



HYGROCHIP

DIGITAL HUMIDITY SENSOR HYT-271

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Characteristic Features

- ▶ **Measuring range 0 ... 100% rH, -40 ... 125°C**
- ▶ **Low drift**
- ▶ **Stable at high humidity**
- ▶ **I²C protocol for humidity and temperature**
(address 0x28 or alternative address)
- ▶ **Accuracy $\pm 1.8\%$ rH, $\pm 0.2^\circ\text{C}$**
- ▶ **Temperature compensated**

Typical Areas of Application

- ▶ **Handheld measurement instruments**
- ▶ **Humidity transmitters**
- ▶ **Industrial applications**
- ▶ **Measuring Technology**
- ▶ **HVAC**

Features

HYT 271 – the powerful all-round talent of the HYGROCHIP product series

Mechanically robust, chemical resistant and dew formation resistant, the digital humidity sensor with only 10.2 x 5.1 x 1.8mm size offers the widest application window and an optimal price performance ratio. Precisely calibrated, the HYT 271 delivers an accuracy of $\pm 1.8\%$ rH and $\pm 0.2^\circ\text{C}$ - 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 applications. The high chemical resistance, dew formation resistant design and an excellent long-term stability speaks for itself.

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



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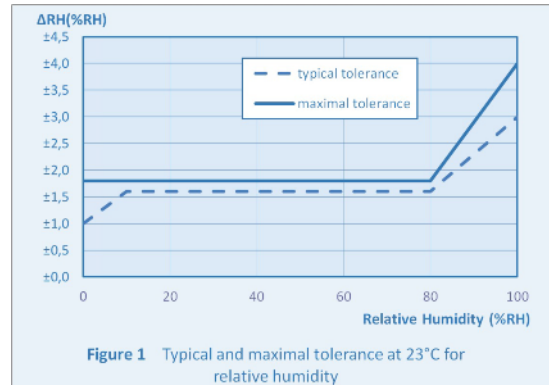
DIGITAL HUMIDITY SENSOR HYT-271

Technical Data

Humidity Measurement	
Humidity measuring range ⁽¹⁾	0 ... 100% rH see Figure 3
Humidity accuracy ⁽²⁾ (Maximum tolerance)	$\pm 1.8\% \text{ rH}$ (0 ... 80% rH) see Figure 1
Accuracy humidity 0 ... 10% RH (0 ... 50 °C) (Typical tolerance)	$\pm (1\% \text{ rF} + 8\% \text{ a}_w)$ $\text{a}_w = \text{rF} / 100\%$
Reproducibility ⁽³⁾	$\pm 0.2\% \text{ rH}$
Hysteresis	$< \pm 1\% \text{ rH}$
Humidity resolution	0.03% rH
Linearity error	$< \pm 1\% \text{ rH}$
Response time t_{63}	$< 4 \text{ sec}$
Tk Residual error	0.05% rH / K (0 ... 60°C)
Long term drift	$< 0.5\% \text{ rH} / \text{a}$
Measuring principle	Capacitive polymer humidity sensor

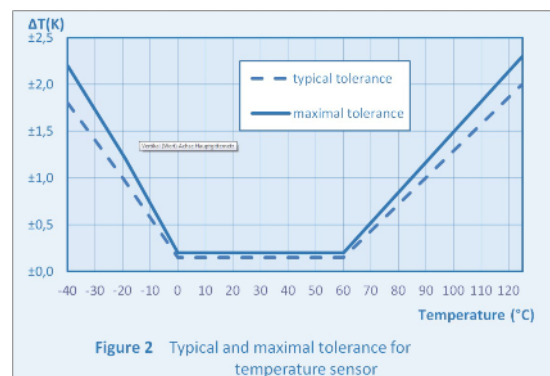
Temperature Measurement	
Temperature measuring range	- 40 ... +125°C
Temperature accuracy	$\pm 0.2\text{K}$ (0 ... 60°C) see Figure 2
Reproducibility	$\pm 0.1\text{K}$
Temperature resolution	0.015°C
Response time t_{63}	$< 5 \text{ sec}$
Long term drift	$< 0.05\text{K} / \text{a}$
Measuring principle	PTAT (integrated)

Relative Humidity Accuracy



- (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 hysteresis effect.
- (3) The repeatability is measured in the same direction and does not consider the hysteresis effect.

Temperature Measurement Accuracy



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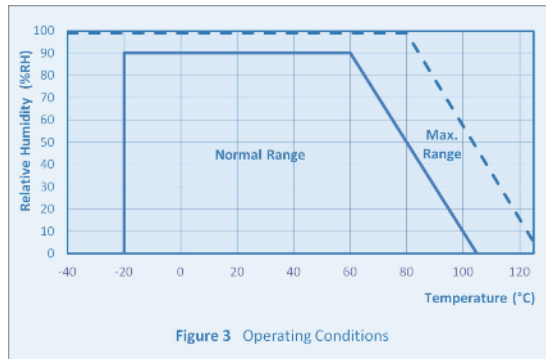


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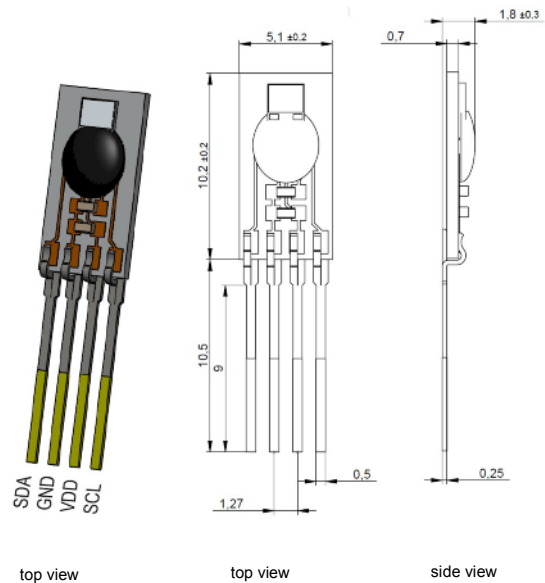
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Humidity Application Range



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	I ² C, address 0x28 or alternative address

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



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