
WOO AUDIO WA7D FIREFLIES DUO

Class-A Single-ended Vacuum Tube Headphone Amplifier

&

32-Bit/192kHz Digital to Analog Converter



Owner's Manual

Please review this manual before operating your WOO AUDIO™ product.

Important Safety Information

FC CAN ICES-3(B)/NMB-3(B)



CAUTION: Amplifiers are shipped without the vacuum tubes installed. The end user must install the tubes, taking great care to install them correctly in the appropriate sockets. Incorrect installation will result in *serious damage* **not** covered by the warranty.



Turn off immediately in the event of malfunction!
Should you notice smoke or an unusual smell coming from the equipment, turn it off immediately. Continued operation could result in injury.



Do not disassemble
The unit contains high voltage circuitry. Touching the amplifier's internal parts may result in injury. In the event of malfunction, the product should be repaired only by a qualified technician.



Keep out of children
Failure to observe this precaution could result in injury



WARNING: Failure to follow these instructions could result in fire, electric shock, or other injury or damage.

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Overview

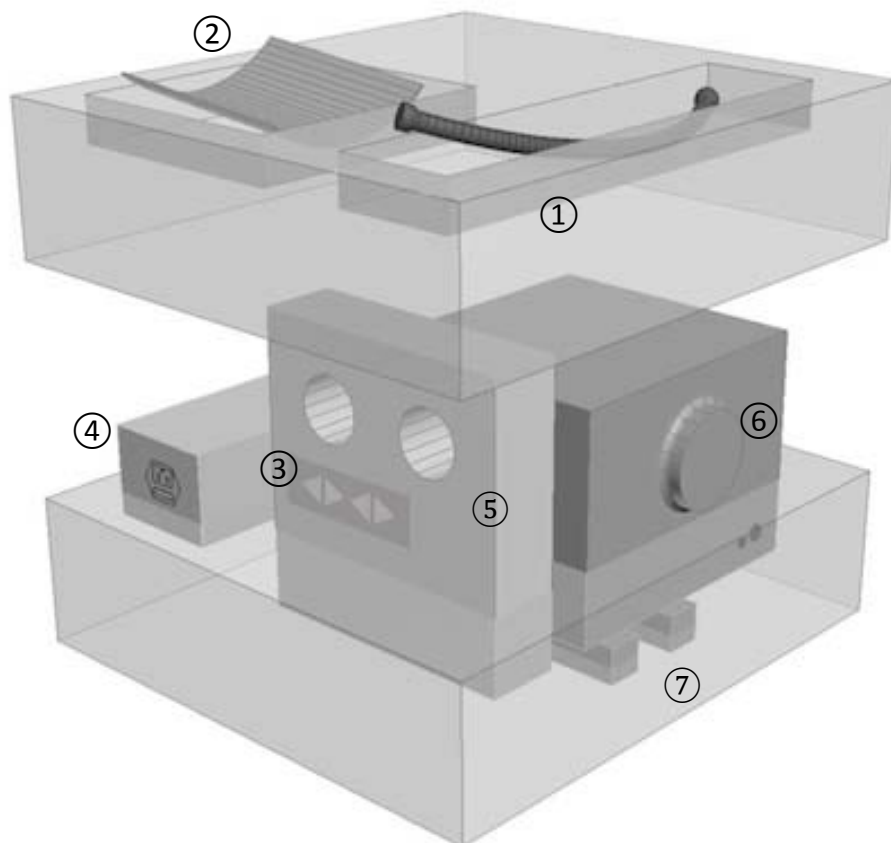
Thank you for choosing a Woo Audio product. WA7d “Fireflies Duo” Amp/DAC is a combination of a high performance vacuum tube headphone amplifier and a USB Digital-to-Analog Converter (DAC). WA7d is a pure tube design, utilizing a pair of 6C45 tubes in a class-A, single-ended topology with transformer-coupled outputs. There are no semi-conductors used in the entire signal path. The internal advanced DAC is capable of processing up to 32 bit/192k sampling rates. The latest asynchronous USB technology is employed to maintain data transmission purity. WA7d features a pair of Nickel Alloy core output transformers, multi-layer military grade PCBs and a linear power supply. To ensure the highest level of performance and noise rejection, we housed the custom Toroidal power transformer in an external chassis. Despite its compact size, WA7d Fireflies Duo is a powerhouse and can drive the most demanding audiophile headphones available. WA7d can also accommodate the most sensitive in-ear-monitors (IEMs) via an ultra quiet, dedicated 3.5mm output port. With care, WA7d Fireflies Duo will deliver many years of musical enjoyment. Please take a short time to read this manual in its entirety to familiarize yourself with the features and connectivity options of your WA7d.

Features:

- Handmade output transformer with Nickel Alloy core
- Up to 32-Bit, 192kHz high resolution playback
- Asynchronous ultra-low jitter USB 2.0
- Selectable high and low impedance output
- Open load protection will automatically engage to prevent the amp from damaging when no headphones are plugged in.
- Multi-functional switch for Optical input, USB input, and RCA input.
- All-aluminum chassis with no screws visible from any viewing angles
- Multi-layer military grade PCBs
- A thick block of high clarity tube protection glass
- Available in anodized Black and Silver color
- Custom driver for Windows Vista/XP/7/8
- USB Audio Class 2.0 is natively supported by Apple OS X version 10.6.4 and later without drivers

Getting Started

What's in the box?



- ① Umbilical DC Power Cord
- ② Micro-fiber Polishing Cloth for glass and metal cleaning
- ③ Anti-slip silicone rubber glass pads (4pcs)
- ④ WA7p External Power Supply
(not included when WA7tp tube power supply is purchased)
- ⑤ Tube Protection Glass
- ⑥ WA7d Fireflies Amplifier
- ⑦ 6C45 Matched Pair Tubes

*** USB, AC power cord,
and inter-connection
cables are not included.**

Front Panel

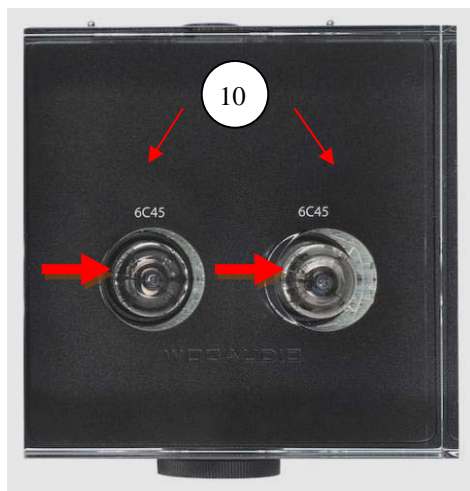


⑦ Volume control for headphone outputs

⑧ 3.5mm or 1/8" mini In-Ear-Monitors
headphone jack

⑨ 6.35mm or 1/4" headphone jack

Top Panel



⑩ Tube sockets for 6C45 vacuum tubes



Please pay close attention to vacuum
tube installation alignment marks!

Back Panel



⑪ USB 2.0 digital input

⑫ RCA analog input

⑬ Optical digital input

⑭ Input-output switch

Optical – optical digital input

RCA – RCA analog input

USB – USB 2.0 digital input

⑮ High and low headphone impedance switch

HI-Z – High impedance

LO-Z – Low impedance

⑯ Umbilical power cord socket (male)

⑰ Power switch

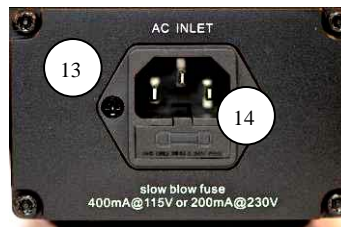
I – ON

O – OFF

External Power Supply (WA7p solid state power supply)



- ⑪ Umbilical cord socket
(Female)
- ⑫ Power LED light



- ⑪ AC power inlet
- ⑫ Fuse box
Slow blow fuse,
400mA@115V or
200mA@230V



Optional WA7tp Vacuum Tube Power Supply is available for WA7 and WA7d amp/DAC

Connection Options

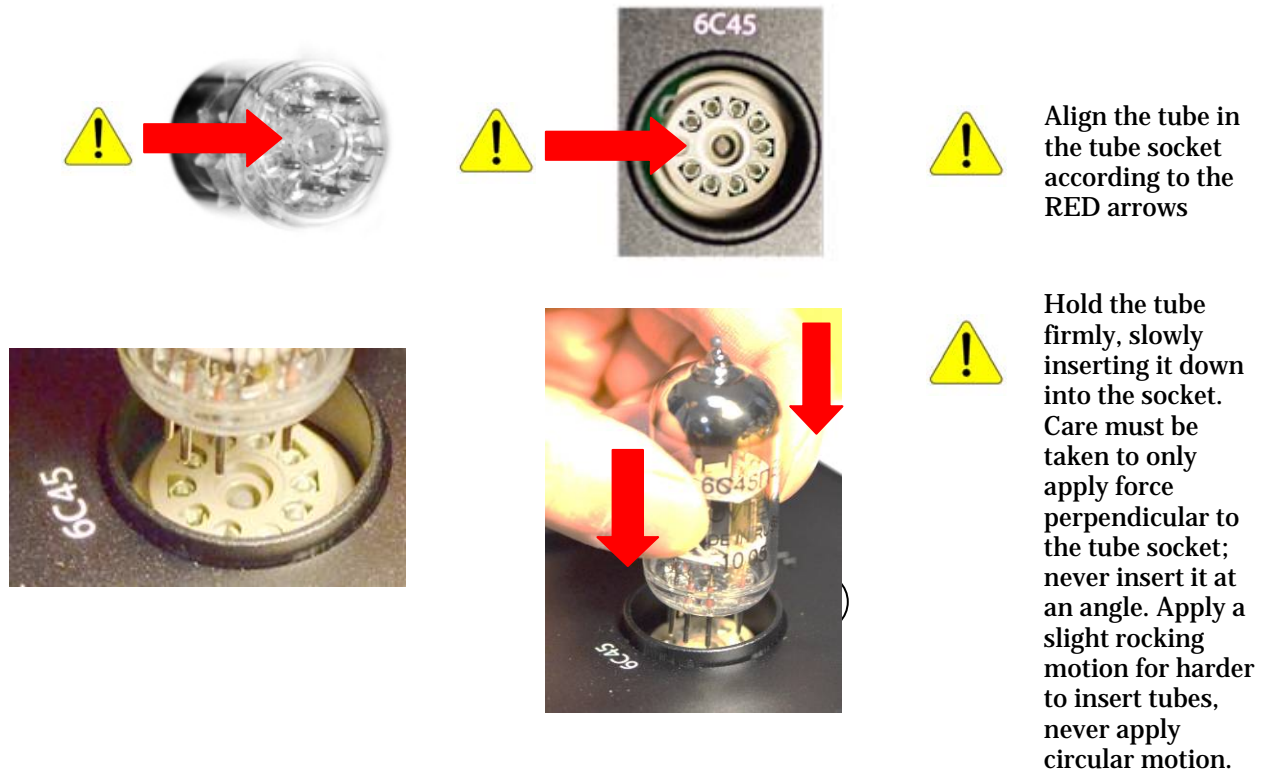


- AM/FM tuner, XM Sirius satellite radio
- Turntable (with Phono stage)
- iPod, iPad, MP3 player
- PC and Mac
- CD player
- Super Audio CD player/SACD
- Blu-ray player, DVD player
- Game consoles

*Compatible, but not limited to.
Appropriate cables and adaptors may
be required.

Quick Installation

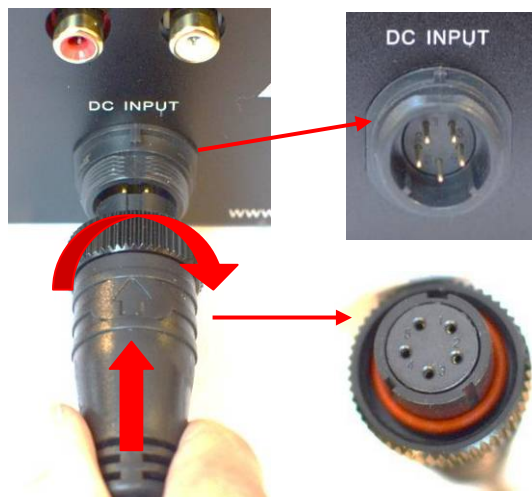
Installing tubes



Umbilical Power Cord Installation

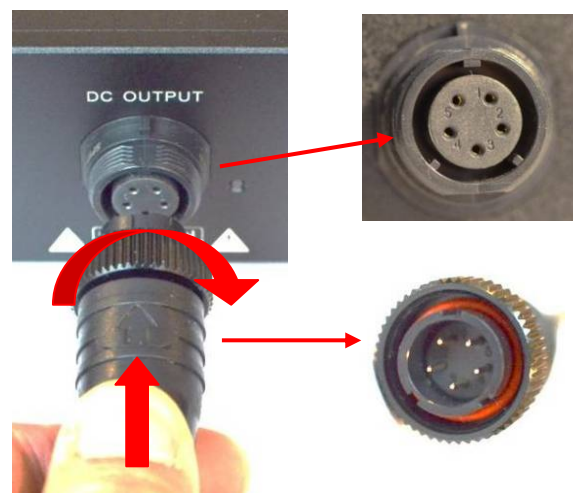
Connecting the Amplifier unit

Align the female plug to the DC input connector. The “arrow” marking on the plug should face up when it is properly oriented. Insert the plug into the socket and turn the locking ring on the plug until fully tightened.



Connecting the Power Supply unit

Align the male plug to the DC input connector. The arrow marking on the plug should face up when it is properly oriented. Insert the plug into the socket and turn the locking ring on the plug until fully tightened.



Installing the AC power cord (customer supplied):

Plug the power cord into the AC inlet; see ⑬ in the above diagram. The AC inlet socket is a standard IEC type. You will need to obtain the correct type for your region if it not supplied with your order.



U.S.



European



U.K.

Installing Tube Protection Glass:



Do not hit the tubes by the glass. The glass is heavy. Handle with both hands.



Powering Up

To power up on the WA7d Fireflies, flip the power switch ⑰ to the “I” position. The LED on the power supply will light up ⑫. Vacuum tubes should also light up the same time.

Using the Asynchronous USB 2.0 port:

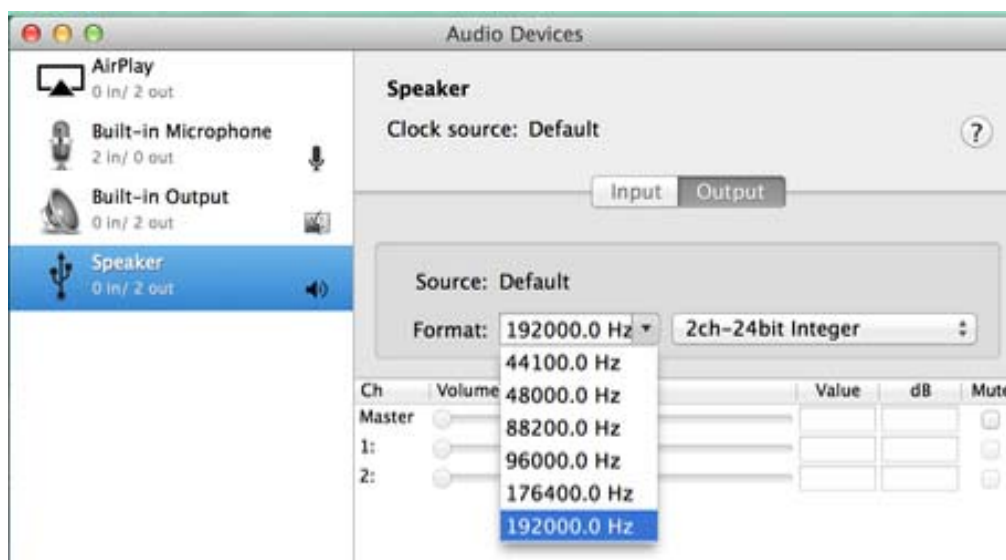
The WA7d Fireflies Duo offers a USB 2.0 port is compatible with Windows or Macintosh OS computer.

Configuring Mac

Open AudioMidi and right-click on the device listed as “Speaker” in the device section on the left pane. Ensure that “Use this device for sound output” is selected. “24bit Integer” should be available in the drop down list on the right side.



Select the appropriate sample rate for the music file type.



Installing the USB driver (Windows PC only)

*These steps only apply for Windows 7.

1. Plug in the USB 2.0 cable to the WA7 Fireflies and your computer.
2. Install the WA7 Fireflies Driver from the downloaded file from <http://www.woaudio.com/drivers/wa7-fireflies-driver-1.01.zip>
3. Unzip the downloaded file. Locate setup.exe file and run it.
4. Follow on-screen instruction to complete the installation. Windows restart may be required.
5. Set USB Speakers as your default audio output.

Go to My Computer -> Control Panel -> Hardware and Sounds -> Sounds
-> Click USB Speakers -> Click Set Default

6. Now you're ready to enjoy music from your computer.

Configuring media player

TIPS: It is strongly recommended to use a media player that supports ASIO output mode for the highest playback quality.

Changing Output mode

Example is given for JRiver Media Center.

Tools -> Options -> Audio Output -> Output mode -> select ASIO

IMPORTANT: In JRiver Media Center, disable “Use large hardware buffers” option by unchecking the box. Buffering error will occur if this option is enable.

Tools -> Options -> Audio Output -> Output mode settings -> uncheck the box below



Operations

NOTE: Only one headphone output is operational at a time. When both headphone jacks are plugged in, only the ¼" output is operational.

DO NOT

- Turn on the amp before properly installing **ALL** tubes and power supply.
- Block vent holes of the power supply.
- Use tubes that are not approved by Woo Audio.
- Align the male plug to the DC input connector. The arrow marking on the plug should face up when it is properly oriented. Insert the plug into the socket and turn the locking ring on the plug until fully tightened.
- Remove any tubes or the umbilical power cord while the amp is operating.
- Touch tubes (**they may be extremely hot**) after warm-up.
- Leave the amp running unattended. (We suggest a maximum of 8 hours of continuous use, allowing the tubes time to cool before using again)

DO

- Place the amp away from any wireless or frequency-emitting devices such as cell phones, Wi-Fi routers and radios to avoid noise interference.
- Keep away from water or excessive moisture.
- Turn off the amp if the audio stream or unit sounds abnormal.
- Allow a minimum of 2 inches of air clearance for heat dissipation.
- Allow approximately 3 minutes of warm-up.
- Allow the tubes to cool down before removing them.

FAQ - Frequently Asked Questions

Computer cannot find the WA7d Fireflies Duo USB DAC.

- Check USB cable connection and make sure the cable meets USB 2.0 specifications.
- See “Mac OSX 10.9 does not recognize USB device” for Apple Macintosh computers
- See “Installing USB driver” section for Windows PC

No sound is coming out of the headphone jack.

- Check you have selected the correct position of the Input-Output switch. Check input connection. Check computer USB output setting if USB input is used.

No sound is coming out of the mini headphone jack.

- Only one headphone is operational at a time. Disconnect headphones from the ¼” jack to enable output of the mini phone jack.

There is static noise, or one channel is dropping out.

- Re-seat all tubes. Make sure that all tubes are securely installed.

The LED does not light.

First check if the AC cord is installed. Next, check if the umbilical cord is securely attached between the amp and the power supply. If the fuse is burnt, see the following instruction on how to replace a fuse. The fuse type is 400mA@115V or 200mA@230V, slow blow type (spare fuse included).



Insert a small flat screwdriver into the fuse door located on the AC inlet.



Pull the fuse door to open it.



The fuse holder may be released from the AC inlet.



Replace the burnt fuse with a new one

Mac OSX 10.9 does not recognize USB device

On some Macs with USB 3.0 running OS X Mavericks 10.9, WA7 and WA7d Fireflies can occasionally lose connection to the Mac. If this has happened to you, please give the following a try.

- Use a good quality USB cable
- Disconnect all USB devices connected to your Mac
- Remove all audio plug-ins from Mac
- If you have Apple Cinema Display powering your MacBook via Thunderbolt, please disconnect as well.

With the Mac **AND** WA7d powered **ON**, disconnect the USB cable. Wait a few seconds.... reinsert the USB cable. Next, following instruction on “Configuring Mac” section.

Lastly, try a powered USB hub like the Belkin F4U040v

Warranty and Service

Woo Audio warrants this product free from defects in materials and workmanship for one (1) year from the original date of purchase. The tubes are warranted for 30 days unless otherwise stated. In the event that your Woo Audio product requires servicing, please contact us directly to receive return instructions. Please do not discard original packing materials. If for any reason, the equipment is to be shipped back to Woo Audio, please use the original packaging, including a copy of sales purchase documents and a detailed explanation of the problem(s).

Send service inquiry to info@woaudio.com

Any modification not authorized by WOO AUDIO will void this warranty.

Product Specification

Model:	WA7d Fireflies Duo
Headphone amp design	Single-ended, class-A, transformers output
Power supply	Linear external high-performance power supply
Tubes used	One matched pair of 6C45, one tube per channel
USB receiving chipset:	C-Media 6631A
DAC chip	TI PCM5102A 32-bit chip
Sampling Rate:	Up to 32-Bit, 192kHz
Inputs:	1 Optical (Toslink), 1 Asynchronous USB2.0, 1 RCA
Outputs:	1 1/4" and 1 1/8" headphone outputs
Headphones impedance	8-600 Ohms
RCA input impedance	100 Kilo-Ohms
Max Output:	Approx. 1 watt @ 32 ohms
Frequency response:	11Hz to 27kHz, +/-0.5dB
Distortion:	<0.03%
S/N:	95dB
Power consumption	25W max
Mains Supply:	100-120V, 220-240V, 50/60Hz, user selectable
Fuse	Slow blow fuse, 400mA@115V, or 200mA@230V
Amp body and PSU finish	Anodized Aluminum, Amp available in Black and Silver
Dimension:	AMP: 4.8" L x 4.8" W x 5.1" H with glass PSU: 7" L x 3.5" W x 2.2" H
Weight:	AMP - 5.3 lbs / 2.4kg, Glass - 3.3 lbs / 1.5 kg PSU - 2.8 lbs / 1.4 kg

**Woo Audio is committed to continuously improve its products.
Features and specifications are subject to change without notice.**