*μ*MIDI Manual

USB/DIN MIDI Voice and Clock Interface



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Table of Contents

Table of Contents

Compliance

Installation

- Installing Your Module

Overview

Features

Front Panel

- Controls
- Outputs

Connection

- DIN MIDI Devices
- Computer
- iPhone or iPad
- Operation
- Portamento (Glide)

Customization

Firmware Updates

Technical Specifications

MIDI Implementation Chart

Compliance

This device 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.

Changes or modifications not expressly approved by Intellijel Designs, Inc. could void the user's authority to operate the equipment.

Any digital equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

This device meets the requirements of the following standards and directives:

EMC: 2014/30/EU
EN55032:2015 ; EN55103-2:2009 (EN55024) ; EN61000-3-2 ; EN61000-3-3

Low Voltage: 2014/35/EU
EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011

RoHS2: 2011/65/EU

WEEE: 2012/19/EU

Installation

Intellijel Eurorack modules are designed to be used with a Eurorack-compatible case and power supply. We recommend you use Intellijel cases and power supplies.

Before installing a new module in your case, you must ensure your power supply has a free power header and sufficient available capacity to power the module:

- Sum up the specified +12V current draw for all modules, including the new one. Do the same for the -12 V and +5V current draw. The current draw will be specified in the manufacturer's technical specifications for each module.
- Compare each of the sums to specifications for your case's power supply.
- Only proceed with installation if none of the values exceeds the power supply's specifications. Otherwise you must remove modules to free up capacity or upgrade your power supply.

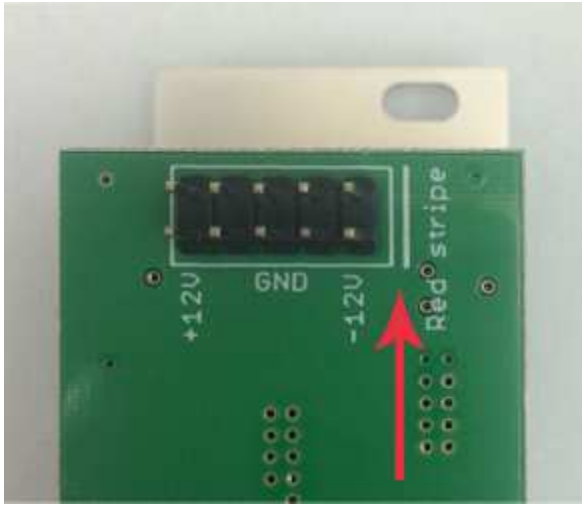
You will also need to ensure your case has enough free space (hp) to fit the new module. To prevent screws or other debris from falling into the case and shorting any electrical contacts, not leave gaps between adjacent modules, and cover all unused areas with blank panels. Similarly, do not use open frames or any other enclosure that exposes the backside of any module or the power distribution board.

You can use a tool like ModularGrid to assist in your planning. Failure to adequately power your modules may result in damage to your modules or power supply. If you are unsure, please contact us before proceeding.

Installing Your Module

When installing or removing a module from your case always turn off the power to the case and disconnect the power cable. Failure to do so may result in serious injury or equipment damage.

Ensure the 10-pin connector on the power cable is connected correctly to the module before proceeding. The red stripe on the cable must line up with the -12V pins on the module's power connector. The pins are indicated with the label -12V, a white stripe next to the connector, the words "red stripe", or some combination of those indicators.



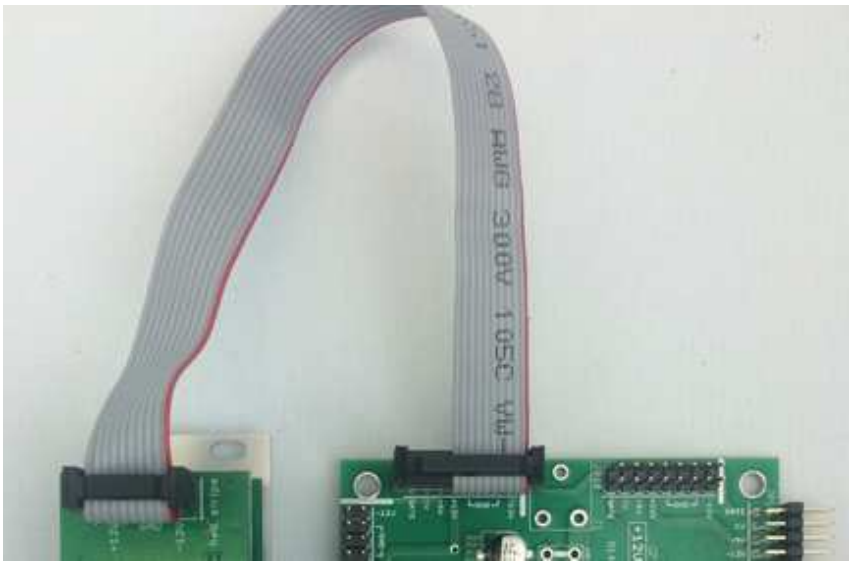
Most modules will come with the cable already connected but it is good to double check the orientation. Be aware that some modules may have headers that serve other purposes so ensure the cable is connected to the right one.



The other end of the cable, with a 16-pin connector, connects to the power bus board of your Eurorack case. Ensure the red stripe on the cable lines up with the -12V pins on the bus board. On Intellijel power supplies the pins are labelled with the label “-12V” and a thick white stripe:

If you are using another manufacturer’s power supply, check their documentation for instructions.

Once connected, the cabling between the module and power supply should resemble the picture below:



Before reconnecting power and turning on your modular system, double check that the ribbon cable is fully seated on both ends and that all the pins are correctly aligned. If the pins are misaligned in any direction or the ribbon is backwards you can cause damage to your module, power supply, or other modules.

After you have confirmed all the connections, you can reconnect the power cable and turn on your modular system. You should immediately check that all your modules have powered on and are functioning correctly. If you notice any anomalies, turn your system off right away and check your cabling again for mistakes.

Overview

The *µ*MIDI provides all the essentials to control and sync your Eurorack modular from your computer, iPhone/iPad, or hardware MIDI device with a minimum of fuss. No menu diving or configuration scripts, just two buttons. The connectivity, feature set, and compact size make the *µ*MIDI ideal for integrating your modular with the rest of your rig while not taking up too much space in your case.

The upper clock section features a dedicated 16th note clock output ideal for synchronizing a Eurorack sequencer like the Metropolis. A second clock output with selectable divisions can be used when difference sync events are needed. The run and reset outputs can be used to reset your Eurorack sequencers in tandem with any external sequencer or DAW.

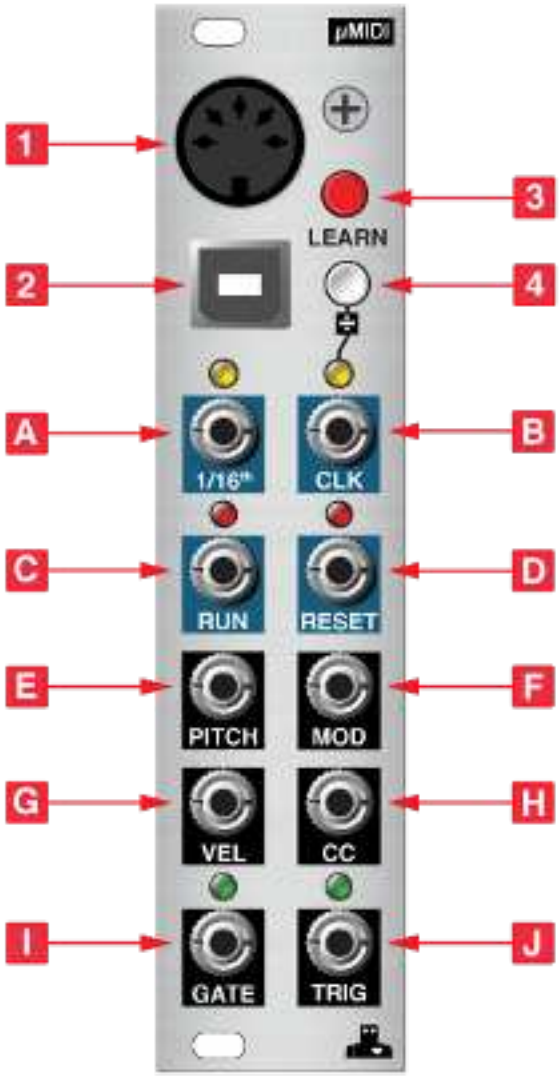
The lower half of the *µ*MIDI gives you everything you need to control a single voice synth via MIDI. Just connect either a USB or DIN MIDI cable to the module, LEARN a channel, and start playing.

Future firmware updates over USB are made easy with the Firmware Updater software.

Features

- High speed ARM processor for low latency & jitter.
- DIN or USB MIDI input.
- Two clock outputs, one with selectable divisions.
- Sequencer sync via run and reset outputs.
- Precision 0 – 10 V note pitch output with pitch bend & portamento CC support.
- Gate and trigger outputs for envelope triggering.
- Mod wheel and continuous controller outputs for additional modulation.
- Firmware updates over USB.

Front Panel



Controls

1. **DIN MIDI Input** - For connecting to 5-pin DIN MIDI outputs of controllers, synths, drum machines etc.
2. **USB Connector** - For connecting to computers, iPhones, iPads, other USB MIDI hosts.
3. **LEARN** - This button can be used to learn the MIDI channel on which the *µ*MIDI will accept notes and controller values. Pressing the button once will cause the lights on the module to blink in a cycle until the first note message is received. The listening channel

will then be set to the channel of the note, and messages on other channels will be ignored.Another function of the button is to save settings. Press and hold the button for one second or longer to save the current clock division and learned channel to memory. The settings will be recalled the next time your system is powered on.

4. **+** - The division button sets the clock division of the MIDI clock that is sent from the CLK output. The default setting is 6, the same as the 1/16th output. Pressing the button repeatedly cycles through the different divisions: 6 (1/16 notes), 12 (1/8 notes), 24 (1/4 notes), 48 (1/2 notes), 96 (whole notes, eg: every measure), 1 (24 ppq), 3 (1/32 notes).

Outputs

A. **1/16th** - Trigger output which outputs a divided MIDI clock with a fixed division of 6, equivalent to 1/16th notes. Suitable for connecting to sequencer clock inputs such as the Metropolis.

B. **CLK** - Trigger output which outputs a divided MIDI clock with a division set by the ÷ button.

C. **RUN** - Gate output which goes high when a MIDI start or continue message is received and low when a stop message is received.

D. **RESET** - Trigger output which sends a trigger when a MIDI reset message is received.

E. **PITCH** - 1 V/octave CV output with a range of 0 – 10 V. The voltage output is determined by the pitch of the last played note and the pitch bend control. MIDI note 0 (C-2) maps to 0 V and note 120 (C8) maps to 10 V.

F. **MOD** - CV output with a range of 0 – 5 V. The voltage is proportional to the position of the mod wheel control. Suitable for connecting to the CV input of a VCA controlling modulation depth.

G. **VEL** - CV output with a range of 0 – 5 V. The voltage is proportional to the velocity of the last played MIDI note. Suitable for connecting to the LEVEL input of an envelope generator such as the Atlantis envelope section or Dual ADSR.

H. **CC** - CV output with a range of 0 – 5 V. The voltage is proportional to the value sent by MIDI CC #2.

I. **GATE** - Gate output which is high when a note is being played. Suitable for connecting to the GATE input of an envelope such as the Atlantis envelope section or Dual ADSR.

J. **TRIG** - Trigger output which sends a trigger when a MIDI note on message is received. Suitable for connecting to the TRIG input of an envelope generator such as the Atlantis envelope section or Dual ADSR.

Connection

DIN MIDI Devices

Connect a 5-pin MIDI DIN cable from the MIDI Out or MIDI Thru port of another MIDI device such as a controller, drum machine, or synthesizer, to the MIDI DIN port at the top of the *µ*MIDI.

Computer

The *µ*MIDI can be connected to a Mac or PC using a USB A to B cable. As it is a USB MIDI class-compliant device, no drivers are required.

iPhone or iPad

The *µ*MIDI can be connected to an iPhone or iPad using the Apple Lightning to USB Camera Adaptor . Connect a USB A to B cable between the adaptor and the module's USB port then connect the adaptor to your iDevice.

Operation

If you are only using MIDI clock then no further action is required. Upon receiving any MIDI clock or transport messages the clock trigger outputs of the *µ*MIDI will function as described in the Front Panel section above.

If you are controlling a voice with MIDI messages you need to ensure the *µ*MIDI is set to the channel on which the messages are being sent. The default channel is 1 but can be changed by pushing the LEARN button to put the module in to learn mode. When in learn mode the next received note message will be used to set the listening channel. If you wish to save the learned channel simply press and hold the button until the lights on the module all blink. The next time the module powers on it will default to the newly saved channel.

Entering learn mode also resets the voice outputs in the event you get stuck notes or wish to reset the outputs for some other reason. You can push the LEARN button again to exit learn mode if you don't need to change MIDI channels.

Portamento (Glide)

The *µ*MIDI is capable of slewing the pitch output to achieve portamento effects. Portamento is enabled by using the standard MIDI portamento controls:

- Send CC 65 (Portamento Control) with a value of 127 to enable portamento
- Use CC 5 (Portamento Time MSB) for coarse control of the portamento time, or CC 37 (Portamento Time LSB) for fine control.
- You can disable portamento by sending CC 65 (Portamento Control) with a value of 0.

Customization

The operation of the µMIDI can be customized by visiting the µMIDI Configuration Utility web page. You must use a recent version of Google Chrome and connect the µMIDI module to your computer via the USB cable.

Firmware Updates

Firmware for the µMIDI can be updated using the Intellijel Firmware Updater. With your modular system powered off, connect a USB cable between the module and your PC or Mac. Power on your modular while holding down the LEARN button. Then follow the instructions on the firmware updater page.

Technical Specifications

Width	6 hp
Maximum Depth	40 mm
Current Draw	47 mA @ +12V 3 mA @ -12V

MIDI Implementation Chart

MIDI implementation chart v. 2.0				
Manufacturer: Intellijel	Model: µMIDI	Version: 1.1	Date: 2016/04/26	
		Transmit/Export	Recognize/Import	Remarks
1. Basic information				
MIDI channels			1 - 16	Channel is selected by first channel message received after pressing "learn"
Note numbers			0 - 120	
Program change			✗	
Bank select response? (Yes/No)			✗	
If yes, list banks utilized in remarks column				
Modes supported:	Mode 1: Omni-On, Poly (Yes/No)		✗	
	Mode 2: Omni-On, Mono (Yes/No)		✗	
	Mode 3: Omni-Off, Poly (Yes/No)		✗	
	Mode 4: Omni-Off, Mono (Yes/No)		✓	
	Multi Mode (Yes/No)		✗	
Note-On Velocity (Yes/No)			✓	
Note-Off Velocity (Yes/No)			✓	
Channel Aftertouch (Yes/No)			✗	
Poly (Key) Aftertouch (Yes/No)			✗	
Pitch Bend (Yes/No)			✓	Pitch bend messages are summed with the note pitch to the pitch output
Active Sensing (Yes/No)			✗	
System Reset (Yes/No)			✓	
Tune Request (Yes/No)			✗	
Universal System Exclusive:	Sample Dump Standard (Yes/No)		✗	
	Device Inquiry (Yes/No)		✓	
	File Dump (Yes/No)		✗	
	MIDI Tuning (Yes/No)		✗	
	Master Volume (Yes/No)		✗	
	Master Balance (Yes/No)		✗	
	Notation Information (Yes/No)		✗	
	Turn GM1 System On (Yes/No)		✗	
	Turn GM2 System On (Yes/No)		✗	
	Turn GM System Off (Yes/No)		✗	

MIDI implementation chart v. 2.0				
Manufacturer: Intellijel	Model: µMIDI	Version: 1.1	Date: 2016/04/26	
		Transmit/Export	Recognize/Import	Remarks
	DLS-1 (Yes/No)		✗	
	File Reference (Yes/No)		✗	
	Controller Destination (Yes/No)		✗	
	Key-based Instrument Ctrl (Yes/No)		✗	
	Master Fine/Coarse Tune (Yes/No)		✗	
	Other Universal System Exclusive		✗	
Manufacturer or Non-Commercial System Exclusive			✗	
NRPNs (Yes/No)			✓	1024 - Note Priority Lowest (0), Highest (1), Last (2)
RPN 00 (Pitch Bend Sensitivity) (Yes/No)			✓	
RPN 01 (Channel Fine Tune) (Yes/No)			✗	
RPN 02 (Channel Coarse Tune) (Yes/No)			✗	
RPN 03 (Tuning Program Select) (Yes/No)			✗	
RPN 04 (Tuning Bank Select) (Yes/No)			✗	
RPN 05 (Modulation Depth Range) (Yes/No)			✗	
2. MIDI Timing and Synchronization				
MIDI Clock (Yes/No)			✓	
Song Position Pointer (Yes/No)			✗	
Song Select (Yes/No)			✗	
Start (Yes/No)			✓	
Continue (Yes/No)			✓	
Stop (Yes/No)			✓	
MIDI Time Code (Yes/No)			✗	
MIDI Machine Control (Yes/No)			✗	
MIDI Show Control (Yes/No)			✗	
If yes, MSC Level supported				

MIDI implementation chart v. 2.0

Manufacturer: Intellijel	Model: µMDI	Version: 1.1	Date: 2016/04/26	
Control #	Function	Transmitted (Y/N)	Recognized (Y/N)	Remarks
0	Bank Select (MSB)		✗	
1	Modulation Wheel (MSB)		✓	Value sent out of MOD output
2	Breath Controller (MSB)		✓	Value sent out of CC output
3			✗	
4	Foot Controller (MSB)		✗	
5	Portamento Time (MSB)		✓	
6	Data Entry (MSB)		✓	Used for NRPN/RPN messages
7	Channel Volume (MSB)		✗	
8	Balance (MSB)		✗	
9			✗	
10	Pan (MSB)		✗	
11	Expression (MSB)		✗	
12	Effect Control 1 (MSB)		✗	
13	Effect Control 2 (MSB)		✗	
14			✗	
15			✗	
16	General Purpose Controller 1 (MSB)		✗	
17	General Purpose Controller 2 (MSB)		✗	
18	General Purpose Controller 3 (MSB)		✗	
19	General Purpose Controller 4 (MSB)		✗	
20			✗	
21			✗	
22			✗	
23			✗	
24			✗	
25			✗	
26			✗	
27			✗	
28			✗	

MIDI implementation chart v. 2.0

Manufacturer: Intellijel	Model: µMIDI	Version: 1.1	Date: 2016/04/28	
Control #	Function	Transmitted (Y/N)	Recognized (Y/N)	Remarks
29			✗	
30			✗	
31			✗	
32	Bank Select (LSB)		✗	
33	Modulation Wheel (LSB)		✓	
34	Breath Controller (LSB)		✓	
35			✗	
36	Foot Controller (LSB)		✗	
37	Portamento Time (LSB)		✓	
38	Data Entry (LSB)		✓	
39	Channel Volume (LSB)		✗	
40	Balance (LSB)		✗	
41			✗	
42	Pan (LSB)		✗	
43	Expression (LSB)		✗	
44	Effect Control 1 (LSB)		✗	
45	Effect Control 2 (LSB)		✗	
46			✗	
47			✗	
48	General Purpose Controller 1 (LSB)		✗	
49	General Purpose Controller 2 (LSB)		✗	
50	General Purpose Controller 3 (LSB)		✗	
51	General Purpose Controller 4 (LSB)		✗	
52			✗	
53			✗	
54			✗	
55			✗	
56			✗	
57			✗	

MIDI implementation chart v. 2.0

Manufacturer: Intellijel	Model: µMIDI	Version: 1.1	Date: 2016/04/26	
Control #	Function	Transmitted (Y/N)	Recognized (Y/N)	Remarks
	58		✗	
	59		✗	
	60		✗	
	61		✗	
	62		✗	
	63		✗	
	64 Sustain Pedal		✗	
	65 Portamento On/Off		✗	
	66 Sostenuto		✗	
	67 Soft Pedal		✗	
	68 Legato Footswitch		✓	
	69 Hold 2		✗	
	70 Sound Controller 1 (default: Sound Variation)		✗	
	71 Sound Controller 2 (default: Timbre / Harmonic Quality)		✗	
	72 Sound Controller 3 (default: Release Time)		✗	
	73 Sound Controller 4 (default: Attack Time)		✗	
	74 Sound Controller 5 (default: Brightness)		✗	
	75 Sound Controller 6 (GM2 default: Decay Time)		✗	
	76 Sound Controller 7 (GM2 default: Vibrato Rate)		✗	
	77 Sound Controller 8 (GM2 default: Vibrato Depth)		✗	
	78 Sound Controller 9 (GM2 default: Vibrato Delay)		✗	
	79 Sound Controller 10 (GM2 default: Undefined)		✗	
	80 General Purpose Controller 5		✗	
	81 General Purpose Controller 6		✗	
	82 General Purpose Controller 7		✗	
	83 General Purpose Controller 8		✗	
	84 Portamento Control		✓	
	85		✗	
	86		✗	

MIDI implementation chart v. 2.0

Manufacturer: Intellijel	Model: µMDI	Version: 1.1	Date: 2016/04/29	
Control #	Function	Transmitted (Y/N)	Recognized (Y/N)	Remarks
87			✗	
88			✗	
89			✗	
90			✗	
91	Effects 1 Depth (default: Reverb Send)		✗	
92	Effects 2 Depth (default: Tremolo Depth)		✗	
93	Effects 3 Depth (default: Chorus Send)		✗	
94	Effects 4 Depth (default: Celeste [Detune] Depth)		✗	
95	Effects 5 Depth (default: Phaser Depth)		✗	
96	Data Increment		✗	
97	Data Decrement		✗	
98	Non-Registered Parameter Number (LSB)		✓	
99	Non-Registered Parameter Number(MSB)		✓	
100	Registered Parameter Number (LSB)		✓	
101	Registered Parameter Number(MSB)		✓	
102			✗	
103			✗	
104			✗	
105			✗	
106			✗	
107			✗	
108			✗	
109			✗	
110			✗	
111			✗	
112			✗	
113			✗	
114			✗	
115			✗	

MIDI implementation chart v. 2.0

Manufacturer: Intellijel	Model: µMDI	Version: 1.1	Date: 2016/04/29	
Control #	Function	Transmitted (Y/N)	Recognized (Y/N)	Remarks
116			✗	
117			✗	
118			✗	
119			✗	
120	All Sound Off		✓	
121	Reset All Controllers		✓	
122	Local Control On/Off		✗	
123	All Notes Off		✓	
124	Omni Mode Off		✗	
125	Omni Mode On		✗	
126	Poly Mode Off		✗	
127	Poly Mode On		✗	