Relative Humidity Sensor
HTM2500

General Description

Based on the rugged Humirel HTS2010 humidity sensor, the HTM2500 is a dedicated humidity and temperature transducer designed for applications where a reliable and accurate measurement is needed.

Typical Applications

- Building science research
    - Building envelope cavity validation
    - Indoor and outdoor air quality analysis

- Restoration
    - Verification of equipment status
    - Drying progress

- Industrial applications
    - Process control
    - Hygrostat

Features

- Hermetic Housing

- Humidity calibrated within ±2% @55% RH

- Integrated Thermistor – MF52 pearl-shaped precision NTC thermistor (leaded version)

- Small size

- Compatible with SMT Mobile and Industrial WiDAQ

- Full interchangeability

- High reliability and long term stability

- Not affected by water immersion

- Instantaneous de-saturation after long period in saturation phase

- Fast response time suitable for low voltage wireless applications.

- High resistance to chemicals

- Unique solid polymer structure

Ordering Information

HTM2500 with 6' Audio cable	HTM2500-02-006
HTM2500 with 6' Leaded cable	HTM2500-01-006
HTM2500 with 30' Leaded cable	HTM2500-01-030

Electrical Characteristics

Operating Voltage (with SMT A3)	0V to 5VDC
Sensing Element	HTM2500

Environmental

Operating Temperature	-30° to 70°C
Operating Humidity Range	0% to 100% RH
Storage Temperature	-40° to 85°C
Storage Humidity	0% to 100% RH

Humidity Characteristics

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Humidity Measuring Range	1% to 99% RH
RH Accuracy (10 to 95% RH)	±3 to ±5 %RH
A3 Supply Voltage	5VDC
Current Consumption	0.4mA
Temperature Coefficient (10°C to 50°C)	±0.1 %RH/°C
Average Sensitivity from 33% to 75% RH	+25 mV/%RH
Recovery time after 150 hours of condensation	10 seconds
Humidity Hysteresis	±1.5 %RH
Long term stability	±0.5 %RH/yr
Time Constant (at 63% signal, static) 33% to 76% RH	5 seconds

Thermistor Characteristics

Rated Resistance R25	10 to 250 KΩ
B Value (25/50°C)	4150K
Operating Temperature	-55° to 125°C
Tolerance	1%

Approvals/Regulatory

Passed Meas-France qualification process	Vibration, shock, storage temperatures, high temperature and humidity and ESD.
Chemical conditions tested	Salt atmosphere, SO2, NOx, NO, CO, Softener, Soap, Toluene, acids (H2SO4, HNO3, HCI), HMDS, insecticide, cigarette smoke. HTM255 is not light sensitive.

Specifications are subject to change without notice

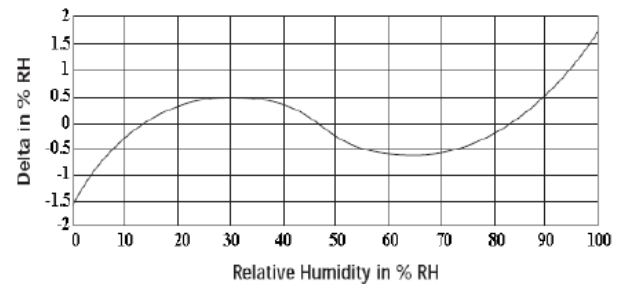### HTM2500 Error Limits at 23°C
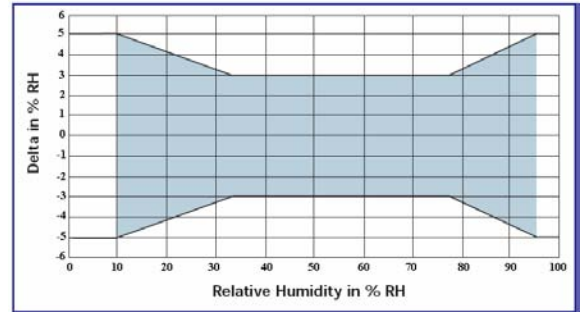
Temperature coefficient compensation:

$$RH_{cor}\% = RH_{read}\% \times \left(1 - (T_a - 23) \times 2.4\,E^{-3}\right)$$

HTM2500 Linearity Error

Non-linearity and temperature compensation

$$RH\% = \frac{-1.9206\,E^{-3}V_{out}^{3} + 1.437\,E^{-5}V_{out}^{2} + 3.421\,E^{-3}V_{out} - 12}{1 + (T_a - 23) \times 2.4\,E^{-3}}$$

HTM2500 on CAT5 Cable

CAT5 Cable	Function
White/Blue	Ground
Blue	+5V
White/Orange	RH
Orange	NC
White/Green	NC
Green	NC
White/Brown	Thermistor
Brown	Thermistor Com

Connecting HTM2500 to the A3 4R4V
(leaded cable)

The RH sensor with leaded cable is to be connected to the A3 4R4V unit. The external thermistor must be connected to any one of the resistance channels 17 to 20 and the RH sensor must be connected to any one of the voltage channels 21 to 24.

Input	Input Type	Wire Color	Function
17-20	Resistance	Brown Pair	Temperature MF52
21-24 pin 1	Voltage	Blue	5V Power
21-24 pin 2	Voltage	White/Orange	RH HTM2500
GND	Ground Bar	White/Blue	Ground

Example Installation of one RH sensor connected on an A3 4R4V unit
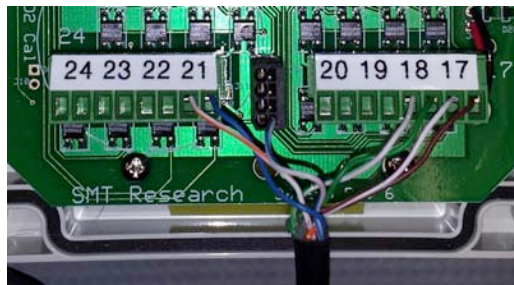
Any pin on the ground bar can be used. To connect to the ground bar simply push the white/blue wire into the circular slot. To release a wire from the ground bar push a small slot screwdriver into the slot adjacent to the wire you wish to release, gently pull on the wire and it will be released.

Connecting HTM2500 to the A3 8R
(audio cable)

The RH sensor with an audio jack connector can be connected to the voltage port on the A3 8R unit.


To connect to the voltage port on an A3, insert the audio jack into as shown. When mounting the A3 in the junction box, be careful not to put additional stress on the audio jack.

Configuration in BiG

Configure the thermistor settings first. Select the appropriate node, right click on input 3 and select the thermistor sensor type:

Audio Jack: Temperature HTM2500
Leaded: Temperature MF52

Note: Input 3 and 4 will only appear in BiG once the audio jack is inserted into the A3.
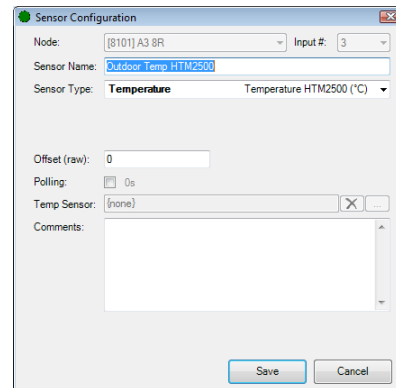
Right click on input 4 to setup the RH sensor. Select Humidity HTM2500 as the sensor type and select the associated temperature sensor as shown below.
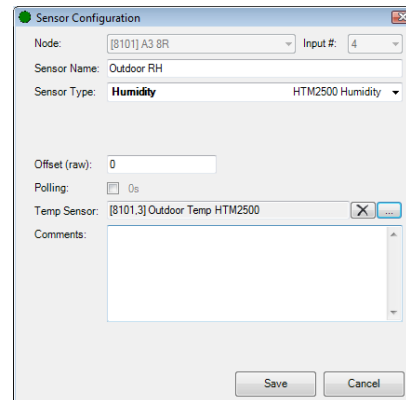
Connecting HTM2500 to an A2

The RH sensor with an audio jack connector can be connected to the voltage (white) port on the A2.