Z-II SERIES
Owner's Manual

Before operating the unit, please read this manual throughly and retain it for future reference.

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EN General Instructions

The installation of the product must be done by professional technicians. Always contact a ZAPCO Authorized Dealer.

Before you start your installation

ZAPCO highly recommends that a fuse or circuit breaker be placed within 18" of the battery. The protection device should be placed where it can be accessed easily and all wiring should be routed safely and correctly according to the following guidelines:

- Do not run wiring close to hot or spinning objects
- Always use wire grommets when routing wire through the firewall or any other metal panels
- Make sure that the potential for pinched wiring is avoided by routing all wires away from moving objects, including brake, gas and clutch pedals, etc.

Planning your power connections

- The +12V B is the main power input. This must be connected the vehicle battery's positive (+) terminal
- The GND is the main ground or negative connection. This must be securely attached to bare metal at the vehicle frame
- The terminal between the main power and ground is the +12 turn-on input (REM) and can be connected to the head unit turn-on output wire. If none is available it can be connected to an accessory (ACC) terminal

Mounting your amplifier

Mounting your Zapco amplifier is easy. Just keep in mind a few guidelines:

- The amplifier requires adequate ventilation. Creating power creates heat, and cooling requires air
- Keep the amplifier out of the engine compartment or other locations that may cause excessive heat or moisture
- Do not mount the amplifier to a subwoofer box or other place that may have excessive vibration

Setting Gains

Gain pots are not volume controls and should be used only if absolutely necessary. Turning up gain controls causes increased noise, makes distortion more likely and reduces the dynamic range of your system.

Continuous exposure to excessive sound pressure levels may cause hearing damage. ZAPCO strongly advises that you use common sense when setting volume levels. Everything written in this manual is for the proper use of the products. Some features or specifications could be modified during production to improve the product performance. The technical specifications and functionalities stated here are current as of the time of publication.

IT *Istruzioni Generali*

L'installazione del prodotto deve essere effettuata da tecnici professionisti. Rivolgersi ad un Rivenditore Autorizzato ZAPCO.

Prima di iniziare l'installazione

ZAPCO consiglia vivamente di posizionare un fusibile entro 18" dalla batteria. Il dispositivo di protezione deve essere posizionato in u punto di facile accesso e tutti i cablaggi devono essere instradati in modo sicuro e corretto secondo le seguenti linee guida:

- *Non eseguire il cablaggio vicino ad oggetti caldi o taglienti*
- *Utilizzare sempre i passacavi quando si instrada il cavo attraverso pannelli metallici*
- *Assicurarsi che venga evitato il rischio di schiacciamento dei cavi allontanando tutti i cavi da oggetti in movimento, inclusi i pedali del freno, dell'acceleratore e della frizione*

Pianificare l'alimentazione

- *Il +12V B è l'ingresso di alimentazione principale. Questo deve essere collegato al terminale positivo (+) della batteria dell'auto*
- *Il GND è la massa principale o il collegamento negativo. Questo deve essere fissato saldamente al metallo del telaio del veicolo*
- *Il terminale tra l'alimentazione principale e la massa è l'ingresso di accensione +12 (REM) e può essere collegato al cavo di uscita di accensione dell'unità principale. Se non è disponibile, può essere collegato ad un terminale accessorio (ACC)*

Installare l'amplificatore

Installare il tuo amplificatore Zapco è facile. Basta tenere a mente alcune linee guida:

- *L'amplificatore richiede una ventilazione adeguata. Creare potenza crea calore ed il raffreddamento richiede aria*
- *Tenere l'amplificatore fuori dal vano motore o altri luoghi che potrebbero causare calore o umidità eccessivi*
- *Non installare l'amplificatore su un subwoofer o in un altro posto che potrebbe generare vibrazioni eccessive*

Regolazione guadagni

I potenziometri di guadagno non sono controlli del volume dovrebbero essere usati solo se assolutamente necessario. Aumentare il guadagno provoca un aumento del rumore, distorsione e riduce la gamma dinamica.

L'esposizione continua a livelli di pressione sonora eccessivi può causare danni all'udito. ZAPCO consiglia vivamente di utilizzare il buon senso quando si impostano i livelli di volume. Tutto quanto scritto in questo manuale è finalizzato al corretto utilizzo dei prodotti. Alcune caratteristiche o specifiche possono essere modificate durante la produzione per migliorare il prodotto. Le specifiche tecniche e le funzionalità qui riportate sono aggiornate al momento della pubblicazione.

DE *Allgemeine Anweisungen*

Die Produktinstallation sollte von professionellen Technikern durchgeführt werden. Wenden Sie sich immer an einen Autorisierten ZAPCO-Händler.

Bevor Sie mit der Installation beginnen

ZAPCO empfiehlt dringend, eine Sicherung innerhalb von 18 Zoll von der Batterie zu platzieren. Der Schutz muss an einer leicht zugänglichen Stelle angebracht werden und die gesamte Verkabelung muss gemäß den folgenden Richtlinien sicher und korrekt verlegt werden:

- *Verkabeln Sie das Gerät nicht in der Nähe von heißen oder scharfen Gegenständen*
- *Bei der Kabeldurchführung immer Kabelverschraubungen verwenden Metallplatten*
- *Stellen Sie sicher, dass die Gefahr eines Einklemmens des Kabels vermieden wird, indem Sie alle Kabel von sich bewegenden Objekten fernhalten, einschließlich Brems-, Gas- und Kupplungspedale usw*

Planen Sie die Stromversorgung

- *+12V B ist der Hauptstromeingang. Dieser muss an den Pluspol (+) der Autobatterie angeschlossen werden*
- *Der GND ist die Hauptmasse oder negative Verbindung. Dieser muss sicher am Metall des Fahrzeugchassis befestigt sein*
- *Der Anschluss zwischen Hauptstrom und Masse ist der Zündeingang +12 (REM) und kann an die Zündausgangsleitung des Hauptgeräts angeschlossen werden. Wenn es nicht verfügbar ist, kann es an ein Zubehörterminal (ACC) angeschlossen werden*

Installieren Sie den Verstärker

Die Einrichtung Ihres Zapco-Verstärkers ist einfach. Beachten Sie einfach ein paar Richtlinien:

- *Der Verstärker benötigt eine ausreichende Belüftung. Bei der Stromerzeugung entsteht Wärme, für die Kühlung ist Luft erforderlich*
- *Bewahren Sie den Verstärker außerhalb des Motorraums oder anderer Orte auf, an denen übermäßige Hitze oder Feuchtigkeit entstehen könnte*
- *Installieren Sie den Verstärker nicht auf einem Subwoofer oder an einem anderen Ort, der übermäßige Vibrationen erzeugen könnte*

Verstärkungsanpassung

Gain-Potentiometer sind keine Lautstärkeregler, sie sollten es sein nur dann verwendet werden, wenn dies unbedingt erforderlich ist. Eine Erhöhung der Verstärkung führt zu mehr Rauschen und Verzerrungen und verringert den Dynamik-bereich.

Ständige Einwirkung übermäßiger Schalldruckpegel kann zu Gehörschäden führen. ZAPCO empfiehlt dringend, beim Einstellen der Lautstärke den gesunden Menschenverstand zu nutzen. Alles, was in diesem Handbuch geschrieben wird, zielt auf die korrekte Verwendung der Produkte ab. Einige Funktionen oder Spezifikationen können während der Produktion geändert werden, um das Produkt zu verbessern. Die hier gezeigten technischen Spezifikationen und Funktionen sind zum Zeitpunkt der Veröffentlichung aktuell.

FR *Instructions Générales*

L'installation du produit doit être effectuée par des techniciens professionnels. Contactez toujours un Revendeur agréé ZAPCO.

Avant de commencer votre installation

ZAPCO recommande fortement qu'un fusible ou un disjoncteur soit placé à moins de 18 pouces (moins de 45 centimètres) de la batterie. Le dispositif de protection doit être placé là où il est facilement accessible et tout le câblage doit être acheminé en toute sécurité et correctement selon les directives suivantes:

- *Ne faites pas passer le câblage à proximité d'objets chauds ou en rotation*
- *Utilisez toujours des passe-fils lorsque vous faites passer le fil à travers le pare-feu ou tout autre panneau métallique*
- *Assurez-vous que tout risque de pincement des câbles soit évité en acheminant tous les fils loin des objets en mouvement, y compris les pédales de frein, d'accélérateur, d'embrayage, etc.*

Planification de vos connexions électriques

- *Le +12V B est l'entrée d'alimentation principale. Celui-ci doit être connecté à la borne positive (+) de la batterie du véhicule*
- *Le GND est la masse principale ou connexion négative. Celui-ci doit être solidement fixé au métal nu sur le châssis du véhicule*
- *La borne entre l'alimentation principale (+12V B) et la masse (GND) est l'entrée de mise sous tension +12 (REM) et peut être connectée au fil de sortie de mise sous tension de l'unité principale. Si aucun n'est disponible, il peut être connecté à une borne accessoire (ACC). Vous devez éviter d'utiliser des fils d'allumage (IGN), car ils peuvent être bruyants*

Montage de votre amplificateur

Le montage de votre amplificateur Zapco est facile. Gardez simplement à l'esprit quelques directives:

- *L'amplificateur nécessite une ventilation adéquate. La création d'énergie crée de la chaleur et pour le refroidissement on nécessite de l'air*
- *Gardez l'amplificateur hors du compartiment moteur ou de tout autre endroit susceptible de provoquer une chaleur ou une humidité excessive*
- *Ne montez pas l'amplificateur sur un caisson de basses ou dans tout autre endroit susceptible de générer des vibrations excessives*

Définition des gains

Les potentiomètres de gain ne sont pas des commandes de volume. Augmenter les commandes de gain entraîne une augmentation du bruit, rend la distorsion plus probable et réduit la plage dynamique de votre système.

Une exposition continue à des niveaux de pression sonore excessifs peut provoquer des lésions auditives. ZAPCO vous conseille fortement de faire preuve de bon sens lors du réglage des niveaux de volume. Tout ce qui est écrit dans ce manuel est destiné à la bonne utilisation des produits. Certaines caractéristiques ou spécifications pourraient être modifiées en cours de production pour améliorer les performances du produit. Les spécifications techniques et les fonctionnalités indiquées ici sont à jour au moment de la publication.

ES *Instrucciones Generales*

La instalación del producto debe ser realizada por técnicos profesionales. Comuníquese siempre con un Distribuidor Autorizado ZAPCO.

Antes de comenzar su instalación

ZAPCO recomienda encarecidamente colocar un fusible o disyuntor a 18 pulgadas (menos de 45 cm) de la batería. El dispositivo de protección debe colocarse en un lugar de fácil acceso y todo el cableado debe tenderse de forma segura y correcta de acuerdo con las siguientes pautas:

- *No tienda cables cerca de objetos calientes o giratorios*
- *Utilice siempre pasacables cuando pase el cable a través del cortafuegos o cualquier otro panel metálico*
- *Asegúrese de evitar la posibilidad de que los cables queden atrapados colocando todos los cables lejos de objetos en movimiento, incluidos los pedales de freno, acelerador, embrague, etc.*

Planificación de sus conexiones eléctricas

- *El +12V B es la entrada de alimentación principal. Este debe conectarse al terminal positivo (+) de la batería del vehículo*
- *El GND es la conexión a tierra principal o negativa. Este debe estar firmemente sujeto al metal desnudo en el marco del vehículo*
- *El terminal entre la alimentación principal (+12V B) y tierra (GND) es la entrada de encendido +12 (REM) y se puede conectar al cable de salida de encendido de la unidad principal. Si no hay ninguno disponible, se puede conectar a un terminal accesorio (ACC). Debes evitar el uso de cualquier cable de encendido (IGN), ya que pueden ser ruidosos*

Montaje de su amplificador

Montar su amplificador Zapco es fácil. Solo tenga en cuenta algunas pautas:

- *El amplificador requiere una ventilación adecuada. La creación de energía genera calor y la para la refrigeración se requiere aire*
- *Mantenga el amplificador fuera del compartimiento del motor u otros lugares que puedan causar calor o humedad excesivos*
- *No monte el amplificador sobre una caja de subwoofer u otro lugar que pueda tener vibraciones excesivas*

Configuración de ganancias

Los potenciómetros de ganancia no son controles de volumen. Antes de encender su sistema por primera vez, debe asegurarse de que todos los controles de ganancia estén configurados al mínimo. Los controles de ganancia deben usarse sólo si es absolutamente necesario. Subir los controles de ganancia provoca un aumento del ruido, aumenta la probabilidad de distorsión y reduce el rango dinámico de su sistema. Si su unidad principal no tiene suficiente salida, obtendrá resultados mucho mejores si invierte en un amplificador de línea para proporcionar más señal al amplificador.

La exposición continua a niveles excesivos de presión sonora puede causar daños auditivos. ZAPCO recomienda que utilice el sentido común al configurar los niveles de volumen. Todo lo escrito en este manual es para el uso adecuado de los productos. Algunas características o especificaciones podrían modificarse durante la producción para mejorar el rendimiento del producto. Las especificaciones técnicas y las funcionalidades aquí indicadas están actualizadas en el momento de la publicación.

CH *常规安装指引*

产品的安装必须由熟练的技术人员完成. 请始终联系 ZAPCO 授权经销商.

开始安装前

ZAPCO强烈建议在电池附近的18英寸 (约45.7厘米) 内放置一个保险丝或断路器. 保护装置应放置在易于触及的位置, 所有布线应根据以下准则安全正确地布置:

- *不要将电线靠近热源或旋转物体*
- *在将电线引导穿越防火墙或任何其他金属面板时, 务必使用电线 防护套*
- *确保所有电线远离汽车可以移动的部件, 包括刹车, 油门和离合 踏板等, 以避免电线被夹*

电源连接的准备工作

- *+12V B是主要的电源输入, 必须连接到车辆电池的正极 (+) 端*
- *GND是主要的接地或负极连接. 必须牢固地连接到车辆车架上的裸 露金属部位*
- *主电源和地之间的端子是+12转换输入 (REM), 可以连接到主机的 开关输出线. 如果没有可用的线, 它可以连接到附件 (ACC) 终端. 应避免使用任何点火 (IGN) 线, 因为这可能会产生噪音*

安装功放机

安装 ZAPCO 功放机非常简单. 只需记住一些准则:

- *功放机需要足够的通风. 因为产生功率会产生热量, 冷却需要空气*
- *不要将功放机安装在发动机舱或可能产生过多热量或湿气的位置*
- *不要将功放机安装在低音炮音箱或其他可能有过多振动的地方*

设置增益

增益旋钮不是音量控制. 在首次启动系统之前, 应确保所有增益控制设置为最小值. 增益控制只应在绝对必要的情况下使用. 增大增益控制会导致噪音增加, 增加失真的可能性, 并降低系统的动态范围. 如果您的主机输出不足, 最好购买信号放大器以向功放机提供更多信号, 从而获得更好的音效.

长时间暴露于过高的声压级可能会导致听力损伤. ZAPCO 强烈建议在设置音量水平时要注意保护听力. 本手册中的所有内容都是为了正确使用产品而编写的. 一些功能或规格可能会在生产过程中进行修改以提高产品性能. 此处陈述的技术规格和功能只针对本手册出版日期前的功放机产品

Class, Power, Heat

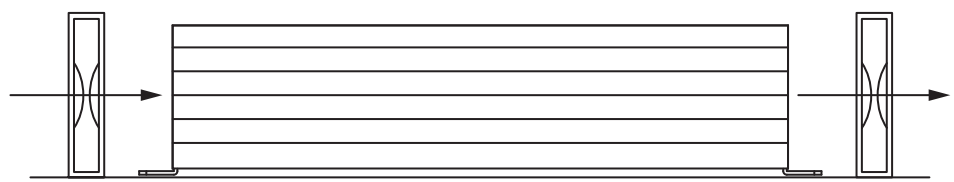
When buying or selling a car audio amplifier you need to consider more than just the power output. The basic design platform of the amplifier (Amplifier Class) will influence how the amp will work in any given situation, for any given user. All amplifiers make small signals bigger and in doing so create heat. Class A produces the most heat and Class D produces the least. If the amplifiers are not properly cooled, they will get too hot and problems will arise. Either the amp will be damaged, or protection circuits will engage to shut the amp off until it has cooled down enough to safely work again. Conversely, better cooling will allow an amp to make more power, longer, without damage or thermal shut down.

Class A/B amplifiers are used when audio fidelity is the primary goal and efficiency is of secondary concern. Class A/B amps have superior sound quality but with lower efficiency, they generate more heat and need more cooling.

Sound Quality and Dynamic Range: Our amps are designed solely for the best possible sound quality, so we do not current limit the amps. This gives Zapco amps more Dynamic Range that other amplifiers. Dynamic range, the ability to go from very quiet to extremely loud without distortion, is a major reason Zapco amps sound better than others. So, with Z-AP amplifiers, consumers have more dynamics plus the sound quality of class A/B amplifiers. If the Zapco Class A/B are used at the maximum dynamic range without distortion, they don't need so much cooling and never will shut down. But if they are driven into its distortion the amplifier will more easily reach maximum temperature and will shut down.

Critical: Volume does not make a system sound loud. Distortion sounds loud. With clean sound it is easy to drive an amp to full power and not know it because it still sounds clean. But when the power requested of the amplifier takes it into distortion the amplifier will overhead and shut down... and possibly be damaged. Zapco offers both Class A/B and Class D amps. Class A/B for the user who puts sound quality and dynamics first, and Class D for the user who wants big power in a small box.

Installation and Cooling: All the amplifiers need cooling, whether they are class A/B or class D. For cooling, the heatsink of the amplifier needs to exchange heat with air around it. So, the amplifier cannot be covered or put in a space where there is not enough air or ventilation. As noted above, in many cases a good installation needs to use external fans to make the ventilation more efficient. Some amplifiers have fans inside, but the problem is not solved if the fans cannot have an exchange of air with the environment.



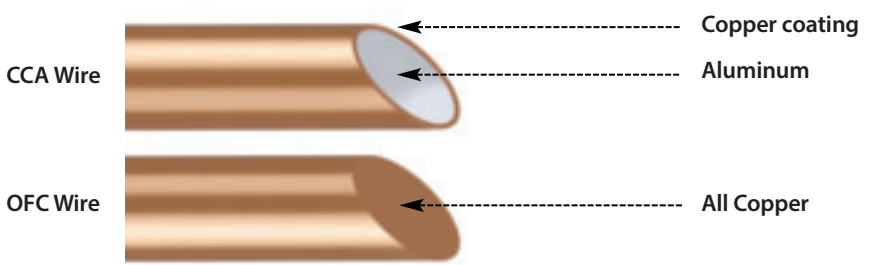
All Wire is not created equal

Do not use CCA wire with Zapco amplifiers

It is easy to think of wire as just wire but the fact is there are major differences between the types of wires being offered today. The price of copper has gone up quite a bit lately, but you will notice that you can still buy heavy primary wire at very reasonable prices. How can this be? Simple... That lower price wire is not all copper, it is CCA wire. CCA stands for Copper Clad, Aluminum. That means it is aluminum wire with a thin coating of copper around the outside of the wire.
Does it look like copper wire? Absolutely. But does it conduct electrical current like copper? Absolutely Not.
Two things can and likely will happen:

- Because CCA wire can not conduct DC electrical current like copper wire can, your amp will not get the current it needs to produce its rated power. That means you get less power and more distortion. It also taxes the amplifier that is trying to make its power, shortening the life of the amp
- CCA wire corrodes quickly and causes terminals that used to be tight to become loose. This causes arcing when electrons to fly around all the open space lookin for more copper. This causes heat that damages connections and can even eventually melt the terminal blocks on your amplifier

In short: While CCA wire is excellent for high frequency AC current (like tweeter voice coils), it is absolutely bad for high current 12V DC like power and ground for a car audio amplifier. We have seen CCA wire become a major cause of amplifier failures as buyers are offered CCA as a low cost alternative to pure copper wire. So always look at the description of the contents of wire that you purchase. When someone offers to save you some money with CCA wire just say "No, thank you". Protect your investment with real copper wire.



Wire Size

The second most common cause of under performing amplifiers is insufficient power current or a poor power connection. The most common cause of under performing amplifiers is insufficient ground current or a bad ground connection. 12-volt current: Battery power works only if it travels in a complete circuit from the battery positive terminal to the battery negative terminal. Main power input, of course, is attached to the battery positive terminal. Ground current is returned to the battery through the chassis to the point where the battery is grounded. The current available for your amplifier to use to produce power will be restricted by the smallest gauge of wire in the circuit and by the weakest physical connection in the circuit.

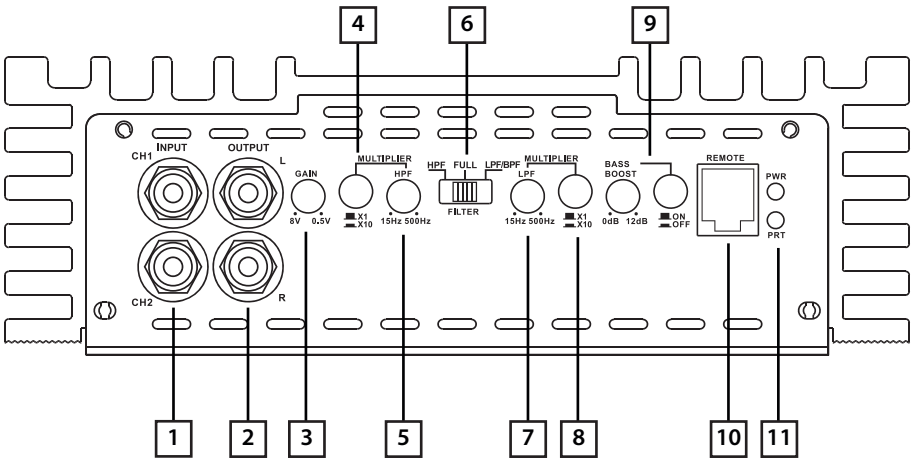
It's often surprising how many people will obsess about signal wire but routinely provide the amplifier with only a fraction of the current it needs to do its job. The most common wire gauge used in car audio is 10-gauge, and the most common location for amplifiers is in the trunk.

Wire Sizing Chart	◄---------- **Length** ----------►							
	4 ft	7 ft	10 ft	13 ft	16 ft	19 ft	22 ft	28 ft
0-20 amps	14	12	12	10	10	8	8	8
20-35 amps	12	10	8	8	6	6	6	4
35-50 amps	10	8	8	6	6	4	4	4
50-60 amps	8	8	6	4	4	4	4	2
65-85 amps	6	6	4	4	2	2	2	0
85 -105amps	6	6	4	2	2	2	2	0
105-125 amps	4	4	4	2	2	0	0	0
125-150 amps	2	2	2	2	0	0	0	0

Let's look at a fairly small system. If you use a 50 watt/ch amp (25 amps) for the highs and a 100 watt/ch amp (40 amps) for the woofers, you need at least a 4-gauge and maybe a 2-Guage wire to provide 65 amps at the trunk. Use the Wire Sizing Chart. Add up the fuse values on the amplifier(s) then choose the proper size wire based on the distance from the car battery to the amplifier location. Always use the same gauge wire for the main ground as you do for the main power. Always make your ground as short as possible and secure it to a clean solid surface, preferably the vehicle frame.

Z-150.2 II Input/Controls

The Input ends of the Z-II amplifiers is where you find the signal input connectors and the various controls. All the Z-II amps have the same basic functions, adapted slightly to fit the expected use of each model. We look first at the stereo (2-Channel) amp. The 550 watt (Bridged @ 4Ω) Z-150.2 II. Then we will look at the 4-Channel and 6-Channel models to see how they adapt to multi-ch. configurations.



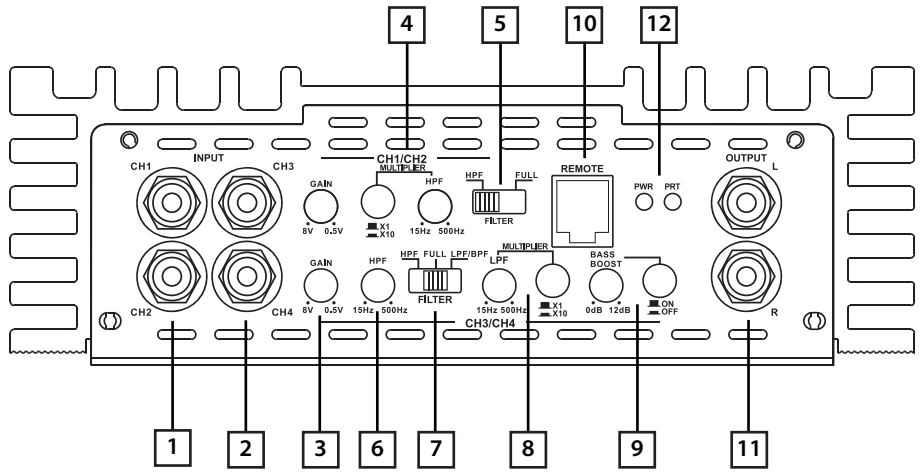
1• Right and left RCA input connectors using Zapco's proprietary connectors
2• To ease multi-amp installations, the amps have pass-through RCA outputs so you can "daisy-chain" multiple amps while only running one front-to-back RCA
3• Variable gain control
4• A unique feature of the crossovers is the Multiplier X10 switch that allows accurate frequency setting by changing the crossover range from 15Hz~500Hz to 150Hz~5000Hz. This is so you can use the amp full range, as a mid range (band-pass), or even as a tweeter amp
5• The high-pass (HP) crossover frequency selector
6• The Crossover function switch: To the left the switch is in high-pass mode, in the center the crossover is out of the signal path (full-range), to the right both filters are in the circuit so you can band-pass. If you are using the amp for bass the LP will be you sub crossover while HP filter will be a variable sub-sonic filter as low as 15Hz
7• The low-pass (LP) frequency selector
8• The X10 switch for the LP filter
9• Variable bass boost control from 0dB~12dB
10• Port for the optional bass control
11• The power on (green) LED and the protect (red) LED

Note: If you are using an amp for a band-pass midrange, the HP filter will be the lowest frequency of the band and the LP filter will be the top of the band. This passes all the frequencies between them. If you reverse the filters you will have no sound.

Z-150.4 II Input/Controls

The Z-150.4 II is the 4-Channel amp and has the same basic controls and features as the 2-Channel amps but adapted for 4-channel use.

- The front channels do not have a low pass filter as they will be used either full range or for mids/highs or even tweeters
- The rear channels have exactly the same controls as the 2-Channel amps as the rears will be used as full-range or bass, depending on the application, or even band-pass if the amp is used for tweeters (Ch1/2) and mid-range's (Ch3/4)
- The Z-150.4 II adds a 2Ch/4Ch switch so you can choose to have only the Ch1/2 inputs feed both front and rear



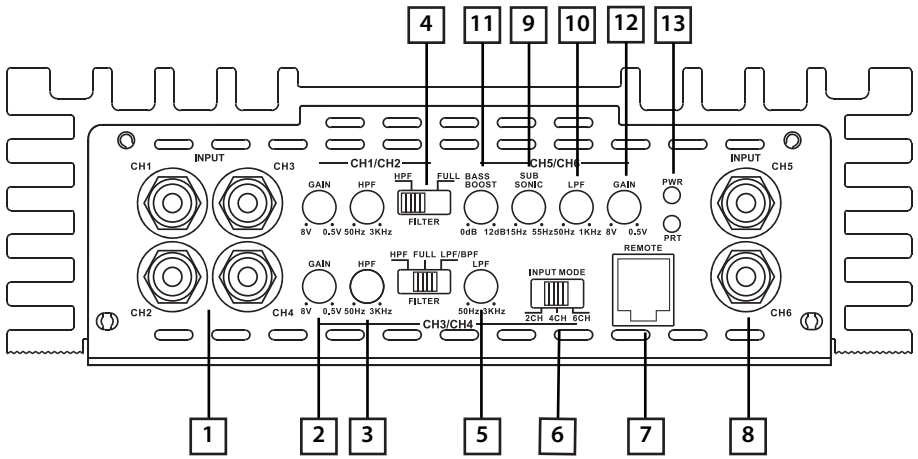
1• Front (Ch1/2) RCA inputs
2• Rear (Ch3/4) RCA inputs
3• Front and rear variable gain controls
4• Front (Ch1/2) Multiplier and HPF frequency control*
5• Crossover mode select (Clone position makes both front and rear crossovers identical)
6• Rear (Ch3/4) HPF frequency control
7• Rear crossover mode switch*
8• Rear (Ch3/4) Multiplier and LPF frequency control*
9• Variable Bass boost control
10• Port for optional dash mount bass gain control
11• Auxiliary pass-through RCA output*
12• Power and Protect LEDs

* See explanations of these functions on the previous section 2-Channel amps

Z-150.6 II Input/Controls

The Z-150.6 II is the 4-Channel amp and it also has the same basic controls and features as the other amps but has been adapted for 6-channel use.

- The channels 1/2 do not have a low-pass filter as they will be used either full range or for mids/highs so there is only high pass here
- Channels 3/4 have high pass, full range, and low pass positions so they can be used for highs, or they can be band-passed for mid-range use
- Channels 5/6 do not have a crossover function switch as they are band pass only. They can be used a the bass section with the low-pass and a variable subsonic. The subsonic (which is high-pass), however has a wide frequency range so it can be used as the bottom of a band-pass to drive mid-bass drivers, if you have a separate sub amp
- The input mode switch lets you use 2Ch, 4Ch,of 6Ch of input, so you can drive all the channels from a single 2Ch stereo output from a head unit

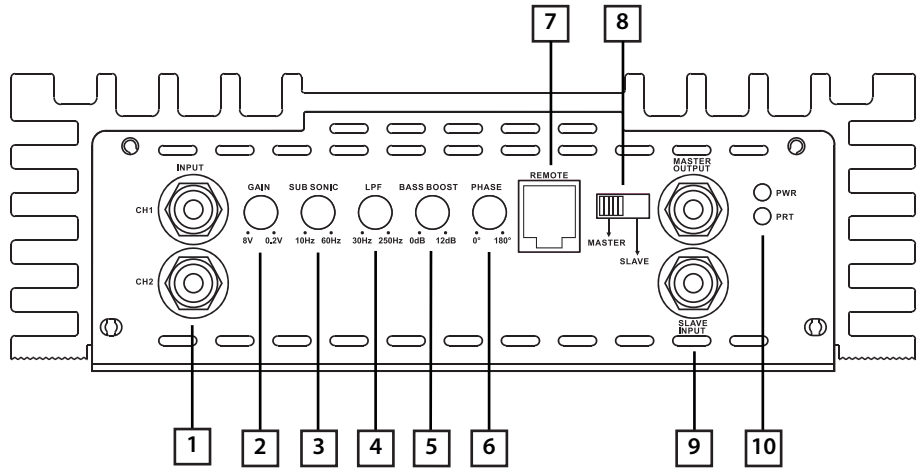


1• Ch1/2 and Ch3/4 RCA Inputs
2• Ch1/2 and Ch3/4 variable gain controls
3• Ch1/2 and Ch3/4 HPF frequency controls
4• Ch1/2 and 3/4 crossover mode switches
5• Ch3/4 LPF frequency control
6• Input mode for 2Ch, 4Ch, or 6Ch inputs
7• Port for optional dash remote
8• Ch5/6 RCA inputs
9• Ch5/6 Sub sonic (HP) frequency control
10• Ch5/6 LP bass crossover frequency control
11• Variable bass boost control
12• Ch5/6 variable gain control
13• Power and protect LEDs

See explanations of common functions on the previous sections

Z-KD II Input/Controls

The Z-1KD II, Z-2KD II, and Z-3KD II share the same endplates and the same controls. The controls of these amps are designed specifically to allow you to maximize the bass performance of your system.



1• RCA Inputs
2• Gain/Sensitivity control
3• Sub Sonic Filter to protect woofers
4• Frequency control for the Low Pass Crossover
5• Variable Bass Boost
6• Variable Phase Control
7• Port for the optional Dash Bass Control
8• Master/Slave Switch (See page 22 about "strapping amplifiers")
9• RCAs for Master Output and Slave Input
10• The power on (green) LED and the protect (red) LED

Speaker Wiring of the Z-II Class AB Amplifiers

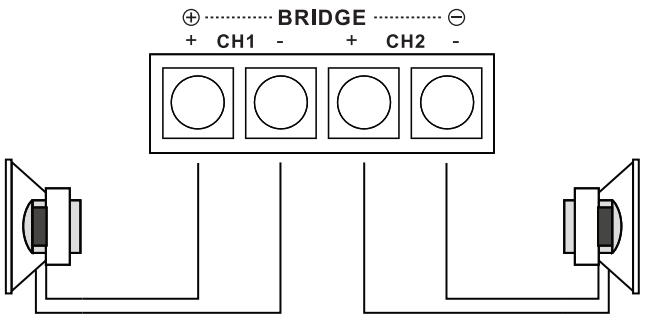
The Very Basics

- No speaker wires can be shorted to, or touching either ground or each other. This will put the amp into protect and may damage the amplifier
- When bridging the left and right channels of any amplifier, you use the left channel (Ch1) positive and the right channel (Ch2) negative, as indicated on the chassis by the speaker terminals

Z-150.2 II Speaker Wiring

Stereo Mode

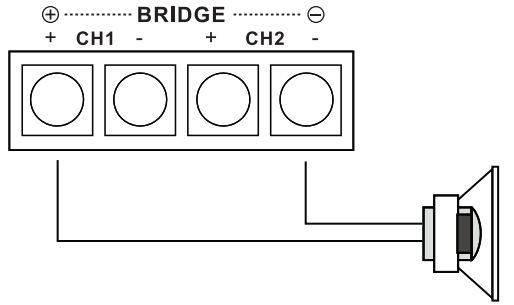
- Commonly a pair of full range speakers with x10 swt. off (out or x1 position) and HPF set between 70Hz~100Hz to protect the speakers from deep bass
- To use for tweeters put Multiplier switch to x10 (pushed in) and set HPF between 2000Hz ~ 5000Hz, as per the tweeter makers recommendation
- To use for midrange: Determine the range of frequencies you want. Put the LPF/BPF Multiplier switch to x10 (pushed in) and set the LPF filter to the highest frequency you want to have. Set the HPF filter to the lowest frequency you want to have



Single Channel Mode

Bridged to one voice coil using L+ and R-

- Commonly for a woofer. Set crossover mode to LPF/BPF with Multiplier to off (x1)
- Set LPF freq. to woofer maker's recommendation. Set HPF crossover freq. to 20Hz to use as a sub sonic filter

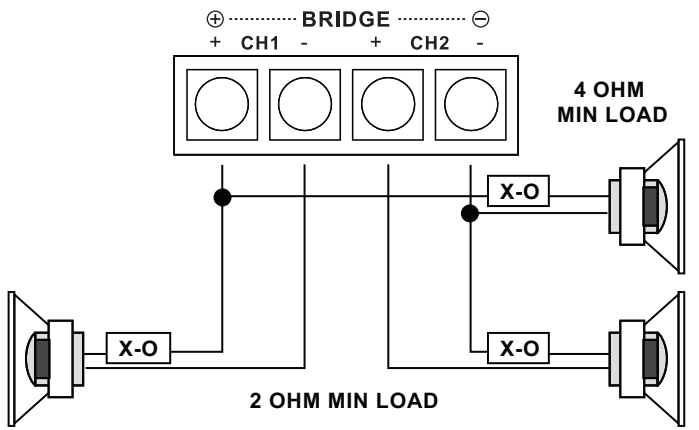


Note: Take note that 4 Ohms is the minimum load when bridging, since each channel will see only 1/2 the load (2 ohms). Do not bridge with a 2Ω woofer

3Ch Mode

It is possible to run the 2-Channel amps in "3-channel" mode by running a pair of speakers for the mids and highs on left and right channels, and at the same time run a woofer bridged between the L+ and R- terminals as shown. However, since each channel will see 1/2 the impedance of the woofer you must use a woofer of no less than 4Ω. The amplifier sees impedance by frequency, so you can have two 2Ω loads but you must use a passive crossover on each speaker in the three channel mode. With the crossovers in the line, the amplifier will always see a minimum load of 2Ω on each channel at all frequencies.

- Main speakers can be 2Ω~4Ω
- Woofer can be 4Ω~8Ω but cannot be less than 4Ω
- HP crossover can be FULL or can be HPF to be used between 15Hz and 25Hz as sub sonic filter
- LP crossover must be set to FULL
- All actual crossover functions will be done by the passive crossovers in the lines

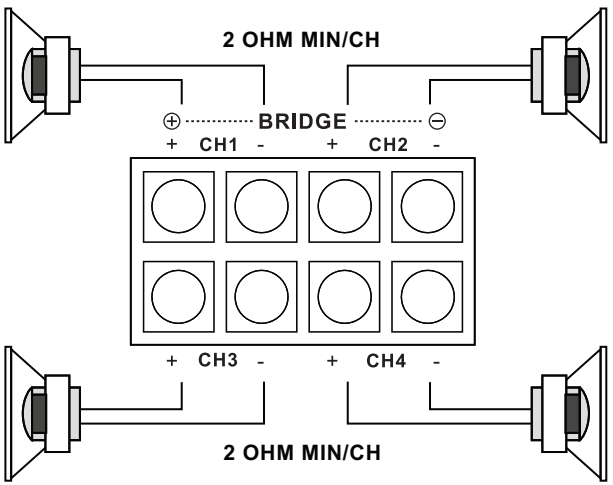


Z-150.4 II Speaker Wiring

Standard 4Ch Mode

The Z-150.4 II four channel amplifier is virtually two 2Ch amps in one chassis and each set of four speaker terminal can be used exactly as you would use a 2Ch amp. The advantage of a four channel amp is primarily the saving of ace (and a little money). Using a four channel also reduces the installation work, over installing two 2Ch amps. This is especially so with some of the unique features of the Z-Series amps.

- This is the standard hookup for full range front and rear speakers
- Speakers can be 2Ω~4Ω
- If the head unit has 2 sets of RCA outputs you will be able to fade front to rear
- You don't have to use crossovers, but it's wise to use the HPF filters set to 30 Hz or a little more as a sub sonic filter to protect the speakers. Best policy is to check your speakers frequency range. Set the sub sonic (HP) frequency just a little above to lowest of the speakers frequency range. i.e. If the speakers range is 40Hz~18,000Hz set filter to 45Hz. The LPF switches should be in FULL
- The HPF Multiplier (x10 switch) must be in the off or x1 position

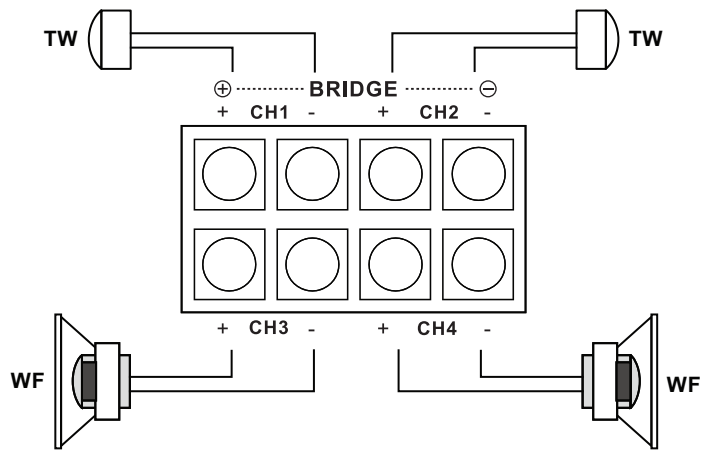


4Ch 2-Way Mode

With the unique features of the Z-Series amplifiers you can also use the Z-150.4 II to drive a 2-way system with the front channels for highs and the rear channels for lows. The unique crossover will let you separate high and low like most 4Ch amps, but with the added range provided by the multiplier (x10) switch you can actually have a tweeter crossover as high as 5,000Hz on the front channels. With the series' band-pass functions, you can have the rears play everything below the tweeters, or you can have the rears play only midrange and use a separate amp for your subs.

For the diagram below of an active 2-way system:

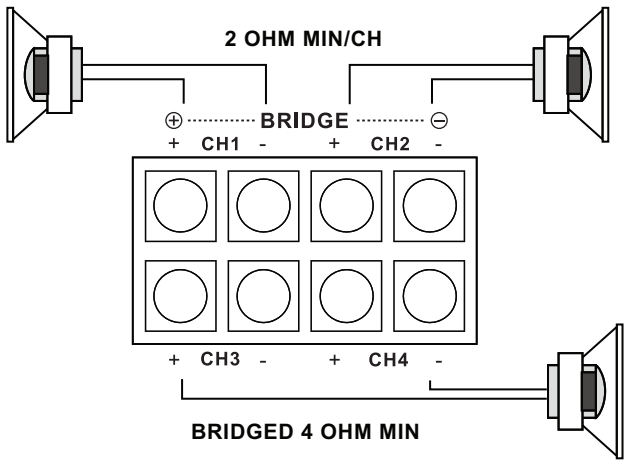
- Front (1/2) crossover is set to HPF and multiplier switch set to x10 (in). HP frequency is set to the tweeter's recommended cut-off point (usually between 2KHz and 5KHz)
- Set the rear filter to LPF/BPF so both the rear filters are active
- Set the LPF/BPF multiplier switch to x10 (in) and set the frequency to the same frequency that was used on the tweeter high-pass filter
- If the lows speaker will be used as woofers then set the rear (3/4) HPF to around 30Hz as a sub sonic filter
- If another amp will be used for bass and channels 3/4 will be used a midrange, then set the rear HP filter to the frequency where the woofer will begin operating (usually 80Hz~120Hz)



2-Way w/Bridged Mono Sub

A similar setup uses a pair of full-range speakers with a mono subwoofer.

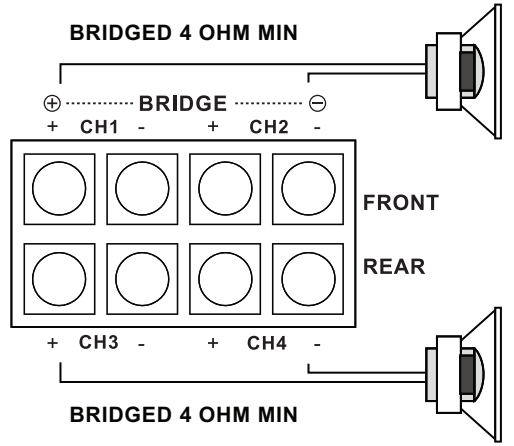
- Front filter is set to HPF, the Multiplier is off (out), HP frequency is set just above the bottom of the full-range speaker's frequency range, where you will also set the woofer crossover
- Set the rear Filter to LPF/BPF to have both filters active and the multiplier to off (x1). Set the rear LPF frequency to the desired woofer crossover point (which should match the front high pass filter), and set the HPF frequency to 15Hz~30HZ as a sub sonic filter



2Ch Bridged

Want more power? Instead of four channels of 165 watts, you can have two channels of 550 watts each by bridging both front and rear amp sections to one speaker each.

- Speakers must be a minimum of 4Ω impedance
- Using RCA "Y" adaptors of 1 female-to-2 male, put the left signal RCA into both L and R inputs of the front channels and put the right signal RCA into both L and R inputs of the rear channels
- Do not use the optional dash bass control as it will only work on the speaker connected to the rear channels

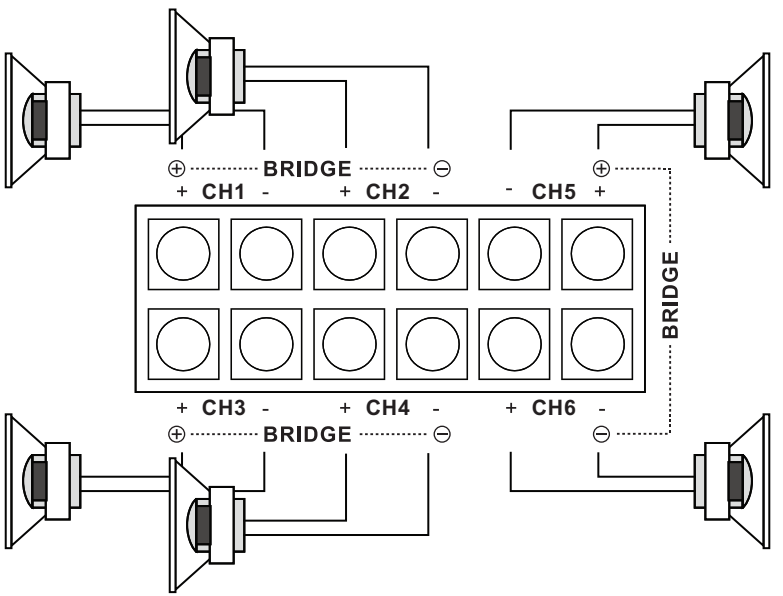


Z-150.6 II Speaker Wiring

6 Ch 6 speakers

The Z-150.6 II is a 6-channel amp that can drive six speakers from 6, 4, or 2 channels of input. Note that channels 5 and 6 are arranged top and bottom and CH5 has + and - reversed from the other channels. That said:

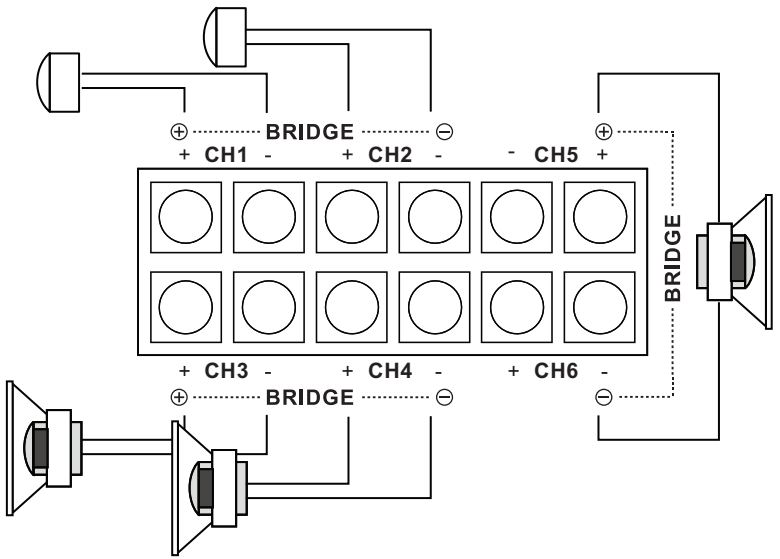
- If you are driving full range speakers the only control you will really need is on Channels 1-4 are the HPF filter to use as a sub sonic. Channels 5 and 6 are designed for bass or mid-bass and plays from 15Hz to 1000Hz



A One-Amp, Active 3-way System

With the crossover features of this amp you can run a completely active 3-way system. You can run it as Tweeter , midrange, bass. You can also ruin it as tweeter, band-passes mid-range, and band passed mid-bass and then use a separate subwoofer amp. Below is an active 3-way system using a mono bass driver.

- The Input Mode switch can be set for 2, 4, or 6 channels of input, but setting up a 3-way system is best done with a 2-channel input unless you are using a digital processor ahead of the amp
- Ch1/2 are used for tweeters. The multiplier is set to x10 (pushed in) with the Filter switch set to HPF. The HP frequency is set to tweeter's recommended HP range (usually between 2kHz ~ 3kHz)
- Ch 3/4 are mid-range. The Ch3/4 Filter switch is set to LPF/BPF so both filters are active. The HP frequency should be set to the frequency that the woofer will begin (usually between 80Hz ~ 120Hz). The Ch 3/4 LP frequency is set to the same frequency as the tweeter HP frequency (usually 2kHz~3kHz) thatwas set in the previous step
- Ch 5/6 are bridged for a mono woofer. Ch 5/6 always have both filters active. Set the LPF frequency to the same frequency as the Ch3/4 high pass filter, so the top of the woofer is the bottom of the midrange
- The bass boost should only be set after system is installed and you have had a chance to listen to see if any bass boost is needed



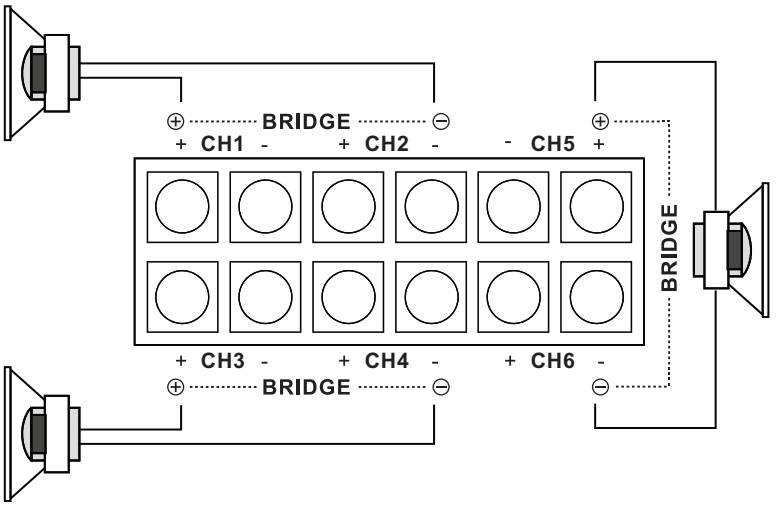
Speakers on channels 1~4 must be minimum 2Ω of higher. The bridged woofer must be 4Ω of higher.
You can add the optional dash control for the bass channels 5/6.

High Power 2-way System

The system below provides plenty of power for a 2-way active system with even the lowest efficiency front speaker system. Each speaker has 550 watts RMS @ 4Ω

- Since all speakers are being bridged, they must all be minimum 4Ω~8Ω impedance
- Ch1/2 and 3/4 will use Filters set to HPF with frequency set to where the woofer will begin
- Ch5/6 will use the HP Sub Sonic filter at 15Hz ~ 30Hz to protect the woofer. The low-pass filter should be set the HP frequency of the full-range speakers on Ch1/2 and Ch3/4

It is critical the crossover frequencies and gains of Ch1/2 and Ch3/4 are set exactly the same.

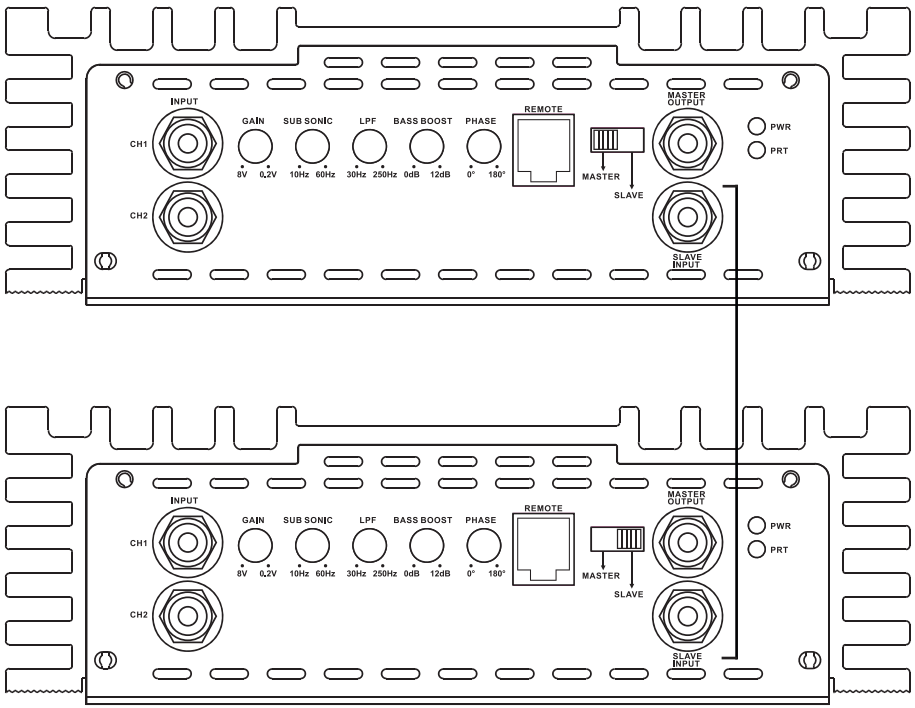


This same setup can also be used for a high power Left, Center, Right front stage.

Notes on the Mono Bass Amp controls:

- Strapping - Two Z-II mono bass amps can be bridged together to operate a single voice coil (speaker) giving it roughly twice the power of a single amplifier. When two amps are "strapped" the Master amps controls will control crossover, sub sonic, bass boost etc. of both amps. When strapping the amps you must maintain a minimum load of at least 2 Ohms

See the input wiring diagram Below:



The Master amp receives the input signal for both amps. With the switch in "master", it sends the proper signal to the slave amp. The ONLY control used on the slave amp is the master/slave switch which is put into the slave position. These two amps will now act as one. See the next section for the speaker wiring.

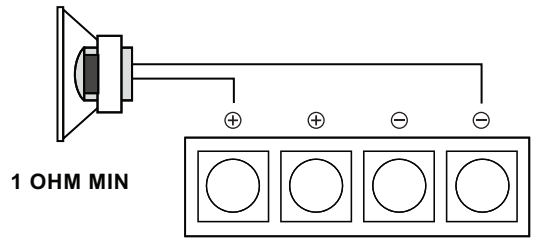
- Sub Sonic - This filter is there to protect the woofer from frequencies that can hurt it. Generally for large woofers in sealed boxes this can be set at about 25 to 30 Hz. The sub sonic becomes most critical when used with a ported box. The sub sonic should be set just below the port frequency regardless of the woofer
- Phase - The phase control will help blend the woofer with the rest of the system

Speaker Wiring of the Z-II Class D Bass Amplifiers

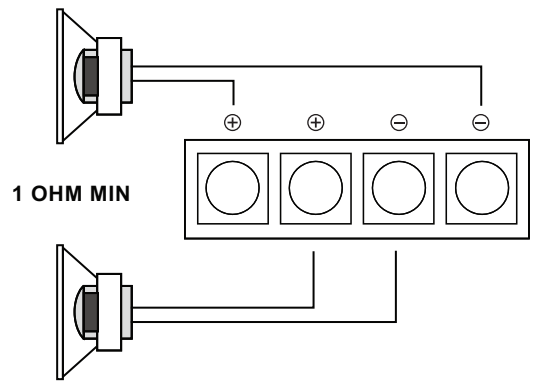
Speaker wiring is identical for all three Z-II Class D amps:
There are four connections for speakers, but note that the 2 left hand terminals are both positive and the two right hand terminals are both negative. This is to make hooking up multiple woofers easier. For a single woofer you use one of the positive terminals and one of the negatives.

Z-KD II Speaker Wiring

One speaker hookup



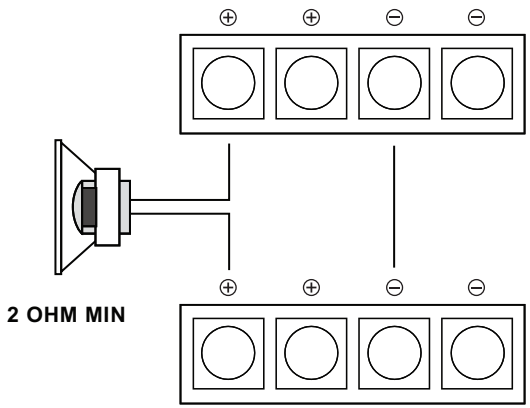
Two speakers hookup



Strapping two amps to one speaker voice coil

When you strap two amplifiers together, you are using one amp for the positive side of the signal and one amp for the negative side. Internally this is accomplished by reversing the polarity (or phase) of the input to the slave amp.

After strapping, each amplifier will see 1/2 of the load. Since the minimum load of each amp is 1Ω, the minimum load for the PAIR of amplifiers is 2Ω. You must not strap 2 amps to a 1 Ω load.



The positive of the master amp goes to the + Speaker terminal and the positive of the slave amp goes to the - speaker terminal. The amps are connected together by connecting a negative terminal from the master amp to a negative terminal of the slave amp.

Technical Specifications

Model	Type	Power (W) Channel/RMS	THD	S/N	Frequency Response
Z-150.2 II	2-Ch, Class AB	2 x 165 (4Ω) 2 x 275 (2Ω) 550 (Br, 4Ω)	< 0.1%	> 100dB	15Hz - 30KHz
Z-150.4 II	4-Ch, Class AB	4 x 165 (4Ω) 4 x 275 (2Ω) 2 x 550 (Br, 4Ω)	< 0.1%	> 100dB	15Hz - 30KHz
Z-150.6 II	6-Ch, Class AB	6 x 165 (4Ω) 6 x 275 (2Ω) 3 x 550 (Br, 4Ω)	< 0.1%	> 100dB	15Hz - 30KHz
Z-1KD II	Mono, Class D	450 (4Ω) 700 (2Ω) 1050 (1Ω)	< 0.1%	> 90dB	10Hz - 350Hz
Z-2KD II	Mono, Class D	800 (4Ω) 1400 (2Ω) 2100 (1Ω)	< 0.1%	> 90dB	10Hz - 350Hz
Z-3KD II	Mono, Class D	900 (4Ω) 1800 (2Ω) 3000 (1Ω)	< 0.1%	> 90dB	10Hz - 350Hz

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Notes

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