



# **CAR AUDIO INTERFACE**

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## **OWNER'S MANUAL**

MODELS:

**GFI-4400**

**GFI-4600**

## NOTICE:

Best results are obtained when GFI-4400 or GFI-4600 is installed as close to the source (cassette, CD player) as possible!

*It is vital to note the APPLICATION description! Specific adapters MUST be used for specific applications!*

### ➤ GFY ADAPTER CABLES for GFIs ◀

**APPLICATION: Connects GFI Interface to GFA-4304, GFA-4404 or GFA-4702**

Front View



**GFX-2.5 (2.5 feet)**

**GFX-20 (20 feet)**

**APPLICATION: Use to connect GFI-4600 output (via GFX-2.5 or 20) to RCA-type input of amplifier**



**APPLICATION: Converts a 4-channel ADCOM amp to a Bridged 2-channel amp (via GFX-2.5 or 20)**



# ADCOM<sup>®</sup> *car audio* OWNER'S MANUAL

**Congratulations!** And thank you for choosing ADCOM Car Audio Interfaces for your mobile sound system. Your ADCOM Car Audio Interface uses state-of-the-art engineering and components to provide a musical experience with clarity and dynamics never before achieved in a vehicle.

*PLEASE read this manual **entirely** before attempting to install this product. Due to the sophisticated nature of this equipment, we highly recommend using an authorized ADCOM Car Audio Dealer to get the maximum performance from your mobile sound system! Your warranty is affected if you choose to install your ADCOM Interface and amplifier yourself. You will only receive the full benefits of the warranty if it is professionally installed!!! Be sure to read your warranty card!*

	<b>GFI-4400</b>	<b>GFI-4600</b>
<b>Frequency Response</b>	5Hz-50KHz +0dB, -3dB	5Hz-50KHz +0dB, -3dB
<b>Input Sensitivity</b>	200mV to 2V	200mV to 2V
<b>Input Impedance</b>	20,000 Ohms	20,000 Ohms
<b>Output Impedance</b>	220 Ohms	220 Ohms
<b>THD</b>	<0.01% 20Hz-20KHz	<0.01% 20Hz-20KHz
<b>Gain</b>	0-12dB (adjustable)	0-12dB (adjustable)
<b>S/N Ratio</b>	>100 dB	>100 dB
<b>Separation</b>	>90dB	>90dB
<b>Low Pass Crossover</b>	N/A	18dB/Octave*
<b>High pass Crossover</b>	N/A	12dB/Octave*
<b>Voltage requirements</b>	10 to 15 Volts DC	10 to 15 Volts DC
<b>Weight</b>	3 lbs (1.4kg)	4 lbs (1.8kg)
<b>Dimensions in Inches</b>	4 x 7.25 x 1.6 W x L x H	4.6 x 9.25 x 1.6 W x L x H

\* Units ship with 100Hz crossover modules. Other values are available; see chart on last page.

### **THE CONCEPT:**

ADCOM Car Audio Amplifiers and Interfaces operate using "Balanced" line circuitry. It is a system of transmitting a signal over long distances through a wire and having noise canceled out electronically. In a car or truck there is noise being generated by many items just waiting to be picked up by an unsuspecting RCA type "shielded" cable. *The longer the cable, the greater the chance of introducing noise.* The shield that surrounds an RCA cable only stops a fraction of the noise, so a car is a prime area for improvements in noise reduction.

Professional audio (live concerts, recording studios, etc.) have been using balanced lines for decades; long lengths of microphone cable used in these systems demand it. If noise were to be introduced into the wire along with the signal, the "Common-Mode-Rejection" of a balanced system will cancel out the noise, while keeping the musical signal pure and true. This is the basis of ADCOM Car Audio Amplifier's input circuitry.

ADCOM Interfaces are designed to adapt the "Unbalanced RCA" cable to a "Balanced XLR" cable. In addition, there are bass equalization level controls for the input signals that can be utilized for up to 8 dB of gain centered at 30Hz. There is a preamplifier built in to increase the signal level with input sensitivity controls to facilitate interfacing with virtually any amplifier.

### **UNPACKING:**

Be sure to verify that the serial number printed on the bottom of the interface is the same as the serial number on the carton. If either number is missing or altered, you should contact ADCOM immediately at **(908) 390-1130**. Before each ADCOM Car Audio Interface leaves New Jersey, it is carefully inspected for physical imperfections and electrical performance as a routine part of ADCOM's Quality Assurance system. This is to ensure flawless performance and appearance when you receive it. After you have unpacked your interface, inspect it for physical damage. In the unlikely event that damage has occurred during shipping, a freight claim to cover shipping damage can be initiated. **THE RIGHT TO A CLAIM AGAINST A PUBLIC CARRIER CAN BE FORFEITED IF THE CARRIER IS NOT NOTIFIED PROMPTLY AND IF THE SHIPPING CARTON AND PACKING MATERIAL ARE NOT AVAILABLE FOR INSPECTION. SAVE ALL PACKING MATERIAL UNTIL THE CLAIM HAS BEEN SETTLED.**

### **MOUNTING:**

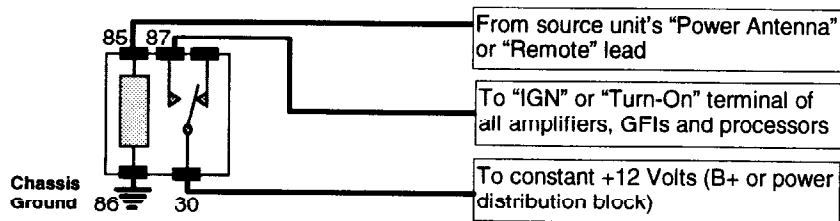
Any car audio component should be securely mounted, as it may become airborne in the event of a collision and seriously injure occupants of the vehicle. The ADCOM Interface unit may be mounted under the dash, in the glove box, under a seat or in the trunk or hatch. **IT IS STRONGLY RECOMMENDED THAT THE INTERFACE BE MOUNTED AS CLOSE TO THE SOURCE UNIT AS POSSIBLE.** The closer to the source, the shorter the RCA cables need to be, which increases the benefit of a Balanced Line.

Do not use the interface as a template to drill mounting holes as damage to the finish may result. Use the unit only to mark holes to be drilled. Be sure to avoid wires and other automotive systems when drilling the mounting holes.

### **CONNECTING POWER:**

ADCOM Car Audio interfaces are designed to be used in any 12 volt negative ground system. Before connecting your ADCOM interface to a power source, make all other connections, checking to ensure that there are no short circuits. *Always disconnect the battery ground cable while performing any installation.*

When connecting power and ground to the interface, use a wire size equivalent to the wires on the power plug connector (16 AWG). The chassis ground from the unit (black wire) should be kept as short as possible, and should be firmly connected to bare metal. Connect power (red wire) to a **SWITCHED** 12 volt source (ignition, antenna, remote turn on, etc.). Since the power supply for the Interface and the switched 12 volt is one and the same, it is strongly recommended that a "relayed" turn on lead be used (see Fig. 1). It is possible to use the relay to turn on all components in your audio system.

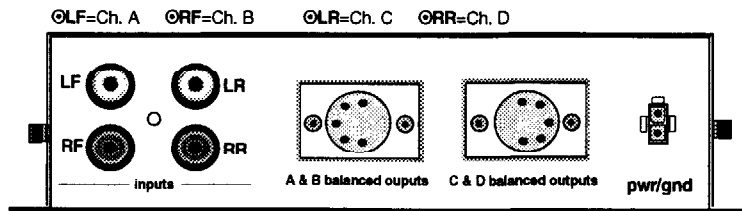


**Fig. 1 Turn-On Relay**

## **GFI-4400**

The ADCOM model GFI-4400 is designed to convert an unbalanced, RCA-type source to a balanced, XLR type line, where any noise that may enter into the cables between the GFI and the amplifier is virtually unheard by the amplifier's balanced inputs. Although high quality interconnect cables help minimize noise interference, the GFI-4400, with its balanced outputs, is the most effective and proven method of rejecting system noise.

Fig. 2 illustrates the front panel of the GFI-4400. Two pairs of RCA inputs may be used for front to rear fading, or a single input pair may be used to drive an entire system. Simply plug the source output RCAs into the interface front panel, and use the optional ADCOM XLR cables (GFX-2.5 or GFX-20) to connect the GFI-4400 to your ADCOM XLR Car Audio amplifier(s). These high quality cables are available in different lengths to accommodate installation of the GFI-4400 in the front or rear of your vehicle. If you are using an amplifier (or amplifiers) with RCA inputs - such as the ADCOM model GFA 4302 or 4402 - an optional XLR to RCA adapter (GFY-2) is available through your authorized ADCOM Car Audio dealer.

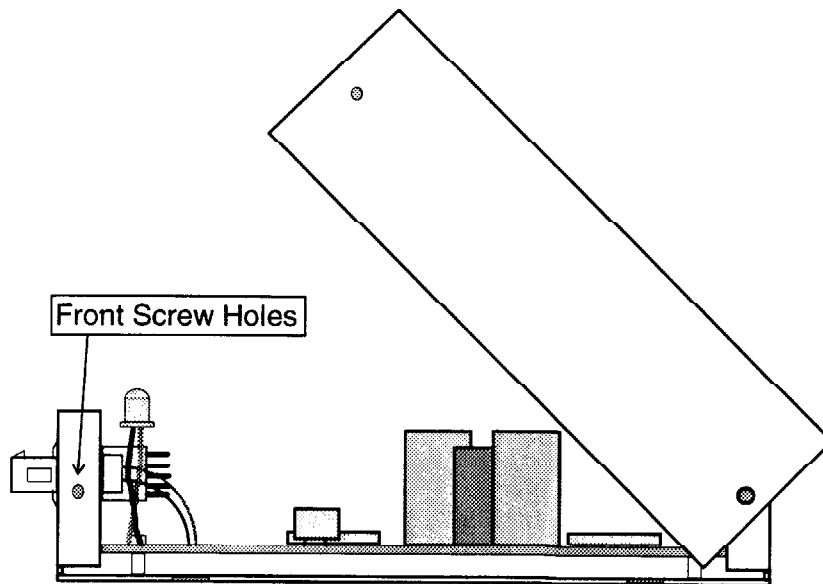


**Fig. 2 GFI-4400 Front Panel**

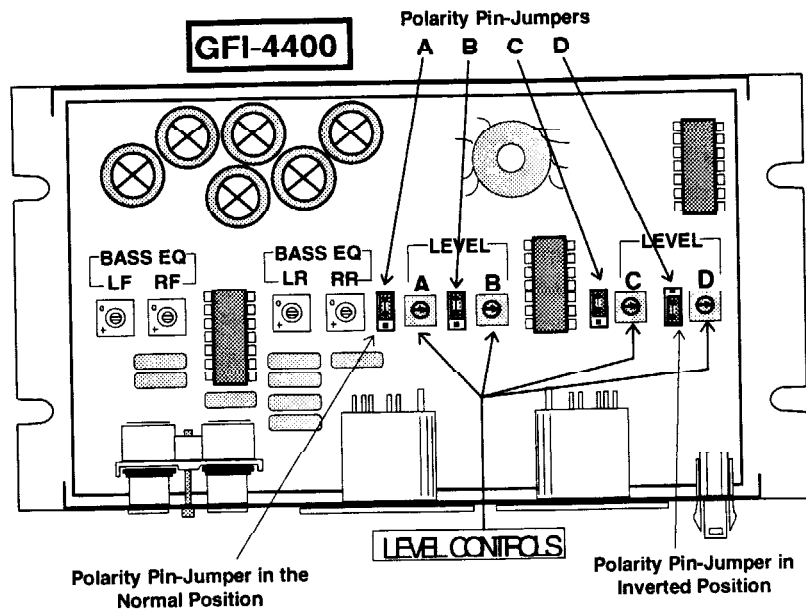
**LEVEL CONTROLS:**

The level controls of the GFI-4400 are found inside the chassis, on the main PC board. Accessing these adjustments can be made by merely removing the *front* two chassis screws and then flipping the top upward to reveal the PC board. Fig. 3 displays a GFI-4400 pivoted open.

Fig. 4 reveals the interior top view. Locate the four level controls. There is one control for each of the 4 channels. The GFI-4400 comes with the controls in the 3 O'clock position. This setting is approximately +6 dB relative to the input. Turning the control counter-clockwise will reduce the input sensitivity (require *more* input voltage for a given output voltage). Turning it clockwise will increase input sensitivity (require *less* input voltage for a given output voltage).



**Fig. 3 GFI-4400/4600 Open**



**Fig. 4 Interior of GFI-4400**

**BASS EQUALIZATION:**

Any channel may be adjusted for more bass (up to 8 dB) at a center frequency of 30 Hz. To adjust the bass EQ, there are four potentiometers directly behind the RCA inputs (see Fig. 4). These correspond with the 4 input channels, left front(LF), left rear(LR), right front(RF), right rear(RR). When the control is turned fully counter-clockwise, there is no bass gain and there is a subsonic filter engaged (-3dB at 20Hz). Turning the potentiometers clockwise increases the bass response. When turned fully clockwise, there is a gain boost of approximately 6 dB at 30 Hz.

**CONFIGURING:**

For consistency, we suggest you use channels A and B (left most 5-pin XLR) for Front Left and Right (respectively), and use channels C and D (right most 5-pin XLR) for Rear Left and Right (respectively).

Polarity (or phase) is inverted with pin-jumpers that are placed alongside the level controls of each channel. Channels are ***inverted*** with the jumpers affixed to the pins toward the front (connector side) of the PC board, with the rear pin exposed (refer back to Fig. 4).

To configure the outputs of the GFI-4400 to run 4-channel stereo, no polarity pin-jumpers need to be changed; all pin-jumpers should remain in the normal position. To see an example of this configuration, see Fig. 5.

Either pair of channels (A&B or C&D) may be bridged mono or bridged MoSt™ (simultaneous Mono/Stereo). To configure the outputs of the GFI-4400 for bridging, choose which pair of channels (A&B or C&D) will be bridged and invert the channel which will be the "Right" channel (If bridging channels A&B invert B. If C&D are to be bridged, invert D). A system that has channels A&B in the MoSt™ configuration and C&D running stereo would be implemented when a 4-channel amp is being used to run front and rear stereo speakers with a mono subwoofer. This design would allow you to fade to the front stage speakers and not lose bass level (see Fig. 6). Both pairs of channels may be bridged mono to convert a 4-channel amplifier into a 2-channel amplifier using a GFY-5 (see Fig. 7).

### 4 Channel Stereo System with GFI-4400

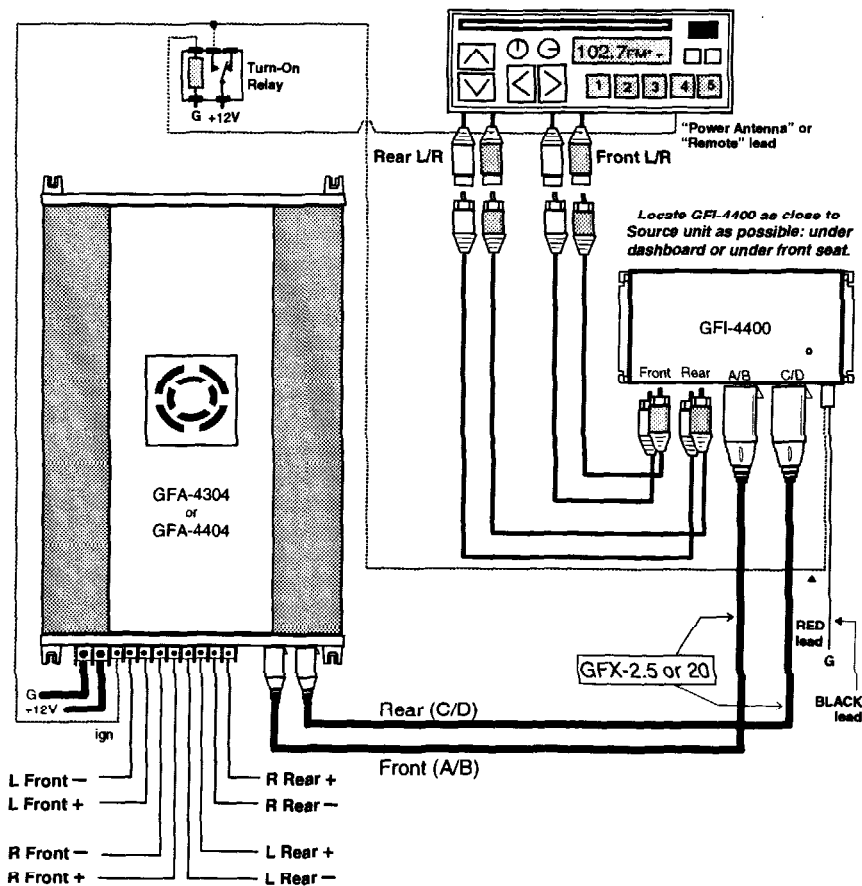
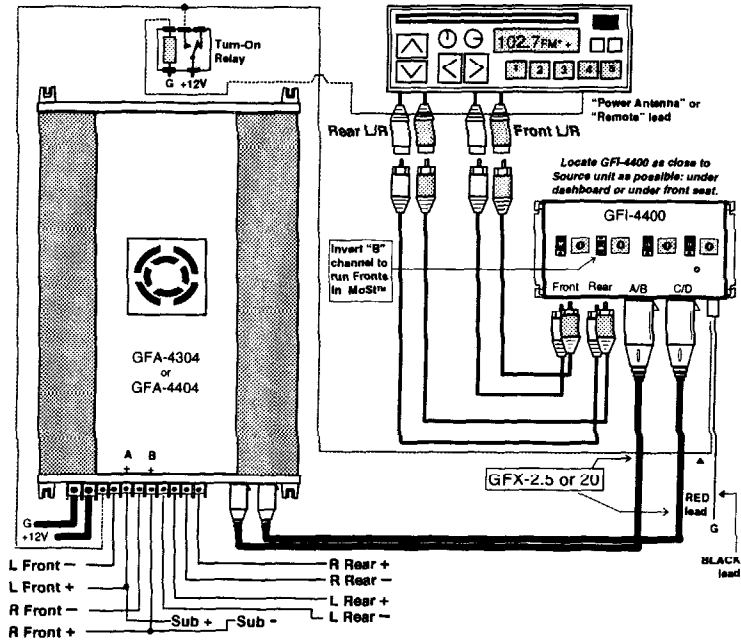


Fig. 5

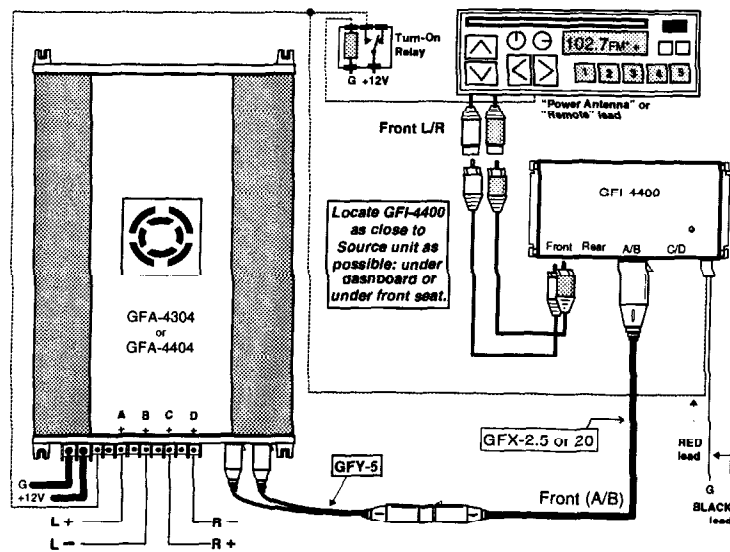


## "5" Ch. MoSt™ & Stereo with GFI-4400



**Fig. 6**

## 2-Ch. System from a 4-Ch. Amp with GFI-4400

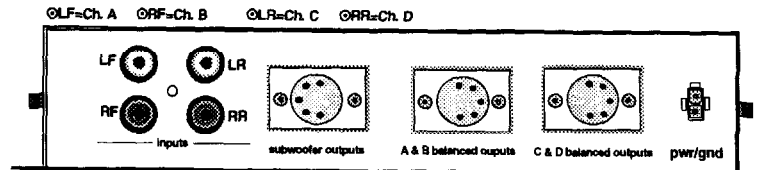


**Fig. 7**

## GFI-4600

The ADCOM model GFI-4600 is designed to convert an unbalanced, RCA-type source to a balanced, XLR-type line, where any noise that may enter into the cables between the GFI and the amplifier is virtually eliminated by the amplifier's balanced inputs. Although high quality interconnect cables help minimize noise interference, the model GFI-4600 with its balanced outputs is the most effective and proven method of rejecting system noise. In addition, the GFI-4600 incorporates a 4-channel, 2-way asymmetrical crossover. The low-pass (or Subwoofer) output is crossed over with an 18 dB/octave slope to eliminate mid bass frequencies from the subwoofer output, while the high-pass outputs (A&B and C&D) are crossed over with a 12 dB/octave slope. There are two separate 16-pin resistor-modules which determine the crossover frequency of the low pass and the high pass filters. Many resistor-module values are available from your ADCOM Car Audio Dealer, see the last page for a complete list.

Fig.8 illustrates the front panel of the GFI-4600. Two pairs of RCA inputs may be used for front to rear fading, or a single input pair may be used to drive an entire system (See Fig. 9). Simply plug the source output RCAs into the interface front panel, and use the optional ADCOM XLR cables (GFX-2.5 or GFX-20) to connect the GFI-4600 to your ADCOM Car Audio amplifier(s). These high quality cables are available in different lengths to accommodate installation of the GFI-4600 in the front or rear of your vehicle. If you are using an amplifier (or amplifiers) with RCA inputs, such as the ADCOM model GFA-4302 or 4402, an optional XLR to RCA adapter (GFY-2) is available through your authorized ADCOM Car Audio dealer.

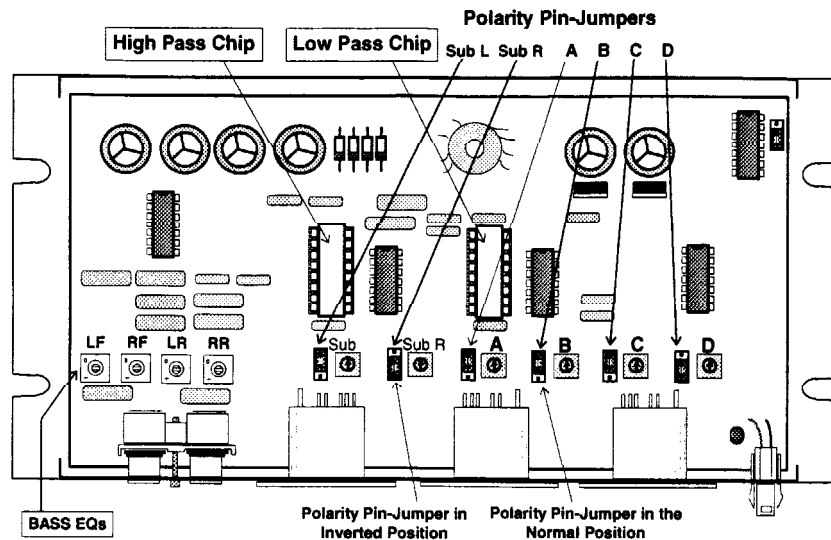


**Fig. 8** GFI-4600 Front Panel

### LEVEL CONTROLS:

The level controls of the GFI-4600 are found inside the chassis on the main PC board. Accessing these adjustments can be made by merely removing the front two chassis screws and then flipping the top upward to reveal the PC board. Fig. 3 illustrates a GFI-4600 pivoted open.

Fig. 9 reveals the interior top view. Locate the six Level controls; two controlling the subwoofer Left and Right, and the remaining four control channels A, B, C and D. The GFI-4600 comes with the controls in the 12 O'clock position. This setting is approximately +6 dB relative to the input. Turning the control counter-clockwise will reduce the input sensitivity. Turning it clockwise will increase input sensitivity.



**Fig. 9** Interior of GFI-4600

**BASS EQUALIZATION:**

Any channel may be adjusted for more bass gain (up to 8 dB) at a center frequency of 30 Hz. To adjust the level of bass gain, there are four potentiometers directly behind the RCA inputs (see Fig. 9). These correspond with the 4 *input* channels, left front(A), right front(B), left rear(C), right rear(D). When the control is turned fully counter-clockwise, there is no bass gain and there is a subsonic filter engaged (-3dB at 20Hz). Turning the potentiometers clockwise increases the bass response. When turned fully clockwise, there is a gain boost of approximately 6 dB at 30 Hz. In most applications, only the LF and HF controls will affect the bass level since the sub outputs are derived from the Front inputs only.

**CONFIGURING:**

For consistency, we suggest you use channels A and B (middle 5-pin XLR) for Front Left and Right (respectively), and use channels C and D (right most 5-pin XLR) for Rear Left and Right (respectively).

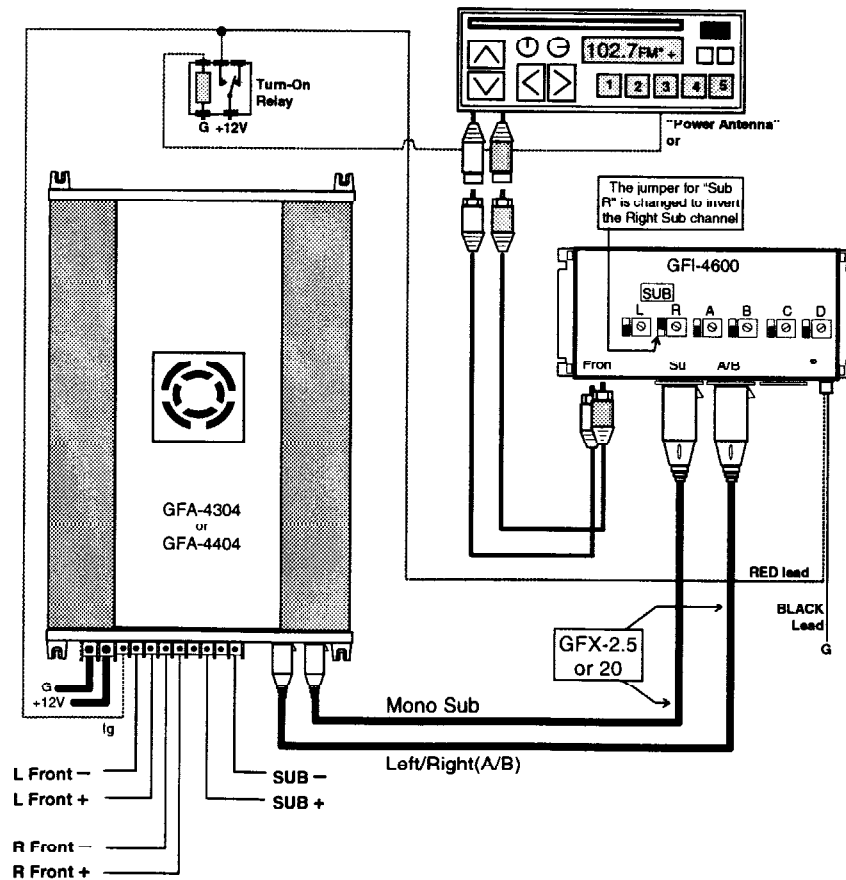
Polarity (or phase) is inverted with pin-jumpers that are placed alongside the level controls of each channel. Channels are *inverted* with the jumpers affixed to the pins toward the front (connector side) of the PC board, with the rear pin exposed (refer to Fig. 9).

To configure the outputs of the GFI-4600 to run 4-channel stereo high-pass and 2-channel stereo low pass, no polarity pin-jumpers need to be changed; all pin-jumpers will remain in-phase. To see an example of this configuration, see Fig. 9.

To configure the GFI-4600 to run 4-channel stereo high-pass and mono low-pass, invert the polarity on the "Sub R" polarity pin-jumper. When the subwoofer output is connected to a GFA-4302 or 4402 2-channel amplifier, install a GFY-2 adapter cable into the "+" inputs of the amplifier and complete the connection with a GFX-2.5 or GFX-20 XLR cable.

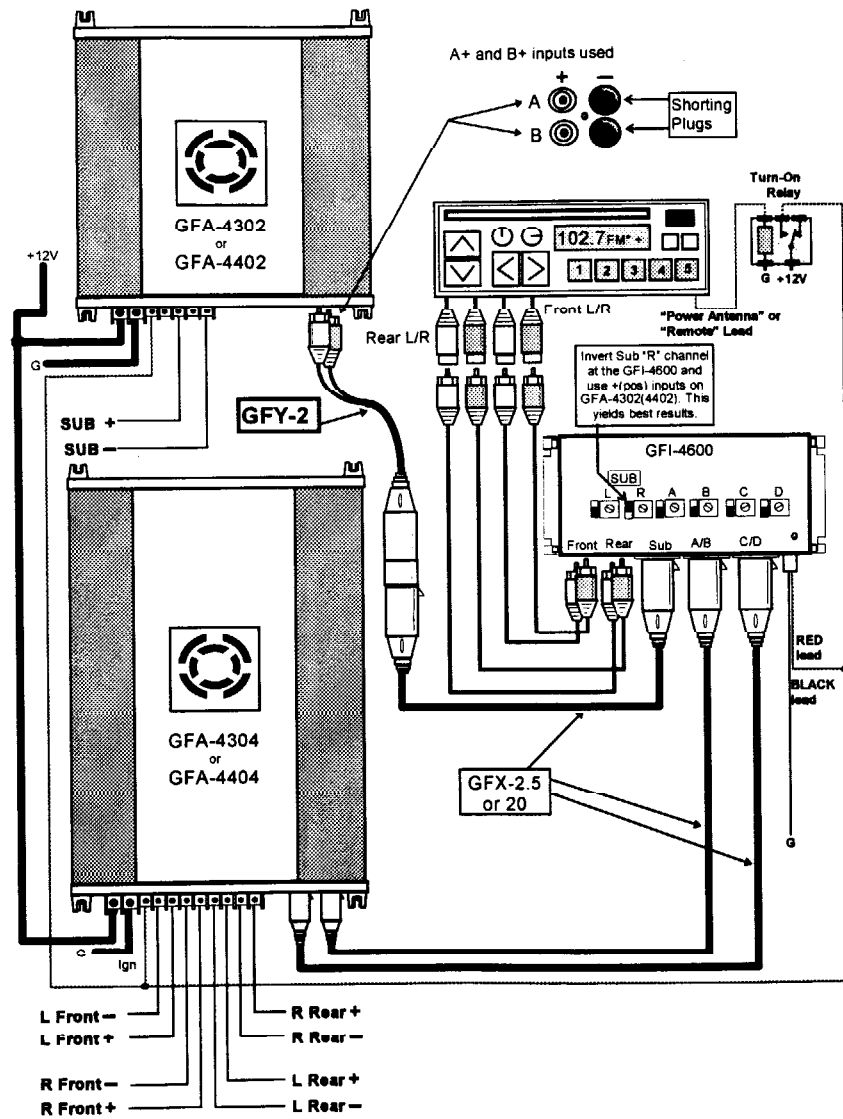
Other widely used configurations are considered in the following diagrams (labeled Fig. 10, 11 and 12). If a more complex system is planned, it is strongly suggested that you contact your Authorized Adcom Car Audio Dealer for system design.

### Front Stereo/Mono Sub (3 Ch.) with GFI-4600



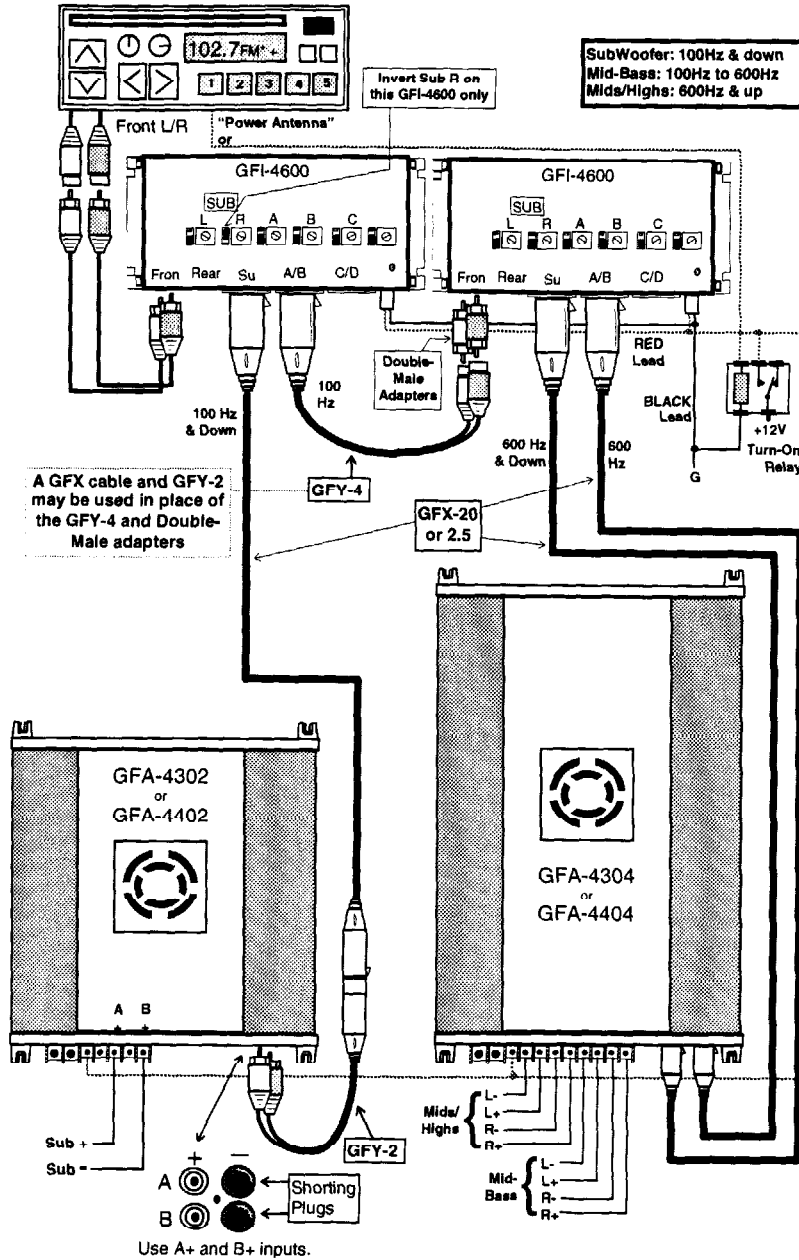
**Fig. 10**

## Multi-Amp System using XLR and RCA-type Amplifiers with GFI-4600



**Fig. 11**

## Multi-Amp System with Dual GFI-4600 as a 2-Channel, 3-Way System



**Fig. 12**

**GFI-4600 ELECTRONIC CROSSOVER  
RESISTOR-PACK VALUE CHART**

ADCOM'S PART NUMBER	MODULE VALUE	COMMON X-OVER POINT (-4.24dB)	HI-PASS X-OVER POINT (-3dB)	LO-PASS X-OVER POINT (-3dB)
GFM-12	330KΩ	12 Hz	14 Hz	11 Hz
GFM-50	82KΩ	49 Hz	56 Hz	43 Hz
GFM-60	68KΩ	59 Hz	68 Hz	52 Hz
GFM-70	56KΩ	71 Hz	83 Hz	63 Hz
GFM-85	47KΩ	85 Hz	98 Hz	75 Hz
GFM-100*	39KΩ	103 Hz	118 Hz	90 Hz
GFM-120	33KΩ	121 Hz	140 Hz	107 Hz
GFM-150	27KΩ	148 Hz	171 Hz	130 Hz
GFM-180	22KΩ	182 Hz	210 Hz	160 Hz
GFM-200	20KΩ	200 Hz	231 Hz	176 Hz
GFM-270	15KΩ	267 Hz	308 Hz	235 Hz
GFM-400	10KΩ	400 Hz	462 Hz	352 Hz
GFM-600	6.8KΩ	589 Hz	679 Hz	518 Hz
GFM-3350	1.2KΩ	3336 Hz	3850 Hz	2933 Hz

Listed values are readily available from  
an Authorized ADCOM Car Audio Dealer  
or ADCOM Parts Dept.

\*GFM-100 comes standard in GFI-4600. Additional  
GFM-100s may be ordered from Adcom Parts Dept.

**Frequency Formulas:**

$$\begin{array}{ccc}
 \boxed{\text{Lo-Pass}} & \boxed{\text{Hi-Pass}} & \boxed{\text{Common}} \\
 F = \frac{3.52 \times 10^6}{R} & F = \frac{4.62 \times 10^6}{R} & F = \frac{4.40 \times 10^6}{R}
 \end{array}$$

Where F=Crossover frequency R=Resistor Module Value



11 Elkins Road  
E. Brunswick, NJ 08816  
Phone (908) 390-1130  
Fax (908) 390-5657

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