



## 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  $\pm 2\%$  @55% RH
- Integrated Thermistor – MF52 pearl-shaped precision NTC thermistor (cable 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' Stereo 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 WiDAQ)	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**

Humidity Measuring Range	1% to 99% RH
Relative Humidity Accuracy (10 to 95% RH)	±3 to ±5 %RH
WiDAQ 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

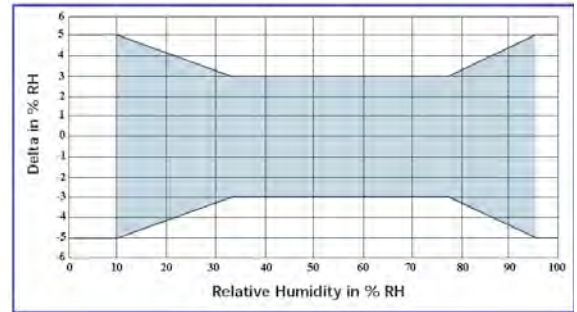
**Thermistor Characteristics**

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, SO <sub>2</sub> , NO <sub>x</sub> , NO, CO, Softener, Soap, Toluene, acids (H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> , HCl), HMDS, insecticide, cigarette smoke. HTM255 is not light sensitive.

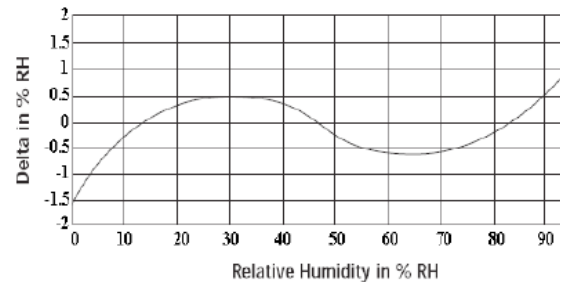
**HTM2500 Error Limits at 23°C**



**Temperature coefficient compensation:**

$$RH_{Cor} \% = RH_{read} \% \times (1 - (T_a - 23) \times 2.4 E^{-3})$$

**HTM 2500 Linearity Error**



**Non-linearity and temperature compensation**

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

Specifications are subject to change without notice

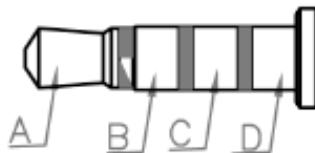
**HTM 2500 to Audio Jack**



**Figure 1. Insert RH Sensor in WiDAQ AUX Port**

No.	HTM Color	Audio Jack	Function
1	Brown	D (Green)	Ground
2	White	A (Red)	+5V
3	Yellow	B (Black)	Humidity Voltage
4	Green	C (Yellow)	NC
5	Black	NC	Shield

**Table 1. HTM2500 to Audio Cable Pin-out**



Scale: 2:1

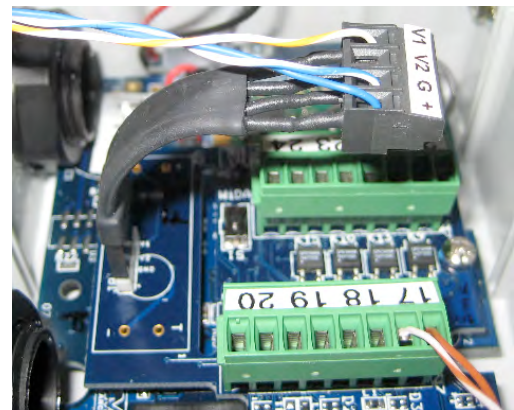


**Figure 2. HTM2500 Cable Assembly**

*Note: The HTM2500 is not protected against reversed polarity. Check carefully when connecting the device.*

**HTM 2500 to CAT5 Cable**

No.	HTM	CAT5 Cable	Function
1	Brown	White/Blue	Ground
2	White	Blue	+5V
3	Yellow	White/Orange	RH
4	Green	Orange	NC
5	Black	Shield	Shield
6		White/Green	
7		Green	
8		White/Brown	Thermistor
9		Brown	Thermistor Com



**Figure 3. HTM2500 wiring to 8R, 2V WiDAQ**

8 Channel Resistance, 2 Channel Voltage WiDAQ

WiDAQ Input	CAT5 Cable	Function
17-24	Brown Pair	Thermistor
+	Blue	+5V
GND	White/Blue	GND
V2	White/Orange	RH
V1	White/Orange	RH

8 Channel Voltage WiDAQ

WiDAQ Input	CAT5 Cable	Function
17,19,21,23	Blue	+5V
18,20,22,24	White/Orange	RH
GND	White/Blue	GND