Professional Fidelity

Mastering Grade Listening

This User Manual is optimized for Acrobat Reader.

Interactive buttons may not appear in other applications.

Get Adobe Acrobat Reader

Crossover – User Manual

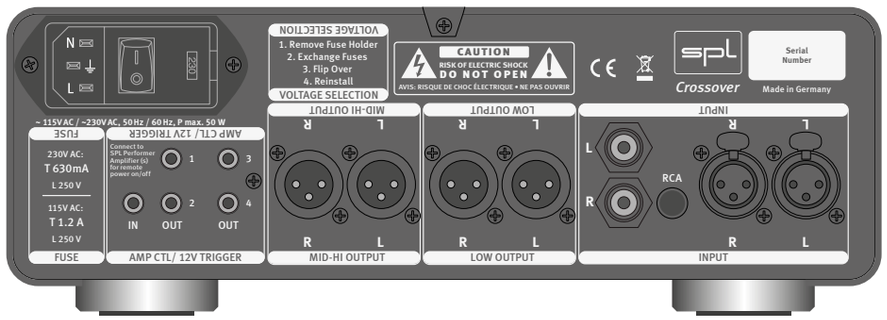
Active analog 2-way crossover

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 throughtout and makes it an outstandig device in terms of dynamic range, signal-to-noise ratio and headroom. It delivers an exceptional sound experience with invincible serenity, transparency and realness.



Content

Getting started 4
Front view 5
Rear view 6
VOLTAiR – 120V Rail Technology 7
Comparisons 8
LOW Section 10
OUT Mono/Stereo 10
X-OVER | Hz 10
PHASE 11
LEVEL 11
MID-HI Section 12
X-OVER On/Off 12
X-OVER | Hz 12
ROLL-OFF 12
LOW CUT 13
VU Meters 14
AMP CTL (Standby / Amplifier Control) 15
Specifications 16
Inputs 16
Outputs 17
Internal operating voltages 18
Power supply 18
Dimensions (incl. feet) 19
Weight 19
Important Notes 20
Declaration of CE Conformity 20

I F R

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.

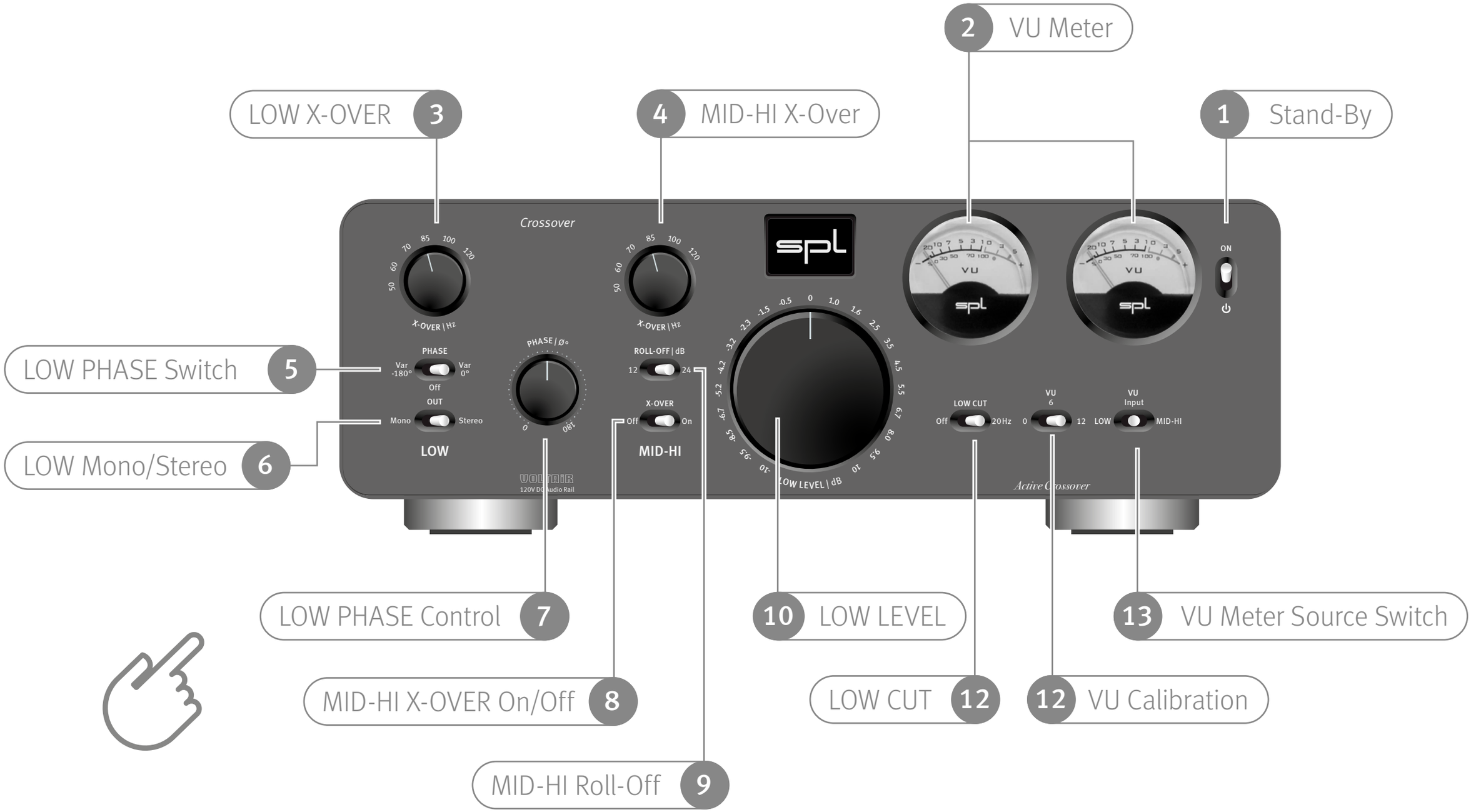
By pressing the I -Button you get to the **table of contents**.

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

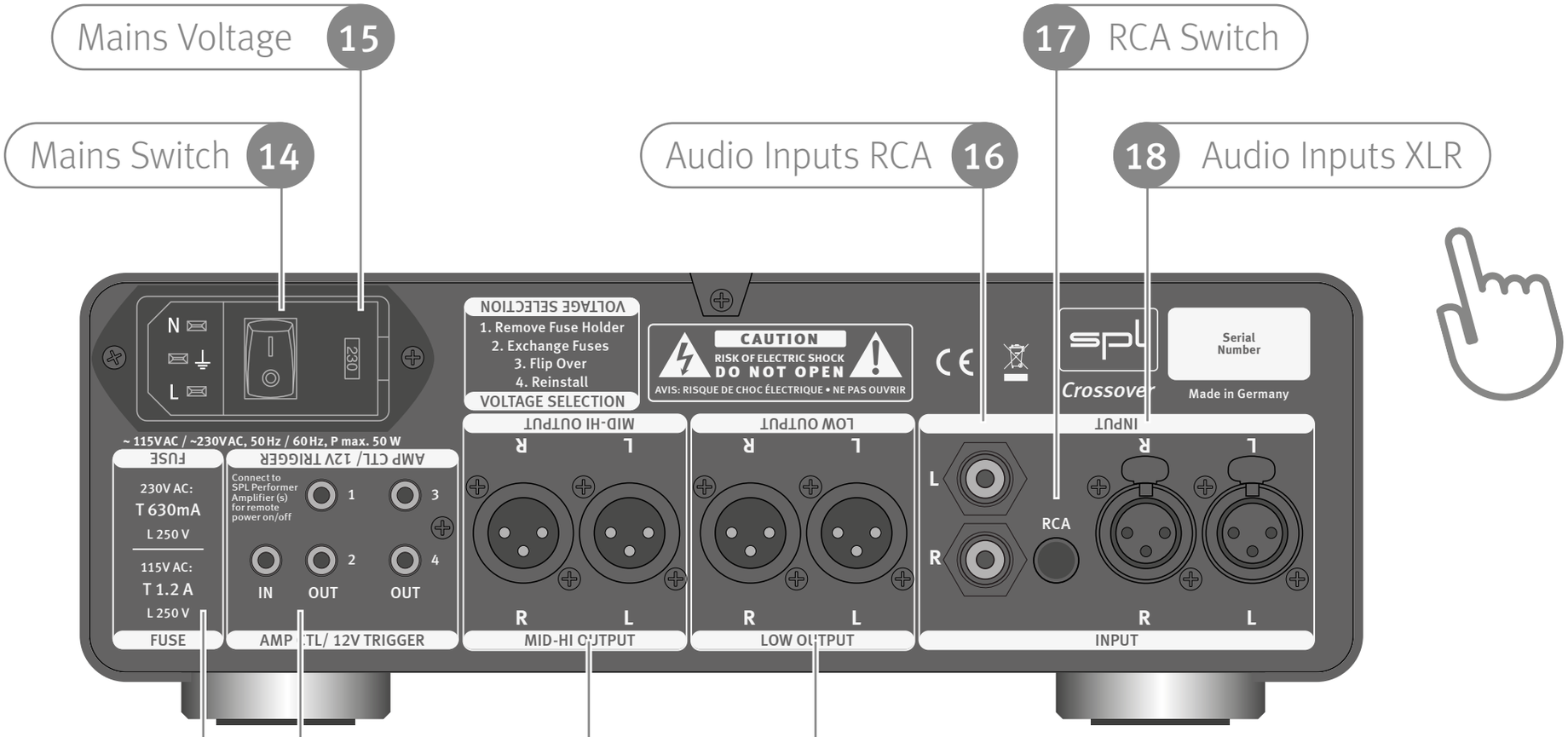
By pressing the R -Button you get to the **rear view** of the unit.

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

Front view


2 VU Meter
LOW X-OVER 3
4 MID-HI X-Over
1 Stand-By
LOW PHASE Switch 5
LOW Mono/Stereo 6
LOW PHASE Control 7
MID-HI X-OVER On/Off 8
MID-HI Roll-Off 9
10 LOW LEVEL
LOW CUT 12
12 VU Calibration
13 VU Meter Source Switch
Crossover
X-OVER | Hz
PHASE
Var -180°
Var 0°
Off
OUT
Mono
Stereo
LOW
PHASE | Ø°
ROLL-OFF | dB
12
24
X-OVER
Off
On
MID-HI
LOW LEVEL | dB
LOW CUT
Off
20 Hz
VU
6
12
VU Input
LOW
MID-HI
ON
VU
spl
VOLTAIR
120V DC Audio Rail
Active Crossover

Rear view


Mains Voltage 15
Mains Switch 14
Audio Inputs RCA 16
17 RCA Switch
18 Audio Inputs XLR
N
L
230
~ 115VAC / ~230VAC, 50Hz / 60Hz, P max. 50 W
VOLTAGE SELECTION
1. Remove Fuse Holder
2. Exchange Fuses
3. Flip Over
4. Reinstall
VOLTAGE SELECTION
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS: RISQUE DE CHOC ÉLECTRIQUE • NE PAS OUVRIR
Crossover
Serial Number
Made in Germany
FUSE
230V AC:
T 630mA
L 250 V
115V AC:
T 1.2 A
L 250 V
FUSE
AMP CTL/ 12V TRIGGER
Connect to SPL Performer Amplifier (s) for remote power on/off
1
2
3
4
IN
OUT
OUT
MID-HI OUTPUT
LOW OUTPUT
INPUT
RCA
L
R
AMP CTL Input 19
AMP CTL Outputs 20
21 LOW Outputs
22 MID-HI Outputs

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 +/-60V DC, which corresponds to four-times that of semiconductor operational amplifiers.

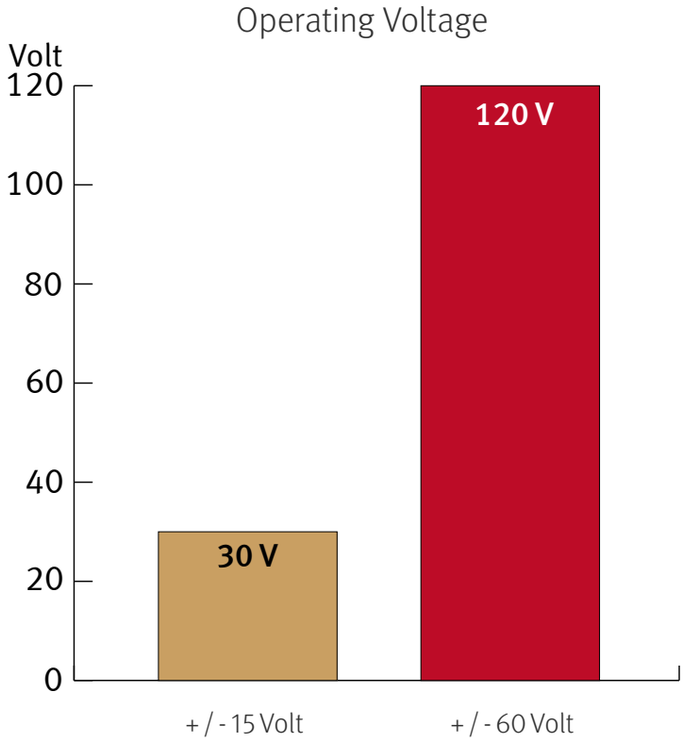
VOLTAiR technology reaches outstanding technical and sonic performances. Technically especially in terms of dynamic range and headroom and sonically especially in reproducing the finest details and delivering a totally relaxed sounding audio experience. Music sounds absolutely natural.

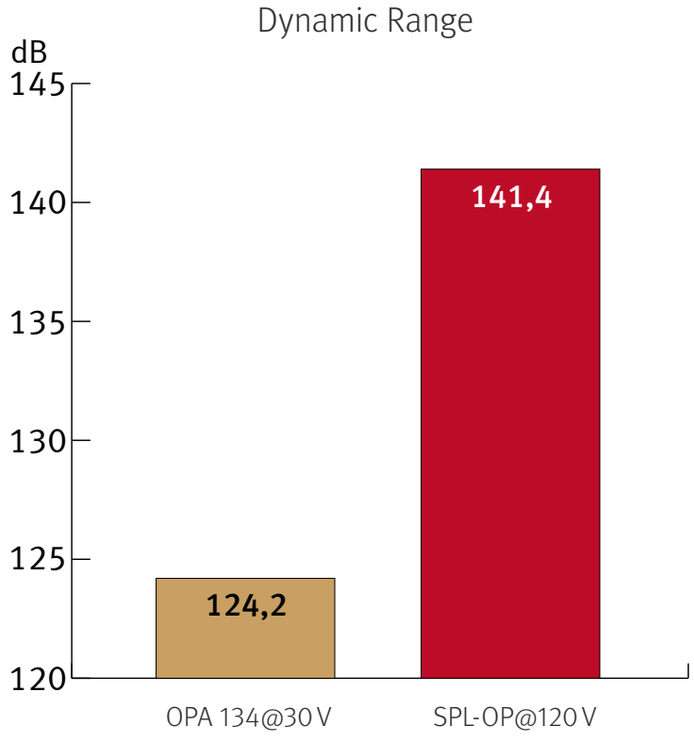
SPL's 120V Rail Technology is the internal audio processing voltage (+/- 60V DC).
It is not to be confused with the external mains voltage (e.g. 115V or 230V AC).

Comparisons

These diagrams show how our VOLTAiR technology compares to standard IC (integrated cicuit) 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.



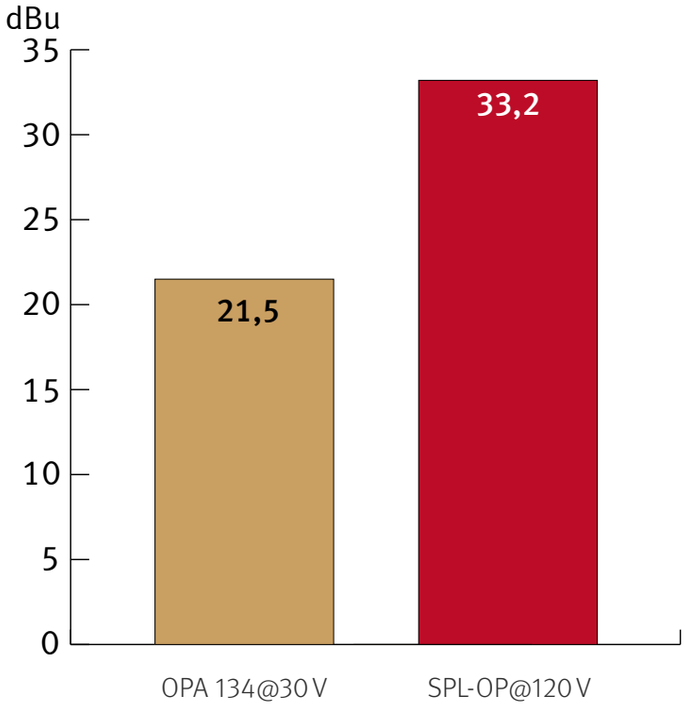


Do bear in mind that dB scales do not represent linear but rather exponential increases. A 3 dB increase corresponds to doubling the acoustic power, +6 dB correspond to twice the sound pressure level, and +10 dB correspond to twice the perceived loudness.

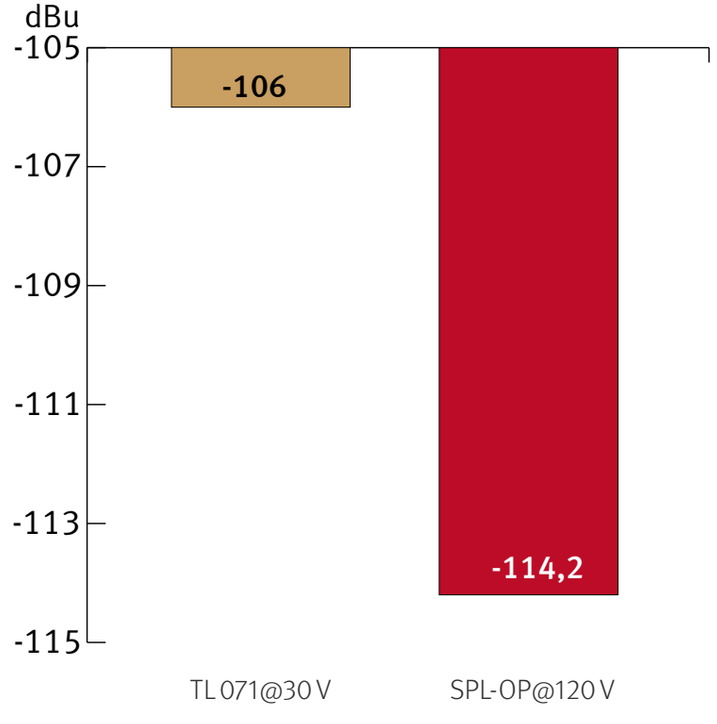
When it comes to volume, the VOLTAiR technology exhibits a performance, in regard to maximum level and dynamic range, that is twice that of common components and circuits given that its values are approximately 10 dB higher.

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.

Max. Audio Level



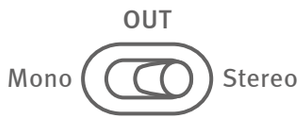
THD&N



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.

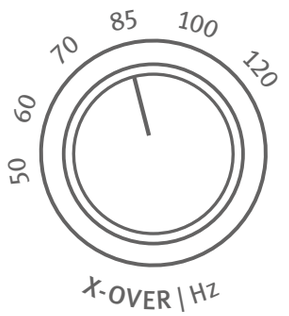
OUT Mono/Stereo



If your playback system consists of two top speakers and a single supwoofer (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.

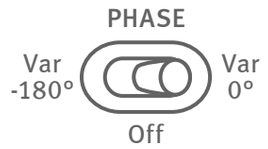
X-OVER | Hz



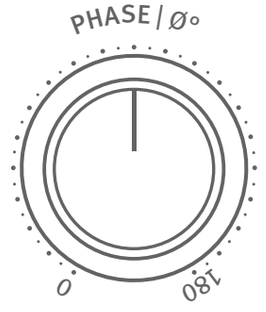
The LOW crossover filter is a Linkwitz/Riley design. The roll-off is 24 dB per octave.

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

PHASE



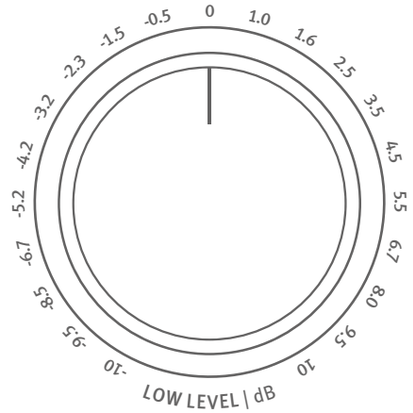
Use the PHASE switch (5) and the PHASE potentiometer (7) to time-allign the subwoofer(s) with the top speakers. This is especially useful when the subwoofer is placed elsewhere in the room.



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.

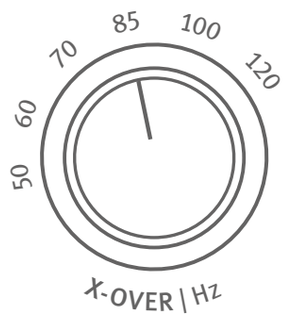
MID-HI Section

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

X-OVER On/Off

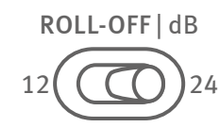
If you want to drive your top speakers full range, set the X-OVER On/Off switch (8) to off. The MID-HI crossover is switched off and the input is passed to the MID-HI OUTPUTS (22) without any processing.

X-OVER | Hz



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

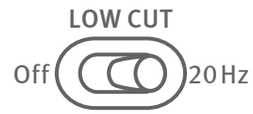
ROLL-OFF



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).

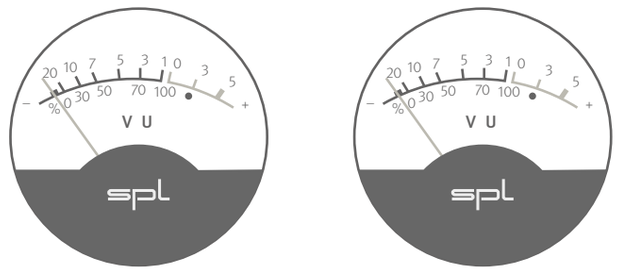
LOW CUT

With the LOW CUT switch (11) you 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.

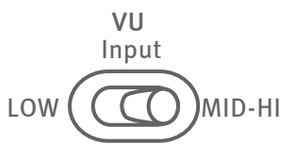


VU Meters

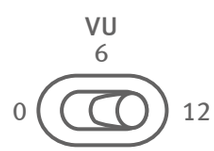
The VU meters (2) display the levels of the selected source in a range from -20 dB to +5 dB. 0 dB corresponds to +4 dBu.



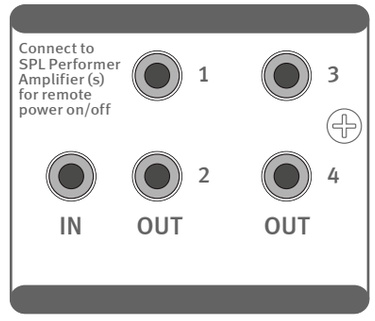
Select the source for the VU meter with the VU meter source switch (13): Input (stereo input), LOW (subwoofer outputs), MID-HI (top speaker outputs).



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)



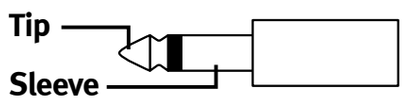
AMP CTL stands for 'amplifier control'. It is essentially a 12V trigger to switch connected units from standby to on and vice versa.

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

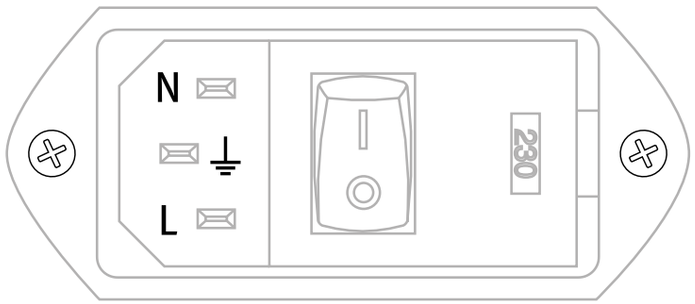
- Frequency range: MID-HI Frequency (50, 60, 70, 85.100, 120 Hz) to 300 kHz (-3 dB)
- Crosstalk at 1 kHz: -70 dB
- THD: 0,0008 % @ 1 kHz (0 dBu / Filter on)
- Noise (A-weighted): -106,0 dB
- Dynamic range: 138,0 dB

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.

 Sound Performance Lab (SPL) continuously strives to improve its products and reserves the right to modify the product described in this manual at any time without prior notice. SPL and the SPL Logo are registered trademarks of SPL electronics GmbH. All company names and product names in this manual are the trademarks or registered trademarks of their respective companies.

Declaration of CE Conformity

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