behringer EXPANDER Analog Semi Modular Synthesizer User Guide

**EXPANDER Analog Semi Modular Synthesizer
User Guide**
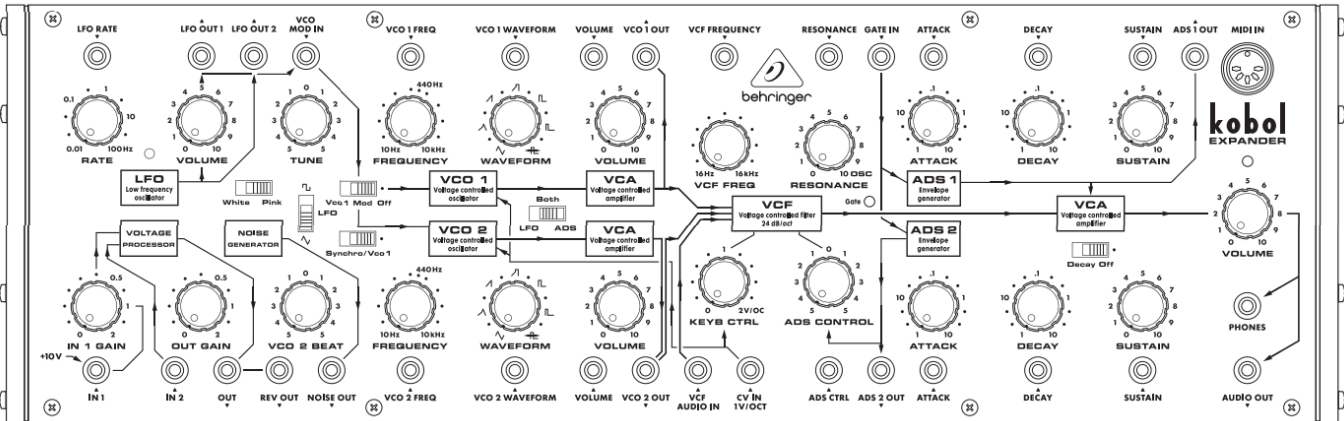
Quick Start Guide

Contents

EXPANDER Analog Semi Modular Synthesizer

KOBOL EXPANDER
Analog Semi-Modular Synthesizer with 2 VCOs Featuring 7 Variable Wave shapes and Unique "Kobold" VCF in Euro rack Format

Important Safety Instructions

Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.

This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure – voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.
Caution

To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.
Caution

To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.
Caution

These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this apparatus near water.

6. Clean only with 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 with one wider than the other. A grounding-type 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. Use only 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, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

16. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

17. Correct disposal of this product: This symbol indicates that this product must not be disposed of with household waste, according to the WEEE Directive (2012/19/EU) and your national law.

    This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE).

    The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

18. Do not install in a confined space, such as a book case or similar unit.

19. Do not place naked flame sources, such as lighted candles, on the apparatus.

20. Please keep the environmental aspects of battery disposal in mind. Batteries must be disposed-of at a battery collection point.

21. This apparatus may be used in tropical and moderate climates up to 45°C.
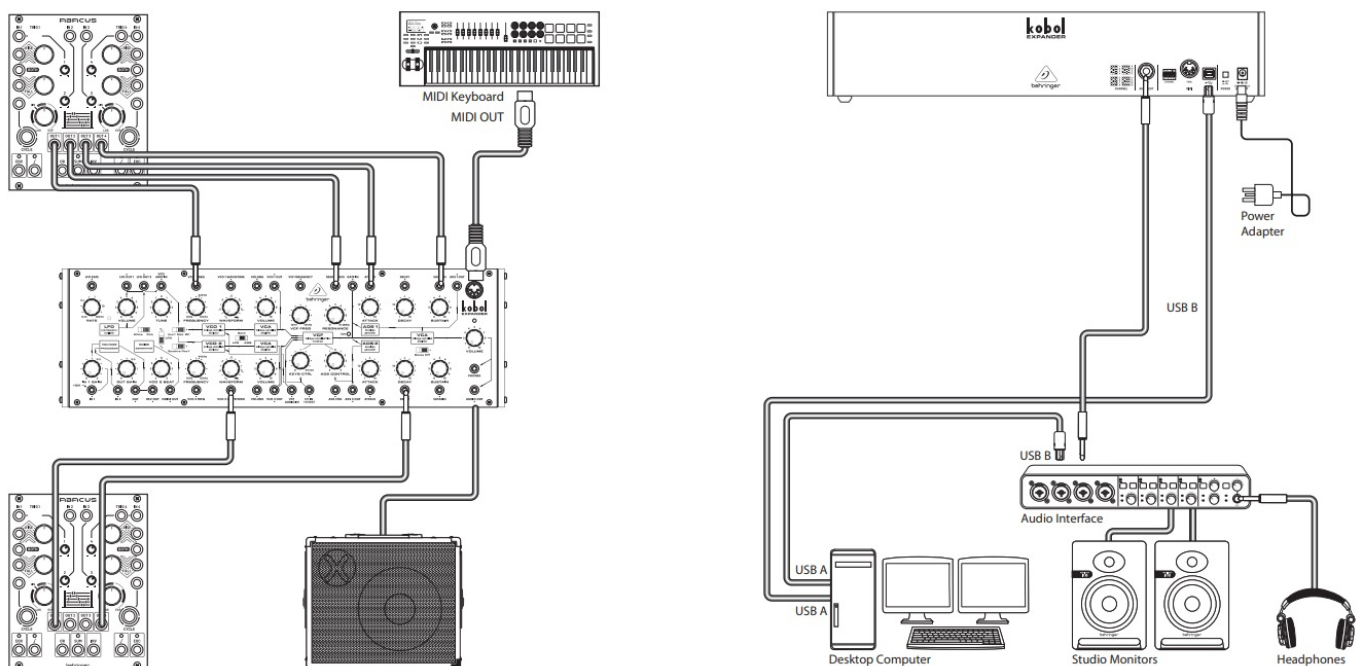
LEGAL DISCLAIMER

LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding Music Tribe's Limited Warranty, please see complete details online at **community.musictribe.com/pages/support#warranty**.

KOBOL EXPANDER Hook-up

Step 1: Hook-Up

KOBOL EXPANDER Getting started

Step 2: Getting started

OVERVIEW
This 'getting started' guide will help you set up your Kobold
Expander and briefly introduce its capabilities.
CONNECTION
To connect the Kobold Expander to your system, please consult the connection guide earlier in this document.
SOFTWARE SETUP
The Kobold Expander is a USB Class Compliant MIDI device, and so no driver installation is required. The Kobold Expander does not require any additional drivers to work with Windows and Mac OS.
HARDWARE SETUP
Make all the connections in your system. Keep the Kobold Expander power turned off when making any connections.
Ensure your sound system is turned down.
Turn on the Kobold Expander before turning on any power amplifiers and turn it off last. This will help prevent any turn on or turn off "pops or thumps" in your speakers.
WARM UP TIME

We recommend leaving 15 minutes or more time for the Kobold Expander to warm up before recording or live performance.

(Longer if it has been brought in from the cold.) This will allow the precision analog circuits time to reach their normal operating temperature and tuned performance.

FIRMWARE UPDATE

Please check the behringer.com website regularly for any updates to the Behringer SYNTHTRIBE app.

The app looks for the latest firmware file which can then be downloaded and used to update the Kobold Expander.

KOBOL EXPANDER Controls
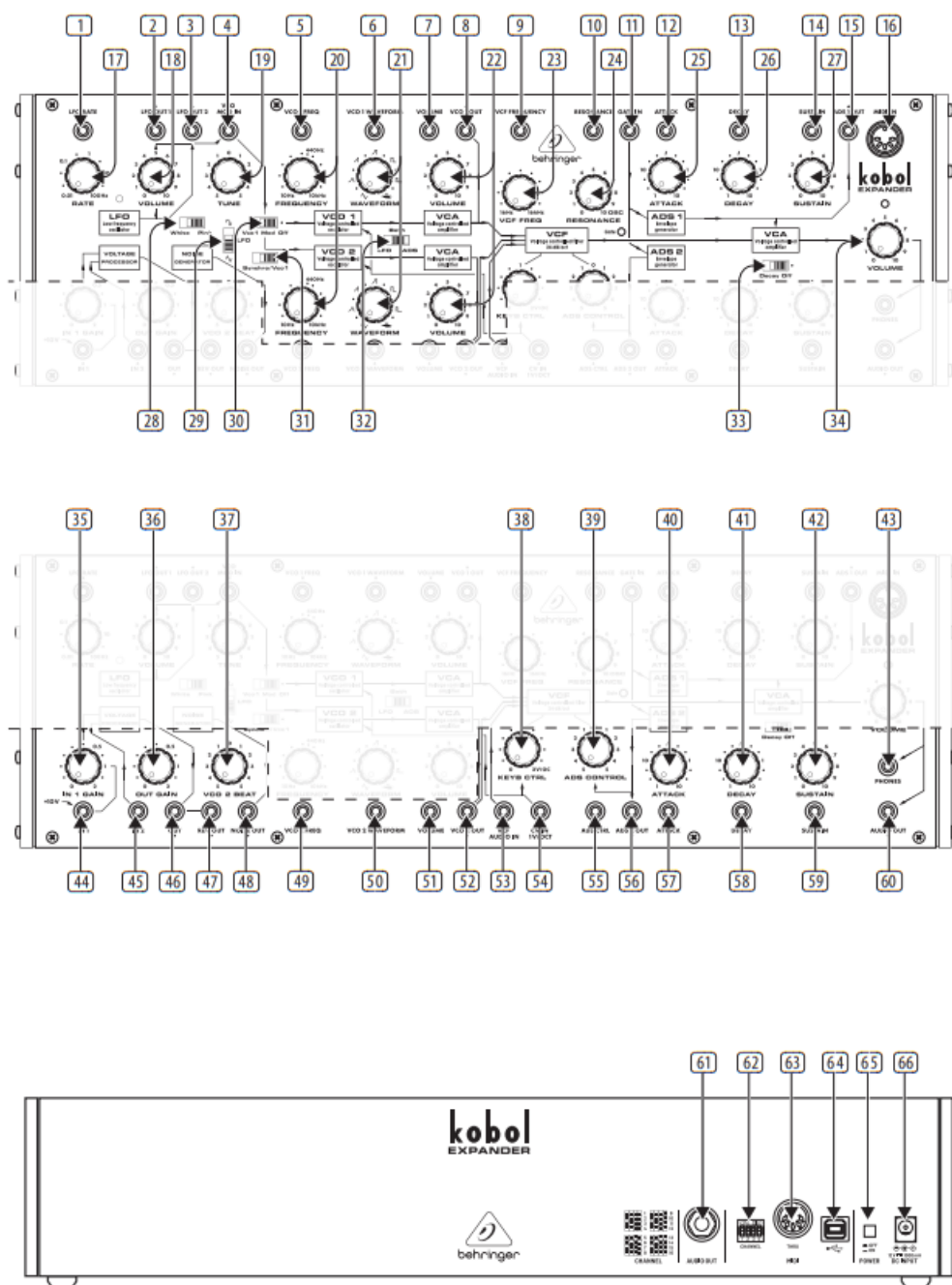
Step 2: Controls

1. **LFO RATE INPUT** – input socket for external voltage control of LFO rate.

2. **LFO OUTPUT 1 –** output socket for LFO (affected by volume control 18).

3. **LFO OUTPUT 2** – unattenuated LFO output.

4. **VCO MOD IN** – input socket for external modulation of VCOs. When no input is present the LFO is nonmilled to

the VCO modulation input via the volume control 18.

5. **VCO 1 FREQUENCY IN –** input socket for external voltage control of VCO 1 frequency.

6. **VCO 1 WAVEFORM IN** – input socket for external voltage control over VCO 1 waveform.

7. **VCO 1 VOLUME** – input socket for external voltage control of VCO 1 volume.

8. **VCO 1 OUT** – audio output for unprocessed VCO 1. VCO 1 will still feed into the VCF.

9. **VCF FREQUENCY IN** – input socket for external voltage control of the VCF base frequency.

10. **RESONANCE IN** – input socket for external voltage control of VCF resonance.

11. **GATE IN –** input socket for external gating of the two ASR envelope generators. Use this socket with an analog sequencer. Use the SynthTRIBE software to invert the gate polarity.

12. **ATTACK IN –** input socket for external voltage control of VCA envelope generator attack time.

13. **DECAY IN –** input socket for external voltage control of VCA envelope generator decay and release times.

14. **SUSTAIN IN** – input socket for external control of VCA envelope generator sustain level.

15. **ADS 1 OUT –** output socket for the VCA envelope generator.

16. **MIDI IN –** input socket for MIDI control of the Kobold Expander. Use the SynthTRIBE software to polychoir multiple expanders.

17. **RATE** – use this control to set the LFO rate from 0.01 Hz to 100 Hz.

18. **VOLUME** – use this control to attenuate the LFO modulation of the VCOs and LFO 1 output.

19. **TUNE CONTROL** – use this control to tune the Kobold to other instruments (range ± 50 cents).

20. **FREQUENCY** – use these controls to set the base frequency of the VCOs independently over ± 2 octaves.

21. **WAVEFORM** – use these controls to set the waveform of the VCOs independently. The waveform morphs between triangle through ramp and sawtooth to square and pulse. At full CW the pulse width can be modulated by the VCF Envelope Generator.

22. **VOLUME** – use these controls to independently set the levels of the two VCOs.

23. **FREQUENCY** – use this control to set the base frequency of the VCF.

24. **RESONANCE** – use this control to emphasize a band of frequencies centred on the VCF base frequency. At the top of the range this will cause the filter to self-oscillate.

25. **ATTACK** – use this control to set the attack time of the VCA envelope generator.

26. **DECAY** – use this control to set the decay and release times of the VCA envelope generator.

27. **SUSTAIN** – use this control to set the sustain level of the VCA envelope generator.

28. **WHITE/PINK** – use this switch to select white or pink noise from the noise generator.

29. **LFO** – use this switch to select the LFO waveform: triangle or square.

30. **VCO 1 MOD OFF –** use this button to disable modulation of VCO 1.

31. **SYNCHRO** – use this button to synchronize VCO 2 to VCO 1.

32. **LFO/BOTH/ADS** – use this switch to select the modulation source of the VCO pulse width modulation.

33. **DECAY OFF** – use this switch to temporarily set the decay time of the VCA envelope generator to zero.

34. **VOLUME** – use this control to set the overall volume of the Kobold's output.

35. **IN 1 GAIN** – use this control to attenuate the external voltage input 1 (socket 47) to the voltage processor.

36. **OUT GAIN** – use this control to attenuate the output of the voltage processor.

37. **VCO 2 BEAT** – use this control to adjust the fine tuning between oscillator 1 and oscillator 2.

38. **KEYB CTRL/STEP LENGTH** – use this control to adjust the amount of VCF keyboard tracking from 0 to 200% (i.e. 2 V /octave).

39. **ADS CTRL** – use this control to adjust the amount of modulation of the VCF by the VCF envelope generator.

40. **ATTACK** – use this control to set the attack time of the VCF envelope generator.

41. **DECAY** – use this control to set the decay and release times of the VCF envelope generator. Using this control

while holding the Shift button sets a release time that is independent of the decay time.

42. SU**S**TAIN – use this control to set the sustain level of the VCF envelope generator.

43. **HEADPHONE OUT** – use this 3.5 mm TRS socket to connect a suitable set of headphones.

44. **VOLTAGE PROCESSOR** IN 1 – Input socket for voltages to be processed by attenuator 35. 10 V DC is present unless a jack is inserted.

45. **VOLTAGE PROCESSOR** IN 2 – Input socket for second DC voltage, whose default gain factor is 2.

46. **VOLTAGE PROCESSOR** OUT – output for voltages processed by the voltage processor, attenuated by control 36.

47. **REV OUT** – inverted output from voltage processor.

48. **NOISE OUT –** output socket for the noise generator.

49. **VCO 2 FREQUENCY IN** – input socket for external voltage control of VCO 2 frequency.

50. **VCO 2 WAVEFORM IN** – input socket for external voltage control over VCO 2 waveform.

51. **VCO 2 VOLUME** – input socket for external voltage control of VCO 2 volume.

52. **VCO 2 OUT** – audio output for unprocessed VCO 2. Using this output will cut the feed from VCO 2 to the VCF.

53. **VCF AUDIO IN** – input socket for external audio to be processed by the Kobold's VCF.

54. **CV IN –** input socket for controlling the Kobold's VCOs and VCF tracking from an external 1 V /octave keyboard.

55. **ADS CTRL** – input socket for external voltage control of VCF envelope generator amount.

56. **ADS 2 OUT** – output socket for the VCF envelope generator.

57. **ATTACK IN** – input socket for external voltage control of VCF envelope generator attack time.

58. **DECAY IN –** input socket for external voltage control of VCF envelope generator decay and release times.

59. **SUSTAIN IN** – input socket for external control of VCF envelope generator sustain level.

60. **AUDIO OUT** – live level 3.5 mm TS jack carrying the Kobold's audio output.

61. **AUDIO OUT** – live level 6.35 mm TS jack carrying the Kobold's audio output.

62. **MIDI CHANNEL DIP SWITCH** – please refer to the following table for switch settings:
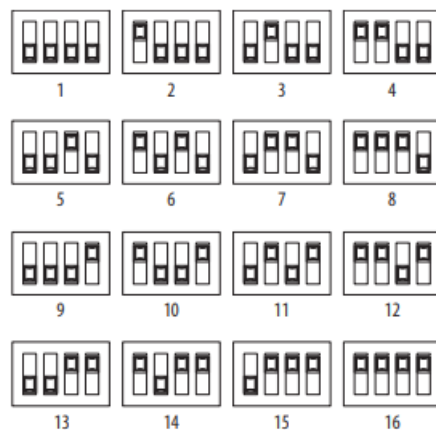
63. **MIDI THRU** – use this socket to mirror the Kobold Expander's MIDI IN (16) for use by other devices.

64. **USB** – use this type B USB socket to control the Kobold Expander using USB MIDI, or to update the firmware and make use of the SynthTRIBE software.

65. POWER SWITCH

66. **DC IN** – please connect the supplied external 12 V to this socket to power up the Kobold.

Hints and Tips

- Use a Y-split lead to take the signal from VCO2 for external processing. Tip is VCO 2 output, ring is VCF input.

- Feed one of the Kobold's outputs into the Audio Input socket to refilter the sound.
- Amplify a signal going into the Audio Input socket to create a fuzz effect before filtering.
- The Kobold Expander works well when used with external modulation sources, such as the Behringer Abacus, given that almost all parameters are controllable.

KOBOL EXPANDER Euro rack Installation

Disconnect from Main PCB
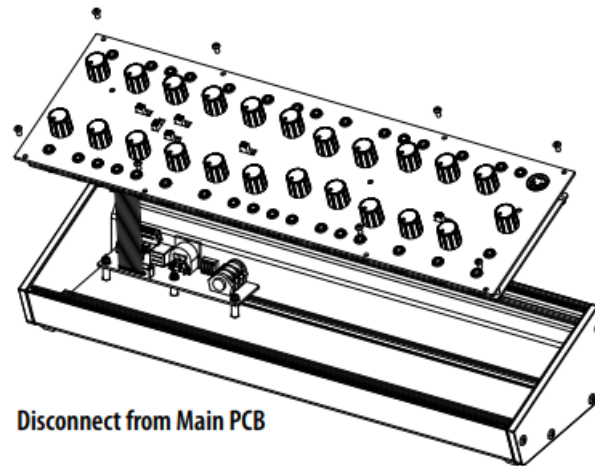
Euro rack Installation

The Kobold Expander can be taken out of its factory chassis and fitted into a standard Euro rack case (not supplied).

We recommend that this procedure is carried out only by an experienced service technician to prevent personal injury or damage to the Kobold Expander. The Euro rack case will need to have a suitable power supply with enough capacity to power the Kobold Expander. Consumption is 1 amp at 12 V DC.

A 10 pin to 16 pin adapter ribbon cable is supplied with the Kobold Expander.

Please ensure that the Euro rack case will supply ± 12 V DC and ground to the correct pins, and that the cable is at the correct orientation before proceeding.

Procedure

Please follow all steps in the correct order.

1. Disconnect the power and all other connections to the Kobold Expander.
2. Undo the eight screws on the top panel as shown. There is no need to undo any other screw.
3. Carefully lift the top panel assembly, and turn it over so that the PCB is facing upwards. Be careful not to pull the ribbon cable from the lower side of the main PCB.
4. Disconnect the 24 pin ribbon cable from the main PCB of the Kobold Expander and remove the assembly from the chassis.
5. Store the chassis assembly and power supply in a safe, dry place.
6. Securely connect the 10 pin end of the supplied ribbon cable adapter to the main PCB of the Kobold Expander.
7. Having ensured that your Euro rack case is isolated from the mains connect the 16 pin end of the ribbon cable to a spare outlet in the case.
8. Secure the Kobold Expander to the case using the eight panel screws.
9. Perform a full safety test before using the Kobold Expander.

Specifications

| Synthesizer Architecture	
Number of voices	Monophonic
Type	Analog
Oscillators	2 VCO
LFO	1 LFO
VCF	LPF 24 dB/octave
Envelopes	2 ADS
Connectivity	
Power switch	Slider On/Off (Top Panel) / Push button On/Off (Rear Panel)
MIDI In	5-pin DIN / 16 channels (Top Panel)
MIDI Thru	5-pin DIN / 16 channels (Back Panel)
Channel Select	4 DIP Switch (Rear Panel)
USB (MIDI)	USB Type B
Audio Out	3.5 mm TS (Top Panel) / 6.35 mm TS (Back Panel)
USB	
Type	Class compliant USB Micro
Supported Operating Systems	Windows 7 or higher
	Mac OS X 10.10 or higher
Volume	
Control	Volume: 0 to 10
LFO Section	

Controls	LFO Rate LFO Volume
Switch	Waveform: Square, S&H, Triangle
Sockets	LFO Rate In LFO Out 1 LFO Out 2

Oscillator Section

Controls	Tune VCO 1 Frequency VCO 1 Waveform VCO 1 Volume VCO 2 Beat VCO 2 Frequency VCO 2 Waveform VCO 2 Volume
Switches	Waveform select VCO Mod Off Synchro
Sockets	VCO Mod In VCO 1 Frequency VCO 1 Waveform VCO 1 Volume VCO 1 Out VCO 2 frequency VCO 2 Waveform VCO 2 Volume VCO 2 Out

VCA Section

Switch	Modulation Source: LFO / Both / ADS

Analog Filter Section

Controls	Frequency Resonance Keyboard Control ADS Control

Sockets	VCF Frequency In Resonance In VCF Audio In CV In ADS Control In

Envelope Section

Controls	ADS 1 Attack ADS 1 Decay ADS 1 Sustain ADS 2 Attack ADS 2 Decay ADS 2 Sustain
Switch	ADS 2 Decay Off
Indicator	Gate In
Sockets	Gate In ADS 1 Attack In ADS 1 Decay In ADS 1 Sustain In ADS 1 Out ADS 2 Attack In ADS 2 Decay In ADS 2 Sustain In ADS 2 Out

Voltage Processor Section

Controls	In 1 Gain Out Gain
Sockets	In 1 In 2 Out Rev Out

Noise Section

Switch	White / Pink
Sockets	Noise Out

Power Requirements

Mains connector	12 v DC (1000 mA)

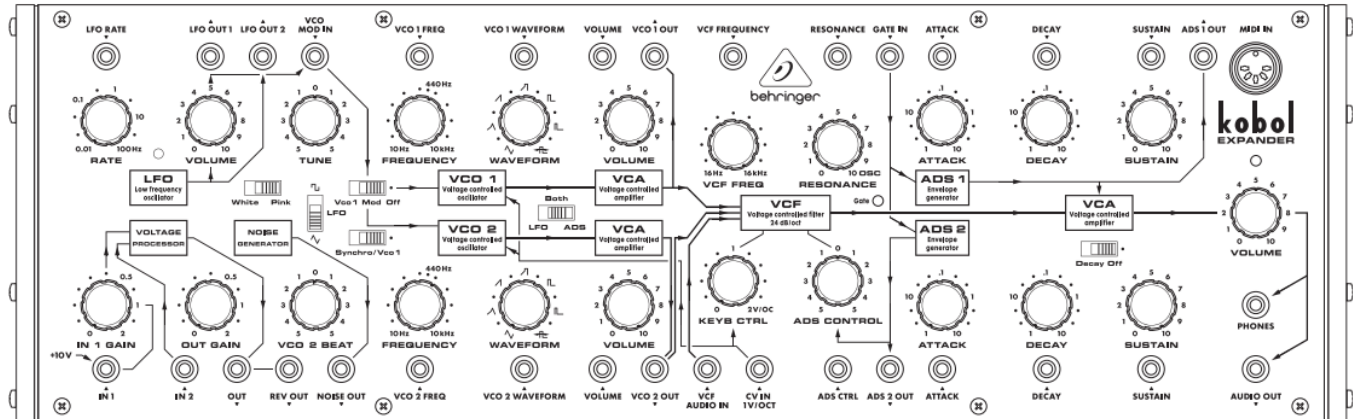| Indicator	Power LED (Top Panel)
Physical	
Standard operating temperature range	5°C – 45°C (41°F – 113°F)
Dimensions (H x W x D)	94 x 424 x 136 mm (3.7 x 16.7 x 5.4 ")
Weight	1.65 Kg (2.3 Kg shipping) / 3.64 lbs (5.07 lbs shipping)

KOBOL EXPANDER Default Patch

DATE:	AUTHOR:	TITLE:
NOTES:		
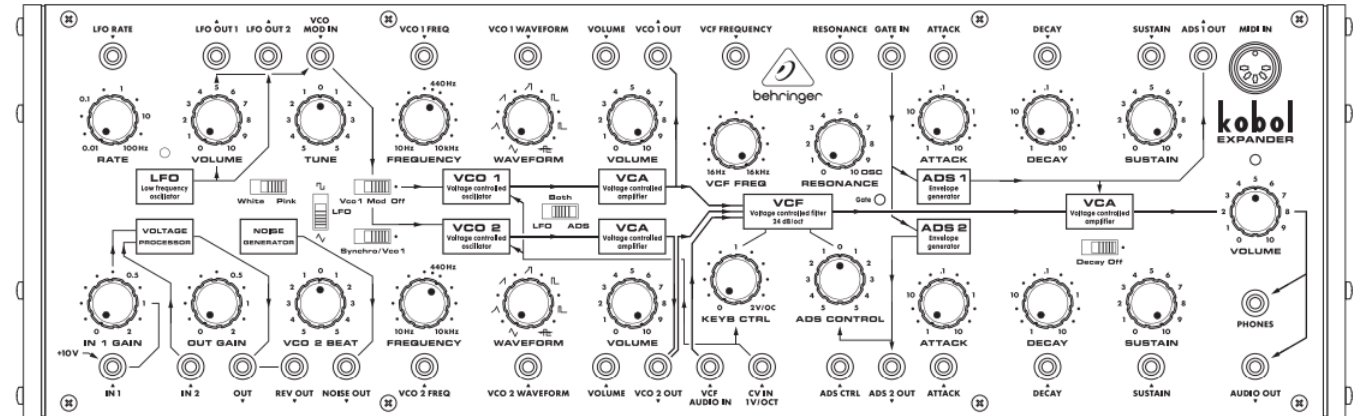
KOBOL EXPANDER Patch Sheet

Patch Number

DATE:	AUTHOR:	TITLE:
NOTES:		

Other important information

Important information

1. **Register online.**

   Please register your new Music Tribe equipment right after you purchase it by visiting **musictribe.com**. Registering your purchase using our simple online form helps us to process your repair claims more quickly and efficiently.

   Also, read the terms and conditions of our warranty, if applicable.

2. **Malfunction. Should your**

   Music Tribe Authorized Reseller not be located in your vicinity, you may contact the Music Tribe Authorized Fulfiller for your country listed under "Support" at **musictribe.com**. Should your country not be listed, please check if your

   problem can be dealt with by our "Online Support" which may also be found under "Support" at **musictribe.com**. Alternatively, please submit an online warranty claim at **musictribe.com** BEFORE returning the product.

3. **Power Connections.**

   Before plugging the unit into a power socket, please make sure you are using the correct mains voltage for your particular model. Faulty fuses must be replaced with fuses of the same type and rating without exception.

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

Behringer
KOBOL EXPANDER

Responsible Party Name: Music Tribe Commercial NV Inc.
Address: 122 E. 42nd St.1, 8th Floor NY, NY 10168, United States
Email Address: **legal@musictribe.com**

KOBOL EXPANDER
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.
This equipment complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
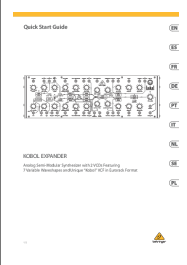**Important information:**
Changes or modifications to the equipment not expressly approved by Music Tribe can void the user's authority to use the equipment.
Hereby, Music Tribe declares that this product is in compliance with Directive 2014/30/EU, Directive 2011/65/EU and Amendment 2015/863/EU, Directive 2012/19/EU, Regulation 519/2012 REACH SVHC and Directive 1907/2006/EC.

CE Full text of EU DoC is available at **https://community.musictribe.com/**
EU Representative: Music Tribe Brands DK A/S
Address: Gammel Strand 44, DK-1202 København K, Denmark
UK Representative: Music Tribe Brands UK Ltd.
Address: 6 Lloyds Avenue, Unit 4CL London EC3N 3AX,
United Kingdom
We Hear You

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Documents / Resources

	behringer EXPANDER Analog Semi Modular Synthesizer [pdf] User Guide EXPANDER Analog Semi Modular Synthesizer, EXPANDER, Analog Semi Modular Synthesizer, Semi Modular Synthesizer, Modular Synthesizer, Synthesizer

References

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