Hifonics HFEQ Crossover Line Driver Amplifier User Manual

Contents

HIFONICS

Hifonics HFEQ Crossover Line Driver Amplifier

GENERAL INSTALLATION PROCEDURE

KEYS TO SUCCESS

Follow these keys to success for your amplifi er installation for reduced system noise and great sound quality.

- **Separate Power/Ground & RCA –** Make sure that Power/Ground and RCA signal cables are at least 18” apart. Consider running Power/Ground on one side of the vehicle and RCA signal on the other.
- **Quality Cables –** Use the highest quality RCA, Power, and Ground Cables. Choosing great amplifi ers is only part of the installation. Use quality, connectors throughout the system to assure great sound and reduced injected noise from the vehicle’s electrical system.
- **Chassis Ground –** Never use factory screws or bolts to electrically ground amplifi ers. Use a short (less than 18”) 0-gauge wire for Cyclops 3K or a 4-gauge wire for Odin 2K with a ring terminal or grounding distribution block. Remove paint and secure amplifi er grounds directly to the chassis of the vehicle.
- **Proper Power & Fuse –** Assure that you have fused each amplifi er with the appropriate fuse within 12” of the vehicle’s battery.

SYSTEM DESIGN

The success of any car stereo system relies on several factors, such as the system design, execution of the installation, and system setup. Remember that any system is only as good as its weakest link. It is important to know that higher power systems or amplifiers are not only useful for high sound pressure levels (SPL) but also to establish headroom capability for an audio system. Headroom means a system to be able to reproduce musical peaks cleanly without distortion. Lower power amplifi ers will clip earlier than their more powerful cousins, and cause loudspeaker failure when overdriven due to the harmonics generated by a clipped signal, thus overheating voice coils. Amplifi ers should be mounted with the fi ns running horizontally for best convection cooling, to minimize overheating. Choose the best quality RCA cables for reliability and less engine noise interference in through the audio system.

HIFONICS MT. OLYMPUS HIGH PERFORMANCE AMPLIFIERS

The MT OLYMPUS Series products have been designed to a very high level of performance, with features unavailable in any other product. All of the amplifi ers have variable crossovers built in, with added touches such as subsonic fi later, parametric bass equalization, and a remote control module that allows the overall Level of bass boost to be controlled from the driver seat. To ensure years of listening pleasure, all amplifi ers have a built-in diagnostic mode that will detect shorted speaker leads, low impedance, dangerously high temperatures, and DC shorts, and will shut down the amplifi er to help prevent damage. This series also features pre-clip, soft clip, and hard clip indications on the remote and end panel of each amp to prevent damage to your audio investments.

INSTALLATION

It is highly recommended that the amplifi er be mounted to a board of MDF or other solid structure using the 4 mounting screws provided. Avoid mounting the amplifi er to the metal as this can introduce noise and other unwanted issues. When mounting the amplifi er, ensure that it is mounted HORIZONTALLY for optimal heat dissipation. Mounting amplifi ers to speaker enclosures is not recommended as this can cause damage to the amplifi er components. When choosing a location for mounting the amplifi er, ensure that you check for clearance from wires, gas tank, electrical devices, and brake lines, etc.

Power & ground connections: (see the features matrix on page 5 for proper gauge cables per amplifier) Run the wiring so that RCA cables are at least 18“ away from power and speaker cables. Keep RCA cables away from electrical devices in the vehicle that can cause electrical noise, such as electric fuel pumps, emission control modules, and other onboard electronic modules.

Use a suffi cient gauge power cable and ground cable using the matrix on page 5 as a reference to what size wire you require. MT OLYMPUS series amplifi ers require at least a 4 gauge power wire. In a multi-amplifi er system, add the total value of the manufacturer's recommended fusing to get your total system amperage. Some applications may require multiple runs of power wire to meet the system requirements. In multi-amplifi er systems it is advisable to mount a large enough fuse right at the battery, and run one or multiple +12 volt power cables to a fused distribution block near the amplifi ers. It is then a simple matter to connect the +12 volt terminal of each amplifi er to the distribution block. During this process, please ensure that the main power fuse is removed to avoid shorting the electrical system. The main fuse must be within 12" of the vehicle's battery. Ground each amplifi er with as short a ground lead as possible directly to the vehicle chassis using at least 4 gauge wire or equivalent to the size of the amplifi ers' power wire. Use a ground distribution block, if you wish, but it is extremely important to keep the main ground lead from this distribution block to the chassis as short as possible, not more than 18". The ground connection integrity to the chassis is very important, and the best way to achieve good, solid electrical and mechanical contact is to use a large round crimp lug, crimped and soldered to the ground cable. The next step is to scrape the paint off the vehicle chassis, slightly larger than the ground lug, at the connection point. Drill a clearance hole in the chassis, the same size as the lug hole, and use a bolt, spring washer, and nut to securely fasten the ground lug. Use petroleum jelly to coat the bolt/lug connection, to prevent oxidization over time.

SPECIFICATIONS

OUTPUT POWER RATING	ODIN 2K RMS/DYNAMIC	CYCLOPS 3K RMS/DYNAMIC
4-Ohms	450/900	600/1200
2-Ohms	800/1600	1100/2200
1-Ohm	1000/2000	1500/3000
Mono Bridged @ 4-Ohms	n/a	n/a
Mono Bridged @ 2-Ohms	n/a	n/a
Power Supply	PWM	PWM
Output Power Circuit Config	MOSFET	MOSFET
Soft Start Up Sound	Yes	Yes
SPECIFICATIONS	ODIN 2K	CYCLOPS 3K
Frequency Response +/- 3dB	15Hz-250Hz	15Hz-250Hz
Damping Factor	>200	>200

Signal to Noise Ratio (A-Weight)	>96dB	>96dB
THD & Noise %	<0.1	<0.1
Variable Input Level Control	0.2V-9.0V	0.2V-9.0V
Input Impedance	47kΩ	47kΩ
Diagnostic Indicator	Top – Green (Power on) Amber (Thermal) Red (Short) Bottom – Green (Pre-Clip) Amber (Near-Clip) Red (Clip)	Top – Green (Power on) Amber (Thermal) Red (Short) Bottom – Green (Pre-Clip) Amber (Near-Clip) Red (Clip)
Protection (DC, Short, Thermal, Overload)	Yes	Yes
CROSSOVER FUNCTIONS	ODIN 2K	CYCLOPS 3K
Variable Low Pass Frequency	35Hz-250Hz	35Hz-250Hz
Multiplier Frequency	No	No
Variable Subsonic Filter	15Hz-35Hz	15Hz-35Hz
PARAMETRIC EQ		
Frequency	30Hz-100Hz	30Hz-100Hz
Bandwidth	Wide – Narrow	Wide – Narrow
Boost	0-10dB	0-10dB
Phase Shift	0-180	0-180
CONNECTIONS	ODIN 2K	CYCLOPS 3K

Power Terminal	4-GA	0-GA
Speaker Terminal	12-GA	12-GA
Remote Control Module (HFR-G1)	Yes	Yes
Fuse Sizes	120 Amps (60×2)	150 Amp (Not included)
Dimensions (L x H x W) USA	14.6“x9.0″x2.8″	17.0″x9.0″x2.8″
Dimensions (L x H x W) METRIC	372x228x70mm	432x228x70mm

Features and specifications subject to change without notice

TIP: Use the same approach when installing head units, equalizers, or any audio equipment for that matter – run short individual grounds from each piece directly to the vehicle chassis, to minimize ground loops and system noise. All power, ground and speaker connections should be crimped and soldered for reliability. Make sure that none of the cable insulation can chafe against exposed metal in the vehicle, causing short circuits to the chassis.

WIRE LENGTH

SYSTEM AMPE RAGE	7 – 10 ft.	10 – 13 ft.	13 – 16 ft.	16 – 19 ft.	19 – 22 ft.	22 – 28 ft.
35 – 50	8	6	4	4	4	4
50 – 65	6	4	4	4	4	2
68 – 85	4	4	2	2	2	0
85 – 105	4	2	2	2	2	0
105 – 125	4	2	0	0	0	0
125 – 150	2	0	0	0	0	0

NOTE: This Matrix is a general rule of thumb. Please refer to the manufacturer’s specifi c requirements. MT OLYMPUS specifi cations can be found on page 20.

Safe connection sequence

After all, cables are run, connect speaker wires to the speakers and amplifi ers, then run and plug in RCA cables. Next, connect all power, ground, and remote turn-on leads. Now, connect all +12 volt cables to the amplifi er or amplifi ers and distribution blocks and fuse holders. Finally, connect the main +12 volt cable to the battery, with the main fuse removed. We are almost ready to power up the system.

Power up the system

The following procedure may seem like overkill, but there is nothing more frustrating than turning on a system for

the first time, and it does not work properly immediately. First, make sure the head unit is off, and turn all level controls to a minimum (counterclockwise), including the head unit volume control. Set all equalizers to 0 dB (no boost), and all crossover frequency controls at approximate frequencies, as recommended by the loudspeaker manufacturer. Set all input selectors and crossover switches as required for the application. Remove all amplifi er fuses, and insert the main fuse at the battery. If the fuse does not blow, you can insert the fuse in one of the amplifi ers, and we are ready to turn on the system. Turn the head unit on, insert a CD, or select a radio station, and increase the head unit volume control. If the system sounds fi ne, turn off the head unit, and install fuses in the remaining amplifi ers, one by one, until the complete system is powered up and functioning properly.

AMPLIFIER FEATURE DESCRIPTIONS

MT. OLYMPUS AMPLIFIERS

Mt. Olympus is a unique series of amplifi ers regarding channel stability and design.

NOTE: THIS MANUAL FEATURES THE AMPLIFIERS ODIN 2K AND CYCLOPS 3K ONLY

- The COLOSSUS and COLOSSUS PRO are stable at 4/2/1-Ohm per channel and 4/2-Ohms bridged.
- The BOLTAR and JUPITER are stable at 4/2-Ohms per channel and 4-Ohms bridged.
- The HERCULES and ATLAS are stable at 4/2/1-Ohm.
- The ODIN 2K and CYCLOPS 3K are stable at 4/2/1-Ohm.
- The input sensitivities for rated output powers are variable from 0.2V to 9V.
- All crossovers are fully variable in their respective ranges.
- Crossover filters are 12dB/Octave.
- A green POWER LED indicates the powered-up and turned-on condition.
- All HIFONICS amplifi ers feature a comprehensive diagnostic system, with speaker lead short circuit, and amplifi er DC faults indicated by the red “PROTECT” LED.

CAUTION: DO NOT OPERATE ANY AMPLIFIER BELOW THE INTENDED IMPEDANCE. THIS WILL CAUSE DAMAGE TO THE AMPLIFIER THAT WILL NOT BE COVERED UNDER THE WARRANTY PRINTED IN THIS MANUAL.

HFXR – Hifonics Electronic Crossover

If you have a multi-amplifi er system and need more crossover control than what is built into the amplifi er, the HFXR is a great solution for your system. The HFX features can be set as a 2-channel or 4-channel X-Over with 8.5 volt line driver.

FEATURES

- Direct sub-in receivers with sub-outs 0 – 12dB bass boost at bass remote
- Maximum pre-amp output: 8.5v RMS @ 45Hz bass boost with quasi-parametric EQ
- Selectable for mono or stereo woofers
- 180° phase-shift switch
- Second order Butterworth front and rear channel high-pass
- Level adjustments for front, rear, and sub-channels
- 2-channel full-range RCA preamp Cascading output

HFEQ – Hifonics EQ

The HFEQ is the perfect addition to any system. The HFEQ is a ½ DIN ISO mount chassis which means it needs a very narrow hole to be trimmed into the dash. It can also be mounted under the dash or center console. The key to a successful operation is “within reach” for quick adjustments to the system when music style or sound changes.

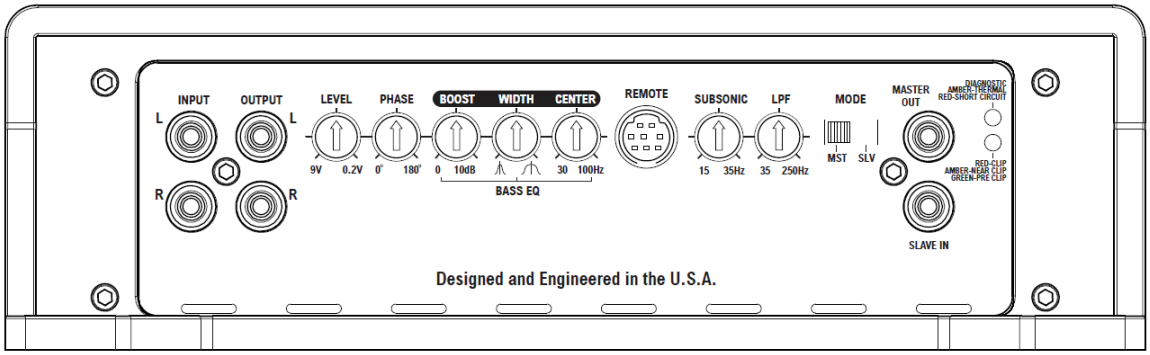
The HFEQ is a 4-band EQ 4-band equalizer with +18dB variable amplitude on each band. The HFEQ also features a 9-volt line driver which means you can drive many amplifi ers without the need for an additional line driver.

Other features are Master volume and subwoofer volume control, Front to rear dual-amp fader, and 2-audio inputs with level matching. This means you can adjust the CD player and game console inputs so they don’t blow your ears out when you switch between them. The HFEQ also gives you a Selectable 12dB high-pass front / rear crossover, a Selectable 12dB low-pass sub output, and a Selectable for mono or stereo outputs.

BXiPro 2.0 & BXiPro 1.0 – Digital Bass Enhancement Processors

If you just need to get a bit more control of the bass frequencies, the BXiPro Digital Bass Enchantment Processors are perfect. The BXiPRO processors contain a Bass Driver circuit that accurately recreates and injects Low-frequency information back into the signal path. What that means in everyday terms is that the BASS BOOSTER will give more bass impact to the best or the worst of your digital or analog media. The BXiPro 2.0 also features input noise reduction circuitry and master volume on the unit plus illuminated controls

FEATURES FOR ODIN 2K & CYCLOPS 3K



These amplifiers feature two DIAGNOSTIC leds. One monitors Short Circuits and Thermal Protection while the second monitors Clipping status.

- **INPUT:** RCA Inputs receive a signal from the source unit.
- **OUTPUT:** Passes full range signal through the amplifi er unchanged by settings on the amplifi er. Use these set of RCA's to reduce the need for multiple runs of cable to the amplifi er installation location.
- **LEVEL:** This is the input level used to balance the amplifi er with the voltage from the source unit. Voltage is variable from 0.2V to 9V.
- **PHASE:** Variable time alignment from 0 to 180 degrees.
- **BASS EQ:** PARAMETRIC

    - **BOOST:** 0 to +10dB. Will enhance bass the FREQUENCY selected.
    - **WIDTH:** Narrow to Wide range enhancements above and below the center FREQUENCY.
    - **CENTER:** Variable center frequency from 30Hz to 100Hz.
- **REMOTE:** Plug in the bass remote to this port.
- **SUBSONIC FILTER:** Low-frequency cutoff variable from 15Hz to 35Hz.
- **LOW PASS FILTER:** High-frequency cutoff variable from 35Hz to 250Hz.
- **MODE:** (ODIN 2K & CYCLOPS 3K):
    - **MST (MASTER):** The factory setting for the switch location when using the amp alone is always set to MST. Also used when linking a pair of either the ODIN 2K or CYCLOPS 3K amplifi ers. When in MST position, a single RCA can be connected to the MASTER OUT RCA receptacle to provide a signal to the SLAVE INPUT on the SLAVE amplifi er.
    - **SLV (SLAVE):** Your MODE switch should only be in this position if you are linking a pair of ODIN 2K or CYCLOPS 3K amplifi ers and one of them will be the SLAVE. At that point, the SLAVE amp will receive the single RCA on the SLAVE IN. No other RCA's can be connected to your amplifi er other than SLAVE IN when in the SLAVE IN position.
- **DIAGNOSTIC INDICATORS:** There are two indicator LEDs that visually represent the amp condition.
    - **Top:** Green – Power On. Amber – Thermal mode. Red – Short Circuit.
    - **Bottom:** Green is Pre-Clip, Amber is Near Clip, and Red is Clipping.

ODIN 2K & CYCLOPS 3K AMPLIFIER APPLICATIONS

Interconnect cable checklist:
A MONO signal source is suggested, such as would be available from the mono–sub bass output of an active crossover, whether stand-alone or built into a head unit or equalizer.

IMPORTANT: Do not be tempted to connect the hot, or positive outputs, from any source together to obtain a mono signal, as this could very well damage the output stage of that source. It is not necessary but recommended, to feed the SAME signal to both left and right inputs via a Y-adapter RCA cable. Connect the mono speaker's positive terminal to the RIGHT +, and its negative terminal to LEFT -.

Control setting checklist:

- **LEVEL:** Minimum (7 o'clock)
- **PHASE:** 0o (7 o'clock)
- **BOOST:** 0 (7 o'clock)
- **WIDTH:** Half (12 o'clock)
- **CENTER:** 45Hz (10 o'clock)
- **SUBSONIC:** 25Hz (12 o'clock)
- **LPF:** 80Hz (11 o'clock)
- **MODE:** MST

SINGLE AMP INSTALLATION PROCEDURE

1. Connect the amp LINE INPUTS to the Radio/CD player full range or mono line outputs with good quality RCA interconnect cables.
2. Plug the HFR-G1 remote module into the amp remote input DIN connection.

3. Route a power cable (4-gauge for Odin 2K / 0-gauge for Cyclops 3K) directly to the vehicle battery with an in-line fuse.
4. Connect a ground (4 or 0-gauge) cable directly to the chassis ground within 18” of the amplifi er.
    - Be sure to remove any paint or primer from the ground point.
    - Use a nut, bolt, and lock washer to secure the ground cable to the chassis ground.
5. Connect the subwoofer(s) in accordance with the diagrams below.
6. Make sure the MASTER/SLAVE switch is in the MST position.

NOTE: The amplifi er will not work if the MASTER/SLAVE switch is in the SLV position

FINE-TUNING: SIGNAL PROCESSING

Every audio system can benefi t from being fi ne-tuned. After the amplifi ers, speakers and subwoofers have been dialed in, the next step is fi ne tuning with external signal processing. Amplifi ers have limited signal processing designed for the specifi c speakers and subwoofers that are connected to those amplifi ers. For the ultimate control of equalization in a vehicle, consider some of these Hifonics signal processors to continue improving the sound of your system.

CONTROL

Most car audio enthusiasts are very happy to install a system, set it, and forget it. However, there are a few of us listeners – you know who you are – who are never satisfi ed. Especially if you have a wide variety of musical styles you enjoy. You have noticed how a piece of music from one record company or one artist can sound completely different than the next. One might need a quick adjustment to the bass, while another might need to have the high-end frequencies toned down to keep from ripping your face off. That requires control. Hifonics Signal Processors put control at your fi fingertips. Wherever you and/or your installer can install the remote controls included with several of these products, you will be able to make quick adjustments or tweaks, to the system to refl ect the great and not so great recordings you play through your system.

EQUALIZATION

Shaping the sound is a critical process in the fi ne tuning of a high-performance system. Creating a boost at certain frequencies or dip where frequencies might be too strong is going to require real control of equalization. Here is a quick rundown of Hifonics processors. For more information, check out the website.

HDBR – Hifonics Digital Bass Restoration

The HDBR contains a BASS DRIVER circuit that accurately recreates and injects Low-Frequency information back into the signal path. What that means in everyday terms is that the HDBR will give more bass impact to your best high-quality digital media or your lowest-quality recordings or your worst radio station reception. The HDBR has a unique equalization circuit that contours the restored bass according to your desires using the variable shaping controls. We have also included a dash mount remote control with a Bass Maximiser Indicator that becomes brighter as you maximize the restoration or dimmer as you back off on enhancements allowing you to be in constant control of the restoration level.

A ticking or whine that changes with engine RPM:

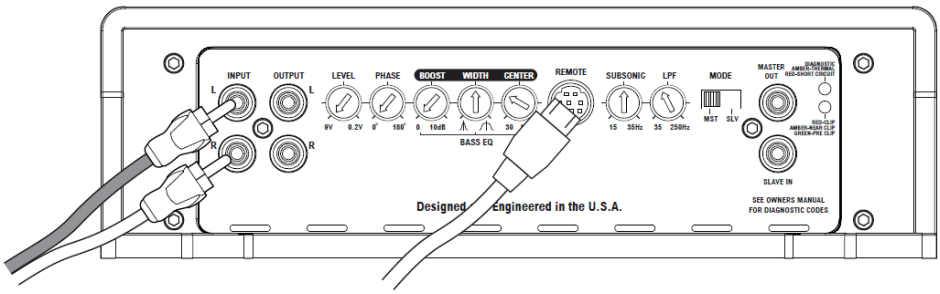
1. This problem could be caused by radiation pickup of RCA cables too near to a fuel pump or a distributor, for instance. Relocate cables to resolve this issue.
2. Check that the head unit ground is connected straight to the vehicle chassis, and does not use factory wiring for ground.
3. Try to supply the head unit with a clean +12 volt supply directly from the battery +, instead of using a supply from the in-dash wiring/fusebox.

A constant whine:

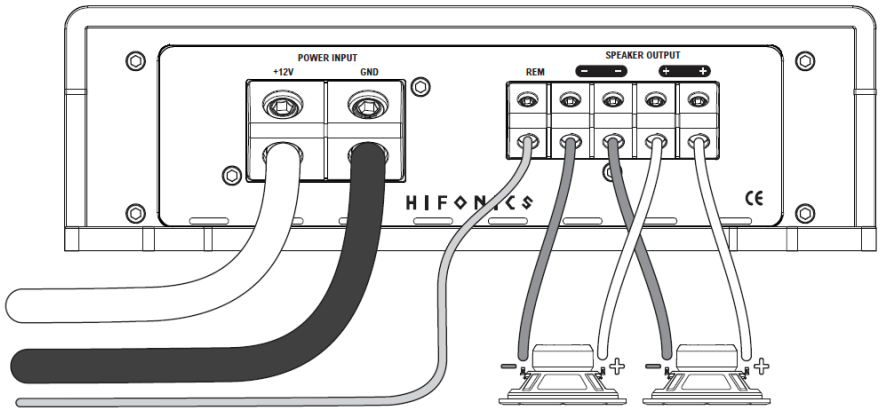
This type of noise can be more difficult to pinpoint but is usually caused by some kind of instability, causing oscillations in the system.

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.

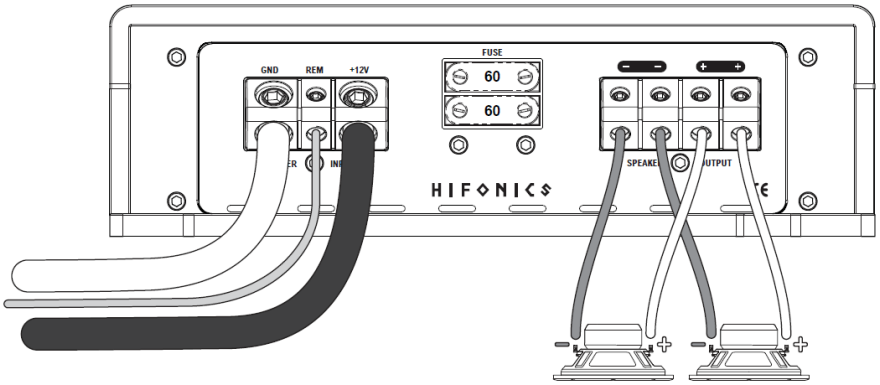
ODIN 2K, CYCLOPS 3K



CYCLOPS 3K



ODIN 2K



Minimum final loudspeaker impedance: 1 Ohm mono

DUAL AMP INSTALLATION PROCEDURE

- Connect the amp LINE INPUTS to the Radio/CD player full range or mono line outputs with good quality RCA interconnect cables.
- Plug in the HFR-G1 bass remote module into the amp remote input DIN connection on the Master amp. This will allow the Master amp to control both Master and Slave with just one Bass Remote.
- Connect an RCA jumper cable from the Master amp MASTER OUTPUT to the Slave amp SLAVE INPUT.

NOTE: This will “link” the amps so that the Master amp crossover switches will control both the Master and Slave amps. The Slave amp crossover switches will be bypassed.

1. Route two power cables (4-gauge for Odin 2K / 0-gauge for Cyclops 3K) directly to the vehicle battery with an in-line fuse to EACH amplifier.
2. Connect two ground cables (4 or 0-gauge) directly to the chassis within 18” of EACH amplifi er.
3. Be sure to remove any paint or primer from the ground point.
4. Use a nut, bolt, and lock washer to secure the ground cable to the chassis ground
5. Make sure the Master amp MASTER/SLAVE switch is in the MST position.
6. Make sure the Slave amp MASTER/SLAVE switch is in the SLV position.
7. Connect the subwoofer(s) in accordance with the diagrams on the next page.
8. Connect a 12 gauge jumper from the Master amp speaker – to the Slave amp speaker – as shown on the next page.

Low output power

1. Check that level controls have been set up properly.
2. Make sure that the battery voltage, as measured at the amplifi er's +12 volt and ground terminals, is 12.6 volts or more.
3. Check all +12 volt and ground connections.

Fuses blowing

1. The use of loudspeaker impedances below the recommended minimums will draw more current. Confirm impedance for all speakers and subwoofer systems is not below recommended levels.
2. A short on the main +12 volt cable from the battery to the vehicle chassis will cause the main fuse to blow.
3. If an amplifi er fuse blows continually, with only +12 volt, ground, and remote leads connected, the amplifier may be faulty.

The system does not turn on

1. 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 low, take voltage measurements at fuse holders, distribution blocks, the head unit's +12 volt, and remote leads to localize the problem.
4. If the HIFONICS lettering is illuminated but you do not have Power or Protection illuminated, simply remove your remote wire and use a jumper wire from 12V+ on the amplifi er to the Remote connection on the amplifier. If the amplifier turns on like normal then you do not have adequate voltage/amperage on the Remote turn-on wire from the source unit to turn on the amplifier. You will need to seek out a certifi ed installer to install a relay for your amplifier. If the jumper does not power your amplifier on, you may have internal damage and should contact Hifonics Customer Service to locate an Authorized Repair Center.

Noise problems

System noise can be divided into two categories, hiss, and electrical interference.

Hiss, or white noise:

1. High levels of white noise usually occur when amplifi er level controls are turned up TOO HIGH. You must re-adjust according to the procedures in the section "D. Setting Up Systems to Maximize Performance"
2. Another major problem that can cause excessive hiss, is a noisy head unit – unplug the amplifi er input RCA cables, and if the hiss level reduces, the source unit is at fault.

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, and air conditioners create radiated electrical fields, as well as noise on the +12 volt supply and ground. Remember to isolate the problem. First unplug the amplifi er input RCA cables, if

the noise is still present, next check the speaker leads. If the noise is gone, plug the RCA's back into the amplifi er, and investigate the source driving the amplifi er, one component at a time.

TROUBLESHOOTING A SYSTEM

The key to finding the problem in a misbehaving sound system is to isolate parts of that system in a logical fashion to track down the fault.

Description of the Diagnostic system built into all HIFONICS amplifiers

The diagnostic system will shut down the amplifi er, until reset by turning the head unit off, and back on. This condition will be indicated by the front panel PROTECT LED lighting up under the following circumstances:

1. A short circuit on the loudspeaker leads.
2. An internal amplifi er fault that causes a DC offset on the loudspeaker output. Should the amplifi er go into diagnostic mode, simply disconnect all RCA and speaker leads, while keeping +12 volt, power ground, and remote leads connected.

Should the amplifi er go into diagnostic mode, simply disconnect all RCA and speaker leads, while keeping +12 volt, power ground, and remote leads connected.

1. After disconnecting the RCAs and speakers turn the amplifi er back on, and if the diagnostic LED lights, the amplifi er has an internal fault.
2. If the diagnostic lights are showing good condition, plug the RCA cables back, and reset the amplifier. If it goes into diagnostic now, the fault lies in the input, either with bad cables or the source unit.
3. If the amplifier seems ok with RCA cables plugged in, connect the speakers, one at a time, and if one speaker or its wiring is faulty, it will activate the diagnostic system.
4. If the amplifier is still in Protection mode after the above steps, remove all RCA's and wires from the amplifier. Take a 12" length of speaker wire, and trim the plastic off of each end exposing the wire. Now connect one end of the wire to the 12V+ on the amplifier and connect the other to the Ground on the amplifier. You will have a brief spark indicating that the Capacitors have been discharged and the driver card has been reset. Remove the jumper wire and reconnect your Power, Ground, and Remote wires. Attempt to power the amplifier up like normal. In some cases, this can Reset the amplifi er if permanent damage has not previously been done.

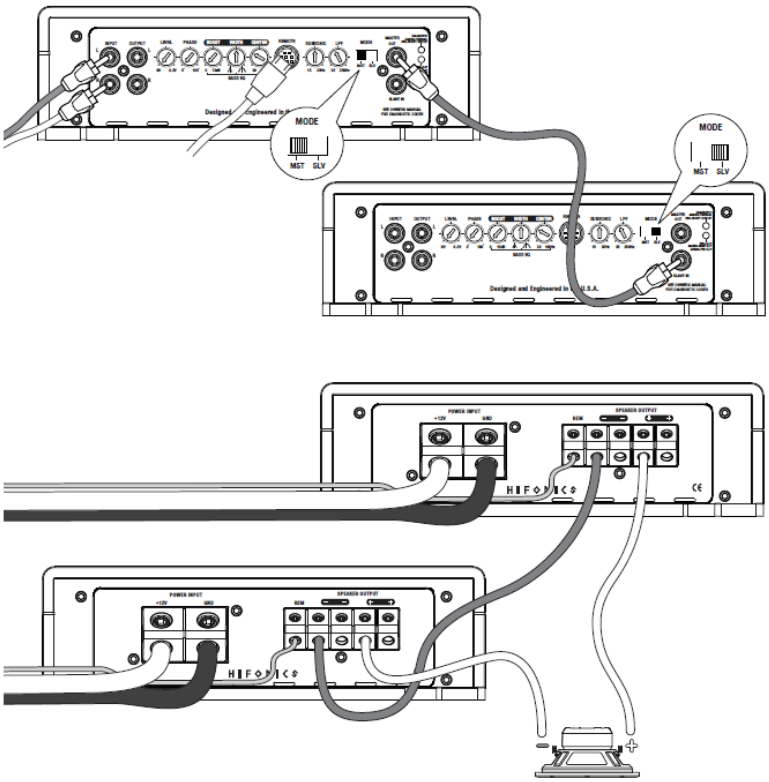
Amplifier heatsink overheating

The amplifi ers will shut down when the heatsink temperature reaches 176 degrees fahrenheit (80 degrees Centigrade), and turn back on once the unit has cooled down below that point.

Causes of overheating:

1. Inadequate cooling – relocate or remount to provide better natural airfl ow over the fins.
2. Driving high power levels into low impedances – back off on the volume control, and confi rm you are not loading the amplifi er with less than the recommended loudspeaker impedance.
3. Excessive voltage drops can also cause overheating. Confi rm the vehicle's electrical system is operating properly.

Linking two amps for single or dual subwoofer application Amplifi ers are stable to 2-OHMS when linked



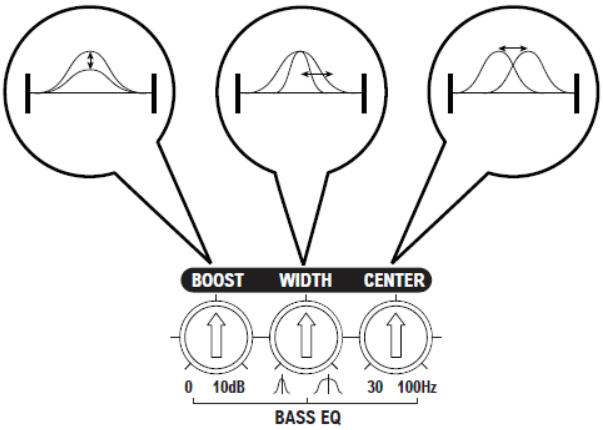
SETTING UP SYSTEMS TO MAXIMIZE PERFORMANCE

ODIN 2K & CYCLOPS 3K

- **General:**
  At this point, you are ready to get more specific on the settings for the amplifier.
- **Phase:**
  Time alignment is typically recommended at 0 degrees unless using multiple amps and subs in both the front and rear of the vehicle. The Phase can be adjusted to give the perception of bass reaching the listener at the same time regardless of location.
- **Subsonic:**
  This setting acts as a low-frequency cut-off for your system bass reproduction. The point that you set it at cuts off any frequencies from reproduction below this point.

EXAMPLE: If you adjust the Subsonic to 25Hz, the amplifi er will not play frequencies below 25Hz but will play frequencies from 25Hz to the chosen Low Pass frequency.

PARAMETRIC BASS EQ



- **Frequency:** This setting is used for selecting the frequency you want to focus your enhancement on. The suggested enhancement is from 35-45Hz, but you should be careful not to set enhancement below the F3 or -3dB point of your sub/enclosure combo.
- **Bandwidth:**
  This setting controls the number of frequencies included in the Bass Boost. The bandwidth varies from narrow to wide in a pyramid-style boost with the selected Bass Frequency value being the center.
- **Boost:**
  This setting adjusts the amount of boost on the selected Bass Frequency and Bandwidth. This setting is variable from 0-10dB. This feature provides impact to your bass, but if not adjusted correctly, it can be overused and cause damage to your subwoofers and amplifiers. It is best to slowly turn this setting clockwise until the desired bass impact is felt. It is not recommended to exceed the 12 o'clock position unless listening at a low volume or a low recording quality as this can result in high distortion and premature clipping.
- **Low Pass:**
  The Low Pass control acts as a ceiling and doesn't allow frequencies above the desired setting to be reproduced.

EXAMPLE: If you adjust the Low Pass to 80Hz, the amplifi er will not play frequencies above 80Hz but will play frequencies from 80Hz to the chosen Subsonic frequency.

Level Control Setup:

Ensure that the Level is turned completely to the left prior to turning the system on. Next, you should insert a CD or other source material that you are familiar with to use as a reference and turn the head unit volume control to about 80% of its full setting. The system sound level will of course be very low, and the following procedures will help you to match the amplifier input sensitivities properly to the head unit output signal level. It is important to match the amplifi er LEVEL input sensitivity to the Radio/CD output sensitivity. This can be located in the Radio/CD or other source unit owner's manual. If the Radio/CD output sensitivity is 2 volts, then adjust the amplifi er LEVEL input to 2 volts.

If you are not sure what the Radio output sensitivity is, follow these general guidelines:

Turn the level control up slowly, until you hear distortion, then back off a few degrees on the control. If at any point your amplifi er goes into protection, you will need to turn the LEVEL to the left a bit and then try again. If you reach a point where the output does not increase, stop turning the LEVEL control to the right as the amplifier/subwoofer combo has reached its max output in this application.

FREQUENTLY ASKED QUESTIONS

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