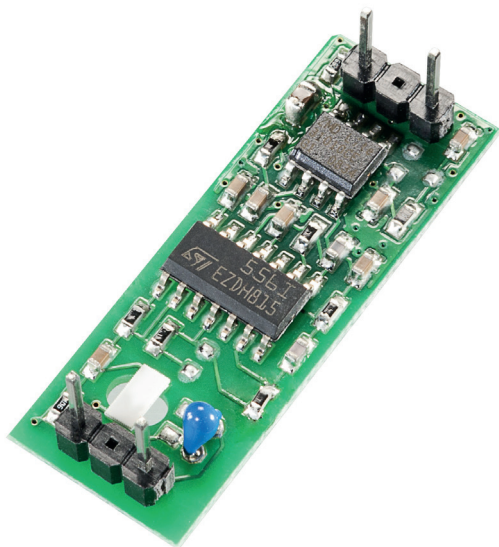


OPERATION MANUAL

Calibrated humidity module HYTE-ANA-1735

Description



Technical Data

Humidity module HYTE-ANA-1735	
Humidity sensor	Capacitive polymer SMD humidity sensor KFS 140
Humidity application range	0 ... 95 % RH (max. dew point = 50 °C)
Accuracy	±3 % RH of 20...90 % RH and at 23 °C
Calibration	Two point, 33 % and 75 % RH
Response time t90	<20 sec. at 2 m/s
Tk-Residue error	<0.1 % RH/K type.
Humidity signal (linear)	1...3.6 V for 0...100 % RH ratio metric
Resolution	0.1 % RH (10 Bit)
Temperature application range	-40...+100 °C
Temperature sensor	Precision-NTC 10 k 0.5 % Type TS-NTC-103
Operating voltage	4,75...5,25 V
Current input	2,5 mA
CE-conformance	2014/30/EU
EMV-noise emission	61000-6-3:2011
EMV-noise withstanding	61000-6-1:2007
Dimensions (B x H x T)	36.0 x 12.0 x 13.5 mm Grid size 2.54 mm see drawing

Characteristic features

- Calibrated module for humidity and temperature measurement and also for determining dew point
- Analogue, ratiometric voltage output 1...3.6 V for 0...100 % RH
- Accuracy ±3 % RH from 20...90 % RH
- Capacitive SMD Polymer sensor
- Precise, long term stable and dew resistant
- Passive NTC for temperature measurement
- Soldered pins for direct mounting on printed circuit board
- RoHS conformance, CE-conformance
- Wide application spectrum
- Miniaturised dimensions
- Optimum price performance ratio

Typical areas of application

- Building automation
- Ventilation and air-conditioning
- Industrial instrumentation
- White goods
- OEM products

Features

Off late, humidity measurement has found entry into many mass produced items like ventilation and household appliances or automotive applications. Normally for such products, a fully integrated and calibrated sub-module is required which can result into an attractive system price with a standard calibrated interface.

The B+B humidity module combines the most modern thin film sensor technology with flexible, digital signal processing of an ASIC and presents an optimum price performance ratio.

The high quality, capacitive humidity sensor guarantees highest measuring accuracy, drift stability, weather resistance as well as an outstanding long-term stability. Moreover, after long saturation phase, the measured value builds up very fast.

The calibrated humidity and temperature values are transmitted over the analogue output with high accuracy and resolution, which enables simple integration into customised products. The calibrated output signal guarantees simple integration of the sub-system during development phase, which results in the shortest time-to-market product developments. Additionally, temperature can also be determined over the brought out NTC, which enables calculation of dew point or absolute humidity.

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Application notes

The module can be either inserted into contacts or can be soldered directly onto the circuit board. The operating voltage is right from 4.75...5.25 V. The current input is around 2.5 mA.

Voltage output

At PIN4, the measured relative humidity values are passed on as voltage signal. The measuring range of 0...100 % RH is represented as voltage signal of 1...3.6 V.

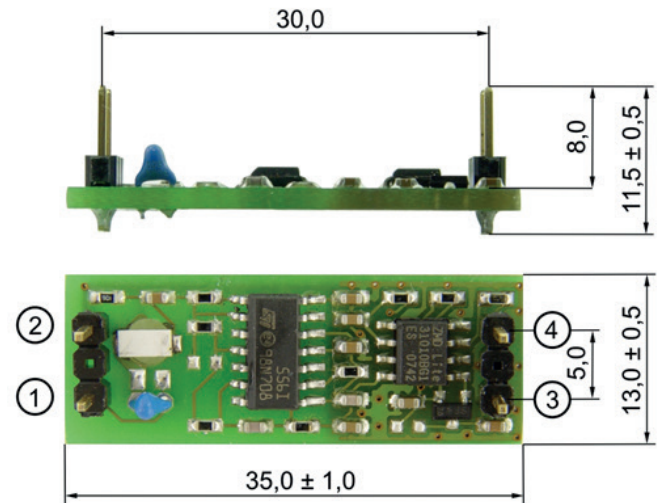
The voltage signal is ratiometric to the operating voltage within the specified supply voltage range. The calibration at works is done at 5 V. The minimum connection impedance should not be below 10 k Ω . The output impedance is 50 Ω .

The output is protected against short time transients. Stray voltage at the output can lead to damage of the ASIC and should be essentially avoided.

Temperature signal

A precision NTC is fitted in the module whose terminal is brought out at pin 1 of the module with reference to ground. The sensor enables precise temperature measurements over a wide temperature range and can be very easily evaluated because of the large impedance and high gradient. The accuracy is comparable to a platinum resistance: Moreover, the nominal resistance and also the B-value are tolerated within $\pm 0.5\%$ so that the component can be used in many applications without temperature calibration. By means of a simple resistance measurement, an accuracy of $\pm 0,12\text{ K}$ can be reached at 25 °C. The maximum error of $\pm 0.5\text{ K}$ occurs in the temperature range of -60...+85 °C. The data sheet of sensors and extensive technical data in the form of excel tables can be obtained on request or can be downloaded from our Homepage (Type TS-NTC). Alternatively, assembly of other sensor elements is also possible e.g. a Pt1000.

Drawing and Layout



Pin	Signal	Function
1	NTC	Passive temperature sensor
2	GND	Ground
3	VCC	Operating voltage 4.75...5.25 V
4	RH	Voltage output of relative humidity

Product variants

The ratiometric voltage output can also be supplied with other scaling, e.g. 0...5 V or 0...1 V. Absolute voltage output of 0...1 V to 0...5 V is also possible.

The possible operating voltage range is right from 3.3 V to 12 V DC depending upon the design. For operating voltage over 5 V, the voltage is internally regulated in the module.

Alternative to analogue interface, a digital interface over I²C, SPI or One-wire-Bus is also possible. The ASICs used in our modules support another set of further options, for example, PWM or switch signal output.

Attention

Please avoid extreme mechanical and inappropriate exposure.

The device/product is not suitable for potential explosive areas and medical-technical applications.