SUMMA SURFACE MAINTENANCE MANUAL

INTERIM DRAFT

A fully formatted, customer-facing document will be produced based upon the content here. Until this is available please feel free to refer to this document or share as and when required.

Please provide all feedback to gareth.frimston@calrec.com

Digital Broadcast Production Console

calrec.com

Putting Sound in the Picture

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Whilst the Company ensures that all details in this document are correct at the time of publication, we reserve the right to alter specifications and equipment without notice. Any changes we make will be reflected in subsequent issues of this document. The latest version will be available upon request. This publication is for International usage.

Calrec Audio Ltd reserve the right to change specifications without notice. E & O.E.

The established policy of Calrec Audio Ltd. is to seek improvements to the design, specifications and manufacture of all products. It is not always possible to provide notice outside the company of the alterations that take place continually.

Despite considerable effort to produce up to date information, no literature published by the company nor any other material that may be provided should be regarded as an infallible guide to the specifications available nor does it constitute an offer for sale of any particular product.

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SUMMA
INFORMATION

To prevent electrical damage to the apparatus, no service / repair / maintenance is permitted inside the console without first isolating both AC power cables from the console. The internal connections MUST NOT be plugged or unplugged whilst the power is on.

Should you require any technical assistance with your Calrec product please contact your regional Calrec distributor. Customers within the UK or Ireland should contact Calrec directly.

For a complete list of worldwide distributors by region, go to www.calrec.com or contact us for more information.

For pre-delivery technical enquiries, UK and Ireland customers should contact the Calrec project manager assigned to their order. Post delivery, the Calrec Customer Support team will take care of your technical enquiries.

Our UK customer support team works closely with our global distributor network to provide the highest level of after sales support. Your distributor should be your first point of contact and will often be able to provide an instant solution, be it technical advice, spares or a site visit by an engineer.

Calrec UK customer support and our global technical team provide free of charge technical support and advice to all customers by phone or e-mail.

Calrec after sales support includes:

- Free of charge comprehensive technical advice and support by phone and e-mail
- Repairs
- Quick supply of replacement or loan hardware in the event of a failure
- Provision of export documentation for the return of faulty parts
- Operational training
- Maintenance / technical training
- Supply of replacement components
- Supply of documentation
- Service contracts

We offer a range service contracts to our UK and Ireland customers, from 24/7 telephone support, regular health checks and extended warranty, amongst other benefits. Please contact our customer support team for more information on service contracts.

Product Warranty

A full list of our conditions and warranties relating to goods services is contained in Calrec's standard terms and conditions. A copy of this is available on request.

Repairs

If you need to return goods to Calrec for whatever reason, please contact your regional distributor, or Calrec customer support beforehand for guidance, as well as to log the details of the problem and receive a reference number. For customers outside the UK and Ireland, shipping via the distributor saves customers from dealing with exportation paperwork. If there is a need to send direct to Calrec, contact us beforehand to log the incoming repair and for assistance with exportation documents.

Standard of Service

Ensuring the highest standards is a priority, if you have any comments on the level of service, product quality or documentation offered to you by Calrec, please contact the Calrec Customer Support team in the UK who will endeavor to address your issues. Calrec welcomes all customer feedback.

For feedback specific to this document, please contact enquiries@calrec.com.

Whenever you contact Calrec Customer Support please have the following information to hand:

- Name
- Company
- Email Address
- Full details of enquiry (e.g. fault report)
- Serial number of faulty hardware (if applicable)

Once this information has been provided, a service ticket will be created to log your enquiry. The service ticket reference number will be given via email.

Serial Numbers

All units produced by Calrec are given a serial number and are booked into a central record system at the time of manufacture. These records are updated whenever a piece of hardware is dispatched to or received from a customer.

When contacting Calrec Customer Support with a hardware inquiry it is important that the correct Calrec serial number is provided to enable the customer support team to provide a high level of service. Summa serial numbers can be found on the label on the rear of the chassis as shown below.

Telephone: (9:00am-5.30pm)	+44 (0) 1422 842159
Email - Technical:	support@calrec.com
Email - General:	enquiries@calrec.com
Postal Address:	Calrec Audio Ltd. Nutclough Mill, Hebden Bridge, West Yorkshire, HX7 8EZ, UK
Fax:	+44 (0) 1422 842159
Website:	www.calrec.com

EXAMPLE OF LABEL ON REAR OF CHASSIS SHOWING SERIAL NUMBER

After Sales Modifications

Please be aware that any modifications other than those made or approved by Calrec Audio Limited or their agents, may invalidate the console's warranty. This includes changes to cabling provided by Calrec and variations to the recommended installation as detailed in Calrec documentation.

Modifications to this equipment by any party other than Calrec Audio Limited may invalidate EMC and safety features designed into the equipment. Calrec Audio Limited can not be liable for any legal proceedings or problems that may arise relating to such modifications.

If in doubt, please contact Calrec Audio Limited for guidance prior to commencing any modification work.

Installation

In many installations the AC power connectors will not be readily accessible, effectively making the equipment permanently connected. The installation should be carried out in accordance with all applicable installation rules and regulations.

Service Personnel

The AC power disconnect devices are the 2 x IEC (IEC60320-1 C13/C14) couplers located at the rear of each unit. WARNING: The apparatus has a dual power system. It is essential that BOTH AC power IEC couplers are disconnected to prevent exposure to hazardous voltage within the unit.

Third Party Equipment

Integrating third party equipment into a Calrec system may compromise the product's ability to comply with the Class B radiated emission limits set in the EMC (Electro Magnetic Compatibility) standard EN55022.

Calrec Audio Limited can not be responsible for any non-conformities due to use of third party equipment. If in doubt, please contact Calrec Audio Limited for guidance prior to integrating any third party equipment.

ESD (Static) Handling Procedures

In its completed form, this equipment has been designed to have a high level of immunity to static discharges. However, when handling individual boards and modules, many highly static sensitive parts are exposed. In order to protect these devices from damage and to protect your warranty, please observe static handling procedures, for example, use an appropriately grounded anti-static wrist band. Calrec will supply an electrostatic cord and wrist strap with all of it's digital products.

All modules and boards should be returned to Calrec Audio Limited in anti-static wrapping. Calrec Audio Limited can supply anti-static wrapping upon request.

This applies particularly to digital products due to the types of devices and very small geometries used in their fabrication, analog parts can, however, still be affected.

RoHS Legislation

In order to comply with European RoHS (Reduction of Hazardous Substances) legislation, Calrec PCB and cable assemblies are produced with lead-free (tin/copper/silver) solder instead of tin/lead solder.

In the unlikely event of a customer having to carry out any re-soldering on Apollo, Artemis or Hydra2 hardware, it is imperative that lead-free solder is used; contaminating lead-free solder with leaded solder is likely to have an adverse effect on the long-term reliability of the product. Circuit boards assembled with lead-free solder can be identified (in accordance with IPC/JEDEC standards) by a small oval logo (see below) on the top-side of the circuit board near the PCB reference number (8xx-xxx). The same logo is used on the connector hoods of soldered cable assemblies.

If in doubt, please check with a Calrec customer support engineer before carrying out any form of re-soldering

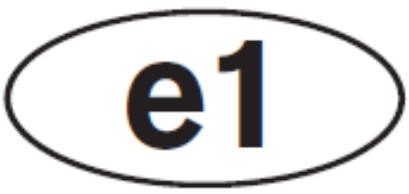
ISO 9001 and RAB Registered

Calrec Audio Ltd has been issued the ISO9001: 2008 standard by the Governing Board of ISOQAR.

The award, for both UKAS and RAB registration (see below), is the most comprehensive of the ISO9000 international standards. Granted in recognition of excellence across design, development, manufacture and after-sales support, the certification follows a rigorous and thorough review of Calrec's internal and external communication and business procedures.

UKAS AND RAB REGISTRATION

LEAD FREE



LEAD FREE STICKER

HEALTH AND SAFETY

Please observe the following:

- This equipment must be EARTHED and only connected to AC power socket outlets with a protective earthing connection
- Only suitably trained personnel should service this equipment.
- Please read and take note of all warning and informative labels.
- Before starting any servicing operation, equipment must be isolated from the AC power supply. The disconnect devices are the 2 x IEC connectors (IEC 60320-1 C13/C14 couplers).
- Fuses should only be replaced with the same type and rating as indicated.
- Operate only in a clean, dry and pollutant-free environment.
- Do not operate in an explosive atmosphere.
- Do not allow any liquid or solid objects to enter the equipment. Should this occur, immediately switch off the unit and contact your service agent. This apparatus must not be exposed to dripping or splashing and no objects filled with liquids, such as vases, should be placed on the apparatus
- Do not allow ventilation slots to be blocked.
- Do not leave the equipment powered up with the dust cover fitted.
- The rack mounting parts of this equipment must be fitted into an enclosure which complies with local regulations.
- Panels are not hot-pluggable.
- The surface panels must not be connected or disconnected when the power is on.
- To prevent electrical damage to the surface, both AC power cables must be unplugged before any internal maintenance is carried out.

Cleaning

For cleaning the front panels of the equipment we recommend using a soft anti-static cloth, lightly dampened with water if required.

Explanation of Warning Symbols

Triangular warning symbols contain a black symbol on a yellow background, surrounded by a black border.

The lightning flash with arrow head symbol within an equilateral triangle, as shown on this page, is intended to alert the user to the presence of dangerous voltages and energy levels within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock or injury.

The exclamation mark within an equilateral triangle, as shown on this page, is intended to prompt the user to refer to important operating or maintenance instructions in the documentation supplied with the product.

Earthing

This is a Class I product. An Earth connection MUST be provided in each AC power cord.

The Earth Bolt connection at the rear of the console should be connected to Earth using Earth cable at least 6 mm2 in cross section (10 AWG).

Lithium Battery Replacement

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type. Batteries must not be exposed to excessive heat such as sunshine, fire or the like

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

DANGEROUS VOLTAGES

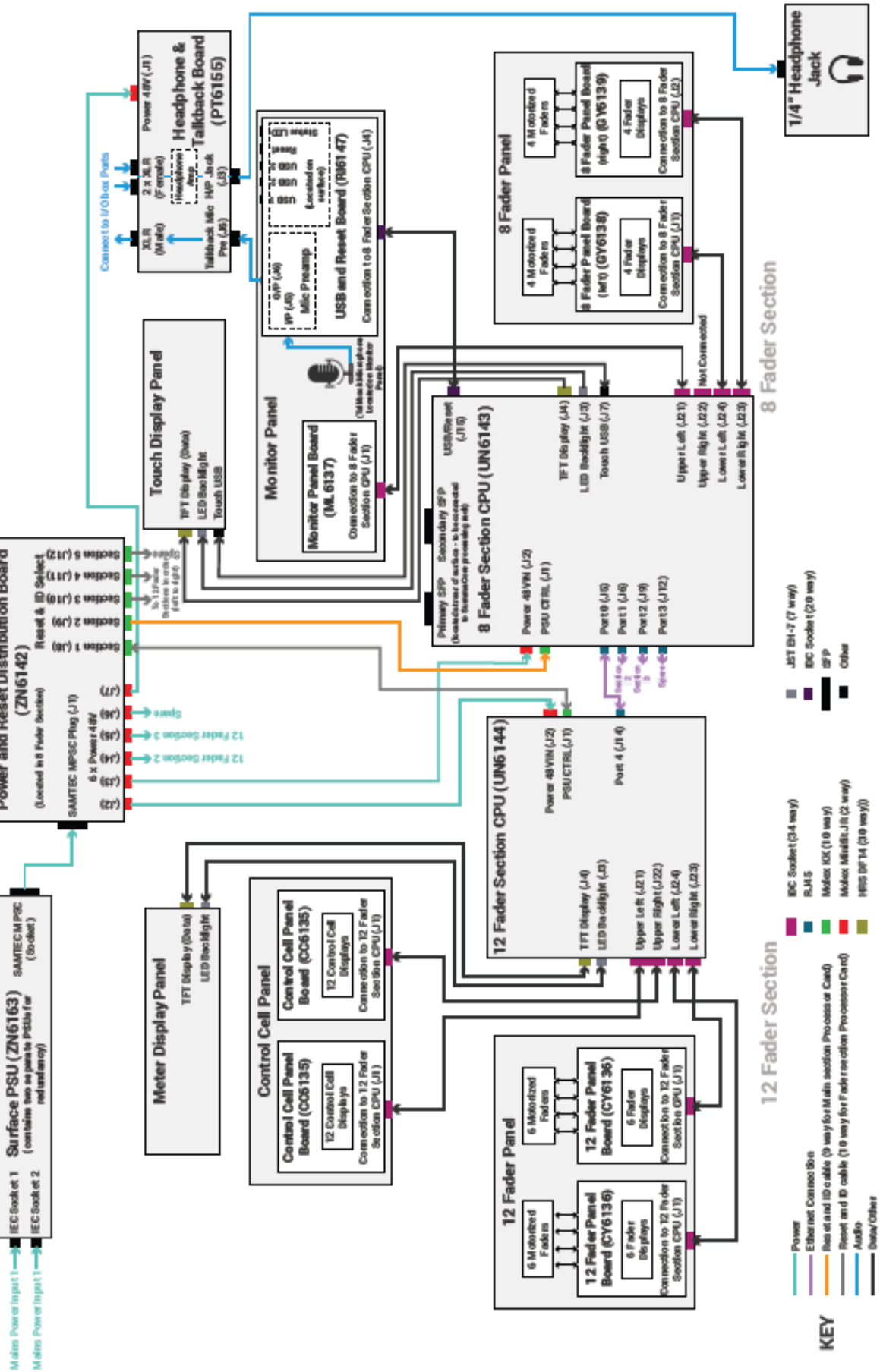
IMPORTANT INSTRUCTIONS

SUMMA
DISASSEMBLY

To prevent electrical damage to the apparatus, no service / repair / maintenance is permitted inside the console without first isolating both AC power cables from the console. The internal connections MUST NOT be plugged or unplugged whilst the power is on.

SURFACE COMPONENTS

The following diagram shows how Summa's internal components are connected together. The image is based on Summa 12 + 8. Your Summa may have more than one 12 fader panel. Summa has a modular connection system and the points at which the extra fader panels should be attached are clearly indicated.

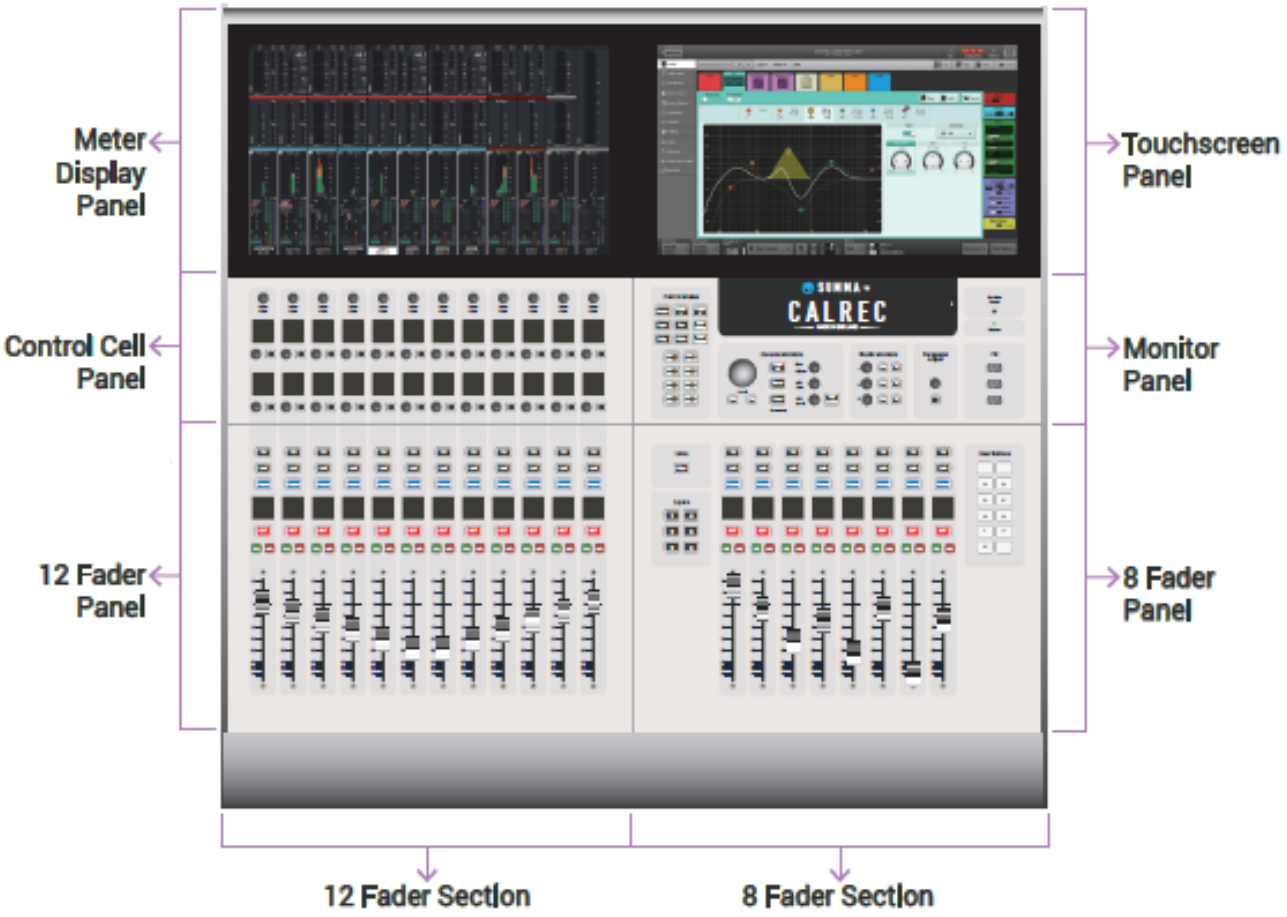


The Summa surface is made up of modular sections. Summa 12+8 is shown here, which is the smallest surface option, made up of one 12 fader section, and one 8 fader section. Summa 24+8 has an extra 12 fader section and Summa 36+8 has two extra 12 fader sections. Each section is made up of three panels.

Each panel is interleaved with the panels directly above and below it. This interleaving dictates the order that the panels must be removed for maintenance:

1. 12 Fader/ 8 Fader panel
2. Control Cell/Monitor panel
3. Meter display/Touch Display panel

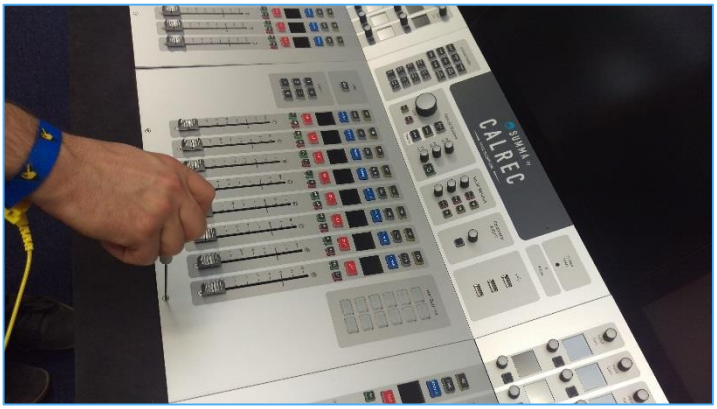
SUMMA SURFACE SECTIONS



CONTROL SURFACE DISASSEMBLY

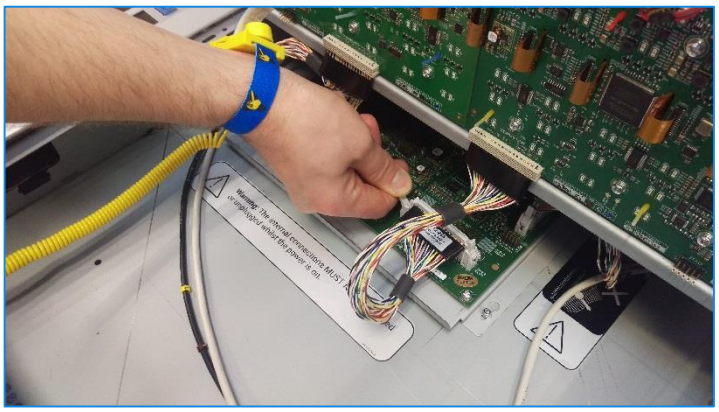
Removing a 12 or 8 Fader Panel

1. Loosen both 2mm hex screws from the front edge of the panel. The panel will rise upwards from the chassis. The screws are held into the panel so should only be unscrewed enough to release the panel.



2. Lift the front edge of the fader panel, levering it on its top-edge to expose the ribbon cable connections beneath.

3. Release both ribbon cables from the section processor card by pulling both connection levers outwards. Lift the ribbon cables from both sockets.



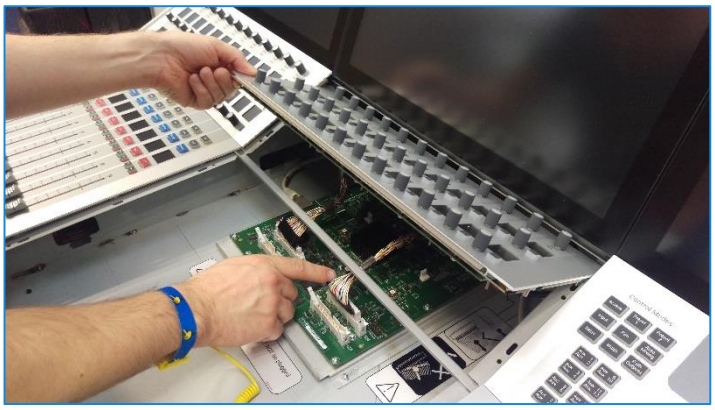
4. Lift the panel towards you to remove it from the console.

Removing a Control Cell panel

1. With the 12 fader panel removed, carefully push the Control Cell panel upwards from below to lift its front edge. Lever the panel backwards on its top edge to expose the connections below.

2. Disconnect the upper left and upper right ribbon cables from the processor card by pulling the levers either side of each socket outward. Lift the ribbons out of each socket.

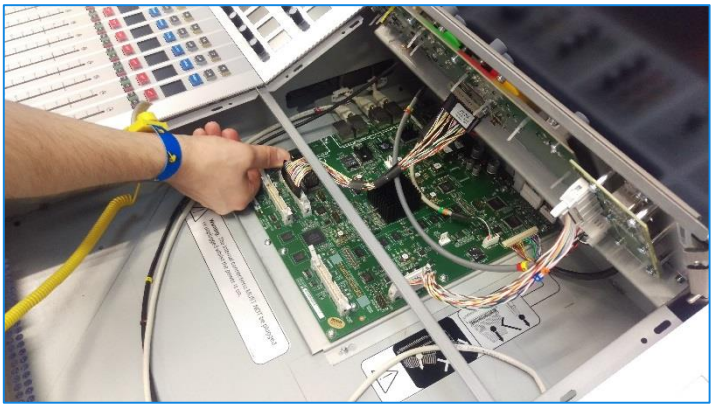
3. Lift the panel towards you to remove it from the console.



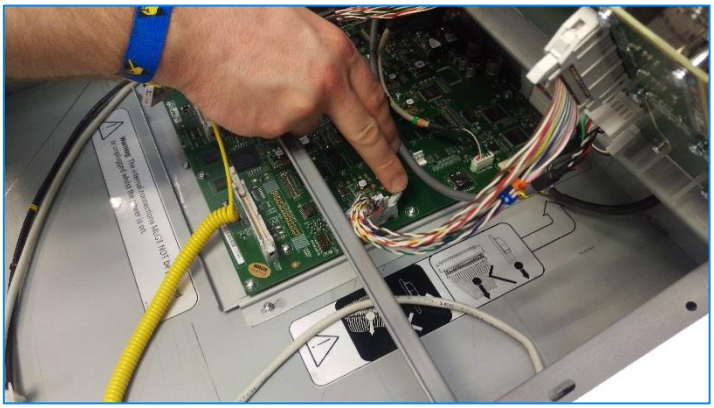
Removing a Monitor panel

1. With the 8 fader panel removed, carefully push the Monitor panel upwards from below to lift its front edge.

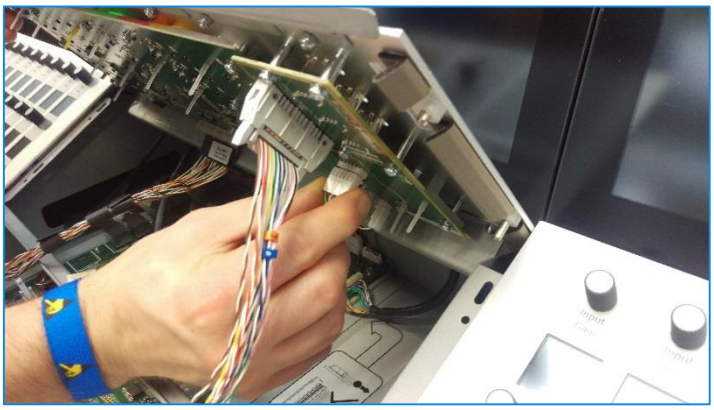
2. Disconnect the upper left 34-way ribbon cable from the 8 fader section processor card by pulling the levers either side of each socket outwards. Lift the ribbon cable out of the socket.



3. Also disconnect the 20-way ribbon on the right-hand side of the section processor card.



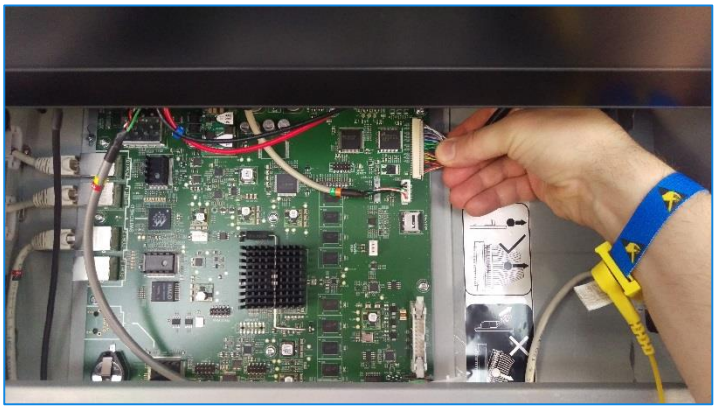
4. Finally disconnect the Molex connector from the underside of the USB and reset board by pulling the connector off the socket.



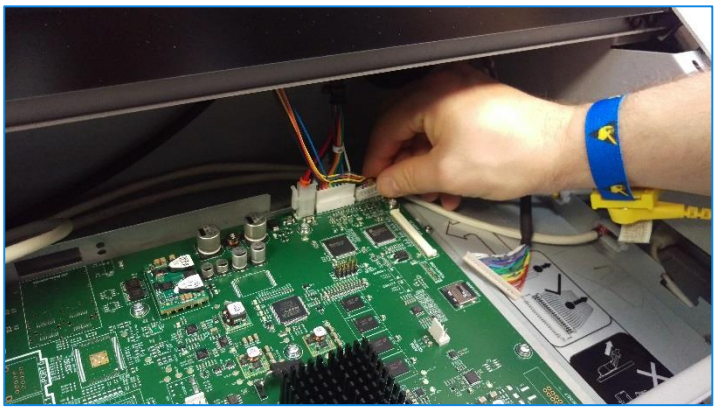
5. Lift the panel towards you to remove it from the surface.

Removing a Meter or Touch display

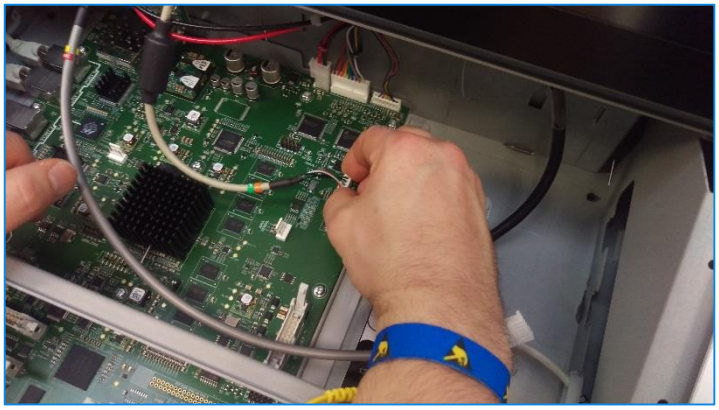
1. To disconnect the TFT data cable from the section processor card, carefully pinch the cables and pull away from the card.



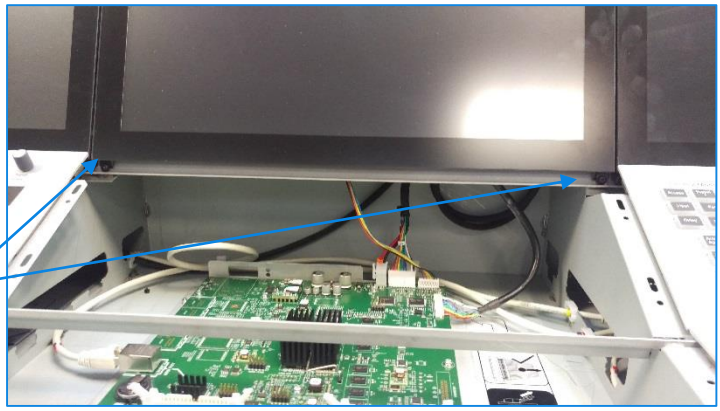
2. Disconnect the TFT power cable from the section processor card by lifting the Molex connector away from the socket.



3. If removing a touch screen, the touch control cable must also be removed from the section processor card. To remove this cable lift the Molex connector from the socket.



4. Using a 2.5mm Hex screwdriver, unscrew the two screws which hold the display in place.



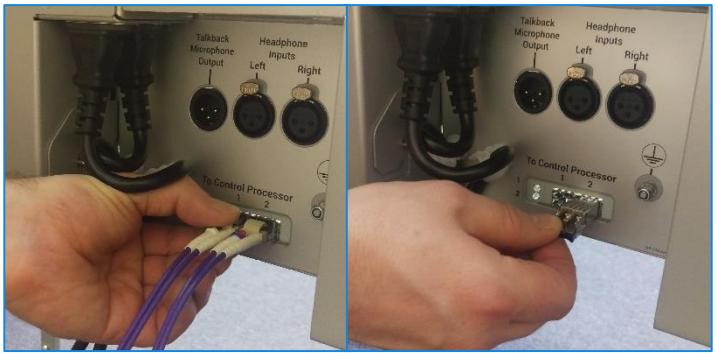
5. Pull the bottom edge of the screen downwards to free it from the surface.

6. Carefully lift the screen from the surface to remove it.

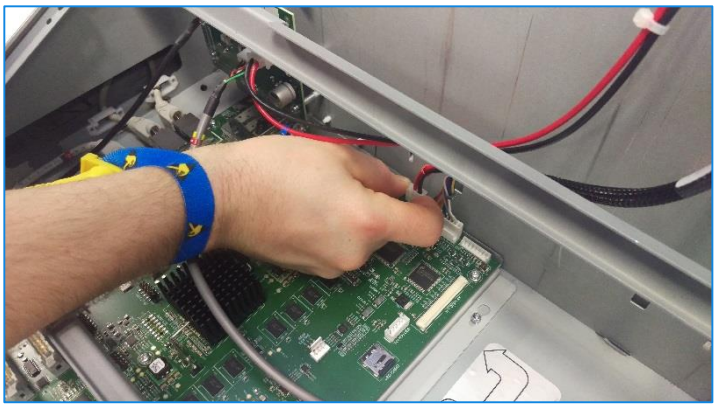
Removing a Fader Section Processor Card

1. Remove all surface panels from the console section.

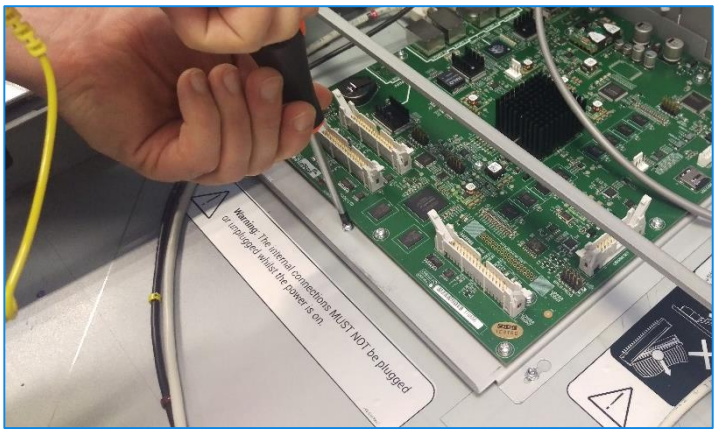
2. Disconnect all remaining connections from the section processor card. For the 8 fader section this also includes the surface fibre links and their SFPs.



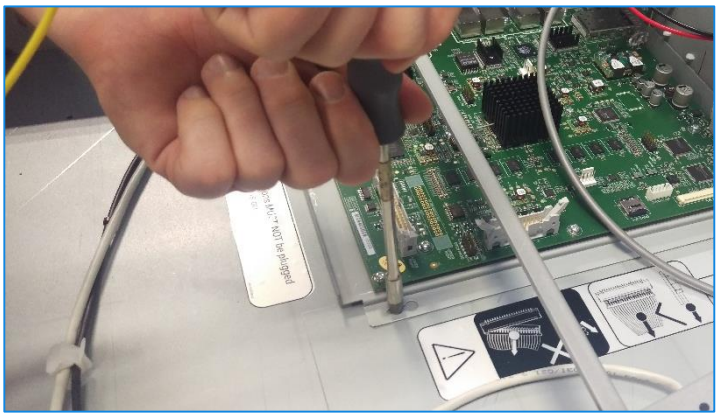
The two-way Molex connector at the rear is latching. To release this, squeeze the latch handle and lift the connector from the socket.



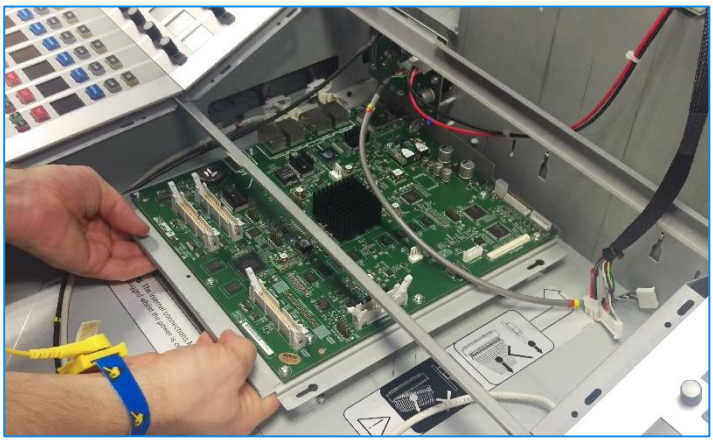
3. Remove the single locating Pozi screw from the front edge of the section processor card.



4. Use a nut runner to loosen each nut at each corner of the tray holding the processor card. There is no need to remove these nuts entirely.



5. To remove the processor card from the surface, slide the tray towards you then lift it over the nuts at each corner. Be careful not to catch the card or processor heatsink on the chassis cross bar.



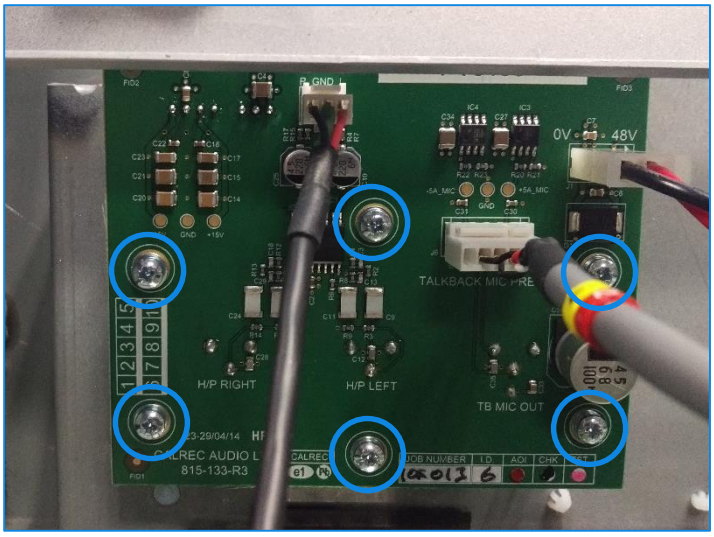
Removing the Headphone and Talkback board

The Headphone and Talkback board is fixed to the rear of the console inside the 8 fader section.

1. Remove the 8 fader, monitor and touch display panels.

2. Disconnect all cables from the board by gently pulling the connectors from their sockets.

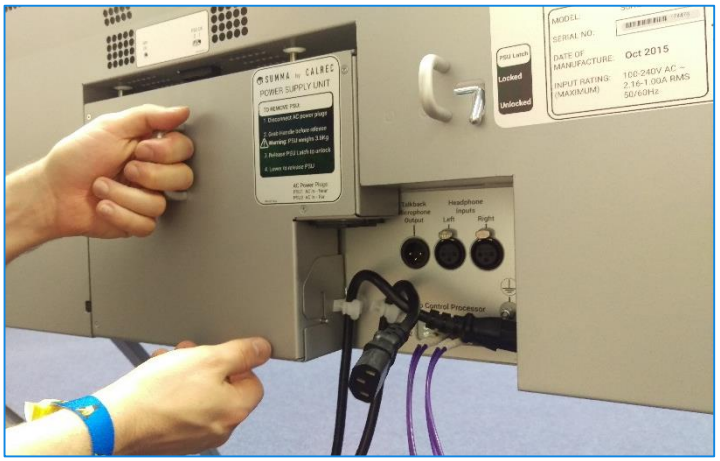
3. Unscrew the six Pozi head screws from the board and pull the PCB directly towards you, allowing the three XLR connectors to pass straight through the chassis. It may be necessary to angle the bottom of the PCB forward and to lower the PCB as it is removed so that the XLR ejector tabs clear the holes in the back of the surface.



Removing the PSU module

1. Disconnect both AC power cables.
2. Hold the PSU handle to support the weight of the PSU module.
3. Slide the PSU latch to the side, into the unlocked position.

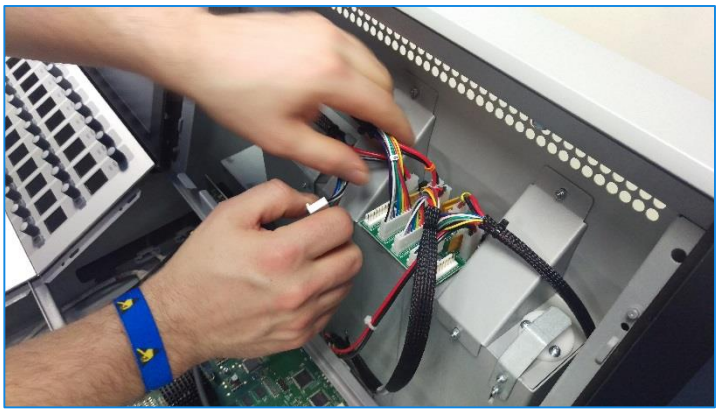
4. The PSU module will drop onto the shelf below



5. Tilt the top edge of the PSU and lift the module away from the surface to remove it.

Removing the Power Supply Distribution board

The power and reset distribution board is situated inside the chassis, behind the touch display.



1. Remove the PSU module from the rear of the chassis.

2. Remove the 8 fader, monitor and display panels.

3. Disconnect all cables from the power and reset distribution board. To remove each power cable, grip the connector and hold in the latch, pull upwards away from the board. To remove each reset/ID cable, gently pull the connector from the socket.

4. Unscrew the four Pozi head screws to release the PCB from the chassis.

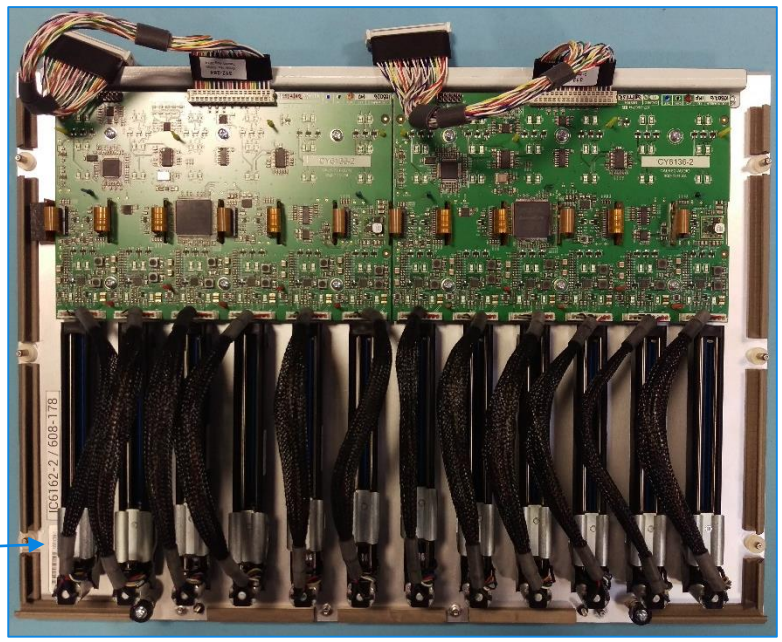
CONTROL SURFACE MAINTENANCE

12 Fader Panel

Each 12 fader panel (IC6162/IC6212) contains two identical circuit boards (CY6136), each of which drives six faders and six fader displays. Summa 36+8 has three 12 fader panels, 24+8 has two and 12+8 has one.

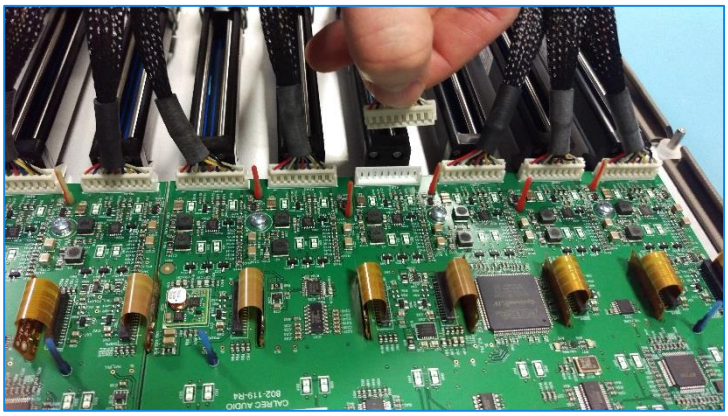
Each CY6136 board is connected to the section processor board by a single 34-way ribbon cable.

The serial number for this panel is located in the corner of the metalwork

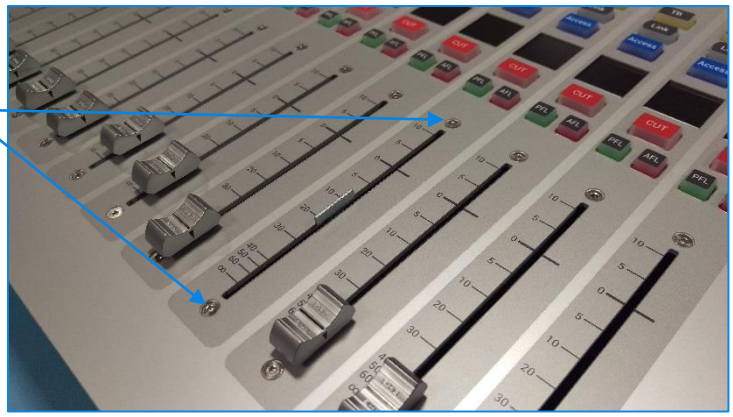


Replacing Motorised Faders

Summa consoles are distributed with either Penny & Giles or ALPS motorised faders. To service either fader type follow the steps given below.



1. Remove the panel from the surface.
2. Carefully turn the panel over and disconnect the fader from the circuit board by firmly gripping the white cable connector and pulling away from the board.
3. Turn the panel over again and remove the fader knob by pulling it away from the fader tab.
4. Hold the fader body whilst unscrewing the two 2mm hex screws at each end of the fader track.
5. Pull the fader tab through the slot to remove the motorised fader.
6. Replace the fader by following this process in reverse.

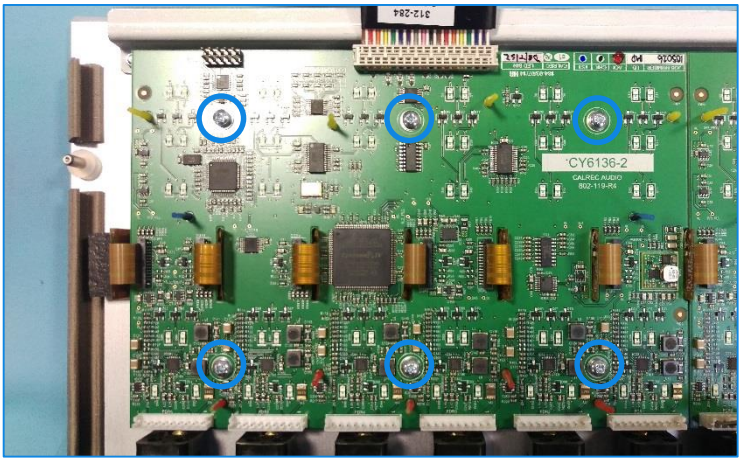


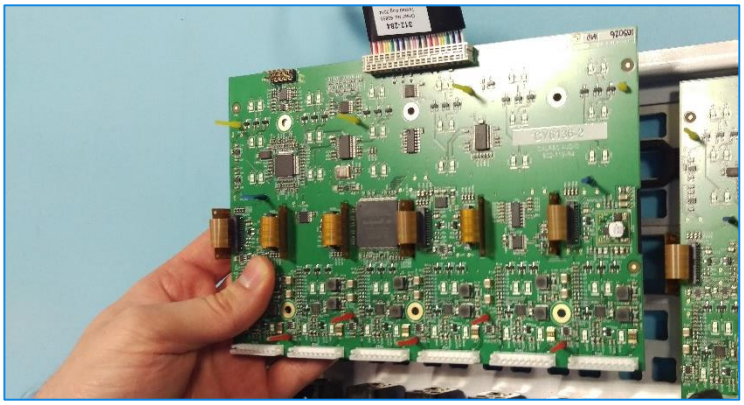
Cleaning Motorised Faders

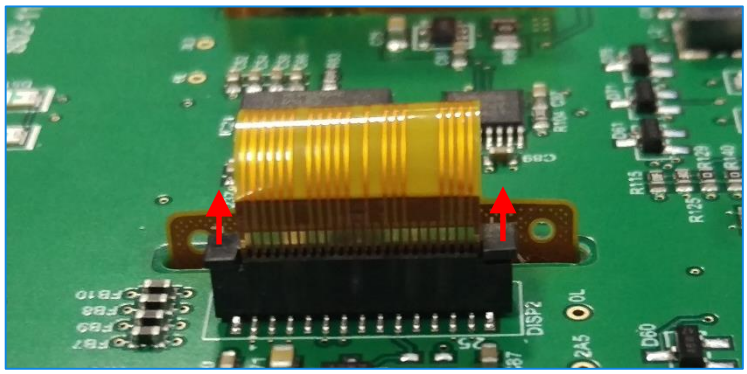
For up-to-date information on how to clean your faders, or to order any cleaning/lubrication products, please contact the manufacturer of your faders.

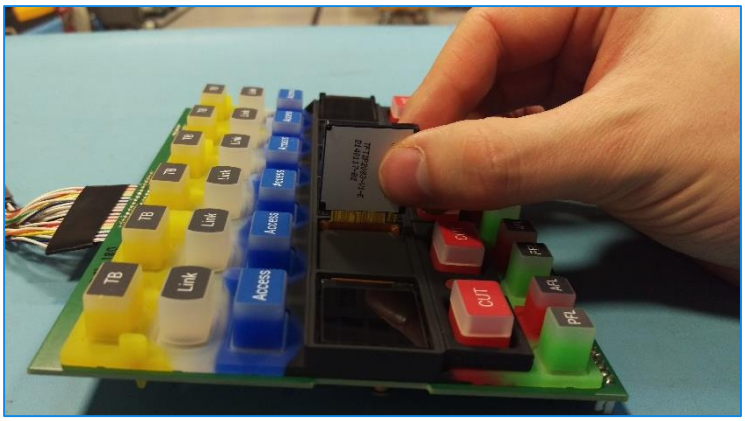
Replacing Small Displays

Each fader channel includes a mini TFT display. This display, and the transparent window which covers it, can be easily removed and replaced.







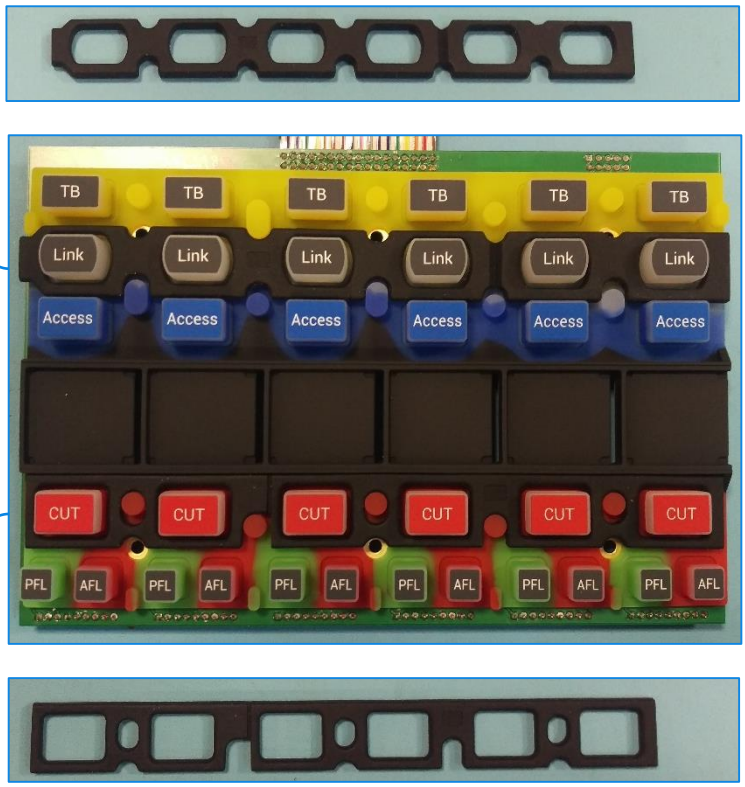


1. Disconnect all six faders from the circuit board which contains the small display or window to be serviced.
2. Unscrew all six Pozi screws holding the circuit board to the panel.
3. Lift the circuit board from the panel and place it on an ESD mat.
4. If you only need to replace a transparent window in the panel you may now push out the broken one and firmly push into place the replacement. Follow the above steps in reverse to reassemble and reinstall the panel.
5. If replacing a mini TFT, first disconnect the orange connecting ribbon of the faulty TFT by carefully lifting the black tabs at either side of the socket. Be sure to only lift these up slightly, excessive force may cause the latch to come away from the socket and these are often difficult or impossible to reinstall.
6. With the ribbon disconnected, carefully turn the board over and lift the mini TFT from the rubber button mat. Pull the ribbon through the slot. A small vacuum pen may be used to lift the display if preferred.
7. To install a replacement display, carefully feed its ribbon back through the slot in the button mat and circuit board then gently press the display into position in the button mat.
8. Fold the ribbon over and into its black socket. Lock it in place by pushing down on the black tabs at either side.
9. Before placing the circuit board back into the panel, use a lint-free cloth (such as that used to clean spectacle lenses) to clean any fingerprints or dust from the small displays and transparent windows.
10. Place the board back into the panel and fix it in place with the six screws.
11. Reconnect all six faders and reinstall the panel in the console chassis.

Replacing Buttons

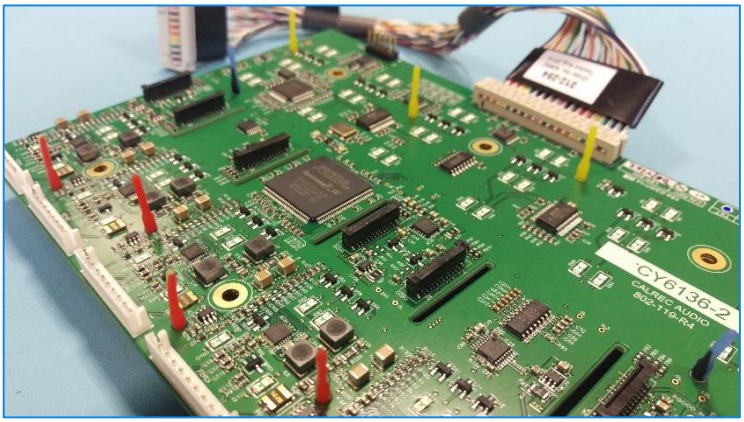
All buttons on the Summa surface are made up of rubber key mats fitted between the circuit boards and the metal front panels. These rubber key mats are very robust but, if needed, they can be removed easily.

Note that some key mats include additional smaller black rubber mats that encircle certain sets of buttons to prevent light from bleeding through. An example of these additional key mats is shown on the right.



To service a key mat:

1. Remove the fader panel from the surface.
2. Turn the fader panel over and remove the circuit board.
3. Carefully disconnect and remove all six mini TFT displays.
4. Remove the light-blocking key mats from the main key mat.
5. Carefully pull the key mat off the circuit board allowing each of the coloured tabs to pass through their fixing holes.
6. Lift off the CUT/ON button caps from the key mat.
7. To fit a replacement mat, pass each of its tabs through the fixing holes in the board and pull the tight.
8. Refit the light-blocking mats.
9. Reassemble the panel, remembering to clean each of the small displays and transparent windows beforehand.
10. CUT/ON button caps should also be refitted.



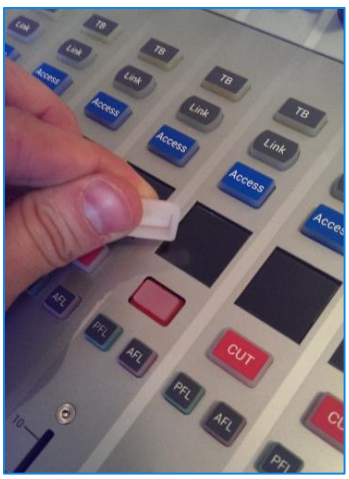
CUT/ON Button Caps

The CUT/ON buttons use rubber button caps to allow them to be easily swapped to match the current console setting. It is possible to change this setting using the configuration screen.

A full set of CUT button caps is included with each Summa console. If specified during the ordering process a set of ON caps will be included.

To remove button caps, pinch a cap between the ends of your fingers and lift it off the key mat beneath.

New button caps can be pushed onto the key mat.



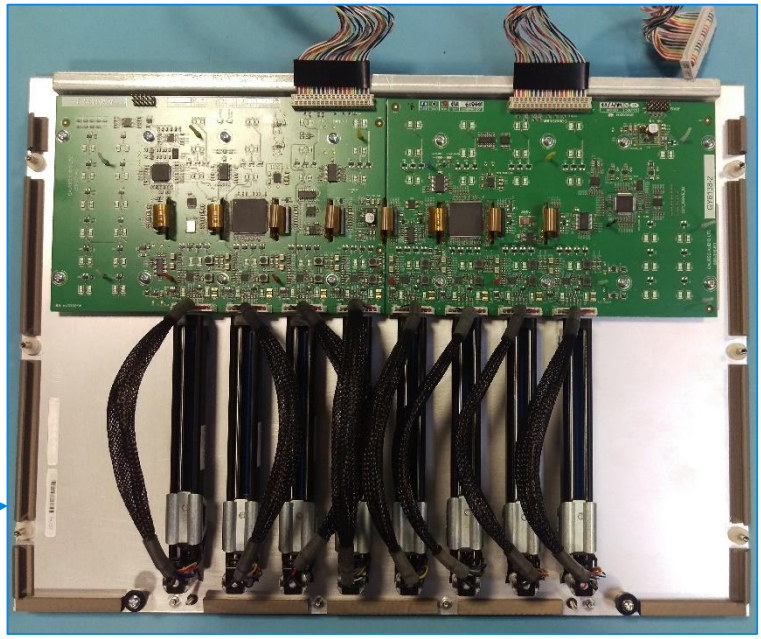
Replacing a CY6136 circuit board

To replace a CY6136 circuit follow the guidance given here to remove it, and all other components fitted to it, from the 12 fader panel. When fitting the replacement circuit board be sure to reinstall all removed parts and to clean each small display of any fingerprints or dust using a lint-free cloth. The same type of cloth used to clean spectacle lenses is suitable.

8 Fader Panel

Each Summa console includes one 8 fader panel (IM6158/IM6215) which contains two circuit boards (GY6138 and GY6139), each of which drives four faders and four fader displays.

Each board is connected to the section processor board by a single 34-way ribbon cable.



The serial number for this panel is located in the corner of the metalwork

Replacing Motorised Faders

Summa fader motors can be easily removed for service or replacement. See “Replacing Motorised Faders” on page 19 for a step-by-step guide.

Cleaning Motorised Faders

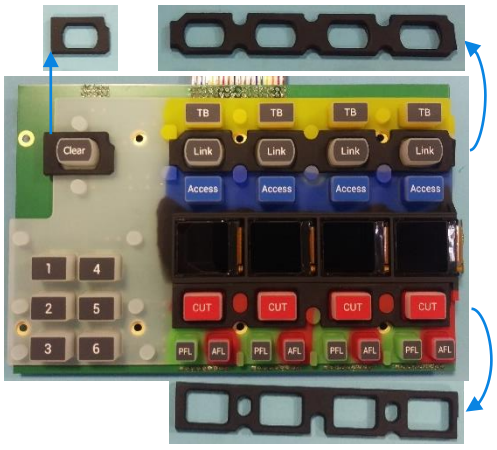
For up-to-date information on how to clean your faders, or to order any cleaning/lubrication products, please contact the manufacturer of your faders.

Replacing Small Displays

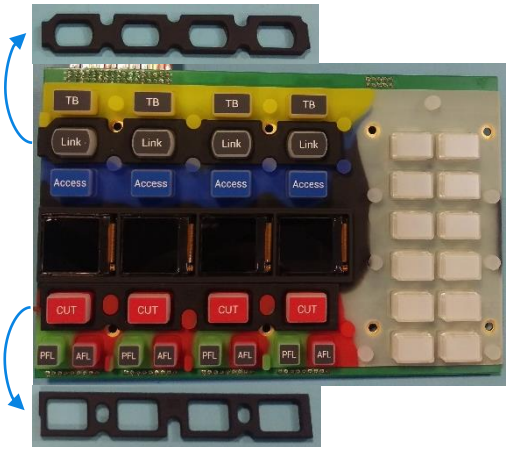
Each fader channel includes a mini TFT display. This display and the transparent window which covers it can be easily removed and replaced. See “Replacing Small Displays” on page 20 for a step-by-step guide. Note that 8-fader panels have fewer small displays, four per circuit board.

Replacing Button

All buttons on the Summa surface are made up of rubber key mats fitted between the circuit boards and the metal front panels. These rubber key mats are very robust but, if needed, they can be removed easily. See “Replacing Button Mats” on page 21 for a step-by-step guide. Note that 8-fader panels have fewer small displays, four per circuit board. Further note the differences in light-blocking key mats as indicated in the images on the right.



The ‘User Button’ plastic key caps can easily be removed at any time without the need to remove the board from the console surface.



CUT/ON Button Caps

See this section on page 21 for full details.

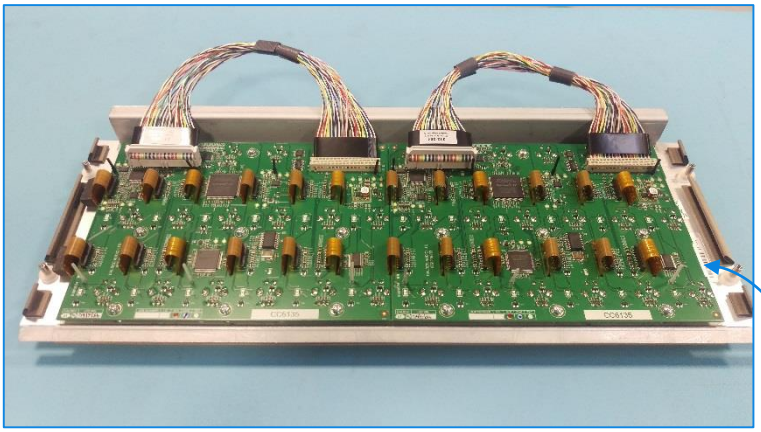
Replacing a GY6138 or GY6139 circuit board

To replace a GY6138 or GY6139 circuit the guidance given here to remove it, and all other components fitted to it, from the 8 fader panel. When fitting the replacement circuit board be sure to reinstall all removed parts and to clean each small display of any fingerprints or dust using a lint-free cloth. The same type of cloth used to clean spectacle lenses is suitable.

Control Cell Panel

Each Summa console includes one Control Cell panel (CA6161) per 12 fader panel. Each panel contains two identical circuit boards (CC6135).

Each circuit board is connected to the section processor board by a single 34-way ribbon cable.



The serial number for this panel is located here on the metal work.

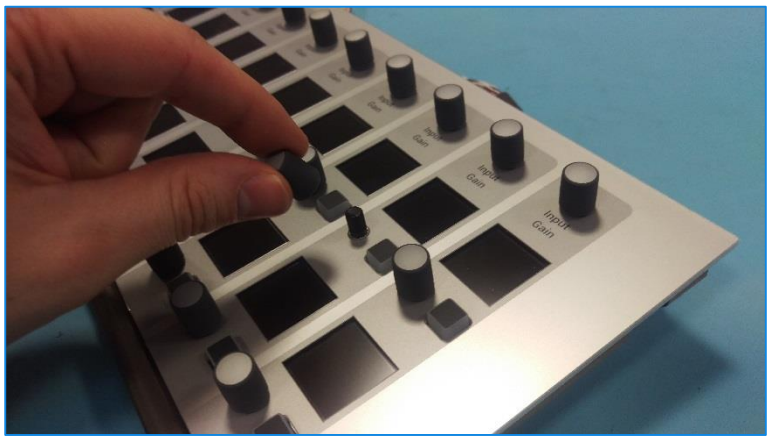
Replacing Encoder Knobs

Each Control Cell Panel includes 36 encoders, each with the same type of encoder knob.

Knobs are fitted directly to the shaft of the encoder. Each knob can be removed by simply pulling it off the shaft.

To fit a replacement knob, press it onto the shaft.

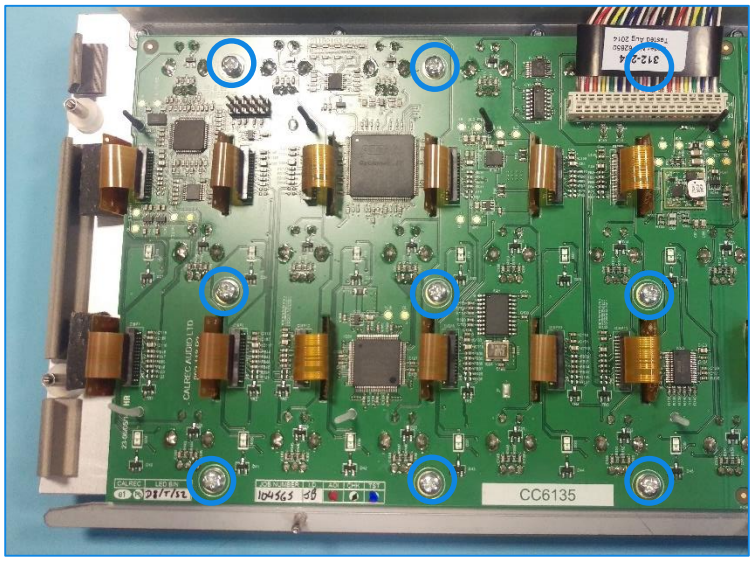
Encoders themselves are soldered into the CC6135 circuit board beneath. It is not recommended that these are removed. Instead the CC6135 board should be replaced.



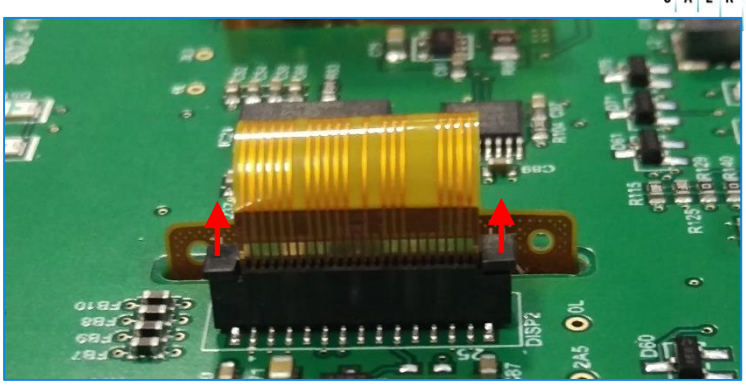
Replacing Small Displays

Each Control Cell in the Panel contains a mini TFT display and viewing window. Each of these can be easily removed and replaced.

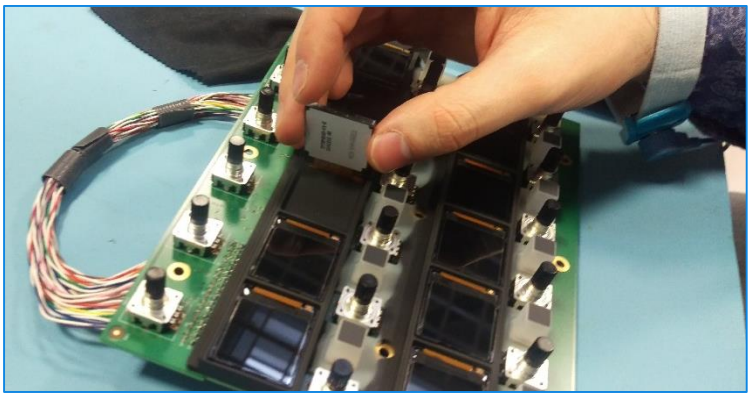
1. Remove the 12 Fader Panel and Control Cell Panel from the surface.
2. Remove the encoder knobs from the half of the panel to be serviced
3. Turn the panel over and remove all 9 Pozi screws from the appropriate CC6135 circuit board. Note that one of the screws is beneath the ribbon. Pull back the ribbon to reveal this.
4. Carefully lift the circuit board from the chassis.



5. If you only need to replace one of the transparent windows in the panel you may now push out the broken one and firmly push in the replacement. Follow the above steps in reverse to reassemble and reinstall the panel.
6. If replacing a mini TFT, first disconnect the orange connecting ribbon of the faulty TFT by carefully lifting the black tabs at either side of the socket. Be sure to only lift these up slightly, excessive force may cause the latch to come away from the socket and these are often difficult or impossible to reinstall.



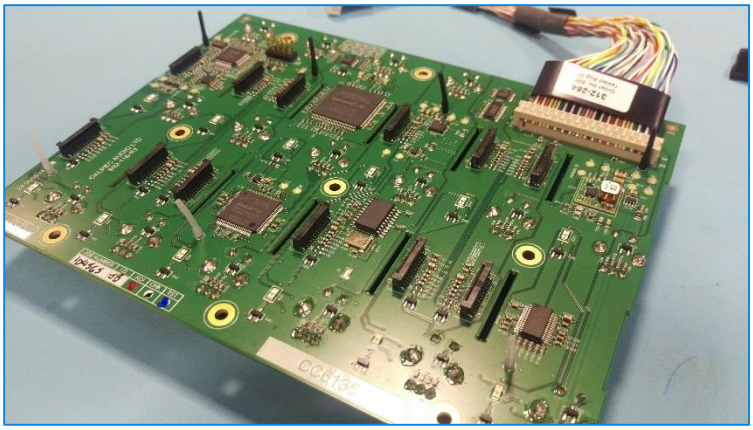
7. With the ribbon disconnected, carefully turn the board over and lift the mini TFT from the rubber button mat. Pull the ribbon through the slot. A small vacuum pen may be used to lift the display if preferred.
8. To install a replacement display, carefully feed its ribbon back through the slot in the button mat and circuit board then gently press the display into position.
9. Fold the ribbon over and into its socket. Lock it in place by pushing down on the black tabs at either side.



10. Before placing the circuit board back into the panel, use a lint-free cloth to clean any fingerprints or dust from the small displays and transparent windows.
11. Place the board back into the panel and fix it in place with all nine screws. Do not forget the fixing obscured by the ribbon.

Replacing Buttons

All buttons on the Summa surface are made up of rubber key mats fitted between the circuit boards and the metal front panels. These rubber key mats are very robust but, if needed, they can be removed easily.



To service a key mat:

1. Remove the panel from the surface.
2. Turn the fader panel over and remove the circuit board in the manner described in previous sections.
3. Carefully disconnect and remove all 12 mini TFT displays.
4. Carefully pull the key mat off the circuit board allowing each of the coloured tabs to pass through their fixing holes.
5. To fit a replacement mat, pass each of its tabs through the fixing holes in the board and pull them tight.
6. Reassemble the panel, remembering to clean each of the small displays and transparent windows beforehand.
7. Reinstall the panel into the console surface.

Replacing a CC6135 circuit board

To replace a CC6135 circuit follow the guidance given here to remove it, and all other components fitted to it, from the Control Cell panel. When fitting the replacement circuit board be sure to reinstall all removed parts and to clean each small display of any fingerprints or dust using a lint-free cloth. The same type of cloth used to clean spectacle lenses is suitable.

Monitor Panel

Each Summa console includes a single Monitor Panel (ML6157). Each panel contains two circuit boards (ML6137 and RI6147).

The larger circuit board (ML6137) is connected to the section processor board by a single 34-way ribbon cable. The smaller circuit board (RI6147) is connected to the section processor board by a single 20-way cable.

The serial number for this panel is located here on the metalwork

The RI6147 board is linked to the ML6137 by the talkback microphone. The microphone capsule is located in the ML6137 but the connector is located on the RI6147. The RI6147 board includes the Talkback microphone balancing circuitry.

Replacing Encoder Knobs

Each Monitor panel includes seven small encoder knobs and one large encoder knob for the main monitor level control.

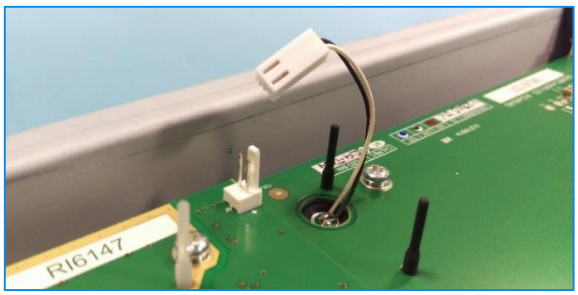
Each of these is fitted directly to the encoder shaft and can be easily removed by simply lifting the knob off the shaft.

Note that the large encoder also uses a separate plastic washer as indicated on the right.

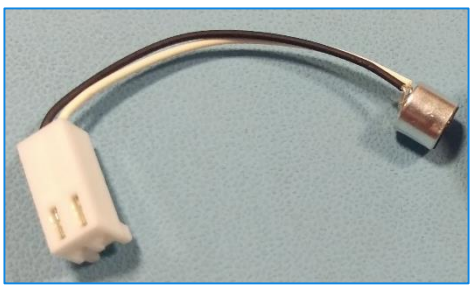
Encoders themselves are soldered into the ML6137 circuit board beneath. It is not recommended that these are removed. Instead the ML6137 board should be replaced.

Replacing the Talkback Microphone

Each Monitor Panel includes a small electret microphone for talkback. The microphone capsule, located in the corner of the ML6137 circuit board is pressed into a rubber mat and its wire connected to a two-pin socket on the RI6147 board.

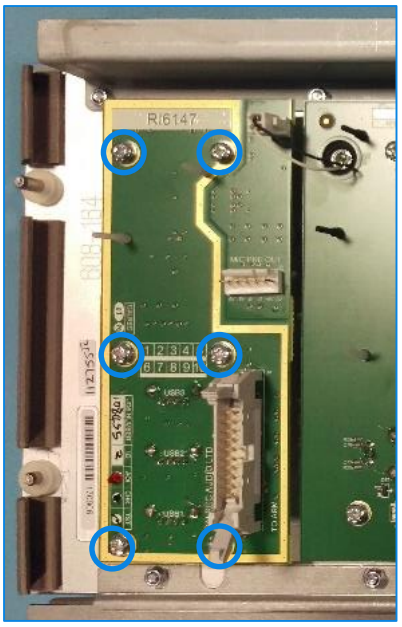


To replace the microphone, disconnect the connecting cable by pulling the header from the socket, then remove the microphone from the rubber mat by pulling it by the connecting wires.



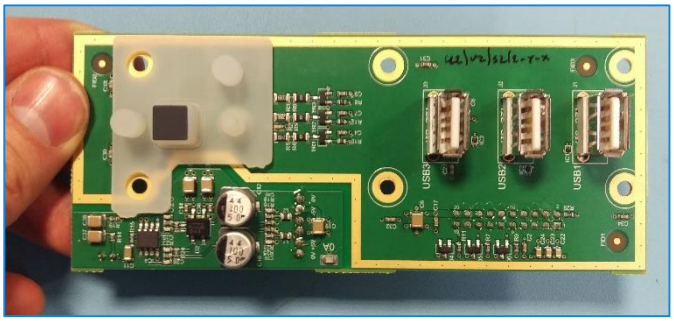
To install a new microphone simply press its capsule through the hole in the circuit board into the rubber mat and plug its connector into the two-pin socket on the RI6147 board.

RI6147



Each RI6147 contains a single 'Surface Reset' button. From the front of the panel this is obscured by the overlay and metalwork with only a small hole above it. To replace the button mat beneath follow these steps:

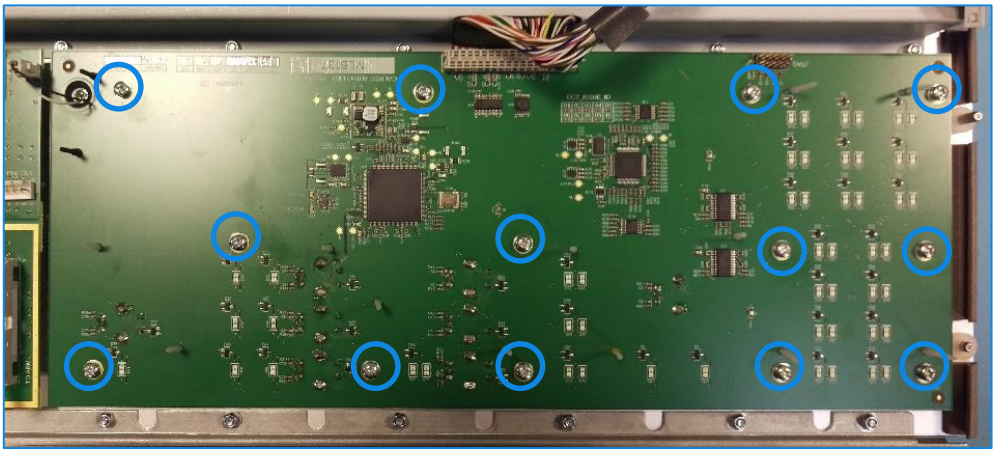
1. Remove the Monitor panel from the surface.
2. Turn the panel over.
3. Disconnect the talkback microphone from the RI6147.
4. Remove the six Pozi screws.
5. Lift the RI6147 circuit board from the panel.
6. Carefully pull the button mat off the circuit board allowing the rubber tabs to pass through their fixing holes.
7. To fit a replacement button mat, pass its pull-through tabs back through the fixing holes in the circuit board and carefully pull them into place
8. Reinstall the RI6147 into Monitor panel and fit this into the surface.



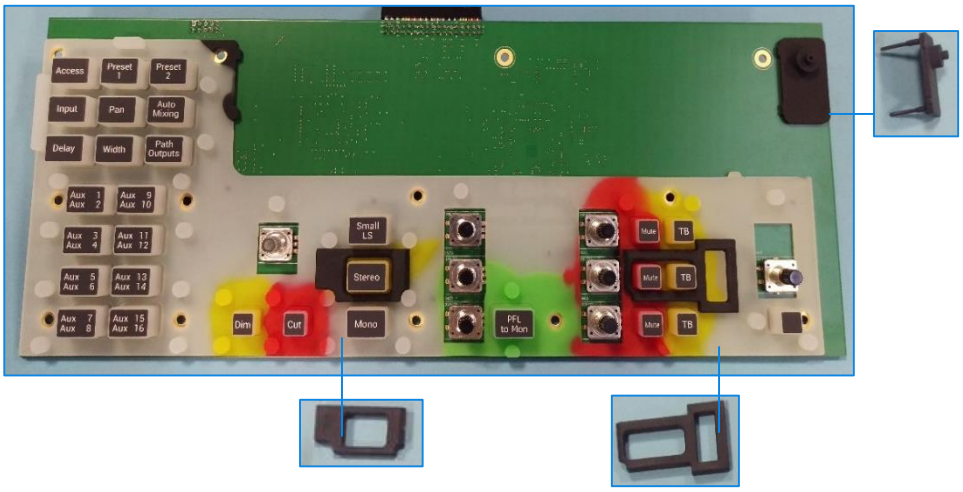
ML6137

All buttons except the Surface Reset button on the ML6157 Monitor Panel are located on the ML6137 circuit board. All buttons on this board are part of a single button mat. To access and replace this follow these steps:

1. Remove all seven encoder knobs and the large encoder washer from the front of the panel.
2. Remove the Monitor Panel from the surface.
3. Turn the panel over.
4. Disconnect the talkback microphone from the RI6147.
5. Remove all 13 Pozi screws from the circuit board.

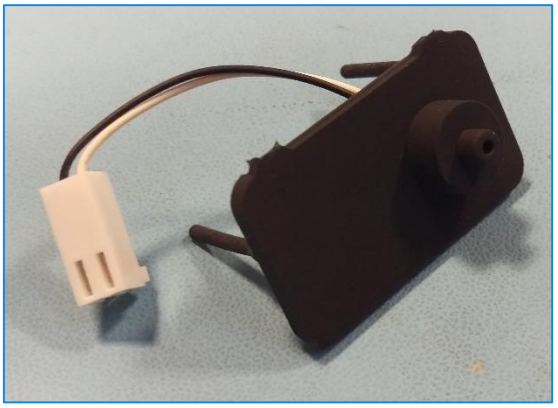


6. Lift the circuit board from the panel and turn it over.
7. Remove the two black rubber light-blocking mats from the Stereo and Mute/TB buttons then carefully pull the mat free from the circuit board, allowing the rubber tabs to pass through the fixing holes in the board.
8. To install a replacement button mat, apply the new part to the board, passing each of its rubber tabs through the fixing holes in the circuit board and carefully pulling each one through until the mat is fixed in place.



Talkback Microphone Mat

To replace the talkback microphone rubber mat, complete the previous steps up to step 6 then lift the black mat from the board allowing the two rubber tabs to pass through their fixing holes and the microphone cable and connector to pass through the large hole in the board (if the microphone is still fitted).



To install a replacement mat, first ensure the small hole in the mat is free from debris then pass the two rubber tabs through the correct fixing holes in the circuit board. Carefully pull them through to fix the mat in place.

Replacing an RI6147 or ML6137 circuit board

To replace either circuit board follow the guidance given here to remove it, and all other components fitted to it, from the panel. When fitting the replacement circuit board be sure to reinstall all removed parts.

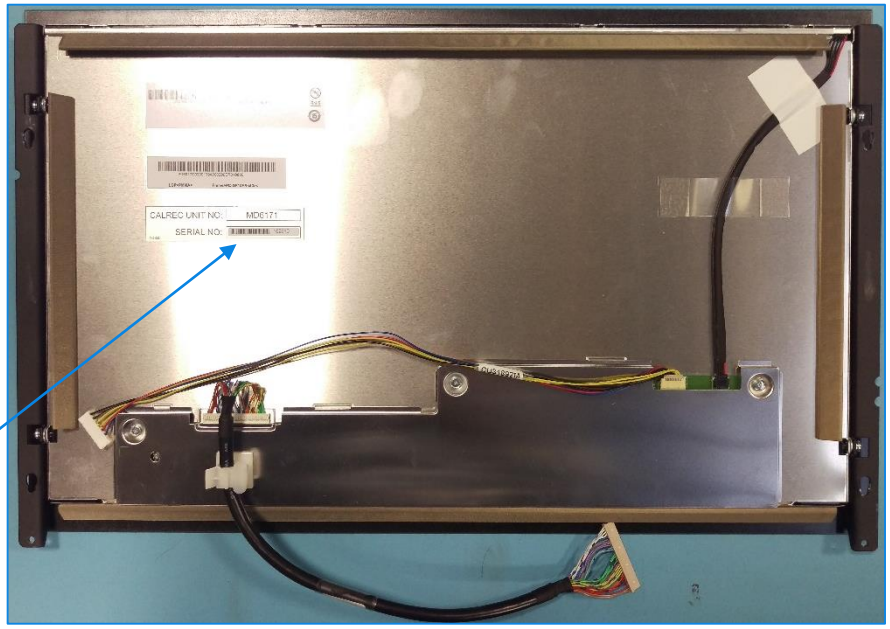
Meter Display

Each Summa fader section includes an up-stand Meter Display (MD6171)

Each Meter Display is connected to the 12-fader section processor card by two cables; a TFT Data connection and a LED backlight connection.

To replace a Meter Display, follow the removal instructions given in the 'Console Surface Disassembly' chapter.

The serial number for this panel is located here

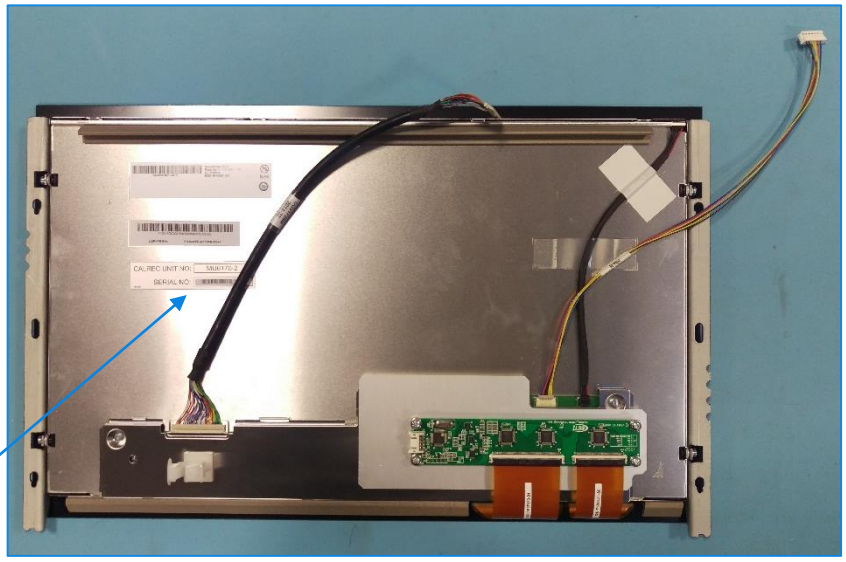


Touch Display

Each Summa console includes an up-stand Touch Display (MU6170).

The Touch Display is connected to the 8 fader section processor card by three cables; a TFT Data connection, a LED backlight connection and a touch sense connection.

To replace a Touch Display, follow the removal instructions given in the 'Console Surface Disassembly' chapter.



The serial number for this panel is located here

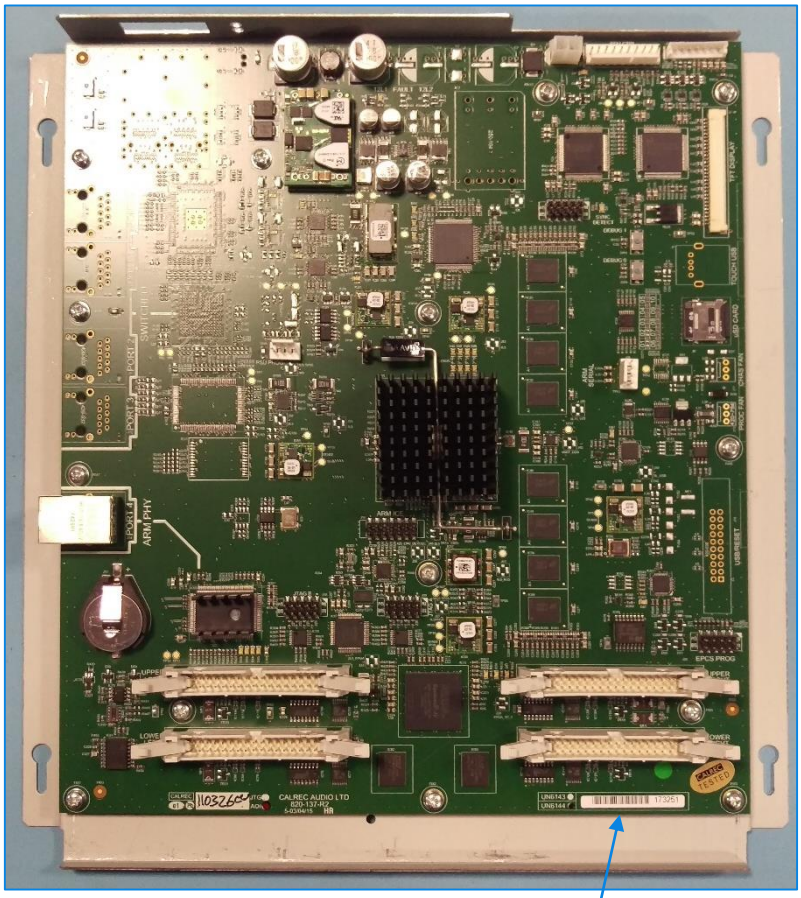
12 Fader Section Processor Card

Each 12 fader section contains a processor board (UN6144) which handles all control, communication and display data. Each 12 fader section processor is connected to the 8 fader section processor card via a shielded Cat5 cable.

The location of each 12 fader section (i.e. its fader numbering) is determined by which RJ45 socket on the 8 fader section processor card it is connected to.

Note that though they contain similar circuitry, 12 and 8 fader section processor cards have a number of differences. As such these parts cannot be substituted for one another.

Each section processor contains two serviceable parts; a BIOS battery and a MicroSD card. Each processor also sits on a removable metal tray.



The serial number for this panel is located here

Replacing a CMOS Battery

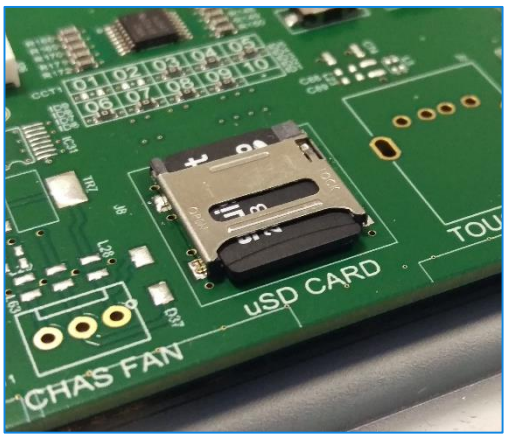
Each processor includes a single 3.0V CR2032 Lithium coin cell. The lifespan of each should be many years, however should you need to replace it use a non-conductive flat bladed implement to lift the catch above the cell, then prise the cell free from its socket.

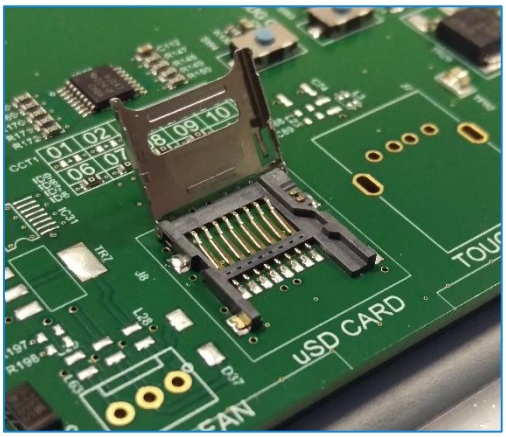
Slide the replacement into the socket, ensuring that the catch applies enough pressure on the top of the cell so that a good contact is made and the cell will not fall free.

Replacing a MicroSD card

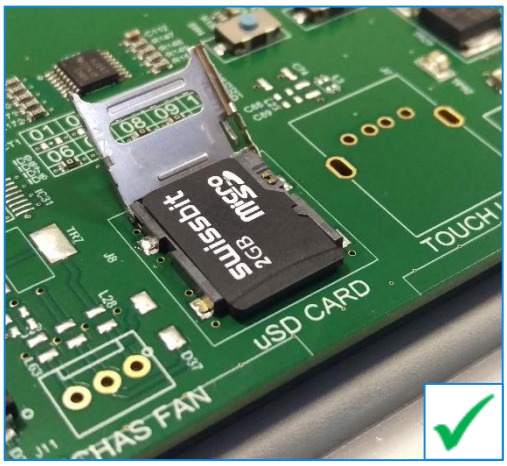
Each section processor includes a single MicroSD card to store the processor's operating system. To remove and replace the MicroSD card follow these steps below:

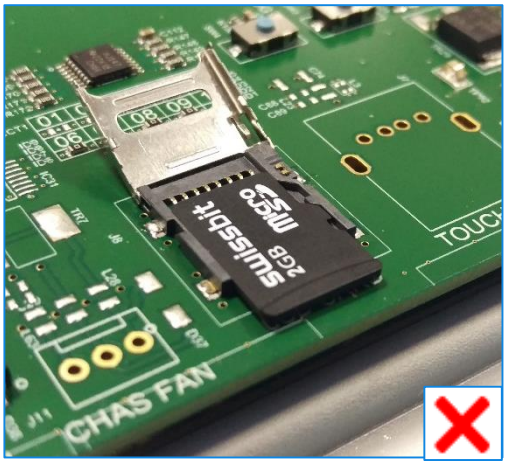
1. The MicroSD card is held in place by a metal catch. To release the card, slide the latch towards the centre of the circuit board. The card will raise up slightly when released.





2. To fit a replacement, place the card into the socket as indicated below on the left. Ensure that the tab on the side of the card is correctly located as indicated.





3. Lock the card in place by pressing down the metal latch and sliding it towards the outer edge of the processor card. If locked in place correctly the card will sit flat against the board

Replacing a Metal Tray

Each processor card sits on a metal tray. This should be kept with the card, however should it need to be replaced for any reason simply unscrew the Pozi screws which hold the circuit board to the tray to separate them.

Note that both section processor card types use the same metal tray part.

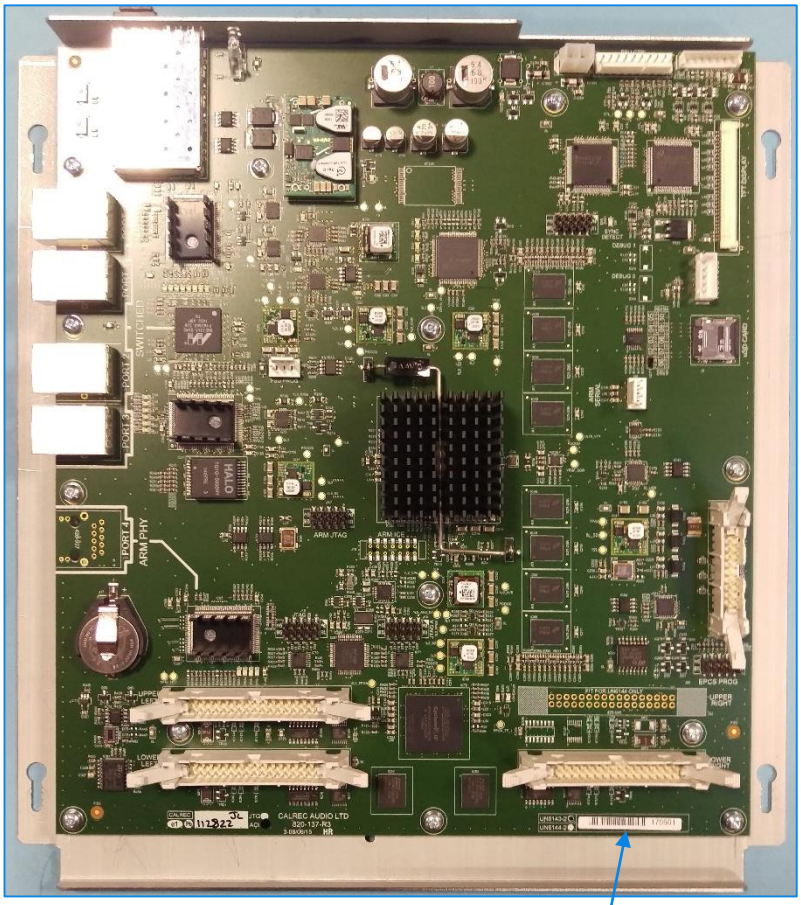
8 Fader Section Processor Card

The 8 fader section contains a processor board (UN6143) which handles all control, communication and display data for the section as well as communications with all other surface sections and the DSP rack. 8 fader section processors are connected to the 12 fader section processor cards via shielded Cat5 cables.

The location of each 12 fader section (i.e. its fader numbering) is determined by which RJ45 socket on the 8 fader section processor card it is connected to.

Note that though they contain similar circuitry, 12 and 8 fader section processor cards have a number of differences. These parts cannot be substituted for one another.

Each section processor contains two serviceable parts; a BIOS battery and a MicroSD card. Each processor also sits on a removable metal tray.



Replacing a CMOS Battery

The 8 fader section processor card uses the same 3V Lithium battery as the 12 fader section, refer to page 34 for details.

Replacing a MicroSD card

The 8 fader section processor card uses the same MicroSD card as the 12 fader section, refer to page 34 for details.

Replacing a Metal Tray

Each processor card sits on a metal tray. This should be kept with the card, however should it need to be replaced for any reason simply unscrew the Pozi screws which hold the circuit board to the tray to separate them.

Note that both section processor card types use the same metal tray part.

Power Supply and Distribution

Each Summa console surface is powered by a PSU cartridge installed at its rear.

Each PSU cartridge contains two discrete PSU modules which provide redundant power.

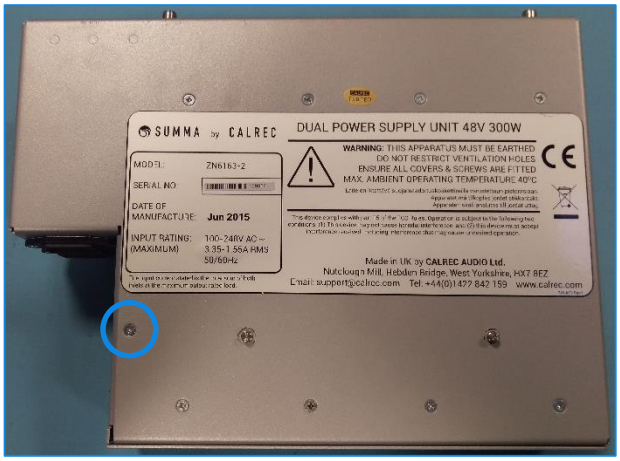
Each PSU module can be easily removed and replaced if required. Follow the steps given below to do so.

The serial number for this module is located on a sticker on the rear side

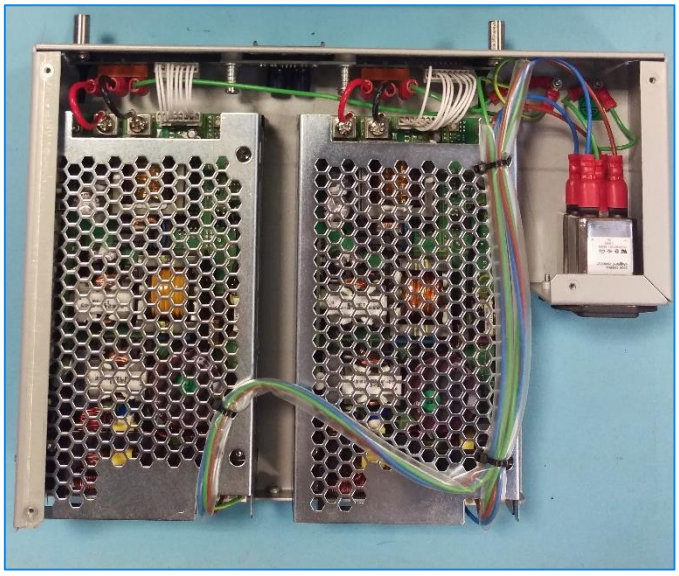
Replacing a PSU module

1. Remove the module from the console chassis.

2. Unscrew four Pozi screws from the front of the module, two from the base and one from the rear, as indicated.

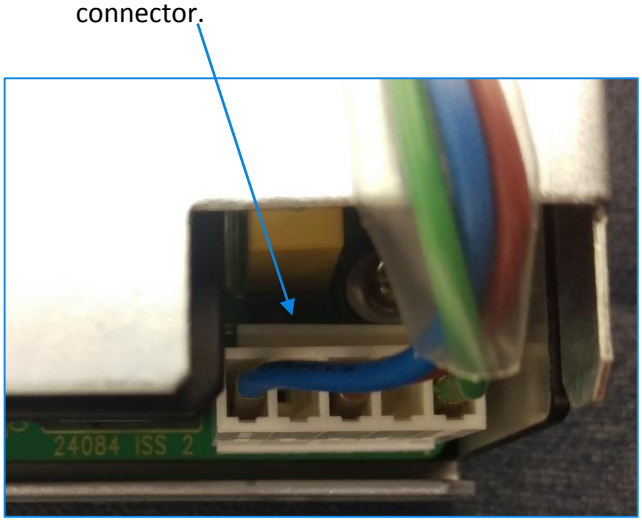


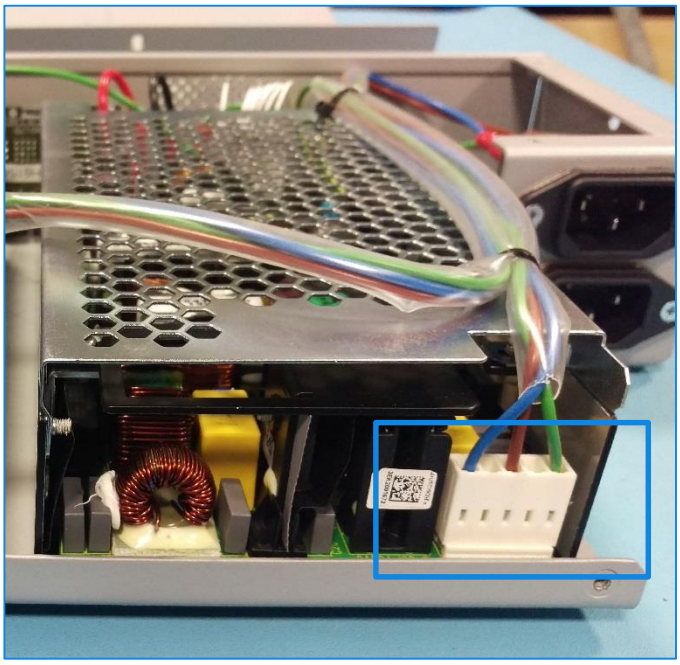
3. Remove the case to expose the two PSU modules.
4. Cut off any cable-ties connected to the case of the PSU module to be removed.



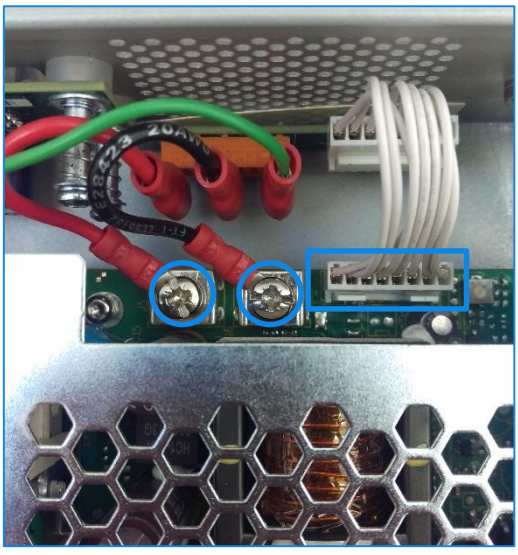
PSU 2 PSU 1

5. Disconnect the large white Molex power inlet connector at the base of the PSU module. You may require a flat blade screwdriver to gently lift back the socket latch to release the connector.



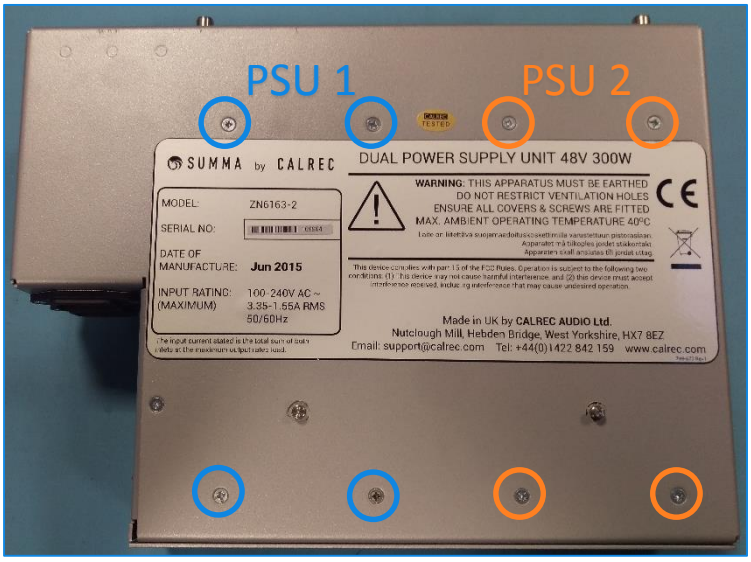


6. Unscrew both Pozi screws, disconnect the red and black wires then disconnect the 8-way Molex connector from the top-edge of the PSU module. You may require a flat blade screwdriver to lift back the socket latch to release the Molex connector.



7. Unscrew the relevant four fixing screws for the PSU module to be removed, this will release it from the PSU cartridge case.

8. To install a replacement PSU module follow these steps in reverse. Ensure that all power connectors are firmly seated and the loose power inlet leads are re-secured to the PSU module case using small cable-ties in the same manner as before the faulty module was removed.



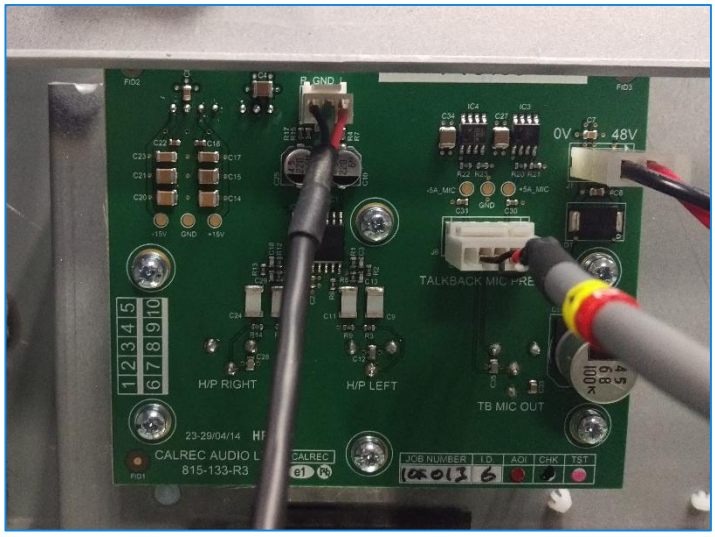
Replacing a Power Distribution board

There are no self-serviceable components on this board.

To remove and replace this circuit board, refer to the guidance given on page 18.

Headphone and Talkback Interface Board

The Headphone and Talkback board (PT6155) is fixed to the rear of the console inside the 8 fader section.



This board provides an interface between XLR inputs/output on the rear interface panel and the built-in headphone output and talkback microphone.

The headphone unbalancing circuitry is located on this board. The Talkback microphone balancing circuitry is located on the RI6147 board (part of the Monitor Panel).

This board can be easily removed and replaced. See page 16.

Replacing the Headphone Output Socket

The headphone output is a ¾ inch socket located in the control surface front trim

This is connected with a cable directly to the headphone unbalancing circuitry on the PT6155 board.

To remove the headphone output cable and socket assembly, follow these steps:

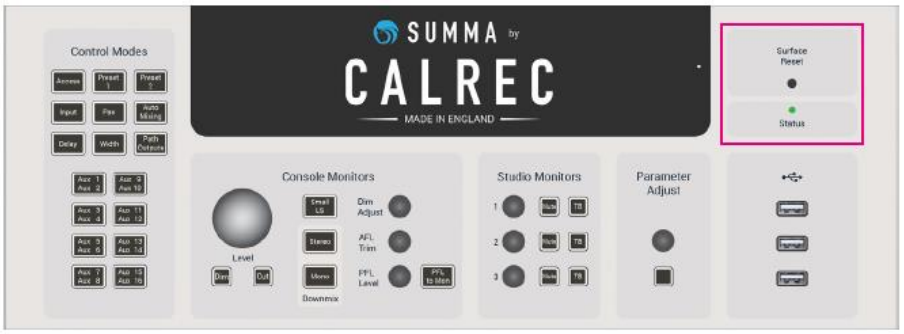
1. Remove the 8 fader and monitor panels from the surface to access the PT6155 board.
2. Disconnect the small 3-pin Molex connector.
3. Open any clips holding the cable in the chassis. You may need to remove an adjacent 12 fader panel to access the full cable run.
4. Loosen the ¾ inch output socket by rotating anti-clockwise the fastening nut on the inside of the chassis.
5. Pass the nut and washer along the full length of the cable until removed.
6. Remove the ¾ inch output socket and cable from the surface by carefully pulling the entire assembly through the hole in the front of the chassis.
7. Install a replacement or repaired cable assembly by passing the connector and cable back through the hole in the front of the chassis.
8. Before clipping the cable in place, slide the washer and nut back over the cable.
9. Clip the cable back in place and plug the connector into the PT6155 board.
10. Fix the ¾ inch socket back into the chassis by tightening the nut.

Software and Firmware

The following surface devices are active and require the correct software and firmware to function correctly:

- 12 fader panel
- 8 fader panel
- Control Cell panel
- Monitor panel
- 12 fader section processor
- 8 fader section processor

Whenever any of these devices is swapped for a replacement or spare, it must be configured with software and firmware versions compatible with the system's current version.

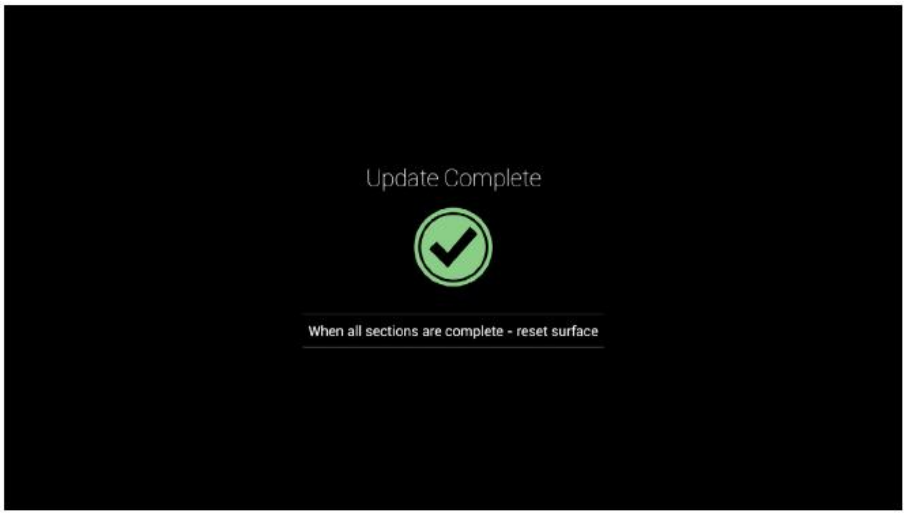


The Summa system makes this process straightforward by storing copies of the correct software and firmware version for each device in the rack-mounted core.

In order to force all surface devices to synchronise their software and firmware versions with the core, perform a 'long reset' by using a non-conductive pointed implement to push and hold down the Surface Reset button (located on the Monitor Panel) until the reset LED lights red, then release.

The Touch and Meter displays will change to display the image to the right.

Once the software synchronisation is complete, the Touch and Meter displays will show 'Update Complete'.



To re-enter normal operation, perform a 'short reset' by pushing and releasing the Surface Reset button once more.