

# DLM8 and DLM12

*2000W Powered Loudspeakers with DL2 Digital Mixer*

**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.
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.

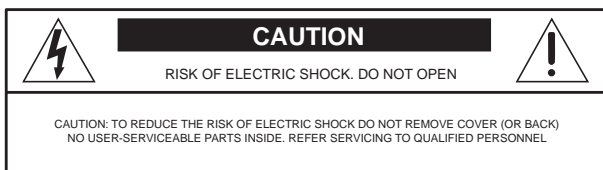
**21.** This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

**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	John screaming at Troy about deadlines
0.5	110	
0.25 or less	115	Loudest parts at a rock concert



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.

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

**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.

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# Features

- 2000W system power via ultra-efficient Class-D amplification
- TruSource™ technology
  - Mackie designed, vertically-aligned, common-magnet Tru Source driver
    - 8" LF woofer / 1.75" HF driver [DLM8]
    - 12" LF woofer / 1.75" HF driver [DLM12]
  - Incredibly compact, lightweight design
- Powerful TruSource DSP delivers seamless clarity, consistent dispersion and unmatched fidelity
- DL2 Integrated Digital Mixer
  - Powerful, one-touch digital mixer with bright OLED screen
  - Two highly-versatile input channels with FX
    - Independent channel level, 3-band EQ and effects control
  - 16 great-sounding effects include reverb, chorus and delay
  - XLR/TRS combo and dual RCA connectors
  - Handles mic, line, stereo and instrument signals
- Unmatched system control for professional applications
  - Multi-band feedback destroyer
  - Six speaker modes deliver the perfect voicing for your application
  - Alignment delay up to 300ms for delay stack, balcony, etc.
  - Three memory locations for instant venue setting recall
  - Smart Protect DSP dynamically protects amp/driver
- Innovative ultra-compact design
  - 1/3 smaller than a traditional 2-way design
  - Fit an entire DLM system in nearly any car
  - Stack them up for storage
  - Pole-mountable on tripod or atop DLM12S using SPM300 speaker pole
  - Flyable via standard M10 rigging hardware
  - Wall-mount them using SWM300 articulated arm for stealthy, powerful install system
  - Roadworthy PC-ABS cabinet with pro black finish and ergonomic top carry handle
  - Rugged, powder-coated 20 gauge steel grille
  - Integrated kickstand delivers the perfect angle for personal monitor use
- Ridiculously lightweight
  - 21.4 lb / 9.7 kg [DLM8]
  - 30 lb / 13.6 kg [DLM12]

## Introduction

The Mackie DLM8 and DLM12 each deliver 2000 watts into the most compact, professional portable loudspeaker design ever. Featuring TruSource™ technology, the DLM loudspeakers are equipped with Mackie's TruSource driver that incorporates the high-output 8" [DLM8] and 12" [DLM12] woofer and 1.75" compression driver into an incredibly compact common-magnet design. Powerful TruSource DSP delivers seamless clarity, consistent dispersion and unmatched fidelity.

These versatile loudspeakers feature the Mackie DL2 integrated digital mixer, providing a dual-channel mixing solution for a wide array of possible connections with incredible channel features like 3-band EQ and 16 great-sounding effects. Plus, system processing like a multi-band feedback destroyer, six speaker modes and Smart Protect technology provide the tools needed for truly professional applications.

With configuration options that include pole/wall mounting and flying, the sleek DLM loudspeakers are a powerful solution for high-end installs. The ultra-compact form factor includes a rugged PC-ABS cabinet, powder-coated grille and integrated kickstand for personal monitor use.

The new shape of sound – Mackie DLM8 and DLM12.

## How to Use This Manual:

After this introduction, a getting started guide will help you get things set up fast. The hookup diagrams show some typical setups, while the remaining sections provide details of the DLM8 and DLM12 loudspeakers.



This icon marks information that is critically important or unique to the loudspeakers. 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 loudspeakers.

## Getting Started

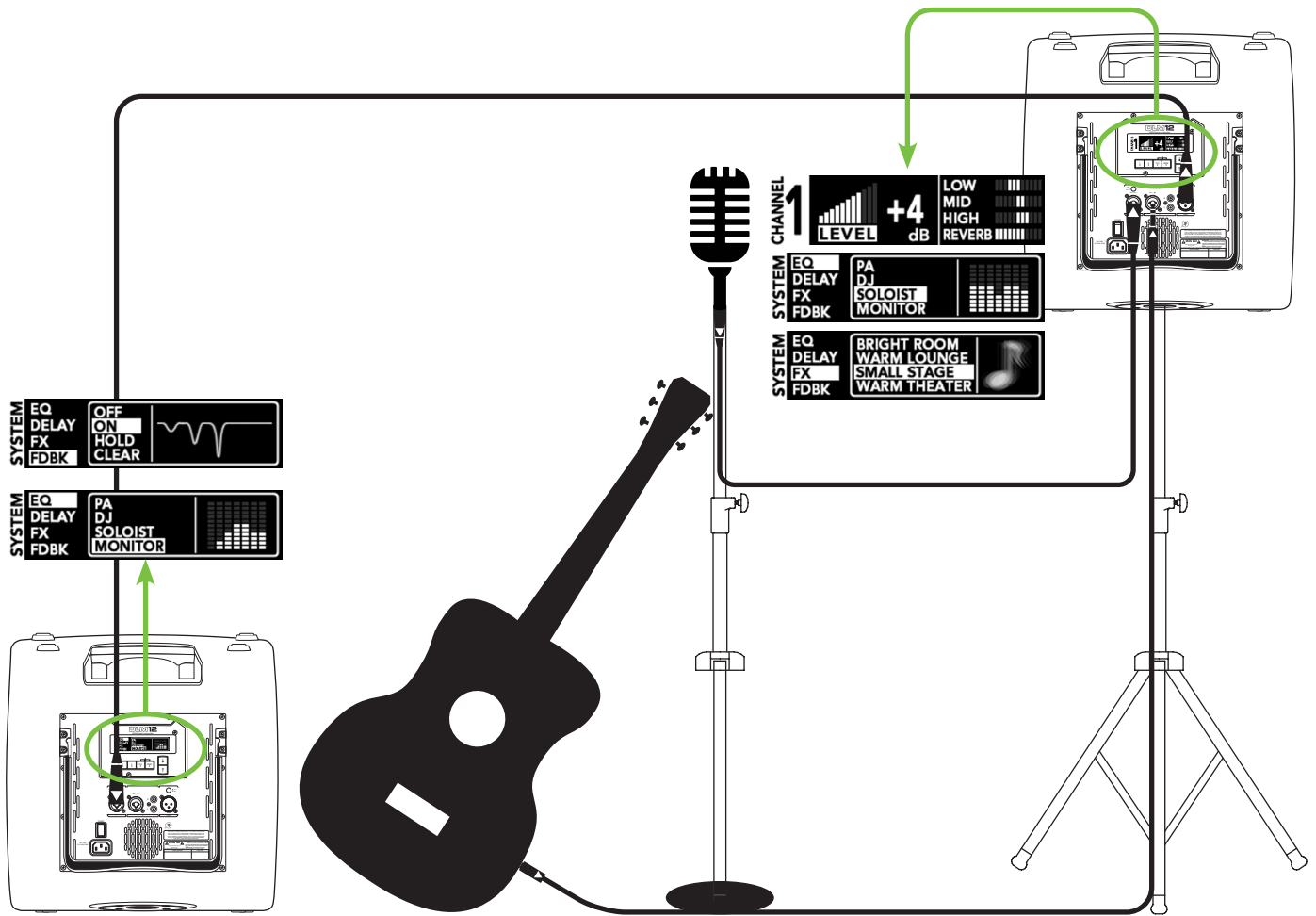
The following steps will help you set up the loudspeakers quickly.

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 the mixing console (or other signal source) to the inputs on the rear panel of the DLM8/12 loudspeakers.
3. Connect the supplied AC power cords to the IEC sockets on the rear panel of each loudspeaker. Plug the other end into an AC outlet properly configured with the correct voltage as indicated to the left of the IEC socket.
4. Turn the mixer (or other signal source) on.
5. Turn the loudspeakers on.
6. Start the signal source and raise the mixer's main L/R fader up until audio may be heard through the loudspeakers.
7. Adjust the master volume of the mixer to a comfortably loud listening level.
8. Read the rest of this manual to learn how to use the DL2 integrated digital mixer to really dial in a sound for the venue.

## Things to Remember:

- Never listen to loud music for prolonged periods. Please see the Safety Instructions on page 2 for information on hearing protection.
- As a general guide, DLM loudspeakers should be turned on last, after any mixer or other signal source. As such, they should also be turned off first. This will reduce the possibility of any turn-on or turn-off thumps and other noises generated by any upstream equipment from coming out of the speakers.
- 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



*DLM loudspeakers are the perfect tool for singer-songwriters touring the local coffee shops. Bring your favorite axe and mic, DLM loudspeakers and cables and power cords. Compact and portable perfection.*

*In this example, a dynamic microphone is connected to the channel 1 input of a DLM12 loudspeaker. Be sure that the mic/line switch is down in order to get an extra 30 dB boost for the mic. Be sure the switch is OUT if anything other than a microphone is attached to the channel 1 input. Adjust the level and EQ, as described on page 12.*

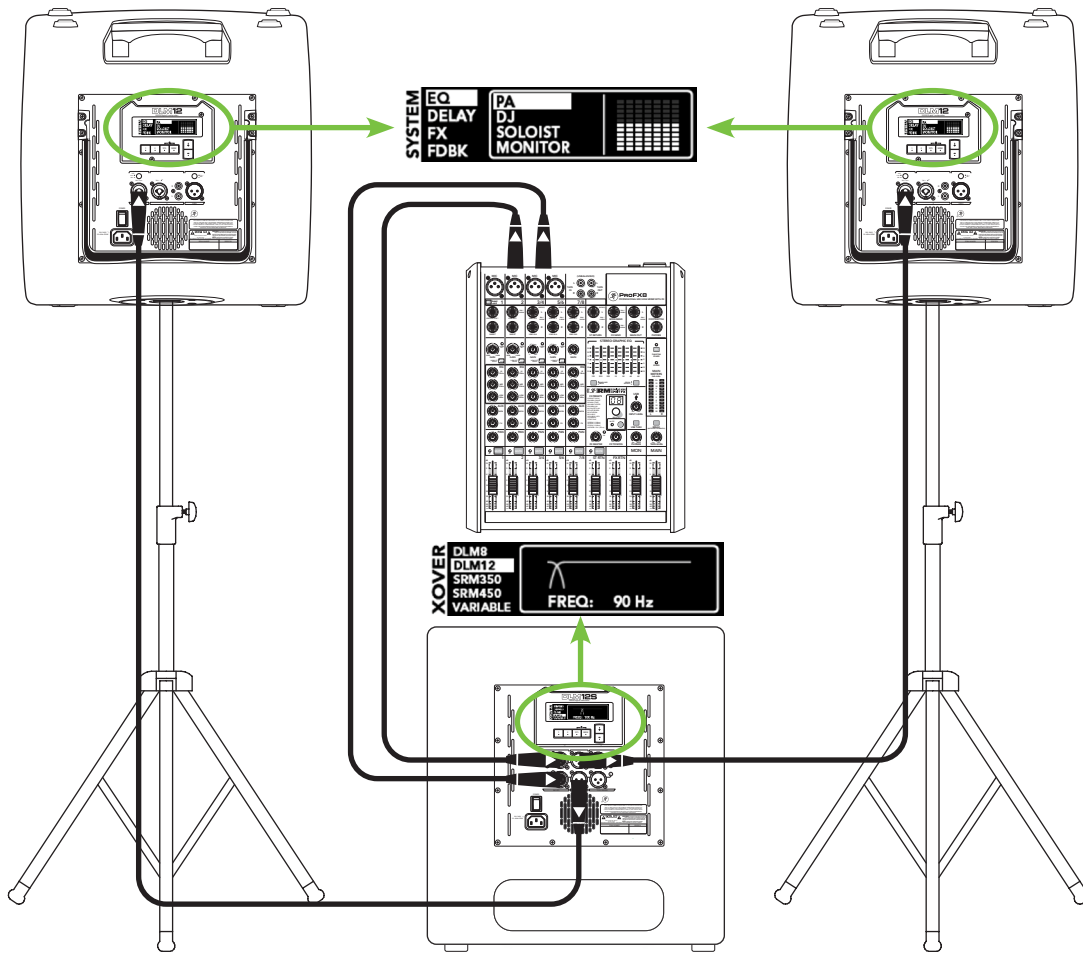
*Now grab your axe and plug it directly into the channel 2 input. Or if you use effects, connect the guitar to the effects input and another cable from the effects output to the channel 2 input. Adjust the level and EQ for the guitar now.*

*An additional DLM8 or DLM12 loudspeaker is great for monitoring. Simply connect a cable from the main DLM loudspeaker's THRU jack to the monitor loudspeaker's channel 1 input [mic/line switch OUT!]. Also, make sure the Ch 1/Mix switch is down on the main DLM, as well, so a mix of the vocals and guitar is relayed to the monitor. Release the kickstand for a perfect angle*

*For the output, you will want to set a speaker mode, described in detail on page 13. For this type of setup, PA works well for the main DLM12. However, don't count out the soloist mode! It has a nice low cut and a brilliant high end. Select the monitor mode for the DLM12 monitor. Lastly, you can ring out before you play, utilizing the DLM's feedback destroyer [page 13] or just let it kill the feedback while playing.*

## Small Coffee Shop

Hookup Diagrams continued...



In this example, a Mackie DLM12S subwoofer and additional DLM loudspeaker have been added to the mix, giving our sound system a little extra beef. It is a perfect setup for a small club.

Here, the L/R outputs of a Mackie ProFX8 mixer are connected directly to the channel A and B inputs of a single Mackie DLM12S subwoofer.

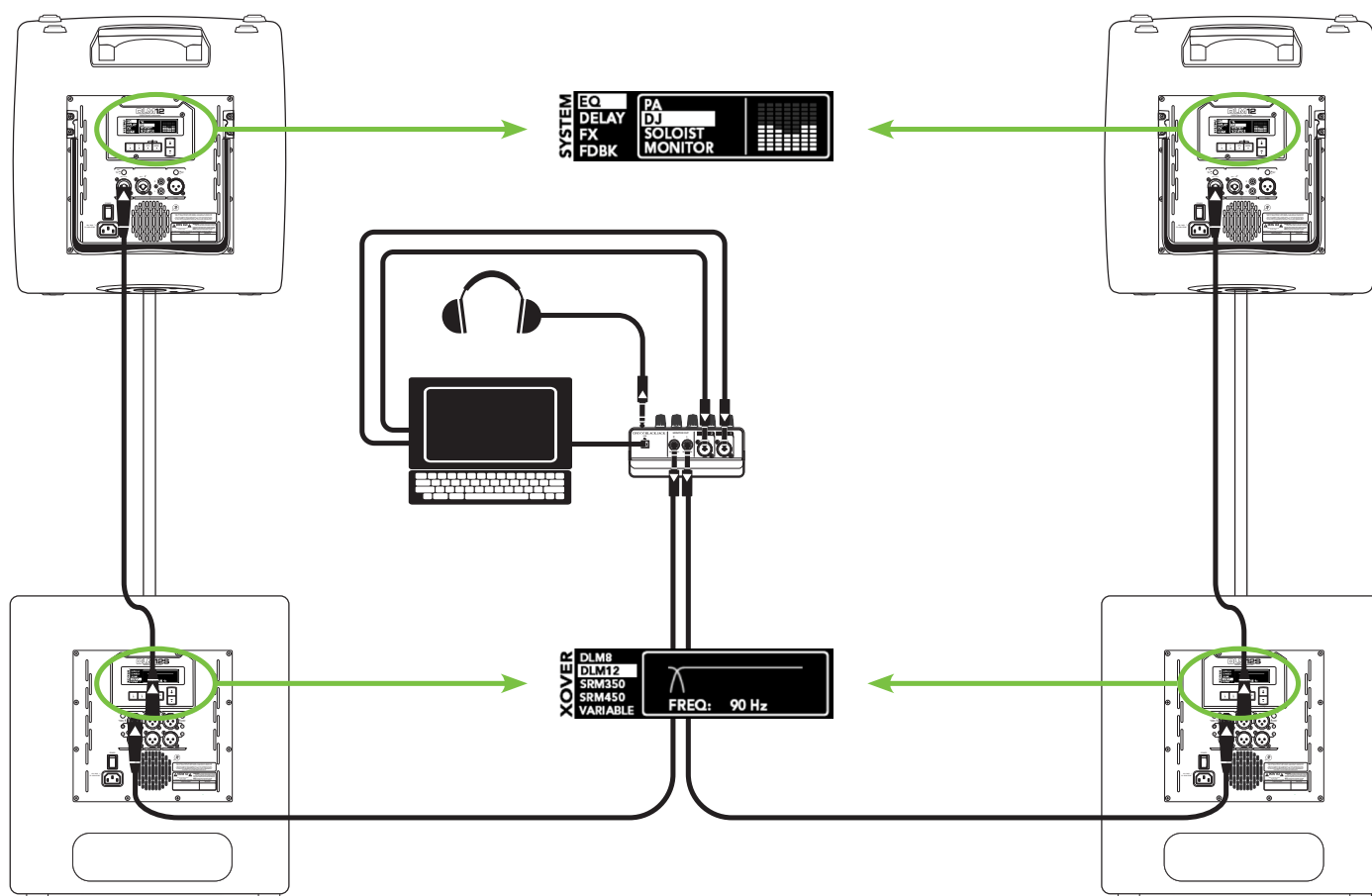
The channel A and B high pass outputs of the Mackie DLM12S subwoofer are connected directly to the channel 1 inputs of each DLM loudspeaker. Be sure the mic/line switch is OUT. Or be ready to be blasted with an additional 30 dB! Select the DLM12 crossover on the DLM12S for a perfectly matched system tuning.

DLM loudspeakers are also perfect for using as stage monitors. Simply connect a cable from each aux send to the channel 1 input of each DLM loudspeaker used as a monitor.

For the output, you will want to set a speaker mode, described in detail on page 13. For this type of setup, we recommend selecting the PA speaker mode for live sound on your DLM loudspeakers. If using any DLM loudspeakers as monitors, select the monitor speaker mode.

Small Club System

## Hookup Diagrams continued...



Perhaps you're a DJ playing bumpin' tunes in the middle of the night to a crowd that's groovin' and dancin' to your fine selection.

In this example, a laptop is connected to the channel 1 and 2 inputs of a Mackie Onyx Blackjack and a set of headphones are connected to the phones jack.

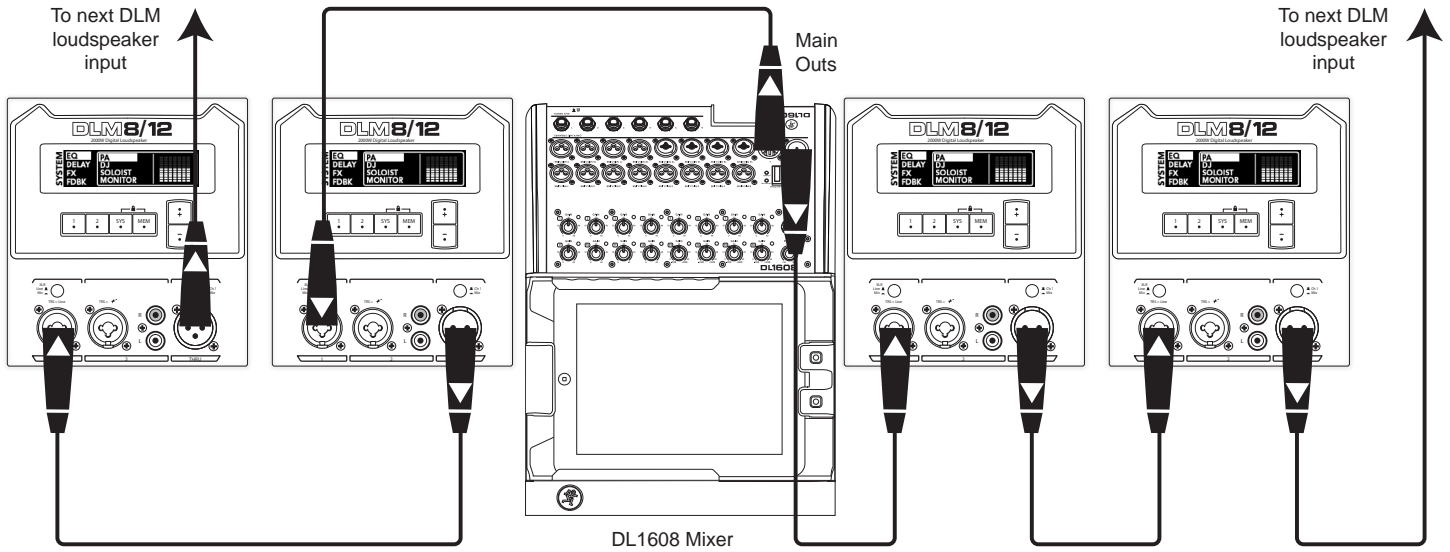
The L/R monitor outputs of the Mackie Onyx Blackjack are connected directly to the channel A inputs of each DLM12S subwoofer.

The channel A high pass output of each Mackie DLM12S subwoofer are connected directly to the channel 1 input of each Mackie DLM loudspeaker. Be sure the mic/line switch is OUT. Or be ready to be blasted with an additional 30 dB! Select the DLM12 crossover on the DLM12S for a perfectly matched system tuning.

For the output, you will want to set a speaker mode, described in detail on page 13. For this type of setup, we recommend selecting either the PA or DJ speaker mode. The DJ speaker mode has more bass and sparkling high end. Try them both out and go with the one that best suits your needs.

## DJ System

## Hookup Diagrams continued...



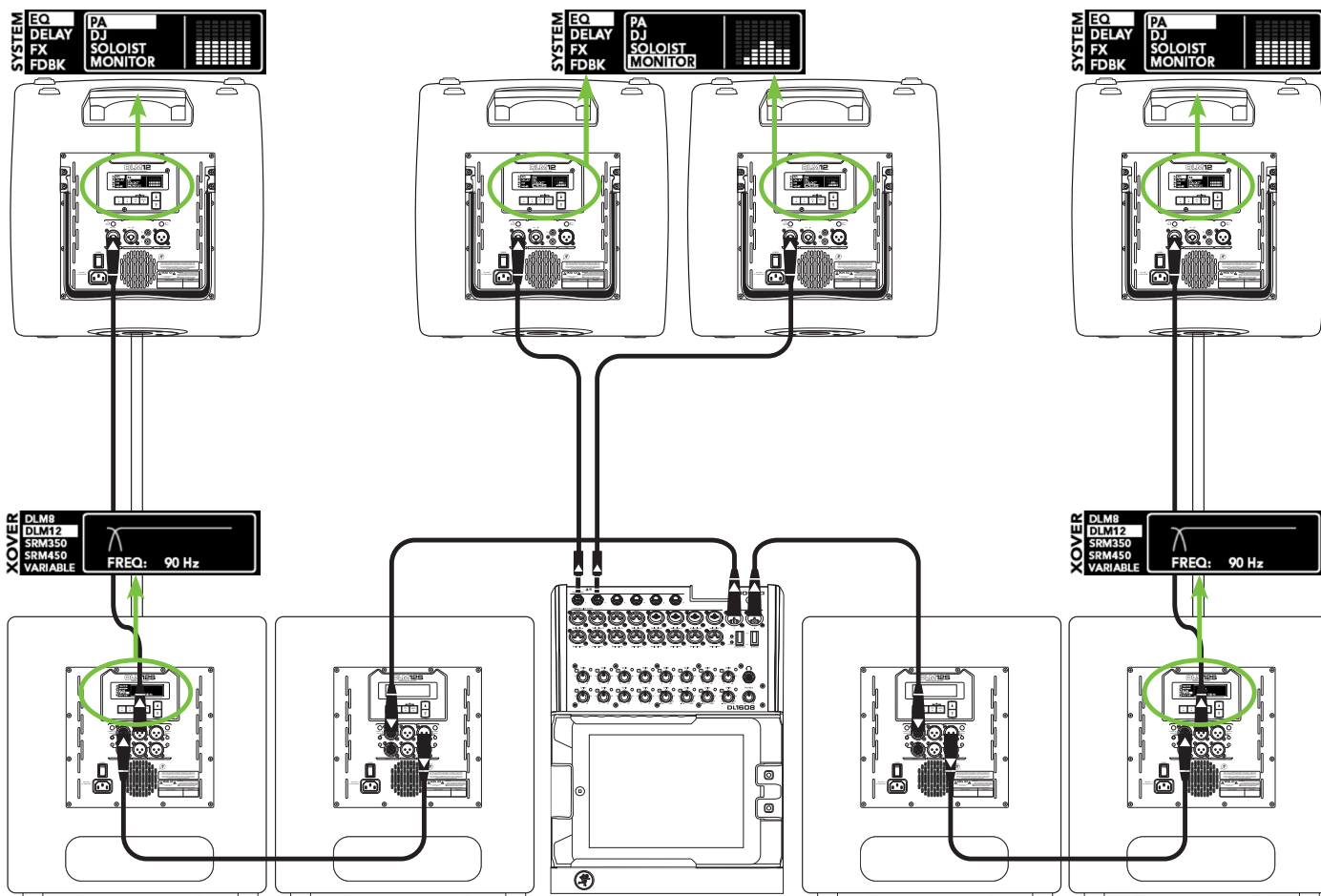
DLM loudspeakers may be daisy-chained via the male XLR connector labeled "THRU". Simply plug the signal source (i.e., mixer output) into the input jack(s), and patch that loudspeaker's THRU jack to the next loudspeaker's input jack, and so on, daisy-chaining multiple DLM loudspeakers. See above for a visual representation of daisy-chaining.

The THRU jack on DLM loudspeakers are fully buffered with 100  $\Omega$  balanced output impedance drivers, so there is no additional loading to the inputs when daisy-chaining. In other words, you could conceivably daisy-chain DLM loudspeakers indefinitely. If you do that, we want pictures!

### Daisy-Chaining Multiple DLM Loudspeakers



## Hookup Diagrams continued...



Here's how to set up a large club system using all Mackie gear. In this example, the L/R outputs of a Mackie DL1608 mixer are connected directly to the channel A inputs of two DLM12S subwoofers. The channel A full range outputs of these two DLM12S subwoofers are connected directly to the channel A inputs of another set of DLM12S subwoofers. Talk about beefy low end, that's 8000 watts, yo! And we've only connected the subs.

The channel A high pass outputs of the last two DLM12S subwoofers are connected directly to the channel 1 inputs of the main pair of DLM loudspeakers. Be sure the mic/line switch is OUT. Or be ready to be blasted with an additional 30 dB! Select the DLM12 crossover on each DLM12S for a perfectly matched system tuning.

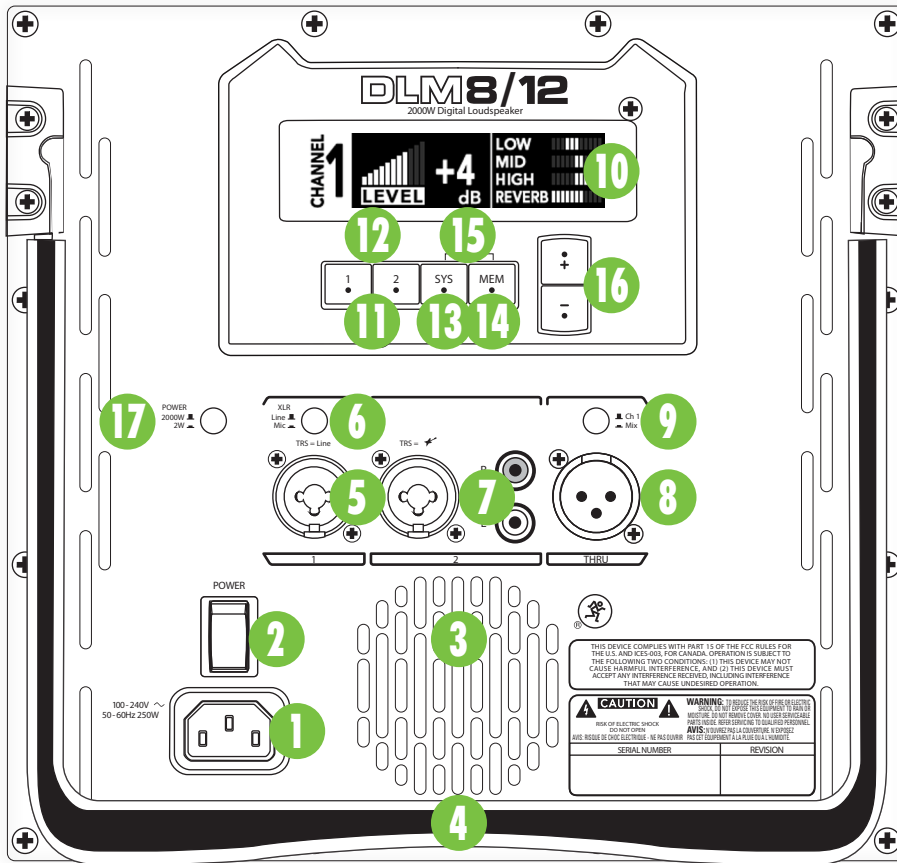
DLM loudspeakers are also perfect for using as stage monitors. Simply connect a cable from an aux send to the channel 1 input of a DLM loudspeaker. For the aux to monitor output, you will want to set a speaker mode, described in detail on page 13. Since these are monitors, select the appropriately named monitor speaker mode.

Select PA speaker mode for the main loudspeakers. You will want to turn the feedback eliminator ON on all four DLM loudspeakers.



### Large Club System

# DLM8/12 Loudspeaker: Rear Panel Features



## 1. Power Connection

This is a standard 3-prong IEC power connector. Connect the detachable power cord (included in the packaging with the loudspeaker) to the power receptacle, and plug the other end of the power cord into an AC outlet.



Make sure that the AC power is matched to the AC power indicated on the rear panel (to the left of the IEC receptacle).



Disconnecting the plug's ground pin is dangerous. Don't do it!

## 2. Power Switch

Press the top of this rocker switch inwards to turn on the loudspeaker. The front panel power LED will glow with happiness...or at least it will if the loudspeaker is plugged into a suitable live AC mains supply.

Press the bottom of this rocker switch inwards to turn off the loudspeaker.



As a general guide, DLM loudspeakers should be turned on last, after any mixer or other signal source. As such, they should also be turned off first. This will reduce the possibility of any turn-on or turn-off thumps and other noises generated by any upstream equipment from coming out of the speakers.

## 3. Fan Vents



Do not obstruct the ventilation openings of the loudspeaker. Fans move air over the heatsinks to cool down the power transistors. If these vents are restricted, then the loudspeaker may overheat and shut down.

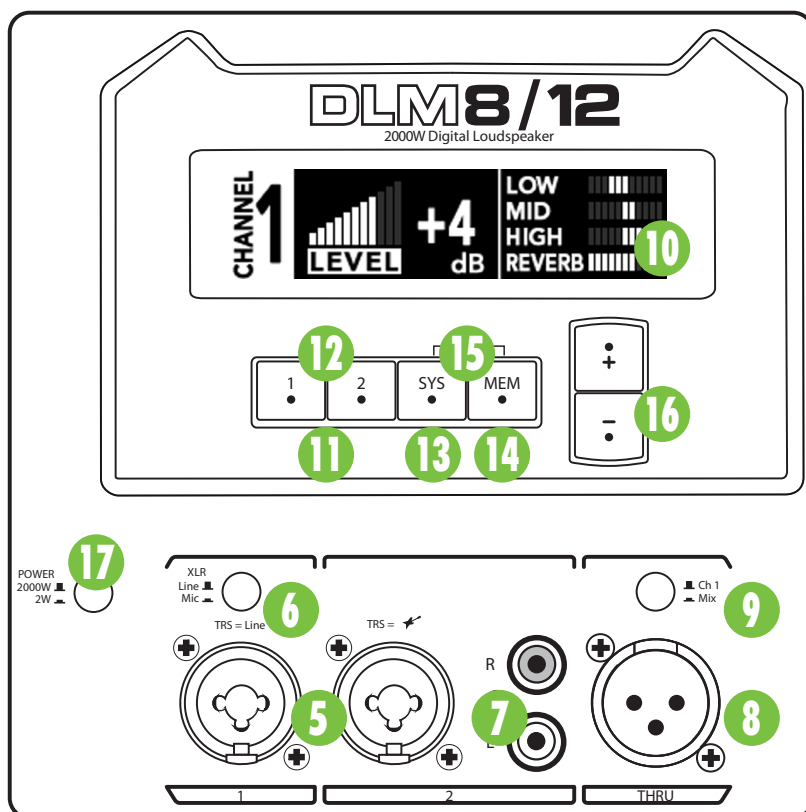
## 4. Kickstand

The kickstand on the DLM loudspeaker works similarly to a kickstand on a bicycle. Simply pull the kickstand out until it locks in place. Now tilt the loudspeaker back so it leans on the kickstand. At a 50° angle (and aimed at your ears, not your knees), the kickstand is ideal for using the loudspeaker as a monitor. Bicycles aren't used as monitors, only as mains.



Be careful not to unplug the unit when engaging the kickstand...unless you're into that sort of thing.

## DLM8/12 Loudspeaker: Rear Panel Features continued...



### 5. XLR and 1/4" Combo Inputs

Channel 1 may accept a mic or line-level signal via XLR or line-level signal via TRS 1/4" cable. Be aware of the position of the mic/line switch [6].

Channel 2 may accept Hi-Z sources (such as guitars) via the 1/4" input without the need for a separate DI box or line-level signal via XLR.



NEVER connect the output of an amplifier directly to the input of the loudspeaker. This could damage the input circuitry of the active loudspeaker.

### 6. Mic/Line Switch (Channel 1 Only)

Leave this switch out when connecting a line-level signal to the channel 1 input connector (from a mixer, keyboard, or other line-level signal source).

Push this switch in when connecting a microphone directly to the channel 1 input connector. Since a microphone produces a much weaker signal than a line-level source, this provides an additional 30 dB of gain to boost the microphone signal to a line level.



Read the paragraph listed above again... 30 dB of gain is a lot, so be sure the switch is engaged only if a mic is connected to the channel 1 input!

### 7. RCA Inputs (Channel 2 Only)

The stereo unbalanced RCA inputs allow you to play a CD player, iPod®, or other line-level source. The tape in jacks accept an unbalanced signal using standard hi-fi [RCA] hookup cables.

### 8. Thru Output

This is a male XLR-type connector that produces exactly the same signal that is connected to the main input jack or a mix of channels 1 and 2. Use it to daisy-chain several DLM loudspeakers together off the same signal source(s). See page 8 to learn more about daisy-chaining DLM loudspeakers.

### 9. Ch 1 / Mix Switch (Thru Output)

This switch allows you to choose whether only the channel 1 signal is sent out to the next loudspeaker [switch out – Ch 1] or if a mix of the channel 1 and 2 signals are sent out to the next loudspeaker [switch in – Mix].

### 10. OLED Display

The OLED Display is one of the most vital features of the DLM loudspeaker. It displays loudspeaker information including (but not limited to) level, EQ, FX selected and levels and other parameters.

When a DLM loudspeaker is powered up, the last state it was in will load up and the OLED Display will present the channel 1 screen and settings.

DLM loudspeakers will display a running Running Man screensaver if parameters haven't been changed in awhile. Simply touch one of the DL2 buttons to "wake up" the display.

## DLM8/12 Loudspeaker: Rear Panel Features continued...

### 11. Channel 1 and 2 Buttons



Press the Channel 1 or 2 button repeatedly until the parameter you want to change (for that channel) is highlighted:

- Level
- Low
- Mid
- High
- FX Send [Reverb, Chorus, Delay]

Once the parameter you want to change is highlighted, press the + or – button [16] repeatedly until you have achieved the perfect parameter value.

Let's take a more detailed look at each of the five input channel parameters:

#### Level:



Level adjusts the overall signal level at the inputs to the built-in power amplifiers. It ranges from off ( $-\infty$  dB) to +10 dB.

#### Channel Equalization (EQ):



Both DLM input channels have 3-band EQ with shelving high, peaking mid and shelving low.

Shelving means that the circuitry boosts or cuts all frequencies past the specified frequency. For example, the low EQ boosts bass frequencies below 80 Hz and continuing down to the lowest note you never heard. Peaking means that certain frequencies form a “hill” around the center frequency.

With too much EQ, you can really upset things. We've designed a lot of boost and cut into each equalizer circuit because we know that everyone will occasionally need that. But if you max the EQ on every channel, you'll get mix mush. If you find yourself repeatedly using a lot of boost or cut, consider altering the sound source, such as placing a mic differently, trying a different kind of mic, a different vocalist, changing the strings, or gargling.

#### Low:

The low EQ provides up to 15 dB of boost or cut below 80 Hz. The circuit is flat at the center position. This frequency represents the punch in bass drums, bass guitar, fat synth patches, and some really serious male singers who eat raw beef for breakfast. This band changes incrementally by  $\pm 3$  dB.

#### Mid:

Short for “midrange,” this EQ provides up to 15 dB of boost or cut, centered at 2.5 kHz, also flat at the center position. Midrange EQ is often thought of as the most dynamic, because the frequencies that define any particular sound are almost always found in this range. You can create many interesting and useful EQ changes by turning the mid EQ down as well as up. This band changes incrementally by  $\pm 3$  dB.

#### High:

The high EQ provides up to 15 dB of boost or cut above 12 kHz, and it is also flat (no boost or cut) at the center position. Use it to add sizzle to cymbals, an overall sense of transparency, or an edge to keyboards, vocals, guitar and bacon frying. Turn it down a little to reduce sibilance or to mask tape hiss. This band changes incrementally by  $\pm 3$  dB.

#### FX Send:

This control sends the channel input to the built-in FX processor. The 16 built-in FX may be selected from the SYS screen [13]. Reverb, chorus and delay make up the 16 choices. The chosen effect is global. Be sure to check out a more detailed description of each effect in Appendix B.

### 12. Front LED On / Limit / Off



Pressing the channel 1 and channel 2 buttons [11] simultaneously gives you the option to turn the front LED on, off or limit. Press the + or – button [16] to make a choice, followed by any other button to exit the screen. Choosing limit means the LED is on full-time. However, it will flicker when the limiter is active [3 dB of attenuation, averaged].

## DLM8/12 Loudspeaker: Rear Panel Features continued...

### 13. SYS Button

DLM loudspeakers have powerful system processing tools built in. Simply press the system [SYS] button repeatedly until the parameter you want to change is highlighted:

- EQ
- Delay
- FX
- Feedback

Once the parameter you want to change is highlighted, press the + or – button [16] repeatedly until you have achieved the setting you want for the loudspeaker system.

Let's take a more detailed look at each of the four factory system preset parameters:

#### EQ:

Here you are able to change the loudspeaker's speaker mode to tailor it to best suit your particular application. There are seven modes, including PA, DJ, Soloist, Monitor, EQ K, EQ Y and EQ J.



**PA Speaker Mode** – This mode is full range, but focuses on mid-range clarity where vocals often reside.

**DJ Speaker Mode** – This mode bumps the lows and highs with a mild tuck to the mids, perfect for music playback.

**Soloist Speaker Mode** – This mode features a low frequency roll-off to get rid of unwanted thumps and adds boost and sparkle to mid-range and high frequencies. This mode is perfect for plug-and-play singer-songwriters.

**Monitor Speaker Mode** – This mode features a low frequency roll-off and a reduction around 2 kHz to ensure maximum gain before feedback in monitor applications.

**KYJ Speaker Modes** – These modes mimic the voicings of popular competitive loudspeakers, allowing you to add Mackie DLM loudspeakers to an existing system while maintaining sonic continuity throughout the system.

#### Delay:

Delay “delays” the audio signal for a set period of time. With DLM loudspeakers, it's used for aligning delay stacks, balcony fills, etc, not as an effect. DLM delay times range from 0 ms [0.0 feet / 0.0 meters] to 300 ms [337.8 feet / 102.9 meters].



#### FX:

DLM loudspeakers include 16 “gig ready” effects, including various reverbs, delays, choruses and combinations of these, as well. Select your preferred effect from the list then return to channel 1 or 2 [11] to adjust the appropriate level for each source.



Be sure to check out a more detailed description of each effect in Appendix D.

#### Feedback destROYer:

The multi-band Feedback Destroyer hunts down offending feedback frequencies and applies up to six notch filters automatically to destroy feedback and maximize gain prior to feedback. This is a great tool for when an engineer is not present.



There are four Feedback Destroyer settings to choose from:

**Off [Default]** – The Feedback Destroyer is not engaged. If filters have been applied, this setting will retain its current filter settings if there are any, but they will not be engaged until it is turned back on. This is indicated by the grayed out filter graphic.

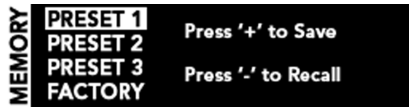
**On** – When the automatic Feedback Destroyer is turned on, scanning occurs continuously. The six filters will engage sequentially when feedback is present until all are used and then it will be locked. If feedback is identified on an existing filter, the notch will deepen in three steps to further destroy the offending feedback frequency. Pretty cool, huh?!

**Clear** – This clears all filters.

**Hold** – Hold allows a user to turn off the continuous scan. In this mode, filters that have been applied are still on, but the circuit is no longer looking for feedback.

## DLM8/12 Loudspeaker: Rear Panel Features continued...

### 14. MEM Button



Settings for DLM loudspeakers may be saved to memory and recalled at a later time by utilizing the memory [MEM] button.

Press this button repeatedly until the preset spot you want to save settings to (or recall settings from) is highlighted. There are three user presets and a fourth to recall the factory default settings.

Once the preset you want to save to (or recall from) is highlighted, press the “+” button [16] to save the current settings, or press the “-” button to recall a preset that was previously saved.

### 15. Control Lock



The DLM interface may be locked by pressing the SYS [13] and MEM [14] buttons simultaneously. An image of a padlock will appear to indicate that the loudspeaker is locked. When locked, the DLM is safe from accidental button presses. Simply press the buttons again to unlock the loudspeaker.

### 16. + and - Buttons

These buttons work in conjunction with the buttons mentioned previously: channel 1 and 2, MEM and SYS. Increase or decrease the level, EQ settings and FX level on channels 1 and 2; select a factory system EQ and FX, change the delay time/distance and turn the feedback on or off in the SYS section; and use these buttons to save and recall presets in the MEM section.

### 17. 2000W/2W Switch<sup>1</sup>

At Mackie we are always striving to push the envelope, dreaming up new awesome products to design in order to expand the boundaries of the pro audio world. As such, sometimes the little guy gets left out. Not here!

Leave this switch out when you want to run the loudspeaker as intended. We designed it with 2000W in mind, so leave this switch out to keep it at 2000W.

Or push this switch in to run the loudspeaker at a mere 2W instead. This is a great trick for fooling friends into wondering, “what’s that noise I barely hear?” They will be shocked that it’s your 2000W DLM loudspeaker running at 2W!

<sup>1</sup> People want more power, not less! As such, this “feature” has been shelved. Power to the people!

## Smart Protect

There are advanced DSP protection mechanisms designed into the DLM8/12 to safeguard the loudspeakers and amplifiers from inadvertent damage.



The protection circuits are designed to protect the loudspeakers under reasonable and sensible conditions. Should you choose to ignore the warning signs [e.g. excessive distortion], you can still damage the speaker by overdriving it past the point of amplifier clipping. Such damage is beyond the scope of the warranty.

## Limiting

The driver has its own compression circuit which helps protect it from damaging transient peaks. The compressor is designed to be transparent and is not noticeable under normal operating conditions. The front LED will pulse when in limit. Turn the volume down!

## Overexcursion Protection

A 36 dB/octave high-pass filter just prior to the low-frequency amplifier prevents very low frequencies from being amplified. Excessive low-frequency energy can damage the woofer by causing it to “bottom out,” also known as overexcursion, which is equivalent to a mechanical form of clipping.

## Thermal Protection

All amplifiers produce heat. DLM loudspeakers are designed to be efficient both electrically and thermally.

The amplifier module has internal heatsinks and a digitally controlled variable speed fan. As the DSP recognizes varying internal heat levels, it will turn on at an appropriate speed to draw cool air in over the amplifier and exit via the side vents.

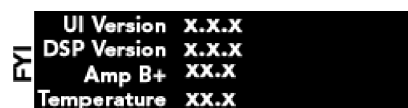
In the unlikely event of the amplifier overheating, a built-in thermal switch will activate, muting the signal and ramping the fan up to top speed. An error message will also appear on the OLED Display:



When the amplifier has cooled down to a safe operating temperature, the thermal switch resets itself, and the DLM loudspeaker resumes normal operation.

If the thermal switch activates, try turning down the level control a notch or two on the mixing console (or the back of the loudspeaker) to avoid overheating the amplifier. Be aware that direct sunlight and/or hot stage lights may be the culprit of an amplifier overheating.

## FYI



The FYI screen displays the latest UI version, DSP version, Amp B+ [voltage] and current temperature. Nothing may be changed or updated here, just an FYI as stated. This screen is displayed when pressing the Channel 1 [11] and MEM buttons [14] simultaneously.

## AC Power

Be sure the DLM loudspeaker is plugged into an outlet that is able to supply the correct voltage specified for your model. It will continue to operate at lower voltages, but will not reach full power.

Be sure the electrical service can supply enough amperage for all the components connected to it.

We recommend that a stiff (robust) supply of AC power be used because the amplifiers place high current demands on the AC line. The more power that is available on the line, the louder the speakers will play and the more peak output power will be available for a cleaner, punchier bass. A suspected problem of “poor bass performance” is often caused by a weak AC supply to the amplifiers.

Be aware of any error messages that may be displayed on the OLED Display:



Never remove the ground pin on the power cord or any other component of the DLM loudspeaker. This is very dangerous.

## Placement



**WARNING:** Installation should only be done by an experienced technician. Improper installation may result in damage to the equipment, injury or death. Make sure that the loudspeaker is installed in a stable and secure way in order to avoid any conditions that may be dangerous for persons or structures.

A DLM loudspeaker is designed to sit on the floor or stage as part of the main PA or as a monitor. It may also be pole-mounted via the built-in socket on the bottom of the cabinet. Be sure the pole is capable of supporting the weight of the loudspeaker. The Mackie SPM300 is a great option when using a DLM12S subwoofer, as it allows for greater extension than most other poles available north of the South Pole.

A DLM loudspeaker may also be flown via its three integrated fly points as detailed on the next page. Be sure to read the **PA-A3 Eyebolt Installation Instructions**, as well.

Or maybe you prefer to mount DLM loudspeakers on the wall. This is possible with the SWM300 Swivel Wall Mount Kit. Be sure to read the **SWM300 Swivel Wall Mount Installation Instructions**.

Check to make sure that the support surface (e.g. floor, etc.) has the necessary mechanical characteristics to support the weight of the loudspeaker(s).

When pole-mounting loudspeakers, be sure that they are stabilized and secured from falling over or being accidentally pushed over. Failure to follow these precautions may result in damage to the equipment, personal injury, or death.

As with any powered components, protect them from moisture. Avoid installing the loudspeaker in places exposed to harsh weather conditions. If you are setting them up outdoors, make sure they are under cover if you expect rain.

## Room Acoustics

Room acoustics play a crucial role in the overall performance of a sound system. Here are some additional placement tips to help overcome some typical room problems that might arise:

- Placing loudspeakers in the corners of a room increases the low frequency output and can cause the sound to be muddy and indistinct.
- Placing loudspeakers against a wall increases the low frequency output, though not as much as corner placement. However, this is a good way to reinforce the low frequencies, if so desired.
- Avoid placing the speakers directly on a hollow stage floor. A hollow stage can resonate at certain frequencies, causing peaks and dips in the frequency response of the room. It is better to place them on a sturdy stand designed to handle the weight of the DLM loudspeaker.
- Highly reverberant rooms, like many gymnasiums and auditoriums, are a nightmare for sound system intelligibility. Multiple reflections off the hard walls, ceiling, and floor play havoc with the sound. Depending on the situation, you may be able to take some steps to minimize the reflections, such as putting carpeting on the floors, closing draperies to cover large glass windows, or hanging tapestries or other materials on the walls to absorb some of the sound.

However, in most cases, these remedies are not possible or practical. So what do you do? Making the sound system louder generally doesn't work because the reflections become louder, too. The best approach is to provide as much direct sound coverage to the audience as possible. The farther away you are from the speaker, the more prominent will be the reflected sound.

Use more speakers strategically placed so they are closer to the back of the audience. If the distance between the front and back speakers is more than about 100 feet, you should use the DL2 delay to time-align the sound. (Since sound travels about 1 foot per millisecond, it takes about 1/10 of a second to travel 100 feet.)

Keep in mind that the DL2 channel and system processor is a great way to compensate for some of these issues. See pages 12-13 for more information [11, 13].



## Rigging

DLM loudspeakers may be individually flown using M10 x 17 mm forged shoulder eyebolts.



**WARNING:** Installation should only be done by an experienced technician. Improper installation may result in damage to the equipment, injury or death. Make sure that the loudspeaker is installed in a stable and secure way in order to avoid any conditions that may be dangerous for persons or structures.



**WARNING:** The cabinet is suitable for rigging via its fly points. NEVER attempt to suspend a DLM loudspeaker by its handle.

## Rigging Design Practices

Rigging a loudspeaker requires determining:

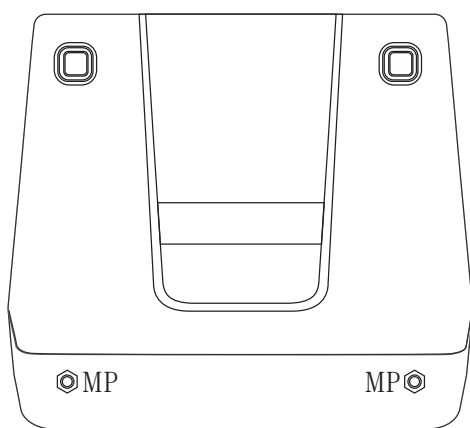
1. The rigging methods and hardware that meet static, shock, dynamic, and any other load requirements for supporting the loudspeaker from structure.
2. The design factor and required WLL (Working Load Limit) for this support.

Mackie strongly recommends the following rigging practices:

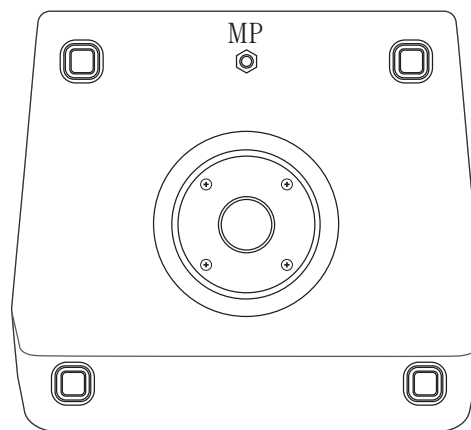
1. Documentation: Thoroughly document the design with detailed drawings and parts lists.
2. Analysis: Have a qualified professional, such as a licensed Professional Engineer, review and approve the design before its implementation.
3. Installation: Have a qualified professional rigger do the installation and inspection.
4. Safety: Use adequate safety precautions and back-up systems.

## 3 Fly Points

MP = Mounting Point



**Top**



**Bottom**

## Rigging Hardware and Accessories

Rigging Mackie loudspeakers will invariably require hardware not supplied by Mackie. Various types of load-rated hardware are available from a variety of third-party sources. There are a number of such companies specializing in manufacturing hardware for, designing, and installing rigging systems. Each one of these tasks is a discipline in its own right. Because of the hazardous nature of rigging work and the potential liability, engage companies that specialize in these disciplines to do the work required.

Mackie does offer certain accessory rigging items, primarily for attachment to the hardware integral with the loudspeaker. Some items, such as eyebolts and wall mount brackets, may be used with a variety of products. While these accessories are intended to facilitate installation, the wide variety of possible installation conditions and array configurations do not permit Mackie to determine their suitability or load rating for any particular application.

Mackie is not in the business of providing complete rigging systems, either as designers, manufacturers, or installers. It is the responsibility of the installer to provide a properly engineered, load-certified rigging system for supporting the loudspeaker from structure.

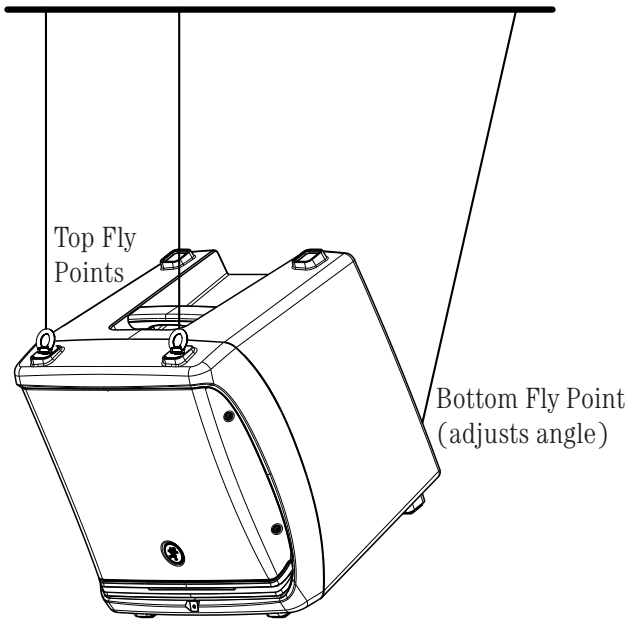
## Rigging Notes

The DLM loudspeaker's integral mounting points are designed to support only the weight of their own loudspeaker with suitable, external hardware. This means that each DLM loudspeaker must be supported independently of any other DLM loudspeaker and any other loads. All three rigging points must be used to hang an DLM loudspeaker.

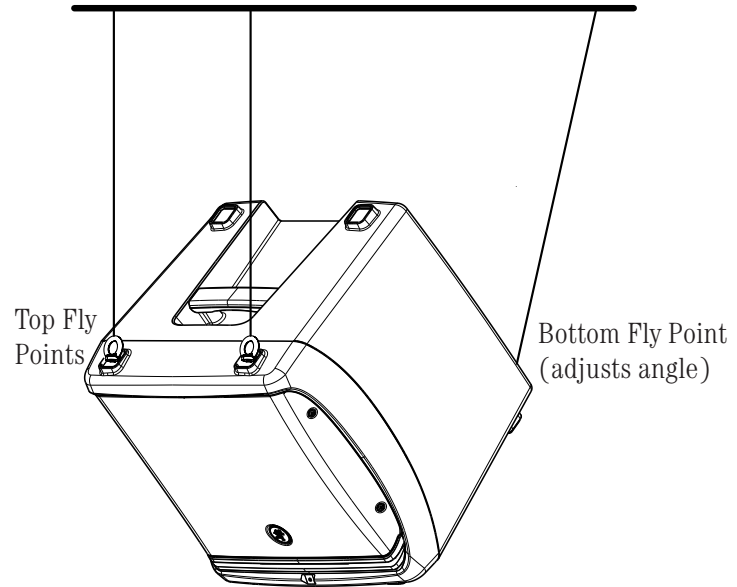
## Important Rigging Reminder:

To reiterate, Mackie is not in the business of providing complete rigging systems, either as designers, manufacturers, or installers. It is the responsibility of the installer to provide a properly engineered, load-certified rigging system for supporting the loudspeaker from structure.

### Flown at a 30° angle



### Flown at a 45° angle



## Care and Maintenance

Your Mackie loudspeakers will provide many years of reliable service if you follow these guidelines:

- Avoid exposing the loudspeakers to moisture. If they are set up outdoors, be sure they are under cover if rain is expected.
- Avoid exposure to extreme cold (below freezing temperatures). If you must operate the loudspeakers in a cold environment, warm up the voice coils slowly by sending a low-level signal through them for about 15 minutes prior to high-power operation.
- Use a dry cloth to clean the cabinets. Only do this when the power is turned off. Avoid getting moisture into any of the openings of the cabinet, particularly where the drivers are located.

# 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/support](http://www.mackie.com/support)) where you will find lots of useful information such as FAQs and other documentation. 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 AC outlet is live [check with a tester or lamp].
- Our next favorite question: Is the power switch on? If not, try turning it on.
- Is the power LED on the front panel glowing green? If not, make sure the AC outlet is live. If so, refer to “No sound” below.
- The internal AC line fuse may be blown. This is not a user serviceable part. If you suspect the AC line fuse is blown, please see the "Repair" section next.

### No sound

- Is the input level control for the input source turned all the way down? Verify that all the level controls in the system are properly adjusted. Look at the level meter to ensure that the mixer is receiving a signal.
- Is the signal source working? Make sure the connecting cables are in good repair and securely connected at both ends. Make sure the output level control on the mixing console is turned up sufficiently to drive the inputs of the speaker.
- Make sure the mixer does not have a mute on or a processor loop engaged. If you find something like this, make sure the level is turned down before disengaging the offending switch.
- Has it shut down? Make sure there is at least six inches of free space behind each DLM loudspeaker.

### Poor bass performance

- Check the polarity of the connections between the mixer and the loudspeakers. You may have your positive and negative connections reversed at one end of one cable, causing one loudspeaker to be out-of-phase with the other.
- Poor bass performance may be the result of bad AC power. See the section titled ‘AC Power’ on the previous page for further details.

### Poor sound

- Is it loud and distorted? Make sure that you're not overdriving a stage in the signal chain. Verify that all level controls are set properly.
- Is the input connector plugged completely into the jack? Be sure all connections are secure.

### Noise

- What is the position of the mic / line switch? It should be IN when a mic is connected and OUT when a line-level signal is connected to the channel 1 input.
- Make sure all connections to the active loudspeakers are good and sound.
- Make sure none of the signal cables are routed near AC cables, power transformers, or other EMI-inducing devices.
- Is there a light dimmer or other SCR-based device on the same AC circuit as the DLM8/12? Use an AC line filter or plug the loudspeaker into a different AC circuit.

### Hum

- Try disconnecting the cable connected to the main input jack. If the noise disappears, it could be a “ground loop,” rather than a problem with the DLM loudspeaker. Try some of the following troubleshooting ideas:
- Use balanced connections throughout your system for the best noise rejection.
- Whenever possible, plug all the audio equipment's line cords into outlets which share a common ground. The distance between the outlets and the common ground should be as short as possible.

## Repair

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

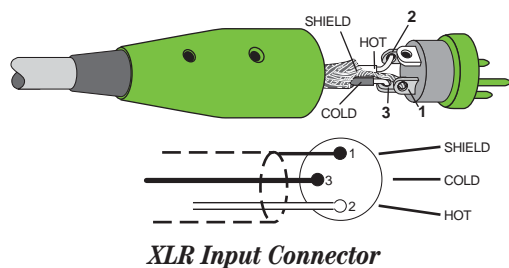
Non-warranty service for Mackie products is available at a factory-authorized service center. To locate the nearest service center, visit [www.mackie.com](http://www.mackie.com), click “Support” and select “Locate a Service Center.” Service for Mackie products living outside the United States can be obtained through local dealers or distributors.

If you do not have access to our website, you may call the 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

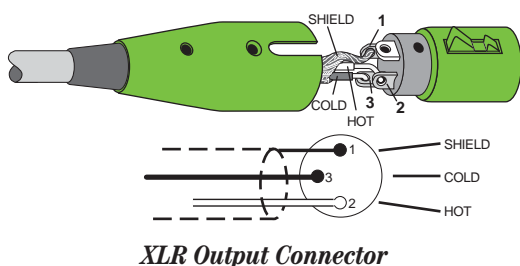
Each DLM loudspeaker has two female XLR/TRS combo inputs. Be sure the cables are wired per AES (Audio Engineering Society) standards:



### XLR

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

There is also a male XLR output on each DLM loudspeaker labeled “THRU”. This is also wired according to the AES standards listed above.

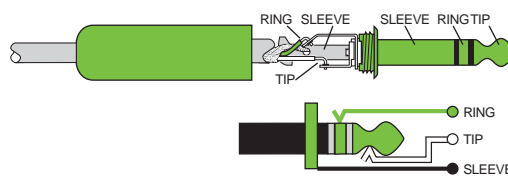


DLM loudspeakers may be daisy-chained via the male XLR connector labeled “THRU”. Simply plug the signal source (i.e., mixer output) into the input jack(s), and patch that loudspeaker’s THRU jack to the next loudspeaker’s input jack, and so on, daisy-chaining multiple DLM loudspeakers. See page 8 for a visual representation of daisy-chaining.

The THRU jack on DLM loudspeakers are fully buffered with 100 Ω balanced output impedance drivers, so there is no additional loading to the inputs when daisy-chaining. In other words, you could conceivably daisy-chain DLM loudspeakers indefinitely.

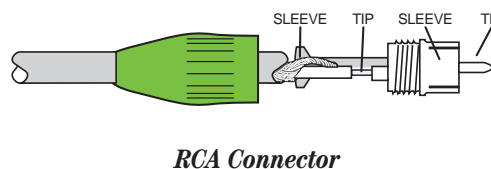
## 1/4" TRS Connectors

TRS stands for Tip-Ring-Sleeve, the three connections available on a stereo 1/4" cable. This allows for a direct connection to the channel 1 and 2 input jacks on DLM loudspeakers. Hi-Z instruments – guitar, for example – may be connected directly to the channel 2 input without needing a DI box.



## RCA Connectors

RCA-type plugs (also known as phono plugs) and jacks are often used in home stereo and video equipment and in many other applications. RCA plugs are unbalanced. Connect the signal to the center post and the ground (earth) or shield to the surrounding “basket.”



# Appendix C: Technical Information

## DLM Loudspeaker Specifications

### Acoustic Performance:

Frequency Response (-10 dB)	65 Hz – 20 kHz [DLM8] 38 Hz – 20 kHz [DLM12]
Max peak SPL (@ 1m calculated) <sup>1</sup>	125 dB [DLM8] 128 dB [DLM12]
Crossover Point	1.6 kHz
Dispersion	90° conical

### Equalization

Low Shelving	±15 dB @ 80 Hz
Mid-Peaking	±15 dB @ 2.5 kHz
High Shelving	±15 dB @ 12 kHz
Increments	±3 dB

### High-Frequency Section

Voice Coil Diameter	1.75 in / 44 mm
Horn Entry Diameter	1.0 in / 25 mm
Diaphragm Material	Polyimide Film
Magnet Material	Ferrite

### Low-Frequency Section

Woofers Diameter	8.0 in / 203 mm [DLM8] 12 in / 305 mm [DLM12]
Voice Coil Diameter	2.0 in / 51 mm [DLM8] 2.5 in / 64 mm [DLM12]
Diaphragm Material	Paper
Magnet Material	Ferrite

### Power Amplifiers

System Power Amplification	
Rated Power	1000 watts rms 2000 watts peak
Low Frequency Power Amplifier	
Rated Power	500 watts rms 1000 watts peak
Rated THD	< 1%
Cooling	Multi-speed fan
Design	Class D
High Frequency Power Amplifier	
Rated Power	500 watts rms 1000 watts peak
Rated THD	< 1%
Cooling	Multi-speed fan
Design	Class D

### DL2 Digital Mixer System Processing

EQ	Six speaker modes
Alignment Delay	0-300 ms
FX	16 presets
Multi-band feedback destroyer	On / Off / Clear / Hold
Memory	Three locations for instant venue setting recall and factory reset

### Input/Output

Channel 1	
Mic	3.3 k $\Omega$ balanced
Line	20 k $\Omega$ balanced 10 k $\Omega$ unbalanced
1/4" TRS	16 k $\Omega$ balanced 8 k $\Omega$ unbalanced
Channel 2	
XLR Line	20 k $\Omega$ balanced 10 k $\Omega$ unbalanced
1/4" TRS [Hi-Z instrument]	1 M $\Omega$ unbalanced
RCA	25 k $\Omega$ unbalanced
Thru	Male XLR balanced

<sup>1</sup> Calculated from driver sensitivity and amplifier power.

## DLM Loudspeaker Specifications continued...

### Line Input Power

US detachable line cord	100 – 120 VAC, 50 – 60 Hz, 250W
EU detachable line cord	220 – 240 VAC, 50 – 60 Hz, 250W
AC Connector	3-pin IEC 250 VAC

### Safety Features

Input Protection	Peak and RMS limiting, power supply and amplifier thermal protection
Display LEDs	Defeatable front power ON, Front load power limiter
Status Info	Power supply voltage, Core temperature

### Construction Features

Cabinet	PC-ABS [High-strength]
Finish	High durability black paint
Handles	One on top
Grille	Powder-coated 20 gauge steel
Fly Points	Three M10 x 17 mm
Monitor Angle	50° (using integrated kickstand)

### Physical Properties

#### DLM8:

Height	12.3 in / 313 mm
Width	12.1 in / 307 mm
Depth	11.9 in / 302 mm
Weight	22 lb / 10 kg

#### DLM12:

Height	15.9 in / 403 mm
Width	15.3 in / 389 mm
Depth	14.3 in / 363 mm
Weight	31 lb / 14.1 kg

### Mounting Methods

Floor mount, pole mount, wall mount or fly via three integrated M10 mounting points (using M10 x 17 mm forged shoulder eyebolts). See pages 15-17 for more information.

### Options

PA-A3 Forged Shoulder Eyebolt Kit (3 x M10 x 17 mm)	P/N 2036960
SPM300 Loudspeaker Pole Mount	P/N 2036970
SWM300 Swivel Wall Mount	P/N 2034990

### Disclaimer

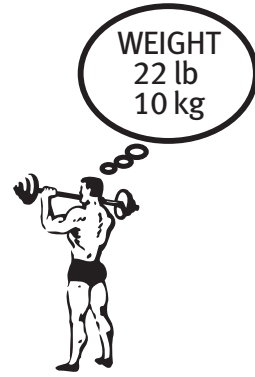
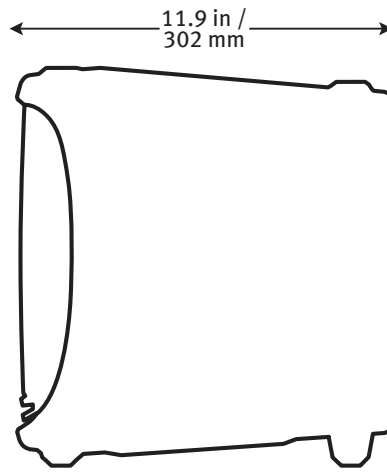
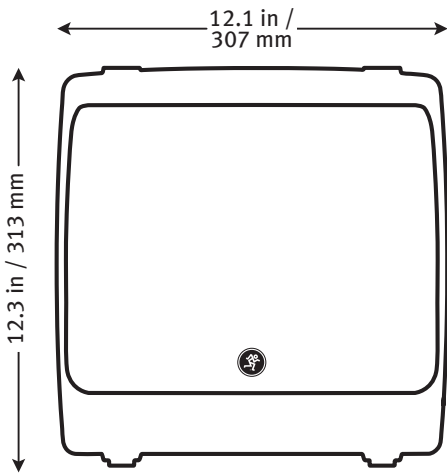
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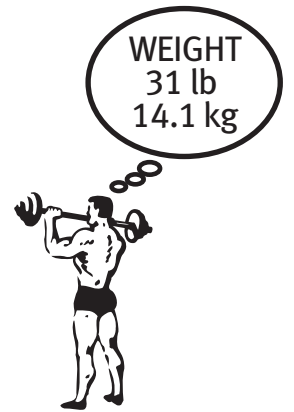
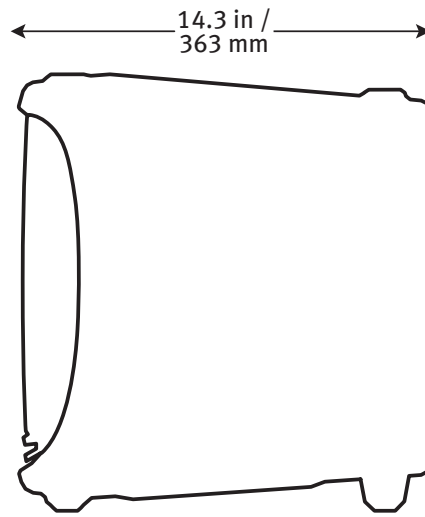
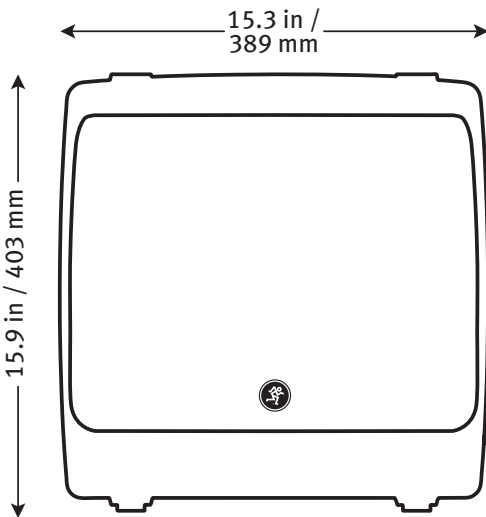
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### DLM8 Loudspeaker Dimensions



### DLM12 Loudspeaker Dimensions





## DLM Loudspeaker Frequency Response Legend

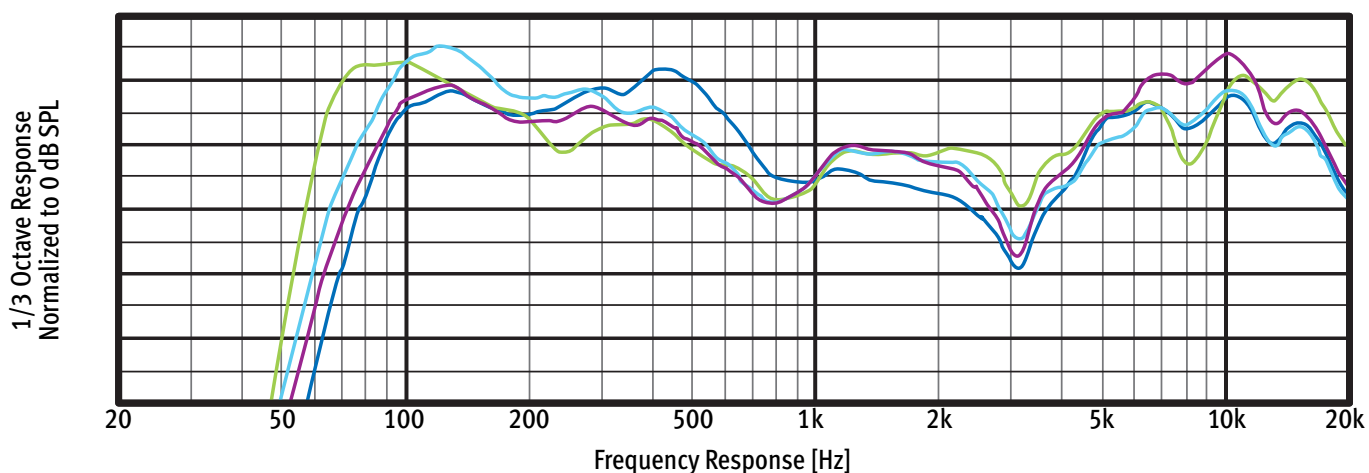
**PA Speaker Mode** – This mode is full range, but focuses on mid-range clarity where vocals often reside.

**Soloist Speaker Mode** – This mode features a low frequency roll-off to get rid of unwanted thumps and adds boost and sparkle to mid-range and high frequencies. This mode is perfect for plug-and-play singer-songwriters.

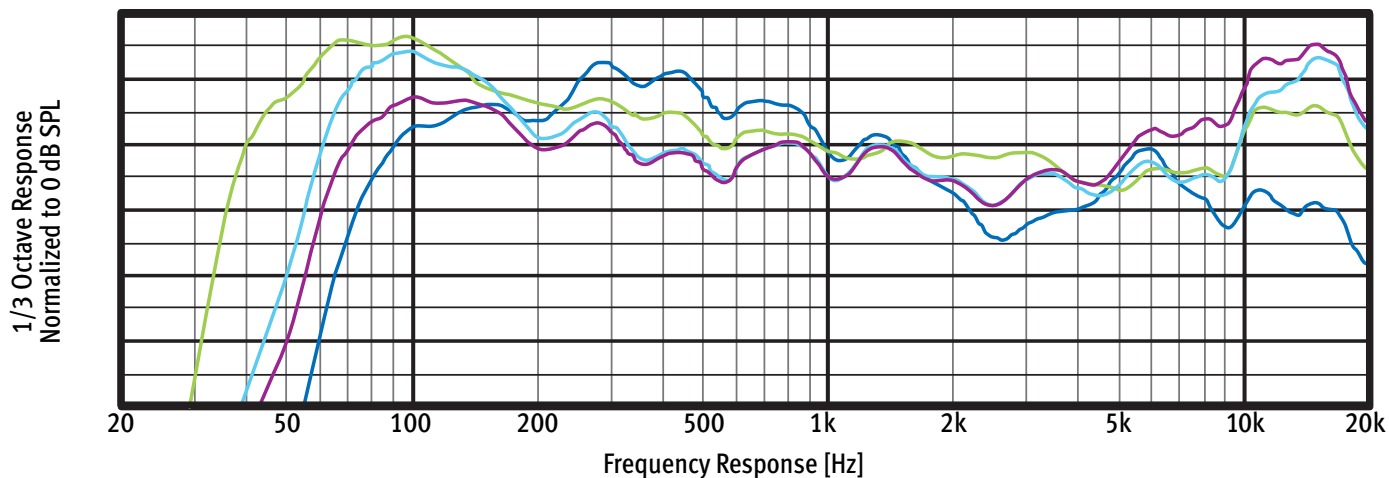
**DJ Speaker Mode** – This mode bumps the lows and highs with a mild tuck to the mids, perfect for music playback.

**Monitor Speaker Mode** – This mode features a low frequency roll-off and a reduction around 2 kHz to ensure maximum gain before feedback in monitor applications.

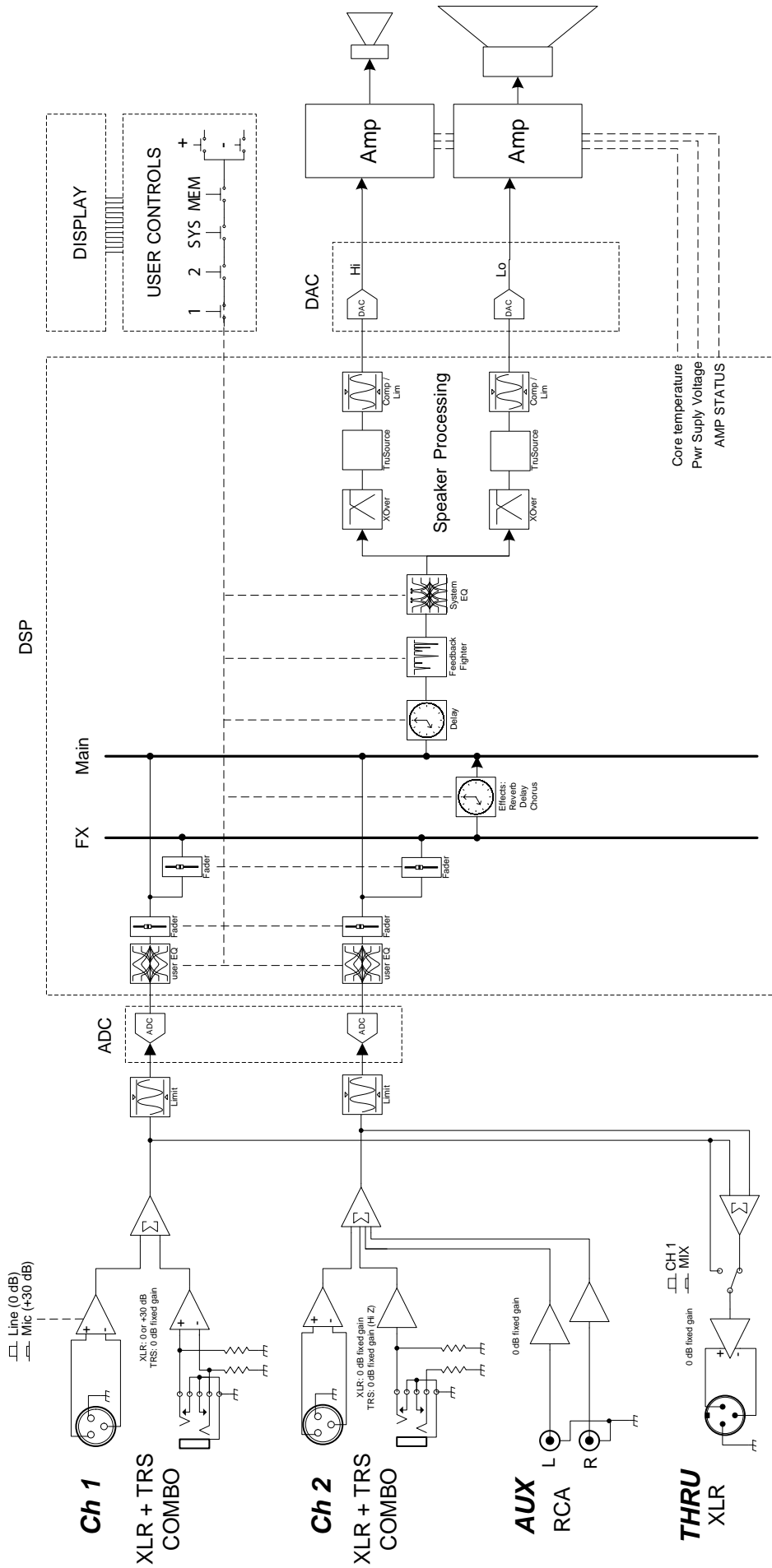
## DLM8 Loudspeaker Frequency Response



## DLM12 Loudspeaker Frequency Response



# DLM8 & DLM12 Loudspeaker Block Diagram



# Appendix D: Table of Effects Presets

No.	Title	Description	Example of its use
01	Bright Room	This room has a bright tone with lots of scattered reflections to simulate harder, more reflective surfaces.	Useful on vocals that require a brighter reverb to cut through the mix, or for giving acoustic instruments a livelier vibe.
02	Warm Lounge	This preset features a medium sized room sound, with just enough enhancement of the lower mids to produce a warm tone.	Useful for vocals on songs that require a larger, more "wet" sound, or for giving dimension to bright horns without adding harshness.
03	Small Stage	This preset simulates the sound of a small concert stage, with a medium reverb time and reverberant space.	Useful for vocals or guitars in fast paced, high-energy songs that call for a "live" sounding reverberation.
04	Warm Theater	This reverb has a warm bodied tone and medium long reverb time to simulate the live acoustics of a theater space.	Perfect for vocals, drums, acoustic and electric guitars, keyboards and more.
05	Warm Hall	This reverb simulates the sound of a spacious, yet cozy, heavily draped and carpeted concert hall with an especially warm tone.	Perfect for adding natural concert hall ambience to close-mic'ed orchestral instruments.
06	Concert Hall	This hall reverb is characterized by its large, spacious sound, long pre-delay, and vibrant tone.	Adds life to acoustic instruments and vocals from solos to full-on symphonies and choirs.
07	Plate Reverb	This preset emulates vintage mechanical reverberation that was generated with a metal plate. Its sound is characterized by lots of early reflections and no pre-delay.	Perfect for thickening percussive instruments, such as a snare drum, or tight vocal arrangements.
08	Cathedral	This reverb emulates the extremely long tails, dense diffusion and long pre-delays and reflections that would be found in a very large, stone walled house of worship.	Gives amazing depth to choirs, wind instruments, organs and soft acoustic guitars.
09	Chorus	This preset provides a soft, ethereal sweeping effect that is useful for thickening and for making a particular sound pop out of the mix.	Perfect for enhancement of electric and acoustic guitar and bass, or to add a dramatic effect to vocals, particularly group harmonies and choirs.
10	Chorus + Reverb	This preset perfectly combines the chorus effect above with a large, roomy reverb.	This effect thickens the sound with chorus while adding warmth and spaciousness thanks to the smooth reverb.
11	Doubler	This effect simulates the sound of a vocal or instrument being recorded twice (double-tracked) on a multi-track recorder.	Provides a vibe that is similar to chorus without the subtle swirl.
12	120 ms Delay	This preset provides 120 ms delay. The smaller the delay time, the faster the delay.	This FX works best with full, up-beat music like rock where the delay needs to cut through the mix.
13	Tape Slap	This effect provides a single, relatively rapid delay of the original signal, with the added warmth that vintage tape-based echo units provided.	Often used on vocals for a 1950's era feel, or on guitars for a surf-type tone. Often used by people whose favorite number is 13.
14	233 ms Delay	This preset provides 233 ms delay. The smaller the delay time, the faster the delay.	This FX works best with full, up-beat music like rock where the delay needs to cut through the mix.
15	300 ms Delay	This preset provides 300 ms delay. The smaller the delay time, the faster the delay.	This FX works best with full, up-beat music like rock where the delay needs to cut through the mix.
16	Delay (300 ms) + Verb	This effect combines the Warm Theater reverb effect with the echoes of the 3-repeat delay effect.	Perfect for thickening vocals while adding dimensions, it can also be used as a spacey effect on electric guitars.

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