



## STX N+1 Controller Instruction Manual

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## **STX N+1 Controller**

### **Instruction Manual**

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Telephone: +1 (217) 224-9617

E-Mail: [rfservice@bdcast.com](mailto:rfservice@bdcast.com)

Fax: +1 (217) 224-6258



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Web Site: [www.bdcast.com](http://www.bdcast.com)

## **PARTS –**

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## **MODIFICATIONS –**

Broadcast Electronics, reserves the right to modify the design and specifications of the equipment in this manual without notice. Any modifications shall not adversely affect performance of the equipment so modified.





## SAFETY PRECAUTIONS

PLEASE READ AND OBSERVE ALL SAFETY PRECAUTIONS//

ALL PERSONS WHO WORK WITH OR ARE EXPOSED TO POWER TUBES, POWER TRANSISTORS, OR EQUIPMENT WHICH UTILIZES SUCH DEVICES MUST TAKE PRECAUTIONS TO PROTECT THEMSELVES AGAINST POSSIBLE SERIOUS BODILY INJURY. EXERCISE EXTREME CARE AROUND SUCH PRODUCTS. UNINFORMED OR CARELESS OPERATION OF THESE DEVICES CAN RESULT IN POOR PERFORMANCE, DAMAGE TO THE DEVICE OR PROPERTY, SERIOUS BODILY INJURY, AND POSSIBLY DEATH.



### DANGEROUS HAZARDS EXIST IN THE OPERATION OF POWER TUBES AND POWER TRANSISTORS –

The operation of power tubes and power transistors involves one or more of the following hazards, any one of which, in the absence of safe operating practices and precautions, could result in serious harm to personnel.

- A. **HIGH VOLTAGE** – Normal operating voltages can be deadly. Additional information follows.
- B. **RF RADIATION** – Exposure to RF radiation may cause serious bodily injury possibly resulting in Blindness or death. Cardiac pacemakers may be affected. Additional information follows.
- C. **HOT SURFACES** Surfaces of air-cooled radiators and other parts of tubes can reach temperatures of several hundred degrees centigrade and cause serious burns if touched. Additional information follows.
- D. **RF BURNS** Circuit boards with RF power transistors contain high RF potentials. Do not operate an RF power module with the cover removed.

## HIGH VOLTAGE –

Many power circuits operate at voltages high enough to kill through electrocution. Personnel should always break the primary AC Power when accessing the inside of the transmitter.

## RADIO FREQUENCY RADIATION

Exposure of personnel to RF radiation should be minimized, personnel should not be permitted in the vicinity of open energized RF generating circuits, or RF transmission systems (waveguides, cables, connectors, etc.), or energized antennas. It is generally accepted that exposure to “high levels” of radiation can result in severe bodily injury including blindness. Cardiac pacemakers may be affected.

The effect of prolonged exposure to “low level” RF radiation continues to be a subject of investigation and controversy. It is generally agreed that prolonged exposure of personnel to RF radiation should be limited to an absolute minimum. It is also generally agreed that exposure should be reduced in working areas where personnel heat load is above normal. A 10 mW/cm<sup>2</sup> per one tenth hour average level has been adopted by several U.S. Government agencies including the Occupational Safety and Health Administration (OSHA) as the standard protection guide for employee work environments. An even stricter standard is recommended by the American National Standards Institute which recommends a 1.0 mW/cm<sup>2</sup> per one tenth hour average level exposure between 30 Hz and 300 MHz as the standard employee protection guide (ANSI C95.1–1982).

RF energy must be contained properly by shielding and transmission lines. All input and output RF connections, such as cables, flanges and gaskets must be RF leak proof. Never operate a power tube without a properly matched RF energy absorbing load attached. Never look into or expose any part of the body to an antenna or open RF generating tube or circuit or RF transmission system while energized. Monitor the tube and RF system for RF radiation leakage at regular intervals and after servicing.

## HOT SURFACES –

The power components in the transmitter are cooled by forced-air and natural convection. When handling any components of the transmitter after it has been in operation, caution must always be taken to ensure that the component is cool enough to handle without injury.



## Table of Contents

<b>1</b>	<b>STX N+1 Controller .....</b>	<b>1</b>
1.1	N+1 Overview .....	1
1.2	N+1 Application .....	1
<b>2</b>	<b>Upgrade Preparation .....</b>	<b>1</b>
2.1	Overview / Estimated Completion Time For Upgrade .....	1
2.2	Items / Tools required for the Upgrade Process .....	2
2.3	Installation .....	2
2.4	Configure the N+1 Controller .....	5
2.4.1	Locate Devices .....	5
2.4.2	Basic Direct Connection - after factory reset .....	8
2.4.3	Adapting the N+1 Controller to your Network .....	9
2.4.4	Connected through a hub or network .....	11
2.4.5	Operation .....	11
2.4.6	Reset N+1 to Factory default configuration (clearing the EEPROM).....	12
2.5	Configuration Log .....	12
2.6	Configuration .....	13
<b>3</b>	<b>RF Technical Services Contact Information .....</b>	<b>14</b>
<b>4</b>	<b>BE Part Numbers .....</b>	<b>15</b>
<b>5</b>	<b>Drawings .....</b>	<b>17</b>





# 1 STX N+1 Controller

## 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 LP N+1 Controller. 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 LP N+1 Controller 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 controller can program the backup STX transmitter to change frequency to the faulted transmitter frequency when commanded.

# 2 Upgrade Preparation

NOTE: The STX LP GEN I transmitter must be loaded with Controller version 2.4 or greater. The STX LP GEN II, STXe 60, or STXe 500 transmitter/exciter must be loaded with CPE software package version 1.15 or greater.

## 2.1 Overview / Estimated Completion Time For Upgrade

The STX LP GEN I N+1 Controller kit (979-4002) contains the necessary items to upgrade an STX LP GEN I transmitter with the N+1 function.

The STX LP GEN II, STXe 60, or STXe 500 transmitter/exciter Controller kit (979-4002-002) contains the necessary items to upgrade an STX LP GEN II, STXe 60, or STXe 500 transmitter/exciter with the N+1 function.

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
- Computer with Ethernet connection.

And either one of the following dependent on product model:

- 979-4002 KIT, STX N+1 CONTROLLER OPTION (GEN I) with STX Controller code 2.4 or greater
- 979-4002-002 KIT, STX N+1 CONTROLLER OPTION (GEN II) Controller with CPE software package version 1.15 or greater

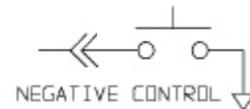
## 2.3 Installation

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 Controller 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



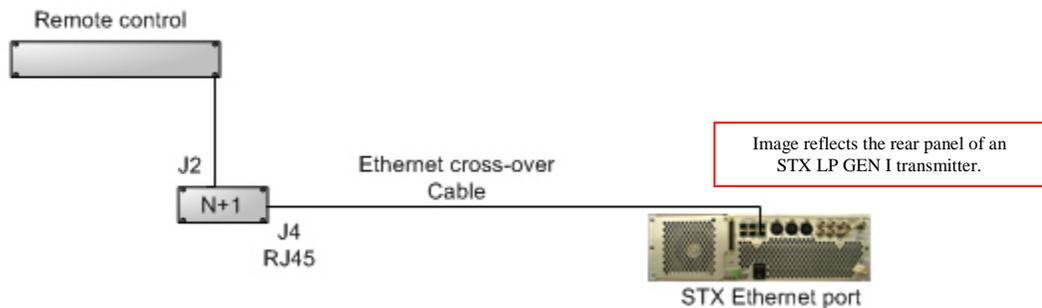
J2-4	STX #4 Frequency	DS4
J2-5	STX #5 Frequency	DS5
J2-6	STX #6 Frequency	DS6
J2-7	STX #7 Frequency	DS7
J2-8	STX #8 Frequency	DS8

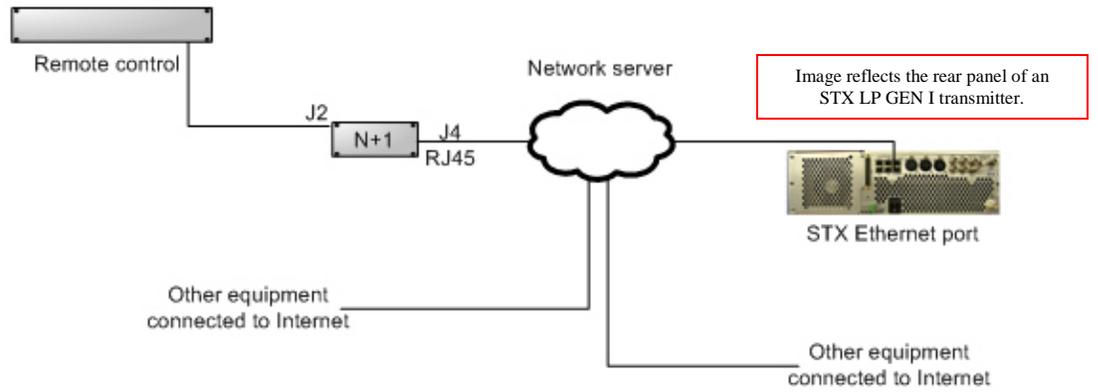
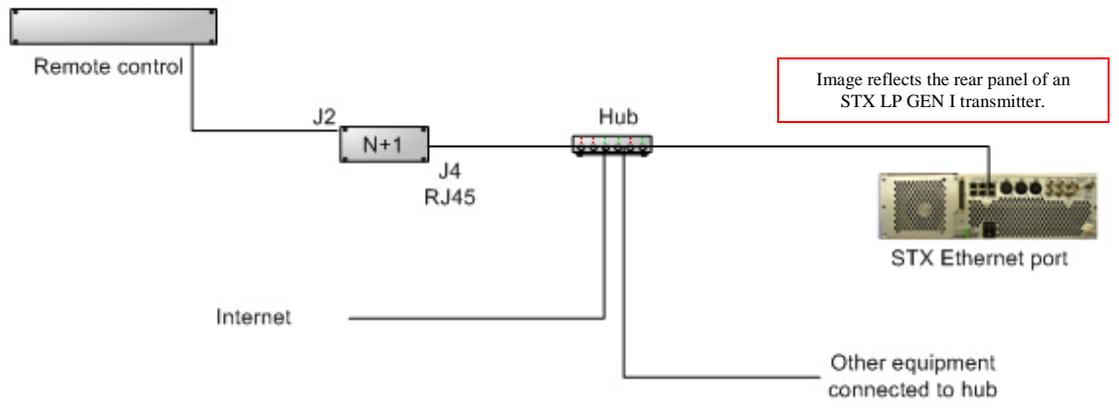
There are two methods of connecting the N+1 controller to the STX-1 backup transmitter via the RJ45 Ethernet connector depending on your facility or layout;

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.

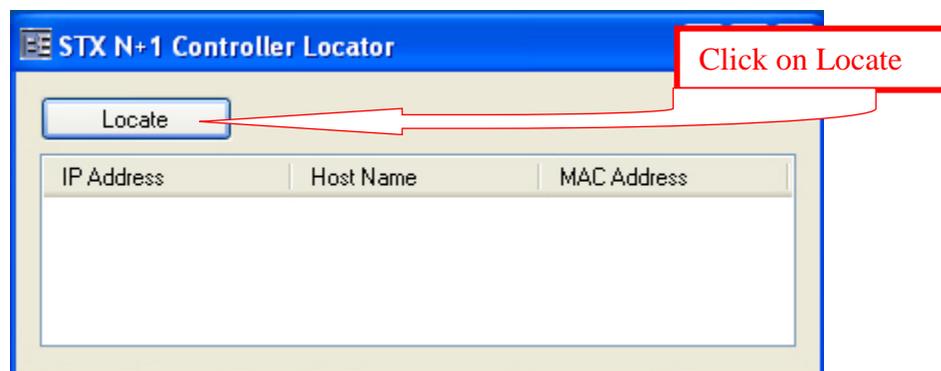
Connect the computer Ethernet to J4 connector of the N+1 Controller. The processor is Auto-Sensing, therefore the connection can be made with a straight-through or cross-over cable.

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.

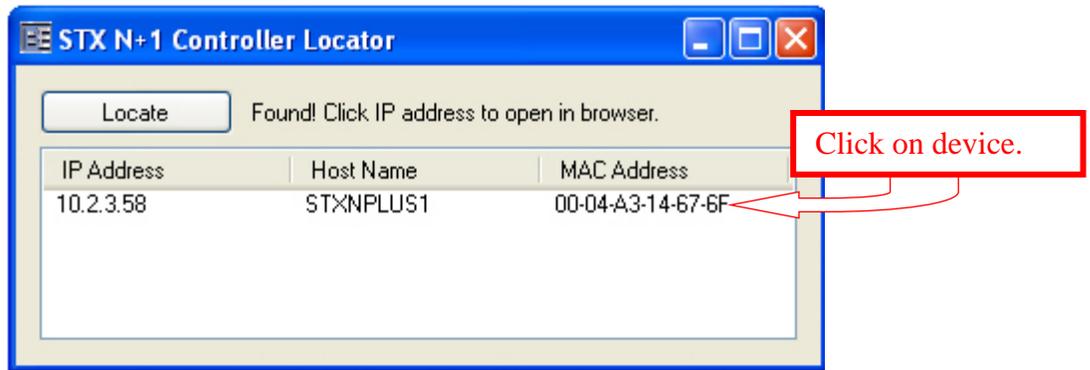
### 2.4.1 Locate Devices

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.

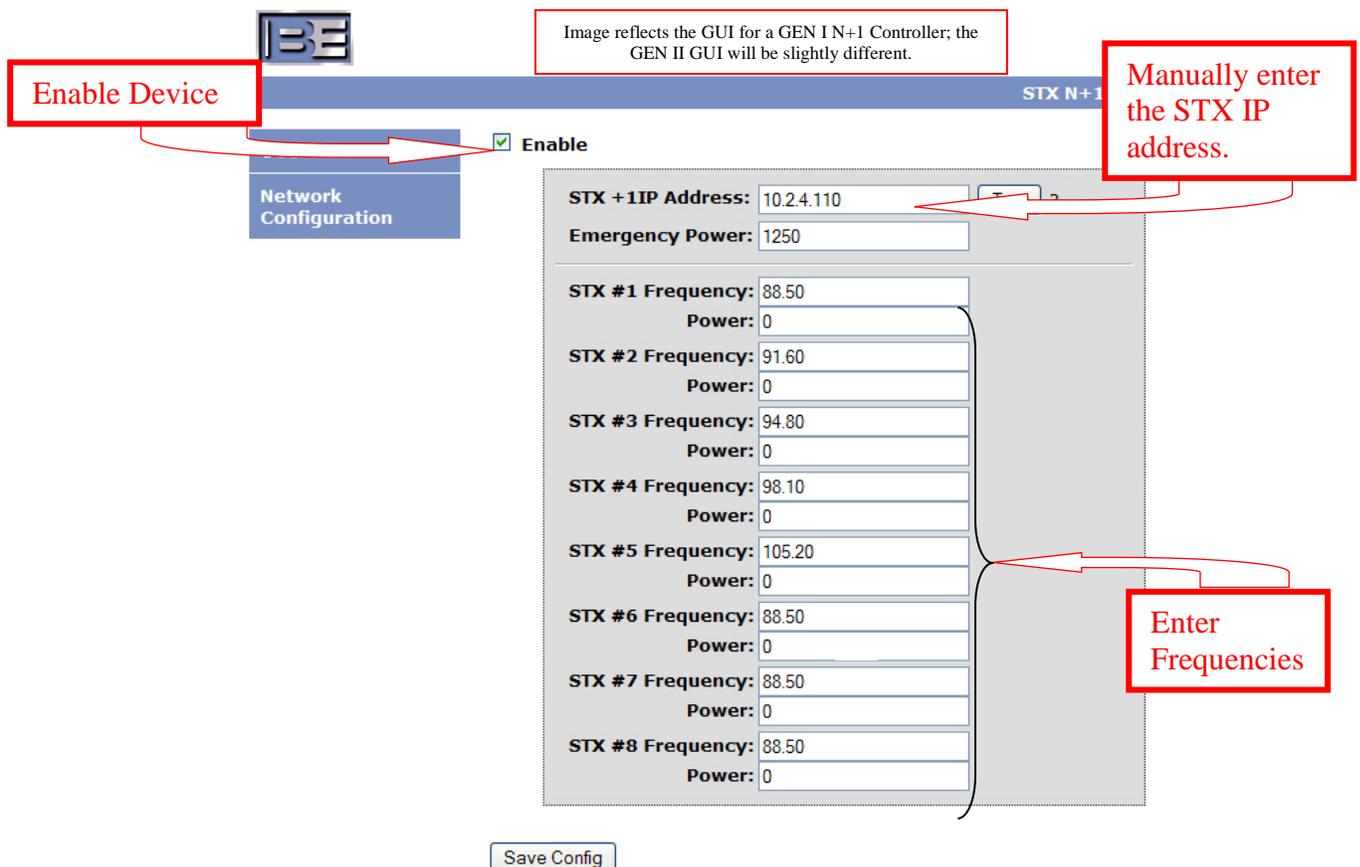
2. Highlight the device and click on it.



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

NOTE: Record the current configuration before making any changes.

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



- 4. Software revision 1.01 includes the ability to set the emergency power level and the desired power level for each frequency. Units can be sent to the factory to be updated with software revision 1.01 for this feature. Standard warranty terms apply.

The screenshot shows the 'STX N+1 Controller' configuration page. At the top left is the BE logo. A blue header bar contains the text 'STX N+1 Controller'. On the left, there are two menu items: 'Overview' and 'Network Configuration'. The main content area has a green checkmark and the text 'Enable'. Below this, there are several input fields: 'STX +1IP Address: 10.2.4.110' with a 'Test ?' button; 'Emergency Power: 1250'; and a list of STX configurations from #1 to #8, each with a 'Frequency' and 'Power' field. The 'Power' fields for all STX entries are currently set to '0'. At the bottom, there is a 'Save Config' button. Three red boxes with arrows point to the 'Emergency Power' field, the 'Power' fields for STX #1 and #2, and the 'Save Config' button. A red text box at the top center contains the note: 'Image reflects the GUI for a GEN I N+1 Controller; the GEN II GUI will be slightly different.'

STX #	Frequency	Power
STX #1	88.50	0
STX #2	91.60	0
STX #3	94.80	0
STX #4	98.10	0
STX #5	105.20	0
STX #6	88.50	0
STX #7	88.50	0
STX #8	88.50	0

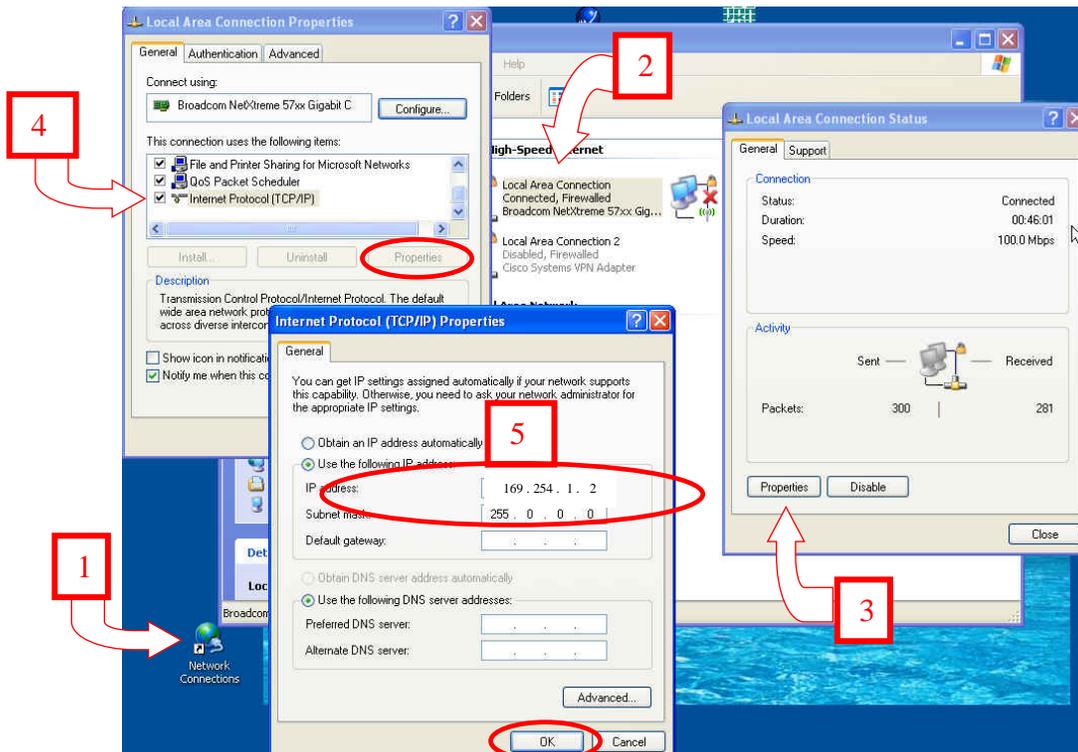
- 5. Save the Configuration.



## 2.4.2 Basic Direct Connection – after factory reset

Verify your computer is not set for DHCP;

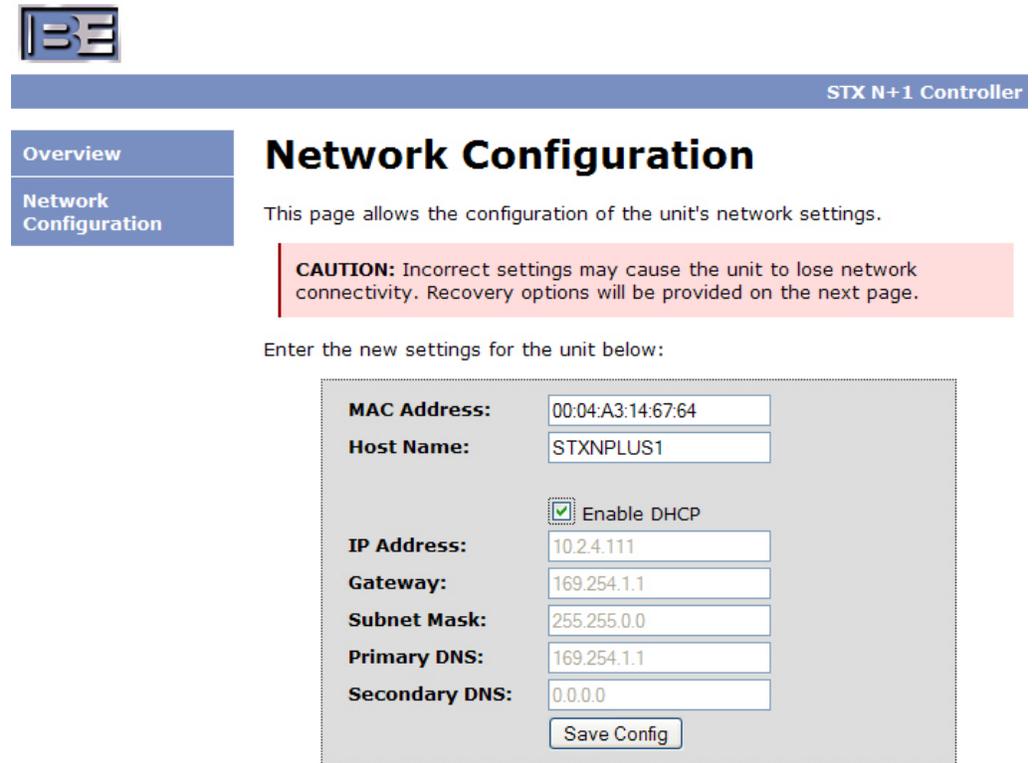
1. Open your Network Connections.
2. Select the Local Area Network.
3. Properties.
4. Highlight the Internet Protocol (TCP/IP) and select Properties in that box.
5. Uncheck Obtain an IP address automatically and check Use the following IP address and enter the default IP address of; 169.254.1.2 . Select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

Overview

Network Configuration

## Network 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:

<b>MAC Address:</b>	00:04:A3:14:67:64
<b>Host Name:</b>	STXNPLUS1
	<input checked="" type="checkbox"/> Enable DHCP
<b>IP Address:</b>	10.2.4.111
<b>Gateway:</b>	169.254.1.1
<b>Subnet Mask:</b>	255.255.0.0
<b>Primary DNS:</b>	169.254.1.1
<b>Secondary DNS:</b>	0.0.0.0
	<input type="button" value="Save Config"/>

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



STX N+1 Controller

Overview

Network  
Configuration

## Network 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:

<b>MAC Address:</b>	<input type="text" value="00:04:A3:14:67:64"/>
<b>Host Name:</b>	<input type="text" value="STXNPLUS1"/>
	<input type="checkbox"/> Enable DHCP
<b>IP Address:</b>	<input type="text" value="10.2.4.111"/>
<b>Gateway:</b>	<input type="text" value="169.254.1.1"/>
<b>Subnet Mask:</b>	<input type="text" value="255.255.0.0"/>
<b>Primary DNS:</b>	<input type="text" value="169.254.1.1"/>
<b>Secondary DNS:</b>	<input type="text" value="0.0.0.0"/>
	<input type="button" value="Save Config"/>

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.



STX N+1 Controller

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: <http://10.2.4.111/>

### 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.

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.

Image reflects the GUI for a GEN I N+1 Controller; the GEN II GUI will be slightly different.

STX N+1 Controller

Overview  
Network Configuration

Enable

STX +1IP Address:  Test ?

Emergency Power:

STX #1 Frequency:   
Power:

STX #2 Frequency:   
Power:

STX #3 Frequency:   
Power:

STX #4 Frequency:   
Power:

STX #5 Frequency:   
Power:

STX #6 Frequency:   
Power:

STX #7 Frequency:   
Power:

STX #8 Frequency:   
Power:

Save Config

## 2.6 Configuration

Image reflects the GUI for a GEN I N+1 Controller; the GEN II GUI will be slightly different.

STX N+1

Overview  
Network Configuration

Enable

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:

Save Config

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STX N+1 Controller

Overview  
Network Configuration

### Network 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:

Host Name:

Enable DHCP

IP Address:

Gateway:

Subnet Mask:

Primary DNS:

Secondary DNS:

Save Config



### 3 RF Technical Services Contact Information

RF Technical Services –

Telephone: (217) 224-9617

E-Mail: [rfservice@bdcast.com](mailto:rfservice@bdcast.com)

Fax: (217) 224-6258

Web: [www.bdcast.com](http://www.bdcast.com)



## 4 BE Part Numbers

This section provides parts lists for the STX N+1 Controller. The parts lists provide descriptions and part numbers of electrical components, assemblies, and selected mechanical parts required for maintenance. Each parts list entry in this section is indexed by reference designators appearing on the applicable schematic diagrams.

This bill of material uses an indented structure to show relationships of parts into sub assemblies. Example; all BOM LEVEL 2 parts are contained in the BOM LEVEL 1 part immediately above it.

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
0	979-4002 <i>or</i> 979-4002-002	KIT, STX N+1 CONTROLLER OPTION		
..1	418-1550-010	CONN, PLUG 10-PIN CAGE CLAMP 3.81MM SPACING	1	
..1	420-0108	SCREW,10-32X.500,S.S. PHH	2	
..1	421-0102	10-32 KEP NUT	2	
..1	421-6008	6-32 KEP NUT	6	
..1	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	2	
..1	471-5362	PLATE, PILOT SYNCHRONIZER	1	
..1	597-4002	INSTRUCTION MANUAL, STX LP (N+1) CONTROLLER	1	
..1	701-0007	ANTISTATIC ZIPLOC BAG 12X12	1	
..1	701-0017	ANTISTATIC ZIPLOC BAG 3X5 4MIL	1	
..1	846-0005	CABLE, CAT5E, SHIELDED LAN CABLE, 5 FT, BLUE	1	
..1	959-0012-300	ASSY,AC-DC CONVTR,100-240VAC,12VDC,500mA,WALL MNT,MULTI PLUG	1	
....2	417-0053	SKT,CONN 641294-1 AMP	2	
....2	418-0701	CONN,HOUSING,2 PIN	1	
....2	540-0012-300	AC-DC CONVERTER,100-240VAC,12VDC,500mA,WALL MOUNT,MULTI PLUG	1	
..1	959-4002	ASSY, STX N+1 CONTROLLER	1	
....2	479-6443	POMONA ELECTRONICS BOX,2906	1	
....2	500-210	Screw,SEMS 4-40x1/4 Phil Pan Head MS Blk Zinc(external lock)	8	
....2	579-4002-101	SOFTWARE, 919-4002 U1	1	
....2	919-4002	PCB, ASSY, STX N+1 CONTROLLER BOARD	1	
.....3	007-0047-050	CAP, CER, 4.7UF, 10%, 50V, X7R, 1210, SMD	2	C16, C17
.....3	007-0100-035	CAP, LYTIC, 100UF, 35V, 20%, LOW IMP, SMD	1	C15
.....3	007-1040-025	CAP,CER,.1UF,+80,-20%,25V,0603,SMD	13	C1, C2, C4, C5, C6, C7, C8, C10, C11, C12, C18, C19, C20
.....3	007-1075-100	CAP, CER CHIP, 10 UF, 10V, 1206	2	C13, C14
.....3	007-1075-161	CAP, CER CHIP, 10 UF, 16V, 0805	2	C3, C9



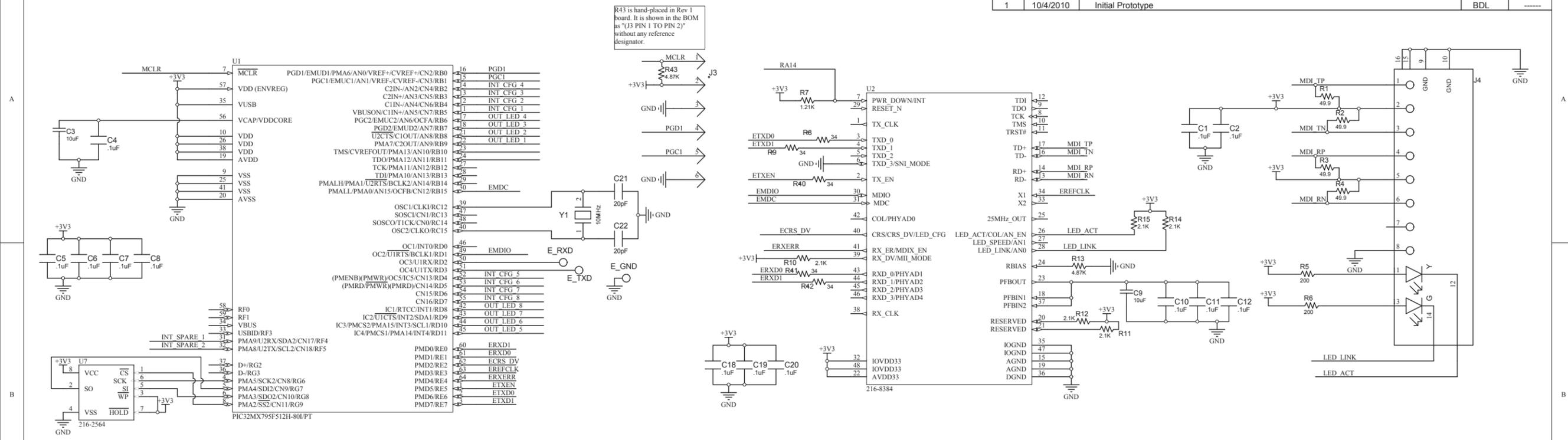
BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	102-2000	RES,CHIP,200 OHM,1/10 W,1% SMD	3	R5, R6, R38
.....3	102-2104	RES,CHIP,2.10K OHM,1/10W,1%	5	R10, R11, R12, R14, R15
.....3	102-2151	RES, 2.15K, 1/10W, 1%, 0805	1	R36
.....3	102-2741	RES,CHIP,2.74K OHMS,1/10W,1%,SMD	10	R17, R18, R19, R20, R21, R22, R23, R24, R25, R26
.....3	102-3010	RES, CHIP, 301 OHMS, 1/10W, 1%, SMD	8	R28, R29, R30, R31, R32, R33, R34, R35
.....3	102-4871	RES,CHIP,4.87K,1/10W,1%,SMD	2	R13,(J3 PIN 1 TO PIN 2)
.....3	102-4991	RES,CHIP,49.9 OHMS,1/10W,1%,SMD	4	R1, R2, R3, R4
.....3	104-0000	RES,CHIP,0 OHM JUMPER,0603,SMD	1	R27
.....3	104-0034	RES,CHIP,34 OHM,1%,1/16W,0603,SMD	6	R8, R9, R16, R40, R41, R42
.....3	104-1001	RES,CHIP,1.0 K OHM,1%,1/16W,0603,SMD	2	R37, R39
.....3	104-1201	resistor,1.21Kohm1/16W,1%,SMD,0603	1	R7
.....3	204-4148	DIODE,MMBD4148,SOT 23,SMD	10	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10
.....3	216-2564	IC, 64KBIT SPI SERIAL EEPROM, 25AA640A	1	U7
.....3	216-3279	IC, MCU 32BIT 512KB FLASH, TQFP-64	1	U1
.....3	216-7002	IC,MOSFET,2N7002LT1,SMD	1	Q1
.....3	216-7414	IC,74AC14,HEX INVERTER,SCHMITT TRIG,SO-14,SMD	2	U3, U5
.....3	216-8384	IC, TXRX ETHERNET PHYTER, LQFP-48	1	U2
.....3	227-0006	IC 6A PROGRAMMABLE DC-DC CONV SMT	1	U6
.....3	320-0603	LED GREEN SMD	9	DS1, DS2, DS3, DS4, DS5, DS6, DS7, DS8, DS9
.....3	360-0167	IND, .56 UH, 6A	1	L1
.....3	390-5000	XTAL, OSC, 50MHZ, +3.3VDC, 50PPM	1	U4
.....3	417-0331	CONN, 6 PIN, SMD	1	J3
.....3	417-0700	CONN,PCB MT,2PIN	1	J1
.....3	417-1555-010	CONN,HEADER,STRAIGHT,10-PIN,3.81MM SPACING,PCB MOUNT	1	J2
.....3	417-4600	CONN,SINGLE PORT,10/100 BASE-TX,RJ45	1	J4
.....3	519-4002	PCB, MACH, STX N+1 CONTROLLER BOARD	1	



## 5 Drawings

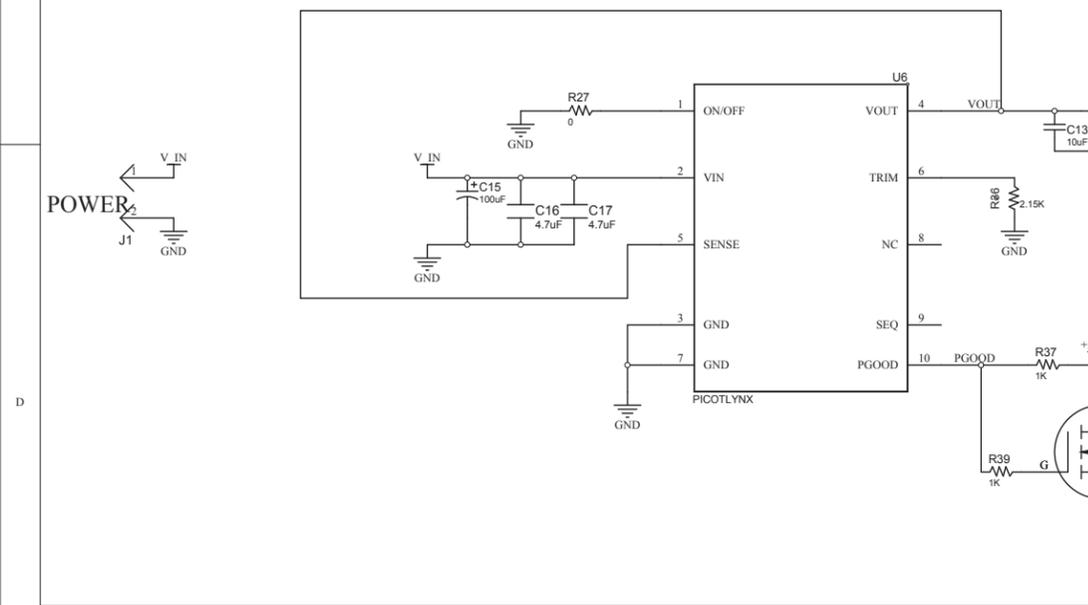
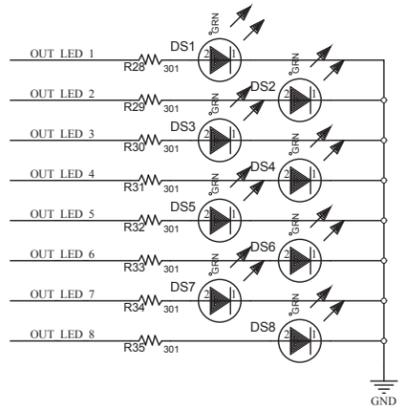
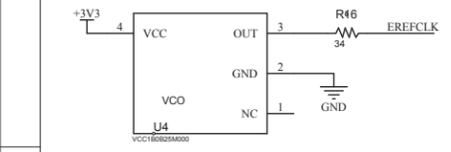
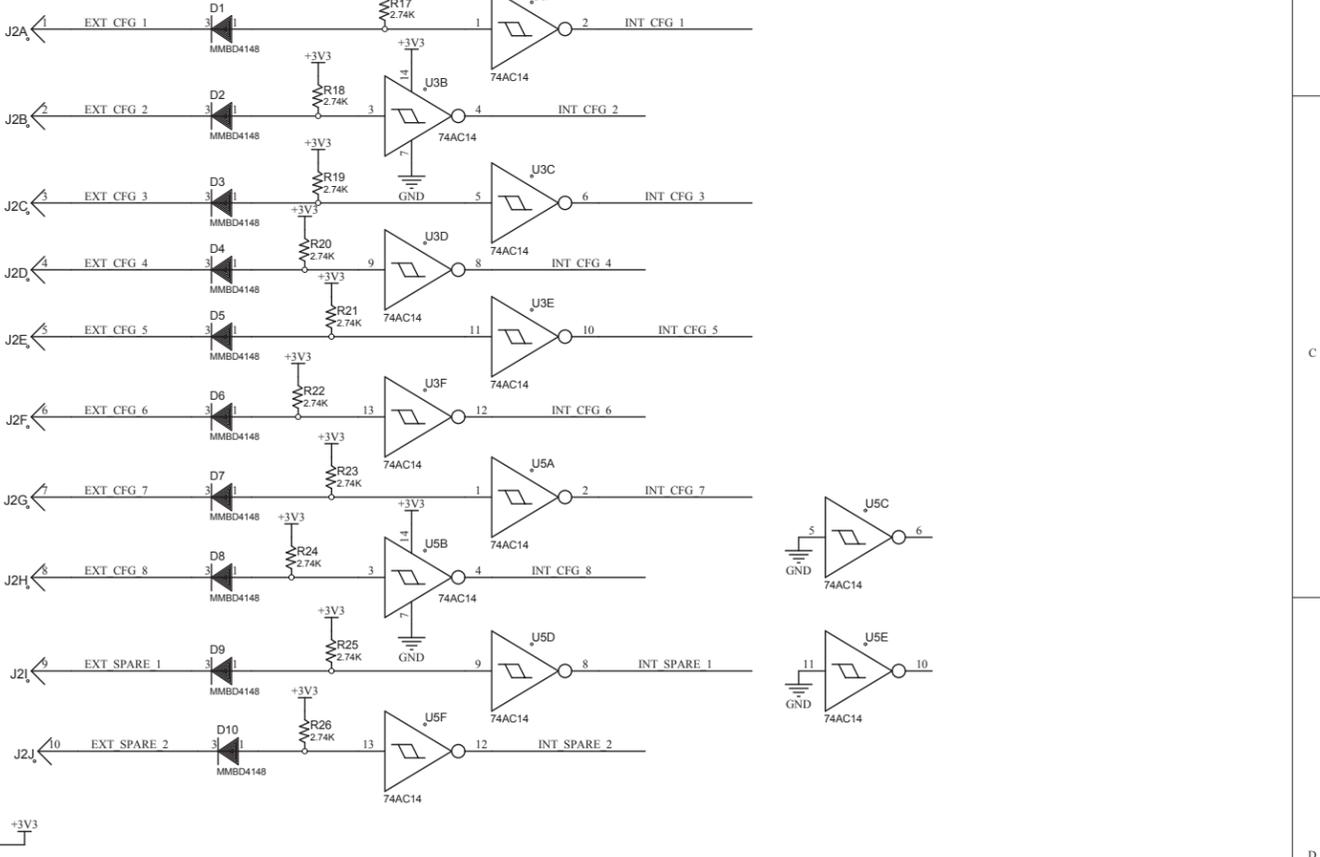


REVISIONS				DRAFTER	ECN
REV	DATE	DESCRIPTION			
1	10/4/2010	Initial Prototype	BDL		



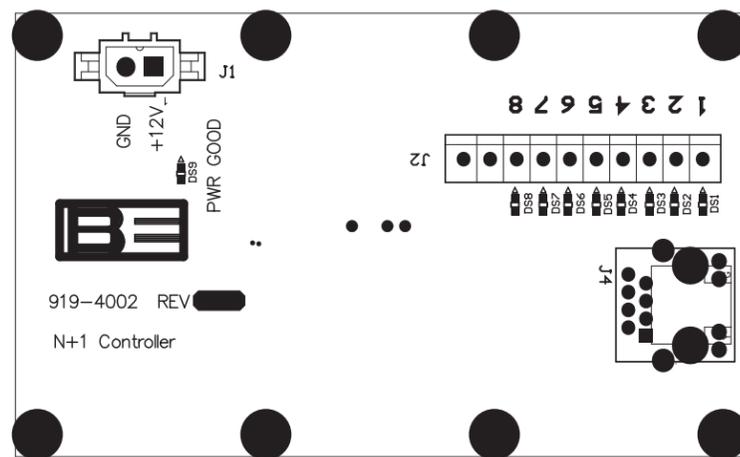
R43 is hand-placed in Rev 1 board. It is shown in the BOM as "J3 PIN 1 TO PIN 2" without any reference designator.

**Discrete inputs**



DESIGNER	B. Lindemann	MATERIAL	
ENGINEER	B. Lindemann	FINISH	
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TITLE	PIC32 Ethernet and I/O		
TYPE	SIZEC	DWG. NO.	REV 1
MODEL	SCALE	SHEET	OF

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	10-4-10	PRE RELEASE	BDL		----



919-4002 Rev 1 Top Silk Screen  
 919-4002 Rev 1 Top Solder Mask

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TOLERANCE (DECIMAL) U.O.S.  
 .X + .030      .XXX + .005  
 .XX + .015      ANGLES + 1

DWN. BY  
**BDL 10/4/10**

DESIGNER(S)  
**10/4/10**

PROJ. LEADER

MFG.

MATERIAL

FINISH

NEXT ASSY.

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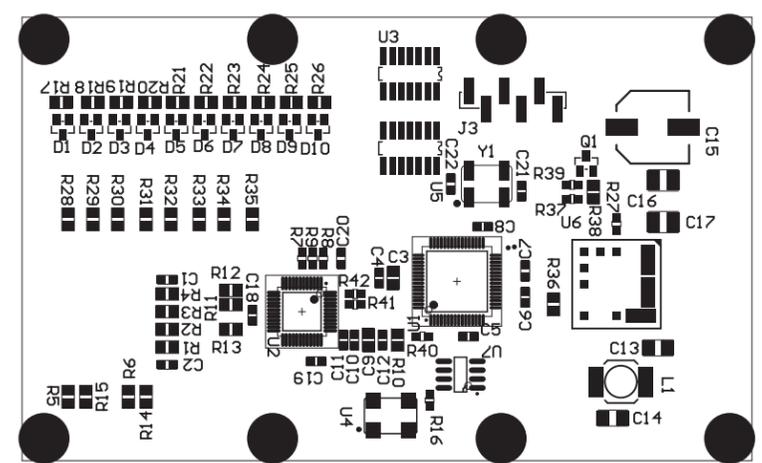
**BE** BROADCAST ELECTRONICS INC.  
 4100 N.24TH ST. P.O.BOX 3606 QUINCY, IL 62305 PH. 217/224-9600  
 TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE  
**PCB ASSEMBLY  
 N+1 CONTROLLER**

TYPE <b>A</b>	SIZE	DWG No. <b>919-4002</b>	REV <b>1</b>
------------------	------	----------------------------	-----------------

MODEL **STX**      SCALE **1/1**      SHEET **1** OF **2**

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	10-4-10	PRE RELEASE	BDL		----



919-4002 Rev 1 Bottom Silk Screen  
 919-4002 Rev 1 Bottom Solder Mask

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	BDL 10/4/10				
	DESIGNER(S)	FINISH	TITLE <b>PCB ASSEMBLY N+1 CONTROLLER</b>		
	10/4/10		TYPE    SIZE    DWG No.    REV <b>A</b> <b>919-4002</b> <b>1</b>		
PROJ. LEADER	MFG.	NEXT ASSY.	MODEL	SCALE	SHEET
			<b>STX</b>	<b>1/1</b>	<b>2 OF 2</b>
TOLERANCE (DECIMAL) U.O.S. .X + .030        .XXX + .005 .XX + .015        ANGLES + 1					