

# NETX™ WiFi THERMOSTAT : STEP-BY-STEP INSTALLATION GUIDE FOR DIRECTCONNECT™ COMMUNICATIONS

**DO NOT INSTALL** the thermostat until you have the Wi-Fi network connection information, including the **SSID**, **Security Type** and **Password**, and the **Router's IP address, User Name and Password**.

## STEP 1: GET YOUR Wi-Fi NETWORK INFORMATION

Confirm your Wi-Fi network information. If you don't already know the SSID (Wi-Fi network name), Security Mode and Password of your Wi-Fi router, you'll need to log into your router and retrieve that information (which means you'll need the router login information also!). Enter the IP address of your router in the address bar of your browser and log in. The SSID and Security Mode will be listed in the wireless settings. Alternately, the label on your router may list the router's IP address, Security Mode and Password.

## STEP 2: DOWNLOAD THE NetX™ DEVICE EXPLORER TOOL

The NetX™ Device Explorer tool can be downloaded here.

<http://www.networkthermostat.com/software/netx-explorer-mac-and-pc>



Figure 1 – NetX™ Device Explorer

## STEP 3: INSTALL THE Wi-Fi THERMOSTAT BACKPLATE

A. Turn off the power to the HVAC unit and then follow the directions included with the thermostat for detailed instructions. Make sure the wires are connected to the correct terminals. In addition to the thermostat wires, there are three (3) wires from the Wi-Fi Backplate. Connect the RED wire to the R terminal (along with the Red wire in the thermostat cable), the BLACK wire to the 24(c) terminal (along with the common wire in the thermostat cable), and the WHITE wire to the X1 terminal. These wires are shipped in the proper locations and are noted here for completeness.



Figure 2 – Wi-Fi Backplate

B. After installing the thermostat cable, study the thermostat installation pages and set the DIP switches on the back of the thermostat to the desired settings. Some DIP switch settings are required for proper HVAC equipment operation and others are features that may be engaged, as desired.

After setting the DIP switches, set the thermostat aside. Do NOT install the thermostat on the backplate.

C. Turn on the power for the HVAC equipment. When power is applied, the Green LED will start flashing (indicating the thermostat backplate is operating in Soft AP (Soft Access Point) Wi-Fi mode), and the Red LED will be on steady (indicating the thermostat backplate is not connected to the thermostat).

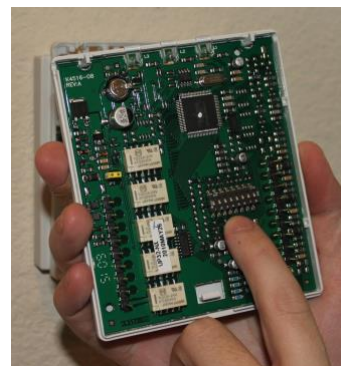


Figure 3 – DIP Switch Location

**DO NOT INSTALL THE THERMOSTAT ON THE Wi-Fi Backplate YET!**

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## STEP 4: CONNECT TO THE Wi-Fi THERMOSTAT USING Soft AP MODE

Using any Windows PC or Apple Computer with a Wi-Fi radio and a web browser, search for the Wi-Fi network with the SSID name that NetX-XXXXXX where the XXXXXX matches the last six digits of the Wi-Fi Backplate MAC ID.

Log on to the NetX-XXXXXX network. This is an open network and does not have a password. It may take up to a full minute for your computer to connect to the Wi-Fi Backplate.

Once connected. Use your internet browser and navigate to 192.168.7.1. This is the Soft AP address for the Wi-Fi Backplate.

The default credentials for login are listed below.

User Name: admin  
Password: netx

NOTE: For Additional information on using Soft AP on Android devices click link Here – <http://www.networkthermostat.com/app-notes/soft-ap-android-tips>

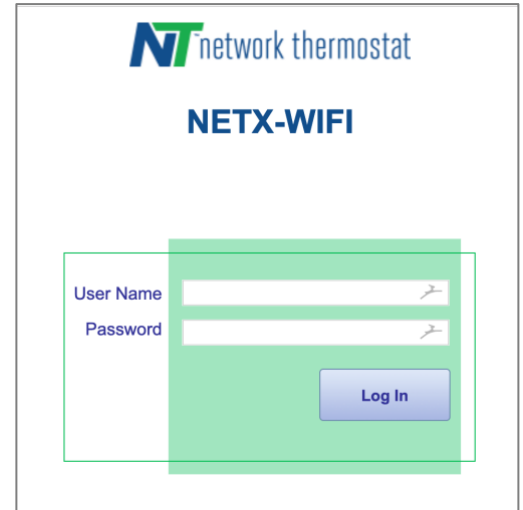


Figure 4 – Soft AP Connection at 192.168.7.1

## STEP 5: CONNECTING TO YOUR LOCAL Wi-Fi NETWORK

When the device connects to the thermostat, the screen below will be displayed in the browser.

### Enter your Wi-Fi Network Information:

On the left side of the screen,

- 1 Click 'Scan for Networks'.
- 2 A pop-up dialog will display all available Wi-Fi networks. Select your network.
- 3 The Security Mode will be automatically entered.
- 4 Wireless network's Pass Phrase. If your network uses WEP, it will be necessary to know the length of the Pass Phrase and if it is ASCII or HEX. (Note: WEP networks have significant security vulnerabilities and are easily hacked. It is recommended that WPA or WPA2 network security mode be used if available).
- 5 Enter the Wi-Fi password.
- 6 Leave 'Enable DHCP' checked.
- 7 Then click 'Save & Reboot'.

When you click 'Save & Reboot', the Wi-Fi Backplate will then reboot.

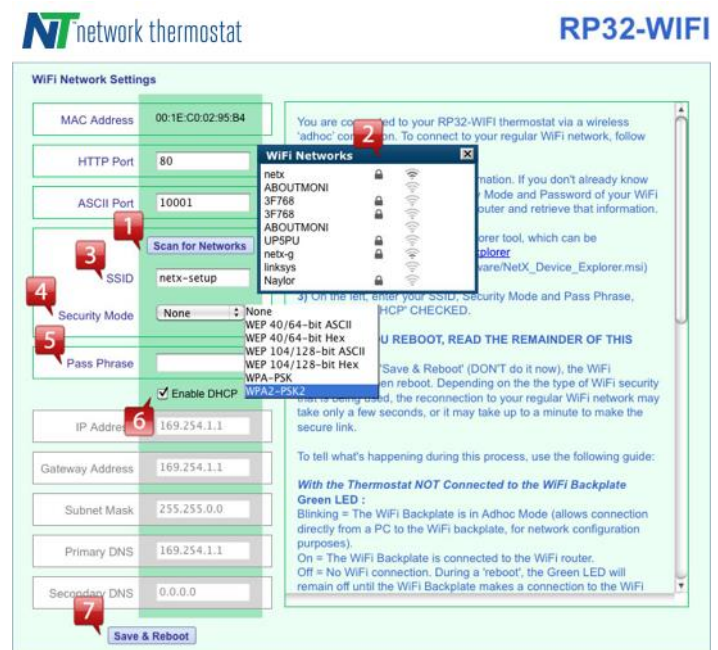


Figure 5 - Network Settings

Depending on the type of Wi-Fi security that is being used, the reconnection to your regular Wi-Fi network may take only a few seconds, or it may take up to a minute to make the secure link.

**Once the thermostat is connected to the network, the back plate LEDs will indicate the following status:**

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## Green (LED Network Connection Indicator):

**Blinking** = The Wi-Fi Backplate is in Soft AP mode (allows connection directly from a PC to the Wi-Fi Backplate , for network configuration purposes).

**ON** = The Wi-Fi Backplate is connected to the Wi-Fi router.

**OFF** = No Wi-Fi connection. During a 'reboot', the Green LED will remain off until the Wi-Fi Backplate makes a connection to the Wi-Fi router and the security credentials are validated.

## Red LED (Face Plate Connectivity Indicator):

**Blinking** = The face plate is removed and has communicated with the back plate since the last back plate reset.

**ON** = The Wi-Fi Backplate is not communicating with the Faceplate (the Faceplate is not on the Wi-Fi Backplate) since last backplate reset.

**NOTE:** After the Wi-Fi Backplate reboots, if the thermostat does not connect to the Wi-Fi network within a few minutes, a wrong SSID, Security Mode and/or Password has been entered. Use one of the Recovery Modes outlined below to reset the thermostat back plate:

## **Recovery Mode**

There are two options for recovery mode: Soft Reset and Factory Reset. Soft Reset only changes your network settings all other setting are retained. Factory reset, removes all your changes and returns your Wi-Fi Backplate to it original factory configuration. See below how to use each reset.

## **Soft Reset**

Press and hold the SETUP button (yellow arrow) for 10 seconds. When both the WIFI Green LED (green arrow) and Red STAT LED (red arrow) flash together. Release the SETUP button and the Wi-Fi Backplate will remove the network settings, reboot, and return to Soft AP Mode. Follow the instructions in **STEP 4** above to connect to your Wi-Fi Plate.

**NOTE:** This reset maintains your current username and password.

## **Factory Reset**

Press and hold the SETUP button (yellow arrow) until both the WIFI Green LED (green arrow) and Red STAT LED (red arrow) flash together, release the SETUP button. While the LEDs are flashing simultaneously, press the SETUP button with three short presses and the Wi-Fi Backplate will remove **ALL** programming, reboot, and return to Soft AP Mode. Follow the instructions in **STEP 4** above to connect to your Wi-Fi Plate.

**NOTE:** A factory reset changes the login back to the default login. The username is admin and the password is netx.

## **STEP 6: RECONNECT YOUR COMPUTER TO YOUR WIRELESS NETWORK**

While the thermostat is rebooting (it only take a few seconds), go back to your computer's Network Settings, locate the wireless network for the and connect to the wireless Network to establish communication with the thermostat. (This will be the SSID and password you just entered).

The screen shot to the right shows typical PC wireless network. In this case, the thermostat network has the SSID name **NETGEAR67**. When the Wi-Fi Backplate is properly connected to the wireless network, the Green LED will be on steady (indicating the thermostat is connected to a regular network)

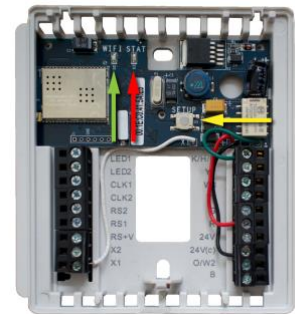


Figure 6 – Wi-Fi Backplate

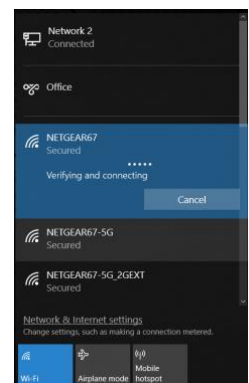


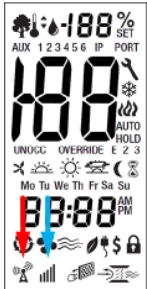
Figure 7 – PC Network Dialog

**IF A HARDWIRE ETHERNET CABLE WAS REMOVED IN STEP 4, IT CAN BE PLUGGED BACK INTO THE COMPUTER NOW.**

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## STEP 7: INSTALL THE THERMOSTAT ONTO THE BACKPLATE

Follow the instruction sheet to install the thermostat onto the Wi-Fi Backplate. When connected, either the Soft AP icon (Red Arrow) or the Wi-Fi icon (Blue Arrow) on the thermostat will turn on.



Faceplate Icon		Thermostat Status
Soft AP(Red Arrow)	Wi-Fi (Blue Arrow)	
ON	OFF	Thermostat is in Soft AP Mode
OFF	ON	Thermostat is connected to a Wi-Fi network
OFF	OFF	Thermostat is not connected to a Wi-Fi network and it is not in Soft AP Mode

## STEP 8: FIND YOUR NetX Wi-Fi THERMOSTAT USING THE NetX™ DEVICE EXPLORER

Once you have reconnected to the thermostat's network, start the NetX™ Device Explorer. The Device Explorer will run on any Windows PC or Mac computer allowing you to see and connect to any of your NetX Devices on your local network, using only your browser.

After launching Device Explorer, click on the 'Discover Devices' button, and when the replies appear, double-click on the thermostat to go to the thermostat's main page. If you are only going to connect to your thermostat(s) via your local network, the NetX Device Explorer is the easiest method to access your thermostats.



Figure 8 - NetX™ Device Explorer

For added convenience, go to the Basic Configuration page of the NetX thermostat and change the thermostat name to something easier to remember than the default name. If you have multiple thermostats on your network, change the name of each of the thermostats to something meaningful. Thermostat names may have a maximum length of **15 characters with no spaces**.

**If connecting to the thermostat(s) is only needed from the wireless LAN (not the Internet), the installation is complete.**

To connect to the thermostat at any time, simply start the NetX™ Device Explorer and select the thermostat needed. This simple software utility will always be able to find your thermostats if they are connected to the same network as your Windows PC or Mac computer.

**OPTIONAL:** To access your thermostat(s) over the Internet or to change your thermostat address(es) to static IP address on your LAN, please continue to the next step.

A static IP address is recommended for using the PC-Connect Command Center Software interface. PC-Connect is a powerful interface for monitoring and controlling all of the thermostats associated with your controls project. For more information on the PC-Connect App and to download the Command Center Software, go to <http://www.networkthermostat.com/software/pconnect>. Video Tutorials for using the PC-Connect Command Center Software interface can be found at <http://www.networkthermostat.com/video-tutorials>.

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## CONNECTING TO YOUR NetX™ THERMOSTAT OVER THE INTERNET (OPTIONAL)

To set up your permanent connection to your thermostat from anywhere on the Internet, follow the instructions below. These instructions are to be used after your thermostat is already connected to your LAN with a DHCP address assigned by the router.

### STEP 9: CHANGE THE ADDRESS TO A STATIC IP ADDRESS ON YOUR LAN

Click on the Configuration tab, and then click the Network Settings button in the right-hand column.

- 1 On the Network Settings page, UNCHECK the 'Enable DHCP' box
- 2 Enter a STATIC IP address for your local network. If you don't know what IP address you can use, you'll need to login to your router and see where the DHCP range is set. Select an available IP address that is OUTSIDE of the DHCP range. It cannot be one that is being used by any other device/computer on the local area network.  
*(Do not change any of the other settings on the Network Settings page; Gateway, Subnet Mask, Primary & Secondary DNS. These items have been automatically pre-configured by the network settings.)*
- 3 Change the HTTP Port from 80 (default) to 81 for your first thermostat. If you have more than one NetX Wi-Fi thermostat, increment this number by one for each addition thermostat installed; 82 for the second, 83 for the third, etc. (This is the port number that is used for the web pages.)
- 4 Leave the ASCII Port 10001 (default) for your first thermostat. If you have more than one NetX Wi-Fi thermostat, increment this number by one for each addition thermostat installed; 10002 for the second, 10003 for the third, etc. (This is the port number that is used for the API protocol for the NetX-IP™ Command Center and third party programs and apps (such as iOS and Android apps).)
- 5 Then click 'Save & Reboot'.

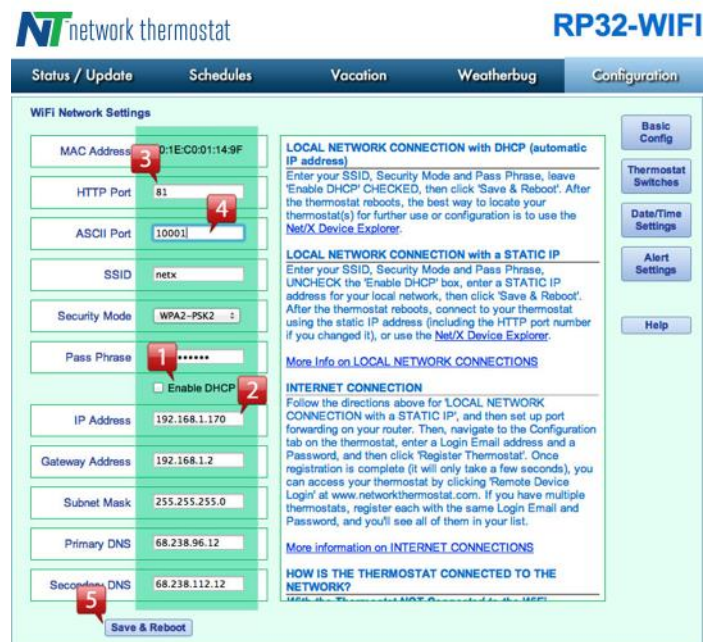


Figure 9 - Static IP Address, HTTP Port 81, ASCII Port 10001

### STEP 10: SET UP PORT FORWARDING ON YOUR ROUTER

Port Forwarding is a term used in the networking world which is simply the process of translating one address to another. The 'Internet' uses an addressing system (IP addresses and Ports) that is in the public domain. Your LAN is your private network with its own addressing (IP addresses and Ports). Port forwarding allows the Internet and LAN addresses to get translated through the router so connections can be rerouted from the public side (Internet) to the private side (your LAN). This is not a complicated task, and the simple steps below will take you through it. If you'd like to read more technical details, please feel free to read the Wikipedia article on port forwarding at [https://en.wikipedia.org/wiki/Port\\_forwarding](https://en.wikipedia.org/wiki/Port_forwarding). NetX has partnered up with the leading port forwarding company, <https://portforward.com/>, giving you simple instructions and pictures for setting up your router properly.

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- 1** Log into your router using the router's name and password. If you don't know the user name and password, there is a huge router Username & Password list at [http://portforward.com/default\\_username\\_password/](http://portforward.com/default_username_password/) . These are the DEFAULT entries given by the router manufacturers.
- 2** In a separate browser window, go to <http://portforward.com/cports.htm> and scroll down the list until you find NetX RP32-WIFI Thermostat and click the link.
- 3** Then, locate your router in the list and click the matching model number. You can then either have the team at portforward.com set up your router for you, or you can click 'skip this advertisement' in the upper right corner to continue to step-by-step instructions.

***In the example above (Figure 8), the thermostat is set to the local static IP address 192.168.1.170 and port 81. After your port forwarding set up is complete, any connection from the Internet to Port 81 on your Internet address (DSL or cable modem address assigned by your Internet Service Provider) will be routed to the local address of 192.168.1.170, port 81.***

***If you have multiple NetX™ thermostats, you will need to use a separate local static IP address and a separate port number for EACH thermostat. Portforward.com instructions show port forwarding for ports 81-89, allowing for up to 9 NetX™ thermostats to be connected. If you have more than 9, simply increase the number of ports as needed.***

***The same is true for the ASCII ports. Start with your first thermostat at 10001 (default) and increment by 1 for each additional thermostat. Typical Addressing Scheme for locations with multiple NetX™ Wi-Fi Thermostats should look like this:***

Thermostat	IP Address	HTTP Port	ASCII Port
Location 1	xxx.xxx.xxx.xxx	81	10001
Location 2	xxx.xxx.xxx.xxx	82	10002
Location 3	xxx.xxx.xxx.xxx	83	10003
...	...	...	...

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## STEP 11: RECONNECT TO YOUR THERMOSTAT AND CLAIM IT

Now that you have a permanent location for your NetX Wi-Fi thermostat, and you've set up port forwarding, you can access it at either the static IP address you assigned above, or using the NetX Device Explorer. (It's the same location on your network.)

- 1 Click on the Configuration tab.  
This will take you to the Basic Configuration page.

Enter AT LEAST the following information:

- 2 Thermostat Name (use a more descriptive name for your thermostat). Click 'Apply'.
- 3 Zip Code (this allows the thermostat to access your current weather and forecast information). Click 'Apply'.
- 4 Login Email & Password

The login email address must be a valid address, but the password does NOT need to be the email password for the account. This password is the *Thermostat Login* password and should be different from your email password.

- 5 Then, to claim your thermostat, click 'Register Thermostat'.

Figure 10 - Basic Configuration & Registration

The thermostat will briefly, securely, connect to the NetX Remote Login Server and store the necessary information (encrypted, of course) so you can always find your thermostat(s), even if you don't have a static IP address from your ISP. When this process is complete (usually only a few seconds), you'll see a message that reads **Claimed** just to the left of the 'Register Thermostat' button.

## STEP 12: CONNECT TO YOUR THERMOSTAT USING NetX™ DirectConnect™ REMOTE LOGIN SERVICE

Now that you're all set up, you can use any current release browser (Firefox, Internet Explorer, Safari) to connect to your thermostat(s).

Simply go to [www.networkthermostat.com](http://www.networkthermostat.com) and click **DirectConnect™ Login** in the upper right hand corner. When you log in with your user name (email) and password, you will see your list of your thermostats. Just click the one you'd like to work with, and you'll be automatically redirected to that thermostat in a new browser tab.