poly-planar®
WATERPROOF MARINE AUDIO SYSTEMS

Rev 2.1

MZ-100 Four Channel DSP Zone Amplifier

Introduction:

The MZ-100 is a 4 channel audio amplifier capable of delivering up to 25W RMS per channel. The Digital Signal Processor (DSP) constantly monitors the output signal and optimizes it for maximum fidelity. The onboard microcontroller communicates with external control panels and poly-planar source units to make a complete networked audio solution. The compact, water resistant design allows for flexible mounting possibilities, and makes it simple to expand the audio system capabilities on any vessel or land based application

Uses:

- To add additional loudspeakers to a current audio system
- To provide amplification for a separate audio zone
- As a stand-alone system amplifier for any audio source

Features:

- Custom Equalization for optimized sound
- Digital Signal Optimization eliminates distortion and maximizes output
- Waterproof, corrosion resistant enclosure
- Connect up to 4 loudspeakers and 2 subwoofers
- Supports Intercom feature
- Supports wireless and wired remote control
- Expandable for multi-zone use
- Includes optional rotary volume knob

Controls, Input and Output Cables:

Left Panel View

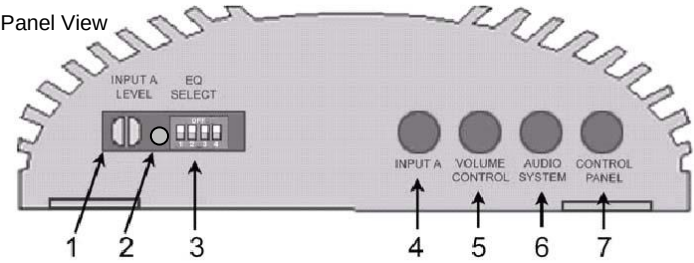


Figure 6 – Amplifier Switch and Gain settings

The switches and gain settings are located behind a watertight plug, which also lights up when the amplifier is on. Be sure to replace the plug when finished with adjustments

1) **Input A Level.** This rotary control selects the input sensitivity of the amplifier's RCA input (#4). Often referred to as Gain Control

2) **Pilot Lamp:** (Green) Illuminates when MZ100 is operating.

3) **Equalization**: These DIP switches are used to set one of eight different equalization settings as shown on page 5.

4) **Input A**: Stereo RCA audio input for connecting other audio devices

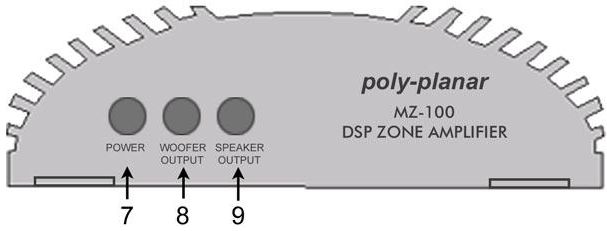
5) **Volume Control**: Plug for the waterproof remote volume control. When installed, this control will turn off the MZ100 Amp when turned all the way down.

6) **Audio System Connection**: This plug is used for hooking the MZ-100 to an extended poly-planar audio network using an RT20 System Router**.**

7) **Control Panel Connection**: This plug is used for hooking the MZ-100 to poly-planar displays and control panels.

Controls, Inputs & Outputs (Continued)

Right Panel View



Power and Speaker Connections: (Refer to diagram on page 4)

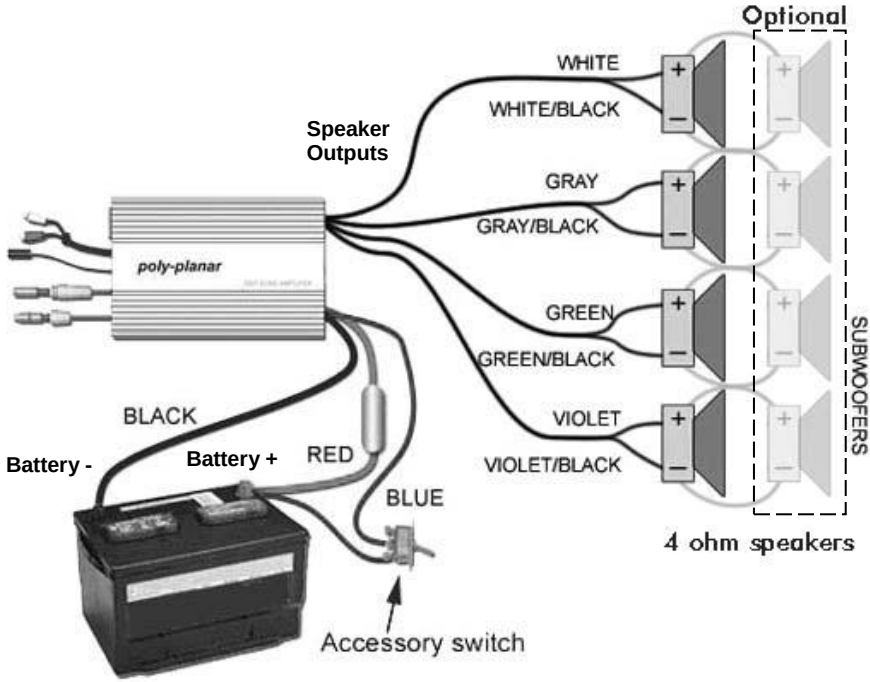
7) POWER The Black and Red wires should be connected directly to the 12 Volt battery, power supply or main fuse block using heavy gauge wire (AWG #14 or larger).

BLUE REMOTE WIRE turns on the amplifier.
For stand alone or as a local booster amp, connect this to the remote wire of your receiver, an on/off toggle switch or Accessory circuit.
As a Zone amplifier with an RD-44 or volume knob, connect this to 12V (Red wire).

8) SUBWOOFER CONNECTIONS: The Violet and Green wires connect to the subwoofers. (if used)

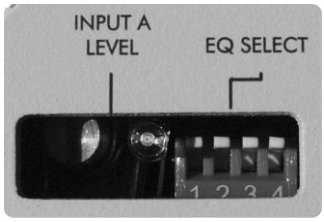
9) SPEAKER CONNECTIONS: The White and Gray Speaker wires connect to stereo pairs of loudspeakers. Make sure the EQ switches are set for the speakers you are using.

- Minimum impedance per channel = 2 ohms
- Pay close attention to polarity (black stripe = negative).
- Unused speaker connectors should NOT be twisted together or grounded. Insulate the contacts and tie them off safely.



Wire Color	Description
Red	Battery (+), 12Vdc
Black	Battery (–), Ground
Blue	Remote Turn On, 12Vdc = ON
White	Left Channel (+)
White/Black	Left Channel (–)
Gray	Right Channel (+)
Gray/Black	Right Channel (–)
Green	Sub 1 Channel (+)
Green/Black	Sub 1 Channel (–)
Violet	Sub 1 Channel (+)
Violet/Black	Sub 1 Channel (–)

Equalization Configurations: The EQ switches (See below) can be set in various configurations in order to accommodate the normal frequency variations found in speakers and installation acoustics. The MZ100 DSP Amp has the unique ability to accomplish this across the full audio spectrum. The chart below shows settings for the broad range of Poly Planar Speakers in Marine and Spa applications. Adding a Subwoofer will further enhance your audio experience.



- Make sure the EQ switches are set for the speakers you are using.
- When using other brands, use the settings based on similar sized applications.

EQ 1 

Optimized for: Platinum Series MA6500, MA6600 MA6800, MA6900 or other similar speakers. Using a subwoofer is optional

EQ 2 

Optimized for: Premium Series MA5106, MA5107, MA5950 or similar sized panel mount. Using a subwoofer optional.

EQ 3 

Optimized for: Performance series MA4055, MA4056, MA4600 or other similar panel mount speaker. A subwoofer is recommended.

EQ 4 

Optimized for: MA3030, MA7500,MA800, MA9060 box speakers MA3013,MA5104 or other small panel speakers in conjunction with MS55 or MS250 Subwoofer.

EQ 5 

Optimized for: SPA applications using Flip-up or Popup speakers containing 3" drivers. Using a subwoofer is optional

EQ 6 

Optimized for: SPA applications using MA7020 Popup speakers and MS-55 subwoofer

EQ 7 

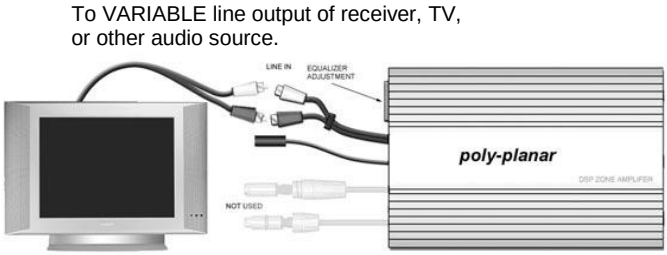
Optimized for: SPA applications using SP200 Popup speakers and MS-55 subwoofer

EQ 8 

Optimized for: SPA applications using SB100 speakers and MS-55 subwoofer.

Connecting the MZ-100 Input (Fixed Gain):

For operation without the optional external volume control, connect the amplifier inputs to the VARIABLE LINE OUT of your receiver using shielded RCA patch cables. In this case the amplifier volume will be determined by the volume setting of the source component.



NOTE:
The BLUE remote wire should be switched or connected to an accessory circuit

Figure 4 - Input connections without Volume control

Connecting the MZ-100 Input (Variable Gain):

For operation with the external volume control, connect the amplifier inputs to the PRE-AMP LINE OUT of your receiver using shielded RCA patch cables. The Pre-amp line output should be a fixed level output that is independent of the volume setting of the receiver.

NOTE:
The BLUE remote wire should be tied to 12V (Red wire). The amp can be turned off by turning the volume knob all the way down.

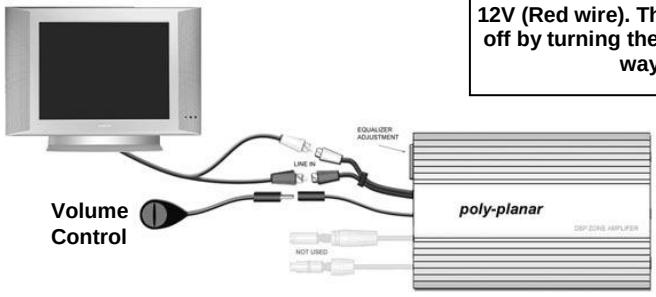


Figure 5 - Input connections with Volume control

IMPORTANT NOTE:
The BLUE remote wire should be tied to 12V (Red wire).

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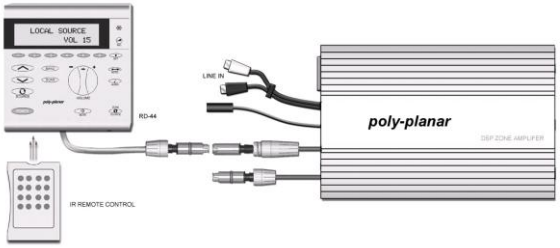
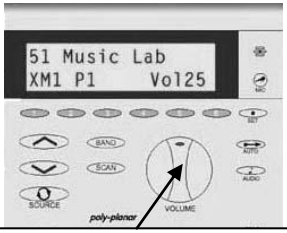
Connecting the MZ-100 to an RD-44 control panel:

The MZ-100 can be controlled by the RD-44 control panel. Using an extension cable (not shown) the panel can be up to 60 feet away from the amplifier. Plug the RD-44 or its extension cable into the CONTROL PANEL plug on the MZ-100. Be sure to tighten the waterproof connectors.





Rotate VOLUME control to set the AUDIO parameters

Controls and Screens when Connected to an RD-44 control panel

Screen	Button	Description
Poly-Planar Vol 15	POWER	Power On start-up screen *Volume is displayed 0 min – 31 max*
Poly-Planar Bass 0	AUDIO	Push 1 time to adjust Bass *(-9 min to + 9 max, 0 = flat)*
Poly-Planar Treb 0	AUDIO	Push 2 times to adjust Treble *(-9 min to + 9 max, 0 = flat)*
Poly-Planar Space 0	AUDIO	Push 3 times to adjust Stereo Spatial Enhancement *0 = normal, 1 = wide, 2 = widest*
Poly-Planar LoudON	AUDIO	Push 4 times to set Loudness ON/OFF *Enhances bass at low volumes*
Poly-Planar LimON	AUDIO	Push 5 times to set Limiter ON/OFF *ON prevents distortion at high volume*
Poly-Planar EQ ON 2	AUDIO	Push 6 times to set Equalizer ON/OFF *ON enables the equalizer selected by the switches shown on page 5.*

IMPORTANT NOTE:
The BLUE remote wire should be tied to 12V (Red wire).

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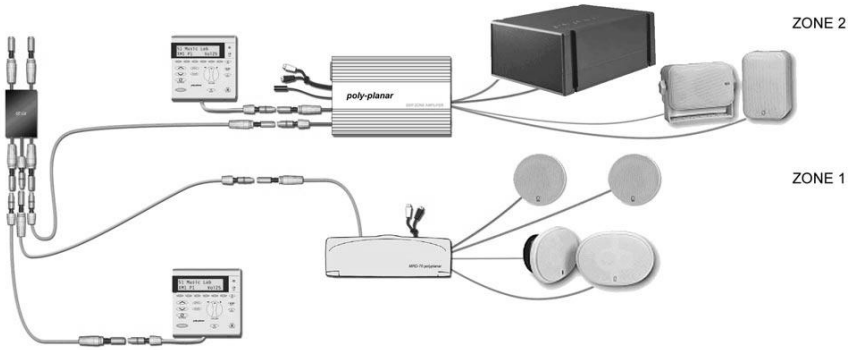
Connecting the MZ-100 to a multi-zone audio system:

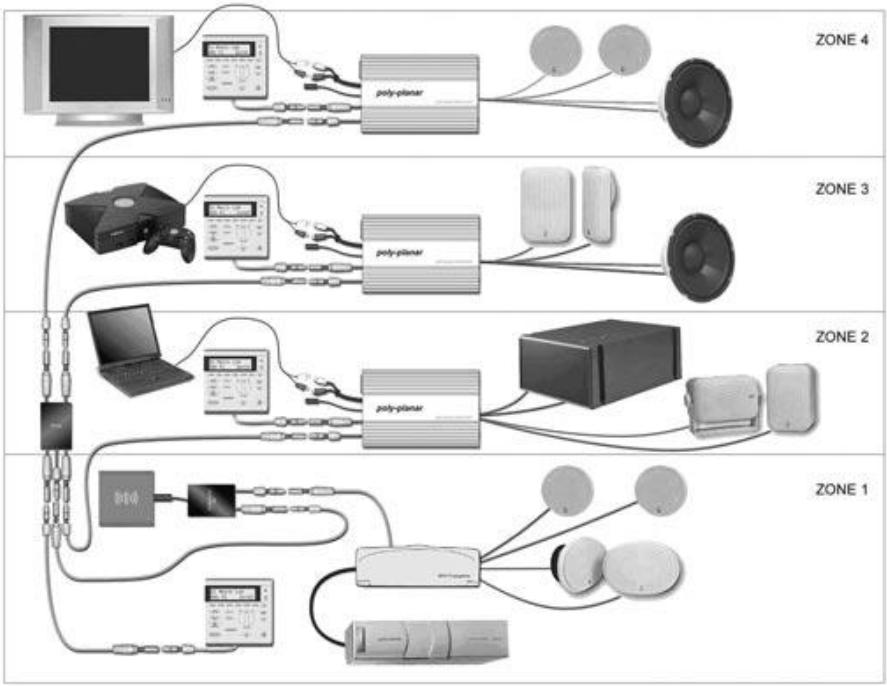
The MZ-100 is designed to be used in a multi-zone audio system. When combined with the MRD-70 CD/MP3 radio, RD-44 control panel and the RT-20 router, up to 4 independent zones can share sources and have communication through the RD-44's intercom.



Additional Controls and Screens when Connected to a Poly-Planar audio network.

Screen	Button	Description
Local Input Vol 15		Chooses between the local RCA jack input on the amp or…
87.5 Stereo FM1 P1 Vol 15		a network source such as Poly-Planar CD/MP3 players, XM sources etc.

Example of a 4 zone audio system.



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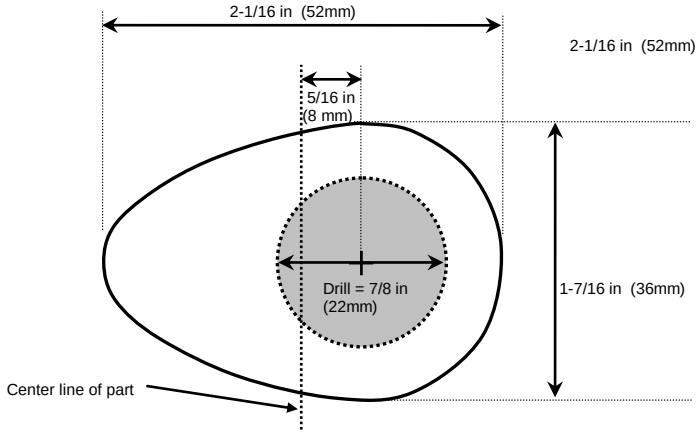
Specifications:

Speaker Impedance	2 – 8 ohm
Output Power (2 ohm load)	25 W RMS per channel
(4 ohm load)	15 W RMS per channel
Frequency Response	20 Hz – 20 kHz
Operating Voltage	13.8V (10V – 16V) DC
Idle Current (no signal)	10 mA
Maximum current draw (full power)	7 A
Remote wire current	4 mA
Dimensions (approx. w/h/d)	105mm X 40mm X 180mm
	4.15 X 1.5 X 4.75 inches
Weight	15 oz (.425 Kg)

Volume Control mounting template Note: Horizontal center of part is 5/16 inch (8mm) to the left of the mounting hole center.



Troubleshooting:

No Audio, Green LED Off

1. Make sure the Blue remote wired is switched to 12 volts.
2. Make sure the inline fuse is not blown. (Red wire)
3. Check that power wires are getting 12 volts from battery.

No Audio, Green LED On

1. Check that speaker outputs are not shorted to ground.
2. Make sure speakers are connected

Distorted Audio / Audio Cycles on & Off

1. Make sure speaker wires are not shorted together.
2. Power voltage too low or too high.
3. Input signal level too high. Turn down.
4. Power wire gauge too small. Use at least 14AWG wire.

Low Bass Output

Speakers are wired out of phase. Check polarity of wires to the speakers.

Amplifier Keeps Blowing Fuse

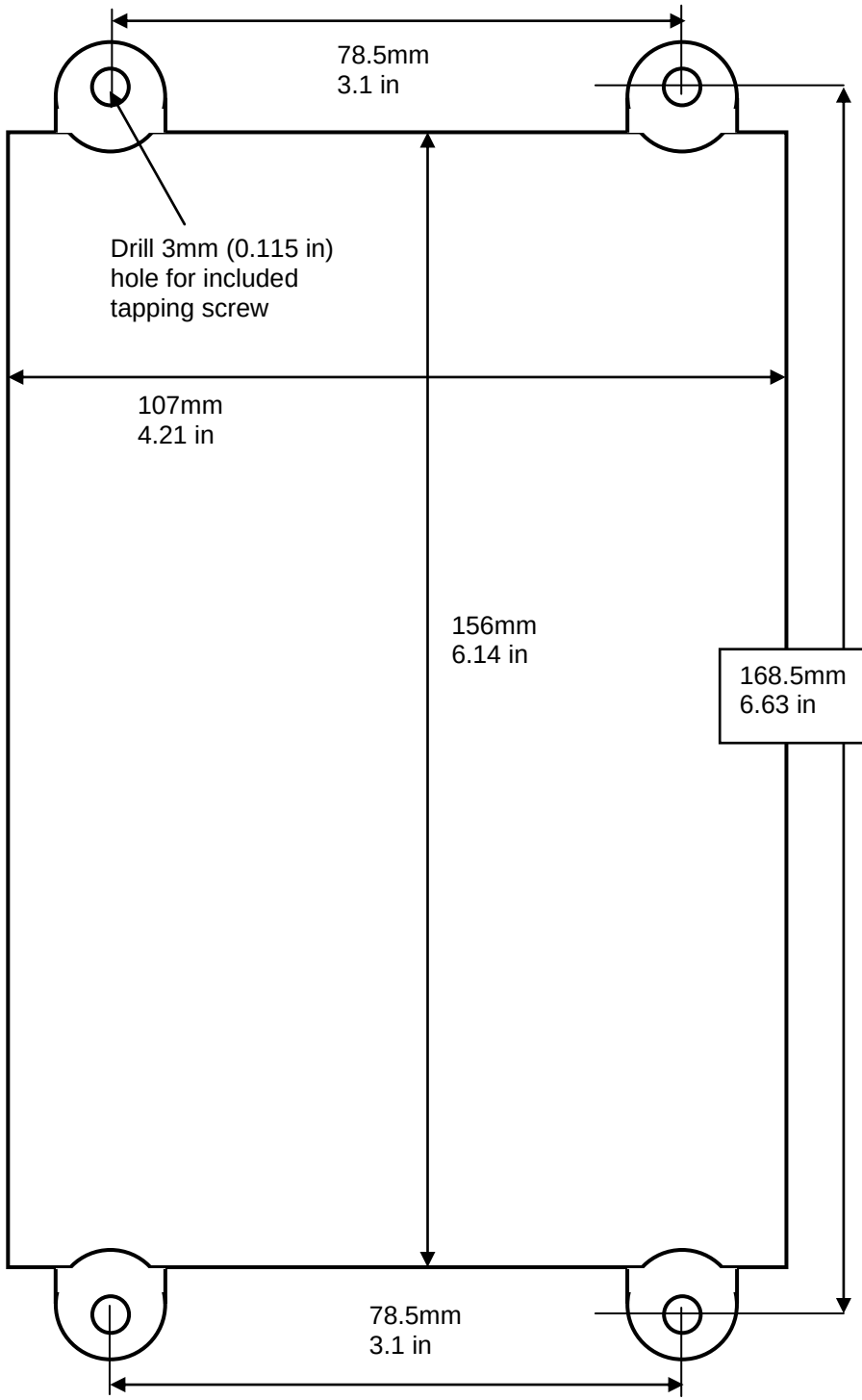
1. Battery + and – reversed at power leads.
2. Incorrect or shorted wiring.
3. Too many speakers or shorted speaker voice coil.

Whining Noise from Speakers

1. Bad ground connection. Confirm that the black wire returns to battery ground with at least a 14AWG wire.
2. Do not share grounds or power connections with other power electronic equipment such as motors, pumps, and VHF radios.
3. Be careful to route all amplifier wires away from other high current equipment wires.
4. Add a noise filter or ground-loop isolator if all else fails.

WARRANTY

Poly-Planar marine audio systems are warranted to be free of defects in materials and workmanship for a period of two years. Warranty is subject to proper installation and operation within published specifications. Poly-Planar will repair or replace, at its discretion, any unit returned prepaid to its factory and determined to be defective. Poly-Planar Inc. is not liable for consequential damages.


78.5mm
3.1 in
Drill 3mm (0.115 in)
hole for included
tapping screw
107mm
4.21 in
156mm
6.14 in
168.5mm
6.63 in
78.5mm
3.1 in