

## ESX QS-FOUR

# ESX QUANTUM QS-FOUR Full Range Class D Amplifier User Manual

## 1. INTRODUCTION AND OVERVIEW

The ESX QUANTUM QS-FOUR is an ultra-compact 4-channel Class D amplifier designed to significantly upgrade your car audio system. This powerful yet miniature 4-channel version measures only 90 x 35 x 80 mm, making it one of the smallest amplifiers in its class. It delivers an impressive 4 x 60 Watts RMS, providing substantial power to factory or aftermarket speakers.

The QS-FOUR features exceptionally low distortion (THD+N < 0.007% at 5W/RMS) and high efficiency (up to 90%), ensuring clear and dynamic sound reproduction. Its compact size allows for flexible installation, often directly behind the dashboard, making it an ideal plug-and-play solution for vehicles. The amplifier's low current draw (5-10 Amps) means it can often utilize existing factory power cables. Additionally, the QS-FOUR includes low-level outputs for connecting active subwoofers or larger monoblock amplifiers, offering expandability for enhanced bass.



This image shows the ESX QUANTUM QS-FOUR amplifier resting in an average-sized hand, highlighting its remarkably small and ultra-compact design.

## 2. SAFETY INFORMATION

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- Always disconnect the vehicle's battery before beginning any installation work to prevent electrical shorts and damage.
- Professional installation is recommended. Incorrect wiring can cause serious damage to the amplifier, vehicle, or personal injury.
- Ensure all wiring is properly insulated and secured to prevent short circuits and vibrations.
- Do not install the amplifier in locations exposed to moisture, excessive heat, or direct sunlight.
- Use appropriate gauge wiring for power and speaker connections as specified in the installation section.
- Protect all power cables with an inline fuse located close to the battery.
- Avoid placing the amplifier where it could obstruct vehicle controls or safety devices.

## 3. PACKAGE CONTENTS

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Please check the package contents to ensure all items are present and undamaged:

- ESX QUANTUM QS-FOUR Amplifier Unit
- High-Level Input Wiring Harness with EPS (Error Protection System)
- Power Input Wiring Harness

- Speaker Output Wiring Harness
- RCA Line-Out Cables
- Inline Fuse Holder with Fuse
- Mounting Screws



An overview of the items included in the ESX QUANTUM QS-FOUR package. It shows the amplifier unit, various wiring harnesses (including high-level input cables with EPS, RCA line-out cables), a fuse holder with a fuse, and mounting screws.

## 4. PRODUCT FEATURES

- **Ultra-Compact Design:** Dimensions of 90 x 35 x 80 mm for flexible installation.
- **High Power Output:** 4 x 60 W RMS at 2  $\Omega$ , 4 x 45 W RMS at 3  $\Omega$ , 4 x 35 W RMS at 4  $\Omega$ , or 2 x 120 W RMS bridged at 4  $\Omega$ .
- **Full Range Class D Technology:** Efficient power delivery with minimal heat generation.
- **Selectable Crossover Filters:** Front and Rear Highpass/Lowpass filters switchable at 80 Hz.
- **High-Level Inputs with EPS:** Error Protection System for seamless integration with factory head units.
- **Auto-Turn-On Function:** Automatic power-on via DC offset or VOX (signal detection).
- **2-Channel RCA Line-Out:** For connecting external active subwoofers or additional amplifiers.
- **12V Remote Output:** Provides a remote signal for other devices.
- **Wide Frequency Response:** 10 Hz to 60 kHz.
- **Low Total Harmonic Distortion (THD+N):** < 0.007% at 5W/RMS.
- **High Efficiency:** Up to 90% for reduced power consumption.

## 5. SETUP AND INSTALLATION

### 5.1 Wiring Connections

Before making any connections, ensure the vehicle's battery is disconnected. Refer to the diagrams below for proper wiring.

#### Power Input:

- **+12V:** Connect to the positive terminal of the car battery via an inline fuse (not included, but a fuse holder is provided).

- **GND:** Connect to a solid, unpainted metal point on the vehicle chassis. Ensure a good ground connection.
- **REM (Remote):** Connect to the remote output of your head unit. If using high-level inputs with Auto-Turn-On, this connection may not be necessary.

### Speaker Output:

Connect your speakers to the designated terminals. Ensure correct polarity (positive to positive, negative to negative). The amplifier supports 4-channel stereo or 2-channel bridged operation.

- **FL+/FL-:** Front Left Speaker
- **FR+/FR-:** Front Right Speaker
- **RL+/RL-:** Rear Left Speaker
- **RR+/RR-:** Rear Right Speaker
- **Bridged Mode:** For 2-channel operation, connect the positive of the left speaker to FL+ and the negative to FR-. For the right speaker, connect positive to RL+ and negative to RR-. Refer to the manual for specific bridging instructions.



A detailed view of the amplifier's rear panel, featuring the speaker output terminal block for front and rear channels (FL+, FL-, FR+, FR-, RL+, RL-, RR+) and the power input terminal block (+12V, REM, GND). Also visible are the Power and Protect indicator LEDs.

### Input Connections:

- **High-Level Input:** Use the provided harness to connect to your head unit's speaker outputs. The EPS (Error Protection System) ensures compatibility with various factory systems.
- **RCA Line-Out:** Use the RCA cables to connect to an active subwoofer or another amplifier.



A close-up of the amplifier's front panel, displaying the input terminal block for front and rear channels, crossover switches (LP, HP, FULL) for both front and rear, level input adjustment knobs (Min/Max), and the AUTO TURN-ON switch (OFF, VOX, DC).

## 5.2 Initial Settings

- **Level Input (Gain):** Start with the gain knobs set to minimum (MIN). Gradually increase the gain until the sound is clear and distortion-free at your desired listening volume. Avoid setting the gain too high, as this can introduce distortion.
- **X-OVER (Crossover):**
  - **FULL:** Full range audio (no filter).
  - **HP (High Pass):** Allows frequencies above 80 Hz to pass, typically used for full-range speakers to remove bass.
  - **LP (Low Pass):** Allows frequencies below 80 Hz to pass, typically used for subwoofers (though this amplifier is not primarily for subwoofers, it can be used for mid-bass applications).
- **AUTO TURN-ON:**
  - **OFF:** Amplifier turns on via the REM wire.
  - **VOX:** Amplifier turns on when an audio signal is detected (signal sensing).
  - **DC:** Amplifier turns on when a DC offset is detected on the high-level inputs (common with factory head units).

## 6. OPERATING INSTRUCTIONS

Once properly installed and configured, the ESX QUANTUM QS-FOUR amplifier operates automatically with your vehicle's audio system.

- **Power On/Off:** The amplifier will power on and off with your head unit, depending on the selected AUTO TURN-ON mode (REM, VOX, or DC). The 'POWER' LED on the rear panel will illuminate when the amplifier is active.
- **Audio Playback:** Play audio through your head unit as usual. The amplifier will provide enhanced power and clarity to your speakers.
- **Adjusting Volume:** Control the overall system volume using your head unit. If distortion occurs at high volumes, slightly reduce the amplifier's gain setting.

- **Protection Mode:** If the 'PROTECT' LED illuminates, the amplifier has entered protection mode due to an issue (e.g., short circuit, overheating, low voltage). Turn off your audio system and vehicle, then troubleshoot the cause before restarting.

## 7. MAINTENANCE

- **Cleaning:** Use a soft, dry cloth to clean the amplifier's exterior. Do not use harsh chemicals or abrasive cleaners.
- **Connections:** Periodically check all power, ground, and speaker connections to ensure they are secure and free from corrosion.
- **Ventilation:** Ensure the amplifier's cooling fins are not obstructed to allow for proper heat dissipation.
- **Fuse Replacement:** If the inline fuse blows, replace it only with a fuse of the same type and rating to prevent damage.

## 8. TROUBLESHOOTING

Problem	Possible Cause	Solution
No sound from speakers	No power to amplifier; Incorrect input/output wiring; Head unit not sending signal; Amplifier in protection mode.	Check power and ground connections; Verify remote turn-on signal; Check speaker and input wiring; Ensure head unit is on and playing audio; Check 'PROTECT' LED.
Distorted sound	Gain set too high; Incorrect crossover settings; Speaker impedance mismatch; Damaged speakers.	Reduce gain level; Adjust crossover settings; Verify speaker impedance is within amplifier's range; Test speakers individually.
'PROTECT' LED is on	Short circuit in speaker wiring; Overheating; Low/high voltage; Speaker impedance too low.	Turn off system, check all speaker wires for shorts; Ensure adequate ventilation; Check vehicle's battery voltage; Verify speaker impedance.
Amplifier does not turn on	No +12V power; No ground connection; No remote signal (if not using Auto-Turn-On); Blown fuse.	Check fuse, power, and ground wires; Verify remote wire connection or Auto-Turn-On setting.

## 9. SPECIFICATIONS

Feature	Specification
Model Number	QS-FOUR
Channels	4
Output Power (RMS @ 4 Ω)	4 x 35 W
Output Power (RMS @ 3 Ω)	4 x 45 W

Feature	Specification
Output Power (RMS @ 2 $\Omega$ )	4 x 60 W
Bridged Output Power (RMS @ 4 $\Omega$ )	2 x 120 W
Frequency Response	10 Hz – 60 kHz
Total Harmonic Distortion (THD+N @ 5W/RMS)	< 0.007%
Efficiency	Up to 90%
Crossover Filters	HP/LP switchable @ 80 Hz (Front/Rear)
Input Voltage	12V DC (Min/Max)
Dimensions (L x W x H)	90 x 80 x 35 mm (3.54 x 3.15 x 1.38 inches)
Mounting Type	Freestanding
Compliance	CE

## 10. WARRANTY AND SUPPORT

The ESX QUANTUM QS-FOUR amplifier comes with a manufacturer's warranty. Please refer to the warranty card included with your product or contact your authorized ESX dealer for specific warranty terms and conditions.

For technical support, installation assistance, or service inquiries, please contact your point of purchase or visit the official ESX Car-Audio website for contact information and resources.