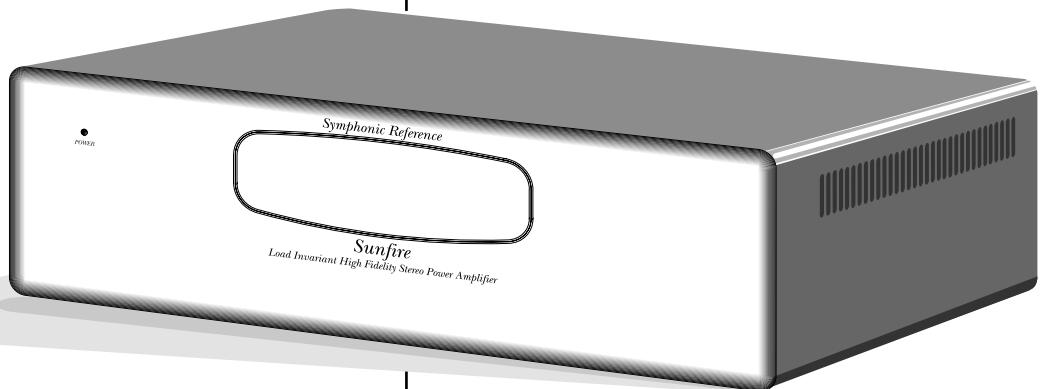


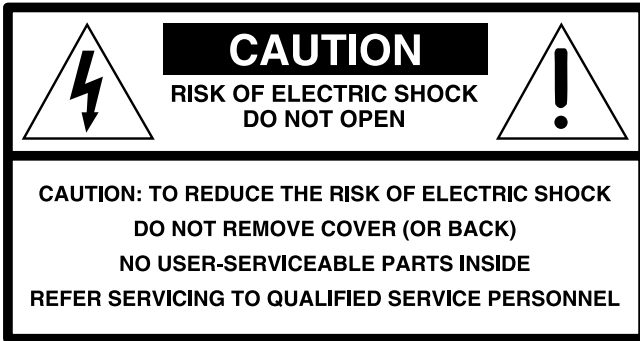
Bob Carver's
Sunfire
...from his mind & soul

*Symphonic
Reference*



*Load Invariant High Fidelity
Stereo Power Amplifier*

User's Manual



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Safety Instructions

- 1. Read Instructions** — All the safety and operation instructions should be read before the Sunfire Component is operated.
- 2. Retain Instructions** — The safety and operating instructions should be kept for future reference.
- 3. Heed Warnings** — All warnings on the Component and in these operating instructions should be followed.
- 4. Follow Instructions** — All operating and other instructions should be followed.
- 5. Water and Moisture** — The Component should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6. Ventilation** — The Component should be situated so that its location or position does not interfere with its proper ventilation. For example, the Component should not be situated on a bed, sofa, rug, or similar surface that may block any ventilation openings; or placed in a built-in installation such as a bookcase, cabinet, or closed equipment rack that may impede the flow of air through ventilation openings.
- 7. Heat** — The Component should be situated away from heat sources such as radiators, or other devices which produce heat.
- 8. Power Sources** — The Component should be connected to a power supply only of the type described in these operation instructions or as marked on the Component.
- 9. Power Cord Protection** — Power-supply cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit the Component.
- 10. Cleaning** — The Component should be cleaned only as recommended in this manual.
- 11. Non-use Periods**—The power cord of the Component should be unplugged from the outlet when unused for a long period of time.
- 12. Object and Liquid Entry** — Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the Component.
- 13. Damage Requiring Service** — The Component should be serviced only by qualified service personnel when:
 - A.** The power-supply cord or the plug has been damaged; or
 - B.** Objects have fallen, or liquid has spilled into the Component; or
 - C.** The Component has been exposed to rain; or
 - D.** The Component does not appear to operate normally or exhibits a marked change in performance; or
 - E.** The Component has been dropped, or its cabinet damaged.
- 14. Servicing** — The user should not attempt to service the Component beyond those means described in this operating manual. All other servicing should be referred to qualified service personnel.

PORTABLE CART WARNING



Carts and stands - The Component should be used only with a cart or stand that is recommended by the manufacturer. A Component and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the Component and cart combination to overturn.



15. To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, un prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans laisser aucune partie à découvert.

16. Grounding or Polarization — Precautions should be taken so that the grounding or polarization means of the Component is not defeated.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

<p>WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.</p>
<p>CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.</p>
<p>ATTENTION: POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.</p>

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Please read the **Safety Instructions** carefully before connecting and using your Sunfire Amplifier.

Chapter 1 is a general introduction to the features, details and installation of your amplifier.

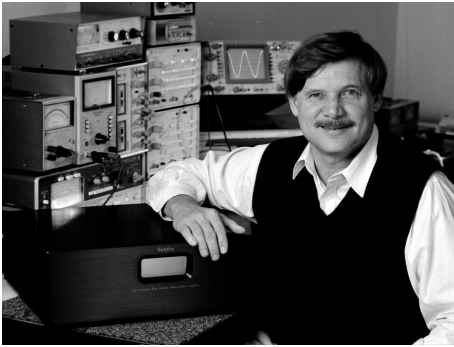
Chapter 2 shows some typical connections to a preamplifier and speakers.

The Appendix shows some additional information, including a troubleshooting guide, the Warranty, and service assistance details.

To find out more about this and other Sunfire products, please visit our website: www.sunfire.com



Introduction



Dear Friend,

Thank you for purchasing my Sunfire Symphonic Reference Amplifier. I hope that you enjoy it and the music it makes as much as I have enjoyed creating it for you.

Bob Carver

Unpacking

Your Sunfire Amplifier should reach you in perfect condition. If you do notice any shipping damage, please contact your Sunfire Dealer immediately.

Gently lift out the unit and remove all the packing material and accessories. It is important to save all the packing materials and the box in case your amplifier ever needs to be moved or shipped for repair.

Make sure that you keep your sales receipt. It is the only way to establish the duration of your Limited Warranty and it may come in useful for insurance purposes.

Please take a moment to fill out and mail the Sunfire Customer Response card. Also read the serial number located on the rear panel and record it here:

Serial #:

Purchased at:

Date: _____

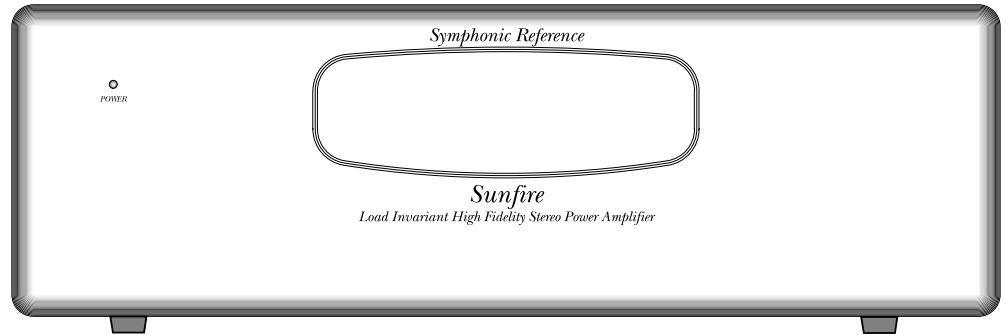
Features

- Two channel Power Amplifier in a 17" wide chassis
- 250 watts per channel into 8 ohms
- 500 watts per channel into 4 ohms
- Outrageously low -115 dB Noise
- An enormous power source provides the ultimate muscle for limitless dynamics
- Peak-to-peak current output capability is 80 amperes per channel
- The amplifier can drive almost **any** load to **any** rationally usable current or voltage level.
- MOSFET tracking downconverter
- 12 VDC trigger input for remote turn-on
- The intrinsic frequency response extends from 1 Hz to beyond 100 kHz
- IEC removable power cord
- High quality styling and finish

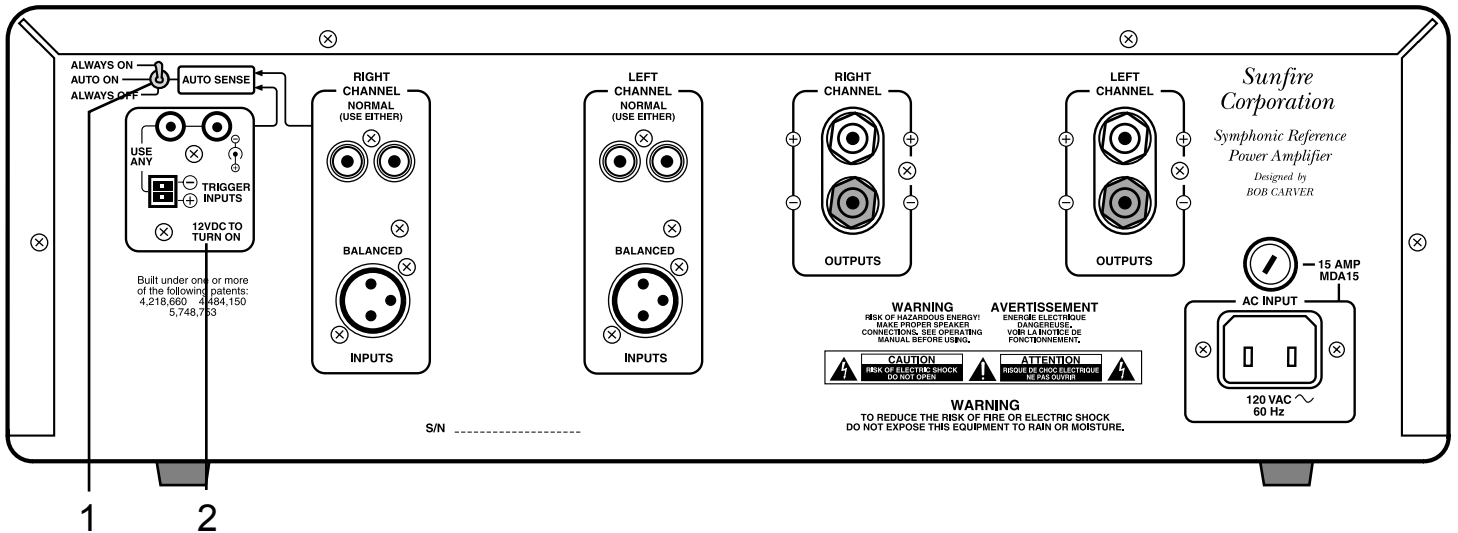


Overview

Your Sunfire Symphonic Reference Amplifier is actually two high-powered amplifiers combined in a 17 inch wide chassis. It accepts line-level signals from a controlling preamplifier, and amplifies them to a higher speaker-level, suitable for driving powerful stereo and Home Theater speakers.



Rear Panel Features



1. AUTO/ON/OFF Switch

Your Sunfire Amplifier is designed with an automatic on/off circuit.

- In the AUTO-ON (center) position, the amplifier will automatically turn on if an audio signal is present at the left or right input, or if it receives an input trigger voltage at the 12 VDC inputs. The amplifier will automatically turn off after a few seconds if the trigger voltage is removed, or after approximately 20 minutes in the absence of an audio signal.

- In the ALWAYS-ON (up) position, the amplifier is always on, regardless of input signals or 12 VDC trigger.
- In the ALWAYS-OFF (down) position, the amplifier is always off, regardless of input signals or 12 VDC trigger.

2. 12 VDC Trigger Input

Although the signal sensing turn-on is adequate for most installations, the 12 VDC trigger inputs are offered as an optional way to turn on the amplifier.

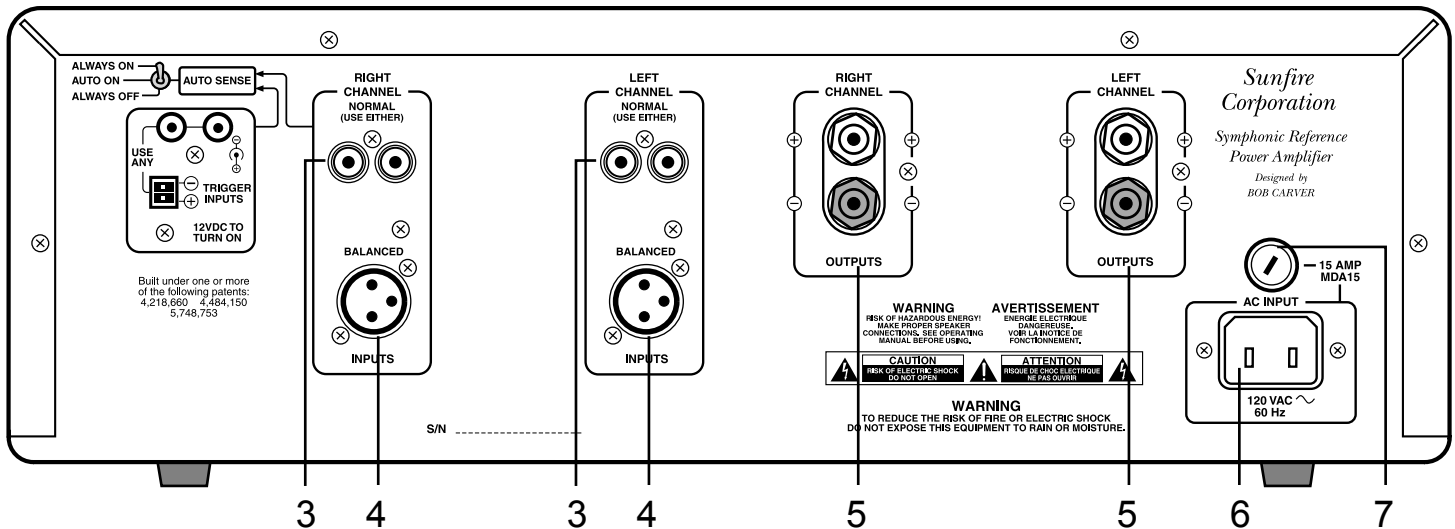
The Sunfire Symphonic Reference Preamplifier has a compatible 12 VDC trigger output. When the preamplifier is turned on, the amplifier will also turn on.

1/8" mono mini jacks are provided for ease of installation, along with a terminal strip to allow more flexibility for custom-wired installations. The terminal strip and both the 1/8" mini jacks are connected in parallel, allowing 'daisy chaining' to turn on multiple amplifiers.

continued..



Rear Panel Features continued



3. RCA Unbalanced Inputs

Your Sunfire Amplifier has three sets of inputs for each channel. Two are unbalanced RCA inputs and one is a balanced XLR type.

The two RCA inputs for each channel are joined together internally and either one can be connected to the corresponding output of your preamplifier. The other can be used as a daisy-chaining output, sending the preamplifier output signal to another channel or to another amplifier.

Note that signals cannot pass from the RCA into the XLR inputs.

Do not drive the amplifier from more than one preamplifier or other source.

4. XLR Balanced Inputs

If your preamplifier has XLR outputs, connect them to the XLR inputs.

The female XLR inputs are wired as follows:

- Pin 1 is ground
- Pin 2 is positive (hot)
- Pin 3 is negative (cold)

Balanced connections pass the input signal along two conductors. If there is any external noise and interference passing into the audio lines, both conductors will receive the same amount of noise. This noise is then rejected in the balanced input stage of the Sunfire Amplifier.

5. Outputs

The top post of each pair is the positive output, and connects to the positive (red) post of your speaker. The bottom post of each pair is the negative, and connects to the negative (black) post of your speaker. The posts can accept bare wire, spade terminals, and dual or single banana connectors.



6. IEC Connector

The amplifier comes with a detachable Linecord which attaches here. Make sure it is firmly pushed in place. Connect the other end to an AC outlet which is properly configured for the type of plug and has the correct voltage for your model.

7. Line Fuse

If this fuse fails, replace it with the exact same "Slow-Blow" type and current rating.



Note: Always unplug the power cord from your AC outlet before removing the fuse. Use a flat headed screwdriver, push in slightly and gently rotate the fuseholder half a turn.

Installation

Read and follow all safety instructions shown on pages 2 and 3.

Observe the following precautions when choosing a location for your amplifier:

- Do not cover any of the ventilation slots on the bottom or sides.
- Do not place a preamplifier directly on top of the power amplifier.
- Protect it from prolonged exposure to direct sunlight and other direct sources of heat, such as heating vents and radiators.
- Do not expose the unit to rain or moisture. If fluid or a foreign object should enter the unit, immediately turn off the power and contact your Sunfire Dealer.
- Avoid excessive exposure to extreme cold or dust.
- Do not place heavy objects on top of the unit.

AC Power Considerations

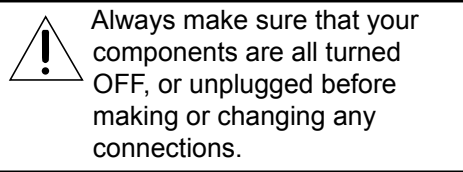
Ensure that the unit is plugged into an outlet capable of supplying the correct voltage specified for your model. The outlet should be capable of supplying 15 amps at 120V.

Care

If you need to clean the front surface, first turn unplug the power cord from the AC supply, and then use a dry cloth, rubbing with the grain. Be careful not to scratch the finish. Avoid strong cleaning agents.

Connection Tips

Before setting up your new system, please consider the following :



- Make sure that the power cords of all your components are attached to the same outlet or at least to the same circuit. This will reduce the possibility of a ground loop in the system.
- Make sure that the total current draw does not exceed the current rating of the outlet.
- Use the XLR inputs if your preamplifier has XLR outputs. These balanced connections provide superior noise rejection.
- Whenever possible, route the power cords away from the signal cables or speaker wires to prevent any hum or interference heard in the speakers.
- Choose reliable hookup cables. They should be fully shielded and as short as possible.
- Some patch cords can be a very tight fit and there is usually a preferred method of getting them off. Some have to be removed with a twisting action. Be gentle or you may damage the jacks of your amplifier, or other components.
- Some audiophile cables should be hooked up in one direction, these are usually marked with arrows.
- It is usual for the right channel patch cord plugs to be red and the left channel connections to be white, grey or black.

12 VDC Trigger

If you have a Symphonic Reference Preamplifier, it has a Trigger terminal which supplies 12 VDC whenever the preamplifier is turned on. This voltage can be used to turn on the amplifier.

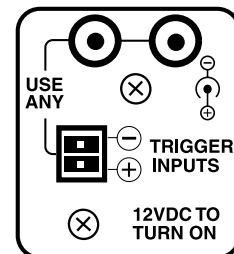


Use all standard safety precautions and make sure all the equipment is disconnected before making any connections.

Any 1/8" mono to mono (two-wire) interconnect cable will suffice to connect the 12 V trigger output from the preamplifier to the amplifier.

The voltage range for the amplifier's trigger input is 5 to 18 Volts DC. Do not exceed 18 Volts on this input. (CAUTION: Do not connect AC line voltage to this input!)

The input impedance of the 12 V trigger input is approximately 600Ω (20 mA @ 12 V).

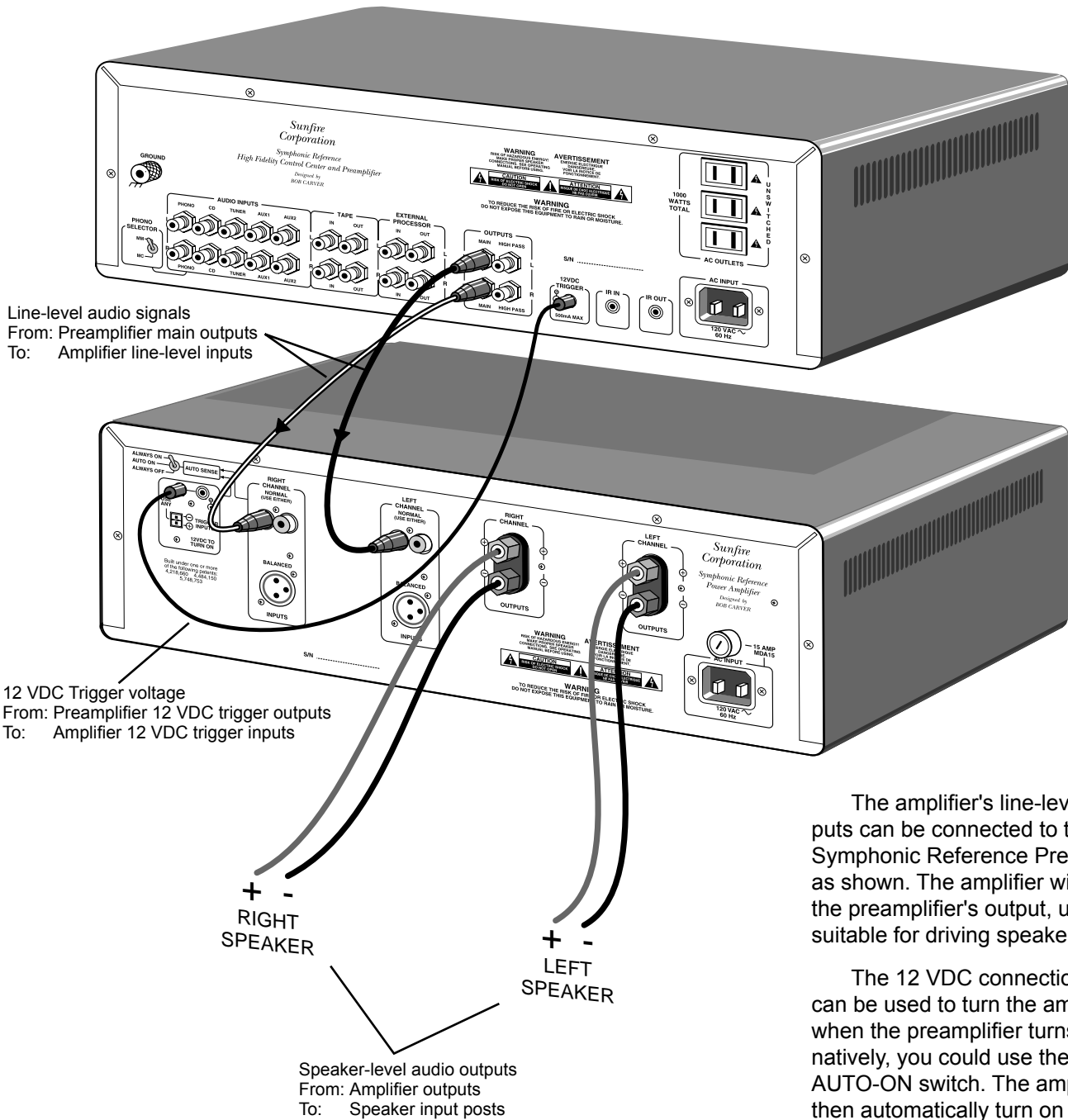




System Configurations

The following diagrams show some typical connections that you might make in your installation. They show how the inputs and outputs of the Sunfire Amplifier are connected to your preamplifier and speakers.

Connections to the Sunfire Symphonic Reference Preamplifier



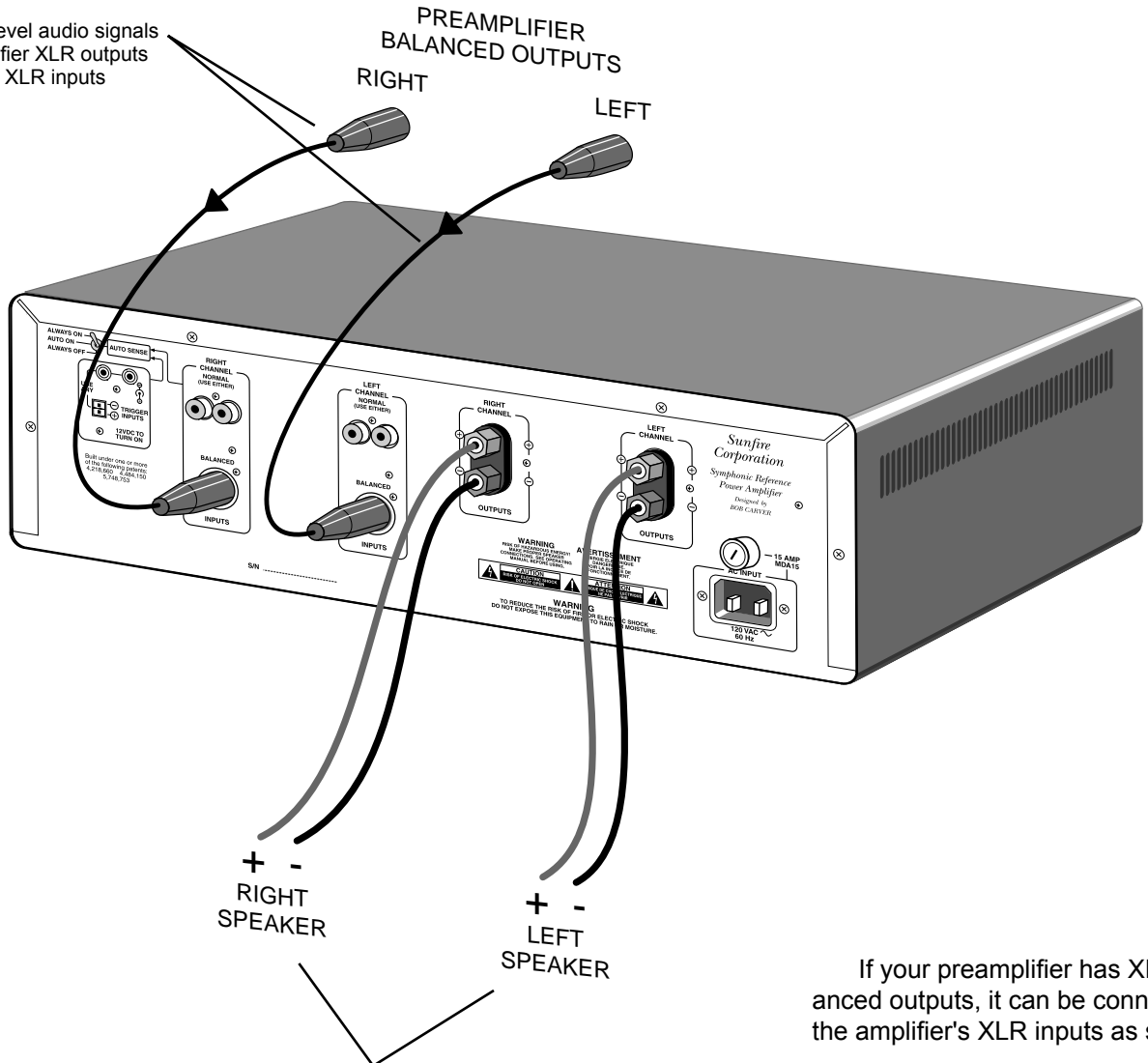
The amplifier's line-level audio inputs can be connected to the Sunfire Symphonic Reference Preamplifier as shown. The amplifier will boost the preamplifier's output, up to a level suitable for driving speakers.

The 12 VDC connection shown, can be used to turn the amplifier on when the preamplifier turns on. Alternatively, you could use the amplifier's AUTO-ON switch. The amplifier will then automatically turn on when a preamp signal is received.



Balanced Connections

Balanced line-level audio signals
From: Preamplifier XLR outputs
To: Amplifier XLR inputs



Speaker-level audio outputs
From: Amplifier outputs
To: Speaker input posts

If your preamplifier has XLR balanced outputs, it can be connected to the amplifier's XLR inputs as shown.



Biamping connections

If your speakers can be biamped, they will have separate input posts for the woofer and the tweeter sections.

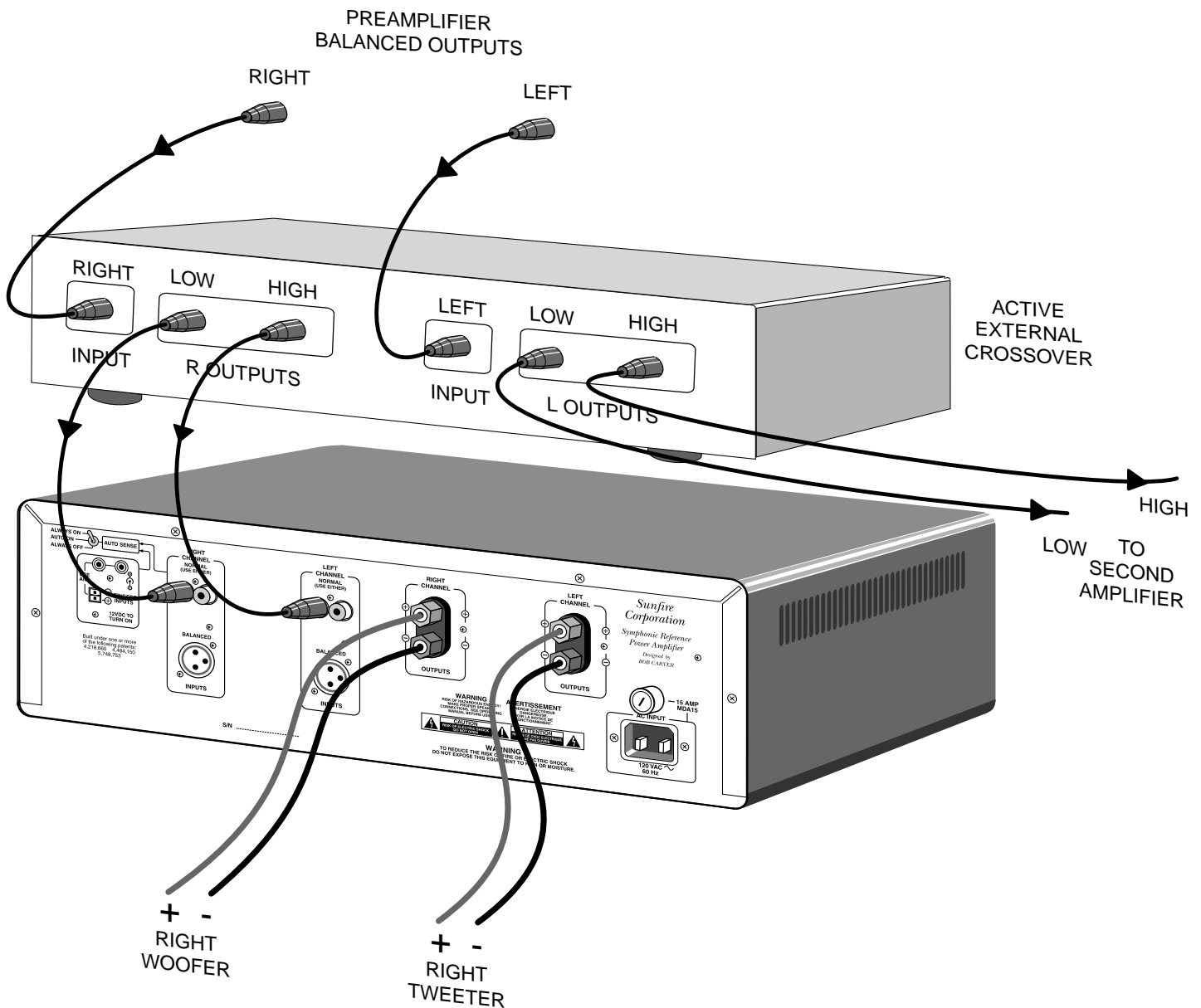
This diagram shows how to create a very efficient system with an active external crossover. The crossover will split the incoming preamp signal into two frequency ranges: one above and one below the crossover frequency.

True biamping is very efficient because each amplifier channel only receives and amplifies the range required for its driver. For example, in the diagram below, the right channel only amplifies the low frequencies, and the left channel only amplifies the high frequencies.

Make sure that you adjust the crossover frequency to suit your

speaker's crossover point. Check the speaker owner's manual for this specification.

An alternative connection method is to have one amplifier running the two woofers and the other running the two tweeters. This is useful if your amplifiers have different power ratings. Use the more powerful amplifier to run the woofers.



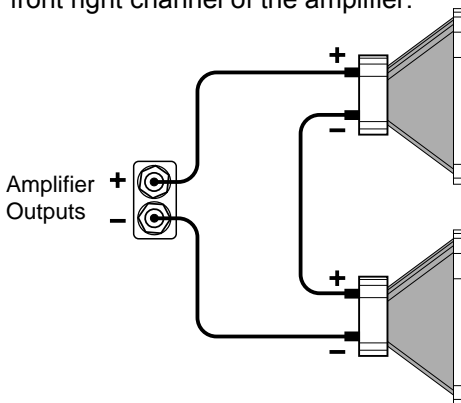
Series and Parallel speaker connections

The connection of more than one speaker per channel will tend to degrade the speaker's frequency response, and may make the amplifier run hot. For the best results use one speaker per channel.

If you do want to connect more than one speaker per channel, there are two main ways: Series or Parallel.

Series

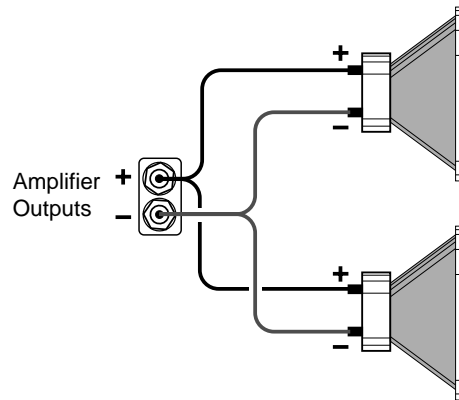
For example, if you want to series-connect two speakers to the front right channel of the amplifier:



- The positive output terminal of the right channel connects to the positive input post of the first speaker.
- The negative input post of the first speaker connects to the positive input post of the second speaker.
- The negative input post of the second speaker connects to the negative output terminal of the right channel.
- The total impedance of speakers in series is found by adding their impedances together. For example, two four ohm speakers in series is an eight ohm load.
- Series connections are easier on the amplifier than parallel connections as the total impedance is higher than driving a single speaker.

Parallel

For example, if you want to parallel-connect two speakers to the front right channel of the amplifier:



- The positive output terminal of the right channel connects to the positive input post of the first speaker and to the positive post of the second speaker.
- The negative output terminal of the right channel connects to the negative input post of the first speaker and to the negative post of the second speaker.
- The total impedance of equal speakers in parallel is found by dividing the impedance of one speaker by the number of speakers. For example, two eight ohm speakers in parallel is a four ohm load (eight ohms divided by two), four eight ohm speakers in parallel is a two ohm load (eight ohms divided by four).
- Parallel connections are harder on the amplifier than series connections, as the total impedance is lower compared to driving a single speaker, and the amplifier must produce more current to drive them.

- Ideally, the total average impedance should be no less than 2 ohms per channel.
- You must make sure that the lower impedance does not cause the amplifier to over-heat, shut down, blow the line fuse, or pop your circuit breaker. If this happens, you should reduce the number of speakers wired in parallel, rewire them in series, or use more than one power amplifier.



Troubleshooting Guide

The Sunfire Amplifier is expertly designed and built to provide years of trouble-free performance. Most problems that occur can usually be solved by checking your setup or making sure that the audio and video components connected to the processor are on and fully operational.

The following information will help you deal with common setup problems you may experience during normal use of your unit. If the problems still persist, please contact your Sunfire Dealer for assistance.

No sound from one or more speakers

- Speaker cables may have come undone. Turn off your system and check the cables, and tighten the amplifier and speaker binding posts.
- Broken audio cable.
- The preamplifier balance level is low for the channel concerned.
- The preamplifier Mute switch is on, or an external processor loop or a tape monitor loop is engaged.

The amplifier shuts down often or the line fuse blows often

- Check that the positive and negative speaker wires are not shorted together.
- Make sure that no speakers are shorted internally. If you have an ohm-meter, disconnect the speaker wires and measure the resistance between the speaker's positive and negative terminals. If the reading is less than 2 ohms, the speakers may have an internal short. Measure all speakers and check their impedance specifications.

- If you have connected speakers in Parallel, the overall impedance may be too low. It is recommended that you rearrange the speakers in Series to increase the overall impedance, thus taking some of the load off the amplifier.
- Make sure that the amplifier has good ventilation and is not overheating. If the amplifier is in a closed rack, open up the rear panel or use a quiet fan for improved ventilation.

A Hum is heard in your speakers

This problem is more than likely caused by a "ground loop" in your system, rather than a fault in the amplifier. Follow these steps to isolate the main cause of the hum, there may even be more than one.

- Remember to turn off all components in your system, including the amplifier, before disconnecting or connecting any cables.
- Disconnect all cables which come from outside the room, and check if the hum goes away. This includes such connections as cable TV, satellite TV, or roof top antennas. Make sure that they are disconnected where they first enter the room, so they are making no connection to the preamplifier or the TV, or any other component. If the hum is caused by the cable TV line, then you will need a "ground loop isolator." This is an inexpensive device fitted in line with the coaxial cable feed. Contact your cable company or your Sunfire Dealer for assistance.
- Disconnect all connections from the preamplifier to your TV, VCR or DVD.

- Disconnect any component which has a grounded power cord.
- If the hum persists, disconnect all the source components one at a time from the back of the preamplifier, until you identify the problem.
- Ground loop isolators are available for audio lines and video. You can ask your Sunfire Dealer for assistance.
- Try moving the speaker cables away from any power cords. Try just one speaker, connecting it to each amplifier channel and see if one channel is bad.
- If you are still having a problem, remember that Sunfire's dealers and technical support staff will assist you.

Other causes of noise

- Speaker noise may also be caused by interference or noise on your AC line. Make sure there are no large appliances sharing the line, or halogen lamps or light-dimming Triac devices.
- Try connecting your system to another AC socket on a separate line.
- Keep power cords away from audio cables.
- Do not place the preamplifier directly on top of the amplifier.
- If the hum is heard from within the amplifier and not through the speakers, this may also be caused by interference on the AC or DC lines. The power transformers may turn this interference into an audible noise. Internal hum can be made worse by a shelf or cabinet resonating, so try moving the amplifier to another shelf.



- Try moving your components further away from the TV, especially if you ever notice the screen has changed color in the area closest to the component.
- If you have very high efficiency speakers, these may show up noise which other speakers may not.

Poor bass performance

- Make sure that your preamp does not have the bass level turned down.
- Many surround preamplifiers have controls which can direct all the bass to subwoofers, or let your main speakers play the full range. Make sure that the preamplifier has been correctly set.
- Check that the speaker wires have been connected correctly: Make sure that the positive of each speaker connects to a positive output of the amplifier, and the negative of each speaker connects to a negative output. If one speaker is wired incorrectly, than it will be “out of phase” with the others, resulting in poor bass performance.
- If you have connected the amplifier using the XLR inputs, make sure that the XLR cables are wired correctly. If one has the hot and cold reversed, then this will also cause a speaker to be out of phase.

Turn-on and turn-off thumps

- Plug the amplifier into an unswitched AC outlet, and use the AUTO-ON feature. This will allow the amplifier to turn on and off with good manners.



Specifications

Power output

250 watts continuous, per channel, all channels driven into eight ohms, from 20 Hz to 20 kHz with no more than 0.5% T.H.D.

Power at clipping, minimum:

500 watts per channel into four ohms.

Hum and Noise

-115 dB, A-Weighted

Maximum output current

80 amperes peak to peak per channel

Maximum output voltage

45 Vrms

Input impedance, RCA inputs

24 k Ω

Input sensitivity for rated output

Unbalanced: 1.6 Vrms
Balanced: 0.8 Vrms

Input impedance, XLR input

24 k Ω , each leg balanced to ground Female XLR
Pin 1 ground
Pin 2 positive (hot)
Pin 3 negative (cold)



12 VDC Trigger Inputs

Input voltage range
5 VDC-18 VDC

Input impedance
Approximately 600 Ω
(20 mA at 12 V)

Removable terminal block

Dual 1/8" minijacks for daisy-chaining

Power Consumption

45 W at idle
200 W typical (1/8th power)
1800 W absolute maximum
(fuse limit)

Dimensions

17.0 inches wide
5.75 inches high (with feet)
16.5 inches deep (to tips of connectors)

Weight

30 lbs

Finish

Brushed aluminum and black anodize

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Manual part number:

913-047-00 Rev A



Limited Warranty

Sunfire Corporation is proud of its products which have been built with care using advanced technology and premium component parts. Your unit has been crafted to perform properly for many years. Sunfire Corporation offers the following Warranty to you, the owner of a new Sunfire product:

The Sunfire Corporation Warranty for the Symphonic Reference Amplifier is in effect for FIVE years from the date of original retail purchase. The Sunfire Corporation Warranty covers defects in materials and workmanship. The following, however, are excluded:

- a) Damage caused during shipment.
- b) Damage caused by accident, misuse, abuse of operation contrary to the instructions specified in the Sunfire Corporation user's manual.
- c) Units where the serial number has been defaced, modified or removed.
- d) Damage resulting from modification or attempted repair by any person not authorized in writing by Sunfire Corporation.
- e) Units purchased from unauthorized dealers.

The Sunfire Corporation Warranty extends to the original owner or subsequent owner(s) during the five year warranty period, so long as the original dated purchase receipt is presented whenever warranty service is required.

All implied warranties, including warranties or merchantability and fitness for particular purposes, are limited in duration to the two year length of this Warranty, unless otherwise provided by state law.

Sunfire Corporation's liability is limited to the repair or replacement, at our option, of any defective product and shall not in any event include property or any other incidental or consequential damages which may result from the failure of this product.

Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state. We suggest that you attach your purchase receipt to this Warranty and keep these in a safe place. Thank you for your choice of a Sunfire Corporation product.

Service Assistance

We suggest that you read the Limited Warranty completely to fully understand your Warranty/Service coverage.

If your Sunfire Corporation product ever requires service, write to us or call:

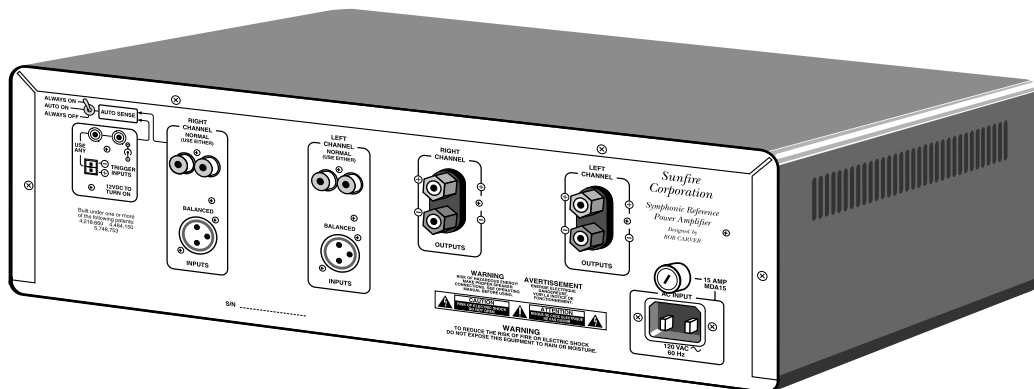
Sunfire Corporation
Technical Services Department
P.O. Box 1589
Snohomish, WA 98291
Tel (425) 335-4748
Fax (425) 335-4746

You will be directed to an authorized Sunfire Corporation Service Station or receive instructions to ship the unit to the factory. Please save the original shipping carton and packing materials in case shipping is required. Please do not ship Parcel Post.

NOTE: Before sending in your unit for repair, you must call Sunfire for return authorization.

Include a complete description of the problem, indicating how you have it connected, the associated equipment in your system and a copy of your purchase receipt. Initial shipping costs are not paid by Sunfire Corporation; return ground shipping costs will be prepaid if repairs were covered by the scope of this Warranty.

Bob Carver's
Sunfire
...from his mind & soul



Symphonic Reference
Load Invariant High Fidelity
Stereo Power Amplifier

Sunfire Corporation
P.O. Box 1589
Snohomish
WA 98291

Manual part number : 913-047-00 Rev A

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