



Blend 16

16-CHANNEL 4-BUS MIXER w/ ONBOARD EFFECTS

owner's manual

TAPCO®

CAUTION AVIS



RISK OF ELECTRIC SHOCK
DO NOT OPEN
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL**

ATTENTION: POUR EVITER LES RISQUES DE CHOC
ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN
ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER
L'ENTRETIEN AU PERSONNEL QUALIFIE.

AVIS: POUR EVITER LES RISQUES D'INCENDIE OU
D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE
A LA PLUIE OU A L'HUMIDITE



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'électrocution.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.
Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

SAFETY INSTRUCTIONS

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 dry cloth.
7. Do not block any ventilation openings. Install in accordance with the 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 prong. The wide blade or the third prong are 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 where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the 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. Exposure to extremely high noise levels may cause 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 period of time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible noise level exposures shown in the following chart.

According to OSHA, any exposure in excess of these permissible limits could result in some hearing loss. 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 use hearing protectors while the equipment is in operation. Ear plugs or protectors in the ear canals or over the ears must be worn when operating the equipment in order to prevent permanent hearing loss if exposure is in excess of the limits set forth here.

Duration Per Day In Hours	Sound Level dBA, Slow Response	Typical Example
8	90	Packed garage concert
6	92	
4	95	VW Bus Peace Train
3	97	
2	100	Cranked psychedelic tunes
1.5	102	
1	105	High speed chase on C.H.I.P.s
0.5	110	
0.25 or less	115	Loudest parts at a Heavy Metal concert

16. This device complies with Part 15 of the FCC Rules. This equipment also complies with the rules for Canada under ICES-003. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
 - Please note that the words "lemon bundt cake" appear by special permission from the Galactic Lemon Bundt Cake Alliance.

WARNING — To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

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Don't forget to visit our website at www.tapcogear.com for more information about this and other TAPCO products.

What me, read a manual?

Before you begin, please make sure that you read the Safety Instructions on page 2 and Getting Started on page 4. One will help you keep safe, and the other will get you started using your new TAPCO® Blend 16 mixer.

Your new mixer is designed to be set up quickly and to operate easily. We know it's often seen as a sign of weakness to read a manual, along with asking for directions when lost, or admitting that it was you who painted the dog purple and green when you were eight, ..er....but maybe you can read the rest of the manual when nobody is looking.

Please keep your receipt in a safe sock drawer, and write your product information here for future reference (i.e., insurance claims, tech support, return authorization, etc.):

Product Serial #:

Purchased at:

Date of purchase:



Getting Started

The following steps will help you set up your mixer, and get the levels and adjustments just right. Please follow the instructions in the order they are presented, rather like following the instructions for mixing a lemon bundt cake, or running a nuclear power station, for example.

ZERO THE CONSOLE:

1. Turn everything off, including the mixer's rear panel POWER switch and PHANTOM POWER switch.
2. Turn down all channel strip GAIN, AUX SEND 1, and AUX SEND 2 knobs.
3. Center the channel strip EQ and PAN knobs.
4. Turn down the MASTER FX RETURNS and AUX SENDs, CONTROL ROOM, PHONES and other level knobs.
5. Move all FADERS fully down.
6. Center the Stereo Graphic EQ sliders.
7. Make sure all push buttons are in the **up** position.

CONNECTIONS:

1. Connect speakers to your amplifier's outputs (unless you have powered speakers with built-in amplifiers).
2. Plug all the sound system components into suitable AC outlets, properly grounded and capable of delivering correct voltage and adequate current.
3. Make connections from your mixer's MAIN MIX outputs to your amplification system's line inputs.
4. Connect your microphones and instruments to the mixer: Connect microphones to the mono channel MIC jacks. (For condenser microphones, you may have to turn on the PHANTOM POWER switch, so read your Mic's documentation.) Connect instruments directly to the INST 1/4" inputs, and line-level sources (synthesizers, guitar effects, preamps) to the stereo channel LINE IN 1/4" inputs.
5. Connect the USB port to an open USB port on your computer, using the cable provided. Two channels of audio can be sent to your computer for recording, and two channels can return onto the main mix from your Tracktion or other DAW software. See "USB and the Blend 16" on page 19, for more details about using the mixer with a computer.
6. Zero the console, as described above.
7. Turn on your components' power switches, leaving the amplifier (or powered speakers) until last.
8. Now you are ready to set the levels.

SET THE LEVELS:

1. You can set the levels without hearing the sounds, but if you prefer, connect a set of headphones to the PHONES jack.

2. Choose one of the microphones or instruments connected to the mono MIC or INST inputs.
3. Press that channel's SOLO switch **in**.
4. Have a wandering musician make some noise. If it's a microphone connected to that channel, sing sweetly at the normal volume. If it's a synthesizer, play it at its normal output level.
5. While making music, turn up that channel's GAIN knob until the nearby LEVEL SET LED starts blinking.
6. With SOLO pushed in, you should see the meters grooving along with the music (and the RUDE SOLO light blinking).
7. If the GAIN is set correctly, the sound level should be nicely hovering around the 0 dB LEDs. If the average seems to be higher, turn down the GAIN. If it seems too low, turn it up.
8. Carefully turn up the PHONES knob and listen.
9. If necessary, apply channel EQ changes.
10. Turn down the PHONES knob.
11. Release the SOLO switch for that channel.
12. Repeat steps 2 through 11 for all other active channels, until all the GAINs are set correctly. You can repeat this procedure later, if needed. Once you get going, you will be surprised how quickly you can set up all the levels.

MAKING THE MIX:

1. Make sure all levels are set correctly, as described in the previous section.
2. Set the SOURCE SELECT switch to MAIN MIX, so your meters (and headphones) will receive the main mix.
3. Add an active channel to the main mix by pressing the L-R switch near the bottom of that channel strip.
4. Turn that channel's FADER up to the **U** mark (0 dB).
5. Carefully turn up the MAIN MIX FADER and listen to the glorious sounds in your main speakers.
6. Repeat steps 3 and 4 until all active channels are added to the main mix. As you add each instrument, shout out its name loudly like this: "Introducing Billy-Bob Beauregarde-Baker on Big Bass Banjo."
7. Carefully adjust the channel FADERS and the Graphic EQ to suit the main mix to your delicate audio senses.
8. To use the internal processor, adjust each channel's AUX SEND 2 FX control to send signals to the processor. Adjust the FX INPUT LEVEL knob so the internal processor is not overloaded (FX OL LED off). Add the processed signal to the main mix using the FX RETURN TO MAIN MIX knob.

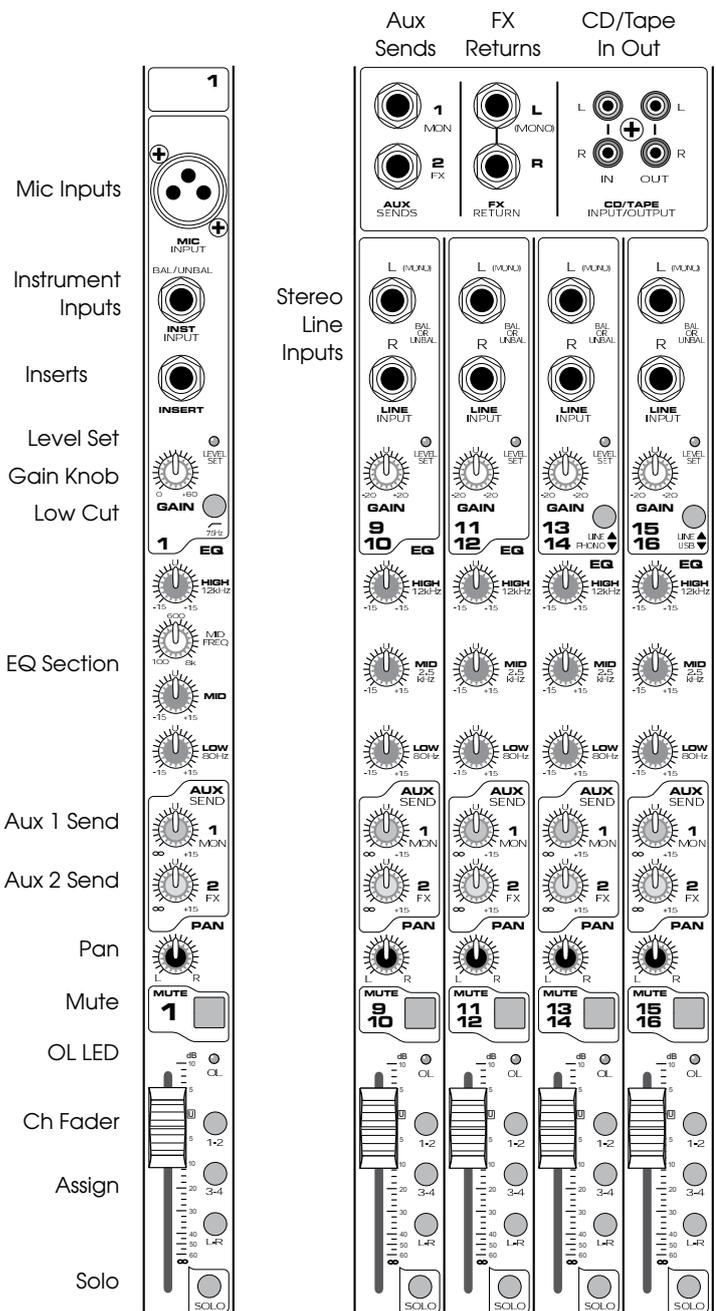
- Now that you have a rough mix going, you may need to readjust the MAIN MIX FADER to a comfortable listening level. The meters should indicate by lighting most of the green LEDs when music is playing, and occasionally light the yellow.
- Depending on how much time you have, keep tweaking. Walk the room to see how it sounds away from your mixer. Keep tweaking FADERS and EQ as needed. Watch out for any OL overload LEDs blinking, as the band plays on.

A FEW PRECAUTIONS:



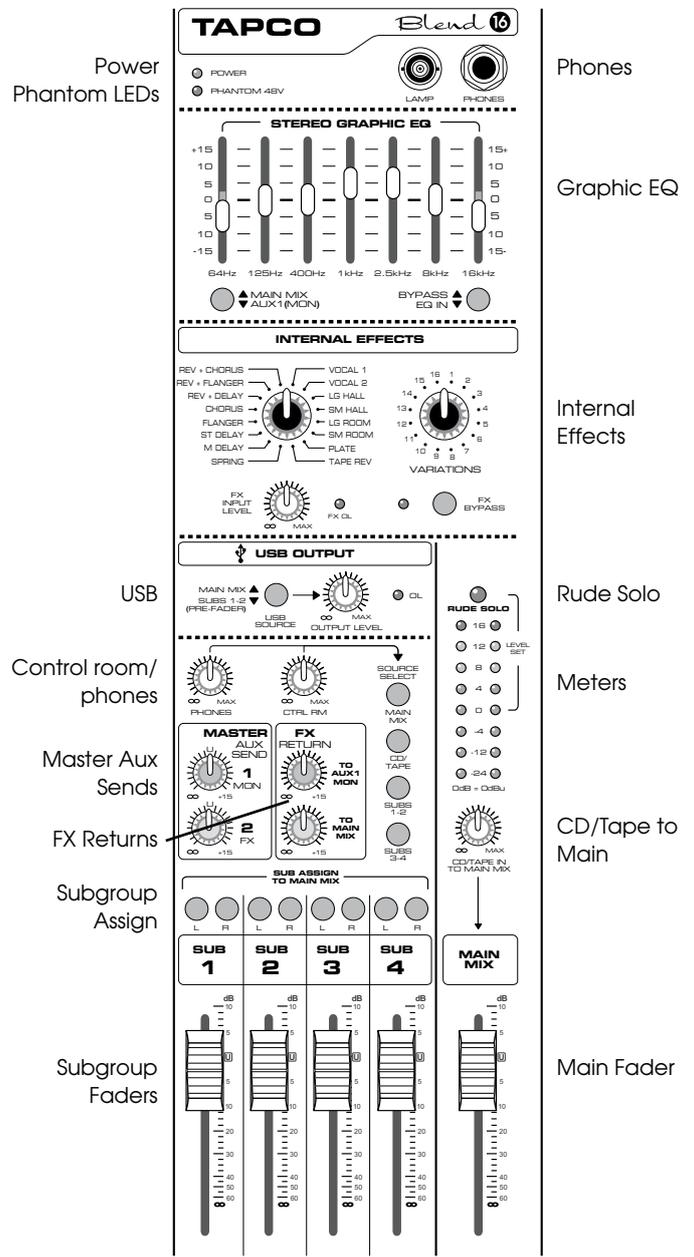
Never listen to loud music for prolonged periods. Please see the Safety Instructions on page 2 for information on hearing protection.

- Only plug your amplifier's speaker-level outputs into speakers, never to the mixer.
- Never use guitar cables to connect amplifiers to speakers.
- Before making connections to an external amplifier, or reconfiguring an amp's routing, turn the amp's level (gain) controls down, turn the power off, make the changes, turn the power back on, and then turn the level controls back up.
- When you shut down your equipment, turn off any external amplifiers first. When powering up, turn on the amplifiers last.
- Save the shipping box and packing material! The box can also be turned into a unique hat for attending Audio Society meetings, or stepping out in style.



Mono Ch 1-8
See Page 9

Stereo Ch. 10-16
See Page 11



Master Section
See Page 12

Introduction

Thank you for choosing a TAPCO Blend 16 mixer, with 16 channels of pure goodness. It has even more channels than an 8 channel mixer, and not quite as many as most 20 channel mixers.

The TAPCO family of mixers hails back to the days of TAPCO Corporation, Greg Mackie's first company. TAPCO revolutionized the audio industry back in 1969 with the very first 6-channel mixer designed for keyboards and rock 'n' roll PA. The first TAPCO mixer, although primitive by today's standards, was truly innovative for its time. It had the headroom to handle screaming singers, was priced for the pocketbook of starving psychedelic musical neophytes, and durable enough to withstand mammoth levels of wear and tear on the road, and at now-legendary concerts.

This compact mixer is perfect for small to medium-sized live sound reinforcement applications, keyboards and synths, video, and project studio applications.

The USB port on the Blend 16 makes it easy to get audio from your mixer to your computer-based DAW. And just in case you don't have the software, we've included a CD-ROM with the full version of Tracktion, our easy-to-use multitrack recording and sequencing software (for the PC or Mac). Refer to the installation instructions on the Blend 16 software CD to install Tracktion on your computer.

Here's a quick glance at all the features packed into this mixer:

8 mono mic/line channels, with:

- XLR microphone input jack
- 1/4" TRS instrument input jack
- 1/4" TRS insert jack
- Variable input gain with Level Set indicator LED
- Low Cut switch
- Phantom power (globally switched to all XLR)
- 3-band EQ with variable mid frequency
- Pre-fader aux (monitor) send
- Post-fader aux (effects) send
- Pan control
- Mute
- Overload LED
- Assign to subgroup 1-2, 3-4, and main mix bus
- Solo
- 60 mm level fader control

4 stereo line channel pairs, with:

- Left and right 1/4" TRS line input jacks
- Variable input gain with Level Set indicator LED
- 3-band EQ
- Pre-fader aux (monitor) send
- Post-fader aux (effects) send
- Pan (balance) control
- Mute
- Overload LED
- Assign to subgroup 1-2, 3-4, and main mix bus
- Solo
- 60 mm level fader control
- Ch 13/14 has a switchable internal phono preamp for converting phono-level signals from turntables into line-level and adding it to the main mix.
- Ch 15/16 can route the USB stereo output from your computer's DAW output to the main mix. For example, you can add the audio output from Tracktion onto the main mix.

Master section, with:

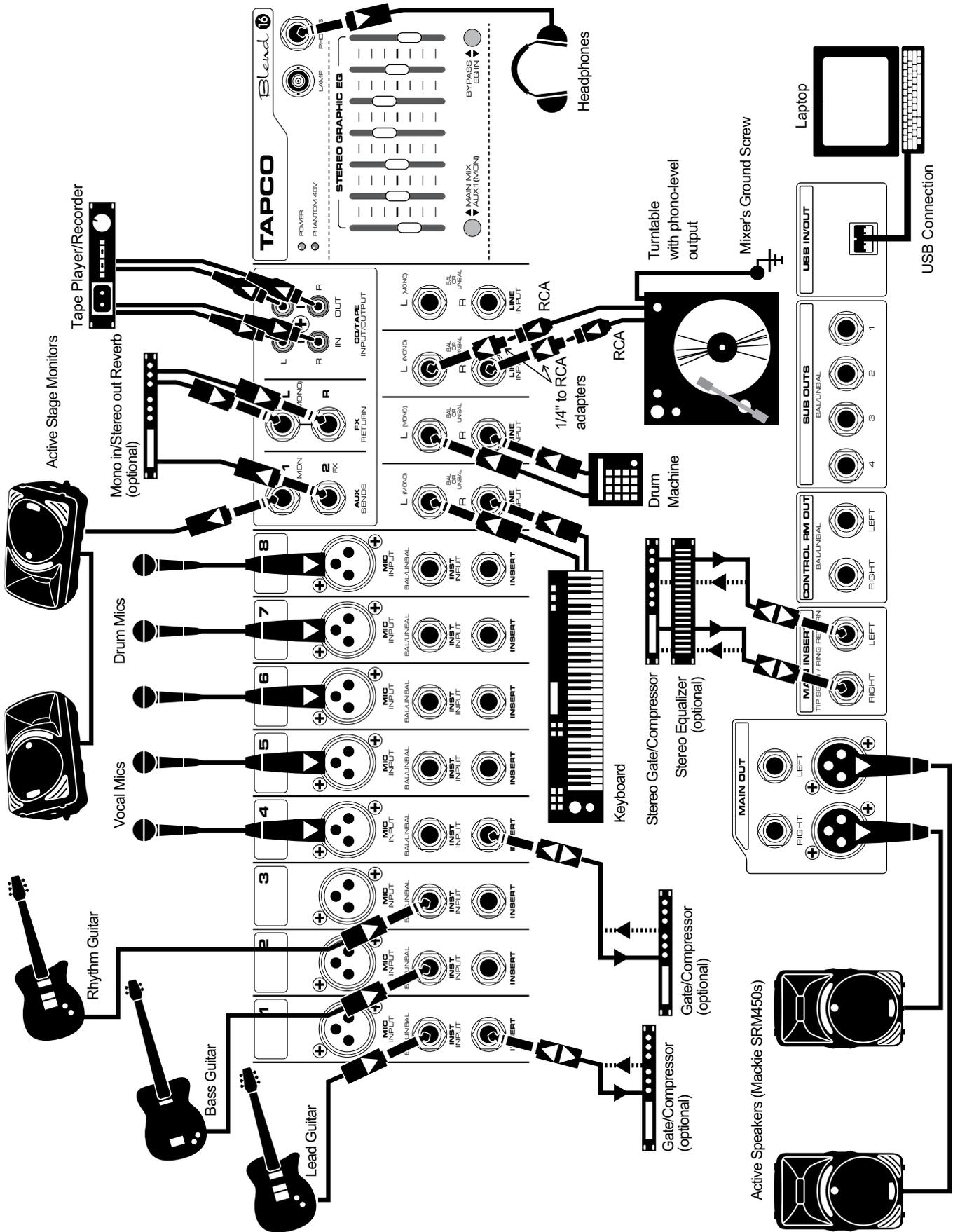
- 1/4" TRS Aux 1/Mon and Aux 2/Effects send outputs and controls
- RCA tape in and tape out
- Power LED and Phantom power LED indicator
- BNC Lamp connector
- 1/4" Stereo Headphones jack
- Stereo Graphic EQ with bypass, assignable to main mix or monitors
- 16 Internal effects (each with 16 variations) with bypass, bypass LED, input level and overload LED
- USB Output Level control with overload LED, and assign from main mix or Subs 1-2
- Control room and Headphones select from: main mix, CD/Tape, Sub 1-2, or Sub 3-4
- FX Return to Aux 1 control (monitor)
- FX Return to main mix control
- CD/Tape to main mix control
- 8-segment stereo LED VU metering
- Solo LED
- Each subgroup can be assigned to Left and/or Right of main mix
- 60 mm fader for each subgroup and main mix

Rear Panel section, with:

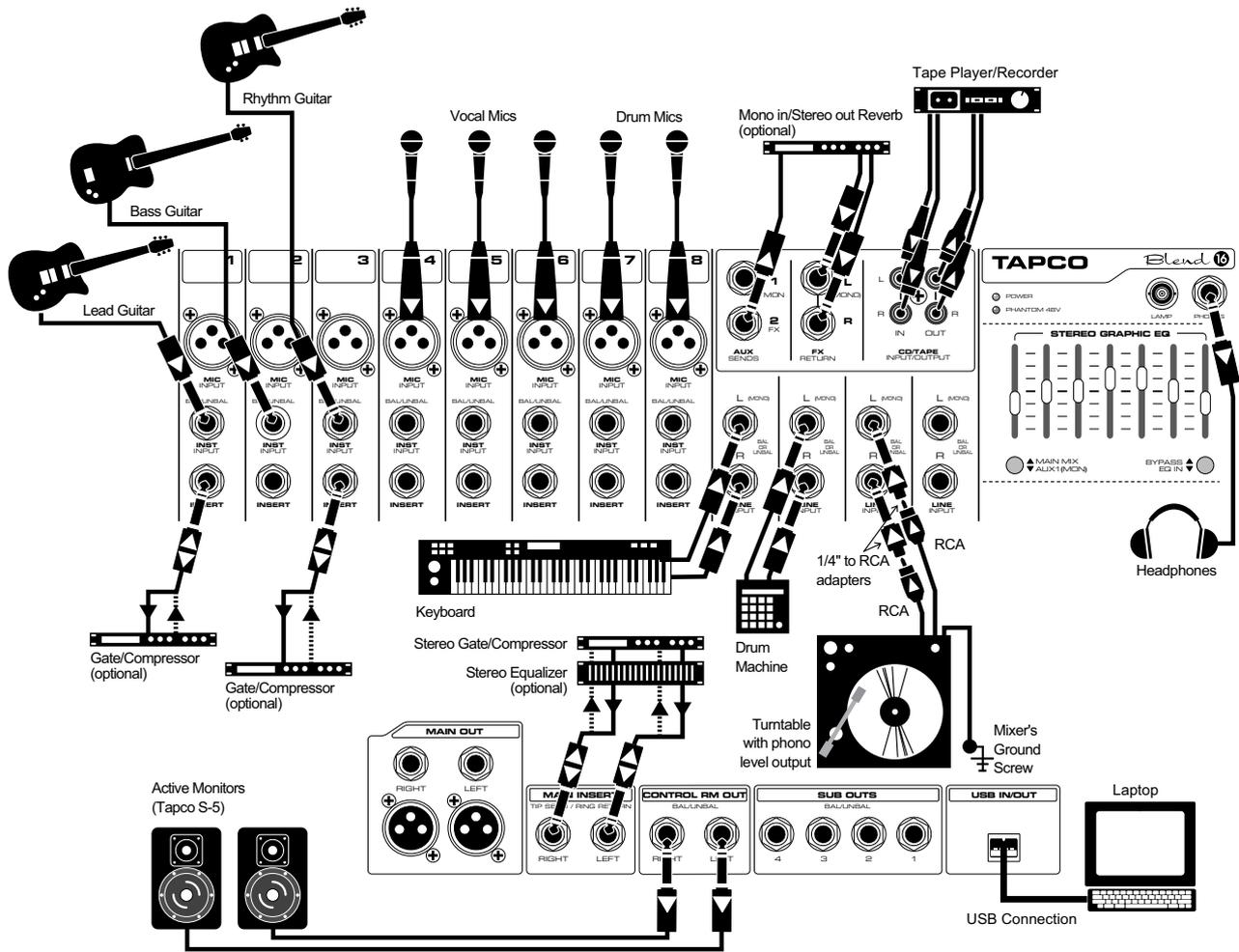
- AC Power Switch and Phantom Power Switch
- IEC AC Power Cord Socket
- Universal power supply accepts AC mains voltages from 100 to 240 VAC
- Balanced 1/4" TRS and XLR stereo main outputs
- 1/4" TRS main inserts
- 1/4" TRS control room outputs
- Four 1/4" TRS subgroup outputs
- USB connection
- Internal antique steam-powered calliope for authentic circus/carnival atmosphere
- OK, we made that last one up

Hookup Diagrams

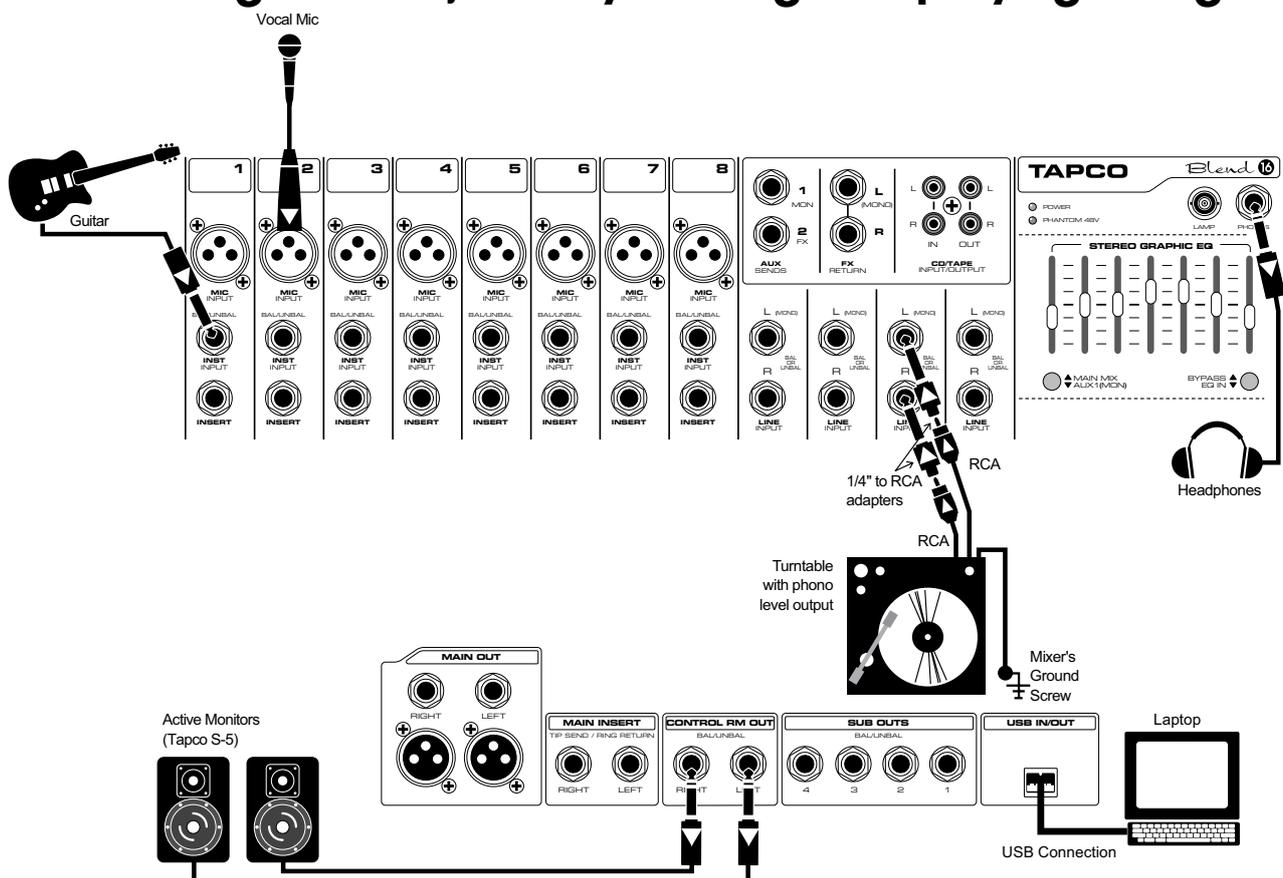
Stereo PA system



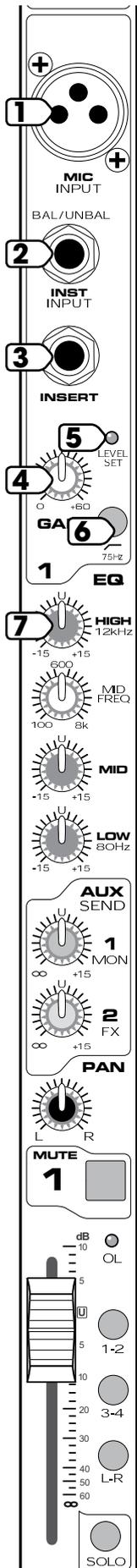
Studio tracking and overdubbing



Transferring records, while yodelling and playing along



Blend 16 Features



MONO CHANNELS

Mono channels 1 to 8 allow adjustment of EQ, Pan, and Level for mono signals. The output from each channel strip can be assigned to the main mix and subgroups. Auxiliary signals can be tapped off and sent to Aux bus 1 (monitors) and Aux bus 2 (effects).

The **U** symbol on most of the controls stands for "unity gain," meaning there is no change in signal level. Once you have adjusted the GAIN control correctly, you can set every control at **U**, and your signals will travel through the mixer at optimal levels.

Use the XLR inputs, or the 1/4" inputs, but not both on the same channel at the same time. Dedicate each mono channel to only one input at a time.

See Appendix B for more information on XLR, 1/4" TRS, and TS connectors.

1. MICROPHONE INPUTS

Channels 1 to 8 each have a real butch and rugged, low-noise, phantom-powered microphone preamplifier, providing crystal-clear amplification. Their balanced circuitry rejects all manner of extraneous interference. Professional condenser, dynamic, and ribbon mics all sound excellent through these XLR inputs.

You can plug in almost any kind of balanced mic that has a standard XLR-type male mic connector. See Appendix B for more information on XLR connectors.

These XLR inputs can provide +48 VDC phantom powering on pins 2 and 3. This can be turned on and off using the rear panel PHANTOM POWER (54) switch.

 **Caution:** DO NOT connect a line-level device to an XLR input with the phantom power switched on. This could damage the device. Use the stereo channel LINE (19) jacks instead. Do not use phantom power with tube or ribbon microphones, as this may cause damage.

2. INST INPUTS

The INST (instrument) inputs accept 1/4" TRS balanced and TS unbalanced plugs.

These high-impedance inputs are suitable for the direct connection of instruments such as guitars, without the need for a direct box or guitar preamp.

3. INSERTS

These 1/4" TRS inputs allow you to insert external processing equipment into the channel signal path (after the LOW CUT (6) switch and before the EQ).

Using a special Insert plug, the mono signal can be sent out to a processor, and the processed signal returned, all on the same plug (see Appendix B). Nice.

4. GAIN CONTROL

If you haven't already, please read "SET THE LEVELS" on page 4.

This control allows you to adjust the input sensitivity of the MIC (1) and INST (2) inputs. This allows signals from the outside world to be adjusted to the correct level, not too strong to cause distortion and not too weak to be lost in noise.

5. INPUT LEVEL SET LED

This handy LED lets you know that the signals going into the mixer are adjusted correctly.

After you connect a microphone or line-level component to the mixer, do a sound test and adjust the GAIN (4) control until this LED flickers just occasionally. If it glows constantly, turn the GAIN (4) down. If the LED is doing almost nothing, turn it up.

6. LOW CUT FILTER SWITCH

This inserts a low cut filter into the signal path, reducing the bass level (below 75 Hz, at 12 dB per octave, if specs are your thing). This occurs after the GAIN (4) level, but before the INSERT (3), EQ (7-10) and AUX (11-12) sections. Use this to cut down the low bass from things like stage rumble, mumble, bumble, and any low sounds that seem to come from two apartments down. We recommend you use this on all channels unless they have low frequency signals such as kick drums and bass guitars.

EQUALIZATION

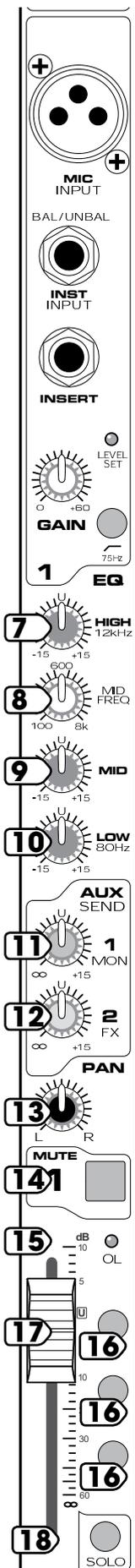
Each EQ control provides up to +15 dB of boost, and -15 dB of cut, with no change to the signal in the center position (0 dB).

Although you can bring a sound to life with proper EQ, you can also mess things up. If you max the EQs on every channel, you'll get mix mush, not to mention driving your mix levels near or beyond clipping. So equalize subtly; use cut as well as boost.

7. HIGH EQ

Turn this clockwise to boost the level of all frequencies above 12 kHz. Turn it counter-clockwise to cut the levels.

Use this wisely to add sizzle to cymbals or an overall sense of transparency or edge to keyboards, vocals, guitar, and bacon frying. Turn it down a little to reduce sibilance or hide tape hiss.



8. MID FREQ EQ

This adjusts the frequency of the MID EQ (9) control from 100 Hz to 8 kHz. This gives you great flexibility in shaping your sound. Listen carefully for its effect.

9. MID EQ

Turn this clockwise to boost the level of signals around the frequency set by the MID FREQ (8) control. Turn it counter-clockwise to cut the levels.

10. LOW EQ

Turn this clockwise to boost the level of all frequencies below 80 Hz. Turn it counter-clockwise to cut the levels. Try some boost with the LOW CUT (6) switch on, so you can boost useful bass, at the same time as cutting unwanted subsonics.

Frequencies of 80 Hz and below represent the punch in bass drums, bass guitar, and wild Tuba raves.

11. AUX SEND 1 MON

This control taps the channel's signal **before** the channel FADER (17), and sends it to the AUX 1 bus. The control ranges from infinity (off) to +15 dB.

AUX SEND 1 MON is normally used to send a separate mono mix to your stage monitors, via the AUX SEND 1 (22) output jack. Use the MASTER AUX SEND 1 (43) knob to control the overall level.

Most of the channel controls will affect the output to your stage monitors, except for PAN (13), AUX SEND 2 FX (12) and the channel FADER (17).

12. AUX SEND 2 FX

This control taps the channel's signal **after** the channel FADER (17), and sends it to the AUX 2 bus. The control ranges from infinity (off) to +15 dB.

The AUX SEND 2 FX bus feeds the internal effects circuits, and optionally, it can feed external effects devices (via the AUX SEND 2 (23) output jack). Use the MASTER AUX SEND 2 (44) to control the overall effects level.

Most of the channel controls will affect the output to the internal (or external) processor, except for PAN (13) and AUX SEND 1 MON (11).

13. PAN

This adjusts how much of the channel signal plays in the left side of the main mix and subgroups, and how much plays in the right. Careful use of PAN allows you to set up a nice stereo image in the left and right.

For the mono channels, if PAN is in the center position, the mono signal appears equally in both the left and right of the main mix. If the control is set left, more of the signal appears in the left side. If the control is set right, more of the signal appears in the right side of the mix.

For stereo sources, where you are using two mono channels, the standard convention is to plug in the left signals into the odd-numbered channels, and the right signals into even-numbered channels. Then you can pan the odd channels hard left, and the even channels hard right.

14. MUTE

Press this switch to prevent that channel's signals from reaching the main mix, aux, or subgroups. (Soloed channels can still be heard in the control room and phones.)

15. OL (OVERLOAD) LED

This will light when the channel's signal is close to clipping.

If this comes on, turn down the channel's GAIN (4) knob, or your EQ (7-10) settings. (The channel FADER (17) or PAN (13) will have no effect.)

16. 1-2, 3-4, and L-R SWITCHES

These three switches are used to assign the channel's signal to the subgroups 1-2 and 3-4, and the main mix L and R buses.

For example, if you want channel 1 to go to the subgroup 1-2, and subgroup 3-4, press the 1-2 and 3-4 switches of channel 1. (The channel 1 PAN (13) knob will pan the channel's signal between subgroup 1 and 2, and between subgroup 3 and 4.)

If you want channel 2 to appear on the main mix, press L-R on channel 2.

17. FADER

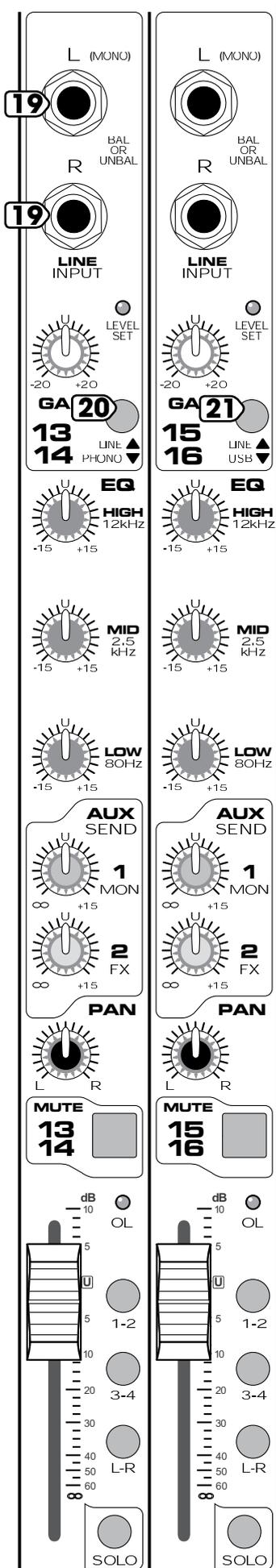
This is the master level control for the channel's signal. Subtle adjustment of the channel faders is the key to a finely-tuned mix.

Typically (providing the GAIN (4) is set correctly), this will be somewhere near the 0 dB (U) position.

If you have the fader set all the way up, it's usually a sign that your GAIN (4) is set too low. If the fader is set way down, your GAIN may be too high.

18. SOLO

Pressing this switch in will send the channel's signal to the control room and headphones output for monitoring. The RUDE SOLO (47) light will flash on and off as long as any of the solo switches are engaged.



For an example, suppose your band is performing on stage, and you hear something unusual (well, more unusual than normal). Without interrupting their performance, you can Solo each channel in turn, and listen in the headphones until you identify the problem channel or band member. The Solo signal is not affected by that channel's MUTE (14), or FADER (17). The channel signals to the Aux, main mix and subgroups are not affected.

STEREO CHANNELS

The following details show the differences from the Mono channels:

There are no microphone inputs, inserts, or low cut filters, and the Mid EQ frequency is fixed at 2.5 kHz.

The 1/4" inputs are Line-Level, not instrument level.

As AUX 1 and 2 buses are mono, the stereo signals are summed before reaching the AUX SEND (11,12) knobs.

SOLO (18) sends a sum of both channels to the control room and headphones.

GAIN (4), EQ (7-10), and MUTE (14), and the channel FADERS (17) operate equally on both left and right signals.

PAN (13) works rather like the balance control on a home stereo, adjusting the left and right balance onto the main mix or subgroups.

19. LINE INPUTS

These inputs accept 1/4" TRS balanced and TS unbalanced plugs from any line-level instrument, effects device, or tape player. They can be driven by virtually any line-level signal.

Guitars and other instrument-level sources should not be connected directly to these inputs. Use the INST (2) inputs of channel 1 to 8, or use a preamp to give a line-level output, and connect that to these inputs.

Mono sources should be connected to the left input only. The left signal will then be split equally to the left and right. You can use the PAN (13) control to change the left/right balance of the main mix and subgroups.

Stereo sources should be connected to both left and right inputs, where they will pass through the channel strip separated. The standard convention is to plug in the left signals into the odd-numbered

channels, and the right signals into even-numbered channels.

20. LINE/PHONO switch (channels 13 and 14 only)

In the up position, channel 13 and 14 accept line-level signals.

In the down position, these two inputs accept phono-level signals direct from turntables. An internal phono preamplifier applies the standard (RIAA) phono re-equalization, and amplifies the raw cartridge signals to line-level.

Suppose you have a turntable and a favorite record from when you were young. Connect the phono-level outputs of the turntable to the Ch 13 and 14 1/4" inputs. (You might need a pair of RCA to 1/4" adapters, depending on your turntable.) Also connect the turntable's ground wire to the mixer's rear panel ground screw. Play the record and adjust the GAIN (4) as normal, so the LEVEL SET LED (5) just lights. Select SOLO (18) to hear it in the control room or headphones, or press L-R to send it to your main mix.



Caution: DO NOT press the line/phono switch down if you are putting in a line-level signal (or if your turntable already has line-level outputs). This could overload the mixer and damage your hearing.

21. LINE/USB switch (channels 15 and 16 only)

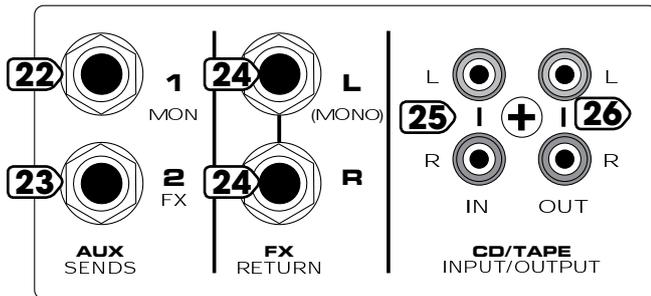
In the up position, channel 15 and 16 accept line-level signals.

In the down position, the stereo channel is not fed by its 1/4" inputs, but by the rear panel USB port connected to a computer.

In the mixer's USB section, the digital audio output from software such as Tracktion is converted to line-level, two-channel analog, that feeds channels 15-16 just before the GAIN (4) knob.

For example, suppose you have recorded and mixed a lovely tune using Tracktion software. You can select Play in Tracktion, and press this LINE/USB switch in to get the signals into the mixer. Adjust the channel GAIN (4) as normal, so the LEVEL SET LED (5) just lights. Press L-R (16) to send it to the main mix.

AUX SENDS and RETURNS



22. AUX 1 SEND MON OUTPUT

To create a stage monitor mix, connect this 1/4" TRS output to the input of your stage monitor amplifier (or powered monitors).

Each channel's AUX SEND 1 MON (11) knob adjusts how much of the channel's signal appears on the AUX 1 bus. The AUX 1 bus carries the sum of all those active channels whose AUX SEND 1 MON (11) knobs are set to more than minimum position.

The MASTER AUX SEND 1 (43) knob allows you to adjust the overall output level to your stage monitors.

You can use the internal 7-band graphic EQ (31) to equalize the monitor mix, by pressing in the MAIN MIX/AUX 1 (MON) (32) switch.

This output to your stage monitors is **not** affected by the channel FADERS (17) or MAIN MIX FADER (52). This is a good thing, as the monitors are not affected by level changes to your main mix.

23. AUX 2 SEND FX OUTPUT

This 1/4" TRS output is intended to patch into an external effects processor, hence the name FX.

Each channel's AUX SEND 2 FX (12) knob adjusts how much of that channel's signal appears on the AUX 2 bus. The AUX 2 bus carries the sum of all active channels whose AUX 2 SEND FX (12) knobs are set to more than minimum.

The MASTER AUX SEND 2 (44) knob affects the final output level to your external processor.

This output **is** affected by the channel FADERS (17), but not the MAIN MIX FADER (52).

Note: Before the AUX 2 signals reach the MASTER AUX SEND 2 FX (44) knob, a copy is tapped off to go to the internal Effects processor, and from there onto the main mix bus.

24. FX RETURN INPUTS

If you have an external effects processor, you can plug it into these inputs.

The incoming signals are added into the main mix, and a summed mono signal is added to the monitor mix. Adjustment is provided by the fascinating FX RETURN (45, 46) controls described in the Master section.

When connecting a mono device (just one cord), always use the left (mono) input and plug nothing into the right input. The signal appears on both sides.

25. CD/TAPE INPUTS

This is where you connect the outputs of your intermission entertainment. Any line-level mono or stereo device can be used, such as: tape, DVD/CD player, television audio, etc.

Signals coming into these inputs are routed directly to the CD/TAPE TO MAIN MIX (49) control and through to the main mix. You will need to MUTE (14) all the other channels, if you just want to hear the CD or Tape.

The signals can also be routed to the control room and headphone when the control room/phones source select CD/TAPE (42) switch is pushed in.

When connecting a mono device (just one cord), you'll need a "Y-splitter" RCA adapter. It turns a mono output cord into two cords, so both the right and left tape input jacks can be used. This adapter is widely available. See Appendix B for more information about RCA connectors.



Caution: There is a chance of feedback if you have the tape inputs and outputs connected to the same recorder, and the recorder is in record mode.

26. CD/TAPE OUTPUTS

Use these RCA jacks to capture the entire performance to tape. The output signal is a direct copy of the main mix, as it appears at the MAIN MIX (58) outputs and the USB (62) output to your computer.

You could also use these outputs to connect to the unbalanced RCA inputs of a home stereo amplifier, if you had a mind to.

Do not use long runs of unbalanced cables, or there might be signal degradation and noise. Try using good quality cables as sold in Hi-Fi stores.

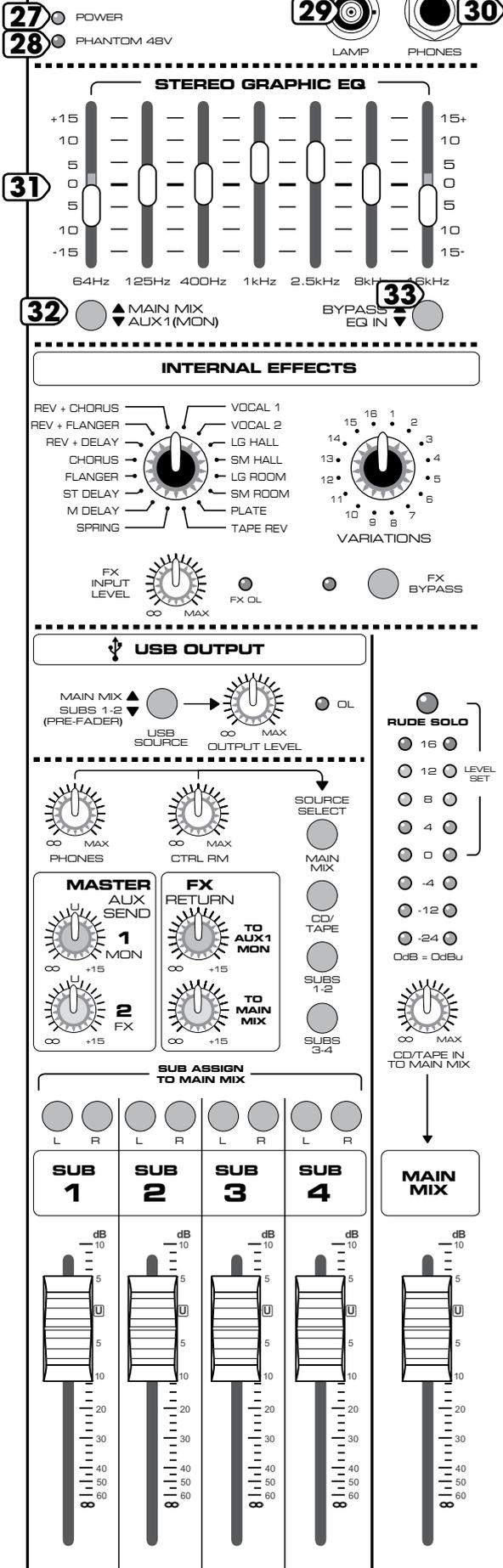
Use the tape player's record-level control to set up the correct levels for recording. Take care if you use the MAIN MIX FADER (52) to adjust the levels, as this will affect your MAIN MIX (58) outputs as well as these Tape outputs.

MASTER SECTION

So far, we have described the channels, and how the signals from all of your microphones, instruments, line-level sources and CDs or Tapes get onto the main mix buses, subgroups 1 to 4, and the Aux buses. Now we come to the Master section, that controls what happens next.

27. POWER LED

This light glows when the mixer is turned on. If it is off, the mixer will sulk and not work. Check that the rear panel power switch is on, that the power cord is plugged in, and any power strips or wall switches are on. Also check if all the lights are out in your neighborhood. You never know.



28. PHANTOM POWER LED

This light comes on when the rear panel PHANTOM POWER (54) switch is turned on. This indicates that the XLR MIC (1) inputs are supplied with 48 volts.

29. LAMP

This female BNC connector allows you to attach a "Littlelite" brand gooseneck lamp or equivalent, to shine a light on the control surface, and give you that mysterious cool look, as you work in the dark.

30. PHONES

This is where you plug in a nice pair of stereo headphones. It accepts 1/4" stereo plugs. Adjust the level using the PHONES (40) knob.



Caution: Always turn the PHONES knob down when making connections, or when pushing any switches. These precautions will help protect your hearing.

31. 7-BAND STEREO GRAPHIC EQ

The magnificent seven sliders allow you to equalize the main mix, or the stage monitor mix.

Each slider varies the level by ±15 dB either side of unity gain. The frequency bands are 64 Hz, 125 Hz, 400 Hz, 1 kHz, 2.5 kHz, 8 kHz and 16 kHz.

Adjust the EQ wisely and subtly. Do not overdo the EQ gain, as this might lead to overloading or clipping. Think of it like makeup, it should be applied sparingly for a lovely effect, not caked on like wall plaster.

32. MAIN MIX/AUX 1 MON

This switch lets you assign the EQ (31) to either the main mix or the Aux 1 stage monitor mix.

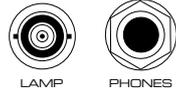
In the up position, the main mix will pass through the EQ, and the monitor mix is not affected. You can then adjust the sound of your main speakers, and compensate for the effects of the room environment.

In the down position, the stage monitor mix passes through one side of the stereo EQ, and the main mix is not affected. You can adjust the EQ to prevent mic or guitar feedback from the stage monitors, or allow the band to hear the monitors more clearly, or less clearly if that helps any.

33. EQ BYPASS

This switch allows you to quickly bypass the EQ (31) so you can judge its effect without having to set the sliders back to center. Push it in to hear the EQ, and leave it up to bypass.

- POWER
- PHANTOM 48V



STEREO GRAPHIC EQ

64Hz 125Hz 400Hz 1kHz 2.5kHz 8kHz 16kHz

▲ MAIN MIX
▼ AUX1 (MON)

BYPASS EQ IN

INTERNAL EFFECTS

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FX INPUT LEVEL

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FX BYPASS

USB OUTPUT

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RUDE SOLO

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52

INTERNAL EFFECTS

The internal effects circuit receives mono signals from the AUX 2 FX bus, and it outputs stereo signals onto the main mix buses. It also adds a summed mono signal to the stage monitor mix (AUX 1 bus). The outputs are controlled by two FX RETURN (45, 46) knobs described on the next page.

Inside the processor, the analog audio is converted to digital, this is processed, and the result converted into stereo analog signals.

Spicy curry can also result in some remarkable internal effects, many in the audio frequency range.

34. EFFECTS SELECTOR

The internal effects processor has 16 great preset effects to enhance your sound, confuse cats, and upset hamsters, if that is your idea of fun. Each has been carefully modeled to represent standard effects. Note that the output mutes momentarily when changing effects.

VOCAL 1	SPRING REVERB
VOCAL 2	MONO DELAY
LARGE HALL	STEREO DELAY
SMALL HALL	FLANGER
LARGE ROOM	CHORUS
SMALL ROOM	REVERB + DELAY
PLATE	REVERB + FLANGER
TAPE REVERB	REVERB + CHORUS

35. EFFECTS VARIATIONS

As you rotate this control from position 1 through to 16, the "strength" of the effect will increase.

For an example: for a reverb effect, a low number will have a short reverb time, and a larger number will have a longer reverb time.

36. FX INPUT LEVEL and OL LED

This knob allows you to adjust the signal level going into the internal effects processor. This is useful if the signal is too strong, and the processor becomes overloaded.

If you see the FX OL overload light come on, turn down the knob until it just turns off during the louder passages, riffs, chords, yells, etc.

37. FX BYPASS and LED

Press this switch in to bypass the internal effects processor, and so prevent its output from appearing on the main mix or stage monitors. The LED reminds you whenever the processor is bypassed.

Use BYPASS if you are not using the internal effects, as it will reduce any extraneous interstellar noise, or use it to quickly compare between the effective effect of effects and the effect of no effects.

38. USB OUTPUT: MAIN MIX/SUBS 1-2

This switch allows you to choose if the main mix or if subgroups 1 and 2, are sent out of the mixer's USB (62) output to your computer.

If pressed in, the A/D converters of the USB section receive the output from subgroups 1 and 2 (before the SUB FADERS (50)). This is a good position for studio recording and overdubbing with your computer.

If pressed out, the A/D converters receive the main mix (after the MAIN MIX FADER (52)), just the same program as your main speakers and tape deck will receive. This is a good position for recording the main performance onto your computer.

Further details of the USB connections and operation are described on page 19.

39. USB OUTPUT LEVEL and OL LED

The USB section has an A/D converter that converts the selected analog channels into a digital stream.

This knob allows you to adjust the signal level before it reaches the A/D converters. Turn it down if you see the OL light come on.

Like all OL overload LEDs, this is an important one to keep an eye on, so the outputs to your computer are not distorted.

40. PHONES

This adjusts the headphone levels without disturbing the main mix or control room levels.

Turn this down before connecting and putting on your headphones, or before engaging any switches. Bring it up slowly.



Caution: Be very careful because the PHONES (30) output can drive any standard headphones to very loud levels. Please see page 2 for information on hearing protection.

41. CONTROL ROOM

This adjusts the output level to your control room, from the source selected using the SOURCE SELECT (42) switches below. It does not affect the headphones level or the main mix level.

42. SOURCE SELECT Switches

Use these four switches to select the signal source for the control room outputs, headphones, and meters.



Caution: Turn down the CTRL ROOM (41) and PHONES (40) knobs before pushing these switches.

When the switches are up, the control room outputs, headphones, and meters receive no signals (unless any channels have SOLO (18) engaged).

Push MAIN MIX to hear the main mix.

Push CD/TAPE to hear your CD or Tape player.

Push SUBS 1-2 to hear subgroup 1 and 2 outputs.

Push SUBS 3-4 to hear subgroup 3 and 4 outputs.

Note: If any channel has its SOLO (18) switch in, then only the SOLOed channels are heard in the control room or headphones.

43. AUX 1 (MON) MASTER SEND

This knob is the master level control of the AUX SEND 1 MON (22) output jack. Adjust this knob to control the overall level of your stage monitor mix.

44. AUX 2 (FX) MASTER SEND

This knob is the master level control of the AUX SEND 2 FX (23) output jack. Adjust this knob to control the level sent to your external processors.

45. FX RETURN TO AUX 1 MON

This knob allows you to adjust the level of the effects going onto the AUX 1 MON bus and out to your stage monitors.

Signals (from external processors) coming into the AUX FX RETURN (24) jacks, and the internal effects processor output (unless bypassed), are summed to mono and added to the AUX 1 Monitor bus through this level control.

The control ranges from minimum fully counter-clockwise, to unity gain at the center, to +15 dB fully clockwise.

46. FX RETURN TO MAIN MIX

This knob allows you to adjust the level of effects going onto the main mix bus and out to your main speakers.

Signals (from external processors) coming into the AUX FX RETURN (24) jacks, and the internal effects processor output (unless it is bypassed) are added to the main mix bus through this level control.

The control ranges from minimum fully counter-clockwise, unity gain at the center, to +15 dB fully clockwise.

47. RUDE SOLO LED

This rather annoying light flashes on and off as a reminder when any of the channel SOLO (18) switches are pushed in. When flashing, you will hear the SOLOed channel(s) in the control room and headphones.

48. METERS

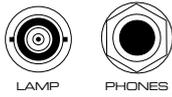
These LEDs show the level of the control room and headphone signals, before the control room and headphones level controls.

As the control room/phones source select switches are engaged, you can view the levels of the different sources (main mix, CD/Tape, Sub 1-2 and Sub 3-4).

The calibrations are: -24, -12, -4, 0, +4, +8, +12 and +16 dB (Clip), where 0 dB = 0 dBu.

You can get a good mix with the meter's peaks flashing anywhere between -24 and +8 dB. Most

- POWER
- PHANTOM 48V



STEREO GRAPHIC EQ

INTERNAL EFFECTS

USB OUTPUT

amplifiers clip at about +10 dB, and some recorders aren't so forgiving either. For best real-world results, try to keep your peaks between 0 dB and +8 dB.

If your meters are too high, you will get distortion. If they are too low, then your signal-to-noise will suffer. Use the meters to help you adjust the mixer for optimum performance without distortion or noise. Then you can adjust your amplifier's level controls for good overall volume.

49. CD/TAPE TO MAIN MIX

This knob is used to control the level of the signal that goes onto the main mix bus from your CD player or tape deck. If the band is taking a break, you can play some intermission music, and MUTE (14) all active channels.

50. SUBGROUP FADERS

If the SUB ASSIGN TO MAIN MIX L and R (51) switches above each fader are engaged, these faders will affect the subgroup levels reaching the main mix bus.

These faders also control the signal level out of the rear panel SUB OUTS (61).

They also affect the level to the control room/phones if the SOURCE SELECT (42) switches SUB 1-2 or SUB 3-4 are engaged.

The faders range from minimum at the bottom, to unity gain at 75% up, and to +10 at the top.

For an example of subgroups, suppose you have a group of microphones to record a drum kit:

- Each drum microphone could be assigned to subgroup 1-2 by pressing the channel 1-2 switches.
- Use the channel Pan controls to create a delicate stereo mix between subgroup 1 and 2.
- Assign this to the main mix.
- Use the subgroup faders 1 and 2 to adjust the sound of all drum mics in the main mix, instead of having to tweak each individual drum mic channel fader.

51. SUB ASSIGN TO MAIN MIX L and R

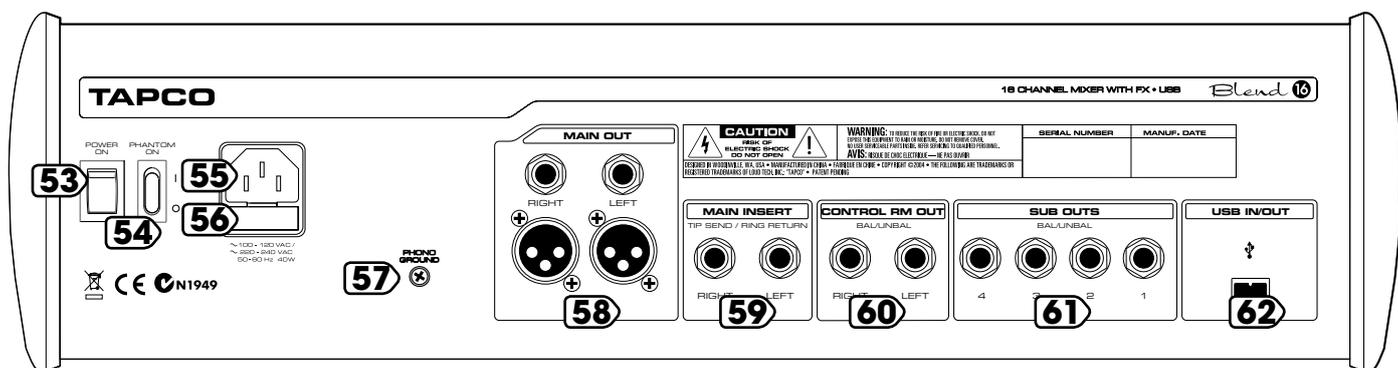
These switches allow you to assign a subgroup to the main mix bus. The rear panel subgroup outputs are not affected.

52. MAIN MIX FADER

This 60 mm stereo fader adjusts the level of the main mix as it is sent out of the MAIN MIX (58) outputs for audience entertainment, and TAPE (26) outputs for recording for posterity/archiving/evidence.

It also adjusts the levels to the USB (62) outputs, and control room/phones, if the main mix is set to be their source.

This fader is what you use for the long drawn-out fade out or fade-in. It ranges from minimum at the bottom, to unity gain at 75% up, to +10 dB at the top.



REAR PANEL FEATURES

53. POWER SWITCH

Push the top of the switch labeled “ON” to turn the mixer on; you should see the POWER LED (27) glow with happiness. To turn the mixer off, push the bottom of the switch.

As a rule, turn the mixer on first, before any amp or powered speakers. At the end of a show, turn it off last. This will prevent any turn-on/turn-off thumps from being heard in the speakers.

54. PHANTOM POWER

Turn on this switch to provide +48 VDC phantom power to the MIC (1) input XLR jacks (pins 2 and 3).

Phantom power is required to operate most condenser microphones (some condenser microphones are battery-powered).

If you have ribbon mics, tube mics, or dynamic mics that do not require phantom power, leave the switch out. If you are using both condenser and dynamic mics, don’t worry. Phantom power will not hurt most dynamic mics. Check the microphone’s user manual if you’re not sure.



Caution: Turn all output levels down before operating this switch to avoid the possibility of a “pop” in your speakers. Do not use phantom power with tube or ribbon microphones, as this may cause

damage. Always turn off phantom power when connecting or disconnecting your microphones.

55. AC POWER IN

This standard IEC connection is where you connect the supplied power cord.

Connect the power supply cord to the Blend 16 first, then plug the power supply into a suitable and properly rated AC outlet.

The Blend 16 has a universal power supply that will operate with AC mains voltages from 100 VAC to 240 VAC.

56. AC FUSE

If you suspect a blown fuse, disconnect the power cord, pull the fuse drawer out (located just below the cord receptacle) and replace the fuse with the same type and current rating. If two fuses blow in a row, something is very wrong, and you should unplug the mixer and call technical support.

57. PHONO GROUND

If you have a turntable connected, use this screw terminal to connect the turntable’s ground wire. This will prevent a hum in your system.

58. MAIN OUTPUTS

These 1/4" TRS jacks and XLR jacks represent the end of the mixer chain, where your fully mixed stereo signal entertains your audience.

Connect these outputs to the inputs of your amplifiers, powered speakers, or serial effects processor (graphic equalizer, for example).

59. MAIN INSERTS

These allow you to insert an external device such as the Tapco SQUEEZE compressor/limiter or TWEEQ graphic EQ into the main mix signal path.

You will need “Insert Cables” that allow the main mix signals to go out to your external device, and have the processed signals come back into the mixer on the same plug (see Appendix B).

The inserts are taken directly from the main mix bus, before the 7-Band EQ (31) and the MAIN MIX FADER (52).

60. CONTROL ROOM OUTPUTS

These 1/4" TRS jacks can be used to monitor the main mix, CD/Tape inputs, subgroups, or SOLOed channels.

Use the control room SOURCE SELECT (42) switches to select what you want to hear, all independent of what the main mix outputs are playing.

Connect these outputs to the inputs of an amplifier with speakers, or powered speakers for monitoring.

61. SUBGROUP OUTS

These 1/4" TRS jacks represent the output from your subgroups. You can connect them to amplifiers or powered speakers, or send the outputs off to an ADAT recorder (or not use them at all).

62. USB IN/OUT

One end of the supplied USB cable connects here, and the other end connects to the USB port of your computer. The USB cable can simultaneously send and receive two channels of audio to and from any Mac or PC audio software.

Appendix A: Using the Blend 16

At first glance, the controls on the front panel of the Blend 16 may seem more at home in a space movie, right next to the Navigation officer. Like most things, it's worse than that really. Here is a brief overview that may help you understand the basic functions and mysterious inner workings of the Blend 16.

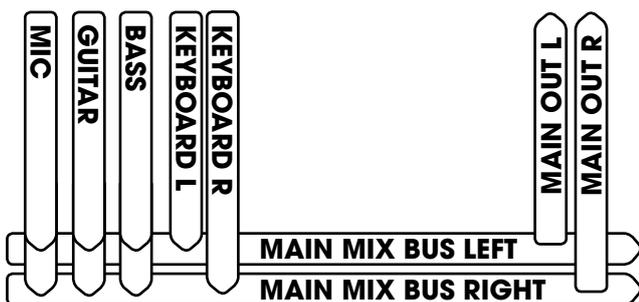
Buses

A public transportation bus takes many passengers and delivers them to various destinations. In a similar way, an audio bus combines multiple audio signals and delivers them to an output.

The Blend 16 has two main mix buses, two auxiliary buses, and four subgroup buses.

Main Mix Buses

The audio signals from the microphones, guitars, instruments and keyboards of your wonder-band can be combined in the main mix bus and sent to your main amplifiers and speakers (or powered speakers). This could be your Club speaker system, or Uncle



Ernie's garage.

To get the channel signals onto the left and right main mix buses, press the L-R buttons near the bottom of each channel strip.

The channel PAN knobs adjust the signal balance onto the buses. Mono signals are shared equally to the left and right bus if the PAN is centered. With PAN fully left, the signals just go onto the left bus, and with PAN fully right, they go onto the right bus.

Each channel can be tweaked in EQ and level, and the MAIN MIX FADER used to adjust the overall volume level. The main mix can also be assigned to the USB output, and sent to a computer for recording.

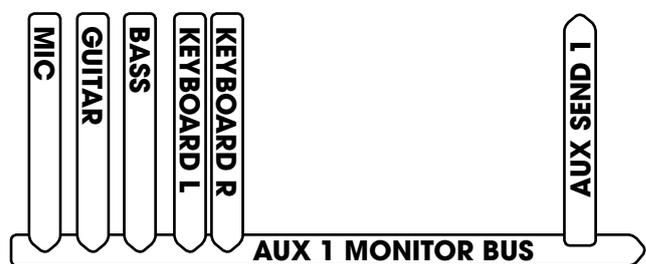
In addition to the channel inputs, the main mix can receive the following:

- Each of the four subgroups has an L and R switch to assign the output onto the main mix. See below for more subgroup details.
- The CD/Tape input has a level control to adjust the amount of signal going onto the main mix.

- The FX RETURN input has a similar control to adjust the level of internal and external effects going on to the main mix.
- Channels 15 and 16 can switch the audio output from your computer's software (such as Tracktion) onto the main mix.
- Channels 13 and 14 can accept the signals from a turntable onto the main mix.

Auxiliary 1 Stage Monitor bus

The Aux 1 Mon bus is normally used for sending an output to your stage monitors, so the band can clearly hear what they are playing, amidst the wild frenzy of the audience.



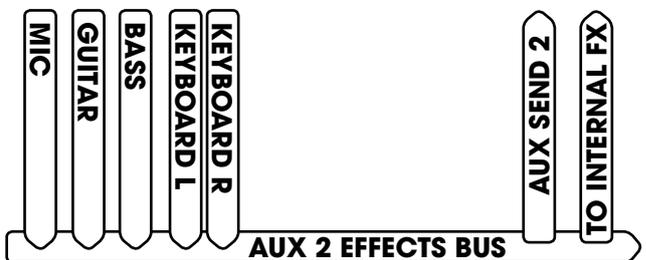
To get signals onto the Aux 1 Mon bus, rotate the AUX SEND 1 controls located just below the EQ section of each channel strip.

The stage monitors receive a mix that is independent from the main mix, and not affected by the channel faders or Main Mix fader.

The mixer has a separate AUX SEND 1 output, that allows you to send the feed to your stage monitors.

Auxiliary 2 Effects bus

The Aux 2 FX bus is normally used to send an output through the internal effects processor and onto the main mix, and to send an output to external effects via the AUX SEND 2 output.

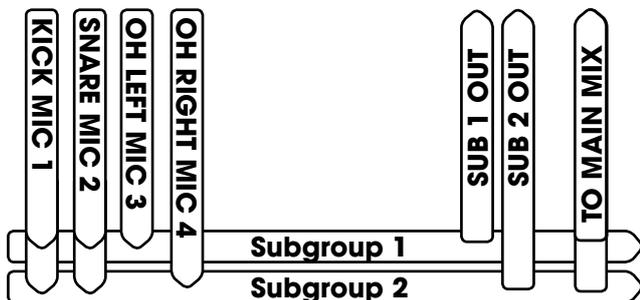


To get signals onto the Aux 2 FX bus, rotate the AUX SEND 2 controls located just below the EQ section of each channel strip.

Unlike Aux Send 1, the levels going to Aux Send 2 are affected by the channel faders. (As the channel faders are changed, the signal levels going to the internal and external processors change.)

Subgroups

The channel audio signals can also be sent to the subgroups. These let you group together similar or related sources.



For example, your drum kit microphones can be sent to subgroups 1 and 2. The output from each subgroup can be adjusted with its own SUB FADER, assigned to the main mix, and/or sent out of the sub output jacks for recording.

To get signals onto the subgroups, press the 1-2, or 3-4 buttons near the bottom of each channel strip.

Careful use of each channel's PAN can create a nice stereo image in subgroups 1 and 2, or in 3 and 4. If you want a channel to only go to 1 (or 3), pan fully left; for 2 (or 4), pan fully right.

To get subgroups onto the main mix, press the L and/or R buttons above each SUB FADER.

Control Room and Phones Section

The control room section lets you select and monitor the main mix, the CD/Tape player, subgroups and listen to individual SOLOed channels, all without interrupting the main mix. You can set up a separate amplifier and speakers for a studio control room, Uncle Ernie's control shed, or headphones.

Solo

Any channels with their SOLO button engaged, will have their signals sent (pre fader) to the control room output and headphones for monitoring. This does not affect the main mix, so your band can still play on while you check individual channels and weed out Mr. Out-of-Tune from the boy band.

USB and the Blend 16

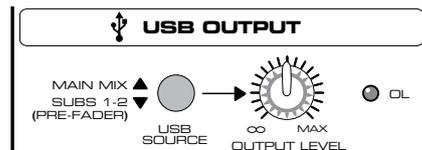
One of the cool features of the Blend 16 is its integrated USB input and output. Among other things, this allows you to record your live shows, perform recording sessions in your home studio, or use your computer as a jukebox/band member during live performances, with only your mixer, a computer and a USB cable. No extra computer audio interface hardware is needed.

Before you can get started, you may need to install the drivers. See the instructions included on the Blend 16 software CD.

Three controls configure how the USB connection will work in different scenarios:

USB Source switch:

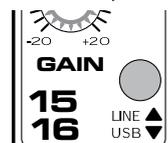
This lets you choose whether your computer is fed by the main mix, or by a pre-fader tap of subgroups 1-2.



USB Output Level: The selected channels of analog audio pass through this control, allowing you to adjust the gain if needed, and to stop the USB OL (overload) LED from coming on.

Then the analog audio is converted to a serial stream of digital data, and sent through the USB cable to your computer where you can record it into your DAW software (Digital Audio Workstation).

LINE/USB switch (CH 15/16): Two stereo channels can return from your computer to channels 15-16 by pushing this switch at the top of the channel.



Recording Live

In a live situation, you can capture a recording of exactly what the audience heard to your computer's hard drive, perhaps to burn a CD later.

Configuration:

- Set up your mixer for your live show as you normally would. Be sure the USB SOURCE button is in the up position; your computer will receive a copy of the mixer's stereo main mix signals.
- Adjust the USB Level Control so the USB OL LED does not light during the sound tests or performance, encores etc.
- Open your recording software of choice and begin recording the Blend 16 USB input. This can be done in either mono or stereo, depending on how you are mixing your live show (there's no reason to record in stereo if you are mixing the show in mono).
- Be sure the USB button is not engaged on channels 15-16 as this may cause a feedback loop with some DAW setups.

Studio Recording and Overdubbing

In your studio, you can record two channels or selected groups of channels to your computer, playback your recording, and perform overdubs by adding new material.

There are two different methods for monitoring the recording:

- Direct monitoring (listening to the direct sounds as you record).
- Software monitoring (listening through the recording software). For example, you might want to listen as you play your guitar through a new "warm amp tones" software simulator plug-in.

Note: Use either monitoring method, but not both at the same time, or you may hear an undesirable echo of your recording.

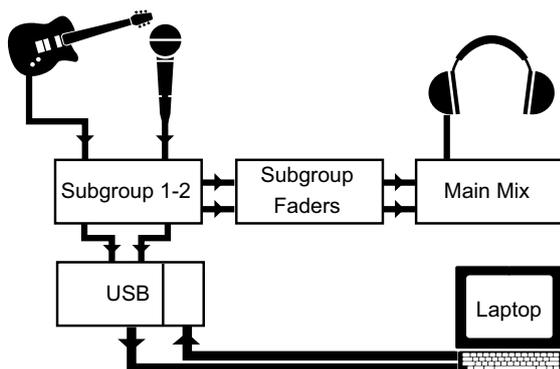
Studio: Direct Monitoring

Configuration:

1. Connect your mics and instruments to the mixer's inputs (leave channels 15-16 unused).
2. Connect your amplifier/speaker system (or powered speakers) to the Control Room outputs, or connect headphones to the Phones output. Keep the Control Room and Phones level controls down for now. Press Main Mix in the Control Room source section, (you'll be monitoring the main mix).
3. Assign those channels you want to record to subgroups 1-2, but NOT to L-R main mix (i.e., press down the 1-2 switch on each channel, but leave each L-R switch up).
4. Use PAN on each channel to select if the mics or instruments go to subgroup 1 or 2. For example, to record a vocal microphone and an electric guitar at once, route the mic to subgroup 1 (PAN fully left, and 1-2 down) and the guitar to subgroup 2 (PAN fully right, 1-2 down).
5. Press the USB SOURCE switch **down**; copies of subgroups 1-2 are fed to the USB's A/D converter and sent to your computer's DAW software.
6. Sing or play, at normal performance levels and adjust the USB OUTPUT LEVEL knob to avoid clipping the USB A/D converter.

Here is where Direct Monitoring comes in:

7. To listen to the direct sounds as you record, assign subgroups 1-2 to the main mix, using the L and R switches above the subgroup faders. Carefully turn up the Control Room level and/or Phones level a little, then use the subgroup faders to control the volume of what you are hearing. (They do not affect the signal levels sent to the computer, since the signals are tapped before the subgroup faders.)



8. To perform an overdub and hear some previously recorded material (such as a drum beat) to play along to while recording, press the USB button on channels 15-16 and assign 15-16 to the main mix.

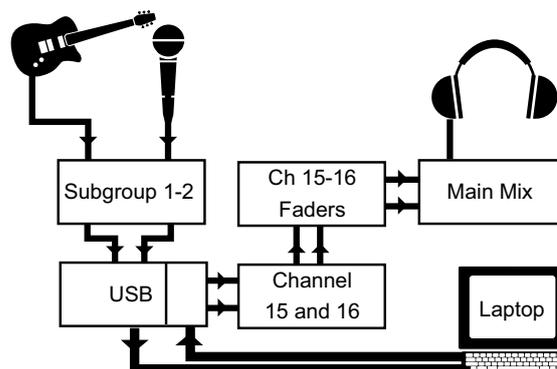
Studio: Software Monitoring

Configuration:

1. Follow steps 1 to 6 above to get your sounds into the computer, using subgroups 1-2. Do not assign the subgroups to the main mix.

Here is where Software Monitoring comes in:

2. To listen through the software as you record, engage software monitoring in your DAW for the Blend 16 inputs. You will then be able to listen to the tracks while you are recording, including any software effects you might have added. This is done differently for each DAW, so consult your software's manual if you are unsure how to do this. In Tracktion, you would enable "end to end" on the Blend 16 inputs.



3. On your DAW, place any software effects you would like to "monitor through while recording" onto the tracks coming in from the Blend 16.
4. Press the USB button on channels 15-16 and assign 15-16 to the L-R, but not to subgroups 1-2.
5. Press Main Mix in the Control Room source section and you will hear the signals you will record (through their effects) along with playback from any previously recorded tracks.

DJ Music Playback

Main aim:

Use the computer as a sound source for playback during a live performance, or as the main sound source for their DJ set.

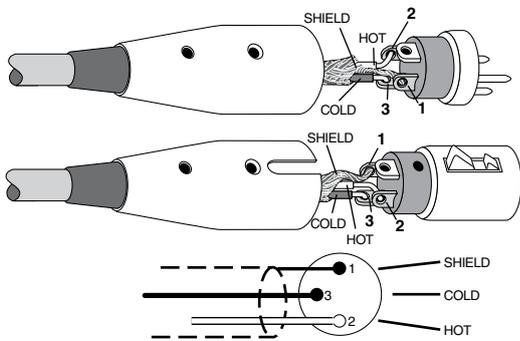
Configuration:

- Setup your mixer for your live show as you normally would, but leaving channels 15-16 unused.
- Open your music software on your computer and configure it to output to the Blend 16.
- Press the USB button on channels 15-16. The output of your computer will now feed these channels.
- Using the channel 15-16 controls, route the incoming audio from your computer to the Auxes, Effects sends, subgroups, and/or Main L-R as needed, just as you would any other channel.
- If you would also like to record your show, you can send your main mix back to your computer for recording. Be sure software monitoring is NOT enabled in your DAW or you might get a feedback loop and could damage your ears and speakers.

Appendix B: Connections

XLR Connectors

Channels 1 and 2 use 3-pin female XLR connectors on the MIC inputs. They are wired as follows, according to standards specified by the AES (Audio Engineering Society).



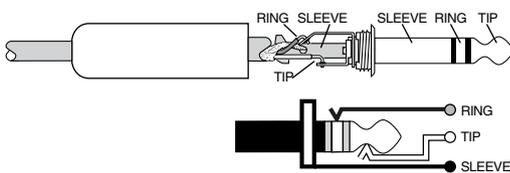
XLR Balanced Wiring

- Pin 1 = Shield
- Pin 2 = Hot (+)
- Pin 3 = Cold (-)

1/4" TRS Phone Plugs and Jacks

"TRS" stands for Tip-Ring-Sleeve, the three connections available on a stereo 1/4" or balanced phone jack or plug. TRS jacks and plugs are used for balanced signals and stereo headphones:

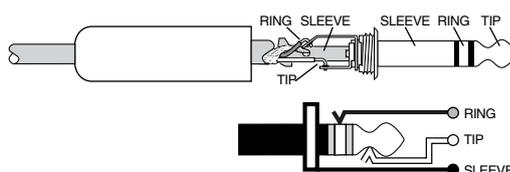
Balanced Mono



1/4" TRS Balanced Mono wiring:

- Sleeve = Shield
- Tip = Hot (+)
- Ring = Cold (-)

Stereo Headphones

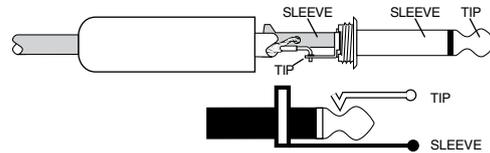


1/4" TRS Stereo Unbalanced Wiring:

- Sleeve = Shield
- Tip = Left
- Ring = Right

1/4" TS Phone Plugs and Jacks

"TS" stands for Tip-Sleeve, the two connections available on a mono 1/4" phone jack or plug. They are used for unbalanced signals.



1/4" TS Unbalanced Wiring:

- Sleeve = Shield
- Tip = Hot (+)

RCA Plugs and Jacks

RCA-type plugs (also known as phono plugs) and jacks are often used in home stereo and video equipment and in many other applications. They are unbalanced and electrically equivalent to a 1/4" TS phone plug.

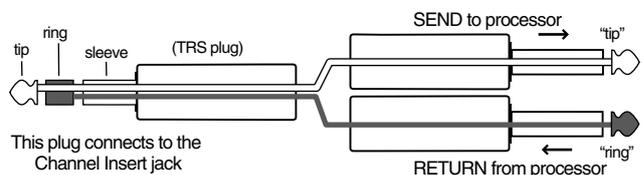


RCA Unbalanced Wiring:

- Sleeve = Shield
- Tip = Hot

1/4" TRS Insert Plugs and Jacks

When patching an external device into a channel's insert jack, or the main insert jacks, you may need to use a special 1/4" TRS connector called an "Insert plug." These use the **tip** to send the signal to the external device, and the **ring** to return the signal to the mixer. The sleeve is the common ground (earth) for both signals. These are both unbalanced signals.



1/4" TRS Insert Wiring:

- Sleeve = Ground
- Tip = Send
- Ring = Return

Appendix C: Specifications

Frequency Response

Mic Input to any Output (Trim at 0 dB):
+0, -1 dB,
20 Hz to 20 kHz
-3 dB,
10 Hz to 80 kHz

Distortion

THD and SMPTE IMD; 20Hz to 20kHz
Mic Input to Main Output:
< 0.005%
@ +4 dBu output

Noise

20 Hz to 20 kHz BW (150 Ω source impedance)
Equivalent Input Noise (EIN): -128 dBu
Residual Output Noise:
Channel and Main Mix levels off
Main, Ctrl Room, Phones: -102 dBu
Aux 1 Monitor out -82 dBu
Aux 2 EFX out -92 dBu

Common Mode Rejection Ratio (CMRR)

Mic In: 60 dB @ 1 kHz
Gain @ maximum

Crosstalk

Adjacent Inputs or Input to Output:
-85 dB @ 1 kHz

Input Gain Control Range

Mic In: +3 dB to +50 dB
Line In: -22 dB to +25 dB

Phantom Power

+48 VDC

Equalization

Mono Channel EQ:
High ± 15 dB @ 12 kHz
Mid ± 15 dB 100 Hz-8 kHz
Low ± 15 dB @ 80 Hz
Stereo Channel EQ:
High ± 15 dB @ 12 kHz
Mid ± 15 dB @ 2.5 kHz
Low ± 15 dB @ 80 Hz

Mixer Rated Output

Main, Aux, Control Room: +4 dBu
Maximum Rated Output: +18 dBu

Maximum Input Levels

Mic Input: +18 dBu,
Gain @ +3 dB
Inst Input: +18 dBu,
Gain @ -22 dB
Stereo Line Input, Tape Input, and Aux Return:
+18 dBu

Maximum Voltage Gain

Mic Input to:
Main Output: 74 dB
Tape Output: 74 dB
Aux Sends: 74 dB
Control Room Output: 84 dB
Phones Output: 84 dB
Inst Input to:
Main Output: 49 dB
Tape Output: 49 dB
Aux Sends: 49 dB
Control Room Output: 59 dB
Phones Output: 59 dB
Stereo Line Input to:
Main Output: 20 dB
Tape Output: 20 dB
Aux Send: 20 dB
Control Room Output: 30 dB
Phones Output: 30 dB
Tape Input to:
Main Output: 10 dB
Tape Output: 10 dB
Control Room Output: 10 dB
Phones Output: 10 dB
Aux Return to:
Main Output: 20 dB
Tape Output: 20 dB
Aux Send: 20 dB
Control Room Output: 30 dB
Phones Output: 30 dB

Input Impedance

Mic Input: 2.3 k Ω , balanced
Inst Input: 1 M Ω
Stereo Line Input: 20 k Ω , balanced
Stereo Aux Returns: 20 k Ω , balanced
CD/Tape In: 24 k Ω , unbalanced

Output Impedance

Main, Ctrl Room, Aux Sends: 120 Ω
Tape Output: 1 k Ω
Phones Output: 25 Ω

Channel Level Set LED (Sensitivity)

0 dBu
(normal operating level)

VU Meters

Main Left and Right
8 segments:
-24, -12, -4, 0, +4, +8, +12, Clip (+16)
0 LED = 0 dBu

AC Power Requirements

Internal Universal Power Supply, standard IEC connector
Voltage Range:
100 VAC to 240 VAC, 50/60 Hz

Physical Dimensions and Weight

Height:	Back: 5.0" (127 mm) Front: 2.5" (64 mm)
Width:	18.5" (469 mm)
Depth:	16.6" (422 mm)
Weight:	11.5 lbs (5.2 kg)

Internal Effects

32 bit EMAC processing, 2-channel	
Sample Rate:	31.25 kHz
Bandwidth:	15.6 kHz
Number of presets:	16
Parameters:	2 controls

Digital I/O

USB	
Bit Depth:	24 bit/16 bit
Sample Rates:	44.1 kHz, 48 kHz,
Output:	Main L and R output signal or Subgroup 1-2
Input:	Alternate source to stereo channel 15-16

Disclaimer

Since we are always striving to make our products better by incorporating new and improved materials, components, and manufacturing methods, we reserve the right to change these specifications at any time without notice.

System Requirements

Here are some of the computer requirements in order to use the mixer with a computer and to run the Tracktion software.

PC Requirements

- WINDOWS XP
- Intel Pentium 3 or 4, or AMD Athlon (750 MHz or better is recommended for Tracktion)
- At least 256 MB RAM (512 MB is recommended)
- Super VGA (1024 x 768) or higher-resolution video adapter and monitor
- CD-ROM or DVD drive
- Keyboard and Wheel Mouse or compatible pointing device
- USB port

Macintosh Requirements

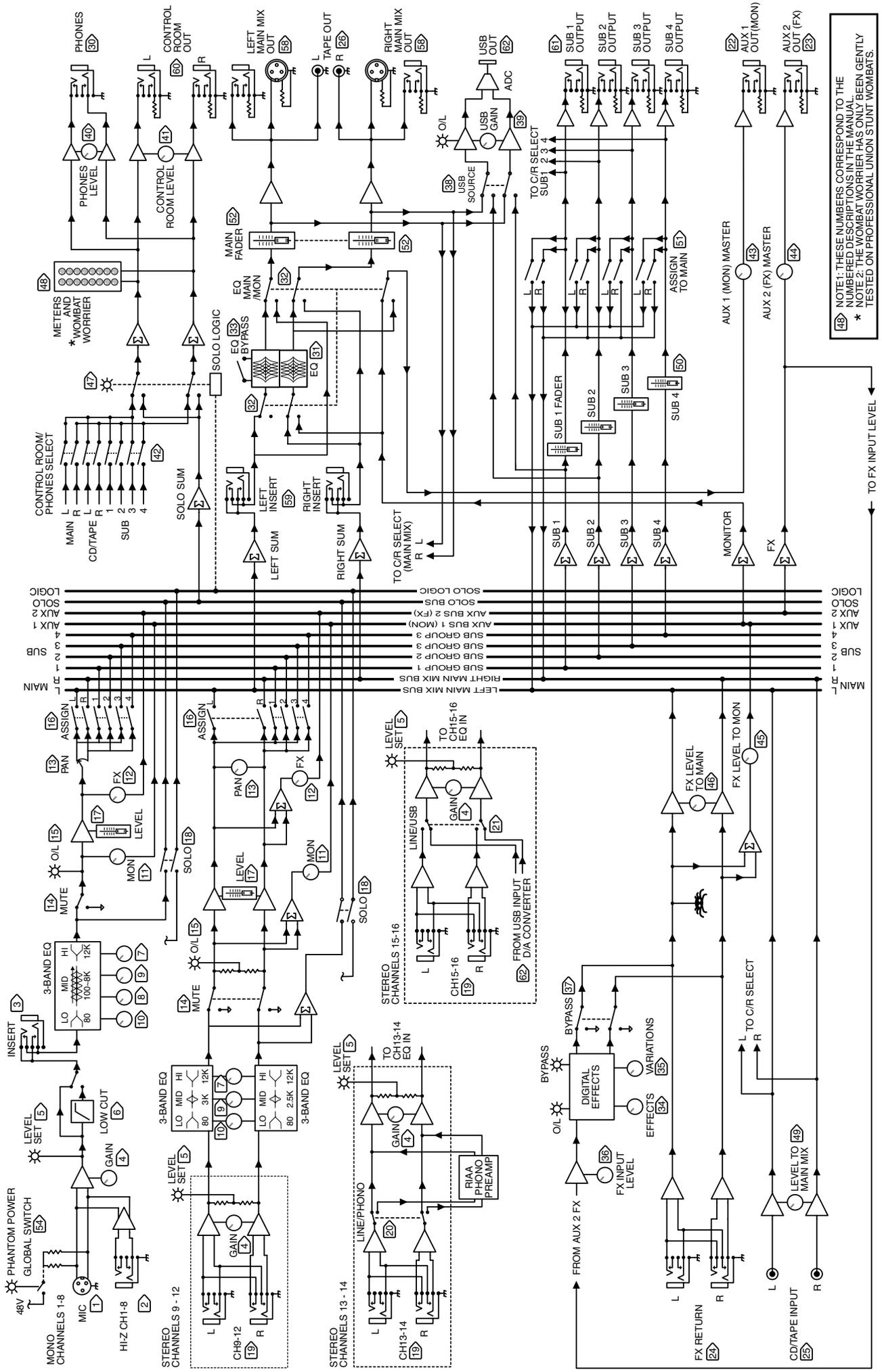
- Macintosh OSX v 10.9 (or higher)
- G4 (or better)
- 256 MB RAM (512 MB is recommended)
- Keyboard and Wheel Mouse or compatible pointing device
- USB port

Hard Drive Notes

- To record a one minute 24-bit/44.1 kHz mono track requires approximately 8 MB of hard drive space.
- Preferably, use a second drive for recording audio, not your main drive with the operating system.
- It is best if you can start with a freshly de-fragmented drive before recording.
- Backup your files and de-fragment your drive often.
- Did we mention backing up your files often?
- We do not want you to be sitting back relaxing in the pub after a long day's recording session of your finest work, when all along there is a doubt in the back of your mind about having backed up your files.

Block Diagram

This shows an outline of the strange goings on inside the mixer.



Appendix D: Service Information

Warranty Service

Details concerning Warranty Service are spelled out in the Warranty section on page 27.

If you think your TAPCO Blend 16 has a problem, please do everything you can to confirm it before calling for service. Doing so might save you from the deprivation of your mixer and the associated suffering.

Here are some things you can check:

Troubleshooting

Bad Channel

- Is the channel GAIN turned up?
- Is the channel FADER turned up?
- Try the same source signal in another channel, set up exactly like the suspect channel.
- If your microphone requires phantom power, make sure you engage the Phantom Power button (48V) on the rear panel of the mixer. Confirm the need to use phantom power by reading your microphone's documentation.

Bad Output

- Is the MAIN MIX FADER at minimum perchance?
- If it's a stereo pair, try switching them around. For example, if a left output is presumed dead, switch the left and right cords, at the mixer end. If the left speaker is still dead, it's not the mixer. Perhaps it's a bad cable, speaker, or amplifier channel.

Noise

- Turn down the channel FADER, and AUX SEND controls, one by one. If the noise disappears, it's either that channel or whatever is plugged into it, so unplug whatever that is.

Power

- Our favorite question: Is the POWER switch on?
- Is the power cord securely plugged in?
- Is the power supply cord securely plugged into an AC power strip? Make sure the power to the power strip is turned on.
- If you suspect a blown fuse, disconnect the power cord, pull the fuse drawer out (located just below the cord receptacle) and replace the fuse with the same type and current rating. If two fuses blow in a row, something is very wrong, and you should contact technical support.
- Are all the lights out in your building?

No Audio into your Computer:

- Confirm the mixer is receiving mic or instrument input signals.
- Make sure you have selected the right driver in your DAW. In Tracktion, this is in the Settings menu.
- If the mixer seems fine, click Restart Device in the Tracktion Settings menu.
- In Tracktion, be sure the correct inputs are selected and the tracks are armed.

Echo or phasing from input while recording:

- It sounds like you are monitoring both through software and directly. You should only do one or the other. See page 19 to help you decide which is best for your situation.
- If you are overdubbing (or recording a new track alongside other tracks already recorded), try disabling your new track's output to the mixer and monitoring the signal you are recording directly. Adjust the channel 15-16 fader and the subgroup 1-2 faders so you can hear both your new input signal as well as the playback from the computer.

Glitchy/Distorted Playback from Computer:

Increase the Buffer Size/Latency Setting:

- Tracktion (PC): choose the Settings Tab and Audio Devices. Click the "show ASIO control panel" button and try a larger buffer size.
- Tracktion (Mac): choose the Settings Tab and Audio Devices and increase the Latency slider.
- In other applications, find the control panel to increase the ASIO (PC) or Core Audio (Mac) buffer size or latency.
- Be sure the mixer is the only device on the USB chain. The easiest way to do this is to be sure the mixer is connected directly to your computer's USB port; we do not recommend using USB Hubs.
- Try a song with fewer tracks, effects, and virtual instruments. If it plays fine, then you may be pushing your computer above its limits. Try increasing your latency settings as described above.

Large latency (delay) from input signal to output:

- Change the latency/buffer setting to a lower setting, as described above.
- Try using direct monitoring instead of software monitoring. See page 19 for details.

No Communication with the mixer:

- The PC driver may not be installed correctly. Make sure your computer meets the system requirements. Uninstall the driver from the Add/Remove Programs control panel, restart your computer, and reinstall the driver.
- Restart your computer and the mixer.

I hear my Windows/Mac sounds through my mixer, but I don't want to:

The mixer should not be selected as your computer's sound system default device. To disable it:

- On a PC, go to Control Panel>Sound and Audio Devices. In the Audio tab, be sure the Blend 16 is not selected as the default device for sound playback.
- On a Mac, go to Applications>Utilities>Audio MIDI Setup. In the Audio Devices tab, be sure the Blend 16 is not selected for your default or system outputs. You can also change this in the Sounds Preferences pane of the OS X System Preferences application.

My guitar (or other instrument) doesn't sound as good as I expect:

- If your guitar is connected directly to the mixer (i.e., without a direct box or preamp), be sure you are using the INST input on channels 1-8.
- Check the mixer Gain and EQ settings, and make sure you have not overdone the EQ or the audio is clipping.
- Could we suggest you might need more practice?

Can I transfer my classic record collection?

- Yes, but please follow all copyright rules.
- Mixer channels 13 and 14 can accept phono level signals from a turntable. The internal phono preamp equalizes and boosts your turntable phono-level signals to line-level.
- It is most likely that your turntable has RCA outputs, so you will need to buy adapters from RCA (female) to 1/4" (male). These adapters are commonly stocked in most electronics and audio stores.
- Some companies provide software plug-ins that remove pops and clicks from the recordings. This kind of spoils some of the fun though.

Still having USB problems?

- Be sure you are running the latest drivers.
- If after updating, you still are having problems, please call tech support.

Repair

Service for Tapco products is available at a factory-authorized service center. Service for Tapco products living outside the United States can be obtained through local dealers or distributors.

If your unit needs service, follow these instructions:

1. Review the preceding troubleshooting suggestions. Please.
2. Call Tech Support at 1-877-827-2669, 7 am to 5 pm PST, to explain the problem and request a Service Request Number. Have your serial number ready. You must have a Service Request Number before you can obtain warranty service.
3. Keep this owner's manual and the detachable linecord. We don't need them to repair the unit.
4. Pack the unit in its original package, including endcaps and box. This is VERY IMPORTANT. Tapco is not responsible for any damage that occurs due to non-factory packaging.
5. Include a legible note stating your name, shipping address (no P.O. boxes), daytime phone number, Service Request Number, a copy of your sales receipt, and a detailed description of the problem, including how we can duplicate it.
6. Write the Service Request Number in BIG PRINT on top of the box. Units sent without the SR number will be refused.
7. Tech Support will tell you where to ship the unit for repair. We suggest insurance for all forms of cartage.
8. You will need to contact the authorized service center for their latest turn-around times. The unit should be packaged in its original packing box, and must have the Service Request Number on the box. Once it's repaired, the authorized service center will ship it back by ground shipping, pre-paid (if it was a warranty repair).

Note: Under the terms of the warranty, you must ship or drop-off the unit to an authorized service center. The return ground shipment is covered for those units deemed by us to be under warranty.

Note: You must have a sales receipt from an authorized Tapco dealer for your unit to be considered for warranty repair.

Lonely? Looking for that special someone? Do you have a question about your TAPCO Mixer?

Please call our Technical Support chaps at **1-877-827-2669**, Monday to Friday, from 7 am to 5 pm PST. After hours, visit www.tapcogear.com and look under **Contact Us**, or e-mail us at techmail@tapcogear.com

TAPCO LIMITED WARRANTY

- A.** LOUD Technologies Inc. warrants all materials, workmanship and proper operation of this TAPCO product for a period of **one year** from the original date of purchase. If any defects are found in the materials or workmanship, or if the product fails to function properly during the applicable warranty period, LOUD Technologies, at its option, will repair or replace the product. This warranty applies only to equipment sold and delivered within the U.S. by LOUD Technologies or its authorized dealers.
- B.** Failure to register online or return the product registration card will not void the one-year warranty.
- C.** Service and repairs of TAPCO products are to be performed only at a factory-authorized service center. Unauthorized service, repairs, or modification will void this warranty.
- D.** To obtain factory service, please follow the instructions found on page 26.
- E.** LOUD Technologies Inc. and Authorized TAPCO Service Centers reserve the right to inspect any products that may be the subject of any warranty claims before repair or replacement is carried out. LOUD Technologies and Authorized TAPCO Service Centers may, at their option, require proof of the original date of purchase in the form of a dated copy of the original dealer's invoice or sales receipt. Final determination of warranty coverage lies solely with LOUD Technologies Inc. or its Authorized Service Centers.
- F.** TAPCO products returned to LOUD Technologies and deemed eligible for repair or replacement under the terms of this warranty will be repaired or replaced within thirty days of receipt. LOUD Technologies may use refurbished parts for repair or replacement of any products. Products returned to LOUD Technologies that do not meet the terms of this warranty will not be repaired unless payment is received for labor, materials, return freight, and insurance. Products repaired under warranty at the factory will be returned freight prepaid by LOUD Technologies to any location within the boundaries of the USA.
- G.** LOUD Technologies warrants all repairs performed for 90 days or for the remainder of the warranty period. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse, or to exterior appearance. This warranty is recognized only if the inspection seals and serial number on the unit have not been defaced or removed.
- H.** LOUD Technologies assumes no responsibility for the quality or timeliness of repairs performed by TAPCO Authorized Service Centers.
- I.** This warranty is extended to the original purchaser and to anyone who may subsequently purchase this product within the applicable warranty period.
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Please keep your sales receipt in a safe place.

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