ENVIROMUX® Series

Temperature/Humidity Sensor Installation Manual

E-STSM-E7, STHSM-E7

Temperature/Humidity sensors

E-STS-O

Outdoor Temperature sensor

E-STHS-N4085IND

Temperature/Humidity sensor

E-STHSB

Temperature/Humidity Sensor

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INTRODUCTION

Many different sensors can be connected to the ENVIROMUX Series Enterprise Environment Monitoring Systems. Series models covered by this manual include ENVIROMUX-SEMS-16U and E-16D/5D/2D. A complete listing of available sensors and accessories can be found at

http://www.networktechinc.com/enviro-rems.html for the ENVIROMUX-SEMS-16U,

http://www.networktechinc.com/environment-monitor-16d.html for the E-16D,

http://www.networktechinc.com/environment-monitor-5d.html for the E-5D,

http://www.networktechinc.com/environment-monitor-2d.html for the E-2D, and Manuals for each Environment Monitoring System covering installation and configuration for all features can also be found at these websites.

This manual is only provided to instruct how to install the ENVIROMUX temperature and humidity sensors to these systems.

MOUNTING

Most of the ENVIROMUX Temperature and Humidity sensors are intended for indoor use only.   These sensors can be mounted in any position but include a keyhole slot on the back to enable quick wall-mounting if desired.
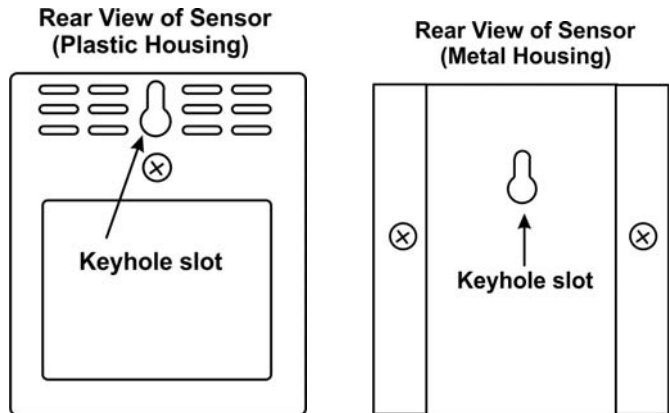

Figure 1- Keyhole slot for standard mounting

If you have purchased an ENVIROMUX Sensor with a DIN rail clip for DIN rail mounting, see the drawing (page 2) for instructions to install the sensor to the DIN rail.
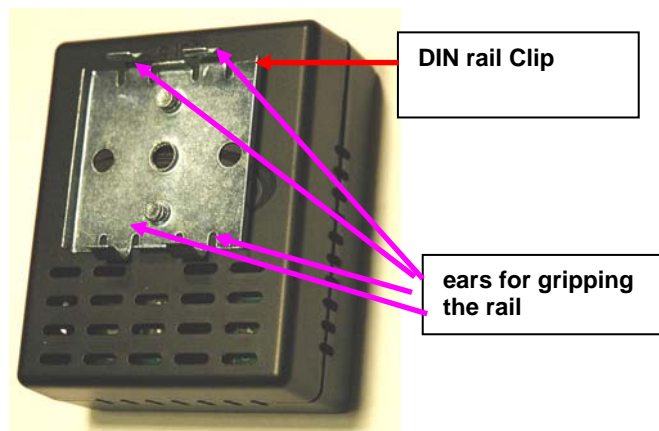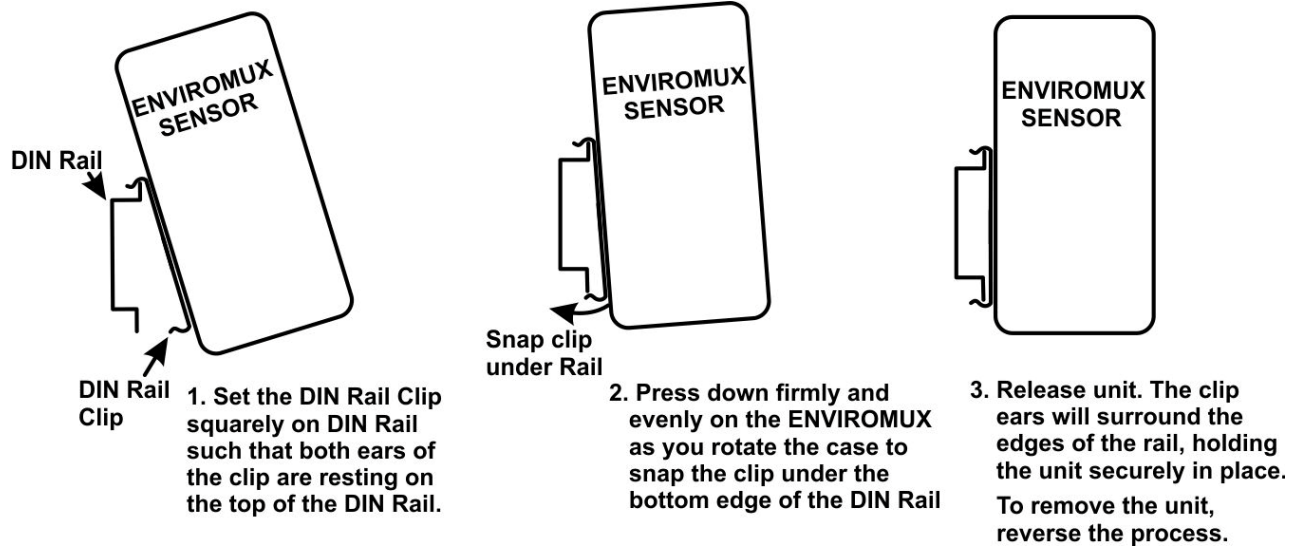

Figure 2- DIN rail clip

NTI ENVIROMUX TEMPERATURE/HUMIDITY SENSOR ATTACHMENT

DIN Rail

ENVIROMUX SENSOR

DIN Rail Clip

1. Set the DIN Rail Clip squarely on DIN Rail such that both ears of the clip are resting on the top of the DIN Rail.

ENVIROMUX SENSOR

Snap clip under Rail

2. Press down firmly and evenly on the ENVIROMUX as you rotate the case to snap the clip under the bottom edge of the DIN Rail

ENVIROMUX SENSOR

3. Release unit. The clip ears will surround the edges of the rail, holding the unit securely in place.

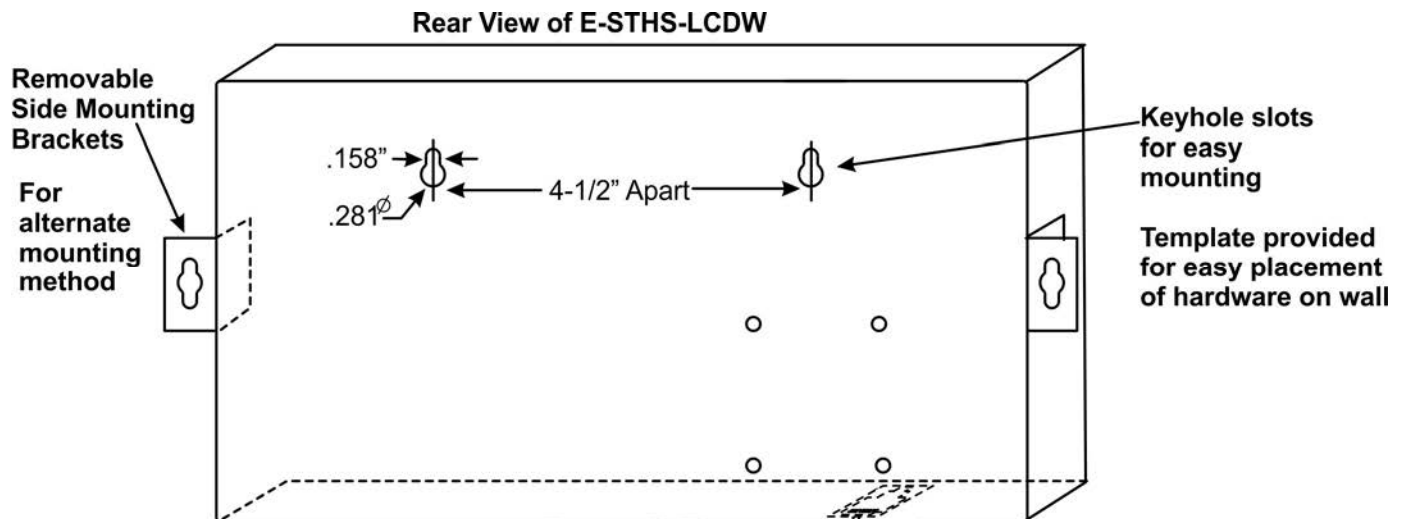**To remove the unit, reverse the process.**

E-STHS-LCDW

The E-STHS-LCDW is a Temperature and Humidity sensor built into a large wall-mount LCD display with 2" character height for easy viewing from a distance. There are two key-hole slots on the back, 4-1/2" apart, for hanging the sensor on the wall. A template has been provided to make placement and hardware location easy. There are also two brackets (with screws) that can be mounted to the sides. These are provided for an alternate method of mounting.

2" High
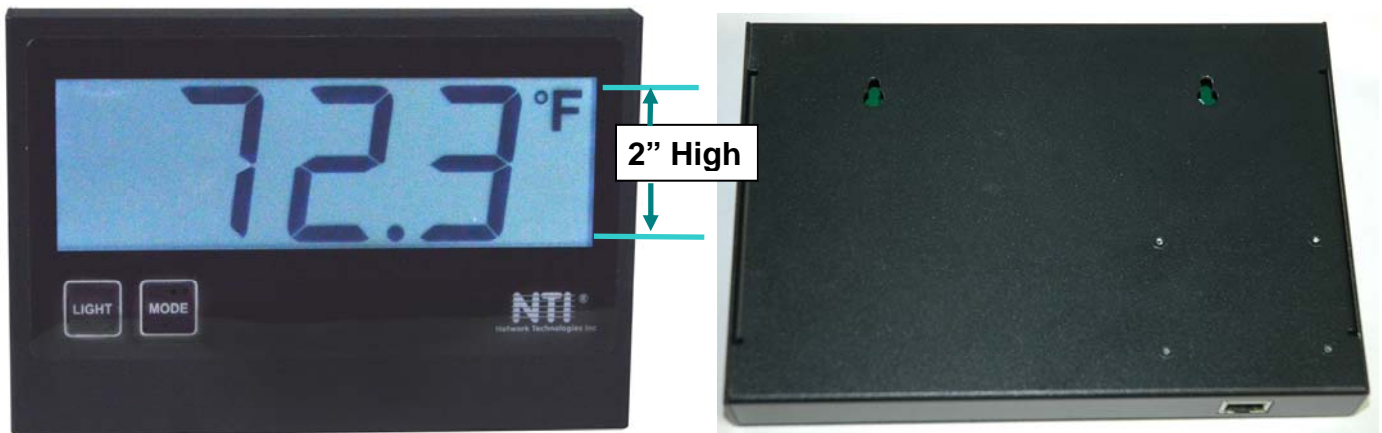
Frontview of E-STHS-LCDW
(Shown without side mounting brackets)

Rearview of E-STHS-LCDW

Rear View of E-STHS-LCDW

Removable Side Mounting Brackets

For alternate mounting method

.158"
.281"⌀
4-1/2" Apart

Keyhole slots for easy mounting

Template provided for easy placement of hardware on wall

**Template for easy mounting the E-STHS-LCDW**

Mounting Instruction

Using Side Brackets

1. Mount one side bracket to each side of the sensor with the screws provided.
2. Position sensor and mark top of keyholes.
3. Drill two 3/16" diameter holes where top of keyholes were marked.
4. Insert wall anchors (provided) and start the mounting screws.
5. Hang the sensor on the screws and snug down the screws.

Using Rear Keyhole Slots

1. Position template at mounting location and mark top of keyholes.
2. Drill two 3/16" diameter holes where top of keyholes were marked.
3. Insert wall anchors (provided) and start the mounting screws.
4. Screw in until head of screw is approximately 1/8-3/16" " from the wall.
5. Hang the sensor on the screws.
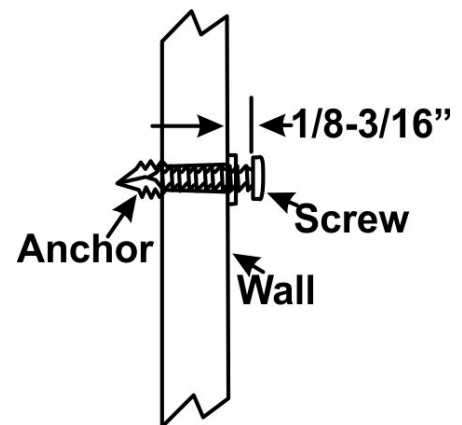
CONNECT SENSORS

RJ45 Sensors

The temperature and humidity sensors for the E-16D/5D/2D and E-SEMS-16(U) Enterprise Environment Monitoring Systems have RJ45 connection ports. Connect each sensor to one of the female connectors labeled "RJ45 Sensors" on the ENVIROMUX using CAT5 cable. The male RJ45 connectors should snap into place. (See page 12 for wiring specification and pinout.) The CAT5 cable that connects the sensor to the ENVIROMUX can be up to 1000 feet in length (except for E-STHS-LCDW, which is limited to 150 feet).

Note: It is very important to locate the temperature and/or humidity sensors away from ventilation sources and fans.
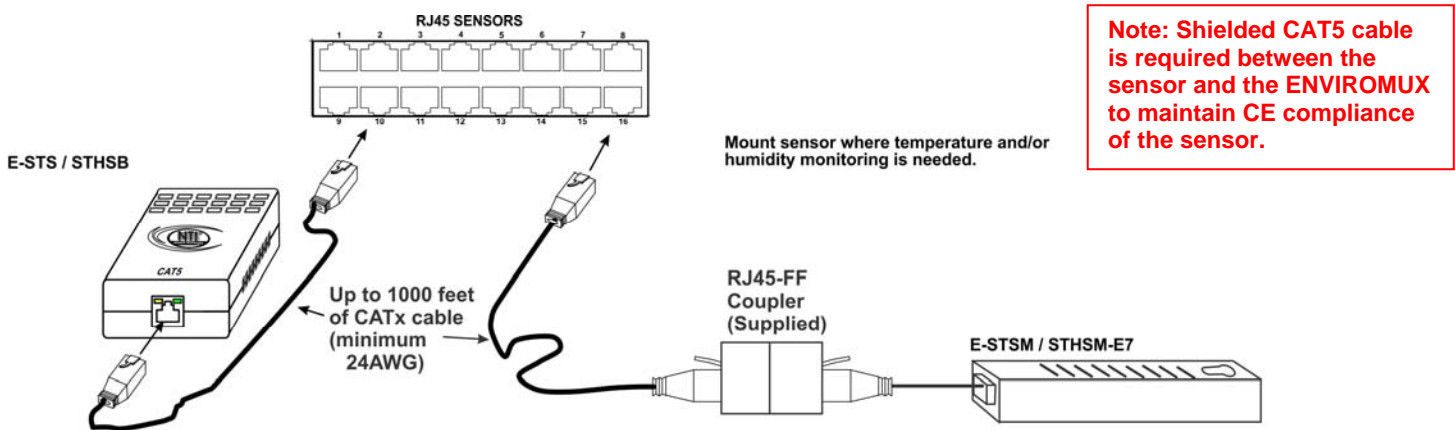

Note: Shielded CAT5 cable is required between the sensor and the ENVIROMUX to maintain CE compliance of the sensor.

Figure 3- Connect Sensors using CAT5 cable with RJ45 connectors

Application Note:

When connecting temperature and humidity sensors to the ENVIROMUX, the web interface will identify the sensor accordingly for the type of sensor it is. The status bar and configuration page will enter the maximum and minimum range that this type of sensor can display if used with the ENVIROMUX, not necessarily the operating range of the sensor itself. The various temperature and humidity sensor models offered by NTI have varying ranges of performance capabilities, as indicated in the table on page 11. Be sure to match the sensor installed to the operating range of the environment it will be expected to work in. Using a sensor outside of its intended temperature range may result in damage to the sensor.

Sensor #2.1 Configuration (Type: Temperature Combo)

This is the range the ENVIROMUX will display, not necessarily the range the sensor will work within. See specifications for the sensor being installed for the proper operating environment.

Figure 4- A portion of the sensor configuration page

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E-STHS-PRCIND100-Pxx

The E-STHS-PRCIND100-Pxx is a precision wide-range extreme environment sensor that includes a probe-type temperature sensor attached to the aluminum case with a special extreme-environment cable.   The cable length is defined by the "xx" in the "Pxx".   When installing this temperature sensor, the temperature sensing probe and attached cable are the only portions of the sensor that can be exposed to the full extreme environment that this sensor is rated for (-40 to 212°F (-40 to 100°C)).   The aluminum case and the components therein are rated for -40 to 185°F (-40 to 85°C) and must be located in an environment within that range.   Most CATx cables are rated 32 to 140°F (0 to 60°C).

Note: When mounting the temperature probe, be sure not to obstruct the holes in the probe tubing as this will adversely affect the sensor's ability to sense humidity.

Note: The E-2D/5D/16D must be running firmware version 2.18 or later to support this sensor.
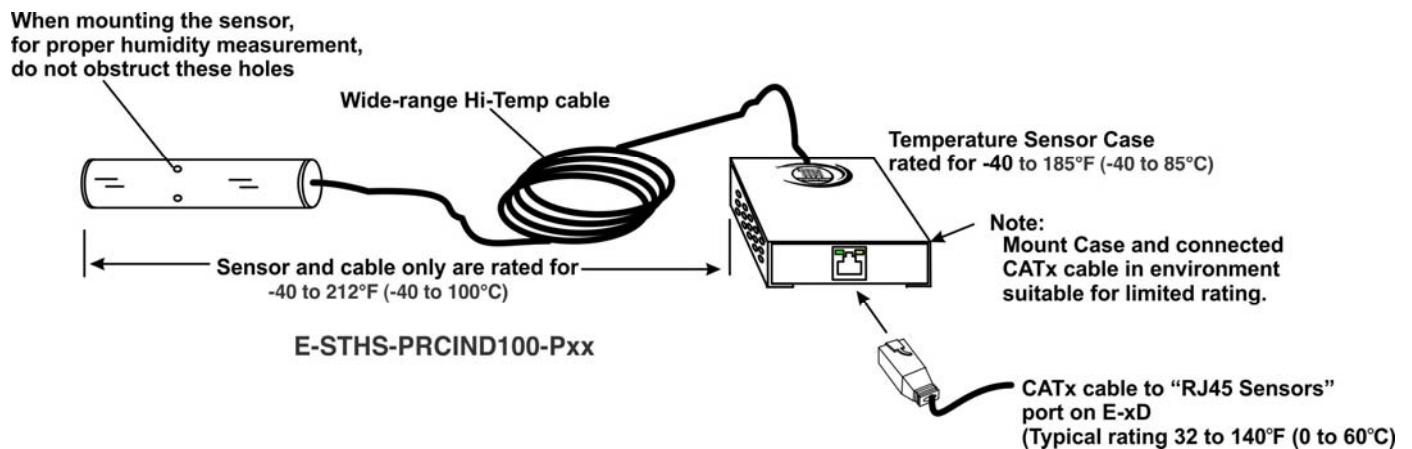

Figure 5- Precision wide-range temperature/humidity sensor

E-STHS-LCDW

E-xD firmware version 2.31 or later is required to support this sensor.

The E-STHS-LCDW is a temperature/humidity sensor with built-in LCD display that has 2" tall characters for easy viewing from greater distances. .   It has a temperature range of -4 to 140°F (-20 to 60°C) ±0.7°F (±0.4°C) and will sense 0 to 90% relative humidity ±4% RH (30°C).   It includes two touch-sensitive buttons. One to control the LCD display illumination, and the other to cycle the display mode between temperature in degrees Fahrenheit, temperature in degrees Celsius, and percentage of humidity. The E-STHS-LCDW includes slots on the back for hidden mounting hardware and two brackets for alternative mounting from the sides.

To use the **MODE** button, touch and release to cycle the display from Degrees F. to Degrees C, and to percentage of Humidity, and once again to return to Degrees F. The display will hold the mode set, each time, until MODE is touched again.

To use the **LIGHT** button, touch to illuminate the display for 5 seconds.   To keep the display illuminated, touch and hold the LIGHT button for at least 6 seconds. Touch and release again to have illumination stop after 5 more seconds.
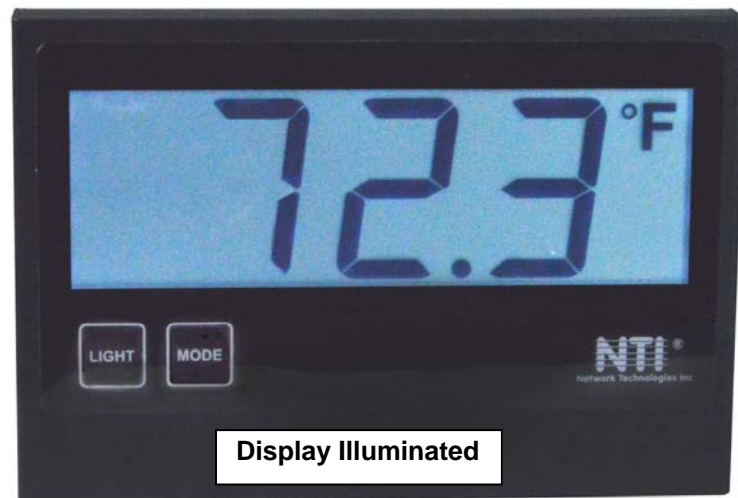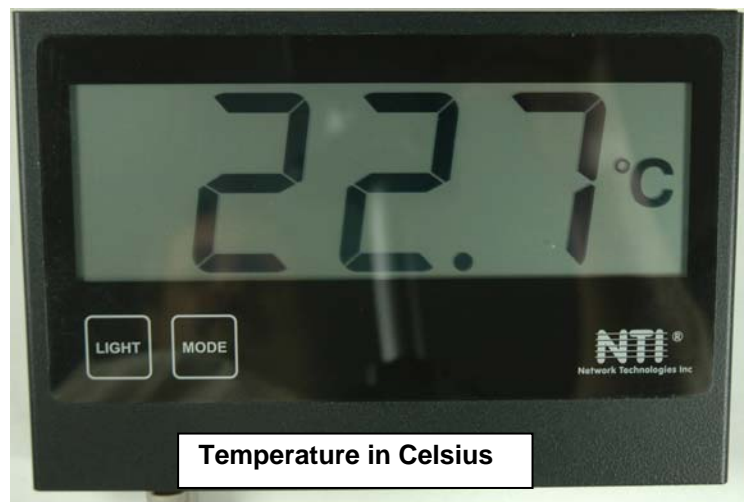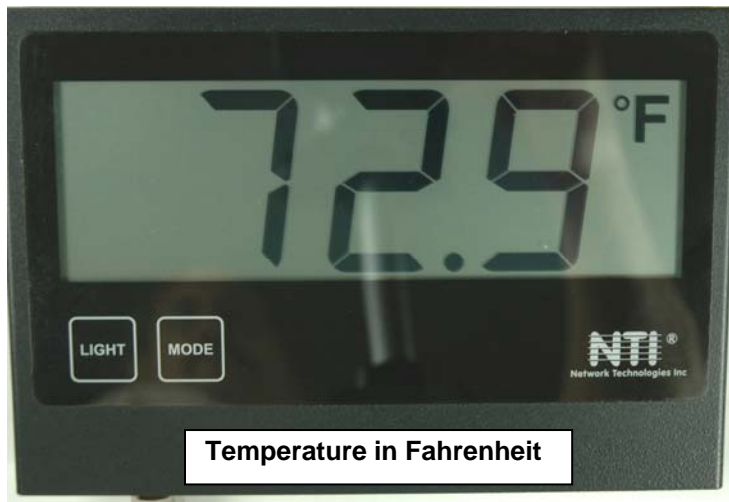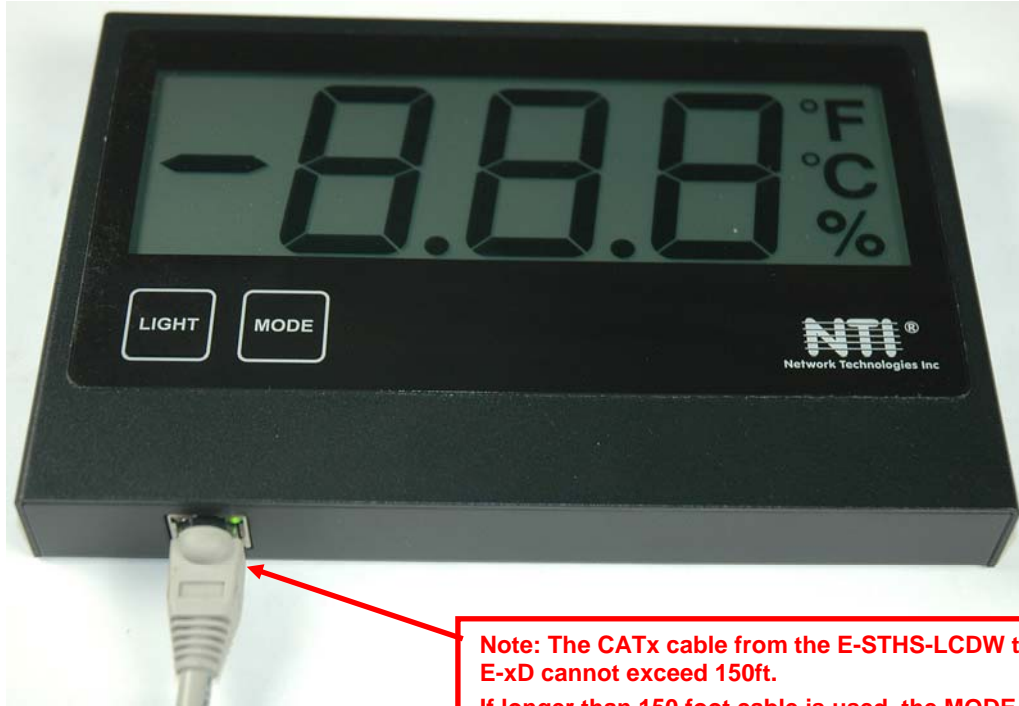

Temperature in Fahrenheit

Temperature in Celsius

Relative Humidity

Display Illuminated

Figure 6- E-STHS-LCDW

To mount the sensor, use the hardware provided to secure the sensor to the wall (see pages 2- 3).   Once it is mounted, connect a CATx cable between the RJ45 connector and the ENVIROMUX monitoring system.

NTI ENVIROMUX TEMPERATURE/HUMIDITY SENSOR ATTACHMENT

Note: The CATx cable from the E-STHS-LCDW to the E-xD cannot exceed 150ft.

If longer than 150 foot cable is used, the MODE button will not function when the backlighting is ON

The cable from the ENVIROMUX will attach to the sensor at the RJ45 port on the bottom of the E-STHS-LCDW. The E-STHS-LCDW will be powered by the ENVIROMUX Monitoring System through the CATx cable. We recommend using CAT5/5e/6/6a cable (minimum 24 AWG) up to 150 ft (45.7 m) long.

Note: If a longer cable is used (up to 1000ft), the MODE button will not work when the display is illuminated by pressing the LIGHT button.

E-STS-O Outdoor Temperature Sensor
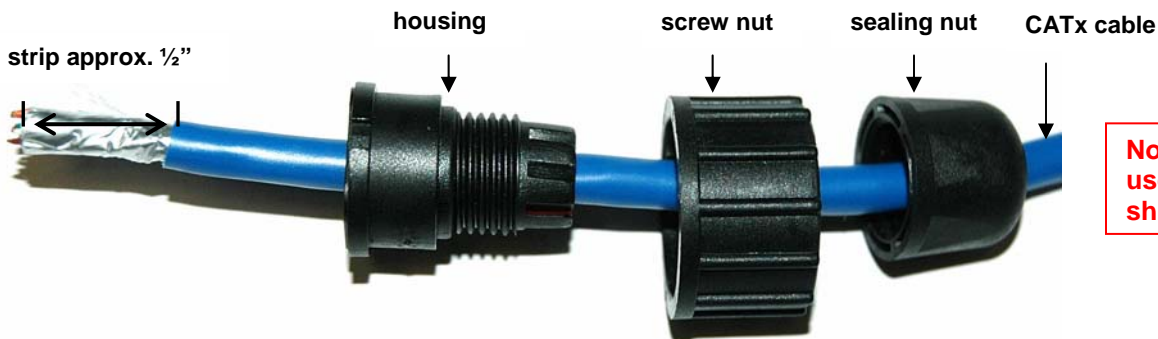# Cable Restraint Assembly Procedure

The E-STS-O Outdoor Temperature Sensor includes a water-tight cable restraint to be applied to the Cat5/5e/6/6a shielded cable to be used to connect the sensor to an E-16D/5D/2D and E-SEMS-16(U) unit.   To make sure the connection is water-tight upon completion, follow the steps below.
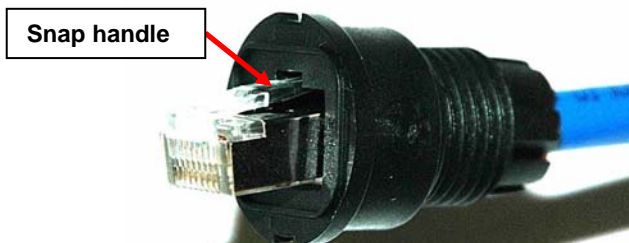
1. Insert the seal ring into the housing.
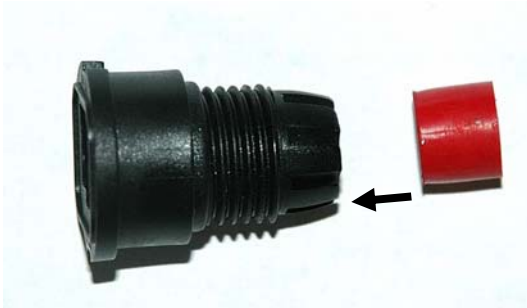
2. Strip the CATx shielded cable jacket (6mm-7mm O.D.) approximately ½" and insert the cable through the sealing nut, screw nut, and housing. (Note: Heat shrink tubing can be applied to cable to increase the O.D. of the CATx cable to 6mm-7mm.)

housing   **screw nut**   **sealing nut**   **CATx cable**

strip approx. ½"

Note: CATx cable used must be shielded cable.

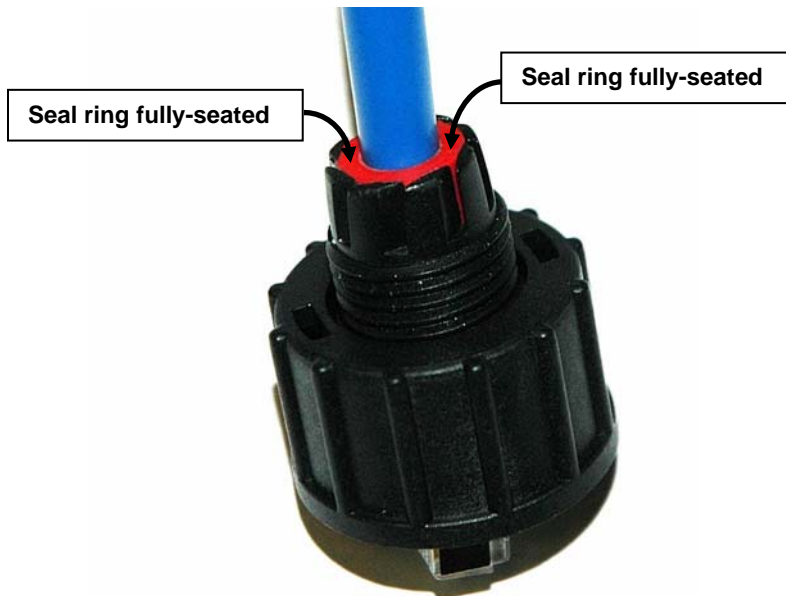3. Terminate the CATx shielded cable with an RJ45 connector.

4. Set the RJ45 connector into the housing such that the snap handle is in the notch.

Snap handle

5. Make certain that the seal ring is <u>fully-seated</u> into the housing.

THIS STEP IS EXTREMELY IMPORTANT TO ENSURE A WATER-TIGHT SEAL!

Seal ring fully-seated

Seal ring fully-seated

6. Plug the assembly into the socket on the E-STS-O and secure the screw nut.　　Then apply the sealing nut and securely tighten.

Securely tighten sealing nut to housing.
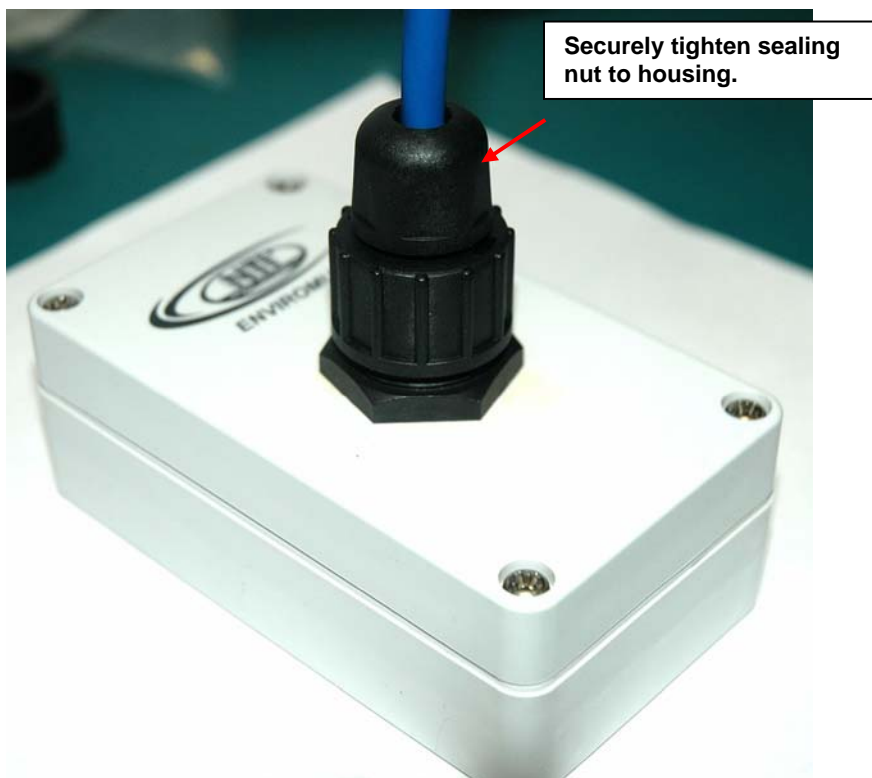
NTI ENVIROMUX TEMPERATURE/HUMIDITY SENSOR ATTACHMENT

Mounting

To mount the E-STS-O, two brackets have been provided that are each secured with a screw (provided).

Install each bracket with the raised ridge towards the front of the sensor, so that the bracket sits flat and squarely against the sensor case.

Do not overtighten screws or stripping of the case will occur.
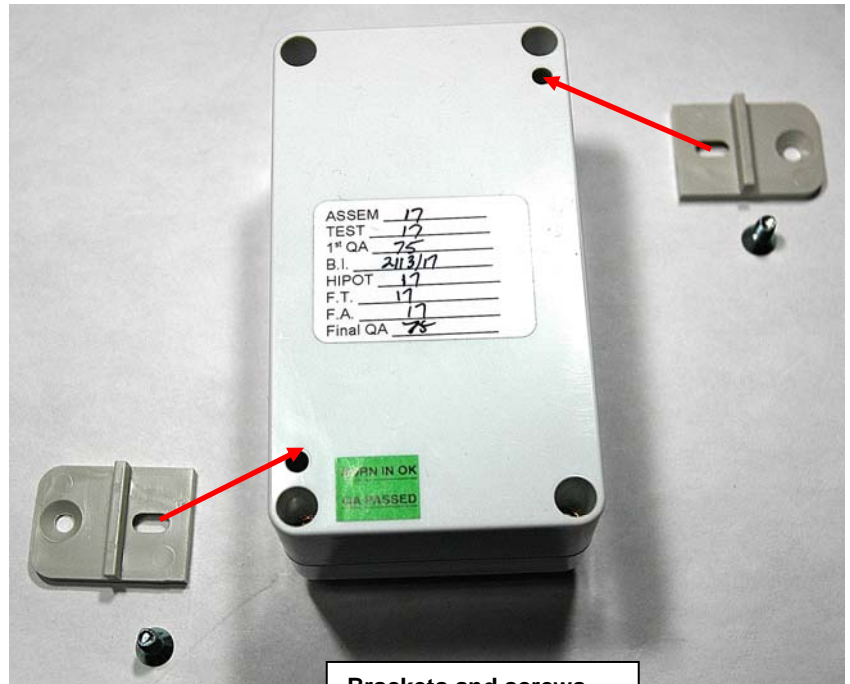
Brackets and screws ready to install.

Sensor ready to mount

Brackets and screws installed.

TEMPERATURE AND HUMIDITY SENSORS

SENSOR MODEL	OPERATING TEMPERATURE RANGE	HUMIDITY RANGE	ACCURACY
E-STS	32 to 122°F (0 to 50°C)	n/a	±0.9°F (±0.5°C)
E-STS-O	-40°F to 185°F (-40°C to +85°C)	n/a	±0.9°F (±0.5°C)
E-STSM-E7	-4 to 140°F (-20 to 60°C)	n/a	±1.26°F (±0.70°C) for -4 to 41°F (-20 to 5°C) ±0.72°F (±0.40°C) for 41 to 140°F (5 to 60°C)
E-STHS-99	32 to 176°F (0 to 80°C)	• 20 to 80% RH, ±3% • 10 to 90% RH, ±4% • 0 to 99% RH, ±5%	±2°F (0 to 50°C, ±1°C)
E-STHSB /	-4 to 185°F (-20 to 85°C)	0 to 90% RH	±0.7°F (±0.4°C). ±4% RH (30°C)
E-STHSM-E7	-4 to 140°F (-20 to 60°C)	0 to 90% RH	±0.7°F (±0.4°C). ±4% RH (30°C)
E-STHS-LCD(W)	-4 to 140°F (-20 to 60°C)	0 to 90% RH	±0.7°F (±0.4°C). ±4% RH (30°C)
E-STHS-PRC	32 to 140°F (0 to 60°C)	10% to 80% RH	± 0.4°F(±0.2°C) ± 1.8%RH@86°F (30°C)
E-STHS-PRCIND-x	-40 to 185°F (-40 to 85°C)	10% to 80% RH	± 0.4°F(±0.2°C) ± 1.8%RH@86°F (30°C)
E-STHS-PRCIND100-Pxx	-40 to 212°F (-40 to 100°C)	10% to 80% RH	± 0.4°F(±0.2°C) ± 1.8%RH@86°F (30°C)
E-STSP E-STSP-SL-7	-40 to 185°F (-40 to 85°C)	n/a	±1.0°F (±0.5°C).
E-STS-PRC	32 to 140°F (0 to 60°C)	n/a	±0.2°F (±0.1°C).

Sensor Calibration

All temperature/humidity combination sensors and humidity-only sensors are factory-calibrated and are not designed to be calibrated in the field.   In the event recalibration of your sensor is desired, please contact NTI for an RMA to return your sensor. Sensors within warranty will be recalibrated at no charge.   Normal labor charges will apply to sensors out of warranty.

Power Consumption

All of our temperature and temperature/humidity sensors operate at 5VDC and draw between 10-56mA (the highest being the E-STHS-LCDW).
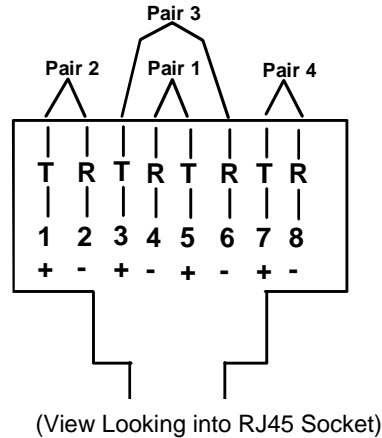
Accuracy

The reported accuracy of these sensors is based on an environment of moving air.   In a stagnant air environment, the sensor may read higher than actual temperature

RJ45 Sensor Cable

The CAT5 connection cable between the ENVIROMUX and connected external sensors is terminated with RJ45 connectors and must be wired according to the EIA/TIA 568 B industry standard.   Wiring is as per the table and drawing below.   The sensors that connect to "RJ45 Sensor" ports (E-16(U)/xD) are all designed to use cables wired to this standard.

Pin	Wire Color	Pair
1	White/Orange	2
2	Orange	2
3	White/Green	3
4	Blue	1
5	White/Blue	1
6	Green	3
7	White/Brown	4
8	Brown	4

```
              Pair 3
Pair 2      Pair 1         Pair 4
  /\          /\            /\
| | | |     | | | |       | | | |
| T   R     T   R   T     R   T   R |
| | | |     | | | |       | | | |
| 1   2     3   4   5     6   7   8 |
| +   -     +   -   +     -   +   - |
```

(View Looking into RJ45 Socket)

CHANGES

The material in this guide is for information only and is subject to change without notice. Network Technologies Inc reserves the right to make changes in the product design without reservation and without notification to its users.