Emergency **A**lert **S**ystem | Encoder/Decoder

ENDEC

Multi-Station Relay Panel
Model RP-2

For use with ENDEC model 1822 or 3644

This manual is for RP-2 serial numbers greater than 39100
All Specifications and features are subject to change without notice.

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1. GENERAL INFORMATION

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 using the modular adapter and the modular line cord. For the model 1822 EAS ENDEC, use COM4 or COM5. For the model 3644 Digital ENDEC, use any COM port, but change the baud rate to 1200. (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 User's Guide and Reference Manual chapter on "Controlling Multiple Stations".

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, _ 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:

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

3. Specifications

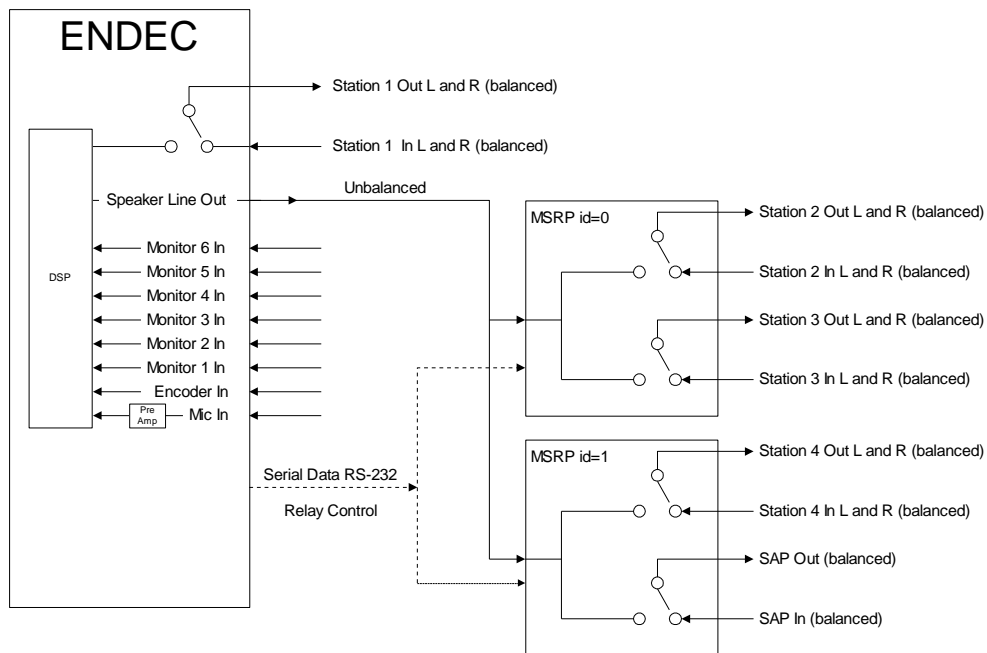|	
Loop-through Frequency Response:	DC to 30 kHz; + .1 dB
Loop-through Signal/Noise:	>90 dB
Loop-through Channel Separation:	>90 dB
Loop-through recommended levels:	-20 to +20 dBm
SIG (ENDEC) Input:	-10 to + 20 dBm, Balanced, 10 KΩ, rear panel multi-turn level adjustment
Output:	0 to + 10 dBm, Balanced, 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 figures. Figure 1 shows how to use the ENDEC's internal interrupt and feed unbalanced audio to one or two MSRPs. Figure 3 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.
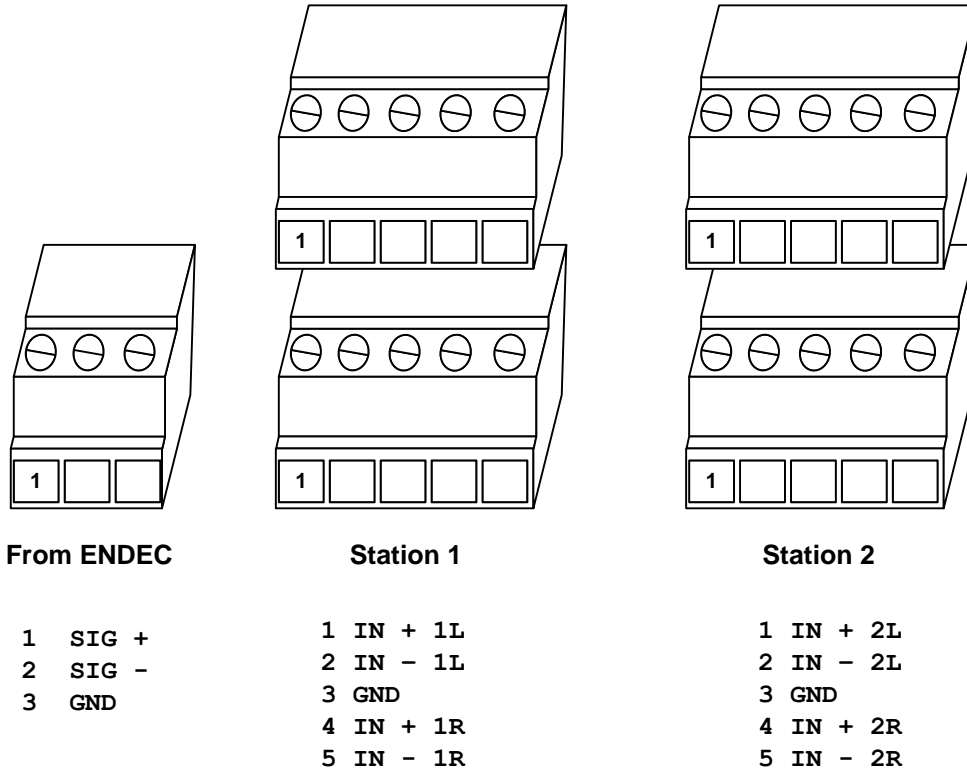
Recent MSRP units have a rear panel connector arrangement with pin outs as show below in figure 2. Strip your wire, insert, and tighten the screw for each connection.

Older MSRP units have a clamp style wire captive terminal strip located at the rear of the unit. Single names are marked on the silkscreen. 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.
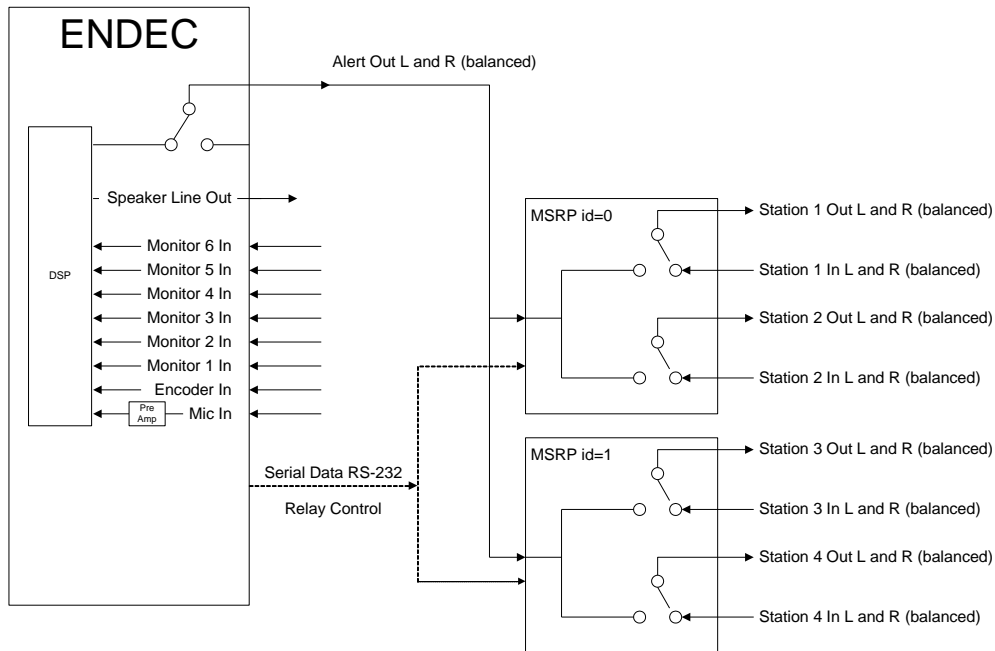
With either old or new MSRPs, connections may be made to the + and – **inputs and outputs** for balanced operation. **In no case should either the + or – outputs be connected to ground.**

```
1 OUT + 1L          1 OUT + 2L
2 OUT - 1L          2 OUT - 2L
3 GND               3 GND
4 OUT + 1R          4 OUT + 2R
5 OUT - 1R          5 OUT - 2R
```


From ENDEC   **Station 1**   **Station 2**

```
1  SIG +     1 IN + 1L          1 IN + 2L
2  SIG -     2 IN - 1L          2 IN - 2L
3  GND       3 GND              3 GND
             4 IN + 1R          4 IN + 2R
             5 IN - 1R          5 IN - 2R
```
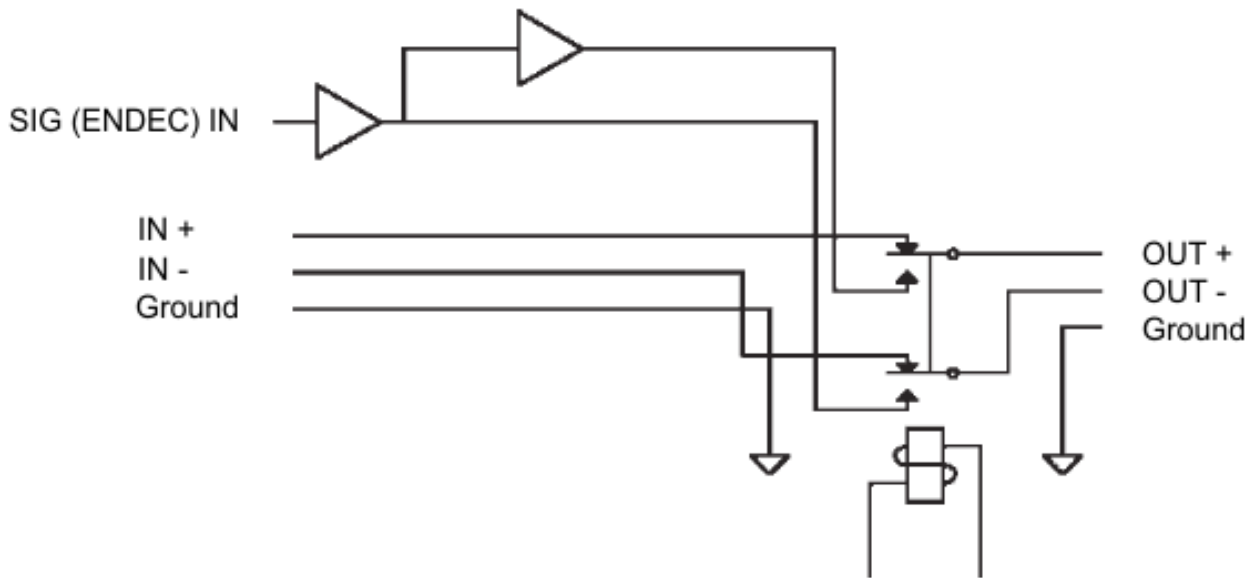
Figure 2. Connectors for newer MSRP models.

Figure 3. Multi-station configuration using the ENDEC to provide a balanced audio source and the MRSP(s) for program interrupt.

Connect each station as follows. Note that the ENDEC will refer to station 1, 2, 3, and 4. The MSRP is labeled station 1 and station 2. The ENDEC's station 2 is the first MSRP's station 1, ENDEC station 3 is the first MSRP's station 2. The ENDEC's station 3 is the second MSRP's station 1.

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.
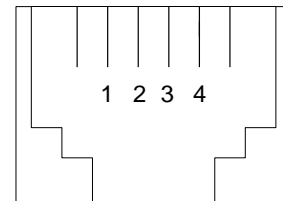
Figure 4. Typical relay showing in and out routing.

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 original ENDEC model 1822, or any port on the Sage Digital ENDEC model 3644. When using the 3644, you will need to send the Com port baud rate to 1200. Set the port to the "RELAY" device using the ENDEC's MENU.DEVICES.PORT.DEVICE TYPE.RELAY command.

The pin out of the adapter is shown below.

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

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.

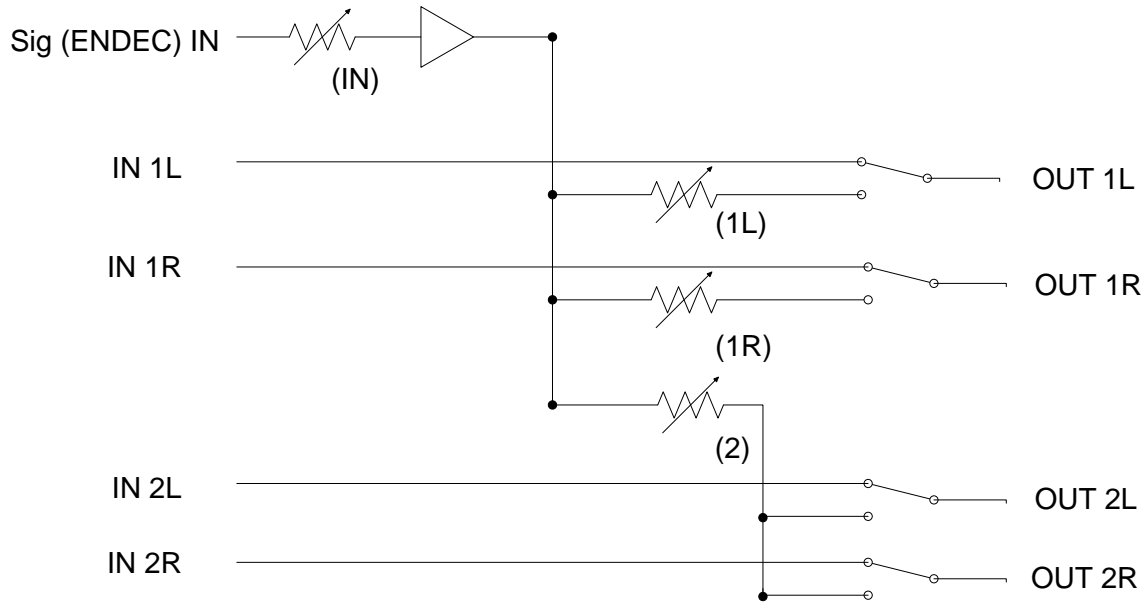| MSRP RJ-11 Pin	Signal Name (MSRP point of view)
2	Ground
4	RS-232 Receive

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** menu to provide a two-tone signal. The ENDEC output levels should be properly set before setting the MSRP levels
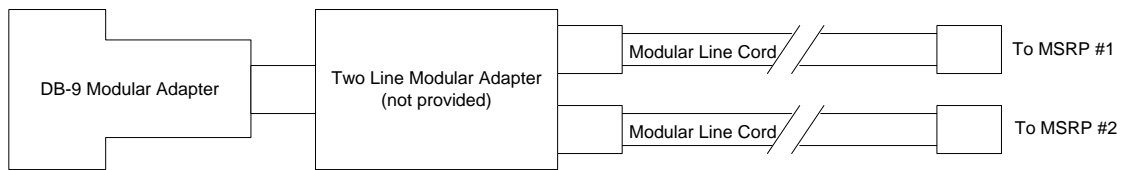

Figure 5. Audio paths, showing the location and names of the level setting pots IN, 1L, 1R, and 2.

6. Daisy-Chaining Two MSRPs
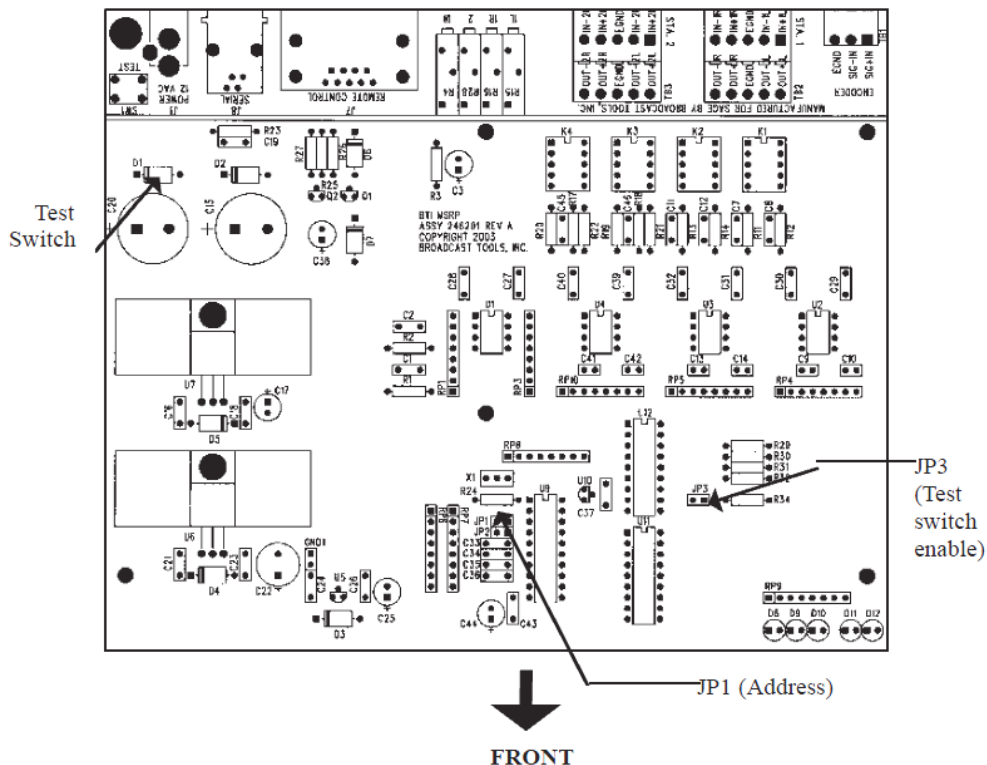
To daisy two MSRPs:

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

8. Warranty

Sage ENDEC Limited Warranty & Service Information

US Warranty Only

Sage warrants to the original end user purchaser that this product and the components thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase. Sage will, without charge, repair or replace, at its option, defective product or component parts upon prepaid delivery to the service department of Sage accompanied by proof of purchase date in the form of a valid sales receipt.

This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alteration or repairs. This warranty is void if the serial number is altered, defaced, or removed.

Sage shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may also have other rights which vary from state to state.

The following information is provided for the unlikely event your unit requires service and must be returned for service.

1. Be sure the unit is the cause of the problem. Check to make sure the unit has power supplied, all cables are connected correctly and the cables themselves are in working condition.

2. If you find the unit to be at fault, write down a description of the problem including how and when the problem occurs.

3. Call Sage at 914 872 4069 or email us at support@sagealertingsystems.com for a Return Authorization (RA) number.

4. Pack the unit in its original carton or a reasonable substitute. Put the packaged unit in another box for shipping. Print the RA number clearly under the address. NOTE: The unit is subject to damage if poorly packaged. Shipping damage may affect your warranty.

5. Include with your unit: a return shipping address (We cannot ship to a P.O. box), a copy of your purchase receipt, a daytime phone number, and the description of the problem.

6. A shipping address will be provided with the RA number.

PLEASE NOTE: All returns must have a valid RA number