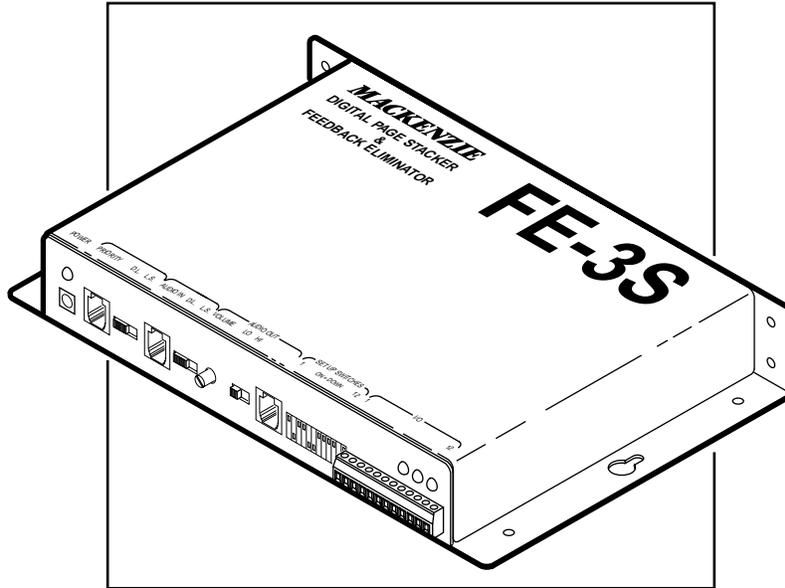


MACKENZIE

LABORATORIES, INC.

DIGITAL PAGE STACKER & FEEDBACK ELIMINATOR

Model FE-3S



Installation Manual

Mackenzie Laboratories, Inc.

General Safety Instructions

Always follow these basic safety precautions when using the system.

1. **Read carefully and understand all instructions.**
2. Follow all warnings and instructions marked on the product.
3. DO NOT block or cover ventilation slots and openings.
4. DO NOT place the product in a closed enclosure or cabinet unless proper ventilation is provided.
5. Never spill liquid on the product or drop objects into the ventilation slots and openings. Doing so may result in serious damage to the components.
6. Repair or service must be performed by a factory authorized repair facility.
7. A UL/CSA approved power pack is provided.
8. DO NOT staple or otherwise attach the power supply cord to the building surface.
9. DO NOT use the product near or in wet or damp places, such as wet basements.
10. DO NOT use extension cords. Install within six feet of a grounded outlet receptacle.
11. DO NOT install during a lightning storm.
12. Never touch un-insulated wires or terminals unless the unit is disconnected from both power and the rest of the phone system.
13. Use caution when installing or modifying Stacking functions or control lines.
14. The unit must be securely attached to a wall board, rack or table mounted.



CAUTION: If any wiring from the system leaves the building premises, you must use proper electrical connectors.

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Shipping Container Contents:

The following items should be found in the container of Digital Page Stacker & Feedback Eliminator.

- FE-3S
- Power Pack, 12 VDC, 1 Amp
- Package of two 1/2" mounting screws
- Installation and User Guide

Operational Accessories:

- Rack mount adapter kit. Part # 90-64-098

OVERVIEW 1

FEATURES AND CAPABILITIES

The FE-3S, Digital Page Stacker and Feedback Eliminator has 4 minutes of available audio memory and can record up to 16 pages, each with a maximum message length of one minute. While recording new messages, another set of up to sixteen messages, can be playing back.

The FE-3S makes feedback over the paging system virtually impossible by opening the loop between the input microphone and the speakers. This eliminates the potential for acoustic feedback while giving the user flexibility in the manner in which pages are broadcast. To insure that messages are not played during a time when other high volume noises might mask them, the systems ability to stack pages permits a user supplied ambient noise level analysis computer to tell the FE-3S to hold the messages and then play them when they can actually be heard.

Multiple Record and Playback modes are supported as well as Pre-page Tones, Adjustable Delay Between Messages and Message Repeat functions. ABORT and STOP functions are also available.

Transformer isolated 600 ohm Line input and Priority input, as well as transformer isolated switchable 8 ohm or 600 ohm audio output

SPECIFICATIONS

Physical	Maximum Dimensions: 10"W x 1.5"H x 6.75"D Weight: 4.5 LB.
Electrical	<ul style="list-style-type: none">• Frequency response of 6.8 kHz and 60dB of dynamic range.• Page Audio Input; 600 Ohms, transformer isolated, with -20 dBm to +4 dBm.• Priority Audio Input: 600 ohms, transformer isolated, with -20 dBm to +4 dBm (nominal 0 dBm) input level.• Audio Output Selectable<ul style="list-style-type: none">• Line Output: Line level (600 ohms), transformer isolated, +4 dBm max. continuously adjustable.
	OR
	<ul style="list-style-type: none">• Power Output: Low impedance (8ohm), transformer isolated, limited to approximately 0.5 watts into 8 ohms (adjustable).• Relay Contacts: All Control relay contacts available are rated at 1 amp, 24 Vdc non-inductive loads.• Power requirement: 12 Vdc, 1A from power pack supplied.
Environmental	Capable of operating in ambient temperatures from 0 to +40°C (+32 to 104°F) and relative humidity from 0% to 85% (non-condensing), at altitudes up to 10,000 feet above sea level.
Interconnect	All external interface connections are RJ12 type and/or two piece screw terminal pluggable euro-connector type.

INSTALLATION 2

This section provides complete instructions for mounting the Digital Page Stacker and Feedback Eliminator on a wall, rack or table. It also illustrates all interface requirements to auxiliary equipment, including inputs and outputs. Configuration switch settings are provided.

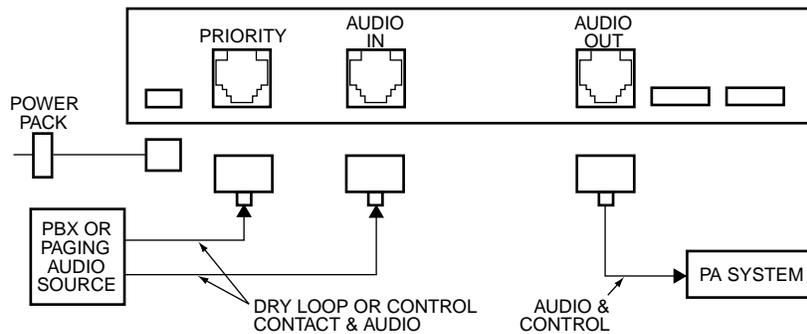
INSTALLATION STEPS

These are the general steps for installation:

1. Find a space on the wall, rack or table. Mount the unit to the selected place with its wiring at least 18" away from the power supply or other equipment that generate electrical noise. Secure unit using the supplied mounting screws.
2. Make sure there is a standard electrical outlet into which you can plug the power pack. This outlet should NOT be controlled by a switch.
3. Make cable connections from the FE-3S to the PBX or audio source and the Paging system,
4. Set DIP switches to the desired operation.
5. Connect the power supply. Power Led should glow GREEN.
6. Test unit operation.

EXAMPLE OF SYSTEM SETUP AND CONNECTING TO THE PAGING SYSTEM

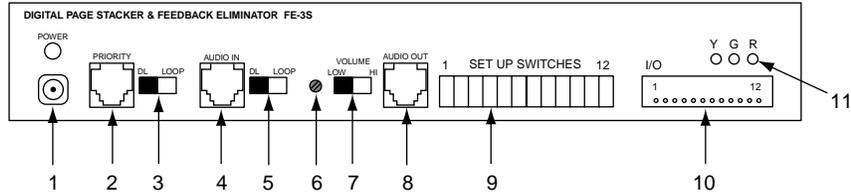
The Digital Page Stacker and Feedback Eliminator Model FE-3S can be configured in several ways depending on the paging system used. The following illustration shows a typical installation.



The FE-3S is typically installed between the telephone system, or paging microphone console and the paging system amplifier(s), as shown. It interfaces with the paging controller in a zone paging environment, and with the amplifier in a single-zone installation.



HARDWARE CONFIGURATION



- | | |
|-------------------------|---|
| 1. POWER | • Input and Indicator |
| 2. PRIORITY | • Audio/Control Input |
| 3. PRIORITY | • Input Mode Switch |
| 4. AUDIO IN | • Audio/Control Input |
| 5. AUDIO IN | • Input Mode Switch |
| 6. VOLUME | • Audio Out Control |
| 7. LO/HI | • Audio Out Selector Switch |
| 8. AUDIO OUT/STATUS | • Connector |
| 9. SETUP SWITCHES | • For selection of optional operational functions |
| 10. General Purpose I/O | • Connector |
| 11. LED Indicators | • Yellow (in use), Green (playing), Red (recording) |

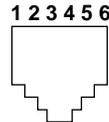
Control Inputs:

Power

Unit needs 12 Vdc, 1A Connect power pack supplied.
Chassis is connected to negative side of power supply.

Priority/Control

Input RJ12 style connector, 6 position



1. Not used.
2. PRIORITY, bypass input, connect to Ground (Pin 5) to operate.
3. PRIORITY Audio, ring.
4. PRIORITY Audio, tip.
5. Ground. (power return). Connected to chassis.
6. Not used.

Priority Input Mode Switch

Mode 1. DRY LOOP. LEFT Position. Operates with phone system's Page/Aux port, a dry contact is required for recording process. Also can be used with DTMF/Audio sense start mode.

Mode 2. LOOP START. RIGHT Position. For operation with loop start trunk. The FE-3S supplies the talk battery, loop current will start the recording.

Audio Control

Input, RJ12 style connector, 6 position.

1. Not used.
2. Record, input, connect to Ground (Pin 5) to operate.
3. Audio, ring
4. Audio, tip.
5. Ground, (power return). Connected to chassis.
6. Not used.

Audio Input Mode Switch:

Mode 1. DRY LOOP. LEFT Position. Operates with phone system's Page/AUX port, a dry contact is required for recording process. Also can be used with DTMF/Audio sense start mode.

Mode 2. LOOP START. Right Position. For operation with loop start trunk. The FE-3S supplies the talk battery. Loop current will start the recording.

Control Outputs:

Audio VOLUME Control

This controls the volume level delivered to the paging system. It is shipped with 1:1 gain factory set.

Audio LOW/HI Switch

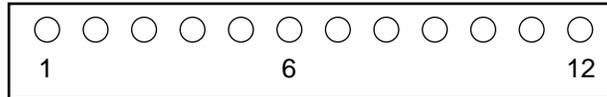
This will select the type of audio drive available at the AUDIO/STATUS connector. LEFT, for power level (8 ohm), and RIGHT for line level (600 ohm).

AUDIO/STATUS

Connector, RJ12 style connector, 6 position.

1. Not used.
2. Playing contact, common.
3. Audio Output (-).
4. Audio Output (+)
5. Playing contact, Normally Open (Factory set). Refer to manual for Normally Closed option.
6. Not used.

General Purpose I/O Connector:



1. COMMON to all control functions.
2. ABORT input
3. PRIORITY input, Paralleled on Priority/Control input
4. STOP input.
5. PLAY input.
6. RECORD input, Paralleled on Audio/Control input.
7. IN USE contact, N/O or (N/C)
8. IN USE contact, Common
9. PLAYING contact, N/O or (N/C)
10. PLAYING contact, Common
11. RECORDING contact, N/O or (N/C)
12. RECORDING contact, Common

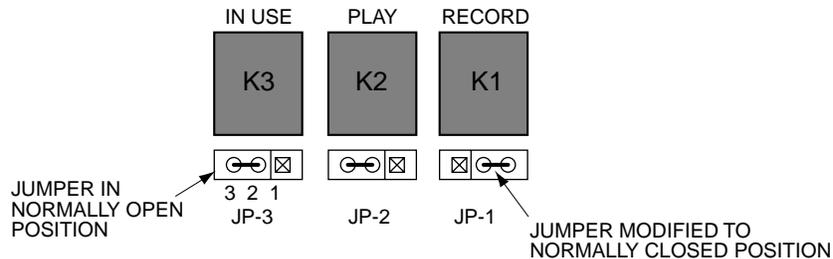
12 position Euro-style, two piece, pluggable type. All relays are supplied with factory set normal contact selection of Form A (Normally Open, Close when Active). This can be changed in the field to Form B (Normally Closed, Open when Active) by internal jumper modifications.

Relay Output Selection:

The FE-3S units are factory set with all relays in the Form A, (Normally open contacts, closed when active). In cases where Form B contacts are needed, a simple field modification will allow the installer to reverse the contact set form, Remove cover, locate and identify the relay involved and also the associated 3-pin mini jumper. In all jumper sets, pin 1 is normally closed, pin 2 goes to the I/O terminal and pin 3 is Normally open.

For any relay:

- Connect jumper between 1,2 for normally closed contacts (Open when active).
- Connect jumper between 3,2 for normally open contacts (Closed when active).



ALL FE-3S are factory set to Normally Open Contact.

OPERATION --- 3

There are three important functions that the FE-3S performs:

1. It eliminates feedback by recording the incoming page(s) then plays it back.
2. It is able to repeat each page allowing for a better response in a noisy environment.
3. It is capable of stacking up to 16 incoming pages by its ability to Record incoming pages while Playing back previously recorded ones on a first-in first-out basis.

Other important features such as the ability to Record/Regenerate, or Block DTMF tones, used for zone selections, and a host of manual operation modes that allow Page screening functions.

The FE-3S is designed to run in both Automatic and Manual modes. For paging applications the Automatic mode is the most widely used. This mode requires minimum installation time since it is the factory's default setup. RJ12 connectors are used for audio/Control inputs and outputs. Where logical, certain control signals are provided on the individual RJ12 connectors associated with each.

AUTOMATIC OPERATION

There are several methods to initiate the record mode on the FE-3S. The activation mode will be selected upon power up. It cannot be changed during normal operation. The record mode will be selected via user configuration dip switch. These modes are listed and described below.

Loop Start, 2 Wire - The FE-3S will source the talk battery to the ring and tip, sense the loop current and start the recording process for the duration of the

Dry Loop, 4 Wire - or contact activation mode. A separate switch closure provided to the FE-3S record input will put the unit into the Record mode for the duration of the contact closure. This mode is available regardless of any other mode selection.

Audio Activation - The FE-3S will start recording when the audio sensor goes active and will stop when the audio sensor is inactive for three seconds.

DTMF Activation - For dry loop mode without a separate switch closure and perhaps noisy audio lines. The FE-3S will start recording when it "see's" a valid DTMF tone and will stop when the audio sensor is inactive for three seconds.

MANUAL OPERATION

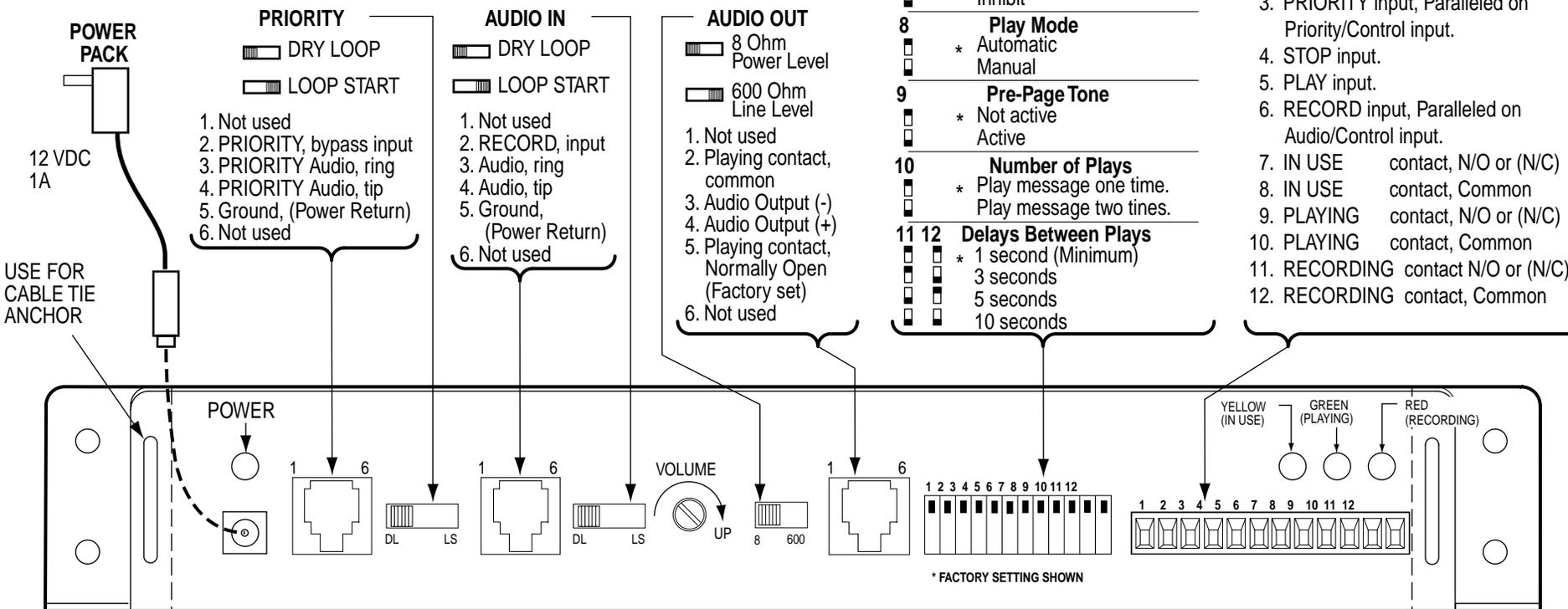
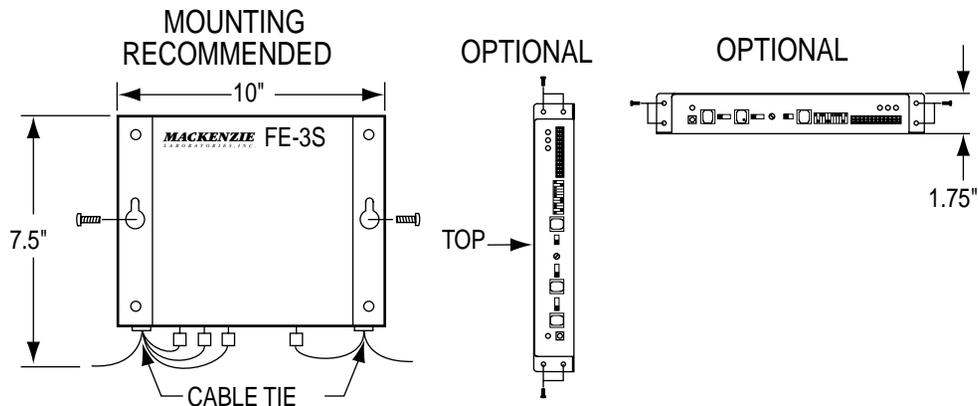
Terminal Block, Input Controls

General purpose I/O Terminal blocks will be used for other control Inputs/Outputs.

Record, Play, Stop, Priority and Abort

Five input control signals are offered to the user for complete control over the recording and playback processes. None of these inputs are necessary for the use of the FE-3S in Auto-play mode but may be required based on system requirements.

All of the input controls are optically coupled so as to electrically isolate each activation initiated via contact closure or open collector driver.



SETUP SWITCHES

	OFF	ON	
1 2	<input type="checkbox"/>	<input type="checkbox"/>	RECORD Activation
<input type="checkbox"/>	<input type="checkbox"/>	*	Off Hook (loop current)
<input type="checkbox"/>	<input type="checkbox"/>		Audio Sensor
<input type="checkbox"/>	<input type="checkbox"/>		DTMF
<input type="checkbox"/>	<input type="checkbox"/>		Not in use
3	<input type="checkbox"/>	<input type="checkbox"/>	DTMF Tone Stripping
<input type="checkbox"/>	<input type="checkbox"/>	*	Active
<input type="checkbox"/>	<input type="checkbox"/>		Not -active
4	<input type="checkbox"/>	<input type="checkbox"/>	DTMF Tone Stripping
<input type="checkbox"/>	<input type="checkbox"/>	*	Strip only tones at start of a recorded page.
<input type="checkbox"/>	<input type="checkbox"/>		Strip any tones in messages, and restart recording message.
5 6	<input type="checkbox"/>	<input type="checkbox"/>	DTMF Allotment
<input type="checkbox"/>	<input type="checkbox"/>	*	Unlimited
<input type="checkbox"/>	<input type="checkbox"/>		4 tones
<input type="checkbox"/>	<input type="checkbox"/>		3 tones
<input type="checkbox"/>	<input type="checkbox"/>		2 tones
7	<input type="checkbox"/>	<input type="checkbox"/>	"#, #" Abort Enable
<input type="checkbox"/>	<input type="checkbox"/>	*	Active
<input type="checkbox"/>	<input type="checkbox"/>		Inhibit
8	<input type="checkbox"/>	<input type="checkbox"/>	Play Mode
<input type="checkbox"/>	<input type="checkbox"/>	*	Automatic
<input type="checkbox"/>	<input type="checkbox"/>		Manual
9	<input type="checkbox"/>	<input type="checkbox"/>	Pre-Page Tone
<input type="checkbox"/>	<input type="checkbox"/>	*	Not active
<input type="checkbox"/>	<input type="checkbox"/>		Active
10	<input type="checkbox"/>	<input type="checkbox"/>	Number of Plays
<input type="checkbox"/>	<input type="checkbox"/>	*	Play message one time.
<input type="checkbox"/>	<input type="checkbox"/>		Play message two times.
11 12	<input type="checkbox"/>	<input type="checkbox"/>	Delays Between Plays
<input type="checkbox"/>	<input type="checkbox"/>	*	1 second (Minimum)
<input type="checkbox"/>	<input type="checkbox"/>		3 seconds
<input type="checkbox"/>	<input type="checkbox"/>		5 seconds
<input type="checkbox"/>	<input type="checkbox"/>		10 seconds

DIGITAL PAGE STACKER & FEEDBACK ELIMINATOR

FE-3S

"QUIKEY"

I/O CONNECTIONS

1. COMMON to all control functions.
2. ABORT input.
3. PRIORITY input, Paralleled on Priority/Control input.
4. STOP input.
5. PLAY input.
6. RECORD input, Paralleled on Audio/Control input.
7. IN USE contact, N/O or (N/C)
8. IN USE contact, Common
9. PLAYING contact, N/O or (N/C)
10. PLAYING contact, Common
11. RECORDING contact N/O or (N/C)
12. RECORDING contact, Common

Page Recording

Upon receiving a valid recording signal, the FE-3S will start recording at the beginning of the memory until the page is complete. While this page is playing, if a new page is requested it will be recorded. Multiple pages will be recorded in series until the playing message has completed its play routine. If, for any reason, the end of available recording memory is reached, the system will immediately stop recording, and a Busy back tone will be sent back through the audio source signaling the user that the FE-3S is not available. Any message prematurely cut off because the end of memory was reached will not be played. If the memory is filled and a new recording command is offered, the FE-3S will not go into record mode and a busy back tone will be output to tell the user that the FE-3S is not available.

Loop Start - The FE-3S will source "talk battery" onto the ring and tip lines. The FE-3S will sense loop current flow and start the recording process for the duration of the loop current flow.

The recording is limited to one minute per page and a maximum of three minutes per stack, or reaching the end of memory during the recording. The incomplete recorded page will not be played.

There are two conditions which will cause the FE-3S not to respond to a RECORD command.

1. If the end of memory has been previously reached on a page the FE-3S will not allow another page to be attempted.
2. If 16 messages have already been recorded without being played back. The FE-3S cannot record more than 16 messages into the mode.

NOTE: A user configuration will be provided which will cause the FE-3S to ABORT a recording should 8 seconds of silence be presented during a recording. Once the FE-3S senses 8 seconds of silence it will offer the busy back tone to the user and abort the recording. The FE-3S will not be able to record new pages for as long as the Record input is held active. The user will be informed that their page has been aborted, prompting them to hang up. This mode is not defeatable.

RECORD Input

The Record input will be used for the Dry Contact activation method. A maintained contact closure will be necessary at this input to keep the FE-3S in record mode. Once the contact is closed the FE-3S will commence recording the audio input immediately. When the contact is opened (released) the unit will immediately stop recording. The recorded message must be a minimum of one second in length. Any message shorter than this will be deleted.

Page Playback

Manual mode is used in applications where the FE-3S may not be the only device feeding the PA system. In this mode the FE-3S will record, or stack, up to sixteen messages into memory, waiting for a "Play" activation from an external controller. Upon this contact, all of the stacked pages are played in a first-in, first out fashion from memory. Since the unit has two memory banks (hence the Record while playing feature), it is possible to record up to 32 messages, only in manual mode when only Record commands are initiated without any Play commands.

In Manual mode after a recording sequence is completed and no page is currently playing, the FE-3S can begin playback of the previously recorded messages. If the unit is currently playing, the FE-3S sequence through both sides of the memory in seamless fashion.

Once a message has been stopped, either because the message was played, or a manual STOP command was received, that message shall be tagged for overwrite. This means that messages cannot be stored and played repeatedly, or skipped for playback later.

PLAY Input

If the FE-3S is in automatic playback mode, this input will have no effect. When the FE-3S is in manual playback mode, this input will be necessary in order to playback the messages once they are recorded. A momentary contact closure will initiate the play sequence. A second play contact closure, while the FE-3S is playing, will be ignored. A maintained contact closure will essentially put the FE-3S into automatic repeat mode. Message strings cannot be repeated by using the Play input after the string has already played.

STOP Input

Messages being played can be skipped and stopped using this input. A momentary contact closure will cause the message being played to be stopped and dropped from queue. If there is a message in the playing queue it will be played next.

The STOP command will have no effect on the operation of the Record process. If the unit is recording at the same time it is playing, a STOP command will only stop the currently playing message. The recording process will not be affected.

If the STOP is maintained, The FE-3S will stop the currently playing message and will wait for the stop input to go away before starting the next message, if there is one in the stack. At this point the FE-3S will not be capable of playing while this STOP input is held active.

PRIORITY Input

A PRIORITY bypass input which, when activated, system will halt the play sequence to allow a separate audio input from Priority RJ12 connector, to be routed directly through the FE-3S. The activation for this input must be maintained for the amount of time which the dedicated Priority audio input is to be routed directly through the system. As soon as the activation is released, the message play sequence, including the previously interrupted message, will resume, after a one second delay.

NOTE: Normal system recording can be performed while the device is in the priority bypass mode.

ABORT Input

When the ABORT input is activated, the message which is being recorded will be immediately halted and the busy back tone sent to at the audio input. The recorded data will not be played as part of the playback message string. An example of the use of this would be the security guard monitoring the pages, and upon hearing an unauthorized page, aborting it. The busy back tone will be output for as long as this input is held active.

NOTE: The ABORT input has no effect on the playing sequence.

Terminal Block, Output Signals

All status outputs will be provided via relay contact closure. These contact closures will be provided via terminal block to the user. The name and description of each output is shown below. Although each of the relays have form C contacts, an internal jumper is made available to the user to route either the normally closed or normally open to the output terminal block.

Power Applied - Green LED. This LED will be activated for the duration which power is applied to the FE-3S.

Recording Output - Form A contact closure. This relay will be active whenever the FE-3S is in the actual recording process. It will not be activated just because the Record input is active, but only when the FE-3S is actually storing data.

Play Output. - Form A Contact closure relay will be active while the FE-3S is Playing audio through the output. It will be active during the pause between the message repeats but not during the delays between different messages within the play sequence. The Playing output will be held active when the priority input is active.

In-Use Output - Form A contact closure. Whenever the FE-3S is in some process required by the user, this output will be active. This would include the record and play processes, pauses, delays, record access tones, etc..

Other Output Signals

Busy Back Tone - A busy back tone tells a prospective user that the FE-3S is not ready to accept the recording. This Busy Back tone will be in the form of a Busy signal and will be output for the duration which the FE-3S can not record.

SETTING CONFIGURATION SWITCHES

The FE-3S is designed to have several functions programmed by the user. These adjustments will be made via dip switch settings in the field. These programmable settings are listed and described below.

NOTE: Turn power OFF, then ON to implement any new changes in Configuration switches settings.

Configuration Switch position:

Off	Up	(*) Factory Settings
On	Down	

Record Activation Method - 1,2

The method with which the user will enter the record mode can be selected from the following: Loop current (default) Voice activation, DTMF activation. Contact closure activation always available regardless of switch settings.

1	2	RECORD Activation
Off*	Off*	Off Hook (loop current)
Off	On	Audio Sensor
On	Off	DTMF
On	On	Not in use

DTMF Tone Stripping - 3

DTMF tone recorded at the beginning of an audio message are typically used for zone control purposes. A repeated page should not have the zone control tones on the front end of the second page because the zone controller is already routed, therefore these tones will be stripped on the repeat of a page. Unit DTMF tones at the beginning of the page would be handled in this fashion. Any DTMF tones recorded in the middle of the message would be recorded and played back in the typical manner.

3	DTM Tone Stripping
Off*	Active
On	Not-Active

DTMF Tone Stripping Method - 4

This setting determines how and where the DTMF tones coming from audio input, during a recording, are processed. Tones can be stripped only at the beginning of the message or at the middle of the message. If the tones are stripped in the middle of the message all recorded information preceding those tones will be deleted resetting the message start.

4	DTMF Tone Stripping Method
Off*	Strip only tones at the start of a recorded page
On	Strip any tones in message, and restart recording message.

DTMF Allotment - 5,6

Most paging systems require a limited number of tones to be recorded because of zone controlling equipment, but if a certain number of tones is exceeded the FE-3S will abort that particular recording. The number of tones the FE-3S can be programmed to cut off after is 2, 3, 4 or unlimited.

5	6	DTMF Allotment
Off*	Off*	Unlimited
Off	On	4 tones
On	Off	3 tones
On	On	2 tones

"#, #" Sign Abort Enable - 7

This would allow a caller to abort a page being recorded by pressing the "#" button two times within one second and the recording will immediately be aborted and the busy back tone sent to the input. A single "#" sign during the recording will not have any effect.

7 "#, #" Abort Enable

Off* Active
On Inhibited

Play Mode - 8

This will allow for auto-play of page after recording.

8 Play Mode

Off* Automatic
On Manual

Pre-Page Tone - 9

A pre-recorded tone can be output prior to message playback. This is used to alert the listeners that a message is about to be played. This tone would be output before each message in the playback queue but not before the repeated plays.

9 Pre-Page Tone

Off* Not active
On Active

Number of Plays - 10

The number of times which each message plays during the playback sequence can be selected from one or two times. If multiple messages were recorded into the queue, each message will play this number of times before the next message is played.

10 Number of Plays

Off* Play message one time.
On Play message two times

Delay Between Plays - 11, 12

To make the page sequence more intelligible, a pause can be inserted between each message in the playback sequence as well as between any repeats of each message. This delay time can be configured to be 1, 3, 5, or 10 seconds.

11 12 DELAY Between Plays

Off* Off* 1 second (Minimum)
Off On 3 seconds
On Off 5 seconds
On On 10 seconds

WARRANTY, SERVICE, RETURNS & _____ 4

The industrial grade housing and quality construction of the Mackenzie FE-3S virtually eliminates the need for service or maintenance. There are no user-serviceable components within the Mackenzie FE-3S. Refer all servicing to the factory.

Warranty Coverage:

The Mackenzie FE-3S is tested and checked before shipment and is guaranteed against defective material or workmanship for a period of one (1) year from the date of purchase. Should trouble ever develop, contact the Factory directly by telephone or in writing. If it is determined that the equipment requires Factory service, return it to the Factory. If our inspection shows that the trouble was caused by defective material or workmanship, we will repair or replace the equipment without charge and return prepaid. Repairs made necessary by abuse, improper use, unauthorized service or maintenance, and/or improper installation, as well as out of warranty repairs, will be charged at our regular prices in effect at the time. The obligation under this warranty shall be limited to the replacement, repair or refund of any such defective device within the warranty period, at Mackenzie's discretion.

This warranty is in lieu of and excludes all other warranties, expressed or implied, and in no event shall MACKENZIE be responsible for damage to other equipment or property, for any anticipated profits, consequential damages, loss of item, or other operation or use of this product, and MACKENZIE'S maximum liability shall not ever be greater than the price paid for the equipment. This warranty gives you specific legal rights. Your rights may vary from state to state. Inquiries regarding use, repair and service should be made to:

MACKENZIE LABORATORIES, INC.
1163 Nicole Court, Glendora, CA 91740 USA
Telephone: (909) 394-9007 / FAX No.: (909) 394-9411

What we ask you to do:

To get warranty service for your FE-3S system, you must provide proof of the date of original purchase. In the event you need to ship your FE-3S system to the factory for service, call us for a return authorization number. When you ship your FE-3S system, you must prepay all shipping cost. We suggest that you retain your original packing material in the event that you need to ship your FE-3S system. When sending your FE-3S system to the factory, include your name, address, phone number, proof of date of purchase, and a description of the operating problem. After repairing or replacing your FE-3S system, we will ship it to your return address at no cost to you within the USA. Repair or replacement of your FE-3S system at our factory is your exclusive remedy.

What this warranty does not cover:

This warranty does not cover defects resulting from accidents, damage while in transit to factory, alterations, unauthorized repairs, failure to follow instructions, misuse, fire, flood, and acts of God.

Warranty & Registration Card
The Mackenzie (Model FE-3S)
Digital Page Stacker & Feedback Eliminator System

Date _____ Serial No. _____

Purchaser _____

Address _____

City _____ State _____ Zip _____

Purchased From _____ Date _____

Address _____

City _____ State _____ Zip _____

*Return this part to: Mackenzie Laboratories Inc., P.O. Box 1416, Glendora, CA 91740 USA



REGULATIONS

FCC (Part 15) Radio Frequency Interference

The Mackenzie FE-3S Digital Page Stacker and Feedback Eliminator generates and uses radio frequency energy and if not installed and used in strict accordance with the manufacturer's instructions, May cause interference to radio and television reception. Unit complies with the limits for Class A device in accordance with the specifications in Subpart J of Part 15 of the FCC Rules. This testing is designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the unit off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the radio or TV receiving antenna.
- Relocate the unit with respect to the radio or TV receiver or vice-versa.
- Plug the unit into a different outlet so that it and the radio or TV receiver are on different branch circuits.
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

Return Address

PLACE
STAMP
HERE

Mackenzie Laboratories, Inc.
P.O. Box 1416
Glendora, California 91740 USA

OTHER MACKENZIE PRODUCT LINES

DYNAVOX - Mackenzie's full line of Digital Autoload Message-On-Hold systems turn your telephone into a powerful marketing tool. The DYNAVOX series offers maintenance free digital playback and convenient tape download. Crystal clear sound is optimized for playback through telephone systems. Several storage/message varieties are available as well as versions with advanced features such as Music-Thru, individual message enable/disable, message sequencing and night answer.

Digital Message Repeaters - Mackenzie's line of Digital Message Repeaters are the ideal audio and video solutions for Information, Amusement, Entertainment, Museum and Exhibit applications. Self contained solid state systems offer unparalleled reliability. A variety of channel, bandwidth and memory configurations are available.

Fire Alarm and Life Safety - Mackenzie's line of Fire Alarm and Life Safety Digital Message Repeaters offer advanced features and unsurpassed reliability. These products offer the maintenance free operation of digital playback and are UL compliant for Life Safety with self test and full supervision. Large memory capacity, random access, multiple channel and field recording/programming are available.

Feedback Eliminators & Page Stackers - Mackenzie's line of Digital Page Stack/Repeater and Feedback Eliminators offer advanced features for the most difficult paging and intercom applications. The FE series makes feedback virtually impossible by recording then repeating pages which opens the loop between the input microphone and speakers. Various models are available to support simple repetition, multiple page stacking and multiple input channels.

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