

## **N+1 Option**

### **STX N+1 Installation Application Guide**

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# 1 STX N+1 Option

## 1.1 N+1 Overview

N+1 operation is the ability of equipment to switch to a number of pre-defined frequencies. When the equipment is a frequency agile transmitter, the transmitter can function as a backup to any one of several transmitters at a site.

This function is provided by the STX N+1 option. The option has multiple mounting options, and connects to the STX via an Ethernet cable. When installed in a system, the transmitter can be configured to any one of 8 different frequencies to provide emergency operation in the event of a failure in the main transmitter.

## 1.2 N+1 Application

The STX N+1 Option is intended for customers that wish to build in a backup transmitter for any number (N) of main transmitters up to 8. The N+1 option can program the backup STX transmitter to change frequency to the faulted transmitter frequency when commanded.

# 2 Upgrade Preparation

NOTE: The STX N+1 transmitter must be loaded with Controller version 2.4 or greater.

## 2.1 Overview / Estimated Completion Time For Upgrade

The STX N+1 Option (979-4002) contains the necessary items to upgrade an STX LP transmitter with the N+1 option.

The installation and programming will take approximately 30 minutes to complete.

## 2.2 Items / Tools required for the Upgrade Process

- 5/16" Nut Driver
- 3/8" Nut Driver
- No. 1 Phillips Screwdriver
- 979-4002 KIT, STX N+1 Controller Option
- STX Controller code 2.4 or greater
- Computer with Ethernet connection.

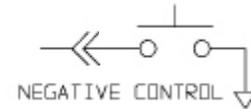
## 2.3 Installation

The N+1 comes already mounted to a plate for ease of installation in your equipment rack. Find a suitable location behind the STX transmitter to mount the N+1 option so the cables can reach the transmitter and the Controller easily. When locating a place to mount the box, avoid locations that would require long cable runs.

The N+1 Option needs external power from the supplied AC to DC converter. The converter is auto-ranging with an input of 100 – 240 VAC. Configure the power supply plug for your style of power outlet and connect to any power strip location and dress the power wire going to the N+1 controller. DS9 should illuminate when power is applied.

Connect the customer supplied remote control output to J2 on the N+1 controller to control the N+ 1 frequency. Pins 1 through 8 when pulled active LOW will activate the configured frequencies 1 through 8. Configuring the frequencies will be detailed later.

NEGATIVE CONTROL - MOMENTARY OR  
SUSTAINED CONTACT TO GROUND  
REQUIRED TO SELECT FREQUENCY



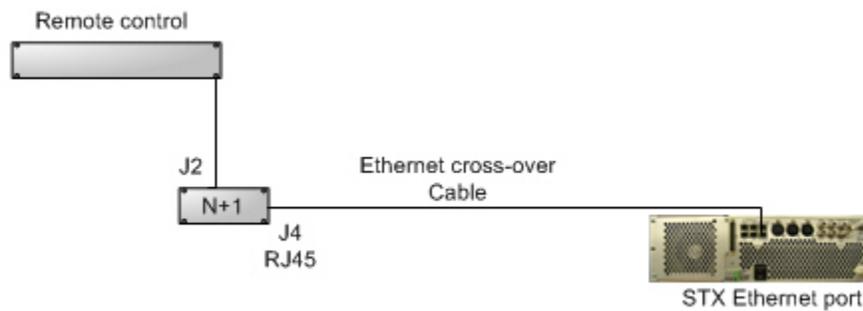
Interface	Program	LED
J2-1	STX #1 Frequency	DS1
J2-2	STX #2 Frequency	DS2
J2-3	STX #3 Frequency	DS3
J2-4	STX #4 Frequency	DS4
J2-5	STX #5 Frequency	DS5
J2-6	STX #6 Frequency	DS6
J2-7	STX #7 Frequency	DS7
J2-8	STX #8 Frequency	DS8

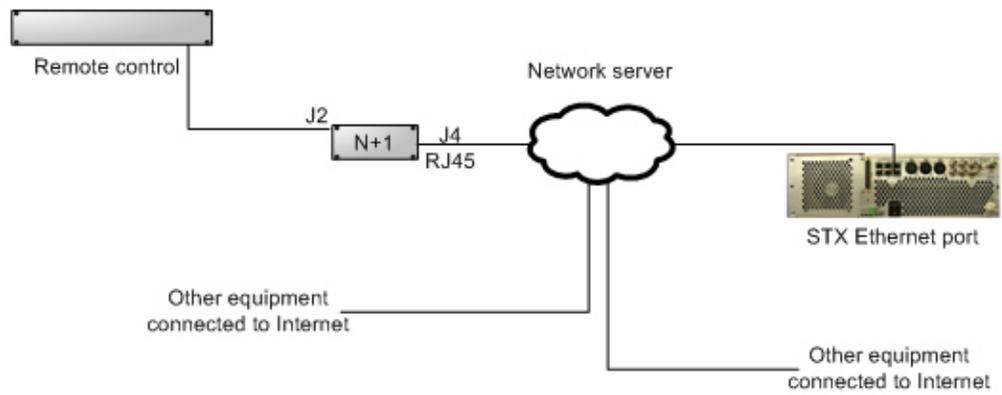
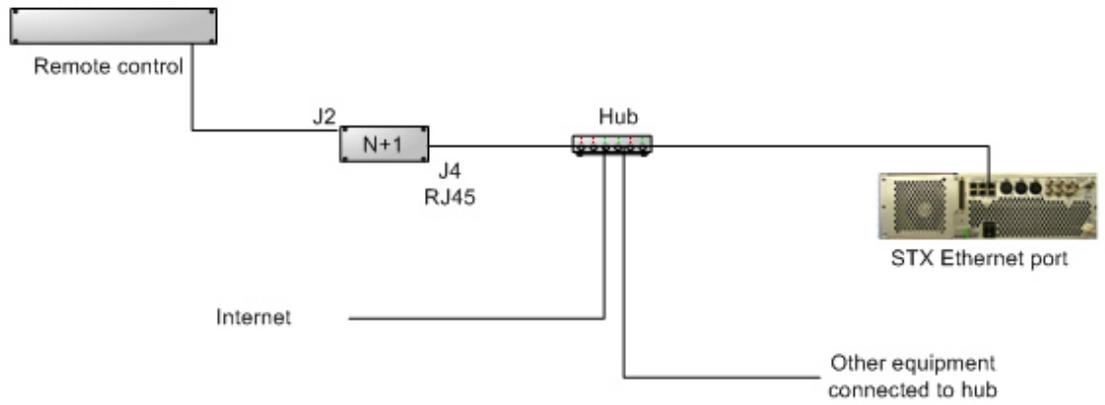
There are two methods of connecting the N+1 controller to the STX-1 backup transmitter via the RJ45 Ethernet connector depending on your facility or layout;

1. Directly connected to the STX using a crossover or straight through Ethernet cable.
2. Connected through a local network using a hub.

When connecting through a network, the device can be configured with a static IP address, or DHCP which is the default configuration. If the N+1 Controller is reset to factory configuration, it will default to DHCP.

Below are simplified diagrams illustrating the different methods to connect the N+1 to the backup STX transmitter.





## 2.4 Configure the N+1 Controller

To configure the frequencies in the N+1 Controller, you will need a computer and a free software download located on the BE website; STX N+1 CONTROLLER LOCATOR.

NOTE: a Registered User Login is required.

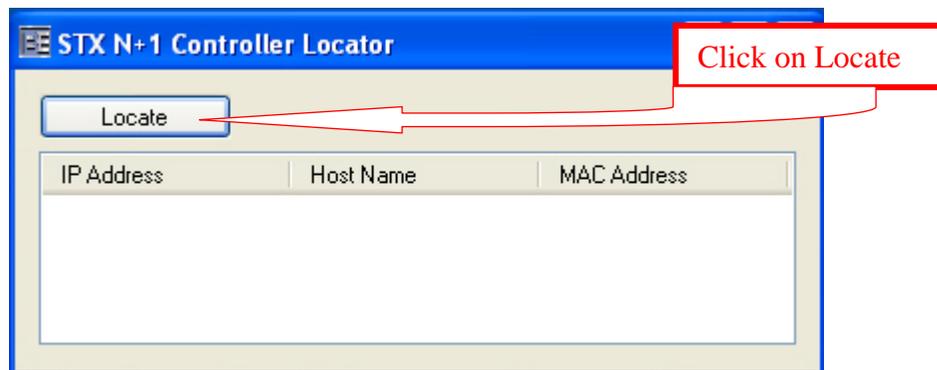
Connect the computer Ethernet to J4 connector of the N+1 Controller. The processor is Auto-Sensing, therefore the connection can be made with a straight-through or cross-over cable.

NOTE: If the controller is delivered as part of a system, configuration has been performed at the factory. Check the documentation supplied with the order for more details. In that case, only adaptation to your network would be necessary.

If you receive an error message, verify your computer is not set for DHCP operation as directed under the section "Basic Direct Connection" to proceed.

### 2.4.1 Locate Devices

1. Launch the freeware "NPlus1Discoverer.exe" file by double clicking on the .exe file. The Controller Locator window will open automatically.



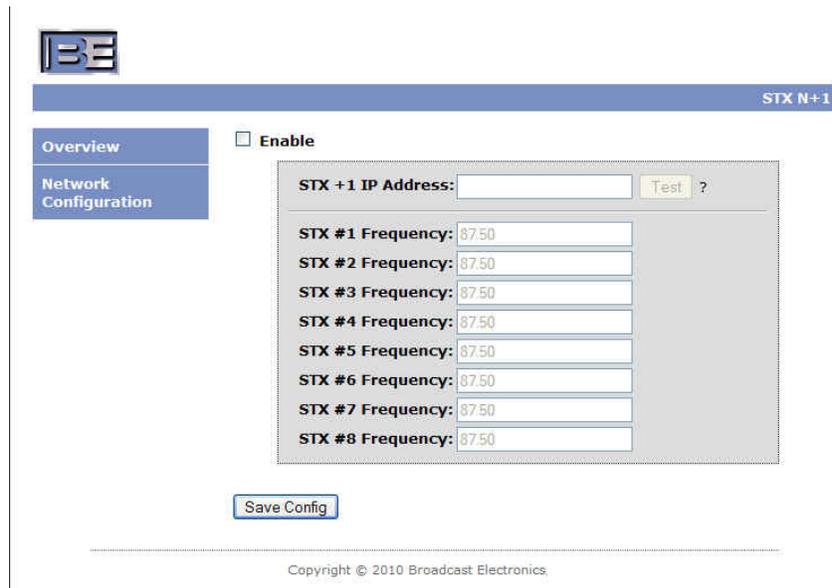
If this is the first time you have connected, it may be necessary to press "Locate" for the program to query the connection and show the N+1 Controller that it found.

2. Highlight the device and click on it.



Clicking on the highlighted device will open up the Configuration Overview window for the device.

NOTE: Record the current configuration before making any changes.



BE

STX N+1

Overview

Network Configuration

Enable

STX +1 IP Address: 10.24.110 Found Test

STX #1 Frequency: 94.7

STX #2 Frequency: 87.5

STX #3 Frequency: 91.7

STX #4 Frequency: 105.9

STX #5 Frequency: 100.9

STX #6 Frequency: 92.9

STX #7 Frequency: 103.9

STX #8 Frequency: 106.7

Save Config

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Enable Device

Manually enter the STX IP address.

Enter Frequencies

Save Configuration

3. Check the enable box and enter the IP address for STX that will be the +1 backup. Enter the frequencies (up to eight total) and Save the Configuration.

BE

STX N+1

Overview

Network Configuration

Settings successfully changed!

Enable

STX +1 IP Address: 10.24.110 Test ?

STX #1 Frequency: 94.70

STX #2 Frequency: 87.50

STX #3 Frequency: 91.70

STX #4 Frequency: 105.90

STX #5 Frequency: 100.90

STX #6 Frequency: 92.90

STX #7 Frequency: 103.90

STX #8 Frequency: 106.70

Save Config

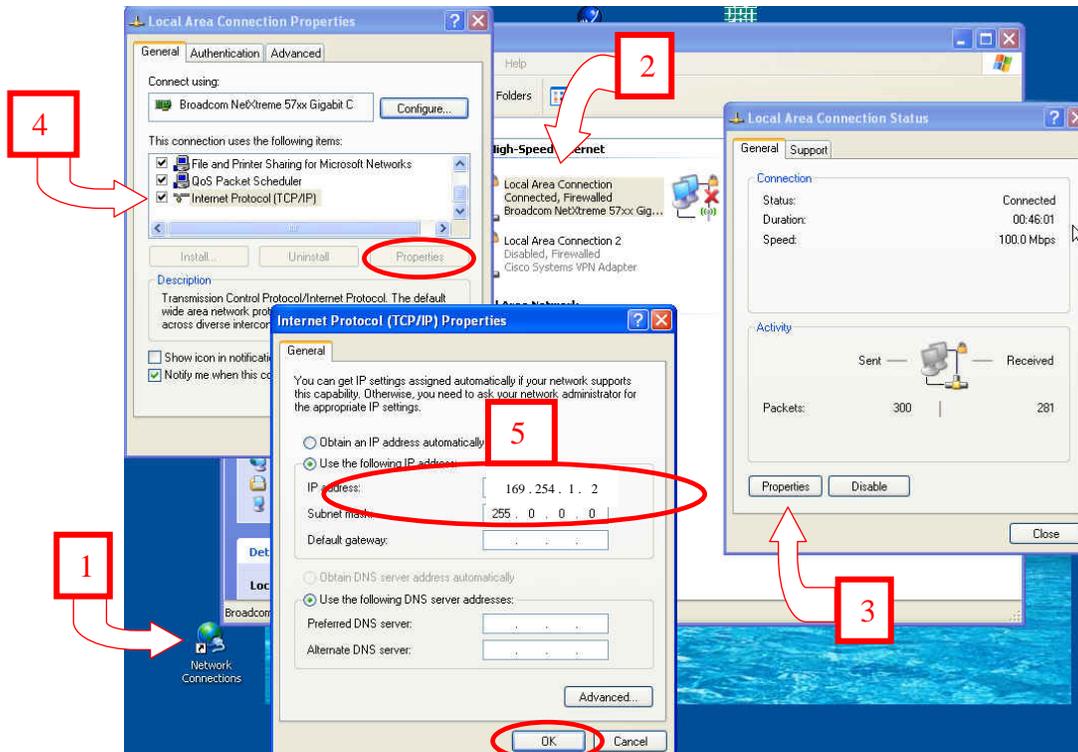
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## 2.4.2 Basic Direct Connection – after factory reset

Verify your computer is not set for DHCP;

1. Open your Network Connections.
2. Select the Local Area Network.
3. Properties.
4. Highlight the Internet Protocol (TCP/IP) and select Properties in that box.
5. Uncheck Obtain an IP address automatically and check Use the following IP address and enter the default IP address of; 169.254.1.2 . Select OK.



Close all dialog boxes.

## 2.4.3 Adapting the N+1 Controller to your Network

Select the Network Configuration window to configure the network settings for the board.

**BE** STX N+1

Overview  
Network Configuration

### Board Configuration

This page allows the configuration of the unit's network settings.

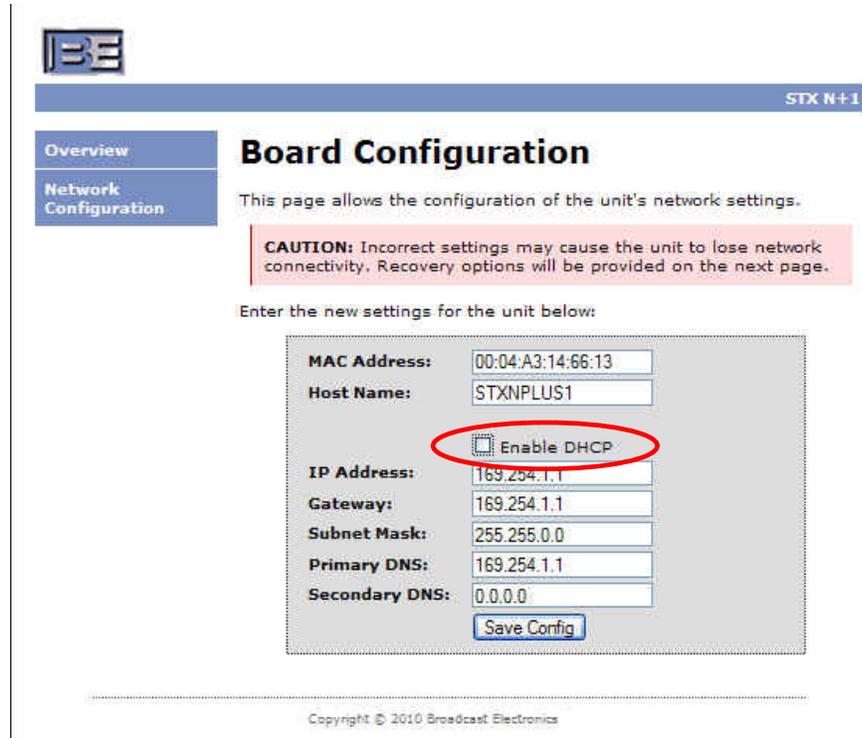
**CAUTION:** Incorrect settings may cause the unit to lose network connectivity. Recovery options will be provided on the next page.

Enter the new settings for the unit below:

MAC Address:	<input type="text" value="00:04:A3:14:66:13"/>
Host Name:	<input type="text" value="STXNPLUS1"/>
	<input checked="" type="checkbox"/> Enable DHCP
IP Address:	<input type="text" value="169.254.1.1"/>
Gateway:	<input type="text" value="169.254.1.1"/>
Subnet Mask:	<input type="text" value="255.255.0.0"/>
Primary DNS:	<input type="text" value="169.254.1.1"/>
Secondary DNS:	<input type="text" value="0.0.0.0"/>

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Un-check DHCP if you want the IP address to be static, then enter the IP address.



**BE** STX N+1

Overview  
Network Configuration

## Board Configuration

This page allows the configuration of the unit's network settings.

**CAUTION:** Incorrect settings may cause the unit to lose network connectivity. Recovery options will be provided on the next page.

Enter the new settings for the unit below:

MAC Address:	00:04:A3:14:66:13
Host Name:	STXNPLUS1
<input type="checkbox"/> Enable DHCP	
IP Address:	169.254.1.1
Gateway:	169.254.1.1
Subnet Mask:	255.255.0.0
Primary DNS:	169.254.1.1
Secondary DNS:	0.0.0.0
<input type="button" value="Save Config"/>	

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NOTE: The MAC address is unique to the N+1 controller and should NOT be changed unless directed to by the factory.

You can enter in a new Host name to identify the site, this is especially helpful if you have more than one N+1 site on your network.

Write down all settings for future reference.

Save your configuration. The device will reboot.

**BE** STX N+1

Overview  
Network Configuration

## Reboot In Progress...

Your settings were successfully saved, and the board is now rebooting to configure itself with the new settings.

Your board is now located at: (IP address)

### Reconnection Instructions

- 1. Did you change the hostname, IP or MAC address?**  
It is necessary to clear the address caches in your web browser and OS. From the command prompt in Windows, enter "nbtstat -R" to clear the hostname cache, close your current web browser, open a new web browser, and then try to access the web address above.
- 2. Did you try the IP address?**  
Try accessing the board directly at the IP address shown on the LCD screen. (ex: enter "http://192.168.5.23/" into your browser). If this fails, then the IP address you set is not reachable. Try the step below.
- 3. Still not working?**  
You can restore factory settings by clearing the board's EEPROM. See user guide.

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After the unit has been configured, disconnect the computer and connect the Ethernet cable to the Ethernet connection on the backup STX transmitter. The N+1 controller will now control the frequency of the backup STX when commanded via the customer remote control.

#### 2.4.4 Connected through a hub or network

Connection through a network or hub is similar to direct connection; however you will have to ensure the network allows communication to go through. When connecting through a network, you have the choice of a DHCP address or a static IP address.

#### 2.4.5 Operation

To change the frequency of the backup STX, provide a pull-down (low) to the pin at J2 that corresponds with the desired frequency.

#### 2.4.6 Reset N+1 to Factory default configuration (clearing the EEPROM)

The following procedure will reset the N+1 controller to factory default settings. This will also reset the IP address of unit, the frequencies and the MAC address. DHCP will also be enabled after reset to factory default.

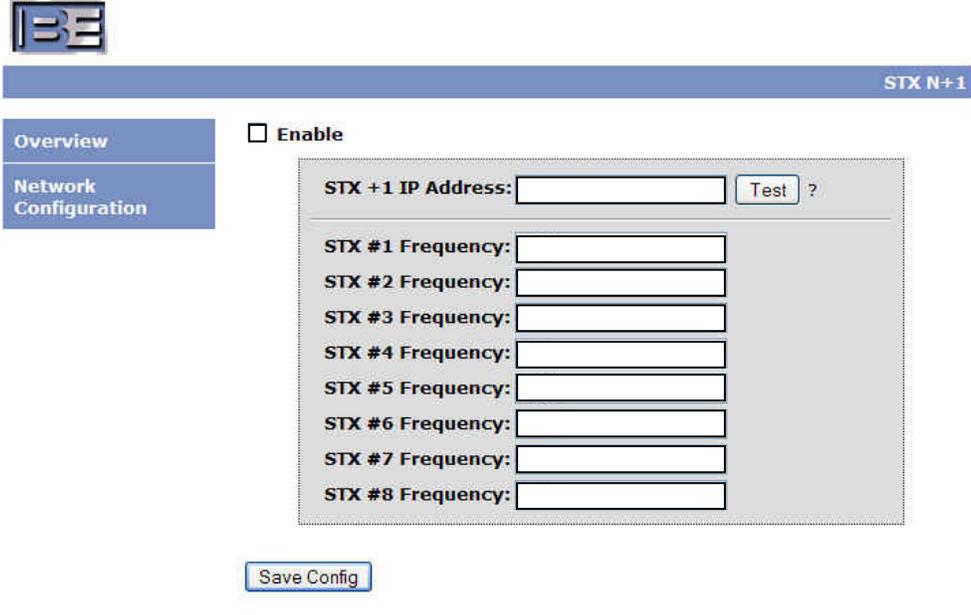
1. Power down the N+1 controller by disconnecting the power supply cord to the unit.
2. Ground pin 9 on J2.
3. Apply power by connecting the power cord to the unit. You will observe all the LED's illuminate, and then start to turn off one at a time.
4. During this count down, ground pin 10 on J2 to reset the controller.



## 2.5 Configuration Log

Use the screen shots below to write down your configuration settings for future reference.

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The screenshot shows the configuration interface for Broadcast Electronics (BE). The interface includes a logo in the top left, a title bar with "STX N+1" on the right, and a navigation menu with "Overview" and "Network Configuration" options. A checkbox labeled "Enable" is present. The main configuration area contains the following fields:

- STX +1 IP Address:  Test ?
- STX #1 Frequency:
- STX #2 Frequency:
- STX #3 Frequency:
- STX #4 Frequency:
- STX #5 Frequency:
- STX #6 Frequency:
- STX #7 Frequency:
- STX #8 Frequency:

A "Save Config" button is located below the configuration fields. At the bottom of the interface, the copyright notice "Copyright © 2010 Broadcast Electronics" is displayed.



**BE** STX N+1

Overview  
Network Configuration

## Board Configuration

This page allows the configuration of the unit's network settings.

**CAUTION:** Incorrect settings may cause the unit to lose network connectivity. Recovery options will be provided on the next page.

Enter the new settings for the unit below:

MAC Address:	<input type="text"/>
Host Name:	<input type="text"/>
	<input type="checkbox"/> Enable DHCP
IP Address:	<input type="text"/>
Gateway:	<input type="text"/>
Subnet Mask:	<input type="text"/>
Primary DNS:	<input type="text"/>
Secondary DNS:	<input type="text"/>
	<input type="button" value="Save Config"/>

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### 3 RF Technical Services Contact Information

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