NT network thermostat

NetX™ NT-DRS
Duct Remote Sensor

INSTALLATION MANUAL

WWW.NETWORKTHERMOSTAT.COM

BEFORE YOU START

Please read the entire installation manual. The NT-DRS will need to be correctly wired and configured for proper operation.

INTRODUCTION

The Network Thermostat NT-DRS duct remote sensor is designed to sense air temperature at locations remote to the X7 or X5 series thermostats. Up to three (3) NT-DRS sensors can be used on the X7 or X5 series thermostats in addition to multiple NT-URS sensors configured for separate functions.

WHAT IS IN THE BOX?

- (1) NT-DRS Universal Remote Sensor
- (1) Installation Manual

REMOTE SENSOR CALLOUT

1 Number of Sensors Jumper
2 Wiring to Thermostat
3 Wiring to an external probe
4 Remote Sensor Configuration DIP Switches
5 Diagnostic LED

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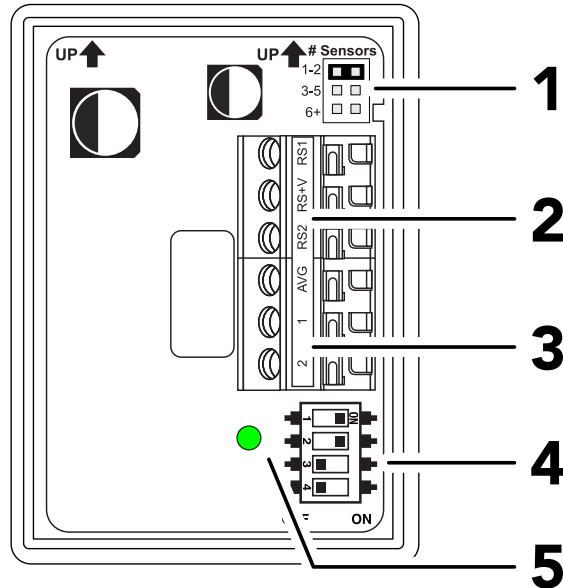
MOUNTING LOCATIONS

Due to the weatherproof enclosure, the NT-DRS can be mounted in an interior or exterior location.

INSTALL STEPS

💡 **TIP:** If you are replacing an existing sensor, take a picture of the wiring for reference.

1. Install the X7 or X5 series thermostat according to the instruction manual supplied with it.

   Install cable (Red Arrow) from the thermostat to the remote sensor location. The maximum distance is 300ft. (90m).

   Use CAT5 or CAT5e unshielded, or 1-Pair Twisted Shielded Cable with Drain and nominal capacitance of 12 pF/ft or less. Use a riser or plenum jacket as required by the local code.

   ⚠ **CAUTION:** Disconnect power to the thermostat or remove thermostat faceplate before connecting either end of the cable.
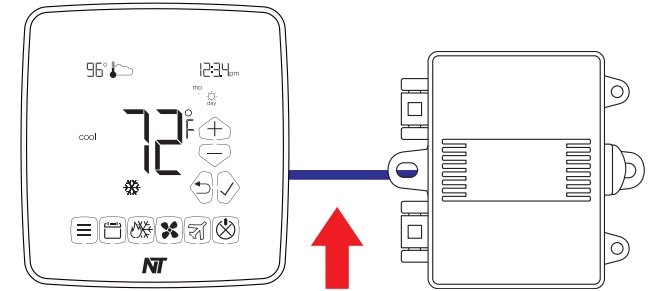
2. Once a suitable spot is selected, drill a 9.5 - 12 mm (3/8" - 1/2") hole for the probe. Then Mount the NT-DRS. A foam gasket on the back of the enclosure provides a tight seal against any air leaks.
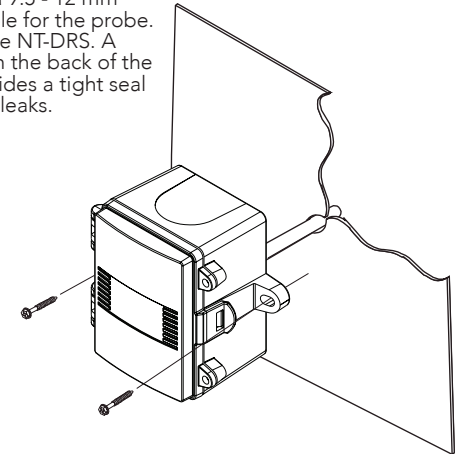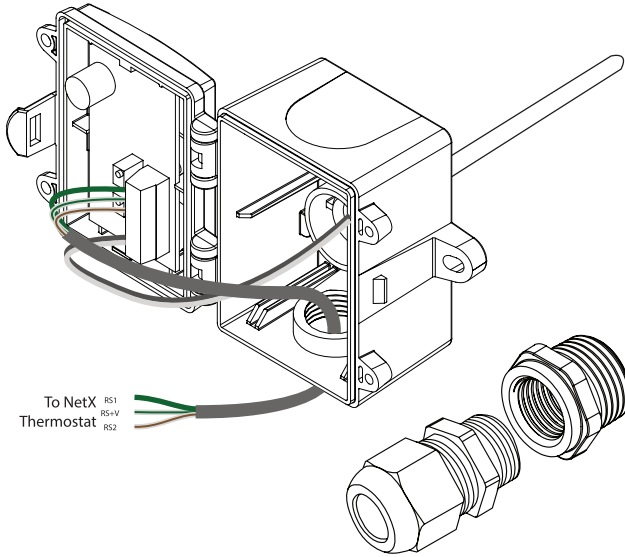

3. The enclosure has a hinged cover with a latch. Open the cover by pulling slightly on the latch on the right side of the enclosure. At the same time pulling on the cover.
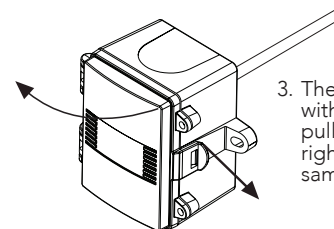
4. Run the sensor cable from the thermostat to the sensor location. A 1/2" NPT threaded connection hole is provided at the bottom of the enclosure.

   ✎ **NOTE:** Up to three (3) NT-DRS can be daisy-chained.

To NetX Thermostat RS1 RS+V RS2

   ✎ **NOTE:** A 1/2" NPT threaded connection hole is provided at the bottom of the enclosure. If installing in an environment that needs to be water tight, screw the EMT or cable gland connector (not included) in until tight. It is recommended that weatherproof EMT or cable gland fittings be used.

5. After mounting the NT-DRS, make sure there is enough wire to finish the wire connections. Push any extra wire back into the enclosure cavity.

6. Strip 1/4 inch of insulation from three wires at the remote sensor. Install the wires in the terminals using the table below.

   Cat5/Cat5e cable color code:
   RS+V = Green with White Stripe
   RS2 = Brown with White Stripe
   RS1 = Green

   Shielded cable color code:
   RS+V = Color 1 in pair
   RS2 = Drain wire
   RS1 = Color 2 in pair

   ✎ **NOTE:** the wire color going to each terminal. The order of the wires on the thermostat are not the same as the sensor.

7. Connect the wires on the thermostat backplate to the terminals labeled RS1, RS2, and RS+V. Make sure each terminal on the sensor is wired to the terminal with the same name on the thermostat.
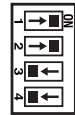
8. Set the DIP Switches on the bottom right of the sensor to the appropriate sensor type.
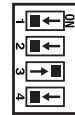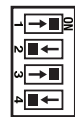

To NetX Thermostat RS1 RS+V RS2
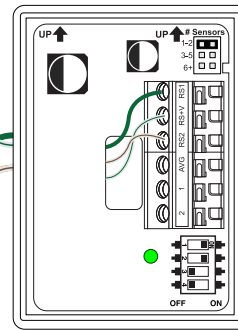
SENSOR TYPE CONFIGURATION

AUX 1
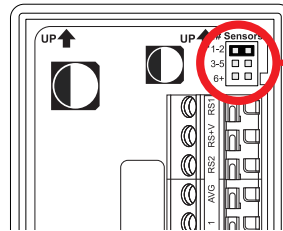The external probe connects to 2-screwless terminals

AUX 2
The external probe connects to 2-screwless terminals

AUX 3
The external probe connects to 2-screwless terminals

9. Set the jumper to match the total number of sensors directly connected to the thermostat; 1-2, 3-5, or 6+ sensors.

   ⚠ **WARNING:** Do Not Count The Additional NT-URS Sensors Used For Indoor Averaging.

NUMBER OF SENSOR CONFIGURATION
1-2
3-5
6+

Sensor Counting Example 1:
You are connecting an *INDOOR* sensor, *OUTDOOR* sensor, *AUX1,* and *AUX2*. The sensor count is 4 and the correct jumper configuration is the middle jumper 3-5.

Sensor Counting Example 2:
You are connecting 6 *INDOOR* sensors (Averaged) and one *INDOOR HUMIDITY* sensor. The sensor count is 2 and the correct jumper configuration is the top jumper 1-2.

Sensor Counting Example 3:
You are connecting 3 *INDOOR* sensors (Averaged), *OUTDOOR* Sensor, *AUX1, AUX2, AUX3,* and an *INDOOR HUMIDITY* Sensor. The sensor count is 6 and the correct jumper configuration is the bottom jumper 6+.

10. Reattach the thermostat faceplate to the backplate. (See your thermostat installation manual for instructions.)

For X-Series thermostats, the remote sensor will display in the upper left of the display. Tap on the upper left of the display to cycle through the different connected sensors. The names of the sensors will display in the dot matrix area of the display.
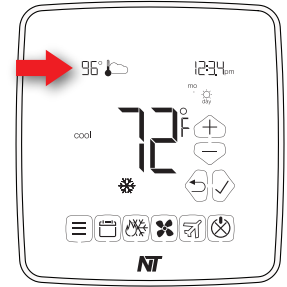
11. When all sensors have been added, snap close the cover on the NT-DRS.
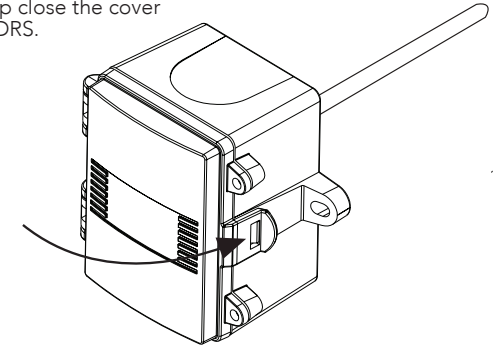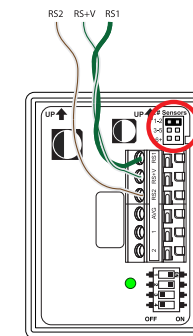

MULTIPLE NT-DRS SENSOR CONFIGURATION

You can connect up to three (3) NT-DRS sensors to provide discrete duct temperature measurements.

The maximum distance for all sensors is 300 ft. (90m) from the NetX thermostat. Follow the instructions and diagrams to connect the additional NT-DRS sensors.

✎ **NOTE::** Each NT-DRS sensor can be assigned to the AUX 1, AUX 2 or AUX 3 inputs.

1. Wire the first sensor using the single sensor instructions.

NetX Thermostat

RS2 RS+V RS1

✎ **NOTE:** See Page 2 Step 9 for proper settings

NT-DRS
First NT-DRS in chain
Set as AUX 1 Sensor

2. Connect wires to each additional sensor in the following manner.

NetX Thermostat

NT-DRS
First NT-DRS in chain
Set as AUX 1 Sensor

NT-DRS
Additional NT-DRS Sensors
Set as AUX 2 Sensor

Wiring To Next Sensor
(If needed)

3. Reinstall the thermostat faceplate onto its backplate.

Check proper operation by watching the LED blink pattern as outlined in the **LED Status** section. Repeat for each sensor.

X-SERIES

LED STATUS

The NT-DRS includes a Diagnostic LED that can help you troubleshoot your installation and sensor operation.

LED Off:

LED OFF indicates no power to the NT-DRS or thermostat. Check the wiring of your sensor and the thermostat for problems. Fix as necessary.

LED On Solid During Power-Up:

On power-up, the LED will turn on solid until the NT-DRS successfully communicates with the thermostat. If the connection is successful, the LED will blink according to its configuration. If the remains on, there is a communication problem. Check the wiring and fix it as necessary.

LED On Solid After Power Up:

If the NT-DRS loses connection with the thermostat for 60 seconds, the LED will turn on solid. Check the wiring and fix as necessary. Cycle power and recheck the LED status.

LED Triple Blink (Probe Operation)

The NT-DRS LED will blink three times when the thermostat requests data. This occurs approximately every 16-20 seconds.

LED Fast Continuous Blink (Lost Probe)

If the NT-DRS loses communication with the probe, the LED will continually blink fast. Check the wiring and fix it as necessary.

✏ **NOTE:** In this condition, the NT-DRS will stop reporting until the communication with the probe is fixed.

ONE (1) YEAR LIMITED WARRANTY

Network Thermostat™ warrants to the original purchaser that this product will be free from defects in workmanship and materials for five years from the date of purchase with proof of purchase.

Warranty Limitations

This warranty begins on the date of purchase.

Warranty is Void if:

- The date code or serial number is defaced or removed.
- The product has a defect or damage due to product alteration, connection to an improper electrical supply, shipping, and handling, accident, fire, flood, lightning, or other conditions beyond the control of the manufacturer.
- The product is not installed according to the manufacturer's instructions and specifications.

Owner's Responsibility

- Provide proof of purchase.
- Provide normal care and maintenance.
- Pay for freight, labor, and travel.
- Return any defective product.
- In no event shall the manufacturer be liable for incidental or consequential damages.

This warranty gives you specific legal rights and you may have others that vary by state and/or province. For example, some states and/or provinces do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion may not apply to you. The manufacturer's continuing commitment to quality products may require a change in specifications without notice.

SPECIFICATIONS

Rated Voltage:
20V to 30VAC, 24VAC nominal

Auxiliary Temp Sensor Range:
AUX1, AUX2, AUX3: -40°F to +200°F (-40°C to +93°C)

Measurement Accuracy:
Temperature: ± 1.0°F (±0.5°C);

Terminations:
RS1 - Data, RS+V – Power, RS2 – Return, 1 & 2 – External Temp Sensor Leads, 1-2, 3-5, 6+ Sensors

Dimensions:
Case: 3.0"H x 3.25"W x 2.05"D (76.2mm x 82.5mm x 52mm)
Probe: 8.0" (203.2mm)

Approved Cable Types:
CAT5 or CAT5e unshielded, or 1-Pair Twisted Shielded Cable with Drain and nominal capacitance of 12pF/ft or less. Use a riser or plenum jacket as required by the local code.

Maximum 300ft Total Sensor Cable Length per Thermostat

TYPICAL WIRING DIAGRAM

NT-URS
Set as OUTDOOR
Sensor

General NetX RSBus Wiring Instructions

- Only 1 Sensor for each type per thermostat except for INDOOR Sensor
- All non indoor sensors and 1st **INDOOR** sensor wired to RS1-to-RS1, RS2-to-RS2 and RS+V-to-RS+V
- Additional **INDOOR** temperature sensors must be wired AVG-to-RS1, RS2-to-RS2 and RS+V-to-RS+V
- Sensors can be placed in any order in the daisy-chain, except for multiple INDOOR sensors

Secondary Internal Temperature Sensors

NT-URS
Set as INDOOR
Sensor

NT-DRS
Set as
AUX 1 Temp

GENERAL WIRING CONNECTIONS FOR NT-DRS

X5 or X7 THERMOSTAT	AUX 1 NT-DRS #1	AUX 2 NT-DRS #2	AUX 3 NT-DRS #3
RS+V	RS+V	RS+V	RS+V
RS2	RS2	RS2	RS2
RS1	RS1	RS1	RS1
AVG	AVG	AVG	AVG

The external probe connects to screwless terminals 1 & 2

NT-DRS
Set as
AUX 2 Temp

AUX 1	AUX 2	AUX 3
DIP 1, 2 ON	DIP 3 ON	DIP 1, 3 ON
DIP 3, 4 OFF	DIP 1, 2, 4 OFF	DIP 2, 4 OFF

NT-DRS
Set as
AUX 3 Temp

Additional NetX RSBus Sensors