
# Allen and Heath QU24C Desktop Digital Mixer User Manual



Contents



ALLEN&HEATH

## Allen and Heath QU24C Desktop Digital Mixer

### Specifications

- Model: QU-24/QU-24C
- Manufacturer: Allen & Heath Limited
- Address: Kernick Industrial Estate, Penryn, Cornwall, TR10 9LU, UK
- Website: [www.allen-heath.com](http://www.allen-heath.com)

## Product Usage Instructions

### Servicing Precautions

- Service work should be carried out by technically qualified personnel only.
- Do not attempt to work on a linear or switched mode power supply if you are not suitably qualified.
- Do not attempt to repair surface mount circuit assemblies unless you are suitably qualified.
- Ensure a suitably sized worksurface is available, clear of dirt, debris, and obstructions.
- Use correct tools in good working order and adhere to workshop safety requirements.

**Safety Information**
Failure to follow appropriate service and safety procedures may result in personal injury. Read and adhere to safety instructions available with the product.

**Service Information**
Check all necessary information before starting the service job. Refer to the Allen & Heath website for user-facing information such as firmware guides, weights, dimensions, and technical specifications. Contact Allen & Heath Product Support for any other queries.

### FAQ

- **Q: Can I service the product myself?**
  A: Service work should only be carried out by technically qualified personnel to ensure safety and proper handling of the equipment.
- **Q: Where can I find user-facing information?**
  A: User-facing information such as firmware guides, weights, dimensions, and technical spec data sheets can

be found on the Allen & Heath website at **www.allen-heath.com**.

## Notices

### Legal Notice

Allen & Heath retains ownership of all intellectual property in this document. The information and materials presented in this document are provided as an information source only. While every effort has been made to ensure the accuracy and completeness of the information, no guarantee is given, nor responsibility taken by Allen & Heath for errors or omissions in the data.
Allen & Heath is not liable for any loss or damage that may be suffered or incurred in any way as a result of acting on information in this document. The information is provided solely on the basis that readers will be responsible for making their own assessment regarding servicing requirements.

### Servicing precautions General Notes

- Service Personnel: Service work should be carried out by technically qualified personnel only. Mains power is dangerous and can kill. Do not attempt to work on a linear or switched
  mode power supply if you are not suitably qualified to do so. Do not attempt to repair surface mount circuit assemblies unless you are suitably qualified and have the necessary facilities to do so. Replacement circuit assemblies can be ordered.
- Service Facilities: Ensure a suitably sized worksurface is available. Ensure this is clear of dirt, debris and obstructions which may damage the equipment surfaces. Ensure adequate lighting. Use the correct tools for the job and ensure that they are in good working order. Ensure all workshop safety requirements are adhered to.
- Safety Information: Failure to follow the appropriate service and safety procedures may result in personal injury. You must read and adhere to the Safety instructions available in
  the box with the finished goods or available to service centres via your Asset Library login.
- Service information: Check that you have all the information you need before starting the service job. Refer to the Allen & Heath website for user facing information such as firmware guides (including block diagrams), weights and dimensions and Technical Spec Data Sheets at **www.allen-heath.com**. For any other information contact Allen &
  Heath Product Support at **https://support.allen-heath.com**.
- Saving Data: In order to preserve the customer data, you should save any console data onto two separate USB devices if applicable.
- Mains Power: Connect the equipment to mains power only of the type described in the user guide and marked on the rear panel. The power source must provide a good
  ground connection. Ensure you always use an isolation transformer when working on any mains power supply unit.
- Mains Cord and Fuse: Use the correct power cord as supplied with the equipment. Do not remove or tamper with the ground connection in the power cord. Heed the important mains plug wiring instructions in the Safety Instructions sheet. Always replace the equipment mains fuse with the correct type and rating as marked on the equipment panel.
- Static Discharge: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated before commencing servicing.
- Opening the unit: Switch off and remove the mains power cord before opening the equipment. Ensure all power supply covers and safety shields are in place before applying power with the unit open for diagnostic fault

finding.

- Fault finding: In-warranty faults should be corrected by board swapping. If attempting an out of warranty repair at a component level, replace suspected faulty components only with those specified by Allen & Heath. The use of lower grade alternatives may degrade the performance or risk damage to the equipment.
- Closing the unit: Before finishing, check the quality and accuracy of the service work carried out. Remove any dirt or debris as this may cause equipment failure in the future. Ensure all assemblies, harnesses and connectors are correctly aligned, plugged in and cable tied. Ensure that jumper settings and control configurations are correctly set according to the requirements of the customer.
- Testing the unit: Before operating the equipment, read and adhere to the Safety Instructions for the unit. Test that the service work has been successfully carried out.
- Shipping the unit: Use adequate packing such as the original packaging or purpose designed flight case if you need to ship the unit. To avoid injury to yourself or damage to the equipment take care when lifting, moving or carrying the equipment.
- Important: Information provided is believed to be accurate, but research is ongoing, and improvements or changes can be made to the unit without notice. If you have any questions, please contact Product Support at **https://support.allen-heath.com**.
- Battery Handling: Batteries can explode with improper handling. Follow the following precautions if a battery is fitted to this product.
- Battery replacement should be performed by qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PCB by soldering, solder using the connection terminals provided on the battery cells.
- Never solder directly onto the cells. Perform soldering as quickly as possible.
- Never reverse the battery polarity when installing.
- Do not short the batteries.
- Do not attempt to recharge batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

## Parts Identification

### Parts List

### Chassis

| Part Number | Description | Qty |
|---|---|---|
| AA12214 | Base Panel Metalwork | 1 |
| AA12213 | Front Panel Metalwork | 1 |
| AA8952-L | Left Side Trim  Metal | 1 |
| AA8952-R | Right Side Trim – Metal | 1 |
| AA8771-L | Left Side Moulding  Plastic | 1 |
| AA8771-R | Right Side Moulding  Plastic | 1 |
| AK7841 | AC Cable Clamp | 1 |
| AA12862 | Shield EMC/H | 1 |
| AA9315 | Bracket iPad Cradle | 1 |
| AJ2887 | AC push button | 1 |
| AJ9842 | Knob Fader – Chrome Version | 25 |
| AJ9015 | Knob Fader Original Version | 25 |
| AJ9854 | Knob Encoder – Chrome Version | 18 |
| AJ6379 | Knob Encoder  Original Version | 18 |
| AA8928 | Screen surround bezel | 1 |
| 004-397 | LCD TFT screen | 1 |
| AJ10265 | Knob D-Shift  Chrome Version | 1 |
| AJ7305 | Knob D-Shift Original Version | 1 |
| AJ7304 | Knob BK-WH Chrome & Original Version | 1 |
| AK0102 | Feet 21mm | 2 |
| AJ9375 | Light pipe QU Fader | 24 |
| AK5069 | Feet 15mm | 2 |
| AA9401 | Keymat Rubber Qu-24 light | 3 |
| AA8905 | Keymat Rubber Qu-16 Channel | 3 |
| AA8906 | Keymat Rubber Qu-16 Multi | 1 |
| AA9311 | Keymat Rubber Qu-24 Multi | 1 |

| Part Number | Description | Qty |
|---|---|---|
| AB7422 | SCREW 2.7X9 AB TORX BK (for connectors outside & iPad shelf) | 54 |
| AB8172 | NUT POT 9MM BLACK | 20 |
| AB0072 | SCREW M3X6 PAN TORX BK (Inside PCB's) | 47 |
| AB0332 | SCREW M4X8 PAN TORX BK (for side trims) | 9 each side |
| AB9037 | SCREW M3X5 (Secure PSU to panel & Side trims) | 106 |
| AB5564 | SCREW M3X12 PAN TORX BLK (secure Power connector) | 2 |
| AB9036 | PILLAR M3X11 HEX BRASS (pillars on surface PCB) | 4 |
| AB0102 | M3 nylock nuts (for AB9036 pillars) | 1 |
| AB2921 | SCREW M4X8 BTN-HEAD | 1 |

**Cables**

| Part Number | Description | Qty |
|---|---|---|
| AL9391 | IDC WFM PSU To Audio | 1 |
| AL8992 | IDC WFM CPU TO FADER | 1 |
| AL9392 | WFMA Power 12v From DC-DC to Fader&CPU | 1 |
| AL9383 | WFMA Qu-24 Mains Inlet - PSU | 1 |
| AL9384 | WFMA Qu-24 PSU – DC-DC | 1 |
| AL9393 | WFMA Qu-24 Mains Inlet – DC-DC | |
| AL8995 | IDC WFM AUDIO to H/P | 1 |
| AH9389 | USB Cable Click-M 0.64m | 1 |
| AH9388 | USB Cable 'Click-M' 0,39m | 1 |
| AH9386 | Cable Cat5E 0.665M From Ethercon DSnake | 1 |
| AH9387 | Cable Cat5E 0.505M From Ethernet Network | 1 |
| AK9238 | From CPU to TFT | 1 |

**PCB**

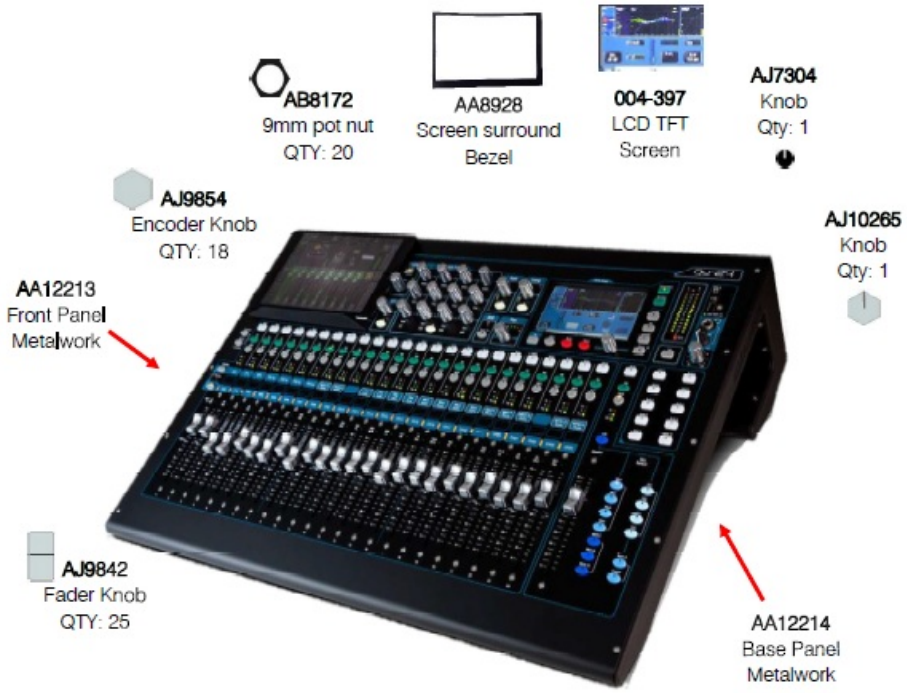
| Part Number | PCB | Description | Qty |
|---|---|---|---|
| 004-1335 | AM11257 | Qu-24 PSU (Previously AM9374 – **004-496**) | 1 |
| 004-486 | AG9286 | Qu-24 DC-DC | 1 |
| 004-1660 | AG9293 | Qu-24 CPU V2 (Previously 004-481) | 1 |
| 004-485 | AG9269 | Qu-24 Connector | 1 |
| 004-1343 | AG12558 | Qu-24 Audio PCB (Previously AG9267 - **004-484)** | 1 |
| 004-392 | AG8892 | Qu-16,24 & 32 Headphone + USB | 1 |
| 004-482 | AG9326 | Qu-24 Surface | 1 |
| 004-1742-1 | AG9292 | Qu-24 Fader V3 (Previously **004-483 and 004-1272 V2**) | 1 |
| AI8649-2 | | Qu-24 Motor Fader | 25 |
| 004-487 | AG9294 | Qu-24 Mains Inlet | 1 |
| 004-488 | AG9334 | Qu-24 Digital I/O | 1 |

*Read the 'Important Information' at the servicing section before fitting Audio Input/Output Board

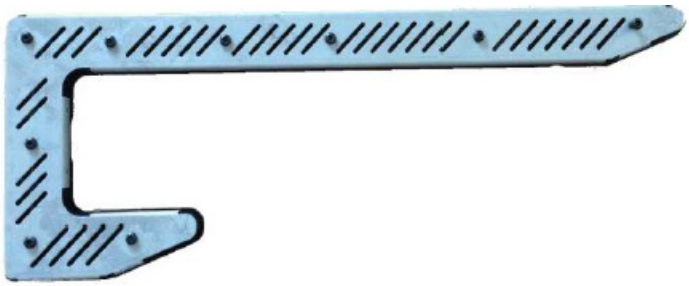
**Accessories**

| Part Number | Description |
|---|---|
| LEDLamp | LED Lamp is a variable brightness 18" gooseneck lamp |
| AP9458 | Qu-24 Dust Cover |

## Chrome Version

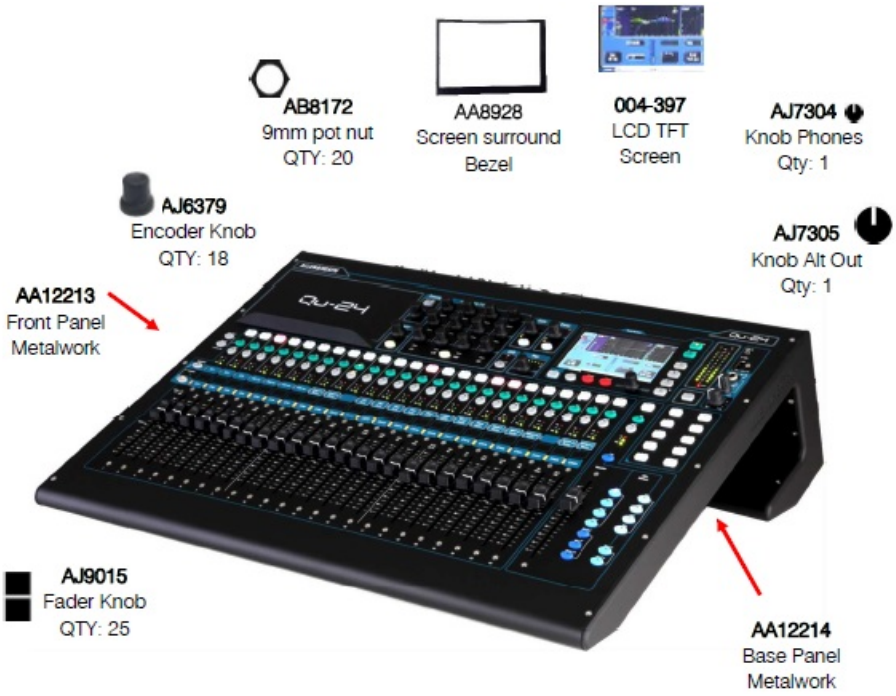



- AA8952-L Left Side Trim — Metal
- AA8952-R Right Side Trim — Metal



- AA8771-L Left Side Moulding Plastic
- AA8771-R Right Side Moulding — Plastic

## Original Version




- AA8952-L Left Side Trim — Metal
- AA8952-R Right Side Trim — Metal

- AA8771-L Left Side Moulding Plastic
- AA8771-R Right Side Moulding — Plastic

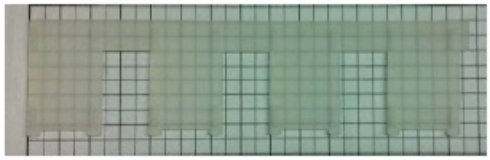

**AK0102** Feet
21mm QTY: 2

**AB6571**
AC Cable Clamp

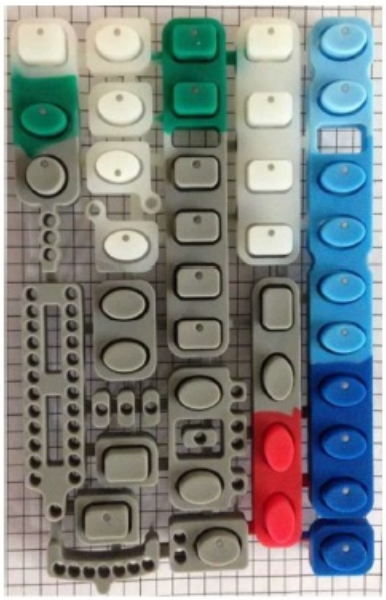
**AJ2887**
AC Push Button

**AK5069** Feet
15mm QTY: 2

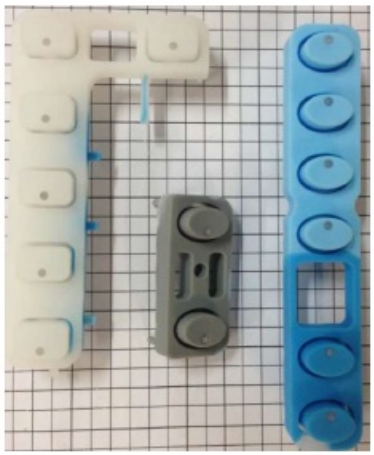
**AA9401** Keymat Qu-24 Light



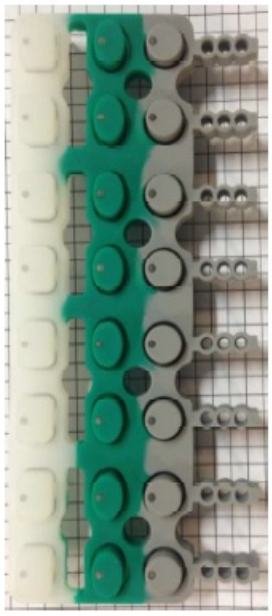
**AA8906** Keymat Multi



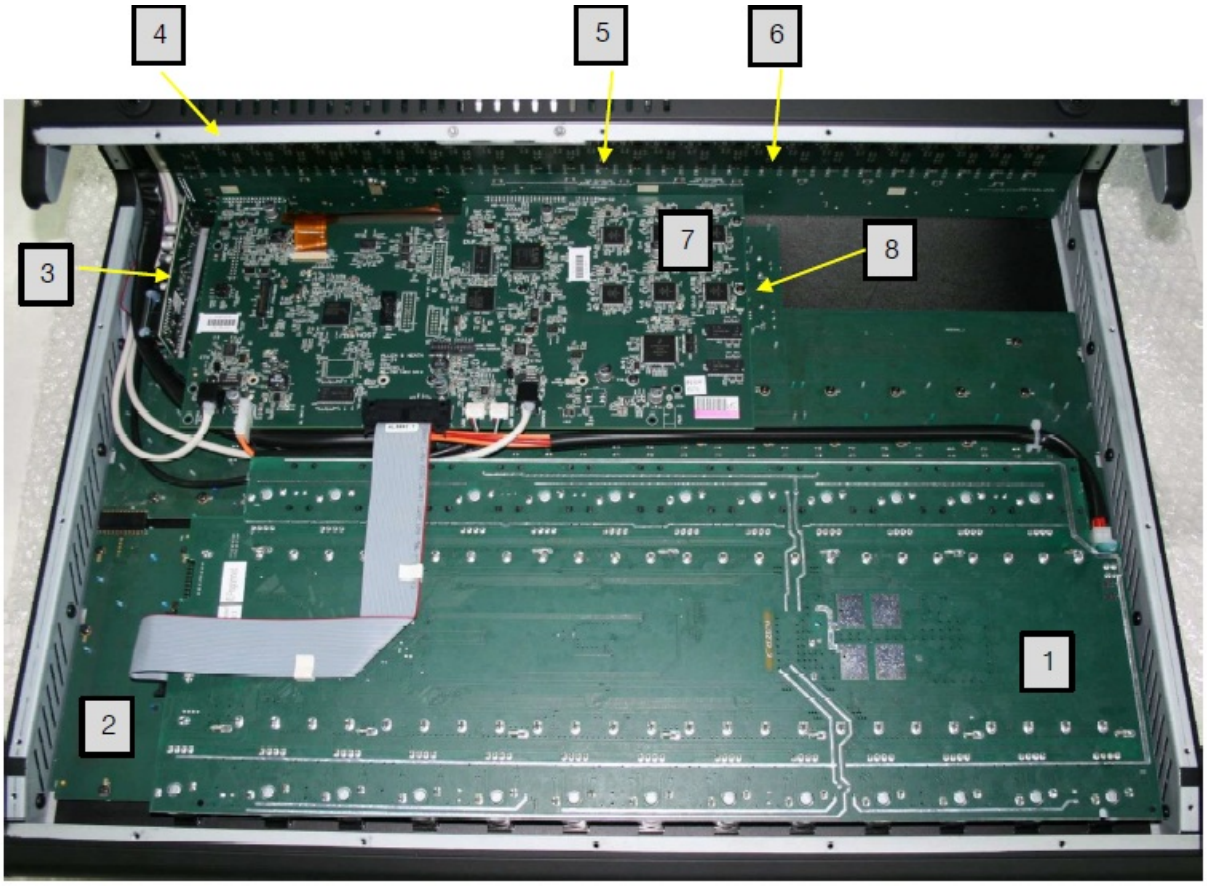
**AA9311** Keymat Qu-24 Multi



**AA8905** Keymat Channel

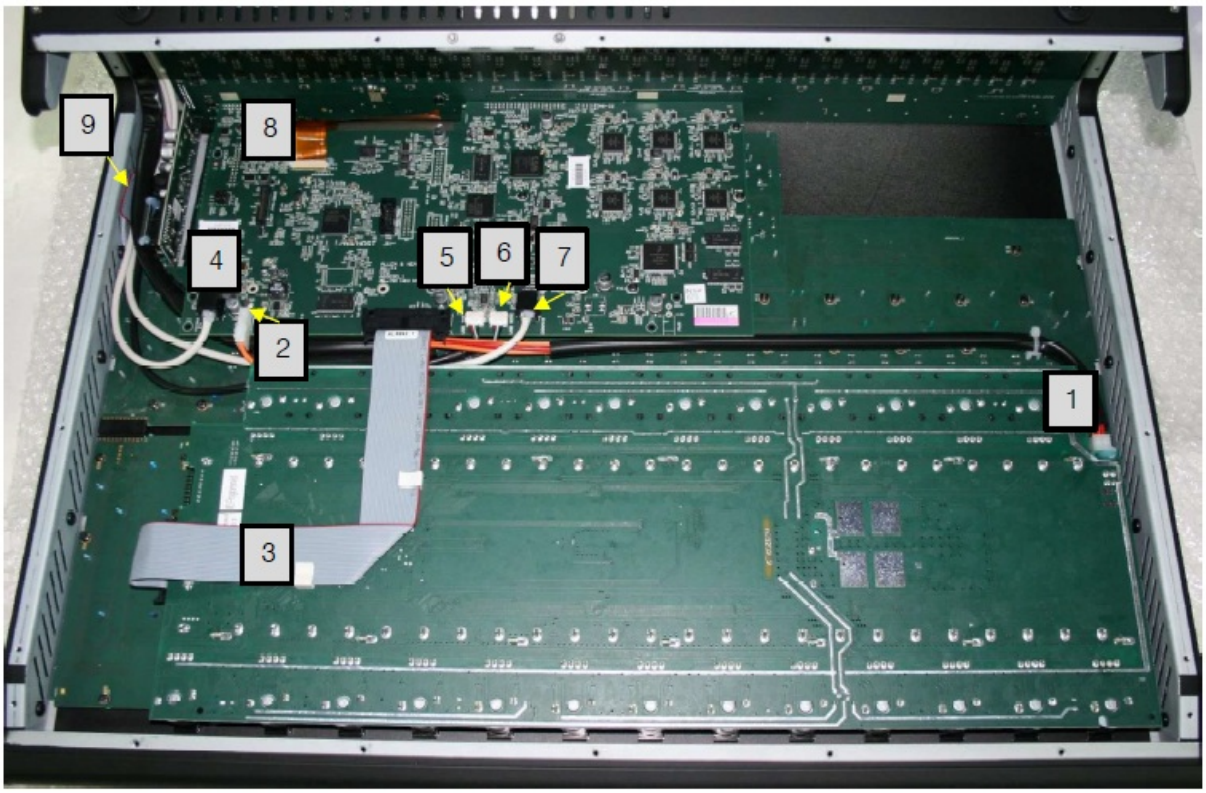


**Circuit Board Layout**




1. Fader V2 PCB AG9292 004-1742-1
2. Surface PCB AG9326 004-482
3. Headphones + USB PCB AG8892 004-392
4. Digital I/O AG9334 004-488
5. Connector PCB AG9269 004-485
6. Audio PCB AG12558 004-1343
7. CPU PCB AG9293 004-1660
8. LCD TFT Screen 004-397

**Wire Layout**



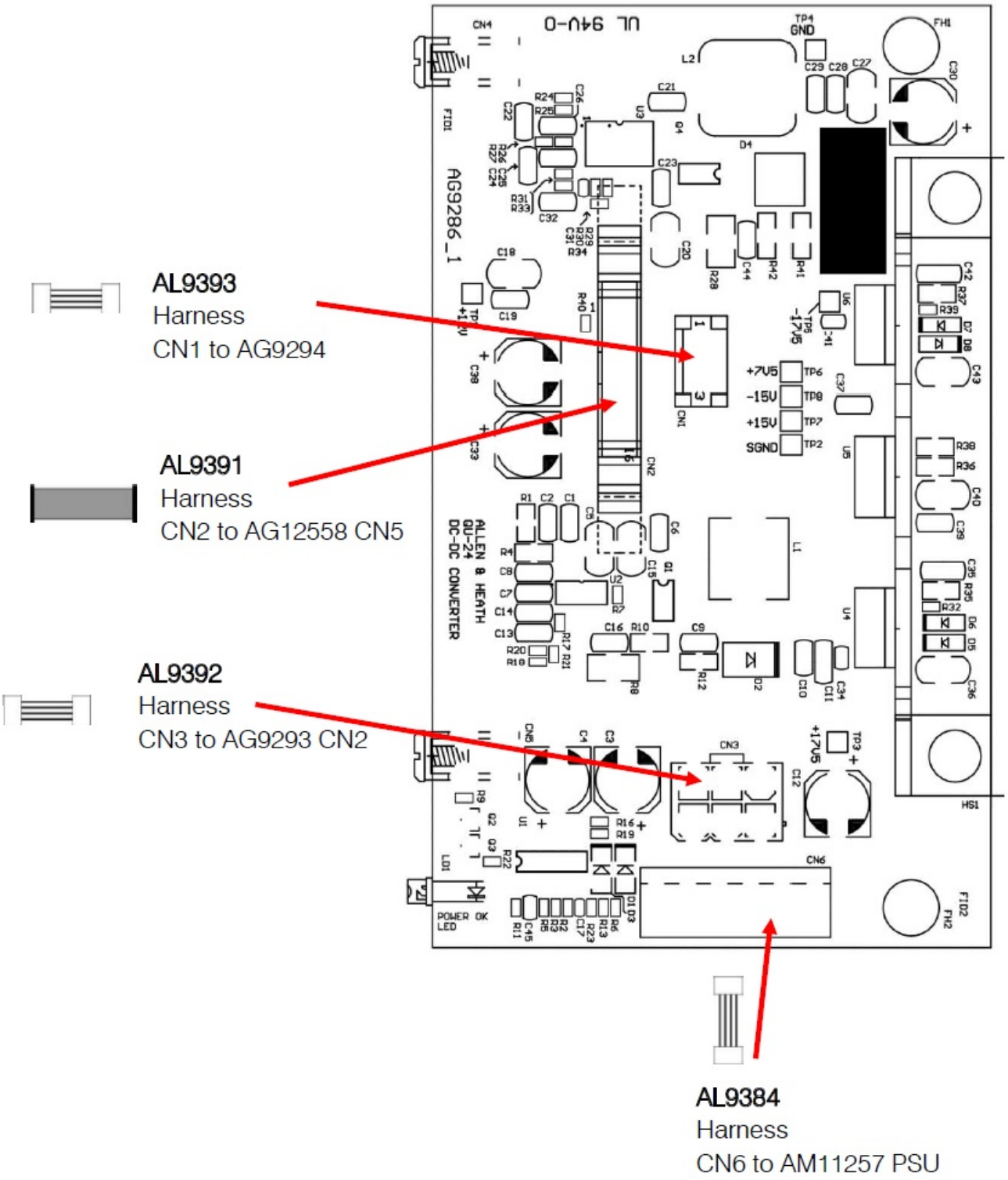

1. AL9392 – Power 12v from DC-DC to Fader Motors (Y-lead coming from DC-DC PCB)
2. AL9392 – Power 12v from DC-DC to CPU (Y-lead cable coming from DC-DC PCB)
3. AL8992 – From CPU to Fader
4. AH9387 – Control Ethernet (Network)(Shorter RJ45)
5. AH9388 – USB Top (From Headphone PCBA)
6. AH9389 – USB Rear (From DIGI I/O PCBA)
7. AH9386 – DSnake (Longer RJ45)
8. AK9238 TFT
9. AL8995 – IDC WFM AUDIO to H/P

*Please refer to page 24 for a new route implementation of Harness AL9392

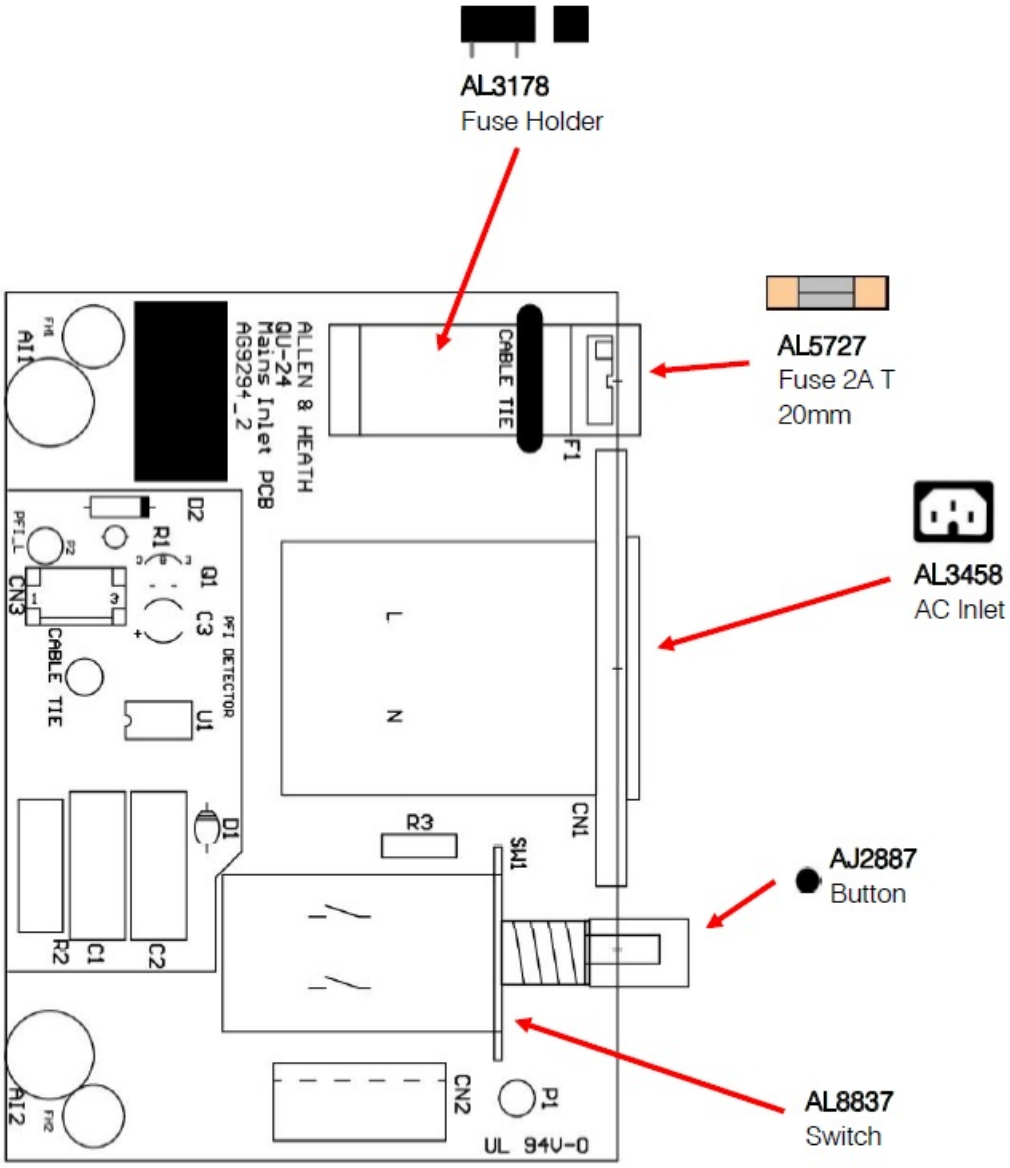
### Circuit Board Identification

| | |
|---|---|
| PCB | AM11257 (Previously AM9374) |
| Part Number | 004-1335 (Previously 004-496) |
| Description | Qu-24 PSU |

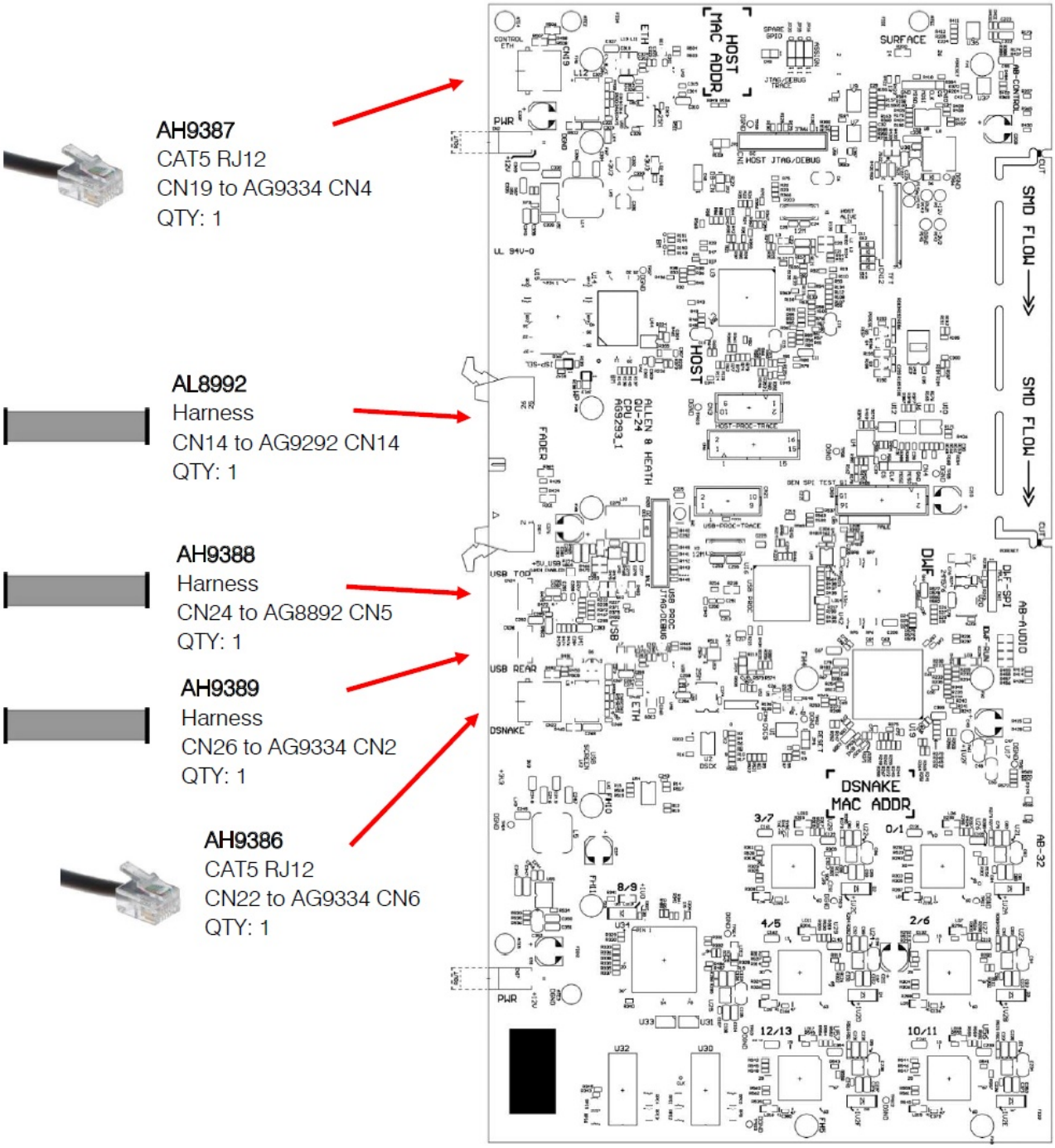

| | |
|---|---|
| PCB | AG9286 |
| Part Number | 004-486 |
| Description | Qu-24 DC-DC Converter |




| | |
|---|---|
| PCB | AG9294 |
| Part Number | 004-487 |
| Description | Qu-24 Main Inlet |




| | |
|---|---|
| PCB | AG9293 |
| Part Number | 004-1660 (Previously 004-481) |
| Description | Qu-24 CPU |




| | |
|---|---|
| PCB | AG9269 |
| Part Number | 004-485 |
| Description | Qu-24 Connector |

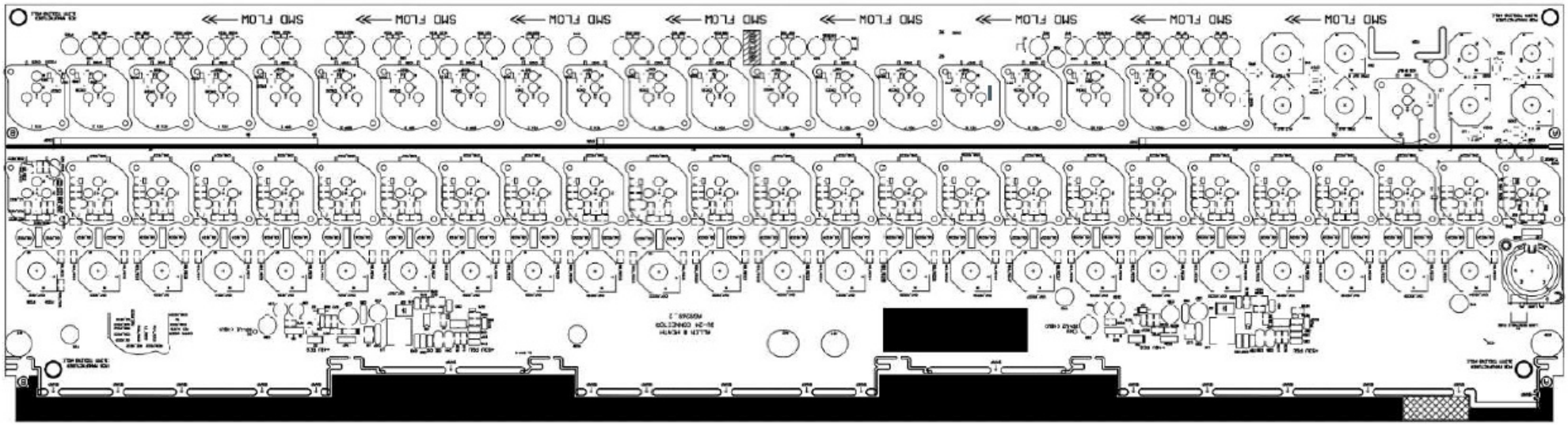
**AL9019**
XLR Female 4 pin
QTY: 1

**AL2410**
XLR Female
QTY: 25

**AL2411**
XLR Male
QTY: 21


**AL9137**
Jack switched (ST1 R & ST2 R)
QTY: 2

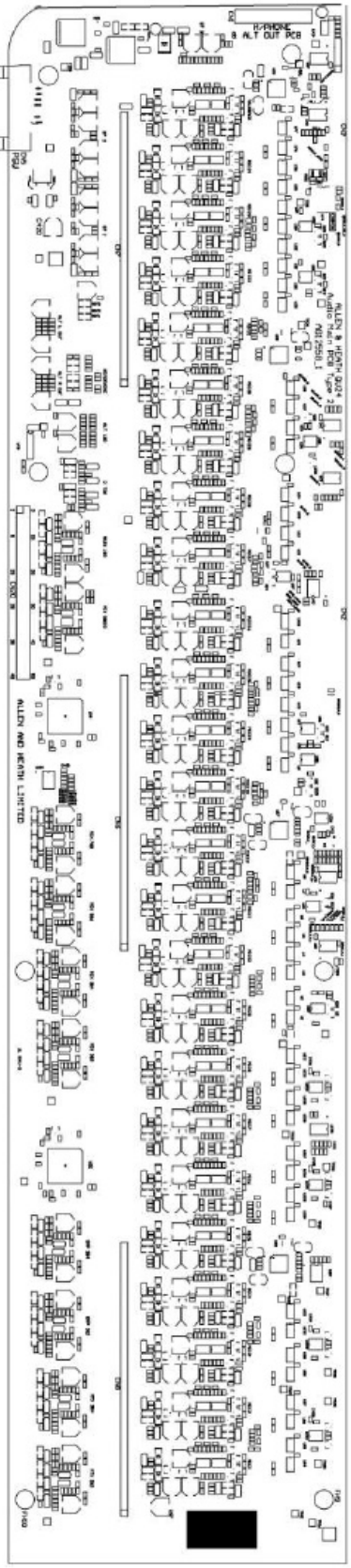

**AL9136**
Jack un-switched
QTY: 30


SMD FLOW

| | |
|---|---|
| PCB | AG12558 Previously AG9267 |
| Part Number | 004-1343 Previously 004-484 |
| Description | Qu-24 Audio |
| *Read the servicing section before fitting this part | |

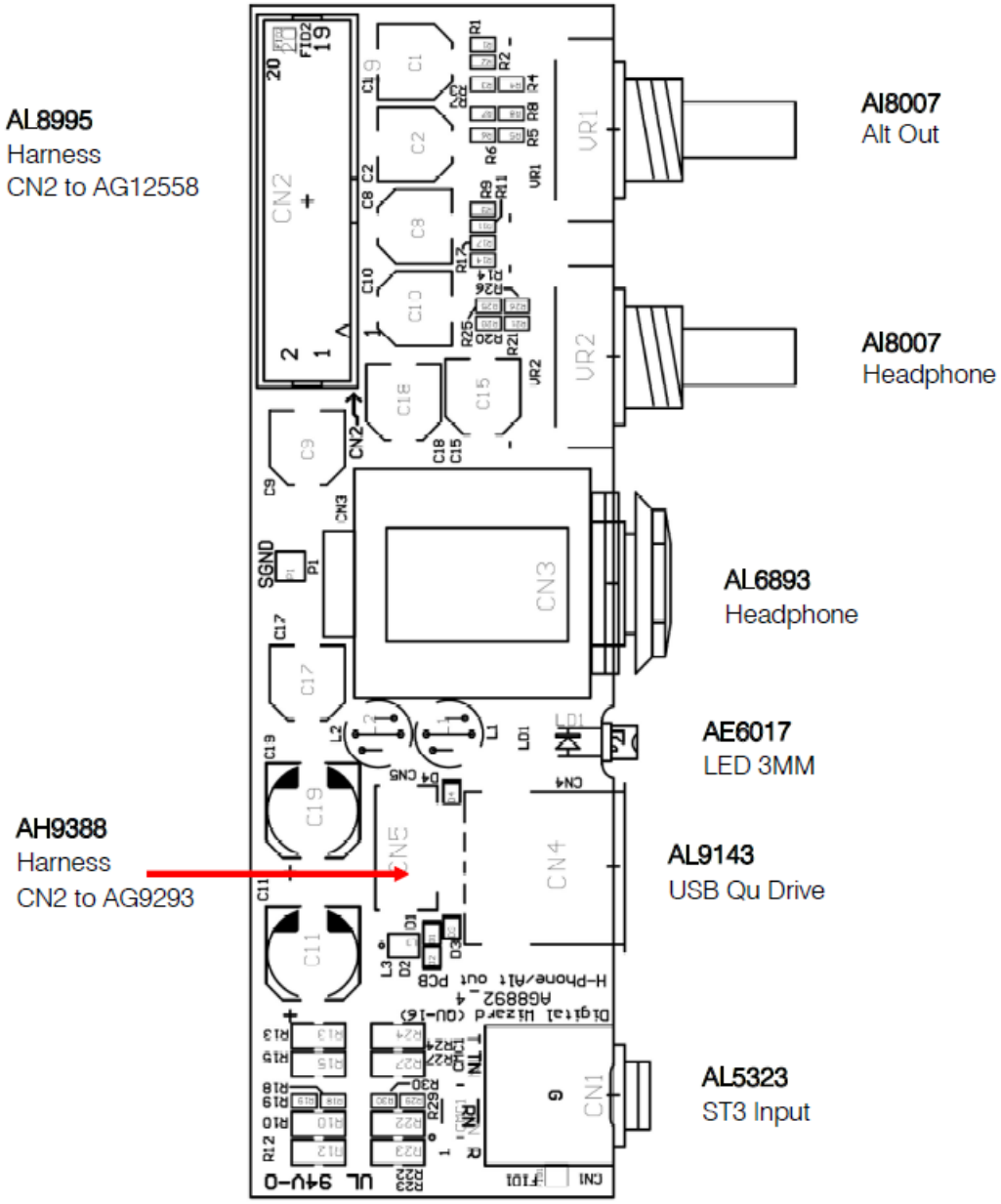
**AL8995**
Harness
CN1 to AG8892

**AL9391**
Harness
CN5 to AG9286

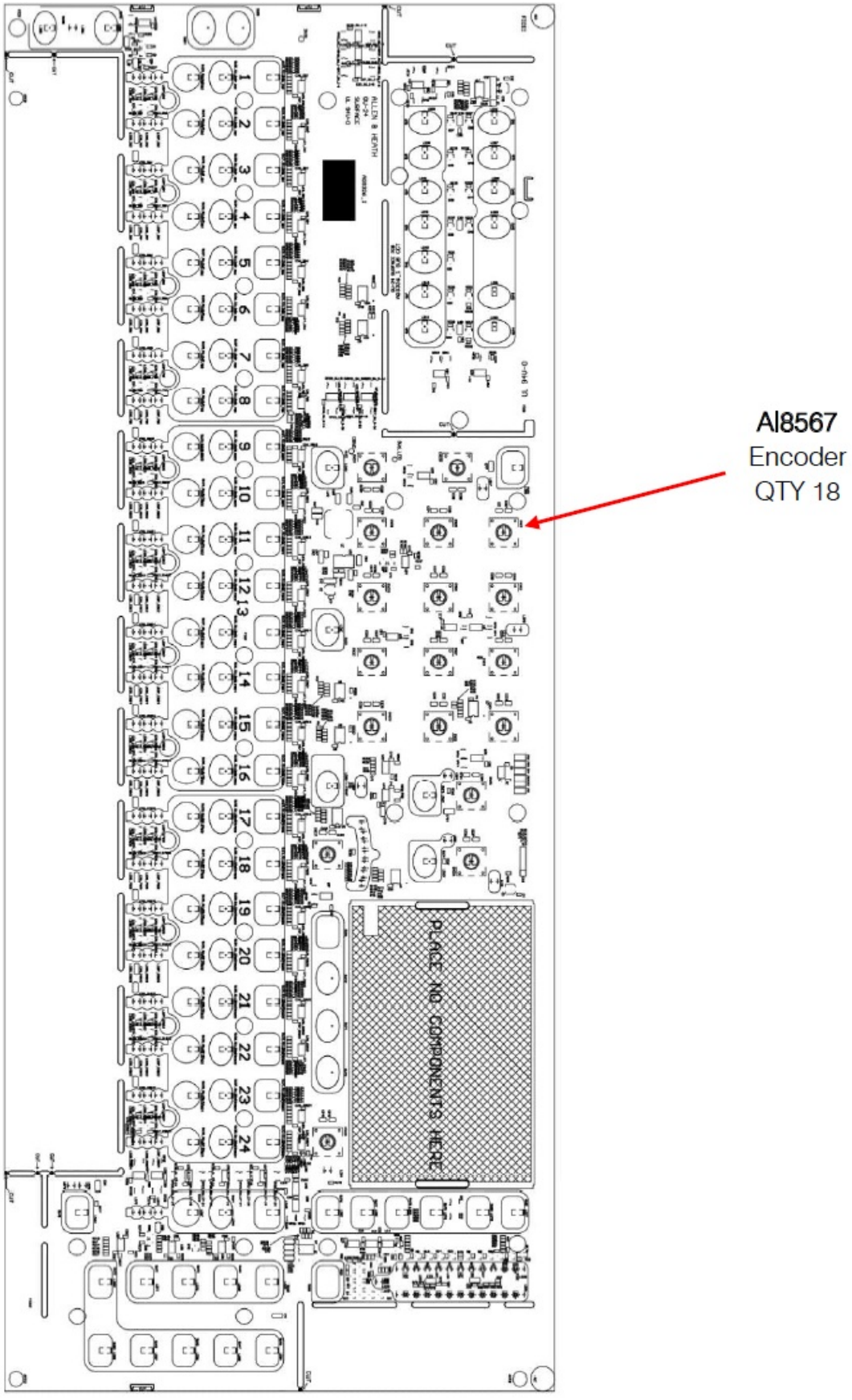


**AL8920**
Box Header 2.54mm
CN3 (on rear) to AG9293

| | |
|---|---|
| PCB | AG8892 |
| Part Number | 004-392 |
| Description | QU-24 Headphone/USB |



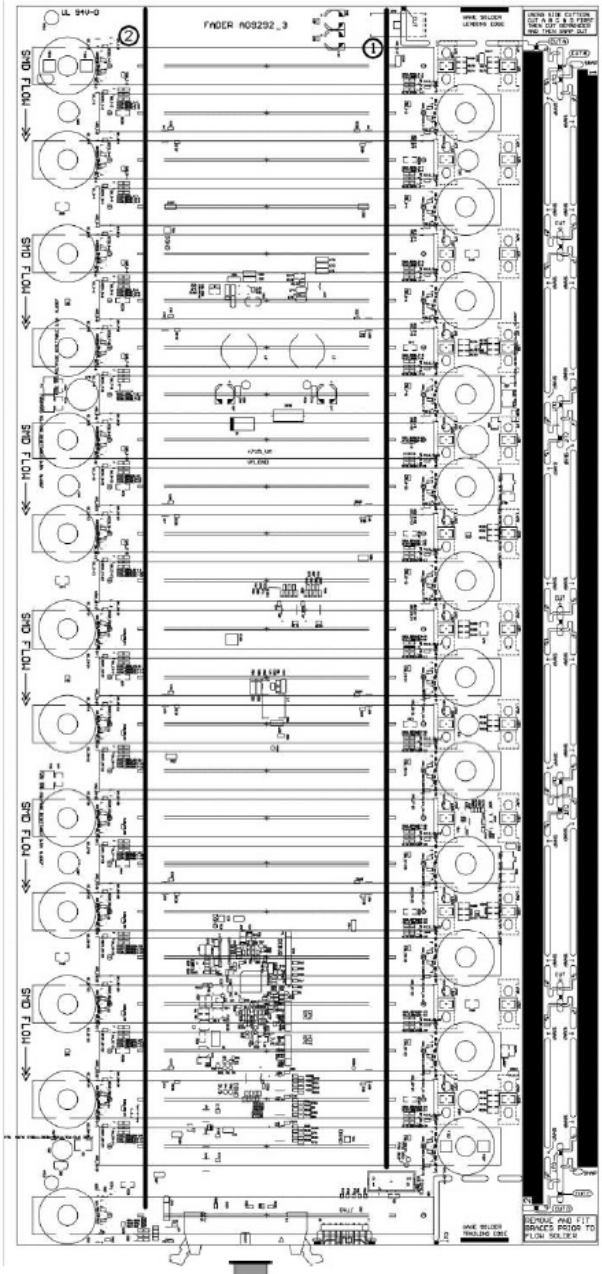

| | |
|---|---|
| PCB | AG9326 |
| Part Number | 004-482 |
| Description | Qu-24 surface |




| | |
|---|---|
| PCB | AG9292 |
| Part Number | 004-1742-1 (Previously 004-483 and 004-1272) |
| Description | Qu-24 Fader V3 |

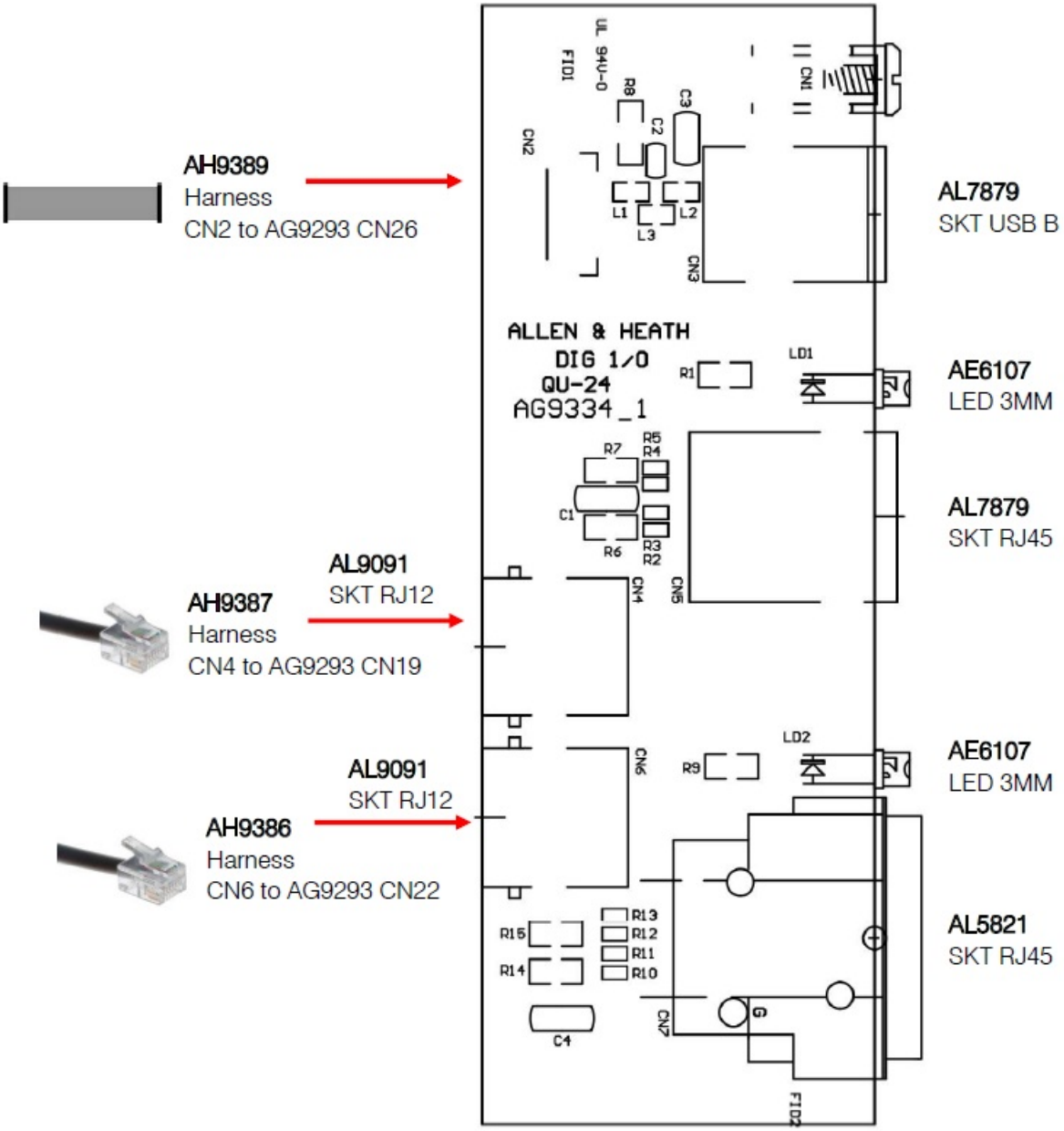
**AI8649-2**
Motor Fader
QTY: 25

**AL9392**
Harness DC Power
CN2 to AG9286 CN3



**AL8992**
Harness DC Power
CN14 to AG9293 CN14

| | |
|---|---|
| PCB | AG9334 |
| Part Number | 044-488 |
| Description | Qu-24 Digital I/O |




**Servicing Information**

**Hot Melt Glue**

Some connectors and wireforms/harnesses may be held in place with hot melt glue. You will need 99% Isopropyl Alcohol (propan-2-ol) to remove it. Follow these steps:

- Apply a small amount of 99% Isopropyl Alcohol to a swab and apply it to the edges of the glue
- Leave it for 20 seconds and then pick off the glue by hand or by using a tool that is of low risk to cause damage. Do not use excessive force. If the glue does not come off re-apply the Isopropyl Alcohol.
- Once the glue is removed from the connector release the wireform.
- Once the service/repair is complete re-apply the hot melt glue to secure the wireform in place.

**Important Information**

- RECN 4709 Audio Boards Type 2
- RECN 3111 ST3 noise while USB connected

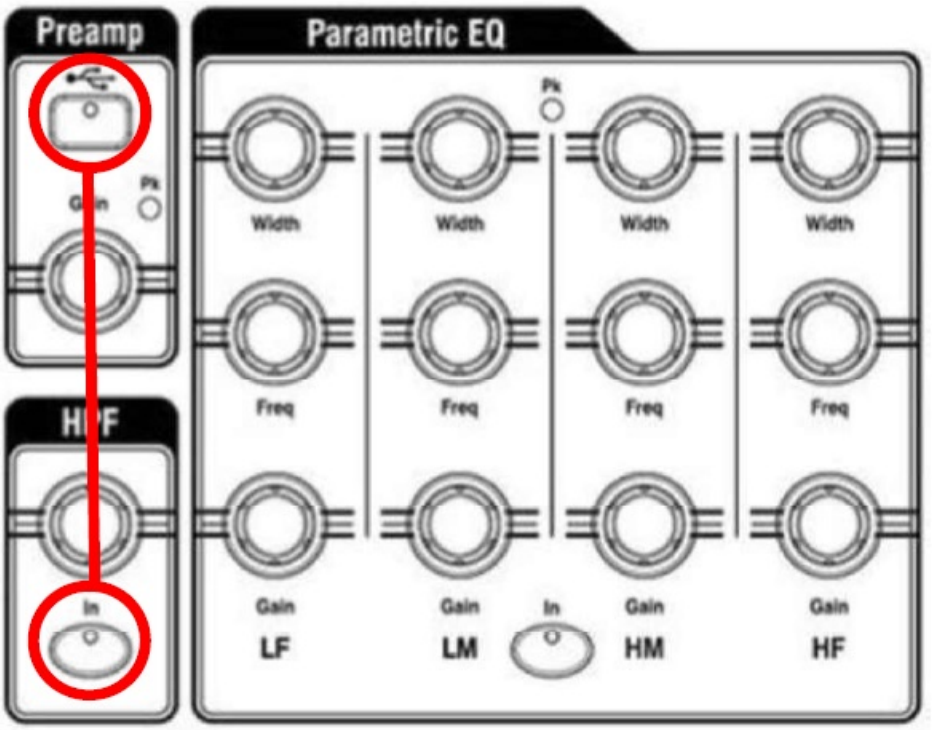
For further details look below or refer to the resource space: Allen & Heath Asset Library

**Backup show**
In order to preserve customer data, the settings should be stored and copied to two separate storage devices before attempting any resets or servicing.

**After replacing PCB parts Firmware Update must be done.**
After replacement of PCBs inside the unit the firmware will need to be updated to ensure that the correct firmware is installed in all parts of the unit. An updated unit will automatically update the firmware on connected I/O expanders when they are connected.

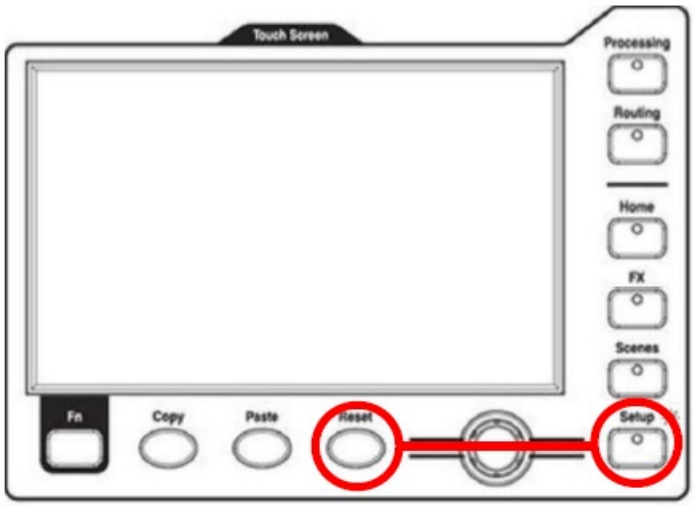
**Updating firmware**
Firmware is available from the Allen & Heath website under the Software tab and is installed via a USB drive on the desk. Go to Setup > Utility > Firmware to install new firmware and view the current firmware version. You will need to format the USB drive under the Status/Format tab before placing the firmware on the drive using a computer.

**Forced Reinstall of Firmware**



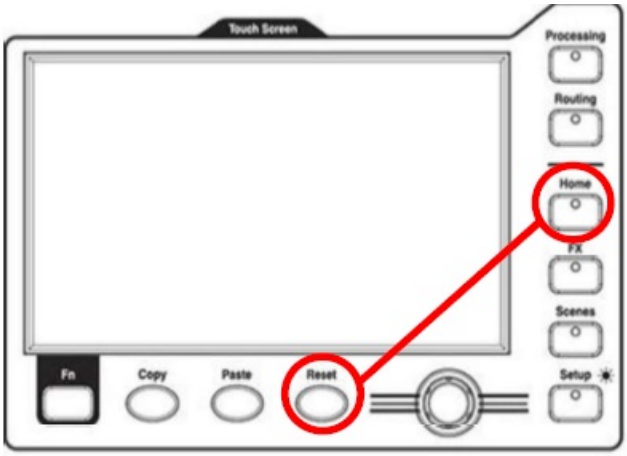

- Insert a formatted USB Drive with firmware loaded onto it into the USB A port with the unit powered off.
- Press and hold the above keys whilst powering on the unit.
- A hard reset should be performed after a forced reinstall of firmware.

**Hard Reset**




Press and hold the above keys whilst powering on the unit

**User Settings Reset**
This procedure resets settings for all users. (Settings to be reset include Scenes selection and Passwords) Kindly be advised that this information is confidential and should be treated with discretion, as it could enable non admin users to gain admin access. Avoid publishing this information online and share with users only in extreme cases.




Press and hold the above keys (Reset & Home) whilst powering on the unit

**Calibrations**
Go to Setup Utility Calibration
Use the routines here to calibrate the touch accuracy of the Touch Screen and positional accuracy of the Motor Faders. Follow the on-screen instructions

**RECN4709**
Qu-24 Audio Main board is being replaced by ‘Type 2’ boards with new PCB and assembly part references.
Audio Main Board
Previous ‘Type 1’ assembly and PCB reference : 004-484X (AG9267)
New ‘Type 2’ assembly and PCB reference : 004-1343X (AG12558)

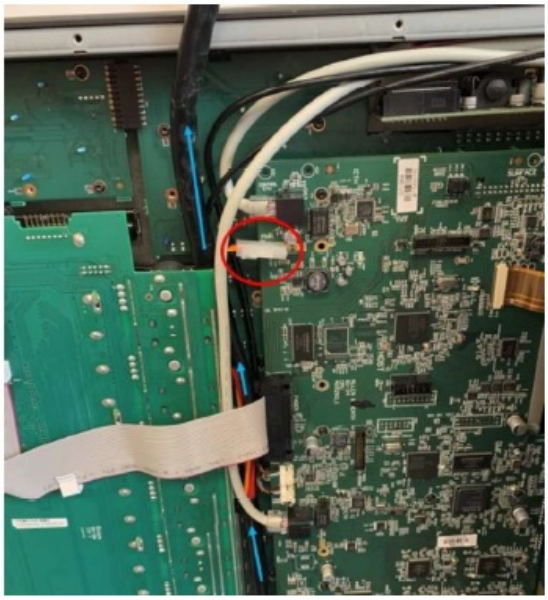
**Important information**
‘Type 2′ boards will be fitted to all newly produced Qu-24 units.
Type 2’ assembly references should be used when ordering spares.
‘Type 2’ boards are backwards compatible for use in older units.
For more information refer to RECN4709

**RECN3111**
Qu-16/Qu-24 mixers fitted with Headphone PCB AG8892_3 or earlier may experience noise when a USB device is connected to the Qu-Drive socket and ST3 is configured to LOCAL with NO cable connected to the 3.5mm input socket. Mixers fitted with AG8892_4 or later will not experience this problem. Should this modification be required for previous boards, instructions can be found on resource space Please note that this is not a compulsory update and should be performed at your discretion.
For more information refer to RECN3111

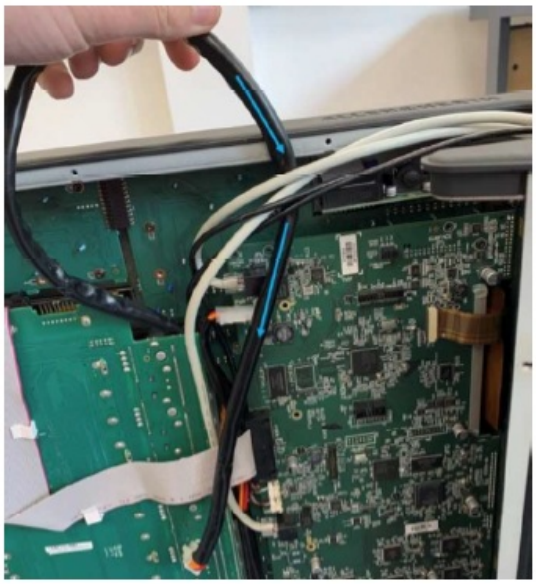
## AL9392 WFMA 12v power harness re-route

A new route for WFMA 12V PWR Harness has been implemented to be distanced from the Headphones/Alt out PCB, reducing noise injection into Audio, affecting Alt Out residual noise performance. If a Qu-24 unit is in service, kindly proceed with this new route procedure as part of the service.

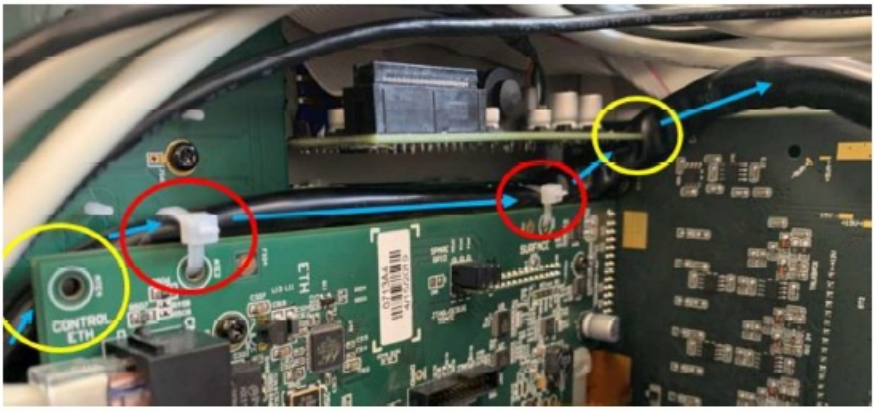
1



2



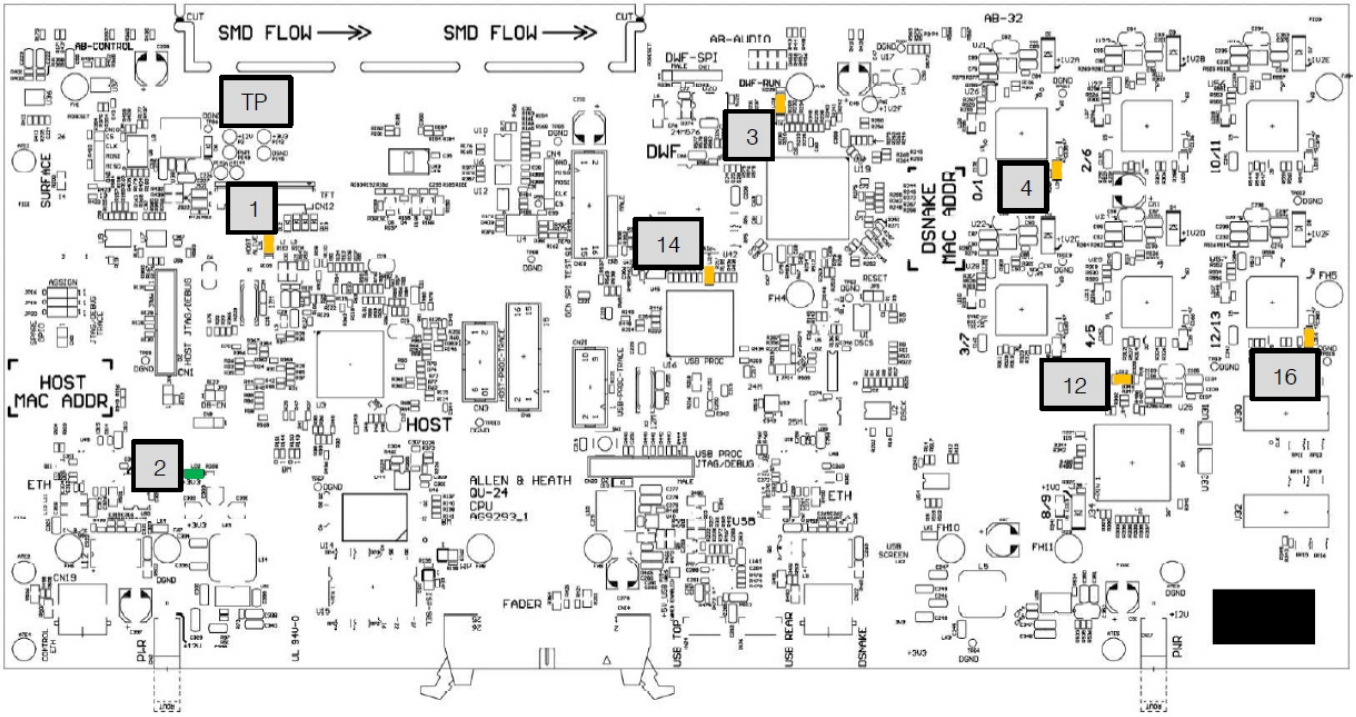
3



4

**Diagnostics**
A number of LED's are placed on both the inside and outside of the console to help monitor activity and power. The blue LED on the rear of the unit should be on solid. If this is off, there will be an issue relating to power. The yellow LNK LED's by the Network and Snake ports should flash when a connection is made.

## CPU LEDS

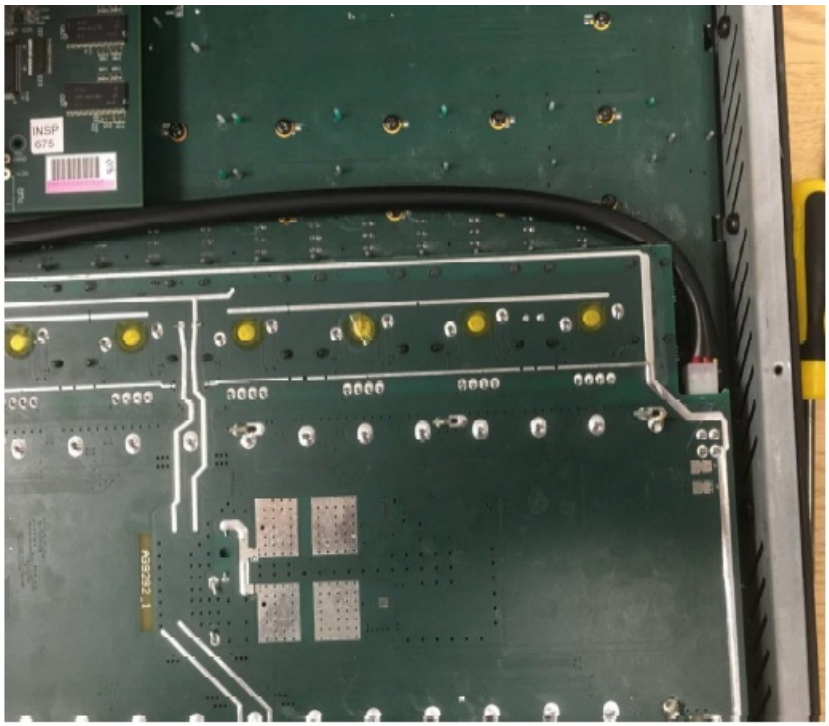



- Test Points for +3v3 rail, +8v rail and PWM for TFT screen.

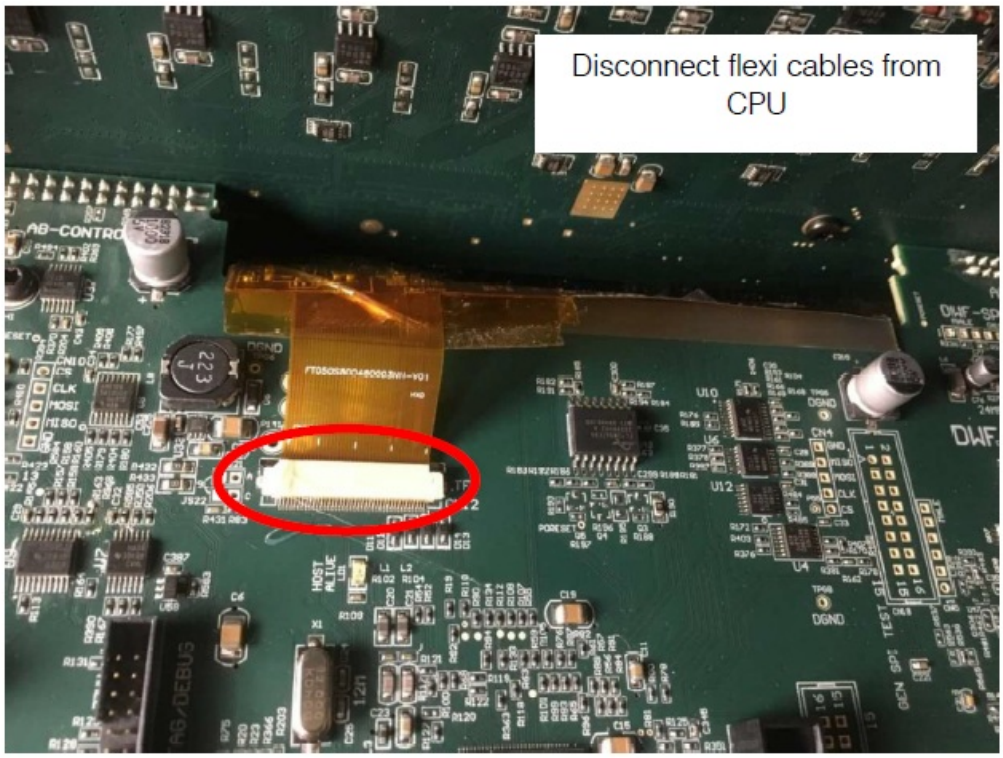
- LD1 Host Alive, Yellow LED with heartbeat pattern
- LD2 +3v3 Power Good, Green LED on solid
- LD3 FPGA Programmed, Yellow LED with heartbeat pattern
- LD4 DSP Programmed (U26 & U27), Yellow LED on solid
- LD12 DSP FX Programmed (U34), Yellow LED on solid
- LD14 USB Processor Alive, Yellow LED with heartbeat pattern
- LD16 DSP Programmed (U28 & U29), Yellow LED on solid

### Disassembly Procedure

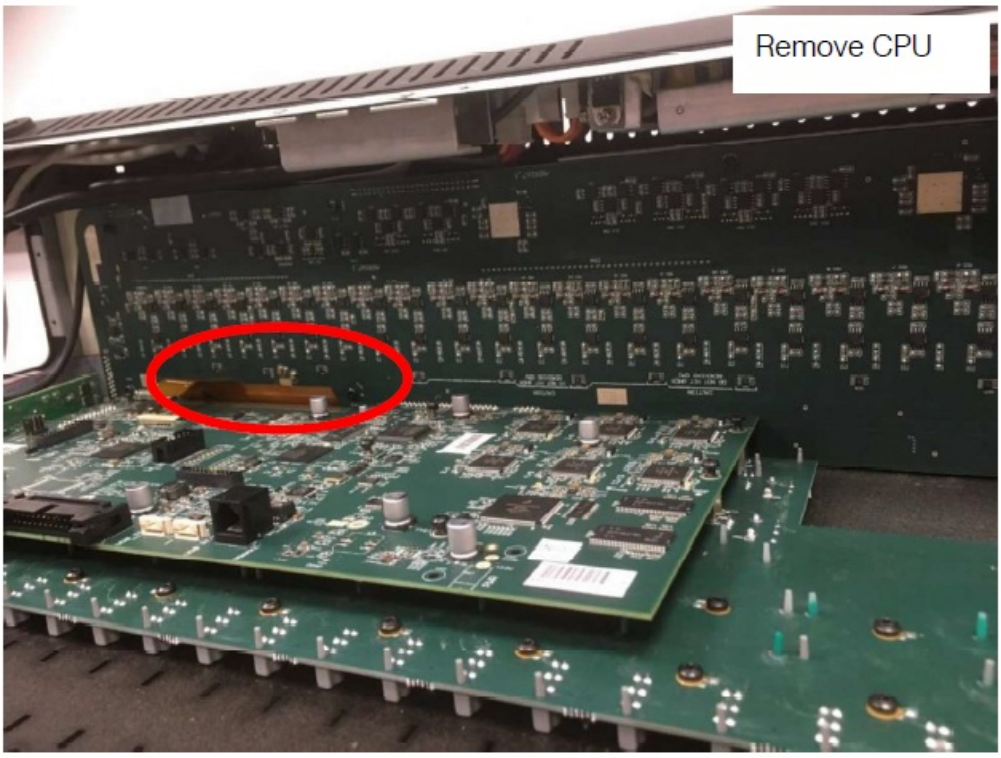

**12v Fader Motor Supply**



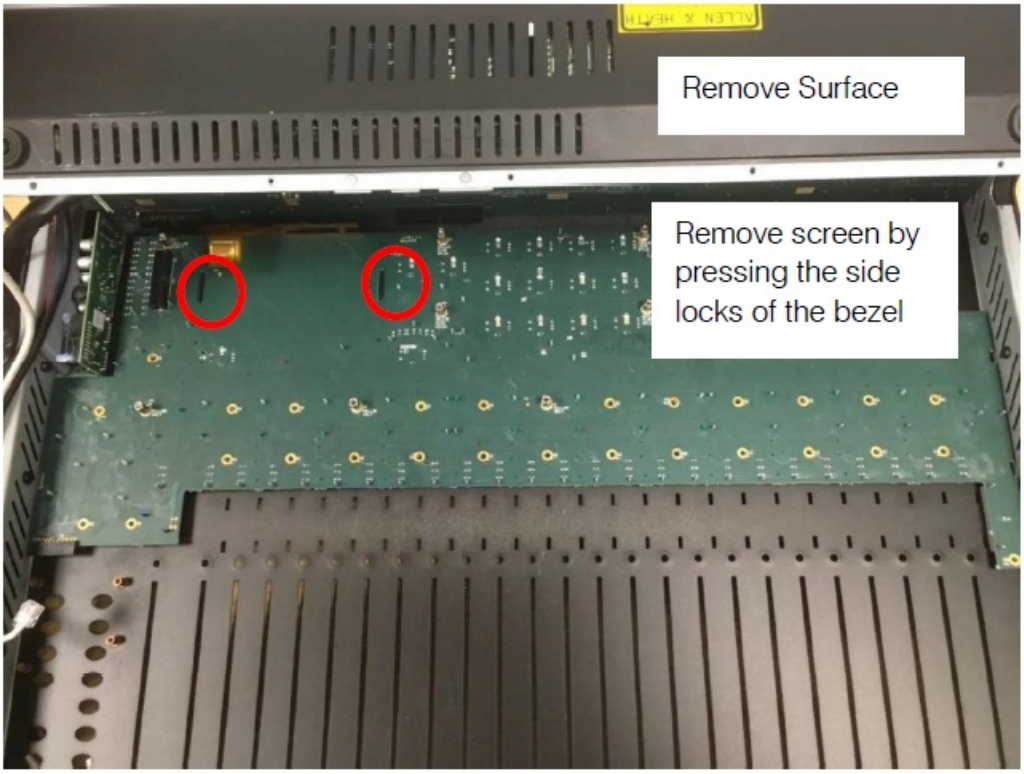
## Changing the Screen

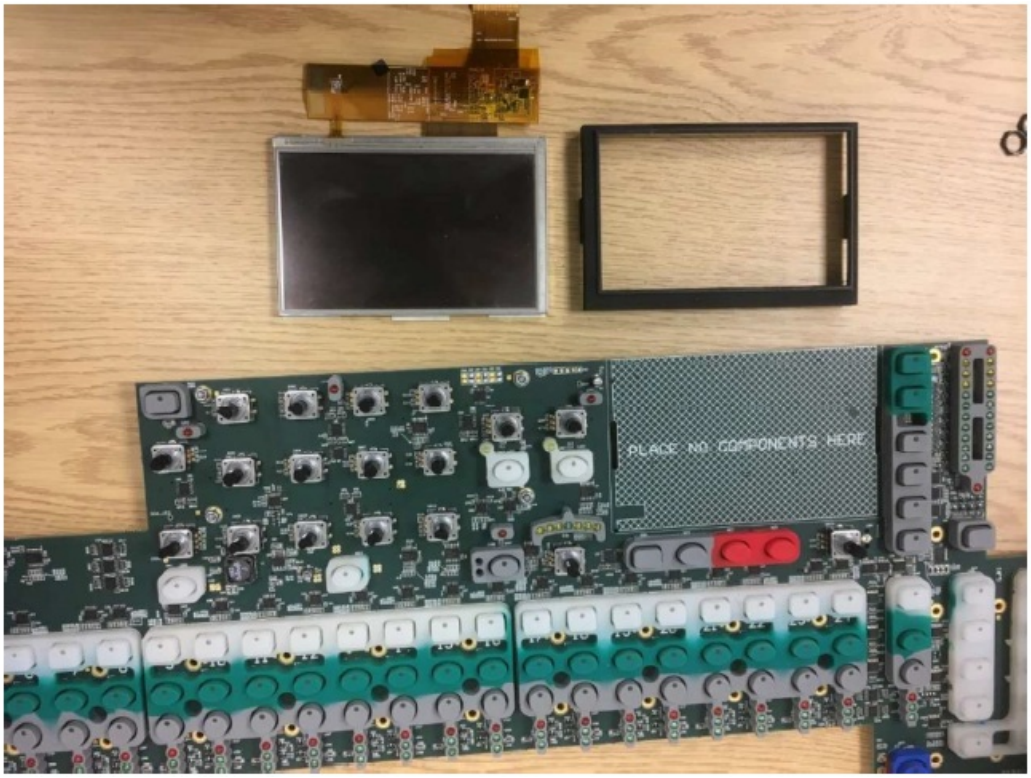



Hot Melt Glue must be carefully removed and re-applied at the connectors during this procedure. Refer to the Hot Melt Glue section in page 21 for further details.



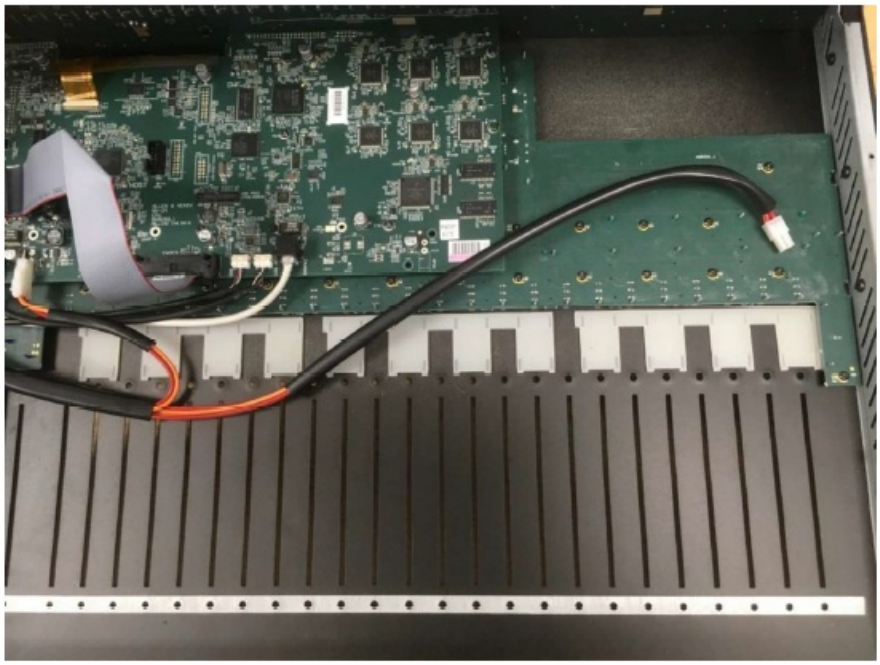

**Remove Surface PCB**

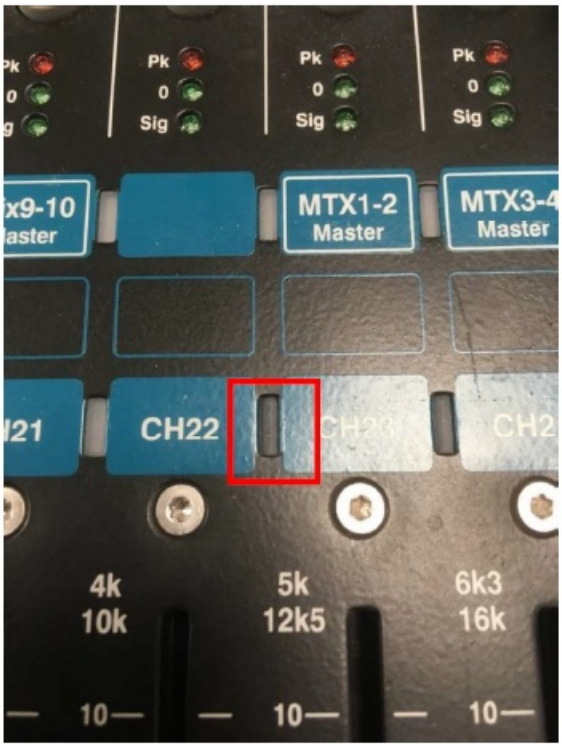




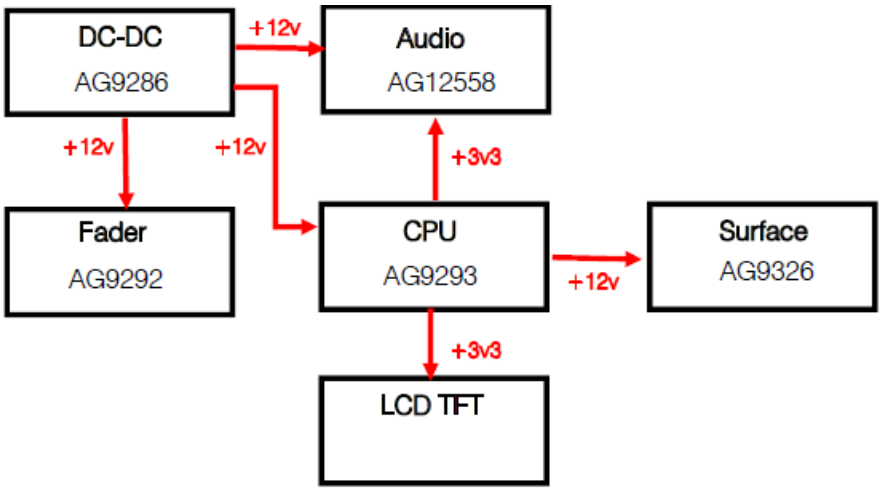

For more details on how to replace screen, follow the “QU-16/24 screen replacement instructions” located at the resource space: Allen & Heath Asset Librarv

### Channel LEDs






## Power Distribution




## CPU

### From CPU CN12 to TFT screen

- Pin 37 = +3v3
- Pin 39 = Anode (+12v)
- Pin 40 = Cathode

### From CPU CN16 to Audio Board CN3

- Pins 1,2&3 = +3v3
- Pin 4 = PSU PFI L
- Pin 6 = PSU PG L
- Pin 9 = +3v3

- Pin 10 = AB Mute L
- Pin 23 = +3v3

**From CPU CN13 to Surface Board CN2**

- Pins 1,2,3&4 = +12v
- Pins 20&22 = +3v3

**From CPU CN14 to Fader Board CN14**

- Pins 7&9 = +3v3

**FADER BOARD**

- From Fader board CN14 to CPU CN14 Pins 7&23 = +3v3

**DC-DC**

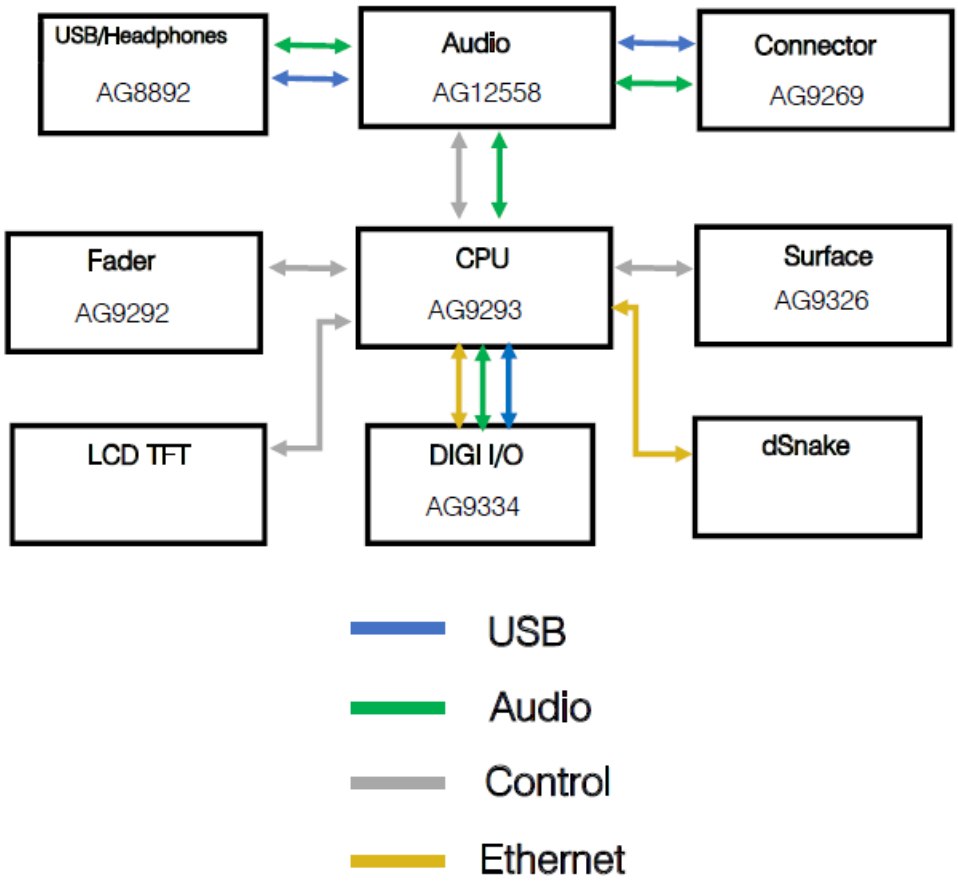
**From DC-DC CN2 to AUDIO PCB CN5**

- Pin 1 = PSU PG L
- Pin 2 = PSU PFL L (+3v3)
- Pin 3 = +3v3
- Pin 4 = +7v5
- Pins 5&6 = +12v
- Pins 13&14 = -15v
- Pins 15&16 = +15v

**From DC-DC CN3 to Fader Motors CN2 & CPU CN2**

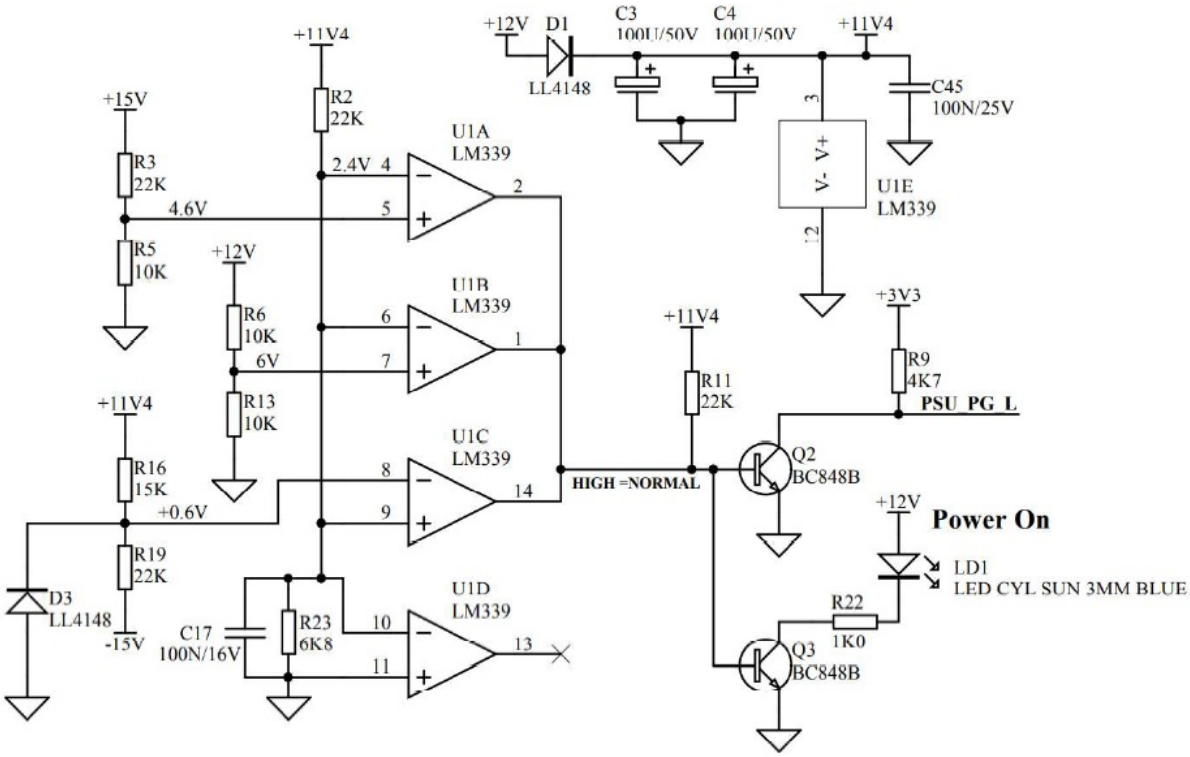
- Pins 2, 4 & 6 = +12v
- Pins 1, 3 & 5 = Earth

## Routing Overview




**Power Good Circuit**

**POWER GOOD CIRCUIT**




**Other Technical Information**

- Block Diagram

- Specifications
- Weights & Dimensions

All of this information is available to end users and can be found at the following location. Qu-24 – Allen & Heath (allen-heath.com)

**For further information please contact Allen&Heath Product Support Product Support**
Allen & Heath (allen-heath.com)

Allen & Heath Limited, Kernick Industrial Estate, Penryn, Cornwall, TR10 9LU, UK
https://www.allen-heath.com

## Documents / Resources

| | |
|---|---|
|   | Allen and Heath QU24C Desktop Digital Mixer [pdf] User Manual<br>QU24C Desktop Digital Mixer, QU24C, Desktop Digital Mixer, Digital Mixer, Mixer |

## References

- & Allen & Heath
- & Allen & Heath • Heard Everywhere
- User Manual