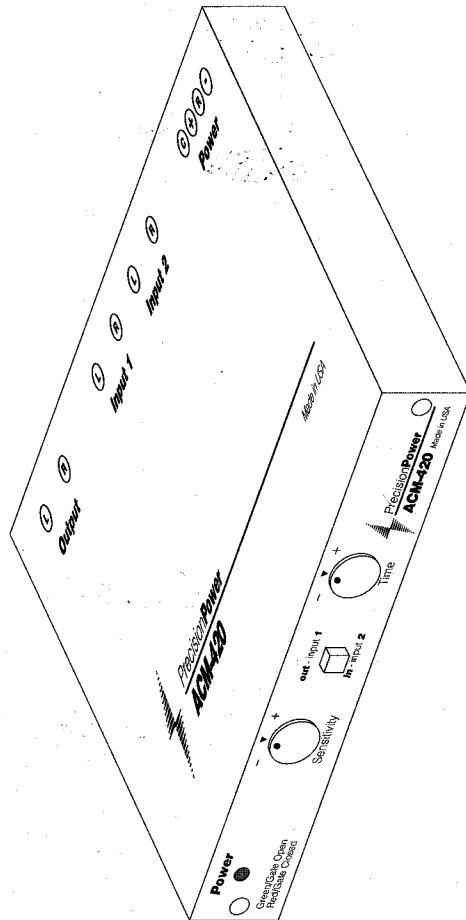


PrecisionPower®

Absolutely State of the Art Mobile Audio™



Owner's Manual

ACM-420 Noise Gate

Designed and Handcrafted in the U.S.A.

PrecisionPower®

Absolutely State of the Art Mobile Audio™

4829 South 38th Street

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PrecisionPower®

Absolutely State of the Art Mobile Audio™

CONGRATULATIONS AND THANK YOU for your choice of a Precision**Power**, Inc. high performance mobile audio noise gate. **PPI** is proud to be a world leader specializing in the design, engineering, and manufacture of "**Absolutely State of the Art Mobile Audio**" components. Our success is derived from the fact that we do not incorporate gadgets or passing fads into our products. Sound engineering practice, combined with deceptively simple yet highly effective circuit designs, characterize every **PPI** product. Our demand for maximum value dictates that every ounce of fat be trimmed if it does not contribute to sound quality or reliability. This is why Precision**Power** products have consistently enjoyed an unparalleled reputation for sound value. We are sure your new **ACM-420** noise gate will provide you the "Absolutely State of the Art" in mobile audio signal processing.

Important Safeguards

The following list of 'Important Safeguards' has been compiled to help you achieve optimum satisfaction and the highest quality performance from your new mobile audio noise gate. **Please take the time to review these safeguards before operation and/or installation of your new ACM-420 noise gate.**

Read and Follow Instructions

We all have a tendency to read instructions only after something doesn't work as anticipated. This manual provides specific information concerning the operation and installation of your new noise gate. **Please read this manual thoroughly and retain it for future reference.**

Keep Your Sales Receipt

Your **PPI** noise gate has a three year limited warranty when it is installed by an Authorized **PPI** dealer. Non Authorized dealer installed (**PPI**) noise gates carry a one-year parts / ninety days labor limited warranty. To establish the starting date of warranty coverage, a copy of your sales receipt must accompany your noise gate for all warranty service. Please file your sales receipt away for future reference. For your convenience, a complete limited warranty statement is located at the back of this manual.

Heed All Wiring Requirements

A high-performance noise gate requires minimum wire gauges be used for the Power, Ground, and Remote Turn-On. To assure proper operation of your **ACM-420** noise gate, follow all wiring requirements.

Installation Accessories

The **ACM-420** noise gate will require non-supplied installation accessories. Please refer to the Installation Section of this manual for a list of requirements or consult your Authorized **PPI** dealer before installation.

Water and Moisture

Never mount your **ACM-420** noise gate in a location which would subject it to immersion or exposure to water.

Servicing

Do not attempt to service this noise gate yourself. Opening or removing covers will void your warranty. For service information, consult your Authorized **PPI** dealer or call Precision Power, Inc. at **1-800-62-POWER**. Our customer service representatives are available Monday through Friday from 8am to 6pm Mountain Standard Time.

Caution!

The use of a high powered audio system may cause hearing loss or damage. While **PPI** systems are capable of "Concert level" volumes with incredible accuracy, they are designed for you to enjoy the subtleties created by musicians while listening at reasonable sound pressure levels. The use of a high powered audio system may impair your ability to hear traffic sounds, and therefore, may constitute a traffic hazard. We advise lower volume levels while driving.

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Features

- Half-din mounting
- 4 input and 2 output channels
- Dual output switch
- 47 dB of system background noise reduction
- Adjustable Sensitivity Range
- Adjustable Time Control
- Gold-plated RCA input and output connectors
- PWM Power Supply
- Remote turn-on capability
- .2 Technology to control ArtSeries .2 Amplifiers
- L.E.D. power indicator
- Designed and Handcrafted in the U.S.A.

Glossary

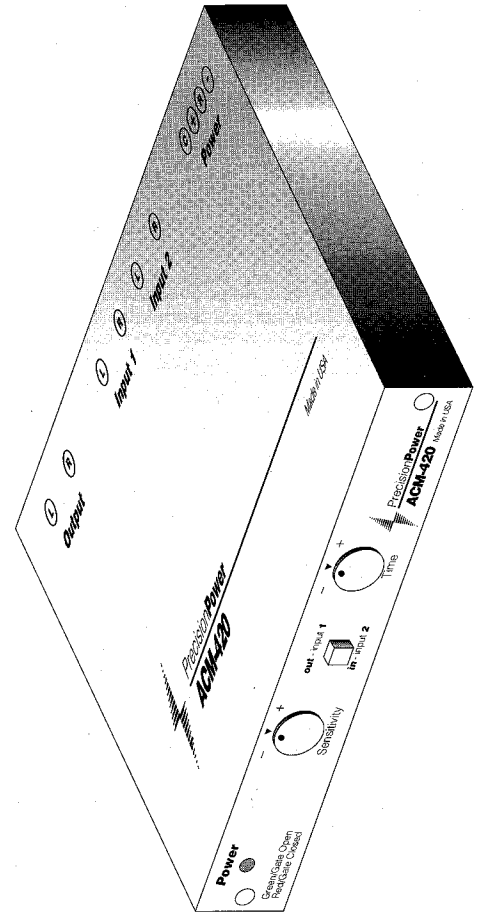
- Time Control**
Control that adjusts the duration of time from when the gate is open to when it closes.
- Sensitivity Level**
Level of input signal necessary to make the gate open.
- Input Sensitivity or Gain**
A measure of a device's input signal requirement to produce a desired output. "High" sensitivity implies a low input signal whereas "Low" sensitivity implies a higher input signal requirement.
- Input Sensitivity or Gain Control**
Control that allows adjustment to the ACM-420 output level for varying input levels.
- LED**
Light Emitting Diode. Used as an indicator. (i.e. Power on, etc.)
- J FET Audio Switch**
The portion of the circuit that closes and opens the gate.
- Remote Turn-on**
Low current "remote" switching circuit which is connected to the source unit from the quick disconnect plug (supplied).
- Noise Gate**
Signal processor designed to eliminate steady background noise from high performance audio systems.
- .2 Technology**
.2 Technology is the latest version on the ArtSeries and ProArt Amplifier lines by Precision **Power**. Even greater efficiency has been added to this line, along with the ability to control the amp with the noise gate.

Specifications

PrecisionPower Inc. is a worldwide industry leader in the design and manufacture of high performance mobile audio amplifiers, signal processors, and accessories. The PrecisionPower name has become synonymous with our desire to produce "Absolutely State of the Art" mobile electronics. A statement as bold as this demands we research and develop each and every PPI product with a high degree of attention to reliability and superior sound quality. The unique sonic problems affecting proper performance in the mobile environment require innovative design solutions from an engineering staff encouraged to challenge the status quo.

We currently manufacture more than 30 different PPI models in amplification and signal processing. Each model is "application specific," in terms of power, number of channels, equalization, integrated accessories, and flexibility. All models have one thing in common: They exist to fulfill a particular sonic need. Your new ACM-420 was developed in this fashion as well. Necessary ingredients were performance, flexibility, and simplicity. Please take the time to read through this owner's manual and assure yourself the opportunity to get the most out of your ACM-420.

Signal-to-Noise Ratio	>102 dB
Total Harmonic Distortion (1KHz)	0.002%
Input Impedance	10k Ohms
Sensitivity Range	.5mV to 5 mV
Input Gain	Unity Gain
Maximum Input Voltage	8VRMS
Maximum Output (10 K Load)	8VRMS
Supply Voltage	11-15 VDC
Dimensions	3.61" L 6.76" W 0.95" H



J FET Audio Switch

The **ACM-420** is a four channel input and two channel output noise gate. It is designed to eliminate steady background noise from high-performance car audio systems. It does this by blocking signal flow from a source when there is no music present. Its J FET circuitry was chosen for its superior musicality.

PPI chose to use J FET Audio switches because they have very low distortion and will not affect the quality of the audio signal. The purpose of a noise gate is to eliminate an unwanted noise floor between musical tracks, where maximum attenuation is needed. Through the use of J FET technology, the **ACM-420** has up to 47dB of attenuation compared to its predecessor the **PCE-440** that had only 20dB of attenuation. The J FET audio switch also provides a dramatically enhanced stereo separation for improved high fidelity operation.

PWM Power Supply

The **PWM (pulse width modulated) power supply** provides precise operation even when the voltage of the electrical system in your vehicle changes. Electrical changes can be caused by something as simple as turning on your headlights. The **PWM** power supply takes the incoming voltage from your vehicle, stabilizes and purifies it, and then provides it for use by the noise gate. This guarantees that every nuance in the music will be faithfully reproduced.

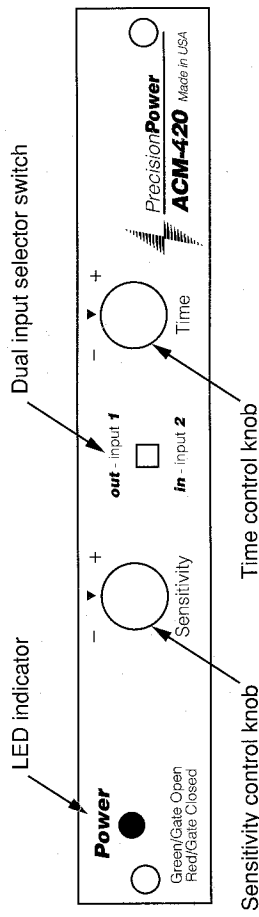
Dual Input Switch

Another feature of the **ACM-420** is its Dual Input Select Switch. This provides the ability to select from two input units. For example, you can put your stereo head unit into source input 1, and a video playback system into input 2 enabling you to switch between the two source units. (See figure A on page 9.)

The "Gate"

The **ACM-420** has four inputs and two output channels. When music is present the input is passed straight through to the corresponding output with no modifications, that is, no gain or equalization. Its purpose is to eliminate background noise, especially "hiss", that is present when the system is on but not playing music.

Figure A



.2 Technology

The **ACM-420** was designed primarily for use with the new .2 Art Series and ProArt amplifiers. Incorporated in all .2 Art Series and ProArt amplifiers is a noise gate at the output stage of the amplifier. It is controlled by the **ACM-420** through the amplifier remote turn-on lead, thus gating the system at the amplifier output as opposed to earlier in the signal path, resulting in the complete elimination of all system noise. When using the **ACM-420** with multiple .2 ArtSeries and ProArt amplifiers the **ACM-420** controls the turn-on of the amplifiers so that they all turn on and off at the same time, reducing the possibility of on/off noise.

Sensitivity Level and Time control

The **ACM-420** has two front panel controls: Sensitivity Level and Time Control. The sensitivity control sets the input signal level at which the gate will open. The sensitivity level should be adjusted so that the gate opens for signals which are just louder than the background noise of the system. If the Sensitivity is set higher than this, it may block desired signals. Turning the control clockwise reduces the threshold and makes the gate open with a smaller input signal. A green LED indicator on the front panel is lit when the "gate" is open (Refer to figure A).

The Time control determines the duration of time from when the gate is open to when it is closed. The gate opens or closes almost instantly - in a few milliseconds. The transition from "open" to "closed" is adjustable with the Time control. At the counterclockwise extreme setting, the time from open to closed is very short. As the control is turned clockwise, the amount of time from open to closed is gradually increased. The range of adjustment is anywhere from just under one second to ten seconds. The Time control setting is a matter of user taste; at some settings, the action of the gate will be more obvious.

Maximizing the Performance of your ACM-420

It is important to note that the exact settings of both the Sensitivity and Time controls must be user defined. Their settings will vary, from system to system, depending upon a number of variables. These include: type of components used in your system, number of components in the audio signal path, gain / level settings of each component, and where the **ACM-420** is placed within the signal path.

So with all of these variables, where do you place the **ACM-420** in the signal path to achieve maximum performance? Since the purpose of the **ACM-420** is to block background noise, it must go in the signal path after the point at which noise is introduced into the system. In many systems, it is the head unit (Radio, CD, Cassette) which determines the background noise, but if other signal processors such as an equalizer are used in the system, they may contribute significantly to background noise, and in this case, the **ACM-420** should be inserted in the signal path after such processors. If the **ACM-420** is inserted after an electronic crossover, you must make sure that it gets midbass or midrange signal on at least two of its inputs to ensure proper gating. (Remember, the **ACM-420** looks for midrange frequencies when deciding whether or not to open the gate).

The Art of Using Your ACM-420

Your new **ACM-420** can be implemented into your system by one of Three methods;

Method 1

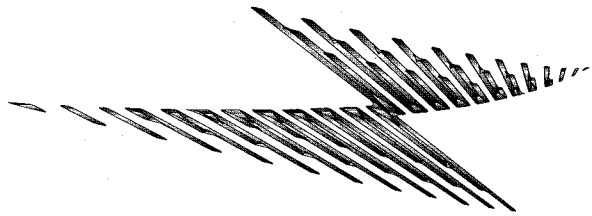
This method **must** be used in all systems **NOT** using .2 ArtSeries and ProArt amplifiers.

The audio signal enters the **ACM-420** at its inputs, passes through the "gate", and then flows out of the **ACM-420** continuing on down the audio path to the amplifiers.

All "gating" will be done at RCA level. Art Series .2 and ProArt amplifiers could be used in this configuration, however, Method 2 is recommended for .2 Art Series and ProArt amplifiers.

A sample system configuration for Method 1 is shown on page 22.

Notice in this diagram that the **ACM-420** is located directly after the head unit. This allows use of the auxiliary input of the **ACM-420** (input 2) for video, etc. Keep in mind that this location in the signal path will not eliminate any noise introduced into the system by products installed AFTER the **ACM-420** such as noise due to the improper setting of gains, improper wiring techniques, or signal processors of dubious quality. Placing the **ACM-420** into the signal path directly before the crossover or amplifier will eliminate all noises present but use of the auxiliary input would not be advised. Use of input 2 with the **ACM-420** last in the signal path would prevent the use of equalization or any type of master volume control (such as a **PAR-245**, **PEQ-114**, **DEQ-230**, etc.).



Method 2

This second method can only be used with .2 ArtSeries and ProArt amplifiers! This is the preferred method of connection.

In the second method, the audio signal flows into but not out of the **ACM-420**. See illustration on page 23.

Signal is given to the inputs of the **ACM-420** by the use of 'Y' connectors inserted into the signal path ANYWHERE BETWEEN THE HEAD UNIT AND AMPLIFIERS. The .2 Art Series and ProArt amplifier's **turn-on trigger wires** (from up to 10 amplifiers) are connected to the rear of the **ACM-420** using the AMP CONTROL terminal. The **ACM-420** sends special signals to the amplifier through it's turn-on lead. These signals tell the gate in the amplifier when to open or close, which prevents any system noise from getting to the speakers. This feature also tells all the amplifiers in the system to turn on and off at the same moment, thus preventing the amplifiers from turning on at irregular intervals and reduces the possibility of turn on and off noise. All .2 ArtSeries and ProArt amplifiers have the same 2-color LED's that the **ACM-420** has.

RED L.E.D. = CLOSED

GREEN L.E.D. = OPEN

Method 3

If a second source (input 2) is used, installation of the **ACM-420** must be directly after the head unit and secondary source. This will allow the use of the auxiliary input switch to select between two different sources as illustrated on page 24. The system can then take advantage of products such as the **PAR-245**, **PEQ-114**, etc. Since the **ACM-420** mutes the amplifiers directly, it doesn't matter if noise is introduced after the **ACM-420**. All of the noise is eliminated at the amplifier.

Note: Since the **ACM-420** is capable of controlling up to 10 amplifiers, the use of a relay to control the amplifiers is not needed. This would result in the failure of the system to correctly open or close the gate. The signals sent to the amplifier through the AMP CONTROL terminal would stop at the relay, and the application of 12 volts to the amplifiers turn-on leads would prevent the gate from closing.

Once you have determined where the **ACM-420** is going to be placed in the signal path, mount it in a convenient location (Refer to the Installation section for mounting your **ACM-420**).

Over the years, advances in mobile audio electronics have changed the demands placed on the type and size of wire needed to create a high-performance mobile audio system. To meet this need, **PPI** uses a **quick/disconnect wire connection system**. This unique, removable connection system offers the versatility of terminal strips, the convenience of quick connect/disconnect style connectors, and the reliability afforded by direct connection to the circuit board.

In the following pages we will discuss the installation and operation of your new ACM-420. Please read this section thoroughly so you can enjoy the full performance capabilities of your ACM-420.

Inputs / Outputs

On the rear panel of the **ACM-420** there are six **RCA** jacks, four inputs and two outputs. The inputs are divided into two sets, so that you can select between two source units. The cables selected to connect the output of your source unit to the **ACM-420** can have an effect on the quality of the musical signal that the **ACM-420** receives. Careful selection of a high grade audio preamp cable will insure optimum signal path performance. When routing the preamp cable, care should be taken to avoid areas of possible noise interference such as main vehicle wiring harness and vehicle computers. Also, run the input/output signal cables on the opposite side of the vehicle from the stereo system's power and ground wires. Once routed, connect the cable to the input/output jacks located on the back of the **ACM-420**. (See figure B on page 14.)

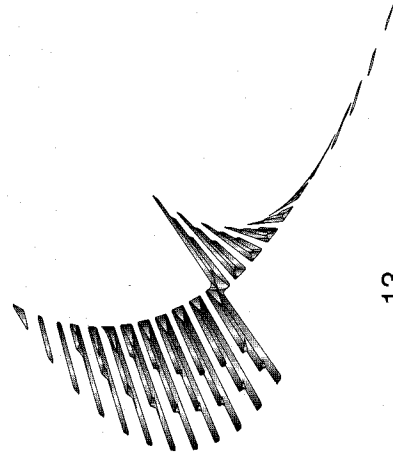
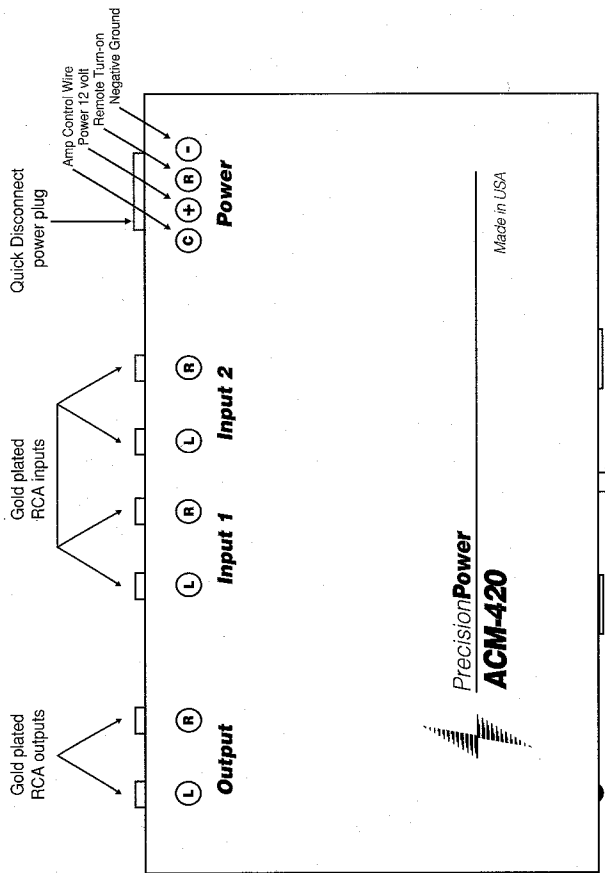


Figure B



Installation

PRIOR TO INSTALLATION of your new **ACM-420** it is important to consider the following: In your profession, your abilities and expertise insure a job well done. This is also true of professional car audio installers. It is their chosen profession, and what they do best. **PPI** believes so strongly in its responsibility to you, that we invest heavily in the hands-on training of professional installers. Our comprehensive system design and installation seminar provides our authorized dealers with the latest techniques to deal with the complexities of car audio today. There is more than meets the eye to insure that a car stereo reaches its fullest potential. The trained professional, through experience, can approach, recognize, and address all the needs of the mobile audio environment. **PPI** highly recommends that all our mobile audio equipment be installed by an Authorized Precision**Power** Dealer.

Before beginning, disconnect the negative (-) terminal of the battery to prevent an electrical short to ground. Reconnect the negative terminal only after all connections have been made.

Wiring

The next step is to connect the Power, Ground, and Remote, of your **ACM-420**. The **noise gate** is designed to operate from a vehicle's (+) 12 volt, negative ground electrical system. The main power cable should run from the **noise gate** location through the vehicle to a 12V source, avoiding 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. We suggest crimping and soldering all wire connections. Insulate the connection with heat-shrink tubing to prevent a short 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. Locate an area near the **noise gate** that is metal 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 soldering this connection. Insulate the connection with heat shrink tubing. It is important that this connection be solid. After the connection is complete, coat the area with silicone or some similar material to prevent rust from developing.

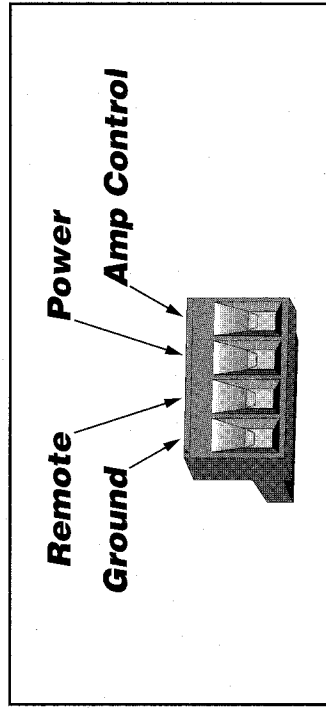
When using .2 ArtSeries or ProArt amplifiers, run a wire from the "Amp Control" terminal on the rear of the **ACM-420** to the remote turn-on lead on the amplifiers.

Finally, the remote wire needs to run from the power antenna (or amplifier remote) lead of the source unit to the **ACM-420**. This wire will supply the 12 volt signal to the **ACM-420**, switching on the unit when the main system is activated.

Once you have run the Power, Ground, Amp control (if used), and Remote wires, it is time to connect the cable to the noise gate. 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, amp control, and remote cables about 1/8 inch. Locate the power, ground, connector and remote connector (supplied). On the underside of the connector are four slotted screws. With a small flat-blade 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. If inserting larger gauge wire presents a problem, tinning the wire with solder may help. Be sure each connection is tight. Once the wires are secure, the connector may be plugged into the noise gate. (See Figure B & C.)

Figure C



System Tuning

In order to achieve maximum signal-to-noise performance from a high quality mobile sound system, it is desirable to use high signal levels wherever possible in the interconnection cables. High signal levels will reduce the effect of induced noise. The peak level of an audio signal is usually determined by the clipping level of electronic components. The following procedure should be used as a guide when the system installation is complete.

Adjusting Crossover Input Gains

1. Adjust all crossover gain controls to 0dB, 1/2 of the maximum sensitivity.
 2. Adjust all amplifier gains to 1/2 of maximum sensitivity.
 3. Turn the volume knob on the equalizer to a maximum of 3 o'clock.
 4. Increase the gain of the crossover until the onset of audible distortion. Then decrease the gain prior to the immediate point of audible distortion. This setting will minimize system back ground noise and prevents overloading of the crossover.
 5. Repeat steps 1 thru 4 for any remaining crossovers in the system.
 6. Adjust the amplifier's input gain next.
- NOTE:** In many multi-crossover / accessory systems, the gain of some crossovers and accessories may need to be further decreased to achieve proportional balance.

Adjusting the Amplifier(s)

1. Adjust the amplifier's input gain to 1/2 maximum sensitivity.
2. Turn the volume knob on the equalizer to a maximum of 3 o'clock.
3. Increase the gain (clockwise) of the amplifier until the onset of audible distortion. Then decrease the gain counter-clockwise prior to the immediate point of audible distortion. This setting will minimize system background noise and prevents overloading of the ArtSeries amplifier.

NOTE: Depending on the sensitivity of the system's pre-amp(s), the gain of the amplifier(s) may not need adjustments. Also, in many multi-amplifier systems, the gain of some amplifiers may need to be further decreased to achieve proportional balance.

Adjusting the ACM-420

For a starting point, set the Sensitivity to the fully clockwise position and Time controls to the fully counter clockwise position. Turn on the system and confirm that the red power LED indicator on the ACM-420 is lit.

Sensitivity Level

Play a music selection that has fairly consistent average loudness. Turn up the system volume above minimum and confirm that the green - Gate Open LED is on and that the system has an output. Next, turn down the system volume until the music level is about as loud as the background noise. This should be considerably below the quietest volume at which the system will be listened to. The car's engine should be off, because its mechanical noise may mask background noise.

Now turn the Sensitivity control counterclockwise until the green Gate Open LED just goes out and the sound from the speakers is muted. Turn up the volume a small amount and confirm that the gate opens. If it doesn't, turn the Sensitivity control back clockwise a little. Now play the head unit between music tracks, in the pause mode, or, if available, play a "zero data" track on a test CD. The green Gate LED should be off. When the Sensitivity control is properly adjusted, the Gate will be closed whenever the system is on and there is no music signal from the head unit.

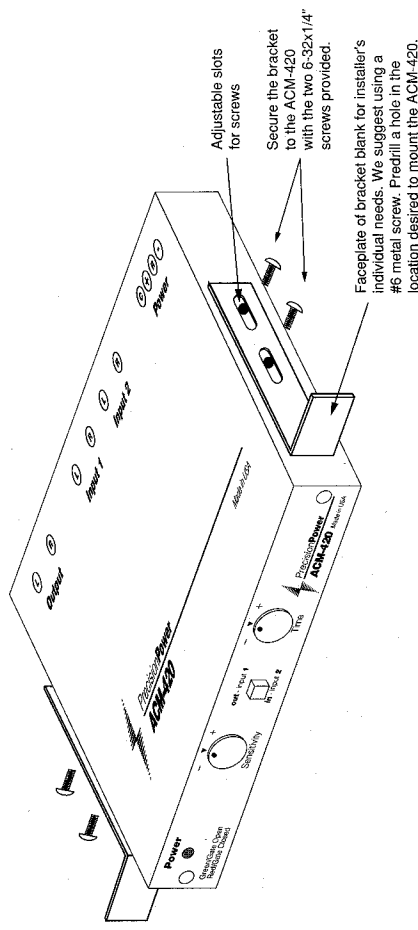
Time Control

The Time Ratio Control only affects how the transition from "gate open" to "gate closed" effects the music. If it is set too sensitive the music will tend to fade in and out during very quiet passages. In general, it will be set near counter clockwise extreme because at this setting the action is the least obvious, but this is completely a matter of taste - experiment with various settings!

Mounting

To prevent damage to the ACM-420 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 for your new ACM-420 might be in the dash or center console. 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 ACM-420 using the two supplied brackets. There are two different brackets included with your ACM-420. One set is used to flush mount the ACM-420, as shown in Figure D. The others are used to surface mount, as shown in Figure E. The brackets are connected to the noise gate by two 6-32 x 1/4" socket head cap screws. We have made the brackets adjustable to compensate for the uniqueness of each vehicle. **Be Careful!** Inspect the area underneath to be sure you are not drilling into wires, etc. that could be damaged by the drill bit or screws.



Troubleshooting

If for some reason your system fails to operate properly, please refer to this guide. If you are unable to resolve the problem, consult your Authorized **PPI** Dealer or call

1-800-62-POWER

NO SOUND

Is the power LED illuminated green?

Check fuses in the power wire.

Be sure turn-on lead and amp control lead is connected.

NO SOUND IN ONE CHANNEL

Check signal leads and inspect for a short to ground or an open connection.

Reverse left and right leads to the inputs to see if the problem is before the **noise gate**. Then, do the same for each of the outputs going to the amplifiers.

If the problem is in the noise gate unit, have your **PPI** Dealer inspect the unit.

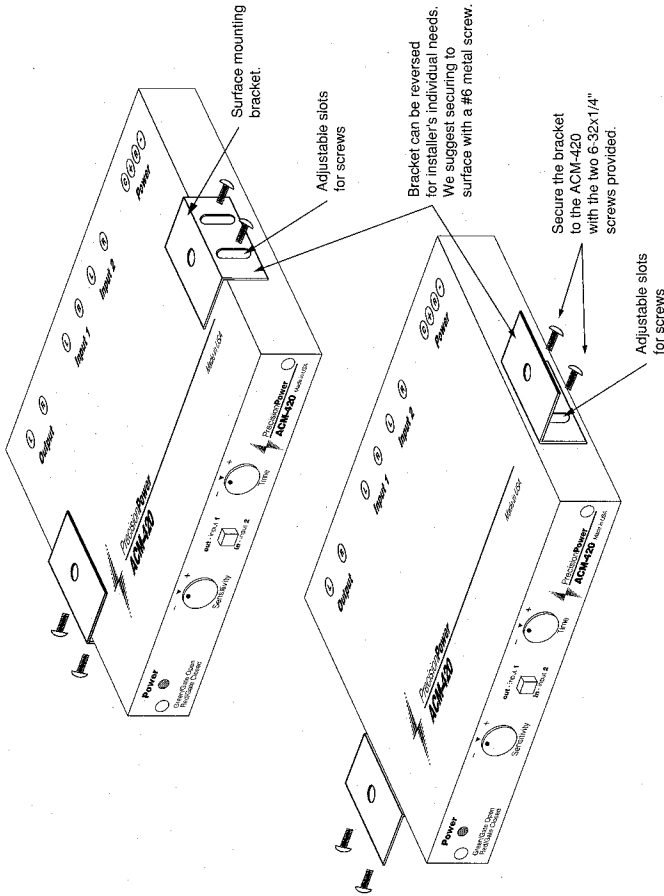
ACM-420 TURNING OFF

Make sure power and ground wires are secure.

Locate proper ground potential with a meter.

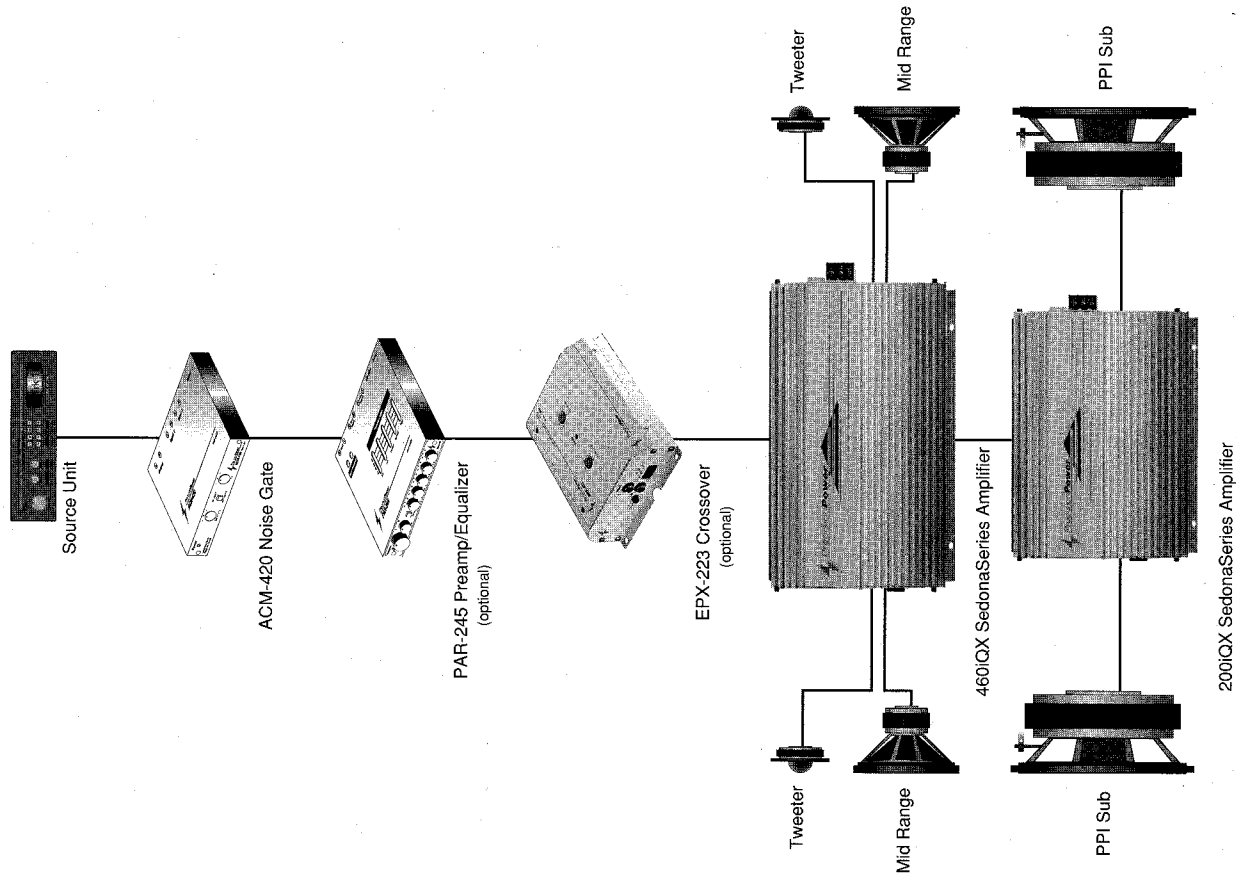
Check that the remote turn on wire is fastened securely.

Have a **PPI** Dealer inspect the unit.

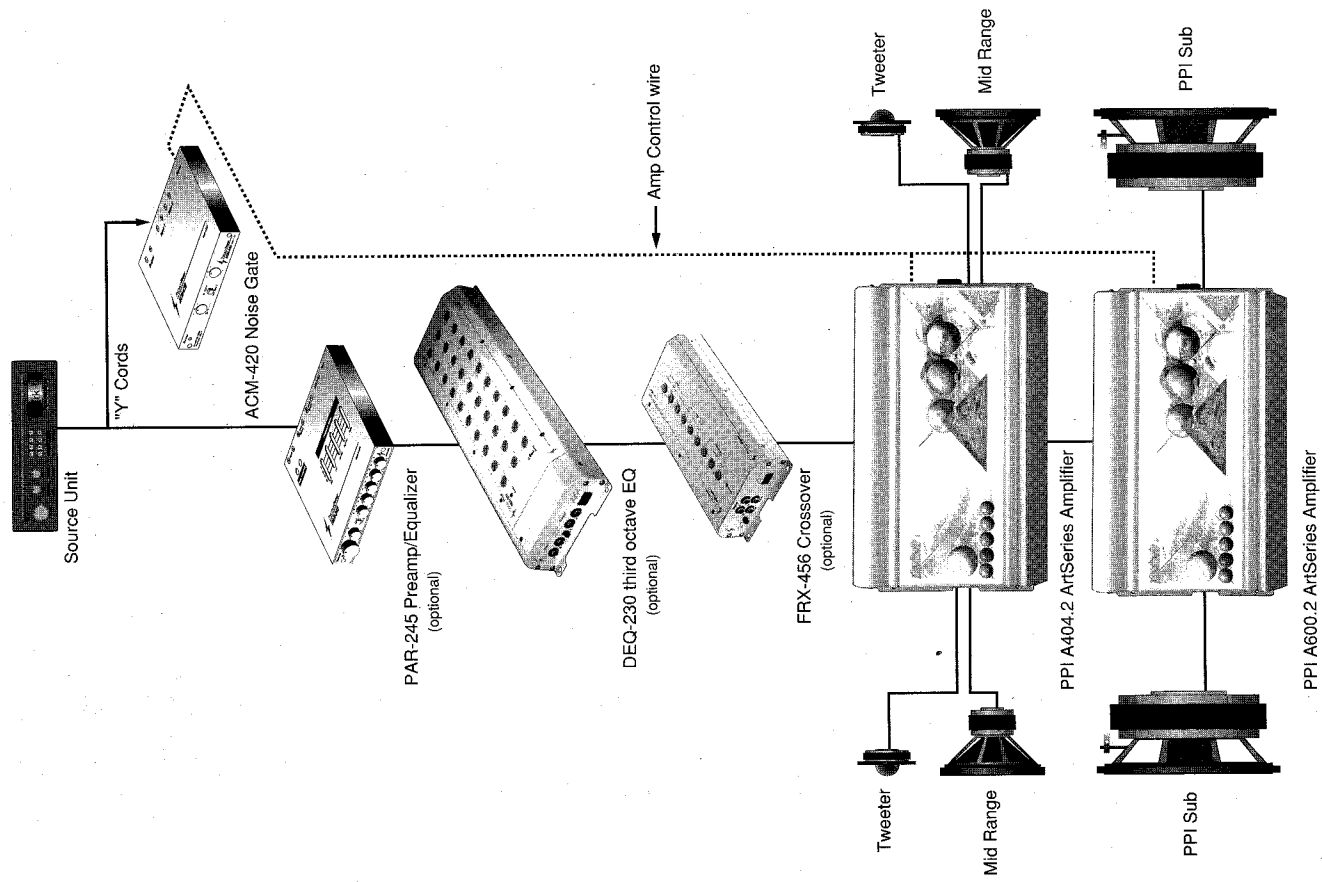


PPI

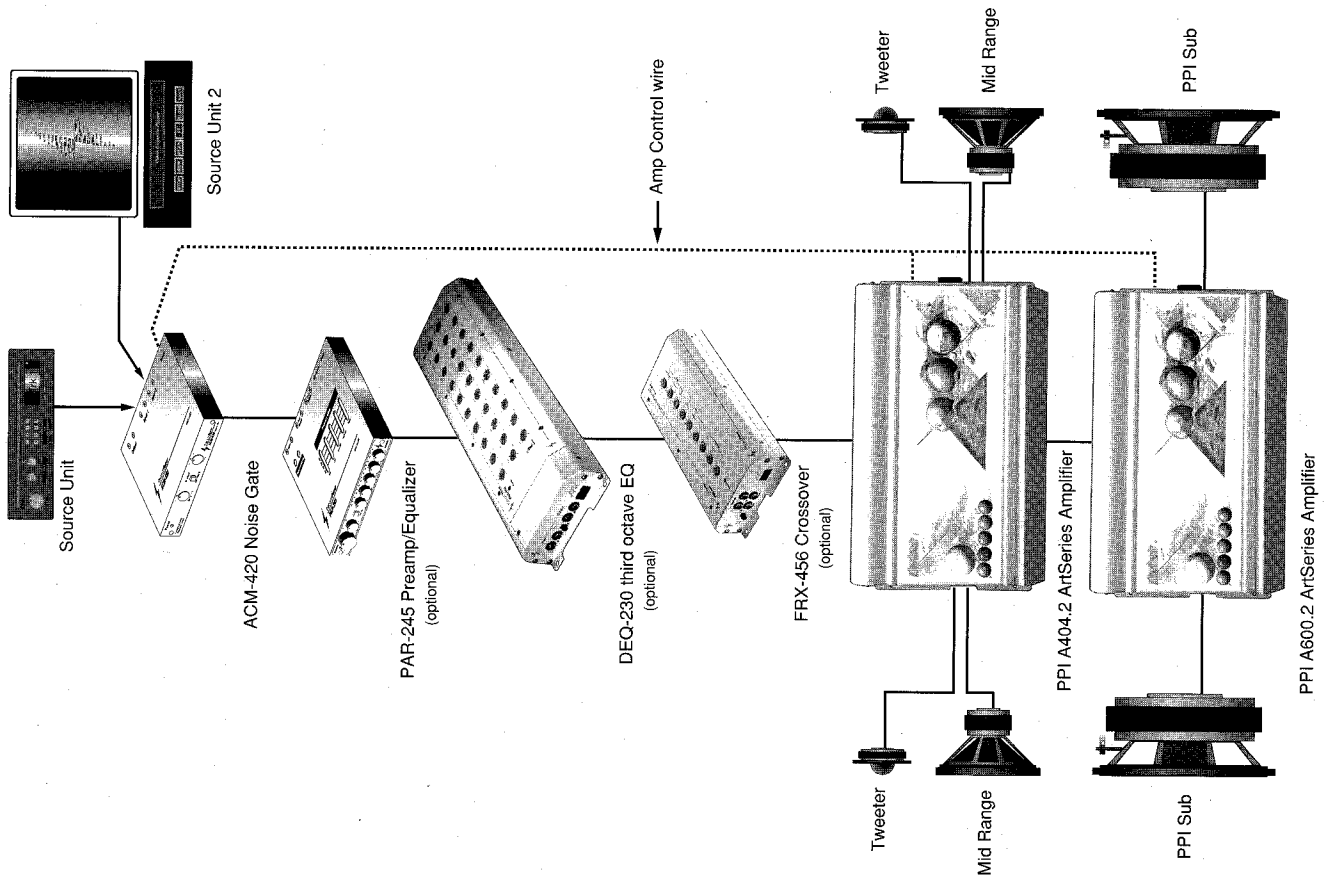
System Design One



System Design Two



System Design Three



Three-Year Limited U.S.A. Warranty

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Precision Power, Inc. (PPI) warrants its amplifiers and accessories to be free from defects in materials and workmanship under normal use and service for a period of three (3) years from the date of original purchase when the unit is installed by an Authorized Precision Power Dealer. Non-Authorized Dealer installed products carry a one (1) year parts and ninety (90) days labor limited warranty. The extent and conditions of PPI's Limited Warranty are as follows:

1. Authorized PPI Dealer Installed Products: PPI will either repair or replace at no charge, to the original purchaser, any unit which PPI's examination discloses to be defective and under warranty, provided the defect occurs within three (3) years from the date of purchase when the unit is installed by an Authorized PPI Dealer and the product is returned immediately to PPI. This warranty is not transferable.
2. Non-Authorized PPI Dealer Installed Products: PPI will either repair or replace at no charge, to the original purchaser, any unit which PPI's examination discloses to be defective and under warranty, provided the defect occurs within ninety (90) days from the date of purchase and the product is returned immediately to PPI. Warranty claims beyond ninety (90) days for Non-Authorized Dealer Installed Products will be for parts only and will extend for one (1) year from the date of purchase. This warranty is not transferable.
3. The date of purchase and proof of Authorized Dealer Installation of a PPI amplifier and / or accessory must be established by an original sales receipt which must accompany the article being returned for warranty work.
4. This warranty shall NOT apply to any PPI unit found to have the original factory serial number removed or defaced. All products received (by PPI) for in warranty or out of warranty repair, with their original serial numbers removed or defaced, will NOT be repaired and will be returned to sender, freight collect.
5. The provisions of this warranty shall not apply to any PPI unit used for a purpose for which it is not designed, which has been repaired or altered in any way, or which has been connected, installed, or adjusted other than in accordance with the instructions furnished in PPI's owner's manual. Nor shall this warranty apply to any part which has been subject to misuse, neglect, or accident.
6. PPI does not authorize any other persons to assume any other liability in connection with its products. THIS WARRANTY IS THE ONLY EXPRESS WARRANTY MADE BY PPI APPLICABLE TO ITS PRODUCTS. ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO PPI'S AMPLIFIERS AND OR ACCESSORIES IS LIMITED IN DURATION TO THE DURATION OF THIS LIMITED WARRANTY. PPI SHALL NOT BE LIABLE FOR THE INCIDENTAL, CONSEQUENTIAL, OR COMMERCIAL DAMAGES RESULTING FROM THE BREACH OF THIS WRITTEN WARRANTY. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts; so the above limitations or exclusions may not apply to you.
7. Your unit will be serviced on an in-warranty basis within the warranty period for the correction of warranted defects. If improper operation of your PPI product should occur, contact your Authorized PPI Dealer for assistance with the return and factory repair of your PPI product. If an Authorized PPI Dealer is not available, return the unit including your name, telephone number, return address, a copy of your sales receipt, and a description of the problem to:

Precision Power Inc.
Service Department
4829 S. 38th Street
Phoenix, AZ 85040-2964

TO RETURN PPI PRODUCTS OUT OF WARRANTY: Return the unit, postage prepaid, in the original protective carton. Please include a description of the problem and, if desired, a request for an estimate of repair costs. Unless a request for an estimate is included, the unit will be repaired as necessary. Please contact PPI Customer Service at 1-800-62-POWER for questions concerning out of warranty repair charges. Repaired unit will be returned with an itemized statement, C.O.D.