

since 1988



*german sound*

# HIGH-PERFORMANCE CAR- AMPLIFIER

OWNER'S MANUAL

**CARBON SERIES  
BY AUDIO SYSTEM**



CARBON-500.1D  
CARBON-240.4



## **Congratulation on your purchase of your new CARBON-SERIES amplifier.**

**IMPORTANT:** Before installation your power amplifier, we recommend to read the owner's manual carefully and to follow the instructions regarding connection and fitting exactly.

**ATTENTION:** Pay attention to advices and instructions of the car manufacturer.

**IMPORTANT:** Your proof of purchase is evidence of warranty claim for repair or replacement. Keep your proof of purchase, manual and original packaging.

**ATTENTION:** Use of sound components can impair your ability to hear necessary traffic sounds and may constitute a hazard while driving your automobile.

**AUDIO SYSTEMGERMANY** accepts no liability for hearing loss, bodily injury or property damage as a result of use or misuse of our products. We recommend installing the equipment by an authorized service center or dealer. A professional fitting and connection is the requirement for further warranty and perfect sound.

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### **CARBON-500.1D**

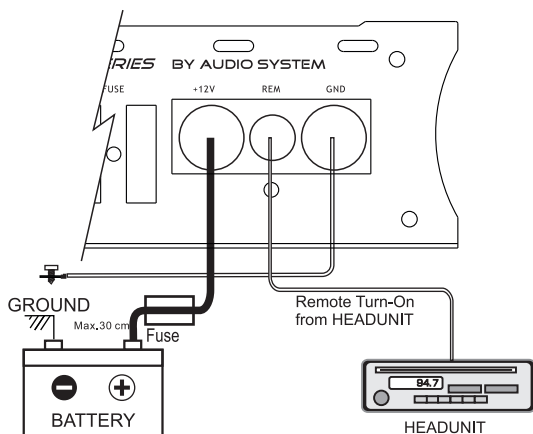
- 1-Channel High Power Class-D amplifier with SMD technology
- MOS-FET PWM Power Supply, Operating Voltage : DC 10 ~ 16 V
- Stable into 2 ohm mono
- Variable Low Pass Filter from 30 to 150 Hz
- Variable Subsonic High Pass Filter from 10 to 50 Hz
- Variable Bass Boost from 0 to 12 dB @ 45 Hz
- Phase control from 0° to 180°
- Input Sensitivity: variable 200 mV maximum to 8 V minimum
- **Multi-Way Protection Circuitry:** overheating, overcurrent, short circuitry and speaker DC protection
- Wired Remote Control **RTC**
- High-Power-Input (normally original radio) with automatically „Turn-On“

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### **CARBON-240.4**

- 4-Channel High Power Class-AB amplifier
- MOS-FET PWM Power Supply
- Stable into 2 ohm stereo per channel and 4 ohm bridged mode
- Variable switchable Low Pass Filter from 50 to 4000 Hz or variable High Pass Filter from 50 to 4000 Hz
- Switchable Bass-Boost 0 / 3 / 6 dB @ 45 Hz
- Input Sensitivity: variable 200 mV maximum to 8 v minimum
- **Multi-Way Protection Circuitry:** overheating, overcurrent, short circuitry and speaker DC protection
- Operating Voltage: DC 10 ~ 16 V
- High-Power-Input (normally original radio) with automatically „Turn-On“

## CARBON-500.1D / CARBON-240.4



### 1. Battery disconnection

First disconnect the power supply of the vehicle. This works out the best by removing the ground cable of the battery.

### 2. Ground connection

Connect the GND (ground) connection of the amplifier with the car chassis. Keep this cable as short as possible (not longer than 50 cm) and use a suitable cross section (AWG size 8 - 6). Make sure, that the connection with the vehicle chassis is free of paint, dirt and dust.

### 3. +12 V Power connection

Connect the +12 V contact of the amplifier with the supply cable via a fuse directly to the vehicle battery. Keep in mind, that the length of the cable from fuseholder to vehicle battery has to be a maximum of 30 cm. Requirement for a perfect function of the amplifier is a qualitative high end fuse holder as well as a suitable cable cross section (AWG size 8 - 6). This fuse protects the amplifier and the vehicle against the possibility of a short circuit in the power cable.

### 4. Remote connection

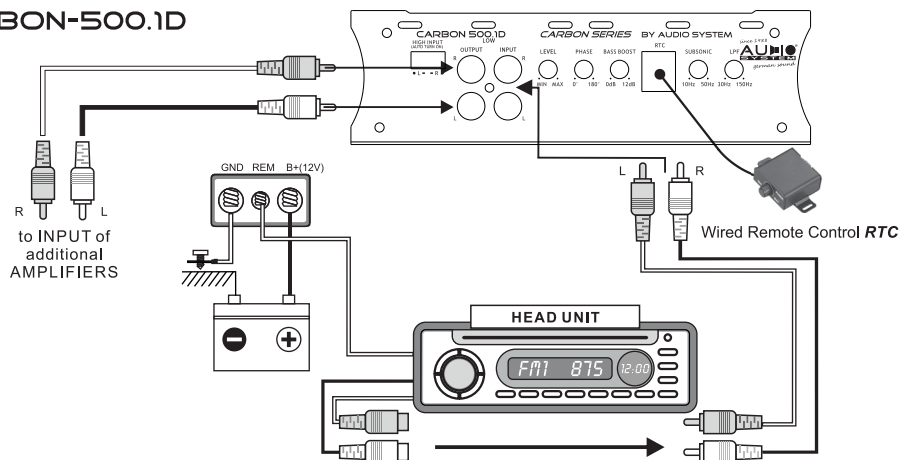
Connect the REM-terminal of the amplifier to the remote-output (automatic 12 V antenna-output) of the head unit. Therefore use a 0,5 - 1,5 mm power cable.

## ⚠ ATTENTION ⚠

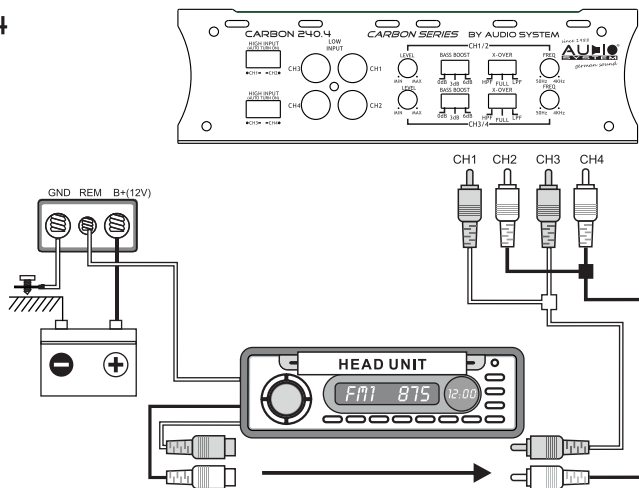
### Please follow the instructions during the installation of your amplifier:

- a) Take care of a professional attachment. Pay attention, that no electrical cable, gas tank, hydraulic brakes or other components get damaged.
- b) There has to be enough cooling and air circulation. Avoid the installation in small closed boxes or close to heating parts.
- c) Protect the amplifier from fluids, wetness, heat and foreign material as well as from other influences.
- d) The amplifier is only to be built into vehicles with a 12 V DC power supply.
- e) Never install the power supply cable with other original wires of the vehicle (gas cables), fan motors, brand control moduls etc.
- f) Install the signal cable (cinch cable) as well as the speaker cable far away of the power cables to avoid troubles with the music signal.
- g) The cables of your amplifier have to be installed, so that there is no danger of binding, squeezing or breaking.

**CARBON-500.1D**



**CARBON-240.4**



The **CARBON-SERIES** amplifier offers RCA-Inputs, which are connected through cinch cables with the preamplifier-outputs of the head unit. If the head unit (OEM-RADIO) has no RCA-Output, than it is possible to connect the speaker output direct to High-Input of the amplifier.

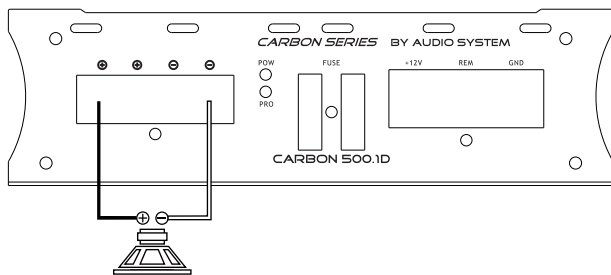
**Important:** the Gain-Controller has to be adjusted to minimum, then carefully turn up the volume. If signal is presented, the amplifier automatically turns on.

With the aid of the variable high- and lowpassfilter, phase shift-controller, the gain-controller and subsonicfilter you are able to adjust the amplifier on to your preferred taste of hearing, the circumstances of the vehicle and to the speakers.

With **CARBON-500.1D** wired remote controller **RTC** can be installed to adjust the output level. In this regard, **AUDIO SYSTEM GERMANY** recommends to adjust your amplifier through a specialized service center, dealer or a specialist.

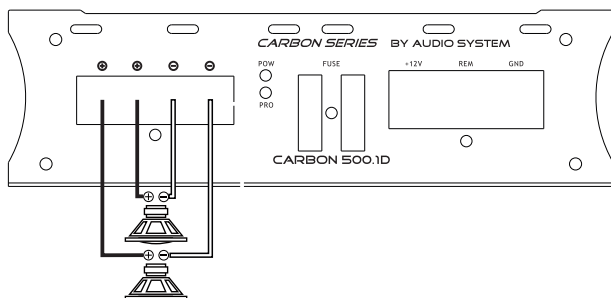
## CARBON-500.1D

### Mono Betrieb



speaker  
impedance  
4 ~ 8 Ohm

### Dual Mono Betrieb



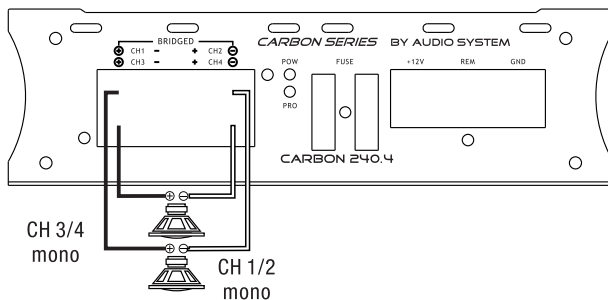
speaker  
impedance  
2 ~ 8 Ohm

Please take care the **CARBON-500.1 D** is a pure 1 channel amplifier. If using 2 subwoofers or a double voice coil subwoofer in parallel configuration take care each subwoofer/voicecoil resistance must not be below 4 Ohm so the resulting total resistance is not below 2 Ohm.

**CARBON-240.4**

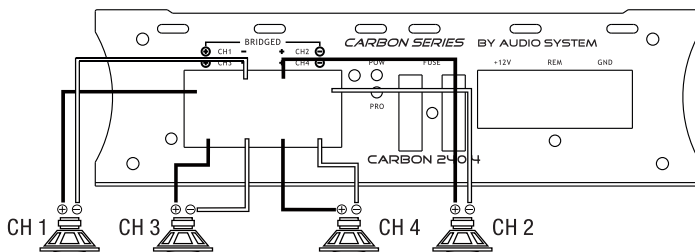
**2-Channel Mono**

speaker  
impedance  
4 ~ 8 Ohm



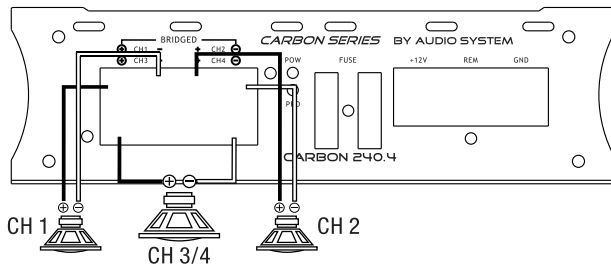
**4-Channel Stereo**

speaker  
impedance  
2 ~ 8 Ohm



**3-Channel Stereo + Mono**

speaker  
impedance  
4 ~ 8 Ohm



# TROUBLE SHOOTING

**CARBON SERIES**  
BY AUDIO SYSTEM

This power amplifier is featured with an efficient protection system to prevent any damages like over-heating, overvoltage, short-circuit and DC at the loudspeaker output.  
Occuring an error the protection-LED will light in red. In order to check the problem, first turn down all levels of the head unit, afterwards turn it off.

<p>AMPLIFIER IS NOT POWERED UP, NO LED IS LIGHTENING</p>	<ul style="list-style-type: none"> <li>- ground connection professional connected?</li> <li>- +12V powercable professional connected?</li> <li>- remote cable professional connected?</li> <li>- fuses inserted and alright?</li> <li>- analyze voltage on the amplifier.</li> </ul>
<p>PROTECTION LED ILLUMINATES GREEN WHILE AMPLIFIER IS SOUNDLESS</p>	<ul style="list-style-type: none"> <li>- cinch cable alrith and professional connected</li> <li>- loudspeaker professional connected?</li> <li>- head unit alright?</li> </ul>
<p>PROTECTION LED ILLUMINATES RED WHEN AMPLIFIER IS POWERED UP</p>	<ul style="list-style-type: none"> <li>- amplifier too hot?</li> <li>- short-circuit at the loudspeaker output?</li> <li>- short-circuit caused by loudspeaker cable with vehicle chassi (ground)?</li> <li>- input voltage too high (e.g.faulty generator)?</li> </ul>
<p>OVERHEATING (PROTECTION LED ILLUMINATES RED WHEN AMPLIFIER IS POWERED UP)</p>	<ul style="list-style-type: none"> <li>- impedance alright?</li> <li>- loudspeaker error?</li> <li>- adequate airflow of the amplifier?</li> </ul> <p style="text-align: center;"><b>! CAUTION !</b> <b>After cooling down, the amplifier turns on automatically.</b></p>
<p>ERROR IN AMPLIFIER FUSE</p>	<ul style="list-style-type: none"> <li>- ground professional connected?</li> <li>- loudspeaker impedance alright?</li> </ul> <p style="text-align: center;"><b>! CAUTION !</b> <b>Make sure when changing fuses to use the same value.</b></p>
<p>SOUND TOO LOW OR LOW-DISTORTED SOUND</p>	<ul style="list-style-type: none"> <li>- input level control "GAIN" is set to match the head unit?</li> <li>- output level control of the head unit alright?</li> <li>- loudspeaker error?</li> <li>- loudspeaker cable checked?</li> <li>- crossover frequencies has been properly set? (Check head unit, amplilfier, DSP, soundprozessor, equalizer, frequency bandpassfilter...)</li> </ul>
<p>HIGH HISS-ENGINE NOISE IN SPEAKERS</p>	<ul style="list-style-type: none"> <li>- ground connection professional connected?</li> <li>- short-circuit caused by loudspeaker cable with vehicle chassi (ground)?</li> <li>- cinhcable (RCA) and/or loudspeaker cabel installed too close to the power connection cable?</li> <li>- cinch ground (RCA) of the head unit alright?</li> </ul>

## **⚠ ATTENTION ⚠**

Please contact your specialized dealer if the amplifier is still not working after it has been checked with the error list!

For warranty adjustement / repairs the original invoice has to be attached!  
**Opening the power amplifier is leading to a lost of warranty in either case!**

**CARBON-500.1D**

Power Supply Voltage	10 - 16 V
Rated Power Output at 14,4 V	
-RMS power @ 4 ohm mono	1x 350 W
-RMS power @ 2 ohm mono	1x 500 W
Bass Boost	0 - 12 dB @ 45 Hz
Signal to Noise Ratio	>96 dB
Low Pass Crossover	30 ~ 150 Hz
High Pass Crossover / Subsonic filter	10 ~ 50 Hz
Frequency Response	10 Hz ~ 150 Hz (+/- 1 dB)
THD@RMS Watts	< 0,048%
Channel Separation	75 dB
Fuse Rating	20 A x 2
Input Sensitivity	200 mV ~ 8 V (+/- 5%)
Dimensions	176(W) x 51(H) x 210(L) mm

**CARBON-240.4**

Power Supply Voltage	10 - 16 V
Rated Power Output at 14,4 V / 28,8 V	
-RMS power @ 4 ohm stereo	4x 60 W
-RMS power @ 2 ohm stereo	4x 100 W
-RMS power @ 4 ohm bridged	2x 200 W
Bass-Boost	0 / 3 / 6 dB @ 45 Hz
Signal to Noise Ratio	>97 dB
Low Pass Crossover	50 ~ 4000 Hz
High Pass Crossover	50 ~ 4000 Hz
Frequency Response	10 Hz ~ 45 KHz (+/- 1 dB)
THD@RMS Watts	< 0,049%
Channel Separation	75 dB
Fuse Rating	20 A x 2
Input Sensitivity	200 mV ~ 8 V (+/- 5%)
Dimensions	176(W) x 51(H) x 290(L) mm



AUDIO SYSTEM GERMANY  
FALLTORSTRASSE 6 - 76707 HAMBRÜCKEN

DESIGNED AND ENGINEERED BY AUDIO SYSTEM GERMANY