network thermostat NetX X5-CFA Universal Setback Thermostat Instruction Manual

Contents

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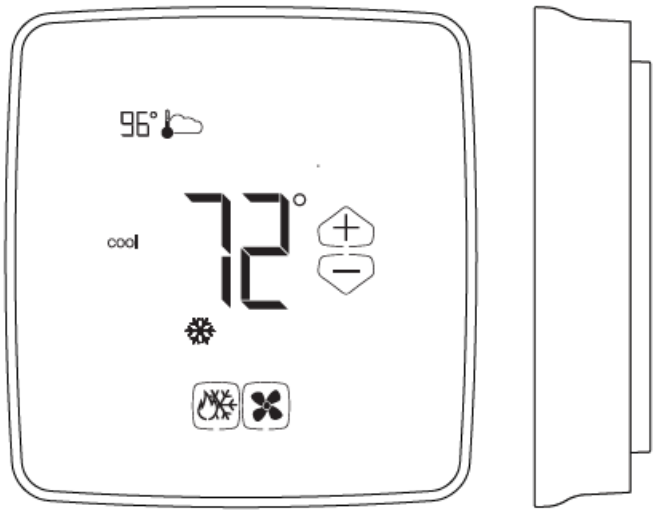
Specifications

- Universal setback thermostat for Chick-fil-A
- Integrated humidity sensor
- Supports up to 11 remote sensors
- Dual heating and cooling setpoints
- Selectable Fahrenheit or Celsius temperature display
- Two (2) year limited warranty

Product Usage Instructions

- **Before You Start**
  Please read the entire installation manual before proceeding. Ensure correct wiring and configuration for proper operation. Basic HVAC configuration can be done via the thermostat touchscreen, while advanced settings are accessible through the network or Internet.
- **Thermostat Location**
  Mount the thermostat on an inside wall in a frequently occupied area, at least 18 inches from any outside wall, and approximately 5 feet above the floor in an area with freely circulating air of an average temperature. Avoid locations listed in the manual to ensure optimal performance.
- **Thermostat Setup**
  Follow the installation manual to mount the backplate securely. Configure the thermostat settings as needed using the installer menu. Utilize features such as tamper-proof electronic keyboard lockout, preprogrammed fan operation, and dual heating and cooling setpoints.
- **Terminal Connection Callouts**
  Refer to the wiring diagram cross-reference chart to correctly connect terminals. An independent power source is required for operation. Ensure proper connection of up to 11 remote sensors for monitoring various conditions.

UNIVERSAL SETBACK THERMOSTAT INSTALLATION AND PROGRAMMING MANUAL FOR CHICK-FIL-A



WWW.NETWORKTHERMOSTAT.COM

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 your network and/or the Internet.

INTRODUCTION

- The X5-CFA thermostat is a network-capable color touchscreen thermostat with an advanced remote sensor bus, designed for new or replacement commercial applications. It supports up to 3 Heat / 2 Cool heat pumps and 2 Heat / 2 Cool conventional systems.
- The X5-CFA includes an integrated XBus communications port that allows wired (XBus) communications when used with an NT-IPXB.

Core Features

- Beautiful Color Touchscreen Display
- No batteries required – always remember setpoints
- Electronic heat anticipation and cooling drop
- Built-in short-cycle equipment protection during normal operation
- Tamper-proof electronic keyboard lockout with programmable override ranges and time
- Preprogrammed fan operation
- Auto or Manual heat/cool changeover
- Dual Heating and Cooling Setpoints for Occupied and Unoccupied operation
- 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, freezers, etc.
- 2 Digital Inputs for Fault Conditions, including Condensate and Equipment Faults

WHAT IS IN THE BOX?

- (1) X5-CFA Thermostat Faceplate
- (2) 3/16 Drywall anchors
- (2) Mounting Screws
- (1) Installation Manual

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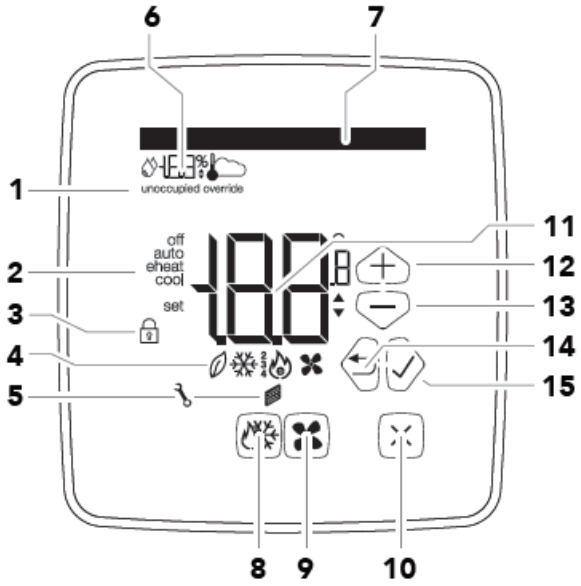
THERMOSTAT CALLOUT



1. Special Status Notifications
2. Current Equipment Mode Indicators
3. Lock Icon
4. Current Operation Status Icons
5. LED Filter and Fault Icons
6. Remote Sensor Display (Indoor, Outdoor, and AUX sensors)
7. Dot Matrix Display
8. Mode Button
9. Fan Button
10. Resume/Cancel Button
11. Current Temperature Display
12. Up Button (Up Arrow)
13. Down Button (Down Arrow)
14. Back Button (Left Arrow)

15. Accept Button (Right Arrow)

THERMOSTAT LOCATION

To ensure 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

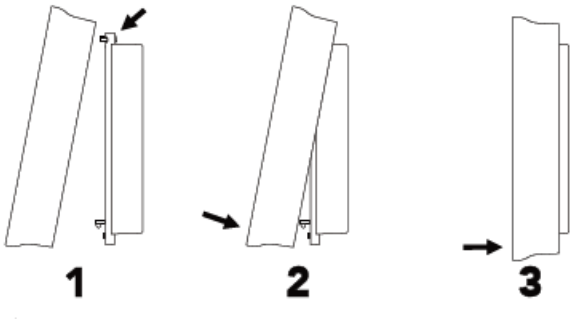
MOUNT THERMOSTAT BACKPLATE

BEFORE YOU BEGIN:
Turn off the power to the 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 flush to the wall surface and fasten the 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 with the plastic backplate. The access hole should be sealed or stuffed to prevent drafts from affecting the thermostat.
    - **Reattach Faceplate**
5. Reattach the faceplate to the 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.



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 HVAC Settings Menu configuration and selected options. The Up Button J and Down Button K 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 return to normal operation.

INSTALLER MENU

Press and hold the MODE Button F for 5 seconds to access. HVAC Settings 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 M (Right Arrow). To return to the previous menu item, press the Back Button L (Left Arrow).

Conventional / Heat Pump

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

CONVENTIONAL SETUP

- **NOTE:**
  If Conventional is Selected Proceed to Stages Cool. If Heat Pump is selected, proceed to # of Compressors.
- **Stages Cool**
- **Default:**
  2 Select between 1 or 2 Stages Cool. The value is displayed in the main display.
- **Stages Heat**
- **Default:**
  2Select between 1 or 2 Stages Heat. The value is displayed in the Main Display.
- **Gas or Electric Heat**
  Select between Gas or Electric operation. Gas heat is the default.

- **NOTE**:
  If you selected Conventional Heat, proceed to Minimum On Time.
- **HEAT PUMP SETUP**
- **# of Compressors**
- **Default:**
  2 Select between 1 or 2 Stage Compressor. The value is displayed in the main display. The default is 1.
- **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 the Heat Pump Option. Otherwise, proceed to the Minimum On-Time option.
- **Heat Pump Option**
  Select between HP Regular (default) or HP Dual Fuel. 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.
- **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. B 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 on 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 on the main display. This will lock out the auxiliary heat at the selected outdoor temperature.

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.
- **Calibration Offset**
  The thermostat and remote sensors are 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 X5-CFA thermostat includes a temperature calibration offset with a range of ±6˚F (±3˚C) in 0.2˚F (0.1˚C) increments.

- **1st Stage Differential**

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

  For single compressor setup go to the One Compressor Configuration. For two compressors setup go to Two Compressor Configuration.

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**

  Select between 1-6˚F (0.5-3˚C). The value is displayed on the main display. 3˚F (1.5˚C) is the default.
- **2nd Stage Delay**

  Select between 5-40 Minutes in 5-minute increments. The value is displayed on the main display. 20 Minutes is the default.
- **Aux Heat Differential (Heat Pump Operation)**

  Select between 1-6˚F (0.5-3˚C). The value is displayed in the main display. 1˚F (0.5˚C) is the default. Aux Heat Delay (Heat Pump Operation)
- **Default:**

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

  Sets the thermostat address for communications with the NetX NT-IPXB network controller.
- **NOTE:**

  Each thermostat connected to a network controller must have its unique address. This is adjustable from 1-99 but the NT-IPXB controller can only support 32 thermostats.

FEATURES

- **CLK Terminals**

  Select between Occupied and Unoccupied operations using a dry contact closure. A shorted contact between CLK1 and CLK2 places the thermostat in Unoccupied operation. Removing the short places of the thermostat in Occupied operation.
- **LED1 Terminal / Filter Indicator** 

  When a 24VAC signal is present on the LED1 terminal, the Filter icons  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.

REMOTE SENSORS

- 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 different attached remote sensors.
- The X5-CFA thermostat uses one or more NT-ROOM-S remote sensors for temperature control. See the NT-ROOM-S installation instructions for details.

NOTE:
If no remote sensors are detected, the thermostat will default to the internal temperature sensor.

- **RS1 – RS2 – RS+V Terminals / Remote Sensor Bus**
  Used for connection of a wide variety of NetX™ remote sensors. See NetX sensor instructions for use.
- **NOTE:**
  If no remote sensors are detected, the thermostat will default to the internal temperature sensor.
- **Emergency Heat Indicator** 

  The thermostat is equipped with an Emergency Heat icon  Q 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 HVAC 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™ X5-CFA thermostat will maintain the operation settings during any type of power failure. When power is restored the thermostat will return to the last MODE (Heat, Cool, Auto, Off) and the Occupied setpoints. If the CLK terminals are shorted at power up, the thermostat will operate using the last Unoccupied setpoints.

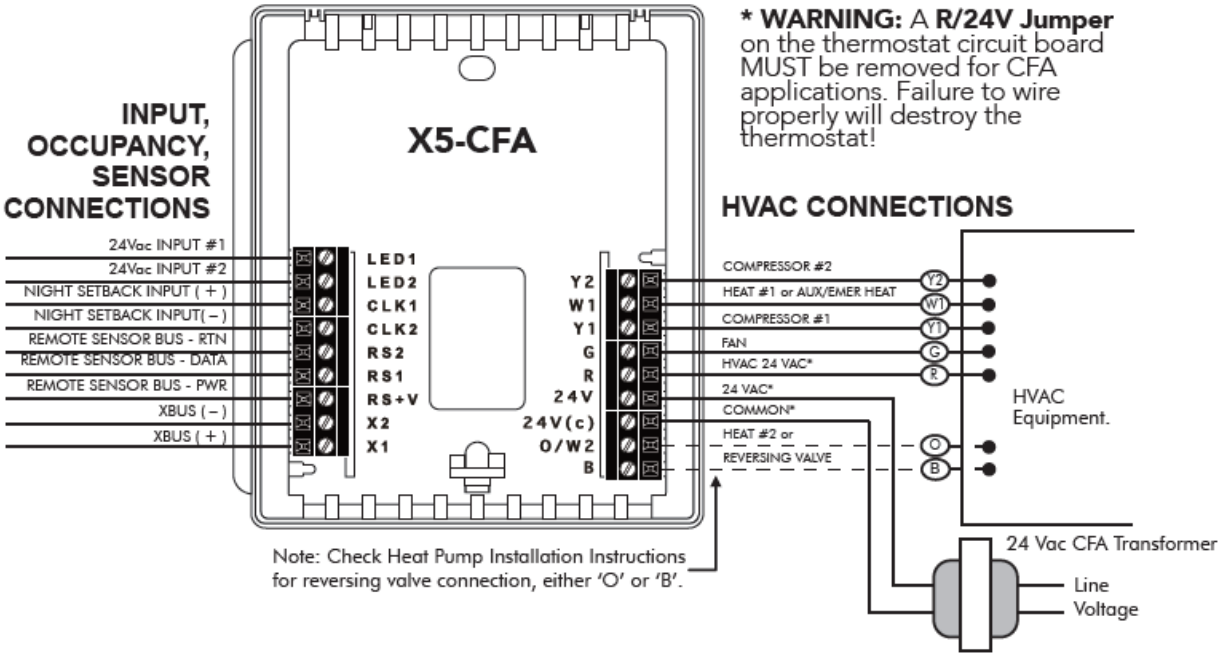
FACTORY DEFAULT SETPOINTS

DEFAULT SCHEDULES	HEAT	COOL
OCCUPIED	69˚F (20˚C)	73˚F (23˚C)
UNOCCUPIED	60˚F (16˚C)	80˚F (27˚C)

TERMINAL CONNECTION CALLOUTS

- Y2: Energizes compressor for second-stage cooling, or 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 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 – Connect to CFA Transformer
- 24V(c): 24Vac Common – Connect to CFA Transformer
- 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 Night Setback Input (+)
- CLK2: For use with Night Setback Input (–)
- RS2: Remote Sensor Bus (Power Return)
- RS1: Remote Sensor Bus (Data)
- RS+V: Remote Sensor Bus (Power)
- X1: XBus (+)
- X2: XBus (–)

Basic Wiring Diagram

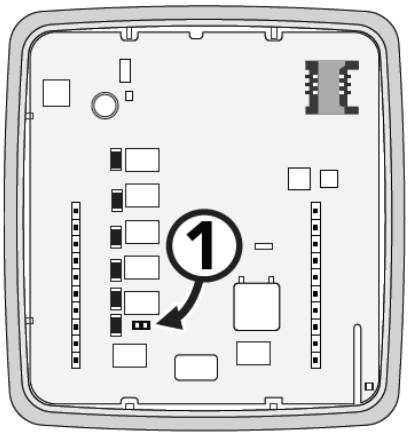


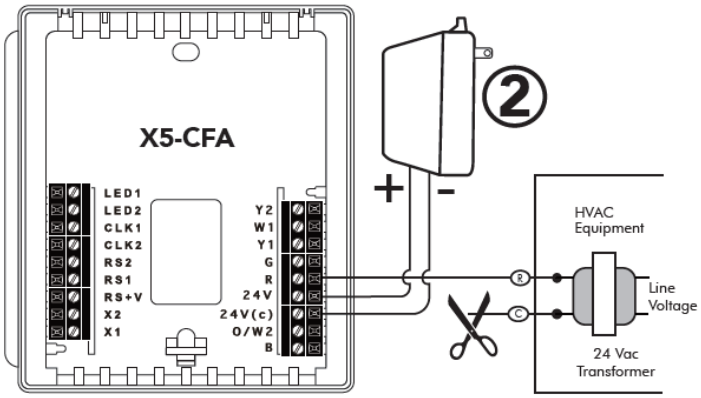
INDEPENDENT POWER SOURCE (REQUIRED)

For proper installation at your Chick-fil-A facility, it is required to use an external power supply for the thermostat. Follow the steps below to install a separate power source.

1. Remove the jumper on the faceplate.
2. Place the equipment red wire in R.
3. Place the separate transformer 24VAC wire in the 24VAC terminal.
4. Place the separate transformer 24VAC(Common) wire in the 24V(c) terminal.
5. Common equipment does not connect to the thermostat.

This can cause a ground loop and issues.





WIRING DIAGRAM CROSS-REFERENCE CHART

- The chart below lists 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	24V(c)	O/W2	B
Conventional- Heat only Gas		X			X	X	X		
Conventional- Heat-only Electric		X		X	X	X	X		
Conventional- Cool Only			X	X	X	X	X		
Conventional- 1H/1C Gas		X	X	X	X	X	X		
Conventional- 2H/2C Gas	X	X	X	X	X	X	X	X	
Conventional- 1H/1C Electric		X	X	X	X	X	X		
Conventional- 2H/2C Electric	X	X	X	X	X	X	X	X	
Heat Pump- No Auxiliary Heat Cool Reversing Valve			X	X	X	X	X	X	
Heat Pump- No Auxiliary Heat Heat Reversing Valve			X	X	X	X	X		X
Heat Pump- 1 Stage Standard Cool Reversing Valve		X	X	X	X	X	X	X	
Heat Pump- 1 Stage Standard Heat Reversing Valve		X	X	X	X	X	X		X
Heat Pump- 1 Stage Dual Fuel Cool Reversing Valve		X	X	X	X	X	X	X	
Heat Pump- 1 Stage Dual Fuel Heat Reversing Valve		X	X	X	X	X	X		X
Heat Pump- 2-Stage Standard Cool Reversing Valve	X	X	X	X	X	X	X	X	
Heat Pump- 2-Stage Standard Heat Reversing Valve	X	X	X	X	X	X	X		X
Heat Pump- 2 Stage Dual Fuel Cool Reversing Valve	X	X	X	X	X	X	X	X	
Heat Pump- 2-Stage Dual Fuel Heat Reversing Valve	X	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 (–)

TWO (2) YEAR LIMITED WARRANTY

Network Thermostat™ warrants to the original purchaser that this product will be free from defects in workmanship and materials for two 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 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.

CA TITLE 24 REQUIREMENTS

This thermostat meets the Joint Appendix 5 (JA5) requirements for Occupant Controlled Smart Thermostat (OCST) certification of the California Energy Commission (CEC).

FCC REGULATORY INFORMATION

This equipment complies with the limits for a Class B digital device, under 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 by 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 the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

FAQS

- **Q: Can I use this thermostat in a residential setting?**
  A: The NetXTM X5-CFA thermostat is designed for commercial use, specifically for Chick-fil-A locations. It may not be suitable for residential applications.
- **Q: How do I access advanced settings for the thermostat?**
  A: Advanced settings can be accessed via your network or the Internet. Refer to the installation manual for detailed instructions on accessing and configuring advanced features.

Documents / Resources

	network thermostat NetX X5-CFA Universal Setback Thermostat [pdf] Instruction Manual X5-CFA, NetX X5-CFA Universal Setback Thermostat, NetX X5-CFA, Universal Setback Thermostat, Setback Thermostat, Thermostat

References

- Commercial Smart Thermostats & IoT Sensors | Network Thermostat
- User Manual