Innovative Solutions for Live Sound

The term “live sound” covers a lot of ground, and no two applications are exactly alike. You might only need to amplify a single microphone for a business meeting, or mix many sources and deliver several kilowatts of power at an outdoor concert. For both these scenarios, and everything in between, Yamaha has the gear you need to get the job done with maximum quality, efficiency and ease.

When choosing equipment for your application, you’ll need to consider the following points:

1. **Scale**
   How big is your audience? How big is the venue or area you need to cover? For larger setups, you will need to have enough speakers and power to cover the area. Smaller spaces with space limitations require equipment that can provide the required functionality and performance without getting in the way.

2. **Sources**
   Do you only need one or two microphones for speech or vocals? Will you be supporting live music using numerous microphones and line-level inputs? Do you need to handle recorded sound effects or background music? All these factors will determine the size and type of mixer you’ll need, as well as monitoring and output equipment (equalizers, power amplifiers, and speakers).

3. **Indoors or Outdoors**
   The requirements for indoor and outdoor sound can be quite different. While power, coverage and sound quality are relatively easy to handle indoors, these factors often require extra care outdoors where there are no room reflections to reinforce the sound and your audience may be spread out over a large area. You also have nature to deal with when working outdoors, so you need a setup that can withstand less-than-favorable weather conditions.

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**Explanation of icons**

- 96kHz compatible
- MIDI format compatible
- VCM Effects pre-installed
- REV-X Reverb pre-installed
- MY16 series compatible
- SPX EFFECT equipped
- One-switch Compressor equipped
- One-knob Compressor equipped
- Frequency Response Correction System equipped
- Feedback Channel Locating System equipped
- Multi-band MAXIMIZER equipped
- Automatic Feedback Suppressor equipped
- Cubase AI4 bundled
- YAMAHA Speaker Processing equipped
- YAMAHA EEnine equipped
- model Class-D Amp equipped
- Max non-clip level of analog output +24dB
- Max non-clip level of analog output +18dB

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### Band Rehearsal 1

If you rehearse with real drums and other instruments at realistic levels, you’ll need some vocal amplification for well-balanced, productive rehearsals. Even if the band is relatively quiet, vocalists need to practice with microphones and amplified sound if amplification will be used on stage. Compression can also help to make the vocal sound stand out. This simple system featuring the EMX312SC powered mixer, a pair of BR12 speakers, an SM10V (CM10V) for monitoring, and a couple of good microphones is ideal.

#### System Chart

| Mic: | 1 – 6 channels |
| Line: | Four stereo |
| Scale: | Rehearsal studio, approx. 30 square meters |
| Audience: | 5 – 8 people |

#### Equipment List

- **Powered Mixer**: EMX312SC 1
- **Main Speaker**: S112V (C112V) 2
- **Monitor Speaker**: SM10V (CM10V) 1

#### Display

#### Sample Application

#### Good Reasons For Choosing Yamaha

- **EMX312SC**
  - All-in-one model with superior portability.
  - Eight microphone inputs.
  - Built-in power amplifier for easy setup.
  - Eight-band EQ for precise tonal control.
  - Automatic feedback suppression.
  - Up to eight microphone inputs. A benefit in jazz clubs with limited stage space.

- **BR12**
  - Compact and lightweight with high power output.
  - Small 12-inch woofer ensures smooth coverage, and supply clear monitor sound to performers.

- **SM10V (CM10V)**
  - Separate equalization for main and monitor speakers
  - Built-in effects add polish to the mix.
  - Eight microphone inputs.
  - Eight-band EQ for precise tonal control.

### Band Rehearsal 2

Rehearsals in larger rooms with many musicians require substantial sound support. Here’s a system that will comfortably handle multiple sources—full drum-set mic setups, brass sections, and more—while powering four main speakers and two monitors. The EMX5016CF features 16 input channels and delivers a healthy 500 watts per stereo channel to four S112V (C112V) speakers. This system is a powerful MSR400 speakers are used for monitoring.

#### System Chart

| Mic: | 1 – 12 channels |
| Line: | Four stereo |
| Scale: | Four-car garage |
| Audience: | 10 – 15 people |

#### Equipment List

- **Powered Mixer**: EMX5016CF 1
- **Main Speaker**: S112V (C112V) 2
- **Monitor Speaker**: MSR400 (Powered) 2

#### Display

#### Sample Application

#### Good Reasons For Choosing Yamaha

- **EMX5016CF**
  - Solid 500 watts + 500 watts power output with pre-class mixing capability.
  - Advanced 5-band compressors for enhanced mixes.
  - IRC (Input Response Correlation) system automates room equalization.
  - Digital stereo graphic equalizer with presets and memory.
  - Multi-band Meters enhances musical impact.
  - Automatic feedback suppression.

- **S112V (C112V)**
  - Compact and lightweight with high power output.
  - Eight microphone inputs. A benefit in jazz clubs with limited stage space.

- **MSR400**
  - Compact and lightweight with high power output.
  - Eight-band EQ for precise tonal control.
  - Separate equalization for main and monitor speakers.

### Sports Bar

There’s no denying that while much of the impact of a sports event is visual, sound plays a huge role as well. Sports bars that show live or recorded sports on 50” or larger screens have the visual aspect pretty much covered, now here’s a sound system that can really bring the action to life. And when it’s not sports time, it serves as an outstanding BG system as well. An MG82CX handles the required inputs with room to spare, and a pair of MSR250 powered speakers deliver big, dynamic sound.

#### System Chart

| Mic: | 1 – 4 channels |
| Line: | Four stereo |
| Scale: | Sports bar with TV or projector TV |
| Audience: | 30 – 50 people |

#### Equipment List

- **Powered Mixer**: EMX312SC 1
- **Main Speaker**: MSR250 2

#### Display

#### Sample Application

#### Good Reasons For Choosing Yamaha

- **EMX312SC**
  - Built-in digital SPX processor makes it easy to achieve a full, rich vocal sound even in small piano-plus-vocal settings. Stereo graphic EQ provides precise level shaping capability.
  - Up to eight microphone inputs. A benefit in jazz clubs with limited stage space.
  - A dual warning alert is available for even further sound savings. Minimum space requirements, but serious 500 x 500 watt output (450W).
  - Compression helps maintain ideal vocal balance with the band. EQ’s help to keep feedback in check even when the vocalist moves around.
  - Up to four microphone inputs can handle multiple acoustic instruments.

- **BR12**
  - Compact and lightweight with high power output.
  - Eight microphone inputs. A benefit in jazz clubs with limited stage space.

- **SM12V (CM12V)**
  - Small vocal monitor takes up minimal stage space.

- **MSR250**
  - Remarkable compact and lightweight.
  - Eight-band EQ for precise tonal control.
  - Separate equalization for main and monitor speakers.
  - Compact and lightweight with high power output.
  - Separate equalization for main and monitor speakers.
  - Eight-band EQ for precise tonal control.

### Piano Bar

Here’s a system that’s ideal for small venues hosting musical entertainment ranging from solo pianists to jazz trios with a vocalist. The volume may be low, but vocalists need solid monitor sound to deliver their best performance. Compression can be a real advantage, too. In this example, an EMX512SC powered mixer delivers the house sound via a pair of S112V (C112V) speakers, while a single SM12V (CM12V) provides quality monitor sound.

#### System Chart

| Mic: | 1 – 6 channels |
| Line: | Four stereo |
| Scale: | Jazz club with small stage |
| Audience: | 30 – 50 people |

#### Equipment List

- **Powered Mixer**: EMX512SC 1
- **Main Speaker**: S112V (C112V) 2
- **Monitor Speaker**: SM12V (CM12V) 1

#### Display

#### Sample Application

#### Good Reasons For Choosing Yamaha

- **EMX512SC**
  - Solid 500 watts + 500 watts power output with pre-class mixing capability.
  - Advanced 5-band compressors for enhanced mixes.
  - IRC (Input Response Correlation) system automates room equalization.
  - Digital stereo graphic equalizer with presets and memory.
  - Multi-band Meters enhances musical impact.
  - Automatic feedback suppression.

- **S112V (C112V)**
  - Compact and lightweight with high power output.
  - Eight microphone inputs. A benefit in jazz clubs with limited stage space.

- **SM12V (CM12V)**
  - Small vocal monitor takes up minimal stage space.

- **MG82CX**
  - Remarkable compact and lightweight.
  - Eight-band EQ for precise tonal control.
  - Separate equalization for main and monitor speakers.
  - Compact and lightweight with high power output.
  - Separate equalization for main and monitor speakers.
  - Eight-band EQ for precise tonal control.

- **MSR250**
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### Sports Bar

There’s no denying that while much of the impact of a sports event is visual, sound plays a huge role as well. Sports bars that show live or recorded sports on 50” or larger screens have the visual aspect pretty much covered, now here’s a sound system that can really bring the action to life. And when it’s not sports time, it serves as an outstanding BG system as well. An MG82CX handles the required inputs with room to spare, and a pair of MSR250 powered speakers deliver big, dynamic sound.

#### System Chart

| Mic: | 1 – 6 channels |
| Line: | Four stereo |
| Scale: | Jazz club with small stage |
| Audience: | 30 – 50 people |

#### Equipment List

- **Powered Mixer**: EMX512SC 1
- **Main Speaker**: S112V (C112V) 2
- **Monitor Speaker**: SM12V (CM12V) 1
**Band and Entertainment**

**Small Stage**

This small-but-serious system will cover small to medium-sized live venues with thoroughly professional quality and versatility. The MG206C mixer offers plenty of input capacity. For Speech and Music, a Q2031B equalizer for feedback control. An SPX2000 professional multi-effect processor could be added for additional vocal processing.

The system also features a STAGEPAS 150M portable PA system for keyboard monitoring. With the main PA mixer’s AUX SEND 3 connected to input 5 (mono) of the STAGEPAS mixer, the STAGEPAS speaker is able to operate as a monitor. In addition, input from keyboards and synths can be mixed on the STAGEPAS mixer and then sent to the main PA.

**Large Outdoor Stage**

Outdoor sound poses some unique problems, and power and speaker coverage are of prime importance. The system shown here delivers three kilowatts to FOH via three P5000S power amplifiers and a combination of S215V (C215V) full-range speakers and SW218V (CW218V) subwoofers. An additional 2.8 kilowatts is allotted for monitoring via four P3005S amps and SM15V (CM15V) monitor speakers. The MG32/14FX console handles the wide range of inputs and signal processing often required at outdoor music events.
Compact Digital Solution for 2-Band Events

Large music events featuring two or more bands can involve a large amount of sound reinforcement gear. Here’s a compact digital system that can handle up to 80 input channels in all while allowing easy switching between completely different band setups. The pair of 01V96V2 digital consoles used provide all the effects and dynamics processing you’ll need built-in, so you won’t even need outboard processor racks.

Full-Fledged Live SR and Recording

This powerful sound reinforcement (SR) solution for the live performance environment uses a single IM8-24 mixing console to handle both FOH and monitor functions. Offering 24 mono and 4 stereo inputs, extensive output connectivity, best-in-class sound quality, and a highly-functional, ergonomic panel layout, the IM8-24 can easily satisfy even the most demanding of professionals. And using Steinberg’s Cubase AI, which is bundled with the mixer, you can easily record live performances on a PC. Despite its compact design, the IM8-24 is ideal for a wide range of professional applications, and when combined with a full set of powered speakers, for example, provides a highly- portable solution for the live-performance environment. In houses of worship and other small venues, this type of setup is ideal when equipment needs to be moved around.

Characteristics of the IM8-24

- With the addition of an M7V1 expansion card, two 01V96V2 consoles can be cascaded to provide up to 80 simultaneous inputs.
- Scene memory allows instant changes for different bands or even different setups.
- Compression provided on all channels.
- Scene memories can be used for redundant failsafe operation.
- Excellent sonic and visual match for the MSR400, the MSR800W.
- Yamaha’s highly regarded VCM Channel Strip processors and REV-X YS Processing technology can be turned on to deliver output tailored to the specific requirements of the live environment.
- With these power amps’ built-in low and high-cut filters, setting up a subwoofer or feedback control and to deliver the optimum monitor sound.

Sample Application: Compact Digital Solution for 2-Band Events

Large Festival Featuring Two Bands

- Large music events featuring two or more bands can involve a large amount of sound reinforcement gear.
- Here’s a compact digital system that can handle up to 80 input channels in all while allowing easy switching between completely different band setups.
- The pair of 01V96V2 digital consoles used provide all the effects and dynamics processing you’ll need built-in, so you won’t even need outboard processor racks.

Sample Application: Full-Fledged Live SR and Recording

Good Reasons For Choosing Yamaha

- IM8-24 - To ensure faultless quality control, the IM8-series is produced and assembled at the same domestic plant as the PM-series, mainstay of Yamaha’s lineup of professional mixing consoles.
- Meticulously refined sound quality easily satisfies the exacting requirements of the professional environment.
- Newly-developed power amplifiers with 150-mm stroke length deliver the precision and accuracy required for specialized applications.
- With 1-knob compressors integrated into all mono channels, high-quality sound can be achieved easily and without the need for complicated settings or connections.
- Portable audio players and the like can be conveniently connected via the front panel’s 2TR IN jack.
- With all input channels capable of receiving microphone input and with 4 stereo input channels, X GROUP OUT channels, 4 AUX inputs, and 4 MATRIX OUT channels, the IM8-24 offers extensive I/O connectivity.
- External power supply maintenance console performance - dual power supplies can be used for redundant failsafe operation.

Example Application: Good Reasons For Choosing Yamaha

Digital Recording and Remixing of Live Sound

- IM8-24 - With 1-knob compressors integrated into all mono channels, a high-quality sound can be achieved easily and without the need for complicated settings or connections.
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- External power supply maintenance console performance - dual power supplies can be used for redundant failsafe operation.

Example Application: Digital Recording and Remixing of Live Sound
Festival
This system is designed for optimum sound coverage from a central stage surrounded by the audience. Special attention must be paid to monitoring in this type of situation, so each performer is provided with his or her own monitor speaker. The MG166CX console provides ample mixing and signal-processing capability, while dual P5000S power amplifiers driving four S115V (C115V) speakers on stands effectively cover the required area. The built-in SPX digital effects make it convenient and easy to add high-quality reverb and delay to band performances.

County Fair
County fair type events combine announcements with competitions and music, requiring substantial sound-reinforcement capability. And since the area to be serviced can be quite large, ample power and coverage are essential. In this system, FOH power is supplied by P5000S amplifiers feeding dual-driver speaker systems for high efficiency. A solid 2.8 kilowatts is provided for monitoring via four SM12V (CM12V) monitor speakers. The MG24/14FX console can easily handle the wide range of sources this type of event can entail.

Good Reasons For Choosing Yamaha
MG166CX
- Top-class SPX digital effect processor with 16 presets built in.
- Selected parts and precision manufacturing deliver sound quality and performance you’d expect from top-line professional mixers.
- Comprehensive output facilities for maximum system flexibility.
- Slim, lightweight design is portable while being extremely rugged and reliable.
- Yamaha 1-knob compressor on microphone inputs makes it easy to maximize the sonic impact of your mixes.
- Rack mountable.

MG24/14FX
- 16 microphone inputs plus four stereo line inputs and built-in digital SPX effects.
- Plenty of inputs and outputs for versatile system expansion.
- The MG24/14FX contain a powerful pair of Yamaha digital signal processors that provide a useful selection of 16 advanced digital effects.

Equipment List
- Mixer MG166CX 1
- Power Amp P5000S 2
- Monitor Speaker SM12V (CM12V) 4

Equipment List
- Mixer MG24/14FX 1
- Power Amp P5000S 2
- Monitor Speaker SM12V (CM12V) 4
Small Church

Designed primarily for background music and speech, this compact, easy-to-handle system is ideal for small houses of worship. It’s portable and easily re-configurable, so it can easily be adapted to a variety of programs, indoors or out. An MG124C mixer offers advanced mixing potential and versatility in a space-saving package, and a P3500S power amplifier delivers more than enough ultra-clean power to make the most of the S112V (C112V) house speakers.

High power capacity in a compact, lightweight enclosure. A perfect match for powered mixers or amplifiers with built-in YS Processing.

Mid-sized Church

A system like this is an excellent starting point for worship programs that involve live music as well as the spoken word. An MG166C console provides outstanding sonic quality and mixing flexibility. And an output chain consisting of P5000S power amps driving C115V (S115V) full-range speakers and CW118V (S118V) subwoofers will get the musical message across without compromise. Powered monitor speakers such as the MSR100 can be added if monitoring is required.

House of Worship Installation

In addition to handling church activities, this installation is designed to deliver the best possible sound for music and theatrical presentations as well. A 40-channel IMX-40 console ensures that plenty of I/O capacity is available for any type of the church may require. Four stage monitors are powered by a pair of P5500S amplifiers, while left and right mains with subwoofers plus flown center and side speakers deliver uniformly high quality sound throughout the house. The mono-fed center speaker is particularly important in achieving maximum clarity and intelligibility for sermons and speeches, while the subwoofers deliver maximum musical impact. The console’s matrix is used to provide sound for the foyer, dressing rooms, and other remote locations via a P2500S amplifier with output transformers and appropriate ceiling-mounted speakers. A computer running the supplied Cubase A4 digital audio workstation software can be connected to the console’s USB I/O ports for recording and playback as required.

System Chart

Sample Application

A small-scale system that takes advantage of the room’s natural ambience.

**System Chart**

- **Mic**: 1 - 6 channels
- **Line**: Four stereo
- **Scale**: Small town church
- **Audience**: Approximately 50 people

**Good Reasons For Choosing Yamaha**

MG124C
- Built-in channel compression delivers enhanced mix quality.
- Illuminated switches provide visual status feedback.
- Top-quality parts throughout, including reliable Neutrik connectors.
- Smooth faders facilitate precise level adjustment.
- Compact, lightweight console is easy to use anywhere.

P3500S
- Adds power for small-scale applications.
- An ideal match for Cub V series speakers.

**Equipment List**

- **Mixer**: MG124C 1
- **Speaker**: S112V/C112V 2

**Sample Application**

A small-scale system that takes advantage of the room’s natural ambience.

**System Chart**

- **Mic**: 1 - 10 channels
- **Line**: Four stereo
- **Scale**: Town church
- **Audience**: Approximately 100 people

**Good Reasons For Choosing Yamaha**

MG106C
- The MG106C provides up to 10 microphone inputs that can be used to handle a variety of changing situations—singer for mass, choir practice, noisy groups and more.

P3500S
- Adds power for small-scale applications.
- An ideal match for Cub V series speakers.

**Equipment List**

- **Mixer**: MG106C 1
- **Power Amp**: P3500S 2
- **Speaker**: C115V (S115V) 2

**Sample Application**

A small-scale system that takes advantage of the room’s natural ambience.

**System Chart**

- **Mic**: 1 - 4 channels
- **Line**: 4 stereo
- **Scale**: Installation for Church (Large), House of Worship
- **Audience**: 500 - 1,000 people

**Good Reasons For Choosing Yamaha**

IMX-40
- To ensure faithful quality control, the IMX series is produced and assembled at the same domestic plant as the PM series.
- Medically refined sound quality suits the needs of the demanding requirements of the professional environment.
- Newly-developed drivers with 100 mm stroke length deliver the precision and accuracy required for specialized applications.
- IMX’s 4-band compressor integrated into multi-channel processing becomes an easy task and a high-quality sound can be achieved without the need for complicated settings or instructions.
- Portable audio players and the like can be conveniently connected to the front panel’s USB terminal.
- With all input channels capable of receiving microphone input and with 4 stereo mixer channels, 2 GROUP OUT channels, 8 AUX busses, and 4 MATRIX OUT channels, the IMX-40 offers excellent I/O connectivity.
- External power supply maximizes console performance, dual-pwer supplies can be used for redundant fail-safe operation.

**Equipment List**

- **Mixer**: IMX-40 1
- **Power Amp**: P5500S 2
- **Speaker**: C115V (S115V) 2
- **Monitor Speaker**: CM15V 4
- **Subwoofer**: CW118V (S118V) 2
- **Microphone**: CM12V 4
- **Moons**: ST OUT 2

**Sample Application**

A full-fledged sound reinforcement system for mid-size live performances.

**System Chart**

- **Mic**: 1 - 4 channels
- **Line**: 4 stereo
- **Scale**: Installation for Church (Large), House of Worship
- **Audience**: 500 - 1,000 people

**Good Reasons For Choosing Yamaha**

IMX-40
- To ensure faithful quality control, the IMX series is produced and assembled at the same domestic plant as the PM series.
- Medically refined sound quality suits the needs of the demanding requirements of the professional environment.
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**Equipment List**

- **Mixer**: IMX-40 1
- **Power Amp**: P5500S 2
- **Speaker**: C115V (S115V) 2
- **Monitor Speaker**: CM15V 4
- **Microphone**: CM12V 4
- **Moons**: ST OUT 2

**Sample Application**

A full-fledged sound reinforcement system for mid-size live performances.
The term “PA” traditionally stands for “Public Address,” and “PA System” refers to an electronic system for amplifying the voice of a speaker addressing a large crowd or people distributed throughout a large building. These terms are not only often applied to the main amplification system at events and concerts as well, although such systems are sometimes called “sound reinforcement systems,” or simply “sound systems.”

The main functions of a PA or sound reinforcement system are summarized below:

**Tips 1**

### PA Basics

- **Input**
  - The sound from acoustic sound sources such as speech or singing, drums, pianos, acoustic guitars, etc. are connected to the mixer via their separate microphones. Microphones are connected to the mixer to make the signal is amplified for the audience. These inputs are labeled as “MIC” for microphone inputs or “LINE” for line inputs.

- **Mixer Essentials**
  - **Direct Inputs**
    - Neutrik XLR type connectors. The MG102C allows connection of all but line signals, and require extra amplification.

- **Amplification**
  - The balanced program created by the mixer is sent to a power amplifier which then drives the speakers that actually deliver sound to the audience. Although separate power amplifiers can be used, it is often more convenient and cost-effective to use a powered mixer-

- **Delivery**
  - The output from electronic sources such as recording devices or other RIAA equalization facilities.
  - A mid-size system to complement important celebrations such as weddings or families who enjoy live music at home. Although an EMX312SC driving a pair of S115V (C115V) speakers for FOH, and an SM12V (CM12V) for monitoring should be quickly set up when needed. The perfect setup for solo performances at home.

### Live Music at Home

Here’s a system that will be appreciated by individuals or families who enjoy live music at home. Although an electronic keyboard and just a couple of microphones are shown, this setup can handle quite a bit more. The MG124CX console will handle up to 12 inputs with top-quality effect processing built-in, and a pair of MSR100 powered speakers put out sound adequate for all but the most spacious living rooms.

### Wedding Ceremony

Two elements essential to any wedding (in addition to the bride and groom) are speech and music. This system is ideal when the joyous mood of the moment needs to be conveyed to a fairly large group of guests. In most cases, just a couple of microphones are sufficient, and an electronic keyboard such as one of Yamaha’s superlative MOTIF series can function as pipe organ, piano... just about any instrumentation you need. An EMX312SC driving a pair of S115V (C115V) speakers for FOH, and an SM12V (CM12V) for monitoring should cover the sound delivery requirements.

### Equipment List

**Sample Application**

**Source**

- **System Chart**
  - **REC OUT**
    - These outputs allow you to connect the programmed signals from outside a mixing device to the monitor system.
  - **RETURN**
    - This sends the processed signal returned from an external processing device to be mixed back into the program signal.
  - **SEND**
    - The output signals of the mixer are assigned to the output signals of the monitor system.

- **Microphones**
  - 

- **Speakers**
  - 

- **Mixers**
  - 

- **Cables**
  - 

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**Good Reasons For Choosing Yamaha**

- **Excellent sound quality**
  - Yamaha’s renowned SPX effects are built in.

- **Compactness**
  - EMX312SC driving a pair of S115V (C115V) speakers for FOH, and an SM12V (CM12V) for monitoring should cover the sound delivery requirements.

- **Ergonomic design**
  - The EMX312SC is a compact 100-watt powered speaker that can be quickly set up when needed.

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**Sample Application**

**Source**

- **System Chart**
  - **REC OUT**
    - These outputs allow you to connect the programmed signals from outside a mixing device to the monitor system.
  - **RETURN**
    - This sends the processed signal returned from an external processing device to be mixed back into the program signal.
  - **SEND**
    - The output signals of the mixer are assigned to the output signals of the monitor system.

- **Microphones**
  - 

- **Speakers**
  - 

- **Mixers**
  - 

- **Cables**
  - 

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**Good Reasons For Choosing Yamaha**

- **Excellent sound quality**
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- **Compactness**
  - EMX312SC driving a pair of S115V (C115V) speakers for FOH, and an SM12V (CM12V) for monitoring should cover the sound delivery requirements.

- **Ergonomic design**
  - The EMX312SC is a compact 100-watt powered speaker that can be quickly set up when needed.
2.Tips

Tips 2

Although a PA system’s mixer, amplifiers and speakers are indispensable, so are the cables and connectors that get the system’s signals from one place to another. In fact, choosing the right cables for the various system connections is of the utmost importance. Here’s a brief overview of the main types of cables and connectors you are likely to encounter.

1. Cable Types

Microphone/Line Cables

These are the cables used to connect microphones and electronic instruments to the mixer’s inputs, and connect the line-level signal from the mixer’s outputs to the system’s power amplifier(s). These types of cables are shielded to minimize noise pickup.

Unbalanced Cables

Unbalanced cables have just two conductors—generally a core and a shield. This type of cable is designed to handle low-level signals, and heat up and even over a fine (C)C (used for power connections.

Balanced Cables

Balanced cables have three conductors—two core conductors surrounded by a shield. This type of connection is designed to transfer the amplified signal from the mixer’s outputs to the system’s power amplifier(s). These are the cables used to connect microphones and electronic instruments to the mixer’s inputs, and connect the line-level signal from the mixer’s outputs to the system’s power amplifier(s). Balanced cables are shielded to minimize noise pickup.

Speaker Cables

Speaker cables are specifically designed to transfer the amplified signal from the power amplifier’s outputs to the speaker’s inputs. Speaker cables feature heavy-duty conductors designed to handle the high-power signal delivered by the power amplifier, and because of the much higher signal levels no shield is required.

2. Connector Types

Phone Connectors

The name “phone connector” (phone jack and phone plug) comes from the fact that these connectors were originally used in telephone switchboards. Phone connectors are also used in mono and stereo types. The stereo type is also sometimes referred to as a “TSX” (Tip, Ring, Sleeve). Phone connectors are also used for outputs and for input sources.

XLR-type Connectors

XLR-type connectors are primarily used for balanced connections. These connectors are the choice for most professional applications because they are inherently balanced and have a substantial feature: locking mechanism to prevent accidental disconnection. Balanced “XLR” type connectors are used for inputs and outputs. Male connectors are used for inputs.

RCA Pin Connectors

RCA pin connectors are used for all standard audio and video equipment. They are a type of unbalanced connector. The connectors are color-coded according to the type of signal they carry: white for the left audio channel, and red for the right audio channel.

Maximum Cable Length

The maximum usable length of a cable will depend on the output impedance of the device feeding it. The maximum length of cable that can be used with high-impedance outputs is about 15 meters. For low-impedance outputs, the maximum is about 20 meters with unbalanced cable or 80 meters with balanced cable. Longer cables will probably cause some signal degradation, particularly a loss of the high frequencies. The actual maximum length will also depend on the construction and quality of the cable.

Speaker Connectors

This is a relatively new type of connector that is becoming widely used for speaker connections in professional applications. This type of connector features easy connectors as well as high reliability.

Dinner Presentation

For formal or informal gatherings that require only a few microphones for speech and an electronic musical instrument or two, a system like the one shown here should be more than sufficient.

With the STAGEPAS 250M, you get a portable PA system comprising a stereo powered mixer, a high-quality speaker, and a microphone. As such, it is the ideal choice for speeches, dinner presentations, and other basic PA applications. The default mono specification of the STAGEPAS 250M is all you will need to amplify spoken word, and if you need to also handle stereo music playback or instruments, an MSR250 speaker can be added to realize a flexible stereo PA system.

Sample Application

An ideal small system for presentations to small groups

STAGEPAS 250M (MIXER)

 Moist settings and sound quality can be adjusted to best suit the current application using a SPEEDMIXER switch.

The sound can be further adjusted through the use of limiting, which suppresses excessive input signals, and compression, which adds punch to the mix.

Optional IW-10A Mic Stand Adapter allows microphone-stand mounting for easy placement and use.

• The mixer also includes a high-grade reverb effect, tailored for its professional-sounding ambience.

STAGEPAS 250M (INCLUDED SPEAKER)

As a 15 series, two-way, bass-reflex type speaker, the STAGEPAS 250M delivers a powerful, high-quality sound.

In order to suit all possible types of application, the speaker has been designed to be stand-mounted, to sit on its side in a barricade tower, or even mounted on a microphone-stand (sold separately).

MSR250

• Powerful Max. 250-watt output and outstanding sound quality from compact, lightweight powered speakers, ideal for front-of-house sound as well as monitoring.

• Speaker Stand Mountable (Speaker Stand is optional).

Gain is the key to level better sound

The role of a sound system is basically to mix and amplify multiple sources to the required level. Learning to set appropriate levels is vitally important to achieving the best possible sound quality.

1. The most important level adjustment is gain control. For the best mix and sound, the gain of individual channels should be as high as possible without distorting or clipping the signal. Some basic levels are given in the chart below.

2. Use the channel faders to set the balance between the input sources. Watch the level meters while doing this, and try to set the overall mix so that the meters just reach peak level on the highest peaks that will be encountered during the program.

Gain Setting Guide

Microphone: Speech: 50dB

Microphone: Soft Vocal: 40dB

Microphone: Loud Vocal: 30dB

Cassette/VTR: 10dB

Audience:

Small: 10dB

Medium: 20dB

Large: 30dB

Party and DJ

Mics: 1-2 channels

Line: 1 ~ 4 stereo

Scale: Large room or restaurant with dinner tables

Audience: Approximately 50 people

STAGEPAS 250M (MIXER)

MSR250

Microphones

Microphone Cable

Speaker Cable (Supplied Cable)

Microphone

STAGEPAS 250M (SPEAKERS)

STAGEPAS 250M (MIXER)

Equipment List

Portable PA System STAGEPAS 250M 1

Speaker MSR250 1

Sample Application

An ideal small system for presentations to small groups

STAGEPAS 250M (MIXER)

MSR250

Good Reasons For Choosing Yamaha

STAGEPAS 250M (INCLUDED SPEAKER)

• Remarkably compact and lightweight.

• Mirror settings and sound quality can be adjusted to best suit the current application using a SPEEDMIXER switch.

• The sound can be further adjusted through the use of limiting, which suppresses excessive input signals, and compression, which adds punch to the mix.

• Optional IW-10A Mic Stand Adapter allows microphone-stand mounting for easy placement and use.

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Microphone: Loud Vocal: 30dB

Cassette/VTR: 10dB

Audience:

Small: 10dB

Medium: 20dB

Large: 30dB

Party and DJ

Mics: 1-2 channels

Line: 1 ~ 4 stereo

Scale: Large room or restaurant with dinner tables

Audience: Approximately 50 people

STAGEPAS 250M (MIXER)

MSR250

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MSR250

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• Speaker Stand Mountable (Speaker Stand is optional).
Party and DJ

Outdoor Dance Event

This relatively large system is designed to deliver dynamic full-spectrum sound that will keep dancers and revelers on the floor. The high-capacity MG32/14FX console comfortably handles a wide range of sources and signal-processing, while four P5000S power amplifiers driving four S215V (C215V) speakers and SW118V (CW118V) subwoofers lay down sound the dancers will delight in.

Power amplifiers driving four S215V (C215V) speakers and SW118V (CW118V) subwoofers.

For Speech

For Music

Monitor sound is delivered via P3500S amps and SM12V (CM12V) monitor speakers, and graphic EQ for feedback control.

Acoustic Music

Acoustic instruments often need amplification to be heard and appreciated by more than a handful of people. Here’s a little system that is ideal for such applications, with room to spare. Plug your electric-acoustic guitars and microphones into an EMX212S powered mixer that directly drives a pair of BR10 speakers.

Conference Room

The system shown here can deliver both optimum speech intelligibility for meetings as well as quality music reproduction for breaks. The compact MG166C-USB mixer is a perfect choice for this type of application, with enough capacity and control features to cover just about any conceivable situation. This system allows extra audience microphones to be provided, and Q&A sessions can be easily recorded to the computer.

Good Reasons For Choosing Yamaha

- Compact, lightweight, and portable.
- Built-in power for easy setup and superior portability.
- Plenty of power for a small venue.
- Up to 8 microphone inputs can handle multiple acoustic instruments.
- Superb vocal microphones.
- Plenty of power for a small venue.
- Built-in power for easy setup and superior portability.

Equipment List

- Mixer MG32/14FX 1
- Power Amp P5000S 2
- Speaker S215V (C215V) 4
- Monitor Speaker SM12V (CM12V) 4

Good Reasons For Choosing Yamaha

- Direct USB connection between mixer and computer allows easy, high-quality digital recording and playback using the bundled CUBASE AI digital audio workstation software.
- Illuminated switches and super-smooth faders contribute to the mixer’s professional operating feel.

Equipment List

- Mixer MG166C-USB 1
- Power Amp P5000S 2
- Speaker C115VA 2

Good Reasons For Choosing Yamaha

- Extra channel to handle the acoustic end.
- Four microphones on the stage provide an excellent sound balance.
- Great for meetings and presentations.

Equipment List

- Mixer MG166C-USB 1
- Power Amp P5000S 2
- Speaker C115VA 2

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- Extra channel to handle the acoustic end.
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Equipment List

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- Power Amp P5000S 2
- Speaker C115VA 2

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- Four microphones on the stage provide an excellent sound balance.
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Equipment List

- Mixer MG166C-USB 1
- Power Amp P5000S 2
- Speaker C115VA 2


**Sample Application**

### Small but powerful for lectures and addresses

**Source**
- EMX102C
- CD Player etc.

**Mixer**
- EMX206C

**Power Amp**
- EMX100S

**Speaker**
- BR15

**Equipment List**
- EMX102C 1
- EMX206C 1
- EMX100S 2
- BR15 2

**Good Reasons For Choosing Yamaha**
- EMX206C: Use USB connection between mixer and computer allows easy, high-quality digital recording and playback using the supplied CUBASE AI digital audio workstation software.
- EMX100S: Shaped switching and super-smooth faders contribute to the mixer’s professional operating feel. 
- Extra input channel capacity means that more microphones can be used whenever they are required.

### System Chart

- **Mic:** 1 ~ 16 channels
- **Line:** 2 ~ 4 stereo
- **Scale:** Large room or restaurant with dinner tables
- **Audience:** Approximately 50 people

### Equipment List
- **Mic:** BR15 2
- **Power Amp:** EMX5014C 1
- **Speaker:** BR15 2

**Good Reasons For Choosing Yamaha**
- EMX5014C: Versatile mixing capability and high power amplification built into a portable unit.
- Suitable power for large gymnasiums.
- Power of input channel to handle instruments for live music.
- One-touch Compressor helps to easily set up optimum microphone sound.
- Versatile equalization and built in SPX digital effects for extended creative control.
- GLL makes it easy to control feedback problems.

**EMX5014C**
- • Varies the mixing capability and high power amplification built into a portable unit.
- • Suitable power for large gymnasiums.
- • Power of input channel to handle instruments for live music.
- • One-touch Compressor makes it easy to set up optimum microphone sound.
- • Versatile equalization and built in SPX digital effects for extended creative control.
- • GLL makes it easy to control feedback problems.

---

**Lecture Hall**

Lecture hall sound systems require a surprising degree of functionality—in addition to microphones, there are tape and disc audio sources, audio from a video projector, and computer output sound for OHP presentations. The MG206C/USB mixer shown in this example is large and versatile enough to handle all of the above and more. And a pair of C115V (S115V) powered speakers delivers enough power and quality to project the sound to the highest tier in the room. This system allows extra audience microphones to be provided, and Q&A sessions can be recorded to the computer. Recorded material can be easily turned into podcasts for distribution.

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**Gymnasium**

In addition to sports events, the “gym” also serves as a venue for gatherings, meetings, and even movies. A mid-size system for sports and other gym events can be easily turned into podcasts for distribution.

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**Point of Sale**

There are a multitude of uses for small PA systems in markets and malls. A small mixer, a single microphone, and either the MSR100 or MS101III powered speaker are all you need for a basic system, but you could add a CD player or other music source for BGM as required. Yamaha’s 1-knob compressor can help to achieve maximum intelligibility and projection.

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**Simple Steps To Better Sound**

### Connection and power switching order

Although simple, the following points will help you to keep your speakers and sound gear in top condition for as long as possible.

**Connecting Cables**

1. Always make sure that all equipment is turned off when making connection.
2. Also make sure that all volume and level controls are set to “0” before turning on the power.
3. Power ON/OFF Switching
   - When turning the power on to your system, follow the procedure outlined below to prevent your speakers from the power surge that occurs when sound gear is switched on.
   1. Turn on any graphic equalizers until feedback begins, then back off a bit. Start with the graphic EQ microphone-input channel fader and then raise the master fader mixer levels up to a point just before feedback begins—raise the problem, use some graphic equalization. Begin by bringing the mixer levels up to a point just before feedback begins—raise the microphone-input channel faders and then raise the master fader until feedback begins, then back off a bit. Start with the graphic EQ controls set at “0” and, starting with the lowest frequency, raise each control a few dB. If no feedback occurs, return the controls to “0” or “2” at each frequency. If feedback occurs when you boost one frequency, cut that frequency by a few dB, and continue testing the remaining frequency bands. This procedure can be effective in preventing feedback in situations in which the microphones and monitor speakers must be used in close proximity.

---

**Simple Steps To Better Sound**

**Feedback control**

Piercing squeals of feedback can put a damper on even the finest performance. Feedback control is a vitally important part of live sound.

1. Check the relative positions of microphones and speakers—feedback is caused by sound from the speaker being picked up again by the microphones and “re-circulated.”
2. In most cases, feedback can be eliminated simply by adjusting the positions of the speakers and microphones. Hand-held microphones require extra care so that the performer doesn’t move into the “feedback zone.”
3. Use graphic EQ. If speaker and microphone positioning doesn’t solve the problem, use some graphic equalization. Begin by bringing the mixer levels up to a point just before feedback begins—raise the microphone-input channel faders and then raise the master fader until feedback begins, then back off a bit. Start with the graphic EQ controls set at “0” and, starting with the lowest frequency, raise each control a few dB. If no feedback occurs, return the controls to “0” or “2” at each frequency. If feedback occurs when you boost one frequency, cut that frequency by a few dB, and continue testing the remaining frequency bands. This procedure can be effective in preventing feedback in situations in which the microphones and monitor speakers must be used in close proximity.
A complete PA system designed from the start for portability and convenience

STAGEPAS 300
- Perfect for public speaking, vocalists, guitarists... just about any performance or event requiring portability and convenience combined with superior sound and versatility.
- Eight-channel powered mixer with four microphone and two stereo line inputs, 150W + 150W power, and digital reverb.
- High-performance two-way bass-reflex speakers double as convenient storage for mixer and cables... with enough room left over for microphones and other articles you might need.
- The powered mixer can be operated while mounted in the speaker cabinet, or separated for versatility and easy access.
- Optional BMS10A Mic Stand Adapter allows the mixer to be mounted on a mic stand.

Extra Power and Capacity for Larger Venues

STAGEPAS 500
- Dual 250-watt power amplifier can fill surprisingly large clubs or rooms, or project your sound over a considerable distance outdoors.
- Class-D power delivers superior sound quality as well as reliability in a remarkably compact unit.
- 10 input channels in all: four mono microphone/line inputs and three stereo line inputs. Switchable phantom power is provided for high-performance phantom-powered condenser microphones, and top-quality Yamaha SPX reverb is built in.
- Channels 1 and 2 feature LIMIT/COMP switches that let you apply either limiting or compression to those channels.
- STAGEPAS 500 speakers can be stand-mounted without standard adaptors.

An ideal choice for amplifying keyboards, guitars, and bass, Yamaha’s STAGEPAS series of single-speaker systems is also perfect for small-venue PA

STAGEPAS 150M
Keyboard players and drummers can use the Click Assign switches to route a metronome or source from a main PA mixer via channel 5/6 (or channel 7/8 on the 250M) to headphones and a STAGEPAS speaker. The system’s full-range speaker can be stood upright, laid on its side as a foldback monitor, or mounted on a speaker stand (using a separately-sold adapter) to suit all possible types of installation. And if necessary, an MSR100 speaker can be added to realize a stereo system.
- Flexible 8-channel Powered Mixer
- Detachable Powered Mixer
- 150 Watt Class D Power Amplifier
- Two-way Full-range Speaker System
- Built-in EQ and 1-bit Modulation Reverb
- MIC/LINE switches select microphone or line level input matching for channels 1 and 2.

STAGEPAS 250M
Not only keyboard players and drummers, but also singers accompanying themselves on an electro-acoustic guitar are well served by this system. Boasting a full range extending into crystal-clear high frequencies, the STAGEPAS 250M can be stood upright, laid on its side as a foldback monitor, or mounted on a speaker stand to suit all possible types of installation. What’s more, an MSR250 speaker can be added to provide support for stereo playback.
- Versatile 10-channel Powered Mixer
- Detachable Powered Mixer
- 250 Watt Class D Power Amplifier
- Two-way Full-range Speaker System
- Built-in EQ and High-quality Digital Reverb
- Channels 1 and 2 feature LIMIT/COMP switches that let you apply either limiting or compression to those channels.
- Pole mount receptacle for direct speaker stand mounting.

Sample Application
- Comprehensive keyboard amp for keyboard players
- Busking amp for the solo performer

STAGEPAS 300
- PORTABLE PA SYSTEM
- PORTABLE MIXER
- PORTABLE SPEAKER
- 250W + 250W POWERED MIXER
- 250W POWERED SPEAKER
- PORTABLE SOLUTION
- PORTABLE MICS
- PORTABLE POWER SUPPLY
- PORTABLE MONITOR
- PORTABLE CABLES
- PORTABLE BAG

STAGEPAS 500
- PORTABLE PA SYSTEM
- PORTABLE MIXER
- PORTABLE SPEAKER
- 500W + 500W POWERED MIXER
- 500W POWERED SPEAKER
- PORTABLE SOLUTION
- PORTABLE MICS
- PORTABLE POWER SUPPLY
- PORTABLE MONITOR
- PORTABLE CABLES
- PORTABLE BAG

STAGEPAS 150M
- PORTABLE PA SYSTEM
- PORTABLE MIXER
- PORTABLE SPEAKER
- 150W + 150W POWERED MIXER
- 150W POWERED SPEAKER
- PORTABLE SOLUTION
- PORTABLE MICS
- PORTABLE POWER SUPPLY
- PORTABLE MONITOR
- PORTABLE CABLES
- PORTABLE BAG

STAGEPAS 250M
- PORTABLE PA SYSTEM
- PORTABLE MIXER
- PORTABLE SPEAKER
- 250W + 250W POWERED MIXER
- 250W POWERED SPEAKER
- PORTABLE SOLUTION
- PORTABLE MICS
- PORTABLE POWER SUPPLY
- PORTABLE MONITOR
- PORTABLE CABLES
- PORTABLE BAG
The Yamaha pro audio lineup includes everything you need to achieve professional sound in applications ranging from small events to large concerts. For serious power and system versatility, there is an excellent selection of independent components—mixers, amplifiers, equalizers, speakers. But when convenience and ease are the main criteria, there’s a good range of powered mixers and speakers to choose from as well. Whatever your live sound needs, Yamaha has the solution.

Product Lineup

### Mixer
- **Mixing Console**
  - MG10C
  - MG12/4C
  - MG16C
  - MG16C-USB
  - MG20C
  - MG20C-USB
- **Powered Mixer**
  - EMX215S
  - EMX315C
  - EMX515C
- **Professional Multi-Effect Processor**
  - SPX2000
- **Graphic Equalizer**
  - Q2031B

### Speaker
- **Power Amp**
  - P7000S
  - P5000S
  - P3000S
  - P2500S
- **Power Speaker**
  - MSR100
  - MSR250
  - MSR400
  - MSR800W
- **Power Monitor Speaker**
  - HS50M
  - HS80M
  - HS10W

### Tips 3
**Selecting PA Equipment**

The term “PA system” can be applied to an extremely wide range of equipment used to provide sound for an endless variety of applications. Here’s a quick guide for selecting the right equipment for your application.

### How Many Microphone Inputs?
- **Meetings, lectures, and other speech-based applications** may only require a small mixer with a few microphone inputs. Live concerts, on the other hand, may involve microphones for vocals, chorus, and a multitude of musical instruments. The number of microphone inputs you need is the first requirement you should consider when choosing a mixer.

### Feedback Control
- Although you might think of graphic equalizers as precision sound-shaping tools (and they are), one of their main uses in live-sound applications is feedback control.
- Graphic equalizers divide the audio spectrum into narrow frequency bands that can be individually adjusted to reduce feedback. Feedback can be prevented by reducing the level of the frequencies at which it is likely to occur.

### One Watt Per Person
- The power output of a PA system is determined by the power amplifier(s) used. So how much power do you need? A basic rule of thumb is to allow about 1 watt per audience member. If your audience will be about 100 people, plan on having about 100 watts of power available.
- The one-watt-per-person rule is only a guideline, however, and the actual power requirements will be affected by many factors including the natural reverberation of the venue and the efficiency of the speakers used. Outdoor applications require considerably more power than indoor events. The types of music being performed will also affect the amount of power required. In all cases, it’s a good idea to have some “reserve” power on hand.
- Another important power-related issue to keep in mind is speaker protection. Speakers have a maximum power-handling capacity that, if exceeded, will result in speaker damage. Speakers with a greater power-handling capacity than the power output of the amplifiers used should always be chosen for safety.

### Speaker Efficiency
- Clearly the power output of a sound system is an important consideration, for which output “units” is the most commonly used specification. But speaker efficiency also plays an important role in determining the “loudness” of the system.
- Yamaha specifies speaker efficiency by measuring sound pressure level one meter away from the cone of a speaker, driven by one watt of power (dB SPL/1Wom). For example, if 200 watts of power is supplied to the Yamaha SM10V speaker, which has an efficiency of 96 dB SPL/1Wom, the resultant sound pressure level will be 119 dB. But to achieve the same 119 dB sound pressure level with the SM10V, which has a higher efficiency of 108 dB SPL/1Wom, only 100 watts of power is required. An efficiency difference of only 3 dB means you have to either double or halve the amount of power provided to achieve the same sound pressure level (see below).

### The Meaning of “dB”
- If the smallest sound that can be heard by the human ear is given an arbitrary value of 1, then the loudest sound that can be heard is approximately 1,000,000 (one million) times louder. That’s too many digits to deal with for practical calculations, and so the more convenient “decibel” (dB) unit was created for sound-related measurements. In this system the difference between the softest and loudest sounds that can be heard is 120 dB. This is a non-linear scale, and a difference of 3 dB actually results in a doubling or halving of the loudness.

<table>
<thead>
<tr>
<th>Ratio</th>
<th>0.1</th>
<th>0.3</th>
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<tr>
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<td>60</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>140</td>
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* The decibel scale is a relative scale based on an arbitrarily chosen “0” value. In most audio equipment dB corresponds to a signal output of 0.775 V.
IM8 Series
MIXING CONSOLES

Solid Performance and Superior Sound for Professional Applications

The Yamaha IM8 series brings experience and know-how accumulated over 35 years in the production of industry-leading mixing consoles to bear in three mid-size consoles that cut no corners when it comes to overall performance and sonic quality. In addition to no-compromise design and development aimed at delivering the finest performance and most useful feature set available in this class, production and assembly are carried out at Yamaha’s own domestic facilities — the same factories where the legendary Yamaha PM series consoles are produced — to ensure unrelenting quality control throughout. Every inch of these extraordinary consoles is well thought out and built for a purpose. There are no unnecessary features, and nothing is out of place. All IM8 series consoles deliver a basic but plentiful complement of features plus high-transparency, high-resolution sound with true-to-life reliability. These are consoles for serious sound applications, and will provide excellent performance, sound, and control in permanent installations or on the road.

The IM8 Series
- IM-32: 32 mono + 4 group + 4 matrix + 1 stereo OUT buses
- IM-40: 40 mono + 8 group + 4 matrix + 1 stereo OUT buses
- IM-44: 44 mono + 8 group + 4 matrix + 1 stereo OUT buses

Main Features
- Professional look, feel, and performance for serious live sound applications.
- Domestic production and assembly ensure flawless quality control.
- Unique Yamaha one-knob compressor on all mono input channels.
- Comprehensive master section provides extensive routing and control versatility.
- Output matrix affords extra output flexibility, particularly for installations.
- Traditional Yamaha color coded controls for easy identification and operation.
- USB audio I/O allows direct digital recording and playback with the supplied Cubase AI audio-sequencing software.
- External power supply maximizes console performance — dual power supplies can be used for redundant failure operation.

Options
- PW8
  - POWER SUPPLY
- LA1L
  - GOOSENECK LAMP
- PSL1010
  - POWER SUPPLY LINK CABLE

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>MG124C</th>
<th>MG124CX</th>
<th>MG166CX</th>
<th>MG166CX-USB</th>
<th>MG204C</th>
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<td>0.1 % (THD+N)</td>
<td>0.1 % (THD+N)</td>
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<td>20W</td>
<td>35W</td>
<td>50W</td>
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</table>

C Models with Improved Utility

MG and MGx models feature an unrivaled range of applications. They may be the most basic models in the series, but they’re packed with features and performance that will let you create superior mixes with ease.

CX Models with SPX Digital Effects

With outstanding Yamaha SPX digital effects built-in, these models offer an extraordinary range of creative control over an extensive range of body, external effect tasks.

USB Makers for Live Recording

If live recording is an important aspect of your application, choose one of the USB models. They allow top-quality control while eliminating the need for bulky external effect racks.

MG Series
MIXING CONSOLES

An Impressive Lineup with a Common Theme—Unmatched Quality and Performance

Whether you have a mixing application that involves only a few channels, or up to 32 inputs with substantial signal routing versatility, Yamaha’s MG series offers a console that will give you the capacity, control, and performance you deserve. All models are remarkably compact and lightweight for superior handling and portability, but absolutely no compromises have been made in terms of features, performance, or durability. The MG series offer an extraordinary blend of technology: some inherited from professional Yamaha mixing consoles you’re likely to see in distinguished halls throughout the world, and some developed specifically to deliver optimum performance in the MG-console format. In either case these performance packed mixers are founded on a solid foundation of Yamaha’s proprietary and technological resources that crystallize to deliver features that really matter, and sound that is undeniably superior.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>MG124C</th>
<th>MG124CX</th>
<th>MG166CX</th>
<th>MG166CX-USB</th>
<th>MG204C</th>
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<td>16 x Mono + 4 x Stereo</td>
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<td>35W</td>
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<td>75W</td>
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</table>

### MG Series

**MG124C**
- **Channels:** 12 x Mono + 4 x Stereo
- **Phantom Power:** +48V
- **Input Hum & Noise:** –128dBu
- **Input Gain:** kHz (Shelving)
- **Output Levels:** –70dB @ 1kHz
- **Power Requirements:** 20W

**MG124CX**
- **Channels:** 16 x Mono + 4 x Stereo
- **Phantom Power:** +48V
- **Input Hum & Noise:** –128dBu
- **Input Gain:** kHz (Shelving), 2.5 kHz (Peaking)
- **Output Levels:** –70dB @ 1kHz
- **Power Requirements:** 35W

**MG166CX**
- **Channels:** 20 x Mono + 4 x Stereo
- **Phantom Power:** +48V
- **Input Hum & Noise:** –128dBu
- **Input Gain:** kHz (Shelving), 2.5 kHz (Peaking)
- **Output Levels:** –100dBu
- **Power Requirements:** 50W

**MG166CX-USB**
- **Channels:** 20 x Mono + 4 x Stereo
- **Phantom Power:** +48V
- **Input Hum & Noise:** –128dBu
- **Input Gain:** kHz (Shelving), 2.5 kHz (Peaking)
- **Output Levels:** –100dBu
- **Power Requirements:** 75W

**MG204C**
- **Channels:** 24 x Mono + 4 x Stereo
- **Phantom Power:** +48V
- **Input Hum & Noise:** –128dBu
- **Input Gain:** kHz (Shelving), 2.5 kHz (Peaking)
- **Output Levels:** –100dBu
- **Power Requirements:** 100W
MG32/14FX, MG24/14FX
MIXING CONSOLES
Serious Capacity for Live Sound & Installations

If your application is live sound reinforcement you won’t need racks of outboard gear to get the sound you need. There’s ready to handle all but the most ambitious sound-reinforcement setups. And with dual SPX digital MIXING CONSOLES MG32/14FX, MG24/14FX

Product Line Up

Yamaha Sound Reinforcement 2010

Facilities

Maximum Output Power @0.5% THD at 1kHz
Input Connectors
Output Connectors
Phantom Power
Graphic Equalizer
Digital Effects

L/R, MAIN (L+R)/MONITOR L/R, MAIN (L+R)/MONITOR L/R, MAIN (L+R)/MONITOR
Yes Yes Yes
Effect On/Off Effect On/Off Effect On/Off
Foot Switch

Power Requirements
120V AC 60Hz 270W, 240V AC 50Hz 270W

Specifications

EMX5016CF
POWERED MIXERS

The EMX5016CF combines 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.

EMX5014C
POWERED MIXERS

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 serve it’s worth in more permanent installations. It even can be re-voiced for vertical or angled operation, and mid 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 Yamaha, so you know it’s going to sound great.

01V96VCM
DIGITAL MIXING CONSOLE

The 01V96VCM delivers the performance and reliability of Yamaha’s acclaimed digital live sound and production consoles in a remarkably compact design that is perfect for home and professional applications where space is limited or maximum portability is required. It may be small but it can handle up to 40 inputs, and can be cascaded if more are required. And now, in addition to the many improvements that were implemented in the 01V96 Version 2, the 01V96VCM comes with a selection of Yamaha’s unsurpassed VCM effects built in. Of course the entire console – effects included – features 24-bit/96 kHz operation for ultimate resolution and sound quality that will satisfy the most demanding applications.

VCM Effects

This compressor and EQ effects faithfully captures the unique saturation effect of analog circuitry. Includes five models that employ VCM technology to simulate the sound and characteristics of classic compression and EQ units from the 70’s, fine-tuned by leading engineers, and featuring carefully selected parameters in a simple interface.

REVERB

These reverbs employ the latest “REV-X” algorithms, first introduced in Yamaha’s SPX9000 Professional Multi Effect Processor. The REV-X programs feature the richest reverbation and smoothest decay available, based on years of dedicated research and development.
An Interview with the EMX/MG 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 often used in almost all professional recording and live-sound applications, but we believe that this is the first time that it has been built into an analog mixer.
• About “box type” mixers having no insert connectors, so we’ve really been no convenient way to use them with. As a result, many users of this type of powered mixer have never used compression, but we wanted to have that option in the new EMX-series.

Reliability Without Compromising Performance

• The simplicity and aesthetic appeal of the design concept are quite impressive. Tell us about the design concept.
  - Simplicity was the main goal, particularly in the console-type P3500C and P2500C. We wanted to consolidate the entire control section onto a single board, so that we could more easily and more compactly control the sound output.

The Battle Against Heat

• Tell us about how you avoided heat problems in their compact enclosures.
  - Heat and high power output usually go hand in hand. In this case we were determined to reduce weight, so we designed a heat sink. And mechanical parts were formed to fit into the enclosure so that we could use the heat sink effectively.
  - 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.

Achieving Pure Sound Quality

• What measures have been taken to ensure optimum sound quality?
  - Our design and test engineers have been working on this for many years. We have made it possible to achieve a high-quality sound using computer simulation, and as a result we have achieved sound quality comparable to that of our best designs.

Achieving Optimum User friendliness

• What are the advantages of the new SPX2000 professional multi-effect processor compared to its predecessor, the SPX900?
  - The SPX2000 brings a new sound quality with the “REV-X” reverb algorithm and the 24-bit/96-kHz audio DSP. The new SPX2000 is faster, more flexible, and easier to use than the SPX900. In addition, the SPX2000 has more powerful digital effects, including 97 presets and 99 user presets, which can be downloaded from the Yamaha website.

P-Series POWER AMPLIFIERS

The P-Series power amplifiers have been designed specifically to deliver big, clean power output that will take full advantage of the quality and power handling capabilities of Yamaha speakers. The amps are equipped with YS Processing (Yamaha Speaker Processing) to deliver a signal that is optimally matched to those speakers as well. All models feature XLR and 1/4-inch TRS inputs, and Neutrik Speakon, phone plug, and five-way binding post outputs to make connections quick and easy. Other features include Yamaha’s exclusive BEZ Engine technology which delivers high performance with exceptional efficiency, selectable high- and low-pass filters for optimizing output to any loudspeakers, compact and durable 2U chassis, and variable speed cooling fans.

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>P7000S</th>
<th>P5000S</th>
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<td>20Hz – 20kHz (±1dB)</td>
<td>20Hz – 20kHz (±1dB)</td>
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<td>26.5kg</td>
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Product Line Up—Signal Processors & Power Amplifier

The SPX2000, while inheriting the standard interface and common programs from its predecessors, brings a new sound quality with the “REV-X” reverberation algorithm and the 24-bit/96-kHz audio DSP.

Yamaha Graphic Equalizers offer features and performance that meet today’s equalization needs whether they be in sound reinforcement, recording, A/V production, electronic musical instruments, broadcasting, music listening, or any other applications where precise sound tailoring is essential.

Yamaha Sound Reinforcement 2010
Club V Loudspeakers S-Series & C-Series

Great Sound To Go

If you’re tired of breaking your back for mediocre speaker performance, it’s time to look at the Yamaha Club V S-Series. Although they easily fold into and out of your compact sedan, they also deliver power and performance that makes them ideal for up to mid-sized sound reinforcement systems. And in the world of touring PA, there’s virtually no way you can cart gear around without bumping into the occasional immovable object, so you’ll appreciate the durable carpet covering—which also protects the interior of your vehicle from the speakers. Heavy-gauge steel grilles and steel protectors help protect your investment, too. In the Club V S-Series the refinements of generation V are taken to the next level, with larger enclosures for improved low-frequency performance, improved drivers for higher power handling, re-designed crossovers, stronger grilles, and dual Speakon® and 1/4” connectors.

Specifications

<table>
<thead>
<tr>
<th></th>
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<td>60Hz – 16kHz (-10dB)</td>
<td>60Hz – 16kHz (-10dB)</td>
<td>60Hz – 16kHz (-10dB)</td>
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</tbody>
</table>

Superior Sound on the Ground or Overhead

The Club V C-Series includes two “VA” flyable models that are ideal for installations. In fact, the entire series features foam-backed full-face perforated steel grilles and a sprayed finish that makes for elegant yet unobtrusive installations. Performance-wise, the C-Series speakers offer the same specs as the S-Series, with large enclosures for improved low-frequency performance, improved drivers for higher power handling, re-designed crossovers, stronger grilles, and dual Speakon® and 1/4” connectors.

Specifications

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<th>S115VA</th>
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<td>60Hz – 16kHz (-10dB)</td>
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</tr>
</tbody>
</table>

BR-Series Speakers

Great Sound and Easy handling

Whether you’re playing to a rock’n roll, jazz, or classic crowd, or delivering an important spoken message, Yamaha BR-Series speakers will ensure that you’re heard clearly. With the right powered mixer, or standard mixer and power amplifiers, these units can pack a heck of a wallop… make that a “high-quality wallop.” But when the show is done and it’s time to tear down the system and go home, you’ll appreciate these speakers a second time—they’re compact, remarkably light for their power and performance, and are designed for easy handling. All models, even the monitors, offer integral pole sockets for easy stand mounting.

Specifications

<table>
<thead>
<tr>
<th>BR-Series</th>
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<td>60Hz – 20kHz (-10dB)</td>
<td>60Hz – 20kHz (-10dB)</td>
<td>60Hz – 20kHz (-10dB)</td>
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</table>

Simple Steps To Better Sound

Why use monitor speakers?

While the purpose of the main or “FOH” (Front Of House) speakers is to deliver the sound to the audience, monitor speakers are necessary to provide a sound reference to the speakers or musicians performing on stage. This was sometimes also known as “foldback”. A monitor system allows performers to clearly hear what they are saying, singing, or playing so that they can perform with confidence and provide performances of the highest quality. It may not be an exaggeration to say that a good monitor system is the key to a successful concert or event.

SM12V | BR12M
**MSR Series Speakers**

**POWERED SPEAKERS**

Powered speakers offer many advantages over their passive counterparts, whether used on the road or in permanent installations. You don’t need separate amplifiers or the extra cables and connections required, so setup is fast and easy while reliability is significantly improved. The ability to plug directly into the speaker inputs can eliminate an entire rack of amplifiers in a road-case system. But the benefits go beyond mere convenience. Optimum matching of amplifiers and speakers involves much more than simple impedance figures, and a formidable engineering task given the vast number of choices available. The Yamaha MSR-series power amplifiers have been ideally tailored to their respective speakers in every way possible, delivering reproduction quality that only the most stringent match can achieve. There are also a significant number of Yamaha refinements that put these extraordinary powered speakers in a class of their own, including an original cabinet design that eliminates internal standing waves and a ferrite-cooled voice coil for superior stability and linearity.

The MSR250, MSR400 or MSR100 powered speakers can be used alone or in combination with the MSR800W powered subwoofer to create sound reinforcement systems from modest to massive that will sound superb while delivering the power and coverage you need for success in just about any venue or at any event. They look great too, and can be used in many permanent installations without requiring any cosmetic cover-up. They’re more than rugged enough for demanding tour applications as well.

**Portable, Compact Solutions for Superior Sound and Convenience**

**MSR100**  
**MSR250**  
**MSR400**  
**MSR800W**

**Specifications**

- **Power Input:** 100 W at 1 kHz.
- **Maximum Power:** 800 W
- **Finish:** 1" V.C. Compression Driver 1" V.C. Compression Driver 1.75" V.C. Compression Driver —
- **HF Driver:** —
- **Sensitivity:** only the louder speakers will be heard. Another option is to add a subwoofer to beef up the low end. By reinforcing the box you effectively boost overall output. This is a good strategy for improving the sound in outdoor setups. If you’re using Yamaha Club Series speakers, you can easily add a subwoofer adding an electronic crossover, or use the filters provided in the P-Series amplifiers.

**Portable Sound Quality from the Company that Knows Music Best**

**Pocket Recordings**

- **C4**  
  - **Features:** Amazing Combination of Quality and Convenience
  - **Recording Battery Life:** 57 g including battery 92 g including battery
  - **Accessories:** Accessories

- **W24**  
  - **Features:** Large Stereo Mic and Ultra-handly Wireless Remote Control
  - **Playback Speed (Not available on PCM):** Slow PB (50 - 100 %), Normal (100 %), Fast PB (100 - 200 %)

**Pockettrack**

- **C4/W24**  
  - **Features:** Powerful MONITOR SPEAKER SYSTEM
  - **Recording Battery Life:** 68h 00m

- **MS101III**  
  - **Features:** Pocketrecorders

**Yamaha Sound Reinforcement 2010**

**Product Line Up—SR Speakers**

**Product Line Up—SR Speakers and Pocket Recordings**
STAGEPAS series

PORTABLE PA SYSTEM

Combining high-performance power and accurate sound reproduction with remarkable versatility in a portable package, Yamaha’s STAGEPAS Series Portable PA Systems are fast becoming the standard for musicians and other PA users on the go.

These combination mixer/amplifier/speaker systems are exceptionally lightweight, portable and full-featured. Since virtually everything you need is in one, easy-to-use package, you can be set up and playing within a matter of minutes.

The series now includes the new single-speaker STAGEPAS 150M and 250M, which can be expanded to a stereo system by simply adding a second speaker. They can also function either as an ultra-portable PA system, or as a powerful keyboard amplifier—with sound expanded to a stereo system by simply adding a second speaker. These combination mixer/amplifier/speaker systems are exceptionally lightweight, portable and full-featured. Since virtually everything you need is in one, easy-to-use package, you can be set up and playing within a matter of minutes.

For Public Speakers

If you’re a speaker or giving presentations, you can instantly optimize the system settings with the special Speech mode—giving you maximum clarity for speech applications. Naturally, you can mix background music from a CD player or other source with the mic input.

For Bands

Multiple microphones and other sources are ideal for band rehearsals and performances. The STAGEPAS 500 is particularly well suited for many venues and events, and offers high power and performance. The STAGEPAS 150M and 250M are excellent systems for guitarists playing in smaller venues, since they deliver outstanding sound for the house as well as great monitoring sound for the house and other PA systems at large events.

For Singer/Vocalists

Vocalists will appreciate the built-in, high-quality reverb on all STAGEPAS systems. Plus, the 250M and 500 models feature a built-in limiter/compressor to let you dial in a smooth, punchy vocal sound. These compact, highly portable and easy-to-use systems can serve as your main system for small gigs, or as a sub-mixer for direct connection to the main mixer at large events.

For Guitarists

The STAGEPAS 150M and 250M are excellent systems for guitarists playing in small venues, since they deliver outstanding sound for the house and great monitor sound for the house as well as great monitor sound for the house and other PA systems at large events.

For Keyboard Players

Players need a simple, yet exceptionally high-quality keyboard amplifier and amplifier with the special Speech mode—giving you maximum clarity for speech applications. Naturally, you can mix background music from a CD player or other source with the mic input.

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that means they'll sound good on anything. And that is the ultimate goal of any reference monitor. We should also mention reference monitors will translate accurately to the widest possible range of reproduction systems... which is engineer-speak for the legendary Yamaha NS10M. Whether you're mixing for stereo or 5.1 surround, mixes that sound good on Yamaha HS series monitors will sound great on any other monitor you can rely on in modern production environments that handle any combination of digital and analog sources as well as studio and surround formats, while the more compact dimensions of the MSP Studio monitor makes it a ideal choice for smaller project studios and DAW-based production systems. The HAS Studio Subwoofer has been designed specifically for optimum matching with the MSP series speakers, and when added to either a stereo or surround system it can provide seamless integration for most environments.

## Specifcations

### Powered Monitor Speaker

<table>
<thead>
<tr>
<th>Speaker Components</th>
<th>MS670</th>
<th>MS770</th>
<th>SW10 Studio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Biamp 2-way</td>
<td>Biamp 2-way</td>
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</tr>
<tr>
<td>Frequency Response</td>
<td>LF: 45W, THD = 0.02 %, RL = 4</td>
<td>LF: 40W, THD = 0.02 %, RL = 4</td>
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