



# VDA14 AMPLIFIED CONTROLLER





# Safety



## Explanation of graphical symbols



The lightning wash 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 instructions in the literature accompanying the product.

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 grounding-type plug. A grounding-type plug has two blades and a third grounding prong. The third prong is 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.
15. **WARNING:** To reduce the risk of fire or electric shock, this apparatus should not be exposed to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.

## Additional important safety instructions



Verify the electrical conformity and compatibility of the mains supply.

Only connect the product to an AC power outlet rated 100-240 V, 50-60 Hz, with the following current values:

100-120 V: 30 A

200-240 V: 16 A

**WARNING:** The product is of CLASS 1 construction and shall be connected to a mains socket outlet with a protective connection to earth.



**When the product is used in a three-phase circuit, verify the electrical conformity and compatibility of the three-phase circuit.**

Verify that the three phases work, and balance the loads between the three phases.

Verify that the neutral and earth work.

Never try to emulate a 230 V circuit connecting an apparatus to two live wires of a 120 V three-phase circuit.

Never try to emulate a 200 V circuit connecting an apparatus to two live wires of a 100 V three-phase circuit.



**Always interconnect a Class C circuit breaker between the product and the mains supply.**

The circuit breaker current rating depends on the mains voltage rating, as follows:

100-120 V: 30 A

200-240 V: 16 A



**Electrical generator**

You must power on the generator before powering on the product. Verify that the product is turned off before powering on the generator.



**Terminals marked with the lightning flash symbol are HAZARDOUS LIVE.**

The external wiring connected to these terminals requires installation by an instructed person or the use of ready-made leads or cords.

Never attempt to touch any exposed speaker wiring while the product is operating: first disconnect the connector from the product.

Mute all output channels before connecting a speaker to an amplified controller.

Do not connect a speaker output in parallel or series with any output of another amplified controller.

Do not connect the speaker outputs to any other voltage source, such as a battery, power mains, or power supply, regardless of whether the amplified controller is turned on or off.



**Never incorporate equipment or accessories not approved by QANON AUDIO.**

Read all the related PRODUCT INFORMATION documents shipped with the products before exploiting the system.



**Beware of sound levels.**

Do not stay within close proximity of loudspeakers in operation.

Loudspeaker systems are capable of producing very high sound pressure levels (SPL) which can instantaneously lead to permanent hearing damage to performers, production crew and audience members. Hearing damage can also occur at moderate level with prolonged exposure to sound.

Check the applicable laws and regulations relating to maximum sound levels and exposure times.



**Beware of over power risks.**

Only use compatible loudspeakers with appropriate presets to avoid damage to the loudspeakers.



**Inspect the product before operation.**

If any sign of defect or damage is detected, immediately withdraw the product from use for maintenance.



**This product is intended for use by trained personnel.**



**Do not use the product outside its operating temperature range.**

The product operates at a room temperature between 0° C / 32° F and 50° C / 122° F. Do not expose the product to direct sun.



**Only use the product in a conformed electro-magnetic environment.**

Conformed environments are: E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors), E4 (controlled EMC environment, ex. TV studio), E5 (heavy industrial), as per EN55103-2 standards.

**Avoid radio interference.**

This product has been tested and complies with the limits indicated in the EMC directive (Electro Magnetic Compatibility). These limits are designed to provide reasonable protection against harmful interference from electrical equipment, but it cannot be guaranteed that interference will never occur.

**Read the USER MANUAL before operating the system.**

Strictly follow the installation and operating instructions.

**Read the maintenance section of this document before servicing the product.****Shipping**

Use the original packaging for shipping the product, unless it is mounted in a rack with the front and rear panels fixed to the rack, as described in the USER MANUAL.

**Maintain this document as an integral part of the product.**

Keep this document in a safe place.

Record in this document any maintenance operation performed on the product. Do not resell the product without this updated document.

## Welcome

Thank you for purchasing the QANON AUDIO VDA14 amplified controller. The shipping carton should contain:

- VDA14
- rear rack support brackets
- power cable

Depending on the country of distribution, the cable is fitted with a European CEE 7/7 plug (KC certified), a Chinese type GB1002 GB2099 16 A plug, a North American type NEMA L5-30 plug, or is left with bare ends (international cable).

**Importer is required to fit a country specific plug, if necessary.**

Each QANON AUDIO product is tested and inspected before leaving the factory and should arrive in perfect condition.

After the careful opening of the shipping carton, check for any noticeable damage. If so, notify the shipping company or the distributor immediately. Only the consignee may initiate a claim with the carrier for damage incurred during shipping. Be sure to save the carton and packing materials to be inspected by the carrier.

Carefully read this document in order to become familiar with the product and to identify the external documents containing essential information on installing and operating the product properly and safely. Product documents are freely available on the QANON AUDIO web site: [www.qanon-audio.com](http://www.qanon-audio.com)

## Manuals and procedures

Using VDA14

Refer to the VDA14 user manual for more information on installation and operation procedures.

**Service and maintenance**

It is essential to inspect the product on a regular basis to ensure performance and safety. Any maintenance not recommended by QANON AUDIO will void the warranty.

Contact QANON AUDIO for any specific maintenance operation or information about the warranty.



# Technical Specifications



## Internal components

The core of the VDA14 is a SHARC DSP engine driving four channels of amplification from four inputs. The VDA18 also features a flash memory for preset storage and management, high performance A/D-D/A converters and AES/EBU inputs for audio signals, a universal SMPS (Switched Mode Power Supply) with PFC (Power Factor Correction), a front panel user interface, and a 1 Gb/s Ethernet dual port.

## Signal inputs

The VDA14 features four input connectors allowing it to receive four analog signals, four digital signals depending on the input mode selected by the user. This architecture also allows digital-to-analog fallback.

## DSP architecture

- The proprietary algorithms allow optimum performance and protection of each individual transducer of the VDA Control systems for an even more natural, transparent and realistic sound experience.
- The DSP engine is a 32-bit floating point DSP at 96 kHz sampling rate providing an enhanced dynamic range since it does not generate calculation clips like a fixed point DSP.
- A dedicated engineering approach combining IIR and FIR filters generates perfectly linearized phase curves and significantly improved impulse responses.
- The 4 x 4 matrix architecture offers flexibility for various system configurations.
- A delay of up to 500 ms can be set for each input and output channel.
- With a complete factory preset library and the possibility to create additional user presets.

## Power supply and amplifier section

The VDA14 is a green amplified controller that relies on a universal SMPS (Switch Mode Power Supply) suitable for mains from 100 to 240 V ( $\pm 10\%$ ). The SMPS features a PFC (Power Factor Correction) which maximizes the amplifier efficiency and takes advantage of nearly 100 % of the electrical power available with a very high tolerance to unstable mains. This represents a reduction of the electrical power requirements (cable gauge, power conditioning, etc.) for substantial savings.

The Class D amplification circuits ensure the VDA14 energy-efficiency for minimal heat dissipation.

VDA14 controller 4 x 1400 W RMS at 8  $\Omega$ , 4 x 2800 W RMS at 4  $\Omega$   
4 x 3200 W RMS at 2.7  $\Omega$ , 4 x 3000 W RMS at 2  $\Omega$



# Network Control



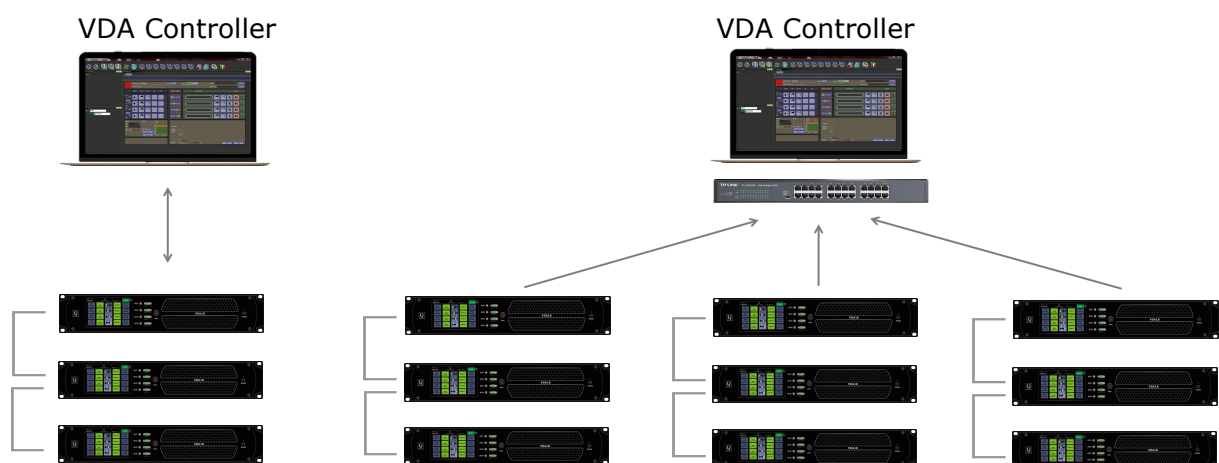
## Features

The four inputs are analog and AES, and the front has AKM 96 kHz A / D converter, which can generate 120dB of impressive coding dynamics. AES / EBU digital input uses a sampling rate converter DSP from 44.1 kHz to 192 kHz to work at 96 kHz, with 32-bit floating-point accuracy. Combining IIR and FIR filter, it can generate perfect linearized phase curve, significantly improve pulse response, realize uniform, natural, transparent and realistic sound experience.

DSP operating at 96 kHz with 32 bit float precision, the DSP combines IIR and FIR filters to generate perfectly linearized phase curves and significantly improved impulse responses for an even, more natural, transparent and realistic sound experience.

## SOFTWARE AND NETWORK

The design of complex systems is made possible by the integration of the VDA Controller Ethernet-based network. Thanks to its high speed data transfer protocol of 1 Gbit/s, up to 254 units can be controlled and monitored in real-time by the VDA Controller software. Multiple network topologies are quickly and easily configurable for full flexibility in the required system architecture.



## General

|   |  |
|---|--|
| Amplification class   | Class D  |
| Output power CEA-2006 / 490A (1% THD, 1 kHz, all channels driven) | 4 x 1400 W RMS (8 $\Omega$ )<br>4 x 2800 W RMS (4 $\Omega$ )<br>4 x 3200 W RMS (2.7 $\Omega$ )<br>4 x 3000 W RMS (2 $\Omega$ ) |
| Digital Signal Processor (DSP)                                    | 2 x SHARC 32-bit, floating point, 96 kHz sampling rate   |
| Frequency response 20 Hz - 20 kHz                                 | $\pm$ 0.1 dB (8 $\Omega$ 60 W output power)<br>$\pm$ 0.1 dB (4 $\Omega$ 120 W output power)                                    |
| Distortion THD+N (20 Hz - 10 kHz)                                 | < 0.05% (8 $\Omega$ 60 W output power)<br>< 0.1% (4 $\Omega$ 120 W output power)   |
| Output dynamic range (20 Hz - 20 kHz, 8 $\Omega$ , A-weighted)    | > 114 dB   |
| Amplification Gain  | 32 dB  |
| Noise level (20 Hz - 20 kHz, 8 $\Omega$ , A-weighted)             | < -72 dBV  |
| Channel separation (at 1kHz, 3 x 120 W, 4 $\Omega$ )              | > 85 dB  |
| Damping factor  | (1 kHz and below, 8 $\Omega$ )   |
| Input delay   | 0 ms to 500 ms   |
| Output delay  | 0 ms to 500 ms   |

## Power supply

|                              |  |
|------------------------------|--|
| Model                        | Universal Switched Mode Power Supply (SMPS) with power factor correction (PFC) |
| Power factor                 | > 0.9 (except Standby on all voltages, and Idle on 230 V)                      |
| Mains rating                 | 100 V - 240 V $\sim$ $\pm$ 10%, 50-60 Hz                                       |
| Voltage start range          | 70-270 V 50-60Hz   |
| Nominal current requirements | 200-240 V for 32 A   |

## Protection

|                        |   |
|------------------------|---|
| Mains and power supply | Over and under voltage<br>Temperature<br>Over current (fuse protection) |
| Power outputs          | Over current<br>DC<br>Short circuit<br>Rail over and under              |

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Temperature

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Cooling system fans with temperature-controlled speed

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### Interface and connections

Indicators For each output: 5 x LEDs for mute, load, signal, levels and limit/clip information

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Interface 5" TFT-Touch screen

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Output connectors 4 Neutrik® NL4

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1 PA-COM® 8-Ponit

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etherNet 2 x 1 Gb/s RJ45 etherCON ®

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### Connectors

Input 4 Neutrik® female XLR3

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Link 4 Neutrik® male XLR3

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### Available input connectors vs. input mode

Analog AB / Analog CD IN A, IN B / IN C, IN D (4 connectors, 4 channels)

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Digital AB / Digital CD IN A&B / IN C&D (2 connectors, 4 channels)

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### Link connectors

Analog input mode Passively connected

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Digital input mode Electronically buffered, fail safe relay

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### Analog input mode

Input impedance 22 kΩ (balanced)

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Maximum input level 15.5 dBu (balanced, THD 1%)

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A/D conversion 32-bit analog/digital converters (120 dB dynamic range)

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### Digital input mode / Supported operating mode

Standards AES/EBU (AES3)

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Sampling frequency (Fs) 44.1, 48, 88.2, 96, 176.4 or 192kHz

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Word length 16, 18, 20 or 24 bits

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Synchronization Signal resampled to internal clock at 96kHz

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### Input gain

Range -80 dB to +15 dB

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Steps 0.1 dB

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### Remote control and monitoring

Network connection Dual-port Ethernet Gigabit interface

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Remote control software VDA Control

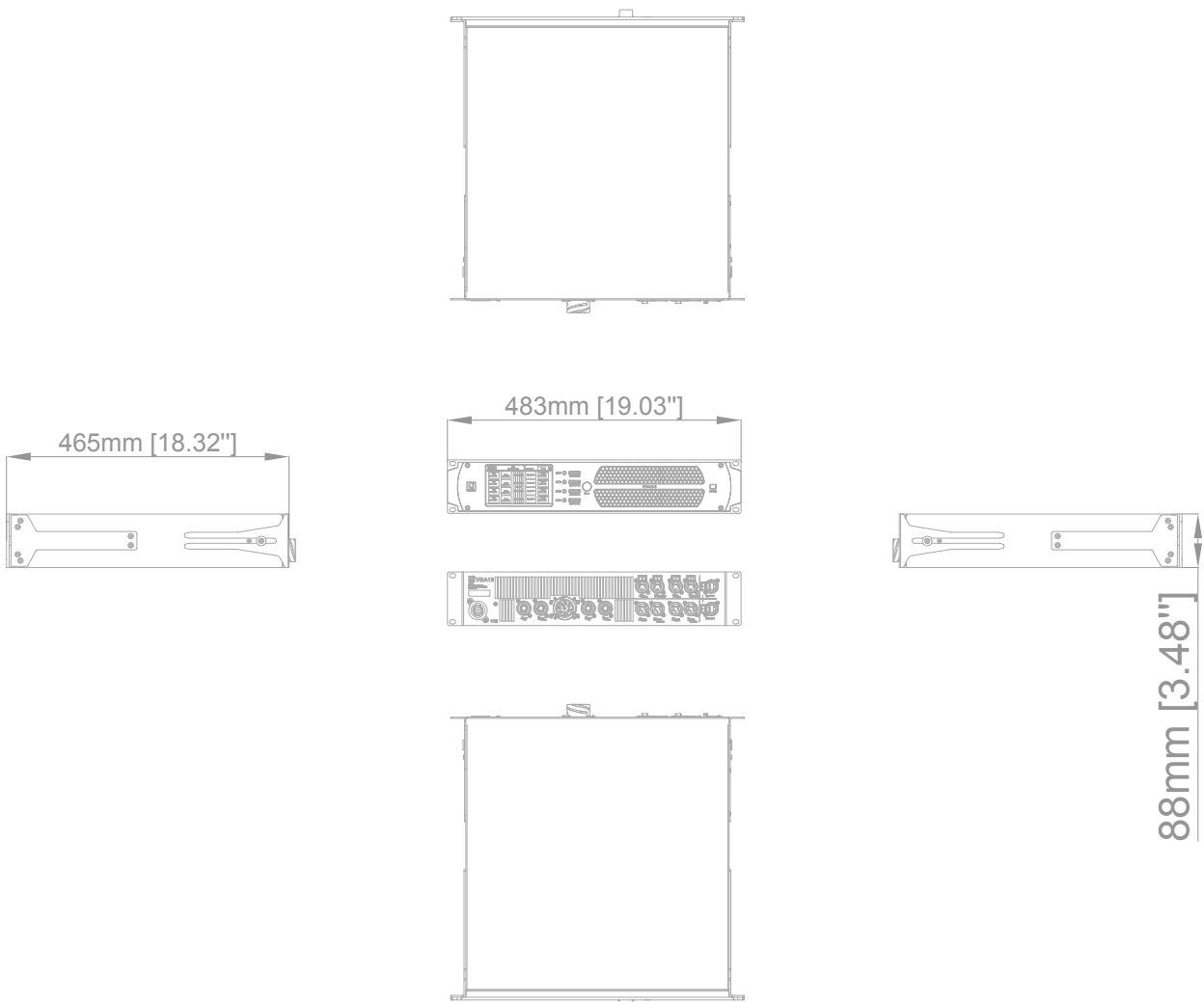
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## Physical data

|                        |                   |
|------------------------|-------------------|
| Dimensions (W x H x D) | 483 x 88 x 465 mm |
| Finish                 | Black             |
| Protection rating      | IP2x              |
| Weight                 | 17kg / 37.5lb     |

## VDA14 Dimensions CAD



[www.qanon-audio.com](http://www.qanon-audio.com)



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