COPY

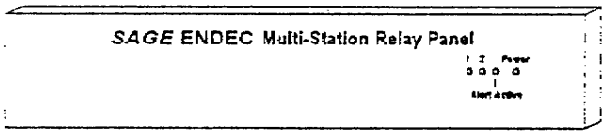
Emergency
Alert
System

Encoder/Decoder

ENDEC

Multi-Station Relay Panel

Model MSRP

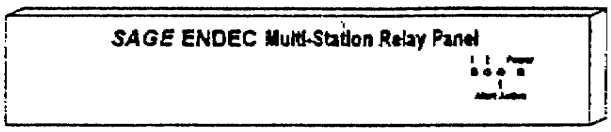


Installation Instructions

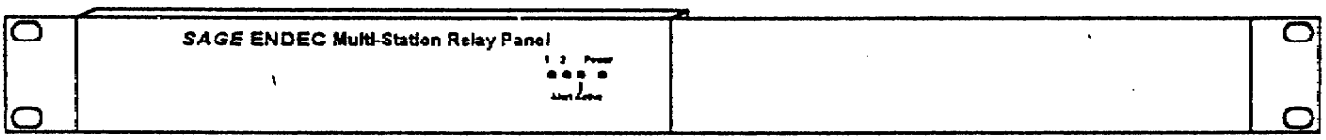
Sage Alerting Systems, Inc.

MSRP Installation Options

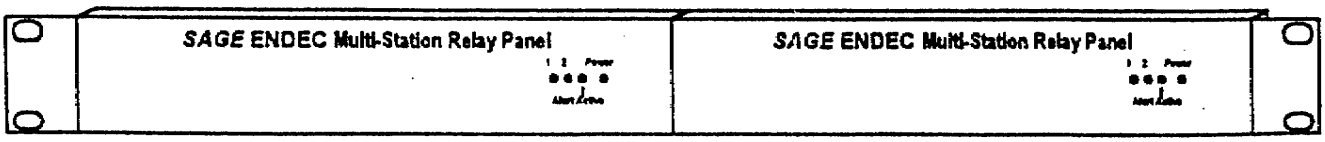
•Single MSRP



•Single MSRP installed on the optional RM-1 rack shelf and FP-1 filler panel.



•Two MSRP's installed on the **optional** RM-1 rack shelf.



1. General Information

NOTE: This manual should be read thoroughly before installation and operation.

The Multi-Station Relay Panel (MSRP) is a two stereo channel relay panel used to provide additional alert audio distribution and audio interrupt switching for the Sage ENDEC. Together with the single stereo balanced and switched audio interrupt relay on the ENDEC, an ENDEC and MSRP will provide interrupt switching for three stereo audio paths. A second MSRP can be daisy-chained with the first to add additional stations.

To completely install the MSRP you must perform the following steps:

1) Connect the ENDEC audio out to the MRSP SIG in, using either balanced or unbalanced outputs. (Section 4.1)
2) Connect the serial port to the ENDEC COM4 or COM5 using the modular adapter and the modular line cord. (Section 4.2)
3) Assign the chosen ENDEC serial port to the "RELAY" device. (Section 4.2)
4) Connect the AC power cube to the MSRP. (Section 4.3)
5) Set the MSRP levels. (Section 5)
6) Configure multiple station support on the ENDEC (see the ENDEC manual or the ENDEC Multi-station Manual Supplement for details).

MSRP Features:

AUDIO CONTROL	The MSRP provides two separate stereo inputs and outputs. The SAGE ENDEC audio may be separately switched into each or both outputs. Multi-turn level controls are provided for each output. The MSRP is equipped with gold bifurcated relays, which provides for a transparent audio path. The relays are configured for program loop-through operation. This feature allows normal program operation even with the power removed from the MSRP.
EASY INSTALLATION	The MSRP is inserted between the main audio chain's source equipment and the input to the station's processing equipment. Alert audio and automatic switching is provided by the SAGE ENDEC unit.
REMOTE CONTROL	The MSRP is supplied with a serial remote control port, and is controlled by the SAGE ENDEC. Two MSRPs may be controlled from a single SAGE ENDEC Controller.
STATUS DISPLAY	Front panel LEDs light when the audio channels are switched to the "alert" mode.
TEST MODE	The MSRP is equipped with a rear panel TEST switch. By holding down this switch, both stations are fed from the SAGE ENDEC input. This feature is handy for level setting and equipment testing.

2. Packing List

The MSRP is shipped with the following items:

1) The MSRP relay panel, one rack unit high, ½ rack unit width (1.75" x 8.5").
2) A DB-9 to RJ-11 adapter module.
3) A modular cable.
4) A 12 VAC power cube. **Warning - do not confuse the ENDEC DC supply with the MSRP AC supply as damage to one or both units could result.**
5) This manual.

These options are available:

- RM-1 Rack mount carrier for the MSRP
- FP-1 Filler panel, used when only one MSRP is mounted in the RM-1.

3. Specifications

Loop-through Frequency Response:	DC to 30 kHz: + .1 dB
Loop-through Signal/Noise:	>90 dB
Loop-through Channel Separation:	>90 dB
Loop-through recommended levels:	-20 to +20 dBm
SIG (ENDEC) Input:	-10 to + 20 dBm, Balanced, 10 KΩ, rear panel multi-turn level adjustment
Output:	0 to + 10-dBm. Balanced, 600Ω rear panel multi-turn level adjustments.
Switching Method:	*Passive.* Two sealed relays per channel utilizing 2-form-C Bifurcated-crossbar silver alloy with gold overlay contacts.
Logic:	8 bit CMOS Microprocessor.
Operation Control:	*Serial* - RS-232c, RJ-11 modular /w 9 pin-D-sub adapter.
Status:	*Front Panel* - RED LEDs
Interfacing:	*Audio* - Rear panel clamp style wire captive terminals. *Remote Control* - RJ-11/4C6P
Power Requirements:	12 VAC, 500 ma. 120 VAC 50-60 Hz wall transformer.
Mechanical	8.50" X 1.75" X 6.25" (WHD) Weight: 3.0 lbs.
Mounting:	Optional RM-1 rack mount. Optional FP-1 filler panel.

4. Installation

We recommend that you bench test and become familiar with the operation of the unit before permanent installation.

The MSRP is designed to be rack mounted in a standard 19" rack with the optional RM-1 rack shelf and optional FP-1 filler panel if only one MSRP is used. It should be mounted in an area that is accessible from the rear and preferably away from sources of heat.

4.1 Audio Connections

The MSRP and the ENDEC provide alert audio and interrupt switching as shown in the following two figures. Figure 1 shows how to use the ENDEC's internal interrupt and feed unbalanced audio to one or two MSRPs. Figure 2 shows how to use the ENDEC to provide balanced output to the MSRPs, using only the MSRPs to provide interrupt switching.

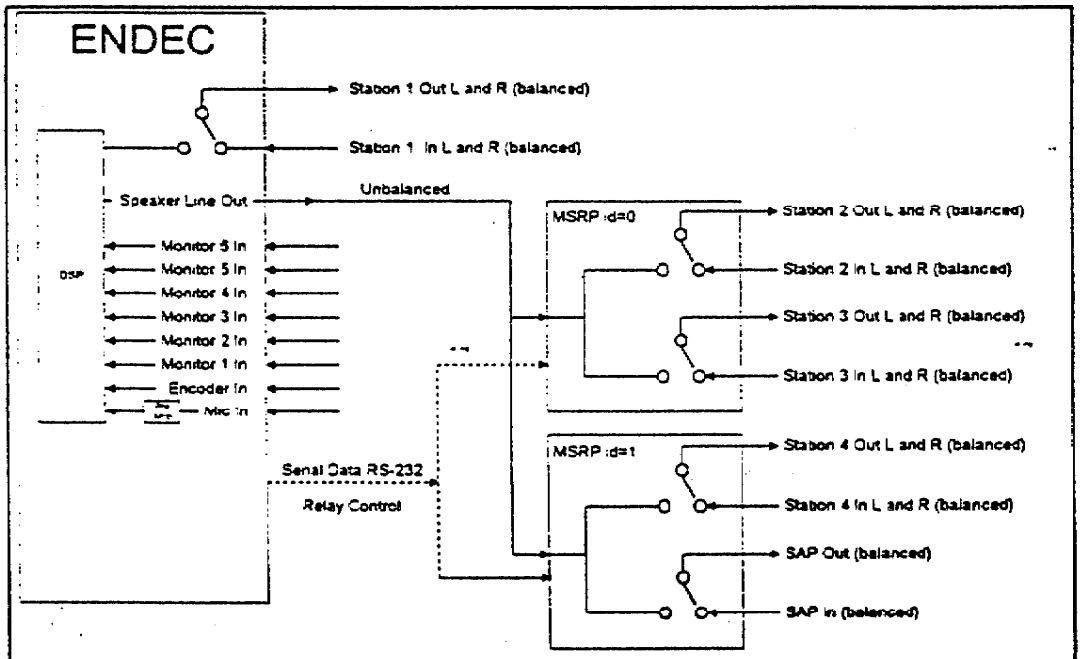


Figure 1. Multi-station configuration using the ENDEC interrupt relay and unbalanced distribution audio.

The signal inputs and outputs are connected via a clamp style wire captive terminal strip located at the rear of the unit. Connections to the clamp style wire captive terminal strip should be made using 22 AWG or smaller solid or stranded wire. Strip off approximately 3/16" from the connection end of the wire, push the white lever just to the rear of the terminal strip connections towards the inside-rear of the unit. While continuing to push the lever, insert the bare wire end into the open orange hole at the desired connection point. Releasing pressure on the white lever will then clamp the wire into its connection. Connections may be made to the + and - inputs and outputs for balanced operation. In no case should either the + or - outputs be connected to ground.

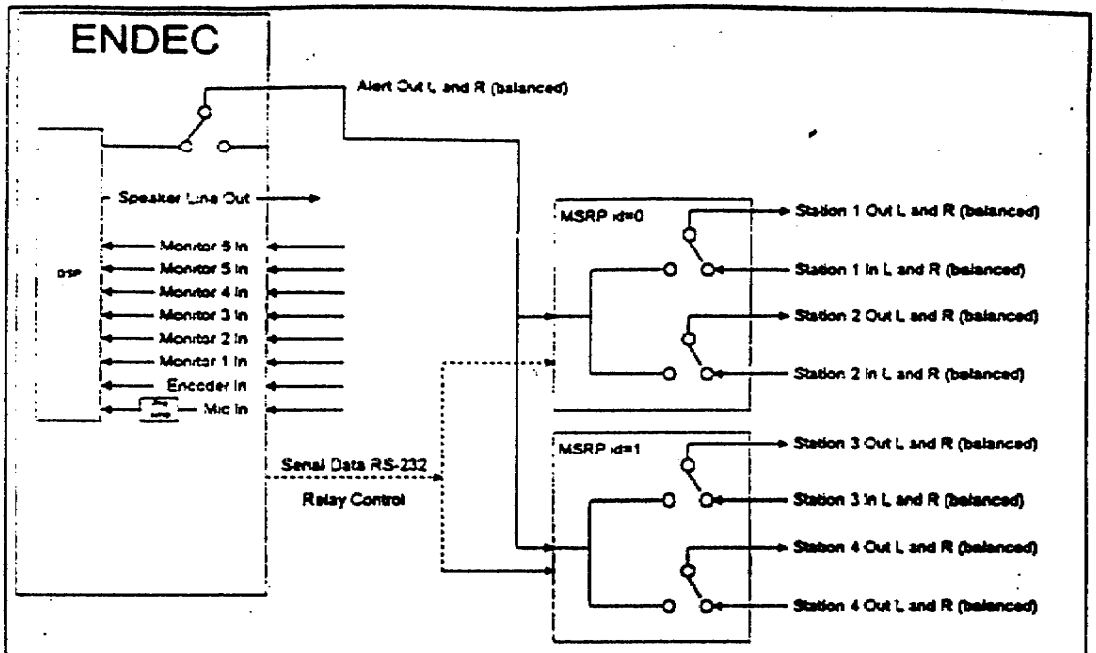


Figure 2. Multi-station configuration using the ENDEC to provide a balanced audio source and the MRSP(s) for program interrupt.

Connect each station as follows:

Left Input, station 1, High	IN+1L
Left Input, station 1, Low	IN-1L
Right Input, station 1, High	IN+1R
Right Input, station 1, Low	IN-1R
Left Input, station 2, High	IN+2L
Left Input, station 2, Low	IN-2L
Right Input, station 2, High	IN+2R
Right Input, station 2, Low	IN-2R
ENDEC speaker line out (unbalanced)	SIG +IN
Ground	EGND

The impedance of both output channels are designed for 600Ω termination when in the alert condition.

The second set of SAGE ENDEC input terminals are in common with the first set, and can be used to daisy chain a second MSRP. If you wish to use the balanced output from the ENDEC as shown in Figure 1, connect the ENDEC's Main/Alert Left output + and - to the MSRP's SIG +IN and SIG -IN.

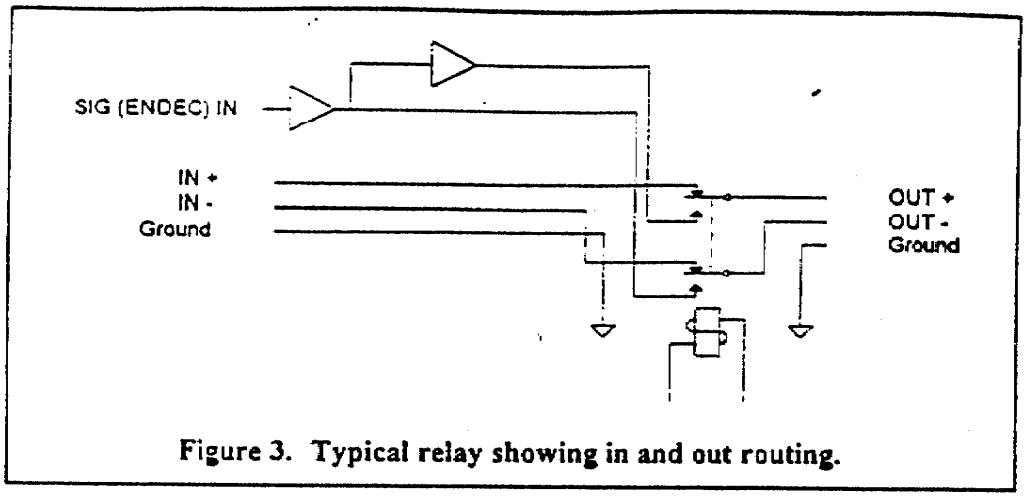


Figure 3. Typical relay showing in and out routing.

4.2 Data Connection

Use the provided modular/9 pin D-sub connector adapter and line cord to connect the MSRP's serial connect (J8) to an ENDEC serial port. Use either COM4 or COM5 (1200 baud ports) on the ENDEC. Set the port to the "RELAY" device using the ENDEC's **MENU.DEVICES.*PORT*.DEVICE TYPE.RELAY**[1] command.

The pin out of the adapter is shown below.

RJ-11 Adapter Pin	DB-9 Pin	Use (ENDEC Point of view)
1	3	RS-232 Transmit
3	5	Ground

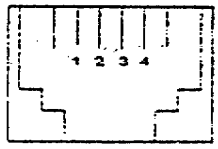


Figure 4. Modular Jack Pin Numbers.

Use only the cord that comes with the MSRP or a replacement that reverses, such as Radio Shack Cat No. 279-422.

The MSRP J8 pin out is shown below.

MSRP RJ-11 Pin	Signal Name (MSRP point of view)
2	Ground
4	RS-232 Receive

[1] See the ENDEC manual for a description of this command.

4.3 POWER

The MSRP is supplied with a 12 VAC/500 ma wall transformer. This transformer should only be used with the MSRP. Connect the coaxial type connector to the POWER connector J1 on the MSRP and the transformer to a 120 VAC, 50/60 Hz power source.

The GREEN "POWER" LED should be lit.

Warning - do not confuse the ENDEC DC supply with the MSRP AC supply as damage to one or both units could result.

5. Audio Levels

Once the input and output connections have been made, the input levels may be set. The MSRP is factory set for unity gain. The output level of the SAGE ENDEC (input to MSRP SIG+ and SIG-) should be in the range of -15 dBm to +8 dBm. The SIG input can add an additional 10 dB of gain from the factory settings using the trimmer pot labeled "IN, accessible from the rear panel. Output one has two output adjustments. They are labeled 1L and 1R, allowing adjustment for each channel. Output two has one adjustment, labeled 2, which sets both L and R channels.. Hold down the rear panel test switch, while adjusting the desired output channel. If additional level is needed, adjust the trimmer labeled "IN". To provide a test signal out of the ENDEC, use the MENU.MONITOR SOURCE.ATTN TONE[2] menu to provide a two-tone signal. The ENDEC output levels should be properly set before setting the MSRP levels.

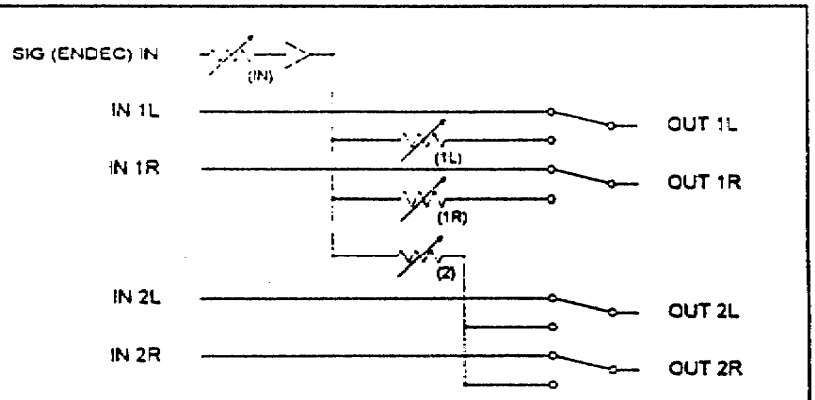


Figure 5. Audio paths, showing the location and names of the level setting pots IN, 1L, 1R, and 2.

[2] See the ENDEC manual for a description of this command.

6. Daisy-Chaining Two MSRPs

To daisy two MSRPs:

1) route audio to the second MSRP by connecting the other "SIG IN" terminals on the first MSRP to the "SIG IN" terminals on the second MSRP.

2) Parallel the serial connector to the second MSRP. The easiest way to do this is to use a one-line to two-line modular adapter such as Radio Shack part # 279-357, modular duplex jack. Plug the two line adapter into the supplied DB-9 to RJ-11 adapter, then attach the supplied modular line cords to each MSRP. See Figure 6.

3) Change the address of the second MSRP by placing a jumper on JP1, as shown in Figure 7. A jumper is provided for this purpose at the factory and is shipped on one peg of JP1.

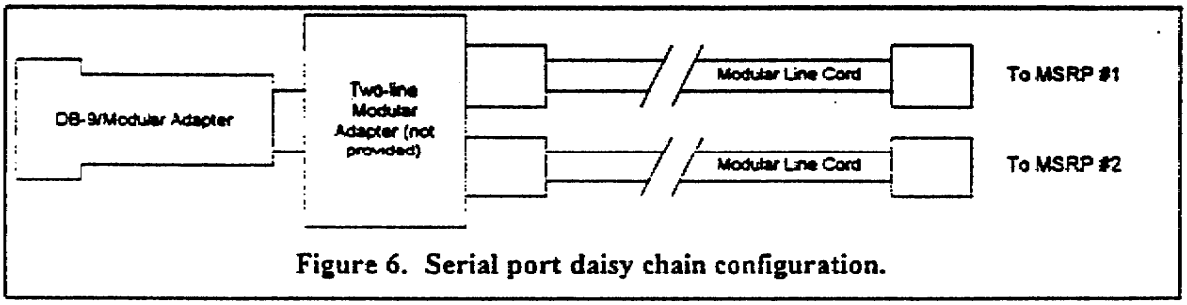


Figure 6. Serial port daisy chain configuration.

7. Locations

The following diagram shows the location of the jumpers and level controls. The top cover must be removed to access JP-1 and JP-3, all other controls are accessible from the rear of the unit.

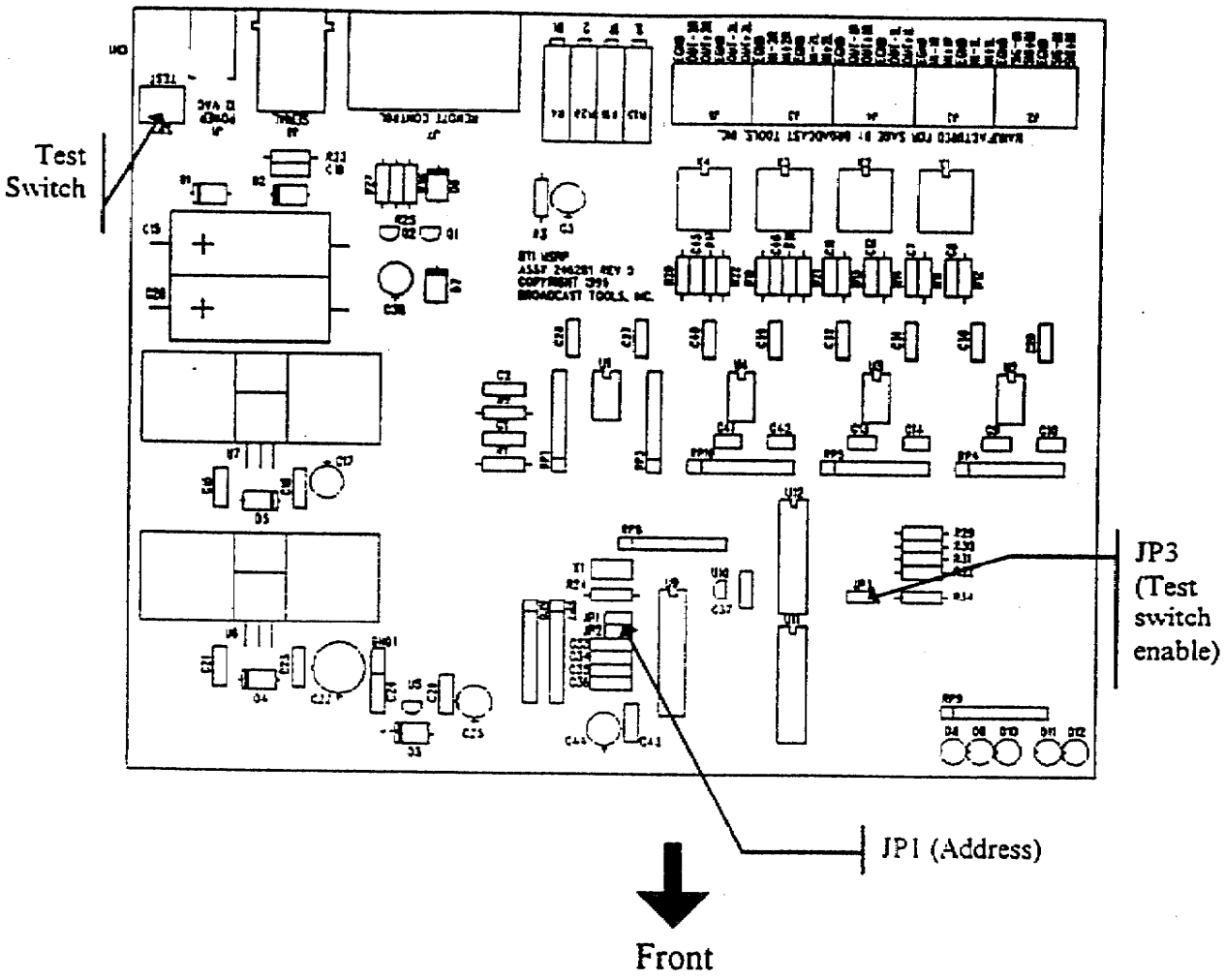


Figure 7. Location of daisy-chain address jumper.

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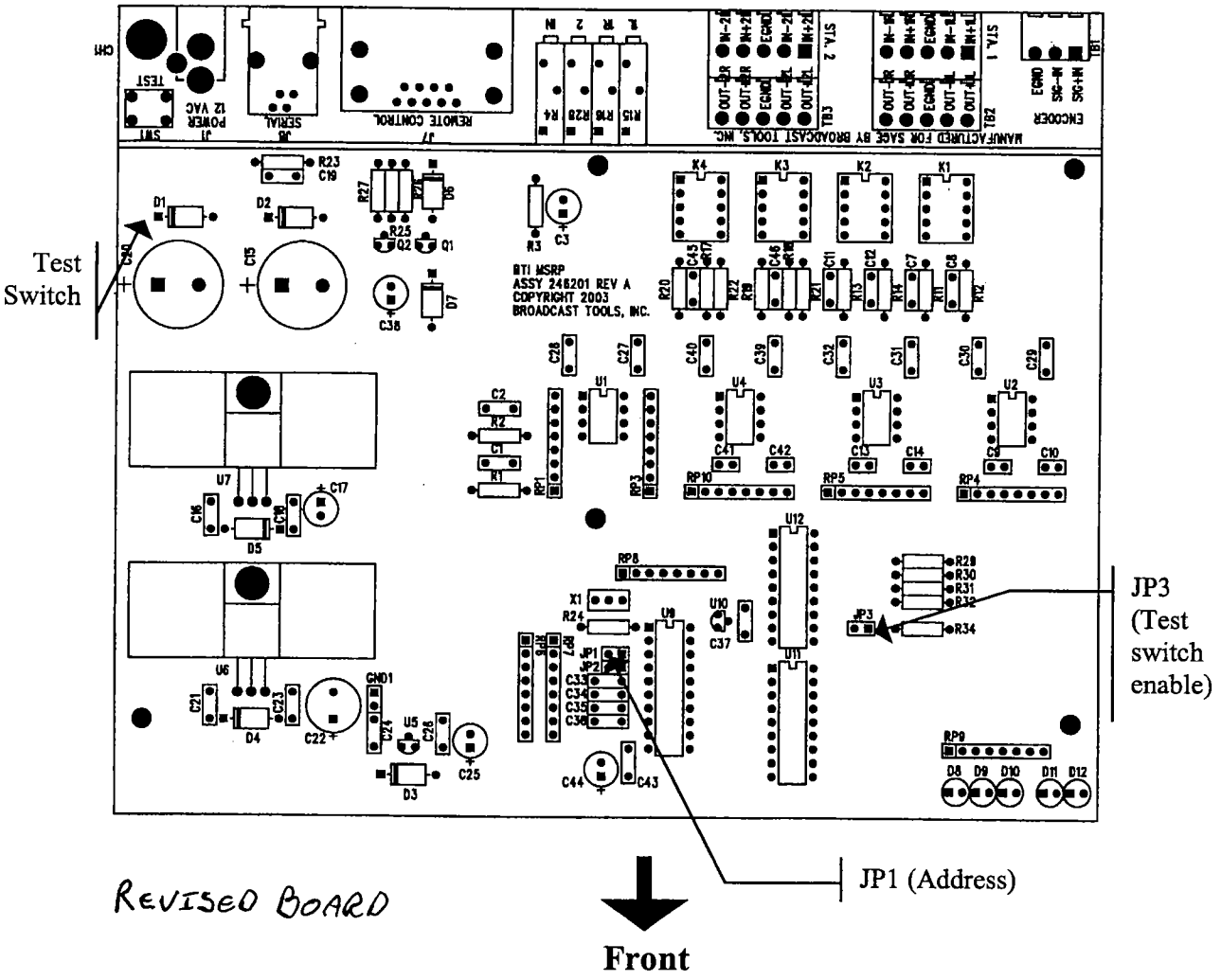


Figure 7. Location of daisy-chain address jumper.

9. Controlling Multiple Stations

A single ENDEC can control several other stations by using one or two Multi Station Relay Panels (MSRP). Each relay panel has four independently switchable relays. You can configure these with the ENDEC software option MSRP.ASSIGN MSRP RELAY as either stereo pairs or as independent monaural input/outputs. You can also assign more than two relays to a station, if, for example, you want to also switch a secondary audio channel.

Two MSRPs can be daisy-chained to provide up to eight relays which can be assigned to a total of four stations.

A station, as used here, is a collection of peripherals:

- A control device, either the front panel or the RC-1 remote control
- One or more MSRP relays or the ENDEC XLR relays
- Possibly a character generator

When the control device for a station initiates an alert, only the peripherals associated with that station will trigger (though the operator has the option of also triggering other stations).

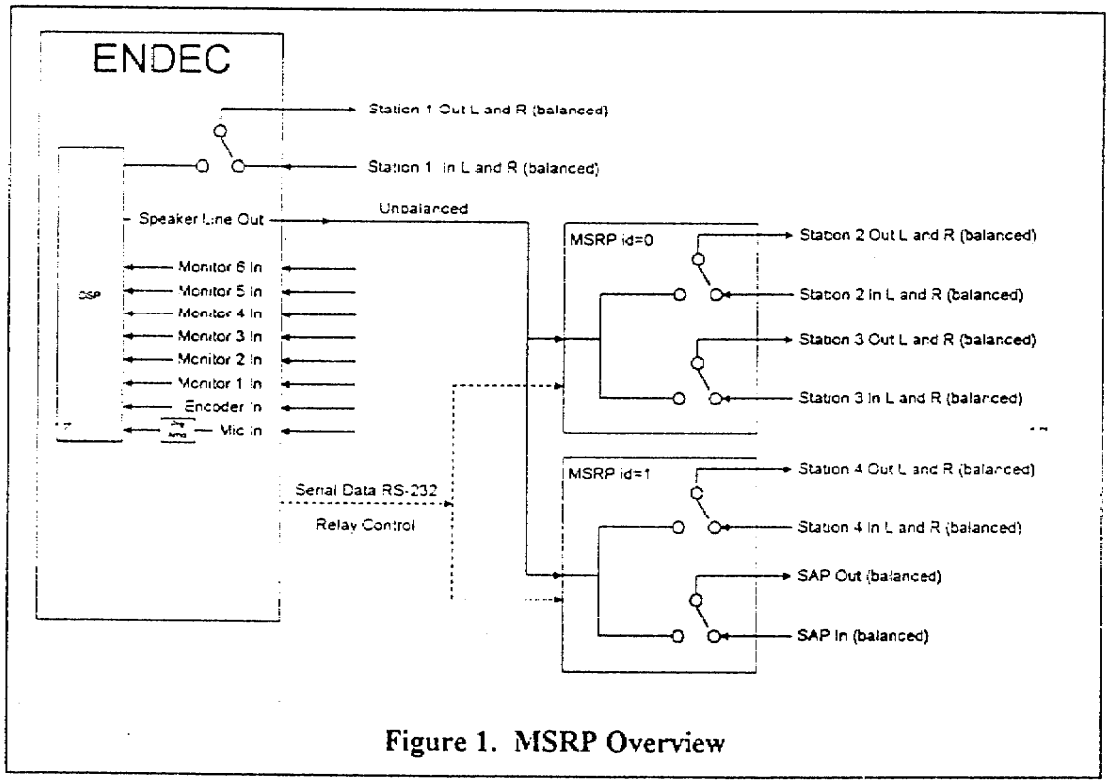


Figure 1. MSRP Overview

The MSRP hardware setup is described in the MSRP installation guide that comes with the MSRP hardware.

START HERE

9.1 Station Numbers and Names

The ENDEC supports four "stations", meaning a thing that can be separately triggered by an alert. In this manual, stations will refer to the ENDEC object called a station. "Transmitter" will refer to your radio or TV stations. The number of transmitters supported by the four ENDEC stations is up to you, and is mainly determined by the number of MSRP relays you assign to each station.

Station number 1 always owns the internal ENDEC XLR relays. It may also own one or more MSRP relays. You can not assign the XLR relays to other stations.

You assign MSRP relays to stations by using the **MSRP.ASSIGN MSRP RELAY** menu. The back panel of the MSRP labels the relays like this: 1L, 1R, 2L, 2R. Each relay can be separately switched. If a second MSRP is used, the ENDEC will refer to its relays as 3L, 3R, 4L, 4R.

By default, the MSRP relays are assign to stations like this:

Relay Name	Station
1L	2
1R	2
2L	3
2R	3
3L	4
3R	4
4L	0
4R	0

This means that station 1 controls the internal ENDEC XLR relays. Station 2 controls the first pair of MSRP relays, station 3 the second. If a second MSRP is present, station 4 controls the first pair and the second pair is unused.

Assume you have a TV transmitter with a SAP channel (station 1), an FM transmitter (station 2), and a mono AM transmitter (station 3), all controlled from a single ENDEC. You can support these with a single ENDEC and one MSRP, with relay assignments like this:

Relay Name	Station	Use
XLR L	1 (fixed)	TV Main Channel Left
XLR R	1 (fixed)	TV Main Channel Right
1L	2	FM Main Channel Left
1R	2	FM Main Channel Right
2L	3	AM Main Channel
2R	1	TV SAP Channel

In this example, you would assign the character generator to station 1 with **MENU.DEVICES.*PORT*.STATION**.

9.2 Configuring the ENDEC for MSRP Use

To configure your ENDEC for use with an MSRP you will need to do at least the following:

1) Assign a comm port to the RELAY device, for example, **DEVICES.COM4.DEVICE TYPE.RELAY.** Use either of the two 1200 baud ports, COM4 or COM5. Refer to the MSRP Installation Manual for information on daisy-chaining two MSRPs.

2) Assign a comm port to the hand held remote control for each station. See the "ENDEC Peripherals" section of the ENDEC manual for hookup information. Note that if you use more than two remote controls powered from the ENDEC accessory power, you'll need a heavy-duty ENDEC power cube. Set the station parameter to the station number controlled by that remote.

3) Set the call sign for each station using the **MENU.MSRP.STATION N.CALL SIGN** menu.

4) Set **MENU.MSRP.STATION N.ENABLE** to yes for each defined station.

9.3 Controlling an Individual Station

Once the MSRP section of the ENDEC has been set up as described above, each remote control will by default control only its station (as set by the **MENU.DEVICES.*PORT*.STATION** parameter for that remote control). The ENDEC front panel always controls station 1.

If a button is pressed on any remote control, or the front panel, the ENDEC becomes locked for use by only the control input (with the exception of the PRESET button, described later). The station that controls the ENDEC is displayed on the first line of the LCD display for all other stations, for example:

```
LOCK WXYZ

MENU WEEK          MSG
```

The station in control (in this example, WXYZ) continues to see the time displayed on the first line. The call sign displayed for each station is set by **MENU.MSRP.STATION N.CALL SIGN**.

By default, alerts originated or relayed from a remote control will only affect its station. For example, if the week button or week soft key is pressed on the remote control for station two, only the relays for station two are closed during the alert.

9.4 Controlling Other Stations

The operator can add other stations to any alert by using the STN soft key. For example, assume the WEEK key has been pressed. If an MSRP is present, the display will look like this:

```
11/08/96   12:23:33

Proceed  Abort     STN
```

Press the STN key to get a list of stations to send this alert to:

```
11/08/96   12:23:33

Select WXYZ          (1)
Yes          No
```

Press Yes to add this station to the list to send to. If a station has already played the alert, it will not play the alert a second time. The station number is displayed in parentheses after the station call sign to differentiate between stations if the same call is used for more than one station.

9.5 MSRP Automatic Operation

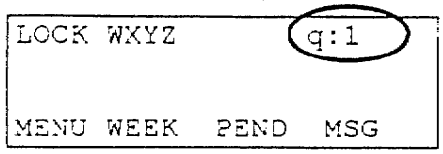
Received alerts work in the same way in an MSRP configuration as they do in the single-station configuration. If the alert matches a filter that is Timed Ignore or Timed Relay, the alert is displayed as pending on the display, and the countdown is shown. If a Timed Relay alert times out, it will be sent on all stations with **MENU.MSRP.STATION N.ENABLE** set to yes. A Timed Ignore alert is deleted when the hold time expires.

While an alert is in the pending state, each operator can elect to send the alert on his or her transmitter by using the play now button or the PEND soft key.

To send the alert:

Press the PEND or Play Now button. If this is the first remote control to do so, the ENDEC will go into the pending alert menu. If the ENDEC is already locked by another station, the LOCK message will be displayed.

If the ENDEC is locked, press the PRESET button. This will place this station in a queue waiting to access the ENDEC. Your position in the queue will be displayed on the LCD display:



The q:n shows your position in the queue, 1 meaning you are next (one station is in front of you and is controlling the ENDEC), 2 means two stations are in front (one waiting, one controlling), etc.

If you are in control, proceed through the pending menu in the normal manner. If you are queued for access, the remote control's LEDs will flash and a "you may proceed" message appears in the display. Press the PEND soft key or the play now button to continue. You can relay the alert with the **SEND** menu, or you can review the text with the **OPT.VIEW** menu, preview the audio with the **CUE** menu, or stop a timed relay message from playing on your station with the **OPT.DEL** menu.

9.6 Unattended Operation

The ENDEC relays an incoming alert based in part on whether the ENDEC is in Automatic or Manual mode. To review the concepts:

Automatic mode: The **CONFIG.MODE** parameter is set to auto, or **CONFIG.MODE** is set to timed and the time of day is in the automatic range.

Manual mode: The config.mode parameter is set to manual, or **CONFIG.MODE** is set to timed and the time of day is NOT in the automatic range.

Incoming alert action	*When relayed if Automatic*	*When relayed if Manual*
Automatic Relay	Immediate	Immediate
Timed Relay	Immediate	When hold time expires
Timed Ignore	Discarded Immediately	Discarded after hold time expires
Manual	Discarded when hold time expires	Discarded when hold time expires
Log Only	Never Relayed	Never Relayed

In an MSRP configuration, **MENU.CONFIG.MODE** is an override for all stations. If **MENU.CONFIG.MODE** is set to manual, then **MENU.MSRP.STATION N.MODE** will control each station. The action for each station is the same as the above table with the following exception: If the incoming alert action is Timed Relay, and config.mode is manual, and **MENU.MSRP.STATION N.MODE** is auto, the alert is not immediately relayed. It is instead held until the hold time expires. This is to allow a manual station to pick the time it will send an alert, rather than having to wait until the alert is sent on the unattended stations first. When the manual station does send its alert, **MENU.MSRP.STATION N.MODE** AUTO stations will trigger along with the manual station.