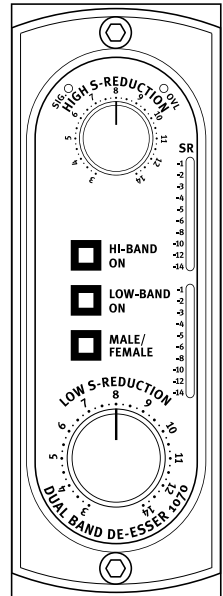




Manual



Dual-Band De-Esser

RackPack Module, Model 1070

Version 1.0 – 8/2010

Developer: Vincenzo Triolo

This user's guide contains a description of the product. It in no way 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.

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CE Declaration of Conformity

The construction of this audio signal processor 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 re-used in accordance with their markings. Through re-use, 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 34988

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Important Security Information



Please note and retain this information. Carefully read and follow all of the safety and operating instructions before you use the machine. Be doubly careful to follow all warnings and special safety instructions noted in this manual and on the unit. The following information refers to modules built into the RackPack frame.

Connections: Only use the connections as described. Other connections can lead to health risks and equipment damage.



Water And Humidity: Do not use this machine anywhere near water (for example near a wash basin or bath, in a damp cellar, near swimming pools, or the like). In such cases there is an extremely high risk of fatal electrical shocks!

Insertion Of Foreign Objects Or Fluids: Never allow a foreign object through any of the machine's chassis openings. You can easily come into contact with dangerous voltage or cause a damaging short circuit. NEVER allow any fluids to be spilled or sprayed on the machine. Such actions can lead to dangerous electrical shocks or fire!

OPENING THE DEVICE: Open the device only to fit or exchange modules. The fitting and/or exchange of modules should only be carried out by qualified persons. In the light of possible physical damage or injuries any manipulation is at your own risk. In order to avoid any residual voltage, the device should be disconnected from any power source at least 5 minutes prior to opening it. If you handle the device improperly or ignore the manual (part of the delivery of the RackPack frame) you risk to damage the device or expose yourself to an electric shock. In these cases SPL electronics GmbH denies any responsibility.

Electrical Power: Run this machine ONLY from sources which can provide proper power at the prescribed rating. When in doubt about a source, contact your dealer or a professional electrician. To be sure you have isolated the machine, do so by disconnecting the power cord from your wall connection. Be sure that the power cord plug is always accessible. When not using the machine for a longer period, make sure to unplug it from your wall power socket.

Power Cord Protection: Make sure that your power cord is arranged to avoid being stepped on or any kind of crimping and damage related to such event. Do not allow any equipment or furniture to crimp this power cord.

Power Connection Overloads: Avoid any kind of overload in connections to wall sockets, extension or splitter power cords. Always keep manufacturer warnings and instructions in mind. Overloads create fire hazards and risk of dangerous shocks!

Important Security Information

Lightning: Before thunderstorms or other severe weather, disconnect the machine from wall power (but to avoid life threatening lightning strikes, not during a storm). Similarly, before any severe weather, disconnect ALL the power connections of other machines and antenna and phone/internet cables which may be interconnected so that no lightning damage or overload results from such secondary connections.

Air Circulation: Chassis openings offer ventilation and serve to protect the machine from overheating. NEVER cover or otherwise close off these openings. NEVER place the machine on a soft surface (carpet, sofa, etc.). Make sure to provide for a mounting space of 4-5 cm/2 inches when mounting the machine in racks or cabinets.

Controls And Switches: Operate the controls and switches only as described in the manual. Incorrect adjustments outside safe parameters can lead to damage and unnecessary repair costs. Never use the switches or level controls to effect excessive or extreme changes.

Repairs: Unplug the machine and immediately contact a qualified technician when you think repairs are needed – or when moisture or foreign objects may accidentally have gotten in to the housing, or in cases when the machine may have fallen and shows any sign of having been damaged. This also applies to any situation in which the machine has not been subjected to any of these unusual circumstances but still is not functioning normally or its performance is substantially altered.

In cases of damage to the power cord or its plug, first consider turning off the main circuit breaker before unplugging the power cord.

Replacement/Substitute Parts: Be sure that any service technician uses original replacement parts or those with identical specifications as the originals. Incorrectly substituted parts can lead to fire, electrical shock, or other dangers, including further equipment damage.

Safety Inspection: Be sure always to ask a service technician to conduct a thorough safety check and ensure that the state of the repaired machine is in all respects up to factory standards.

Cleaning: In cleaning, do NOT use any solvents, as these can damage the chassis finish. Use a clean, dry cloth (if necessary, with an acid-free cleaning oil). Disconnect the machine from your power source before cleaning.



Fitting A Module

The fitting and/or exchange of modules should only be carried out by qualified persons. Please read the manual of the RackPack frame. It contains all information needed to fit a module as well as all safety and notes and warnings.

If you don't have the manual at hand, you can download it like all SPL product manuals from our website <http://www.spl.info>.

Symbols And Notes



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 MACHINE 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 machine without the approval or supervision of SPL electronics GmbH. Doing so could nullify completely any and all of your warranty/guarantee rights and claims to user support.

Scope of Delivery

- The module
- This manual
- Two Philips screws to mount the module to the back panel (if module is delivered separately from the frame). Further screws needed for mounting the module remain when you remove front and rear covers from the RackPack frame.

Back in the 1990's, we developed an alternative way to process signals in order to reduce sibilance based on phase cancellation. Unlike traditional compression methods, this procedure is much more unobtrusive and simplifies control to one single parameter. SPL's De-Esser quickly became a standard reference among recording studios, broadcast stations and live sound engineers.

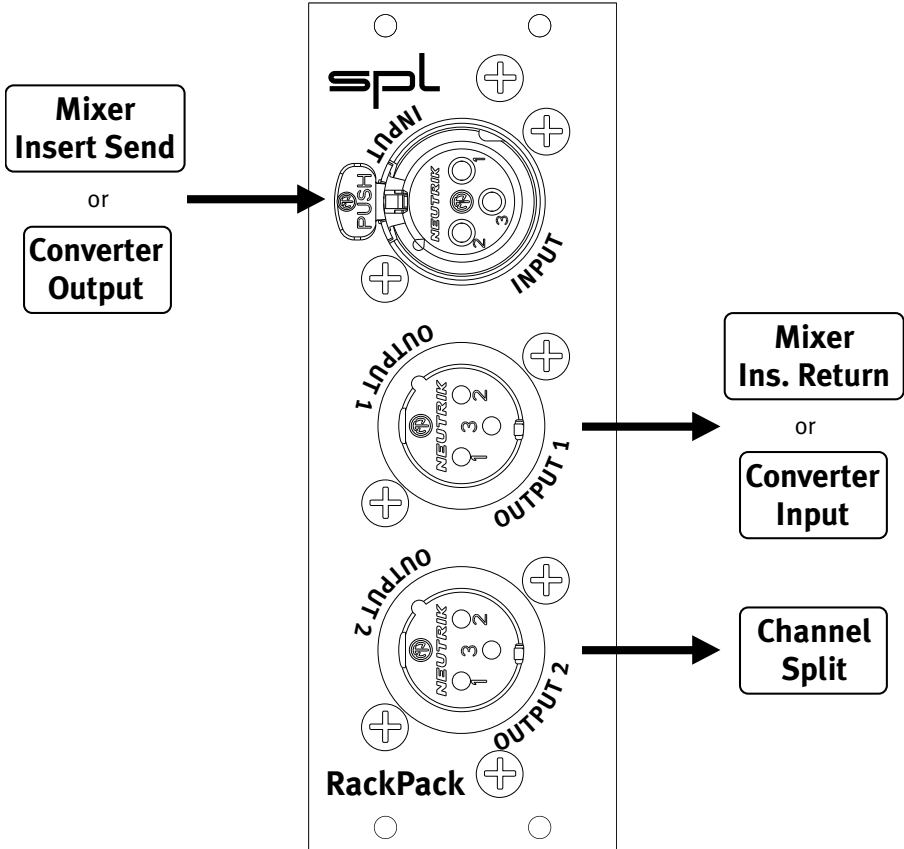
The most commonly used technology to remove sibilance is based on compression. In addition to determining the threshold, the center frequency for processing must also be set. The processing range can be up to two octaves in order to effectively address all possible problems across the frequency spectrum. This results in one of the most critical disadvantages: the wide range of frequencies being processed leads to undesired effects such as nasalization and lisper.

The SPL De-Esser works on the principle of phase cancellation to remove unwanted sounds. And it also adds automatic sibilance detection, which allows processing to be limited only to the range where sibilant sounds are present. The result is a neutral-sounding, unnoticeable but highly effective processing that never requires fine tuning level and frequency settings. This way de-essing has the least possible influence on the voice's timbre, avoiding side effects like nasalization and lisper. Operation is limited to adjusting the processing intensity with one single control. The SPL De-Esser is a safe and precise tool to solve sibilance problems, without having to compromise sound quality nor the hassle of permanently readjusting settings.

The Dual-Band De-Esser

The Dual-Band De-Esser module expands on this concept by making use of two frequency bands that can be used independently or jointly.

- Two de-esser stages increase processing effectiveness without introducing any audible artifacts
- Focused processing with high and low bands
- Input signals are automatically adjusted so that processing is uniform, regardless of the distance between source and microphone
- Male/Female modes that adapt processing in the lower band to male or female voices



Rear Panel/Connections

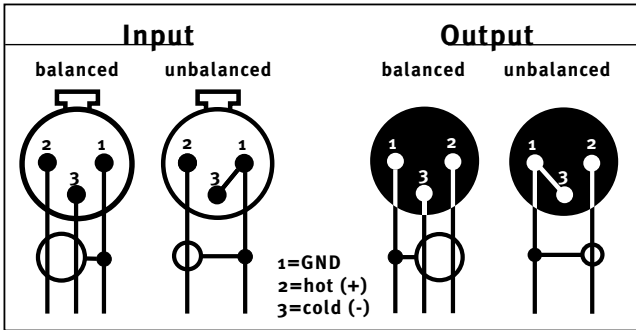
The Dual-Band De-Esser is fitted with one XLR input and two XLR outputs for balanced operation.

Pin-wiring of all XLR sockets:

Pin 1 = GND, Pin 2 = hot (+), Pin 3 = cold (-)

Discrete balancing stages for both in- and output provide high common mode rejection and are capable of driving long cables (depending on the capacity of the cables and the following input balancing stages).

The illustration shows the correct pin-wiring of the balanced XLR sockets if an unbalanced wiring is required.



Lundahl I/O Transformers

The Input and Output 1 stages may be transformer-balanced *if ordered*. The transformer option can not be upgraded after sales anymore. Please refer to page 12 for detailed information on transformers.

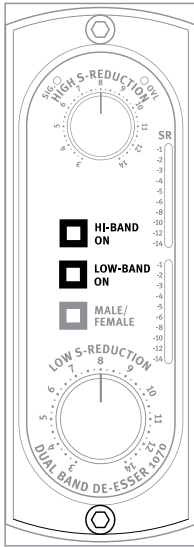
Otherwise, all inputs and outputs are balanced electronically. Output 2 cannot be fitted with a transformer. It is actively decoupled and allows for the input signal to be split into two output signals.

Channel Split

The channel split option through Output 2 always provides alternatives in processing or routing of the input channel. While one output may be used directly for mixing, the second output can be routed in any other way—for example to further RackPack modules, to other effect units etc.



Control Elements



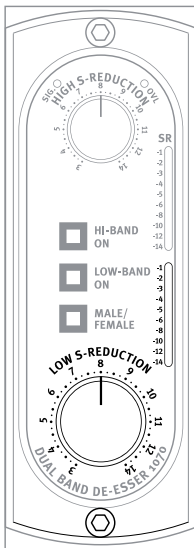
HI-BAND ON, LOW-BAND ON

Use the HI-BAND ON button to turn the HIGH-S-REDUCTION on or off. Use the LOW-BAND ON button to turn the LOW-S-REDUCTION on or off. The buttons light up when engaged.

You can use the two processing stages separately or jointly. They are connected in series as independent de-esser modules. The low-band de-esser is set first in the chain.

If both de-essers are engaged, there is interaction between them: a signal already processed with the low-band de-esser is different from the raw material that the high-band de-esser would otherwise process. That is the reason why the readings of the high band's SR LEDs change when the low-band de-esser is engaged while the high-band processor is active.

Hard-Bypass: the Dual-Band De-Esser module features power outage protection based on relay-controlled hard-bypass circuits to always guarantee signal flow from input to output. In order to keep signal flow constant, the bypass is automatically activated whenever a voltage drop or failure is detected.



LOW S-REDUCTION

Use the LOW S-REDUCTION control to adjust the intensity of the sibilance reduction in the lower frequency range. The center frequency for sibilance recognition is set at 7.6 kHz in FEMALE mode and 6.4 kHz in MALE mode. For more information, please refer to section „MALE/FEMALE“ on page 11. The bandwidth of the low-band de-esser is 1.44 kHz.

Scale values for the filter are displayed in dB. The actual reduction values, i.e. after phase cancellation, are displayed in the lower SR LEDs. Thus, when the control is set to 3 dB, actual reduction might only be of around 1 dB.

The SR LEDs display sibilance reduction between -1 dB and -14 dB, first in 1 dB increments and from 6 dB on in 2 dB increments.

In practice, for most applications, the best results are usually achieved when LOW S-REDUCTION is set between 3 and 7.

HIGH S-REDUCTION

Use the HIGH S-REDUCTION control to adjust the intensity of the sibilance reduction in the upper frequency range.

The center frequency for sibilance recognition is set at 11.2 kHz with a 3 kHz bandwidth.

Scale values for the filter are displayed in dB. The actual reduction values, i.e. after phase cancellation, are displayed in the upper SR LEDs. Thus, when the control is set to 3 dB, actual reduction might only be of around 1 dB.

The SR LEDs display sibilance reduction between -1 dB and -14 dB, first in 1 dB increments and from 6 dB on in 2 dB increments.

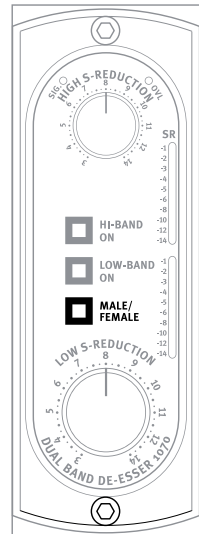
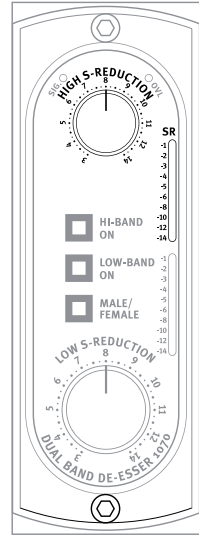
Please note that the MALE/FEMALE button has no effect on the high-band de-esser.

In practice, for most applications, the best results are usually achieved when HIGH S-REDUCTION is set between 3 and 7.

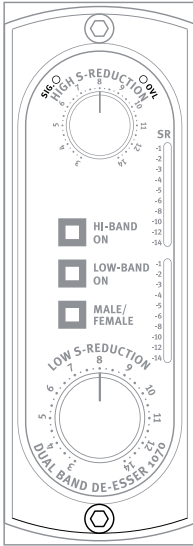
MALE/FEMALE

The MALE/FEMALE button allows you to adjust the low-band de-esser to the type of voice being processed. When engaged, the mode selected for the low-band de-esser is FEMALE, otherwise the de-esser works in MALE mode. The mode selected affects the center frequency for sibilance recognition: in FEMALE mode it is set at 7.6 kHz, while in MALE mode it is set at 6.4 kHz.

These values have been determined by practical experience, so that the processor adapts better to gender. Nevertheless, you cannot take for granted that these settings will suit every single male and female voice. Consider the MALE/FEMALE function as an additional tool to help you set the low-band de-esser more precisely according to your needs. Always trust your ears to find the best settings.



Control Elements



Signal-LED (SIG.)

The SIG. LED indicates that an audio signal reaches the input with a level above -20dB. This LED helps the operator especially in complex setups to determine immediately whether the Dual-Band De-Esser actually receives any signal.

Overload-LED (OVL)

The OVL LED indicates a potential internal overload. It begins indicating approximately 3 dB ahead of any expected overload to leave headroom for peak levels.



Overloads must be avoided to exclude audible distortions.

The gaining is still perfect in most cases when the OVL LED is illuminating shortly since there's still a headroom of 3 dB for peak levels.

Permanent illumination of the OVL LED indicates overloads with possible audible distortions. Reduce the output gain level of source units if the OVL LED illuminates permanently until the OVL LED goes out or flashes shortly.

Option: I/O Transformers

Transformers have a pleasant sound characteristic, especially the low end sounds rounder and more full-bodied. The top end benefits from a softer and silky atmosphere without being emphasized.

Further advantages are aspects of improved operational safety: galvanic insulation excludes the transmission of damaging currents. Electromagnetic, high frequency or digital interferences have no influence on the signal quality, hum potentials are cancelled out.

From our listening experience we can recommend Lundahl I/O transformers in any case, and their improved operational safety is an advantage that can not be overestimated in any critical or complex studio, broadcast or sound reinforcement installation.

Audio

Frequency range:	10 Hz-80 kHz
Common mode rejection: <i>(@ 1 kHz, 0 dBu input level, unity gain)</i>	>60 dBu
Signal to noise ratio: <i>(A-weighted)</i>	-106 dBu
Dynamic range:	128 dB
Total harmonic distortion & noise <i>(@ 1 kHz, 0 dBu input level, unity gain)</i>	0,01%

Input

XLR socket, electronically balanced, optionally transformer-balanced

Impedance	ca. 20 kOhm
Maximum input level	+22 dBu
Nominal input level	+4 dBu

Outputs

<i>Output 1</i>	XLR socket, electr. balanced, optionally transformer balanced
Output impedance:	75 Ohm / >600 Ohm w. transf.
max. Ausgangspegel	+22 dBu
<i>Output 2</i>	XLR socket, electr. balanced
Impedance	ca. 75 Ohm
Maximum output level	+22 dBu

Control Elements

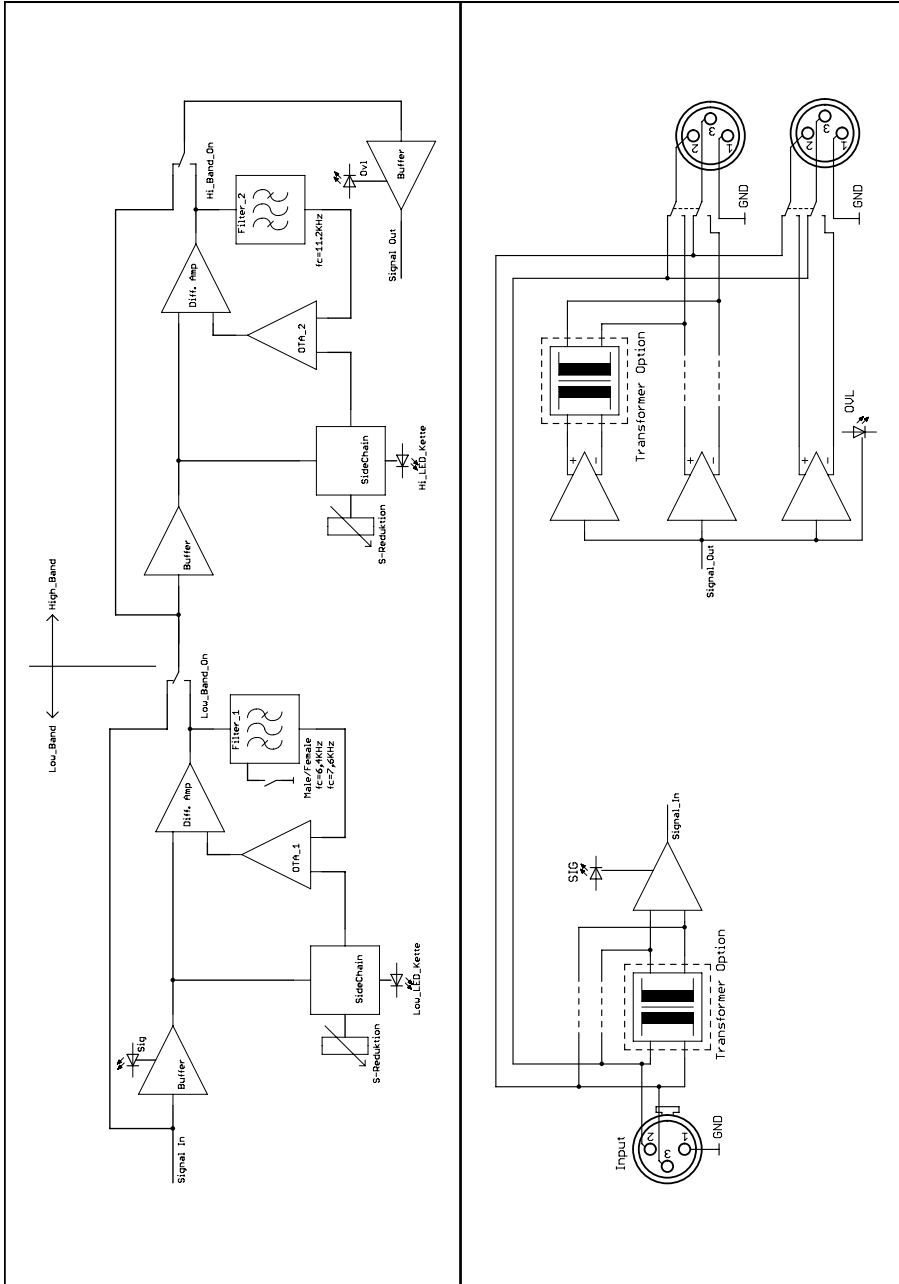
Signal-LED	-20 dBu
Overload-LED	+19 dBu (peak hold 1,5 seconds)

Measurements & Weight

Height x Width x Depth	132 x 46,9 x 315 mm
Weight	0,5 kg 0,7 kg w. I/O transformers

0 dBu = 0,775 V. Specifications subject to change without notice.

Block Diagrams



Copy Master Recall Settings

Artist:

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Album:

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Title:

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Engineer:

.....

Track(s)/Group:

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Date:

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