

USAcoustics™

USA SERIES

MOSFET POWER AMPLIFIERS

OWNER'S MANUAL

Congratulations

on your selection of this **US Acoustics** USA Series Amplifier. We take pride in manufacturing our products, and you can expect your new amplifier to give you years of trouble-free service.

To make your installation as easy and reliable as possible, **please read this manual carefully before beginning.** If you need more information, your US Acoustics Dealer will be glad to help.

US AcousticsTM

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Owner's Manual

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FEATURES

POWER SUPPLIES

- **Full MOSFET power supply** employing 40 amp high-current switching devices
- **50 nanosecond high-speed diodes**
- **Latch type protection circuit:** in the event of a fault condition (either a short circuit on the speaker terminals, or DC on the speaker terminals), this protection circuit will shut down the amplifier. The amplifier must then be reset for continued operation.
- **Thermal protection circuitry** shuts down the amplifier when it reaches 85° C, and automatically resets when temperature drops to 75°C.
- **Reverse polarity protection**

AMPLIFIERS

- **Full MOSFET design**, utilizing high current MOSFETS in all output stages
- **Variable Low Pass 12 dB/octave crossover** in stereo amplifiers (High Pass in model USA 2050H)
- **Variable High and Low Pass 12 dB/octave crossovers** in 4 channel amplifiers
- **Thump-free turn on and turn off**
- **Double differential input circuits** for improved sound quality

S P E C I F I C A T I O N S

		USA2050H	USA2050	USA2075	USA2100	USA2150	USA2200F	Model 600	USA4050	USA2300F
OUTPUT POWER										
Per channel @ 4 Ohms @ 12.9v input		50Wx2CH	50Wx2CH	75Wx2CH	100Wx2CH	150Wx2CH	200Wx2CH	300Wx2CH	50Wx4CH	300Wx2CH
Per channel @ 2 Ohms @ 12.9v input		80Wx2CH	80Wx2CH	120Wx2CH	150Wx2CH	250Wx2CH	300Wx2CH	400Wx2CH	80Wx4CH	400Wx2CH
Bridged Mono @ 4 Ohms @ 12.9v input		160Wx1CH	160Wx1CH	240Wx1CH	300Wx1CH	500Wx1CH	600Wx1CH	800Wx1CH	160Wx2CH	800Wx1CH
TOTAL HARMONIC DISTORTION			LESS THAN 0.01%							
NOISE below rated output		100 dB	100 dB	102 dB	104 dB	107 dB	109 dB	109 dB	104 dB	110 dB
SLEW RATE			20 volts/microsecond							
PHASE RESPONSE			Lagging 12 Degrees at 20 kHz							
INPUT SENSITIVITY			100 mV - 2.2 Volt				100 mV - 8v	100 mV - 8v	100 mV - 2.2v	100 mV - 8v
INPUT IMPEDANCE			56 Kilo Ohm				17 Kilo Ohm	17 Kilo Ohm	56 Kilo Ohm	17 Kilo Ohm
DAMPING FACTOR			Greater than 100							
PROTECTION										
Reverse Polarity		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thermal		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Short Circuit		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D.C		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IDLE CURRENT		0.4A	0.4A	0.4A	0.6A	0.9A	1.0A	1.0A	0.6A	1.5A
FUSE RATING		10A	10A	15A	35A	35A	40A	40A	25A	60A
SIZE inches (mm)	Length	6.5 (165)	6.5 (165)	7.9 (200)	11.4 (290)	15.7 (400)	17.7 (450)	17.7 (450)	11.4 (290)	19.7 (500)
	Width	6.3 (160)	6.3 (160)	6.3 (160)	6.3 (160)	6.3 (160)	8.2 (209)	8.2 (209)	6.3 (160)	8.2 (209)
	Height	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)
WEIGHT lbs.(kg)		4.0 (1.8)	4.0 (1.8)	4.0 (1.8)	5.0 (2.27)	8.0 (3.63)	11.0 (5)	11.0 (5)	7.0 (3.2)	12.3 (5.6)

I N S T A L L A T I O N

Model 1000	USA4060	USA4080	USA6300
500Wx2CH	60Wx4CH	80Wx4CH	50Wx4CH and 50Wx2CH
700Wx2CH	90Wx4CH	120Wx4CH	75Wx4CH and 75Wx2CH
1400Wx1CH	180Wx2CH	240Wx2CH	150Wx2CH and 150Wx1CH CH 5 & 6 ONLY: 300Wx1CH
Bridged Mono @ 2 Ohms: (USA 6300 only)			
	LESS THAN 0.01%	••••••••	
110 dB	104 dB	105 dB	104 dB
	20 volts/microsecond	••••••••	
	Lagging 12 Degrees at 20 kHz	••••	
100 mV - 8v	100 mV - 8 Volt	••••••••	
17 Kilo Ohm	22 Kilo Ohm	••••••••	
	Greater than 100	••••••••	
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
1.5A	0.6A	0.7A	1.0A
60A	25A	35A	40A
19.7 (500)	11.4 (290)	11.4 (290)	15.3 (390)
8.2 (209)	6.3 (160)	8.2 (209)	8.2 (209)
1.9 (47.3)	1.9 (47.3)	1.9 (47.3)	1.9 (47.3)
12.3 (5.6)	9.0 (4.1)	7.9 (3.6)	9.0 (4.1)

1. Locate a suitable mounting location for the amplifier, making sure there is sufficient ventilation.
2. Use #8-32 screws to bolt down the amplifier.
3. Connect a #8 BLACK wire to a lug connector and bolt it securely to the amplifier barrier strip marked "GROUND" and, using the shortest possible length, connect it to the chassis of the vehicle using a suitable lug.
4. Connect a #16 wire to a lug and bolt it securely to the amplifier barrier strip marked "REM"(remote), and then connect it to the remote output of the head unit.
5. Run a #8 RED wire from the battery to the amplifier's location. Insert the supplied fuse holder close to the battery, not more than two (2) feet from the battery. Connect the other end to a lug connector, and bolt it securely to the amplifier barrier strip marked "BATT" (+12v).

Please Note:

The enclosed fuse holder should be connected as close to the battery as possible. Although the manual recommends #8 wire, the #10 wire for the fuse hold is more than adequate for the short length used.

— US Acoustics

6. Connect the speaker systems to the LEFT and RIGHT speaker outputs, taking care to observe the correct phasing (for MONO, MIXED STEREO/MONO, 4 CHANNEL and BI-AMP operation, see respective paragraphs in this manual for speaker hookup descriptions).
7. Connect a stereo signal source to the RCA jacks using high-quality shielded RCA-RCA patch cables.

S E T T I N G L E V E L C O N T R O L S

In order to optimize the performance of your sound system, it is important to set the LEVEL controls of the amplifier(s) correctly. Please follow this simple procedure:

- Insert a CD or cassette into head unit.
- Set LEVEL control on the amplifier(s) to MINIMUM (turn knob fully counterclockwise).
- Set VOLUME control on head unit to about "3 o'clock" (If your head unit uses "up/down" buttons for volume, set the "up" button to about 85% of maximum value).
- Now reset the LEVEL control on the amplifier until the required maximum listening level is achieved.

S T E R E O O P E R A T I O N

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.

NOTE: The **USA2050H**, **USA2050**, **USA2075**, **USA2100**, and **USA2150** may be switched for **LOW PASS OPERATION** (**USA2050H** may be switched for **HIGHPASS PASS OPERATION**): Slide the crossover switch to the correct position, and set the crossover control to desired frequency.

M O N O O P E R A T I O N

1. Connect all power connections as described under "Installation Instructions."
2. Connect the two RCA inputs together using a Y-adaptor, and then feed the single RCA input to a mono signal source, such as the low pass (subwoofer) output of an electronic crossover.
3. Connect the woofer(s) to the speaker terminals as follows: The positive connection of the woofer(s) to the left positive (+) output, and the negative connection of the woofer(s) to the right negative (-) output.

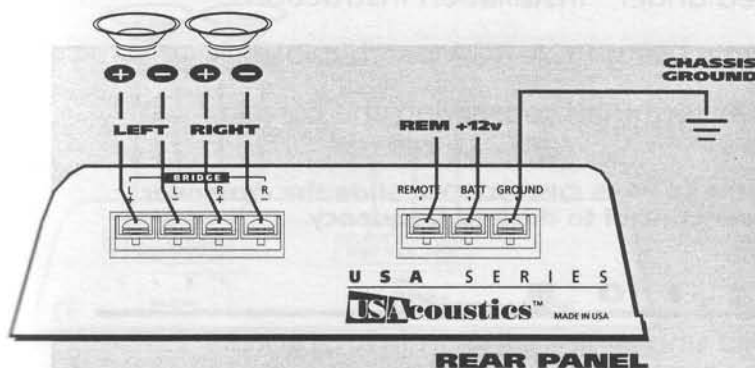
NOTE: In mono operation, the right positive (+) and left negative (-) speaker terminals have no connections made to them.

M I X E D M O N O / S T E R E O

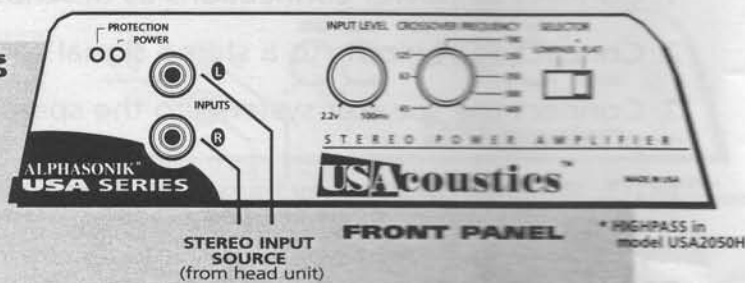
The **USA2050**, **USA2075**, **USA2100**, and **USA2150** may be used in mixed mono/stereo mode (For **USA2050H**, mixed mono usage with crossover in "FLAT" position only). This means that you may run satellite speakers on the left and right channels as in stereo operation, while simultaneously powering a mono subwoofer in "bridge mode" as in mono operation.

1. Connect all power connections as described under "Installation Instructions."
2. The satellite speakers connected to the left and right speaker terminals must not have an impedance of less than four (4) ohms each, and must also have appropriate high-pass, passive crossovers connected between them and the speaker terminals.
3. The subwoofer(s) are then connected as described in "MONO OPERATION."
4. The subwoofer(s) total impedance must not be less than eight (8) ohms and must utilize a low-pass, passive crossover as shown in diagram. Total speaker impedance presented to each channel is two (2) ohms. This is determined by the four ohm satellite in parallel with half the subwoofer impedance (8 divided by 2 = 4) of four ohms.

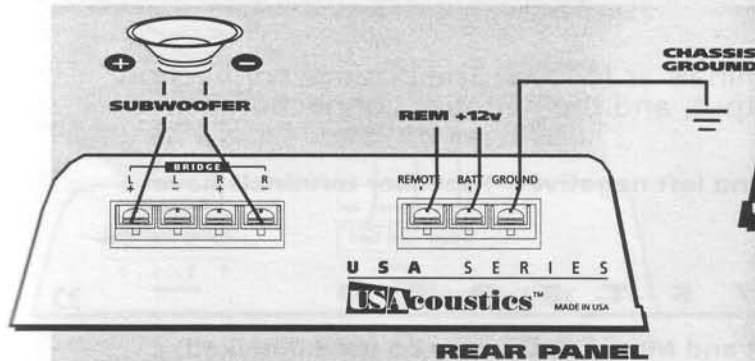
USA2050H, USA2050, USA2075, USA2100, and USA2150



REAR PANEL



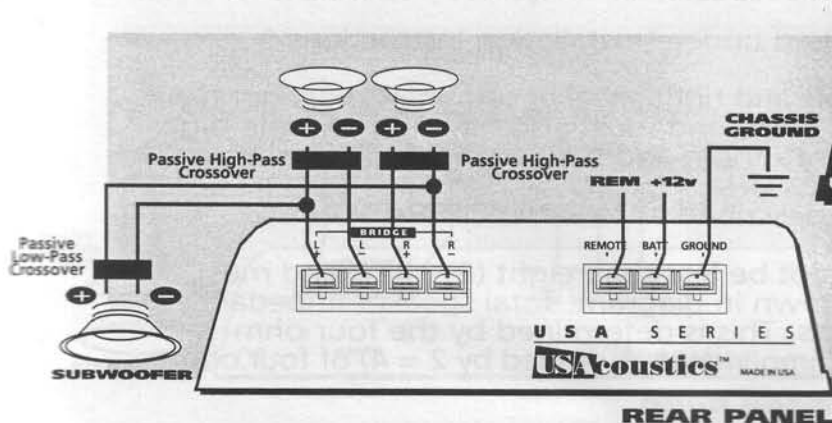
STEREO OPERATION



REAR PANEL



MONO OPERATION



REAR PANEL



MIXED MONO/STEREO OPERATION

NOTE: For model USA2050H, Mixed Mono mode only applies when the Crossover Selector switch is set to "FLAT."

S T E R E O O P E R A T I O N

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.

NOTE: These amplifiers may be switched for **HIGHPASS PASS OPERATION**: Slide the crossover switch to the correct position, and set the crossover control to desired frequency.

M O N O O P E R A T I O N

1. Connect all power connections as described under "Installation Instructions."
2. Connect the two RCA inputs together using a Y-adaptor, and then feed the single RCA input to a mono signal source, such as the low pass (subwoofer) output of an electronic crossover.
3. Connect the woofer(s) to the speaker terminals as follows: The positive connection of the woofer(s) to the left positive (+) output, and the negative connection of the woofer(s) to the right negative (-) output.

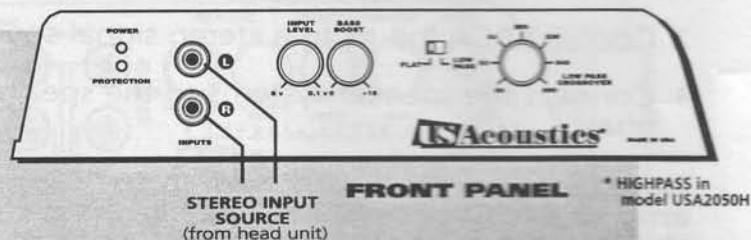
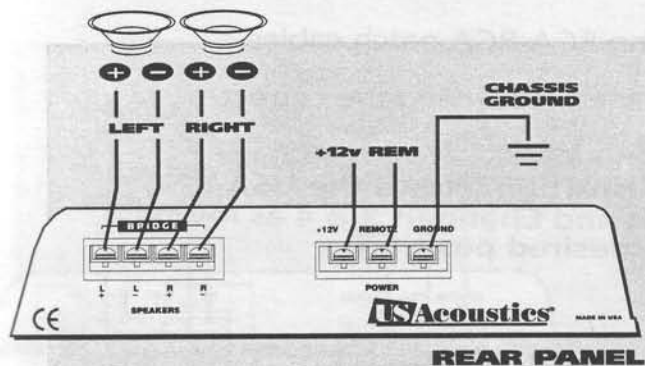
NOTE: In mono operation, the right positive (+) and left negative (-) speaker terminals have no connections made to them.

M I X E D M O N O / S T E R E O

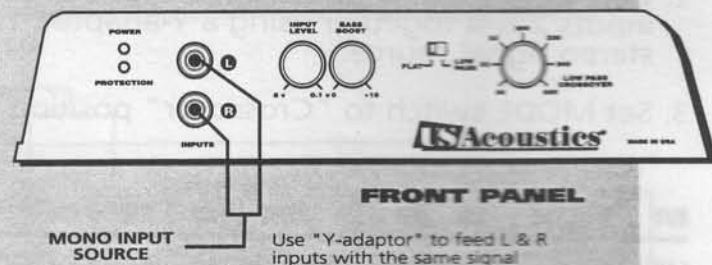
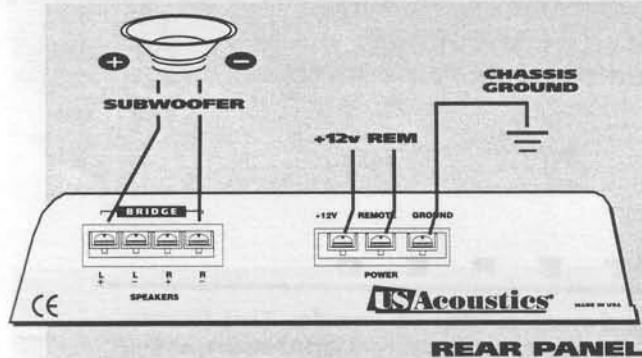
Alphasonik USA2200F, Model 600, USA2300F and Model 1000 may be used in mixed mono/stereo mode. This means that you may run satellite speakers on the left and right channels as in stereo operation, while simultaneously powering a mono subwoofer in "bridge mode" as in mono operation.

1. Connect all power connections as described under "Installation Instructions."
2. The satellite speakers connected to the left and right speaker terminals must not have an impedance of less than four (4) ohms each, and must also have appropriate high-pass, passive crossovers connected between them and the speaker terminals.
3. The subwoofer(s) are then connected as described in "MONO OPERATION."
4. The subwoofer(s) total impedance must not be less than eight (8) ohms and must utilize a low-pass, passive crossover as shown in diagram. Total speaker impedance presented to each channel is two (2) ohms. This is determined by the four ohm satellite in parallel with half the subwoofer impedance ($8 \div 2 = 4$) of four ohms.

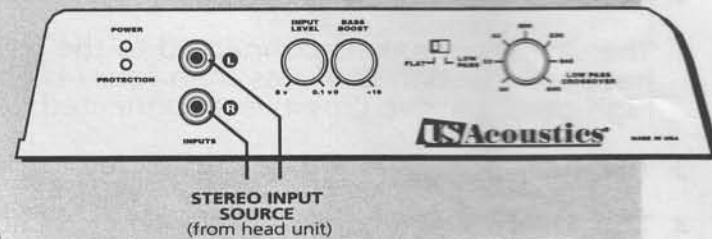
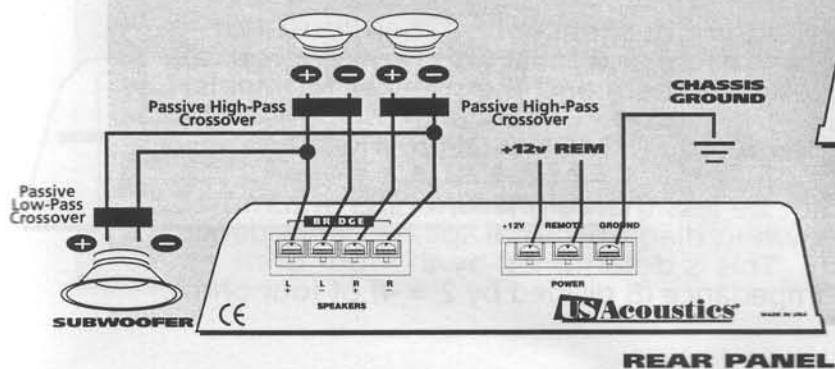
USA2200F, Model 600, USA2300F and Model 1000



STEREO OPERATION



MONO OPERATION



MIXED MONO/STEREO OPERATION

USA 4050 4 - CHANNEL AMPLIFIER

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.

Note: Setting the MODE switch to "Crossover" position allows the USA4050 amp to use Channels 1 & 2 as highpass channels and Channels 3 & 4 as lowpass channels. Adjust each frequency control to the desired position.

B I - A M P O P E R A T I O N

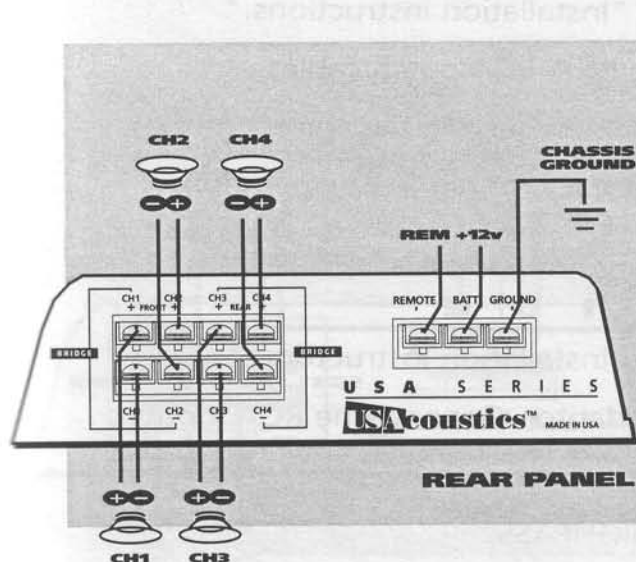
1. Connect all power connections as described under "Installation Instructions."
2. Connect the RCA inputs 1 & 3 together using a Y-adaptor. Connect the RCA inputs 2 & 4 together using a Y-adaptor. Then feed these RCA inputs to a stereo signal source.
3. Set MODE switch to "Crossover" position.

M I X E D M O N O / S T E R E O

USA-Series amplifier USA4050 may be used in mixed mono/stereo mode. This means that you may run satellite speakers on the left and right channels as in stereo operation, while simultaneously powering a mono subwoofer in "bridge mode" as in mono operation.

1. Connect all power connections as described under "Installation Instructions."
2. The satellite speakers connected to the left and right speaker terminals must not have an impedance of less than four (4) ohms each, and must also have appropriate high-pass, passive crossovers connected between them and the speaker terminals.
3. The subwoofer(s) are then connected as described in "MONO OPERATION."
4. The subwoofer(s) total impedance must not be less than eight (8) ohms and must utilize a low-pass, passive crossover as shown in diagram. Total speaker impedance presented to each channel is two (2) ohms. This is determined by the four ohm satellite in parallel with half the subwoofer impedance ($8 \text{ divided by } 2 = 4$) of four ohms.

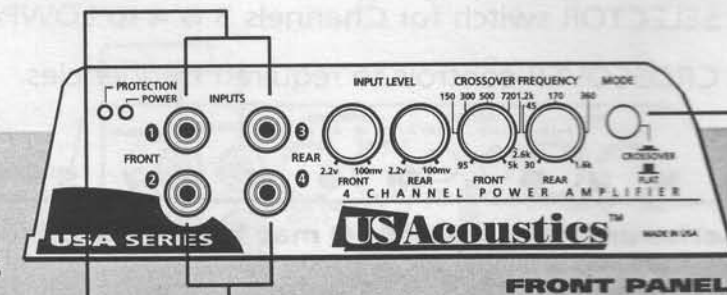
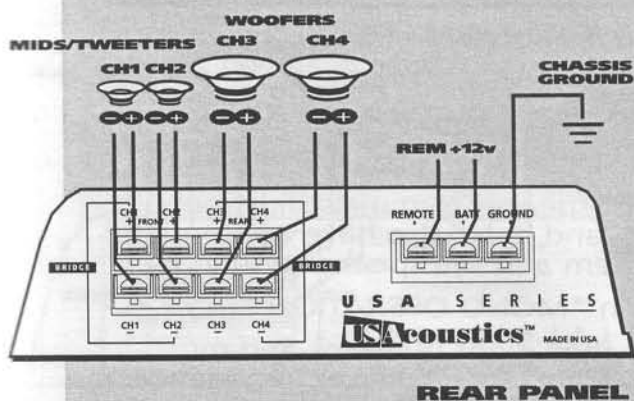
USA 4050



from FRONT and
REAR OUTPUTS of
HEAD UNIT

MODE SWITCH SET
TO "FLAT"
("OUT" POSITION)

4-CHANNEL OPERATION



from STEREO OUTPUTS
of HEAD UNIT

MODE SWITCH SET
TO "CROSSOVER"
("IN" POSITION)

BI-AMP OPERATION

USA 4060 4 - CHANNEL AMPLIFIER

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.
4. Set CROSSOVERS to HIGHPASS, or to a higher frequency for highpass operation.

B I - A M P O P E R A T I O N

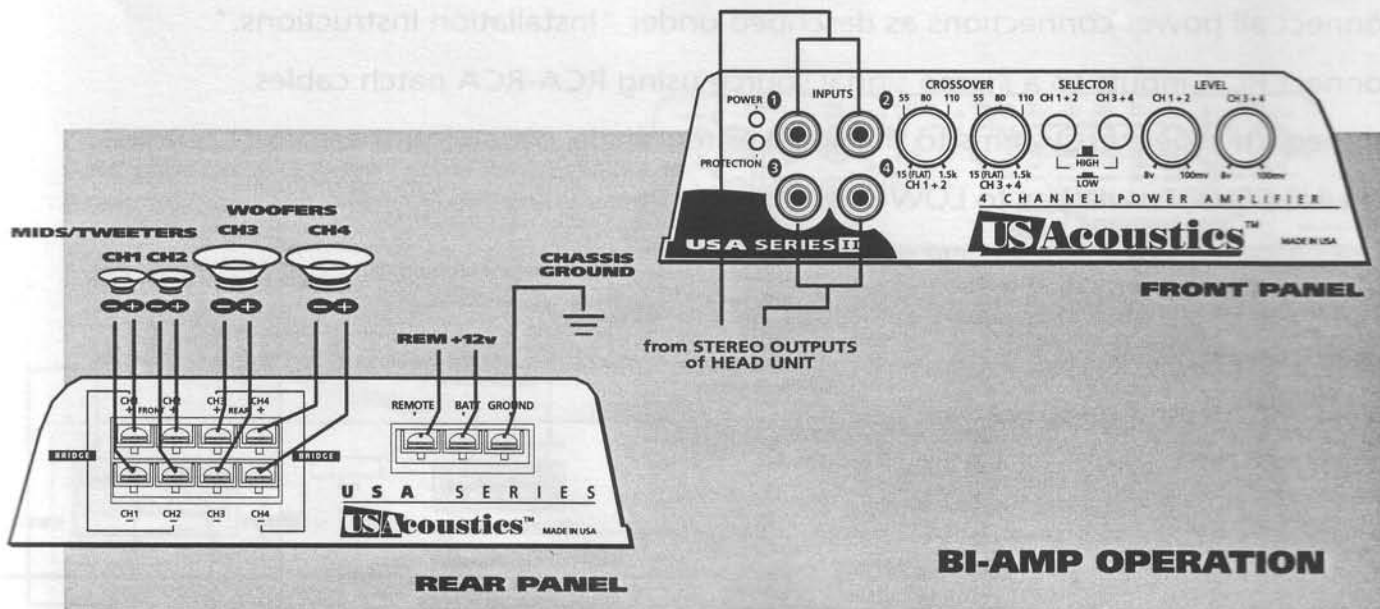
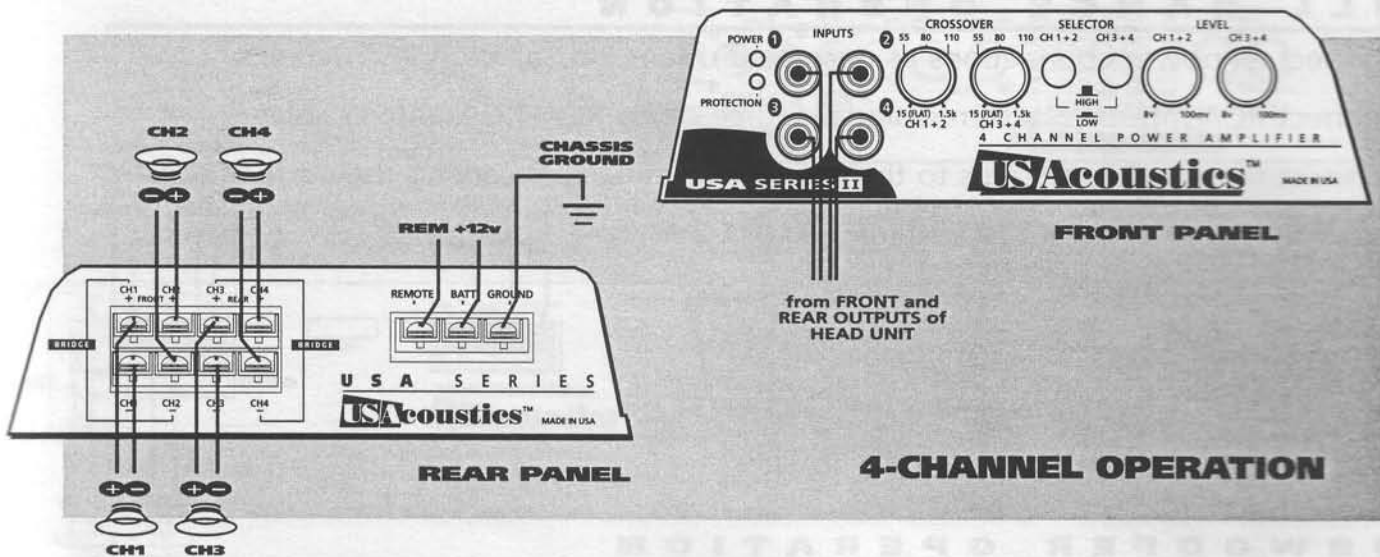
1. Connect all power connections as described under "Installation Instructions."
2. Connect the RCA inputs 1 & 3 together using a Y-adaptor. Connect the RCA inputs 2 & 4 together using a Y-adaptor. Then feed these RCA inputs to a stereo signal source.
3. Set SELECTOR switch for Channels 1 & 2 to FLAT/HIGHPASS.
4. Set SELECTOR switch for Channels 3 & 4 to LOWPASS.
5. Set CROSSOVER controls to required frequencies.

M I X E D M O N O / S T E R E O

USA-Series amplifier USA4060 may be used in mixed mono/stereo mode. This means that you may run satellite speakers on the left and right channels as in stereo operation, while simultaneously powering a mono subwoofer in "bridge mode" as in mono operation.

1. Connect all power connections as described under "Installation Instructions."
2. The satellite speakers connected to the left and right speaker terminals must not have an impedance of less than four (4) ohms each, and must also have appropriate high-pass, passive crossovers connected between them and the speaker terminals.
3. The subwoofer(s) are then connected as described in "MONO OPERATION."
4. The subwoofer(s) total impedance must not be less than eight (8) ohms and must utilize a low-pass, passive crossover as shown in diagram. Total speaker impedance presented to each channel is two (2) ohms. This is determined by the four ohm satellite in parallel with half the subwoofer impedance ($8 \div 2 = 4$) of four ohms.

USA 4060



USA4080 4 - CHANNEL AMPLIFIER

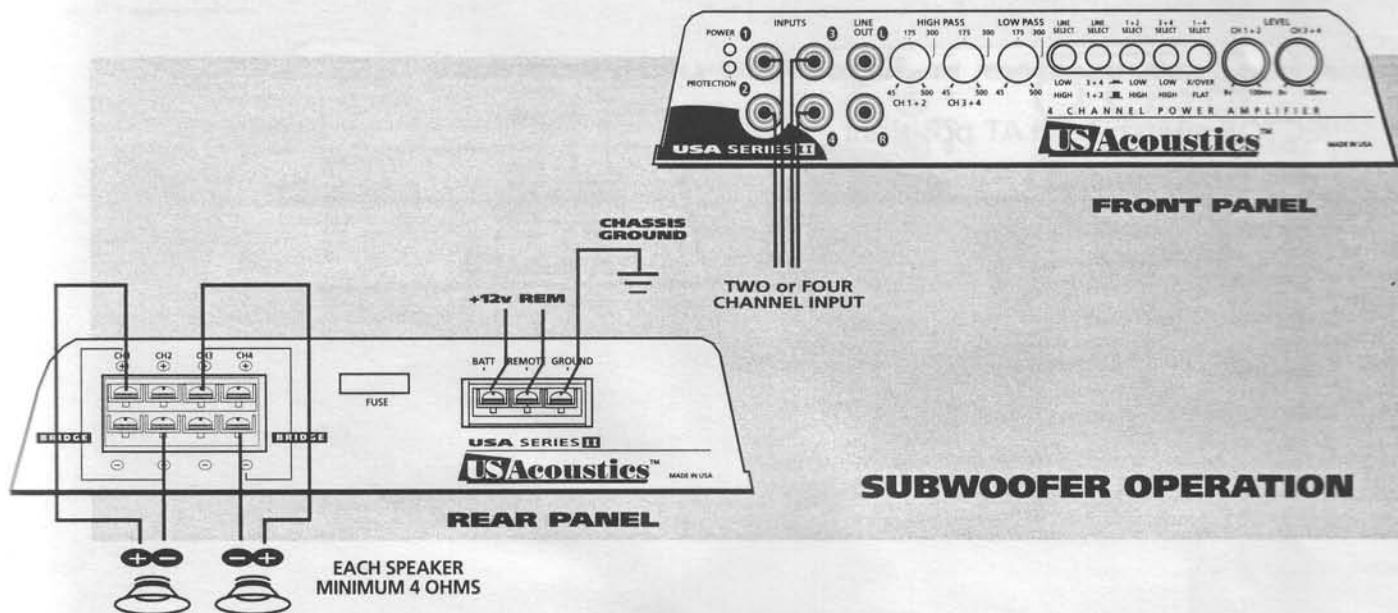
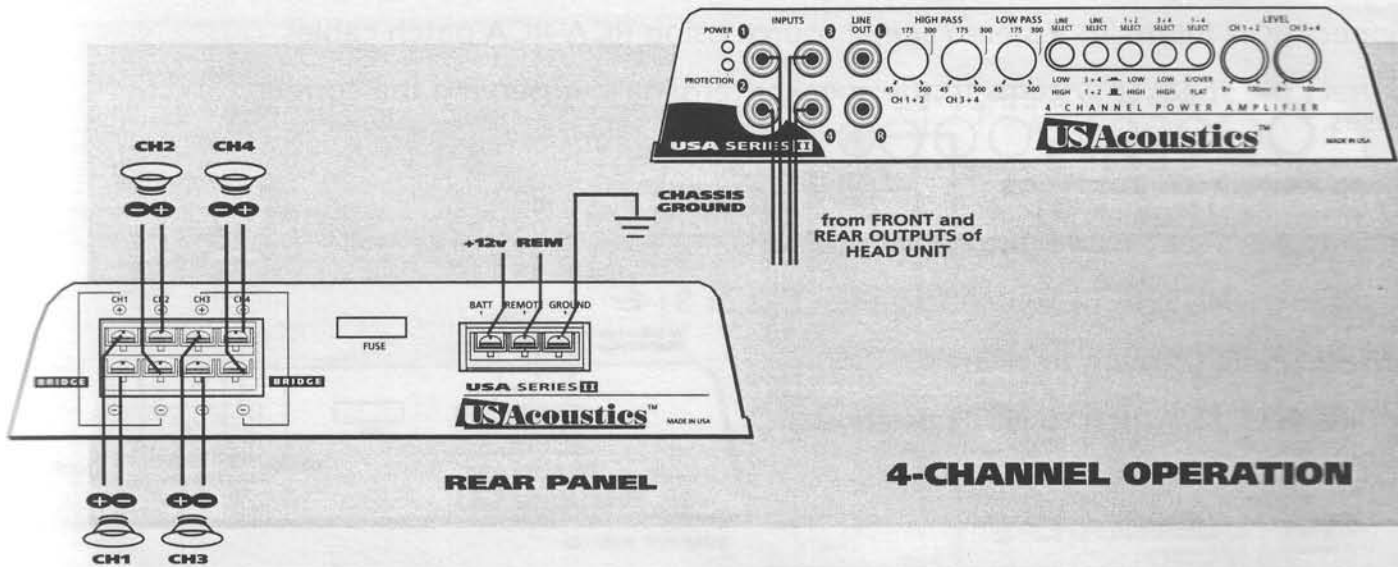
FULL RANGE OPERATION

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.
4. Set LINE SELECT switches to either HIGH or LOW.
5. Set 1+2 SELECT switch to either HIGH or LOW.
6. Set 3+4 SELECT switch to either HIGH or LOW.
7. Set 1+4 SELECT switch to FLAT – **IMPORTANT!**
8. The USA4080 now operates in FULL RANGE.

SUBWOOFER OPERATION

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.
4. Set LINE SELECT switches to LOW or HIGH.
5. Set 1+2 SELECT switch to LOW position.
6. Set 3+4 SELECT switch to LOW position.
7. Set 1+4 SELECT switch to X/OVER.
8. All four channels are now in LOWPASS operation.

USA 4080



USA 4080 5-CHANNEL BI-AMP OPERATION

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.

USA4080 AMPLIFIER SETTINGS

4. Set first LINE SELECT switch to LOW position.
5. Set second LINE SELECT switch to either 1+2 or 3+4.
6. Set 1+2 SELECT switch to HIGH position.
7. Set 3+4 SELECT switch to HIGH position.
8. Set 1+4 SELECT switch to X/OVER.

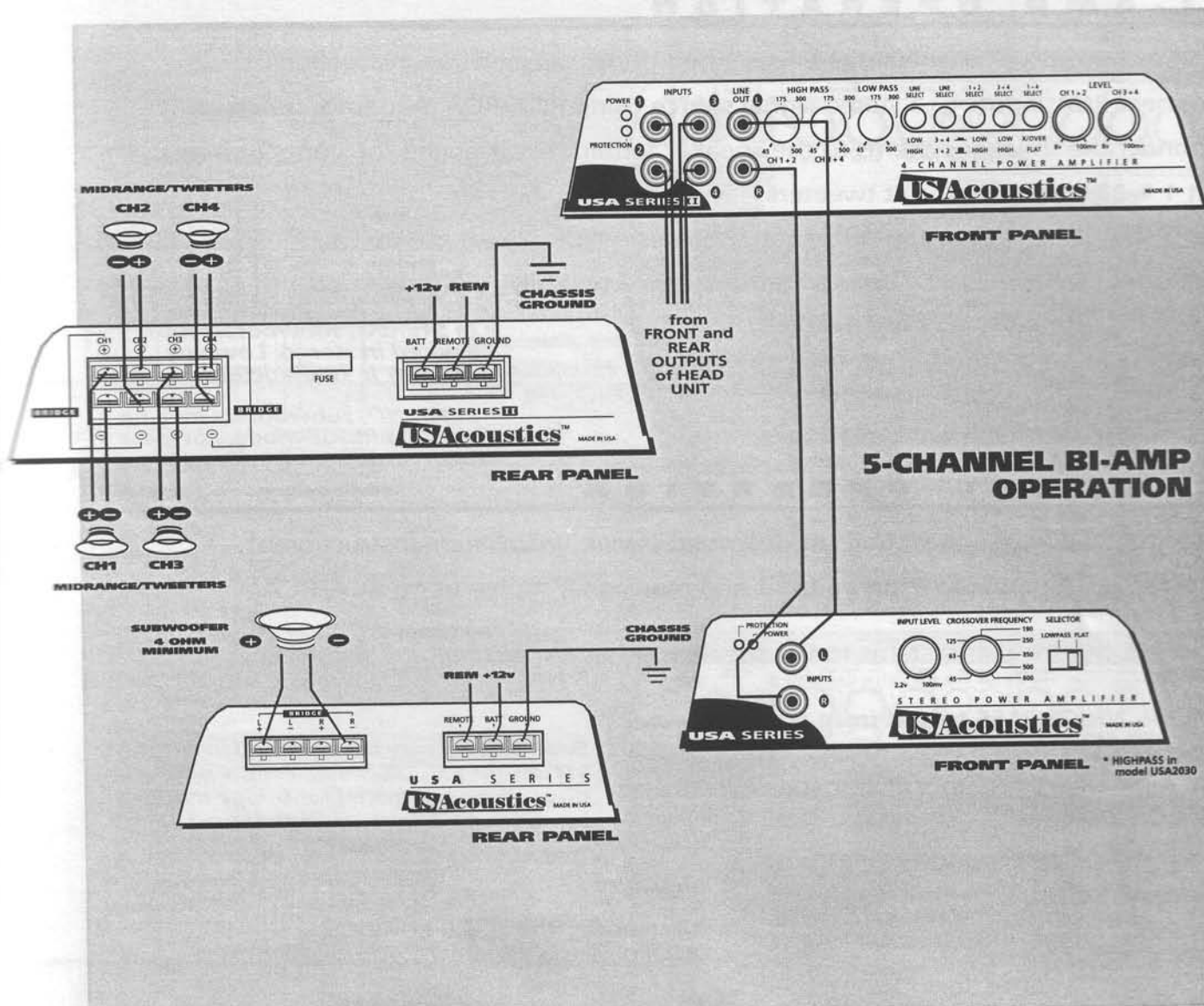
USA2050, 2075, 2100, 2150 AMPLIFIER SETTINGS

9. Set SELECTOR switch to FLAT position.

USA2200F, Model 600, USA2300F, Model 1000 AMPLIFIER SETTINGS

9. Set SELECTOR switch to FLAT position.

USA4080



USA 6300 6-CHANNEL AMPLIFIER

TRI-AMP OPERATION

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo signal source using RCA-RCA Y-adaptor patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.
4. Set 1 + 2 HIGHPASS to suit tweeters – typically set at 4-5 kHz.
5. Set 3 + 4 HIGHPASS to suit midrange speakers – typically set at 100 Hz.
6. Set 3 + 4 LOWPASS to suit midrange speakers – typically set at 4-5 kHz.
7. Set 3 + 4 MODE switch to "3 WAY."
8. Set 5 + 6 MODE switch to either STEREO or MONO. ◀
9. Set 5 + 6 LOWPASS to about 100 Hz.

• In STEREO, subwoofers must be wired in stereo. Lowpass crossover is 12 dB/octave.

• In MONO, subwoofers may be wired in BRIDGE mode. Lowpass crossover is then 24 dB/octave.

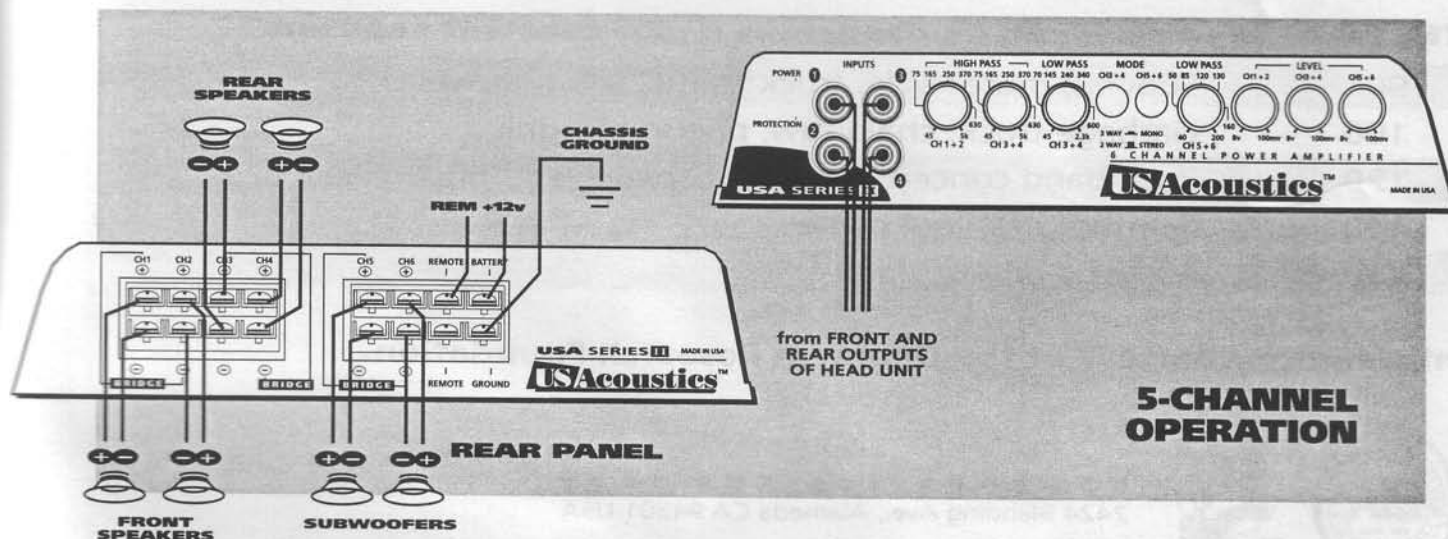
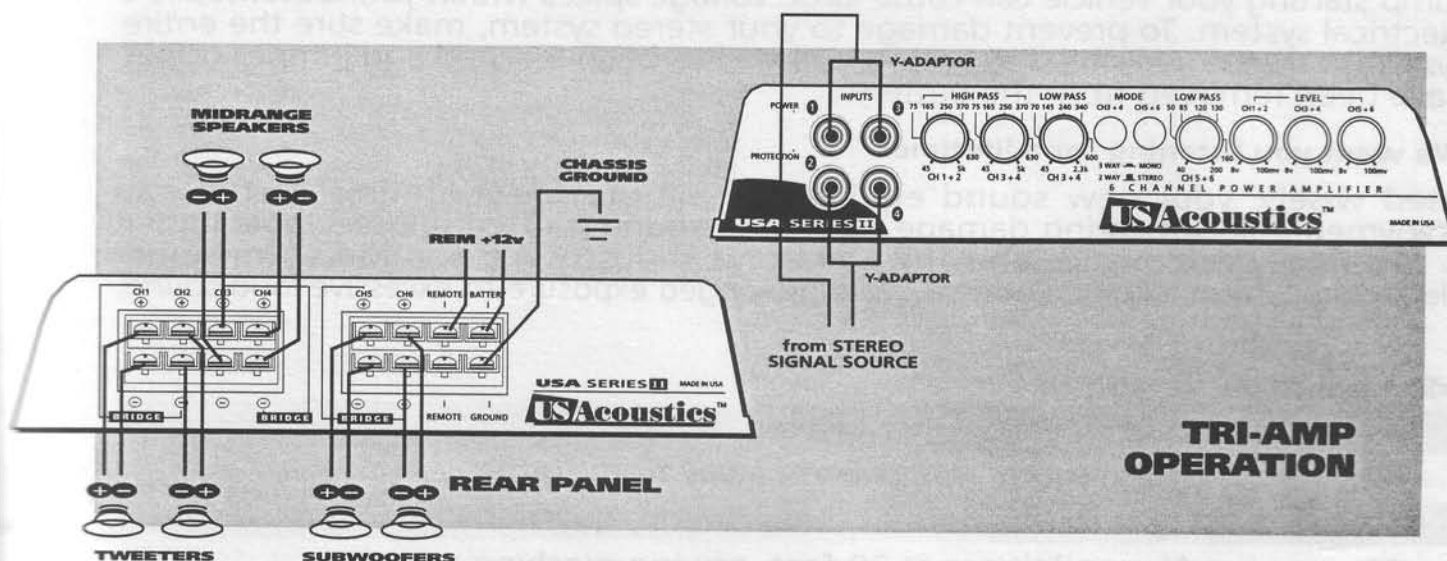
5-CHANNEL OPERATION

1. Connect all power connections as described under "Installation Instructions."
2. Connect RCA inputs to a stereo front and rear signal source using RCA-RCA patch cables.
3. Connect the speaker systems to the speaker terminals, observing the correct phases.
4. Set 1 + 2 HIGHPASS to suit front speakers – typically set at 100 Hz.
5. Set 3 + 4 HIGHPASS to suit rear speakers – typically set at 100 Hz.
6. 3 + 4 LOWPASS is inoperative.
7. Set 3 + 4 MODE switch to "2 WAY."
8. Set 5 + 6 MODE switch to MONO. ◀
9. Set 5 + 6 LOWPASS to suit subwoofers – typically set at 100 Hz.
10. Set LEVEL controls to suit.

Subwoofer(s) may be connected in either STEREO or BRIDGE mode. Follow wiring diagram on rear panel for bridge mode connections. Minimum impedance is 2 Ohms in bridge mode.

In this mode, the 5 + 6 Lowpass crossover has a slope of 24dB/octave.

USA 6300



CAUTION!

Jump starting your vehicle can cause large voltage spikes within your automobile's electrical system. To prevent damage to your stereo system, make sure the entire system is shut down until full battery charge has been reached and jumper cables have been removed from the battery.

We want you listening for a lifetime!

Used wisely, your new sound equipment will provide a lifetime of fun and enjoyment. Since hearing damage from loud sound is often undetectable until it is too late, USAcoustics and the Electronic Industry Association's Consumer Electronics Group recommend you avoid prolonged exposure to excessive loud sound.

dB level	example
30	Quiet library, soft whispers
40	Living room, refrigerator, away from traffic
50	Light traffic, normal conversation, quiet office
60	Air conditioner at 20 feet, sewing machine
70	Vacuum cleaner, hair dryer, noisy restaurant
80	Average city traffic, garbage disposals, alarm clock at 2 feet

The following noises can be dangerous under constant exposure

90	Subway, motorcycle, truck traffic, lawn mower
100	Garbage truck, chain saw, pneumatic drill
120	Rock band concert in front of speakers, thunderclap
140	Gunshot blast, jet plane
180	Rocket launching pad

Information courtesy of the Deafness Research Foundation.



USAcoustics Company

2424 Blanding Ave., Alameda CA 94501 USA

CAUTION

Installing your vehicle can cause a fire hazard. Please read the instructions carefully. To prevent damage to your stereo system, make sure the entire system is shut down before the stereo is installed. The stereo and amplifier cables have been removed from the factory.

We want you listening for a lifetime.

Used wisely, your new stereo system will provide a lifetime of fun and enjoyment. Since hearing damage from loud sound is often undetectable until it is too late, USAcoustics, an ISO International Industry Association's Consumer Electronics Group, has taken the extra step to ensure to excessive loud sound.

dB level

Example

40

14 in. from refrigerator when it runs

60

At 100 ft. from a 20 ft. moving machine

80

Average city traffic, garbage disposal, alarm clock at 2 feet

The following noise level measurements are for reference only.

100

At 100 ft. from a 20 ft. moving machine

120

At 100 ft. from a 20 ft. moving machine

USAcoustics™

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