



ASSEMBLY RECOMMENDATION

HYT 939 Humidity sensors

1/2



Mounting instructions

The media compatibility of the sensor, housing and sealing materials are to be checked and kept suitable as per the application.

The housing and the assembly must be so constructed that it can withstand the application pressure multiplied by the factor of safety. In case of dynamic applications in the upper pressure range, an additional extra factor is to be taken into account for the material fatigue.

The assembly must be done stress free. This should remain valid for the entire temperature range, considering the different coefficients of expansion between the sensor housing and the opening.

The support from top may be provided only in the boundary area. The upper mounting ring must rest upon flat.

Sealing rings

The most frequent error in case of a pressure resistant assembly is the loss of sealing. Therefore, this is the point where high attention is to be given.

Standard sealing rings in the form of O-rings are available in the market, which are offered by different manufacturers. A typical dimension is, for example, 7 x 1 mm.

The material is dependant on the application, hence due to qualitative reasons, high grade options of VITON or FPM are recommended, which are also resistant to ageing and temperature exposure.

In case of queries, we recommend to directly contact the manufacturer of O-rings:

Busak und Shamban GmbH

Handwerkerstr. 5-7

D- 70565 Stuttgart

www.busakshamban.de

Suggested type: BUSAK + SHAMBAN, O-Ring Dimension 7 x 1 mm

Dichtomatik GmbH

Albert-Schweizer-Ring 1

D- 22045 Hamburg

www.dichtomatik.de

Suggested type: Dichtomatik, O-Ring Dimension 7 x 1 mm



INNOVATIVE SENSOR TECHNOLOGY

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HYT 939 Humidity sensors

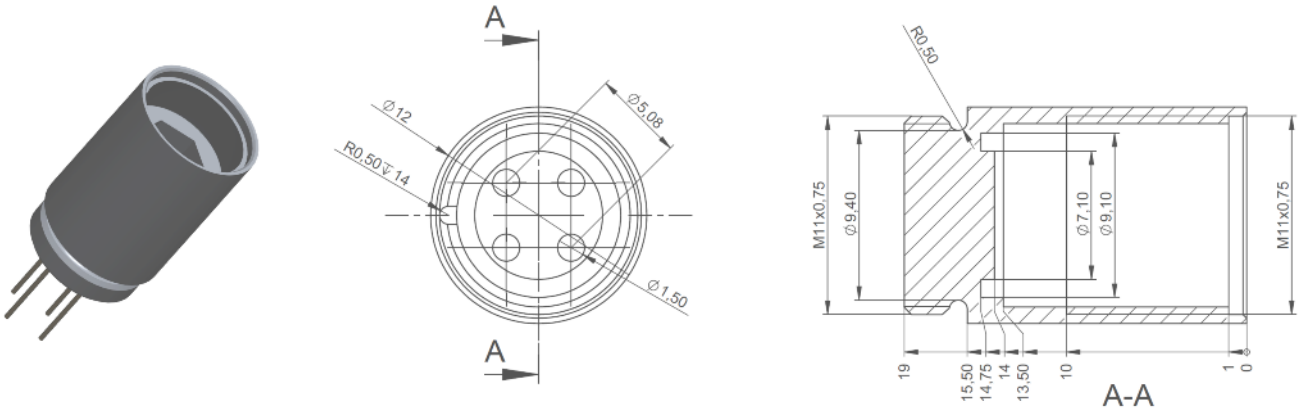


Construction recommendations

These recommendations for construction are to be understood only as an assistance for our own construction. The dimensioning of the components in each case is to be decided suiting to the application and checked.

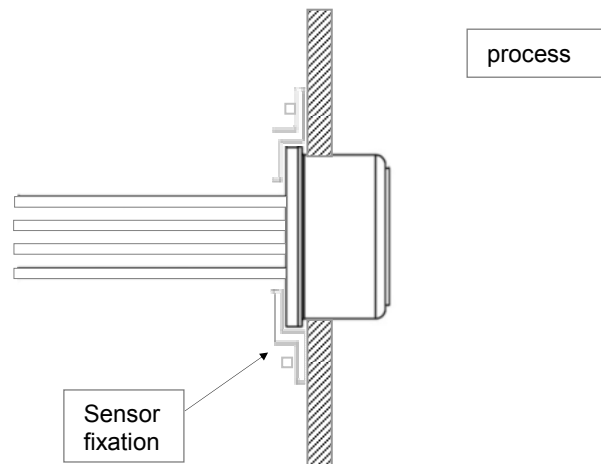
Please also consider the fitment and application guidelines of O-ring manufacturer!

Version 1



Version 2

Legal Notice: These recommendations for construction are unbinding; alterations are possible in these recommendations at any time without prior notice. Any liability on our part for damages of any kind is excluded.



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. Released 03/2012

AHHT939_E1.2





HYGROCHIP

DIGITAL HUMIDITY SENSOR HYT-939



Characteristic Features

- ▶ **Measuring range 0 .. 100% rH, -40 ... 125°C**
- ▶ **I²C protocol for humidity and temperature**
(address 0x28 or alternative address)
- ▶ **Accuracy ±1.8% rH, ±0.2°C**
- ▶ **Temperature compensated**

Typical Areas of Application

- ▶ **Medical systems**
- ▶ **Autoclaves**
- ▶ **Pressure dew point measurement (pressure tight sensor packaging required)**
- ▶ **Drying systems**
- ▶ **Laboratories**

Features

HYT 939

Precisely calibrated, the HYT 939 delivers an accuracy of ±1.8% rH and ±0.2°C. Further features are the integrated signal processing for measuring the physical parameters of relative humidity and temperature, the I²C compatible interface, easy interchangeability without adjustment as well as mechanical robustness, chemical resistance, dew formation resistance and long-term stability.

Both the linearity error and temperature drift are corrected "OnChip" through computation.

Because of the special robust construction, the sensor also withstands peak loading at high temperatures. Therefore, this special model is also ideal for extremely sophisticated industrial applications in drying systems and suitable for medical systems.

For a pressure tight sensor packaging consult IST AG.

Further variants and the full spectrum of the HYGROCHIP product series can be found at:



www.ist-ag.com



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HYGROCHIP

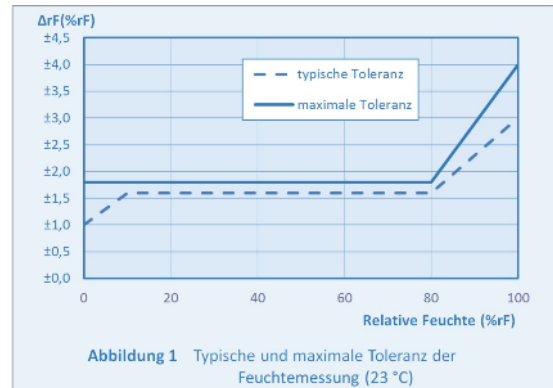
DIGITAL HUMIDITY SENSOR HYT-939

Technical Data

Humidity Measurement	
Humidity measuring range ⁽¹⁾	0 ... 100% rH see Figure 3
Humidity accuracy ⁽²⁾ (Maximum tolerance)	±1.8% rH (10 ... 80% rH) see Figure 1
Accuracy humidity 0 .. 10% RH (0 ... 50 ° C)	±(1% rF + 8% a _w)
(Typical tolerance)	a _w = rF / 100%
Hysteresis (50% rH)	< ±1% rH
Humidity resolution	0.02% rH
Linearity error	< ±1% rH
Response time t ₆₃	< 10 sec with Sinter filter
Tk Residual error (50% rH)	0.05% rH / K (0 ... 60°C rH)
Long term drift	< 0.5% rH / a
Measuring principle	Capacitive polymer humidity sensor

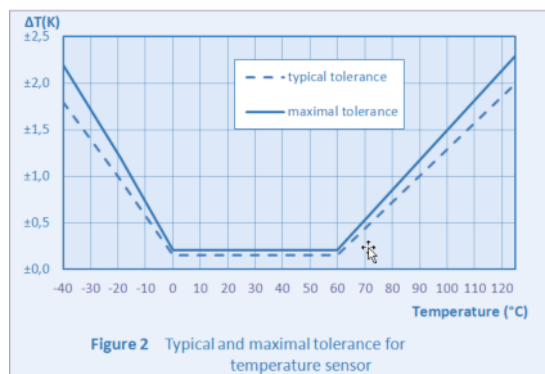
Temperature Measurement	
Temperature measuring range	- 40 ... +125°C
Temperature accuracy	±0.2°C (0 ... 60°C) see Figure 2
Reproducibility	±0.1K
Response time t ₆₃	< 10 sec with membrane filter
Temperature resolution	0.015°C
Long term drift	< 0.05K / a
Measuring principle	PTAT (integrated)

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

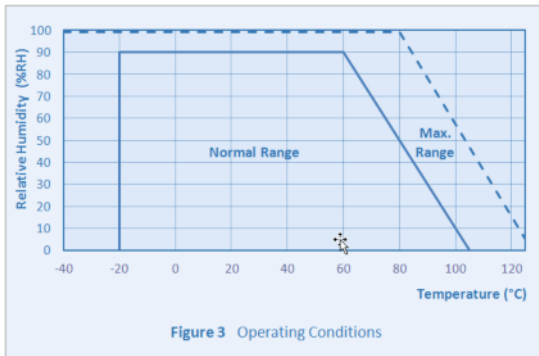




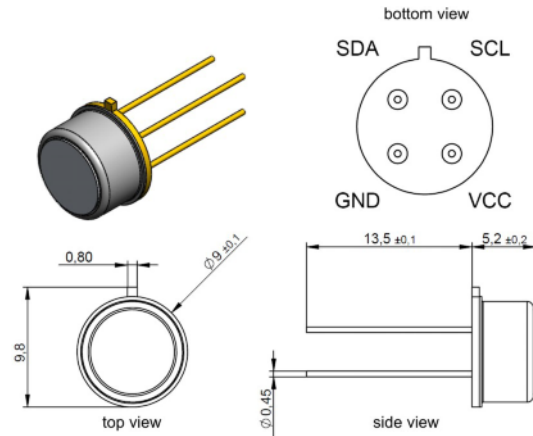
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DIGITAL HUMIDITY SENSOR HYT-939

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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