owner's manual

X-Rack rack mount mixers

XR-20
XR-24

Important precautions
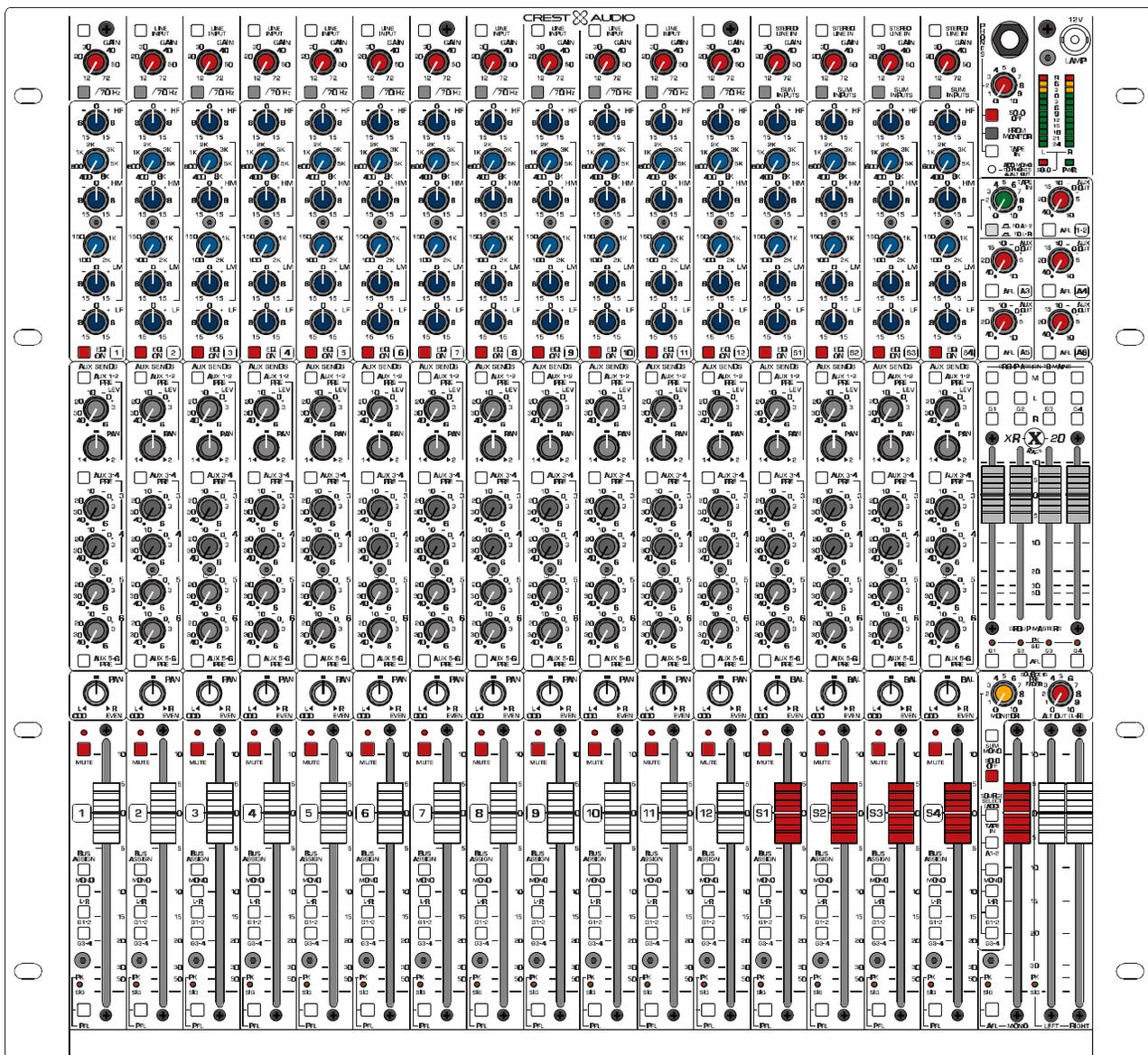
1 **Save the carton and packing materials!** Should you ever need to ship the unit, use only the original factory packing.

   For replacement packaging, call Crest Audio's Customer Service Department directly.

2 **Read all documentation before operating your equipment.** Retain all documentation for future reference.

3 **Follow all instructions printed on unit chassis for proper operation.**

   _____

4 **Do not use the unit if the electrical power cord is frayed or broken.** The power supply cord should be routed so that it is not likely to be walked on or pinched by items placed upon or against it.

5 **Always operate the unit with the AC ground wire connected to the electrical system ground.** Precautions should be taken so that the means of grounding of a piece of equipment is not defeated.

6 **Damage caused by connection to improper AC voltage is not covered by any warranty.**

7 **Do not spill water or other liquids into or on the unit, or operate the unit while standing in liquid.**

8 **The power cord of equipment should be unplugged from the outlet when left unused for a long period of time.**

Service Information

Do not open unit!
Opening the unit will expose you to potentially dangerous voltages. There are no user serviceable parts inside.

Equipment should be serviced by qualified service personnel when:

A. The equipment has been exposed to rain.

B. The equipment does not appear to operate normally, or exhibits a marked change in performance.

C. The equipment has been dropped, or the enclosure damaged.

To obtain service:
contact your nearest Crest Audio Service Center, Distributor, Dealer, or Crest Audio at 201.909.8700 USA or visit www.crestaudio.com for additional information.

email   techserve@crestaudio.com

This symbol is used to alert the operator to follow important procedures and precautions detailed in documentation.

This symbol is used to warn operators that uninsulated "dangerous voltages" are present within the equipment enclosure that may pose a risk of electrical shock.

IMPORTANT SAFETY INSTRUCTIONS

WARNING: When using electrical products, basic cautions should always be followed, including the following:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding plug. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point they exit from the apparatus.
11. Only use attachments/accessories provided by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Never break off the ground pin. Write for our free booklet "Shock Hazard and Grounding." Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
16. If this product is to be mounted in an equipment rack, rear support should be provided.
17. Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time. The U.S. Government's Occupational and Health Administration (OSHA) has specified the following permissible noise level exposures:

Duration Per Day In Hours	Sound Level dBA, Slow Response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

According to OSHA, any exposure in excess of the above permissible limits could result in some hearing loss. Ear plugs or protectors to the ear canals or over the ears must be worn when operating this amplification system in order to prevent a permanent hearing loss, if exposure is in excess of the limits as set forth above. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels such as this amplification system be protected by hearing protectors while this unit is in operation.

SAVE THESE INSTRUCTIONS!

table of contents

Introduction

Thank you and congratulations on your purchase of your new Crest Audio X-Rack mixer. We're confident that you will enjoy many years of trouble-free service from it. You will quickly find that it fits into a wide variety of mixing applications with ease. Due to well thought out sets of features, coupled with intelligent circuit design and the highest standards in construction & workmanship, all Crest Audio console products excel above and beyond the competitor's products, in every area.

This owner's manual covers both the XR-20 and the XR-24 X-Rack mixers. Features are identical for both models, the only difference is the amount of Mono Inputs versus Stereo Inputs. The XR-20 has 12 Mono inputs and 4 Stereo inputs, adding up to a total of 20 microphone inputs. The XR-24 has 8 Mono inputs and 8 Stereo inputs, adding up to a total of 24 microphone Inputs.

Please read this manual thoroughly and keep it handy for future reference. If you have any operating concerns that are not covered in this manual, or have application questions of any type, don't hesitate to contact Crest Audio directly either by phone, fax, or email. Here is our technical support contact information:
Phone: (201) 909 8700
Fax: (201) 909 8744
Email: techserve@crestaudio.com

X-RACK Block Diagram

FOR MODELS:
XR-20: 12 MONO / 4 STEREO
XR-24: 8 MONO / 8 STEREO
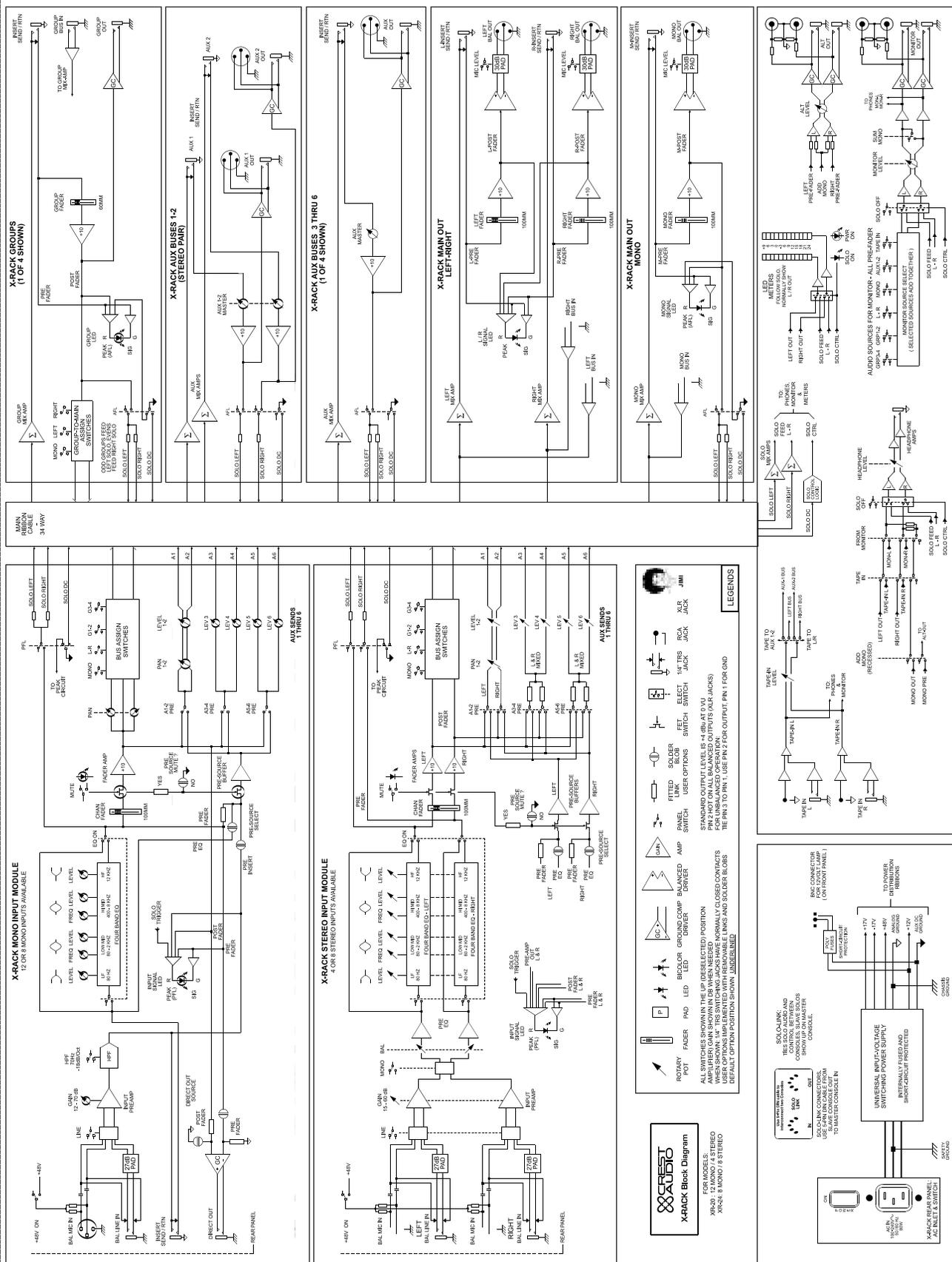
format

This manual uses a format that is intended to be easy to read, yet technical for those who need to know all the details. For feature descriptions, this is done by devoting the left side of each page to 1) an overall module picture, 2) a block diagram, and 3) a control closeup. These images all pertain to the features and control descriptions on the right side of the page. The intention is to make the manual easy to read while including all the technical details needed for getting the most out of the X-Rack - a compact, flexible, feature-rich addition to Crest Audio's growing line of audio mixing console products.
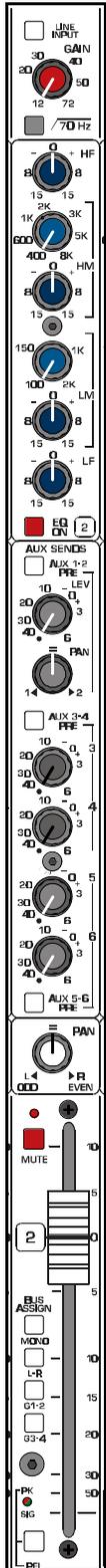
conventions

Control Icons

This manual uses symbols to illustrate what the control descriptions are referring to. This makes it possible to avoid redundant wording and makes the control descriptions clear.
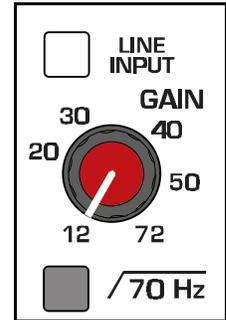
Switch in the UP, non-activated position

Switch in DOWN, activated position

Switch that illuminates when in the DOWN position

Momentary switch that illuminates when activated

LED that is on, indicating that it's associated feature is activated

Potentiometer

Standard 1/4" TRS jack (used for line level inputs and insert sends)

1/4" TRS jack with normal switching (used on insert returns)
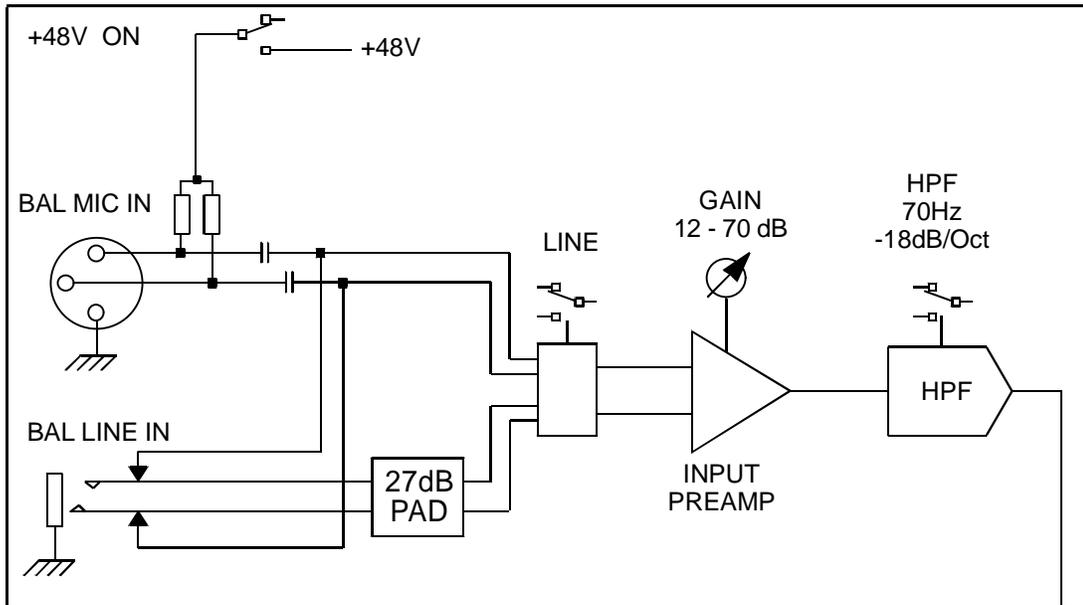
Female XLR input jack

Male XLR output jack

Module

Controls

Block diagram

+48V ON   +48V

BAL MIC IN

BAL LINE IN

LINE

27dB PAD

GAIN 12 - 70 dB

INPUT PREAMP

HPF 70Hz -18dB/Oct

HPF

CREST AUDIO

Front panel features

Mono Input channel features are identical for both the XR-20 and the XR-24. The XR-20 has 12 Mono inputs and the XR-24 has 8 Mono inputs.

Line Input (mic pad)

☐ The input preamp circuit is set up to accept a mic-level signal. This signal is brought in via the XLR mic-input connector located on the rear panel. The 1/4" TRS input jack is disabled.

☐ The input preamp circuit is set up to accept a line-level signal from either the XLR mic-input connector or the 1/4" TRS input jack, both located on the rear panel. Since the sensitivity of the input preamp is reduced, this control can also act as a PAD for bringing a very hot microphone feed down to a controllable level, avoiding overload. When a plug is inserted into the 1/4" TRS input jack, the XLR mic-input connector is disabled.

Gain

○ The Input gain control is used to establish proper gain structure in the channel. For best results, use the Solo system to monitor the channel while you set the gain. The goal is maximum gain without distortion. Both the main LED meters (during Solo) and the channel's Level/Peak indicator can be used for adjusting gain.
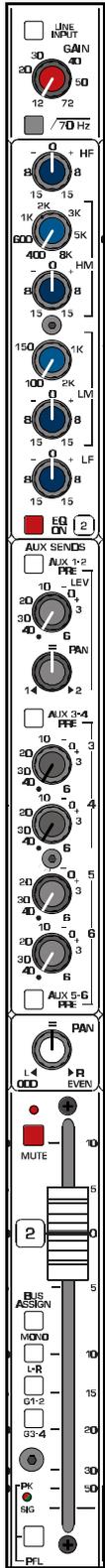
70 Hz high-pass filter

The high-pass filter reduces or eliminates unwanted low frequencies without substantially affecting the program material. Quite often such unwanted low frequencies are included with mic- or line-input signals. For example, stage rumble or wind can be picked up through vocal mics. The cut-off frequency of the high-pass filter is 70 Hz and the slope is -18dB per octave.

HPF
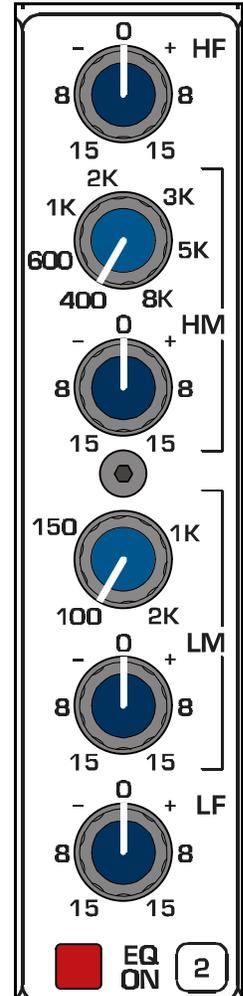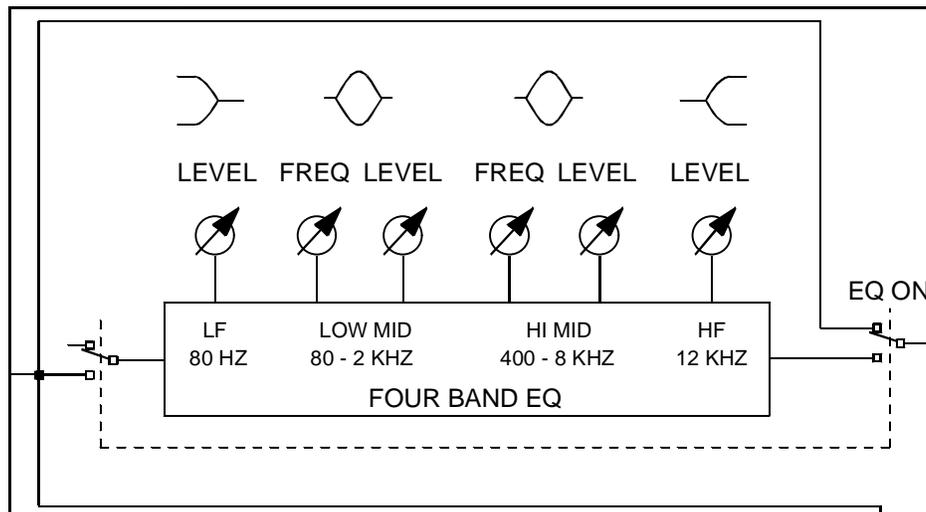
☐ High-pass filter is on.

Module

Controls

Block diagram

LEVEL FREQ LEVEL   FREQ LEVEL   LEVEL

EQ ON

LF	LOW MID	HI MID	HF
80 HZ	80 - 2 KHZ	400 - 8 KHZ	12 KHZ

FOUR BAND EQ

CREST AUDIO

Front panel features

EQ

Many audio signals coming into the console require some degree of corrective eq in order to be part of a good sounding mix. XR-20 & XR-24 offer a very useful and great sounding eq section on each channel. The input EQ consists of four bands: High, High-mid, Low-mid and Low. The High and Low frequency bands each have a boost/cut control and their frequencies are fixed. The High-mid and Low-mid bands each have variable boost/cut and variable frequency.

high frequency—HF

○ **Boost / Cut** 15dB boost and cut. Shelving @ 12 kHz

high mid—HM

○ **Frequency** Continuously sweepable between 400 Hz and 8 kHz.

○ **Boost / Cut** 15dB boost and cut. Bell curve with a Q of 1

Low mid—LM

○ **Frequency** Continuously sweepable between 100 Hz and 2 kHz.

○ **Boost / Cut** 15dB boost and cut. Bell curve with a Q of 1
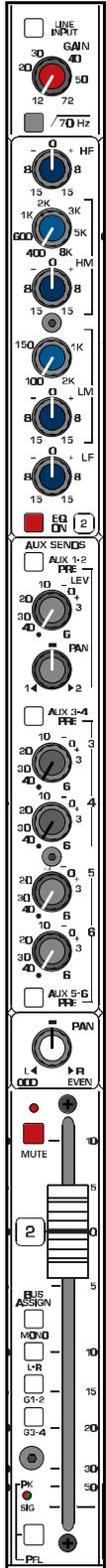
Low frequency—LF

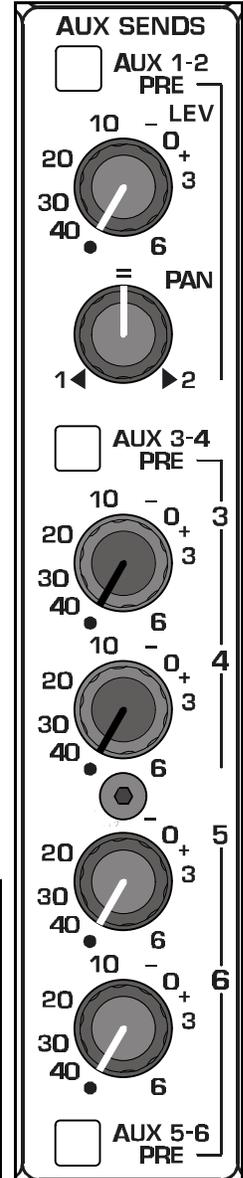○ **Boost / Cut** 15dB boost and cut. Shelving @ 80 Hz.

EQ on

▭ Equalizer is on. This switch is used to activate the EQ section and can be used to make A/B comparisons between "flat" and eq'd signals.

Module

Controls
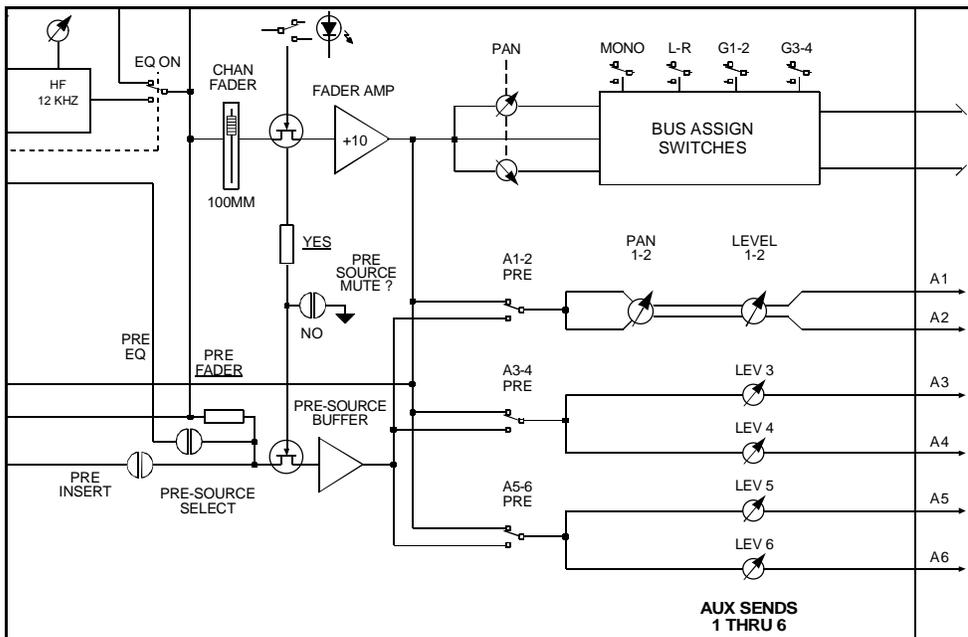
Block diagram

AUX SENDS

AUX 1-2 PRE

LEV
10 — 0 +
20 3
30
40 6

PAN
1 ◄ ► 2

AUX 3-4 PRE

10 — 0 +
20 3
30 3
40 6

10 — 0 +
20 3
30 4
40 6

10 — 0 +
20 5
30 3
40 6

10 — 0 +
20 6
30 3
40 6

AUX 5-6 PRE

LINE INPUT
GAIN
30 40
20 50
12 72
70 Hz

HF
8 0 + 8
15 15
2K 3K
1K 5K
600 8K
400 0 HM 8
15 15
150 1K
100 2K
8 0 + LM 8
15 15
8 0 + LF 8
15 15
EQ ON [2]

AUX SENDS
AUX 1-2 PRE
LEV
10 0 +
20 3
30 G
40 6
PAN
1 ► 2
AUX 3-4 PRE
10 0 +
20 3
30
40 6
10 0 +
20 3
30
40 6
10 0 +
20 3
30
40 6
10 0 +
20 3
30
40 6
AUX 5-6 PRE

PAN
L ◄ ► R
ODD EVEN

MUTE

[2]

BUS ASSIGN
MONO
L-R
G1-2
G3-4

PK
SIG

PFL

HF
12 KHZ

EQ ON

CHAN FADER

100MM

FADER AMP
+10

PAN

MONO L-R G1-2 G3-4

BUS ASSIGN
SWITCHES

YES

PRE
SOURCE
MUTE ?

NO

PRE
EQ

PRE
FADER

PRE-SOURCE
BUFFER

PRE
INSERT

PRE-SOURCE
SELECT

A1-2
PRE

A3-4
PRE

A5-6
PRE

PAN
1-2

LEVEL
1-2

LEV 3

LEV 4

LEV 5

LEV 6

A1
A2

A3

A4

A5

A6

AUX SENDS
1 THRU 6

CREST AUDIO

AUX send features

Six auxiliary sends are available for creating individual output mixes. These can be used to drive effects processors, provide monitor mixes, create broadcast or alternate sound reinforcement mixes, or for other special requirements.
Note: The default PRE setting for the Auxes is pre-fader, but post-mute, post-insert, and post eq. Internal settings can be changed so that PRE is also pre-eq and pre mute

Aux 1 - 2 PRE
☐ AUX 1/2 stereo pair is post fader
⊓ AUX 1/2 stereo pair is pre-fader

Aux sends 1 & 2
Auxes 1 and 2 are configured as a stereo pair. The top knob controls the level and the bottom knob acts as a PAN control. This stereo aux send can be used for any type of stereo feed from the console, such as live two-track recording, stereo in-ear monitors, alternate stereo feed for broadcast, and stereo signal processors. Also, by properly using the pan control Auxes 1 and 2 can be used as discrete mono Aux buses

○ **Aux 1/2 level** Send level for the Aux 1/2 stereo pair

○ **Aux 1/2 PAN** Stereo placement for the Aux 1/2 stereo pair

AUX 3-4 PRE
☐ AUX 3 and AUX 4 are post fader
⊓ AUX 3 and AUX 4 are pre-fader

Aux sends 3, 4, 5 & 6
Auxes 3, 4, 5, & 6 are configured as descrete mono aux sends. They are typically used to feed signal processors and for on-stage monitors.
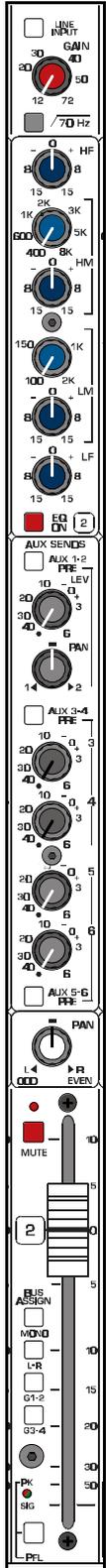
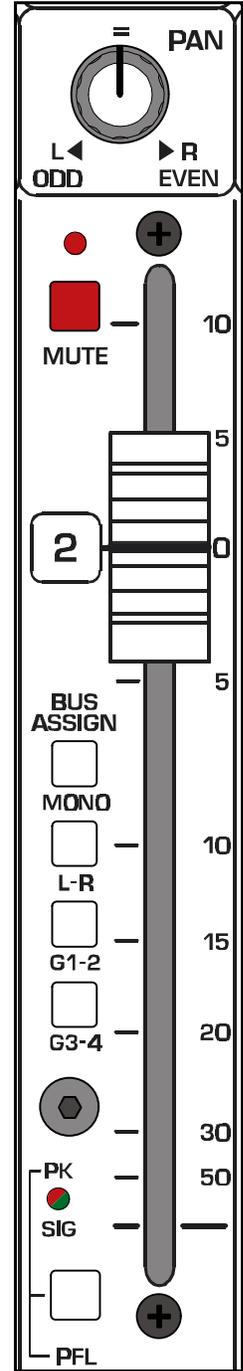○ **Auxes 3, 4, 5, &6 level** Set levels Auxes 3, 4, 5, & 6.

AUX 5-6 PRE
☐ AUX 5 and AUX 6 are post fader.
⊓ AUX 5 and AUX 6 are pre-fader.

Module

Controls
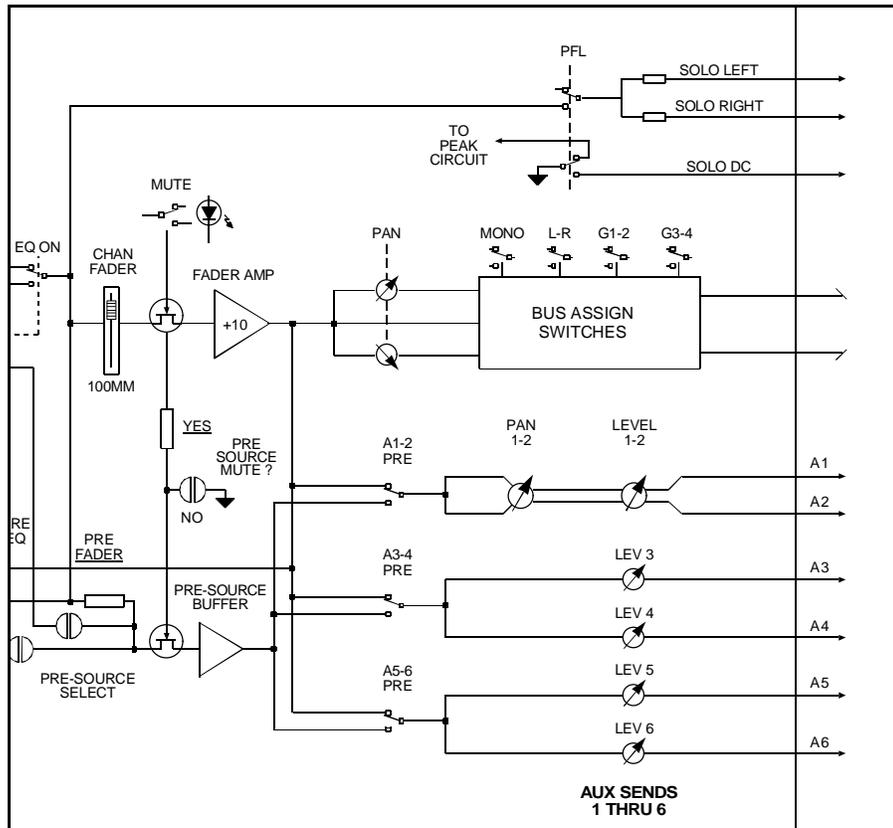
LINE INPUT

GAIN
30 40
20 50
12 72

70 Hz

0 + HF
8 8
15 15

2K 3K
1K 5K
600 8K
400 HM
0
8 8
15 15

150 1K
100 2K
0 LM
8 8
15 15

0 + LF
8 8
15 15

EQ ON 2

AUX SENDS

AUX 1-2 PRE
LEV
10 0 +
20 3
30
40 G

PAN
1 2

AUX 3-4 PRE
10 0 +
20 3
30
40 G

10 0 +
20 4
30
40 G

10 0 +
20 5
30
40 G

10 0 +
20 6
30
40 G

AUX 5-6 PRE

PAN
L◄ ►R
ODD EVEN

MUTE

2

BUS ASSIGN
MONO
L-R
G1-2
G3-4

PK
SIG

PFL

PAN
=
L ◄ ► R
ODD EVEN

MUTE

2

10

5

0

5

10

15

20

30

50

BUS ASSIGN

MONO

L-R

G1-2

G3-4

PK
SIG

PFL

Block diagram

PFL

SOLO LEFT

SOLO RIGHT

TO PEAK CIRCUIT

SOLO DC

MUTE

PAN   MONO L-R G1-2 G3-4

EQ ON

CHAN FADER

FADER AMP
+10

BUS ASSIGN SWITCHES

100MM

YES

PRE SOURCE MUTE ?

NO

PRE EQ

PRE FADER

PRE-SOURCE BUFFER

PRE-SOURCE SELECT

A1-2 PRE

A3-4 PRE

A5-6 PRE

PAN 1-2

LEVEL 1-2

LEV 3

LEV 4

LEV 5

LEV 6

A1

A2

A3

A4

A5

A6

AUX SENDS 1 THRU 6

CREST AUDIO

Bus assignment features

The bus assignment section offers considerable flexibility for creating what eventually becomes the main output mix. Two stereo subgroups are available for creating submixes or separate stereo mixes. All assignments are derived post-fader, post-eq, and post-mute.

PAN control

○ The pan control positions the signal within the stereo left/right (or odd/even) field. PAN affects signals that are assigned directly to Left-Right, Groups 1-2 and Groups 3-4

Mono bus assign

▭ The channel is assigned to the MONO mix bus. PAN has no affect on MONO

L-R bus assign

▭ The channel is assigned to the Left and Right mix buses.

G 1-2 bus assign

▭ The channel is assigned to Groups 1 and 2. Groups 1 and 2 are configured as a stereo pair. They can also be treated as two discrete mono groups by using the PAN control.

G 3-4 bus assign

▭ The channel is assigned Groups 3 and 4. Groups 4 and 4 are configured as a stereo pair. They can also be treated as two discrete mono groups by using the PAN control.

Input fader (100mm)

The fader is the primary level control for signals being sent to any of the consoles post fader mix buses,

MUTE

▭ The input channel is muted and the MUTE LED is alluminated. All AUX feeds and bus assignments are shut off. Insert send and SOLO signals are still active.
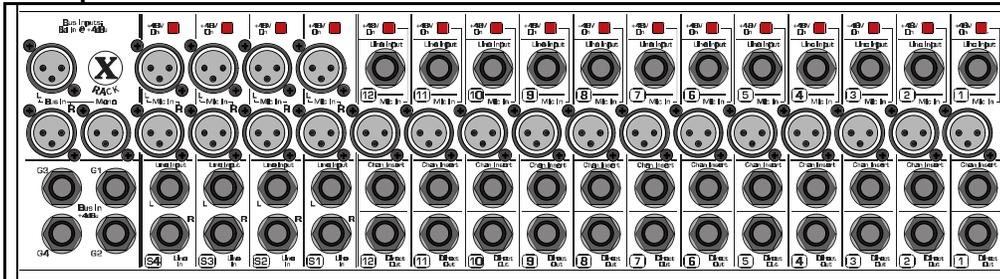
PK / SIG LED indicator

▥ This two-color(green & red) LED is used to monitor the channel's signal level. Signal present (green) is monitored pre-fader. Peak (red) is monitored at the preamp and before & after the fader.
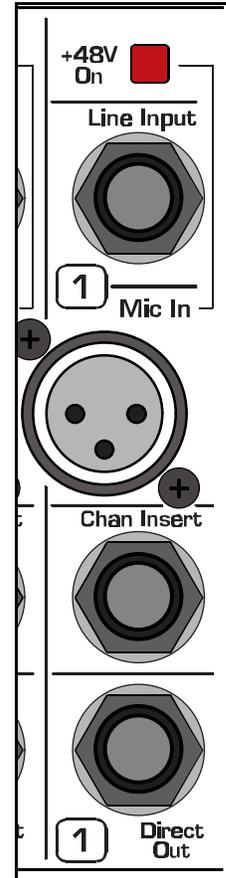
PFL

▭ PFL -Pre fader listen. This button routes the channel's signal to the Solo bus for monitoring through headphones or in the control room. The Peak (red) LED is illuminated to show PFL status.
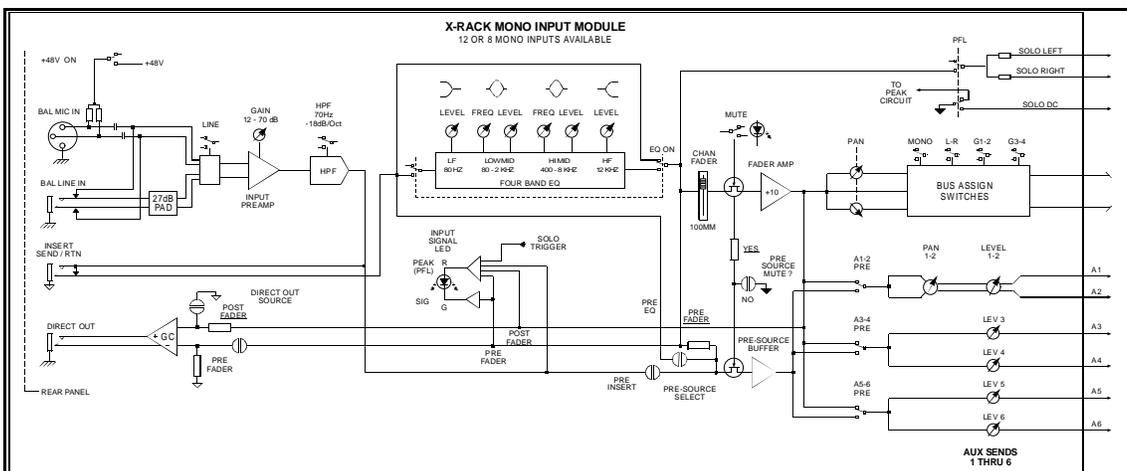
Rear panel

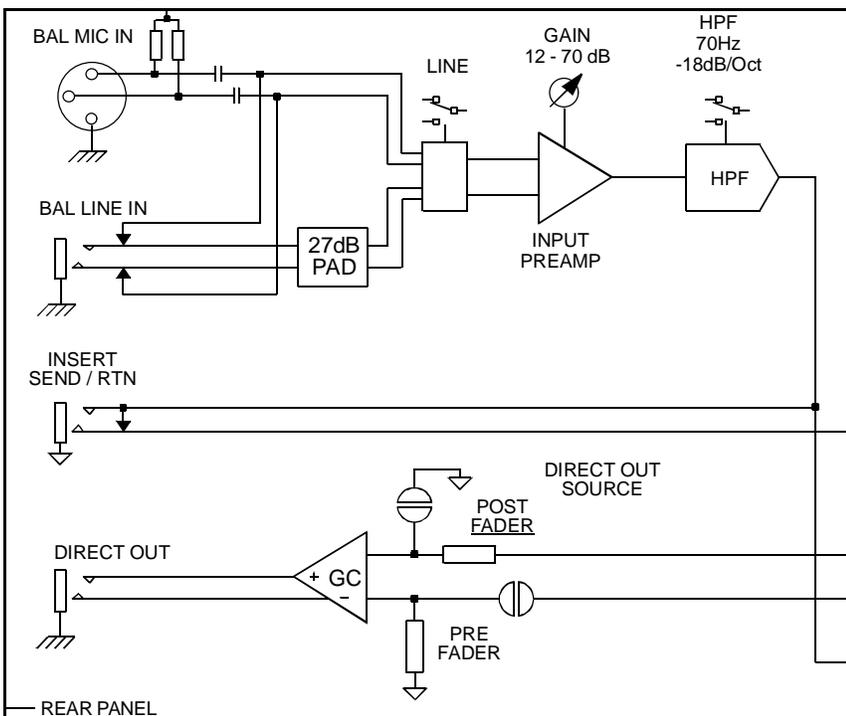## Connectors

+48V On

Line Input

1 Mic In

Chan Insert

1 Direct Out

Block diagram

BAL MIC IN

LINE

GAIN 12 - 70 dB

HPF 70Hz -18dB/Oct

27dB PAD

BAL LINE IN

INPUT PREAMP

HPF

INSERT SEND / RTN

DIRECT OUT SOURCE

POST FADER

DIRECT OUT

+ GC -

PRE FADER

REAR PANEL

X-RACK MONO INPUT MODULE
12 OR 8 MONO INPUTS AVAILABLE

AUX SENDS
1 THRU 6

CREST AUDIO

Rear panel features

48 V Phantom power

48 volts DC is applied to pins 2 and 3 on the mic-input XLR connector. This option is used with condenser microphones and active direct boxes that require an external DC voltage (phantom power) in order to operate.

Line INPUT jack

Line-level signals, balanced or unbalanced, may be brought into the input channel through this jack. The LINE INPUT switch must be pressed for this jack to be active.

MIC INPUT jack

This balanced female XLR accepts a low-impedance microphone signal, or a line-level signal, depending on the position of the LINE INPUT switch on the front panel.
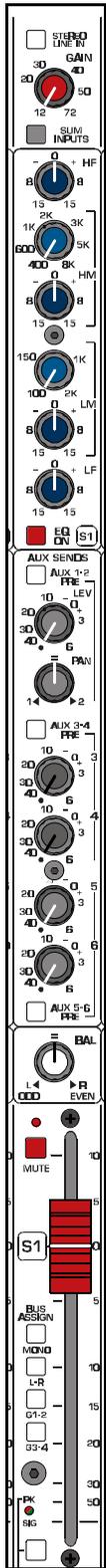
INSERT jack

This switching 1/4" TRS jack allows an external signal processor to be inserted into the signal path of the channel. The tip carries the SEND signal and the ring carries the RETURN signal.
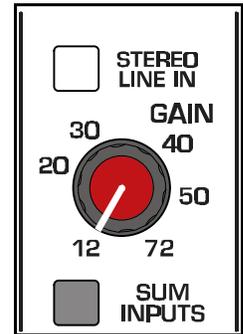
DIRECT OUT jack

The channel's signal can be brought out of the console via the direct out jack. The signal that appears at this jack is normally post fader. There is an internal option for making it pre fader.

Module

Controls

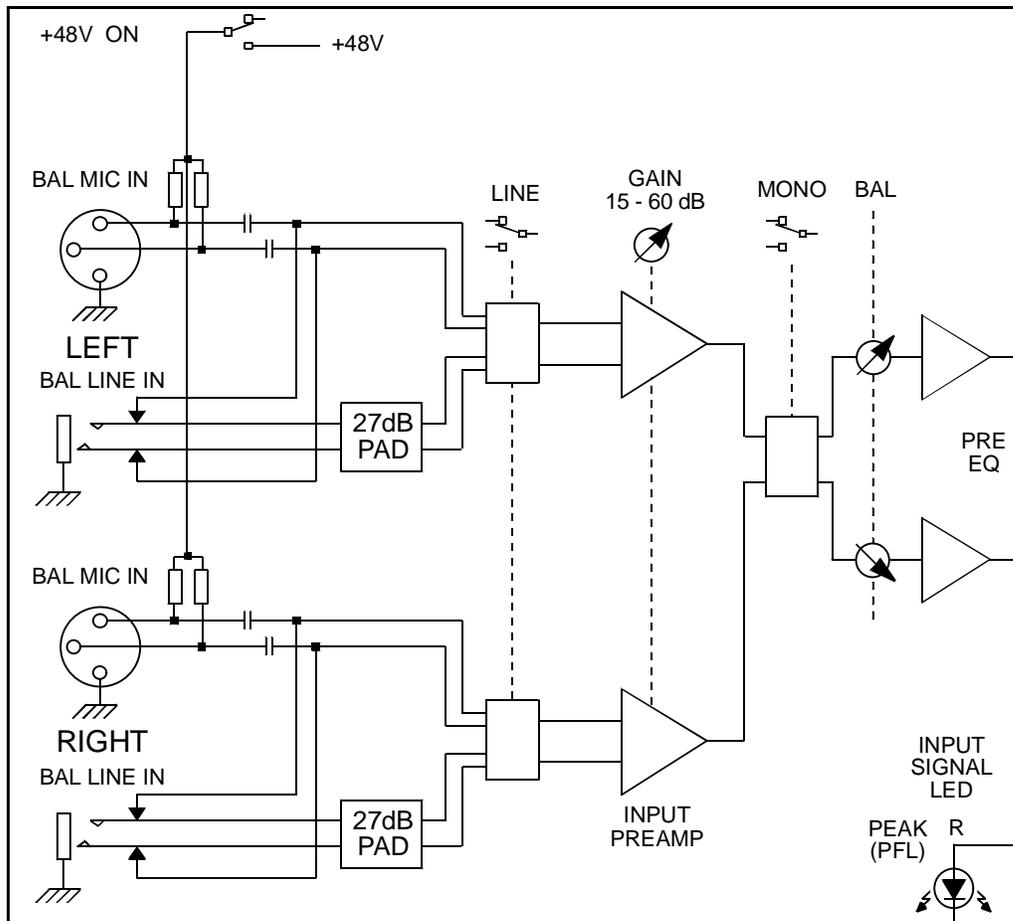## Block diagram

+48V ON

+48V

BAL MIC IN

LINE

GAIN
15 - 60 dB

MONO   BAL

LEFT

BAL LINE IN

27dB
PAD

PRE
EQ

BAL MIC IN

RIGHT

BAL LINE IN

27dB
PAD

INPUT
PREAMP

INPUT
SIGNAL
LED

PEAK   R
(PFL)

CREST
AUDIO

Front panel features

Stereo Input channels features are identical for both the XR-20 and the XR-24. The XR-20 has 4 Stereo inputs, and the XR-24 has and 8 Stereo inputs. On both models the Stereo inputs are located to the left of the master section, to the right of the Mono inputs. They can be treated as mono input channels, or as Stereo input channels.

Stereo Line Input (mic pad)

☐ The stereo input preamp circuit is set up to accept mic-level signals. The signals are brought in via the XLR mic-input connectors located on the rear panel. The 1/4" TRS input jacks are disabled.

◻ The stereo input preamp circuits are set up to accept line-level signals from either the XLR mic-input connectors or the 1/4" TRS input jacks, all located on the rear panel. Since the sensitivity of the stereo input preamp is reduced, this control can also act as a PAD for bringing very hot microphone feeds down to a safe level, avoiding overload. When a plug is inserted into a 1/4" TRS input jack, the XLR connector is disabled.

Gain

○ The Input gain control is used to establish proper gain structure in the channel. The GAIN control affects both the Left and Right input signals. For best results, use the Solo system to monitor the channel while you set the gain. The goal is maximum gain without distortion. Both the main LED meters (during Solo) and the channel's Level/Peak indicator can be used for adjusting gain.
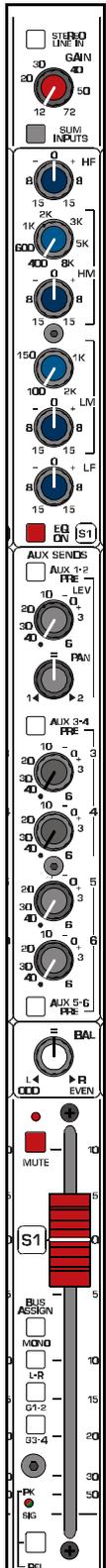
SUM INPUTS

By summing the inputs, a stereo input channel can be used as a mono input channel.
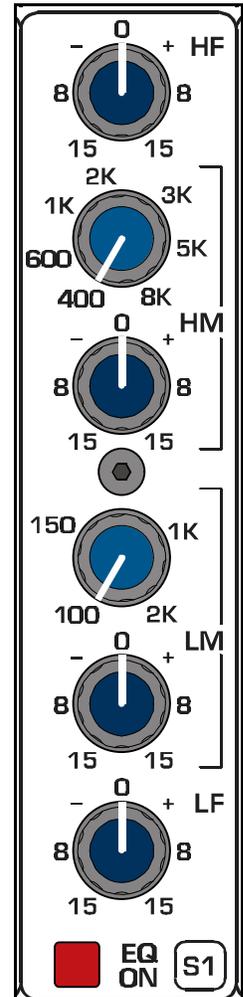
☐ The channel functions as a stereo input.

◻ If signals are applied to both the Left and Right input jacks, they will be summed together as a mono signal. If a signal is applied to just one of the input jacks, it will be treated as a mono signal throughout the rest of the channel.

Module

Controls

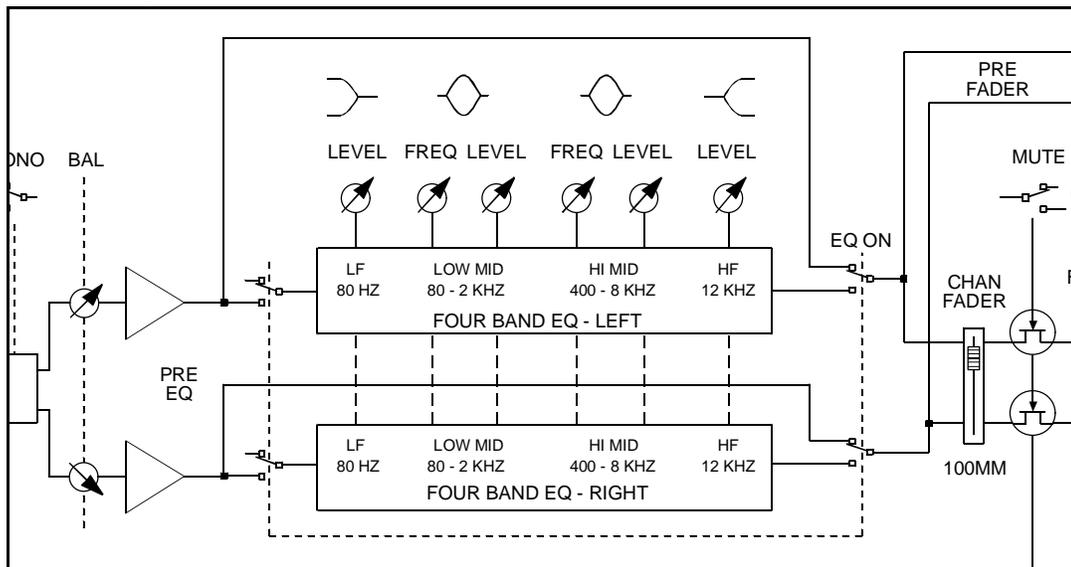STEREO
LINE IN

GAIN
30   40
20   50
12   72

SUM
INPUTS

– 0 + HF
8   8
15   15

2K
1K   3K
600   5K
400   8K

– 0 + HM
8   8
15   15

150   1K
100   2K

– 0 + LM
8   8
15   15

– 0 + LF
8   8
15   15

EQ ON   S1

AUX SENDS

AUX 1·2 PRE
LEV
10 – 0
20   3
30
40   6

PAN
1   2

AUX 3·4 PRE
10 – 0 + 3
20
30
40   6

10 – 0 + 3
20
30
40   6

20 – 0 + 3
30
40   6

10 – 0 + 3
20
30
40   6

AUX 5·6 PRE

BAL
L R
ODD EVEN

MUTE

S1

BUS ASSIGN
MONO
L-R
G1-2
G3-4

PK
SIG

PFL

10
5
5
10
15
20
30
50

Controls (right panel)

– 0 + HF
8   8
15   15

2K
1K   3K
600   5K
400   8K

– 0 + HM
8   8
15   15

150   1K
100   2K

– 0 + LM
8   8
15   15

– 0 + LF
8   8
15   15

EQ ON   S1

Block diagram

MONO   BAL

LEVEL   FREQ   LEVEL   FREQ   LEVEL   LEVEL

| LF 80 HZ | LOW MID 80 - 2 KHZ | HI MID 400 - 8 KHZ | HF 12 KHZ |

FOUR BAND EQ - LEFT

PRE EQ

| LF 80 HZ | LOW MID 80 - 2 KHZ | HI MID 400 - 8 KHZ | HF 12 KHZ |

FOUR BAND EQ - RIGHT

100MM

EQ ON

PRE FADER

MUTE

CHAN FADER

CREST AUDIO

Front panel features

Stereo EQ

The Stereo Input channel has two parallel EQ circuits that are controlled by the same set of knobs.

high frequency—HF

○ **Boost / Cut** 15dB boost and cut. Shelving @ 12 kHz

high mid—HM

○ **Frequency** Continuously sweepable between 400 Hz and 8 kHz.

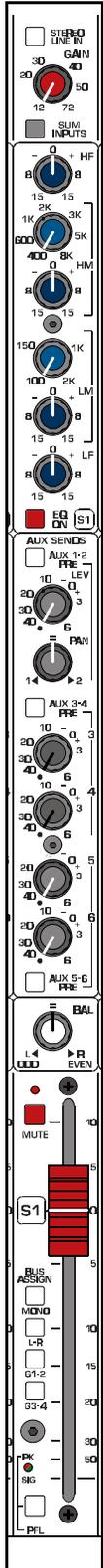○ **Boost / Cut** 15dB boost and cut. Bell curve with a Q of 1

Low mid—LM

○ **Frequency** Continuously sweepable between 100 Hz and 2 kHz.

○ **Boost / Cut** 15dB boost and cut. Bell curve with a Q of 1

Low frequency—LF

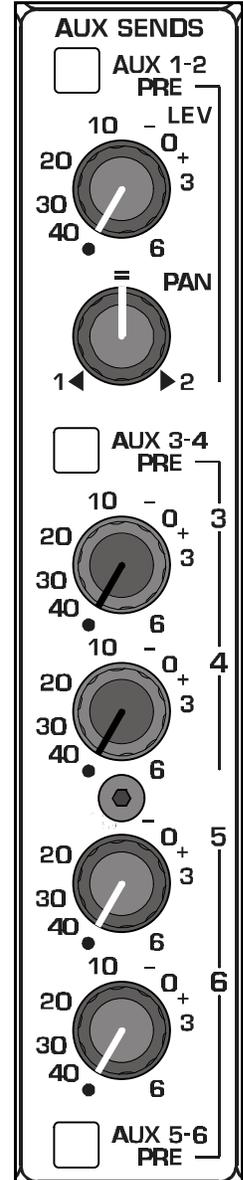○ **Boost / Cut** 15dB boost and cut. Shelving @ 80 Hz.

EQ on

⊏ Equalizer is on. This switch is used to activate the EQ section and can be used to make A/B comparisons between "flat" and eq'd signals.

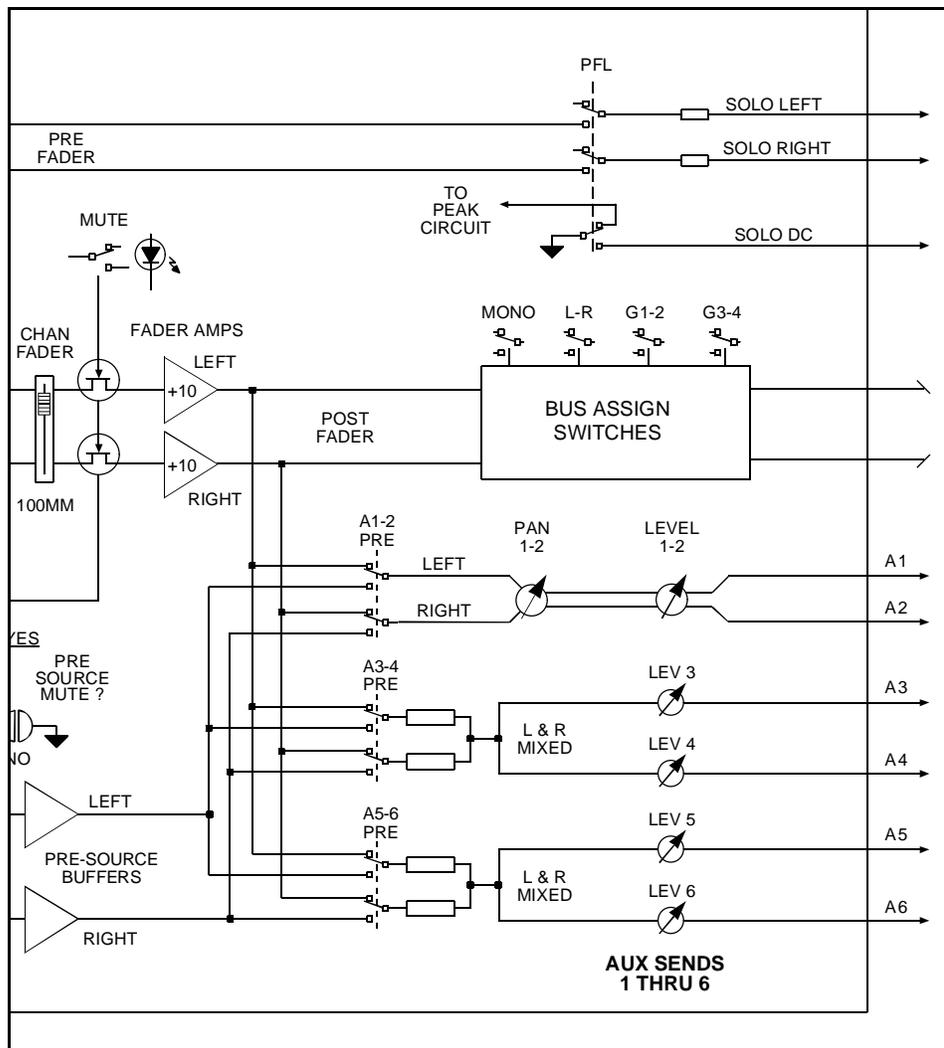**Module**   **Controls**

Block diagram

AUX SENDS

AUX 1-2 PRE

LEV
10 20 30 40 0 + 3 6

PAN
1 ◄ ► 2

AUX 3-4 PRE
10 20 30 40 0 + 3 6 — 3
10 20 30 40 0 + 3 6 — 4
10 20 30 40 0 + 3 6 — 5
10 20 30 40 0 + 3 6 — 6

AUX 5-6 PRE

PFL
SOLO LEFT
SOLO RIGHT
PRE FADER
TO PEAK CIRCUIT
SOLO DC
MUTE
MONO L-R G1-2 G3-4
CHAN FADER FADER AMPS LEFT +10
POST FADER
BUS ASSIGN SWITCHES
100MM +10 RIGHT
A1-2 PRE PAN 1-2 LEVEL 1-2 A1 A2
LEFT / RIGHT
PRE SOURCE MUTE ?
A3-4 PRE LEV 3 A3
L & R MIXED LEV 4 A4
PRE-SOURCE BUFFERS LEFT
A5-6 PRE LEV 5 A5
L & R MIXED LEV 6 A6
RIGHT
AUX SENDS 1 THRU 6

AUX send features

Six auxiliary sends are available for creating individual output mixes. These can be used to drive effects processors, provide monitor mixes, create broadcast or alternate sound reinforcement mixes, or for other special requirements.
Note: The default PRE setting for the Auxes is pre-fader, but post-mute, post-insert, and post eq. Internal settings changed be changed so that PRE is also pre-eq and pre mute

Aux 1 - 2 PRE
☐ AUX 1/2 stereo pair is post fader
⊓ AUX 1/2 stereo pair is pre-fader

Aux sends 1 & 2
Auxes 1 and 2 are configured as a stereo pair. If the channel is configured as a stereo input, the Left and Right signals are routed to Auxes 1 and 2, retaining the stereo split. The PAN knob acts as a balance control. This stereo aux send can be used for any type of stereo feed from the console, such as live two-track recording, stereo in-ear monitors, alternate stereo feed for broadcast, and stereo signal processors. Also, by using the pan control to select a single bus, Auxes 1 and 2 can be used as discrete mono Aux buses

○ **Aux 1/2 level** Sets level for the Aux 1/2 stereo pair

○ **Aux 1/2 PAN** If the MONO SUM button is up, this knob controls the stereo balance for Auxes 1 and 2. If the MONO SUM button is down, the summed signal is panned between Auxes 1 and 2

AUX 3-4 PRE
☐ AUX 3 and AUX 4 are post fader
⊓ AUX 3 and AUX 4 are pre-fader

Aux sends 3, 4, 5 & 6
Auxes 3, 4, 5, & 6 are configured as descrete mono aux sends. They are typically used to feed signal processors and for on-stage monitors. Stereo signals are summed together to make up the source for Auxes 3, 4, 5 & 6.

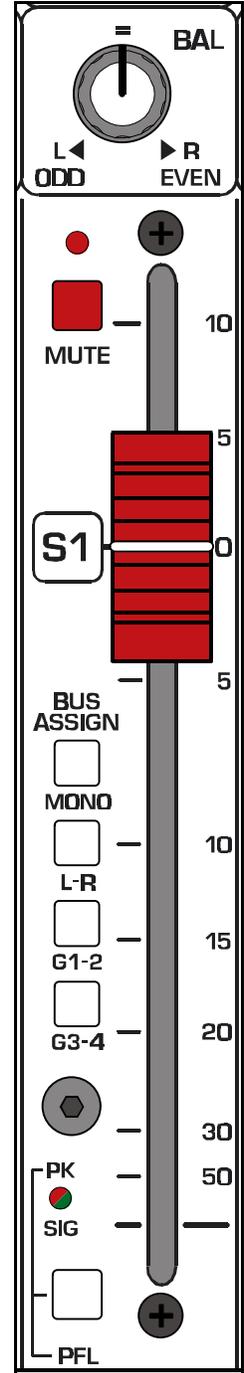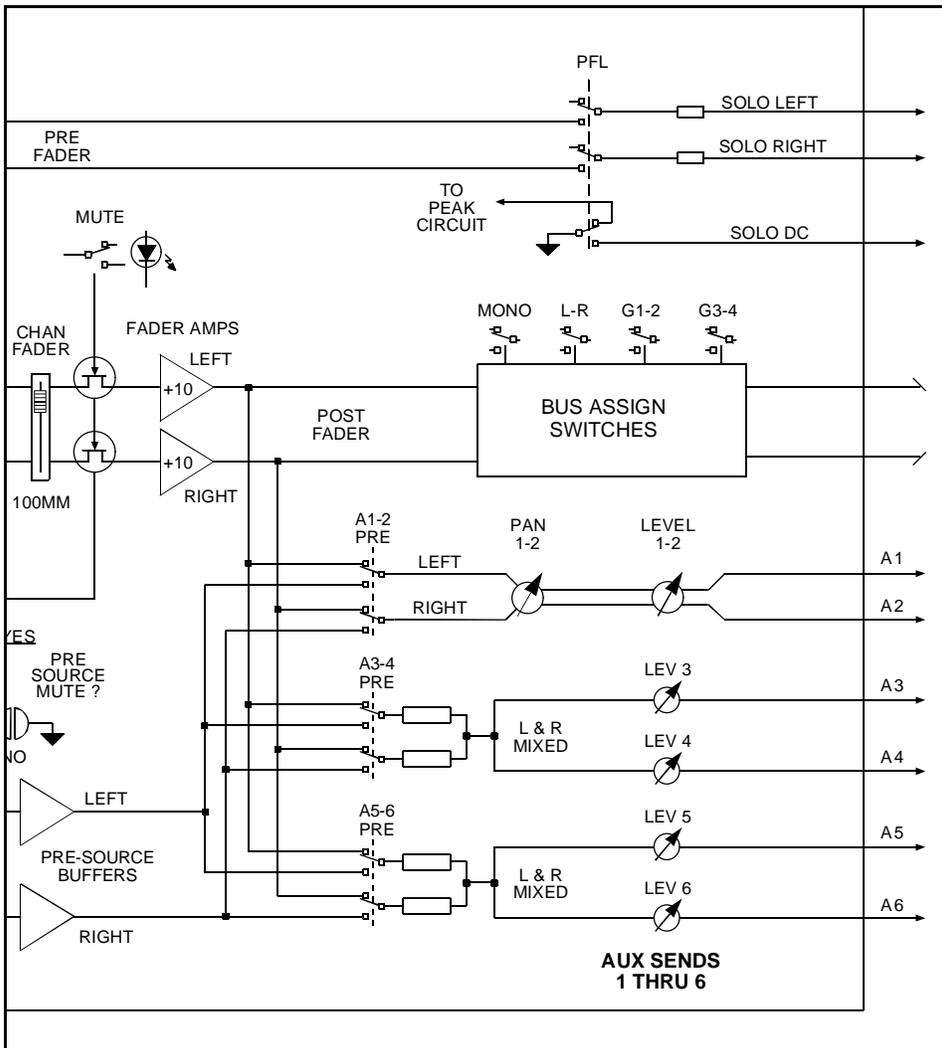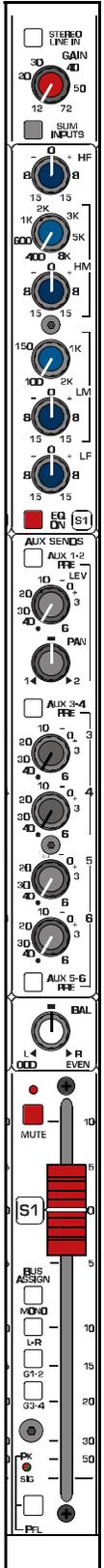○ **Auxes 3, 4, 5, & 6 level** Set levels Auxes 3, 4, 5, & 6.

AUX 5-6 PRE
☐ AUX 5 and AUX 6 are post fader.
⊓ AUX 5 and AUX 6 are pre-fader.

Module

Controls

PFL

PRE
FADER

SOLO LEFT

SOLO RIGHT

TO
PEAK
CIRCUIT

SOLO DC

MUTE

MONO   L-R   G1-2   G3-4

CHAN
FADER

FADER AMPS

LEFT

+10

POST
FADER

BUS ASSIGN
SWITCHES

+10

RIGHT

100MM

A1-2
PRE

PAN
1-2

LEVEL
1-2

LEFT

A1

RIGHT

A2

YES

PRE
SOURCE
MUTE ?

A3-4
PRE

LEV 3

A3

L & R
MIXED

NO

LEV 4

A4

LEFT

PRE-SOURCE
BUFFERS

A5-6
PRE

LEV 5

A5

L & R
MIXED

LEV 6

A6

RIGHT

**AUX SENDS
1 THRU 6**

BAL

L◄   ►R
ODD   EVEN

MUTE

10

S1

5

0

5

BUS
ASSIGN

MONO

10

L-R

15

G1-2

20

G3-4

30

PK

50

SIG

PFL

STEREO
LINE IN

GAIN

30   40

20   50

12   72

SUM
INPUTS

0   +   HF

15   15

2K

1K   3K

600   5K

400   8K   HM

15   15

150   1K

100   2K   LM

15   15

0   +   LF

15   15

EQ
ON   S1

AUX SENDS

AUX 1-2
PRE   LEV

10   0

20   3

40   6

PAN

1◄   2

AUX 3-4
PRE

10   0

20   3

40   6

10   0

20   3

40   6

10   0

20   3   5

40   6

10   0

20   3

40   6

AUX 5-6
PRE

BAL

L◄   ►R
ODD   EVEN

MUTE   10

S1   5

BUS
ASSIGN

MONO   10

L-R   15

G1-2   20

G3-4   30

PK   50

SIG

PFL

CREST
AUDIO

Bus assignment features

The bus assignment section offers considerable flexibility for creating what eventually becomes the main output mix. Two stereo subgroups are available for creating submixes or separate stereo mixes. When the channel is being used as a stereo input, Left/Right, Groups 1 & 2 Groups 3/4 bus assignments are configured as true stereo pairs. Bus assignments are derived post-fader, post-eq, and post-mute.

BAL control

○   The balance control adjusts the stereo balance for the Group and Left/Right assignments.

Mono bus assign

▭   The channel is assigned to the MONO mix bus. The Left and Right signals a are summed to make up the MONO signal. BAL has no affect on MONO

L-R bus assign

▭   The channel is assigned to the Left and Right mix buses.

G 1-2 bus assign

▭   The channel is assigned Sub Groups 1 and 2. Groups 1 and 2 are configured as a stereo pair. They can also be treated as two discrete mono groups by using the BAL control as an GROUP 1/2 mix control.

G 3-4 bus assign

▭   The channel is assigned Sub Groups 3 and 4. Groups 4 and 4 are configured as a stereo pair. They can also be treated as two discrete mono groups by using the BAL control as an GROUP 3/4 mix control.

Input fader

The fader is the primary level control for signals being sent to any of the consoles mix buses, The signals affected are the AUX sends selected to be post-fader and the Mono, L/R, and Groups 1-4.

MUTE

▭   The input channel is muted and the MUTE LED is alluminated. All AUX feeds and bus assignments are shut off. SOLO is still active.
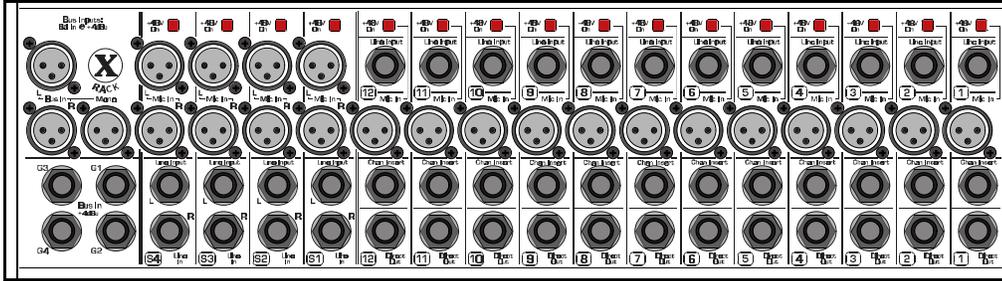
PK / SIG LED indicator

▤   This two-color(green & red) LED is used to monitor both the channel's Left and Right signal levels. Signal present (green) is monitored pre-fader. Peak (red) is monitored at the preamp and both before & after the fader.
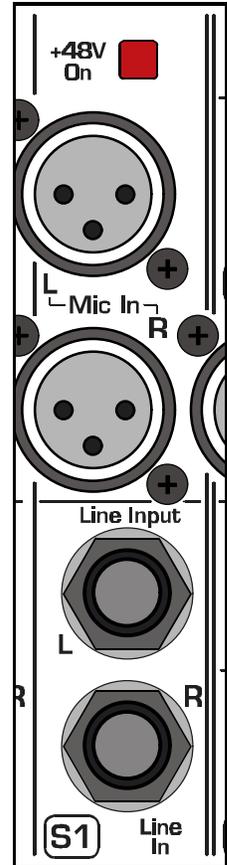
PFL

▭   PFL -Pre fader listen. This button routes the channel's signal to the PFL bus for monitoring through headphones or in the control room. The Peak (red) LED is illuminated to show PFL status.Since the SOLO bus is stereo, stereo image is preserved.
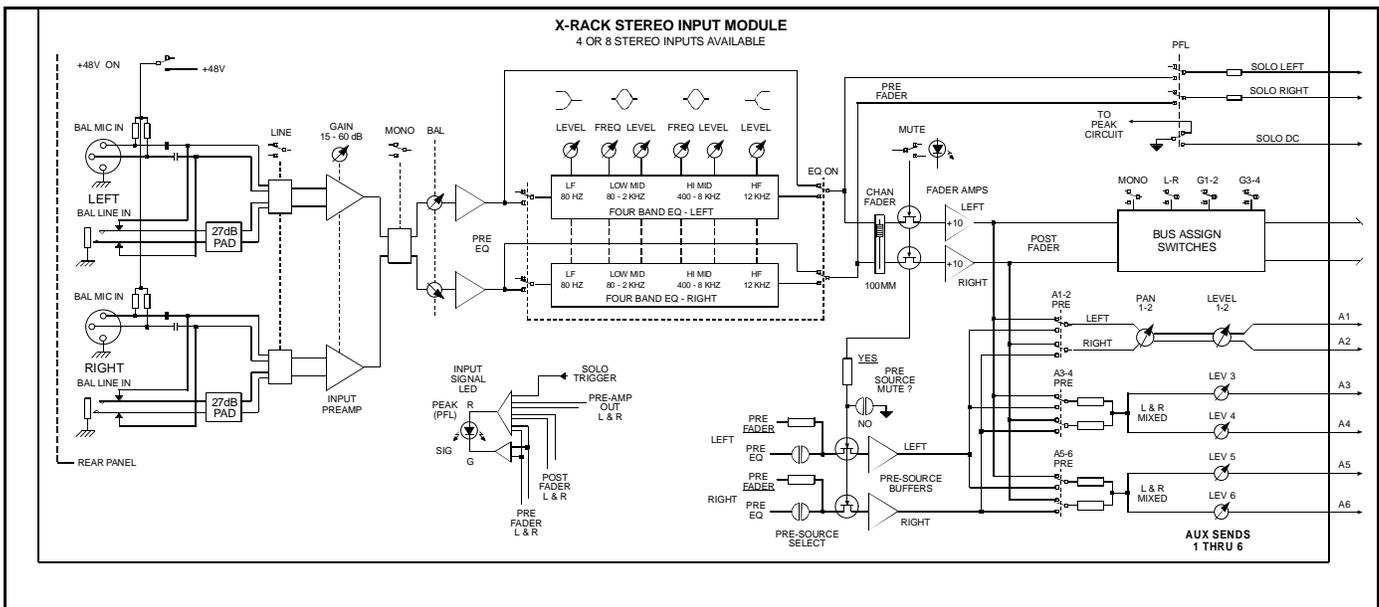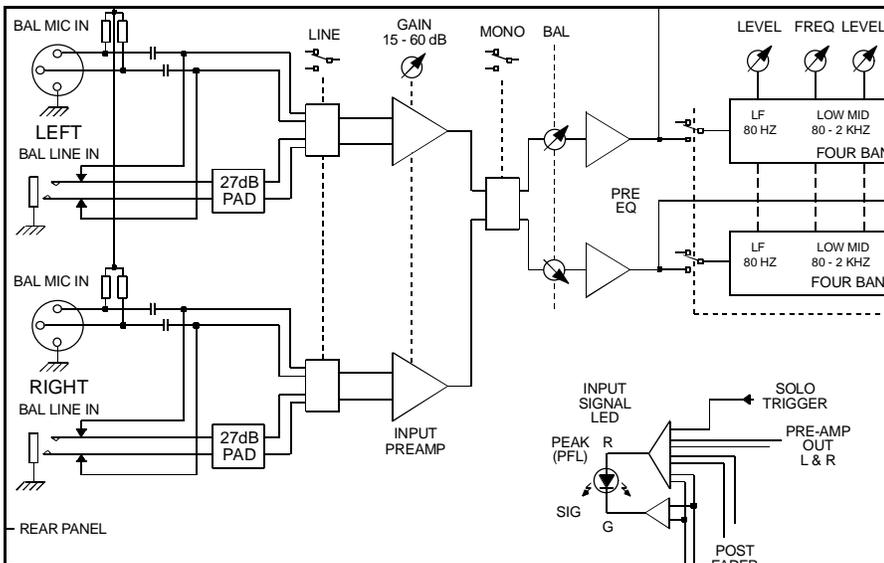
Rear panel

Connectors

+48V On

L Mic In R

Line Input

L

R

S1 Line In

Block diagram

X-RACK STEREO INPUT MODULE
4 OR 8 STEREO INPUTS AVAILABLE

Rear panel features

48 V Phantom power

⊏ 48 volts DC is applied to pins 2 and 3 on the mic-input XLR connectors. This option is used with condenser microphones and active direct boxes that require an external DC voltage (phantom power) in order to operate.

Line INPUT jacks - Left and Right

Line-level signals, balanced or unbalanced, may be brought into the input channel through this jack. The LINE INPUT switch must be pressed for these jack to be active.

MIC INPUT jack - Left and Right

These balanced female XLRs accept low-impedance microphone signals, or line-level signals, depending on the position of the LINE INPUT switch on the front panel.
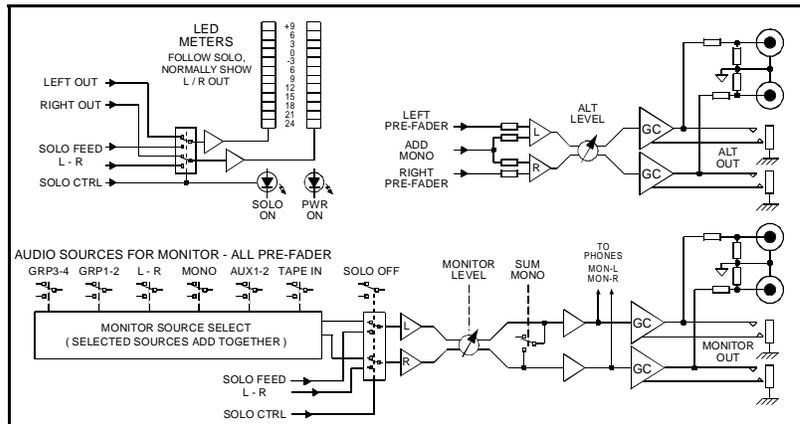
Module
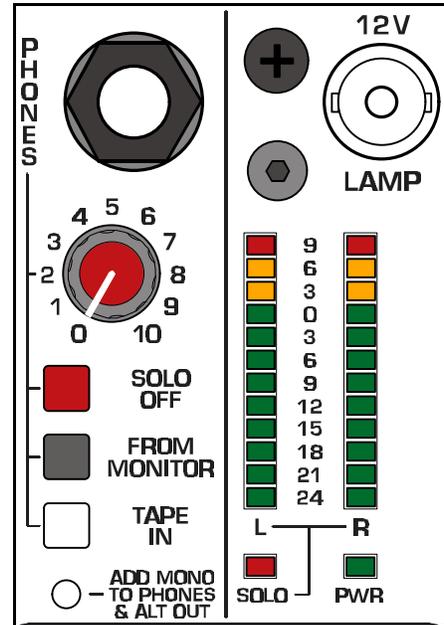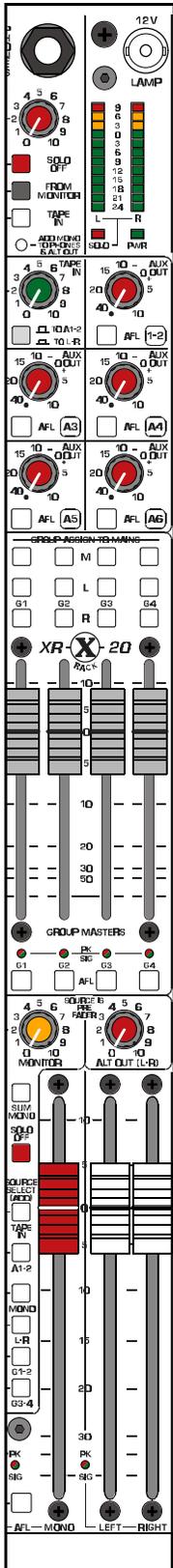
Controls

Block diagram
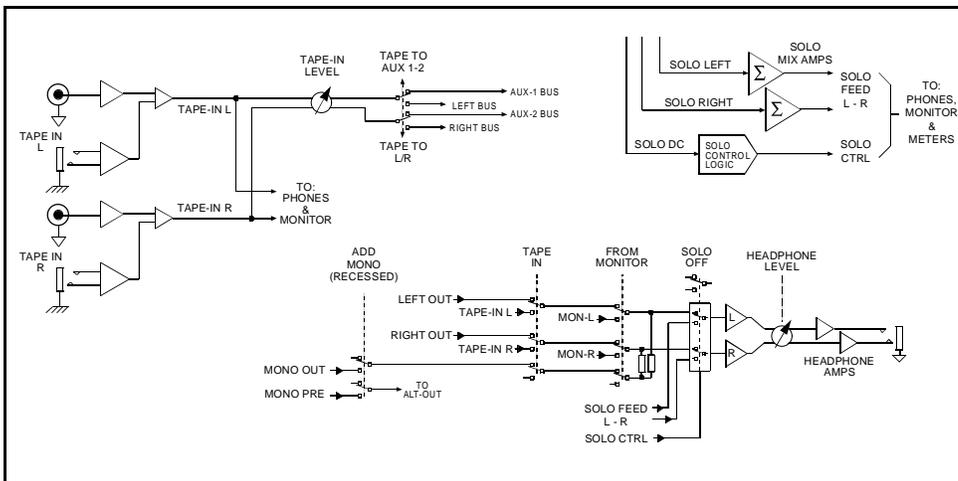
Front panel features

The XR-20 & XR-24 have a comprehensive output section, including meters, master level controls, and a flexable group assignment section.

Headphone control section

In normal use, the headphone out is used to monitor the Solo system. The Solo system is made up of anything that is PFL'd (pre-fader-listen) or AFL's (after fader listen).

The hirarchy of what appears in the headphones when nothing is soloed, or when the SOLO OFF button is pressed is as follows:

MONITOR when **FROM MONITOR** is engaged.

TAPE IN when **TAPE IN** is engaged and **FROM MONITOR** is not engaged.

LEFT and RIGHT masters when neither **FROM MONITOR** nor **TAPE IN**

are engaged.
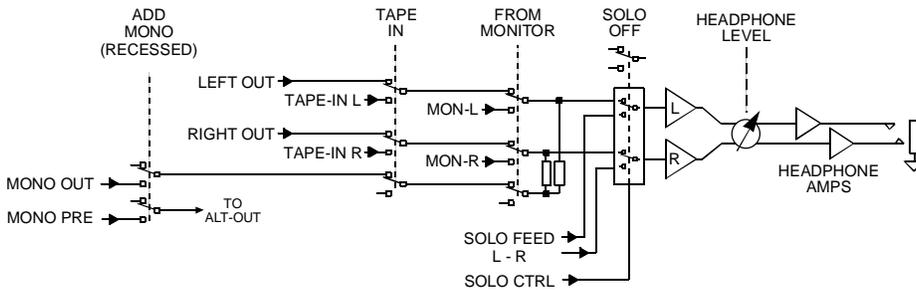
Headphone jack

This 1/4" TRS jack is intended for stereo headphones. It can also be used as a stereo control-monitor output from the mixer. From this jack you can get a number of signals, including SOLO, Left, Right & Mono, and Monitor / Tape feeds.

Headphone level

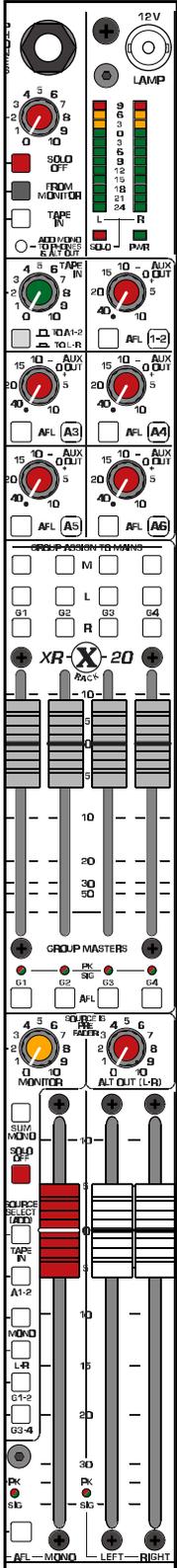This knob controls the level that appears at the Headphone Jack.

SOLO OFF

Solo (PFL or AFL) overrides the default headphone signals unless this button is depressed.
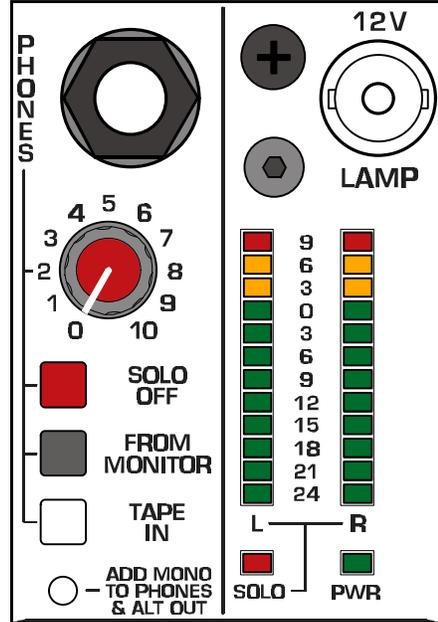
Whenever something is Soloed, it appears in the headphones.

Soloed signals do not appear in the headphones.

Module

Controls
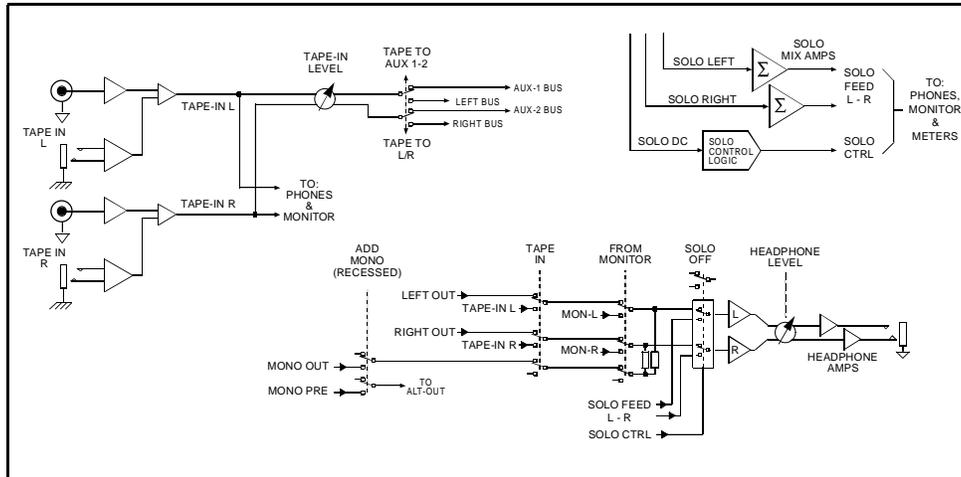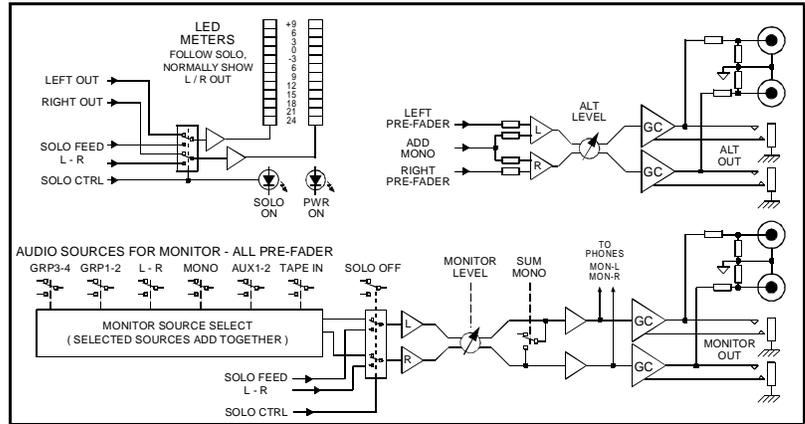

Block diagram

CREST AUDIO

Front panel features

FROM MONITOR

⊐ The post-level control MONITOR output becomes the signal in the head-phones when nothing is soloed. This overrides TAPE IN if the TAPE IN button is depressed.

TAPE IN

⊐ The TAPE IN signals appear in the headphones when the FROM MONITOR button is not depressed and nothing is Soloed.

ADD MONO to Phones and ALT OUT

Mono, or Center can be added when the LEFT and RIGHT masters are present at the Phone out, on the front panel and the ALT OUT jacks on the rear panel. The switch is recessed to prevent it's state from acidentaly being switched.

☐ The default signal at the Headphone output and the ALT OUT jacks is the stereo LEFT/RIGHT mix.

⊐ In addition to the LEFT/RIGHT mix at he the Headphone output and the ALT OUT jacks, the MONO master signal is blended in.

12 V Lamp jack

A BNC jack is used for hooking up a goose-neck lamp. The center connection is 12 Volts DC and the outer connection is ground. A medium or high-intensity 12V DC Littlite is can be used.

LED meters - Left and Right

A pair of LED arrays are provided for monitoring the output levels. They follow the SOLO system, making it easy to adjust input and output levels by PFL'ing and AFL'ing different sources. They normally show the LEFT and RIGHT output levels. When something is Soloed, it replaces LEFT and RIGHT on the meters.

SOLO LED

This red LED lights up when anything on the mixer is soloed.

PWR LED

This green LED illuminates to indicate that the mixer is powered up and ready for use.

Module

Controls

Block diagram

Front panel features

TAPE IN level

○ On the rear panel there are Left and Right TAPE IN connectors, both 1/4" TRS and RCA. They can be used to bring in a stereo source such as a two-track playback from tape, CD, MD, or a sampler. This knob controls the level to the Aux 1/2 and Left/Right buses.

TAPE IN assignment

☐ **TO A1-2** This assigns the stereo TAPE IN to Auxes 1 and 2, which are configured as a stereo pair. This is useful for stereo program monitoring.

▭ **TO L-R** This assigns the stereo TAPE IN feed to the Left and Right mix buses. This is useful for in-between-set background music and as an extra stereo return.

AUX OUT 1-2 level control

○ This is the master stereo output level control for the AUX 1/2 pair.

Aux 1-2 AFL

▭ This button assigns the AUX 1/2 stereo pair to the solo system. Since it is AFL, the signal is monitored after the AUX insert and master level control. Auxes 1 & 2 show up in stereo in the System - 1 on the left and 2 on the right.
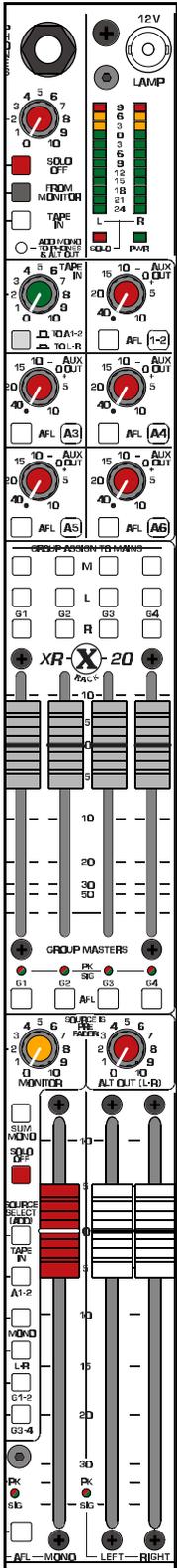
AUX OUT 3, 4, 5 & 6 level controls

○ These are the master output level controls for Auxes 3, 4, 5 &6.
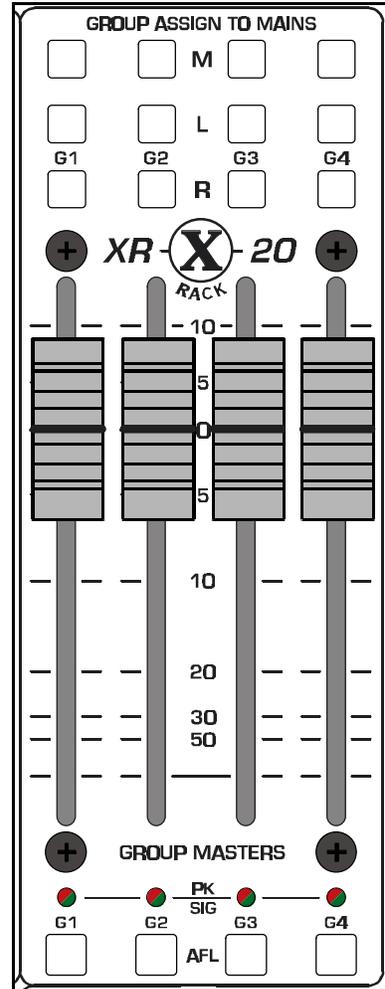
Aux 3, 4, 5, & 6 AFL

▭ These buttons assign Auxes 3, 4, 5 & 6 to the solo system. Since they are AFL, the signals are monitored after the AUX inserts and master level controls.

Module

Controls

Block diagram

X-RACK GROUPS (1 OF 4 SHOWN)

GROUP MIX AMP

INSERT SEND / RTN

PRE FADER

GROUP FADER

TO GROUP MIX-AMP

GROUP BUS IN

GROUP-TO-MAIN ASSIGN SWITCHES

MONO   LEFT   RIGHT

POST FADER

+10

60MM

GROUP LED

GROUP OUT

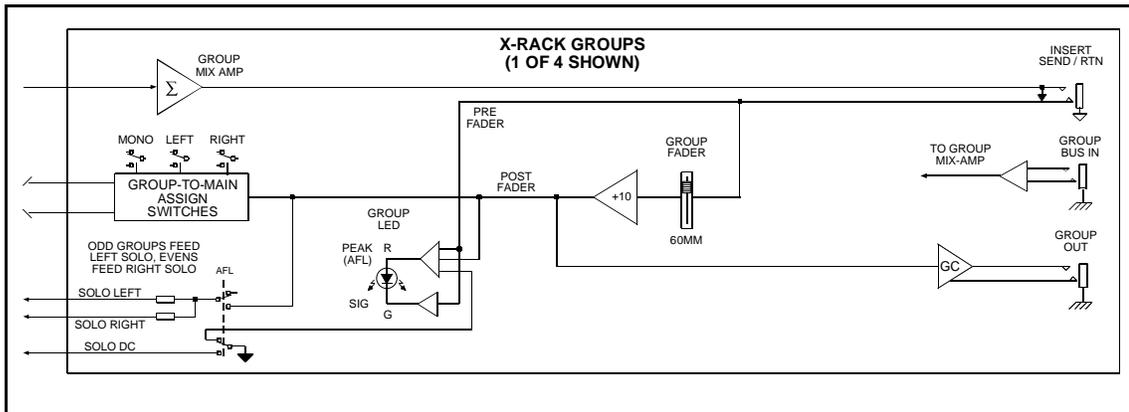ODD GROUPS FEED LEFT SOLO, EVENS FEED RIGHT SOLO

PEAK R (AFL)

SIG   G

AFL

GC

SOLO LEFT

SOLO RIGHT

SOLO DC

Front panel features

GROUP assignment section

The XR-20 offers a flexible group assignment arrangement. Each of the four Groups can be assigned to Left, Right and Mono busses, in any combination.

M - Mono assignments for Groups 1, 2, 3 & 4

Each of the four groups has a Mono assignment button for routing its post-fader signal to the Mono mix bus.

L - Left assignments for Groups 1, 2, 3 & 4

Each of the four groups has a Left assignment button for routing its post-fader signal to the Left mix bus.

R - Right assignments for Groups 1, 2, 3 & 4

Each of the four groups has a Right assignment button for routing its post-fader signal to the Right mix bus.

Group Master Faders 1, 2, 3 & 4

Each Group has a master fader for adjusting its overall level. These signals show up at the Group OUT jacks on the rear panel and can be assigned to the Left, Right and Mono buses. They also feed the Solo system when the Group AFL buttons are down.
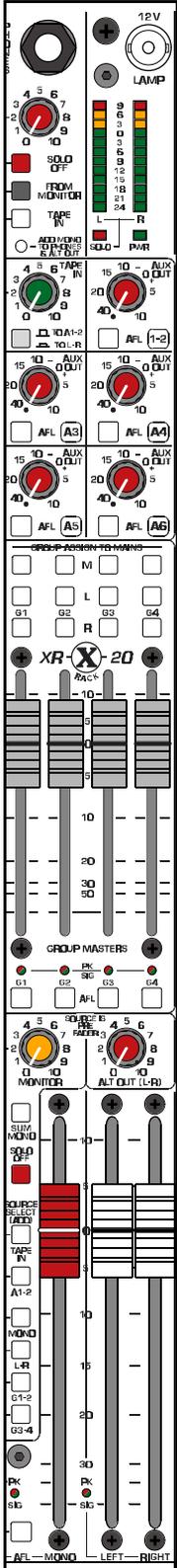
GroupPK / SIG LED indicators

These two-color(green & red) LEDs are used to monitor each of the group's signal levels. Signal present (green) is monitored pre-fader. Peak (red) is monitored at the preamp and both before & after the fader.
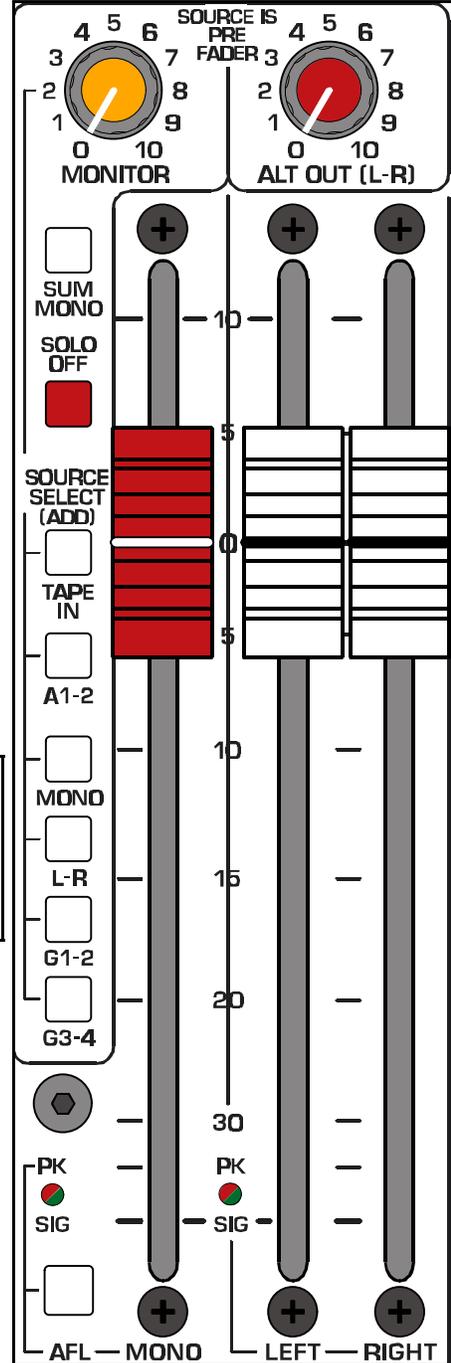
AFL buttons for Groups 1, 2, 3 & 4

Each of the four groups has an AFL button for monitoring through the SOLO system. The signal assigned to the Solo bus is picked up after the fader. The groups show up in stereo in the Solo system - odd - left, even - right. The Peak (red) LEDs are illuminated to show AFL status.

Module

Controls

Block diagram

AUDIO SOURCES FOR MONITOR - ALL PRE-FADER

GRP3-4 GRP1-2 L - R MONO AUX1-2 TAPE IN SOLO OFF

MONITOR SOURCE SELECT
(SELECTED SOURCES ADD TOGETHER)

MONITOR
LEVEL
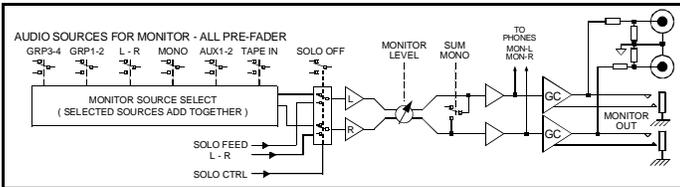
SUM
MONO

TO
PHONES
MON-L
MON-R

GC

GC

MONITOR
OUT

SOLO FEED
L - R

SOLO CTRL

CREST
AUDIO

Front panel features

MONITOR Output section

The XR-20 and XR-24 offer an extensive monitoring system which can be used for several alternate mix and remote listening purposes. The main L/R & M mixes, the Groups, Auxes 1&2, the Tape IN, and the Solo system can all be routed to the Monitor outs. Like the Headphone section, the SOLO system is automatically routed to the Monitors. This can be defeated by pressing the SOLO OFF button.

MONITOR Level control

○ This knob controls the signal level that appears at the Monitor output on the rear panel. This signal can also be assigned to the headphone system by pressing the FROM MONITOR button located below the Headphone level control.

SUM MONO

The MONITOR System operates in stereo, and has Left and Right outputs. You can assign several stereo sources to the Monitor bus, including the Aux 1/2 stereo pair, the Left/Right busses, the TAPE IN, and the Groups, in stereo odd/even pairs.

☐ The MONITOR system operates in stereo. .Any stereo signals that are assigned to the Monitor system remain stereo.

⌐ The MONITOR system operates in mono. Any stereo signals that are assigned to the Monitor system are summed together.

SOLO OFF

Like the Headphone section, the Solo system is automatically routed to the monitors.

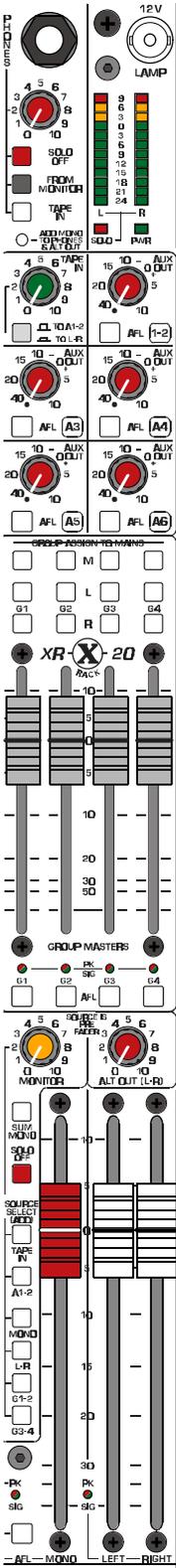☐ .Solo takes overrides anything that is assigned to the monitors.

⌐ The Solo system does not appear in the monitors.
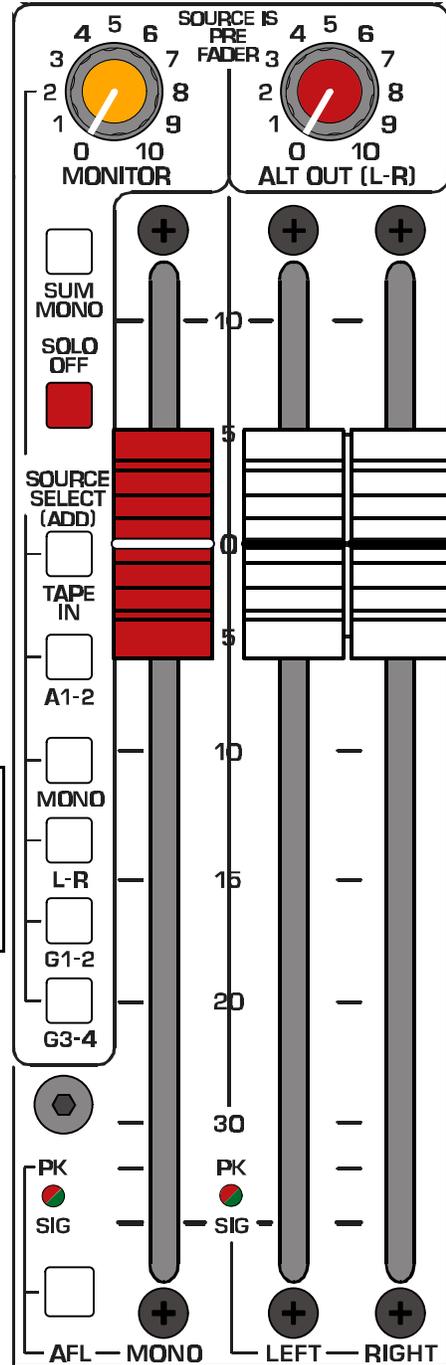
Note

If you are 1) routing the Monitor outs to the Headphone system by pressing the FROM MONITOR button in the Headphone section, and, 2) you don't want the Solo system to show up in the headphones, you must press both SOLO OFF buttons -the one in the Headphone section *and* the one in the Monitor section.

Module

Controls

Block diagram
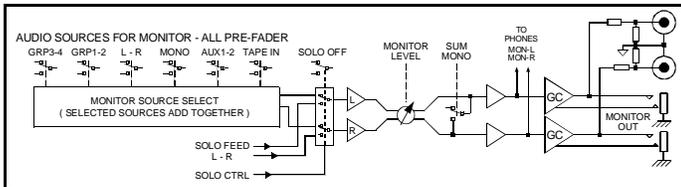
AUDIO SOURCES FOR MONITOR - ALL PRE-FADER

GRP3-4 GRP1-2 L - R MONO AUX1-2 TAPE IN SOLO OFF

MONITOR SOURCE SELECT
(SELECTED SOURCES ADD TOGETHER)

MONITOR LEVEL SUM MONO

TO PHONES
MON-L
MON-R

MONITOR OUT

SOLO FEED
L - R
SOLO CTRL

Front panel features

MONITOR Output section

SOURCE SELECT

The Source select portion of the Monitor system allows you do assign the primary mix buses to the Monitor outputs. All assignments are post insert, pre-fader. All selected sources are added (summed) together.

TAPE IN

⊏ Assigns the TAPE IN L & R signals to the monitors. The TAPE IN jacks are located on the rear panel. 1/4″ TRS jacks and RCA phone plugs are provided for easy hookup.

A1-2 (Aux 1 & 2)

⊏ Assigns Auxes 1 and 2 to the Monitor outputs. Auxes 1 and 2 are configured as one stereo Aux bus (see Mono input channel description). 1 is Left and 2 is Right.

MONO

⊏ Assigns the Mono bus to both the Left and Right Monitor outs.

L-R (Left & Right)

⊏ Assigns the Left and Right buses to the Left and Right Monitor outs.
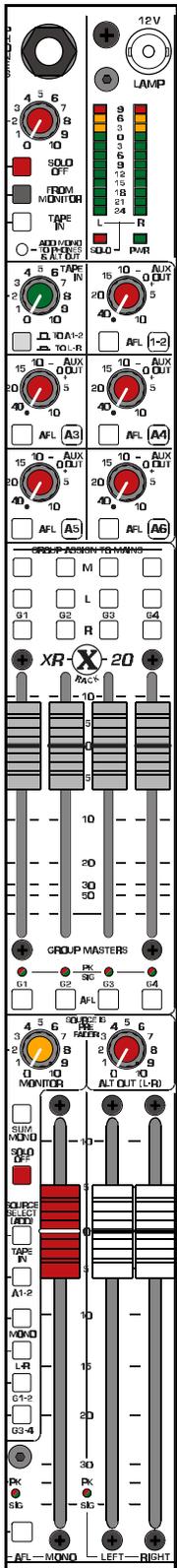
G1-2 (Groups 1 & 2)

⊏ Assigns Groups 1 and 2 to the Monitor outs. 1 is Left and 2 is Right
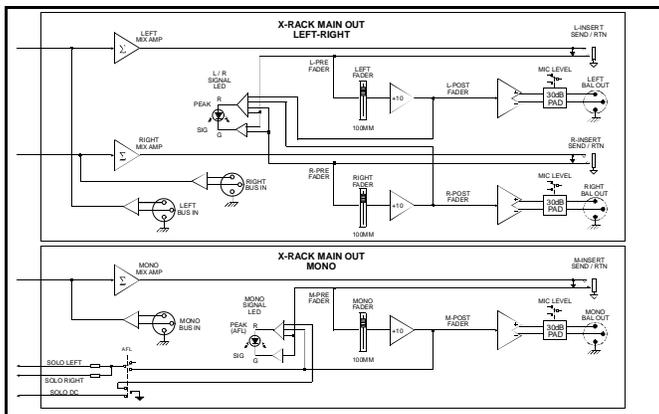
G3-4 (Groups 2 & 4)

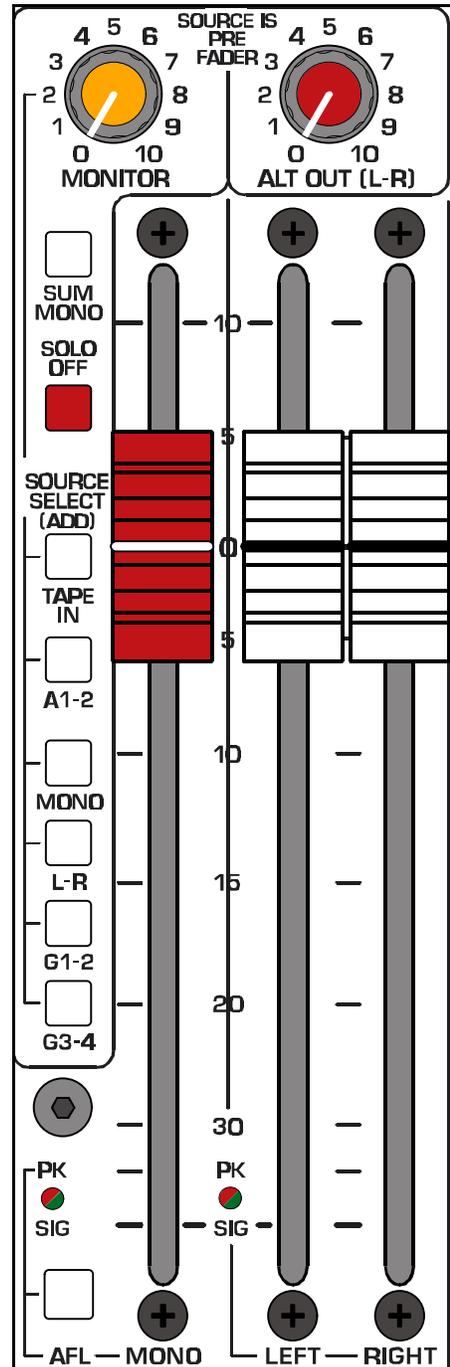⊏ Assigns Groups 3 and 4 to the Monitor outs. 3 is Left and 4 is Right.

Module

Controls

Block diagram

Front panel features

Mono PK/SIG LED

Green/Red - Flashes to indicate the Mono master level. Green during normal operation and red to indicate overload either at the mix amp or at the fader.

Left/Right PK/SIG LED

Green/Red - Flashes to indicate the summed Left/Right master levels. Green during normal operation and red to indicate overload either at the mix amps or at the faders.

MONO AFL

Assigns the post-fader Mono master signal to Solo bus, and illuminates the Peak (red) LED.

MONO, LEFT & RIGHT Master faders (100mm)

These are the master level controls for the main Left, Right and Mono outputs.

ALT OUT (L-R)

Sets the level for the Alternate Left & Right outputs. These outputs are made up of the pre-fader Left/Right mix. If the ADD MONO TO PHONES & ALT OUT button is depressed, the pre-fader MONO mix becomes part of the ALT OUT as well. Jacks are located on the rear panel. 1/4″ TRS and RCA jacks are provided for easy hookup.
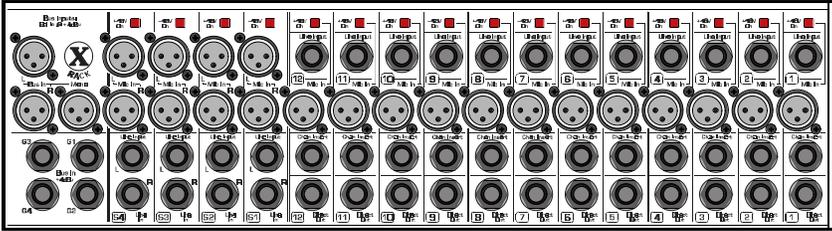
Rear panel

Connectors
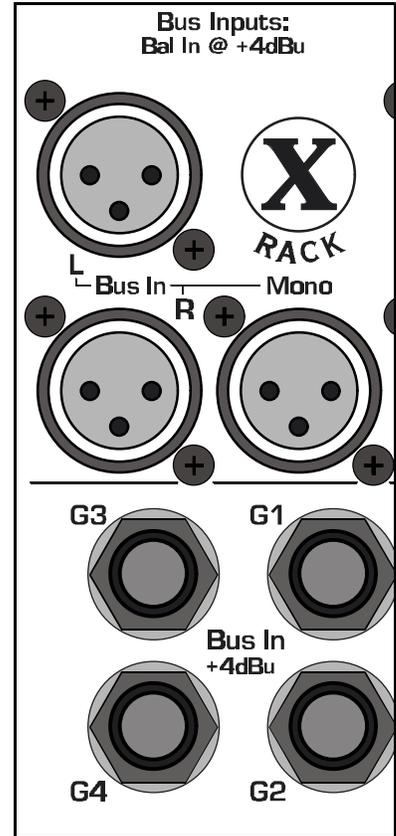
Block diagram

Rear panel features

Left, Right and Mono bus inputs

These three female XLR's are used to bring external signals directly into the Left, Right and Mono mix buses. This is useful for linking multiple mixers together.

Group 1, 2, 3 & 4 bus inputs

These 1/4" TRS jacks are used to bring external signals directly into the first four sub groups. This is useful for linking multiple mixers together.

Rear panel

| Main Out | Main Insert | Monitor Out | Alt Out | Tape (Line) In | Group Out | Group Insert | Aux Out -XLR | Aux Out -TRS | Aux Insert |

Main Outputs:
Bal Line @ +4dBu
or
Bal Mic @ –25dBu

Main Inserts:
Tip = Send
Ring = Return
Sleeve = Ground

Outputs: RCA= Unbal @ –10dBV
TRS= Ground Comp @ +4dBu
Inputs: RCA= Unbal @ –10dBV
TRS= Bal @ +4dBu

Group Inserts @–2dBu:
Tip = Send
Ring = Return
Sleeve = Ground

Pin 2 = Driven
Pin 3 = GC Sense
Pin 1 = Ground

Aux Outputs @+4dBu:
Ground Comp

Tip = Driven
Ring = GC Sense
Sleeve = Ground

Aux Inserts @–2dBu:
Tip = Send
Ring = Return
Sleeve = Ground

Block diagram

CREST AUDIO

Rear panel features

AUX Inserts 1 through 6

The Aux masters have pre-fader inserts for patching in signal processors. This is useful when using Aux outputs for stage monitors. Tip is Send and Ring is Return.

Aux OUT TRS Jacks 1 through 6

The six post-fader Aux master outputs are available at these 1/4″ TRS jacks.

Aux OUT XLR's 1 through 6

The six post-fader Aux master outputs are also available at these male XLR jacks. (pin 2 hot)

Group Inserts 1 through 4

The Groups have pre-fader inserts for patching in signal processors. This is useful when using Group outputs for recording or stage monitors. Tip is Send and Ring is Return.

Tape (line) in

The Left and Right Tape inputs are available as both 1/4″ TRS and RCA.

Alt Out

The Left and Right Alternate outputs are available as both 1/4″ TRS and RCA.

Monitor out

The Left and Right Monitor outputs are available as both 1/4″ TRS and RCA.

Left, Right and Mono Main Inserts

The Left, Right and Mono buses have pre-fader inserts for patching in signal processors. Tip is Send and Ring is Return.

Left, Right and Mono main Outputs

The Left, Right and Mono post-fader signals appear at these male XLR's.

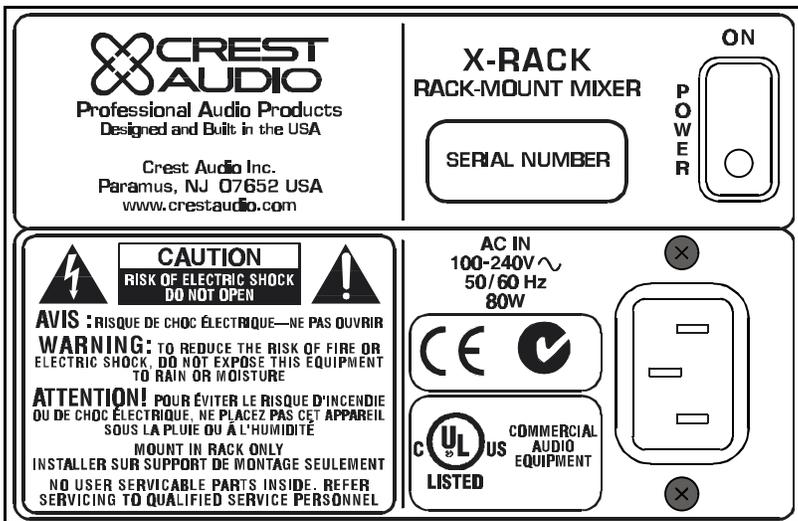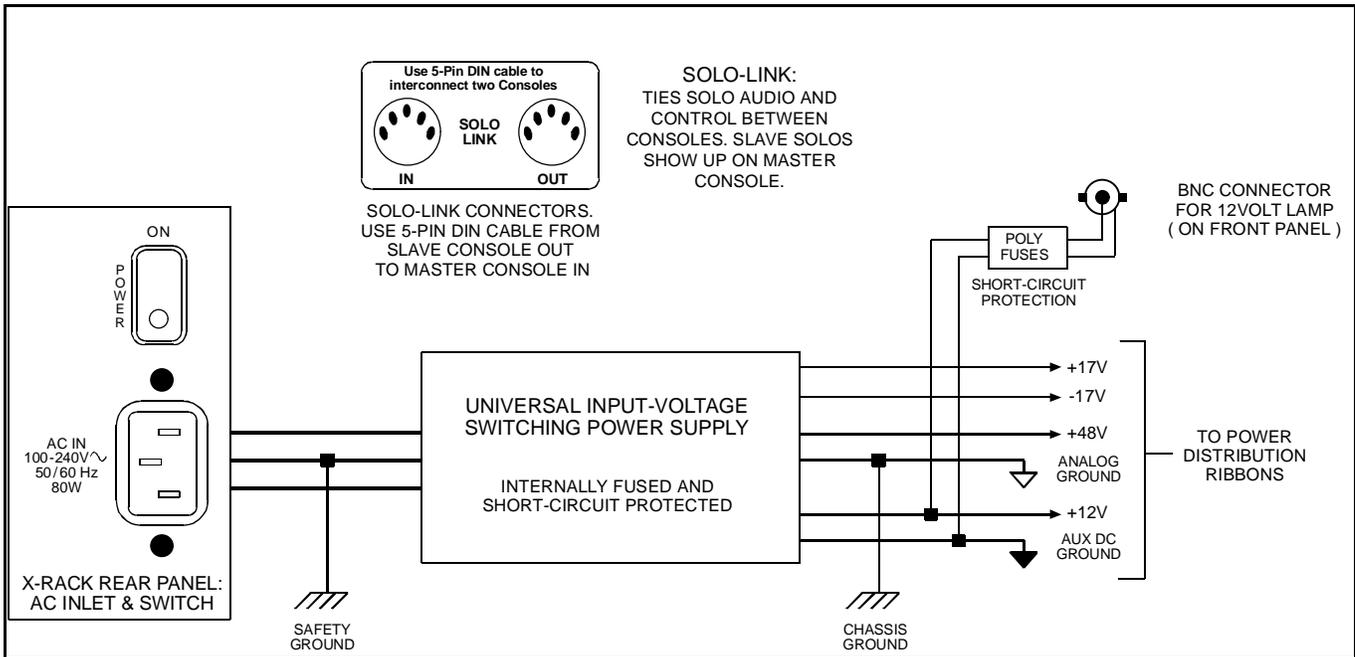### Mic/Line Switches for Left, Right and Mono main outputs
These switch are recessed to prevent the from accidentally being hit

☐   Output levels are presented at line level for feeding the line inputs on a signal processor, another mixer, or a power amplifier.

☐   Output levels are reduced to mic level for feeding the Microphone inputs on a signal processor or another mixer. Outputs are protected against phantom power.

Use 5-Pin DIN cable to interconnect two Consoles

SOLO LINK

IN   OUT

SOLO-LINK CONNECTORS. USE 5-PIN DIN CABLE FROM SLAVE CONSOLE OUT TO MASTER CONSOLE IN

SOLO-LINK: TIES SOLO AUDIO AND CONTROL BETWEEN CONSOLES. SLAVE SOLOS SHOW UP ON MASTER CONSOLE.

BNC CONNECTOR FOR 12VOLT LAMP (ON FRONT PANEL)

POLY FUSES

SHORT-CIRCUIT PROTECTION

ON

POWER

AC IN 100-240V ~ 50/60 Hz 80W

X-RACK REAR PANEL: AC INLET & SWITCH

UNIVERSAL INPUT-VOLTAGE SWITCHING POWER SUPPLY

INTERNALLY FUSED AND SHORT-CIRCUIT PROTECTED

+17V

-17V

+48V

ANALOG GROUND

+12V

AUX DC GROUND

TO POWER DISTRIBUTION RIBBONS

SAFETY GROUND

CHASSIS GROUND

CREST AUDIO

Professional Audio Products
Designed and Built in the USA

Crest Audio Inc.
Paramus, NJ 07652 USA
www.crestaudio.com

X-RACK
RACK-MOUNT MIXER

SERIAL NUMBER

ON

POWER

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

AVIS : RISQUE DE CHOC ÉLECTRIQUE—NE PAS OUVRIR
WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE
ATTENTION! POUR ÉVITER LE RISQUE D'INCENDIE OU DE CHOC ÉLECTRIQUE, NE PLACEZ PAS CET APPAREIL SOUS LA PLUIE OU À L'HUMIDITÉ
MOUNT IN RACK ONLY
INSTALLER SUR SUPPORT DE MONTAGE SEULEMENT
NO USER SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

AC IN
100-240V ~
50/60 Hz
80W

CE

COMMERCIAL AUDIO EQUIPMENT

c UL us LISTED

Rear panel features

Solo Link

When using multiple X-Rack mixers together, the solo systems can be linked.

A 5-pin DIN cable is used to link the Solo Audio and control signals.

AC Input

The XR-20 and XR-24 use an internal switching power supply which is capable of accepting a wide range of line voltages. This industry-standard IEC connector will mate up with any of the common IEC line cords. The in-coming voltage can be anywhere between 100 and 240 volts, +/- 10%. The AC frequency can be 50 Hz or 60 Hz.

Specifications

Frequency response	+0/-1dB 20Hz-20kHz ref 1kHz
	(any input to any output)
THD	any output <0.01% THD 20Hz-20kHz@ +15dBu out
Noise	mic ein: better than –128dBu 20Hz to 20kHz 150 ohm source, 60dB gain
	Bus Noise: better than -85dBu
Crosstalk	channel mute >90dB, channel routing >80dB
	channel fader attenuation >90dB
	aux send attenuation >85dB
Phase Shift	< +/- 30 degrees, 20Hz to 20kHz – mic-in to main out
Mic-in	XLR 4k ohm balanced
	max voltage gain to main outs = 100dB
Line-in XLR and TRS	>10k Ohms balanced
RCA tape input	>10k Ohms unbalanced
Bus inputs	>10k Ohms balanced
L/R/M outputs	XLR 100 ohms balanced
	(switchable between line or mic level)
Group/direct out	TRS 50 ohms ground compensated
Aux outputs	XLR & TRS 50 ohms gnd compensated
Headphones	Stereo, Intended to drive > eight-ohms
Dimensions	17.5" in height (10u) x 19" in width x 4.5" in depth behind panel
Internal Power Supply	100 -240 VAC, 50/60 Hz
Warranty	Five Years