VERMONA

FILTER lancet

Owner‘s Manual

Introduction

The filter is the most essential part of every synthesizer. It allows easy sound manipulation with drastic results. However, why should only synthesizers have all the fun? Drum-computers, groove-machines, guitars and other instruments are equally suited for filtering. This is why external filter boxes like the FILTER Lancet exist! They allow sound manipulation for different kinds of audio signals. In addition, such manipulation should be intuitive. A good filter box therefore demands lots of knobs, switches and connections. FILTER Lancet was created to be a highly flexible and easy to use filter box with multiple possibilities to be controlled. As you can expect from VERMONA, this unit uses finest analogue technology.

Enjoy filtering!

The VERMONA team

Erlbach, Germany

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions. Alway include these instructions when passing the product on to third parties.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Only clean the product when it is not connected to the mains power supply. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel.Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, when the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.
16. WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
17. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
18. The mains plug of the power supply cord shall remain readily accessible.

Installation

- Ensure that the room in which you use this product is wired in accordance with the local electrical code and checked by a qualified inspector.
- Only use this product indoors.
- Do not install the product in hot, humid, or excessively dusty locations, in direct sunlight or in locations where it is exposed to externally generated vibrations.
- Do not place burning objects (e.g. candles) on top of or near the product.
- If condensation has formed on the product, e.g. because it was moved from a cold environment to a warm one, allow the product to acclimatize to room temperature before using it.
- Do not overload wall outlets and extension cables as this may result in fire and electric shock.

Table of Contents

Getting Started

To ensure top quality we carefully checked FILTER Lancet before packaging. Nevertheless, the unit could have been damaged during transportation. Therefore, we ask you to take a serious look at the unit when unpacking it. Do not hesitate to contact us, should there be anything unusual on MONO Lancet itself or its packaging.

You should find the following items in the box:

- one Filter Lancet unit
- one AC adapter (12V / at least 830mA)
- this manual

Connections and Powering

If you came here without any problems, you can finally start up your FILTER Lancet:

1. Connect the provided power supply unit to the 12VAC jack on FILTER Lancet

ATTENTION:

Only use the included power supply! You may already own a suitable-looking power supply that offers the same connector. However, FILTER Lancet requires an AC adapter, not DC! Using an unsuitable power supply may cause damage to the unit.

2. Connect the INPUT jack of FILTER Lancet to an appropriate audio source such as a drum-computer, a groove-box, a synthesizer, a guitar or CD-player.
3. Connect the OUTPUT jack of FILTER Lancet to an appropriate audio input of a mixing console, an audio-interface or an amplifier.
4. Start FILTER Lancet by switching on OVERKILL on the unit's rear. The corresponding green LED will be lit.
5. Congratulations, FILTER Lancet has been started.

ATTENTION:

Because FILTER Lancet is a filter built of analogue components, it will take 5 to 10 minutes for the parts to reach their appropriate temperature and ensure best tuning stability!

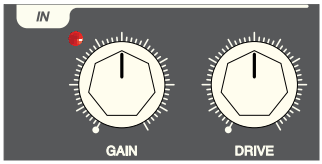
Components and Controls

Filter Lancet is a filter box. Beside its central sound shaping element, a multimode filter, it offers further functions such as overdrive, VCA, LFO and an envelope-generator. This section will take a closer look to the different sections of FILTER Lancet and their correspondent control elements.

Input Section (IN)

This section controls input sensitivity and a possible analogue overdrive of the circuit. The amount of possible distortion in FILTER Lancet ranges from light saturation to hefty distortion.

The available control elements are:



Picture 1: Input Section

GAIN

Use this control to set the input sensitivity. A corresponding LED will indicate overloads. Set the control in a way that the LED only lights up shortly during signal peaks. FILTER Lancet has a large GAIN range that allows line- as well as instrument-level-signals to be connected and adequately pre-amplified. Do not worry if the clip-LED already lights up in the gain control's first quarter when using line-level-signals. Using higher GAIN settings will allow you to distort the input, which will result in a noticeable increase of volume.

FILTER Lancet's input was designed to handle high-impedance signals of instrument pickups, too. There is no need to use a DI-box here. Instead, you may connect your guitar, bass or clavinet directly.

ATTENTION:

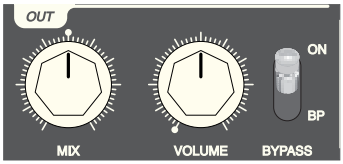
Using too little preamplification will decrease the signal to noise ratio. In addition, trigger sensitivity (see "Envelope-Generator (EG)", page 14) as well as the envelope-follower directly depend on the input level setting. Checking for best possible levels is essential for best results of your FILTER Lancet.

DRIVE

This control adjusts the amount of distortion applied to the input signal. Note that DRIVE will take effect on the processed as well as on the dry signal. With MIX turned fully counterclockwise, the signal can still be distorted if needed. The distortion can be disabled by switching BYPASS on. In contrary to distortion achieved with the GAIN control, DRIVE will not significantly raise the level when increasing the amount of drive.

Output Section (OUT)

The output section offers the following control elements:



Picture 2: Output Section

MIX

This control adjusts the ratio between direct and processed signal. With MIX turned fully counterclockwise, the input signal passes through the input section with possible distortion and straight to the output. With MIX turned fully clockwise, only the signal processed with VCF and VCA will be audible.

VOLUME

This control sets the output level of FILTER Lancet.

BYPASS

Setting this switch to BP to disable all sections of FILTER Lancet. The input signal is passed directly to the output after the GAIN stage. With the switch set to ON, all sections are active.

Filter (VCF)

FILTER Lancet's central sound shaping takes place in its multimode filter section. It can be configured as low pass, high pass and band pass. Each type will suppress certain frequencies that will result in specific sound coloring. Let us start with a short explanation of the available filter types:

Low pass

The low pass will only let the low frequencies of the input signal pass. CUTOFF sets the frequency where the attenuation starts. The lower CUTOFF is set, the more high frequencies will be suppressed, resulting in a sound more muffled.

A slowly opening low pass filter is a characteristic element of countless House- and Dance-tracks. Its rising effect will accentuate intros, breaks and build-ups.

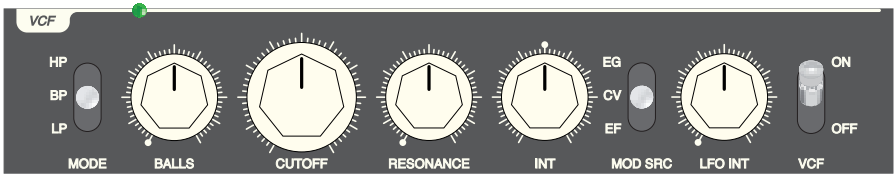
High pass

The high pass filter is the exact opposite of the low pass filter. It will only let high frequencies of the input signal pass. CUTOFF sets the frequency where the attenuation starts. The higher CUTOFF is set, the more low frequencies will be suppressed and the sound will lose bass. The high pass filter is well suited for mash-up-mixing. It allows removing/attenuating bass drums and basslines from a track that is to be mixed with a second track. Ideally, the second track is run through a separate low pass filter at the same time.

Band pass

The band pass filter is a combination of a low pass- and high pass filter. It will only let a certain frequency band of the input signal pass. CUTOFF sets the center frequency for that frequency band. By moving CUTOFF, you set the pass band for the mid frequencies. The band pass offers a slope less steep than that of the other filter types. Its efficiency is a little less distinctive.

The filter section offers the following control elements:



Picture 3: Filter (VCF)

MODE

MODE selects the filter type.

LP = Low pass	Low pass filter with a slope of 24dB per octave
BP = Band pass	Band pass filter with a slope of 12dB per octave
HP = High pass	High pass filter with a slope of 24dB per octave

BALLS

BALLS will emphasize low and higher frequencies in a predefined ratio. The resulting signal will cut through the mix better with increased punch and bass amount. The high frequency enhancement will be best accentuated with higher RESONANCE settings.

ATTENTION:

The amplification using BALLS will not necessarily be perceived as increased level. However, the lower frequencies are emphasized. This can lead to clipping of sensitive inputs in audio-interfaces. Make sure, you match FILTER Lancet's output level or the input sensitivity (Gain) or your audio-interface to avoid distortion.

CUTOFF

This control manually sets the filter's cutoff-frequency. This is the frequency from which the audio signal is manipulated (filtered) with the filter's slope. In low pass mode (MODE LP) the filter is fully opened with CUTOFF turned fully clockwise, closed when turned fully counterclockwise. In high pass mode (MODE HP), the principle of operation works oppositely. When using the filter in bandpass mode (MODE BP), there is no fully opened filter. Here, specific frequencies are always suppressed.

CUTOFF has a larger control knob intentionally. This is the most important function of FILTER Lancet and turning this knob should be fun!

RESONANCE

Resonance is a feedback circuit within the filter that emphasizes the CUTOFF frequency. Lower values will slightly color the sound, higher values more significantly. With higher values, the filter will also start to self-oscillate, generating a sine wave at the CUTOFF frequency.

NOTE:

Resonance in FILTER Lancet will easily reach self-oscillation and produce a constant sine-wave-like tone. It is recommended, not to set the VCA to ON but preferably use it through the envelope-generator (EG) or the envelope-follower (EF).

Self-oscillation of the filter will reach a high volume within the last third of the control. Typically, you would avoid these levels by not turning up the control that far. The prominent resonance frequency will also be audible at lower settings. However, the maximum level-settings are useful when mixing the original with a little portion of the filtered signal through the MIX control. Here, the distinctive self-oscillation will also be heard at tiny mix amounts.

INT

The INT control sets the intensity of the CUTOFF frequency being controlled by a modulation source. The MOD SRC switch (Modulation Source) selects this source. The INT control works bipolar. Turning clockwise from the center position results in upward CUTOFF modula-

tion while turning left from center results in downward modulation. In its center position, CUTOFF modulation is deactivated.

MOD SRC

The MOD SRC switch selects the modulation source for the CUTOFF frequency. There are three possible sources:

EG	Envelope Generator – see "Envelope-Generator (EG)", page 14
CV	external signal connected to the Pedal/CV-input
EF	Envelope Follower, a control signal deriving from the level at the audio input

NOTE:

Combing an envelope-follower with rhythmic audio-signals such as drum loops is quite useful. Another useful application is using a guitar with the FILTER Lancet set to band pass filtering with audible resonance. An envelope-follower will create a sound that resembles of the typical Autowah-effect.

LFO INT

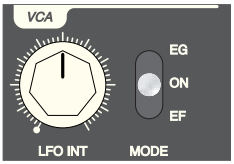
This control sets the LFO's modulation intensity towards the CUTOFF-frequency. The filter's frequency will be modulated periodically according to the selected LFO's waveform and its speed.

VCF

This switch will enable or disable the complete filter section, leaving the setting of the in- and output section, the VCA and the modulations untouched.

Amplifier (VCA)

A voltage-controlled-amplifier (VCA) controls FILTER Lancet's output. It offers the following control elements:



Picture 4: Amplifier (VCA)

LFO INT

This control sets the LFO's modulation intensity towards the output volume. The result is a tremolo-effect.

MODE

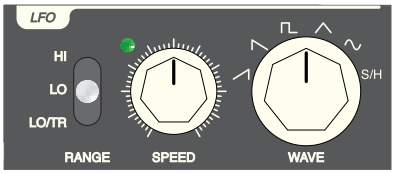
This switch sets the modulation source for the VCA, respectively sets the VCA to be opened permanently. There are three positions:

EG	Envelope Generator - see "Envelope-Generator (EG)", page 14
ON	the VCA is permanently on
EF	Envelope Follower, a control signal deriving from the level at the input

Modulation

Modulation-Generator (LFO)

The LFO (Low Frequency Oscillator) is an oscillator specialized on slow frequencies that are used to create cyclic repeating modulations. Its frequency is variable, ranging from 0.05Hz to 300Hz, being divided in two switchable ranges. The LFO allows modulating the VCF and/or VCA, each with individually adjustable intensity. The available control elements are:



Picture 5: Modulation-Generator (LFO)

RANGE

The range switch selects the LFO's frequency range:

LO/TR	low frequencies (0.05Hz–25Hz) with retrigger. Incoming trigger-signals will restart the waveform (depending on the TRIG SRC setting in the EG section). Using suited trigger settings allow synchronizing the LFO to an external tempo. It may also act as a simple envelope using rhythmical trigger signals with a suited waveform selected.
LO	lower frequency range (0.05Hz–25 Hz), free oscillating LFO.
HI	higher frequency range (1Hz–300Hz), free oscillating LFO.

SPEED

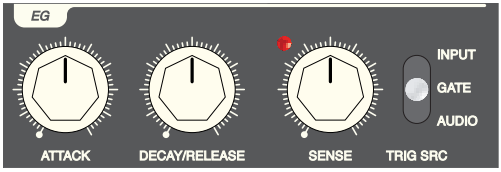
This control sets the LFO speed (frequency). The available range depends on the RANGE-setting.

WAVE

This switch selects the LFO waveform. Choices are ascending saw tooth, descending saw tooth, rectangle, triangle, sine, Sample & Hold (random).

Envelope-Generator (EG)

FILTER Lancet's envelope generator (EG) generates a variety of envelope shapes depending on the trigger source used. It will work as an Attack/ Decay envelope when using triggers from the audio input or the AUDIO TRIG-input. It will work in three phases (Attack, Sustain, Release) when using the GATE-input. The sustain period cannot be adjust in FILTER Lancet. It is dependent on the duration of the incoming gate signal. The release phase will follow once the gate signal has been ended. The following parameters are available for contour shaping:



Picture 6: Envelope-Generator (EG)

ATTACK

adjusts the rising time from 0ms to 10s (maximum level).

DECAY/RELEASE

adjusts the decay time for the sound between 0ms to 15s.

SENSE

SENSE controls the sensitivity for the trigger source. SENSE will be inactive with GATE being selected as trigger source.

TRIG SRC

TRIG SRC sets the trigger source:

INPUT	the audio input
GATE	a 5 volts gate voltage applied at the GATE input.
AUDIO	audio signal fed into the AUDIO TRIG input.

Envelope Follower (EF)

The envelope-follower converts the amplitude characteristic of the audio input signal into a control voltage. Most audio signals do not show clear levels and -jumps as pure control voltages. This results in the envelope-follower being less effective compared to a regular envelope. In most cases, it is therefore necessary to increase the VCF modulation intensity to achieve a comparable effect depth.

PEDAL/CV-Input

This input allows connecting a suited pedal or an analogue control voltage to control the CUTOFF frequency. MOD SRC has to be switched to CV when using this input.

PEDAL

The PEDAL input allows connecting Expression Pedals with a TS-connector. In addition, volume pedals with in- and output can be connected using Y-cables. Use an expression pedal with a resistance of 100 kΩ to ensure smooth control scaling.

Picture 7: Connecting volume pedals

CV

Analogue control voltages ranging from 0-5 volts can be connected to the PEDAL/CV input. This allows FILTER Lancet to be controlled from external CV-sources such as step-sequencers, key-CV of analogue synthesizers, LFOs with special functions as well as Theremin antennas.

Further Control Elements

OVERKILL

Connects FILTER Lancet to the AC-power-supply-unit. A green LED shows an active powered unit.

ATTENTION:

The OVERKILL switch is no power switch. It simply removes the connection to the power supply. Please do always disconnect the PSU from the socket when not using the unit for a longer period!

Connectors

Find a short description of the connectors on FILTER Lancet's rear panel:

12 VAC

Connect the supplied AC power supply here.

INPUT

Input jack for the audio signal.

GATE

Input to trigger the envelope-follower. This input needs a voltage of 5 volts.

AUDIO TRIG

This audio input can trigger the envelope-generator.

PEDAL/CV

Allows connecting a CV-source or a pedal to control the CUTOFF-frequency.

OUTPUT

Carries the output signal of FILTER Lancet to be connected to a mixing console, an audio-interface or an amplifier.

Technical Specifications

Input	
max. Input Level	-32dBu
Impedance	1MΩ
Output	
max. Output Level	20dBu
Impedance	600Ω
Audio Trigger	
max. Input Level	-32dBu
Impedance	1MΩ
GATE	
min. trigger voltage	+4V
CV Input	
voltage	+/-5V
Signal-to-Noise Ratio	
Direct	>80dB
Effect (filter open)	>75dB
Filter	
Modes	24dB Lowpass, 24dB Highpass, 12dB Bandpass
Modulation Sources	envelope generator, envelope follower, CV
Controller	Balls, Cutoff, Resonance, INT (Modulation Intensity), LFO Intensity
Switches	Mode, Modulation Source, VCF On/ Off
VCA	
Controller	LFO Intensity
Switches	Modulation Source: envelope generator, envelope follower
LFO	
Frequency Range	0,05..300Hz
Waveforms	saw up, saw down, square, triangle, sine, sample&hold
Controller	Speed

Switch	Range: Lo/Trigger, Lo, Hi
Envelope-Generator	
Attack	1ms..10s
Decay/Release	1ms..15s
Controller	Attack, Decay/Release, Trigger Sense
Switch	Trigger Source: Input, GATE, Audiotrigger
Input-/Output section	
Controller	Gain, Drive, Mix, Volume
Switch	Bypass
Product Properties	
Jacks	Input, GATE, Audio Trig, Pedal/CV, Output, 12VAC
Weight	0,75kg

Declaration of Conformity

We declare under our sole responsibility that this product is in conformity with the following standards or standardization documents in attention of operation conditions and installation arrangements acc. to operating manual:

EN61000-3-2, EN 61000-3-3, EN 55013, EN 55020, EN 60065 according to the provisions of the regulations 2004/108/EG and 2006/95/EG.

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