



AT5XXnc CLASS D 2 TO 8-CHANNEL POWER AMPLIFIER OWNER'S GUIDE



american muscle
Designed, Engineered and Assembled in the USA

PLEASE READ FIRST

CAUTION: To reduce the risk of electrical shock, do not remove the cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.



WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

WARNING TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

The lightning flash with arrowhead, 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 electrical shock to persons.



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



PRECAUTIONS

The AT5XX_{NC} amplifier is a wide-band design with substantial power output capability. Certain precautions must be taken to ensure proper operation.

- Never expose the amplifier to moisture.
- Never plug an input cable into the amplifier while the unit is turned on.
- Never apply the "thumb test" (touching the "hot" lead of the input cable with your finger) to the tip of the input cable or input jack of the ATI amplifier. RF rectification and/or hum will be created and could cause damage to the loudspeakers. ATI will not be responsible for damage to the loudspeakers due to improper use of the equipment.
- Under no circumstances should the output terminals of the AT5XX_{NC} be short-circuited.
- Avoid restricting the airflow around the AT5XX_{NC} amplifier. Good airflow is necessary to ensure proper cooling and trouble-free operation.
- Ensure that the rated power handling of the loudspeakers connected to the AT5XX_{NC} amplifier can handle the output power of the amplifier. The warranty of the AT5XX_{NC} does not cover damage to loudspeakers with inadequate power handling capability.
- Do not stack other system components or any other materials on top of the AT5XX_{NC} amplifier. The amplifier is convection cooled and air must be free to circulate around its chassis.

SAFETY INSTRUCTIONS

Read all the safety and operating instructions before connection or using the AT5XX_{NC}.

- All warnings on the unit and in this operating manual should be adhered to.
- All operating instructions should be followed.
- Do not place/use the unit near water; for example, near a bathtub, washbowl/sink, laundry tub, decorative water features (waterfalls/fountains), in a wet basement or near a swimming pool.
- This unit is not intended for outdoor use.
- This unit should be installed so that its location or position does not interfere with its proper ventilation. For example, it should not be situated on a bed, sofa, rug or similar surface that may block its ventilation openings. It should also not be placed in a built-in enclosure, such as bookcase or cabinet, that may impede the flow of air through its ventilation openings.
- The unit should be situated away from heat sources such as radiators, fireplaces, hot air ducts, heat registers, stoves and/or other devices (including amplifiers) that produce heat.
- The unit should be connected to a power-supply outlet only of the voltage and frequency marked on its rear panel.
- The AC power cord should be routed so that it is not likely to be walked on or pinched, especially near the plug, convenience receptacles or where the cord exits from the unit.
- Clean unit only as recommended in this instruction manual.
- The unit's AC power cord should be unplugged from the wall outlet when the unit is to be unused for a long period of time.
- Care should be taken so that objects do not fall, and liquids are not spilled, into the unit through any openings.
- The unit should be serviced by qualified service personnel only when:
 - a. The power cord or plug has been damaged; or
 - b. Objects have fallen, or liquid has been spilled, into the unit; or
 - c. The unit has been exposed to rain or liquids of any kind; or
 - d. The unit does not appear to operate normally or exhibits a marked change in performance; or
 - e. The device has been dropped or the enclosure damaged.
- To prevent electric shock, do not use a ground lift plug/adaptor. Also, do not use the polarized plug with an extension cord, receptacle or other outlet unless all the blades can be fully inserted to prevent blade exposure.

Amplifier Identification Record

This information is for your records and for future identification of the AT5XX_{NC}. Please take a moment to fill out all pertinent data now, and as upgrades and/or options are installed. **Whenever upgrades, inquiries and/or changes are requested, the serial number will be required.**

MODEL NUMBER _____

SERIAL NUMBER _____

DATE PURCHASED _____

DEALER'S NAME _____

DEALER'S ADDRESS/PHONE _____

IMPORTANT

Save all packaging in a dry place away from fire hazards. Your amplifier is a precision electronic instrument and should be properly packaged any time shipment is made. In the unlikely event that you have to return your AT5XX_{NC} to the factory or dealer for service or updating, the original packaging will best protect the unit from shipping damage.

In order to achieve the fullest flexibility and enjoyment from your AT5XX_{NC}, we recommend that you read this manual in full before connecting the unit to your audio system.

Note: While the AT5XX_{NC} amplifier is an advanced Class-D design and generates little heat, it is imperative that the amplifier be operated in a well-ventilated environment and that the immediate external temperature be maintained as specified.

Warning: There are two versions of the AT5XX_{NC} amplifier. One is conventional. The other is a balanced bridge amplifier in which the negative speaker terminal is NOT a ground and cannot be connected to a system ground or to a loudspeaker system with a common ground. *The balanced bridge amplifiers are: AT542_{NC}; AT543_{NC} and AT544_{NC}.*

Consult your speaker manufacturer to ensure that any speaker in your system that will be connected to these balanced bridge amplifiers does NOT have internal circuitry with a common ground.

PREFACE

CONGRATULATIONS. You have just acquired one of the most advanced audio components available. Your AT5XX_{NC} amplifier was designed to provide a state-of-the-art listening experience and is suitable for use with associated components of the highest order.

The amplifier uses N-Core NC-500 class D amplifier modules with ATI designed custom gain stage and linear power supply to deliver superior performance.

Additional features include:

1. Custom soft-start circuitry to minimize any turn-on power surge;
2. Complete protection from overload, DC faults, over-voltage or over-temperature conditions.
3. ATI's proprietary voltage-sensing power supply which automatically selects the proper voltage and is suitable for use with AC supply of 100V to 260V.

SAFETY WARNING	i
SAFETY INSTRUCTIONS	ii
AT5XX _{NC} Identification Record	iii
Preface.....	iv
Table of Contents.....	1
INTRODUCTION	1
Getting to know your amplifier.....	1
Burn-In/Break-In Time.....	1
Reference Manual Conventions.....	1
IMPORTANT NOTICE	1
Front Panel Layout	2
Rear Panel Layout	3
OPERATION	4
Connecting your amplifier.....	4
Setup and Operation	4
Remote Triggers	4
Appendix A Troubleshooting Guide	5
Appendix B Specifications	6
Warranty.....	7

INTRODUCTION

Getting to know your AT5XX_{NC} Amplifier

This AT5XX_{NC} amplifier has been put through a rigorous and unique testing procedure ensuring that each amplifier will last for many years with minimal service requirements. This procedure includes the following:

- All assembled circuit boards are given a thorough visual inspection and are then performance tested.
- The tested, assembled circuit boards are then installed in a new AT5XX_{NC} and the whole unit is tested for every function and parameter.
- The unit is put on a burn-in torture rack to test for any possible component failures.
- The amplifier then undergoes a critical listening and functional test.

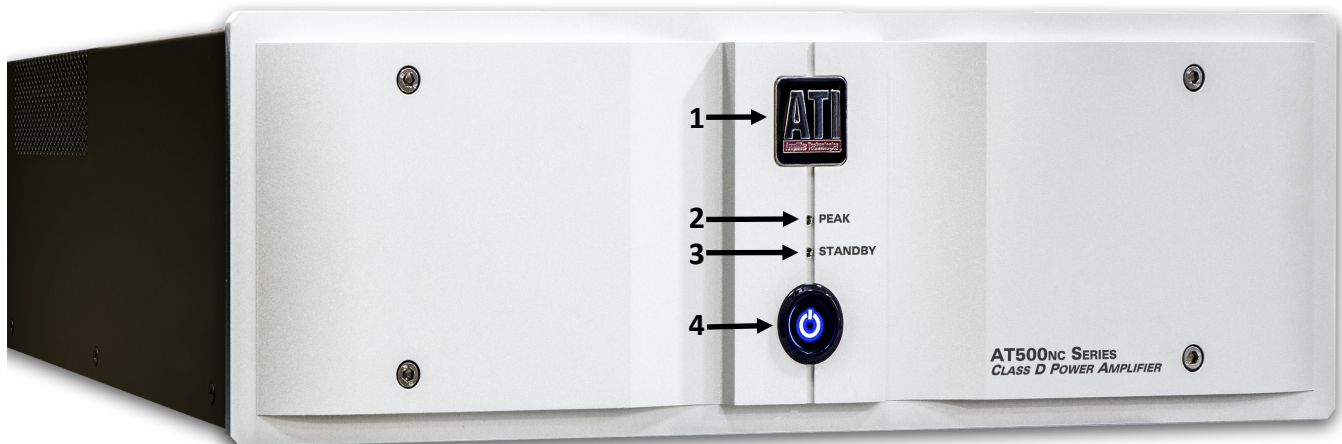
Burn-In/Break-In Time

This unit has a break-in period of about 1 week during which continuous improvement in sound quality will be observed. It is recommended that music be played continuously through the unit during this time to expedite the break-in period.

Reference Manual Conventions

For clarity purposes, references to buttons and LED's will be shown in bold capital letters.

Front Panel Layout



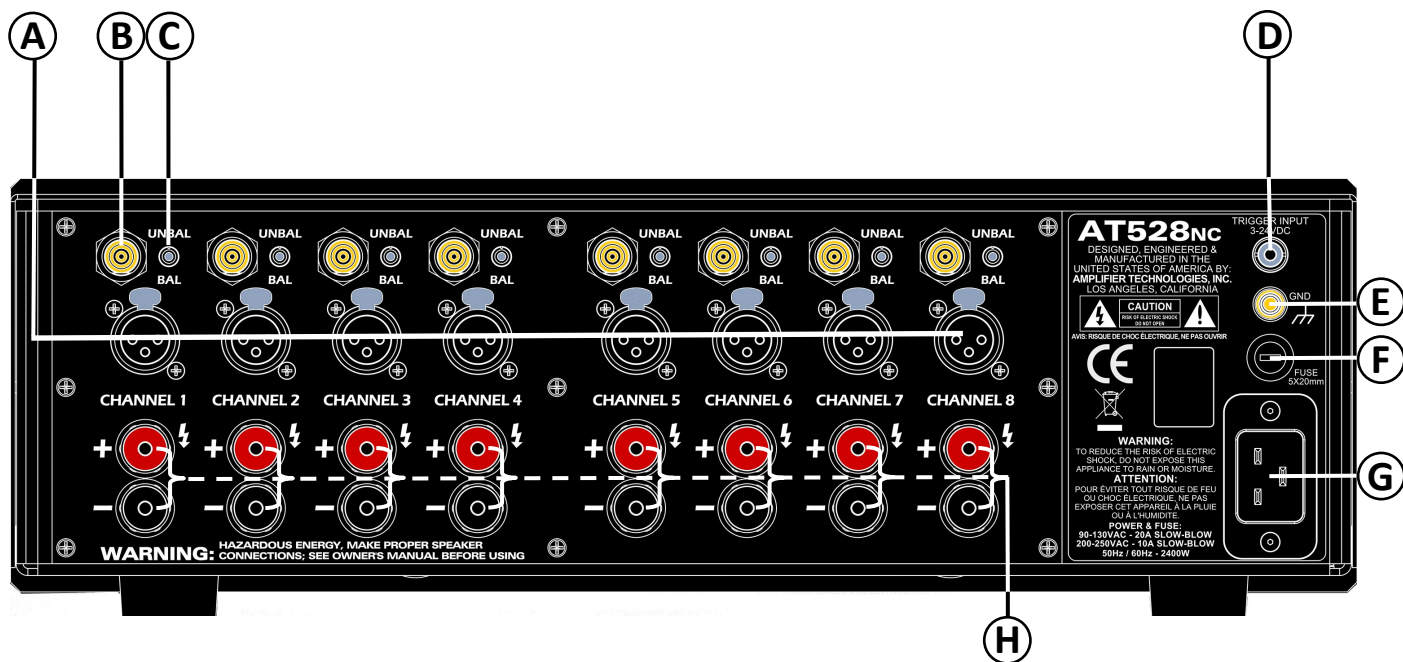
1. LOGO.

2. **PEAK POWER LED.** Illuminates whenever any channel reaches full output.

3. **STANDBY LED.** When the **MAIN POWER** switch is pressed, the **STANDBY LED** illuminates until the amplifier has completed the turn-on process and enters the playback mode. When the playback mode is reached, the **STANDBY LED** turns off. After 10 minutes (approximately) with no input signal, the **STANDBY LED** illuminates indicating the amplifier has entered **SLEEP MODE**. While in **SLEEP MODE**, internal processes are scaled back reducing power consumption. When a signal is again present at any of the inputs, the **STANDBY LED** will turn off and playback resumes instantaneously.

4. **ILLUMINATED POWER SWITCH.** When the amplifier is plugged in and idle, the **ILLUMINATED POWER SWITCH** pulses slowly and dimly. When the **ILLUMINATED POWER SWITCH** is depressed, the illumination of the switch becomes constant, the **STANDBY LED** illuminates and the amplifier begins the turn-on process. When the turn-on process is complete, the **ILLUMINATED POWER SWITCH** brightens fully, the **STANDBY LED** turns off and the amplifier begins playback.

Rear Panel Layout



Rear Panel Layout

A. Balanced XLR Audio Inputs

Use the BALANCED INPUT jacks to connect to the outputs of a preamplifier or other control device with XLR outputs.

B. Unbalanced (RCA) Audio Inputs

Use the UNBALANCED INPUT jacks to connect to the outputs of a preamplifier, receiver with preamp-out connections, CD player, or other source device with RCA style outputs.

C. Input Selector Switch

Selects either the BALANCED INPUT (XLR) or the UNBALANCED (RCA) INPUT jack.

D. Remote Trigger Input

Use the REMOTE TRIGGER jack to connect to a compatible preamplifier, source device, or other product with a 3-24 VDC output.

E. Ground Terminal

Use to interconnect chassis where necessary.

F. Fuse

Replace only with the correct type and rating. The rating is shown on the rear panel next to the IEC power inlet.

G. AC Inlet

Use the included power cord to connect your amplifier to an AC power source.

H. Speaker Outputs

Use the OUTPUT binding posts to connect the amplifier to your speakers. The post with the red band is positive. The post with the white band is negative.

OPERATION

Before turning on the AT5XX_{NC}, ensure that all precautions and warnings have been carefully reviewed and adhered to. Damage to the amplifier caused by improper operation, wiring and/or ventilation will not be covered under warranty and ATI will not be liable for any consequential damage or loss.

Connecting your AT5XX_{NC} Amplifier

With the amplifier unplugged, connect the signal outputs of the preamp/processor to the desired input (XLR (A) or RCA (B) of the amplifier. Use the toggle switch (C) to the right of each RCA input (as viewed from the rear) to select the desired input. Connect the amplifier's output to the input of the speaker that is intended to be driven.

Connect a 12V trigger source to the **STANDBY** trigger input of the AT5XX_{NC} using the supplied cable or a cable with a 3.5 mm monophonic plug to enable remote turn-on and turn-off.

Setup and Operation

Turn the output volume of the preamp/processor, or other source device, down all of the way.

Plug in the AT5XX_{NC} amplifier into an appropriate AC power source. The front panel switch will dimly illuminate and pulse slowly. The amplifier is in the standby mode and draws less than 1 watt from the wall outlet.

Depress the **ILLUMINATED POWER SWITCH**. The switch will stop pulsing and the **STANDBY LED** will illuminate. After the turn-on process is complete, the front panel switch will illuminate fully, the **STANDBY LED** will turn off and the amplifier will enter playback mode.

Slowly bring the output volume of the preamp/processor up to an audible level.

Remote Triggers

When the rear panel **STANDBY** trigger jack receives a 3-24 VDC signal, the AT5XX_{NC} will change its operating state from **STANDBY** to **ON**. When the signal is removed, the amplifier will return to **STANDBY**.

Appendix A Troubleshooting Guide

If the amplifier should function abnormally during operation, please review the items in the following checklist. Please be sure to thoroughly check all other connected components such as speakers and preamplifiers, as well as cables. If the problem persists, please consult your dealer or distributor.

Symptom	Possible Cause(s)	Remedy
No power or front panel lights and no sound.	The power cable is not inserted 100% into AC input connector.	Ensure that the AC cord is fully inserted into the amplifier and that the wall outlet is active.
No power or front panel lights and no sound.	Circuit breaker is open (AC outlet).	Check the AC outlet circuit breaker and reset, if necessary, or contact your dealer.
No audio output.	Overheating, DC at output, Catastrophic failure	The amplifier will turn off. For any but a catastrophic failure, the amplifier can be reset by removing the fault and completing the turn-on sequence again.
Warm	Normal operation	

Appendix B Specifications

Analog Audio Inputs	One Single-ended (RCA) jack per channel; One Balanced (XLR) jack per channel	
Input Impedance	47 k Ω . Balanced for each phase	
Input Sensitivity	2.82V RMS input for 300W into 8 ohms	
Gain	27.8 dB	
Polarity	(Single-Ended) Non-Inverting Balanced; Pin-2 = Positive, Pin-3 = Negative for Non-Inverting Output	
Speaker Outputs	Binding posts; 1 pair per channel	
Modes /Process	Standby: Amplifier is ready to be turned on via front panel switch or remote trigger. Overcurrent, D.C., and/or thermal protection: Amplifier will cycle. Catastrophic D.C. or output stage failure: Amplifier will shut down.	
Power Output—Watts RMS		
Per Channel, All Channels Driven	8 ohms	4 ohms
20 Hz-20 kHz, < 0.02% THD	200 W	300 W
1 kHz, 0.02% THD, (Watts)	230 W	350 W
1 kHz, 1% THD	250 W	375 W
CEA 2006 1 kHz Burst Power	300 W	450 W
Power Output (Balanced Bridge Models)		
Per Channel, All Channels Driven	8 ohms	4 ohms
20 Hz-20 kHz, < 0.02% THD	500 W	900 W
1 kHz, 0.02% THD, (Watts)	600 W	1000 W
1 kHz, 1% THD	650 W	1000 W
CEA 2006 1 kHz Burst Power	700 W	1000 W
Distortion		
THD + N, 20 Hz—20 kHz	0.02%	0.02%
THD + N at 1 kHz, 1W	0.005%	0.005%
Intermodulation Distortion (SMPTE or Twin-tone)	Less than 0.03%	
Frequency Response	+0, -.5 dB, 5 Hz to 20 kHz, load independent	
Damping factor	>5000 at 100 Hz; >1500 at any frequency up to 20 kHz	
Signal to noise ratio	123 dB referenced to rated output (A-Weighted)	
Slew rate	>60V per microsecond	
Crosstalk	> 110 dB	
Power Requirements	117V AC; 230V; 50/60 Hz; Amplifier automatically selects proper voltage	
Power Consumption	Less than 1W x 2 at Standby; 1800W maximum	
Trigger Input	3-24 VDC; Steady State	
Dimensions (W x H x D)		
2, 3 and 4 Channel Models	17" x 5 11/16" x 10 5/8" (432 mm x 145 mm x 270 mm)	
5, 6, 7, 8 Channel and Bridged	17" x 5 7/8" x 15 1/2" (432 mm x 150 mm x 394 mm)	
	Add 1 inch (25mm) for connectors.	
Weight	Model dependent: 39 lbs to 65 1/2 lbs; 17.8 to 29.8 kg	

90-Day Limited Warranty Terms and Conditions (7-Year Optional Extended Warranty)

This ATI product is warranted against defects in materials and workmanship for a period of 90 days from the date of purchase by the original owner. The date of purchase shall be established by the original owner presenting to the ATI Customer Service Facility the original owner's purchase receipt or sales slip showing from whom the product was purchased, the date of purchase and the unit's purchase price.

In the event that proof of purchase cannot be established as stated in the preceding paragraph, the warranty period shall commence on the date of manufacture, provided the serial number on the unit has not been altered in any manner.

During the warranty period, ATI will repair, or at its sole option, replace at no charge, components that prove to be defective provided the product is returned in accordance with the shipping instructions that are contained in the unit. The unit is to be sent FREIGHT PREPAID in the original carton and packing along with a detailed description of the problem to ATI in the event it needs factory servicing. ATI will return the unit prepaid to you upon completion of the service

Optional Extended Warranty Program

The standard 90-Day Limited Warranty will be extended to a 7-Year Limited Warranty if the following conditions are met: The ATI product is purchased from an authorized ATI reseller; The customer completes and returns the registration card to ATI or the ATI distributor (if the unit is purchased outside the United States) or completes the warranty registration process at: www.ati-amp.com AND submits a copy of the original bill of sale to ATI within 14 days of purchase.

This extended warranty is transferrable to subsequent owners of the ATI component as long as all of the Optional Extended Warranty conditions are met.

PLEASE RETAIN A COPY OF THE ORIGINAL PROOF-OF-PURCHASE. It will be necessary should in-warranty service ever be required.

Transferability

The above warranties are transferable to subsequent owners as long as all of the conditions are met under the Optional Extended Warranty Program. The warranty is not transferable if the unit was originally purchased from an unauthorized seller.

The above warranties do not apply if the product has been damaged by accident or misuse or as a result of modification by other than the ATI factory service facility.

ATI shall not be held liable for incidental or consequential damages of any kind arising from the sale or use of its products. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THERE ARE NO WARRANTIES GIVEN BY ATI THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. ALL IMPLIED WARRANTIES OF FITNESS FOR PURPOSE SOLD, MERCHANTABILITY, DESCRIPTION, QUALITY PRODUCTIVENESS OR ANY OTHER MATTER ARE LIMITED TO THE TERM OF THE EXPRESS WARRANTIES HEREIN STATED.

Some states do not allow limitations on how long an implied warranty may last, so the above limitations may not apply to you.

Obligation to Make Changes

Products are sold on the basis of specifications applicable at the time of sale. ATI shall have no obligation to modify or to update products once sold.

This warranty gives you specific rights and you may also have other rights that vary from state to state. This warranty is applicable only in the United States.

Warranty Outside the United States

ATI has formal distribution agreements in many countries. The ATI importer in those countries has assumed the responsibility for servicing ATI products. Please contact the dealer or distributor in the country where you purchased your product for any service issues.



Amplifier Technologies, Inc.
1749 Chapin Road
Montebello, CA 90640 USA
Tel: (323) 278-0001 Fax: (323) 278-0083
www.ati-amp.com support@ati-amp.com