



OWNER'S MANUAL

## CAD 500 MB

Pure Balanced Mono Power Amplifier

## CAD 200

Stereo Power Amplifier

NOTE: Before installing your new component, please read this manual carefully as it will inform you of the product specifications, proper installation and correct operating procedures for your unit. Also included in this manual are guidelines on how to service and care for your new Cary Audio Design product.

# CONTENTS

---

Welcome..... 3-4

Introduction..... 5

Specifications ..... 6-7

Features..... 7

Installation ..... 8-9

Operation ..... 9

Service and Care ..... 10

Awards..... 11

Troubleshooting Guide ..... 12

Warranty ..... 13-14

# WELCOME

---

Greetings to all of you! I would like to tell you the story on how the mono bloc solid state power amplifiers called the 500 MB came about. The 500 MB's are a pair of discrete, true balanced 500 watt amplifiers. In fact, these music powerhouses will yield 1,000 watts at a 4 ohm load. What, solid state from the triode tube crazed Dennis Had, some may ask? If someone had asked me 16 years ago when I started Cary Audio, 'Are you going to build high power transistor amplifiers?' My response would have been almost in the form of a lecture about how high power amplifiers corrupt. If the first watt is no good than why would you want 499 more of them? Oh, the self-righteous 'tube-o-phile' in me would have kept you listening all night to my design philosophies. Well, if I may, I would like to explain how this high power craze came about. Or how I became corrupted by high current, wide bandwidth, SOLID STATE power amplifiers...

About six years ago, Gregg Dunn, our Cary Audio sales manager joined the company. Although he loved tubes in audio he felt we needed to seriously enter the home theater market place. Gregg convinced Billy and I that with our reputation for having the best sounding two channel tube gear, we could design and become the best in multichannel solid state amplifiers. Within about six months I completed the CAD 500T, a five channel Cary Cinema amplifier. It weighed in at 168 pounds, measured over two and a half feet deep and contained five individual monster EI core power transformers. The CAD 500T was constructed of all machined aluminum.

The June 1999 issue of *Home Theater* Magazine featured our new monster amp on the front cover along with a glowing review. We were in the home theater arena. Well, not exactly, the amplifier was sooo heavy, sooo large and expensive (30" x 19" x 14", \$8,000) no one wanted to lift it. We sold a couple dozen and I was back to the drawing board. Two years later I completed the sleek, slimmed down, five channel Cinema 5 power amplifier.

The Cinema 5 became the lead product of our new Cary Cinema line of products. We received both a 2003 Editor's Choice award from *The Absolute Sound* magazine and a Multichannel Amplifier of the Year Award from *The Perfect Vision* magazine! It repeated as a Best Buy Award from both of those prestigious magazines in 2004 and has repeated for 2005! The Cinema 5 continues to receive product of the year awards around the world. It is now the reference multichannel power amplifier for Peter Moncrieff of *Wide Screen Review* magazine and it unseated a very famous foreign made \$11,000 multichannel power amplifier in the process. Did we mention that the CINEMA 5 is made in North Carolina?

Next came the seven by 100 watts per channel model Cinema 7 power amplifier. We have just won the *Home Theater* magazine, 2005 Rave Award for the Best Amplifier (Cinema 7) under \$3000. The enthusiast press and the customers are all singing the sonic merits of the Cary Audio Design solid state amplifiers. It was time for some SERIOUS two channel stereo action with this design.

Once again, Gregg came to me with an idea. I can still hear him.... "High power, full bandwidth and low distortion in a mono amp package". He had this wild look in his eye as he insisted that we needed a 500 watt mono amplifier. Oh, it also had to play at 1,000 watts into 4 ohms. Since Gregg has had some serious home run ideas in the past, I thought OK, let me do some basic design work. Soon the design work turned into a personal passion: An intense desire on my part to produce absolute sonic excellence in the listening qualities and load handling capabilities of this high power, solid state power amplifier.

First, I started with the same power supply and power transformer that ran all 5 channels of our Cinema 5. Then I proceeded to implement the basic emitter follower design that was winning all the awards. I chose direct coupled FET inputs driving bipolar Sanken 50 ampere, high current, wide bandwidth bipolar output

devices. The amplifier also needed to be true fully balanced design to match some new preamplifier designs that I was completing. The basic prototypes were sounding much too good for our listening room at the factory. I took them home and I was now listening in my own living/listening room. The CAD 500 MB had me on my hands and knees with clip leads, various parts and a soldering iron. My wife knew this was turning into a serious design and listening project. The listening room looked like a parts depot or an electronics warehouse! Picture this scene if you can, a pair of the new raw prototype CAD 500 MB's along with a pair of CAD 211 Anniversary Edition tube amplifiers sitting in line with a pair of CAD 805 Anniversary Edition tube amplifiers. I was into serious listening comparisons with no holds barred. I almost wore out a few of my records in the process.

To speed up this tale of high power corruption, within a few weeks I had become very fond of the sonic presentation from the CAD 500 MB's. The final design challenge was to increase the sound stage depth and have the midrange bloom a bit more. Well, I must say I achieved success! The CAD 500 MB amplifiers have a deep sound stage, a glorious midrange along with enough serious, high current output power to shake the house.

**NOTE:** Let me digress here for a moment about why we choose to make such wide frequency response bandwidth amplifier or preamplifier designs. In the design phase of earlier Cary Audio Design tube and solid state amplifiers or preamplifiers, we always noticed a positive correlation between extended frequency response and sound quality. This could be measured in some ways with test gear but not in all ways. It could be heard always, though, as improved sound quality. When the V 12R and Rocket 88R power amplifiers were modified to include a high gain, extremely wide bandwidth driver tube in the front end stage, the distortion dropped remarkably with the increase of the overall frequency response bandwidth of the circuit. To say this another way, if all other design characteristics are exactly the same but you increase the frequency response bandwidth of the overall circuit then the distortion in the circuit will drop in direct response to this change. We view this as a positive correlation and we choose to design with this in mind in all of our current and in our future circuit designs.

The boys and girls in the Cary Audio "toy" factory have been manufacturing the CAD 500 MB's since February. I have heard from many satisfied customers from all corners of the world about how happy and pleased they are with their new reference quality solid state power amplifiers. They simply love their new CAD 500 MB's. My own pair of CAD 500 MB's has not been turned off in my home listening room since January. They are great fun and such a pleasure to listen to with any type of music.

Oh, get this..... Gregg has some of our custom home theater installers using ... you guessed it ... five (5) CAD-500 MB's in home cinema surround sound systems! Talk about total corruption. We love It!

We have made extensive rated output power, distortion and price comparisons to some of our competitor's mono power amplifier models verses the CAD 500 MB. I truly believe we offer the best sound, the best power and the best value in a high power, solid state power amplifier in the market!

Thank you for your continued interest in and continuing support of Cary Audio Design.

Yours Truly,

Dennis J. Had  
President  
Cary Audio Design

# INTRODUCTION

---

## Congratulations!

You have just purchased one of the finest solid state power amplifiers made. Whether in mono, stereo or in multi channel usage, the CAD 500 MB and the CAD 200 are audiophile quality power amplifiers. In addition to awesome power delivery, the CAD 500 MB and the CAD 200 power amplifiers deliver flawless reproduction of musical detail.

Cary Audio Design solid state power amplifier features include:

- Remote trigger (works with + 4.2 to + 32 Volts DC)
- Short circuit protection,
- Thermal Protection circuits
- DC offset protection
- Matched 50 MHz multiple emitter output transistors
- Soft start circuit prevents "Brown outs" when amplifier is turned on
- Pure Balanced FET input section in the CAD 500 MB mono balanced power amplifier

The Cary Audio Design CAD 500 MB and CAD 200 power amplifiers have three separate protection circuits to prevent damage to your speaker and the power amplifier.

- AC Fuse - Fused with a 3.5A/7.5A for 240V and a 7.5A/15A for 120V.
- Thermal protection - if a channel overheats its output is disconnected until it cools down to a safe operating temperature.
- DC offset sensor - If an amplifier malfunction or signal source malfunction occurs, the potential exists for providing DC voltage to the loudspeaker. If this happens, the channel will automatically shut down. No damage can occur.

In building the CAD 500 MB and CAD 200 power amplifiers, significant effort has been focused on building an amplifier that delivers outstanding mechanical performance, is easy to use, and has sonic properties that will delight the most demanding audiophile customer. Thank you for choosing Cary Audio Design and we hope you enjoy your new power amplifier.

*\*Short circuit protection activates if load impedance is about 1.6 ohms or less. Constant tripping of short circuit can degrade output transistors. To reset protection, turn the amplifier off, wait 10 seconds, then turn the amplifier on.*

# SPECIFICATIONS

---

This section describes the basic specifications of the CAD 500 MB or CAD 200 power amplifiers at the time of printing. Specifications are subject to change without notice or obligation. When the following cautionary terms are used in this manual, these definitions apply:

**WARNING**

Electrical hazard! Misuse or failure to follow instructions properly may result in personal injury or death!

**CAUTION**

No risk or personal injury; however, misuse or failure to follow instructions may result in damage to equipment.

**NOTE**

No risk of personal injury or equipment damage; however, misuse or failure to follow instructions may prevent proper performance of the equipment.

---

**RATED POWER OUTPUT**

CAD 500 MB	500 watts @ 8 ohms, 1,000 watts @ 4 ohms, Class A/B
CAD 200	200 watts/channel - 8 ohms, Class A/B x 2 350 watts/channel - 4 ohms x 2

---

<b>DAMPING FACTOR</b>	>100 @ 8 ohms
-----------------------	---------------

---

<b>PEAK CURRENT</b>	CAD 500 MB - 70 amps CAD 200 - 35 amps
---------------------	---

---

<b>FREQUENCY RESPONSE</b>	10 to 50 kHz +/-0.1 dB -3 dB @ 200 kHz
---------------------------	---

---

<b>INPUT POWER REQUIREMENTS</b>	117 VAC 50/60 Hz or 234 VAC 50/60 Hz, by market
---------------------------------	---

---

<b>POWER CONSUMPTION</b>	255/155/115/90/125 Watts – Idling with no signal input 2500/1000, All channels, 8-ohm load, full power
--------------------------	---

---

<b>INPUT IMPEDANCE</b>	44k ohms - Single-ended RCA inputs 91k ohms - Balanced XLR inputs
------------------------	--

---

<b>OUTPUT IMPEDANCE</b>	4 to 16 ohms rated speaker impedance
-------------------------	--------------------------------------

---

<b>GAIN</b>	27 dB
-------------	-------

---

<b>THD</b>	< 0.05 %, 20 Hz-20 kHz
------------	------------------------

---

<b>NOISE</b>	> 100 dB below rated output, A-weighted
--------------	---

<b>SENSITIVITY</b>	1.42 Volts for full output
<b>POWER SUPPLY CAPACITORS</b>	4 or 2 - 33,000 $\mu$ FD @ 80 Volts
<b>POWER TRANSFORMERS</b>	1 – Toroidal, 200% duty cycle
<b>BREAK-IN PERIOD</b>	100 hours of music playing time
<b>FINISH</b>	Textured black chassis with silver anodized aluminum faceplate Standard (black faceplate optional)
<b>AC CORD</b>	3 conductor shielded, Detachable
<b>WEIGHT</b>	CAD 500 MB – 48 lbs. (21.8 kg.) CAD 200 - 45 lbs. (20.5 kg.)
<b>DIMENSIONS</b>	6.25" H x 17.75" W x 14.5" D Allow 2" Depth for speaker binding post clearance

## FEATURES

### Front Panel

<b>POWER SWITCH</b>	Main power switch for all channels
<b>LED</b>	Indicates channels operating. The LED's will not light if the power amplifier is in protection mode or if the fuse is blown

### Rear Apron

<b>AC INLET</b>	3-conductor detachable power cord connector
<b>INPUTS</b>	XLR or RCA inputs, with input selector switch
<b>OUTPUT</b>	CAD 500 MB - Dual WBT 5-way binding posts CAD 200 - 5-way binding posts
<b>FUSES</b>	AC power fuse. Only replace with a 7 AMP SLOW BLOW Fuse @ 250 VOLT!
<b>RCA/XLR SWITCHES</b>	Select single-ended or balanced operation for each channel
<b>REMOTE TRIGGER</b>	1/8" mono mini-plug connection jack. Set the front panel Main Power switch to OFF for use of either the CAD 500 MB or CAD 200 for the remote turn on or turn off feature with the remote trigger controlled by an external switch.

# INSTALLATION

---

This section describes the unpacking and installation procedures for your new component.

## **CAUTION**

**EQUIPMENT DAMAGE MAY OCCUR WITH IMPROPER FUSES.  
NEVER REMOVE / INSERT AC LINE CORD WHEN THE UNIT IS ON.**

## **Unpacking**

All Cary Audio Design shipping containers have been specially designed to protect their contents and special care has been taken to prevent damage under normal shipping conditions. Mishandling should be evident upon inspection of the shipping container. If shipping damage is found after visual inspection, take care not to destroy the evidence. If necessary, document the damage with photographs and contact the transport carrier immediately.

Carefully remove your new component from its packing carton and examine it closely for signs of shipping damage. We strongly recommend saving all original packing cartons to protect your amplifier from damage should you wish to store it or ship it for after-sales service.

## **Warranty Card**

**IN THE USA:** If you are the original purchaser of a new unit from an AUTHORIZED CARY AUDIO DESIGN DEALER, please fill out the enclosed warranty registration card and return it to Cary Audio Design within 15 days of your purchase. Cary Audio Design also suggests that you keep your original packing cartons in case you ever need to ship the unit when moving to a new home. Warranty restrictions apply. Consult the warranty section at the end of this manual for details. Please be certain to keep a copy of the original sales receipt from your AUTHORIZED CARY AUDIO DESIGN DEALER to validate the warranty if ever needed. The warranty is for the original purchaser only and does not transfer to any subsequent owner.

**OUTSIDE THE USA:** Your local Authorized Cary Audio Design Distributor will make his own warranty policy for your country. Please check with them for the terms of warranty for your new amplifier.

## **Placement**

The power amplifier is designed for use inside climate controlled rooms. It must be protected from the elements and temperature extremes. For example, avoid placing the unit in extremely hot locations such as near radiators or other heating units. Avoid installation where it might be damp or wet to avoid potential shock hazards.

## **Power Requirements**

Your new power amplifier is designed to operate from residential or commercial AC current mains. The design voltage is 117 VAC at 50/60Hz for USA. (Export units 234 VAC at 50/60Hz or 117 VAC at 50/60 Hz.)

## **Cables**

The speaker cables from the CAD 500 MB or Cary Cinema power amplifier can be any convenient length that your individual speaker set-up requires. Select quality speaker cables of sufficient size to preserve the outstanding performance capabilities of your Cary Cinema amplifier. Heavy gauge #14 wire is suitable for



distances up to 10 feet, #12 for 25 feet. Most audio dealers will have proper speaker cable in stock for this purpose. Consult your Authorized Cary Audio Design Dealer for advice about wire.

### **Interconnects**

Signal input connections are made on the rear of your CAD 500 MB or Cary Cinema power amplifier, selecting either single ended RCA connections or XLR balanced inputs. The interconnect cables can be any convenient length your installation set-up requires. The choice of a high quality shielded interconnect cable is important. Once again, your audio dealer will have the proper cables in stock for this purpose.

#### **WARNING**

**Do not touch the speaker output binding posts during normal operation. You may be shocked. Do not short-circuit the speaker output binding posts. Damage may occur or the fuse may blow. Do not parallel or "bridge" the speaker output binding posts as this will damage the amplifier.**

## **OPERATION**

---

Your new CAD 500 MB or CAD 200 amplifier is ready for operation after installing the AC power cord, the speaker and interconnect cables. Make sure that the RCA/XLR switch is in the proper input selector position for your particular usage and installation.

### **On-Off Power Switch**

Push the main power switch on the front panel to the ON position for normal use. (Set CAD 500 MB, CAD 200 for remote turn on/off operation and it will be turned on and off by the trigger in the surround sound processor.) At this point you can play music or start the movie. Flip the main power switch to OFF for normal shut down.

### **Break In Period**

The transistors and capacitors take approximately 100 hours of music playing to fully settle in for peak performance. The power amplifier will sound good right out of the box and continue to improve as it goes through 'break in.' After the first couple of hours you will notice increased image depth and tighter bass.

## SERVICE AND CARE

---

The chassis may be cleaned with a soft towel and Windex® or a similar window cleaner. Spray it on the cleaning cloth to moisten it, not on the component. Do not use solvents or harsh chemicals to clean the preamplifier. They may remove the labels from the chassis. The frequency and need of cleaning will be governed by operating environmental conditions. Avoid letting the component become dusty or wet. A 'feather duster' type cleaner will also work well for cleaning the component.

### Factory Service

Careful consideration has been given to the design of this product to keep maintenance problems to a minimum. If problems arise, refer to the troubleshooting guide at the end of this manual. If the problem is not easily solved, we suggest that you contact our Customer Service Department by phone at (919) 355-0010, 1–5 pm Eastern Standard Time, to describe your problem in detail. DO NOT return the component to the factory without a Return Authorization Number (**RA**) from the Customer Service Department.

Cary Audio Design assumes no responsibility if the transportation company refuses to pay a damage claim due to your improper packing or lack of insurance should the unit be lost in shipment. We strongly suggest using the original packing cartons for shipping any Cary Audio Design component.

### Non-Warranty Repairs

Cary Audio Design will provide repair service for its products charging on a time and expense basis. At this time, the standard non warranty service bench fee is \$125 with all parts used for repair charged extra. This may change with time and is not a quote for service. Please call us at 919-355-0010 for more information about out of warranty service and repair fees.

#### **WARNINGS**

**Make no attempt to put the CAD 500 MB or CAD 200 amplifier in service outside of the cabinet - Contact with high voltages found inside the unit can be fatal! Completely remove AC power plug from the wall and allow 30 minutes for the high voltage capacitors to discharge through bleeder resistors before attempting to clean the inside of the amplifier.**

#### **CAUTIONS**

**Never remove/insert the AC plug when the unit is on or the AC power switch is in the "ON" position. Obstruction of the top portion of the CAD 500 MB or CAD 200 power amplifier will result in overheating.**

## AWARDS

---

The CAD 500 MB and CAD 200 power amplifiers are derived from the CAD 500 T power amplifier that sold for \$8,000 as a multichannel audiophile power amplifier. We firmly believe that you will enjoy with our Cary Classic solid state power amplifiers. Thank you for your support of Cary Audio Design. We suggest that a Cary Cinema CD player or Cary Classic preamplifier would be a great match for your Cary Classic power amplifier. The CAD SLP 05 balanced vacuum tube preamplifier is an excellent match for the CAD 500 MB, for example.

The Cary Cinema 5 power amplifier has been named the Multichannel Power Amplifier of the Year for *The Perfect Vision* magazine in 2003! It was chosen for the prestigious Editor's Choice Award by *The Absolute Sound* magazine for 2003! Now it is *The Perfect Vision* and *The Absolute Sound* magazines Editors Best Buy choice for 2004 and has repeated for 2005! With an award-winning amplifier, design like this you can rest assured that you have bought the right power amplifier for your home audio system!

*\*Any trademarks or award images used remain the property of their respective owners.*



## TROUBLESHOOTING GUIDE

---

SYMPTOM	CAUSE	REMEDY
Hum or "Buzzing" through the speakers	<p>Ground loop</p> <p>Intermittent or poor connection of interconnect ground</p> <p>RCA/XLR Switch not in correct position</p>	<p>Install 2-pin adapter on AC cord to float the ground</p> <p>Replace interconnect</p> <p>If using balanced inputs, make sure switch is toward XLR connector and toward RCA jack for RCA in</p>
Reduced Output	RCA/XLR Switch not in correct position	If using balanced inputs, make sure switch is toward XLR connector and toward RCA jack for RCA in
AC fuse blows	<p>Overload</p> <p>Short at output</p>	<p>Playing very loud into very low impedance. Replace fuse</p> <p>Make sure (+) and (-) of binding post are not shorted</p>
LED out	Protection circuit activated	Turn power off. Wait 10 seconds and turn back on

## UNITED STATES LIMITED WARRANTY

---

Cary Audio Design warrants to the original United States purchaser for use in the United States, that Cary Audio Design vacuum tube or solid state power amplifiers, surround sound processors or preamplifiers shall be free from defects in parts or workmanship for three (3) years from the date of the original purchase. Vacuum tubes, if any are used in the component, are offered a 90 day from purchase date exchange policy against defects with the exception of the CAVT 300B vacuum tube which has a (1) one year from purchase date exchange policy. Any digital drive design, whether a Cary Audio Design CD or SACD player or a Cary Cinema DVD player, has a limited one year parts and labor warranty against defects in manufacture. This is a limited warrant, for the original purchaser only and does not transfer to any subsequent owner.

During the limited warranty period, Cary Audio Design or an authorized Cary Audio Design service facility will provide free of charge both parts and labor necessary to correct any defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

1. Complete and send in the warranty Registration Card within 15 days of purchase.
2. If claiming service the owner must send a fully filled in copy of the original sales receipt along with any unit sent in for service showing the AUTHORIZED CARY AUDIO DESIGN DEALER'S name, the new selling price, the buyer's name, e-mail or phone number and address on the receipt. Blank receipts will NOT validate the limited warranty for service.
3. Notify Cary Audio Design as soon as possible after the discovery of a possible defect and submit the following information to determine eligibility for warranty:
  - (a) The model number and serial number;
  - (b) A fully filled in copy of the original sales receipt showing the original selling price, purchasers name and address filled in by an AUTHORIZED CARY AUDIO DESIGN DEALER with the original date of purchase shown on the form;
  - (c) a detailed description of the problem.
4. Deliver the product to Cary Audio Design or the nearest authorized service facility or ship with all freight and insurance charges prepaid, in its original packing container or equivalent, to Cary Audio.

Correct maintenance, repair and use are important to obtain performance from this product. Therefore, please carefully read the Operating Manual. This warranty does not apply to any defect that Cary Audio Design in its sole discretion determines is due to:

1. Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and the specifications of the original parts.
2. Misuse, abuse, neglect or improper installation.
3. Accidental or incidental damage.

### WARRANTY DISCLAIMER

Except for the express warranties stated herein, Cary Audio Design disclaims all other warranties including, without limitation, all implied warranties of merchantability and fitness for a particular purpose. The

foregoing constitutes Cary Audio Design's entire obligation with respect to this product, and the original purchaser and any user or owner shall have no other claim for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives legal rights and you may also have other rights, which vary from state to state.

**EXCLUSIVE REMEDY**

Notwithstanding the foregoing, the purchaser's exclusive remedy for any breach of warranty, express or implied, is limited to the repair or replacement of the defective unit or the refund of the purchase price, at the option of Cary Audio Design. Under no circumstances is Cary Audio Design liable for incidental or consequential damages. Any implied warranties imposed by law terminate one (1) year from the date of purchase.

**INTERNATIONAL PURCHASERS (Export markets)**

Cary Audio Design warrants its merchandise to purchasers within the United States exclusively for use within the United States of America. It provides no other warranties, expressed or implied. If you are living outside the USA, please consult with your local dealer or distributor to determine the details of your local warranty.

**Cary Audio Design**  
1020 Goodworth Drive  
Apex, North Carolina 27539  
Tel: 919-355-0010  
Fax: 919-355-0013  
[www.caryaudio.com](http://www.caryaudio.com)

**CARY AUDIO DESIGN**

1020 Goodworth Drive, Apex, NC 27539  
phone 919-355-0010  
fax 919-355-0013  
[www.caryaudio.com](http://www.caryaudio.com)

