



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

Low Humidity Digital RH/T Transducer Module for low humidity monitoring

Benefits & Characteristics

- Best suitable for process control based on dew point monitoring down to -40 °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)

Illustration

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.



Technical Data

| | Humidity | Temperature |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Accuracy | ±0.5 %RH at 23 °C (0 to 5 %RH) ±1.0 %RH at 23 °C (5 to 10 %RH) See figure 1 for typical accuracies in the measuring temperature range. Custom specific alternatives available. | ±0.2 °C (0 to 60 °C) |
| Reproducibility | ±0.2 %RH | ±0.1 °C |
| Resolution | 0.03 %RH | 0.015 °C |
| Response time T ₆₃ ¹ | < 10 s | < 10 s |



| | |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long-term drift | < 0.5 %RH/a (at 23 °C 0 %RH to 10 %RH in synthetic air) < 0.05 °C /a Exposure to VOCs can lead to higher values. Please find more details in HYT application note. |
| Measurement principle | Capacitive polymer humidity sensor PTAT (integrated) |
| Measuring temperature range ² | 0 °C to +50 °C |
| Measuring humidity range ² | 0 %RH to 10 %RH For usage in condensing environment please refer to HYT application note |
| Hysteresis | < ±1 %RH at 25 °C |
| Operating voltage | 2.7 V to 5.5 V |
| Current consumption (nominal) | < 22 µA at 1Hz measuring rate; 850 µA max. |
| Current consumption (sleep) | < 1 µA |
| Digital interface | I ² C, address 0x28 or alternative address |
| Operating voltage (limits) | -0.3 V to 6 V |
| Storage conditions | +5 to +30 °C, < 30 %RH |
| Operating range ³ | -40 to +80 °C, 0-100 %RH |
| Housing material | Stainless steel |
| Process connector | M14 x 1.5 |
| Cable | 4x AWG 26, 500 mm |

- 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 > 50 °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 +50 °C can lead to an offset of the %RH signal.

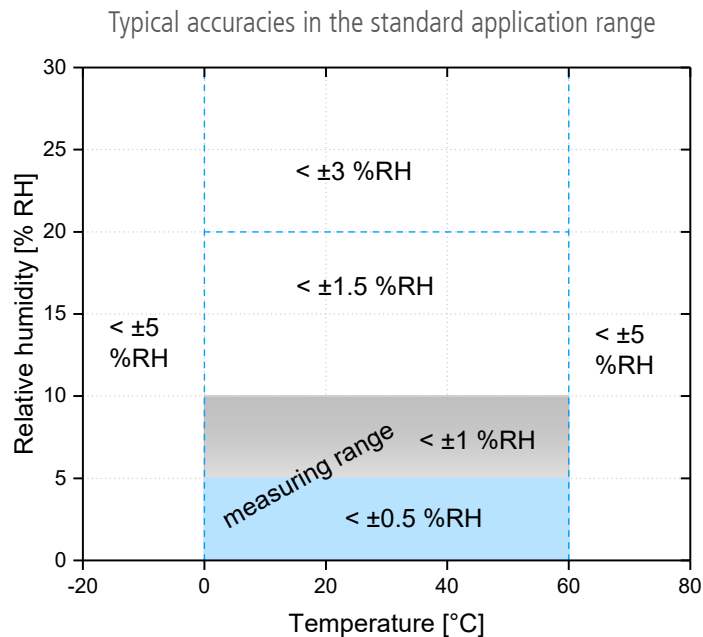
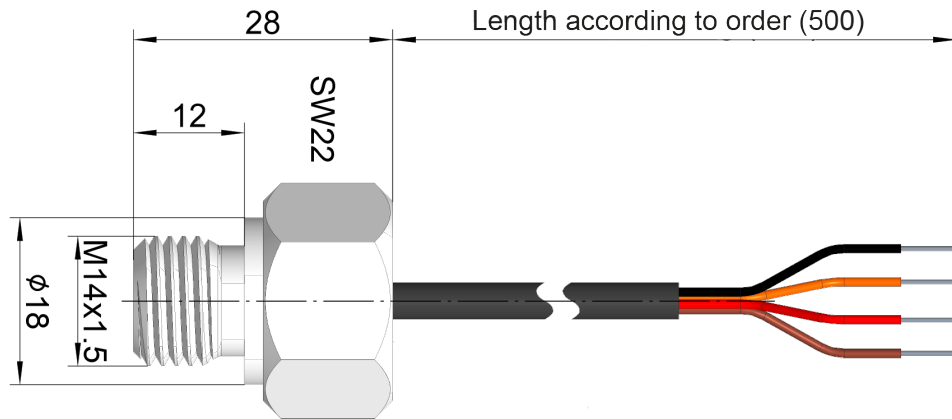


Figure 1: Typical accuracies of the % RH measurement



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

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|------------|--------------------------------|
| Order code | HYT.939p.K.0.KK.SA.S 153326 |
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Innovative Sensor Technology IST AG, Stegrütistrasse 14, 9642 Ebnat-Kappel, Switzerland
Phone: +41 71 992 01 00 | Fax: +41 71 992 01 99 | Email: info@ist-ag.com | www.ist-ag.com

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