

# DATA SHEET



## Digital humidity sensor HYT-271

### Description



### Characteristic features

- Measuring range 0...100 % RH, -40...125 °C
- Accuracy  $\pm 1.8$  % RH, Temperature  $\pm 0.2$  °C
- Precisely calibrated and temperature compensated
- Chemical resistant, dew formation resistant
- Low hysteresis, compensated linearity error and temperature drift
- Operating voltage 2.7...5.5 V
- Current consumption (Nominal) 1  $\mu$ 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
- Dimensions 10,2 x 10,5 x 5,1 mm

### Application

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

### Features

HYT 271 – the powerful allround talent

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  $\pm 1.8$  % RH and  $\pm 0.2$  °C - ideal for sophisticated mass applications, industrial handheld devices and precise humidity transmitters. 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 I<sup>2</sup>C 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 "On-Chip" 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.

Humidity measurement	
Humidity measuring range <sup>3</sup>	0...100 % RH - see figure <sup>3</sup>
Humidity accuracy <sup>1</sup>	$\pm 1.8$ % RH (10...80 % RH) see figure <sup>1</sup>
Reproducibility <sup>2</sup>	$\pm 0.2$ % RH
Hysteresis	$< \pm 1$ % RH
Humidity resolution	0,03 % RH
Linearity error	$< \pm 1$ % 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

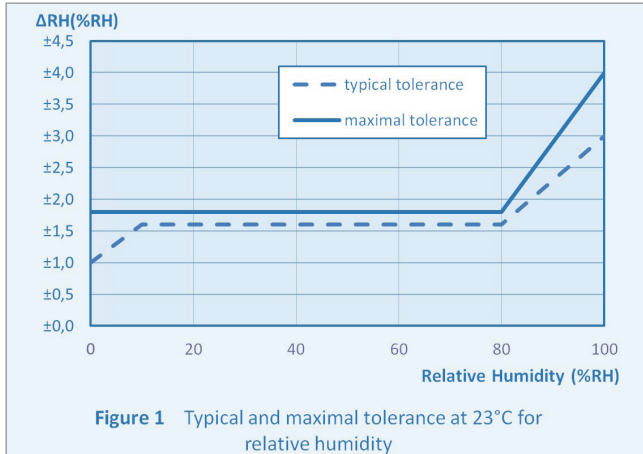
Temperature measurement	
Temperature measuring range	-40...+125 °C
Temperature accuracy	$\pm 0,2$ K (0...60 °C) see figure <sup>2</sup>
Reproducibility	$\pm 0,1$ K
Response time $t_{63}$	$< 5$ sec
Temperature resolution	0,015 °C
Long term drift	$< 0,05$ K / a
Measuring principle	PTA (integrated)
Article number	HYT 271-S

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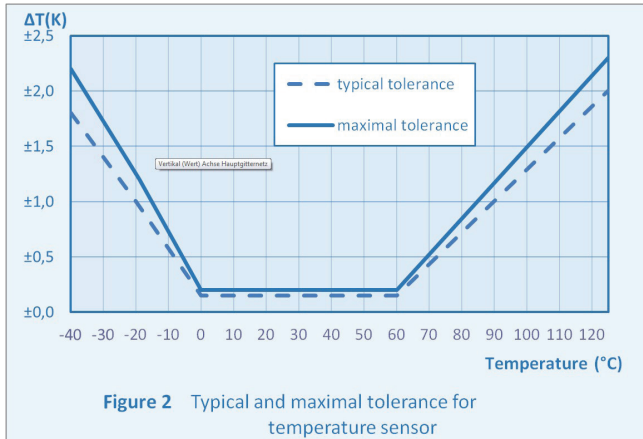
## Digital humidity sensor HYT-271

### Relative humidity accuracy

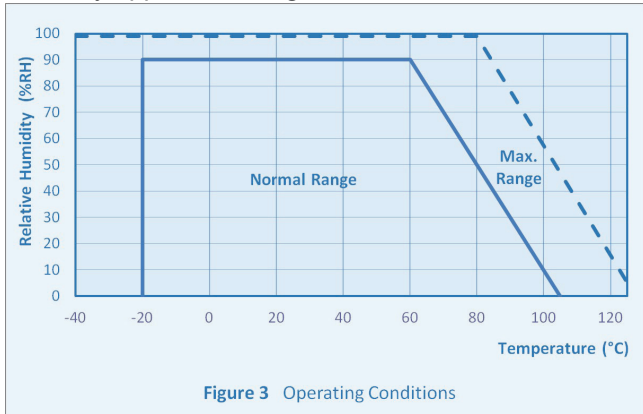


<sup>1</sup> The accuracy is tested at 23 °C and 3.3 V operating voltage in the direction of rising humidity. The accuracy does not include Tk-Residual error, residual linearity error or Hysteresis effect. <sup>2</sup>The repeatability is measured in the same direction and does not consider the Hysteresis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

### Temperature measurement accuracy



### Humidity application range



Further information about the component can be found at:

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	I <sup>2</sup> C, address 0x28 or alternative address

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

### Mechanical dimensions

