



BB100 Broadcast Mixer

TECHNICAL MANUAL



H A Harman International Company



Serial No: **C**

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IMPORTANT

For convenience, write your serial number in the box above and keep this manual in a safe place. The number can be found on the rear of the product.

This number **MUST** be quoted in all communications in order to obtain technical support and spare parts from either the factory or your dealer.

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It is recommended that all maintenance and service on the product should be carried out by AMEK or its authorised agents. AMEK cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

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Introduction



Precautions and Safety Instructions

Caution

For your own safety and to avoid invalidation of warranty, all text marked with these Warning Symbols should be read carefully!

Please keep this information!



Important information.
Read this before
proceeding.



Hazard or unsafe practice
which can result in severe
personal injury or death.



Cautionary Advice

Important



Please read this manual carefully before connecting the power supplies to the mains for the first time!

Obey all safety instructions in this manual where marked with any of the above symbols. Read and understand these instructions before operating the product, doing any troubleshooting, testing, adjustments or repairs. Failure to comply with the safety instructions may result in personal injury.

Warning



To avoid the risk of fire, do not expose this unit to rain or moisture. Unplug this apparatus during storms or when unused for long periods of time.

Caution



The apparatus will operate as a free standing unit without requiring any special cooling arrangement but should not be allowed to be accidentally or deliberately covered in any way. Do not obstruct the ventilation slots in the upper and lower surfaces.

Note de Précaution et Sécurité

Précaution

Pour votre sécurité et afin de ne pas interrompre la garantie il est important de lire attentivement les paragraphes marqués d'un symbole!

Conserver ce document!



Importante information.
Prière de lire avant utilisation.



Hazardeuse ou dangereuse manipulations
peuvent provoquées de graves blessures
ou même la mort.



Note de précaution.

Importante



Ce manuel est à lire attentivement avant de brancher cet appareil pour la première fois!

Suivre les instructions de sécurité. Lire et comprendre ces intructions avant l'utilisation de l'appareil ou avant dépannage, essai, ajustement ou réparation. Ne pas se conformer aux instructions de sécurité peut provoquer de graves blessures.

Avertissement



Afin d'éviter un risque de feu, ne pas exposer l'appareil à la pluie ou à l'humidité. Débranchez l'appareil en cas d'orage électrique ou si l'appareil n'est pas utilisé pendant une longue période.

Précaution



Cet appareil fonctionnera de lui-même sans supplément de ventilation mais ne doit en aucun cas être recouvert, afin ne pas bloquer les fentes de ventilation inférieures et supérieures.

Warranty

1. **Amek** is a trading division of Harman International Industries Ltd.
End User means the person who first puts the equipment into regular operation.
Dealer means the person other than Amek (if any) from whom the End User purchased the equipment, provided such a person is authorised for this purpose by Amek or its accredited Distributor.
Equipment means the equipment supplied with this manual.
2. If within the period of twelve months from the date of delivery of the Equipment to the End User it shall prove defective by reason only of faulty materials and/or workmanship to such an extent that the effectiveness and/or usability thereof is materially affected, the Equipment or the defective component should be returned to the Dealer or to Amek and subject to the following conditions, the Dealer or Amek will repair or replace the defective components. Any components replaced will become the property of Amek.
3. Any Equipment or component returned will be at the risk of the End User whilst in transit (both to and from the Dealer or Amek) and postage/shipping must be prepaid.
4. This warranty shall only be available if:
 - a) The Equipment has been properly installed in accordance with instructions contained in Amek's manual; and
 - b) The End User has notified Amek or the Dealer within 14 days of the defect appearing; and
 - c) No persons other than the authorised representatives of Amek or the Dealer have effected any replacement of parts, maintenance adjustments or repairs to the Equipment; and
 - d) The End User has used the Equipment only for such purposes as Amek recommends, with only such operating supplies as meet Amek's specifications and otherwise in all respects in accordance with Amek's recommendations.
5. Defects arising as a result of the following are not covered by this Warranty:
 Faulty or negligent handling, chemical or electro-chemical or electrical influences, accidental damage, Acts of God, neglect, deficiency in electrical power, air-conditioning or humidity control.
6. The benefit of this Warranty may not be assigned by the End User.
7. End Users who are consumers should note their rights under this Warranty are in addition to and do not affect any other rights to which they may be entitled against the seller of the Equipment.

Introduction

BB100 Hardware

The BB100 Series is a range of compact, high quality audio consoles designed for broadcast professionals. Although it has been designed primarily for broadcast use, the BB100 will find numerous applications in other areas where a cost-effective and flexible audio mixer is required that does not compromise build quality or performance in the least.

The console is available in 4 frame sizes and can be supplied as drop through or desktop style chassis. Standard features include conductive plastic faders, 28 segment light meters, Cleanfeeds and Fader Starts. The professional standard interface provides electronically balanced inputs together with Stereo, Auxiliary, Cleanfeed and Group Outputs.

Console Size

BB100 Series – 14 Position Console
BB100 Series – 22 Position Console
BB100 Series – 30 Position Console
BB100 Series – 38 Position Console

Main console features include:

- ☐ Mono Input modules
- ☐ Stereo Input modules
- ☐ Up to 4 Cleanfeeds with 4 Cleanfeed Outputs
- ☐ Up to 4 Stereo Group Returns
- ☐ Up to 8 Audio Groups
- ☐ 8 Auxiliary Sends
- ☐ Comprehensive Monitoring
- ☐ Comprehensive Metering
- ☐ Soft Mutes

Installation

2

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Installation



Before disposing of the packaging, check that all expected items are present and correct. Refer to the enclosed packing list!

Power Supplies



Three different types of power supply unit may be used with BB100 consoles. The type supplied depends on the console size and the date it was built. The PSU 300 and the MPS 20 are switch mode supplies whilst the MPS 5 is a linear supply.

Note: - Always use the Power Supply which is supplied with the Console.

Positioning the Power Supply Unit(s)



All the PSU are designed for installation in a 19" rack unit. Adequate ventilation should be provided for the PSU with an unrestricted air flow through the unit. The air intake and the outflow holes must be inspected regularly and cleaned if necessary to maintain good airflow through the unit. This will be particularly important if the unit is used in a dusty environment. The PSU300 draws air through the top of the unit and is expelled through the left and right sides. The MPS 5 draws air through the rear of the unit and is expelled through the front panel. The MPS20 draws air through the rear of the unit and is expelled through the left side.

All power units should be placed close enough to the console to use the standard 8 metre DC power cables. Avoid placing the units close to other sensitive audio equipment to reduce the risk of hum pickup from external stray magnetic fields e.g. mains transformers.

Checking and connecting the power units

BEFORE connecting any power units to the chassis, follow the procedure below:

WARNING: **THIS APPARATUS MUST BE EARTHED.**



Use the terminal provided on the rear of the chassis if necessary and connect it to the technical ground for the installation. **DO NOT** disconnect the safety earth from the AC mains cords.



- ☐ Make sure the AC operating voltage settings are correct for the local mains supply.
(Refer to the power supply section of this manual if necessary).
- ☐ Use the moulded IEC power cords provided with the console or by the distributor.
- ☐ Connect all power units to the local mains supply. **DO NOT connect the DC cables to the chassis at this point.**
- ☐ Switch each unit ON in turn and check that all the power rail LEDs on the front panels illuminate properly.
STOP IMMEDIATELY if any LEDs fail, TURN OFF the power unit and refer to the power supply section of this manual. DO NOT attempt to use this power unit until the fault has been rectified.
- ☐ If ALL power unit LEDs illuminate correctly, TURN OFF all power units and connect the DC cables between the power units and the chassis.
- ☐ TURN ON all power units again and check that the power supply LEDs illuminate properly and that the VU lamps are ON.
STOP IMMEDIATELY if any LEDs or lamps fail, TURN OFF the power units and rectify the fault before proceeding further.

If all above steps are healthy the console can be safely powered up.



WARNING:
Always switch off the Power Supply Unit OFF before connecting or disconnecting the Console.
NEVER remove modules while the PSU is ON



Avoid using the console close to magnetic fields such as video monitors and power supply units as this will cause degradation of the audio performance of the console.

Mounting



Diagrams showing sizes of the consoles are shown at the end of this Chapter.

The design of the BB100 console is based on long established audio principles but uses the latest technology to produce its outstanding performance. Only when the console is carefully installed in accordance with our recommendations, will you obtain the best results. EMC precautions are described at the end of this chapter.

Earthing



The most reliable earthing system is to have only one point to which all equipment is earthed. It is essential for safety that all mains powered equipment in the system has a mains (safety) earth connected. This is especially important on computers with an internal power supply. Connecting a non earthed computer to the console can cause serious damage.

Clean Earth



The console has an external M4 stud, for a clean or 'technical' earth to be connected. This stud is located on the rear panel of the console. The incoming technical earth should be connected to this star point; the incoming cable should be terminated in an M4 eyelet. In the best installations, a clean earth is provided from a specially constructed earth rod system. Use of the console's earth terminal is preferred whenever possible, but if there is no clean technical earth, an adequate earth can sometimes be provided by the console's power supplies. These have a limited earth via a resistor/capacitor network. The lack of a clean earth is especially likely to cause noise problems.

Earth loops



Earth loops occur whenever a piece of equipment has two connections to earth. This can happen if there is an earth through the mains lead and a second one through a cable screen to another piece of earthed equipment. This may cause hum and other problems. Always avoid earth loops in the system wiring. ***If you have earth loops in your installation, they must never be 'solved' by removing safety earth connections.***

Microphone Cables



All microphone and line level connections in the control room and studio should be wired using a high quality twin screened cable. The screens of the cables should be connected to one ground only. With microphone inputs this is not difficult as microphones do not normally have any ground connection other than the one through the cable. It is therefore correct and essential that the microphone cables have the screen connected at both ends.

Wiring Conventions



Amek uses the standard XLR wiring convention on all consoles. Not all equipment uses this convention so check your wiring to prevent any phase reversals. See Table below for wiring convention.

Pins	
Pin 2	HIGH (HOT) +
Pin 3	LOW (COLD) -
Pin 1	SCREEN (GROUND)

Pins	¼ Inch Jack Plug
Tip	HIGH (HOT) +
Ring	LOW (COLD) -
Screen	SCREEN (GROUND)

Signal Levels

The BB100 has been designed to operate with a wide range of studio equipment. All input and output levels are therefore suitable to match +4dBu systems and the meters are calibrated to read "0" for output levels of +4dBu. The meter trim controls can allow the meters to be adjusted to read "0" for output levels of +6dBu.

Refer to Chapter 8 (Specifications) for details of input / output levels.

Module Removal



Never remove or insert modules or any system parts when the power are switched ON.

Maintenance



All maintenance and repair work should be carried out by a qualified and trained technician. Failure to do so may invalidate the product warranty. Refer to the warranty information in Section I of this manual.

EMC Precautions

Introduction



EMC (electromagnetic Compatibility) is the ability of equipment to function correctly in locations where electromagnetic interference is present. Examples of electromagnetic interference are Radiated Interference e.g. from local broadcast transmitters, mobile phones Conducted interference. This can be introduced into console signal, mains, or dc power cables when they are located close to cables for electrical plant which contain “spikes”

Electrostatic discharge. e.g. the shock you can get when touching a piece of equipment after walking on a nylon carpet. EMC precautions are common-sense measures, which should be carried out, in any quality audio installation.

For good EMC performance, the console must be installed in accordance with our recommendations.

Giving some thought to EMC at the planning stage can provide protection, which costs very little.. Interference field strength diminishes with distance, so locate audio equipment far from strong emitters such as fixed radio, TV or radio transmitters and industrial equipment such as welders, RF furnaces

Console shipping and storage



During shipping, and if the console is stored before installation, it must be kept dry. Corrosion on metal parts can drastically reduce EMC performance.

EMC Environment

The console is designed to be installed in a “Commercial / Light Industrial” environment.

Mains supplies



The console is designed to be used in an environment, which is protected against mains-borne transients, and no console cabling should be routed in the vicinity of power cables carrying switched high current loads. Supply mains power for the studio equipment from separate phases or better still from different distribution transformers.

RF immunity



When exposed to a field of 3 volts / metre (European Standard), a loss of performance may be noticeable. Typical field strength from mobile phones or nearby communications transmitters is usually substantially less than this level. Field strengths of up to 10 V/m can be encountered within 20m of amateur radio transmitter and performance degradation may be noticeable in these conditions. If the console is to be sited close to strong radio frequency sources, such as a broadcast transmitter, please contact the factory.

Static and furnishings



The degree of inconvenience caused by a ‘click’ is very subjective, in many cases, a single transient can be ignored. If there are any circumstances where this is not acceptable, the first step should be to remove the possibility of static generation by selection of furniture and flooring materials, humidity control and other anti-static procedures. In low humidity climates, extra static precautions may be required.

Do-it-yourself testing

You can do a simple check of the local electromagnetic environment using a radio or television, or, better, an all-wave ham radio or scanner.

Antennas and receivers for wireless microphones



The antenna of the receiver for a wireless microphone is very sensitive to rf. Because the frequency bands allocated to wireless microphones differ greatly among CENELEC countries, it is not possible just to specify very low emission limits over a particular frequency range. Nor is it economic to design equipment to have very low emissions over the whole range required for all CENELEC states (31,6 to 1000 MHz). Care must therefore be taken with the location of the antennas and receivers.

Installation cables - type and location

Amek consoles are designed to have good EMC performance, but a poor installation can easily negate this.

Type of cable



For best EMC performance, audio circuits should all be wired in twisted-pair screened cable. Twisted pair cables should have a tight twist (20 twists per metre or better). The screen of audio cables should have good coverage. We recommend a double lapped screen with lapping in opposing directions. Copper screens are preferred over conducted plastic because they provide effective screening over a wider frequency range. If AC magnetic fields are likely, use star-quad cable, and route them as far as away as possible from the fields to minimise hum pickup.

Location of Cable



Audio cables should be routed in metal ducts where possible. This is especially important in an environment, which contains high RF fields. Pickup of RF fields can be reduced by routing cables so that they “cling to” large ground plane areas such as equipment racks or steel-reinforced concrete floors. Separate trunking should be used for (a) Console signal cables (b) Mains for the console, and (c) Power cables carrying switched high current loads. Don't use cables longer than necessary. Coiling of excess length is a bad idea.

Connectors - type and termination of cables



Mating connectors should have a metal body and the cable screen should be connected to the connector body.

Termination



When terminating cables, the hot, cold and screen wires must be kept as short as possible inside the connector. ‘Pigtails’ should not be used for the cable screen connection.

High RF fields



Cable screens should normally be terminated at one end only. However, if a high RF field is present in the installation, try connecting the screen at the tied back end via a high quality 0.01 uF capacitor. In extreme cases, you may need to parallel several capacitors of different values, this is to compensate for resonance in the capacitor.

Jackfield cords

These should be less than 1m long

Connecting unbalanced equipment



Equipment with unbalanced audio ports should be avoided or used with one of the many “unbalanced-to-balanced” interface boxes" available. If it is unavoidable to use unbalanced equipment, it must be wired in twin-screened cable. In this case, unbalanced inputs are worse than unbalanced outputs.

EMC precautions during Maintenance

Mixer panelling



To maintain good immunity to an electrostatic discharge or rf field, metal panels should be kept on the console at all times. All screws should be fitted and should be kept tight.

Service staff should be made aware of this.

Modifications by the console's owner



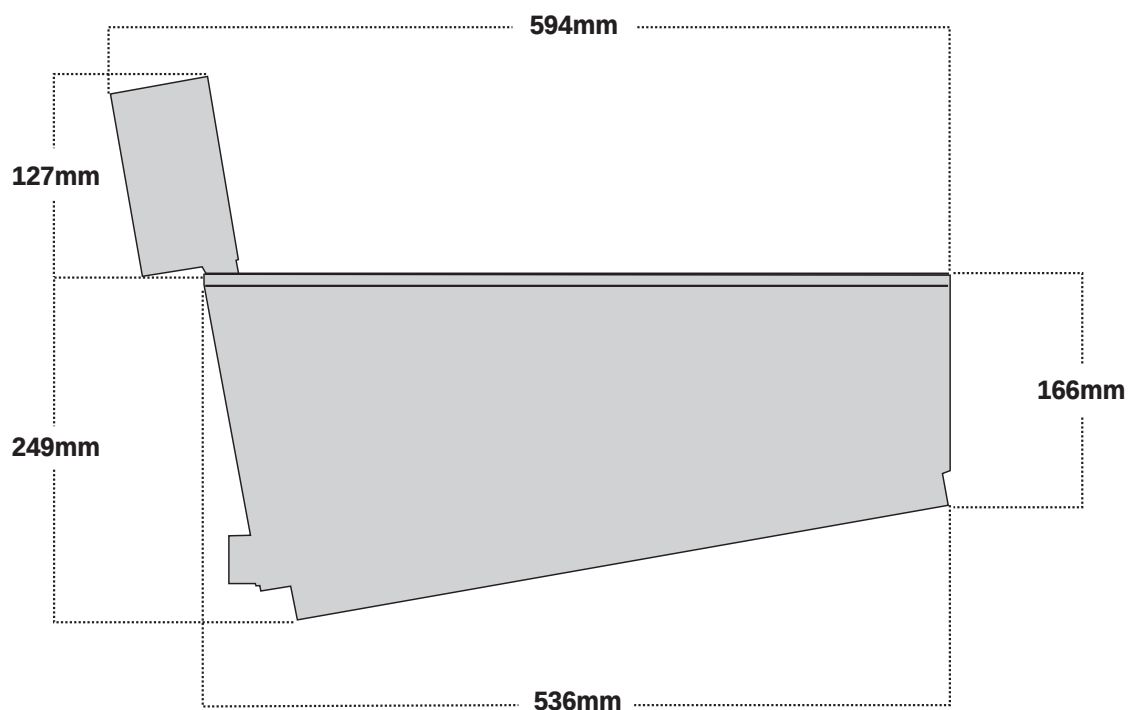
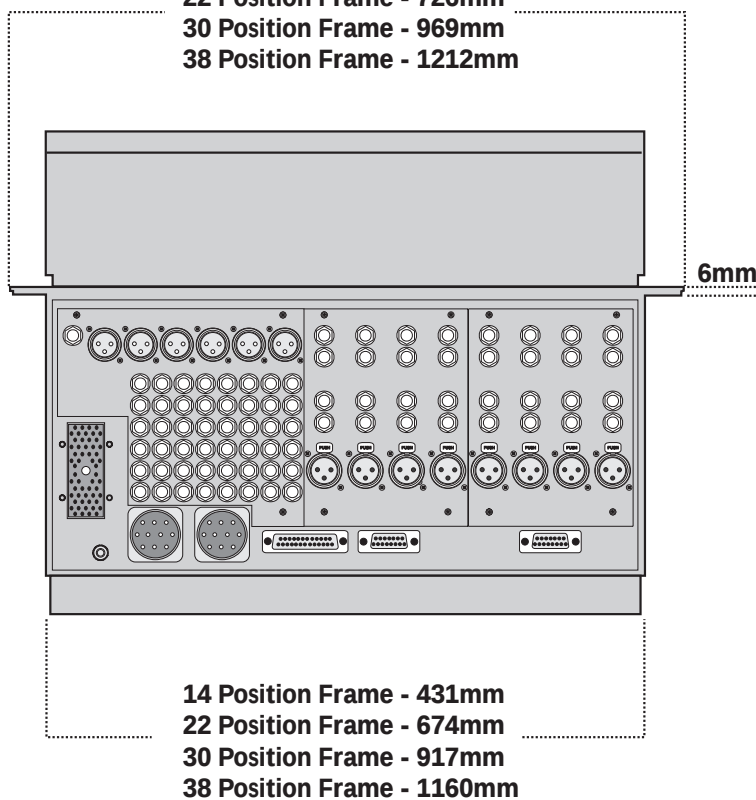
Modifications to the console can easily reduce the effectiveness of the console's EMC.

If any changes are made, the person who made them becomes the “owner” of, and therefore responsible for, the console's EMC performance.

BB100 Chassis Dimensions

BB100 Chassis Dimensions

14 Position Frame - 483mm
22 Position Frame - 726mm
30 Position Frame - 969mm
38 Position Frame - 1212mm



Power Supplies & Cabling

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Power Supplies & Cabling

**WARNING:**

THIS APPARATUS MUST BE EARTHED.

**WARNING:**

It is important that a console is never left connected to a defective PSU. This may cause serious damage to the console.

**WARNING:**

The power cord must be disconnected before removing cover plates. The power supply **MUST** be earthed. Under no circumstances should the mains earth be disconnected from the power supply unit. Lethal voltages are present on the printed circuit boards. Do not operate the unit with the top cover removed.

Mains Lead Connections

FOR UK USER ONLY

All mains leads must have the green/yellow wire connected to mains earth. The cores of the lead are colour coded:

Brown = LIVE

Blue = NEUTRAL

Green / Yellow = EARTH

As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

- ☐ The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked with the letter **E** or by the **Earth symbol**.
- ☐ The wire which is coloured **Blue** must be connected to the terminal in the plug which is marked with the letter **N** or coloured **Black**.
- ☐ The wire which is coloured **Brown** must be connected to the terminal in the plug which is marked with the letter **L** or coloured **Red**.



Never remove any green/yellow earth connections. If you have earth loops in your installation, they must **never** be 'solved' by removing safety earth connections. The IEC connector is supplied, moulded to the mains lead and should not be rewired.

Supply types & Description

Three different types of power supply unit may be used with BB100 consoles. The type supplied depends on the console size and date it was built. The PSU 300 and the MPS 20 are switch mode supplies whilst the MPS 5 is a linear supply.



There are no user serviceable parts in the units. In the event of failure for any reason, the switched mode module should be replaced with a spare and the faulty module returned to AMEK for repair or replacement subject to current warranty conditions. All switched mode modules must be fitted by qualified and approved technicians.

Console Size	PSUs Supplied
BB100 – 14 Position Console	PSU 300 / MPS 5
BB100 – 22 Position Console	PSU 300 / MPS 5
BB100 – 30 Position Console	MPS 20
BB100 – 38 Position Console	MPS 20

Main Voltage Selection

PSU 300 / MPS 20

The MPS 20 and the PSU 300 are auto-ranging units and do not require any adjustment for the mains input. The supply ranges for the correct operation are 90v – 254v AC @ 47 – 63 Hz.

MPS 5



Do not change the voltage setting without first turning the unit off and removing the mains lead.



The **MPS 5** mains input has to be selected for the level of local mains voltage supply. The supply may be preset at the factory for your mains voltage but this must be verified before switching on or serious damage may result. Amek cannot accept responsibility for failures caused by wrongly adjusted power supplies. Voltage selection is achieved by positioning the fuse carrier so that the required voltage appears next to the arrow which is moulded in the connector. In this way the unit is set up for operation at one of the following ranges of mains supply.



Nominal Voltage	Operating Voltage Range
	(+10/-15%)
Vrms AC	Vrms AC
230	196 - 253
115	98 - 126
100	85 - 110
85	73 - 93

Replacing Mains Fuse – PSU 300 / MPS 5

**WARNING:**

To avoid risk of fire use the correct value fuse as indicated on the units.



Switch the ON/OFF switch to the OFF position. Remove the mains lead from the connector. Use a small screwdriver to prise the fuse carrier from its location in the connector. Check the fuse and replace if necessary. In the event of repeated failure of the mains fuse consult the AMEK dealer from where the unit was purchased.

Note: The **MPS 20** is not fitted with an external fuse, each switched mode module is locally protected.

Location and Cooling air



All the PSU are designed for installation in a 19" rack unit. Adequate ventilation should be provided for the PSU with an unrestricted air flow through the unit. The air intake and the outflow holes must be inspected regularly and cleaned if necessary to maintain good airflow through the unit. This will be particularly important if the unit is used in a dusty environment.

The PSU 300 draws air through the top of the unit and is expelled through the left and right sides.

The MPS 5 draws air through the rear of the unit and is expelled through the front panel.

The MPS 20 draws air through the rear of the unit and is expelled through the left side.

Magnetic fields



Magnetic fields are radiated from all power supplies and this provides a further reason to allow space above and below the PSU. Care should be taken not to place items of equipment, which are sensitive to magnetic fields close to the console power supply.

DC Cables

Consoles are supplied with eight metre DC connection cables. Every effort should be made to site the power supply within this distance from the console as extending PSU cables is not recommended. If a longer cable must be substituted please bear in mind the following factors.



The cable must be of at least 5mm² cross section for each conductor and under no circumstances should the length exceed 12 metres. Console performance may be unaffected by extended PSU cables but it should be noted that the specification is only guaranteed when the cables supplied with the console are used.

Earthing



The most reliable earthing system is to have only one point to which all equipment is earthed. It is essential for safety that all mains powered equipment in the system has a mains (safety) earth connected. This is especially important on computers with an internal power supply. Connecting a non earthed computer to the console can cause serious damage.

Clean Earth

The console has an external M4 stud, for a clean or 'technical' earth to be connected. This stud is located on the rear panel of the console. The incoming technical earth should be connected to this star point; the incoming cable should be terminated in an M4 eyelet.



In the best installations, a clean earth is provided from a specially constructed earth rod system. Use of the console's earth terminal is preferred whenever possible, but if there is no clean technical earth, an adequate earth can sometimes be provided by the console's power supplies. These have a limited earth via a resistor/capacitor network. The lack of a clean earth is especially likely to cause noise problems.

Earth loops

Earth loops occur whenever a piece of equipment has more than ONE connection to earth. This can happen if there is an earth through the mains lead and a second one through a cable screen to another piece of earthed equipment.



This may cause hum and other problems. Always avoid earth loops in the system wiring. ***If you have earth loops in your installation NEVER resolve them by removing safety earth connections.***

Technical Specifications

Mains Input Voltage Range

PSU 300	90v – 254V AC @ 47 – 63 Hz
MPS 5	85/100/115/230V AC @ 50 – 60 Hz
MPS 20	90v – 254V AC @ 47 – 63 Hz

Rated Input Power

PSU 300	380 watts
MPS 5	450 watts
MPS 20	700 watts

Mains Fuse Rating

PSU 300	Use T8A/250V (slow-blow) for 90 - 132V
	Use T8A/250V (slow-blow) for 180 - 254V
MPS 5	Use T3.15A/250V (slow-blow) for 230V
	Use T6.3A/250V (slow-blow) for 85/100/115V
MPS 20	N/A No External Fuse Fitted

Output Capacity

PSU 300	± 17.5v @ 6.5 Amps
	48v @ 0.35 Amps
MPS 5	± 17.5v @ 5.25 Amps
	48v @ 0.3Amps
MPS 20	± 17.5v @ 15 Amps
	48v @ 0.5 Amps

Operating Temperature Range (Ambient)

PSU 300	-10 to +40C.
MPS 5	-10 to +40C.
MPS 20	-10 to +40C.

Overall Dimensions

PSU 300	Height. (exc. Feet)	133.50mm (3U)
	Width	482.60mm
	Depth. (exc. Connectors)	103.50mm
MPS 5	Height. (exc. Feet)	88.10mm (2U)
	Width	482.60mm
	Depth. (exc. Connectors)	350.50mm
MPS 20	Height. (exc. Feet)	133.50mm (3U)
	Width	482.60mm
	Depth. (exc. Connectors)	400.00mm

Weight (Exc. Packing)

PSU 300	5Kg
MPS 5	11Kg
MPS 20	15Kg

Note: All Voltage and Current measurements are taken at the console end of the power supply cable.

Connector Pinouts

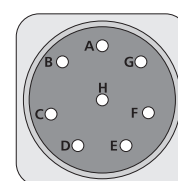
Pin	Voltage
PSU 300	
Pin 1	0v
Pin 2	+17.5V DC
Pin 3	-17.5V DC
Pin 4	48V DC

MPS 5	
Pin A	AGND (0V)
Pin B	AGND (0V)
Pin C	+17.5V DC
Pin D	-17.5V DC
Pin E	+5V DC
Pin F	+48V DC
Pin G	DGND
Pin H	Chassis GND

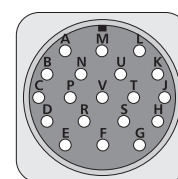
MPS 20	
A	+48V DC
B	0v ($\pm 17V$ & 48V DC) AGND
C	0v ($\pm 17V$ & 48V DC) AGND
D	+17.5V DC
E	+17.5V DC
F	-17.5V DC
G	-17.5V DC
H	CGND ($\pm 15V$ GND)
J	+15V DC
K	-15V DC
L	DGND
M	DGND
N	DGND
P	DGND Sense
R	+5V DC
S	+5V DC
T	+5V DC
U	+5V DC Sense
V	N.C.



Output Connector
Viewed From OUTSIDE The PSU



Output Connector
Viewed From OUTSIDE The PSU



Output Connector
Viewed From OUTSIDE The PSU

Output Voltage Adjustments



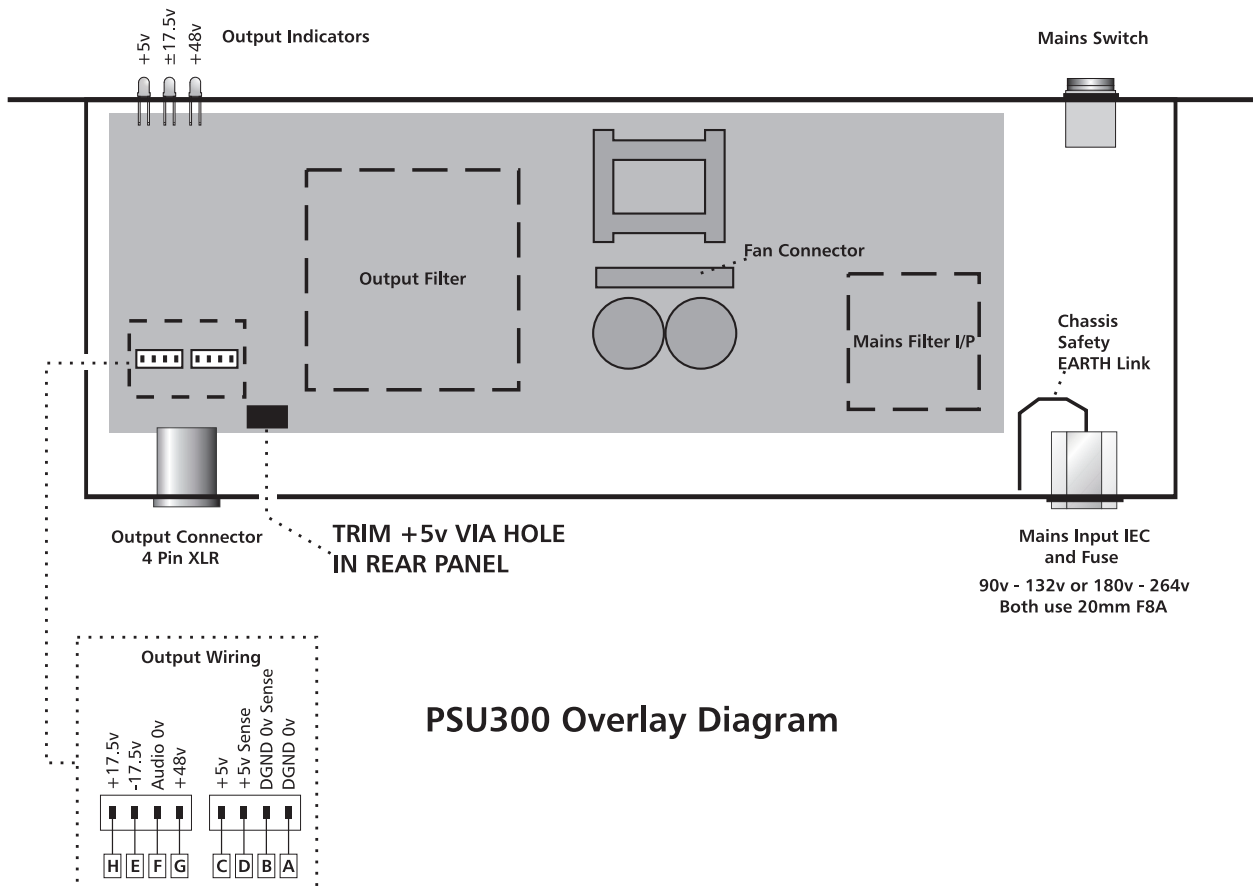
The voltage adjustment presets are adjusted during manufacture and should not need resetting unless major repairs have been done to the units. The adjustment trimmers for each PSU are shown in the following diagrams. Any adjustment should be checked with the unit on load.



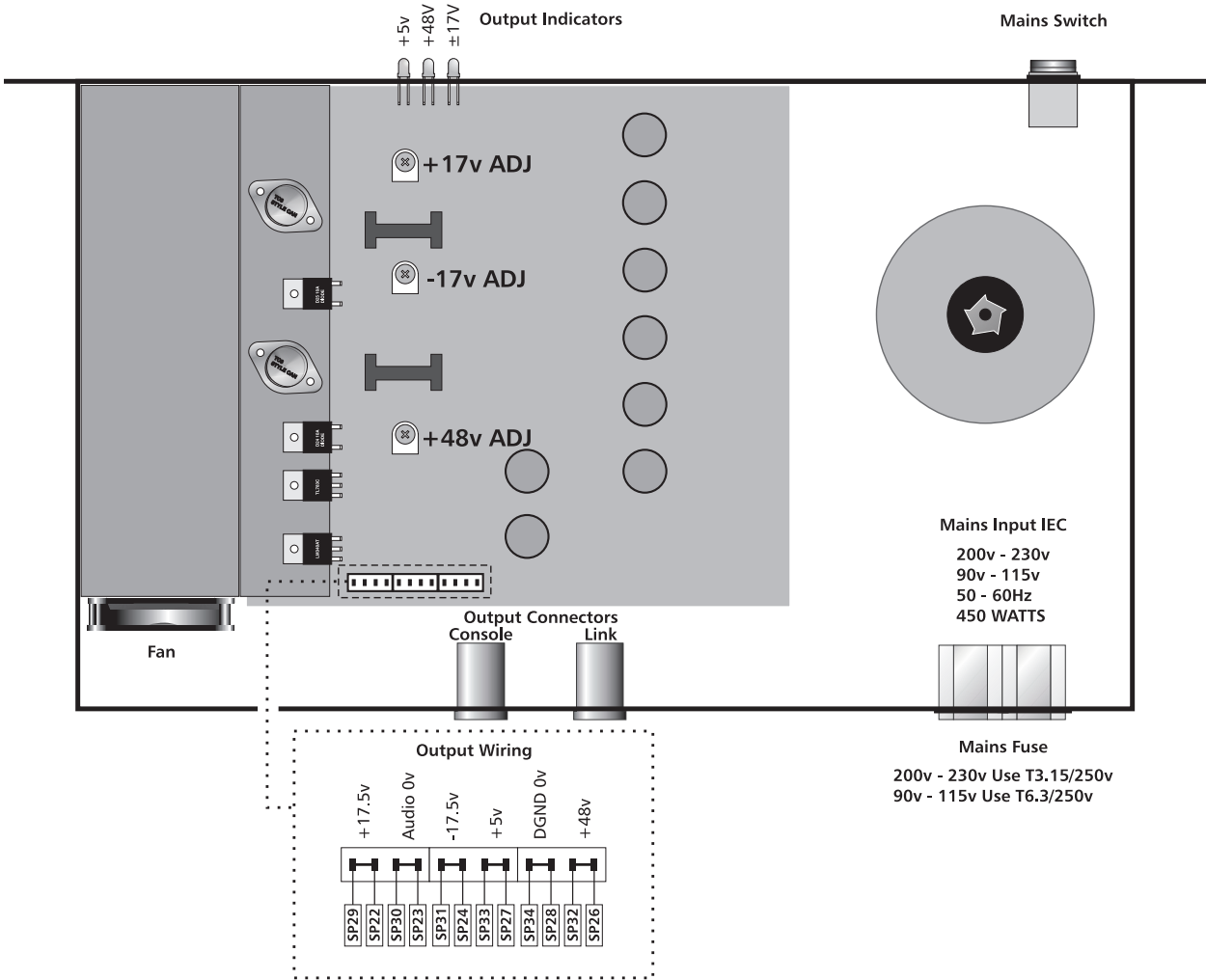
Note: Only an insulated trimmer tool should be used before making any adjustment.

Note: There are no user trimmable controls on the PSU 300 except for a for a voltage adjustment on the 5v output. This is accessed through a small hole in the rear panel.

Note: The BB100 does not use the 5V rail on the PSU 300.

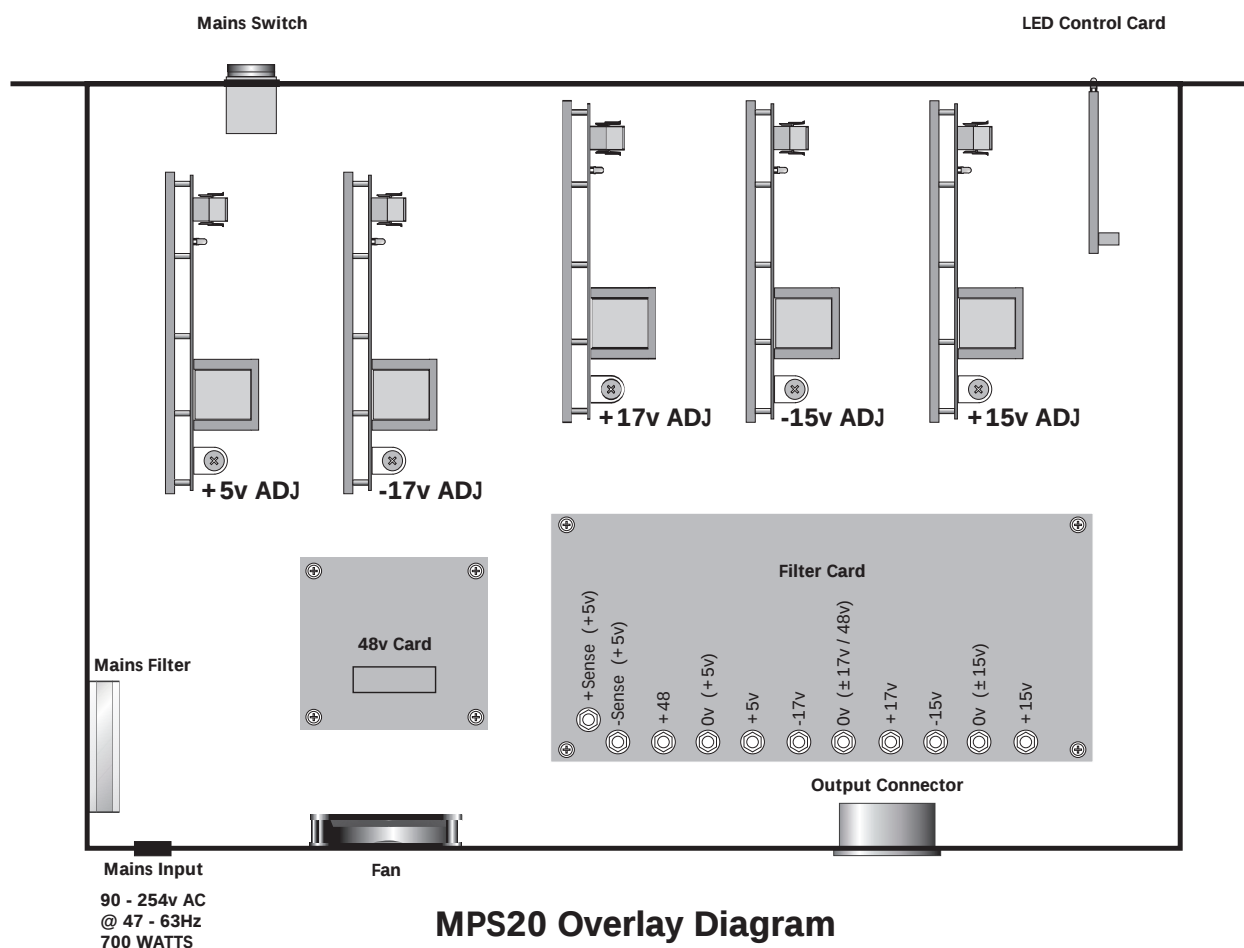


Output Voltage Adjustments - MPS 5



MPS5 Overlay Diagram

Output Voltage Adjustments - MPS 20



Connectors

4

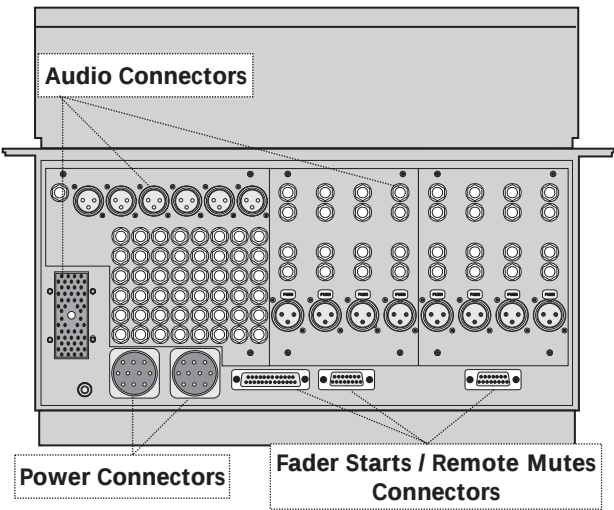
Contents

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Connections

All the main audio inputs and outputs are located on the back panel of the console. The Mic inputs are balanced and are via 3 pin female XLR connectors.

Inputs and Outputs are electronically balanced excluding the send, which is **Ground Compensated**. The headphone output is located at the front of the console and is via a stereo ¼ inch jack socket.



Rear view of console (14 Position)

Wiring Conventions



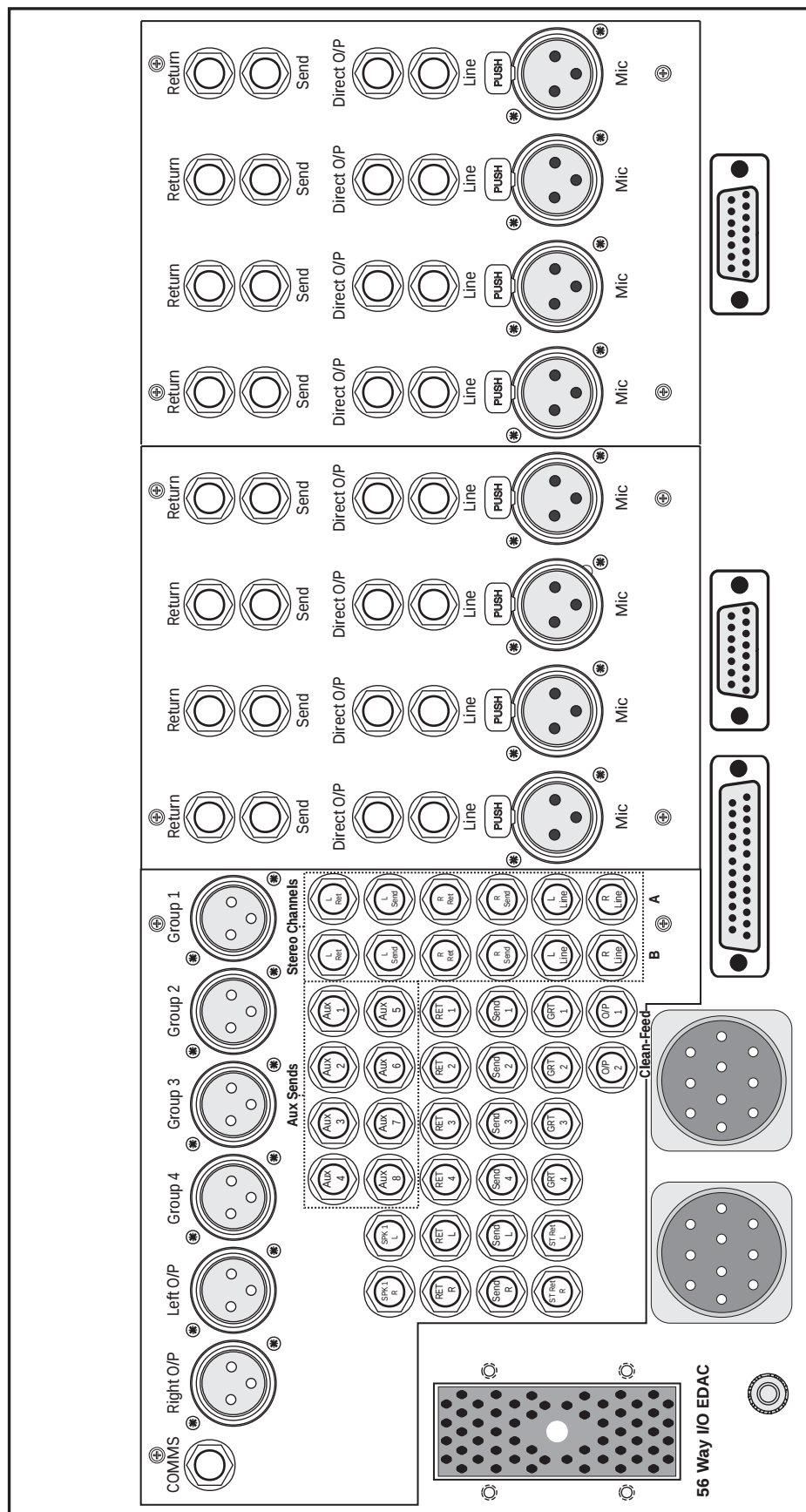
Amek uses the standard XLR wiring convention on all consoles. Not all equipment uses this convention so check your wiring to prevent any phase reversals. See table below for wiring convention.

Pin	XLR
Pin 2	HIGH (HOT) +
Pin 3	LOW (COLD) -
Pin 1	SCREEN (GROUND)

Pin	¼ Inch Jack Plug
Tip	HIGH (HOT) +
Ring	LOW (COLD) -
Screen	SCREEN (GROUND)

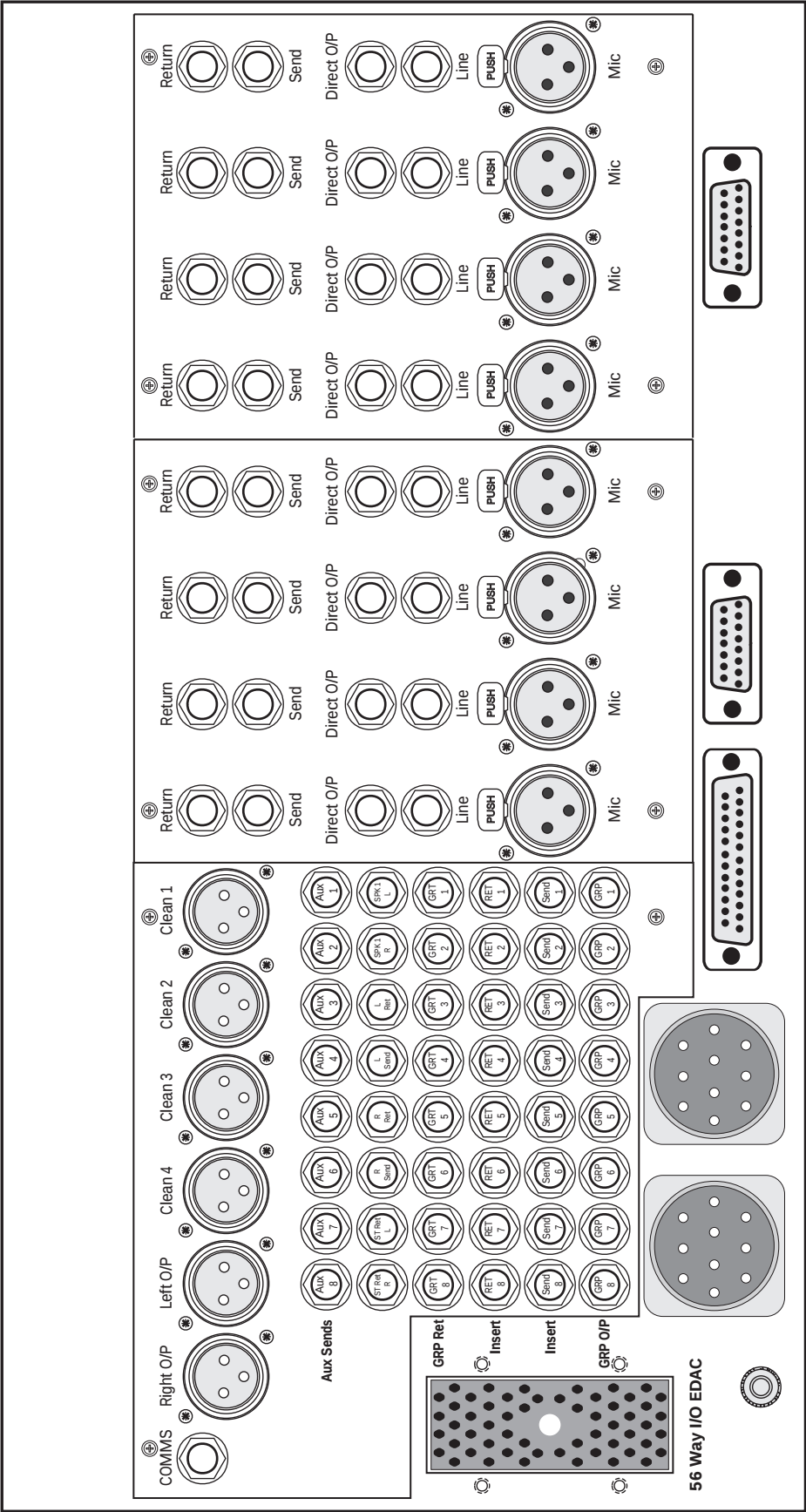
Back Panel Layout 4 Group

BB100 4 Group Back Panel



Back Panel Layout 8 Group

BB100 8 Group Back Panel



Fader Starts / Monitor Logic / Remote Mutes

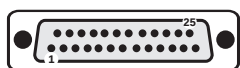
Fader Start

The Fader Start switch allows tape recorders or similar equipment to be remote started. The connection is designed for use with 5 volt (TTL/CMOS type) logic systems and is controlled by an active low. Internal module jumpers select whether or not the TALLY Led can be controlled internally or externally. The TALLY Led when set to external is controlled by applying an active low to a pin on the D Type connector located on the rear panel. If the internal Tally as been selected then the LED is directly driven of the fader start system.

Monitor Logic / Remote Mutes

The Monitor Logic and the Remote Mutes are controlled by applying an active low to a pin on the D Type connectors located on the rear panel.

Fader Starts Monitor Logic 25 Way Female D Type

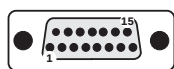


Viewed From OUTSIDE The Console

Note: All controls are activated by an active LOW

Pin 1: Chassis Ground	Pin 16: Group Mute Control (GRP 4) (Option)
Pin 2: User Switch O/P	Pin 17: Group Mute Control (GRP 2) (Option)
Pin 3: External Talkback Control	Pin 18: Studio Remote Cut
Pin 4: Group Mute Control (GRP3) (Option)	Pin 19: Remote Mute Control 12
Pin 5: Group Mute Control (GRP1) (Option)	Pin 20: Remote Mute Control 10
Pin 6: Remote Mute Control (Pos 13)	Pin 21: Remote External Tally Control 12
Pin 7: Remote Mute Control (Pos 11)	Pin 22: Remote External Tally Control 11
Pin 8: Remote Mute Control (Pos 9)	Pin 23: Remote External Tally Control 10
Pin 9: External Fader Start (Pos 12)	Pin 24: Remote External Tally Control 9
Pin 10: External Fader Start (Pos 11)	Pin 25: Analogue Ground
Pin 11: External Fader Start (Pos 10)	
Pin 12: External Fader Start (Pos 9)	
Pin 13: A Ground	
Pin 14: User Tally Control	
Pin 15: Remote User In	

Fader Starts Remote Mutes 15 Way Female D Type



Viewed From OUTSIDE The Console

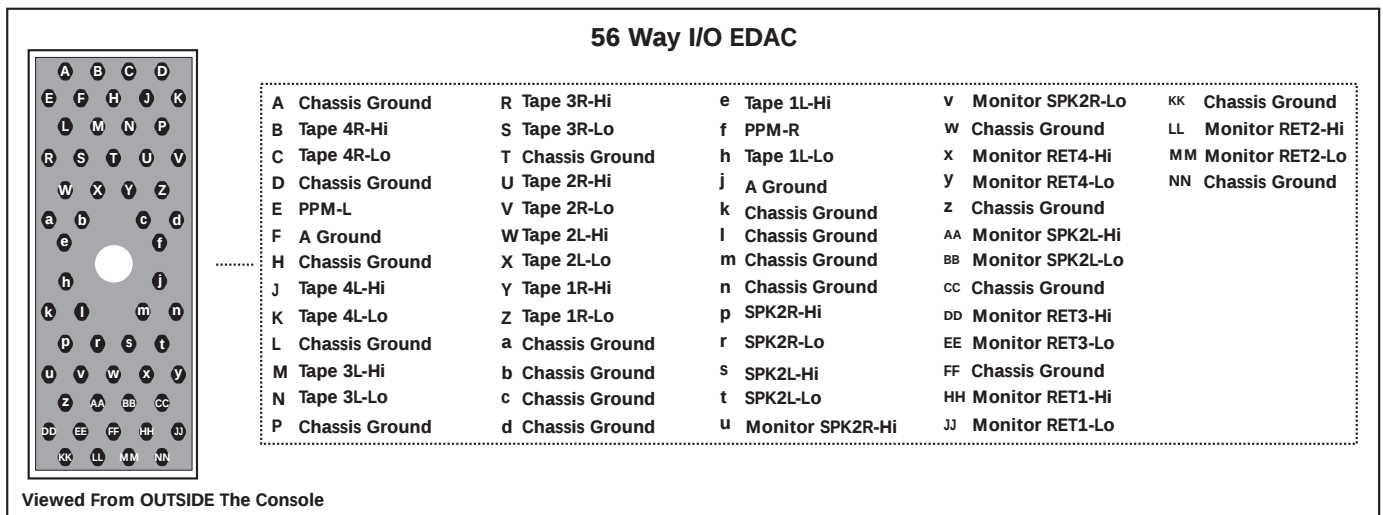
Note: All controls are activated by an active LOW

Pin 1: Chassis Ground
Pin 2: Remote Channel Mute (Pos 3)
Pin 3: Remote Channel Mute (Pos 1)
Pin 4: External Fader Start (Pos 4)
Pin 5: External Fader Start (Pos 3)
Pin 6: External Fader Start (Pos 2)
Pin 7: External Fader Start (Pos 1)
Pin 8: A Ground
Pin 9: Remote Channel Mute (Pos 4)
Pin 10: Remote Channel Mute (Pos 2)
Pin 11: Remote External Tally Control (Pos 4)
Pin 12: Remote External Tally Control (Pos 3)
Pin 13: Remote External Tally Control (Pos 2)
Pin 14: Remote External Tally Control (Pos 1)
Pin 15: A Ground

56 Way I/O EDAC Connections

Input and Output Connections

I/O connections are supplied via a 56 way EDAC located on the rear panel.



Power Supplies

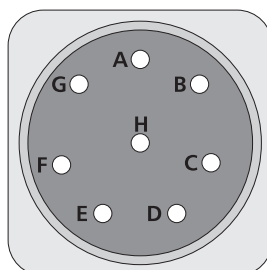
DC Input Connector Pin Out - PSU300



Pin 1: 0v
Pin 2: +17.5V
Pin 3: -17.5V
Pin 4: +48V

Viewed From OUTSIDE The Console

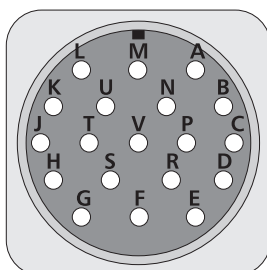
DC Input Connector Pin Out - MPS5



Pin A: AGND (0V)
Pin B: AGND (0V)
Pin C: +17.5V
Pin D: -17.5V
Pin F: +48V

Viewed From OUTSIDE The Console

DC Input Connector Pin Out - MPS20



Pin A: +48V
Pin B: 0v ($\pm 17V$ / 48V) AGND
Pin C: 0v ($\pm 17V$ / 48V) AGND
Pin D: +17V
Pin E: +17V
Pin F: -17V
Pin G: -17V

Viewed From OUTSIDE The Console

Modules

5

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LBI Mono Input Module

The LBI Mono Input is provided with XLR and 1/4 jack connectors, either of which may be used for any level of input signal.

The channel is provided with Insert points using a Ground Compensated Send and a Balanced Return at a nominal level of +4dBu located on the rear panel.

1. The **48V** switch applies 48v phantom power to the Mic Input XLR.
Note: Under no circumstances press the 48v switch if an unbalanced source is connected to the XLR.
2. The **Pad** attenuates the Mic Input by -15dBu and allows high level signal to be used. Maximum input level +7dBu.
3. The **Line** switch selects the Line Amp instead of the Mic Amp.
4. The **Ø (Phase)** switch reverses the phase of the Mic Input or the Line Input. The switch should normally be released.
5. The **Gain** control adjusts the sensitivity of both the XLR and jack inputs. The Mic range is +10dBu to +70dBu. The Line range is ± 20 dBu.

Equaliser

6. The EQ section has four bands. The HF and LF sections have a shelving response with selectable frequencies. The two MID sections have a bell response at a variable frequency.
 - The HF control gives 18dB of cut or boost switchable at frequencies 6kHz or 12kHz.
 - The LF control gives 18dB of cut or boost. The frequency switch selects between 40 Hz and 80Hz. Using the X3 switch multiplies the selected frequencies by three giving a selection of 120Hz or 240Hz.
 - The HMF cut and boost control gives a range of ± 14 dB. The HMF frequency control gives a variable frequency range of 300Hz to 6kHz. Using the X3 switch multiplies the selected frequencies by 3 giving a range of 900Hz to 18kHz. Using the Q switch selects either 0.7 or 1.3 Q Factor.
 - The LMF cut and boost control gives a range of ± 14 dB. The LMF frequency control gives a variable frequency range of 40Hz to 800Hz. Using the X3 switch multiplies the selected frequencies by three giving a range of 120Hz to 2.4kHz. Using the Q switch selects either 0.7 or 1.3 Q Factor.
7. The **HP** switch inserts a HI-PASS filter into the signal path. The -3dB point is fixed at 80Hz at 18dB per octave.
8. The **EQ IN** switch inserts the equaliser into the signal path.



Auxiliary Sends

9. Signal is sent to the Aux 1-8 buses via the eight **LEVEL** controls. All the Auxs have unity gain when the controls are fully clockwise and are switched pre or post in pairs by the **PRE** switches.
10. Auxs 1 & 2 has an internal switch option to configure the Aux to a Stereo level/pan arrangement.

Routing

11. The **Pan** control feeds the signal to the Stereo mix and the groups. Panning left pans to the odd groups and Stereo left, panning right pans to the even groups and Stereo right. In the centre position there is a drop of -3dB.
12. The **Group Disable** switch when selected disables panning across the groups.
13. The **Mute** switch cuts off all output from the channel and utilises a soft mute for click free switching.
14. The **PFL** switch provides a pre fade signal to the monitor speakers replacing the selected source. There is an internal switched option, which allows the PFL to become After Fade listen.
15. The **Fader** is the main level control for the channel. It has 10dB of gain at the top of travel.
16. The **Group** switches assign the signal in pairs to the group buses. The source signal can be pre or post pan as selected by the Group Disable switch. Groups are available only if the appropriate amount of group modules is fitted.
17. The **Stereo** switch assigns the signal to the Stereo bus.
18. The four segment PFL meter displays the channel pre-fade level. The meter monitors the signal pre and post EQ simultaneously. The O/L led illuminates when the signal reaches +18dB.
19. A Ground Compensated **Direct Output** is provided which is normally feed from the post fade signal (Factory Pre-set) but can be selected to be pre fade/post mute or pre EQ by internal jumpers. The Direct Outputs are fed to jacks on the rear panel.



LBS Stereo Input Module

The LBS Stereo Input Module is provided with ¼ jack connectors on the rear panel.

The channel is provided with Stereo insert points using Ground Compensated Sends and Balanced Returns at a nominal level of +4dBu located on the rear panel. The insert points have an internal option to move the points post pan.

1. The **Mono Left** switch applies the left hand signal to the left and right of the module.
2. The **Mono Right** switch applies the right hand signal to the left and right hand side of the module. If both switches are pressed together the left and right signals appear on both sides of the module @ -6dB.
3. The **Ø (Phase)** switch reverses the phase of the right hand side signal only. The switch should normally be released.
4. The **Gain** controls adjust the sensitivity of both the left and right jack inputs. The Line range is ± 20 dBu.

Equaliser

5. The EQ section has three bands. The HF and LF sections have a shelving response with selectable frequencies. The MID sections have a bell response at a variable frequency.
 - The HF control gives 18dB of cut or boost switchable at frequencies 6kHz or 12kHz.
 - The LF control gives 18dB of cut or boost. The frequency switch selects between 40 Hz and 80Hz. Using the X3 switch multiplies the selected frequencies by three giving a selection of 120Hz or 240Hz.
 - The MF cut and boost control gives a range of ± 14 dB. The HMF frequency control gives a variable frequency range of 80Hz to 5kHz. Using the X3 switch multiplies the selected frequencies by 3 giving a range of 240Hz to 15kHz. Using the Q switch selects either 0.7 or 1.3 Q Factor.
6. The **HP** switch inserts a HI-PASS filter into the signal path. The -3dB point is fixed at 80Hz at 18dB per octave.
7. The **EQ** switch inserts the equaliser into the signal path.



Auxiliary Sends

Note: The pre and post signals are the sum of the left and right signals except Aux 1 & 2 which has an internal switch option to configure it to a Stereo level/pan arrangement i.e. Aux 1 will be fed by the left only and Aux 2 will be fed from the right only.

8. Signal is sent to the Aux 1-8 buses via the eight **LEVEL** controls. All the Auxs have unity gain when the controls are fully clockwise and are switched pre or post in pairs by the **PRE** switches.

Routing

9. The **Pan** control feeds the signal to the Stereo mix and the groups. Panning left pans to the odd groups and Stereo left, panning right pans to the even groups and Stereo right. In the centre position there is a drop of -3dB.
10. The Stereo **Mute** switch cuts off all output from the channel and utilises a soft mute for click free switching.
11. The **PFL** switch provides a pre fade signal to the monitor speakers replacing the selected source. There is an internal switched option, which allows the PFL to become a post fade signal - this signal is a derived post pan.
12. The Stereo **Fader** is the main level control for the channel. It has 10dB of gain at the top of travel.
13. The **Group** switches assign the signal in pairs to the group buses. The source signal is all ways post pan. Groups are available only if the appropriate amount of group modules are fitted.
14. The **Stereo** switch assigns the signal to the Stereo bus.
15. The four segment **PFL meter** displays the channel pre-fade level. The meter monitors the signal pre mute, left and right simultaneously. The O/L led illuminates when the signal reaches +18dB.



LB2 Dual Group Module

The Dual Group Module is provided with XLRs on a 4 group console and ¼ jacks on a 8 group console, insert send and returns. Clean feed outputs are provided on XLRs on an 8 group console and jacks on a 4 group console.

1. Signal is sent to Aux 1-4 buses via the four **level** controls. The Auxs have unity gain when the controls are fully clockwise. The source signal is fed from pre or post group faders. The pre or post switch operates on all four Auxs.
2. The other four Auxiliaries are fed from the other group (Right) fader. Each Dual Group module contains one clean-feed master therefore the amount of clean-feed buses is dependent on the amount of Dual Group modules fitted.
3. The **Level** control adjusts the level of the balanced **Clean-Feed** output which is fed from the **selected** clean-feed input module. Jumpers make the clean-feed bus selection of which positions are used to source on the 14 position motherboard. Therefore if the signal is inserted into the first of the input modules (clean-feed 1) it will then be removed from the clean-feed output 1 on the group module.
4. The **Talk Enable** switch provides signal from the Comms system to be fed to the clean-feed outputs when the Comms system is activated.
5. The clean-feed **Mute** switch cuts off the signal to the clean-feed outputs.
6. The clean-feed **AFL** switch provides the post level signal to the monitor speakers replacing the selected source.
7. Signal is sent to the Aux 1 & 2 bus via the **Aux Level** control (optionally Aux 3 & 4 using the internal jumpers). All the Auxs have unity gain when the controls are fully clockwise and are switched pre or post in pairs by the **PRE** switches. The source is fed from the Group Return.
8. The **Stereo Return Level** control adjusts the level of the return signal. Gain of +10dB of gain is provided when the control is fully clockwise.
9. The **ST/Mix Group** switch determines whether the output can be sent to the Stereo Bus or the associated pair of groups.
10. The **Pan** control feeds the signal to the Stereo mix or the groups. In the centre there is a drop of -3dB.
11. The **Return Mute** switch cuts of the signal from the Stereo bus or the group bus. Also mutes the PFL and aux pre and post.
12. The **Return PFL** switch provides Pre Fade signal to the monitor speakers replacing the selected source.
13. The **ST Assign** switch assigns the signal to the Stereo bus. The source signal is from the group output fader.
14. The **Pan** control feeds the signal to the Stereo bus and to the Stereo AFL bus. In the centre there is a drop of -3dB.
15. The **Mute** switch cuts off all output from the channel and utilises a soft mute for click free switching.



16. The **AFL** switch provides a post fade signal to the monitor speakers replacing the selected source.
17. The **ST Assign** switch assigns the signal to the Stereo bus.
18. The **Pan** control feeds the signal to the Stereo bus and to the Stereo AFL bus. In the centre there is a drop of -3dB.
19. The **Mute** switch cuts off all output from the channel and utilises a soft mute for click free switching.
20. The **AFL** switch provides a post fade signal to the monitor speakers replacing the selected source.
21. The **Faders** are the main level control for the Dual Group module. They have 10dB of gain at the top of travel.

Metering

The group output meter signal is derived post fade and is supplied to the group meter in the meter hood. A trimmer is supplied for calibration. (Factory Preset).

The clean-feed null trim is used to optimise clean feed attenuation. (Factory Preset).

Each Dual Group has a pre fade insert point (located on the back panel) using a Ground Compensated Send and a Balanced Return at a nominal level of -2dBu.



LB6 Auxiliary Master Module

The Aux Master module is provided with jack connectors for the outputs

Comms

The Talkback system provides communication to the Groups and Aux outputs and speaker outputs.

1. The 3 pin XLR connector provides a balanced talkback input for a local microphone or gooseneck mic. The sensitivity of the mic input is variable between +10dBu and +70dBu.
2. The **Talk** switch can be momentary or latching depending on the length of time pressed. Destination of the talkback sources are selected by 4 switches. **Slate** assigns the comms system to the group buses 1-8 and/or the Stereo Bus. **Aux 5-6** assigns the comms system to aux 5,6,7,8. **Aux 1-4** assigns the comms system to aux 1,2,3,4. **Speaker** assigns the comms system to Monitor 2 speaker outputs and/or the comms output connector located on the backpanel.
3. A **User** switch at the top of the module can activate **ON-AIR** mode. When the On-Air mode is enabled no access to the slate bus is available from both the comms or the oscillator. The oscillator is disabled from the Aux buses and the comms output but the Comms System still has access. The **User** switch automatically mutes the Mon 2 speakers.
4. The **Auxiliary Master** level controls set the output level of the Aux send mixes. With the controls fully clockwise 10dB of gain is provided. The Aux outputs are fully balanced and terminate via jack connectors on the rear panel.
5. The **AFL** switch provides a post fade signal to the monitor speakers replacing the selected source.
6. The **Mute** switch cuts off all output from the Aux masters

Oscillator

7. A **Trimmer** is provided for the calibration of the oscillator. (Factory Preset @ +4dB).
8. A three frequency **oscillator** is selected by two switches. The 1kHz switch provides a 1kHz sinewave. The 10kHz switch provides a 10kHz sinewave. Pressing both switches provides 100Hz. When not in use both buttons should be released to prevent leakage from the oscillator onto the console outputs. The oscillator utilises the same four assignment switches as the comms system to enable access to the slate, aux sends and speaker outputs.
9. A **Headphone** output is provided which can be fed from the Control Room Monitors or optionally Mon 2, selected by internal jumpers. The phones output socket is a 1/4 inch jack. It should not be used with headphones of less than 200 ohms impedance. A second headphones jack is provided on the console chassis.



LB4 Stereo Master Module

1. Signal is sent to the Aux 1-4 buses via the four **Level/Pan** controls. The upper four are sourced from the left Stereo bus and the lower four from the right Stereo bus. They are switched pre or post in groups of four by the **PRE** switches. Internal jumpers can configure the Aux controls as a level/level option.
A further option allows the source signal to be derived from the monitor return inputs instead of the Stereo bus, via internal jumpers.
The Aux sends can alternatively be Clean-Feed sends again via internal jumpers.
2. The **ST Return Level** control adjusts the level of the return signal. The level range is -20dB to +10dB.
3. The **Mute** switch cuts off all output from the Return to the Stereo bus.
4. The **PFL** switch provides a pre fade signal to the monitor speakers replacing the selected source.
5. The **VU/PEAK** switch provides switching between VU and PEAK characteristics for the LED bargraph meters. The VU setting shows the average level of the program. The PEAK setting will show transients levels within the program.
6. The **PFL/AFL Level** control adjusts the level of the solo bus to the monitor speakers. The level control is unity gain when fully clockwise. The **PFL/AFL** Led indicates an active solo system.
7. The **Monitor 2 Level** control adjusts the level of the **Monitor 2** speakers or **Headphone** output. There is a power on mute for click free power ups.
8. **ST Mix / CR MON** switch. When the switch is released the Stereo Bus will be fed to the Monitor 2 output. When the switch is depressed (now CR MON) Monitor 2 will follow the CR MON source selection.
9. **ST Return** switch. When the switch is depressed it overrides the ST Mix / CR MON switch making the ST Return the source to the MON 2 output.
10. There are four **2 Track Return** inputs, electronically balanced, which are fed from a 56 way EDAC connector on the rear panel. **Tape 1** has an internal jumper selection, which allows the sensitivity of the input to be set at +4dBu or -6dBu. All other monitor inputs operate at a nominal level of +4dBu.
11. The **ST Return** switch selects the ST Return signal to be fed to the Monitor output speakers. Internal jumpers can reconfigure the ST Return switch to alternatively source the Aux sends.
12. The **ST Mix** switch selects the Stereo Bus to be fed to the Monitor outputs.
13. The **Level** control adjusts the level to the Monitor outputs (Control Room) and / or headphone outputs.
14. The **SPK 2** switch provides the ST monitor output to be fed to an alternative pair of speakers. Monitor outputs are provided with a Ground Compensated output at a nominal level of +4dB to a 1/4-inch jack on the rear panel. SPK 2 outputs are provided on a 56 way EDAC on the rear panel.

15. The **Mute** switch cuts off all output from the console to the Monitor speakers.
16. The **Faders** are the main level control for the Stereo Master. They have 10dB of gain at the top of travel.
17. The **Mix Mute** switch cuts off the output from the Stereo Bus.

Metering

Level indication is monitored by 28 segment LED bargraph meters and VU meters, which are located in the meterhood. The meters read **Group Output**, **Stereo Mix** or **2 Track Returns** or the **PFL/AFL** bus.

The bargraph meters can be set to read **VU** or **PEAK** by the switch on the Stereo Master module LB4.

The meter source select switch, **CR Mon / PFL**, enables the VU meters to monitor the Control Room outputs or the PFL bus.

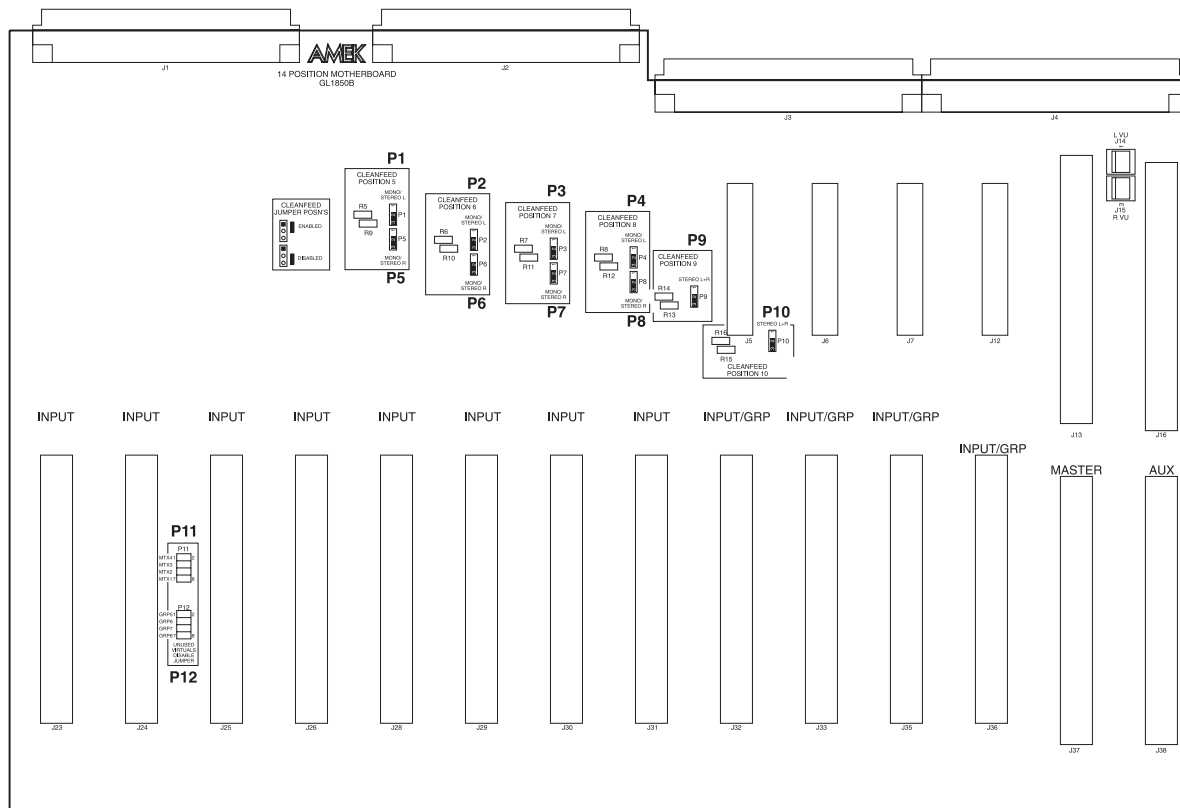
Meter trims are provided for the fine adjustment of the VU meters. (Factory Pre-set).



BB100 Jumper and Switch Options

14 Position Motherboard - GL 1850

Jumpers **P1** to **P10** are the Cleanfeed options and will be set depending on the operation and configuration of the console.

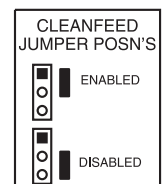
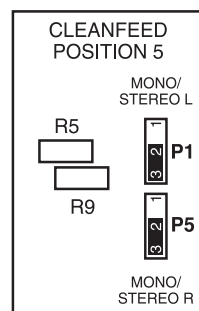


P1/ P5 Cleanfeed Position 5

To enable the module in position 5 to be the cleanfeed input link pins 1 – 2.

This can only be applied to a Mono channel or the right input for a Stereo channel.

Note: - **P5** should be in the disabled position if a Mono channel is fitted. If a Stereo channel is fitted Jumper **P5** will be set as **P1** and applies to the left input for the Stereo channel.

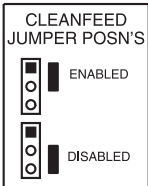
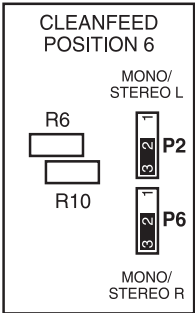


P2 / P6

Cleanfeed Position 6

To enable the module in position 6 to be the cleanfeed input link pins 1 - 2.
This can only be applied to a Mono channel or the right input for a Stereo channel.

Note: - **P6** should be in the disabled position if a Mono channel is fitted. If a Stereo channel is fitted Jumper **P6** will be set as **P2** and applies to the left input for the Stereo channel.

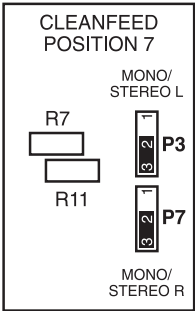


P3 / P7

Cleanfeed Position 7

To enable the module in position 7 to be the cleanfeed input link pins 1 - 2.
This can only be applied to a Mono channel or the right input for a Stereo channel.

Note: - **P7** should be in the disabled position if a Mono channel is fitted. If a Stereo channel is fitted Jumper **P7** will be set as **P3** and applies to the left input for the Stereo channel.

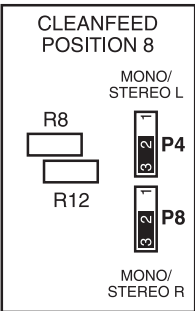


P4 / P8

Cleanfeed Position 8

To enable the module in position 8 to be the cleanfeed input link pins 1 - 2.
This can only be applied to a Mono channel or the right input for a Stereo channel.

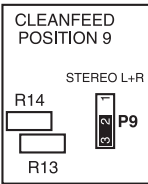
Note: - **P8** should be in the disabled position if a Mono channel is fitted. If a Stereo channel is fitted Jumper **P8** will be set as **P4** and applies to the left input for the Stereo channel.



P9

Cleanfeed position 9

If position 9 has a Group module fitted **P9** must be in the disabled position. If a Stereo module is fitted and it is to be used as a Cleanfeed input **P9** has to be enabled.
To enable link pins 1 - 2.



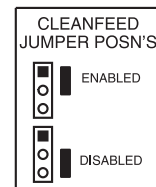
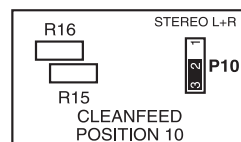
P10

Cleanfeed position 10

If position 10 has a Group module fitted **P10** must be in the disabled position.

If a Stereo module is fitted and it is to be used as a Cleanfeed input **P10** has to be enabled.

To enable link pins 1 – 2.



Jumpers **P11** and **P12** are the Virtual Earth Disable options and will be set depending on the operation and configuration of the console.

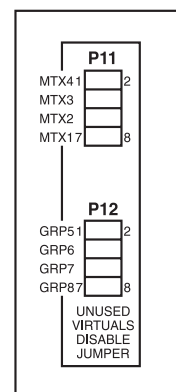
P11

Virtual Earth Disable options

Cleanfeed Jumpers. In an eight group console no jumpers are fitted. In a four group console jumpers are fitted to disable the unused Cleanfeed buses 3 and 4. To disable link pins 5 - 6 and 7 - 8.

If the Cleanfeed buses 3 and 4 are unused link pins 1 - 2 and 3 - 4.

When Group modules 5 to 8 are omitted the relevant virtual earth buses are grounded. To disable the Groups 5 to 8 link pins 9 – 10, 11 – 12, 13 – 14 and 15 – 16.

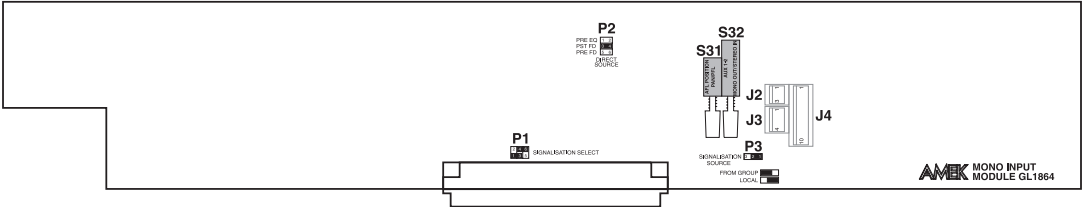


P12

When Group modules 5 to 8 are omitted the relevant virtual earth buses are grounded. To disable the Groups 5 to 8, link pins 1 - 2, 3 - 4, 5 - 6 and 7 - 8.

LB I Mono Input Module

Jumper and Switch Options – GLI864

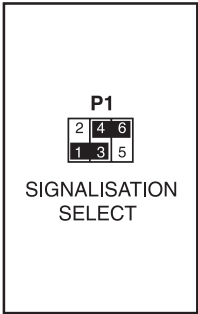


P1

Signalisation Select

To enable the remote mute facility on the channel, link pins 4 – 6 (Factory Pre-set). Applying an active low to a pin on the 15 way D Type connector controls the remote mute. This is located on the back panel. To disable the remote mute and enable the optional VCA, link pins 2 – 4. To enable the external Tally indicator, link pins 3 – 5.

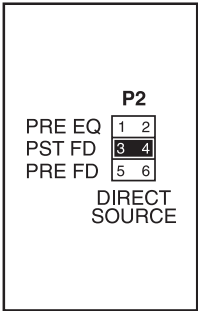
Note:- The Tally LED indicator when set to external is controlled by applying an active low to a pin on the 15 way D Type connector, This is located on the back panel. If the internal Tally has been selected by linking pins 1 – 3 (Factory Pre-set) the LED is driven directly off the fader start system.



P2

Direct Source

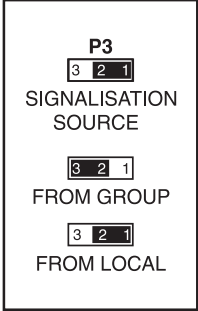
Gives the option of selecting the source signal for the Direct output. To select the source signal to be Pre Eq, link pins 1 - 2. To select the source signal to be Post Fader, link pins 3 – 4 (Factory Pre-set). To select the source signal to be Pre Fader, Post Mute link pins 5 – 6.



P3.

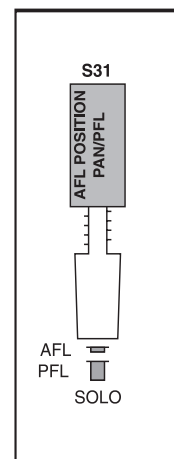
Signalisation Source.

To enable the **Local** mode link pins 1 – 2 (Factory Pre-set). To enable the **Group / Master** mode link pins 2 - 3. **Local** mode, if the Mic / Line switch is selected to Line and the channel fader is open, an active low is sent to the 15 way D Type connector. This is located on the back panel. If the Mic is selected and the fader is open the Studio outputs will mute. No signal is sent to the back panel. The **Group / Master** mode operation is as above, except a Group or Master fader has to be open to trigger the signal signalisation.

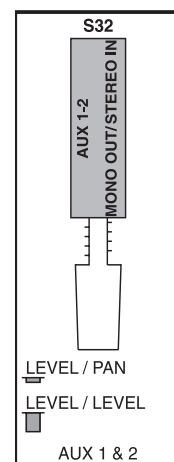


S31**PFL / AFL Select Switch.**

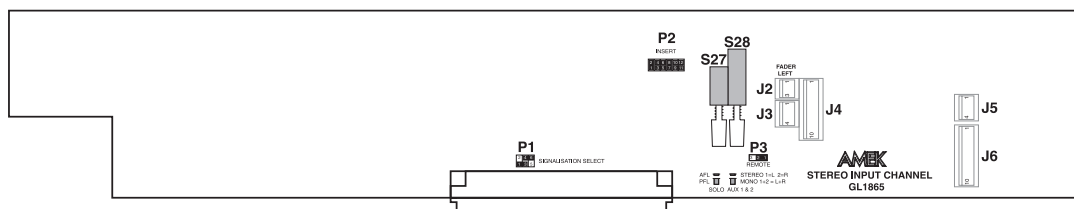
When the switch is out (Factory Pre-set), pre fade listen is sent to the Monitor outputs when any SOLO switch is pressed. When the switch is pressed in, stereo after fade listen is sent to the Monitor outputs when any SOLO switch is pressed.

**S32.****Aux 1 & 2 Mono Stereo Switch.**

When the switch is out, Aux 1 & 2 acts as a level / level arrangement (Factory Pre-set). When the switch is pressed in, Aux 1 & 2 are converted to a level / pan arrangement.



LBS Stereo Input Module Jumper and Switch Options – GLI865

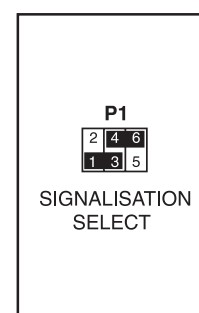


P1

Signalisation Select

To enable the remote mute facility, link pins 4 – 6 (Factory Pre-set). Applying an active low to a pin on the 25 / 15 way D Type connector controls the remote mute. This is located on the back panel.
(25 way for Group position, 15 way for Input position).
To disable the remote mute and enable the optional VCA control link pins 2 – 4.
To enable the external tally indicator, link pins 3 – 5.

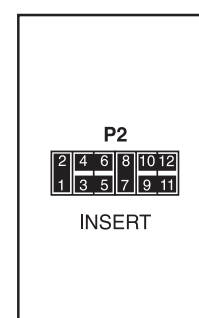
Note:- The Tally LED indicator when set to external, is controlled by applying an active low to a pin on the 25 / 15 way D Type connector. This is located on the back panel (25 way for Group position, 15 way for Input position). If the internal Tally has been selected by linking pins 1 – 3 (Factory Pre-set), the LED is driven directly off the fader start system.



P2.

Stereo Insert Position Select.

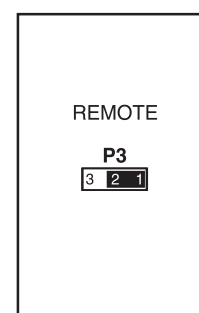
To select stereo insert position to be Post Eq, link pins 1 – 2, 3 – 5, 4 – 6, 7 – 8, 9 – 11 and 10 – 12 (Factory Pre-set).
To select the stereo insert position to be Post Fader and Post Pan, link pins 1 – 3, 2 – 4, 5 – 6, 7 – 9, 8 – 10 and 11 – 12.



P3

Signalisation Source

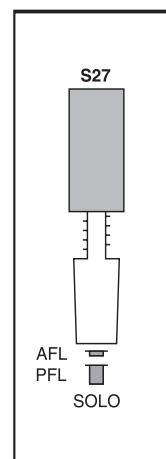
To enable the **Local** mode, link pins 1 – 2 (Factory Pre-set). To enable the **Group / Master** mode, link pins 2 – 3. **Local** mode, if the channel fader is open an active low is sent to the 15 way D Type connector. This is located on the back panel. The **Group / Master** mode operation is as above except a Group or Master fader has to be open to trigger the signal signalisation.



S27**PFL / AFL Select Switch**

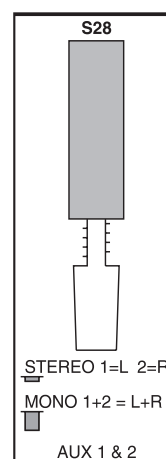
When the switch is out (Factory Pre-set), stereo pre fade listen is sent to the Monitor outputs when any SOLO switch is pressed.

When the switch is pressed in, stereo after fade listen is sent to the Monitor outputs when any SOLO switch is pressed.

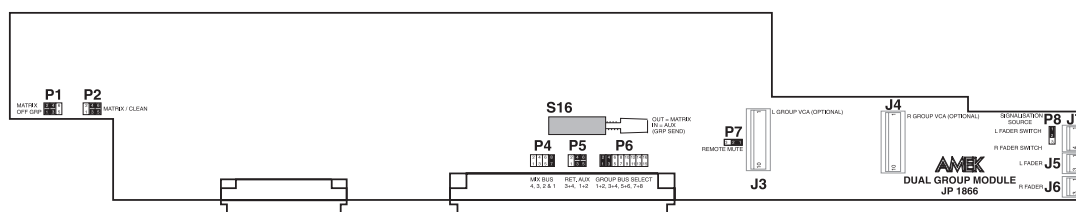
**S28****Aux 1 & 2 Mono Stereo Switch**

When the switch is out, Aux 1 & 2 is fed by a mono mix of left and right (Factory Pre-set).

When the switch is pressed in, Aux 1 & 2 are sourced in stereo so Aux 1 is left only and Aux 2 is right only.



LB2 Dual Group Module Jumper and Switch Options – JP 1866



P1

Cleanfeed Off Group Source

To route the signal from the Aux Pre / Post switch and send it to the Cleanfeed output, link pins 3 – 5 and 4 – 6. E.g. If the module is Groups 1 & 2, Groups 1 & 2 will be sent to Cleanfeed 1. To disable the function, link pins 1 – 3 and 2 – 4 (Factory Pre-set).



P2

Cleanfeed Jumper

Linking pins 3 – 5 (Factory Pre-set) enables the chosen Cleanfeed bus to be connected to the Cleanfeed mix amp. Linking pins 1 – 3 disconnects Cleanfeed bus from the Cleanfeed mix amp. Linking pins 4 – 6 (Factory Pre-set) sends the Cleanfeed cancellation signal to the Cleanfeed mix amp. This signal is out of phase and will cancel out any identical signal on the selected Cleanfeed bus. Linking pins 2 – 4 disables the Cleanfeed cancellation signal.



P4

Cleanfeed Bus Selection

This allows you to select the appropriate Cleanfeed buses. To connect Cleanfeed bus 1 to the module in the first group position, link pins 7 – 8. To connect Cleanfeed bus 2 to the module in the second group position; link pins 5 – 6. To connect Cleanfeed bus 3 to the module in the third group position, link pins 3 – 4. To connect Cleanfeed bus 4 to the module in the fourth group position link pins 1 – 2.

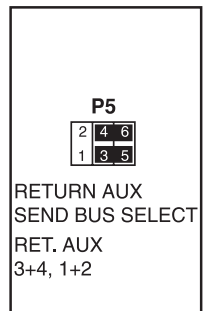


Note: - In a four Group console Cleanfeed buses 3 and 4 will be used for Cleanfeed outputs 1 & 2. Only link one bus per modules.

P5**Return Aux Send Bus Select**

To select Aux buses 1 & 2, link pins 4 – 6 and 3 – 5 (Factory Pre-set).

To select Aux buses 3 & 4, link pins 1 – 3 and 2 – 4.

**P6****Group Bus Select**

These jumpers should be set for the appropriate Group buses.

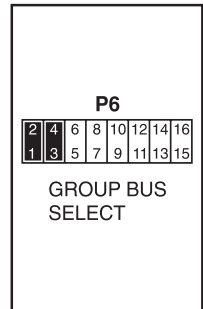
To select Groups 1 & 2, link pins 1 – 2 and 3 – 4.

To select Groups 3 & 4, link pins 5 – 6 and 7 – 8.

To select Groups 5 & 6, link pins 9 – 10 and 11 – 12.

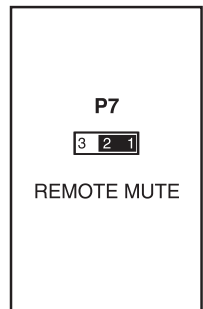
To select Groups 7 & 8, link pins 13 – 14 and 15 – 16.

Note: - Only link one pair of buses per module.

**P7****Remote Mute / VCA Control Select**

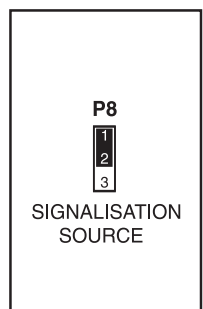
To enable the remote mute facility on the Group module, link pins 1 - 2 (Factory Pre-set).

Applying an active low to a pin on the 25 way D Type connector controls the remote mute. This is located on the back panel. To disable the remote mute and enable the optional VCA control, link pins 2 – 3.

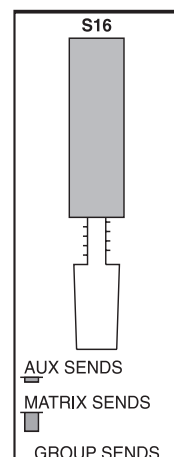
**P8****Signalisation Select**

To disable the Group fader start switch; link pins 1 – 2 (Factory Pre-set).

To enable the Group fader start switch; link pins 2 – 3.

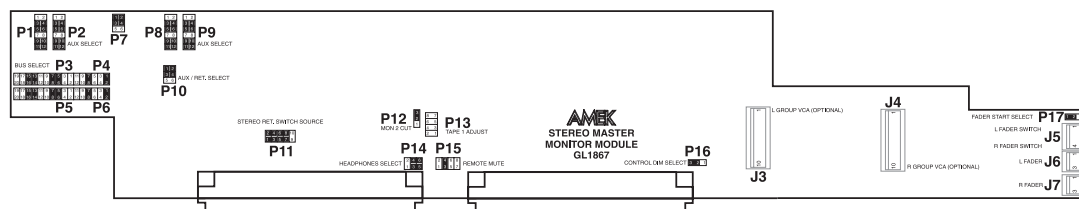
**S16****Group Sends Aux**

When the switch is pressed in, the Group sends are Aux sends 1 to 4 (Factory Pre-set).



LB4 Master Module

Jumper and Switch Options – GL 1867



P1, P2, P8, and P9

Monitor Aux Send Mono / Stereo Select

Stereo bus left and right has four sets of Aux sends. These can be configured as a stereo / level pan arrangement or mono level / level arrangement in pairs.

P9 operates off the Stereo bus left for Aux 1 and 2.

P8 operates off the Stereo bus left for Aux 3 and 4.

P2 operates off the Stereo bus right for Aux 1 and 2.

P1 operates off the Stereo bus right for Aux 3 and 4.

To configure as Stereo. (Factory Pre-set), link pins 3 – 5, 4 – 6, 9 – 11 and 10 – 12.

To configure as Mono, link pins 1 – 3, 2 – 4, 7 – 9 and 8 – 10.

P1, P2, P8 & P9

1	2
3	4
5	6
7	8
9	10
11	12

AUX SELECT

P3 and P5

Aux sends / Return Level Destination Select

Configures the destination of the Aux level controls.

To select Aux buses 1, 2, 3, and 4, link pins 13 – 14 and 15 – 16 on both jumpers (Factory Pre-set).

To select the Matrix buses, link pins 9 – 10 and 11 – 12 on both jumpers.

To select the Stereo bus, link pins 17 – 18 and 19 – 20 on both jumpers.

To select Control Room Monitor, link pins 1 – 2 and 3 – 4 on both jumpers.

To source the Cleanfeed buses off the Stereo Bus Pre, link pins 5 – 6 and 7 – 8 (Factory Pre-set).

P3 & P5

19	17	15	13	11	9	7	5	3	1
20	18	16	14	12	10	8	6	4	2

BUS SELECT

P7 and P10

Aux sends / Return level source select

This configures the source for the Aux send level controls.

To source the Stereo bus, link pins 1 – 3 and 2 – 4 (Factory Pre-set).

To source the Monitor Returns 1 to 4, link pins 3 – 5 and 4 – 6. **P10** configures the left hand side of the Stereo bus and Monitor Returns 1 and 2.

P7 configures the right hand side of the Stereo bus and Monitor Returns 3 and 4.

P7 & P10

1	2
3	4
5	6

AUX / RET. SELECT

P4 and P6

Monitor Return Bus Select

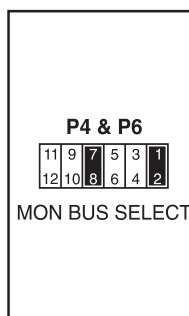
The Monitor Return outputs can be configured to feed the Aux sends.

To disable the Monitor Returns (Factory Pre-set), link pins 1 – 2 and 7 – 8 on both jumpers.

To feed the Aux buses, link pins 3 – 4 and 9 – 10 on both jumpers.

P6 configures the Monitor Returns 1 and 2.

P4 configures the Monitor Returns 3 and 4.

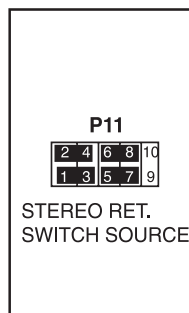


P11

Stereo Return Switch Source

To define the source for the Stereo Return switch to be the stereo return signal, link pins 1 – 3, 2 – 4, 5 – 7 and 6 – 8 (Factory Pre-set).

To convert the Stereo Return switch to a Monitor Mix switch, which sends the Stereo Bus or the Monitor Returns 1 to 4 to the Control Room speakers, link pins 3 – 5, 4 – 6, 7 – 9 and 8 – 10.



P12

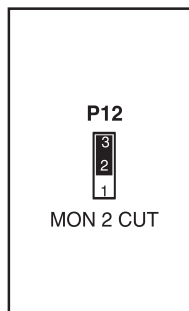
Monitor 2 Cut Disable / Enable

To enable the external Monitor cut to be active, link pins 2 – 3 (Factory Pre-set).

To disable the function, link pins 1 – 2.

Applying an active low to pins on the 25 way D Type connector controls it.

This is located on the back panel.

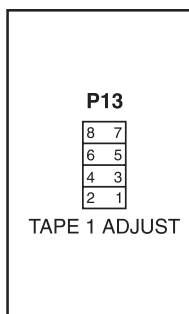


P13

Tape 1 Sensitivity Adjust Switch

To increase the sensitivity of the Tape 1 input to –6dBu, link pins 1 – 2, 3 – 4, 5 – 6 and 7 – 8.

To select unity gain fit no jumpers (Factory Pre-set).



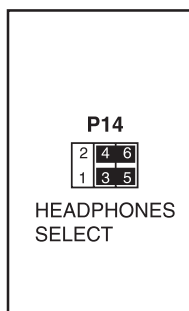
P14

Headphones Source Select

The source for the Headphones output can follow the Control Monitors or Monitor 2.

To select the Control Monitors (Factory Pre-set), link pins 3 – 5 and 4 – 6.

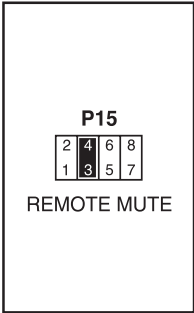
To select Monitor 2, link pins 1 – 3 and 2 – 4.



P15

Remote Mute / VCA Control Select

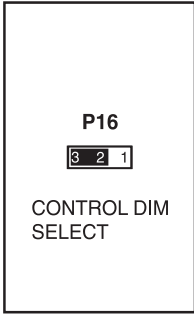
To enable the remote mute facility for the Control Room Monitors, link pins 3 - 4. (Factory Pre-set).
Applying an active low to a pin on the 25 way D Type connector controls the remote mute.
This is located on the back panel.
To enable Stereo Bus to be cut externally, link pins 5 – 6.
To enable Monitor 2 to be cut externally, link pins 1 – 2.
Note:- If fitted with optional VCAs, link pins 7 – 8 to provide external control.



P16

Control Room Monitor Dim Select

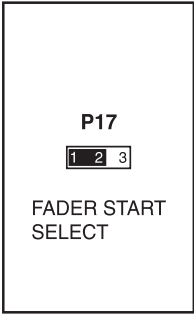
To enable the Dim control (Factory Pre-set), link pins 2 – 3. The attenuation level is set at –20dB.
To disable the Dim control, link pins 1 – 2.



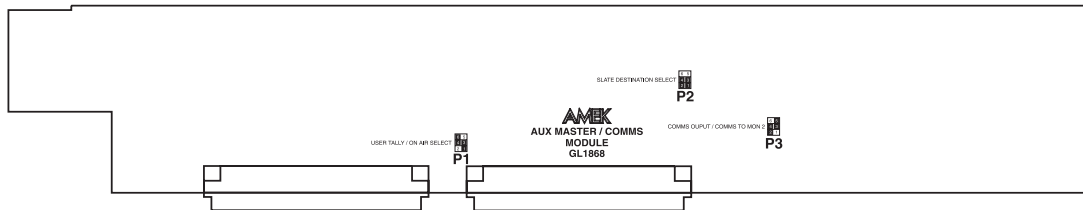
P17

Fader Start Select

To enable the fader start link, pins 2 – 3.
To disable the function, link pins 1 – 2 (Factory Pre-set).



LB6 Aux Master Comms Module Jumper and Switch Options – GL 1868



P1

User Tally / On Air Select

To select the internal User Tally indicator, link pins 1 – 3 (Factory Pre-set).

To select the external User Tally, link pins 3 – 5.

Applying an active low to a pin on the 25 way D Type connector controls the external User Tally.

This is located on the back panel.

To activate On Air Mode, link pins 4 – 6 (Factory Pre-set).

To disable it, link pins 2 – 4.

P1



USER TALLY
ON AIR SELECT

P2

Slate Destination Select

To enable the oscillator to slate to the Stereo Bus, link pins 1 – 3 (Factory Pre-set).

To enable it to slate to the Group Buses, link pins 2 – 4 (Factory Pre-set).

To disable slate to the Stereo Bus, link pins 3 – 5.

To disable the slate to the Group Buses, link pins 4 – 6.

P2



SLATE DESTINATION
SELECT

P3

Comms Output / Comms to Monitor 2

To enable the comms signal to route to the Comms output, link pins 3 – 5 (Factory Pre-set).

For the oscillator to route to the Comms output link pins 1 – 3.

To enable the comms signal to route to the Monitor 2 output, link pins 4 – 6.

To disable the comms to Monitor 2, link pins 2 – 4 (Factory Pre-set).

P3



COMMS OUTPUT /
COMMS OUTPUT
TO MON 2
SELECT

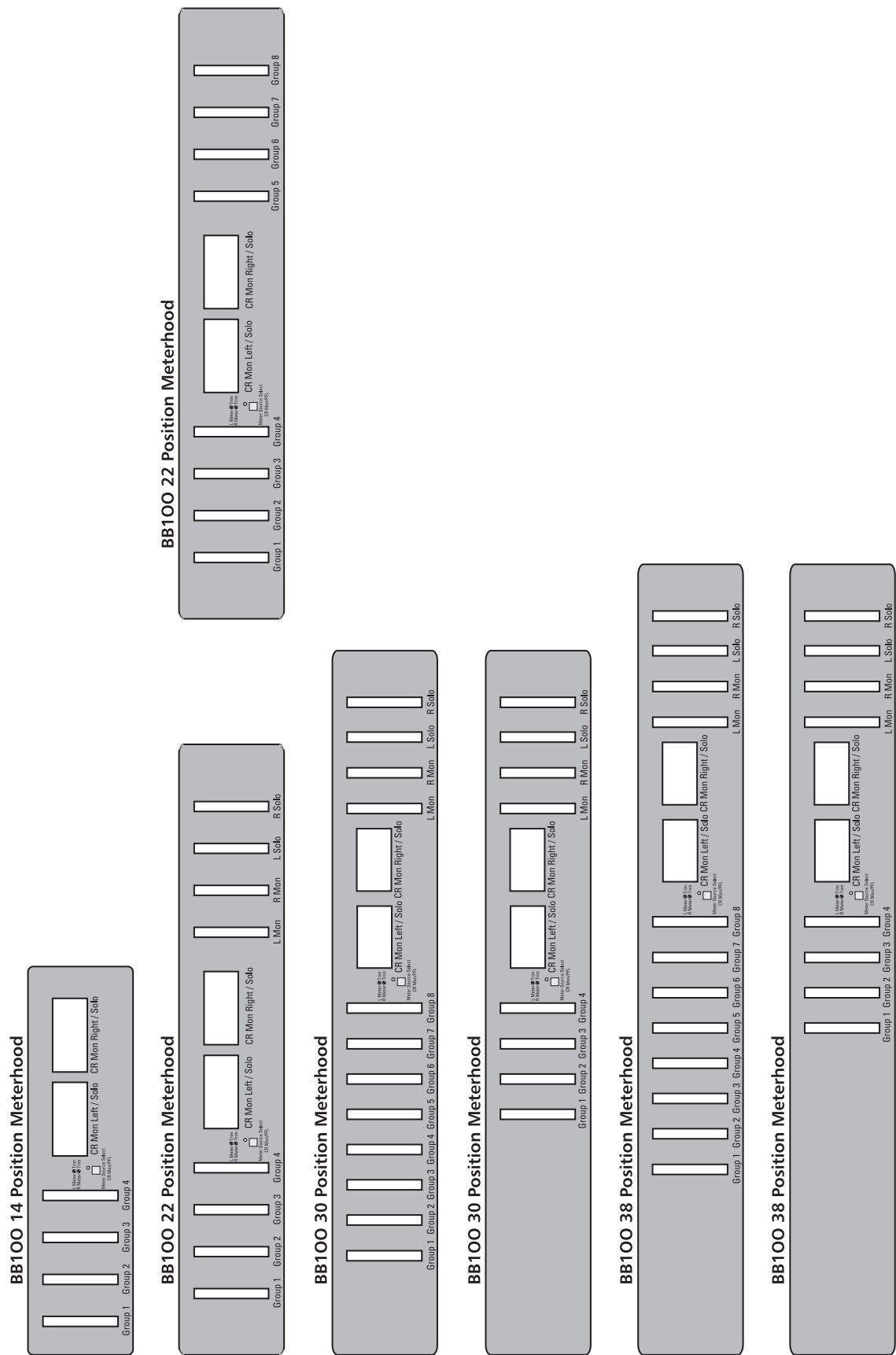
System Architecture

6

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<i>BB100 Meterhood Layouts</i>	<i>6-3</i>
<i>Power and Ribbon Harness Locations</i>	<i>6-4</i>

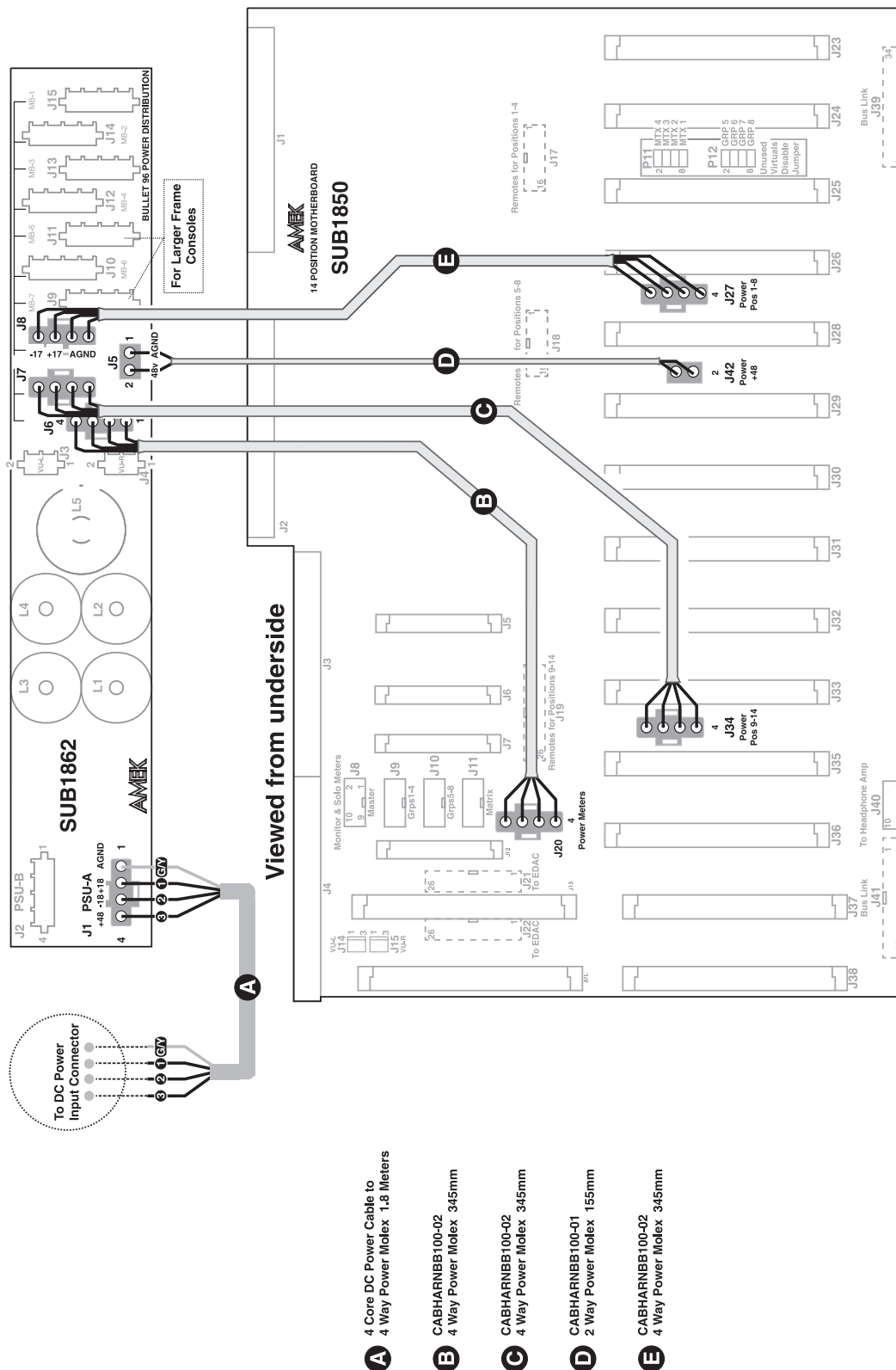
BB100 Meterhood Layouts



Power and Ribbon Harness Locations

To gain access to the power and ribbon harnesses remove the underside panel. See the following diagrams for the location and function of the harnesses.

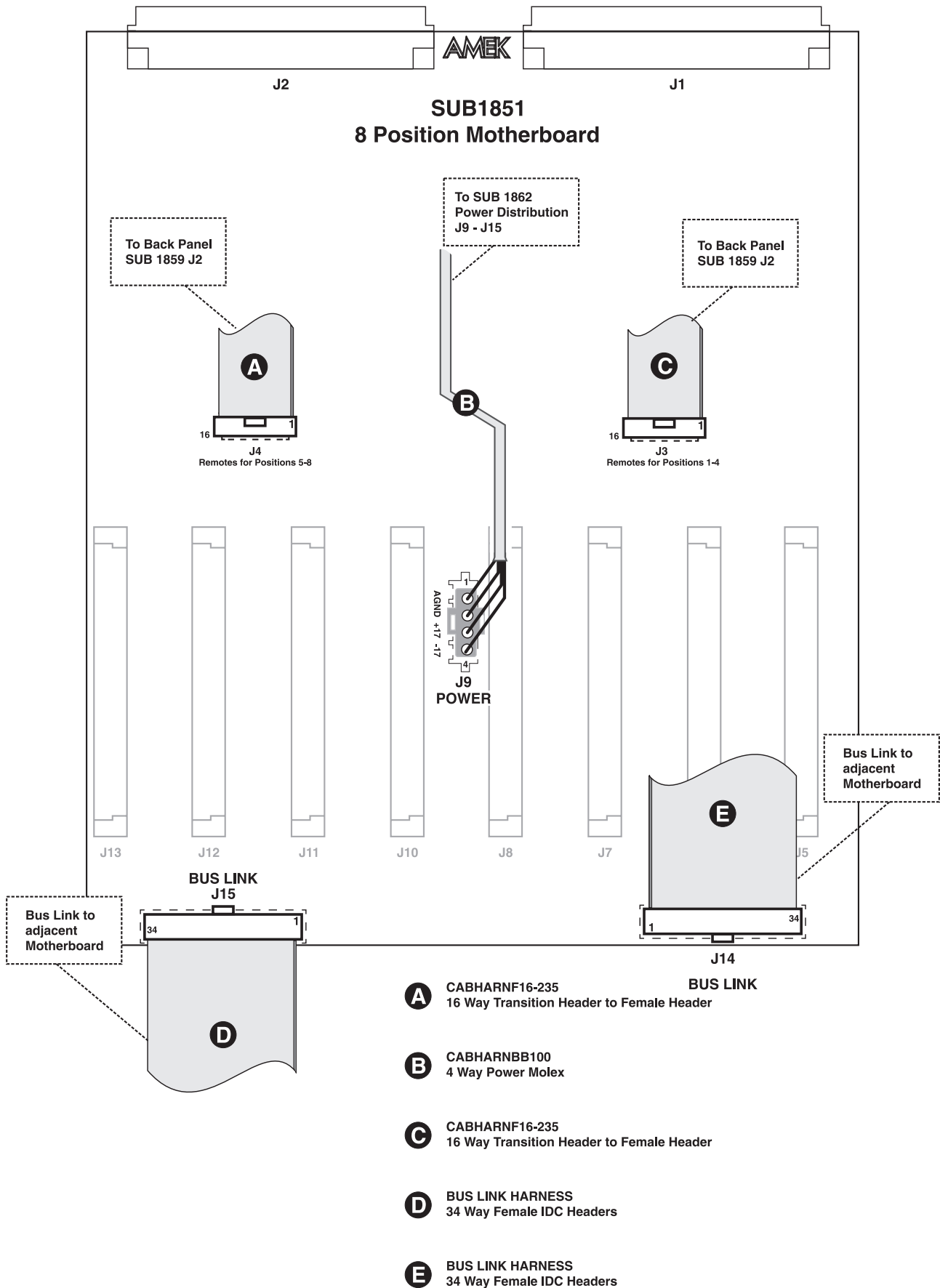
Power Distribution Diagram





Power Distribution and Harness Location (1851)

Viewed from underside



Maintenance

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Maintenance 7-3

Removing the Modules 7-3

Audio and Level Alignment 7-3

Moving Coil Meter Alignment 7-3

Oscillator Level 7-3

Clean-Feed Trim 7-4

Maintenance



There are no user serviceable parts in the console, all maintenance work should be carried out by AMEK or the authorised dealer.

The unit should be cleaned with a soft brush around the controls.
DO NOT use solvent cleaners under any circumstances.

Removing the Modules



Modules are taken out by removing the fixing screws at the top and bottom ends. The modules are removed by pulling them directly upward. **Never remove or refit the modules with the power on.**

Audio and Level Alignment

Bargraph meter calibration

The console bargraph meters are calibrated during factory testing to read '0' for output levels of +4dBu. Level indication is by 28 segment LED bargraph meters, which are located in the meterhood.

The meters read Group Output, Stereo Mix or 2 Track Returns.

Where fitted, the two far right meters read the PFL/AFL bus.

The meters can be set to read VU or PEAK by the switch on the Stereo Master module LB4.

The trim adjustments for each Group meter are accessed through the top faceplate of each Group module (LB2).

The trim adjustments for the Clean-feed output meters (optional extras) are accessed through the top faceplate of each Group module (LB2).

The trim adjustments for the Monitor output meters are accessed through the top faceplate of the Stereo Master module (LB4).

The trim adjustments for the PFL/AFL meters are accessed through the top faceplate of the Stereo Master module (LB4).

Moving Coil meter Alignment

The console VU meters are calibrated during factory testing to read '0' for output levels of +4dBu. The fine trim adjustments are located on the front of the meterpanel.

Oscillator Level

The trim adjustment for the Oscillator is accessed through the top faceplate of the Auxiliary Master module (LB6).
(Factory Pre-set @ +4dB).

Clean-Feed Trim

The clean-feed null trim is used to optimise clean feed attenuation. (Factory Preset).

The trim adjustment for the null is accessed through the top faceplate of the Dual Group module (LB2).

The null trim is used to cancel the pre stereo bus signal with the chosen clean-feed input modules direct output.

The result in cancellation appears on the clean-feed output.

Power and Ribbon Harness Location

To gain access to the power and ribbon harnesses remove the underside access panel. See Chapter 6 for location and function of harnesses.

Specifications

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Console Types. 8-3

Technical Specification

Console Types

All specifications for the BB100 console apply to consoles that are installed completely in accordance with Amek's recommendations. This includes recommendations on power supply cables and grounding.

The figures in this specification are typical figures measured on a console, immediately after completing normal production tests.

Figures will therefore vary slightly from console to console and the results here should not be regarded as 'guaranteed minimum performance'. They should be taken only as indicative of the results that might be obtained.

Noise		
Microphone equivalent input noise	Measured at the channel insert point, 22Hz – 22kHz band, RMS. Input terminated with 200 ohm source. Gain +70 dB.	Typically -127 dBu
One Line Input to Stereo Bus	Measured at the Stereo Bus output, 22Hz – 22kHz band, RMS. Gain unity	Typically -89 dBu (14 position frame)
Total harmonic distortion		
Mic input to Main output	Measured at the Stereo Bus output with 10K or 600 ohm load. Test signal -30 dBu @ 1 kHz, Gain 40 dB. 22Hz – 22kHz band, RMS.	<0.03%
Line input to Main output	Measured at the Stereo Bus output with 10K or 600 ohm load. Test signal +20 dBu @ 1 kHz, Gain unity. 22Hz – 22kHz band, RMS.	<0.01%
Frequency response		
Mic input to Main output	All Filters & EQ out. Measured at the Stereo Bus output with 10K load. Test signal -40 dBu, Gain 60 dB.	+/- 0.5dBu (20Hz – 20kHz)
Line input to Main output	All Filters & EQ out. Measured at the Stereo Bus output with 10K load. Test signal +20 dBu, Unity gain.	+/- 0.5dBu (20Hz – 20kHz)
X-Talk		
Channel breakthrough	Channel 1 to Subgroup 1, Channel 4 to Subgroup 4. Test signal +20 dBu to Channel 1, Unity gain, 200 ohm load to Channel 4. Measured @ Subgroup output 4.	Better than -90dB (40Hz – 15kHz)
Channel Pan cut-off	Channel 1 to Subgroup 4, Pan hard right, Test signal +20 dBu to Channel 1, Unity gain, Measured @ Subgroup output 3.	Better than -65dB @ 1kHz

Headroom

Mic input	Measured at the channel insert point. Gain 10 dB. PAD in.	> +25dBu
Line input	Measured at the channel insert point. Gain unity.	> +25dBu
Subgroup & Stereo Bus output	Measured at the Stereo Bus output with 600 ohm load. Gain unity.	> +25dBu

Impedance

Mic input	Measured using Audio Precision System One protocol	> 1k Ω @ 1kHz
Line input	Measured using Audio Precision System One protocol	> 15k @ 1kHz
Outputs	Measured using Audio Precision System One protocol	< 70 ohm @ 1kHz

Equaliser & Filter

LBI Mono Input Channel		
HF	The HF control gives 18dB of cut or boost switchable at frequencies 6kHz or 12kHz.	
LF	The LF control gives 18dB of cut or boost. The frequency switch selects between 40 Hz and 80Hz. Using the X3 switch multiplies the selected frequencies by three giving a selection of 120Hz or 240Hz.	
HMF	The HMF cut and boost control gives a range of ± 14 dB. The HMF frequency control gives a variable frequency range of 300Hz to 6kHz. Using the X3 switch multiplies the selected frequencies by 3 giving a range of 900Hz to 18kHz. Using the Q switch selects either 0.7 or 1.3 Q Factor.	
LMF	The LMF cut and boost control gives a range of ± 14 dB. The LMF frequency control gives a variable frequency range of 40Hz to 800Hz. Using the X3 switch multiplies the selected frequencies by three giving a range of 120Hz to 2.4kHz. Using the Q switch selects either 0.7 or 1.3 Q Factor.	
HI-PASS Filter	The HP switch inserts a HI-PASS filter into the signal path. The -3dB point is fixed at 80Hz at 18dB per octave.	

LBS Stereo Input Channel		
HF	The HF control gives 18dB of cut or boost switchable at frequencies 6kHz or 12kHz.	
LF	The LF control gives 18dB of cut or boost. The frequency switch selects between 40 Hz and 80Hz. Using the X3 switch multiplies the selected frequencies by three giving a selection of 120Hz or 240Hz.	
MF	The MF cut and boost control gives a range of ± 14 dB. The HMF frequency control gives a variable frequency range of 80Hz to 5kHz. Using the X3 switch multiplies the selected frequencies by 3 giving a range of 240Hz to 15kHz. Using the Q switch selects either 0.7 or 1.3 Q Factor.	
HI-PASS Filter	The HP switch inserts a HI-PASS filter into the signal path. The -3dB point is fixed at 80Hz at 18dB per octave.	
Power Consumption		
10 – 4 – 2 BB100 Console		0.5kVA
32 – 8 – 2 BB100 Console		1.2kVA

Notes:-

1. 0dBu = 0.775 Volts.
2. Published specifications apply to standard consoles.
3. All measurements taken using the Audio Precision System One test set.
4. Where no load impedance is specified, the equipment should be loaded with 10K ohms or greater.
5. These figures are typical of performance in a normal electromagnetic environment. Performance may be degraded in severe conditions.
6. Amek has an established policy of seeking improvements to designs, specifications and manufacture of its products. Alterations take place continually, often without notice outside the company. Amek's literature must not be taken as an infallible guide to the specifications available despite a considerable effort to produce up to date information.

