Titan Upgrade and Installation

Version 2.4

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Reprint and revision history:

C O N T E N T S

1. Introduction

This document is a step by step instruction on how to upgrade the Pearl Expert and install the Titan software. It is vital that the steps including the various checks are followed in the correct order and manor to assure that the installation is correct. Failure to do this may decrease the reliability of your console.

Each upgrade kit is assigned to a particular console serial number and contains a software lock. Therefore the kit must be used for upgrading the serial number of the console specified on the kit box.

The upgrade and installation takes little over 90 minutes but you should allow 1 hour to read and familiarise yourself with what needs to be done.

We have carefully designed the order in which the upgrade is completed to make it as simple as possible. Please follow the order specified here.

Allow enough time for complications, this is a major upgrade and it is always possible something will need extra time. We suggest that the upgrade is carried out during UK office hours so you can contact us should you need to.

We have placed a strong support system for this upgrade here at Avolites, which can be reached by phone (**UK office hours**) and by email. The phone numbers can be found on the second page of this document.
When contacting us please quote it is for the "Expert Upgrade support" so we can direct your call to the right person.

Please contact us in case of doubt rather than to carry on, our wish is that the upgrade is successful and we are here to help you.

Alternatively we will carry out the upgrade at Avolites free of charge; this can usually be carried out on the same day providing it is booked in advance.

Titan software requires this upgrade and therefore it is essential the upgrade is carried out before the software is installed. We cannot support consoles where the software has been installed but the upgrade has not been completed.

These instructions bring the console up the Engineering Change Notice level ECN-0184, ECN-0185 and ECN-187.

2. Overview – what you get with this upgrade

This upgrade to your Pearl Expert comprises of Hardware and Software. The hardware upgrade fits a Safety-Cage over the main motherboard, this holds components and cables reducing the possibility of these coming lose during high vibration transport or when the console is used in high sound environments. There is additional fixing of USB cables to prevent these working lose over time, and an improved DMX earth giving better immunity from external noise induced on long DMX lines. Finally there are resistors added the fader boards to prevent cold environments triggering fader bleed.

The Keyboard USB cable in now routed to the motherboard directly, which allows the keyboard to still control the motherboard when ShowSafe is switched in.

The amount of PC memory is doubled allowing larger shows to be programmed.

Secondly there is a software upgrade enabling the Titan operating system to run. Once the software upgrade is completed the Pearl Expert can run either "Classic" Pearl software or "Titan" software. Titan which is based on the Diamond 4 software brings a host of exciting new features to the Pearl Expert such as multiple timers, fixture exchange, memories/chases on preset faders,

new shape engine etc.

3. Important information

3.1   Technical competency

This upgrade involves soldering SMD parts, adding memory to the PC mother board and relocating cables and cable fixings. It requires a good level of electronic and mechanical understanding including minimizing static and the potential damage due to misaligned connectors and the use of tool. Service technicians who are used to repairing moving lights should find this upgrade no problem. Part of the upgrade requires the soldering of two pre tinned wires to the DMX cards.

We advice you to contact your local reseller or distributor if you are unsure about doing the upgrade after reading this manual.

We ask again that before you start the upgrade you read this right through and familiarise yourself with what needs to be done. This investment in time will make the actual upgrade much easier.

3.2 Tools required

- DZUS key or large 8mm flat screwdriver
- Small flat screwdriver
- No 2 Pozi drive
- Small Side cutter
- Soldering Iron suitable for electronics (like Weller 20W) and some solder
- 5.5MM nut runner or spanner
- DMX tester or DMX receiving equipment that is known to work
- MIDI lead (optional)
- Multimeter

3.3 Kit contents

- Assembled PC Safety-Cage containing two USB sockets and one Security Key
- Memory Module
- Resistor set (4 SIL and Wires + 4 SMD)
- 1 loose Fixing for the PC Safety-Cage
- 20 cable ties and 5 cable tie bases
- 1 Alcohol Cleaning Wipe
- Neoprene foam
- White label to insulate BIOS resistor
- 2 pre-crimped and tinned DMX Board Earth Leads
- installation instructions
- Installation CD
- Console Marking labels (activation code and Security Key codes for reference)

Do not start on the upgrade and or the install if there is a part missing that you can not source locally. Inform Avolites at all times about missing parts, and quote the serial number of the kit.

4. Starting the upgrade

4.1 Final notes and warnings!

Before we start, make sure you have more then two days time between starting this upgrade and requiring the console, that way if a problem is encountered you have enough time to resolve it. Call us if you have any difficulty at all. We are here to help you.

Read the whole, document at least once before actually starting the upgrade.

If in doubt contact your reseller or Avolites for support.

Perform the upgrade in an area with good work lighting and clear working space.

Have a small container handy to put screws in as you remove them.

All the instructions are described as seen from the back of the console.

And finally tick the Check point boxes as you go along, this helps you making sure that the right steps are done at the right time and allows us to help you better in case of required support.

Disconnect the console from the Mains and other electrical connections

4.2 Opening the Console

Place the Console on a steady non scratching surface. Close the keyboard drawer and unfasten the four Dzus fixings either using a Dzus key, a flat-blade or a small coin Turn the Dzus ¼ turn counter clockwise, take care not to damage the laminate if a screw driver is used, then lift the front panel up.

5. Fader Resistors

5.1 Master Fader PCB resistors

Remove the master fader PCB fader knobs (GM/ preset A&B and swop). Disconnect the USB and the program switch from the Master Fader PCB (U-MAS)and remove the PCB from the console
Place the Fader board with eh faders facing up in front of you and locate resistor location R41,R42 and R43 as seen in the picture below
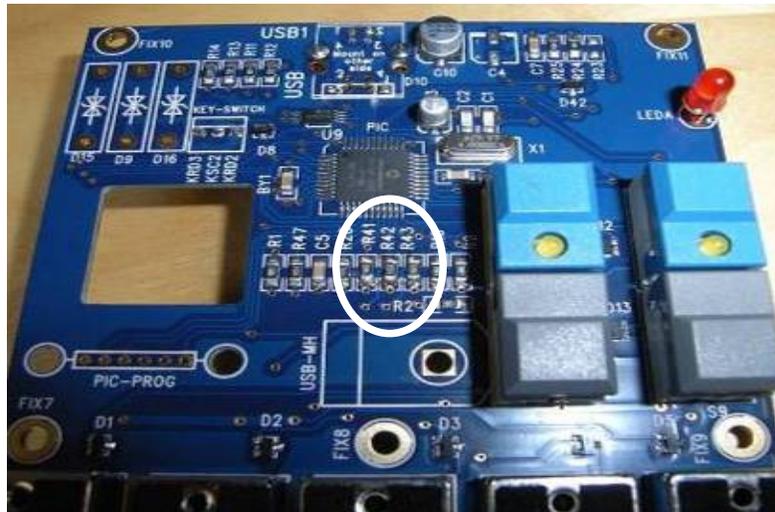
Fit the supplied SMD resistor, this is best done soldering one side first while holding the resistor in place with a small flat blade screwdriver

Refit the PCB to the console and connect the USB cable as shown in the pictures below.
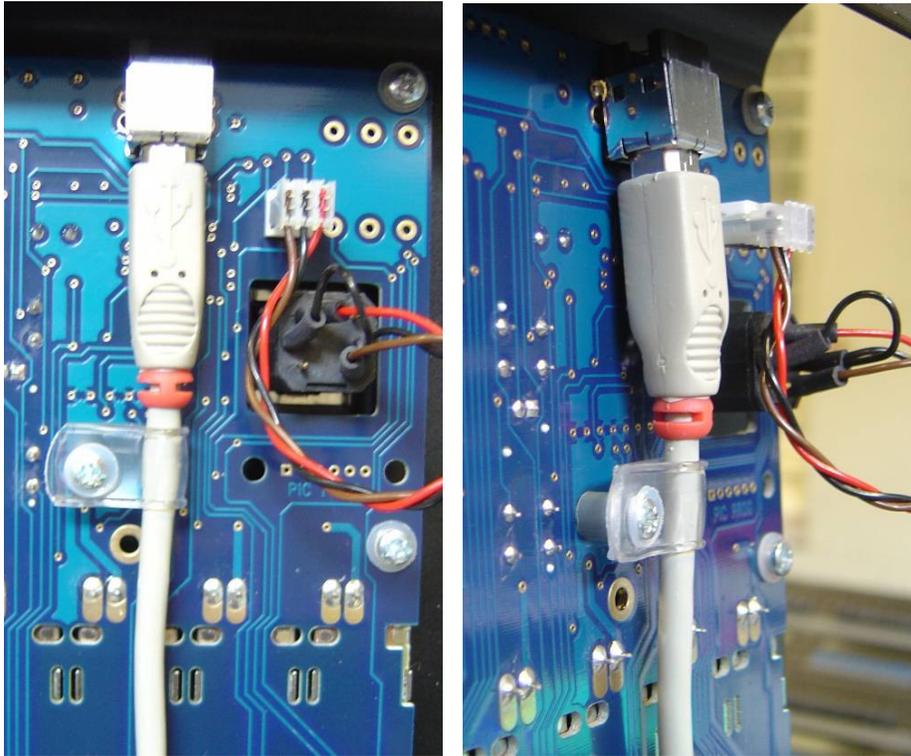
Re-connect the Key-switch to the U-MAS board as shown above and refit the fader knobs.

<table>
<tr><td>Check point 5.0.1</td></tr>
</table>

Testing the resistor installation

For each PCB test the following points against ground. Use the Multimeter set to resistance 100K Ohm range . Place one probe to the shell of the USB connector and the other to the indicated points. The reading should be **less** then 100K Ohm.
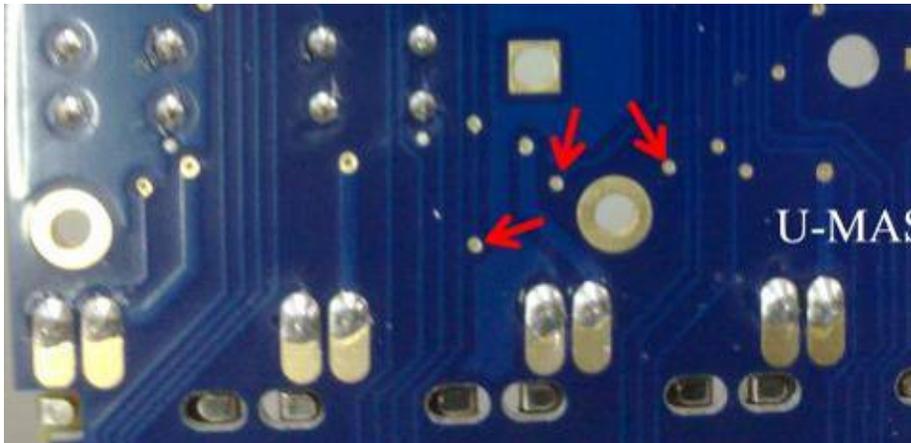
5.2   Preset Fader PCB resistors

!! Remove the Key from the key switch !!

In order to make it easier to fit the remaining resistors we are going to place the console on its front panel

Carefully lift the base and front so that the console is resting on the front as per picture below

To help you find the components below, the following pictures are taken standing at left side in the above picture of the console.

For each of the three PCBs locate the 4th Fader from the left and place a small section of the double sided tape on the PCB
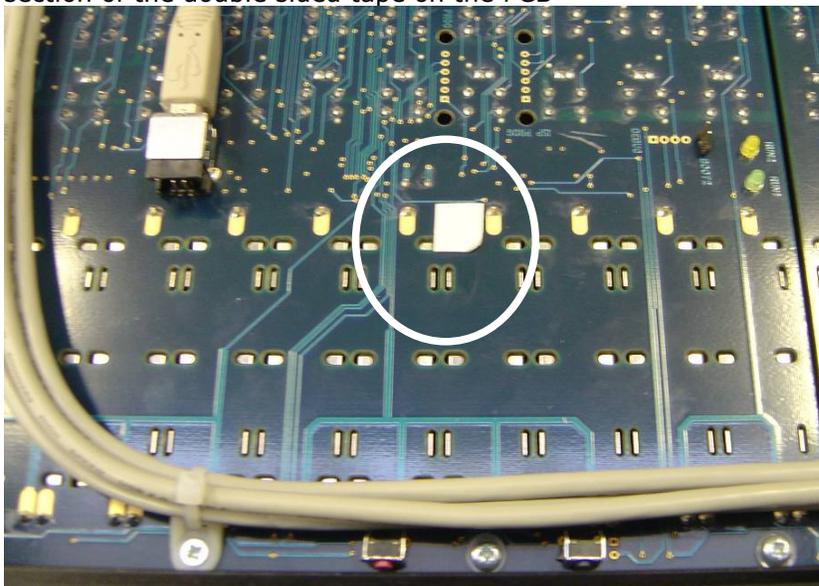
and solder the supplied resistor network common leg as shown below
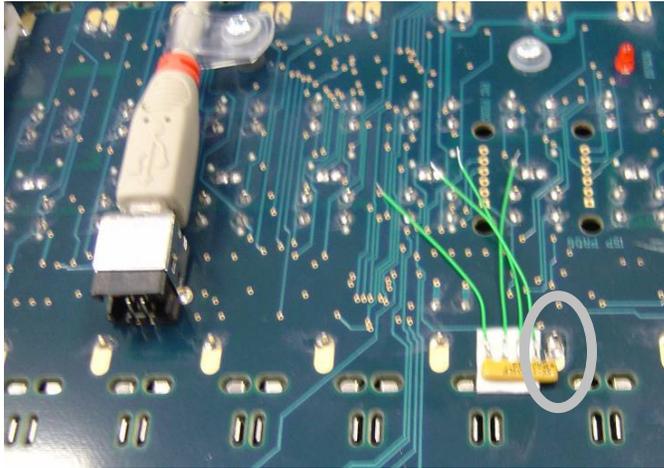
Then Solder the trailing wires to the indicated points
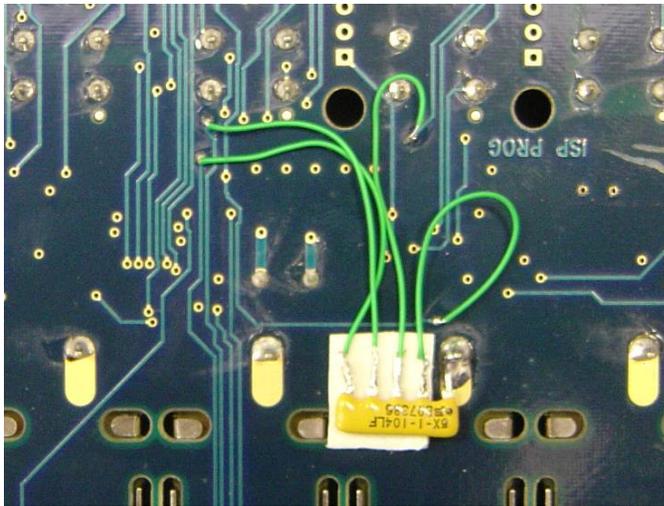
Testing the resistor installation

Test the following points against ground. Use the Multimeter set to resistance 100K Ohm range. Place one probe to the shell of the USB connector and the other to the indicated points below. The reading should be **less** then 100K Ohm.
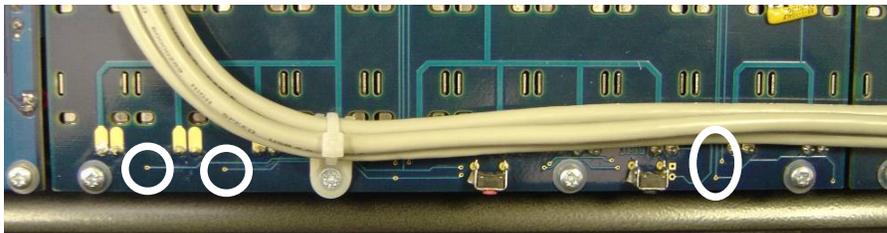
Check point 5.0.1

5.3   Playback fader board

Leaving the console "Upside down" locate fader xx on the playback fader board (see picture below)

Scrape away the top solder resist so that a solder joint can be made between the ground plane and the resistor network and place a small section of the double sided tape on the PCB. See picture below;
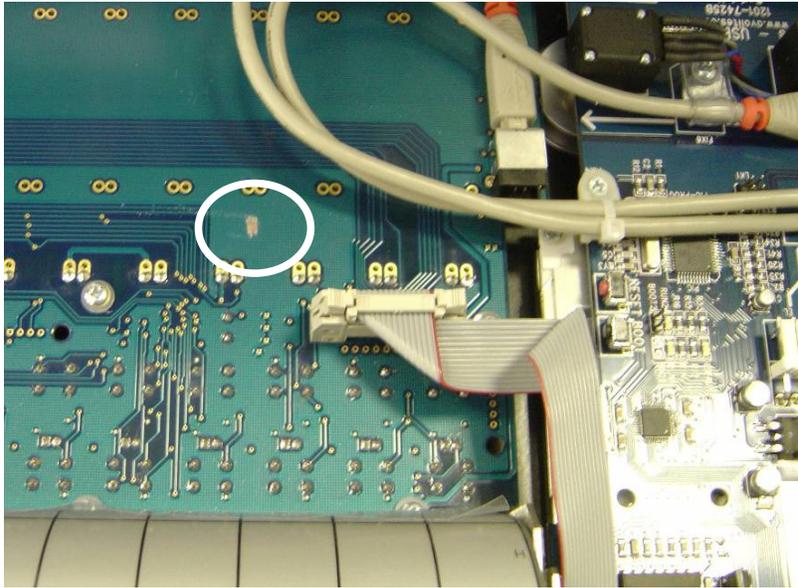
Solder common leg of resistor network to ground plane as in picture below;
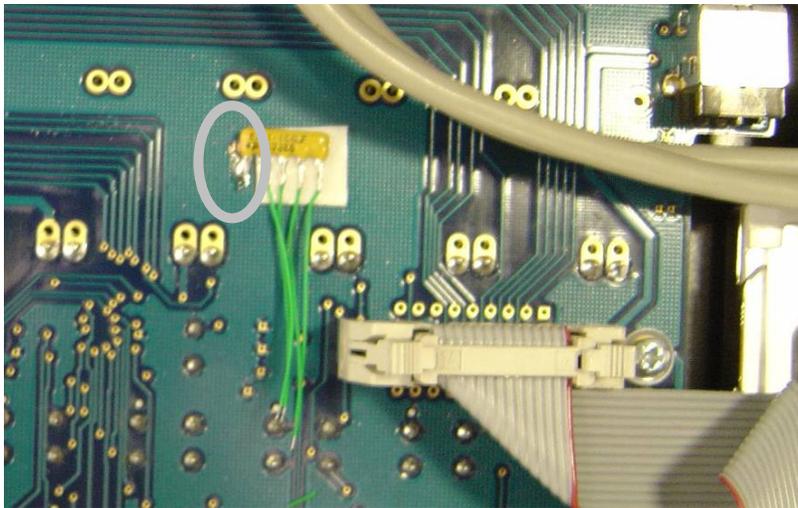
Solder wire links to the track pads as in the picture below

Testing the resistor installation

Test the following points against ground. Use the Multimeter set to resistance 100K Ohm range . Place one probe to the shell of the USB connector and the other to the indicated points below. The reading should be **less** then 100K Ohm.

Carefully turn the Console back on the shell base as per normal

The following pictures are taken from the back of the console.

All the instructions are described as seen from the back of the console.

6. DMX and Hub modification

You are going to remove the DMX output boards to add an earth wire to these, and also to access the USB cables to fit additional cable clamping.

Check point 6.0.1

On the back of the console, locate the 8 screws holding the DMX XLR sockets (DMX A, B, C and D) to the panel, and remove them. (Put them aside so you can re use them later.)

Check point 6.0.2

Inside the console locate the two M3x10 Pozi screws holding the DMX board to the Hub board, Mark the DMX boards as Left A&B and Right C&D corresponding the DMX outlets (so you can put them back in the right place) and then remove them.
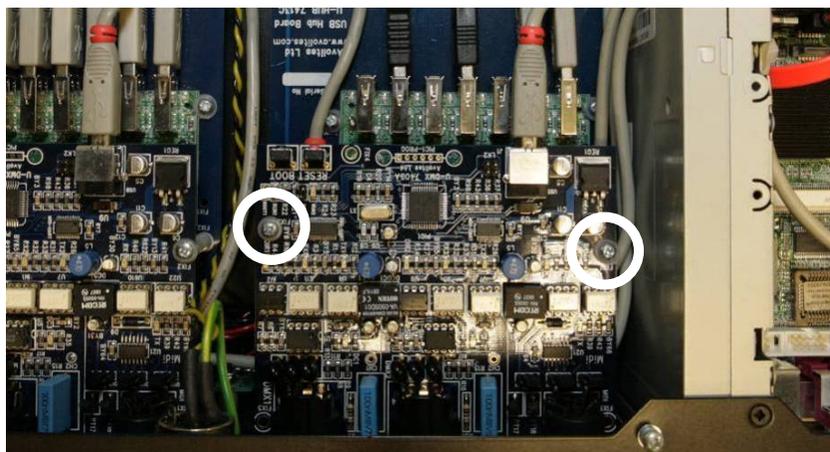
Disconnect the USB connection to the DMX boards and remove the boards.

6.1 DMX Earth Wire modification

Insert one supplied DMX Earth wire to each DMX board in the CH1 hole provided and carefully solder this to the board (repeat this for the second DMX board). Check that no solder has splashed to adjacent tracks.
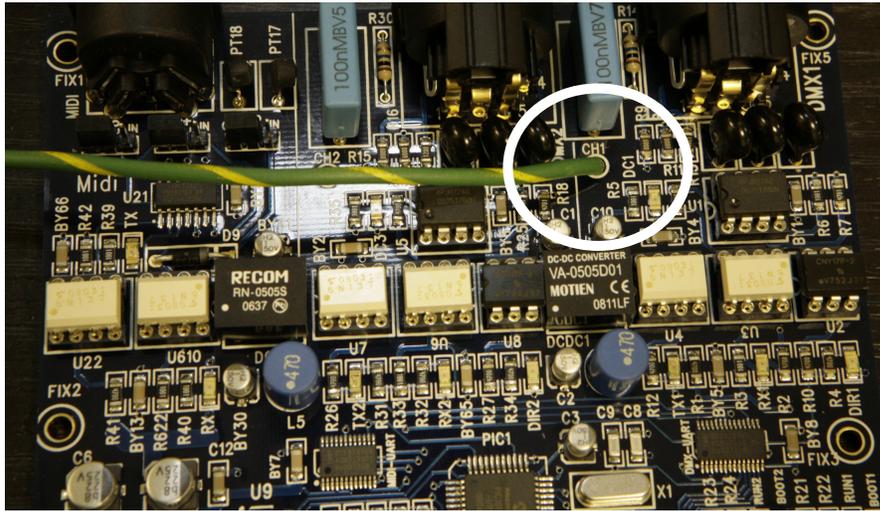
Put the DMX boards to one side for a moment.

6.2 Hub USB cable Fixing

Next you will be fitting additional vibration clamping to the USB hub feed cables. The final fixing method can be seen in the pictures at Checkpoint 2.6 and 2.7

Locate the HUB USB feed cable (type B connector), which are exposed once the previous step has been completed, and disconnect it. Carefully cut the cable tie holding the HUB PSU Jack plug and disconnect it. Locate the U-HUB USB feed cable and disconnect it (type A connector). Repeat the above for the second HUB board.

U-HUB USB Feed cable

Hub PCB (the green board)

HUB PSU Jack

HUB-USB feed cable

Feed Jack cable tie
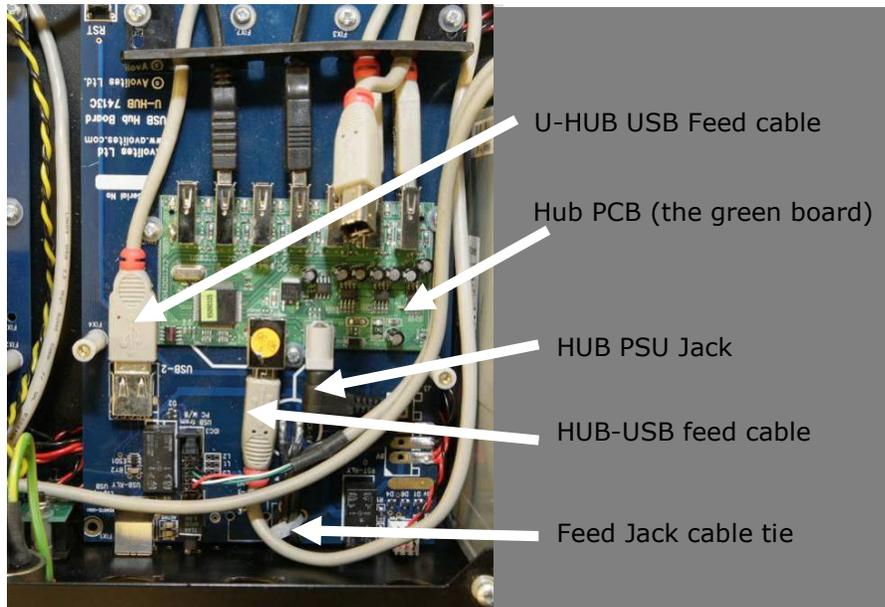
Open the alcohol wipe and clean the marked areas (left image below) and allow to fully dry.

Clean

Clean

B

A

Track edge
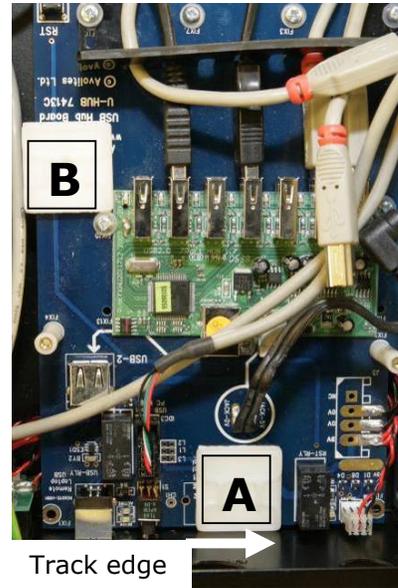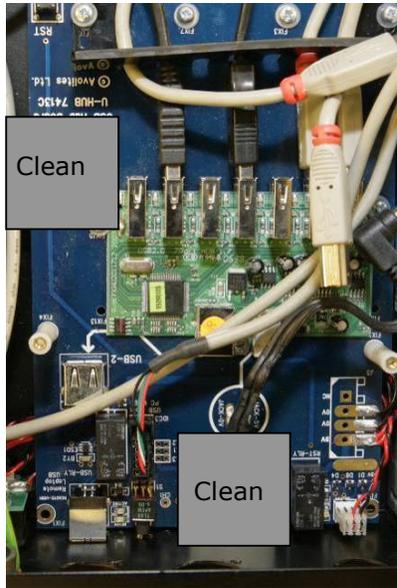
| Check point 6.2.3 | Fit a cable tie base "**A**" as indicated above, making sure the right side aligns with the track on the PCB and the tie-loops vertical. This needs to be done accurately to assure correct connector alignment later |

| Check point 6.2.4 | Fit a cable tie base "**B**" as indicated, making sure the right side aligns with HUB PCB edge and the tie-loops vertical. |

| Check point 6.2.5 | Re-connect the Hub Feed Jack and fit the cable tie in the right-most loop only as indicated below. |

| Check point 6.2.6 | Re-connect the HUB USB feed (type B connector) and fix the cable tie in the left-most loop only as indicated below, pull the cable tie back to reduce the potential for backwards movement before closing the cable tie. |
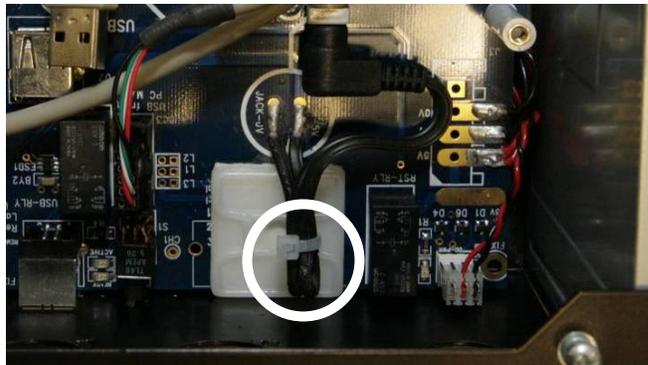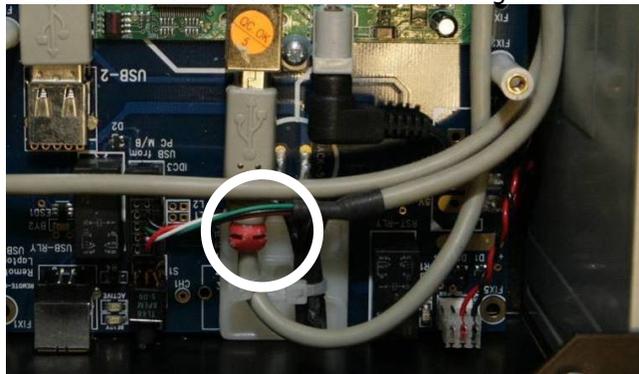
Re-connect the U-HUB USB connector (type A connector) and fit the cable tie

| Check point 6.2.7 | in the right-most loop as indicated pull the cable tie forward to reduce the potential for forwards movement before closing the cable tie. Repeat fixing the cables for the other U-HU and HUB board. |

| Check point 6.2.8 | Check that all connections look like the images and no tools or parts are left on the PCBs. |
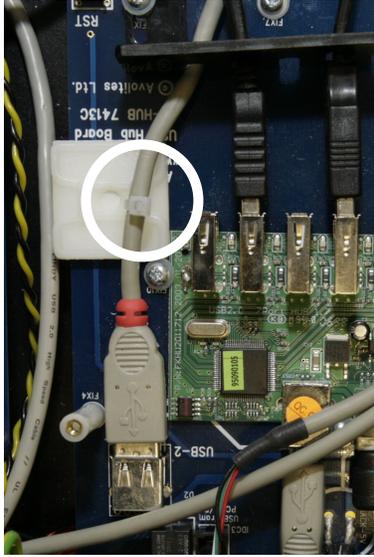
Double check all the cables are firmly held in place.

6.3 Refitting the DMX boards

| Check point 6.3.1 | Locate the Console Lamp XLR and remove the M3 Nyloc nut on the earth wire stud, using 5.5mm nut runner or spanner. Make sure you do not drop any washers into the console, or if you do find them before continuing! |

| Check point 6.3.2 | Replace the DMX boards to their original location A&B left and C&D right. (If you did not mark them before, have a look behind the MIDI connector, you will find three jumpers which on the A&B Board are on the left-most pins and on the C&D board on the right most.) |
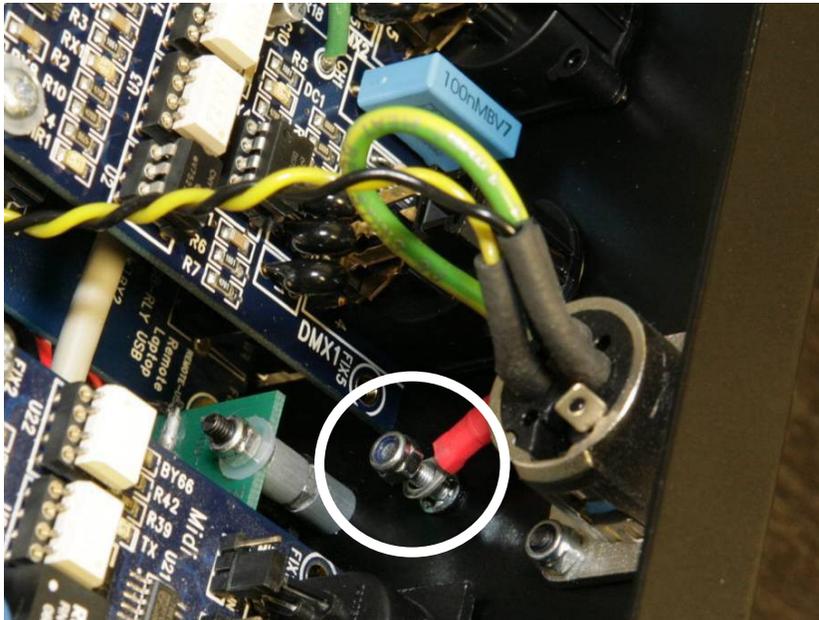
The image below shows a C&D board (fitter to the right)

Midi Identifier
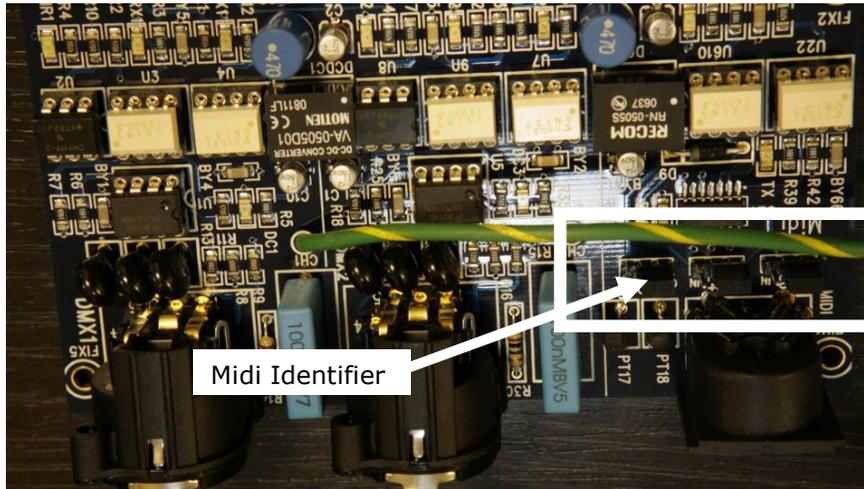
Refit the screws in the XLR first, and then refit the M3x10 with the nylon washer on the top of the PCB, repeat this for both DMX PCB's.

Run both earth wires to the earth wire stud under the console lamp socket and refit the M3 Nyloc nut. Make sure this is tight and the tags cannot turn.
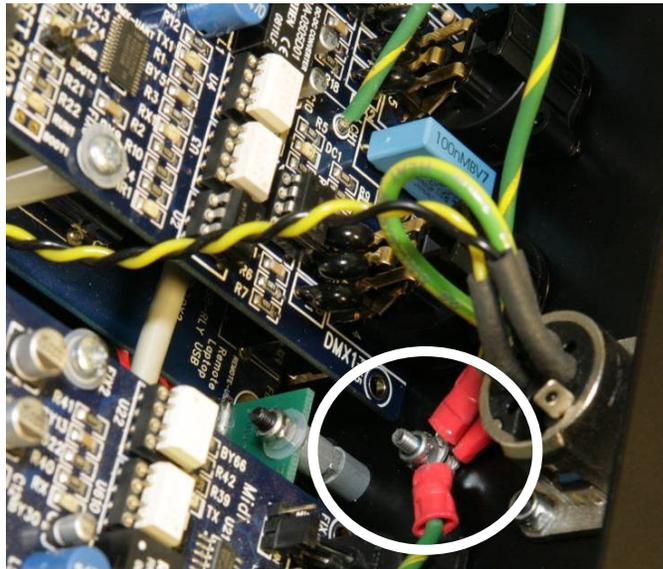
At this stage you have completed the DMX and USB hub cable upgrade. It is OK to have a cup of tea here!

7. Installing PC memory module

This section upgrades the amount of PC memory to 1GB.

Note: Most consoles where made with high memory modules as shown below, since then the memory manufacturer has reduced the size of the module. In order for the safety frame to work, the memory modules need to be of the same high and the supplied frame fixings are selected to hold the modules correctly.

Therefore:

Always remove the original memory module from the console and fit the supplied two modules. Do NO re-use the old memory.

Locate the memory slot on the PC motherboard.

Wear and earth strap or ground yourself to the console before you carry out the next step.

Remove the memory module carefully from the MB by pressing the levers first as indicated with the arrows in the picture below.

<table>
<tr><td>Check point 7.0.1</td><td>Remove the memory modules carefully from the packaging and fit to the empty memory sockets on the PC motherboard (MB). Try to minimize contact with either the contact fingers or the tracks on the PCB. Before connecting the memory touch the PSU case of the Console to reduce the risk of static. Take note of the location pin inside the memory module where the shortest contact row is on the right.</td></tr>
</table>

Short contact row
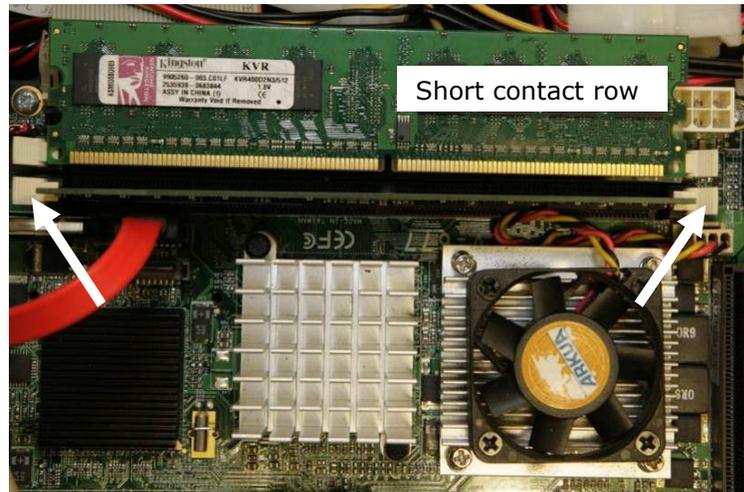
Memory fitted:

8.   Safety Cage

This section is about fitting the Safety-Cage above the PC Mother Board (MB). You need to disconnect most of the connections to the motherboard and then reconnect and cable tie the cables as shown once the Safety-Cage is fitted. The Safety-Cage prevents the BIOS chip from vibrating lose, and holds the memory modules in place, as well as taking the strain on various connecting cables.

8.1   Preparing the MB cabling

<table>
<tr><td>Check point 8.1.1</td><td>"**A**" Carefully cut the cable ties holding the console USB cable and the Red SATA cable to the floppy drive. Then disconnect the SATA cable.</td></tr>
<tr><td>Check point 8.1.2</td><td>Carefully guide the SATA cable from underneath the MB and leave the free end inside the case for now. Remove the cut cable tie.</td></tr>
<tr><td>Check point 8.1.3</td><td>"**B**" Carefully disconnect the USB loom from the MD USB port by lifting the connector body with a small screwdriver, do not pull on the cable as this may</td></tr>
</table>

damage the crimps or the cable.

<table>
<tr><td>Check point 8.1.4</td><td>"**C**" Carefully cut the cable tie holding the PSU loom and disconnect the ATX connector, this connector has a locking tag on the front which needs to be pressed.</td></tr>
</table>
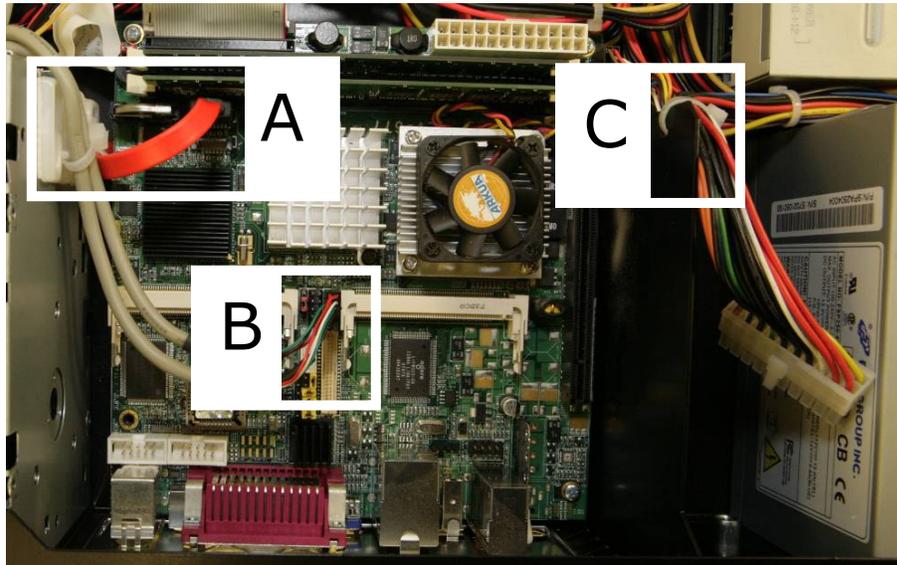
<table>
<tr><td>Check point 8.1.5</td><td>Fit the small piece of Neoprene foam in the centre of the BIOS chip (chip with silver label fitted).</td></tr>
</table>

Neoprene foam fitted on top of the BIOS chip
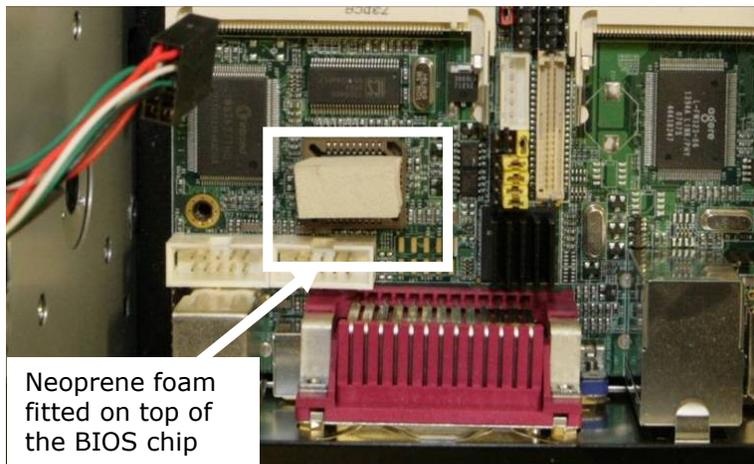
<table>
<tr><td>Check point 8.1.6</td><td>Remove only three the fixing screws as indicated (front right, back left and right)</td></tr>
</table>

Screw left in place

Remove these screws.
Take care not to drop any
washers into the console.
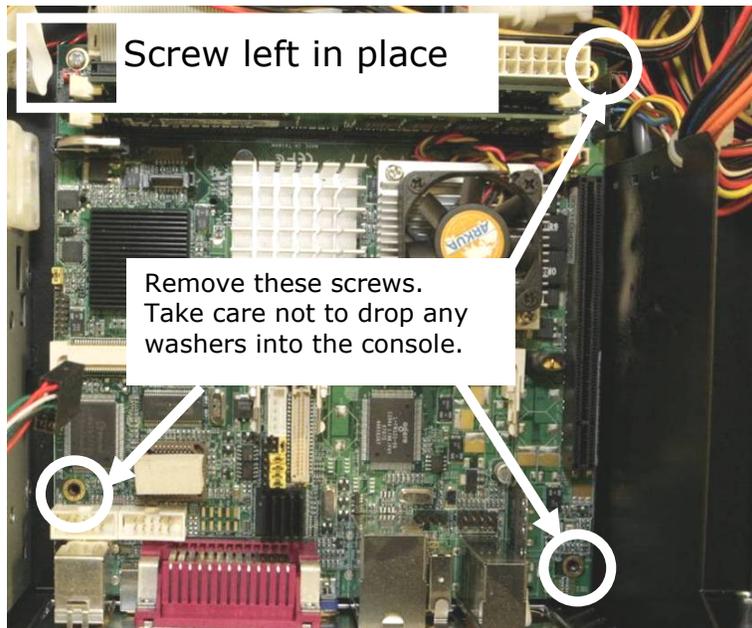
Check point 8.1.7	Loosen the remaining screw (Front left) 3 turns but leave in place.

The reason for leaving it in place is to stop the MB from moving whilst the Safety-Cage is initially fitted in place. This final screw is near the BIOS reset pin which could be shortened during the installation resetting all the BIOS settings. If you accidently do this the settings are given later and it is easy to reset them.

8.2   Fitting the Safety-Cage

Check point 8.2.1	*The Safety-Cage came assembled; check that there are three fixing posts with screws, spring washer fitted as per the image. The plastic washers on the end of the posts are required to allow installation and should not be removed.*

Carefully lower the Safety-Cage over the MB and align the fixing posts with the MB fixings. Engage the back two posts first into the fixings a few turns then evenly press the Safety-Cage down over the memory modules and engage the front right fixing post.

Back Screws, engage first
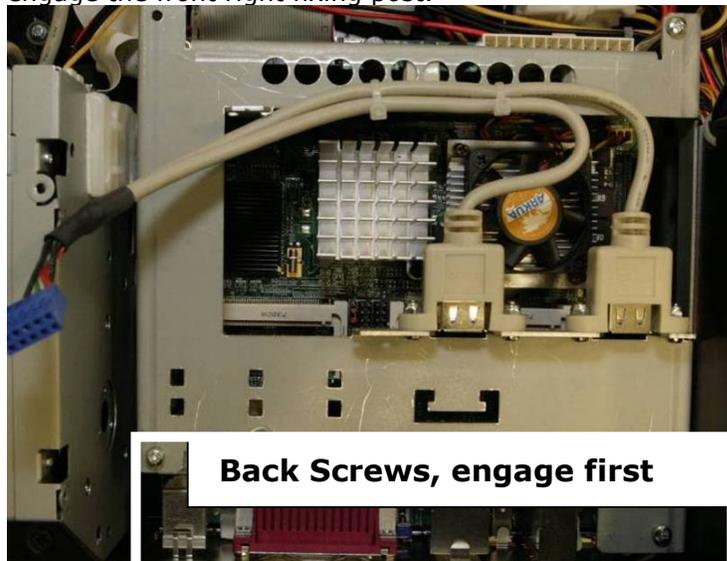
Check point 8.2.2

Check that the BIOS chip foam is pressed in the centre,

Check point 8.2.3

Check that the memory modules are covered with the foam on both sides as per image.

Check that no parts or cables are trapped.

Remove the front left screw still holding the MB and fit the supplied small white label over the empty screw hole so it covers the SMD components (see picture below)

fit the fixing post together with a screw and spring washer. Make sure you have the spring washer which was under the original screw. Do not leave it in the console because it will short out electronics at some time in the future. (First picture seen from the front of the desk)
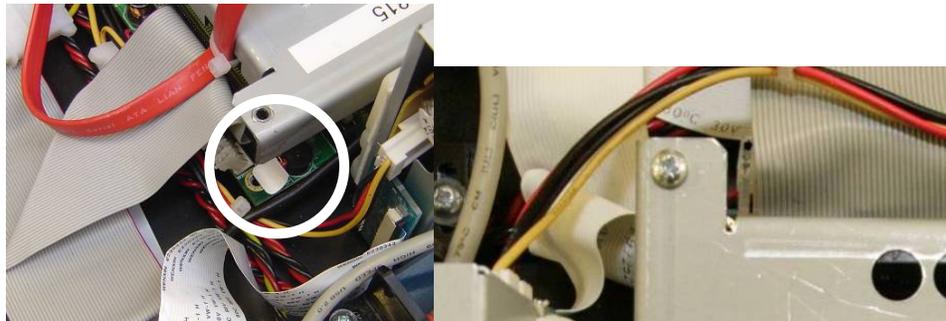
Note: Do not fit a plastic washer under the post as this is used as an earth connection.

Tighten all Safety-Cage fixing screws (4).

8.3   Connecting the console wiring

Now the Safety-Cage is fitted you need to reconnect the various wires and fix cable ties to hold them in place. The Safety-Cage has two USB sockets already mounted on it.
The supplied and fitted USB cable set on the Safety-Cage may have a single connector or two connectors, functionally they are the same.

Single USB Connector per Safety-Cage:

Follow the USB cable from the empty USB socket on the Safety-Cage and connect this to the right most USB pin set with the red wire towards to front of the desk as per image.

Console Front   Console Back
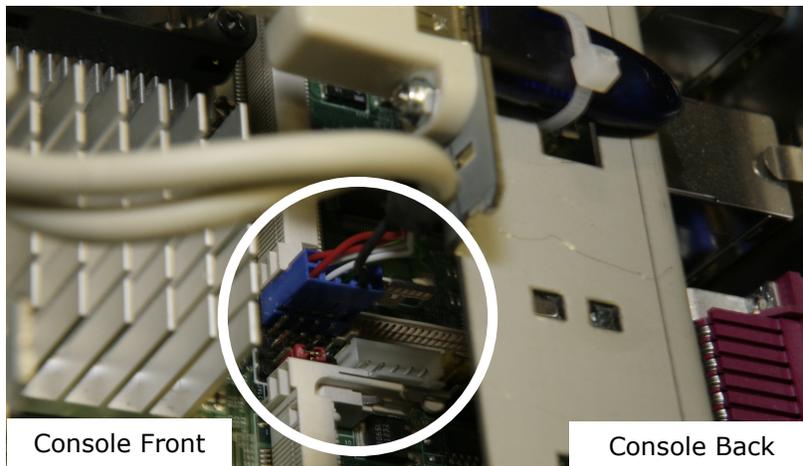
Continue with 8.4 Console USB wiring.

Two USB Connectors per Safety-Cage:

Follow the USB cable from the empty USB socket on the Safety-Cage and connect this to the right most USB pin set with the red wire towards the front of the console as per image, then follow the other cable and connect the USB pin set left of the one fitted before.

Console Back

The first USB cable is in place

Console Front
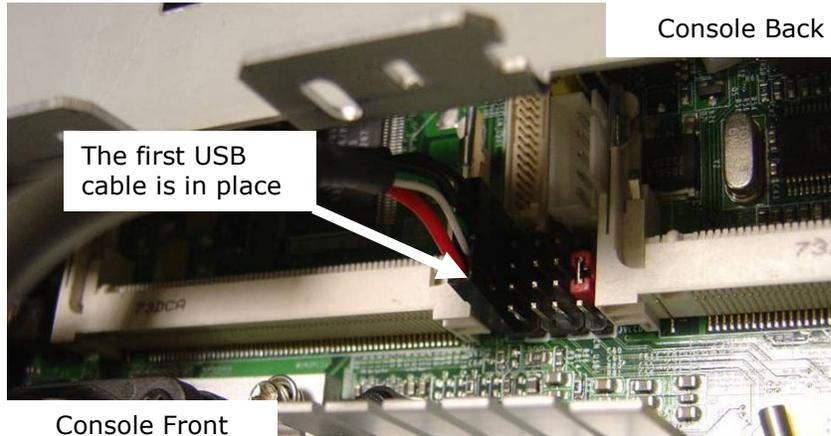
8.4 Console USB wiring

Before connecting the console USB cable, note that these cables may have different colour schemes, therefore orient this cable using the empty pins, which should be located nearest to the back of the console as per the image.
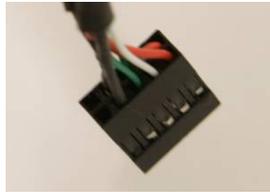
| Check point 8.4.1 | Connect the original Console USB cable and connect the remaining USB pin set. |

| Check point 8.4.2 | Insert a cable tie and almost close it, guide the cables so they form a square section and then carefully push the cables down about 2 mm to form an arc in the signal wires then while pressing down close the cable tie so it forms a close fitting loop. The best result can be obtained by using a pointed nose pliers to pull the cable tie (right-most picture) |

This fixings has to be tight and fitted exactly as per the right image
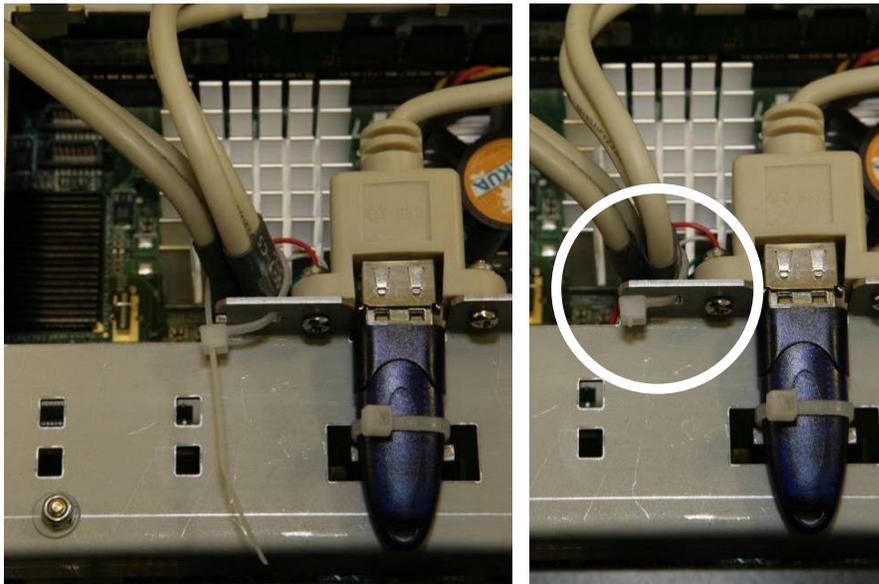
| Check point 8.4.3 | "**A**" Fold the Keyboard and Security Key USB cable as shown and fix them with a cable tie through the 4th hole from the left as per the image |

| Check point 8.4.4 | "**B**" Fold the console USB cables down towards the floppy drive and fix using a cable tie as per the image then route the USB cable towards the top cable tie base on the floppy and fix using a cable tie through the top loop only. |
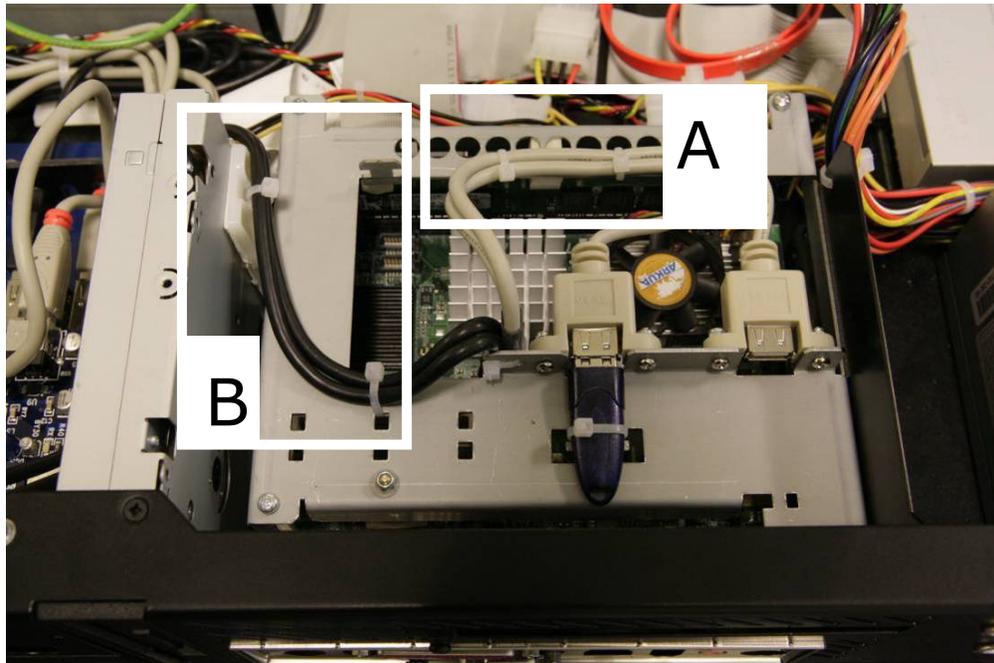
Some consoles may not have enough console USB cable length to run this route, in this case the cable can be routed over the floppy drive as it leaves the PC Safety-Cage, for this use the supplied spare cable tie base and fit as shown on the image.
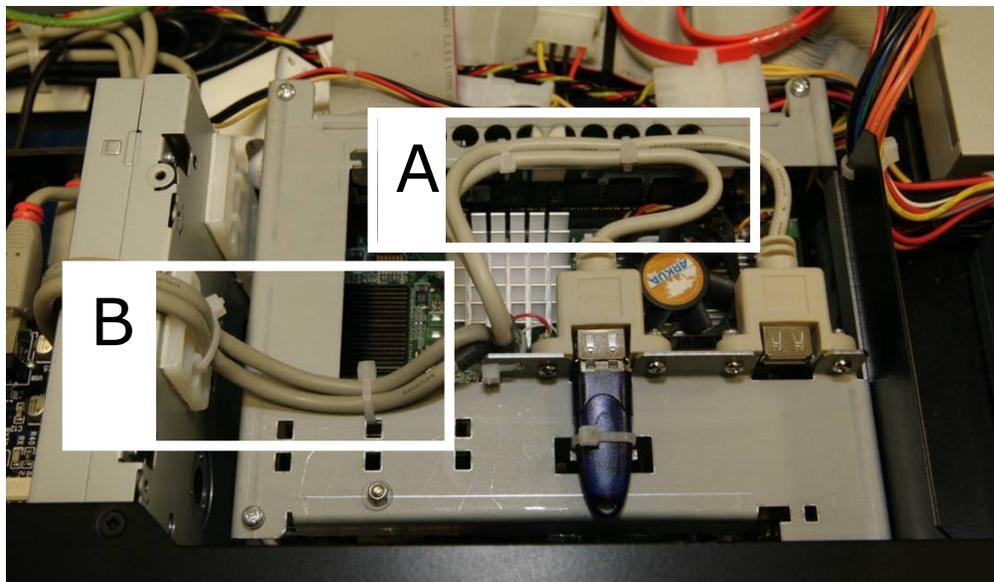
| Check point 8.4.5 | Re-connect the SATA hard disk drive cable to the connector located nearest to the memory module on the MB making sure there no sharp twists in the cable, run the cable past the fixing tab and fit a cable tie and close pulling the cable tie up while pressing the cable down to minimise play in the fixing. |
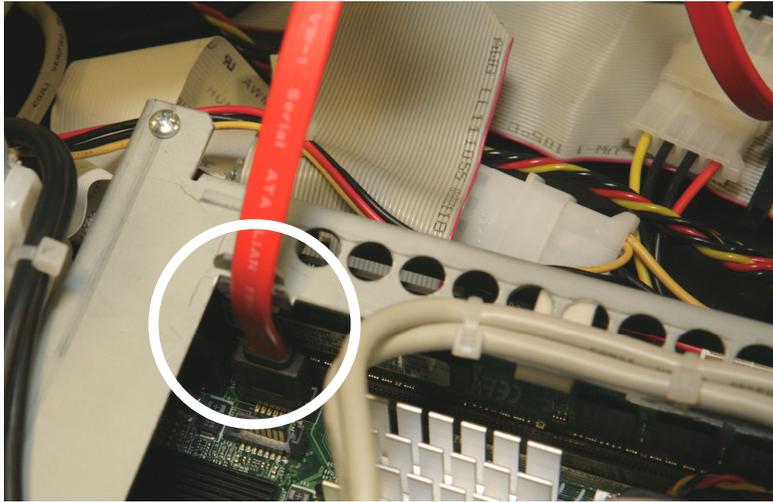
Create a loop with a minimum height of 30mm of the SATA cable and fit to the other side of the Safety-Cage and fix using a cable tie as per image.
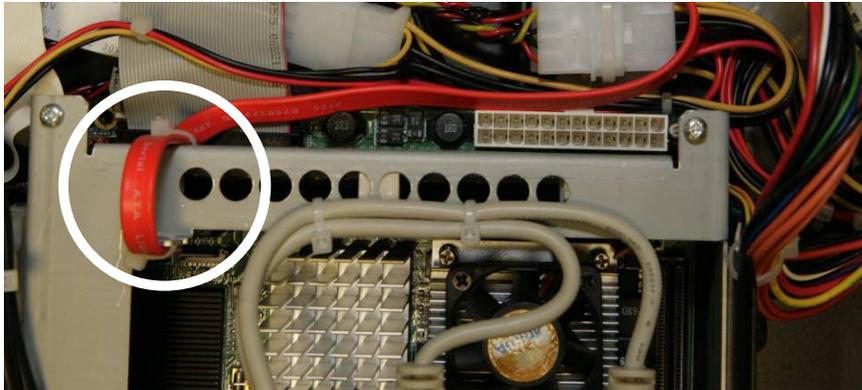
Follow the MB control loom near the PSU and guide the cable so that the sheet is aligned with the fixing tab on the right, this involves pushing the cable down. Then fix the cable with a cable tie, see the image for the end result.
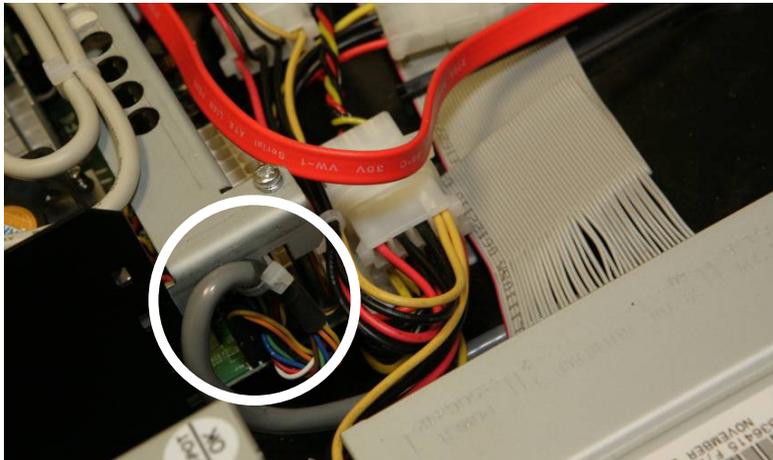
Re-connect the ATX PSU connector and pres down till the lock engages. Re-fix the loom to the side of the case structure using a cable tie, guide the looms so they are not touching the PC Safety-Cage

Check point 8.4.8
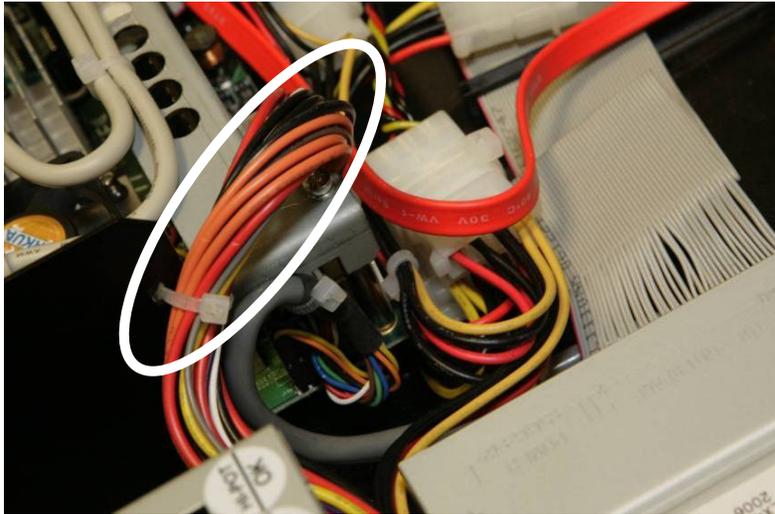
Next you will re route the QWERTY keyboard cable to connect to the USB socket on the Safety-Cage. Take care when cutting the cable tie not to accidently cut a cable.

Check point 8.4.9

"**A**" Cut open the cable tie holding the excess cable of the keyboard, this is located just in front of the keyboard drawer.

Check point 8.4.10

"**B**" Unscrew the left most screw holding the USB comb to release the keyboard USB plug from the rightmost USB hub
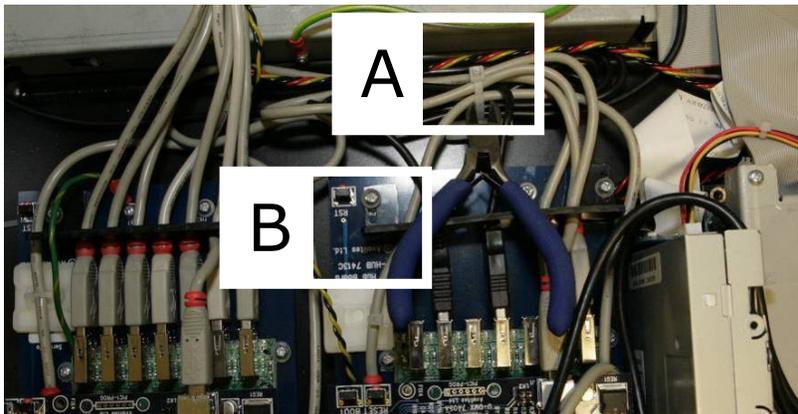
Check point 8.4.11

Loosen two loops of keyboard cable and run the cable under the already fitted cables behind the floppy, then between the floppy and the MB and then towards the empty socket on the PC Safety-Cage.
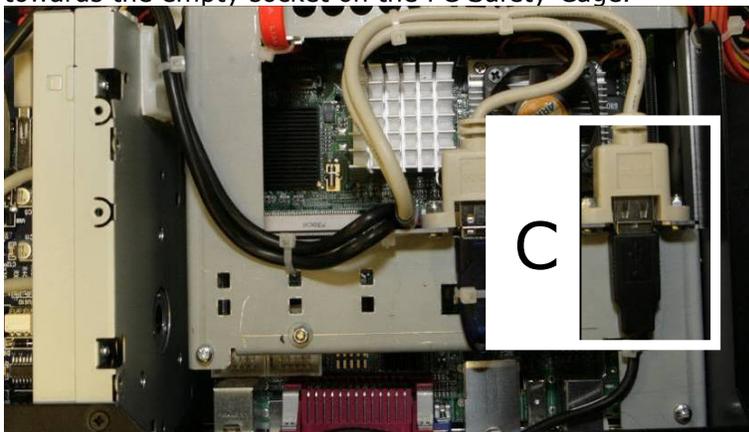
<table>
<tr><td>Check point 8.4.12</td><td>Connect the keyboard and secure the cable to the Safety-Cage using a cable tie. See "**C**" in the preceding image.

Guide the cable back to the drawer and re-fix the excess to the cable tie base behind the drawer.</td></tr>
<tr><td>Check point 8.4.13</td><td>Press the USB comb on the right most HUB backwards so it holds all the USB connectors in place and retighten the screw loosened before.</td></tr>
</table>
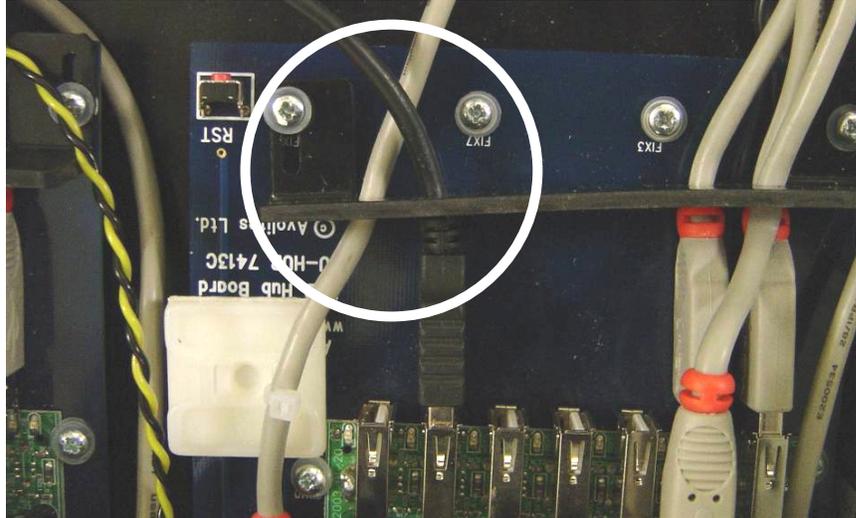
8.5 Marking the console

<table>
<tr><td>Check point 8.5.1</td><td>*Marking the console is important so in the future the console can be identified as having been upgraded.*

Fit the provided white label to the side of the floppy drive so it can be seen through the vent holes without having to open the console in the future.

Fit the Black label just under the Ctrl-key on the left side of the keyboard. The data on the label is required if the recovery disk is used at a later date.</td></tr>
</table>

9. Hardware inspection

Before powering up the console we need to check that the hardware installation is correct. Tick the following questions when checked

	Are all the check points ticked?
	Are all the screws and nuts tight?
	Are there any parts left inside the console (washers, screws tools etc.?
	Are there no wires or cables trapped?
	4 M3x8 Screws and 4 M3 spring washers are left over

10. First Boot

Connect the console to a VGA screen and then to the mains supply. Press the On/off switch at the front and observe the VGA screen.

Press the DEL key on the keyboard to enter the BIOS.(This option is given shortly after booting)

You **may** be asked for the BIOS password which is 68340

You should now be presented with the blue

Phoenix – AwardBIOS CMOS Setup Utility screen.

Change the following settings: -

Select "**Load Optimized Defaults**" and enter
Set "**Supervisor Password**" to 68340
Set "**User Password**" to 68340

Enter the "**Standard CMOS Features**" Menu

Set the correct "**Date and Time**"
Set "**Halt on**" to [**All, But Keyboard**]

Enter the "**Advanced BIOS Features**" Menu

Set the "**First Boot Device**" to [**CD ROM**]
Set the "**Second Boot Device**" to [**Hard Disk**]
Set the "**Third Boot Device**" to [**Disabled**]
Set "**Swap Floppy Drive**" to [**Disabled**]
Set "**Boot Up Floppy Seek**" to [**Disabled**]
Set "**Boot Up NumLock Status**" to [**Off**]

Enter the "**Advanced Chipset Settings**" Menu

Set the "**Onchip VGA Control**" to [**auto**]
Set the "**LCD Type**" to [**3**]

Enter the "**Integrated Peripherals**" Menu, and
then enter the "**Onboard Device**" Menu.

Set the "**USB Keyboard Support**" to[**Enabled**]

Enter the "**Integrated Peripheral**" Menu, and
then enter the "**Super IO Device**" Menu.

Set the "**PWRON After PWR-Fail**" to [**Former-Sts**]

Then press F10 to Save to CMOS and EXIT and then press the Enter key.

Allow the console to boot up normally.

The console will prompt with "**found new hardware**" click on the "Cancel"
Button that is presented onscreen. This message appears as it has found the
Avolites Security Device and the drivers are not yet installed.

| Check point 10.0.1 | Open the USB expert utility by clicking the third Icon from the top on the right hand side (depicting a USB connector) and check that all the panels are available in the "Connected Panels" list (as shown below) double check the list because if a panel is missing now it the time to find this. If panels are missing Annex A explains how to resolve this. |

Tick the following box if all the panels are found.

Are all panels present in the USB console?

11. Titan Installation

Next the TITAN software will be installed. Before doing this you should make a backup to a USB pen any shows you have stored on the console since these will be erased. During this install process the console will re boot a number of times. You only need to press keys during the first boot and when prompted to enter serial numbers.

Insert the Titan CD and Power cycle the console using the front switch while observing the External VGA screen:

You will be prompted after a few moments with '**Boot from CD …**

And then **"Press any key to boot from CD…"**

▶ Press a key on the QWERTY keyboard

You only have a few seconds to press a key (on the keyboard) to start the installation process from CD. If you miss this, the console will try to boot up as normal and so you will need to reboot and try again!

After the above key stroke the screen turns blue and in a black window a new prompt will appear:

 '**Avolites Titan Pearl Expert Installation and Recovery' press any key to continue…**

▶ Press any key to continue

The Avolites software agreement will be printed to the screen, please read this carefully and type 'a' to confirm that you have read and agree to the license. Any other key will indicate you do not agree to the license and the installation process will be terminated

▶ Press "a" key to agree with the license and to continue the installation

After the above keystroke a new prompt will appear:

'Do you wish to partition the hard drive (Y/N)?'

▶ Type y and enter.

After the above keystroke a new prompt will appear:

'Warning all data on non-removable disk drive C: will be lost! Proceed with format (Y/N)?

▶ Type y and enter.

After the above keystroke a new prompt will appear:

'Do you wish to install windows XP and the Titan operating system (Y/N)?'

▶ Type y and enter

The installer files are now copied onto the hard disk

After about 5 minutes the console will reboot, this time **do not** press any keys to Boot from CD.

Next the "First Boot Agent" will run and a bar will show the progress of this process. During the first boot period the panels and LCD screen on the console will flash several times, this is normal. At the end of the first boot period the console will reboot. (Again do not press any keys so that it won't boot from CD).

After this reboot further installation happens automatically and eventually you will then be prompted to enter the console serial number which can be found

on the back of the console.

▶ You must enter a total of 5 characters, so the indicated serial number 765 is to be entered as 00785, enter to continue

The console will reboot (not pressing any keys again).

When the console has started up you are presented with a prompt to enter the "Product Activation Code", this is a six character code that is supplied on the black label you earlier fixed to keyboard.

▶Enter the activation code, and "Enter" again when asked to restart Titan.

If the Activation Code is declined please refer to Annex B

▶Once Titan has restarted, remove the Installation CD from the CD drive.

▶Press the power button on the front of the console to shutdown the console. This power cycle is important for the proper installation.

Wait for the console to shutdown then close the QWERTY Keyboard drawer and open the console. Place the recovery CD case which is above the keyboard drawer. Don't skip doing this, you may need this CD in the future and if it isn't in the console you will need to request a new one from Avolites.

Close the console and carefully fasten the four ¼ turn fasteners.

▶Now press the power button again to start up the console.

11.1 Panel Update

At this stage the TITAN operating system has been installed but the firmware that runs on each panel must now be checked and upgraded if necessary. The USB Expert Console application allows this and the checking is automatic, you simply need to follow the instructions below.

Open the USB Expert Console utility by clicking on the "U "icon which can be found on the top right of the screen, check that all the nine panels are in the "Connected Panels" list box as shown below. If panels are missing refer to Annex A.

Still in USB Expert console utility, Click on the scroll button to show the "Service" tab and then click on the "Enter Boot" button as indicated.

After about 2 minutes all panels should be in boot mode and re-appear in the "Connected Panel" list box with a red spanner icon. At the same time a list of panels that require updates should appear in the Auto Update list box as indicated below. The lists may vary from console to console. Some consoles

may not need updating at all.
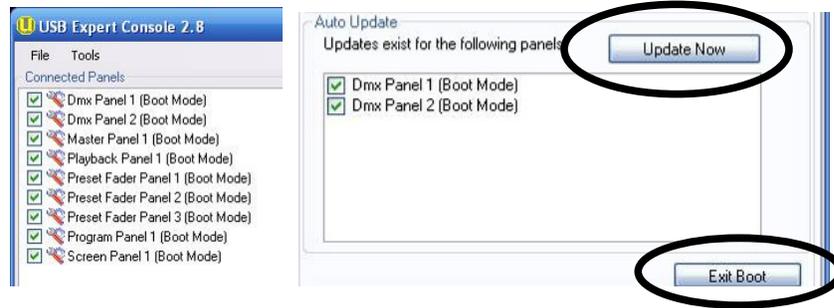
Click on the "Update Now" button as indicated above and wait for the system to update the panels one by one.

After the "Auto update" list box is empty click on "Exit Boot" button and observe the panels re-appearing in the "Connected Panel" list box with the green USB icon.

If the panel update is not finished after 10 minutes, press the "Exit Boot" regardless and allow the panels to re-appear in the "Connected Panels" list box, then press "Enter Boot" again and see if any panels need updating. If not simply press "exit boot" and continue. If panels require updating press "Update Now" as previously described.

When all the panels that required an update have been updated, close the USB Expert utility and restart the console by pressing briefly the On/Off switch on the front of the console.

After this reboot close the Virtual panel (click on the minimize button top right, and the select USB Expert console for the last time

Check that all panels are present (green USB logo) and that no exceptions are shown (yellow USB logo).

<table>
<tr>
<td>Check point 11.1.4</td>
<td>Press every button and move every fader an encoder in turn on the console whilst observing the message displayed in the Event log window. This verifies everything works. If any switch, fader or button does not verify you should investigate or contact Avolites for assistance.</td>
</tr>
</table>
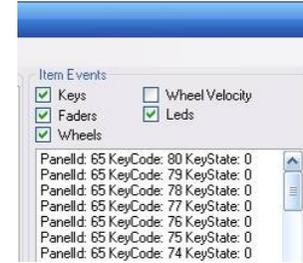
12. Installation test

12.1 Midi Test

Connect a MIDI lead between the two MIDI outlets on the back.

<table>
<tr>
<td>Check point 12.1.1</td>
<td>In USB Expert console click on the Timecode tab and select "DMX panel 2" (highlight with the mouse), then on the right side of the USB console window, click on "Start" and observe the "Out Timecode" count up.</td>
</tr>
</table>

Then highlight "DMX panel 1" and observe the "In Timecode" counter count, up, this indicates a functioning MIDI port. Now go back to the "DMX Panel 2 and "Stop" the MIDI.
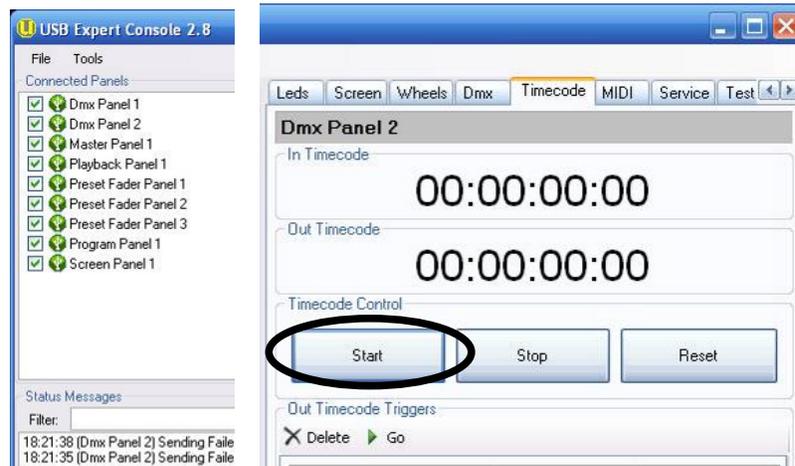
Close the USB expert console.

If the Midi test fails, check the orientation of the MIDI links as referred to in section 6.3.
DMX board A/B should have the links left-most and DMX board C/D should have them right-most. Check that all IC legs are properly in the sockets. If this does not resolve the issue contact Avolites.
The Console can be used if the MIDI port is not functional, apart for the new MIDI functions in Expert Titan software.

12.2 Switching to "Expert Classic"

<table>
<tr>
<td>Check point 12.2.1</td>
<td>Now switch the console to "Classic Expert" by pressing the "switch" button on the screen (7th button down on the right side). In the presented window select "Pearl Expert (classic)" and then "Confirm restart"</td>
</tr>
</table>

12.3 DMX Testing

We are now testing the DMX and while doing so testing the other console panels.

▶ In the Expert window, select "Tools" and then "Set DMX outputs"

▶ In the following window, click on "Remove All"

▶ Check that the Node type is set to "ExpertDmx"
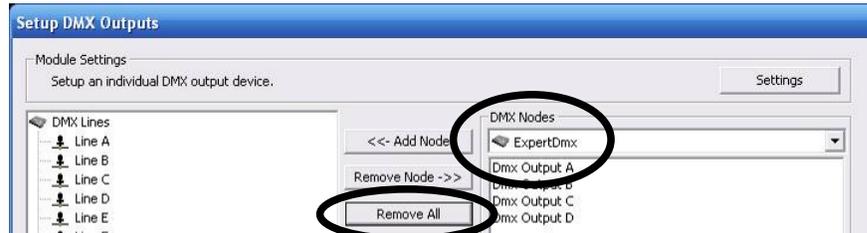
▶ Highlight "Dmx Output" A and drag it into Line A of the universe list, Repeat this for DMX output B,C and D.
The picture below shows the last output to be assigned.
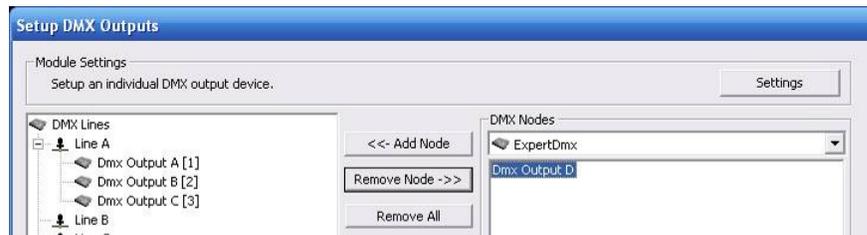
Referring to the Expert Manual, Patch a dimmer to Line A on Fader Handle 1, 11 and 21 on the console.

Using a DMX tester or a dimmer, check each DMX outlet on the back of the console using all patched faders to change levels. Use the checklist below to keep track

Check point 12.3.1

	Outlet A DMX tested		Outlet B DMX tested
	Outlet C DMX tested		Outlet D DMX tested

Program a memory on the console and replay it, again check the DMX output levels.

Check point 12.3.2

	Memory programmed		Memory replayed

12.4 Restoring Default settings

After the testing has been successful we need to restore the console to factory settings, do this using the following instructions

▶ In the Expert window, select "Tools" and then "Set DMX outputs"

▶ In the following window, click on "Remove All"

▶ Check that the Node type is set to "ExpertDmx"
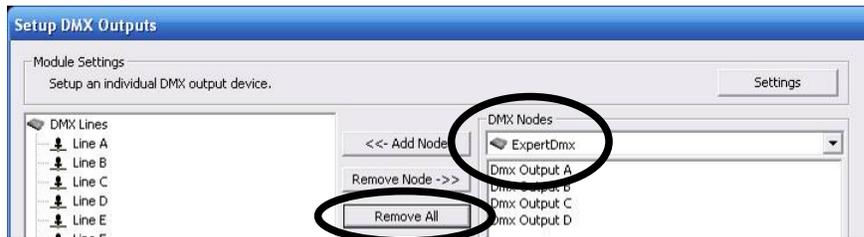
► Highlight "Dmx Output" A and drag it into Line A of the universe list, Repeat this for DMX output B into Line B, output C into Line C and finally output D into Line D. Then close the DMX utility

The picture below shows the last output to be assigned
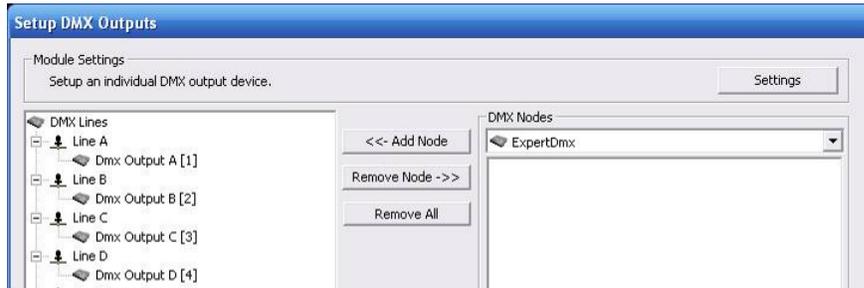
Check point 12.4.1

Check point 12.4.2

► Press "Disk" on the console followed by Soft-key A "New Show" and then A again to confirm. This clears the console.

13. Finishing the upgrade

13.1 Returning Data to Avolites

At Avolites we keep a database of the consoles, this holds vital data with which we can support the product. Since you have upgraded the console we would like you to ask to return the Faxback form which is the last page of this booklet to Avolites either by Fax or by email.

We would like to thank you for spending the effort in upgrading the Pearl Expert Console. With this upgrade we aim to take on board the various comments we have had from users worldwide.

In time we will release updates for this product, If you Register with our Titan user database we can inform you better about these updates

So please Visit www.avolites.com and click on subscribe me, then follow the Titan registration

Or type http://www.avolitesshop.co.uk/sme/subscribe.htm

And follow the TITAN EXPERT registration link

The Avolites Team

14. Annex A USB console Panels issues

Although unlikely, USB panel issues may arise from the hardware change and the software installation, this annex will describe some obvious problems and the remedy for them.

Stay in the USB expert console utility to resolve the issue

14.1 Understanding the Panel status

Each Expert console has 9 panels in total, and the "Connected Panels list should normally look like:

There are six panel types which are; DMX, Master, Playback, Preset, Program and Screen.

Within a type each panel will need a unique ID, this is set at the factory by Avolites.

The green USB icons denote the panel is correctly communicating.

The order in which the panels are shown in the panel list is not critical, and may vary from console to console.

A Yellow Triangle denotes a problem, which may be that the panel is still in boot mode, or that it has the wrong ID. The example on the left shows a DMX panel with a duplicate ID (2).

When this happens see section 14.6 "Correcting wrong panel ID"

14.2.1 Missing panels

If a panel is missing this is mostly due to connection or cable issues. Therefore check all the connections, and that they are in the correct socket. Also check that the green LEDs near the outlet sockets on the HUB are on.
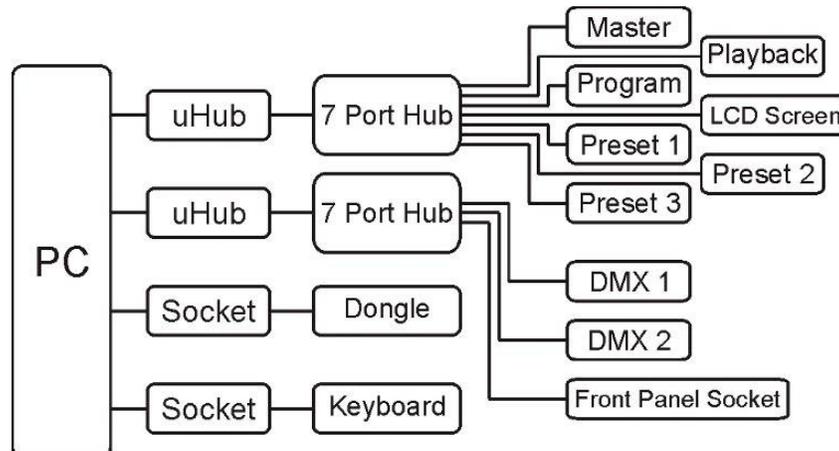
14.2 Corrupted panels type

In rare cases it is possible after running the "Auto Update" that the panel uses the wrong panel Type. This would show up in the "Connected panel" list as a missing a panel, while having one to many of another type. For example, missing a DMX board and having four Preset boards.

The correct list should look like the image on the right.

When this happens the panel in question needs to be re-programmed to its correct function

To do this;

Open the Console and remove the Comb that holds the USB cable in place on the USB Hubs, Then remove all panel USB cables including the DMX boards.

Plug each panel in one by one observing that the correct "panel type appears"

If a panel is appears with the incorrect Type Select the "service" tab of USB expert and ENTER boot. Then highlight the panel in the "Connected panels" list and then press on the "program" key

In the File dialog, browse to
`C:\Program Files\Avolites\UsbExpert\Panel Software`
and select the correct panel software fie. This will trigger the update

Hex File	Panel
xp_dmx.hex	DXM boards
xp_fas.hex	Preset Fader Board
xp_mas.hex	Grand Master Fader Board
xp_mf.hex	Playback Fader Board
xp_pp.hex	Program Panel Board
xp_scb.hex	Screen Driver Board

After the Update press "Exit Boot" and continue to add Boards checking for the correct panel type to be displayed

Power down the console and reboot to check that all panels are now of the correct type and respond.
Replace the USB Comb making sure it presses the USB connectors firmly into the HUB.

14.3 Panel LEDs

Each panel has two LEDs one Amber and one Green, The LEDs show the USB data connection state. The table below shows the 7 possible states

Alternating Amber - Green	USB Configured (ready to use)
Both off	Detached (USB data connection)
Both On	Attached (USB data connection)
Both flash at the same time	USB Suspended (USB data connection)
Only Green	Powered (cable connected)
Only Amber	Default state
Green flash / Amber off	Waiting for Address

14.4 Panel Reset

On the back of the console there is a "Panel Reset" switch which allows you to reset the panels without resetting the PC. This can be a quick method to resolve connectivity issues. The panel reset should not be relied on as a daily fix. If a console requires a panel reset every time it is started then there is something wrong and you should contact Avolites for advice.

14.5 Device manager

If after checking the connections and resetting the panels you are still short of a panel, start up the device manager by:

Press the "Control Panel" button (third from the top on the right), then click on "system", then select the "Hardware" tab and finally click on the "Device manager" button.

After a few seconds the device list will be drawn up. Select the Jungo driver and then check if all the panels are available.

The list should contain the panels as shown on the left. The order in which the panels are shown in the panel list is not critical, and may vary from console to console.

If a panel is not shown as per the image to the left then there may be a panel issue. Non responsive panels may show up as "Unknown device" or "Boot device" Contact Avolites support with the exact information for further information and help.

14.6 Correcting wrong panel ID

Highlight the panel in the "connected panel" list and then press the "Enter Boot" button, when the panel is in boot mode (denoted by red spanner icon) change the panel index to the desired one and click on "Apply"

15. Annex B Security Key issues

First all check that the code is correct, it should have 6 characters which can be found on the supplied yellow and black label. If the code is not accepted, check that the Security Key is seen in the device manager, for this Device manager

Press the "Control Panel" button (third from the top on the right), then click on "system", then select the "Hardware" tab and finally click on the "Device manager" button.

After a few seconds the device list will be drawn up. Select the "Software security token" and then check if all the panels are available.

If the Security Key is not attached properly it will end up in "other devices"

Please not that the Security Key is only recognized and supported after Titan has been installed.

If the Security Key is present in the device manager and you still have problems entering the "Activation Code" contact Avolites support for further help.

Please note that the console can be used in "Classic Expert" mode without the Security Key.

Expert Upgrade Faxback Form

Fax to Avolites Ltd +44(0)2089650290 or email to support@avolites.com

Console serial Number	
Product activation code	
Date of Upgrade	
Upgraded By	
Contact email	

Midi Test passed	

Other Comments

Do not forget to register your Titan installation at

http://www.avolitesshop.co.uk/sme/subscribe.htm

and follow the register the TITAN EXPERT link

Expert Upgrade Faxback Form

Fax to Avolites Ltd +44(0)2089650290 or email to support@avolites.com