

The Car Audio Forge.



Owner's Manual

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Installation and Electrical Connection

V 450.2

General Installation Notes

The amplifier is generally mounted in the rear trunk area but can be mounted in any convenient area such as beneath a seat. Please be sure to locate this unit where you have reasonable air circulation and protection from moisture. When considering the mounting location you should minimize the length of the power and speaker leads. Minimizing both leads will yield a more reliable installation. It is also important to ensure that the heat sink fins are not against a panel or a surface, preventing air circulation. Do not install the amplifier on a subwoofer box or on vibrating parts of the vehicle, since the vibrations can cause damage to the amplifier's electrical components.

Installation of the amplifier

Mark the location for the mounting screw holes by using the amplifier as a template. Drill holes at the marked locations and firmly fasten the amplifier in place with the mounting screws supplied in the accessory kit. Before drilling or cutting any holes, investigate the layout of your automobile thoroughly: Take care when working near the gas lines or hydraulic lines and electrical wiring od your car.

Electrical Connection

Ground (GND)

This wire is the electrical ground and must be fastened securely to the vehicle's chassis.

The best method is to use a threading sheet metal screw since the threads cut into bare metal. Ensure that all paint or other insulation is removed from around the hole area, and using self tapping screw, securely affix the bare wire ends to the vehicle chassis. Use as short a piece of cable as possible - use the same gauge that is used for the +12V cable.

Make sure that the connection is safe, a loose connection may result in amplifier noise and fault condition.



Remote (REM)

Many music sources have an output terminal for connection of the remote turn-on of the power amplifier. If a radio doesn't have a remote turn-on feature, then you can use the antenna relay wire, which activates the antenna motor. Please note, if the power antenna retracts when the radio is operating, then you cannot use the antenna relay wire to operate the remote turn-on.

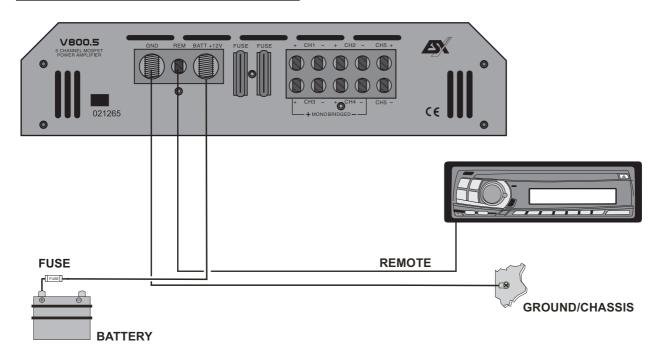
Battery Connection (+12V)

This wire is usually connected directly to the positive battery terminal. Ensure that the + power supply wire is fused via an assigned fuse in line with the + power supply wire. Please use a sufficient gauge for the installed amplifiers (16 - 25 mm²). This connection must be completed using spade lug with insulating sleeve.

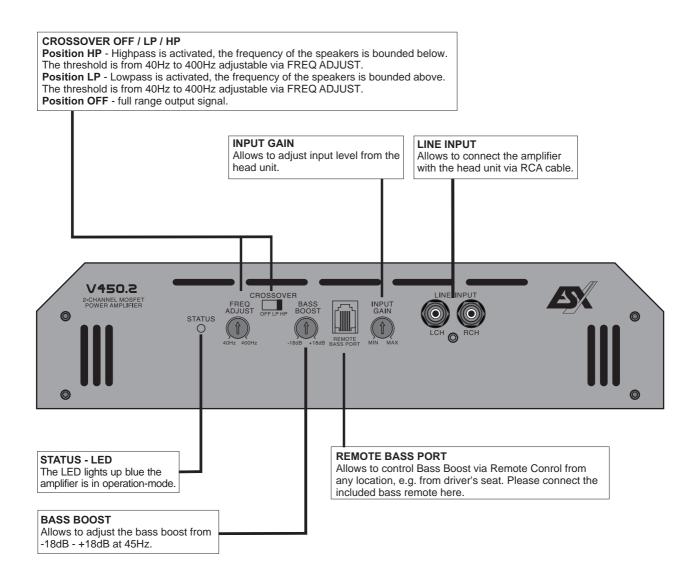
Fuses

The integrated amplifier fuses protect the units from short circuit and overload. The fuse rating is for 4 Ohm loads (impedance) of the speakers, for 2 Ohm loads the fuses may have to get increased in case of higher power consumption. The 5-Channel Amplifier V 800.5 has two additional built-in fuses. When you want to change the fuses, you have to pull out the screws of the coverage on the bottom plate near the loudspeaker outputs.

Power / Ground / Remote Connection

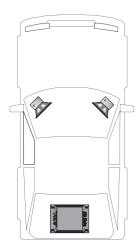


2-Channel Amplifier - Functions & Controls V 450.2



2-Channel Amplifiers - Speaker & RCA-Connection V 450.2

2-Channel-Mode: 2 Speakers / Stereo



Interconnect Cable Checklist

- Connect the head unit line outputs with good quality RCA to RCA cables with the LINE INPUT SECTION for CH1/2 of the amplifier.
- Connect the speakers with the terminal block (SPEAKER OUTPUT + LCH and + RCH -) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohms per channel. Too low speaker loads results in too high heat dissipation and may cause the amplifier runs into protection-mode.
- Please observe speaker channel and polarity as printed by the speaker terminal block.
 Incorrect phasing of the speakers results in total loss of bass response.

Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

CROSSOVER - Switches & Controls

- If larger than Ø 20 cm speakers are used, the COSSOVER selector should be set on "OFF" (Full-range).
- For all smaller speakers (Ø 8.7cm Ø 16cm) the CROSSOVER selector should be set on "HP", which eliminates the lowest frequencies and protects the speakers from damages. Set the crossover-frequency between 60Hz 150Hz, depending on the size of the installed speakers. The Highpass adjustment can be done with the FREQ ADJUST control. The crossover-frequency is continously variable from 40Hz 400Hz.

INPUT GAIN - Control

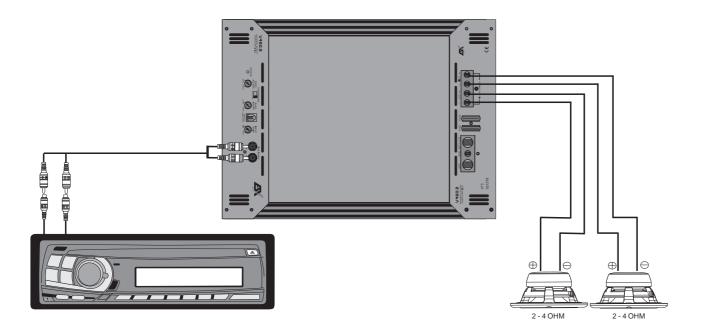
- Turn the INPUT GAIN control on the amplifier to "MIN." position.
- Turn the head unit volume controls to about 80-90% of its full setting.
- Turn the INPUT GAIN control clockwise until you hear some distortion.
- Then turn back the INPUT GAIN control slightly until you can hear clean sound.

BASS BOOST - Control

• Turn the BASS BOOST control into "0dB" - position.

REMOTE

• The BASS REMOTE should not be used in this configuration.



2-Channel Amplifiers - Speaker & RCA-Connection V 450.2

1-Channel-Mode: 1 Subwoofer / Mono bridged



Interconnect Cable Checklist

- Connect the head unit line outputs with good quality RCA to RCA cables with the LINE INPUT SECTION for CH1/2 of the amplifier.
- Connect the speakers with the terminal block (SPEAKER OUTPUT + MONO BRIDGED -) of the amplifier.
- The minimum final speaker impedance must not be below 4 Ohms. Too low speaker loads results in too high heat dissipation and may cause the amplifier runs into protection-mode.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

CROSSOVER- Switches & Controls

• In 1-Channel-Mode in Mono set the CROSSOVER selector to "LP"- position, which eliminates the higher frequencies. The recommended crossover-frequency is between 60Hz - 100Hz, depending on the size and response of the Subwoofer. The Lowpass adjustment can be done with the FREQ ADJUST control. The crossover-frequency is continously variable from 40Hz - 400Hz.

INPUT GAIN - Control

- Turn the INPUT GAIN control on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the INPUT GAIN control clockwise until you hear some distortion.
- Then turn back the INPUT GAIN control slightly until you can hear clean sound.

BASS BOOST - Control

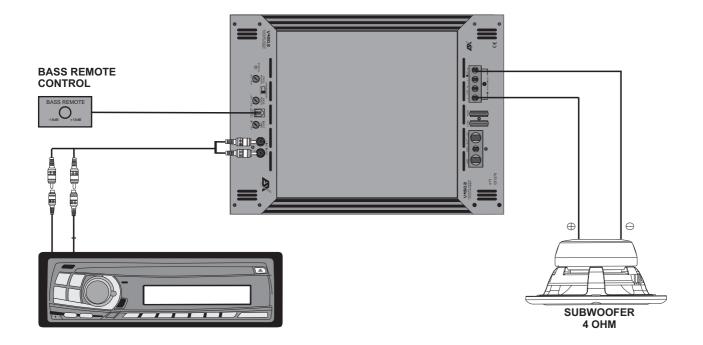
• The BASS BOOST controls the bass level from "-18dB - +18dB" at 45Hz.

BASS REMOTE - Control

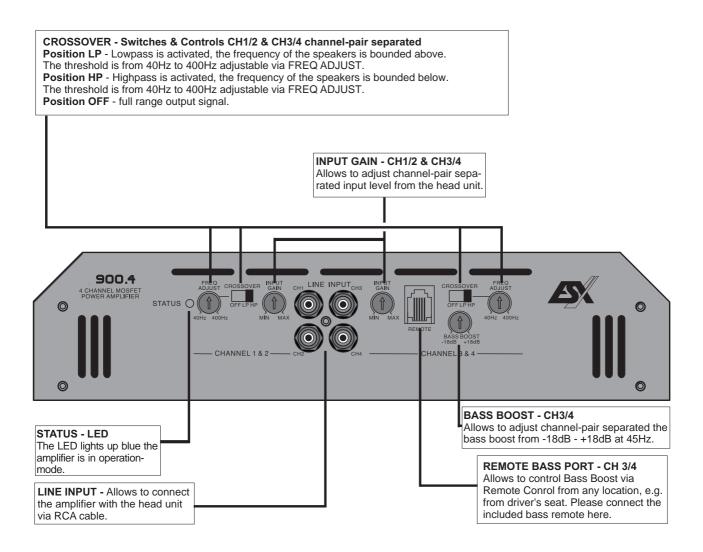
• Allows to control Bass Boost via Remote Conrol from any location, e.g. from driver's seat.

Caution!

When you use the Remote Control you have to set the BASS BOOST Control on 12 o´clock position (0dB). Please use the Bass Boost carefully. The additional boost may result in clipping or overload.



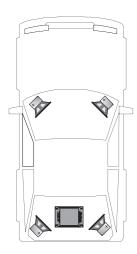
4-Channel Amplifiers - Functions & Controls V 500.4 / V 900.4



4-Channel Amplifiers - Speaker & RCA-Connection

V 500.4 / V 900.4

4-Channel-Mode: 2 Frontspeakers / Stereo & 2 Rearspeakers / Stereo



Interconnect Cable Checklist

- Connect the head unit line outputs with good quality RCA to RCA cables with the LINE INPUT SECTION for CH1/2 & CH3/4 of the amplifier.
- Connect the Speakers with the terminal blocks (SPEAKER OUTPUT + CH1 -, + CH2 -, + CH3 - and + CH4 -) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohms per channel. Too low speaker loads results in too high heat dissipation and may cause the amplifier runs into protection-mode.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

CROSSOVER - Switches & Controls Channel 1/2 & Channel 3/4

- If larger than Ø 20 cm speakers are used, the CROSSOVER selector should be set on "OFF" (Full-range).
 For all smaller speakers (Ø 8.7cm Ø 16cm) the CROSSOVER selector should be set on "HP", which eliminates the lowest frequencies and protects the speakers from damages. Set the crossover-frequency between 60Hz - 150Hz, depending on the size of the installed speakers. The Highpass adjustment can be done with the FREQ ADJUST. The crossover-frequency is continously variable from 40Hz - 400Hz.

INPUT GAIN - Control Channel 1/2 & Channel 3/4

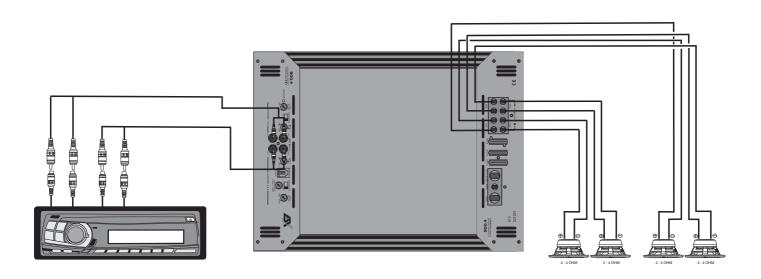
- Turn the INPUT GAIN controls on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the INPUT GAIN controls clockwise until you hear some distortion.
- Then turn back the INPUT GAIN controls slightly until you can hear clean sound.

BASS BOOST - Control Channel 3/4

• Turn the BASS BOOST control into "0dB" - position.

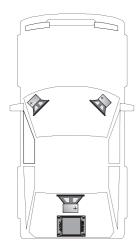
BASS REMOTE- Control Channel 3/4

• The BASS REMOTE should not be used in this configuration.



4-Channel Amplifiers - Speaker & RCA-Connection V 500.4 / V 900.4

3-Channel-Mode: 2 Speakers / Stereo & 1 Subwoofer / Mono bridged



Interconnect Cable Checklist

- Connect the head unit line outputs with good quality RCA to RCA cables to the LINE INPUT SECTION CH1/2 & CH3/4 of the amplifier.
- Connect the Front-Speakers with the terminal block (SPEAKER OUTPUT + CH1 and + CH2 -) of the amplifier.
- Connect the Subwoofer with the terminal block (SPEAKER OUTPUT + MONO BRIDGED from CH3/4) of the amplifier.
- The minimum final speaker / subwoofer impedance must not be below 2 Ohms / 4 Ohms Mono. Too low speaker loads results in too high heat dissipation and may cause the amplifier runs into protection-mode.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

CROSSOVER - Switches & Control Channel 1/2

- If larger than Ø 20 cm speakers are used, the CROSSOVER selector should be set on "OFF" (Full-range).
- For all smaller speakers (Ø 8.7cm Ø 16cm) the CROSSOVER selector should be set on "HP", which eliminates the lowest frequencies and protects the speakers from damages. Set the crossover-frequency between 60Hz - 150Hz, depending on the size of the installed speakers. The Highpass adjustment can be done with the FREQ ADJUST control. The crossover-frequency is continously variable from 40Hz - 400Hz.

CROSSOVER- Switches & Control Channel 3/4

• In 1-Channel-Mode in Mono the CROSSOVER selector should be set on "LP", which eliminates the higher frequencies. The recommended crossover-frequency should be between 60Hz - 150Hz, depending on the size and response of the Subwoofer. The Lowpass adjustment can be done with the FREQ ADJUST control. The crossover-frequency is continously variable variable from 40Hz - 400Hz.

INPUT GAIN - Control Channel 1/2 & Channel 3/4

- Turn the INPUT GAIN controls on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the INPUT GAIN controls clockwise until you hear some distortion.
 Then turn back the INPUT GAIN controls slightly until you can hear clean sound.

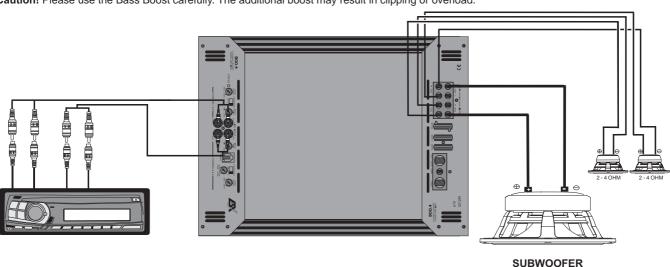
BASS BOOST - Control Channel 3/4

• The BASS BOOST controls the bass level (only CH3/4) from "-18dB - +18dB" at 45Hz.

BASS REMOTE - Control Channel 3/4

· Allows to control Bass Boost via Remote Control from any location, e.g. from driver's seat.

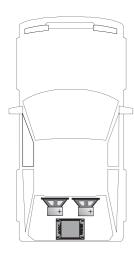
Caution! Please use the Bass Boost carefully. The additional boost may result in clipping or overload.



4 OHM min.

4-Channel Amplifiers - Speaker & RCA-Connection V 500.4 / V 900.4

2-Channel-Mode: 2 Subwoofer / Mono bridged



Interconnect Cable Checklist

- Connect the head unit subwoofer line output with a good quality RCA to RCA cable and Y-Connectors (Split signal) to the LINE INPUT SECTION CH1/2 & CH3/4 of the amplifier.
- Connect the Subwoofers with the terminal blocks (SPEAKER OUTPUT + MONO BRIDGED from CH1/2 and + MONO BRIDGED - from CH3/4) of the amplifier.
- The minimum final speaker impedance must not be below 4 Ohms per channel pair. Too low speaker loads results in too high heat dissipation and may cause the amplifier runs into protection.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

CROSSOVER - Switch & Control Channel 1/2 & Channel 3/4

• In 2-Channel-Mode with 2 Subwoofers mono bridged set the CROSSOVER selector to "LP"- position, which eliminates the higher frequencies. The recommended crossover-frequency is between 60Hz - 150Hz, depending on the size and response of the Subwoofer. The Lowpass adjustment can be done with the FREQ ADJUST control. The crossover-frequency is continously variable from 40Hz - 400Hz.

INPUT GAIN - Control Channel 1/2 & Channel 3/4

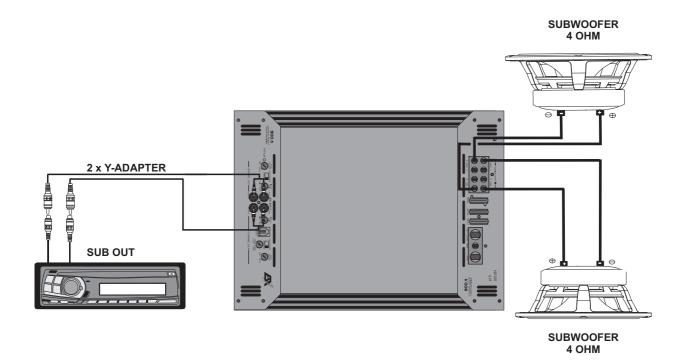
- Turn the INPUT GAIN controls on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the INPUT GAIN controls clockwise until you hear some distortion.
- Then turn back the INPUT GAIN controls slightly until you can hear clean sound.

BASS BOOST - Control Channel 3/4

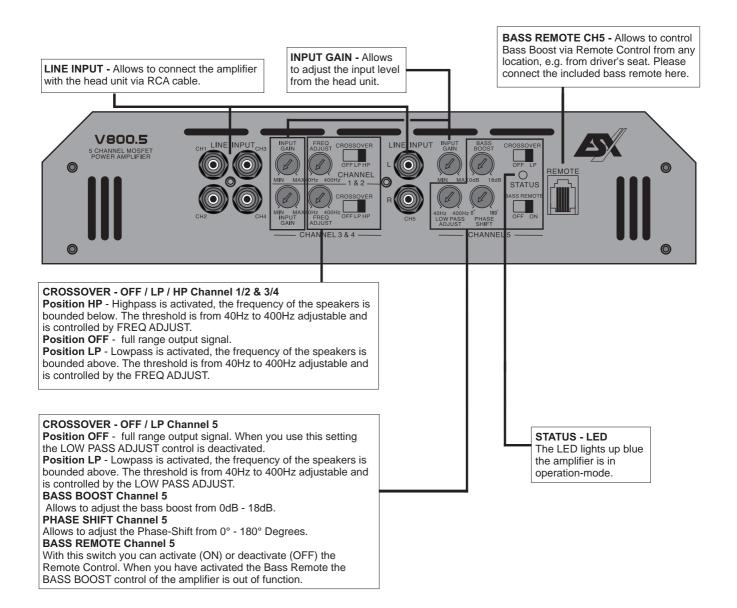
• Turn the BASS BOOST control into "0dB" - position.

BASS REMOTE - Control Channel 3/4

• The BASS REMOTE should not be used in this configuration.

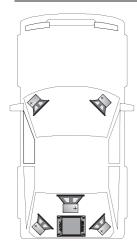


5-Channel Amplifiers - Functions & Controls V 800.5



5-Channel Amplifiers - Wiring & Connections V 800.5

5-CHANNEL-MODE: 4 Loudspeakers / Stereo with 1 Subwoofer / Mono



Interconnect Cable Checklist

- Connect the RCA Outputs (FRONT L & R, REAR L & R and SUB OUT) of the head unit with the RCA LINE INPUT SECTION (CH1/2 & CH3/4 & CH5) of the amplifier in use of good quality RCA to RCA Cables.
- Connect the Front-and Rear-Speakers and the Subwoofer with the terminal blocks (SPEAKER OUTPUT + CH1 - and + CH2 - / + CH3 - and + CH4 - and also + CH5 -) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohms per Channel. Too low impedance results in too high heat dissipation and may cause the amplifier runs into protection mode.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

CROSSOVER - Switches & Control Channel 1/2 & Channel 3/4

- If larger than Ø 20 cm speakers are used, the CROSSOVER selector should be set on "OFF" (Full-range).
- For all smaller speakers (Ø 8.7cm Ø 16cm) the CROSSOVER selector should be set on "HP", which eliminates the lowest frequencies and protects the speakers from damages. Set the crossover-frequency between 60Hz - 150Hz, depending on the size of the installed speakers. The crossover adjustment can be done with the FREQ ADJUST control and is continously variable between 40Hz - 400Hz.

CROSSOVER - Switches & Control Channel 5

• The CROSSOVER selector should be set on "LP"- position.

LOW PASS ADJUST - Control Channel 5

• The crossover-frequency should be between 60Hz - 150Hz, depending on the size of the installed Speaker. The Lowpass adjustment can be done with the LOW PASS ADJUST control and is continously variable between 40Hz - 400Hz.

INPUT GAIN - Control Channel 1/2 & 3/4 & Channel 5

- Turn the INPUT GAIN controls on "MIN." position.
- Turn the head unit volume to about 80-90% of its full setting.
- Turn the INPUT GAIN controls clockwise until you hear some distortion.
- Then turn back the INPUT GAIN controls slightly until you can hear clean sound.

BASS BOOST - Control Channel 5

• This allows you to adjust the Bass Boost between "0dB - +18dB" at 45Hz.

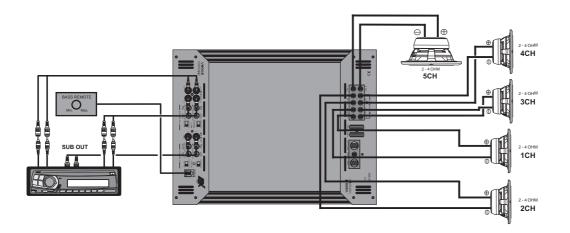
PHASE SHIFT - Control Channel 5

• With this control you can virtually move the built-in position of the Subwoofer. It is continously variable between 0° and 180° degrees.

BASS REMOTE - Control Channel 3/4

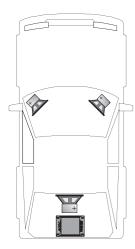
· Allows to control Bass Boost via Remote Control from any location, e.g. from driver's seat.

Caution! When you use the Remote Control you have to set the BASS BOOST Control on "0dB" - position. Please use the Bass Boost carefully. The additional boost may result in clipping or overload.



5-Channel Amplifiers - Wiring & Connections V 800.5

3-CHANNEL-MODE: 2 Loudspeakers / Stereo bridged with 1 Subwoofer / Mono



Interconnect Cable Checklist

- Connect the RCA Outputs (FRONT L & R or REAR L & R) of the head unit with the RCA LINE INPUT SECTION (CH1/2 & CH3/4) of the amplifier in use of good quality RCA to RCA Cables. (Y-Adapter)
- Connect the RCA Outputs (SUB OUT) of the head unit with the RCA Inputs (CH5) of the Amplifier in use of good quality RCA to RCA Cables.
- Connect the Front- and Rear- Speakers and the Subwoofer with the terminal blocks (SPEAKER OUTPUT + CH1 and - CH2 / + CH3 and - CH4 and also + CH5 -).
- The minimum final speaker impedance must not be below 4 Ohms per Channel for CH1-CH4 and 2 Ohms for CH5. Too low impedance results in too high heat dissipation and may cause the amplifier runs into protection mode.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

CROSSOVER - Switches and Control Channel 1/2 & 3/4

- If larger than Ø 20 cm speakers are used, the CROSSOVER selector should be set on "OFF" (Full-range).
 For all smaller speakers (Ø 8.7cm Ø 16cm) the CROSSOVER selector should be set on "HP", which eliminates the lowest frequencies and protects the speakers from damages. Set the crossover-frequency between 60Hz - 150Hz, depending on the size of the installed speakers. The crossover adjustment can be done with the FREQ ADJUST control and is continously variable between 40Hz - 400Hz.

CROSSOVER - Switches and Control Channel 5

• The CROSSOVER selector should be set on "LP" - position.

LOW PASS ADJUST - Control Channel 5

• The crossover-frequency should be between 60Hz - 150Hz, depending on the size of the installed Speaker. The Lowpass adjustment can be done with the LOW PASS ADJUST control and is continously variable between 40Hz - 400Hz. .

INPUT GAIN - Control Channel 1/2 & 3/4 & Channel 5

- Turn the INPUT GAIN controls on "MIN." position
- Turn the head unit volume to about 80-90% of its full setting.
- Turn the INPUT GAIN controls clockwise until you hear some distortion.
- Then turn back the INPUT GAIN controls slightly until you can hear clean sound.

BASS BOOST - Control Channel 5

• This allows you to adjust the Bass Boost between "0dB - +18dB" at 45Hz.

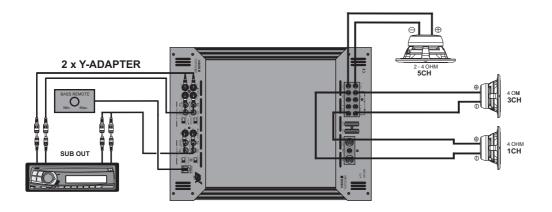
PHASE SHIFT - Control Channel 5

• With this Control you can virtually move the built-in position of the Subwoofer. It is continously variable between 0° and 180° degrees.

BASS REMOTE - Control Channel 5

· Allows to control Bass Boost via Remote Control from any location, e.g. from driver's seat.

Caution! When you use the Remote Control you have to set the BASS BOOST Control on "0dB" - position. Please use the Bass Boost carefully. The additional boost may result in clipping or overload.



Specifications

	V 450.2	V 500.4	V 900.4	V 800.5
Channels	2	2	4	5
Watts RMS/MAX. @ 4 Ohms	2 x 150/300	4 x 75/150	4 x 125/250	4 x 75/150 + 200/400
Watts RMS/MAX. @ 2 Ohms	2 x 225/450	4 x 125/250	4 x 225/450	4 x 125/250 + 300/600
Watts RMS/MAX. @ 1 Ohms	-	-	-	-
Watts RMS/MAX. @ 4 Ohms mono bridged	1 x 450/900	2 x 250/500	2 x 450/900	2 x 250/500
Damping Factor	> 150dB	> 150dB	> 150dB	> 150dB
S/N Ratio	> 90 dB	> 90 dB	> 90 dB	> 90 dB
Channel Separation	> 60 dB	> 60 dB	> 60 dB	> 60 dB
THD&N	< 0,05 %	< 0,05 %	< 0,05 %	< 0,05 %
Input Gain	0.2 - 4 Volt			
Input Impedance	> 20 kOhm	> 20 kOhm	> 20 kOhm	> 20 kOhm
X-Over CH1 & CH2				
Crossover Switch	OFF/LP/HP	OFF/LP/HP	OFF/LP/HP	OFF/LP/HP
Freq Adjust	40Hz - 400Hz	40Hz - 400Hz	40Hz - 400Hz	40Hz - 400Hz
Bass-Boost @ 45Hz	-18dB - +18dB		-	-
X-Over CH3 & CH4				
Crossover Switch	-	OFF/LP/HP	OFF/LP/HP	OFF/LP
Freq Adjust	-	40Hz - 400Hz	40Hz - 400Hz	40Hz - 400Hz
Bass-Boost @ 45Hz	-	-18dB - +18dB	-18dB - +18dB	
X-Over CH5				
Crossover Switch	-		-	OFF/LP
Low Pass Adjust	-			40Hz - 400Hz
Phase Shift	_		_	0 - 180°
Bass-Boost @ 45Hz	-	-	· ·	0dB - +18dB
Bass-Boost @ 43FI2				00B - +100B
Fuses	2 x 25 Ampere	2 x 30 Ampere	3 x 25 Ampere	4 x 20 Ampere
1 4363	Z X ZO Allipele	2 X 00 Allipele	3 X 20 Allipele	T X ZU AIIIPEIE
Dimensions in mm				
Width x Height	257 x 60	257 x 60	257 x 60	257 x 60
Length Heatsink	305 / 335	365 / 395	405 / 455	455 / 485
All specifications are object to change!	300 / 300	303 / 333	T00 / T00	700 / 700

Trouble Shooting

System does not turn on

- Check all fuses.
- 2. Check all connections.
- 3. Measure the +12 volt and remote turn on voltages at the amplifier terminals. If these are non existent or too low, take voltage measurements at fuse holders, distribution blocks, the head unit's +12 volt and remote leads to localize the problem.

Noise problems

- 1. Check the speaker wiring.
- 2. Speakers are damaged.

No Signal at Channels

- 1. Set Balance and Fader from head unit on Zero-Position.
- 2. Check wiring (Amplifier, Speakers).
- 3. Speakers are damaged.

Hiss or white noise

- 1. Speakers are overload.
- 2. High levels of white noise usually occurs when amplifier level controls are turned up too high.
- 3. Another major problem that can cause excessive hiss, is a noisy head unit unplug the amplifier input RCA cables, and if the hiss level reduces, the source unit is at fault.

No Stereo-Sound or Low Output

1. Check speaker wiring (speakers polarity - and +).

Amplifier Protection-Mode (LED is illuminated red)

- 1. Speaker cabels are shorted.
- Inadequate cooling relocate or remount to provide better natural airflow over the fins.
 Driving high power levels into low impedances back off on the volume control, and/or make sure you are not loading the amplifier with less than the recommended loudspeaker impedance.
- 3. Make sure that the battery voltage, as measured at the amplifier's +12 volt and ground terminals, is 11 volts or more.

Electrical interference

The inside of an automobile is a very hostile electrical environment. The multitude of electrical systems, such as the ignition system, alternator, fuel pumps, air conditioners to mention just a few, create radiated electrical fields, as well as noise on the +12 volt supply and ground. Remember to isolate the problem - first unplug amplifier input RCA cables, if the noise is still present, check the speaker leads, if not, plug the RCAs back, and investigate the source driving the amplifier, one component at a time.

A ticking or whine that changes with engine RPM:

- 1. This problem could be caused by radiation pickup of RCA cables too near to a fuel pump or a distributor, for instance, relocate cables.
- 2. Check that the head unit ground is connected straight to the vehicle chassis, and does not use factory wiring for ground.
- 3. Try to supply the head unit with a clean +12 volt supply directly from the battery +, instead of using a supply from the in dash wiring/fusebox. This type of noise can be more difficult to pinpoint, but is usually caused by some kind of instability, causing oscillations in the system.

A constant whine:

- 1. Check all connections, especially for good grounds.
- 2. Make sure that no speaker leads are shorting to exposed metal on the vehicle chassis.
- 3. RCA cables are notorious for their problematic nature, so check that these are good, in particular the shield connections.

Caution!

In your amplifier there are protection circuits integrated. Short Circuit Protection engaged: The amplifier will turn off and try to come back on immediately. Then there is an operation fault the Status-LED lights up red. If this is the case, check your speakers and wiring for low impedance and short circuits. Thermal Protection engaged: The amplifier will turn off and several minutes later will come back on. In this case, ensure that there is nothing blocking the normal convective airflow of the amplifier. No obstruction should be within 2" of the amplifier on all sides.

NOTE: Low battery voltage will cause the amplifier to run warmer and possibly damage the amplifier.



The Car Audio Forge.



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