BEYOND LIVE...

324 LIVE



32 Input Live Digital Mixing Console

DIGITAL 328XD



32 Channel Digital Mixing Console

STUDIO



Professional Multitrack Recording Mixing Consoles

ABSOLUTE



A Range of Professional Nearfield Monitors

FX16



16 Mono Channels with onboard Lexicon Effects

FX8



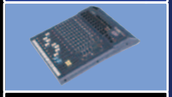
8 Mono Channels with onboard Lexicon Effects

SX



12 Mono & 4 Stereo Inputs

F1



6 or 8 Mono & 4 Stereo Inputs

NOTEPAD



4 Mono & 2 Stereo Inputs

SOUNDCRAFT'S SPIRIT RANGE OF LIVE AND POWERED MIXING CONSOLES ARE JUST PART OF THEIR EXTENSIVE RANGE OF PROFESSIONAL AUDIO EQUIPMENT.

In the studio as well as on stage, Soundcraft's designs have become synonymous with versatility, innovation and sonic excellence.

On the ROAD and in the STUDIO

Since the launch of the original Spirit Folio in 1992, the Folio Range of mixers has set the standards in the field of compact mixers. Ideal for both studio and live applications, FX16, FX8, SX, F1 and Notepad still represent the pinnacle in compact mixers for usability, sound quality and value for money.

Spirit Studio, a design that has remained virtually unchanged since its introduction in 1991, has become a recording classic used by the likes of Portishead, M:People and Radiohead.

Since its launch in 1998, the multi-award-winning Digital 328 console, with its ground breaking easy-to-use interface, has revolutionized low cost digital mixing in studios and live applications.

Soundcraft's award-winning range of nearfield studio monitors – Absolute Zero, Absolute 2 and Absolute 4P – have taken the Soundcraft name into top studios such as The Roundhouse and Ridge Farm, and won many friends in the production world. John Leckie and Tony Tavenor are just two internationally acclaimed producers to use Soundcraft monitoring.

Around the WORLD

Soundcraft is committed to excellence in audio. In eighty-eight countries, in countless studios, venues and recordings Soundcraft provides the inspiration. You simply have to do the rest.

For details of the complete Soundcraft range contact your Soundcraft dealer or visit the Soundcraft website where you'll find comprehensive details of every product, including downloadable PDF brochures, technical support and user group information.

Soundcraft

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This equipment complies with the EMC Directive 89/336/EEC
Spirit by Soundcraft Registered Community Trademark / RTM Nº 000557793
Soundcraft Registered Community Trademark / RTM Nº 000557827

Part Nº A4: ZL0527 US: ZL0528 02/02

LIVE MIXING CONSOLES

SPIRIT 8



8-Bus Professional Mixing Console

MONITOR 2



12-Bus Stage Monitor/ FOH/Theatre Mixer

LIVE 4²



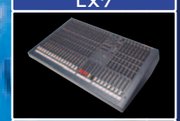
4-Bus Professional Mixing Console

SPIRIT M SERIES



Compact Mixing Consoles with integral rack mounting

LX7



7-Bus Professional Mixing Console

LIVE MIXING CONSOLES

POWERSTATION 1200 AND 600



Mixing Consoles with integral power amps and Lexicon effects

POWERPAD



Compact 10 Input Mixing Console with 2 x 30W power amp

POWERED MIXERS

LIVE RANGE BROCHURE

CONTENTS

Choosing & Using a Live Mixer; FAQs — 4 - 9

The Mixers in detail — 10 - 32

Live Mixer Applications — 33 - 35

Choosing Powered Mixers — 36 - 37

Powered Mixers in detail — 38 - 44

Powered Mixer Applications — 46 - 47

More Soundcraft products — back cover

Choosing & Using Soundcraft Live Mixers

Quick Selection Table	Page 4
Major features explained	Pages 5 - 7
Frequently Asked Questions	Pages 8 - 9

Spirit 8 — 8-Bus Professional Mixing Console

Features	Pages 10 - 11
Controls & Connections	Pages 12 - 14
Specifications; Block Diagram	Pages 15

Monitor 2 — 12-Bus Stage Monitor / FOH / Theatre Console

Features	Pages 16 - 17
Controls & Connections	Page 18
Specifications; Block Diagram	Page 19

Live 4² — 4-Bus Professional Mixing Console

Features	Pages 20 - 21
Controls & Connections	Pages 22 - 23
Specifications; Block Diagram	Page 24

M Series — Compact Mixing Consoles

Features	Page 25
Controls & Connections	Page 26
Specifications; Block Diagram	Page 27

LX7 — 7-Bus Professional Mixing Console

Features	Pages 28 - 29
Controls & Connections	Pages 30 - 31
Specifications; Block Diagram	Page 32

Applications Using Live Mixers in various applications

Live Mixing	Page 33	Outdoor Events	Page 34
Houses of Worship	34	Theatre Sound	35
Installed Sound	34	Presentations	35

Powered Mixers

Choosing Powered Mixers	Page 36
Powered Mixer Features	Page 37

PowerStation — Powered Mixing Consoles

Features	Pages 38 - 39
Controls & Connections	Pages 40 - 41
Specifications; Block Diagram	Page 42

aPowerPad — Compact Powered Mixing Console

Features	Page 43
Controls & Connections	Pages 43 - 44
Specifications; Block Diagram	Page 44

Applications Using Powered Mixers in various applications

Live Mixing	Page 45	Presentations	Page 46
Installed Sound	46	Power Supply Data (all models)	47
Outdoor Events	46		

Other Soundcraft Products

See Back Cover

AT THE HEART OF LIVE SOUND

For nearly thirty years, Soundcraft consoles have been at the heart of live production around the world. From venues, theatres and houses of worship to global stadium tours by artists such as Bruce Springsteen, Bryan Adams and Garbage, Soundcraft consoles are chosen for their uncompromising sound quality, comprehensive facilities, intuitive operation and rugged reliability.

Since its launch in 1991, the Spirit range has continued the Soundcraft tradition and has been responsible for many ground-breaking new products including the revolutionary Folio and the multi-award winning Digital 328. From young musicians to international artists such as Jean-Michel Jarre, the Manic Street Preachers and the Chemical Brothers, the Spirit range has become synonymous with professional features, sound quality and reliability, all at affordable prices.

Soundcraft's success stems from years of experience specialising in the design and manufacture of mixing consoles. Our Product Managers are in constant communication with sound engineers and musicians around the world, ensuring the development of consoles that truly match the needs of our customers.

Famous Soundcraft users today include artists like The Orb, Manic Street Preachers, Gomez, Jean-Michel Jarre, Sasha, Catatonia, M:People, the Chemical Brothers, Asian Dub Foundation, Texas, Pulp and Portishead*. To discover for yourself why they all chose Soundcraft, read on.

At Soundcraft's manufacturing facility outside London, we use world class production techniques including the latest surface mount technologies to ensure every console is packed with features. At the same time, we ensure reliability with continual investment in the latest testing systems, ensuring every Soundcraft console is built and tested to the same exacting standards.

This brochure outlines the key features and specifications of the Spirit range of Soundcraft live mixing consoles. For more detailed information on individual products, please contact Soundcraft or your nearest dealer, or visit the Soundcraft website shown on the back cover.

TEXAS



GOMEZ



ASIAN DUB FOUNDATION



* No endorsements implied.

Soundcraft

CHOOSING A LIVE MIXER

QUICK REFERENCE TABLE

To help you find the right live mixing console for your needs, we've summarised the key features and recommended applications of each model below.

Quick Reference Mixer Selector		Spirit 8	Monitor 2	Live 4[2]	M Series	LX7
Applications						
Large Bands FOH		•		•		
Medium Bands FOH		•		•	•	
Small Bands FOH			•		•	•
Touring			•			•
Stage Monitors			•		•	•
Large Venue Installed		•				
Medium Venue Installed		•		•	•	•
Small Venue Installed					•	•
Club		•		•	•	•
Houses of Worship		•		•	•	•
Theatre		•	•	•	•	•
Mono Inputs	4				•	
	8				•	
	12			•	•	
	16			•		•
	24	•	•	•		•
	32	•	•	•		
	40	•	•	•		
Sub Groups		8	12 (monitor)	4		4
Master Outputs		2	2	2	2	2
Matrix		2	-	2	-	-
Stereo Inputs		4	-	2 (12 ch) 4 (16+ ch)	4	2
EQ Bands Mono (±15dB)	Lo Fixed	80Hz	80Hz	80Hz	60Hz	80Hz
	Lo Mid Sweep	80Hz-1.9kHz	80Hz-1.9kHz	80Hz-1.9kHz	-	80Hz-1.9kHz
	Hi Mid Sweep	550Hz-13kHz	550Hz-13kHz	550Hz-13kHz	240Hz-6kHz	550Hz-13kHz
	Hi Fixed	13kHz	13kHz	13kHz	12kHz	13kHz
EQ Bands Stereo (±15dB)	Lo Fixed	80/120Hz	-	80/120Hz	60Hz	80Hz
	Hi Fixed	6/12kHz	-	6/12kHz	12kHz	12kHz
High Pass Filters		Mono inputs	Mono inputs	Mono inputs	Mono inputs	Mono inputs
Auxiliary Sends	Pre Fade	2	12	3	2	4
	Post Fade	2	12	3	2	6
	Pre/Post switchable	2	12	1	-	4
Mute Groups		4	-	4	-	-
FX Returns		8 x stereo	2 x stereo	4 x stereo	4 x stereo	2 x stereo
Inserts		Mono inputs, groups, mix	Mono inputs,mix, monitor sends	Mono inputs, groups, mix	Mono inputs, mix, mono out	Mono inputs, mix
Phantom Power		Individual	Individual	Individual	Global	Global
For full information turn to pages...		10 - 15	16 - 19	20 - 24	25 - 27	28 - 32

For full product information and specifications, please turn to the page numbers shown.

USING LIVE MIXERS

USING LIVE MIXERS

You don't have to take centre stage to feel the heat of live performance – ask any engineer, and they'll tell you that live mixing places special demands on equipment and on personnel. In the recording studio or in the dubbing suite there's always a second chance, but in live sound you get only one chance to get it right.

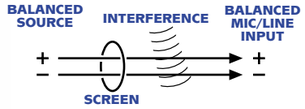
So when the pressure's on, why do so many engineers choose Soundcraft? Perhaps because we've had nearly 30 years experience at the forefront of professional live sound, listening to engineers, and turning their comments into practical products at all levels of the market. From houses of worship to concert halls, and from clubs and bars to touring theatre companies, we know what it takes to make a live mixer perform: the right combination of control features, presented in as intuitive a manner as possible, plus crystal-clear audio quality, to satisfy audiences and performers who expect 'CD-quality' digital audio from even the cheapest portable players or keyboards. And to all this we add something just as important – value for money.

Thanks to smart design and advanced manufacturing techniques – such as automated surface mount technology – you get more features per square inch on a Soundcraft desk. And thanks to efficient production, we can deliver the best in audio quality and control at a very reasonable price.

Let's look at a few of the more important features of live mixers, and how they are used.

USING INPUTS

When choosing a live mixer, one of the first things you should think about is how many inputs and outputs you need. Also, what types of inputs and outputs are required – where do they need to fit into the mixer's signal path, and what kind of physical connectors should be present. Mono input channels are generally best suited to microphones, or guitars and bass guitars connected via DI boxes. Both XLR and jack inputs are offered on most consoles, providing excellent flexibility. Most inputs are balanced preferred since a balanced cable will reject interference and noise where an unbalanced cable may pick up unwanted signals from lighting and other equipment.



Interference appears at the input with same polarity on both the + and - wires, and is rejected

STEREO INPUTS

Many sources in live and installed sound are stereo – stereo keyboard and sampler outputs, for example, CD or MiniDisc players for background or pre-show music, and stereo cart players for effects in theatre. Although you can use two mono channels for a stereo source, stereo channels take up half as much space on the desk, which means more inputs in total. Stereo channels are also easier to use, as you only have a single set of controls for level, aux sends and equalisation of the stereo signal.

Other inputs, such as stereo returns and effect returns, are intended mainly for routing a signal back into the mixer after it has passed through an external processor (such as a reverb or delay), but they can be also used for extra instrument inputs. 2-track inputs, where available, give a clean and direct signal path from a stereo playback unit to the mixer's main outputs.

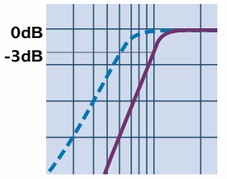
TAKING CONTROL

No matter how many advanced features a desk has, they're useless if the mixer is too hard to use – so we make sure that Soundcraft designs are always easy to get to grips with. When you're working with a lot of inputs, or when you have to accommodate several bands or scenes in a show, Mute Groups help to keep control of a mix. Groups of channels can be set up for different bands or scenes, and switched in and out rather than clumsily faded up and down.

Clear layout is an important aspect of mixer design that is often overlooked. All Soundcraft desks follow the familiar conventions of using white fader tops for channels, and red fader tops for groups. While it may sound trivial, under pressure and in dimly-lit clubs, it makes a big difference. Furthermore, all Soundcraft live mixers feature custom pots and faders, ensuring that their sound quality is matched by a usable, effective interface. Both rotary pots and linear faders have useful resolution all along their travel,
giving you the confidence to fine tune a mix properly.

USING HIGH-PASS FILTERS

Many engineers would say that a high-pass filter is the most important channel feature, enabling unwanted low-frequency noise to be removed from a signal. Mics on stage can pick up a good deal of rumble, and by using a HPF you can still employ the low frequency part of the channel EQ for creative work, rather than using it for keeping stage rumble at bay.



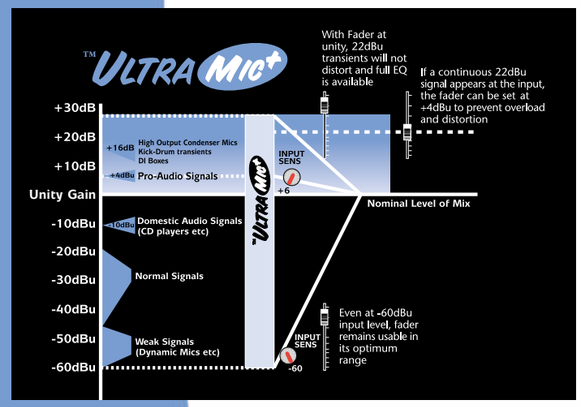
Whereas most high-pass filters have a 12dB/octave slope, Soundcraft filters have an ultra-steep 18dB/octave slope which means that more of the lower frequencies are attenuated – a shallower slope allows more bass frequencies to slip through, making it less effective. By positioning the filters at 100Hz, Soundcraft's HPFs act on the full range of lower frequencies that can cause clarity problems in mixing. (The more commonly-used 50Hz or 75Hz filter points work only on the very lowest frequencies.)

SETTING CHANNEL GAIN

If you want to be sure of getting a good mix, you have to start with the basics – and correctly setting the gain on each channel comes first at most soundchecks. Channel gain sets the amount by which the input signal is raised or lowered to match the operating level of the desk – high enough to give the best signal-to-noise ratio, but low enough to avoid distortion. A good way to do this is to ensure that a typical input signal is present on a channel, by simply having someone play a riff over and over, and adjust the gain pot until the meters read within the yellow range ('3' to '6' on the meter scale). This leaves enough headroom for transients and peaks. By setting appropriate gain on all channels, you can bring all the faders up to 0dB and know that all the instruments and mics will come through at roughly the same level. As well as making it easier to set up a basic mix, it helps to keep things clear and simple during a performance.

Thanks to the renowned UltraMic+ preamps used on all the Spirit range of Live mixers, their input channels can easily handle a wide range of signal levels – but even with this added flexibility, it's still good practice to set the gain properly.

One of the hardest types of signals for preamps are sudden transients – sharp peaks, often with a lot of high-frequency content. By using a feed-forward circuit configuration rather than a negative feedback design, the UltraMic+ is more stable and sounds cleaner when it has to deal with these signals. In a negative-feedback circuit, transients tend to draw power from the power rail, in turn limiting the circuit's ability to control the feedback. With the UltraMic+, however, the performance of the preamp remains linear, which means less distortion and more usable headroom.



USING EQ

Channel EQ is a vital live tool, for both corrective and creative work. Soundcraft's classic British EQ design combines well-focused HF and LF bands with two swept mid bands. Carefully chosen frequency ranges and slopes give simple, effective control of the high and low frequency ranges, without interfering with the area covered by the two swept mid bands. The result is EQ controls that give you more power to, for example, correct the change in sound as a radio mic slips out of position.

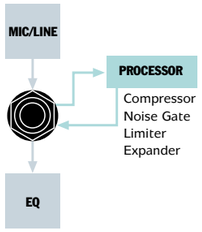
GRAPHIC EQUALISERS

Whereas channel EQ is used for changing the sound of individual channels, graphic equalisers are more suited to changing the overall sound. By patching a graphic EQ into the mix inserts, you can tailor the output of the desk to suit the room acoustics, rather than making the same corrections on all channels. To set the graphic EQ up properly, start by setting all of its faders to their centre positions, and turn the amplifier volume up until you can just hear the onset of feedback. Back the amp volume off slightly and, starting with the lowest frequency band, one by one slowly push the faders up. If no feedback occurs, return the fader to the centre position (0dB gain). If feedback does kick in, reduce the fader's level to the same amount below 0dB by which you had to raise it in order to induce feedback. Now do the same for the rest of the frequency bands.

USING INSERTS

Sometimes you need more specialised signal processing than a mixer can offer, which is where insert points come in. At key points in the signal chain, an insert point allows the signal to be diverted from its normal, internal, path, and instead routed out of the mixer and back in via an external processor. Inserts on input channels are often used to patch in dynamics processors – noise gates on drum kit mics to keep things clean, and perhaps compressors on the lead vocal and DI'd bass guitar to even out levels on these critical sources.

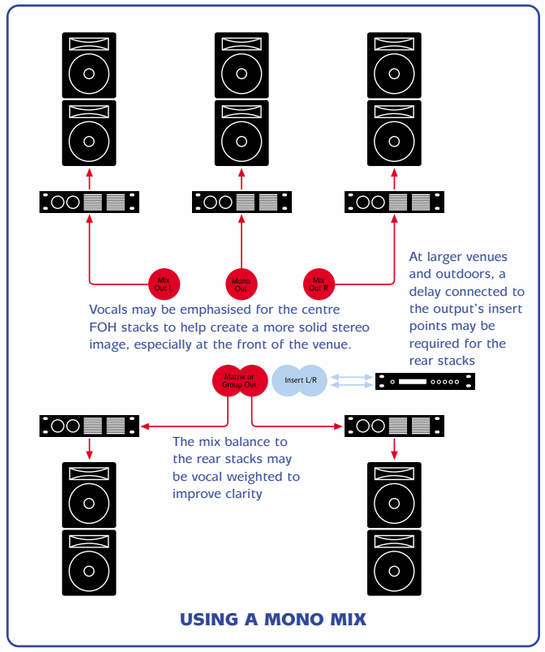
Inserts at the outputs are more likely to be used for extra equalisers. Theatres, bars and concert halls rarely have very controlled acoustics, and a graphic equaliser is one of the best ways of putting things right. The main stereo outputs are generally the most important, as they're usually feeding the loudest sources in your sound system. But if you're putting speakers on-stage or in an orchestra pit (so that performers can hear themselves properly), these too may require some EQ'ing to produce a more natural sound. The interplay of speaker design and a speaker's position in a venue are very complex, and experienced engineers know that there's simply no way to predict exactly how a speaker stack will sound in a particular space until it's up and working.



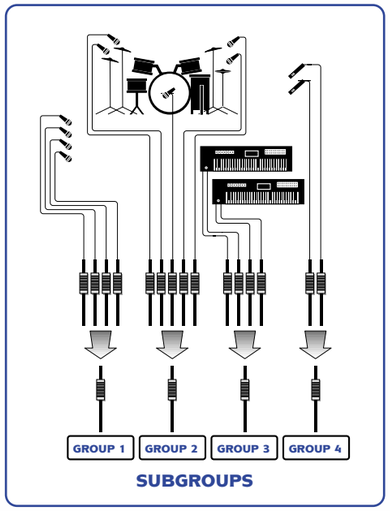
ROUTING TO OUTPUTS

Outputs are the business end of any live mixer – the means by which you ensure that the right people hear the right sound. For a start that means routing signals to amplifiers and speakers, but there are numerous other sources to which you may need to route signals – such as effects processors, and DAT or multitrack tape recorders – and that's why live mixers have so many outputs.

The audience is usually your first concern – making sure that they're hearing things loud and clear. As well as the main Front-of-House speaker system, there are several ways in which a mono output from the mixer, as well as the main stereo outputs, can help in this respect. You could feed a mono mix to a centre 'fill' speaker cluster, or a sub-bass cabinet. Keeping the mono feed separate, with its own level control on a fader, makes it easy to balance the sub-bass or fill against the main stereo mix. Other uses for the mono feed could include feeding an extra room, or in a larger room or outdoor event, feeding a delay stack.



USING A MONO MIX



SUBGROUPS

SUB-GROUPS & AUX SENDS

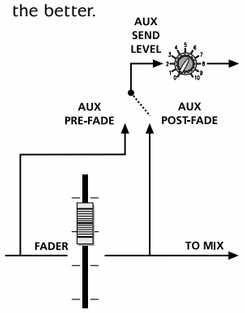
Sub-groups on a mixer are a valuable means of controlling sets of inputs as if they were one input. Apart from making it easier to balance the main elements in a live music performance – say, lead and backing vocals on groups 1 and 2 respectively, with the band as a stereo mix on groups 3 and 4 – these groups can be used to provide additional mixes via matrix outputs. Different zones in a building could be fed in this manner, or a mix with slightly higher vocal levels fed to rear speaker stacks in a large room to aid intelligibility. In theatre and installed sound, you might drive an induction loop (to help people with hearing problems); a mono or matrix feed is ideal for this purpose.

Auxiliary sends provide yet another means of deriving mix outputs carrying a different balance of input signals, but without a dedicated linear output fader. Pre-fade aux send levels are unaffected by channel fader levels, and are therefore ideal for setting up monitor mixes – performers still need to be able to hear their performance, even when you cut them out of the FOH mix. Post-fade sends, on the other hand, are better suited to feeding effect processors, as the balance of dry to effected sound remains constant as you raise and lower channel faders. As with inputs, however, at a pinch you can put outputs to different uses – feeding extra speaker stacks from an auxiliary send, for example.

OTHER INPUTS & OUTPUTS

As well as the main mix or mixes, there may be other signals that you need to route to different zones in a building – a talkback mic to the artists' dressing room, for example. 'House mics' may be useful if you are using in-ear monitors. Adding background noise by sending these mics to the otherwise 'dry' in-ear mix, you create a much more natural monitor mix that performers usually prefer.

When you need to record a live performance, the easiest way to do it is to record via stereo tape outputs, found on all Soundcraft live mixers. When you need to make multitrack recordings, look for direct channel outputs, which are usually switchable to take either a pre- or a post-fade channel signal out to a multitrack recorder. Group outputs can also be used, though as a rule, the less 'mixed' your recorded tracks are, the better.



Soundcraft

FREQUENTLY ASKED QUESTIONS

Why use Balanced Inputs?

Balanced inputs provide better rejection of interference and noise than unbalanced inputs. This is especially important in a live environment, as lights and other equipment tend to introduce a good deal of hum in unbalanced cable runs.

What is Phantom Power?

Phantom power is a simple DC power supply, usually 48V, available via the balanced inputs of a mixer. It allows condenser microphones and DI boxes to be powered without batteries or any external power supplies.

What is Talkback?

Talkback is a way of allowing an engineer to talk to performers on-stage or backstage, via a dedicated mic input that can be routed to (usually) group or aux outputs, or the main mix outputs.

What is in-ear monitoring (IEM), and what's so good about it?

In-ear monitoring is an alternative way of providing a monitor mix to performers. Rather than play the mix over on-stage speaker cabinets, IEM carries the mix from the mixer's outputs via a wireless or hard-wired link to a performer's compact body-worn receiver, complete with earphones.

This offers several key advantages over traditional monitoring: a higher quality monitor mix can be provided, and by reducing or (if the whole band is on IEM) eliminating the extra on-stage volume due to monitor speakers, there's less chance of feedback and a better FOH mix is possible. There's also less equipment to move around, and provided that transmitters are correctly placed, performers can wander all over the stage without compromising their monitor mix.

What are matrices for?

Matrices are extra outputs which can carry yet another separate mix, derived from the main and group busses. They could be used for something as simple as duplicating the main mix to feed a MiniDisc recorder or another set of speakers, or used to carry a mix with more vocal, for example, for a set of rear speakers.

What is a high-pass filter for?

A high-pass filter is one of the most useful facilities that you will find on a live mixer. By cutting out all low-frequency sounds, a high-pass filter can eliminate stage rumble and other unwanted low-end 'mush' that you don't want to hear over the main PA.

What is a DI box?

Some instruments, usually keyboards and bass guitars, are best connected to a mixer electrically rather than via a microphone. This is where a Direct Injection box comes in. A DI box converts the unbalanced instrument output into a balanced signal which can be run to the mixer. This avoids the noise problems associated with long runs of unbalanced cable, and provides a convenient point to lift the earth connection without butchering your cables.

DI boxes may be passive (i.e. a simple transformer), or powered by either batteries or the mains. Some accept 48V phantom power. If you get problems with DI boxes or other equipment humming, you can use the 'Earth Lift' switch; but whatever you do, don't resort to removing the Mains earth connection. This is potentially **lethal**, so if you can't solve it, get the equipment fixed properly by a qualified engineer.

What is a foldback?

A foldback mix is another name for a monitor mix, totally separate from the main front-of-house mix, and provided so that performers can hear themselves properly on stage or backstage.

What's the Inverse Square Law?

Every time you double the distance from a sound source, you halve the volume (ie. a 6dB drop). Halve the distance and you double the volume. Remember this when positioning microphones.

What are the maximum input levels to each type of input?

+22dBu for UltraMic preamp inputs (ie. mic inputs apart from those on the Powerpad), +14dBu for the Powerpad mic inputs, and +30dBu for all line inputs.

What are the maximum output levels of the different outputs on the Spirit range of desks?

Around +21dBu.

What is the typical output noise on a Spirit range live desk?

-80dBu at the master outputs, with the master fader at max.

What is a 2-track return?

A 2-track return is intended primarily to accept the output from a stereo playback source such as a CD, cassette or MD player.

What cables should I use to connect my console?

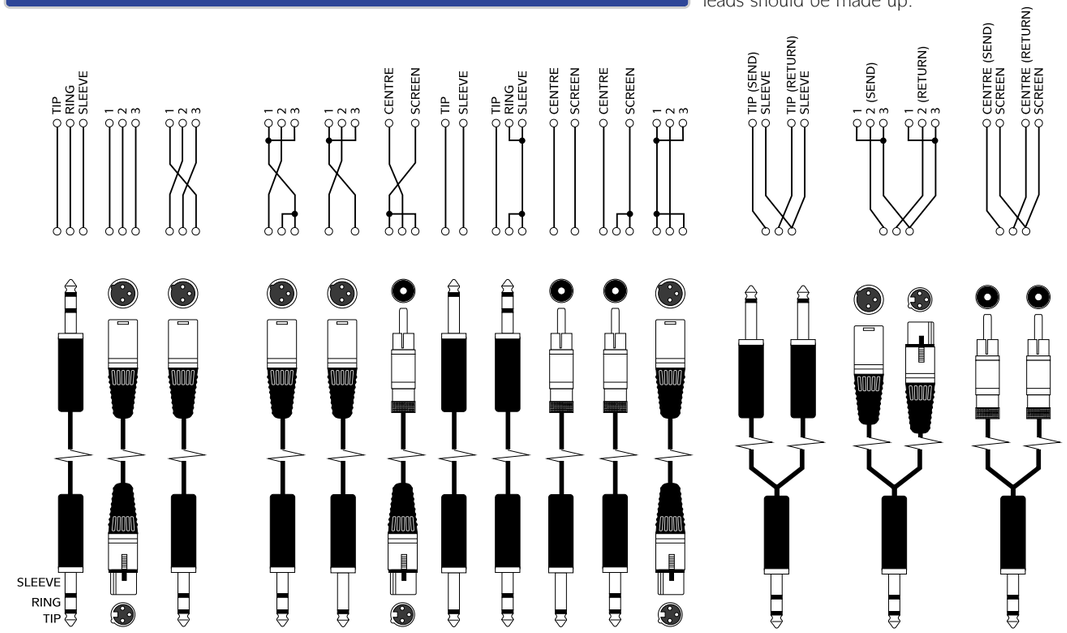
The best you can afford! Cheap cables will have poor quality connectors that will be more likely to give trouble (such as crackle and buzz) than good connectors. Also, good cables will offer higher audio quality and better rejection of interference, particularly over long runs in hostile live environments.

What is an auxiliary send?

An auxiliary send, usually abbreviated to aux send or aux, is an extra output from a mixer that can carry a quite separate balance of sources to that sent to the master outputs. In the studio aux sends are used mainly for patching effects processors in, by sending an aux mix to a effects unit and then returning the processed signal to the desk. Auxes are also useful for setting up on-stage or in-ear monitor mixes, and for multi-speaker mixing in installed sound.

How should I wire up insert and other cables for my console?

These diagrams show how some standard leads should be made up.



BALANCED
Line, Mix L&R, Sub L&R, Aux, Stereo Inputs

UNBALANCED
Direct Output, Control Room L&R, Stereo Inputs

INSERT LEADS
Mono Inserts, Mix L&R Inserts

Why are cardioid mics usually preferred for live work?

A cardioid mic, with its directional pick-up characteristics, can fairly easily be positioned so as to avoid feedback and unwanted spill. An omni mic, by comparison, may offer slightly higher sound quality, but must be placed with care – remember the inverse square law, and place omnis as close as possible to sound sources.

Is it a good idea to use a wide range of microphones?

It is generally good practice to use similar microphones, and as few of them as possible. By sticking to mics with similar characteristics, you will find it easier to achieve a balanced sound, and there's less chance of a single cheap mic spoiling the party. By using fewer mics, you reduce leakage, and therefore reduce the chance of feedback. (The more open mics are on stage, the more the amount of gain before feedback is cut.)

I'm having real problems avoiding feedback. Help!

You've moved all the mics again, you've done the best you can with your graphic EQ, moved the monitor speakers – but feedback still threatens whenever you push the levels. Try reversing the phase of one of your monitor outputs to deal with this. This will not affect the subjective sound quality of the stage monitor mixes, but it may make a big difference to how much gain can be dialled into the monitor system before the onset of feedback.

Why do you need a mono bus?

A mono bus on a live mixer is a valuable addition to the main stereo outputs. Unlike studio and domestic hi-fi situations, live sound often presents problems for a simple L-R stereo mixing – mainly because the audience is spread over far too large an area to be properly covered by a system's 'sweet spot'. Rear speakers are often used to reinforce sound at the back of a hall, and a mono bus can be used to provide a 'fill' in between speakers at the front. If the centre speakers carry more vocals than the L-R mix to the main speaker stacks, overall intelligibility and clarity are often improved.

Soundcraft

SPIRIT 8
8-BUS PROFESSIONAL MIXING CONSOLE

Up to 56 inputs

8 group busses

UltraMic+ preamp with up to 66dB gain range

+48V phantom power, individually switchable on each channel

4-band EQ with two swept mid bands

4 mute groups

Additional outputs on 10 x 2 matrix

MAIN FEATURES

- 16, 24, 32 and 40-channel frame sizes
- Two stereo input channels
- 8 stereo returns
- Phase reverse on mono inputs
- 18dB/octave high-pass filter
- 6 aux sends, configurable to give up to 4 pre or post-fade sends
- Separate rackmountable PSU

The Spirit 8 is the ultimate Spirit range live console, a fully-featured 8-bus desk that combines a comprehensive range of professional control and routing facilities with cost-effective and compact design. You can choose the Spirit 8 in any of four frame sizes, from 16 to 40 mono channels, all featuring eight sub-groups for routing sets of channels together, giving you fewer faders to ride when balancing the overall mix.



APPLICATIONS

Applications:

- 8-bus live mixing
- FOH mixing
- Touring bands
- Venues and theatres
- Installations
- Recording direct to multitrack

SEE PAGES 33 – 35

Frame sizes available:

16
24
32
40

Outputs for every application

In live music or in theatre, the Spirit 8's eight sub-groups can also provide extra outputs, for additional zones or speaker stacks. Still more outputs, besides the main stereo and six aux outputs are available via a 10 x 2 matrix section, bringing to 18 the total number of independent outputs on the Spirit 8. All are on balanced XLRs, with transformer-balanced output circuitry that offers excellent rejection against interference from electronics such as lights and computers.

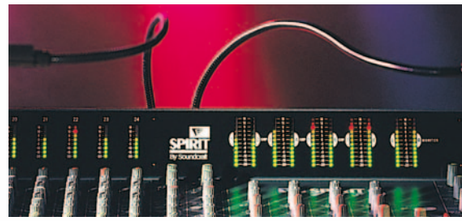


The Spirit 8's six auxiliary sends can be configured in various ways to suit uses such as monitor, effects and other sends. Front-panel switches allow four of the auxes to be routed either pre- or post-fade, while internal jumpers are used to change options such as whether a send is pre- or post-EQ - even whether an aux send is muted along with the channel. A more specialised facility is the channel direct output, switchable for either pre- or post-fade, provided on all mono input channels for multitrack recording or extra effect sends.

All mono input channels feature Soundcraft's legendary UltraMic+ mic preamp, designed to get the best out of almost any input source, from low-output dynamic mics to the hottest stage box or keyboard outputs. Other important professional features for mic mixing are also provided. Phase reverse switching enables quick and easy correction of out-of phase mics in a multi-mic system, and +48V phantom power for condenser mics is switchable on all channels. As on all of the Spirit range of live mixers, powerful 4-band EQ with two swept mid bands provides all the corrective power you need. Carefully chosen, well-focussed frequency bands and filter slopes mean that you can dial in just the right amount of high frequency shimmer without bringing up unwanted mid-range boominess. Similarly, you can cut or boost only the narrow range of bass frequencies required to avoid speaker distortion or bring out the character of a bass guitar, without muddying the whole mix.

Stereo inputs

The Spirit 8 is well-equipped with stereo inputs, suitable for everything from instruments to CD players. Besides four stereo channels, complete with EQ and aux routing, the master section includes a further eight stereo effect returns. Four of the returns even have EQ controls – a refinement that brings greater tonal control to effect mixing, as well as making it easier to bring in stereo instruments, or stereo playback of pre-show music from a CD or MD player. The construction of the Spirit 8 is everything you'd expect of a full-size professional live board, with individual channel circuit boards firmly bolted into a solid steel frame. Its ergonomic design and familiar colours, important



factors in ensuring easy and intuitive operation, are based on years of in-house live experience. Even in low light, EQ pots can easily be distinguished from aux controls, and there's enough room around all the rotary pots to allow control movements without knocking adjacent pots out of alignment.

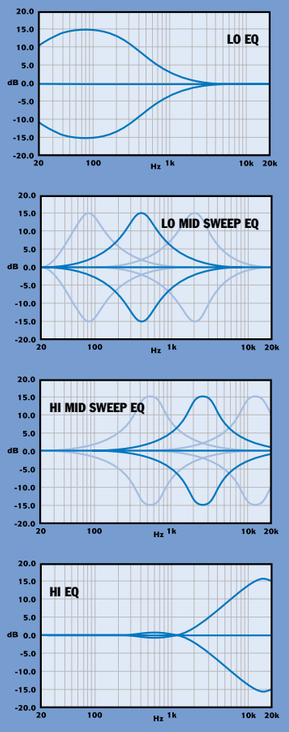
With its integral meterbridge, the Spirit 8 provides accurate and comprehensive monitoring of levels throughout the signal chain – channels, groups, and the main mix busses. More than just a way of seeing which channels are in use, this helps the engineer to maintain optimum levels throughout the signal path, avoiding both unwanted noise and distortion. Thanks to PFL and AFL facilities, channels and groups can be isolated and checked on headphones – even in mono when looking for phasing problems.

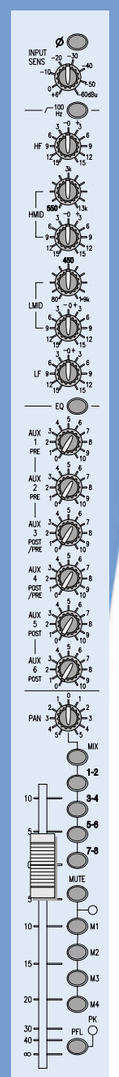
Mute groups

full

FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

BLOCK DIAGRAM –





MONO INPUT

The UltraMic Plus™ padless mic preamp provides up to +28dBu capability with the input sensitivity control operating between +6dB and -60dB on Mic and Line inputs.

180° Phase Reverse switch
This switch reverses the polarity of the input to compensate for signal phase differences.

Connector Bay (behind meterbridge)
Both Mic and Line inputs are balanced with +48V phantom power available individually per channel for condenser mics. Direct Out is factory set post-fader/post-EQ, but can be set to pre-fader, pre/post EQ. The insert point is pre-fader, pre-EQ but post HPF.

EQ Section
The 4 band equaliser section has two swept mids for extra control during live performances. All bands provide 15dB of cut or boost.The HF shelving filter operates above 13kHz. The Hi Mid control operates between 550Hz and 13kHz with Lo Mid operating between 80Hz and 1.9kHz.
The LF shelving filter operates below 80Hz.

EQ In/Out switch
Selecting the EQ allows comparison of treated and untreated sounds.

High Pass Filter
A 100Hz/18dB/octave High Pass Filter is set pre-EQ to 'clean up' low frequencies.

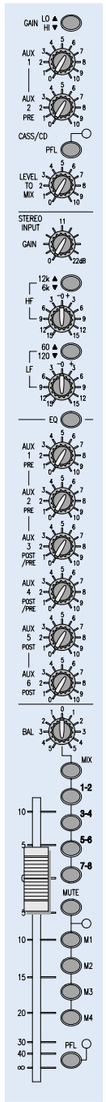
Auxiliary Section
6 Auxiliary Sends allow the choice of either monitor or effects-orientated mixes. Auxes 1 and 2 are pre-fader, post-EQ for monitor mixes. Auxes 3 and 4 are normally post-fader, post-EQ but are individually globally switchable to pre-fader, post-EQ from the master section. Auxes 5 and 6 are post-fader, post-EQ. The pre- or post-EQ parameters on Auxes 1, 2, 3 and 4 are all easily resettable via internal jumpers for custom configurations.

Pan
Each input channel can be routed to mix and/or any of the 8 groups in pairs.

Mute
All pre- and post-fade outputs are muted on the channel when the mute switch is pressed. Alternatively, the channel can be assigned to one of the 4 mute busses for scene setting.

PFL/Solo
Each channel can be soloed pre-fader, post-EQ to check gain levels. The PFL LED also doubles as a PEAK indicator.

Faders
Custom-built 100mm long throw linear faders provide 10dB of extra gain above "zero".



STEREO INPUT

Two stereo input channel strips, each comprise two independent pairs of inputs.

Connector Bay (behind meterbridge)
Both pairs of line inputs are balanced. Plugging in the left jack only will feed a mono source to both paths.

Cassette/CD Input Section
This features two gain settings: LO for -10dBV semi-pro devices such as CD or cassette players, or HI for -20dBV hi-fi equipment. Signals are controlled by the LEVEL TO MIX pot and directed straight to Mix. The input can be soloed pre-fader, with two pre-fade auxes allowing the signal to be sent to stage monitor mixes.

Stereo Input Section
A gain control operates from 0 to 22dB allowing the connection of line level devices as well as most professional and hi-fi sources.

EQ Section
A two band frequency switchable EQ provides 15dB of cut or boost over high or low frequencies. The HF control is selectable between 6 or 12kHz, with LF selectable between 80 and 120Hz.

EQ In/Out Switch
This switch allows comparison of treated and untreated sounds.

Aux Section
The Stereo Input has 6 Auxiliaries with identical pre/post-fader settings to the mono inputs.

Balance
This control sets the amount of signal feeding the left and right mix outputs and the odd or even groups. Acts as a Pan control when a mono signal is used.

PFL/Solo
Pressing the PFL switch provides a mono sum solo of the pre-fade, post-EQ signal.

Fader/Route/Muting switch
The fader, mute switch and routing switch behave identically to the mono channels.

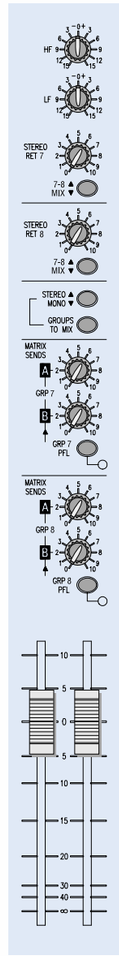
GROUP SECTION

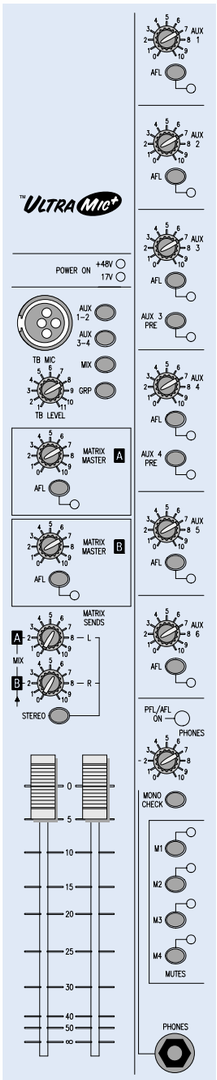
Connectors (see below)
Each group has an impedance-balanced output with a male XLR connector and a pre-fade insert point. All stereo returns are balanced.

Stereo Returns
8 Stereo Returns are provided in the group section, for use as effects returns, or as additional stereo inputs. The returns in the top row include 2 band EQ with 15dB of cut or boost at 12kHz and 80Hz. Each return can be routed to Mix or to the pair of groups directly below it. A rotary control determines the level of the signal.

Matrix Sends
For the creation of two independent mixes derived from the groups, in addition to the group and mix outputs: ideal for monitor sends and speaker fills. Each group signal can be fed independently to Matrix A, Matrix B, or a combination of the two.

Group Controls
Custom-built 100mm long throw linear faders provide 10dB of extra gain above the "zero" mark whilst still ensuring smooth operation. Each group can be soloed pre-fader by using the PFL switch.Pressing the STEREO/ MONO switch routes the groups to mix in pairs or for use as mono subgroups feeding both sides of the mix.





MASTER SECTION

Mix and Matrix outputs are provided on 4 impedance-balanced XLR connectors . The Mix inserts are pre-fader. A pair of unbalanced -10dBV jacks allow the performance to be recorded. The six Aux master outputs are also impedance-balanced.

Matrix Sends and Masters
Two rotary controls allow the Mix L and R busses to be fed to the Matrix outputs, either as a mono sum or individually to Matrix A and B respectively. The Matrix masters above govern the level of Matrix A and B outputs. Both may be soloed after the fader.

Talkback Section
A balanced XLR connector allows a microphone signal to be routed to Aux 1-2, Aux 3-4, the Mix, or the Groups. A rotary control governs talkback level.

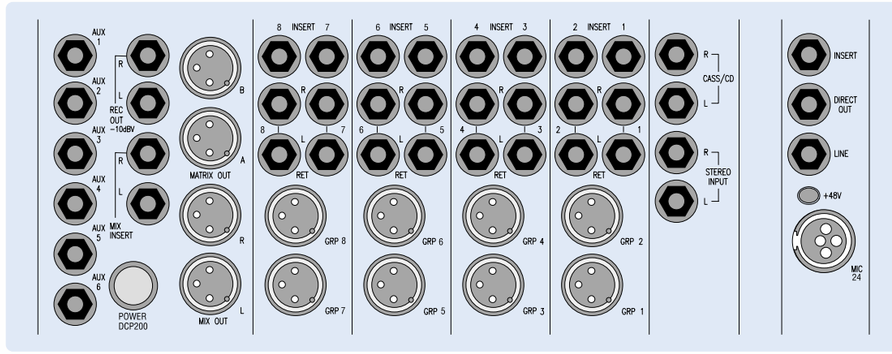
Auxiliary Masters
Six rotary controls govern the overall level of each Aux master. Each can be soloed after the fader for monitoring. In addition, Auxes 3 and 4 can be switched post-fader, post-EQ globally.

Mute Masters
Four switches control the status of the Mute Groups. The associated LED illuminates when any mute group is active.

Headphones Section
A jack is provided for use with headphones with impedances of 200 Ohms or greater. Level is controlled by a rotary fader. The PFL master LED illuminates if any solo is active.

Master Faders
The Mix L & R levels are controlled by 2 custom-built 100mm long throw linear faders.

CONNECTOR PANEL



FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

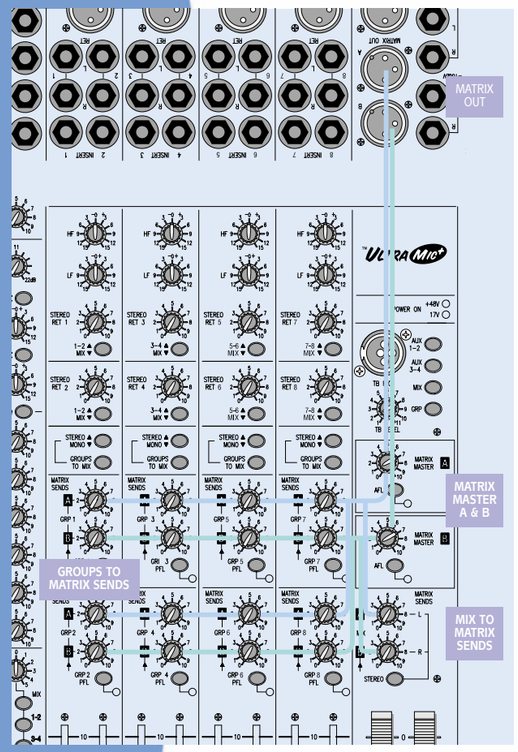
SPECIFICATIONS – PAGE 15

BLOCK DIAGRAM – PAGE 15

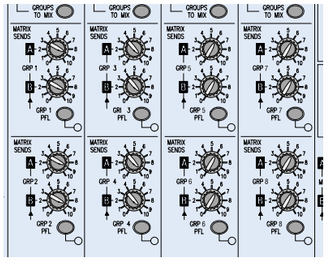
USING MATRIX & MUTE GROUPS

10 X 2 MATRIX

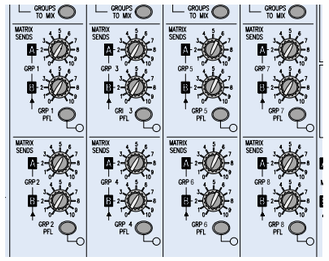
The output from any of the eight groups and the L&R Mix busses can be mixed into the Matrix A and Matrix B outputs using the Matrix section's rotary controls.



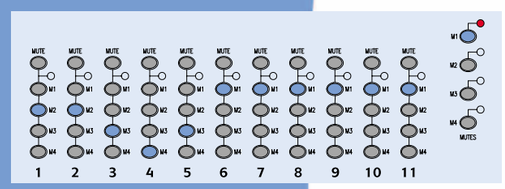
Here, groups 1-4 are used to create the mix to the Matrix outputs, feeding additional speaker stacks. Groups 3 & 4 are mixed at a slightly higher level than 1 & 2, giving more lead and backing vocals in the extra speakers relative to the basic band mix.



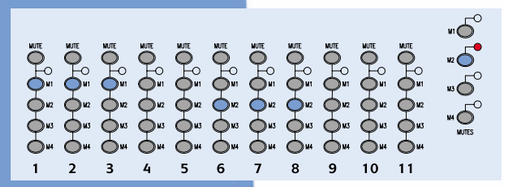
Groups 5 & 6 are used on their own for a feed to backstage speakers - this could consist of totally separate sources to the main mix, perhaps house mics and a talkback mic.



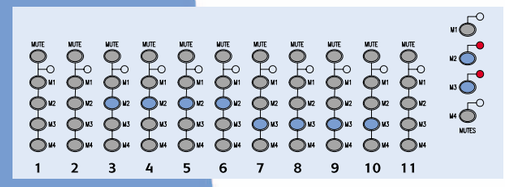
MUTE GROUPS



Here, Mute Group 1 is used on the channels used by a support band, enabling their mics and instruments to be brought up or silenced with a single button push.



By assigning two on-stage mics and a 'bug' mic used for the brass section to Mute Group 2, these can be easily silenced during songs and passages where the brass isn't used.



In a theatre production, two sets of radio mics used during different scenes are assigned to Mute Groups 2 and 3.

FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

SPECIFICATIONS

Noise
Measured RMS, 20Hz to 20kHz Bandwidth Line inputs selected at unity gain and terminated 150Ω

Mix
32 mono and 4 stereo inputs routed to Mix, faders at unity -81dBu
Mix Faders down -95dBu

Aux
32 mono and 4 stereo inputs routed, output at max., input faders down -86dBu

Direct Output
Input to Post-Fade Output @ unity gain -90dBu
Input to Post-Fade Output @ 40dB gain -81dBu

Matrix Output
Matrix Output at max., sends down -93dBu

EIN
Microphone Input, Maximum Gain, terminated 150Ω -129dBu

Crosstalk

@ 1kHz	1kHz	10kHz
Fader Attenuation to Direct Output	92dB	80dB
Fader Attenuation to Mix (36ch. routed)	94dB	89dB
Fader Attenuation to Mix (1ch. routed)	101dB	89dB
Typical Aux Attenuation	88dB	83dB
Pan Isolation (36ch. to Mix)	76dB	68dB
Adjacent Channel Crosstalk	99dB	95dB
Routing Isolation	86dB	86dB
Mute Offness	104dB	88dB

Frequency Response
Line In to Mix Out via Group (longest path) 25Hz to 20kHz -1dB

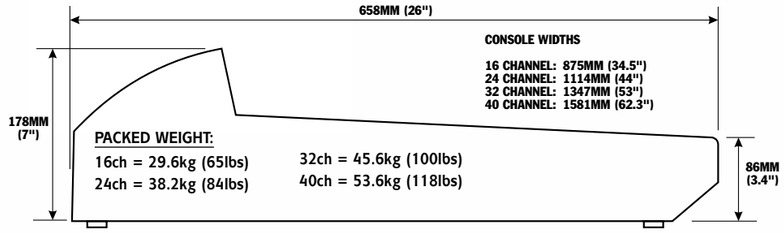
THD
-10dBu Input routed to Mix, +20dBu out @ 1kHz <0.005%

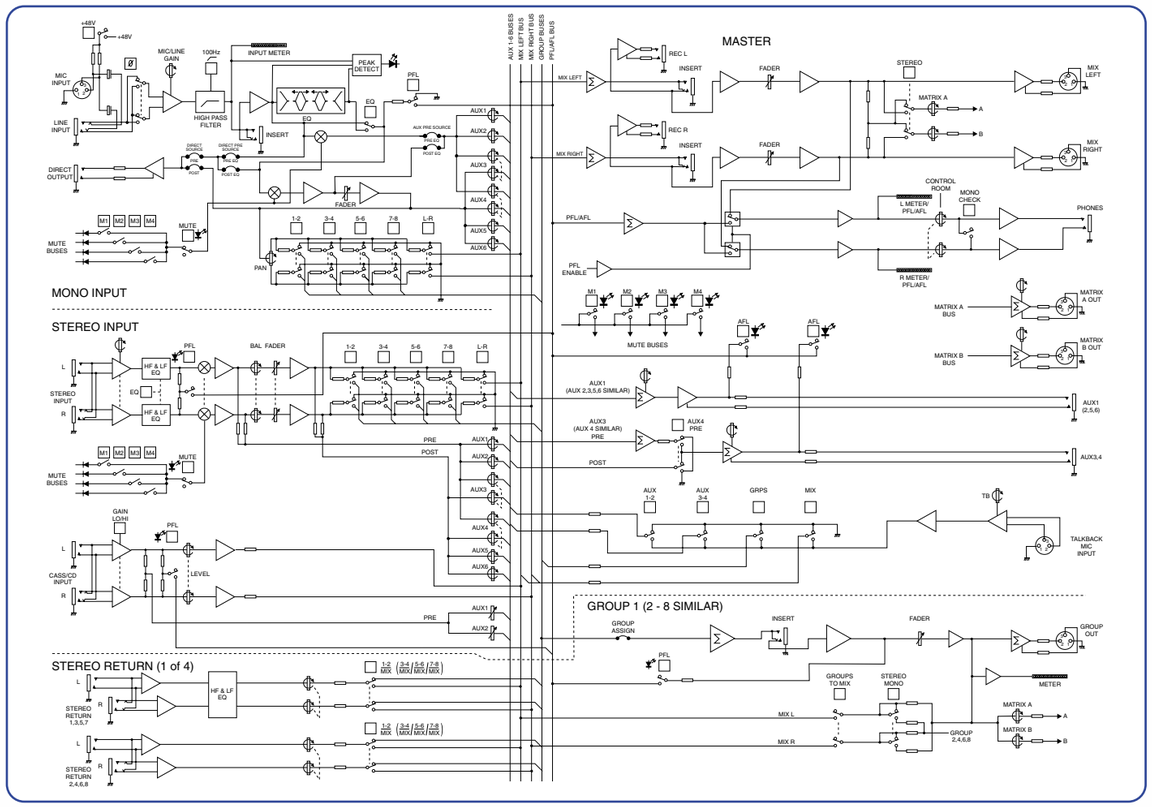
CMRR
Typical at medium gain, 50Hz to 10kHz >80dB
Typical at high gain, 50Hz to 10kHz >85dB

Input and Output Impedances
Microphone Input 1.8kΩ
Line Input >10kΩ
Stereo Input 8.6kΩ
Cass/CD Input >10k
Stereo Return >10k

Input & Output Levels
Mic/.Line input Maximum Level +28dBu
Stereo Input +25dBu
Cass/CD Input +18dBu
Nominal Input for +4dBu at Mix Output, level at '7' -20dBV (HI) -10dBV (LO)
Stereo Return +22dBu
Max. Mic Gain through longest path to Mix 84dB

Power Supply Unit
Please see page 47 for details





MONITOR 2

12-BUS STAGE MONITOR / FOH / THEATRE MIXER

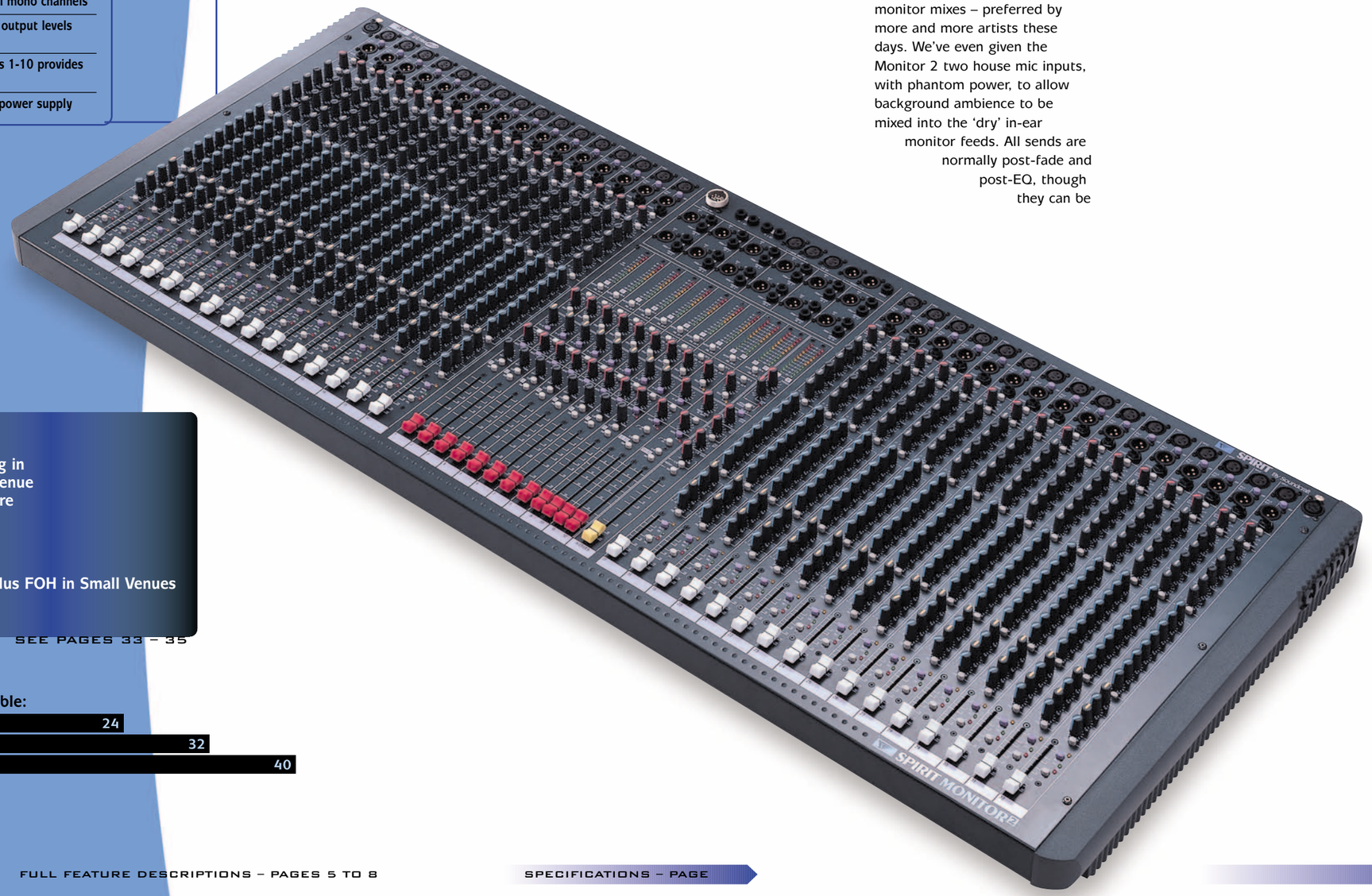
MONITOR 2

MAIN FEATURES

- 4-band EQ with two swept mid bands
- 12 monitor sends with 1-8 mono and 9-12 stereo
- UltraMic+ preamps on all mono inputs
- +48V phantom power switchable on all channels

- 24, 32 and 40-channel frame sizes
- Split Out connectors avoid the need for special cables or splitter boxes
- Pre-EQ insert point on all mono channels
- Dim switch cuts monitor output levels by 6dB
- Sub-grouping on channels 1-10 provides FOH mixing capability
- Rackmountable external power supply

Where space and budgets allow, there's no substitute for a separate console for monitor mixing – which is why we created the Monitor 2, an ideal complement to full-size FOH desks like the Spirit 8. The Monitor 2 combines all the necessities of a professional monitor desk with elegant design features aimed at speed and clarity in use – such as Split outputs that allow easy connection to an FOH mixer without using splitter leads. And because versatility is a priority in all of Soundcraft's Spirit range of designs, the Monitor 2 is flexible enough to perform FOH mixing where no other mixer is available.



APPLICATIONS

Monitoring in Touring, Venue and Theatre

Monitor plus FOH in Small Venues

SEE PAGES 33 – 35

Frame sizes available:

24

32

40

The last thing you want when setting up a monitor mix is to run out of aux sends. The Monitor 2 has 12 sends in total: eight mono sends plus two stereo pairs. Whilst the stereo pairs can be used, like the mono sends, for routing to conventional on-stage speaker cabs, they are ideally suited to setting up stereo in-ear monitor mixes – preferred by more and more artists these days. We've even given the Monitor 2 two house mic inputs, with phantom power, to allow background ambience to be mixed into the 'dry' in-ear monitor feeds. All sends are normally post-fade and post-EQ, though they can be switched on each channel to pre-fade operation, if necessary for effect sends.

Easy set-up

The Monitor 2's connectors, easily accessible at the rear of the front panel, make it easy to get hooked up. All channels accept a mic or line input via a balanced XLR input, with a Split output (also on an XLR) that duplicates the input signal for a feed to a front-of-house console, or to a multitrack recorder. Switchable +48V phantom power is provided on all channels, for phantom powered stage boxes or mics. Because you may want to use noise gates or compressors on some channels, to remove unwanted 'spill' in drum mics or to keep bass volume down to a safe level, all mono channels feature insert points on stereo jack sockets.

Powerful EQ is just as useful on a monitor desk as on a front-of-house design – balancing on-stage sound so that everyone gets a clear monitor mix, without feedback, can require very precise tonal control. That's why we gave all mono input channels on the Monitor 2 our classic 4-band EQ, with its well-chosen bands and precision controls. An EQ In/Out switch is also provided, to make on-the-fly comparisons easy.

FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

SPECIFICATIONS – PAGE

INPUTS

Mic/Line Input
A balanced female XLR connector accepts balanced or unbalanced mic or line signals. At -129dbU EIN the mic amp is extremely quiet.

48V Phantom Power Switch
Individual switches on each channel activate Phantom Power for use with condenser mics or active DI boxes.

Split Out
A balanced male XLR connector on each Mono input allows the "dry" input signal to be sent direct to a FOH mixer.

Insert
1/4" TRS jacks are provided for patching in Limiters, Graphic Equalisers or other signal processors.

180° Phase Reverse switch
This switch reverses the polarity of the input to compensate for phase differences caused by multiple microphone placement or incorrectly wired input cables.

Padless Input Sensitivity control
Soundcraft's UltraMic+™ padless mic preamp provides up to +28dBu input capability, with the input sensitivity control operating between +6dB and -60dB on the Mic / Line inputs.

High Pass Filter
The 100Hz, 18dB/octave filter is an effective tool for tackling low frequency rumble or mic popping.

EQ Section
Monitor 2 has a 4-band equaliser section with two swept mids for extra control during live performances. All bands provide 15dB of cut or boost.
The HF shelving filter operates above 13kHz.The Hi Mid control operates between 550Hz and 13kHz with Lo Mid operating between 80Hz and 1.9kHz. The LF shelving filter operates below 80Hz.

EQ In/Out Switch
When the EQ switch is selected, the EQ section is bypassed allowing comparison of treated and untreated sounds. An 18dB per octave 100Hz High Pass Filter is available prior to the EQ section to 'clean up' low end frequencies.

Monitor Sends
Sends 1 to 8 are Mono with 9/10 and 11/12 configured as Stereo pairs for in-ear monitoring. All are normally Post-Fade/ Post-EQ but may be switched to Pre-Fade/Post-EQ by pressing the associated PRE switches.

Mute
Provides muting control over the input channel including monitor sends. The adjacent LED lights when mute is activated.

Fader
Input levels are controlled by highly accurate 60mm linear faders.

Signal Present LED
Illuminates when a signal is present to give an instant indication of which channels are in use.

PFL/Peak
The latching PFL with LED solos the input for monitoring. When PFL is switched out, the LED acts as a channel peak signal indicator.

OUTPUT SECTION

These outputs provide summing of the corresponding input channel monitor sends. Outputs 1-8 are configured as Mono sends, 9/10 and 11/12 are Stereo.

Outputs
Impedance-balanced male XLRs provide outputs from the Monitor section.

Graphic EQ (Inserts)
Two balanced 1/4" jacks allow connection of a graphic equaliser across a stage monitor.

Bargraph Meters
The 3-colour, 12 segment LED meters can be switched Pre/Post EQ on inserts.

MNTR Control
Provides rotary level control of the engineer's wedge/headphones level. Switchable Pre/Post EQ on inserts.

Solo
Solos the monitor output on the engineers wedge/headphones

FOH Facility (outputs 1-10)
Allows sub-grouping to outputs 11-12 when Monitor 2 is used as a FOH mixer.

Pan
Allows the signal to be sent individually to monitors 11-12.

FX Returns
Two stereo effects returns (either RET1 or RET2) may be mixed direct to the stage monitor output. Effects are connected by FX1/FX2 1/4" jacks.

Mute
Disables the stage monitor send. The LED lights when mute is active.

High Pass Filters
Channels1-8 are provided with a variable filter (off-160Hz). A fixed 60Hz filter is used for channels 9-12.

T/B (Talkback)
A balanced XLR connector allows a T/B microphone signal to be routed to monitor out. The rotary control governs level.

Dim
Instantly attenuates monitor output by 6dB.

Fader
Accurate and consistent 100mm long throw linear faders control the overall level of each output.

House (inputs 9-10, 11-12)
A rotary control determines the level of the "house" mics being sent to the monitor output when in-ear monitors are being used.

MASTER SECTION

L & R Bargraph Meters
The 3-colour, 12 segment meters show levels as selected by the Wedge Source switch.

Phones Level Control
Sets level to the phones jack. Use headphones having an impedance of 200 Ohms or higher.

Solo/PFL Trim
Provides ±15dB level adjustment to allow for differences in operating levels.

Wedge Source
Selects monitor outputs 11-12 as source for engineer's wedge outputs, if the console is being used as a FOH desk.

House Mics
Two balanced female XLR inputs allow connection of "house" mics to provide ambience for in-ear monitors.

House Sens
Sets the house mic input level. Phantom Power (+48VDC) is available for condenser microphones.

FX Returns
When the HOUSE switch is pressed, these two balanced stereo effects returns may be used in place of the house mic inputs on monitor channels 9-12.

T/B Sensitivity
Controls the Talkback mic level to the selected monitor outputs.

Master T/B
Routes the Talkback signal to ALL monitor outputs.

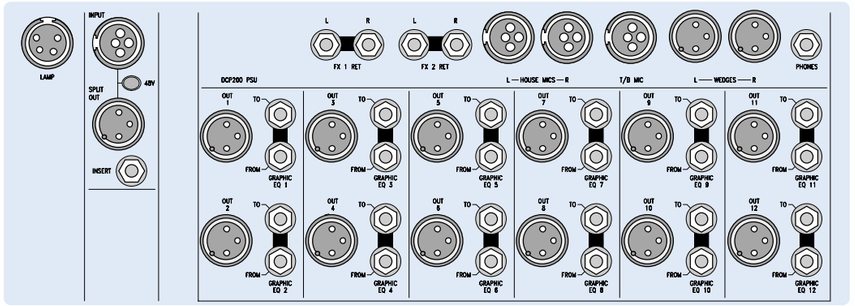
Master Dim
Attenuates ALL monitor and wedge outputs by 6dB.

Fader
This 100mm fader controls the overall level of the engineer's wedges.

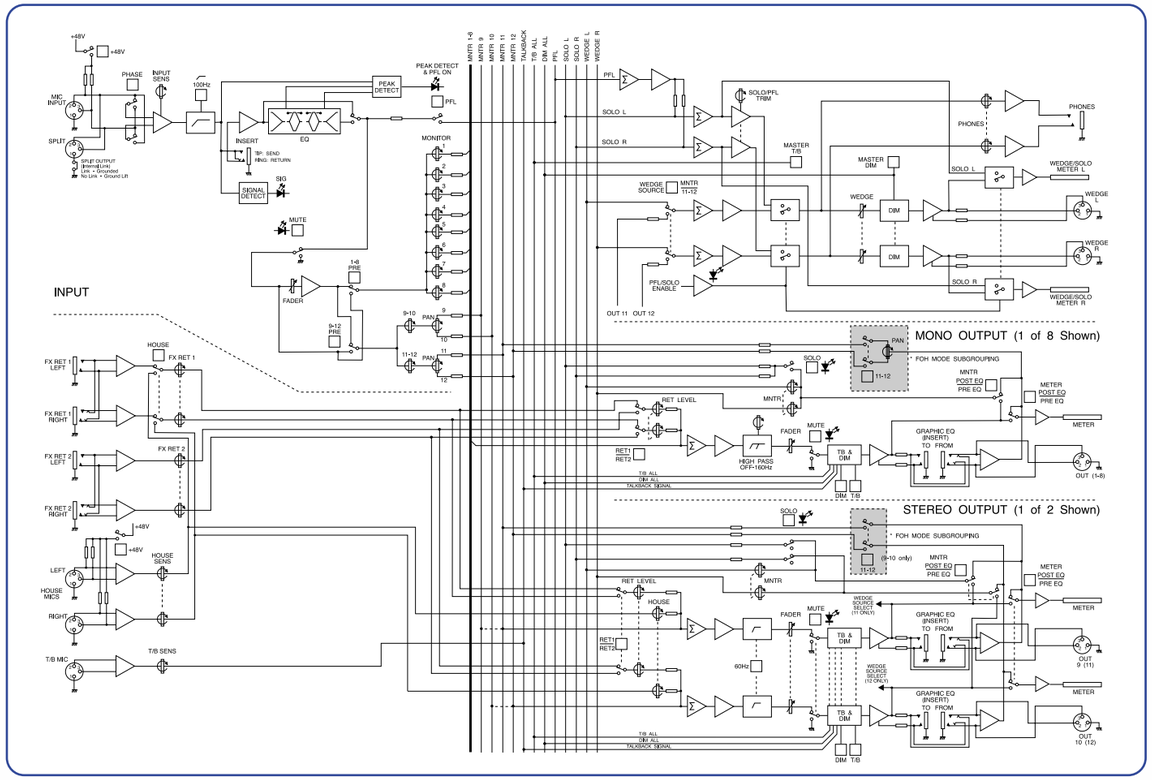
Wedges
Two male XLRs facilitate connection to the amplifier/s powering the engineer's monitor wedges.

Dustcover Option
To protect Monitor 2 from dust, dirt and minor spillages when not in use.

CONNECTOR PANEL



FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8



Noise
Measured RMS, 22Hz-22kHz bandwidth. Inputs at unity gain and terminated 150Ω.

Output Noise
24 inputs routed, sends down, master @ unity < -80dBu

Mic EIN
Measured @ max. gain (150Ω terminated) -129dBu

THD & N
Mic sensitivity -10dBu, faders @ unity, send @ max., +20dBu @ all outputs @ 1kHz <0.005%

Crosstalk
@ 1 kHz, typical

Channel send range	> 90dB
Channel fader range	> 80dB
Mute attenuation	> 100dB
Adjacent output isolation	> 90dB

CMRR

Typical @ max. gain @ 1kHz	> 85dB
Typical @ any gain @ 50Hz	> 65dB

Frequency Response
Input to output, medium gain, via output (High Pass Filter off)

15Hz - 45kHz	< -3dB
25Hz - 25kHz	< -1dB

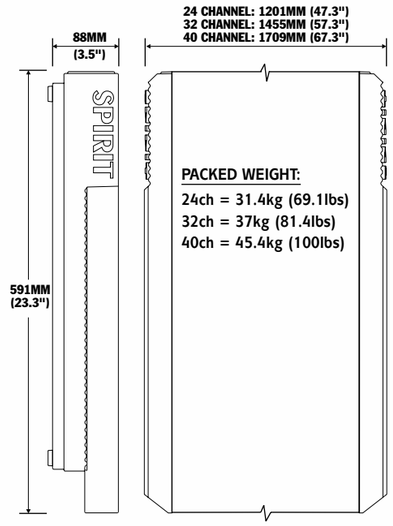
Typical Input & Output Levels

Max. output	> +22dBu
Max. signal into mic input	+28dBu
Max. signal into FX Return & Insert Return	+22dBu
Max. sensitivity of FX Return (output faders @ unity)	-15dBu
Max.level into Talkback Mic input	+3dBu
Max. level into House Mic input	+8dBu
Headphones (@ 200Ω)	150mW

Input & Output Impedances

Mic Input	1.8kΩ
FX Returns	8.6kΩ
Monitor Outputs, Wedges & Inserts	75Ω

Power Supply Unit
Please see page 47 for details



PACKED WEIGHT:
24ch = 31.4kg (69.1lbs)
32ch = 37kg (81.4lbs)
40ch = 45.4kg (100lbs)

Soundcraft

LIVE 4²

4-BUS PROFESSIONAL MIXING CONSOLE

Mixing in larger venues requires more than just extra inputs and outputs – you need effective means of controlling the way that signals are routed, along with facilities such as grouping and mutes that make it easy to deal with all those channels. The Live 4², in frame sizes from 12 to 40 channels, is designed for just these situations: its 4-buss architecture provides the basis for grouping sets of inputs; a wide variety of mono and stereo sources can be mixed through to as many as 14 outputs; and full-size 100mm faders provide precise and smooth group and master level controls.

MAIN FEATURES

- Up to 56 inputs – 40 mono, 8 stereo
- 4 group busses
- UltraMic+ preamp with up to 66dB gain range
- +48V phantom power, individually switchable on each channel
- 4-band EQ with two swept mid bands
- 12, 16, 24, 32 and 40-channel frame sizes
- 4 mute groups
- Additional outputs on 6 x 2 matrix
- 2 or 4 additional stereo inputs
- Phase reverse on mono inputs
- 18dB/octave high-pass filter
- 6 aux sends, 4 of them pre/post switchable
- 4 stereo returns
- Optional 8-channel expander



APPLICATIONS

- Sound installations where 4 busses are required
- Club or venue installation
- FOH band console
- Houses of worship
- Theatre sound
- PA hire

SEE PAGES 33 – 35

Frame sizes available:

12
16
24
32
40

Control Freak

Uniquely in its price bracket, the Live 4² offers the power of professional mute group control. Especially useful in bigger installations and larger frame sizes, the four mute groups can be used to silence sets of channels, making it easy to switch between bands or scenes in theatre. Using the mute group buttons next to each channel fader, you can, for example, assign all radio mic channels to mute group 1, then use the master section mute controls to kill these channels when they're not needed. Simple channel mutes are also provided, allowing you instantly to silence a channel in an emergency. Drawing on years of live experience, the Live 4²'s mute circuits are designed to be fool-proof - when you mute a channel, either via a mute group or a channel mutes, you silence all of its outputs, including aux and and group routings, ensuring that there is no way for a muted source to find a way back into the mix.

Despite its compact size, the Live 4² includes a 6 x 2 matrix section that gives you two extra outputs, derived from the groups and stereo outputs. This means that in any application where the groups and main mix still aren't enough, two extra speaker clusters, more rooms, monitor wedges, or perhaps recording hardware, can be fed with additional independent mixes. Counting the auxiliary sends, the Live 4² can provide a total of 14 different mix outputs, each with its own mix balance.

Input channels

In live mixing, 'garbage in, garbage out' is as true as it is anywhere - which is why we equipped all mono channels on the Live 4² with the classic Soundcraft UltraMic+ pre-amp, a proven favourite of live engineers the world over. +48V phantom power for condenser mics can be switched individually on each channel, and phase reverse makes it easy to handle complex multi-mic mixing. There are insert points on all mono channels for dynamics processors, such as compressors to keep tricky vocals and bass levels under control, while channel direct outputs allow connection to a multitrack for professional live recordings. Each channel can be routed to any combination of Groups 1-2, 3-4, and the main stereo mix bus, allowing a high degree of flexibility in how inputs are mixed through to outputs. You could use the groups as two stereo pairs, routing vocals through 1-2 and all instruments through 3-4, making it easy to balance the relative vocal/instrument balance in the mix using only the four group faders. In theatre use, you might use the groups to feed several speaker stacks, with the group faders providing precise output level control.

The Live 4²'s six auxiliary sends can be configured in several ways, providing maximum flexibility for foldback and effects. Up to four sends can be set to either pre-fade operation, suitable for monitor sends, or post-fade operation, which is better for effect sends.

Stereo sources are handled by dedicated stereo channels, each boasting two sets of inputs: one suitable for stereo instruments, and one for sources such as CD and tape players. The simpler 'playback' inputs can be switched to match -10dB or -20dB sources, and have aux sends plus a simple level control feeding the main mix bus. The second set of inputs have full channel facilities, including six aux sends, 2-band EQ, and a balance pot to control stereo positioning.

FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

SPECIFICATIONS – BLOCK

CONTROLS & CONNECTIONS

MONO INPUTS

Mic Input
A balanced XLR connector accepts balanced or unbalanced mic signals. At -129dbU EIN the mic amp is extremely quiet and transparent.

Line Input
A balanced 1/4" jack for connecting balanced or unbalanced electronic instruments, such as keyboards.

+48V Phantom Power
Activates phantom power on each channel individually when using condenser microphones or active DI boxes.

Direct Out
An impedance-balanced Post-Fade, Post-EQ connector provides access to effects units, or can send signals to multitracks for recording.

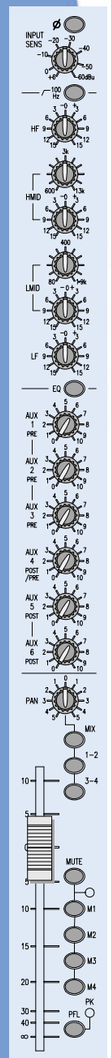
Insert
For patching in Limiters, Graphic Equalisers or other signal processors.

Phase Reverse
When pressed, this switch reverses the polarity of the input to compensate for phase differences caused by multiple microphone placement or incorrectly wired input cables.

Input Sensitivity
Soundcraft's low noise UltraMic+™ padless preamp provides up to 66dB of gain range, allowing the connection of items such as line level sources, active DI boxes and the most sensitive condenser mics. The custom designed gain control provides a uniform increase in gain and smooth response across the entire range.

EQ Section
A 4 band EQ includes two swept mid frequencies with 15dB of cut and boost in the ranges 550Hz–13kHz and 80Hz–1.9kHz. Two shelving controls at 12kHz and 80Hz provide 15dB of cut and boost for high and low frequencies. The frequency ranges of each band overlap, allowing the simultaneous cut and boost of adjacent frequencies.

High Pass Filter
A steep 18dB per Octave High Pass Filter at 100Hz is ideal for minimising on-stage rumble and mic popping.



EQ In/Out switch
The EQ In/Out switch allows comparison and "A/B Testing" of treated sounds without the inconvenience of having to reset controls.

Auxiliary Section
Live 4²'s 6 Auxiliaries are configured with flexibility in mind, allowing four to be set Pre-Fade for performances where many foldback mixes are required or four Post-Fade when several effects sends are necessary.
Auxes 1, 2 and 3 are Pre-Fade, Pre-EQ (changeable to Post-EQ by internal link).
Aux 3 can be selected Post-Fader internally.
Aux 4 is Post-Fade, Post-EQ but can be switched to be Pre-Fade Pre-EQ globally from the master section.
Auxes 5 and 6 are always Post-Fade, Post-EQ.

Pan Control
Determines the position of the signal in the stereo image. Panning hard left or right allows the signal to be routed to only odd or even groups, or the L or R bus separately.

Routing
Input signals may be routed to Mix, or to the four Groups.

Mute Switch and Groups
The Mute switch mutes all channel outputs. Alternatively, a channel can be assigned to one of four Mute Groups. These groups allow a combination of open mic or line inputs to be muted - ideal for scene-setting in theatre applications or for multi-band performances.

Pre Fade Listen
When pressed, the PFL switch sends a Pre-Fade solo to the headphones and the L & R meters for setting and monitoring gain levels: the main mix output is unaffected. The PFL LED glows when a solo is active, otherwise it acts as a peak indicator.

100mm Fader
Custom-built 100mm long throw faders ensure smooth, precise control over levels. Normal operating position is at zero with an extra 10dB available if required.

STEREO INPUTS

The four stereo inputs are housed in two input strips. Only one input strip is available on the 12 channel version.

Input Connectors
Two pairs of balanced 1/4 inch jacks allow connection of the left and right inputs of stereo sources. By plugging into the left input jack only, mono sources can be connected.

Cassette/CD Section
The upper stereo input is designed primarily for cassette or CD inputs. A gain switch facilitates connection of either -10dB semi-professional equipment, or -20dB Hi-Fi sources.
Two pre-fade aux sends are provided for foldback in addition to a PFL solo. The rotary level control is routed permanently to Mix.

Main Stereo Input Section
This is a full facility input primarily for electronic instruments such as keyboards.

Gain Control
This control has 22dB of range and allows the matching of a wide variety of sources.

EQ Section
A two band fixed EQ section with 15dB of boost and cut is provided. High frequency is selectable between 6 and 12kHz, and the LF between 80 and 120Hz, for extra flexibility.

Aux Section
The Aux section is similar to the mono inputs' except that Auxes 1, 2 and 3 are Pre-Fade, Post-EQ.

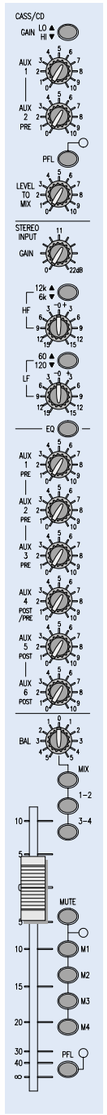
Balance
Sets the relative levels of the Left and Right inputs.

Routing
Input signals may be routed to Mix, or to the four Groups.

Mute Switch and Groups
The Mute switch mutes all channel outputs. Alternatively, a channel can be assigned to one of four Mute Groups. These groups allow a combination of open mic or line inputs to be muted - ideal for scene-setting in theatre applications or for multi-band performances.

Pre Fade Listen
When pressed, the PFL switch sends a Pre-Fade solo to the headphones and the L & R meters for setting and monitoring gain levels: the main mix output is unaffected. The PFL LED glows when a solo is active, otherwise it acts as a peak indicator.

100mm Fader
Custom-built 100mm long throw faders ensure smooth, precise control over levels. Normal operating position is at zero with an extra 10dB available if required.



GROUP SECTION

Group Outputs
Four Impedance-Balanced XLR connectors allow the connection of the group outputs to extra speaker stacks, or to recording devices.

Inserts
Signal processors may be connected in series with the groups via these 1/4" jacks.

Stereo Returns
Four pairs of balanced 1/4" jacks accept the outputs from reverbs and effects units. The Stereo Returns can also be used as extra line level inputs.

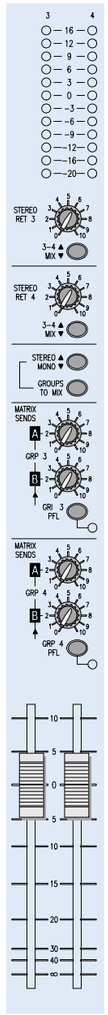
Group Meters
Three-colour, 12 segment, peak-reading bargraph meters provide visual indication of group levels.

Stereo Return Controls
Provide level control over the output from effects devices. May be routed straight to mix, or to the pair of groups directly below.

Matrix Sends
A 6x2 Matrix section provides feeds from the four groups and the L & R Mix busses to two additional independent outputs. These can be used to feed extra speaker clusters, side-fills or delay towers. The stereo switch combines the Matrix Outputs into a Stereo pair.

PFL Switch
Each group can be soloed pre-fader for monitoring. The PFL light below each switch illuminates when a group PFL is active.

Group Faders
100mm faders control Group levels. The Groups can be routed to Mix, or assigned as mono pairs.

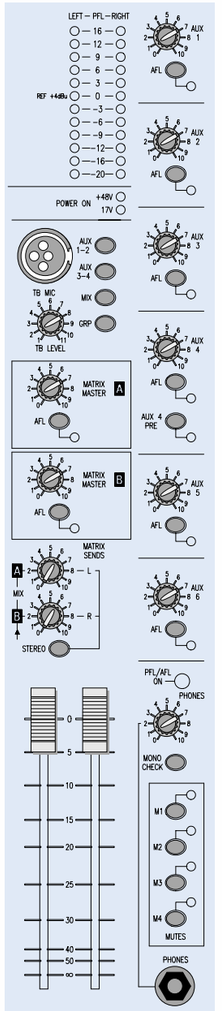


ACCESSORIES AND EXTRAS

Flightcasing
Live 4²'s side panels can be easily removed to save space when flight case mounting is required.

Dustcover Option
To protect Live 4² from dust, dirt and minor spillages when not in use.





MASTER SECTION

Main Outs
Two impedance-balanced XLRs provide the Stereo mix for the FOH amplification.

Matrix Outs
Two impedance-balanced XLRs supply output signals from Matrix A and Matrix B.

Mix Inserts
For connecting protective limiters or graphic equalisers in series with the mix.

Rec Out
Two 1/4" jacks provide a -10dBV level signal of the mix for use with cassette or DAT recorders.

Aux Outputs
The six impedance-balanced 1/4" jacks can be used to feed stage monitors or effects units.

Master Meters
Two peak-reading, 12-segment bargraphs indicate mix levels. If any solo is activated the meters switch to read those levels.

TalkBack Section
Allows the engineer to talk to the musicians through Auxes 1-4, the Mix or the Groups. Level control and mic XLR provided.

Matrix Masters
These control the overall level of the Matrix Outputs.

Master Faders
100mm faders set the final level of the Mix Outputs.

Aux Masters
For controlling the master levels of each aux bus. Each Master can be soloed after the fader to monitor levels. Aux 4 can be switched Pre-Fade globally by pressing the Aux 4 PRE switch.

PFL/AFL LED
Indicates if any PFL or AFL has been activated.

Headphones Level
Sets the level of the headphones.

Mono Check
This sums the L & R outputs allowing checks for phasing problems.

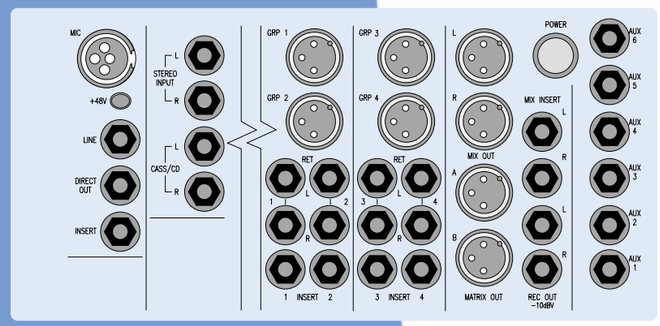
Mute Masters
Provide muting control over any channels that have been assigned to one of the four Mute busses.

Phones Socket
Suitable for use with headphones having an impedance of 200 Ohms or higher.

Power LED
Indicates when Live 4² is powered up.

Power Input
An external power supply unit minimises mains hum. See page 47 for details.

CONNECTOR PANEL

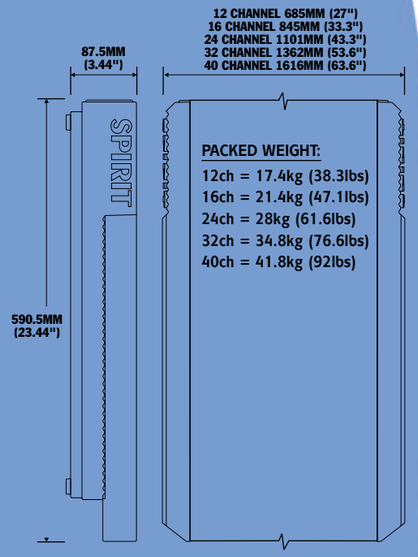


FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

SPECIFICATIONS – PAGE 24

BLOCK DIAGRAM – PAGE 24

SPECIFICATIONS



Noise
Measured RMS, 22Hz to 22kHz Bandwidth. Line inputs selected at unity gain and terminated 150Ω

Mix
26 Inputs routed to Mix, faders at unity, muted -82dBu
Mix Faders down -97dBu

Aux
26 Inputs routed, output at max, input faders down -84dBu

Direct Output
Input to Direct Output @ unity gain -87dBu
Input to Direct Output @ 40dB gain -77dBu

Matrix Output
Matrix Output at max, Sends down -95dBu

EIN
Microphone Input, Maximum Gain, terminated 150R -129dBu

Crosstalk
Wide Band except where stated
Typical Channel Fader Attenuation >80dB
Typical Aux Attenuation >80dB
Typical Pan Isolation >70dB
Adjacent Channel Crosstalk >85dB
100dB @ 1kHz

Frequency Response
20Hz to 20kHz -1dB

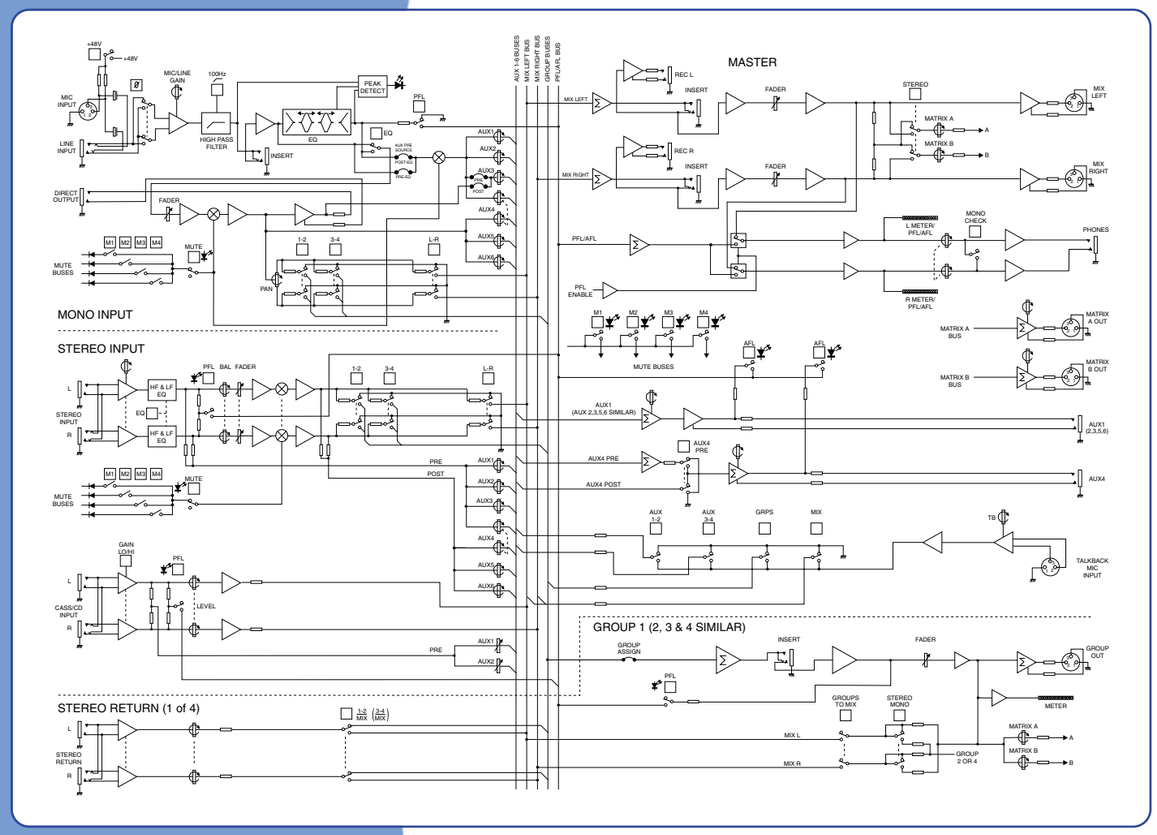
THD
-10dBu Input routed to Mix, +20dBu out @ 1kHz <0.006%

CMRR
Typical at max gain @ 1kHz -85dB
Typical at any gain @ 50Hz -65dB

Input & Output Impedances
Microphone Input 1.8kΩ
Line Input 10kΩ
Stereo Input 8.6kΩ
Cass/CD Input 12.8kΩ
Stereo Return 19kΩ

Input & Output Levels
Mic/Line Input Maximum Level +28dBu
Stereo Input +25dBu
Cass/CD Input +18dBu
Stereo Return +22dBu
Nominal Input for + 4dBu at Mix Output, level at '7' -10dBu (Lo) -20dBV (Hi)
Max Mic Gain through longest path to Mix 84dB

Power Supply Unit
Please see page 47 for details



FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

HIGH PERFORMANCE COMPACT MIXERS

FEATURES

- Effective grounding eliminates noise and crosstalk
- 3-band EQ with two swept mid bands
- Integrated S/PDIF digital output
- High quality, linear mic preamps with smooth gain control

MAIN

- 4, 8, and 12-mono input channel frame sizes
- 18dB/octave high-pass filter
- 4 aux sends, 2 pre-fade and 2 post-fade
- 4 stereo returns
- 4 stereo inputs
- 100mm faders
- Internal power supply
- Integral rack mounting

APPLICATIONS

- Digital audio workstation front-end
- Public address
- Small PA hire
- Multi-speaker systems
- PA mixing for bars, schools, leisure centres, etc
- Conferencing
- Small-medium size band mixing

SEE PAGES 33 – 35

SPIRIT M SERIES

In a world full of cheap compact mixers, Soundcraft has achieved something exceptional with the Spirit M Series. Suited to a wide range of live sound applications, the Spirit M Series delivers a great-sounding, reliable performance, gig after gig, mix after mix. A mixer for life.

Sonic integrity through design

Through a fresh and innovative approach, Soundcraft designers have created a mixer that rivals the sonic performance of many high end live consoles.
Attention to detail in the design of the Spirit M Series makes mixing a positive pleasure. A no-compromise approach to circuit design and to the quality of the components throughout has resulted in a console that delivers exceptionally low noise and crosstalk figures. Mic and line inputs are provided on balanced XLR and 1/4" jack connectors for optimum performance, with the main stereo outputs on balanced XLRs for better integration with other professional equipment. There are also insert points on every mono channel and the mix outputs for external signal processing.

Built for all eventualities

Live sound reinforcement requires different mixes – a stereo master mix for the audience and one or more monitor mixes for the performers on stage. The monitor mixes can be set up using Aux 1-4 on the M Series mixer. When a venue uses multiple fill speakers, delay should be added to speakers that are closer to the listener.

The direct outputs on the Spirit M Series can be used to record each of the mono input channels to a multitrack recorder. Each direct output can be individually switched to be pre-fade, ensuring the signal at these outputs remains unaffected by any movements of the channel faders during the live performance. Different mixes of the performance can then be made after the event.

Integral rack mounting

Through innovative design, the M Series can be transformed into a rack-mounted desk suitable for use on the road. All three mixers in the range occupy 11U of standard rack space.

Comprehensive monitoring control

Because levels are constantly changing throughout the signal path – from the preamp stage, through filtering and EQ – the Spirit M Series provides signal detect and peak LEDs on all input channels. These monitoring LEDs are fed from multiple points in the circuit path to ensure nothing gets overlooked. The main stereo mix has two 12-segment LED meters, with a SOLO AFL/PFL indicator to show whether any solo channels or aux masters are being monitored. With all this information instantly available, efficient control is easy to maintain.

Switchable direct outputs

Use a single console for your live mix and recording. Switchable direct outputs enable the pre-fade signal to be sent directly to the recorder regardless of the fader settings used for the live mix, allowing total post production flexibility.



Frame sizes available:

4
8
12

SPECIFICATIONS – PAGE 27

BLOCK DIAGRAM – PAGE 27

MONO INPUTS

Direct Out (switchable)
For connection to external multitrack recorders or effects units.

Mic Input
A balanced female XLR connector accepts balanced or unbalanced mic signals. At -128dbu EIN the mic amp is extremely quiet and transparent.

Line Input
A balanced 1/4" jack for connecting balanced or unbalanced electronic instruments, such as keyboards.

Insert
For patching in Limiters, Graphic Equalisers or other signal processors. It can also be used for recording.

Gain
A rotary gain control on each input alters the gain of the input signal, from +5 to +60dB. Linear circuitry within the preamp delivers smooth gain control over the entire gain range.

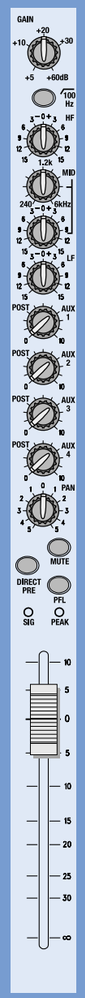
Filter Section
A high pass filter with an 18dB per octave slope can be used to reduce frequencies below 100Hz. Ideal for reducing unwanted stage rumble or popping from microphones.

EQ Section
Equalisation is split into three bands. The HF control provides 15dB of cut or boost (gain adjustment) for frequencies above 12kHz. Two swept mid frequency controls enable frequencies from 240Hz to 6kHz to be adjusted, offering 15dB of cut or boost at the selected frequency. Signals below 60Hz can be adjusted with the LF control, which features ±15dB of gain adjustment (cut or boost).

Auxiliary Section
For sending separate monitor mixes in live applications, four aux busses, with two pre-fade and two post-fade aux sends on each input channel cater for all requirements.

Pan, Muting, PFL & Direct Pre
The pan control positions each channel's signal across the stereo image, with a mute button to cut the signal completely. A PFL (Pre Fade Listen) button solos the signal for monitoring. The Direct Pre button selects the direct outputs to be pre-fader.

Faders and Metering
Each mono channel features a smooth 100mm fader, a signal LED to show whether a signal is present and a peak level LED indicating signal levels in excess of +17dBu.



STEREO INPUTS

Aux Output
The aux output contains a mix of the aux send signals sent from each input channel, which can then be sent as a monitor mix to stage loudspeakers or to send to an external effects unit.

Input Connectors
The stereo inputs are connected via balanced 1/4" jack inputs delivering optimum performance with other professional audio equipment.

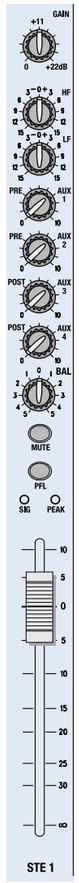
Stereo Returns
Stereo returns for effects processors are via RCA phono inputs – these returns can also be used with CD players and other hi-fi equipment.

EQ Section
Equalisation on the stereo channel strip is simpler than the EQ featured on the mono channels. There are two controls, adjusting HF signals at 12kHz and LF signals at 60Hz by ±15dB.

Auxiliary Section
With 4 aux sends on the stereo input channels, the signal can be sent pre-fade for use in a monitor mix (using aux sends 1 & 2) or sent post-fade (via aux sends 3 & 4) for effects processing.

Bal, Muting, PFL & Direct Pre
The balance control adjusts the amount of the signal sent to the left and right busses. Mute and PFL buttons operate as on the mono input channels, cutting or soloing the stereo channel. With PFL pressed, the pre-fade signal is fed to the headphones, control room output and meters, with levels displayed on the left and right meters in mono to enable levels to be monitored without interruption to the main mix.

Faders and Metering
Each stereo channel features a smooth 100mm fader, a signal LED to show whether a signal is present and a peak level LED indicating signal levels in excess of +17dBu.



MASTER SECTION

Phantom Power
Global control over phantom power is offered via a push button. When active, an LED will illuminate.

2-Track Inputs
2-track recorder playback inputs are on unbalanced RCA phonos.

Monitor Output and Mix Insert
Available on balanced 1/4" jacks.

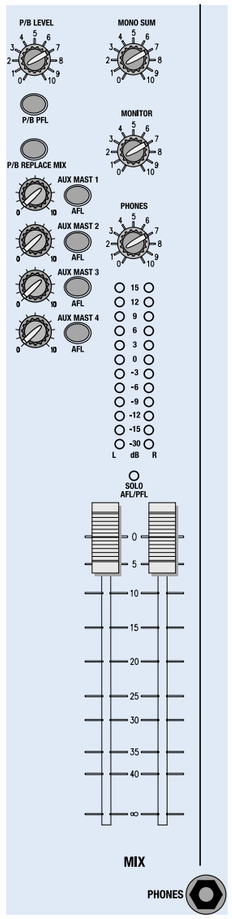
Mix Outputs and Mono Sum
The main left and right mix outputs are provided on balanced XLR connectors with a mono sum signal available on a balanced 1/4" jack.

Playback Level
The playback gain control adjusts the level from the 2-track playback inputs. This playback signal can be monitored separately by pressing the PFL button, which routes it to your monitoring system or to the headphones, replacing any existing monitoring signals. The 'P/B Replace Mix' button routes the playback signal directly to the main mix, replacing any signal that may be present.

Mono Sum, Monitor & Phones Level
Levels sent to the mono sum output, monitor output and headphones can be adjusted using these three rotary controls. And when a pair of headphones are plugged into the phones socket at the bottom right of the mixer, the monitor outputs are cut for easier headphone listening.

Auxiliary Masters
Each aux bus features a master level control, with an AFL (After Fade Listen) button enabling monitoring of each aux output. When pressed, the AFL button routes the aux output to the monitor ouputs or to the headphones, where it can be monitored on the master stereo meters.

Faders and Metering
Controlling the overall stereo mix level are two 100mm faders, with two 12-segment 3-colour LED peak-reading bargraph meters monitoring the mix right and mix left outputs. These meters normally follow the current monitor selection, so if any PFL or AFL is pressed, the meters will switch to monitor this and the Solo AFL/PFL LED will light.

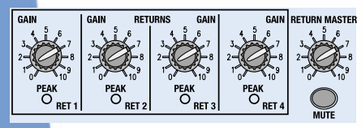


RETURNS CONTROLS

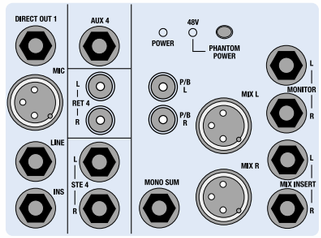
Gain Control
Positioned at the top of each stereo channel strip, adjusts the gain for each stereo return, with a peak signal LED indicating when the signal exceeds +17dBu.

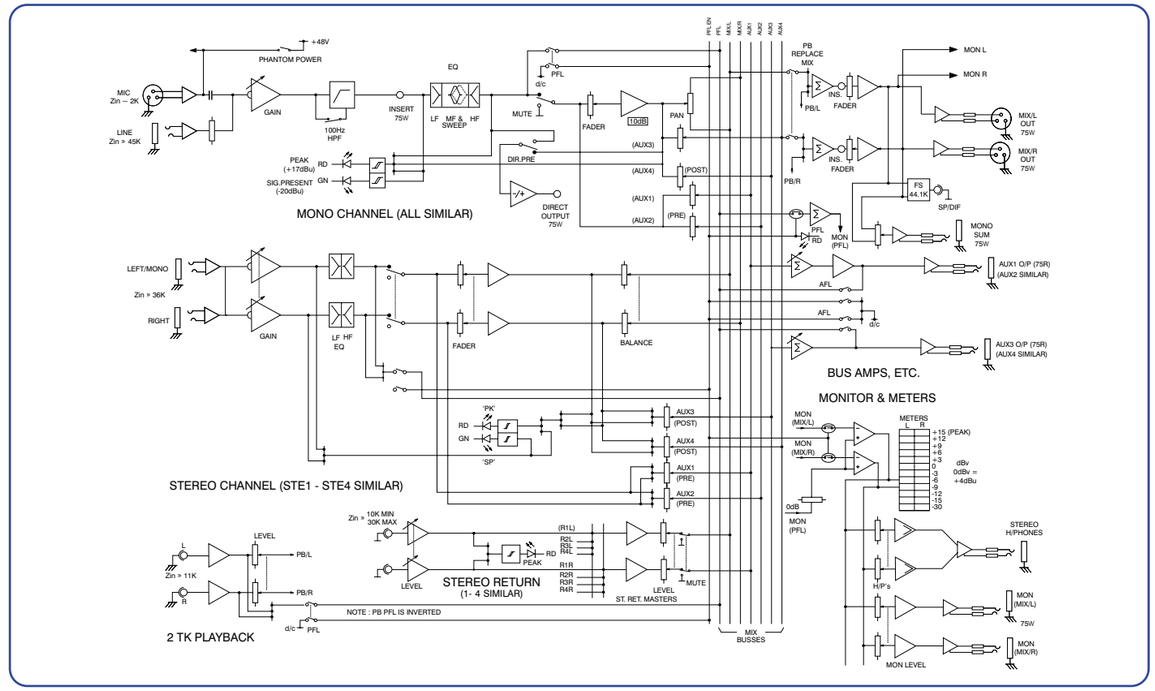
Return Master
Adjusts the overall level of the stereo returns in the main mix.

Mute Button
When stereo returns are used to return a signal from an effects unit, the mute button offers a fast method of comparing the signal with or without FX.



CONNECTOR PANEL





Frequency Response
Mic/Line Input to any Output, 20Hz - 20kHz +/-1dB

T.H.D.
Mic Sensitivity -30dBu, +20dBu @ all outputs <0.008% @ 1kHz

Noise
Mic Input EIN (maximum gain, measured 22Hz - 22kHz, unweighted) -128dBu

Aux and Mix Outputs (8 ch.routed, faders down, 22Hz - 22kHz, unweighted) < -84dBu

Crosstalk
Channel Mute <90dB 20Hz - 10kHz, <80dB 10kHz - 20kHz

Fader Cut-Off (ref. Fader 0dB) <90dB 20Hz - 10kHz, <80dB 10kHz - 20kHz

Routing Isolation <90dB 20Hz - 10kHz, <80dB 10kHz - 20kHz

Input & Output Impedances

Microphone Input	~2kΩ
Mono Channel Line Input	>40kΩ
Stereo Input (Stereo Mode)	>30kΩ
Stereo Returns	>10kΩ
Headphones Output	~40Ω
All Other Audio Outputs	75Ω

Input & Output Levels

Microphone Input Max. Level	+12dBu
Mono Channel Line Input Max. Level	+38dBu
Stereo Input Max. Level	+21dBu
Headphones Output (into 200Ω)	150mW
All Other Audio Outputs	+21dBu into 10kΩ

Filter

HP	100Hz, 18dB/octave

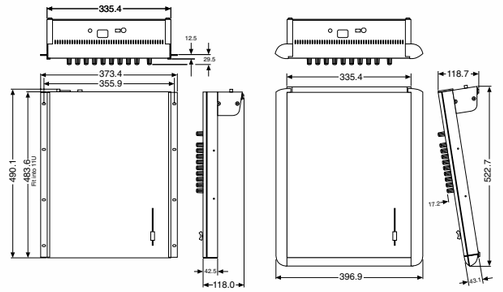
EQ

HF	12kHz, +/-15dB
MF	240Hz - 6kHz, +/-15dB
LF	60Hz, +/-15dB

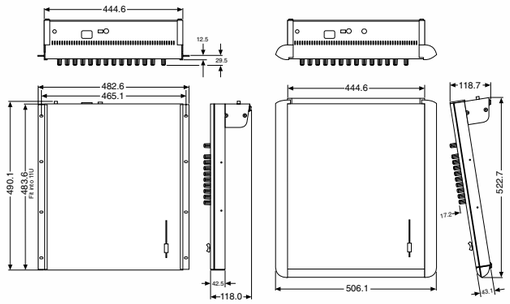
Weight

M4	6.75kg (14.8 lbs)
M8	8.25kg (18.1 lbs)
M12	8.55kg (18.8 lbs)

M4 DIMENSIONS



M8/12 DIMENSIONS



LX7
7-BUS PROFESSIONAL MIXING CONSOLE

The Spirit LX7 combines the essential Soundcraft live mixer qualities with basic recording-oriented features, in a compact 16, 24 or 32 channel 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, while its direct channel outputs make the LX7 an ideal choice for bands who need a live desk that can also double up in the studio.

- 4-band EQ with two swept mid bands
- UltraMic+ preamp with up to 66dB gain range
- True 7-bus architecture
- Channel direct outputs
- Talkback facility



MAIN FEATURES

- 100mm faders
- +48V phantom power
- 16, 24 or 32 channel frame sizes
- Up to 40 inputs (including stereo inputs and returns)
- 18dB/octave high-pass filter
- 6 aux sends, 4 of them pre/post switchable
- Group and mix inserts
- 12-segment LED metering
- Integral PSU

Frame sizes available:

16
24
32

APPLICATIONS

- Gigging bands
- Small installations
- Small venues
- Theatres
- Houses of worship
- Live and studio recording

SEE PAGES 33 – 35

FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

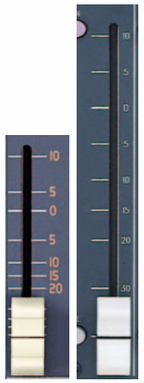
True 7-bus architecture

Much of the LX7's flexibility comes from its true 7-bus architecture; almost unique in a price bracket where most designs offer only four or six main outputs. In contrast, the LX7 boasts left and right main outputs, four group outputs, plus a mono output suitable for uses such as a centre speaker cluster, side or rear fills, induction loop, or mono mix recording.

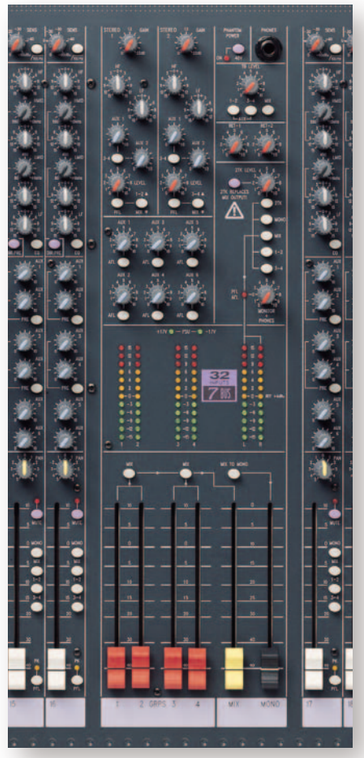
All mono input channels use the Soundcraft UltraMic+ mic pre-amp, ensuring that this most critical link of the signal chain can tolerate a wide range of input levels from almost any mic or instrument source. Soundcraft's proprietary circuitry means that distortion and noise levels remain exceptionally low, no matter how much you need to ride levels during a performance. +48V phantom power can be switched in and out globally, with an LED indicator in the master section.

Classic British EQ

The LX7's 4-band EQ is designed to allow quick, powerful corrective treatment to compensate for problems during a show – brightening up a slipping mic that's sounding slightly dull, or notching out a particular frequency from a feedback-prone mic near a monitor speaker. Because EQ frequency bands are chosen with all the benefit of years of in-house live experience, you get control just where you need it. High-quality circuit design is complemented by custom pots that offer consistent resolution and response, and therefore a reassuring 'feel' to the EQ controls. More basic but even more useful, a powerful 18dB/octave high-pass filter lets you remove stage rumble and other low-end mush without using up a valuable EQ band.



LX7 uses full 100mm faders rather than the less-effective 60mm controls found on similar mixers



The LX7's six auxiliary sends can be used for monitor sends, effects, or additional mix or tape outputs. Auxes 1-4 can be switched in pairs between pre-fade operation, preferred for monitor mixing, and post-fade operation for effect sends, while auxes 5 & 6 are always post-fade. Noise gates, limiters or other dynamics processors can be patched into all input channels via insert points, and still more flexibility is afforded by the LX7's Direct line outputs. Provided on channels 1-16 (or 1-8 on the 16 channel frame), these make it easy to route channels to additional effects units, or more likely to a digital or analogue multitrack for recording. And to make sure you never run out of inputs, as well as offering up to 32 mono input channels, the LX7 provides a further eight inputs on stereo channels, plus a 2-track input for pre-show music playback.

No-compromise design

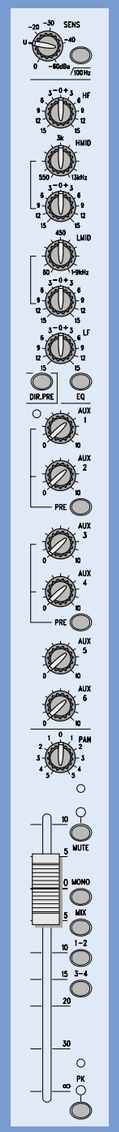
Because this is a Soundcraft design, all this versatility doesn't mean you get any less quality. The LX7 employs the same electronic design principles as larger desks, and therefore delivers the same quality and reliability. Inside the LX7, surface mount technology is employed throughout, allowing greater component packing density and ensuring outstanding reliability.

On the outside, an all-metal jackfield ensures reliable connections at all times, while the mixer's electronics and integral power supply are protected by a solid metal frame.



SPECIFICATIONS – PAGE 32

BLOCK DIAGRAM – PAGE 32



MONO INPUT CHANNEL

Mic Input
A balanced XLR connector accepts balanced or unbalanced mic signals.

Line Input
The balanced 1/4" jack allows connection of balanced or unbalanced electronic instruments, such as keyboards.

+48V Phantom Power
+48V Phantom Power is available globally from the master section for condenser mics and active DI boxes.

Input Stage
LX7's exclusive UltraMic™ padless mic preamp provides up to 22dBu input capability with the input sensitivity control operating between 0dB and -60dB on all mic inputs.

HIgh Pass Filter
A steep 18dB per Octave High Pass Filter is included straight after the preamp to reduce low frequency rumble on stage and clean up vocal performances.

Insert
A pre-fade, pre-EQ (but post-HPF) insert point is provided for patching in Limiters, Graphic Equalisers or other signal processors. It may also be used for recording.

Direct Outputs
A direct output is also available on the first 16 channels with individual pre/post fader switching situated in the EQ section. This allows LX7's direct outputs to be equally useful for effects send applications or multitrack tape feeds.

EQ Section
LX7's 4 band equaliser section has two swept mid frequencies carefully selected for optimum control during live performances. All bands provide 15dB of cut or boost.
The Low frequency shelving control operates at frequencies below 80Hz.
The swept Lo Mid control operates between 80Hz and 1.9kHz.
The swept Hi Mid control operates at frequencies between 550Hz and 13kHz.
The fixed High frequency shelving filter operates at frequencies above 13kHz.

EQ Switch
The EQ section can be bypassed using the EQ switch, allowing comparison of treated and untreated sounds without having to reset controls.

Auxiliary Sends
6 flexible auxiliary sends allow the choice of either monitor or effects orientated mixes. Auxes 1-4 are normally post-fader, post-EQ but can be switched in pairs from each channel to be pre-fader, post-EQ. Auxes 5 and 6 are always post-fader, post-EQ. In this way a maximum of 4 pre-fader foldback mixes or 6 post-fader effects sends are possible.

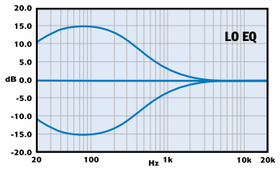
Level Control and Routing
Each input channel can be routed to mix, the mono bus, and/or any of the 4 groups in pairs.

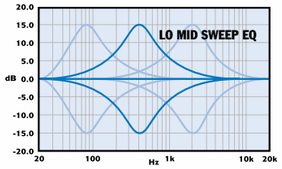
Pan Control
Turning the pan control full left or right enables odd or even groups or the left or right mix bus to be accessed individually.

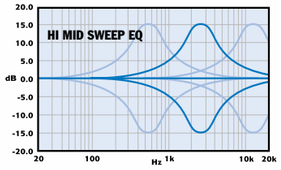
Solo/PFL
Each channel can be soloed pre-fader, post-EQ to check gain levels.

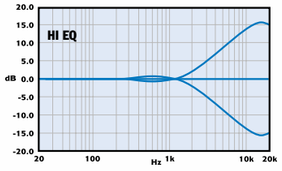
PFL LED
The PFL indicator LED also doubles as a PEAK indicator, illuminating 4dB before clipping occurs to make the maximum headroom available.

100mm Fader
Professional- grade 100mm faders provide accurate, consistent control of audio levels.

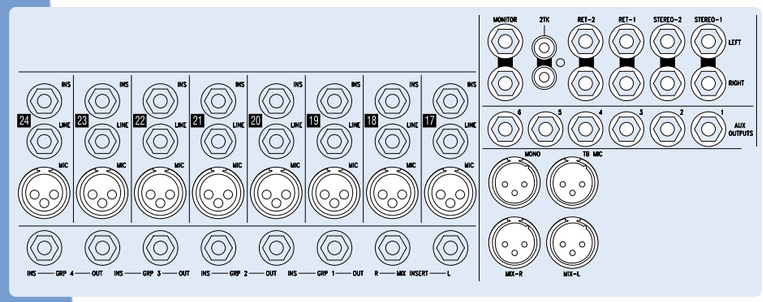






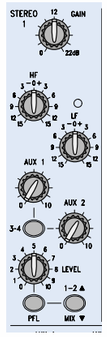


CONNECTOR PANEL



STEREO INPUT SECTION

Two stereo inputs allow stereo sources such as CD players, keyboards or samplers to be connected. Alternatively, they may be used as sophisticated effects returns.



Connections
2 balanced pairs of line inputs allow the stereo inputs to be accessed. Plugging in the left jack only will feed a mono source to both paths.

Input Gain control
A rotary control provides 22dBU of gain range to boost even the weakest line-level signals.

EQ Section
The two band High and Low frequency EQ section and provides 15dB of boost or cut at 12kHz and 80Hz respectively.

Auxiliary Control
The stereo inputs have access to either Auxes 1 and 2 or 3-4, by toggling the "3-4" switch.

Solo
Inputs can be soloed pre-fader, post-EQ and routed direct to mix, or to the group immediately below each input strip. A rotary control governs signal level.

GROUP SECTION

Group Outputs
Each group has an impedance-balanced 1/4" jack output connector, allowing long cable runs on stage.

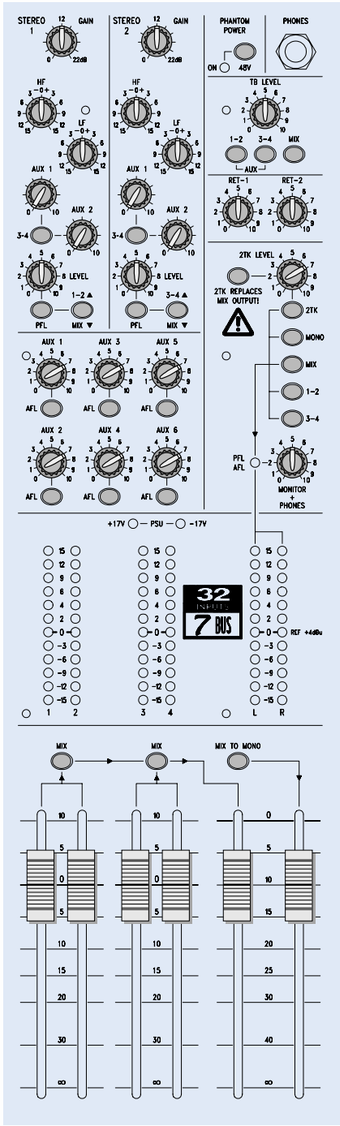
Insert Points
Pre-fade insert point are provided on each group for the connection of Limiters, Graphic Equalisers or other signal processors.

Auxiliary Outputs
There are 6 impedance-balanced jack outputs for the auxiliary outputs.

Auxiliary Masters
Six rotary controls govern auxiliary send level. Each Auxiliary may be soloed after the fader.

Group Metering
Four 12-segment bargraph meters display group output levels.

Group Faders
Custom-built 100mm long-throw linear faders provide 10dB of extra gain above the "zero" mark, whilst still ensuring smooth operation. Each pair of groups may be routed to mix.



MASTER SECTION

Connections
3 impedance-balanced XLR connectors cater for the Mix and Mono Outputs, with a balanced XLR input allowing talkback microphones to be connected. Two control room outputs for engineer monitoring are available on impedance balanced 1/4" jacks.

2TRK Inputs
A pair of unbalanced -10dBv phono connectors labelled "2TRK" allow pre-show music to be replayed.

Phantom Power
A global Phantom Power switch provides +48V for condenser microphones and active DI boxes. The LED illuminates when Phantom Power is active.

Talkback Section
Once connected, the engineer's talkback mic can be routed to either pair of groups or the mix. A rotary control governs talkback level.

Stereo Returns
Two stereo returns are provided for use with effects units, or as simple stereo instrument inputs. The rotary controls govern level and are automatically routed to mix.

Control Room Section
The control room section allows the engineer to monitor either the 2-track return, the Mono Bus, the Mix, or either pair of groups via the control room outputs or headphones. A headphone jack is provided for use with headphones with impedances of 200 Ohms or greater. Both the Control room and 2-track return levels can be altered using the associated controls. It is also possible to replace the mix output signal with the 2-track return by pressing "2 TRK TO MIX OUT". This allows easy playing of pre-show music at a single button press, without having to make any alterations to the band's settings.

Metering
A 12-segment bargraph meter normally displays mix output levels, but switches to display group, mono output or 2-track levels when the appropriate control room selection is made. If any input or auxiliary master is soloed then the PFL/AFL LED illuminates, and the master meters show PFL/AFL levels instead.

Master Faders
Mix and Mono Output levels are governed by custom-built 100mm long throw faders. The mix outputs may be routed to the mono bus should only a mono PA be required, or an induction loop need to be fed.

PSU indicators
The LEDS illuminate if LX7 is powered up, showing the status of the +/-17v voltage rails used within the console.

Power Supply
LX7's power supply is internal, activated by the Power On switch on the rear panel.

Dust Cover
To protect LX7 in an installed environment.

FULL FEATURE DESCRIPTIONS – PAGES 5 TO 8

SPECIFICATIONS – PAGE 32

BLOCK DIAGRAM – PAGE 32

LX7 SPECIFICATIONS

Noise

Measured RMS, 22Hz to 22kHz Bandwidth
Line inputs selected at unity gain and terminated 150Ω

Mix

24 inputs routed to mix, faders at unity, muted	<–80dBU
Mix faders down	<–100dBu

Aux

24 inputs routed, output at max, input faders down	<–80dBu
Direct Outputs	
Input to Direct output at unity gain	<–90dBu
Input to Direct output at 40dB gain	<–80dBu

EIN

Mic EIN @ max. gain	-129dBu

Crosstalk (@1kHz)

Fader attenuation	>95dB
Aux attenuation	>80dB
Pan isolation	>75dB
Adjacent Channel crosstalk	>–80dB
Channel Mute	>90dB
Fader Cut-off (rel. 0 Mark)	>90dB
Aux Sends Pots Offness	>80dB

Frequency Response

Mic/Line Input to any output, 20Hz to 20kHz	<1dB

THD+N

Mic sens. –30dBu, +20dBu at all outputs @ 1kHz	<0.006%

CMRR

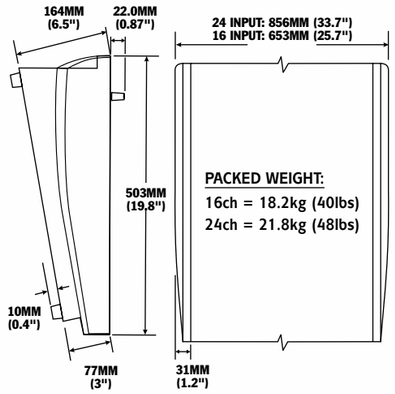
Typical at max gain @ 1kHz	>80dB
Typical at any gain @ 50Hz	>60dB

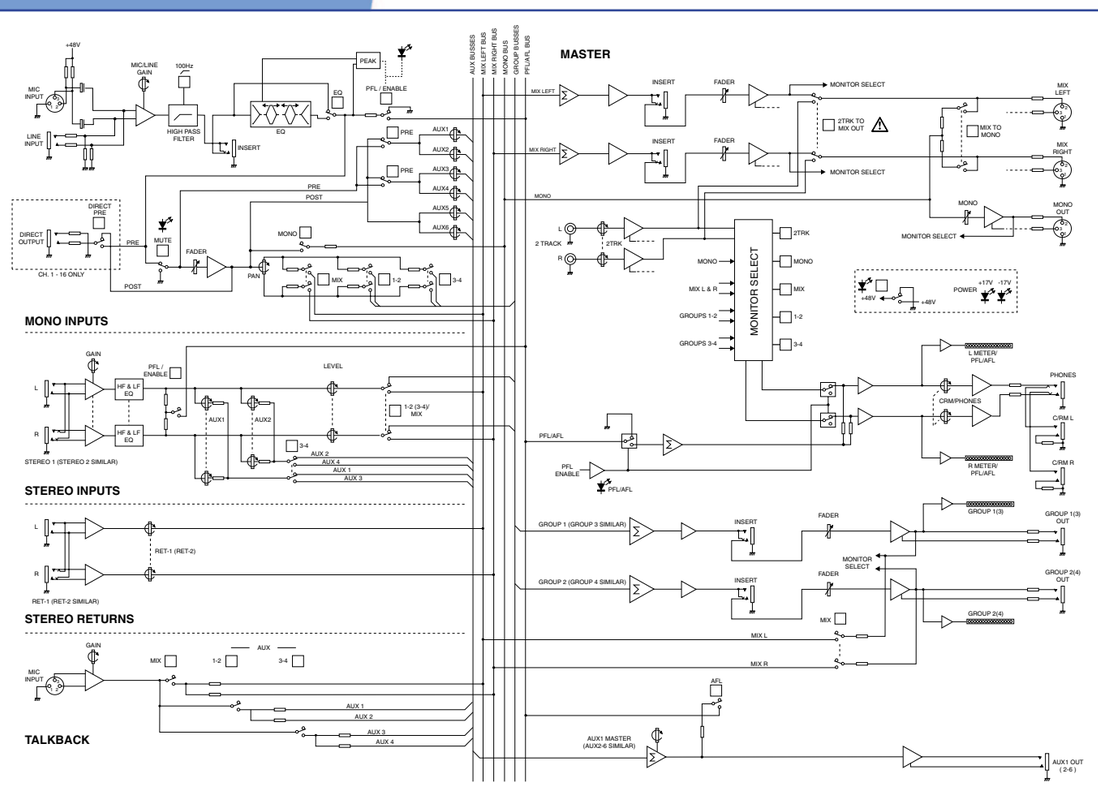
Input and Output Impedance

Mic Input	1.8kΩ
Line Input	10kΩ
Stereo Input	8.6kΩ
Stereo Input (Unbalanced RCA Phono)	12kΩ
Mix, Aux, Direct Out & Inserts	75Ω

Input and Output levels

Mic Input max. level	+22dBu
Line Input max. level	+22dBu
Stereo Input max. level	+21dBu
2 track return	>30dBu
Headphones (@200Ω)	150mW





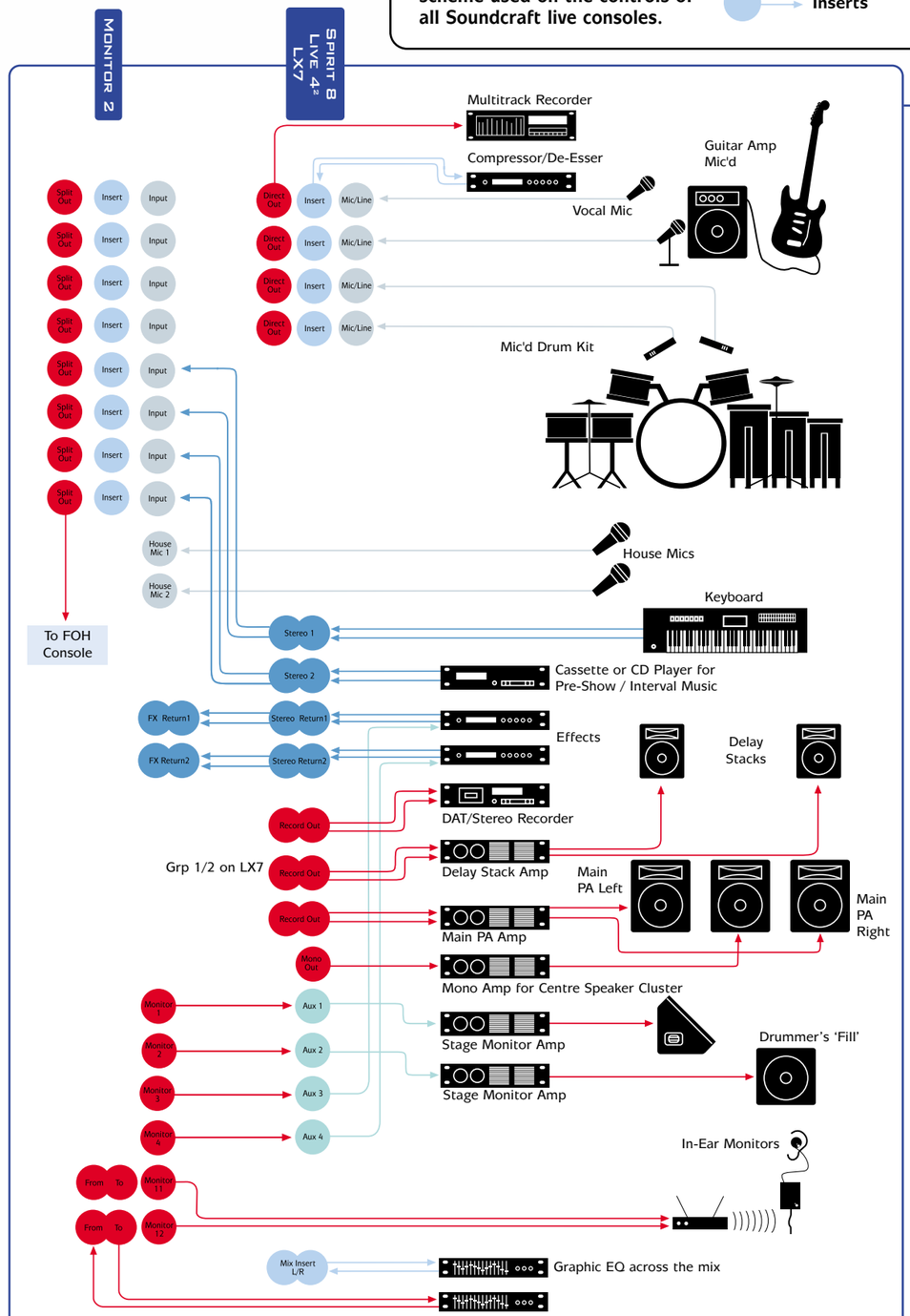
LIVE MIXER APPLICATIONS

On these pages, you will find some examples of Soundcraft live mixers in use, showing suggested ways of setting up and connecting equipment.

KEY TO CONNECTIONS

The connections shown in these applications have been colour-coded to represent the colour scheme used on the controls of all Soundcraft live consoles.

- Mono Inputs
- Stereo Inputs
- Inserts
- Auxes
- Outputs



LIVE MIXING

In the example FOH setup shown here, any of the Spirit range of Soundcraft live consoles may be used, though a monitor desk, such as the Spirit Monitor 2, is best used alongside a full-sized front-of-house desk providing the main FOH mix.

TIPS

Positioning all stage mics behind the FOH speaker stacks will reduce the likelihood of feedback.

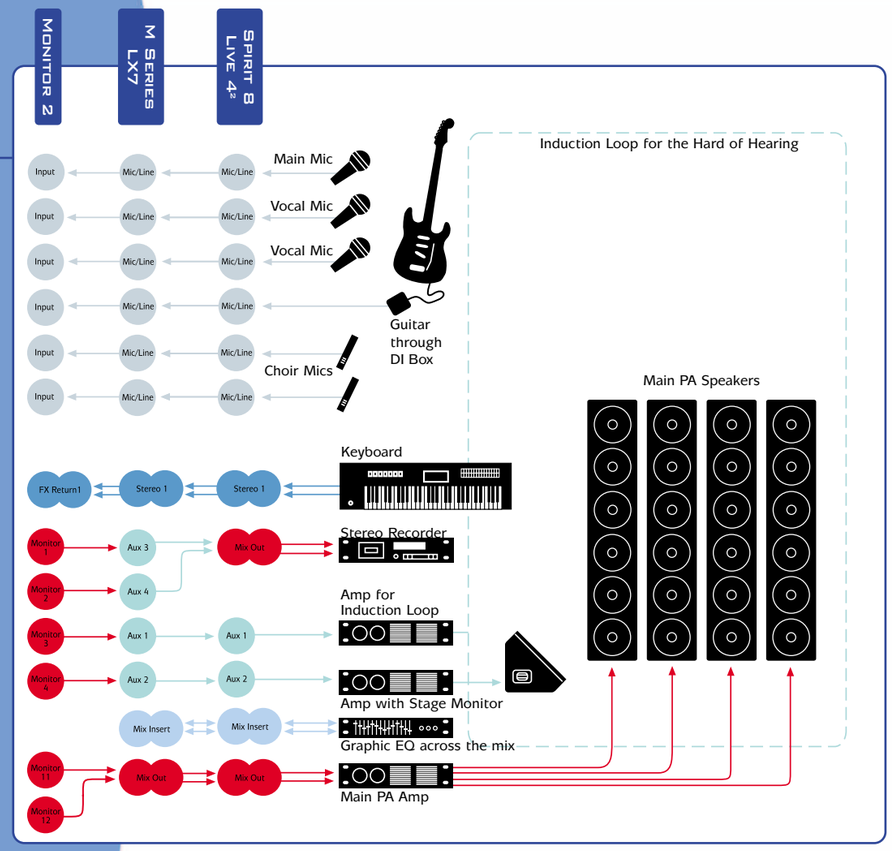
Mute channels when not in use to keep the mix clean – but remember to un-mute them when they're actually needed. Alternatively, use noise gates on all mic channels, which will automatically shut out most of the unwanted sound.

LIVE MIXER APPLICATIONS

Houses of Worship

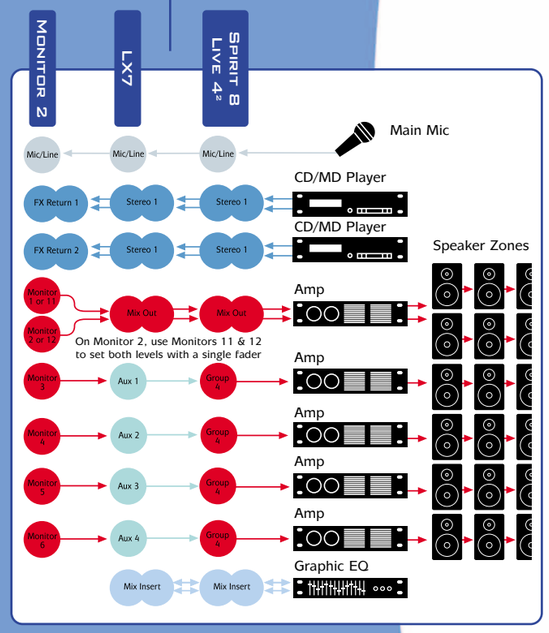
If a room acoustic is poor – probably as a result of too much reverberation and 'boominess' in a space – you will have fewer problems if you keep sound levels low.

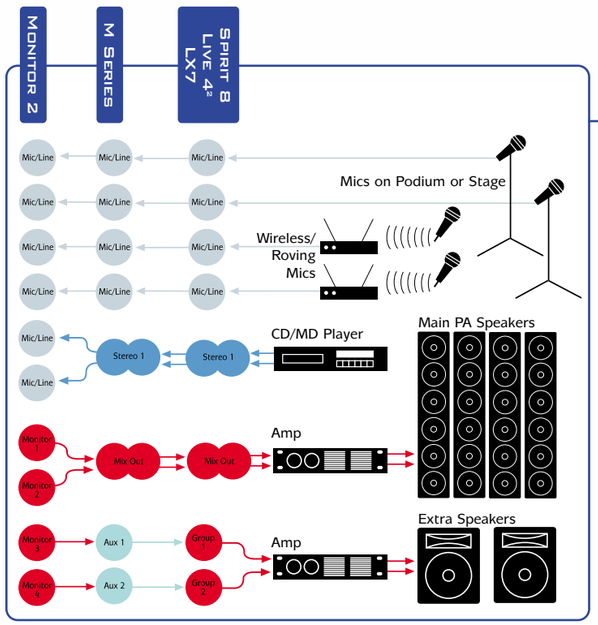
As a room fills up with people, more sound energy is absorbed, especially at higher frequencies, and you may want to raise volume levels.



Installed Sound

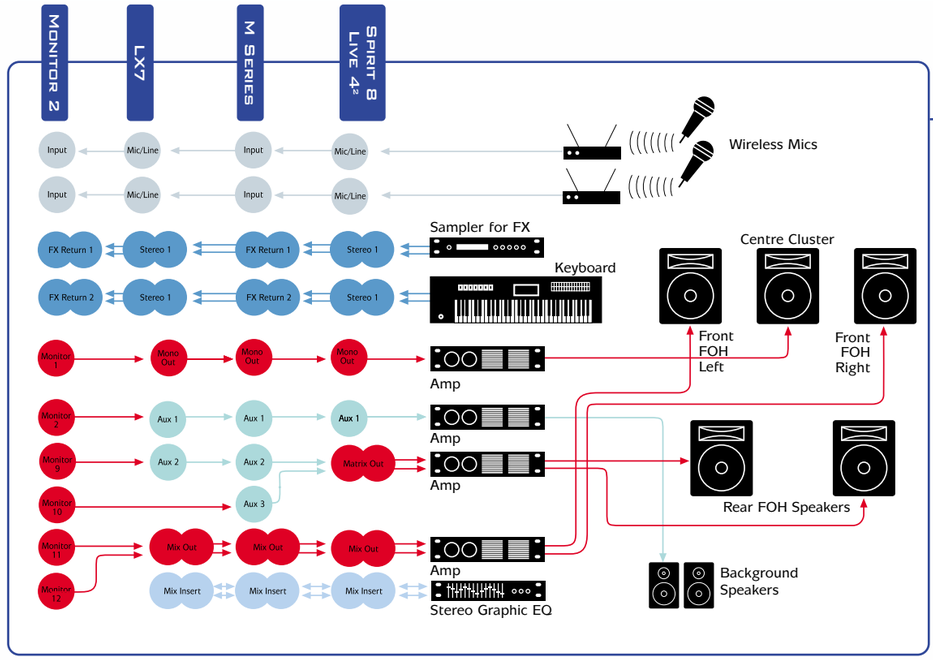
It is often necessary to feed sound to several areas with different acoustic characteristics. Graphic equalisers patched into group insert points can provide a valuable means of tailoring the sound of each output.

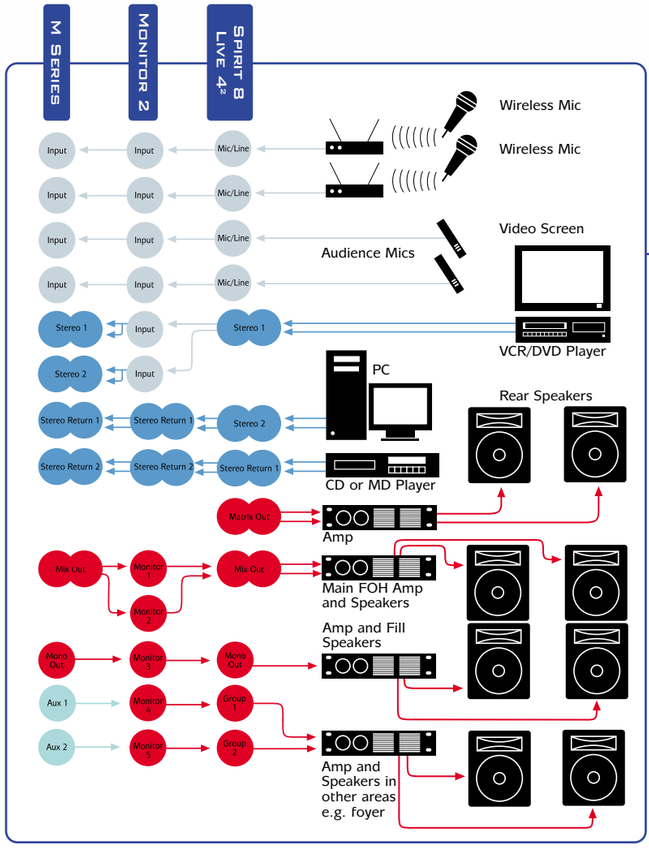




Outdoor Event

Though it's always good practice to keep your system as simple as possible, this is especially true for outdoor events – there's less to go wrong, less to go missing, and fewer items to keep dry when it starts to rain. If you need more than two main PA stacks, you may need to delay the signal going to the additional speaker stacks – the delay time should be equal to the time that it takes sound from the main speakers to reach the additional stacks. Digital delays can be patched into group outputs, or you could take matrix or aux sends and feed them via a delay line.





Theatre Sound

When mute groups are available, they are often best used on sets of radio mics, which can be brought up only when required for a scene. Lavalier mics clipped on to costumes are quite likely to produce unwanted sound, especially as actors move on and off stage. If you can, experiment with speaker positions for best results, as theatre acoustics are often surprisingly poor.

To reduce costume noise, try mounting Lavalier radio mics on hair lines or cheeks.

Presentation

Sound levels in presentations do not generally have to be all that high. Nonetheless, you should ensure that the speakers and amplifiers used are adequate – bigger amps and speakers, driven well within their limits, will sound better at lower volumes than small amps and speakers that are trying a little too hard.

Soundcraft

CHOOSING POWERED MIXERS

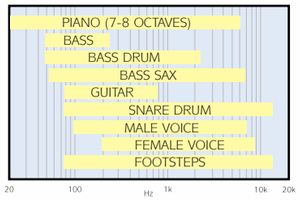
Powered mixers fulfil a widespread need for simple, integrated tools that remove much of the hassle involved in setting up a sound system, whether it be a permanent or temporary installation. The inclusion of amplification means that you can plug speakers straight into the mixer, without worrying about finding an external power amp. But a live mixer will also often include additional features that are usually performed by external processors – such as reverb and delay processing, or graphic EQ.

This integrated approach offers several advantages. Most importantly, the mixer and amplifier have been designed to complement each other electronically, so there's no possibility of mismatching between mixer and amp. When time is tight, setting up for a club gig, having everything in one box can mean peace of mind. There are fewer leads to unpack and connect, and fewer boxes to set up, leaving more precious minutes to soundcheck and prepare for a performance. In a permanent installation, there are advantages – a powered mixer is much more compact than separate units, saving valuable space. And if you're setting up an installation from scratch, it's easier to choose a well-designed powered mixer than to pick out several separate boxes to perform the same task.

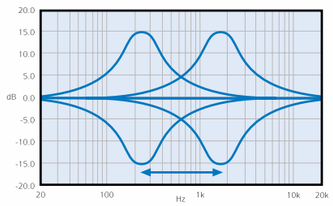
HOW TO CHOOSE A POWERED MIXER

When choosing a powered mixer, the most important question to consider is how much sound level you need. The size of room is the most important factor – big rooms need more power – but there's more to it than this. As a rule, folk duos need less volume than rock bands. And a noisy, young crowd may call for more volume than a quieter, older audience. Speaker sensitivity is also key: the higher the dB-per-watt rating, the less power is required. Horn-loaded speakers tend to be more efficient than cone speakers, but cheap horn speakers tend to distort. Remember that there are different ways of rating amplifiers, and that a peak rather than RMS (i.e. average) power rating will make a low-powered design seem more capable than it really is. It's also important to understand that poorly designed amplifiers will distort far more – and at lower volume settings – than well designed ones.

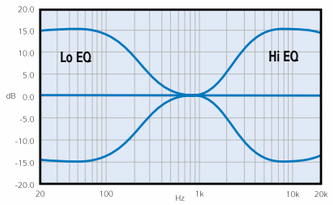
Compare the typical frequency ranges of different voices and instruments with the EQ ranges found on Soundcraft powered mixers (shown below)



Mid EQ frequency is sweepable on PowerStation mixers



15dB of cut or boost is available at low, mid and high frequencies, giving plenty of control just where it's needed



Think about how many inputs and outputs you need. Remember that as well as front of house (PA) speakers, you may need to drive on-stage monitor speakers, perhaps with an external amplifier. This requires one or more auxiliary outputs. Although you should ensure that you have enough inputs, bear in mind that it's not always a good idea to amplify everything. In a small room, for example, amplifying a drum kit may cause more problems than it solves.

If you are working in theatre, do you need to feed signals backstage to the dressing room? If there's no separate sound booth, does the mixer have a cooling fan that runs continuously, or will it only cut in when required? Quiet passages in a play might be disturbed by a noisy fan.

Good EQ and effective High Pass Filters are often neglected by powered mixer designers, but these can make an enormous difference to the quality and clarity of the sound. Make sure that the EQ frequencies and slopes actually work on the type of sounds you'll be using, and that the HPFs, if fitted, really do cut unwanted low frequency stage noise without ruining the tonal quality of instruments and vocals.

Because a powered mixer is usually chosen for applications where convenience and ease of operation are important, it's worth choosing one with a clear control layout. Particularly when equipment may be used by non-technical personnel, perhaps in community venues or houses of worship, simple, clear controls are as valuable as a few extra bells and whistles.

Finally, does the mixer offer enough flexibility to cope with its likely future applications? Immediate needs may be filled by something simpler, but features such as extra auxiliary sends, or insert points, might give the mixer a longer practical life, enabling a sound system to expand as more speakers are added, or dynamics or additional EQ processors acquired.

POWERED MIXER FEATURES

INTEGRAL POWER AMP

By including true professional power amps, with large power supplies, PowerStation and Powerpad mixers deliver clear, distortion-free sound even at high levels. The PowerStation 600's amp is conservatively rated at 300 watts RMS per side (into 4 Ohms), while the PowerStation 1200's is rated at 600 watts per side. Advanced protection circuitry prevents overheating, and protects both the mixer output stages and your speakers from damage due to overload. Cooling fans switch in only when output sound levels exceed a certain level, when the amps run hotter and when the fan noise is masked by the music.

ON-BOARD EFFECTS

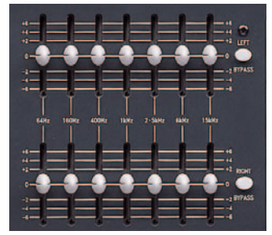
Rather than use low-cost anonymous effects chips, PowerStation mixers employ custom processors from Lexicon, widely acknowledged as the first name in digital effects. As well as the convenience ensured by built-in effects, a further benefit is that by cutting out external cabling to and from the processor, there's less chance to add noise or pick up interference.



On both the PowerStation 600 and 1200, the effects processors feature specially programmed versions of classic reverb, delay and chorus effects, plus combination effects such as reverb plus delay. The 16 original presets are selected via a rotary pot, and the easy-edit system lets you modify each preset with a second pot. All your edits can be stored in memory, so you can restore your custom effects without recreating settings from scratch.

POWERFUL EQUALISATION

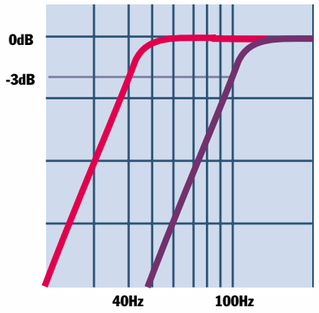
The stereo 7-band graphic EQ on PowerStation mixers lets you compensate for a poor room acoustic, and tailor the output of the mixer to suit. Once this is set at the start of a show, you can then use the channel EQ to adjust the sound of each source. Fixed high and low bands let you gently roll off troublesome parts of over-bright or bass-heavy signals, while a swept mid band is ideal for tuning out frequencies that may cause feedback, or boosting a broader band to enhance the character of an instrument or voice.



Designed by British EQ guru Graham Blyth, this channel EQ features carefully chosen slope and frequency characteristics that enable all three bands to work effectively without interfering with the other bands.

HIGH-PASS AND SUBSONIC FILTERS

As well as the high-pass filter found across the Spirit range of live mixers, PowerStation mixers feature an additional subsonic filter across the main outputs. Fixed at 40Hz and with a steep 18dB/octave slope, this cuts out ultra-low frequencies that can overload high-mid PA cabinets, enabling you to work creatively on bass frequencies above this range. In short, it gives you a clearer mix with more control over the low-end.



INTEGRAL PATCHBAY

The patchbay section on the PowerStation series lets you change the standard audio path, increasing the flexibility of the mixer by allowing you to use the mixer, graphic EQ and power amp sections separately. You could use the mix output to feed an external amplifier rack, for example, to drive an even bigger PA. By patching a second mixer into the power amp inputs, you can easily accommodate a second band without having to reset channels on the PowerStation for a different mix. Or, if you want to fine tune the sound of an effect return, you could patch it through the graphic EQ section.



Soundcraft

POWERSTATION 1200 & 600
POWERED MIXING CONSOLES

16 mono input channels

24 inputs (including 2-track returns)

2 x 600W power amplifier

MAIN FEATURES

- CD-quality mixing with integrated power amp
- 2 stereo input channels
- High quality UltraMic™ preamps
- Built-in Lexicon effects processors
- 7-band graphic EQ
- 40Hz subsonic filter
- Inserts on mono channels and mix outputs
- PFL solo on all channels
- 3-band EQ with swept mid
- Integral patchbay

8 mono input channels

16 inputs (including 2-track returns)

2 x 300W power amplifier

APPLICATIONS

- Medium PA
- Gigging bands
- Rehearsal rooms
- Presentations
- Outdoor events

SEE PAGES 17 - 21

Power is nothing without control – something that Graham Blyth and the Soundcraft design team understand very well. Which is why PowerStation series mixers complement their integrated power amplifiers with enough signal routing and control facilities to put many larger desks to shame.



Both the PowerStation 1200 and 600 offer a well-balanced combination of features for mixing live bands, or driving a variety of installed or temporary sound systems: features such as 8 or 16 mono inputs, flexible output routing, and integrated digital effects.

Input channels

Any comprehensively-equipped mixer should be able to handle a wide variety of mono and stereo sources. All PowerStation mono inputs feature bullet-proof UltraMic™ preamps, capable of handling signal levels as high as +22dBu, yet delivering exceptional CMRR and EIN performance that keeps noise well at bay. Stereo sources can be plugged into two stereo channels, or into a simple RCA phono 2-track input, intended for line-level equipment such as CD or MD players. Mono channels feature an insert point for dynamics or other processors, and a high-pass filter to cut stage rumble. Two aux sends, switchable to pre- or post-fade operation, allow routing to external effects or to on-stage monitors, and a third aux send is provided for the internal effects section. All the main inputs are balanced, again ensuring that noise and interference are kept to a minimum, while impedance-balanced outputs allow long cable runs to be used without compromising signal quality.

The sound of great EQ

The PowerStation EQ offers the classic 'warm' British sound that is a favourite of Soundcraft users all around the world. But more than that, the slopes and cutoff points of the high and low bands, and carefully chosen characteristics of the swept mid band

POWERSTATION

put one of the most powerful tools in live mixing at your fingertips. It's as easy to tune out a troublesome frequency without affecting the rest of the mix as it is to gently emphasise the character of an instrument or voice – the sign of great EQ.

This quality extends to the precision power amplifiers. On both PowerStation models, large power supplies are provided, enabling the integral amps to be driven hard without compromising audio quality. Internal cooling fans switch in only when needed, ensuring that quiet acoustic gigs aren't spoiled by unnecessary fan noise. Advanced protection circuitry prevents overheating, and protects the output stages and speakers from overload damage. Still further protection at the outputs is provided by a steep 18dB/octave 40Hz subsonic filter, cutting out the almost inaudible ultra-low frequencies that can damage some speakers and muddy clarity in the audible bass frequencies. This in turn allows overall levels to be raised while keeping audio quality high.

Quality effects

Whereas many powered mixers include sub-standard digital effects, the PowerStation series uses a Lexicon processor with algorithms and easy-edit controls created especially for the 1200 and 600. That means that a pro-spec stereo digital effects processor goes wherever your Powerstation goes, and it's always wired up and ready to go. The master section also includes a stereo 7-band graphic EQ, allowing basic tonal correction to compensate for poor room acoustics, or to tailor the PowerStation's output to match the characteristics of particular speaker clusters.

Last but not least, versatile output options include a mono output for an additional speaker cluster or foldback feed, and stereo RCA outputs for recording. An integral patchbay lets you modify the standard internal signal routing, to feed an external stereo signal into the power amp, or through the graphic EQ, or take the master output to an external amplifier.

LEXICON EFFECTS

Lexicon is widely acknowledged as the first name in digital effects, and Lexicon reverbs take pride of place in live and studio racks all over the world. The Lexicon effects processors built into PowerStation mixers feature specially programmed versions of classic reverb, delay and chorus effects, plus combination effects such as reverb plus delay. While it's very convenient to have effects built in to a mixer, it also has another benefit as the signal stays in the console and therefore there's no external cabling to add noise or pick up interference.

Superb audio quality is matched by ease of use. The 16 original presets are selected via a rotary switch, and the easy-edit system lets you modify each preset very quickly.

You can start from any of the 16 presets and easily reach your required effect within a couple of button presses.

Lexicon Effects Table (Powerstation 1200 and 600)

Param 1 control	Minimum	Maximum	Program	Description	Param 2 control	Minimum	Maximum
Reverb decay	0.11 mSec	283 mSec	1	Gated Reverb	Timbre	420Hz	19kHz
Reverb time	0.25 Sec	6.5 Sec	2	Chorus + Reverb	Speed	OFF	16 glides
Delay time	No delay	977 mSec	3	Chorus + Delay	Speed	OFF	16 glides
Depth	0.34 mSec	5.8 mSec	4	Large Chorus	Speed	OFF	16 glides
Reverb time	0.25 Sec	6.5 Sec	5	Plate	Timbre	420Hz	19kHz
Reverb time	0.25 Sec	6.5 Sec	6	Room	Timbre	420Hz	19kHz
Reverb time	0.25 Sec	6.5 Sec	7	Chamber	Timbre	420Hz	19kHz
Reverb time	0.25 Sec	6.5 Sec	8	Hall	Timbre	420Hz	19kHz
Delay time	No delay	977 mSec	9	Delay + Bright Plate	Reverb time	0.25 Sec	6.5 Sec
Delay time	No delay	977 mSec	10	Delay + Dark Plate	Reverb time	0.25 Sec	6.5 Sec
Delay time	No delay	977 mSec	11	Echo + Plate	Regeneration	0%	94%
Delay time	No delay	977 mSec	12	Delay + Bright Room	Reverb time	0.25 Sec	6.5 Sec
Delay time	No delay	977 mSec	13	Delay + Dark Room	Reverb time	0.25 Sec	6.5 Sec
Delay time	No delay	977 mSec	14	Echo + Room	Regeneration	0%	94%
Delay time	No delay	977 mSec	15	Delay + Mono Regen	Regeneration	0%	94%
Delay time	No delay	977 mSec	16	Delay + Stereo Regen	Regeneration	0%	94%

Both PowerStation models have the same features and functions - the only differences between them are the number of mono inputs and the power output.

MONO INPUTS

Mic Inputs
Balanced XLR connectors accept balanced or unbalanced mic signals. At -129dbU EIN, and with a gain range of 60dB, the inputs are extremely quiet and transparent.

Mono Line Inputs
Balanced 1/4" jacks for connecting balanced or unbalanced electronic instruments, such as keyboards. Balanced inputs offer extra protection against hum and noise in electrically hostile live environments,

Inserts
Unbalanced insert points allow limiters, compressors and other processors to be patched into the signal path – especially useful for live vocals.

Gain Control
The custom design of the gain control on the UltraMic™ preamp gives an even spread of gain and a smooth response across its 60dB range.

High Pass Filter
A 100Hz/18dB/octave High Pass Filter is available pre-EQ to 'clean up' low frequencies such as stage rumble or mic popping.

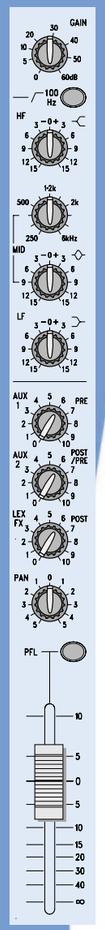
EQ Section
The HF control has cut or boost of up to 15dB at 12kHz and above, to add crispness or cut hiss or excessive brilliance, while the 80Hz LF control can add real punch to bass drums. Swept mid, from 250Hz to to 6kHz, offers even finer control over sound on the mono channels.

Auxiliary Sends
3 Auxiliary Sends allow the choice of either monitor or effects-orientated mixes. Aux 1 is always pre-fader, post-EQ for monitoring. Aux 2 is normally post-fader, post-EQ for external effects, but are switchable to pre-fader, post-EQ from the master section.
LEX FX is post-fade, post-EQ and feeds the Lexicon effects unit directly.

Pan Control
Controls the position of the source in the stereo image.

PFL Solo
For checking levels and EQ settings in each channel without affecting the mix. Pressing the PFL switch feeds that channel to the headphones and meters in the master section.

Channel Fader
Sets the channel level. PowerStation's 60mm channel faders ensure smooth, predictable response, with a full 100dB of attenuation. Normal operating position is at the '0' mark, with an additional 10dB of gain available.



MONO CHANNEL

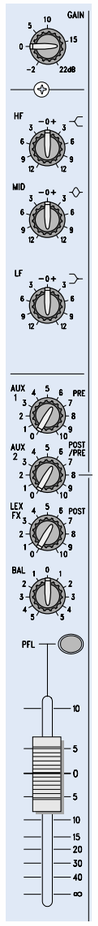
STEREO INPUTS

Stereo Line Inputs
Two balanced 1/4" jack stereo channels provide additional inputs for keyboards, effect returns, or other line level signals. Accepts balanced and unbalanced signals. Can also be used as additional mono inputs, by plugging into the left channel only.

Stereo Input Gain Control
Matches the input level to a wide range of pro, semi-pro, and hi-fi sources.

3-Band EQ
3 fixed bands of EQ at carefully chosen points provide fine control, with 15dB cut & boost available. HF is at 12kHz, Mid at 1kHz, and LF is at 80Hz.

Balance
Controls the relative level between the left and right channels of the stereo input.



STEREO CHANNEL

MASTER SECTION

Effects Master Fader
Controls the amount of signal from the Lexicon effects section that is fed into the main stereo mix.

L&R Master Faders
Control PowerStation's final output level to the main impedance-balanced mixer outputs. 60mm faders with custom fader laws give smooth, predictable response.

Aux 2 Pre Switch
Switches Aux 2 from post to pre-fade, post-EQ operation.

Effects to Aux 1 Control
Mixes the output of the Lexicon effects section (summed mono) into the Aux 1 sends, to give a 'wet' foldback mix on-stage.

Aux 1 Master
Sets the final level of the Aux 1 mix appearing at the impedance-balanced Aux 1 output.

Aux 2 Master
Sets the final level of the Aux 2 mix appearing at the impedance-balanced Aux 2 output.

Stereo Return
Two unbalanced 1/4" jacks feed the main stereo mix via the Stereo Return control. Use for returning signals from external processors, or as an additional stereo input.

2-Track Return
Two unbalanced phono inputs, feeding the main stereo mix via the 2Trk to Mix switch and 2-Track Return control, are ideal for pre-show music from a CD or tape player. Can also be used as extra effect returns or instrument inputs.

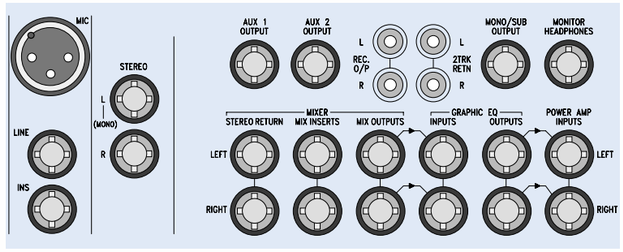
2-Trk PFL Solo
Pre-fade listen on the 2-track return allows music to be cued on headphones without interrupting the main mix.

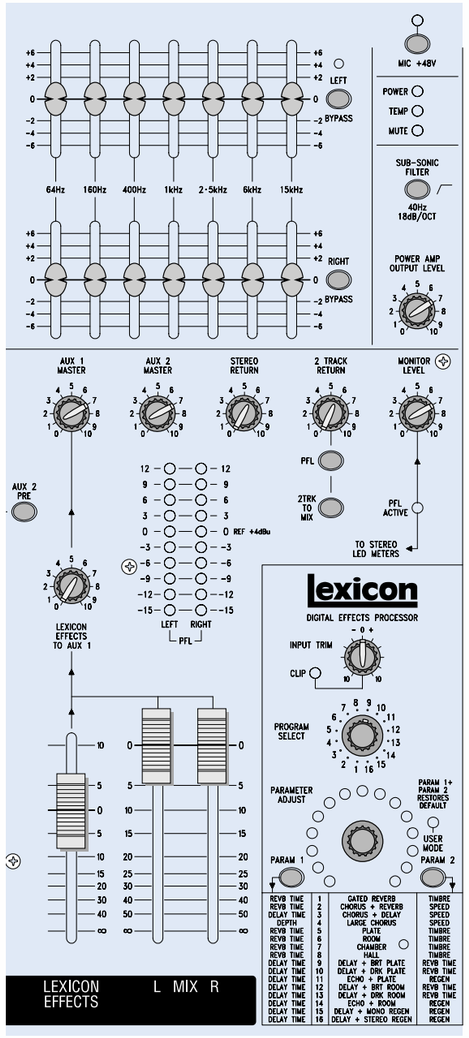
2-Track to Mix
Routes the 2-Track Return to the stereo mix bus, allowing pre-show music to be played over the main PA speakers.

Monitor level
Sets the monitor level to the headphones.

Bargraph Meters
10-segment LED meters indicate levels in the main stereo bus, or can check input channels when any PFL is switched in.

CONNECTOR PANEL





PFL Active
Illuminates when any PFL switch is pressed to warn that the headphones and meters are monitoring the PFL signal.

Record Output
Unbalanced phono outputs, at -10dBv, for recording the mix.

+48V Phantom Power
Activates phantom power on each channel individually when using condenser microphones or active DI boxes.

Status Indicators
Provide visual indication of mixer status. The green Power LED indicates that PowerStation is switched on. The orange Thermal LED indicates that the power amp is running hot, and the red Mute LED indicates that the amplifier output relays are open – this happens if the protection circuits detect a power surge or DC problem. The relays also open when mains power is switched on or off.

Mix Inserts
For patching additional dynamics processors or graphic EQs across the main mix bus, to help deal with feedback in a difficult venue.

Mono Output
This summed left and right mix is useful for centre speaker fills, bass bins, delay stacks or simple mono PAs.

Rugged Steel Case
PowerStation is built to survive the knocks of life on the road, with a solid steel chassis to protect the electronics.

Optional Rack Ears
To rackmount PowerStation 600.
PowerStation 1200 is **not** rackmountable.

THE POWER AMPLIFIER

Power Amp Level
This control sets the level of the integrated stereo power amplifier. In normal operation this is normalled to the Graphic EQ outputs, but inserting plugs into the input jacks allows amplification of an external signal.

Subsonic Filter
This 18dB per octave filter, across the amplifier inputs, cuts out frequencies below 40Hz. This helps avoid problems with bass-heavy signals overloading the amp and speaker cabinets, leaving more freedom to apply creative low-frequency EQ.

Loudspeaker Output Terminals
For connecting PowerStation to a pair of PA cabs. The power amp output is available on standard speaker terminals, and Speakon connections.

Power On/Off Switch
For powering up.

Effects Controls
PowerStation Series' custom-developed Lexicon dual effects section provides a wide array of studio-quality effects including reverbs, choruses and delays. Several dual effects combinations such as delay and reverb, and chorus and reverb - specially formulated for Live performance - are also available. Each effect has two editable parameters which may be stored as user programs, so that favourite settings may be retained. The table at left provides a description of the effects that are included.

Input Trim
Sets the input level to the Lexicon effects section. A clip LED indicates overloading of the internal LEXICON effects.

Programme Select
Allows 16 pre-programmed effect combinations, listed in the table, to be selected.

Parameter Adjust
When either the PARAM 1 or PARAM 2 switches are held down the parameter adjust encoder will alter the level of these two effect parameters. Any alterations will be held in memory as soon as the PARAMETER switch is released, with the User Mode LED indicating an alteration has been made to the factory preset. Each factory preset may be restored by holding down the Parameter switches.

Graphic EQ
The stereo 7-band graphic allows subtle control over the tone of the PA rig, to achieve the best sound in any room. 6dB of cut or boost, with plenty of fader resolution, allows precise control.

Left & Right Bypass Switches
Use these to bypass either channel, to compare the signal with and without the graphic EQ.

Power Amp and Graphic EQ Connections (patchbay)
Quarter-inch balanced jack connectors let you route signals in and out of the master section, graphic EQ and power amp, changing the normal signal routing to give additional flexibility.

Soundcraft

POWERSTATION SPECIFICATIONS

THD

Mic, Line or stereo input to Main Outputs, +20dB at outputs, any input gain	<0.009%

Crosstalk (@1kHz)

Fader Attenuation:	100dB
Aux Send Attenuation:	80dB
Stereo separation:	70dB

Noise

Measured RMS, 22Hz-22kHz bandwidth

Aux outputs:	–83dBu
Main outputs:	–80dBu

EIN

Microphone Input, maximum gain, terminated 150R:	–129dBu

Max Gain to Main Outputs

Mic Input	74dB
Line Input	54dB
Stereo Input	32dB
Stereo Return & 2-track Return	12dB

Maximum Input Levels

Mic Input	+21dBu
Line Input	>30dBu
Stereo Input	+26dBu
Stereo Return & 2-track Return	>30dBu

Maximum Output Levels

Any Output	+22dBu

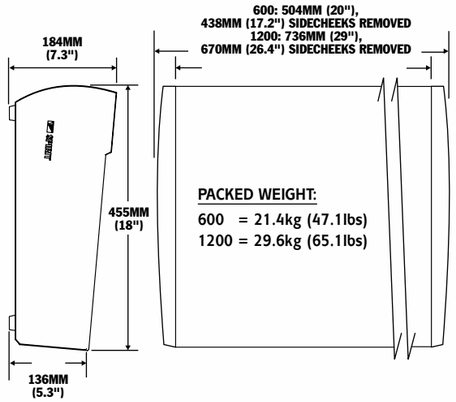
Power Amplifier Power Output

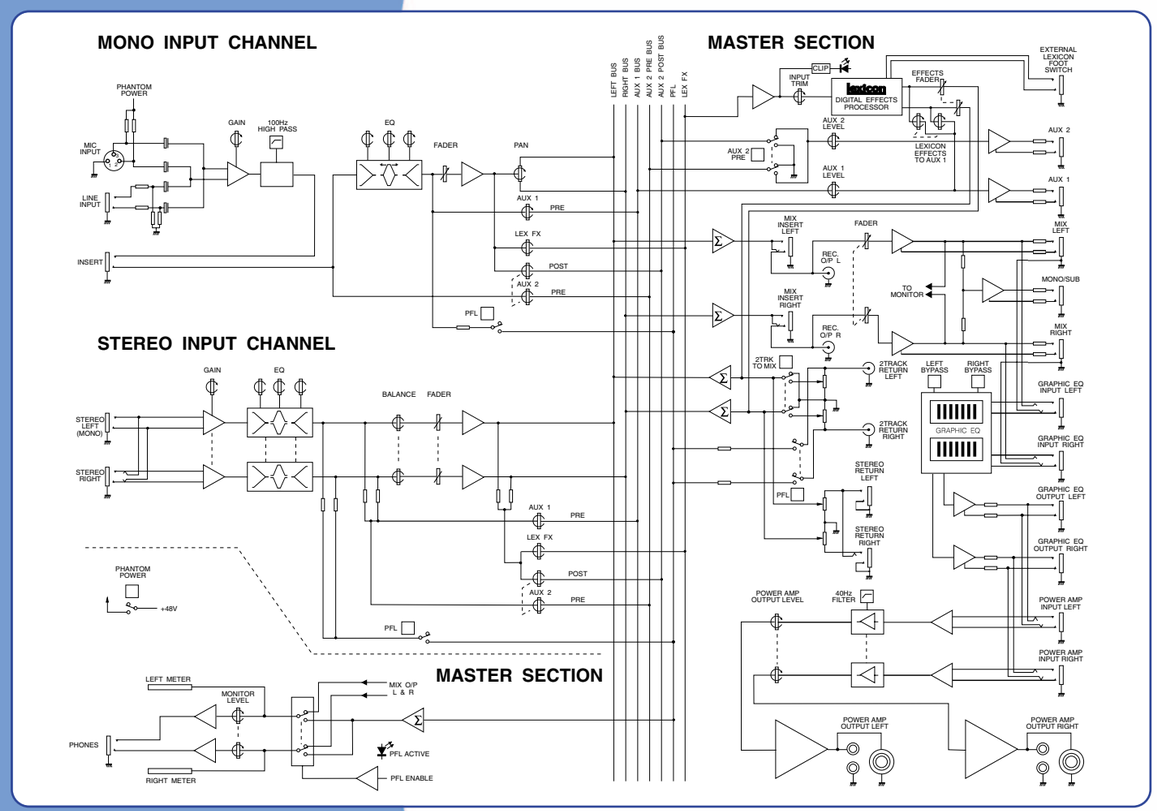
PowerStation 600	300W + 300W RMS into 4Ω
	175W + 175W RMS into 8Ω
PowerStation 1200	600W + 600W RMS into 4Ω
	350W + 350W RMS into 8Ω

Metering

10-segment LED bargraph

Accuracy relative to 0dB	±1dB





POWERPAD COMPACT POWERED MIXER

MAIN FEATURES

- 2-channel 30W power amp built in
- 10 inputs
- High-quality mic preamps with phantom power

- 4 mono mic/line inputs
- 2 stereo inputs with switchable RIAA preamps for turntables
- Amplifier clip and thermal protection
- Rugged, lightweight design



PACKED WEIGHT:
4.96kg (10.9lbs)

CONTROLS & CONNECTORS

APPLICATIONS

Applications:

- Small PA
- Rehearsal Rooms
- Presentations
- Multimedia
- Outdoor Events
- Houses of Worship

SEE PAGES 17 - 21

The Powerpad may be the smallest of the powered mixer range, but it still has everything you need for professional mixing in widely varied applications.
With its compact, lightweight frame, clear control layout, and integral power amp, Powerpad is a true all-in-one audio toolkit.

Even on this smallest of Soundcraft designs, all four mono input channels can mic as well as line-level sources. +48V phantom power is available to power condenser mics, while the pro-spec mic preamp can deal comfortably with a wide range of signals, from stage boxes to low-output dynamic mics. Low noise and distortion are ensured by Graham Blyth's proprietary preamp circuits, bringing big-console audio quality to this truly desktop design. And because we understand the importance of corrective EQ, even here you get a 2-band equaliser circuit with carefully tailored frequencies and filter slopes.

Powerpad

Two stereo inputs are provided for sources such as stereo keyboards, and CD or MD players – even turntables, thanks to switchable RIAA preamps on both channels. On both the mono and stereo channels, an aux send is provided for monitor or effects sends. Similarly, flexibility is found in the master output section, where the master jack outputs are complemented by additional outputs on RCA phonos for stereo recording.

To ensure ease of use at all times, the custom designed controls give consistent and accurate response, and useful resolution all the way around their travel.

As on the larger PowerStation mixers, the Powerpad's on-board stereo amplifier has a highly rated power supply, ensuring consistently high sound quality even when driving speakers hard. A clip protection LED indicates the onset of amplifier distortion, telling you when to back the levels off, and integral thermal protection helps to prevent damage to amps and speakers.

MONO INPUT

Mic
Connect a microphone to this balanced XLR input.

Line
A balanced 1/4" jack input for connecting keyboards or other electronic instruments.

Gain
Use this control to set the input level of the microphone or instrument. Gain ranges from -5 to +55dB, allowing matching of signals from the most sensitive microphones to the weakest-output keyboards.

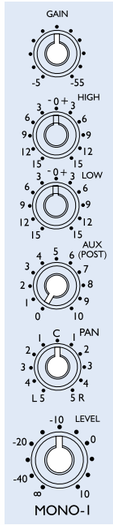
High Frequency Control (12kHz)
Ideal for bringing lead instruments out of the mix, improving the clarity of speech, or cleaning up mushy sounds.

Low Frequency Control (80Hz)
This EQ control adds extra warmth and punch to bass lines, kick drums or voices.

Aux(Post)
Determines the effects level in each input channel. It is set "post fader" so that the effects level remains constant no matter how high the input volume.

Pan
Positions the sound source left or right in the stereo master mix.

Level
Mixes and sets the relative levels of sound sources.



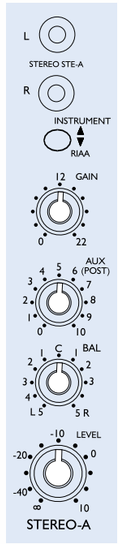
STEREO INPUT

Connectors
Two RCA/phono jacks allow the connection of stereo sources such as keyboards, drum machines, CD or cassette players, effects units or turntables.

Instrument/RIAA
When this switch is in the "up" position, instruments, CD players, tape machines, DAT players etc can be connected. When using turntables, press the switch down.

Gain
Sets the input level of the sound sources. 22dBU of Gain Range is available.

Balance
Sets the relative volumes of the left and right sides of the stereo sound source.



SPECIFICATIONS AND BLOCK DIAGRAM – OVERLEAF

POWERPAD SPECIFICATIONS

Typical specifications @ 1kHz

Noise

22Hz-22kHz, channel faders down	
Loudspeaker output (rel. to full output)	
Master faders up	<-98dBr
Master faders down	<-103dBr

EIN

150Ω source impedance	-128.5dBu
Output	-84dBu
Aux Out (Inputs down)	-80dBu
Mix, masters at max.	-80dBu

Crosstalk

Fader Cut-off (rel 0 mark)	>90dB
Aux Send	>90dB
Pan Isolation	>75dB

Frequency Response

20Hz – 20kHz rel. 1kHz, Line In to Master Mix	-1dB

THD+N

Mic sens. -30dBu, +14dBu at output	<0.005%

Inputs

Mic Input

Input Impedance	1.8kΩ
Max. Input	+14dBu
Max. Mic Gain to output	68dB

Line Input

Input Impedance	20kΩ
Max. Input	>+30dBu
Max. Mic gain to output	+68dB

Stereo Input

Input Impedance	20kΩ
Output	
Max. Output (typical)	+21dBu

Connectors

Mic (Bal or unbal)	XLR
Line/Instrument (Bal or unbal)	Jack*
Stereo Input, Tape In (Unbal), Monitor Amp Out	RCA Phono
FX Return (Bal or unbal)	Jack*
Master Mix Out	Impedance-Balanced Jack*
FX Send	Impedance-Balanced Jack*
Headphone	Stereo Jack*

* All Jacks are 3-pole TRS 'A' gauge

Amplifier

Power Output (RMS Per channel, 1kHz into 4 Ohms)	>30 watts
THD=N (30kHz Bandwidth)	
30 watts, 1kHz into 4Ω	<1%
20 watts, 1kHz into 4Ω	<0.01%
20 watts, 20kHz into 4Ω (measured via FX return)	<0.1%

Frequency Response

20Hz-20kHz	-1dB

Protection

Turn on muting	>1 sec
Turn off muting	Instant
DC Offset muting	>0.7v
Fan control speeds up when heatsink gets hotter than 65ºC	

Dimensions

102H x 248W x 237D mm	[4.0" x 9.8" x 9.3"]

MASTER SECTION

Master Mix (Out)
Impedance-balanced 1/4" jacks take the combined "mix" of all sound sources out from Powerpad to a stereo mastering device such as a tape machine for recording the mix. If extra audio power is required at a live performance, these outputs may be connected to an additional amp and pair of PA speakers.

FX Returns (In)
Connect the outputs of an effects unit to this pair of 1/4" jacks. When using a mono effect, connect the left jack only.

Aux (Out)
Connect this 1/4" jack to the input of an effects unit.

Headphones
This connector allows the use of headphones of 200 Ohms or higher impedance. When headphones are connected, the Monitor Amp output is muted to prevent feedback.

Thermal
This LED lights to warn that Powerpad's amplifier is overheating. If the amplifier becomes too hot, it will automatically cut out.

Clip Protect
This LED flashes to warn when Powerpad's amplifier is overloading, i.e. when the input signal(s) are too high.

Power Amp Mix/Mon
With the Power Amp switch up, Powerpad's amplifier derives its signal from the master mix. When down, this switch sends the monitor/headphone signal to the amplifier.

Tape (In)
These two RCA/phono connectors are for stereo tape machines, DAT recorders, CD players, the outputs of computer sound cards or any other line-level stereo signal. Use for playing back masters when recording, or pre-event music in a live situation.

48V Phantom Power
Pressing this switch supplies power to condenser microphones, avoiding the need for batteries.

Power On
Indicates when Powerpad is powered up.

FX Ret Level
Sets the level of the signal returning from an effects unit.

Tape Level
Sets the playback level of a tape machine or mastering device.

Metering
Normal operating levels are indicated by the AVG LEDs. The PK LEDs light to warn that overload is imminent.

Master Mix/Tape
When this switch is up the master mix may be heard. Press the switch down to hear the Tape Inputs.

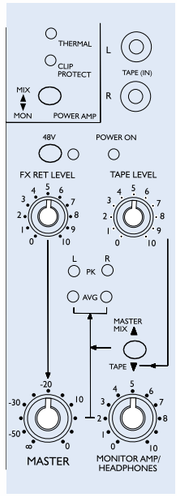
Master Mix Volume
When recording, this rotary control determines the level of the signal going to the stereo master. In a live situation, it determines the level going to the main P.A. speakers

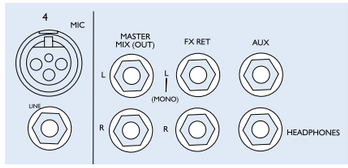
Monitor Amp / HeadPhones Volume
Sets the volume of both the Monitor amp and headphone outputs.

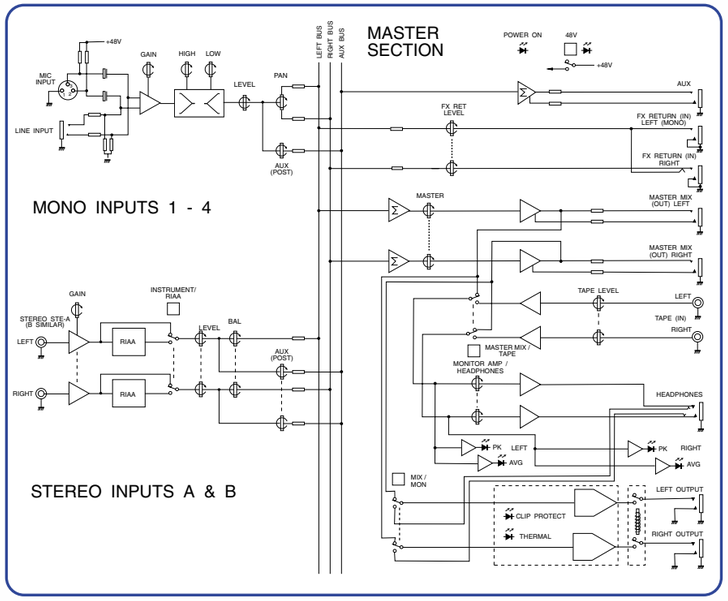
Power Amp Outputs
Two 1/4" jacks allow Powerpad's 30W x 2 amplifier to be connected to a pair of speakers.

On/Off Switch
To power-up Powerpad.

Mains Connector







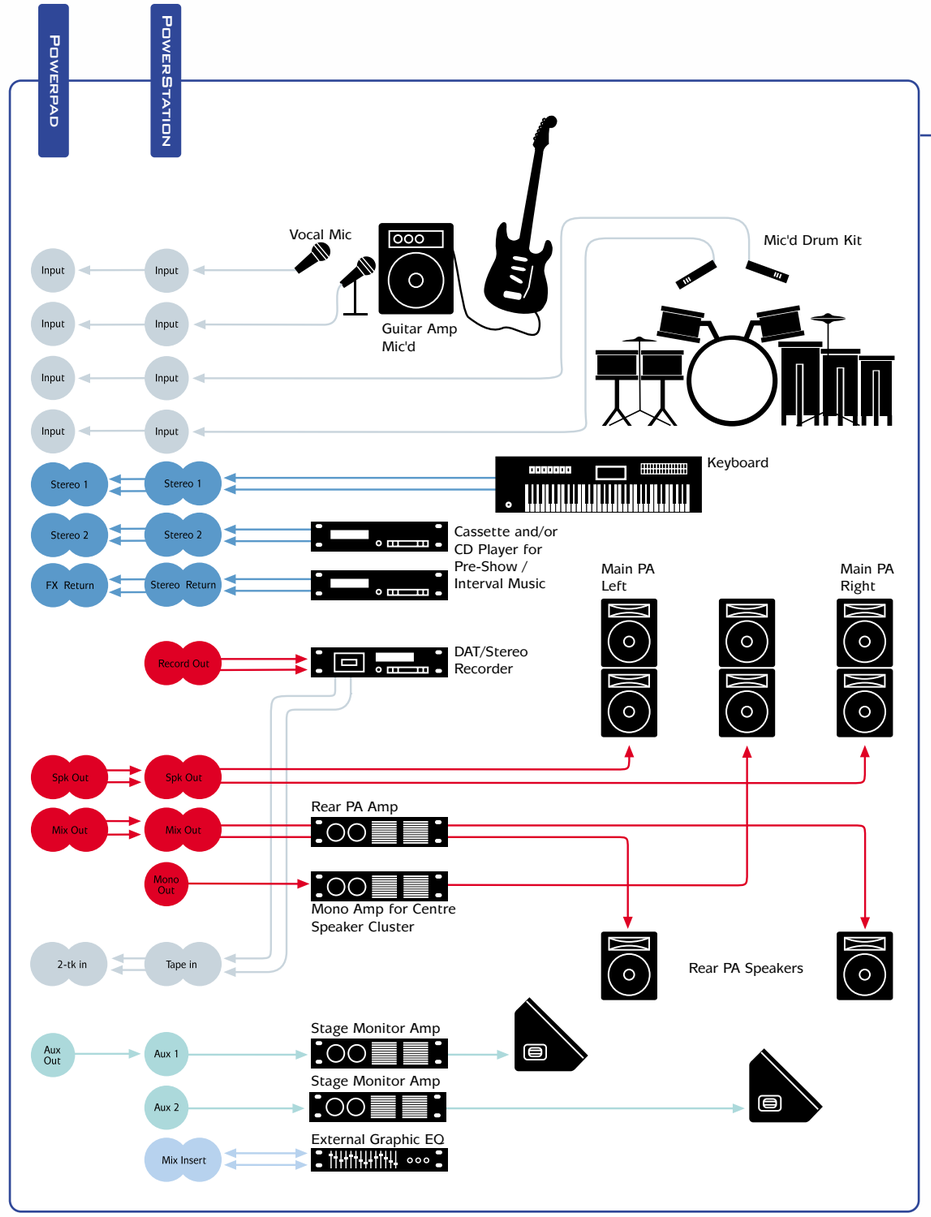
POWERED MIXER APPLICATIONS

On these pages, you will find some examples of Soundcraft powered mixers in use, showing suggested ways of setting up and connecting equipment.

KEY TO CONNECTIONS

The connections shown in these applications have been colour-coded to represent the colour scheme used on the controls of PowerStation and Powerpad.

Mono Inputs
Stereo Inputs
Inserts
Auxes
Outputs



LIVE MIXING

PowerStation is a surprisingly capable live mixer, and even Powerpad has remarkable abilities hidden in its diminuitive dimensions.

In addition to giving you full control – including EQ – of all mics and instruments, the performance can be recorded in stereo for posterity.

The Line inputs of an external power amplifier can be fed from the Mix Outs if more power is needed.

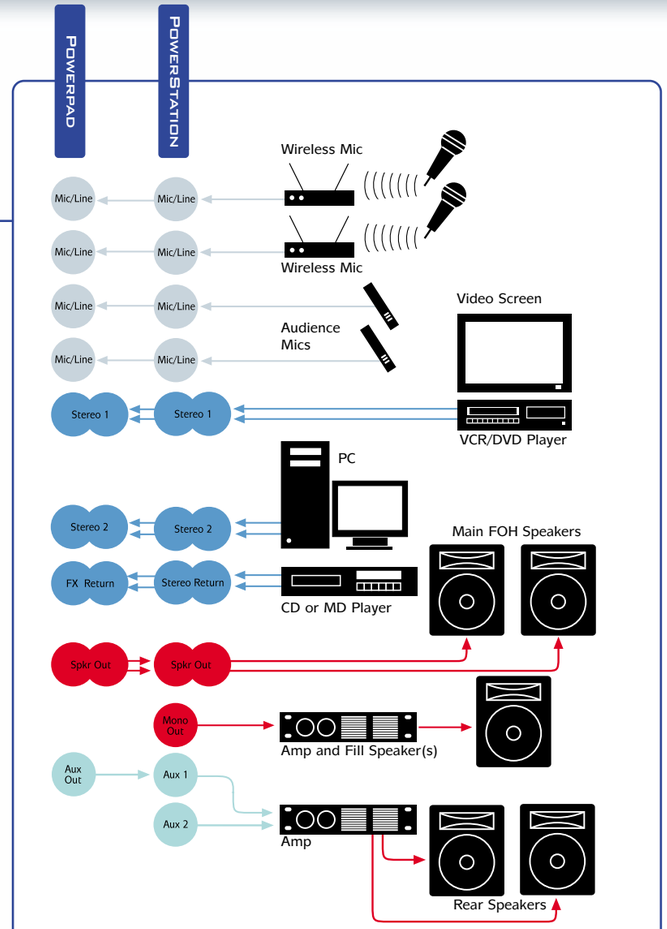
Soundcraft

POWERED MIXER APPLICATIONS

Presentation

The built-in amplifiers of PowerStation and Powerpad will normally be more than adequate for most presentations.

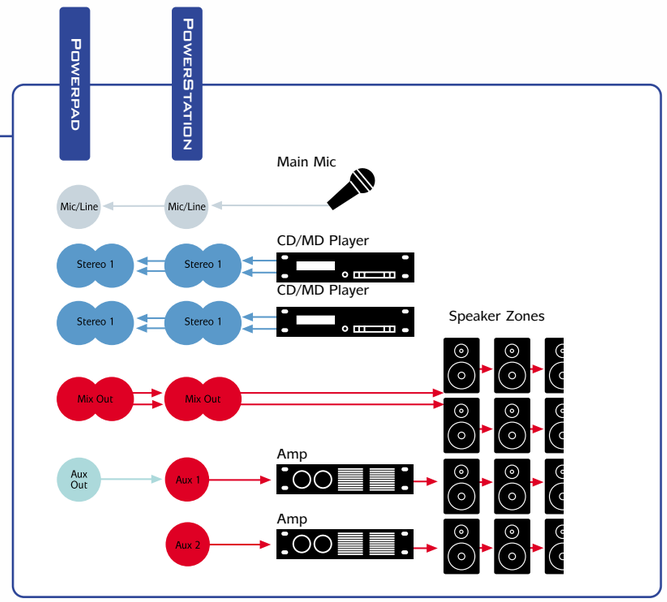
For larger audiences, the Mix Out of Powerpad may be used to feed an external amplifier and speakers.



Installed Sound

PowerStation and Powerpad mixers are ideal for small installations where music – either foreground or background – is required, such as in bars, restaurants and shops.

PowerStation models have so many inputs and so much control that they can also double as PAs for visiting live musicians.

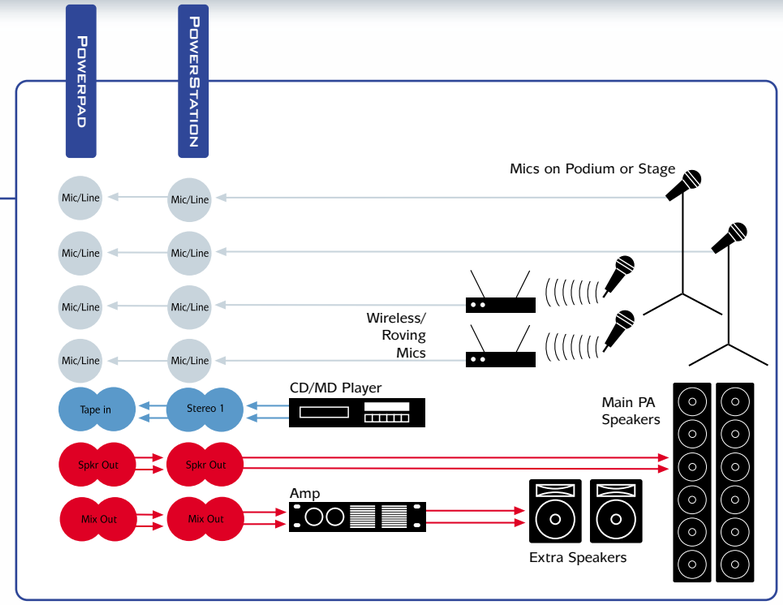


Outdoor Event

If you keep the setup simple, there's less to go wrong, less to go missing, and fewer items to keep dry when it starts to rain.

Wireless microphones are ideal for outdoor events but PowerStation's balanced mic inputs allow longer cable runs using good quality conventional mics without running the risk of interference from external sources such as mains cables.

If onboard amplifier power is insufficient, both PowerStation and Powerpad allow external amplifiers to be connected. By using the Mix Outs, full control remains at the mixer.



Power Supply Unit Specifications

		DCP125	CPS150	DCP200	CPS450
Part N°		RW8005	RW8000	RW8006	RW1368
Spirit 8	16 ch	•			
	24 ch			•	
	32ch			•	
	40ch			•	
Monitor 2	24 ch			•	
	32ch			•	
	40ch			•	
Live 4²	12ch	•			
	16 ch	•			
	24 ch	•			
	32ch		•		
	40ch				•
Rackmount as standard					•
Rackmount kit available		RW5516	RW1255	RW8010	
Packed Weight		4.2kg	5.2kg	7.8kg	13.2kg
Height		85 mm	85mm	85mm	89mm (2u)
Width at front		185 mm	287mm	375mm	483mm (19")
Width at rear		185 mm	287 mm	375mm	424 mm
Depth		210mm	190mm	180mm	305mm
Power from mains		99W	100W	175W	400W

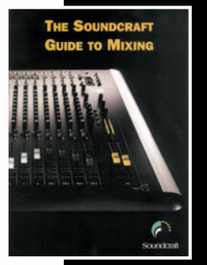
LX7, M Series and all powered mixers do not need external power supplies.

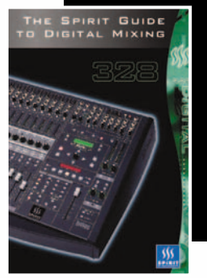
Soundcraft Mixing Guides

To get the most out of your Soundcraft mixer, we've produced these definitive guides that tell you just about everything you'll ever need to know.

The Guides are full of tips on choosing equipment, setting up and using sound equipment and example applications.

To obtain your free copies, please contact the address shown on the back cover.





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