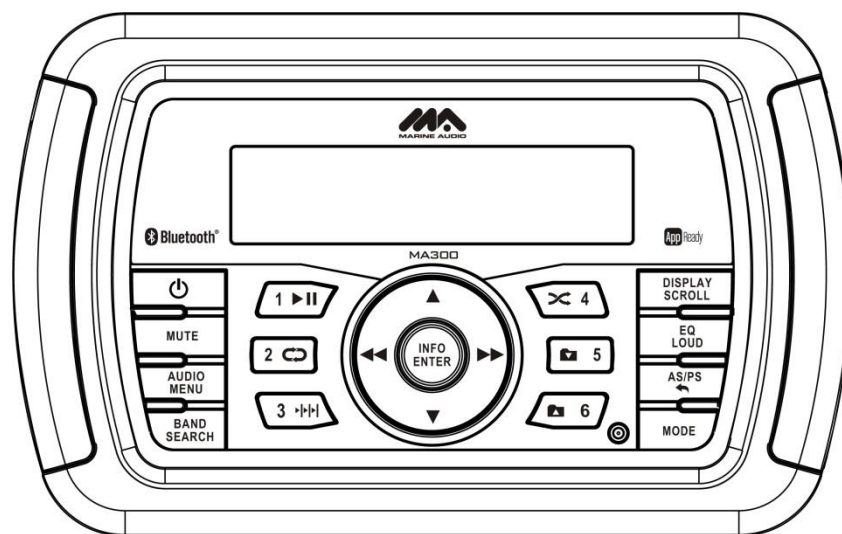




# MA300

*MARINE AUDIO SYSTEM*

## Installation and Operation Manual



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iPhone, iPod, iPod classic, iPod nano, iPod shuffle, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries.

“Made for iPod” and “Made for iPhone” mean that an electronic accessory has been designed to connect specifically to iPod or 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 iPod or iPhone may affect wireless performance..



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## WARNINGS AND COMPLIANCE

### Important Safety Instructions

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**NOTE:** *Keep the volume level low enough to be aware of your surroundings.*

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**NOTE:** *USE THE PROPER POWER SUPPLY! This product is designed to operate with a 12 volt DC negative ground battery system.*

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### FCC Notes

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**WARNING!** *Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

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**NOTE:** *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.*

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This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

# INTRODUCTION

## System Features

Features of the Marine Audio MA300 include:

- White LED Backlit LCD
- IPx6 Waterproof
- Low Battery Alarm
- AM/FM US/EURO Tuner with 30 Presets (12 AM, 18 FM)
- Weatherband with Weather Alert
- Bluetooth (Supports A2DP and AVRCP)
- APP Ready
- USB Playback of MP3/WMA Files
- Made for iPod/iPhone (USB Input)
- Mute
- Pre-set Equalizer - 5 settings (User > Flat > Pop > Classical > Rock)
- Electronic Bass, Treble, Balance and Fader Controls
- Output Power 22W x 4
- Wired Remote Control Ready (only supports MARC100)
- 2-Channel Pre-amp Line Level Outputs
- Auxiliary Audio Input (Rear RCA)

## Content List

- Marine Audio MA300 Radio
- Installation Opening Cutout Template
- M4 x 0.7 Screws (x4)

# INSTALLATION

## Before you Begin

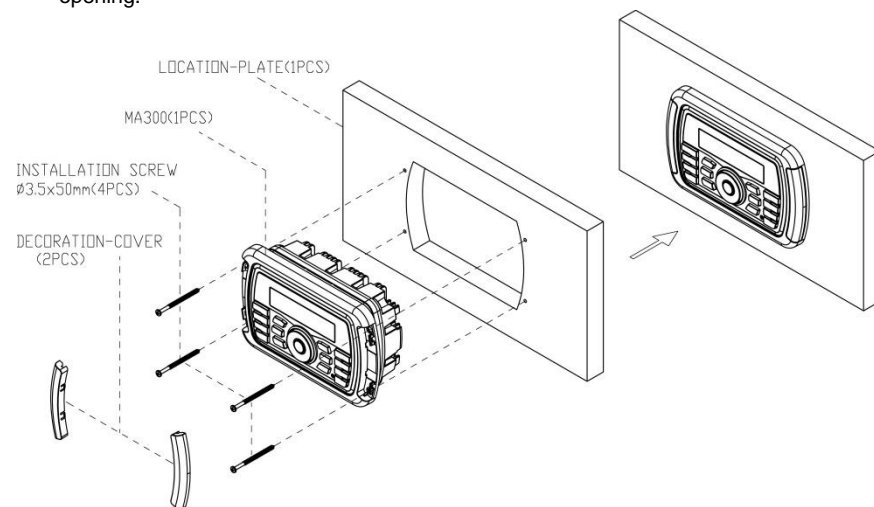
Before you begin, always disconnect the negative battery terminal.

## Important Notes

- Before final installation, test the wiring connections to make sure the unit is connected properly and the system works.
- Consult with your nearest dealer if installation requires the drilling of holes or other modifications to your vehicle.
- Install the unit where it does not interfere with driving and cannot injure passengers if there is a sudden or emergency stop.

## Front Mount

1. Use the included template to cut the installation opening.
2. Check the dashboard opening size by sliding the radio into it. If the opening is not large enough, carefully cut or file as necessary until the radio slides into the opening. Check that there will be sufficient space behind the dashboard for the radio chassis.
3. Place the radio in front of the dashboard opening so the wiring can be brought through the opening.



4. Follow the wiring diagram carefully and make certain all connections are secure to ensure proper operation.
5. After completing the wiring connections, temporarily reconnect the battery terminal and turn the unit on to confirm operation (vehicle accessory switch must be on). If the unit does not operate, recheck all wiring until the problem is corrected. Once proper operation is

achieved, turn the accessory switch off and proceed with final mounting of the chassis.

6. Carefully slide the radio into the opening, making sure it is right-side-up.
7. Secure the radio to the dashboard using #6 stainless steel pan head screws (not provided).
8. Replace the covers on either side of the radio.
9. Test radio operation by referring to the operating instructions for the unit.

## Removing the Unit

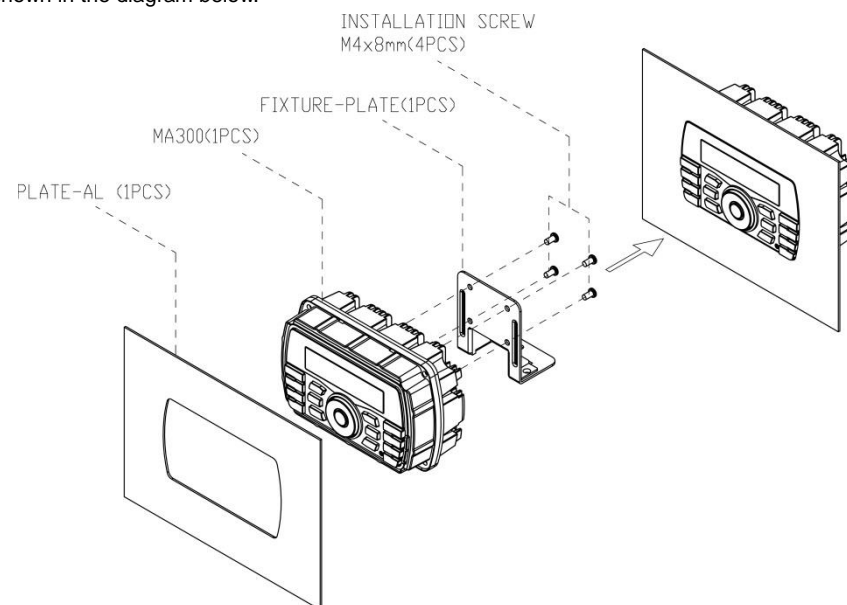
To remove the radio after front mount installation, remove the covers, unscrew the installation screws and pull the radio out.

## Reconnect Battery

When wiring is complete, reconnect the battery negative terminal.

## Bracket Mount

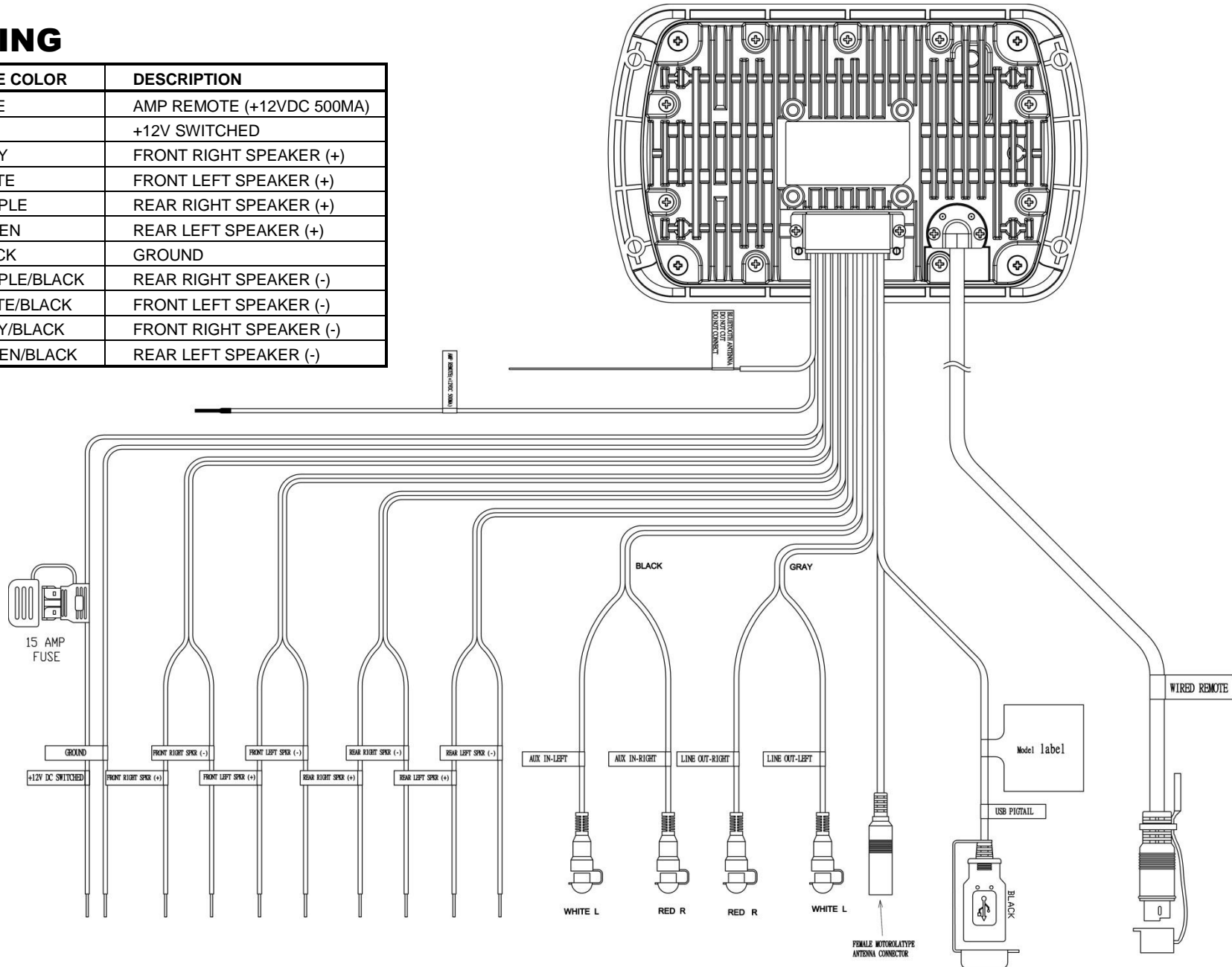
The VOSHD4MNT (sold separately) is a versatile mounting base/bracket for easy installation on most flat surfaces. Please use the included M4 screws to attach the radio to the bracket, as shown in the diagram below.



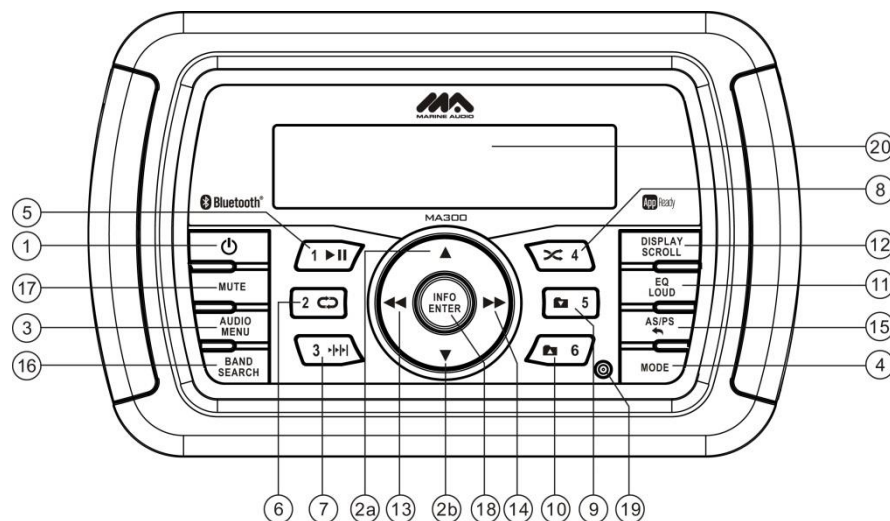
**NOTE: Use only the M4 x 7-10mm length screws, included.**

## WIRING

WIRE COLOR	DESCRIPTION
BLUE	AMP REMOTE (+12VDC 500MA)
RED	+12V SWITCHED
GRAY	FRONT RIGHT SPEAKER (+)
WHITE	FRONT LEFT SPEAKER (+)
PURPLE	REAR RIGHT SPEAKER (+)
GREEN	REAR LEFT SPEAKER (+)
BLACK	GROUND
PURPLE/BLACK	REAR RIGHT SPEAKER (-)
WHITE/BLACK	FRONT LEFT SPEAKER (-)
GRAY/BLACK	FRONT RIGHT SPEAKER (-)
GREEN/BLACK	REAR LEFT SPEAKER (-)



## BASIC OPERATION



### Power On/Off

Press the power button (1) on the front panel to turn the unit on or off.

### Volume Control

To increase the volume, press the ▲ button (2a). To decrease the volume, press the ▼ button (2b).

### Mute

Press the **MUTE** button (17) on the control panel to mute the audio output. Press **MUTE** again to restore the audio output to the previous level.

### Mode

Press the **MODE** button (4) on the control panel to select a different mode of operation, as indicated on the display panel. Available modes include AM/FM Tuner, Weatherband, iPod, USB, AUX In (optional Auxiliary Input), and Bluetooth Audio.

### Reset

The reset button (19) should be activated for the following reasons:

- initial installation of the unit when all wiring is completed
- function buttons do not operate
- error symbol on the display

Use a ball point pen or similar object to press the **RESET** button (19). This may be necessary

should the unit display an error code.

You can recover factory default settings using the **RESET** function located in the system menu. With "Reset to Defaults?" flashing, press the **INFO/ENTER** button (18) to activate.

### Audio Menu

Press the **AUDIO/MENU** button (3) on the control panel to access the audio menu. You can navigate through the audio menu items by pressing the **AUDIO/MENU** button repeatedly. Once the desired menu item appears on the display, adjust that option by pressing the ▲/▼ buttons (2) within 5 seconds. The unit will automatically exit the audio menu after five seconds of inactivity. The following menu items can be adjusted.

#### Bass

Use the ▲/▼ buttons to adjust the bass level range from "-6" to "+6".

#### Treble

Use the ▲/▼ buttons to adjust the treble level range from "-6" to "+6".

#### Balance

Use the ▲/▼ buttons to adjust the balance between the left and right speakers from "L12" (full left) to "R12" (full right).

#### Fade

Use the ▲/▼ buttons to adjust the fader between the rear and front speakers from "R12" (full rear) to "F12" (full front).

### System Menu

1. Press and hold the **AUDIO/MENU** button (3) for more than 2 seconds to enter the system menu.
2. Press the ▲/▼ buttons (2) repeatedly to navigate the system menu and select the desired item.
3. Press the **INFO/ENTER** or ◀▶ button (18) to adjust the selected menu item.
4. Press the **AS/PS** button (15) to return to the previous operation.

The following items can be adjusted:

- Key Beep (On/Off): Turn the audible beep On/Off (heard when functions/buttons are selected). NOTE: Beep tone off will not affect Battery Alarm audible tone.
- LCD Backlight (1/10 – 10/10): Adjust LCD brightness.
- LCD Contrast (1/10 – 10/10): Set LCD contrast.
- Tuning Region (USA/Europe/China/Latin/Aus/Russia/Japan): Set frequency spacing for various regions.
- Weather Alert Configure: Press the **INFO/ENTER** button (18) to see weather alert options.
  - Weather Alert (On/Off): Determines if the weather band alert feature is activated.
  - Alert Volume (1/40 – 40/40): Set default volume for weather alert broadcasts.
- Battery Alarm (On/Off): Monitor voltage on ACC line and send alert when voltage is low.
- Battery Auto-Off (On/Off): Automatically turn off power to radio when battery voltage is low.
- Bluetooth Device (Lock/Unlock, Disconnect/Connect, Delete): View, lock and delete from a list of previously paired mobile phone device models.

- Bluetooth Pair (On/Off): Choose “**INFO/ENTER**” to automatically pair a device.
- Bluetooth (On/Off): Choose “Bluetooth On” or “Bluetooth Off”.
- Volume Preset (1/40 – 40/40): Select an automatic turn-on volume.
- Reset to Defaults <ENTER>: Return the EEPROM to factory default set up values. Press the **INFO/ENTER** button (18) to select.

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**NOTE: BT Pair and BT Device menu options are only available while the Bluetooth feature is ON and the radio is in Bluetooth Audio mode.**

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**NOTE: A locked Bluetooth device will not be overwritten from the list.**

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## Battery Alarm Operation

If Battery Alarm is set to “On”, an alarm will sound (8 beeps every 30 sec) when the voltage drops to 10.5V (+/- 0.3V). A visual warning (Low Battery) will appear flashing (8 flashes every 30 sec) in the LCD display.

---

**NOTE: “Off” is the default setting for Battery Alarm. If the audio is muted or the volume is set to 0, the audible beep will not be heard.**

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## Equalizer

Press the **EQ/LOUD** button (11) to turn on the equalization function and select between five pre-defined bass and treble curves: User > Flat > Pop > Classical > Rock.

## Loudness

Press and hold the **EQ/LOUD** button (11) to toggle true loudness on/off. When listening to music at low volumes, this feature will boost the bass ranges to compensate for the characteristics of human hearing.

## Auxiliary Input

To access an auxiliary device:

1. Connect the portable audio player to the AUX IN cables routed from the rear of the radio.
2. Press the **MODE** button (4) to select Aux In mode.
3. Press **MODE** again to cancel Aux In mode and switch to the next mode.

## Liquid Crystal Display (LCD)

The current frequency and activated functions are shown on the LCD panel (20).

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**NOTE: LCD panels may take longer to respond when subjected to cold temperatures for an extended period of time. In addition, the visibility of the numbers on the LCD may decrease slightly. The LCD display will return to normal when the temperature increases to a normal range.**

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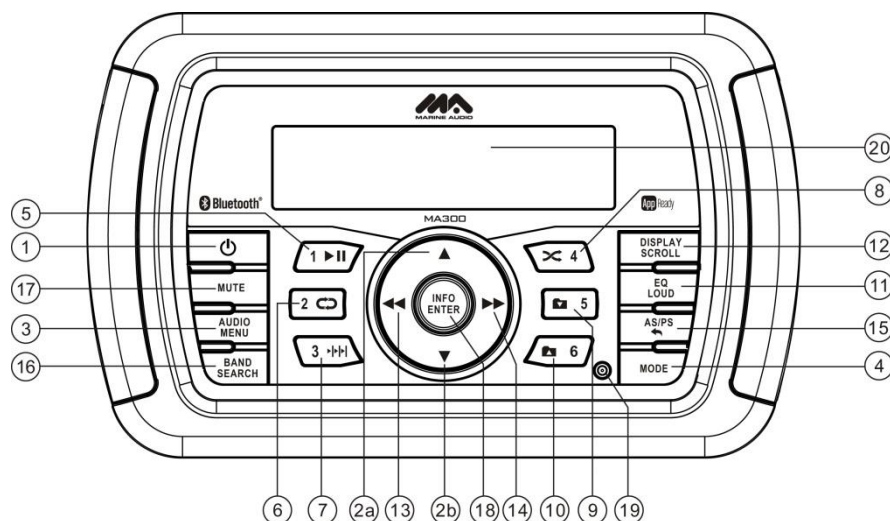
## Quick Exit Hot Key ↩

In the following modes and conditions, press the **AS/PS** ↩ button (15) < 5 seconds to quickly exit the current operation without waiting for the system default time out:

- System menu operation
- Searching mode
- Audio menu operation



## TUNER OPERATION



### Select a Band

Press the **BAND/SEARCH** button (16) to change between three FM bands and two AM (MW) bands.

### Manual Tuning

Press the ◀◀ or ▶▶ buttons (13, 14) to seek stations up/down step by step.

### Auto Seek Tuning

*Press and hold* the ◀◀ or ▶▶ buttons (13, 14) to automatically seek the next or previous strong station.

### Preset Stations

Six numbered preset buttons store and recall stations for each band.

#### Store a Station

Select a band (if needed), then select a station. *Press and hold* a preset button (5-10) for two seconds. The preset number will appear in the display.

#### Recall a Station

Select a band (if needed). Press a preset button (5-10) to select the corresponding stored station.

## Automatically Store / Preset Scan (AS/PS ◀)

### Automatically Store

Select an AM or FM band. Press and hold the **AS/PS** ◀ button (15) for more than two seconds to automatically select strong stations and store them in all bands. The new stations replace any stations already stored in that band.

### Preset Scan

Select a band (if needed). Press the **AS/PS** ◀ button (15) to scan stations stored in all bands. The unit will pause for ten seconds at each preset station. Press **AS/PS** ◀ again to stop scanning when the desired station is reached.

## WEATHER BAND OPERATION

### Accessing the Weather Band

Press the **MODE** button (4) to access the weather band mode.

#### *What is the NOAA Weather Radio?*

NOAA is a nationwide system that broadcasts local weather emergency information 24 hours a day. The U.S. network has more than 530 stations covering the 50 states, as well as the adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands and the U.S. Pacific Territories. Each local area has its own transmitting station and there are a total of seven broadcasting frequencies used: 162.400MHz (CH2), 162.425MHz (CH4), 162.450MHz (CH5), 162.475MHz (CH3), 162.500MHz (CH6), 162.525MHz (CH7) and 162.550MHz (CH1).

#### *How many stations can I expect to receive?*

Since the broadcasts pertain to local weather and information, the transmission power is usually very low (much less than AM or FM stations) which means you will usually receive only one station unless you are on the edge of two or more broadcast signals. The most you will receive is two or three, and that is rare.

#### *Is it possible I won't receive any stations?*

Depending on location, it's possible to receive a very weak signal or none at all. Also, similar to AM and FM signals, weather band signals are subject to surrounding conditions, weather, obstructions of the signal by hills or mountains, etc. If no NOAA signals are found, the tuner will scan all seven NOAA frequencies every 30 seconds.

#### *How will I know I am tuned to the weather band?*

When you select the weather band, the "WB" icon will appear on the display panel, along with the current channel indication. Press the ◀◀ or ▶▶ buttons (13, 14) to tune to each of the seven channels until you find the weather band station broadcasting in your area.

#### *NOAA Weather Alert*

The Weather Alert function adds an additional level of user safety by automatically switching from the current function mode to weather band mode for a minimum of 60 seconds if a NOAA warning tone (1050 Hz) is received. If no additional warning tone is received for 60 seconds, the unit will switch back to the last known function mode.

The Weather Alert function can be turned "on" or "off" by the **INFO/ENTER** button (18), as described on page 5. When set to "ON", the weather tuner remains active in the background, even when the radio is turned off (as long as the power is still applied to the radio). If a weather

alert is issued, the radio will turn on and play the announcement, then turn back off and revert to weather alert monitor mode.

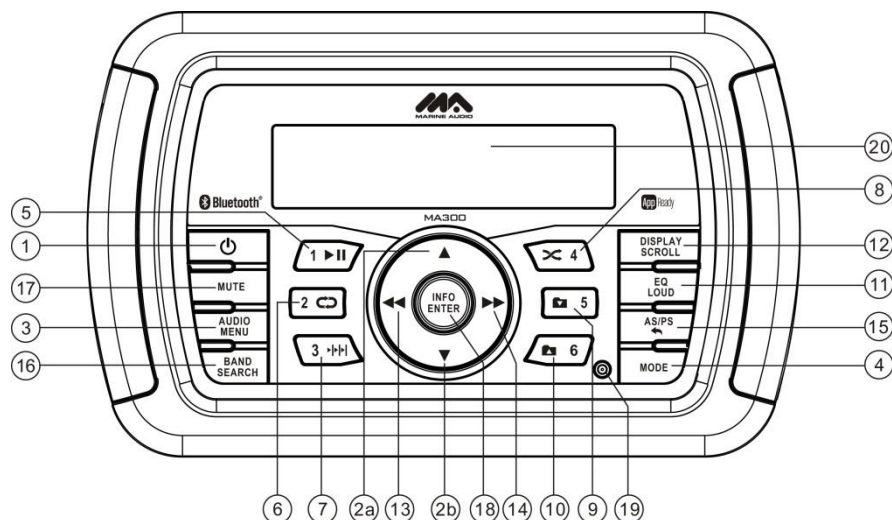
The radio will not respond to any weather alerts when it is off and will not automatically switch to the weather band if an alert is issued.

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**NOTE: If the unit is programmed for European operation, the WB function will be disabled.**

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## MP3/USB OPERATION



### MP3 Specifications

- T A directory that does not include an MP3 file is skipped.
- Maximum number of folders: 512 (including skipped directories)
- Maximum number of folder levels: 12
- Maximum number of MP3 files: 999
- Maximum number of characters for MP3 file name and folder name: 32
- Sampling frequency: 16KHz, 22.05KHz, 24KHz, 32KHz, 44.1KHz, 48KHz.
- Bit rates: maximum 384 Kbps.
- Maximum number of Characters of ID3 Tag:
- ID3 Tag version 1.0: 32
- ID3 Tag version 2.x: 32

**NOTE: USB flash drives with a capacity of up to 64 GB are supported.**

### Inserting and Removing a USB Device

#### Inserting a USB Device

Insert the USB device into the USB connector routed from the rear of the radio and display will show the "Loading..." message. The unit will read the files on the USB device automatically.

#### Removing a USB Device

Press the **MODE** button (4) to select another mode and then remove the USB device from the USB connector.

**NOTE: After loading a USB device, files and folders are accessed in the order in which they were written to the device. Therefore, the playing order may not be the same as the order in which they are expected to be played.**

### Controlling Playback

#### Pause/Play

Press the **1 ►||** button (5) to suspend playback. Press the **1 ►||** button again to resume play.

#### Track Select

Press the **►►** (14) or **◄◄** (13) button for less than one second to advance to the next file, or press and hold to fast forward or fast reverse. Playback begins when the button is released.

#### Repeat (RPT)

Press the **2** button (6) to repeatedly play the current file. Press **2** again to repeat all songs in the current folder. Press **2** a third time to resume normal playback.

#### Intro Scan (INT)

Press the **3** button (7) once to play the first 10 seconds of each file in the current device.

When the desired file is reached, press **3** again to end the scan and play the selected file.

#### Random (RDM)

Press the **4** button (8) to randomly play all files in the current folder. Press **4** again to resume normal playback.

#### Navigating Folders

Press the **5** button (10) to move to the previous folder and begin playback of the first song in the folder. Press the **6** button (9) to advance to the next folder and begin playback of the first song in the folder.

#### Alternate Display Information

Press the **DISP/SCROLL** button (12) to change the display information from file name default display to Artist/Song Title double line display mode.

#### MP3/WMA Directory Search

1. Press the **BAND/SEARCH** button (16) to enter directory search mode.
2. The LCD will display the folder list for the current directory. Press the **BAND/SEARCH** button to view the folder directory list.
3. Navigate the folder list by pressing the **▲/▼** buttons (2).
4. Press the **INFO/ENTER** button to select a folder. The LCD will display the list of files within that folder.
5. Navigate the file list by pressing the **▲/▼** buttons.
6. Press the **INFO/ENTER** button to select a file.
7. Use the **AS/PS** button (15) to reverse navigate the list.

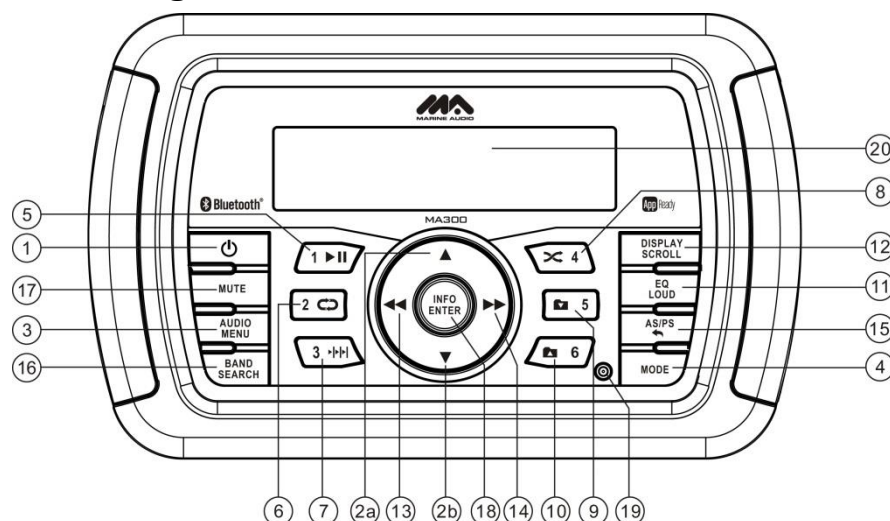
## iPod® OPERATION

This unit is equipped with an iPod ready function that will allow you to control your iPod (if compatible) using the control panel buttons. The following iPod versions are supported:

- iPod Nano – 6G, 7G
- iPod Classic
- iPod Touch – 4G, 5G
- iPhone – 4, 4S, 5, 5C, 5S

**NOTE:** Earlier model iPods are not supported because they do not implement the required control protocol. Also, the iPod shuffle is not supported because it does not utilize the 30-pin Apple iPod Connector. These unsupported iPod models may be connected to the radio using the Auxiliary Input.

### Accessing iPod Mode



Connect a supported iPod or iPhone to the USB connector. The iPod icon illuminates in the bottom left corner of the LCD whenever an iPod or iPhone is attached to the USB connector. Music playback begins automatically.

To enter iPod mode from any other source, press the **MODE** button (4) until "LOADING" appears on the display. If the user connects an iPod containing no file, the radio will display a message stating "No Songs" when it enters iPod mode.

### Turning the iPod On/Off

The iPod power turns on automatically when an iPod is connected to the USB connector, as long as the vehicle ignition is turned on. You can turn the iPod off by disconnecting it or by turning the ignition off. When the ignition is turned off, the iPod will pause and then enter sleep mode after 2 minutes. While the iPod is connected, the power cannot be turned on or off from the iPod itself.

**NOTE:** The iPod will continuously recharge when connected to the unit, as long as the vehicle ignition is turned on.

### Controlling Playback

#### Selecting Tracks

During playback, press the ►► button (14) to play the next track in the current category. Press the ◀◀ button (13) twice to play the previous track. Press and hold the ◀◀ or ►► button (13/14) to fast reverse/forward the song.

#### Pausing Playback

During playback, press the 1|| button (5) to pause the iPod player. "Pause" will appear on the LCD. Press 1|| again to resume playback.

#### Repeat Play

During playback, press the 2 button (6) to repeat the current song. "Repeat One" will appear on the LCD. Press 2 again to stop repeat playback.

#### Random Play

During playback, press the 4 button (8) to play all songs in the current category in random order. Random play will begin once the current song has finished playing. "Random On" will appear on the LCD. Press 4 again to stop random playback.

**NOTE:** If you press and hold the ◀◀ / ►► button to change the current song to the previous/next song, you will exit fast reverse/forward mode.

### Alternate Display Information

Press the **DISP/SCROLL** button (12) to change the display information from single line default display to Artist/Song Title double line display mode.

### Search Mode

Press the **BAND/SEARCH** button (16) to enter iPod search mode and choose from the following search criteria: Playlist, Artist, Album, Song, Genre, Composer, Audiobooks and Podcasts (consecutively).

When search mode is selected, press the **INFO/ENTER** button (18) to confirm selection. Use the ▲/▼ buttons (2) to navigate through various list selections. Press **INFO/ENTER** (18) to make your final selection. Use the **AS/PS** button (15) to reverse navigate the list.

## BLUETOOTH OPERATION

The MA300 includes built-in Bluetooth technology that allows you to wirelessly connect Bluetooth devices to this head unit for streaming audio playback.

### About Bluetooth Technology

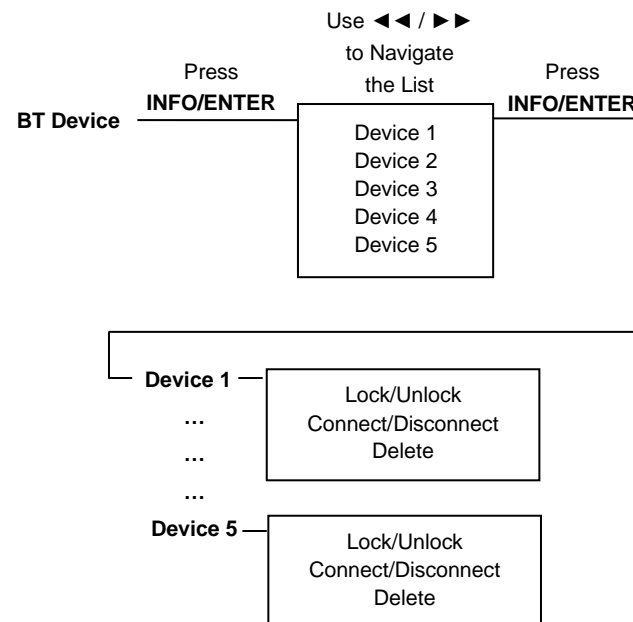
Bluetooth is a short-range wireless radio technology. Operating in the 2.4 GHz frequency range, it transmits voice and data at speeds up to 2.1 Mbit/s over a range of *up to* 10 meters.

### Bluetooth Menu Options

**NOTE:** Please note that some BT menu options are only available while the unit is in Bluetooth Audio mode.

Press and hold the **AUDIO/MENU** button (3) to enter menu adjustment mode. Repeatedly press the **AUDIO/MENU** button to access the following Bluetooth Menu options:

- **BT ON/OFF:** Press the **▲/▼** buttons (2) to choose "BT ON" or "BT OFF".
- **BT PAIR:** Press the **▲/▼** buttons to choose "ON" or "OFF", and then press the **INFO/ENTER** button (18) to enter the selection.
- **Bluetooth Pair <ENTER>:** Press the **INFO/ENTER** button to begin pairing with a Bluetooth enabled device is pairing mode.
- **BT DEVICE:** Press the **INFO/ENTER** button to view devices from the list. Press the **◀◀/▶▶** buttons (13, 14) to view a list of previously paired mobile devices. Press the **INFO/ENTER** button to select the device. Press the **◀◀/▶▶** button to choose Lock/Unlock, Disconnect or Delete for this device. You cannot delete a device that is actively connected.
- **LOCK/UNLOCK:** The MA300 can store up to 5 devices for BT connection. The devices are stored in FIFO (First In First Out) order. To prevent a device from being bumped from the list when more than 5 devices are used, you must lock the device. To Lock/Unlock a device, press the **INFO/ENTER** button to display/change the Locked (🔒) or Unlocked (🔓) icon.
- **DISCONNECT:** To disconnect a paired device, press the **INFO/ENTER** button to temporarily remove the BT link. The link can be re-established through your phone menu by selecting the MA300 for connection.
- **DELETE:** To delete a device from the list, press the **INFO/ENTER** button.



### Pairing a Bluetooth Device



Before you begin, consult the owner's manual for the Bluetooth device you want to pair with the MA300.

1. Make sure the device is on and ready to receive a signal from the MA300. With the MA300 in BT Audio mode, choose BT Pair from the MA300 menu and press the **INFO/ENTER** button to select ON. The unit is waiting to connect to a mobile device. With the Bluetooth function of the mobile device turned on, search for a Bluetooth device.
2. When the Bluetooth device has completed its search, the mobile device will display the Bluetooth device name (MA300).
3. Select MA300. The BT Audio icon (🎵) on the LCD will display.
4. Enter the pairing password (0000), if requested. After connecting successfully, you will be able to listen to music stored on your Bluetooth enabled device through the radio.

#### Answering a call While Listening to Music

When answering a call using a connected phone, Bluetooth audio playback will pause. After hanging up from the call, Bluetooth audio will continue on some phones. It may be necessary to press the play button to resume Bluetooth audio playback.

## Bluetooth Audio (A2DP)

The A2DP music is available for Bluetooth enabled phones when the phone is connected. To access Bluetooth mode and play songs stored on your phone, press the **MODE** button (4). While in BT mode , the BT Audio icon () illuminates on the LCD.

### Selecting Tracks

During playback, press the ◀◀/▶▶ button (13, 14) to play the previous or next track.

### Pausing Playback

During playback, press the 1▶|| button (5) to pause the Bluetooth audio playback. "BT Audio Pause" will appear on the LCD. Press 1▶|| button again to resume playback.

If you change to another mode, the mobile phone audio will pause. Press the **MODE** button (4) to return to BT mode and resume mobile phone audio playback.

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**NOTE: If a Bluetooth device is disconnected due to the power being turned off or if the device is disconnected inadvertently, the unit will automatically search for the matching Bluetooth device when the power is restored.**

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## APP OPERATION

MARINE AUDIO® Specialty Controller is the ultimate wireless remote control for your MARINE AUDIO stereo system. Store away your old remotes and enjoy the convenience of all the primary functions of your MARINE AUDIO stereo right from your phone or tablet by transforming your mobile device into a functional stereo remote control!

## Features

This app controls all of the primary functions of your stereo features including:

- Power on/off
- Volume and mute
- AM/FM radio tuner: access station, recall, store presets
- Bluetooth® streaming audio
- File structure visibility, track selection, track audible scan up and down via USB
- iPod/iPhone/iPad® control capabilities via USB
- Auxiliary audio input control
- Audio menu controls- bass, treble, balance, fader, equalizer and volume
- Visual display feedback so you can see artist title and album on your mobile screen

## Connecting and using MARINE AUDIO app

After downloading and installing **MARINE AUDIO app** on your device, pair your device to the MA300 as stated above for Bluetooth pairing.

When Marine Audio is installed on Android operating system, close the app before Bluetooth pairing, otherwise there may be errors on Bluetooth connection.

## CARE AND MAINTENANCE

- Keep the product dry. If it does get wet, wipe it dry immediately. Liquids might contain minerals that can corrode the electronic circuits.
- Keep the product away from dust and dirt, which can cause premature wear of parts.
- Handle the product gently and carefully. Dropping it can damage circuit boards and cases, and can cause the product to work improperly.
- Wipe the product with a dampened cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the product.
- Use and store the product only in normal temperature environments. High temperature can shorten the life of electronic devices, damage batteries, and distort or melt plastic parts.

### Ignition

The most common source of noise in reception is the ignition system. This is a result of the radio being placed close to the ignition system (engine). This type of noise can be easily detected because it will vary in intensity of pitch with the speed of the engine.

Usually, the ignition noise can be suppressed considerably by using a radio suppression type high voltage ignition wire and suppressor resistor in the ignition system. (Most vessels employ this wire and resistor but it may be necessary to check them for correct operation.) Another method of suppression is the use of additional noise suppressors. These can be obtained from most CB/A radio or electronic supply shops.

### Interference

Radio reception in a moving environment is very different from reception in a stationary environment (home). It is very important to understand the difference.

AM reception will deteriorate when passing under a bridge or when passing under high voltage lines. Although AM is subject to environmental noise, it has the ability to be received at great distance. This is because broadcasting signals follow the curvature of the earth and are reflected back by the upper atmosphere.

## TROUBLESHOOTING

Symptom	Cause	Solution
No power	The vessel's accessory switch is not on	If the power supply is properly connected to the vessel's accessory terminal, switch the ignition key to "ACC".
	Fuse is blown	Replace the fuse.
No sound	Volume too slow	Adjust volume to audible level.
	Wiring is not properly connected	Check wiring connections.
The operation keys do not work	The built-in microprocessor is not operating properly due to noise	Press the reset button (19).
Cannot tune to radio station, auto-seek does not work	Antenna cable is not connected	Insert the antenna cable firmly.
	Signals are too weak.	Select a station manually.



## SPECIFICATIONS

### **FM Radio**

Frequency Coverage (USA) . . . . .	87.5 to 107.9 MHz
Frequency Coverage (Europe) . . . . .	87.5 to 108 MHz
Sensitivity (S/N=30dB) . . . . .	4 $\mu$ V
Image Rejection . . . . .	>45 dB
Stereo Separation . . . . .	>25 dB

### **AM/MW**

Frequency Range (USA) . . . . .	530-1710 kHz
Frequency Range (Europe) . . . . .	522-1620 kHz
Sensitivity (S/N=20dB) . . . . .	30 dB

### **General**

Frequency band(s) (for Bluetooth) . . . . .	2.4~2.4835GHz
Maximum radio-frequency power transmitted (for Bluetooth) . . . . .	4 dBm
Operating Voltage . . . . .	DC 12 Volts
Grounding System . . . . .	Negative Ground
Speaker Impedance . . . . .	4 - 8 $\Omega$ (ohms) per channel
Tone Controls:	
Bass (at 100 Hz) . . . . .	$\pm$ 14 dB
Treble (at 10 kHz) . . . . .	$\pm$ 13 dB
Power Output . . . . .	22 W x 4
Fuse Rating . . . . .	15 Ampere (max.)
Chassis Dimensions . . . . .	182 (L) x 52.2 (W) x 173 (H)
Front Panel Dimensions . . . . .	188 (L) x 58 (W) x 21 (H)





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