



## **MPD500.1 USER MANUAL**

**500 WATTS | MONOBLOCK POWER AMPLIFIER  
FEATURING MARINIZED DUSTPROOF/  
WEATHERPROOF ENCLOSURE**



**Thank you for purchasing this Boss Audio Systems® *ELITE* amplifier!**

For the best performance and product experience, please read this user manual thoroughly.

If there are any technical questions, please contact:

Customer care: 805-751-4853 & Live chat

Online support: [www.bosssaudio.com/support](http://www.bosssaudio.com/support)

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## Package Contents

When first unpacking your new amplifier, please verify the package contains all of the items listed below. If any items are identified as missing, please contact the place of purchase.

- 1x Amplifier with two attached wiring harnesses.
- 1x Remote speaker volume control
- 4x Mounting screws
- 1x Spare ATO fuse (40A)
- User manual and warranty card

## Introduction

This Audio Amplifier is designed specifically to withstand the harsh Marine and Powersports conditions. To maintain a high IP rating, the wiring is attached to the Amplifier itself. The amplifier features the following:

- Full range Class D amplifier
- Monoblock
- 1 $\Omega$  stable mono operation
- MOSFET PWM (Pulse Width Modulated) power supply
- RCA low level input
- High level input with auto power on
- Variable input gain control
- Variable low pass filters
- Subsonic filter
- Variable bass boost
- Input sensitivity selector (Input voltage selection)
- Thermal, short and overload protection
- IP66-rated (Dustproof/Weatherproof)
- Remote speaker volume control
- LED illuminated end panels

## Important

Read and understand all instructions before you use your product. If you do not follow the instructions in this manual, we are not responsible for injury or damage resulting from improper handling. This will also void the warranty.

### Important Safety Precautions

- Do not open or attempt to repair this product yourself. Dangerous high voltages are present which may result in electric shock.
- To avoid risk of electronic shock or damage to the product, do not permit the product to become damp or wet from water or drinks. If this does occur, immediately unplug the power wires and send the product to your local dealer or service center as soon as possible.
- Do not make any adjustment on the product when driving or in other situations where distractions can be hazardous. Responsible and safe driving is your primary responsibility when operating a vehicle or vessel.
- In the event of smoke, strange noise or odor emitted from the product or any other abnormal operational signs appearing on the product, disconnect the product from the power supply. Discontinue use and contact your dealer or our technical support team. Using the product in this condition may result in permanent damage to the system.
- Servicing must only be carried out by a technician. Contact our technical support for any service questions.

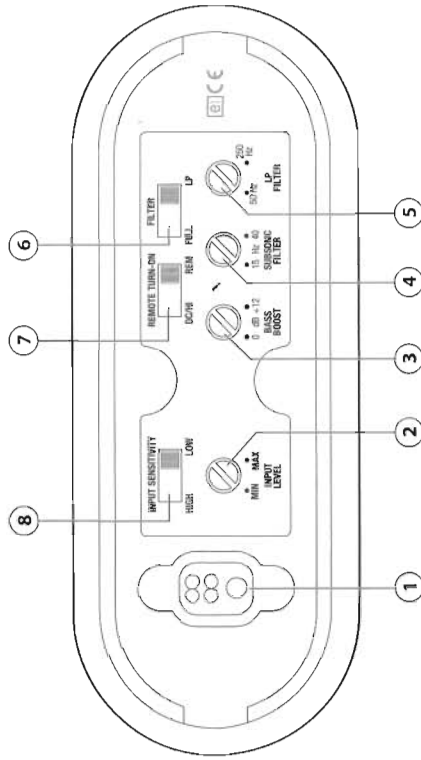
### Installation Precautions

- **WARNING: Always consult a professional installer.**
- Installation must be performed by a professional. Contact our technical support for any installation questions.
- Before installing any electrical accessories to your vehicle, always make sure the vehicle's electrical system is equipped to handle the extra electrical load.
- Before installation, disconnect the negative terminal of the vehicle battery to prevent damage to the product, fire, and/or possible injury.
- Always connect the power cable (red) to the vehicle or vessel's battery through the fuse. This can avoid a short circuit.
- Use only installation parts provided with the product. Using other mounting methods may void the warranty.
- Prior to any use, the amplifier must be fully mounted and secured and installed into the vehicle or vessel. All wiring should be secured and properly insulated. Failure to do so can result in damage.
- Observe the safety and operating instructions of the devices which are connected to this product.
- **Important!** Replace the faulty fuse with the same type and rating. Using a different type or rating of use may result in damage to the product or vehicle, or cause a fire.
- Do not use any aggressive cleaning agents. Clean the product with a dry, fiber-free cloth.

### Care of the Environment

Please inform yourself about the local separate collection system for electrical and electronic products. Do not throw away the product with the normal household waste at the end of its life, but hand it in at an official collection point or recycling. By doing so, you help to preserve the environment.

## Panel Controls and Features



### 1 Audio Input Wiring Harness

Connect the RCA audio outputs from your source unit using RCA cables (not included), or to the speaker output wires on your source unit. To use the high level inputs, the RCA inputs on the amplifier must be cut off.

### 2 Input Gain Control

Adjust the input level to the amplifier so as to match the output level from your source unit.

**Important!** Do not adjust the input level to maximum unless your input level requires it. Set the input gain just below the level of distortion.

### 3 Bass Boost Control

Use this control to increase sound output level of bass frequencies.

### 4 Subsonic Filter (15-40 Hz)

Use this control to filter out low frequency noise and rumble.

### 5 Low Pass Filter (50-250 Hz)

Use this control to define the frequency range you want the amplifier to receive. The amplifier will only receive the frequencies below the one you set to reproduce sound.

- Set the **FULL/LP** filter selector to the **LP** position to enable the Low Pass Filter, and the amplifier will only receive the frequencies below the one you set to reproduce sound.
- When the **FULL/LP** filter selector is set to the **FULL** position, the Filter is not adjustable and full-range frequencies are applied.

### 6 FULL/LP Filter Selector

When setting to **FULL**, the amplifier will receive low, mid and high frequencies to reproduce sound.

When setting to **LP**, the Low Pass Filter will be enabled.

### 7 Remote Turn-On Switch

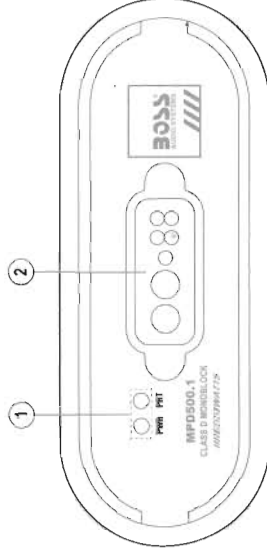
Set to **REM** when connecting low-level input (RCA input) from your source unit.

Set to **DC/HI** when connecting high-level input (speaker level input) from your source unit.

### 8 Input Sensitivity Selector

Set to **LOW** (300mV - 2V input) when connecting low-level input (RCA input) from your source unit.

Set to **HIGH** ( 2V - 8V input) when connecting high-level input (speaker level input) from your source unit.



### 1 Status Indicators

**PWR LED** (Green): Lights up to indicate the amplifier is powered on and operational.

**PRT LED** (Red): Lights up to indicate the amplifier is in protection mode and not operational. This problem can be caused by input overload, short circuit or high temperature.

### 2 Power/Audio Output Wiring Harness

Connect to the power source and a speaker.

## Amplifier Setup Procedure

1. Secure the amplifier in your vessel or Powersports machine. See the section "Mounting" on page 6.
2. Disconnect the negative terminal on the vehicle battery to prevent a short circuit.
3. Connect audio inputs. See the section "Low Level Input Wiring" on page 8, or "High Level Input Wiring" on page 8.
4. Connect audio outputs. See the section "Speaker Wiring" on page 9.
5. Connect to power supply. See the section "Power Connection" on page 10.
6. Recheck all wirings to ensure correct and secure power/input/output connections.
7. Set all input gain controls (**INPUT LEVEL**) to the minimum position, and set all filter controls to the desired frequency points.
8. Reconnect the negative battery terminal.
9. Turn on the source unit, then the amplifier automatically turns on.
10. Set your source unit to about 3/4 volume, then turn up the amplifier's input gain controls (**INPUT LEVEL**) to just below the level of distortion.
11. If necessary, further fine tune the various controls to obtain best results.

## Important notes on input gain control

- The input gain control (INPUT LEVEL) is designed only to adjust the input level to the amplifier so as to match the output level from your source unit. It is not a volume control!
- Never adjust the input level to maximum unless your input level requires it.
- Failure to notice these instructions will result in an input overload to the amplifier and excessive audio distortion. It can also trigger protection mode, or may cause damage to the amplifier or your speakers.

## Protection Mode

When protection mode triggers, the PRT LED (red) on the amplifier turns on and the amplifier shuts down.

One of the following reasons can trigger protection mode: input overload, short circuit or high temperature.

When the PRT LED turns on, take the following measures.

- Check the system carefully to determine what has caused the protection mode to trigger.
- Reset the amplifier. Turn off the amplifier (by turning off the head unit or other audio source which feeds the amplifier) and turn it on again.
- If the shut down was due to either an input overload or a short circuit, correct the conditions which cause the overload or short circuit then turn on the amplifier again.

## Mounting



See the section "Installation Precautions" on page 3.

Before you drill or cut any holes, investigate your car's layout very carefully. Take special care when you work near the gas tank, fuel lines, hydraulic lines and electrical wiring.

Mount the amplifier in the location away from moisture, and where connection cables are not pinched or damaged by sharp objects.

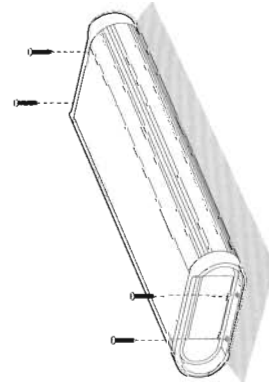
- 1 Find a suitable location in the vehicle to mount the amplifier. Make sure there is sufficient air circulation around the intended mounting location.

- 2 Secure the amplifier with four supplied screws:

a. Use the four screw holes on the amplifier to mark the mounting holes on the mounting surface.

b. Drill the mounting holes in the mounting surface.

c. Place the amplifier in position, and fix the amplifier on the mounting surface using four supplied screws.



## Wiring



See the section "Installation Precautions" on page 3.

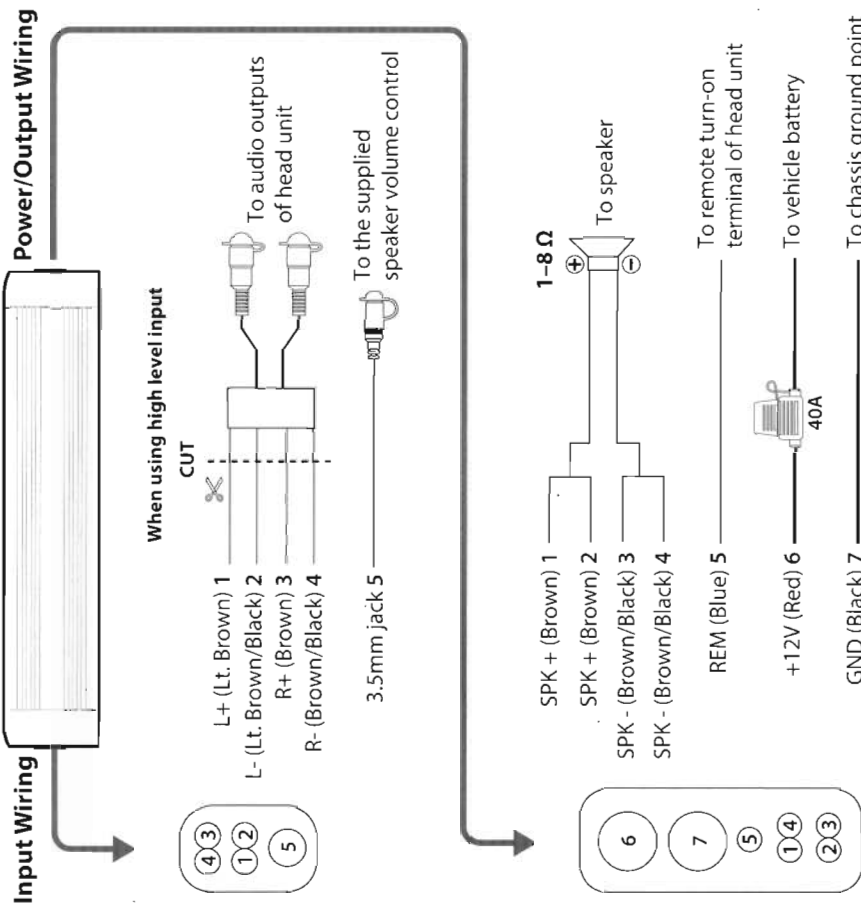
For safety, disconnect the negative terminal of the vehicle battery prior to wiring.

Use only high quality cables for reliable installation to minimize signal or power loss.

Make sure cables are not squeezed or damaged by sharp edges. Use rubber bushings for penetrations.

Make sure all the cables are securely connected and bare wires are properly insulated.

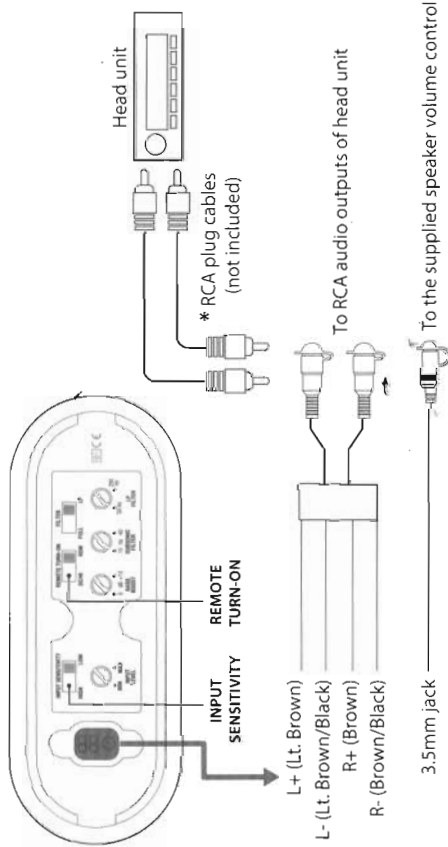
Reconnect the negative battery terminal only when all cable connections are correctly and securely made.



## Low-Level Input Wiring

The amplifier offers you two wiring alternatives for audio input from your head unit. Low-level input wiring is preferred for best audio performance. It provides an exceptional clean sound from the head unit.

**Important!** Do not connect both the high-level and low-level inputs from your head unit to the amplifier at the same time.



- \* Using RCA plug cables (not included), connect RCA female connectors on the amplifier to the RCA audio outputs on your head unit. Make sure the left and right channels are correctly matched.
- To reduce the possibility of noise entering signal chain, use high-quality RCA cables for better insulation and run the RCA cables away from large wire loops, electric fan and power wires.

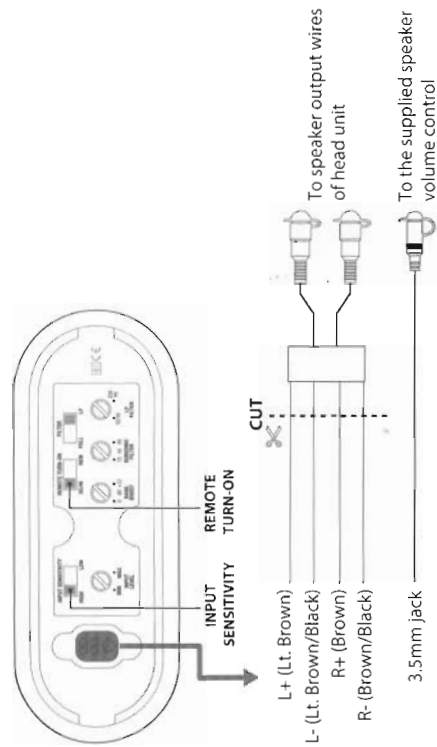
## Channel Input

- Make channel input connections illustrated above.
- Set **INPUT SENSITIVITY** to the **LOW** position, and set **REMOTE TURN-ON** to the **REM** position.

## High-Level Input Wiring

The amplifier offers you two wiring alternatives for audio input from your head unit. Use high-level input wiring for audio input only when your head unit does not have the RCA audio outputs for connection.

**Important!** Do not connect both the high-level and low-level inputs from your head unit to the amplifier at the same time.



As illustrated above, cut off the RCA female connectors so that the supplied input harness can be used for high-level input. Then connect the colored wires to speaker output wires of your head unit.

Observe speaker polarity. Make sure the speaker wires are securely connected and properly insulated.

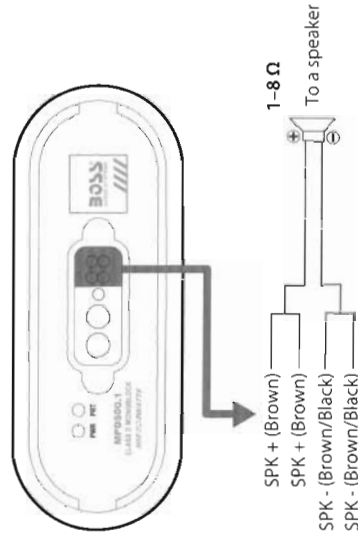
## Channel Input

- Make channel input connections illustrated above.
- Set **INPUT SENSITIVITY** to the **HIGH** position, and set **REMOTE TURN-ON** to the **DC/HI** position.

## Speaker Wiring

**Important!** Do not connect a speaker with an impedance lower than the one specified in the illustration below.

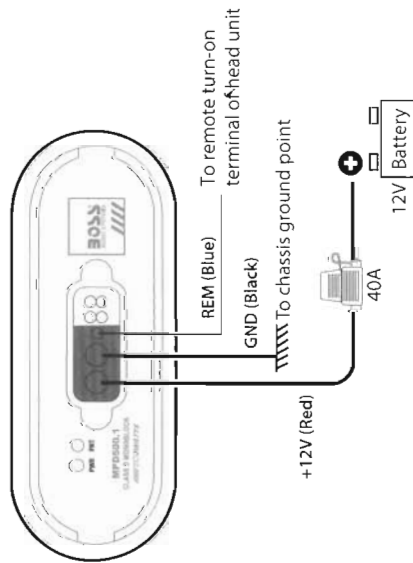
Observe speaker polarity. Make sure the speaker wires are securely and properly insulated.



## Important!

The channel is high powered. Always combine two positive wires together, and two negative wires together. Doing so can prevent overheating the wires.

## Power Connection



- 1 Connect the black ground cable (labeled "GND") on the amplifier to the metal frame (chassis) of your vehicle.  
Use an 8 gauge (or heavier) cable if extending the ground cable. Keep the ground cable as short as possible.  
Scrape away any paint, rust or dirt from the ground point to provide a clean contact. Fasten the ground cable on the ground point with a screw or bolt.
- 2 Connect the blue wire (labeled "REM") on the amplifier to the remote turn-on wire of your head unit.  
If high-level input connection is used, you do not need to make the remote turn-on connection. The amplifier can be turned on or off automatically whenever the head unit is turned on or off. The remote connection is used for power control. The amplifier automatically turns on or off every time the head unit is turned on or off.  
If your head unit does not have the remote turn-on wire, connect the "REM" wire on the amplifier to the ignition switch wire of your vehicle. In this case, make sure your head unit is also turned on or off with the operation of the ignition switch to avoid noise occurrence.
- 3 Connect the red power cable (labeled "+12V") on the amplifier to the positive terminal on the 12V vehicle battery.  
Use an 8 gauge (or heavier) cable if extending the power cable.

**Important:** The power cable must be connected to the positive battery terminal through a fuse to avoid a short circuit. Do not cut off the fuse box in the line.

## Troubleshooting

If you have problems using this product, check the following points before you request service. If you still have a problem, contact our technical support.

Problem	Solution
No power.	<p>Check that the amplifier is properly grounded (e.g. clean contact point on the chassis and secure ground connection).</p> <p>Check that there is at least 9VDC remote input on the <b>REM</b> terminal</p> <p>Check that there is battery power or at least 12V input on the +12V terminal.</p> <p>Check all fuses. Replace faulty one with the same type and rating.</p> <p>If the <b>PRT</b> LED illuminates, this indicates that the amplifier in protection mode. Power off the amplifier briefly, then power it on again.</p>
<b>PRT</b> LED (Red) lights up.	<p>Turn down volume on your source unit to prevent overdriving.</p> <p>Reset the amplifier by turning it off and on again. If the protection still lights up, the amplifier is faulty and needs servicing. See the section "Protection Mode" on page 7 for more details.</p>
No sound.	<p>Check that audio input connection is correctly and securely made.</p> <p>If using low-level input connection, check the RCA cables are correctly and securely plugged.</p> <p>If using high-level input connection, check connection with the speaker wires of your source unit.</p>
Low output.	<p>Adjust the remote speaker volume control to increase sound level.</p> <p>Input gain level is too low. Reset the input level control.</p> <p>Check the frequency pass filter settings.</p>
Distorted sound.	<p>Check that the input gain control is set to match the output level from your source unit. Always try to set the input gain level as low as possible.</p> <p>Check that the frequency pass filter is set correctly.</p> <p>Check for short circuits on the speaker wires.</p>
Hissing sound.	<p>Disconnect all RCA inputs to the amplifier and power on the amplifier to find out the faulty/noisy component.</p> <p>Try to set the source unit volume as high as possible (without distortion) and set the input gain level on the amplifier as low as possible.</p>
Engine noise (static type).	<p>This is usually caused by poor quality RCA cables, which can pick up radiated noise. Use only the high quality RCA cables and route them away from the power cables, large wire loops and electric fan.</p>
Engine noise (alternator whine).	<p>Check that the speaker wires are not shorted to the vehicle chassis.</p>
Amplifier gets very hot.	<p>Check that your source unit is properly grounded.</p> <p>Check the minimum speaker impedance for the amplifier is correct.</p> <p>Check that there is good air circulation around the amplifier. In some applications, it may be necessary to add an external cooling fan.</p>

## Specifications

### Audio

RMS output power .....	Up to 500W x 1 @ 1 $\Omega$ Up to 300W x 1 @ 2 $\Omega$ Up to 180W x 1 @ 4 $\Omega$
Min. speaker impedance .....	1 $\Omega$ stable
Total harmonic distortion (THD) .....	<0.01%
Frequency response .....	10Hz – 30kHz
Signal-to-noise ratio .....	>90dB
Channel separation .....	>50dB
Input sensitivity .....	300mV – 2V (Low level/RCA) 2V – 8V (High level)
Low pass filter (LPF) .....	50Hz – 250Hz
Subsonic filter .....	15Hz – 40Hz
Bass boost .....	0 to +12dB

### General

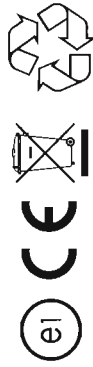
Power supply .....	12VDC
Current consumption .....	max. 40A
Fuse .....	ATO type, 40A
PWM MOSFET power supply .....	yes
Protection circuitry .....	yes (overload, short circuit, and thermal protection)
High-level inputs with auto power on .....	yes (no need to have remote turn-on wire connection)
Remote turn-on/turn-off .....	yes
Input gain control .....	yes, variable
LED indicators .....	green - power on; red - protection
Weight .....	3.2 lbs/ 1.45 kg
Dimensions .....	7.8" x 5.12" x 1.97" / 198 x 130 x 50 mm

*Specifications are subject to change without notice.*





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