

OWNER'S MANUAL

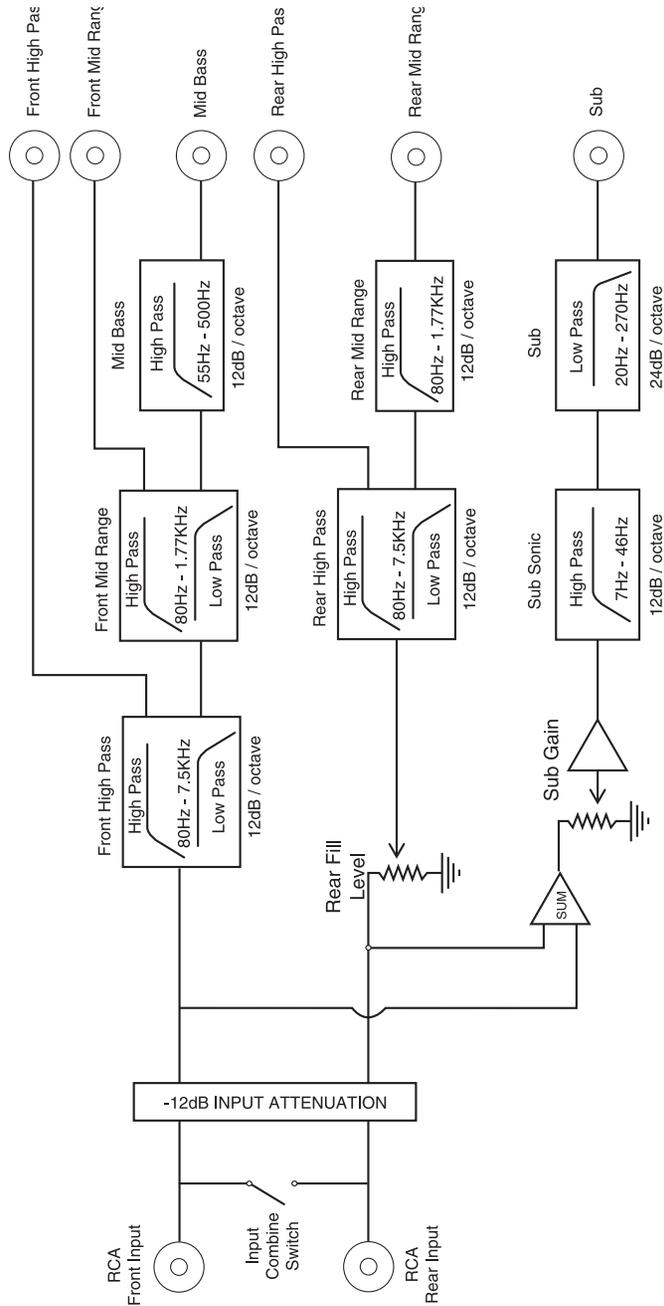


FRX-456
SIGNAL PROCESSOR



Designed and Engineered in the USA by
Directed
ELECTRONICS, INC.

SYSTEM DIAGRAM



FEATURE / SPECIFICATIONS

- Linkwitz-Riley 24 dB/octave Subwoofer Filter
- Linkwitz-Riley 12dB/octave Mid Bass, Mid Range and High
- 2,3, or 4-way active crossover
- Input Combine Switch
- Input Attenuation
- Detented Frequency Selection Controls
- Rear Fill Level Control
- Sub Woofer Level Control
- Gold RCA input and output connectors
- PWM Power Supply
- Completely Designed and Engineered in the USA

SPECIFICATIONS

- Signal-to-Noise Ratio >102dB
- Total Harmonic Distortion (1KHz, 1VRMS) 0.002%
- Crossover Slopes:

All Except Sub Low Pass	12 dB/octave
Sub Low Pass	24 dB/octave
- Crossover Frequencies:

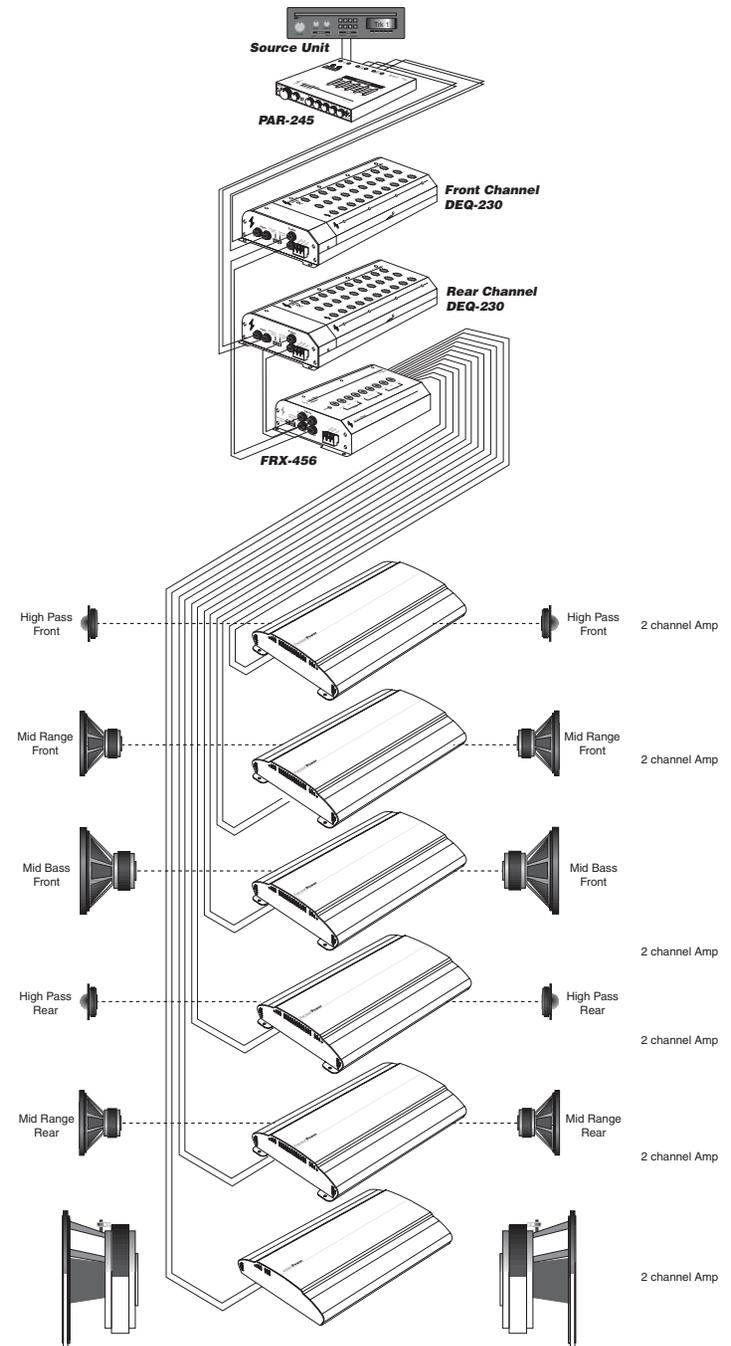
Front:	High Pass	80 Hz-7.5 KHz to 20 KHz
	Mid Range	80 Hz-1.7 KHz to high pass
	Mid Bass	55 Hz-500 Hz to midrange
Rear:	High Pass	80 Hz-7.5 KHz to 20 KHz
	Mid Range	80 Hz-1.7 KHz to high pass
Sub:	Low Pass	20 Hz-270 Hz
	Sub Sonic	7 Hz-46 Hz
- Input Impedance: 10 K
- Maximum Output (10 K Load) 8 VRMS
- Supply Voltage 11-15 VDC
- Dimensions (H x W x L) 1.75" x 5.125" x 10.50"

FEATURE / SPECIFICATIONS

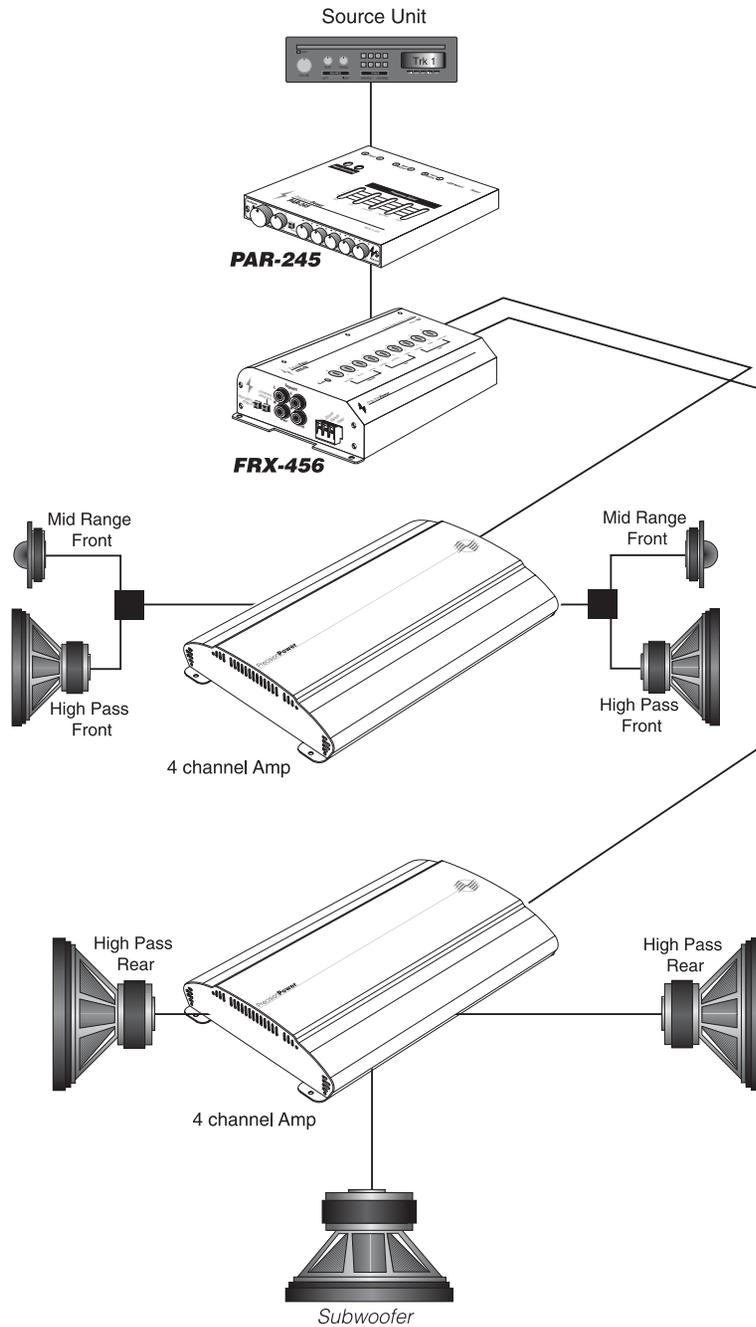
All crossover frequency controls are detented. Each "click" counted from the full counterclockwise position corresponds to a specific frequency. Refer to this chart and page 6 for set-up instructions.

DETENT	SUB SONIC	SUB	MID BASS	MID RANGE	HIGH PASS
1	7 Hz	20 Hz	55 Hz	80 Hz	80 Hz
2	7 Hz	22 Hz	56 Hz	80 Hz	88 Hz
3	7 Hz	22 Hz	56 Hz	80 Hz	88 Hz
4	7 Hz	22 Hz	56 Hz	80 Hz	88 Hz
5	8 Hz	24 Hz	56 Hz	80 Hz	88 Hz
6	8 Hz	24 Hz	60 Hz	88 Hz	96 Hz
7	8 Hz	26 Hz	64 Hz	88 Hz	100 Hz
8	8 Hz	28 Hz	68 Hz	88 Hz	108 Hz
9	9 Hz	30 Hz	72 Hz	96 Hz	116 Hz
10	9 Hz	32 Hz	80 Hz	96 Hz	128 Hz
11	10 Hz	34 Hz	84 Hz	104 Hz	140 Hz
12	10 Hz	36 Hz	92 Hz	112 Hz	152 Hz
13	10 Hz	40 Hz	100 Hz	120 Hz	172 Hz
14	11 Hz	44 Hz	112 Hz	128 Hz	200 Hz
15	12 Hz	48 Hz	124 Hz	136 Hz	216 Hz
16	13 Hz	54 Hz	140 Hz	152 Hz	248 Hz
17	14 Hz	60 Hz	152 Hz	168 Hz	280 Hz
18	15 Hz	64 Hz	160 Hz	176 Hz	304 Hz
19	16 Hz	66 Hz	168 Hz	184 Hz	324 Hz
20	16 Hz	70 Hz	172 Hz	192 Hz	344 Hz
21	17 Hz	74 Hz	180 Hz	200 Hz	368 Hz
22	18 Hz	78 Hz	192 Hz	216 Hz	392 Hz
23	19 Hz	82 Hz	200 Hz	232 Hz	424 Hz
24	19 Hz	88 Hz	212 Hz	240 Hz	452 Hz
25	21 Hz	94 Hz	224 Hz	264 Hz	492 Hz
26	22 Hz	100 Hz	236 Hz	280 Hz	536 Hz
27	23 Hz	108 Hz	252 Hz	312 Hz	656 Hz
28	25 Hz	118 Hz	272 Hz	344 Hz	752 Hz
29	26 Hz	128 Hz	292 Hz	384 Hz	880 Hz
30	29 Hz	142 Hz	312 Hz	448 Hz	1.02 KHz
31	32 Hz	162 Hz	344 Hz	512 Hz	1.26 KHz
32	35 Hz	180 Hz	372 Hz	616 Hz	1.56 KHz
33	38 Hz	198 Hz	400 Hz	752 Hz	2.11 KHz
34	40 Hz	212 Hz	424 Hz	888 Hz	2.65 KHz
35	41 Hz	226 Hz	440 Hz	1.00 KHz	3.12 KHz
36	43 Hz	238 Hz	456 Hz	1.17 KHz	3.77 KHz
37	44 Hz	248 Hz	472 Hz	1.37 KHz	4.90 KHz
38	45 Hz	256 Hz	480 Hz	1.53 KHz	5.88 KHz
39	46 Hz	264 Hz	492 Hz	1.69 KHz	6.70 KHz
40	46 Hz	264 Hz	492 Hz	1.77 KHz	7.40 KHz
41	46 Hz	270 Hz	500 Hz	1.77 KHz	7.50 KHz

FEATURE / SPECIFICATIONS



SYSTEM ONE



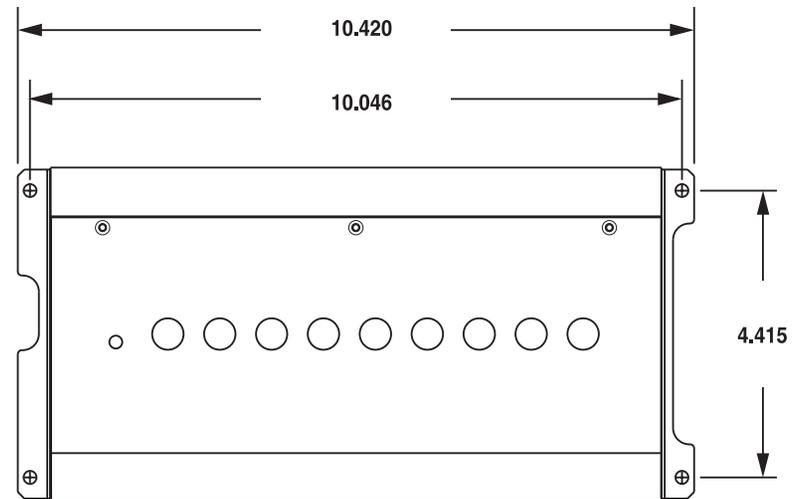
FEATURE / SPECIFICATIONS

Before beginning, disconnect the negative (-) terminal of the battery prior to working on the positive (+) terminal to prevent a short to ground. This is important, unless you want to spend the rest of your life with a nickname like "Sparky," or "Smokey." Reconnect the negative terminal only after all connections have been made.

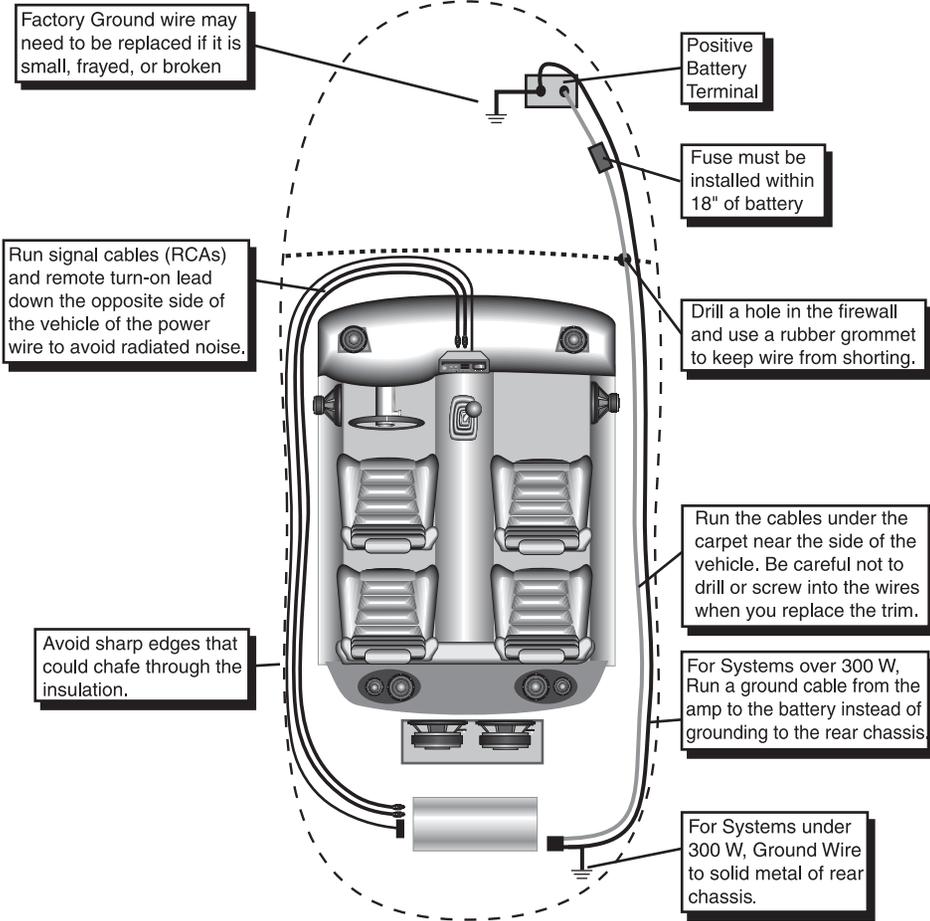
MOUNTING

To prevent damage to the crossover while driving, mount it in a secure place. Choosing the appropriate location will depend upon your vehicle and the complexity of your system design. Typical mounting locations would be in the same location as your amplifiers and or crossovers. Never mount the component in a location that would subject it to immersion or exposure to water.

Once a location has been chosen, securely mount the **FRX-456** using the four screws supplied. **Be Careful!** Inspect the area underneath to be sure you are not drilling into wires, brake or fuel lines, etc. that could be damaged by the drill bit or screws.



WIRING



CAUTION

Before beginning, disconnect the negative (-) terminal of the battery prior to working on the positive (+) terminal to prevent a short to ground.

TROUBLE SHOOTING

NO SOUND

Is the LED lit?

YES

Check Input cables for signal by connecting them straight to the amplifier.

NO

Check Input cables for signal by connecting them straight to the amplifier.

ANY SOUND NOW?

YES

Problem is in the FRX-456. See your local Authorized **PrecisionPower** Dealer or call 1-800-62POWER

NO

Problem is elsewhere in the system. Check head unit and amplifiers.

SOUND IN ONE CHANNEL ONLY

Reverse left and right RCA outputs.

SOUND IS NOW IN

OPPOSITE CHANNEL

Reverse RCA inputs

SAME CHANNEL

Problem is in the amplifier, speakers or associated wiring of the silent channel.

SOUND IS NOW IN

OPPOSITE CHANNEL

Reverse RCAs at head unit (check Balance Control)

SAME CHANNEL

Problem is in the FRX-456. See your local Authorized **PrecisionPower** Dealer or call 1-800-62POWER.

SOUND IS NOW IN

OPPOSITE CHANNEL

Problem is in the head unit.

SAME CHANNEL

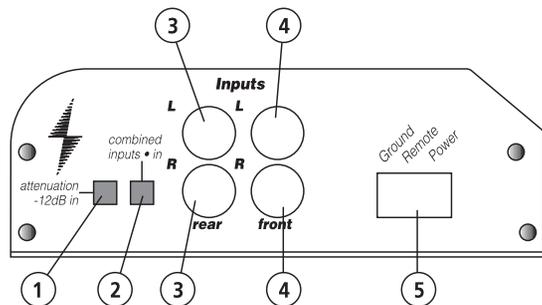
Problem is in the RCA cable.

FEATURE / SPECIFICATIONS

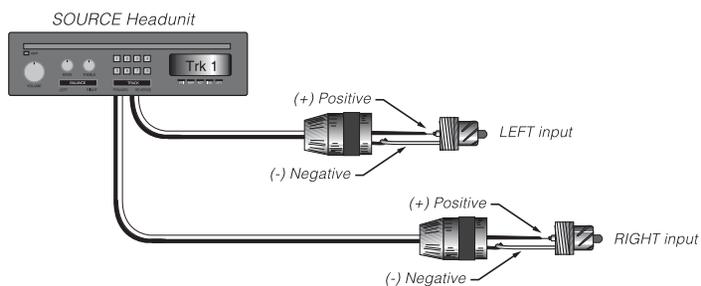
Check crossover frequencies for Low Pass points set higher than High Pass points, check level control setting for sub and rear Fill, and check gain control on the affected amplifier(s).

STILL LOW OUTPUT- See your Authorized **PPI** Dealer or call 1-800-62POWER.

FEATURE / SPECIFICATIONS



1. Attenuation- Push this switch in to accept high level RCA inputs (up to 8v) or direct speaker lead inputs from common grounded (not high powered) headunits. See diagram below for wiring.
2. Combined Inputs- Push this switch IN to connect Front and Rear Inputs. Leave the switch OUT for front/rear fading.
3. Rear Inputs- For fading rear fill, connect the rear RCAs from your head unit here.
4. Front Inputs- Connect the front RCAs from your head unit here.
5. After connection- After connecting Ground, Remote, and Power wires, plug in the **Powerlock** connector here.



CAUTION

Caution! If you are using a source unit with bridged high powered (or "floating ground") speaker outputs, a suitable high to low level adapter must be used. We recommend the Directed Audio Essentials adapter p/n (55020). If you are unsure about your head unit see your local **PrecisionPower** dealer or call **1-800-62POWER**.

To use Speaker Level Inputs (common ground headunits only), connect RCA plugs to the front or rear speaker leads as shown, and push IN the Attenuation switch.

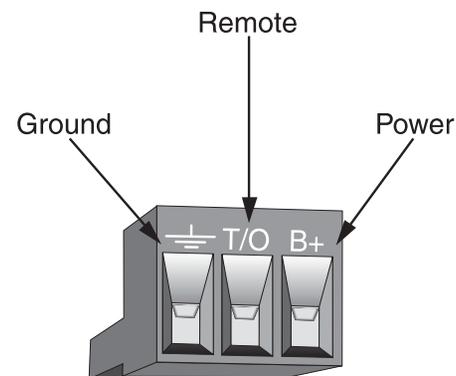
WIRING

The next step is to connect the Power, Ground, and Remote wires to your **FRX-456**. The power wire should run from the mounting location through the vehicle to the battery or power distribution block. Avoid sharp corners, creases, and sharp body parts. When passing through any metal wall (i.e. firewall etc.), a grommet must be used to prevent the wire from chafing and shorting to ground.

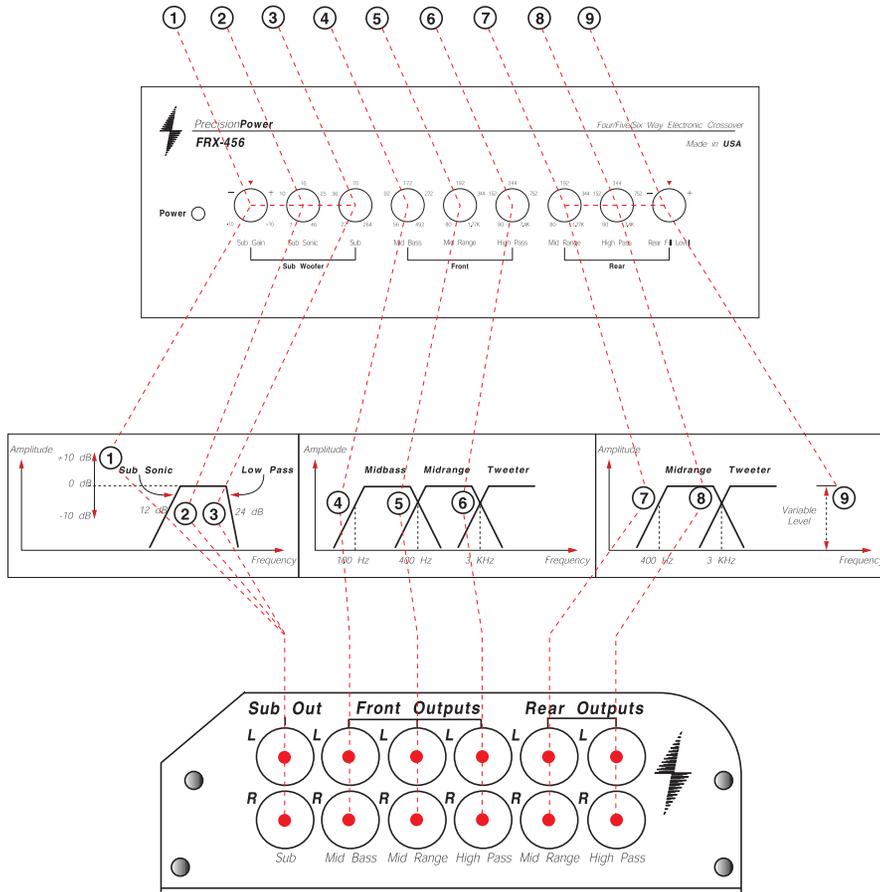
The ground wire should be of the same gauge as the power wire. As a rule of thumb, use as short a length of wire as possible. Find a location near the **FRX-456** that is metal (the floor is ideal) and clean an area about the size of a quarter to bare metal. Drill a pilot hole in the middle of this area. **Be Careful!** Inspect the area underneath to be sure you are not drilling into wires, brake or fuel lines, etc. Terminate the wire with a ring connector and attach it to the bare metal using a #8 sheet metal screw and washer (not supplied). We suggest crimping and/or soldering this connection. After the connection is complete, coat the area with silicone or some similar material to prevent rust from developing.

Finally, the remote wire needs to run to the power amplifier (or antenna remote) lead of the head unit. This wire supplies a 12 volt signal to the crossover when the main system is activated. Once you have routed the power, ground, and remote wires through the vehicle, it is time to connect the wires to the **FRX-456**. Be sure that you have not reconnected the ground cable to the negative post of the battery.

Cut off excess wire and, using wire strippers, strip the power, ground and remote cables about 1/8 inch. Locate the power, ground, and remote **Powerlock™** connector (supplied). On the top of the connector are three slotted screws. With a small flat-bladed screwdriver, loosen the screws before attempting to insert the cables. After you have inserted the stripped end of each cable into the connector, secure it by tightening the associated screw. Check that each connection is tight. If the wires are secure, the connector may be plugged into the **FRX-456**.



FUNCTIONS



NOTES

All crossover frequency controls are detented. Each "click" counted from the fully counterclockwise position corresponds to a specific frequency. See the Frequency Chart on page 2 for these values.

FUNCTIONS

THESE SPEAKERS:	USE THESE OUTPUTS:
Subwoofer	Sub Out
Front	Front
Mid Bass / Mid Range / Tweeter	Mid Bass / Mid Range / High Pass
Mid Range / Tweeter	Mid Range / High Pass
Full Range (coaxial or component with passive crossover)	High Pass
Rear	Rear
Mid Range / Tweeter	Mid Range / High Pass
Full Range (coaxial or component with passive crossover)	High Pass

- 1.) **SUB GAIN**
Adjusts Sub output level allowing a boost or cut of +/- 10dB.
- 2.) **SUBSONIC**
Sets a high pass to filter low Subsonic frequencies.
- 3.) **SUB**
Sets lowpass Crossover frequency for the Sub output.
- 4.) **MID BASS**
Sets the Highpass crossover frequency to the Front Mid Bass Output.
- 5.) **MID RANGE**
Tracking 2-way crossover frequency sets Low pass to Front Mid Bass output and High pass to Front Mid Range output.
- 6.) **HIGH PASS**
Tracking 2-way crossover frequency sets High pass to Front High Pass output and Low pass to Front Mid Range output.
- 7.) **MID RANGE**
Sets High pass crossover frequency to Rear Mid Range output.
- 8.) **HIGH PASS**
Tracking 2 way crossover sets High pass frequency to Rear High Pass output and Low pass frequency to Rear Mid Range output.
- 9.) **REAR FILL LEVEL**
This attenuates the rear outputs.

CONGRATULATIONS

Thank you for choosing *PrecisionPower*™ audio equipment. At *PrecisionPower* we proudly design and engineer the world's finest audio products. Our award winning products utilize innovative design and technology to consistently deliver **Absolutely State of the Art™** performance, sound quality, reliability, and value. This *PrecisionPower* product reflects our commitment to offer you unparalleled versatility and quality for years of dependable service and listening enjoyment.

SERVICE

Do not attempt to service *PrecisionPower* products yourself. Performing exploratory surgery on your audio equipment yourself will void the warranty. Many parts of your *PrecisionPower* gear are custom built to our specifications. Our factory parts are not made available to anyone else nor are they for sale. Our goal is to make sure that your *PrecisionPower* product will always sound as good as the day it was purchased. Contact your authorized *PrecisionPower* dealer about obtaining any warranty service through *PrecisionPower*. (See Warranty inside back cover.)

FOR YOUR RECORDS:

MODEL:

SERIAL NUMBER:

PURCHASE DATE:

CAUTION

Caution! The extended use of a high powered audio system may result in hearing loss or damage. While *PrecisionPower* systems are capable of "Concert Level" volumes with incredible accuracy, they are also designed for you to enjoy at more reasonable levels all of the sonic subtleties created by musicians. Please observe all local sound ordinances.

WARRANTY

LIMITED TWO YEAR CONSUMER WARRANTY

Directed Electronics, Inc. promises to the original purchaser, to replace this product should it prove to be defective in workmanship or material under normal use, for a period of two years from the date of purchase by the dealer as indicated by the date code marking of the product **PROVIDED** the product was installed by an authorized Directed dealer. During this two year period, there will be no charge for this replacement **PROVIDED** the unit is returned to Directed, shipping pre-paid. If the unit is installed by anyone other than an authorized Directed dealer, the warranty period will be 1 year from date of purchase by the dealer as indicated by the date code marking of the product. During this 1 year period, there will be no charge for this replacement **PROVIDED** the unit is returned to Directed, shipping pre-paid. This warranty is non-transferable and does not apply to any unit that has been modified or used in a manner contrary to its intended purpose, and does not cover damage to the unit caused by installation or removal of the unit. This warranty is void if the product has been damaged by accident or unreasonable use, neglect, improper service or other causes not arising out of defects in materials or construction. **ALL WARRANTIES INCLUDING BUT NOT LIMITED TO EXPRESS WARRANTY, IMPLIED WARRANTY, WARRANTY OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, AND WARRANTY OF NON-INFRINGEMENT OF INTELLECTUAL PROPERTY ARE EXPRESSLY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY LAW, AND DIRECTED NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. DIRECTED HAS ABSOLUTELY NO LIABILITY FOR ANY AND ALL ACTS OF THIRD PARTIES INCLUDING ITS AUTHORIZED DEALERS OR INSTALLERS.** Unit must be returned to Directed, postage pre-paid, with: consumer's name, telephone number, and address, authorized dealer's name and address, and product description. **IN ORDER FOR THIS WARRANTY TO BE VALID, YOUR UNIT MUST BE SHIPPED WITH PROOF OF INSTALLATION BY AN AUTHORIZED DIRECTED DEALER. ALL UNITS RECEIVED BY DIRECTED FOR WARRANTY REPAIR WITHOUT PROOF OF DIRECTED DEALER INSTALLATION WILL BE COVERED BY THE LIMITED 1 YEAR PARTS AND LABOR WARRANTY.** Note: This warranty does not cover labor costs for the removal and reinstallation of the unit.

BY PURCHASING THIS PRODUCT, THE CONSUMER AGREES AND CONSENTS THAT ALL DISPUTES BETWEEN THE CONSUMER AND DIRECTED SHALL BE RESOLVED IN ACCORDANCE WITH CALIFORNIA LAWS IN SAN DIEGO COUNTY, CALIFORNIA.