

# BeoAmp 2

Type 9699

Installation Guide

English - version 1.1



## Warning

*Please adhere to all the following safety instructions before use:*

### Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.  
When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



### Additional Safety Information

15. The appliance coupler is used as the disconnect device and shall remain readily operable.
16. The ground pin of the mains plug must not be removed due to the danger of electric shock. If a wall outlet with protective earth is not available, an electrician should be contacted.
17. The supplied plug and mains cord are specially designed for the product. Do not change the plug. If the mains cord is damaged, you must purchase a new one from the retailer as per specified by the manufacturer.
18. No naked flame sources, such as lighted candles, should be placed on the apparatus.

*For the US-market only!*

NOTE: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the retailer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



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



**WARNING!** This apparatus shall be connected to a mains socket outlet with a protective earthing connection.



**WARNING!** Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.



**DANGER!** No user serviceable parts inside.



**NOTICE!** The Type label is placed on the bottom of BeoAmp 2.

Safety symbol definitions:



The lightning flash with arrowhead symbol 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 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 the product.

## Introduction

The BeoAmp 2 amplifier is a highly compact and light-weight solution with audiophile sound quality. Thanks to the class D technology, the amplifier has very low heat dissipation and is therefore perfectly suitable for installation in a rack system.

This amplifier is very powerful considering its compact size with 2 channels, each capable of delivering 150W/8Ω. Furthermore, it features universal mains for world-wide use and standby functionality compliant with ErP 2013 which specifies standby power consumption below 0.5W.

The amplifier is 1U high for easy rack installation. The amplifier's width of 200 mm means that two amplifiers can sit next to each other in a 19" rack with a stabilizer between them. It is possible to mount rack ears either on the side or on the top of the amplifier, enabling the amplifier to be installed on any flat surface, such as a wall or a ceiling (see rack possibilities drawings on page 9).

## Features

- Ultra-compact enclosure (2 pcs BeoAmp 2 fits in a 1U rack).
- Extremely low weight - up to seven times lighter than similar products.
- Up to 2 x 150W channels of audiophile sound quality.
- Very low power consumption and heat dissipation thanks to efficient ICEpower Class-D technology.
- Comprehensive protection keeps the music playing and your quality costs down.
- Removable rack ears and feet.

## Specifications

General	
Number of channels	2 channels
Typical output power	150 W per Ch., 8 $\Omega$ (1%THD+N, f=1 kHz), @ 230 Vac
Signal sense	Audio input sense (Only on left channel) (Turns off after 13 minutes without a signal) External 12V trigger Power Link trigger
Standby power consumption	Less than 0.5 W
Audio	
THD + N	0.005%, 4 $\Omega$ , f=100 Hz, Po=1 W 0.004%, 8 $\Omega$
Dynamic range	113 dBA
Idle noise	75 $\mu$ V, A-weighted, 20 Hz-20 kHz
Upper bandwidth, -3 dB	55 kHz, 4 $\Omega$ 70 kHz, 8 $\Omega$
Frequency response	$\pm$ 0.5 dB, 20 Hz- 20 kHz, all loads
Input impedance	47 K $\Omega$ , f=1 kHz
Output serial impedance	12 m $\Omega$ , f=1 kHz
Gain	Input level for maximum output volume: Min gain = No output Mid gain = 6.5Vrms input gives max output (Power Link input) Max gain = 1Vrms input gives max output (Line input)
AC Mains Power	
AC mains power	Universal Mains 85 - 264 Vac, 45-65 Hz
Power connection	IEC 320 C18 power connector
Thermal	
Environmental operating temperature	0° - 60° C / 32° - 140° F
Construction	
Height	42 mm/1.65 inches
Width	200 mm/7.87 inches
Depth	250 mm/9.84 inches
Weight	1.95 kg - 4.3 lb

Front Panel

Status LED

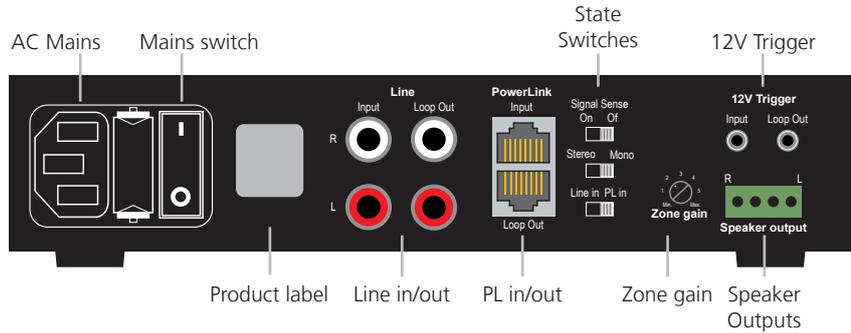


The front panel has a green and red status LED which indicate if the amplifier is turned on, in standby or in protection mode.

Green	Red	Status
ON	OFF	Amplifier is turned on and ready for use
OFF	ON	Amplifier is in standby mode
ON	ON	Protection mode
OFF	OFF	Shutdown, either due to no AC mains voltage or because the power supply temperature is too high

In case of too high power supply temperature the amplifier will automatically restart after 5-10 seconds, if the temperature is no longer too high.

Rear Panel



Mains

The amplifier has a mains plug on the back. It is an IEC 320 C18 power connector.

On/Off Switch

The amplifier has an On/Off switch on the back.

Audio inputs

There are two options for connecting a source signal.

- Stereo RCA/phono terminals (Line input) with stereo RCA for line out\*
- Power Link stereo audio input (PL input) with PL Loop out\*

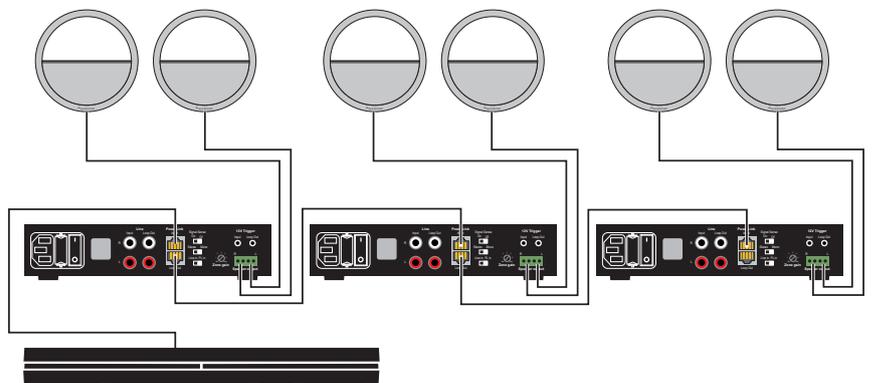
Power Link Pin Description

PIN	Description
1	Not connected
2	Data
3	Signal GND
4	Zone on/off
5	Not connected
6	Audio right in (channel 2)
7	Signal GND
8	Audio left in (channel 1)
GND	GND Data

(Only pin 3, 4, 6, 7 and 8 are used.)

\*) The Line and Power Link loop out can be used for daisy chaining more BeoAmp 2 amplifiers. The signal input on the RCA input is hardwired to the RCA loop out connectors. All 8 pins in the Power Link input is hardwired to the PL loop out connector.

Example of daisy chain with BeoSound Essence



### Signal Sense On / Off

The amplifier can be enabled and disabled externally by either:

- Using the Signal sense on the audio input,
- The Power Link trigger signal (pin 4 in the RJ45 terminal) or
- 12V trigger input.

Signal sense On:

The music signal on Line In RCA will trigger the power amplifier when a signal is present. When the music signal is off or muted for at least 13 minutes, the amplifier will go into standby.

The Power Link trigger (pin 4) and the 12V trigger are disabled.

Signal sense Off:

The signal sense is disabled and the Power Link trigger (pin 4) and the 12V trigger will now power up the amplifier when a trigger voltage is present.

### Line in / PL In

The amplifier has a 2-position slide switch for input selection; either the RCA Line in or the Power Link.

### Stereo / Mono Switch

This slide switch selects between stereo or mono mixing. In stereo setting, the two input channels (left and right) are routed to the corresponding left and right power outputs. In Mono setting, the left and right inputs are mono mixed and the same signal is routed to the left and right power outputs.

### 12V trigger input / Loop out

The amplifier has a 12V trigger input (12V trigger in), which can be used to turn on the amplifier from a control system or AV receiver. The Signal Sense must be off for the 12V trigger to work. The 12V trigger input is hard wired to the 12V trigger output so the trigger signal can be used for other BeoAmp 2.

### Speaker outputs

The speaker output terminals consist of a 4-pin terminal (Phoenix Contact MSTBVA 2.5/4-G-5.08 or similar) having two output terminals, each output terminal has a + and - terminal.

### Gain Adjustment

The amplifier has a gain adjustment for adjusting for different input levels.

- When the gain is at minimum the output is off.
- Set the gain to mid for Power Link input. (6.5Vrms input will give max output).
- Set the gain to max for line input. (1Vrms input will give max output).

## Installation

The amplifier has two different mounting options: a) in a standard 19" AV rack and b) on a solid flat surface.

### Rack mount

Detachable rack ears are included with the product for mounting in a standard 19" rack. Please see the illustrations below for rack possibilities. A single amplifier can be mounted using a regular short rack ear in one side and a long rack ear in the other side. Two amplifiers can also be mounted side by side by mounting them with a stabilizer between them.

Rack Possibilities:

1. One amplifier mounted with one short rack ear and one long rack ear:

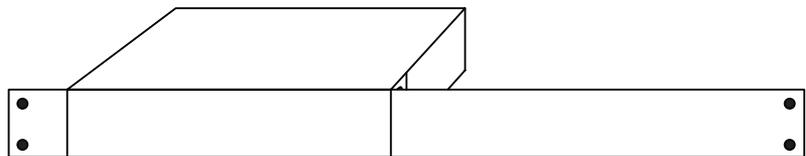


Figure 1

2. Two amplifiers mounted together with a centre bracket underneath and with two short rack ears:

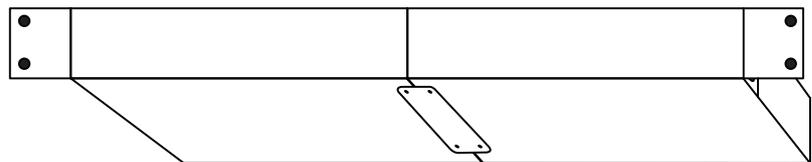


Figure 2

### Surface mount

The detachable rack ears can also be used for mounting the amplifier on a flat surface, for example a wall or a ceiling. In this case, the rack ears are mounted in a different set of holes in the amplifier chassis (see figure 3). Four rubber feet are also included if the amplifier is placed on a flat surface

Be sure to keep a minimum of 2 inches of clearance above the amplifier to ensure proper air ventilation for the holes in the top of the cabinet.

Caution: All speaker wire connections must be made with the amplifier off. The amplifier must be off whenever you make changes to the input connections.

3. One amplifier mounted with two top mounted rack ears:

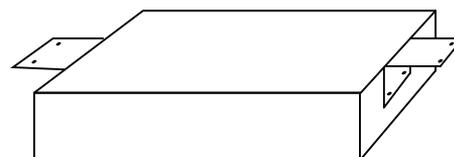


Figure 3

### Decision on loudspeaker wire size

The higher the cross sectional area of a wire is, the lower the resistance in the wire is and thereby the signal loss. AWG 12 is the maximum size that can be placed in the connectors. The table below indicates the recommended maximum wire length.

### AWG wire size

	18	17	16	15	14	13	12
Cross sectional area - metric [mm <sup>2</sup> ]	0.823	1.04	1.31	1.65	2.08	2.63	3.31
Wire resistance per meter [ $\Omega$ /m]	0.0462	0.0365	0.029	0.023	0.0183	0.0144	0.0115
Approximate loss per meter [dB/m]	-0.0396	-0.0327	-0.0269	-0.022	-0.0179	-0.0144	-0.0116
Maximum length [m]	25	35	40	54	65	83	100

### Metric wire size

	■ 0.75	■ 1.5	■ 2.5
Cross sectional area - metric [mm <sup>2</sup> ]	0.75	1.5	2.5
Wire resistance per meter [ $\Omega$ /m]	0.052	0.0255	0.0154
Approximate loss per meter [dB/m]	-0.0442	-0.024	-0.0153
Maximum length [m]	23	47	78

## Important Information

### English



Electrical and electronic equipment, parts and batteries marked with this symbol must not be disposed of with normal household waste, it must be collected and disposed of separately to protect the environment.

Your Bang & Olufsen retailer will advise you of the correct way of disposal in your country.

### Dansk (Danish)



Elektrisk og elektronisk udstyr, reservedele og batterier, der er mærket med dette symbol, må ikke bortskaffes sammen med almindeligt husholdningsaffald. Det skal indsamles og bortskaffes separat for at beskytte miljøet.

Din Bang & Olufsen forhandler kan rådgive dig om den korrekte bortskaffelsesmetode i dit land.

### Deutsch (German)



Mit diesem Symbol gekennzeichnete elektrische und elektronische Geräte, Bauteile und Batterien dürfen nicht in den normalen Hausmüll gegeben, sondern müssen zum Schutz der Umwelt sämtlich getrennt eingesammelt und entsorgt werden.

Ihr Bang & Olufsen Fachhändler berät Sie bei der sachgerechten Entsorgung in Ihrem Land.

### Français (French)



Il n'est pas permis de jeter les équipements, les pièces électriques et électroniques et les ménagères; ces équipements doivent être collectés et mis au rebut séparément afin de préserver l'environnement.

Votre revendeur Bang & Olufsen se fera un plaisir de vous conseiller sur la procédure correcte de mise au rebut dans votre pays.

### Español (Spanish)



Los equipos, piezas y baterías de tipo eléctrico y electrónico marcados con este símbolo no deben eliminarse junto con los residuos domésticos habituales; en su lugar, deben ser recogidos y eliminados de forma independiente para proteger el medioambiente.

Su distribuidor de Bang & Olufsen le asesorará acerca de los pasos a seguir en su país para realizar la eliminación de forma correcta.

### Italiano (Italian)



Apparecchiature elettriche ed elettroniche, parti e batterie, contrassegnate con questo simbolo non devono essere smaltite con i normali rifiuti domestici, ma devono essere raccolte e smaltite separatamente per proteggere l'ambiente.

Per informazioni sulla procedura di smaltimento corretta per il proprio Paese, rivolgersi a un rivenditore Bang & Olufsen.

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16-10