LX10

User Guide

Soundcraft

IMPORTANT

Please read this manual carefully before using your mixer for the first time.

This equipment complies with the EMC directive 89/336/EEC Environment E1-E4, 93/68/EEC and LVD 73/23/EEC.

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Parts of the design of this product may be protected by worldwide patents.

Part No.: 5069297

Issue: 1

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INTRODUCTION

Features

The LX10 combines the essential Soundcraft live mixer qualities with basic recording-oriented features, in a compact frame that's light enough for one person to carry yet easy to configure and use. This makes it especially suitable for multi-purpose use in venues such as small halls and community centres.

Housed in a choice of 16, 24 and 32 channel frame, LX10 provides 24, 32 or 40 inputs – with no less than 13 separate bus outputs including mix, 4 groups, a dedicated mono bus for centre speaker clusters, side or rear fills, and six auxiliary busses.

LX10's balanced mic inputs all use Soundcraft new GB30 padless mic preamp providing 60dB of gain and 22 dBu of headroom. Each input also includes 4 band EQ with two swept mid frequency controls. In addition, EQ In/Out switch and steep 18dB/Octave High Pass Filter, allow effective audio control in difficult venues whilst the six auxiliary sends are pre-post switchable in pairs from each channel, providing a maximum of 4 pre-fader and six post fader. This makes LX10 equally applicable for foldback – heavy performance or in situations where more effects are required.

LX10 groups section houses two further stereo inputs – with EQ, auxiliaries for keyboards or stereo recording devices – as well as two FX returns. All four groups are routable to mix and include 12 segment bargraph metering for accurate monitoring and inserts. Six auxiliary masters on rotary controls also included AFL soloing.

In the master section there is talkback provision to all pre-fade auxiliaries and the mix. A two track return for pre-show music are present. A "two-track" to mix switch allows the engineer to play CD's over the main PA whilst back-stage set-up is going on, with one press of a button. The mix is also routable to the separate mono bus if mono PAs are required.

A USB 2.0 I/O is provided to facilitate collaboration with digital audio systems or computer-based digital audio workstations. Configured in 2-in and 2-out, the USB port can be used either for music playback from a digital source or recording mixed signals from the console to a connected digital audio device.

LX10 is built in a rugged wedge-shaped steel chassis with an internal power supply, professional all-metal jackfield and connectors on the rear of the console. All inputs and outputs are balanced.

Applications include: Gigging Bands, Small installations, Small venues, Theatres, Houses of Worship and Live & studio recording.

Warranty

1. Soundcraft 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 Soundcraft (if any) from whom the End User purchased the Equipment, provided such a person is authorised for this purpose by Soundcraft 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 Soundcraft and subject to the following conditions the Dealer or Soundcraft will repair or replace the defective components. Any components replaced will become the property of Soundcraft.

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 Soundcraft) and postage must be prepaid.

4. This warranty shall only be available if:
   a) The Equipment has been properly installed in accordance with instructions contained in Soundcraft's manual; and
   b) The End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and
   c) No persons other than authorised representatives of Soundcraft 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 Soundcraft recommends, with only such operating supplies as meet Soundcraft's specifications and otherwise in all respects in accordance with Soundcraft'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.

INSTALLATION

For your own safety and to avoid invalidation of the warranty please read this section carefully.

Warning

THIS UNIT MUST BE EARTHED

Under no circumstances should the mains earth be disconnected from the mains lead.

The wires in the mains lead are coloured in accordance with the following code:

Earth:	Green and Yellow (Green/Yellow – US)
Neutral:	Blue (White – US)
Live:	Brown (Black – US)

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.
- The wire which is coloured Brown must be connected to the terminal in the plug which is marked with the letter L.

Ensure that these colour codings are followed carefully in the event of the plug being changed.

To avoid the risk of fire, replace the mains fuse only with the correct value fuse, as marked on the rear panel.

The internal power supply unit contains no user serviceable parts. Refer all servicing to a qualified service engineer, through the appropriate Soundcraft dealer.

Precautions and Safety Instructions

General Precautions

Avoid storing or using the mixing console in conditions of excessive heat or cold, or in positions where it is likely to be subject to vibration, dust or moisture. Do not use any liquids to clean the fascia of the unit: a soft dry cloth is ideal.

Avoid using the console close to strong sources of electromagnetic radiation (e.g. video monitors, high-power electric cabling): this may cause degradation of the audio quality due to induced voltages in connecting leads and chassis.

Caution! In all cases, refer servicing to qualified personnel.

Handling and Transport

The console is supplied in a strong carton. If it is necessary to move it any distance after installation it is recommended that this packing is used to protect it. Be sure to disconnect all cabling before moving. If the console is to be regularly moved we recommend that it is installed in a foam lined flightcase. At all times avoid applying excessive force to any knobs, switches or connectors.

Power Cable

Always use the power supply cable supplied with the mixer: the use of alternative cables may cause damage and voids the warranty.

Warning! In the event of an electrical storm, or large mains voltage fluctuations, immediately switch off the mixer and unplug from the mains.

Signal Levels

It is important to supply the correct input levels to the console, otherwise signal to noise ratio or distortion performance may be degraded; and in extreme cases, damage to the internal circuitry may result. Likewise, on all balanced inputs avoid sources with large common mode DC, AC or RF voltages, as these will reduce the available signal range on the inputs. Note that OdBu =0.775V RMS.

Refer to the Specifications section for details of input and output levels.

Mains Installation

General Wiring Procedures

To take full advantage of the excellent signal to noise ratio and low distortion of Soundcraft consoles, care must be taken to ensure that incorrect installation and wiring does not degrade the performance of the desk. Hum, buzz, instability and Radio Frequency interference can usually be traced to earth loops and inferior earthing systems. In some areas, especially heavily industrial areas, the incoming mains earth will not be adequate and a separate technical earth for all the audio equipment must be supplied. However, check with your local electricity supply company to ensure that safety regulations are not infringed or negated.

The successful, hum free, installation of a system requires forethought, and the establishment of a set of ground rules, which must be consistently adhered to at all stages of installation.

Initial Wiring Considerations

For optimum performance, it is essential for the earthing system to be clean and noise free, as all signals are referenced to this earth. A central point should be decided on for the main earth point system, and all earths should be 'star fed' from this point. It is common electrical practice to 'daisy chain' the earths to all electrical outlets but this method is unsuitable for audio installations. The preferred method is to run an individual earth wire from each outlet, back to the system star point to provide a safety earth screen reference for each piece of equipment. A separate earth wire should also be run from each equipment rack and area, to the star point. This may or may not be used depending on circumstances, but it is easier to install in the first place, than later when problems arise. The location of the star point should be a convenient, easily accessible place, preferably at the rear of the console or in the main equipment rack.

Install separate 'clean' and 'dirty' mains outlets, wired individually back to the incoming mains distribution box. Use the 'clean' supply for all audio equipment and the 'dirty' supply for all lighting, etc. Never mix the two systems.

If necessary, to provide sufficient isolation from mains borne interference, install an isolating transformer. This should be provided with a Faraday Shield which must be connected with earth.

Never locate the incoming mains distribution box near audio equipment, especially tape recorders, which are very sensitive to electro-magnetic fields.

Ensure that all equipment racks are connected to earth, via a separate wire back to the star point.

Equipment which has unbalanced inputs and outputs may need to be isolated from the rack to prevent earth loops.

Audio Wiring

Having provided all equipment with power and earthing connections, consideration must be given to the method of providing audio interconnection and adequate screening of those interconnections. This must be done in a logical sequence to avoid problems and assist in the localisation of problem equipment.

Connect the FOH or Monitor system to the console and check for any hum, buzz, or RFI. Only when you are satisfied with the quietness of the console and the PA system should you proceed with the next step.

Connect stereo or multitracktape recorders, FX and foldback sends one at a time, checking and isolating any connection which degrades performance.

Connect all other peripheral devices.

Connect all microphone lines.

By following this sequence much time and future trouble will be saved, and the result will be a quiet, stable system.

Shielding

Audio equipment is supplied with a variety of input and output configurations, which must be taken into consideration when deciding where the screen connections should be made. There are three sources of unwanted signal being impressed on the screen, which are as follows:

Extraneous electrostatic or electromagnetic fields.
Noise and interference on the earth line.
Capacitive coupling between the screen and signal wires.

To minimize the adverse affects of the unwanted coupling to the signal wires, it is important that the screen is connected at one end only, i.e. the screen must not carry any signal current. Any signal on the wires within the screen will be capacitively coupled to the screen. This current will ultimately be returned to the source of the signal, either directly, if the screen is connected at the signal source end, or indirectly via the earthing system, if the signal is connected at the signal destination end. The indirect connection will cause an increase in high frequency cross-talk, and should be avoided wherever possible.

Therefore, in general, always connect the shield only at the signal source end. In high RF areas, the screen can also be connected to earth via a 0.01 mF capacitor. This will present a short circuit at RF frequencies, thus lowering the effective shield impedance to ground. However, at low audio frequencies the reactance of the capacitor will be sufficiently high not

to cause an earth loop problem.

Points to Remember

In all cases, use good quality twin screened audio cable. Check for instability at the output.

Always connect both conductors at both ends, and ensure that the screen is only connected at one end.

Do not disconnect the mains earth from each piece of equipment. This is needed to provide both safety and screen returns to the system star point.

Equipment which has balanced inputs and outputs may need to be electrically isolated from the equipment rack and/or other equipment, to avoid earth loops.

It is important to remember that all equipment which is connected to the mains is a potential source of hum and interference and may radiate both electrostatic or electromagnetic radiation. In addition, the mains will also act as a carrier for many forms of RF interference generated by electric motors, air-conditioning units, thyristor light dimmers etc. Unless the earth system is clean, all attempts to improve hum noise levels will be futile. In extreme cases there will be no alternative but to provide a completely separate and independent 'technical earth' to replace the incoming 'noisy earth'. However, always consult your local electricity supply authority to ensure that safety regulations are not being infringed.

Setting Up & Troubleshooting

Initial set-up

Once you have connected up your system (see the sections on connection and wiring earlier in this manual for guidance) you are ready to set initial positions for the controls on your mixer.

Set up individual input channel as follows:

- Connect your sources (microphone, keyboard etc.) to the required inputs and release the MUTE switches. Note: Phantom powered mics should be connected before the 48V is switched on.
- Set Master faders at 0, input faders at 0, route the channels to MIX and set power amplifier level to suit the application.
- Provide a typical performance level signal and press the PFL button on the first channel, monitoring the level on the bargraph meters.
- Adjust the input gain until the meter display is in the amber section, with occasional peaks to the first red LED at a typical maximum source level. This allows sufficient headroom to accommodate peaks and establishes the maximum level for normal operation (but see note below).
- Repeat this procedure on other channels as required.
- Listen carefully for the characteristic sound of 'feedback'. If you cannot achieve satisfactory input level setting without feedback, check microphone and speaker placement and repeat the exercise. If feedback persists, it may be necessary to use a Graphic Equaliser to reduce the system response at particular resonant frequencies.

Note: The initial settings should only be regarded as a starting point for your mix. It is important to remember that many factors affect the sound during a live performance, for instance the channel EQ settings or even the size of the audience!

You are now ready to start building the mix and this should be done progressively, listening carefully for each component in the mix and watching the meters for any hint of overload. If this occurs, back off the appropriate Channel Fader slightly until the level is out of the red segments, or adjust the Mix Master Faders. This procedure will ensure that the mixer is set up correctly, with adequate headroom. If more amplification is needed, adjust the power amplifier level controls.

Troubleshooting

No Power

- Is the mains supply present?
- Is the mains lead firmly connected?
- Check the mains fusing
- If only one of the power indicators is illuminated, consult your Soundcraft dealer

Condenser Mic Not Working

- Is the 48V turned on?
- Is the mic plugged into the Mic input?
- Is the mic cable a balanced 3-wire type?

Meters not showing any signal

- Has the input gain been set correctly? (see above.)
- Is the source connected to the appropriate input socket for the level of signal?
- Do you have something connected on the Inserts, and is that external device switched on?
- Are the Master faders set at max., are input faders set high enough and is the channel routed to the output being

monitored?

- Is the MUTE switch released on the relevant channels?
- Is the appropriate monitor select switch pressed?
- Is there a PFL/AFL pressed on another channel?

No Mix output

- Check that the Mix Master Fader is up?
- Check that the 2TK REPLACES MIX switch is released?

No Monitor output

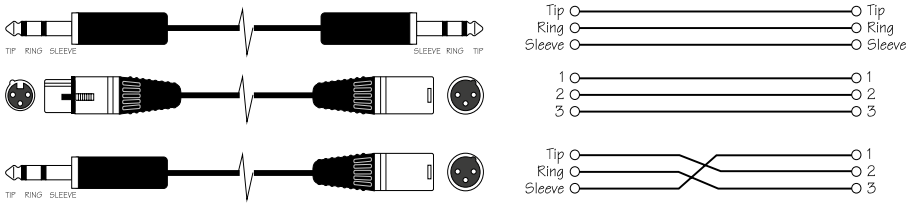
- Is a headphone jack plugged in?
- Is the Monitor + Phones control set high enough?
- Is the appropriate monitor select switch pressed?

Headphones Distorting

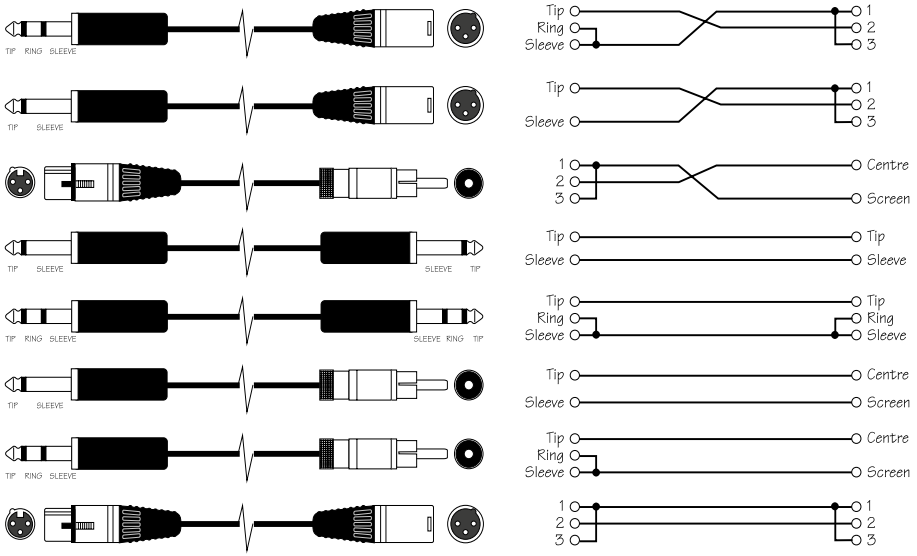
- Are the headphones less than 200Ω impedance?
- Is the Monitor + Phones level set too high?

Connecting Leads

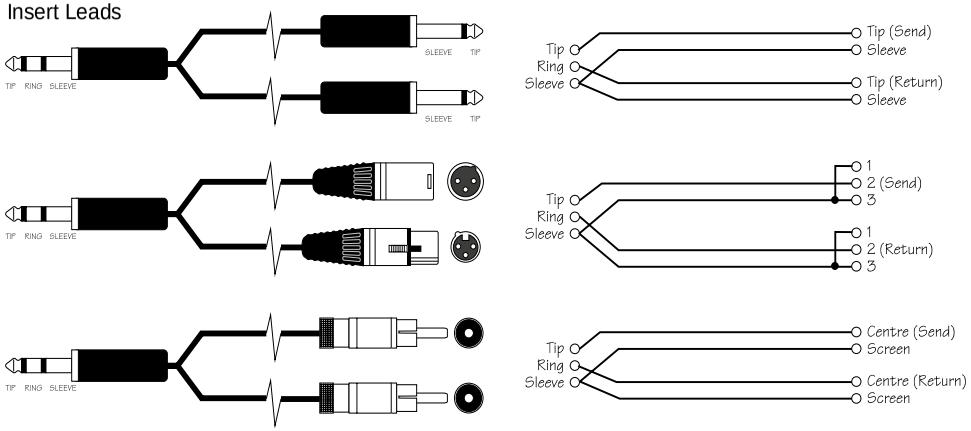
Balanced



Unbalanced

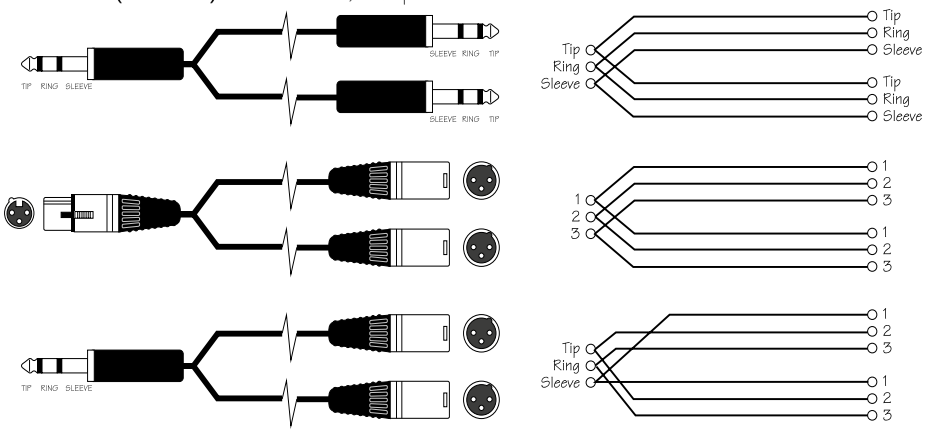


Insert Leads



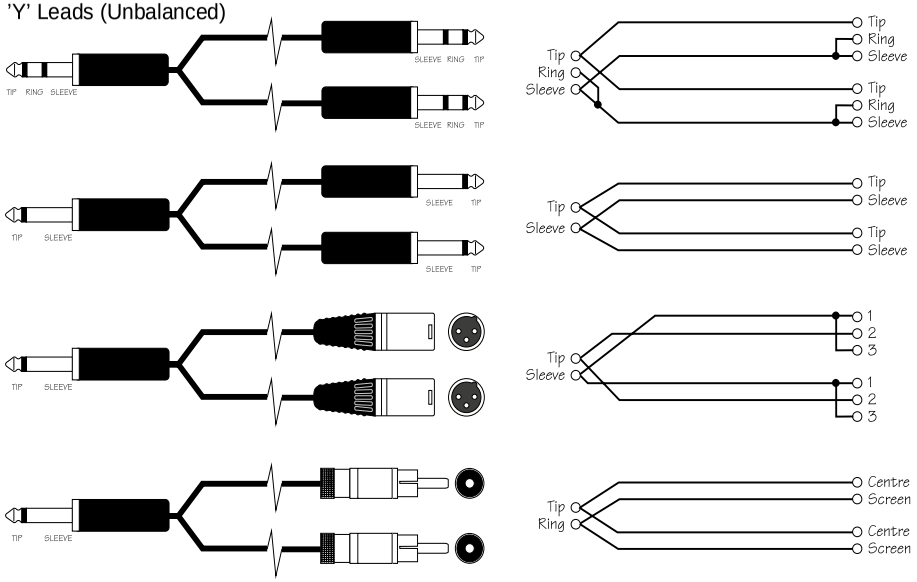
'Y' Leads (Balanced)

Where used....Aux, Mix outputs



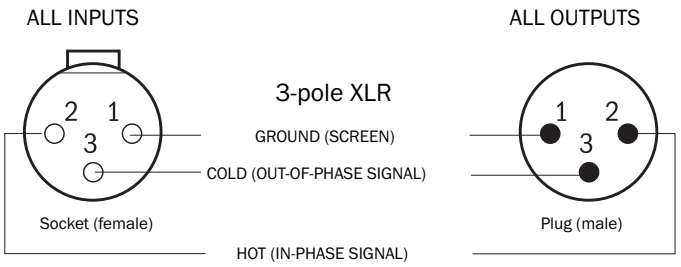
Headphone Splitter

'Y' Leads (Unbalanced)

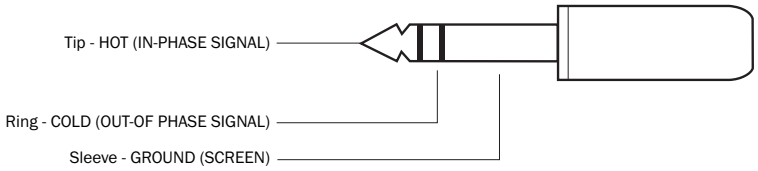


Audio Connector Pinouts

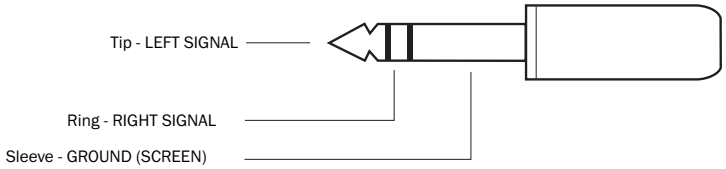
Audio Connector



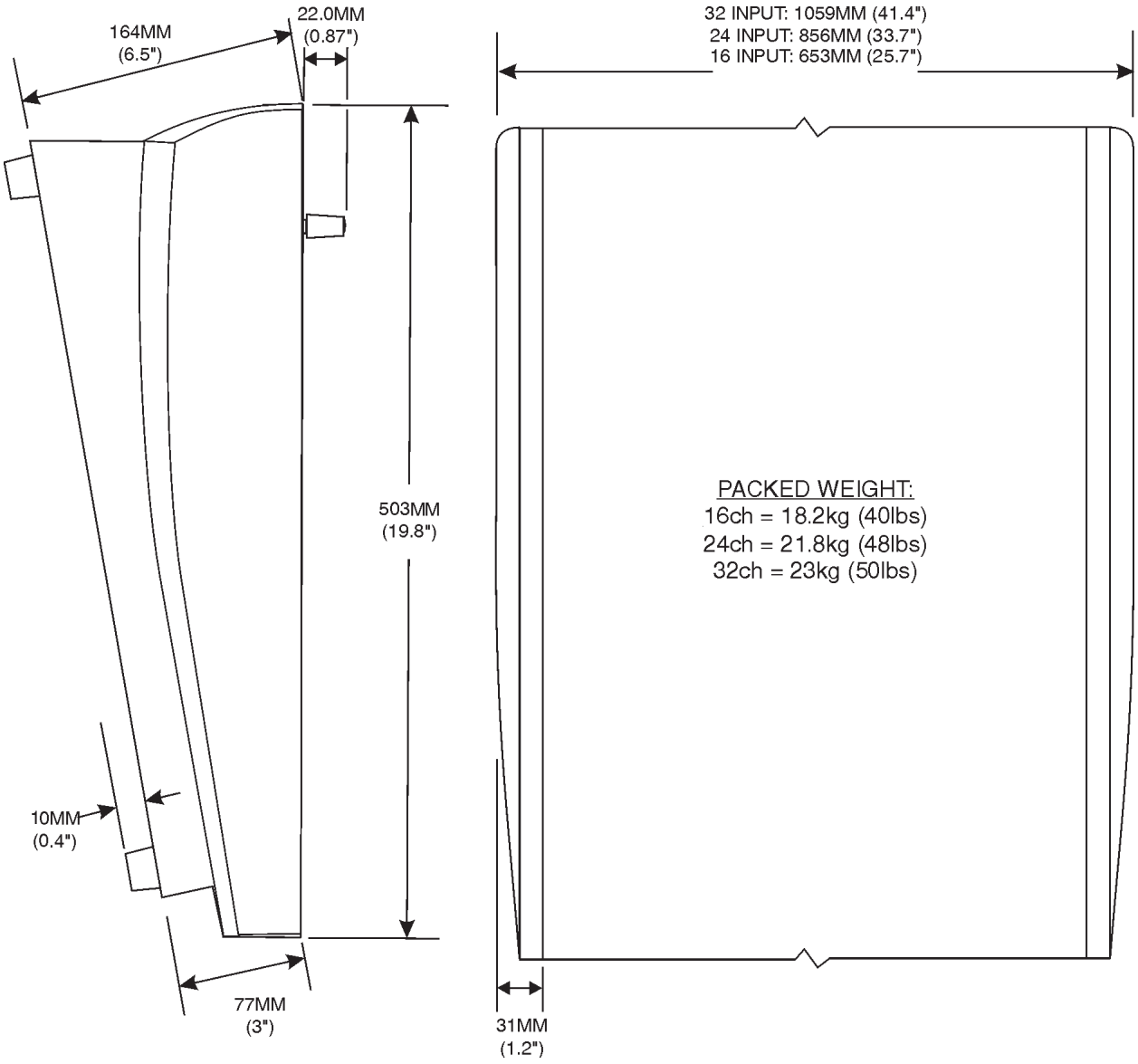
1/4” Stereo Jack Plug used as balanced Input/Output:
All Jacks Except Headphones



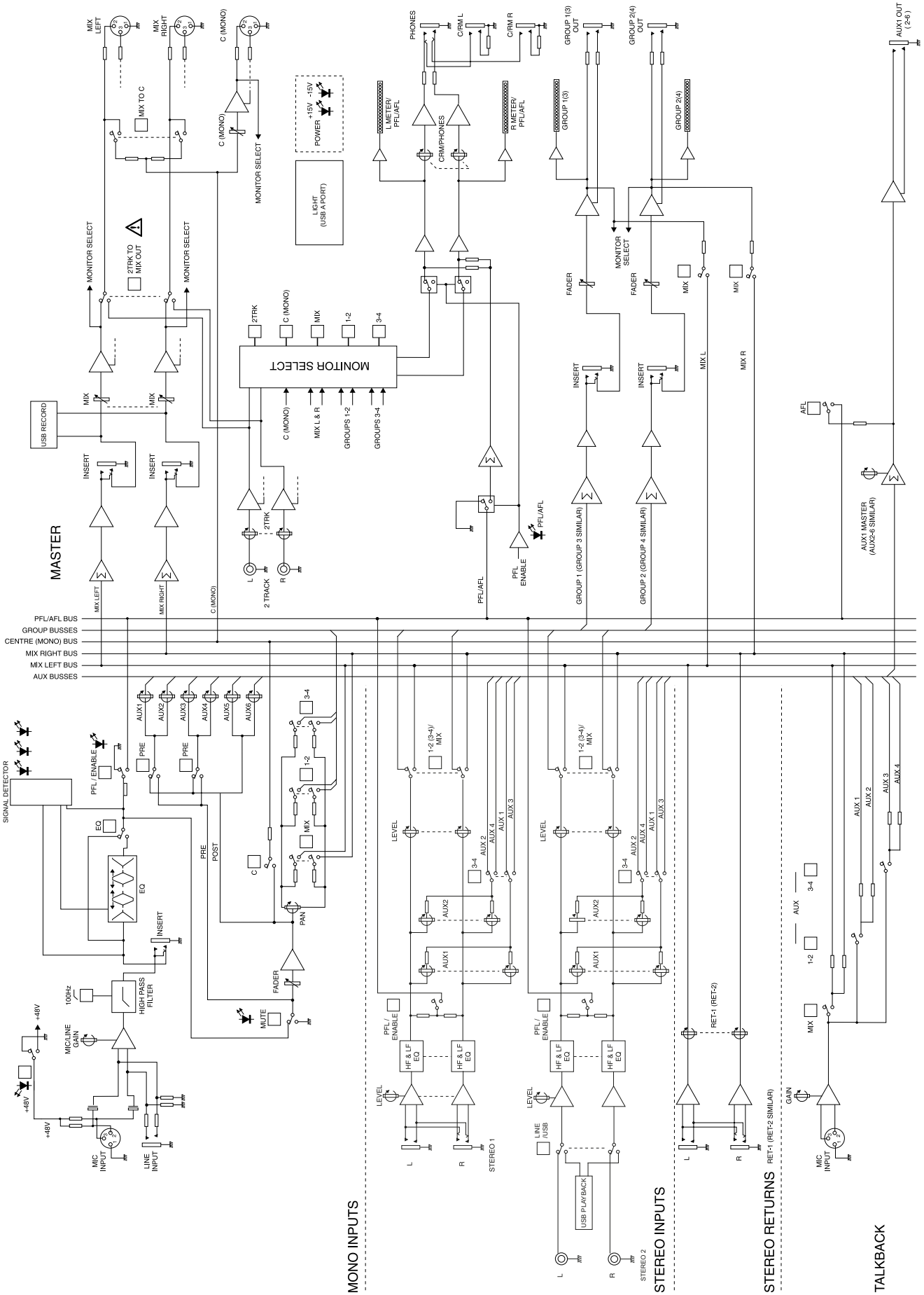
1/4” Stereo Jack Plug used For Headphones



Dimensions


164MM
(6.5")
22.0MM
(0.87")
503MM
(19.8")
10MM
(0.4")
77MM
(3")
32 INPUT: 1059MM (41.4")
24 INPUT: 856MM (33.7")
16 INPUT: 653MM (25.7")
PACKED WEIGHT:
16ch = 18.2kg (40lbs)
24ch = 21.8kg (48lbs)
32ch = 23kg (50lbs)
31MM
(1.2")

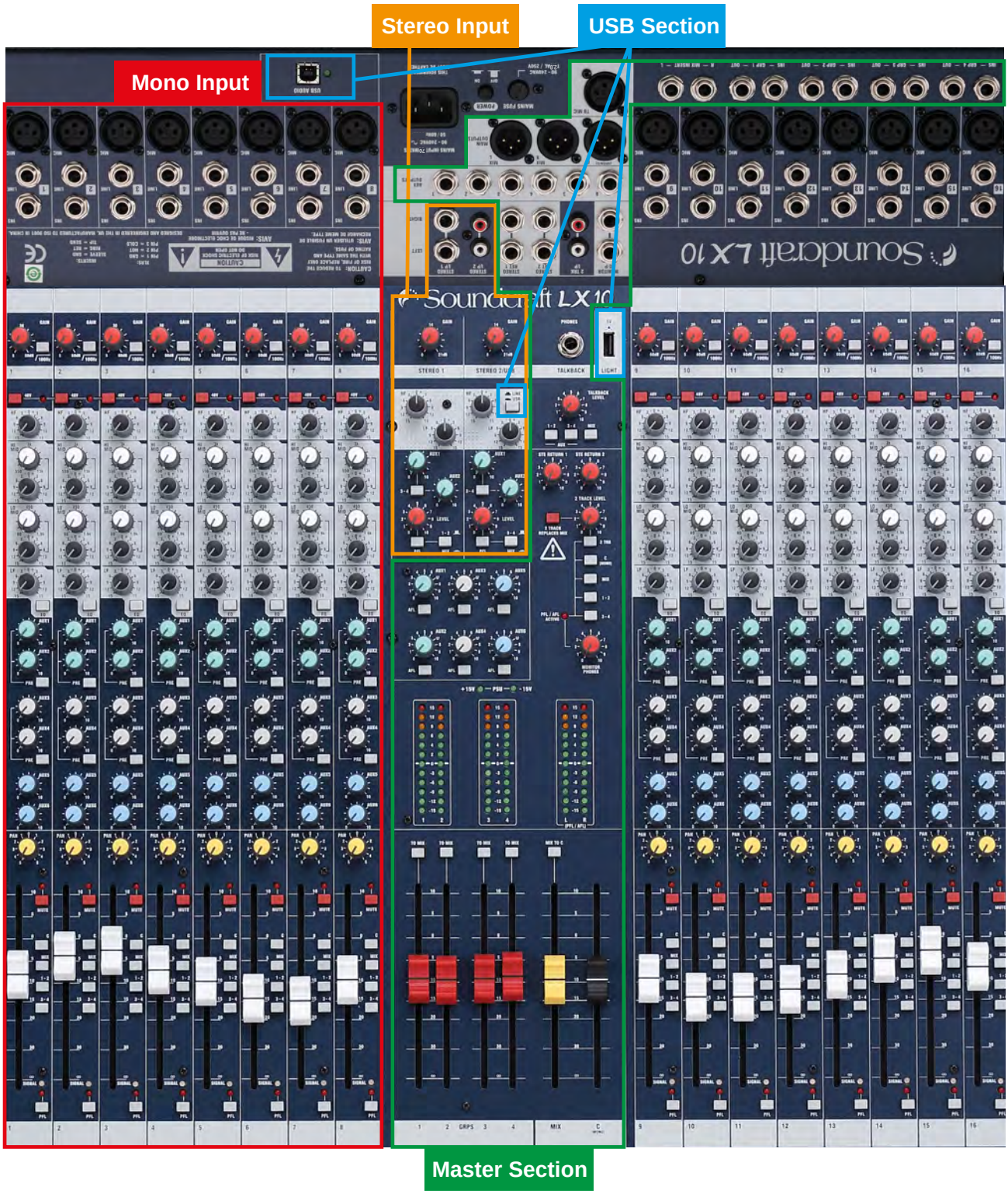
BLOCK DIAGRAM


MASTER
MONITOR SELECT
MONO INPUTS
STEREO INPUTS
STEREO RETURNS
TALKBACK
PFL/AFL BUS
GROUP BUSSES
CENTRE (MONO) BUS
MIX RIGHT BUS
MIX LEFT BUS
AUX BUSSES
MIX LEFT
MIX RIGHT
C (MONO)
2TRK TO MIX OUT
MIX TO C
MONITOR SELECT
POWER
+15V -15V
LIGHT (USB A PORT)
PHONES
C/RM L
C/RM R
L METER/ PFL/AFL
R METER/ PFL/AFL
CRM/PHONES
GROUP 1(3) OUT
GROUP 2(4) OUT
GROUP 1(3)
GROUP 2(4)
AUX1 OUT (2-6)
USB RECORD
INSERT
MIX
2TRK
1-2
3-4
C (MONO)
MIX L & R
GROUPS 1-2
GROUPS 3-4
2 TRACK
PFL/AFL
PFL ENABLE
FADER
MONITOR SELECT
MIX L
MIX R
GROUP 1 (GROUP 3 SIMILAR)
GROUP 2 (GROUP 4 SIMILAR)
AFL
AUX1 MASTER (AUX2-6 SIMILAR)
SIGNAL DETECTOR
PFL / ENABLE
EQ
PRE
POST
AUX1
AUX2
AUX3
AUX4
AUX5
AUX6
HIGH PASS FILTER
100Hz
MIC/LINE GAIN
+48V
MIC INPUT
LINE INPUT
PAN
MUTE
1-2 (3-4)/ MIX
LEVEL
HF & LF EQ
STEREO 1
LINE /USB
USB PLAY BACK
STEREO 2
RET-1 (RET-2)
RET-1 (RET-2 SIMILAR)
GAIN
AUX

USING THE CONSOLE

Overview

A 16 channel frame is shown.



Mono Input Channels

1 - MIC INPUT

The mic input accepts XLR-type connectors and is designed to suit a wide range of BALANCED or UNBALANCED signals. Professional dynamic, condenser or ribbon mics are best because these will be LOW IMPEDANCE. You can use low-cost HIGH IMPEDANCE mics, but the level of background noise will be higher. If you press the 48V switch down the socket provides a suitable powering voltage for professional condenser mics (this is also known as Phantom Power).

> **ONLY connect condenser microphones with the 48V powering OFF (switch UP), and ONLY turn the 48V powering on or off with all output faders DOWN, to prevent damage to the mixer or external devices.**
>
> **TAKE CARE when using unbalanced sources, which may be damaged by the phantom power voltage on pins 2 & 3 of the XLR connector.**

Unplug any mics if you want to use the LINE Input. The input level is set using the GAIN knob.

2- 48V (Phantom Power)

Many professional condenser mics need an external powering voltage, normally 48V, also known as PHANTOM POWER. This is a method of sending a powering voltage down the same wires as the mic signal. Each switch supplies the 48V power to one MIC input. The adjacent LED illuminates when the power is active.

> **DO NOT USE unbalanced mics with 48V switched on as they may be damaged by the phantom power voltage. Balanced dynamic mics and leads can normally be used with 48V switched on (contact your microphone manufacturer for guidance).**
>
> **Mics should always be plugged in, and all output faders set to minimum before switching 48V ON to avoid damage to external equipment.**

3 - LINE INPUT

Accepts 3-pole 'A' gauge (TRS) jacks. Use this high impedance input for sources other than mics, such as keyboards, drum machines, synths, tape machines or guitars. The input is BALANCED for low noise and top quality from professional equipment, but you can use UNBALANCED sources by wiring up the jacks as shown in 'Connecting Leads' Section, although you should then keep cable lengths as short as possible. Unplug anything in the MIC input if you want to use this socket. Set the input level using the GAIN knob.

4 - GAIN

This knob sets how much of the source signal is sent to the rest of the mixer. Too high, and the signal will distort as it overloads the channel. Too low, and the level of any background hiss will be more noticeable and you may not be able to get enough signal level to the output of the mixer.

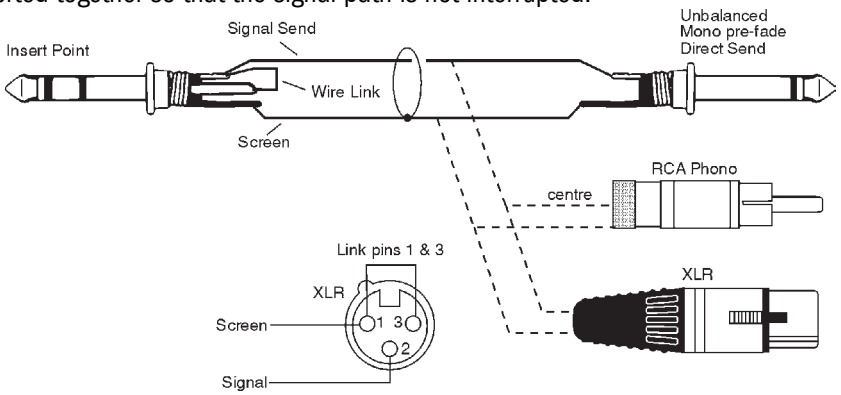
See 'Setting Up & Troubleshooting' Section to learn how to set GAIN correctly.

5 - 100Hz HI-PASS FILTER

Pressing this switch activates a steep 18dB per octave filter which reduces the level of bass frequencies only. Use this in live PA situations to clean up the mix, reducing stage rumble or 'popping' from microphones.

6 - INSERT POINT

The unbalanced, pre-EQ insert point is a break in the channel signal path, allowing limiters, compressors, special EQ or other signal processing units to be added in the signal path. The Insert is a 3-pole 'A' gauge jack socket which is normally bypassed. When a jack is inserted, the signal path is broken, just before the EQ section. The Send may be tapped off as an alternative pre-fade, pre-EQ direct output if required, using a lead with tip and ring shorted together so that the signal path is not interrupted.



7 - EQUALISER

The Equaliser (EQ) allows fine manipulation of the frequency bands, and is particularly useful for improving the sound in live PA applications where the original signal is often far from ideal and where slight boosting or cutting of particular voice frequencies can really make a difference to clarity.

HF EQ

Turn clockwise to boost high (treble) frequencies (12 kHz and above) by up to 15dB, adding crispness to cymbals, vocals and electronic instruments. Turn anticlockwise to cut by up to 15dB, reducing hiss or excessive sibilance which can occur with certain types of microphone. Set the knob in the centre-detented position when not required.

MID EQ (HMID & LMID)

There are two pairs of knobs which work together to form HI and LO MID frequency EQ sections. The lower knob in each pair provides 15dB of boost and cut, just like the HF EQ knob, but the frequency at which this occurs can be set by the upper knob over a range of 550Hz to 13 kHz (HMID) or 80Hz to 1.9k Hz (LMID). This allows some truly creative improvement of the signal in live situations, because the mid bands cover the range of most vocals. Listen carefully as you use these controls together to find how particular characteristics of, for instance, a vocal signal can be enhanced or reduced. Set the gain (lower) knob to the centre-detented position when not required. Note: Q is set at 1.5.

LF EQ

Turn clockwise to boost low (bass) frequencies (60Hz and below) by up to 15dB, adding warmth to vocals or extra punch to synths, guitars and drums. Turn anticlockwise to cut low frequencies by up to 15dB for reducing hum, stage rumble or to improve a mushy sound. Set the knob to the centre-detented position when not required.

8 - EQ SWITCH

The EQ switch bypasses the Equalisation section when released. Alternately pressing and releasing the switch provides an easy way of comparing the equalised and unequalised signals.

9 - AUX SENDS

These are used to set up separate mixes for FOLDBACK, EFFECTS or recording, and the

combination of each Aux Send is mixed to the respective Aux Output at the rear of the mixer. For Effects it is useful for the signal to fade up and down with the fader (this is called POST-FADE), but for Foldback or Monitor feeds it is important for the send to be independent of the fader (this is called PRE-FADE). All Aux Sends are muted with the other channel outputs when the MUTE switch is pressed.

All six Aux Sends are POST-EQ, unless the EQ is bypassed using the EQ switch (see above) and are normally POST-FADE for use as effects sends or additional submixes.

Aux's 1&2 and 3&4 may if required be switched in pairs to PRE-FADE by pressing the respective PRE switch, for use as foldback or monitor feeds. Aux's 5&6 always remain POST-FADE.

10 - PAN

This control sets the amount of the channel signal feeding the Left and Right MIX buses, allowing you to move the source smoothly across the stereo image. When the control is turned fully right or left you are able to route the signal at unity gain to either left or right outputs individually.

11 - MUTE

All outputs from the channel except inserts are active when the MUTE switch is released and muted when the switch is down, allowing levels to be pre-set before the signal is required.

12 - FADER

The 100mm FADER allows precise balancing of the various source signals being mixed to the Master Section. You get most control when the input sensitivity is set up correctly, giving full travel on the fader. See the 'Setting Up & Troubleshooting' Section for help in setting a suitable signal level.

13 - PFL

When the latching PFL switch is pressed, the pre-fade, post-EQ signal is fed to the headphones, control room output and meters, where it replaces the selected monitor source. The adjacent LED lights to identify the selected channel and the PFL/AFL LED on the Master section illuminates to warn that a PFL is active. This is a useful way of listening to any required input signal without interrupting the main mix, for making adjustments or tracing problems.

14 - SIGNAL

The 3-colored LED lighting is used to indicate the level of input signal, which is sampled PRE-EQ. When the signal is at a low level (-40 dBu - +4 dBu), the LED illuminates green. When the signal is at a normal performance level (+4 dBu - +17 dBu), the LED illuminates amber. When the signal passes above +17 dBu, the LED warns in red.

15 - ROUTING

The channel signal may be routed to the main stereo MIX or pairs of group busses (1-2, 3-4) by pressing the respective switches, with the channel signal fed proportionately to left (1, 3) or right (2, 4) depending on the position of the PAN control. The channel signal may also be routed to the separate centre (mono) bus by pressing the C switch, unaffected by the position of the PAN control.

Stereo Input Channels

1 - INPUT JACKS

Stereo 1 input accepts 3-pole 'A' gauge (TRS) jacks and Stereo 2 input accepts RCA jacks. Use these inputs for sources such as keyboards, drum machines, synths, tape machines or returns from processing units. Stereo 1's TRS is BALANCED for low noise and top quality from professional equipment, but you can use UNBALANCED sources by wiring up the jacks as shown in 'Connecting Leads' section, although you should then keep cable lengths as short as possible to prevent 'hum' being induced into the sound system. Mono sources may be used by plugging into the left jack only. Stereo 2's RCA connectors are for UNBALANCED sources.

2 - GAIN

The GAIN control sets the input level to the channel, allowing matching to a wide range of line level sources.

3 - EQUALISER

HF EQ

Turn clockwise to boost high (treble) frequencies, adding crispness to percussion from drum machines, synths and electronic instruments. Turn anticlockwise to cut these frequencies, reducing hiss or excessive brilliance. Set the knob in the centre-detented position when not required. The control has a shelving response giving 15 dB of boost or cut at 12 kHz and above.

LF EQ

Turn clockwise to boost low (bass) frequencies, adding extra punch to synths, guitars and drums. Turn anticlockwise to reduce hum, boominess or improve a mushy sound. Set the knob to the centre-detented position when not required. The control has a shelving response giving 15dB of boost or cut at 60Hz and below.

4 - AUX SENDS

These are used to set up separate mixes for FOLDBACK, EFFECTS or recording, and the combination of each Aux Send is mixed to the respective Aux Output at the rear of the mixer. The sends are always PRE-FADE which is most appropriate for Foldback or Monitor feeds, but note that the Line Inputs on pairs of Mono channels may be used as alternative stereo inputs if post-fade sends are essential for effects.

5 - LEVEL

The rotary level control adjusts the overall level of the signal which is fed to the Mix or selected pair of Groups.

6 - ROUTING

The Stereo channel signal is fed either to a pair of Subgroups (switch UP) or the stereo Mix (switch DOWN), at a level set by the LEVEL control. Stereo 1 feeds to Subgroups 1 & 2, Stereo 2 feeds to Subgroups 3 & 4.

7 - PFL

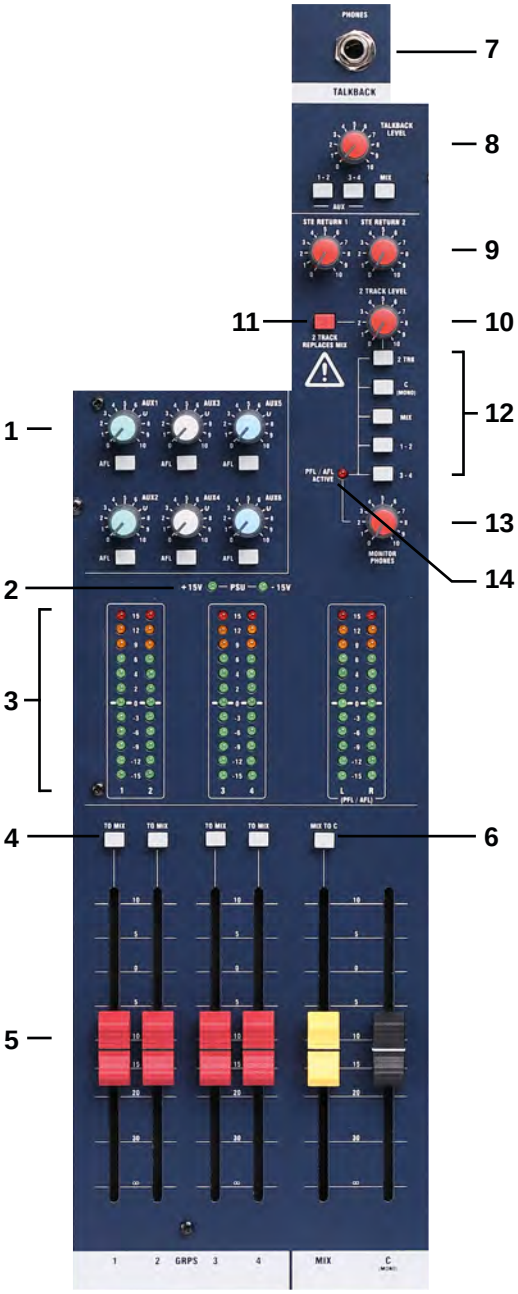
When the latching PFL switch is pressed, the pre-fade, post-EQ signal is fed in mono to the headphones, control room output and meters, where it replaces the selected monitor source. The PFL/AFL LED on the Master section illuminates to warn that a PFL is active.The Left and Right meters display the PFL signal in mono.

8 - USB/LINE SWITCH

The USB/LINE switch allows to input audio signals to Stereo 2/USB either through the RCA connectors (STEREO I/P 2) or the USB Audio connector.

Release (press up) the switch to input signals through the STEREO I/P 2 RCA connectors. Press down the switch to input signals through the USB Audio connector by using a USB (A-B) cable.

Note: please disconnect the STEREO I/P 2 connections when USB input is to be used.



Master Section

1 - AUX MASTERS

Each of the six AUX outputs has a master output level control and associated AFL switch.

AUX AFLs

Just as the Channel PFL switches allow pre-fade listening, so you can monitor each AUX output after the level control by pressing the AFL switch. This routes the AUX output signal to the MONITOR or PHONES, replacing any existing signal which is selected. The METERS also switch from the selected source to display the PFL/AFL signal and the PFL/ AFL LED lights to warn that a PFL or AFL switch is pressed. When you release the switch the Monitor swaps back to the previous source.

2 - POWER INDICATORS

These LEDs light to show that power is connected to the console and that the internal power supply is operating correctly.

3 - BARGRAPH METERS

3-colour peak reading BARGRAPH METERS are provided to monitor the four Subgroup outputs and the selected Monitor Phones source (2TK, C (mono), Mix or Groups), giving you a constant warning of excessive peaks in the signal which might cause overloading. Aim to keep the signal within the amber segments at peak levels for best performance.

Similarly, if the output level is too low and hardly registering at all on the meters, the level of background noise may become significant. Take care to set up the input levels for best performance.

When any PFL or AFL switch is pressed, the L & R meters automatically switch to show the selected PFL/AFL signal on both meters, in mono.

4 - TO MIX

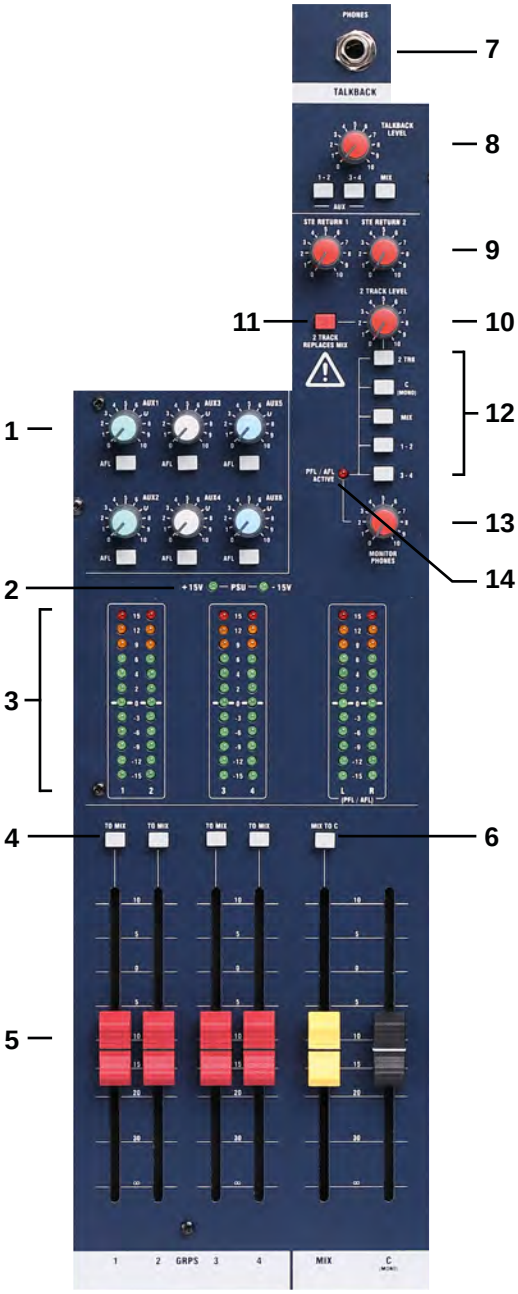
Pressing the Mix switch routes the post-fade Subgroup signals in pairs to the main Mix. Group 1 and 3 will be routed to MIX L separately by pressing down their respective 'TO MIX' switch. Group 2 and 4 will be routed to MIX R separately by pressing down their respective 'TO MIX' switch.

5 - MASTER FADERS

The MASTER FADERS set the final level of the Subgroup and Mix L & R outputs. These should normally be set close to the '0' mark if the input GAIN settings have been correctly set, to give maximum travel on the faders for smoothest control.

6 - MIX TO C (mono)

Pressing this switch routes the post-fade Mix L/R outputs to the C (mono) bus to create a separate mono mix to feed, for example, an induction loop or centre cluster. Note: If there are input channels which are routed both to Mix and C (mono), pressing this switch will have an additive effect which may lead to feedback.



7 - PHONES

The PHONES output appears on a 3-pole 1/4" jack, suitable for headphones with an impedance of 200Ω or higher.

8 - TB LEVEL

A balanced input is provided for a Talkback microphone. The signal may be routed selectively to Aux 1/2 or 3/4 (which might typically be used for performers' foldback) or Mix L/R by pressing the appropriate switches. The signal level is adjusted by the TB LEVEL control.

9 - STEREO RETURNS

Two balanced Stereo Returns are available for the outputs of effects units and are mixed directly to the Mix L/R busses at a level set by the RET-1 or RET-2 controls. If a mono source is used, plugging into the Left jack only automatically feeds to the signal to both Left and Right.

10 - 2TK LEVEL

The rotary control sets the level of the 2 Track Tape input, which is routed to the headphones, monitor outputs and meters, or directly to the Mix outputs by pressing the adjacent switch (12 MONITOR SOURCE SELECT). These unbalanced inputs, on RCA phono connectors, are ideal to connect the playback of a tape machine for monitoring.

11 - 2TK REPLACES MIX OUTPUT

This switch does what it says! When pressed the Mix output is switched to the 2 Track input and is an ideal way of feeding pre-show music to the main outputs in live applications without using up valuable input channels. For example, with the switch pressed and a CD connected and playing pre-show music, the engineer can be setting up channel levels, adjusting EQ, talking back to performers and monitoring any part of the mix (including final Mix) without affecting the sound to the audience. Releasing the switch instantly swaps the Mix Outputs back to the mixer and cuts off the CD.

CAUTION: Pressing this switch cuts off the normal Mix L/R signal and it should therefore NOT be used during live performance or recording.

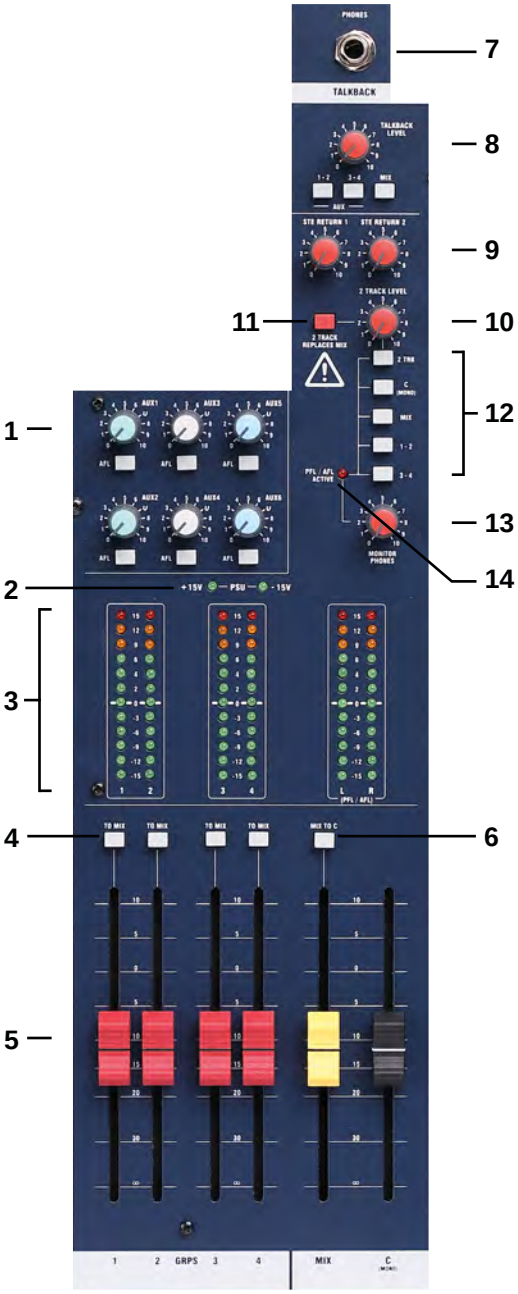
12 - MONITOR SOURCE SELECT

These switches allow a choice of 2TK, C (mono), Mix or Groups as the source for the Phones, Monitor outputs and meters, and may be selected individually or as a combination.

NOTE: If NO switches are pressed, there will be NO signal on the meters or monitors!

13 - MONITOR PHONES

This control sets the output level to the MONITOR LEFT & RIGHT outputs. If Headphones are plugged into the PHONES jack the Monitor outputs are cut off, and the knob then sets the headphone listening level. When the PHONES are unplugged the Monitor output is restored. The source for the Monitor and Phones is selected by the five switches

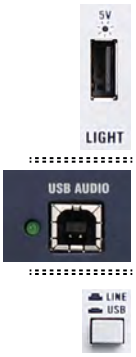


(12 MONITOR SOURCE SELECT) above the control.

When any PFL or AFL switch is pressed the source for the Monitor outputs and Headphones is switched to the mono PFL/AFL signal without interrupting the other outputs from the mixer, to allow individual signals to be monitored. The original monitor source is restored when the PFL/AFL switches are released.

14 - PFL/AFL

The PFL/AFL LED illuminates to show that a PFL/AFL is active and is the source for the monitors and meters. The LED will normally be OFF.



— 1

— 2

— 3

USB Section

1 - USB POWER SOCKET

The Standard-A USB power socket supplies power of 5.0V DC, 0.5A (maximum) and can be connected to USB-powered/chargeable peripherals like a USB lamp.

2 - USB AUDIO

The USB AUDIO connector allows the console to work with digital audio systems or computer-based digital audio workstations. Configured in 2-in and 2-out, the Standard-B USB connector can either send audio signals to the unit for playback or receive MIX L/R signals from it.

Playback

Connect your digital audio system or computer-based workstation to USB AUDIO using a USB A-B cable. Master left and right outputs will enter the console through the two USB input channels.

Recording

By selecting recording from the console on your digital audio system, the MIX L/R signals will be recorded from the console through the two USB output channels.

3 - USB/LINE SWITCH

The USB/LINE switch allows to input audio signals to Stereo 2 either through the RCA connectors (STEREO I/P 2, See '1-INPUT JACKS') or the USB Audio connector. (See '8-USB/LINE SWITCH' in 'Stereo Input Channel').

Gig: ..... **Date:** .....

Engineer: .....

Mark-up Sheet

You may freely copy this page to mark control positions to assist in resetting the desk between performances.

Sheet Title:

Sheet Title:

Sheet Title:

Sheet Title:

Sheet Title:

Sheet Title:

SPECIFICATIONS

Noise

Measured RMS, 22Hz to 22kHz Bandwidth	
Mic E.I.N @ unity gain, 150W source impedance	-129dBu
Mix Output, 24 inputs routed to mix, faders at unity, muted	<-80dBu
Mix Output, 24 inputs routed to mix, faders down	<-100dBu

Crosstalk (@1kHz, typical)

Fader attenuation	>95dB
Aux attenuation	>80dB
Pan isolation	>75dB
Adjacent channel crosstalk	>-80dB
Channel Mute	>90dB
Fader cut-off (rel. 0 mark)	>90dB
Aux Send pots offness	>80dB

Frequency Response

Mic/Line Input to any output, 20Hz-20kHz	<1dB
THD + N	
Mic sens. -30dBu, +20dBu at all outputs @ 1kHz	<0.006%

CMRR

Typical @ max gain @ 1kHz	>80dB
Typical @ any gain @ 50Hz	>60dB

Input & Output Impedance

Mic Input	1.8kΩ
Line Input	10kΩ
Stereo Input	8.6kΩ
2TK Return	12kΩ
Mix, Aux and Insert Sends	75Ω

Input & Output Levels

Mic Input max. level	+22dBu
Line Input max. level	+22dBu
Stereo Input max. level	+22dBu
2TK Return	>30dBu
Headphones (@ 200Ω)	150mW

USB 2.0 (Standard B)

Inputs / Outputs	2-in, 2-out
Bit Depth	16-bit, 24-bit
Sampling rate	44.1kHz / 48kHz / 88.2kHz / 96kHz / 176.4kHz / 192kHz

Power Consumption

AC mains supply (internal PSU)	90V-240VAC, 50/60Hz universal input

LX10

用户手册

Soundcraft

重要提示！

首次使用本设备前，请仔细阅读

用户手册！

本设备符合EMC指令89/336/EEC环境E1-E4，93/68/EEC与LVD 73/23/EEC。

了解更多详情，请联络：

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Tel: +44(0)1707 665000
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配件号：5069297

第1版

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目录

LX10简介

LX10简介

LX10调音台集Soundcraft现场调音品质与基本录音功能于一体，紧凑轻量机身可实现单人搬运操作，适用于各类场馆与场景的应用。

LX10提供16、24与32路通道三款型号，分别设有24、32与40路输入与不少于13条独立总线输出（含混音输出、4组编组输出、专用于中置、侧面、后置扬声器的单声道总线输出，以及6条辅助总线输出）。

LX10平衡话筒输入均采用Soundcraft新型GB30话筒前级功放，具有60dB增益与22dBu峰值削波冗余量。各输入均配有4段均衡，其中中频部分设有两组控制。均衡器开关、18dB倍频程斜率高通滤波器与6组可衰减前后切换辅助发送（成对切换，最多可提供4组衰减前辅助发送信号与6组衰减后辅助发送信号），令LX10可轻松应对各类高难度应用场景与对返听要求较高的各类实况与现场演出等。

LX10设有两组立体声输入，分别配备均衡器与辅助发送等，可用于键盘与立体声录音设备等，另有两路直接效果器返回输入。主控制部分含4组编组输出，可分别选通至主混音输出。12段电平指示用于持续监控各编组与被监听通道的信号水平。6只辅助主控制分别设有独立的AFL监听。

主控制部分设有对讲控制，可选通至衰减前辅助输出或混音输出。2轨返回可接入CD机等用于播放演出前暖场音乐。演出准备阶段，只需一个轻松按键，即可将CD机的暖场音乐通过调音台输出。此外，主混音输出亦可选择通过单声道总线输出。

LX10另设有USB 2.0 I/O端口，用于连接数字音频系统或计算机辅助数字音频工作站等。该USB接口采用2-in & 2-out设计，可用于数字音源设备中的音源信号回放或将调音台中混音信号录入至数字音频设备等。

LX10楔形机身采用耐用性钢材设计，具有PSU内置电源，所有接口均采用专业级金属材质。

应用范围：乐队表演、小型固定安装系统、小型场馆、剧院、宗教场馆、录音棚等。

保修条款

1. Soundcraft 隶属哈曼国际工业有限公司（Harman International Industries Ltd.）。本保修条款中所涉最终用户是指设备的日常使用人；所涉经销商是指除Soundcraft以外（如有）、经Soundcraft或Soundcraft授权代理商授权，将设备销售至最终用户的企业或个人；所涉设备是指随同本手册销售至最终用户的设备。

2. 自设备发货至最终用户之日起十二（12）个月内，如设备被证明存在材料与/或工艺缺陷，其有效性与功能性受影响，设备或故障部件可寄回至经销商或Soundcraft；经销商或Soundcraft将根据以下条款对故障部件进行维修或更换。所有被更换部件归Soundcraft所有。

3. 设备或部件运输过程（含自最终用户运输至经销商或Soundcraft与自经销商或Soundcraft运回至最终用户）中存在的风险由最终用户承担。运输费用由最终用户预付。

4. 本保修条款仅适用于以下情况：
   a）设备已依据Soundcraft用户手册中相关说明安装；且
   b）最终用户在设备出现故障十四（14）天内通知Soundcraft或经销商相关故障事宜；且
   c）除Soundcraft或经销商授权人员外，无其他人员对设备实施部件更换、维护调整或维修等操作；且
   d）最终用户使用设备的目的符合Soundcraft的相关建议，所使用的配套器材符合Soundcraft的相关规格要求或建议。

5. 因以下情况所造成的设备故障不适用于本保修条款：使用不当；化学、电化学或电子类干扰；意外损坏；不可抗力；疏忽；供电不足；空调或湿度控制。

6. 本保修条款中所涉最终用户权益不得转至他人。

7. 作为设备消费者的最终用户应知悉，本保修条款所提供的最终用户权益作为设备销售方所提供其它权益的补充、且不影响最终用户享受设备销售方所提供的其它权益。

安装

为确保用户安全与避免保修条款失效，请仔细阅读本章节。

警告

本设备必须接地！

在任何情况下，设备电源必须有良好的接地保护！

电源线中线缆按以下颜色区分：

地线： 黄绿色（绿色/黄色 – 美标）

零线： 蓝色（白色 - 美标）

火线： 棕色（黑色 - 美标）

如设备电源线中线缆颜色标识与所需连接电源插头中接线端颜色标识不一致，请按以下步骤操作：

- 将设备电源线中黄绿色线缆连接至电源插头中标有E或接地符号的接线端；
- 将设备电源线中蓝色线缆连接至电源插头中标有N的接线端；
- 将设备电源线中棕色线缆连接至电源插头中标有L的接线端。

如需更换电源插头，请谨慎留意并严格遵循以上电源线颜色标识规则。

如需更换保险丝，请根据设备后面板上相关保险丝规格参数更换，以防火灾危险。

设备内部电路不含用户可维修部件。如需维修保养，请咨询经Soundcraft或授权代理商授权的专业维修工程师。

注意事项与安全须知

一般注意事项

使用与存放本设备应避免过高或过低的环境温度，并注意防震、防尘与防潮。请勿使用任何液体清洁剂清洁本设备，建议使用干净的软质清洁布。

使用本设备时应远离强电磁辐射，如视频监控、高压电缆等，因感应电压可对设备机身与接线产生干扰，影响音频质量。

注意！本设备如需维修保养，请咨询相关有资质的专业人员！

搬运移动

本设备发货时采用硬纸板箱包装。如设备首次安装后需搬运，建议使用原包装箱。搬运设备前，请断开所有接线。如设备需定期搬运，建议使用海绵内衬航空箱。在任何情况下，请勿对设备各控制旋钮、开关、接头、接口等施加重力。

选用电缆

请使用随同设备配送的原装电缆：使用非原装线缆可能对设备造成损伤并导致保修条款失效。

警告！如遇雷电风暴或电压极不稳定，
应立即关停本设备，并拔下电源插头。

信号水平

输入设备的信号应保持合理水平，以免影响设备在信噪比与失真率方面的性能表现或对内部线路造成损害。所有平衡输入应避免接入使用高共模电压（如直流（DC）、交流（AC）或射频（RF））的声源信号，以免输入信号范围减小。注：0dBu=0.775V RMS。

关于输入输出信号水平的详细信息，请参阅“规格参数”章节。

设备接线

一般接线步骤

本设备接线安装时，应仔细谨慎，避免安装或接线不当对设备性能、性噪比与失真度等造成影响。如设备的接地环路或接地系统设置不佳，设备可出现系统噪声明显、性能不稳定或射频干扰等问题。如在接地不完全地区（多见于重工业区）使用本设备与相关音频设备，应为各设备加设独立的接地。加设接地前，应咨询当地电力机构，确保该接地符合当地电力安全管理规定。

音频系统的成功安装取决于科学严谨的预先计划以及在安装各阶段对接地等安全设置的严格执行。

接线准备与接地保护

因音频系统中信号均参考接地系统，为确保音频系统与设备运行正常，系统的接地设置必须干净无噪声。音频系统所有设备的接地应采用“星型”连接，各设备接地保护必须汇总至一个“中心点”。电气工程中常见的“菊链型”接地连接不适用于音频系统安装。推荐做法是在电源端为每一台音频设备连接一条单独的接地线，所有接地线汇总至中心接地点。这一做法可为每台音频设备提供安全可靠的接地屏蔽参考。此外，设备工作架或工作区域也应设置接地保护线。这类接地保护因时因地而宜，多数情况下推荐采用。“星型”接地的中心点位置应方便操作，建议设于调音台后部或主设备架。

设置电路连接时，应从主电源箱分出两路电源线路，其中噪声较低/无噪声的电源线路用于连接所有音频设备，另一电源线路用于灯光等设备供电。两路电源不得混用。

如需加强音频系统对电磁干扰的隔绝性，可额外加装变压器与接地法拉第屏蔽系统。

为防止电磁场对音频设备（如磁带机）的干扰，请勿将主电源箱设于音频设备附近。

确保所有设备架均已接地：使用单独的接地线接至接地中心点。

采用非平衡输入或输出的设备与设备架间应采取绝缘保护，防止接地环路对设备造成影响。

音频连接

完成音频设备电源与接地保护连接后，还应对音频设备间互联采取相应的屏蔽保护。屏蔽保护可防止设备出现运行问题，有助于快速排除故障。

连接前台控制（FOH）或监控系统至调音台，检查是否存在噪声或射频干扰问题。如设备与音频系统内噪声情况良好，可继续执行下列步骤。

逐一连接立体声设备或多轨磁带录音机、效果器、返听发送等，对各连接设备实施屏蔽保护并检查屏蔽效果，以确保各设备运行正常。

连接其它周边设备。

连接话筒。

按以上顺序连接各音频设备可令整个系统噪声小且更稳定，节省安装准备时间，有效避免运行故障。

屏蔽保护

音频设备通常设有多个输入与输出，因此，在为音频设备设置屏蔽保护层时，应考虑这一点。对音频设备进行屏蔽保护，可防止以下信号对设备造成干扰：

外来静电或电磁干扰；

接地线噪声干扰；

屏蔽层与信号线缆间的电容耦合。

为降低屏蔽保护层与信号线缆间电容耦合所造成的干扰，应仅在一端连接屏蔽保护，即令屏蔽保护层不会传输任何电流信号。如线缆屏蔽层直接接入信号源的回路系统或间接接入接地系统，屏蔽保护与各线缆中信号产生电容耦合，并产生电流，该电流最终返回信号源。这种现象可造成高频串音，应尽量避免。

通常，屏蔽层应连接信号源端。对于高射频区，该屏蔽保护层可通过一个0.01 mF电容接地以形成射频短路，降低屏蔽层的接地阻抗。而对于相对低频的声音区域，因电容电抗足够高，不易导致接地环路问题。

重要提示

在任何情况下，使用高品质双屏蔽音频电缆。检查输出端的稳定性。

导线应两端同时连接；屏蔽保护应在一端连接。

为安全与屏蔽保护起见，不得断开任何设备的接地系统。

平衡输入与输出的设备应与设备架及其它设备绝缘，防止接地环路问题。

所有连接电源设备可能导致噪声干扰与静电或电磁辐射。电源线缆可传导发电机、空调或晶闸管调光器所产生的射频干扰。为确保音频系统噪声最低，应保持接地系统随时完全接地 。如系统噪声明显，建议加设独立的接地系统。加设接地保护前，应咨询当地电力机构，确保该接地保护符合当地电力安全管理规定。

初始设置与故障诊断

初始设置

完成系统接线（见“设备接线”章节）后，即可对调音台进行初始设置。

按以下步骤对各输入通道进行初始设置：

- 连接音源设备（话筒、键盘等）至相应输入接口，释放MUTE开关。注意：连接电容话筒时，48V幻象电源开关应处于关闭状态。
- 调节输出主衰减推子至0，各输入通道衰减推子至0，将各通道输出切换至MIX；调整功放输出至适当水平。
- 输入正常演出水平信号，按下1通道的PFL按键，观察电平指示灯。
- 调节输入增益控制，直至电平指示灯显示黄色，偶尔显示红色。该设置可提供足够的“峰值削波冗余量”（下调余量），更好地应对日常操作中出现的峰值信号。（见下方注意点）
- 按以上步骤对其余通道进行设置。
- 仔细聆听反馈噪声。如反馈噪声随着信号水平提高而增强，应检查话筒与音箱的设置，如需，应多次检查。如反馈持续，应使用图像均衡器减少系统对特定谐振频率的响应度。

注意：初始设置仅是调音的第一步。现场演出时，一系列因素可能对输出音质效果产生影响，如各通道的EQ设置或是观众人数等。

完成以上初始设置，即可进行调音操作。整个调音过程应循序渐进，仔细聆听混音中每个细节，时刻关注电平指示，以防过载。如出现过载（电平指示长时间显示红色），应将相应输入通道的衰减推子或主衰减推子稍作下调，直至电平指示显示正常。该操作确保调音台设置正常，提供足够的下调余量。如需增大功率，应对功放的功率进行调整。

故障诊断

设备无电源

- 设备是否与电源连接?
- 电源线连接是否松动?
- 检查电源保险丝
- 如仅有一只电源指示灯亮起，请咨询相关Soundcraft代理商

电容话筒无法正常工作

- 48V幻象电源是否开启?
- 电容话筒是否插入话筒（Mic）输入接口?
- 电容话筒线缆是否是平衡三线式?

电平指示灯无信号显示

- 输入增益控制是否调至正确位置?（见上）
- 音源设备是否接至相应的输入接口?

- 插入点接口（INSERT）是否接入了其它设备？该设备是否开启？
- 主衰减推子是否推至最大值？输入通道衰退推子是否置于高位？或者该通道是否处于监听输出？
- 相应通道的MUTE开关是否释放？
- 相应的监听选择开关是否已按下？
- 其它通道的衰减前/后监听（PFL/AFL ） 按键是否已按下？

无混音输出

- 检查主混音输出推子是否置于高位？
- 检查2轨道替代混音输出（2TK REPLACES MIX）开关是否释放？

无监听输出

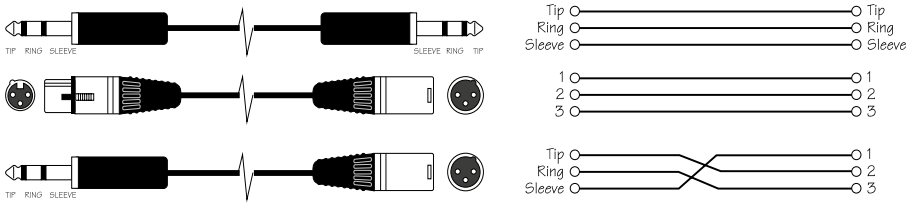
- 耳机是否接入？
- 监听耳机（Monitor Phones）旋钮是否调至足够水平？
- 相应的监听选择开关是否已按下？

耳机失真

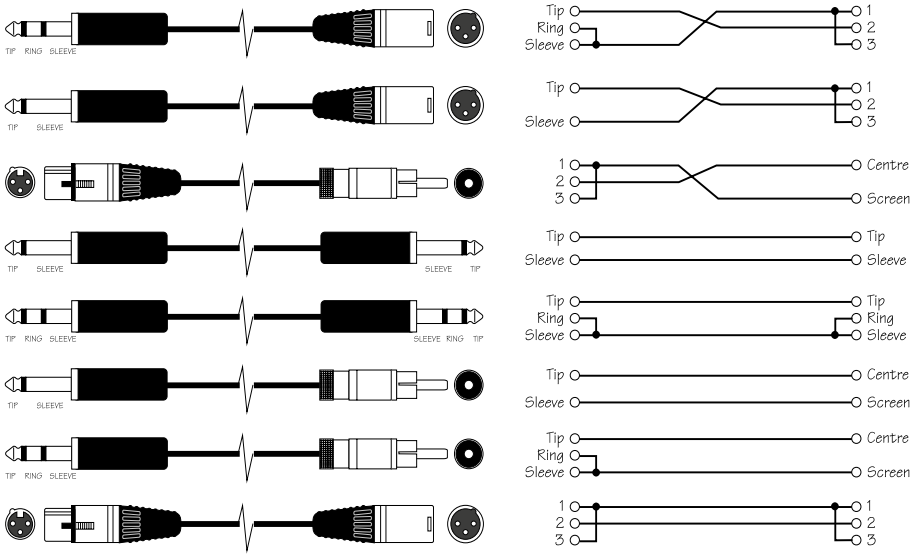
- 耳机阻抗是否小于200Ω？
- 监听耳机（Monitor Phones）旋钮是否设置过高？

连接线

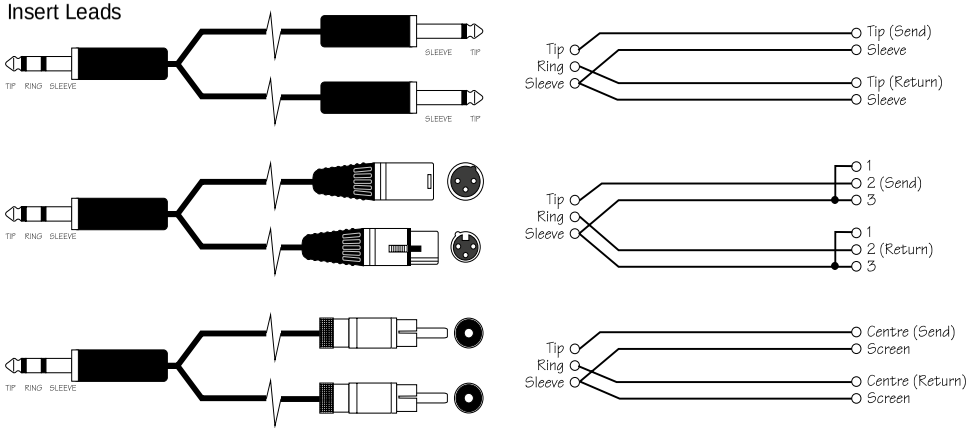
Balanced



Unbalanced

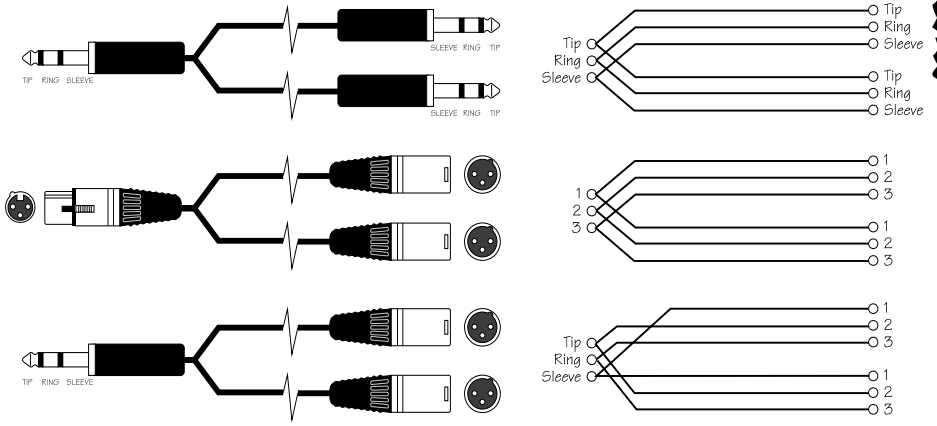


Insert Leads



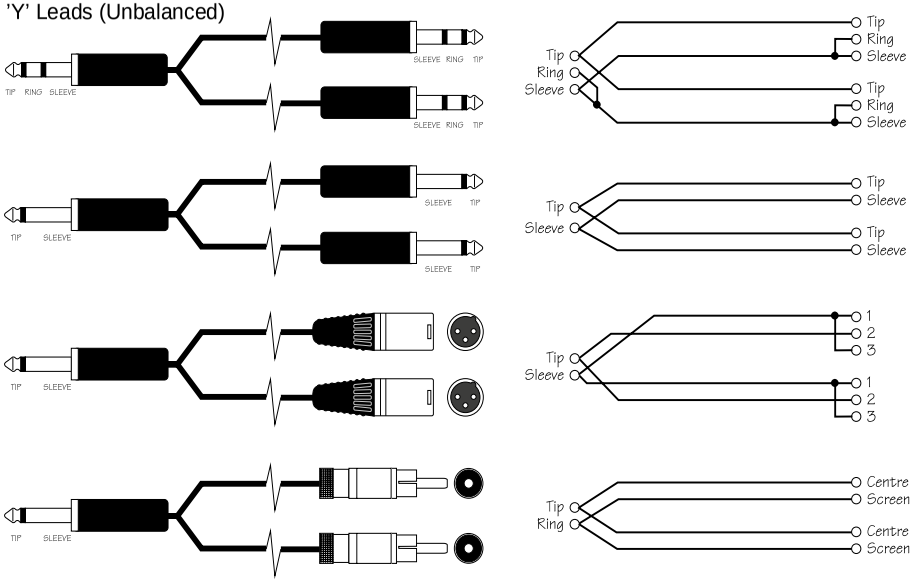
'Y' Leads (Balanced)

Where used....Aux, Mix outputs



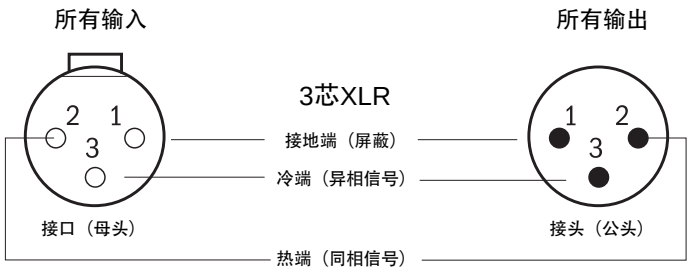
Headphone Splitter

'Y' Leads (Unbalanced)

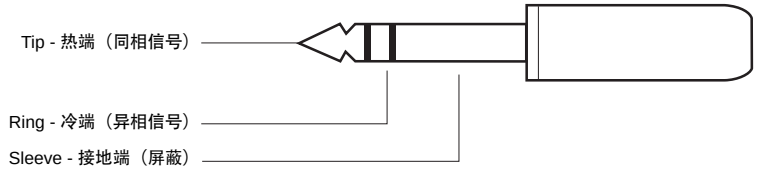


音频接头

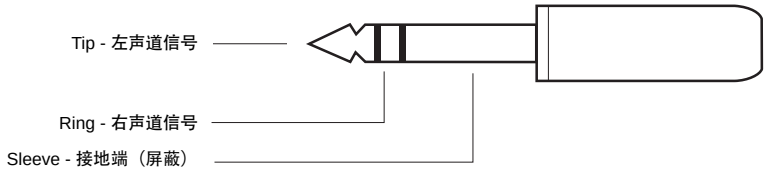
音频接头



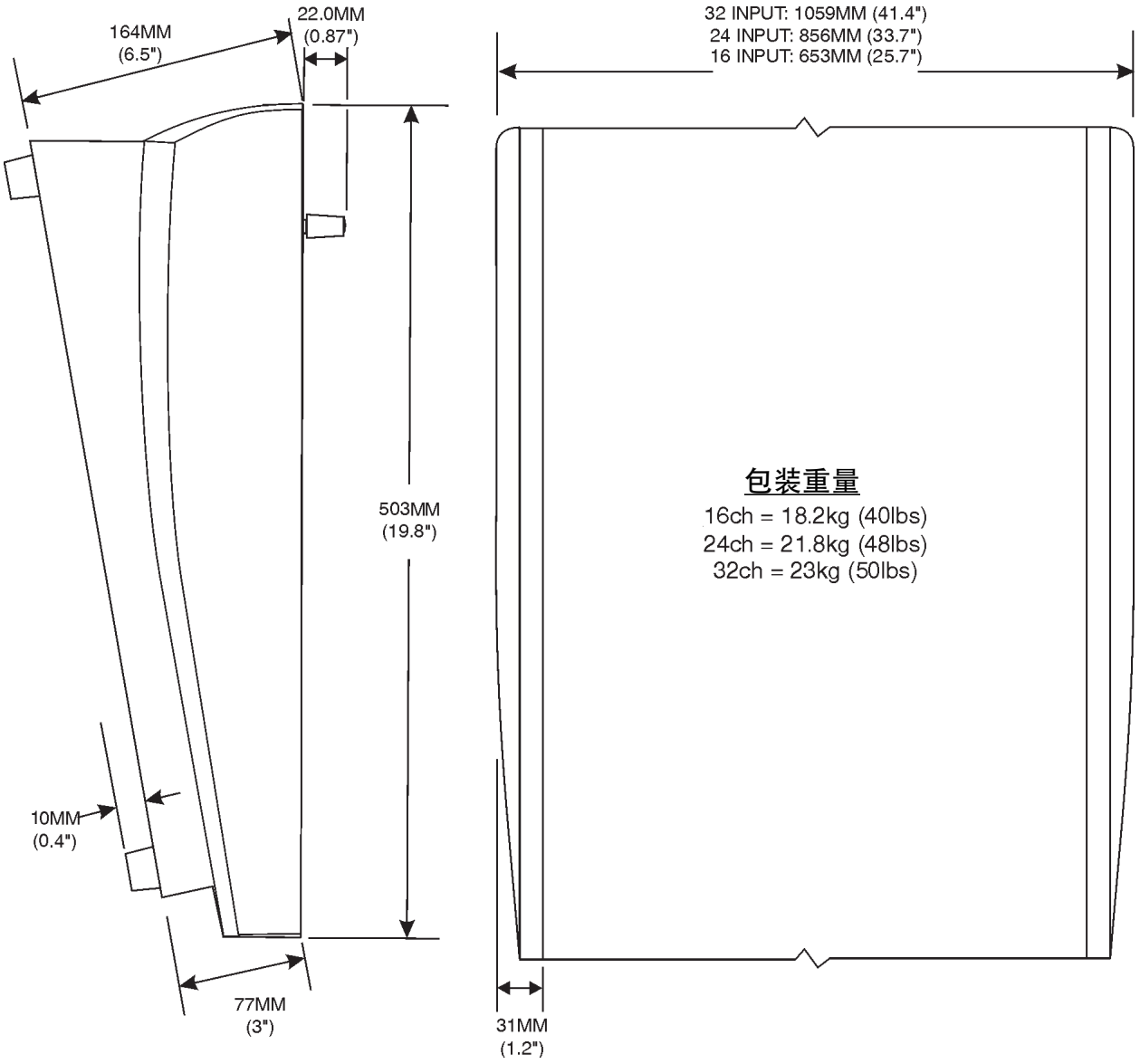
1/4” 立体声接头用于平衡输入/输出
（不含耳机）



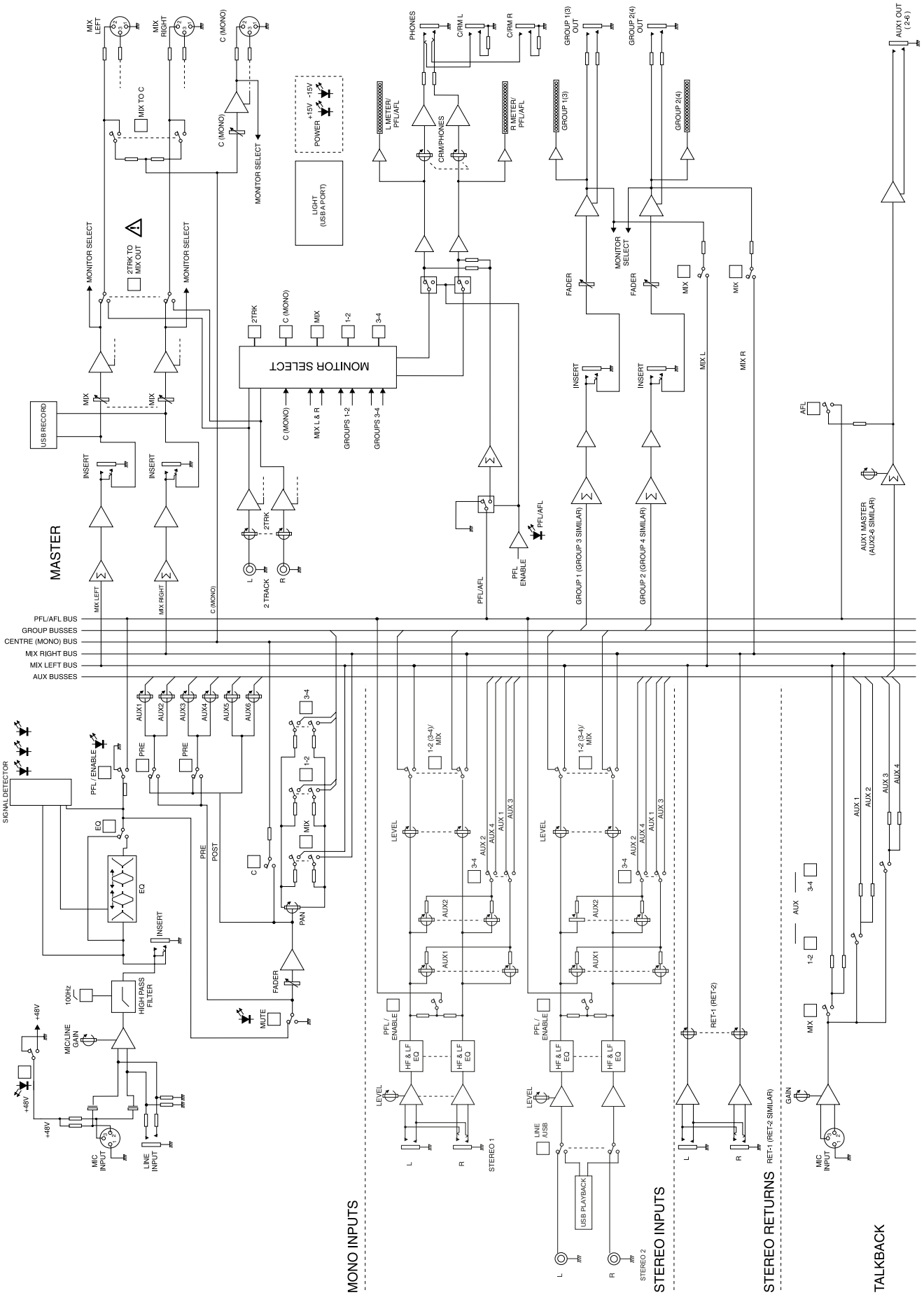
1/4” 立体声接头用于耳机连接



尺寸


164MM
(6.5")
22.0MM
(0.87")
503MM
(19.8")
10MM
(0.4")
77MM
(3")
32 INPUT: 1059MM (41.4")
24 INPUT: 856MM (33.7")
16 INPUT: 653MM (25.7")
包装重量
16ch = 18.2kg (40lbs)
24ch = 21.8kg (48lbs)
32ch = 23kg (50lbs)
31MM
(1.2")

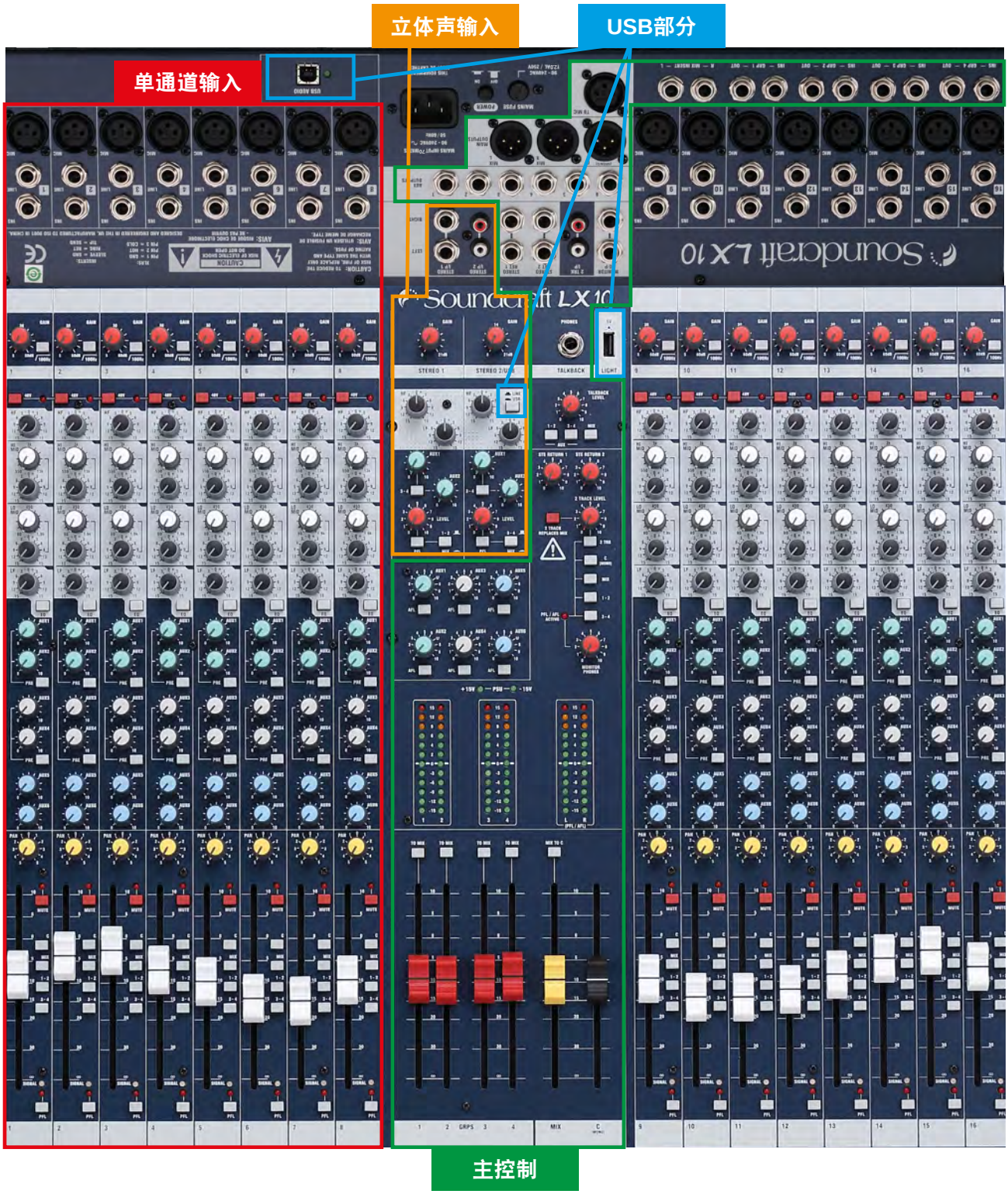
电路图


MASTER
MONITOR SELECT
2TRK
C (MONO)
MIX
1-2
3-4
MIX L & R
GROUPS 1-2
GROUPS 3-4
MIX LEFT
MIX RIGHT
C (MONO)
PFL/AFL BUS
GROUP BUSSES
CENTRE (MONO) BUS
MIX RIGHT BUS
MIX LEFT BUS
AUX BUSSES
MONO INPUTS
STEREO INPUTS
STEREO RETURNS
TALKBACK
STEREO 1
STEREO 2
RET-1 (RET-2 SIMILAR)
GROUP 1 (GROUP 3 SIMILAR)
GROUP 2 (GROUP 4 SIMILAR)
AUX1 MASTER (AUX2-6 SIMILAR)
USB RECORD
USB PLAYBACK
LIGHT (USB A PORT)
POWER
+15V -15V
PHONES
C/RM L
C/RM R
L METER/ PFL/AFL
R METER/ PFL/AFL
C/RM/PHONES
GROUP 1(3) OUT
GROUP 2(4) OUT
GROUP 1(3)
GROUP 2(4)
AUX1 OUT (2-6)
MIX TO C
2TRK TO MIX OUT
MONITOR SELECT
2 TRACK
PFL/AFL
PFL ENABLE
AFL
INSERT
FADER
MIX L
MIX R
SIGNAL DETECTOR
PFL / ENABLE
EQ
PRE
POST
HIGH PASS FILTER
100Hz
MIC/LINE GAIN
+48V
MIC INPUT
LINE INPUT
MUTE
PAN
LEVEL
HF & LF EQ
LINE /USB
GAIN
AUX1
AUX2
AUX3
AUX4
AUX5
AUX6
1-2 (3-4)/ MIX
RET-1 (RET-2)

使用方法

概览

以下为16路通道Soundcraft LX10调音台概览图。



单通道输入

1 - 话筒输入（MIC）

话筒输入（MIC）用于连接XLR接头，可接收平衡或非平衡输入信号。低阻抗型专业动圈、电容与带式话筒为最佳选择。如连接高阻抗型话筒使用，本底噪声较明显。如需连接专业电容话筒，按下48V开关，调音台将提供相应的电压（即幻象电源）。

连接电容话筒至调音台时，48V电源必须关闭（释放开关）；48V电源开启或关闭时，所有输出衰减器推至“∞”，以防调音台与外接设备损坏。

谨慎使用非平衡输入设备，因幻象电源电压可损坏XLR接头2、3芯。

使用线路输入（LINE）前，拔下话筒。使用增益旋钮（GAIN）调节话筒输入信号。

2 - 48V幻象电源

专业电容话筒通常需使用通过话筒信号线供电的48V外接电源，即幻象电源。每个48V幻象电源开关为一路话筒输入（MIC）供电。LED灯亮起表示48V幻象电源已开启。

48V幻象电源开启时，禁止使用非平衡话筒，以防电压对话筒造成损坏。48V幻象电源开启可使用平衡动圈话筒与接线，详细使用指导请咨询话筒厂商。

开启48V幻象电源开关前，请确保话筒已连接，所有输出衰减器推至“∞”，以免损坏外接设备。

3 - 线路输入（LINE）

线路输入（LINE）用于连接3芯A级（TRS）接头，用于接收高阻抗输入信号设备，如键盘、电子鼓、合成器、磁带机或吉他，不含话筒。该输入接口多用于连接平衡输入的低噪声专业设备。如需连接非平衡输入信号，请按“连接线”章节所示连接输入接头，并尽量使用较短线缆。使用线路输入前，断开话筒连接设备。使用增益旋钮（GAIN）调节线路输入信号。

4 - 增益旋钮（GAIN）

增益旋钮（GAIN）用于调节输入声源信号的放大量。信号过大时，可出现通道过载、信号失真等情况；信号过弱时，可出现背景噪声明显、信号水平无法达到输出要求等问题。

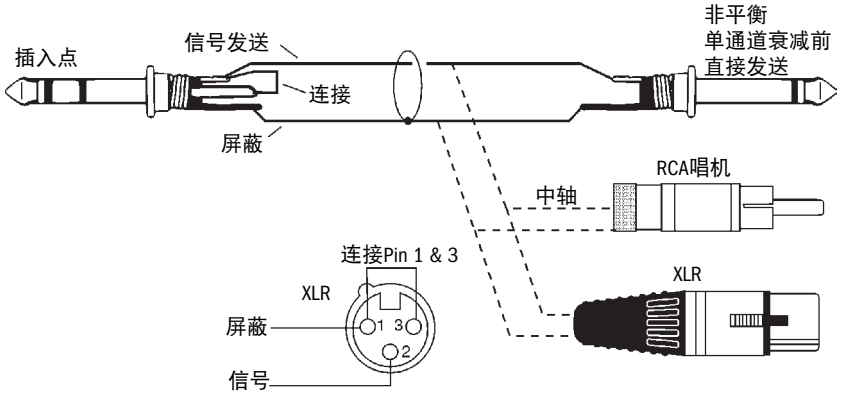
有关增益旋钮的使用说明，请参阅“初始设置与故障诊断”章节。

5 - 100Hz高通滤波器（HI-PASS FILTER）

按下“100 Hz”开关开启高通滤波器。该高通滤波器具有18dB倍频程的陡峭斜率，可有效减少低频率信号。配合专业音响设备现场使用时，可减小舞台震动与话筒爆破声。

6 - 插入点（INSERT POINT）

均衡前插入点接口（INS）可接收非平衡输入信号，用于在信号通道中接入限幅器、压缩器、特殊均衡器以及其它信号处理设备等。插入点接口为旁路直通3芯A级接头插口。接头插入后，均衡前信号通道切断。插头的Tip和Ring短路后插入该接口可输出均衡前及衰减前信号，不对设备内部信号造成影响。



7 - 均衡器（EQ）

均衡器（EQ）用于对各频段音色的细致调节与修饰。配合专业音响现场使用时，均衡器可将初始信号调至理想水平，对特定的人声频率进行增减，提高清晰度。

高频均衡器（HF EQ）

高频均衡器（HF EQ）提衰量为15 dB。顺时针旋转以提升高频信号（12 kHz及以上信号），提高铜钹、人声与电子乐器等的清脆度。逆时针旋转衰减高频信号，减少话筒噪音。无需使用时，旋钮旋至中间位（“0”）。

中频均衡器（中高频&中低频）（MID EQ (HMID & LMID)）

中频均衡器由一对中高频均衡器旋钮与一对中低频均衡器旋钮构成。两对旋钮中处于下方的旋钮提衰量为15 dB，处于上方的旋钮用于频率调整：中高频为550 Hz – 13 kHz，中低频为80 Hz – 1.9 kHz。该中频均衡器可为现场表演带来独特效果，因为多数的人声处于该频段。现场控制时，应仔细聆听该频段调节所产生的独特人声效果。无需使用时，增益旋钮（下方旋钮）调至中间位（“0”）。注意：Q值设置为1.5。

低频均衡器（LF EQ）

低频均衡器（LF EQ）提衰量为15 dB。顺时针旋转以提升低频信号（60 Hz及以下信号），提高人声温暖度或合成器、吉他、鼓音的力度。逆时针旋转衰减低频信号，减少舞台震动等杂音，增强声音柔和度。无需使用时，旋钮旋至中间位（“0”）。

8 - 均衡器开关（EQ SWITCH）

释放均衡器开关可旁通均衡器。按下与释放开关可对比均衡处理前后效果。

9 - 辅助发送（AUX SEND）

辅助发送（AUX SEND）通过调音台背板的辅助输出（AUX OUTPUT）将混音信号发送至返听、录音设备或效果器等。对效果器而言，所接收信号应可接受衰减器调整设置（此类信号被称为衰减后信号）；对返听或监听设备而言，所接收信号应不受衰减器影响（此类信号被称为衰减前信号）。按下通道哑音（MUTE）按键将关闭当前通道的辅助输出信号。

如均衡器（EQ）未旁通（见以上有关均衡器开关章节），6个辅助（AUX）通道发送均衡后（POST-EQ）信号（通常亦为衰减后（POST-FADE）信号），可作为效果发送或用于亚混音。成对按下AUX 1&2与3&4的衰减前（PRE）按键，可输出衰减前信号，用于返听或监听设备。AUX 5&6仅输出衰减后信号。

10 - 声像调节（PAN）

声像调节（PAN）旋钮用于控制输入混音总线左右通道的信号量，调节该路声源的立体声空间分布。旋钮旋至最左或最右时，该路声源将位于听音的左侧或右侧。

11 - 哑音（MUTE）

释放哑音（MUTE）按钮，通道中信号（除插入点设备信号）可输出；按下哑音按钮，关闭混音总线中该通道信号，可对该通道输出前信号进行调节。

12 - 衰减器（FADER）

调节100 mm行程衰减器（FADER）可精准设置进入主控制前的通道信号。为确保衰减器调节效果最佳，应选择合适的输入灵敏度。有关信号水平的设置，请参阅“初始设置与故障诊断”章节。

13 - 衰减前监听（PFL）

按下衰减前监听（PFL）按键，衰减前均衡后信号进入耳机、监听控制室与监听指示，替换现有监听信号。衰减前监听按键上方LED亮起表示该通道处于衰减前监听状态；主控制区域衰减前/衰减后监听（PFL/AFL）显示灯亮起，表示当前有通道处于监听状态。该衰减前监听功能可监听所有输入信号，以判断通道信号情况或作出相应调整，不对主混音输出产生影响。

14 - 信号（SIGNAL）

该信号指示为三色LED灯，用于显示输入信号水平，采样于均衡器前。如输入信号处于较低水平（-40 dBu - +4 dBu），LED显示为绿色。如输入信号处于正常演出水平（+4 dBu - +17 dBu），LED显示为黄色。如输入信号高于+17 dBu，LED则以红色警示。

15 - 选通（ROUTING）

选择行程右侧相应按键，通道信号将选通至主立体声混音输出（MIX）或编组输出（1-2，3-4），并根据声像调节（PAN）比例设置分别进入左（1,3）右（2,4）声道。选择C（单声道）按键，通道信号进入单声道输出，不受声像调节设置影响。

立体声输入

1 - 输入接口（STEREO I/P）

该输入接口用于连接键盘、电子鼓、合成器、磁带机或处理器等设备。立体声输入1（STEREO I/P 1）可连接3芯A级（TRS）接头，用于输入平衡式低噪声专业设备信号。如需连接非平衡输入信号，请按“连接线”章节所示连接输入接头，并尽量使用较短线缆，以免信号衰减过大造成音质失真。单声道信号输入设备连接至左声道接口。立体声输入2（STEREO I/P 2）用于连接RCA接头以输入非平衡信号。

2 - 增益旋钮（GAIN）

增益旋钮（GAIN）控制输入信号水平，以适应其它线路输入声源信号水平。

3 - 均衡器（EQ）

高频均衡器（HF EQ）

顺时针旋转提升高频信号，提高合成器、电子鼓等打击乐器的清脆度。逆时针旋转衰减高频信号，减少杂音与过高亮度。无需使用时，旋钮旋至中间位（“0”）。高频均衡器提衰量为15dB，可提升或衰减12kHz及以上高音频率。

低频均衡器（LF EQ）

顺时针旋转提升低频信号，提高合成器、吉他、鼓音的力度。逆时针旋转衰减低频信号，减少低频杂音，增强声音柔和度。无需使用时，旋钮旋至中间位（“0”）。低频均衡器提衰量为15dB，可提升或衰减60Hz及以下低音频率。

4 - 辅助发送（AUX SEND）

辅助发送（AUX SEND）通过调音台背板的辅助输出（AUX OUTPUT）将混音信号发送至返听、录音设备或效果器。辅助发送信号为衰减前（PRE-FADE）信号，多用于返听或监听。注意，如效果器需使用衰减后辅助发送信号，可通过一对单通道线路输入替代立体声输入。

5 - 信号水平（LEVEL）

信号水平（LEVEL）旋钮控制进入混音或编组输出的信号水平。

6 - 选通（ROUTING）

立体声通道信号可选通至编组输出（释放按键）或立体声混音输出（按下按键），信号水平通过信号水平（LEVEL）旋钮调节。立体声1（Stereo 1）信号进入1&2编组，立体声2（Stereo 2）信号进入3&4编组。

7 - 衰减前监听（PFL）

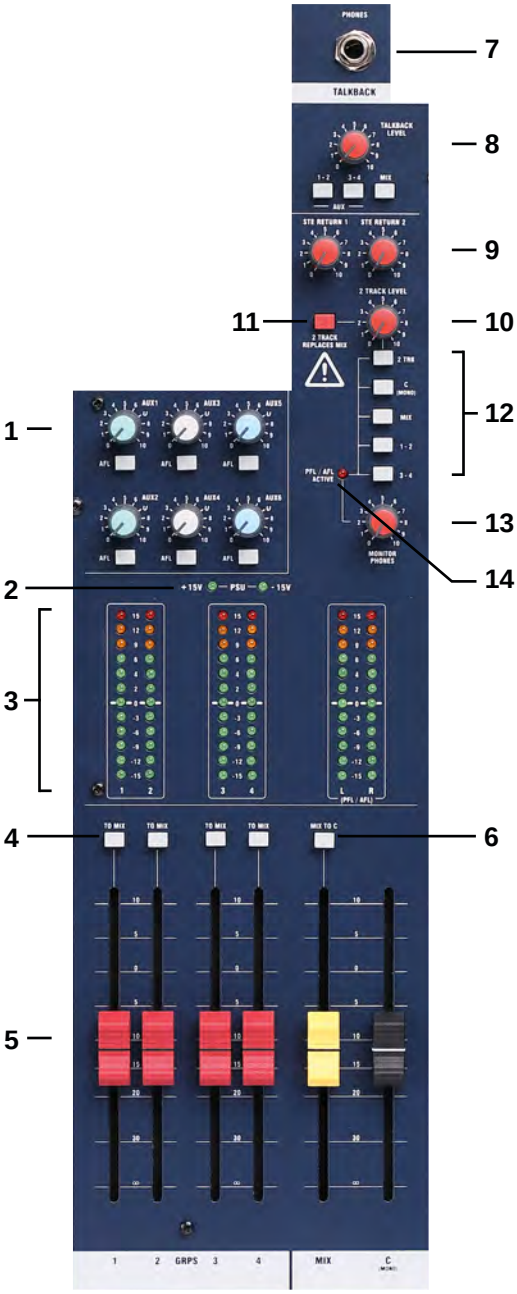
按下衰减前监听（PFL）按键，衰减前均衡后信号以单声道模式进入耳机、监听控制室输出与监听指示，替换现有监听信号。主控制部分的衰减前/衰减后监听（PFL/AFL）显示灯亮起，表示当前有通道处于衰减前监听状态。左右指示灯显示衰减前监听单声道信号水平。

8 - USB/LINE切换开关（USB/LINE）

切换USB/LINE开关（USB/LINE）用于选择立体声2/USB（STEREO 2/USB）中信号通过RCA非平衡接口输入（STEREO I/P 2）或USB 音频接口（USB AUDIO）输入。

释放该开关，立体声2/USB中信号通过STEREO I/P 2的RCA非平衡接口输入；按下该开关，立体声2/USB中信号则通过USB 音频接口输入（需使用USB（A-B）接线连接数字音频系统或工作站至调音台）。

注意：使用USB 音频接口输入信号时，应切断STEREO I/P 2 RCA接口处所连接设备。



主控制

1 - 辅助主控制（AUX MASTERS）

每个辅助输出均配有主输出信号水平控制旋钮与衰减后监听（AFL）按键。

辅助衰减后监听（AUX AFL）

辅助输出的衰减后监听（AUX AFL）用于监听衰减后的辅助输出信号。按下按键，辅助输出信号选通至监听设备或耳机，替代现有监听信号。衰减前/后电平指示（PFL/AFL METERS）转为显示被监听通道的信号水平，衰减前/后（PFL/AFL）LED指示灯亮起表示当前有通道信号处于被监听状态。

2 - 电源指示（POWER INDICATORS）

电源指示LED灯亮起表示调音台有电源接入且内部供电正常。

3 - 电平指示（BARGRAPH METERS）

电平指示（BARGRAPH METERS）采用三色显示，用于持续监控四个编组输出与被监听通道（2TK、C（单声道）、混音或编组）的信号，防止信号过载。电平指示长期显示黄色表示信号水平最佳。

如输出信号水平过低，电平指示将无法显示，设备将出现背景噪声明显等问题。为确保最佳输出效果，请谨慎设置输入信号水平。

如当前有通道处于衰减前/后监听（PFL/AFL），左右电平指示（L/R）自动显示被监听的通道信号水平。

4 - 至混音输出（TO MIX）

按下至混音输出（TO MIX）按键，衰减后编组信号进入主混音输出：1&3编组信号将分别进入混音输出左声道，2&4 编组信号则分别进入混音输出右声道。

5 - 主衰减器（MASTER FADERS）

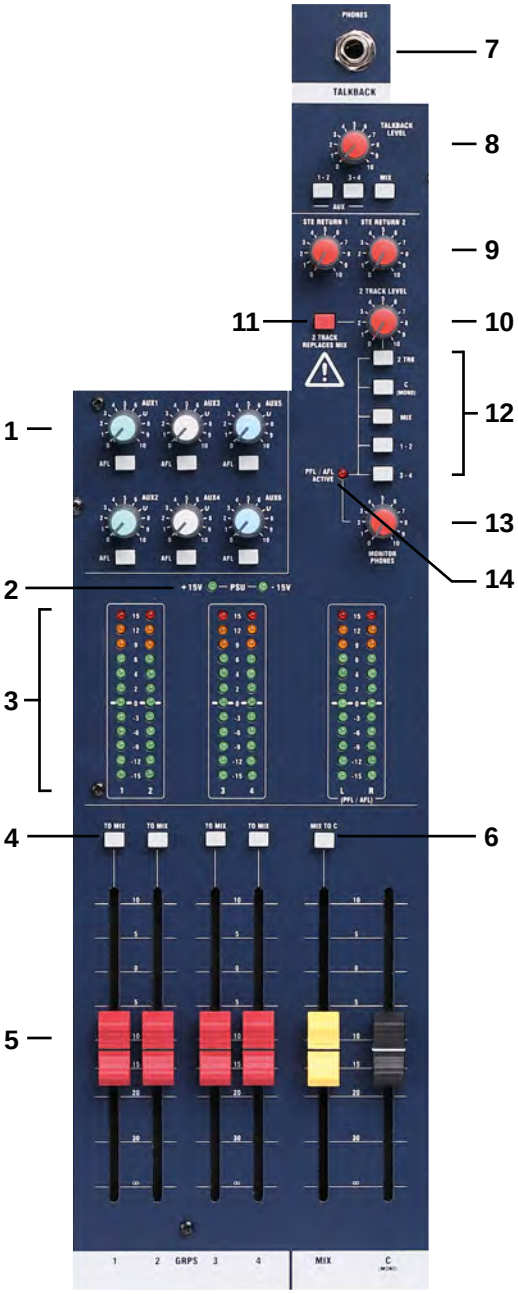
主衰减器（MASTER FADERS）调节编组输出与混音左右通道输出的最终信号水平。如输入增益（GAIN）设定合适，主衰减器通常可推至“0”位，以便各通道衰减器更精准调节各通道信号水平。

6 - 混音至单声道（MIX TO C）

按下混音至单声道（MIX TO C）按键，衰减后混音左右通道输出信号进入C（单声道）总线，为音频感应回路或中置扬声器等提供独立的单声道混音信号。注意：如输入通道同时选通至混音输出（MIX）与单声道输出（C），按下该按键可对信号产生影响，导致反馈等问题。

7 - 耳机（PHONES）

耳机（PHONES）输出为3芯1/4”接口，可连接阻抗200Ω及以上耳机。



8 - 对讲电平（TB LEVEL）

调音台设有连接对讲话筒的平衡输入接口（TB MIC）。选择相应按键，对讲信号可选通至辅助1/2（AUX 1/2）或辅助3/4（AUX 3/4）（通常用于演员返听）或混音左/右通道（MIX L/R）。对讲电平（TB LEVEL）旋钮用于调节对讲电平信号水平。

9 - 立体声返回（STEREO RET）

立体声返回（STEREO RET）平衡接口用于接入效果设备的输出信号。立体声返回接入信号直接进入混音左/右通道（MIX L/R）总线。立体声返回（STE RETURN 1&2）旋钮用于调节接入信号水平。接入单声道信号，仅需连接至左声道接口，信号则通过混音左右通道输出。

10 - 2轨信号水平（2TK LEVEL）

该旋钮用于控制2轨磁带输入信号水平。旋钮下方有多个按键，可将2轨磁带信号选通至不同输出通道。使用2TK按键，可将信号输出至耳机、监听输出或监听指示；使用MIX按键，可将信号选通至混音输出通道。（详细设置见12-监听信号选择（MONITOR SOURCE SELECT））。非平衡RCA唱机接口（2TK I/P）用于接入2轨磁带输入信号，可连接磁带机回放用以监听。

11 - 2轨替代混音输出（2TRACK REPLACES MIX OUTPUT）

按下2轨替换混音输出（2TRACK REPLACES MIX OUTPUT）按键，2轨磁带输入信号将选通至混音输出（MIX OUTPUT）。该功能可用于演出前音乐播放，无需占用其它输入通道。接入CD机，按下该按键，即可播放暖场音乐，操作简便。此时工作人员可设置各通道信号水平、调整均衡效果、与演员对讲沟通、监听各部分混音输出及主混音输出效果，不会对暖场音乐播放造成任何影响。释放该按键，混音输出即从CD播放转至各调音通道。

注意：按下此按键将切断混音输出左右通道信号，现场表演与录音时请勿使用此按键。

12 - 监听信号选择（MONITOR SOURCE SELECT）

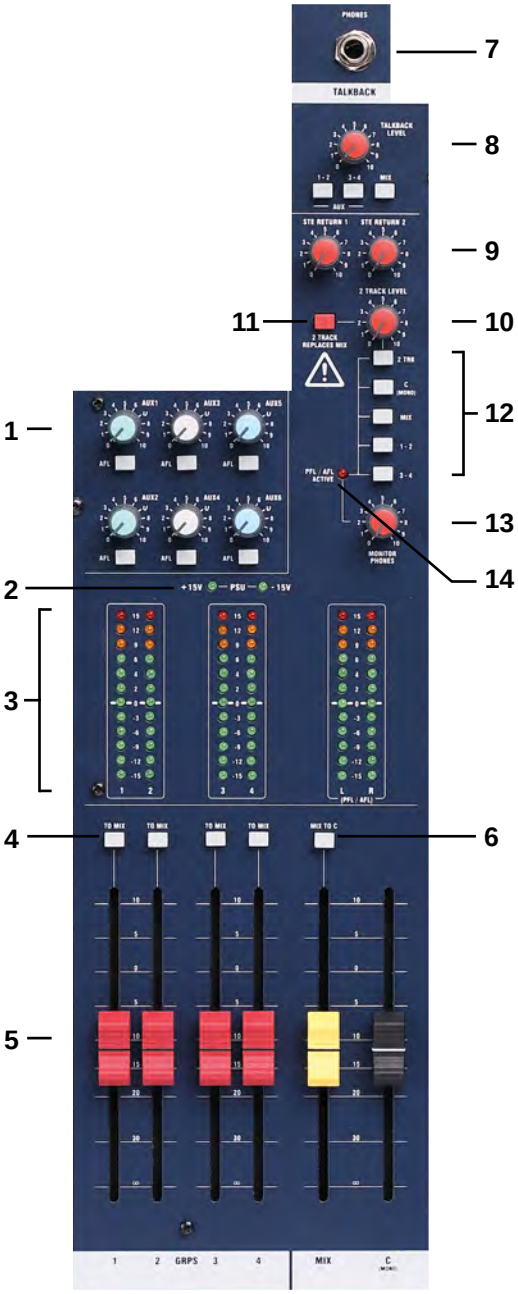
该组按键用于选择2轨（2TK）、C（单声道）、混音或编组信号作为耳机、监听输出或监听指示等的监听信号，可单独或组合选择。

注意：如无按键按下时，监听指示或监听设备中无监听信号！

13 - 监听耳机（MONITOR PHONES）

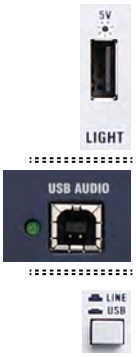
该旋钮用于控制输出至监听左右通道的信号水平。如耳机插入耳机接口（PHONES），监听输出信号被切断，此时该旋钮用于调整耳机音量水平。如耳机从耳机接口拔下，监听输出信号恢复。监听信号通过旋钮上方五个按键（12 - 监听信号选择（MONITOR SOURCE SELECT））选择。

如有任何通道的衰减前/后监听（PFL/AFL）按键按下，监听输出或耳机中信号转为该通道衰减前/后监听信号，不会对调音台的信号输出产生影响。衰减前/后监听按键释放后，监听输出或耳机中信号将转至最初监听信号。



14 - 衰减前/后监听（PFL/AFL）

衰减前/后监听（PFL/AFL）LED灯通常关闭。LED灯亮起表示当前有通道处于衰减前/后监听状态、监听设备/指示有信号。



— 1

— 2

— 3

USB部分

1 - USB电源接口

该电源接口采用A类标准USB接口，提供5.0V DC 0.5A（最高）电源，可用于连接采用USB供电类设备，如USB照明灯等。

2 - USB音频接口（USB Audio）

该音频接口采用B类标准USB接口，采用2-in & 2-out设计，可连接数字音频系统或计算机辅助数字音频工作站等，用于音频回放或录音。

回放

使用A-B USB接线将数字音频系统或计算机辅助数字音频工作站与该USB音频接口连接。系统或工作站的左右输出信号将通过USB的两路输入通道进入调音台。

录音

如在数字音频系统或工作站中选定由调音台录入音频，调音台的混音左右通道信号将通过USB两路输出通道输录至系统或工作站。

3 - USB/线路切换开关（USB/LINE SWITCH）

该切换开关用于选择由非平衡RCA接口（STEREO I/P 2）或USB 音频接口输入音频信号。（有关该USB/线路切换开关的详细信息，请参阅“立体声输入”章节中“8-USB/线路切换开关”。）

演出人员： ..... **日期：** .....

调音工程师： .....

标注页

该页面用于标注不同演出活动时该调音台控制旋钮/按键的位置。如需，请复制使用。

标注页名称：

标注页名称：

标注页名称：

标注页名称：

标注页名称：

标注页名称：

规格参数

噪声

测得RMS， 22Hz - 22kHz 波束带宽	
话筒E.I.N @ 均一增益，150W音源抗阻	-129dBu
混音输出，24输入选通至混音输出，均一增益，哑音	<-80dBu
混音输出，24输入选通至混音输出，衰减器推至最低位	<-100dBu

串音（@1kHz，通常情况）

衰减器衰减量	>95dB
辅助衰减量	>80dB
声像隔离	>75dB
相邻通道串音	>-80dB
通道哑音	>90dB
衰减器阻断（相对于“0”）	>90dB
辅助发送（AUX SEND）关闭	>80dB

频率响应

话筒/线路输入至任意输出， 20Hz-20kHz	<1dB

THD + N

话筒灵敏度-30dBu， +20dBu所有输出@ 1kHz	<0.006%

CMRR

通常@最大增益@ 1kHz	>80dB
通常@任意增益@ 50Hz	>60dB

输入&输出阻抗

话筒输入	1.8kΩ
线路输入	10kΩ
立体声输入	8.6kΩ
2TK返回	12kΩ
混音、辅助与插入点发送	75Ω

输入&输出电平信号

话筒输入最大电平信号	+22dBu
线路输入最大电平信号	+22dBu
立体声输入最大电平信号	+22dBu
2TK返回	>30dBu
耳机（@200Ω）	150mW

USB 2.0（B类标准）

输入/输出	2-in, 2-out
位深	16-bit, 24-bit
采样率	44.1kHz / 48kHz / 88.2kHz / 96kHz / 176.4kHz / 192kHz

电源

交流电源（内置PSU电源）	90V-240VAC 50/60Hz 通用输入

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