



FOR CENTRAL STATION TALK



FOR CENTRAL STATION LISTEN



FOR DISCONNECT (HANG UP)

Figure 7. Touch Tone Control Keys

## SPECIFICATIONS

SIZE: 6.75" x 3.25" x 1"

OPERATING VOLTAGE: 6 to 14 VDC

OPERATING CURRENT: 6 VDC 12 VDC

ONE 8Ω SPEAKER (MAX): 160 mA 300 mA

TWO 8Ω SPEAKERS (MAX): 225 mA 500 mA

IDLE: 30 mA 35 mA

SPEAKER IMPEDANCE: 8Ω

AUDIO POWER INTO 8Ω: .3 Watt @ 6 VDC

SPEAKER: 1.25 Watts @ 12 VDC

### MICROPHONE TYPE

REQUIRED: Condenser with built-in preamp

AGC CONTROL RANGE: -22 dbm to +10 dbm

## LINEAR LIMITED WARRANTY

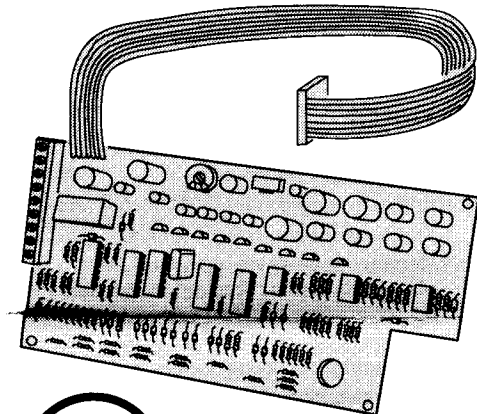
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Linear Corporation  
2580 Pioneer Avenue, Suite C  
Vista, CA 92083  
Attention: Repairs Department

# AUD-1/VB-1

## 2-WAY AUDIO INTERFACE BOARD



Installation and  
Operation Instructions

# Linear

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## DESCRIPTION

The AUD-1 (VB-1) 2-Way Audio Interface Board is designed to provide hands-free 2-way audio communication between a subscriber's premises and the central station. After the communicator completes its report, the central station can talk and listen to people and sounds at the subscriber's premises through the RSM-1 Remote Speaker Microphone. The direction of the communications is controlled at the central station by using a standard Touch Tone telephone. The AUD-1 can also be used in a "listen-only" mode to monitor sounds at the alarm site from the central station.

Presently, the AUD-1 is directly compatible with Linear's CP-90, 1704 & 1708 controls and communicators.

## FEATURES

- \* Two independent audio amplifiers
- \* Two microphone inputs
- \* Automatic gain control (AGC) for talk and listen
- \* Two-way or listen-only operation
- \* Remote control via standard Touch Tone phone eliminates "clipping" of the audio that occurs in voice switched systems
- \* Connects to one or two RSM-1 Remote Speaker/Microphones
- \* Relay switching of local speaker from siren to voice communication

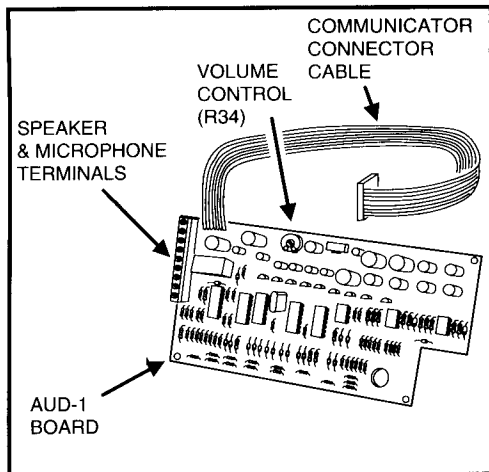


Figure 1. AUD-1 Component Locations

## INSTALLATION

The AUD-1 is supplied in a "board only" fashion from Linear. Most installations of this board will be semi-custom, where the AUD-1 will be mounted inside a control panel.

### CP-90 Installation

Linear's CP-90 Supervised Wireless Control Communicator includes a custom mounting area designed especially for the AUD-1 board.

Four spacers, nylon washers and screws are provided to mount the AUD-1 board to the rear of the CP-90 circuit board panel. **The spacers must be used to prevent shorting between the AUD-1 board and the CP-90 cabinet.** Carefully line up the AUD-1 board on the mounting posts and install the four screws, washers and spacers (see Figure 2).

Plug the AUD-1 connector into the 2-WAY AUDIO connector on the CP-90 (see Figure 2).

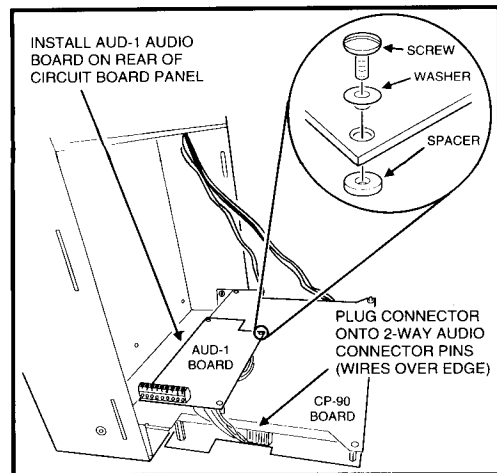


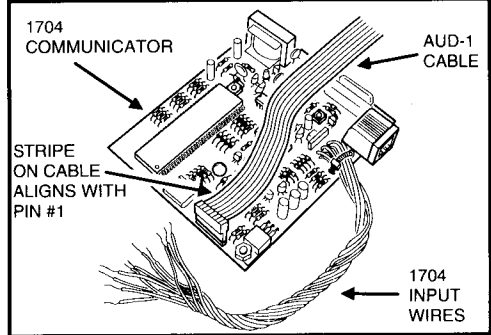
Figure 2. CP-90 Installation

### 1704 Connection

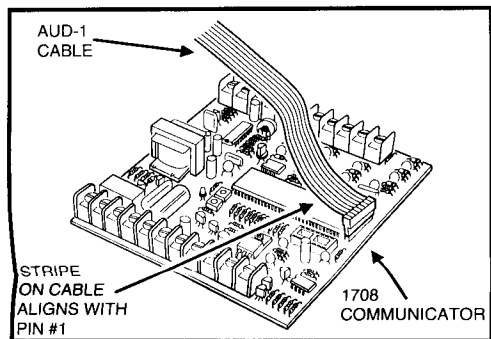
The 1704 4-zone Upload/Download Communicator has a 7-pin connector for the AUD-1 cable. Mount the 1704 and AUD-1 in a control panel cabinet. Plug the AUD-1 cable onto the 1704 connector (see Figure 3).

### 1708 Connection

The 1708 8-zone Upload/Download Communicator has a 7-pin connector for the AUD-1 cable. Mount the 1708 and AUD-1 in a control panel cabinet. Plug the AUD-1 cable onto the 1708 connector (see Figure 4).



**Figure 3. 1704 Connection**



**Figure 4. 1708 Connection**

### RSM-1 Connections

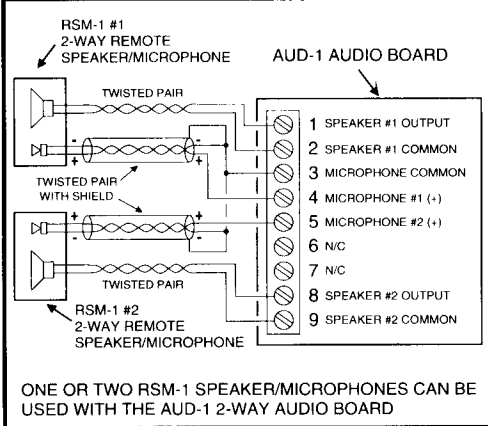
One or two RSM-1 Remote Speaker/Microphones can be used with the AUD-1 board. Each RSM-1 contains a speaker and a microphone. Refer to the instructions provided with the RSM-1 for mounting details.

**NOTE:** The RSM-1 should not be located close to any devices that create loud noise (fans, air conditioners, home audio speakers, alarm system sirens or bells). The central station will not be able to hear clearly if the background noise level is high.

**UL NOTE:** The RSM-1 has not been investigated by UL for use with the Model S-712V or S-724V Consoles.

#### Microphone

The RSM-1 microphone should be connected with size 24 AWG or larger shielded two conductor wire. Up to 100 feet can be used. **Connect the cable shield and negative wire together at the AUD-1 terminal block end only.** See Figure 5.



ONE OR TWO RSM-1 SPEAKER/MICROPHONES CAN BE USED WITH THE AUD-1 2-WAY AUDIO BOARD

**Figure 5. RSM-1 Connections**

#### Speaker

The RSM-1 speaker should be connected with twisted pair, two conductor wire. See Figure 5. For wire runs up to 50 feet, use size 18 AWG wire or larger. For wire runs up to 100 feet, use size 16 AWG wire or larger.

#### Optional Siren Input Switching

AUD-1 Terminals 6 & 7 are special SIREN INPUT terminals. The AUD-1 can switch SPEAKER #2 from a siren to an audio communication speaker. **An external siren driver must be used for this type of hook-up.** See Figure 6.

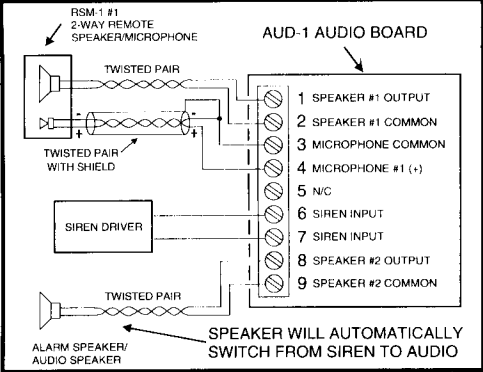
When the audio board is idle, the SIREN INPUT terminals 6 & 7 are connected to the SPEAKER #2 output terminals 8 & 9.

When the audio board is active, the SIREN INPUT terminals 6 & 7 are disconnected and the AUD-1 will send audio from the central station to the SPEAKER #2 output terminals 8 & 9.

**NOTE:** The speaker connected to the SPEAKER #2 output terminals 8 & 9 must be able to handle the maximum power that the siren driver connected to the SIREN INPUT terminals 6 & 7 can deliver.

### SYSTEM SETUP

The communicator that triggers the AUD-1 must be programmed for audio operation. With some communicators, specific zones can be set up for audio reporting. Other communicators, specific sensors can be programmed for audio reporting. For details, refer to the communicator's instructions.



**Figure 6. Switched Siren Connection**

**CP-90 Programming**

Each of the 64 sensors that can be used with the CP-90 system can individually be programmed for audio reporting. Each sensor can be programmed for 2-way audio or listen-only operation. When an alarm is caused by one of these sensors, after completion of the central station report, the CP-90 will enter the audio mode programmed for that sensor. Refer to the CP-90 Programming Instructions for details. (CP-90 Function #10 is for programming 2-Way Audio Reporting.)

**1704 & 1708 Programming**

The P-9A Programmer is used for programming 1704 & 1708 communicators. Refer to the P-9A's 1700 Programming Guide for details. Two programming steps pertain to the audio module:

**AUDIO LOOP? (Y/N)**

Select Y (yes) for each alarm loop that you want audio (1- or 2-way). Select N (no) standard non-audio loops.

**AUDIO LISTEN ONLY? (Y/N)**

Select N (no) for 2-way audio loops. The central station will be able to listen and talk to the customer. Select Y (yes) for 1-way audio listen-only loops. The central station will only be able to listen to the customer.

**CENTRAL STATION SETUP**

**Receiving Audio Accounts**

With Linear's 3000 series central station receivers, program the communicator account number to fit with the selected audio group account numbers in the central station.

if the communicator is sending Sesco SuperSpeed format, an audio identifier is sent with report and the central station receiver will automatically know that an audio report is coming. Early models of Linear's 3000 series central station receivers (pre 1992) will need a new PROM to be able to recognize the Sesco SuperSpeed audio identifier. Line card PROM Version 1.4 and later and control card PROM Version 1.2 and later support the audio identifier. Call Linear's Technical Services Department if your station needs a new PROM.

With other manufacturer's central station receivers, refer to the station's manual and call Linear's Technical Services Department for information on receiving audio accounts.

**Telephone Connections**

A phone must be connected in parallel with the central station receiver for controlling, listening and talking to the AUD-1 board at the subscriber's premises. The operator should pick up the phone when the communicator report is complete and acknowledge the call so the line card is "off line" when controlling the AUD-1 board with the phone.

**OPERATION**

When an alarm with audio is triggered, the communicator first reports the appropriate alarm message for the loop to the central station. Next, the AUD-1 board is switched on.

**The audio board always starts in the "listen" direction.** The central station can control the direction of the audio communication (listen or talk) using a pushbutton phone. The central station "Touch Tone" codes are shown in Figure 7.

Each time the central station switches from talk to listen, a short tone will sound from the audio speaker at the subscriber end. **The short tone alerts the subscriber that the central station has switched from talk to listen.**

As soon as the AUD-1 is enabled, an automatic disconnect timer is started. If no control tones are detected from the central station for 90 seconds, the audio board will disconnect from the phone line. Each time a control tone is received by the AUD-1, the timer is reset. The central station can also disconnect manually using control tone #4.

**Speaker Volume Control**

The volume of the speaker(s) connected to the AUD-1 can be controlled with variable resistor R34 (see Figure 1). This control can be adjusted with a small screwdriver from either side of the AUD-1 board.

## 2-WAY AUDIO INSTRUCTION ADDENDUM

This Console is equipped with Linear's 2-way audio module. Hands-free audio communication with the central station in 2-way or 1-way audio listen-only format can be programmed by communicator loop.

### INSTALLATION

The Console contains a built-in speaker and microphone. A remote speaker and microphone (Linear's RSM-1) can be connected for larger audio coverage. Refer to the RSM-1 instructions for remote speaker/microphone hookup details.

**NOTE: The Console or external microphone should not be located close to any devices that create loud noise (fans, air conditioners, home audio speakers, etc.) The central station will not be able to hear clearly if the background noise level is high.**

### PROGRAMMING

Refer to the P-9 programmer user's guide for programming the communicator. Two programming steps pertain to the audio module:

#### AUDIO LOOP? (Y/N)

Select Y (yes) for each alarm loop (1-3) that you want audio (1- or 2-way). Select N (no) for supervisory loop 4.

#### AUDIO LISTEN ONLY? (Y/N)

Select N (no) for 2-way audio loops. The central station will be able to listen and talk to the customer. Select Y (yes) for 1-way audio listen-only loops. The central station will only be able to listen to the customer.

**NOTE: With Linear's 3000 series central station receivers, program the communicator account number to fit with selected audio group account numbers in the central station. Refer to the central station receiver manual or call Linear's Technical Services Department for details on receiving audio accounts.**

### OPERATION

When a loop programmed for audio is triggered, the communicator reports the appropriate alarm message for the loop to the central station first. The Console's internal beeper will sound (if enabled) during the alarm report.

When the report is complete the Console's internal beeper is silenced and the audio module automatically switches to listen mode. The central station can then control the direction of the audio (listen or talk) using a pushbutton phone. This prevents the "chatter" and "clipping" of the audio that occurs in voice switched systems. Each time the audio module switches from central station talk to listen, a short tone will sound at the Console. **The short tone tells the customer the central station has switched from talk to listen.** The central station "Touch Tone" codes are shown in Figure 1.

### VOLUME CONTROL

The volume of the Console's speaker can be adjusted through a hole on the bottom of the Console (see Figure 3). **The volume control does not affect the microphone level.**

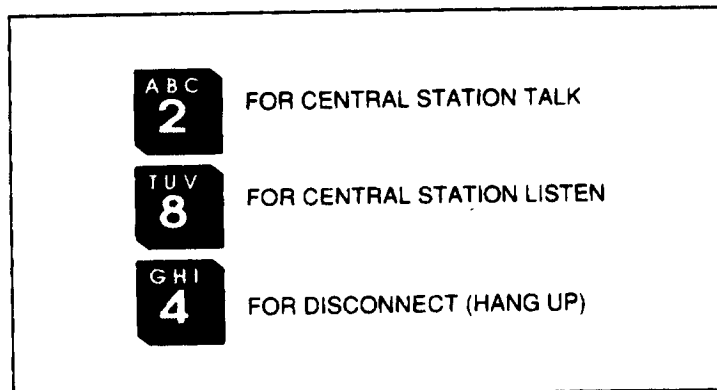


Figure 1. Central Station Phone Codes

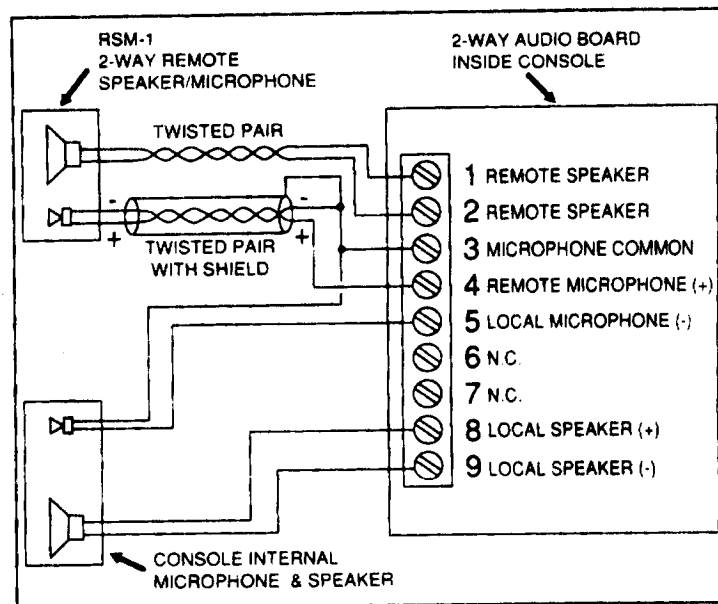


Figure 2. 2-Way Audio Board Connections

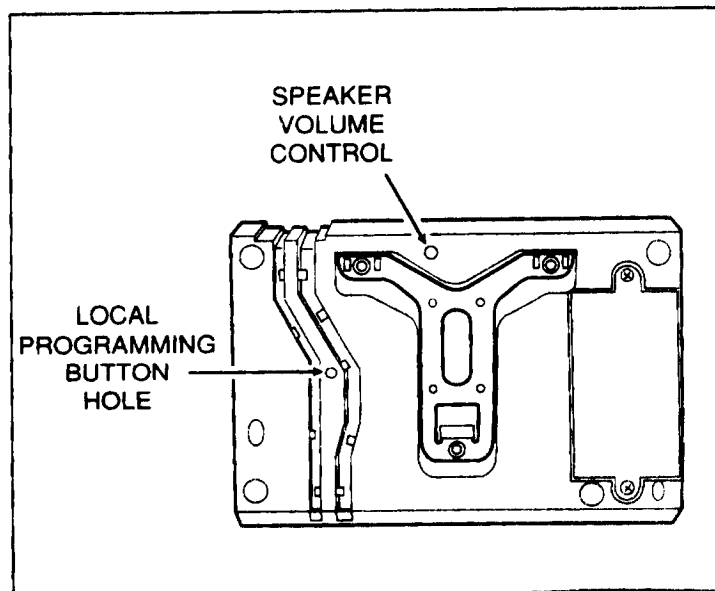


Figure 3. Console Speaker Volume Control

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