

MOONWALK SERVICE



DOCUMENTAZIONE

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SOUND PERFORMANCE LAB



Manual



CLASSIC VITALIZER, Model 9215

Dual-channel program equaliser

Classic Vitalizer · Model 9215

R & D: Wolfgang Neumann

Version 3.0 – 11/1999

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Congratulations on the purchase of the CLASSIC VITALIZER. We are sure that you have as much pleasure using it as we had making it. Please read this manual carefully to ensure that you gain all the benefits of this unique program equaliser.

I would like to start with my thanks to all our staff. Our products are often tested and compared in many publications as well as by our customers themselves and constantly attract outstanding evaluations for their audio performance.

I would like to pass on this broad appreciation to those, who deserve it – my excellent colleagues.

Hermann Gier

Welcome!

Thanks



Introduction

The CLASSIC VITALIZER combines most modern equalisation, phase shift manipulation and harmonic enhancement to provide signal enhancement across the entire audio spectrum. Based on established psychoacoustic and audiometric principles, the VITALIZER brings mid-range material into sharp focus while enhancing high frequencies. The attendant harshness introduced by units that add controlled distortion to the signal is avoided. At the low end the sub-bass is accentuated without incurring the penalties of boomyness or clouded low-mid detail that inevitably occur when conventional equalisers are used. The result is a sound that is subjectively more powerful, more detailed and more commercially appealing. Additionally, a separate stereo width-expander is incorporated which may be used either in conjunction with the VITALIZER equalisers or on its own.

The VITALIZER may be used on complete mixes or on individual tracks within a mix. Furthermore, a PROCESS SOLO function allows the processed signal to be added selectively to different tracks within a mix using the mixing console's aux send system. Both signal channels of the VITALIZER are identical and have separate controls with the exception of STEREO WIDTH which affects both channels. If the unit is to be used as two independent mono channels, this control should be set fully counter-clockwise. The VITALIZER may be connected either via suitable signal insert points or via the aux send/return circuit of a mixing console; in the latter application, the PROCESS SOLO button must be active.

The Signal Peak LED should light either briefly on signal peaks or not at all. In operation, the Signal Peak LED comes on 3 dB before the onset of clipping in the processing chain. All front panel push-button switches have status LEDs that light when the switch is active. Each channel has an independent ACTIVE/BYPASS switch. Processing is achieved by adding a treated signal to the original. The treated signal may be auditioned by depressing the PROCESS SOLO button.

Hook up



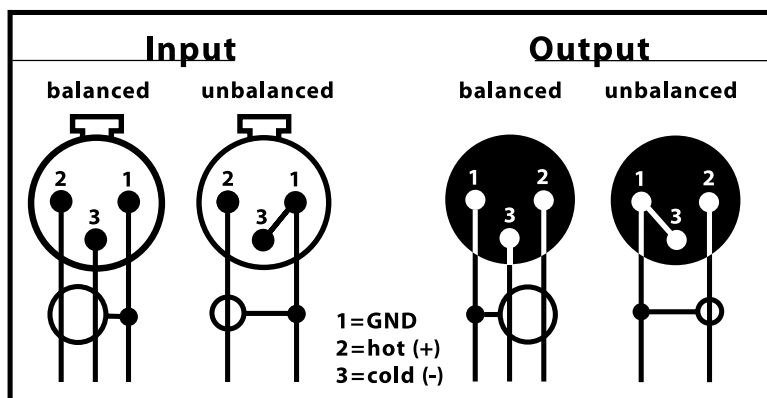
Packaged in a standard 19" EIA format and occupying 1U (44,45 mm) of rack space, the VITALIZER can be installed in a standard rack, but it is recommended to support the rear of the case – especially in touring applications. The VITALIZER should not be installed near units which produce strong magnetic fields or extreme heat or directly above or below power amplifiers or digital processors. If possible, the VITALIZER should be placed in an 'analogue rack' where the majority (or all) of the equipment installed is analogue.

- Use a small, flat bladed screwdriver to set the voltage selector to the voltage for the area in which the unit will be used.
- Never cover up the ventilation slots on the top side of the unit.
- If, during operation, the sound is interrupted or indicators no longer illuminate, or if abnormal odour or smoke is detected, or if liquids are spilled on the unit, immediately disconnect the power cord plug and contact your dealer.
- Only clean the unit with a soft, lint-free cloth. Use only standard cleaning agents.

Before connecting the VITALIZER or any other equipment turn off all power. Adjust the voltage setting on the back so that it corresponds with the local power conditions.

The balanced XLR input connectors are Neutrik XLRs wired pin 2 hot. The unbalanced mono-jacks are wired tip hot. Should the need arise to use the XLR unit in an unbalanced system, pin 3 of both the input and output connectors should be grounded.

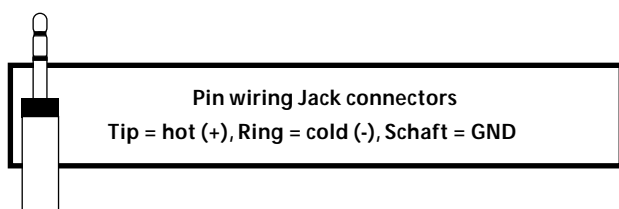
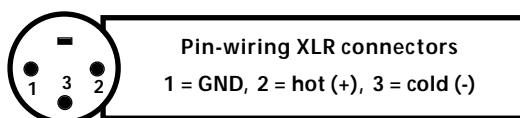
The following graph shows the correct wiring for connecting unbalanced signals to the balanced XLR connectors:



Both output stages operate in parallel, so it is possible to connect two different destination units simultaneously, for example to record to two different media at the same time or split the output between a mixer and effects processor. However, only one type of input (jack or XLR) should be connected at a time – the VITALIZER is not intended to be used as a mixer!

To ensure optimal signal quality, SPL has developed a new hybrid-component balanced input/output stage using all laser-trimmed resistors with a tolerance of 0.01%. This approach has resulted in an exceptionally high CCMR (common mode rejection); 100 dB at 1kHz and 80 dB at 10 kHz.

As a precaution, before connecting the VITALIZER switch off the power to the unit and to all connected units.

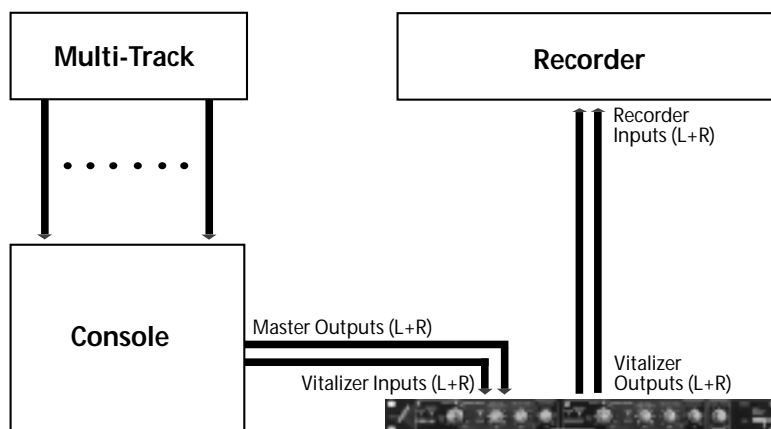


Applications

Recording Studio

Studio Application 1:

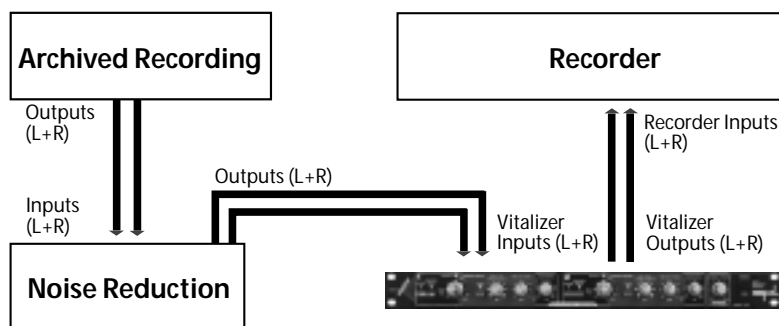
VITALIZER between console (master outputs) and recorder



2. Another popular stereo application is the processing of existing master tapes during post-production such as remastering archive material for CD release. If a single-ended noise reduction system is used to clean up the original, the VITALIZER can make a significant contribution in restoring the high end detail that invariably suffers during such treatment.

Studio Application 2:

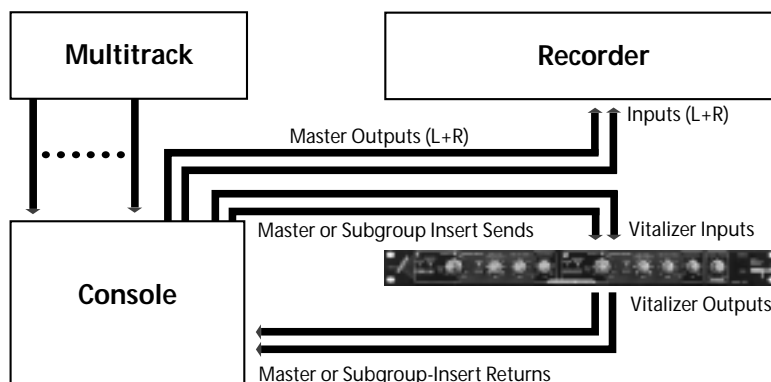
The VITALIZER between Noise Reduction and Recorder to improve archived recordings



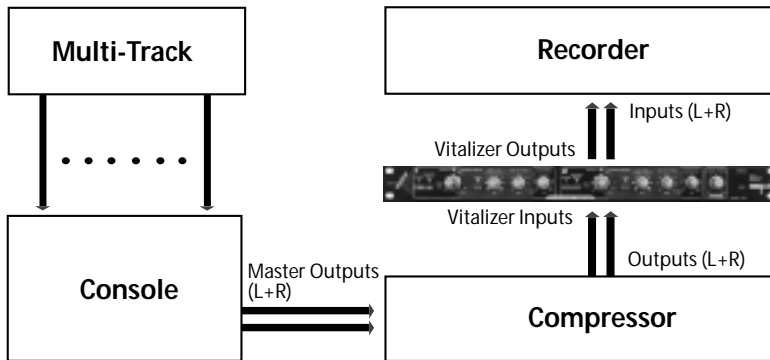
3. When processing stereo-mixes it is recommended to patch the VITALIZER into the master-breaks of the console. Mostly these breaks are switched pre-fader, so that the monitoring volume does not affect the processing intensity, which would be the case when using the VITALIZER on the master outputs of the console.

Studio Application 3:

The VITALIZER connected to the Master or Subgroup Inserts of the consoles



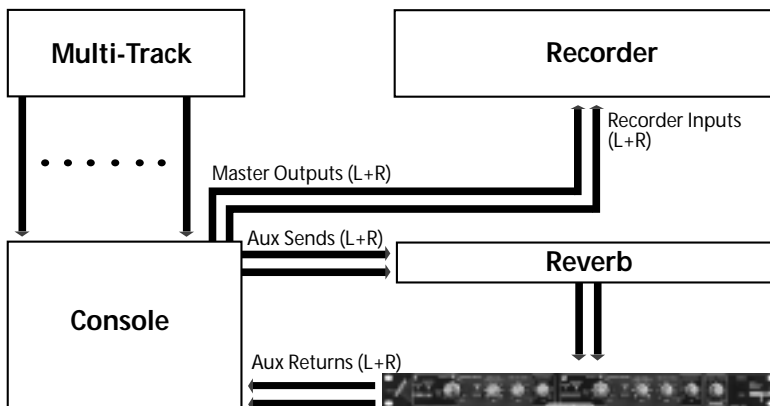
4. Another interesting application is the use of the VITALIZER right after a compressor unit in the master signal chain. Using the VITALIZER before a compressor can result in more obvious side-effects of the compressor, such as pumping. It is also possible to patch the VITALIZER into the aux send system of a console in much the same way as a reverb or delay unit as long as the PROCESS SOLO switch is active. The aux return mixing stages in some consoles are designed in a more cost effective and simpler way than in the VITALIZER. That's why it might be possible that the sonic effect of the VITALIZER sounds different when using the unit on the aux send/ return system.



Studio Application 4:

If used together with a compressor, the VITALIZER is to be inserted behind the compressor

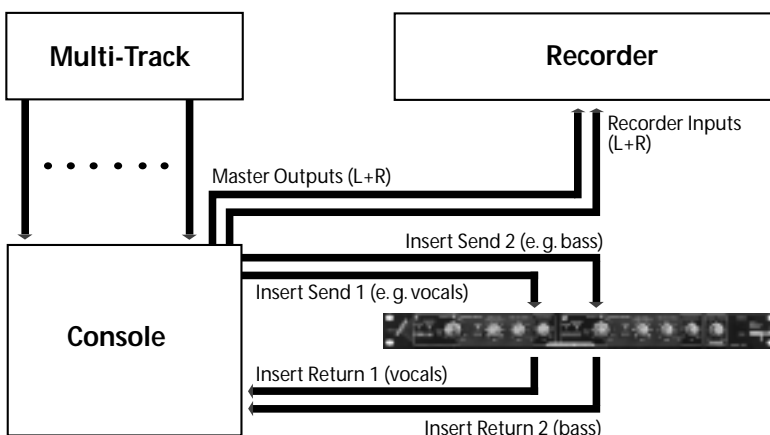
5. To obtain better transparency and a full rich sound even if very long reverb-times are used, the processing of the reverb can be interesting, too. Connect the VITALIZER right after the reverb unit and feed the VITALIZER outputs to the aux returns.



Studio Application 5:

The VITALIZER inserted in the Aux Send/Return-Bus to improve the reverb signal

6. It is also possible to use the VITALIZER either in place of or to supplement an equalizer for enhancing individual channels or sub groups.



Studio Application 6:

The VITALIZER connected to the Inserts of two channel strips to improve single instruments and vocals

Applications

Tape Duplication

Tape duplication is often made at high speed, resulting in a deterioration of the high frequency spectrum of the copies. By processing the output from the source machine, additional brightness can be added to compensate for deficiencies in the copying system. It may also be necessary to modify the bass end as many high speed systems fail to reproduce the bass end of the spectrum faithfully. In both applications, the VITALIZER is both effective and simple to set up.

Broadcast

The VITALIZER is perfectly suited for the production of radio jingles, commercials and station idents. Due to the unique processing of the VITALIZER the treated signal will appear louder, closer, brighter and more intelligible than those signals broadcasted without VITALIZER processing. In commercial radio, the VITALIZER can be used to process the entire on-air signal helping the radio station stand out from the competition. The integral STEREO WIDTH expander creates a wider stereo spread for those listeners using a narrow speaker geometry (e. g. car and portable systems).

P. A.

In live performances or in club installations, the VITALIZER is a powerful ally in maintaining speech intelligibility under difficult conditions. It is also of great benefit in systems designed to play recorded music because the hearing sensation of loudness can be maintained at lower absolute SPLs. This could be particularly beneficial with the introduction of new noise level legislation. On the subjective side, the VITALIZER helps produce a detailed, tight sound, even from indifferent speaker systems giving an improvement in perceived audio quality.

Video & Film Post Production

As in other areas, the VITALIZER can be used to optimise dialogue, especially when the microphone placement is inadequate (for example when the mic must be kept out of shot). Music soundtracks benefit in the same way as described for audio-only applications. For most soundtrack producers the enormous ease of use compared with tuning multi-band equalisers means to save a lot of wasted time.

Time-compressed audio can also be treated to restore the lack of timbre. This is particularly valid in the case of vocal narratives as even a relatively small amount of time compression or expansion can dramatically compromise the sound quality.

On the post production work on Spike Lee's "Malcom X" the voice of Denzel Washington playing Malcolm X was treated with the Vitalizer for dramatical reasons:

"We wanted to make sure that there was a dramatic quality difference between the voice-over and the sync dialog," Fleischman adds, offering a mixer's view. "You try to find a balance between two center mics then balance that with whatever you're using from left-right pair. We then treated it with the SPL Vitalizer, a program equalizer. It brings a lot more presence to the upper end of the spectrum and a very deep low end so that the voice sounds full." (Mix Magazine)

First Steps

Both channels of the VITALIZER are set-up identically and can be controlled separately – except the STEREO WIDTH control. If the channels are to be used separately, the STEREO WIDTH control is to be set to OFF. If the VITALIZER is connected to the „Aux Send/Return“ Bus, the PROCESS SOLO circuitry must be activated.

Check the PEAK LED regularly: short illuminating indicates peaks at about 3 dB below clipping – constant illumination is to be avoided. Please contact SPL if you are not satisfied with the Input Level adjustment. All front switch positions are indicated by Status-LEDs. The ACTIVE button switches each channel in or off.

When setting up the VITALIZER for the first time, it is recommended to approach the controls in a specific order to achieve positive results right from the start.

Initially, set the SUB BASS and HARMONICS controls to 0. Please note that the SUB BASS control is off in its center position, not when set fully counter-clockwise.

Set the MID-HI TUNE control to around 3.5 kHz and then advance the PROCESS DEPTH control until the processing can be heard. You should hear a change in the mid-range but no appreciable change at the bass end.

To hear the effect of the MID-HI TUNE control in isolation, increase the PROCESS DEPTH and set the SUB BASS and HARMONICS controls to 0.

Next, try advancing the SUB BASS control both clockwise and counter-clockwise and listen to the different effect on the character of the bass end. At this point, it is also interesting to hear the difference the DEEP button makes (full-range monitors needed; near-field monitors do not generally have the necessary low frequency capability to reveal the extent of the low-frequency processing applied by the VITALIZER).

To hear the effect of the SUB BASS in isolation, turn up the PROCESS DEPTH control, set HARMONICS to minimum and set the MID-HI TUNE fully counter clockwise to its maximum frequency of 22 kHz.

In the next step, advance the HARMONICS control and listen to the high end details. To hear the effect of this control in isolation, set the PROCESS DEPTH to minimum. Note that the MID-HI TUNE frequency control still influences the action of the HARMONICS section.

Finally, turn up the STEREO WIDTH control to the 12 o'clock position and note the soft spreading stereo image.



Control Elements



Active

The ACTIVE-function allows to switch between the processed and unprocessed signal. The green status LED indicates that the channel is active. A relais hard bypass circuitry works on both XLR and Jack connections. In case of a power failure the unit is switched to hard-bypass.

Output

The outer ring of the dual-concentric control sets the output level and is usually set in its fully clockwise position giving unity gain. However, intensive processing, especially of the bass end, may increase the overall signal level. The GAIN control may be used to control the output accordingly.

Process Depth (Part 1)

The inner ring of the dual-concentric control regulates the intensity of the equalisation process. The effect only pertains to the SUB BASS and MID-HI TUNE controls. Effects generated using the HARMONICS or STEREO WIDTH controls are not affected.

Process Solo

The PROCESS SOLO button may be used to compare the processed signal with the dry signal. Alternatively a processed only output can be created (necessary when using the VITALIZER in the effects send/return loop of a mixing console).

Sub Bass

The SUB BASS control is arranged so as to have no effect when set to its central position denoted by a ~ on the scale. Turned clockwise, the processing produces a tight, punchy bass sound free from boomyness. The scale markers in the clockwise half of the scale are square markers to give a visual indication that a tight or sharply defined bass sound is being produced.

When turned in the counter-clockwise direction, a very deep, warm bass sound is created. This is denoted by circular markers on the counter-clockwise half of the scale suggesting a "rounded" sound. The processing increases the more the controls are turned from it's centre position.

As with the MID-HI TUNE control, the amount of processed signal added to the main signal is determined by the setting of the PROCESS DEPTH control.

The DEEP button spreads the frequency range around which the SUB BASS is centered. Also the level is increased by +4 dB at the centre frequency of 50 Hz.

This affects both the hard and soft bass settings giving the choice of four possible permutations.

Equalising the mid-range signal according to the dynamics and spectral content of the input signal, the VITALIZER improves the focus of mid-range detail while modifying the overall signal response curve to create an impression of increased loudness. The degree of processing is controlled by the PROCESS DEPTH control while the MID-HI TUNE control is used to set the lower frequency limit at which processing will take place.

With the control set fully counter-clockwise at 22 kHz, no audible processing will be evident as the filters are limiting processing to those frequencies outside the human range of hearing. However, if you turn the PROCESS DEPTH control fully clockwise you will hear the high end starting to sound duller than the dry signal. This effect can be used to dull out very bright signals. By decreasing the frequency setting, the processing will become more evident. Additionally, the lower the frequency is set, the more obvious the effect becomes since more of the audio spectrum is being treated.

It is generally best to start off with this control set to somewhere between 3 kHz and 6 kHz and then fine tune by ear.

Adjusting the bandwidth preset control ("Q", inside the front panel) changes the characteristics of the MID-HI TUNE filter. The VITALIZER is shipped with the Q setting in its minimum position (counter-clockwise) which is best suited to general purpose processing. A higher Q may be selected in order to selectively enhance certain parts of the audio spectrum such as hi-hats as may be desirable when mastering a record or reworking an existing recording.

If the Q control is advanced too far clockwise, the filter is likely to oscillate. In this case the control should be backed off until oscillation ceases. For stereo applications, care should be taken to ensure that the Q presets on either channel are set up as similarly as possible to eliminate the possibility of spectrally related image shifts.

This control affects the amount of SUB BASS and MID-HI TUNE filter signal added back into the mix and will cause certain dominating mid-range frequencies to be attenuated increasing the overall sense of loudness. Since the human ear perceives the audio spectrum differently at different SPLs (sound pressure levels), the VITALIZER reshapes the spectrum so as to convince the human brain/hearing system that the sound being heard is louder than it actually is.

Deep

Mid-Hi Tune

Q

Bandwidth Setting of Mid-Hi Tune

Process Depth (Teil 2)

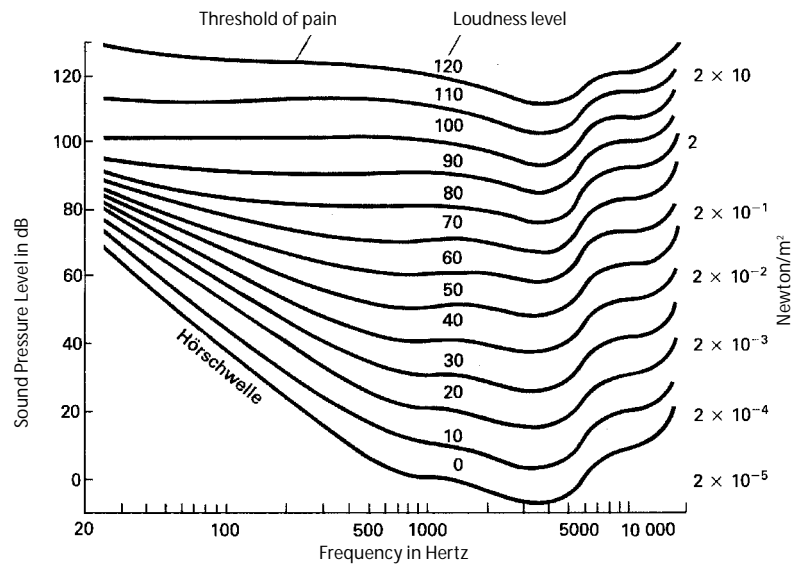
Control Elements

Advancing the setting of the PROCESS DEPTH control simultaneously increases the amount of MID-HI TUNE filter and SUB BASS signals in the mix while attenuating other midrange frequencies to enhance the sense of loudness, thus increasing clarity, bass end punch and overall power.

Because the PROCESS DEPTH control is really varying three parameters at once, it is worthwhile setting aside a little time to explore the important interaction between the PROCESS DEPTH, SUB BASS and MID-HI TUNE controls.

Diagram:

„Curves of equal loudness“ according to psychoacoustic researches by Fletcher and Munson



Harmonics

This harmonic enhancement circuitry is based on fourth-order filters and phase manipulation, effectively restoring harmonics that have been corrupted during the recording process or by other equipment in the processing chain. It may also be used to increase the subjective brightness of a sound without introducing harshness. Used as an effect, this process is useful for increasing the intelligibility and intimacy of vocals.

The harmonic circuitry is driven by a signal combining the original, "dry" signal and the output signal of the MID-HI TUNE filter. The HARMONICS control determines how much of the restored harmonics are added back to the original signal. Though the circuitry of the VITALIZER is inherently very quiet, please note that applying any significant degree of high frequency processing will show up any noise present as part of the signal source. For this reason, the signal source should be as noise-free as possible. The harmonics control is independent of the PROCESS DEPTH control.

Control Elements

Surround Processor

Working on established inter-channel phase principles, the STEREO WIDTH control increases the subjective soundstage width of any stereo source. The off-centre signals of the stereo source are detected and fed back phase inverted to the opposite channel. This effect can be applied to overall mixes as well as to single instruments. Very interesting is the spreading of the stereo image of overhead mics of drums-sets, choruses or horn sections.

The Surround Processor section is independent from all other processes and is not affected by the ACTIVE buttons or PROCESS DEPTH controls. To deactivate the effect of this section, the STEREO WIDTH control should be set fully counter clockwise. In standard applications a STEREO WIDTH setting above the 2 o'clock position is not recommended for complete mixes. However, such settings can produce some very interesting special effects for single instruments.

Special care has gone into the design of the power supply of the VITALIZER – the better it is, the better the system works. In an audio system, this translates into better sound quality, lower noise and lower distortion.

The power supply is based around a 15 VA toroidal transformer and is designed to minimise induced hum and noise due to the lack of an air-gap.

The primary voltage may be selected between 230 V / 50 Hz and 115 V / 60 Hz by means of a recessed slide switch on the rear panel and a rear-panel ground-lift switch is fitted for use where ground loops are causing hum problems. When the Gnd Lift switch is set to off, the circuit ground is isolated from the chassis ground.

The detachable power cord is a standard 3-wire type fitted with an IEC mains connector; the transformer, power cord and mains connector have VDE, UL and CSA approvals.

The fuse has a value of 315 mA for the primary voltage.

On the secondary side of the power supply, an RC combination is used to filter out noise and hum voltages. Both half-waves are smoothed with 4000 microF capacitors in the positive and negative supply path, and both lines use precision voltage regulators for optimum stability. Deviations of only a few millivolts can impair audio quality, introducing artifacts such as loss of stereo imaging or a diffused sound character.

Power Supply

Specifications

Frequency response: 20 Hz-22 kHz, +1 - 0.25 dB
THD: 0.002% @ 1 kHz
... 0.105% @ 10 kHz
S/N (CCIR 468): Bypass: -96 dBu
... In/Effekt min: -78 dBu

XLR Inputs:

Electronically balanced (differential), transformerless

Impedance: 20 kOhm
Nominal input level: + 6 dB
Maximum input level: + 22 dBm

XLR Outputs:

Electronically balanced (differential), transformerless

Impedance: >75 Ohm
Nominal output level: + 6 dB
Minimum load ohms: 600 Ohm
XLR-wiring: Pin 2 = (+); Pin 3 = (-)

Jack Inputs:

Unbalanced

Impedance: = 20 kOhm
Nominal input level: 0 dB
Maximum input level: +22 dBm

Jack Outputs:

Unbalanced

Impedance: <600 Ohm
Nominal output level: 0 dB
Minimum load ohms: 600 Ohm

Jack Wiring: Tip = (+); Shield = GND

Power Supply: Toroidal transformer

Primary Voltage Selectable (230 V / 50 Hz or 115 V / 60 Hz)

AC cord: IEC mains connector with detachable 3-wire, U-ground power cord

PCB Ground-Lift (Gnd Lift) switch on rear panel

Fuse: 630 mA

Operating Temperature: + 10°C - + 40°C

Relative Humidity: 5% - 92%

Dimensions: 19" EIA rack mounting unit, 482 x 44 x 232 mm

SPL electronics GmbH (hereafter called SPL) products are warranted only in the country where purchased, through the authorized SPL distributor in that country, against defects in material or workmanship. The specific period of this limited warranty shall be that which is described to the original retail purchaser by the authorized SPL dealer or distributor at the time of purchase.

SPL does not, however, warrant its products against any and all defects:

1) arising out of materials or workmanship not provided or furnished by SPL, or 2) resulting from abnormal use of the product or use in violation of instructions, or 3) in products repaired or serviced by other than authorized SPL repair facilities, or 4) in products with removed or defaced serial numbers, or 5) in components or parts or products expressly warranted by another manufacturer.

SPL agrees, through the applicable authorized distributor, to repair or replace defects covered by this limited warranty with parts or products of original or improved design, at its option in each respect, if the defective product is shipped prior to the end of the warranty period to the designated authorized SPL warranty repair facility in the country where purchased, or to the SPL factory in Germany, in the original packaging or a replacement supplied by SPL, with all transportation costs and full insurance paid each way by the purchaser or owner.

All remedies and the measure of damages are limited to the above services. It is possible that economic loss or injury to person or property may result from the failure of the product; however, even if SPL has been advised of this possibility, this limited warranty does not cover any such consequential or incidental damages. Some states or countries do not allow the limitations or exclusion of incidental or consequential damages, so the above limitation may not apply to you.

Any and all warranties, express or implied, arising by law, course of dealing, course of performance, usage of trade, or otherwise, including but not limited to implied warranties of merchantability and fitness for particular, are limited to a period of 1 (one) year from either the date of manufacture. Some states or countries do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state, country to country.

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