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ETON PA 1 Ultra Compact 1-Channel Class D Amplifier Instruction Manual

Model: PA 1

1. INTRODUCTION

The ETON PA 1 is an ultra-compact 1-channel Class D amplifier designed for car and RV audio systems. It delivers powerful performance in a minimal footprint, making it suitable for flexible installation in various vehicles. This manual provides essential information for safe installation, operation, and maintenance of your PA 1 amplifier.

The PA 1 features advanced Class D technology, high-quality electronic components, and a premium finish, ensuring high efficiency and superior sound quality. Its robust die-cast aluminum housing with an anodized matte finish provides effective temperature management. The removable top plate conceals numerous adjustment options, including a tunable low-pass filter, subsonic filter, high-level input voltage control, and gain adjustment.



Image 1.1: ETON PA 1 Ultra Compact 1-Channel Class D Amplifier, front view.

2. SAFETY INSTRUCTIONS

- Always disconnect the vehicle's battery before beginning any installation or wiring work to prevent electrical shock or damage.
- Ensure proper grounding of the amplifier to the vehicle's chassis to prevent electrical hazards and ensure optimal performance.
- Do not expose the amplifier to moisture, water, or extreme temperatures. Install it in a dry, well-ventilated area.
- Consult a qualified professional for complex installations or if you are unsure about any steps.
- Use appropriate wiring gauges for power, ground, and speaker connections as specified in the installation section to prevent overheating and ensure stable operation.
- Securely mount the amplifier to prevent it from moving during vehicle operation, which could cause injury or damage.

3. PACKAGE CONTENTS

Please check the package for the following items:

- 1 x ETON PA 1 Amplifier
- 1 x Power Plug
- 3 x Speaker Connectors
- 3 x High-Level Cables
- 4 x Mounting Feet
- Mounting Screws
- 1 x Remote Level Control

4. PRODUCT FEATURES

- **Ultra-Compact Design:** Measuring 128 x 100 x 45 mm, the monoblock amplifier integrates flexibly into various vehicle spaces.
- **Advanced Class D Technology:** Ensures high efficiency, minimal distortion, and precise sound reproduction.
- **Durable Construction:** Features a robust die-cast aluminum housing with an anodized matte finish for effective heat dissipation.
- **Adjustable Filters:** Includes a tunable low-pass filter (12/24 dB/oct) and a subsonic filter for precise sound tuning.
- **High-Level Input (EPS):** Equipped with adjustable high-level input voltage and High-Level Input Resistance (EPS) for seamless integration with factory head units.
- **Integrated Adjustment Tool:** A convenient tool is integrated into the heatsink for filter and gain adjustments.
- **Removable Connectors:** Features detachable connectors for power and audio signals, simplifying installation and removal.
- **Versatile Mounting:** Supplied with mounting feet for secure and flexible installation.
- **Stackable Design:** Multiple PA series amplifiers can be stacked for compact multi-amplifier setups.
- **Remote Level Control:** Includes a wired remote control for convenient bass level adjustment.



Image 4.1: ETON PA 1 amplifier demonstrating its compact size with a pen for scale.

5. INSTALLATION

5.1 Mounting the Amplifier

Select a secure, dry, and well-ventilated location for mounting the amplifier. Ensure there is sufficient airflow around the unit to prevent overheating. Use the provided mounting feet and screws to securely fix the amplifier to a solid surface in your vehicle. The compact dimensions allow for flexible placement options.



Image 5.1: Exploded view illustrating the removable top plate and mounting feet for the ETON PA 1.

5.2 Power Connections

- B+ (Positive Power):** Connect the B+ terminal to the vehicle's positive battery terminal using a suitable gauge power cable. An inline fuse (not supplied) must be installed within 18 inches (45 cm) of the battery.
- GND (Ground):** Connect the GND terminal to a clean, solid chassis ground point on the vehicle. Ensure the connection is free of paint and corrosion for optimal conductivity.
- REM (Remote Turn-On):** Connect the REM terminal to the remote turn-on output of your head unit. This signal turns the amplifier on and off with your audio system.

5.3 Speaker Connections

Connect your subwoofer to the speaker output terminals of the amplifier. Ensure correct polarity (+ to + and - to -) for optimal sound reproduction. The PA 1 is a monoblock amplifier designed for a single subwoofer.

5.4 Input Signal Connection

The PA 1 offers both high-level and low-level (RCA) input options:

- High-Level Input:** Use the provided high-level cables to connect directly to your vehicle's speaker outputs. This is ideal for factory head units without RCA pre-outs. The amplifier features High-Level Input Resistance

(EPS) and adjustable input voltage (1-15V or 15-40V) for optimal integration.

- **Low-Level Input (RCA):** If your head unit has RCA pre-outs, connect RCA cables from the head unit to the amplifier's RCA input jacks.

5.5 Remote Level Control

Connect the wired remote level control to the 'REMOTE' port on the amplifier. This allows for convenient adjustment of the subwoofer output level from your listening position.



Image 5.2: Overview of the ETON PA 1 connection panel, including power, speaker, and input terminals.

6. OPERATION AND ADJUSTMENTS

6.1 Accessing Controls

The adjustment controls for the PA 1 amplifier are located under the removable top plate. Carefully remove the top plate to access the settings. An integrated adjustment tool is provided within the heatsink for precise tuning.



Image 6.1: ETON PA 1 with the top cover removed, showing the internal adjustment controls.



Image 6.2: Close-up of the integrated adjustment tool for fine-tuning the amplifier settings.

6.2 Gain Adjustment

The GAIN control matches the amplifier's input sensitivity to the output level of your head unit. To set the gain, start with the control at its minimum position. Play a familiar piece of music at a moderate volume on your head unit. Slowly increase the GAIN control until you hear distortion, then back it off slightly until the sound is clear. This ensures maximum clean output from the amplifier.

6.3 Low-Pass Filter (LPF)

The LPF (Low-Pass Filter) allows only frequencies below the set point to pass through to the subwoofer. Adjust the LPF frequency (range: 30 Hz - 220 Hz) to blend the subwoofer's output seamlessly with your main speakers. The filter slope is adjustable between 12 dB/octave and 24 dB/octave for precise control over the frequency rolloff.

6.4 Subsonic Filter

The SUBSONIC filter removes extremely low frequencies (range: 20 Hz - 50 Hz) that are typically inaudible and can cause your subwoofer to over-excurse, potentially leading to damage. Setting this filter helps protect your subwoofer and improves overall sound quality by focusing its output on audible bass frequencies.

6.5 Input Voltage Adjustment

For high-level inputs, the amplifier features a switch to adjust the input voltage range (1-15V or 15-40V). Select the appropriate range based on the output voltage of your vehicle's head unit to ensure proper signal processing.

6.6 Remote Level Control

The included remote level control allows you to conveniently adjust the subwoofer's output volume from your driver's seat without needing to access the amplifier directly.

7. MAINTENANCE

- **Cleaning:** Keep the amplifier clean and free from dust. Use a soft, dry cloth for cleaning. Avoid using harsh chemicals or abrasive materials.
- **Connection Check:** Periodically check all power, ground, and speaker connections for tightness and corrosion. Loose connections can lead to poor performance or damage.
- **Ventilation:** Ensure that the amplifier's cooling fins are not obstructed and that there is adequate airflow around the unit to prevent overheating.

8. TROUBLESHOOTING

If you experience issues with your ETON PA 1 amplifier, refer to the following troubleshooting guide:

- **No Power / Amplifier Not Turning On**
 - Check the main power cable connection at the battery and amplifier.
 - Verify the ground connection is secure and free of corrosion.
 - Inspect the inline fuse near the battery; replace if blown.
 - Ensure the remote turn-on (REM) wire is connected and receiving a 12V signal from the head unit.
- **No Sound Output:**
 - Confirm that the input signal cables (RCA or high-level) are securely connected to both the head unit and the amplifier.
 - Check the speaker wire connections at both the amplifier and the subwoofer for correct polarity and tightness.
 - Adjust the GAIN control; it might be set too low.
 - Ensure the head unit is powered on and producing an audio signal.
- **Distorted Sound:**
 - Reduce the GAIN setting on the amplifier. If the gain is set too high, it can cause distortion.
 - Check the LPF and Subsonic filter settings. Incorrect settings can lead to muddy or distorted bass.
 - Verify that the subwoofer's impedance matches the amplifier's capabilities (e.g., 1 ohm, 2 ohms, 4 ohms).
 - Ensure the input signal from the head unit is clean and not distorted.
- **Amplifier Overheating:**
 - Ensure adequate ventilation around the amplifier. Clear any obstructions from the cooling fins.
 - Check the speaker impedance. Running the amplifier below its minimum rated impedance can cause overheating.
 - Reduce the volume or gain settings if the amplifier is consistently overheating.

9. SPECIFICATIONS

Feature	Specification
Output Power (RMS)	1 x 200 W @ 4 ohms, 1 x 340 W @ 2 ohms, 1 x 480 W @ 1 ohm
Signal-to-Noise Ratio	83.5 dB
Damping Factor @ 4 ohms	> 88
Dimensions (L x W x H)	128 x 100 x 45 mm
Number of Channels	1
Low-Pass Filter (LPF)	Adjustable 30 Hz - 220 Hz (12/24 dB/oct)
Subsonic Filter	Adjustable 20 Hz - 50 Hz
High-Level Input Voltage	Adjustable 1-15V or 15-40V
Material	Aluminum
Compliant Specifications	TÜV
Package Dimensions	22 x 18 x 7 cm
Item Weight	1.25 kg
Manufacturer	ETON
Item Model Number	PA 1

Note: Specifications are subject to change without notice.

10. WARRANTY AND SUPPORT

For detailed warranty information, technical support, and service inquiries, please refer to the official ETON website or contact your authorized ETON dealer. It is recommended to keep your proof of purchase for any warranty claims.