



# PowerPlus Amplifiers

420, 840, 900, 1150, 1302, 1304

## Installation & Operation Manual



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## Introduction

The Jensen PowerPlus series of amplifiers were designed to meet or exceed the CEA-2006 test standards. These new standards give all participating manufacturers (and many don't participate) a baseline when comparing amplifiers of similar power output. The CEA Power rating protects you, the customer. "Power is power – it doesn't matter who makes it," is not always true. What does matter is whether the power can be produced in the first place. The RMS rating is the true power you are getting. At Jensen, to be fair to you and to the competition, we rate our amps in the two most popular ratings, including the CEA RMS rating. So feel confident that your Jensen purchase decision was a sound one, and remember "If it's Too Loud, You're Too Old."

### ***Before You Begin***

We need to get the legal stuff out of the way, so please keep reading. Afterwards, you'll be armed with the knowledge to install your new hard-hitting, speaker-pumping Jensen amplifier.

Exposure to loud sounds or music can permanently damage your hearing. Unfortunately, in many cases, the damage is not noticeable until years later. In addition, loud music may hinder your ability to hear traffic, police, and fire or emergency vehicles. Please be responsible and have respect for other people by listening at moderate volumes!

### ***Warranty Service***

If your Jensen amplifier should ever require service, you will need the original dated receipt. If you must return the unit for any reason, always include the receipt with the product.



## Features and Specifications

Your new PowerPlus Jensen mobile stereo power amplifier is the amplifier of choice for the high demands of auto sound reproduction. With its deep-bass reproduction and plenty of reserve power, low harmonic distortion and neutral reproduction, the PowerPlus series of amplifiers takes Mobile Hi-Fi to new heights. Like all Jensen products, when it comes to accurate sound reproduction the PowerPlus series takes a back seat to no one. Jensen will bring your Hi-Fi experience to new heights with the following features:

- Low profile Aluminum extruded heat sink
- Pass-Thru RCA's
- Variable Bass EQ 0 - 12dB @ 45Hz
- 12dB / octave Low Pass and High Pass filters
- Variable Input Level 400mV - 5V
- Encapsulated power and speaker connectors
- Short circuit, DC-offset and Thermal Overload protection circuitry
- Blue illuminated VU level meter(s)
- Diagnostic LED's - Green: Power, Red: Standby / Fault

### PowerPlus 420 / 840 / 1304

- Low Pass filter 40 - 240Hz
- High Pass filter 40 - 400Hz
- High Pass/Low Pass/Full Range selector switch
- Stereo/Mono Mode switch (PowerPlus 420)
- 2/3/4 Channel Mode switch (PowerPlus 840 and 1304)

### PowerPlus 1302

- Low Pass filter 50 - 250Hz
- High Pass filter 40 - 500Hz
- High Pass / Low Pass / Full Range selector switch
- Stereo/Mono Mode switch
- Remote Input Level Control w/ 5 meter interface cable

### PowerPlus 900 / 1150

- Mono subwoofer amp
- Low Pass filter 40 - 250Hz
- Subsonic filter 10 - 40Hz, 12dB / octave
- Remote Input Level Control w/ 5 meter interface cable

## **Specifications**

### PowerPlus 420 / 840 / 1302 / 1304

- Load Impedance: 2-4ohm

- Signal to Noise @ 1 kHz: >100dB (rated power)
- Channel Separation @ 1 kHz: >60dB
- Frequency Response: 5-60 kHz, -3dB
- Input Impedance: 20 kHz, nominal
- THD+N @ 5 watts: 0.02%, 1 kHz, 14.4VDC

### PowerPlus 900 / 1150

- Signal to Noise @ 125Hz: >100dB (rated power)
- Channel Separation not applicable
- THD+N @ 5 watts: 0.02%, 125Hz, 14.4VDC

## **Power Output**

RMS Power Output @ 2% THD+N, 1kHz, 14.4VDC

### PowerPlus 420

- 75 x 2 Watts, 4-ohm
- 110 x 2 Watts, 2-ohm
- 210 x 1 Watts, 4-ohm Bridged

### PowerPlus 840

- 75 x 4 Watts, 4-ohm
- 110 x 4 Watts, 2-ohm
- 210 x 2 Watts, 4-ohm Bridged Stereo

### PowerPlus 900

- 275 x 1 Watts, 4-ohm
- 450 x 1 Watts, 2-ohm

### PowerPlus 1302

- 195 x 2 Watts, 4-ohm
- 320 x 2 Watts, 2-ohm
- 650 x 1 Watts, 4-ohm Bridged

### PowerPlus 1304

- 125 x 4 Watts, 4-ohm
- 160 x 4 Watts, 2-ohm
- 325 x 2 Watts, 4-ohm Bridged Stereo

### PowerPlus 1150

- 350 x 1 Watts, 4-ohm
- 575 x 1 Watts, 2-ohm

**Specifications subject to change without notice.**

## Installation

Before you begin the installation of your PowerPlus series amp remember, there are two ways to do things – right and twice! Use the proper installation techniques, tools and accessories to ensure that your Jensen PowerPlus series amp will put out all the power it was designed to. If necessary, seek a professional installer to have the amplifier installed correctly. Most mobile amp installations do not have the proper gauge wire for power and ground – do not let your amp be a victim of this common installation oversight!

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***NOTE: This device is a high-power audio amplifier intended for installation in vehicles with a 12-Volt negative ground electrical system. Attempting to connect or operate the amplifier with another type of electrical system may cause damage to the amplifier or the electrical system.***

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### **Installation Assistance**

For installation assistance, call 1-800-323-4815 during normal business hours, or visit [www.jensen.com](http://www.jensen.com) at any time.

### **Supplies and Tools Needed**

To install the amplifier, you will need tools, supplies and adapters. It is best to make sure you have everything you need before you start.

#### Supplies

- Black electrical tape
- Amplifier Installation Kit

#### Tools

- Cordless drill with assortment of bits
- Flat-head and Philips screwdrivers
- Wire cutters/strippers
- Crimping tool
- 12-volt test light or digital multimeter
- Wire brush, sandpaper or scraping tool (ground connection to vehicle should be a clean, unpainted metal surface)

### **Disconnect Battery**

Disconnect the negative (-) battery cable before starting the installation. Check the battery ground (there should be two (2) ground wires coming from the battery – one going to the starter mounting bolt or engine block and another

going to the vehicle chassis) and make sure the battery is grounded to the chassis with at least a #8 gauge wire. Also check the alternator connections, making sure they are tight and free from corrosion, rust or dirt.

### **Location and Mounting**

The amplifier's compact design allows great flexibility in mounting. Common mounting locations include under the front passenger seat or in the trunk area.

When selecting a location, remember that amplifiers generate heat. Select a location on a flat surface away from heat and moisture where air can circulate around the amplifier.

Place the amplifier in the mounting location and mark the positions of the holes with a marker, pen or pencil. Carefully drill the mounting holes in the marked positions, then use the supplied mounting screws to securely fasten the amplifier to the mounting surface.

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***WARNING: Do not cover the amplifier with carpets or enclose it behind interior trim panels, and do not mount the amplifier in an inverted or upside down configuration. Be sure the mounting location and the drilling of pilot holes will not damage any wires, control cables, fuel lines, fuel tanks, hydraulic lines or other vehicle systems or components.***

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### **Routing Wires**

Proper wiring connections are illustrated on the following pages. If wiring connections are made incorrectly, the unit will not operate properly and could become permanently damaged. Follow the installation instructions carefully, or have the amplifier installed by an experienced technician.

## Power Wiring

### Charging System

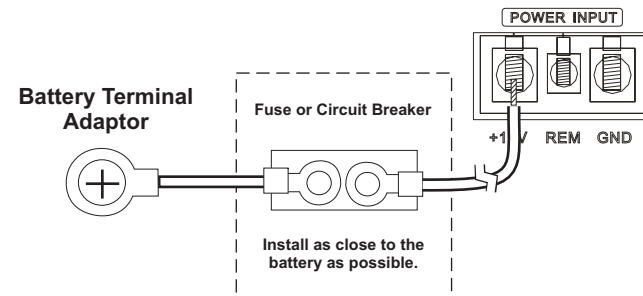
In some cases, the installation of just one (1) amplifier could be enough to overload your factory electrical system (i.e., alternator). Depending on the state of your electrical system and overall condition of your vehicle, you may need to upgrade your alternator and battery. After the vehicle is started, the alternator provides the power to your electrical system, not the battery. When the engine is running, the alternator is your main source of power. Upgrading the alternator should be your first consideration if you should experience a voltage drop in the system when operating your audio system. Adding capacitors and/or batteries without upgrading the alternator will only make the problem worse because these devices put an extra load on the alternator. After upgrading the alternator, capacitors and/or batteries can be installed if desired.

Use the following recommended wire gauge as a guide when installing your amplifier(s):

MODEL NUMBER	MAX CURRENT DRAW	MIN WIRE GAUGE
420	30A	#8
840	50A	#8
900	90A	#4
1150	120A	#4
1302	60A	#6
1304	80A	#8

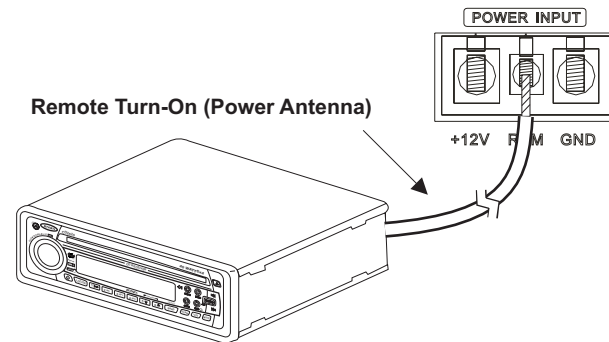
### Power Terminal (+12V/B+)

Connect the main power wire to the battery, within 18 inches from the positive (+) battery post, using an adequate size fuse or circuit breaker capable of handling the current of the selected power wire. A fuse or circuit breaker must be installed to prevent a possible electrical fire should the main power wire short to ground.



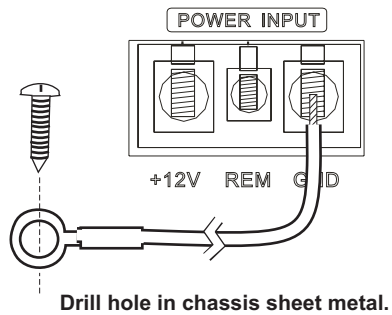
### Remote Terminal (REM)

Connect the power antenna or amplifier turn-on lead from the receiver to the amplifier remote terminal.



**Ground Terminal (GND)**

Make the ground lead as short as possible, leaving enough length to complete the installation and to allow for any service that may be needed at a later date. To ensure a good ground, scrape away any paint or undercoating to expose bare metal. Use a "ring" terminal of the proper gauge and an "outside star washer" (between the chassis and ring terminal) when making your ground connection. Although you've scraped away the paint to expose bare metal, the outside star washer will help to "bite into" the chassis for a tight, secure ground.



**Replacement Fuse Requirements (FUSE)**

Model	Quantity	Amps	Type
420	2	15	ATO
480	2	25	ATO
900	3	30	ATO
1150	4	30	ATO
1302	1	60A	MAXI
1304	1	80A	MAXI

## Speaker Wiring

The Speaker Wiring diagrams illustrate options for connecting one or two speakers. Observe the proper speaker polarity.

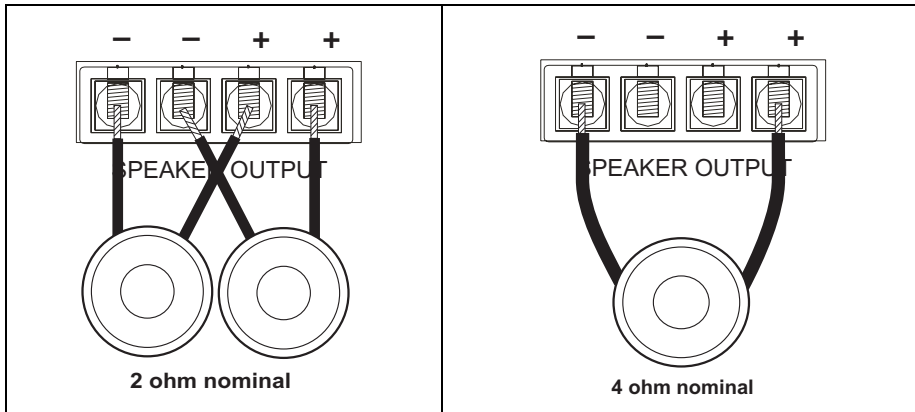
**NOTE: PowerPlus amplifiers can drive speakers with a nominal impedance range of 2~ 4-ohms. For maximum power, configure your speakers for a nominal 2-ohm load.**

**NOTE: Do not overlook the use of the proper gauge speaker wire. The PowerPlus series of amplifiers require a minimum of 12-gauge wire.**

### PowerPlus 900/1150

#### Two Subwoofers

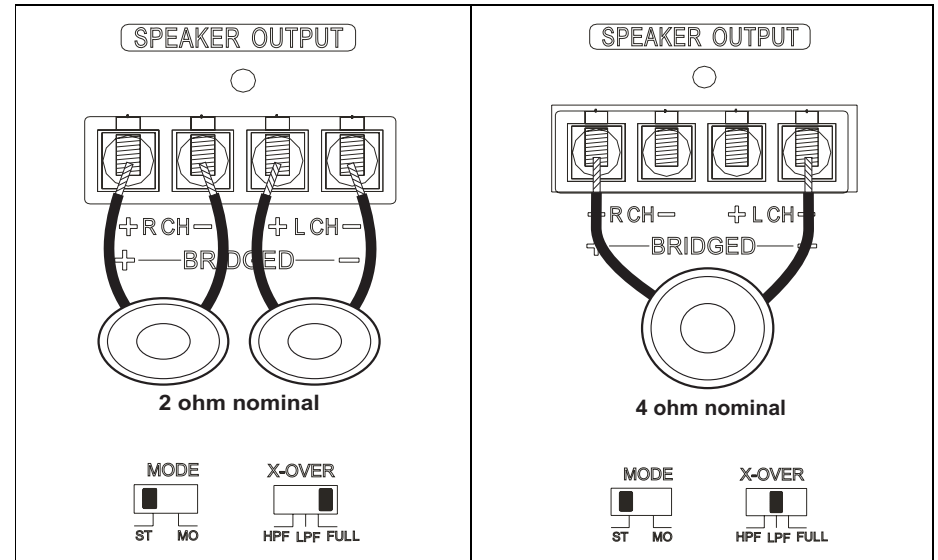
#### One Subwoofer



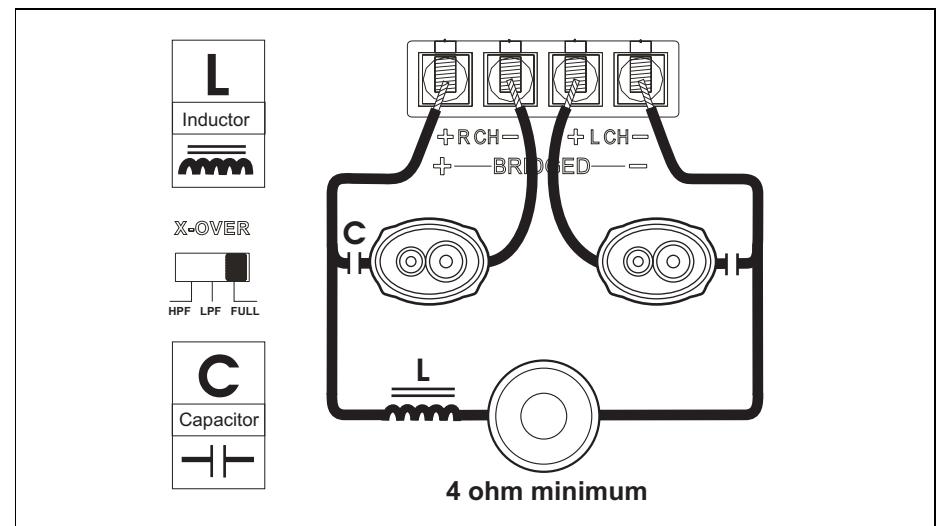
### PowerPlus 420/1302

#### Two Speakers

#### One Subwoofer

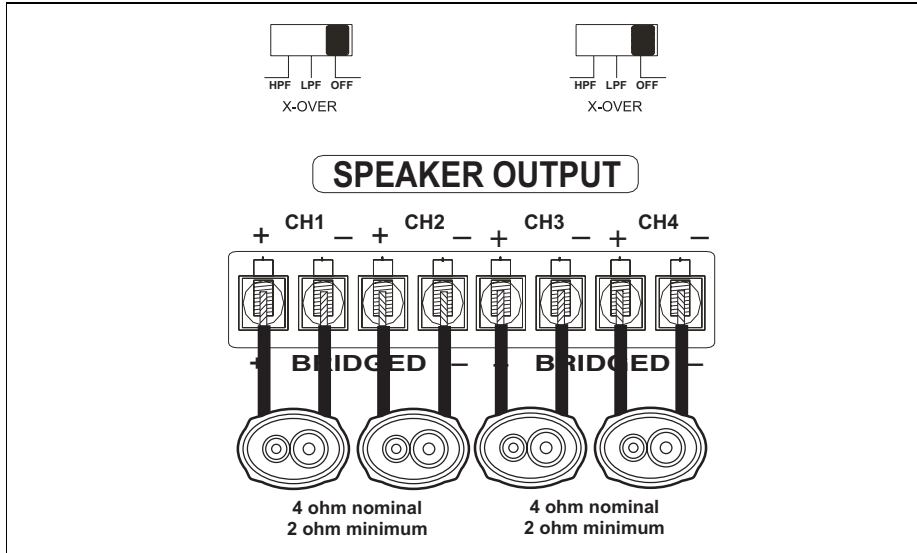


#### Tri-Mode

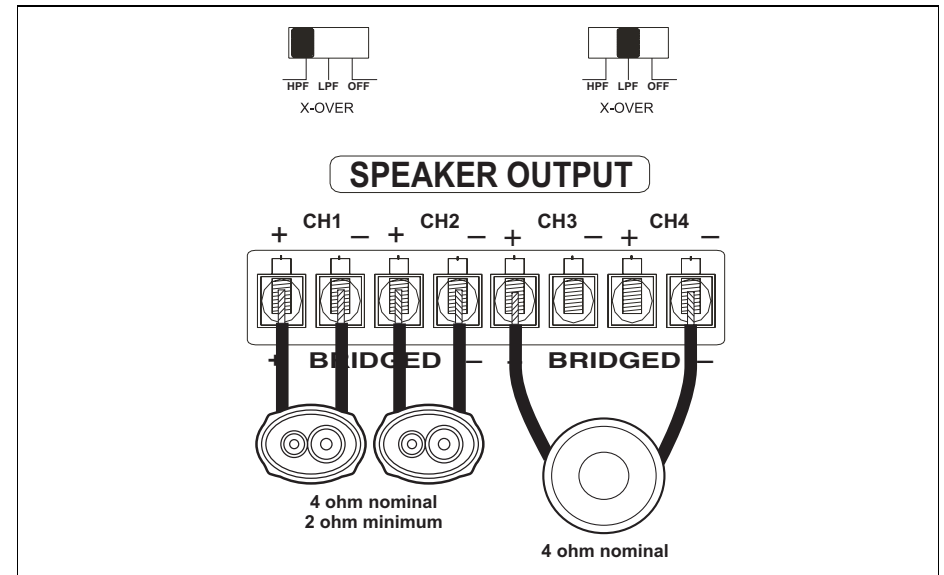


**PowerPlus 840/1304**

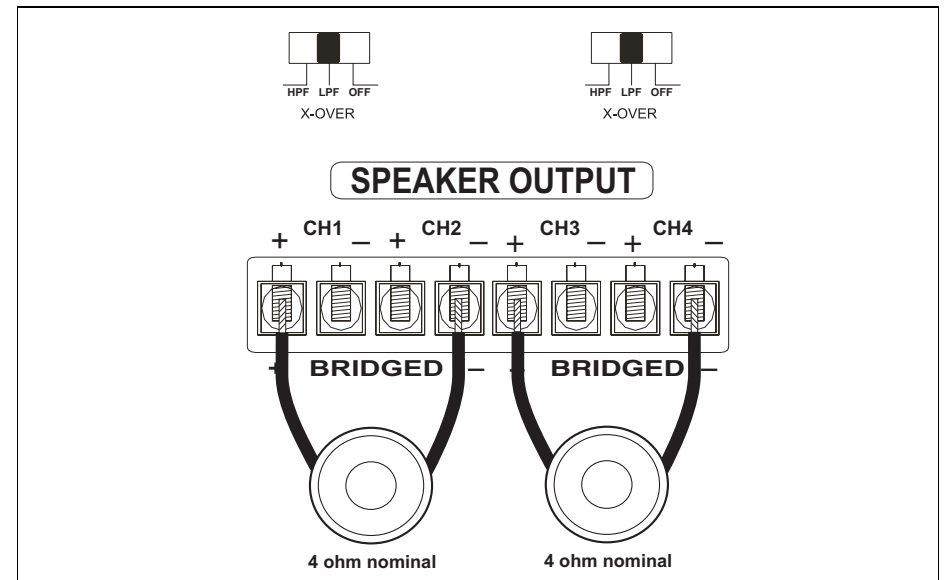
Four Speakers



Two Speakers and Bridged Subwoofer



Two Subwoofers

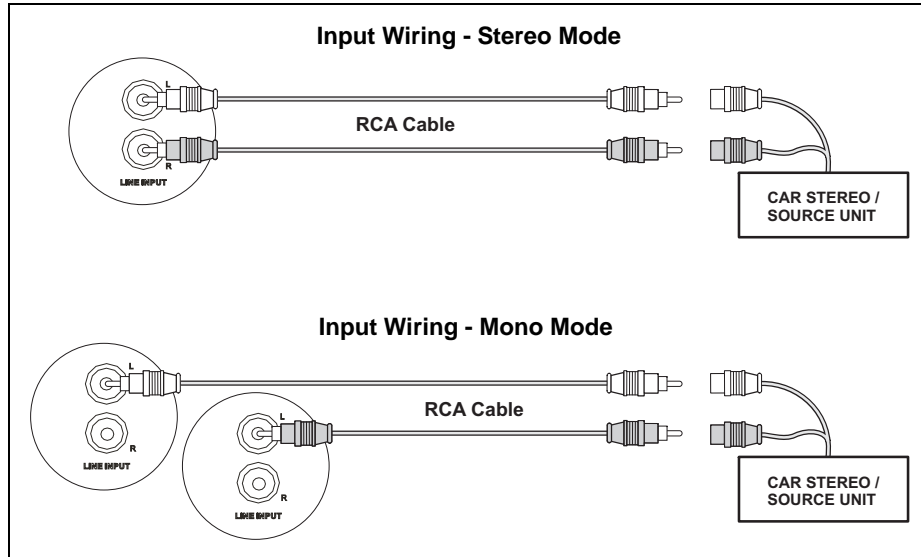




## Input Wiring

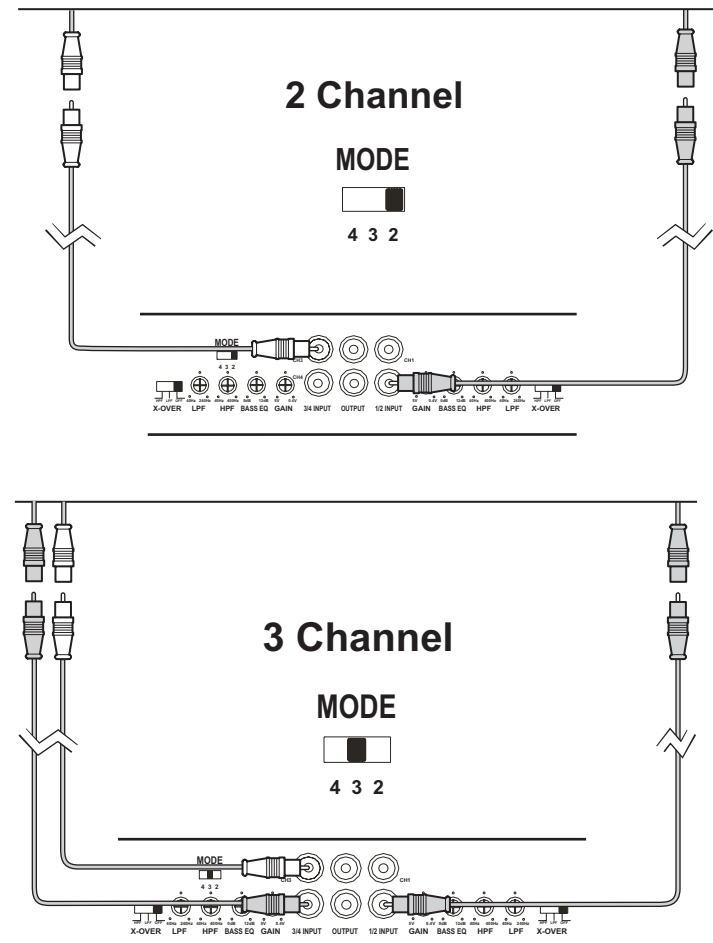
Most trunk/hatchback installations will require a 15-20 foot RCA cable, while pickup trucks and under-seat mounting will require a 6-12 foot RCA cable. Connect an RCA cable from your receiver to the RCA input on your amplifier.

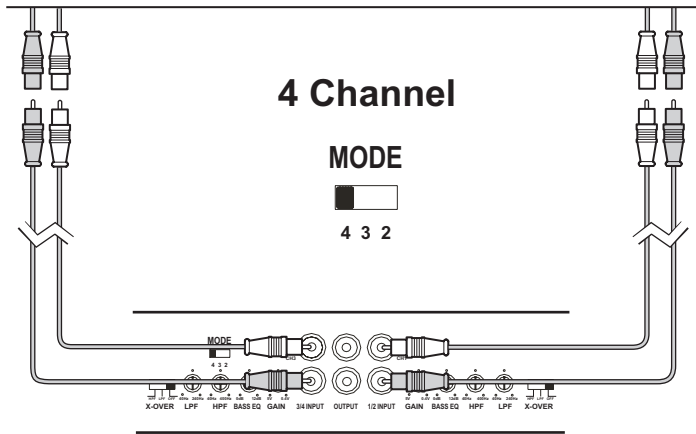
### PowerPlus 420/900/1150/1302



### PowerPlus 840/1304

The PowerPlus 1304 and 840 can be configured for three different input modes: 2 channel, 3 channel or 4 channel.





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**NOTE:** The use of good quality RCA cables is just as important as power and speaker wire. Choose a high quality low capacitance cable for the best results.

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### **Connecting Additional Amplifiers**

Pass-Thru RCA connectors are provided to connect additional amplifiers without the need to purchase "Y" adapters.



## Indicators and Controls

### **Power Indicator (POWER)**

The power indicator provides a visual indication that the amplifier is turned on.

### **Input Level Control (LEVEL/GAIN)**

The INPUT LEVEL control (or GAIN) matches the output of your radio to the input of the amplifier. After the installation is complete, make sure the input level control on the amplifier is turned down all the way (counter-clockwise or all the way to the left). Play a tape or CD (make sure bass and treble settings or Bass EQ are flat) and turn the volume up slowly until you just start to hear distortion. Back the volume down just a bit. On the amplifier, slowly turn up the input level control (clockwise or to the right) until you just start to hear distortion, then back it down a bit. Now your radio and amplifier levels are matched.

### **BASS EQ**

The Bass EQ is continuously adjustable from 0 to +12dB @ 45Hz. Adjusting the Bass Boost level allows different subwoofer/enclosure combinations to be equalized. Use this control to increase the level of low bass available from your subwoofer/enclosure combination. Ported and Band Pass enclosures should be limited to about +6dB to +9dB of boost. Sealed enclosures should be able to accept the full +12dB of boost, if necessary. The full +12dB of boost should be reserved for special applications since improper use of the Bass Boost could damage your subwoofers at high volumes.

### **Low Pass Filter (LPF)**

The Low Pass Filter controls adjust the crossover point. Typical crossover is between 60Hz and 80Hz for ported and sealed enclosures. Bandpass boxes will typically use a higher crossover setting between 125Hz and 150Hz. Since musical tastes vary, you should play music that you would normally listen to in your vehicle, with the above settings as a starting point. If necessary, set the crossover by ear.

### **High Pass Filter (HPF)**

The high pass filter will limit the low frequencies being transmitted to your speakers. This can be useful in number of situations. For example, if you selected the high pass filter and set the crossover to 40Hz, then you would have an infra-sonic (sub-sonic) filter at 40Hz, which would be useful with certain enclosure/subwoofer combinations that were tuned between 45Hz and 50Hz. Other uses might include limiting the low frequencies to smaller

speakers (6 1/2", 6 X 9", etc.) by adjusting the crossover to a higher setting (80–100Hz).

### **Crossover (X-OVER)**

The Jensen PowerPlus series of amplifiers have built-in low-pass and high-pass crossover filters for bi-amplifying the system. Adjust the crossover to accommodate your chosen installation method. Select LPF (low pass filter) when the amplifier will be driving woofers or subwoofers. Choose FULL or OFF when crossover mode is not active and the amplifier is in “full range” mode. Select HPF (high pass filter) when the amplifier will be driving full-range or separate speakers, and you want to limit the “bass” being transferred to these speakers.

### **Mode Switch**

#### PowerPlus 420 and 1302

The 420 and 1302 come equipped with a ST/MO (stereo/mono) MODE switch. Use STEREO mode when you have a 2-channel input from the source unit. Use MONO mode when you have a single input from the source unit. See “Input Wiring” on page 9.

#### PowerPlus 840 and 1304

The 840 and 1304 come equipped with a 4/3/2 MODE switch and can be configured for three different input modes: 2 channel, 3 channel or 4 channel.

## Testing

Before finishing the installation, perform the following tests to make sure the wiring is correct and everything is operating properly.

### **Reconnect Battery**

When wiring is complete, reconnect the battery negative terminal.

### **Test Power Wiring**

Turn on the receiver, but do not turn up the volume. The amplifier power light should come on. If not, check the REM and +12V (B+) wires. Turn up the receiver volume slightly. All speakers should operate. If not, check wiring connections at amplifier and speakers.

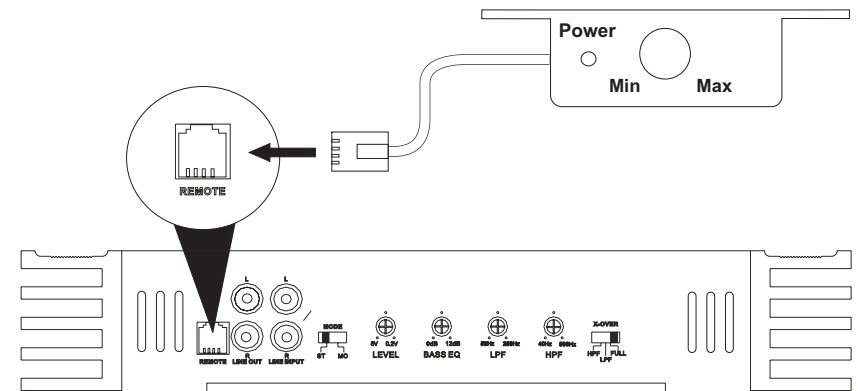
### **Test Speaker Connections**

These tests make sure the speakers are connected properly. If speakers don't play at all, one (or both) speaker wires may be disconnected.

## Remote Input Level Control

The **PowerPlus 900, 1150 and 1302** come equipped with a Remote Input Level Control. The Remote Input Level Control allows the input level to be adjusted from an alternate location. It can be mounted under-dash or in-dash. When the amplifier is used to drive subwoofers and the low pass crossover is activated, the Remote Input Level Control can be used as a "remote bass level control". This enables you to control the bass level independent from the rest of the system. This is convenient for system tuning and/or when playing many different types of music.

The Remote Input Level Control uses a 6-pin modular cable for connectivity. Simply plug the 6-pin modular cable into the amplifier and then into the Remote Input Level Control to activate the circuit.





## Troubleshooting

Problem	Possible Cause	Corrective Action
Amplifier does not turn on	No power to +12V terminal	Check fuse(s)
	No power to REM terminal	Check head unit fuse(s) and wiring
	Blown main fuse at battery	Replace fuse and identify cause of failure
	Blown fuse at amplifier	Replace fuse and identify cause of failure
	Faulty ground	Re-ground main power ground to bare metal chassis
Volume control too sensitive	Input level control adjusted too high	Re-adjust the input level (refer to page 8)
Distorted sound	Input level control adjusted too high	Re-adjust the input level (refer to page 8)
Blows fuse(s) at amp	Power wires connected backwards	Reconnect power wires properly
	Internal problem with amp	Take unit for service
Engine noise / Alternator whine	Ground loop(s)	Use good quality shielded RCA cables
	Faulty ground at amp	Re-ground amp to clean bare metal chassis
	Faulty ground at head unit	Re-ground head unit to clean bare metal chassis
	Inductive coupling	Re-route RCA and/or speaker wires away from factory harnesses
	Input level on amp set too high	Re-adjust input level (refer to page 8)
Thermal protection activated	Amplifier driving 2 ohm load for long durations	If the amplifier "thermals" frequently while driving subwoofers, install fan to keep amp cool.

Short circuit protection activated	Blown speakers	Check all speakers
	Speaker wire(s) shorting to ground	Check for faulty wiring
	Defective crossover	Faulty passive crossover
Low impedance protection activated	Amp connected to improper load	Check speaker connections
	Amp will not drive a 1 ohm mono load, 2 ohm minimum in mono configuration	Verify that speakers are connected properly
	Speakers defective/blown	Check speakers
	Faulty passive crossovers	Check crossovers
Poor bass response	Speakers out of phase	Check speaker polarity; reverse the connection to one speaker only if two subwoofers are connected to the amplifier.

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**NOTE: If the protection light is activated with no speakers connected to the amplifier, and all the power connections are correct, this would indicate an internal problem with the amplifier.**

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## CEA Power Output



### ***RMS Power Output @ 1% THD+N, 14.4VDC***

#### PowerPlus 420

**Power Output:** 65 watts RMS X 2 channels into 4-ohms @ < 1% THD+N  
**Signal to Noise Ratio:** 100dBA below reference (Reference: 1 watt, 4-ohms)  
**Additional Power Output:**  
90 watts RMS X 2 channels into 2-ohms @ < 1% THD+N  
170 watts RMS X 1 channels (Bridged Mono) into 4-ohms @ < 1% THD+N  
**Frequency Response:** 10Hz to 60 kHz, -3dB (Reference: 1 watt)  
**Dimensions:** L10.5" x H2.5" x W11.75"

#### PowerPlus 840

**Power Output:** 70 watts RMS X 4 channels into 4-ohms @ < 1% THD+N  
**Signal to Noise Ratio:** 100dBA below reference (Reference: 1 watt, 4-ohms)  
**Additional Power Output:**  
100 watts RMS X 4 channels into 2-ohms @ < 1% THD+N  
175 watts RMS X 2 channels (Bridged Stereo) into 4-ohms @ < 1% THD+N  
**Frequency Response:** 10Hz to 60 kHz, -3dB (Reference: 1 watt)  
**Dimensions:** L14" x H2.5" x W11.75"

#### PowerPlus 900

**Power Output:** 260 watts RMS X 1 channels into 4-ohms @ < 1% THD+N  
**Signal to Noise Ratio:** 100dBA below reference (Reference: 1 watt, 4-ohms)  
**Additional Power Output:**  
430 watts RMS X 1 channels into 2-ohms @ < 1% THD+N  
**Frequency Response:** 10Hz to 240Hz, -3dB (Reference: 1 watt)  
**Dimensions:** L17.25" x H2.5" x W11.75"

#### PowerPlus 1150

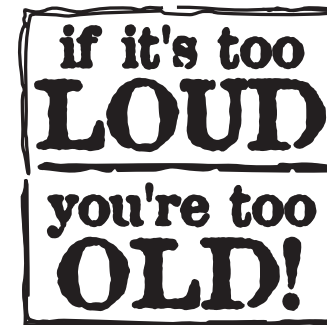
**Power Output:** 330 watts RMS X 1 channels into 4-ohms @ < 1% THD+N  
**Signal to Noise Ratio:** 100dBA below reference (Reference: 1 watt, 4-ohms)  
**Additional Power Output:**  
550 watts RMS X 1 channels into 2-ohms @ < 1% THD+N  
**Frequency Response:** 10Hz to 240Hz, -3dB (Reference: 1 watt)  
**Dimensions:** L19" x H2.5" x W11.75"

#### PowerPlus 1302

**Power Output:** 175 watts RMS X 2 channels into 4-ohms @ < 1% THD+N  
**Signal to Noise Ratio:** 100dBA below reference (Reference: 1 watt, 4-ohms)  
**Additional Power Output:**  
280 watts RMS X 2 channels into 2-ohms @ < 1% THD+N  
570 watts RMS X 1 channels (Bridged Mono) into 4-ohms @ < 1% THD+N  
**Frequency Response:** 10Hz to 60 kHz, -3dB (Reference: 1 watt)  
**Dimensions:** L15.5" x 2.5" x 11.75"

#### PowerPlus 1304

**Power Output:** 117 watts RMS X 4 channels into 4-ohms @ < 1% THD+N  
**Signal to Noise Ratio:** 100dBA below reference (Reference: 1 watt, 4-ohms)  
**Additional Power Output:**  
145 watts RMS X 4 channels into 2-ohms @ < 1% THD+N  
290 watts RMS X 2 channels (Bridged Stereo) into 4-ohms @ < 1% THD+N  
**Frequency Response:** 10Hz to 60 kHz, -3dB (Reference: 1 watt)  
**Dimensions:** L15.5" x 2.5" x 11.75"



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