COMMUNICATION SYSTEMS

AES-3 Module

The AES-3 option module adds digital input and output via RJ-45 or coax to V-Series main panels and desktop panels. The AES-3 module cannot be fitted to early versions of the V-Series panels and the panel should be checked for compatibility before attempting to fit the AES-3 module.
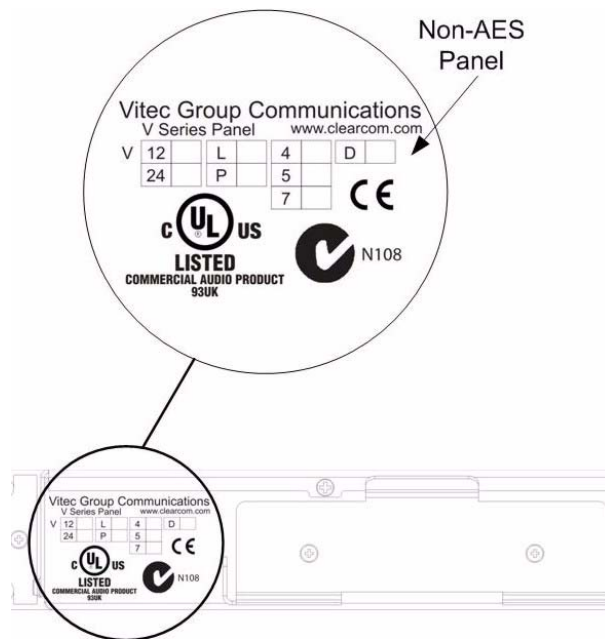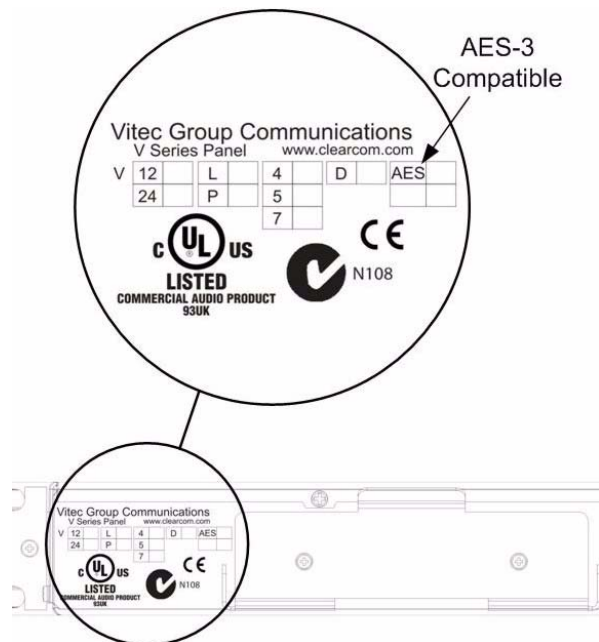
The AES-3 upgrade kit contains the following items:

> 1 x AES-3 interface card part no. 710850Z
> 1 x AES-3 screening card part no. 710849Z
> 2 x mounting blocks part no. 251437Z
> 2 x panhead screw and washer assemblies part no. 280496Z
> 2 x panhead screws part no. 280462Z
> 4 x plastite screws part no. 280536Z
> 1 x BNC hex nut part no. 280537Z
> 1 x BNC locking washer part no. 280538Z
> 1 x BNC spacer part no. 251694Z
> 1 x Ferrite part no. 180028Z

Check that all the items are present before starting the upgrade.

Panel Compatibility

To check whether a panel can be fitted with an AES-3 module the rear of the panel should be checked. Panels that can be fitted with an AES-3 card have an additional "AES" box in the conformity label on the left of the panel rear. The drawings Figure 1 and Figure 2 illustrate the differences.

Figure 1: Panel Cannot be Upgraded

Figure 2: Panel Can Be Upgraded

Fitting the AES-3 Option Card to Rack Mount Panels

Before fitting the AES-3 card the panel must be completely disconnected and removed from any rack or console. Place the panel on a clear workspace suitable for antistatic precautions.

Step 1

The power supply should be removed from the cradle at the back of the panel if it has been fitted there (see Figure 3). If the power supply is not fitted in the cradle proceed to step 2.

Power supply

Figure 3: Power Supply in Cradle on Rack Mount Panel

Unlock the power connector from the panel by turning the outer ring anticlockwise then pulling the connector. Remove the power supply block by pulling it out of the rear of the cradle (Figure 4).

Figure 4: V-Series Rack Mount Panel with PSU Removed

Step 2

The next step is to remove the four countersunk screws and four panhead screw and washer assemblies holding the lid on. The countersunk screws are located on the top of the lid, two of the panhead screw and washer assemblies are located on the rear of the panel and one at each end of the panel (Figure 5). Ensure that all the screws are retained for refitting the lid.
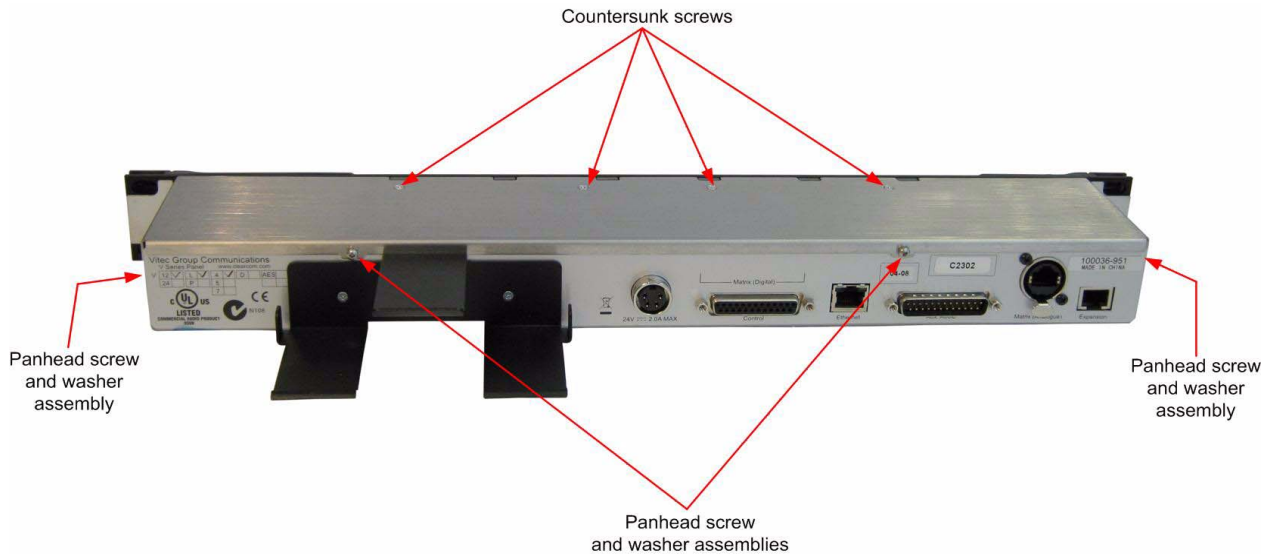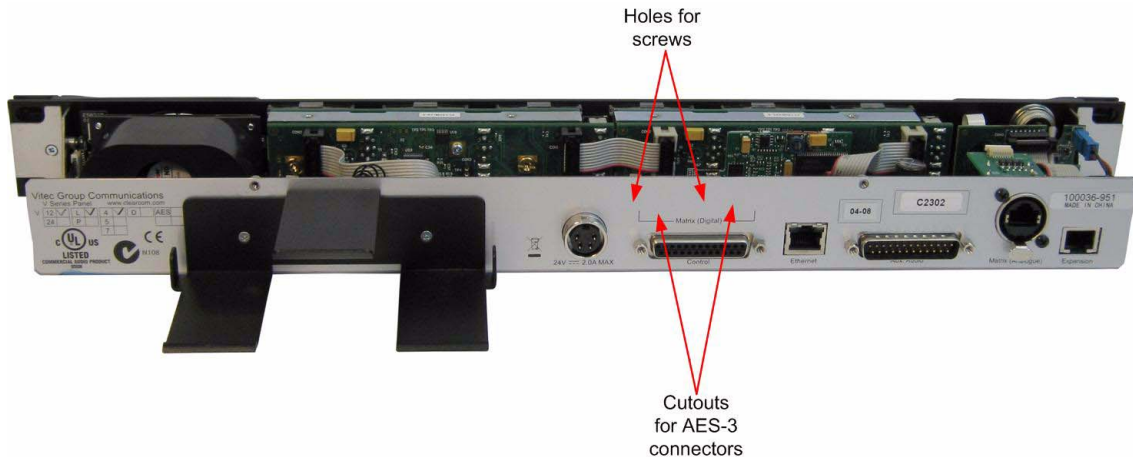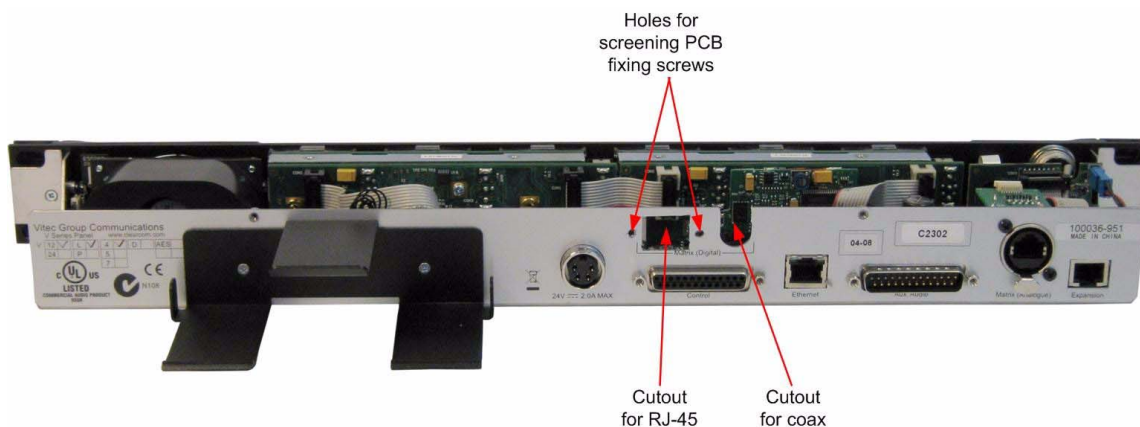

Figure 5: Rack Mount Panel Lid Retaining Screws

Step 3

Figure 6: Rack Mount Panel with Lid Removed

There are two cutouts and two screw holes in the rear metalwork which are covered from the outside by the plastic overlay. The overlay covering the cutouts and screw holes must be removed before the AES-3 card can be inserted. This should be done using a small sharp blade such as a scalpel or craft knife. Care must be taken to avoid any damage to the electronics or cables in the panel while doing this.

Pressing on the overlay will highlight the position of the holes.

Note: Ensure that no pieces of overlay are left inside the panel once the cutouts are cleared as the overlay itself is conductive and could cause damage to the panel.

Figure 7: Rack Mount Panel with Overlay Removed from Cutouts

Step 4

Taking anti-static precautions remove the AES-3 option card from its packaging.

Slide the screening PCB over the front of the RJ-45 connector ensuring that the capacitors fitted to the rear of the screening PCB are at the top and press the top towards the rear of the connector so that it is held on the spring contacts (Figure 8).
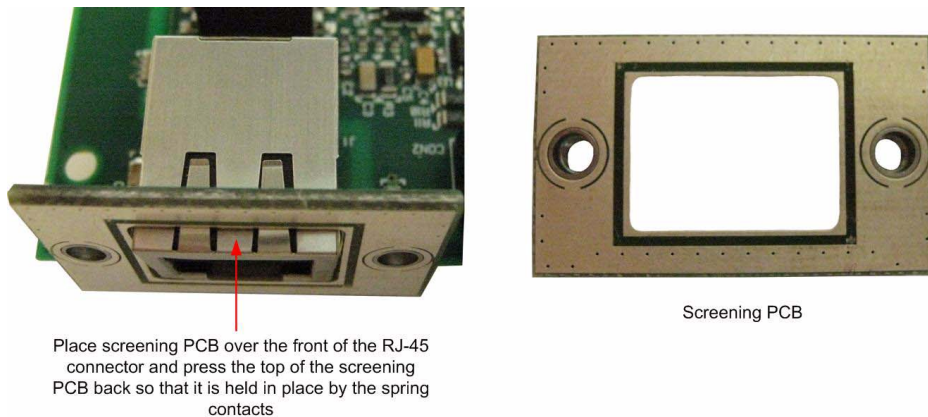

Place screening PCB over the front of the RJ-45 connector and press the top of the screening PCB back so that it is held in place by the spring contacts

Screening PCB

Figure 8: Screening PCB fitted to AES-3 Card

Step 5

Slide the AES-3 option card vertically down onto the panel main PCB ensuring that the BNC shielding clips are on the inside of the panel.

Care should be taken that the PCB connector pins on the AES-3 card are aligned with the connector on the PCB to prevent any pins being bent when the card is fitted. Do not use excessive force to fit the card as this may damage the connector if the pins are misaligned.

Ensure that the mounting holes at the rear of the AES-3 card line up with the spacers fitted to the V-Series panel main PCB . Press the top of the screening PCB forward so that it is in contact with the back of the panel (Figure 9).
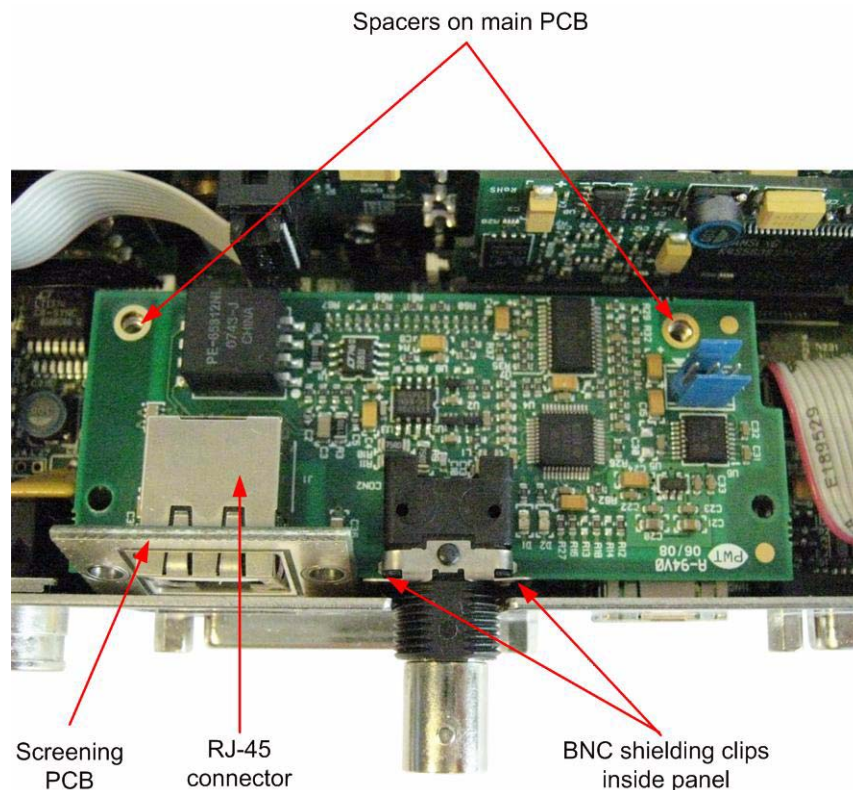

Figure 9: AES-3 Option card in V-Series Rack Mount Panel

Step 6

Use two panhead screws to fix the screening PCB to the chassis. Use the two panhead screw and washer assemblies to fix the AES-3 card to the spacers.

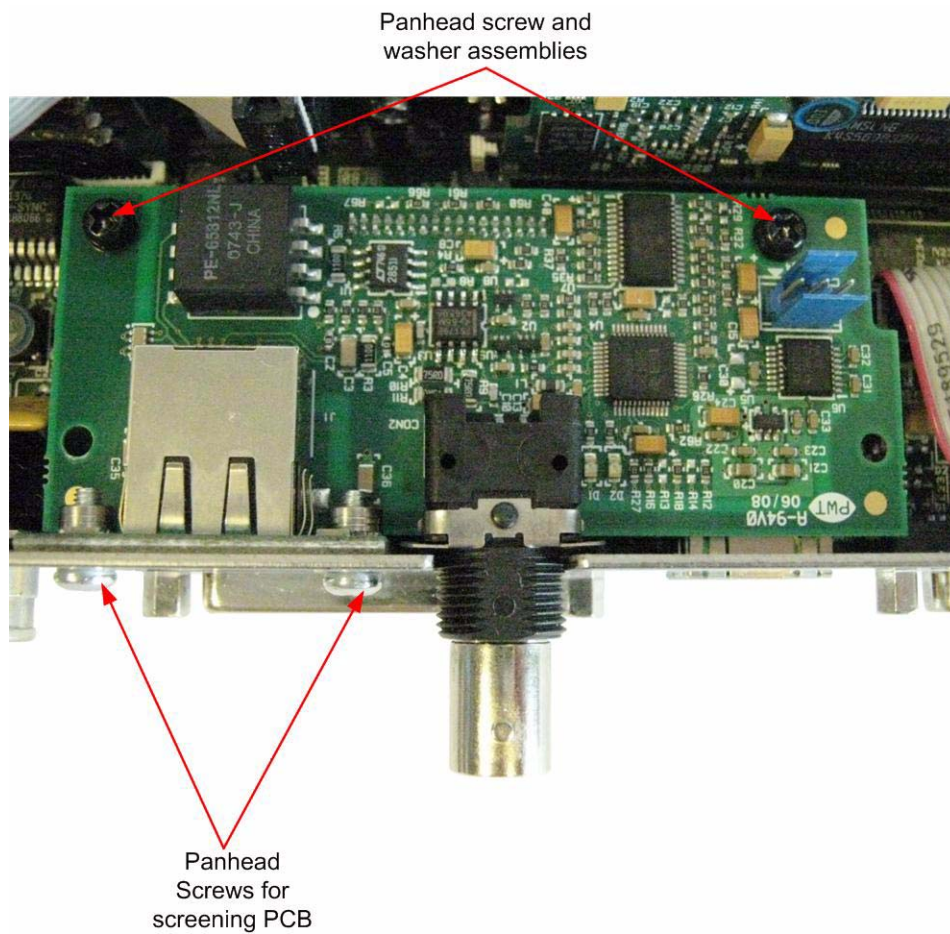 The completed assembly is shown in Figure 10.

Figure 10: AES-3 Card with Mounting Screws in Rack Mount Panel

Step 7

Screw the lid back on the panel making sure that the correct screws are used (see Figure 5).   Refit the four panhead screw and washer assemblies first and then the four countersunk screws.

Figure 11: Rack Mount Panel Upgrade with Lid Replaced

Step 8

The BNC connector must be secured to the back of the panel using the spacer, washer and hex nut supplied in the fitting kit (see Figure 12).

Figure 12: BNC Connector Fittings

Step 9

Place the spacer over the BNC connector so that the flat is aligned with the lid (see Figure 13).
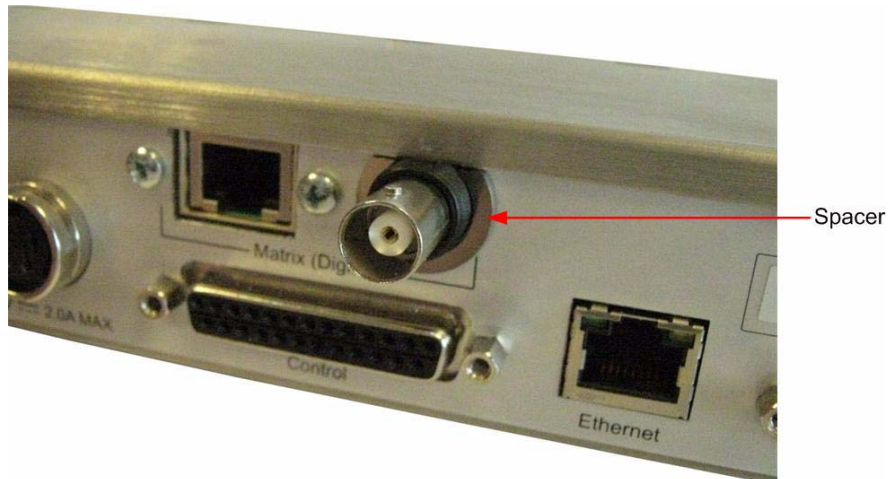

Figure 13: BNC Connector with Spacer

Place the locking washer over the BNC connector and the screw the hex nut onto the BNC connector to secure the AES-3 card (see Figure 14).
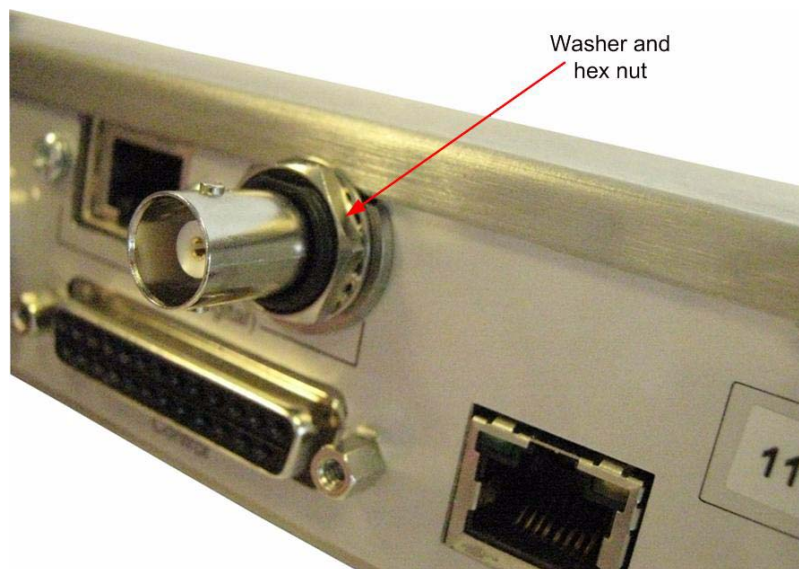

Figure 14: BNC Connector with Locking Washer and Hex Nut

Step 10

If the power supply was originally held in the cradle replace it in the cradle and reattach the power supply cable to the power inlet (see Figure 3).

Remount the panel in the rack or console and reconnect power and I/O cables.

Step 11

When the upgraded unit is connected ensure that the ferrite provided is put on the AES cable as close as possible to the connector for the BNC or RJ-45 cable that may be used (Figure 15).
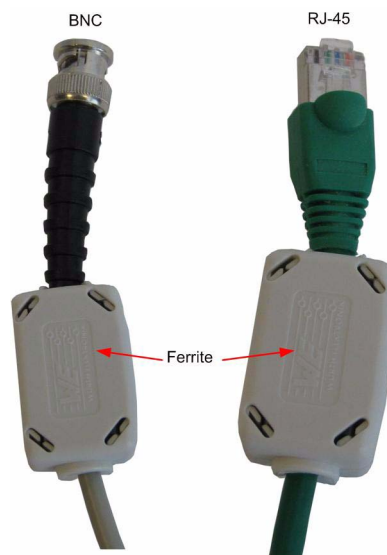

Figure 15: Ferrites Fitted to BNC and RJ-45 Cables

When a panel has been fitted with an AES-3 option card the "AES" box shown in Figure 2 should be marked with a tick using a permanent marker to record the modification.

Fitting the AES-3 Option Card to Desktop Panels

Before fitting the AES-3 card the panel must be completely disconnected from any cabling. Place the panel on a clear workspace suitable for antistatic precautions.

Step 1

Note: Record whether the panel has been build for desktop use or for attachment to a wall to ensure the front panel is replaced in the correct orientation.

Remove the eight countersunk screws holding the front of the panel on. The countersunk screws are located on the ends of the panel, four on each end (Figure 16).
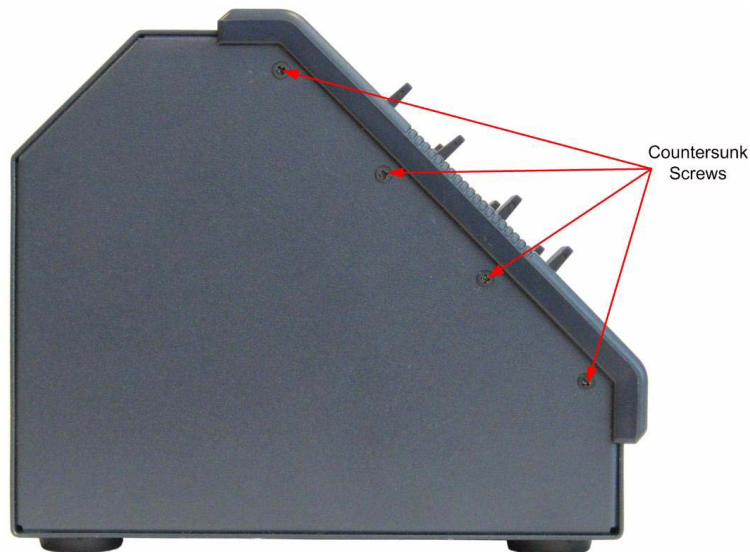

Countersunk Screws

Figure 16: Desktop Panel Retaining Screws

Remove and retain all the screws and and remove the front panel assembly. The cables connecting the front panel electronics to the main PCB are long enough to allow the panel front to be removed without having to unplug any of the cables (Figure 17).
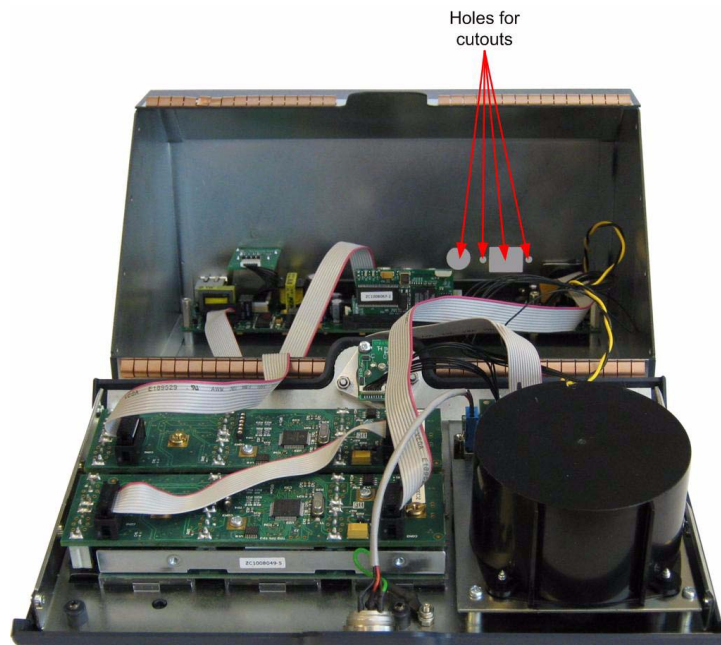
Holes for
cutouts

Figure 17: Interior of Desktop Panel Before Removing Cutouts

Step 2

There are two cutouts and two screw holes in the rear metalwork which are covered from the outside by the plastic overlay. The overlay covering the cutouts and the screw holes must be removed before the AES-3 card can be inserted. This should be done using a small sharp blade such as a scalpel or craft knife. Care must be taken to avoid any damage to the electronics or cables in the panel while doing this.

Pressing on the overlay will highlight the position of the holes.

Note: Ensure that no pieces of overlay are left inside the panel once the cutouts are cleared as the overlay itself is conductive and could cause damage to the panel.
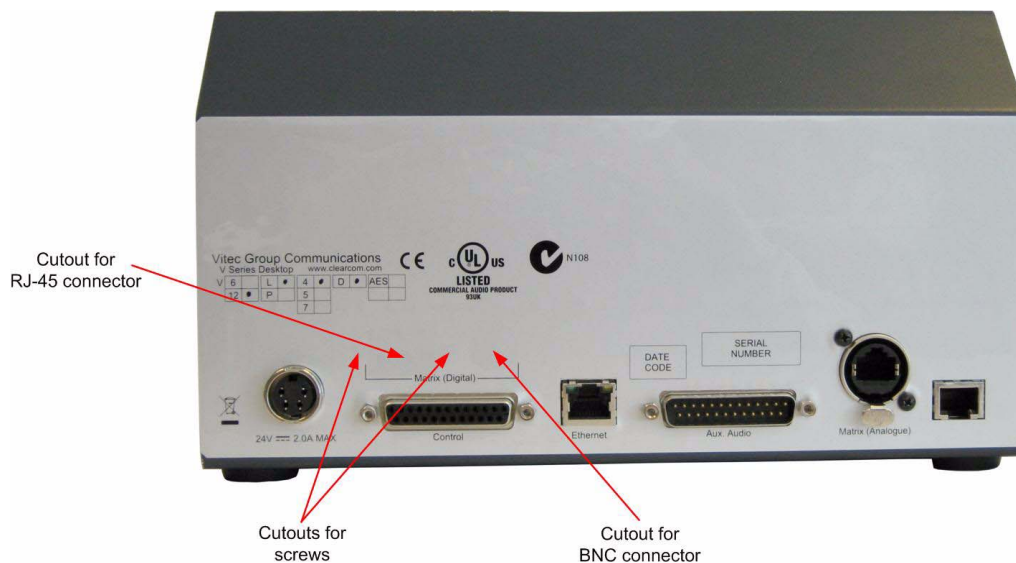

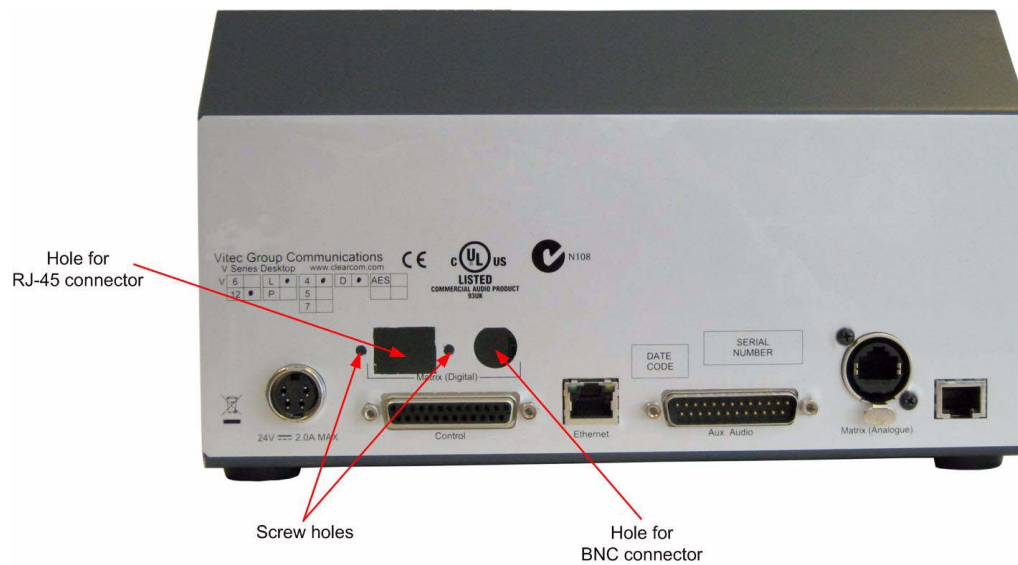**Figure 18: Desktop Panel Rear Before Removing Cutouts**

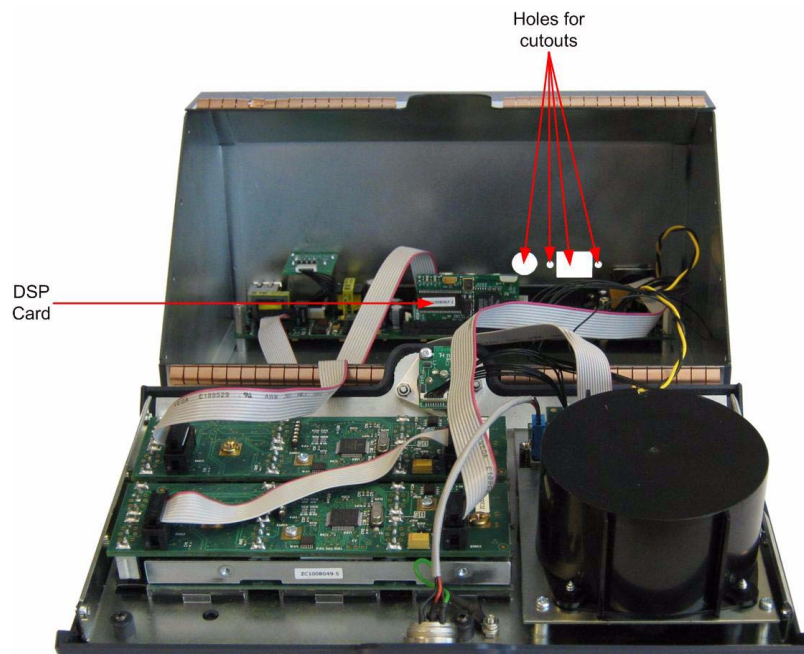**Figure 19: Desktop Panel Rear After Removing Cutouts**

Figure 20: Desktop Panel with Cutouts Remove from Overlay

Step 3

Before installing the AES-3 option card remove the DSP card at the rear of the main PCB to allow access (see Figure 21).
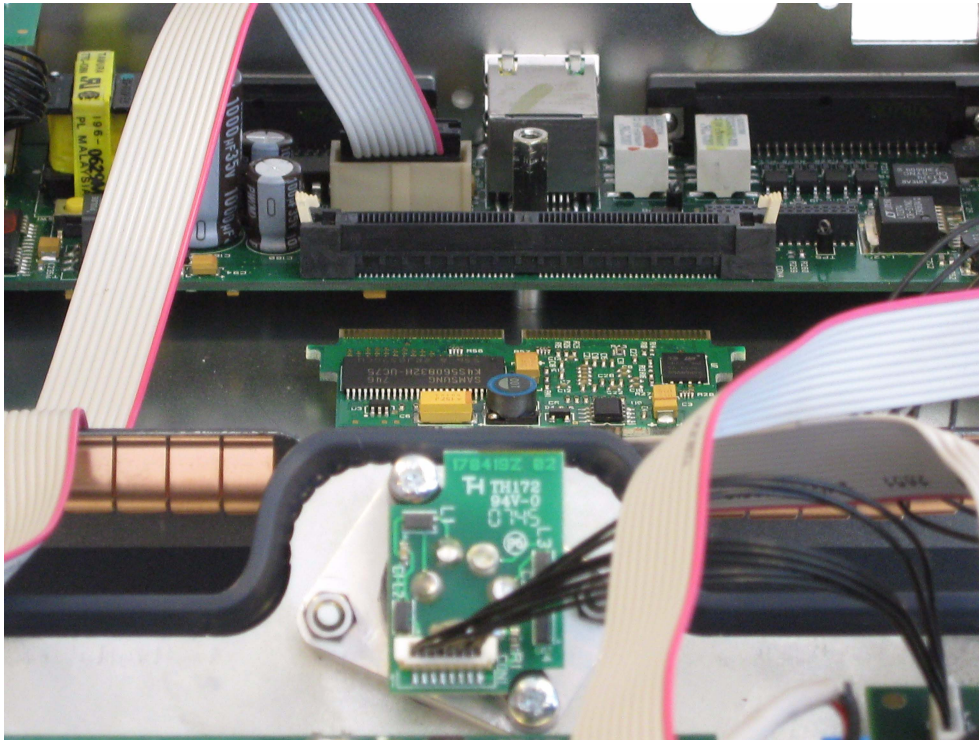

Figure 21: DSP Card Removed to Allow Access

Step 4

Taking anti-static precautions remove the AES-3 option card from its packaging.

Note: The mounting blocks should not be used when fitting the AES-3 to a desktop panel.

Step 5

Slide the screening PCB over the front of the RJ-45 connector ensuring that the capacitors fitted to the rear of the screening PCB are at the top and press the top towards the rear of the connector so that it is held on the spring contacts (Figure 22).
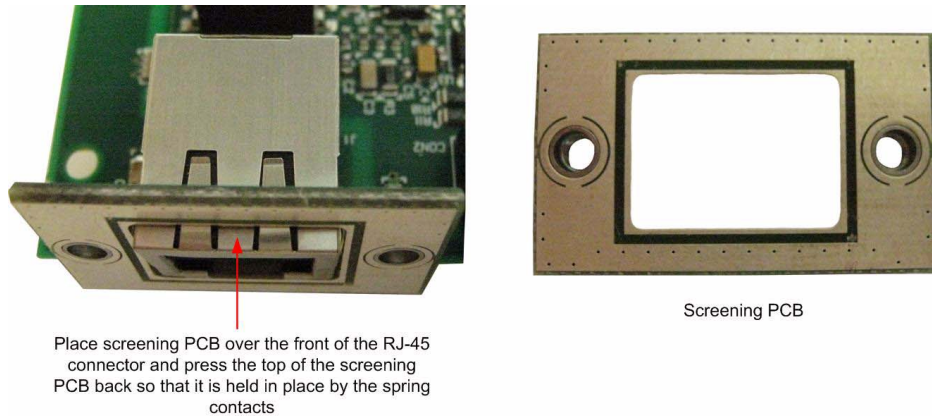

Place screening PCB over the front of the RJ-45 connector and press the top of the screening PCB back so that it is held in place by the spring contacts

Screening PCB

Figure 22: Screening PCB fitted to AES-3 Card

Step 6

Insert the AES-3 option card into position over the main PCB so that the connectors line up with the cutouts and the PCB connector on the bottom of the card lines up with the socket on the main PCB. Ensure that the mounting holes at the rear of the AES-3 card line up with the spacers fitted to the V-Series panel main PCB and press the card down so that the PCB connector pins are in the socket . Press the top of the screening PCB forward so that it is in contact with the back of the panel (Figure 23).
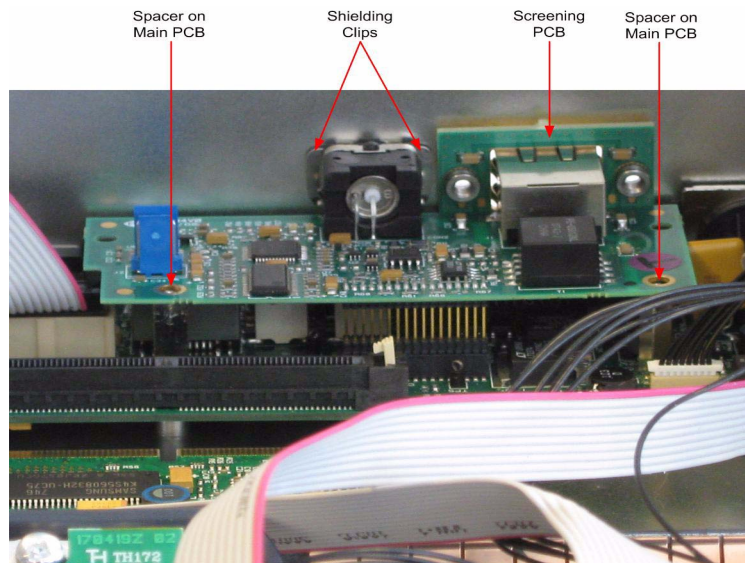

Figure 23: AES-3 Option card in V-Series Desktop Panel

Step 7

Secure the BNC connector to the panel rear using the BNC Locking washer and hex nut.

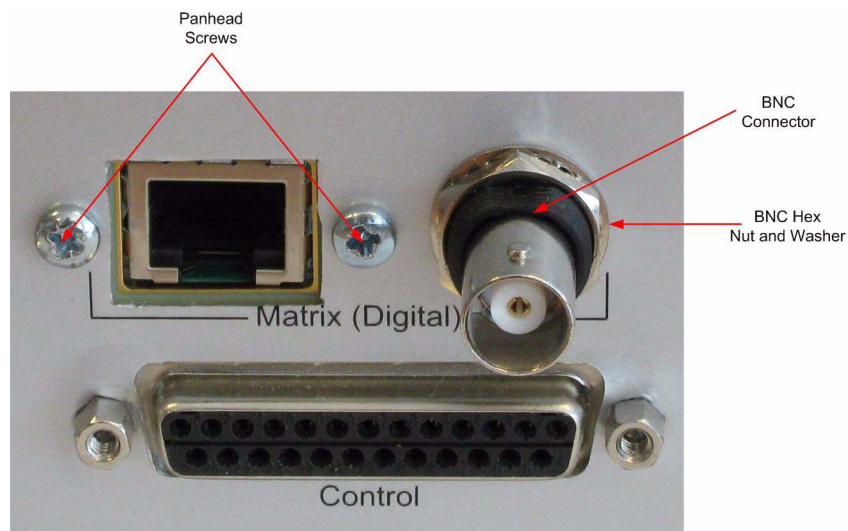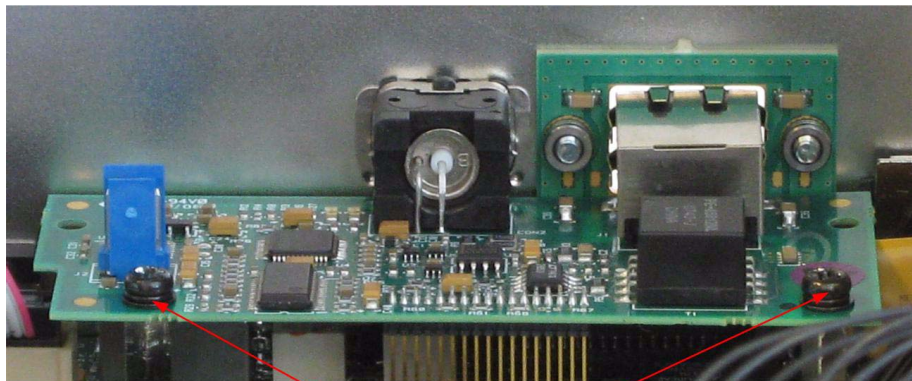Use the two panhead screws to fix the screening PCB to the chassis.

Figure 24: AES-3 Card with Hex Nut and Washer

Step 8

Use the two panhead screw and washer assemblies to fix the AES-3 card to the spacers (see Figure 25).

Note: A "stubby" or short handled screwdriver is required for this operation.

Panhead Screw and
Washer Assemblies

Figure 25: AES-3 Option Card with Mounting Screws

Step 9

Replace the DSP card in the slot at the rear of the motherboard ensuring that it is securely held by the clips.

Step 10

Replace the front panel assembly ensuring it is replaced in the correct orientation noted in step 1, making sure that the correct screws are used (see Figure 16).

Insert the microphone connector edge into position first, then lower the headset connector into place.

Note: Ensure that no cables are trapped before attempting to refit the screws.

Apply pressure to the lid to align the screw holes and fit the top and bottom screws loosely on each side before fitting the remaining screws and tightening all the screws.

Figure 26: Completed Desktop Panel Upgrade with AES-3

Re-site the panel and reconnect power and I/O cables.

When the upgraded unit is connected ensure that the ferrite provided is put on the AES cable as close as possible to the connector for the BNC or RJ-45 cable that may be used (Figure 27).
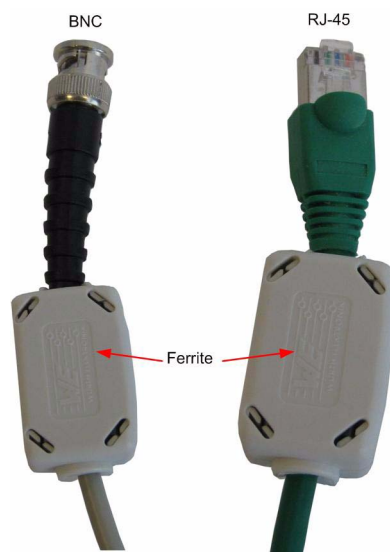
Figure 27: Ferrites Fitted to BNC and RJ-45 Cables

When a panel has been fitted with an AES-3 option card the "AES" box shown in Figure 2 should be marked with a tick using a permanent marker to record the modification.