Telex

Operating Instructions
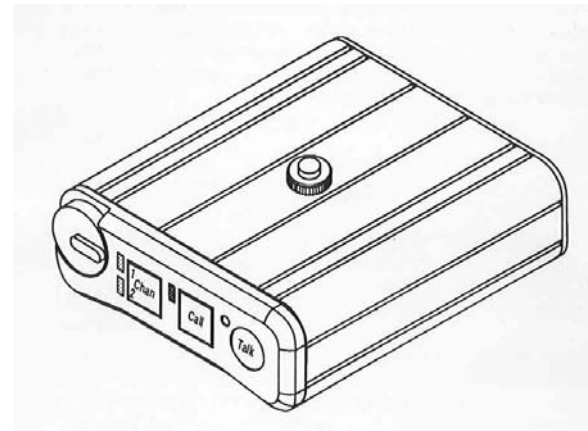
NFL-1002/NFL-2002
Belt Packs
Audiocom® Intercom System

INTRODUCTION

The Audiocom® NFL-1002 and NFL-2002 are microprocessor controlled one- and two-channel intercom belt packs. An internal switch and jumper setting allows the units to be used with Clear-Com® components, if desired. Other internal switch and jumper settings allow the unit to be uniquely configured to the operator's requirements.

FCC STATEMENT

This equipment uses, and can radiate radio frequency energy that may cause interference to radio communications if not installed in accordance with this manual. The equipment has been tested and found to comply with the limits of a Class A computing device pursuant to Subpart B, Part 15 of FCC Rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference which the user (at his own expense) will be required to correct.

$C\epsilon$

This product meets the Electromagnetic Compatibility Directive, 89/336/ EEC.

Audiocom® is a registered trademark of Telex Communications, Inc., Burnsville, Minnesota 55337
Clear-Com® is a registered trademark of Clear-Com Intercom Systems

Jumper/Switch Number	Jumper or Switch Function	Default Setting
SW1	Electret/Dynamic Microphone Select	Dynamic
^	(Must be set to Dynamic when J15 functions are designed)	
J15	Balanced/Single-ended Dynamic Mic	Pins 1&2 shorted
^	(SW1 must be set to Dynamic)	
^	Single-ended Mic: Pins 1&2 shorted	
^	Balanced Mic: Pins 2&3 shorted	
J3	Power Select	Pins 2&3 shorted
^	Channel One Power: Pins 2&3 shorted	
^	(On BP-1002, pins 2&3 always shorted)	
^	Channel Two Power: Pins 1&2 shorted	
J5	Power Select	Pins 2&3 shorted
^	Channel One Power: Pins 2&3 shorted (On BP-1002, Pins 2&3 always shorted.)	
^	Channel Two Power: Pins 1&2 Shorted	
^	(Must be set for same channel as J3 for proper power operation in Audiocom® mode on BP-2002)	
^	(Must be used in conjunction with SW3)	
SW3	Clear-Com / Audiocom® Operation	Balanced
^	Unbalanced / Balanced Line	
^	(Must be used in conjunction with J2, J5, J6, and J7)	
J2	Clear-Com / Audiocom® Operation Pins 1&2 shorted: UNBAL (Clear-Com)	Pins 2&3 shorted
^	Pins 2&3 shorted: BAL (Audiocom®)	
^	(Must be used in conjunction with SW3)	
J6	DC Call Detect (Clear-Com operation only, not used in Audiocom® mode) BP-2002 only	No jumper present
^	Disabled: No pins jumpered	
^	Enabled: Pins 1&2 shorted	
^	(To enagle, use jumper from J5)	
J7	DC Call Detect (Clear-Com operation only, not used in Audiocom® mode) BP-2002 only	Jumper on one pin only
^	Disabled: No pins jumpered	
^	Enabled: Pins 1&2 shorted	

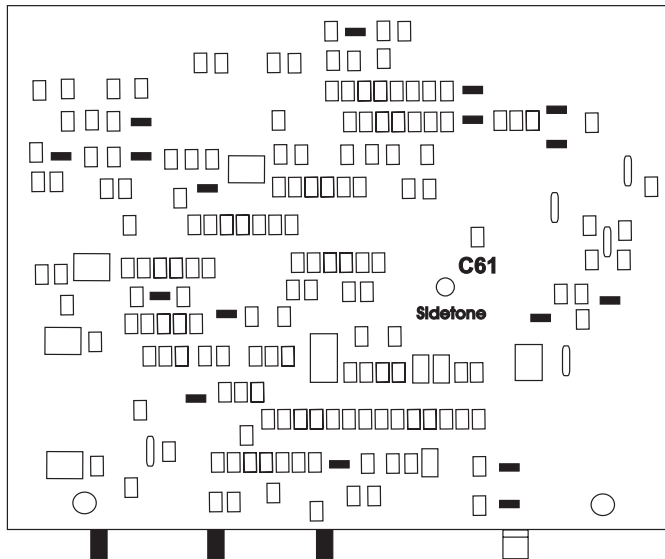*Table 2. Internal Switches and Jumpers*

Figure 3. Printed Circuit Board

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OPERATION

SYSTEM POWER

The NFL-2002 belt pack receives power externally, in one of two ways:

- Via the intercom channel (similar to the NFL-1002)
- Via the local-power (pin 2) of the intercom channel connector

The NFL-1002 belt pack receives power externally, via the intercom channel.

INITIAL NFL-2002/NFL-1002 SETUP

The channel termination is initially set for balanced operation, which is compatible with other Audiocom® equipment. If the unit is going to be connected to Clear-Com equipment, one switch and several jumpers must be changed as described in the section on Clear-Com Setup in this manual.

The headset microphone type is initially set for single-ended dynamic operation. To change the microphone type to electret, refer to Table 2 for the position of JP9.

APPENDIX A

OPTIONAL FOOTBALL MODIFICATIONS

GENERAL DESCRIPTION

In Audiocom® Intercom Systems, the Mic-Kill feature is used to turn off any activated microphones on a selected channel. The Mic-Kill feature is activated when the beltpack receives a 24 kHz signal from the channel. In some applications the Mic-Kill and Call signal features are not desired and need to be disabled.

ELIMINATING MIC-KILL AND CALL SIGNAL

CAUTION: TO PREVENT DAMAGE TO THE EQUIPMENT, THESE MODIFICATIONS SHOULD ONLY BE MADE BY QUALIFIED TECHNI-CIANS.

If desired, the Mic-Kill and Call signal features can be disabled in the NFL-2002/NFL-1002 by removing a surface-mounted capacitor from the printed circuit board. Perform the following:

1. Before making changes to the printed circuit board,   disconnect all power and line connections from the beltpack.
2. Refer to Figure 3 and locate C61 on the underside of the printed circuit board.
3. Remove capacitor C61 from the printed circuit board.

RESTORING MIC-KILL AND CALL SIGNAL

To restore the Mic-Kill and Call signal features, replace C61 with Telex® part number 102879-218, 1500 pF, 50V capacitor.

FACTORY SERVICE

All equipment returned for repair must be accompanied by documentation stating your return address, telephone number and proof of date of purchase, along with a description of the problem. In lieu of this, you may obtain a Return Authorization form from our Customer Service Department.

Customer Service Department
Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, Minnesota 55337 U.S.A.
Telephone: (800) 392-3497
Fax: (800) 323-0498

Return equipment to:
Service Department
Telex Communications, Inc.
West 1st Street
Blue Earth, Minnesota 56013 U.S.A.

WARRANTY REPAIRS - If in warranty, no charge will be made for the repairs. Equipment being returned for warranty repair must be sent prepaid and will be returned prepaid.

NON-WARRANTY REPAIRS - Equipment that is not under warranty must be sent prepaid to Telex. If requested, an estimate of repair costs will be issued prior to service. Once your approval for repair, and repair of equipment is completed, the equipment will be returned on a collect basis. Collect charges may be avoided by sending a signed check for payment in full along with your signed estimate approval form (the estimate includes the shipping charge).
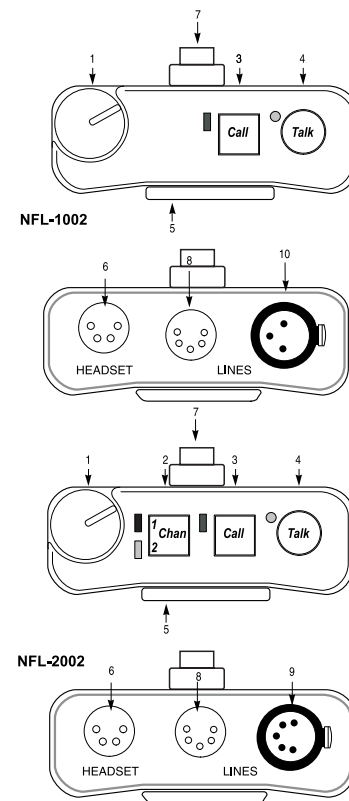

Figure 1. NFL-2000 &NFL-1002 Connections and Controls

EXTERNAL CONNECTIONS & CONTROLS

NOTE: The numbers refer to the callouts in Figure 1.

1. VOLUME CONTROL: Use this control to adjust the headset listen level.

2. CHAN BUTTON AND INDICATORS: The Chan button (only on the NFL-2002) allows the user to select which intercom channel is active. The yellow indicator next to the 1 or 2 lights to show the active channel. Press the Chan button to change the channel selection, the yellow indicator for that channel will light.

3. CALL BUTTON AND INDICATOR: The Call function allows the user to send or receive signals to other devices on the intercom channel selected. The Call button operates in two ways:

Call receive: When there is an incoming call signal, the indicator is red. (If Audible Call Alert is enabled, incoming calls will cause beeps in the headset.) On the NFL-2002, calls can be received on the selected channel only.

Call send: To send a call signal to all stations on a channel, press and hold the Call button until a verbal response is received. The indicator will glow red. On the NFL-2002, calls can be sent on the selected channel only.

4. TALK BUTTON AND INDICATOR: The Talk button activates the headset microphone and operates in two ways:

DYNAMIC MICROPHONE AMPLIFIER:

Voltage Gain:
Mic to Channel; 45 ±3 dB, before limiting

Mic to Headphone; adjustable, 65 dB range into 150 ohm

Frequency Response:
200 Hz to 8 kHz +1/-3dB

Total Harmonic Distortion:
Less than 1% at Channel output at 1 kHz

ELECTRET MICROPHONE AMPLIFIER:
Voltage Gain:
Mic to Channel; 27 ±3 dB, before limiting

Mic to Headphone; adjustable, 45 dB ±10% into 150ohm

Frequency Response:
200 Hz to 8 kHz +1/-3dB

Total Harmonic Distortion:
Less than 1% at Channel output

Unbalanced Intercom Channel:

        Output Level: 700 mVrms ±10%
        Input Impedance: 200 ohm ±5%
        Bridging Impedance: greater than 10,000 ohm
        Call Signalling:
            Send: 12 ±3 VDC
            Receive: 4 VDC minimum

HEADPHONE AMPLIFIER:

Voltage Gain:
        27 ±3 dB from the line

Maximum Output:
        60 mW into 150 ohm

Frequency Response:
        200 Hz to 8 kHz with no more than 4 dB deviation

Audible Alert:
        1 kHz, at the headset

Total Harmonic Distortion:
        Less than 2% at 50 mW from the line

Sidetone:
        20 dB minimum range, adjustable

Latched Mode:
Tap the button once to talk. The indicator will glow green. Tap the button again when finished with a conversation.

Momentary Mode:
Press and hold the button to talk momentarily. Release the button when finished talking.

NOTE: On the NFL-2002, if no headset is connected when the Talk button is pressed, the Talk button will have the same function as the Chan button.

5. SIDETONE CONTROL: When using a headset, this control adjusts your own voice level heard in the headphones. To adjust the level, tap the Talk button once to turn on the headset microphone. Then, use a small flat-blade screwdriver to increase or decrease your voice level while talking into the microphone. (This control is accessible by removing one screw of belt clip.)

6. HEADSET CONNECTOR: This connector accepts a fourwire Telex® boom-microphone headset.

7. RADIO PUSH-TO-TALK BUTTON: If the Motorola GP-300 radio is connected to the beltpack, press the PTT to transmit via the radio. (After pressing PTT, wait for the tone to stop.)

Note: If the Talk button is in Latched Mode, pressing PTT will simultaneously transmit your voice via the radio and Intercom system.

8. RADIO CONNECTOR: This connector accepts the five-pin cable supplied to connect the belt pack to the GP-300 radio.

9. INTERCOM CHANNEL CONNECTORS:

On the NFL-2002, intercom channels are connected via a 6-pin connectors (one male and one female).

Local Power Input (NFL-2002 only)
Normally the NFL-2002 is powered from the intercom system and will turn on with the intercom system. The NFL-2002 belt pack may also be powered from an optional power supply (14-30 VDC) connected between pin 2 (+) and pin 1 (-) of the intercom channel connector.

10. INTERCOM CHANNEL CONNECTORS: On the NFL-1002, the intercom channel is connected via a 3-pin connector.

OPERATING MODES

The microprocessor within the NFL-1002/NFL-2002 controls four modes of operation that affects the Microphone Kill and Audible Call Alert features.

SPECIFICATIONS

GENERAL:

Power Requirements:
    Channel supplied: 24 VDC nominal, 45 to 70 mA
    Local-power: (NFL-2002 only) 24 VDC nominal (14 to 30 VDC), 45 to 70 mA

Environmental Requirements:
    Storage: -20ºC to 80ºC; 0% to 95% humidity,   non-condensing
    Operating: -15ºC to 60ºC; 0% to 95% humidity, non-condensing
    Dimensions: 5.0" (127 mm) H x 3.5" (88.9 mm)
    W x 1.8" (45.7 mm) D Weight: 1.5 pounds (0.68 kg)

INTERFACE REQUIREMENTS:
Headset:
    50 to 200 ohm dynamic microphone
    150 to 600 ohm headphones

Balanced Intercom Channel:
    Output Level: 1 Vrms nominal
    Input Impedance: 300 ohm ±5%
    Bridging Impedance: greater than 10,000 ohm
    Call Signalling:
        Send: 20 kHz ±100 Hz, 0.5 Vrms ±10%
        Receive: 20 kHz ±800 Hz, 100 mVrms
    Mic-Off Frequency:
        Detect: 24 kHz ±800 Hz, 100 mVrms
    Noise Contribution: less than -60 dB on the line

Intercom Channel Connectors
NFL-1002
Type: XLR-3M (callout 10 in Figure 1)
Audiocom® Mode (Internal switch SW1 and jumpers
       JP4, JP5, JP2 and JP1 set to BAL position)
       Pin 1   Common
       Pin 2   Intercom audio low and +24 VDC input
       Pin 3   Intercom audio high and +24 VDC input

Clear-Com Mode (Internal switch SW1 and jumpers JP4, JP5, JP2
and JP1 set to UNBAL position)
       Pin 1   Common
       Pin 2   +30 VDC input
       Pin 3   Intercom audio/call signal

NOTE: On the NFL-1002, jumper JP6 must always have pins 2 and 3 shorted.

NFL-2002
  Type: One XLR-5M (callout 8 in Figure 1)
  Audiocom® Mode (Internal switch SW1 and jumpers JP4, JP5, JP2
and   JP1 set to BAL position)
       Pin 1   Common
       Pin 2   Local power (+24 VDC)
       Pin 3   Channel A intercom audio low and +24 VDC input
       Pin 4   Channel A intercom audio high and +24 VDC input
       Pin 5   Channel B intercom audio low and +24 VDC input
       Pin 6   Channel B intercom audio high and +24 VDC input

Clear-Com Mode (Internal switch SW1 and jumpers JP4, JP5, JP2
and   JP1 set to UNBAL position)
       Pin 1   Common
       Pin 2   Local power (14 to 30 VDC)
       Pin 3   Channel A +30 VDC input
       Pin 4   Channel A intercom audio/call signal
       Pin 5   Channel B +30 VDC input
       Pin 6   Channel B intercom audio/call signal

MODE (BEEPS)	MIC KILL	AUDIBLE CALL ALERT
1	Disabled	Disabled
2 (Default)	Enabled	Disabled
3	Disabled	Enabled
4	Enabled	Enabled

Table 1. Operating Modes

Changing Modes of Operation:
Perform the following steps to change the mode of operation.

1. Both the Talk and Call indicators should be off.

2. Press and hold the Talk key, then press and hold the Call key, then release both keys. The Call indicator should now glow red.

(The number of beeps heard in the headset indicates the current mode of operation.)

3. Press the Call key to change to the next mode of operation. Each press of the Call key will cause the NFL-2002/NFL-1002 to change to the next mode of operation.

4. When the desired mode is reached, press the Talk key to select that mode and exit the mode changing function. (Beeps will be heard in the headset when the mode changing function is exited. The number of beeps heard indicates the selected mode of operation.)

NOTE: Each time the intercom system power is turned on, the beltpack will reset to the default mode of operation (Mode 2).

INTERNAL SWITCHES, JUMPERS AND ADJUSTMENTS

There are several internal switches, jumpers and an adjustment that affect operation. These are described below. To gain access to the switches, jumpers and the adjustment, disconnect all power and line connections. Remove two screws from the top of each side and two screws from bottom of each side. Switch, jumper and adjustment locations are shown in Figure 2.
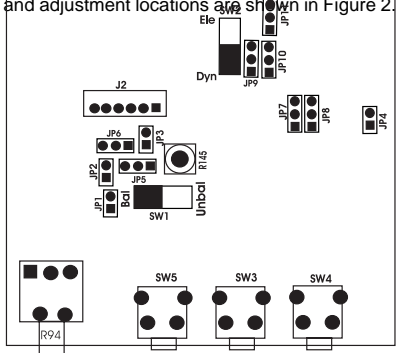

Figure 2. Internal Switches, Jumpers and Adjustments

NOTE: Figure 2 shows a NFL-2002 with the switches and jumpers in their factory default positions (referenced in Table 2).

The SIDETONE adjustment is also accessible behind the screw that holds the belt clip (callout 5 in Figure 1).

The functions of the internal switches and jumpers are described in Table 2.

Side Tone Adjustment (R145)

The side tone adjustment is accessible either internally (refer to Figure 2) or by removing the belt clip mounting screw (callout 5 in Figure 1).

To adjust the level of your own voice heard in the headphones, tap the Talk button once to turn on the headset microphone. Then, use a small flat-blade screwdriver to increase or decrease your voice level while talking into the microphone.

Clear-Com Setup

Make the following switch and jumper changes when the belt pack is used with Clear-Com equipment:

NFL-1002

1.   SW1 must be placed in the UNBAL position.
2.   JP4 must have pins 1 and 2 shorted (U position).
3.   JP6, JP5 must have pins 2 and 3 shorted at all times.

NFL-2002

1.   SW1 must be placed in the UNBAL position.
2.   JP4 must have pins 1 and 2 shorted (U position).
3.   JP5 jumper must be removed and placed on J6.
4.   JP2 must have pins 1 and 2 shorted (using jumper from JP5).
5.   JP1 must have pins 1 and 2 shorted.

Note: In case of local power use, install a jumper on pins 2 & 3 of U6

CONNECTOR PIN CONFIGURATIONS

Headset Connector

Type: XLR-4M (callout 6 in Figure 1)

Pin 1	Headset microphone low
Pin 2	Headset microphone high
Pin 3	Headphone high
Pin 4	Headphone low