

RUBICON

Angina
A4

Power Amplifiers

Owner's Manual
and
Installation Guide



Conaratuations!

You now own a Soundstream **RUBICON** amplifier, the product of an uncompromising design and engineering philosophy. Your Soundstream **RUBICON** amplifier will outperform any other amplifier in the world.

To maximize the performance of your system, we recommend that you thoroughly acquaint yourself with its capabilities and features. Please retain this manual and your sales receipt for future reference.

Soundstream amplifiers are the result of American innovation and craftsmanship with the highest quality control standards. When properly installed, they will provide you with many years of listening pleasure. Should your amplifier ever need service or replacement due to theft, please record the following information which will help protect your investment.

Model and Serial # _____

Dealer's Name _____

Date of Purchase _____

Installation Shop _____

Installation Date _____

CAUTION!

Prolonged listening at high levels may result in hearing loss. Even though your new Soundstream Rubicon amplifier sounds better than anything you've ever heard, exercise caution to prevent hearing damage.

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Design features of the Anaina

- ◆ **SLA/SH™** (Speaker Load Adapting / Subwoofer Hyper-Efficient) This new dual function technology currently operates in two different ways in different models. In subwoofer applications the power supply tracks the incoming audio signal and increases or decreases its own voltage level to mirror the input. This design results in enormous low impedance, low frequency stability and maximum efficiency, since no power is wasted maintaining an unnecessarily high voltage level in the power supply.
- ◆ **Trident™ Protection Topology** provides three types of protection:
 1. Output protection against short circuits or improper loads.
 2. Ground fault detection: Shuts down the amplifier when a significant voltage (>5 Volts) fluctuation occurs between electrical (turn-on lead) and battery ground.
 3. Thermal Protection: Puts the amplifier into shutdown in extreme thermal conditions.
- ◆ **Hawkins Bass Control™** provides a focused subwoofer boost (0-6dB at 45Hz) and routes otherwise wasted amplifier power back to the audible bandwidth.
- ◆ **Harmonic Bass Alignment™** The 2nd and 3rd order harmonic peaks are critically aligned to fundamental peaks at low frequencies. This produces tighter, more accurate bass reproduction.
- ◆ **Drive Delay II™** Amplifier section powers up 2 to 3 seconds after the power supply eliminating turn-on pops. Turn off process is reversed: Amplifier section turns off first, followed by the power supply.
- ◆ **Chassisink™** All transistors are ideally located and sandwiched between the circuit board and the heatsink to provide cool efficient amplifier operation.
- ◆ **Differentially Balanced RCA Input** eliminates ground loop related noise in the audio path.
- ◆ **Variable Crossover Network** 12dB/octave low pass filter that is selectable at 60, 80 or 100Hz.
- ◆ **Symmetrical Discrete Balanced Class A Drive Board** auto-adjusts for linear performance while driving low impedance loads.

Design Features of the Anaina

- ◆ **High Level Input** with terminal block connector will accept a speaker level input. This allows the user to hook this amplifier up to any factory headunit.
- ◆ **Auto Turn On** allows the amplifier to turn on without the use of a remote turn on wire, when the amplifier is using the high level inputs.
- ◆ **Remote Wire Output** provides a +12 volt output to turn on another amplifier.
- ◆ **Line Level Output** will allow the use of another Soundstream amplifier to run the front speakers, while still retaining the factory head unit. This option is only available when the high level inputs are used.

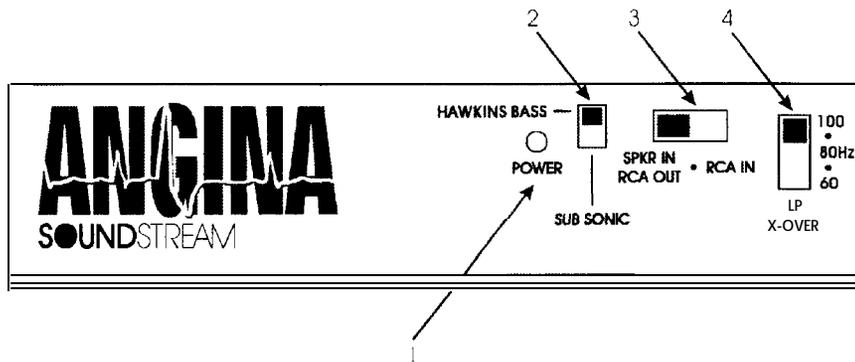
Design Features of the A4

- ◆ **RUBI™ Power Supply** (Rapid-Use Branched Impulse) Our new power supply eliminates “power sags” during low frequency reproduction by rapidly increasing the duty cycle, stabilizing the power supply and allowing it to deliver the power required when reproducing low frequencies. Also, greater reserve gate power is now stored for low voltage conditions that occur during extreme conditions.
- ◆ **STACT™** (Stabilized Apex Current Topology) Reduces power supply stress by 50%. Use of inverted channels usually degrades the stereo image due to phase reversal of even order harmonic distortion that occurs between the inverted channels. In the STACT design inversion is done at the power amplifier drive stage. Since the fully symmetrical power amplifier produces no even harmonic distortion itself and all preamp circuitry (which does produce even harmonics) is run completely in phase, no even harmonic distortion phase reversal occurs.
- ◆ **Trident™ Protection** Three types of protection for RUBICON amplifiers:
 1. Output protection against short circuits or improper loads.
 2. Ground fault detection shuts down the amplifier when a significant (5 volt or greater) voltage fluctuation occurs between audio ground and battery ground.
 3. Thermal protection will shut the amplifier down in extreme thermal conditions.
- ◆ **Hawkins Bass Control** Provides focused subwoofer boost and routes wasted subsonic power to the audible bandwidth. The A4 contains the fixed Hawkins Bass Control which allows you to boost bass 6dB at 45Hz. A built-in subsonic filter at 45Hz helps protect the speakers.
- ◆ **Harmonic Bass Alignment™** The 2nd and 3rd order harmonic peaks are critically aligned to fundamental peaks at low frequencies. This produces tighter, more accurate bass reproduction.
- ◆ **Drive Delay II Muting™** Amplifier section now powers up 2 - 3 seconds after power supply, eliminating turn on pops. Turn off process is reversed. Amplifier section turns off first, followed by power supply.
- ◆ **Dynamically Optimized Power Grid™** Power grid is now evenly distributed between primary and secondary power supplies, providing greater dynamics and improved RF filtering.

Design Features of the A4

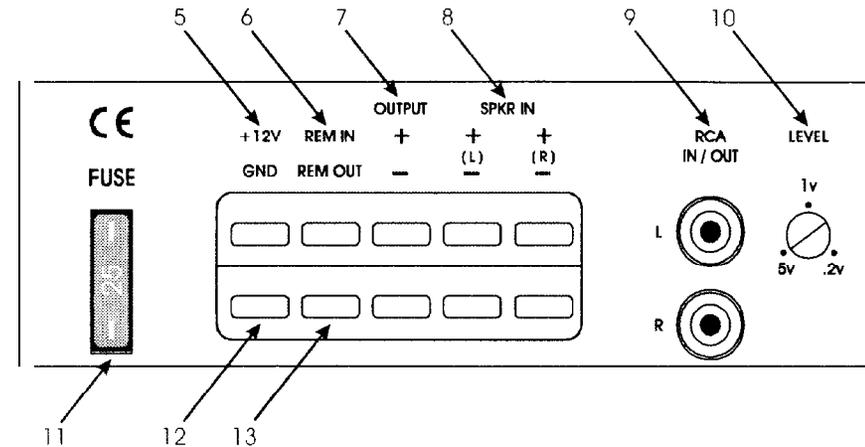
- ◆ **Chassisink™** All transistors are sandwiched between the circuit board and the heatsink to provide cool efficient amplifier operation in a smaller package.
- ◆ **Continuously Variable Lowpass Crossover Networks** 12dB/oct low pass crossover variable from 50 to 220Hz.
- ◆ **Built-in Staggered S.I.P. Crossover Networks** Built-in high pass electronic crossover is designed to send high pass information to the amplifier with a 12dB/oct slope.
- ◆ **Flexible Input Level Control** 200mV to 5V input sensitivity. Stereo level control allows user to optimize system level control.
- ◆ **Symmetrical Discrete Balanced Class A Drive Boards** Auto-adjusts for linear performance in low impedance loads.

Callouts for the Anaina Top Panel



1. **Power LED** - Indicates amplifier power.
2. **Subsonic / Hawkins Bass Control Switch** - Select "Subsonic" to engage the Subsonic filter at 13Hz. Select "Hawkins Bass Control" to engage the +6dB boost @ 45Hz for the lowpass channel.
3. **Input Selection Switch** - Select "SPKR IN / RCA OUT" to engage the high level speaker inputs and the RCA's become outputs to run to another amplifier. Select "RCA IN" to engage the RCA's as inputs.
4. **Low Pass XOVER Switch** - A selectable crossover frequency switch at 60, 80 or 100Hz.

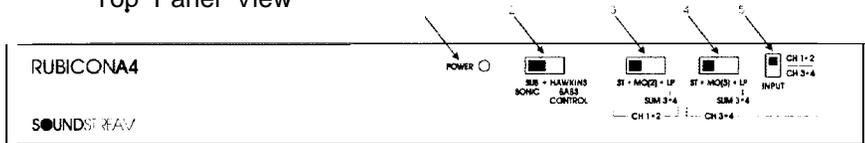
Callouts for the Anaina Front Panel



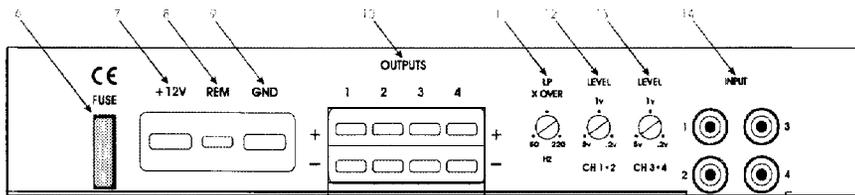
5. **+12V** - Connected to a fuse or circuit breaker, then to the battery's positive terminal.
6. **Remote In** - Remote turn-on input from the head unit. Accepts +12V.
7. **Speaker Connection Terminal** - Speaker connections to the mono sub channel.
8. **High Level Speaker Inputs** - Left and right inputs from a speaker level source.
9. **Inputs** - Right and left RCA inputs for the mono sub channel.
10. **Input Level** - The mono channel input level control.
11. **Fuse** - Main power supply fuse. *Warning: Replace only with the same value fuse!*
12. **GND** - Main ground connection. Bolt to a clean chassis point in the vehicle.
13. **Remote Out** - Remote turn-on output to control a second amplifier.

Callouts for the A4

Top Panel View



2. **Subsonic / Hawkins Bass Control Switch** - Select "Subsonic" to engage the Subsonic filter at 13Hz. Select "Hawkins Bass Control" to engage the +6dB boost @ 45Hz for the lowpass channel.
3. **ST/MO(2)/LP Switch** - Select "ST" for normal stereo operation. "MO" for bridged mono operation with a single input signal (number 2 input only). "LP" for low pass bridged mono operation with input from channels 3&4.
4. **ST/MO(3)/LP Switch** - Select "ST" for normal stereo operation. "MO" for bridged mono operation with a single input signal (number 3 input only). "LP" for low pass bridged mono operation with input from channels 3&4.
5. **Input Selection Switch** - Selectable inputs for channels 3&4 from internal (channels 1&2) or external (channels 3&4).



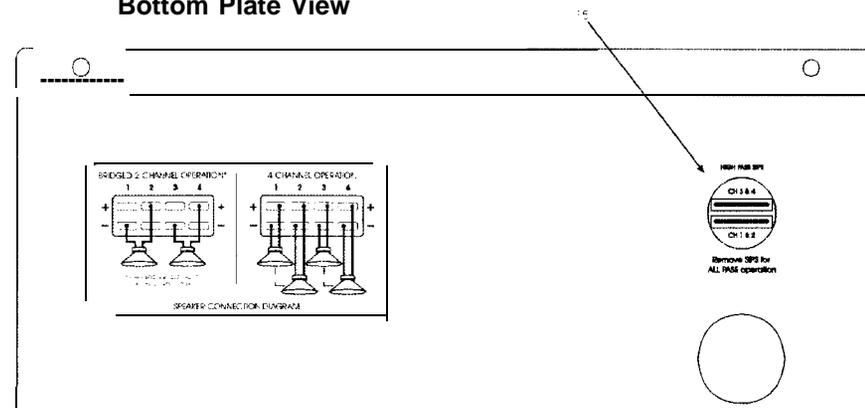
Front Control Panel View

6. **Fuse** - Main power supply fuse. *Warning: Replace only with the same value fuse!*
7. **+12V** - Connected to a fuse or circuit breaker, then to the battery's positive terminal.

Callouts for the A4

8. **Remote** - Remote turn-on input from the head unit. Accepts +12V.
9. **GND** - Main ground connection. Bolt to a clean chassis point in the vehicle.
10. **Speaker Connection Terminal** - Speaker connections for channels 1&2 and 3&4.
11. **Low Pass Filter Control Adjustment** - Crossover frequency control for the internal low pass filter.
12. **Input Levels** - Stereo input level control for channels 1&2.
13. **Input Levels** - Stereo input level control for channels 3&4.
14. **RCA Inputs** - Right and Left channel RCA inputs for channels 1&2 and 3&4.
15. **Crossover S.I.P.'s** - High pass crossover frequency settings for amplifier.

Bottom Plate View



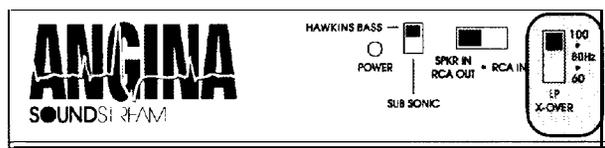
Crossover Adjustments

ANGINA CROSSOVER

The ANGINA is designed as a mono subwoofer amplifier. This means the amplifier will direct 200 watts of pure hard-core bass to your subwoofers. It handles these low frequencies with a Butterworth, 12dB/octave low pass filter.

These low pass frequencies are directed by the three position switch which sits on top of the amplifier as shown in the shaded area below. The switch selects from the following three frequencies; 60, 80 or 100Hz.

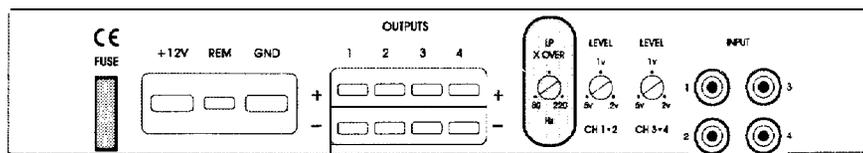
Top View of the ANGINA



A4 CROSSOVER

The A4 uses a S.I.P. (Series In-line Package resistor network) for high pass crossover functions (factory set at 150Hz). However, the low pass is adjusted using a 12dB/oct variable crossover that has a range of 50 to 220Hz as seen in the shaded area below.

Front View of the A4



IMPORTANT NOTE:

On the A4 amplifier, a full range signal can be achieved by removing the S.I.P. entirely.

Hawkins Bass Control

Subwoofer drivers in general have excellent power handling characteristics over their operational bandwidth. This bandwidth is determined by many factors, including driver design, and enclosure type. It is possible to overdrive any subwoofer driver by sending powerful

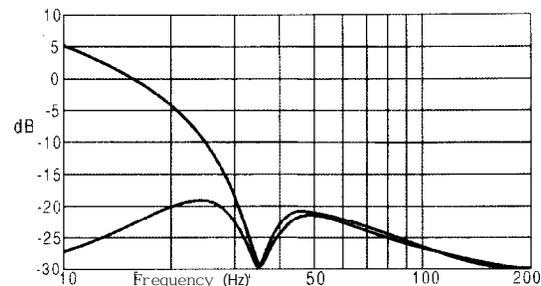


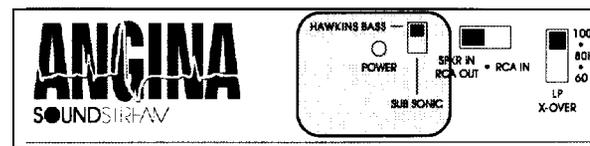
Figure 1

signals outside of its operational bandwidth. These potentially damaging signals can be removed by adding a subsonic filter. Figure 1 shows the effectiveness of the Hawkins Bass Control on woofer excursion in a vented enclosure. The woofer travels 7.5mm at 10Hz. With Hawkins Bass Control properly adjusted, this excursion can be reduced to less than 1 mm. This is of great benefit to lowering woofer distortion and increasing output.

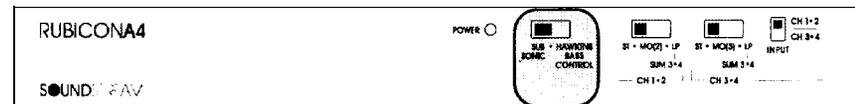
With Soundstream's Hawkins Bass Control, the boost and frequency control can provide the "tailoring" needed for any type of "assisted" design and any woofer in any type of installation.

The Angina and A4 amplifiers share the same fixed Hawkins Bass Control technology. A two position switch on the top of the amplifiers control the 'Hawkins Bass Control' or 'Sub Sonic' filters as seen in the shaded area below. When the 'Hawkins Bass Control' is engaged a 6dB boost is applied at 45Hz. The 'Sub Sonic' setting will engage the 13Hz subsonic filter with no boost.

Top View of the ANGINA



Top View of the A4



Wiring

POWER AND GROUND

To ensure maximum output from your RUBICON amplifier, use high quality, low-loss power and ground cables and connections. The RUBICON amplifiers will accept an 8 gauge power and ground cables. Determine from the chart below the minimum and maximum gauge power and ground wire for your application.

	up to 10'	up to 20'
Angina	8 or 10 gauge	8 gauge only
A4	8 or 10 gauge	8 gauge only

CIRCUIT BREAKERS AND FUSES

EXTERNAL

Like all audio components, the RUBICON amplifier must be fused near the battery. A fuse or circuit breaker must be located within 18" of the battery. This will prevent fire in the event of a shorted cable. See the chart below to determine the correct fuse value.

INTERNAL

The RUBICON Angina and A4 amplifiers are fused with automotive-type fuses. In the event of blown power supply fuses, replace with the correct value fuse found in the chart below. **Never replace the fuse with a higher value than what is supplied. This may result in amplifier damage and will void the warranty!**

RUB/CON Amplifier Fuse Values

	Amplifier Fuse	Battery Fuse /Circuit Breaker
Angina	25 amp automotive	30 amp
A4	25 amp automotive	30 amp

REMOTE TURN-ON

Connect the "Remote" line to the turn-on lead from the source unit. When +12 volts is received, the amplifier will turn on. **Note: Remote wire is not needed when the Angina is using the speaker level inputs.**

SIGNAL CABLE

Use a high quality cable that will be easy to install and has minimal signal loss to guarantee optimum performance.

SPEAKER CABLE

The RUBICON amplifiers will accept up to 8 gauge speaker cable. Use a high quality, flexible, multi-strand cable for best performance and longevity.

Installation and Mounting

AMPLIFIER LOCATION

The RUBICON amplifier employs highly efficient circuitry, a custom-engineered heat sink, and a unique Chassisink construction to maintain lower operating temperatures. Additional cooling may be required if the amplifier is located in a tightly confined area or when driving especially low impedance loads at extremely high levels.

When mounting the amplifier, it should be securely mounted to either a panel in the vehicle or an amp board or rack that is securely mounted to the vehicle. The mounting location should be either in the passenger compartment or in the trunk of the vehicle, away from moisture, stray or moving objects, and major electrical components. To provide adequate ventilation, mount the amplifier so that there are at least two inches of freely circulating air above and to the sides of it.

MOUNTING THE AMPLIFIER

- Using the amplifier as a template, mark the holes on the mounting surface.
- Remove the amplifier and drill the holes for the mounting screws.
- Secure the amplifier to the mounting surface using the supplied hardware.

WIRING

- Run and connect the audio signal and remote turn-on cables to the amplifier from the source unit.
- Carefully run the positive cable from the amplifier to a fuse or circuit breaker within 18" of the battery.
- Connect the fuse or circuit breaker lead to the battery. Leave the circuit breaker off or the fuse out until everything is bolted down.
- Secure the ground cable to a solid chassis ground on the vehicle. It may be necessary to sand paint down to raw metal for a good connection.
- Double check each and every connection!
- Reconnect the fuse or circuit breaker.

POWER UP

Power up the system and look at the Power LED; there may be a 2-3 second delay from the time the source unit is turned on to the time that the LED on the amp turns on, which is normal. Once the amplifier LED is on and the source unit is playing, you should have sound coming from the speakers.

IMPORTANT ANGINA NOTE:

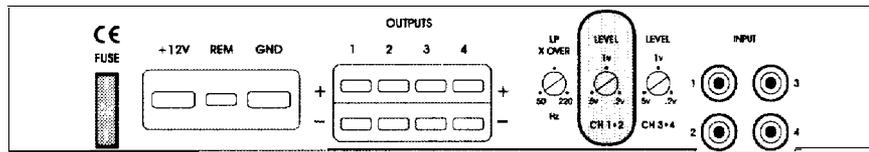
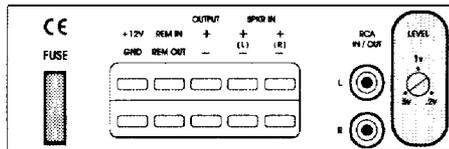
The initial power up connection will leave the amplifier power light on for about one minute after turning off. Normal operation will occur after that.

Level *Setting*

The input levels are adjusted by means of the input level controls located on the front of the amplifier as shown below in the shaded area. This is a unique dual-stage circuit that adjusts both level and gain. This topology maintains better S/N Ratio even when using sources with minimal output.

In the ideal situation, all components in the audio system reach maximum undistorted output at the same time. If you send a distorted signal to an amplifier, it is simply going to amplify distorted information. The same holds true if an outboard processor or crossover begins to distort before you have maximum output from the amplifier. By setting all components to reach clipping at the same time, you can maximize the output of your system. For the RUBICON amplifier, follow these steps for setting the input levels:

1. Turn the amplifier's input levels to minimum position (counterclockwise)
2. Set the source unit volume to approximately 3/4 of full volume.
3. While playing dynamic source material, slowly increase the amplifiers' input level until a near maximum undistorted level is heard in the system.

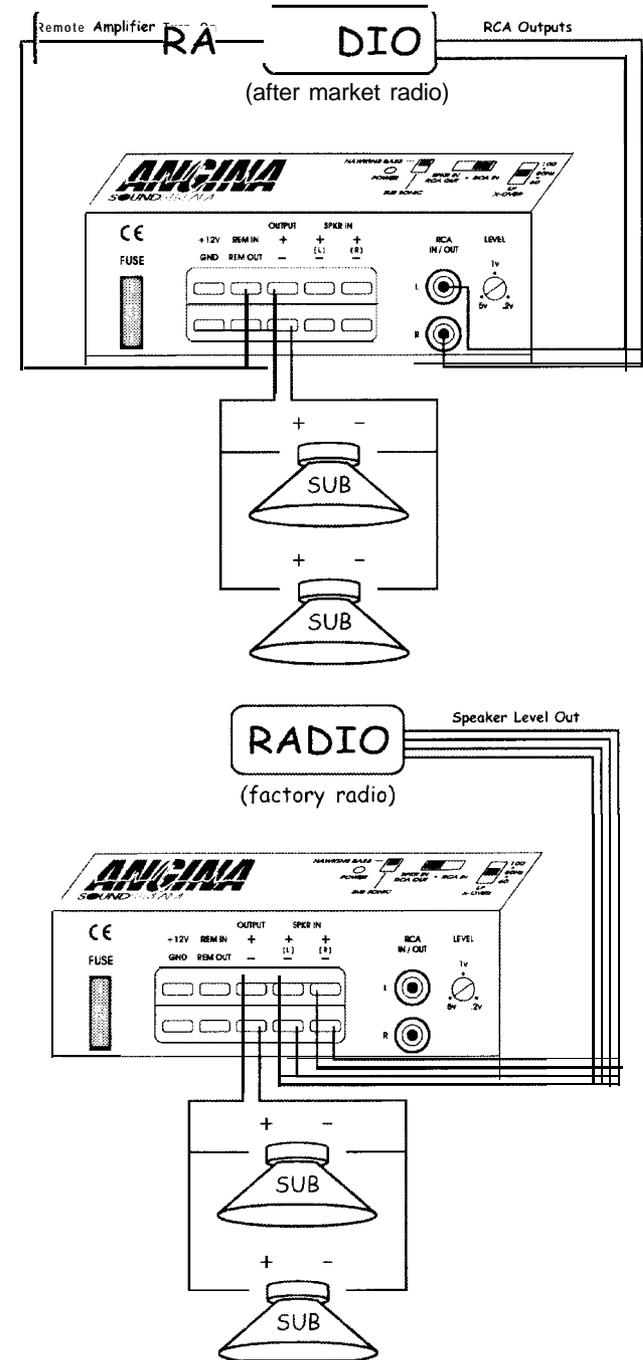


Trident Protection Circuitry

Your RUBICONA4, ANGINA amplifiers are protected against both overheating and short circuits by means of main power fuses and the following circuits:

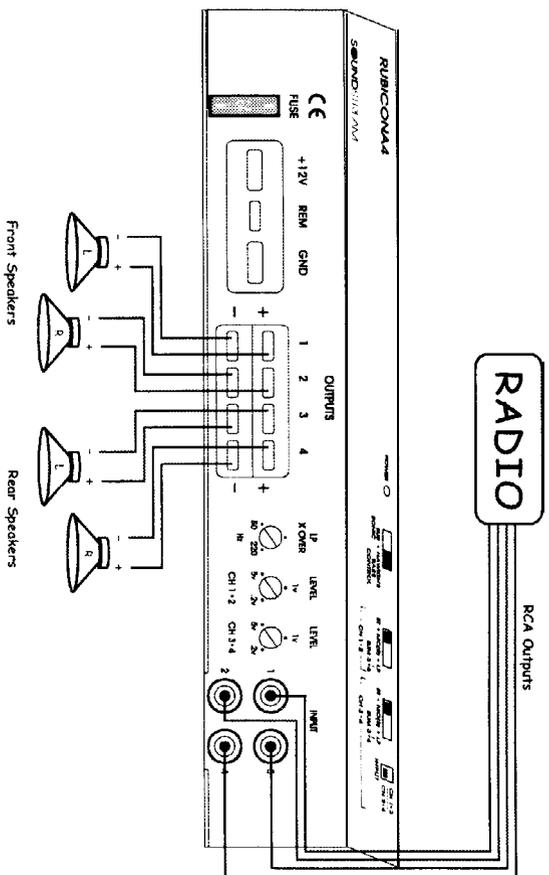
- ◆ Speaker Protection
- ◆ Ground fault Protection
- ◆ A fail-safe thermal protection circuit

Angina Sample Systems

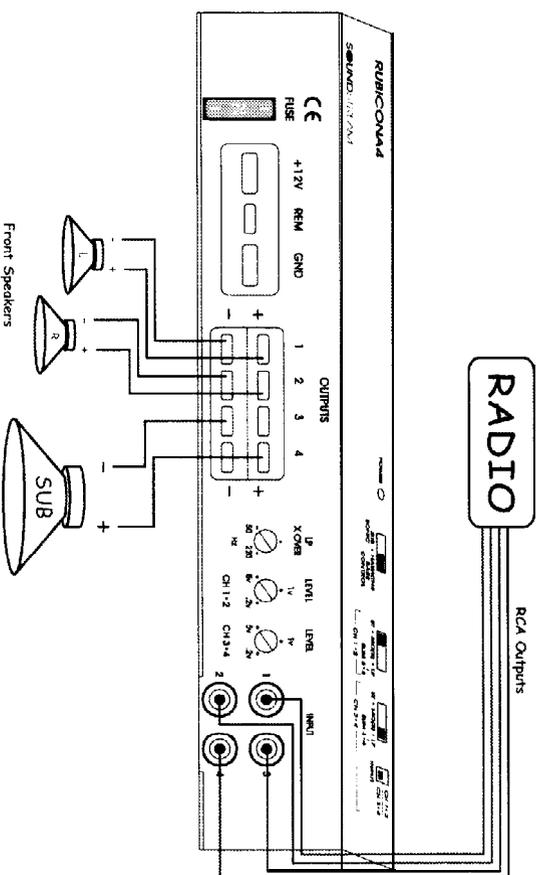


A4 Sample Systems

4 channel mode running front and rear speakers

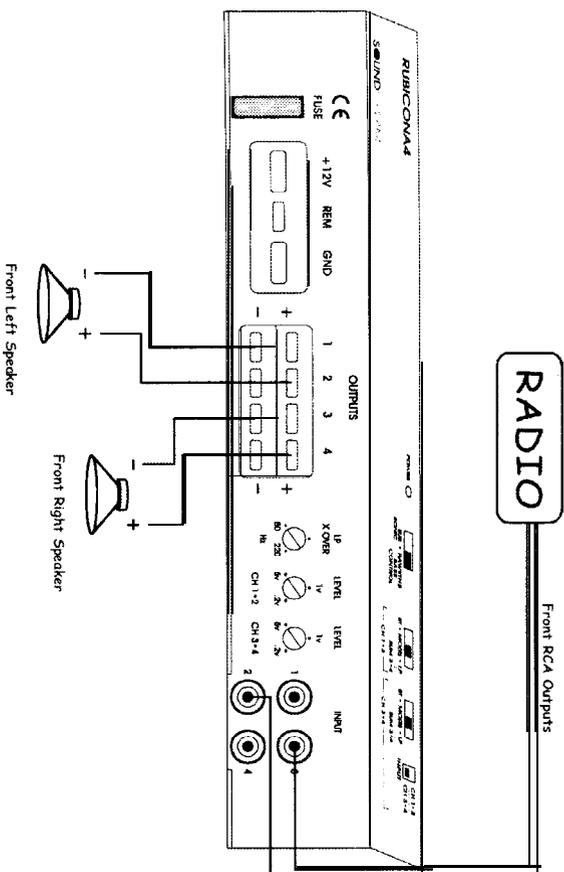


3 channel mode running front speakers and subwoofers

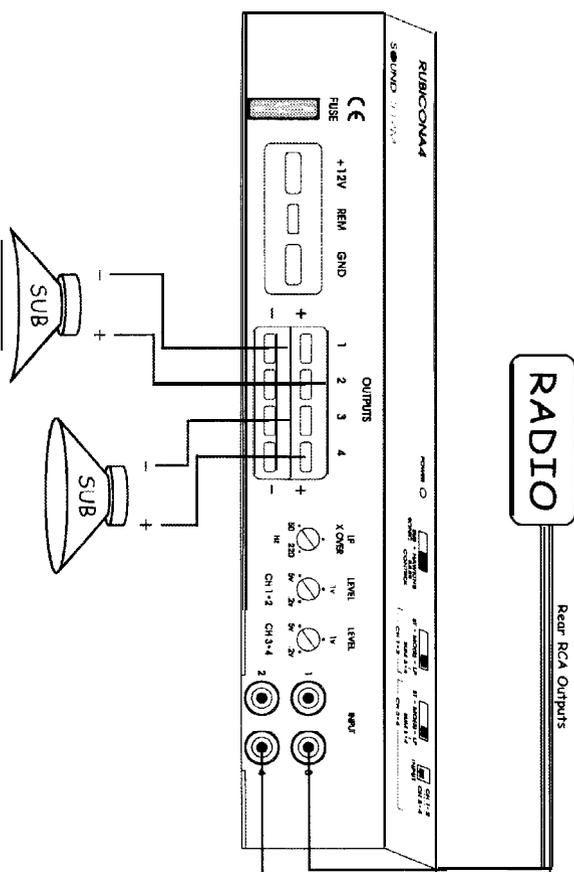


A4 Sample Systems

2 channel mode running front speakers

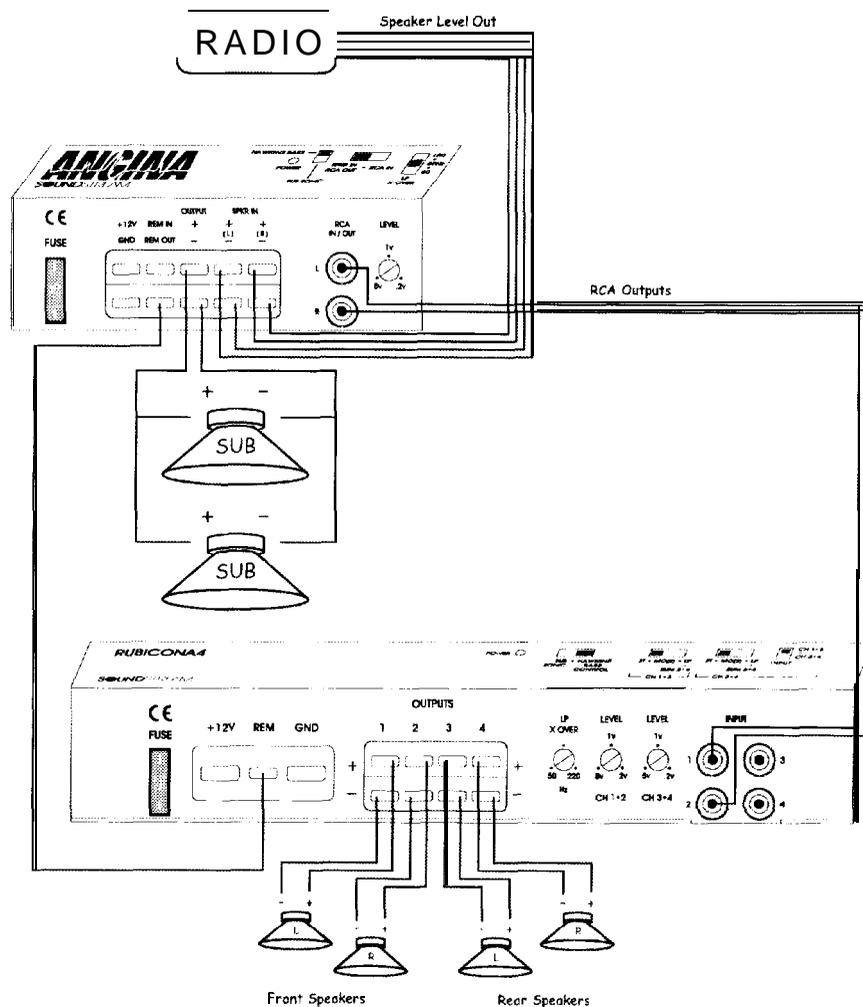


2 channel mode running subwoofers



Angina and A4 Sample System

Complete System while using a Factory Radio



Troubleshooting

PROBLEM	CAUSE
No Sound and power LED is not lit	<ol style="list-style-type: none"> 1. No power or ground at the amp 2. No remote turn-on signal 3. Blown fuse near the battery
No sound, power LED is lit	<ol style="list-style-type: none"> 1. No signal input 2. Speaker leads may be shot-ted 3. Speaker leads may be referenced to ground
Amplifier output cuts on/off repeatedly	<ol style="list-style-type: none"> 1. Speaker output may be shorted to ground. 2. Speaker leads may be shorted to each other. Check continuity with a volt meter.
Repeatedly blow amp fuse; frequent activation of Trident protection or Smart Power Supply Circuit	<ol style="list-style-type: none"> 1. Speaker or leads may be shot-ted 2. Amplifier load may be too low 3. Verify adequate amp ventilation

NOT: If you experience blown main power supply fuses, it is likely that the amplifier is seeing a dead short, either in the speaker wire or in the speaker itself. Rectify the problem before blowing multiple fuses! DO NOT increase values beyond the original fuse value! Doing so will void your warranty and may damage your amplifier.

Service

Your Soundstream **RUBICON** amplifier is protected by a limited warranty. Please read and send in the enclosed warranty card.

Specifications for the Angina

<i>MODEL</i>	4 Ω Mono (12.6 Vdc)	2 Ω Mono (14.4 Vdc)
<i>Angina</i>	100W x 1	200W x 1

THD	<0.1%
Signal to Noise	>90dB
Frequency Response	20Hz (\pm 0.5dB) to 100Hz (-3dB)
Stereo Separation	NA
Damping	>100
Input Sensitivity	200mV to 5.0 Volts
Input Impedance	1 Ok Ohms

Crossover Specifications

Low Pass: Select between 60, 80 and 1 00Hz @12dB/Octave

Hawkins Bass Control

Hawkins Bass Control "IN" is a +6dB boost at 45Hz
Sub Sonic filter frequency is at 13Hz

Dimensions (W x D x H)

ANGINA: 5.3" X 7" X 2.3"

Specifications for the A4

<i>MODEL</i>	4 Ω Stereo (12.6 Vdc)	2 Ω Stereo 4 Ω Bridged (14.4 Vdc)
<i>A4</i>	25W x 4	50W x 4 100W x2

THD	<0.1%
Signal to Noise	>100dB
Frequency Response	20Hz to 20kHz \pm 0.5dB
Stereo Separation	>90dB
Damping	>200
Input Sensitivity	200mV to 5.0 Volts
Input Impedance	1 Ok Ohms

Crossover Specifications

Low Pass: 50Hz - 220Hz, 12dB/Octave
High Pass: Removable SIP @150Hz, 12dB/Octave
Full Range: Removing the SIP chips all together

Hawkins Bass Control

Hawkins Bass Control "IN" is a +6dB boost at 45Hz
Sub Sonic filter frequency is at 13Hz

Dimensions (W x D x H)

A4: 10" X 7" X 2.3"