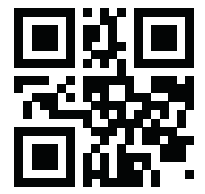


AUDIOPHILE ACOUSTICS



B2<sup>®</sup>

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# RIOT16000

## USER MANUAL

PRODUCT ID:

RIOT16KFR20

[WWW.B2AUDIO.COM](http://WWW.B2AUDIO.COM) / [WWW.FACEBOOK.COM/B2AUDIO](http://WWW.FACEBOOK.COM/B2AUDIO)



## INTRODUCTION

There are times when you need to make a statement, such as raising the bar & going beyond what has become the standard. For nearly a decade this has become synonymous with B2 audio. Whether it being product like subwoofers & amplifiers or even various competition formats in car audio, we have continuously set our standards higher. At times it might not be the most financially wise decision, but we are more than product and profits, we are first and foremost passionate about what we do, thus we want to implement our soul into each product.

### RIOT

Go all the way across. The 3rd series of Fullbridge amplifiers started by the RIOT7500 expands with the RIOT16000. New to some, established to others. B2 audio has downsized, but increased the performance with this new RIOT amplifier. The side benefit is also the power vs cost ratio is by far greater than before. Riot is for B2 audio equivalent to an uprising and something most can relate to. The entire Riot line offers subwoofers, speakers and amplifiers. It is the most complete series from B2 audio and will be superior in both performance and power. Given the small size of the Riot amplifiers they should also fit in any vehicle.

To obtain the full potential of any amplifier & to minimize failure, it is advised to upgrade your stock electrical system. Don't take any shortcuts, a better

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## AUDIOPHILE ACOUSTICS

IS THE DNA OF B2 AUDIO. ANY PRODUCT IS DEVELOPED BY ADDING THE UNIQUENESS AND THOUGHT OF EVOLUTION IN THE SPECIFIC APPLICATION OF THE PRODUCT'S DESIGN.

KEEP IN MIND THAT CONTINUOUS EXPOSURE TO SPL ABOVE 100 DB CAN SERIOUSLY DAMAGE YOUR HEARING. TODAY'S HIGH POWER AUTO SOUND SYSTEMS CAN EASILY PRODUCE SPL ABOVE 140 DB. ENJOY YOUR PASSION WITH SENSE AND RESPECT FOR THE ENVIRONMENT.

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## DESIGN FEATURES

# RIOT 16000

CIRCUIT CONFIGURATION:	FULLBRIDGE CLASS D
FREQUENCY RESPONSE:	10 HZ -20 KHZ (+/- 3 DB)
SIGNAL TO NOISE RATIO:	>80 DB
INPUT SENSITIVITY:	0.2 V - 5V
CROSSOVER CIRCUIT:	12DB/OCT
LOW PASS CROSSOVER:	80 HZ - 20 KHZ
HIGH PASS CROSSOVER:	15 HZ - 500 HZ
SUBSONIC CROSSOVER:	15 HZ -500 HZ
DAMPING FACTOR:	>200
BASS BOOST:	0 - 12 DB
BASS BOOST FREQUENCY:	35 HZ - 70 HZ
REMOTE CONTROL W/CLIP SENSOR:	INCLUDED
POWER TERMINAL GAUGE:	0 GA X 2
FUSE RATING:	1200 A (PEAK CURRENT DRAW >1500 A)
DIMENSIONS:	24.49" X 8.85" X 2.63" / 620 X 225 X 68 MM

All features are subject to change in the continuing effort to improve the products without notice.

### CONTINUOUS OUTPUT POWER (RMS)

	13.8 V - 1% THD**	14.4 V - 1% THD**
OUTPUT POWER @ 4 $\Omega$ :	7000 W	8500 W
OUTPUT POWER @ 2 $\Omega$ :	10500 W	12500 W
OUTPUT POWER @ 1 $\Omega$ :	16000 W	16000 W

\*\* Measured at industry standard for full range amplifiers (1KHz)

### DESCRIPTION OF SPECIFICATIONS

Operation below minimum impedance will stress the amplifier & void the warranty.

Excessive heat will also appear at a faster rate and the amplifier will go into thermal protection.

**Fullbridge amplifiers are not strappable and the RIOT16000 will not be stable below 1 ohm!**

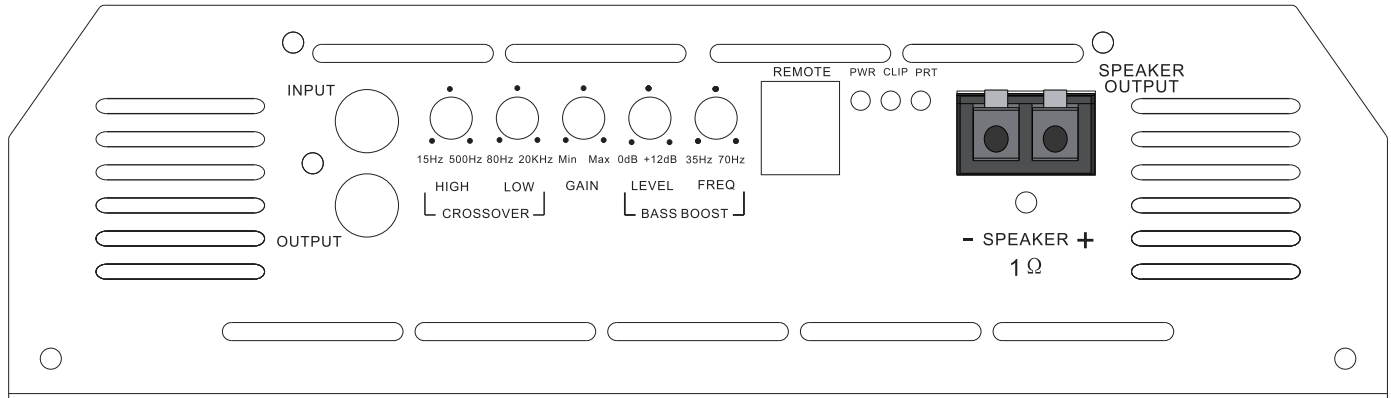
Protection can also be caused by the following

- \* Speaker overload
  - \* Short circuit
  - \* Input Voltage - RCA & Power Supply
- Operational voltage 9V ~16V.

Operational voltage will also be affected by the load of the amplifier.

\*In order to get the full power output of the amplifier, it is crucial that your electrical system is correctly (over)dimensioned.

## PANEL LAYOUT



### INPUT

RCA signal input

A minimum of 0.2V input signal is required for correct operation.

### OUTPUT

RCA signal output diverted from the amplifiers RCA input.

### CROSSOVER HIGH (12 DB/OCT)

Variable high pass crossover from 10 Hz to 500 Hz. It is highly recommended to set it according to the tuning of your loudspeakers enclosure / t/s parameters to avoid unnecessary strain to your sound system.

### CROSSOVER LOW(12 DB/ OCT)

Adjusts the cut off point for the low pass crossover at the chosen frequency. If used at the same time as crossover high, it will create a bandpass crossover within the frequencies set.

### GAIN (5V -0.2V)

Asjusts signal input voltage from the input source to match the amplifiers input stage. 0.2V ~ 5V is the given variation of voltages. Voltages beyond may cause errors or damages to the input section. Eventually the amplifier may go into protect.

### BASS BOOST LEVEL

Level control of 0 ~12 dB.

### BASS BOOST FREQ

Variable bass boost frequency from 35 Hz to 70 Hz. If the level selector is set at 0 dB, the boos frequency is not activated.

### REMOTE LEVEL CONTROL PORT

Connection of external signal level control with clip indicator. Caution, it is not a volume knob and shall be adjusted in accordance with the amplifiers gain.

### LED STATUS

Power lit = normal operation, Clip lit or flashing = signal input is not clean and distortion is detected. Protect = amplifier has shut down operation caused by improper application, malfunction, circuit damage

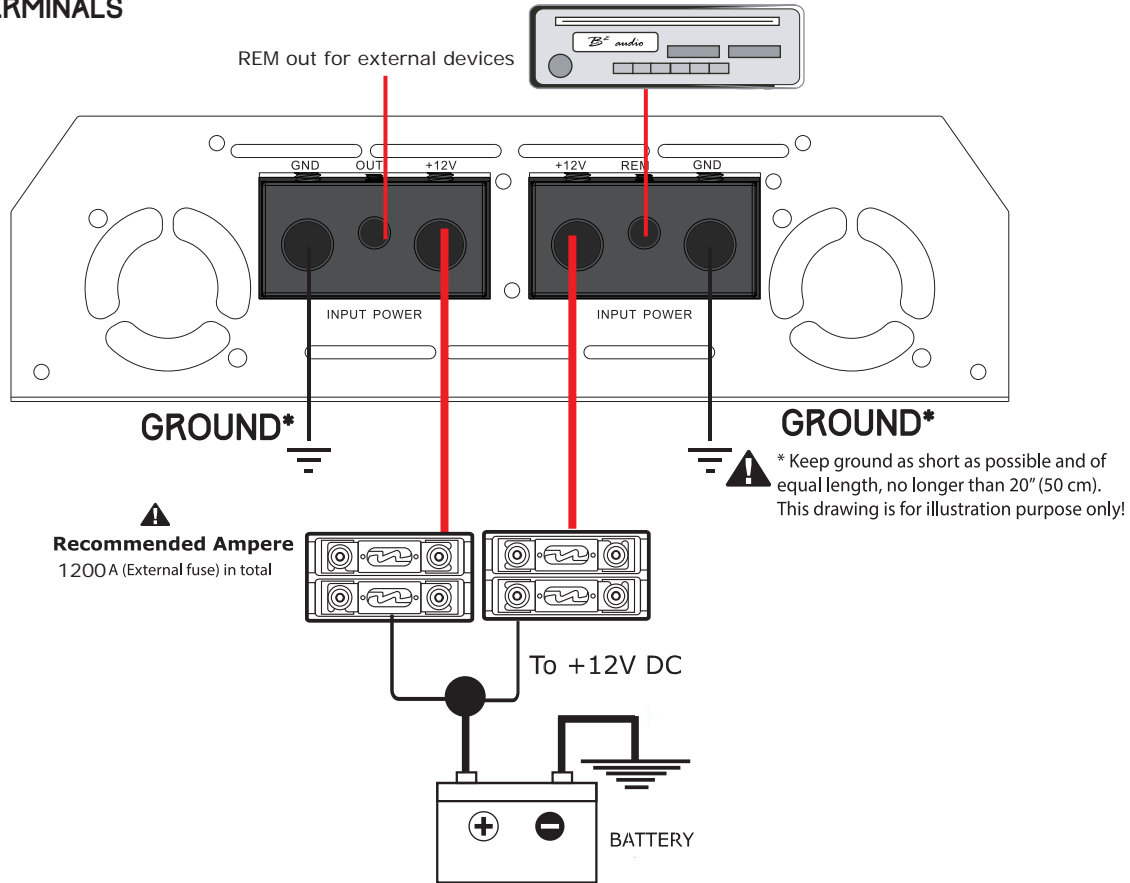
### SPEAKER OUTPUT

Connection to loudspeakers and / or subwoofers.

The minimum impedance is **1 OHM!**

The RIOT16000 is a fullbridge amplifier and is bridged internally. It can't be strapped or bridged.

## POWER TERMINALS



## POWER TERMINAL

### GND (GROUND CONNECTION)

Connects to the vehicle's chassis. Keep as short as possible (< 20" / 50 cm). Use minimum 0AWG cable for optimal operation.

### OUT (REMOTE OUTPUT)

Switched remote output for additional devices such as amplifiers, signal processors etc.

### +12V (POWER CONNECTION)

Connects to the positive terminal of the battery. For specified performance 0AWG cable is required. Fuses shall be placed within 8" / 20 cm of the battery.

### REM (REMOTE INPUT)

Switched remote input connection

## ⚠ CAUTION

### INSTALLATION OF THE AMPLIFIER SHALL BE DONE IN THE FOLLOWING STEPS:

1. Connect the +12V wire, keep in mind this wire has to be fused at the battery as well.
2. Ensure the ground is appropriate, then connect it to the amplifier.
3. Connect the switched remote.
4. Reattach negative wire (ground) to the battery.
5. Operation over 16 V will cause the amplifier to go into protect & can void the warranty!

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## **INSTALLATION**

### **INSTALLATION CONSIDERATIONS**

If you choose to install the amplifier by yourself, please read the entire owner's manual carefully. Before you start your installation, please take all steps into consideration. If in doubt, please go to [www.b2audio.com](http://www.b2audio.com) for authorized distributors / dealers that will be able to configure your set up & ensure the warranty of your amplifier.

### **PREPARATION**

Disconnect the negative (-) battery cable before mounting or making any connection. Check the battery & alternator ground (-) connection. Make sure they are properly connected/dimensioned & free of corrosion. Before selecting a mounting location for the amplifier, please take cooling & safety into consideration. Avoid areas with excessive vibration & up side down installation!

In order to avoid excessive heat from the amplifier, it is recommended to find a mounting location that allows for vertical positioning of the heatsink fins. For safety purposes, install the amplifier in a dry and well ventilated location and make sure no cables or other harness of the car is interfaced with the mounting location or will present a hazard to the car's cable, control cables, fuel lines/tanks, hydraulic lines or other components of the vehicle. Route the RCA cables away from high current wires, if possible run RCA, Power and Speaker cables individually and with a good distance from each other.

### **POWER CONNECTORS**

#### **12V (POWER CONNECTION)**

Before mounting the amplifier, disconnect the negative (-) wire from the battery to protect any accidental damage to the amplifier or the audio system. The amplifier is equipped with 0 AWG power & ground terminals. It is crucial that all terminals are used with the adequate cable to ensure correct operation. Connect the power cables to the power terminal labeled as +12V.

The amplifier is not equipped with fuses, so external fuses are required at both the battery and the amplifier. Connect one end of the fuse holder to the power cable and the other end of the fuse holder to the positive battery terminal within 8" / 20 cm of the same cable. The same shall be done at the other end of the cable that connects to the amplifier. The fuses will protect the system and the vehicle against the possibility of a short circuit in the power cable. Make sure that the fuses and the fuse holder is according to the system requirements.

#### **GND (GROUND CONNECTION)**

Locate a secure grounding connection as close as possible to the amplifier. Make sure the location is clean and provides a direct electrical connection to the chassis of the vehicle. Connect one end of an equal sized cable as the positive cable to the location of ground. It is important that the ground cable is as short as possible, but no longer than 20" / 50 cm at maximum. Run one end of the cable to the grounding point. Run the other end of the cable to the mounting location. Connect the ground cable to the terminals labeled as GND.

#### **REM ( REMOTE CONNECTION )**

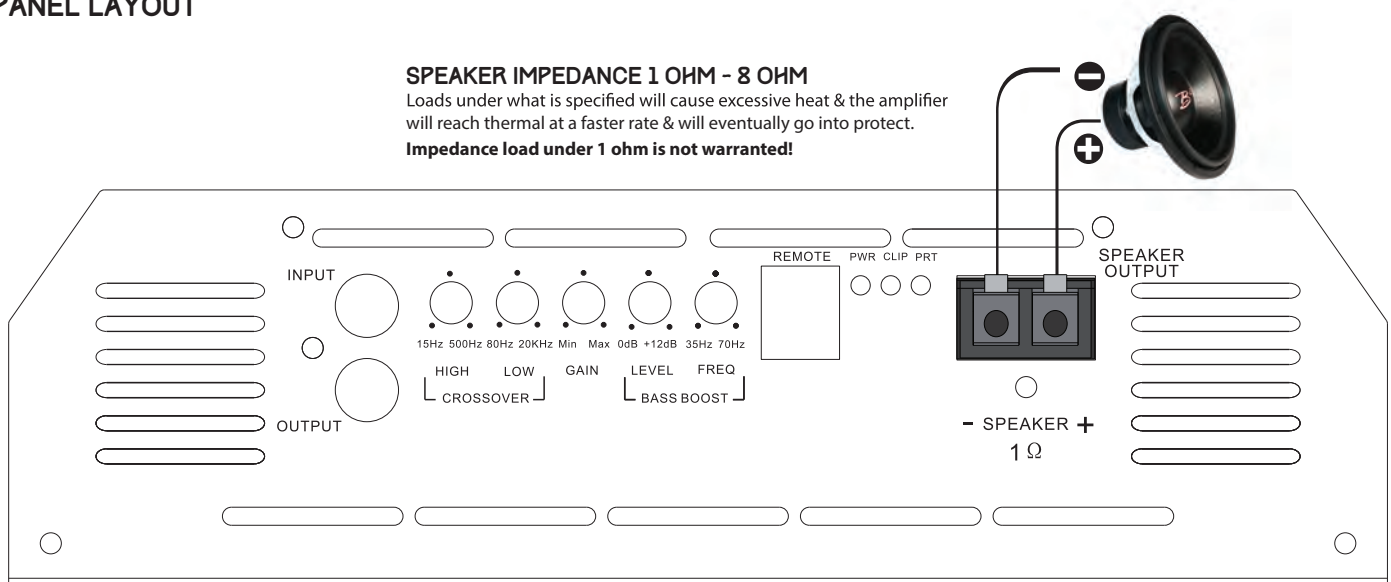
Run a remote turn on cable from the switched +12 V source. This may be a toggle switch, a relay, the source unit's remote output cable or power antenna trigger cable. Connect the remote turn on cable to the power terminal labeled as REM. The REM out terminal is mainly intended for connection of another amplifier ran in a chain, but it can also be used for other units.

#### **INPUT (RCA CABLE)**

Run the RCA cables away from the high current cables / speaker cables and connect to the amplifier. Use high quality cables with a secure grounding point to avoid amplifier malfunction and / or alternator whine.

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## PANEL LAYOUT



We recommend using minimum 10 Ga speaker cables to acquire the intended performance & efficiency. Run the speaker cables from your speakers to the amplifier's mounting location. Ensure these are ran separately and away from high current cables and if possible the RCA cables as well. In all cases where cables are penetrating the vehicle's chassis use grommets to protect the cable.

Connect the speaker wires according to the terminals on the speaker(s). Strip 3/8" / 1 cm of insulation of the end of each cable and twist the cable strands together tightly. Make sure there are no stray strands that could touch other cables or terminals as it can cause a short circuit. Crimp spade plugs over the end of the cable or tin the ends with solder to provide a solid terminal. Connect the cable ends to the amplifier as shown in the diagram.

### **⚠ CAUTION**

#### **INSTALLATION OF THE AMPLIFIER SHALL BE DONE IN THE FOLLOWING STEPS:**

1. Connect the +12V wire, keep in mind this wire has to be fused at the battery as well.
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## TROUBLESHOOTING

The protection circuits of the amplifier prevents severe damages from faulty conditions & improper use. The protection indicator will switch on due to short circuit connection & speaker overload, thus the amplifier will be turned off. Prior to inspecting the occurred problem, turn all levels down & all power off, then carefully check the installation for wiring mistakes, shorts or faulty ground (GND). If the amplifier shuts down due to excessive heat, the protection indicator will light up; please allow time for the unit to be cooled off. Before removing your amplifier, refer to the list below and follow the suggested procedures step by step. If not at ease, contact an authorized installer which can assist you.

### AMPLIFIER DOESN'T TURN ON

- Measure voltage on the +12V terminal.
- Ensure that the remote terminal has min. 13.8 V DC remote connection.
- Recheck the ground (GND) connection. Inspect the in-line fuses.
- Check the protection LED is not on.

### PROTECTION LED IS LIT ONCE THE AMPLIFIER IS TURNED ON

- Check shorts on speaker wires & the connected load / impedance. Check power cables & GND.
- Disconnect the speaker cables and reset the amplifier.
- High / Low voltage, operation voltage is 9 V ~ 16 V. Voltages below / beyond this will cause the amplifier to go into protect.

### FUSE BLOWING

- Measure the speaker impedance & that it is in accordance with the configuration.
- Inspect the power cable for shorts along with vehicle chassis.

### OVERHEATING

- Measure the speaker impedance & that it is in accordance with the configuration.
- Check speaker shorts.
- Ensure airflow around the amplifier is sufficient & that the amplifier is not installed in areas of excessive vibration & upside down!

### AUDIO OUTPUT INSUFFICIENT - DISTORTED SOUND

- Ensure that the gain settings on the amplifier is matched with the output level of the head unit.
- Adjust the head unit volume.
- Check speaker shorts.
- Adjust the crossover frequencies in accordance with the setup.
- If no output at all, check the RCA connections & the cable itself.

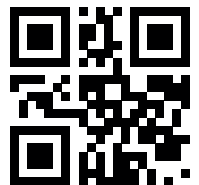
### TURN ON THUMP

- Disconnect the signal input to the amplifier, then turn it on and off.
  - a) If the noise is cancelled, then connect a delay turn on module on the REM wire running from the source unit to the amplifier.
  - b) Use another 12V source for REM lead to the amplifier. If the noise is cancelled, use a relay to isolate the amplifier from the turn on thump.

### HIGH HISS-ENGINE NOISE IN SPEAKERS

- Ensure that all signal transferring wires (RCA, speaker cables etc) are kept separately / away from the power and the ground wires.
- Bypass all electrical components between the Head unit and the amplifier.  
Connect the Head unit directly to the amplifier's input. If the noise is eliminated, the unit bypassed is the one causing the noise.
- Remove the existing ground wires for all electrical components installed. Ensure that the point of ground is 100% metal which has been grinded free of rust, paint etc.
- Replace the ground cable from the OEM battery / alternator and ensure it is grounded accordingly.
- Test the battery and alternator load (can be carried out by a professional).  
Ensure that the vehicle's electrical system is in a good condition, this includes distributor, alternator, spark plugs / wires, voltage regulators etc.

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**LIMITED WARRANTY INFORMATION**

B2 audio offers a limited warranty under the following terms:

The product is to be free of defects in material & workmanship under normal use for a period of 1 year from the date of the original purchase, when installed by an authorized dealer. Items not installed by authorized dealers will be warranted for 30 days from the original purchase. Original sales receipts must be accompanied with all returns. The warranty applies to the original purchaser of the product & it being sold by authorized B2 audio dealers.

- The warranty does not cover:
1. Damage caused by accident, abuse, misuse, improper operation, water / solvents & shipping.
  2. Product modification, neglect, failure to follow installation instructions & misrepresentation by the seller.
  3. Products used for competition purposes or are of such a character 4. Any product that has been opened.
  5. Products that has had the serial number defaced, altered or removed.
  6. The cost of shipping the product back for repair to an authorized repair centre & cost of return of non-defective items.

