

POWERED MIXER

EMX SERIES

EMX5016CF/EMX5014C
EMX512SC/EMX312SC/EMX212S



For details please contact:



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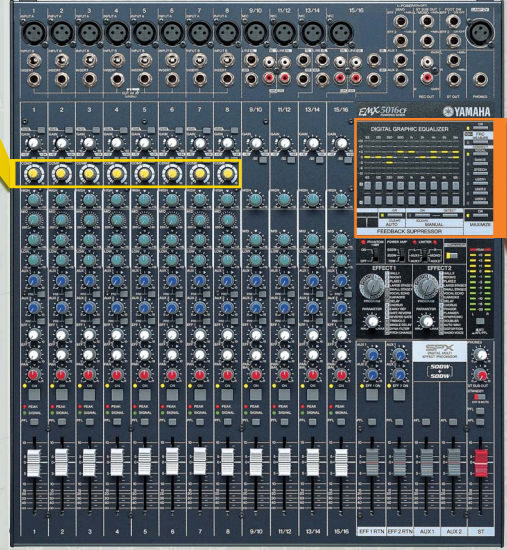
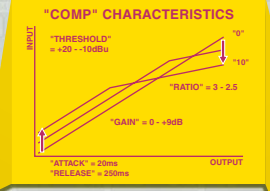
LEA514 P10018398

Serious Live Sound Capability Plus Innovative Digital Features

The EMX5016CF delivers the convenience of an integrated powered mixer with input capacity, flexible features, and solid sound that critical live sound applications demand. It is remarkably compact and portable for a live sound system with this much capability, but offers performance and reliability that will satisfy the discerning professional user either on the road or in installed applications. And thanks to leading Yamaha digital technology, the EMX5016CF also includes a number of innovations that make it easier than ever to achieve top-class sound in just about any venue. An impressive power output of 500 watts per channel means it can handle fairly large audiences, indoors or out. The EMX5016CF goes considerably beyond the standard definition of "powered mixer," entering the realm of serious sound reinforcement.

EMX5016CF POWERED MIXER

- Up To 12 Mics, 16 Inputs Total
- 4 Stereo Inputs
- 500 W + 500 W (4Ω)
- Input Gain Trim and Pads
- LPF
- 3-band Mid-Sweep Channel EQ
- One-Knob Compression
- PFL and AFL Monitoring
- Dual AUX Sends
- Dual SPX Processors
- Feedback Suppressor
- 9-band Digital Graphic EQ
- FRC System
- Multi-band Maximizer
- Maximum Power Switch
- Standby Mode
- Power Amp Mode Switch
- YAMAHA Speaker Processing
- Lightweight Design
- Lightweight Design (11kg)
- Rack Mountable
- Lamp Connector



Versatile 16-Input Configuration Adapts to Varied Source Requirements

The EMX5016CF has a total of 16 input channels – eight for monaural microphone or line input plus four stereo pairs. The stereo channel pairs can function either as monaural microphone inputs or stereo line inputs. This system gives you extra microphone inputs if your sources are mostly microphones, or if you need to handle more stereo sources the EMXCF will comfortably handle four pairs in addition to eight monaural microphone or line inputs. Switchable phantom power is provided for all microphone inputs.

Advanced Channel EQ

3-band EQ is available on all input channels, but extra versatility is provided on the eight mono channels with mid-frequency sweep controls. The mid EQ center frequency can be continuously swept from 250 Hz through 5 kHz so you can precisely pinpoint frequencies in the critical midrange that require compensation, providing significantly enhanced equalization potential.

Ample I/O for Expansion and Integration

All you need to create a powerful, high-performance live sound system is the EMX5016CF, a pair of speakers or two, and your sources. But it does feature a range of inputs and outputs that allow it to be expanded with external gear or integrated into larger systems. Insert patch points on the mono input channels, for example, let you add outboard signal processing to individual input channels. And although you have all the monitor power and effects you're likely to need built in, external AUX and EFFECT sends allow you to route the mixer's signals to external signal processing and/or monitor systems as required. Stereo out, stereo sub-out, and record outputs are also provided.

One-knob Compression On Mono Channels

The EMX5016CF features compressors on all monaural microphone/line channels that can help to make vocals ride the mix better, give you that smooth compressed guitar sound, deliver more punchy bass, and generally refine your mixes in a multitude of ways. These unique one-knob compressors are surprisingly simple to use. There are no multiple attack, threshold, makeup gain, and other controls – just set the COMP control to the amount of compression you need.

9-band Digital Graphic EQ with Presets & Memory

This advanced digital 9-band stereo graphic equalizer goes way beyond conventional analog types with a refined control interface, instant-recall presets, and user memory locations. It also works with the console's innovative Frequency Response Correction system (see below) for unprecedented response-shaping control. Of course you can manually adjust each band as required from scratch, but you can also use one of the presets – VOCAL, DANCE, or SPEECH – as a starting point and edit from there. You also have three user memories into which you can store your own EQ curves for instant recall whenever needed.

FRC (Frequency Response Correction) System

Setting a live sound system's output equalizer to optimally match room response is normally a complicated process requiring noise generators, calibrated microphones, real-time analyzers, and a great deal of time and experience. The EMX5016CF handles the entire process automatically, using either pink noise or a recorded music source you supply. To precisely match the system's response to the room you're in all you need to do is set up a microphone in an appropriate location, connect it to channel 1, press MEASURE/CORRECT once to make the measurement, and then again to automatically set the graphic equalizer for optimized response. The EQ setting can then be stored in one of the user memories for later recall if needed.

Automatic Feedback Suppression

Although the graphic equalizer can be used for feedback control, the EMX5016CF provides a Feedback Suppressor system that is dedicated to the job. The Feedback Suppressor works by detecting feedback frequencies on the stereo bus and applying precise notch filters to eliminate the feedback. The Feedback Suppressor has an AUTO mode that automatically keeps track of and attenuates feedback frequencies for you, and a sensitive manual mode that lets you pinpoint and attenuate feedback points one by one.

Multi-band "Maximizer"

The EMX5016CF "Maximizer" is an advanced 3-band compressor that can be applied to the stereo bus for a more punchy "up-front" overall sound. Simply press the MAXIMIZE switch to instantly give the mix more presence and impact without sacrificing musical subtlety.

Dual Yamaha SPX Effect Processors

The EMX5016CF includes not one but two top-performance Yamaha SPX digital effect processors built in! You might only need ambience effects such as reverb and delay for live sound applications – and the EMX5016CF includes some of the finest reverb and delay effects available – but if you need other effects as well they're right at your fingertips, and you can use two different effects simultaneously. Each effect processor offers a selection of 16 top-quality effects including reverb, echo, chorus, flanger, phaser, and even distortion, with editable parameters that allow you to customize each effect.

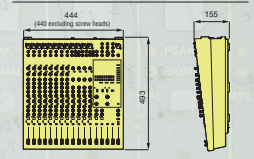
Dual AUX Sends

AUX 1 and AUX 2 send controls with pre/post fader switching adjust the level of the channel signal sent to the auxiliary buses for monitoring or external effects send. The availability of two AUX sends provides considerable flexibility for effect and monitor routing. You could, for example, use the channel EFFECT controls to control send level to the internal SPX effect processor while using AUX 2 to feed an external effects unit, and AUX 1 to feed a stage monitor system.

Other Pro-class Features

- Gain controls and 26-dB pad switches allow optimum level matching with just about any source.
- 80-Hz high pass filters for elimination of unwanted low-frequency noise and rumble.
- Channel ON switches let you switch individual channels into or out of the mix.
- Pan control adjusts the position of mono channel signals in the stereo sound field, while balance controls on stereo channels control the balance of the stereo image.
- High-quality linear faders individually adjust the level of each channel.
- PFL (pre-fader listen) switches allow isolated monitoring of individual channels.
- All input channels feature signal and peak indicators for visual signal monitoring.
- Linear AUX 1, AUX 2, EFF1 RTN and EFF2 RTN faders with PFL (pre-fader listen) switches on the effect returns and AFL (after-fader listen) monitor switches on the auxiliary returns.
- Stereo master fader with both PFL and AFL monitor switches.
- Yamaha Speaker Processing delivers enhanced lows and high-end smoothness with Yamaha Club-series speakers.
- Limiter indicators tell you when the internal limiter circuitry has been activated due to power amplifier overload.
- Power Amp mode selector allows two-channel power amplifier to be quickly configured for Main + Main, Mono + Aux 1, or Aux 1 + Aux 2 operation.
- Power amplifier output selector allows selection of 500, 200, or 75 watt output per channel.
- Stand-by switch instantly mutes all mono inputs.
- Pre-sets 12-segment stereo level meter.
- Phones jack with independent level control.
- High-quality SPEAKON speaker connectors for fast, reliable connection.
- Rack mountable with the optional RK5014 rack-mount kit.
- Console lamp connector accepts standard 3-pin XLR-connector gooseneck lamp (12 volts DC, 5 watts max.).

Dimensions

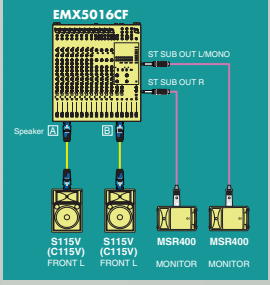


Rear Panel



System Example

500-watt Mains and Dual Monitors
In this basic system the EMX5016CF speaker outputs drive S115V speakers for solid front-of-house sound, while the sub-stereo outputs are connected to MSR400 powered speakers for stage monitoring.



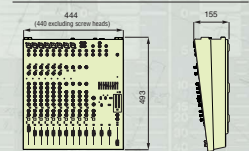
A Console-format Powered Mixer for Advanced Live Applications

More sources? Bigger venues? If your sound reinforcement requirements are getting serious, but you still want the convenience and reliable performance of a Yamaha powered mixer, check out the console-style EMX5014C. Here's an all-in-one solution that will appeal to bands and venue operators alike. The EMX5014C transports and sets up with the ease of systems built around the smaller EMX-series powered mixers, but will also prove it's worth in more permanent installations. It can even be rack-mounted for vertical or angled operation, and real space savings! But of course the EMX5014C offers much more than just convenience. It provides a surprising palette of features and versatile signal routing options that can take your live sound to the next level. And it's a Yamaha, so you know it's going to sound great.

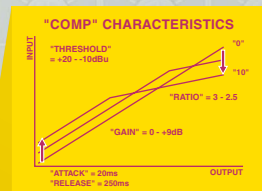
EMX5014C POWERED MIXER

- Up To 8 Mics, 14 Inputs Total
- 4 Stereo inputs
- 500 W + 500 W (4Ω)
- Input Gain Trim
- 3-band Mid Sweep (Channel EQ)
- LPF
- FCL System
- Dual AUX Sends
- SPX Digital Effects
- 9-band Stereo Graphic EQ
- PFL and AFL Monitoring
- Power Select Switch
- Standby Mode
- Power Amp Mode Switch
- YAMAHA Speaker Processing
- Lightweight Design (10.5kg)
- Rack Mountable

Dimensions



Rear Panel



Console Controllability and Versatility

With the many features and control functions provided by the EMX5014C, console style is the only way to go. It's still compact enough to be placed in the stage area and controlled by the performers – especially if rack mounted – but its console configuration also makes it an ideal choice for front-of-house type operation by a sound engineer. Linear faders are another advantage of the console layout, providing precise level control as well as graphic representation of relative channel levels.

Expanded EQ Capability

Like the other EMX-series mixers, the EMX5014C features 3-band EQ on all input channels, but goes a step further on the six mono channels with mid-frequency sweep controls. The mid EQ center frequency can be continuously swept from 250 Hz through 5 kHz so you can precisely pinpoint frequencies in the critical midrange that require compensation or enhancement, providing significantly greater enhanced tailoring potential. The stereo graphic equalizer has also been expanded with 9 bands that can be used for more effective room voicing or feedback control.

One-knob Compression on Mono Channels

Built-in channel dynamics is normally a feature reserved for much larger (and more expensive) mixers. But in the EMX5014C you get compressors on all six monaural/mic/line channels. Judicious application of compression can help to make vocals ride the mix better, give you that smooth compressed guitar sound, deliver more punchy bass, and generally refine your mixes in a multitude of ways. Yamaha's unique one-knob compressors are simple to use, too. There's no need to juggle multiple attack, threshold, makeup gain, and other controls – just set the COMP control to the amount of compression you need.

Feedback Channel Locating (FCL) System

FCL System indicator LEDs at the top of each channel light if the corresponding channel goes into feedback. So if and when feedback occurs you'll be able to locate the channel(s) in which it is occurring immediately and rectify the problem without delay.

Versatile 14-Input Configuration

The EMX5014C has a total of 14 input channels – six for monaural microphone or line input, plus four stereo pairs. Two of the stereo channels can function either as monaural microphone inputs or stereo line inputs. Switchable phantom power is provided for all microphone inputs. This system lets you use up to eight microphone channels plus two stereo inputs if your sources are mostly microphones. Or if you need to handle more stereo sources – say, Background Music, from a DJ mixer, and two stereo keyboards – the EMX5014C will comfortably handle all of these in addition to six monaural microphone or line inputs.

Comprehensive I/O

Although the EMX5014C and a pair of speakers or two are all you need to create a powerful, high-performance live sound system, it features a range of inputs and outputs that allow it to be integrated into larger systems. Insert patch points on the mono input channels, for example, let you add outboard signal processing to individual input channels. And although you have all the effects you're likely to need built in, and monitor power, external AUX and EFFECT sends allow you to route the mixer's signals to external signal processing and/or monitor systems as required. Stereo out, stereo sub-out, and record outputs are also provided.

SPX Digital Effects

Normally you'll only need ambience effects such as reverb and delay for live sound applications – and the EMX5014C includes some of the finest reverb and delay effects available built right in – but if you need other effects as well they're right at your fingertips. You can dial up a selection of 16 top-quality Yamaha SPX effects – including reverb, echo, chorus, flanger, phaser, and even distortion. Yamaha SPX digital effects are widely recognized as being some of the finest available, and the effects provided in the EMX mixers live up to that reputation.



Dual AUX Sends

AUX 1 and AUX 2 send controls, with pre/post fader switching for AUX 2, adjust the level of the channel signal sent to the auxiliary buses for monitoring or effects send. The available of two AUX sends provides considerable flexibility for effect and monitor routing. You could, for example, use the channel EFFECT controls to control send level to the internal SPX effect processor while using AUX 2 to feed an external effects unit, and AUX 1 to feed a stage monitor system.

Yamaha Speaker Processing

You'll undoubtedly want to use at least one pair of Yamaha Club-series speakers with the EMX5014C for the superior sound and projection they provide. If you do you'll really appreciate the enhanced low-end output and high-end smoothness provided by built-in Yamaha speaker processing.

Rack Mountable

With the optional RK5014 rack-mount kit, the EMX5014C can be conveniently mounted in a portable or installed rack. This has been made possible by a combination of the mixer's configuration and a highly efficient fan cooling system that ensures reliable, stable operation.

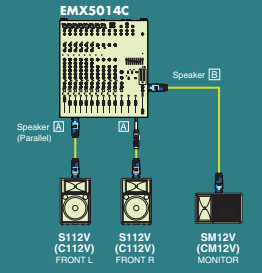
Other Pro-class Features

- Gain controls and 26-dB pad switches allow optimum level matching with just about any source.
- 80-Hz high pass filters for elimination of unwanted low-frequency noise and rumble.
- Channel ON switches let you switch individual channels into or out of the mix.
- Pan control adjusts the position of mono channel signals in the stereo sound field, while balance controls on stereo channels control the balance of the stereo image.
- High-quality linear faders individually adjust the level of each channel.
- PFL (pre-fader listen) switches allow isolated monitoring of individual channels.
- All input channels feature signal and peak indicators for visual signal monitoring.
- Linear AUX 1, AUX 2, and EFFECT RTN faders with AFL (after-fader listen) monitor switches.
- Stereo master fader with both PFL and AFL monitor switches.
- Limiter indicators tell you when the internal limiter circuitry has been activated due to power amplifier overload.
- Power Amp mode selector allows two-channel power amplifier to be quickly configured for Main + Main, Mono + Aux 1, or Aux 1 + Aux 2 operation.
- Power amplifier output selector allows selection of 500, 200, or 75 watt output per channel.
- Stand-by switch instantly mutes all mono inputs.
- Precise 12-segment stereo level meter.
- Phones jack with independent level control.
- High-quality SPEAKON speaker connectors for fast, reliable connection. Phone jack connectors are also provided.



System Example

500-watt Mains and Monitor
In this basic system the EMX5014C Speaker A output is driving a pair of parallel-connected S112V speakers for solid front-of-house sound, while an SM12V driven by the Speaker B output serves as a stage monitor.



Integrated Solutions for Superior Live Sound

Experienced musicians, performers, speakers, and club operators know the importance of a high-quality sound system with the right features and performance to deliver their sound. Where portability and convenience are important criteria, a system based on a high-performance Yamaha EMX-series powered mixer is definitely the way to go. In one integrated, portable unit you have a mixer to combine and balance your microphone, instrument, and line sources, effects to refine and polish your sound, and power to drive the main speakers and even monitor speakers as well. But that's nowhere near the whole story – Yamaha EMX-series Powered Mixers offer a range of features that let you mix, process, and deliver your sound with maximum quality and creative control ... and, of course, that unrivalled Yamaha sound.



Angled Cabinet for Easy Access

This thoughtful feature makes the control panel easy to see and access when the unit is placed on the floor.

EMX512SC POWERED MIXER

For larger venues and audiences, or if you plan to use it for outdoor sound, the EMX512SC with a pair of whopping 500-watt amplifiers to ensure that your music or message comes across with full impact.

- Up To 8 Mics, 12 Inputs Total
- 2 Stereo inputs
- 500 W + 500 W (4Ω)
- 5-band Channel EQ
- 7-band Stereo Graphic EQ
- One-Knob Compression
- FCL System
- SPX Digital Effects
- Power Select Switch
- Standby Mode
- YAMAHA Speaker Processing
- Lightweight Design
- Angled Cabinet
- Rack Mountable



EMX312SC POWERED MIXER

If you need a little more power—300 watts +300 watts—and the added advantage of one-knob compression on mono channels, the EMX312SC may be the model you need.

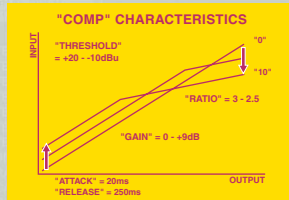
- Up To 8 Mics, 12 Inputs Total
- 2 Stereo inputs
- 300 W + 300 W (4Ω)
- 5-band Channel EQ
- 7-band Stereo Graphic EQ
- One-Knob Compression
- FCL System
- SPX Digital Effects
- Power Select Switch
- Standby Mode
- YAMAHA Speaker Processing
- Lightweight Design
- Angled Cabinet
- Rack Mountable



EMX212S POWERED MIXER

The lowest-powered model in the series offers a pair of 220-watt amplifiers per channel that should be more than sufficient for small-to-medium size venues.

- Up To 8 Mics, 12 Inputs Total
- 2 Stereo inputs
- 220 W + 220 W (4Ω)
- 5-band Channel EQ
- 7-band Stereo Graphic EQ
- SPX Digital Effects
- Power Select Switch
- Standby Mode
- YAMAHA Speaker Processing
- Lightweight Design
- Angled Cabinet
- Rack Mountable



Features For Superior Sound and Convenience

Great Yamaha Sound

Yamaha is a leader in the field of professional live sound for a very good reason: we deliver the sound and performance that the pros demand. The EMX-series powered mixers are no exception. They're built at the same standards of sonic performance and rugged reliability that makes Yamaha the first choice for live sound applications from schools to stadiums around the globe.

One-knob Compression on Mono Channels (EMX512SC & EMX312SC)

All four monoaural mic/line channels on the EMX512SC and EMX312SC feature built-in compressors that can help to bring vocals to the front of the mix, give your guitars extra smoothness and presence, deliver a more punchy bass sound, and generally refine your mixes in a multitude of ways. These one-knob compressors are simple to use, too. There's no need to juggle multiple attack, threshold, makeup gain, and other controls – just set the COMP control to the amount of compression you need.

Feedback Channel Locating (FCL) System

FCL System indicator LEDs at the top of each channel light if the corresponding channel goes into feedback, so you won't have to fumble around searching for the channel that needs adjustment.

12 Inputs

All three mixers in this series offer a total of 12 input channels – four for monoaural microphone (incl. Phantom Power) or line input, plus four pairs that can function either as monoaural microphone inputs or stereo line inputs – providing you with a versatile mix of input capabilities for a wide range of applications. If you need only microphone inputs you can use up to eight mic channels. Or if, for example, you want to play recorded background music during breaks (that's one stereo channel), and you have a keyboard player with a stereo-output keyboard (that's one more stereo channel), you still have six mic/line inputs. If you use all four stereo pairs to handle stereo line sources you have four channels available for mono mic or line input. This is a very versatile system that can adapt to your needs.

High Power For Main and Monitor Speakers

These powered mixers certainly don't skip on power. From the EMX212S with 200 watts per channel to the EMX512SC with a solid 500 watts per channel, there's a power configuration to suit any application and venue. All models also feature a power mode switch that lets you use the two power channels as a stereo amplifier, or you can use one of the channels for the main speaker(s) and the other to drive monitors with a separate monitor mix set up via the channel MONITOR controls.

SPX Digital Effects

The EMX212S, EMX312SC, and EMX512SC all feature a selection of 16 top-quality Yamaha SPX effects – including reverb, echo, chorus, flanger, phaser, and even distortion – that can add the final touch to your live presentation. Yamaha SPX digital effects are widely recognized as being some of the finest available, and the effects provided in the EMX mixers live up to that reputation.

Built-in Graphic EQ

Graphic equalizers are provided for both the main and monitor channels, so you can effectively control feedback or tailor the sound to the match the room and program material.

Stand-by Mode

When you're done with a set, simply engage the stand-by mode to mute all mono channels while leaving the 2-track inputs active for background music playback while you're taking your break.

Yamaha Speaker Processing

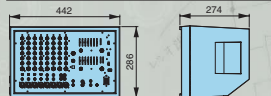
Yamaha Club-series speakers are fine performers in their own right, but with Yamaha Speaker Processing you get extra-smooth highs and enhanced low-frequency output.

Durable, Lightweight Design

The EMX powered mixers offer the ideal combination of outstanding sound performance and easy handling. They're lightweight – only 8 kilograms (17.6 lbs.) – and feature conveniently located handles for maximum carrying comfort. They're also built tough to withstand the rigors of use on the road.



Dimensions



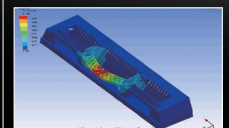


P.T. Yamaha Music manufacturing Asia
 —Manufacturing the electronic instruments and PA products. From the initial design to final manufacturing, all production processes for the Yamaha EMX series Powered Mixers are performed entirely inside the company. Moreover, every product that comes off our production line must pass strict quality controls using the sophisticated test instruments. Thus, all of this enables us to deliver the highest quality products to you!

An Interview with the EMX Design Team

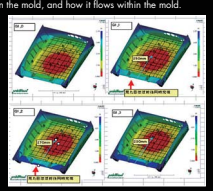
Built-in Compression Adds Live-sound Versatility to the new EMX-series Powered Mixers

- New Features**
- What is the main difference compared to previous EMX-series mixers?
 - The main difference is built-in compression. Compression is indispensable in almost all professional recording and live-sound applications, but we believe that this is the first time it has been built into an analog live mixer.
 - Most "box type" mixers have no insert connectors, so there has really been no convenient way to use compressor with them. As a result, many users of this type of powered mixer have never used compression, but we wanted them to have that option in the new EMX series.
 - Although compression is used in most pro audio applications, it has been a bit too difficult for beginners to take full advantage of. That's why we streamlined it down to the essentials and made it very easy to use.
 - Another important new feature is FCL (Feedback Channel Location). This system detects feedback and shows you which channel is causing the problem. Some mixers from other manufacturers have indicators in the graphic equalizer section that show the feedback frequency, but indicating the problem channel allows the feedback to be more effectively controlled using channel EQ.
 - If you try to control feedback using the EMX graphic equalizer, for example, you end up changing the sound of the entire program. For this reason, it is far more effective to control it at the input, thus avoiding degradation of the overall sound.
 - In the box-type 212C, 3125C, and 5125C, it was easy to mount the fan away from the circuit board to minimize degradation of the audio signal. But in the console-type EMX5016CF and EMX5014C, finding the ideal fan location was extremely difficult. Since the fan must be located near the input circuitry, special measures have been taken to ensure that electronic and mechanical noise from the fan do not affect sound quality, while at the same time ensuring maximum heat extraction.
 - The hardware team wanted to increase the size of the body by 30 millimeters, but our goals for a streamlined, compact design were important enough that we decided to find other ways to achieve the desired performance.
 - An important idea implemented in the box-type models is that they can be set at an angle like monitor speakers. The integral handles are also an important design feature, and achieving the required strength was a constant problem.
 - Achieving the ideal blend of size, weight, and durability is quite difficult. As usual, demands from the sales team continue to escalate while the hardware and mechanics teams try to turn them into reality... without ever reducing or compromising features or performance. Computer simulation was called into play once again, providing an accurate preview of the mid-flow characteristics of the resin used for the box-type housings.
 - The final strength of the molded housings depends to a large degree on how the molten resin is introduced in the mold, and how it flows within the mold.
 - The strength of the integral handles was also predicted using computer simulation, and as a result, we have achieved strength comparable to that of aluminum.
 - Of course sound quality is first and foremost in the design of any model. Achieving the lowest possible noise and hum when changing components is always a challenge. There's influence from vibration, from the current flowing through the components themselves, and a simple op-amp IC change can precipitate a large change in sound. We often find ourselves using the best components we can find rather than compromise on sound quality. Even the FCL system has an effect on the sound, and we were able to achieve a dramatic improvement by simply eliminating a single component from the circuit. Once again, the final design depends on trial-and-error listening tests while changing components.
 - With SPX effects in all models in this EMX series, plus compression and FCL, you can rely on a single EMX powered mixer to deliver outstanding live sound, especially in applications that use mostly microphones.
 - Most compressors have at least two controls, what is the idea behind having just one?
 - Simplicity. Standard compression controls can be very difficult to set quickly and accurately, but we've managed to provide well-balanced threshold and ratio settings that can be controlled by a single knob. By focusing primarily on microphone applications in which compression is applied to vocals, acoustic guitar, or similar sources, great-sounding compression can be dialed in quickly and easily.
 - There's a good description of compression and its uses in the owner's manual. We hope that our users will take advantage of this very useful feature.

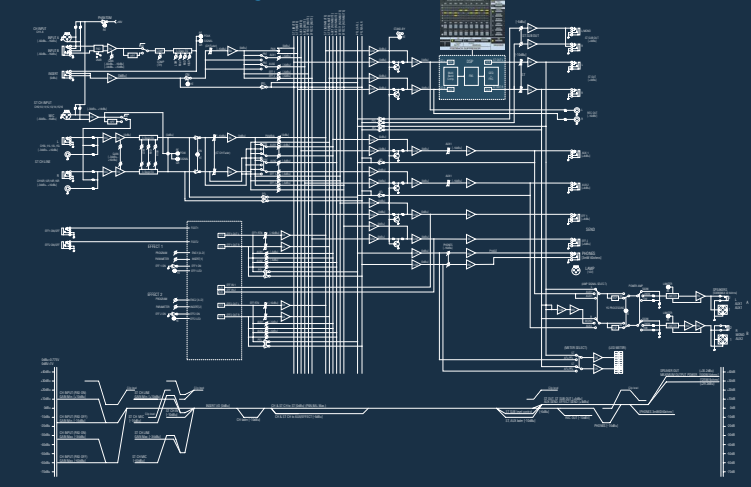


- Reliability Without Compromising Performance**
- The simplicity and aesthetic appeal of the designs are quite impressive. Tell us about the design concept.
 - Simplicity was the main goal, particularly in the console-type 5016CF and 5014C. We wanted to consolidate the mixer controls, so the ability control section has been clearly separated. We didn't even want any handles to be visible.
 - An important idea implemented in the box-type models is that they can be set at an angle like monitor speakers. The integral handles are also an important design feature, and achieving the required strength was a constant problem.
 - Achieving the ideal blend of size, weight, and durability is quite difficult. As usual, demands from the sales team continue to escalate while the hardware and mechanics teams try to turn them into reality... without ever reducing or compromising features or performance. Computer simulation was called into play once again, providing an accurate preview of the mid-flow characteristics of the resin used for the box-type housings.
 - The final strength of the molded housings depends to a large degree on how the molten resin is introduced in the mold, and how it flows within the mold.

- The Battle Against Heat**
- Tell us about how you avoided heat problems in such compact enclosures.
 - Heat and high power output unavoidably go hand-in-hand. In this case we were also determined to reduce weight, so the design, hardware, and mechanics teams joined forces to pursue this goal. Changing even a single component can alter the heat profile enough to require a change in heat sink design, and that change can cause a change in sound quality, so the design process involves a lot of trial and error.
 - In this particular case, the fact that we were able to use internal heat-flow simulation and analysis was a huge advantage. We were able to define an enclosure shape on the computer, and then by analyzing the heat flow while refining the heat sink configuration we were able to come to within 80% or 90% of the ideal final design. The final stages using physical prototypes still relied on trial and error.



EMX5016CF Block and Level Diagram



EMX5016CF Specifications

GENERAL SPECIFICATION

Maximum Output Power	500 W @ 0.5% THD at 1 kHz
Frequency Response	20 Hz - 20 kHz, ref. to the 10kΩ output level, GAIN-MIN, PAD-OFF
Total Harmonic Distortion	Less than 0.3% (THD-A)
Gain	Equivalent Input Noise: -128 dBu, GAIN-MAX, 20 Hz-20 kHz, CH1-8 MIC
Input Connectors	CH 1-8: XLR and Phone CH 9-10: 1/4" TRS, XLR, Phone and Pin
Channel EQ	CH 1-8: 8-Band (10 k, Shelving), MID (max: 200-5, at 2.5 k, Peaking), LOW (100, Shelving) CH 9-10: 10-Band (10 k, Shelving), MID (at 2.5 k, Peaking), LOW (100, Shelving)
Channel EQ	CH 1-8: 8-Band (10 k, Shelving), MID (max: 200-5, at 2.5 k, Peaking), LOW (100, Shelving) CH 9-10: 10-Band (10 k, Shelving), MID (at 2.5 k, Peaking), LOW (100, Shelving)
Function Equalizer	48 Hz
Digital Graphic Equalizer	9 Band (83, 125, 250, 500, 1 k, 2 k, 4 k, 8 k, 16 kHz), PreSet x3, User preset x3
Digital Effects	SPX Digital Multi-Effect (24 bit AD/DA, 32 bit Internal Processing), 18 Programs x 2
Fader Arms	1/2" XLR (MICRO), AUX/IO
Fader Switch	Electro-Optical
Dimensions (W x D x H)	444 x 493 x 150 mm (17.5" x 19.3" x 6.1")
Weight	12.0 kg (26.5 lbs)
Power Requirements/Consumption	120 V/60 Hz, 500W 220-240 V/50 Hz, 500W

All level controls are nominal, unless measured. Output impedance of input processor: 150 Ω

INPUT CHARACTERISTICS

Input Terminal	Pin	Gain	Actual Load Impedance	For Use With Nominal	Minimum ¹⁾ / Maximum ²⁾ Input Level	Max. Return Loss	Connector
CH INPUT 1-8	50kΩ	-48 dB	50kΩ	50kΩ	127 dBu (0.775 V) / 123 dBu (0.707 V)	20 dB	XLR-3 pin Type "2"
	600 Ω	-18 dB	600 Ω	600 Ω	118 dBu (0.316 V) / 114 dBu (0.251 V)	15 dB	XLR-3 pin Type "2"
CH INPUT 9-10	50kΩ	-48 dB	50kΩ	50kΩ	127 dBu (0.775 V) / 123 dBu (0.707 V)	20 dB	XLR-3 pin Type "2"
	600 Ω	-18 dB	600 Ω	600 Ω	118 dBu (0.316 V) / 114 dBu (0.251 V)	15 dB	Phone Jack "4"
STEREO INPUT 9/10-15/16	50kΩ	-48 dB	50kΩ	50kΩ	127 dBu (0.775 V) / 123 dBu (0.707 V)	20 dB	XLR-3 pin Type "2"
	600 Ω	-18 dB	600 Ω	600 Ω	118 dBu (0.316 V) / 114 dBu (0.251 V)	15 dB	Phone Jack "6"
STEREO INPUT 9/10-15/16	50kΩ	-48 dB	50kΩ	50kΩ	127 dBu (0.775 V) / 123 dBu (0.707 V)	20 dB	Phone Jack "6"
	600 Ω	-18 dB	600 Ω	600 Ω	118 dBu (0.316 V) / 114 dBu (0.251 V)	15 dB	Phone Jack "6"
DUAL MONO IN L/R	50kΩ	-48 dB	50kΩ	50kΩ	127 dBu (0.775 V) / 123 dBu (0.707 V)	20 dB	Phone Jack "5"
	600 Ω	-18 dB	600 Ω	600 Ω	118 dBu (0.316 V) / 114 dBu (0.251 V)	15 dB	Phone Jack "5"

¹⁾ 0 dBu is referenced to 0.775 Vrms.
²⁾ Depending on the lowest level input and impedance or output of all dBu.
 All connectors are 100 Ω terminated unless otherwise specified.
³⁾ XLR-3 pin type connector per IEC60320-1 (Type 3, 5-pin, 300 Ω).
⁴⁾ Phone Jack per IEC60320-1 (Type 3, 3-pin, 300 Ω).
⁵⁾ Phone Jack per IEC60320-1 (Type 3, 2-pin, 300 Ω).
⁶⁾ Phone Jack per IEC60320-1 (Type 3, 2-pin, 300 Ω).

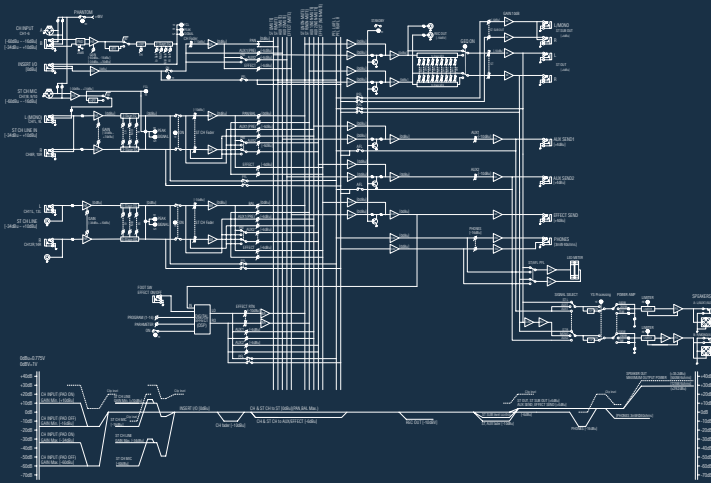
OUTPUT CHARACTERISTICS

Output Terminal	Actual Source Impedance	For Use With Nominal	Output Level	Max. Return Loss	Connector
ST OUT L/R	150 Ω	600 Ω Line	+18 dBu (1.23 V) / +20 dBu (1.75 V)	20 dB	Phone Jack "2"
ST SUB OUT L/R	150 Ω	600 Ω Line	+18 dBu (1.23 V) / +20 dBu (1.75 V)	20 dB	Phone Jack "2"
AUX SEND 1, 2	150 Ω	600 Ω Line	+18 dBu (1.23 V) / +20 dBu (1.75 V)	20 dB	Phone Jack "2"
EFF SEND 1, 2	150 Ω	600 Ω Line	+18 dBu (1.23 V) / +20 dBu (1.75 V)	20 dB	Phone Jack "2"
CH INPUT OUT L-R	600 Ω	150 Ω	0 dBu (0.775 V) / +20 dBu (1.75 V)	20 dB	Phone Jack "2"
MIC OUT L-R	600 Ω	150 Ω	+3 dBu (0.707 V) / +18 dBu (1.23 V)	20 dB	Phone Jack "2"
PHONE IN L/R	150 Ω	40 Ω Load	3+0W	75dB	Phone Jack (TRC)
SPK MON	0.1 Ω	4 Ω Load	120W	50W	SPK MON Phone Jack "2"

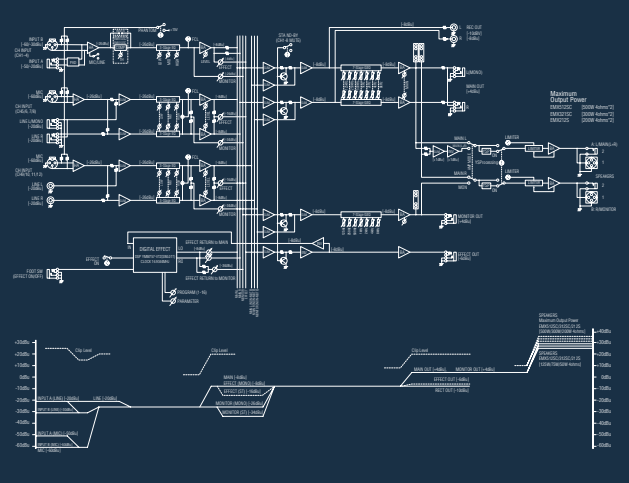
¹⁾ 0 dBu is referenced to 0.775 Vrms, 0 dBV is referenced to 1 Vrms.
²⁾ These values are nominal.

Rack Mount Adaptor RK5014
 The EMX5016CF can be rack-mounted using an optional rack-mounting kit for optimum integration with any system or installation.

EMX5014C Block and Level Diagram



EMX5125C, EMX3125C, EMX2125S Block and Level Diagram



EMX5014C Specifications

GENERAL SPECIFICATION

EMX5014C	
Maximum Output Power @ 0.5% THD at 1 kHz	500 W @ 4 Ω 300 W @ 8 Ω (JA) 300 W @ 16 Ω (JA)
Frequency Response	-3, 0, 1 dB 20 Hz-20 kHz, ref to the nominal output level @ 1 kHz
Total Harmonic Distortion	Level: Best 0.5% (THD+N) +14dB output into 8Ω @ 20 Hz-20 kHz
Hum & Noise	Equivalent Input Noise: -128 dBu, GAIN-MAX, 20 Hz-20 kHz, ST OUT
Crossover @ 1 kHz	5C/5P
Input Connectors	DI: 4-XLR and Phono DI: 7.8, 9.1X, XLR and Phono DI: 11.2, 13.1X, XLR and Phono
EQ	10EQ (10k, Shelving), MID boost 250 Hz, 6° 2.5 k, Peaking, LOW (100, Shelving)
Phantom Voltage	48V
Capacitor	5 μF @ 125, 200, 500, 1k, 2k, 4k, 8k, 16 kHz
Digital Effects	8 FX Digital Matrix Effects (20 Bit ADC/DAC, 18 bit Internal Processing), 18 Programs
Power Amp. Mode	L/R, AUX (MONO), AUX1/2
Fuse Switch	Effect On/Off
Dimensions (W x D x H)	444 x 403 x 105 mm (17.5" x 15.9" x 4.1")
Weight	15.5 kg (34.1 lbs)
Power Requirements/Consumption	ULC: 100 V 60 Hz, 450 W E: 240 V 50 Hz, 450 W BS: 240 V 50 Hz, 450 W

All level checks are nominal, unless specified. Output impedance of signal generator: 100 Ω



Rack Mount Adaptor RK5014

The EMX5014C can be rack-mounted using an optional rack-mounting kit for optimum integration with any system or installation.

INPUT CHARACTERISTICS

Input Terminals	Phc	Gain	Actual Level Impedance	For Use With Nominal	Input Level	Max. Return Clip	Connector
DI INPUT 1-4	6dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
	20dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
DI INPUT 5-6	6dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "4"
	20dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "4"
ST CH INPUT 7-8	6dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
	20dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
DI CH INPUT 9-10	6dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "5"
	20dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "5"
DI INPUT 11, 12	6dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	RCA Pin Jack
	20dB	-60 dB	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	RCA Pin Jack

OUTPUT CHARACTERISTICS

Output Terminals	Actual Return Impedance	For Use With Nominal	Output Level	Max. Return Clip	Connector
ST OUT (L, R)	100 Ω	80 Ω Lines	+4 dBu (1.23 V)	+20 dBu (7.75 V)	Phono Jack "2"
ST OUT (L, R)	100 Ω	80 Ω Lines	+4 dBu (1.23 V)	+20 dBu (7.75 V)	Phono Jack "2"
AUX SEND 1, 2	100 Ω	80 Ω Lines	+4 dBu (1.23 V)	+20 dBu (7.75 V)	Phono Jack "2"
EFFECT SEND	100 Ω	80 Ω Lines	+4 dBu (1.23 V)	+20 dBu (7.75 V)	Phono Jack "2"
DI OUTPUT 1-4	800 Ω	10 kΩ Lines	0 dBu (0.775 V)	+20 dBu (7.75 V)	Phono Jack "2"
REC OUT (L, R)	800 Ω	10 kΩ Lines	+10 dBu (3.16 mV)	+10 dBu (3.16 V)	RCA Pin Jack
PROCES (L, R)	100 Ω	80 Ω Lines	+10 dBu (3.16 mV)	+10 dBu (3.16 V)	Phono Jack (FET) SPK/AMP
SPK/AMP OUT	8 Ω	8 Ω Speakers	120W	500W	Phono Jack "2"

¹ 0 dBu is referenced to 0.775 volts.
² 0 dBu is referenced to 0.775 volts.
³ 0 dBu is referenced to 0.775 volts.
⁴ 0 dBu is referenced to 0.775 volts.
⁵ Phono Jacks are unbalanced.

EMX5125C, EMX3125C, EMX2125S Specifications

GENERAL SPECIFICATION

EMX5125C		EMX3125C	EMX2125S
Maximum Output Power @ 0.5% THD at 1 kHz	500 W @ 4 Ω 300 W @ 8 Ω (JA) 300 W @ 16 Ω (JA)	200 W @ 4 Ω 100 W @ 8 Ω (JA) 100 W @ 16 Ω (JA)	200 W @ 4 Ω 100 W @ 8 Ω (JA) 100 W @ 16 Ω (JA)
Frequency Response	-3, 0, 1 dB 20 Hz-20 kHz, ref to the nominal output level @ 1 kHz	-3, 0, 1 dB 20 Hz-20 kHz, ref to the nominal output level @ 1 kHz	-3, 0, 1 dB 20 Hz-20 kHz, ref to the nominal output level @ 1 kHz
Total Harmonic Distortion	Level: Best 0.5% (THD+N) +14 dB @ 20 Hz, 1 kHz, 20 kHz, GAIN control: all nominal	Level: Best 0.5% (THD+N) +14 dB @ 20 Hz, 1 kHz, 20 kHz, GAIN control: all nominal	Level: Best 0.5% (THD+N) +14 dB @ 20 Hz, 1 kHz, 20 kHz, GAIN control: all nominal
Hum & Noise ¹	Equivalent Input Noise: -115 dBu, R _n = 100 Ω, CH 1-4 MIC/LINE MIC	Equivalent Input Noise: -115 dBu, R _n = 100 Ω, CH 1-4 MIC/LINE MIC	Equivalent Input Noise: -115 dBu, R _n = 100 Ω, CH 1-4 MIC/LINE MIC
Crossover @ 1 kHz	5C/5P	5C/5P	5C/5P
Input Connectors	DI: 4-XLR and Phono DI: 5.8, 7.8, 9.1X and Phono DI: 8.1, 11.2, 13.1X and Phono	DI: 4-XLR and Phono DI: 5.8, 7.8, 9.1X and Phono DI: 8.1, 11.2, 13.1X and Phono	DI: 4-XLR and Phono DI: 5.8, 7.8, 9.1X and Phono DI: 8.1, 11.2, 13.1X and Phono
EQ	10EQ (10k, Shelving), MID boost 250 Hz, 6° 2.5 k, Peaking, LOW (100, Shelving)	10EQ (10k, Shelving), MID boost 250 Hz, 6° 2.5 k, Peaking, LOW (100, Shelving)	10EQ (10k, Shelving), MID boost 250 Hz, 6° 2.5 k, Peaking, LOW (100, Shelving)
Phantom Voltage	15V	15V	15V
Capacitor	5 μF @ 125, 200, 500, 1k, 2k, 4k, 8 kHz	5 μF @ 125, 200, 500, 1k, 2k, 4k, 8 kHz	5 μF @ 125, 200, 500, 1k, 2k, 4k, 8 kHz
Digital Effects	8 FX Digital Matrix Effects (20 Bit ADC/DAC, 18 bit Internal Processing), 18 Programs	8 FX Digital Matrix Effects (20 Bit ADC/DAC, 18 bit Internal Processing), 18 Programs	8 FX Digital Matrix Effects (20 Bit ADC/DAC, 18 bit Internal Processing), 18 Programs
Power Amp. Mode	MAIN/LR, MAIN (L+R)/MONITOR	MAIN/LR, MAIN (L+R)/MONITOR	MAIN/LR, MAIN (L+R)/MONITOR
Fuse Switch	Effect On/Off	Effect On/Off	Effect On/Off
Dimensions (W x D x H)	422 x 274 x 200 mm (17.0" x 10.8" x 7.9")	422 x 274 x 200 mm (17.0" x 10.8" x 7.9")	422 x 274 x 200 mm (17.0" x 10.8" x 7.9")
Weight	8.5 kg (18.7 lbs)	8.5 kg (18.7 lbs)	8.5 kg (18.7 lbs)
Power Requirements/Consumption	ULC: 100 V 60 Hz, 450 W E: 240 V 50 Hz, 450 W A: 240 V 50 Hz, 450 W	ULC: 120 V 60 Hz, 270 W E: 240 V 50 Hz, 450 W A: 240 V 50 Hz, 450 W	ULC: 120 V 60 Hz, 270 W E: 240 V 50 Hz, 450 W A: 240 V 50 Hz, 270 W

¹ Hum & Noise are measured with a Distortion Meter @ 12.7 kHz, equipped to a 20 kHz filter with infinite attenuation characteristics.



Rack Mount Adaptor RK512

All models in this series can be rack-mounted using an optional rack-mounting kit for optimum integration with any system or installation.

INPUT CHARACTERISTICS

Input Terminals	MIC/LINE	Actual Level Impedance	For Use With Nominal	Input Level	Max. Return Clip	Connector
DI INPUT 1-4	XLR	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
	LINE	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
Phono	MIC	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "4"
	LINE	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "4"
DI INPUT 5, 6	ALR	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "5"
	Phono	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	Phono Jack "5"
DI INPUT 9, 10	ALR	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
	Phono	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	ALR 3-31 Type "3"
DI INPUT 11, 12	Pho	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	RCA Pin Jack
	Pho	100 kΩ	50-600 Ω	0.31 mV (0.31 mV) 12.3 mV (12.3 mV) 123 mV (123 mV)	48 dB (0.31 mV) 117 dB (12.3 mV) 123 dB (123 mV)	RCA Pin Jack

¹ 0 dBu is referenced to 0.775 volts.
² 0 dBu is referenced to 0.775 volts.
³ 0 dBu is referenced to 0.775 volts.
⁴ 0 dBu is referenced to 0.775 volts.
⁵ Phono Jacks are unbalanced.

OUTPUT CHARACTERISTICS

Output Terminals	Actual Return Impedance	For Use With Nominal	Output Level	Max. Return Clip	Connector
SPK/AMP OUT (A1, A2, B1, B2)	8 Ω	8 Ω Speakers	120 W	500 W	A1, B1 SPK/AMP (A2, B2) Phono Jack "2"
MAIN OUT (L, R)	800 Ω	10 kΩ Lines	+4 dBu (1.23 V)	+20 dBu (7.75 V)	Phono Jack "2"
EFFECT OUT	800 Ω	10 kΩ Lines	+4 dBu (1.23 V)	+20 dBu (7.75 V)	Phono Jack "2"
MONITOR OUT	800 Ω	10 kΩ Lines	+4 dBu (1.23 V)	+20 dBu (7.75 V)	Phono Jack "2"
REC OUT (L, R)	800 Ω	10 kΩ Lines	+10 dBu (3.16 mV)	+10 dBu (3.16 V)	RCA Pin Jack

¹ 0 dBu is referenced to 0.775 volts. 0 dBu is referenced to 1 volt.
² Phono Jacks are unbalanced.

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