

FUSION® MS-RA70/MS-RA70N

MARINE ENTERTAINMENT SYSTEM
OWNER'S MANUAL



ENGLISH

FUSION®
FUSIONENTERTAINMENT.COM

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Made for iPhone 7 Plus, iPhone 7, iPhone 6s Plus, iPhone 6s, iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, iPhone 5, and iPod touch (5th and 6th generation).

"Made for iPod and iPhone" means that an electronic accessory has been designed to connect specifically to an iPod or an iPhone respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with an iPhone may affect wireless performance.

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Getting Started

This manual covers the features of both the FUSION® MS-RA70 and the FUSION MS-RA70N. Only the FUSION MS-RA70N is compatible with NMEA 2000®, and all topics that refer to NMEA 2000 functionality apply to the FUSION MS-RA70N only.

Stereo Controls



Dial ①	- Turn to adjust the volume. - Press to switch between zones. - Hold for at least one second to adjust the subwoofer levels. - Turn to move through the menus or adjust a setting. - Press to select the highlighted option.
☰	- Select to open a menu. - Select to return to the previous screen or menu.
↶	Select to change the source (Selecting a Source, page 1).
⏮	- Select to skip to the previous track, when using an applicable source. - AM or FM source: - Select to tune to the previous station. - Hold for faster tuning (manual mode only). - AUX source: Select to decrease the gain for the connected source. - DAB source: Select to return to the previous DAB station in the ensemble. When you reach the beginning of the current ensemble, the stereo automatically changes to the last available station in the previous ensemble.
⏭	- Select to skip to the next track, when using an applicable source. - AM or FM source: - Select to tune to the next station. - Hold for faster tuning (manual mode only). - AUX source: Select to increase the gain for the connected source. - DAB source: Select to advance to the next DAB station in the ensemble. When you reach the end of the current ensemble, the stereo automatically changes to the first available station in the next ensemble.
⓪	- Select to turn on the stereo. - When the stereo is on, select to mute the stereo. - Hold to turn off the stereo.
⏸	- Select to pause or resume. - AM or FM source: - Select to cycle through the tuning modes (auto or manual) and presets (when two or more presets are saved). - Hold to save this station as a preset. - DAB source: Select to scan for DAB stations.

Using the Dial to Select Items

You can use the dial to highlight and select items on the screen.

- Turn the dial to select an item on the screen.
- Press the dial to select the highlighted option.

Selecting a Source

- Select ☰.
- Select an option:
 - Turn the dial to highlight a source.
 - Select ☰ repeatedly to highlight a source.
- Press the dial to select the source.

Entering Text

You can enter text to change some settings field values on this device.

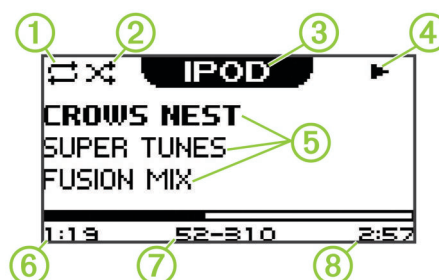
- In a settings field that allows you to enter text, select ⏮ to erase the existing characters.
- Use the dial to choose a letter, and press the dial to select it.
- Add additional letters to finish entering the text.
- Select ⏭ to save the new text.

Adjusting the Backlight Brightness and Contrast

- Select ☰ > **SETTINGS** > **LCD**.
- Press the dial to select brightness or contrast.
- Adjust the brightness or contrast.
- Select ☰ to exit the menu.

Stereo Screen

The information displayed on the stereo screen varies depending on the source selected. This example shows the stereo playing a track on an iPhone® mobile digital device.



①	Repeat status icon
②	Shuffle status icon
③	Source
④	Play status icon
⑤	Track details (if available)
⑥	Elapsed time
⑦	Current track number out of total number of tracks in the playlist (if available)
⑧	Track duration

Media Player Connection

⚠ CAUTION

Always disconnect your media player from the stereo when not in use and do not leave it in your vessel. This helps reduce the risk of theft and damage from extreme temperatures.

Do not remove the media player or use your stereo in a distracting manner while operating the vessel. Check and obey all marine laws in association with use.

The stereo accepts a variety of media players, including smartphones and other mobile devices. You can connect a compatible media player using a Bluetooth® wireless connection or a USB connection to the USB port.

NOTE: If you connect a supported media player to the USB port, you must either disable Bluetooth on the media player, or unpair the Bluetooth connection from the stereo to avoid possible media-playback issues.

USB Device Compatibility

You can use a USB flash drive or the USB cable included with your media player to connect a media player or mobile device to the USB port.

The stereo is compatible with iAP2 Apple® devices such as the iPhone 7 Plus, iPhone 7, iPhone 6s Plus, iPhone 6s, iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, iPhone 5, and iPod touch® (5th and 6th generation).

The stereo is compatible with Android™ devices that support the Android Open Accessory (AOA) protocol.

NOTE: The stereo is not compatible with Android devices in MTP or PTP mode. See the instructions for your Android device to connect using AOA, if necessary.

The stereo is compatible with media players and other USB mass storage devices, including USB flash drives. Music on USB drives must meet these conditions:

- The USB mass storage device must be formatted using the FAT32 file system.
- The music files must be formatted as MP3 files.
- Each folder on the storage device can contain a maximum of 250 MP3 files.

Connecting a USB Device

You can connect a USB device to the USB port on the stereo.

- 1 Locate the USB port on the back of the stereo.
- 2 Connect the USB device to the USB port.
- 3 Select the USB source.

Connecting an Auxiliary Device

You can connect various auxiliary devices to the stereo. These devices have either RCA connectors, a line output, or a headphone output jack.

- 1 Locate the auxiliary connectors on the wiring harness.
- 2 If necessary, connect an RCA-to-3.5 mm adapter cable to the auxiliary device.
- 3 Connect the auxiliary device to the RCA connectors on the wiring harness.

Adjusting the Gain for the Auxiliary Device

You can adjust the gain for the connected auxiliary device to achieve a volume level similar to that of other media sources. You can adjust the gain in 1 dB increments.

- 1 Select an auxiliary source.
- 2 Select an option:
 - To increase the gain, select ►►.
 - To decrease the gain, select ◄◄.

Auxiliary Device	Recommended Gain Setting(dB)
Portable media player with headphone output	from -9 dB to -6 dB
CD/DVD player with line output	-6 dB
Portable media player with line output	0 dB
Game console with line output	0 dB
Older audio/visual equipment with line output (for example, VHS or cassette deck)	from 6 dB to 9 dB

NOTE: To achieve the best audio quality when using a portable media player with headphone output, it may be necessary to adjust the volume control on the media player, instead of adjusting the gain.

Connecting the Stereo to a Garmin® Watch

For a list of a compatible Garmin watches, go to www.fusionentertainment.com/marine.

For more information about the watch, see the watch manual at www.garmin.com/manuals.

- 1 Following the instructions in the watch manual, install the FUSION-Link™ app from the Connect IQ™ store onto the watch.
- 2 On the stereo, select the **BT** source.
- 3 Select  > **DISCOVERABLE**.
The stereo remains discoverable for two minutes.
- 4 Bring the watch within 3 m (10 ft.) of the stereo.

NOTE: Stay 10 m (33 ft.) away from other ANT® devices while pairing.

- 5 Open the FUSION-Link app on the watch.

The first time you open the app on the watch, the watch automatically pairs with and connects to the stereo. If you need to pair to another stereo, in the FUSION-Link app, select **Settings** > **Pair new**.

- 6 Control the audio playback using the FUSION-Link app on the watch.

After the devices are paired, they connect automatically when they are turned on, within range, and the app is open on the watch.

Adjusting the Volume

- 1 Use the dial to adjust the volume.
- 2 If necessary, press the dial to switch between zones.

TIP: To control all zones at the same time, press the dial until all zones are highlighted.

Adjusting the Tones

- 1 Select  > **SETTINGS** > **TONE**.
- 2 Use the dial to adjust the level.
- 3 Press the dial to switch to a different tone.

Speaker Zones

You can group speakers in one area into speaker zones. This enables you to control the audio level of the zones individually. For example, you could make the audio quieter in the cabin and louder on deck.

Zones 1 and 2 are powered by the on-board, Class AB amplifier. To use the two line outputs and the two subwoofer outputs, you must connect external amplifiers.

You can set the balance, volume limit, and name for each zone. You can set the subwoofer level for zone 1.

Setting up Speaker Zones

- 1 Select  > **SETTINGS** > **ZONE**.
- 2 Select a zone.
- 3 Select one or more options:

NOTE: Not all options are available for all zones.

- To link zones 1 and 2, select **LINK TO ZONE 1** to fill the option button (zone 2 only).
- To adjust the right and left speaker balance of this zone, select **BALANCE**, and use the dial to set the balance.
- To limit the maximum volume output of this zone, select **VOLUME LIMIT**, and use the dial to set the limit.
- To set the subwoofer filter, select **SUB FILTER**, and use the dial to set the filter (zone 1 only).
- To set the subwoofer level, select **SUB LEVEL**, and use the dial to set the level (zone 1 only).

TIP: To open the subwoofer level from any screen, press and hold the dial for three seconds.

- To give the zone a specific name, select **SET ZONE NAME** (*Entering Text*, page 1).

Linking Zones

- 1 Select  > **SETTINGS** > **ZONE** > **ZONE 2**.
- 2 Select **LINK TO ZONE 1** to fill the button.

When zones 1 and 2 are linked, **+** appears between zones 1 and 2 on the volume screen.

Adjusting the Subwoofer Filter

You can use the subwoofer filter setting to control the subwoofer cutoff frequency, which can enhance the blend of the sound produced by the speakers and the subwoofer. Audio signals

above the selected frequency are not passed to the subwoofer. The setting applies to both subwoofer outputs.

- 1 Select  > **SETTINGS** > **ZONE** > **ZONE 1** > **SUB FILTER**.
- 2 Select a frequency.
- 3 Press the dial to save the selection.

Bluetooth Device Playback

You can pair the stereo to up to eight Bluetooth media devices.

You can control the playback using the keys, but you cannot browse the music collection. You should select the song or playlist on the media device.

The availability of song information such as song title, artist name, and track duration depends on the capability of the media player and music application. The shuffle and repeat status icons are not supported over Bluetooth wireless technology.

Connecting a Compatible Bluetooth Device

You can play media from a compatible Bluetooth device using the Bluetooth wireless connection.

- 1 Select the Bluetooth source.
- 2 Select  > **DISCOVERABLE** to make the stereo visible to your compatible Bluetooth device.
NOTE: The stereo is discoverable for only two minutes to prevent interruption to audio streaming over Bluetooth wireless. If more than two minutes pass before you connect a compatible device, you must repeat this step.

- 3 Enable Bluetooth on your compatible Bluetooth device.
- 4 Bring the compatible Bluetooth device within 10 m (33 ft.) of the stereo.
- 5 On your compatible Bluetooth device, search for Bluetooth devices.
- 6 Select the stereo from the list of detected devices.
- 7 Follow the on-screen instructions to pair and connect to the discovered stereo.

When pairing, your compatible Bluetooth device may ask you to confirm a code on the stereo. The stereo does not display a code, but it does connect correctly when you confirm the message on the Bluetooth device.

- 8 If your compatible Bluetooth device does not immediately connect to the stereo, repeat steps 1 through 7.

Bluetooth Range Information

The stereo and Bluetooth wireless devices have a range of 10 m (33 ft.). For optimal performance, the Bluetooth wireless device should also have a clear line of sight to the stereo.

Selecting a Different Bluetooth Source

When you have more than one Bluetooth device paired to the stereo, you can select a different source when needed. You can connect the stereo to up to eight Bluetooth devices.

- 1 With the **BLUETOOTH** source selected, select .
- 2 Select a Bluetooth device.

Bluetooth Source Settings

With the **BLUETOOTH** source selected, select .

DISCOVERABLE: Allows the stereo to be visible to Bluetooth devices. This setting turns off automatically after two minutes to prevent possible interruption to audio after pairing a Bluetooth device to the stereo.

REMOVE DEVICE: Removes the Bluetooth device from the stereo. To listen to audio from this Bluetooth device again, you must pair the device again.

FUSION-Link Smartphone App

You can use the FUSION-Link smartphone app on your compatible Apple or Android device to adjust the stereo volume, change the source, control playback, and adjust some stereo settings.

The app communicates with the stereo using the Bluetooth connection for the mobile device. You must connect your compatible device to the stereo using Bluetooth to use the app.

For information about the FUSION-Link smartphone app for compatible Apple or Android devices, go to the Apple App StoreSM or the Google PlayTM store.

USB Device Playback

You can connect various USB media players and smartphones to the stereo. For example, you can connect an Android smartphone, a USB flash drive, or a compatible Apple device. How you access the USB source depends on which type of media player is connected. The stereo is designed for use with one USB connection at a time. You must disconnect one USB device before connecting another.

NOTE: If you connect an Apple media player to the USB port on the stereo, you must either disable Bluetooth on the media player, or unpair the Bluetooth connection from the stereo to avoid possible media-playback issues.

Media Player	Source Selections
Android device	ANDROID
Apple device	IPOD
USB flash drive	USB
MP3 media player (as a mass-storage device)	USB NOTE: If your MP3 media player does not support mass-storage when connected using USB, you must connect it to the stereo as an auxiliary device (Connecting an Auxiliary Device , page 2).

The availability of song information such as song title, artist name, and track duration depends on the capability of the media player and music application.

Controlling Music Playback on an Apple or Android Device

- 1 Connect a compatible Apple or Android device to the stereo using USB or Bluetooth.
- 2 Select the appropriate source.
- 3 Launch a music application on the connected Apple or Android device and begin playback.

You can use the stereo controls to play, pause, and skip tracks.

Controlling Music Playback on a USB Flash Drive

- 1 Connect a compatible USB flash drive or media player to the stereo.
- 2 Select the **USB** source.
- 3 Select .
- 4 Select the name of the USB drive to view the file structure of the USB flash drive or media player.
- 5 Select a song to begin music playback.

Shuffling Songs

The shuffle feature is available on the USB source only.

NOTE: The shuffle feature is controlled by the music application on connected Apple and Android devices, if supported by the application.

- 1 From the **USB** source, select .
- 2 Select **SHUFFLE**.

Setting a Song to Repeat

The repeat feature is available on the USB source only.

NOTE: The repeat feature is controlled by the music application on connected Apple and Android devices, if supported by the application.

- 1 From the **USB** source, select .
- 2 Select **REPEAT**.

Radio

To listen to AM or FM radio, you must have a suitable marine AM/FM antenna properly connected to the stereo and be within range of a broadcasting station. For instructions on connecting an AM/FM antenna, see the stereo installation instructions.

To listen to DAB stations, you must have the appropriate equipment (*DAB Playback*, page 4). For instructions on connecting a DAB adapter and antenna, see the installation instructions provided with your adapter and antenna.

Setting the Tuner Region

You must select the region you are in to receive AM and FM stations properly.

If you are connected to a compatible DAB module and antenna (not included), you must select the region you are in to receive DAB stations properly.

NOTE: DAB stations are not available in all regions.

- 1 Select  > **SETTINGS** > **TUNER REGION**.
- 2 Select the region you are in.

Changing the Radio Station

- 1 Select an applicable source, such as **FM**.
- 2 Select  repeatedly to move through the tuning modes:
 - Select **AUTO** to scan and stop on the next available station.
 - Select **MANUAL** to select a station manually.
 - Select **PRESETS** to select a saved station preset.
- 3 Select  or  to tune to the station.

Presets

You can save your favorite AM stations and FM stations as presets for easy access.

Saving a Station as a Preset

- 1 With an applicable source selected, tune the stereo to a station.
- 2 Select  > **PRESETS**.
- 3 Select **SAVE CURRENT**.

TIP: You can quickly save the selected station as a preset by holding .

Selecting a Preset from a List

Before you can select a preset from a list, you must save at least one station as a preset.

- 1 Select the applicable source.
- 2 Select  > **PRESETS**.
- 3 Select a preset from the list.

Removing Presets

- 1 With an applicable source selected, select  > **PRESETS** > **REMOVE PRESET**.
- 2 Select an option:
 - To remove one preset, select the preset.
 - To remove all presets, select **REMOVE ALL PRESETS**.

DAB Playback

When you connect a compatible Digital Audio Broadcasting (DAB) module and antenna, such as the MS-DAB100A to the MS-RA70/MS-RA70N stereo, you can tune in to and play DAB stations.

DAB broadcasts are not available in all regions. When the stereo is not set to a compatible region, the DAB source is not available.

Setting the Tuner Region

You must select the region you are in to receive DAB stations properly.

- 1 Select  > **SETTINGS** > **TUNER REGION**.
- 2 Select the region you are in.

Scanning for DAB Stations

Before you can scan for DAB stations, you must connect a compatible DAB module and antenna (not included) to the stereo. Because DAB signals are broadcast in select countries only, you must also set the tuner region to a location where DAB signals are broadcast.

- 1 Select the **DAB** source.
- 2 Select  to scan for available DAB stations.

When scanning is complete, the first available station in the first ensemble found begins playing.

NOTE: After the first scan is complete, you can select  again to re-scan for DAB stations. When the re-scan is complete, the system starts playing the first station in the ensemble you were listening to when you started the re-scan.

Changing DAB Stations

- 1 Select the **DAB** source.
- 2 If necessary, select  to scan for local DAB stations.
- 3 Select  or  to change the station.

When you reach the end of the current ensemble, the stereo automatically changes to the first available station in the next ensemble.

Selecting a DAB Station from a List

- 1 Select the **DAB** source.
- 2 If necessary, select  to scan for local DAB stations.
- 3 Select  > **BROWSE** > **STATIONS**.
- 4 Select a station from the list.

Selecting a DAB Station from a Category

- 1 Select the **DAB** source.
- 2 If necessary, select  to scan for local DAB stations.
- 3 Select  > **BROWSE** > **CATEGORIES**.
- 4 Select a category from the list.
- 5 Select a station from the list.

DAB Presets

You can save your favorite DAB stations as presets for easy access.

You can save up to 15 DAB-station presets.

Saving a DAB Station as a Preset

- 1 With the **DAB** source selected, change the stereo to a DAB station.
- 2 Select  > **BROWSE > PRESETS > SAVE CURRENT**.

TIP: You can quickly save the selected DAB station as a preset by holding .

Selecting a DAB Preset from a List

Before you can select a DAB preset from a list, you must save at least one DAB station as a preset.

- 1 Select the **DAB** source.
- 2 Select  > **BROWSE > PRESETS > VIEW PRESETS**.
- 3 Select a preset from the list.

Removing DAB Presets

- 1 With the **DAB** source selected, select  > **BROWSE > PRESETS**.
- 2 Select an option:
 - To remove one preset, select **REMOVE PRESET**, and select the preset.
 - To remove all presets, select **REMOVE ALL PRESETS**.

General Settings

Select  > **SETTINGS**.

NOTE: When an option button is filled, the option is on. When the option button is clear, the option is off.

ZONE: Enables you to configure the speaker zones.

ZONE > TONE: Adjusts the bass, middle, and treble tones.

LCD: Adjusts the backlight brightness and contrast settings (*Adjusting the Backlight Brightness and Contrast, page 1*).

POWER SAVE: Disables the LCD backlight after one minute of inactivity to save battery power.

LANGUAGE: Sets the language on the device.

TUNER REGION: Sets the region used by the FM, AM, and DAB sources.

TEL MUTE: Sets the behavior of the mute function when the device is connected to a hands-free mobile phone. When a call is received, the device can either mute the audio or broadcast the call through the AUX input. See your hands-free kit instructions.

SET DEVICE NAME: Sets a name for this stereo (*Entering Text, page 1*).

UPDATE > UPDATE SOFTWARE: Updates the stereo using a valid software update file on a connected USB flash drive.

UPDATE > MS-NRX200: (FUSION MS-RA70N only) Updates compatible remote controls on the same NMEA 2000 network using a valid software update file on a connected USB flash drive.

UPDATE > DAB MODULE: Updates a connected DAB module using a valid software update file on a connected USB flash drive.

UPDATE > FACTORY RESET: Resets all settings to the factory default values.

ABOUT: Shows the software versions for the stereo, FUSION-Link™, and connected remote.

Additional Stereo Control Options

When connected to an optional NMEA 2000 network, FUSION MS-RA70N models can be controlled by compatible devices, such as a FUSION NRX200 remote control or a compatible multi-function display on the same NMEA 2000 network.

Optional Wired Remote Controls

The stereo can be controlled by compatible FUSION wired remote controls installed in the audio zones throughout the vessel. Operating the entertainment system from the remote control is similar to operating it from the main stereo.

The wired remote controls operate over an existing NMEA 2000 network. All remote controls connected to the same NMEA 2000 network as the stereo can control the stereo.

The remote control can also serve as an NMEA® display showing NMEA navigation data or vessel performance data from other NMEA devices on an existing NMEA 2000 network.

FUSION-Link

FUSION-Link technology allows you to fully control compatible FUSION entertainment systems on compatible multi-function displays installed at the helm, flybridge, or navigation station of the vessel. This provides you with integrated entertainment control and a less cluttered console.

The partnered multi-function display becomes the portal on which all audio on the vessel is controlled, no matter where on the vessel the stereo is installed. The FUSION-Link equipped stereo can be installed out of sight if space is an issue and users need to access the stereo only to replace removable media.

FUSION-Link technology offered on this device operates over existing industry-standard NMEA 2000 networks.

For a list of FUSION-Link capable products from companies that are partnering with FUSION, go to www.fusionentertainment.com.

Audio Control with NMEA 2000

NMEA 2000 is the most popular marine standard for data communication within vessels. It has become the standard for sending navigation and engine management data within vessels. FUSION introduces an industry-first product by incorporating NMEA 2000 functionality in its audio remote control devices. This enables the user to monitor a series of available NMEA sentences.

Go to www.fusionentertainment.com for a full list of supported NMEA sentences.

Appendix

Registering Your MS-RA70/MS-RA70N

Help us better support you by completing our online registration today.

- Go to www.fusionentertainment.com.
- Keep the original sales receipt, or a photocopy, in a safe place.

Troubleshooting

The stereo does not respond to key presses

- Turn off power to the stereo for two minutes to reset the stereo.

The stereo keeps locking up when connected to an Apple device

- Press and hold the power button to reset the stereo.
- Reset the Apple device. Go to www.apple.com for more information.
- Make sure you have the latest version of iTunes® and the latest operating software on your Apple device.

The stereo is not finding my connected Apple device

- Make sure you have the latest version of iTunes and the latest operating software on your Apple device.

- Make sure you have the latest version of the FUSION-Link application on your Apple device.
- Reset the Apple device.
Go to www.apple.com for more information.
- Contact your FUSION dealer or send an email to FUSION from www.fusionentertainment.com.

My Bluetooth audio is interrupted by short breaks

- Ensure the media player is not covered or obstructed.
Bluetooth technology performs best with line-of-sight operation.
- Bring the media player within 10 m (33 ft.) of the stereo.
- Turn off the **DISCOVERABLE** setting after pairing a Bluetooth device to the stereo.

The stereo does not display all song information from my Bluetooth source

The availability of song information such as song title, artist name, track duration, and album cover artwork depends on the capability of the media player and music application.

Album cover artwork and shuffle and repeat status icons are not supported by Bluetooth technology.

Specifications

General	
Weight	556 g (19.6 oz.)
Water resistance	IEC 60529 IPX7 (front), IEC 60529 IPX3 (rear)
Operating temperature range	From 0 to 50°C (from 32 to 122°F)
Storage temperature range	From -20 to 70°C (from -4 to 158°F)
Input voltage	From 10.8 to 16 Vdc
Current (max.)	15 A
Current (muted)	less than 900 mA
Current (standby)	FUSION MS-RA70: less than 5 mA FUSION MS-RA70N: less than 15 mA
NMEA 2000 LEN	1 (50 mA)
ANT wireless range	Up to 3 m (10 ft.)
Compass-safe distance	15 cm (5.9 in.)

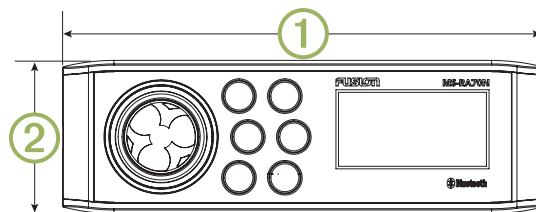
On-board, Class AB Amplifier

Output music power per channel	50 W max. x 4 channels at 4 Ohms per channel
Total output music power	200 W max.

Tuner	Europe and Australasia	USA	Japan
FM radio frequency range	From 87.5 to 108 MHz	From 87.5 to 107.9 MHz	From 70 to 95 MHz
FM frequency step	50 kHz	200 kHz	50 kHz
AM radio frequency range	From 522 to 1620 kHz	From 530 to 1710 kHz	From 522 to 1620 kHz
AM frequency step	9 kHz	10 kHz	9 kHz

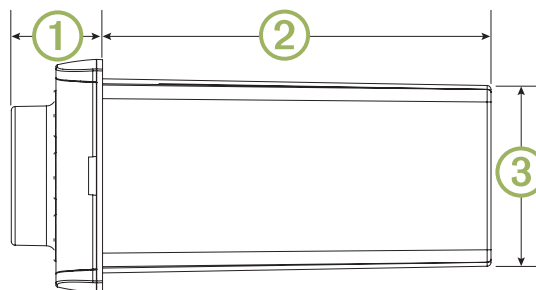
Stereo Dimension Drawings

Front Dimensions



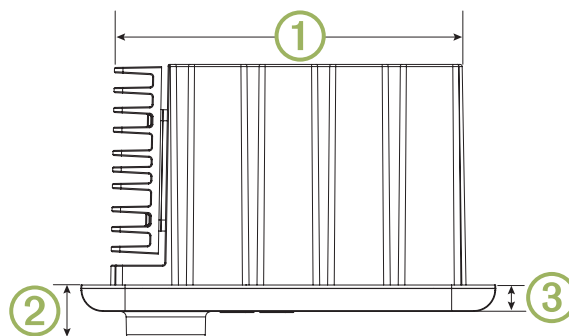
①	188 mm (7.40 in.)
②	60 mm (2.36 in.)

Side Dimensions



①	23.5 mm (0.93 in.)
②	100 mm (3.94 in.)
③	50 mm (1.97 in.)

Top Dimensions



①	161 mm (6.34 in.)
②	23.5 mm (0.93 in.)
③	12 mm (0.47 in.)

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