

THS-3
Temperature & Humidity Sensor
Operating Manual

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REVISION HISTORY

Revision #	Date	Description
1	July 27, 2006	Original issue.
2	October 2, 2006	Updated specifications.
3	Jan 25, 2007	Added special order specification.
4	October 11, 2007	Updated for new filter, updated specifications.



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OPERATION

GENERAL DESCRIPTION

The THS-3 is a combined analog Temperature and Relative Humidity sensor. Temperature is sensed by an encapsulated thermistor housed in a stainless steel tube. Thermistor contacts are brought directly to the sensor connector for easy temperature measurement. Relative Humidity is measured using a capacitive-type humidity transducer. A microprocessor internal to the THS-3 sensor measures the transducer humidity, performs the appropriate conversion, and outputs a voltage proportional to the relative humidity (0 to 1 Vdc equals 0 to 100% RH) on the sensor connector.

The T/H sensor assembly (see Figure 1) houses the sensors and associated electronics. Both sensors are protected from air-borne contaminants by a replaceable sensor filter. The sensor assembly is mounted to an anodized aluminum base and housed inside white louvers that make up the solar screen. The purpose of the screen is to prevent solar heating of the sensors that would introduce large inaccuracies in the data. At the same time, airflow is permitted to aid in correct ambient readings.

The sensor is mounted on an aluminum sensor support arm that can be attached to a mast or tower.

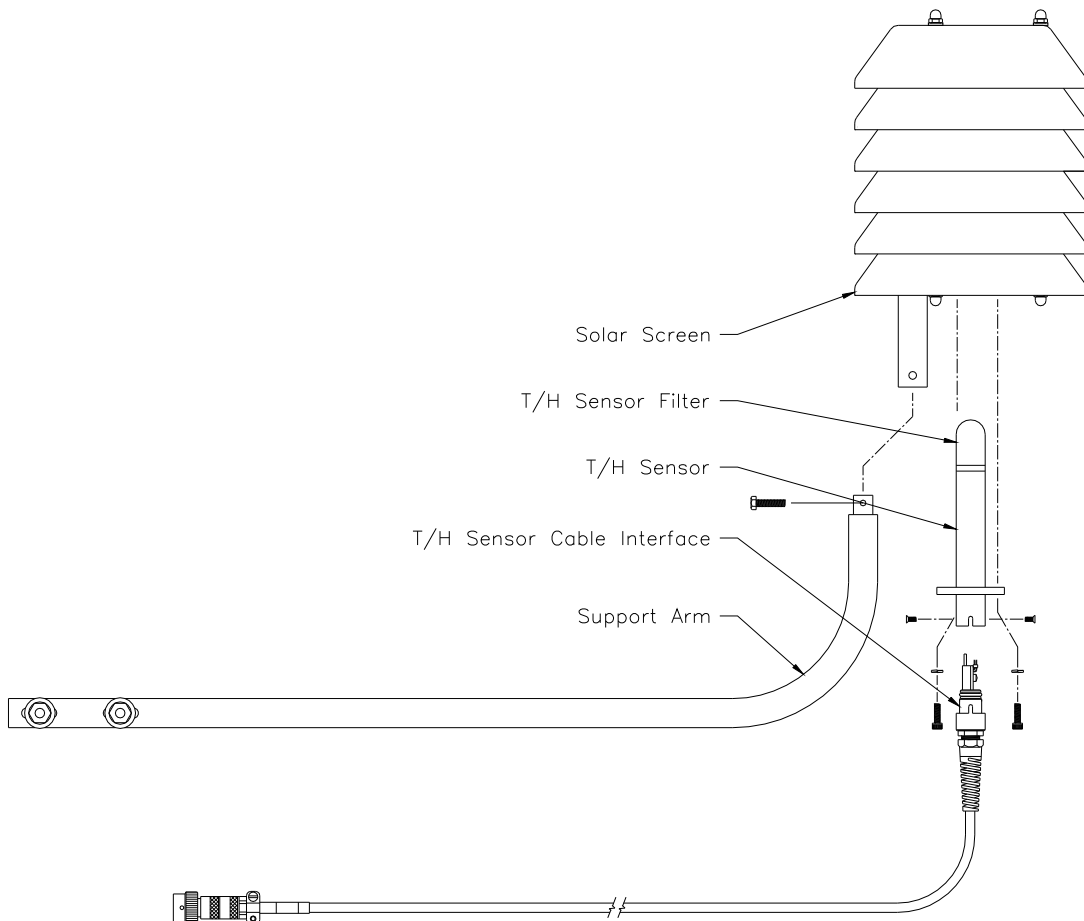


Figure 1: THS-3 Temperature & Humidity Sensor Exploded View

INSTALLATION

Correct installation height is dependant on regulations for the jurisdiction in which the equipment is to be deployed.

In the United States the THS-3 Temperature & Humidity sensor is to be installed on the south side of the mast 4 to 8 feet above ground. The Canadian regulations are to install the sensor on the south side of the mast 1 to 1.3 meters above the ground.

Sensor height is also dependant on regional weather conditions. The sensor should be installed at a height that is above the worst case estimate for snow levels in the area.

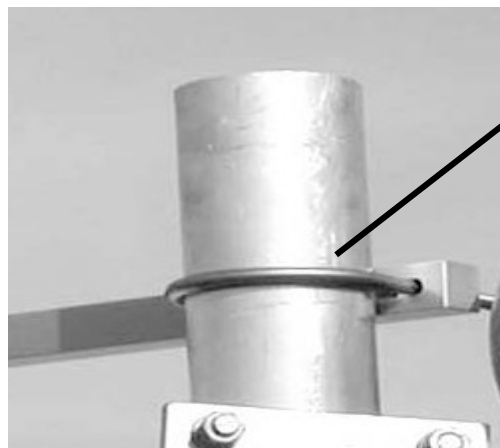
Best operation is achieved when the sensor support arm has been properly leveled.

The procedure for tower mounting the THS-3 sensor is as follows:

1. Place the solar screen / TH sensor assembly onto the end of the support arm and then secure the assembly with the locking screw.

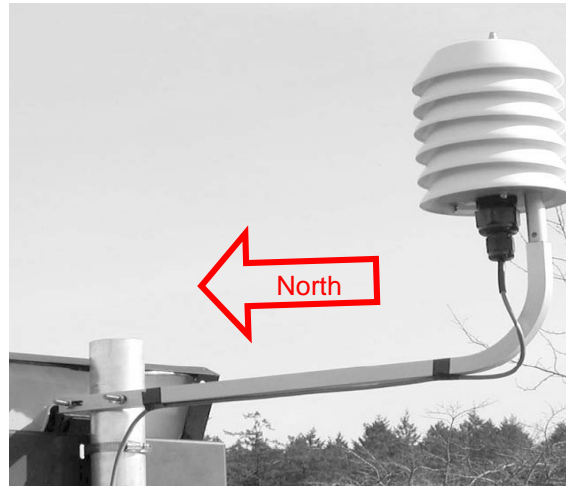


2. Attach the support arm to the mast or tower with the clamp bolts at the desired sensor height.



U-bracket and clamp

3. Positioning the support arm so that the sensor is positioned due south of the tower.



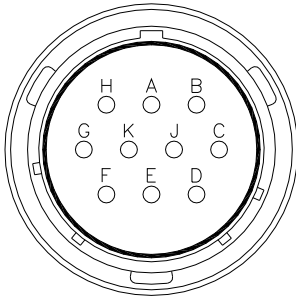
4. Tape the sensor cable to the support arm and the mast.
5. Connect the sensor cable to the data logger's Temperature / Humidity connector (red ring).

NOTE: Key Installation Points:

- a) The sensor should be pointed to the south.
- b) The sensor should be in the open, in a shade free area to ensure accurate temperature readings.
- c) The sensor should be well away from external sources of heat (i.e. any equipment at the site that might generate heat).
- d) The sensor should be given a minimum of thirty minutes to acclimatize to a site after installation before data is taken.

CONNECTIONS

The THS-3 sensor connector is an environmentally sealed, bayonet mount, keyed, military style connector. This connector is waterproof even without a mating connector attached. Electrical signal connections for the THS-3 connector are shown in the table below.



PIN	SIGNAL
B	Power (+12Vdc nominal)
C	Chassis Ground
D	Humidity Output (0-1Vdc for 0-100% RH)
F	Temperature Output (thermistor +)
J	Ground (Power & Humidity Output)
K	Temperature Ground (thermistor -)
others	No Connect

Table 1: THS-3 Sensor Signal Connections

MAINTENANCE

FTS recommends that the sensor be returned to FTS for a yearly check of the THS-3 sensor's calibration.

Also, FTS recommends that during any site visit a visual check of the THS-3 cable, connector and sensor filter is performed. Any observable damage should be noted so that the appropriate repairs can be performed. The THS-3 sensor filter (FTS part number: 03-THS3-6192) is field replaceable in the event that the sensor filter is clogged.

Please contact FTS technical support if the unit ceases to operate properly.

SPECIFICATIONS

THS-3 TEMPERATURE & HUMIDITY SENSOR

General	Operating Temperature: -40 to 60°C Operating Humidity: 0 to 100% RH Operating Voltage: 9.6 to 20 Vdc, 12 V nominal Operating Current: less than 1 mA Measurement Speed: less than 50 ms
Temperature	Type: Encapsulated Thermistor Output: 10k ohm @ 25°C Accuracy: +/- 0.1°C (0 to 60°C)
Humidity	Type: Capacitive Sensor Output: 0 to 1 Vdc Accuracy: +/- 2% (0 to 100% RH)