## DD Audio RL-SA500.1

# RL-SA500.1 Redline SA Series Subwoofer Monoblock Amplifier User Manual

Model: RL-SA500.1 | Brand: DD Audio

## 1. Introduction

Thank you for choosing the DD Audio RL-SA500.1 Redline SA Series Subwoofer Monoblock Amplifier. This amplifier is designed to deliver powerful and efficient audio performance in a compact form factor, ideal for driving DD AUDIO loaded enclosures or RL-SW subwoofers. This manual provides essential information for proper installation, operation, and maintenance of your amplifier. Please read it thoroughly before installation and keep it for future reference.




Figure 1: Front view of the RL-SA500.1 amplifier, showcasing the Redline logo and model number.

## 2. Safety Information

To ensure safe operation and prevent damage, please observe the following precautions:

- Always disconnect the vehicle's battery negative terminal before making any electrical connections.

- Ensure all wiring is properly sized and fused to prevent overheating and short circuits.
- Mount the amplifier securely in a well-ventilated area, away from moisture, excessive heat, and direct sunlight.
- Do not operate the amplifier if it has been exposed to water or moisture.
- Seek professional assistance if you are unsure about any installation steps.
- Avoid listening to audio at excessively high volumes for prolonged periods, as this can cause hearing damage.

## 3. Product Features

The RL-SA500.1 amplifier is engineered with advanced features for optimal performance:

- **Compact Class D Topology:** Utilizes the latest Class D technology for powerful output from an ultra-compact chassis, maximizing power efficiency and minimizing space requirements.
- **High Power Output:** Capable of delivering 500 Watts of continuous power, suitable for driving dedicated subwoofers.
- **Variable 12dB Crossovers:** Allows precise tuning of the subwoofer stage with adjustable low-pass and sub-sonic filters.
- **Hi-Level Inputs:** Provides easy integration with factory head units without the need for a line output converter.
- **Set Screw Power and Speaker Terminals:** Ensures secure and reliable electrical connections, typically found in higher-end amplifiers.
- **6dB Bass Boost:** Offers adjustable bass enhancement at 45Hz for deeper low-frequency response.
- **Remote Control Knob:** Included for convenient on-the-fly adjustment of subwoofer volume from the driver's seat.

## 4. Setup and Installation

Proper installation is crucial for the performance and longevity of your amplifier.

### 4.1 Mounting the Amplifier

Choose a mounting location that is dry, well-ventilated, and secure. Ensure there is sufficient airflow around the amplifier's heat sink fins to prevent overheating. Avoid mounting in direct sunlight or near heat sources.




Figure 2: Side view of the amplifier, highlighting the heat sink design for efficient cooling.

### 4.2 Power and Ground Connections

Use appropriate gauge wiring (4 AWG recommended for power) for all connections.

- **+12V (Power):** Connect to the positive terminal of the vehicle's battery via an inline fuse (not included) located within 18

inches of the battery.

- **GND (Ground):** Connect to a clean, unpainted metal surface of the vehicle's chassis. Ensure a solid, low-resistance connection.
- **REM (Remote Turn-On):** Connect to the remote turn-on output of your head unit. This signal turns the amplifier on and off with your audio system.




Figure 3: Detailed view of the power input terminals (GND, REM, +12V) on the amplifier.

## 4.3 Audio Input Connections

The RL-SA500.1 supports both RCA Line Level and High Level inputs.

- **RCA Input:** Connect RCA cables from your head unit's subwoofer pre-out to the amplifier's RCA input jacks (L and R).
- **Hi-Level Input:** If your head unit does not have RCA outputs, use the included Hi-Level input harness. Connect the speaker wires from your head unit's speaker outputs to the corresponding terminals on the harness (+L, -L, +R, -R).

## 4.4 Speaker Output Connections

Connect your subwoofer(s) to the amplifier's speaker output terminals. The RL-SA500.1 is a monoblock amplifier, designed for a single subwoofer or multiple subwoofers wired to a compatible impedance. Use 12 AWG speaker wire for optimal performance.




Figure 4: Angled view of the amplifier, showing both power input and speaker output terminals.

## 5. Operating and Adjustments

Once installed, you can fine-tune the amplifier's settings for optimal audio performance.




Figure 5: Detailed view of the amplifier's control panel, showing gain, filters, and bass boost adjustments.

- **GAIN:** Adjusts the input sensitivity of the amplifier to match the output voltage of your head unit. Start with the gain at minimum and slowly increase until desired volume is achieved without distortion.
- **SUB SONIC (Sub-Sonic Filter):** Filters out extremely low frequencies that are below the audible range or harmful to your subwoofer. Adjustable from 10Hz to 50Hz. Set it slightly below your subwoofer's resonant frequency.
- **LPF (Low-Pass Filter):** Filters out frequencies above the set point, ensuring only low frequencies are sent to the subwoofer. Adjustable from 30Hz to 250Hz. Set it to blend smoothly with your main speakers.

- **BASS BOOST:** Provides an adjustable bass enhancement of up to 12dB at 45Hz. Use sparingly to avoid distortion.
- **Remote Control Knob:** Connect the included remote control knob to the "REMOTE" port on the amplifier. This allows for convenient adjustment of the subwoofer's output level from the listening position.




Figure 6: The included remote control knob for convenient bass level adjustment.

## 6. Maintenance

The RL-SA500.1 amplifier requires minimal maintenance.

- Keep the amplifier clean and free of dust. Use a soft, dry cloth for cleaning.
- Periodically check all wiring connections to ensure they are secure and free from corrosion.
- Ensure the amplifier's ventilation fins are not obstructed to maintain proper cooling.

## 7. Troubleshooting

If you experience issues with your amplifier, consult the following table before contacting support.

| Problem | Possible Cause | Solution |
|---|---|---|
| No Power / Amplifier Not Turning On | ◦ Blown fuse<br>◦ Loose power or ground connection<br>◦ No remote turn-on signal<br>◦ Low battery voltage | ◦ Check and replace fuse if necessary.<br>◦ Verify all power, ground, and remote connections are secure.<br>◦ Check remote wire connection to head unit and amplifier.<br>◦ Check vehicle battery voltage. |
| No Sound Output | ◦ Input signal issue (RCA/Hi-Level)<br>◦ Speaker wires disconnected or shorted<br>◦ Gain setting too low<br>◦ Head unit volume too low | ◦ Check RCA or Hi-Level input connections.<br>◦ Inspect speaker wiring for shorts or disconnections.<br>◦ Increase gain setting gradually.<br>◦ Increase head unit volume. |
| Distorted Sound | ◦ Gain set too high<br>◦ Speaker impedance mismatch<br>◦ Poor ground connection<br>◦ Bass Boost set too high | ◦ Reduce gain setting.<br>◦ Verify speaker impedance is compatible with amplifier.<br>◦ Ensure ground connection is clean and secure.<br>◦ Reduce Bass Boost level. |

| Problem | Possible Cause | Solution |
|---|---|---|
| Amplifier Overheating (Protection Mode) | ◦ Insufficient ventilation<br>◦ Speaker impedance too low<br>◦ Prolonged high volume operation | ◦ Ensure proper airflow around amplifier.<br>◦ Check speaker impedance.<br>◦ Reduce volume or allow amplifier to cool down. |

## 8. Specifications

Technical specifications for the RL-SA500.1 Redline SA Series Subwoofer Monoblock Amplifier:

| Parameter | Value |
|---|---|
| Operating Voltage | 10 - 16V |
| Test Voltage | 14.4V |
| Output Channel(s) | 1 |
| Continuous Wattage @ 4ohm | 250W |
| Continuous Wattage @ 2ohm | 390W |
| Continuous Wattage @ 1ohm | 500W |
| Dynamic Wattage | 1000W |
| Max Current Draw (Amps) | 50A |
| RCA Input Voltage Sensitivity | 6 - 2.5V |
| High-Level Input Voltage Sensitivity | 20 - 1.1V |
| RCA Input S/N | > 85 dB |
| Damping Factor | > 70 |
| THD | <0.1% |
| Bass Boost | 12dB @ 45Hz |
| Frequency Response (Hz) | 10 - 250Hz |
| Sub-Sonic Filter | 10 - 50Hz |
| Low-Pass Filter | 30 - 250Hz |
| Power Wire Gauge | 4 AWG |
| Speaker Wire Gauge | 12 AWG |
| Dimensions (Inches) | 7 x 3.8 x 1.69 |

## 9. Warranty and Support

The DD Audio RL-SA500.1 amplifier comes with a **1-Year Manufacturer Defect Warranty**. Please retain your proof of purchase for warranty claims.

For technical support, warranty inquiries, or service, please contact DD Audio customer service through their official website or authorized dealer. Provide your product model number (RL-SA500.1) and a detailed description of the issue.

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