calibrated and temperature compensated
- ▶ Chemical resistant, dew formation resistant
- ▶ Low Hysteresis, compensated Linearity error and Temperature drift
- ▶ Operating voltage 2.7 ... 5.5V
- ▶ Current consumption (Nominal) 1 μ A (25°C, sleep-mode)
- ▶ High quality ceramic substrate
- ▶ SIL-connections, plug-in type, RM 1.27 mm
- ▶ Miniaturised construction, fully interchangeable
- ▶ Mechanically robust
- ▶ Optimum price performance ratio
- ▶ RoHS conformance

Typical areas of application

- ▶ Handheld measurement instruments
- ▶ Humidity transmitters
- ▶ Industrial applications
- ▶ Measuring & Sensor Technology

Features

HYT 271 – the powerful allround talent of the HYGROCHIP product series

Mechanically robust, chemical resistant and dew formation resistant, this digital humidity sensor with only 10.2 x 5.1 x 1.8 mm size offers the widest application window and an optimal price performance ratio. Precisely calibrated, the HYT 271 delivers an accuracy of ± 1.8 % rH and ± 0.2 °C - ideal for sophisticated mass applications, industrial handheld devices and precise humidity transmitters. 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 temperature drift are corrected "OnChip" through computation resulting in an outstanding accuracy over a wide range of application. The high chemical resistance, dew formation resistant design and an excellent long term stability speaks for itself. Further variants and the full spectrum of HYGROCHIP product series can be found at: <http://www.ist-ag.com>



All mechanical dimensions are valid at 25°C ambient temperature, if not differently indicated. ■ All data except the mechanical dimensions only have information purposes and are not to be understood as assured characteristics. ■ Technical changes without previous announcement as well as mistakes reserve. ■ The information on this data sheet was examined carefully and will be accepted as correct. No liability in case of mistakes. ■ Load with extreme values during a longer period can affect the reliability.

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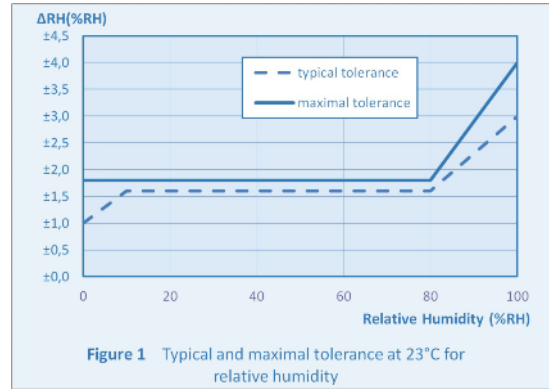
HYT-271

Technical data

Humidity measurement	
Humidity measuring range ⁽³⁾	0 ... 100% rH see Figure 3
Humidity accuracy ⁽¹⁾	±1.8% rH (0 ... 80% rH) see Figure 1
Reproducibility ⁽²⁾	±0.2% rH
Hysteresis	< ±1% rH
Humidity resolution	0.03% rH
Linearity error	< ±1% rH
Response time t_{63}	< 4 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
Temperature resolution	0.015 °C
Response time t_{63}	< 5 sec
Long term drift	< 0.05 K / a
Measuring principle	PTA (integrated)

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

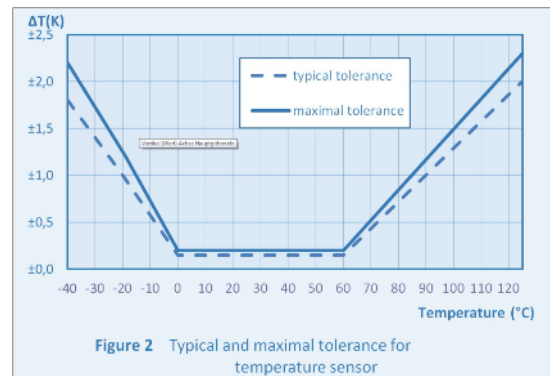


Figure 2 Typical and maximal tolerance for temperature sensor

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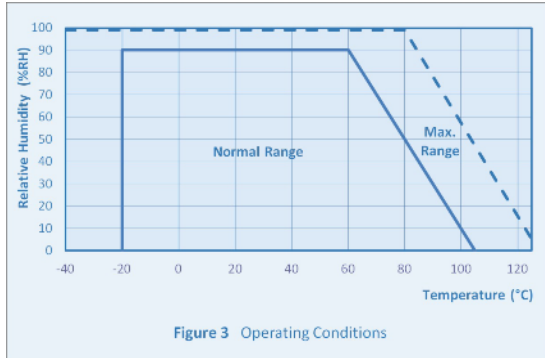


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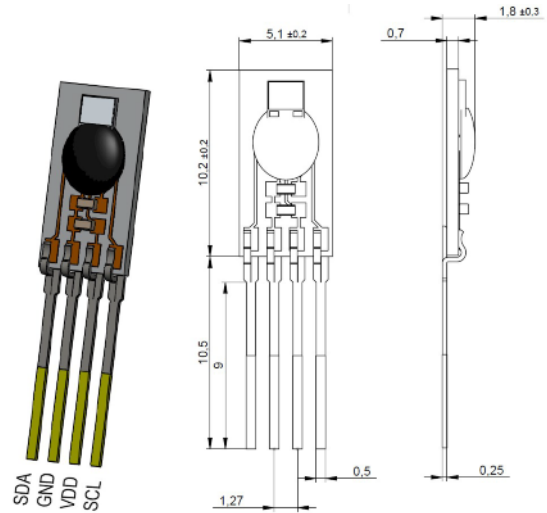
Humidity application range



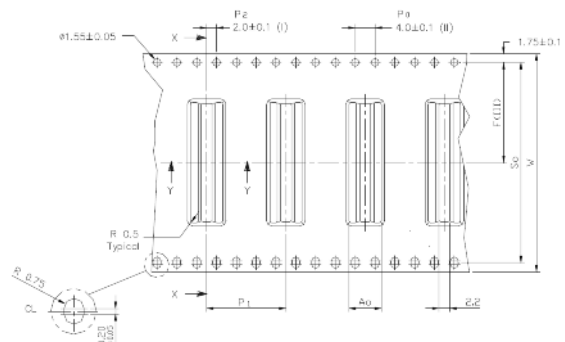
Further information about the component can be found at:

<http://www.ist-ag.com>

Mechanical dimensions



Packing



- (I) Measured from centreline of sprocket hole to centreline of pocket.
- (II) Cumulative tolerance of 10 sprocket holes is = 0.20
- (III) Measured from centreline of sprocket hole to centreline of pocket.
- (IV) Other material available.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.

Operating data	
Operating voltage	2.7 ... 5.5 V
Current consumption (Nominal)	< 22µA at 1Hz measuring rate 850 µA maximum
Current consumption (Sleep)	< 1µA
Application temperature	-40 °C ... 125 °C
Humidity application range	0 ... 100% rH
Digital Interface	I ² C, address 0x28 or alternative address

Limits	
Operating voltage	-0.3 ... 6.0 V
Storage temperature	-50 °C ... 150 °C

Tape & Reel, 44 mm Strap

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