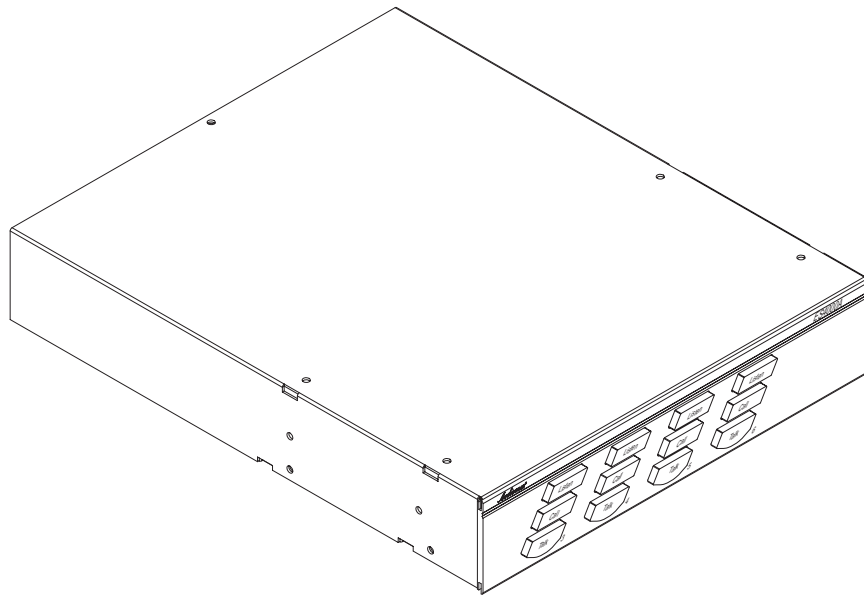# Telex®

User Instructions

Model ES4000A
Intercom Expansion Station

Audiocom® Intercom Systems

TELEX®

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.

$C\epsilon$ This product meets Electromagnetic Compatibility Directive 89/336/EEC.

Introduction.

Thank you for purchasing the Audiocom ES4000A Intercom Expansion Station. We hope the many design features of this product will satisfy your intercommunication requirements for many years to come. To get the most out of the ES4000A, please take a few moments to look through this booklet before using the Intercom Expansion Station for the first time.

2

Table of Contents

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Description

The ES4000A is an Expansion Station for the US2000A User Station. It interfaces 4 additional intercom channels to the US2000A, and it provides talk, listen and call buttons for the 4 additional channels. There are also 4 additional program inputs on the back of the ES4000A, 1 for each added channel. Up to 4 ES4000A Expansion Stations may be connected to the US2000A to add up to 16 channels (18 channels total). The ES4000A typically utilizes the US2000A microphone and speaker (or microphone headset) for communication with the added channels. The ES4000A also has individual speaker outputs for independent monitoring of one or more of the 4 channels if desired.

The US2000A / ES4000A combination can be used as a simple, multi-channel intercom user station. In this configuration, the program inputs (and possibly the PA output of the US2000A) 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 US2000A, such as Mic Kill Send, might be turned off. Alternatively, the US2000A / ES4000A 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 US2000A. Additionally, the Mic Kill Send feature can be enabled, and microphones on any channels may then be turned off from the US2000A.
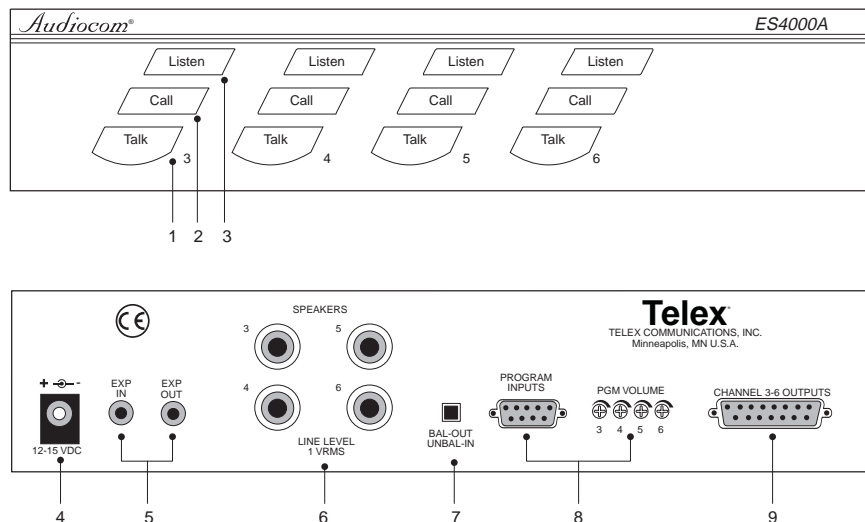

Figure 1. ES4000A Reference View (See numbered features on next page)

4

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. Local Power Jack: The ES4000A can be powered from the intercom channels via the CHANNEL 3-6 OUTPUTS connector (9). Alternatively, an optional PS-L wall-pack accessory may be used to power the ES4000A from an AC outlet. When power is sensed at the local power jack, the ES4000A automatically disconnects from channel power. This means more channel power is available for additional belt packs.

☞ **Important:** The Local Power Jack only provides power to the ES4000A: it cannot be used to power the intercom system.

5. EXP IN and EXP OUT Connectors: The EXP IN connector receives the microphone audio signal from the US2000A, and it sends the monaural mix of the four ES4000A channels to the US2000A speaker or headset. The EXP OUT connector connects to the EXP IN connector of an additional ES4000A. Up to 4 ES4000A Expansion Stations may be daisy chained with the EXP IN and EXP OUT connectors. An EXP IN/OUT cable is supplied with each ES4000A.

6. SPEAKERS: Usually, the listen mix of all 4 ES4000A channels is sent to the US2000A speaker or headset via the EXP IN connector. Alternatively, speakers may be connected to one or more of the speaker outputs of the ES4000A.

7. BAL / UNBAL Switch: This selector switch sets the ES4000A for compatibility with either Audiocom or Clear-Com* channel connector pin-outs, channel power requirements, and call signaling requirements.

8. Program Inputs Connector and Trimmers: Each intercom channel has its own program input and level adjust trimmer. For each program input, there is an inter-

* Brand names mentioned are the property of their respective companies.

5

Audiocom®

nal jumper which routes the program either to the intercom channel only, or to both the intercom channel and the US2000A headset or speaker (default setting). Additionally, the program signal to the intercom channel may be turned on or off via the US2000A 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 ES4000A program inputs connector may be broken out to common 3-pin XLR audio cables using an optional XP-4PGM Breakout Panel.

9. CHANNEL 3-6 OUTPUTS Connector: This connector provides the intercom channel audio input and output connections, as well as operating power when the ES4000A is being powered from the intercom channels. Depending on the application, this connector can connect to either a PS4000 Power Supply, or to an XP-ES4000 Breakout Panel. Examples of both connections are provided in the wiring diagrams which follow. A channel output cable is supplied with each ES4000A.

10. Configuration Switches, Jumpers and Sidetone Controls (Figure 2). These let you customize the operation of the ES4000A to match your intercom system requirements. See "Configuration Pre-check", page 7, for details.
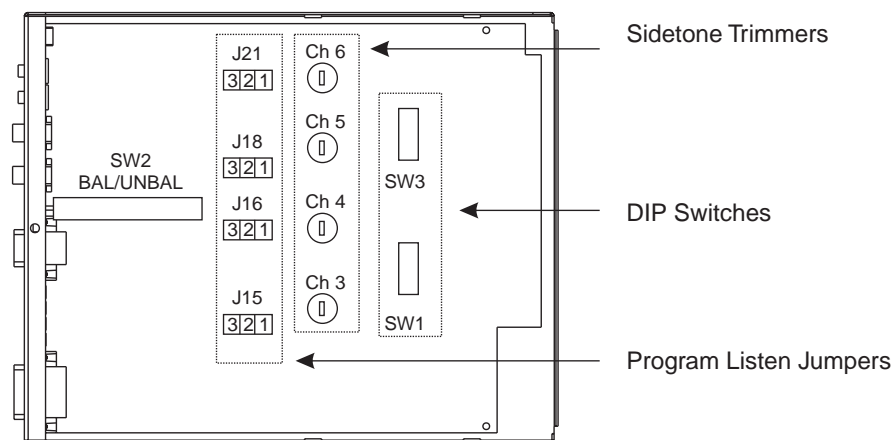

Figure 2. Locations of configuration switches, jumpers, and sidetone controls. (Top cover removed.)

6

Installation

Unpacking

The ES4000A 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	ES4000A Expansion Station
1	Warranty and registration card
1	User Instructions
2	Termination Plug
1	EXP IN/OUT Cable, with 1/8-inch (3.5 mm) phone plugs
1	CHANNEL OUTPUT Cable, with 15-pin connectors
4	Rubber feet (apply to bottom of ES4000A for desktop use)

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. Only the DIP switches and jumpers require internal access. If access is required, remove one screw from the top cover and 3 screws from each side.

DIP Switches

DIP switches and their default settings are listed in Table 1, page 8. The following paragraphs provide additional details.

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 intercom channels. If external program sources will be connected to the ES4000A, you have a choice of whether or not you want the program audio to interrupt (shut off) on the intercom channel while the US2000A/ES4000A station operator is talking.

7

Table 1. Configuration Switch Settings

Switch Number	Description	Settings	Default Setting
DIP Switch SW1 (Internal)			
SW1-1	Program Interrupt, Ch 6	On (Closed): Enabled Off (Open): Disabled	Off
SW1-2	Program Interrupt, Ch 5	On (Closed): Enabled Off (Open): Disabled	Off
SW1-3	Program Interrupt, Ch 4	On (Closed): Enabled Off (Open): Disabled	Off
SW1-4	Program Interrupt, Ch 3	On (Closed): Enabled Off (Open): Disabled	Off
SW1-5	Audiocom Call Send, Ch 3*	On (Closed): Enabled Off (Open): Disabled	On
SW1-6	Audiocom Call Receive, Ch 3*	On (Closed): Enabled Off (Open): Disabled	On
SW1-7	Audiocom Call Send, Ch 4*	On (Closed): Enabled Off (Open): Disabled	On
SW1-8	Audiocom Call Receive, Ch 4*	On (Closed): Enabled Off (Open): Disabled	On
Push-button Switch SW2 (BAL-UNBAL Switch on Back Panel)			
	Audiocom or Clear-Com operation	Out: Audiocom (Balanced) In: Clear-Com (Unbalanced)	Out
DIP Switch SW3 (Internal)			
SW3-1	Audiocom Call Send, Ch 5*	On (Closed): Enabled Off (Open): Disabled	On
SW3-2*	Audiocom Call Receive, Ch 5*	On (Closed): Enabled Off (Open): Disabled	On
SW3-3	Audiocom Call Send, Ch 6*	On (Closed): Enabled Off (Open): Disabled	On
SW3-4	Audiocom Call Receive, Ch 6*	On (Closed): Enabled Off (Open): Disabled	On
SW3-5*	Not used	On (Closed): N/A Off (Open): N/A	Don't care
SW3-6*	Not used	On (Closed): N/A Off (Open): N/A	Don't care
SW3-7*	Not used	On (Closed): N/A Off (Open): N/A	Don't care
SW3-8*	Not used	On (Closed): N/A Off (Open): N/A	Don't care

*   These switches apply only when the BAL/UNBAL switch on the back panel (SW2) is set to the BAL position for Audiocom usage. When the switch is set to the UNBAL position, call send and receive are always enabled.

8

Audiocom Call Send and Receive DIP Switches

By default, all channels of the ES4000A can send and receive Audiocom call signals. You can disable call send or call receive capability for selected channels if desired.

☞ When the BAL / UNBAL switch on the back panel is set to the UNBAL position (for use with a Clear-Com Intercom System) the call send and call receive DIP switches have no effect. Call send and call receive are always on for Clear-Com usage.

Balanced/Unbalanced Switch (SW2)

This 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 US2000A / ES4000A 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 US2000A front panel programming. See "Turning the Program Inputs On and Off" in the Operation section of the US2000A User Instructions.) Additionally, all program signals can be heard directly in the US2000A speaker or headset, and each program is output at the corresponding speaker jack on the back of the ES4000A. To disable direct program listening for a program input, reset the appropriate jumper as shown in Table 2. Locations of the jumpers are shown in Figure 2, page 6.

Table 2. Direct Program Listen Enable / Disable Jumpers

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

9

Sidetone Trimmers

These trimmers are normally adjusted after all components are connected, and they can be accessed through the bottom cover (Figure 15). Refer to the US2000A User Manual for the sidetone adjustment procedure.

Mounting Configurations

The ES4000A can be used on a desktop, or it can be rack mounted. For desktop use, install the 4 rubber feet supplied with the ES4000A. For rack mounting, use optional Audiocom RMK Rack Mount Kits (Figure 3). Many configurations are possible when using the kits. Examples are shown in Figures 4 and 5.

☞ 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.

RMK-S Single-Unit Rack Mount Kit
for one 1/2-rack wide Audiocom component*

RMK-D Dual-Unit Rack Mount Kit
for two 1/2-rack wide Audiocom components*

RMK-M Multi-Unit Rack Mount Kit
for mixed 1/2-rack and 1/4-rack wide Audiocom components. Mounts one 1/2-rack wide unit with 1/4-rack wide components, or 3 1/4-rack wide components.
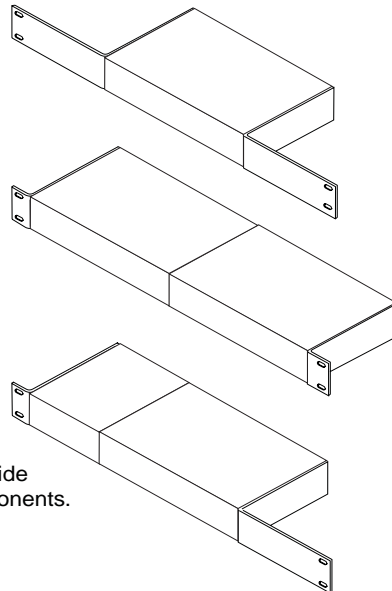
* 1/2-rack wide components: US2000A, ES4000A, PS2000L, SPS2000A, PS4000, PS-X, SPK-2000. 1/4-rack wide components: SS-1000

Figure 3. Audiocom RMK Rack Mount Kits.

10

BACK OF RACK   FRONT OF RACK

PS4000 (CH7 -10POWER)

SPS2000A (CH1/2 POWER)   PS4000 (CH3 -6POWER)

US2000A (CH 1/2)

2 ES4000A'S
(CH 3-6 AND CH 7-10)

XP-USPG   XP-4PGM   XP-4PGM   SPARE

BOP-1000 WITH 1 XP-USPG AND 1 XP-4PGM

Figure 4. Typical Rack Mount Configuration for a 10-Channel Master Speaker Station with Minimum Power Supply Configuration. The SPS-2000A provides power for channels 1 and 2, and also provides the listening speaker for all 10 channels. A microphone must be connected to the US2000A for talk on the 10 channels. Each PS4000 provides power for 4 intercom channels and also interfaces an ES4000A to the intercom channels. The XP-USPG interfaces 2 external program inputs to the US2000A, and also interfaces the US2000A to an external PA system. Each XP-4PGM interfaces 4 external program sources to an ES4000A. Connections and further details for this configuration are shown in Figure 6. **Note:** An additional rack space is shown between the two PS4000 power supplies. This may be required to prevent power supply overheating when the ambient air temperature is high.

11

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BACK OF RACK

FRONT OF RACK

PS2000L (CH5 POWER) PS2000L (CH6 POWER)

PS2000L (CH3 POWER) PS2000L (CH4 POWER)

BOP-1000 WITH 1 XP-USPG, 1 XP-4PGM, AND 1 XP-ES4000

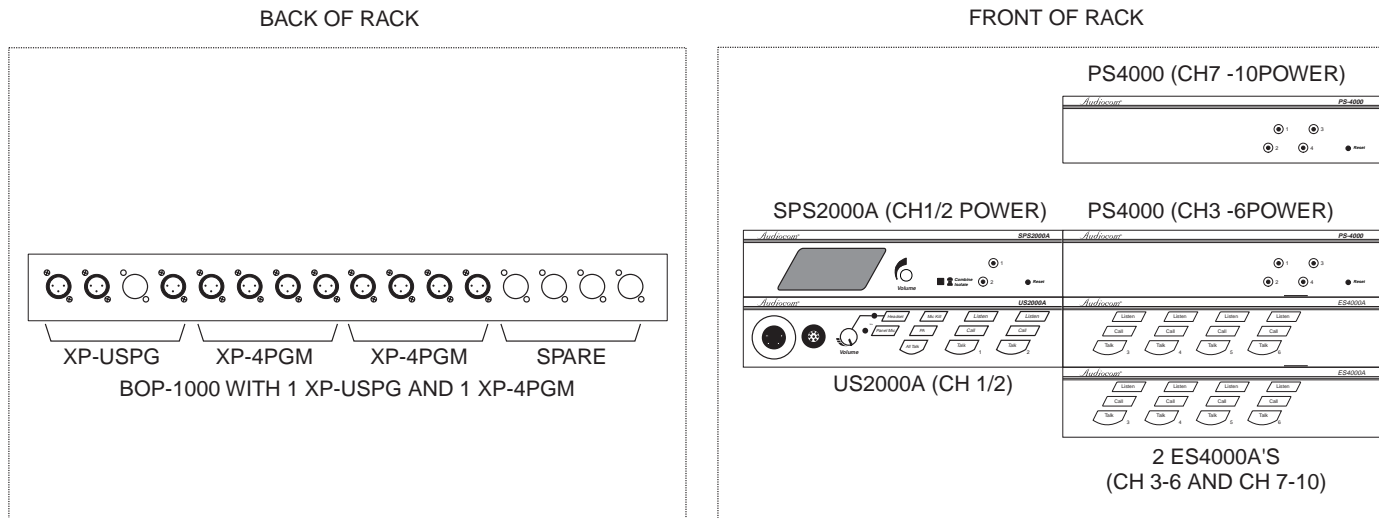SPS2000A (CH1 POWER) PS2000L (CH2 POWER)

XP-USPG   XP-4PGM   XP-ES4000

US2000A   ES4000A

Figure 5. Typical Rack Mount Configuration for a 6-Channel Master Speaker Station with Maximum Power Supply Configuration. *Each channel has a separate power supply, and the SPS-2000A on channel 1 also provides the listening speaker for all 6 channels. A microphone must be connected to the US2000A for talk on the 6 channels. The XP-USPG interfaces 2 external program inputs to the US2000A, and also interfaces the US2000A to an external PA system. The XP-4PGM interfaces 4 external program sources to the ES4000A. The XP-ES4000 interfaces 4 of the PS2000L power supplies to the 4 channels of the ES4000A. The connection between the US2000A and the ES4000A, as well as the connections of the XP-USPG and XP-4PGM, are shown in Figure 6. The power supply connections for the US2000A are shown in Figure 7. The power supply connections for the ES4000A are shown in Figure 9.* **Note:** *Additional rack spaces are shown between the rows of power supplies. This may be required to prevent power supply overheating when the ambient air temperature is high.*
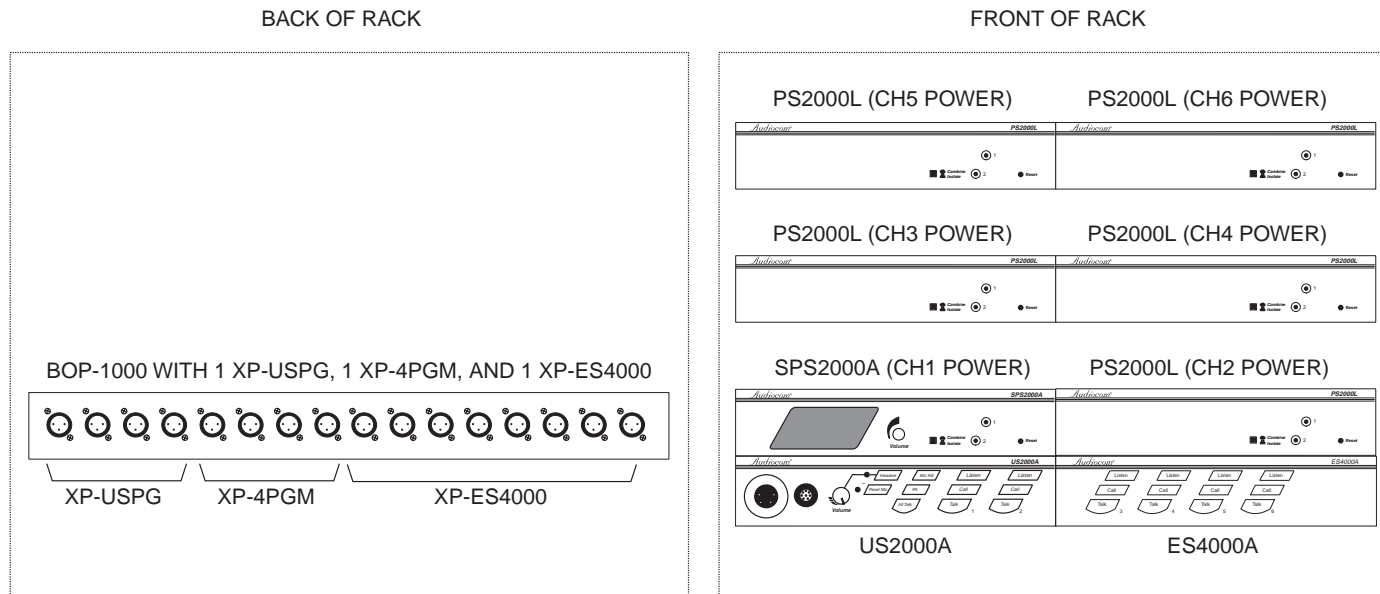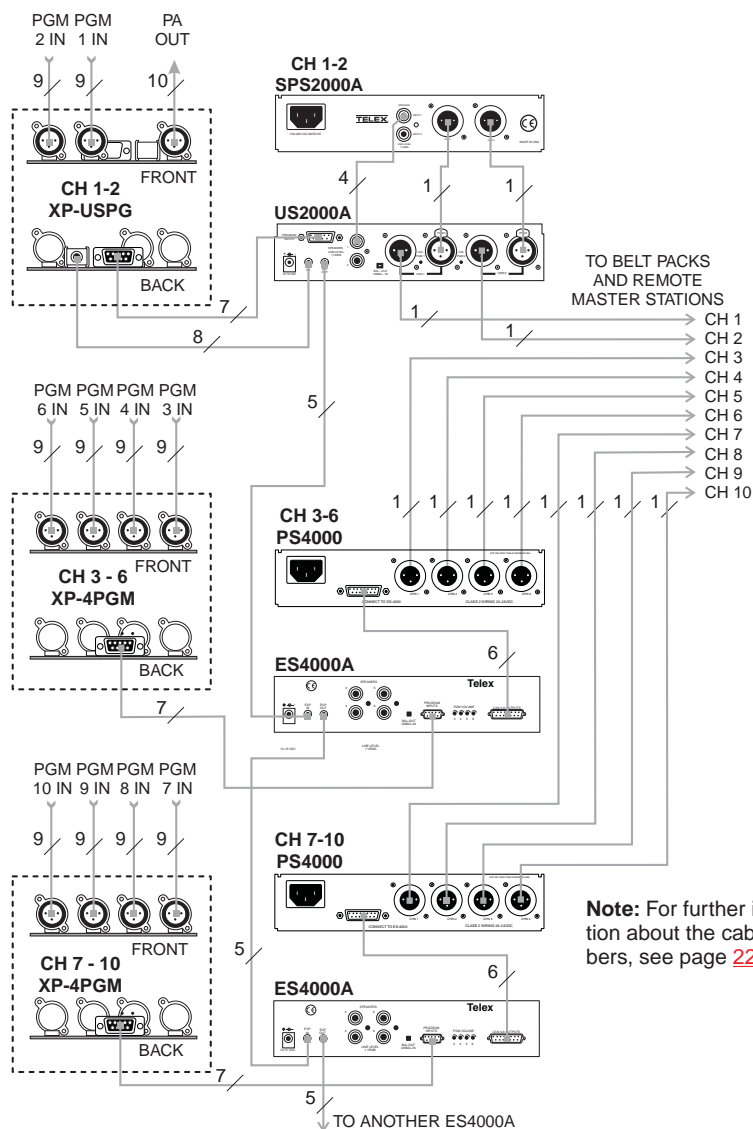
Connection Notes

- Typical connections for the US2000A, ES4000A and various power supplies are shown starting with Figure 6, page 14. Select the configuration which most closely matches your intended usage.

- The US2000A and ES4000A normally draw operating power from the intercom channel power supplies (SPS2000A, PS2000L, etc.). Alternatively, you can use optional PS-L Wall-pack Power Supplies. If you are using PS-L Wall-packs, connect them to the 12-15 VDC jacks on the back panels of the US2000A and ES4000A. When PS-L Wall-packs are used, the US2000A / ES4000A will not draw power from the intercom channel power supplies, leaving more power for belt packs.

☞ **Important:** The PS-L power supply only provides power for the station that it is connected to. You cannot use a PS-L to power the intercom channels!

- Never connect more than 1 SPS2000A, PS2000L, or PS4000 Power Supply to the same intercom channel. This will cause poor audio quality and increased noise. Typically, all power supplies are located at a central location, such as a central master station. This lets the central master station operator turn off the intercom system when it is not being used.

- Termination Plugs: The ES4000A is supplied with 2 termination plugs for special applications where 1 or more channels are unpowered. Figures 12, page 20 and 13, page 21 show examples of how to use these plugs. If all of your intercom channels will be powered from an SPS2000A, PS2000L, or PS4000 power supply, the termination plugs are not needed.

13

PGM PGM   PA
2 IN 1 IN OUT
9   9   10

CH 1-2
SPS2000A

TELEX

4   1   1

CH 1-2
XP-USPG
FRONT

US2000A

BACK

7

8

5

TO BELT PACKS
AND REMOTE
MASTER STATIONS

1 → CH 1
1 → CH 2
→ CH 3
→ CH 4
→ CH 5
→ CH 6
→ CH 7
→ CH 8
→ CH 9
→ CH 10

PGM PGM PGM PGM
6 IN 5 IN 4 IN 3 IN
9   9   9   9

CH 3-6
PS4000

1 1 1 1 1 1 1

CH 3 - 6
XP-4PGM
FRONT

BACK

ES4000A   6

Telex

7

PGM PGM PGM PGM
10 IN 9 IN 8 IN 7 IN
9   9   9   9

CH 7-10
PS4000

CH 7 - 10
XP-4PGM
FRONT

Note: For further informa-tion about the cable num-bers, see page 22.

ES4000A   6

Telex

BACK

7

5

5

TO ANOTHER ES4000A

*Figure 6. Central master station with simple power supply configuration. This 10-channel station provides all of the channel power and program input connections for the intercom system. This configuration should only be used at one point in the intercom system. It is ideal for smaller intercom systems with fewer remote intercom stations. For optional power configurations that permit more stations, see Figures 7 through 10. **Note:** The SPS2000A power supply includes a speaker and is typically used for intercom listening, with a gooseneck microphone connected to the US2000A for talk-back. Alternatively, a headset with a microphone may be used. In this case, no speaker is needed, and a PS2000L power supply may therefore be used in place of the SPS2000A.*

14

SPS2000A
Channel 1 Power and
All-Channel Speaker
Combine / Isolate Switch
set to Combine

PS2000L
Channel 2 Power
Combine / Isolate Switch
set to Combine

1

4

1

Note:
US2000A Internal
DIP switches set
for monaural
operation (default)

Note: For further informa-
tion about the cable num-
bers, see page 22.

1

1

1

1

To ½ of stations
on channel 1

To ½ of stations
on channel 1

To ½ of stations
on channel 2

To ½ of stations
on channel 2

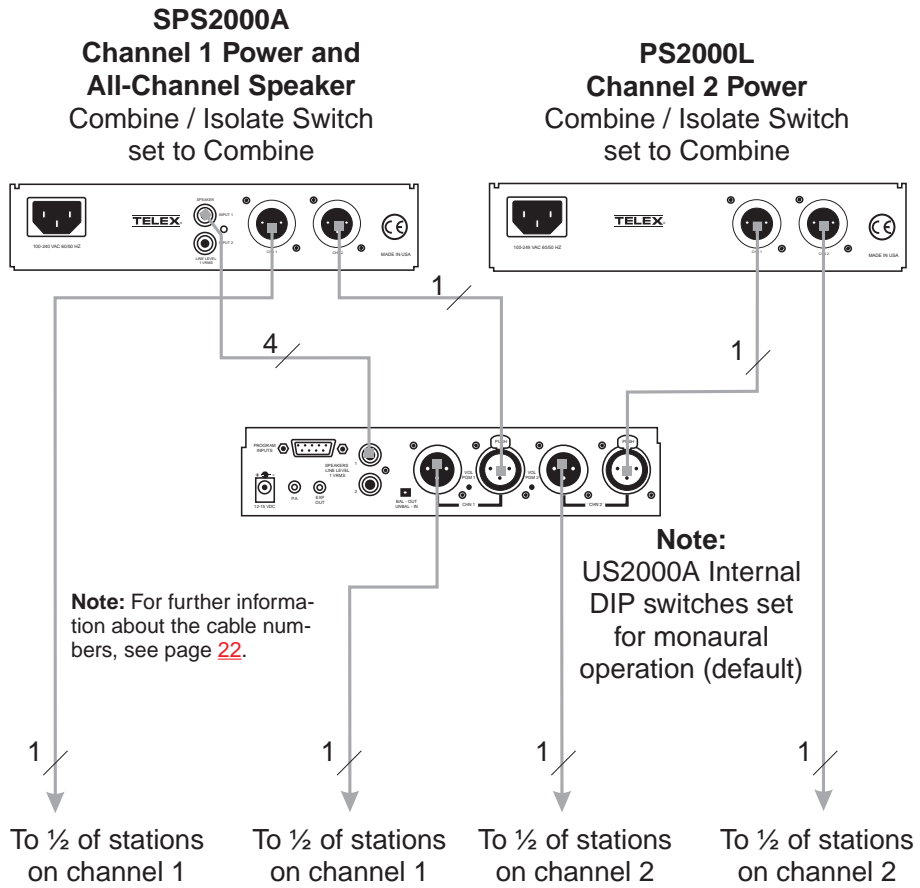*Figure 7. Maximum Power Configuration for Channels 1 and 2. This power sup-
ply configuration should only be used at one point in channels 1 and 2. Typically, it
is set up at the central master station. This configuration permits about twice as
many remote stations on channels 1 and 2 than the configuration shown in Figure
6. Note: A PS2000L may be substituted for the SPS2000A for headset-only opera-
tion.*

15

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TO US2000A
EXP IN CONNECTOR

5

**CH 3-6
ES4000A**

Telex

XP-ES4000

BACK

5

TO THE EXP IN CONNECTOR
OF ANOTHER ES4000A

6

1 — CH 6

1 — CH 5

1 — CH 4

1 — CH 3

FRONT

TO REMOTE MASTER
STATIONS AND BELT PACKS

1

1

1

1

CH 6   CH 5

TELEX

CH 4   CH 3

TELEX

PS2000L Power Supplies
Combine / Isolate switches set to Isolate
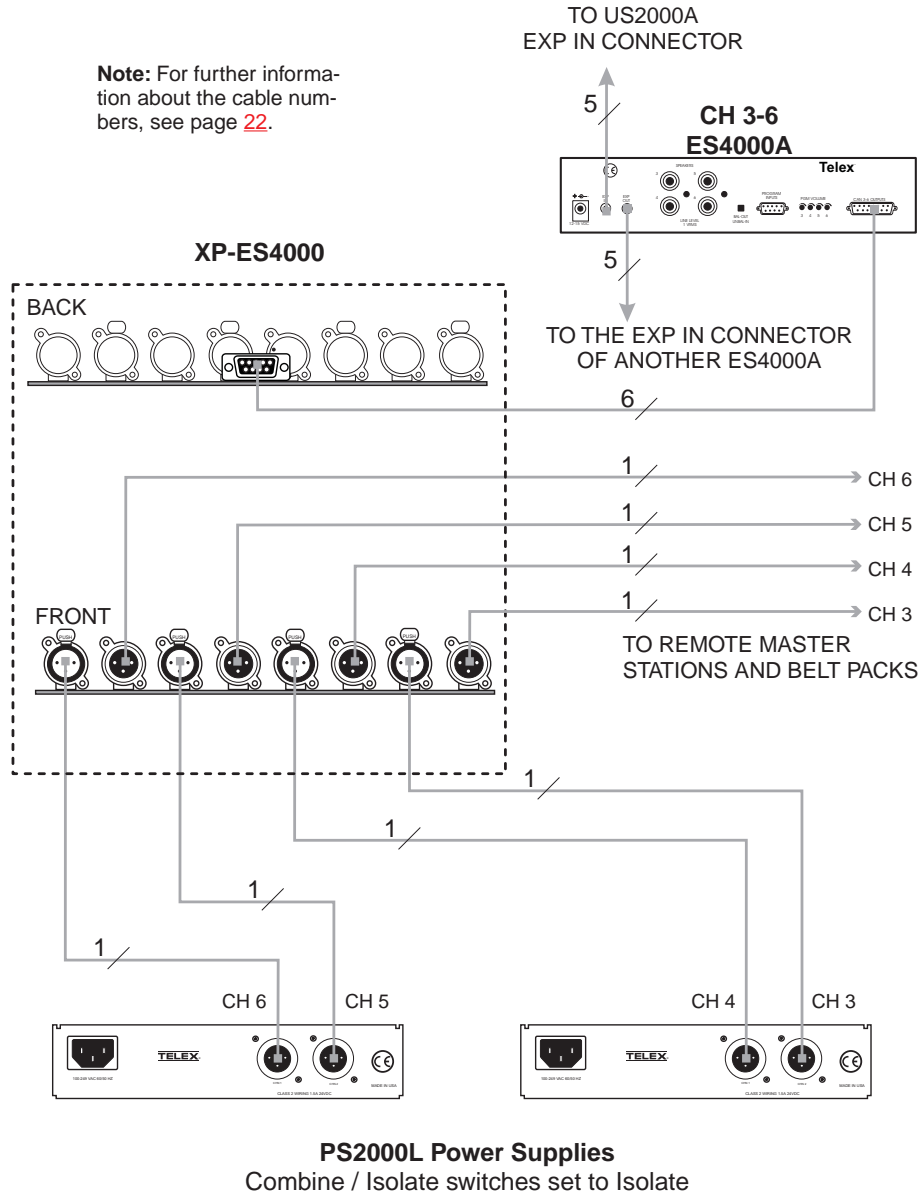
*Figure 8. Intermediate Power Configuration for Channels 3-6 (or 7-10, 11-14,
etc.). This power supply configuration should only be used at one point in each
group of 4 channels. Typically, it is set up at the central master station. It permits
about twice as many remote stations on the 4 channels than is possible with the
power supply configuration shown in Figure 6.*

16

TO US2000A
EXP IN CONNECTOR

Note: For further information about the cable numbers, see page 22.

5

**CH 3-6
ES4000A**

Telex

5

TO THE EXP IN CONNECTOR
OF ANOTHER ES4000A

XP-ES4000

BACK

6

1 → CH 6

1 → CH 5

1 → CH 4

FRONT

1 → CH 3

TO 1/2 OF REMOTE
MASTER STATIONS
OR BELT PACKS

1

1

1

1

TO 1/2 OF REMOTE
MASTER STATIONS
OR BELT PACKS

CH 6

TELEX

1 → CH 6

CH 5

TELEX

1 → CH 5

1 → CH 4

CH 4

TELEX

1 → CH 3

PS2000L Power Supplies
Combine / Isolate Switches
set to Combine

CH 3

TELEX

Figure 9. Maximum Power Configuration for Channels 3-6 (or 7-10, 11-14, etc.).
This power supply configuration should only be used at one point in each group of 4 channels. Typically, it is set up at the central master station. It permits about four times as many remote stations on the 4 channels than is possible with the power supply configuration shown in Figure 6.

17

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TO US2000A
EXP IN CONNECTOR

5

**CH 3-6
ES4000A**

Telex

XP-ES4000

BACK

5

TO THE EXP IN CONNECTOR
OF ANOTHER ES4000A

6

1 → CH 6

1 → CH 5

1 → CH 4

1 → CH 3

FRONT

TO 1/2 OF REMOTE
MASTER STATIONS
AND BELT PACKS ON
CH 3 AND CH 4.

TO ALL REMOTE
MASTER STATIONS
AND BELT PACKS ON
CH 5 AND CH 6.

1

1

1

1

CH 5
and
CH 6

TELEX

PS2000L Power Supply
Combine / Isolate switch set to Isolate

TO 1/2 OF REMOTE
MASTER STATIONS
AND BELT PACKS
ON CH 3 AND CH 4

1 → CH 4

1 → CH 3

CH 4

TELEX

PS2000L Power Supplies
Combine / Isolate switches
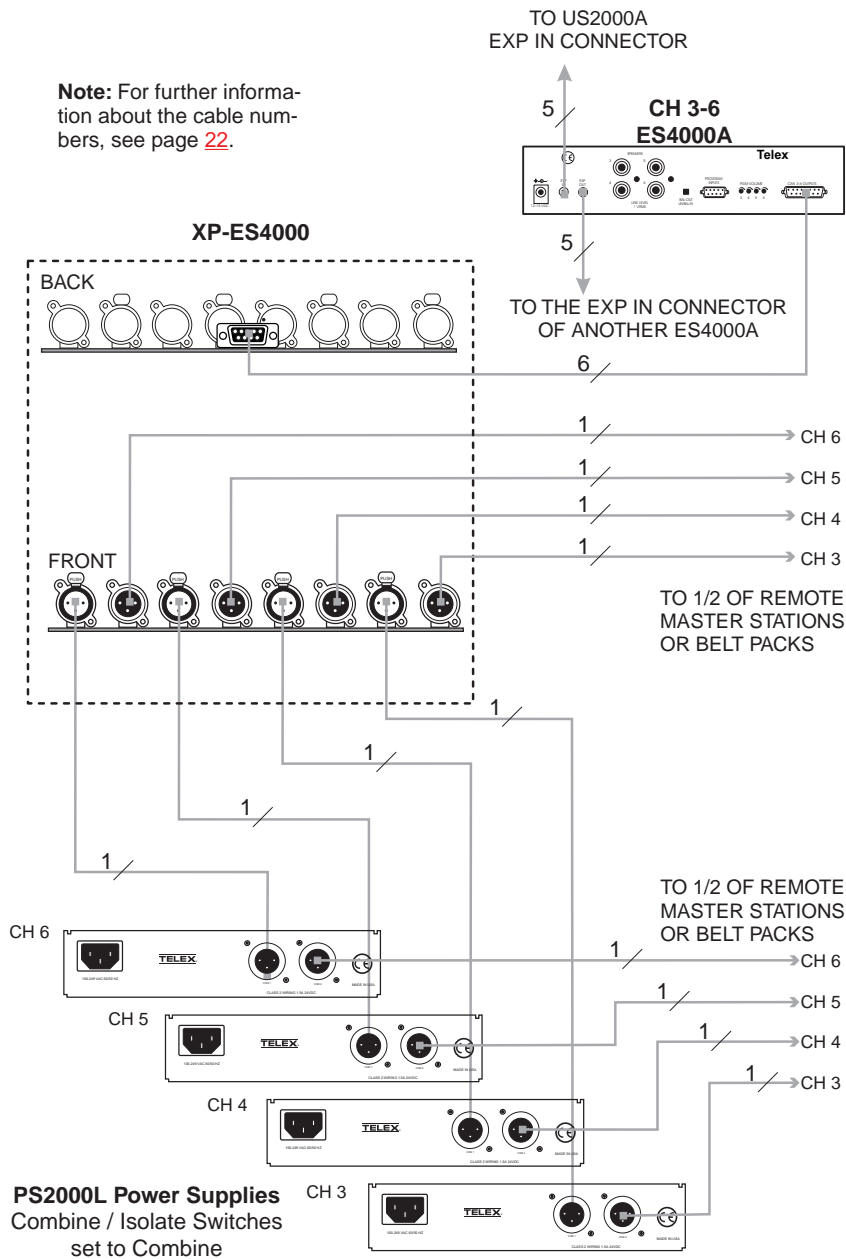set to Combine

CH 3

TELEX
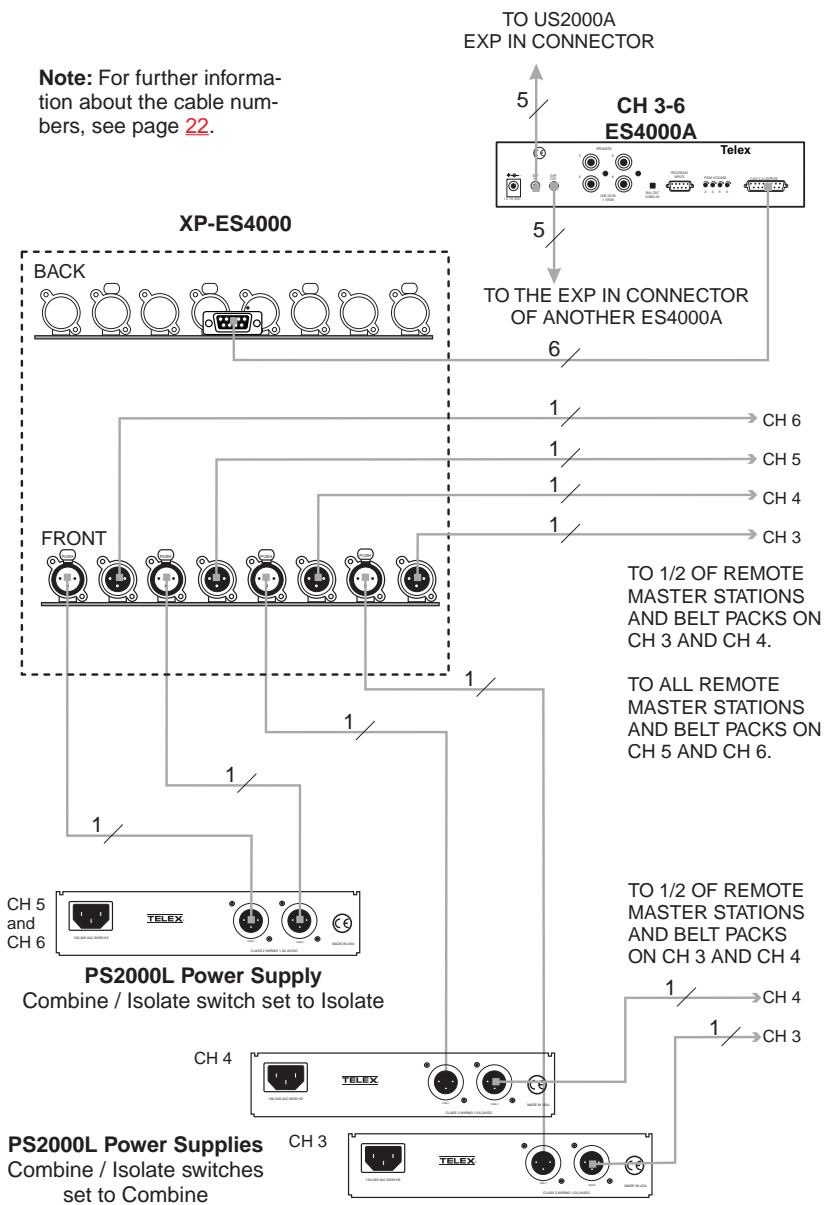
Figure 10. Mixed Intermediate and Maximum Power Configuration for Channels 3-6 (or 7-10, 11-14, etc.). This power supply configuration should only be used at one point in each group of 4 channels. Typically, it is set up at the central master station. In this example, channels 3 and 4 have about twice the capacity of channels 5 and 6, while channels 5 and 6 have about twice the capacity as the configuration shown in Figure 6.

18

PS-L SPK2000 CH 1-2 US2000A

TO ADDITIONAL REMOTE MASTER STATIONS OR BELT PACKS

4

1 — CH 1
1 — CH 2

CH 1 — 1
CH 2 — 1

FROM MASTER STATION OR BELT PACK

5

XP-ES4000

BACK

CH 3-6 ES4000A

Telex

6

1 → CH 6
1 → CH 5
1 → CH 4
1 → CH 3

FRONT

TO ADDITIONAL REMOTE MASTER STATIONS OR BELT PACKS

CH 6 — 1
CH 5 — 1
CH 4 — 1
CH 3 — 1

FROM MASTER STATION OR BELT PACK

5

XP-ES4000

BACK

CH 7-10 ES4000A

Telex

6

1 → CH 10
1 → CH 9
1 → CH 8
1 → CH 7

FRONT

TO ADDITIONAL REMOTE MASTER STATIONS OR BELT PACKS

CH 10 — 1
CH 9 — 1
CH 8 — 1
CH 7 — 1

FROM MASTER STATION OR BELT PACK

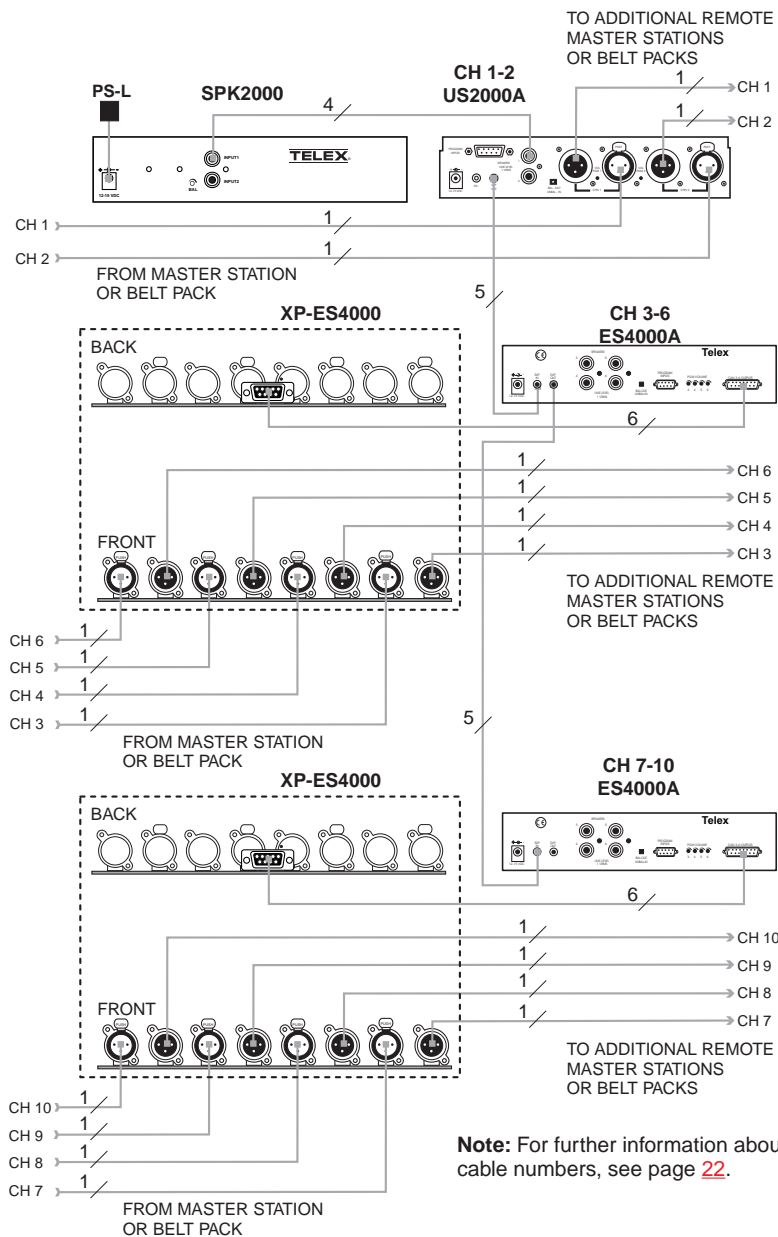**Note:** For further information about the cable numbers, see page 22.

Figure 11. Typical remote 10-channel master station or user station. This intercom station can have the same functionality as the central master station shown in Figure 6. Alternatively, you can disable some of the advanced features, such as Mic Kill, program inputs, etc. This will limit the station's functionality to be a common user station with multi-channel talk/listen capability.

19

Audiocom®

TO US2000A
EXP IN CONNECTOR

5

**CH 3-6
ES4000A**

Telex

5

XP-ES4000

TO THE EXP IN CONNECTOR
OF ANOTHER ES4000A

BACK

6

1   CH 6

1   CH 5

TERMINATION
PLUGS

WET LINES TO 1/2 OF REMOTE
MASTER STATIONS OR BELT PACKS ON
CHANNELS 5 AND 6

FRONT

1   CH 3

1   CH 4

DRY LINES TO REMOTE STATIONS
ON CHANNELS 3 AND 4

1

1

CH 6

TELEX

1   CH 6

CH 5

TELEX

1   CH 5

PS2000L Power Supplies
Combine / Isolate Switches
set to Combine

WET LINES TO 1/2 OF REMOTE
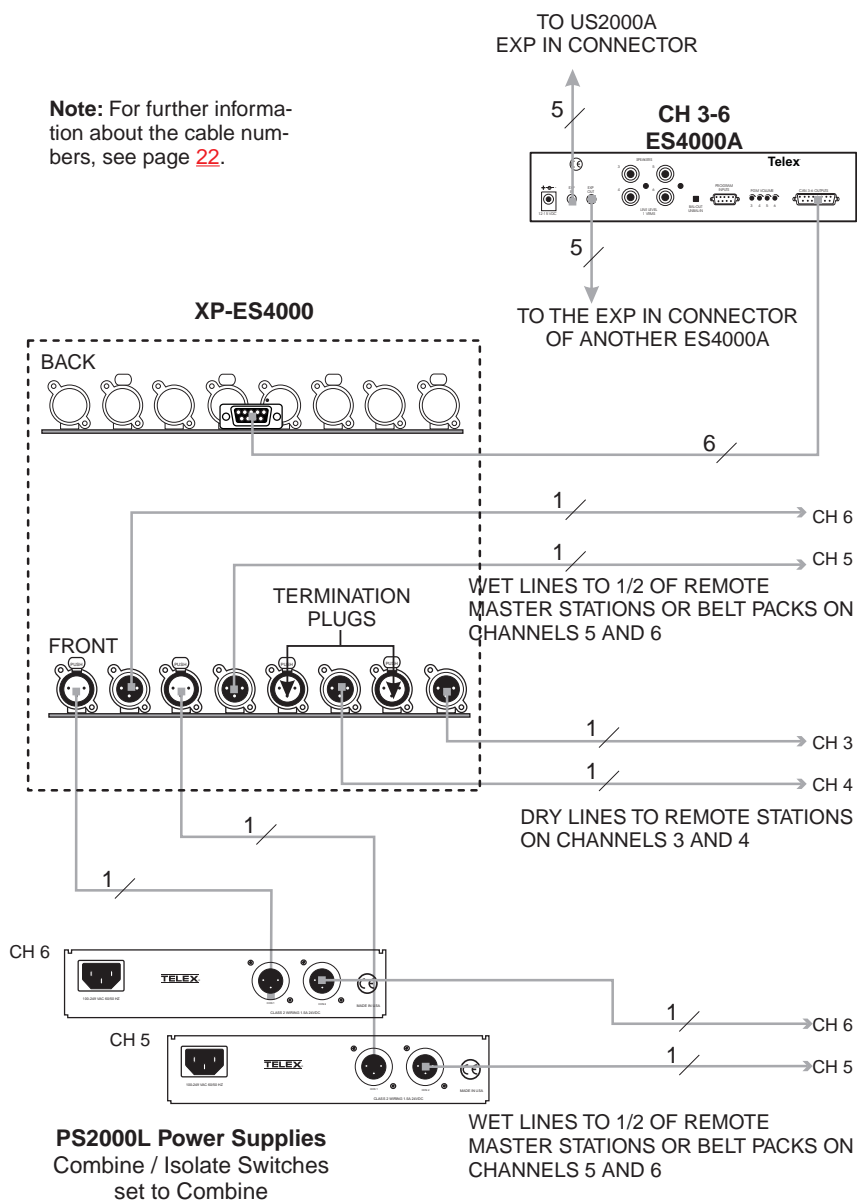MASTER STATIONS OR BELT PACKS ON
CHANNELS 5 AND 6

*Figure 12. Using the termination plugs supplied with the ES4000A for mixed
wet- and dry-line operation.* *In this example, channels 5 and 6 are powered from
a PS2000L Power Supply (wet lines), while channels 3 and 4 are operated without
power (dry lines). Any remote station connected to channel 3 or 4 must supply its
own power. For example, a US2000A that is powered by a PS-L Power Supply
could be connected to channels 3 and 4. The advantage of dry-line operation is
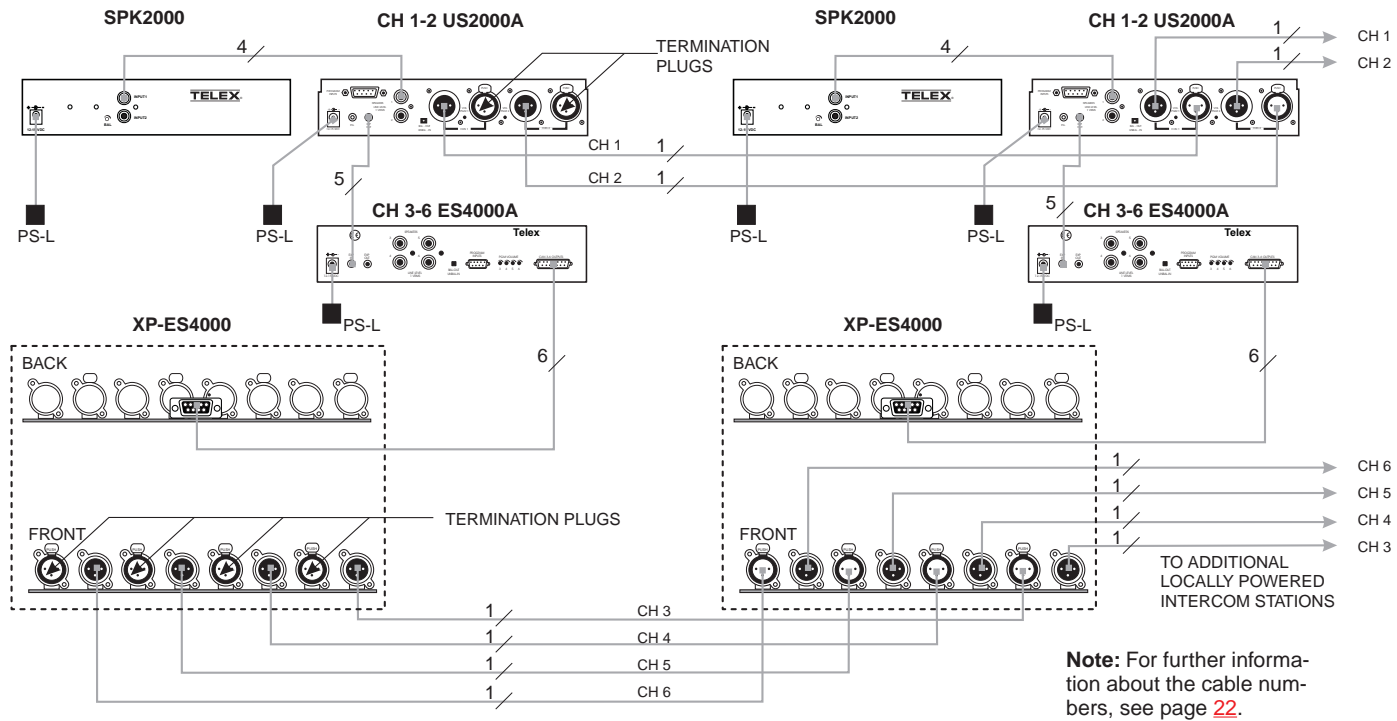that intercom stations may be operated over a much greater distance.*

20

SPK2000　　　**CH 1-2 US2000A**

4

TERMINATION PLUGS

1 → CH 1
1 → CH 2

SPK2000　　　**CH 1-2 US2000A**

4

PS-L　　　PS-L

CH 1 　1
CH 2 　1

5

CH 3-6 ES4000A

Telex

PS-L　　　PS-L

5

CH 3-6 ES4000A

Telex

PS-L

6

XP-ES4000

BACK

XP-ES4000

BACK

6

1 → CH 6
1 → CH 5
1 → CH 4
1 → CH 3

TERMINATION PLUGS

FRONT

FRONT

TO ADDITIONAL LOCALLY POWERED INTERCOM STATIONS

1　CH 3
1　CH 4
1　CH 5
1　CH 6

Note: For further information about the cable numbers, see page 22.

Figure 13. Using termination plugs for all dry-line connection. In this example, all components use local power supplies, and no power is supplied on the intercom channels. All stations may be operated over a much greater distance than is possible when using powered channels. *Important:* there should only be one termination plug used in each channel.
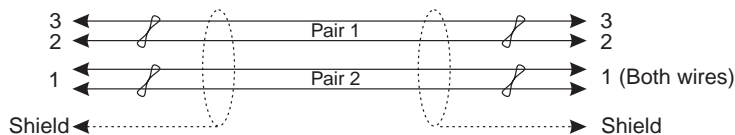
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Cables

The numbers below correspond to the cable numbers in the connection drawings on the previous pages.

1. 1-channel intercom cable. Sold separately. Use Telex "ME" cables, below. Or, build per Figure 14.
    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. 2-channel intercom cable. Sold separately. Use Telex "ME /2" cables, below. Or, build per Figure 14.
    ME-25/2: 25' (7.6 m) cable with Male and Female 6-pin XLR connectors.
    ME-50/2: 50' (15.2 m) cable with Male and Female 6-pin XLR connectors.
    ME-100/2: 100' (30.4 m) cable with Male and Female 6-pin XLR connectors.

3. Y adapter cable. Sold separately. Use Telex CA-23-16. Or, build per Figure 14.

4. 3 ft (0.91 m) speaker cable with RCA plugs. One supplied with each SPS2000A, SPK-1000, and SPK-2000.

5. 18" (457 mm) EXP IN/OUT cable, stereo miniplug to stereo miniplug. One supplied with each ES4000A.

6. 18" (457 mm) CHANNEL OUTPUT cable, 15-pin Male Dsub to 15-pin Female Dsub. One supplied with each ES4000A.

7. Shielded patch cable, 9-pin Male Dsub to 9-pin Female Dsub. Customer local purchase: available at Radio Shack, etc. Note: All pins must be connected straight through: do not use an RS232 computer cable!

8. Shielded patch cable, stereo miniplug to stereo miniplug. Customer local purchase. Available at Radio Shack, etc.

22

9. 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

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

    Pin 1: common

    Pin 2: + PA output

    Pin 3: - PA output

23

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TYPICAL 1-CHANNEL CABLE WIRING

```
3 ◄─────────────────────► 3
2 ◄──────── Pair 1 ───────► 2

1 ◄──────── Pair 2 ───────► 1 (Both wires)

Shield ◄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄► Shield
```

Cable Type: 22AWG Stranded, 2-Pair Twisted-wire, with Shield
Connector Type: 3-Pin XLR Audio (Neutrik or Switchcraft)*
Pin 1: Common
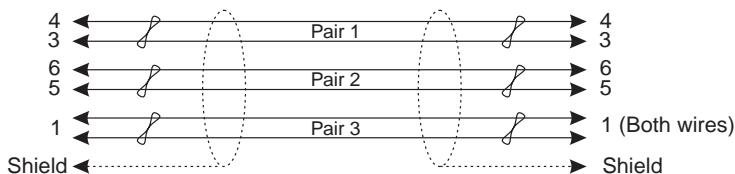Pin 2: Channel Audio / Power   ⌇ Denotes twisted pair.
Pin 3: Channel Audio / Power
Shield: Earth ground   ⦚ Denotes shield.

TYPICAL 2-CHANNEL CABLE WIRING

```
4 ◄─────────────────────► 4
3 ◄──────── Pair 1 ───────► 3

6 ◄─────────────────────► 6
5 ◄──────── Pair 2 ───────► 5

1 ◄──────── Pair 3 ───────► 1 (Both wires)

Shield ◄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄► Shield
```

Cable Type: 22AWG Stranded, 3-Pair Twisted-wire, with Shield
Connector Type: 6-Pin XLR Audio (Neutrik only, not compatible with 6-pin Switchcraft)*
Pin 1: Channel 1 & 2 Common
Pin 2: No connection
Pin 3: Channel 1 Audio / Power   ⌇ Denotes twisted pair.
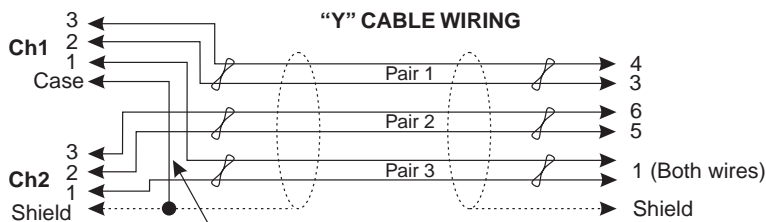Pin 4: Channel 1 Audio / Power
Pin 5: Channel 2 Audio / Power   ⦚ Denotes shield.
Pin 6: Channel 2 Audio / Power
Shield: Earth ground

"Y" CABLE WIRING

```
      3 ◄
      2 ◄
Ch1   1 ◄
      Case ◄────── Pair 1 ──────► 4
                                  3

                 ─── Pair 2 ───► 6
                                  5

      3 ◄
      2 ◄
Ch2   1 ◄       ─── Pair 3 ───► 1 (Both wires)
      Shield ◄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄► Shield
```

Use second drain wire if available, or add an extra section of wire.

* Standard cables are generally constructed using a male connector at one end and a
    female connector at the other end. This allows several cables to be interconnected to
    create longer cable runs. Audiocom master stations, speaker stations and belt packs
    also typically provide both a male and female Neutrik connector for each intercom
    channel. This permits loop-through connection of several intercom stations using the
    standard cables. Audiocom power supplies use a 3-pin male Neutrik connector for
    each channel. Audiocom wallplates use male Neutrik connectors.

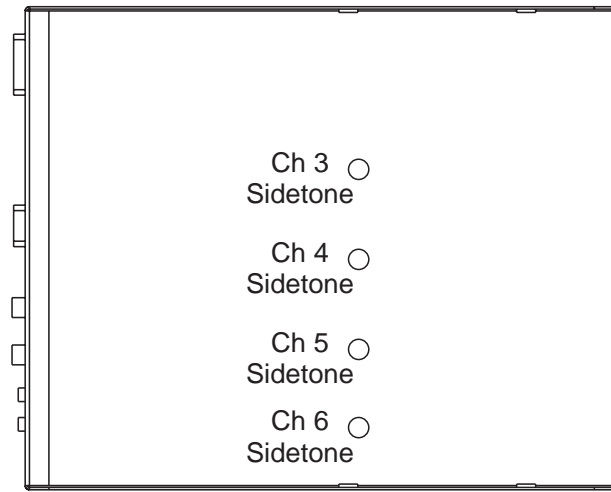*Figure 14. Audiocom intercom cable wiring diagrams*

24

Figure 15. Sidetone Trimmer Access on Bottom of ES4000A

Power-Up

The ES4000A channels power-up identically to channels 1 and 2 of the US2000A. Refer to the US2000A User Instructions for all power-up information.

Sidetone Adjustments

Use the sidetone adjustment procedure as described in the US2000A User Instructions, except substitute channel 3, channel 4, etc. The locations of the ES4000A sidetone trimmers are shown in Figure 15.

Operation

The ES4000A channels operate identically to channels 1 and 2 of the US2000A. Refer to the US2000A User Instructions for all operating information.

25

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Specifications

General

Power Requirements:

Voltage:

Phantom Power: 24 VDC nominal (12 to 30 VDC)

Local Power (with PS-L Wall-pack Power Supply or equivalent): 14 to 15 VDC

Current: 65 mA, quiescent; 150 mA maximum

Dimensions: 1.75" (44.5 mm) high, 8.25" (209.6 mm) wide, 10.0" (250 mm) deep

Environmental Requirements:

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

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

Intercom Channels, Balanced Mode (BAL / UNBAL switch set to BAL position)

Output Level: 1 Vrms nominal

Input Impedance: 300 ohms

Bridging Impedance: greater than 10,000 ohms

Sidetone: -40 dB, 35 dB adjustable range

Call Signaling:

Send: 20 kHz ±100 Hz, 0.47 Vrms ± 2dB

Receive: 20 kHz ±800 Hz, 100 mVrms

Mic-Kill Frequency:

Send: 24 kHz ±100 Hz, 0.5 Vrms ± 2dB

Receive: 24 kHz ±800 Hz, 100 mVrms

Noise Contribution: less than -70 dB

Common Mode Rejection Ratio: greater than 50 dB

Intercom Channel, Unbalanced Mode (BAL / UNBAL switch set to UNBAL position)

Output Level: 1 Vrms ±10%

Input Impedance: 150 ohms

Bridging Impedance: 10,000 ohms ±5%

Sidetone: -40 dB, 35 dB ±10% adjustable range

Call Signaling:

Send: 11 ±2 VDC

Receive: 4 VDC

Speaker Output

Level: 1.0 Vrms, ±2 dB (0 dB nominal)

Impedance: 1000 ohms nominal

Program Input

Voltage Gain Adjustment Range (program Input to channel output, with 100 mVrms input): 25 ±3 dB (2.6 Vrms maximum, unit is factory-set to 1.0 Vrms)

Input Impedance: Balanced, 75 Kohm ±10%; unbalanced, 38 Kohm ±10%

26

Frequency Response

EXP IN to/from Channel, EXP IN to/from EXP OUT, Channel to Speaker: 200 Hz to 8 kHz +1/-3 dB

Total Harmonic Distortion: Less than 0.5 %

Connector Pin-outs

12-15 VDC Jack

Connector Type: 2.0 mm DC jack

Internal pin: + 12 to 15 VDC

External Ring: Common

EXP IN Jack

Connector Type: 1/8" (2.0 m) stereo phone jack

Tip: Listen input

Ring: Talk output

Sleeve: Common

EXP OUT Jack

Connector Type: 1/8" (2.0 m) stereo phone jack

Tip: Talk output

Ring: Listen input

Sleeve: Common

SPEAKER Jacks

Connector Type: RCA Phono jack

Tip: Speaker output high

Sleeve: Common

PROGRAM INPUTS Connector

Connector Type: DB9F Female, 9-pin D-subminature

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

27

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CHANNEL 3-6 OUTPUTS Connector

Connector Type: DB15F Female, 15-pin D-subminature

Pin 1: Channel 3 intercom audio input/output high

Pin 2: Channel 3 intercom audio input/output low

Pin 3: Common

Pin 4: Channel 5 intercom audio input/output high

Pin 5: Channel 5 intercom audio input/output low

Pin 6: Common

Pin 7: Common

Pin 8: Common

Pin 9: Common

Pin 10: Channel 4 intercom audio input/output high

Pin 11: Channel 4 intercom audio input/output low

Pin 12: Common

Pin 13: Channel 6 intercom audio input/output high

Pin 14: Channel 6 intercom audio input/output low

Pin 15: Power (30 VDC)

28

Factory Service and Parts Information

When returning equipment for repair include your return address, telephone number and proof of date of purchase, along with a description of the problem.*

The address for Audiocom equipment returns and parts information is:

Service Department

Telex Communications, Inc.

West 1st Street

Blue Earth, Minnesota 56013 U.S.A.

Telephone: (507) 526-3205

(Collect calls not accepted)

Warranty Repairs - If in warranty, no charge will be made for the repairs. Equipment 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. After your approval and completion of the repairs, 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 (shipping charges are included in the estimate).

* For sales / technical support and system design contact:

Pro Audio Sales Department

Telex Communications, Inc.

12000 Portland Avenue South

Burnsville, Minnesota 55337 U.S.A.

Telephone: (952) 884-4051

(Collect calls not accepted)

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Notes

30

Notes

Addendum

Document Affected: ES4000A User Instructions, Publication Number 9350-7551-000 Rev. A

Addendum Number: 1

General Instructions: Use this addendum with Revision A of the user instructions. This information will be included in Revision B.

Page 6, item 6: The description should be 18" (457 mm) CHANNEL OUTPUT cable, 15-pin Male Dsub to 15-pin Male Dsub. One supplied with each ES4000A.

Pages 16-21: All cables labeled with number 6 should be labeled with number 11. The description for cable number 11 is 18" (457 mm) CHANNEL OUTPUT cable, 15-pin Male Dsub to 15-pin Female Dsub. One supplied with each XP-ES4000.

Notes:

- When you are connecting an ES4000A to a PS4000 Power Supply, use the CHANNEL OUTPUT cable that is supplied with the ES4000A (cable 6).

- When you are connecting the ES4000A to an XP-ES4000, use the CHANNEL OUTPUT cable that is supplied with the XP-ES4000 (cable 11). The CHANNEL OUTPUT cable that is supplied with the ES4000A is not used.

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