

USER'S MANUAL

2-CHANNEL POWER AMPLIFIER

OX2.600

4-CHANNEL POWER AMPLIFIER

OX4.400

MONOBLOCK POWER AMPLIFIER

OX1.5KM

CLASS D MONOBLOCK POWER AMPLIFIERS

OX3KD | OX4KD



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SPECIFICATIONS

Thank you for purchasing a Boss Audio Systems Onyx Amplifier. This power amplifier has been designed to provide high quality performance. We therefore advise that you read these instructions very carefully to familiarize yourself with the product and its features.

MODEL	OX2.600	OX4.400	OX1.5KM	OX3KD	OX4KD
MAX POWER into 1 Ohm	NC	NC	NC	3000W x 1	4000W x 1
MAX POWER into 2 Ohm	600W x 2	400W x 4	1500W x 1	1500W x 1	2000W x 1
MAX POWER into 4 Ohm	300W x 2	200W x 4	750W x 1	750W x 1	1000W x 1
Bridged Power 4 Ohm	1200W x 1	800W x 2	NC	NC	NC
Min. speaker impedance	2 Ohm	2 Ohm	2 Ohm	1 Ohm	1 Ohm
THD	≤ 0.1%	≤ 0.1%	≤ 0.1%	≤ 0.1%	≤ 0.1%
Input impedance	20K	20K	20K	20K	20K
Input Sensitivity	150mV - 3.5V	150mV - 3.5V	100mV - 2V/2V - 8V	100mV - 2V/2V - 8V	100mV - 2V/2V - 8V
Frequency response	10Hz - 30KHz	10Hz - 30KHz	10Hz - 30KHz	10Hz - 250Hz	10Hz - 250Hz
Signal-to-noise ratio	≤ 90dB	≤ 90dB	≤ 90dB	≤ 90dB	≤ 90dB
Crossover/filter range	--	--	--	--	--
Low pass	50Hz - 250Hz	50Hz - 250Hz	50Hz - 250Hz	50Hz - 250Hz	50Hz - 250Hz
High pass	80Hz	80Hz	NC	NC	NC
Bass Boost	0dB - 18dB	0dB - 18dB	0dB - 18dB	0dB - 18dB	0dB - 18dB
Phase shift	NC	NC	NC	0° - 180°	0° - 180°
Fuse rating	30A x 1	25A x 1	30A x 1	30A x 2	40A x 3
Dimensions:	10.38" x 6.25" x 2.18"	12.25" x 6.25" x 2.18"	10.38" x 6.25" x 2.18"	12.25" x 6.25" x 2.18"	14.18" x 6.25" x 2.18"



OX2.600

Two Channel
Power Amplifier

OX4.400

Four Channel
Power Amplifier

OX1.5KM

Monoblock
Power Amplifier

OX3KD OX4KD

Class D Monoblock
Power Amplifiers

USER'S MANUAL

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INTRODUCTION

Thank you for purchasing our car audio amplifier. This power amplifier has been designed to provide high quality performance. We therefore advise that you read these instructions very carefully to familiarize yourself with the product and its features.

Before installing the power amplifier please read this instruction manual carefully. The instructions for mounting and connecting the set have to be followed precisely. Professional installation is required.

All connections for DC power, signal input, and speaker outputs can be carried out easily and safely by way of RCA and screwed terminals.

INSTALLATION INSTRUCTIONS

Please choose a mounting place without any direct weather influences. Note that the amplifier generates massive amounts of heat. Make sure it is installed in a well ventilated place. The structure of each car is different, please choose the right location of installation to ensure full performance and safety.

Keep the wire connections as short as possible in order to minimize power losses and provide a higher audio output of the system.

For safety purposes, please use standard wires to connect all power supplies and speaker wiring.

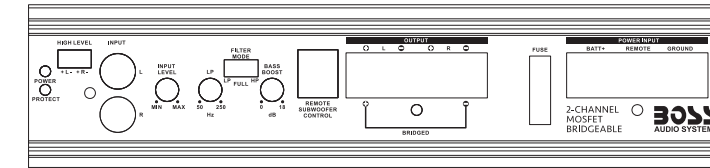
To minimize damage to the cables, take care that they do not pass sharp edged metal.

Lay all cables as far away as possible from the ignition cables and the modules in the boot and key dashboard, as this reduces interference.

Add a fuse into the (+) power cable in a distance of not more than 18 inches from the positive battery pole.

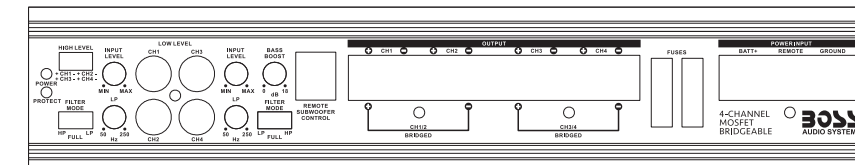
FEATURES

OX2.600



- ▶ 2/1 Channel
- ▶ Full Range, Class A/B
- ▶ 2Ω Stereo Stable
- ▶ PWM MOSFET Power Supply
- ▶ RCA & Speaker Level Inputs
- ▶ HP & LP Filters
- ▶ Bass Boost
- ▶ LED Illumination
- ▶ Remote Subwoofer Control
- ▶ Max Power: 1200W

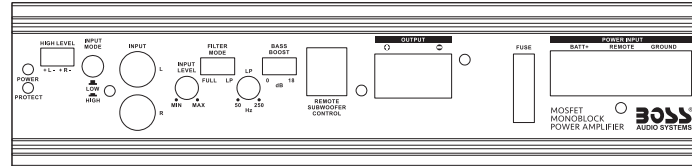
OX4.400



- ▶ 4/3/2 Channel
- ▶ Full Range, Class A/B
- ▶ 2Ω Stereo Stable
- ▶ PWM MOSFET Power Supply
- ▶ RCA & Speaker Level Inputs
- ▶ HP & LP Filters
- ▶ Bass Boost
- ▶ LED Illumination
- ▶ Remote Subwoofer Control
- ▶ Max Power: 1600W

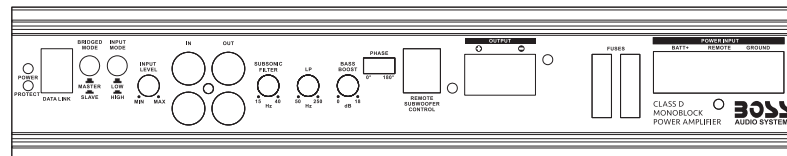
FEATURES

OX1.5KM



- ▀ Monoblock
- ▀ Full Range, Class A/B
- ▀ 2Ω Stereo Stable
- ▀ PWM MOSFET Power Supply
- ▀ RCA & Speaker Level Inputs
- ▀ Low Pass Filter
- ▀ Bass Boost
- ▀ LED Illumination
- ▀ Remote Subwoofer Control
- ▀ Max Power: 1500W

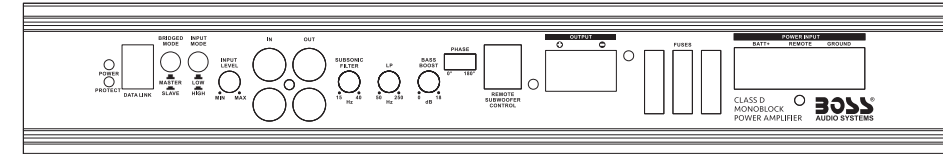
OX3KD



- ▀ Monoblock
- ▀ Class D Topology
- ▀ 1Ω Stable
- ▀ PWM MOSFET Power Supply
- ▀ RCA in/Out
- ▀ Low Pass Filter
- ▀ Subsonic Filter
- ▀ Bass Boost
- ▀ Phase Control
- ▀ Remote Subwoofer Control
- ▀ Strapping Capable
- ▀ LED Illumination
- ▀ Max Power: 3000W

FEATURES

OX4KD



- ▀ Monoblock
- ▀ Class D Topology
- ▀ 1Ω Stable
- ▀ PWM MOSFET Power Supply
- ▀ RCA in/Out
- ▀ Low Pass Filter
- ▀ Subsonic Filter
- ▀ Bass Boost
- ▀ Phase Control
- ▀ Remote Subwoofer Control
- ▀ Strapping Capable
- ▀ LED Illumination
- ▀ Max Power: 4000W

PRECAUTIONS

- ▶ This unit is designed for negative ground 12-14.50 Volts(DC) operation only.
- ▶ Use speakers with an impedance of 2 or 4 Ohms **(4 to 8 Ohm when used as bridged amplifier)**
- ▶ Avoid installing the unit where:
 - It would be subject to high temperatures, such as from direct sunlight or hot air from the heater.
 - It would be exposed to rain or moisture.
 - It would be subject to dust or dirt.
- ▶ If your car is parked in direct sunlight and there is a considerable rise in temperature inside the car, allow the unit to cool off before operation.
- ▶ When installing the unit horizontally, be sure not to cover the heatsink fins with the floor carpet.
- ▶ If this unit is placed too close to the car radio, interference may occur. In this case, separate the amplifier from the car radio.
- ▶ This power amplifier employs a protection circuit to protect the transistors and speakers if the amplifier malfunctions. Do not attempt to test the protection circuits by covering the heatsink or connecting improper loads.
- ▶ Do not use the unit with a weak auto battery as its optimum performance depends on a normal battery supply voltage.
- ▶ For safety reasons, keep the volume of your car audio system moderate so that you can still hear normal traffic sounds outside your car.

FUSE REPLACEMENT

If the fuse blows, check the power connection and replace the fuse. If the fuse blows again after replacement, there may be an internal malfunction. In this case, consult your dealer.

WARNING:

Use the specified amperage fuse. Use of a higher amperage fuse may cause serious damage.

PROTECTION CIRCUIT:

This amplifier is provided with a protection circuit which operates in the following cases when:

- ▶ the unit is overheated.
- ▶ the speaker terminals are short circuited.

WIRING INSTRUCTIONS

▶ **POWER CONNECTION**

- ▶ The battery terminal (BATT) must be connected directly to the positive terminal of the vehicle battery to provide an adequate voltage source and minimize noise. Connecting the battery terminal lead to any other point (such as the fuse block) will reduce the power output and may cause noise and distortion. Use only #12 gauge or thicker (smaller gauge #) wire for this lead and connect it to the terminal of the battery after all other wiring is completed.

▶ **GROUND CONNECTION**

- ▶ The ground terminal (GND) connection is also critical to the correct operation of the amplifier. Use a wire of the same gauge as the power connection (#8 or thicker) and connect it between the ground terminal(GND) of the amplifier and a metal part of the vehicle close to the mounting location. This wire should be as short as possible and any paint or rust at the grounding point should be scraped away to provide a clean metal surface to which the end of the ground wire can be screwed or bolted.

▶ **REMOTE TURN-ON CONNECTION**

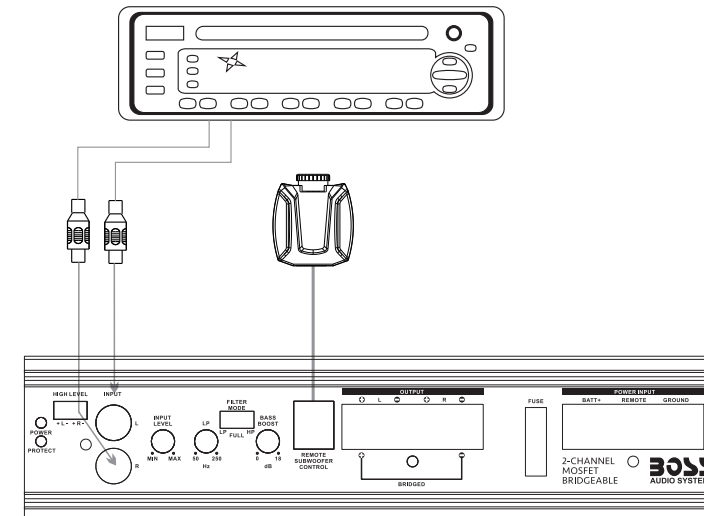
- ▶ The amplifier is turned on by applying +12V to the remote turn-on terminal (REM). The wire lead to this terminal should be connected to the "Auto-Antenna" lead from the car stereo which will provide the +12V only when the car stereo is turned on. If the car stereo does not provide an "Auto-Antenna" lead, the remote turn-on lead may be wired to an "Accessory" or "Radio" terminal in the car's fuse block. This will turn the amplifier on and off with the ignition key, regardless of whether the car stereo is on or off. The remote turn-on lead does not carry large currents. So #16 gauge wire may be used for this application.

▶ **SPEAKER CONNECTIONS**

- ▶ Depending on the type and number of speakers used with the amplifier wire them to the speaker terminals as per the appropriate wiring diagram. For most applications #18 gauge wire should be used for the speaker leads but in no case thinner than #16 gauge. For leads in excess of 10 feet #12 gauge is recommended. When wiring the speakers, pay careful attention to the polarity of the terminals on the speakers and make certain they correspond to the polarity of the corresponding terminals on the amplifier. Do not ground any speaker leads to the chassis of the vehicle.

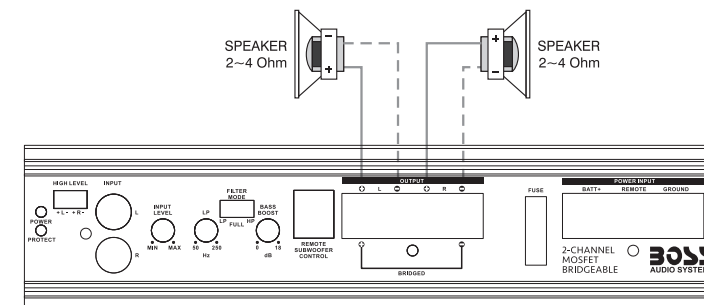
INPUT WIRING DIAGRAM

OX2.600



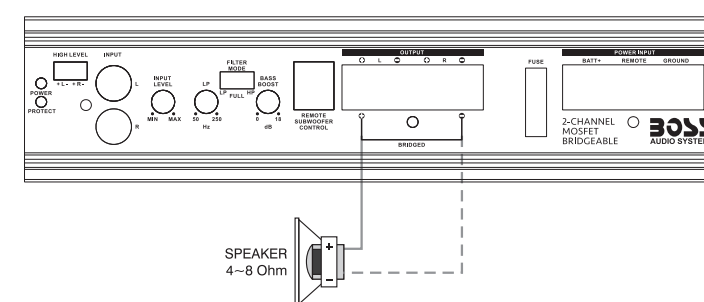
SPEAKER CONNECTIONS

OX2.600



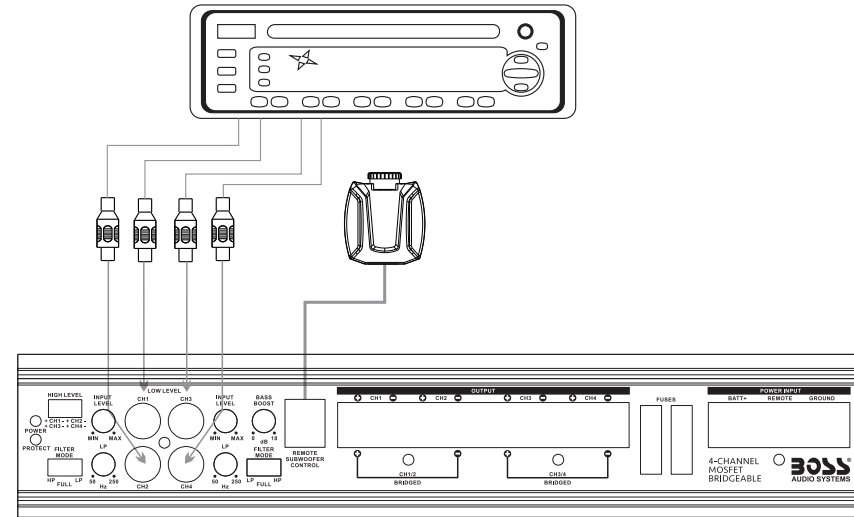
AMPLIFIER BRIDGING

OX2.600



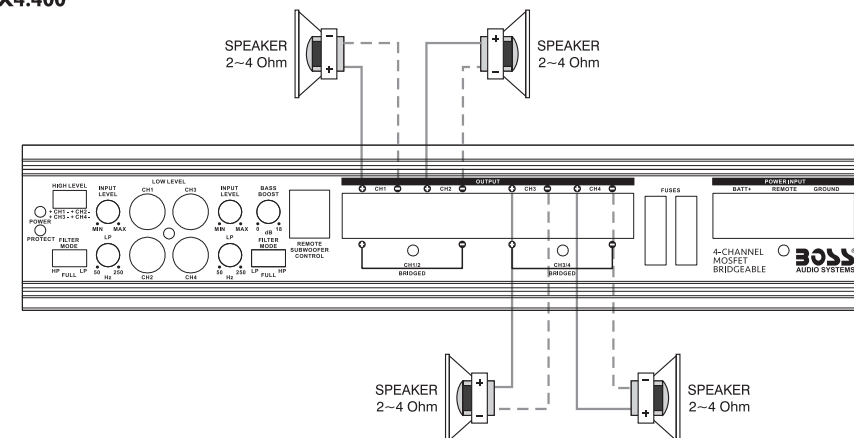
INPUT WIRING DIAGRAM

OX4.400



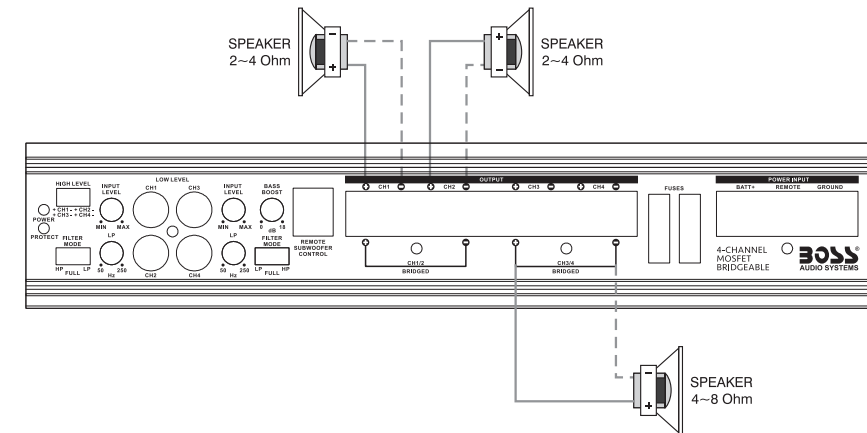
SPEAKER CONNECTIONS

OX4.400



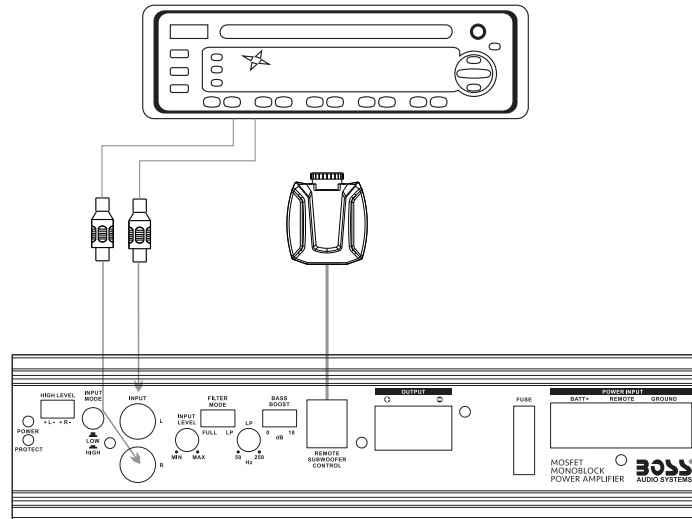
AMPLIFIER BRIDGING

OX4.400



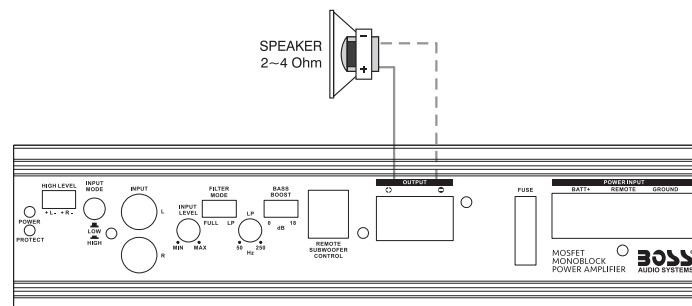
INPUT WIRING DIAGRAM

OXI.5KM



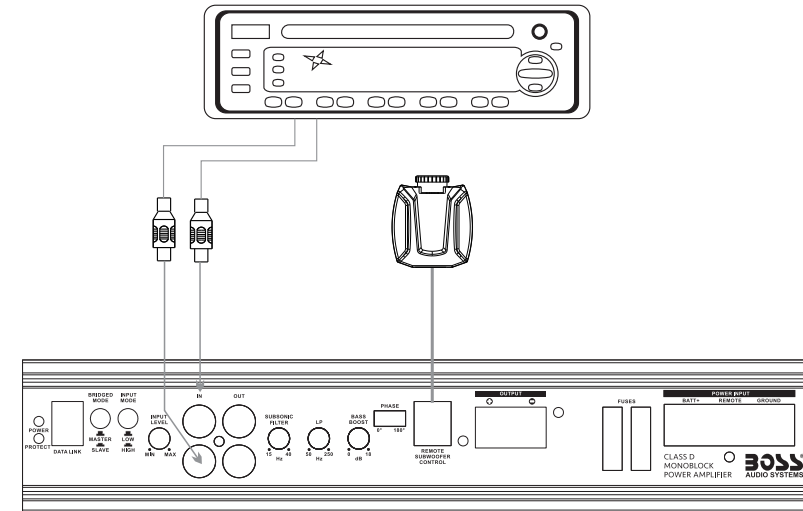
SPEAKER CONNECTIONS

OXI.5KM



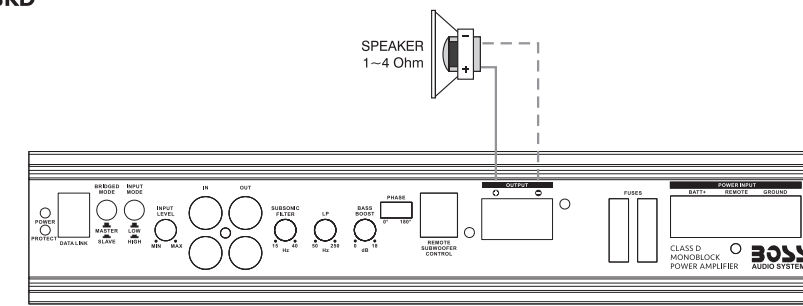
INPUT WIRING DIAGRAM

OX3KD



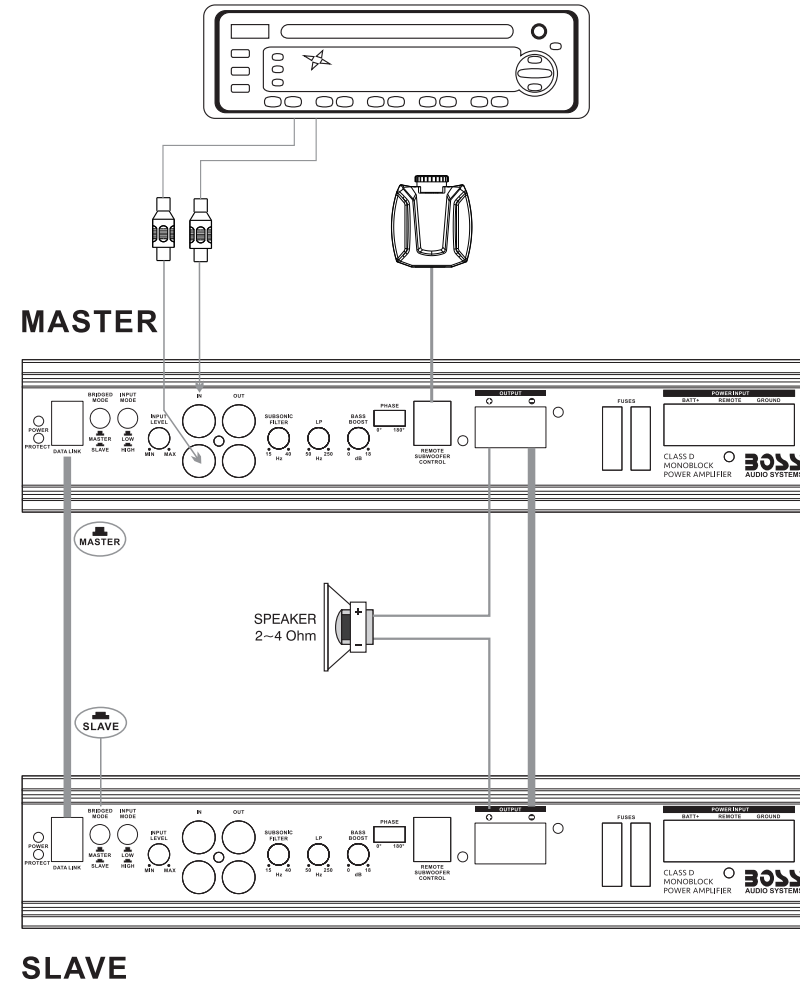
SPEAKER CONNECTIONS

OX3KD



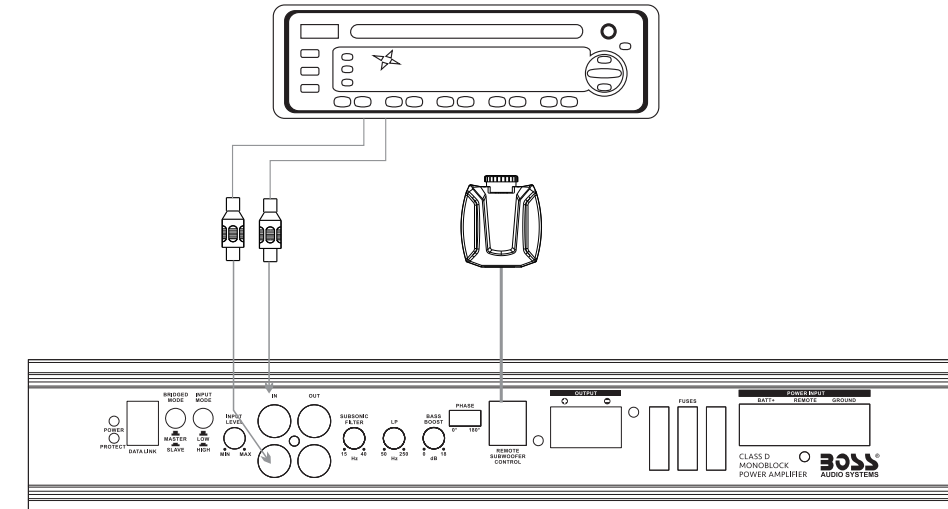
TWIN AMPLIFIER BRIDGING

OX3KD



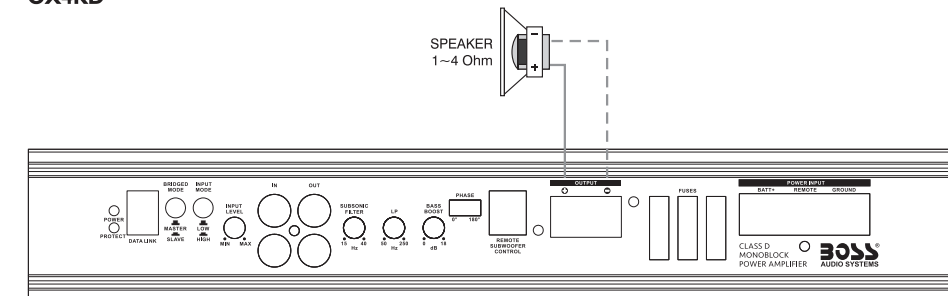
INPUT WIRING DIAGRAM

OX4KD



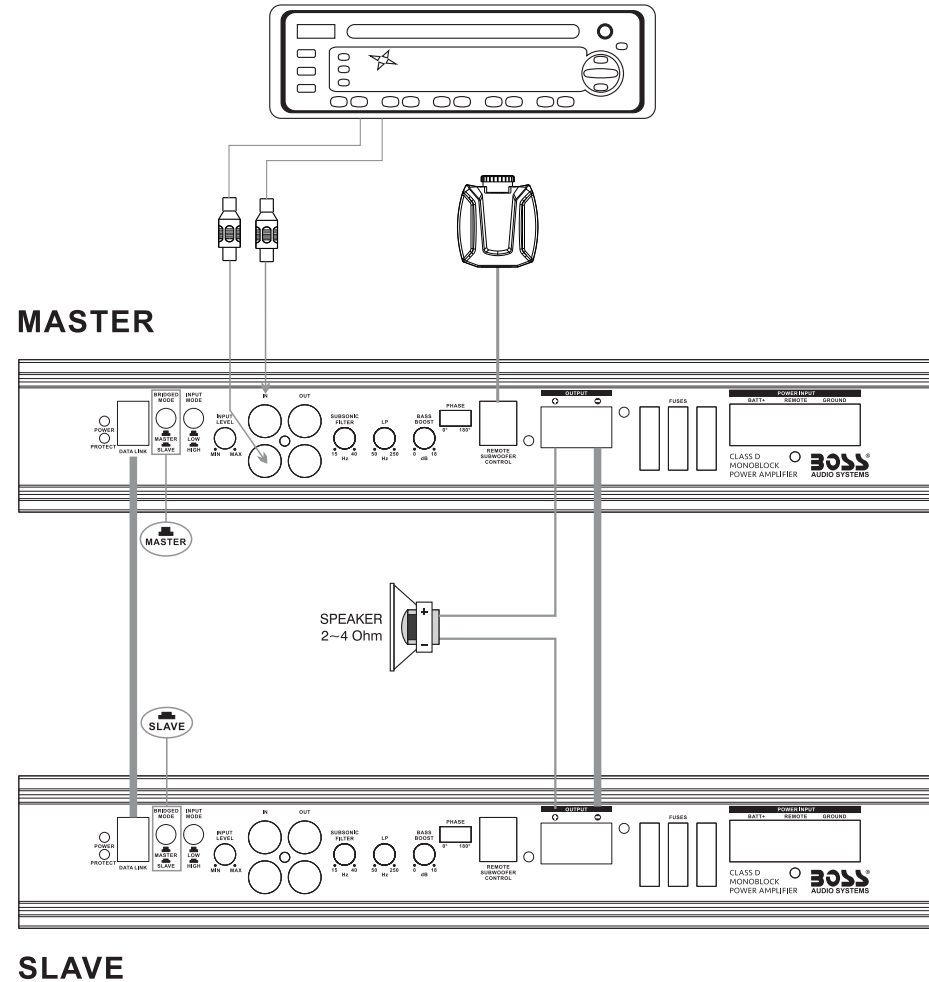
SPEAKER CONNECTIONS

OX4KD

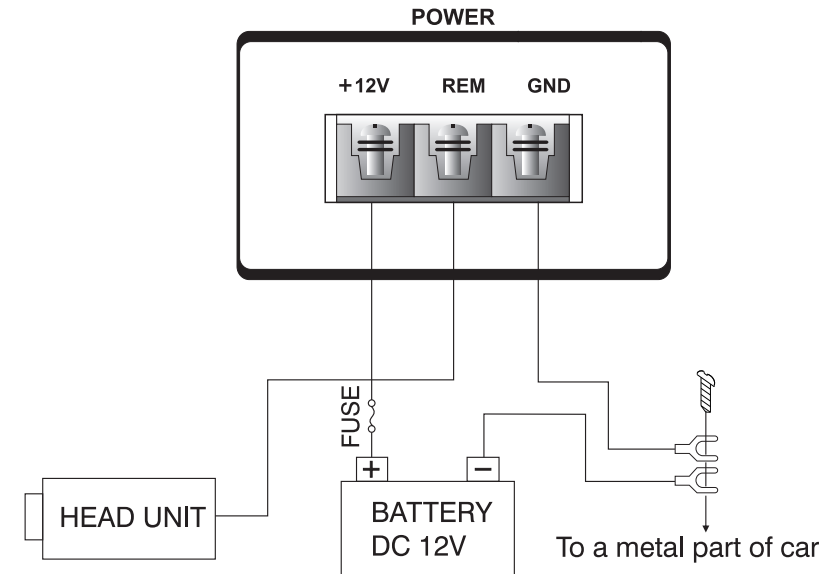


TWIN AMPLIFIER BRIDGING

OX4KD



POWER CONNECTION LEADS



NOTES ON THE POWER SUPPLY:

- Connect the +12V power input lead only after all other leads have been connected.
- Be sure to connect the ground wire of the unit securely to a proper ground source.
- A loose connection may cause a malfunction of the amplifier.
- REM: The unit is turned on by applying +12 Volts to this terminal. This terminal does not draw heavy current like the two Power Terminals so a thinner connecting wire is acceptable. Standard 18 GAUGE is fine and the standard color is yellow. If the radio is equipped with a Power Antenna control wire, it can drive this terminal. If the Power Antenna wire is already in use, you can still splice into it. With this method, the unit will turn on automatically with the radio.
- Use the power supply lead with a fuse attached whose value is the same as original fuse.
- Place the fuse in the power supply lead as close as possible to the car battery.
- During a full power operation, Maximum current

will run through the system. Therefore, make sure that the leads to be connected to the +12V and GND terminals of the unit respectively must be larger than 8-Gauge (AWG.8).

OPERATION

After the amplifier has been installed and all connections have been made carefully and securely, turn the radio on so that the amplifier is switched on automatically. After a short power-on period, the amplifier reaches its full potential.

Now turn up the volume slowly using the volume control of the radio. If there is no sound or only a distorted replay, switch off the radio immediately - the amplifier will also switch off automatically - and check if all connections have been made correctly.

▶ **GAIN = INPUT LEVEL CONTROL**

▶ The input level control allows the system to work well within a wide range of output level. Choose the adjustment in the way that you achieve a sound most possibly without any distortion. As a guideline the following procedure is recommended:

- ▶ If you use several amplifiers, the adjustment has to be made for each set separately. Tune in the volume of your car radio to 2/3 of the maximum volume. Now turn the gain control of the amplifier from "Min" to "Max" direction until you can hear distortions. Then turn the level control a little back to "Min". The gain control adjustment is finished now.
- ▶ **Attention!** If you use 2 Ohm speakers in stereo mode. Tri-mode or 4 Ohm speakers in bridge mode and the overload protection is triggered out, turn the gain control to "Min" direction, until the operation is free of trouble.

▶ **X-OVER FREQUENCY CONTROL**

- A). When the crossover control is in the Low-Pass position, this control becomes active allowing you to select your crossover point.
- B). When the crossover control is in the High-Pass position, this control becomes active allowing you to select your crossover point.

▶ **CROSSOVER SWITCH**

- ▶ Full: full range frequency.
- ▶ Low pass: the lower frequency under setting point can be passed.
- ▶ High pass: the higher frequency above setting point can be passed.

▶ **BASS BOOST CONTROLS**

This amplifier has Bass controls for making good sound combination.

▶ **FUSE**

The amplifier is equipped with a plug-in auto fuse protecting the set against faulty conditions. Do not use a fuse with a higher value and never bridge the fuse over, as this may lead to irreparable damage.

▶ **GND(-) = GROUND CONNECTION**

- ▶ Connect the GND terminal to the chassis ground of your car. In doing so, drill a hole into the car chassis near the amplifier then remove color, dirt or any other substance from the ground point. Thereafter fasten the cable end with added ring terminal by using a screw. Ensure that the ground connection is as short as possible and that the cable diameter is sufficient (min 4mm²). Route the ground cables from the radio and all other equipment parts, like equalizer, active crossover network or other amplifiers, to the same ground point.

▶ **+ 12V = POWER SUPPLY**

- ▶ Connect the BATT terminal to the positive pole of the battery with a lead cable and add a fuse into the power cable in a distance of not more than 18 inches from the battery. The lead cable's diameter should be at least 4 mm² for a length of 3 m and 6 mm² for a length of 6 m.

▶ **REM(ON/OFF) REMOTE CONTROL**

- ▶ Connect the REM terminal to the automatic antenna connector of your car radio. Now when turning on and off your car radio, the amplifier automatically switches ON and OFF. A cable diameter of 0.5 mm² is sufficient.

HOW TO PROCEED IN CASE OF FAULTS

▶ **No Function:**

- ▶ Power is not connected correctly (+ 12V/GND/REM). Before wiring, please peel off the insulation of the wire jacket to ensure that all connections with the metal part is complete. The fuse is defective-pay attention to the correct value of a new fuse!

▶ **No Sound :**

- ▶ Speaker cable or speaker plug are not connected correctly.

▶ **No Sound / Red LED Protection Shines :**

- ▶ The positive and negative wires of the speaker cable may be shorted. If you use a 2 Ohm speaker in stereo mode, a 4 Ohm speaker in bridge mode or tri-mode and the set is overloaded, then turn the gain control to "min" until the operation is free of trouble.

▶ **Poor Sound Quality (Distortions) :**

- ▶ The speakers are overloaded. Turn down the volume.

▶ **No Stereo Sound And A Weak Bass :**

- ▶ Speaker cables (+) and (-) are mixed up, unit is wired out of phase.

INTERFERENCE

All cables can source and create interference. The power cable and Cinch/RCA audio cable are very prone to interference; the remote cables are less prone. There is often interference caused by the generator (piping), ignition (cracking) or other car electronic parts. Most of these problems can be eliminated by correct and careful cabling. Please use the following guidelines:

- ▶ Use only a screened audio cable for the wiring between "low level in" of the amplifier and RCA or DIN output of the radio.
- ▶ Lay the signal, speaker and power cables separately with enough distance from one another and also from each other car cable. If not possible, you can lay the circuit and ground cable together with the serial cables. Audio and speaker cable should be as far away from these as possible. The REM cable to the automatic antenna output of the radio can be laid together with the signal cables.
- ▶ Avoid ground loops by laying the ground wiring of all components to a center point in a star-like pattern. You can find the best central point in measuring the voltage directly at the battery. Now compare this voltage value with the chosen ground point and the (+) terminal of the amplifier. If measured voltage is only slightly different, you've found the correct central. Otherwise you have to look for another point. You should measure with the ignition point for earth being switched on and additionally switched on consumers (rear window heating and light).
- ▶ If there are pickups from external electrical sources into the speaker cables, divide the core leads and twist them together.
- ▶ If there are noises from the car electrics, add an interference suppression choke into the power wiring.
- ▶ If there are humming noises, use thicker ground cables or add further ground cables to the chassis.
- ▶ To reduce contact resistance and bad and loose contacts, please solder the cable ends or use multi core cable ends, spade terminals or others. Gold Plated spade terminal are free of corrosion and have the lowest contact resistance.
- ▶ If the measures above are unsuccessful, a ground loop isolator may solve the problem.