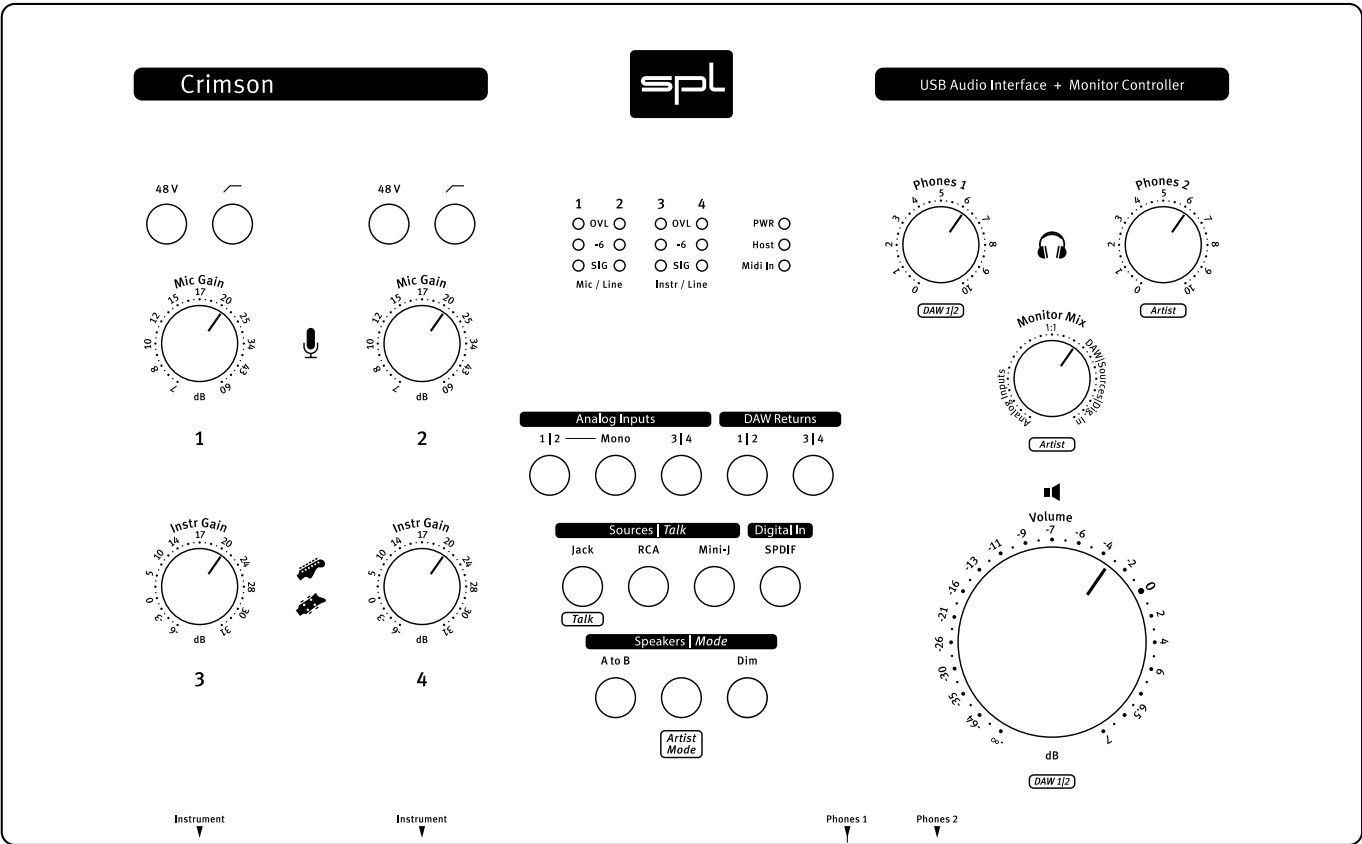


Manual



Crimson

Model 1250

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Version 1.1 – 3/2014

This manual contains a description of the product SPL Crimson, Model 1250. In no way it represents a guarantee of particular characteristics or results of use. The information in this document has been carefully compiled and verified and, unless otherwise stated or agreed upon, correctly describes the product at the time of packaging with this document.

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. This document is the property of SPL and may not be copied or reproduced in any manner, in part or fully, without prior authorization by SPL.

SPL electronics GmbH

Sohlweg 80, 41372 Niederkruechten, Germany

Declaration of CE Conformity

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



Notes on Environmental Protection

At the end of its operating life, this product must not be disposed of with regular household waste but must be returned to a collection point for the recycling of electrical and electronic equipment. The wheelie bin symbol on the product, user's manual and packaging indicates that. 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.



WEEE Registration: 973 349 88

Support

Visit crimson.spl.info and find all required support information and downloads. Our Frequently Asked Questions (FAQ) area is open for questions 24/7/365 under all weather conditions.

Or follow us on our Blog, Facebook, Twitter and YouTube:

Website & Blog: spl.info

Videos: youtube.spl.info

Twitter: twitter.spl.info

Facebook: facebook.spl.info

IN THIS MANUAL A LIGHTNING SYMBOL WITHIN A TRIANGLE WARNS YOU ABOUT THE POTENTIAL FOR DANGEROUS ELECTRICAL SHOCKS – WHICH CAN ALSO OCCUR EVEN AFTER THE DEVICE HAS BEEN DISCONNECTED FROM A POWER SOURCE.



AN EXCLAMATION MARK (!) WITHIN A TRIANGLE IS INTENDED TO MAKE YOU AWARE OF IMPORTANT OPERATIONAL ADVICE AND/OR WARNINGS THAT MUST BE FOLLOWED. BE ESPECIALLY ATTENTIVE TO THESE AND ALWAYS FOLLOW THE ADVICE THEY GIVE.



The symbol of a lamp directs your attention to explanations of important functions or applications.



Attention: Do not attempt any alterations to this device without the approval or supervision of SPL electronics GmbH. Doing so could void completely any and all of your warranty rights and claims to user support.

Scope of Delivery and Packaging

The scope of delivery comprises the Crimson, the external power supply with cord, quick start and security advices, a product overview with most important information and the guarantee card. Contact your dealer if something is missing.

Driver and this detailed manual can be downloaded at crimson.spl.info

Please keep the original packaging. In case of a service procedure the original packaging ensures a safe transport. It also serves as a safe packaging for your own transports if you do not use special transportation cases.

Welcome

and thank you for purchasing the Crimson. It combines a high-performance USB audio interface with high-quality preamps and a separate, fully-featured monitor controller. You can play and play back, record and convert, control and listen with one single device. So all you essentially need for a truly professional recording setup is the Crimson and a DAW.

With and without DAW

Crimson is designed to operate with your Digital Audio Workstation. But you can also do a lot with it as a stand-alone device: plug in an instrument and play. Connect a microphone and sing along. Mix your own monitor signal with playback or guide tracks from any source – including your smartphone. What you are playing is not bad? Turn on the DAW and record it.

A new price-sound ratio

At SPL we design audio equipment in all price ranges – except cheap gear. Therefore each SPL unit provides professional quality. The Crimson leaps forward and sets a new sound quality benchmark in its price range: We have re-designed proven circuitries and created a new, fully integrated design. Together with new production methods we are able to break through usual price limits. So with the Crimson interface and controller you have a boutique standard recording and monitoring device at a fraction of the price we used to know from traditional engineering and manufacturing.

Special Features

- 6+6 channel USB interface with 24Bit/192kHz converter
- Stand-alone operation without DAW for play-alongs and playbacks
- 2 discrete mic preamplifiers, 2 instrument preamplifiers (Hi-Z, +22 dBu headroom)
- 4 balanced line inputs
- High-quality, latency-free analog monitoring (8 stereo monitoring channels)
- 2 separate headphones amps, 2 stereo speaker outputs
- Fast one-knob monitor mix, Individual artist monitoring signal with talkback option
- 34V operational voltage for pro levels up to +22 dBu
- Hot-plugging iPad recording/monitoring (Class 2 compliance)
- Level boost for consumer players and MP3 players, smartphones, pads etc.
- Hi-Speed USB 2.0 (480MBit/s), MIDI I/O, SPDIF I/O
- Made in Germany

Hook Up



Placement

Place the unit on a leveled and stable surface or mount it in a dedicated rack frame. The unit's enclosure is EMC-safe and effectively shielded against HF interference. Nonetheless, you should carefully consider where you place the unit to avoid electrical disturbances. It should be positioned so that you can easily reach it, read the meters and status LED's well, but there are other considerations as well. Try not to place it near heat sources or in direct sunlight, and avoid exposure to vibrations, dust, heat, cold or moisture. It should also be kept away from transformers, motors, power amplifiers and digital processors.



Power Connection

Connect the DC connector of the external power supply to the rear DC IN socket of the Crimson. Plug the power supply to a wall power socket. Read and follow all security advices on the separate sheet supplied with the unit („Quick Start/Security Advices“).



Signal Connections

Before connecting any other equipment – and in all other cases where you are connecting cables with or from other sources – you should be sure to switch off the Crimson (unplug rear DC connection) and all other devices you want to connect it to. Otherwise you risk damaging the unit, other connected gear and/or your ears.

Powering On and Off

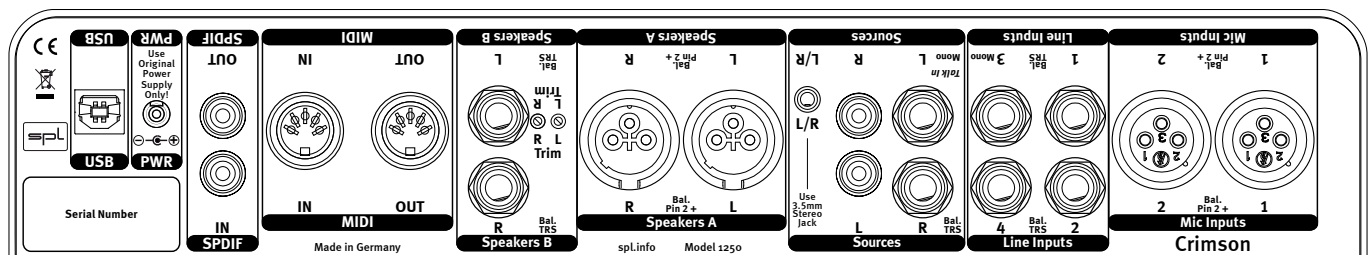
The Crimson has no power on/off switch for two good reasons: first of all, cutting the power off before the external PSU does not truly stop the latter's power consumption and, secondly, the chances of an accidental powering off that could ruin a recording are reduced to zero.



We recommend to connect the Crimson and all other audio devices in the same network to a high-quality and appropriately rated multi-outlet power strip from where you can cut-off and restore the power supply. In any case, the connection of the audio network to a central power outlet is the general recommendation, in order to avoid ground loops and other similar noises that could arise due to connection points having different potentials.

Rear Panel

Recording and DAW return channels, Inputs and Outputs



Recording Channels

- 2 microphone inputs (XLR)
- 2 Instrument inputs (TRS)
- 4 balanced line inputs (TRS)
- 2 SPDIF

Note: any 4 analog channels can be recorded simultaneously. Including S/P-DIF, six channels can be recorded simultaneously.

Playback Channels

- 4 channels via USB (DAW 1-4)

Analog Inputs (Sources)

- 2 TRS line input channels (balanced)
- 2 RCA line input channels (rear, unbalanced)
- 1 mini jack stereo input (unbalanced)

Digital Inputs

- 1 USB
- 1 SPDIF stereo input (coax)
- 1 MIDI

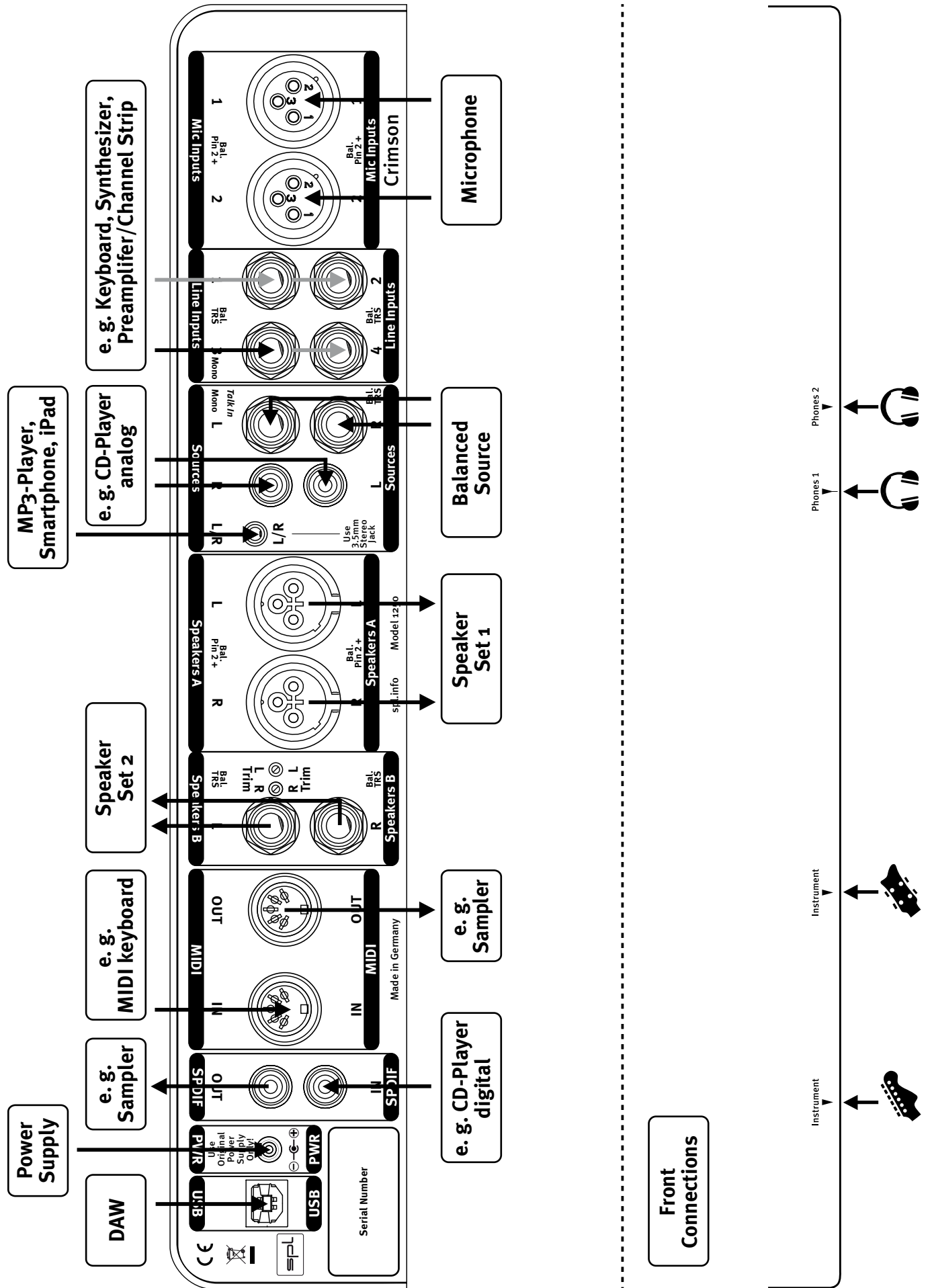
Analog Outputs

- Speakers A: 2 XLR sockets (L/R, balanced)
- Speakers B: 2 TRS sockets (L/R, balanced, w. trimming)
- 2 headphone sockets (TRS)

Digital Outputs

- 1 USB
- 1 SPDIF stereo output (coax)
- 1 MIDI

Rear Panel: Wiring Diagram



USB Port

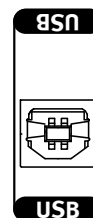
Connect here your computer. Alternatively you can connect an iPad or iPhone with the original Apple camera adapter. The USB port complies with the Hi-Speed USB 2.0 specification with a data transfer rate of 480 MBit/s, and is Apple Class 2 compliant as well.

USB 3 is backward compatible with USB 2, which means that the Crimson can also be connected to any USB 3 port. The Hi-Speed USB 2 specification is enough to provide the Crimson with the necessary data throughput. We decided to use the USB 2 interface due to the reliability of the drivers.

By the way, we intentionally did not include a USB cable in the supply. The reason being that the vast majority of us already have several lying around, so we would only be contributing to the unnecessary generation of waste. And like with all other signal cables, we do not know the length and quality needs of our customers. So we decided to not include any signal cables — which in the end also helps us keep the prices down.

The Hi-Speed USB 2 specification recommends a cable length of up to five meters. We recommend to keep the cables as short as possible, remember: the shorter, the better. For cable runs extending over five meters, you could use a hub or a line extender, in which case you should get the advice of an expert.

The cable quality is something that should not be underestimated: low-quality USB cables can often lead to unstable system behaviors, interferences and more. High-quality cables can be recognized by their manufacturing: thick, flexible cables have a good shielding, which is the most important characteristic of a cable, from a technical point of view. High-quality connectors can also be spotted right away. And while the price is no guarantee of quality, you can rest assured that little money will not get you the best quality. If in doubt, ask for advice at your local audio specialist shop.

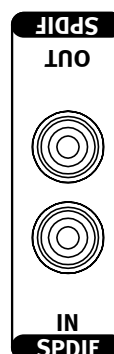


SPDIF In/Out

The coaxial SPDIF input allows you to connect a CD player, for example. But you can also connect any other source with a digital SPDIF output (synthesizer, drum machine...).

The SPDIF output can be connected to a sampler or a DAT/CD/MP3 recorder for instance.

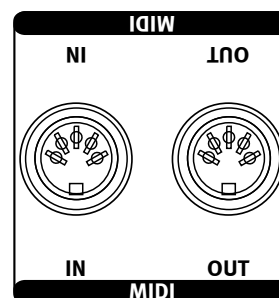
The SPDIF input and output are AES3 compatible, often called „SPDIF Professional.“ Do note that there are electric differences between the SPDIF and AES specifications. Generally speaking, any AES device ought to be able to receive SPDIF Professional from the Crimson without problems. In very rare occasions, it might happen that the AES signals are not correctly received by the SPDIF input of the Crimson.



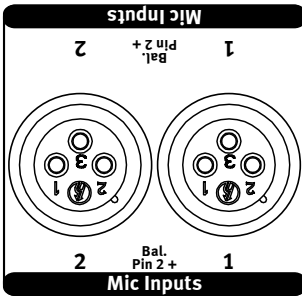
MIDI In/Out

The Crimson is equipped with two 5-pin DIN connectors to send and receive MIDI. To communicate with a computer via MIDI, the Crimson features a MIDI interface that translates the voltage level and provides galvanic isolation.

Use the MIDI input to connect a master keyboard, for example. Such a keyboard generates note information in MIDI format and, thus, can control a software synthesizer, for instance, or can also be used to record key movements when inputting data into the sequencer. In such cases, the MIDI output of the master keyboard is connected to the MIDI input of the Crimson. The MIDI output of the Crimson can also be used to play back pre-recorded MIDI tracks, in order to use the sound generator of an external synthesizer, sampler, drum machine, etc. You can then record the audio outputs of the latter via the Crimson Line inputs 1-4, when analog, or via the SPDIF input, when digital.



Rear Panel: Analog Connections



Mic Inputs

You can connect dynamic, condenser, tube, and ribbon microphones to the mic inputs. Use the Phantom switch to provide phantom power to the microphones that require it. For more information, read the „Phantom“ section on page 14.

Specifications: XLR connectors, input impedance 10 kOhm, maximum input level +14.5 dBu (Gain knob hard left).

IMPORTANT: Below you can read more information regarding Input Selection.

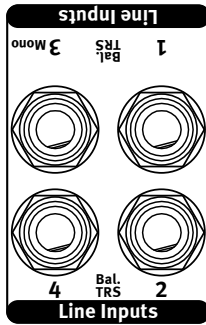
Line Inputs

You can connect and record up to four line signals. Besides keyboards and synths you can connect here other external sources like preamps or channel strips.

All four balanced line inputs are routed 1:1 to the converter and monitoring section. Level adjustment is not possible.

Specifications: 1/4" stereo jacks, unbalanced input impedance 10kOhm, balanced input impedance 20kOhm, maximum input level +22.5 dBu.

IMPORTANT: Below you can read more information regarding Input Selection and Monitoring Mono and Stereo Signals.



Input Selection: Microphone, Instrument and Line Inputs

Taking into account both microphone inputs, the two instrument and four line inputs, you have eight analog inputs at your disposal. Any four of the eight analog inputs can be used simultaneously for recording purposes.

The selection is defined by the assignment of the corresponding inputs. This has the added advantage that the channel configuration can be directly and intuitively made out by the assignment of the connections, plus there is almost no need for switching.

The input selection follows this provision:

- Line 1 has preference over Mic Input 1
- Line 2 has preference over Mic Input 2
- Instrument input 3 has preference over Line input 3
- Instrument input 4 has preference over Line input 4

IMPORTANT: you should bear in mind the following conditions:

To record microphone signals, Line 1 and/or Line 2 ought to be free. If you cannot hear a microphone signal, check whether Line 1 or 2 are free or not.

To record Line inputs 3 and 4 or to listen to a stereo signal through Line 3 and 4, Instrument 3 and 4 ought to be free. If you cannot hear a line signal, check whether Instrument inputs 3 and 4 are free or not.

Monitoring Mono and Stereo Signals

We have also managed to keep Instrument and Line input monitoring free of any switching. Depending on the situation, you must only use the appropriate inputs to either listen to them on one channel (R) or in stereo (L and R):

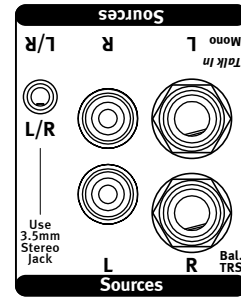
- Only Instr 3 engaged » Mono monitoring
- Only Instr 4 engaged » Mono monitoring
- Instr 3+4 engaged » Mono monitoring for both
- Only Line 3 engaged » Mono monitoring
- Only Line 4 engaged » Monitoring on the R channel
- Line3+4 engaged » Stereo monitoring



Sources 1, 2 and 3

Besides the SPDIF digital input you have three stereo source inputs with different connectors at your disposal: Source input 1 via two mono jacks, Source input 2 via two RCA connectors, Source input 3 via mini stereo jack.

This means you can connect up to four audio devices as playback sources, be it a CD or MP3 player, a tape machine or even a smartphone. Typical applications include the use of reference tracks to do A/B comparisons or playing an instrument on top of a song while listening to it — everything without the need to connect the Crimson to a computer. The preamplification of low level signals can prove very advantageous (see next section, Level Increase for Source Inputs 2 and 3).



Source input 1: two jacks (L and R), balanced

Connect here signal sources with balanced connections, for example, a DA converter. If you only connect the left channel, the signal is automatically placed as mono in the monitoring path (in the center of the stereo image).

In ARTIST MODE you can use the L jack as Talkback by connecting a preamped mic signal. When you engage the JACK (TALK) switch, the Talkback signal is mixed in Phones 2 and Speaker B.

Specifications: 1/4" jack, balanced (Sleeve=Ground, Tip=hot, Ring=cold), input impedance: 10kOhm unbalanced, 20kOhm balanced, maximum input level +22.5 dBu.

Source input 2: RCA, unbalanced

RCA connectors are ideal for any type of consumer devices with unbalanced connections, for example CD/DVD/BluRay player, AV receiver, Sat receiver, cable receiver, etc.

Specifications: RCA connector, input impedance: 10kOhm, maximum input level +22.5 dBu.

Source input 3: mini stereo jack, unbalanced

The mini stereo jack input is the natural input for all MP3 players, tablets, smartphones and laptops. iPads and iPhones can also be connected via USB (Apple Class 2).

Specifications: 1/8" stereo jack, input impedance: 10kOhm, maximum input level +22.5 dBu.

Level Increase for Source Inputs 2 and 3

The Crimson includes a preamp for RCA and minijack input signals. Consumer level from the RCA connector with -10dBV is increased to the professional level of 0dBu. Minijack signals are amplified 15dB to reach professional level.

The preamp is activated by default so that weak signals are directly comparable with professional level signals.

If you want to deactivate the preamp, when the signals are too loud for instance, use the DIP switches on the bottom of the unit.

On the bottom there are four switches that are assigned to the inputs in pairs:

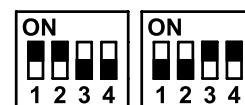
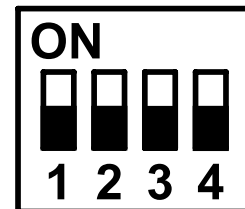
1. DIP switches 1 and 2 for the RCA connectors (switches are ordered 1-4)
2. DIP switches 3 and 4 for the minijack (switches are ordered 1-4)

If you want to deactivate the preamping for the RCA connectors:

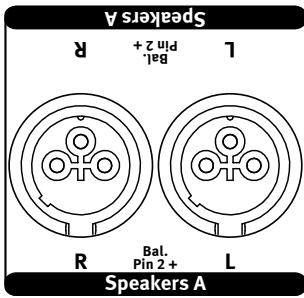
- DIP switches 1 and 2 up (ON)

If you want to deactivate the preamping for the minijack:

- DIP switches 3 and 4 up (ON)



Rear Panel: Analog Connections



Speaker Outputs

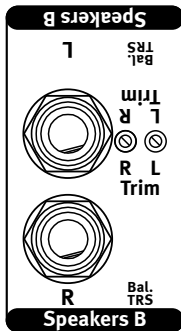
You can connect a total of two stereo speaker sets to the Crimson and toggle between them with the A to B switch.

Speakers A

Connect your (usually full-range) loudspeakers here.

IMPORTANT: In Artist Mode, the Speakers A output reproduces only the DAW's 1/2 mix. The artist mix is played back via Speakers B and Phones 2.

Specifications: XLR balanced (Pin 1=Ground, Pin 2=hot, Pin 3=cold), output impedance 75 Ohm unbalanced, 150 Ohm balanced, maximum output level +22.5 dBu.



Speakers B

The Speakers B output is meant for alternative monitoring through a second set of speakers. You can trim the Speakers B output in order to level them to Speakers A: two ten-step trimmers allow a fine adjustment of +/-5dB.

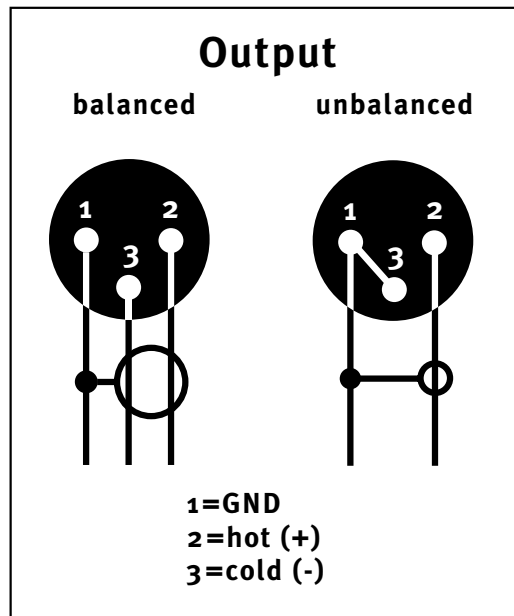
In Artist Mode, you can also connect an external headphone amplifier to the Speakers B output in order to get a specific headphones mix. Other alternatives include the connection of an AD converter (the amplification factor is 1 or unity gain) or an external processor (AD/DA insert: send from Speakers B, return to Line 3/4).

Specifications: 1/4" jack, balanced (Sleeve=Ground, Tip=hot, Ring=cold), output impedance 75 Ohm unbalanced, 150 Ohm balanced, maximum output level +22.5 dBu.



Unbalanced Connections from XLR/Stereo Jack to Mono Plug/RCA

Unbalanced connections are also possible without the need of an adapter. It is important to verify the polarity of the three balanced wires. The image shows the pinout of the XLR connectors, as well as the correct polarity for connections with unbalanced cables, whereby Pin 1 and 3 ought to be connected (for the stereo plug: ring and ground).



We recommend the use of specially manufactured 1/4" stereo jack/XLR to 1/4" mono plug/RCA cables to avoid the use of adapters. Such cables can be found in specialized shops. The pinout diagram will help the specialist dealer make sure he provides you with correctly configured cables.

Front Panel: Analog Connections



Instrument Inputs

Both Instrument inputs are on the front panel so they can be reached directly. They support high levels to allow the connection of active or passive instruments, and they have a corresponding high impedance. Active instruments already feature a preamp circuit, passive do not (only pickups). Connection examples: electric guitars and basses, acoustic guitars with pickups, etc.

Low impedance line signals (D/A converter, sampler, synthesizer, etc.) ought to be connected to the line inputs on the rear panel.

Specifications: 1/4" mono jacks, unbalanced (Sleeve=Ground, Tip=hot/Signal), input impedance 1.1 M Ω , maximum input level +24.0 dBu. We recommend using mono plugs, however stereo plugs can also be used without causing any damage.



Phones 1 and Phones 2

Use the Phones 1 and Phones 2 jacks on the front panel to connect your headphones. When connecting them, make sure that the plug is completely in and that it is firmly attached.

You can connect all types of headphones with impedances from 20 to 600 Ω . This wide range entails big volume differences between low- and high-impedance headphones. In order to keep under control low impedance headphones, we set a comparatively high impedance of 33 Ω at the output — the best compromise for such a wide range: since the headphone amplifiers have more than enough power, all headphones are sufficiently supplied, at the same time the volume can be appropriately adjusted in all situations.

Specifications: 1/4" stereo jacks (Sleeve=Ground, Tip=left channel, Ring=right channel), output impedance 33 Ω . For power ratings according to different load impedances, see Technical Specifications on pages 20 and 21.

Important Recommendations

Always reduce the volume before you connect or disconnect your headphones or headphone preamp, for example to change headphones. This way you will avoid loud crackling noises reaching your ears. Plus, it will also spare you unexpected surprises whenever the new headphones you connect have a lower impedance or a higher efficiency, which will make them sound louder when connected to the Crimson and keeping the same volume setting.



Warning

Never connect mono plugs to the Phones1 and Phones2 stereo jacks on the front panel. Otherwise you can cause a short circuit that will damage the amplifier! Headphones always have stereo plugs, which is the reason why you should always connect them directly.





Mic Gain

The Crimson features two identical microphone preamps. The preamps are discrete, which means they use single transistors instead of ICs. This allows the preamp to be perfectly optimized for its task — such efforts are usually taken only in the production of high-end preamps.

Use the Mic Gain control to adjust the microphone preamp level. The adjustable volume range spans from +3 to +60dB. To achieve the best recording level, the -6dB LED should flash from time to time: you have enough headroom left. If the LED remains always on, it means that the level is at the brink of overloading — in such cases, you should reduce the Mic Gain value.

The OVL LED indicates the Crimson's converter is overloading, which should be strictly avoided.

IMPORTANT: Read the explanation regarding Input Selection on page 10!

48 V



48 V

Use the 48V switch above the Mic Gain knob to activate the 48 Volt phantom power to supply condenser microphones with an integrated preamp. To work correctly such microphones require a clean, noiseless voltage, which the Crimson can provide.



VERY IMPORTANT: All condenser microphones with a balanced, floating output, as well as ribbon microphones, can be used with phantom power.

A microphone with an unbalanced output should only be used without phantom power! We recommend you to disengage the phantom power for all types of microphones except condenser microphones.



TO USE THE PHANTOM POWER FOLLOW THESE STEPS:

1. **First connect the microphone to the Crimson and then engage the phantom power. Now you can start to work. Once you are done, disengage the phantom power first.**
2. **Wait at least ten seconds after disengaging the 48 V phantom power, before you disconnect the microphone from the Crimson, to allow for complete discharging — otherwise you could damage the Crimson's input stages!**



High-Pass Filter

The high-pass filter passes high-frequency signals but filters out impact noise, rumble and other unwanted noises below 75 Hz. This first order filter has a 6dB/octave slope, which means it is soft and goes unnoticed acoustically speaking.

Besides impact noise, other unwanted noises include the ones produced when handling the microphone.



Application examples: stage miking, speech recordings, vocals and high-pitched instruments where you are sure that you will not need to record lower-pitched neighboring instruments. Another aspect you should consider: low frequencies require a lot of energy during conversion, which is another argument for engaging the high-pass filter when the recording allows for it.

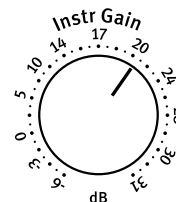
Instr Gain

The Crimson also includes two identical instrument preamps. Use the Instr Gain control to adjust the instrument preamp level in steps.

The adjustable volume range spans from -6 to +31dB. The possibility to reduce the level -6dB allows for the direct connection of electric bass guitars. To achieve the best recording level, the -6dB LED should flash from time to time: you have enough headroom left. If the LED remains always on, it means that the level is at the brink of overloading — in such cases, you should reduce the Instr Gain value. The OVL LED indicates the Crimson's converter is overloading, which should be strictly avoided.

Note: During monitoring, both instrument signals are played back as mono signals.

IMPORTANT: Read the explanation regarding Mono and Stereo Signal Selection on page 10!



LED Indicators

The central LED display panel provides information about the operating status and also helps you adjust better microphone and instrument signals.

Level Adjustment with Four LED sets

Four traffic-light-like LED sets indicate the level of the four recording channels. Every set of LEDs is numbered: set 1 and 2 correspond to mic preamps 1 and 2, while set 3 and 4 correspond to instrument preamps 3 and 4.

Each LED set is identical to the others:

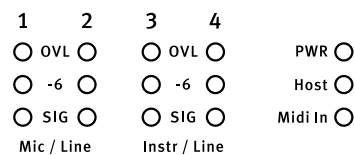
- The OVL LED lights red to indicate the Crimson's converter is being overloaded
- The -6 LED lights yellow. An optimally adjusted level makes it flicker on and off from time to time
- The SIG LED lights green and indicates the presence of a signal with a minimum level of -42dB

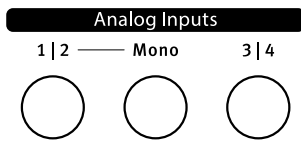
Special note regarding the OVL LED: this LED is directly connected to the converter and thus indicates the overloading of the converter. Make sure it never lights during a recording, otherwise you risk ending up with a useless take due to the presence of audible distortion. As a safety measure, the OVL LED remains lit for around a second.

Status LEDs

1. The PWR LED indicates the power supply of the unit.
2. The MIDI IN LED indicates the reception of MIDI data.
3. The HOST LED indicates that a host computer has been detected at the USB port and the connection has been correctly established.

Note: When used standalone, without DAW or iPad connected to the USB port, the digital section is not initialized. And since the OVL LED is controlled directly by the converter, if not initialized, the OVL LED is inactive. This has no negative effect on the operation of the Crimson, since you cannot record without a DAW and analog distortion is clearly noticeable.





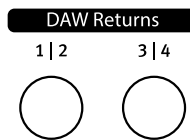
Analog Inputs

The Crimson allows the simultaneous recording of up to four analog inputs. To determine which signal you want to hear use the switches underneath the Analog Inputs as follows:

Switch 1|2 engaged: you hear Mic or Line inputs 1 and 2.

Switch 3|4 engaged: you hear Instrument or Line inputs 3 and 4.

When recording a mono vocal track it makes sense to hear it in the center of the stereo image (rather than hard left or hard right), so you should engage the Mono switch as well. When you record a single instrument, we recommend you to use input 3, in order to hear it right away in the center (refer to page 10, Monitoring Mono and Stereo Signals).

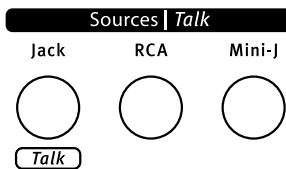


DAW Returns

The Crimson has four DA converters that allow you to monitor two stereo signals (four channels) from the DAW.

Switch 1|2 engaged: you hear the Mix from DAW outputs 1/2.

Switch 3|4 engaged: you hear, for example, an AUX mix from DAW outputs 3/4.



Sources | Talk

As a true monitor controller, you can also use the Crimson as a preamp for three stereo sources. Use the three switches under Sources | Talk to manage the three source inputs, which are named after their connector format. For more information on the connectors refer to „Sources 1, 2 and 3“ on page 11.

JACK = balanced 1/4“ input (for a professional CD player or a converter, for example)

RCA= unbalanced RCA input (Hi-Fi CD player, AV receiver or similar)

Mini-J = unbalanced minijack input (MP3 player, tablets, smartphones, etc)

Note: the level of both unbalanced inputs is automatically converted to professional level in order for them to be directly comparable according to the Crimson's standard level. You can also deactivate this preamplification (refer to „Level Increase for Source Inputs 2 and 3“ on page 11).

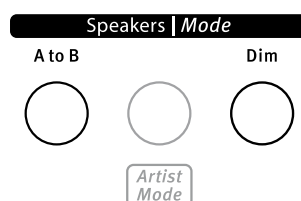


Digital In

It is good practice to compare your own mixes with reference CDs to gain perspective. The Crimson makes such comparisons easy and meaningful, since it uses the exact same high-quality converters for the SPDIF and DAW 1|2 inputs in order to avoid any sound differences.

Use the SPDIF switch to toggle between your Mix and the reference.

You can also use the digital inputs to record two additional tracks. Good SPL channel strips are an excellent choice, since they can be fitted with an optional AD converter.



Speakers | Mode

You can connect two stereo speaker sets. Use the A to B switch to select the speaker set you want to listen to. If the switch is not engaged, you hear Speakers A. If A to B is engaged you hear Speakers B (the other set being automatically deactivated).

The DIM switch reduces the monitoring level -20dB.

In Artist Mode, you can also connect an external headphone amplifier to the Speakers B output in order to get a specific headphones mix. Alternatively this output can be used e. g. to feed an AD converter with unity gain.

Artist Mode

When you record other artists, you can make them their own headphone mix with Artist Mode and use the Talkback function to communicate with them.

The monitoring options for artists include:

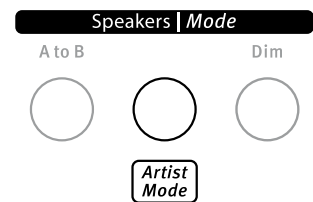
1. Mic, Line and Instrument inputs in real time
2. DAW 1|2, to hear the current mix
3. DAW 3|4, for an alternative mix, with effects (a reverb), for example.
4. Any source as playback or play along

As sound engineer or producer your job is to concentrate on the mix. That's why DAW 1|2 is routed to Phones 1 and Speakers A, to spare you any other switching.

If you want to check the artist's headphone mix, deactivate Artist Mode.

If you want to let the artist hear the current mix, push the A to B switch anytime. This means no monitoring setting ought to be changed.

Tip: If the artist is not in the control room, connect a headphone amplifier to Speakers B. If you are recording several artists at the same time, connect a multi-channel headphone amplifier to Speakers B.



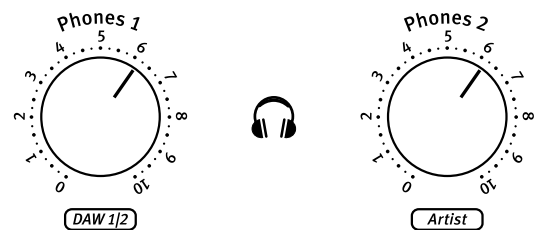
Talkback Option

To make use of the Talkback option, connect the preamped microphone signal to Talk In on the rear panel (Source Input 1, L). Press Talk and you will be heard on Phones 2 and Speakers B. Speakers A is automatically dimmed to avoid feedbacks.

Alternatively, with an integrated microphone preamp: use the Crimson's Mic input 2 for the Talkback microphone and activate Artist Mode. Use Mic Gain 2 to adjust the Talkback level. Whenever you are not talking to the artist, turn down Mic Gain 2. The artist can hear you and the current mix on Phones 2 and Speakers B.

Phones 1 and 2

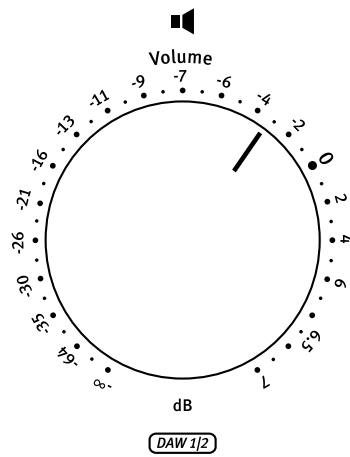
The Crimson has two identical headphone amplifiers. Use volume controls Phones 1 and Phones 2 to adjust the level of the headphones signal. Thanks to the separate headphone amplifiers there is no risk of any interferences when connecting two headphones. Headphones volume adjustment is also independent from that of the loudspeakers. The outputs and gain are designed for headphones with impedances from 20-600 Ohms. For more details regarding the connection of headphones, refer to „Headphone Outputs“ on page 13.



Note: In Artist Mode, Phones 1 is allocated the DAW 1/2 signal and is designed to be used by the sound engineer/producer. Phones 2 is designed to be used by the artist with the Artist Mode signals (refer to the two previous sections).

Optimal Potentiometer Control Range

The control range of the headphone amplifiers is very wide: it allows you to listen to very high level signals with 30 Ohm headphones, as well as to detect the faintest details in quiet passages with 600 Ohm headphones. To achieve such a wide range, and due to component characteristics, a constant taper during the beginning of the travel of the potentiometer cannot be guaranteed. A reduction of the overall volume would also lower the tolerance in this initial range, but at the price of wasting power margin. Thus, we recommend you to adjust the level above the „1“ mark to achieve the best results.



Volume

Use the Volume potentiometer to adjust the volume of both channels of the Speakers A and Speakers B outputs on the rear panel. The high-grade potentiometer regulates the audio signal directly to avoid any coloration/distortion typical of VCAs and DCAs, which require higher inter-channel tolerances and have a tendency towards higher distortion figures.

The Volume control uses a relative dB scale referenced to the input level. When set to the 0dB mark the input level is „as is“ (the amplification factor is 1 or unity gain).

The signal can be amplified from $-\infty$ dB to +7dB. With such signal amplification you can control better quiet passages by monitoring them at higher volumes or, more generally speaking, listen better to the signal in order to check for any problems (artifacts, crackling noises, etc.).

If the signal can still be heard when hard left, do not worry: the potentiometer is not a switch. This was a conscious decision we made to be able to offer you an amplification possibility too. Power off the source when you want to mute it.

Recommendation: Calibrate the whole monitoring system (read the following section) so that the control range in use is always between eight and two o'clock of the travel. This is the range where the potentiometer works best, which guarantees a good and noiseless level matching for the monitoring system.

Calibration of the Monitoring System

The input signal level of the Crimson and the input sensitivity of the power amps or active speakers should be matched to ensure a proper overall gain. An inappropriate matching results, for example, in an extremely high monitoring level with a fairly low volume setting (at 9 o'clock). Likewise, settings above two o'clock should sound really loud, otherwise it is indicative of a matching problem.

Important: During calibration it can get very loud, so don't forget to wear ear protection. For calibration we recommend using a SPL Meter (where SPL stands for „Sound Pressure Level“). Place the measuring microphone at the listening position and playback pink noise from a generator calibrated to 0dBu. Each measurement should be done with one channel (and loudspeaker) at a time. 83dB SPL at the listening position is a good and very common reference value.

Adjust the volume control until the SPL meter reaches 83dB with pink noise.

Ideally, 83dB SPL should be reached when the volume control is near the 12 o'clock mark. Write down the exact value for 83dB SPL at the listening position. If it only reaches 83dB SPL above two o'clock, increase the power amps' or active loudspeakers' input sensitivity (higher dB value). Conversely, you should decrease the power amps' or active loudspeakers' input sensitivity (lower dB value) when it indicates 83dB SPL before reaching the 12 o'clock mark.

Recommendations for Hearing Protection

Always reduce the volume before putting on, connecting or disconnecting your headphones. That way you not only avoid loud crackling noises but also prevent unpleasant surprises when switching to headphones with a lower impedance.

Always protect your hearing, especially when using headphones. Reduce the volume as much as possible and do not expose your ears to very loud volumes for long periods. As a reference: German law requires the use of hearing protection when working in environments that exceed 85dB SPL because such levels can cause hearing loss after years of exposure.

Under certain conditions, the Crimson can also produce sound pressure levels that can harm your hearing, considering that the wide impedance range of common headphone models also demands an equally wide power range. Always adjust the volume carefully from the lowest possible value upwards, especially when you are just starting to work with the Crimson or unfamiliar headphones.

Specifications

Input Sockets

Mic Inputs 1-2: XLR
Line Inputs 1-4: 6,3mm TRS
Instrument Inputs 3-4: 6,3mm TRS
Source 1 Input: 6,3mm TRS
Source 2 Input: RCA
Source 3 Input: 3,5mm TRS
Midi Input: DIN (5 pins)
SPDIF Input: RCA

Output Sockets

Speaker A Output: XLR
Speaker B Output: 6,3mm TRS
Midi Output: DIN (5 pins)
SPDIF Output: coax
Headphone Outputs: 6,3mm TRS

Input Impedances

Mic Preamps: 10kOhm
Line Inputs: 10kOhm unbalanced, 20kOhm balanced
Instrument Inputs: 1,1 Mohm
Source 1 Input: 10kOhm unbalanced, 20kOhm balanced
Source 2 and 3 Input: 10kOhm
SPDIF Input: 75 Ohm

Output Impedances

Speaker A and B Outputs: 75 Ohm unbalanced, 150 Ohm balanced
Headphone Outputs: 33 Ohm

Maximum Input Levels

Mic Inputs: +14,5 dBu (Gain fully left)
Line Inputs: +22,5 dBu
Instrument Inputs: +24,0 dBu (Gain fully left)
Source 1, 2 and 3 Inputs: +22,5 dBu

Maximum Output Levels

Speaker A and B Outputs: +22,5 dBu

Volume Control Range

-∞ to +7 dB

Values of LED Indicators

Signal (SIG): -37dBFS (-22dBu)
-6dB: -6dBFS (+9dBu)
Overload = OVL: 0dBFS (+15dBu)

Mic Preamplifier (balanced, XLR)

Gain Control: +8dB - +60dB
Frequency Response: 10Hz - >200kHz
Noise (unweighted, 30dB gain, input termination 150 Ohm): -90 dBu
Equivalent Input Noise: -128 dBu
Common Mode Rejection Ratio: < -70 dBu
THD+N Ratio@1kHz (30dB gain, input termination 150 Ohm): 0,003 %
High Pass Filter: fg = 80Hz, 6dB/Oct.
Phantom Power: 48Volt

Instrument Input (unbalanced, 6,3mm TRS)

Gain Control: -6dB - +31dB
Frequency Response: 10Hz - >200kHz
Noise (unweighted, unity gain, input termination 100 kOhm): -85 dBu
THD+N Ratio@1kHz (unity gain, input termination 100 kOhm): 0,005 %

Line Input (balanced, 6,3mm TRS)

Frequency Response: 10Hz - 200kHz

Noise (unweighted, unity gain, input termination 600 Ohm): -95 dBu

Common Mode Rejection ratio: < -60 dBu

THD+N Ratio@1kHz (unity gain, input termination 600 Ohm): 0,002 %

Source 1 Input (balanced, 6,3mm TRS)

Frequency Response: 10Hz - 200kHz

Noise (unweighted, unity gain, input termination 600 Ohm): -95 dBu

Common Mode Rejection ratio: < -60 dBu

THD+N Ratio@1kHz (unity gain, input termination 600 Ohm): 0,002%

Source 2 Input (unbalanced, RCA)

Frequency Response: 10Hz - 200kHz

Noise (unweighted, unity gain, input termination 600 Ohm): -90 dBu

Noise (unweighted, -10dBV, input termination 600 Ohm): -85 dBu

THD+N Ratio@1kHz (unity gain, input termination 600 Ohm): 0,003 %

THD+N Ratio@1kHz (-10dBV, input termination 600 Ohm): 0,003 %

Source 3 Input (unbalanced, 3,5mm TRS)

Frequency Response: 10Hz - 200kHz

Noise (unweighted, unity gain, input termination 600 Ohm): -88 dBu

Noise (unweighted, +15dB gain, input termination 600 Ohm): -76 dBu

THD+N Ratio@1kHz (unity gain, input termination 600 Ohm): 0,003 %

THD+N Ratio@1kHz (+15dB gain, input termination 600 Ohm): 0,005 %

Headphone Outputs (stereo, 6,3mm TRS)

Frequency Response: 10Hz - 200kHz

Power@odBu: 47 Ohm load: 13 mW/300 Ohm load: 1,7 mW/600 Ohm load: 1,0 mW

Power max: 47 Ohm load: 670 mW/300 Ohm load: 265 mW/600 Ohm load: 150 mW

THD+N Ratio@1kHz (Power@odBu): 47 Ohm: 0,0026 %/300 Ohm: 0,002 %/600 Ohm: 0,002

%

AD Conversion

Sample Rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz

Dynamic Range (Line Input > AD Converter > DAW > SPDIF Output):

44.1kHz: 110dB (unweighted), 48kHz: 110dB (unweighted), 96kHz: 107dB (unweighted)

THD+N ratio @ 1kHz (-1dBFS): 44.1kHz: 0,01 %; 48kHz: 0,01 %; 96kHz: 0,01 %

odBFS = +15 dBu

DA Conversion

Dynamic Range (SPDIF Input > DAW > DA Converter > Speaker Output):

44,1kHz: 106dB (unweighted), 48kHz: 106dB (unweighted), 96kHz: 104dB (unweighted)

THD+N ratio @ 1kHz (-1dBFS): 44,1kHz: 0,006 %; 48kHz: 0,006 %; 96kHz: 0,007 %

Power Supply

External Power Supply, Input 100-240V AC/50-60 Hz; Output 12V DC/1,5A

Internal Power Supplies

Audio: +/-17V, Digital: +5V and +3,3V

Power Consumption

16,8 Watt

Dimensions and Weight

Housing (H x W x D in mm): 60 x 330 x 207 (BxT=bottom panel w/o sockets, H w/o controls)

Weight: 2,7 kg

Notes: odBu = 0,775 V. Specifications are subject to change without notice.

Specifications USB-Interface

Hardware

- USB2 audio/MIDI system
- High-performance, 32 bit microcontroller
- 24 bit audio processing
- 6 input and 6 output channels up to 192 kHz
- Sample rates: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz or 192kHz
- Fixed master clock for lowest jitter
- True 1:1 audio, no sample rate conversion or clock recovery
- SPDIF and MIDI I/Os

Software

- Windows XP/Vista/7/8 (32 and 64 bit), Mac OS X 10.4 or higher
- Multi-application mode, simultaneous ASIO and/or WDM playback
- Low-latency Mac OS X (ASIO-like) HAL plug-in driver
- Low-latency Windows ASIO and WDM driver
- Driver feedback synchronization to hardware clock
- ASIO control panel for Windows and Mac
- USB Audio Class 2.0 compliance (asynchronous mode)

Note: Firmware updates via USB.

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