

# VIOLECTRIC

**HEADPHONE AMPLIFIER**  
with D/A converter

## **Violectric DHA V590<sup>2</sup> / V590<sup>2</sup> PRO**

### **Short Form Manual**



**DHA V590<sup>2</sup> (Standard) =**  
Volume Control with Alps RK 27 motorized Attenuator

**DHA V590<sup>2</sup> PRO =**  
Volume Control in 256 Steps each 0,4 dB with Reed-Relays

## POWER SUPPLY

Mains power is provided via a three-pin IEC/CEE socket and mating "cold-appliance" mains cord with Schuko-type plug for units purchased in middle Europe.

The device is set to 230V mains, whereas the actual voltage may vary between 190 and 240 volts for flawless operation.

The mains voltage may be altered to 115 V AC supply inside the unit with the aid of a mains voltage selector. In this case stable operation is granted in a range of 85 to 120 V.

## THE POWER SWITCH



The unit is put into operation by means of the "POWER" switch.

The power-on procedure takes about 5 seconds, during this time the "PROTECT" LED flashes red. It will go off when all internal parameters are checked and found ok.

Any unregular behavior will be displayed by the red "PROTECT" LED which also causes all outputs to be muted.

Always the last setting of the input-, resampling- and output-configuration is recalled.

## The Remote Control of VIOELECTRIC DHA V590<sup>2</sup>

This remote control sends out infrared rays.

For that purpose there is a infrared LED on the front.

The remote control should point in direction of the target device to obtain best functionality.

The operating distance is about 5 - 7 meters (15 - 20 ft).

With the "VOLUME +" and "VOLUME -" buttons the volume can be altered. This is done with a motor inside DHA V590<sup>2</sup> to get the volume knob into motion.

With the "MUTE" button the internal mute function is engaged.

A direct "MUTE" can only be released by the remote control.

With the "ANA + / -" buttons one of the three analogue inputs may be selected. With the "DIGI + / -" buttons one of four digital inputs may be selected.

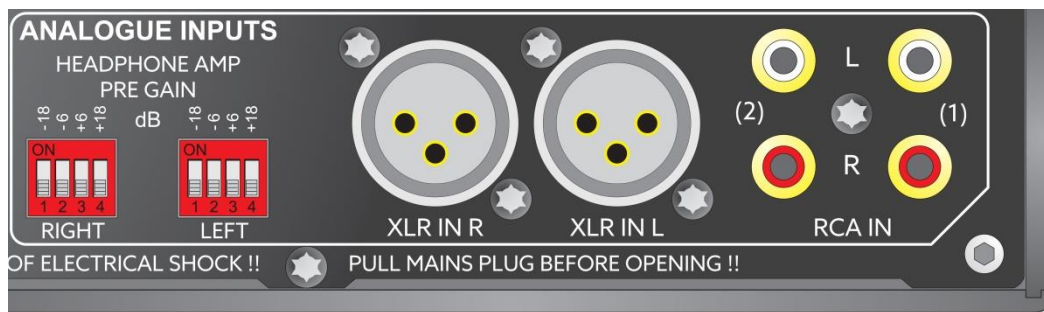
The "RESAMPLING" buttons are only partially active.

The "OUTPUT SELECT" may be controlled may be controlled with the buttons "x2 = Head-Output" und "x4 = Line-Output".

So the front mounted headphone outputs as well as the rear mounted line outputs can be controlled remotely.



**THE ANALOGUE SIGNAL-INPUTS** can be found on the back panel.



**THE BALANCED INPUTS** are marked with "XLR IN L" und "XLR IN R", featuring gold plated connectors. With the aid of an adaptor also unbalanced sources may be connected.

**THE UNBALANCED INPUTS** are labelled as "RCA IN L 1/2" and "RCA IN R 1/2". Gold plated connectors are used here.

The input impedance on all analogue inputs is 10 kohms.  
The maximum input level shall not exceed +21 dBu.

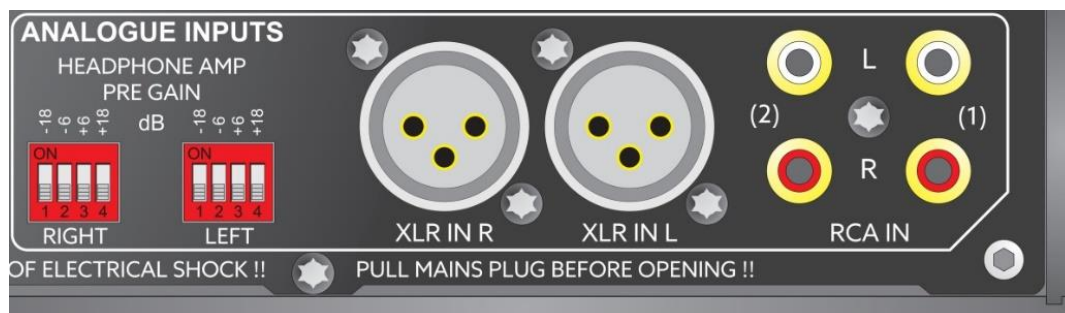
**THE DIGITAL SIGNAL-INPUTS** are situated on the back panel.



There are four different ones.  
The optical input accepts PCM Signals up to 24 Bit, up to 96 kHz.  
The coaxial input accepts PCM Signals up to 24 Bit, up to 192 kHz.  
The balanced input accepts PCM Signals up to 24 Bit, up to 192 kHz.

The USB input accepts PCM Signals up to 32 Bit, up to 384 kHz and DSD Signals up to DSD 256.

## PRE-GAIN - HEADPHONE AMP



Settings can be made for the left and right channel, they shall not be different from each other. With these switches an additional gain or attenuation may be set. It is dependent on the output level of the input source and the sensitivity of the headphones connected.

By this measure it is maintained to achieve lowest possible noise and maximum travel of the volume attenuator. The high gain/attenuation range of about 36 dB (factor 64) ensures a perfect match of any source with any headphone in the market.

## SELECTING AN INPUT



With the "ANALOGUE INPUTS" and "DIGITAL INPUTS" buttons on the front panel one of three analogue inputs or one of four digital inputs may be selected and the appropriate LED is on. Concerning the digital inputs, also the "PCM" or "DSD" LED is on as far as a valid digital signal is detected. The input selection may also be done with the remote control.

## THE DIGITAL to ANALOGUE CONVERTER (D/A Converter)

inside DHA V590<sup>2</sup> is the SABRE® ES9026PRO HyperStream® II 8-channel audio DAC. It is a high performance 32-bit solution designed for Audiophile and Studio equipment applications. Using the patented HyperStream® II architecture and Time Domain Jitter Eliminator, the ES9026PRO 32-Bit Audio DAC delivers an unprecedented DNR of up to 124dB and THD+N of -110dB, the industry's highest performance level that will satisfy the needs of the most demanding audio applications.

The clock signals are taken from the precise built in FEMTO-CLOCK.

Here in DHA V590<sup>2</sup>, the ES9026PRO handles up to 32-bit 384kHz PCM and DSD 64 - 256.

4 of its 8 D/A channels are assigned to be the left channel, the 4 remaining are assigned to be the right channel.

The D/A architecture allows the use of several filters. These settings are explained in the extended manual.

## RESET OF THE PROCESSORS

The buttons, the complete inner control, the resampling and the D/A converters are in need of processors. If - of any reasons - nothing seems to work as it should anymore, follow these instructions to come back to **DEFAULT SETTINGS**:

Push and hold the "INPUT SELECT" button whilst powering the unit. Soon after all LEDs on the front panel will light up. Now you can release the "INPUT SELECT" button as all settings had been reset to default.

**THE VOLUME ATTENUATOR** is to set the desired volume for the left and right channel simultaneously. Volume can also be set via your remote control. A motor will turn the knob in this



case. While DHA V590<sup>2</sup> offers a "standard" RK27 attenuator, V590<sup>2</sup> PRO features a sophisticated 256-steps reed-relay volume control providing minimum channel mismatch and minimum crosstalk over the entire range.

Please note: some "glitches" may be heard during turning the knob of V590<sup>2</sup> PRO due to relay action !

### BALANCE CONTROL

is provided to compensate moderate level differences between left and right channel in a range of +/- 6 dB. Only the right channel is affected.

### THE AMPLIFIER(S)

The input signals are fed to an amplifier stage especially designed for this application, with eight transistors per channel. For balanced operation DHA V590<sup>2</sup> houses no less than four of those! Channels are physically separated from each other to ensure optimum crosstalk rejection. The frequency range covers 5 Hz ... 250 kHz (-0.5 dB) in order to ensure fully linear performance within the entire audible range. Overall gain is set to 0 dB (unbalanced) or +6 dB respectively (balanced) to ensure lowest self-generated noise.

### ACTIVATING / DEACTIVATING THE **HEADPHONE** OUTPUTS



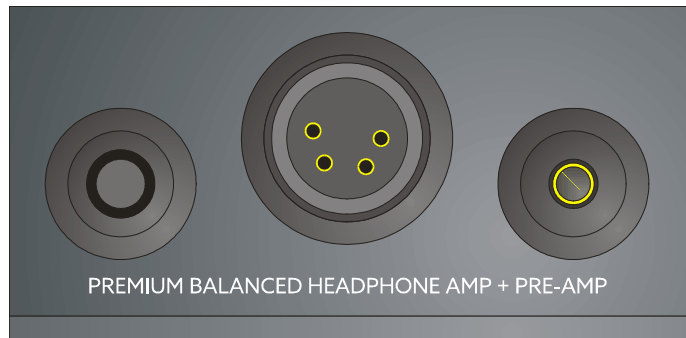
Pressing the "HEAD" button will activate/deactivate the headphone outputs on the front panel. The white LED shows the activated state.

## THE HEADPHONE OUTPUTS

DHA V590<sup>2</sup> offers real balanced outputs because of its four amplifiers !

### UNBALANCED HEADPHONE OUTPUT (left)

Here, "standard" headphones with with a 6.3mm (1/4") jack may be connected.



### THE XLR BALANCED HEADPHONE OUTPUT (middle)

is to connect balanced headphones with 4-pin XLR Plug.

### THE PENTACONN BALANCED HEADPHONE OUTPUT (right)

Serves to connect balanced headphones with 4.4 mm Pentaconn jack.

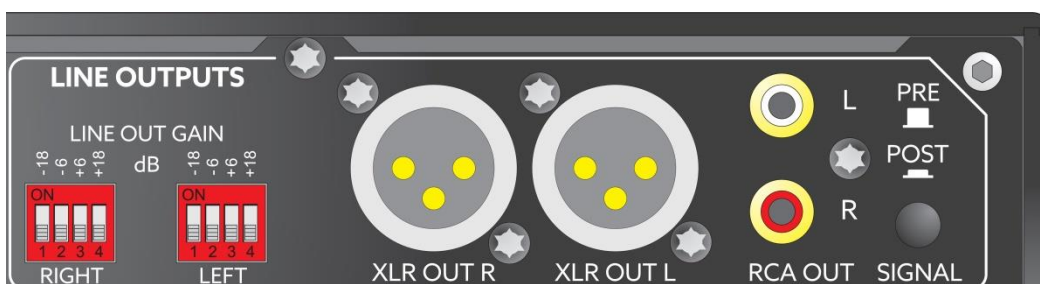
## ACTIVATING / DEACTIVATING THE **LINE** OUTPUTS



Pressing the "LINE" button will activate/deactivate the rear line outputs.

The white LED shows the activated state.

## THE LINE OUTPUTS



### THE UNBALANCED LINE OUTPUTS

are gold plated and located on the rear panel of the unit and are marked as "RCA OUT L/R".

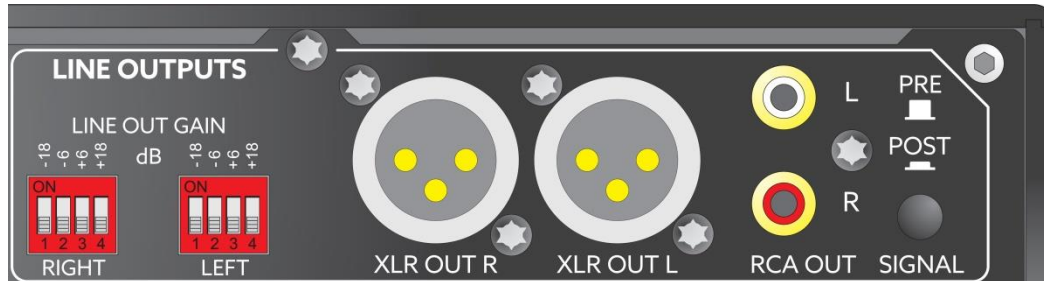
### THE BALANCED LINE OUTPUTS

are gold plated and located on the rear panel of the unit and are marked as "XLR OUT L/R".

## OUTPUT GAIN SETTINGS

The level of the activated input will appear unaltered at the line outputs. This level may be adapted by the "LINE OUT GAIN" switches in order to perfectly match the subsequent equipment.

## SIGNAL SWITCH: PRE - POST FADER or FIXED - VARIABLE



The line out signal may be sourced from two different positions inside DHA V590<sup>2</sup>.

If you want to use the activated input signal as is, maybe to source a unit with its own attenuator or a recording device, than the "**PRE-FADER**" or "**FIXED OUT**" mode is the right choice.

If you like to operate you DHA V590<sup>2</sup> as a pre-amp device of outstanding quality to drive some active speakers or power amps, than switch to "**POST-FADER**" or "**VARIABLE OUT**".

## TECHNICAL DATA VIOLECTRIC DHA V590<sup>2</sup> / DHA V590<sup>2</sup> PRO

All values RMS unwt'd., 20 Hz - 20 kHz, Pre-Gain set to 0 dB

### Input Parameter Analogue

Inputs (stereo, analogue): 1 x XLR female, balanced,  
2 x RCA, unbalanced

Max. Input Voltage: + 21 dBu

Input Impedance: 10 kohm

### Input Parameter Digital

Inputs (stereo, digital): 1 x optical, Tos-Link, PCM up to 24 Bit, 96 kHz  
1 x Unbalanced, Coaxial, RCA, PCM up to 24 Bit, 192 kHz  
1 x Balanced, XLR, PCM up to 24 Bit, 192 kHz  
1 x USB, PCM up to 32 Bit, 384 kHz / DSD 64 up to 256

### Line Out Parameter

Line Outputs (stereo, analog): 1 x XLR male, balanced  
1 x RCA unbalanced

Line-Out Gain: -18 / -12 / -6 / 0 / +6 / +12 / +18 dB

Max. Output Voltage: + 21 dBu

Output Impedance: < 1 Ohm

### Headphone Amp Parameter

Nominal Input Sensitivity: +6 dBu

Amplifier Gain: 0 dB unbal. / +6 dB bal.

**PRE-GAIN:** -18 / -12 / -6 / 0 / +6 / +12 / +18 dB

Frequency Range: 5 Hz ... 250 kHz (- 0,5 dB)

Balance: +/- 6 dB, only effective in the right channel

Output Impedance: 0,15 Ohm unbal. / 0,3 Ohm bal.

Damping Factor (Load 50 Ohm): 320 unbal. / 160 bal.

Dynamic Range: > 131 dB (A-wtd)

Noise: < -103 dBu (A-wtd)

THD+N (1kHz/2x10V/100R = 1W): < -102 dB / < 0,0008 %

THD+N (1kHz/2x4V/32R = 0,5W): < -100 dB / < 0.001 %

Crosstalk: -105 dB (1 kHz) / -100 dB (15 kHz)

Headphone Outputs: 1 x 4-pol XLR  
1 x 4.4 mm Pentaconn  
2 x ¼" (6.3 mm) Klinke

Max. Output Level

R <sub>L</sub>	U <sub>a</sub> (dBu)	U <sub>a</sub> (V)	P <sub>a</sub> (mW)
600	28,7	21,1	740
300	28,6	20,9	1450
100	28,5	20,7	4300
50	27,3	17,9	6400
32	24,0	12,3	4700
16	17,3	5,7	2000
8	12,3	3,2	1300
4	6,8	1,7	700

Conditions:

Balanced Operation

Both channels driven

(1kHz / < 0.1% THD+N)

Mains Supply: 230 V AC / 115 V AC max. 50 VA

Front, Back: 8 mm / 3 mm Aluminum, black anodized

Case: 3 mm / 4 mm Aluminum, black anodized

Case Dimensions: 290 x 80 x 254 mm / 11,4" x 3,15" x 10" (W x H x D)

Overall Dimensions: 290 x 90 x 282 mm / 11,4" x 3,5" x 11,1" (W x H x D)