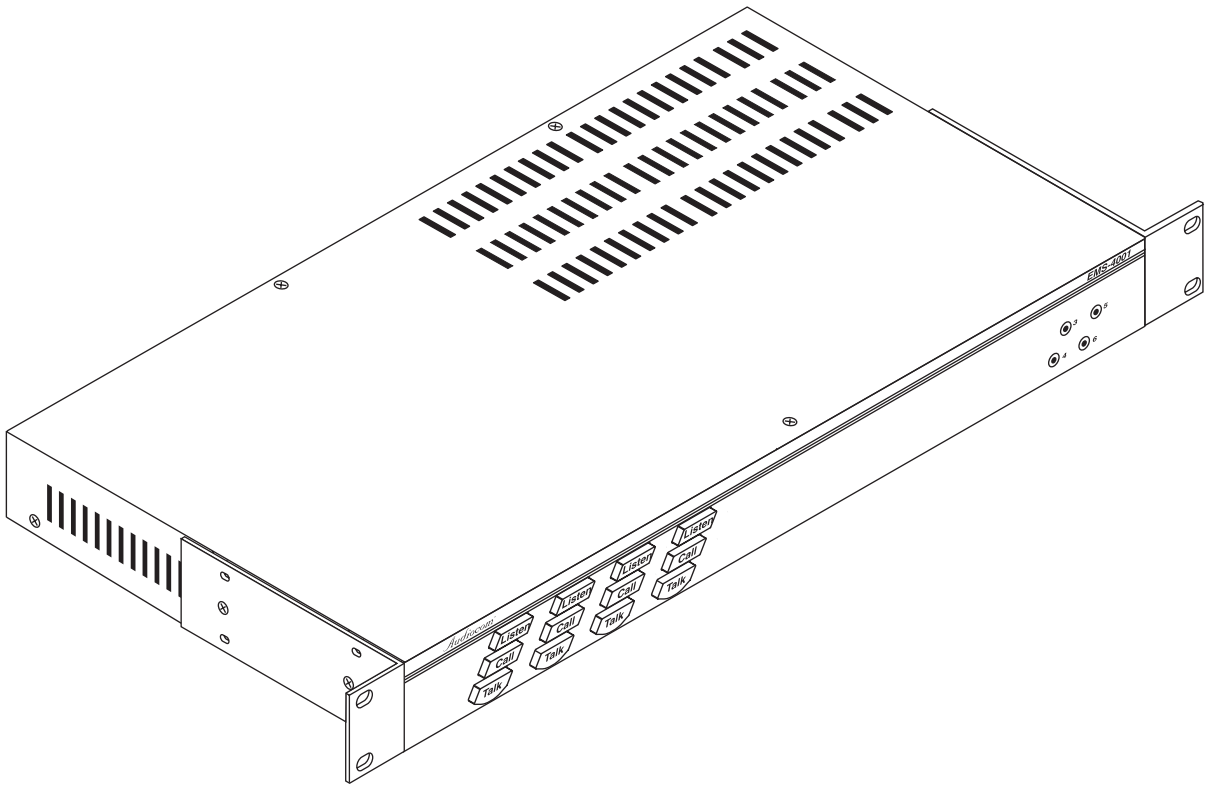
Audiocom® Innovative solutions for today's communications™

Model EMS-4001
Expansion Master Station
User Instructions



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Copyright Notice

Warranty Notice

See the enclosed warranty card for further details.

Customer Support

Technical questions should be directed to:

Customer Service Department
RTS/Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 USA
Telephone: 800-392-3497
Fax: 800-323-0498
Factory Service: 800-553-5992

Return Shipping Instructions

Customer Service Department
Telex Communications, Inc. (Lincoln, NE)
Telephone: 402-467-5321
Fax: 402-467-3279
Factory Service: 800-553-5992

Please include a note in the box which supplies the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

Shipping to the Manufacturer

All shipments of product should be made via UPS Ground, prepaid (you may request from Factory Service a different shipment method). Any shipment upgrades will be paid by the customer. The equipment should be shipped in the original packing carton. If the original carton is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four (4) inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Proof of Purchase for warranty repair. Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

Factory Service Department
Telex Communications, Inc.
8601 East Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.
Attn: Service

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 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.

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

Table of Contents

CHAPTER 1

Introduction

Description

The EMS-4001 adds four powered intercom channels to an MS-2001 Master Station, and it provides talk, listen and call buttons for the added channels. Up to four EMS-4001 Expansion Master Stations may be connected to the MS-2001 to add up to 16 channels (18 channels total). The MS-2001 microphone is used to talk back to the EMS-4001 channels, and the MS-2001 speaker is typically used for listening. However, there are also separate speaker jacks on the back panel of the EMS-4001 for independent monitor speakers, if desired. There are also 4 additional program inputs on the back of the EMS-4001, one for each added channel.

The MS-2001/ EMS-4001 combination can be used as a simple, multi-channel intercom user stations. In this configuration, the program inputs (and possibly the PA output of the MS-2001) are most likely not used, and the station operator has only talk, listen and call capability. It is also possible that advanced features of the MS-2001, such as Mic Kill Send, might be turned OFF. Alternatively, the MS2001/ EMS-4001 can be used as a master station. In this application, one or more program inputs and the PA output may be connected, and the program signals to the intercom channels can be turned ON or OFF from the MS-2001. Additionally, the Mic Kill Send feature can be enabled, and microphones on any channels may then be turned OFF from the MS-2001.

Features

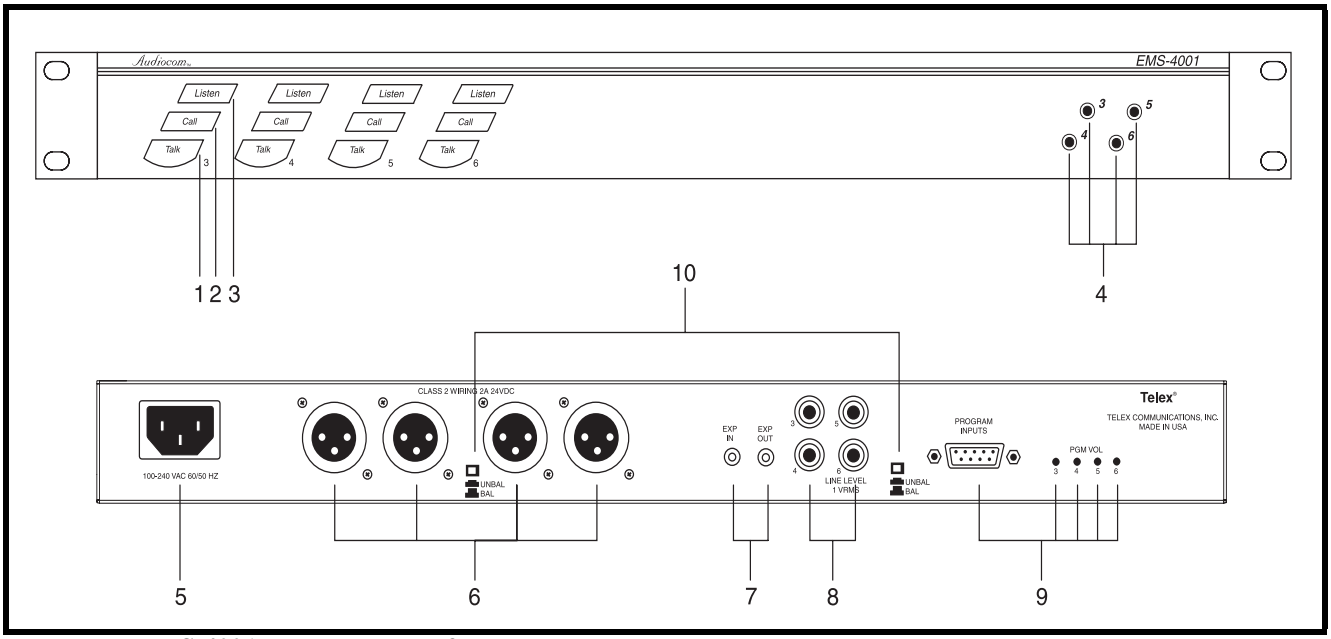

FIGURE 1. EMS-4001 Front and back features

1. Intercom Talk Keys: Momentary or latching (hands-free operation possible).
2. Call Keys: Used to call intercom channels and to indicate incoming calls.
3. Intercom Listen Keys: Momentary or latching operation possible.
4. Channel Power Status Indicators: The indicators are green for normal operation and change to red if there is a short circuit or overload condition on a power output line. If an indicator turns red, either disconnect the corresponding channel connector or turn off the intercom system and locate the problem before resuming operation.
5. Universal AC Power Connector: The unit accepts any input power in the range of 100-240 VAC, 50/60 Hz.
6. Intercom Channel Connectors: These connectors provide the power and audio connections for each of the four intercom channels.
7. EXP IN and EXP OUT Connectors: The EXP IN connector receives the microphone audio signal from the MS-2001, and it sends the monaural mix of the four EMS-4001 channels to the MS-2001 speaker or headset. The EXP OUT connector connects to the EXP IN connector of an additional EMS-4001. Up to four EMS-4001 Expansion Master Stations may be daisy chained with the EXP IN and EXP OUT connectors. An EXP IN/OUT cable is supplied with each EMS-4001.
8. Speakers: Usually, the listen mix of all four EMS-4001 channels is sent to the MS-2001 speaker or headset via the EXP IN connector. Alternatively, speakers may be connected to one or more of the speaker outputs of the EMS-4001.
9. Program Input Connector and Trimmers: Each intercom channel has its own program input and level adjust trimmer. For each program input, there is an internal jumper which routes the program either to the intercom channel only, or to both the intercom channel and the MS-2001 headset or speaker (default setting). Additionally, the program signal to the intercom channel may be turn on or off via the MS-2001 front panel programming. There is also an internal program interrupt DIP switch which selects either automatic program interrupt when the station operator activates a channel's talk key, or no program interrupt during talk. The EMS-4001 program input connectors may be broken out to common 3-pin XLR audio cables using the optional XP-4PGM Breakout Panel.
10. BAL/UNBAL switch: This selector switch sets the EMS-4001 for compatibility with either Audiocom or Clear-Com channel connector pinouts, channel power requirements, and call signaling requirements.

11. Configuration switches, Jumpers and Sidetone Controls: These let you customize the operation of the EMS-4001 to match your intercom system requirements.

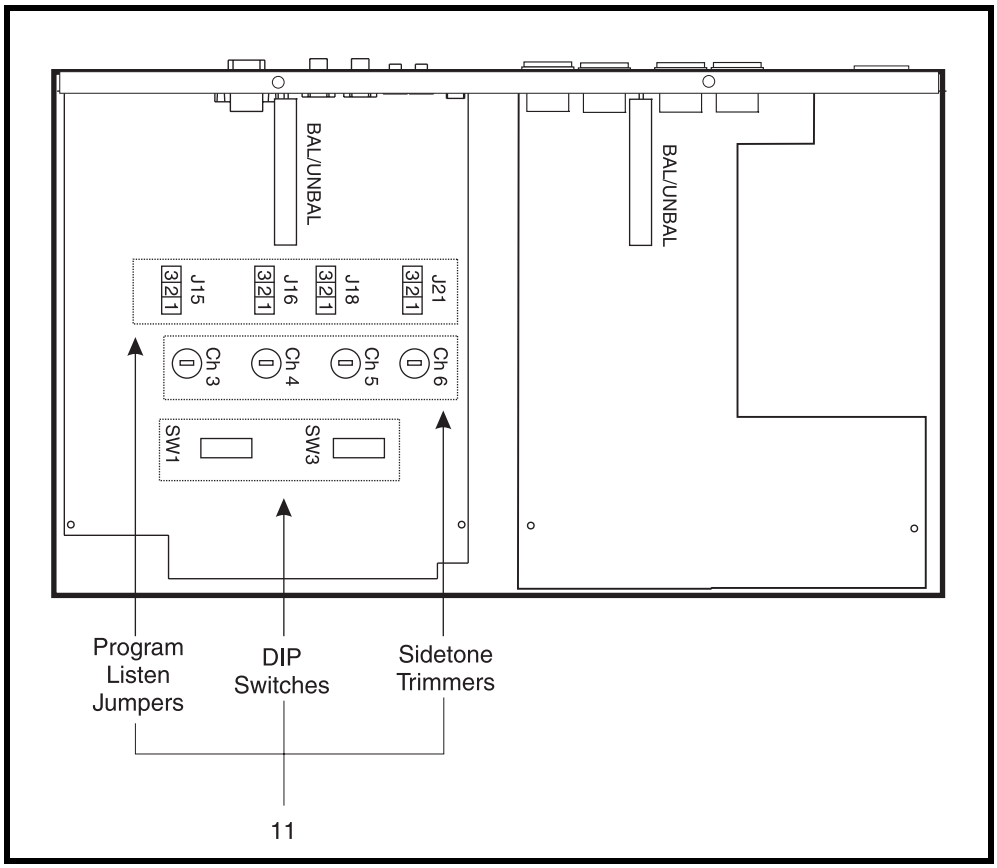

FIGURE 2. EMS-4001 Internal DIP switches, jumpers, and adjustments

CHAPTER 2

Installation

Unpacking

The EMS-4001 is supplied with the following items. Contact the shipper or your Audiocom dealer immediately if anything is damaged or missing. Detach and fill out the registration card and return it to Telex to properly register your intercom station.

Quantity	Description
1	EMS-4001 Expansion Master Station and Power Supply
1	Warranty and Registration Card
1	User Instructions
1	EXP IN/OUT cable, with 1/8-inch (3.5mm) phone plugs
2	Rack mount cosmetic covers

THE FOLLOWING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID ELECTRIC SHOCK, DO NOT REMOVE THE COVER UNLESS YOU ARE QUALIFIED TO DO SO.

LES INSTRUCTIONS QUI SUIVENT S'ADRESSENT UNIQUEMENT A UN TECHNICIEN QUALIFE. POUR EVITE DES CHOCS ELECTRIQUES, NEPAS OUVRIR LE BOITIER, A MOINS D'Y HABILITE

Configuration Pre-check

Before making connections, read the configuration notes that follow, and make sure that all switches and jumpers are properly set for your intended usage. Locations of configuration switches and jumpers are shown in Figure 2 on page 5. Only the DIP switches and jumpers require internal access. If access is required, remove three screws from the top cover and three screws along the bottom edge from each side.

DIP Switches

DIP Switches and their default settings are listed in Table 1 on page 9. The following paragraphs provide additional information.

Program Interrupt DIP Switches

Each intercom channel has a dedicated program input. These can be used to feed background music, mix-minus audio (for broadcasting usage) etc. to the channels. If external program sources will be connected to the EMS-4001, you have a choice of whether or not you want the program audio to interrupt (shut off) on the intercom channel while the MS-2001/EM-4001 station operator is talking.

Audio Call Send and Receive DIP Switches

By default, all channels of the EMS-4001 can send and receive Audiocom call signals. You can disable call send or call receive capability for selected channels, if desired.

Balanced / Unbalanced Switch

The BAL/UNBAL switch is located on the back panel. The switch must be set to the balanced (BAL) position for use with an Audiocom Intercom System. Set the switch to the unbalanced (UNBAL) position when using the unit with a Clear-Com Intercom System.

Direct Program Listen Enable/Disable Jumpers

By default, each program input can be heard by intercom stations on the corresponding intercom channel. (This can be turned ON or OFF for each program input via the MS-2001 front panel programming. See “Turning the Program Inputs ON and OFF” in the Operations section of the MS-2001 User Instructions.) Additionally, all program signals can be heard directly in the MS-2001 speaker or headset, and each program is output at the corresponding speaker jack on the back of the EMS-4001. To disable direct program listening for a program input, reset the appropriate jumper as shown in Table 2 on page 10. Locations of the jumpers are shown in Figure 2 on page 5.

Sidetone Trimmers

These trimmers are normally adjusted after all components are connected, and they can be accessed through the bottom cover as depicted in Figure 4 on page 14. Refer to the MS-2001 User Instructions for the sidetone adjustment procedure.

TABLE 1. EMS-4001 configuration switch settings

SWITCH NUMBER	DESCRIPTION	SETTINGS	DEFAULT SETTING
DIP Switch SW1 (Internal)			
SW1-1	Program Interrupt, CH6	On (Closed): Enabled Off (Open): Disabled	Off
SW1-2	Program Interrupt, CH5	On (Closed): Enabled Off (Open): Disabled	Off
SW1-3	Program Interrupt, CH4	On (Closed): Enabled Off (Open): Disabled	Off
SW1-4	Program Interrupt, CH3	On (Closed): Enabled Off (Open): Disabled	Off
SW1-5	Audio Call Send, CH3[a]	On (Closed): Enabled Off (Open): Disabled	On
SW1-6	Audio Call Receive, CH3[a]	On (Closed): Enabled Off (Open): Disabled	On
SW1-7	Audio Call Send, CH4[a]	On (Closed): Enabled Off (Open): Disabled	On
SW1-8	Audio Call Receive, CH4[a]	On (Closed): Enabled Off (Open): Disabled	On
Balanced (BAL) - Unbalanced (UNBAL) operation **Important!** Both switches on the back of the unit must be set the same			
SW1	Audiocom or Clear-Com Operation	Out (Audiocom): BAL In (Clear-Com): UNBAL	Out
SW2	Audiocom or Clear-Com Operation	Out (Audiocom): BAL In (Clear-Com): UNBAL	Out
DIP Switch SW3 (Internal)			
SW2-1	Audiocom Call Send, CH 5[a]	On (Closed): Enabled Off (Open): Disabled	On
SW2-2	Audiocom Call Receive, CH 5[a]	On (Closed): Enabled Off (Open): Disabled	On
SW2-3	Audiocom Call Send, CH 6[a]	On (Closed): Enabled Off (Open): Disabled	On
SW2-4	Audiocom Call Receive, CH 6[a]	On (Closed): Enabled Off (Open): Disabled	On
SW2-5	Not Used	On (Closed): Enabled Off (Open): Disabled	N/A
SW2-6	Not Used	On (Closed): Enabled Off (Open): Disabled	N/A
SW2-7	Not Used	On (Closed): Enabled Off (Open): Disabled	N/A
SW2-8	Not Used	On (Closed): Enabled Off (Open): Disabled	N/A

a. These switches apply only when in Audiocom (BAL) mode. Call send and receive are always enabled in Clear-Com (UNBAL) mode.

TABLE 2. EMS-4001 jumper settings

Jumper	Description	Settings for All Jumpers
J15	Program 3 direct to Headset or Speaker	Pins 2&3 Shorted: Enable Pins 1&2 Shorted: Disable
J16	Program 4 direct to Headset or Speaker	Pins 2&3 Shorted: Enable Pins 1&2 Shorted: Disable
J18	Program 5 direct to Headset or Speaker	Pins 2&3 Shorted: Enable Pins 1&2 Shorted: Disable
J21	Program 6 direct to Headset or Speaker	Pins 2&3 Shorted: Enable Pins 1&2 Shorted: Disable

Mounting Configurations

The EMS-4001 mounts in a standard 19-inch equipment rack and is 1 rack unit high. Install the two supplied rack mount cosmetic covers when installing the EMS-4001 in the rack.

When rack mounting components, you may not be able to access the sidetone trimmers after the components have been mounted. In this case, you can position the components in the rack and make all required connections. Then adjust the sidetone trimmers before installing and tightening all rack mount screws.

Connection Notes

Typical connections for the MS-2001/EMS-4001 are shown in Figure 3 on page 13.

Cables

The numbers below correspond to the cable numbers in the connection drawing in Figure 3 on page 13.

1. Single channel intercom cable. Sold separately. Use Telex “ME” cables, below, or can also be built by using two twisted pairs in a shielded cable: Pair 1 is used for pins 2 and 3. Pair 2 has both wires connected to pin 1.

   ME-25: 25’ (7.6 m) cable with male and female 3-pin XLR connectors.
   ME-50: 50’ (15.2 m) cable with male and female 3-pin XLR connectors.
   ME-100: 100’ (30.4 m) cable with male and female 3-pin XLR connectors.
2. Shielded patch cable, 9-pin Male D-sub to 9-pin Female D-sub. Customer local purchase: available at most electronic stores. Note, all pins must be connected straight through (i.e., pin 1 to pin 1, pin 2 to pin 2, etc.).
3. Shielded patch cable, stereo miniplug to stereo miniplug. Customer local purchase: available at most electronic stores.
4. 18” (457 mm) EXP IN/OUT cable, stereo miniplug to stereo miniplug. One supplied with each EMS-4001.
5. Shielded audio cable. Must have male 3-pin XLR connector at one end for connection to the XP-USPG or XP-4PGM program inputs. Pin-out for program inputs is as follows:

   Pin 1: common
   Pin 2: + program input
   Pin 3: - program input

6. Shielded audio cable. Must have male 3-pin XLR connector at one end for connection to the XP-USPG or XP-4PA output. Pin-out for PA output is as follows:

   Pin 1: common

   Pin 2: + PA output

   Pin 3: - PA output

CHAPTER 3

Operation

Power-Up

Plug in the power cord. The EMS-4001 channels power-up identically to channels one and two of the MS-2001. Refer to the MS-2001 User Instructions for all power-up information. The MS-2001 and EMS-4001 can be powered up in any order.

Sidetone Adjustments

Use the sidetone adjustment procedure as described in the MS-2001 User Instructions, except substitute channel 3, channel 4, etc. The locations of the EMS-4001 sidetone trimmers are shown in Figure 4 on page 14.

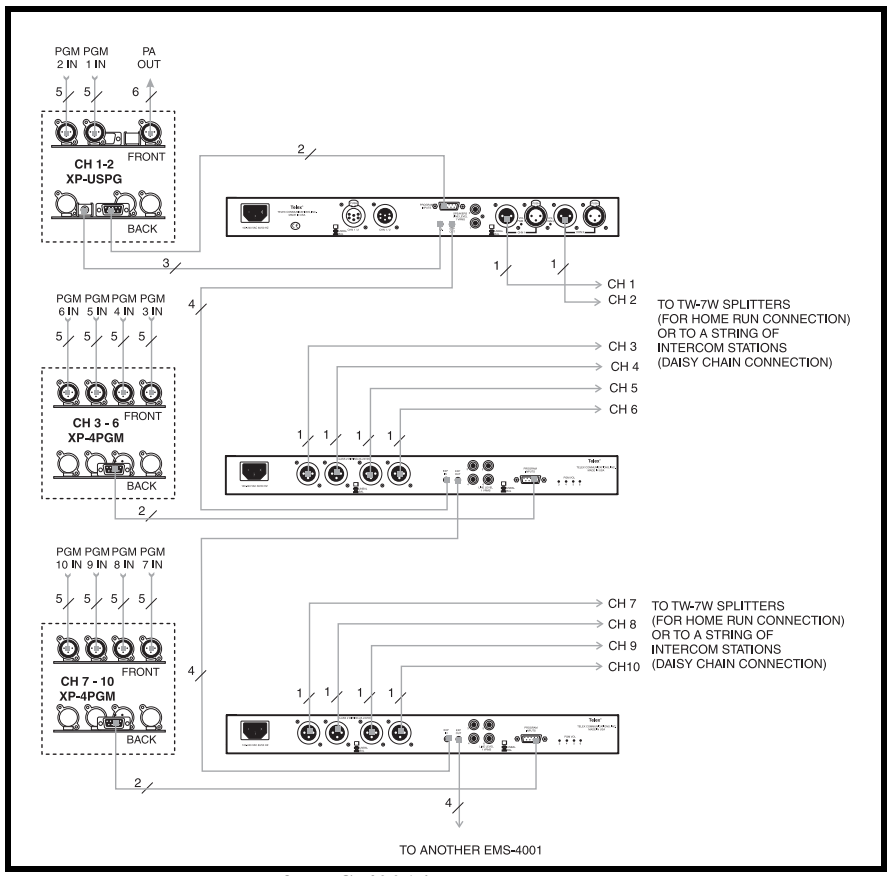

FIGURE 3. Example of EMS-4001 in a system.

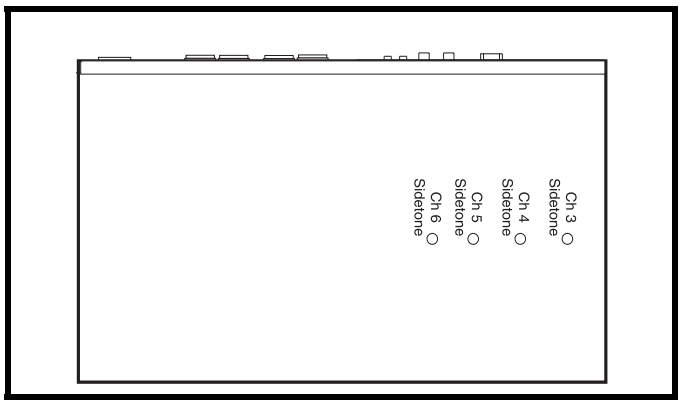

FIGURE 4. EMS-4001 sidetone adjustment locations

Operation

The EMS-4001 channels operate identically to channels one and two of the MS-2001. Refer to the MS-2001 User Instructions for all operating information.

Specifications

GENERAL

Input and Output Power:

AC Input: 100-200 VAC, 50/60 Hz

Channel Power (each channel): 24 ±1 VDC, 2A

Dimensions: 1.75" (44.5 mm) high, 19" (483 mm) wide, 10.31" (261.9 mm) deep

Weight: approximately 4.5 lbs (2 kg)

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

PROGRAM INPUT CONNECTORS

Input Level: 100mV maximum

Voltage Gain: 25 ±3dB

Output Level (to intercom channel): 1.0 VRMS nominal, 2.3 VRMS max.

Input Impedance: 75k ohms

Common Mode Rejection: Greater than 50dB

Connector Type: DB9F female, 9-pin D-Sub

Pin 1: Common

Pin 2: Channel 3 program in low

Pin 3: Channel 4 program in low

Pin 4: Channel 5 program in low

Pin 5: Channel 6 program in low

Pin 6: Channel 3 program in high

Pin 7: Channel 4 program in high

Pin 8: Channel 5 program in high

Pin 9: Channel 6 program in high

INTERCOM CHANNELS, BALANCED MODE (BAL/UNBAL SWITCH SET TO BAL)

Output Level: 1VRMS nominal

Input Impedance: 300 ohms ±10%

Bridging Impedance: greater than 10,000 ohms

Sidetone: -40dB, 35dB adjustable range

Call Signaling:

Send: 20 kHz ±100 Hz, 0.5VRMS ±10%

Receive: 20 kHz ±800 Hz, 100m VRMS

Mic Kill Frequency:

Send: 24 kHz ±100 Hz, 0.5VRMS ±10%

Receive: 24 kHz ±800 Hz, 100m VRMS

Noise Contribution: less than -70dB

Common Mode Rejection Ratio: greater than 50dB

Connector Type: One SLR-3M for each channel

Balanced Configuration Pinouts

Pin 1: DC/audio Common

Pin 2: Intercom audio low and +24 VDC output

Pin 3: Intercom audio high and +24 VDC output

INTERCOM CHANNEL UNBALANCED MODE (BAL/UNBAL SWITCH SET TO UNBAL

Output Level: 2 Vp-p (750m VRMS)

Input Impedance: 200 Ohms ±10%

Bridging Impedance: greater than 10k ohms ±5%

Call Signaling:

Send: 11 ±3 VDC

Receive: 4 VDC minimum

Connector Type: One XLR-3M for each channel

Pin 1: Common

Pin 2: +30 ±1 VDC output

Pin 3: Intercom audio high

EXPANSION INPUT/OUTPUT

Connector Type: 1/8" Stereo phone jack

Tip: Talk output

Ring: Listen input

Sleeve: Common


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