



SOUND REINFORCEMENT APPLICATION GUIDE 2007

A TRADITION OF
INNOVATIVE SOLUTIONS



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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 venues 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.



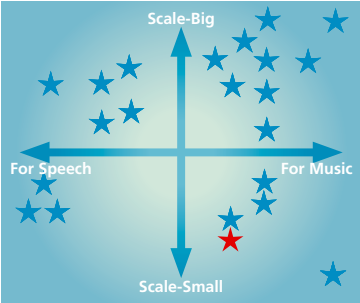
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Band Rehearsal 1

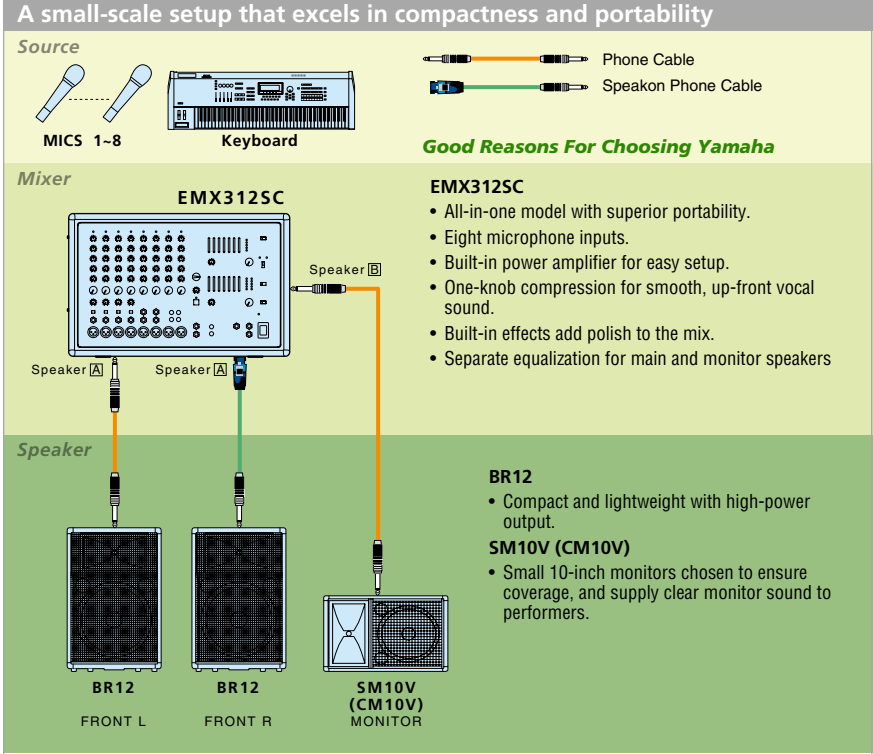
If you rehearse with real drums and other instruments at realistic levels, you'll need some vocal amplification for well-balanced, productive rehearsals. Even if the band is relatively quiet, vocalists need to practice with microphones and amplified sound if amplification will be used on stage. Compression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

System Chart



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

Sample Application

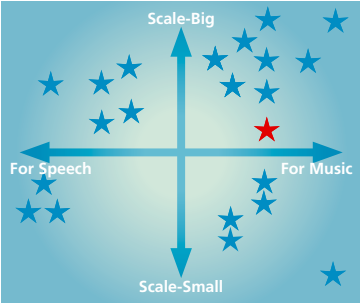


Equipment List		
Powered Mixer	EMX312SC	1
Main Speaker	BR12	2
Monitor Speaker	SM10V (CM10V)	1

Piano Bar

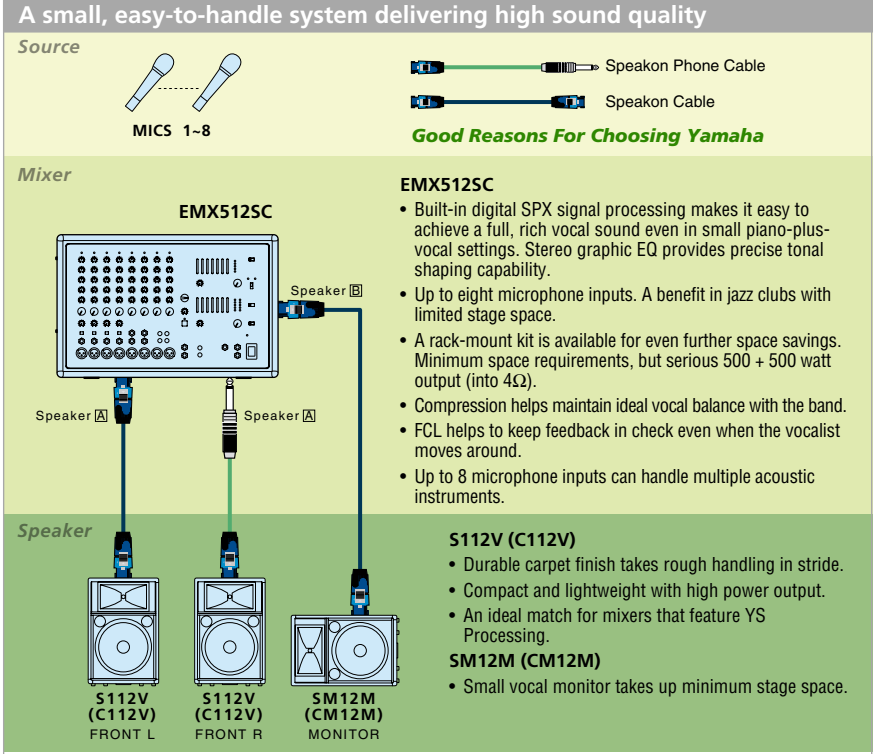
Here's a system that's ideal for small venues hosting musical entertainment ranging from solo pianists to jazz trios with a vocalist. The volume may be low, but vocalists need solid monitor sound to deliver their best performance. Compression can be a real advantage, too. In this example, an EMX512SC 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 ~ 8 channels
Line:
Four stereo
Scale:
Jazz club with small stage
Audience:
30 ~ 50 people

Sample Application

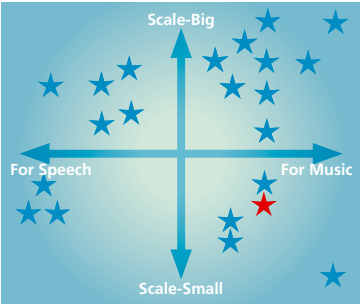


Equipment List		
Powered Mixer	EMX512SC	1
Main Speaker	S112V (C112V)	2
Monitor Speaker	SM12M (CM12M)	1

Band Rehearsal 2

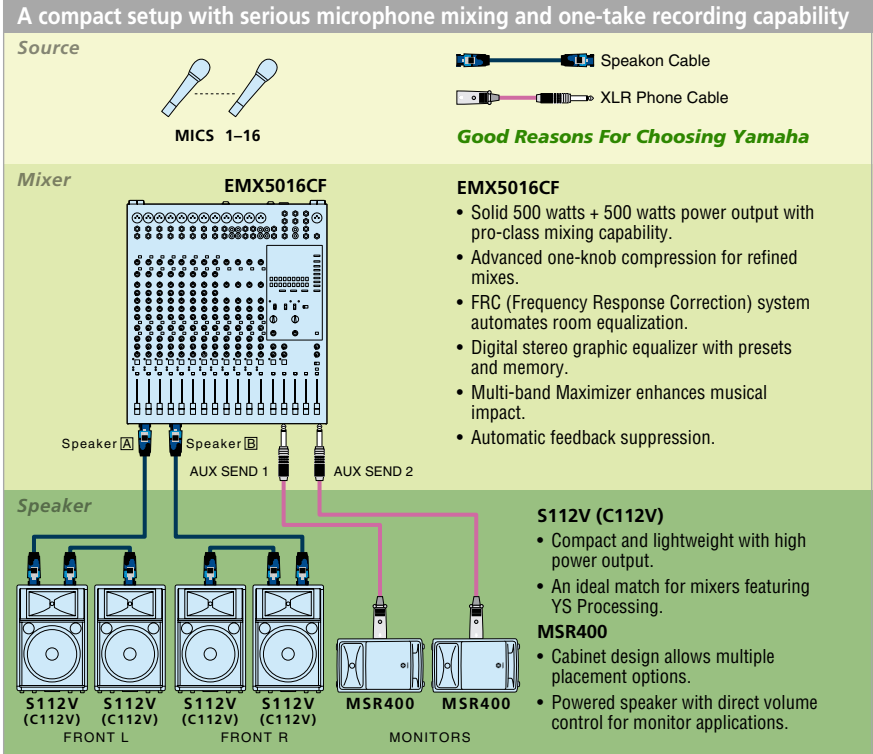
Rehearsals in larger rooms with many musicians require substantial sound support. Here's a system that will comfortably handle multiple sources – full drum-set mic setups, brass sections, and more – while powering four main speakers and two monitors. The EMX5016CF features 16 input channels and delivers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

System Chart



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

Sample Application

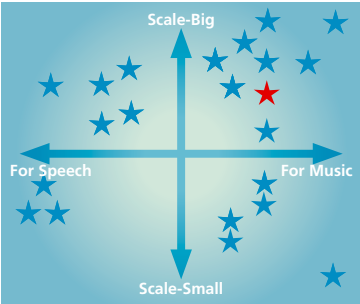


Equipment List		
Powered Mixer	EMX5016CF	1
Main Speaker	S112V (C112V)	4
Monitor Speaker	MSR400 (Powered)	2

Sports Bar

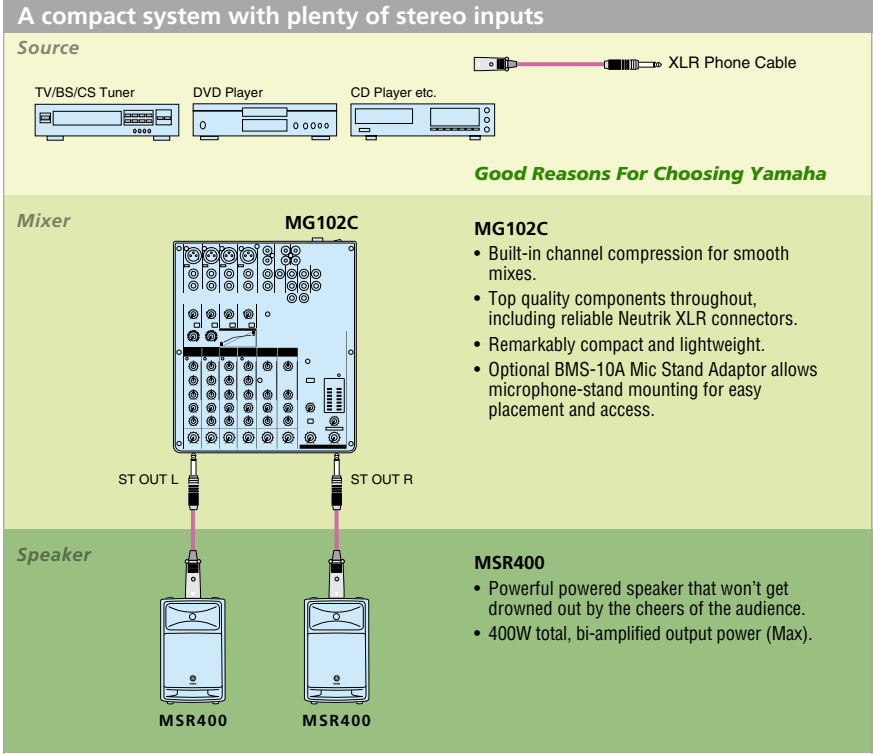
There's no denying that while much of the impact of a sports event is visual, sound plays a huge role as well. Sports bars that show live or recorded sports on 50" or larger screens have the visual aspect pretty much covered, now here's a sound system that can really bring the action to life. And when it's not sports time, it serves as an outstanding BGM system as well. An MG102C handles the required inputs with room to spare, and a pair of MSR400 powered speakers deliver big, dynamic sound.

System Chart



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

Sample Application

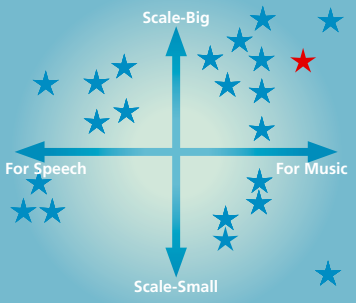


Equipment List		
Mixer	MG102C	1
Powered Speaker	MSR400	2

Small Stage

This small-but-serious system will cover small to medium-sized live venues with thoroughly professional quality and versatility. The MG24/14FX mixer offers plenty of input capacity plus dual high-performance signal processors built-in. FOH sound is delivered by P5000S and P7000S power amplifiers driving S115V (C115V) full-range speakers and SW118V (CW118V) subwoofers, respectively. For monitoring, a pair of SM15Vs (CM15Vs) is powered by a P5000S amplifier with a Q2031B equalizer for feedback control. An SPX2000 professional multi-effect processor could be added for additional vocal processing.

System Chart



Mic:
1 ~ 16 channels

Line:
Four stereo

Scale:
Medium-size live space with stage

Audience:
150 ~ 200 people

Sample Application

Medium-size system for powerful live sound

Source

MICS 1-16 Guitar Amp x 2 Bass Amp Drums Keyboard

Mixer

MG24/14FX

Signal Processor

SPX2000 Q2031B

Power Amp

P5000S P7000S

Speaker

S115V (C115V) SW118V (CW118V) SM15V (CM15V) MONITOR

Good Reasons For Choosing Yamaha

- 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
- SPX2000
 - Add full, natural reverb to the vocal sound with the top-rated new SPX model.
- Q2031B
 - Use both channels for feedback control and to deliver the optimum monitor sound.
- P5000S, P7000S
 - Choose the amplifiers renowned for stable power – the P Series! The P5000S drives the main speakers while the P7000S delivers extra power to the subwoofer.
- S115V, SW118V (C115V, CW118V)
 - The 15-inch S115V (C115V) woofers deliver plenty of sonic impact while the subwoofer puts out the low end needed for rock 'n roll fidelity. This is an FOH setup that will do justice to just about any band.
- SM15V (CM15V)
 - Large 15-inch monitors chosen to ensure coverage, and supply clear monitor sound to performers.

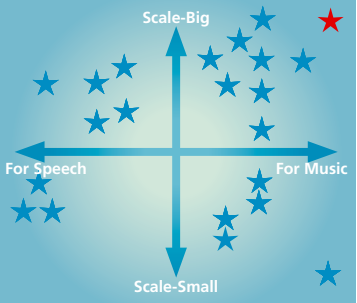
Equipment List

Mixer	MG24/14FX	1	Speaker	S115V (C115V)	2	Graphic EQ	Q2031B	1
Power Amp	P5000S	2	Woofer	SW118V (CW118V)	2	Digital Multi Effects	SPX2000	1
Power Amp	P7000S	1	Monitor Speaker	SM15V (CM15V)	2			

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 P3500S 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.

System Chart



Mic:
1 ~ 24 channels

Line:
Four stereo

Scale:
Large outdoor concert stage

Audience:
500 ~ 1,000 people

Sample Application

Large-scale support for long-running live events

Source

MICS 1-24 Guitar Amp x 2 Bass Amp Drums Keyboard x 2

Mixer

MG32/14FX

Signal Processor

SPX2000 Q2031B x2

Power Amp

P5000S x2 P7000S P5000S

Speaker

S215V (C215V) SW218V (CW218V) SM15V (CM15V) MONITOR

Good Reasons For Choosing Yamaha

- MG32/14FX
 - Ample input and output capacity provides plenty of margin for micing and monitoring even for large bands.
- SPX2000
 - Add full, natural reverb to the vocal sound with the top-rated new SPX model.
- Q2031B
 - Use both channels for feedback control and to deliver the optimum monitor sound.
- P5000S, P7000S
 - Choose the amplifiers renowned for stable power – the P Series! The P5000S drives the main speakers while the P7000S delivers extra power to the subwoofer. P5000S power amplifiers deliver ample power to SM15V (CM15V) monitors.
- S215V, SW218V (C215V, CW218V)
 - Taking the extra sound loss usually incurred in outdoor applications into consideration, the dual-woofer S215V (C215V) has been chosen to provide plenty of coverage. And the dual-woofer SW218V (CW218V) is used to match the performance of the main speakers.
- SM15V (CM15V)
 - Since the event is outside, monitors with large 15-inch woofers are used to ensure solid monitor sound.

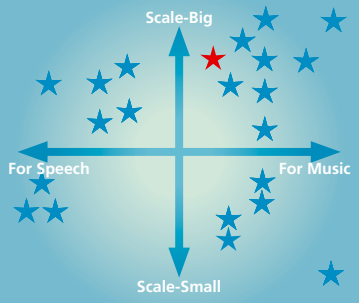
Equipment List

Mixer	MG32/14FX	1	Speaker	S215V (C215V)	4	Graphic EQ	Q2031B	2
Power Amp	P5000S	4	Woofer	SW218V (CW218V)	2	Digital Multi Effects	SPX2000	1
Power Amp	P7000S	1	Monitor Speaker	SM15V (CM15V)	4			

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.

■ System Chart



Mic and Line:
Max. 80 channels

Scale:
Large events or festivals featuring two or more bands. Plenty of capacity is also provided for announcements and commentary.

Audience:
300~500 people

■ Sample Application

Large Festival Featuring Two Bands

Source

Mixer

Signal Processor

Speaker

Good Reasons For Choosing Yamaha

01V96V2 x 2

- With the addition of an MY16 expansion card, two 01V92V2 consoles can be cascaded to provide up to 80 simultaneous inputs.
- Scene memory allows instant changes for different bands or even different songs.
- Compression provided on all channels.
- MY card slot allows flexible I/O expansion and selection.

Q2031B

- Feedback control and monitor EQ.

MSR400

- Powerful 400-watt output and outstanding sound quality from compact, lightweight powered speakers. Ideal for front-of-house sound as well as monitoring.

MSR800W

- A perfect sonic and visual match for the MSR400, the MSR800W subwoofer delivers up to 800 watts of power.

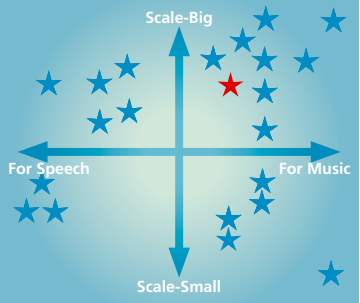
■Equipment List

Mixer	01V96V2	2	Monitor Speaker	MSR400	4
Graphic EQ	Q2031B	2	Subwoofer	MSR800W	1
Speaker	MSR400	2			

Digital Live Recording

01V96V2 provides an ideal solution for high performance digital live recording system. Onboard ADAT in/out allows high quality connection to computer via audio interface which has ADAT in/out port. You can record 24-bits at 96 kHz for pro-quality sound, and all the effects an processing you need are built right into the console so you won’t be overloading the computer’s CPU with processing tasks. The same system can be used for mixdown after the tracks have been recorded.

■ System Chart



Mic:
1 ~ 12 channels

Line:
Two stereo

Scale:
Central outdoor stage

Audience:
100 ~ 300 people

■ Sample Application

Digital Recording and Remixing of Live Sound

Source

Mixer

Power Amp

Speaker

Good Reasons For Choosing Yamaha

01V96V2

- Onboard ADAT in/out allows high quality connection to computer via audio interface.
- Professional 24-bit/96-kHz recording capability.
- Top-quality internal effects and signal processing minimizes load on the computer’s CPU.
- Compression provided on all channels.
- Scene recall capability for quick on-the-fly changes.

P5000S

- The P5000S is used to power the main speakers. YS Processing delivers optimum performance from the Club Series speakers.

S115V (C115V)

- These speakers cover the entire service area from four points on the temporary stage. 15-inch woofers are chosen to ensure solid coverage.

MSR400

- Powerful 400-watt output and outstanding sound quality from compact, lightweight powered speakers. Ideal for front-of-house sound as well as monitoring.

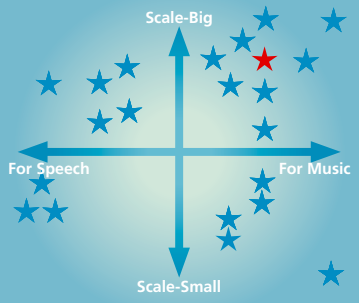
■Equipment List

Mixer	01V96V2	1	Speaker	S115V (C115V)	4
Audio Interface	GO46	2	Monitor Speaker	MSR400	2
Power Amp	P5000S	2			

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 MG16/6FX 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.

System Chart



Mic:
1 ~ 10 channels

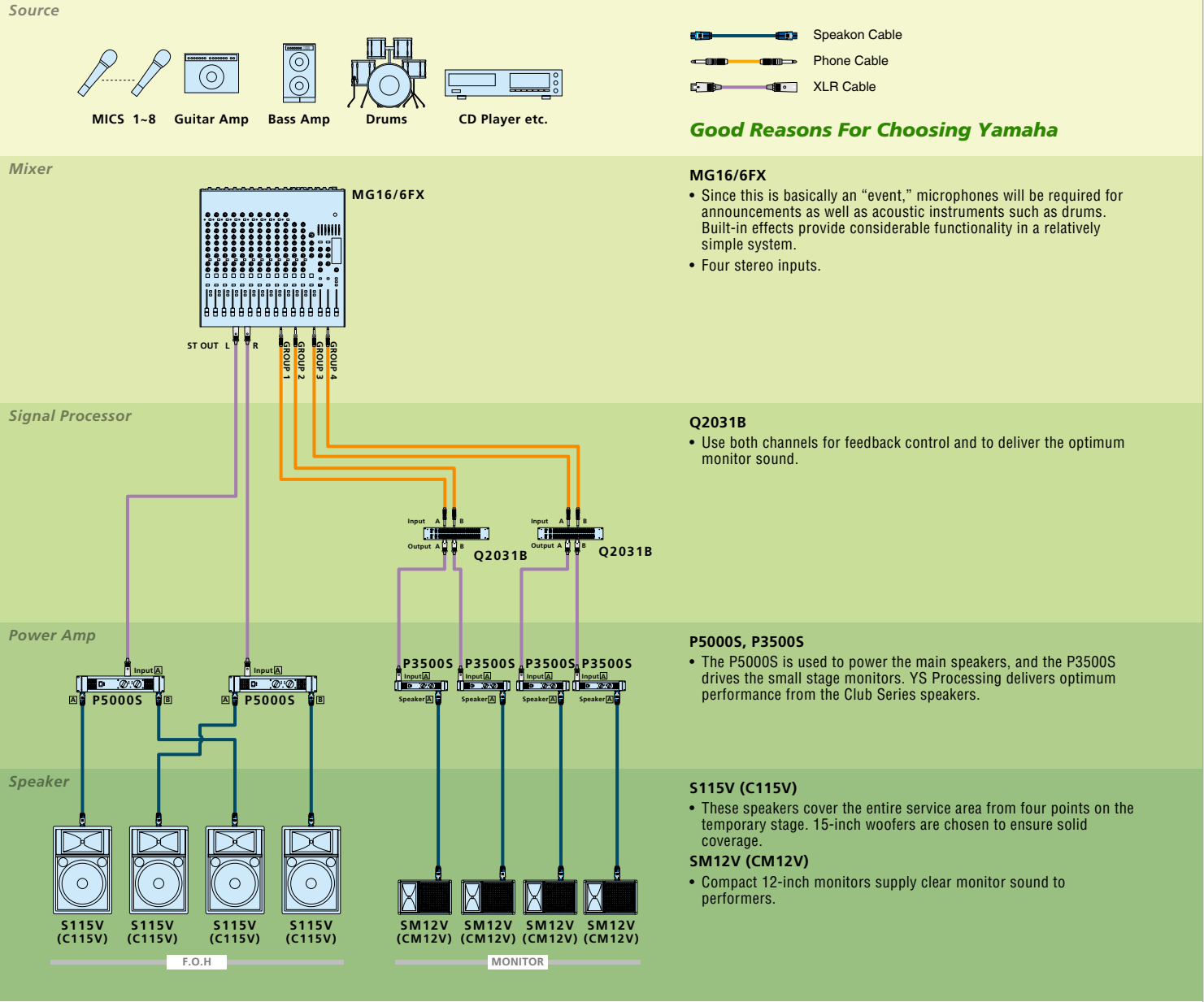
Line:
Four stereo

Scale:
Central outdoor stage

Audience:
100 ~ 500 people

Sample Application

Serving the entire area from a temporary central stage



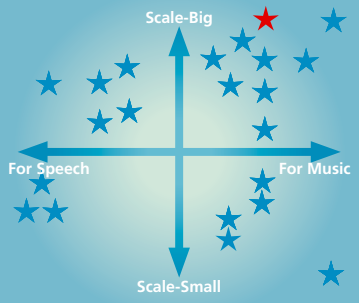
Equipment List

Mixer	MG16/6FX	1	Speaker	S115V (C115V)	4
Power Amp	P5000S	2	Monitor Speaker	SM12V (CM12V)	4
Power Amp	P3500S	4	Graphic EQ	Q2031B	2

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 MG32/14FX console can easily handle the wide range of sources this type of event can entail.

System Chart



Mic:
1 ~ 24 channels

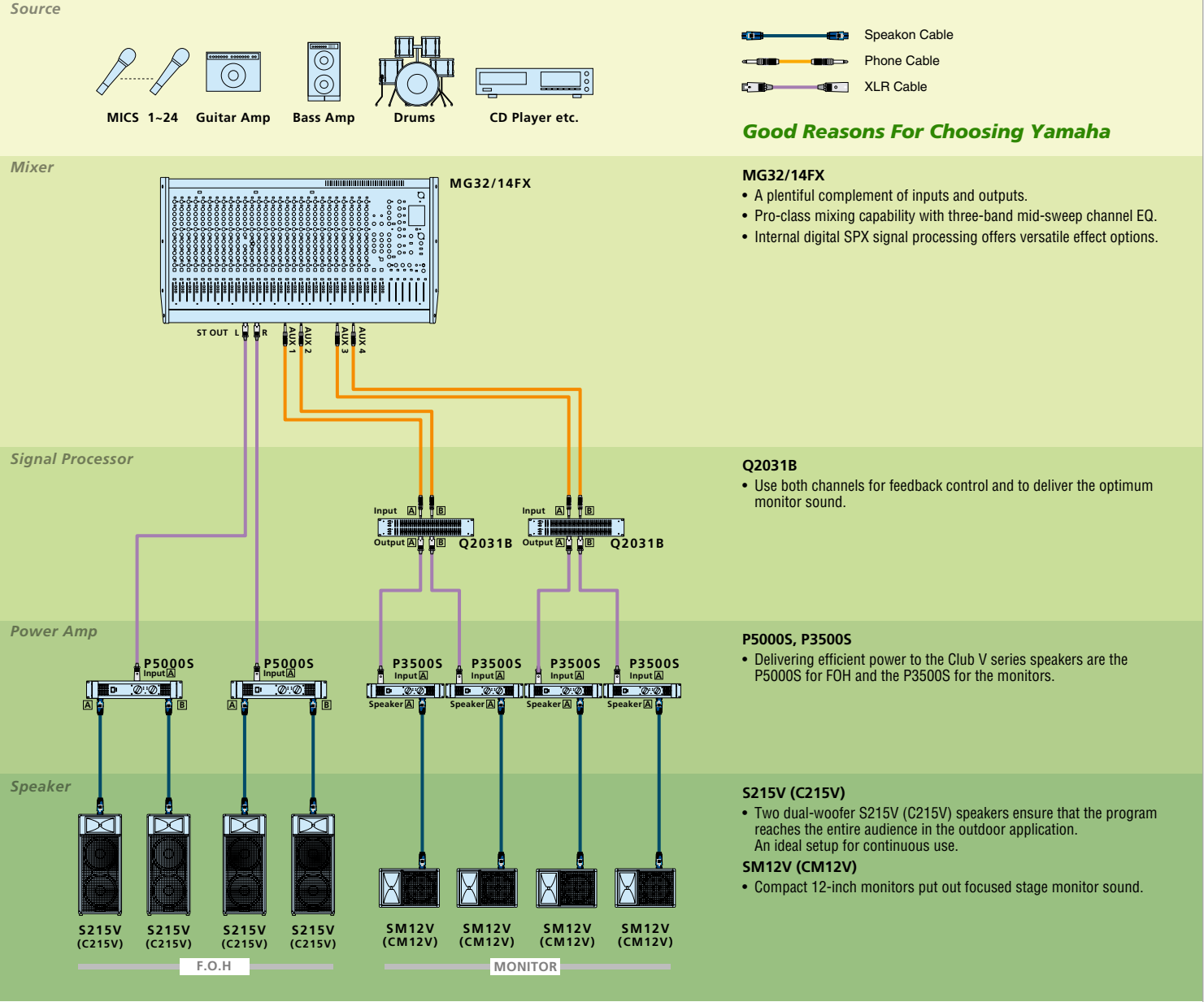
Line:
Four stereo

Scale:
Temporary outdoor stage. Contests being held in front of the stage with full-time announcements and commentator. Live music during breaks in the activities

Audience:
500 ~ 1,000 people

Sample Application

A large-scale system to handle everything from announcements to live bands



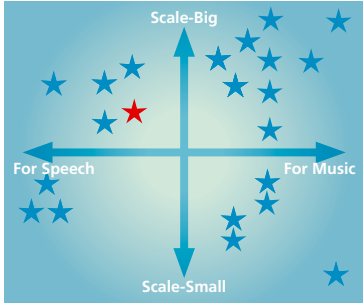
Equipment List

Mixer	MG32/14FX	1	Speaker	S215V (C215V)	4
Power Amp	P5000S	2	Monitor Speaker	SM12V (CM12V)	4
Power Amp	P3500S	4	Graphic EQ	Q2031B	2

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.

System Chart



Mic:
1 ~ 6 channels

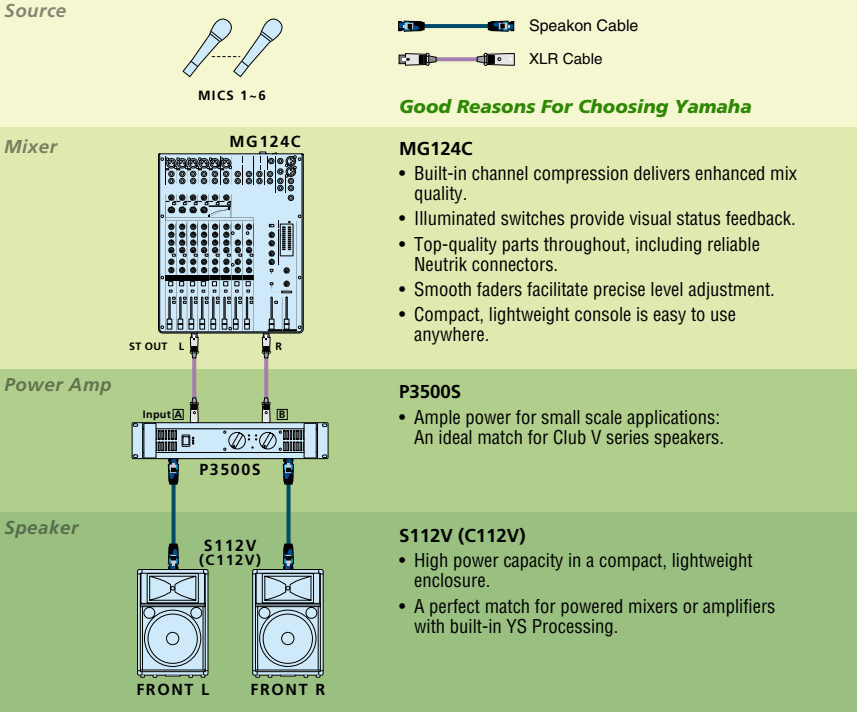
Line:
Four stereo

Scale:
Small town church

Audience:
Approximately 50 people

Sample Application

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



Speakon Cable
XLR Cable

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**
- Ample power for small scale applications: An ideal match for Club V series speakers.

- S112V (C112V)**
- High power capacity in a compact, lightweight enclosure.
 - A perfect match for powered mixers or amplifiers with built-in YS Processing.

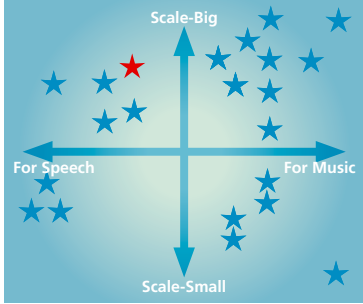
Equipment List

Mixer	MG124C	1
Power Amp	P3500S	1
Speaker	S112V (C112V)	2

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 MG16/4 or larger MG-series 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 (SW118V) subwoofers will get the musical message across without compromise. Powered monitor speakers such as the MSR100 can be added if monitoring is required.

System Chart



Mic:
1 ~ 10 channels

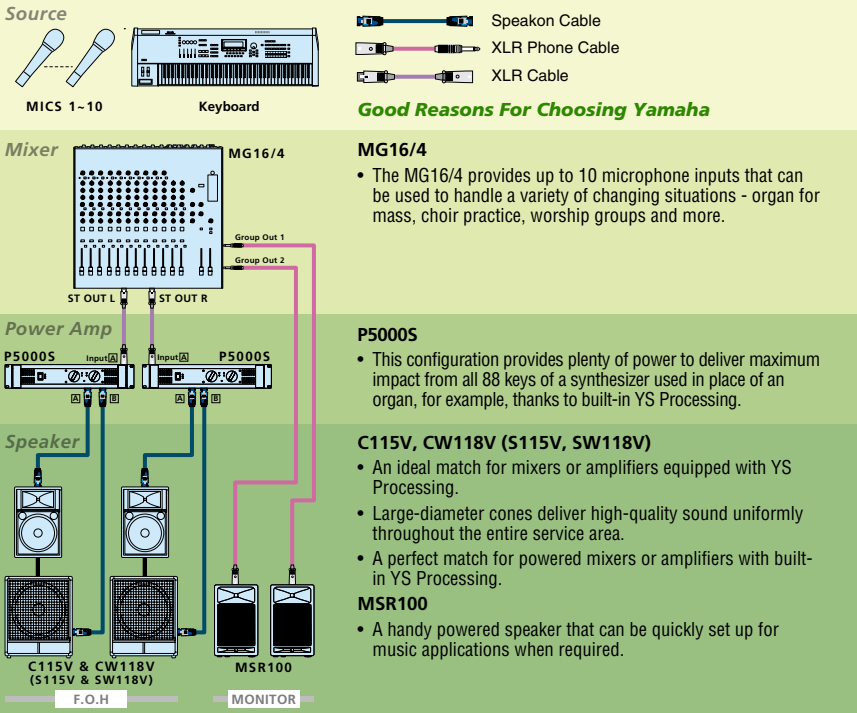
Line:
Four stereo

Scale:
Town church

Audience:
Approximately 100 people

Sample Application

Mid-sized church installation



Speakon Cable
XLR Phone Cable
XLR Cable

Good Reasons For Choosing Yamaha

- MG16/4**
- The MG16/4 provides up to 10 microphone inputs that can be used to handle a variety of changing situations - organ for mass, choir practice, worship groups and more.

- P5000S**
- This configuration provides plenty of power to deliver maximum impact from all 88 keys of a synthesizer used in place of an organ, for example, thanks to built-in YS Processing.

- C115V, CW118V (S115V, SW118V)**
- An ideal match for mixers or amplifiers equipped with YS Processing.
 - Large-diameter cones deliver high-quality sound uniformly throughout the entire service area.
 - A perfect match for powered mixers or amplifiers with built-in YS Processing.

- MSR100**
- A handy powered speaker that can be quickly set up for music applications when required.

Equipment List

Mixer	MG16/4	1
Power Amp	P5000S	2
Speaker	C115V (S115V)	2

Sub Woofer	CW118V (SW118V)	2
Powered Speaker	MSR100	2

Tips 1

PA Basics

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 days the term is 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:

Input

- The sound from acoustic sound sources such as speech or singing, drums, pianos, acoustic guitars, and electric guitar amplifiers is initially picked up using microphones. Microphones sources are input to the sound system's mixer via its microphone or "mic" inputs.
- The output from electronic sources such as CD players, synthesizers, and other electronic instruments are connected directly to the mixer via its line inputs.

Amplification

- The balanced program created by the mixer is sent to a power amplifier which boosts the program signal so that it can drive the system's speakers.
- Although separate power amplifiers can be used in just about any application, mixers with built-in power amplifiers and powered speakers are often a better choice especially when system simplicity and portability are required.

Mixing and Processing

- As its name implies, a "mixer" is a device which is used to mix and balance the signals from the various microphone and line sources to create the final program the audience will hear. The mixer usually also includes equalization facilities.
- Some mixers also include effects such as reverb or delay to allow more extensive control over the output sound.

Delivery

- The output from the power amplifier (whether separate or built-in) drives the speakers that actually deliver audible sound to the audience. The type and number of speakers required will depend on the size and configuration of the venue as well as the type of event being handled.
- In live music applications monitor speakers for the performers will also be necessary in most cases.

Mixer Essentials

The mixer is the core of any sound system. The basic elements of a mixer are described below, using the simple MG102C mixer as an example.

MIC

These are the mixer's microphone inputs, featuring top-quality Neutrik XLR type connectors. The MG102C allows connection of up to four microphones.

LINE

Electronic keyboards and other electronic instruments, effect devices, electric-acoustic guitars and other line-level devices can be connected to the LINE inputs. Both mono and stereo line inputs are provided, so synthesizers with stereo outputs, for example, can be connected to the stereo line inputs.

GAIN

Primarily used to adjust the input gain (sensitivity) of the microphone inputs. Microphone signals are much lower in level than line signals, and require extra amplification.

HIGH/MID/LOW (Equalizer) /HIGH/LOW

These equalization controls - somewhat similar to tone controls - can be used to refine the sound of each individual channel. Independent controls for the high, midrange, and low frequencies allow precise response shaping.

AUX

In addition to the main stereo program outputs, the mixer has "auxiliary" outputs that can be used to send the channel signals to external signal processors or monitor amps and speakers. Independent AUX controls are provided for each channel.

PAN

These controls position the corresponding channel's signal from left to right in the stereo sound field. "Pan" is short for "panorama" or "panoramic" control.

LEVEL

These are the main level controls for each of the mixer's channels. The MG102C uses rotary level controls. On larger mixers these are often linear "faders".

Pin-jack Connectors

These are line-level inputs provided specifically for connecting to standard CD players or tape decks and thus feature pin-jacks that are directly compatible with most equipment of this type.

2TR IN

These inputs are primarily used to receive the stereo signal from a CD player or other source for background music.

REC OUT

The REC OUT connectors can be connected to a stereo tape deck or other recording device to allow convenient recording of the mixer's stereo program.

STEREO OUT

These are the mixer's main stereo program outputs.

SEND

Sends the assigned signals to an external signal processing device or monitor system.

RETURN

Receives the processed signal returned from an external signal processing device to be mixed back in with the program signal.

METER

Allows accurate visual monitoring of the mixer's stereo signal levels.

ST

Adjusts the level of the mixer's STEREO outputs, and thus the volume of the sound heard from the system's speakers.

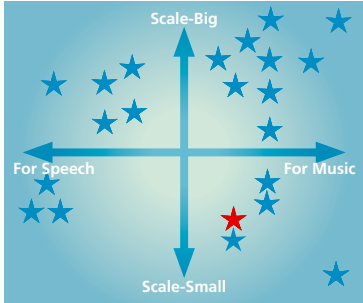
MONITOR/PHONES

This control adjusts the signal level monitored via both headphones and the mixer's MONITOR outputs.

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.

■ System Chart




Mic:
1 ~ 6 channels
Line:
Four stereo
Scale:
Living room
Audience:
10 ~ 15 people

■ Sample Application

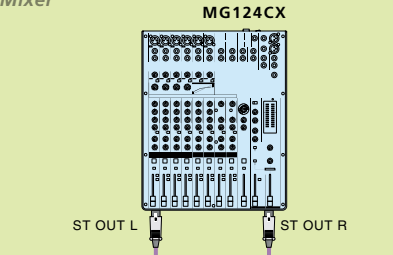
The perfect setup for solo performances at home

Source



MICS 1~6 Keyboard

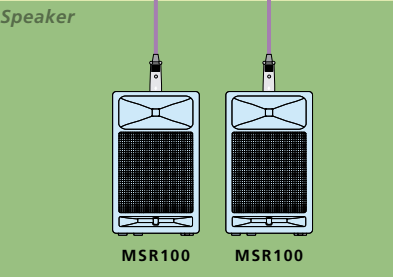
Mixer



MG124CX

ST OUT L ST OUT R

Speaker



MSR100 MSR100

Good Reasons For Choosing Yamaha

MG124CX

- Built in channel compression makes it easy to achieve great vocal or guitar sound.
- Renowned Yamaha SPX effects built in.
- Compact, lightweight design lets you make music just about anywhere.

MSR100

- Compact 100-watt powered speaker that can be quickly set up when needed.

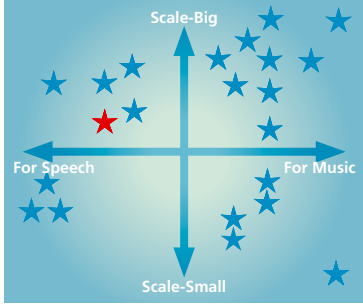
Equipment List

Mixer	MG124CX	1
Powered Speaker	MSR100	2

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.

■ System Chart

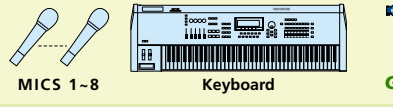


Mic:
1 ~ 8 channels
Line:
Four stereo
Scale:
Wedding chapel with central aisle
Audience:
20 ~ 30 people

■ Sample Application

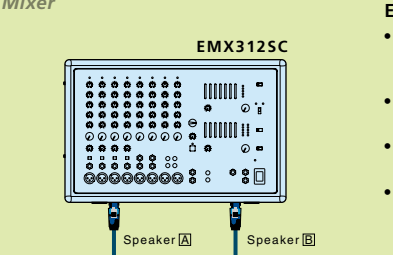
A mid-size system to complement important celebrations

Source



MICS 1~8 Keyboard

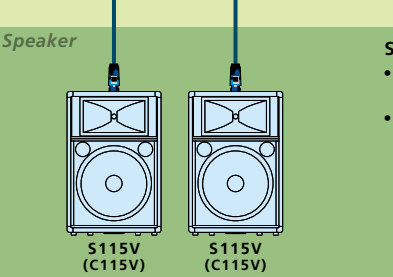
Mixer



EMX312SC

Speaker A Speaker B

Speaker



S115V (C115V) S115V (C115V)

Good Reasons For Choosing Yamaha

EMX312SC

- This powered mixer ensures that speeches, background music, and keyboard (organ) performances are heard by everyone present.
- Graphic EQ can be put to good use in adjusting for optimum sound in naturally reverberant chapel spaces.
- The microphone inputs can also be used for speeches by guests.
- FCL helps to keep feed back in check even when the M.C moves around.

S115V (C115V)

- The large-diameter 15" Club V series S115V (C115V) is chosen for its outstanding projection and presence
- An optimum match for the YS Processing equipped EMX series mixers

Equipment List

Powered Mixer	EMX312SC	1
Speaker	S115V (C115V)	2

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

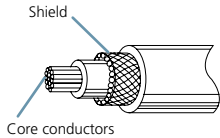
These are the cables used to connect microphones and electronic instruments to the mixer's inputs, and connect the line-level signal from the mixer's outputs to the system's power amplifier(s). These types of cables are shielded to minimize noise pickup.

* Never use this type of cable to connect the outputs of a power amplifier to speakers. Microphone/line cables are designed to handle low-level signals, and heat up and even pose a fire hazard if used for power connections.



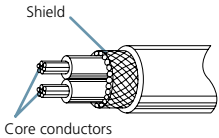
Unbalanced Cables

Unbalanced cables have just two conductors – generally a core and a shield. Electric guitar cables and most types of electronic instrument cables have this type of construction. Cables of this type are convenient to use and offer good noise rejection, but are inferior to balanced cable when it comes to noise-rejection with very low-level signals or long cable runs.

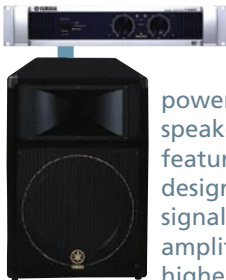


Balanced Cables

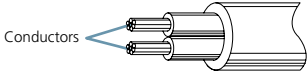
Balanced cables have three conductors – two core conductors surrounded by a shield. This type of connection was invented to overcome the noise pickup problems commonly encountered with unbalanced connections, and is the type used in most professional sound equipment. This type of cable can only be used with balanced connectors.



Speaker Cables



Speaker cable is 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.



* Speaker cable cannot be used in place of microphone/line cable because of its susceptibility to noise pickup.

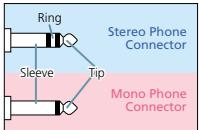
Maximum Cable Length

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 10 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.)

2. Connector Types

Phone Connectors

The name "phone connector" (phone plugs and phone jacks) comes from the fact that these connectors were originally used in telephone switchboards. Phone connectors come in mono and stereo types. The stereo type is also sometimes referred to as a "TRS" (Tip, Ring, Sleeve) phone connector, and these types can be used for headphones and other stereo signal connections, input/output insert patching, and balanced signals. Mono types are only used for unbalanced connections, and are commonly used for guitar and instrument cables.



RCA Pin Connectors

Most home-use audio and audio/video equipment use this type of unbalanced connector. The connectors are often color-coded according to the type of signal they carry: white for the left audio channel, and red for the right audio channel.



XLR-type Connectors

These connectors are primarily used for balanced connections. These are the connectors of choice for most professional applications because the connectors themselves are extremely durable and reliable, and some feature a locking mechanism to prevent accidental disconnection. Normally "male" connectors are used for outputs and "female" connectors are used for inputs.



Speakon Connectors

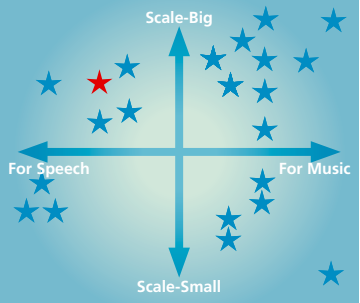
This is a relatively new type of connector that is becoming widely used for speaker connections in professional applications. This type of connector features easy connection as well as high reliability.



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. An EMX212S supplies the mixing and output power, and the sound is delivered to the crowd via a pair of BR15 speakers.

System Chart



- Mic:**
1 ~ 8 channels
- Line:**
Four stereo
- Scale:**
Large room or restaurant with dinner tables
- Audience:**
Approximately 50 people

Sample Application

An ideal small system for presentations to small groups

Source

MICS 1-8 Keyboard

Mixer

EMX212S

Speaker

BR15

Good Reasons For Choosing Yamaha

- The most user-friendly model in the EMX lineup. The choice of a mono model means that plenty of power is available for a variety of situations.
- FCL aids in achieving optimum microphone placement.
- Compact, lightweight design for easy setup.
- Can also handle background music or instruments.

BR15

- The BR15 has a standard phone-jack connector allowing easy connecting via a phone-jack speaker cable.

Equipment List

Powered Mixer	EMX212S	1
Speaker	BR15	2

1 Simple Steps To Better Sound

Gain is the key to level control

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.

Mixer

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.
If your mixer has peak indicators, gain should be set so that they light only occasionally on brief signal peaks.
2. Set the master fader about three-quarters of the way toward it's maximum setting.
3. 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	-50dB
Microphone:	Loud Vocal	-40dB
Cassette/VTR		-10dB
CD/LD		0dB

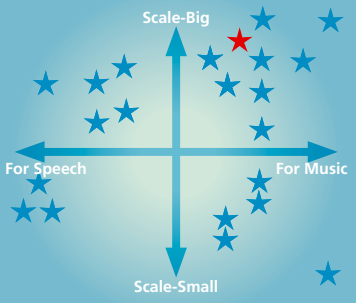
Power Amps

Turn the amplifier's attenuator or volume control up to the required level. The important thing to remember is that you should not move the mixer's master fader at this point. Use the power amplifier controls to set the overall level. In powered mixers, however, the master fader doubles as the power amp attenuator, and can be used to set the overall volume.

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

System Chart



- Mic:**
1 ~ 24 channels
- Line:**
Four stereo
- Scale:**
Public area with stage set up for music and a dance floor
- Audience:**
500 people - audience and dancers

Sample Application

Large-scale support for outdoor school festivals or dance events

Source

MICS 1-24 Guitar Amp Bass Amp Drums Keyboard CD Player etc. Turntable x 2

Mixer

MG32/14FX

Signal Processor

Q2031B

Power Amp

P5000S P5000S P5000S P5000S P3500S

Speaker

S215V (C215V) S215V (C215V) SW118V (CW118V) SM12V (CM12V) SM12V (CM12V) SM12V (CM12V) SM12V (CM12V)

Good Reasons For Choosing Yamaha

- Enough input and output capacity to cover two band setups on stage.
- Pro-class input/output configuration allows serious mixing and sound quality.
- Two built-in digital SPX signal processing stages provide plenty of signal processing versatility.

Q2031B

- Use both channels for feedback control and to deliver the optimum monitor sound.

P5000S, P3500S

- P Series power amplifiers provide ample high-quality power to deliver authoritative bass and drive multiple large speakers. The P5000S drives the main speakers surrounding the dance area, and the P3500S drives the subwoofer system that reinforces the low end, as well as the SM12V (CM12V) stage monitors.

S215V, SW218V (C215V, CW218V)

- Large speakers with dual 15" woofers surround the dance floor, and a dual 18" subwoofer supplies the bass to keep the dancers happily on their feet.

SM12V (CM12V)

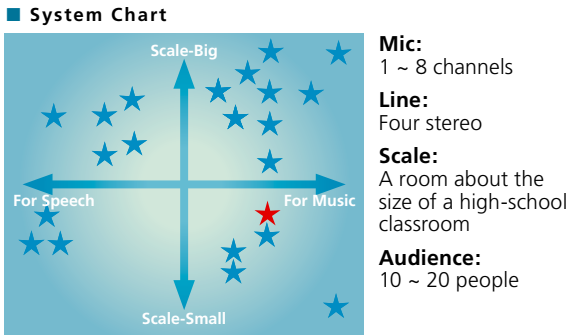
- Four monitors on the stage provide solid monitor sound that won't be drowned out by the excitement going on all around.

Equipment List

Mixer	MG32/14FX	1	Graphic EQ	Q2031B	2	Monitor Speaker	SM12V (CM12V)	4
Power Amp	P5000S	3	Speaker	S215V (C215V)	4			
Power Amp	P3500S	2	Woofers	SW118V (CW118V)	2			

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.



■ **Sample Application**

A small system with superior portability and handling ease

Source

MICS 1-8 Electric-Acoustic Guitar Phone Cable

Mixer

EMX212S

Speaker A Speaker B

Speaker

BR10

Good Reasons For Choosing Yamaha

EMX212S

- Built-in power for easy setup and superior portability.
- Plenty of power for a small venue.
- An idea choice for an acoustic duo – e.g. two acoustic guitars with acoustic pickups or microphones, and two vocal microphones.
- Equalizers make it easy to achieve great sound in any space.
- Compression helps maintain ideal vocal balance with the duo.
- FCL makes it easy to control feedback problems.
- Up to 8 microphone inputs can handle multiple acoustic instruments.

BR10

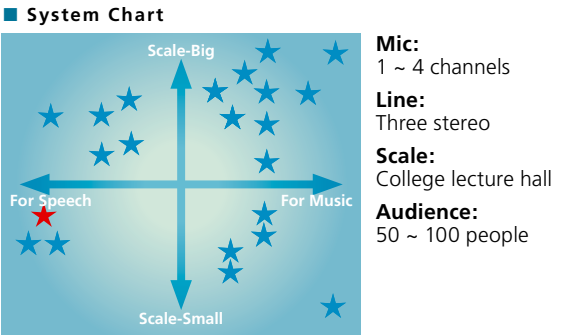
- Compact, lightweight, and portable.

■ **Equipment List**

Powered Mixer	EMX212S	1
Speaker	BR10	2

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 sound output for OHP presentations. The MG82CX mixer shown in this example is large and versatile enough to handle all of the above and more. And a pair of MSR400 powered speakers delivers enough power and quality to project the sound to the highest tier in the room.



■ **Sample Application**

Small but powerful for lectures and addresses

Source

MICS 1-4 CD Player etc. XLR Phone Cable

Mixer

MG82CX

ST OUT L R

Speaker

MSR400

Good Reasons For Choosing Yamaha

MG82CX

- Built-in channel compression helps to deliver lecture content with maximum presence.
- SPX effects can be used to enhance ambience as required.
- Compact, lightweight design means the mixer can be used anywhere and easily moved around as required.

MSR400

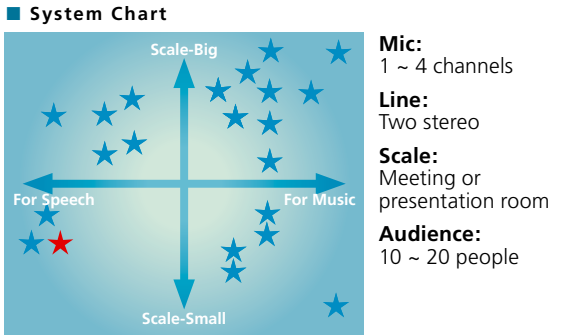
- High-efficiency, high-power performance delivers the sound to the back of the lecture hall.

■ **Equipment List**

Mixer	MG82CX	1
Powered Speaker	MSR400	2

Conference Room

The system shown here can deliver both optimum speech intelligibility for meetings as well as quality music reproduction for breaks. The compact MG102C mixer is a perfect choice for this type of application, with enough capacity and control features to cover just about any conceivable situation. The MSR100 powered speakers deliver superb sound quality and will directly accept a microphone input when a mixer isn't necessary.



■ **Sample Application**

The perfect small setup for meetings and presentations

Source

MICS 1-4 CD Player etc. Phone Cable

Mixer

MG102C

ST OUT L ST OUT R

Speaker

MSR100

Good Reasons For Choosing Yamaha

MG102C

- Built-in channel compression aids in achieving optimum intelligibility with fewer level fluctuations.
- Compact, lightweight design means the mixer can be used anywhere and easily moved around as required.
- Optional BMS-10A Mic Stand Adaptor allows microphone-stand mounting for easy placement and access.

MSR100

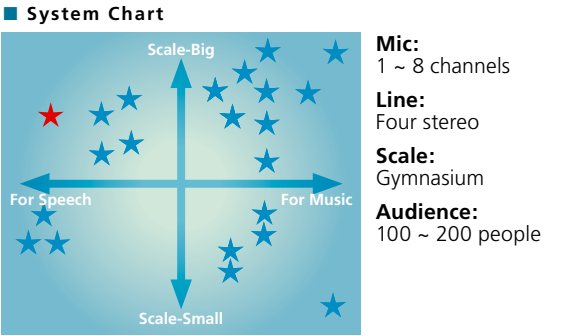
- 100-watt powered speaker is so small and light tht one person can easily carry two - on in each hand.

■ **Equipment List**

Mixer	MG102C	1
Powered Speaker	MSR100	2

Gymnasium

In addition to sports events, the "gym" also serves as a venue for gatherings, meetings, and even movies and concerts. Plenty of PA power and mix capacity is required to cover all possibilities. Here's a system that will do the job nicely without being excessive: an EMX5014C powered mixer driving a pair of BR15 speakers. Superb quality and useful capacity without a lot of extra equipment.



■ **Sample Application**

A mid-size system for sports and other gym events

Source

MICS 1-8 CD Player etc. Phone Cable

Mixer

EMX5014C

Speaker A Speaker B

Speaker

BR15

Good Reasons For Choosing Yamaha

EMX5014C

- Versatile mixing capability and high power amplification built into a portable unit.
- Sufficient power for even large gymnasiums.
- Plenty of input capacity to handle instruments for live music.
- One-knob Compression makes it easy to set up optimum microphone sound.
- Versatile equalization and built-in SPX digital effects offer extensive creative control.
- FCL makes it easy to control feedback problems.

BR15

- The same large-diameter 15" drivers that have made the Club Series speakers leaders in their class.
- Durable carpet finish withstands rough use.

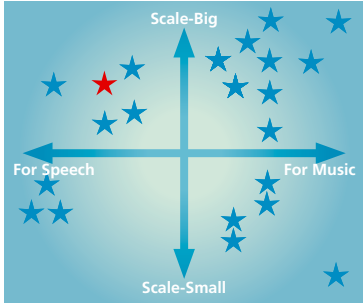
■ **Equipment List**

Powered Mixer	EMX5014C	1
Speaker	BR15	2

Point of Sale

There are a multitude of uses for small PA systems in markets and malls. Since such applications usually require only a single microphone and amplification, either the MSR100 or MS101III are good choices. Both accept direct microphone input, and the MSR100 can be stand-mounted for broader coverage.

System Chart




Mic:
1 ~ 8 channels
Line:
Four stereo
Scale:
Large room or restaurant with dinner tables
Audience:
Approximately 50 people


Sample Application

Small, simple, and portable for point-of-sale use

Source



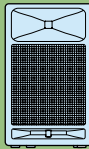
MIC



XLR Phone Cable

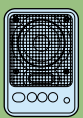
Good Reasons For Choosing Yamaha

Speaker



MSR100

OR



MS101 III

MSR100 or MS101III

- High-power 100-watt speaker with direct microphone and line inputs (MSR100).
- Plug a microphone directly into the front-panel mic jack (MS101III).
- Just one speaker and a CD player lets you provide background music.
- All you need is a power outlet and it's ready to use.

Equipment List

Powered Speaker	MSR100 or MS101 III	1
-----------------	---------------------	---

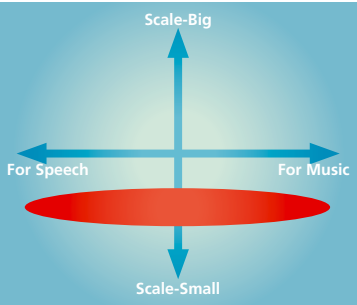
A complete PA system designed from the start for portability and convenience

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 Adaptor allows the mixer to be mounted on a mic stand.



System Chart




Mic:
Four inputs
Line:
Two stereo
Scale:
—
Audience:
10 ~ 50 people


Sample Application

A complete PA system designed from the start for portability and convenience


Source



MICS 1~4

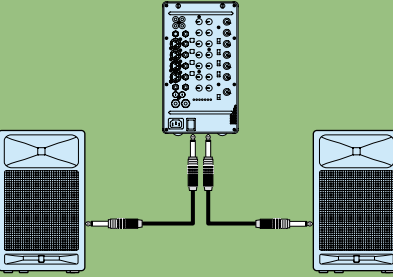


Keyboard



Good Reasons For Choosing Yamaha

Mixer & Speaker



STAGEPAS 300

STAGEPAS 300

- Portability and convenience.
- 150W + 150W powered mixer.
- Eight-channel mixer.
- Hi performance two-way bass-reflex speaker.
- Five meter speaker cables included.

Equipment List

Portable PA System	STAGEPAS 300	1
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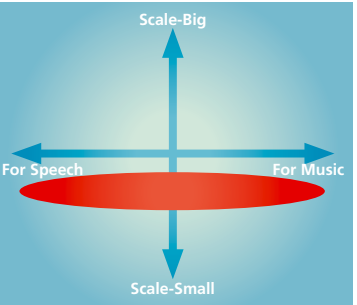
Extra Power and Capacity for Larger Venues

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.




System Chart




Mic:
Four inputs
Line:
Three stereo
Scale:
—
Audience:
50 ~ 100 people

Extra Power and Capacity for Larger Venues


Source



MICS 1~4

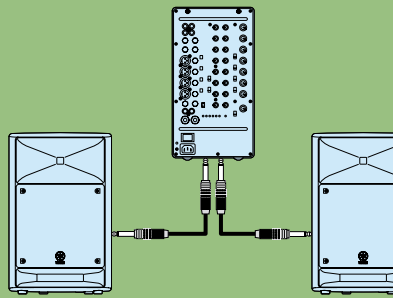


Keyboard



Good Reasons For Choosing Yamaha

Mixer & Speaker



STAGEPAS 500

STAGEPAS 500

- High power but portable and easy to use.
- Efficient, high-performance 250W + 250W amplifier.
- Versatile 10-channel mixer with phantom power.
- Compression/limiting and SPX reverb built in.
- STAGEPAS 500 speakers can be stand-mounted without standard adaptors.

Equipment List

Portable PA System	STAGEPAS 500	1
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2 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

Always make sure that all equipment is turned off when making connections. Also make sure that all volume and level controls are turned down to minimum before turning the power on.

Power ON/OFF Switching

When turning on the power to your system, follow the procedure outlined below to protect your speakers from the power surge that occurs when sound gear is switched on or off.

1. Turn on electric/electronic musical instruments and sources such as CD or cassette players
2. Turn on the mixer
3. Turn on any graphic equalizers
4. Turn on the power amp(s)

Reverse this procedure when turning the system off. See "Simple Steps To Better Sound – 2" for information on preventing speaker overload and "Simple Steps To Better Sound – 3" for feedback control hints.

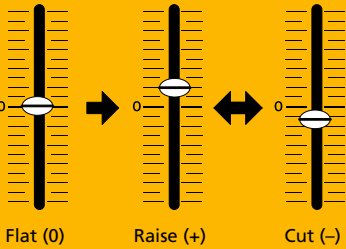
3 Simple Steps To Better Sound

Feedback control

Piercing squeals of feedback can put a damper on even the finest performance. Feed back 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 speakers being picked up again by the microphones and "re-circulated". In many 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".

2. 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 flat (set at "0") and, starting with the lowest frequency, raise each control a few dB. If no feedback occurs, return the controls to "0" as you test 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.



Product Line Up

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.

Mixer

Mixing Console
MG102C
MG124C
MG16/4

P. 24

Mixing Console
MG82CX
MG124CX
MG16/6FX
MG24/14FX
MG32/14FX

P. 24

Powered Mixer
EMX212S
EMX312SC
EMX512SC

P. 25

Digital Mixing Console
01V96V2

P. 26

Signal Processor

Powered Mixer
EMX5014C
EMX5016CF

P. 26

Professional Multi-Effect Processor
SPX2000

P. 28

Graphic Equalizer
Q2031B

P. 28

Power Amp

Power Amplifier
P7000S
P5000S
P3500S
P2500S

P. 28

Portable PA System
STAGEPAS 300
STAGEPAS 500

P. 33

Powered Monitor Speaker
HS50M
HS80M
Powered Sub Woofer
HS10W

P. 34

Speaker

Loud Speaker
S112V
S115V
S215V
C112V
C115V
C215V
C112VA
C115VA

P. 29

Monitor
SM10V
SM12V
SM15V
CM10V
CM12V
CM15V

Sub Woofer
SW115V
SW118V
SW218V
CW115V
CW118V
CW218V

Powered Speaker
MSR400
Powered Sub Woofer
MSR800W

P. 31

Powered Speaker
MSR100
MS101 III

P. 32

Loud Speaker
BR10
BR12
BR15

Monitor
BR10M
BR12M
BR15M

P. 30

Powered Monitor Speaker
MSP5 STUDIO
MSP7 STUDIO
Powered Sub Woofer
MSP10W STUDIO


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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.

Mixer



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.


Reverb for Vocals

- If your application involves singing, you’ll probably want to add some reverb and/or delay to the vocal sound. You could use external signal processing, but it might be more convenient to have this capability built right into the mixer. The EMX-series powered mixers and MG-series mixers such as the MG16/6FX feature a range of top-quality built-in effects.

Built-in Power

- Mixers with built-in power amplification are often simply referred to as “powered mixers.” The benefits of this type of mixer include easier setup and greater portability (you don’t have to carry and connect an external power amplifier). Powered mixers are recommended for applications such as meeting rooms or other situations in which the size of the room and audience remains constant.


Sound Processor (Graphic Equalizer)



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 as required. The Yamaha Q2031B, for example, is a stereo graphic equalizer that provides 31 bands of adjustment per channel. Feedback can be prevented by reducing the level of the frequencies at which it is likely to occur.
- EMX-series mixers feature built-in graphic EQ.

Power Amp




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 type of music being performed will also affect the amount of power required. In all cases, it is a good idea to have some “extra” power to spare.
- 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.

* Professional sound engineers will generally use larger-than-necessary power amplifiers running at considerably lower than maximum output to maximize sound quality. In such cases great care must be taken not exceed the speakers’ maximum power-handling capacity.

Speakers



Speaker Efficiency

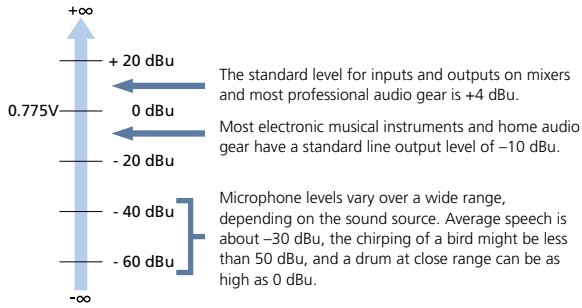
- Clearly the power output of a sound system is an important consideration, for which output “watts” is the most commonly used specification. But speaker efficiency also plays an important role in determining the “loudness” of the system.
- Yamaha specifies speaker efficiency by measuring sound pressure level one meter away from the cone of a speaker driven by one watt of power (dB SPL/1Wom). So 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 SM15V, which has a higher efficiency of 99 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 appropriate “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.

Ratio	0.01	0.1	0.5	1	2	4	5	8	10	100	1000
dB	-20dB	-10dB	-3dB	0dB	3dB	6dB	7dB	9dB	10dB	20dB	30dB

* The decibel scale is a relative scale based on an arbitrarily chosen “0” value. In most audio equipment 0 db corresponds to a signal voltage of 0.775 V.



22 Yamaha Sound Reinforcement 2007

Yamaha Sound Reinforcement 2007 23

MG Series
MIXING CONSOLES



Introducing
the New MG Mixers

The new additions to the MG series feature the same compact, lightweight design as the original models, and incorporate the latest generation of specially selected components for further refined performance and audio precision. They also now feature Yamaha’s innovative one-knob compressor for built-in dynamics control that further eliminates the need for external equipment and potentially troublesome connections. If you need a convenient analog mixer that can handle from 8 and 12 input sources and deliver pro-level sound, plus top-quality effects in the“ CX” models, the new MG models might be exactly what you’re looking for.

If you need a high-performance analog mixer for music production or sound reinforcement, the Yamaha MG Series may be the only place you need to look. Featuring eight models ranging in size from small 8- or 10-channel/2-bus units through mid-size 12- or 16-channel/4- or 6-bus models right up to very flexible 24- and 32-channel/14-bus types with an impressive selection of built-in effects, the MG series offers a console for any size application. There have been no compromises. These mixers are built for great sound, total control, and superior reliability. In fact, they undergo the same rigorous quality and reliability tests as our world-class PM-series mixing consoles. But, by taking full advantage of the latest Yamaha technology and manufacturing techniques, we have been able to pack these superlative mixers with more value than you’ll find anywhere else. In short, they offer extraordinary performance and mixing power at remarkable prices.



Superior Sound &
Control In Any Application

Specifications

	MG102C	MG82CX	MG124C	MG124CX
Total Harmonic Distortion	0.1 % (THD+N) +14 dBu, 20Hz – 20kHz, Input Gain Control at minimum (ST OUT)			
Frequency Response	-3, 0, +1dB 20Hz – 20kHz @ +4dBu (ST OUT)		0 +1, -3dB, 20Hz – 20kHz @ +4dBu (ST OUT)	
Input Hum & Noise *1	-128dBu Equivalent Input Noise/-100dBu Residual Output Noise, 20Hz – 20kHz, Rs=150Ω, Input Gain=Maximum, Input sensitivity=-60dB		-128dBu Equivalent Input Noise/-98dBu Residual Output Noise, 20Hz – 20kHz, Rs=150Ω, Input Gain=Maximum, Input sensitivity=-60 dB	
Crosstalk	-70dB @ 1kHz			
Phantom Power	+ 48V			
CH & ST High Pass Filter	80Hz 12dB/Octave			
Input	MIC: 4, LINE: 2 mono + 3 stereo, CH INSERT: 2, AUX RTN: 1 stereo, 2TR IN: 1		MIC: 6, LINE: 4 mono + 4 stereo, CH INSERT: 4, AUX RTN: 1 stereo, 2TR IN: 1	
Output	ST: 1, AUX SEND: 1, CH INSERT: 2, REC: 1 stereo, MONITOR: 1 stereo	ST: 1, EFFECT SEND: 1, CH INSERT: 2, REC: 1 stereo, MONITOR: 1 stereo	ST: 1, AUX SEND: 2, CH INSERT: 4, REC: 1 stereo, MONITOR: 1 stereo, GROUP: 2	ST: 1, AUX SEND: 1, EFFECT SEND: 1, CH INSERT: 4, REC: 1 stereo, MONITOR: 1 stereo, GROUP: 2
CH EQ (MONO) *2 ±15 dB (Max.)	100 Hz (Shelving), 2.5 kHz (Peaking), 10 kHz (Shelving)			
CH EQ (STEREO) *2 ±15 dB (Max.)	100 Hz (Shelving), 10 kHz (Shelving)			
MONO Out Low Pass Filter	80 – 120Hz 12dB/octave			
Graphic Equalizer	–	7-band (125, 250, 500, 1 k, 2 k, 4 k, 8 kHz) ±12 dB (Max.)	–	–
Internal Digital Effect	–	16 Programs: Parameter Control Foot Switch (Digital Effect On/Off)	–	16 Programs: Parameter Control Foot Switch (Digital Effect On/Off)
Dimensions (W x H x D mm)	256.6 x 62.2 x 302.5		346.2 x 86.1 x 436.6	
Weight	1.5 kg	1.6 kg	3.0 kg	3.2 kg
Power Requirements *4	21W	21W	30W	30W
Other	mic stand mountable (w/ BMS-10A MIC STAND ADAPTOR)	mic stand mountable (w/ BMS-10A MIC STAND ADAPTOR)	–	–

*1 Hum & Noise are measured with a 6dB/octave filter @ 12.7kHz, equivalent to a 20kHz filter with infinite dB/octave attenuation.
*2 Turn over /roll-off frequency of shelving : 3dB below maximum variable level.

	MG16/4	MG16/6FX	MG24/14FX	MG32/14FX
Total Harmonic Distortion	Less than 0.1 % (THD+N) 20Hz – 20kHz @ +14 dBu (ST OUT) *3		Less than 0.1 % (THD+N), 20Hz – 20kHz @ +14dBu (ST OUT)	
Frequency Response	-3, 0, +1 dB 20Hz – 20kHz @ +4dBu (ST OUT)		0 +1, -3dB, 20Hz – 20kHz @ +4dBu (ST OUT)	
Input Hum & Noise *1	-128dBu Equivalent Input Noise/-100dBu Residual Output Noise, 20Hz – 20kHz, Rs=150Ω, Input Gain=Maximum, Input sensitivity=-60dB *3		-128 dBu Equivalent Input Noise/-99dBu Residual Output Noise 20Hz – 20kHz, Rs=150Ω, Input Gain=Maximum, Input Pad =OFF,	
Crosstalk	-70dB @ 1kHz			
Phantom Power	+48 V			
CH & ST High Pass Filter	80Hz 12dB/Octave			
Input	MIC: 10, LINE: 8 mono +4 stereo, CH INSERT: 8, AUX RTN: 1 stereo, 2TR IN: 1	MIC: 10, LINE: 8 mono +4 stereo, CH INSERT: 8, AUX RTN: 1 stereo, 2TR IN: 1	MIC: 16 + 1, LINE: 16 mono + 4 stereo, CH INSERT: 16, AUX RTN: 2 stereo, 2TR IN: 1, ST INSERT: 1, GROUP INSERT: 4	MIC: 24 + 1, LINE: 24 mono + 4 stereo, CH INSERT: 24, AUX RTN: 2 stereo, 2TR IN: 1, ST INSERT: 1, GROUP INSERT: 4
Output	ST: 1, AUX SEND: 2, CH INSERT: 8, REC: 1 stereo, C/R: 1 stereo, GROUP: 2	ST: 1, AUX SEND: 2, CH INSERT: 8, REC: 1 stereo, C/R: 1 stereo, GROUP: 4	ST, MONO, AUX SEND: 6, CH INSERT: 16, REC: 1 stereo, C/R: 1 stereo, GROUP: 4, FX: 2	ST, MONO, AUX SEND: 6, CH INSERT: 24, REC: 1 stereo, C/R: 1 stereo, GROUP: 4, FX: 2
CH EQ (MONO) *2 ±15 dB (Max.)	100Hz (Shelving), 2.5kHz (Peaking), 10kHz (Shelving)	100Hz (Shelving), 0.25 – 5kHz (Peaking), 10kHz (Shelving)	100Hz (Shelving), 0.25 – 5kHz (Peaking), 10kHz (Shelving)	
CH EQ (STEREO) *2 ±15 dB (Max.)	100Hz (Shelving), 2.5kHz (Peaking), 10kHz (Shelving)	100Hz (Shelving), 800Hz (Peaking), 3kHz (Peaking), 10kHz (Shelving)	100Hz (Shelving), 800Hz (Peaking), 3 kHz (Peaking), 10kHz (Shelving)	
MONO Out Low Pass Filter	80 – 120 Hz 12dB/octave			
Graphic Equalizer	–	7-band (125, 250, 500, 1k, 2k, 4k, 8kHz) ±12dB (Max.)	–	–
Internal Digital Effect	–	16 Programs: Parameter Control	SPX x 2 (Effect 1: 16 Programs, Effect 2: 16 Programs, Parameter Control)	
Dimensions (W x H x D mm)	423 x 108 x 416.6		819 x140 x 551	1027 x 140 x 551
Weight	5.2 kg	5.5 kg	18.5 kg	22 kg
Power Requirements *4	36W 120V / 60Hz 36W 220V / 50, 60Hz 36W 230V / 50Hz 36W 240V / 50Hz	51W 120V / 60Hz 51W 220V / 50, 60Hz 51W 230V / 50Hz 51W 240V / 50Hz	100W 120V / 60Hz 100W 220V / 50Hz 100W 230V / 50Hz	120W 120V / 60Hz 120W 220V / 50Hz 120W 230V / 50Hz
Other	Rack Mountable			

*1 Hum & Noise are measured with a 6 dB/octave filter @ 12.7kHz, equivalent to a 20kHz filter with infinite dB/octave attenuation.
*2 Turn over /roll-off frequency of shelving : 3dB below maximum variable level.
*3 (CH1-8): MG16/4, MG16/6FX.
*4 PA-30 (MG16/6FX).

EMX512SC/312SC/212S
POWERED MIXERS

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.

EMX512SC



EMX312SC



EMX212S



Rear panel



Specifications

	EMX212S	EMX312SC	EMX512SC
Maximum Output Power @0.5% THD at 1kHz	220W+220W/4ohms, 130W+130W/8ohms	300W+300W/4ohms, 190W+190W/8ohms	500W+500W/4ohms, 350W+350W/8ohms
Input Connectors	MIC: max.8, LINE: 4 stereo	MIC: max.8, LINE: 4 stereo	MIC: max.8, LINE: 4 stereo
Output Connectors	SPEAKER OUT: (A1, A2, B1, B2), MAIN OUT: 1 stereo, EFFECT OUT: 1, MONITOR OUT: 1, REC OUT: 1 stereo	SPEAKER OUT: (A1, A2, B1, B2), MAIN OUT: 1 stereo, EFFECT OUT: 1, MONITOR OUT: 1, REC OUT: 1 stereo	SPEAKER OUT: (A1, A2, B1, B2), MAIN OUT: 1 stereo, EFFECT OUT: 1, MONITOR OUT: 1, REC OUT: 1 stereo
EQ	HIGH MID LOW	10kHz shelving 2.5kHz peaking 100Hz shelving	10kHz shelving 2.5kHz peaking 100Hz shelving
Phantom Power	+15V	+15V	+15V
Graphic Equalizer	7 band (125, 250, 500, 1k, 2k, 4k, 8kHz): Main (Stereo) and Monitor	7 band (125, 250, 500, 1k, 2k, 4k, 8kHz): Main (Stereo) and Monitor	7 band (125, 250, 500, 1k, 2k, 4k, 8kHz): Main (Stereo) and Monitor
Digital Effects	SPX Digital Multi Effector (24bit AD/DA, 32bit Internal Processing) 16 programs	SPX Digital Multi Effector (24bit AD/DA, 32bit Internal Processing) 16 programs	SPX Digital Multi Effector (24bit AD/DA, 32bit Internal Processing) 16 programs
Power Amp. Mode	L/R, MAIN (L+R)/MONITOR	L/R, MAIN (L+R)/MONITOR	L/R, MAIN (L+R)/MONITOR
Yamaha Speaker Processing	Yes	Yes	Yes
Stand-by switch	Yes	Yes	Yes
Foot Switch	Effect On/Off	Effect On/Off	Effect On/Off
Dimensions (W x H x D mm)	442 x 274 x 286	442 x 274 x 286	442 x 274 x 286
Weight	8 kg	8 kg	8 kg
Power Requirements /Consumption	120V AC 60Hz 270W, 230V AC 50Hz 270W, 240V AC 50Hz 270W	120V AC 60Hz 270W, 230V AC 50Hz 270W, 240V AC 50Hz 270W	120V AC 60Hz 270W, 230V AC 50Hz 270W, 240V AC 50Hz 270W
Option	RK-512 (Rack Mount Adaptor)	RK-512 (Rack Mount Adaptor)	RK-512 (Rack Mount Adaptor)

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 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.



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.



01V96V2

DIGITAL MIXING CONSOLE

Sound, reliability, operability ... Yamaha digital mixing consoles have become standards throughout the world because they deliver all of the above with no compromise: the PM1D, PM5D, and M7CL for sound reinforcement and broadcast applications; the DM2000, DM1000, and 02R96 for sound and music production. The 01V96V2 brings you the same performance and reliability in a compact, affordable format that's perfect for the home or smaller professional production studio. It may be small, but it has a maximum 40-channel input capacity and can be cascaded for applications that require more. And, of course, 24-bit/96 kHz operation is standard. Mixer functions and effects are all inherited from the top-of-the-line DM2000, so you know you're getting the best. And the Version 2 upgrade features a number of improvements and enhancements in both functions and operation. The 01V96V2 brings cutting-edge digital mixing and processing performance within easy reach.



Specifications

EMX5014C		
Maximum Output Power	500W+500W/4ohms, 350W+350W/8ohms, 1000W/8ohms bridge	
@0.5% THD at 1kHz		
Input Connectors	MIC: Max 8, LINE: 4 stereo, INSERT: 6	
Output Connectors	ST OUT: 1 stereo, ST SUB OUT: 1 stereo, EFFECT SEND: 1, AUX SEND: 2, REC OUT: 1 stereo, CH INSERT OUT: 6	
EQ	HIGH	10kHz shelving
	MID	Peaking, 250Hz – 5kHz sweep
	LOW	100Hz shelving
Phantom Power	+48V	
Graphic Equalizer	9 band (63, 125, 250, 500, 1k, 2k, 4k, 8k, 16kHz)	
Digital Effects	SPX Digital Multi Effector (24bit AD/DA, 32bit Internal Processing): 16 programs	
Power Amp. Mode	L/R, AUX1/MONO, AUX1/2	
Power Select Switch	500W / 200W / 75W	
Yamaha Speaker Processing	Yes	
Stand-by switch	Yes	
Foot Switch	Effect On/Off	
Dimensions (W x H x D): mm	444 x 155 x 493	
Weight	10.5 kg	
Power Requirements	120V AC 60Hz 450W, 240V AC 50Hz 450W,	
/Consumption	230V AC 50Hz 450W	
Option	RK-5014 (Rack Mount Adaptor)	

EMX5016CF		
Maximum Output Power	500W+500W/4ohms, 350W+350W/8ohms, 1000W/8ohms bridge	
@0.5% THD at 1kHz		
Input Connectors	MIC: Max 12, LINE: 4 stereo, INSERT: 6	
Output Connectors	ST OUT: 1 stereo, ST SUB OUT: 1 stereo, EFFECT SEND: 2, AUX SEND: 2, REC OUT: 1 stereo, CH INSERT OUT: 8	
EQ	HIGH	10kHz shelving
	MID	Peaking, 250Hz – 5kHz sweep
	LOW	100Hz shelving
Phantom Power	+48V	
Graphic Equalizer	9 band (63, 125, 250, 500, 1k, 2k, 4k, 8k, 16kHz)	
Digital Effects	SPX Digital Multi Effector (24bit AD/DA, 32bit Internal Processing): 16 programs x 2	
Power Amp. Mode	L/R, AUX1/MONO, AUX1/2	
Power Select Switch	500W / 200W / 75W	
Yamaha Speaker Processing	Yes	
Stand-by switch	Yes	
Foot Switch	Effect On/Off	
Dimensions (W x H x D mm)	444 x 155 x 493	
Weight	11 kg	
Power Requirements	120V AC 60Hz 500W,	
/Consumption	220 – 240V AC 50Hz 500W	
Option	RK-5014 (Rack Mount Adaptor)	

Specifications

01V96V2		
Internal processing		
32bit (Accumulator 58bit)		
Number of scene memories		
99		
Sampling frequency	Internal	44.1kHz, 48kHz, 88.2kHz, 96kHz
	External	Normal rate: 44.1kHz-10% -48kHz+6% Double rate: 88.2kHz-10% -96kHz+6%
Fader resolution		
100mm motorized x 17		
Total harmonic distortion *		
@fs = 48kHz: Less than 0.05%, 20Hz to 20kHz @+14dB into 600ohms		
Input GAIN=Min.		
Less than 0.01%, 1kHz @+24dB into 600ohms		
CH INPUT to STEREO OUT		
@fs = 96kHz: Less than 0.05%, 20Hz to 40kHz @+14dB into 600ohms		
Less than 0.01%, 1kHz @+24dB into 600ohms		
Frequency response		
@fs = 48kHz: 0.5, -1.5dB, 20Hz – 20kHz @+4dB into 600ohms		
CH INPUT to STEREO OUT		
@fs = 96kHz: 0.5, -1.5dB, 20Hz – 40kHz @+4dB into 600ohms		
Dynamic range		
110dB typ. DA Converter (STEREO OUT)		
(maximum level to noise level)		
106dB typ. AD+DA (to STEREO OUT) @fs=48kHz		
106dB typ. AD+DA (to STEREO OUT) @fs=96kHz		
Hum & noise level **		
-128dB Equivalent Input Noise.		
(20Hz-20kHz)		
-86dB residual output noise. STEREO OUT		
Rs=150ohms		
STEREO OUT off.		
Input GAIN=Max		
-86dB (90dB S/N) STEREO OUT		
Input PAD=0dB		
STEREO fader at nominal level and all CH INPUT faders at minimum level.		
Input PAD=0dB		
-64dB (68dB S/N) STEREO OUT		
Input sensitivity=60dB		
STEREO fader at nominal level and one CH INPUT fader at nominal level		
Maximum voltage gain		
74dB CH INPUT (CH1-12) to STEREO OUT/OMNI (BUS) OUT		
40dB CH INPUT (CH13-16) to STEREO OUT		
74dB CH INPUT (CH1-12) to OMNI (AUX) OUT (via pre input fader)		
74dB CH INPUT (CH1-12) to MONITOR OUT (via STEREO BUS)		

Crosstalk(@1kHz)	80dB adjacent input channels (CH1-12, 13-16)
Input GAIN=min	80dB input to output
Power requirements	North America: AC120V, 60Hz, 90W
	Other Areas: AC220 – 240V, 50/60Hz, 90W
Dimensions (W x H x D mm)	436 x 150 x 548
Weight	15kg

*. Total Harmonic Distortion is measured with a 60dB/octave filter @80kHz.
Hum & Noise are measured with a 60dB/octave filter @12.7kHz, equivalent to a 20kHz filter with infinite dB/octave attenuation.

Topic



An Interview with the EMX Design Team Built-in Compression Adds Live-sound Versatility to the new EMX-series Powered Mixers

New Features

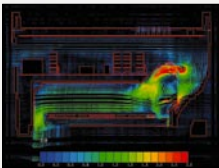
* What is the main difference compared to previous EMX-series mixers?

- 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 compression 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've 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.

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.

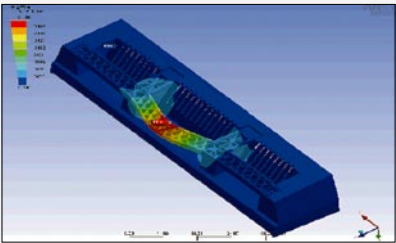


P.T. Yamaha Music manufacturing Asia

—Manufacturing the electronic instruments and PA products

From the initial design to final manufacturing, all production processes for the Yamaha EMX series Powered Mixers and MG series Mixing Consoles 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.



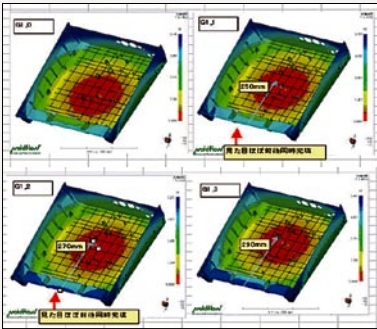
Achieving Pure Sound Quality

* What measures have been taken to ensure optimum sound quality?

- 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.



SPX2000

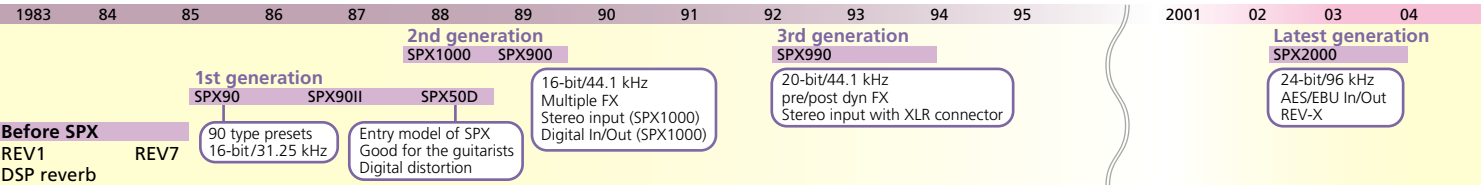
PROFESSIONAL MULTI-EFFECT PROCESSOR

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



● 24-bit Liner 128-times/64-times Oversampling (①fs=44.1,48kHz/88.2,96kHz) ● PRESET BANK: 97, USER BANK: 99, CLASSIC BANK: 25 ● AC 120V, 60Hz, AC 230V, 50Hz, 25W ● 480W x 45H x 372.5D mm, 4kg

SPX History The good reputation from users keeps our SPX effects as standard effects over 15 years...



P Series

POWER AMPS

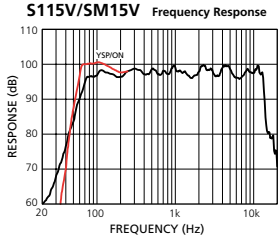
The P Series power amplifiers have been designed specifically to deliver big, clean power output that will take full advantage of the quality and power handling capabilities of Yamaha speakers. The amps are equipped with YS Processing (Yamaha Speaker Processing) to deliver a signal that is optimally matched to those speakers as well. All models feature both 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 EEEngine technology which delivers high performance with exceptional efficiency, sweepable high- and low- pass filters for optimizing output to any loudspeakers, compact and durable 2U chassis, and variable speed cooling fans.



Sound Advice

YS Processing

So what does this YSP (Yamaha Speaker Processing) switch do, anyway? Glad you asked: it rolls off unnecessary frequencies below around 40 Hz, which helps to protect your speakers, and at the same time boosts frequencies from 60 Hz through 150 Hz by about 3 or 4 dB which, as you rocket scientists already know, is a sound-pressure-level boost of about 1.5 times. And although this won't give you the bone-shaking bass of a subwoofer, it will make your bass and drums sound really cool. If you're reinforcing rock, turn it on.



Specifications

		P7000S	P5000S	P3500S	P2500S
Output Power	8 ohms/STEREO	750W+750W	525W+525W	390W+390W	275W+275W
	20Hz – 20kHz	1100W+1100W	750W+750W	590W+590W	390W+390W
	THD+N=0.1%	2000W	1500W	1180W	780W
THD+N	20Hz – 20kHz, half power	≤ 0.10%			
Intermodulation Distortion	60Hz: 7kHz, 4:1, half power	≤ 0.10%			
Frequency Response	Po=1W, RL=8 ohms	0dB, +0.5dB, -1dB f=20Hz – 50kHz			
Channel Separation	half power	≥ 70dB 1kHz			
	Att.max	≥ 70dB			
Residual noise Att. min	DIN AUDIO	104dB	103dB	102dB	100dB
S/N ratio	Att.max	32.1dB			
Voltage Gain		30KΩ (balance) 15KΩ (unbalance)			
Input Impedance		XLR-3-31 type/ch, 1/4" TRS/ch*			
Connectors	Input	SPEAKON, 5way biding post, 1/4" phone/ch*			
	Output	comp. :THD ≥ 0.5%			
Limitier Circuit					
Cooling		Dual variable-speed fan		Single variable-speed fan	
Power Requirements		20V 60Hz, 230V 50Hz, 240V 50Hz			
Idle Power Consumption		35W	35W	30W	25W
Maximum Power Consumption (4 ohms)		4000W	3000W	2000W	1600W
Dimensions (W x H x D): mm		480 x 88 x 456			
Weight		12kg	12kg	15kg	14kg

* 0dB=0.775V • half power=1/2 output power
* Output power into 8Ω stereo (20Hz – 20kHz) on the P7000S 230V model is 650W + 650W.

Club V Loudspeakers S-Series & C-Series

Great Sound To Go



Superior Sound on the Ground or Overhead



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 load 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 the 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.

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

*S-series are carpet finish, C-series are sprayed finish.

Club V S- & C- series

	S112V, C112V	S115V, C115V	S215V, C215V	SM10V, CM10V	SM12V, CM12V	SM15V, CM15V
Type	12" 2 way bass reflex	15" 2 way bass reflex	15" x 2.2 way bass reflex	10" 2 way bass reflex	12" 2 way bass reflex	15" 2 way bass reflex
Frequency Range	60Hz – 16kHz (-10dB)	55Hz – 16kHz (-10dB)	42Hz – 16kHz (-10dB)	70Hz – 20kHz (-10dB)	60Hz – 16kHz (-10dB)	55Hz – 16kHz (-10dB)
Power Capacity	175 watts (NOISE)* 350 watts (PGM) 700 watts (MAX)	250 watts (NOISE)* 500 watts (PGM) 1000 watts (MAX)	500 watts (NOISE)* 1000 watts (PGM) 2000 watts (MAX)	125 watts (NOISE)* 250 watts (PGM) 500 watts (MAX)	175 watts (NOISE)* 350 watts (PGM) 700 watts (MAX)	250 watts (NOISE)* 500 watts (PGM) 1000 watts (MAX)
Nominal Impedance	8 ohms	8 ohms	4 ohms	8 ohms	8 ohms	8 ohms
Sensitivity	97dB	99dB	99dB	96dB	97dB	99dB
LF Driver	12" cone	15" cone	15" cone x 2	10" cone	12" cone	15" cone
HF Driver	2" vc, Titanium Horn	2" vc, Titanium Horn	2" vc, Titanium Horn	1" vc, Titanium Horn	2" vc, Titanium Horn	2" vc, Titanium Horn
Crossover Frequency	2kHz	1.7kHz	1.5kHz	1.8kHz	2kHz	1.7kHz
Finish	S: Carpet, C: Sprayed	S: Carpet, C: Sprayed	S: Carpet, C: Sprayed	S: Carpet, C: Sprayed	S: Carpet, C: Sprayed	S: Carpet, C: Sprayed
Input Connectors	1/4" Phone x 2, Speakon x2	1/4" Phone x 2, Speakon x2	1/4" Phone x 2, Speakon x2	1/4" Phone x 2, Speakon x2	1/4" Phone x 2, Speakon x2	1/4" Phone x 2, Speakon x2
Dimensions (W x H x D mm)	S: 420 x 632 x 333 C: 416 x 628 x 329	S: 489 x 719 x 377 C: 485 x 715 x 373	S: 495 x 1167 x 597 C: 491 x 1163 x 593	S: 560 x 353 x 277 C: 556 x 349 x 273	S: 632 x 414 x 351 C: 628 x 410 x 339	S: 719 x 483 x 343 C: 715 x 479 x 339
Net Weight	S: 20.8 kg, C: 21.3 kg	S: 29.4 kg, C: 30.3 kg	S: 47.2 kg, C: 47.5 kg	S: 13.4 kg, C: 13.3 kg	S: 21.4 kg, C: 21.8 kg	S: 28.0 kg, C: 28.8 kg

Club V S- & C- series

	SW115V, CW115V	SW118V, CW118V	SW218V, CW218V	C112VA	C115VA
Type	15" Bass reflex	18" bass reflex	18" x 2 Bass reflex	12" 2 way bass reflex	15" bass reflex
Frequency Range	35Hz – 2kHz (-10dB)	30Hz – 2kHz (-10dB)	30Hz – 2kHz (-10dB)	60Hz – 16kHz (-10dB)	55Hz – 16kHz (-10dB)
Power Capacity	250 watts (NOISE)* 500 watts (PGM) 1000 watts (MAX)	300 watts (NOISE)* 600 watts (PGM) 1200 watts (MAX)	600 watts (NOISE)* 1200 watts (PGM) 2400 watts (MAX)	175 watts (NOISE)* 350 watts (PGM) 700 watts (MAX)	250 watts (NOISE)* 500 watts (PGM) 1000 watts (MAX)
Nominal Impedance	8 ohms	8 ohms	4 ohms	8 ohms	8 ohms
Sensitivity	95dB	96dB	98dB	97dB	99dB
LF Driver	15" cone	18" cone	18" cone x 2	12" cone	15" cone
HF Driver	–	–	–	2" vc, Titanium Horn	2" vc, Titanium Horn
Crossover Frequency	90Hz, 12dB/Oct.	90Hz, 12dB/Oct.	90Hz, 12dB/Oct.	2kHz	1.7kHz
Finish	S: Carpet, C: Sprayed	S: Carpet, C: Sprayed	S: Carpet, C: Sprayed	Sprayed	Sprayed
Input Connectors	1/4" Phone x 2, Speakon x2	1/4" Phone x 2, Speakon x2	1/4" Phone x 2, Speakon x2	Barrier strip	Barrier strip
Dimensions (W x H x D mm)	S: 506 x 611 x 532 C: 500 x 607 x 528	S: 610 x 728 x 641 C: 605 x 720 x 637	S: 1221 x 578 x 659 C: 1217 x 574 x 655	416 x 620 x 329	485 x 715 x 373
Net Weight	S: 28.2 kg, C: 28.0 kg	S: 39.0 kg, C: 37.2 kg	S: 65.4 kg, C: 64.7 kg	21.8 kg	29.9 kg

*EIA RS426A

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.

Specifications

BR-Series

	BR10	BR12	BR15	BR12M	BR15M
Type	10" 2 way bass reflex	12" 2 way bass reflex	15" 2 way bass reflex	12" 2 way bass reflex	15" 2 way bass reflex
Frequency Range	65Hz – 20kHz (-10dB)	60Hz – 20kHz (-10dB)	60Hz – 20kHz (-10dB)	60Hz – 20kHz (-10dB)	60Hz – 20kHz (-10dB)
Power Capacity	125 watts (NOISE)* 250 watts (PGM) 500 watts (MAX)	150 watts (NOISE)* 300 watts (PGM) 600 watts (MAX)	200 watts (NOISE)* 400 watts (PGM) 800 watts (MAX)	150 watts (NOISE)* 300 watts (PGM) 600 watts (MAX)	200 watts (NOISE)* 400 watts (PGM) 800 watts (MAX)
Nominal Impedance	8 ohms	8 ohms	8 ohms	8 ohms	8 ohms
Sensitivity	96dB	97dB	98dB	97dB	98dB
LF Driver	10" cone	12" cone	15" cone	12" cone	15" cone
HF Driver	1" vc, Titanium Horn	1" vc, Titanium Horn	1" vc, Titanium Horn	1" vc, Titanium Horn	1" vc, Titanium Horn
Finish	Carpet	Carpet	Carpet	Carpet	Carpet
Input Connectors	1/4" Phone x 2	1/4" Phone x 2	1/4" Phone x 2	1/4" Phone x 2	1/4" Phone x 2
Dimensions (W x H x D mm)	375 x 537 x 326	403 x 569 x 335	485 x 656 x 365	569 x 407 x 334	652 x 487 x 365
Net Weight	14.4 kg	16 kg	21.3 kg	15.6 kg	20.9 kg

*EIA RS426A

4 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.



MSR400

POWERED SPEAKER

There are many advantages to using powered speakers – the most obvious being that you don’t have to drag separate power amplifiers around or find a convenient place to install them. Fewer cables need connection as well. There are, also, real sonic advantages. The performance of an amplifier/speaker system depends to a considerable degree on the matching between the power amplifier and loudspeaker; a surprisingly complex relationship that involves impedances, amplifier loading, reflected EMF, damping, and a variety of other factors best left to the guys with the scientific calculators. Fortunately, these things are pretty much standardized, so you can connect just about any speaker of the appropriate impedance and power handling capacity to an amplifier and get decent results. But in a powered speaker like the MSR400, or a powered subwoofer like the MSR800W, everything can be (and is) matched to perfection for optimum performance. All you have to do is connect your line or microphone-level source.

For a simple system, you can use just a pair of MSR400s and a small mixer (actually, these models have microphone inputs as well as line inputs, with gain controls, so in a pinch you can connect a microphone directly to the speaker). The MSR400 employs bi-amplification for the best possible sound across the entire audio spectrum. But if you want serious low end, we suggest that you pair each speaker with a MSR800W subwoofer that features a 800 watts power amplifier driving a 15" woofer in a specially designed bass-reflex enclosure that can deliver bass your audience will feel as well as hear. A simple pole stand adaptor allows an MSR400 to be piggybacked on each MSR800W for optimum positioning, phasing, and overall sound.

MSR800W

POWERED SUBWOOFER



MSR400



MSR800W

Piggyback Powerhouse

Specifications

	MSR400	MSR800W
Type	Amplified 2 way bass reflex powered speaker (Bi-amplified electronic cross over network)	Amplified bass reflex powered subwoofer
Frequency Range	50Hz – 20kHz (-10dB)	40Hz – 120Hz
Maximum Output Level (SPL)	121dB (1m)	122dB (1m)
LF Driver	12" cone	15" cone
HF Driver	1.75" V.C., Compression Driver	–
Maximum Output Power	LF: 225W, RL=4Ω HF: 75W, RL=16Ω Burst Power: 400W Total	500W at 100Hz THD=1%, RL=8Ω Burst Power: 800W
Input sensitivity	LINE: +4dB* MIC: -36dB*	+4dB
Controls	Level Control, EQ (High, Low), Power switch	Master Level Control, Cutoff Freq. Control, Phase Switch, Power switch
Connectors	1: XLR-3-31 balanced 2: XLR-3-32 balanced 3: PHONE balanced	Input (ch-A & B): XLR-3-31 (balanced) THRU Out (ch-A & B): XLR-3-32 (balanced) High Pass Out (ch-A & B): XLR-3-32 (balanced) (100Hz, 18dB/oct, +4dB)
Power Requirement	AC120V 60Hz, AC230V 50Hz, AC240V 50Hz, AC220V 50Hz/60Hz, AC110V 60Hz	AC120V 60Hz, AC230V 50Hz, AC240V 50Hz, AC220V 50Hz
Power Consumption	110W	200W
Finish	Polypropylene	Black sprayed
Dimensions (W x H x D mm)	406 x 667 x 351	600 x 521 x 590
Net Weight	23kg	45 kg

* 0dB=0.775V

5 Simple Steps To Better Sound

Boosting system power

If the people in the back row aren’t hearing the performance with the intended impact, you can add speakers to boost the system’s output. The first thing to try would be adding an extra set of speakers parallel-connected with the main front speakers. In this case, it is important to add the same type of speakers as the originals. If you use speakers with

different sensitivity, only the louder speakers will be heard. Another option is to add a subwoofer to beef up the low end. By reinforcing the lows 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.

MSR100

POWERED SPEAKER

With the MSR100's built-in three-channel line mixer and power amplifier, you can actually use it as an all-in-one PA system. The built-in mixer has independent gain controls on each of the three channels, as well as master level and master low and high EQ controls, a link out jack so you can connect to another MSR100, and a clip indicator. But the MSR100 also makes a great 100-watt powered speaker for use with a small mixer. MSR100's can be pole-mounted, suspended, or stacked – anywhere you need them. You can even lay them on their side for monitor service. The MSR100 is a serious contender in the sound category, too, with a top-performance 100-watt amplifier perfectly matched to a two-way speaker system consisting of a custom 8" woofer and 1" titanium diaphragm compression driver feeding a 90° x 40° horn. A durable molded enclosure with integral handle makes this one of the most portable, convenient speaker systems available.



Specifications

MSR100	
Type	Amplified 2 way bass reflex powered speaker
Frequency Range	55Hz – 20kHz (-10dB)
Maximum Output Level (SPL)	112dB (1m)
LF Driver	8" Cone
HF Driver	1" Compression Driver
Maximum Output Power	100W at 1kHz. THD=1%, RL=6Ω
Input sensitivity	INPUT 1: -50dB*/+4dB* (with select SW) INPUT 2 & 3: -10dB*
Controls	Level Control, EQ (High, Low), Power switch
Connectors	INPUT 1: XLR-3-31 (balanced), INPUT 2&3: Phone (unbalanced), LINK OUT: Phone (unbalanced)
Power Requirement	120V 60Hz,230V 50Hz, AC240V 50Hz
Power Consumption	70W
Finish	Polypropylene
Dimensions (W x H x D mm)	275 x 455.5 x 255
Net Weight	11 kg

* 0dB=0.775V

MS100III

POWERED MONITOR SPEAKER SYSTEM

Nothing beats these small powered monitors for performance and utility. The 10-watt MS101III is an equally fine choice for your desktop studio or point-of-sale sound in a retail outlet. In the former application, the superior sound of these remarkably accurate monitors can help you make better mixes, while in the latter you can broadcast line-fed program material, or plug a microphone directly into the front-panel mic jack when you want to grab your customers' attention. MS101III can be wall- or ceiling-mounted, or conveniently mounted on a microphone stand.

Ideal For Monitoring or Point-Of-Sale Sound



Specifications

MS101III	
Type	Bass reflex.
Frequency Range	75Hz to 18kHz
Maximum Output Level (SPL)	97dB (1m, 10W)
Compornent	10-cm (4") full-range cone speaker x 1
Maximum Output Power	10W
Input sensitivity	Mic: -45dB, Line1, 2:-10dB
Controls	VOLUME, Tone (High, Low), Power switch
Connectors	Line Inputs RCA pin-jack x 1 (rear panel), Phone jack x 1 (front panel), Microphone Input Phone jack x 1 (front panel), Line Output Phone jack x 1 (front panel)
Power Requirement	120V 60Hz, 230/240V 50/60Hz
Power Consumption	30W
Dimensions (W x H x D mm)	147 x 214 x 192
Net Weight	2.2 kg

STAGEPAS series

PORTABLE PA SYSTEM

Yamaha now offers two ways to take your music to new places ... and hew heights! STAGEPAS 300 has already become the portable PA system of choice for legions of musicians on the move, and now the STAGEPAS 500 is available for situations in which a little extra power and channel capacity is needed. The basics remain the same: an incredibly lightweight, portable, easy-to-use PA system consisting of a pair of high-performance speakers with a built-in powered mixer. You can be set up and playing in a matter of minutes, and then packed away and on the road again with the same ease and speed when you're done. And all of this is provided with no compromise in sound quality or versatility, plus some advanced features you normally wouldn't expect to find in systems in this class. Whichever system you choose, you have a high-performance live-sound system that will deliver your music or message wherever you go, indoors or out.

The "Docking" PA System for Ultimate Portability



STAGEPAS 300



STAGEPAS 500

Specifications

STAGEPAS 300		STAGEPAS 500
Maximum Output Power	150W + 150W/6Ω @10% THD at 1kHz (SPEAKER L/R)	250W + 250W/4Ω @10% THD at 1kHz (SPEAKER L/R)
Frequency Response	-3dB, 0dB, +1dB @20Hz – 20kHz, 1W Output/6Ω (Without MUSIC/SPEECH, EQ and SP EQ Circuit) (SPEAKER L/R) -3dB, 0dB, +1dB @20Hz – 20kHz, +4dBu 10kΩ load [MUSIC/SPEECH] switch=MUSIC (MONITOR OUT, REC OUT)	-3dB, 0dB, +1dB @20Hz – 20kHz [MUSIC/SPEECH] switch=MUSIC (MONITOR OUT) -3dB, 0dB, +1dB @80Hz – 20kHz [MUSIC/SPEECH] switch=SPEECH (REC OUT) -3dB, 0dB, +1dB @20Hz–20kHz, 1W Output (Without MUSIC/SPEECH, EQ and SP EQ Circuit) (SPEAKER L/R)
Total Harmonic Distortion	≤ 1% @1kHz, 50W Output Power (SPEAKER L/R) 0.5% @20Hz–20kHz, +14dBu 10kΩ (MONITOR OUT, REC OUT)	0.5% @20Hz, 1kHz, 20kHz, +14dBu 10kΩ (MONITOR OUT, REC OUT)
Hum & Noise (20Hz - 20kHz, Rs=150Ω, MIC/LINE switch=MIC)	≤ -65dBu Residual output noise (SPEAKER L/R) ≤ -90dBu Residual output noise (MONITOR OUT, REC OUT) ≤ -67dBu @MONITOR OUT control & one CH LEVEL control at nominal level (CH1–4) (MONITOR OUT)	≤ -106dBu (CH1/2) ≤ -112dBu (CH3/4) ≤ -65dBu Residual ooutput noise (SPEAKER L/R)
Crosstalk (1kHz)	-70dB between input channels	-70dB between input channels
Dimensions (W x H x D mm)	275 x 456 x 255 (Speaker x 1) 290 x 96 x 160 (Mixer)	342 x 545 x 298 (Speaker x 1) 330 x 12 x 175 (Mixer)
Weight	18 kg (mixer and two speakers)	24 kg (mixer and two speakers)
Power Consumption	70W	65W
Stereo Input Channel Equalization	Shelving turnover/rolloff frequency: 3dB before maximum cut or boost. ±15dB HIGH 10kHz shelving LOW 100Hz shelving Bass-reflex type	Shelving turnover/rolloff frequency: 3dB before maximum cut or boost. ±15dB HIGH 10kHz shelving LOW 100Hz shelving Bass-reflex type
Enclosure	LF: 8" (20cm) Cone	LF: 10" (25cm) Cone
Speaker Unit	HF: 1" (2.54cm) Compression Driver	HF: 1" (2.54cm) Compression Driver
Cross Over Frequency	4kHz	4kHz (LF: 12dB/oct, HF: 12dB/oct)
Frequency Range	55Hz–20kHz	55Hz–20kHz (-10dB)
Maximum Output Level	112dB (1m)	112dB (1m)

MSP STUDIO series speakers

POWERED MONITOR SPEAKER

Yamaha’s “STUDIO” series monitors have been designed without compromise for serious monitoring. Years of experience and development have been applied to achieve reference-quality reproduction precision that lets you hear sonic details, rather than flattering sound. These studio-class speakers carry on in the tradition of the venerable NS10M STUDIO, which was the definitive near-field monitor in an overwhelming majority of professional studios throughout the world for many years from the 80s onward. But technology has evolved dramatically right throughout the audio chain, and speakers must follow suit. The new top-of-the-line MSP7 STUDIO Powered Monitor Speaker is capable of delivering consistent quality and performance that you can rely on in modern production environments that handle any combination of digital and analog sources as well as stereo and surround formats, while the more compact dimensions of the MSP5 STUDIO make it an ideal choice for smaller project studios and DAW-based production systems. The SW10 STUDIO subwoofer has been designed specifically for optimum matching with the MSP series speakers, and combined with either model in a stereo of surround system it can provide a seamlessly extended low end for accurate ultra-wide-range monitoring.



MSP7 STUDIO SW10 STUDIO MSP5 STUDIO

Refined Monitoring Precision

Specifications

	MSP5 STUDIO	MSP7 STUDIO	SW10 STUDIO
General Specifications	Type	Biamp 2-way Powered speaker	Biamp 2-way Powered Speaker
	Crossover Frequency	2.5kHz, LF: 24dB/oct, HF: 24dB/oct	2.5kHz, LF: 30dB/oct, HF: 30dB/oct
	Overall Frequency Response	50Hz – 40kHz (-10dB)	45Hz – 40kHz (-10dB)
	Dimensions (W x H x D mm)	179 x 208 x 279	218 x 235 x 330
Speaker Components	Weight	7.9 kg	12.2 kg
	Speaker Components	LF: 5" cone, HF: 1.0" Titanium dome	LF: 6.5" cone, HF: 1.0" Titanium dome
	Enclosure Type	Bass-Reflex Type	Bass-Reflex Type
	Material	PP	PP
Amp. Unit	Magnetic shielding	Yes	Yes
	Output Power	LF: 40W, THD = 0.02 %, RL = 4Ω, HF: 27W, THD = 0.02 %, RL = 6Ω	LF: 80W, THD = 0.05 %, RL = 4Ω, HF: 50W, THD = 0.05 %, RL = 6Ω
	Input Sensitivity	XLR-3-31: +4dBu, LEVEL = Center, -6dBu, PHONE: -10dBu, LEVEL = Center, -20dBu, LEVEL = Max	XLR-3-31: +4dBu, LEVEL = Center, -6dBu, PHONE: -10dBu, LEVEL = Center, -20dBu, LEVEL = Max
	Input Impedance	10kΩ	10 kΩ
	Input Connectors	1: XLR-3-31 type (balanced) 2: PHONE (unbalanced)	XLR-3-31 type (balanced)
	Output Connectors	—	—
	Controls	LEVEL control: 31 Positions Detent type VR (Min = ∞ Attenuation), LOW TRIM: +1.5/0/-1.5/-3 dB at 60 Hz, HIGH TRIM: +1.5/0/-1.5 dB at 15 kHz	LEVEL control: 31 Positions Detent type VR (Min = ∞ Attenuation), LOW CUT switch: FLAT/80/100Hz (12dB/oct), LOW TRIM: +1.5/0/-1.5/-3dB at 45Hz, HIGH TRIM: +1.5/0/-1.5dB at 15kHz
	Power Consumption	60W	100W

HS series speakers

POWERED MONITOR SPEAKER

When choosing reference monitors for mixing and music production, what you really need is an honest reference for your mix rather than sound that has been tweaked or colored to sound impressive at the expense of accuracy. Unlike speakers that have exaggerated bass and treble that make a good first impression but can’t be relied on for accuracy, Yamaha HS series reference monitors have been painstakingly crafted by our studio monitor engineering team to deliver exceptionally flat, accurate response that you can trust. The HS series speakers are true studio reference monitors in the tradition of the legendary Yamaha NS10M. Whether you’re mixing for stereo or 5.1 surround, mixes that sound good on Yamaha HS series reference monitors will translate accurately to the widest possible range of reproduction systems ... which is engineer-speak that means they’ll sound good on anything. And that is the ultimate goal of any reference monitor. We should also mention that the HS-series monitors not only sound great, they look great, too.

High-performance Speakers and Mounting System



HS50M HS10W HS80M

Specifications

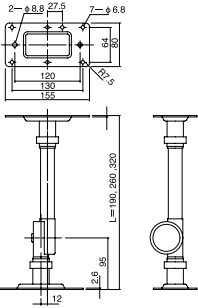
	HS50M	HS80M	HS10W
General Specifications	Type	Biamp 2-way Powered speaker	Biamp 2-way Powered speaker
	Crossover Frequency	3kHz	2kHz
	Overall Frequency Response	55Hz – 20kHz (-10dB)	42Hz – 20kHz (-10dB)
	Dimensions (W x H x D mm)	165 x 268 x 222	250 x 390 x 332
Speaker Components	Weight	5.8 kg	11.3 kg
	Speaker Components	LF: 5" cone, HF: 0.75" Dome	LF: 8" cone, HF: 1" Dome
	Enclosure Type	Bass-Reflex Type	Bass-Reflex Type
	Material	MDF	MDF
Amp. Unit	Magnetic shielding	Yes	Yes
	Output Power	LF: 45W, 4Ω, HF: 25W, 8Ω	LF: 75W, 4Ω, HF: 45W, 8Ω
	Input Sensitivity	XLR-3-31: -10 dBu, PHONE: (parallel)	XLR-3-31: -10dBu, PHONE: (parallel)
	Input Impedance	10kΩ	10kΩ
	Input Connectors	1: XLR-3-31 type (balanced) 2: PHONE (balanced) (parallel)	1: XLR-3-31 type (balanced) 2: PHONE (balanced) (parallel)
	Output Connectors	—	—
	Controls	LEVEL control: +4dB, center click, LOW CUT switch: FLAT/80/100Hz, 12dB/octave, HIGH TRIM: +2/0/-2dB at 3kHz (HF), EQ: MID: +2/0/- 2dB at 2kHz, ROOM CONTROL: 0/-2/-4dB under 500Hz	LEVEL control: +4dB, center click, LOW CUT switch: FLAT/80/100Hz, 12dB/octave, HIGH TRIM: +2/0/-2dB at 3kHz (HF), EQ: MID: +2/0/- 2dB at 2kHz, ROOM CONTROL: 0/-2/-4 dB under 500Hz
	Power Consumption	45 W	60W

Speaker Brackets

Wall Brackets

For MSR100/STAGEPAS300

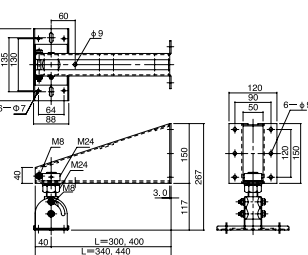
- BWS50-190
- BWS50-260
- BWS50-320



Wall Brackets

For MSR400/STAGEPAS500

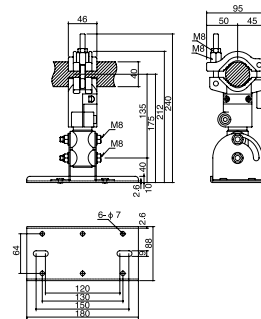
- BWS251-300
- BWS251-400



Batton Brackets

For MSR100/MSR400/STAGEPAS300/STAGEPAS500

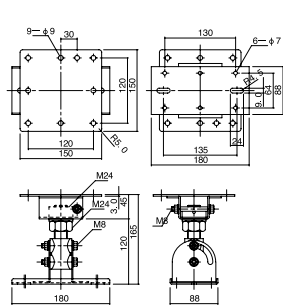
- BBS251



Ceiling Brackets

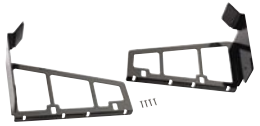
For MSR100/MSR400/STAGEPAS300/STAGEPAS500

- BCS251



Rack Mount Adapters

RK512



For EMX512SC/
EMX312SC/
EMX212C

RK5014



For EMX5014C/
EMX5016CF

RK-1



For 01V96V2

Mic Stand Adapter

BMS-10A



For MG82CX/MG102C/
STAGEPAS 300 (Mixer only)/
STAGEPAS 500 (Mixer only)

Foot Switch

FC4



FC5



Headphone

RH-5MA



Mini-YGDAI Compatible Cards

For 01V96V2

mini-YGDAI card Name	Function	Input	Output
MY8-AE	AES/EBU	8 In	8 Out
MY8-AT	ADAT	8 In	8 Out
MY8-TD	TASCAM	8 In	8 Out
MY4-AD	Analog In	4 In	—
MY8-AD24	Analog In	8 In	—
MY8-AD96	Analog In	8 In	—
MY4-DA	Analog Out	—	4 Out
MY8-DA96	Analog Out	—	8 Out

mini-YGDAI card Name	Function	Input	Output
MY8-ADDA96	Analog In/Out	8 In	8 Out
MY8-AE96	AES/EBU	8 In	8 Out
MY8-AE96S	AES/EBU	8 In	8 Out
MY16-AT	ADAT	16 In	16 Out
MY16-TD	TASCAM	16 In	16 Out
MY16-AE	AES/EBU	16 In	16Out
MY16-CII	CobraNet	16 In	16 Out
MY16-mLAN	mLAN	16 In	16 Out



For details please contact:



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