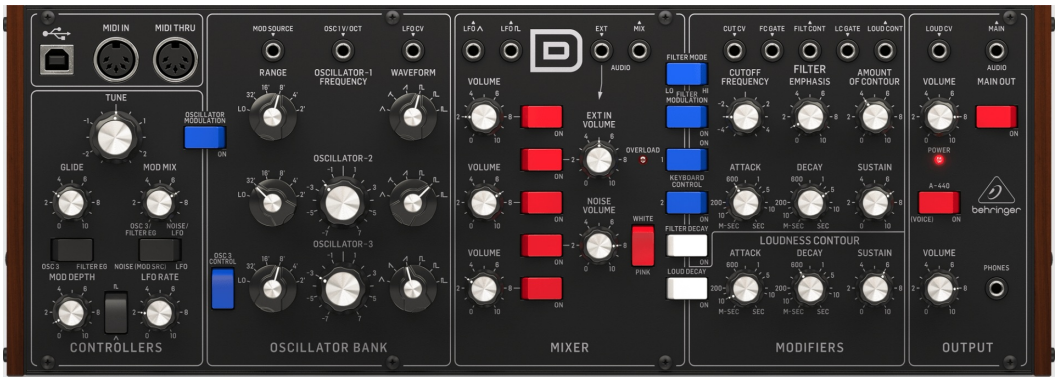
behringer D Authentic Analog Synthesizer With 3 VCOs Ladder Filter User Guide

Contents

1 Behringer D Authentic Analog Synthesizer With 3 VCOs Ladder Filter
2 Specifications
3 Hook-Up
4 Controls
5 Getting started
6 MODEL D System Exclusive Commands
7 Eurorack Installation
8 FAQs
9 Documents / Resources
9.1 References
10 Related Posts

Behringer D Authentic Analog Synthesizer With 3 VCOs Ladder Filter



Specifications

Synthesizer Architecture	
Number of voices	Monophonic
Type	Analog
Oscillators	3 (0.1 Hz to 20 kHz in 6 overlapping ranges)
LFO	1 (0.05 Hz to 200 Hz, up to 300 Hz with external CV input)
VCF	1 switchable low pass or high pass (24 dB/octave slope)
Envelopes	VCA, VCF
Connectivity	
MIDI In/Thru	5-pin DIN / 16 channels
USB (MIDI)	USB 2.0, type B
High output	¼" TS, unbalanced, max. 0 dBu
High output impedance	1.2 kΩ
Low output	¼" TS, unbalanced, 30 dB below high output
Low output impedance	1 kΩ
Headphones	3.5 mm TRS, unbalanced, max. –3.5 dBu
Headphones output impedance	8 Ω
USB	
Type	Class compliant USB 2.0, type B
Supported Operating Systems	Windows XP or higher Mac OS X 10.6.8 or higher
Controllers Section	
Knobs	Tune: –2 to +2 Glide: 0 to 10 Modulation mix: (OSC 3 or filter EG) to (noise/ext mod source, or LFO) Modulation depth: 0 to 10 LFO rate: 0 to 10
Switches	Modulation source: OSC 3 or filter EG Modulation source: (noise or external modulation source) or LFO LFO waveform: triangular or square
Oscillator Bank	
Knobs	Range (OSC 1, 2, and 3): LO, 32', 16', 8', 4', 2' Frequency (OSC 2 and 3): –7 to +7 Waveform (OSC 1 and 2): triangular, triangular/saw, saw, square, wide pulse, narrow pulse Waveform (OSC 3): triangular, reverse saw, saw, square, wide pulse, narrow pulse
Switches	Oscillator modulation on/off OSC 3 control (by keyboard) on/off

Mixer Section	
Knobs	Volume (OSC 1, 2, and 3): 0 to 10 Volume (external input): 0 to 10 Volume (noise): 0 to 10
Switches	OSC 1, 2, and 3: on/off External input: on/off Noise: on/off Noise source: pink or white
LED	Overload
Filter Section	
Knobs	Cutoff frequency: −4 to +4 Filter emphasis: 0 to 10 Amount of contour: 0 to 10 Attack: 1 ms to 10 s Decay: 4 ms to >35 s Sustain: 0 to 10
Switches	Filter mode: low pass/high pass Filter modulation: on/off Keyboard control 1: on (⅓) or off Keyboard control 2: on (⅔) or off Filter decay: on/off
Output Section	
Loudness contour dynamic range:	80 dB
Knobs	Volume: 0 to 10 Headphone volume: 0 to 10 Amount of contour: 0 to 10 Attack: 1 ms to 10 s Decay: 4 ms to >35 s Sustain: 0 to 10
Switches	Main output: on/off A-440: on/off Loudness decay: on/off
LED	Power
Inputs (TS 3.5 mm)	
Modulation source	Noise is the modulation source if there is no connection present
Oscillator 1	Control voltage: 1 V per octave
LFO	Control voltage: –5 V to +5 V
External input	Input impedance: 1 MΩ
Cutoff frequency	Control voltage: 0 to +10 V controls the cutoff frequency
Loudness	Control voltage: 0 to +5 V controls the loudness
Filter contour	Gate: +5 V input triggers the filter contour
Loudness contour	Gate: +5 V input triggers the loudness contour

Outputs (TS 3.5 mm)	
LFO triangular waveform	+/-2 V
LFO square waveform	+/-2 V
Mixer output	max. 0 dBu
Filter contour	0 to +4 V
Loudness contour	0 to +4.6 V
Main audio output	max. 0 dBu
Power Requirements	
External power adaptor	12 VDC 1000 mA
Power consumption	7 W max.
Environmental	
Operating temperature range	5°C – 45°C (41°F – 113°F)
Physical	
Dimensions (H x W x D)	90 x 374 x 136 mm (3.5 x 14.7 x 5.4")
Module width	70 HP
Weight	1.7 kg (3.7 lbs)
Shipping weight	2.7kg (6.0 lbs)

Important Safety Instructions

⚠Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute a risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation modifications 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.
Warning Please refer to the information on the exterior of bottom enclosure for electrical and safety information before installing or operating the device.

1. Please read and follow all instructions and warnings.
2. Keep the apparatus away from water (except for outdoor products).
3. Clean only with h dry cloth.
4. Do not block ventilation openings. Do not install in a confined space. Install only according to the manufacturer's instructions.
5. Protect the power cord from damage, particularly at plugs and appliance sockets.
6. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
7. 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 (only for USA and Canada). A groundingtype plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

8. Protect the power cord from damage, particularly at plugs and appliance sockets.
9. Use only attachments and accessories recommended by the manufacturer.
10. Use only specified carts, stands, tripods, brackets, or tables. Use caution to prevent tip-over when moving the cart/apparatus combination.
11. Unplug during a storm or if not in use for a long period.
12. Only use qualified personnel for servicing, especially after damage.
13. The apparatus with a protective earthing terminal shall be connected to a MAINS socket outlet with a protective earthing connection.
14. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.
15. Avoid installing in confined spaces like bookcases.
16. Do not place naked flame sources, such as lighted candles, on the apparatus.
17. Operating temperature range 5° to 45°C (41° to 113°F).

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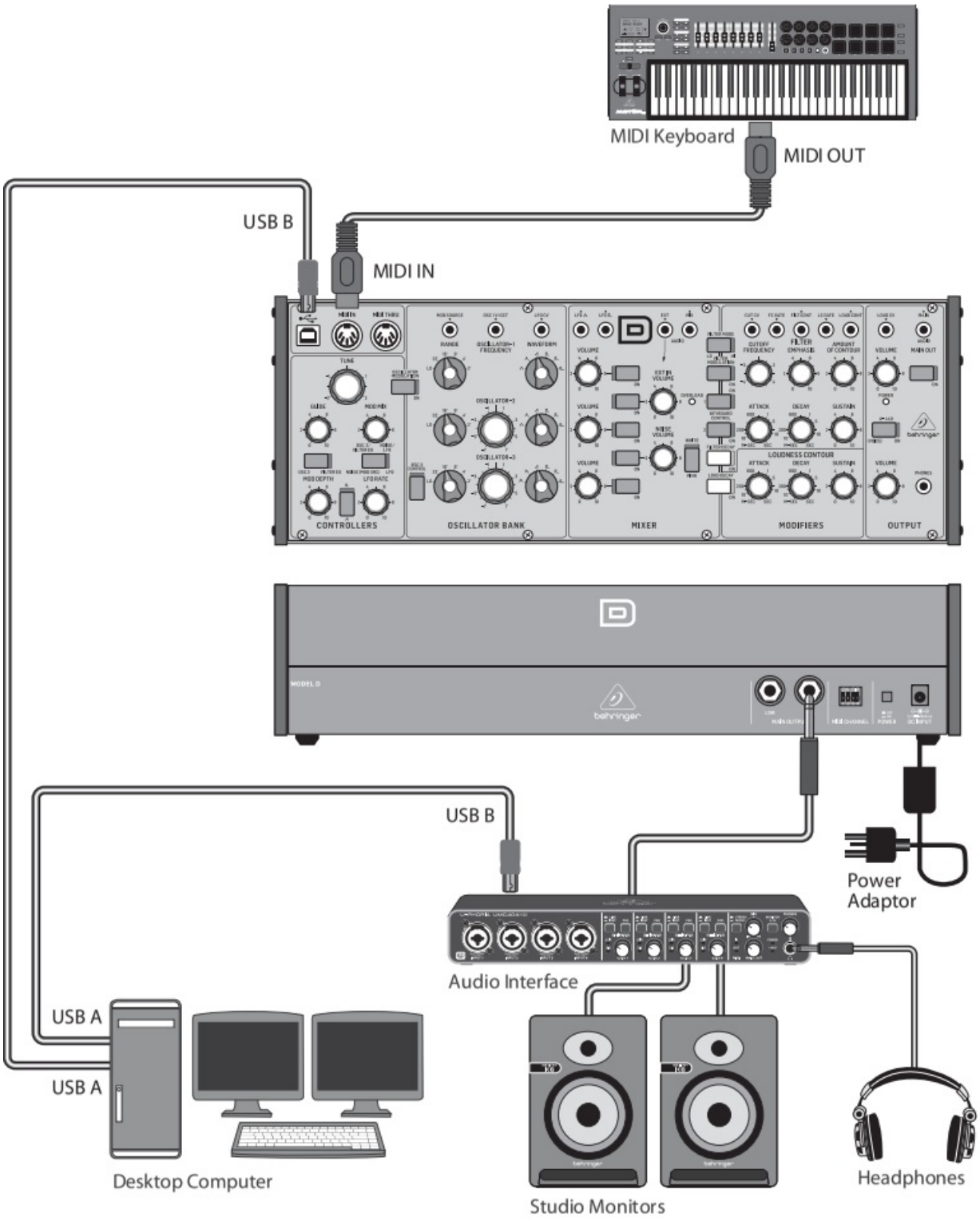
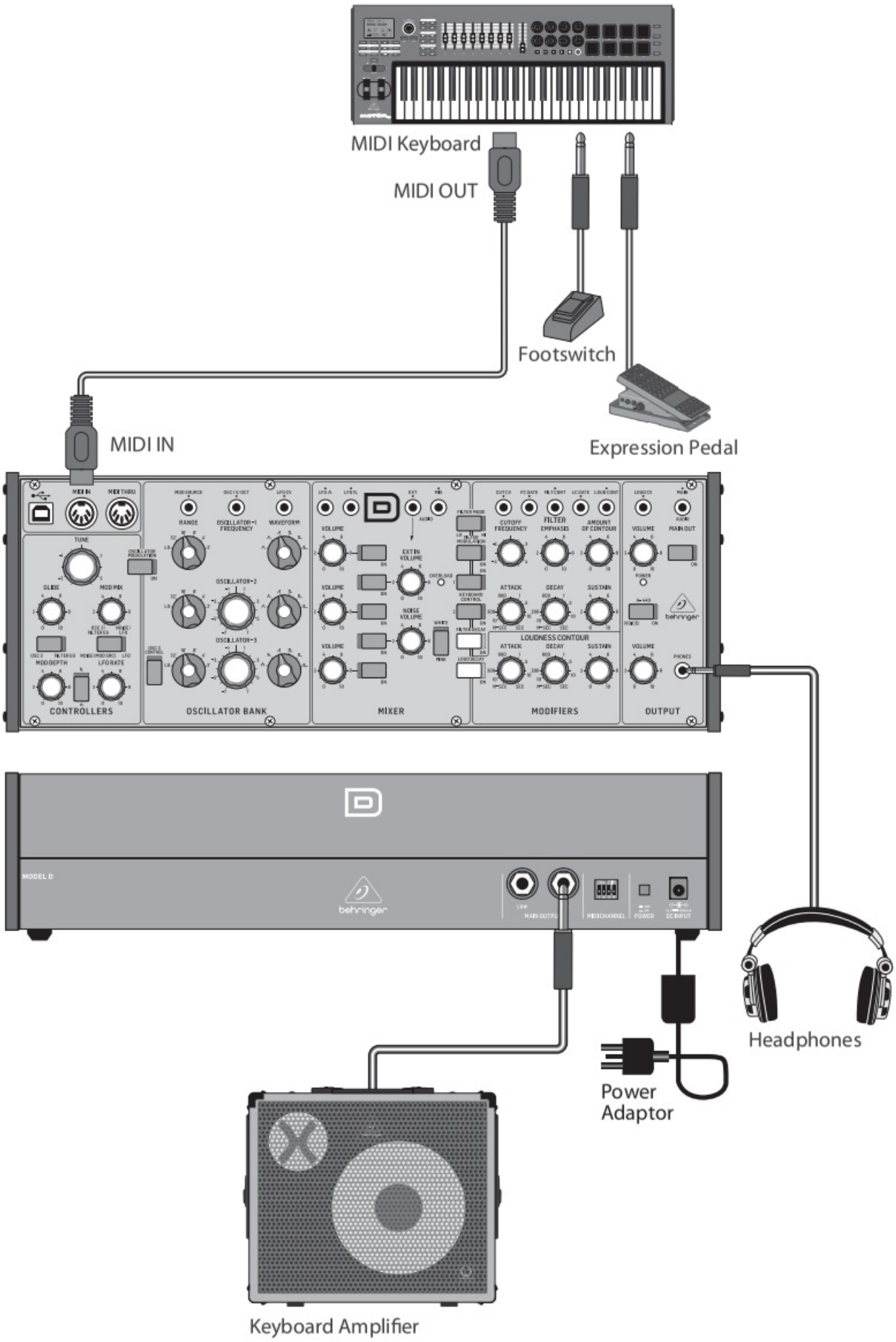
LIMITED WARRANTY
For the applicable warranty terms and conditions and additional information regarding Music Tribe's Limited Warranty, please see the complete details online at **community.musictribe.com/support**.

Hook-Up

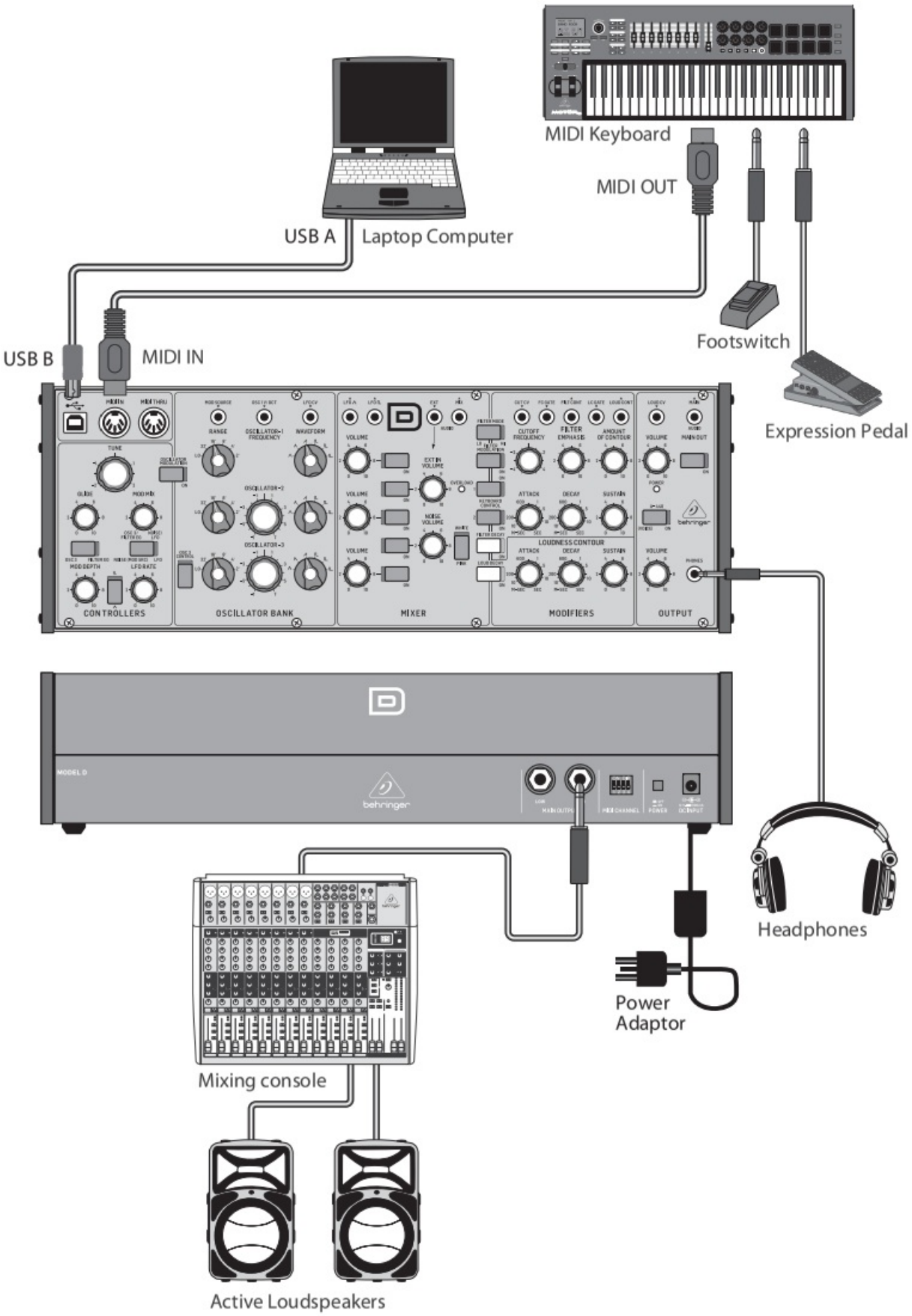
Studio System



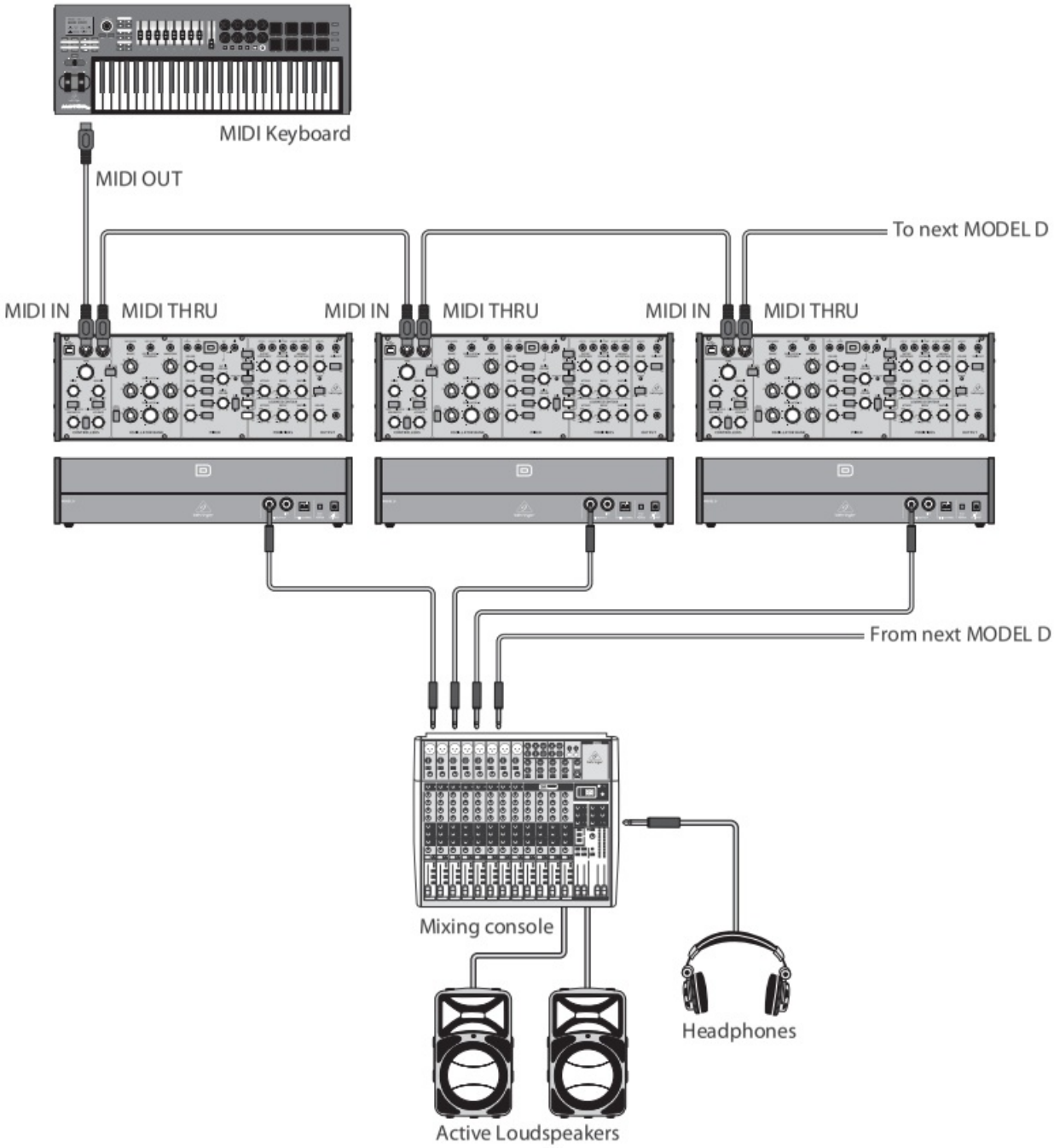
Band /Practice System


MIDI Keyboard
MIDI OUT
Footswitch
MIDI IN
Expression Pedal
CONTROLLERS
OSCILLATOR BANK
MIXER
MODIFIERS
OUTPUT
Headphones
Power
Adaptor
Keyboard Amplifier

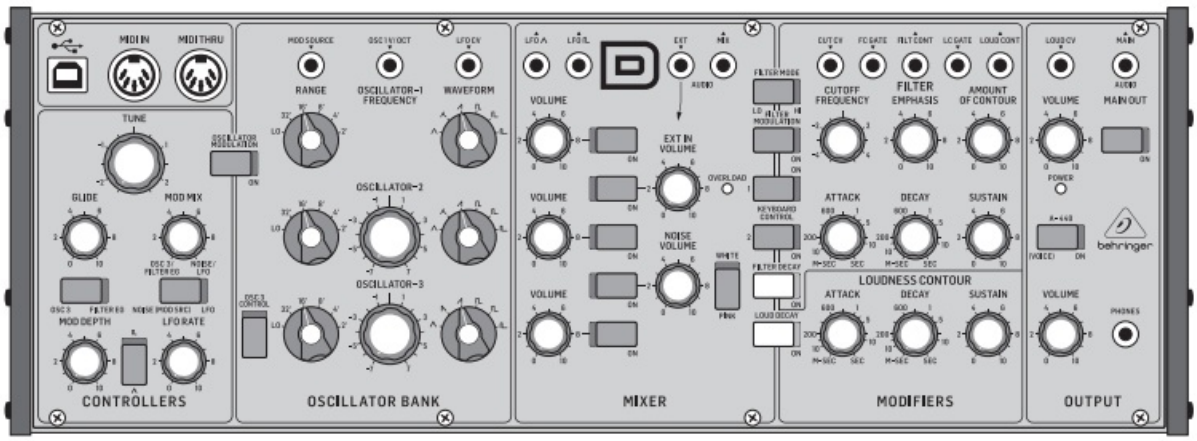
Live System

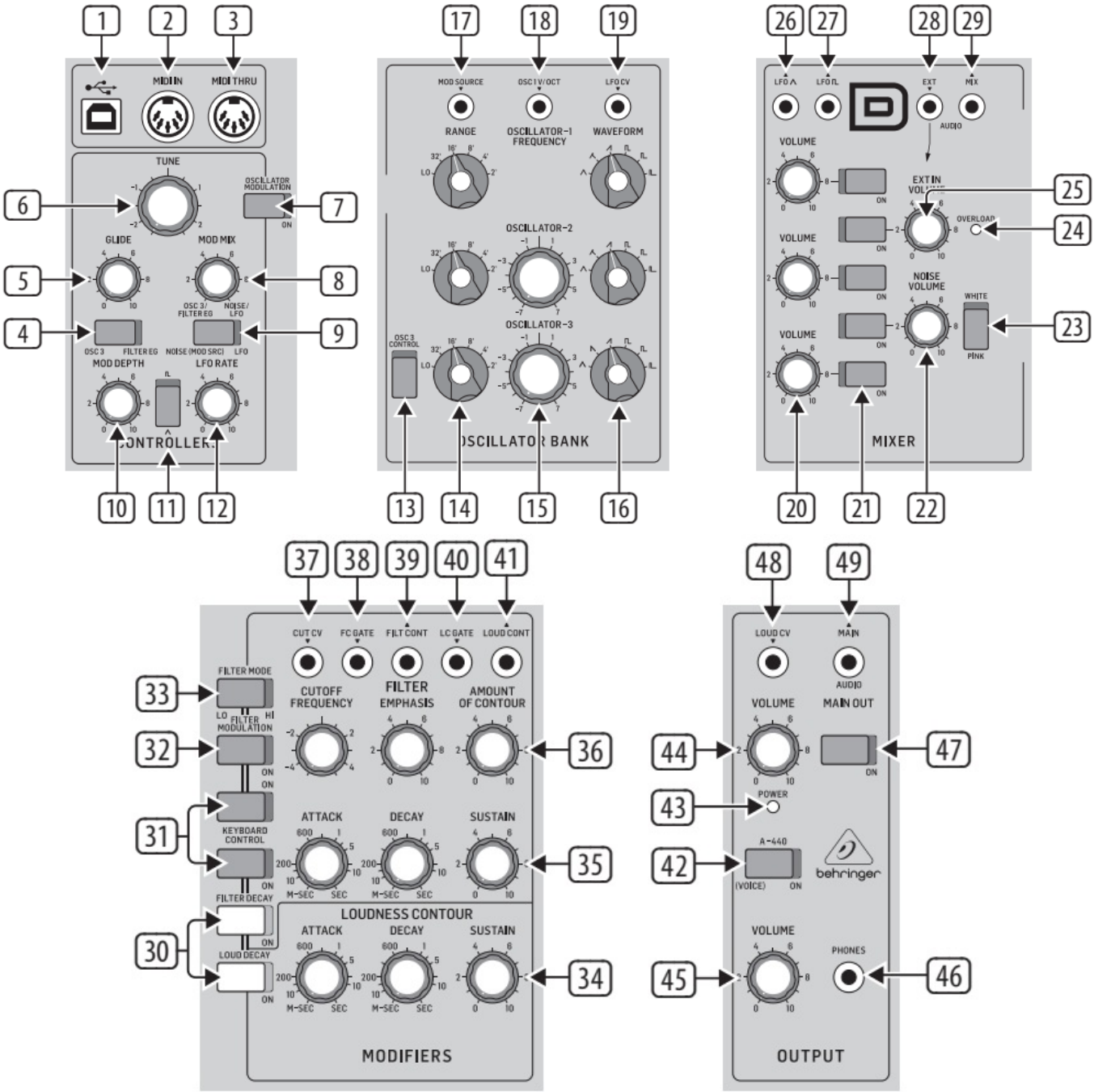


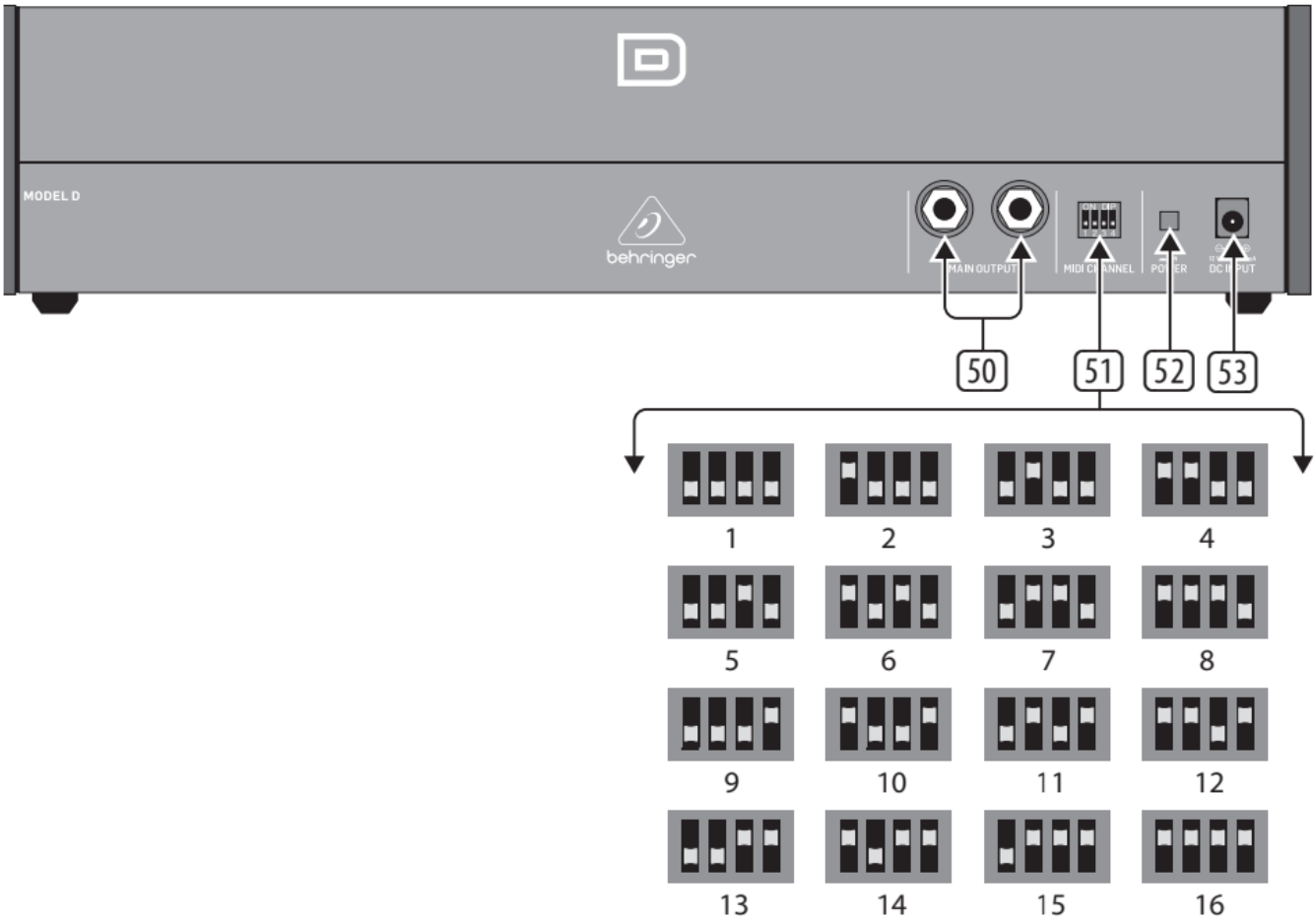
Polv Chain System


MIDI Keyboard
MIDI OUT
To next MODEL D
MIDI IN
MIDI THRU
MIDI IN
MIDI THRU
MIDI IN
MIDI THRU
From next MODEL D
Mixing console
Headphones
Active Loudspeakers

Controls


MIDI IN
MIDI THRU
TUNE
GLIDE
MOD MIX
MOD DEPTH
LFO RATE
CONTROLLERS
RANGE
OSCILLATOR-1 FREQUENCY
WAVEFORM
OSCILLATOR-2
OSCILLATOR-3
OSCILLATOR BANK
VOLUME
EXT IN VOLUME
NOISE VOLUME
MIXER
CUTOFF FREQUENCY
FILTER EMPHASIS
AMOUNT OF CONTOUR
ATTACK
DECAY
SUSTAIN
LOUDNESS CONTOUR
MODIFIERS
MAIN OUT
PHONES
OUTPUT


1
2
3
MIDI IN
MIDI THRU
TUNE
OSCILLATOR MODULATION
ON
6
7
GLIDE
MOD MIX
5
8
OSC 3 / FILTER EG
NOISE / LFO
4
9
OSC 3
FILTER EG
NOISE (MOD SRC)
LFO
MOD DEPTH
LFO RATE
CONTROLLER
10
11
12
17
18
19
MOD SOURCE
OSC 1 V/OCT
LFO CV
RANGE
OSCILLATOR-1 FREQUENCY
WAVEFORM
OSCILLATOR-2
OSCILLATOR-3
OSC 3 CONTROL
OSCILLATOR BANK
13
14
15
16
26
27
28
29
LFO ∧
LFO ⊓
EXT
MIX
AUDIO
VOLUME
EXT IN VOLUME
OVERLOAD
25
24
NOISE VOLUME
WHITE
PINK
23
MIXER
20
21
22
37
38
39
40
41
CUT CV
FC GATE
FILT CONT
LC GATE
LOUD CONT
FILTER MODE
LO
HI
33
CUTOFF FREQUENCY
FILTER EMPHASIS
AMOUNT OF CONTOUR
FILTER MODULATION
32
36
ON
ON
31
ATTACK
DECAY
SUSTAIN
KEYBOARD CONTROL
35
M-SEC
SEC
FILTER DECAY
LOUDNESS CONTOUR
30
LOUD DECAY
34
MODIFIERS
48
49
LOUD CV
MAIN
AUDIO
VOLUME
MAIN OUT
44
47
POWER
43
A-440
(VOICE)
42
behringer
PHONES
45
46
OUTPUT



MIDI Section

1. **USB PORT** – This USB Type B jack allows connection to a computer. The MODEL D will show up as a class-compliant USB MIDI device, capable of supporting MIDI in and out.
    - **USB MIDI IN** – accepts incoming MIDI data from an application.
    - **USB MIDI OUT** – sends MIDI data to an application.
2. **MIDI IN** – This 5-pin DIN jack receives MIDI data from an external source. This will commonly be a MIDI keyboard, an external hardware sequencer, a computer equipped with a MIDI interface, etc.
3. **MIDI THRU** – this 5-pin DIN jack is used to pass through MIDI data received at the MIDI INPUT. This will commonly be sent to another MODEL D synthesizer to run a Poly Chain or to a drum machine assigned to a different MIDI Channel.

Controllers Section

4. **OSC3/FILTER EG** – switch between OSC 3 or the Filter Envelope as a modulation source.
5. **GLIDE** – adjust the amount of Glide (Portamento) between notes on the keyboard.
6. **TUNE** – adjust the frequency of oscillators 1, 2, and 3. (OSC3 is not affected if the OSC3 CONTROL switch is off.)
7. **OSCILLATOR MODULATION** – when ON, the three oscillators are modulated by the modulation mix, set by the MOD MIX knob.
8. **MOD MIX** – the modulation mix between OSC3/Filter EG and Noise/LFO.
9. **NOISE (MOD SRC)/ LFO** – switch between Noise (or external modulation source) or Low Frequency Oscillator (LFO) as a modulation source.
10. **MOD DEPTH** – Adjust the modulation depth from off to maximum. The modulation depth can also be adjusted using the modulation wheel on a MIDI keyboard.

11. **WAVE SHAPE** – select the LFO wave shape from either triangular or square wave.
12. **LFO RATE** – adjusts the frequency of the LFO.

Oscillator Bank Section

13. **OSC 3 CONTROL** – When ON, the frequency of Oscillator 3 will vary with the keyboard. When OFF, the keyboard, Pitch wheel, and Modulation wheel will not affect SC3.
14. **FREQUENCY RANGE** – select from six frequency ranges of Oscillator 1, 2, or 3.
15. **FREQUENCY ADJUSTMENT** – Adjust the frequency of Oscillator 2 or 3.
16. **WAVE SHAPE** – select the wave shape used for Oscillator 1, 2, or 3 from: triangular, triangular/ sawtooth (OSC 1 and 2), reverse sawtooth (OSC 3), sawtooth, square, medium pulse, and narrow pulse.
17. **MOD SOURCE (INPUT)** – allows connection of an external modulation source. If nothing is connected here, then the internal Noise generator is available as a modulation source.
18. **OSC 1V/OCT (INPUT)** – This input allows the frequency of the three oscillators to be adjusted by an external control voltage (1 Volt input increase will increase the frequency by one Octave).
19. **LFO CV (INPUT)** – allows control of the LFO frequency by an external control voltage.

Mixer Section

20. **VOLUME** – the volume of Oscillator 1, 2, or 3.
21. **ON/OFF** – select the sources to play from OSC 1, OSC 2, OSC 3, Noise, and External Input, or any combination of these 5 sources.
22. **NOISE VOLUME** – Adjust the level of the internal Noise source.
23. **WHITE/PINK** – switch the internal Noise source from Pink noise to White noise.
24. **OVERLOAD** – indicates when the audio levels of the mix are overloading the mixer section.
25. **EXT IN VOLUME** – Adjust the level of any external source playing into the external Input. If nothing is connected to the external input, then instead of any external audio coming in at this point, the main MODEL D output is automatically connected here. This creates a feedback path from the output back into the mixer section, to get extra phat bass or extra crunch. In this case, the EXT IN volume control will adjust the level of the incoming main audio fed back into the mixer section.
26. **LFO Triangular (OUTPUT)** – outputs the internal LFO triangular-wave signal.
27. **LFO Square (OUTPUT)** – outputs the internal LFO square-wave signal.
28. **EXT (INPUT)** – connect any external line-level audio source to this 3.5 mm input. If nothing is connected here, then the main audio output is internally connected to this external input.
29. **MIX (OUTPUT)** – outputs the final mix from this Mixer section.

Modifiers Section

30. **DECAY** – when ON, the signal will decay during the time set by the DECAY TIME knob after a note or external trigger is released. When OFF, it will decay immediately after a note or external trigger is released.
    - **LOUDNESS DECAY** – affects the decay of volume level of the Loudness section.
    - **FILTER DECAY** – affects the decay of the cutoff frequency of the Filter section.
31. **KEYBOARD CONTROL** – these switches vary the effect of the keyboard tracking, where the filter section is affected by the pitch of note played.
    - **Switch 1 and 2 OFF** – no keyboard tracking effect
    - **Switch 1 and 2 ON** – maximum effect
    - **Switch 1 ON (only)** – 1/3 of maximum effect
    - **Switch 2 ON (only)** – 2/3 of maximum effect.
32. **FILTER MODULATION** – when ON, the filter section is modulated by the modulation mix, set by the MOD MIX

knob.

33. **FILTER MODE** – select the filter between Low-pass and High-pass.
34. **LOUDNESS CONTOUR** – these 3 knobs adjust the overall shape enveloping the audio after it has passed through the mixer section and filter section. The controls affect the change in volume (loudness) level with time.
    - **ATTACK** –Adjust the time it takes for the signal to reach a maximum level after a note is played.
    - **DECAY TIME** – Adjust the time for a signal to decay down to the sustain volume level after the attack time is over. If the LOUDNESS DECAY switch is ON, this is also how long it takes to decay to minimum once a note is released.
    - **SUSTAIN** – adjust the volume level that the signal is sustained after the attack time and initial decay time have been reached.
35. **FILTER ENVELOPE CONTROLS** – these 3 knobs adjust the overall shape enveloping the filter section. The controls affect the change in cutoff frequency with time.
    - **ATTACK** – Adjust the time for the cutoff frequency to increase from its set value and reach the frequency set by the AMOUNT OF CONTOUR control.
    - **DECAY TIME** – Adjust the time for the cutoff frequency to decay down to the sustain frequency after the attack time is over. If the FILTER DECAY switch is ON, then this decay time is also how long it takes to decay from the sustain frequency once a note is released.
    - **SUSTAIN** – adjust the cutoff to a frequency which is sustained after the attack time and initial decay time have been reached.
36. **FILTER CONTROLS** – The filter can be low-pass or high-pass, depending on the setting of the FILTER MODE switch. In low-pass mode, audio frequencies above the cutoff frequency are attenuated. In high-pass mode, audio frequencies below the cutoff frequency are attenuated.
    - **CUTOFF FREQUENCY** – adjusts the cut-off frequency of the filter.
    - **FILTER EMPHASIS** – adjusts the amount of volume level boost (resonance) given at the cut-off frequency.
    - **AMOUNT OF CONTOUR** – adjusts the amount of frequency shift given to the cutoff frequency.
37. **CUT CV (INPUT)** – allows connection of a control voltage to control the cutoff frequency.
38. **FC GATE (INPUT)** – allows an external trigger voltage to be applied to trigger the filter contour.
39. **FILT CONT (OUTPUT)** – outputs the filter contour.
40. **LC GATE (INPUT)** – allows an external trigger voltage to be applied to trigger the loudness contour.
41. **LOUD CONTOUR (OUTPUT)** – outputs the loudness contour. Output Section
42. **A-440** – Use this to turn on an output tuning signal of 440 Hz concert pitch. This switch can also be used to enter various modes during turn-on (see the Getting Started section of this manual for more details).
43. **POWER** – This LED shows when power is applied and the synthesizer is turned on.
44. **VOLUME** – Adjust the overall volume level of the synthesizer output.
45. **VOLUME (HEADPHONE)** – Adjust the overall volume level of the phone's output.
46. **PHONES** – connect your headphones to this 3.5 mm TRS output. Make sure the headphone volume is turned down before putting on headphones.
47. **ON** –Use this to quickly turn on or mute the main audio output of the synthesizer.
48. **LOUD CV (INPUT)** – allows connection of an external control voltage to control the Loudness Contour.
49. **MAIN (OUTPUT)** – use this 3.5 mm TRS connection to output the main audio output. Typically it is patched to an audio input of the MODEL D or the audio inputs of other modular synthesizer equipment. If you are using the MODEL D in a Eurorack, then this is the main output, as the rear panel output connectors are not used.

Rear Panel

50. **MAIN OUTPUT** – connect these 1/4″ TRS outputs to the inputs of your external equipment as follows (note that they are both Mono, and not left/right):
    - **LOW** – This instrument-level mono output can connect to the instrument-level inputs of guitar amplifiers or mixers, for example.
    - **HIGH** – this line-level mono output can connect to the linelevel inputs of mixers, keyboard amplifiers, or powered speakers for example.
51. **MIDI CHANNEL** – these 4 switches allow you to set the MIDI Channel number from 1 to 16. The MIDI channel can also be changed using MIDI SysEx commands, as shown in the MIDI SysEx tables later in this manual. (This method is used when the MODEL D is housed in a Eurorack, and these switches are no longer present.)
52. **POWER** – turn the synthesizer on or off. Make sure all the connections are made before turning on the unit.
53. **DC INPUT** – connect the supplied 12V DC power adapter here. The power adapter can be plugged into an AC outlet capable of supplying from 100V to 240V at 50 Hz/60 Hz. Use only the power adapter supplied.

Getting started

OVERVIEW

This ‘getting started’ guide will help you set up the MODEL D analog synthesizer and briefly introduce its capabilities.

CONNECTION

To connect the MODEL D to your system, please consult the connection guide earlier in this document.
Caution: Do not overload the 3.5 mm inputs. They can only accept the correct level of voltages as shown in the specification tables. The 3.5 mm outputs should only be connected to inputs capable of receiving the output voltages. Failure to follow these instructions may damage the MODEL D or external units.

SOFTWARE SETUP

The MODEL D is a USB Class Compliant MIDI device, and so no driver installation is required. The MODEL D does not require any additional drivers to work with Windows and MacOS.

HARDWARE SETUP

Make all the connections in your system. Use the rear panel MIDI switches to set the MODEL D to a unique MIDI channel in your system. Connect an external MIDI keyboard directly to the MODEL D MID IN 5-pin DIN type input. Apply power to the MODEL D using the supplied power adapter only. Ensure your sound system is turned down. Turn on the MODEL D rear panel power switch.

WARM UP TIME

We recommend leaving 15 minutes or more time for the MODEL D 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.

INITIAL SETUP

A quick way of finding out if your external sound system is working, is to turn on the A-440 switch on the MODEL D and adjust the volume control. This will send a constant tone (440 Hz) to your external amplifier and speakers.

MIXER SECTION

The MODEL D has three oscillators, an internal Noise generator, and an external source input. Each of these, and any combination, is used by the MODEL D to generate sound. The Mixer section allows you to turn each of these sources on or off and adjust the volume of each to create an overall mix. Start by turning on the top switch for Oscillator 1, and turn off the others. Adjust the volume control of Oscillator 1. In the Output section, adjust the main volume. Now, if you play a note on your MIDI keyboard, you should hear the sound of Oscillator 1 only. Turn on

other oscillators and/or noise and adjust their volume controls to create a mix.

OSCILLATOR SECTION

In the Oscillator section, adjust the Range knob and you will hear the sound of the various octaves. Adjust the wavetype and listen to the differences. The oscillator modulation switch allows the oscillator frequency to be modulated by the modulation mix. The OSC 3 switch allows its frequency to be affected by, or be independent of, the notes played on the keyboard and the modulation and pitch wheels.

Note: The TUNE knob and OSCILLATOR-2 and -3 FREQUENCY knobs are marked in units of semi tones as a general guide.

FILTER SECTION

Play with the Cutoff Frequency, Emphasis, and Contour, and listen to their effects on the sound. Adjust the Attack, Decay, and Sustain; they affect the cutoff frequency with time, while a note is played. The filter decay switch affects the decay after a note is released. The 2 keyboard switches affect how much the filter is affected by the frequency of notes that are played. If the filter modulation switch is ON, then the filter section is modulated by the modulation mix.

LOUDNESS CONTOUR SECTION

In this section, adjust the Attack, Decay, and Sustain; they affect the overall level with time, while a note is played. The loudness decay switch affects the decay in level after a note is released.

CONTROLLERS SECTION

First set the 2 switches to choose from internal LFO or internal Noise, OSC 3 or the filter envelope, and then use the MOD MIX knob to vary the mix between them. You can experiment by first setting the switch to OSC 3, and turning the MOD MIX knob to OSC 3. Then set the Oscillator 3 range control to LO, and the Oscillator Modulation switch to. You may now be able to hear the sound of the Oscillator 1 modulated by OSC 3. Use the MOD DEPTH knob, and/or the Modulation wheel of your keyboard to increase the effect. If the Filter Modulation switch is ON, listen to the effect of modulation on the filter. The Modulation Sensitivity curve can be chosen from hard, medium, or soft (the default), using the SysEx commands shown later in this manual.

SPECIAL MODES

The A-440 switch can be used to set the MODEL D into various modes of operation. This is done by turning the A-440 switch on and off a certain number of times within the first 5 seconds of turning on power to the MODEL D. The number of times determines the mode, as shown in the table below. The Power LED will show the current value by flashing.

Press the A-440 switch:	Mode	Power LED FLashing
On and off	Multi-trigger ON	Flashing fast twice
	Multi-trigger OFF	Flashing slow twice
On and off and on	Note Priority LAST/LOW/ HIGH	Flashing 3 times
On and off, On and off	Poly Chain ON	Flashing fast four times
	Poly Chain OFF	Flashing slow four times

MULTI-TRIGGERING

Multi-triggering – On: playing a new note will change the pitch and also trigger the filter and loudness contour envelopes.

Multi-triggering – Off (default, Legato): playing a new note will change the pitch, but with no new triggering unless all notes are released. For example, you can play a note and hold it down, and any new note will play and use the envelopes of the note being held. The second note will often play after the attack and decay time of the held note has passed, so the second note will not have the sound that the attack and decay usually give.

NOTE PRIORITY

Note Priority – if more than one note is played at the same time, this sets which note has priority: the last note played, the lowest (default), or the highest.

POLY CHAIN

Poly Chain – if you have multiple MODEL D units, you can connect them in a Poly Chain so that the first MODEL D plays the lowest note, the second MODEL D plays the second lowest note, and so on, to produce polyphonic sound. Each MODEL D must have the same MIDI channel number set using the rear panel switches. Only set the Poly Chain ON for the first MODEL D. Turn it OFF when you are done.

EURORACK
The MODEL D synthesizer can be taken out of its factory chassis and fitted into a standard Eurorack case (not supplied). Please see the details shown later in this manual.

FIRMWARE UPDATE
Please check our website, **behringer.com**, regularly for any updates to the firmware of your MODEL D synthesizer. The firmware file can be downloaded and stored on your computer, and then used to update the MODEL D. It comes with detailed instructions on the update procedure.

MODEL D System Exclusive Commands

Some parameters in the MODEL D synthesizer can be changed using MIDI system exclusive (SysEx) commands. A MIDI utility such as the popular MIDI OX can be used to send the SysEx command data string to the MODEL D using the USB MIDI connection between the host computer and the MODEL D.

SysEx Data Format
The following data format is used when creating a SysEx message (with the data beginning with F0 and ending with F7).

F0 00 20 32 aa bb cc dd ee ff F7
The various items in this SysEx data string are described below:

Item	Description
00 20 32	Manufacturer SysEx ID number (Behringer GmbH)
aa	Reserved
bb	Device ID: 00-0xF (must match hardware device ID), or 7F to address all devices. **Note:** This is the same as the Poly Chain ID. It is not the MIDI Channel
cc	Main parameter number (see Command Table below)
dd	Sub parameter number (see Command Table below)
ee	Parameter value MSB (will be zero unless the parameter value is greater than 127)
ff	Parameter value LSB (Range is 0 to 127) (see Command Table below)

Command Table

cc (Main)	dd (Sub)	Description	ff (Para Range)	Default
	00	MIDI Channel	0 to 15	0
	01	Key Priority	0-LOW	0- LOW

		(In poly chain mode, note priority will be restricted to 'LOW')	1-HIGH 2-LAST	
	02	Multi Trigger	0-OFF 1-ON (1.05 style) 2-ON (1.06 style)	0- OFF
	03	Pitch Bend semitones (Pitch wheel range) Effective when pitch bend range not fixed. See "0C Pitch bend mode" below	0 to 12	12
0xA Global Setting	06	MIDI IN Transpose	0 to 24 The range is −12 to + 12, so 12 is no transpose	12
	07	MIDI Note Zero Volts	0 to 127	36
	08	Poly Chain* see note below	0-OFF, 1-ON	0- OFF
	09	Device ID (Poly Chain ID)	0-15	0
	0A	Enable/Disable MIDI Channel Switches	0- Enable 1- Disable	0-Enable
	0B	Modulation Curve	0- Soft 1- Med 2- Hard	0- Soft
	0C	Pitch Bend Mode	0- PitchBend Range Fixed 1- PitchBend Range Settable	0- Fixed
	0D	Poly Chain Style	0- New Style 1- Old Style	0- New Style
0xB		Restore Global Settings		
0xE		Start User Pitch CV Calibration		

0xF		Restore Default CV Calibration		

*__Note__: If you use SysEx instead of the recommended A-440 method to turn on the Poly Chain, then the Poly Chain Device ID of other units in the chain is not set automatically. You have to use SysEx to set the Poly Chain ID of the first MODEL D to Device ID=0, the second MODEL D to ID=1, the third MODEL D tID=3 ID=3 and so on. All MODEL D units must have the same MIDI channel.

Retriggering Style
These examples show the difference between the old and new retriggering styles.

Example	Old style (v1.0.5)	New style (v1.0.6)
Press and hold note A. Note A is playing. Then press and hold note B. Note B is playing (A stop). Release note A.	Retrigger	No Retrigger
Press and hold note A. Note A is playing. Then press and hold note B. Note B is playing (A stop). Release note B.	Retrigger	Retrigger

Poly Chain Style
These two tables show the difference between the old and new poly chain style.

TABLE OF NOTE RESPONSE- Old poly chain style

Poly chain Device no.	How many notes are playing							
	0	1	2	3	4	5	6	7
1	Off	**Note1**	Note1	Note1	Note1	Note1	Note1	Note1
2	Off	Note1	**Note2**	Note2	Note2	Note2	Note2	Note2
3	Off	Note1	Note1	**Note3**	Note3	Note3	Note3	Note3
4	Off	Note1	Note1	Note1	**Note4**	Note4	Note4	Note4
5	Off	Note1	Note1	Note1	Note1	**Note5**	Note5	Note5

TABLE OF NOTE RESPONSE- New poly chain style

Poly chain Device no.	How many notes are playing							
	0	1	2	3	4	5	6	7
1	Off	**Note1**	Note1	Note1	Note1	Note1	Note1	Note1
2	Off	Off	**Note2**	Note2	Note2	Note2	Note2	Note2
3	Off	Off	off	**Note3**	Note3	Note3	Note3	Note3
4	Off	Off	Off	Off	**Note4**	Note4	Note4	Note4
5	Off	Off	Off	Off	Off	**Note5**	Note5	Note5

Note: Turning on the Poly Chain will affect the note priority function

Command Examples

Note: All command parameters should be in hexadecimal format.

Function	SysEX Command String
Set MIDI Channel to 13	F0 00 20 32 00 7F 0A 00 00 0C F7
Set Key Priority to last	F0 00 20 32 00 7F 0A 01 00 02 F7
Turn on Multi Trigger (1.05 style)	F0 00 20 32 00 7F 0A 02 00 01 F7
Set Pitch Bend semitone to 11	F0 00 20 32 00 7F 0A 03 00 0B F7
Set MIDI IN Transpose to +8	F0 00 20 32 00 7F 0A 06 00 14 F7
Set Note C5 as Zero Volts	F0 00 20 32 00 7F 0A 07 00 48 F7
Turn on Poly Chain	F0 00 20 32 00 7F 0A 08 00 01 F7
Set Device ID to 5	F0 00 20 32 00 7F 0A 09 00 05 F7
Disable MIDI Channel Switches	F0 00 20 32 00 7F 0A 0A 00 01 F7
Set Modulation Curve to Medium	F0 00 20 32 00 7F 0A 0B 00 01 F7
Make pitch bend range effective	F0 00 20 32 00 7F 0A 0C 00 01 F7
Set poly chain style to old style	F0 00 20 32 00 7F 0A 0D 00 01 F7

Note: A decimal to hex conversion table is shown below. If you are using the MIDI Transpose command, then the

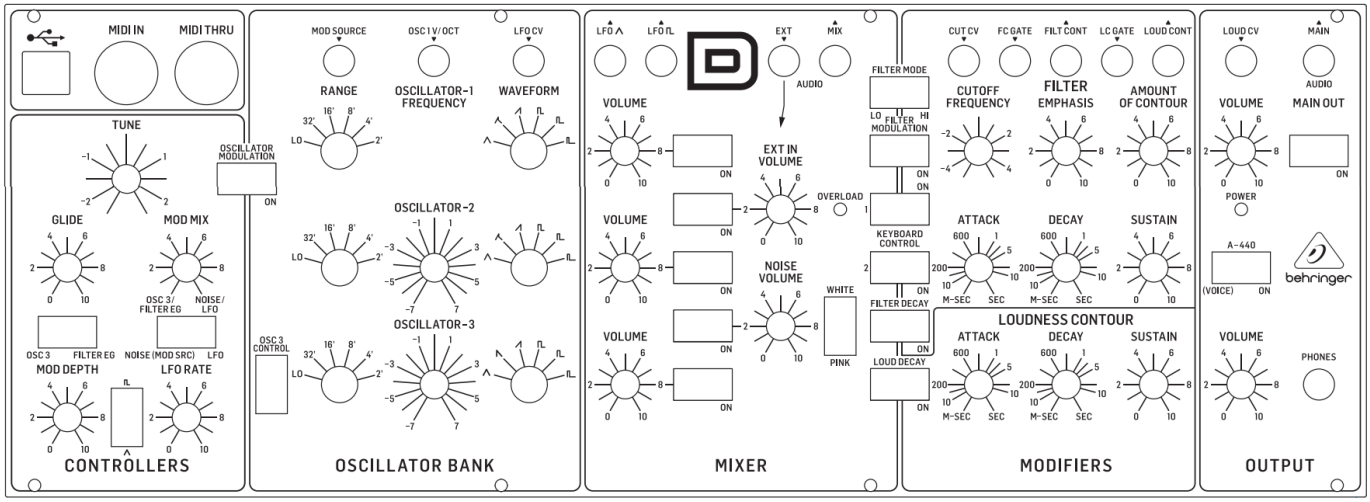
3rd column shows the MIDI IN Transpose that corresponds to each data value. For example, if you wanted a transpose of +8 as shown in the table above, then the data sent is 14 (hex).

Value	Value (hex)	MIDI Transpose
0	0	-12
1	1	-11
2	2	-10
3	3	-9
4	4	-8
5	5	-7
6	6	-6
7	7	-5
8	8	-4
9	9	-3
10	A	-2
11	B	-1
12	C	0
13	D	1
14	E	2
15	F	3
16	10	4
17	11	5
18	12	6
19	13	7
20	14	8
21	15	9
22	16	10
23	17	11
24	18	12

MODEL D Patch Sheet

Patch Number

DATE:	AUTHOR:	TITLE:
NOTES:		



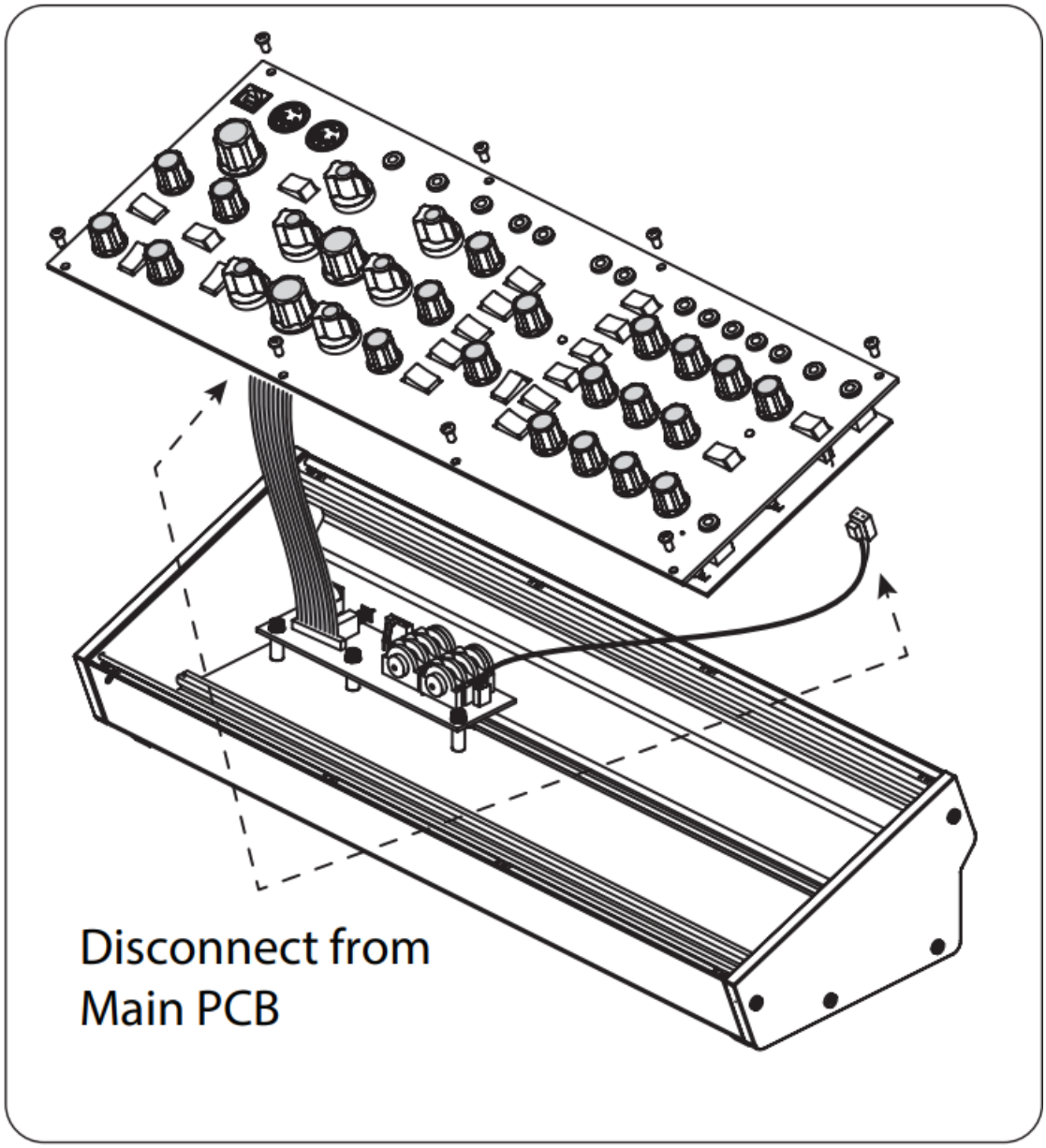
Eurorack Installation

The MODEL D synthesizer can be removed from its factory chassis and installed into a standard Eurorack chassis (not supplied). The module width is 70HP. We recommend that this procedure be undertaken only by experienced service technicians to prevent personal injury or damage to the unit. The Eurorack case will need its power supply unit to power the MODEL D synthesizer. A 10-pin connector on the rear of the main PCB of the MODEL D allows the +12 VDC power supply connection to be made. A 10-pin to 16-pin adapter ribbon cable is supplied to connect to your power supply.
Warning: Before proceeding, make sure that your power supply is capable of supplying +12 VDC, 1 Amp.
Warning: Make sure that the connections using the supplied adapter cable supply the ground and power to the correct pins of X23.

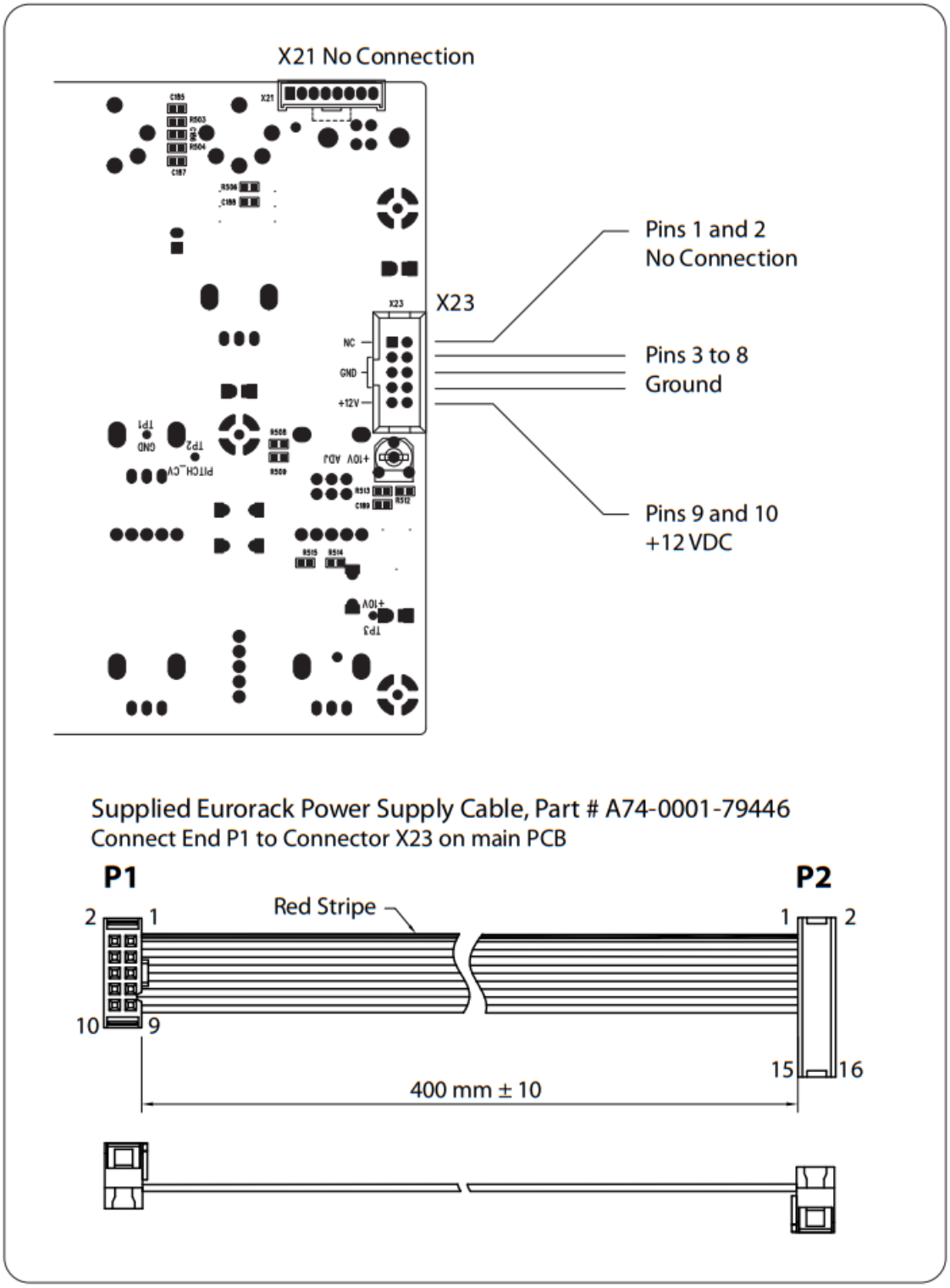
Procedure

Follow all steps in the order in which they are presented.

1. Disconnect the power cord and all other connections to the MODEL D.
2. Undo the 8 screws on the top panel as shown. There is no need to undo any other screws.



3. Disconnect the two cables from the lower side of the main PCB of the MODEL D, and remove the assembly from the chassis.
4. Store the chassis assembly and the power supply adaptor in a dry, safe place.
5. Securely connect the 10-pin end P1 of the supplied adapter cable to connector X23 on the Main PCB of the MODEL D.



6. Make sure your power supply is turned off and disconnected from the AC mains.
7. Make sure that your power supply will supply the following to the pins of connector X23, as shown in the diagram above:

Pins	Connection
1 and 2	No Connection
3 to 8	Ground
9 and 10	+12 VDC

8. Securely connect the 16-pin end P2 of the supplied adapter cable to your power supply, and double check all

connections are correct.

9. Securely install the MODEL D Synthesizer into your Eurorack, using 8 screws in the front panel.
10. Perform a full test and safety test before using the MODEL D.
11. The 3.5 mm MAIN OUT connector on the top panel is used instead of the ¼” rear output, which is no longer present.

Setting the MIDI Channel
Once installed in a Eurorack, the MIDI channel number is automatically set to channel 1 (as the MIDI switches are no longer present). The MIDI channel can be changed using MIDI OX or a similar MIDI utility on your computer to send MIDI SysEx commands directly to the MODEL D via the USB MIDI connection. Here is a brief guide to the procedure (see the MIDI SysEx pages in this manual for the actual SysEx codes sent to the MODEL D):

1. Disable the MIDI Channel Switches by sending the appropriate SysEx command.
2. Change the MIDI Channel by sending the appropriate SysEx command.

Other important information

Register online.
Please register your new MusicTribeequipment 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.

Malfunction.
Should your MusicTribe Authorized Reseller not be located in your vicinity, you may contact the MusicTribe 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.

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.

MODEL D
This equipment has been tested and found to comply with the limits for a Class B digital device under 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 according to 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 to 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 complies with Directive 2014/35/EU, Directive 2014/30/EU, Directive 2011/65/EU, and Amendment 2015/863/EU, Directive 2012/19/EU, Regulation 519/2012 REACH SVH,C and Directive 1907/2006/EC. Full text of the 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: 8th Floor, 20 Farringdon Streett London EC4A 4AB, United Kingdom

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.

Behringer MODEL D
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**

FAQs

Q: Can I use the Model D synthesizer outdoors?

A: The device is suitable for outdoor use, but make sure to protect it from water exposure.

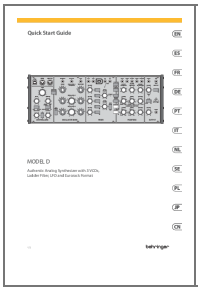
Q: What should I do if the power cord is damaged?

A: Immediately stop using the device and replace the power cord with a new one recommended by the manufacturer.

Q: Can I clean the synthesizer with a damp cloth?

A: No, only clean the device with a dry cloth to prevent damage.

Documents / Resources



behringer D Authentic Analog Synthesizer With 3 VCOs Ladder Filter [pdf] User Guide
MODEL D, D Authentic Analog Synthesizer With 3 VCOs Ladder Filter, Authentic Analog Synthesizer With 3 VCOs Ladder Filter, Synthesizer With 3 VCOs Ladder Filter, 3 VCOs Ladder Filter, Ladder Filter, Filter

References

- Behringer | Home
- Music Tribe
- Music Tribe
- Music Tribe
- User Manual

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