Mini MIDI

User Manual

Software Version 1.1
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MANUFACTURER’S WARRANTY

The warranty period is valid for one year from the day of purchase.

Audiophile Circuits League (ACL) warrants this product against defects in material and workmanship.

The warranty will expire in case of failure or damage caused by:

- use of unspecified power supply or accessories
- incorrect connection or use of power cable
- improper handling
- natural disasters (fire, flooding, etc.) and pollution
- equipment other than this product
- unauthorized modification, adjustment or parts replacement
- a third party

In case you notice a malfunction, please read the user manual carefully and check your system again. If the problem still persists, contact your local distributor or us by email (english):

support@audiophilecircuitsleague.com

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1. INTRODUCTION

The MINI MIDI is a USB MIDI to CV/GATE interface built in a small, space saving Eurorack module.

It converts a monophonic MIDI Note, one selectable MIDI CONTROL CHANGE (or NOTE ON VELOCITY or CHANNEL´S PRESSURE), MIDI CLOCK and START/STOP to corresponding Eurorack compatible CV, GATE, Clock and Trigger signals.

Despite its simplicity, the Mini MIDI comprises useful configuration capabilities and a user friendly calibration mode.

A Class Compliant USB MIDI Device can be connected to the USB DEVICE port and a USB MIDI Host (computer) can be connected to the USB HOST port, allowing at least three different modes of operation.

The Mini MIDI is designed to solve the kind of problems encountered by users and by ourselves when using similar modules.

2. INSTALLATION

⚠ WARNING

Always turn the Eurorack power supply off and unplug the power cord before plugging the Eurorack power cable to your module.

When attaching the Eurorack power cable, please be careful not to touch the terminal part.

Connect to the Eurorack's system power supply using the supplied Eurorack power cable.

Connect one end of the 16-pin cable to the Eurorack power connector. Connect the red mark on the power cable so that it matches the pin on the (- 12 V) side of the power connector.

Connect the other end of the 16-pin cable to the shrouded header on the back of the module. The header is protected against reverse-plugging.

3. OPERATING ELEMENTS

3.1 FRONT PANEL

OUTPUTS:

- **PITCH:** CV output (1V / Octave, -3V to 7V)
- **GATE:** Active high Gate output (10V)
- **CC:** CV output for a MIDI CC, Note On Velocity or Channel´s Pressure (0V to 5V)
- **START:** Start = 5V, Stop = 0V
- **CLOCK:** Rising edge (5V)

USB MIDI PORTS:

- **DEVICE:** connect here a Class compliant USB MIDI Device, e.g. a MIDI-Keyboard or Sequencer.
- **HOST:** connect here a USB MIDI Host, e.g. a Computer running your preferred DAW software.

3.2 BACK

POWER CONNECTOR

Connect a 16-pin Eurorack power cable.

JUMPER SETTINGS

The PITCH and GATE outputs can be connected to Pitch and Gate signals on the Eurorack power connector.

- **Gate:** Set to connect Gate output to Gate signal on power connector.
- **Pitch:** Set to connect Pitch output to Pitch signal on power connector.

DIP SWITCHES 1 TO 4

Use the DIP switches to map MIDI Control Change Number, Channel´s Pressure (Aftertouch) or Note On Velocity to CC Output (see table 1) or enter Calibration Mode (see chapter 5. CALIBRATION MODE).

4. GETTING STARTED

Before applying power to the module, select the MIDI controller number to be mapped to the CC output by setting the DIP switches on the back of the Mini MIDI (see table 1). Most commonly used MIDI Control Change Numbers are implemented.

The default Control Change number, i. e. when all DIP switches are in off position, is CC 1 “Modulation Wheel”. The DIP switches will be read once at power up time.

The PITCH and GATE outputs can be connected to Pitch and Gate signals on the Eurorack power connector using the Pitch and Gate jumpers at the back of the Mini MIDI.

1	**2**	**3**	**4**	**MIDI Controller**
0	0	0	0	Modulation Wheel
1	0	0	0	Breathe Control
0	1	0	0	Foot Control
1	1	0	0	Channel volume
0	0	1	0	Balance
1	0	1	0	Pan
0	1	1	0	Expression
1	1	1	0	Effects controller 1
0	0	0	1	Effects controller 2
1	0	0	1	General purpose 1
0	1	0	1	General purpose 2
1	1	0	1	General purpose 3
0	0	1	1	General purpose 4
1	0	1	1	**Channel Pressure (Aftertouch)**
0	1	1	1	**Note On Velocity**
1	1	1	1	**Calibration Mode**

Table 1: DIP switches settings. 0 = off, 1 = on

The three last rows of 1 contain special modes:

- **Channel´s Pressure:** In this mode the value of incoming “Channel Pressure” (aftertouch) messages will be mapped to the CC output rather than the values of incoming Control Change messages.
- **Note On Velocity:** In this mode the note velocity of incoming “Note On” messages will be mapped to the CC output rather than the values of incoming Control Change messages.

- **Calibration mode:** With all DIP Switches in the “On” position, the MiniMIDI enters the calibration mode (see chapter 5. CALIBRATION MODE).

4.1 SETTING THE MIDI CHANNEL

The Mini MIDI listens to Channel Voice on one MIDI channel.

After power up, the Mini MIDI waits for the first incoming MIDI Channel Voice Message and sets the MIDI channel according to it.

! MIDI Channel Mode Messages are ignored. The module always works in POLY OFF and MONO OFF mode, i. e. one MIDI Channel and one voice.

4.2 MODES OF OPERATION

Depending on which USB Ports are used, the Mini MIDI can operate in at least three different modes. It also offers a calibration mode (see chapter 5. CALIBRATION MODE).

USB Device to CV/Gate

When a class compliant USB MIDI Device is connected to the USB DEVICE Port on the Mini MIDI, MIDI messages from the Device will be directly converted and mapped to their corresponding outputs on the Mini MIDI.

USB Host to CV/Gate

When a USB MIDI Host is connected to the USB HOST Port on the Mini MIDI, MIDI messages from the Host will be directly converted and mapped to their corresponding outputs on the Mini MIDI.

USB Device to CV/Gate, through USB Host

When both MIDI Device and Host are connected to the Mini MIDI, MIDI messages from the Device will be redirected to the MIDI Host, and only MIDI messages from the Host are converted and mapped to the corresponding outputs on the Mini MIDI.

This allows to play your modular set from the USB MIDI Device whilst simultaneously recording this information into a MIDI track in your DAW.

Implemented MIDI messages

Regardless of which USB Port is being used, the Mini MIDI listens to Channel Voice Messages and System Real-Time Messages like MIDI Clock and START/STOP/CONTINUE. 2 lists all MIDI messages implemented in the Mini MIDI.

MIDI Channel Voice Messages	**Status Byte**	**Data Byte 1**	**Data Byte 2**
Note Off	8x	Key Number	Note Off Velocity
Note On	9x	Key Number	Note On Velocity
Control Change	Bx	Controller Number	Controller Value
Channel´s Pressure	Dx	Pressure Value	None
Pitch Bend	Ex	MSB	LSB
MIDI System Real Time Messages			
Timing Clock	F8		
Start Sequence	FA		
Continue Sequence	FB		
Stop Sequence	FC		
System Reset	FF		

Table 2: Implemented MIDI Messages, x = midi channel 1 to 16 (1 to F hex)

5. CALIBRATION MODE

Each Mini MIDI has been carefully tested and calibrated at factory. However, it is possible for the user to perform a calibration of the Pitch output voltage. The calibration procedure requires the use of a voltage meter with enough resolution (1 mVmess).

Calibration procedure

1. Connect the voltage meter to the PITCH output of the Mini MIDI. You can insert a patch cable into the PITCH output and connect the positive probe of the voltage meter to the tip of the patch cable connector and the negative probe of the voltage meter to the sleeve of the patch cable connector.
2. Enter the calibration mode by setting all DIP Switches to the “On” position and then power up the module.
3. Read the voltage meter, the voltage should be 0 V.
4. Adjustment of the output voltage can be achieved by sending the MIDI notes listed in 3 to the Mini MIDI on one of the USB MIDI Ports.
5. Send note C2 to change the output voltage to 5 V, read the voltage meter and adjust the output voltage if needed as described above.
6. Changes are immediately saved. After finishing the calibration remove power from the module and set the DIP Switches to your preference (see 1) before powering up the module again for normal use.

MIDI Note number decimal (hex)		Note	Action
45	(0x2D)	A1	Decrement of voltage at selected pitch output voltage
47	(0x2F)	B1	Fine decrement of voltage at selected pitch output voltage
48	(0x30)	C2	Select pitch output voltage: 0 or 5 Volt
50	(0x32)	D2	Fine increment of voltage at selected pitch output voltage
52	(0x34)	E2	Increment of voltage at selected pitch output voltage

Table 3: MIDI notes used in calibration mode

6. TECHNICAL SPECIFICATIONS

DAC resolution (PITCH, CC): 16 bit

Pitch Output range (1V / Octave): -3 V to 7 V

Gate Output: 0 V / 10 V

MIDI CC Output: 0 V to 5 V

MIDI Start / Stop: Active High (5 V)

MIDI Clock: Rising edge (5 V)

USB MIDI Host Interface output current: up to 500 mA

Current Draw:

- **+12V:** ca. 22mA + current consumption of a connected class compliant USB Device, USB current supply available up to 500mA
- **-12V:** ca. 10mA
- **5V:** 0 mA

3U Eurorack module, **4 HP** wide, compatible with Skiff cases

Installation depth: 30 mm deep