

SP260

2x6 Speaker Processor

OWNER'S MANUAL



Important 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 a 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 a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquids, such as vases or beer glasses, shall be placed on the apparatus.
16. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
17. This apparatus has been designed with Class-I construction and must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).
18. This apparatus has been equipped with a rocker-style AC mains power switch. This switch is located on the rear panel and should remain readily accessible to the user.



CAUTION

RISK OF ELECTRIC SHOCK. DO NOT OPEN

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

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.

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.

Correct Disposal of this product: This symbol indicates that this product should not be disposed of with your household waste, according to the WEEE Directive (2002/96/EC) and your national law. This product should be handed over to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, or your household waste disposal service.

19. The MAINS plug or an appliance coupler is used as the disconnect device, so the disconnect device shall remain readily operable.
20. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and the receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications to this device not expressly approved by LOUD Technologies Inc. could void the user's authority to operate the equipment under FCC rules.

21. This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — *Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.*

22. 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	Duo in small club
6	92	
4	95	Subway Train
3	97	
2	100	Very loud classical music
1.5	102	
1	105	Fooyoung screaming at desTROyer about deadlines
0.5	110	
0.25 or less	115	Loudest parts at a rock concert

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

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Introduction

Offering sophisticated EQ, crossover, dynamics processing and system protection, the Mackie SP260 2x6 Speaker Processor provides complete system optimization for both passive and powered systems.

Five different operating modes cover a wide range of systems. Each of the six outputs feature dedicated level control, mute, polarity invert, high / low-pass filters, 7-band parametric / shelving EQ, 600ms delay and limiting. Two input channels provide independent level control, mute, 600ms delay and a flexible 5-band parametric / shelving EQ.

The convenient front-panel control also includes 7-segment LED metering per channel. The SP260 utilizes high-end 24-bit AKM® AD/DA converters with 120 dB dynamic range for class-leading sound quality. With 24 user-definable presets and flexible I/O for simple routing and configuration, the SP260 is an ultra-flexible processor, ideal for a wide range of portable and permanent applications.

Features

- Professional 2-input, 6-output system processor for passive and powered PAs
- Sophisticated, intuitive EQ, crossover, delay and dynamics processing optimizes and protects your system
- High-end 24-bit AKM® AD/DA with 120 dB dynamic range
- Two balanced XLR inputs with level control, mute, 600ms delay and 5-band parametric / shelving EQ
- Six balanced XLR outputs with level control, mute, polarity invert, dedicated high and low pass filters, 7-band parametric / shelving EQ, 600ms delay, and limiting
- Powerful limiter on every output for ultimate protection
- Convenient front-panel controls for parameter editing and input / output muting
- USB port for simple programming via PC
- Linkable inputs and outputs for easy stereo configuration
- 7-segment LED metering for input / output level or limiter activity
- 5 operating modes: 2 x stereo + sub, 3 x stereo, 2 x 2-way + sub, 2 x 3-way and 1 x 6-way
- 24 presets for storing your Mackie or other system parameters
- Switchmode power supply: 100V – 240V
- Compact, single rack unit design

How to Use This Manual:

After this introduction, a getting started guide will help you get things set up fast. The hook-up diagrams show some typical setups, while the remaining sections provide details of the SP260 and how to use it to optimize your PA system.



This icon marks information that is critically important or unique to the processor. For your own good, read and remember them.



This icon leads you to in-depth explanations of features and practical tips. They usually have some valuable nuggets of information.



This icon draws attention to certain features and functions relating to the usage of the processor.

Getting Started

The following steps will help you set up your system quickly.

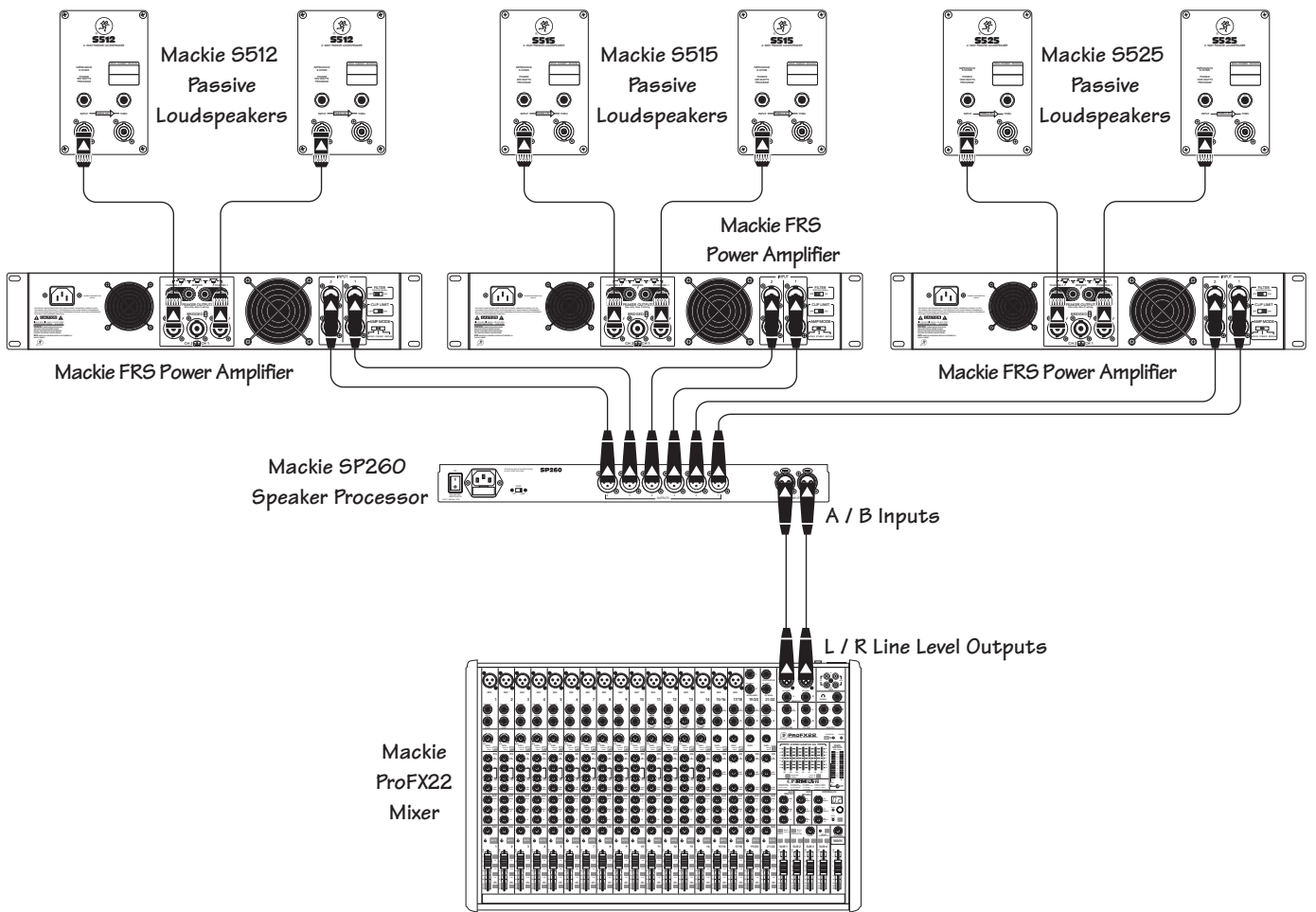
1. Make all initial connections with the power switches OFF on all equipment. Make sure the master volume, level, or gain controls are all the way down.
2. Connect the line-level outputs from your mixing console (or other signal source) to the inputs of the SP260 2x6 Speaker Processor.
3. Connect outputs 1-6 from the SP260 to the inputs of power amplifiers OR directly to the inputs of POWERED loudspeakers and/or subwoofers.
4. If using amplifiers, connect the outputs from the power amplifier(s) to the inputs of PASSIVE loudspeakers.
5. Turn on the mixing console (or other signal source).
6. Turn on the SP260 2x6 Speaker Processor.
7. Select the system setup that best matches your PA [more details may be found on page 14]:
 - 2xStereo+Sub [default]
Two full-range loudspeaker pairs and a pair of [mono by default] subwoofers
 - 2x2Way+Sub
Two bi-ampable full-range loudspeakers and a pair of [mono by default] subwoofers
 - 2x3Way
Two tri-ampable full-range loudspeakers
 - 3xStereo
Three full-range loudspeaker pairs
 - 1x6Way
Mono 6-way setup
8. Un-mute the appropriate outputs on the SP260. [See page 12 for details.]
9. Turn on the amplifier(s) OR powered loudspeakers. Turn up the volume or gain control(s) as recommended by the manufacturer.
10. Start the signal source and raise the mixer's main L/R fader up until audio may be heard through the loudspeakers.

At this point you've got signal through the PA – which is great – but there is some fine-tuning to do at this point. We strongly encourage that you read the rest of this owner's manual to learn basic navigation, how to edit the inputs and outputs, set security features and more.

Things to Remember:

- Never listen to loud music for prolonged periods. Please see the Safety Instructions on page 2 for information on hearing protection.
- When you shut down the equipment, turn off the amplifiers first to prevent thumps and other noises generated by any upstream equipment from coming out of the speakers. When powering up, turn on the amplifiers last.
- Save the shipping boxes and packing materials! You may need them someday. Besides, the cats will love playing in them and jumping out at you unexpectedly. Remember to pretend like you are surprised!
- Save your sales receipt in a safe place.

Hookup Diagrams

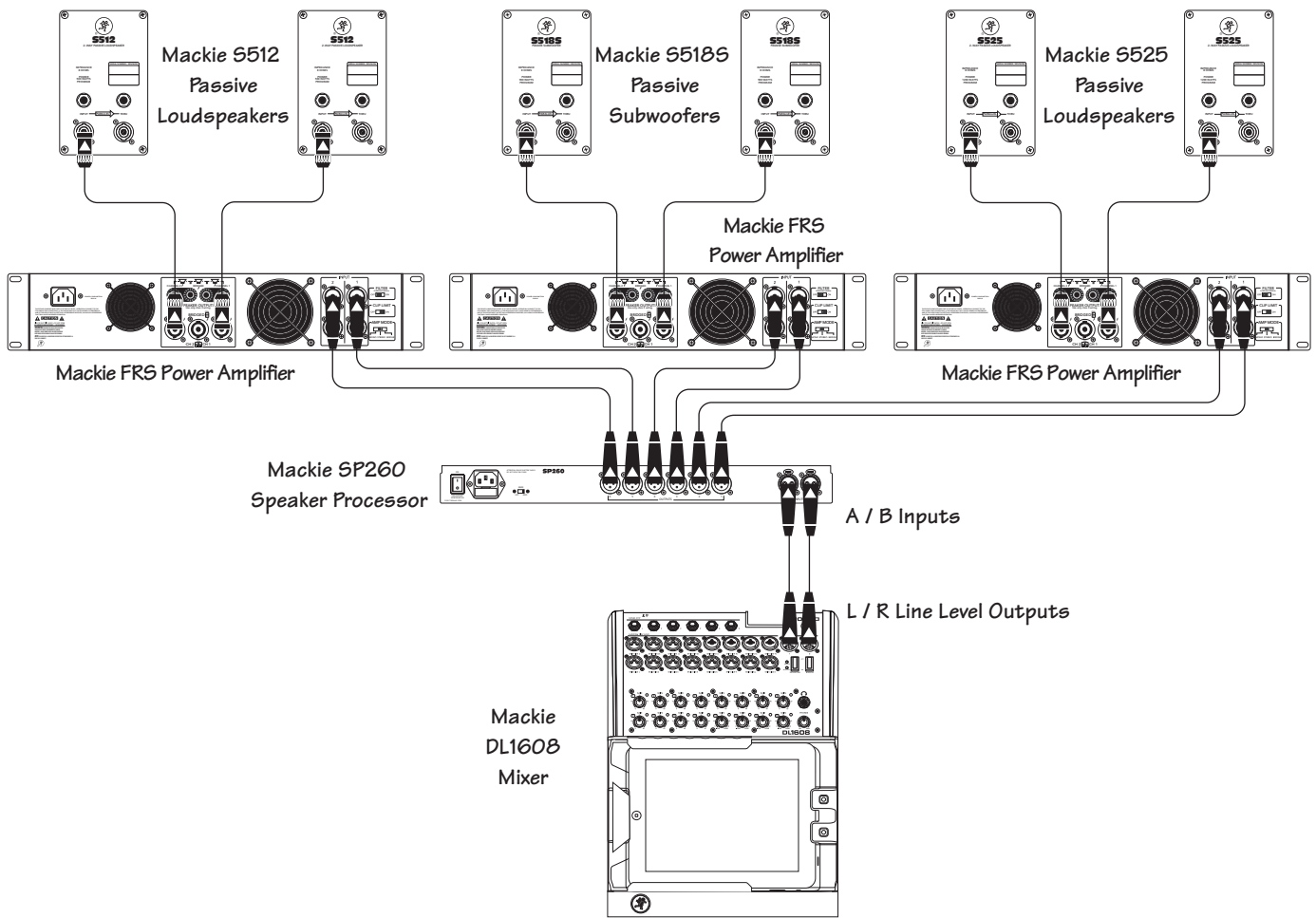


In this example, the SP260 is configured using the '3xStereo' setup type. The left and right line-level XLR outputs from a Mackie ProFX22 mixer feed the A and B XLR inputs of a Mackie SP260 Speaker Processor. XLR outputs 1 and 2 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of a Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of the power amplifier feed the NL4 inputs of two Mackie S525 passive loudspeakers which are located on stage.

XLR outputs 3 and 4 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of another Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of this power amplifier feed the NL4 inputs of two Mackie S515 passive loudspeakers. These are positioned halfway toward the rear of the venue and have delay added, so they are sync'd with the mains.

Then there are XLR outputs 5 and 6 of the Mackie SP260 Speaker Processor which feed the 1 and 2 XLR inputs of yet another Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of this power amplifier feed the NL4 inputs of two Mackie S512 passive loudspeakers which are located in an area away from the coverage of the Mackie S525s and S515s; a beer garden, for example. Mmmmmm, beer.

Passive Full-Range Loudspeakers

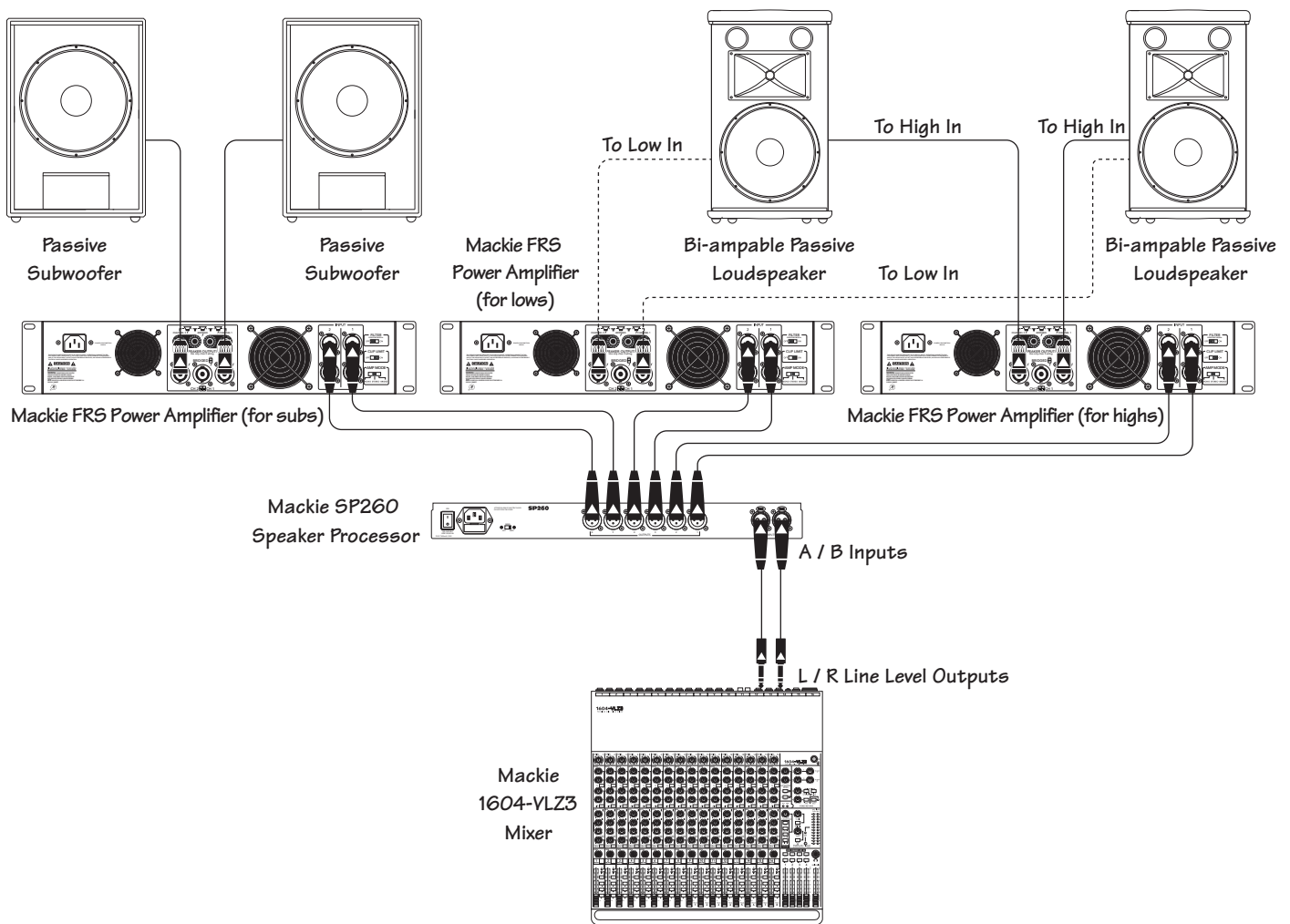


In this example, the SP260 is configured using the '2xStereo+Subs' setup type. The left and right line-level XLR outputs from a Mackie DL1608 mixer feed the A and B XLR inputs of a Mackie SP260 Speaker Processor. XLR outputs 1 and 2 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of a Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of the power amplifier feed the NL4 inputs of two Mackie S525 passive loudspeakers. These loudspeakers are paired with subwoofers as mentioned below.

XLR outputs 3 and 4 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of another Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of this power amplifier feed the NL4 inputs of two Mackie S518S passive subwoofers. The SP260's high- and low-pass filters on output channels 1–4 are configured to create a crossover to optimize these subwoofers with the S525 loudspeakers. The subs may be stereo or mono by properly configuring the input sources for SP260 outputs 3 and 4.

XLR outputs 5 and 6 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of yet another Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of this power amplifier feed the NL4 inputs of two Mackie S512 passive loudspeakers. This full-range pair is positioned halfway toward the rear of the venue and has delay added, so it syncs with the mains.

Passive Main Loudspeakers with Subwoofers and Delay Stacks



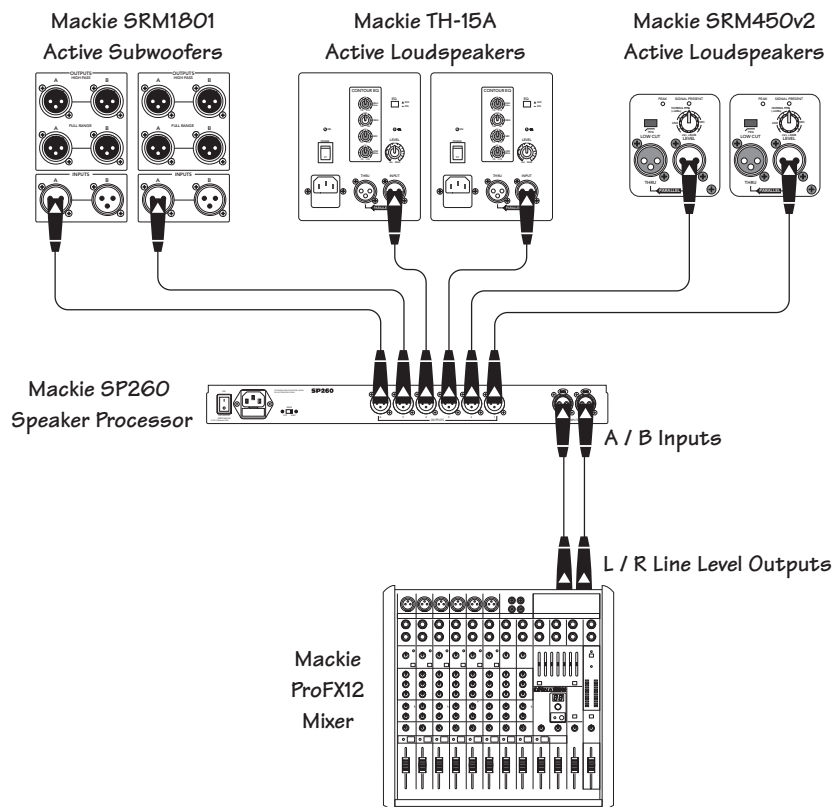
Here's a fun setup! In this example, the SP260 is configured using the '2x2Way+Subs' setup type. The left and right line-level 1/4" outputs from a Mackie 1604-VLZ3 mixer feed the A and B XLR inputs of a Mackie SP260 Speaker Processor. XLR outputs 1 and 2 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of a Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of the power amplifier feed the high inputs of two bi-amplified passive loudspeakers.

XLR outputs 3 and 4 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of another Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of this power amplifier feed the low inputs of the two aforementioned bi-amplified passive loudspeakers.

XLR outputs 5 and 6 of the Mackie SP260 Speaker Processor feed the 1 and 2 XLR inputs of a third Mackie FRS Power Amplifier. The CH 1 and CH 2 NL4 speaker outputs of this power amplifier feed input A of two passive subwoofers.

The SP260's high- and low-pass filters on the output channels are configured to create a crossover so that outputs 1 and 2 of the SP260 deliver the high frequencies to the loudspeakers, outputs 3 and 4 deliver the low frequencies to the same loudspeakers and outputs 5 and 6 deliver the lowest frequencies to the passive subwoofers. The subs may be stereo or mono by properly configuring the input sources for SP260 outputs 5 and 6.

Bi-amped Passive Full-Range Loudspeakers with Subwoofers



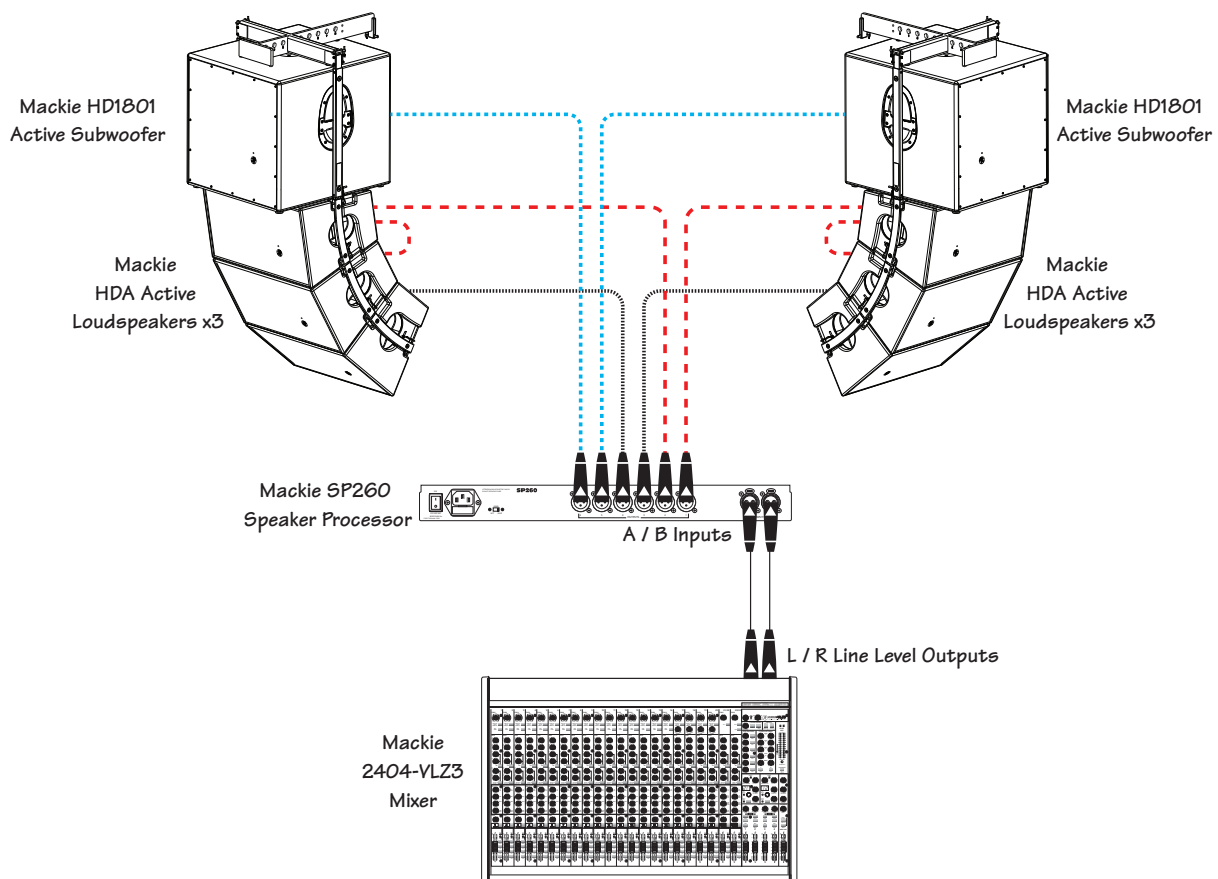
The Mackie SP260 Speaker Processor is also useful for folks utilizing powered loudspeakers and subwoofers. Here, the SP260 is configured using the '2xStereo+Subs' setup type. The left and right line-level XLR outputs from a Mackie ProFX12 mixer feed the A and B XLR inputs of a Mackie SP260 Speaker Processor. XLR outputs 1 and 2 of the Mackie SP260 Speaker Processor feed the XLR inputs of two Mackie SRM450v2 powered loudspeakers. These loudspeakers are located on stage and are paired with powered subwoofers as mentioned below.

XLR outputs 3 and 4 of the Mackie SP260 Speaker Processor feed the XLR inputs of two Mackie TH-15A powered loudspeakers. This full-range pair should be positioned halfway toward the rear of the venue with delay added, so it syncs with the mains. Or place them in a separate area away from the stage. Again, beer gardens, for example. Who doesn't like gardening...it's relaxing and looks nice, right?!

Finally, XLR outputs 5 and 6 of the Mackie SP260 Speaker Processor feed the XLR inputs of two Mackie SRM1801 powered subwoofers that are located on stage and paired with the SRM450v2 loudspeakers. In this setup, the SP260's high- and low-pass filters on outputs 1 and 2 and 5 and 6 may be used to configure a crossover between the SRM450v2s and SRM1801s for added control from the processor. Care should be taken when configuring the SP260's crossover so the SRM1801's built-in crossover does not conflict. The subs may be stereo or mono by properly configuring the input sources for SP260 outputs 5 and 6.

The SP260 may be used for additional room corrective EQ and delay to align the loudspeakers and subwoofers and a limiter added for extra protection against greasy-fingered guest engineers or irrational DJs.

Powered Main Loudspeakers and Subwoofers with Separate Stereo Full-Range Loudspeakers



Ok, so you've got the big boy setup...we understand and are able to fulfill your needs here, too! Here, the SP260 is configured using the '2xStereo+Subs' setup type. We connected the left and right line-level XLR outputs of a Mackie 2404-VLZ3 mixer to the A and B XLR inputs of a Mackie SP260 Speaker Processor. Next, we connected XLR outputs 1 and 2 of the Mackie SP260 Speaker Processor to the XLR main input of the top Mackie HDA powered arrayable loudspeaker on each side. The loop out XLR jack of these HDAs feed the main inputs of another pair of Mackie HDA powered arrayable loudspeakers right below them [the middle HDA on each side].

XLR outputs 3 and 4 of the Mackie SP260 Speaker Processor feed the XLR main input of the bottom Mackie HDA powered arrayable loudspeaker on each side.

Now let's add some low end to this beast! Connect XLR outputs 5 and 6 of the Mackie SP260 Speaker Processor to XLR input A of the Mackie HD1801 powered subwoofer on each side.

With this setup, you might choose to reduce output to the bottom HDA if the application calls for it. If the rig is high enough, though, these HDAs might be fine at the same output level as the top two HDAs on each side.

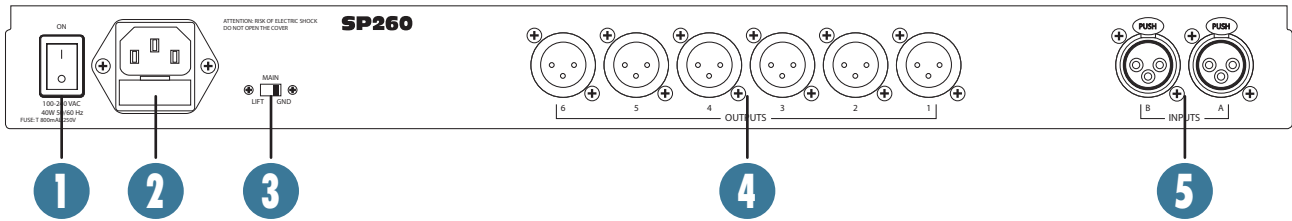
The SP260's high- and low-pass filters on output channels 1-6 may be configured to create a crossover to optimize the subwoofers with the HDAs. The subs may be stereo or mono by properly configuring the input sources for SP260 outputs 5 and 6. The SP260 may be used for additional room corrective EQ and delay to align the loudspeakers and subwoofers and a limiter added for extra protection. The only thing it can't do is make you breakfast!



NOTE: Please refer to the loudspeaker's owner's manual if utilizing a setup similar to the one shown here. There are issues of safety, weights, angles, coverage and much more regarding systems that are flown. Installation should only be done by experienced, licensed professionals. Improper installation may result in damage to the equipment, injury or death. Make sure the loudspeakers and subwoofers are installed in a stable and secure way in order to avoid any conditions that may be dangerous for persons or structures.

Powered Arrayable Loudspeakers and Subwoofers; aka "The Shizz"

SP260 2x6 Speaker Processor Features: Rear Panel



1. Power

Use this rocker-style switch to turn the unit on or off. The processor is on when the top of the switch is pressed in. It is off when the bottom of the switch is pressed in. The LCD Display [6] will illuminate and text will appear when the power switch is on.

The SP260 remembers its settings, so you may power cycle the unit and it will resume operation using the same settings as before. The SP260 employs relays on the outputs to prevent unwanted pops and noise in the system when power cycling and starting up the processor. After engaging the power switch, the unit will initialize and the relays will switch. Any live outputs will smoothly fade from silence to their configured output levels. The processor may now be edited, or you may signal the band to start playing if the SP260 is already configured for the PA system.

2. Power Cord Socket and Fuse

This is where to connect the detachable power cord included with the processor. Plug the other end of the power cord into an AC outlet. The outlet should match the power cord.



WARNING: Bypassing the plug's safety ground pin can be dangerous. Don't do it!

The fuse is located behind the fuse cover, at the bottom of the IEC socket. See the "Troubleshooting" section on page 22 for information about replacing the fuse.

3. Main: Lift / Gnd

The ground lift separates the chassis ground from the signal ground. The default position is GND. You may attempt to remedy system ground loop hum by moving the switch to LIFT.

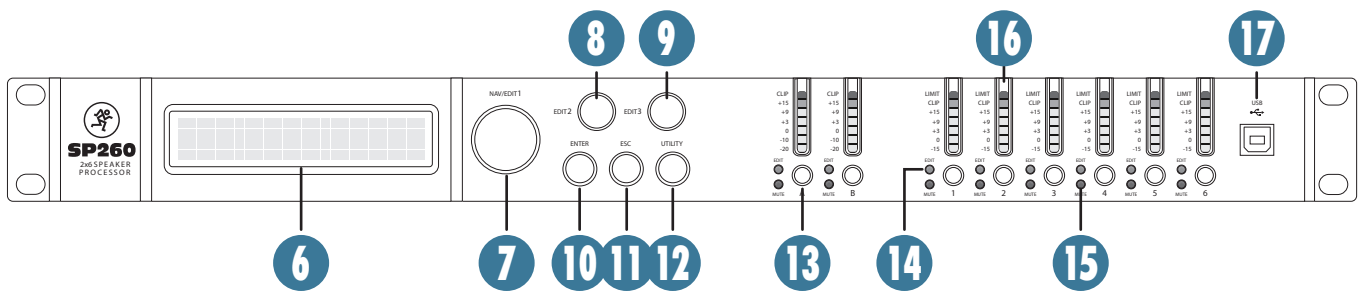
4. XLR Outputs

These six male XLR connectors provide a balanced line-level signal for each of the processor's output channels. Connect these to the inputs of power amplifiers and/or powered loudspeakers.

5. XLR Inputs

These female XLR connectors accept a balanced line-level input from a mixer's main L/R output.

SP260 2x6 Speaker Processor Features: Front Panel



6. LCD Display

The LCD Display is one of the most vital features of the processor. It displays processor information including (but not limited to) System, Preset and Security Utilities, gain, delay, EQ and other input and output processing parameters.

When the SP260 is powered up, the last state it was in will load up and the LCD Display will present the current system setup type:

- 2xStereo+Sub [default]
- 2x2Way+Sub
- 2x3Way
- 3xStereo
- 1x6Way

7. Nav/Edit1 Wheel

The Nav/Edit1 Wheel allows you to navigate the user interface, edit sections of the processor, navigate within screens to select sub-menus, pages and parameters, as well as select values during editing.

8. Edit2 Wheel

The Edit2 Wheel allows you to edit parameters, as well as select values during editing.

9. Edit3 Wheel

Broken record alert! The Edit3 Wheel allows you to edit parameters, as well as select values during editing.

NOTE

Read on to learn more about what each of these wheels does. In general, use the Nav/Edit1 Wheel to scroll through the various pages and configuration settings. Depending on the page, individual parameters may be changed by turning one (or more) of the wheels. In some cases, the Edit2 and Edit3 Wheels provide fine and course control of the same parameter.

10. Enter Button

The Enter Button allows you to dig deeper and deeper into menus and parameters, confirm operations and change settings.

11. ESC Button

The ESC Button allows you to retreat from selected variables. In some cases, it confirm operations and changes settings, as well. These will be noted.

12. Utility Button

Press this button to select and update the SP260's utilities. There are three main utilities menus:

- System Utilities
- Preset Utilities
- Security Utilities

Within each, an array of sub-menus are available.

13. Mute / Edit Buttons

These eight buttons serve a dual purpose:

- Muting selected inputs and outputs
- Editing selected inputs and outputs

To **mute** an input or output, quickly press and release the desired button once to engage mute; quickly press and release it again to un-mute. Mute does just what it sounds like it does. It mutes – turns off – the signal on the corresponding inputs and outputs.

To **edit** an input or output, press and hold the desired button until that input or output's blue LED [14] illuminates. Press and hold again to take it out of edit mode. Edit does just what it sounds like it does. It allows you to edit – change – variables on the chosen inputs and outputs.



While it is not possible to edit the inputs AND outputs simultaneously, it is possible to link and edit the inputs simultaneously OR link and edit any number of outputs simultaneously. Simply press and hold any additional input or output Mute / Edit buttons to link. Any changed parameters will affect all linked inputs or outputs.

SP260 2x6 Speaker Processor Features: Front Panel

14. Edit LEDs

There are a total of eight Edit LEDs on the SP260: two input and six output. Edit LEDs illuminate blue when engaged. See Mute / Edit Buttons [13].

Have you ever been at the airport when it's dark outside? You know the blue lights lined up on runways? The color of these Edit LEDs look quite similar to those of the airport runway's lights.

15. Mute LEDs

There are a total of eight Mute LEDs on the SP260: two input and six output. Mute LEDs illuminate red when engaged. See Mute / Edit Buttons [13].

16. Meters

These seven-segment meters display the input and output signal levels OR the gain reduction amount for each output's limiter, depending on the selected VU Meter mode. Detailed information may be found on page 21 [VU Meter section].

These meters should remain green with the occasional bump into the yellow zone. If there is too much yellow (or any red clipping), lower the mixer's Main L/R fader until it's gone. You might check the gain and EQ settings on the SP260 input and output channels, as well.

Input meters (starting at the top) show:

Clip, +15 dBu, +9 dBu, +3 dBu, 0 dBu, -10 dBu and -20 dBu.

Output meters (starting at the top) show:

Limit, Clip, +15 dBu, +9 dBu, +3 dBu, 0 dBu and -15 dBu when in Level mode.

If the VU meter mode is Limit, the output meters show Limit, 0 dB, -3 dB, -6 dB, -9 dB, -12 dB and -15 dB.

17. USB

The SP260 may be controlled and programmed using a Windows-based PC. Go to www.mackie.com to download the free application and driver. Here you will also find presets for typical Mackie PA system setups.

Simply connect a USB cable from the SP260 to the computer in order to control all parameters of the processor via computer.

Factory Reset

It is possible to reset the SP260 2x6 Speaker Processor to its factory settings.



Please keep in mind that this erases all settings, including any passwords and presets that may have been set. Be sure to power down any amps and/or powered speakers before resetting the SP260.

Simply press and hold the Enter [10], ESC [11] and Utility [12] buttons when powering up until the LCD Display [6] shows:

Please Wait....

Memory Reset

Then you may take your fingers off the buttons. You will know it worked when the six output Mute LEDs [15] illuminate after the SP260 is fully powered up.

The default password is six zeroes: 000000

Utilities

As mentioned earlier, there are three main utility menus to choose from:

- System Utilities
- Preset Utilities
- Security Utilities

Within each utility menu, an array of sub-menus are available. We will go through each utility, each sub-menu, how to get there, how to edit and change settings and what each wheel and button does in each situation.

NOTE

When navigating menus, the current setting for any parameter will be indicated with an asterisk [*] making it easy to get back where you started.

Press the Utility Button [12] to open the Utility Menu.

Use the Nav/Edit1 Wheel [7] to navigate between the three utility menus: System Utilities, Preset Utilities and Security Utilities.

Press the ESC button [11] to return to the main screen. We're here to learn about Utilities, so no need to ESC out of here at this point!

Press the Enter Button [10] to enter and edit the selected Utilities menu. This is how we reach the sub-menus of the Utilities.

System Utilities

Turn the Nav/Edit1 Wheel until System Utilities is presented and press the Enter Button [10] to reach the System Utilities sub-menus as listed below:

- System Setup
- Delay Units
- Ramps on changes
- Software Version

We will go through each of these sub-menus, one-by-one (and in order), but know that...

(1) The Nav/Edit1 Wheel [7] is used to navigate between the four System Utilities.

(2) The ESC button [11] is used to return to the System Utilities menu.

(3) The Enter Button [10] is used to enter and edit the chosen System Utility.

Without further ado, press the Enter Button [10] to enter System Setup.

System Setup

System Setup is where the processor is configured for your particular loudspeaker system. It configures channel names, input routing to outputs and provides starting points for crossover setups.

The five options are listed below. Here, turn the Edit2 [8] or Edit3 [9] Wheel to scroll between the different System Setup choices.

- 2xStereo+Sub [default]
Two full-range loudspeaker pairs and a pair of [mono by default] subwoofers
- 2x2Way+Sub
Two bi-ampable full-range loudspeakers and a pair of [mono by default] subwoofers
- 2x3Way
Two tri-ampable full-range loudspeakers
- 3xStereo
Three full-range loudspeaker pairs
- 1x6Way
Mono 6-way setup

Once you have decided on a system, press the Enter Button [10] twice: once to select and again to confirm. The outputs will automatically mute once updated and the processor returns to the System Setup splash screen.



You may configure the SP260 for other scenarios by adjusting the available parameters. If you are creating a custom setup, choose the setup that most closely resembles your system, then tweak from there.

Press the ESC button [11] to return to the System Utility menu without making any changes.

Delay Units

This is where to choose units used when adjusting the input and output delay values. You will be presented with three options here:

- Unit : Time(ms)
- Unit : Distance(m) [default]
- Unit : Distance(feet)

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between these three choices. Press the Enter Button [10] once a unit of delay has been decided. The processor will return to the Delay Units splash screen. Or press the ESC button [11] to return to the System Utility menu without making any changes.

Ramps on changes

When engaged, sudden volume changes may be avoided when changing parameter values, particularly when using a Windows-based PC to control the unit. Disengage this feature for live applications since instant response to change is desired.

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *Ramps : On* and *Ramps : Off* [default]. If changing, press the Enter Button [10] only once here. The processor will return to the Ramps on changes splash screen. Or press the ESC button [11] to return to the System Utility menu without making any changes.

Software Version

Nothing may be changed here. Just press the Enter Button [10] to view what version of software is installed in this SP260. Press the Enter [10] or ESC [11] Button to return to the Software Version splash screen.

And that wraps up the System Utilities portion of the SP260 training. Next we will take a look at the Preset Utilities and what features are offered there.

Preset Utilities

This is where to save, recall and delete presets on the SP260. This is useful when the PA system has multiple setups for different environments or several loudspeaker systems utilizing varying setups.

Note: As mentioned earlier, the SP260 will load up the last state it was in when it was powered down.

As discussed earlier, the way to get here from the main menu is by pressing the Utility Button [12]. Once inside the Utility Menu, scroll the Nav/Edit1 Wheel [7] clockwise to Preset Utilities. One click should do the trick. Now press the Enter Button [10] again to reach the sub-menus as listed below:

- Recall a Preset
- Save a Preset
- Delete a Preset

Again, we will go through each of these sub-menus, one-by-one (and in order), but know that...

(1) The Nav/Edit1 Wheel [7] is used to navigate between the three Preset Utilities.

(2) The ESC button [11] is used to return to the Preset Utilities menu.

(3) The Enter Button [10] is used to enter and edit the chosen Preset Utility.

Without further ado, press the Enter Button [10] to enter Recall a Preset.

Recall a Preset

If a preset has been saved earlier, it may be recalled here. If no presets are stored in the unit, the processor will return to the Recall a Preset splash screen.

If presets are available, turn the Edit2 [8] or Edit3 [9] Wheel to select which preset to recall. Press the Enter Button [10] to select a preset and again to confirm recall. The preset will load and the processor will return to the Recall a Preset splash screen.

Save a Preset

Once the perfect system settings have been dialed in, save it to the SP260 for recall later. Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between presets 1 – 24. Press the Enter Button [10] once you decide where to save the preset.

Now you get to name the preset. The Nav/Edit1 Wheel [7] moves the cursor left and right while the Edit2 [8] and Edit3 [9] Wheels change the text. Once satisfied with the results, press the Enter Button [10] twice: once to select and again to confirm. The processor will return to the Save a Preset splash screen.

It is possible to save over an existing preset. If attempted, you will need to confirm by pressing the Enter Button [10] again. Or press the ESC Button [11] to return to the Preset Utilities menu without overwriting the preset.

Delete a Preset

Those “perfect” settings weren’t so “perfect” now, were they? If a preset is no longer needed for recall, it may be deleted here. It will help avoid confusion down the road and keep the SP260’s memory clutter-free.

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between presets 1 – 24. Press the Enter Button [10] once you decide on which preset to delete.

Press the Enter Button [10] twice: once to select and again to confirm. The processor will return to the Delete a Preset splash screen.

And that wraps up the Preset Utilities portion of the SP260 training. Next we will take a look at the Security Utilities and what features are offered there.

Security Utilities

This is where to lock the SP260 to prevent anyone from accidentally (or intentionally) changing the settings. You also have control over some of the behaviors after it's been locked.

As discussed earlier, the way to get here from the main menu is by pressing the Utility Button [12]. Once inside the Utility Menu, scroll the Nav/Edit1 Wheel [7] clockwise to Security Utilities. Two clicks should do the trick. Now press the Enter Button [10] again to reach the sub-menus as listed below.

- Show Parameter
- Lock Unit
- User Password
- Enable Password

We will go through each of these sub-menus, one-by-one (and in order), but know that...

(1) The Nav/Edit1 Wheel [7] is used to navigate between the four Security Utilities.

(2) The ESC button [11] is used to return to the Security Utilities menu.

(3) The Enter Button [10] is used to enter and edit the chosen Security Utility.

Without further ado, press the Enter Button [10] to enter Show Parameter.

Show Parameter

Once an SP260 has been locked, you have the option of allowing the various processing parameter values to be shown or not.

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *Parameter will be shown* [default] and *Parameter will not be shown*. If changing, press the Enter Button [10] only once here. The processor will return to the Show Parameter splash screen.

Lock Unit

Locking a SP260 prevents accidental changes to its settings.

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *Lock : Off* [default] and *Lock : On*. If changing, press the Enter Button [10] only once here.

When locked, a symbol resembling a key will appear in the lower-right hand area of the LCD Display [6]. Pressing the Utility Button [12] here returns you directly to the Lock Unit splash screen.

When unlocked, the key symbol disappears and the processor will return to the Security Utilities splash screen.

User Password

For the ultimate protection from accidental and intentional parameter adjustments, set up a user password here. Only those with the password will be allowed access to edit processor settings.

The Nav/Edit1 Wheel [7] moves the cursor left and right while the Edit2 [8] and Edit3 [9] Wheels change the text.



In order to change the password, the current password needs to be entered. The default / factory password is: 000000

Enter the current password and press the Enter Button [10]. It will now prompt you for a new password. Use as few as one (and up to a maximum of six) characters, using any combination of letters, numbers and symbols. Enter a new password and press the Enter Button [10]. It will now prompt you to confirm the new password. Enter it and press the Enter Button again to confirm. The processor will return to the User Password splash screen.

If the entered password is wrong, the splash screen will display "Password Wrong!" and the processor will return to the User Password splash screen without changing the password.

The password has been updated, but it is still disabled. This leads us to the fourth – and final – sub-menu:

Enable Password

Here is where the user password is enabled. The Nav/Edit1 Wheel [7] moves the cursor left and right while the Edit2 [8] and Edit3 [9] Wheels change the text.

Enter the correct password and press the Enter Button [10]. Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *Password : Disable* [default] and *Password : Enable*. If changing, press the Enter Button [10] only once here.

When enabling, a symbol resembling a padlock will appear in the lower-right area of the LCD Display [6]. Pressing the Utility Button [12] here returns you directly to the User Password splash screen.

When disabling, the padlock symbol disappears and the processor will return to the Security Utilities splash screen.



The password will need to be entered to make any changes once the SP260 has been locked and password enabled. Therefore, *write it down or tell a friend!*

If the password is gone forever, you will have to perform a factory reset to restore the unit's default settings [see page 13].

Editing

Each input and output has an assortment of powerful tools used to optimize the PA. Like we did in the 'Utility' section of the manual, here we will dissect each sub-menu of the inputs and outputs, how to get there, how to edit and change settings and what each wheel and button does in each situation.

NOTE Changes made in Editing mode occur in real time.

As a reminder...

To edit an input or output, press and hold the desired Edit Button [13] until that input or output's blue LED [14] illuminates. Press and hold again to take it out of edit mode.

Inputs A / B:

Engaging Edit on Input A, Input B, or both simultaneously allows you the opportunity to edit the following:

- Gain
- Delay
- EQ Bypass
- 5-Band EQ

We will go through each of these sub-menus, one-by-one (and in order), but know that...

(1) The Nav/Edit1 Wheel [7] is used to navigate between Gain, Delay, EQ Bypass and 5-Band EQ. The SP260 recalls where you are, so scroll the Nav/Edit1 Wheel [7] until you see the parameter you want to edit.

(2) The ESC button [11] is used to disengage Editing and return to the previous menu.

(3) The Enter Button [10] is used to enter and edit the chosen feature.

Without further ado, press the Enter Button [10] to enter the currently selected input processing parameter. An arrow → will appear next to whatever setting is ready to be edited: Gain, Delay, EQ Bypass or EQ Bands 1 – 5.

Gain

The input gain allows you to adjust the entire PA levels up and down. This is where to calibrate the signal level coming in from the mixer.

Press the Enter button [10] to enter and edit the gain. An arrow → will appear next to "Gain" indicating that it is ready to be edited.

Use the Edit2 [8] or Edit3 [9] Wheels to change the gain by ± 0.1 dB per click. Turning these wheels clockwise increases gain, while turning them counter-clockwise decreases gain. The gain ranges from -15.0 dB to $+15.0$ dB.

Press the ESC button [11] to exit the gain editing mode.

Delay

Setting up input delays on the SP260 is useful for aligning PA loudspeakers to the live instruments or as a dedicated processor for delay stacks.

Press the Enter button [10] to enter and edit the delay. An arrow → will appear next to "Delay" indicating that it is ready to be edited.

As stated on page 14, Delay may be represented in one of three ways:

- Time(ms), or
- Distance(m) [default], or
- Distance(feet)

Use the Edit2 Wheel [8] to change the delay by:

- ± 1.000 ms per click, or
- $\sim \pm 0.340$ m per click, or
- $\sim \pm 1.115$ feet per click

Use the Edit3 Wheel [9] to make fine adjustments. The Edit3 Wheel changes the delay by:

- ± 0.0208 ms per click, or
- $\sim \pm 0.007$ m per click, or
- $\sim \pm 0.023$ feet per click

Turning these wheels clockwise increases the delay time, while turning them counter-clockwise decreases the delay time.

The minimum and maximum delay ranges from:

- 0.0000 ms – 600.9984 ms
- 0.000 m – 204.339 m
- 0.000 feet – 670.233 feet

Press the ESC button [11] to disengage Editing.

EQ Bypass

EQ Bypass flattens the 5-Band EQ on the input so you may hear exactly how it is affecting the system. By toggling the EQ Bypass on and off, you may quickly compare the sound with and without EQ.

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *Bypass = Off* [default] and *Bypass = On*.

Press the ESC button [11] to accept the new EQ Bypass mode and exit the EQ Bypass editing mode.

5-Band EQ

Editing input EQ on the SP260 is useful for adjusting the response of the entire PA, particularly when correcting anomalies caused by the venue.

Press the Enter button [10] to enter and edit the EQ bands. An arrow → will appear next to “EQ” indicating that it is ready to be edited.

Use the Nav/Edit1 [7] Wheel to change the frequency by $\sim\pm 1/24$ octave per click. Turning this wheel clockwise increases the frequency, while turning it counter-clockwise decreases the frequency. The frequency ranges from 20.0 Hz to 20.0 kHz.

Use the Edit2 [8] Wheel to change the bandwidth by $\sim\pm 0.05$ per click. Turning this wheel clockwise increases the bandwidth, while turning it counter-clockwise decreases the bandwidth. The EQ band may be configured as high or low shelf by turning it all the way counter-clockwise.

These are the EQ choices from the furthest counter-clockwise option to the furthest clockwise option:

- -12 High Shelving
- -6 High Shelving
- -12 Low Shelving
- -6 Low Shelving
- 0.05 – 3.00 [Parametric]

NOTE

To change the EQ between shelving and parametric, the gain must first be set to 0.0 dB.

Use the Edit3 [9] Wheel to change the gain by $\sim\pm 0.5$ dB per click. Turning this wheel clockwise increases the gain, while turning it counter-clockwise decreases the gain. The gain ranges from -15.0 dB to +15.0 dB.

Press the ESC button [11] to exit the EQ editing mode.

Outputs 1-6:

Engaging Edit on Output(s) 1-6 allows you the opportunity to edit the following:

- Name
- Source
- Polarity
- Gain
- EQ Bypass
- 7-Band EQ
- Delay
- High Pass Filter
- Low Pass Filter
- Limiter
- VU Meter

We will go through each of these sub-menus, one-by-one (and in order), but know that...

(1) The Nav/Edit1 Wheel [7] is used to navigate between Name, Source, Polarity, Gain, EQ Bypass, 7-Band EQ, Delay, High Pass Filter, Low Pass Filter, Limiter and the VU Meter.

(2) The ESC button [11] is used to disengage Editing and return to the previous menu.

(3) The Enter Button [10] is used to enter and edit the chosen feature.

Without further ado, press the Enter Button [10] to enter Name.

An arrow → will appear next to “Name” indicating that it is ready to be edited.

NOTE

The aforementioned arrow → will appear next to whatever setting is ready to be edited: Name, Source, Polarity, Gain, EQ Bypass, 7-Band EQ, Delay, High Pass Filter, Low Pass Filter, Limiter and the VU Meter.

Name

Here is where the name of the selected output(s) may be changed. The Nav/Edit1 Wheel [7] moves the cursor left and right while the Edit2 [8] and Edit3 [9] Wheels change the text.

Press the Enter button [10] to accept the new name and return to the Edit menu. Pressing the ESC button leaves the name as-is and returns you to the output edit menu.

Source

There are three input sources to choose between:

- InA = Input A
- InB = Input B
- InA+InB = A mono sum of Input A + Input B

If you are running a stereo system, choose either Input A or Input B. If the system is mono (or has a mono component such as a subwoofer or a single loudspeaker mounted in a venue's lobby, for example), go with the Input A + Input B choice.

Use the Edit2 [8] or Edit3 [9] Wheel to change between these three options.

Press the ESC button [11] to exit input source editing mode.

Polarity

Polarity inversion is often helpful in improving phase alignment throughout the loudspeaker system, whether used separately or with a small amount of delay. For example, if a subwoofer doesn't sound "full", invert the polarity to see if that doesn't solve the issue.

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *Polarity = Normal* [default] and *Polarity = Invert* [180°].

Press the ESC button [11] to exit polarity edit mode.

Gain

In some cases you may need to adjust the output levels differently to properly balance the system components for ideal performance.

Use the Edit2 [8] or Edit3 [9] Wheel to change the gain by ± 0.1 dB per click. Turning these wheels clockwise increases gain, while turning them counter-clockwise decreases gain. The gain ranges from -12.0 dB to $+6.0$ dB.

Press the ESC button [11] to exit gain editing mode.

EQ Bypass

EQ Bypass flattens the 7-Band EQ on the output so you may hear exactly how it is affecting the system. By toggling the EQ Bypass on and off, you may quickly compare the sound with and without EQ.

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *Bypass = Off* [default] and *Bypass = On*.

Press the ESC button [11] to accept the new EQ Bypass mode and exit the EQ Bypass editing mode.

7-Band EQ

Output EQ is used primarily for adjusting the response of a particular loudspeaker or transducer. Additionally, output EQ may be used to correct room anomalies in multi-room setups.

Use the Nav/Edit1 [7] Wheel to change the frequency. Turning this wheel clockwise increases the frequency, while turning it counter-clockwise decreases the frequency. The frequency ranges from 20.0 Hz to 20.0 kHz.

Use the Edit2 [8] Wheel to change the bandwidth by $\sim \pm 0.05$ per click. Turning this wheel clockwise increases the bandwidth, while turning it counter-clockwise decreases the bandwidth. The EQ band may be configured as high or low shelf by turning it all the way counter-clockwise.

These are the EQ choices from the furthest counter-clockwise option to the furthest clockwise option:

- -12 High Shelving
- -6 High Shelving
- -12 Low Shelving
- -6 Low Shelving
- $0.05 - 3.00$ [Parametric]

NOTE

To change the EQ between shelving and parametric, the gain must first be set to 0.0 dB.

Use the Edit3 [9] Wheel to change the gain by $\sim \pm 0.5$ dB per click. Turning this wheel clockwise increases the gain, while turning it counter-clockwise decreases the gain. The gain ranges from -15.0 dB to $+15.0$ dB.

Press the ESC button [11] to exit the EQ editing mode.

Delay

Setting up output delays on the SP260 is useful for time and phase aligning transducers in bi- and tri-amplified loudspeakers, aligning subwoofers to full-range loudspeakers, aligning delay stacks to mains on stage, and more.

As stated on page 14, Delay may be presented in one of three ways:

- Time(ms), or
- Distance(m) [default], or
- Distance(feet)

Use the Edit2 Wheel [8] to change the delay by:

- ± 1.000 ms per click, or
- $\sim \pm 0.340$ m per click, or
- $\sim \pm 1.115$ feet per click

Use the Edit3 Wheel [9] to change the delay by:

- ± 0.0208 ms per click, or
- $\sim \pm 0.007$ m per click, or
- $\sim \pm 0.023$ feet per click

Turning these wheels clockwise increases the delay time, while turning them counter-clockwise decreases the delay time.

The minimum and maximum delay ranges from:

- 0.0000 ms – 600.9984 ms
- 0.000 m – 204.339 m
- 0.000 feet – 670.233 feet

Press the ESC button [11] to exit delay editing mode.

High Pass Filter

High Pass Filters are utilized to set up crossovers in multi-way loudspeaker and subwoofer systems. They may also be used to roll-off low frequencies that full-range loudspeakers cannot efficiently reproduce.

Use the Edit2 [8] Wheel to change the frequency. Turning this wheel clockwise increases the frequency, while turning it counter-clockwise decreases the frequency. The frequency ranges from 20.0 Hz to 20.0 kHz.

Turn the Edit3 [9] Wheel to see the various filter type and slope options:

- No Cut-Off
- Butterworth 6 dB
- Butterworth 12 dB
- Linkwitz-Riley 12 dB
- Bessel 12 dB
- Butterworth 18 dB
- Butterworth 24 dB
- Linkwitz-Riley 24 dB
- Bessel 24 dB

Press the ESC button [11] to exit this edit mode.

Low Pass Filter

In conjunction with high pass filters, low pass filters are utilized to set up crossovers in multi-way loudspeaker and subwoofer systems. For example, in a 3-way stereo system, use the high and low pass filters on the output feeding the mid-range transducer to define the range of frequencies it will reproduce. Combined with high and low pass filters on the outputs to the low and high frequency transducers, you may divide the frequency spectrum so each transducer is reproducing the range for which it is best suited, making the system sound its best and operate most efficiently.

Use the Edit2 [8] Wheel to change the frequency. Turning this wheel clockwise increases the frequency, while turning it counter-clockwise decreases the frequency. The frequency ranges from 20.0 Hz to 20.0 kHz.

Turn the Edit3 [9] Wheel to see the various filter type and slope options:

- No Cut-Off
- Butterworth 6 dB
- Butterworth 12 dB
- Linkwitz-Riley 12 dB
- Bessel 12 dB
- Butterworth 18 dB
- Butterworth 24 dB
- Linkwitz-Riley 24 dB
- Bessel 24 dB

Press the ESC button [11] to exit this edit mode.

Limiter

Each output has a powerful limiter that may be used to protect loudspeakers from damage due to excessive output levels from the mixer.

Three Limiter controls may be edited here:

- Attack
- Release
- Threshold

Use the Nav/Edit1 Wheel [7] to change the attack time. Turning this wheel clockwise increases the attack time, while turning it counter-clockwise decreases the attack time. The attack time ranges from 5 ms to 200 ms.

The attack time increment depends on where it is currently set:

- 5 ms – 20 ms: ±1 ms per click
- 20 ms – 30 ms: ±5 ms per click
- 30 ms – 100 ms: ±10 ms per click
- 100 ms – 200 ms: ±20 ms per click

Use the Edit2 Wheel [8] to change the release time by ±0.1 s per click. Turning this wheel clockwise increases the release time, while turning it counter-clockwise decreases the release time. The release time ranges from 0.1 s to 3.0 s.

Use the Edit3 Wheel [9] to change the threshold by ±0.2 dBu per click. Turning this wheel clockwise increases the threshold, while turning it counter-clockwise decreases the threshold. The threshold ranges from -10.0 dBu to +20.0 dBu. A setting of +20.0 dBu is off.

Press the ESC button [11] to exit limiter editing mode.

VU Meter

You may choose between viewing the signal level or the limiter's gain reduction for each output. These will be displayed on the 7-segment LED meters [16].

Turn the Edit2 [8] or Edit3 [9] Wheel to scroll between *VU-Meter = Level* [default] and *VU-Meter = Limiter Act*. If the latter is selected, the Clip LED on the selected output(s) will illuminate to indicate 0 dB of gain reduction. When the signal level exceeds the limiter threshold, the top Limit LED will illuminate to indicate gain reduction is occurring. Additional LEDs will illuminate for every 3 dB of gain reduction.

Press the ESC button [11] to accept the update and exit VU Meter edit mode.

Linking Inputs or Outputs



It is possible to link multiple inputs or outputs and edit specific parameters simultaneously. This is handy if you want to set the gain on both inputs to +1.0 dB, for example. Or you could introduce a 3 dB cut at 250 Hz on EQ band 3 on output channels 1-4. This saves valuable time rather than having to make the same change on each input or output. The changes are absolute, not relative, so if you want different values for the same parameter across other inputs or outputs, you need to make these changes on each input or output. To link, simply press and hold any additional input or output Mute / Edit buttons. Any changed parameters will affect all linked inputs or outputs.

Wrap-up

The SP260 contains a minimal amount of knobs, buttons and other bells and whistles, but it is packed with features awaiting your every command. With little effort, you will be a master of the SP260 2x6 Speaker Processor in no time. Please accept our congratulatory virtual 'Certificate of Achievement', you deserve it...it looks great when framed!

Appendix A: Service Information

If you think your Mackie product has a problem, please check out the following troubleshooting tips and do your best to confirm the problem. Visit the Support section of our website (www.mackie.com) to get some ideas or contact our technical support heroes. You may find the answer to the problem without having to send your Mackie product away.

Troubleshooting

No Power

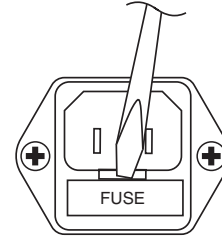
- Our favorite question: Is it plugged in?
- Make sure the power cord is securely seated in the IEC socket and plugged all the way into the AC outlet.
- Is anything on the front panel illuminated? If not, make sure the AC outlet is live [check with a tester or lamp].
- Make sure the rear panel power switch is in the ON position.
- Are all the lights out in town? If so, contact the local power company to get power restored.
- Is the fuse blown? See instructions to the right for removing and replacing it.
- If nothing is illuminated (and you are certain that the AC outlet is live and the fuse is not blown), it will be necessary to have the SP260 serviced. *There are no user serviceable parts.* Refer to “Repair” on the next page to find out how to proceed.

Noise / Hum

- Try changing the position of the main ground lift switch [3] on the rear panel of the SP260.
- Check the signal cables between the mixer and the processor and the processor, amps and loudspeakers. Disconnect them one-by-one. If the noise goes away, you will know which input or output is causing the problem.
- Sometimes it helps to plug all the audio equipment into the same AC circuit so they share a common ground. Make it so.

To remove and replace the fuse:

1. Disconnect the power cord from the IEC socket.
2. Remove the fuse drawer by prying it open with a small screwdriver. It will slide all the way out.



3. Remove the fuse and replace it with an equivalent-type fuse:
T 800mA / 250 V
4. Replace the fuse drawer by pushing it all the way back into the IEC socket.

If two fuses blow in a row, then something is very wrong. Try a different outlet in a totally different location. If fuses continue to blow, see the “Repair” section on the next page to find out what to do.

No Sound

- Are the level controls on the mixer or amplifier turned all the way down? Follow the procedures in “Getting Started” section on page 5 to verify that all of the volume controls in the system are properly adjusted.
- Is the signal source working (and making union scale)?
- Are all the connections good and sound? Make sure all of the connecting cables are in good repair and securely connected at both ends.

One side is way louder than the other!

- Are the level controls set the same for both sides on the mixer, amplifier and processor?
- Are the gain settings the same for all left-right pairs of inputs and outputs on the processor?
- Are the EQ settings the same for all left-right pairs of inputs and outputs on the processor?
- Are the limiter settings the same for all left-right pairs of outputs on the processor?
- Check the pan control on the signal source. It may be turned too far to one side. If you're using a stereo signal source, it may be delivering an out-of-balance stereo signal.
- Try switching sides: Turn off the amp, swap the speaker cables at the amp and turn the amp back on. If the same side is still louder, the problem is with your speaker cabling or the loudspeakers. If the other side is louder now, the problem is with the mixer, the amp, or the line-level cabling.

Bad Sound

- Are the input and output connectors plugged completely into the jacks? Make sure they are plugged all the way in.
- Is it loud and distorted? Reduce the signal level at the mixer, amplifier and/or processor.
- If possible, listen to the signal source with headphones plugged into the preamp stage. If it sounds bad there, it's not the processor.
- Have you gone a tad overboard with the gain and EQ settings? Cut is our friend and boost should be used wisely.
- Has the band been together long?

Factory Reset:

As a last ditch effort, you can reset the SP260 to its factory settings.



Please keep in mind that this erases all settings, including any passwords and presets that may have been set. Be sure to power down any amps and/or powered speakers before resetting the SP260.

Simply press and hold the Enter [10], ESC [11] and Utility [12] buttons when powering up until the LCD Display [6] shows:

Please Wait....

Memory Reset

Then you may take your fingers off the buttons. You will know it worked when the six output Mute LEDs [15] illuminate after the SP260 is fully powered up.

The default password is six zeroes: 000000

Repair

For warranty service, refer to the warranty information on page 28.

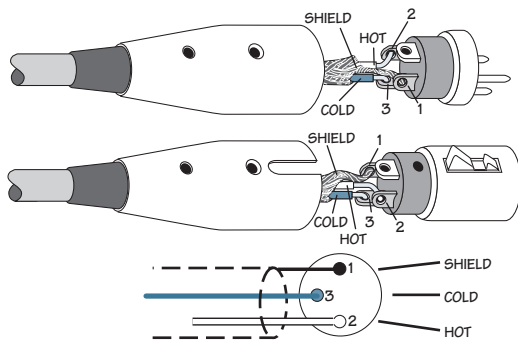
Non-warranty service for Mackie products is available at a factory-authorized service center. To locate your nearest service center, visit www.mackie.com, click "Support" and select "Locate a Service Center." Service for Mackie products living outside the United States can be obtained through local dealers or distributors.

If you do not have access to our website, you can call our Tech Support department at 1-800-898-3211, Monday-Friday during normal business hours, Pacific Time, to explain the problem. Tech Support will tell you where the nearest factory-authorized service center is located in your area.

Appendix B: Connections

XLR Connectors

The SP260 has two female XLR input jacks that accept balanced line-level signals. When connecting a balanced signal, be sure it's wired per AES (Audio Engineering Society) standards:



Balanced XLR Connectors

XLR

- Pin 1 – Shield (Ground)
- Pin 2 – Hot (+)
- Pin 3 – Cold (-)

You should use high-quality, shielded cable to connect the signal source to the input jacks on the SP260.

- High quality microphone cables work well.
- Foil shielded cables are commonly used for audio wiring.
- The better the shield, the better the immunity from externally induced noise (like EMI and RFI). Route the cable away from AC power cords and outlets. These are common sources for hum in an audio signal. You can purchase quality cables from your Mackie dealer.

Additionally, there are six male XLR output jacks on the SP260. These are also wired according to the AES standards listed above.

Appendix C: SP260 Control Application

The SP260's Control Application provides you with a simple, intuitive means of programming the device using your USB-equipped Windows-based PC. All of the System Setup, Preset, Utilities and Editing functions detailed in this owner's manual are available via the software, plus a few more which are detailed below. To get started, simply visit www.mackie.com, navigate to the SP260 product page, then download the driver and software installers and follow the installation instructions.

Once you've successfully installed the driver and software and connected your SP260, simply launch the SP260 application. The software will auto-detect and connect to the SP260, after which you can begin programming in real time. Or if you prefer to work offline, you can configure a system via the software, save your work as a preset, and later connect to the SP260 and load your settings into it.

NOTE

When the SP260 is connected and controlled by the software application, all front panel controls on the unit are disabled and the LCD screen indicates that the unit is locked.

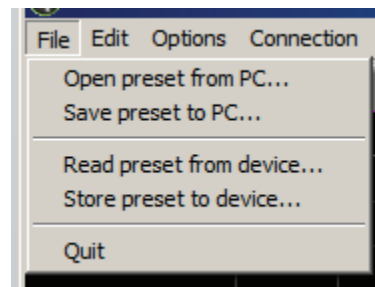
Launching the application will take you to the Summary screen. At the top of the window are four menus where you can manage system settings, preferences, presets, device connection and copy and paste input and output settings. Below the menus are nine tabs that give you one-click access to a summary view of the entire processor, as well as individual screens showing every processing parameter available for each input and output.

Here is a quick run through of the menus and the three different screens types that are available in the application.

Menus

File Menu

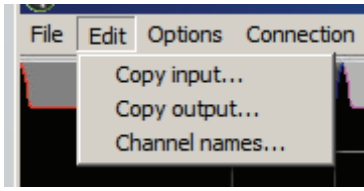
The File menu is where you manage presets on your device and/or on your computer's hard drive or external storage device. It is also where you can safely Quit the SP260 software. You can also Quit the application by clicking on the X in the upper right corner of the SP260 application window. If you are connected to the SP260, quitting the application either way will close the application window and disconnect the SP260.



- **Open preset from PC...**
Saved presets can be loaded in the application. If an SP260 is connected, the settings will be transmitted to the SP260. If working offline, the preset can be loaded for viewing or additional editing purposes.
- **Save preset to PC...**
Once you have dialed in the perfect settings, you may want to save them to your computer's hard drive or external storage device as an added measure of safety. Or working offline, you can create a preset file and open it later when you are with your SP260. You can even create preset files and share them with other SP260 users.
- **Read preset from device...**
Click here if you want to access one or more presets that are already stored in the SP260's memory banks, perhaps to save it to your hard drive as a safety backup in case you ever need to reset your processor, or if a rival engineer wants to try and mess up your settings.
- **Store preset to device...**
Click here if you've dialed in settings using the application, or opened a preset file, and want to store it in one of the SP260's 24 preset memory locations.
- **Quit**
Close and exit the SP260 application, but please keep your day job...unless this is your day job. In that case, keep it.

Edit Menu

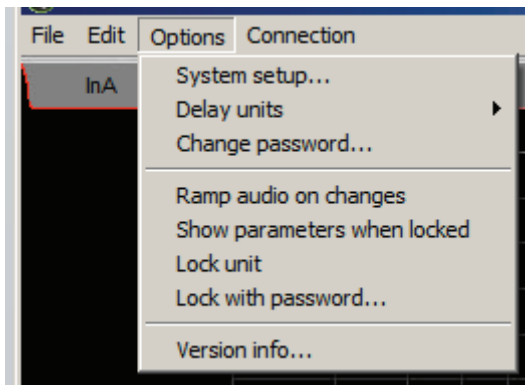
The edit menu is where you can copy and paste input/output settings and manage the names of your output channels.



- Copy input...
Select input source and destination to copy settings from Input A to Input B or vice versa.
- Copy output...
Select an output source and destination to copy settings from any one output channel to any other output channel.
- Channel names...
Output channels can be named to make it easier for you to keep track of your system channels when editing via the software and hardware interfaces. Name them by loudspeaker model, position in the venue, or get creative! If you figure out how to change the input names, let us know. On second thought, don't even try; they're A and B forever. We know that!

Options Menu

Talk about options, there are loads of them in here, including system setup, preferences, password and lock functionality, and more!

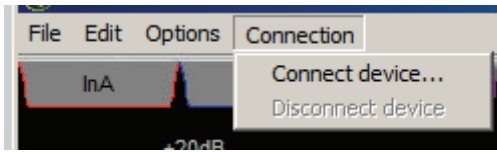


- System setup...
Configure your processor to best suit your loudspeaker setup by choosing from one of the five options. From there, you can tweak to your heart's content to achieve sonic bliss.

- Delay units
Choose between feet, meters and milliseconds as your preferred unit of measure when adjusting input and output delays.
- Change password...
If you want to setup a password so you can lock your SP260 and prevent intruders from wrecking your show, you've come to the right place.
- Ramp audio on changes
This is a handy feature when using the software application to make live adjustments to your system. Sneezing while your mouse is on an input level control could send your system into overload. By activating this feature, parameters will slowly transition from one setting to another. For real-time control, you can disable this feature. Just be careful.
- Show parameters when locked
Disable this feature if you want to be able to navigate unit settings while it is locked, without being able to change anything. For total privacy, activate this feature and your ideal system settings will be kept a secret.
- Lock unit
Activate this and the SP260 will be in a locked state once you disconnect from the software application. This is handy to prevent accidental changes to system settings.
- Lock with password...
For the ultimate in protection from accidental and intentional processor adjustments, click here. You'll need to know the current password of the SP260, which I do not know. The default password is '000000'.
- Version info...
If you're curious, or if one of our tech support guys asks you, you can find information about your SP260 hardware and software versions here.

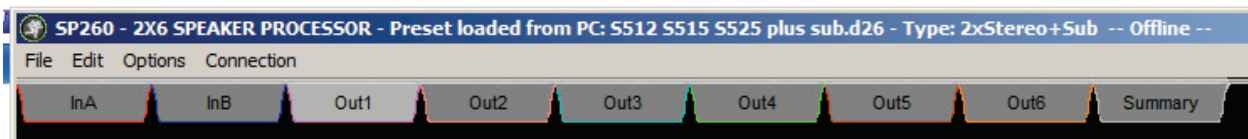
Connection menu

The connection menu is where you can manage the connection to your SP260 without exiting the software. This is handy if you are using the application to program multiple SP260 units in the same venue.



- **Connect device...**
Click here and the software will detect and connect to your SP260 for programming and control from your computer.
- **Disconnect device...**
Click here if you want to disconnect the SP260 from the software application without closing the application.

Input and Output Tabs

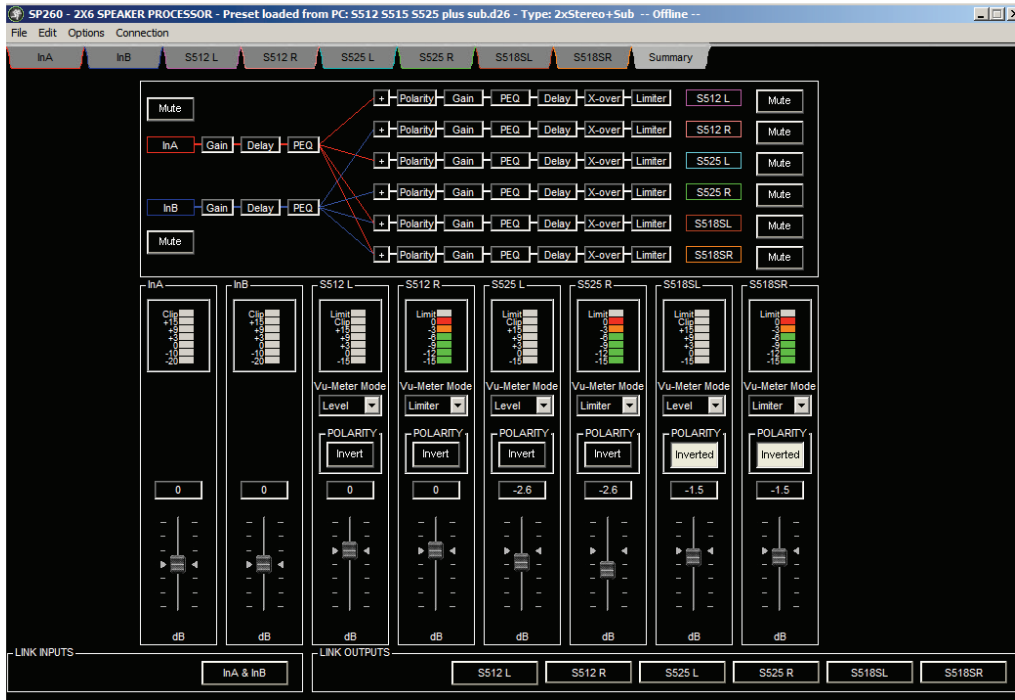


Below the menus are nine tabs that give you quick access to an overview of the whole processor or all of the processing options for a specific input or output. There are tabs for inputs A and B, for each of the six outputs, and lastly a Summary tab. When you launch the application, it will open showing you the Summary tab. Click on any tab to navigate between Input, Output and Summary screens.

Input and Output Linking

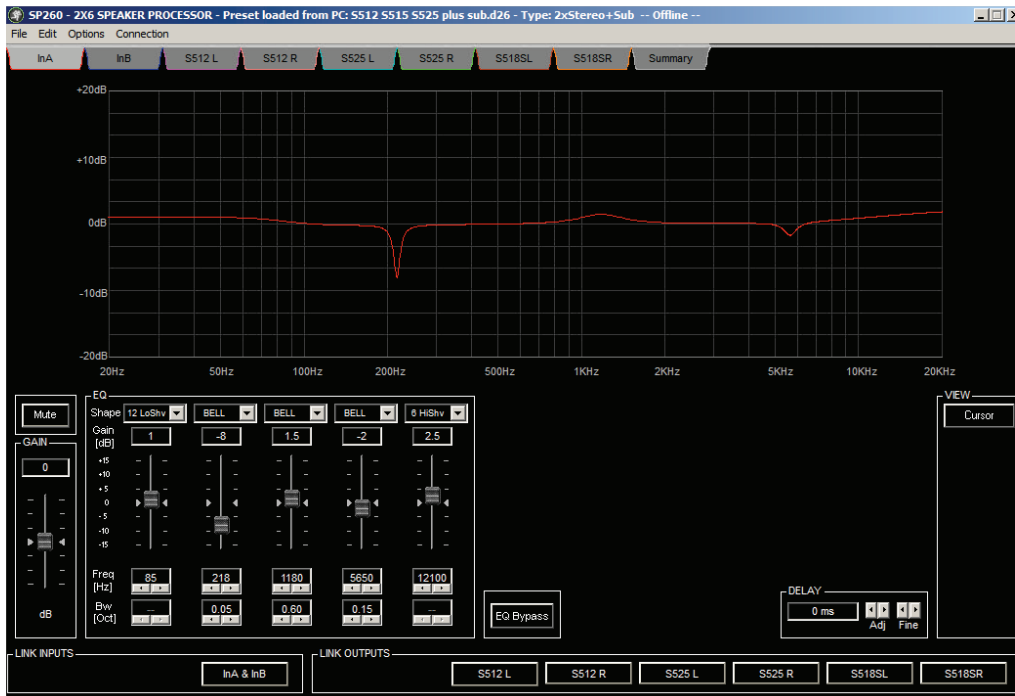


At the bottom of every screen are a series of buttons that let you link inputs or outputs to edit specific parameters simultaneously. See page 21 for further details.

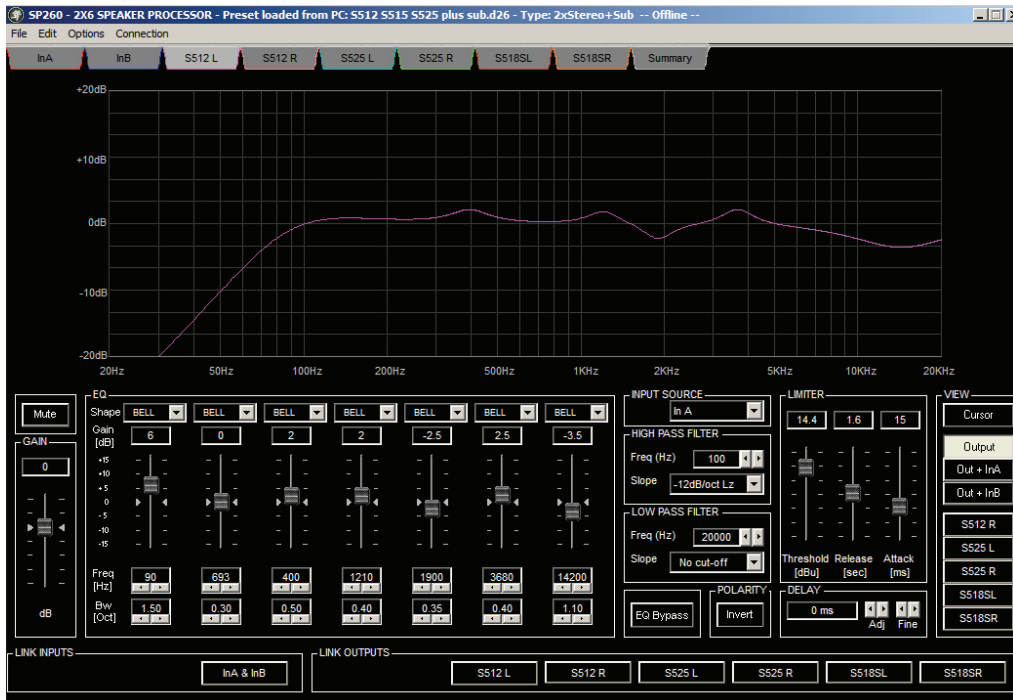


The Summary Screen lets you keep tabs on critical processor parameters and input/output levels in a single view. At the top is a signal routing overview showing the processing elements in order from input to output, plus input routing to each output. You can also mute and unmute inputs and outputs using the buttons flanking the processor flow diagram. Meters are located in the center of the screen, along with mode settings that let you switch between level and limiter activity per channel. Below that are the polarity invert buttons for each output, followed by input and output gain controls.

Input Screens



There are 2 input tabs, one for Input A and one for Input B. The top of the screen shows you the EQ graph for the selected input. Clicking the Cursor button in the View section will add nodes to the graph so you can click and drag to dial in EQ settings. Below the EQ graph, starting from the left are the Mute and Gain controls, followed by the 5-band EQ controls and EQ bypass button. Double clicking gain controls will reset them to 0. A popup menu over each EQ band lets you choose between shelving and parametric (bell) types. Frequency and bandwidth controls are below the gain control for each EQ band. To the right are the course and fine adjustment controls for your input delay.



There is a dedicated screen for each of the 6 output channels. The EQ graph, Mute, Gain and EQ controls are identical to those found on the input tab, except that there are 7 bands of EQ on the outputs. To the right of the EQ controls are Input Source, High and Low Pass Filters, Polarity, Limiter and Delay controls. As with the Input tabs, the Cursor button will show and hide EQ nodes. The next 3 buttons determine the information seen on the EQ graph. By default (Output) it shows the additive effects of the displayed output's 7-band EQ, High and Low Pass Filter settings. Selecting one of the other options (Out + InA or Out + InB) will also add the EQ and Gain settings of Input A or Input B, giving you a more complete view of the output's gain structure. The last 5 buttons allow you to overlay additional output channel EQ, High and Low Pass Filter curves to the graph, helpful when adjusting system crossover settings.

In Closing

The SP260's Control Application extends its power and convenience by making all of the hardware interface's functionality and control available via your Windows-based PC, with additional options for managing presets, online or offline. For more detailed information on any of the processing features discussed in this Appendix, please refer to the appropriate section in the main body of the Owner's Manual.

Appendix D: SP260 Processing Parameters

Operating Modes and Presets

2xStereo+Sub	Two full-range loudspeaker pairs and a pair of [mono by default] subwoofers
2x2Way+Sub	Two bi-ampable full-range loudspeakers and a pair of [mono by default] subwoofers
2x3Way	Two tri-ampable full-range loudspeakers
3xStereo	Three full-range loudspeaker pairs
1x6Way	Mono 6-way setup

Inputs

Gain:	±15 dB ±0.1 dB increments
Delay:	
Time (ms):	0.0000 – 600.9984 ms ±1.000 ms and ±0.0208 ms increments
Distance (m):	0.000 – 204.339 m ~±0.340 m and ±~0.007 m increments
Distance (feet):	0.000 – 670.233 feet ±~1.115 feet and ±~0.023 feet increments
EQ Bypass:	On or Off
5-band EQ:	
Frequency:	20 Hz – 20 kHz ~1/24 octave increments
Bandwidth:	0.05 – 3.0 ±0.05 increments
Gain:	±15 dB ±0.5 dB increments
High or low-shelving:	6 or 12 dB / oct

Outputs

Name:	User-editable
Source:	InA, InB, InA+InB
Polarity:	180° invert
Gain:	-12.0 dB to +6.0 dB ±0.1 dB increments

Outputs Continued...

EQ Bypass:	On or Off
7-band EQ:	
Frequency:	20 Hz – 20 kHz ~1/24 octave increments
Bandwidth:	0.05 – 3.0 ±0.05 increments
Gain:	±15 dB ±0.5 dB increments
High or low-shelving:	6 or 12 dB / oct
Delay:	
Time (ms):	0.0000 – 600.9984 ms ±1.000 ms and ±0.0208 ms increments
Distance (m):	0.000 – 204.339 m ~±0.340 m and ±~0.007 m increments
Distance (feet):	0.000 – 670.233 feet ±~1.115 feet and ±~0.023 feet increments
High- and Low-Pass Filters:	
Frequency:	20 Hz – 20 kHz
Filter / Slope:	No Cut-Off Butterworth 6 dB / octave Butterworth 12 dB / octave Linkwitz-Riley 12 dB / octave Bessel 12 dB / octave Butterworth 18 dB / octave Butterworth 24 dB / octave Linkwitz-Riley 24 dB / octave Bessel 24 dB / octave
Limiter:	
Attack:	5 – 200 ms [5 ms – 20 ms] ±1 ms increments [20 ms – 30 ms] ±5 ms increments [30 ms – 100 ms] ±10 ms increments [100 ms – 200 ms] ±20 ms increments
Release:	0.1 – 3.0 s ±0.1 s increments
Threshold:	-10 to +20 dBu ±0.2 dBu increments

Appendix E: SP260 Specifications

Analog Inputs

Connectors:	Two Balanced XLRs
Max Input (Line Level):	+20 dBu
CMRR:	>58 dB
Input Meter Range:	Clip +15 dBu +9 dBu +3 dBu 0 dBu -10 dBu -20 dBu

Distortion (THD+N)

20 Hz to 20 kHz:	<0.004%
------------------	---------

Crosstalk

22 Hz to 22 kHz [unweighted]	
Interchannel Crosstalk +20 dBu @ 1 kHz:	-107 dB
Crosstalk Input to Output +20 dBu @ 1 kHz:	-107 dB

Analog Outputs

Connectors:	Six Balanced XLRs
Max Output Level:	+21 dBu
Output Meter Range:	
Level Mode:	Limit Mode:
Limit	Limit
Clip	0 dB
+15 dBu	-3 dB
+9 dBu	-6 dB
+3 dBu	-9 dB
0 dBu	-12 dB
-15 dBu	-15 dB

USB

USB port for programming via Windows-based computers (downloadable app and driver from www.mackie.com)	
Format:	USB 1.1

AC Power Requirements

Power Consumption:	40 watts
Universal AC Power Supply:	100 VAC – 240 VAC, 50 – 60 Hz
Power Connector:	3 Pin IEC

AD/DA

Converter Type:	24-bit AKM®
Dynamic Range:	120 dB
Sample Rate:	48 kHz
Bit Depth:	24 Bit

Frequency Response

20 Hz to 20 kHz:	±0.2 dB
------------------	---------

Noise Characteristics

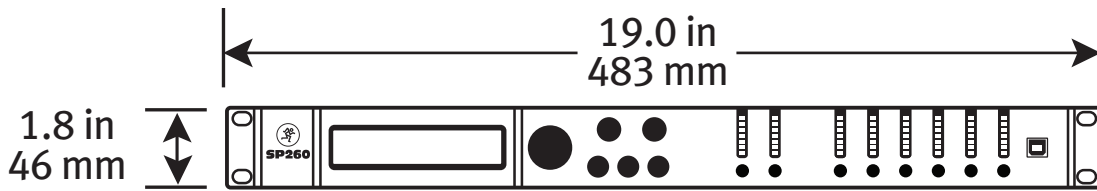
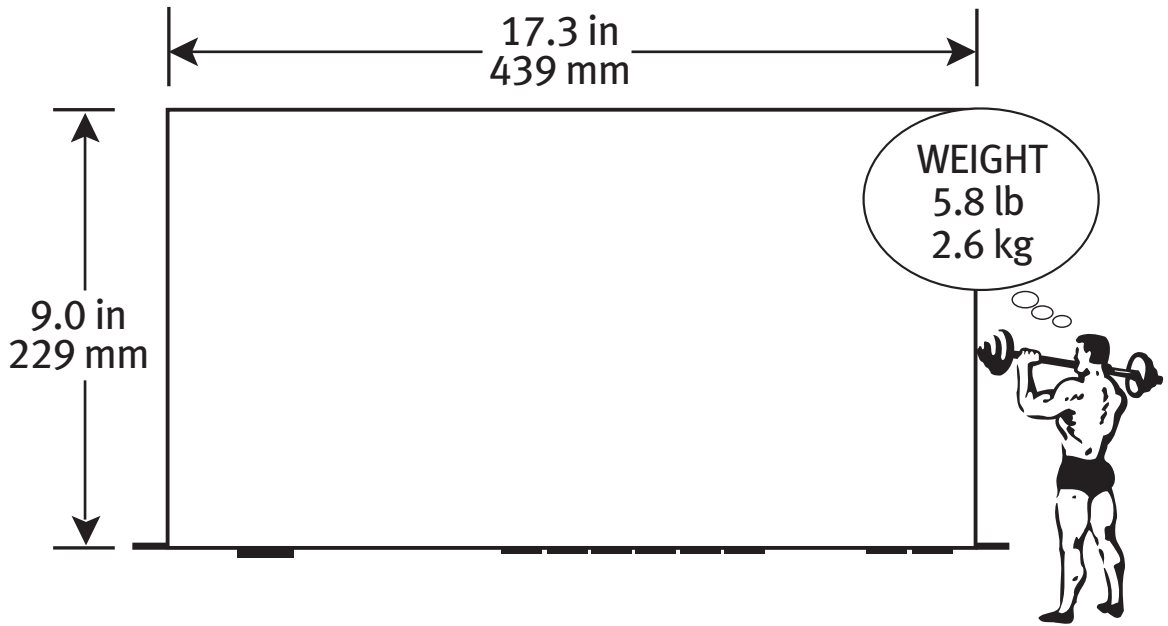
Dynamic Range:	111 dB A-weighted 108 dB unweighted
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Physical

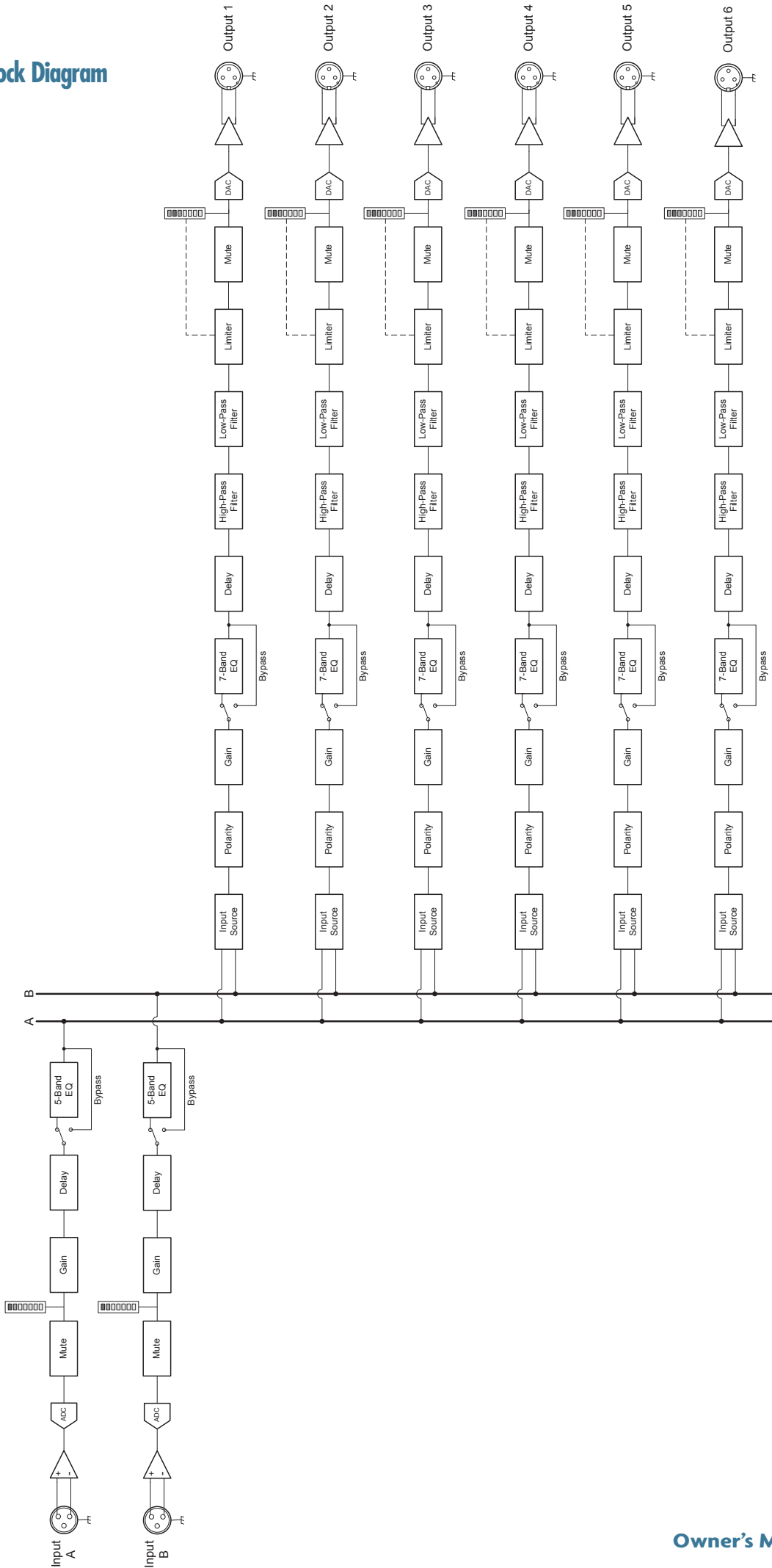
Display	2x24 character LCD with backlight
Dimensions	
Height:	1.8 in / 46 mm (1U rack mount design)
Width:	19.0 in / 483 mm (front) 17.3 in / 439 mm (rear)
Depth:	9.0 in / 229 mm
Product Weight:	5.8 lb / 2.6 kg
Shipping Weight:	8.8 lb / 4.0 kg

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SP260 Dimensions



SP260 Block Diagram



Mackie Limited Warranty

Please keep your sales receipt in a safe place.

This Limited Product Warranty (“Product Warranty”) is provided by LOUD Technologies Inc. (“LOUD”) and is applicable to products purchased in the United States or Canada through a LOUD-authorized reseller or dealer. The Product Warranty will not extend to anyone other than the original purchaser of the product (hereinafter, “Customer,” “you” or “your”).

For products purchased outside the U.S. or Canada, please visit www.mackie.com/warranty to find contact information for your local distributor, and information on any warranty coverage provided by the distributor in your local market.

LOUD warrants to Customer that the product will be free from defects in materials and workmanship under normal use during the Warranty Period. If the product fails to conform to the warranty then LOUD or its authorized service representative will at its option, either repair or replace any such nonconforming product, provided that Customer gives notice of the noncompliance within the Warranty Period to the Company at: www.mackie.com/support or by calling LOUD technical support at 1.800.898.3211 (toll-free in the U.S. and Canada) during normal business hours Pacific Time, excluding weekends or LOUD holidays. Please retain the original dated sales receipt as evidence of the date of purchase. You will need it to obtain any warranty service.

For full terms and conditions, as well as the specific duration of the Warranty for this product, please visit www.mackie.com/warranty.

The Product Warranty, together with your invoice or receipt, and the terms and conditions located at www.mackie.com/warranty constitutes the entire agreement, and supersedes any and all prior agreements between LOUD and Customer related to the subject matter hereof. No amendment, modification or waiver of any of the provisions of this Product Warranty will be valid unless set forth in a written instrument signed by the party to be bound thereby.

Need help with your processor?

- Visit www.mackie.com and click Support to find: FAQs, manuals, addendums, and other documents.
- Email us at: techmail@mackie.com.
- Telephone 1-800-898-3211 to speak with one of our splendid technical support chaps (Monday through Friday, normal business hours, Pacific Time).



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