



HPM.HYT 939P.K.0.KK.SA.S

Low Humidity Digital RH/T Transducer

HYT939 assembly for low humidity monitoring



A compact and ready-to-use sensor for process control of industrial processes sensitive to condensation. Continuous and highly accurate measurement of relative humidity and temperature, to ensure compliance with dew point setpoints. System integration is made easy by a digital interface and small screw-in housing. Custom calibration and assembly options upon request.

Benefits & Characteristics

- Best suitable for process control based on dew point monitoring down to $-40\text{ }^{\circ}\text{C Tdp}$
- Easy to integrate into compressed air systems with a screw-in housing
- Ready-to-use, factory calibrated humidity sensor with digital I2C outputs

Applications

- Ultra-pure air production, distribution and supply systems (e.g., compressors)
- Compressed air operated systems (e.g., pneumatic brakes, medical tools)
- Industrial systems sensitive to humidity (e.g. lasers)
- Air barrier and sensitive drying process (e.g., laminar flow packaging)
- Component testing (e.g., semiconductor manufacturing)



Technical Data



Humidity

Temperature

Accuracy:	±0.5 % RH at +23 °C (0 % RH to 5 % RH) ±1.0 % RH at + 23 °C (5 % to 10 % RH)	±0.2 °C (0 °C to +60 °C)
	See Fig.1 for typical accuracies in the measuring temperature range. Custom specific alternatives available.	

Reproducibility:	±0.2 % RH	±0.1 °C
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Resolution:	0.03 % RH	0.015 °C
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Response time T_{63}^1 :	< 10 s	< 10 s
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Long-term drift:	< 0.5 % RH/a (at 23 °C and 0 % RH to 10 % RH in synthetic air)	< 0.05 °C/a
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Exposure to VOCs can lead to higher values.
Please read HYT application note for more details.

Measurement principle:	Capacitive polymer humidity sensor	PTAT (integrated)
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Measuring temperature range ² :	0 °C to 60 °C
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Measuring humidity range ² :	0 % RH to 10 % RH For usage in condensing environment please refer to HYT application note.
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Hysteresis:	< ±1 % RH at 25 °C
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Operating voltage:	2.7 V to 5.5 V
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Current consumption (nominal):	< 22 µA at 1 Hz measuring rate; 850 µA max.
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Current consumption (sleep):	< 1 µA
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Digital interface:	I ² C, address 0x28 or alternative address
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Operating voltage (limits):	-0.3 V to 6 V
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Storage conditions:	+5 to 30 °C, < 30 % RH
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Operating range ³ :	-40 to 80 °C, 0 - 100 % RH
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Housing material:	Stainless steel
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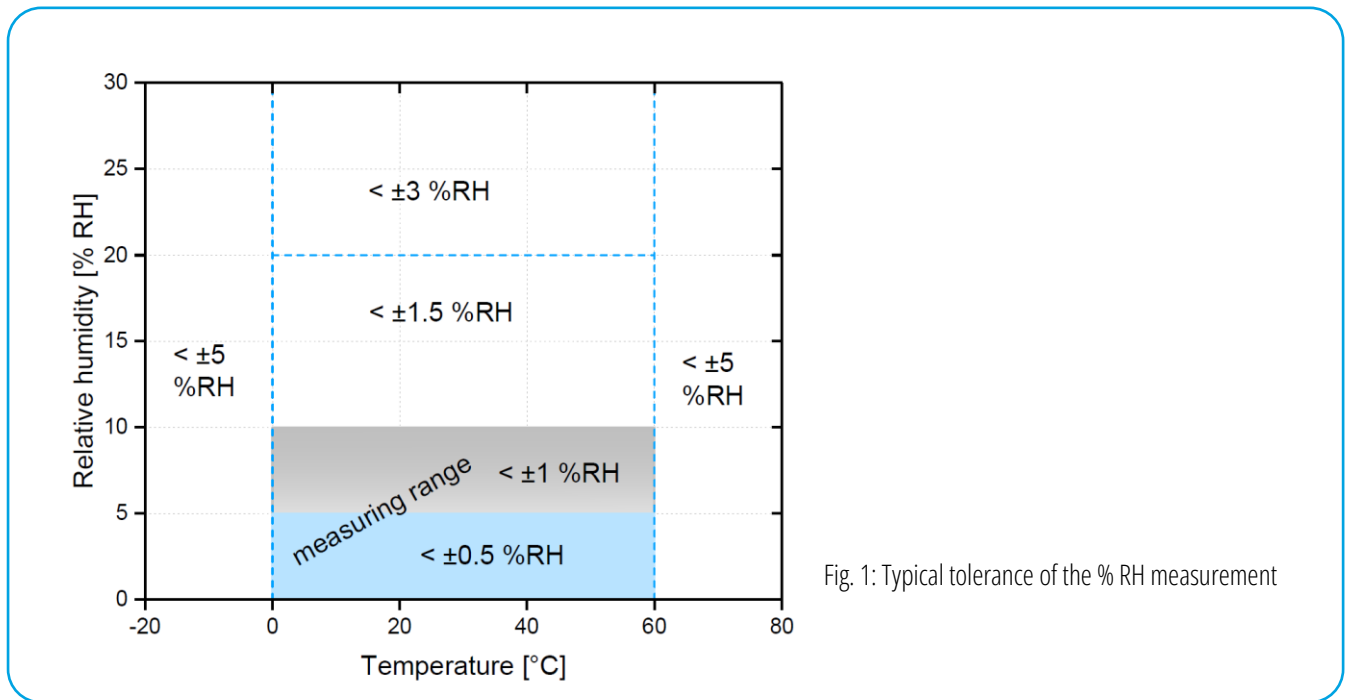
Process connector:	M14 x 1.5
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Cable:	4x AWG 26, 500 mm
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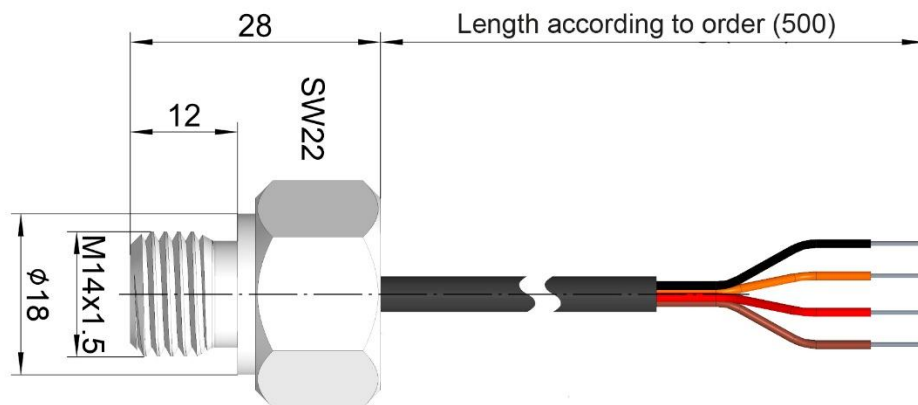


- 1) The response time is often measured for increasing humidity steps, whereas physics predicts that decreasing humidity leads to generally far longer response times for capacitive humidity sensors. IST thus measures response times always for decreasing humidity values, since this is the worst case.
- 2) In the specified range the modules measure according to typical accuracies demonstrated in figure 1. At $T > 60\text{ }^{\circ}\text{C}$ and/or high humidity over a long period of time, an offset in the %RH signal can occur.
- 3) Specifies the temperature range the modules work without permanent damage. Operation/storage above $+60\text{ }^{\circ}\text{C}$ can lead to an offset of the %RH signal.
- 4) The maximum bending radius of the cable is for single bending 5x outer diameter (4.1 mm) and for repeated bending 20x outer diameter (4.1 mm). Bending closer than 50 mm to the housing is discouraged and might harm the cable or potting material. The cable must not be stretched or pulled.

Typical accuracies in the standard application range



Mechanical Dimensions





Pin Assignment

Insulation Color	Assignment
Black (SW)	SDA
Orange	SCL
Brown	GND
Red	VCC / 3V3



Additional Documents



	Document name:
Application Note	ANH_001

Order Information

	RH/T module	RH/T module with PTFE filter
Product name	HPM.HYT.939p.K.0.KK.SA.S	HPM.HYT.939p.K.0.KK.SA.S
Order code	153326	157097



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