



# X7-M Thermostat

- **Commercial Wi-Fi / Ethernet Thermostat**
- **Gas/Electric to 2H/2C, Heat Pump to 3H/2C**
- **Humidity Sensing and Control**
- **CO<sub>2</sub> Sensing and Control Ready**
- **Advanced Wired Remote Sensor Bus**
- **Wireless Remote Sensing Network Ready**
- **Two Configurable Relays**
- **Full Color Touchscreen; Black or White Trim**
- **Weekly and Calendar Scheduling**
- **Home Automation Controller API Included**
- **BACnet/IP and Modbus TCP/IP Included**

## GENERAL DESCRIPTION:

The X7-M is a commercial grade color touchscreen thermostat with both Wi-Fi and Ethernet connectivity, designed for new or replacement commercial and residential applications. Use the X7-M with conventional and heat pump applications, or with interfaces, VRF and mini-splits. Two configurable relays allow humidity, fresh air damper, IAQ controls and more. The X7-M has an accessory slot for a revolutionary CO<sub>2</sub> sensor that requires no field calibration for five (5) years. The X7-M delivers a near-effortless setup of your daily schedules (4 events per day) and up to 80 Additional Events (40 Special and 40 Calendar Events). The unique scheduling structure also supports the powerful features of adjustable temporary override times and temperature ranges, occupied and unoccupied events, keypad lockout, and many more features. The X7-M also includes full Modbus TCP/IP and BACnet/IP support over Wi-Fi, directly on the thermostat.

The X7-M is designed to operate completely stand-alone behind a firewall, or integrated with the optional NetX-Cloud management suite. Since all functions are stored in the thermostat, the X7-M will continue to operate even during network outages, allowing you to maintain control, comfort and energy savings. For ultimate control over energy usage, the X7-M offers a digital lockout that can restrict temperature overrides. Our on-board data collection allows for historical review, sub-metering, and run-time reporting.

## Complete Stand-Alone Solution

## STANDARD FEATURES:

### Energy Savings

- Efficient Equipment Restart™ randomizes equipment starts to minimize multiple units turning on simultaneously when there are multiple NetX thermostats at the location
- Random Restart on power up staggers restart of HVAC system after a power outage to minimize peak inrush current
- Adaptive Recovery for Schedules allows system to achieve desired setpoint at the beginning of the schedule

### Monitoring

- 12 Remote Sensors: up to 6 indoor, 1 humidity, 1 outdoor, 1 water leak sensor, and up to 3 auxiliary sensors for monitoring items such as supply air, return air, walk-in refrigerators and freezers, etc.
- Accessory Port for CO<sub>2</sub> Sensor
- 2 Digital Inputs for Fault Conditions, including Condensate and Equipment Faults
- Occupancy Sensor Input
- On-board Data Logging with Sub-Metering Support

### Connectivity

- CloudConnect™ Internet-Based Cloud Service
- PCCoconnect™ Software Local Network & Port Forwarded Access
- DirectConnect™ Integrated Web Server
- Integrated NetX™ API, Supports 3rd Party Apps and HA Mode
- BACnet/IP and Modbus TCP/IP Embedded

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## CloudConnect™ & CloudManager™ Available

### Facility Management

- 4 independent schedules per day
- 80 Additional Schedules (40 Special and 40 Calendar Events)
- Commercial Lockout with Programmable Temporary Override Time and Temp Adjustment
- Email & Text Message Alerting
- Alerts include Hi/Lo Temps for Indoor, Outdoor, Supply, Return, and Aux Temps, Inefficient Equipment Runs, Change Filter Notifications, and Two Digital Inputs: 19 Alerts in All

### General

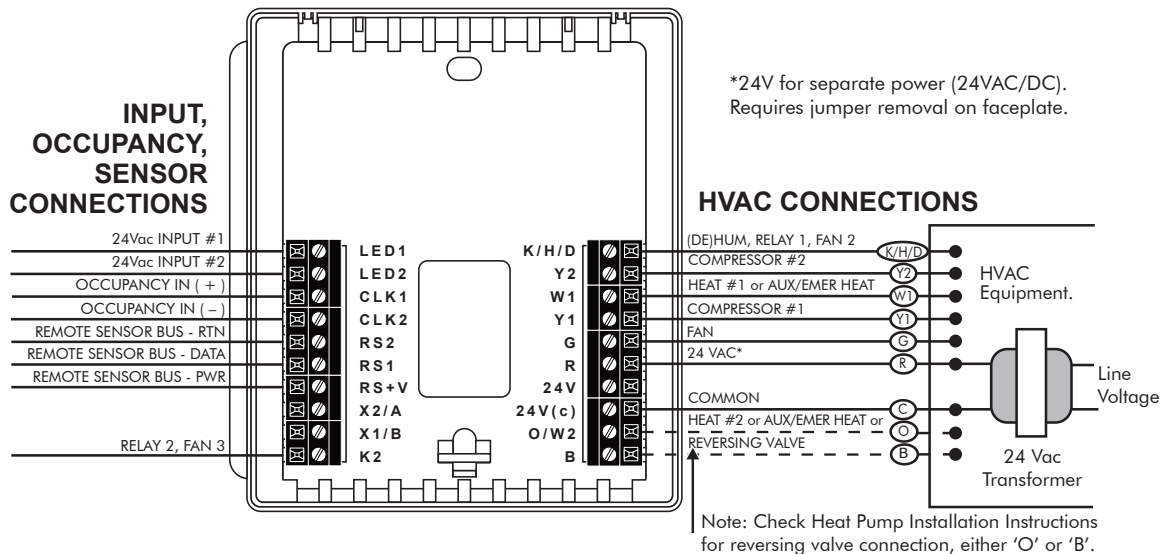
- Color Selectable Touchscreen Display, Black or White Case
- Modes: Heat, Cool, Automatic Changeover
- Integrated Humidity Sensor and Humidification & Dehumidification Control
- Fan Selector for Automatic and Manual Operation; Programmable Recirculation Fan
- K/H/D and K2 Relays Add Flexible Control
  - Humidification and Dehumidification Control
  - Fresh-Air Damper Control
  - IAQ Equipment Control
  - Auxiliary General Purpose Relays with Scheduling
  - CO<sub>2</sub> Control (With Optional CO<sub>2</sub> sensor)
- Integrated Weather with Current Conditions and 7-Day Forecasts



## SPECIFICATIONS:

<b>Rated Voltage:</b>	20V to 30VAC, 24VAC nominal
<b>Rated A.C. / D.C. Current:</b>	0.05 to 0.75 AC / 0.0 to 0.75 DC Amp continuous, per output, surges to 3 Amps maximum
<b>Temperature Control Range:</b>	<b>Heating:</b> 38 to 88°F (6 to 30°C) in 1° steps <b>Cooling:</b> 60 to 108°F (16 to 40°C) in 1° steps
<b>Thermostat Sensing Range:</b>	20 to 124°F (0 to 48°C) <b>Control Accuracy:</b> +/-1°F @ 68°F (0.5°C @ 20°C)
<b>Minimum Deadband:</b>	2°F (1°C)
<b>Humidity Sensing:</b>	<b>Range:</b> 0% - 100% RH <b>Accuracy:</b> ±3% From 10% - 90%
<b>Humidity Control Range:</b>	<b>Humidify:</b> 10% to 60%RH in 5%RH steps <b>Dehumidify:</b> 35% to 75%RH in 5%RH steps
<b>Dimensions:</b>	5.1"H x 4.7"W x 1.15"D (128mm x 119mm x 29mm)
<b>Equipment Terminations:</b>	R - 24V switching voltage, W1 - Heat1 or Aux/Emer Heat, G - Fan, Y1-Compressor1, Y2 - Compressor2, O/W2 - Heat2 or Rev. Valve in Cooling, B - Rev. Valve in Heating, K/H/D – Humidify / Dehumidify / Relay 1 Schedule / Damper / IAQ , K2 – Relay 2 Schedule / Damper / IAQ
<b>Aux Relay Terminations:</b>	24V(c) - Power Return, 24V - Separate Power (24VAC/DC) requires jumper removal
<b>Power Terminations:</b>	LED1 (Filter Icon Selectable), LED2 (Fault Icon Selectable), CLK1 (+), CLK2 (-) (Occupancy)
<b>Input Terminations:</b>	RS+V - Power, RS2 - Return, RS1 - Data
<b>Remote Sensor Terminations:</b>	RS+V - Power, RS2 - Return, RS1 - Data
<b>Wi-Fi Radio:</b>	2.4GHz 802.11b/g/n, Security: Open, WEP, WPA-PSK, WPA2-PSK (Wi-Fi or Ethernet Active Operation)
<b>Ethernet:</b>	10/100Mbps, 802.3, Auto Negotiation, Auto-MDIX (Wi-Fi or Ethernet Active Operation)
<b>Accessory Port:</b>	SIM port for NetX CO <sub>2</sub> /VOC Sensor, NetX DECT/ULE Wireless Sensor Network Host Card
<b>Protocols:</b>	Native NetX API, BACnet/IP and Modbus TCP/IP

## WIRING DIAGRAMS:



## TERMINAL FUNCTIONS

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|--|---|
| <p><b>LED1</b> 24Vac Input #1 for Filter or other Alert</p> <p><b>LED2</b> 24Vac Input #2 for Condensate, Fault or other Alert</p> <p><b>CLK1</b> For use with External Occupancy Sensor (+)</p> <p><b>CLK2</b> For use with External Occupancy Sensor (-)</p> <p><b>RS2</b> Remote Sensor Bus (Power Return)</p> <p><b>RS1</b> Remote Sensor Bus (Data)</p> <p><b>RS+V</b> Remote Sensor Bus (Power)</p> <p><b>X2/A</b> N/A</p> <p><b>X1/B</b> N/A</p> <p><b>K2</b> Programmable Auxiliary Relay 2, FAN 3</p> | <p><b>K/H/D</b> Humidification or Dehumidification, Aux. Relay 1, or FAN 2</p> <p><b>Y2</b> Energizes compressor for second stage cooling, or for heat pumps, either second stage heating or cooling</p> <p><b>W1</b> Energizes heater for first stage heating, or for heat pumps, aux/emmer heat</p> <p><b>Y1</b> Energizes compressor for first stage cooling, or for heat pumps, either first stage heating or cooling</p> <p><b>G</b> Energizes fan circuit with a call for heating or cooling</p> <p><b>R</b> Independent Switching Voltage from HVAC equip</p> <p><b>24V</b> 24Vac</p> <p><b>24V(c)</b> 24Vac Common</p> <p><b>O/W2</b> Energizes heater for second stage heating, or for heat pumps, energizes the reversing valve in cooling mode</p> <p><b>B</b> Energizes the reversing valve in heating mode</p> |
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