hifonics MERCURY IV-V2 ANALOG CLASS A-B 4-CHANNEL AMPLIFIER User Manual

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HIFONICS

hifonics MERCURY IV-V2 ANALOG CLASS A-B 4-CHANNEL AMPLIFIER

SAFETY INSTRUCTIONS

- THE PURCHASED DEVICE IS ONLY SUITABLE FOR AN OPERATION WITH A 12V ONBOARD ELECTRICAL SYSTEM OF A VEHICLE. Otherwise fire hazard, risk of injury and electric shock consists.
- PLEASE DO NOT MAKE ANY OPERATION OF THE SOUND SYSTEM, WHICH DISTRACT YOU FROM A SAFE DRIVING. Do not make any procedures, which demand a longer attention. Perform these operations not until you have stopped the vehicle on a safe place. Otherwise, the risk of accident consists.
- ADJUST THE SOUND VOLUME TO AN APPROPRIATE LEVEL, THAT YOU ARE STILL ABLE TO HEAR EXTERIOR NOISES WHILE DRIVING. High-performance sound systems in vehicles may generate the acoustic pressure of a live concert. Permanent listening to extreme loud music may cause the loss of your hearing abilities. The hearing of extremely loud music while driving may derogate your cognition of warning signals in the traffic. In the interests of the common safeness, we suggest driving with a lower sound volume. Otherwise, the risk of accident consists.
- DO NOT COVER COOLING VENTS AND HEAT SINKS. Otherwise, this may cause heat accumulation in the device and fire hazard consists.
- DO NOT OPEN THE DEVICE. Otherwise fire hazard, risk of injury and electric shock consist. Also this may cause a loss of the warranty.
- REPLACE FUSES ONLY WITH FUSE WITH THE SAME RATING. Otherwise fire hazards and risk of electric shock consists.
- DO NOT USE THE DEVICE ANY LONGER, IF A MALFUNCTION OCCURS, WHICH REMAINS NOT REMEDIED. Refer in this case to the chapter TROUBLESHOOTING.
- Otherwise risk of injury and the damage of the device consists. Commit the device to an authorized retailer.
- INTERCONNECTION AND INSTALLATION SHOULD BE ACCOMPLISHED BY SKILLED STAFF ONLY. The interconnection and installation of this device demands technical aptitude and experience. For your own safe-ness, commit the interconnection and installation to your car audio retailer, where you have purchased the device.
- DISCONNECT THE GROUND CONNECTION FROM THE VEHICLE’S BATTERY BEFORE INSTALLATION. Before you start with the installation of the sound system, disconnect by any means the ground supply wire from the battery, to avoid any risk of electric shock and short circuits.
- CHOOSE AN APPROPRIATE LOCATION FOR THE INSTALLATION OF THE DEVICE. Look for an appropri-ate

location for the device, which ensures a sufficient air circulation. The best places are spare wheel cavities, and open spaces in the trunk area. Less suitable are storage spaces behind the side coverings or under the car seats.

- DO NOT INSTALL THE DEVICE AT LOCATIONS, WHERE IT WILL BE EXPOSED TO HIGH HUMIDITY AND DUST. Install the device at a location, where it will be protected from high humidity and dust. If humidity and dust attain inside the device, malfunctions may be caused.
- MOUNT THE DEVICE AND OTHER COMPONENTS OF THE SOUND SYSTEM SUFFICIENTLY. Otherwise the device and components may get loose and act as dangerous objects, which could cause serious harm and damages in the passenger room.
- ENSURE CORRECT CONNECTION OF ALL TERMINALS. Faulty connections may could cause fire hazard and lead to damages of the device.

MOUNT THE DEVICE AND OTHER COMPONENTS OF THE SOUND SYSTEM SUFFICIENTLY
Otherwise the device and components may get loose and act as dangerous objects, which could cause serious harm and damages in the passenger room.

ENSURE NOT TO DAMAGE COMPONENTS, WIRES AND CABLES OF THE VEHICLE WHEN YOU DRILL THE MOUNTING HOLES
If you drill the mounting holes for the installation into the vehicle's chassis, ensure by any means, not to damage, block or tangent the fuel pipe, the gas tank, other wires or electrical cables.

DO NOT INSTALL AUDIO CABLES AND POWER SUPPLY WIRES TOGETHER
Ensure while installation not to lead the audio cables between the head unit and the processor together with the power supply wires on the same side of the vehicle. The best is a areal separated installation in the left and right cable channels of the vehicle. Therewith overlap of interferences on the audio signal will be avoided. This stands also for the equipped bass-remote wire, which should be installed not together with the power supply wires, but rather with the audio signal cables.

ENSURE THAT CABLES MAY NOT CAUGHT UP IN CLOSE-BY OBJECTS
Install all the wires and cables as described on the following pages, therewith these may not hinder the driver. Cables and wires which are installed close by the steering wheel, gear lever or brake pedal, may caught up and cause highly dangerous situations.

DO NOT SPLICE ELECTRICAL WIRES
The electrical wires should not be bared, to provide power supply to other devices. Otherwise, the load capacity of the wire may get overloaded. Use therefore an appropriate distribution block. Otherwise, fire hazards and risk of electric shock consist.

DO NOT USE BOLTS AND SCREW NUTS OF THE BRAKE SYSTEM AS GROUND POINT
Never use for the installation or the ground point bolts and screw-nuts of the brake system, steering system or other security-relevant components. Otherwise, fire hazard consists or driving safety will be derogated.

ENSURE NOT TO BEND OR SQUEEZE CABLES AND WIRES BY SHARP OBJECTS
Do not install cables and wires not close-by movable objects like the seat rail that may be bent or harmed by sharp and barbed edges. If you lead a wire or cable through the hole in a metal sheet, protect the insulation with a rubber grommet.

KEEP AWAY SMALL PARTS AND JACKS FROM CHILDREN
If objects like these will be swallowed, the risk of serious injuries consists. Consult promptly a medical doctor, if a child swallowed a small object.

TECHNICAL SPECIFICATIONS

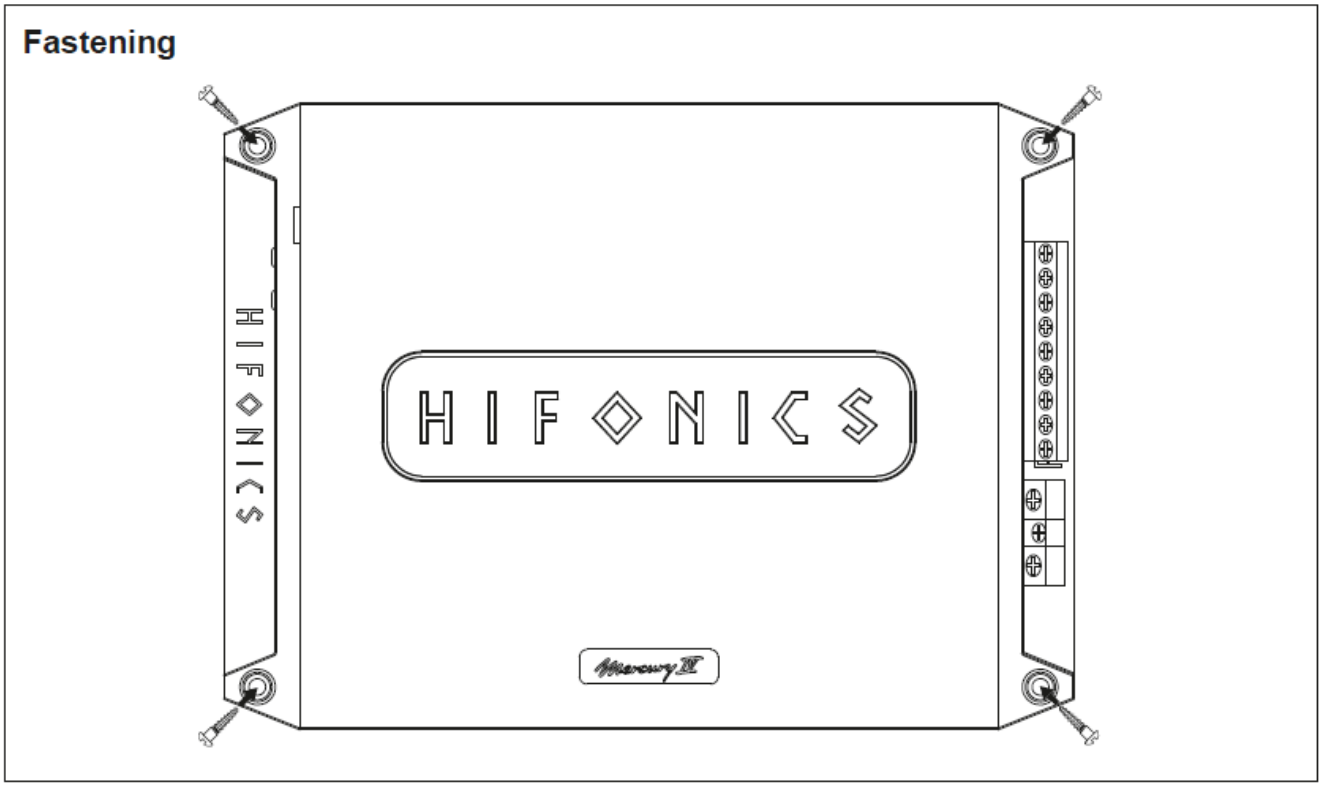
Model	MERCURY IV V2
Channels	4
Circuit	Analog Class A/B
OUTPUT POWER RMS @ 14.4 V Watts @ 4 Ohms Watts @ 2 Ohms Watts @ 4 Ohms bridged	4 x 85 4 x 125 2 x 250
Loudspeaker Impedance	2 – 8 Ohms
Frequency Range –3dB	3 – 44000 Hz
Damping Factor	> 220
Signal-to-Noise Ratio	92 dB
THD+N	< 0,01 %
Input Sensitivity	Low Level: 6 – 0,15 V High Level: 12 – 0,5 V
Filter CH1/2 Crossover Modes High Pass Filter	DUPE – HPF – FULL 10 – 4000 Hz
Filter CH3/4 Crossover Modes High Pass Filter Low Pass Filter Bass Boost	LPF/BPF – HPF – FULL 10 – 4000 Hz 50 – 4000 Hz 0 – 12 dB @ 45 Hz
Start-stop capability	Yes
High Level Inputs with EPS	Via the included 10-pin wire harness
Auto Turn On	Only in connection with High Level Inputs (DC Offset)
Low Level RCA Inputs	Yes
Bass Level Remote Controller	Yes
Fuse Rating	1 x 60 A (external)
Dimensions	205 x 46 x 278 mm

DISPOSAL
If you have to dispose the device, please note that no electronic devices may be disposed in the household waste. Dispose the device in a suitable recycling facility in accordance with local waste regulations. If necessary, consult your local authority or your dealer.

INTENDED USE
This product is only designed for use in a vehicle with 12 volt on-board voltage and negative ground and functions as an amplifier for audio signals. Any other use may lead to damage to the product or in the vicinity of the product.

MECHANICAL INSTALLATION

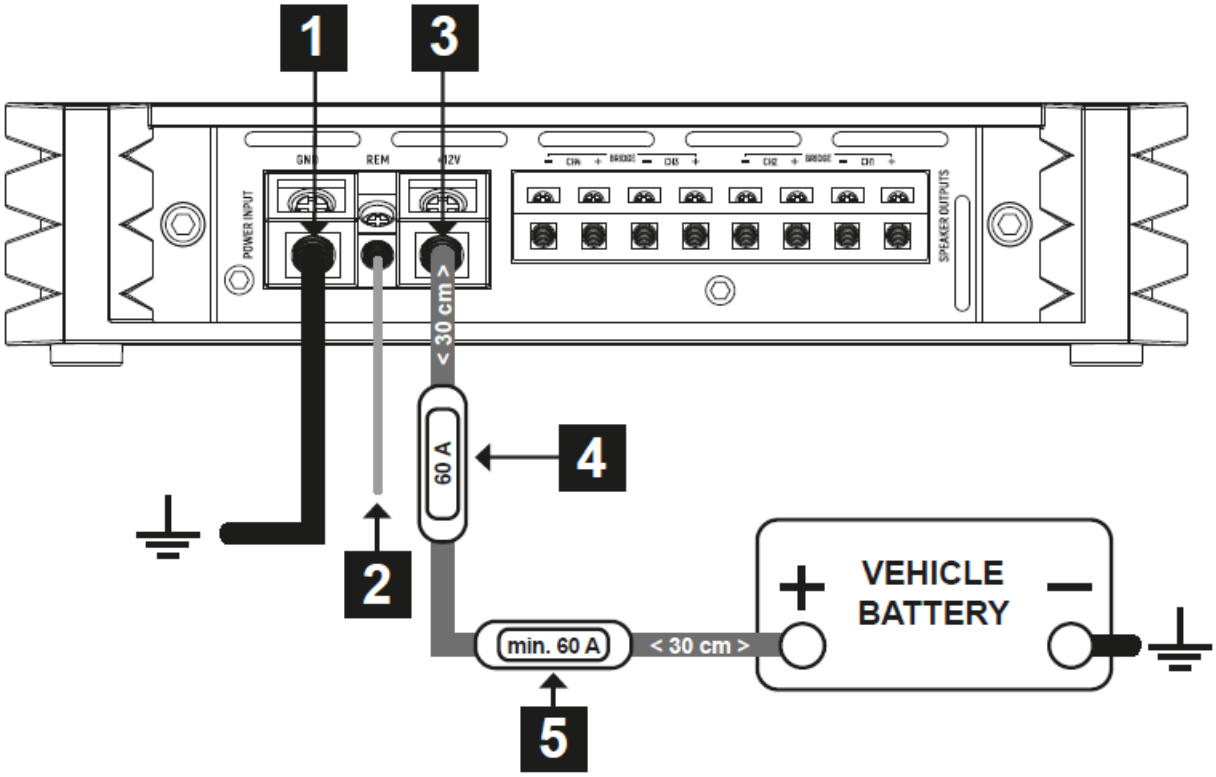
- Avoid any damages on the components of the vehicle like air bags, cables, board computer, seat belts, gas tank or the like.
- Ensure that the chosen location provides a sufficient air circulation for the amplifier. Do not mount the device into small sealed spaces without air circulation or near by heat dispersing parts or electrical parts of the vehicle.
- All cables must be as short as possible to avoid losses and interferences.
- Use self-tapping screws (not included in delivery) to install the amplifier in the vehicle.



CAUTION
Before you start with the installation, disconnect necessarily the GROUND connection wire from the battery to avoid any risk of electric shocks and short circuits.

ELECTRICAL INTERCONNECTION

BEFORE CONNECTING
For the professional installation of a sound system, car audio retail stores offers appropriate wiring kits. Ensure a sufficient profile section (refer to the table on the next page) and a suitable fuse rating and the conductivity of the cables when you purchase your wiring kit. Clean and remove rust-streaked and oxidized areas on the contact points of the battery and the ground connection. Make sure that all screws are fixed tight after the installation because loose connections cause malfunctions, insufficient power supply or interferences.



GND
Connect the GND terminal with a suitable contact ground point on the vehicle's chassis. The ground wire must be as short as possible and must be connected to a blank metallic point at the vehicle's chassis. Ensure that this ground point has a stable and safe electric connection to the negative "–"pole of the battery. Check this ground wire from the battery to the ground point if possible and enforce it if required. Use a ground wire with a sufficient cross-section (refer to the table on the next page) and the same size like the +12V power supply wire.

REM
Connect a turn-on signal or the turn-on remote signal of your head unit (REM) with the REM terminal of the amplifier. Use therefore a suitable cable with a sufficient cross section (0,5 mm2). Hereby the amplifier turns on or off with your head unit.

NOTE:
If you operate the amplifier via HI LEVEL INPUT, the REM connection does not have to be used.

+12V
Connect the +12V terminal with the +12V pole of the vehicle's battery. Use a suitable cable with a sufficient cross section (refer to the table on the next page).

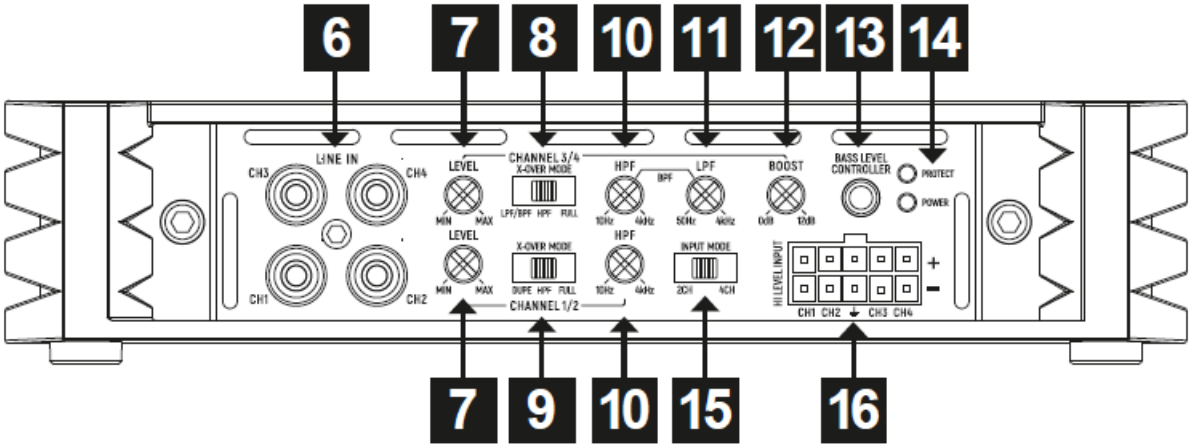
FUSE
The amplifier inherently has no internal device fuse. Use the supplied fuse (60 A) with the fuse holder and install it in the power cable between the 12 Volt pole of the vehicle battery and next to the +12V terminal of the amplifier. The distance between the fuse and the amplifier should not exceed 30 cm.

ADDITIONAL CABLE FUSE (NOT INCLUDED)
Install an extra fuse (not included) for the +12V power cable near the battery to secure the power cable. The distance between the fuse and the battery should not exceed 30 cm. The fuse size must be adapted to the cable cross-section of the installed power cable (refer to the table below). IMPORTANT: The fuse on the battery does not protect the amplifier, but the cable between the battery and the amplifier against short circuits.

		Cable length in meters							
		0 – 1,2	**1,2 – 2,1**	**2,1 – 3,1**	**3,1 – 4,0**	**4,0 – 4,9**	**4,9 – 5,8**	**5,8 – 6,7**	**6,7 – 8,5**
Fuse value in Amperes	0 – 20	2,5	4	4	6	6	10	10	10
	20 – 35	4	6	10	10	16	16	16	20
	35 – 50	6	10	10	16	16	20	20	20
	50 – 65	10	10	16	20	20	20	20	35
	65 – 85	16	16	20	20	35	35	35	50
	85 – 105	16	16	20	35	35	35	35	50
	105 – 125	20	20	20	35	35	50	50	50
		Minimum cable cross-section in mm2							

Recommended minimum cable cross-section to guarantee full amplifier performance: Up to a length of 3 m: 16 mm2 From a length of 3 m: 20 mm2.

DESCRIPTION OF OPERATION



LINE IN
Connect the LINE IN RCA jacks with the head unit by using appropriate audio signal cables.

LEVEL
These controllers determine the input sensitivity on each channel pair, to adapt the incoming signal from the head unit.

CHANNEL 3/4 X-OVER MODE
This crossover switch selects the desired operating mode of channel pair CH3/4:

LPF/BPF:
Low Pass mode adjustable with LPF – frequency is limited upwards. The HPF controller acts here as a bandpass filter and limits the frequency downwards.

HPF:
High Pass mode adjustable with HPF – frequency is limited downwards.

FULL:
Full Range mode – the entire frequency range is amplified.

Note:
If the HPF controller is set higher than the LPF controller, no sound is heard.

CHANNEL 1/2 X-OVER MODE
This crossover switch selects the desired operating mode of channel pair CH1/2:

DUPE:
All settings made on CH3/4 are then also effective on CH1/2. This is particularly useful if you want to operate the channel pairs CH1/2 and CH3/4 bridged with two subwoofers. The bass level remote controller is then also effective on CH1/2.

HPF:
High Pass mode adjustable with HPF – frequency is limited downwards.

FULL:
Full Range mode – the entire frequency range is amplified.

HPF
This controller limits the frequency at the respective channel pair CH1/2 or CH3/4 downwards. Low frequencies that can damage a loudspeaker are cut off. The crossover frequency is adjustable from 10 Hz to 4000 Hz (4 kHz).

LPF
This controller limits the frequency at channel pair CH3/4 upwards. The crossover frequency is adjust-able from 50 Hz to 4000 Hz (4 kHz).

BOOST
This controller adjusts the bass boost from 0 dB to +12 dB at 45 Hz on channel pair CH3/4. In DUPE mode the bass boost is also effective on CH1/2.

BASS LEVEL CONTROLLER
This port is for connecting the cable of the included bass level remote controller. With this, the bass level can be e.g. be adjusted from the driver's seat. Only use the supplied bass remote controller and the associated cable. The bass level remote controller only works in LPF/BPF mode (Low-Pass/Band-pass) on channel pair CH3/4, in DUPE mode also on channel pair CH1/2.

POWER/PROTECT
If the LED lights up in blue, the amplifier is ready for operation. If the LED lights up in red, there is a malfunction. Refer in this case to chapter TROUBLESHOOTING on page 26.

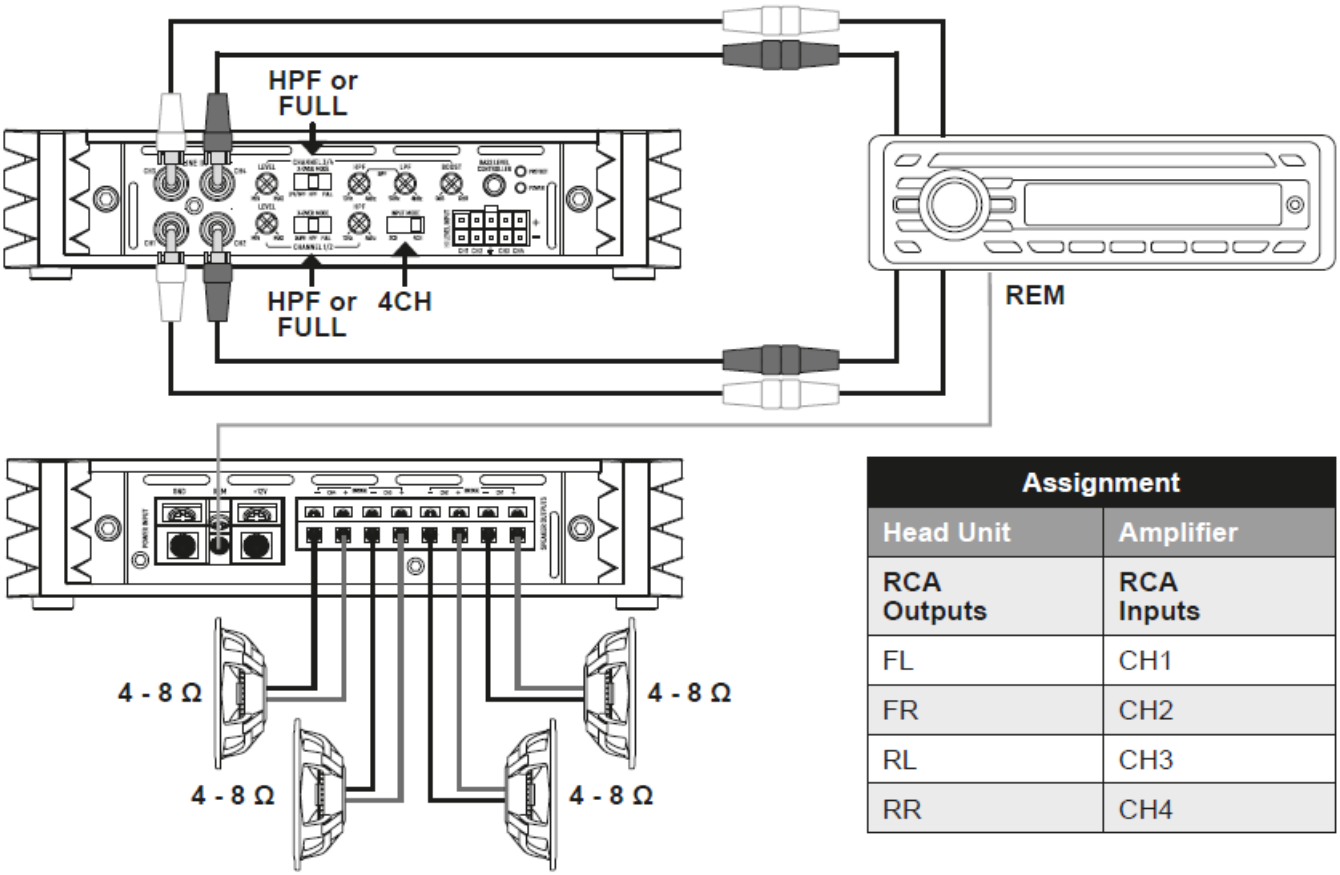
INPUT MODE
This switch can be used to set whether the amplifier should be controlled with just one stereo signal (2CH) or with two stereo signals (4CH) from the head unit. The fader setting on the control unit is only effective in switch position 4CH. In switch position 2CH, the input signal is routed from the channel pair CH1/2 to CH3/4. This means that only a stereo signal is required at the inputs CH1/CH2.

HI LEVEL INPUT
If your head unit does not have RCA preamp outputs, you can use the HI LEVEL INPUT. To do this, simply connect the loudspeaker cables of the head unit to the included 10-pin cable harness.

NOTE:

If you can hear background noises when using the high level inputs, connect the ground con-nection of the cable plug to a ground point on the vehicle.

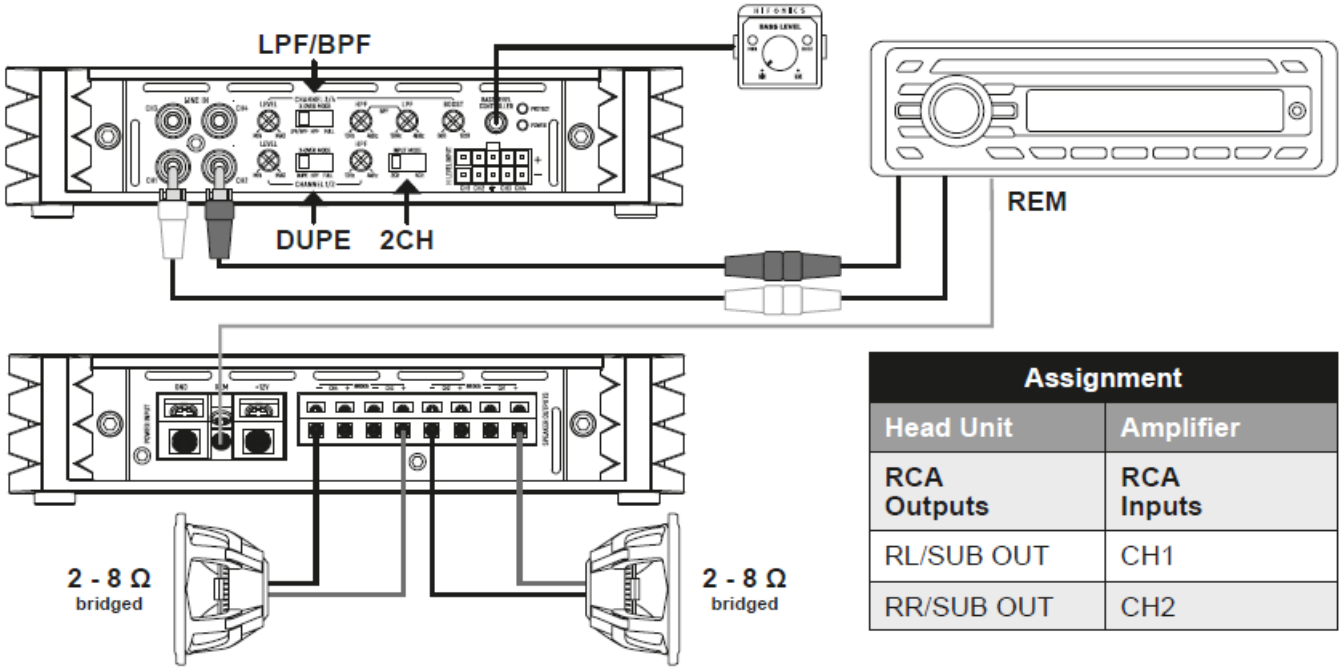
APPLICATION EXAMPLE A



Assignment	
Head Unit	Amplifier
RCA Outputs	RCA Inputs
FL	CH1
FR	CH2
RL	CH3
RR	CH4

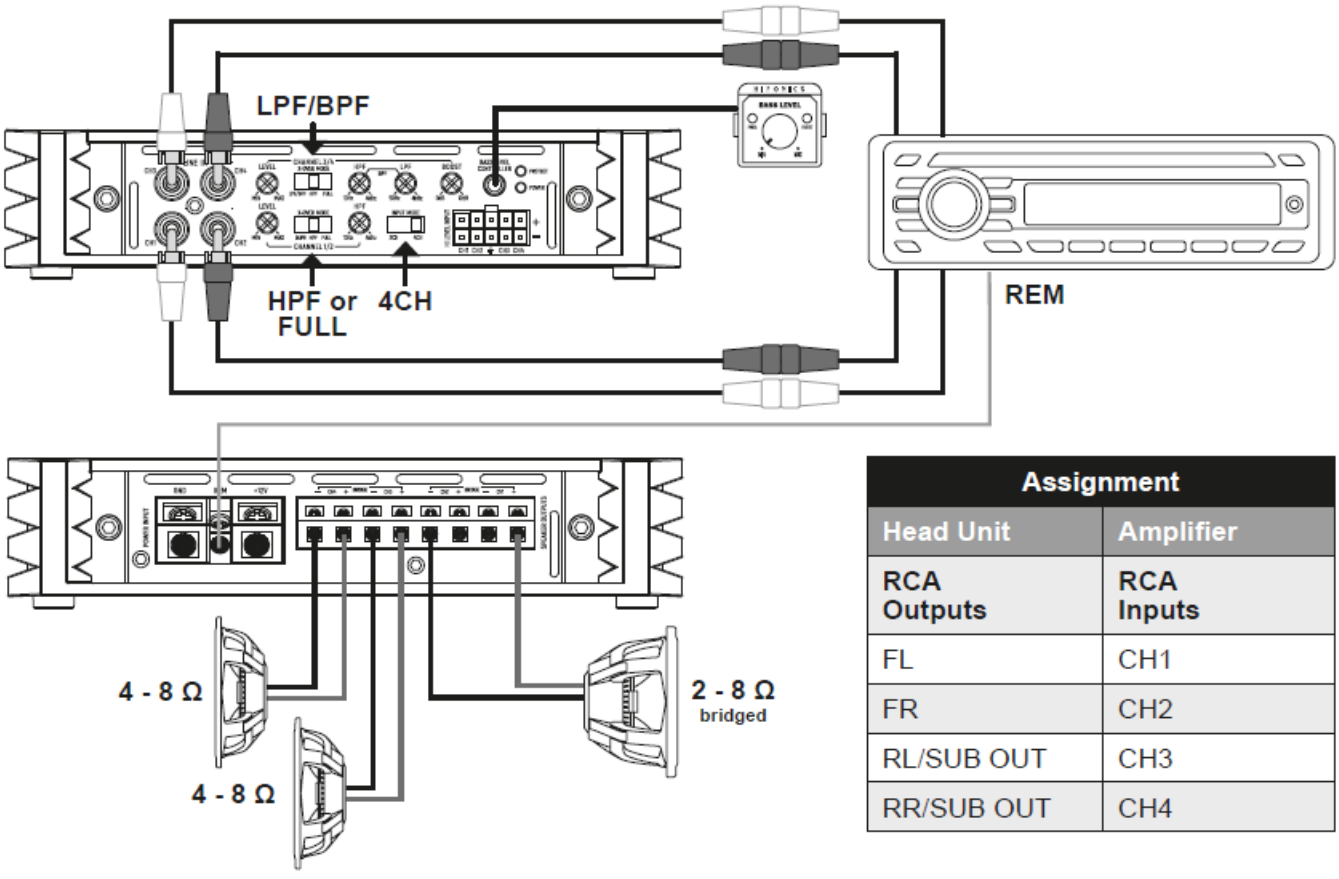
Assignment	
Head Unit	**Amplifier**
RCA **Outputs**	**RCA** **Inputs**
FL	CH1
FR	CH2
RL	CH3
RR	CH4

APPLICATION EXAMPLE B



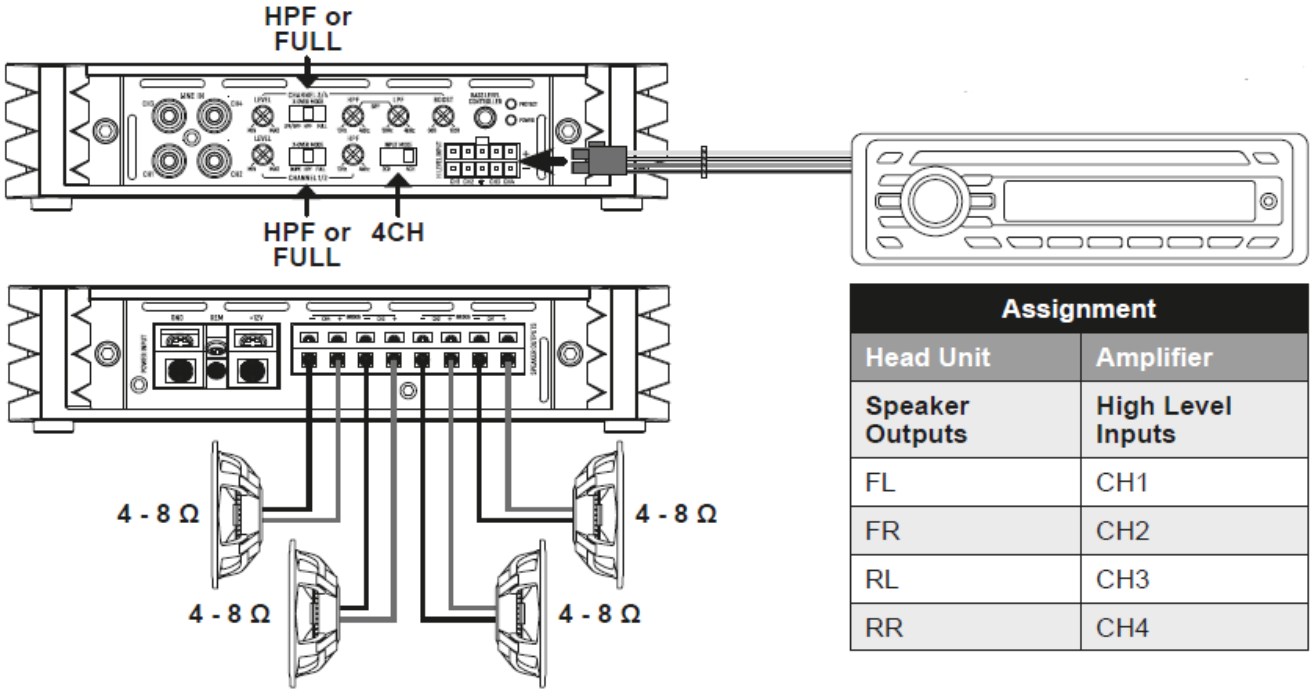
Assignment	
Head Unit	**Amplifier**
RCA Outputs	**RCA Inputs**
RL/SUB OUT	CH1
RR/SUB OUT	CH2

APPLICATION EXAMPLE C



Assignment	
Head Unit	**Amplifier**
RCA Outputs	**RCA Inputs**
FL	CH1
FR	CH2
RL/SUB OUT	CH3
RR/SUB OUT	CH4

APPLICATION EXAMPLE D



Assignment	
Head Unit	**Amplifier**
Speaker Outputs	**High Level Inputs**
FL	CH1
FR	CH2
RL	CH3
RR	CH4

Assignment	
Head Unit	**Amplifier**
Speaker Outputs	**High Level Inputs**
FL	CH1
FR	CH2
RL	CH3
RR	CH4

TROUBLE SHOOTING

CAUTION
All instructions in this troubleshooting refer to the entire sound system and its individual components. The features of your device may not match the functions described in the notes. Then skip this point and move on to the next one.

NO FUNCTION / THE POWER LED IS NOT ILLUMINATED

First check the fuse of the routed power cable on the vehicle battery

The fuse is defective
Replace the defective fuse with an equivalent one, never with a higher value.

The fuse fails again.
In this case there appears to be a short circuit between the fuse and the amplifier. To do this, check the + 12V power cable along its entire length from the battery to the amplifier for damage and whether there is a short circuit to the ground, e.g. contact with the vehicle chassis or the body. If necessary, replace the defective power cable.

The fuse is apparently okay
Use a standard 12-volt voltmeter to check the voltage between the + 12V connection and the ground connection

on the amplifier.

There is no voltage
Use the voltmeter to check the fuse, which is located close to the vehicle battery, to see whether there is voltage between the output and ground. If there is no voltage there, either the fuse holder or the fuse is defective, although it appears to be okay. If necessary, replace the fuse holder or fuse.

There is voltage
If you operate the amplifier with a pre-amplifier signal (RCA), you must have laid a remote turn-on wire from the head unit to the REM terminal of the amplifier. A remote turn-on wire is connected to the REM terminal at the amplifier. Use the voltmeter to check whether there is voltage between the REM terminal of the amplifier and ground. The head unit must be switched on.

There is no voltage.
Check the remote turn-on wire from the amplifier to the head unit for a short circuit or damage. If necessary, replace the control line.

There is voltage
The amplifier is probably malfunctioning or defective. Contact your retailer.

THE POWER LED IS ON, BUT NO SOUND COMES FROM THE SPEAKERS

Check the following steps:

Low level mode: Are the RCA cables on the head unit and on the amplifier correctly connected?
The RCA cables are correctly connected. Then an RCA cable could be defective. Check the function of the RCA cables on another audio device. If necessary, replace the defective RCA cables.

High level mode: Are the loudspeaker cables on the head unit and the high-level inputs of the am-plifier or on the high level cable plug correctly connected?

The speaker cables are connected correctly.
A speaker cable could be defective. If necessary, replace the speaker cable or insulate the damaged area.

Are the speaker cables correctly connected between the speakers or the subwoofer at the speaker outputs of the amplifier?
The speaker cables are connected correctly. A speaker cable could be defective. If necessary, replace the speaker cable or insulate the damaged area.

Is the high pass filter or subsonic filter set higher than the low pass filter on the amplifier?
Then slowly turn down the controller for the high pass filter or subsonic filter until the sound can be heard.

Is the input mode switch on the amplifier set correctly?
Check the setting and change the switch position if necessary.

Are the crossover switches on the amplifier set correctly?
Check the settings and change the respective switch position if necessary.

Are the speakers or the subwoofer working?
Hold a standard 9 volt block battery to the terminals of each loudspeaker or the subwoofer.

- A faint cracking sound can be heard. The speaker or subwoofer is fine.

- There is nothing to be heard. The loudspeaker or subwoofer could be defective. If necessary, replace the defective speaker or subwoofer.

Are the settings on the head unit set correctly?

- Check the fader and balance settings
- Check whether the mute function is activated
- Check whether a high pass or low pass filter is activated
- Check whether playback has been paused
- Check the source settings
- Check whether any existing subwoofer output is activated

DISTORTION OR HISSING NOISE CAN BE HEARD FROM THE SPEAKERS

Check the following steps:

Is a input level controller on the amplifier set too high?
Slowly turn the controller back until you hear a clean audio signal.

Is the Bass Boost controller on the amplifier set too high?
Slowly turn the controller back until you hear a clean audio signal.

Is the loudness function on the head unit set too high?
Deactivate loudness or turn the loudness setting back until you can hear a clean audio signal.

Are the EQ and sound settings on the head unit set too high?
Turn down the settings for Treble, Middle and Bass or deactivate the equalizer until you can hear a clean audio signal.

ENGINE SPEED-DEPENDENT NOISE CAN BE HEARD FROM THE SPEAKERS

Check the following steps:
Have the RCA cables been laid separately from the power cable in the vehicle?
If necessary, lay the cables again and make sure that the audio cables are laid separately from the power cable on the left and right in the vehicle.

Is the amplifier's ground connection correctly connected?
Make sure that the ground connection of the amplifier is not connected directly to the negative pole of the vehicle battery. Select a suitable ground point on the vehicle body for connection. If necessary, use contact spray to improve the conductivity of the connections.

Is the conductivity of the ground cable from the vehicle battery to the body okay?
Make sure that the ground connection of the vehicle battery has a stable and conductive connection to the body. If necessary, use contact spray to improve the conductivity of the connections.

AN ACTIVE OPERATED TWEETER IS DISTORTED OR CRACKED

CAUTION:
Tweeters will be damaged if the frequencies are too low. Please note the manufacturer's information on which frequency setting is recommended. To be on the safe side, pause the playback of the head unit first. Check the

following steps:

Is the crossover mode switch of the relevant channel pair on the amplifier set correctly?
Set the crossover mode switch to the high pass position (HP or HPF).

Is the high pass filter of the relevant channel pair set too low on the amplifier?
First turn the high pass controller fully clockwise. Now start playback on the head unit. Then turn the high pass controller slowly counter-clockwise until you can hear a clean sound from the tweeters and produce a balanced sound together with the woofers/mid-range speakers. Make sure that the woofers/ mid-range speakers are set correctly with the respective high pass and low pass controllers.

AMPLIFIER ACTIVATES THE PROTECTIVE CIRCUIT / THE PROTECT LED LIGHTS UP

Check the following steps:

Short circuit on the speaker cables

- First disconnect all speaker cables from the amplifier. Use a multimeter to check the ohmic impedance of each loudspeaker by measuring between its plus and minus lines. With standard loudspeakers the value fluctuates between 3 and 5 ohms. The values for low-resistance subwoofers can be lower.
- The measurement shows a resistance value of less than 0.5 Ohms
  Then there is a short circuit. Remove the wiring of the affected loudspeaker at its connections. Now use the multimeter to check the ohmic impedance directly at the loudspeaker connections by measur-ing between the plus and minus connections.

The measurement shows a resistance value of more than 0.5 Ohms

- The speaker is fine, so the speaker wire appears to be defective and causing a short circuit. Replace the defective speaker cable.

The measurement shows a resistance value of less than 0.5 Ohms

- The speaker appears to be defective and is shorting out. Replace the defective speaker.

The load impedance of the loudspeakers or the subwoofer is too low
Compare the ohmic impedance of the connected loudspeaker or subwoofer with the technical specifications of the amplifier. For example, if the amplifier is only designed for 2 or 4 ohm operation, no loudspeaker with less than 2 ohms may be connected.

The cross-section of the power cables is too small
If the cable cross-section is too small, this leads to increased ohmic resistance and thus to a voltage drop (voltage loss). This indicates that the amplifier consumes more power. The increased power consumption results in a significantly higher heat development and the amplifier switches to thermal protection mode. Therefore, observe the recommended cable cross-sections in these instructions and, if necessary, lay power cables with a larger cable cross-section.

The amplifier is overheated

- The heat sink of each amplifier requires sufficient air circulation to be able to dissipate the heat generated

during operation. If necessary, change the installation position in favor of better cooling of the amplifier or ensure better air circulation at the installation location.

- Turn off the sound system and wait about half an hour for the amplifier to cool down again. With very hot outside temperatures and strong sunlight, enormous heat develops inside the vehicle. The amplifier then activates its thermal protection circuit to prevent damage. After cooling down, the amplifier works properly again.

CAUTION
All instructions in this troubleshooting refer to the entire sound system and its individual components. The features of your device may not match the functions described in the notes. Then skip this point and move on to the next one.

Documents / Resources

	hifonics MERCURY IV-V2 ANALOG CLASS A-B 4-CHANNEL AMPLIFIER [pdf] User Manual MERCURY IV-V2 ANALOG CLASS A-B 4-CHANNEL AMPLIFIER, MERCURY IV-V2, ANALOG CLASS A-B 4-CHANNEL AMPLIFIER, MERCURY IV-V2 4-CHANNEL AMPLIFIER, MERCURY IV-V2 AMPLIFIER
	HIFONICS Mercury IV V2 Analog CLASS A/B 4-Channel Amplifier [pdf] User Manual Mercury IV V2 Analog CLASS A B 4-Channel Amplifier, Mercury IV V2, Analog CLASS A B 4-Channel Amplifier, A B 4-Channel Amplifier, 4-Channel Amplifier, Amplifier