

Professional Fidelity



This User Manual is optimized for Acrobat Reader.

Interactive buttons may not appear in other applications.

Diamond – User Manual

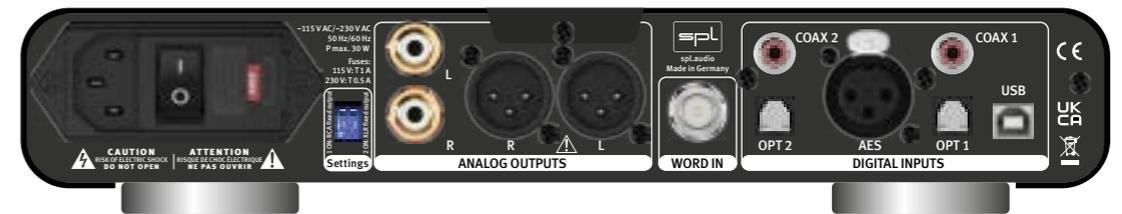
DA Converter

Welcome

and thank you for choosing Diamond.

Diamond is the perfect DAC and preamplifier for everyone who plays music exclusively from digital sources. Diamond offers connectivity for five digital sources and an external word clock.

The superior VOLTAiR technology, in combination with the premium DAC including DLP120, lets digital players enter soundscapes never experienced before. The analog volume control guarantees for high-resolution dynamics even at low volumes.



Content

Getting started	4	DIP Switches	15
Front view	5	Specifications	16
Rear view	6	Inputs and Outputs	16
VOLTAiR – 120V Rail Technology	7	Digital inputs	16
Comparisons	8	Sample rates 32 Bit	16
Operation	10	Outputs	17
Volume	10	Measurements	17
Source Selection	11	Internal Voltage	18
Display	11	Power supply	18
Display after two seconds –		Dimensions (incl. feet)	18
Word Clock: Source	12	Weight	18
Display after two seconds –		Important Notes	19
Word Clock: Word	13	Declaration of CE Conformity	19
Word Clock	14		



Getting started

Read thoroughly and follow the instructions as well as the security advices of the Quickstart which is enclosed in the scope of delivery! You can also download the Quickstart [here](#).

By pressing the -Button you get to the table of contents.

By pressing the -Button you get to the front view of the unit.

By pressing the -Button you get to the rear view of the unit.

By pressing the -Button you get to the previous content.

Front view



Rear view



VOLTAiR – 120V Rail Technology

VOLTAiR is the synonym for our 120V Rail Technology within the Professional Fidelity series. The audio signals are processed with an unequalled $\pm 60V$ DC, which corresponds to twice that of discrete operational amplifiers and four-times that of semiconductor operational amplifiers.

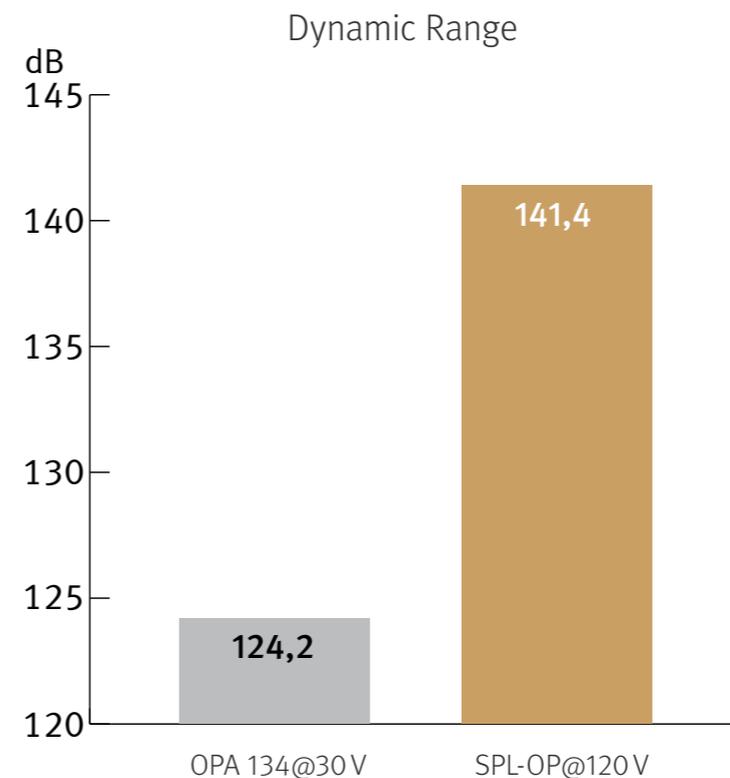
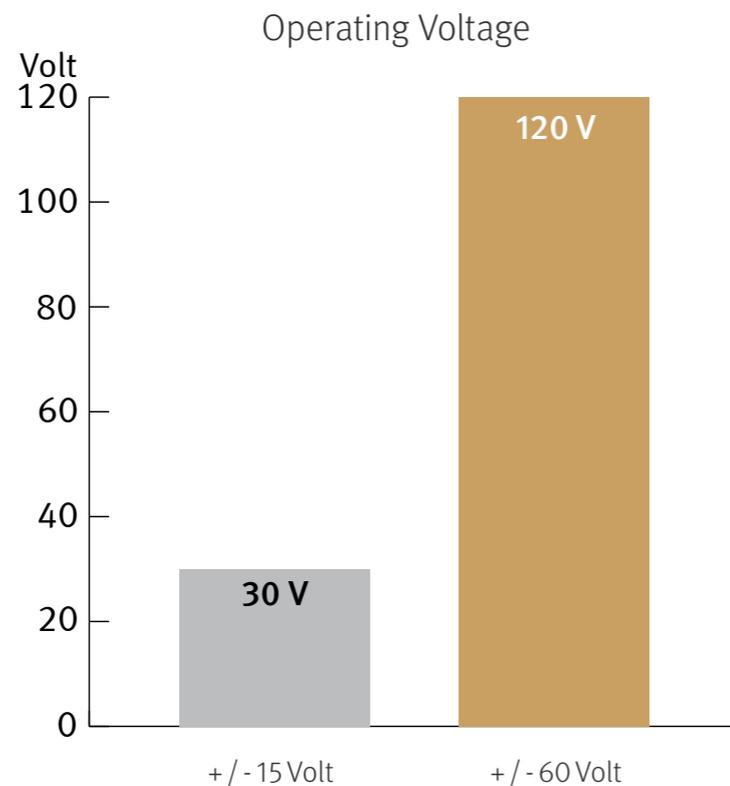
VOLTAiR Technology reaches outstanding technical and sonic performances. Technically especially in terms of dynamic range and headroom and sonically especially in reproducing the finest details and delivering a totally relaxed sounding audio experience. Music sounds absolutely natural.

SPL's 120V Rail Technology is the internal audio processing voltage ($\pm 60V$ DC).
It is not to be confused with the external mains voltage (e.g. 115V or 230V AC).

Comparisons

These diagrams show how our VOLTAiR Technology compares to other circuits.

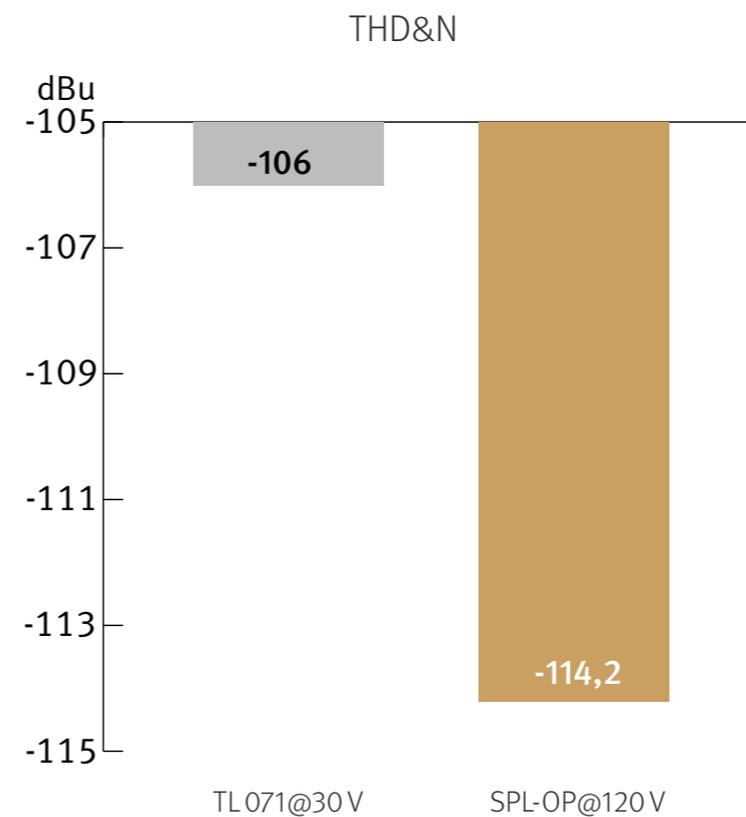
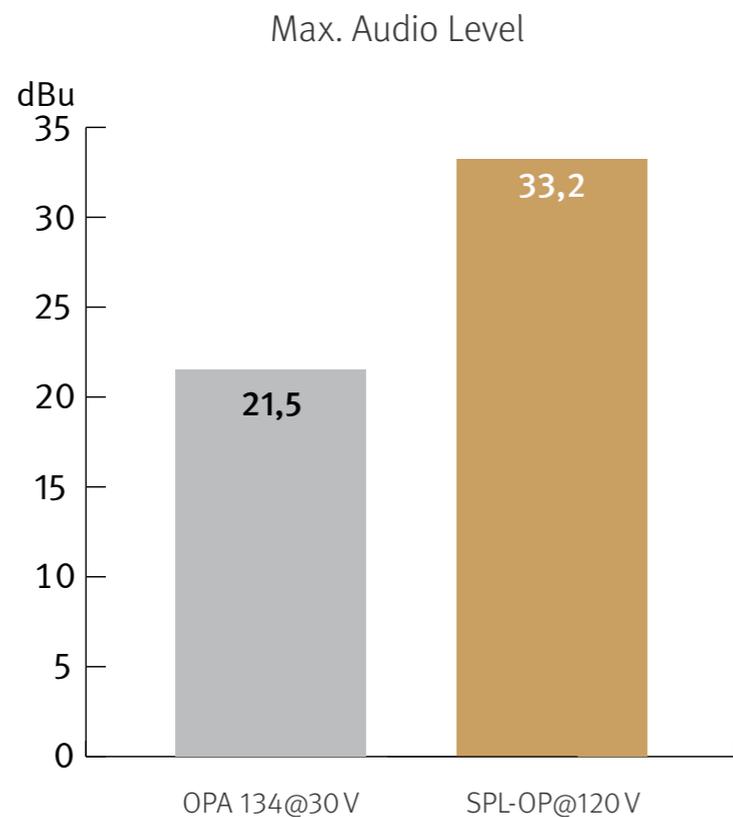
The direct relation between operating level and maximum level is fundamental for the classification: the higher the operating level, the higher the maximum level a circuit can handle. And since virtually all essential acoustic and musical parameters depend on this relation, a higher operating voltage also has a positive impact on the dynamic range, distortion limit and signal-to-noise ratio.



Do bear in mind that dB scales do not represent linear but rather exponential increases. A 3 dB increase corresponds to doubling the acoustic power, +6 dB correspond to twice the sound pressure level, and +10 dB correspond to twice the perceived loudness.

When it comes to volume, the VOLTAiR Technology exhibits a performance, in regard to maximum level and dynamic range, that is twice that of common components and circuits given that its values are approximately 12 dB higher.

THD measurements show a difference of more than 8 dB compared to the TL071 at 30 V — in terms of sound pressure level, that corresponds to an improvement of more than 130%. The operating level most commonly used for audio equipment is +/- 15 volts.



Operation

Volume

You control the volume of the analog outputs with the [volume knob \(4\)](#).

The two outputs (RCA, XLR) can alternatively be set to a fixed level (Unity Gain) with the DIP switches (see DIP switch on page 15).



Source Selection

With the [Source switch \(5\)](#) you select the source – USB, Coax 1, Coax 2, Optic 1, Optic 2 or AES.

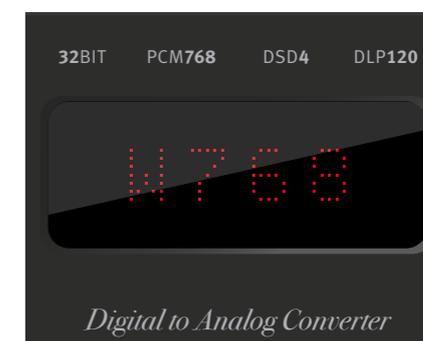


Display

After selecting a source, the name of the selected source is first shown in the [display \(2\)](#) for two seconds (USB, COAX1, COAX2, OPT1, OPT2, AES).

Two seconds after selecting a source, the display shows further information – depending on whether the clock of the selected source or an external word clock is used.

If no signal or no word clock is present, error messages are shown in the display.



Display after two seconds – Word Clock: **Source**

The display shows the first letter of the selected source together with the detected sampling rate (e.g. **U384**, **C192**, see table).

Digital source	Sample rate PCM (kHz)										Sample rate DSD (n * 44,1 kHz)		
	44.1	48	88.2	96	176.4	192	352.8	384	705.6	768	64 x	128 x	256 x
USB	U 44	U 48	U 88	U 96	U176	U192	U352	U384	U706	U768	DSD1	DSD2	DSD4
Optical	O 44	O 48	O 88	O 96	-	-	-	-			-	-	
Coax	C 44	C 48	C 88	C 96	C176	C192	-	-			-	-	
AES/EBU	A 44	A 48	A 88	A 96	A176	A192	-	-			-	-	

If there is no signal at the selected source, the first letter of the selected source will blink – **U** (USB), **C** (Coax 1 or Coax 2), **O** (Optic 1 or Optic 2) or **A** (AES).

Display after two seconds –
Word Clock: **Word**

If an external word clock is used, the display shows the letter **W** together with the sampling rate (e.g. **W 96**).

The following error displays are possible:

Digital source	No Signal at selected source	Word samplerate and samplerate of selected source do not match	No Word signal
Optical	SR~W (flashes alternately with) D	SR~W (flashes)	W
Coax	SR~W (flashes alternately with) C		
AES/EBU	SR~W (flashes alternately with) A		

The source USB does not support external Word Clock.

Word Clock

If an external Word Clock is connected, set the [Word Clock switch \(3\)](#) to the Word position.

In the Source position, the Diamond derives its clock from the selected digital source.



DIP Switches

With the [DIP switches \(8\)](#) on the rear of the unit the following settings can be chosen:

DIP switch 1: OFF = The level of the RCA analog output is adjusted with the volume control.

DIP switch 1: ON = The level of the RCA analog output is fixed (Unity Gain).

DIP switch 2: OFF = The level of the XLR analog output is adjusted with the volume control.

DIP switch 2: ON = The level of the XLR analog output is fixed (Unity Gain).



Specifications

Inputs and Outputs

Digital inputs

- 6 digital inputs
- AES/EBU (XLR), balanced
- 2 x Coaxial SPDIF (RCA)
- 2 x Optical TOSLINK (F06)
- USB (B)
- 0 dBfs = 15 dBu
- Converter Chip AK4490-Velvet Sound

Sample rates 32 Bit

- Encoded PCM (kHz): 44.1, 48 , 88.2, 96, 176.4, 192, 352.8, 384, 705.6, 768
- DSD: DSD1 (DSD64), DSD2 (DSD128), DSD4 (DSD256)

Outputs

- 2 analog stereo outputs
- Neutrik XLR, balanced, Pin 2 = (+)
- RCA, unbalanced
- Impedance: 75 ohms (balanced)
- max. output level 32,5 dBu

Measurements

- Frequency range: 4 Hz – 300 kHz (-3 dB)
- Crosstalk at 1 kHz: -108 dB
- THD: 0.001001 % (0 dBu, 1 kHz)
- Noise (A-weighted): -102.3 dB
- Dynamic range: 135 dB

Internal Voltage

- Audio: +/- 60 V

Power supply

- Mains voltage (switchable): 230 V AC / 50 Hz or 115 V AC / 60 Hz
- Fuses: 230 V: T 500 mA; 115 V: T 1 A
- Power consumption: max. 40 VA
- Standby power consumption: < 0.3 W

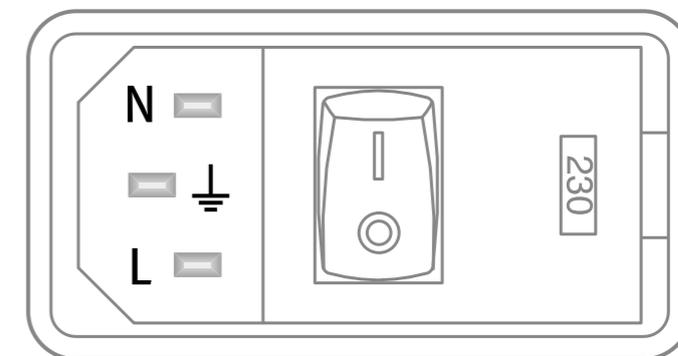
Dimensions (incl. feet)

- 278 mm W x 57 mm H x 300 mm D
- 10.95 in W x 2.24 in H x 11.81 in D

Weight

- 3.15 kg; 6.94 lbs (unit only)
- 5.35 kg; 11.79 lbs (shipping)

Reference: 0 dBu = 0,775V. All specifications are subject to change without notice.



Important Notes

Version 1.0 – 11/2022

Developer: Bastian Neu

This manual includes a description of the product but no guarantee as for specific characteristics or successful results. Unless stated otherwise, everything herein corresponds to the technical status at the time of delivery of the product by SPL electronics GmbH. The design and circuitry are under continuous development and improvement. Technical specifications are subject to change.

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Declaration of CE Conformity

 The construction of this unit is in compliance with the standards and regulations of the European Community.