



Broadcast Electronics

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FXi 60, FXi 250 EXCITERS N+1 OPTION Instruction Manual

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Rev B
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FXi 60, FXi 250 EXCITERS N+1 OPTION

Instruction Manual

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Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Claims for loss or damage will not be honored without proper notification of inspection by the carrier.

RF PRODUCT TECHNICAL ASSISTANCE, REPAIR SERVICE, PARTS -

Technical assistance is available from Broadcast Electronics by letter, prepaid telephone or E-mail. Equipment requiring repair or overhaul should be sent by common carrier, prepaid, insured, and well protected. If proper shipping materials are not available, contact the RF Technical Services Department for a shipping container. Do not mail the equipment. We can assume no liability for inbound damage, and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact the RF Technical Services Department for a Return Authorization.

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RF TECHNICAL SERVICES -

Telephone: +1 (217) 224-9617

E-Mail: rfservice@bdcast.com

Fax: +1 (217) 224-6258

FACILITY CONTACTS -

Broadcast Electronics, Quincy Facility

4100 N. 24th St. P.O. BOX 3606

Quincy, Illinois 62305

Telephone: +1 (217) 224-9600

Fax: +1 (217) 224-6258

General E-Mail: bdcast@bdcast.com

Web Site: www.bdcast.com

PARTS -

Telephone: +1 (217) 224-9617

E-Mail: parts@bdcast.com



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Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. All returned merchandise must be sent freight prepaid and properly insured by the customer.

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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.

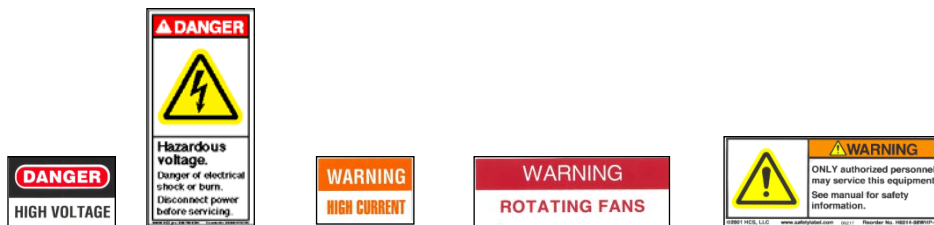




SAFETY PRECAUTIONS

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 IPA unit.

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/cm² 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/cm² 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 IPA unit are cooled by forced-air and natural convection. When handling any components of the IPA unit 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

1	Overview.....	1
1.1	INSTALLATION.....	1
2	N+1 PROGRAMMING.....	9
2.1	CARRIER FREQUENCY PROGRAMMING.....	10
2.2	N+1 FREQUENCY SELECTION.....	11
3	BE Part Numbers.....	13
4	RF Technical Services Contact Information.....	15
5	Drawings.....	15



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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

The FXi exciter can be equipped with an optional N+1 circuit board. The circuit board allows the FXi to operate as part of an N+1 transmitter in an automatic transmitter backup system, refer to Figure 4-1. The N+1 circuit board provides the FXi with the ability to operate at one of eight pre-programmed operating frequencies for automatic backup transmitter operation.

1.1 INSTALLATION.



WARNING

ENSURE ALL PRIMARY POWER IS DISCONNECT FROM THE EXCITER BEFORE ATTEMPTING EQUIPMENT MAINTENANCE.

WARNING

Installation of the N+1 circuit board into the FXi Exciter is accomplished by: 1) removing the N+1 cover plate, 2) installing the N+1 circuit board, 3) connecting the interfacing cable to the controller circuit board, and 4) interfacing the N+1 circuit board to the N+1 system. Refer to Figure 1-1 and install the N+1 circuit board. Once power is restored to the FXi, successful installation of the N+1 circuit board is indicated by the enabling of the N+1 menus. Refer to Figure 1-2.

The FXi exciter within the N+1 transmitter has the ability to accept RBDS/RDS data; the data is the same regardless of the selected frequency.

1.1.1 WIRING.

The circuit board is equipped with a 25-pin D-type interface connector (refer to Figure 1-1). The connector must be interfaced to the N+1 system. The interface circuit board is designed to provide both positive and negative control for frequency select commands and remote frequency select indications. For details refer to Table 1-1. Jumper J5 programs the select commands for positive or negative control operation. Jumper J4 programs the frequency select indications for positive or negative active operation.

Table 1-1. Setting Control Polarity

J-4	IN (1-2)	Provides High (3.3 Vdc) on selected TALLY indicator output
	OUT	Provides active Low on selected TALLY indicator output
J5	1-2 (toward rear)	Requires active Low signal on FREQ line which selects TX frequency
	2-3 (toward front)	Requires active High signal on FREQ line which selects TX frequency

The following text presents a description of the control functions. Refer to the following text and Figure 1-1 to interface the N+1 circuit board to the N+1 system controller. If the user's selection circuitry accidentally selects more than one frequency, the lower-numbered frequency will be selected.

- **FREQUENCY 1 SELECT.** The frequency 1 select function is located at J1-1. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 1 operation.

- **FREQUENCY 2 SELECT.** The frequency 2 select function is located at J1-2. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 2 operation.
- **FREQUENCY 3 SELECT.** The frequency 3 select function is located at J1-3. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 3 operation.
- **FREQUENCY 4 SELECT.** The frequency 4 select function is located at J1-4. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 4 operation.
- **FREQUENCY 5 SELECT.** The frequency 5 select function is located at J1-14. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 5 operation.
- **FREQUENCY 6 SELECT.** The frequency 6 select function is located at J1-15. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 6 operation.
- **FREQUENCY 7 SELECT.** The frequency 7 select function is located at J1-16. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 7 operation.
- **FREQUENCY 8 SELECT.** The frequency 8 select function is located at J1-17. Depending on the programming of J5, a momentary or sustained contact to ground or +5V is required to enable frequency 8 operation.



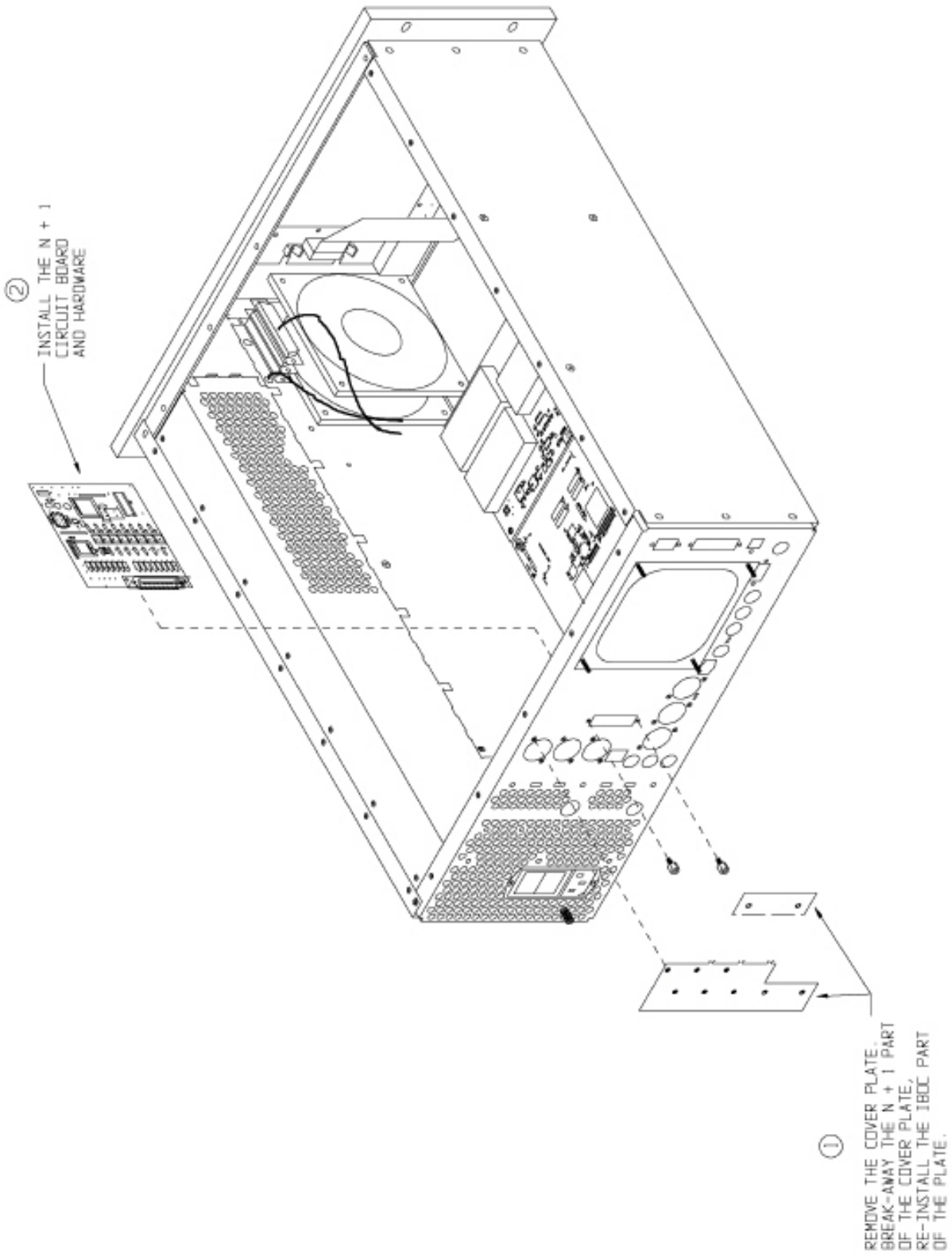
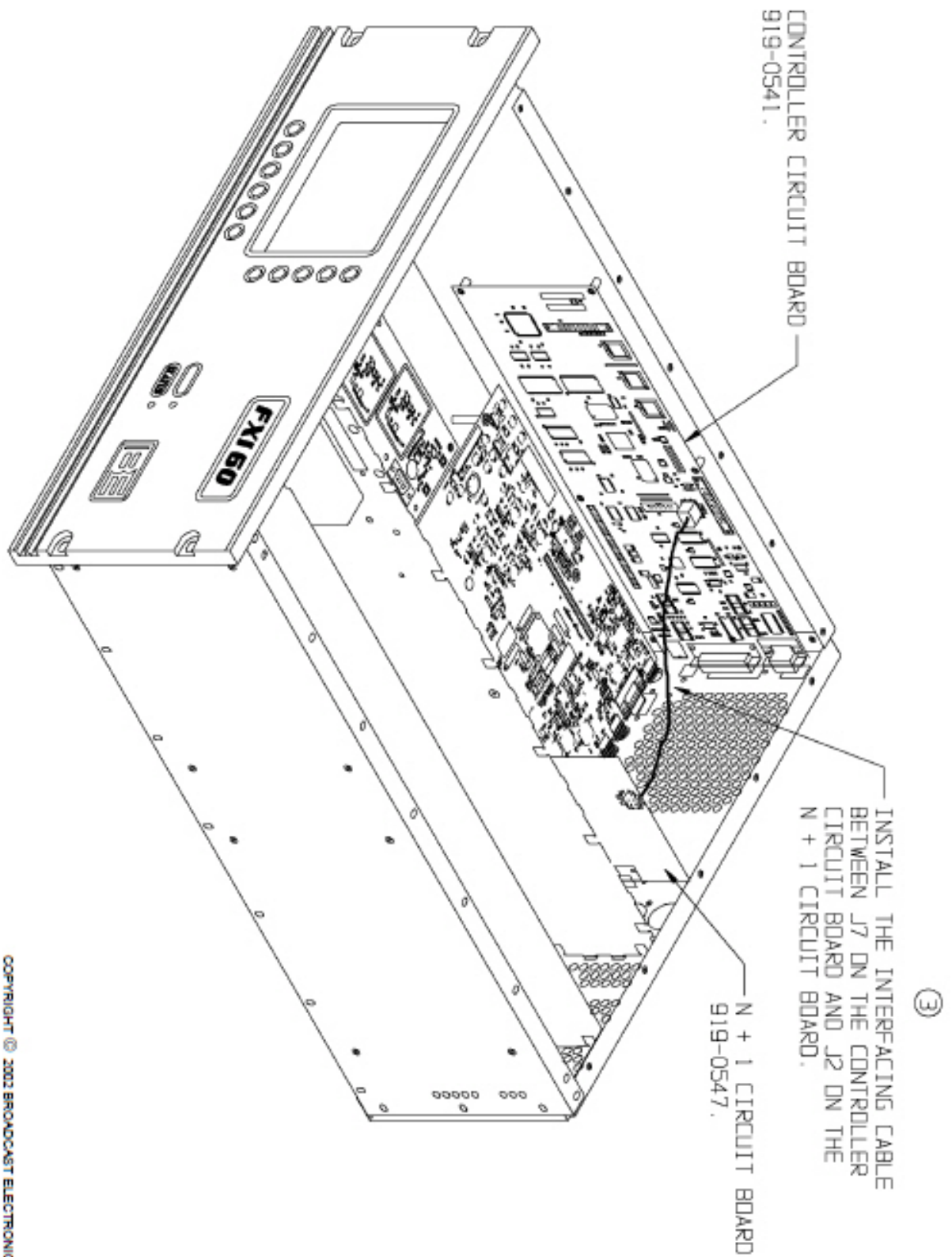


Figure 1-1. N+1 CIRCUIT BOARD INSTALLATION AND CONTROL INTERFACING
(sheet 1 of 6)



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Figure 1-1. N+1 CIRCUIT BOARD INSTALLATION AND CONTROL INTERFACING
(sheet 2 of 6)



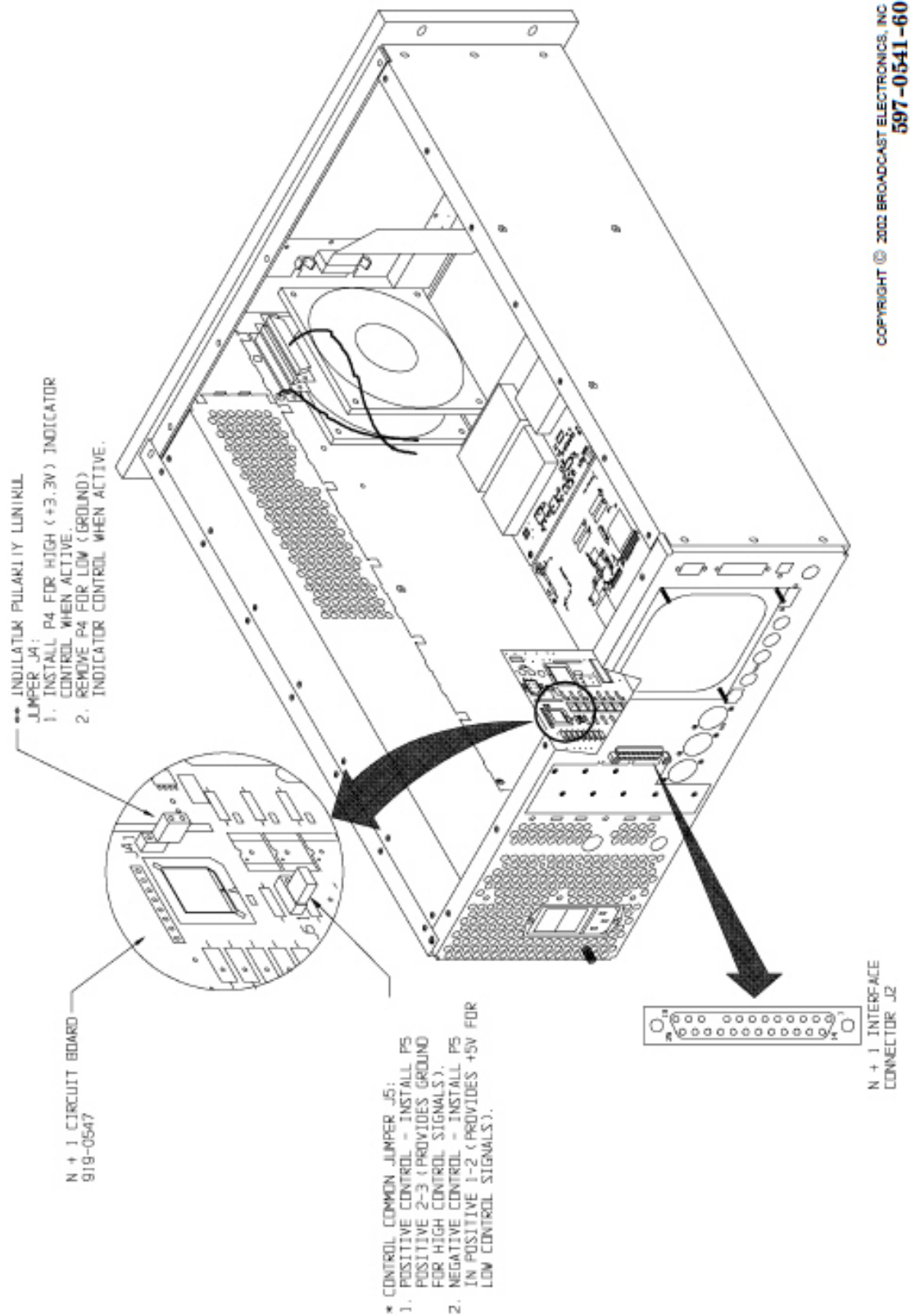


Figure 1-1. N+1 CIRCUIT BOARD INSTALLATION AND CONTROL INTERFACING
(sheet 3 of 6)

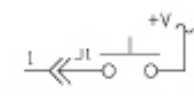
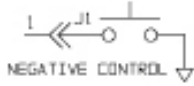
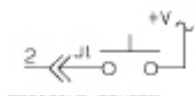
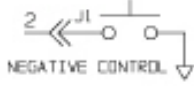
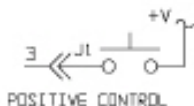

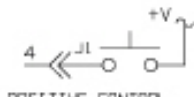
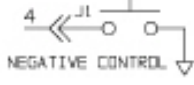




① FREQUENCY 1 SELECT	<p>*FREQUENCY 1 COMMAND</p> <p>POSITIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO +5 TO +15 VDC REQUIRED TO SELECT FREQUENCY 1.</p>	 <p>POSITIVE CONTROL</p>
	<p>NEGATIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO GROUND REQUIRED TO SELECT FREQUENCY 1.</p>	 <p>NEGATIVE CONTROL</p>
② FREQUENCY 2 SELECT	<p>*FREQUENCY 2 COMMAND</p> <p>POSITIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO +5 TO +15VDC REQUIRED TO SELECT FREQUENCY 2.</p>	 <p>POSITIVE CONTROL</p>
	<p>NEGATIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO GROUND REQUIRED TO SELECT FREQUENCY 2.</p>	 <p>NEGATIVE CONTROL</p>
③ FREQUENCY 3 SELECT	<p>*FREQUENCY 3 COMMAND</p> <p>POSITIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO +5 TO +15 VDC REQUIRED TO SELECT FREQUENCY 3.</p>	 <p>POSITIVE CONTROL</p>
	<p>NEGATIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO GROUND REQUIRED TO SELECT FREQUENCY 3.</p>	 <p>NEGATIVE CONTROL</p>
④ FREQUENCY 4 SELECT	<p>*FREQUENCY 4 COMMAND</p> <p>POSITIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO +5 TO +15VDC REQUIRED TO SELECT FREQUENCY 4.</p>	 <p>POSITIVE CONTROL</p>
	<p>NEGATIVE CONTROL - MOMENTARY OR SUSTAINED CONTACT TO GROUND REQUIRED TO SELECT FREQUENCY 4.</p>	 <p>NEGATIVE CONTROL</p>
⑤ TRANSMIT DATA OUT	TRANSMIT DATA	TRANSMIT DATA OUT
⑥ RECEIVE DATA IN	RECEIVE DATA	RECEIVE DATA IN
⑦ +5V	+5V DC USED FOR REMOTE CONTROL	+5V DC
⑧ GROUND	GROUND	
⑩ FREQUENCY 1 INDICATOR	<p>** FREQUENCY 1 INDICATOR</p> <p>ACTIVE HIGH - HIGH (+3.3VDC) WHEN ACTIVE.</p>	
	<p>ACTIVE LOW - LOW (GROUND) WHEN ACTIVE.</p>	
⑪ FREQUENCY 2 INDICATOR	<p>** FREQUENCY 2 INDICATOR</p> <p>ACTIVE HIGH - HIGH (+5VDC) WHEN ACTIVE.</p>	
	<p>ACTIVE LOW - LOW (GROUND) WHEN ACTIVE.</p>	

Figure 1-1. N+1 CIRCUIT BOARD INSTALLATION AND CONTROL INTERFACING
(sheet 4 of 6)

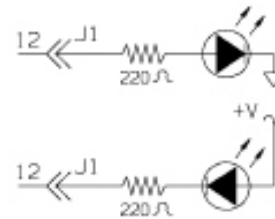
J1 PIN DESCRIPTIONS

⑫ FREQUENCY 3 INDICATOR

** FREQUENCY 3 INDICATOR

ACTIVE HIGH - HIGH (+5VDC)
WHEN ACTIVE.

ACTIVE LOW - LOW (GROUND)
WHEN ACTIVE.

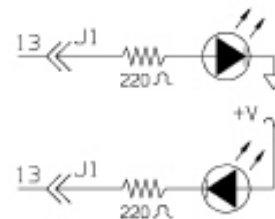


⑬ FREQUENCY 4 INDICATOR

** FREQUENCY 4 INDICATOR

ACTIVE HIGH - HIGH (+5VDC)
WHEN ACTIVE.

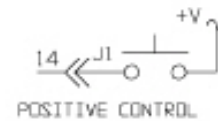
ACTIVE LOW - LOW (GROUND)
WHEN ACTIVE.

⑭ FREQUENCY 5
SELECT

*FREQUENCY 5 COMMAND

POSITIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO +5 TO +15 VDC
REQUIRED TO SELECT FREQUENCY 5.

NEGATIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO GROUND
REQUIRED TO SELECT FREQUENCY 5.

⑮ FREQUENCY 6
COMMAND

*FREQUENCY 6 COMMAND

POSITIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO +5 TO +15VDC
REQUIRED TO SELECT FREQUENCY 6.

NEGATIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO GROUND
REQUIRED TO SELECT FREQUENCY 6.

⑯ FREQUENCY 7
SELECT

*FREQUENCY 7 COMMAND

POSITIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO +5 TO +15 VDC
REQUIRED TO SELECT FREQUENCY 7.

NEGATIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO GROUND
REQUIRED TO SELECT FREQUENCY 7.

⑰ FREQUENCY 8
COMMAND

*FREQUENCY 8 COMMAND

POSITIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO +5 TO +15VDC
REQUIRED TO SELECT FREQUENCY 8.

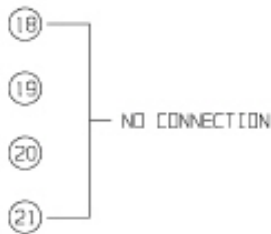
NEGATIVE CONTROL - MOMENTARY OR
SUSTAINED CONTACT TO GROUND
REQUIRED TO SELECT FREQUENCY 8.



Figure 1-1. N+1 CIRCUIT BOARD INSTALLATION AND CONTROL INTERFACING

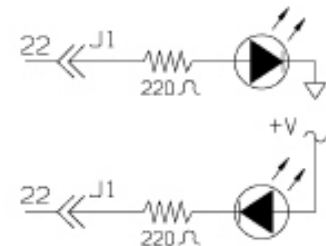
(sheet 5 of 6)

J1 PIN DESCRIPTIONS



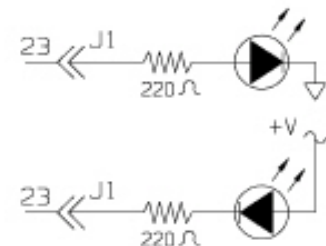
22 FREQUENCY 5 INDICATOR ** FREQUENCY 5 INDICATOR
ACTIVE HIGH - HIGH (+5VDC)
WHEN ACTIVE.

ACTIVE LOW - LOW (GROUND)
WHEN ACTIVE.



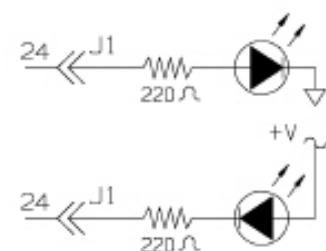
23 FREQUENCY 6 INDICATOR ** FREQUENCY 6 INDICATOR
ACTIVE HIGH - HIGH (+5VDC)
WHEN ACTIVE.

ACTIVE LOW - LOW (GROUND)
WHEN ACTIVE.



24 FREQUENCY 7 INDICATOR ** FREQUENCY 7 INDICATOR
ACTIVE HIGH - HIGH (+5VDC)
WHEN ACTIVE.

ACTIVE LOW - LOW (GROUND)
WHEN ACTIVE.



25 FREQUENCY 8 INDICATOR ** FREQUENCY 8 INDICATOR
ACTIVE HIGH - HIGH (+5VDC)
WHEN ACTIVE.

ACTIVE LOW - LOW (GROUND)
WHEN ACTIVE.

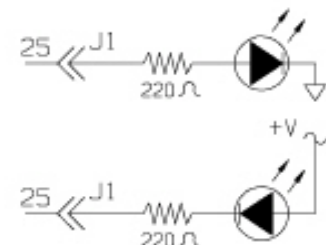


Figure 1-1. N+1 CIRCUIT BOARD INSTALLATION AND CONTROL INTERFACING
(sheet 6 of 6)



- **FREQUENCY 1 ON INDICATION.** The frequency 1 on indicator is located at J1-10. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 1 is selected.
- **FREQUENCY 2 ON INDICATION.** The transmitter 2 on indicator is located at J1-11. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 2 is selected.
- **FREQUENCY 3 ON INDICATION.** The transmitter 3 on indicator is located at J1-12. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 3 is selected.
- **FREQUENCY 4 ON INDICATION.** The transmitter 4 on indicator is located at J1-13. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 4 is selected.
- **FREQUENCY 5 ON INDICATION.** The transmitter 5 on indicator is located at J1-22. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 5 is selected.
- **FREQUENCY 6 ON INDICATION.** The transmitter 6 on indicator is located at J1-23. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 6 is selected.
- **FREQUENCY 7 ON INDICATION.** The transmitter 7 on indicator is located at J1-24. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 7 is selected.
- **FREQUENCY 8 ON INDICATION.** The transmitter 8 on indicator is located at J1-25. Depending on the programming of J4, the indicator will go HIGH (+3.3 VDC) or LOW (ground) when frequency 8 is selected.

1.1.2 +5VDC.

+5VDC is located at J1-7. The voltage is provided for the connection of remote switches. Current should not exceed 100 milliamperes.

1.1.3 GROUND.

Ground is located at J1-8 and J1-9. The ground terminal is provided for the connection of remote switches and indicators.

1.1.4 NO CONNECTION.

No connection at J1-5, J1-6, and J1-18 thru J1-21.

2 N+1 PROGRAMMING.

When the optional N+1 circuit board is installed in the unit, the N+1 menus in the FXI user interface will be enabled. These menus allow the operator to program and select the N+1 frequencies. The following text presents the N+1 menus.



2.1 CARRIER FREQUENCY PROGRAMMING.

The FXi carrier frequency is programmed by the Freq menu (refer to Figure 1-2). Up to 8 frequencies can be programmed in 10 kHz increments from 87.0 MHz to 108.9 MHz. If a data entry error occurs, depress ENTER at any time to back up to the previous menu. The data will not be saved until the correct number of digits are entered and the ENTER button is depressed. Enter the carrier frequency as follows.

Figure 1-1. FREQUENCY MENU WITH N+1 OPTION.

1. On the Main Menu, depress FREQ.
The Frequency Menu will appear (refer to Figure 1-2).
2. Depress PROG N+1 FREQ.
The Program N+1 Carrier Frequency Menu will appear (refer to Figure 1-3).

Figure 1-2. N+1 CARRIER FREQUENCY SELECT MENU.



3. Depress **FREQ 1**, **FREQ 2**, **FREQ 3**, **FREQ 4**, **FREQ 5**, **FREQ 6**, **FREQ 7**, or **FREQ 8** to select the frequency to be programmed.

The Program Carrier Frequency Menu will appear (refer to Figure 1-4).

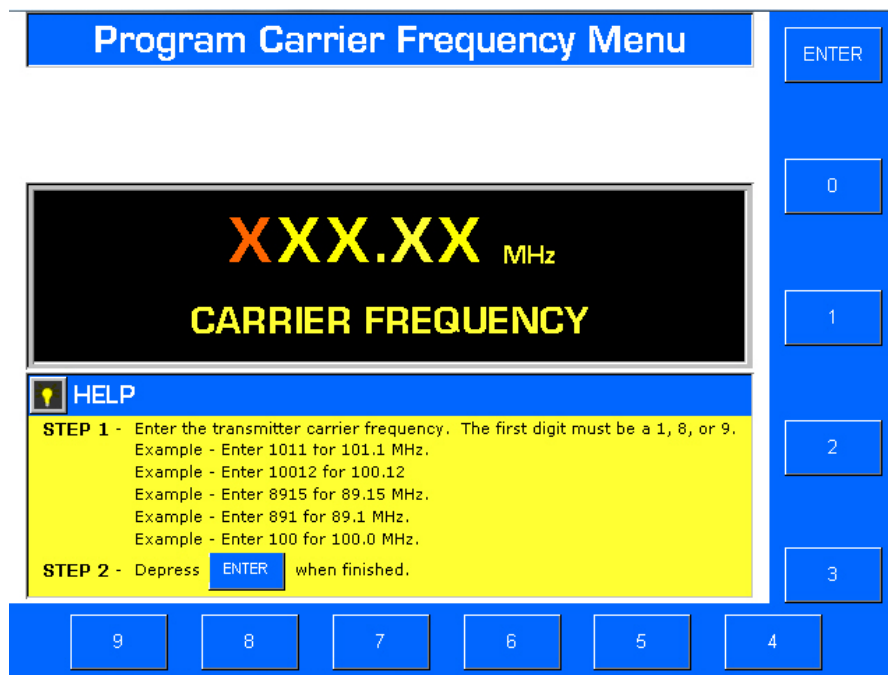


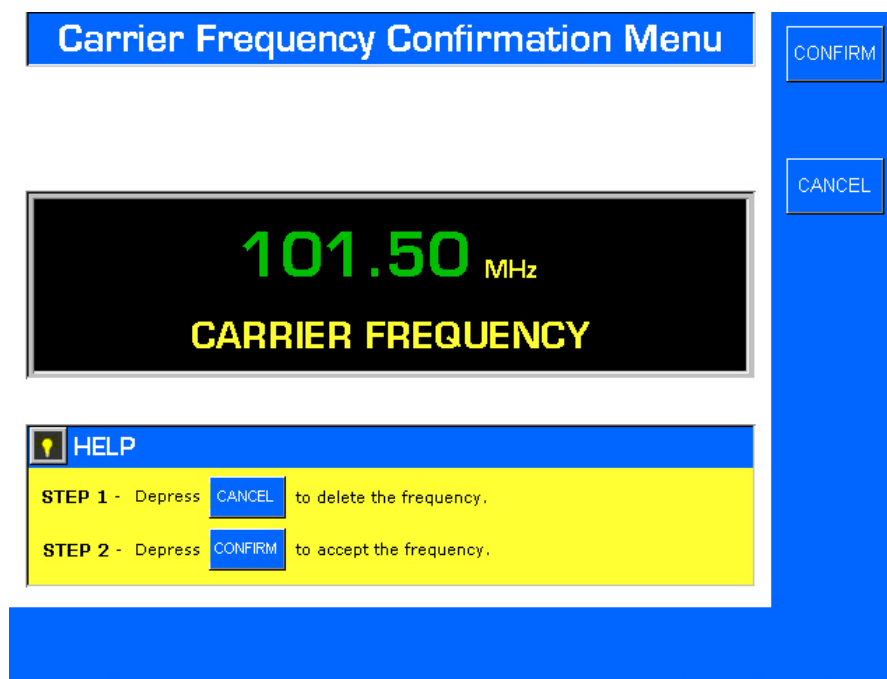
Figure 1-3. PROGRAM CARRIER FREQUENCY MENU

4. For the first digit, enter a 1, 8, or 9.
The menu automatically adjusts the digits in response to the data entered.
5. Using the menu numeric keys, enter the remaining digits in the carrier frequency. If a data entry error occurs, depress **ENTER** at any time to back up to the previous menu. The data will not be saved until the correct number of digits are entered and the **ENTER** button is depressed.
6. When finished, depress **ENTER**.
The Carrier Frequency Confirmation Menu will appear (refer to Figure 1-5).
7. Depress **CONFIRM** to save the entered carrier frequency or **CANCEL** to delete the frequency.
The Frequency Menu will appear.

2.2 N+1 FREQUENCY SELECTION.

The N+1 operating frequency can be manually selected using the N+1 **FREQ SELECT** button (refer to Figure 1-2). Select the active N+1 frequency as follows:

1. On the Main Menu, depress **FREQ**.
The Frequency Menu will appear (refer to Figure 1-2).
2. Depress **N+1 FREQ SELECT**.
The Select N+1 Carrier Frequency Menu will appear (refer to Figure 1-6).
3. Depress **SELECT FREQ 1**, **SELECT FREQ 2**, **SELECT FREQ 3**, **SELECT FREQ 4**, **SELECT FREQ 5**, **SELECT FREQ 6**, **SELECT FREQ 7**, or **SELECT FREQ 8** to select the desired operating frequency.
The selected frequency will appear in the carrier frequency status display on the Select N+1 Carrier Frequency Menu.



Carrier Frequency Confirmation Menu

101.50 MHz
CARRIER FREQUENCY

HELP

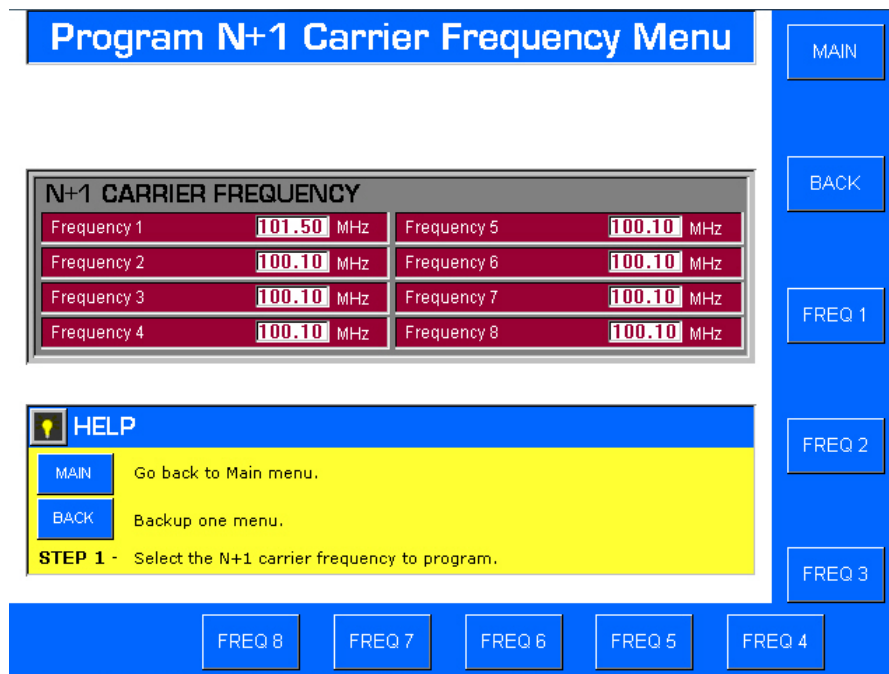
STEP 1 - Depress **CANCEL** to delete the frequency.

STEP 2 - Depress **CONFIRM** to accept the frequency.

CONFIRM

CANCEL

Figure 1-4. CARRIER FREQUENCY CONFIRM MENU.



Program N+1 Carrier Frequency Menu

N+1 CARRIER FREQUENCY

Frequency 1	101.50 MHz	Frequency 5	100.10 MHz
Frequency 2	100.10 MHz	Frequency 6	100.10 MHz
Frequency 3	100.10 MHz	Frequency 7	100.10 MHz
Frequency 4	100.10 MHz	Frequency 8	100.10 MHz

HELP

MAIN Go back to Main menu.

BACK Backup one menu.

STEP 1 - Select the N+1 carrier frequency to program.

MAIN

BACK

FREQ 1

FREQ 2

FREQ 3

FREQ 8

FREQ 7

FREQ 6

FREQ 5

FREQ 4

Figure 1-5. PROGRAM N+1 CARRIER FREQUENCY MENU

3 BE Part Numbers

This section provides parts lists for the FXi60/250 Exciter N+1 Option. 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	979-0547-001	KIT, N+1 OPTION, FXi-60/250		
..1	400-0600	STRIP, QUIET SHIELD, 6.00x.197	2	
..1	420-0817	ASSY, FEMALE SCREWLOCK 205817-1	1	
..1	471-5367	FILLER, OPTIONS, BLANK, FXi60/250	-1	
..1	471-5368	FILLER, OPTIONS, N+1, FXi60/250	1	
..1	919-0547	PCB, ASSY, N+1, DTC DIGITAL EXCITER	1	
....2	000-1023	CAP, 100PF, 5%, N750	8	C1, C2, C3, C4, C5, C6, C7, C8
....2	003-1054	CAP, CER, MNLY, .1uF, 50V, 20%	2	C15, C16
....2	023-1076	CAP, LYTIC, 10uF, 50V, STDUP	3	C9, C13, C14
....2	030-1033	CAP, CER MOLDED, .001UF, 200V, 10%	1	C12
....2	042-3312	CAP, MICA, 33PF, 500V, 5%	2	C10, C11
....2	100-3373	RES, 3.3MEG OHM, 1/4W, 5%	8	R4, R6, R8, R10, R12, R14, R16, R18
....2	102-1133	RES, CHIP, 110 OHMS, 1/10W, 1%, SMD	8	R20, R21, R22, R23, R24, R25, R26, R27
....2	103-2213	RES, 221 OHM, 1/4W, 1%, METAL	8	R3, R5, R7, R9, R11, R13, R15, R17
....2	201-0007	ZENER VOLTAGE SUPPRESSOR, +/-7.5V	8	D9, D10, D11, D12, D13, D14, D15, D16
....2	201-0015	ZENER VOLTAGE SUPPRESSOR, +/-15V	8	D1, D2, D3, D4, D5, D6, D7, D8



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	203-4005	DIODE,1N4005	1	D17
....2	216-7002	IC,MOSFET,2N7002LT1,SMD	10	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10
....2	224-7733	IC, POWER SUPERVISOR, 3.3V	1	U2
....2	226-0393	RES NET,1.0K,10-PIN	1	R19
....2	226-4740	RES NET,4.7K,10-PIN,.1 SPACE	2	R1, R2
....2	227-1585	VR,LT1585CT-3.3,3.3V,TO-220	1	U5
....2	229-0111	IC,AC INPUT OPTO-ISOLATOR	8	U6, U7, U8, U9, U10, U11, U12, U13
....2	229-0233	IC,MAX233,DUAL RS232 DRVR/RCVR	1	U4
....2	340-0004	SW,JUMPER PROGRAMMABLE	2	P4, P5
....2	390-0033	XTAL,11.0592 MHZ NE-18 CASE	1	Y1
....2	411-914	DIODE, SMD 1N4148	8	D18, D19, D20, D21, D22, D23, D24, D25
....2	417-0200	CONN,HEADER 20 PIN	1	J3, J4, J5
....2	417-0600	SKT,IC 6 PIN	8	XU6, XU7, XU8, XU9, XU10, XU11, XU12, XU13
....2	417-0677	CONN,PCB MT,6PIN MALE	1	J2
....2	417-2004	SOCKET,20-PIN,DIP,HIGH RELIABILITY	1	XU4
....2	417-2801	SKT,IC,28PIN PLCC	1	XU3
....2	417-4401	SKT,IC,44PIN PLCC	1	XU1
....2	417-8925	CONN, 25 PIN,D, FEMALE, R.A. FILTERED	1	J1
....2	519-0547	PCB, MACH, N+1, DTC DIGITAL EXCITER	1	
....2	979-0547-S01	KIT, SOFTWARE, CPU, N+1 MODULE	1	U1
.....3	224-8252	IC,MICROCONTROLLER 8 BIT WITH 8K BYTES FLASH,44 PIN PLCC	1	U1



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	979-0547-S03	KIT, SOFTWARE, PAL, N+1 MODULE	1	U3
.....3	224-2210	IC, PAL, 22LV10, LOW V, SMD	1	U3
..1	949-0547-001	ASSY,CABLE,N+1 OPTION, FXI	1	
....2	417-0053	SKT,CONN 641294-1 AMP	12	HDW1
....2	418-0670	HOUSING,CONN,6PIN FEM	2	J1, J2
....2	601-2209	WIRE,AWG22,7/30 WHT	7	W1
..1	979-0541-547	KIT,BIND+MAN,FXI N+1 OPTION	1	
....2	597-0541-002	INSTRUCTION MANUAL, FXI 60/250 (N+1) CONTROLLER	1	
.....3	594-9999	PAPER,COPIER 8 1/2 X 11,20LB HI-TEC	1	
....2	598-0010-001	BINDER,1 IN, BLUE,W CD POCKET	1	

4 RF Technical Services Contact Information

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5 Drawings

The following pages present the FXI Exciter N+1 Option drawings.



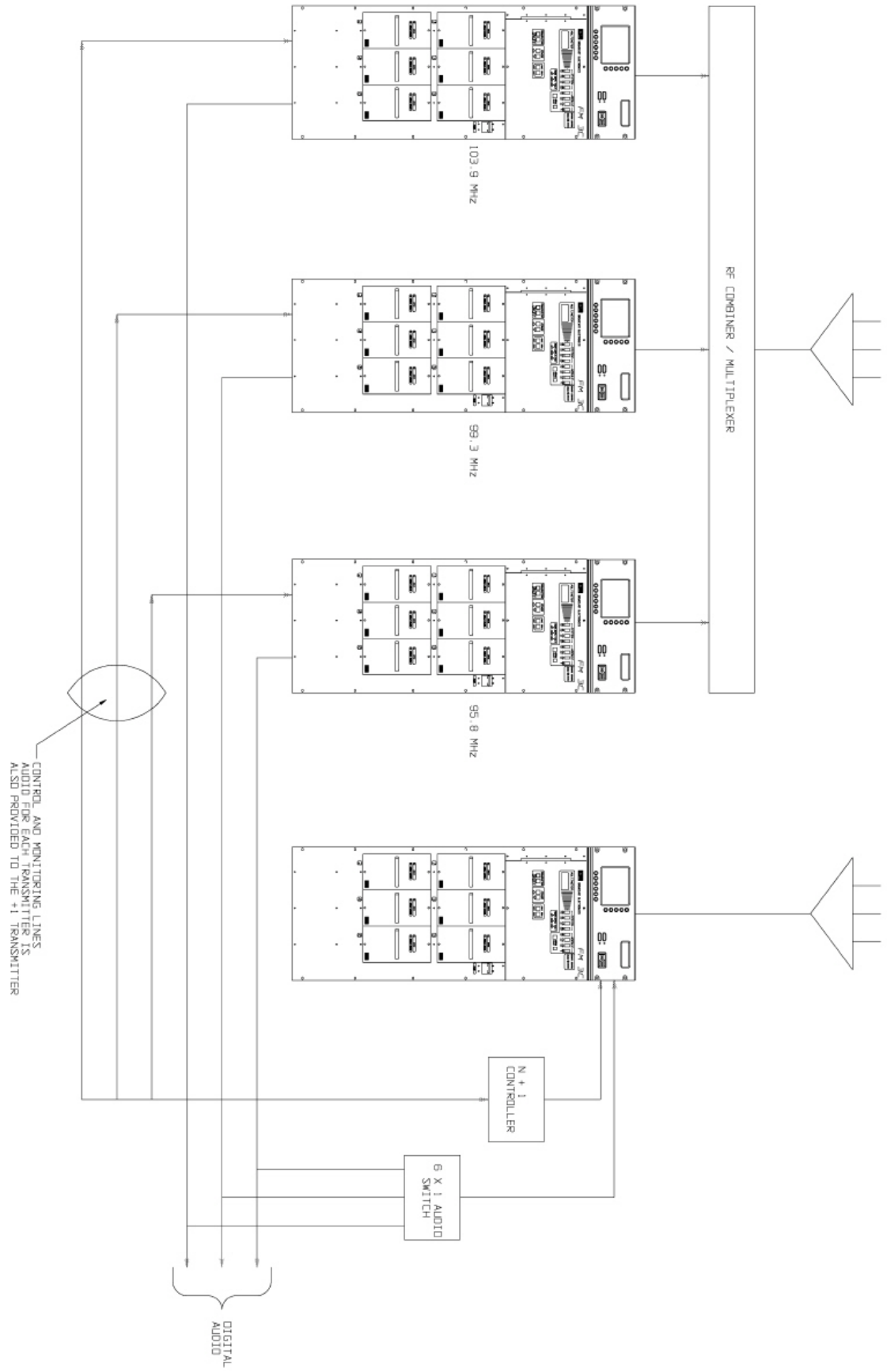
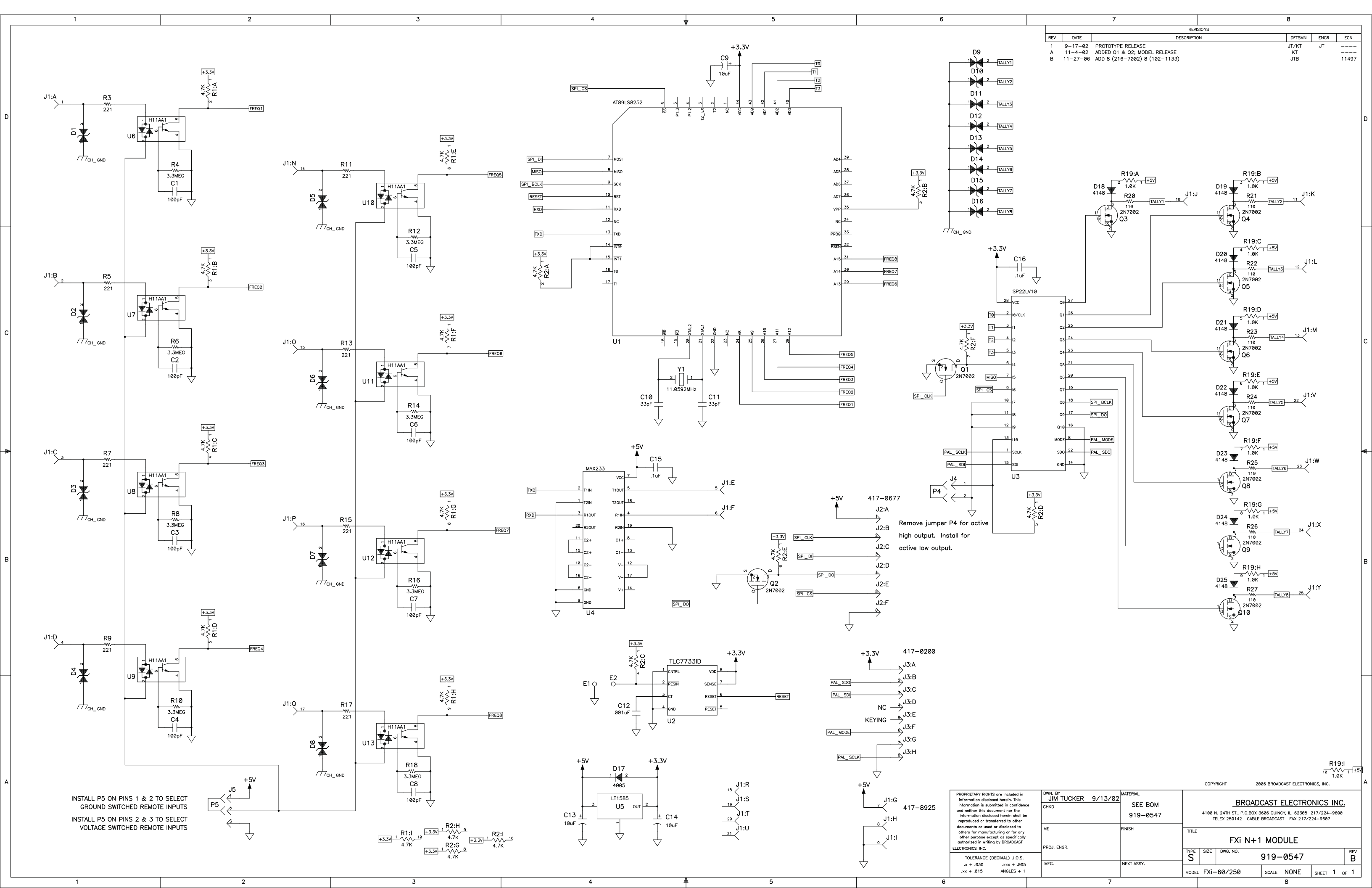


Figure 4-1. N+1 TRANSMITTER SYSTEM.

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597-0541-2





REVISIONS						
REV	DATE	DESCRIPTION	DFTSMN	ENGR	ECN	
1	9-17-02	PROTOTYPE RELEASE	JT/KT	JT	----	
A	11-4-02	ADDED Q1 & Q2; MODEL RELEASE	KT		----	
B	11-27-06	ADD 8 (216-7002) 8 (102-1133)	JTB		11497	

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TOLERANCE (DECIMAL) U.O.S. .x + .030 .xxx + .005 .xx + .015 ANGLES + 1				PROJ. ENGR.		FINISH		TITLE FXi N+1 MODULE			
MFG.				NEXT ASSY.		REV B		MODEL FXi-60/250			
								SCALE NONE			
								SHEET 1 OF 1			

