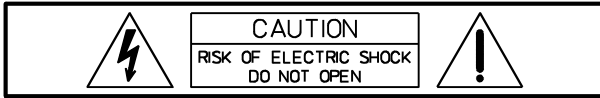




AC ONE AUDIO CONTROLLER

IMPORTANT SAFETY INSTRUCTIONS



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
AVIS: RISQUÉ DE CHOC ELECTRIQUE. NE PAS OUVRIR.



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 appliance.

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 a damp cloth.
7. Do not block any of the 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 that produce heat.
9. Only use attachments/accessories specified by the manufacturer.
10. 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.

For US and CANADA only:

Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

IMPORTANT SERVICE INSTRUCTIONS

CAUTION: These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

1. Security regulations as stated in the EN 60065 (VDE 0860 / IEC 65) and the CSA E65 - 94 have to be obeyed when servicing the appliance.
2. Use of a mains separator transformer is mandatory during maintenance while the appliance is opened, needs to be operated and is connected to the mains
3. Switch off the power before retrofitting any extensions, changing the mains voltage or the output voltage.
4. The minimum distance between parts carrying mains voltage and any accessible metal piece (metal enclosure), respectively between the mains poles has to be **3 mm** and needs to be minded at all times.
The minimum distance between parts carrying mains voltage and any switches or breakers that are not connected to the mains (secondary parts) has to be **6 mm** and needs to be minded at all times.
5. Replacing special components that are marked in the circuit diagram using the security symbol (Note) is only permissible when using original parts.
6. Altering the circuitry without prior consent or advice is not legitimate.
7. Any work security regulations that are applicable at the location where the appliance is being serviced have to be strictly obeyed. This applies also to any regulations about the work place itself.
8. All instructions concerning the handling of **MOS** - circuits have to be observed.

Note:  **SAFETY COMPONENT (HAS TO BE REPLACED WITH ORIGINAL PART ONLY)**

INTRODUCTION

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ACONE

Meeting the highest requirements of modern audio applications - especially, when it comes to sound pressure level, coverage and sound quality - is only possible when using active multi-component loudspeaker systems which provide the possibility to separately amplify and reproduce the audio signal's individual frequency ranges. Active 2-way installations with additional sub woofer systems probably offer the best price-performance ratio. The low frequency range of the audio signal is reproduced by the sub woofers while high-quality full-range cabinets take care of the Mid/Hi frequencies and vocals.

One of the essential advantages when using active 2-way systems with additional sub woofers is the fact that the vocals are not divided between several speaker systems. This, in return, offers more convenience when adjusting the sound system. Unlike than with active 3- or 4-way configurations – difficult analyzing and measuring of sound fields is unnecessary.

Since locating low-frequency sound is merely impossible, simply using monaural sub woofers is absolutely sufficient for smaller stages or rooms. On wider stages it is indispensable to use individual sub woofer systems for both sides. Otherwise, the level differences between bass and treble would result in audible degradation of the overall sound. Of course, adding a centrally located sub woofer might additionally improve the sound quality.

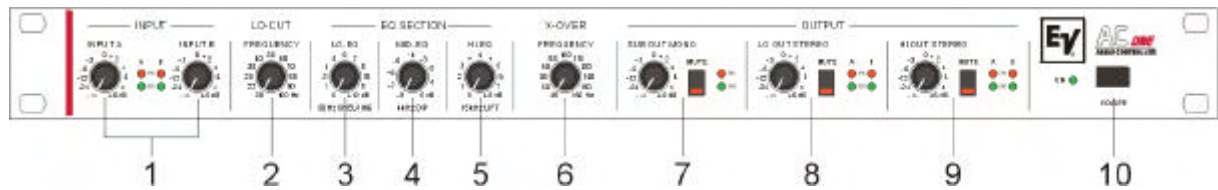
The ACONE Controller has been designed to be used in high-performance installations that employ active 2-way systems plus sub woofers. Applications like these also mostly incorporate professional linear power amplifiers like the Electro-Voice P1200, P2000, P3000 or Q44, Q66. When using processor controlled power amplifiers like the Electro-Voice P1250, the processor section is simply switched off.

Installing and operating the ACONE Controllers is easy as can be since the user does not need to know any complex detail about crossover functions and equalization. All controls for matching the sound to different acoustic conditions and loudspeaker systems are located on the front panel. Difficult tasks - like electronic signal routing and settings for instance - are automatically carried out inside the appliance. The newly designed PowerMax12 crossover function (patents pending) optimally utilizes amplifier output power and loudspeaker transmission capacities. Compared to conventional crossovers or controllers, this results in an improved overall sound quality which is achieved with less effort.

The ACONE Controller is also most suitable for integration in active 2-way instrument reinforcement applications for keyboards, E-bass and drums. The PowerMax12 crossover function eliminates the often complained about "lack-of-punch-and-definition", like it is common for conventional active musical instrument reinforcement systems.

Its excellent dynamic range of more than 116dB, the extremely low noise level and the outstanding price-performance ratio makes the ACONE Controller an advantageous alternative to conventional crossover and controller solutions – even in the critical field of permanent installation.

FRONT PANEL



1. Input “A” and “B” level controls

These controls are normally set to their “0”-marked (detent) center position.

If needed or desired, the controls can be used to individually adjust the input levels of the channels “A” and “B”. The green “Signal” LEDs indicate that audio signals are present at the inputs. The red “Peak” LEDs light whenever the audio signal is clipped inside the AC_{ONE} which might result in distortion. In case the “Peak” LEDs light continuously, lowering of the input levels is recommended to maintain the entire dynamic range.

2. Lo-Cut filter control

This control is normally set to its center (50Hz) position.

The filter is used to eliminate unwanted low-frequency noise.

3. Lo-EQ control

This control is normally set to its center (6dB) position and it is used to correct the frequency response of the sub woofer systems. When the control is set to its clockwise margin, low bass frequencies are amplified by +12dB. The audio signal stays unaltered when the control is positioned at its counter-clockwise margin.

4. Mid-EQ control

This control is normally set to its center (-4dB) position.

It is used to increase the audio level in the 4kHz range. Setting the control to its clockwise margin results in no change in the frequency response but delivers the farthest coverage of the sound reinforcement system. Setting the control to its counter-clockwise margin provides pleasant audio even in the near field of the loudspeaker systems.

5. Hi-EQ control

This control is normally set to its center (4dB) position.

The control is used to increase the audio signal’s high frequency range which allows to accomplish improved intelligibility and brilliance even when using loudspeaker systems with diminished treble characteristics. Setting the control to its counter-clockwise margin leaves the high frequency response unaltered.

6. X-over frequency control

The control is normally set to its center (100Hz) position.

This sets the crossover frequency between sub woofer (LO OUT) and full-range cabinets (HI OUT) to 100Hz. Reproduction of the fundamental frequencies of the vocals is mainly taken care of by the full-range cabinets. Best results in coverage and vocal dynamic are achieved when shifting the crossover frequency to approximately 140Hz; a setting that gets widely used in live music sound reinforcement applications. Setting the crossover point at approximately 70Hz results in optimally locatable vocals and average coverage. This setting is often used when reproducing CDs or other pre-recorded audio programs. With the PowerMax12 x-over function, setting the crossover frequency is extremely uncritical. Often enough, when the system is operated at medium sound pressure levels, changes are not registered. Only when operating the reinforcement system at extremely high levels and depending on the actual setting of the crossover frequency, minor differences in the subjective peak dynamic of the low frequency range and in the coverage of mid frequency band can be heard.

7. Sub Out Mono control

The control is normally set to its center (0dB) position.

This control is used to adjust the loudness level of the summed low-frequency audio signal of the two channels "A" and "B", which serves to feed a connected monaural sub woofer power amplifier. The "Mute" switch attenuates the Sub Out Mono audio signal, which allows to easily check the entire sound reinforcement system. The green "Signal" LED indicates the presence of an audio signal while the red "Peak" LED lights when the audio signal is clipped inside the *ACONE* which might result in distortion. In case the "Peak" LED lights continuously, lowering the input "A" and input "B" level controls is recommended to maintain the entire dynamic range.

8. Lo Out Stereo

The control is normally set to its center (0dB) position.

This control is used to adjust the loudness level of the low-frequency audio signals of the two channels "A" and "B", which serves to feed a connected sub woofer stereo power amplifier or two separate power amplifiers, respectively. The "Mute" switch attenuates the Sub Out Stereo audio signal, which allows to easily check the entire sound reinforcement system. The green "Signal" LED indicates the presence of audio signals while the red "Peak" LED lights when the audio signals are clipped inside the *ACONE* which might result in distortion. In case the "Peak" LED lights continuously, lowering the input "A" and input "B" level controls is recommended to maintain the entire dynamic range.

9. Hi Out Stereo

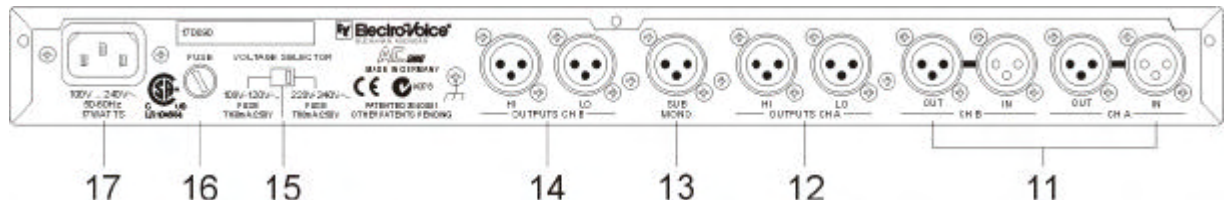
The control is normally set to its center (0dB) position.

This control is used to adjust the loudness level of the connected full-range or mid-hi cabinet power amplifiers. The "Mute" switch attenuates the Hi Out Stereo audio signal, which allows to easily check the entire sound reinforcement system. The green "Signal" LED indicates the presence of audio signals while the red "Peak" LED lights when the audio signals are clipped inside the *ACONE* which might result in distortion. In case the "Peak" LED lights continuously, lowering the input "A" and input "B" level controls is recommended to maintain the entire dynamic range.

10. Power-On switch

The *ACONE*'s outputs employ high quality audio relays. This ensures that no switching noise or any other noise deriving from erroneously or inadvertently separating the appliance from the mains will cause any harm to the connected loudspeaker systems.

REAR PANEL



11. Input connectors of channel “A” (CH A IN) and channel “B” (CH B IN)

The ACONE Controller’s inputs are electronically balanced (pin2 = +, pin3 = -, pin1 = shield). The OUT-connectors are parallel-wired with their corresponding IN-connectors. This thru-connection allows to easily and conveniently feed additional gear with the original input audio signals.

12. Output connectors of channel “A” (CH A LO, HI)

The ACONE Controller’s outputs are electronically balanced (pin2 = +, pin3 = -, pin1 = shield). The low-frequency audio signal feeding channel “A” of the sub woofer power amplifier is present at the LO-output. The mid-high-frequency audio signal feeding channel “A” of the mid-hi or full-range power amplifier is present at the HI-output.

13. SUB MONO output

The ACONE Controller’s outputs are electronically balanced (pin2 = +, pin3 = -, pin1 = shield). This output is meant for the connection of an additional active center sub woofer or sub woofer power amplifier. The output provides the summed monaural audio signal of the two LO-outputs.

14. Output connectors of channel “B” (CH B LO, HI)

The ACONE Controller’s outputs are electronically balanced (pin2 = +, pin3 = -, pin1 = shield). The low-frequency audio signal feeding channel “B” of the sub woofer power amplifier is present at the LO-output. The mid-high-frequency audio signal feeding channel “B” of the mid-hi or full-range power amplifier is present at the HI-output.

15. Mains selector switch

Slide switch to select the correct mains voltage 100V/120V or 230V/240V. When switching the mains voltage always disconnect the appliance from the mains. When changing the mains voltage range, replacing the mains fuse by the appropriate type is absolutely mandatory. Correct types and values are marked on a label on the rear panel of the appliance.

16. Fuse holder

When switching the mains voltage always disconnect the appliance from the mains. When changing the mains voltage range, replacing the mains fuse by the appropriate type is absolutely mandatory. Correct types and values are marked on a label on the rear panel of the appliance.

17. Mains connector

Please, make sure to only use the supplied mains cord to connect the appliance to a mains wall outlet.

SPECIFICATIONS

Technical Specifications ACONE

All level and frequency controls in center position, Lo-EQ and Hi-EQ controls at 0dB, MID-EQ control at -4dB, unless otherwise specified. Note: 0dBu = 0.775V

Crossover

Mode 2-Way-Stereo + SUB Mono
Frequency, sweepable 45Hz ... 160Hz
Filter Type PowerMax12*

LO-Cut

Filter Type 12dB/octave
Frequency, sweepable 20Hz ... 100Hz

Equalization

LO-EQ 50Hz, Shelving, 0dB ... +12dB
MID-EQ 4kHz, Dip, -8dB ... 0dB
HI-EQ 15kHz, Lift, 0dB ... +8dB

Inputs A, B

Type Active Balanced, XLR-female
Input Impedance 20kohms
Maximum Level +20dBu
Rated Level + 6dBu
Gain Range -∞ ... + 6dB
Parallel Outputs A, B XLR-male

Outputs HI, LO, SUB

Type Active Balanced, XLR-male
Output Impedance 75 ohms
Maximum Level + 20dBu
Rated Level + 6dBu
Gain Range -∞ ... + 6dB

Frequency Response, -3dB @ 1kHz, Lo-Cut 20Hz

16Hz ... 150kHz

Nominal Gain

0dB

Maximum Gain

+12dB

Dynamic Range, +20dBu, noise A-weighted

117dB

THD+N, 20Hz ... 20kHz, +6dBu

< 0.02%

THD+N, typical, +6dBu

0.003%

Crosstalk Attenuation

> 80dB

Mute Switch Rejection

> 90dB

Level Control Attenuation

> 80dB

Power Requirements, 50Hz...60Hz, voltage selector

100V ... 120V, 220V ... 240V

Power Consumption

17 W

Dimensions, (WxHxD), mm

483 x 43.6 x 226.5

Weight

3.2 kg

Optional, input transformer

NRS 90208

*Patents pending

BLOCKDIAGRAM

