

# IRON

## Mastering Compressor



Manual  
Version 2.0





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## Version 2.0 – 11/2022

Developer: Wolfgang Neumann

This manual includes a description of the product but no guarantee as for specific characteristics or successful results.

It describes the IRON Mastering Compressor in the hardware revision v2. IRON v2 differs from the first hardware version in the following details:

1. IRON v2 features balanced side-chain inserts with send and return XLR sockets.
2. IRON v2 features different side-chain EQ presets.
3. IRON v2 is equipped with Wathen CryoTone™ 12AX7-WCM Long Plate tubes.

Unless stated otherwise, everything herein corresponds to the technical status at the time of delivery of the product and user manual by SPL electronics GmbH.

The design and circuitry are under continuous development and improvement. Technical specifications are subject to change.

## Package Contents

### IRON Mastering Compressor

Power cord

Manual

The IRON Mastering Compressor is available in different colors.

Black:	Model 1520
All Black:	Model 1523
Red:	Model 1524

Do consider keeping the original packaging. It can come in very useful whenever you need to transport your gear. If there is ever the need to send it in for repair, the original packaging guarantees a safe shipment.

The SPL IRON Mastering Compressor was developed and manufactured in Germany.

## Operating Principles of a Compressor

The basic operating principles of a compressor/limiter can be easily explained.

The level of an audio signal is reduced according to the specified Attack time and Ratio whenever it exceeds a given threshold. This reduction ceases when the Release time elapses, while the compressed signal is amplified with the Make-Up Gain.

Compressors basically differ from each other in the technology used. This technology – tubes, opto, FET, or VCA – is what gives a compressor its particular character. Some units sound soft and silky, some sound pounding, while some others make sound fatter, and there are those that make sound clearer, harder or more percussive. The trick resides in how the unit is technically designed, in the signature of the maker. Different compressors with the exact same settings might work and sound completely different. They provide different sounds for different applications and music styles.

Nowadays, the compressor has become a key element when it comes to provide dynamics and punch to any production. The number of compressors available is huge and it's easy to succumb to the promises made by software emulations and analog recreations of vintage gear as the perfect solution. Unfortunately, many of these emulations and recreations differ quite a bit from their original counterparts. You must simply accept that the components used today, like the transformers, tubes and all other passive elements, are different to the ones originally used and that they can't be digitally emulated. No software (DSP-emulated compressors) or hardware replica will ever be able to sound like the original.

**An authentic sound can only be achieved with the original unit.**

## IRON Mastering Compressor

The IRON mastering compressor is not a copy of a classic unit, but rather an original concept in itself. Our goal was to conceive a compressor that provided a pleasant, melodic-sounding, transparent compression, inspired on the vintage compressors of the radio era. And we wanted it to be versatile enough to adapt perfectly to the needs of modern mastering studios. Thus, the Iron combines not only the sonic virtues of legendary vintage tube compressors with the advantages of the High Dynamic 120V operating voltage in a single unit. It also sets a new benchmark in terms of tube compressor technology, with the innovative implementation of a parallel dual-tube circuit. Thanks to the especially conceived Mu-Metal iron transformers, the signal of each channel is split across two different twin-triode tubes. The combination of the different response curves of both tubes results in a transparent and musically pleasant compression. Additionally, peak signals of the control voltage are limited by a feed-forward resistive opto-isolator. Thus, the output signal remains lively even with a high gain reduction. The compression is only noticeable with extreme settings.

But mastering is not the only domain where the IRON sets new standards. It can also be used to process individual instruments, like vocals, bass, guitar, strings, etc. The IRON is also an excellent option for subgroups.

# Technical Aspects

## The 120V technology

SPL's goal was to push analog signal processing to the limits. That's why we combined the best possible components with a high-grade optimized circuit design.

The 120V technology is our reference technology. The 120V technology is unique in the world. It operates at a DC voltage of 120 volts. This is four times that of IC-based semiconductor op-amps.

**The highest possible audio quality requires the highest possible audio operating voltage.**

The 120V technology works with +/-60 V. To be able to handle such a high voltage, we have developed special proprietary operational amplifiers that can operate with a DC voltage of +/-60 V: the SPL 120V SUPRA operational amplifiers. This high voltage would destroy conventional components and operational amplifiers.

The 120V technology achieves exceptional technical specifications and sonic benefits. Technically, in terms of dynamic range, signal-to-noise ratio and headroom. Sonically, in terms of richness of detail and an absolutely relaxed listening experience.

By the way, the "120V" in the name of the technology has nothing to do with the local mains voltage from the mains power socket. This is about the operating voltage inside the device with which the audio signals are processed.

The mains voltage from the mains power socket is transformed to the required secondary voltage in the device's internal linear power supply with toroidal transformer. Rectifiers convert this AC voltage into DC voltage required in the audio device.

Ultimately, this supply voltage is key for the overall dynamic response of a processor. Voltage is to an electrical circuit what cylinder capacity is to an internal combustion engine.

**You can't replace cylinder capacity with anything else, except more cylinder capacity.**

The 120V technology is based on op-amps developed internally by SPL's co-founder and Chief Developer Wolfgang Neumann. The IRON features the most advanced generation of these op-amps. They boast better tech specs thanks to the thermal behavior optimization they underwent under the hands of Bastian Neu.

Some of the most highly respected Mastering studios today revolve around SPL devices with 120V technology (Bob Ludwigs Gateway Mastering & DVD in the USA, Simon Heyworth's Super Audio Mastering in the UK, Galaxy Studios in Belgium, and the legendary Wisseloord in the Netherlands, for instance).



## 120V technology – Comparison

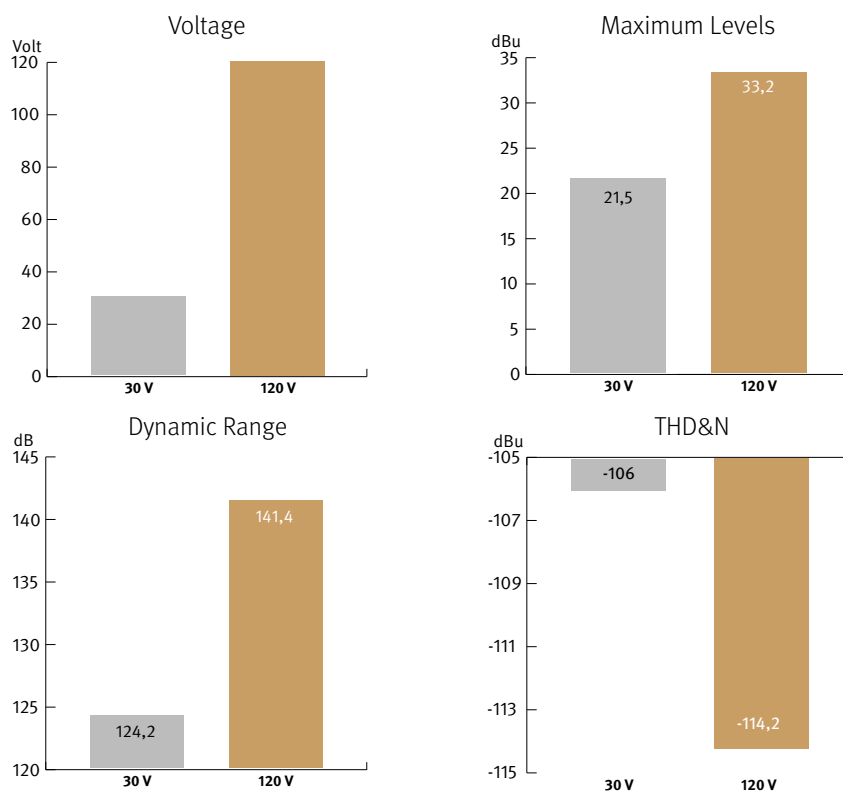
Most audio devices work with an internal operating voltage of +/-15 volts and can thus process a maximum input level of +21.5 dBu. If a DAC, for example, has an output level of +22 dBu at 0 dBFS, level peaks of the music material would already cause overloads in the input stage of the device. All components in the audio device often operate at their limits.

SPL devices with 120V technology can handle input levels of +32.5 dBu thanks to the higher internal operating voltage of +/- 60 volts – thus offering 12 dB more headroom. All components consequently operate continuously in the optimum operating range. The result is a very pleasant, natural and relaxed sound experience.

These diagrams clearly show the superiority of the 120V technology in comparison to other circuits with lower, common operating voltages.

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 120V technology exhibits a performance that is twice that of common components and circuits, in regard to maximum level and dynamic range, with values that are approximately 10 dB higher. THD measurements of the the 120V technology more than 8 dB better than a device with a operating voltage of 30V.

# Technical Aspects

## Innovating Compression

The IRON Mastering Compressor is a variable-bias limiter/compressor from the basic concept. Through the integration of new technologies, this concept gets significantly improved.

Its basic operating principle as a variable-bias tube compressor was loosely inspired by the sonic and technical operation of Fairchild, Collins and Gates compressors, which used remote cut-off of tube biasing to achieve a well-balanced, well-compensated and musical compression. However, the IRON compressor features a second sharp-cutoff tube, a medium-variable Mu Triode, in its circuit design. This tube is connected in parallel to the remote cutoff tube and it has a considerably steeper characteristic curve. The tube used to process the signal depends on the amplitude of the latter. This results in a more well-balanced sound and more controllable settings of the parameters. To receive mastering grade sound and performance it is necessary to use the best tubes available. It is not only crucial to use perfectly matched tubes – they also need to stay true to their specs as long as possible. Therefore IRON is equipped with matched 12AU7 tubes, which get paired with preselected matched pairs of Wathen CryoTone™ 12AX7- WCM Long Plate tubes at SPL. Wathen Audiophile's CryoTone™ tubes are cryogenically treated tubes. Cryogenics is the study of how to get to low temperatures and of how materials behave when they get there. Cryogenic treatment modifies the molecular structure in electronic components by reducing or eliminating voids and imperfections in the material. Wathen utilizes a cryogenic treatment process that is specifically designed to maximize all aspects of the sonic performance in audio tubes. Wathen CryoTone™ Long Plate versions of the 12AX7-WCM have unequalled soundstage, depth and frequency balance. Silky, clear and large from top to bottom with the quietest noise floor and an extended life-span. IRON combines the best of modern technology and vintage magic. The tubes are integrated into the IRON's signal flow via special Lundahl manufactured balanced high-level double core mu-metal-iron transformers.

An independent feed-forward resistive vactrol-opto-isolator in the control path of the variable-bias tube circuit intercepts extreme signal peaks, ensuring that the tube circuitry achieves its full sonic potential.

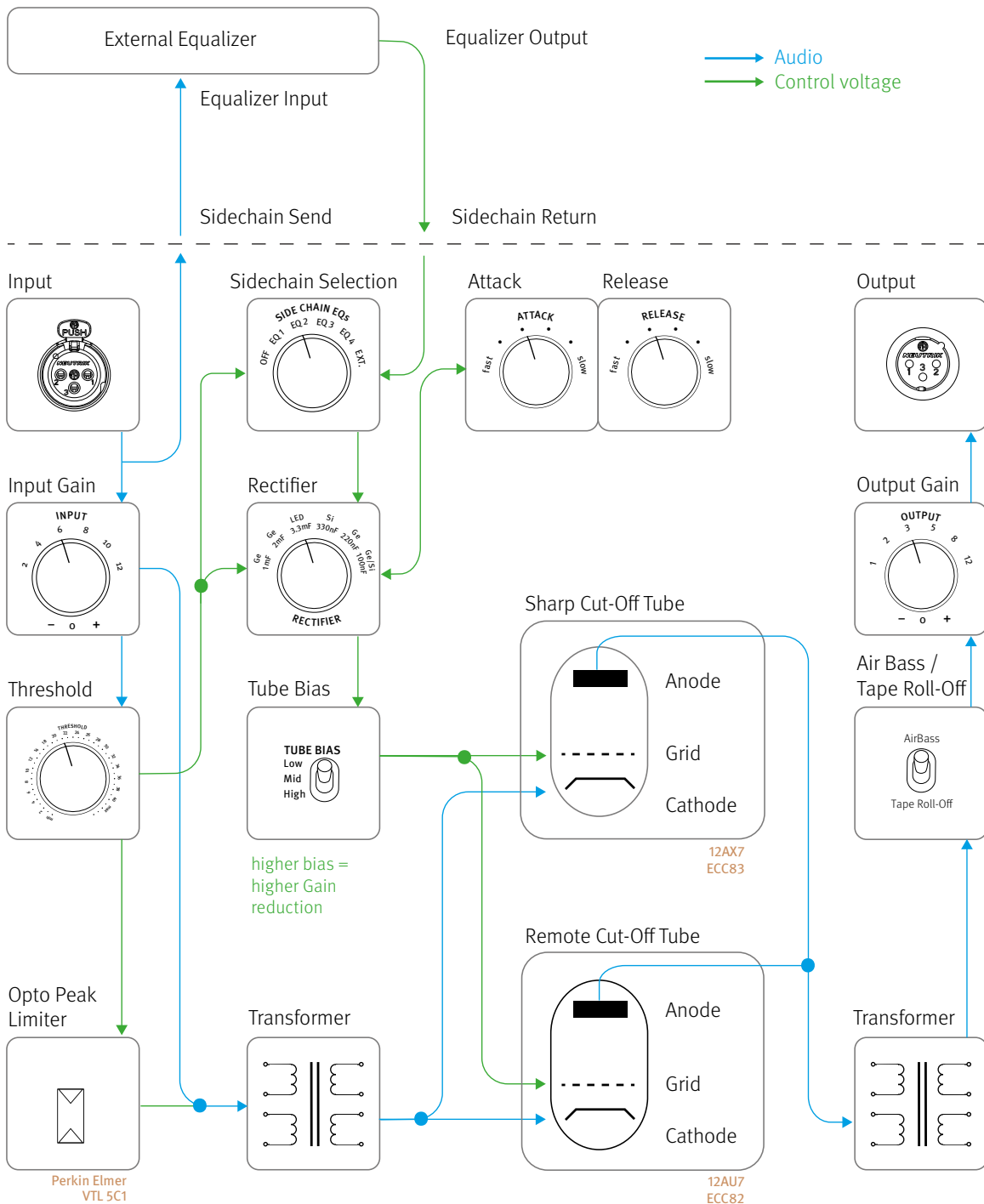
A complex rectifier circuit is the basis for the tube control. You can use the six-position switch to choose either of the six different control characteristic curves of the diodes within the rectifier. Given the specific characteristic curve of its elements, the combination of germanium, silicon and LED diodes produces different behaviors and characteristics for the Attack and Release times. Hence, compared to most compressors, the application scope of the IRON is clearly enlarged, resulting in new possibilities regarding the processing of music material.

A comprehensive logical relay circuit perfectly links both channels of IRON together, making the right channel the Master regarding the parameters Release, Attack, Threshold, Rectifier, Tube-Bias and Side Chain EQ.



## Signal Flow

The following diagram depicts the signal flow within the IRON compressor. It is meant to clarify how it works and to show the relation between its different parameters. The audio signal flow is in blue and the control voltage signal flow is in green.



# Installation

## First Steps

Before turning on the IRON you must first connect the included 3-pin power cord to the 3-pin IEC socket. The transformer, power cord and IEC socket all comply to the VDE, UL and CSA regulations.

The IRON should not be installed in close proximity to equipment that emits magnetic fields or emanates heat. Avoid exposure to heat, moisture, dust, and vibrations. Do not install the IRON close to any power amps or digital processors. Instead, install it in a fully “analog rack” where any interferences can be avoided (Word Clock, SMPTE, MIDI etc.).

The unit should be powered off before connecting or disconnecting any cables or equipment to it.

Use the On/Off switch on the rear panel to turn the unit on or off. The illuminated VU-meter on the front panel indicates the unit’s operating status. The On/Off switch was placed on the rear panel to avoid any emissions due to voltage-carrying conductors running across the unit and affecting sound. When powering on or off, there’s no need to observe a specific sequence regarding the connected devices. However, like with any audio signal chain, power amplifiers should always be powered on last and powered off first. The IRON can be powered on and off with the use of a circuit breaker, as long as the total load does not exceed the rating of the latter.

## Voltage Selection

Before connecting the IRON to the mains, make sure that the voltage selection corresponds to the values of your local power grid (230 or 115 volts). Inside the power connector, to the right, next to the on/off switch, there is an opening that displays the voltage selected. If the voltage indicated does not correspond to the one required, change it by following this procedure:

Open the power connector lid with a small screwdriver (use the tiny slots on the right hand side). Use the screwdriver to lever the red fuse holder from above until you can grab it. Take the fuse holder out and replace the fuse with one corresponding to the local power grid specifications. You can find the adequate values on the rear of the unit or on page 13 of this user’s manual. Turn the fuse holder around 180 degrees and place it back again. When you close the lid again, you should see the correct voltage displayed in the opening.

On the product site on our website (<https://iron.spl.audio>) you will find the video “Changing the mains voltage” concerning this topic. If you ever have to exchange a fuse, we recommend the video “Exchange defective fuses”.

## Ground Lift switch to avoid ground loops

On the rear panel of the IRON mastering compressor (see details on page 13) is also a “GND LIFT” (Ground Lift) switch to avoid any ground loops. Ground loops take place when gear connected in the same network have different potentials.

The GND LIFT switch disconnects the equipment ground from the service ground to avoid such problems. The Ground Lift function is activated (= equipment ground disconnected) when the switch is depressed.

## Tube Warm-Up

IRON includes several tubes in the signal path. We recommend you to warm up the tubes of the IRON about 30 minutes before processing any audio material with it. The sound and compression characteristics of the IRON compressor might change especially within the first 15 minutes after powering on.

## Suggestions for setting the compressor

The operation of the IRON strongly depends on the input signal. Normally the following start values are a good starting point:

**Attack:** Position 2 or 3 (clockwise from “fast”)

**Release:** Position 1 or 2 (clockwise from “fast”)

**Rectifier:** LED

**Side Chain EQs:** Off

**Tube Bias:** Low

**Threshold:** 20

If you switch through the different rectifiers, you have to adjust the other parameters. The remaining rectifier circuits tend to provide faster/slower time values. When the program material stays the same, slower/longer time values should be chosen and/or the threshold should be raised.

Especially when it comes to group applications, the high bias setting can be interesting.

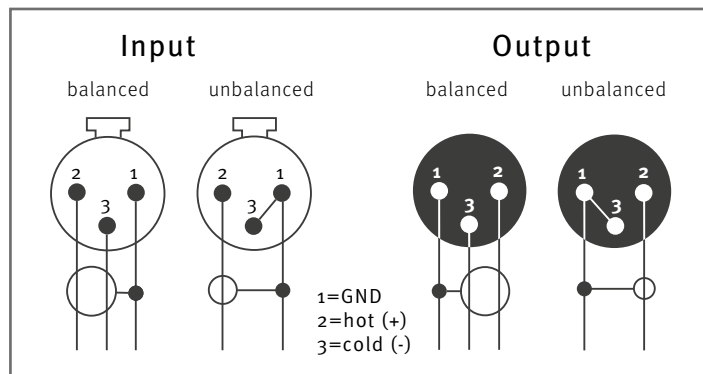
# Cabling: Rear Side

## XLR inputs and outputs

We used exclusively Switchcraft/Neutrik XLR input and output plugs and jacks to guarantee perfect connectivity in the studio. These plugs and jacks provide an optimal connection thanks to their electromechanical design and large contact surface.

The image shows the XLR connectors pinout. They are balanced and have three conductors or wires. Conductor 2 (Pin 2) corresponds to the (+) or hot Signal.

In case an unbalanced connection is necessary, the correct polarity of the conductors needs to be observed.



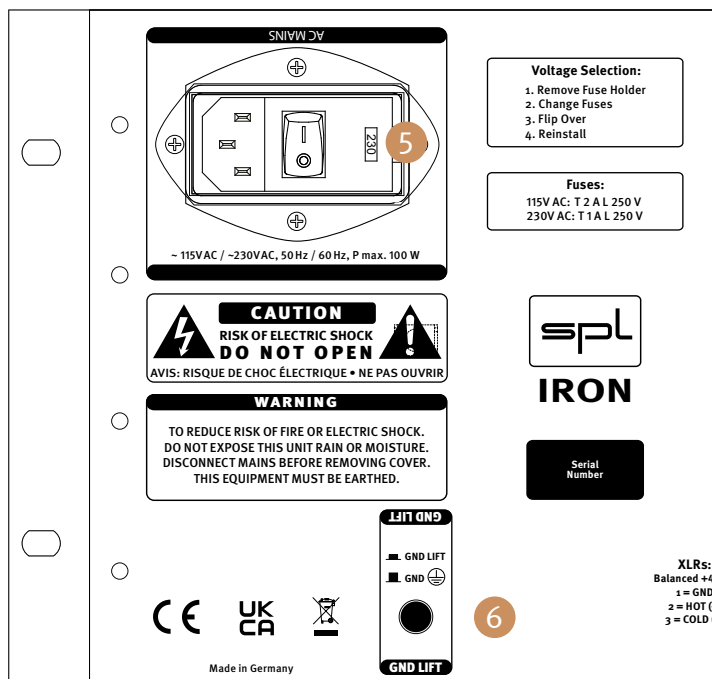
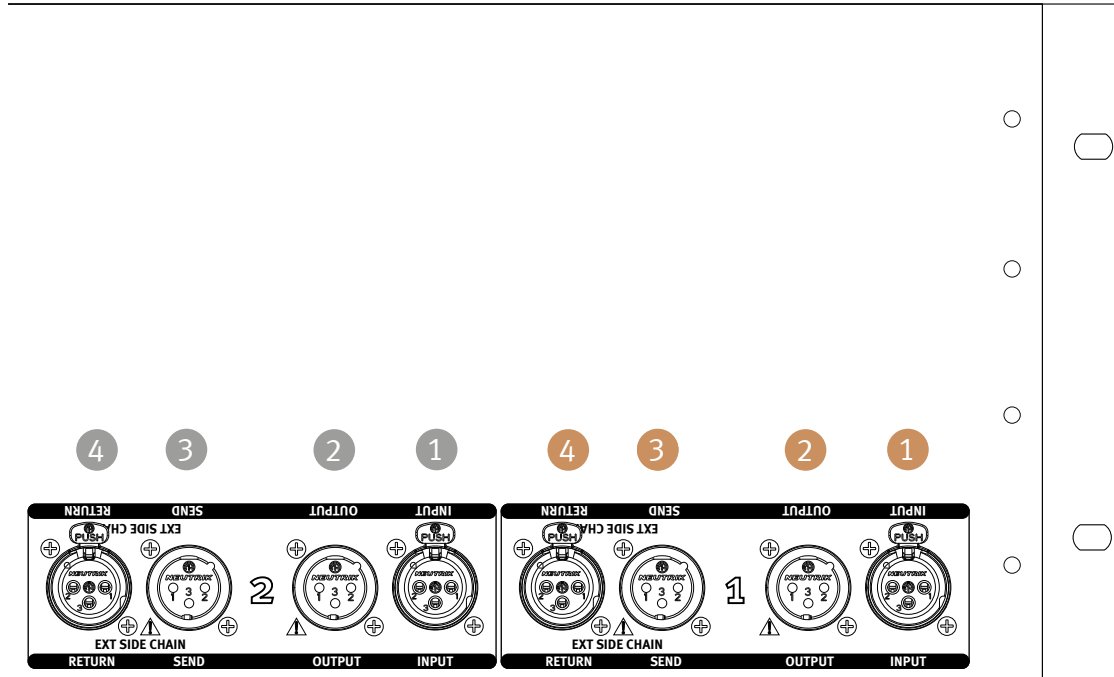
## Side-chain Insert

This insert serves to connect an external external stereo equalizer into the side-chain of the IRON Mastering Compressor. This can be used to focus the response of the compression to certain frequency ranges. This is also referred to as frequency selective compression (for more information, see page 18).

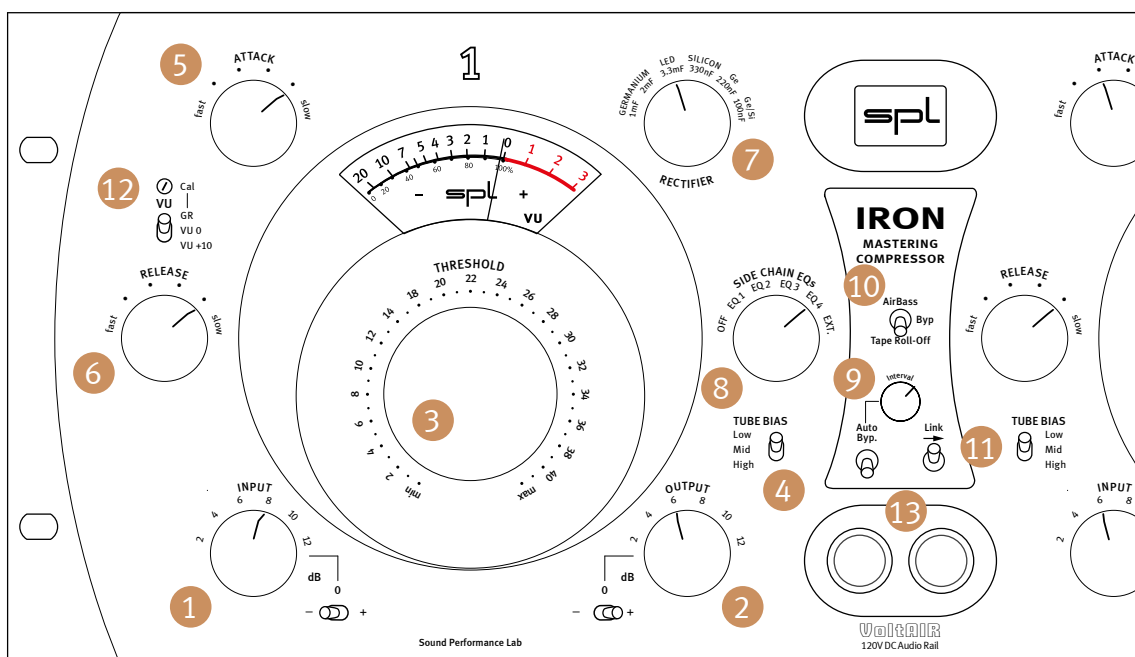
Send features two XLR connectors, balanced. Return features two XLR connectors – one for the left and one for the right channel. The pinout is identical to the input and output connectors.

# Cabling: Rear Side

- 1 Input
- 2 Output
- 3 Side-chain Insert Send
- 4 Side-chain Insert Return
- 5 Voltage (see details on page 10)
- 6 Ground Lift (see details on page 11)



# Control Elements



- 1 Input
- 2 Output
- 3 Threshold
- 4 Tube Bias
- 5 Attack
- 6 Release
- 7 Rectifier
- 8 Side Chain EQs / External side-chain
- 9 Auto Bypass
- 10 AirBass / Bypass / Tape Roll-Off
- 11 Link
- 12 VU switch
- 13 Channel switch

## Input

The operating value of each channel can be increased or attenuated in 2 dB steps via the six- step rotary knob. A three-way switch allows you to select whether the value is increased or decreased. In the center position, the Input switch is inactive; in other words, no level increase nor reduction takes place. This position is the default setting. If the switch is in the “-” position (left), the input level is reduced according to the chosen setting. If the switch is in the “+” position (right), the input level is increased according to the chosen setting.

The increase or reduction of the input level affects the overall response of the compressor and it has a direct impact on the level attenuation.

### Tip:

For audio material with a narrow dynamic range and a lot of information in the lower frequency spectrum, attenuating the input signal with the Input switch, for example -4dB, allows the compressor to work in a much more relaxed manner.

## Output

Since the compressor reduces the dynamics of the incoming signal, the output level is, generally speaking, lower than the input level. This audible level loss can be compensated with the Output control, in order to make the best use of the recording medium used. Just like with the input section, the increase or reduction is achieved via a three-way switch. In the center position, the Output switch is inactive; in other words, no level increase nor reduction takes place. This position is the default setting. If the switch is in the “-” position (left), the Output level is reduced according to the chosen setting. If the switch is in the “+” position (right), the Output level is increased according to the chosen setting.

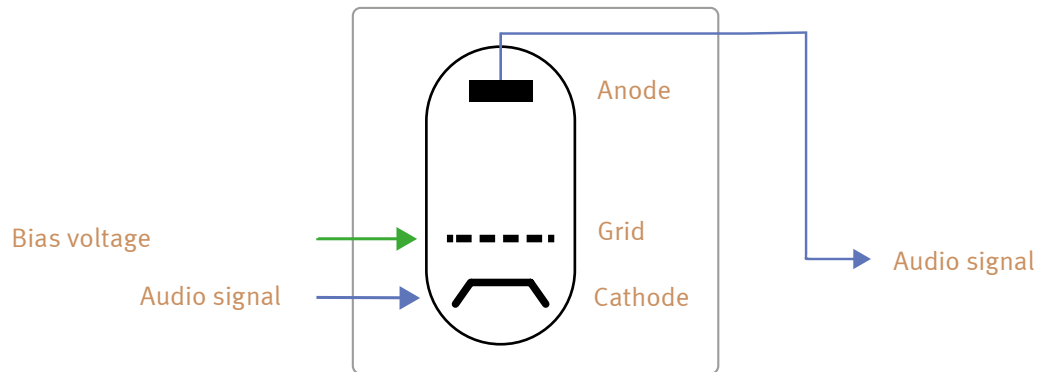
## Threshold

Threshold determines the level beyond which the compressor starts to compress. The compressor begins to process the signal once the threshold value has been exceeded. Only signals that exceed the threshold level are compressed. Signals whose level is beneath the threshold value are not processed. The Threshold parameter of the IRON can be adjusted in 41 steps with the detent potentiometer. Do note, however, that the intensity of the compression depends also on the parameters Input, Tube Bias, Rectifier, Attack, Release and Side Chain EQs.

# Control Elements

## Tube Bias

The Tube Bias switch allows you to determine the bias of the tubes according to three settings: Low, Mid, and High. The bias of a tube is the voltage present on the tube's grid. The higher the voltage, the less signal makes it from the cathode to the anode of the tube, which means the compression is stronger.



The modulation of the bias is the sum of the Threshold, Rectifier, Side Chain EQ, Attack and Release parameters.

## Attack

Attack determines the response time of the compressor. Put simply, it is the time that the compressor needs to respond once a signal is above the threshold. It indicates how long it takes the compressor to perform 63% of its work. The Attack time can be adjusted in six steps, from Fast to Slow.

The IRON does not offer the possibility to set an exact Attack time, since it is not a constant value and it depends on the rest of the parameters.

### Medium Attack times

To get an inconspicuous compression, set a middle-of-the-road Attack time and then reduce it carefully until you can hear some distortion. Right at that moment you should go back a bit and you will have reached an ideal compromise.

### Longer Attack times

If you want to use the compressor to shape sound and to highlight the attack phase of an instrument, you should use longer attack times.

### Long Attack times and short Release times

The use of extremely long Attack times and shorter Release times is called Leveling, because the compressor then hardly reacts to any level changes and always keeps the signal at the same level. That way, short dynamic changes in the music are not affected, only long-term volume variations are processed.



## Release

The counterpart of the Attack is Release. The Release parameter determines how fast the compressor eases processing the signal. To be precise, it determines the time in which 63% of the reduced gain is restored. Similarly to the Attack time, the Release time can also be set in six steps from Fast to Slow. Likewise, exact Release time settings are not possible. Once again, there are no constant values, since the Release time depends on the rest of the parameters, too.

Although the Attack and Release times can be considered fixed intervals, the control-time behavior and operating mode of the tubes is very different depending on the music. That is why these values should not be considered absolute values.

On page 23 you will find an overview for orientation, which shows the time values depending on the chosen rectifiers.

### Tip: Compression during vocal recordings

The attack time should not be too fast, otherwise plosives could be distorted, resulting in the vocals sounding unnatural. Many sound engineers compensate these level variations by automating the fader. The actual peaks of vocals are not at the beginning of a syllable, but rather later, when long vocals come along, which ought to be limited as well. That is why the Attack time should be relatively slow and the Release time relatively fast.

## Rectifier

To produce the bias voltage to control the parallel connected tubes we use a rectifier. This circuit has six different operating characteristics (different rectifiers), which can be selected with the corresponding switch. They have a direct impact on the Attack and Release times.

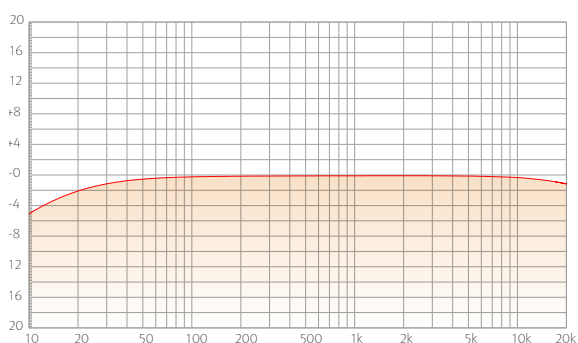
In comparison to the other rectifiers, the rectifier circuit LED delivers the longest/slowest time values. You can find more information at the time values overview on page 23.

# Control Elements

## Side-chain filter / External side-chain

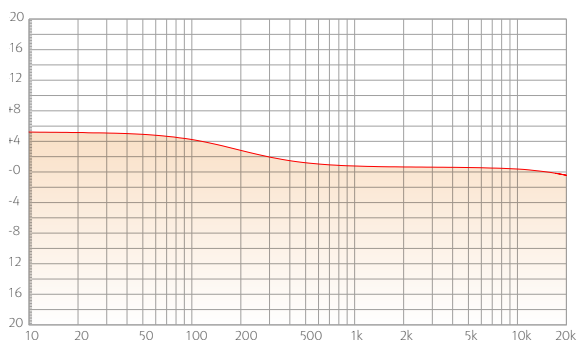
Side-chain filters can be used to focus the response of the compression to certain frequency ranges. This is also referred to as frequency selective compression. The side-chain filters are only in the control signal path – not in the audio path. The IRON Mastering Compressor offers a six-position switch to choose between the Off position, four side-chain filter presets or an external side-chain insert. For instance, if the low frequencies are attenuated, the compressor will not react as promptly to kick drums and bass lines. This can prove very useful when these elements are very present in the material used. The same applies the other way around. If you increase certain frequencies, the compressor will respond more resolutely to them. The side-chain filters are only in the control signal path – not in the audio path.

The IRON Mastering Compressor offers a six-position switch to choose between the Off position, four side-chain filter presets or an external side-chain insert. In position 1 (Off), only a capacitor is integrated into the side-chain signal to filter out frequencies lower than 20 Hz.

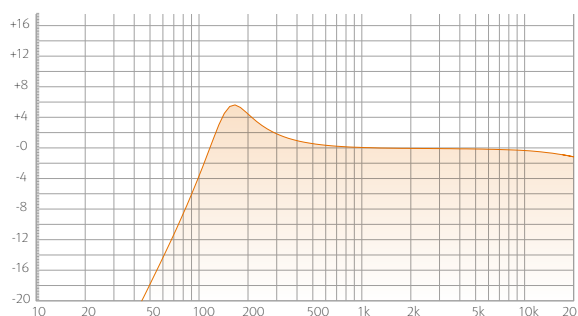


The next switch positions can be used to switch more complex filters into the side-chain signal. These can be used to focus the response of the compression to certain frequency ranges. This is also referred to as frequency selective compression.

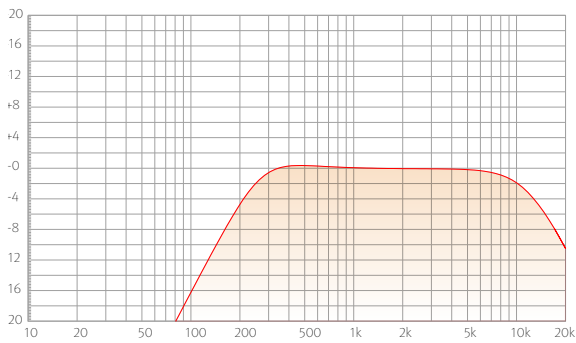
Position 2 (EQ 1) integrates a lowpass filter.



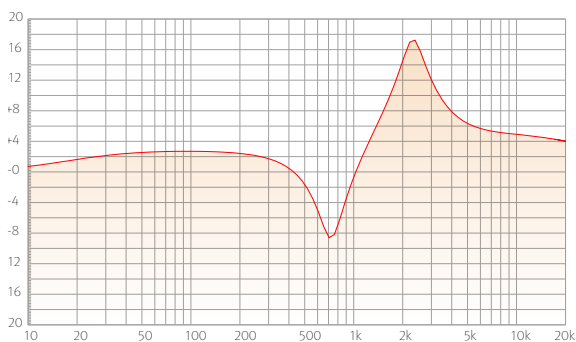
Position 3 (EQ 2) integrates a highpass filter.



Position 4 (EQ 3) integrates a bandpass filter.



Position 5 (EQ 4) integrates a filter curve empirically designed by developer Wolfgang Neumann.



In position 6 (Ext) the external side-chain insert is activated. Via insert send and insert return, an external stereo equalizer can be integrated into the side-chain signal. Individual filter curves can be created to focus the response of the compression to certain frequency ranges.

In Link mode, only the side-chain insert of the right channel is active.

**Tip:**

You can also use a mono equalizer with two parallel outputs in the side-chain insert. The input signal then has to be received from the send of the right channel – not from the left channel!

If no external equalizer is connected to the side-chain insert or if the send and return of the side-chain insert are not bridged with a cable, the audio signal in the IRON will be interrupted when the switch position (Ext) is selected.

# Control Elements

## Ratio

Compressors of this design do not have a fixed compression ratio.

The lower the Threshold and the higher the input signal, the stronger the compression. This is actually one of the main factors that make the IRON's compression so musical.

## Auto Bypass

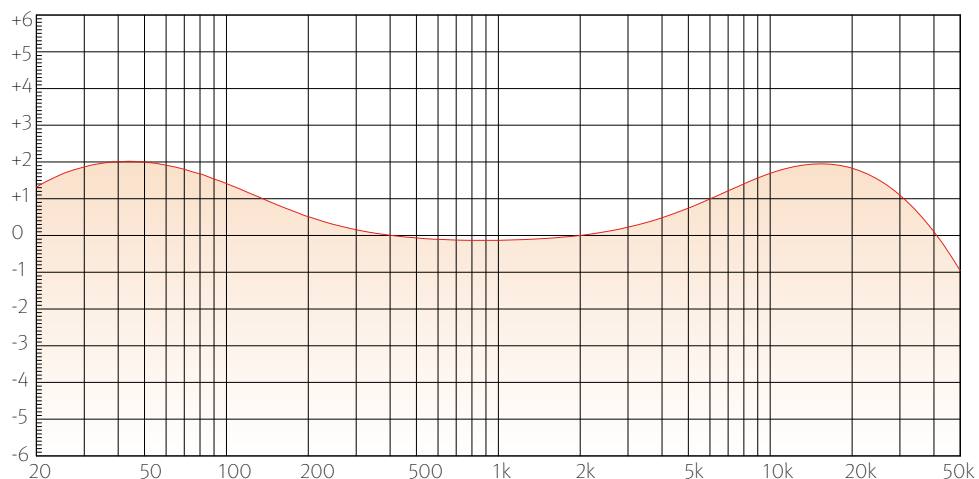
To be able to make an objective judgment of the processed material, it is best not to have to be toggling between the original and processed signals by yourself, but rather have it done automatically. Plus, the fact that you do not have to move from the sweet spot and can concentrate better on the music to optimally assess the processing is a huge advantage. The Interval control determines the time that needs to elapse before the compressor toggles between the processed and unprocessed signals. Hard left is the shortest setting. To increase the interval, turn the knob clockwise.

## AirBass / Bypass / Tape Roll-Off

Many times, you might want to give that distinctive touch to a music production at the very end of the production process, without the need to modify or redo the entire signal chain. It was with this in mind that we developed two specially matched passive filters and integrated them into a 120V technology amplification stage.

### AirBass:

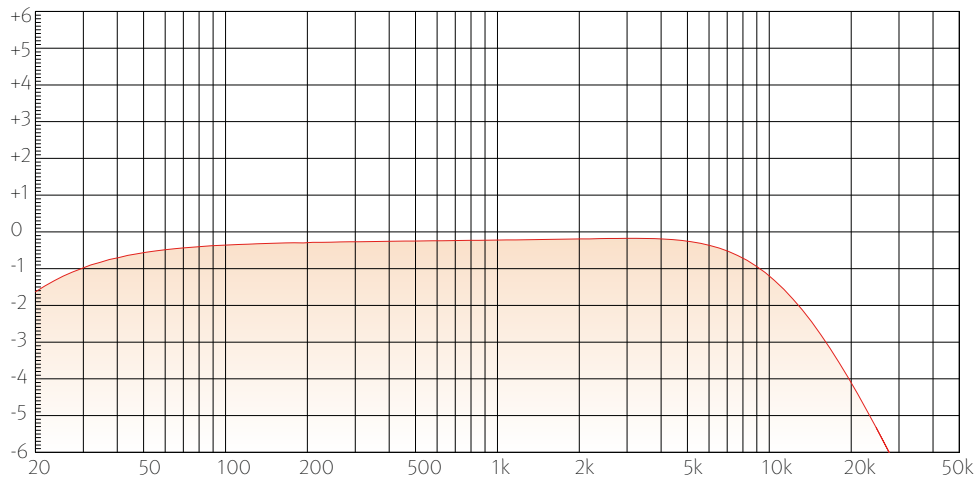
This filter makes music rounder and more well-balanced with powerful lows and bright, silky highs.



# Control Elements

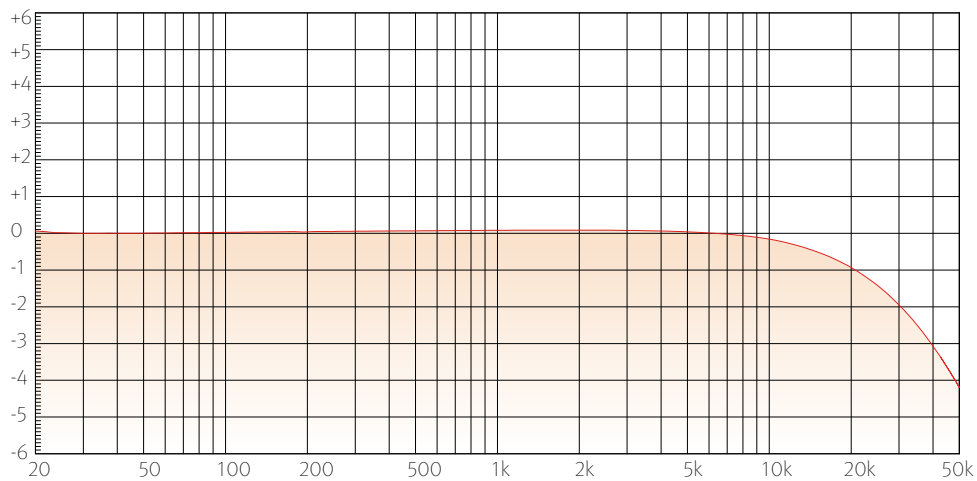
## Tape Roll-Off:

This filter is based on the frequency response of tape machines. It can prove very useful to provide a nice rounding-off in the high end when the material being processed is too shrill.



## Bypass:

In the following diagram you can see the frequency response curves for the AirBass and Tape Roll-Off presets, as well as that of the Bypass switch.



# Control Elements

## Link

The IRON mastering compressor has been designed as a completely independent two-channel, dual-mono compressor and can be used to process two different mono signals at the same time. Nevertheless, you can also easily process a stereo signal. All settings are made with switches or a detent potentiometer (Threshold). This allows you to effortlessly make the same settings on the left and right channels. The components of both channels have been especially selected so that the difference between them is as little as possible, considering a very small tolerance range.

However, if you activate the Link function, all settings of the link channel are applied to the right channel thanks to an intelligent logical relay circuit. This is true for the Threshold, but also for the Attack, Release, Bias, Side Chain EQ, and Rectifier settings. Keep in mind that when Link mode is active, only the external side-chain insert send of the right channel is active.

The combination of both control voltages makes it easier to process a stereo signal more precisely. It allows you to concentrate on the music without having to worry about correcting a parameter on the other channel.

And it can also be put to use creatively. For instance, with the Link function not activated, a sound that only exceeds the Threshold on the left channel would trigger the compression on the left channel only. However, if the Link function is activated, the right channel is compressed, too. When processing stereo signals in dual-mono mode, the stereo image is acoustically perceived wider.

## VU switch

Use this three-way switch to toggle the display between Gain Reduction and Output level (0dB and +10 dB). This can be done for each of the two VU meters separately. The meters work independently for each channel, even when the Link function is activated.

The CAL trimmer allows you to calibrate the display of the Gain Reduction on the VU meter. The IRON's Gain Reduction VU-meter ought to show 0dB after the warm-up phase.

0 dB on the VU meter correspond to an output level of 0 dBu.

## Channel switch

The two, centrally located, orange-lit switches activate or deactivate the corresponding left and right channels.

## Time values depending on the rectifiers

Although the Attack and Release times can be considered fixed intervals, the control-time behavior and operating mode of the tubes is very different depending on the music. That is why these values should not be considered absolute values. The following chart should give an overview of the dependence of the control times of the input signal and the chosen Rectifier, with the same preset (OFF) of Side Chain EQ. Attack and Release were switched in sequence, together, from Fast (A + R position 1) to Slow (A + R position 6). The times were measured with an input signal of frequency 10 kHz.

A + R Position	Attack (msec)	Release (msec)	Rectifier
1	0.1	100	GE 1mF
2	6	150	GE 1mF
3	10	180	GE 1mF
4	18	200	GE 1mF
5	30	220	GE 1mF
6	50	250	GE 1mF
1	1	300	GE 2mF
2	15	450	GE 2mF
3	30	500	GE 2mF
4	40	600	GE 2mF
5	50	700	GE 2mF
6	70	900	GE 2mF
1	3	600	LED 3.3 mF
2	35	1000	LED 3.3 mF
3	70	1700	LED 3.3 mF
4	100	2500	LED 3.3 mF
5	150	3200	LED 3.3 mF
6	220	5000	LED 3.3 mF
1	0.5	80	Si. 330 nF
2	3	120	Si. 330 nF
3	5	160	Si. 330 nF
4	8	180	Si. 330 nF
5	9	220	Si. 330 nF
6	12	300	Si. 330 nF
1	0.3	30	Ge 220 nF
2	1.5	50	Ge 220 nF
3	3	70	Ge 220 nF
4	5	80	Ge 220 nF
5	7	120	Ge 220 nF
6	9	130	Ge 220 nF
1	0.2	20	Ge/Si 100nF
2	0.7	40	Ge/Si 100nF
3	1.5	60	Ge/Si 100nF
4	2.5	80	Ge/Si 100nF
5	4	100	Ge/Si 100nF
6	6	170	Ge/Si 100nF

# Specifications

## Measurements

Frequency Range (40 kHz = -3 dB).....10 Hz- 40 kHz  
CMRR (at 0 dBu) .....1 kHz: > 80 dB / 10 kHz: > 65 dB  
THD & N (at 0 dBu).....> 82 dB  
Noise (A-weighted).....-98 dBu

### Total Harmonic Distortion

at -10 dBu: 0.3% at 100 Hz, 0.06% at 1 kHz, 0.02% at 15 kHz  
at 0 dBu: 0.01%  
at +10 dBu: 0.002%

### Inputs

Input Impedance .....20 kOhms  
Max. Input Level.....+ 32.5 dBu

### Ausgangsdaten

Max. Output Level .....+ 32.5 dBu  
Output Impedance.....< 50 Ohms

Power Consumption: .....0.24 Amp, 230V/50Hz, 44 Watt, 55 VA  
0.46 Amp, 115V/60Hz, 42 Watt, 52 VA

Fuses.....230 V/50 Hz: 1 Amp  
115 V/60 Hz: 2 Amp

### Dimensions

Standard EIA 19 Inch Housing/4U .....482 x 177 x 300 mm / approx. 19" x 7" x 12.25"  
Weight.....11 kg / 24.25 lb



## Before starting up the device:

- Read thoroughly and follow the security advices.
- Read thoroughly and follow the this manual.
- Observe all warning instructions on the device.
- Please keep the user manual as well as the security advices in a safe place for future reference.



## Warning

Always follow the security advices listed below to avoid serious injuries or even deadly accidents due to electric shocks, short circuit, fire or other dangers. The following are examples of such risks and do not represent an exhaustive list:

### Power supply/Power cord

Do not place the power cord near heat sources such as heaters or radiators and do not excessively bend or otherwise damage the cord, do not place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.

Only use the voltage indicated on the device.

Only use the supplied power cord/plug.

If you intend to use the device in an area other than in the one you purchased it, the included power cord may not be compatible. In this case please contact your dealer.

Be sure to connect the device to an appropriate mains socket outlet with a protective grounding connection. Improper grounding can cause electrical shock.

### Do not open

This device contains no user-serviceable parts. Do not open the device or attempt to disassemble the internal parts or modify them in any way. If it should appear to be malfunctioning, turn off the power immediately, unplug the power cord from the mains socket outlet and have it inspected by a qualified professional.

### Water warning

Do not expose the device to rain, or use it near water or in damp or wet conditions, or place anything on it (such as vases, bottles or glasses) containing liquids which might spill into any openings. If any liquid such as water seeps into the device, turn off the power immediately and unplug the power cord from the mains socket outlet. Then have the device inspected by a qualified professional.

Never insert or remove an electric plug with wet hands.

### Fire warning

Do not put burning items, such as candles, on the unit. A burning item may fall over and cause a fire.

### Lightning

Before thunderstorms or other severe weather, disconnect the device from the mains socket outlet; do not do this during a storm in order to avoid life threatening lightning strikes. Similarly, disconnect all the power connections of other devices, antenna and phone/network cables which may be interconnected so that no damage results from such secondary connections.

# Security Advices

## **If you notice any abnormality**

When one of the following problems occur, immediately turn off the power switch and disconnect the electric plug from the mains socket outlet. Then have the device inspected by a qualified professional.

- The power cord or plug gets frayed or damaged.
- The device emits unusual smells or smoke.
- An object has fallen into the unit.
- There is a sudden loss of sound during the use of the the device.



## **Caution**

Always follow the basic precautions listed below to avoid the possibility of physical injury to you or others, or damage to the device or other property. These precautions include, but are not limited to, the following:

### **Power supply/Power cord**

When removing the electric plug from the device or an mains socket outlet, always pull on the plug itself and not the cord. Pulling the cord may damage it.

Unplug the device from the mains socket outlet when the device is not used for a while.

### **XLR output connector**

Touching the open pins of the XLR output connector may result in an uncomfortable feeling.

### **Location**

Do not place the device in an unstable position where it might accidentally fall over.

Do not block the vents. This device has ventilation holes to prevent the internal temperature from rising too high. In particular, do not place the device on its side or upside down. Inadequate ventilation can result in overheating, possibly causing damage to the device or even fire.

Do not place the device in a location where it may come into contact with corrosive gases or salty air. This may result in malfunction.

Before moving the device, remove all connected cables.

When setting up the device, make sure that the mains socket outlet you are using is easily accessible. If some trouble or malfunction occurs, immediately turn off the power switch and disconnect the plug from the mains socket outlet. Even when the power switch is turned off, electricity is still flowing to the product at a minimum rate. When you are not using the device for a long time, make sure to unplug the power cord from the wall mains socket outlet.

### **Connections**

Before connecting the device to other devices, power down all devices. Before power on or off the devices, set all volume levels to minimum.

Only use appropriate cables to connect the device with other devices. Make sure that the cables you use are intact and comply with the electrical specifications of the connection. Other connections can lead to health risks and damage the equipment.

## Handling

Operate the controls and switches only as described in the manual. Incorrect adjustments outside safe parameters can lead to damage. Never use excessive force on the switches or controls.

Do not insert your fingers or hands in any gaps or openings of the device.

Avoid inserting or dropping foreign objects (paper, plastic, metal, etc.) into any gaps or openings of the device. If this happens, power down immediately and unplug the power cord from the mains socket outlet. Then have the device inspected by a qualified professional.

Do not expose the device to excessive dust or vibrations or extreme cold or heat (such as direct sunlight, near a heater or in a car during the day) to prevent the possibility of causing damage to the housing, the internal components or unstable operation.

If the ambient temperature of the device suddenly changes, condensation can occur (if for example the device is relocated or is affected by a heater or air conditioning).

Using the device while condensation is present may result in malfunction. Do not power on the device for a few hours until the condensation is gone. Only then it is safe to power on.

## Cleaning

Disconnect the device from your mains socket outlet before cleaning.

Do not use any solvents, as these can damage the chassis finish. Use a dry cloth, if necessary, with an acid-free cleaning oil.

## Disclaimer

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SPL cannot be held responsible for damage caused by improper use or modification of the device or data that is lost or destroyed.

## Notes on Environmental Protection



At the end of its operating life, this product must not be disposed with regular household waste but must be returned to a collection point for the recycling of electrical and electronic equipment.



The wheelee bin symbol on the product, user manual and packaging indicates that.

For proper treatment, recovery and recycling of old products, please take them to applicable collection points in accordance with your national legislation and the Directives 2012/19/EU.

The materials can be reused in accordance with their markings. Through reuse, recycling of raw materials, or other forms of recycling of old products, you are making an important contribution to the protection of our environment.

Your local administrative office can advise you of the responsible waste disposal point.

This directive only applies to countries inside the EU. If you wish to discard devices outside the EU, please contact your local authorities or dealer and ask for the correct method of disposal. WEEE-Reg-No.: 973 349 88





# Contact

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If an IRON Mastering Compressor should ever might need service, a recalibration or a tube change after many years of intensive use, this is no problem at all. Especially tubes are wearing parts that may need to be replaced or recalibrated after a longer period of use.

Requests for service, repairs and spare parts:

[help.spl.audio](http://help.spl.audio)

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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.



Artist:

Engineer:

Album:

Track(s) /Group:

Title:

Date:

