



## Delta-T Devices Data Sheet

### Relative Humidity & Air Temperature Sensors Types RHT2nI, RHT2v & AT2

*The RHT2 and AT2 sensors are designed for weather station measurements of relative humidity and air temperature.*

*They are lower cost replacements for the former Delta-T RHA1 and AT1 sensors, with superior specifications and reduced maintenance cost for the RH sensor.*

- **High RH accuracy and stability**
- **Plug-in replacement sensor modules**
- **Avoids the need to return sensor for recalibration**
- **Simple 0-1V linear outputs for easy interfacing**
- **High temperature accuracy with thermistor sensors, if required**
- **Thermistor output easily logged as temperature with Delta-T loggers**
- **Low transducer power requirement**



#### Solar Radiation Shield

The common feature of the RHT2 and AT2 sensors is the solar radiation shield type SRS2 that protects the sensors from solar radiation and rain when they are mounted outdoors.

The features include:

- 13-plate naturally aspirated shield
- UV stabilised thermoplastic plates
- Good solar radiation shielding
- Protection from long wave ground thermal radiation
- Simple mounting bracket for vertical or horizontal masts or poles up to 50 mm diameter

#### Shielded RH and Temperature Sensors

The RHT2 comprises an RH and air temperature transducer housed in the solar radiation shield. The transducer requires power and provides two output signals for the RH and air temperature.

The RH and air temperature sensing elements are contained in a plug-in module. The module is interchangeable and can be replaced at routine maintenance intervals.

The modules come in two versions depending on the precision of temperature measurement required:

- The RHT2nI gives highest temperature precision of  $\pm 0.1$  °C with non-linear thermistor output
- The RHT2v is lower cost, with a broader tolerance of  $\pm 0.5$  °C, and a linear 0-1V output derived from a PRT temperature element

#### Shielded Air Temperature Sensor

The AT2 is a high accuracy, shielded, air temperature probe for weather station measurements.

- High accuracy thermistor sensor.
- Stainless steel sheathed probe (125 mm long x 4.8 mm diameter).
- Thermistor output easily logged as temperature with Delta-T loggers.
- No sensor power requirement.

Plug-in Replacement Modules

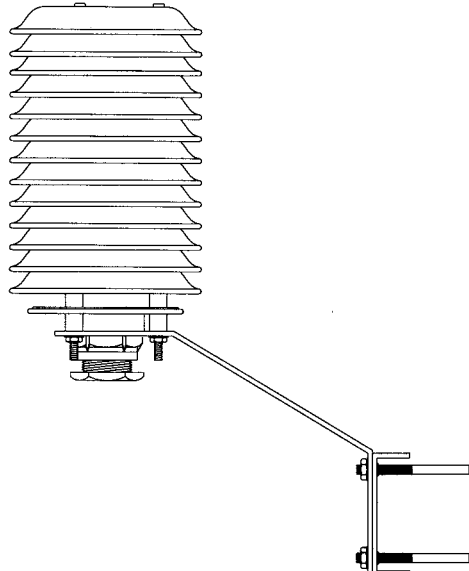
Routine checking at least once every year is the minimum for RH sensing elements, since the RH element may show some ageing with time. This is a common feature of all capacitive polymer type sensors.

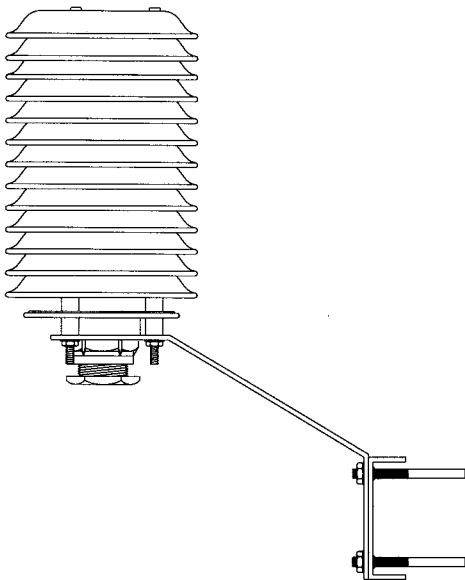
The general recommendation for the replacement interval is every two or three years, in clean atmospheric conditions. If atmospheric pollutants are present, or if the atmosphere is acidic then the replacement must be made every year.

Plug-in Replacement Modules minimise the cost and delay of maintenance. They are interchangeable and can be fitted and used without any further calibration.



RHT2nl, RHT2v & AT2 Technical Specifications		specifications are subject to change without notice
Relative Humidity Sensor [RHT2nl & RHT2v models]		
RH Output range	0 to 100%RH	
Sensitivity	10 mV per %RH; 0 to 1 V	
Ageing characteristic	Typical: ~-1.5 to -2% first year; ~-1% second year; ~-0.5% third year.	
Accuracy at 23°C	± 2% RH (5 to 95% RH) ± 2.5% RH (RH<5% and >95%) (hysteresis and non linearity included)	
Humidity linearisation	7 points, 6 segments, memorised in the module EEPROM	
Operating conditions	0 to100% RH, -20 to +80°C	
Storage conditions	-40 to +85°C	
Response time	t <10 s (90% of a step from 11% to 75% RH).	
Load impedance	> 10 kΩ	
Voltage supply	5 to 32 VDC, ≤2 mA RHT2nl, ≤4 mA RHT2v	
Size and Weight	length 96 mm, Ø 18 mm, 80 g	
Enclosure rating	IP65	
Air Temperature Sensor [ RHT2nl and AT2 models only ]		
Output range	-50 to +150°C (thermistor only)	
Thermistor resistance	2K ohm at 25°C, non-linear	
Accuracy	± 0.1°C over 0 to 70°C	
AT2 probe dimensions	125 mm x 4.8 mm dia	
Air Temperature Sensor [ RHT2v model only ]		
Output range	-20 to +80°C	
Sensitivity	10 mV per °C; 0 to 1 V	
Accuracy	± 0.5% (± 0.5°C)	
Solar Radiation Shield type SRS2		
Overall height / Diameter	22 cm / 12 cm	
Plate spacing	11 mm	
3 x Top Plates; 10 x Lower Plates		
Material	UV stabilised thermoplastic	
Radiation temperature error at 1 kW.m <sup>-2</sup> irradiance level:	0.4°C @ 3 m.s <sup>-1</sup> 0.65°C @ 2 m.s <sup>-1</sup> 1.4°C @ 1 m.s <sup>-1</sup> or slower	





Ordering Information

type reference	item description
RHT2nl-02	RH Sensor and Precision Air Temperature sensor type RHT2nl (2m cable) both mounted in same solar radiation shield. RH accuracy 2%; Precision Thermistor Temp sensor (± 0.1°C, 0 to 70°C) with non-linear output.
RHT2v-02	RH Sensor and Linearised Air Temperature sensor type RHT2v (2m cable) both mounted in same solar radiation shield. RH accuracy 2%; Temp sensor with linearised voltage output (± 0.5°C, -20 to 80°C).
RHT2nl-chp	Replacement plug-in RH & Temperature module for RHT2nl sensor
RHT2v-chp	Replacement plug-in RH & Temperature module for RHT2v sensor
SRS2	RH/Air Temp Solar radiation shield type SRS2 - suitable for RHT2nl, RHT2v and AT2 units
AT2-02	Air Temperature Sensor type AT2 (2m cable) mounted in own solar radiation shield (± 0.1°C, 0 to 70°C)

