MDR**1688**
MDR**1248**

Maximum Dynamic Range
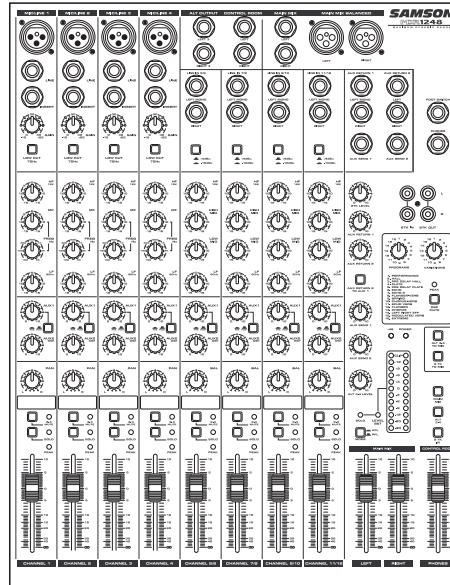
TWELVE AND SIXTEEN CHANNEL MIXER
WITH 24-bit DSP EFFECTS

Owners Manual

SAMSON®
A U D I O

Safety Instructions/Consignes de sécurité/Sicherheitsvorkehrungen

WARNING
DO NOT EXPOSE THIS EQUIPMENT
TO RAIN OR MOISTURE
AVIS
RISQUE DE CHOC ELECTRONIQUE
NE PAS OUVRIR

CAUTION
FOR CONTINUED PROTECTION AGAINST RISK
OF FIRE, REPLACE ONLY WITH SAME TYPE FUSE
ATTENTION
UTILISER UN FUSIBLE DE
RECHANGE DE MÊME TYPE

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING: To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture. To reduce the hazard of electrical shock, do not remove cover or back. No user serviceable parts inside. Please refer all servicing to qualified personnel.The lightning flash with an arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Important Safety Instructions
1. Please read all instructions before operating the unit.
2. Keep these instructions for future reference.
3. Please heed all safety warnings.
4. Follow manufacturers instructions.
5. Do not use this unit near water or moisture.
6. Clean only with a damp cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers 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 prong. The wide blade or third prong is provided for your safety. When the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on and pinched particularly at plugs, convenience receptacles and at the point at which they exit from the unit.
11. Unplug this unit during lightning storms or when unused for long periods of time.
12. Refer all servicing to qualified personnel. Servicing is required when the unit has been damaged in any way, such as power supply cord or plug damage, or if liquid has been spilled or objects have fallen into the unit, the unit has been exposed to rain or moisture, does not operate normally, or has been dropped.

ATTENTION: Pour éviter tout risque d'électrocution ou d'incendie, ne pas exposer cet appareil à la pluie ou à l'humidité. Pour éviter tout risque d'électrocution, ne pas ôter le couvercle ou le dos du boîtier. Cet appareil ne contient aucune pièce remplaçable par l'utilisateur. Confiez toutes les réparations à un personnel qualifié. Le signe avec un éclair dans un triangle prévient l'utilisateur de la présence d'une tension dangereuse et non isolée dans l'appareil. Cette tension constitue un risque d'électrocution. Le signe avec un point d'exclamation dans un triangle prévient l'utilisateur d'instructions importantes relatives à l'utilisation et à la maintenance du produit.

Consignes de sécurité importantes
1. Veuillez lire toutes les instructions avant d'utiliser l'appareil.
2. Conserver ces instructions pour toute lecture ultérieure.
3. Lisez avec attention toutes les consignes de sécurité.
4. Suivez les instructions du fabricant.
5. Ne pas utiliser cet appareil près d'une source liquide ou dans un lieu humide.
6. Nettoyez l'appareil uniquement avec un tissu humide.
7. Veillez à ne pas obstruer les fentes prévues pour la ventilation de l'appareil. Installez l'appareil selon les instructions du fabricant.
8. Ne pas installer près d'une source de chaleur (radiateurs, etc.) ou de tout équipement susceptible de générer de la chaleur (amplificateurs de puissance par exemple).
9. Ne pas retirer la terre du cordon secteur ou de la prise murale. Les fiches canadiennes avec polarisation (avec une lame plus large) ne doivent pas être modifiées. Si votre prise murale ne correspond pas au modèle fourni, consultez votre électricien.
10. Protégez le cordon secteur contre tous les dommages possibles (pincement, tension, torsion,, etc.). Veillez à ce que le cordon secteur soit libre, en particulier à sa sortie du boîtier.
11. Déconnectez l'appareil du secteur en présence d'orage ou lors de périodes d'inutilisation prolongées.
12. Consultez un service de réparation qualifié pour tout dysfonctionnement (dommage sur le cordon secteur, baisse de performances, exposition à la pluie, projection liqui-de dans l'appareil, introduction d'un objet dans le boîtier, etc.).

Stromschlags zu verringern, sollten Sie weder Deckel noch Rückwand des Geräts entfernen. Im Innern befinden sich keine Teile, die vom Anwender gewartet werden kön-nen. Überlassen Sie die Wartung qualifiziertem Fachpersonal.Der Blitz mit Pfeilspitze im gleichseitigen Dreieck soll den Anwender vor nichtisolierter "gefährlicher Spannung" im Geräteinnern warnen. Diese Spannung kann so hoch sein, dass die Gefahr eines Stromschlags besteht. Das Ausrufezeichen im gleichseitigen Dreieck soll den Anwender auf wichtige Bedienungs- und Wartungsanleitungen aufmerksam machen, die im mitgelieferten Informationsmaterial näher beschrieben werden.

Wichtige Sicherheitsvorkehrungen
1. Lesen Sie alle Anleitungen, bevor Sie das Gerät in Betrieb nehmen.
2. Bewahren Sie diese Anleitungen für den späteren Gebrauch gut auf.
3. Bitte treffen Sie alle beschriebenen Sicherheitsvorkehrungen.
4. Befolgen Sie die Anleitungen des Herstellers.
5. Benutzen Sie das Gerät nicht in der Nähe von Wasser oder Feuchtigkeit.
6. Verwenden Sie zur Reinigung des Geräts nur ein feuchtes Tuch.
7. Blockieren Sie keine Belüftungsöffnungen. Nehmen Sie den Einbau des Geräts nur entsprechend den Anweisungen des Herstellers vor.
8. Bauen Sie das Gerät nicht in der Nähe von Wärmequellen wie Heizkörpern, Wärmeklappen, Öfen oder anderen Geräten (inklusive Verstärkern) ein, die Hitze erzeugen.
9. Setzen Sie die Sicherheitsfunktion des polarisierten oder geerdeten Steckers nicht außer Kraft. Ein polarisierter Stecker hat zwei flache, unterschiedlich breite Pole. Ein geerdeter Stecker hat zwei flache Pole und einen dritten Erdungsstift. Der breitere Pol oder der dritte Stift dient Ihrer Sicherheit. Wenn der vorhandene Stecker nicht in Ihre Steckdose passt, lassen Sie die veraltete Steckdose von einem Elektriker ersetzen.
10. Schützen Sie das Netzkabel dahingehend, dass niemand darüber laufen und es nicht geknickt werden kann. Achten Sie hierbei besonders auf Netzstecker, Mehrfachsteckdosen und den Kabelanschluss am Gerät.
11. Ziehen Sie den Netzstecker des Geräts bei Gewittern oder längeren Betriebspausen aus der Steckdose.
12. Überlassen Sie die Wartung qualifiziertem Fachpersonal. Eine Wartung ist notwendig, wenn das Gerät auf irgendeine Weise, beispielsweise am Kabel oder Netzstecker beschädigt wurde, oder wenn Flüssigkeiten oder Objekte in das Gerät gelangt sind, es Regen oder Feuchtigkeit ausgesetzt war, nicht mehr wie gewohnt betrieben wer-den kann oder fallen gelassen wurde.

PRECAUCION: Para reducir el riesgo de incendios o descargas, no permita que este aparato quede expuesto a la lluvia o la humedad. Para reducir el riesgo de descarga eléctrica, nunca quite la tapa ni el chasis. Dentro del aparato no hay piezas susceptibles de ser reparadas por el usuario. Dirija cualquier reparación al servicio técnico oficial. El símbolo del relámpago dentro del triángulo equilátero pretende advertir al usuario de la presencia de "voltajes peligrosos" no aislados dentro de la carcasa del producto, que pueden ser de la magnitud suficiente como para constituir un riesgo de descarga eléctrica a las personas. El símbolo de exclamación dentro del triángulo equilátero quiere advertirle de la existencia de importantes instrucciones de manejo y mantenimiento (reparaciones) en los documentos que se adjuntan con este aparato.

Instrucciones importantes de seguridad

1. Lea todo este manual de instrucciones antes de comenzar a usar la unidad.
2. Conserve estas instrucciones para cualquier consulta en el futuro.
3. Cumpla con todo lo indicado en las precauciones de seguridad.
4. Observe y siga todas las instrucciones del fabricante.
5. Nunca utilice este aparato cerca del agua o en lugares húmedos.
6. Limpie este aparato solo con un trapo suave y ligeramente humedecido.
7. No bloquee ninguna de las aberturas de ventilación. Instale este aparato de acuerdo a las instrucciones del fabricante.
8. No instale este aparato cerca de fuentes de calor como radiadores, calentadores, hornos u otros aparatos (incluyendo amplificadores) que produzcan calor.
9. No anule el sistema de seguridad del enchufe de tipo polarizado o con toma de tierra. Un enchufe polarizado tiene dos bornes, uno más ancho que el otro. Uno con toma de tierra tiene dos bornes normales y un tercero para la conexión a tierra. El borne ancho o el tercero se incluyen como medida de seguridad. Cuando el enchufe no encaje en su salida de corriente, llame a un electricista para que le cambie su salida anticuada.
10. Evite que el cable de corriente quede en una posición en la que pueda ser pisado o aplastado, especialmente en los enchufes, receptáculos y en el punto en el que salen de la unidad.
11. Desconecte de la corriente este aparato durante las tormentas eléctricas o cuando no lo vaya a usar durante un periodo de tiempo largo.
12. Dirija cualquier posible reparación solo al servicio técnico oficial. Deberá hacer que su aparato sea reparado cuando esté dañado de alguna forma, como si el cable de corriente o el enchufe están dañados, o si se han derramado líquidos o se ha introducido algún objeto dentro de la unidad, si esta ha quedado expuesta a la lluvia o la humedad, si no funciona normalmente o si ha caído al suelo.

ATTENZIONE: per ridurre il rischio di incendio o di scariche elettriche, non esponete questo apparecchio a pioggia o umidità. Per ridurre il pericolo di scariche elettriche evitate di rimuoverne il coperchio o il pannello posteriore. Non esistono all'interno dell'apparecchio parti la cui regolazione è a cura dell'utente. Per eventuale assistenza, fate riferimento esclusivamente a personale qualificato. Il fulmine con la punta a freccia all'interno di un triangolo equilatero avvisa l'utente della presenza di "tensioni pericolose" non isolate all'interno dell'apparecchio, tali da costituire un possibile rischio di scariche elettriche dannose per le persone. Il punto esclamativo all'interno di un triangolo equilatero avvisa l'utente della presenza di importanti istruzioni di manutenzione (assistenza) nella documentazione che accompagna il prodotto.

Importanti Istruzioni di Sicurezza

1. Prima di usare l'apparecchio, vi preghiamo di leggerne per intero le istruzioni.
2. Conservate tali istruzioni per una eventuale consultazione futura.
3. Vi preghiamo di rispettare tutte le istruzioni di sicurezza.
4. Seguite tutte le istruzioni del costruttore.
5. Non usate questo apparecchio vicino ad acqua o umidità.
6. Pulite l'apparecchio esclusivamente con un panno asciutto.
7. Evitate di ostruire una qualsiasi delle aperture di ventilazione. Posizionatelo seguendo le istruzioni del costruttore.
8. Non posizionatelo vicino a sorgenti di calore come radiatori, scambiatori di calore, forni o altri apparecchi (amplificatori compresi) in grado di generare calore.
9. Non disattivate la protezione di sicurezza costituita dalla spina polarizzata o dotata di collegamento a terra. Una spina polarizzata è dotata di due spinotti, uno più piccolo ed uno più grande. Una spina dotata di collegamento a terra è dotata di due spinotti più un terzo spinotto di collegamento a terra. Questo terzo spinotto, eventualmente anche più grande, viene fornito per la vostra sicurezza. Se la spina fornita in dotazione non si adatta alla vostra presa, consultate un elettricista per la sostituzione della presa obsoleta.
10. Proteggete il cavo di alimentazione in modo che non sia possibile camminarci sopra né piegarlo, con particolare attenzione alle prese, ai punti di collegamento e al punto in cui esce dall'apparecchio.
11. Staccate l'apparecchio dalla alimentazione in caso di temporali o tempeste o se non lo usate per un lungo periodo.
12. Per l'assistenza, fate riferimento esclusivamente a personale qualificato. È necessaria l'assistenza se l'apparecchio ha subito un qualsiasi tipo di danno, come danni al cavo o alla spina di alimentazione, nel caso in cui sia stato versato del liquido o siano caduti oggetti al suo interno, sia stato esposto a pioggia o umidità, non funzioni correttamente o sia stato fatto cadere.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES CLASS B. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MUST NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION. SUITABLE FOR HOME OR OFFICE USE.

Table of Contents

Introduction

Congratulations on your purchase of the Samson MDR1248 or MDR1688 mixer! The MDR1248 and MDR1688 are great sounding mixers with a lot of inputs, flexible routing and stunning on-board digital effects. Connecting all your microphones and instruments is simple, with four mic/line inputs plus FOUR additional stereo channels on the MDR1248, and eight mic/line inputs plus four additional stereo channels on the MDR1688. There are also dedicated stereo effects returns for the onboard digital effects. And the effects! You can add one of the MDR's 256 dazzling digital studio quality effects, which include Delays, Chorus, Flanging, and lush Reverbs to your vocals or instruments, using the onboard 24-bit Multi-Effects Processor.

The Mic/line inputs feature a 3-band equalizer with sweepable midrange control and there is a four band fixed equalizer on each of the stereo input channels. Each of the stereo and mono input channels have two Aux sends, plus you can switch one from Pre to Post. The MDR1248 and MDR1688's master section includes two stereo Aux returns and a 2-track Input and Output for playing back stereo devices and for recording your mix. Clean, clear sound reproduction with sweet equalization and signal flexible routing in a rugged enclosure, ensure reliable high quality sound from performance to performance. Optimized for recording, live sound reinforcement and commercial installations, the MDR1248 and MDR1688 are ideal mixer solutions, offering big sound in a compact package.

In these pages, you'll find a detailed description of the features of the MDR1248 and MDR1688 mixers, as well as a description of their front and rear panels, step-by-step instructions for their setup and use, and full specifications. You'll also find a warranty card enclosed—please don't forget to fill it out and mail it in so that you can receive online technical support and so we can send you updated information about these and other Samson products in the future.

With proper care and adequate air circulation, your MDR1248 or MDR1688 will operate trouble free for many years. We recommend you record your serial number in the space provided below for future reference.

Serial number: _____

Date of purchase: _____

Should your unit ever require servicing, a Return Authorization number (RA) must be obtained before shipping your unit to Samson. Without this number, the unit will not be accepted. Please call Samson at 1-800-3SAMSON (1-800-372-6766) for a Return Authorization number prior to shipping your unit. Please retain the original packing materials and if possible, return the unit in the original carton and packing materials.

If you purchased your Samson product outside the United States, please contact your local distributor for warranty information and service.

Also, be sure to check out our website (www.samson-tech.com) for complete information about our full product line.

MDR1248 and MDR1688 Features
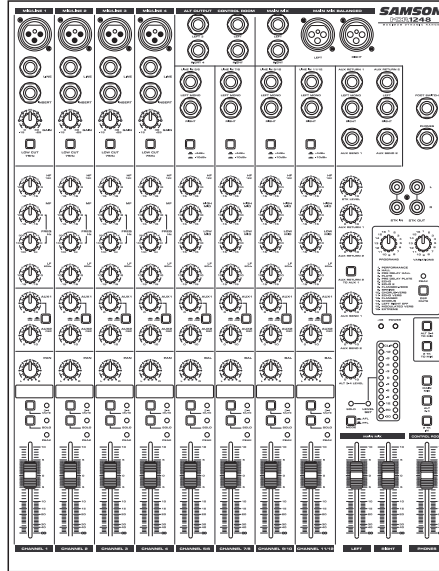
The Samson MDR1248 and MDR1688, twelve and sixteen channel mixers are a comprehensive, all-in-one solution for live sound, recording, fixed installation and post production applications. Here are some of its main features:

- The mixers offer plenty of inputs with four Mic/Line plus four Stereo inputs for the MDR1248 and eight Mic/Line plus four Stereo inputs for the MDR1688.

- Flexible design topology ideal for live sound, recording and post production.

- The MDR1248 and MDR1688 has a built-in, 24-bit DSP (Digital Signal Processor) Multi-effects Processor with 256 selectable presets offering dazzling studio quality effects including Reverb, Delay, Chorus and Flanging.

- 2 Track Input and Output allows you to connect a CD, DAT, Cassette, Mini Disk or Computer Sound Card.

- Three-band channel equalizer with sweepable mids on the mono input channels, along with four band fixed equalizer on the stereo channels, provide precise and musical results in contouring the tone of any signal.

- Two Auxiliary Sends for built-in or external effects, on-stage monitor mix, or headphone mixing. For added flexibility, AUX 1 can be configured as a Pre or Post fader send.

- High quality, low noise, discrete microphone pre-amplifiers with 48-Volt phantom power, provide Maximum Dynamic Range and transparent audio.

- Twelve segment LED Meter with VU ballistics displays the main MIX output.

- High quality 60mm faders on the mono and stereo inputs, plus the Main and Control Room/Headphone outputs.

- Advanced circuit design using discrete components and high quality, low noise op-amps carefully selected at each stage of the signal path.

- Quality build and rugged construction ensure reliable performance from venue to venue and session to session.

- Standard 19-inch rackmount kit included.

- Three-year extended warranty.

Front Panel Layout
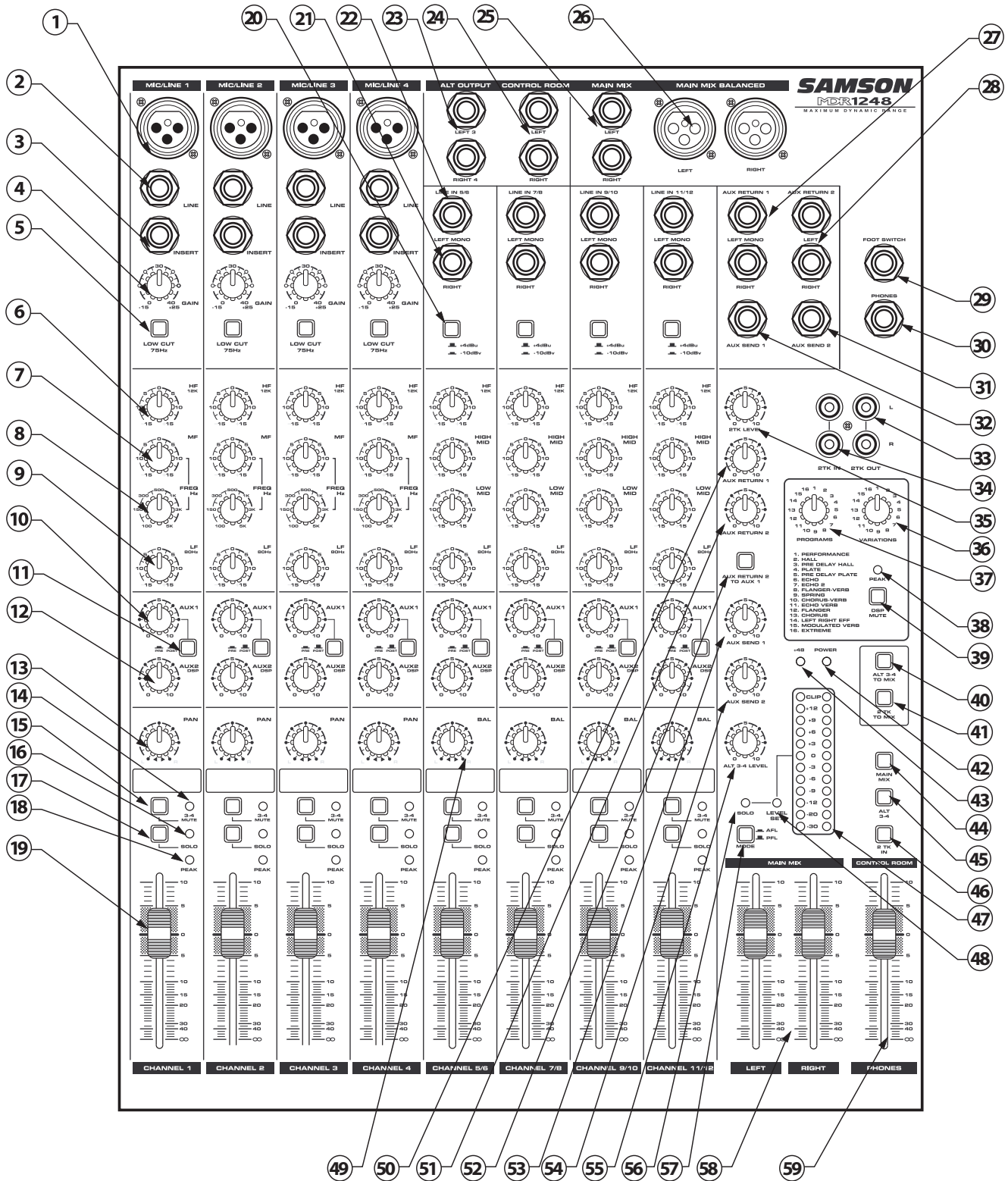
FRONT PANEL

1 MIC IN – Input connector for Low-Noise Microphone pre-amp.

2 LINE IN–Input connector for Line level inputs.

3 INSERT – 1/4-inch TRS (TIP/RING/SLEEVE) connector providing send and receive channel patch point for outboard effects.

4 GAIN – Used to set the input level of the mic pre and line input.

5 LOW CUT – Bass roll off switch at 75Hz used to eliminate unwanted low end rumble and hum.

6 HIGH FREQUENCY – Controls the high band of the Channel Equalizer, +/- 15 dB at 12KHz.

7 MID CUT/BOOST – This control knob provides +/- 15 dB of boost or cut at the frequency set on the MID SWEEP control on the mono input channels.

8 MID SWEEP – Control knob used to set the center frequency of the mid band of the Channel Equalizer.

9 LOW FREQUENCY – Controls the low band of the Channel Equalizer, +/- 15 dB at 80Hz.

10 AUX 1 – Auxiliary send that can be used with an external effects processor, or to create a cue or monitor mix.

11 PRE / POST switch – Used to configure Aux 1 signal routing from a Pre fader to a post fader send.

12 AUX 2/DSP – Post-fader auxiliary send that can be used with an external effects processor, or to create a cue or monitor mix, or to send a signal to the internal DSP.

13 PAN – Controls the channel's position between left and right in the stereo bus.

14 3/4 MUTE LED – When illuminated, the display indicates that the input channel is assigned to the ALT3/4 bus and is muted in the Left /Right Main Mix bus.

15 3/4 / MUTE switch – When engaged, the input channel is assigned to the ALT3/4 bus and is muted in the Left / Right MAIN MIX bus.

16 SOLO LED – When illuminated, the display indicates that the input channel is assigned to the SOLO bus.

17 SOLO switch – When engaged, the input channel is assigned to the SOLO bus.

18 PEAK – Red LED will illuminate indicating when the GAIN has been adjusted too high.

19 LEVEL – Audio taper fader provides smooth control of level changes.

20 +4 / -10 switch – Used to set the line input sensitivity from –10dB when the switch is pressed in to +4dB when this switch is out.

21 RIGHT LINE – 1/4-inch phone input connector for the right line input for the stereo channels.

22 LEFT/MONO LINE - 1/4-inch phone input connector for the Left Line input for the stereo channels or a mono input.

23 ALT 3/4 OUTPUTS jacks – Balanced, 1/4-inch phone connectors carrying the signal from the ALT 3/4 bus.

24 CONTROL ROOM OUTPUT– Left and Right Control Room output connectors for connecting a monitor system.

25 MAIN MIX OUTPUT (1/4-inch) – Left and Right Main Mix balanced output 1/4-inch TRS connectors.

26 MAIN MIX OUTPUT (XLR) – Left and Right Main Mix balanced output XLR connectors.

27 AUX RETURN 1 – Left and right input jacks for connecting to the outputs of external line level sources like those from effects processors.

28 AUX RETURN 2 – Left and right input jacks for connecting to the outputs of external line level sources like those from effects processors.

29 FOOTSWITCH JACK – 1/4-inch phone jack for connecting a standard footswitch used to turn the internal DSP effects on and off.

30 PHONES JACK – Connect stereo headphones here.

31 AUX SEND 2 – Line level output from the Auxiliary 2 bus.

32 AUX SEND 1 – Line level output from the Auxiliary 1 bus.

33 2 TRACK OUTPUTS – Connect to the input of a DAT, Cassette, Mini Disk or Hard Disk Recording system.

34 2 TRACK INPUTS – Connect the output from a DAT, Cassette, Mini Disk or Hard Disk Recording system.

35 2 TRK LEVEL – Control knob used to set the level of the source connected to the 2-track input.

36 VARIATIONS – Control knob used to select one of the sixteen variations for each of the sixteen DSP effect programs.

37 PROGRAMS – Control knob used to select one of the sixteen DSP effect programs.

38 DSP PEAK – LED indicator illuminates when the input signal to the internal DSP is reaching an overload level.

39 DSP MUTE switch – Used to turn the internal DSP effects on and off.

40 ALT 3/4 TO MIX – Routes the ALT 3/4 to the Left / Right MAIN MIX outputs. Use the ALT3/4 Level (55) to set the volume.

41 2 TRK TO MIX - Routes the Left / Right 2 track inputs to the Left / Right MAIN MIX outputs. Use the 2 TRK

Front and Rear Panel Layout

FRONT PANEL CONTROLS - continued

LEVEL control (35) to set the volume.

42 POWER LED – Indicates the MDR1248 or MDR1688 is powered up.

43 PHANTOM LED – Indicates that the 48 Volt Phantom Power is on.

44 MAIN MIX – Routes the Left / Right MAIN MIX bus to the CONTROL ROOM / PHONES outputs. Use the Left / Right MAIN MIX Level faders (58) and PHONES level fader (59) to set the volume.

45 ALT 3/4 – Routes the ALT 3/4 bus to the CONTROL ROOM / PHONES outputs. Use the ALT3/4 Level (55) and PHONES level fader (59) to set the volume.

46 2 TRK IN – Routes the Left / Right 2 track input to the CONTROL ROOM / PHONES outputs. Use the 2 TRK LEVEL control (35) and PHONES level fader (59) to set the volume.

47 OUTPUT METER - Twelve segment LED display with VU ballistics indicates main Mix level.

48 LEVEL SET LED – When an input channel is in SOLO, this indicator will illuminate to show that the channel's input gain level is displayed on the Main Level Meter.

49 BALANCE – Controls the channel's position between left and right of the stereo inputs.

50 AUX RETURN 1 – Used to mix in the level of AUX Return 1.

51 AUX RETURN 2 – Used to mix in the level of AUX Return 2.

52 AUX RETURN 2 TO AUX 1 - Switch used to route AUX RETURN 2 into the AUX 1 output so that effects can be heard in the monitor mix.

53 AUX SEND 1 – Control knob used to set the master level of the AUX1 SEND.

54 AUX SEND 2 – Control knob used to set the master level of the AUX2 SEND.

55 ALT 3/4 LEVEL – Control knob used to set the level of the ALT 3/4 bus.

56 SOLO LED – Indicates that one or more channels are assigned to the SOLO bus.

57 SOLO MODE – Selects the SOLO mode from AFL (After Fader Level) when the switch is pressed in, and PFL (Pre Fader Level) when the switch is pressed out.

58 MAIN LEVEL faders – Used to control the overall volume of the Left and Right main Mix output

59 CONTROL ROOM / PHONES fader – Adjusts the volume of the control room speakers and/or headphones.
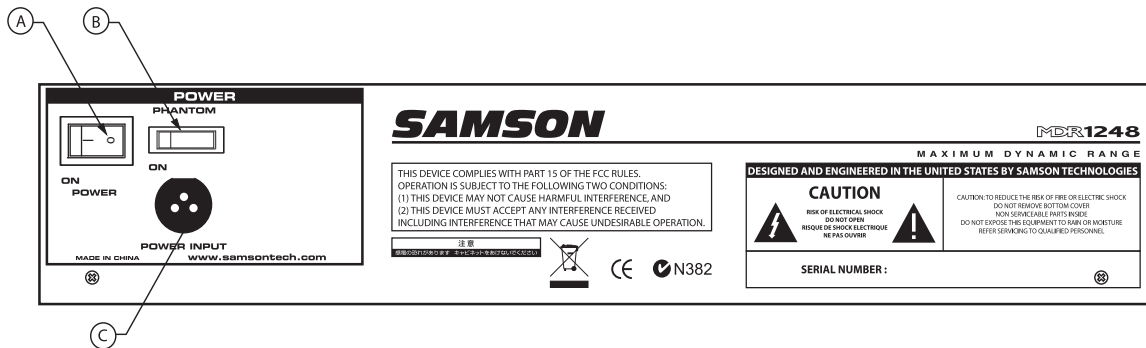
REAR PANEL

A POWER – Switches on the MDR1248 and MDR1688's main power.

B PHANTOM – Engages the 48-Volt Phantom power supply to microphone pre-amps.

C AC ADAPTOR INLET – Connect External AC power supply here.

MONO INPUT CHANNEL SECTION

The following section details each part of the MDR1248 and MDR1688's MONO INPUT CHANNELS including the GAIN control, LOW CUT switch, 3-BAND EQ, AUX sends, PEAK LED, PAN, SOLO, ALT 3/4 bus and LEVEL controls. The input channels one through four on the MDR1248 and on through eight on the MDR1688 feature high quality, discrete transistor pre-amps providing transparency and extended dynamic range.

1 - GAIN - control knob

The MDR1248 and MDR1688's pre-amp stage has a variable GAIN control with a range of 0 to 40dB on the MIC input and –15 to +25dB on the LINE input.

2 - LOW CUT FILTER - switch

Each of the MDR1248 and MDR1688's mono input channels include a LOW CUT (or high pass) filter which rolls off the low frequencies from 75Hz and below at the rate of 18dB per octave. The LOW CUT filter allows you to remove the lower frequencies that you sometime just don't want to pick up. For example, when you are miking a high-hat you only want to capture the frequencies that the hi-hat is producing. Therefore, by using the LOW CUT filter, you can reduce the amount of pick-up from the low toms and bass drum that may leak into the hi-hat mic. You can use the same technique on other instruments like acoustic guitar, violin, piano and even on vocals. In live sound applications, the LOW CUT filter is especially useful for removing stage rumble.

3 - Channel Equalizer

The MDR1248 and MDR1688 mic/line input channels incorporate a 3-band equalizer, with sweepable Mid-range, allowing you to adjust the high, mid-range, and low frequencies independently on each channel. The frequency centers, range of boost or cut, and equalizer type for each band are described in the following section.

HF (HIGH FREQUENCY) 12kHz +/- 15dB Shelving type

The channel's HIGH frequency response is flat when the knob is in the "12:00" position. Rotating the knob towards the right will boost the channel's high frequency response at 12 kHz by 15dB, and rotating it towards the left will cut the high frequency by 15dB.

**MF (MID FREQUENCY) CUT & BOOST**

The MID CUT & BOOST knob is used in conjunction with the MID FREQUENCY knob to create the tonal shape in the mid-range frequency when using the mono channel's equalizers. You can adjust the frequency on the mid-range control with the FREQ knob, and use the MF CUT & BOOST to either boost or cut that frequency by plus or minus 15dB. The channel's MID frequency response is flat when the MF knob is in the "12:00" position.

FREQ (MID FREQUENCY) Variable 100Hz – 5K

The MID FREQUENCY is a control enabling you enhanced capabilities in the tonal shaping of the input channel signal. Thanks to the MID FREQUENCY control, you have a variable mid-range equalizer, allowing you to pin point the exact frequency you want to boost or cut. The MID SWEEP has a "fixed Q" of two octaves (the amount, or width, of frequencies around the center point that are effected by the MID CUT & BOOST control) and can be set in a range from 100Hz to 5Khz.

LF (LOW FREQUENCY) 80Hz +/- 15dB shelving type

The channel's LOW frequency response is flat when the knob is in the "12:00" position. Rotating the knob towards the right will boost the channel's low frequency response at 80 Hertz by 15dB, and rotating it towards the left will cut the frequency by 15dB.
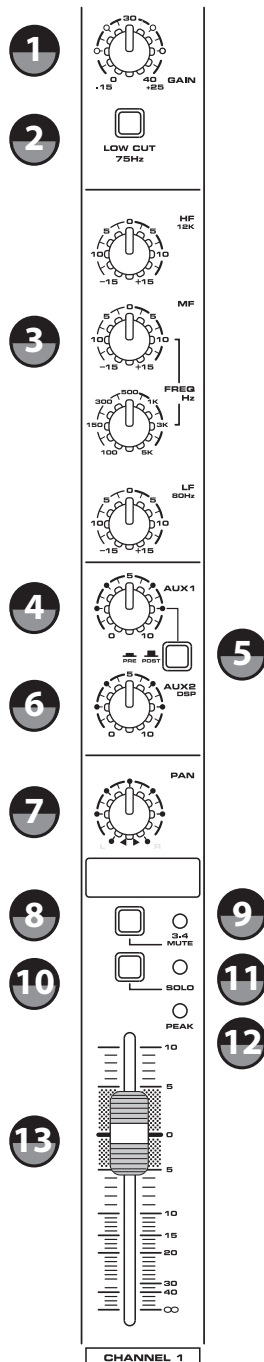
Controls and Functions

MONO INPUT CHANNEL SECTION - continued

Auxiliary Busses (4 - 6)

The MDR series include two auxiliary signal paths, or buses, that can be used to create independent mixes for sending to the internal or external effects processors, or to an external monitor system. The flow of these buses start by sending the signal from each individual channel, which is set with one of the auxiliary control knobs. Then, the mix of all the channels auxiliary level is ultimately sent to either an internal effects processors, or to an output jack to connect to an external effect or monitor system. To help you control your effects and monitor mixes, the MDR mixers have two auxiliary buses. Plus, for added flexability, AUX1 can be configured as a Pre or Post fader send.

PRE….? POST….? What's That?

In order to operate your mixer correctly, it is important to understand the concept of PRE and POST Fader Aux sends. An auxiliary bus that is set up as PRE Fader routes, or sends, the signal to its output from a point in the channels' circuit that is electronically before the channel Fader. That means the channel Fader has no effect on the PRE aux level. A Pre Fader send is what you want to use for a monitor mix, so when the level is changed for the mix in the main PA speakers using the channel Fader, the level in the monitor set by the aux control knob remains the same. An auxiliary bus that is set up as POST Fader routes, or sends, the signal to its output from a point in the channels' circuit that is electronically after the channel Fader. That means that the channel Fader also affects the level of a POST aux send. A POST Aux bus is what you want to use (almost always) for sending to an effects processor, either internal or external. When using the POST aux sends, (while turning the channel Fader up or down) the level of effects will track the channel level correctly.

4 - AUX 1

The MDR1248 and MDR1688 have two auxiliary sends which can be used for sending signals to external effects devices or for creating a monitor mix. The AUX1 section is often used for a monitor mix in a live sound mixing, or for a headphone mix in a recording application. AUX 1 can also be used as a Pre Fader effect send by setting the Pre/Post switch to the Post postion. Each input channel includes an AUX 1 send which controls the amount of that channel's signal that is sent to the AUX bus.

NOTE: If the AUX1Pre/Post switch is set to Pre, the Aux controls are "PRE-FADER SENDS" which means they are not affected by the FADER level settings of each channel. This allows you to create a mix for the monitors that is independent of the main LEFT and RIGHT MIX.

5 - PRE/POST - switch

The PRE/POST switch is used to select the point that the AUX 1 bus uses to send the signal. When the PRE/POST switch is set to PRE, the signal feeding AUX 1 is sent before the fader, so the channel Fader has no effect on that level. This is the normal setting when using AUX 1 as

a monitor send. When the PRE/POST switch is set to POST, the signal feeding AUX 1 is sent after the fader, so the channel Fader has an effect on that level, meaning the Aux level tracks up and down with the channel Fader. This is the normal setting for using AUX 1 as an effects send, since when you set the channel louder, you normally want the effect to get louder.

NOTE: The channel's effects signal is sent to the AUX 1 bus from a location in the signal path after the VOLUME control.

6 - AUX 2/DSP

The channel's AUX 2/DSP knob controls the amount of signal that is sent to the AUX 2 bus. The AUX 2 signal can be sent to an external effects device connected to the AUX 2 OUT jack located in the MASTER SECTION jack field. NOTE: The channel's AUX 2 signal is sent to the AUX 2 bus from a location in the signal path after the channel's LEVEL control. This is commonly referred to as a POST FADER send. This means that the amount of signal that is sent to the AUX 2 bus will be affected not only by the setting of the AUX 2 knob control, but it will also be affected by the setting of the LEVEL control.

7 - PAN

The MDR1248 and MDR1688's PAN control is used to place or position the mono signal into the stereo main Left and Right MIX bus. You can create a stereo image by panning some input signals to the left and others to the right. The MDR1248 and MDR1688's PAN control is a Power-Pan circuit, which includes a 3dB dip in the center position. This is desirable since there's a 3dB increase in gain when the mono input signal is heard in both the Left and Right MIX bus.

8 - 3/4 MUTE switch

The Mono Input channels feature a 3/4 MUTE switch allowing you to easily turn that channel on or off. When 3/4 MUTE LED is illuminated, the channel is off, conversely, when the backlight is off, the channel is on. The switch also has a second purpose. When the switch is pressed down, signal from the selected channels is sent to the 3/4 Outputs. This lets you use 3/4 as a second stereo bus which can be mixed in with the main left and right mix bus or sent out the 3/4 outputs without being heard in the main Left and Right mix.

9 – 3/4 MUTE LED

The MDR1248 and MDR1688's has a 3/4 Mute LED indicator allowing you to easily see if the channel is muted or assigned to the 3/4 mix bus. When 3/4 MUTE LED is illuminated, the channel is off and assigned to the 3/4 bus, conversely, when the backlight is off, the channel is on and not assigned to the 3/4 mix bus.

10 - Solo switch

The Mono Input channel's Solo switch allows you to listen, or "solo" a channel or group of channels in the headphones. When the SOLO switch is pressed down, the channel is assigned to the solo bus and can be heard

in any optional headphones plugged in to the PHONES connector located in the front panel jack field. If the AFL/PFL MODE switch, located in the master section, is switched out, the signal is sent pre fader, so you can hear the signal regardless of the position of the channel volume Fader. This allows you to listen to a channel by itself: (let's say) to see if an artist is out of tune, or to cue up a channel without having to play it through the main PA speakers. If the AFL/PFL MODE switch is switched in, the signal is sent post fader, the signal you hear is dependant on the position of the channel volume Fader. This allows you to hear if there is any distortion on a channel added by the level of the channel fader.

11- SOLO LED
The MDR1248 and MDR1688's Mono Input channels include a SOLO LED which, when illuminated, indicates that the signal is assigned to the SOLO bus.

12 - PEAK LED
The MDR1248 and MDR1688's MIC/LINE pre-amp also includes a PEAK LED which, when illuminated, indicates that the signal is peaking or overloading. To reduce distortion, lower the GAIN control to keep this LED from staying on.

13 - CHANNEL LEVEL
The MDR1248 and MDR1688's LEVEL control knobs are used to adjust the overall channel volume.

STEREO INPUT CHANNEL SECTION
The MDR1248 and MDR1688 feature stereo input channels for connected stereo line level devices like keyboards and drum machines, as well as the outputs from effects processors and digital guitar modelers. The MDR1248 has four sets of stereo inputs which make up channels 5/6, 7/8, 9/10 and 11/12, while the MDR1688 has four sets of stereo inputs which make up channels 9/10, 11/12, 13/14 and 15/16. The Stereo input channels have a four-band fixed equalizer and AUX 1 and 2 sends and are laid out the same as the mono inputs. The following section details the stereo input controls:

14- GAIN switch
The MDR1248 and MDR1688's pre-amp stage has a variable GAIN switch with a range of -10 to +4dB on the stereo LINE input.

15 - LOW/LOW MID/HIGH MID/HIGH - Channel Equalizer
The MDR1248 and MDR1688 Stereo input channels feature a 4-band equalizer allowing you to adjust the high, mid, and low frequencies independently on each channel. The stereo channel equalizer is laid out like a mono input on the control panel input strip, but internally, the equalizer is effecting a stereo signal path. The channel's frequency response is flat when the knobs are in the "12:00" position. Rotating the knob towards the right will boost the corresponding frequency band by 15dB, and rotating
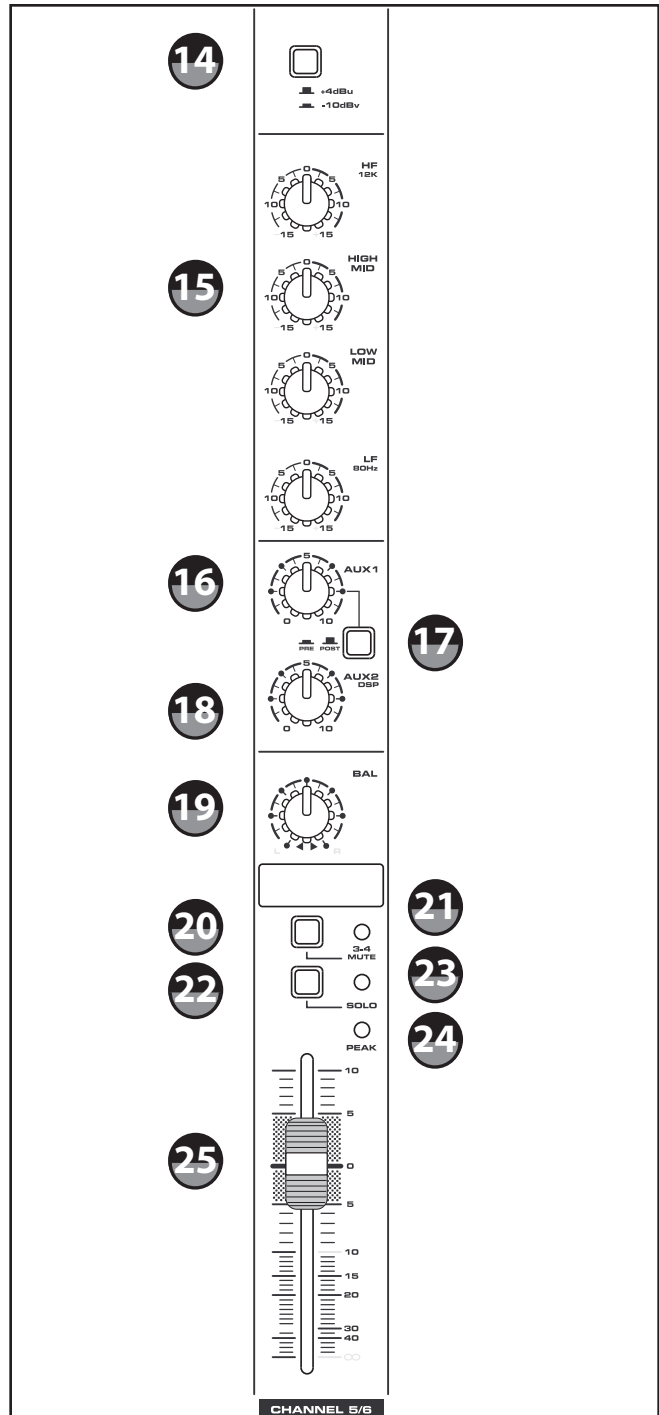
it towards the left will cut the frequency by 15dB. The frequency centers, range of boost or cut, and equalizer type for each band are as follows:

High: 12kHz +/- 15dB shelving type

High Mid: 3kHz +/- 15dB peaking type

Low Mid: 500Hz +/- 15dB peaking type

Low: 80Hz +/- 15dB shelving type

Controls and Functions

Auxiliary Busses (16 - 18)

The MDR series include two auxiliary signal paths, or buses, that can be used to create independent mixes for sending to the internal or external effects processors, or to an external monitor system. The signal flow from these buses start by sending the signal from each individual channel, which is set with one of the auxiliary control knobs. Then, the mix of all the channels auxiliary level is ultimately sent to either an internal effects processors or to an output jack to connect to an external effect or monitor system. To help you control your effects and monitor mixes, the MDR's have two auxiliary buses.

In order to operate your mixer correctly it is important to understand the concept of PRE and POST fader sends. For more information on Pre and Post aux sends, see the previous section "Pre…?, Post?… What's that?" Located on page 8 of this manual.

16 – AUX 1
Each of the MDR1248 and MDR1688's stereo input channels include an AUX 1 send, which controls the amount of that channel's signal that is sent to the AUX 1 Output. The AUX1 section is often used for a monitor mix in live sound mixing, or for a headphone mix in a recording application. AUX 1 can also be used as a Post Fader effect send by setting the Pre/Post switch to the Post postion. Each input channel includes an AUX 1 send which controls the amount of that channel's signal that is sent to the AUX bus.

17 - PRE/POST - switch
The PRE/POST switch is used to select the point that the AUX 1 bus uses to send the signal. When the PRE/POST switch is set to PRE, the signal feeding AUX 1 is sent before the fader, so the channel Fader has no effect on that level. This is the normal setting when using AUX 1 as a monitor send. When the PRE/POST switch is set to POST, the signal feeding AUX 1 is sent after the channel fader, meaning the Aux level tracks up and down with the channel Fader. This is the normal setting for using Aux1 as an effects send, since when you set the channel louder, you normally want the effect to get louder.

18 – AUX 2 /DSP
Each of the MDR1248 and MDR1688's stereo input channels include an AUX 2/DSP send, which controls the amount of that channel's signal that is sent to the internal DSP and/or AUX 2 Output. The signal that feeds Aux 2 is sent after, or post, the channel Fader, so the channel Fader has an effect on the Aux 2 level. This is the normal setting for an effects send, since when you set the channel louder, you normally want the effect to get louder.

19 - BALANCE - Control
The MDR1248 and MDR1688's BALANCE control is used to place, or position, the stereo signal into the main Left and Right stereo mix field. You can create a stereo image by panning some input signals to the left and others to the right.

20 - 3/4 MUTE switch
The Stereo Input channels feature a 3/4 MUTE switch allowing you to easily turn that channel on or off. When 3/4 MUTE LED is illuminated, the channel is off, conversely, when the LED is off, the channel is on. The switch also has a second purpose. When the switch is pressed down, signal from the selected channels is sent to the 3/4 Outputs. This lets you use 3/4 as a second stereo bus which can be mixed in with the main left and right mix bus or sent out the 3/4 outputs without being heard in the main Left and Right mix.

21 – 3/4 MUTE LED
The MDR1248 and MDR1688's has a 3/4 Mute LED indicator allowing you to easily see if the channel is muted or assigned to the 3/4 mix bus. When 3/4 MUTE LED is illuminated, the channel is off and assigned to the 3/4 bus, conversely, when the LED is off, the channel is on and not assigned to the 3/4 mix bus.

22 - Solo switch
The Stereo Input channel's Solo switch allows you to listen, or "solo" a channel or group of channels in the headphones. When the SOLO switch is pressed down, the channel is assigned to the solo bus and can be heard in any optional headphones plugged in to the PHONES connector located in the front panel jack field. If the AFL/PFL MODE switch, located in the master section, is switched out, the signal is sent pre fader, so you can hear the signal regardless of the position of the channel volume Fader. This allows you to listen to a channel by itself: (let's say) to see if an artist is out of tune, or to cue up a channel without having to play it through the main PA speakers. If the AFL/PFL MODE switch is switched in, the signal is sent post fader, the signal you hear is dependant on the position of the channel volume Fader. This allows you to hear if there is any distortion on a channel added by the level of the channel fader.

23- SOLO LED
The MDR1248 and MDR1688's Stereo Input channels include a SOLO LED which, when illuminated, indicates that the signal is assigned to the SOLO bus.

24 – PEAK LED
The MDR1248 and MDR1688's MIC/LINE pre-amp also includes a PEAK LED which, when illuminated, indicates that the signal is peaking or overloading. To reduce distortion, lower the GAIN control to keep this LED from staying on.
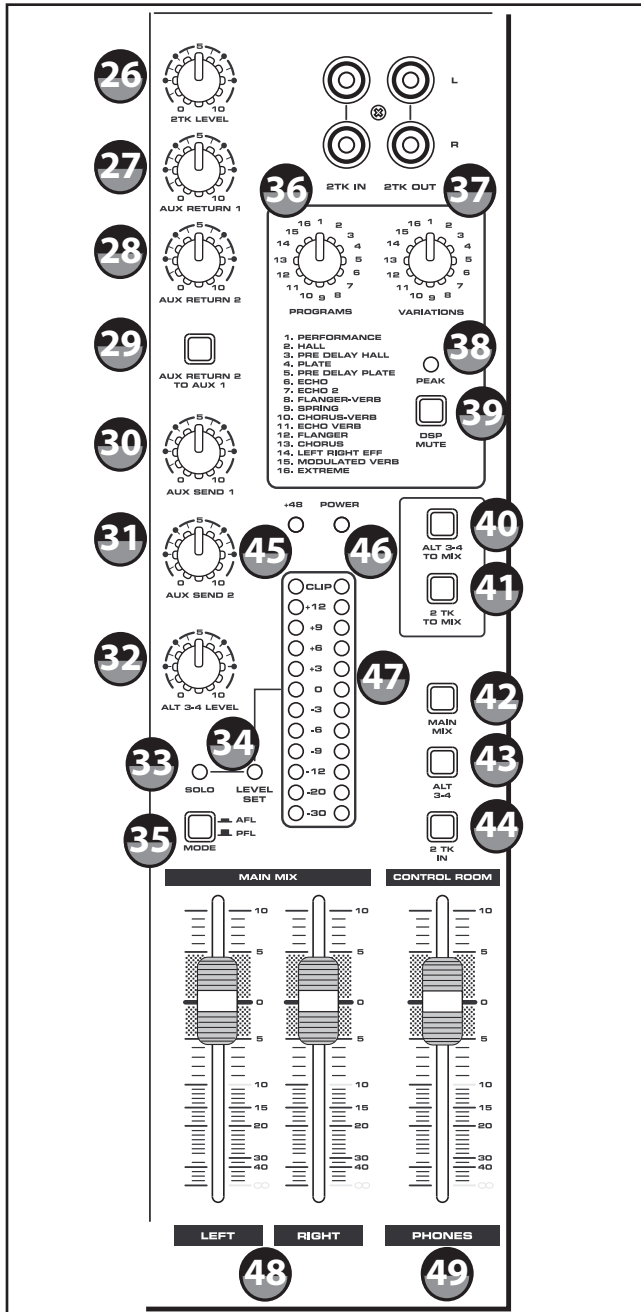
25- VOLUME - Fader Level Control
The VOLUME Fader control adjusts the level of the stereo channel.

MASTER SECTION

26 - 2 TRK LEVEL

The 2TK LEVEL control knob is used to set the volume level of the source connected to the 2-track input. If you want to mix in a CD, tape or MP3 player with your input channels connected to the 2TK inputs, use the 2TK LEVEL to adjust the level.

Auxiliary Returns

The MDR1248 and MDR1688 have two stereo auxiliary returns, which can be accessed via the two pairs of 1/4-inch phone jacks located on the master section jack field. The auxiliary returns can be used to connect any stereo line level signal, but they are primarily used to connect the output of external effects processors.

27 - AUX RET 1 control knob

This adjusts the amount of signal that is sent from the AUX 1 RET jacks to the MAIN bus.

28 - AUX RET 2 control knob

The AUX RETURN 2 adjusts the level of the signal present at the AUX 2 RET jacks. This signal is summed, or mixed in to the main L/R MIX bus.

29 - AUX 2 RETURN TO AUX 1 switch

This routes the signal that is present on the AUX 2 RETURN jacks to AUX 1 so that the effects can be heard in the monitor mix.

30 - AUX 1 SEND control knob

The master AUX SEND control is used to send the effect mix bus to an external effect device connected to the AUX SEND 2 jack.

31 - AUX 2 SEND control knob

The master EFX SEND control is used to send the effect mix bus to an external effect device connected to the AUX SEND 2 jack.

32 - ALT 3/4 Level control knob

Use this control knob to set the level of the mix created from the channels assigned to the 3/4 bus. The ALT 3/4 level control will control the level of the signal being sent to the 3/4 Output jacks. When the Master ALT 3/4 switch(43) is switched in, the ALT 3/4 level control will control the level of the ALT 3/4 mix that is heard in the Main Left and Right mix. Remember, the ALT 3/4 TO MIX switch must be set to the on or down position in order to hear the 3/4 mix in the main Left and Right mix.

33 - SOLO LED

The LED will illuminate when any one or more channel's SOLO switch is engaged, indicating that there is a channel in solo.

34 - LEVEL SET   LED

When a channel's SOLO switch is pressed, the LEVEL SET LED will illuminate and flash indicting that the channels input level is now being measured by the main VU meter.

35 - MODE (AFL/PFL) switch

You can change the mode of the SOLO bus from Pre fader listen to After, or Post fader listen using the MODE switch. When the switch is pressed in, the SOLO mode is set to AFL (After Fader Listen), so the channels signal is sent after or post fader. When the switch is pressed out, the SOLO mode is set to PFL (Pre Fader Listen), so the channels signal is sent before or pre fader.

36 - PROGRAM control knob

The MDR1248 and MDR1688 feature an internal 24-bit DSP with 256 presets. The presets are organized in sixteen Program banks, each with sixteen variations. The Program control knob used to select one of the sixteen DSP effect programs.

37 - VARIATION control knob

The MDR1248 and MDR1688 feature an internal 24-bit

Controls and Functions

MASTER SECTION (continued)

DSP with 256 presets. The presets are organized in sixteen Program banks, each with sixteen variations. The Variation control knob is used to select one of the sixteen variations for each of the sixteen DSP effect Programs.

38 - PEAK (DSP INPUT) LED

LED indicator illuminates when the input signal to the internal DSP is reaching a clipping level.

39 - DSP MUTE switch

This switch is used to turn the internal DSP effects on and off. When the DSP MUTE switch is pressed in, the internal DSP effects are turned off and when the switch is pressed out, the DSP effects are on.

2 TRACK INPUT AND OUTPUT

The MDR1248 and MDR1688's 2 Track section provides the connections for playback and recording for an external device such as a DAT, cassette recorder, CD or Mini Disk.

Main Mix Assign Switches

The next two switch functions are used to select additional sources that can be combined with the Main Left and Right mix and sent to the main Left and Right Outputs.

40 - ALT 4/3 TO MIX switch

The ALT 3/4 TO MIX switch is used to assign the ALT 3/4 mix bus to the MAIN mix bus. If you push the ALT 3/4 TO MIX button, all the channels with their ALT 3/4 switch pressed in will be routed to the left and right MAIN outputs and the level will be controlled by the 3/4 LEVEL control knob and MAIN LEVEL fader**.**

41 - 2TK TO MIX switch

The 2TR TO MIX switch is used to assign the 2TR input to the MAIN mix bus. If you push the 2TR TO MIX button, the signal present at the 2 TRACK IN will be routed to the left and right MAIN output and the level will be controlled by the 2TK LEVEL control knob and MAIN LEVEL fader**.**

Control Room and Headphone Assign Switches

The next three switch functions are used to select additional sources that can be heard in the headphones and sent to the Left and Right Control Room Outputs.

42 - MAIN MIX switch

The MAIN MIX switch routes the Left / Right MAIN mix bus to the CONTROL ROOM / PHONES outputs. Use the Left / Right MAIN MIX Level faders (48) and PHONES level fader (49) to set the volume.

43 - ALT 3/4 switch

The ALT 3/4 switch routes the 3/4 mix bus to the CONTROL ROOM / PHONES outputs. Use the ALT 3/4 LEVEL control knob (32) and PHONES level fader (49) to set the volume.

44 - 2 TK IN switch

The 2TR IN switch is used to assign the 2TR input to the Control Room output. If you push down the 2TK IN button, signal will be routed into the left and right Control Room

output and will be adjusted by the CR / PHONES control fader.

45 - Phantom Power LED

This LED illuminates indicating that the 48 volt phantom power is applied to the microphone pre-amps enabling use with condenser microphones. The +48V LED will light up when the Phantom Power switch (located on the rear panel) is switched to the ON position.

46 - POWER LED

The Power LED lights up to indicate that the main POWER switch (located on the rear panel) is on.

47 - Output Level Meters

The OUTPUT LEVEL METERS allows you to monitor the level of the signal which is being sent to the MAIN MIX jacks.

48 - MAIN MIX - Fader Control

The master MAIN controls are the overall volume controls for the left and right mix bus. These line level signals are output from the MAIN MIX jacks.

49 - PHONES / CR

The PHONES / CR control is used to set the level sent to the control room outputs, and also to the headphone jack.

NOTE: To avoid distortion, adjust the Main Level control so that the 0 indicator LED lights occasionally.

MDR1248 and MDR1688 Input and Output Connections

MONO INPUT CHANNELS - MIC and LINE INPUTS

Channels 1 through 4 on the MDR1248 and channels 1 through 8 on the MDR1688 are mono inputs, each providing a 1/4-inch connector for line level signals and an XLR connector for the MIC signals. Channels 5/6 through 11/12 on the MDR1248 and channels 9/10 through 15/16 on the MDR1688 are stereo inputs, providing a pair of 1/4-inch connectors for line level inputs. By using the GAIN control on the mono channels, you can connect a variety of signal sources from microphones to line level devices such as synthesizers, and drum machines. All the LINE and MIC inputs are balanced. The MIC inputs are compatible with microphones with output impedances of 50-600 Ohms and the LINE inputs are compatible with line level devices of 600 Ohms. Following below is a detailed description of the MDR1248 and MDR1688's input and output connectors.
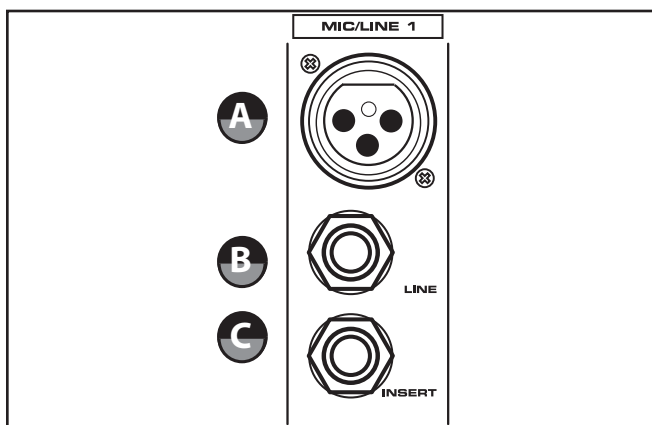
NOTE: It is not possible to simultaneously use both the LINE and MIC inputs on the same channel. Use only one of the inputs for the appropriate source on each channel.

A - Microphone Input - Mono Input Channels

Use these inputs to connect Low Impedance microphones and low level signals from direct boxes. The MIC inputs have a nominal operating level of –50dBu through -20dBu. The MIC inputs also feature +48V phantom power, allowing you to use condenser microphones. The Phantom Power switch (located on the MDR1248 and MDR1688's rear panel) enables phantom power on all the microphone inputs when set to the ON position. XLR Connector pin-out - Pin 1: Ground, Pin 2: Hot (+), Pin 3: Cold (-)

B - Line Level Input - Mono Input Channels

Use these inputs to connect synthesizers, drum machines, effects processors or any line-level signal. The LINE inputs have a nominal operating level of -40dBV through - 10dBV. TRS phone jacks Connector pin-out - Sleeve: Ground, Tip: Hot (+), Ring: Cold (-)

C - Insert Point Jack - Mono Input Channels

The MDR1248 and MDR1688's mono input channels feature a 1/4-inch, TRS INSERT jack providing a patch point to connect an external processor. You can use these connections to interface an external signal processor like an

equalizer, compressor, noise gate, reverb and other audio devices. For more information on the channel INSERT points, see the section, "Using the Channel Insert Jacks" on page 17 of this manual.

Stereo Input Channels - Line Inputs

You can connect the outputs from stereo devices such as synthesizers, drum machines, effects processors or any stereo line-level signal. The LINE inputs have a nominal operating level of -40dBV through - 10dBV. The 1/4-inch TRS phone jacks Connector pin-out are as follows; Sleeve: Ground, Tip: Hot (+), Ring: Cold (-)
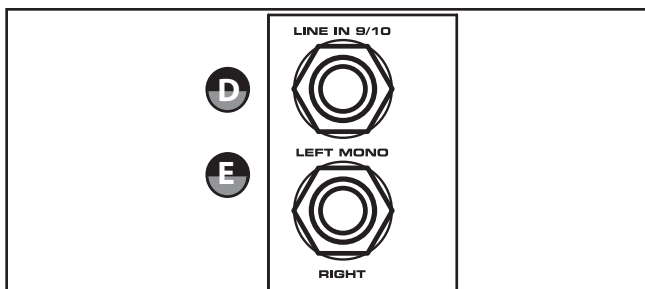

D- LEFT MONO

The LEFT MONO jack is used to connect the left output of a stereo device to the Left input of the MDR's stereo input channels or use the LEFT input when connecting a mono input signal to the Stereo Input channels.

E - RIGHT

The RIGHT jack is used to connect the Right output of a stereo device to the Right input of the MDR's stereo input channels.

MASTER SECTION INPUT AND OUTPUT JACKS

The MDR1248 and MDR1688 features several input and output connectors allowing you to interface a variety of external devices. A stereo recording device, such as a cassette recorder, can be connected to the 2 Track jacks, and power amplifiers or powered monitors can be connected to the CONTROL ROOM and MAIN output jacks.
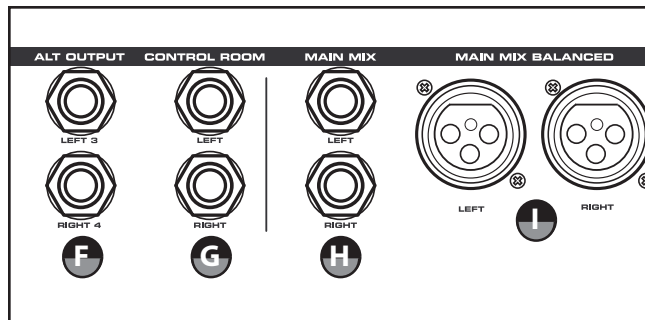
F - ALT 3/4 LEFT/RIGHT OUTPUT

The ALT 3/4 outputs are 1/4-inch balanced jacks carrying the signal from the 3/4 bus. You can assign a channel or a group of channels to the 3/4 bus using the MUTE 3/4 switch on the stereo and mono input channels. The 3/4 output connectors are labeled Left and Right since the 3/4 bus follows the channels' PAN control allowing it to be used for a second stereo

mix. You can also pan the channels hard left and right to create two mono buses. Keep in mind that using the 3/4 switch mutes the channel from the main mix, so use the ALT 3/4 bus for a separate stereo, or two mono, zone mixes.

G - CONTROL ROOM LEFT/RIGHT OUTPUT
The Control Room outputs are 1/4-inch balanced jacks used to connect a studio monitor system. The Control Room outputs have the same output as the L/R MIX, however, the level can be adjusted independently from the main mix using the C ROOM/HEADPHONES control.

H - MAIN MIX LEFT/RIGHT 1/4-INCH OUTPUTS
In a live sound application, the LEFT/ RIGHT MIX outputs are 1/4-inch balanced jacks used to connect a power amplifier or powered speakers. In a recording application, the LEFT/ RIGHT MIX outputs are used to connect to the inputs of a stereo device such as computer sound card, DAT, or cassette recorder.

I - MAIN MIX LEFT/RIGHT XLR OUTPUTS
In a live sound application, the LEFT/ RIGHT MIX outputs are connected to a power amplifier or powered speakers. In a recording application, the LEFT/ RIGHT MIX outputs are used to connect to the inputs of a stereo device such as computer sound card, DAT, or cassette recorder.

J - AUX RETURN 1 LEFT/RIGHT
The AUX RETURN 1 LEFT/RIGHT are stereo inputs that are generally used to connect the outputs of an effects processor, but can also accept the signal from any line level source like a keyboard, recorder and even another mixer. The signal connected to the AUX RETURN 1 LEFT/RIGHT will feed the main

LEFT/RIGHT MIX bus. The overall level is controlled by the AUX RET 1 knob located in the master section on the front panel. Use the LEFT/MONO input when connecting a mono input signal to the AUX RETURN.

K - AUX Send 1
The signal present at the AUX1 output is sent from the AUX1 bus, which is fed from all the AUX 1 sends on the input channels. The AUX 1 output can be used as the EFFECTS SEND bus in a live sound situation by connecting the output to an external effects device.

L - AUX RETURN 2 LEFT/RIGHT
The AUX RETURN 2 LEFT/RIGHT are stereo inputs that are generally used to connect the outputs of an effects processor, but can also accept the signal from any line level source like a keyboard, recorder and even another mixer. The signal connected to the AUX RETURN 2 LEFT/RIGHT will feed the main LEFT/RIGHT MIX bus. The overall level is controlled by the AUX RET 2 knob located in the master section on the front panel. Use the LEFT/MONO input when connecting a mono input signal to the AUX RETURN.
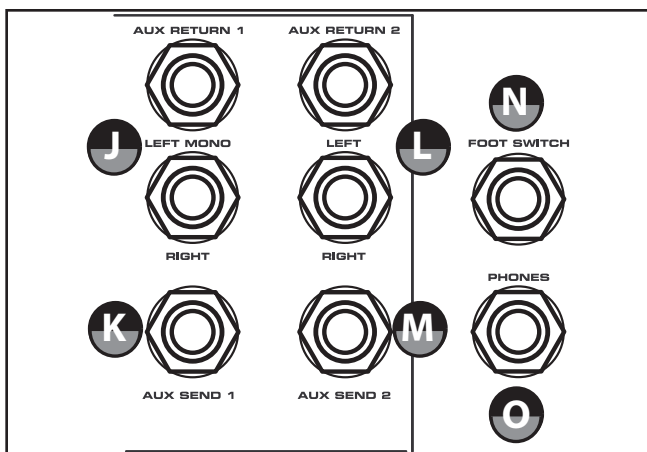
M - AUX Send 2
The signal present at the AUX 2 output is sent from the AUX 2 bus, which is fed from all the AUX 2 sends on the input channels. The AUX 2 output can be used as the MONITOR MIX bus in a live sound situation by connecting the output to a power amp and monitor speaker.

N – FOOTSWITCH - 1/4-inch jack
With a footswitch connected to this jack, you can turn on and off the on-board digital effects by simply stepping on the footswitch.
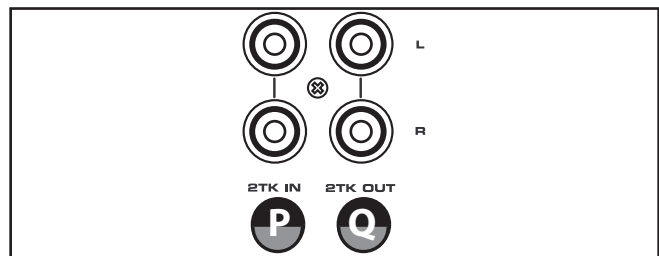
0 - HEADPHONE OUTPUT
You can connect a standard pair of stereo headphones to the PHONES jack and depending on the position of the 2T TO CR switch, you will hear either the 2-Track input or the MAIN mix.

P - 2TR INPUT
The MDR1248 and MDR1688 features dual RCA connectors for the left and right 2-track input. You can use these inputs to connect a CD, Cassette, Mini Disk, DAT or the output from a computer sound card. To listen to the input connected to the 2T IN, be sure to check the position of the 2T To Mix and 2T TO CR switches. *For more information on using the 2 Track inputs, see the section "PLAYING BACK A CD USING 2T TO MIX " on page 18 of this manual.*

Q - 2TR OUTPUT
If you want to record the mix from your MDR1248 and MDR1688, you can use the 2-track OUT connectors. The dual RCA connectors can be connected to a CD, Cassette, Mini Disk, DAT or even the input of a computer sound card for hard disk recording. *For more information on using the 2 Track outputs, see the section "RECORDING A MIX FROM THE MDR1248 and MDR1688 " on page 18 of this manual.*

BASIC OPERATION
The following section explains the basic operation of the MDR1248 and MDR1688:

CONNECTING MICROPHONES AND INSTRUMENTS
1. Before connecting mics or instruments, make sure that the power of all your system's components including the MDR1248 and MDR1688 is turned off. Also, make sure that the MAIN LEVEL and PHONES / CR controls are turned all the way down.

2. Connect the cables to your microphones and instruments, and insert the other end of the cable firmly into the appropriate input on the MDR1248 and MDR1688.
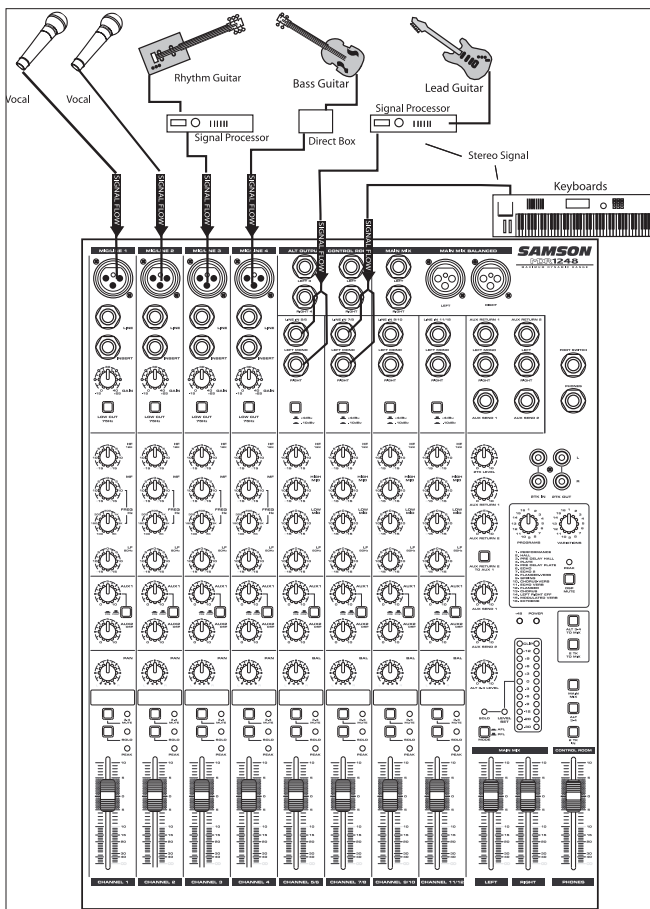
NOTE: SETTING THE INPUT GAIN - When connecting a microphone to channels 1 through 4 on the MDR1244 or 1 through 8 on the MDR1688, it's a good idea to start with the Gain Control turned all the way down. Set the input fader to the "0" position and slowly raise the GAIN control until you see the PEAK LED turn on. Now, back the GAIN control down so that the PEAK LED only lights for a short time during the loudest input the channel will see.

Note. You can also press the channel's PFL switch and use the LEVEL SET function. When the PFL is switched on, you'll see the LEVEL SET LED is illuminated and the channel's input level will now be displayed on the Main VU meter.

3. Switch on the power of any peripheral devices, and then power up the MDR1248 and MDR1688.

NOTE: It is important to remember the Golden Rule of audio … " **LAST ON, FIRST OFF**". Translated, this means that when turning on your system, you should always turn your power amplifiers or powered monitors on LAST, and when turning your system off, turn your power amps off FIRST. This helps avoid any loud pops caused by rush current at power up, or down, which can sometimes damage loudspeakers.

4. Turn on your power amp or powered monitors and raise the level control to the manufacturers recommended operating level.

5. Set the MAIN LEVEL control in the MDR1248 and MDR1688's master section to the "0" position.

6. While speaking into the mic (or playing the instrument), adjust the channel LEVEL control so that the "0" LED of the MAIN section VU level meter lights occasionally.

7. You can shape the tone of each channel by adjusting the channel equalizer controls as desired.

NOTE: You may need to adjust the channel LEVEL control to compensate for the slight changes in level after using the channel equalizer.

Operating the MDR1248 and MDR1688

USING THE DIGITAL EFFECTS

The MDR1248 and MDR1688 mixers feature a built-in, high quality, 24-bit Multi Effect Processor, offering studio grade digital effects. The MDR's Effect section features clean Delay, lush Reverbs and multi-effects like Chorus + Delay, Chorus Flange or Chorus + Reverb. You can add a broad range of studio quality effects by simply dialing through the 256 presets.
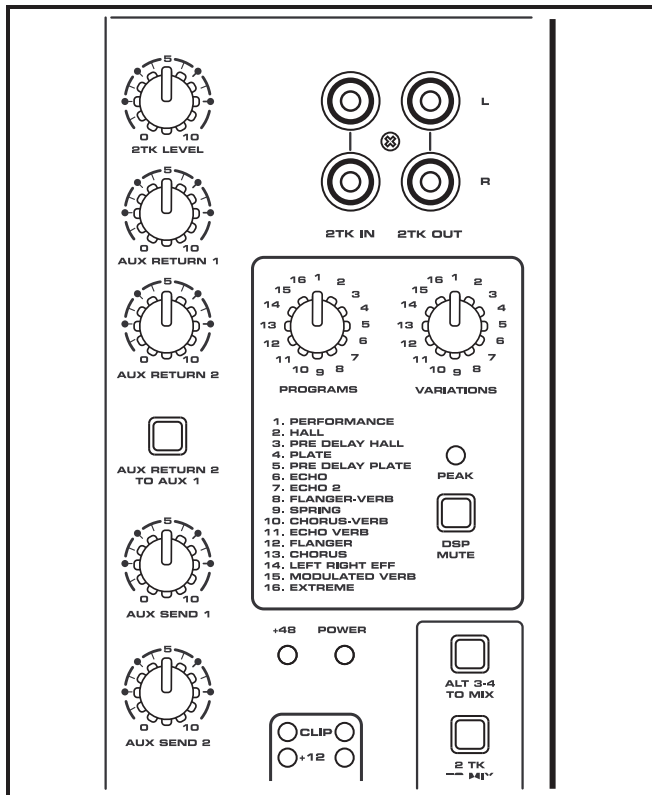
The following details the operation of the internal DSP effects in the MRD1248 and MDR1688 Effects section:

1. Connect a mic or instrument to the desired channel, adjust the level and equalizer to your liking and make sure the MAIN fader level is set so you can hear it in your speakers.

2. Now select the desired effects program using the PROGRAM control knob located in the Effects section in the middle of the mixer's Master section. Set the PROGRAM control knob to one of the 16 effects. You can check the effects Program List below the PROGRAM knob to find the effect type perfect for your performance. The first PROGRAM and VARIATION banks have been preset with common effects for live performance, and the following banks are set up in groups by the types of effects.

3. Once you have selected the desired effects preset, raise the AUX 2 DSP control on the channels you wish to apply the digital effect to.

4. Next, locate the AUX SEND 2 knob and turn it about to a little past "5" or half way.

5. Now, use the AUX RETURN 2 control knob to adjust the effects return level. The AUX RETURN 2 control knob sets the overall level control for the DSP effects processor in the main Left and Right Mix.

6. Now, you can check out different versions of the PROGRAM presets by using the VARIATIONS control knob. Each of the 16 effects PROGRAM banks has sixteen variations providing a total of 256 effects presets.

7. If you want to hear the effects in the monitors, press the AUX RETURN 2 TO AUX1 switch and you will have the output of the internal effects routed to the AUX1 output. For more information on setting up a monitor mix, see the following section.

NOTE: If the DSP PEAK LED lights up and effect sound is distorted, even though the AUX RETURN 2 is turned down low, lower the AUX SEND 2 control knob and the AUX2/DSP controls of each channel.

8. If you want to bypass the effects, you can turn off the effects processors output by using the DSP MUTE switch, or an optional footswitch connected to the FOOTSWITCH jack.

Operating the MDR1248 and MDR1688

SENDING AN INDEPENDENT MIX TO THE MONITOR SPEAKERS

The MDR1248 and MDR1688's AUX1 auxiliary send can be used to feed a separate set of amplifiers and loudspeakers for stage monitors. This lets you build one mono mix for the amplifiers and monitor speakers facing the musicians, and the other stereo mix for the amplifiers and speakers facing the audience.

1. Connect the AUX1 output to your monitor's power amplifier or powered monitor.

2. Press the input channels' AUX 1 PRE/POST switches in, to set AUX 1 up as a pre-fader bus.

3. Raise the AUX SEND 1 control knob, located in the Master section, up to a little past "5" or halfway.

4. Raise the AUX 1 controls for the channels that you wish to hear from the monitor speakers.
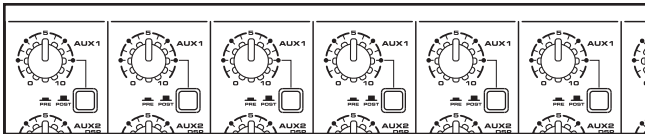
NOTE: When the AUX1 PRE/POST switch is pressed in and set to "PRE", the AUX 1 controls are "PRE-FADER SENDS" which means they are not affected by the level settings of each channel. This allows you to create a mix for the monitor system that is independent of the main LEFT and RIGHT MIX.

5. If feedback occurs, turn down the AUX SEND 1 knob to lower the overall level sending to the monitor. Then check the AUX1 levels of the individual channels to see if you need to turn one or more channels down. Then try to raise the AUX 1 SEND level again.

NOTE: Adjusting the balance between the channel AUX1 control knobs and the AUX SEND 1 is a tricky but necessary part of getting good levels in the monitor system. In general, try to keep the master AUX SEND 1 higher than the channel AUX1 levels to achieve a cleaner mix. In order to get the most gain from your monitor mix, use an external graphic equalizer (like a Samson S curve 131or D2500 digital EQ with feedback control) to cut out any frequencies that cause feedback.

6. If you want to add effects from the internal effect processor, or the effects from an external processor connected to the AUX RETURN 2 inputs, engage the AUX RETURN 2 TO AUX 1 switch, located in the Master section, by pressing it in.

USING THE CHANNEL INSERT JACKS

To further control your signal, channels 1-4 on the MDR1248 and 1-8 on the MDR1688 feature an insertion point, or "effects loop", on one 1/4-inch phone jack, INSERT SEND and RETURN. An insertion point is a patch-point that interrupts the signal, allowing you to bring that signal outside to be processed by another device. You can use these connections to interface an external signal processor like an equalizer, compressor, noise gate, reverb and other audio devices. A common application for the MDR1248 and MDR1688's insert point is using a compressor.

To send a signal to an external processor, use a standard 1/4-inch "Y" insert cable to connect the MDR1248 and MDR1688 channel insert point. Connect the TRS (TIP / RING / SLEEVE) plug to the channel INSERT point, and then, connect the 1/4-inch (TIP / SLEEVE), INSERT SEND plug to the input of the external processor. The signal is sent back to the MDR1248 or MDR1688, using the 1/4-inch (TIP / SLEEVE), INSERT RETURN plug connected to the output of the external processor.

The diagram below shows a typical application for using a compressor (in this example a Samson C com opti) in the MDR1248 or MDR1688's insertion point.
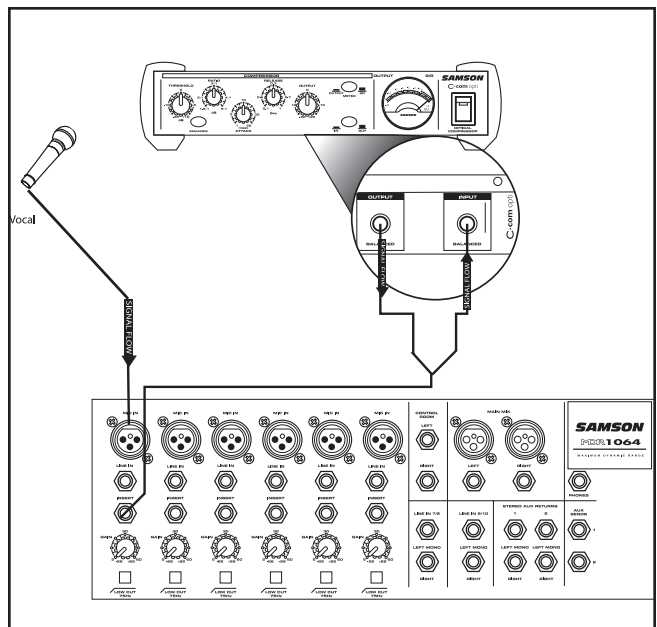
Below, is a diagram showing the wire for the TRS 'Y" Insert cable.
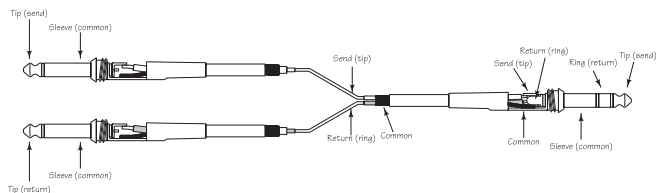
Operating the MDR1248 and MDR1688

USING AN EXTERNAL EFFECT
If you prefer to use an external device for effects processing, you can easily connect the unit using the MDR1248 and MDR1688 AUX 2 bus. Follow the simple steps below to interface your processor:

1. Connect the AUX 2 OUTPUT to the input of the external effect processor.

2. Connect the outputs of the effect processor to the AUX 2 RETURN located on the MDR1248 and MDR1688's master section.

RIGHT OUTPUT
LEFT OUTPUT
INPUT
Effects Processor
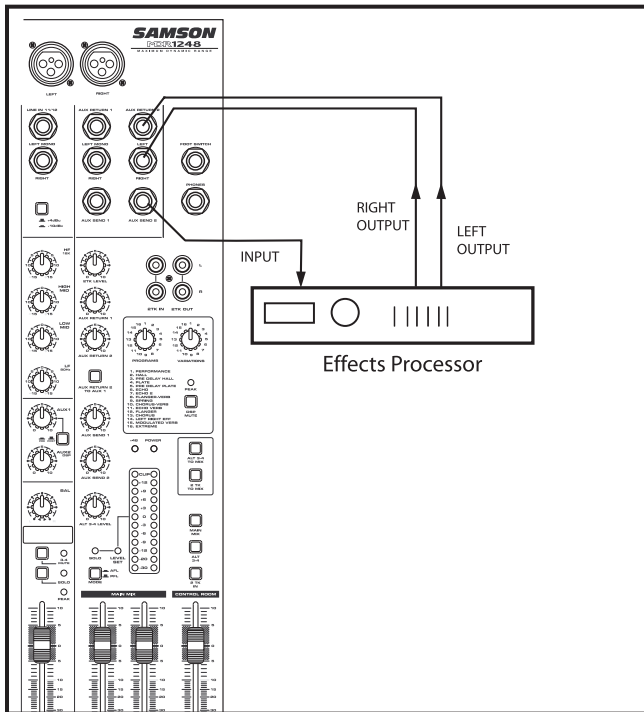
3. Set the MAIN LEVEL control to the "0" position.

4. Raise the AUX 2 knobs for the channels to which you want the external effect to be applied.

5. Set the input level of the external effect so that the sound is not distorted and so that the effect's input meter does not indicate a clipped signal.

6. Use the AUX RETURN 2 control to adjust the level of the effects processed by the external effects device.
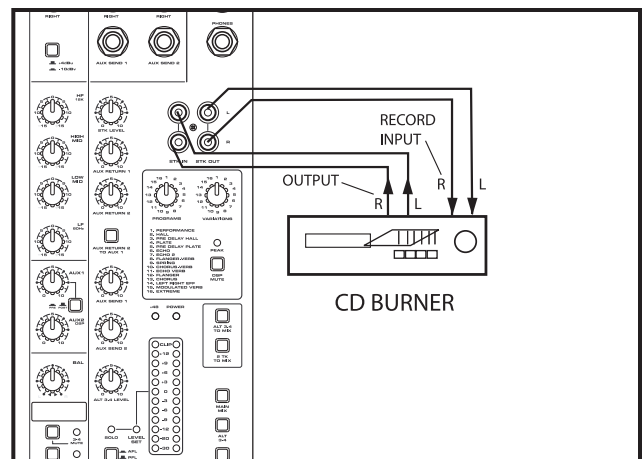
PLAYING BACK A CD USING 2T TO MIX

The MDR1248 and MDR1688 has a dedicated input for playing back a stereo device such as a CD, Tape or Mini Disk. Below is a description of how you can play back a CD, Tape or MD using the MDR1248 and MDR1688's 2 TRACK INPUT.

1. Turn the MAIN level control all the way down.

2. Press the 2TK TO MIX button down.

3. Adjust the MAIN LEVEL control in the master section to the "0" position.

4. Start playback on the CD, Tape or MD player, and use the 2 TK LEVEL control to set the desired level.

RECORDING A MIX FROM THE MDR1248 and MDR1688
You can record the audio from the MDR1248 and MDR1688's mixer section including the MIC, LINE, 2T IN and AUX inputs to a Cassette deck, MD, DAT or any other type of recorder using the 2T OUT outputs. Simply connect the MDR1248 and MDR1688's 2 TRACK OUT to the input jacks of the recorder as shown in the diagram on the right and follow the steps below.

RECORD INPUT
OUTPUT
R L
R L
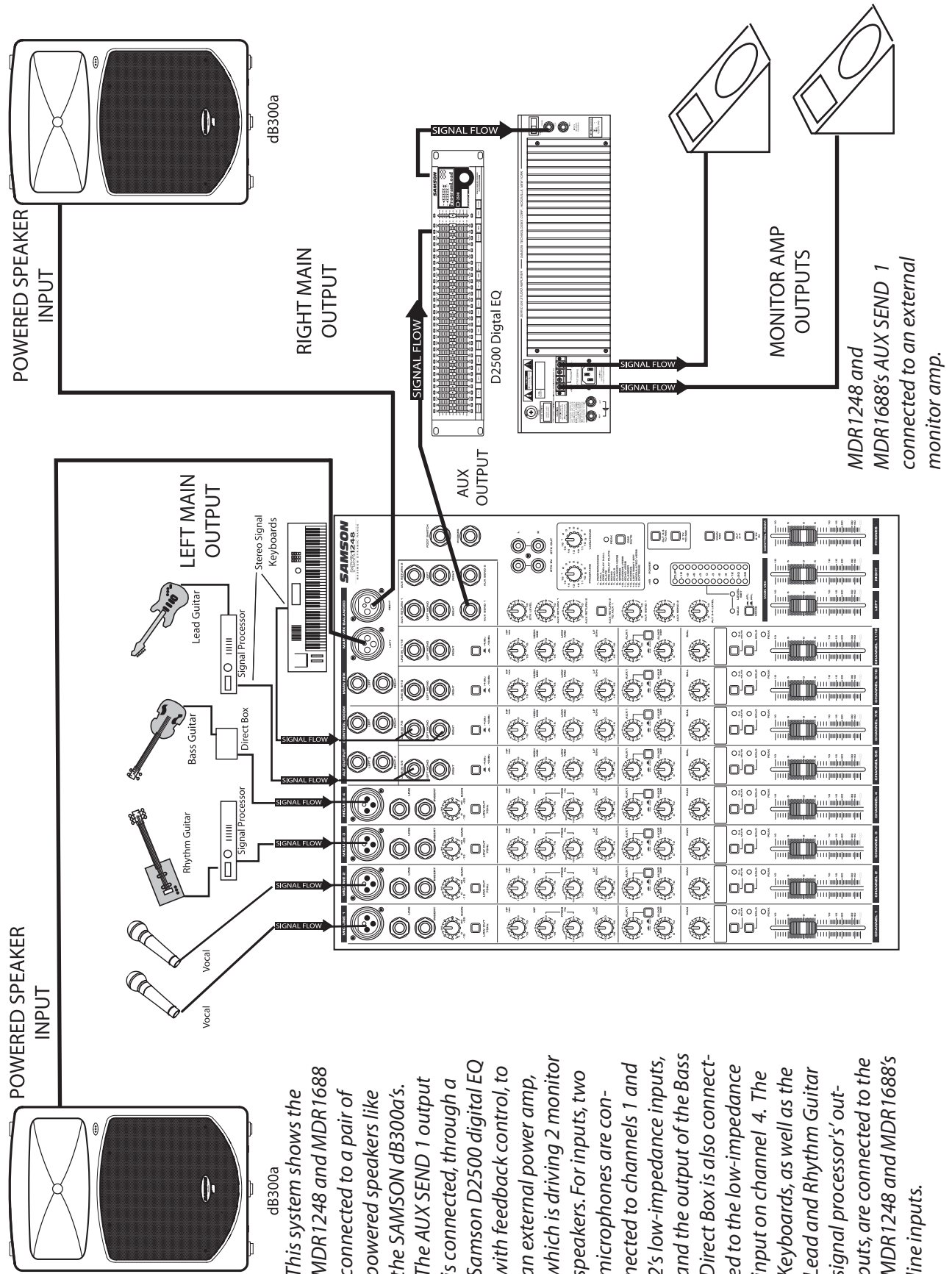CD BURNER

1. Adjust the MAIN LEVEL control in the master section to the "0" position.
2. Set a clean signal using the recorder's input level controls and meters.
3. Press RECORD.
4. Play back using as described in the previous section "PLAYING BACK A CD USING 2T TO MIX".

NOTE: To avoid feedback, be sure to keep the 2TK LEVEL control knob all the way down while recording with the 2TK outputs.

MDR1248 and MDR1688 LIVE SOUND SET-UP

POWERED SPEAKER INPUT

dB300a

RIGHT MAIN OUTPUT

SIGNAL FLOW

D2500 Digtal EQ

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

MONITOR AMP OUTPUTS

MDR1248 and MDR1688's AUX SEND 1 connected to an external monitor amp.

LEFT MAIN OUTPUT

AUX OUTPUT

Stereo Signal Keyboards

Lead Guitar

Signal Processor

Bass Guitar

Direct Box

Rhythm Guitar

Signal Processor

Vocal

Vocal

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SAMSON MDR1248

POWERED SPEAKER INPUT

dB300a

This system shows the MDR1248 and MDR1688 connected to a pair of powered speakers like the SAMSON dB300a's. The AUX SEND 1 output is connected, through a Samson D2500 digital EQ with feedback control, to an external power amp, which is driving 2 monitor speakers. For inputs, two microphones are connected to channels 1 and 2's low-impedance inputs, and the output of the Bass Direct Box is also connected to the low-impedance input on channel 4. The Keyboards, as well as the Lead and Rhythm Guitar signal processor's outputs, are connected to the MDR1248 and MDR1688's line inputs.

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MDR1248 and MDR1688 RECORDING SET-UP

RIGHT POWERED MONITOR INPUT

RIGHT CONTROL ROOM OUTPUT

LEFT CONTROL ROOM OUTPUT

LEFT POWERED MONITOR INPUT

Samson S•phone Headphone amplifier

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

SIGNAL FLOW

Stereo Signal Keyboards

Lead Guitar

Signal Processor

Bass Guitar

Direct Box

Rhythm Guitar

Signal Processor

Vocal

Vocal
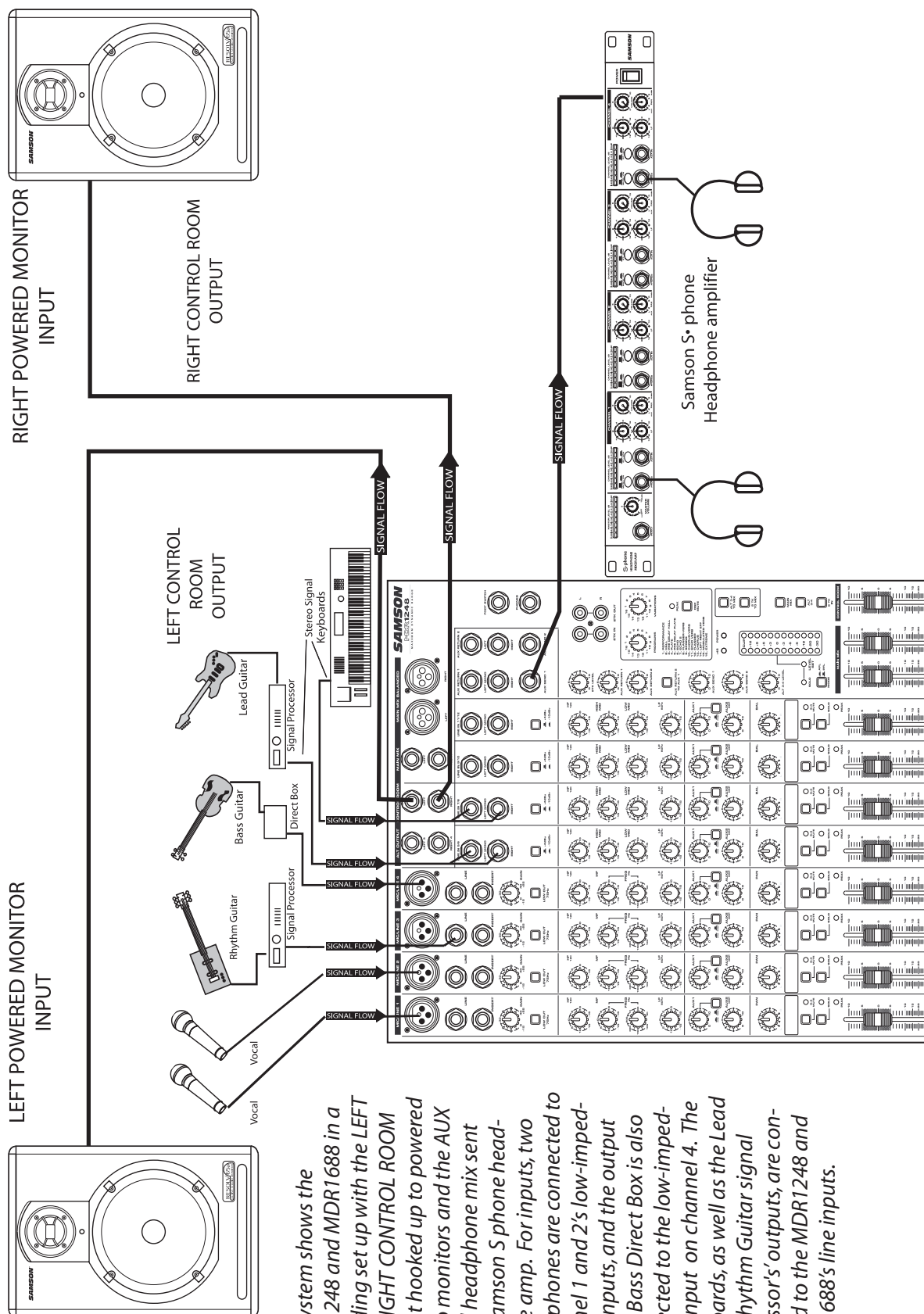
SAMSON

This system shows the MDR1248 and MDR1688 in a recording set up with the LEFT and RIGHT CONTROL ROOM output hooked up to powered studio monitors and the AUX 1 feed headphone mix sent to a Samson S phone head- phone amp. For inputs, two microphones are connected to channel 1 and 2's low-imped- ance inputs, and the output of the Bass Direct Box is also connected to the low-imped- ance input on channel 4. The Keyboards, as well as the Lead and Rhythm Guitar signal processor's' outputs, are con- nected to the MDR1248 and MDR1688's line inputs.

MDR1248 and MDR1688 Wiring Guide
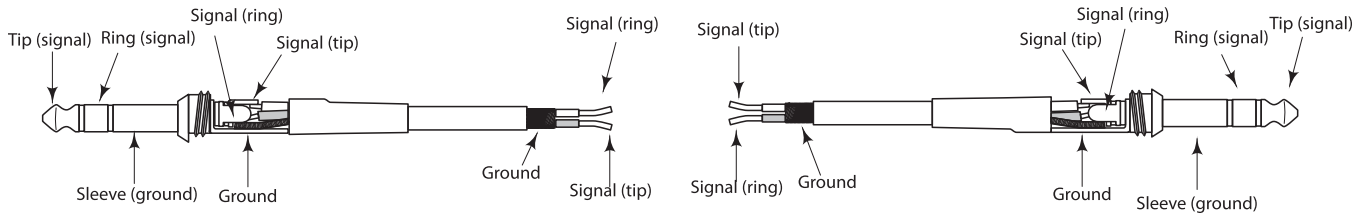
CONNECTING THE MDR1248 and MDR1688

The are several ways to interface the MDR1248 and MDR1688 to support a variety of applications. The MDR1248 and MDR1688 features balanced inputs and outputs, so connecting balanced and unbalanced signals is possible.
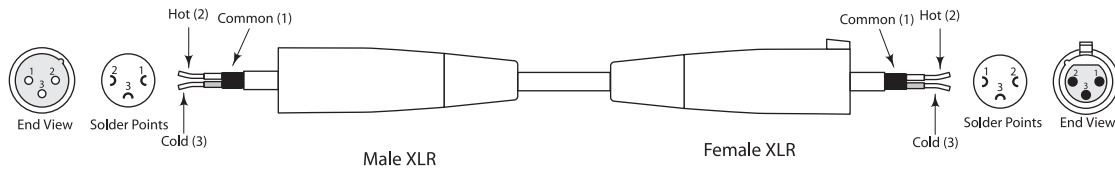
Unbalanced 1/4" Connector

Tip (signal)   Signal   Signal   Signal   Signal   Tip (signal)

Sleeve (ground) Ground   Ground   Ground   Ground   Sleeve (ground)
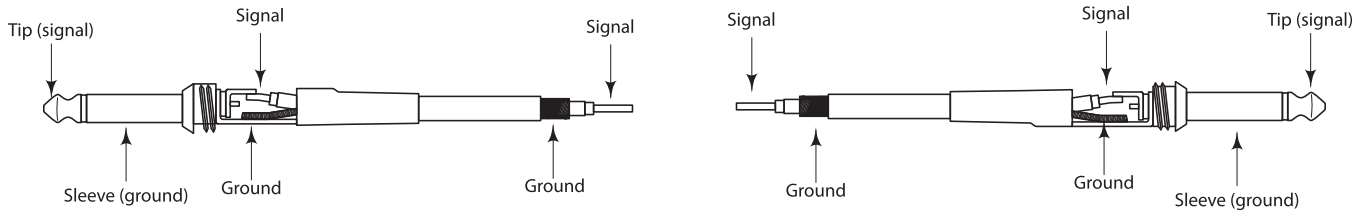
Balanced TRS 1/4" Connector

Tip (signal) Ring (signal)   Signal (ring)   Signal (ring)   Signal (tip)   Signal (ring)   Tip (signal)
              Signal (tip)   Signal (tip)   Signal (tip)   Ring (signal)

Sleeve (ground) Ground   Ground   Signal (tip)   Signal (ring)   Ground   Ground   Sleeve (ground)

XLR Balanced Wiring Guide

Hot (2)   Common (1)   Common (1)   Hot (2)

End View   Solder Points   Solder Points   End View
Cold (3)   Male XLR   Female XLR   Cold (3)

1/4-inch TRS "Y" Insert Cable Wiring Guide

Tip (send)
    Sleeve (common)   Send (tip)   Return (ring)   Tip (send)
                                                            Send (tip)   Ring (return)

                              Return (ring) Common   Common   Sleeve (common)
Sleeve (common)
Tip (return)

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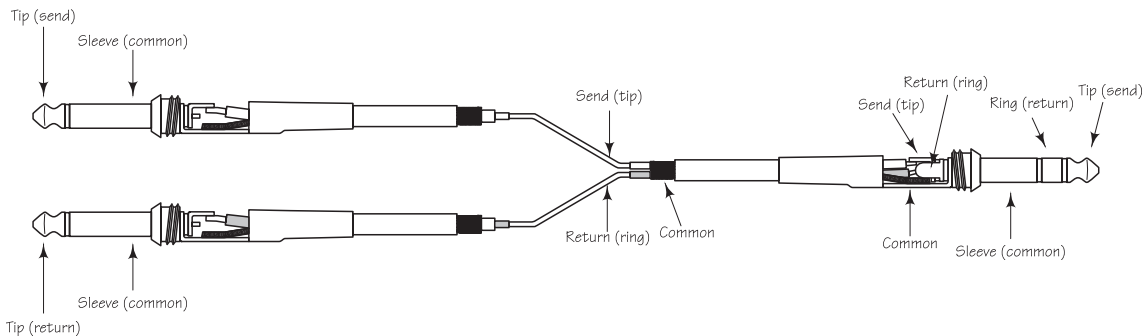
MDR1248 and MDR1688 Specifications

Mono input channels

Microphone input	electronically balanced, discrete input configuration
Frequency response	10Hz to 45kHz
Distortion	(THD & N) 0.005% at 4dBu, 1kHz
Gain range	0dB to +40dB (MIC)
SNR (Signal to Noise Ratio)	105dB
Line input	electronically balanced
Frequency response	10Hz to 45kHz
Distortion (THD & N)	0.005% at 4dBu, 1kHz
Sensitivity range	-10dBu to +30dBu

Stereo input Channels

Line input	Balanced
Frequency response	10Hz to 45kHz
Distortion (THD & N)	0.005% at +4dBu, 1kHz

Impedances

Microphone input	3k Ohm
Channel Insert return	2.5k Ohm
All other inputs	14.8k Ohm or greater
Tape out	1k Ohm
All other output	120 Ohm

Equalization

Mono Channels	
Hi shelving	+/- 15dB @ 12kHz
Swept Mid bell	+/- 15dB @ 100 to 5kHz
Low shelving	+/- 15dB @ 80Hz
Low Cut filter	75Hz, 18dB/oct.
Stereo Channels	
Hi shelving	+/- 15dB @12kHz
High Mid bell	+/- 15dB @ 3kHz
Low Mid bell	+/- 15dB @ 500Hz
Low shelving	+/- 15dB @80Hz

Main Mix Section

Noise (Bus noise)	Levels full down: -100dBr (ref.:+4dBu)
	Level set to 0 dB: -90dBr (ref.:+4dBu)
Max output	+28dBu balanced XLR,
	+22dBu impedance balanced, 1/4" jacks

3/4 Output Section

Noise (Bus noise)	Levels full down: -100dBr (ref.:+4dBu)
	Level set to 0 dB - 90dBr (ref.:+4dBu)
Max output	+22dBu impedance balanced, 1/4" jacks

Control Room Output Section

Noise (Bus noise)	Levels full down: -100dBr (ref.:+4dBu)
	Level set to 0 dB - 90dBr (ref.:+4dBu)
Max output	+22dBu impedance balanced, 1/4" jacks

Aux Section

AUX Return gain range	-∞ to +15dB
AUX Sends max out	+22dBu

Power supply (AC/AC Adaptor)

Power Consumption	15W
MDR1248	32W
MDR1688	39W
Main voltage	USA/Canada 108 - 132V, 60Hz
	Europe 210 - 230V, 50Hz
	U.K./Australia 240V, 50Hz

Physical

Net weight		
	MDR1248	9.79 lb. (4.45kg)
	MDR1688	12.87 lb. (5.85kg)
Shipping weight		
	MDR1248	13.86 lb. (6.30kg)
	MDR1688	18.92 lb. (8.60kg)
Dimension (W D H)		
	MDR1248	16" x 12.3" x 2.6" (405mm x 313mm x 65mm)
	MDR1688	16" x 16.7" x 2.6" (405mm x 425mm x 65mm)

Specifications are subject to change without notice.