NT™ network thermostat

NetX™ X5N-SM Thermostat

INSTALLATION AND PROGRAMMING MANUAL
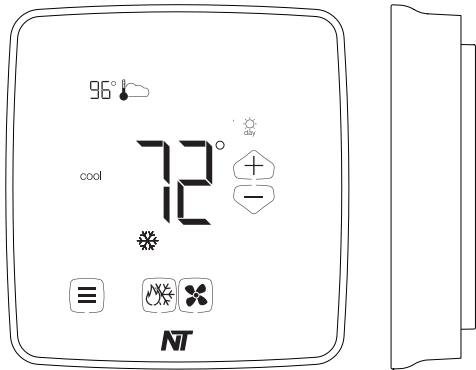
WWW.NETWORKTHERMOSTAT.COM

TABLE OF CONTENTS

BEFORE YOU START

Please read the entire install manual. The thermostat will need to be correctly wired and configured for proper operation. Basic HVAC configuration can be performed from the thermostat touchscreen and advanced settings are accessed via a computer interface.

INTRODUCTION

The X5N-SM thermostat is a StrongMesh™ network connected color touchscreen thermostat with an advanced remote sensor bus, designed for new or replacement commercial or residential applications. It supports up to 3 Heat / 2 Cool heat pumps and 2 Heat / 2 Cool conventional systems.

The X5N-SM includes an integrated XBus communications port that allows wired (XBus) communications when used with an NT-IPXB. The X5N-SM is supported by Command Center Software Tools.

Core Features

- Beautiful Color Selectable Touchscreen Display
- StrongMesh™ Self-Healing Wireless Mesh Network Communications when used with the WCM-2 Wireless Coordinator
- No batteries required – always remembers setpoints
- Computerized heat anticipation and cooling droop
- Built-in, adjustable short cycle equipment protection during normal operation
- Tamper proof electronic keyboard lockout with programmable override ranges and time
- Automatic and Manual fan operation
- Auto or Manual heat/cool changeover
- Dual Heating and Cooling Setpoints for Day (Occupied) and Night (Unoccupied) operation
- Keypad Lockout with restricted ±2°F(±1°C) or ±8°F(±4°C) setpoint adjustment and 0 minute to 24 hour override timer with automatic return
- Selectable Fahrenheit or Celsius temperature display
- Integrated Humidity Sensor
- Supports up to 11 Remote Sensors: up to 6 indoor, 1 humidity, 1 outdoor, and up to 3 auxiliary sensors for monitoring items such as supply air, return air, walk-in refrigerators and freezers, etc.
- Occupancy Sensor Inputs (use NT-OSC or NT-OSW)
- 2 Digital Inputs for Fault Conditions, including Condensate and Equipment Faults

WHAT IS IN THE BOX?

- (1) X5N-SM Thermostat Faceplate
- (2) 3/16 Drywall anchors
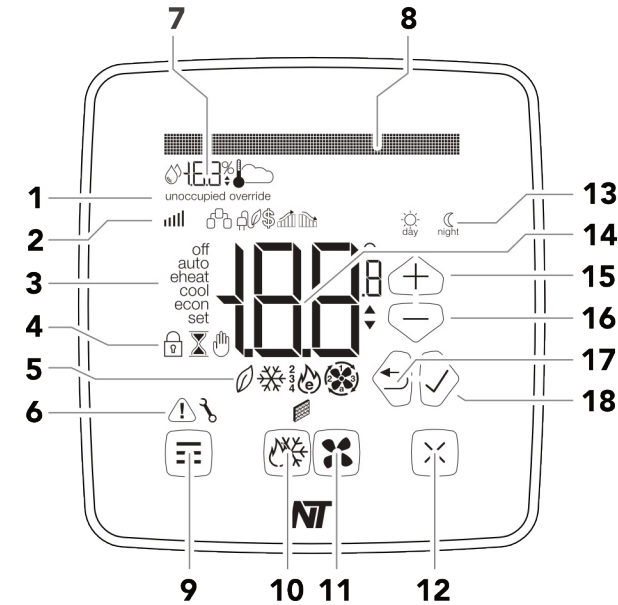- (2) Mounting Screws
- (1) Installation Manual

COPYRIGHT NOTICE

THERMOSTAT FUNCTION CALLOUT

1. Special Status Notifications
2. Secondary Notification Icons
3. Current Equipment Mode Indicators
4. Lock, Override and Hold Icons
5. Current Operation Status Icons
6. Secondary Status Icons
7. **Remote Sensor Display** – Tap area to rotate between active sensor values (indoor temp/hum, outdoor temp, aux temp sensors)
8. Dot Matrix Display
9. **Menu Button** – Tap to access menu functions
10. **Mode Button** – Tap to change thermostat mode
11. **Fan Button** – Tap to change fan mode
12. **Resume/Cancel Button** – Tap to cancel an override
13. **Day/Night** – Tap to alternate between Day (Occupied) and Night (UnOccupied) setpoints
14. **Main Display (Current Temperature)** – Press and hold for 5 seconds to enter Clean Screen Mode
15. **Up Button (Up Arrow)** –Tap to increment or change value
16. **Down Button (Down Arrow)** –Tap to decrement or change value
17. **Back Button (Left Arrow)** – Tap to go to previous menu
18. **Accept Button (Right Arrow)** – Tap to accept setting

THERMOSTAT LOCATION

For proper operation, the thermostat should be mounted on an inside wall in a frequently occupied area of the space. In addition, its position must be at least 18" (46 cm) from any outside wall, and approximately 5' (1.5 m) above the floor in a location with freely circulating air of an average temperature.

Be sure to avoid the following locations:

- Behind doors or in corners where freely circulating air is unavailable
- Where direct sunlight or radiant heat from appliances might affect control operation
- On an outside wall
- Adjacent to, or in line with, conditioned air discharge grilles, stairwells or outside doors
- Where its operation may be affected by steam or water pipes or warm air stacks in an adjacent partition, or by any unheated / uncooled area behind the thermostat
- Where operation may be affected by lighting dimmers
- Where operation will be affected by the supply air of an adjacent unit
- Near electrical source interference such as arcing relay contacts

MOUNT THERMOSTAT BACKPLATE

**BEFORE YOU BEGIN:** Turn off the power to HVAC equipment.

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

1. From the factory, the thermostat faceplate is not firmly connected to the backplate. While holding the thermostat, firmly near the bottom, gently pull apart the backplate from the faceplate.
2. Place the rectangular opening in the backplate over the equipment control wires protruding from the wall. Use the backplate as a template and mark the location of the two mounting holes.
3. Use the supplied anchors and screws for mounting on drywall or plaster; drill two 3/16" (5mm) diameter holes at the marked locations; tap the nylon anchors in flush to the wall surface and fasten backplate using the supplied screws.

   ⚠ **WARNING:** Do not over tighten the screws!

4. Connect the wires from your system to the thermostat terminals as shown in the *Wiring Diagrams* section of this manual. Carefully dress the wires so that any excess is pushed back into the wall cavity or junction box. Ensure that the wires are flush to the plastic backplate. The access hole should be sealed or stuffed to prevent drafts from affecting the thermostat.

Reattach Faceplate

5. Reattach faceplate to backplate by placing the top of the faceplate over the top lip of the backplate.
6. Gently swing the thermostat down and press on the bottom center edge until it snaps in place. This is a tight connection, but may require a little wiggle to align the pins on the faceplate with the screw terminals on the backplate before it snaps into place.

7. Reconnect power to the HVAC equipment. You are now ready to configure your thermostat for operation.

1   2   3
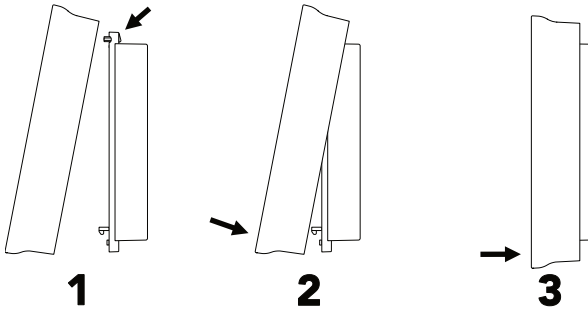
⚠ **WARNING**: Your thermostat is NOT ready to use. You must complete the Thermostat Setup section before using the thermostat. Failure to do this can result in damage to your equipment.

THERMOSTAT SETUP

The **Dot Matrix Display** will provide feedback on the User Menu or Installer Menu configuration and selected options. The **Up Button** ⊕ and **Down Button** ⊖ are used to select parameters while the **LEFT ARROW** (Back Button) and **RIGHT ARROW** (Accept button) are used to accept settings and navigate through the menu. At any time you can use the **CANCEL BUTTON** to leave the User or Installer Menu.

TOUCHSCREEN USER MENU SETTINGS

Tap the **Menu Button** ≣ on the lower left of the thermostat touchscreen to access the User Menu. The Dot Matrix Area will guide you through the User settings. To save a setting and navigate to the next menu item, press the **Checkmark Button** ✓ (Right Arrow). To return to the previous menu item, press the **Back Button** ⤺ (Left Arrow). Use the Up ⊕ and Down ⊖ Buttons to select from the available options for each setting.

Brightness - Screen Brightness

Default: Auto Select brightness of the touchscreen display between Auto, High, Medium, and Low.

Color - Display color

Default: Cyan Select the color of your display. Between Cyan, Purple, Yellow, White, Red, Green, and Blue.

Display Complexity

Default: Full There are three different resting display options.

Options:

- **Full:** (default) Shows entire screen all the time
- **Minimal:** if nothing is noticed by the sensor for 5 seconds only room temperature shows.
- **Dark:** if nothing is noticed by the sensor for 5 seconds the whole screen goes blank.

°F or °C Temperature Display

Select between **°F** (Fahrenheit) or **°C** (Celsius) temperature display. **°F** (Fahrenheit) is the default.

TOUCHSCREEN INSTALLER MENU SETTINGS

Press and hold the **Menu Button** ≣ on the lower left of the thermostat touchscreen for 5 seconds to access. Installer Menu will briefly display in the Dot Matrix Area followed by Conventional/HP. To save a setting and advance to the next menu item, press the Checkmark Button ✓ (Right Arrow). To return to the previous menu item, press the Back Button ⤺ (Left Arrow).

Conventional/ Heat Pump

Select between **Conventional** or **Heat Pump** operation. Conventional is the default.

✎ **NOTE:** If Conventional is Selected Proceed to **Stages Cool**. If **Heat Pump** is selected, proceed to **# of Compressors**.

CONVENTIONAL SETUP

Stages Cool

Default: 1 Select between **1** or **2 Stages Cool.** The value is displayed in the main display.

Stages Heat

Default: 1 Select between **1 or 2 Stages Heat.** The value is displayed in the **Main Display**.

Gas or Electric Heat

Default: Gas Select between **Gas** or **Electric** operation.

✎ **NOTE:** If you selected Conventional Heat, proceed to **Minimum On Time**.

HEAT PUMP SETUP

of Compressors

Default: 1 Select between **1** or **2 Stage Compressor.** The value is displayed in the main display.

Enable Aux/EHeat

Select between **Aux/EHeat Mode On** (default) or **Aux/EHeat Mode Off**.

✎ **NOTE:** If the **Aux/EHeat ON** is selected, proceed to **Heat Pump Option**. Otherwise, proceed to the **Minimum On Time** option.

Heat Pump Option

Default: HP Regular Select between **HP Regular** or **HP Dual Fuel**.

✎ **NOTE:** If needed, the thermostat will perform the function of a fossil fuel kit. When **HP Dual Fuel** is selected the thermostat will turn off the compressor with a call for AUX heat. The **HP Regular** option will allow the compressor and AUX heat to run simultaneously.

COMMON CONTROL SETUP

Minimum On Time

Default: 2 minutes Select between **0-5 Minutes**. The value is displayed on the main display. The system will operate for a minimum of 0 minutes to 5 minutes depending on your setting.

Minimum Off Time

Default: 4 minutes Select between **2 to 5 Minutes**. The value is displayed on the main display. The system will allow equipment recovery for 2 to 5 minutes before turning on again.

Remote Sensor (Averaging)

Switching between **Remote Only** or **Remote + Tstat**, the X5N-SM thermostat can either use the remote sensors (default) or can average the remote sensor and the internal temperature sensor.

✎ **NOTE:** If no remote sensors are detected, the thermostat will default to the internal temperature sensor regardless of the selected option.

Temperature Override Range (During Lockout)

Default: ±3°F (±1.5°C) This setting adjusts the temperature variance allowed from the scheduled setpoint when the faceplate locked. The range is from ±2°F (±1°C) to ±8°F(±4°C).

Override Timer

Default: 8 Hours Set the amount of time a setpoint override from the normal schedule is active from 0 hours - 24 hours, in 10-minute increments. At the end of the override time, the normal schedule will resume. Set to 0 hours to completely remove setpoint adjustability from the thermostat front panel.

Calibration Offset

The thermostat is pre-calibrated at the factory, but in some installations, lack of airflow at the sensor or proximity to other warming or cooling sources may cause the temperature to be off by a few degrees. The X5N-SM thermostat includes a temperature calibration offset with a range of ±6°F (±3°C) in 0.2°F (0.1°C) increments.

Maximum Heat Temperature

Default: 88°F (31°C) Sets the Maximum Temperature range between 43°F to 88°F (6°C to 31°C)

Minimum Heat Temperature

Default: 38°F (4°C) Sets the Minimum Temperature range between 38°F to 82°F (4°C to 28°C)

Maximum Cool Temperature

Default: 108°F (42°C) Sets the Maximum Temperature range between 66°F to 108°F (18°C to 42°C)

Minimum Cool Temperature

Default: 60°F (16°C) Sets the Minimum Temperature range between 60°F to 102°F (16°C to 39°C)

1st Stage Differential

Default: 1°F (0.5°C) Select between **1-6°F (0.5-3°C).** The value is displayed in the main display. The 1st Stage Differential is the temperature degree change required before the thermostat responds.

ONE COMPRESSOR CONFIGURATION

Aux Heat Differential (Heat Pump Operation)

Default: 1°F (0.5°C) Select between **1-6°F (0.5-3°C)**. The value is displayed on the main display. Proceed to **Aux Heat Delay.**

TWO COMPRESSOR CONFIGURATION

2nd Stage Differential

Default: 1°F (0.5°C) Select between **1-6°F (0.5-3°C).** The value is displayed in the main display.

2nd Stage Delay

Default: 20 minutes. Select between **5-40 Minutes** in 5 minute increments. The value is displayed in the main display.

✎ **NOTE:** The preceding options only apply to multi-stage heat pump configuration.

Aux Heat Delay

Default: 20 minutes. Select between **5-40 Minutes** in 5 minute increments. The value is displayed in the main display.

High & Low Balance Point Configuration

If the thermostat is being used as a Heat Pump thermostat and current weather conditions are enabled or an outdoor sensor is connected to the remote sensor terminals, the thermostat can be configured to disable the use of auxiliary heat during warmer weather and to lock out the compressor during colder weather. If the weather conditions are enabled the high and low balance point settings are available in the installer menu.

💡 **TIP:** Refer to the manufacturer's heat pump equipment manual for temperature cut-offs on the equipment.

Low Balance Point

Default: -54°F (-48°C) Select between **-54°F to 39°F (-48°C to 4°C).** The value is displayed in the main display. This will lock out the heat pump at the selected outdoor temperature.

High Balance Point

Default: 118°F (48°C) Select between **41°F-118°F (5°C-48°C)**. The value is displayed in the main display. This will lock out the auxiliary heat at the selected outdoor temperature.

CLK Terminals

Select between **OCC/UNOCC** (occupied/unoccupied) or OFF. When OFF is selected, a signal received will turn off the HVAC system. When OCC/UNOCC is selected, the HVAC system will switch between the DAY (Occupied) and NIGHT (Unoccupied) setpoint settings.

Thermostat Address

Sets the thermostat address to receive and transmit data and control signals.

⚠ **ATTENTION**: This is adjustable from 1-99 but the NT-IPXB controller can only support 32 thermostats. Each thermostat must have its own unique address.

Screen Lock

Select the thermostat faceplate to be locked out restricting the override range (dictated by the Temperature Override Range above) and disallowing access to the HVAC Settings menu. When engaged, you will be directed to set a 4-digit pin code that can be used to temporarily unlock the faceplate for 30 minutes.

FEATURES

Temporary Override During Lockout (Up to 24 hours)

Change the temperature setting temporarily without affecting the schedules, even though the keypad is locked. Use the Up ⊕ and Down ▽ Buttons to adjust the temperature limited to the **Temperature Override Range** setting. This temperature will be maintained for the duration set by the **Override Timer.** To cancel, simply press the Cancel Button. ☒

🖉 **NOTE:** If running an OCCUPIED schedule, the current occupied setpoint will be shown, and if running an UNOCCUPIED schedule the thermostat will revert to the last OCCUPIED schedule setpoints.previous OCCUPIED.

Temporarily Unlock Faceplate

When the X5N-SM thermostat is locked, you can temporarily bypass the Lock Screen by entering the 4-digit PIN. To temporarily unlock the faceplate, follow the steps below.

1. Press the bottom left area of the touchscreen where the Menu Button ☰ is normally located. Temporary Unlock will display in the *Dot Matrix Display*.

2. The Dot Matrix area will then display Enter PIN: 0 0 0 0. Use the Up ⊕ and Down ▽ Buttons to select the first digit in the pin code. Press the Accept Button ◿ (Right Arrow) to Enter the first digit.

3. Repeat Step 2 for the next three digits.

When you enter the correct PIN, the thermostat will return to the main screen and display a count down timer Unlock: 30 min left.in the *Dot Matrix Display* To re-lock the screen, press the Cancel Button ☒ on the right.

⚠ **WARNING:** If you enter the incorrect PIN, Wrong PIN will display in the Dot Matrix display. After 3 wrong attempts, the thermostat will return to the main screen and will not allow another attempt for 5 minutes.

LED1 Terminal / Filter Indicator 🖾

When a 24VAC signal is present on the LED1 terminal, the Filter icon 🖾 will display on the thermostat screen.

LED2 Terminal / Service Indicator 🔧

When a 24VAC signal is present on the LED2 terminal, the Wrench icon 🔧 will display on the thermostat screen.

Emergency Heat Indicator ♨

The thermostat is equipped with Emergency Heat icon ♨ in the *Current Operation Status Icon* area on the faceplate that indicates when the system has engaged emergency heat mode.

Random Restart

After a power failure, the thermostat will delay the heating/cooling equipment start-up by 1-24 seconds. When multiple NetX™ X-Series thermostats are used, this minimizes the 'in rush' current (electric power usage) as it reduces the number of HVAC units that will be turned on simultaneously.

Power Failures

This NetX™ X5N-SM thermostat will maintain the operation settings during any type of power failure. When power is restored the thermostat will return to the proper mode.

REMOTE SENSORS (OPTIONAL)

If your NetX™ thermostat has been installed with one or more NetX™ remote sensors, the sensor information is available on the small secondary display of the thermostat. There are many different remote sensor options.

You can view the remote sensor information by tapping the upper left part of the display to view the different attached remote sensors.

RS1 – RS2 – RS+V: Remote Sensor Bus

Used for connection of a wide variety of NetX™ remote sensors, allowing installation flexibility and additional information from the communications bus. It also allows the thermostat to be placed in an area away from view.

FACTORY DEFAULT SETPOINTS

This NetX™ thermostat product has default setpoints as indicated below. Based on energy saving guidelines and recommendations for residential use, these settings can reduce heating/cooling expense by as much as 33%.

DEFAULT	HEAT	COOL
DAY (Occupied)	68°F (20°C)	77°F (25°C)
NIGHT (Unoccupied)	54°F (13°C)	87°F (31°C)

THERMOSTAT FACTORY SETPOINTS

This thermostat can be used as a stand alone or communicating setback thermostat. Communications can be accomplished over a computer interface via:

1. Personal computer using the NetX™ Command Center software in conjunction with an NT-IPXB.

2. Custom software using the NetX™ ASCII protocol, allowing integration into any application.
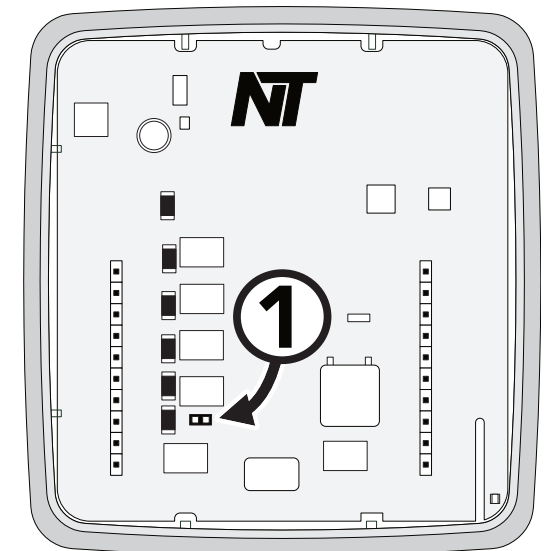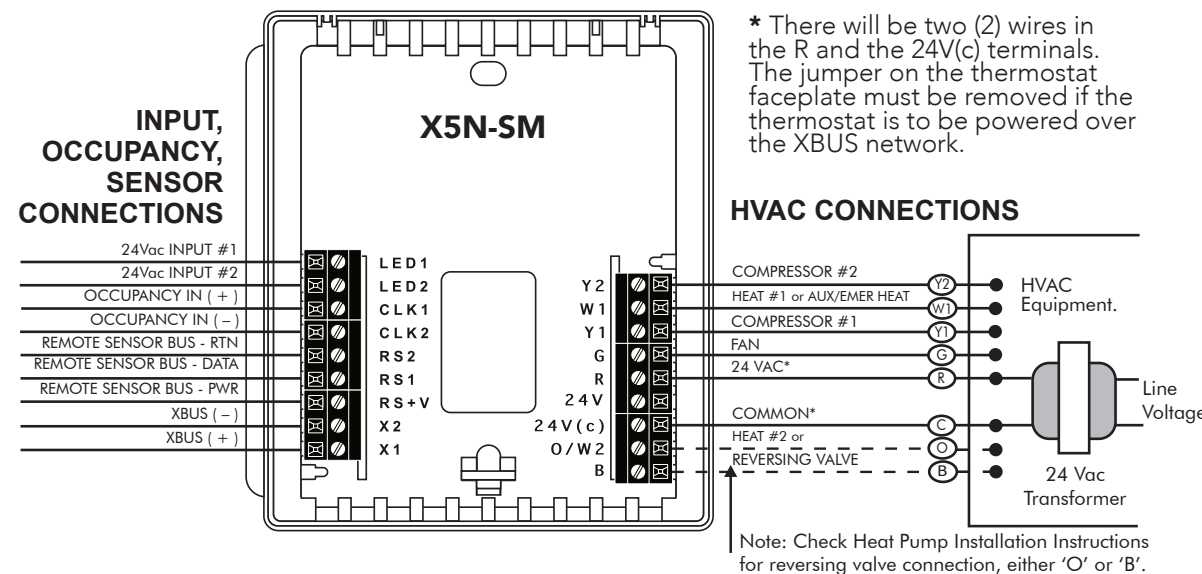
TERMINAL CONNECTION CALLOUTS

Y2: Energizes compressor for second stage cooling, or for heat pumps, either second stage heating or cooling

W1: Energizes heater for first stage heating, or for heat pumps, auxiliary /emergency heat

Y1: Energizes compressor for first stage cooling, or for heat pumps, either first stage heating or cooling

G: Energizes fan circuit with a call for heating or cooling

R: Independent Switching Voltage from HVAC equip

24V: 24Vac

24V(c): 24Vac Common

O/W2: Energizes heater for second stage heating, or for heat pumps, energizes the reversing valve in cooling mode

B: Energizes the reversing valve in heating mode

LED1: 24Vac Input #1 for Filter or other Alert

LED2: 24Vac Input #2 for Condensate, Fault or other Alert

CLK1: For use with OCC/UNOCC Sensor (+)

CLK2: For use with OCC/UNOCC Sensor (-)

RS2: Remote Sensor Bus (Power Return)

RS1: Remote Sensor Bus (Data)

RS+V: Remote Sensor Bus (Power)

X1: XBus (+)

X2: XBus (–)

INDEPENDENT POWER SOURCE (OPTIONAL)

In situations where power from the HVAC hardware does not meet the needs of the X-Series thermostat, You can power the X-Series thermostat independently of the HVAC unit. Network Thermostat 24 VAC Transformer has the capability to power eight X-Series thermostats. Follow the steps below to install separate power source.

1. Remove the jumper on the faceplate.

Basic Wiring Diagram

INPUT, OCCUPANCY, SENSOR CONNECTIONS

X5N-SM

24Vac INPUT #1	LED1
24Vac INPUT #2	LED2
OCCUPANCY IN (+)	CLK1
OCCUPANCY IN (–)	CLK2
REMOTE SENSOR BUS - RTN	RS2
REMOTE SENSOR BUS - DATA	RS1
REMOTE SENSOR BUS - PWR	RS+V
XBUS (–)	X2
XBUS (+)	X1

HVAC CONNECTIONS

* There will be two (2) wires in the R and the 24V(c) terminals. The jumper on the thermostat faceplate must be removed if the thermostat is to be powered over the XBUS network.

Y2	COMPRESSOR #2	Y2
W1	HEAT #1 or AUX/EMER HEAT	W1
Y1	COMPRESSOR #1	Y1
G	FAN	G
R	24 VAC*	R
24V		
24V(c)	COMMON*	C
O/W2	HEAT #2 or REVERSING VALVE	O
B		B

HVAC Equipment.

Line Voltage

24 Vac Transformer

Note: Check Heat Pump Installation Instructions for reversing valve connection, either 'O' or 'B'.

Independent Power Source cont.

2. Place the separate transformer 24VAC wire in 24VAC terminal.

3. Move the WiFi or Ethernet board RED wire from R to the 24VAC terminal.

4. Leave the WiFI or Ethernet board BLACK wire in the 24V(c) terminal. If connected, remove thermostat wire from the 24VAC(c) terminal.

5. Place the equipment red wire in R.

6. Place the separate transformer 24VAC(Common) wire in the 24V(c) terminal.

7. Common from equipment does not connect to the thermostat. This can cause a ground loop and issues.
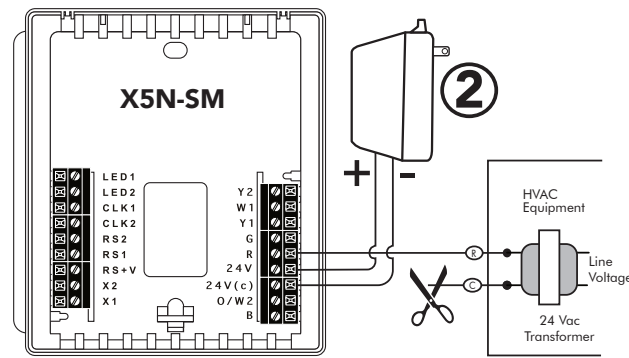
WIRING DIAGRAM CROSS REFERENCE CHART

The chart below list the connections needed for most common applications. Refer to the Basic Wiring Diagram for where to connect appropriate wires.

Terminals	Y2	W1	Y1	G	R	24V(c)	O/W2	B
Conventional- Heat only Gas		X			X	X		
Conventional- Heat only Electric		X		X	X	X		
Conventional- Cool Only			X	X	X	X		
Conventional- 1H/1C Gas		X	X	X	X	X		
Conventional- 2H/2C Gas	X	X	X	X	X	X	X	
Conventional- 1H/1C Electric		X	X	X	X	X		
Conventional- 2H/2C Electric	X	X	X	X	X	X	X	
Heat Pump- No Auxiliary Heat Cool Reversing Valve			X	X	X	X	X	
Heat Pump- No Auxiliary Heat Heat Reversing Valve			X	X	X	X		X
Heat Pump- 1 Stage Standard Cool Reversing Valve		X	X	X	X	X	X	
Heat Pump- 1 Stage Standard Heat Reversing Valve		X	X	X	X	X		X
Heat Pump- 1 Stage Dual Fuel Cool Reversing Valve		X	X	X	X	X	X	
Heat Pump- 1 Stage Dual Fuel Heat Reversing Valve		X	X	X	X	X		X
Heat Pump- 2 Stage Standard Cool Reversing Valve	X	X	X	X	X	X	X	
Heat Pump- 2 Stage Standard Heat Reversing Valve	X	X	X	X	X	X		X
Heat Pump- 2 Stage Dual Fuel Cool Reversing Valve	X	X	X	X	X	X	X	
Heat Pump- 2 Stage Dual Fuel Heat Reversing Valve	X	X	X	X	X	X		X

SPECIFICATIONS

RATED VOLTAGE: 20V to 30VAC, 24VAC nominal

RATED A.C./D.C. CURRENT: 0.05 to 0.75 AC / 0.0 to 0.75 DC Amp continuous, per output, surges to 3 Amps maximum

TEMPERATURE CONTROL RANGE: **HEATING:** 38 to 88°F (4 to 31°C) in 1° steps **COOLING:** 60 to 108°F (16 to 42°C) in 1° steps

THERMOSTAT SENSING RANGE: 32 to 118°F (0 to 48°C) Control Accuracy: ±1°F @ 68°F (±0.5°C @ 20°C)

MINIMUM DEADBAND: 2°F (1°C)

DIMENSIONS: 5.1"H x 4.7"W x 1.15"D (130mm x 119mm x 29mm)

EQUIPMENT TERMINATIONS: R - 24V switching voltage, W1 - Heat1 or Aux/Emergency Heat, G - Fan, Y1 - Compressor1, Y2 - Compressor2, O/W2 - Heat2 or Rev. Valve in Cooling, B - Rev. Valve in Heating

POWER TERMINATIONS: 24V - remote power (not used), 24V(c) - power common (from HVAC equipment)

INPUT TERMINATIONS: LED1 (Filter Icon Selectable), LED2 (Fault Icon Selectable)

OCCUPANCY TERMINATIONS: CLK1 (+), CLK2 (-)

REMOTE SENSOR TERMINATIONS: RS+V - Power, RS2 - Return, RS1 - Data

COMMUNICATIONS TERMINATIONS: X1 - XBus (+), X2 - XBus (−)

RADIO: (802.15.4) 2.4GHz IEEE 802.15.4

FIVE (5) YEAR LIMITED WARRANTY

Network Thermostat™ warrants to the original purchaser that this product will be free from defects in workmanship and materials for a period of 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 manufacturers 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 which 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.

FCC REGULATORY INFORMATION

This equipment complies with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation, If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected