

Operating Instructions



BP-1002 / BP-2002 Beltpacks

Audiocom Intercom Systems

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	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
THE LIGHTNING FLASH AND ARROWHEAD WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF "DANGEROUS VOLTAGE" INSIDE THE PRODUCT.	CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.	THE EXCLAMATION POINT WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF IMPORTANT INSTRUCTIONS ACCOMPANYING THE PRODUCT
SEE MARKING ON BOTTOM/BACK OF PRODUCT		


WARNING: APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

WARNING: THE MAIN POWER PLUG MUST REMAIN READILY OPERABLE

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE CENTER PIN OF THIS PLUG MUST BE MAINTAINED.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPRATUS TO RAIN OR MOISTURE.

WARNING: TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY ATTACHED TO THE FLOOR/WALL/ RACK IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS.

	This product is AC only.	
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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

FCC STATEMENT

This equipment uses, and can radiate radio frequency energy that may cause interference to radio communication 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 J, 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.


	This product meets Electromagnetic Compatibility Directive 89/336/EEC
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Introduction

WARNING: If you have a BP-1002/2002 with a 9030-7740-XXX circuit board, you must obtain revision H of this user manual.

The Audiocom BP-1002 and BP-2002 are microprocessor controlled 1- and 2-channel intercom beltpacks. 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.

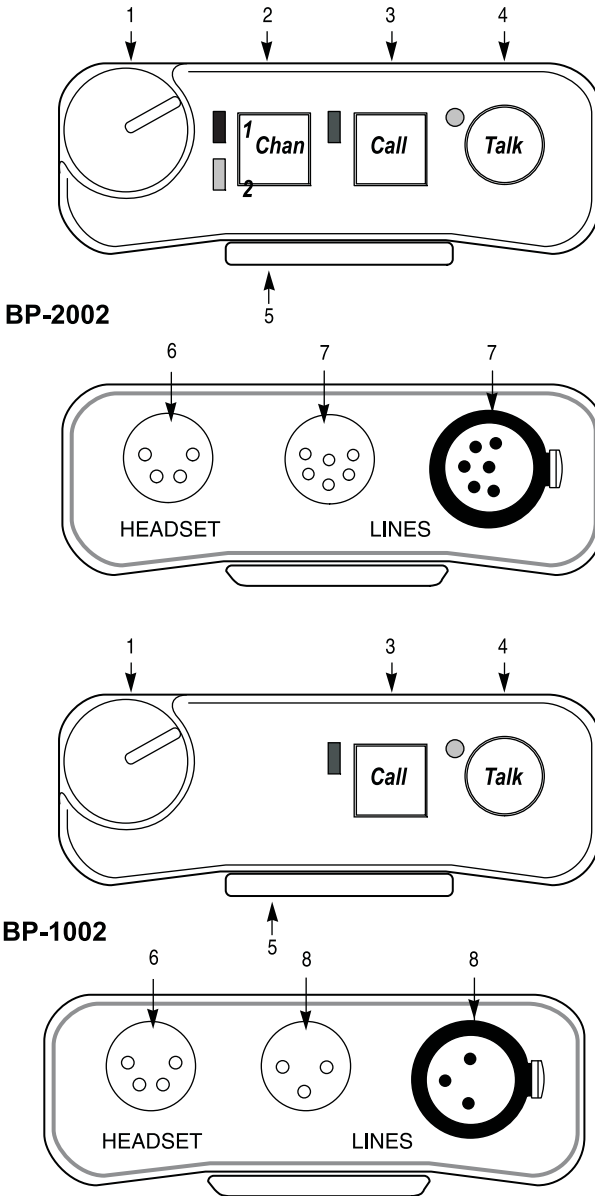


FIGURE 1. BP-2002 & BP-1002 Connections and Controls

External Connections and Controls

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

1. Volume Control: The Volume Control is used to adjust the headset listen level.
2. Chan Button and Indicators: The Chan button (only on the BP-2002) allows the user to select which intercom channel is active. Press the Chan button to change the channel selection. The yellow indicator next the channel number lights to show the active channel.
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 (2) ways:
 - Call Receive - When there is an incoming call signal, the indicator is red. (If Audible Call Alert is enabled, incoming calls cause beeps in the headset.) On the BP-2002, calls can be sent 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 BP-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 (2) ways:
 - Latched Mode - Tap the button once to talk. The indicator glows 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 BP-2002, if no headset is connected, when the Talk button is pressed, the Talk button has the same function as the Chan button.

5. Sidetone Control: When using a headset, this control adjust 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 Phillips head screwdriver to increase or decrease your voice level while talking into the microphone. (This control is accessible by removing one (1) screw in the belt clip.)
6. Headset Connector: This connector accepts a 4-wire Bosch boom microphone headset.
7. Intercom Channel Connectors: On the BP-2002, intercom channels are connected via a pair of 6-pin connectors (one male and one female). The male and female connectors are wired together in parallel, providing a loop-through at each connector pin. Use one connector to connect to the intercom channel. Use the other connector to daisy chain a cable to the next beltpack or other station on the channel.
- Local Power Input - Normally, the BP-2002 is power from the intercom system and turns on with the intercom system. The BP-2002 beltpack may also be powered from an optional power supply (21-30 VDC) connected between pin 2 (+) and pin 1 (-) of the intercom channel connector.
8. Intercom Channel Connectors On the BP-1002, the intercom channel is connected via a pair of 3-pin connectors (one male and one female). The male and female connectors are wired together in parallel, providing a loop through at each connector pin. Use one connector to connect to the intercom channel. Use the other connector to daisy chain a cable to the next beltpack or other station on the channel.

System Power

The BP-1002/2002 beltpack receives power externally in one of two ways:

- The intercom channel
- The local power (pin 2) of the intercom channel connector (BP-2002 only)

Both the BP-1002 and BP-2002 pass system power through to subsequent beltpacks that are daisy chained together.

Initial BP-1002/2002 Setup

The channel termination is initially set for balanced operation, which is compatible with other Audicom equipment. If the unit is going to be connected to Clear-Com equipment, one switch must be changed as described in the second on Clear-Com setup in this manual.

The headset microphone type is auto-sensing, which means it automatically determines if an Electret or Dynamic headset is attached to the unit.

Operating Modes

The microprocessor within the BP-1002/2002 controls four (4) modes of operation that affect the Microphone Kill and Audible Call Alert features. These modes can be seen in Table X on page X.

Changing Modes of Operation

Perform the following steps to change the mode of operation.

NOTE: Both the Talk and Call indicators should be off and the headset should be connected.

1. Press and hold the Talk key, and then press and hold the Call key.
2. Release both keys.
The Call indicator glows 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 causes the BP-1002/2002 to change 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 are 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 resets to the default mode of operation (mode 2).

TABLE 1. Modes of Operation

Mode (beeps)	Mic Kill	Audible Call Alert
1	Disabled	Disabled
2 (default)	Enabled	Disabled
3	Disabled	Enabled
4	Enabled	Enabled

Internal Switches, Jumpers, and Adjustments

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

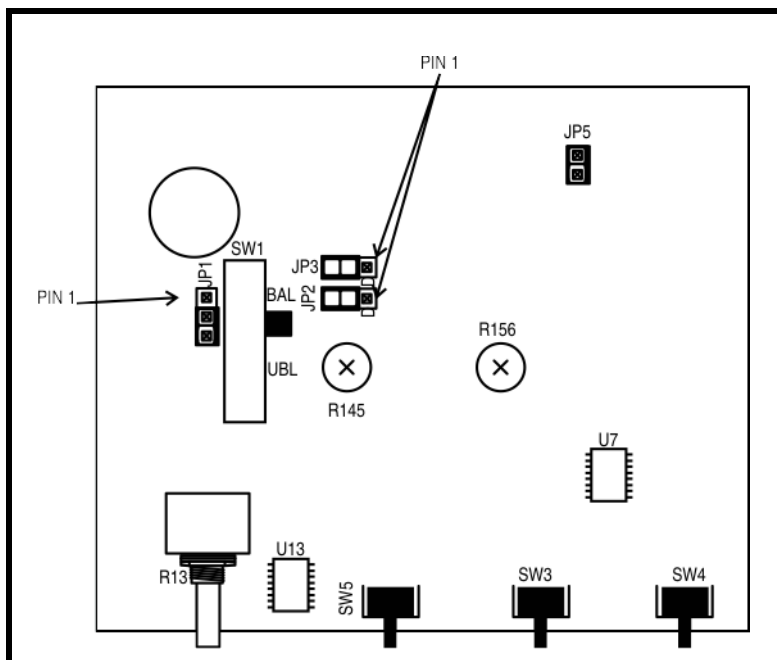


FIGURE 2. Internal Switches, Jumpers, and Adjustments

NOTE: Figure 2 shows a BP-2002 with the switches and jumpers in their factory default positions. SW5 does not exist on the BP-1002 board.

The Sidetone and Mic Gain adjustment are 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 on page 10.

Sidetone Adjustment (R145)

The sidetone adjustment is accessible either internally (refer to Figure 3) or by removing the belt clip mounting screw (callout 5 in Figure 1).

Operation

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 Phillips head screwdriver to increase or decrease your voice level while talking into the microphone.

Mic Gain Adjustment (R156)

The Mic Gain Adjustment is accessible internally on the board (R156) (refer to Figure 3) or by removing the belt clip mounting screw (callout 5 in Figure 1).

To adjust mic gain, do the following:

- Using a Phillips head screwdriver, turn the Mic Gain pot clockwise to increase the gain (or counter-clockwise to decrease the gain).

Clear-Com Setup

Make the following switch and jumper changes when the backpack is used with Clear-Com equipment

BP-1002/2002

- SW1 must be placed in the UNBAL position.

TABLE 2. Internal Switches and Jumpers

Jumper/ Switch Number	Jumper or Switch Function	Default Setting
JP1 and JP2	Power Select	Pins 2 & 3 are shorted
	Channel one power: pins 2 & 3 shorted (On BP-1002, pins 2 & 3 are always shorted)	
	Channel two power: pins 1 & 2 are shorted	
SW1	Clear-Com/Audiocom	BAL
	Unbalanced/Balanced Line	
JP3	Must be left on default	Pins 2 & 3 shorted
JP5	Pins 1 & 2 shorted	Pins 1 & 2 shorted

Connector Pin Configurations

Headset Connector

Type: XLR-4M (Callout in Figure 1)

Pin 1	Headset Microphone Low
Pin 2	Headset Microphone High
Pin 3	Headphone High
Pin 4	Headphone Low

Intercom Channel Connectors

BP-1002

Type: One XLR-3M and XLR3-F pair (callout 8 in Figure 1)

Audiocom Mode (internal switch SW1 set to BAL position)

Pin 1	Common
Pin 2	Intercom audio/call low and +24VDC input
Pin 3	Intercom audio/call high and +24VDC input

Clear-Com Mode (Internal switch SW1 set to UNBAL)

Pin 1	Common
Pin 2	+30VDC input
Pin 3	Intercom audio/call signal

BP-2002

Type: One XLR-6M and XLR-6F pair (callout 7 in Figure 1)

Audiocom Mode (internal switch SW1 set to BAL position)

Pin 1	Common
Pin 2	Local Power (21-30VDC)
Pin 3	Channel A intercom audio/call low and +24VDC input
Pin 4	Channel A intercom audio/call high and +24VDC input
Pin 5	Channel B intercom audio/call low and +24VDC input
Pin 6	Channel B intercom audio/call high and +24VDC input

Clear-Com Mode (internal switch SW1 set to UNBAL position)

Pin 1	Common
Pin 2	Local Power (21-30VDC)
Pin 3	Channel A +30VDC input
Pin 4	Channel A intercom audio/call signal
Pin 5	Channel B +30VDC input
Pin 6	Channel B intercom audio/call signal

Specifications

General

Power Requirements:

Channel Supplied: 24VDC nominal, 40 to 100mA

Local Power: 24VDC nominal (21 to 30VDC), 40 to 100mA

Environmental Requirements:

Storage: -20°C to 80°C; 0% to 95% humidity, non-condensing

Operating: -15°C to 60°C; 0% to 95% humidity, non-condensing

Dimensions: 5.0" (127mm) H x 3.5" (88.9mm) W x 1.8" (45.7mm) D

Weight: 13oz. (0.36kg)

Interface Requirements

Headset:

1000-3000 Ohm electret microphone

50-200 Ohm dynamic microphone

150-600 Ohm headphones

Input Level:

4mVRMS (nominal)

Balanced Intercom Channel:

Output Level: 1 VRMS nominal

Terminating Impedance: 300 Ohm $\pm 10\%$

Bridging Impedance: greater than 10,000 Ohm

Call Signaling

Send: 20kHz $\pm 100\text{Hz}$, $>500\text{mVRMS}$

Receive: 20kHz $\pm 800\text{Hz}$, 100mVRMS (minimum)

Mic-Off Frequency

Detect: 24kHz $\pm 800\text{Hz}$, 100mVRMS (minimum)

Noise Contribution: less than -60dBu on the line

Total Harmonic Distortion: less than 1% at channel output for normal input

Unbalanced Intercom Channel:

Output Level: 775mVRMS $\pm 10\%$

Terminating Impedance: 200 Ohm $\pm 10\%$

Bridging Impedance: greater than 10,000 Ohm

Call Signaling

Send: 12 $\pm 3\text{VDC}$ on the line

Receive: 4 -15VDC from the line

Total Harmonic Distortion: less than 1% at channel output for normal input

Headphone Amplifier

Maximum Output:

3.5 ±10% Vrms into 150Ω headset

Frequency Response:

200Hz to 8kHz ±2dB

Audible Alert:

1kHz, at the headset

Total Harmonic Distortion:

Less than 1% at less than 3.25VRMS into 150Ω headset

Sidetone:

17dB minimum range, adjustable

Optional Football Modifications

General Description

In Audiocom Intercom Systems, the Mic Kill feature is used to turn off any activated microphone on a selected channel. The Mic Kill feature is activated when the beltpack receives a 24kHz 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 technicians.

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

To **remove the capacitor**, do 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

Operation

To restore the Mic Kill and Call Signal feature, replace C61 with Bosch part number F01U143777, 1500pF, 50V capacitor.

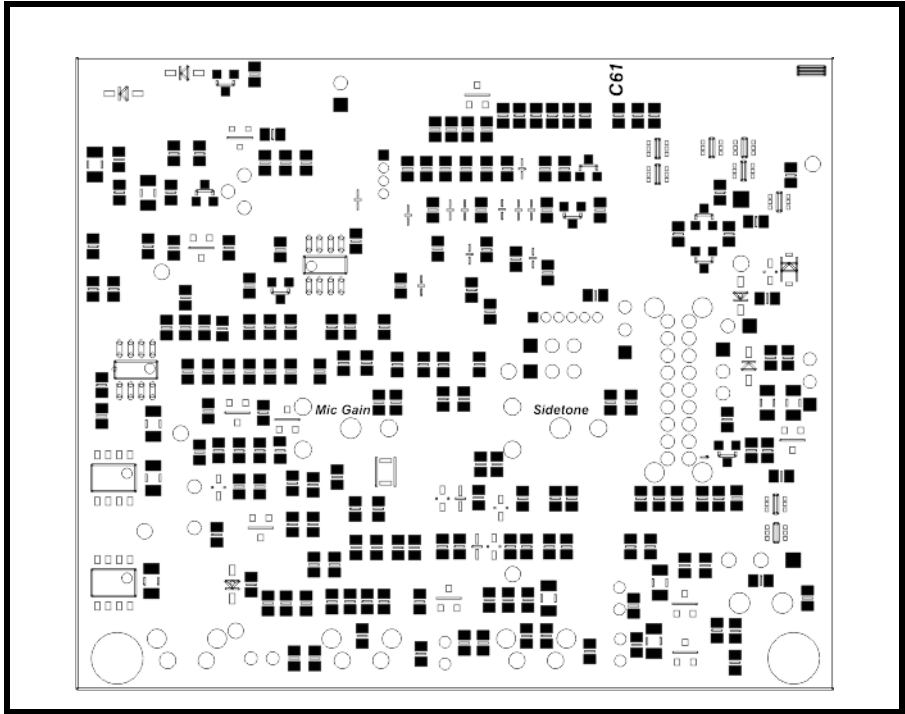


FIGURE 3. Printed Circuit Board

Notes

