

Alpha plus



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Alpha plus

user manual

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1. Introduction

Welcome to *AER*!

Thank you for choosing the **Alpha plus**.

The **Alpha plus** is a complement to our Alpha, still as professional and versatile as the Alpha itself, but provided with increased power output.

With one channel but two independent input stages (line and microphone/line), a dynamically controlled 50 Watts power-amplifier, 8"-twin-cone speaker-system, 3-band equalization and reverb, the **Alpha plus** is applicable for the enhancement of a wide variety of instruments just as well as vocals.

Although especially developed for acoustic instruments, the **Alpha plus** is suited excellently for all other (even electrical) instruments and the 48V-phantom-power-supply of the XLR-input allows the operation of high-quality condenser-microphones.


The whole system ensures impressive dynamics plus a well-balanced distortion-free tone at all sound pressure levels, despite strikingly small sizes and little weight.


Read on and have fun using your **Alpha plus**!

2. Important Safety Instructions

The following guidelines shall help minimize the risk of injury through fire or electric shock.



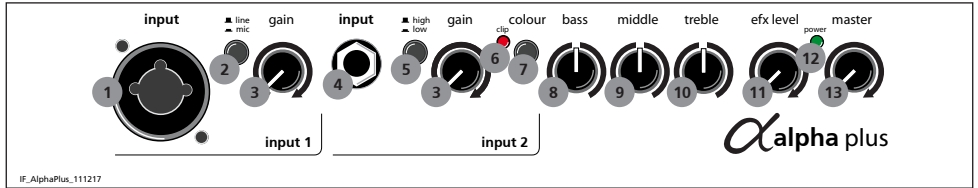
 The lightning flash with the arrow head symbol within an equilateral triangle is intended to alert the user to the presence of unisolated 'dangerous voltage' within this product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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

1. Carefully read these safety notes before you use the device!
2. Keep these safety notes in a safe place.
3. Pay attention to all warnings, instructions and additional texts on the unit.
4. This device was only designed for operation under normal climatic conditions (temperate climate).
5. Do not install or use your amp in close proximity to water or if you are wet yourself.
6. Do not subject your device to sudden and severe temperature changes. This could cause moisture condensation inside the unit, which could damage it. In the event of moisture condensation allow the device to dry out completely before use.
7. Use your amp in a safe place where nobody can step on cables or trip over and damage them.
8. Pay attention to an unhindered air circulation around the amp, never obstruct the air vents or grilles.
9. Always pull the mains plug before cleaning your amp or when left unused for a long period of time. Use only a dry cloth for cleaning. Avoid the use of detergents and do not let any liquids seep into the unit.
10. Use only the right fuses with the same current rating and trigger characteristic as replacements. Never mend fuses! Pull the mains plug before replacing a fuse. Should a fuse blow again after a short while, the device needs to be checked.
11. Never install your amp close to devices with strong electromagnetic fields such as large mains transformers, revolving machines, neon illumination etc. Do not lay signal cables parallel to power current cables.
12. There are no user-serviceable components inside the unit. To avoid the risk of an electric shock, the unit must not be opened. All maintenance, adjustment and repair works should be carried out by qualified staff only. Any unauthorized tampering will void the 2-year warranty.
13. In keeping with the EMV regulations screened cables with correctly fitted connectors must be used for all signal connections.
14. Always use an earthed power supply with the correct mains voltage. If you are in doubt about the power outlet ground, have it checked by a qualified technician.
15. Cable up your amp only when it is powered off.
16. This device should be installed near the socket outlet and disconnection of the device should be easily accessible. The mains plug of the power supply shall remain readily operable. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
17. This product may cause permanent hearing loss. Do not operate for long periods of time at a high volume level or at any level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
18. The product should be located away from heat sources such as radiators, heat registers or other products that produce heat.
19. Do not place any open sources of fire, like candles, on the device.
20. Care should be taken so that objects do not fall onto the device and liquids are not spilled into the enclosure through openings. Ensure that no objects filled with liquids, such as vases, are placed on the device.
21. Do not place this device on an unstable cart, stand, tripod, bracket or table. The device may fall, causing serious injury to you and serious damage to the device itself.



3. Controls and connections

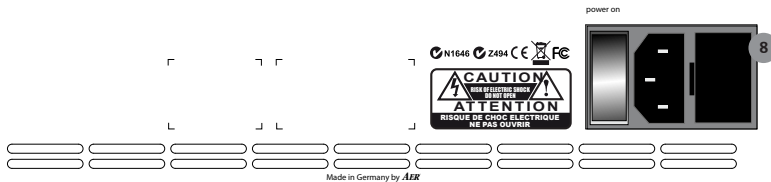
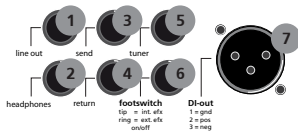


3.1 Front side

1) input (inp. 1)	signal input, combo-socket for 6,3 mm mono jackplug and XLR-connectors (48V phantom power)	
2) line/mic	signal source selector switch: line (only via jackplug) for instruments (pickup) and other line level sources, mic (only via XLR-connector) for microphones	
3) gain	input gain control	
4) input (inp. 2)	signal input, socket for 6,3 mm mono jackplug	
5) high/low	input sensitivity switch (attenuator)	
6) clip	overload indicator	
7) colour	tone colour filter activation switch <input type="checkbox"/> = not active <input checked="" type="checkbox"/> = active	
8) bass	bass frequency level control	
9) middle	middle frequency level control	
10) treble	treble frequency level control	inputs 1 + 2
11) efx level	effect level control (reverb)	efx
12) power	on/off status indicator	
13) master	master level control	mains & master

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alpha plus



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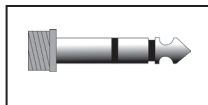
3.2 Rear side

1) line out

The **line out** supplies a pre-amp signal taken after tone-control, effects and **master** for forwarding to other appliances.

2) headphones

This output enables you to connect stereo headphones and mutes the loudspeaker.



!!!Warning: Only use headphones with stereo jackplugs in this output socket!!!

3) send

Send is an output to connect to an external effect device and in conjunction with **return** (input) forms a loop here designed as external effect loop. The effect can be switched on or off via footswitch.

4) return

Return as part of the effect loop operates as signal input from an external effect device (from output of the effect device). The effect can be switched on

or off via footswitch. **Return** on its own can also be used as quasi auxiliary signal input (-10 dBV).

5) tuner

The **tuner** output supplies a **pre-master signal** (-9 dBV) to connect an external tuner to the **Alpha plus**.

6) footswitch

Connection socket for a double-footswitch (on/off-switch, tip = internal effect/ring = external effect on/off).

7) DI-out

Preamp-output with symmetrical signal, after tone-control, pre master, without effects.

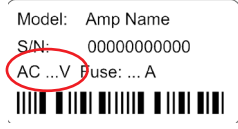
8) power on

Combined mains switch with mains socket and fuse holder.

4. Starting up

4.1 Cabling and switching on

Before connecting to mains, please ensure that your local mains voltage is suitable for the voltage of the device (e.g. 120V in the USA, 230V in Europe). The relevant specs and safety symbols are printed on the rear side of the unit.



Connect all cables according to your application and switch the amplifier on. The green power control LED indicates operational readiness.

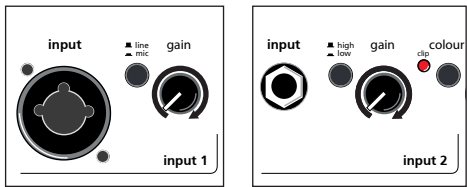
4.2 Level adjustment

Note: Level adjustment

By setting the level correctly we mean the signal level in one or several devices in a signal chain is neither too high nor too low. This applies equally to all circuits in a complete circuit design (EQs, preamps etc.)

Consequently, care must be taken that no part of the circuit is overloaded or that distortion is unintentionally added to the signal.

We have carefully designed the circuit to achieve this objective whilst also providing controls for „manual“ intervention.



First ensure, that the **master** level control is zeroed (over to far left), so that when you are setting the sound level, the signal passes through the electronics only and does not reach the loudspeaker. By pressing the **high-/low-** (attn.) resp. **line-/mic-** switches you can adapt the amplifier to your signal sources (guitar pickups, microphone etc).

Turn the **gain** control clockwise until the red **clip** indicator flashes momentarily when playing with a strong attack. Thus you make sure that your signal source (e.g. instrument) provides the input-stage of the amplifier with the necessary input.

The **clip**-LED indicates an overload. A short flicker is of no danger to AER devices. During operation a short flicker can be accepted, to be on the safe side you should reduce the **gain** slightly to achieve an optimal and distortion-free performance.

Finally set the desired overall volume level with the **master** level control.

5. Functional characteristics

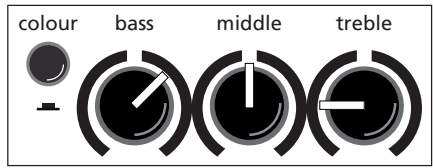
5.1 Tone control

The triple-band equalizer of your **Alpha plus** provides you with an active and high quality sound interaction tool that supports the natural tone of instruments and voice whilst simultaneously offering you the possibility of a controlled accentuation.

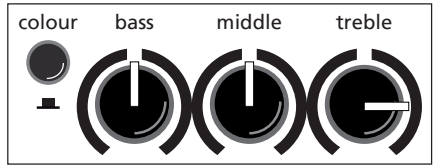
With all controls in mid position the filters are set to produce a very pleasing and natural sound impression that you can „colour up“ by using the **colour** filter with the effect of lowering the mids and lifting the trebles. The tone becomes more open and light and is especially suited for fingerpicking techniques.

The equalization can support or soften the effect of the **colour** filter and allows a differentiated mid-accentuation.

A: with colour-filter (switch pressed)
reduce **treble** to soften possible sharpness



B: without colour-filter (switch not pressed)
boost **treble** to brighten the sound



Note:

The active equalization of the **Alpha plus** effects the signal adjustment. If you spot an intensified flickering of the **clip** indicator, readjust the signal level with the **gain** control (s. 4.2 Level adjustment).

5.2 Effects

The **Alpha plus** has a built-in (internal) reverb-effect. The **efx-level-control** determines the intensity of the internal effects (left stop = no effect).

Furthermore an additional effects unit (external effect) may be connected to the **Alpha plus**. For this purpose use the **send** and **return** sockets on the rear side of the amplifier (**send** goes to **input**, **return** to the **output** of the external effects device). The intensity of the effect is adjusted at the external effects unit. The external effect loop works „parallel“, the effect is blended with the original signal.

5.3 Footswitch

A standard double-footswitch (on-/off-switch) can be plugged into the **footswitch-socket** on the rear side of the amplifier via stereo cable. By this footswitch the internal and external effects can be switched on and off.

5.4 Phantom power

Microphones requiring **48V phantom power** can be directly connected to the **XLR-socket of input 1**. Factory-provided phantom power is activated but, if required, may be deactivated by an internal jumper.

In contrary **9V phantom power**, if required, can additionally be activated in **input 2** by an internal jumper.

Please note: For both alterations the device must be opened, therefore only qualified service personnel may carry out the modifications concerning the de-/activating of phantom power.



General Note: Use of 48V or 24V phantom power

(Phantom power = remote supply, here: powering an audio device via the connected audio line)

Only units which are designed to handle phantom-power should be connected to the **XLR socket of input 1**.

In general, suitable units are e.g. condenser microphones, active DI-boxes and other special audio devices, whose power supply is drawn from the phantom power. Such devices are also labelled accordingly; please heed the permissible power consumption (max. 10mA).

High-quality dynamic microphones with a balanced signal need no phantom power, but can handle it anyway.

Other devices, which have not been designed explicitly for phantom power operation, can suffer from considerable malfunctions and damage may result as well.

Examples of devices that may be damaged by incorrect application of phantom power include:

Low-cost dynamic microphones with a mono jack-plug (unbalanced signal) that were fitted afterwards with an XLR connector.

Audio devices with a balanced XLR output (e.g. DI-boxes, effects devices, instrument preamps with a DI output etc.) which are not protected against phantom power applied to their XLR output. (The DI connectors on AER products are protected against applied phantom power.)

Other audio devices (such as preamps, effects pedals etc.) whose unbalanced line output was replaced by an XLR socket.

If in doubt please consult the manufacturer of the device you are using.

We wish you lots of fun playing your **Alpha plus!**

P.S.: For questions or suggestions contact us:

tachauch@aer-amps.com

6. Technical specifications Alpha plus

Inputs	
input 1	Switchable line or microphone input Combo socket, XLR + jack ¼" (6.35 mm) line mode (jack only) Unbalanced high-impedance input for instrument pick-ups and line-level sources Min. input voltage: 16 mV (-36 dBV) Max. input voltage: 7 V (+17 dBV) Input impedance: 2 MΩ 300 pF Equivalent input noise, A-weighted: 2.1 µV (-114 dBV) mic mode (jack or XLR) XLR (balanced), stereo jack (balanced), or mono jack (unbalanced) microphone input Min. input voltage: 2 mV (-54 dBV) Max. input voltage: 1 V (0 dBV) Input impedance (balanced): 1.2 kΩ Input impedance (unbalanced): 2.7 kΩ Voice filter: -10 dB at 260 Hz (ref. to 10 kHz) Equivalent input noise, A-weighted: 0.7 µV (-123 dBV) Phantom power: 48 V (XLR only), R = 6.8 kΩ per terminal, total current max. 10 mA, short circuit protected.
input 2	Unbalanced high-impedance input for instrument pick-ups and line-level sources Mono jack, ¼" (6.35 mm) Min. input voltage: 14 mV (-37 dBV) Max. input voltage: 5 V (+14 dBV) High / low switch: attenuator -10 dB Input impedance: 2.2 MΩ 300 pF Equivalent input noise, A-weighted: 1.2 µV (-118 dBV) Optional phantom power (see notes): 9 V DC at "ring" terminal, max. 100 mA, short circuit protected
return	Return input for effect loop Mono jack, ¼" (6.35 mm) Min. input voltage: 150 mV (-17 dBV) Max. input voltage 5 V (+14 dBV) Input impedance: 20 kΩ (5 kΩ if effect is switched off by footswitch.)
clip LED	Headroom: min. 8 dB
Outputs	
headphones	Headphones output. When plugged in, the internal speaker is switched off. Stereo jack, ¼" (6.35 mm), L / R connected Max. output power: 2 x 65 mW / 1000 Ω Input sensitivity for 2 x 50 mW / 1000 Ω : 19 mV (-35 dBV) at input 1, line mode Output impedance: 470 Ω (shared by L and R) Note: Suitable for headphones with stereo jack. Does not work with mono jacks.
line out	Preamplifier output after master volume Mono jack, ¼" (6.35 mm) Output voltage: 1.4 V (+3 dBV)
tuner	Tuner output Mono jack, ¼" (6.35 mm) Output voltage: 450 mV (-7 dBV)
DI-out	Balanced XLR output before master, after tone controls, without effects Output voltage (differential): 190 mV (-15 dBV)
send	Send output for effect loop, before master, after tone controls Mono jack, ¼" (6.35 mm) Output voltage: 450 mV (-7 dBV)
Footswitch connector	
footswitch	Connector for a dual footswitch Stereo jack, ¼" (6.35 mm) tip = internal effect on/off ring = external effect on/off sleeve = common (ground) Effect is OFF when the footswitch is ON.

Tone controls	
colour (input 2)	-3 dB at 700 Hz, +10 dB at 8 kHz, switchable
bass	±8 dB at 100 Hz, shelf type
middle	±6 dB at 800 Hz
treble	±8 dB at 10 kHz, shelf type
Effects	
Internal effect	Built-in digital reverb
External effect	Parallel effect loop (effect blended with dry sound), see send and return .
Power	
Power amp	40 W / 4 Ω at 1% THD, DMOS, monolithic I.C. Dynamic range, A-weighted: 92 dB
Limiter	Threshold 35 W / 4 Ω
Analog signal processing	Subsonic filter, adaptive peak limiter
Speaker system	8" (200 mm) twin cone full-range speaker, bass reflex enclosure
Mains power	Mains voltage (depending on model): 100, 120, 230, or 240 V-, 50-60 Hz. Power consumption: max. 100 W
Mains fuse	Size: 5 x 20 mm For 230 and 240 V models: T 1 A L For 100 and 120 V models: T 2 A L
General	
Cabinet	12 mm (0.47") birch plywood
Finish	Waterbased acrylic, black spatter finish
Dimensions	265 mm (10.4") high 330 mm (13") wide 235 mm (9.25") deep
Weight	7.2 kg (15.9 lbs)

Definitions and conditions

Input and output voltages are RMS values for a sine signal and 1 kHz unless stated otherwise.

Tone controls in neutral position unless stated otherwise.

Min. input voltage: Required input voltage for 35 W / 4 Ω output, gain and master fully clockwise.

Max. input voltage: Allowable input voltage that does not cause more than 1% total harmonic distortion, assuming suitable control settings.

Output voltages refer to 50 mV (-26 dBV) at input 1, line mode, gain and master max.

Equivalent input noise voltage: Noise voltage at speaker divided by voltage gain of amplifier for white noise, for the input under test. Gain and master fully clockwise, input shorted, 20 Hz - 20 kHz, gain of unused inputs in zero position.

Dynamic range of power amplifier: Ratio of output voltage at limiter threshold to A-weighted noise voltage with master in zero position.

XLR connectors pin assignment:

1 = ground, 2 = positive (+), 3 = negative (-)

Options

Microphone input can be attenuated by 5 dB by an internal jumper, increasing the max. input voltage to 1.6 V (+4 dBV).

9 V phantom power for input 2 can be activated by an internal jumper. When activated, operation without phantom power is still possible by using a mono jack connector.

48 V phantom power for the XLR input can be deactivated by an internal jumper. (The jack input does not have 48 V.)

Warning: External equipment may be damaged by inappropriate use of phantom power.

Specifications and appearance subject to change without notice.

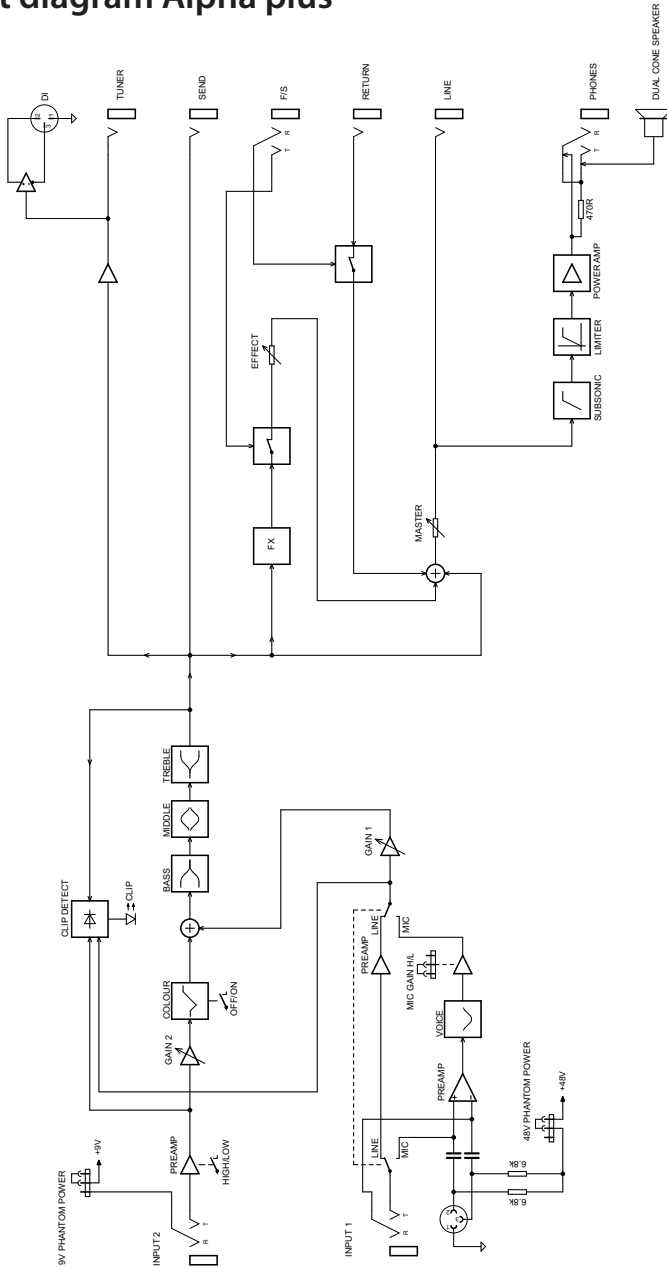
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7. Circuit diagram Alpha plus



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notes

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