LX-4

USER'S MANUAL

December 20, 1996

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INTRODUCTION

The Burk Technology LX-4 Audio Switch is specially designed for use with Emergency Alert Systems, in particular the Burk Technology **E▫A▫S** Encoder/Decoder. One EAS audio source can be inserted into four discrete program channels. EAS audio is individually adjustable on each channel to permit balancing with program audio. Since the LX-4 will normally be inserted in the program chain, the electronic switching circuits have been meticulously designed to be transparent, free of cross-talk, and to switch quietly.

DESCRIPTION

The LX-4 includes four identical channels. In the normal, or inactive state, each channel will pass audio from IN to OUT at unity gain. Audio from the **E▫A▫S** unit is connected to the EAS IN terminals, and will replace the normal channel audio whenever the channel is activated by a closure on the associated SWITCH CONTROL terminal.

All four channels are independent and may be used either as stereo pairs or as individual monaural audio circuits. EAS OUT terminals are provided to facilitate connection of additional LX-4 units where more channels are required.

An optional RS-485 controller may be installed in the unit and is connected via the RS-485 terminals on the rear panel. SWITCH CONTROL terminals 5 through 8 are active only when the RS-485 controller is installed.

The only front panel controls are level adjustments for the EAS audio on each channel. Four front panel LED indicators display which channels are active for EAS. A green LED in the center of the front panel indicates the presence of AC power.

AC Power is connected to the unit via the supplied EIA power cord. A 1.5A S.B. fuse is located in the top section of the power entry module, and is accessible from the rear panel without removing the cover.

TYPICAL CONFIGURATIONS

In most cases, the program audio will be interrupted between the air console and the audio processing equipment. Connect the console output to CHANNEL IN on the LX-4, using one channel for monaural or two channels for stereo. Connect the corresponding CHANNEL OUT terminals to the audio processor input. The main audio output of the **E▫A▫S** Encoder/Decoder should be connected to the EAS IN terminals, and the ON-AIR contacts of the **E▫A▫S** unit should be connected to ground and the corresponding channels on the SWITCH CONTROL connector.

To insert EAS audio for a second station, interrupt the audio as above, using additional channels as required. Two stereo stations, for instance, would use channels 1 and 2 for the first station (left and right audio, respectively) and channels 3 and 4 for the second station.

To control the switching of two stations, you may either connect SWITCH CONTROL terminals 1 through 4 together, causing both stations to insert audio at the same time, or connect terminals 1 and 2 together and terminals 3 and 4 together, permitting separate control of both stations. In the latter example, a switch must be installed between the **E▫A▫S** unit ON-AIR output and the two control lines so that EAS audio is fed to the appropriate station. In this manner, EAS activations may be initiated at natural breaks in programming on both stations as long as both occur within the fifteen minute time period permitted in part 11 of the FCC rules.

For more than two stereo stations, additional LX-4 units may be connected, with the EAS audio cascaded to each.

SPECIFICATIONS

Program Channels	4
Channel Gain	Unity
Maximum Input Level	+20 dBm
Input Impedance	50 K Ohm, Balanced
Frequency Response	+/- 0.15 dB 20 Hz to 92 KHz
Distortion	less than 0.01% THD @ +8dBm
EAS Audio Gain	Adjustable -10 to +8 dB
Output Impedance	50 Ohm, Balanced (may drive multiple 600 Ohm loads)
Maximum Output	+20 dBm
Channel Switching	4 Individually Controlled. Ground switches channel to EAS
Audio Connectors	Combicon plug-in screw type
Power Connector	6-1/2' EIA power cord
Power Requirements	115vac 30 w
Physical	EIA Rack Mount 19"W x 7"D x 1-3/4"H

INSTALLATION

This section contains installation information, including configuration considerations, physical installation and all electrical connections.

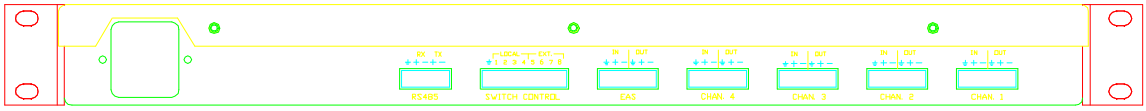

Figure 1. LX-4 Rear Panel

Physical Installation

The LX-4 requires a 1-unit (1-3/4") rack space and may be located up to 300 feet from the controlling **E▫A▫S** unit. In normal operation, no LX-4 controls need to be within the reach of an operator, so accessibility is only important for the initial level adjustments. LED indicators on the front panel show which channels are currently activated for EAS. In some installations, it may be desirable to locate the unit where these indicators are visible to the operator. Usually, the primary consideration for location can be the proximity to the program audio circuits to which the unit will be connected.

The shallow depth of the LX-4 may make access to the rear panel connections difficult if the LX-4 is placed between two deeper units. If an alternate location is not satisfactory, you may wish to pre-wire the connectors, pass them through the desired rack space and plug them in while holding the unit in front of the rack. If this approach is used, be sure to allow sufficient lead length for the connectors to reach through the rack.

Audio and Control Connections

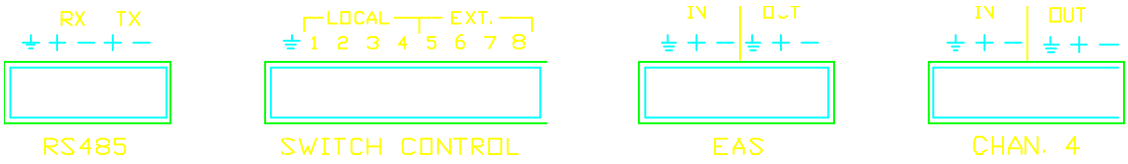

Figure 2. Connector Pin-outs

Plan the audio and control connections as described above in the "Typical Configurations" section. All audio and control connectors are Phoenix Combicon connectors for which mating cable connectors are provided. Phoenix Combicon connectors are unique in that they are a plug-in terminal strap that can be prepared for use with no other tools than a wire stripper and a small slotted screwdriver such as a green Xcelite mini-screwdriver.

Audio inputs and outputs are balanced, therefore it is highly desirable to use two-conductor shielded cables for the audio inputs and outputs. Beldon 8450 (solid) or 8451 (stranded) are appropriate.

Install the cable connectors for all audio and control circuits, taking care to observe polarity on the audio circuits. A separate ground connection is available for each audio connection. Each terminal is marked on the rear panel. The connectors can be labeled by printing with a felt-tip pen in the space provided on the back of each connector.

In most instances, connection in the above manner will produce satisfactory results. If desired, an attempt may be made to minimize noise by disconnecting the grounds at the connector and either leaving them floating (if they are grounded at the other end) or connecting input and output grounds together (if they are grounded at one end only). The optimum method will depend on the grounding scheme used in the studio. Measurements may be made to confirm the best method.

Front Panel Labeling

A write-on space is provided to identify each channel on the front of the LX-4. Although the polycarbonate surface will accept pencil or felt tip marker, press-on lettering or a label maker will produce a more satisfactory appearance.

Power-Up

Once all connections are made, apply power to the unit by connecting the provided EIA power cord. The green light in the center of the front panel should light, confirming that the power is on. Verify that the proper channels are activated by using the **E▫A▫S** unit ON-AIR relay test feature and observing the red LED displays for each channel.

The ON-AIR relay test may be accessed via the following pathway on your **E▫A▫S** unit: From the **READY** menu, press 7 for **SYSTEM SETUP** and enter your 3-digit System Password. From the **SYSTEM SETUP** menu, press 2 for the **TEST/CALIBRATE** menu. Press 1 and the **ON-AIR RELAY** screen is displayed. A full procedure for conducting an ON-AIR relay test begins on page 34 of your **E▫A▫S** manual.

ADJUSTMENT

The only adjustment required on the LX-4 is the EAS audio level for each channel. The normal audio path for each channel is unity gain, and the unit will function properly with console outputs from -10dBm to +8dBm. Each channel may be operated at a different nominal level within this range as required.

To adjust the EAS level, first make certain that the **E▫A▫S** unit is set to the desired output level. The recommended initial setting of the **E▫A▫S** unit is 0dBm, as this provides ample adjustment range for program levels up to +8dBm. The LX-4 EAS audio level may then be adjusted from the front panel to produce a signal at the same level as the program audio, within the range of -10dBm to +8dBm. If it is necessary to match a higher or lower level, adjust the **E▫A▫S** output level accordingly.

The **E▫A▫S** calibration mode provides a single tone output to facilitate this adjustment. You will also need to turn the ON-AIR relay on to activate the channels on the LX-4. This can be done from the setup menu of the **E▫A▫S** unit before selecting the calibration tone.

You may access the ON-AIR relay tone using the pathway described in the second paragraph of the "Power Up" section, above. Press ENTER after turning the relay on to leave the relay energized while conducting the tone test. The calibrate mode is accessed in a similar fashion, and full descriptions of calibration procedures begin on page 36 of your **E▫A▫S** manual. The pathway to the **CALIBRATE** menu is as follows: From the **READY** menu, press 7 for **SYSTEM SETUP**. After entering your 3-digit System Password, select option 2: **TEST/CALIBRATE**. Pressing 4 will bring you directly to the **CALIBRATE** menu. From there you may select the AFSK Signal, 2-Tone Signal, or conduct a Separate Tone Test.

Observe the output of the LX-4, using an audio test set or the input level meter of the audio processor. If L-R metering is available, adjust the second channel in a stereo pair to produce minimum L-R.

The adjustments are one-turn screwdriver adjust pots, and require a small slotted screwdriver such as a green Xcelite mini-screwdriver. Do not attempt to force a larger screwdriver into the opening as damage to the front panel or the pot may occur.

Pressing ESCAPE on the **E▫A▫S** unit will turn off the tone and the ON-AIR relay.

Once all channels are adjusted properly, any overall adjustments in EAS level should be made from the **E▫A▫S** unit, as the change will affect all channels equally.

TECHNICAL SUPPORT

In case of difficulty, Burk Technology Tech Support stands ready to assist you. Assistance is available during normal business hours by calling (978) 486-0086.

Appendix: Schematic Diagram