

S16

Congratulations on your purchase of the S16 16 channel stereo mixer. Your new Studio Series mixer demonstrates CARVIN's commitment to the pro audio world by offering sophisticated signal mixing and processing in a compact easy to use console. The Studio Series is designed to be a powerful tool for the home studio where limited space and high performance are the main requirements. The S16's high quality construction and features provide years of trouble-free performance, reproduceig your music flawlessly. It's ideal for mixing to cassette, DAT or hard disk recording with a computer. Enjoy your new S16!

16 CHANNEL OVERVIEW

There are 8 MIC/LINE input channels with XLR and 1/4" LINE inputs and PATCH insert jacks. There are also 4 STEREO input channels (8 mono) with two 1/4" LINE inputs each. The XLR channels feature input GAIN controls and provide Phantom power for condenser mics. There are 3 bands of EQ and 2 post fader effect SENDS on each channel. The master section features 2 SENDS and 2 stereo RETURNS along with RCA tape IN's and OUTs that can be used as a separate stereo channel with it's own level control. A master LEFT/RIGHT level control also feeds a 1/4" stereo headphone jack. The stereo LED VU metering gives you clear visibility of your output levels.

"SHELVING" EQ WITH ACTIVE TONE CIRCUITS

The S16 incorporates 3 bands of EQ's per channel that offer smooth tone curves so your adjustments will sound natural and yet be effective. Depth is added to your bass due to the 90Hz for the LOW frequency EQ controls instead of the usual 100Hz. The HI EQ controls are set at 11.5kHz, which is slightly higher than the normal 10kHz treble controls, giving more top-end clarity. These are "shelving" type controls which cover the complete frequency band from 90Hz down to 20Hz and from 11.5kHz up to 20kHz. The MID EQ controls are a "band pass" type which peak at 2.2kHz for added presence to your mid range tones. Because CARVIN uses "active" tone circuits, you are able to boost or cut your tones without any signal loss in your mixer.

RECEIVING INSPECTION—read before getting started

INSPECT YOUR MIXER FOR ANY DAMAGE which may have occurred during shipping. If any damage is found, please notify the shipping company and CARVIN immediately.

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to re-ship your unit, always use the original carton and packing material. This will provide the best possible protection during shipment. CARVIN and the shipping company are not liable for any damage caused by improper packing.

SAVE YOUR INVOICE. It will be required for warranty service if needed in the future. SHIPMENT SHORTAGE. If you find items missing, they may have been shipped separately. Please allow several days for the rest of your order to arrive before inquiring.

RECORD THE SERIAL NUMBER on the enclosed warranty card or below on this manual for your records. Keep your portion of the card and return the portion with your name and comments to us.

USA customers register online at: www.carvin.com/registration
All other countries register online at: www.carvinworld.com/registration

LOW NOISE SIGNAL PATH

Your balanced mic or instrument signal plugs directly into high quality XLR connectors and is then routed into a differential circuit for excellent noise and hum cancellation. As your signal continues within the console, it passes through precision mounted parts including 1% tolerance resistors and ultra low noise op-amps. On the back of the double sided (FR-4 rated) printed circuit board are large areas of copper ground plating supply an excellent shield from interference. Plated-through holes assure that components which undergo physical stress, such as jacks and pots, are solidly mounted and have exceptional electrical connection because they are soldered in three places (bottom, in hole, and top of the PC card).

MORE HEADROOM

Headroom is very important when designing a mixer—especially for recording. Lack of headroom will cause your sound to become distorted and muddy. This can happen when you turn the volume too high, if the input signal is too hot or if excess bass or treble is added. With most mixers, you have to reduce the input gain to fight headroom problems, but this just increases noise. That's why we have taken great care in the S16 to make sure that each gain stage is properly designed and balanced with more headroom along the entire audio path. There is no headroom "bottle necking" at the summing stages, ensuring clean, pure audio throughout.

SWITCHING POWER SUPPLY

Now you can use your S16 almost anywhere in the world, with voltages ranging from 100 - 250 VAC. The switching power supply is self-regulating and protects the signal path from noise and level fluctuation. However, the most significant advantage is the elimination of 50/60Hz hum, providing noise-free performance. CARVIN has spared no expense to achieve studio quality performance.

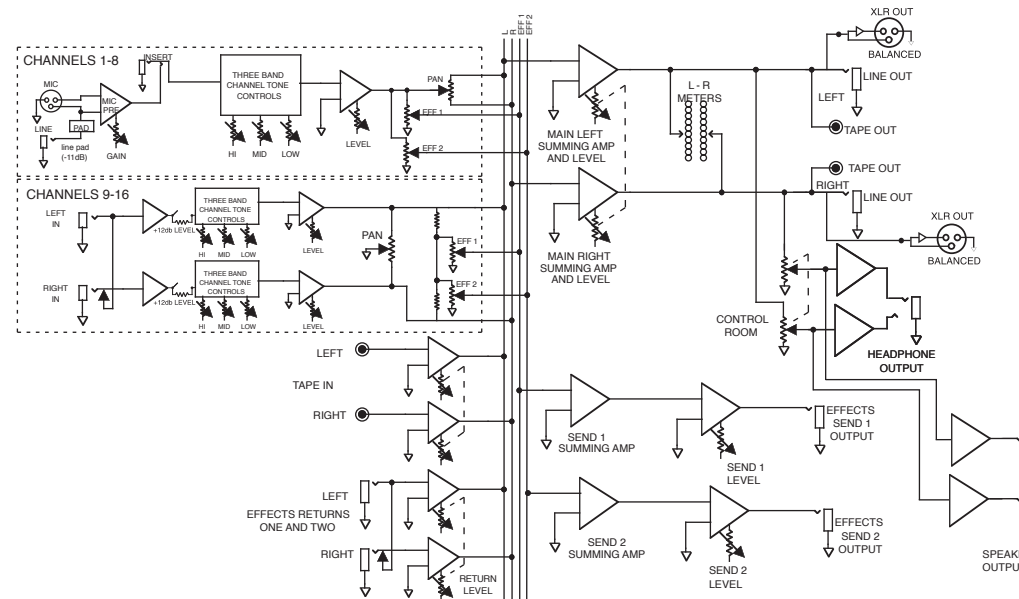
PROFESSIONAL HEADPHONES

The S16 is designed to be used with professional headphones such as Carvin's H40M Studio Headphones. The impedance of the headphones should be between 40 and 100 ohms with a sensitivity of at least or higher than 100 dBm at 1k Hz with 1mv input. 8 ohm or 1000 ohm and higher headsets are not recommended.

For your records, you may wish to record the following information.

Serial No. _____ Invoice Date _____

BLOCK DIAGRAM



MODEL S16 SPECIFICATIONS:

- Frequency Response:** Mic or Line Inputs: 20Hz-20kHz ±1dB
- Total Harmonic Distortion:** Less than .009% MIC in - Master out
- Equivalent Input Noise:** 150 ohm source: -114dBu
- Output Noise:** -90dBu Master Line Out (All Levels Minimum)
- Output Headroom:** +20dB 1/4" unbalanced
- Maximum Gain:** Mic in to Master Line Out: 70dB
- Crosstalk:** Adjacent ch's: -60db at 1KHz
- Common Mode Rejection:** -80db at 1KHz
- Phantom Power:** All XLR Mic in channels
- Channel EQ.:** 3 band active, LOW: 90Hz ±12dB
MID: 2.2KHz ±12dB
HI: 11.5KHz ±12dB
- Power Consumption:** 10VA 100-250VAC 50-60 Hz
- Size and Weight:** (8 lbs) 2.5"H x 16.2"W x 10.2"D
- Speaker Output:** 22w @8 ohms/CH

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

This symbol 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.

IMPORTANT! FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:
WATER AND MOISTURE: Appliance should not be used near water (near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
POWER SOURCES: The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
SERVICING: The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.
FUSING: If your unit is equipped with a fuse receptacle, replace only with the same type fuse. Refer to replacement text on the unit for correct fuse type.

SAFETY INSTRUCTIONS (EUROPEAN)
The conductors in the AC power cord are colored in accordance with the following code.
GREEN & YELLOW—Earth BLUE—Neutral BROWN—Live
U.K. MAIN PLUG WARNING: A molded main plug that has been cut off from the cord is unsafe. NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAIN PLUG INTO A POWER SOCKET.

LIMITED WARRANTY
Your Carvin product is guaranteed against failure for ONE YEAR unless otherwise stated. Carvin will service and supply all parts at no charge to the customer providing the unit is under warranty. Shipping costs are the responsibility of the customer. CARVIN DOES NOT PAY FOR PARTS OR SERVICING OTHER THAN OUR OWN. A COPY OF THE ORIGINAL INVOICE IS REQUIRED TO VERIFY YOUR WARRANTY. Carvin assumes no responsibility for horn drivers or speakers damaged by this unit. This warranty does not cover, and no liability is assumed, for damage due to: natural disasters, accidents, abuse, loss of parts, lack of reasonable care, incorrect use, or failure to follow instructions. This warranty is in lieu of all other warranties, expressed or implied. No representative or person is authorized to represent or assume for Carvin any liability in connection with the sale or servicing of Carvin products. CARVIN SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.
When RETURNING merchandise to the factory, you may call for a return authorization number. Describe in writing each problem. If your unit is out of warranty, you will be charged the current FLAT RATE for parts and labor to bring your unit up to factory specifications.

HELP SECTION
1) MIXER WILL NOT TURN ON
Check the power to the amp. Check for tripped circuit breakers, unplugged extension cords or power-strip switches that may be turned off. Check the fuse. If a dark brownish color or no wire can be seen within the glass tube, then replace. The mixer may be perfectly fine but occasionally a fuse may blow because of high AC voltage surges. After the fuse has been replaced with the proper Slow Blow value and if the fuse fails again, the mixer will require servicing.
2) KEEP YOUR MIXER LOOKING NEW
Use caution to avoid spilling liquids or allowing any other foreign matter inside the unit. The top of the mixer can be wiped from time to time with a dry or slightly damp cloth in order to remove dust and bring back the new look. A suggestion is to cover the mixer when not in use. This can be done with a cloth or a small towel to reduce the amount of dust collection on the mixer. Well cared for equipment is usually friendlier equipment in the long run.

CAUTION
RISK OF ELECTRIC SHOCK
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL! THIS UNIT CONTAINS HIGH VOLTAGE INSIDE!

S16 PANEL CONTROLS

QUICK START UP

If you're like most new owners, you're probably in a hurry to plug your mixer in and use it. Here are some brief instructions to get you going quickly. With the mixer unplugged and the unit turned off, complete the following procedures:

- CONNECTING AC POWER TO YOUR MIXER**
 - Studio Mate will except line voltages 100 ~250VAC. (USA 120VAC, Europe 240 VAC ...etc.)
 - Use only a grounded (3 prong) power outlet to prevent a shock hazard.
 - This gives the quietest grounding for your mixer.
 - Insert power cord. Be sure it's pushed all the way in.
- TURNING YOUR MIXER ON**
 - Adjust all channel and master level controls to their off positions (fully counter clockwise).
 - Adjust all "EQ" tone controls—the channel's Hi, Mid, and Bass controls to their center position.
 - Adjust all the Channel "PAN" controls to their center position.
 - Turn the mixer on by the rear panel power switch and watch for the power LED to come on. Your mixer is now ready to operate.
- CONNECTING INPUTS TO YOUR MIXER**
 - For low level balanced devices such as microphones, plug into the balanced MIC inputs using a shielded microphone cable with XLR ends.
 - For high level unbalanced devices such as Tape Recorders and Keyboards, plug into the LINE input jacks using a shielded cable with 1/4" phone ends.

1-8 MIC CHANNEL FEATURE

1. LINE INPUT JACK

The LINE input is a 1/4" phone jack designed for unbalanced line and instrument level inputs. Examples of these inputs would be instruments such as a guitar, a keyboard, an unbalanced mic, or a pre-amp output. The line input can be used at the same time the mic input is being used.

2. XLR MICROPHONE INPUT

The XLR MIC input is designed for balanced low impedance microphone s. The XLR connector is wired as per the industry standard where pin 1 is ground, pin 2 is non-inverting (positive), and pin 3 is inverting (negative).

Phantom power is available on every XLR input jack when the phantom power switch above channel 8. This feature allows condenser microphones to be run directly from the mixer.

Note: When using phantom power, make sure the phantom power is switched off before connecting or disconnecting microphones to the mixer. It is recommended to allow 5 seconds for the phantom power to discharge before making any microphone connections. Also, to avoid hearing a pop, turn down the main volume when turning on the phantom power.

3. INSERT JACK

The insert jack is a Tip Ring Sleeve (TRS) 1/4" jack where the tip is the send, the ring is the return and the sleeve is ground. The insert point is after the input (MIC-pre) amplifier and before the channel EQ section (see the Block Diagram page 9). When a 1/4" plug is fully inserted it breaks the connection between the mic-pre and the channel EQ. This, insert break -point, allows external equipment to be used on only the channel it is inserted into. One common use is to insert a compressor. This will reduce any input spikes before they distort the channel's EQ or the master busses.

Another use for the insert jack, is a direct output. To achieve this function, insert a mono 1/4" plug into the first click of the jack. The result is a direct output signal from the channel that does not disturb the channels operation. A common use for the insert direct out is in multi tracking when individual channels are recorded to separate tracks on a multi track recorder.

4. GAIN CONTROL

The gain control adjusts the input gain on both the line and mic input jacks. For the mic input, the gain range goes from a +3dB min to +49dB. For the line input, the gain goes from a -12dB min to +34dB. For optimum signal to noise performance, the gain control should be set for the highest level possible before distortion or clipping of the incoming signal. In order to reduce surprise feedback and other thumps start, with the gain control at minimum. If distortion is heard regardless of the position of the channel LEVEL control, lower the gain control until no distortion is heard.

5. CHANNEL TONE CONTROLS

Each channel features three tone controls LO, MID, and HI. All three controls function as boost /cut controls, where the center "0" position neither boosts nor cuts. For boosting, turn the control clockwise and for cutting, turn the control counterclockwise. The LO and HI controls are shelving type tone controls with corner frequencies at 80Hz and 11.5k Hz respectively. The shelving means for the LO control all the bass frequen-

cies from 90Hz and down. For the HI control, the shelving means all the HI frequencies from 11.5k Hz and up will be affected. The MID control is a band pass type of tone control. The band pass means a middle section of frequencies centered around 2.2kHz, but do not over-lap the HI and LO controls. The MID affects the clarity of the average person's spoken voice. Also the MID controls the louder sometimes harsher tones that can distort the over all sound. Use these controls to change the tonal shape of the input signal and in many cases to reduce possible feedback in live situations. It is suggested the channel tone controls start out in their center detente positions where they do not affect the original incoming signal. Then, if needed, adjust the tone controls to change the sound.

6. CHANNEL EFFECTS 1 AND EFFECTS 2

These controls are identical in function. Both adjust the volume of the channel going to the effects send master controls. The only difference is EFF 1 goes to Send 1 and EFF 2 goes to Send 2. Both controls are post channel level. This means adjustments in the channel's EQ or level controls will effect the sound and volume of the EFF 1 and EFF 2 sends.

7. CHANNEL PAN CONTROL

The PAN control adjusts where the channel is heard in the stereo field of the stereo master outputs. If it is turned to the extreme left, then the channel will only be heard in the left master output and similarly only in the right master output if turned to the extreme right. In the center position the channel is heard equally in both the left and right main outputs. A good starting point for the pan is in the center position. Then if stereo placement is needed, a quarter turn to the desired side from the center position gives a smooth placement in the stereo field, or if desired a full turn to one side assigns the channel to the L or R.

8. CHANNEL LEVEL CONTROL

The LEVEL control adjusts the final volume of the channel before going to the Pan control. Here is where the individual channel volumes are adjusted to make up the desired mix heard at the master left and right outputs.

9-10 STEREO LINE CHANNEL FEATURES

9. CH 9 THRU 16 LEFT/RIGHT LINE INPUT

JACKS

These LINE inputs are 1/4" phone jacks designed for unbalanced line and instrument level inputs. Examples of these inputs would be instruments such as a guitar, a keyboard, an unbalanced mic, or multi track outputs. If a mono input is needed, use the left input jack and the channel will act like a mono channel with a normal functioning pan going to L/R masters.

10. GAIN SWITCHES

The gain switches boost the line level at the stereo channels (11-16) by +12db. This is ideal for stereo sources that may be too weak.

11-15 MASTER CONTROLS

11. L/R MASTER CONTROL+USB OUTSOURCE
The L/R master control is the master volume control for the left - right stereo mix. This control receives its signals from the channel pan controls and generates the volume heard in the left and right main output jacks.

12. CONTROL ROOM

The CONTROL ROOM level controls the volume for the headphone jack and speaker jacks. The signal going out to the headphones and speaker is controlled by the TAPE IN/USB switch.

13. TAPE IN/USB SWITCH

This switch controls the Main L/R signal going to the Control Room as well as the Tape IN/USB signal to the Main L/R out. In the UP position, the Main L/R is connected to the Control Room, and the Tape IN/USB is connected to the Main L/R. In the DOWN position, the Main L/R is no longer connected to the Control Room and the Tape IN/USB is connected to only the Control Room. This is used for Tracking, or recording an individual track at a time while still allowing you to monitor playback through the Control Room.

14. SEND 1 AND 2 CONTROLS

The SEND 1 and SEND 2 master controls are the levels for the EFF 1 and

EFF 2 sends from the channels. The output of these controls are available at the effects send 1 and 2 output jacks. The typical use of effects sends is to drive external effects processors, but it can also be used as another stage monitor mix or headphone mix if needed.

15. EFFECTS RETURN 1 AND 2 CONTROLS

The RETURN 1 and RETURN 2 controls are stereo effects return controls. They receive input from the LEFT and RIGHT 1/4" EFFECTS RETURN jacks in the master section. These control the return level going to the master left right stereo mix. A mono return into the stereo mix can be achieved by simply feeding the mono signal into the left return jack. These stereo returns can also be used as another input to the stereo mix for a keyboard or other stereo and mono gear.

16. TAPE IN CONTROL + USB IN

The TAPE IN control is a stereo tape return level. It receives its input from the L/R TAPE RTN RCA jacks. This volume controls the level feeding the master L/R stereo mix. A mono TAPE IN into the stereo mix can be achieved by simply feeding the mono signal into both Left and right RCA jacks. The stereo TAPE IN can also be used as another input to the stereo mix for a keyboard or other stereo gear.

17-26 MASTER CONNECTORS

17. STEREO EFFECTS RETURN 1 AND 2 JACKS

The stereo EFFECTS RETURN 1 and 2 jacks are the input jacks for the stereo return 1 and 2 master RETURN.

18. EFFECTS SEND 1 AND 2 JACKS

The EFFECTS SEND 1 and 2 jacks are the output jacks to feed your effects or monitors. These sends are controlled by the master SENDS 1 & 2.

19. LEFT AND RIGHT LINE OUT JACKS

The LEFT and RIGHT LINE OUT are 1/4" unbalanced output jacks. The same signals are also being fed to the TAPE OUT RCA jacks and XLR outs.

20. XLR OUTPUTS

The L/R XLR outputs allow for professional balanced connections.

21. TAPE OUT AND TAPE IN RCA JACKS

The LEFT/RIGHT TAPE OUT RCA jacks deliver the main left - right stereo output for recording. The LEFT/RIGHT TAPE IN jacks are RCA inputs. To the TAPE IN level control adjust the input level and adds it to the mix.

The TAPE IN jacks can also be used for returning another effects processor or instrument such as a keyboard to the main mix.

The RCA jacks are Ideal for using a cassette deck to record a mix using the TAPE OUT jacks and playing it back through the TAPE IN jacks with out using up any channels for play back or having to use adapters to hook up the cassette deck.

22. POWER LED

The Power LED indicates when the mixer is powered up.

23. PHANTOM POWER SWITCH AND LED

The PHANTOM power switch turns on the microphone phantom power in the 8 MIC/LINE channel XLR jacks. The phantom power is used for supplying a bias voltage to condenser microphones. The LED indicates the phantom power is turned on. The phantom power will not damage dynamic microphones.

24. AC POWER & FUSE

The detachable AC POWER CORD supplied is designed to operate with one type of voltage (the European 230V export model uses a CEE-7 plug cord set). Plug the cord into a grounded "3 prong" power source. No attempt should ever be made to use the amp without the ground connected.

The FUSE is located within the mixer. The fuse type is a 250V 5 x 20 mm 3 AMP. The fuse is not normally a user serviceable part. If the mixer doesn't turn on and there is power at the AC cord and the cord is firmly connected, then service is required.

25. POWER SWITCH

ON/OFF control.

26. HEADPHONES

Use a high quality stereo headphone similar to Carvin's H40M.

27. SPEAKER OUTPUTS

L-R Speaker out (8Ω min, 22w per channel). Use to monitor main recording mix or for low power PA use.

28. USB & S/PDIF

Connecting a USB cable between a computer and the S16 mixer will allow recording on a computer with compatible USB drivers and software. The L-R stereo mix is sent via the USB cable and the RECORD LEVEL offers fine tuning of the output level. Inversely, you can bring audio in from computer playback via USB. The audio comes into the TAPE IN bus on the mixer, see #13 TAPE IN/USB switch. The S/PDIF connector can be used to bring in digital audio to a computer through USB. This is useful for transferring digital audio sources such as DAT to the computer. It can also be used to convert playback from the computer into S/PDIF out. This is useful for creating a digital backup of computer recorded audio to another digital recorder. The USB and S/PDIF feature up to 48kHz, 16 BIT audio resolution.



S16 REAR PANEL