

Professional Fidelity

Mastering Grade Listening



This User Manual is optimized for Acrobat Reader.

Interactive buttons may not appear in other applications.

Crossover – User Manual

Active analog 2-way crossover

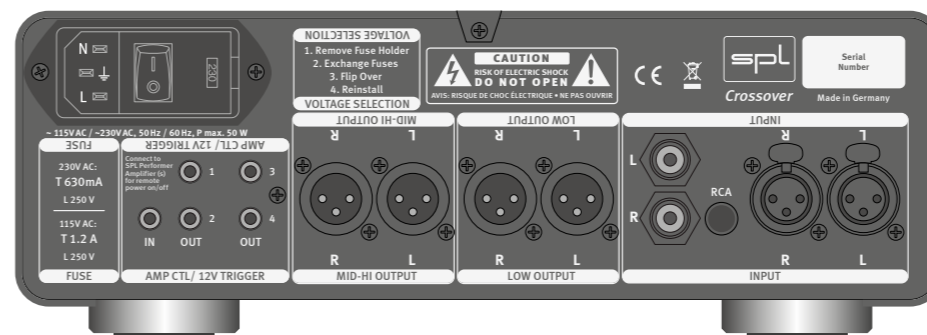


Welcome

and thank you for choosing the SPL Crossover.

The SPL Crossover is a high-end active analog 2-way crossover that will perfectly team up your subwoofer(s) with your top speakers. You can tune crossover frequencies, align the phase response and set levels all in the analog domain.

VOLTAiR technology is what we call our proprietary 120V rail technology within the Professional Fidelity series. The Crossover uses this technology throughout and makes it an outstanding device in terms of dynamic range, signal-to-noise ratio and headroom. It delivers an exceptional sound experience with invincible serenity, transparency and realness.



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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](#).

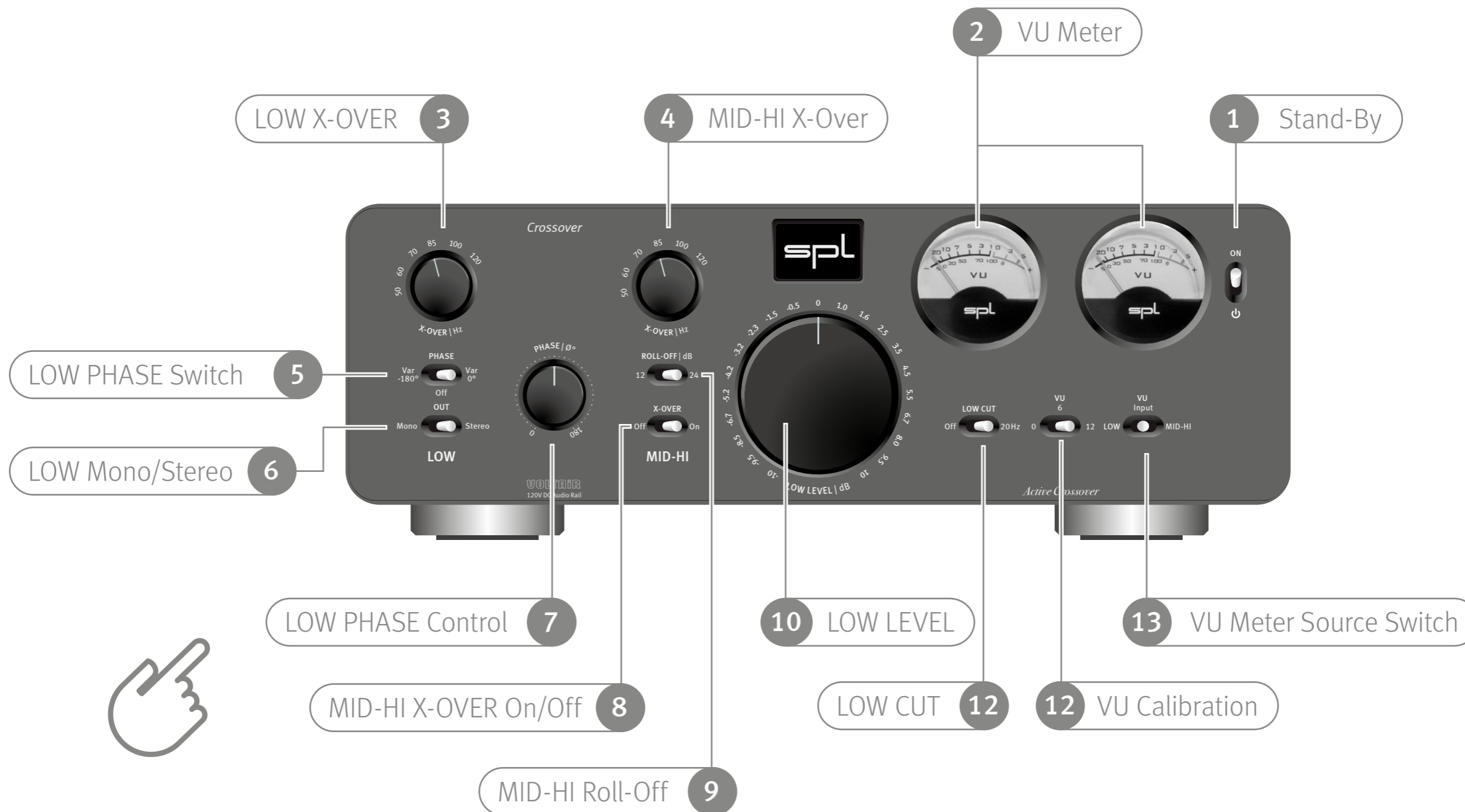
By pressing the -Button you get to the **table of contents**.

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

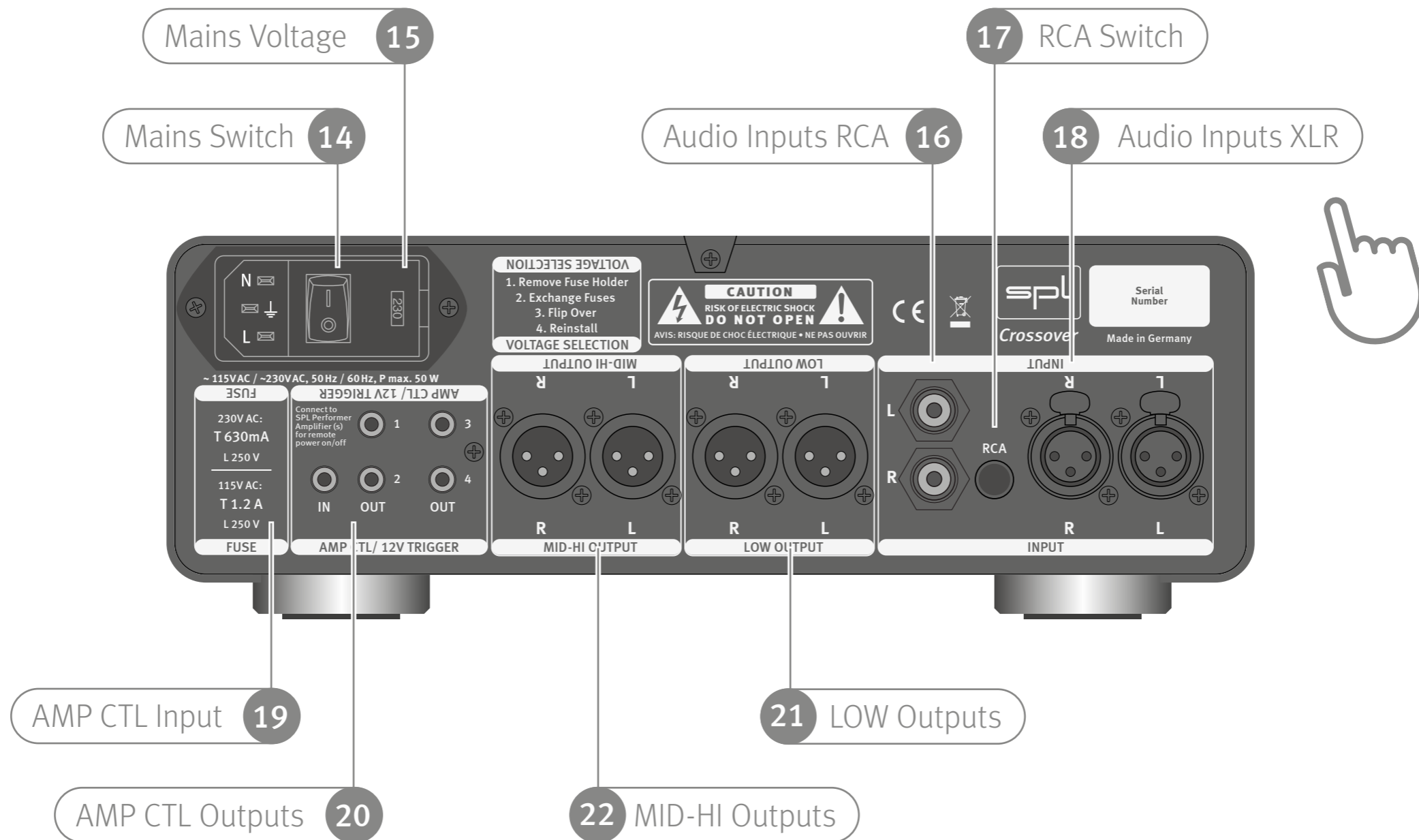
By pressing the -Button you get to the **rear view** of the unit.

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 four-times that of semiconductor operational amplifiers.

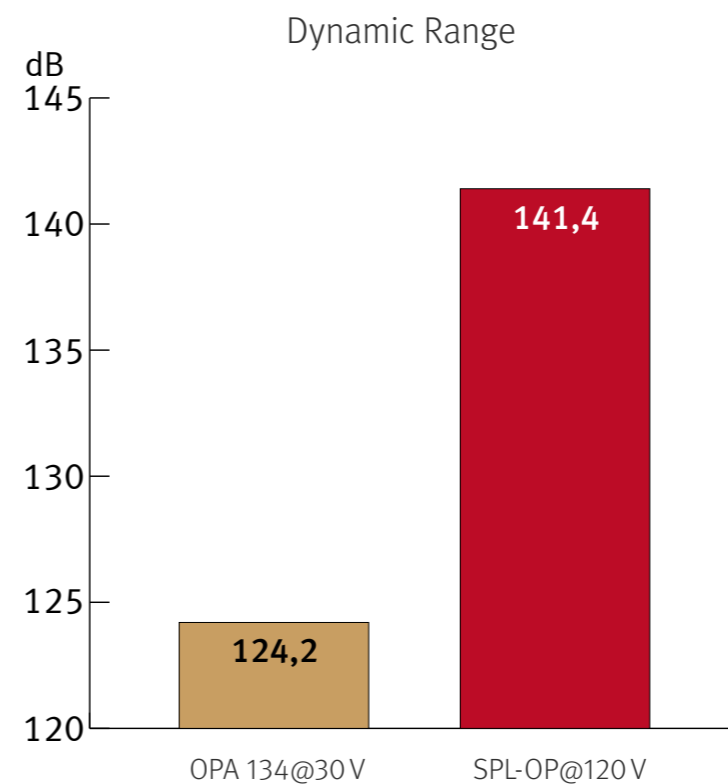
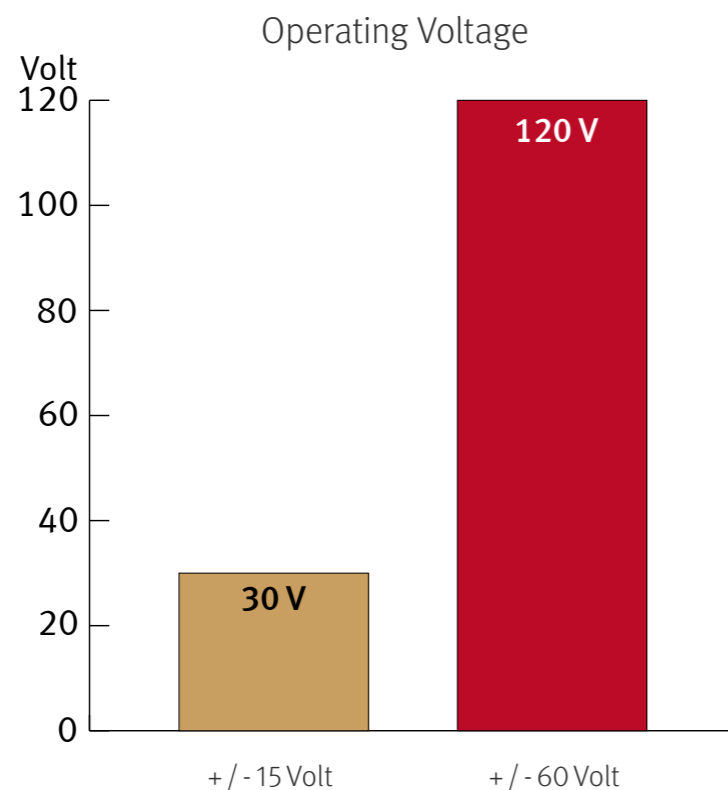
VOLTAiR technology reaches outstanding technical and sonic performances. Technically especially in terms of dynamic range and headroom and sonically especially in reproducing the finest details and delivering a totally relaxed sounding audio experience. Music sounds absolutely natural.

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 standard IC (integrated circuit) designs.

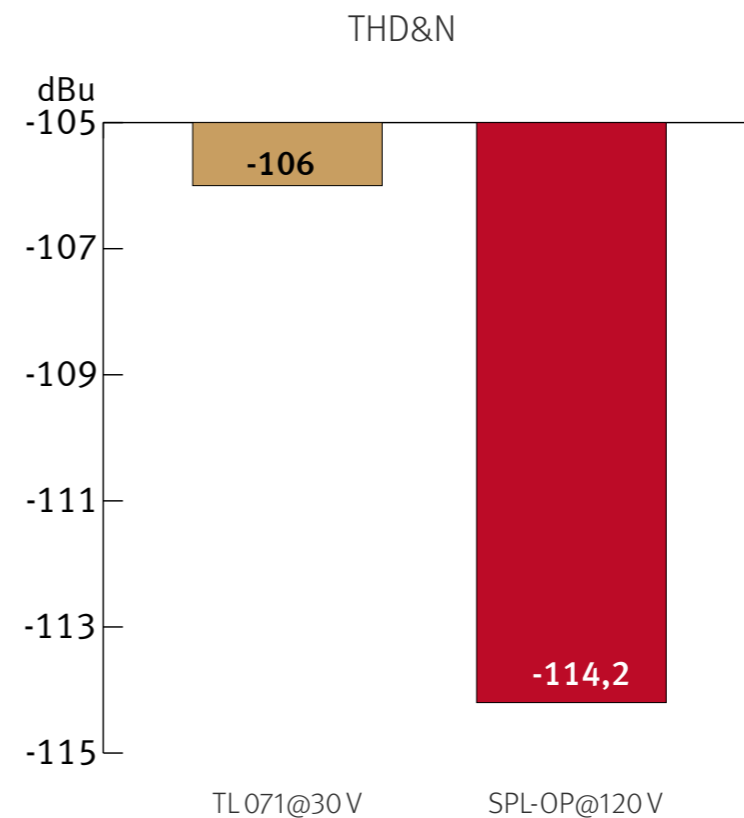
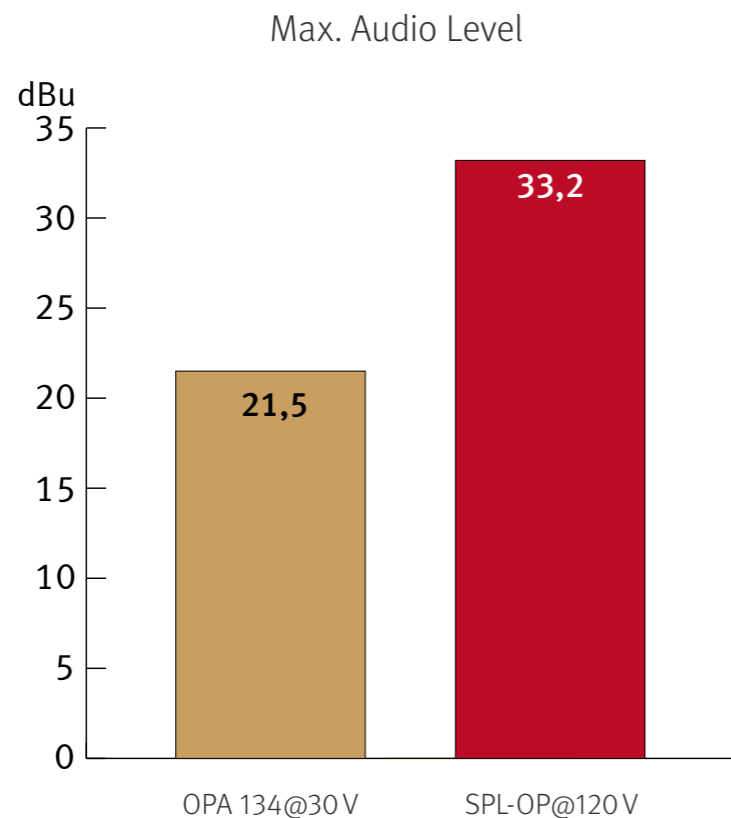
The direct relation between operating level and maximum level is fundamental for the classification: the higher the operating level, the higher the maximum level a circuit can handle. And since virtually all essential acoustic and musical parameters depend on this relation, a higher operating voltage has a positive impact on the dynamic range, headroom 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 10 dB higher.

THD measurements show a difference of over 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.

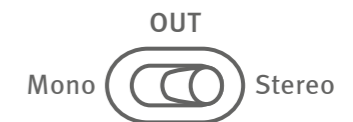


LOW Section

In the LOW section you control the crossover frequency, the level, the phase of the LOW section. You also select whether your playback system has a single subwoofer or two subwoofers.

OUT Mono/Stereo

If your playback system consists of two top speakers and a single subwoofer (2.1 set-up) set the [Mono/Stereo switch \(6\)](#) to mono. The left and right channels are then summed to mono.

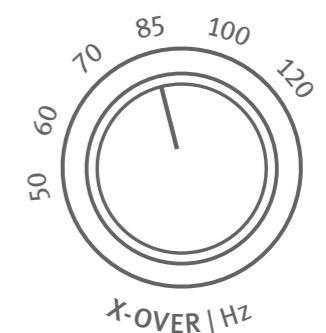


The mono LOW signal is passed to both outputs [L and R \(21\)](#). You can select either one to drive your subwoofer.

X-OVER | Hz

The LOW crossover filter is a Linkwitz/Riley design. The roll-off is 24 dB per octave.

Set the crossover frequency with the [LOW X-OVER switch \(3\)](#). Available crossover frequencies are: 50, 60, 70, 85, 100 and 120 Hz.

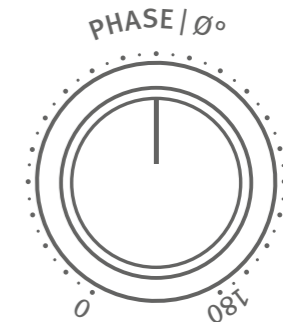
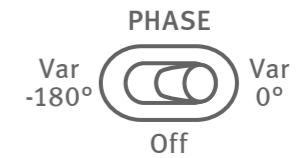


PHASE

Use the [PHASE switch \(5\)](#) and the [PHASE potentiometer \(7\)](#) to time-align the subwoofer(s) with the top speakers. This is especially useful when the subwoofer is placed elsewhere in the room.

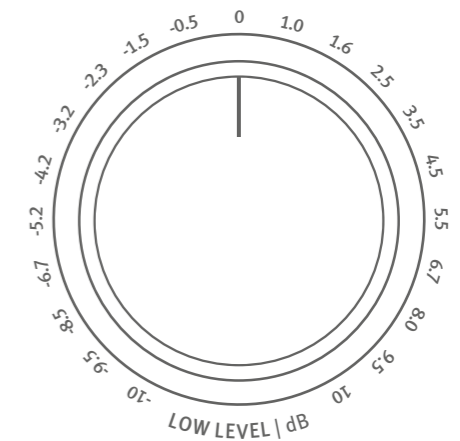
If you set the PHASE switch to position “Var -180°”, you set the phase of the LOW signal with the phase potentiometer from -180° to 0°.

If you set the Phase switch to position “Var 0°”, you set the phase of the LOW signal with the phase potentiometer from 0° to 180°.



LEVEL

Set the overall level of the subwoofer(s) with the [LOW LEVEL potentiometer \(10\)](#). The control has a range of +/- 10dB. It allows to finely control the level of your subwoofer(s) in relation to your top speakers.



MID-HI Section

In the MID-HI section you control the frequency and the roll-off of the top speaker crossover.

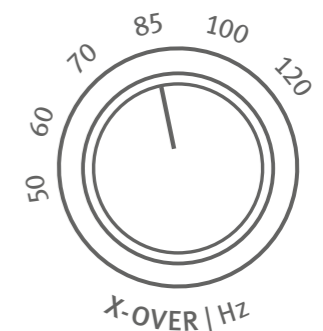
X-OVER On/Off

If you want to drive your top speakers full range, set the [X-OVER On/Off switch \(8\)](#) to off. The MID-HI crossover is switched off and the input is passed to the [MID-HI OUTPUTS \(22\)](#) without any processing.



X-OVER | Hz

Select the X-OVER frequency (50, 60, 70, 85, 100 or 120 Hz) with the [MID-HI X-OVER switch \(4\)](#).



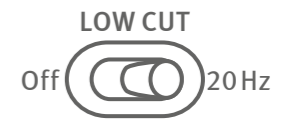
ROLL-OFF

The roll-over of the MID-HI section can be switched between 12 dB (Butterworth) and 24 dB (Linkwith/Riley) per octave with the [MID-HI ROLL-OFF switch \(9\)](#).



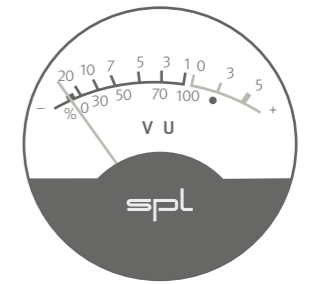
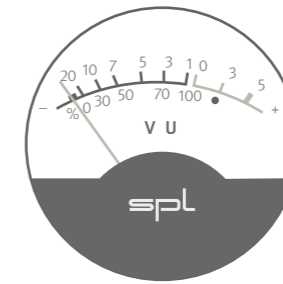
LOW CUT

With the [LOW CUT switch \(11\)](#) you engage a cut filter for frequencies below 20 Hz. The roll off is 12 dB per octave. Both the LOW and MID-HI sections are affected by this filter. It is used to filter out frequencies that do not contain musical content but demand a lot of power from the power amplifiers.



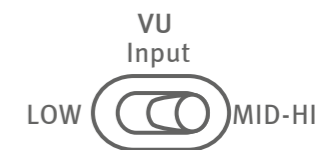
VU Meters

The [VU meters \(2\)](#) display the levels of the selected source in a range from -20 dB to +5 dB. 0 dB corresponds to +4 dBu.

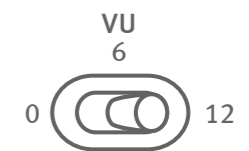


VU Meters

Select the source for the VU meter with the [VU meter source switch \(13\)](#): Input (stereo input), LOW (subwoofer outputs), MID-HI (top speaker outputs).



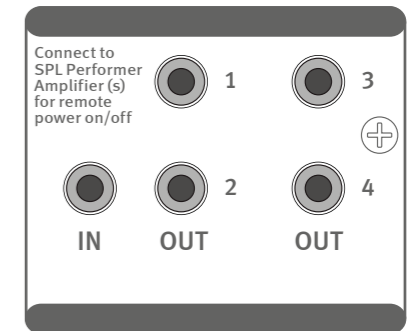
If necessary you can lower the sensitivity by 6 or 12 dB with the [VU level switch \(13\)](#). The VU meters then display up to +17 dB. The ballistics of the VU meters guarantee an optimal visual perception. The time calibration complies with the requirements of the BBC. The rise time up to 0 dB is about 300 ms.



AMP CTL (Standby / Amplifier Control)

AMP CTL stands for 'amplifier control'. It is essentially a 12V trigger to switch connected units from standby to on and vice versa.

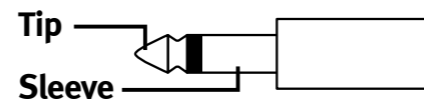
If you own an SPL device supporting AMP CTL output(s) you can trigger standby and operation of the Crossover. Therefore connect the AMP CTL output of the SPL device to the Crossover's [AMP CTL IN \(19\)](#).



The Crossover has four trigger [AMP CTL Outputs \(20\)](#) to switch on up to four power amplifiers simultaneously. If the Crossover is triggered via its AMP CTL IN, the connected power amplifiers are triggered too.

You may also use other 12V trigger controller. The Crossover is in operation mode when a switching voltage of 12 Volt DC is applied to the AMP CTL input. As soon as the 12 Volt DC is removed, the Crossover switches back to standby.

SPL devices are equipped with mini jack connectors. Use cables with mono mini jack plugs (1/8", 3.5mm) where the tip is plus and the sleeve is minus.



Specifications

Inputs

XLR inputs

- Neutrik XLR, balanced, Pin 2 = (+)
- Impedance: ca. 20 kohms
- CMR: -82 dBu (at 1 kHz)
- Max. Input level: +32.5 dBu

RCA inputs

- Unbalanced
- Impedance: ca. 10 kohms
- Max. Input level: +32.5 dBu

Outputs

LOW Output

- Crosstalk at 70 Hz: -70 dB
- THD: 0,0014% @ 30 Hz (0 dBu)
- Noise (A-weighted): -104,9 dB
- Dynamic range: 136,9 dB

MID-HI Output

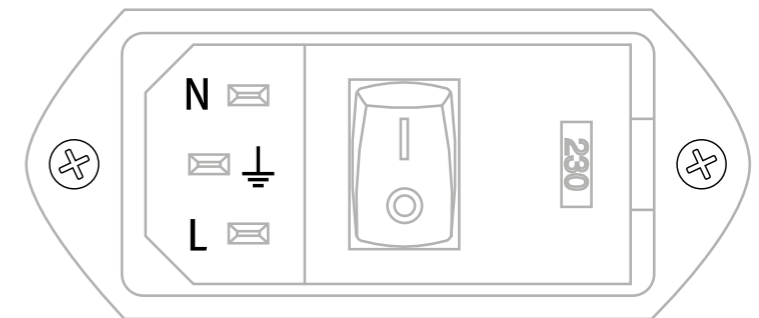
- Frequency range: MID-HI Frequency (50, 60, 70, 85.100, 120 Hz) to 300 kHz (-3 dB)
- Crosstalk at 1 kHz: -70 dB
- THD: 0,0008 % @ 1 kHz (0 dBu / Filter on)
- Noise (A-weighted): -106,0 dB
- Dynamic range: 138,0 dB

Internal operating voltages

- Analog: +/- 60 V

Power supply

- Mains voltage (switchable): 230 V AC / 50 Hz or 115 V AC / 60 Hz
- Fuses: 230 V: T 630 mA; 115 V: T 1.2 A
- Power consumption: max 50 VA
- Stand-by power consumption: < 0.1 W



Dimensions (incl. feet)

- (WxHxD) 10.94 x 3.94 x 12.99 in (278 x 100 x 330 mm)

Weight

- 11.90 lbs (5.4 kg), unit only
- 15.43 lbs (7 kg), shipping

Important Notes


Version 1.1 – 02/2020

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.