NoiseMeters Limited

Sentry MKII Installation / Setup Overview Document

Rev 02 (08/11/22)

Music Noise Control System

1   Overview - Sentry MKII Entertainment Noise Control System

The Sentry is a product designed to solve some of the noise control issues in entertainment venues by ensuring DJ's and Bands etc to adhere to predefined acceptable noise limits, thus not creating unacceptable environmental noise problems. There are also a number of additional options available that are described in the Appendix (such as Remote Reset Switch / Door Contactors).

This aim of this information sheet is to allow contractors / electricians / venue management etc to plan the installation process / requirements prior to purchase of the Sentry, it does not replace the installation manual.

1.1   Dimensions

Sentry Unit: Width 320 mm (including hinges) x Height 261 mm x Depth 120 mm

Optional Contactor: Width 300 mm x Height 150 mm x Depth 120 mm

1.2   Additional parts required (not supplied)

- •   3 x No.10 or No.12 round headed screws 38mm (1.5") minimum length
- •   (3 x Raw plugs for brick or masonry walls)
- •   Protective Grommets
- •   Contactor or relay **(Optional SEN-071 32 Amp Fused Contactor is available from NoiseMeters)**
- •   Power cabling
- •   Optional: Sound Level Meter to set up the system (Sometimes a local Environmental Health Officer will come in to make the measurements)

It can be advisable to take measurements when the venue has people in it. For contractors pricing an installation it is usually sensible to allow a site visit during opening hours to take measurements and make any final adjustments.

1.3   Summary of how the MKII system works

The Sentry works in conjunction with a **relay** or **contactor**. NoiseMeters can provide a product specific contactor for the system order code **SEN-071** *32 Amp Fused Contactor for Sentry Music Controller. (See page 6)* Alternatively a suitably qualified electrician can install a similar fused contactor / relay unit.

The Sentry unit provides a continuous low power voltage (12V) output to the contactor / relay which is connected by designated outlets from the Sentry. If the Sentry is tripped, or anyone disconnects power to the Sentry, the power outlets to the contactor / relay will be disconnected.

There is a large clear display which is colour coded from green to red. Whilst the meter is operating in the green section with occasional entries into the red there would be no action taken.

However, once the levels have lit up two sets of red segments the DJ or Band should be aware they are at their maximum permitted noise levels. Once all three sets of red segments are lit up for a pre-designated time (20 seconds is the factory default -10 to 70 seconds available) the unit will cut power to the **contactor** or **relay** causing the mains power to the DJ or Band to be cut.

This allows the noise levels to have occasional "spikes" without causing any disruption but sustained disregard for preset levels will result in a major inconvenience for the entertainers. This "no nonsense" methodology has proved one of the most effective measures to control entertainment noise levels and the one preferred by many local authorities and environmental health officers.

Cable entry knockouts or rear cable entry options are also available to help you create a neat installation.

Music Noise Control System

2 Planning the mounting position for the Sentry

The Sentry should be mounted:

• on a solid flat surface preferably where it can be seen by the persons affected by its use (DJ, band etc).

• in a position where it can not be tampered with e.g . a minimum of 2.5m or 8 feet from the floor

• ideally on a wall facing the noise source.

It is not necessary to have a microphone suspended above the band or dance floor. If the Sentry can hear the noise source above the background noise the unit can be calibrated accordingly.

Avoid: Positions that are too close to the noise source

Minimum Height from floor 2.5 m
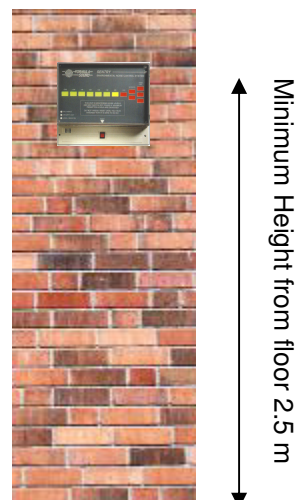
Fig 1 Ideal Position (viewed from above)

If there is more than one noise source i.e. a number of musicians with individual amplification etc try to position the Sentry at an equal distance from these sources.

Stage Width

Distance

Sentry Device
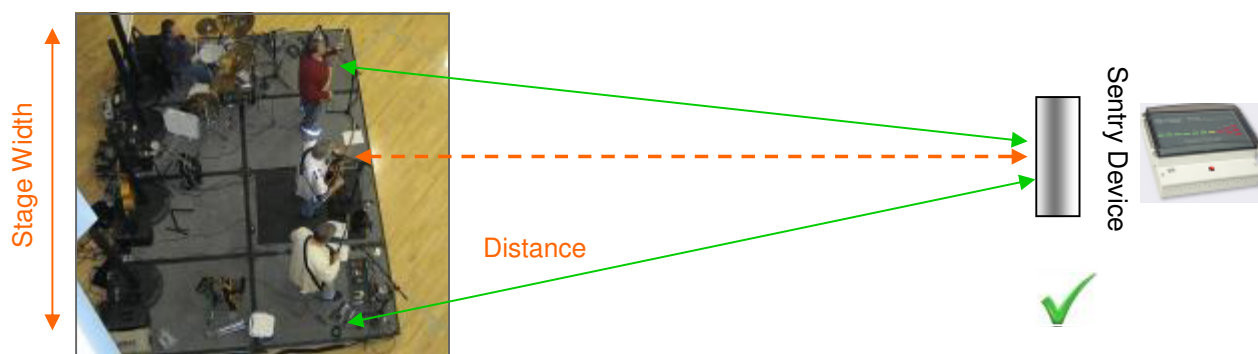
In the above diagram the distance between the Sentry and the Stage must always be longer than the Stage Width

Fig 2 Compromised Position (viewed from above)

Stage Width

Better position

Poor Position
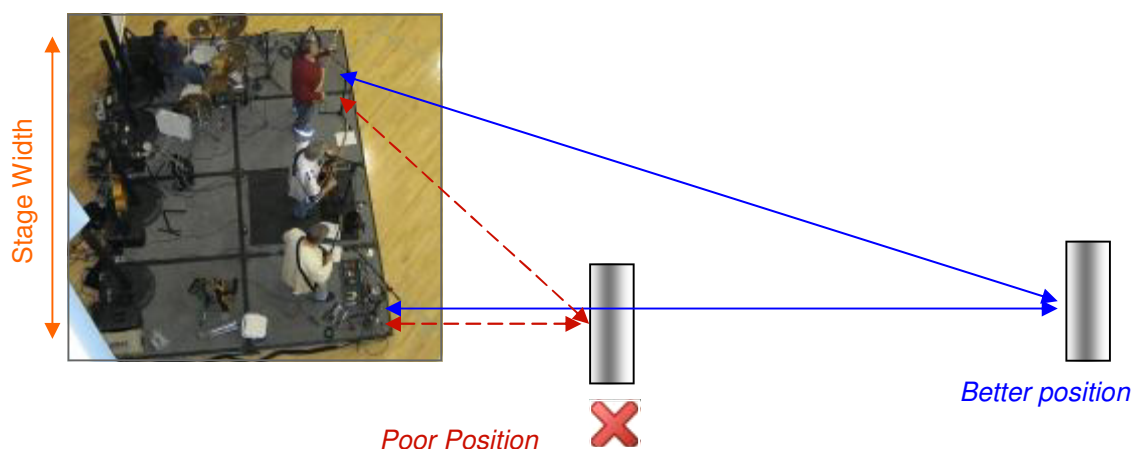
3   Installation

3.1   Fastening the unit

The unit is secured to a wall using 3 screws (not supplied). The top centre screw locates in a key hole slot on the back of the unit.

Fit the top centre screw 30 mm down from where you require the top case position, leaving the screw approx 1.5 mm proud of the mounting face. The unit can then be suspended from this screw whilst the bottom 2 hole / screw positions can be marked out.

3.2   Cable entries

Cable entry knock outs are provided on the rear and bottom faces of the unit allowing you to fit the unit as required. Using the rear knockouts allows you to make a very neat installation. Use protective grommets to shield the cables (not supplied).

Note: Use a separate cable entry for mains connections. **Always keep low voltage cables away from mains cables and connections.**

3.3   Contactor

The benefits of using a low voltage / current contactor are the extra **safety** and possible lower installation costs stemming from the fact that only low voltage cable is required between the Sentry and Contactor at a minimal current.

The Sentry provides output to control a contactor or relay which in turn will control the mains supply. This strategy allows the Sentry to be positioned in the most suitable position for Noise measurement whilst the mains switching equipment (the relay or contactor) can be mounted in the most convenient position for switching the mains power (fuse cupboard etc).

Select and install a suitable contactor(s), arrange the installation to control all the power outlets in the vicinity. (If any are left uncontrolled it will not take very long for the enterprising band of D.J. to find and use them. It is inadvisable to arrange control of only half the outlets in a venue).

In very large installations, it is a simple matter to make 1 contactor control many others of whatever current rating is require.

Connect the contactor control back to the Sentry using appropriate cable and connections depending on the type of contactor used.

The Sentry is capable of driving several low voltage controlled contactors simply connect each contactor to the Sentry in parallel. The polarity is not critical. *See fig 3 (page 5) for wiring detail*

The Sentry also provides the connections to use a mains coil contactor with maximum coil consumption

3.4   Power requirements for the Sentry

The mains consumption is approximately 1 amp at 240 V therefore a 5 amp lighting feed could be utilized. Connect via an isolating switch or removable plug socket arrangement so the unit can be isolated when necessary.

ENSURE THAT THE MAINS SUPPY IS NOT THE SAME AS THAT CONTROLLED BY THE CONTACTOR. REMEMBER THIS SUPPLY CONTROLS ALL THE POWER OUTLETS CONTROLLED BY THE CONTACTOR.

4   Installation (continued)

Please note the front upper cover is **not** designed to be opened

Wall mounting screw aperture

Wall mounting screw aperture

4.5   Removable lower front cover

During the installation / set up phase the lower section is removed by carefully unscrewing the two screws. Once installed anti tamper stickers (supplied) are fixed over the two screws.

The lower two wall mounting apertures are also accessed by removing the cover.
Once installed anti tamper stickers (supplied) are fixed over the two screws.

## 4.6   View of internal set up PCB options (Left hand side)
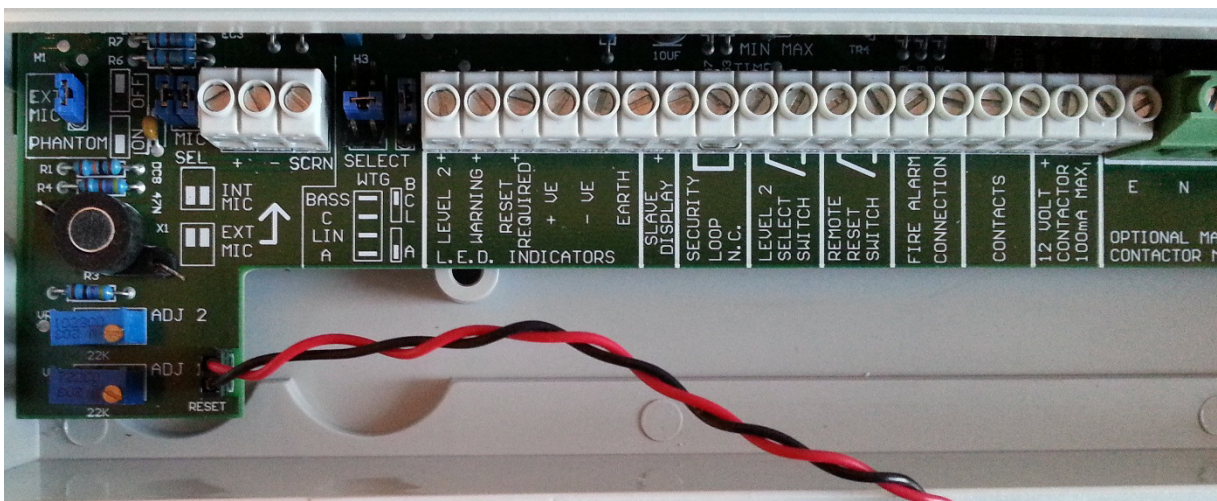
Details of Terminals /options located beneath the Sentry unit cover

*Fig 3 Expanded left hand section of internal terminals / switches*

A Internal, External. Measuring microphone selection
B External measuring microphone connection terminals
C Phantom power selector for external microhone.
D Weighting response selector. (measuring microphone).
E Timer adjustment preset.
F Level 1 (Normal) adjustment pre-set.
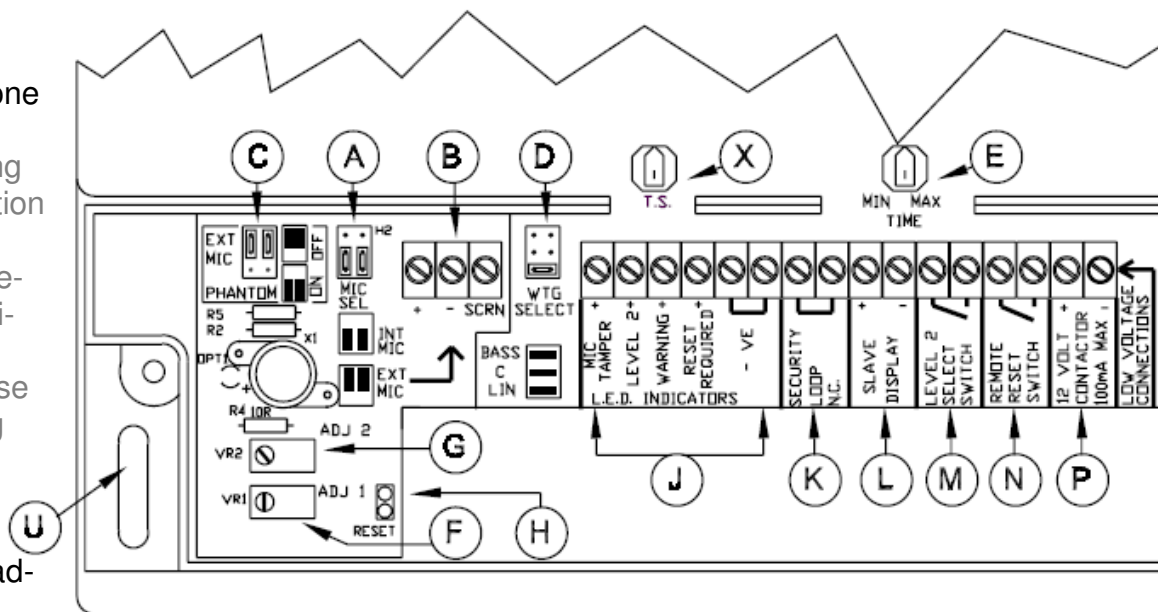
G Level 2 adjustment pre-set (see M to select).
H Reset switch connector
J Terminal for the connection of external Led indicators etc.
K Security Loop connection. **Link if not used.**
L Output for a Slave Display
M Terminals to connect level 2 selector switch.
N Terminals to connect remote reset switch.
P Terminals to connect low voltage contactor.

Fig 4 Expanded right hand section of internal terminals / switches

R Terminals to connect mains coil contactor
S Terminals for the connection of mains warning lamp—60 W max.
T Mains input Terminals
V Voltage selector (Slide switch)
U Bottom mounting holes
**X** Internal microphone tamper sensitivity adjustment.
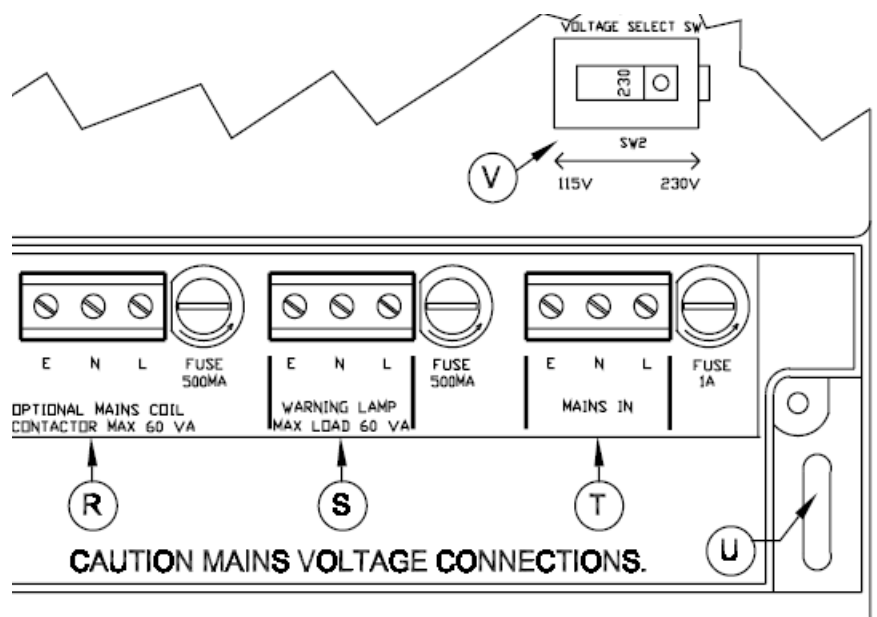
Appendix 2

Setting up the Noise Threshold Level

By default the SENTRY is sent out with a 'Threshold Level' set to 90dB Linear. This means no frequency weighting filter is applied. The more common variant of this on modern sound level meters is the 'Z' weighting. This is usually ideal for music as the issue tends to be the lower frequencies as these travel through walls and travel greater distances than higher frequencies.

If you want to alter the Threshold Level you would need to open the bottom of the enclosure as shown earlier and adjust the 'Potentiometer' labelled 'F' in the diagram and photo below.
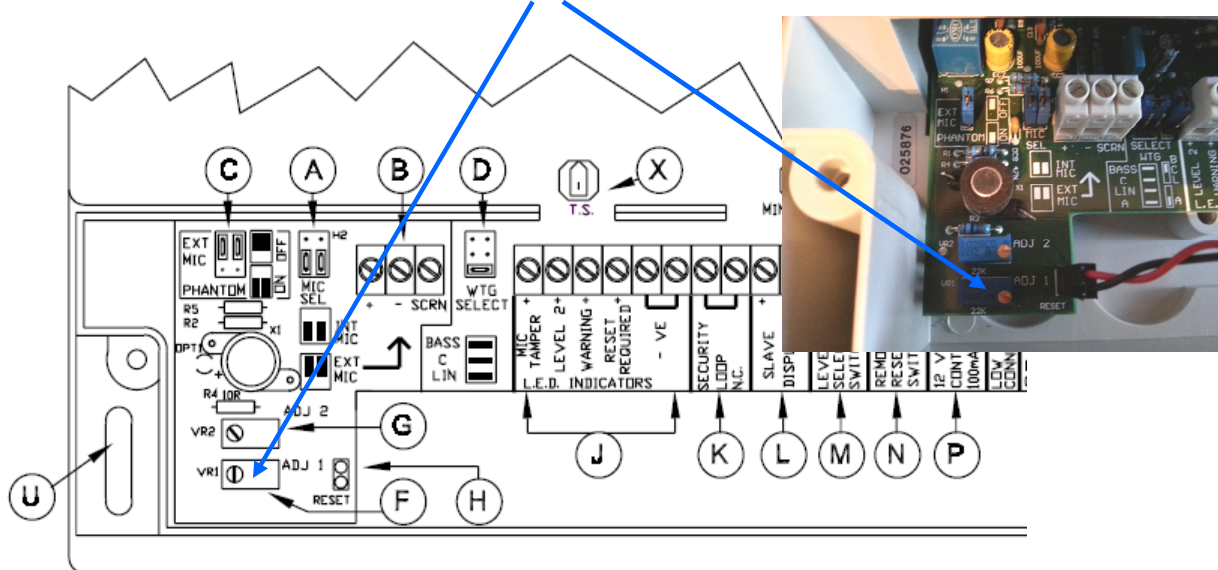
Potentiometer adjustment

Method 1 - In conjunction with a Sound Level Meter

Using a Sound Level Meter measuring to the Frequency Weighting that best represents the scenario at your venue (Z / Lin, C or A weighting). Set up using a typical level of loud music and then by measuring levels either in the entertainment area and / or near adjacent properties. In other words you may simply decide to set it to a level i.e. 96dB(Z) in the room.

Alternatively you may like to determine the level outside of your venue and 'work backwards' by measuring noise levels outside the venue or near the boundary of the complainants. Using this method you will work to a suitable level at the boundary and work out at what point the entertainment noise in the venue starts to cause a problem.

Method 2 - by adjustment of the Potentiometer alone

Use a small and suitable screwdriver

- Turn the screw anticlockwise 8 to 10 full rotations. The potentiometer has a clutch system so once it has travelled fully anticlockwise you can still continue to rotate without causing any damage but at no point will it 'stop'. At this point the level will be around 85dB.

- Option from the nominal 85dB level:

    Clockwise 1.5 turns to get it to 95/95 dB

    Clockwise 2 complete turns to get it to 100dB

It is not necessary to have a microphone suspended above the band or dance floor. If the Sentry can hear the noise source above the background noise the unit can have the threshold level set accordingly.
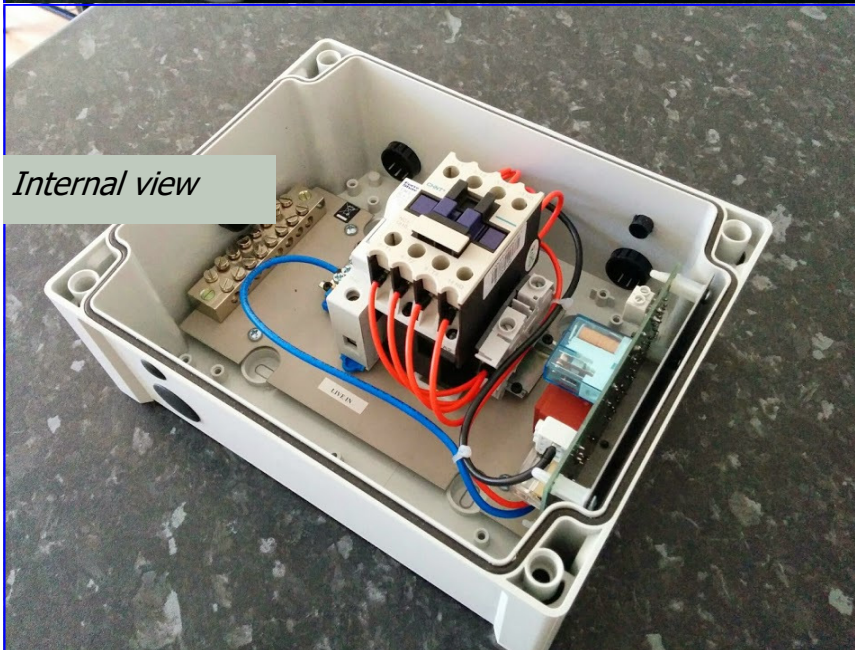
Appendix 3

Optional **SEN-071 Contactor** *32 Amp Fused Contactor for the SENTRY MKII*

Using a Contactor or relay is an essential part of the SENTRY system and for that reason the SEN-071 is offered.

Outer case

Internal view

External Microphone Option   Occasionally there are venues where it is beneficial to use an external microphone with extension lead so that the Sentry and the microphone can be in two different places, i.e. the Sentry device close to a DJ or management staff whereas the microphone can be positioned to capture the different components of the PA system. An optional external microphone can be ordered from NoiseMeters using the following codes:

SEN-EMIC External Microphone for Sentry Noise Controller
SEN-EX30 Sentry Microphone Extension Cable 30 m for SEN-EMIC

External Microphone
with 30 m / 100 ft Extension Cable

Ceiling or Wall Panel Mounted

Appendix 4

Optional Remote Reset Buttons

SEN-074P Push Button Remote Reset *for the SENTRY MKII Music Controller*
SEN-074K Key Switch Remote Rest *for the SENTRY MKII Music Controller*

There is a choice of 2 optional remote switches that allow you have a remote reset option. For most environments it is advisable to mount the SENTRY high on a wall (to avoid tampering), however this makes resetting the unit more awkward. Alternatively you may wish to allow the reset to take place in a managers office for example.

Features

- Warning light to show when noise is approaching permitted Threshold Levels, allowing Manager or supervisor to take action prior to the unit cutting the power.
- Simple Push Button design (shown below)
- Key operated switch (not pictured), allowing only a designated key holder to reset the power.
- Indication light to show when RESET required.

Close up view of Remote Reset Units

Warning light flashes when noise is within 1 or 2 levels below the preset threshold.
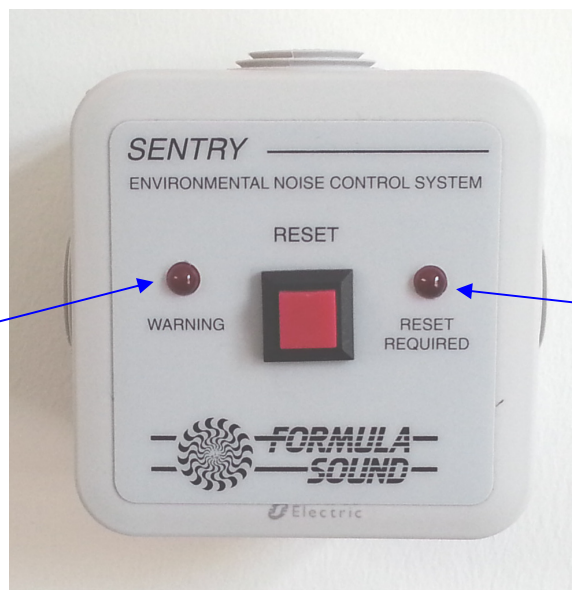
Reset Required button illuminates once the SENTRY has cut mains power to the DJ or Band.
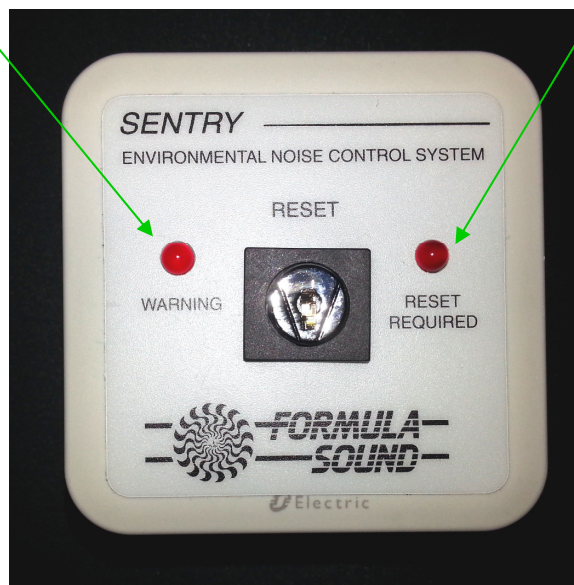
Appendix 5

Optional **SEN-074M Security Door or Window Contactor Set** *for the SENTRY MKII Music Controller*

Noise Issues at Entertainment Venues

One of the Key issues in controlling noise at many venues is when Doors and Windows are left open (particularly when the weather is warm). This certainly helps with the ventilation of a venue but lets noise funnel out which could potentially create a noise nuisance for neighboring residents.

The SENTRY can be configured to have 2 different Threshold levels, 1 and 2 respectively.

Features

- Allows the two available Threshold Levels available with the SENTRY to set noise levels with and without any doors / windows open.
- Automatic change to the suitable Threshold once a Door / Window is opened or shut.
- Protects against inadvertent potential noise nuisance when members of public leave a door open etc.

Installation Notes

When installing a number of Door / Window contactors they should be connected to the SENTRY in series.

Set the SENTRY to work on THRESHOLD 2 in normal use, it will then switch to THRESHOLD 1 when one or more of the contactors are open.

Contactor Set