



ELEKTROAKUSTISCHE MANUFAKTUR

Mono Lancet '15

Bedienungsanleitung
User Guide

Introduction

Music is a performing art with living sounds which your hands control - at least, it should be like that. We develop synthesizers allowing you to create such lively sounds, which can be comfortably controlled for performances by touching them. This might be the reason why you decided or at least intent to purchase Mono Lancet '15.

Developing and manufacturing of this instrument was a joy. However, we will even be happier if you will enjoy the use of Mono Lancet '15 during music production and performances. This is what the synthesizer was designed for.

Mono Lancet '15 offers simple and intuitive operation. You will immediately take full control over its potential, even if you are not a synthesizer specialist yet. Nevertheless, we kindly ask you to read this manual to get to know all features of the unit. In addition, we have also compiled some useful basic information and hints to make life easier using this instrument.

Enjoy your Mono Lancet '15!

The VERMONA crew from the
Elektroakustische Manufaktur Erlbach

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Important Safety Information

The following safety precautions must be observed during all phases of operation, service and repair of Mono Lancet '15! Failure to comply with these precautions or with specific warnings in this manual violates safety standards of design, manufacture and intended use of this equipment.

We assume no liability for the customer's failure to comply with these requirements!

Cleaning

Please clean Mono Lancet '15 with a dry duster only. Do not use sharp cleaning fluids or water!

Dampness

Mono Lancet '15 should not be used in damp or wet places. Make sure the unit is not used in humid atmospheres (walls, floors, ceilings etc.) because this could cause condensation within the unit.

WARNING! Risk of electrical shock!

Use near Explosive Goods

Mono Lancet '15 should not be used near easy flammable or explosive goods.

Cooling System

Mono Lancet '15 should not be used near heating systems, warm or hot fans etc. When using the unit in a rack, wall system or fixed installation, make sure the unit has enough space to let the generated heat dissolve.

Accessories

Do only use cables, plugs and adapters, which do not affect the normal use of the unit.

Spare Parts or Modifications

Modification instructions and schematic information should only be used from service departments of our officially authorised dealers. To prevent the risk of electrical shock, do not open the unit yourself. Due to the risk of injury, we prohibit the installation of additional components or any modification to the existing circuits!

ALWAYS DISCONNECT THE DC ADAPTER BEFORE OPENING THE UNIT!

WE WILL NOT BE LIABLE FOR ANY CLAIMS IN THESE CASES!

Getting Started



Figure 1: Mono Lancet '15' Control Panel

To ensure top quality we carefully checked Mono Lancet '15 before packaging. Nevertheless, the unit could have been damaged during transportation. Therefore, we ask you to take a serious look at the instrument when unpacking it. Do not hesitate to contact us, should there be anything unusual on Mono Lancet '15 itself or its packaging.

You should find the following items in the box:

- one Mono Lancet '15
- one DC adapter (12 V / 1000 mA)
- this manual

Connections and Powering

If you came here without any problems, you can finally start up your Mono Lancet '15:

1. Connect the provided power supply unit to the **DC 12 V** jack ②⑥ on Mono Lancet '15.



Only use a power supply with 12 volts DC and 1000 mA. You do not have to take care about polarity.

2. Connect the **OUTPUT** jack ②① of Mono Lancet '15 to an appropriate audio input of your amplifier, mixing console, audio interface etc.
3. Mono Lancet '15 has to be triggered and played by MIDI, so you will need to connect an appropriate MIDI source like a master keyboard, MIDI interface, hardware sequencer, etc. Connect the MIDI output of your MIDI source to **MIDI IN** ②⑩ of Mono Lancet '15.
4. Start Mono Lancet '15 by switching on the **POWER** switch ②⑦. The corresponding green LED on the synthesizers' surface will be lit.

Congratulations, Mono Lancet '15 has been started.



Because of Mono Lancet '15 is a synthesizer built of analogue components, it will take 5 to 10 minutes until these parts reach their appropriate temperature and ensure best tuning stability!

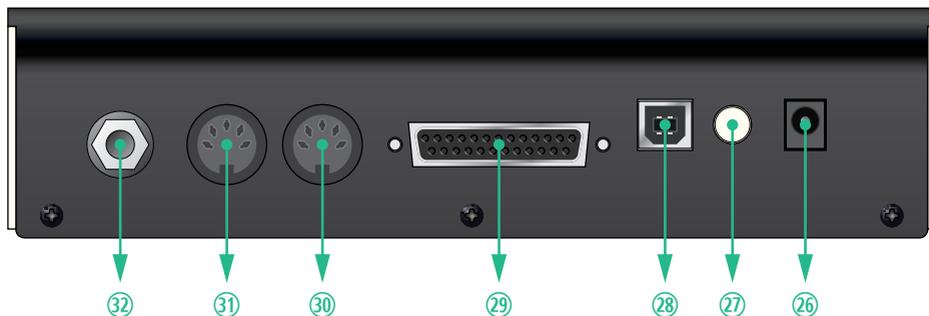


Figure 2: Rear Connections of Mono Lancet '15

Components and Controls

Mono Lancet '15 is based on a classical VCO-VCF-VCA structure. In the following we will take a closer look at the sections and their control elements.

Oscillators VCO1 and VCO2

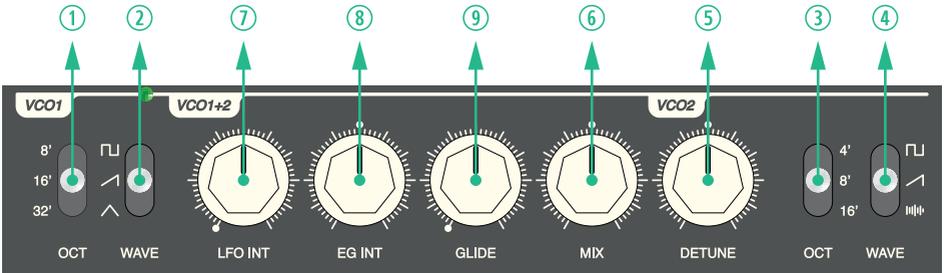


Figure 3: VCO section of Mono Lancet '15

Oscillators form the base of every synthesized sound. They offer different waveform shapes to create various audio spectrums. Mono Lancet '15 offers two voltage controlled oscillators (VCOs). Both offer full but slightly different feature sets. VCO1 generates sawtooth-, square- and triangle-waveforms with octave positions 32', 16' and 8', while VCO2 generates sawtooth- and square-waves in octave positions 16', 8' and 4' as well as white noise.

The following controls are available:

- ① **OCT** sets the base octave of VCO1 to **32'**, **16'** or **8'**. VCO1 can run one octave below VCO2.
- ② **WAVE** selects the waveform shape for VCO1: square (Π), sawtooth (∟) or triangle (∧).
- ③ **OCT** sets the base octave of VCO2 to **16'**, **8'** or **4'**. VCO2 can run one octave higher than VCO1.
- ④ **WAVE** selects the waveform shape for VCO2: square (Π) or sawtooth (∟). Instead of VCO2 a noise generator can be activated when selecting noise (noise icon).



The pulse width of the square waveform of both oscillators can be adjusted using the modulation wheel (MIDI CC#1), which enlarges Mono Lancet '15's sound options (see "[MIDI Control Change Messages](#)" on page 16).

- ⑤ **DETUNE** Use this control to detune VCO2 against VCO1 within a range of at least ± 7 semitones. In its center position both oscillators run with same frequency.
- ⑥ **MIX** This control sets the level-ratio between VCO1 and VCO2. In its center position, both oscillators have the same volume. Turning this knob left from center decreases the level of VCO2 (fully left turns VCO2 off); turning it right from center decreases the level of VCO1. Turning this control fully right will turn off VCO1, allowing you to use only VCO2, e.g. to be used as noise source without tonal parts.
- ⑦ **LFO INT** sets the modulation intensity for the LFO targeting the pitch of both oscillators.
- ⑧ **EG INT** This control sets the modulation amount of the envelope generator towards the oscillators' pitches in positive or negative direction. In its center position, modulation is turned off, therefore it is equipped with center catch.
- ⑨ **GLIDE** sets the time of the glide-effect between two adjacently played notes. The control specifies the time-period needed to travel from the first note's pitch to reach the pitch of the second note. This function is well suited for playing leads. Setting this control fully left will disable the glide-effect.



Mono Lancet '15's glide-effect is switchable between constantly active glide and auto-glide. Use MIDI-CC #89 to activate/deactivate auto-glide mode. With auto-glide activated, the glide-effect is audible only when a second note is played while the first note is still being pressed (see "[MIDI Control Change Messages](#)" on page 16).

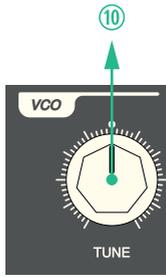


Figure 4: Tune Control for VCO1 and VCO2

⑩ **TUNE**

sets the overall tuning of Mono Lancet '15 within a range of ± 1 semitones.

Voltage Controlled Filter (VCF)

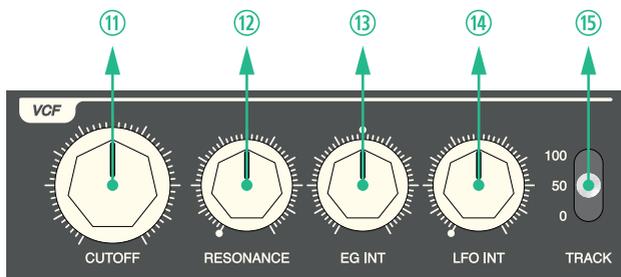


Figure 5: Filter Section of Mono Lancet '15

Mono Lancet '15's filter shapes the oscillators' signals. Certain frequencies will be suppressed, resulting in significant sound changes. Dynamic control of the filter will create progressive sound changes over time. Mono Lancet '15 offers a voltage-controlled resonant low-pass filter with a slope of 24 dB per octave.

This type of filter allows frequencies of an audio signal to pass below a certain frequency (cutoff frequency) and suppresses all frequencies above.

The filter section has the following control elements:

⑪ **CUTOFF** sets the filter's cutoff-frequency. This is the frequency from which the audio signal is manipulated (filtered). Frequencies above the cutoff will be attenuated with the filter's slope. Setting the cutoff lower will result in a muffled sound as harmonics are reduced.



The cutoff frequency can be modulated by MIDI velocity and/or aftertouch. Both functions can be individually switched on/off using MIDI control change messages (see "MIDI Control Change Messages" on page 16).

⑫ **RESONANCE** Resonance is a feedback circuit within the filter that emphasizes the cutoff frequency. Higher values can colour the sound significantly, which is regularly used as resonant bass sounds in House and Techno. With values higher than 3 o'clock, the filter will start to self-oscillate, generating a sine wave with the cutoff frequency. This sound can even be played chromatically over a range of approx. two and a half octaves, when enabling the **TRACK** switch ⑮. It makes sense to disable any envelope modulation when playing the self-oscillating filter.

- ⑬ **EG INT** This control sets the intensity of positive or negative modulation carried out by the ADSR envelope generator. There is no modulation of the cutoff frequency in its center position.
- ⑭ **LFO INT** specifies the intensity of cutoff modulation by the LFO.
- ⑮ **TRACK** sets the filter tracking by the keyboard between **0**, **50** and **100** percent. With active filter tracking, the cutoff frequency is increased with higher notes. This makes it possible to play deeply filtered sounds without the sound getting to gentle or thin at higher octaves. Setting tracking to **100** (percent) will allow playing a self-oscillating filter chromatically within a certain range.

Voltage Controlled Amplifier (VCA)

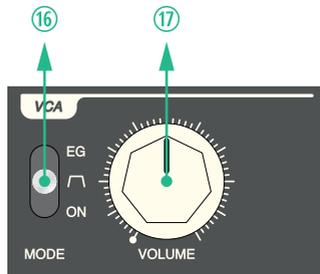


Figure 6: VCA Section of Mono Lancet '15

A voltage-controlled amplifier (VCA) controls Mono Lancet '15's output. This allows manual control over the output volume as well as dynamic volume progression. Available modulation sources are the envelope generator and a fixed gate-envelope. The latter offering minimal attack- and release-phases to avoid unwanted clicks during sound reproduction.

- ⑯ **MODE** This switch sets the modulation source for the VCA, respectively sets the VCA to be opened permanently. There are three positions:

EG	the ADSR envelope-generator modulates the VCA.
GATE (⌌)	a fixed organ-like envelope modulates the VCA.
ON	the VCA is permanently on, no modulation.

- ⑰ **VOLUME** sets the overall output volume of Mono Lancet '15.

Modulation Generator (LFO)

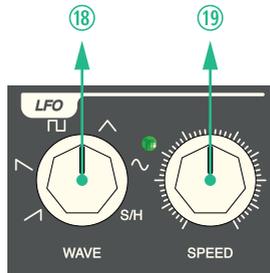


Figure 7: Mono Lancet '15's LFO

The LFO allows creating cyclic repeating modulations of Mono Lancet '15's oscillators and filter. Its frequency is variable, ranging from 0,04 Hz (25 seconds) to 90 Hz.

- ⑱ **WAVE** This control selects the LFO waveform: saw up (↗), saw down (↘), square (□), triangle (△), sine (∩), as well as sample & hold (S/H).
- ⑲ **SPEED** sets the LFO's speed (frequency).

Envelope Generator (EG)

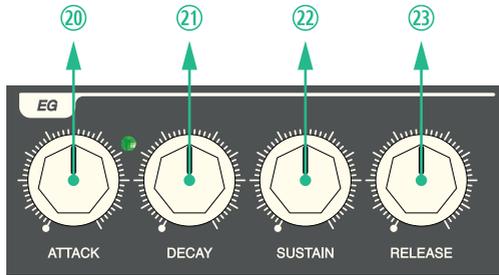


Figure 8: ADSR-Envelope Generator of Mono Lancet '15

Mono Lancet '15's envelope generator (EG) generates a control voltage that can modulate the VCO and VCF as well as the VCA. The envelope generator is restarted with each incoming MIDI-note (when Legato Mode is switched off - see "MIDI Control Change Messages" on page 16). The following parameters are available for contour shaping:

- ⑳ **ATTACK** adjusts the rising time from zero to maximum level. The attack-phase starts when a MIDI note-on command is received (or when using the **TRIG** button ㉔).
- ㉑ **DECAY** adjusts the time from maximum level to a specific sustain level, while the MIDI note is still active.
- ㉒ **SUSTAIN** sets the envelope's sustain level, while the MIDI note is still active. With **SUSTAIN** set to maximum, **DECAY** ㉑ has no audible influence on the sound.
- ㉓ **RELEASE** sets the time from sustain level to zero level after a MIDI note-off message is received.

Further Control Elements

- ⑳ **TRIG** The **TRIG** button starts single notes or sequences internally to check out Mono Lancet '15 without an externally connected keyboard or sequencer - useful when checking out sounds. Single notes will be held as long as the **TRIG** button is being pressed. Sequences will be started and continuously played with pressing the button. Hitting **TRIG** again will stop the sequence.

- ㉑ **SEQ** This button steps through the different sequences respectively single notes: Lower note, higher note and four different short sequences. Hitting the **SEQ** button will stop the playback of a sequence.

- ㉒ **POWER** connects Mono Lancet '15 to the DC power supply unit. A green LED shows an active powered unit.

Connectors

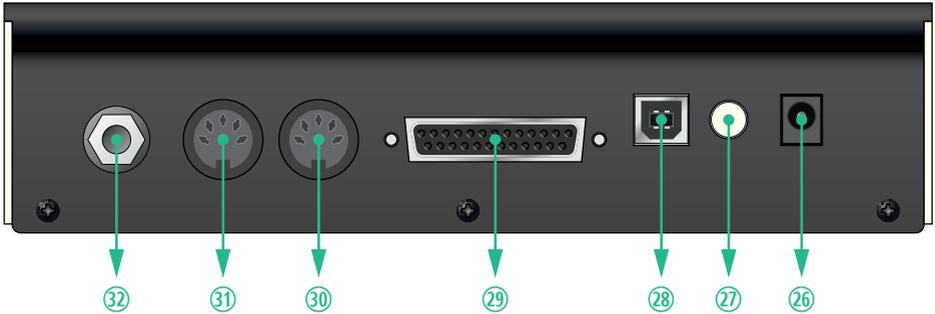


Figure 9: Rear Panel of Mono Lancet '15

Find a short description of the connectors on Mono Lancet '15's rear panel:

- ②⑥ **DC 12 V** connect the supplied DC power adapter here.
- ②⑧ **USB** Mono Lancet '15's firmware can be updated if necessary, using this USB connector.
- ②⑨ **MODULAR DOCK**
This 25-pin Sub-D-jack offers different in- and outputs for use with the optional Modular Dock eurorack module (see „Modular Dock (optional expansion)“ on page 19).
- ③⑩ **MIDI IN** connects the MIDI-output of a master keyboard, a MIDI-interface or a hardware sequencer here.
- ③① **MIDI THRU** This output forwards the MIDI-data from Mono Lancet '15's MIDI input ③⑩ and allows connecting more MIDI devices in a row.
- ③② **OUTPUT** carries the audio output signal of Mono Lancet '15.

MIDI Functions of Mono Lancet '15

You can play Mono Lancet '15 by any MIDI device that sends note-on/note-off messages. It also responds to MIDI controllers like modulation wheel, pitch bender, velocity and aftertouch. Along with the reception of MIDI-note-on/off, modulation wheel- and pitch bend data, additional functions in Mono Lancet '15 can be switched on/off or controlled using MIDI commands (CCs). The red LED above the **TRIG** button ⑳ will indicate incoming MIDI-notes.

Setting up the MIDI channel

By default, Mono Lancet '15 receives data on MIDI channel 1. This can easily be changed, carrying out the following steps:

1. Make sure Mono Lancet '15 is switched off.
2. Press and hold the **TRIG** button ⑳ while powering Mono Lancet '15 using the **POWER** switch ㉗. The red LED above the **TRIG** button ⑳ starts blinking.
3. Send a MIDI note to Mono Lancet '15, e.g. by hitting a key on your master keyboard connected to the synthesizer. Mono Lancet '15 stores the corresponding MIDI channel and automatically jumps into normal play mode.

Factory Reset

You can reset the MIDI channel and all other MIDI controller settings to factory default by carrying out the following steps:

1. Make sure Mono Lancet '15 is switched off.
2. Press and hold the **TRIG** button ⑳ while powering Mono Lancet '15 using the **POWER** switch ㉗. The red LED above the **TRIG** button ⑳ starts blinking.
3. Switch off Mono Lancet '15. The next time you start the synthesizer, all MIDI-related controllers are reset and Mono Lancet '15 receives MIDI events on MIDI channel 1.

MIDI Control Change Messages

Mono Lancet '15 can receive different MIDI Control Change commands (CCs) to perform additional adjustments by switching specific functions on and off. For all MIDI control changes, a value of 0..63 means **OFF**; 64..127 means **ON**.

Function	CC#	Description	Factory Setting
Pitch Bender	84	You can change the pitch of both oscillators within a range of ± 5 semi-tones by using the Pitch Bender of your keyboard. You can switch on/off this function for both oscillators using this control change message.	ON
Modulation Wheel	85	The pulse-width of both oscillators' square wave can be adjusted using the modulation wheel. This is an effective way of sound shaping. You can switch on/off this function for both oscillators using this control change message	ON
Aftertouch	86	The filter's cutoff frequency responds to MIDI aftertouch messages send by your MIDI source. If you hold a keyboard note and press it further, the aftertouch signal will open the filter.	ON
Velocity	87	Mono Lancet '15 can respond to MIDI velocity, which is send by almost every master keyboard. If turned on, the VCA's output - the volume of your sound - is controlled by velocity allowing you to play the synthesizer dynamically. This works only with the VCA's MODE switch ⑩ set to EG .	OFF
Filter Velocity	88	In addition to the VCA, velocity data can modulate the filter's cutoff frequency. This function works only if the EG INT controller ⑪ is not in it's center position and CC 87 is ON .	OFF
Auto-Glide	89	As a factory default, the glide effect is always active (if the GLIDE control ⑨ is not set fully left). Turning GLIDE ⑨ clockwise will reveal this effect. With activated Auto-Glide the glide-effect is only present if two adjacent notes are played legato.	OFF
Legato	90	By factory default the envelope generator is triggered with every incoming note-on command, wether it is played staccato or legato. With activated Legato mode, the envelop will only be triggered when playing legato.	OFF

Technical Specifications

VCO1	
Waveforms	Rectangle, Sawtooth, Triangle
Octaves	8', 16', 32'
VCO2	
Waveforms	Rectangle, Sawtooth, Noisegenerator
Octaves	4', 8', 16'
Detune	± 7 seminotes
VCO1 & VCO2	
Controls	LFO INT, EG INT (bipolar), GLIDE, MIX, TUNE
VCF	
Type	Lowpass, 24 dB/octave
Controls	CUTOFF, RESONANCE, EG INT (bipolar), LFO INT
Switch	TRACK (OFF, 50, 100)
VCA	
MODE	EG, GATE, ON
LFO	
Waveforms	saw up, saw down, rectangle, triangle, sine, sample & hold
Frequency Range	0,04 Hz (= 25 seconds) to 90 Hz
Envelope Generator	
Controls	ATTACK, DECAY, SUSTAIN, RELEASE
MIDI Interface	
Connections	MIDI IN, MIDI THRU
Note On/Off	Oscillators' pitch and envelope generator
Pitch Bender	Pitch of VCO1 and VCO2
Modulation Wheel	Pulsewidth of VCO1 and VCO2
Velocity	VCA (EG), VCF Cutoff
Aftertouch	VCF Cutoff
MIDI-Control-Changes	see "MIDI Control Change Messages" on page 16

Miscellaneous	
Power Supply	external DC adapter with 12 volts / 1000 mA
Dimensions	about 21 cm x 14.5 cm x 5.5 cm
Weight	about 0,75 kg
optional Accessories	Mono Lancet Modular Dock Wooden side panels

Modular Dock (optional expansion)

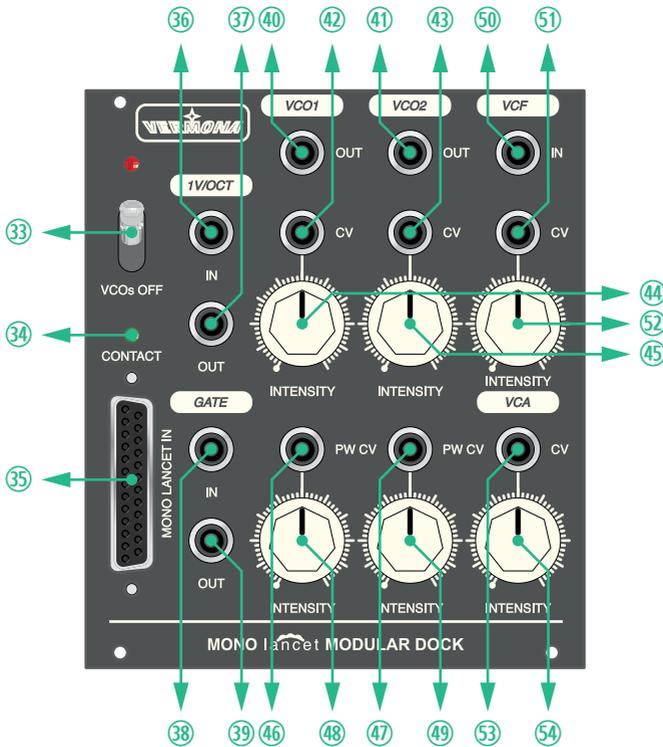


Figure 10: Mono Lancet Modular Dock

Modular Dock is an optional expansion that connects Mono Lancet '15 to an analogue modular system in eurorack format. Modular Dock expands the synthesizer with additional in- and outputs for audio-, CV- and gate-signals allowing extended control over different functions. In addition, Modular Dock serves as MIDI-to-CV/gate-interface.

Modular Dock is compatible to Doepfer's A-100-system in format and power requirements. The module is 3 RU (rack units) in height and 22 HP (horizontal pitch) in width. The module is powered by the modular systems bus board. Use the supplied 25-pin cable to connect Modular Dock to Mono Lancet '15.



If you want to use Modular Dock with another modular synthesizer than Doepfer's A-100 or the VERMONA Modular Case 104, make sure its system bus is fully compatible to Doepfer's specification!

Packaging and Setup

The delivered package includes:

- one Modular Dock module with bus connector cable
- one cable with 25-pin connectors
- four screws and washers for rack mounting

Connecting Mono Lancet '15 and Modular Dock

Follow these steps to setup your Modular Dock:

1. Switch off your modular system and pull the power supply for safety reasons!
2. Connect the supplied ribbon cable to the module's rear.



Modular Dock is equipped with a shroud connector. Thus, the 10-pin ribbon cable connector will only fit in one direction. The colour-coded side of the provided VERMONA ribbon cable points towards -12 volts. This might not be the case with other manufacturer's ribbon cables. So always use the cable that comes with Modular Dock!

3. Connect the ribbon cable's other side with the 16-pin ribbon connector to your frame's system bus. Make sure the colour coded side of the ribbon cable points towards **-12 volts!**
4. Mount Modular Dock to your modular frame using the supplied screws. Use the provided plastic washers to prevent scratches on the module's surface.
5. Reconnect your modular system and switch it on. To check whether the module is supplied with power, move the **VCO'S OFF** switch ③ to the upper position. The red LED should light up.
6. Finally connect Mono Lancet '15 to the module using the supplied 25-pin cable and its **MODULAR DOCK** jack ②. The connection is ready if the green **CONTACT LED** ④ is lit.

Modular Dock's Connections and Controls

Modular Dock offers different in- and outputs to the oscillators, the filter and the VCA of Mono Lancet '15. Find the connections and corresponding controls explained here:

1V/OCT in- and output

- ⑳ **IN** This jack allows connecting an external control voltage to control the oscillators' pitch, e.g. through an analogue step sequencer. To play Mono Lancet '15's oscillators in tune, the control voltage has to comply with the 1-volt-per-octave-standard.
- ㉑ **OUT** This jack carries the pitch information of Mono Lancet '15's MIDI input ㉒ as control voltage (1V/octave). Use it to play other oscillators of your modular system.

GATE in- and output

- ㉒ **IN** This jack allows connecting an external gate-signal to trigger the envelope generator, e.g. from a step sequencer. This input is compatible to gate-signals with positive slope and a voltage between 5 and 10 volts.
- ㉓ **OUT** This jack carries the note-on/off information of Mono Lancet '15's MIDI input ㉒ as gate voltage. Use it to trigger envelopes and other trigger-dependent modules of your modular system.

VCO1 and VCO2

- ㉔/㉕ **OUT** These outputs carry the unaltered audio output of VCO1 and VCO2. Use these jacks to connect these signals freely to other modules of your system or within Modular Dock.
- ㉖/㉗ **CV** allows the connection of an external control voltage to control the pitch of the oscillators individually. It works additionally to the **1V/OCT** input ㉑ and can be used for additional pitch modulation, e.g. by an LFO, an envelope generator or for FM effects.

- ④④/④⑤ **INTENSITY** sets the amount of the modulation using the **CV** inputs ④②/④③. In its fully right position it allows to play the oscillators in tune using an 1V/octave voltage.
- ④⑥/④⑦ **PW CV** These jacks allow connecting an external control voltage to modulate a single oscillator's pulse width when using the rectangle waveform. Suitable modulation sources are LFOs and envelopes.
- ④⑧/④⑨ **INTENSITY** sets the amount of the pulse-width-modulation (PWM) using the **PW CV** inputs ④⑥/④⑦. If no plug is connected to **PW CV** ④⑥/④⑦, you can control the pulse-width of the corresponding oscillator manually with **INTENSITY**.
- ③③ **VCOS OFF** This switch deactivates the internal connection of both oscillators. With the red LED lit, the VCOs are not routed into VCF and VCA, so they are not audible on Mono Lancet '15's **OUTPUT** jack ③② anymore. Their signals are still available on Modular Dock's VCO **OUT** jacks ④⑩/④⑪.

VCF

- ⑤① **IN** This input allows feeding an audio signal into Mono Lancet '15's filter section. The input signal is summed with both oscillator's outputs if **VCOS OFF** ③③ is not switched on.
- ⑤① **CV** Use this input to connect an external control voltage to modulate the filter's cut-off frequency. Among several suited sources are LFOs, envelope generators, step sequencers, or even Mono Lancet '15's oscillators.
- ⑤② **INTENSITY** sets the amount of the modulation using the **CV** input ⑤①.

VCA

- ⑤③ **CV** Use this input to connect an external control voltage to modulate the VCA.
- ⑤④ **INTENSITY** sets the amount of the CV modulation.



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