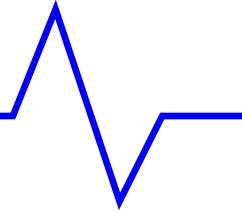


Jiisuki Industries

Old-School Technology Re-Invented



Please visit www.jiisuki.net for the latest version of the documentation.

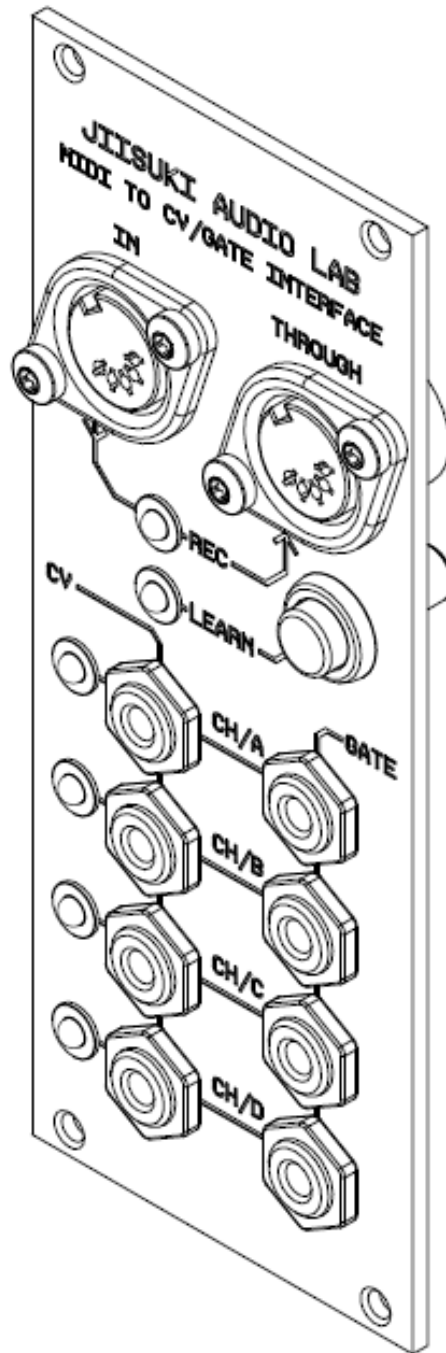
Document Version 1.0

Baseline MIDI to CV/Gate Interface

Manual

*This document contains information for the subject requesting the product or service. The information in this document is valid from **March 10, 2016**, until a new version of the document is released or the service or product is closed. **Jiisuki Industries** reserves the right to close any service or product without notice. If there exist a support agreement, this agreement is still valid until the date of cancellation provided along with the agreement. If there is no date of cancellation provided, the default time of 6 months from date of purchase applies. This document is copyright **Jiisuki Industries**. Reprinting and publication on any website, journal or other means of distribution not owned by **Jiisuki Industries** is strictly prohibited!*

For any questions about this document, please visit www.jiisuki.net for further contact information.



1 Specification

1.1 General Run-Down

Module Dimensions	3U Eurorack panel, 10 TE width. Aluminium front panel.
Power	± 12 Vdc, 20 mA max. 5 Vdc, 10 mA max.
Front Connections	3.5 mm cv/gate outputs, MIDI in/through.
Rear Connections	Eurorack bus 16 pin header, expansion header, bus configuration.

1.2 Electrical characteristics

Input Impedance	1 M Ω .
Output Impedance	100 Ω .
Output Noise	-90 dBV (Full auditory bandwidth).
Linearity	See Technical Details.

1.3 General

The **Jiisuki Industries** Baseline MIDI to CV/Gate Interface requires a complementary power supply providing ± 12 Vdc, as well as 5 Vdc. The module is protected against reverse voltage. However, the warranty is not valid for faults occurred by faulty installation. Please make sure that you check all connection carefully before turning on the system.

This unit is cooled by air convection only and should under normal circumstances produce little heat. However, make sure you have adequate space behind the module to allow air to flow freely. Do not place the unit under direct sunlight, or in any other source of heat.

The module may be mounted in a 3U Eurorack with 10 TE (HP) of available space. Mounting screws are provided, together with protective washers. Use the washers on the front panel when installing to protect the finish. Only clean the front panel with a barely damp cloth. No cleaning solutions except pure water should be used.

1.4 Compliance

This product complies with the **European EMC Directive 89/336/EEC** which applies to apparatus which is *liable to cause electromagnetic disturbance or is itself liable to be affected by such disturbance* when mounted in a shielding Eurorack case.

2 Installation

2.1 Earthing

The oV (GND) line is not connected to the front panel. However, it is connected to a couple of mounting screws and exposed metal parts and must therefore be grounded at all times.

2.2 Hardware Configuration

The module has a couple of switches that enables you to send output D to the bus CV, and output H to the bus GATE. See figure of the board layout for the location of these switches.

Warning: It is absolutely crucial that the module is removed safely from the system before making any changes to the operational mode. Failure to observe this practice may result in hazard to life or damage to connected equipment.

There is a jumper that can be removed to enter calibration mode. In calibration mode, MIDI messages can be used to fine tune the output ranges. See more on this in section 2.9.

2.3 Connecting Power

Before connecting power, please make sure the system is offline and disconnected from the mains power. Leave all connections on the front panel unconnected when installing the module.

Warning: Failure to observe this practice may result in hazard to life or damage to connected equipment. Please follow the recommended safety guidelines.

The module is delivered with a power cable following the Eurorack format. The marked side of the cable is -12Vdc power, and should be facing downwards. It is important that you check the polarity of the connection. Make sure that -12Vdc line is connected to -12Vdc on the distribution board. The module is protected against reverse polarity and missing supply lines. However, wrongly attached power might cause damage and problems to other modules in the system that does not have protection, so please check the power connection several times.

When the power connection has been made, mount the front panel in the rack using the screws delivered with the module. There are 2 sets of screws, M2.5 and M3 type screws. Use the washers delivered with the module to protect the front panel from scratches. It is important that the module is firmly attached to the front panel before turning on power, both for safety reasons and for electromagnetic compatibility.

2.4 Starting Up

When the power is correctly connected and the front panel is secured to the rack, turn on power. Please do not plug in any signal cables before turning on power the first time. Make sure that the ADAPT lamp lights up, and switches off after about 3 seconds.

2.5 Connecting Signals

Depending on the mode of operation, the control voltage outputs may work as gate outputs. Refer to section 2.2 for more information. In the normal operational mode, there are 4 control voltage outputs (labeled CV) and 4 gate outputs (labeled GATE). Each CV output has one corresponding GATE output, which answers to a note on the associated channel (see section 2.2 for more information).

Connect a MIDI compatible cable to the socket labeled IN. The module allows MIDI chaining by using another MIDI cable connected to the THROUGH output, connected to more equipment.

2.6 Software Configuration

To configure what the outputs should do, the following command chain should be used

Step 1	→	Step 2	→	Step 3	→	Step 4	→	Step 5	→	Step 6
240		0: Out A		0: Ch 1		0: CV		0: Val. 1		247
		1: Out B		1: Ch 2		1: Gate		1: Val. 2		
		2: Out C		2: Ch 3		2: Aftertouch		2: Val. 3		
			3: Pitch bend		...		
			4: Controller		...		
			5: Gate by Note		...		
			6: Reserved		...		
		7: Out H		15: Ch 16		7: Reserved		119: Val. 120		

Note that Step 5 is ignored if the entity selected in Step 4 does not need a value.

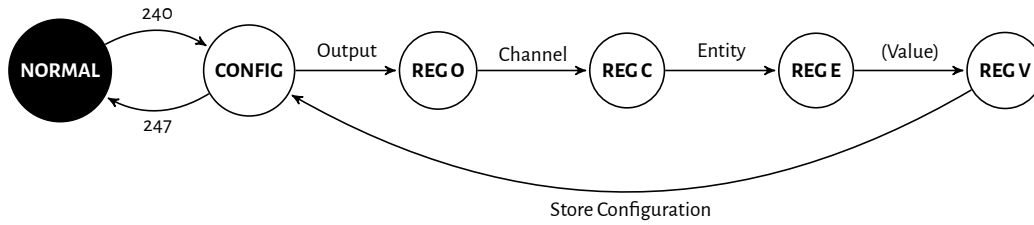


Figure 1: When SYSEX (240) is received, configuration mode is enabled. First the output is read, followed by channel, entity and a value. The value is only used if the entity supports it, otherwise it is ignored. These updates are stored to the configuration matrix and the FSM then return and wait for new update. EOX (247) ends configuration mode.

Here we will show a few examples of code chains to setup the outputs. The example is how to create factory preset 3.

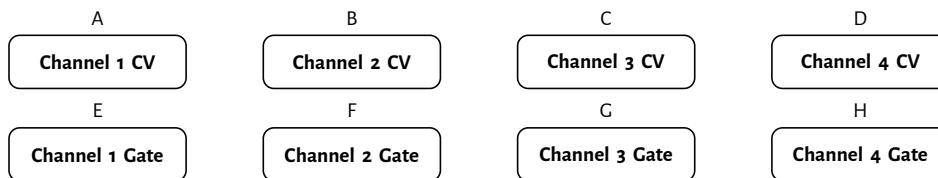
- 240** Enter configuration mode
- 0, 0, 0, 0** Set A to be CV + Pitch bend for Channel 1
- 1, 0, 1, 0** Set B to be Gate for Channel 1
- 2, 0, 2, 0** Set C to be Aftertouch for Channel 1
- 3, 1, 5, 12** Set D to be Gate for Channel 2, Note C1
- 4, 1, 5, 13** Set E to be Gate for Channel 2, Note C# 1
- 5, 1, 5, 14** Set F to be Gate for Channel 2, Note D1
- 6, 1, 5, 15** Set G to be Gate for Channel 2, Note D# 1
- 7, 1, 5, 16** Set H to be Gate for Channel 2, Note E1
- 247** Exit configuration mode

For instance, the example above can be used to control a monophonic sound from Channel 1 and create some drum programming from Channel 2.

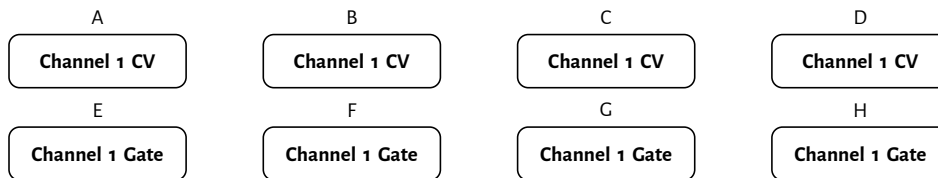
2.7 Simple Configuration -- Factory Presets

Since not all like programming totally customized setups, we have created an easier way to setup the outputs using a program change command to recall presets. The program change command is the same for all channels, i.e. channel is ignored.

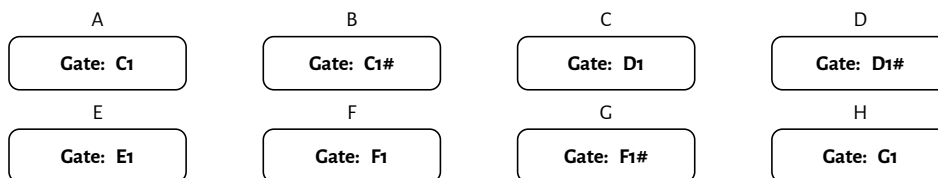
2.7.1 Preset 0 – 4 Channel Mono



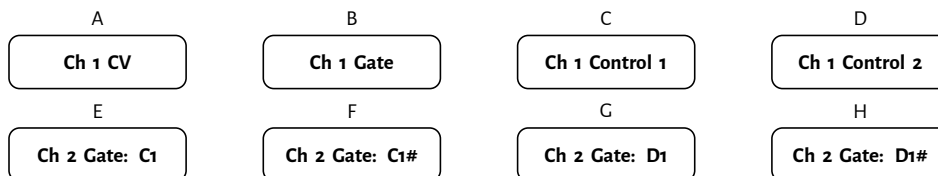
2.7.2 Preset 1 – 4 Note Polyphony (Channel 1)



2.7.3 Preset 2 – Drum Sequencer (Channel 1)



2.7.4 Preset 3 – Mixed Domain



2.8 Maintenance

Only clean the front panel with a barely damp cloth. No cleaning solutions except pure water should be used, and use it very sparsely. Always make sure that the power is disconnected before cleaning the front panel!

2.9 Calibration

There is a jumper that can be removed to enter calibration mode. In calibration mode, MIDI messages can be used to fine tune the output ranges. The following commands are used:

Command	Description	Values
192 -- 199	Select Note for Edit	0 to 127
96	Increase Note CV	
97	Decrease Note CV	

To enter the calibration mode, send MIDI message 192 to 199 to select output A to H, then send a value from 0 to 127 to select the note, where 0 corresponds to C0. You are now in calibration mode. Here, send either 96 or 97 to increase or decrease the output voltage for the selected note on selected output. This can be repeated as many times as required. When happy with the result, select a new output by sending 192 to 199 (A-H) followed by the note number 0 to 127. The new control voltage is then stored to internal memory and is remembered even when power is removed.

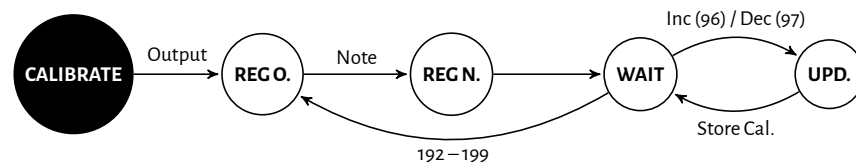


Figure 2: First the output read, followed by a note value. The FSM is then waiting for increase (96), decrease (97) or a new output selection. For any 96 or 97, the calibration value is updated for the particular output and note value.

To use the newly calibrated module, please remove power from the system and uninstall the module. Replace the jumper on the back of the module and reinstall. Power on the system, the module should now be fully functional and calibrated to your requirements.

3 Technical Details

The following sections displays details about the module in higher technical detail than the previous chapters. This is the reference section for DIY modifications, repair work, extensive troubleshooting and system overview interests.

3.1 State Machine for Normal Operation Mode

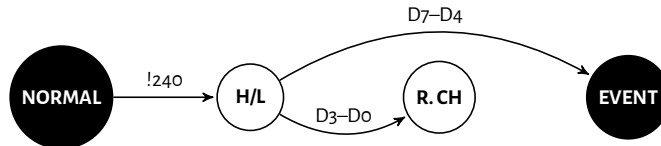
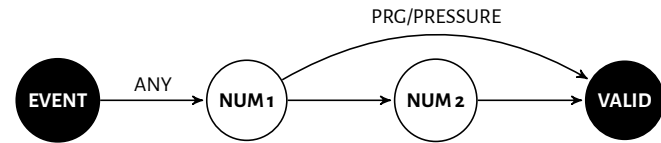


Figure 3: Normal mode is idle until a MIDI command is received. If SYSEX (240) is read, then enter configuration mode, otherwise split the 8-bit byte into its high and low portions. The lower 4 bits are used to define the channel which is controlled, the other 4 bits are used to determine the type of event, continued by the event handler.

3.2 State Machine for Event Handling



State	Description
EVENT	Event handler entry point
NUM 1	First value number, in some cases the only one before jumping to validation
NUM 2	Second value number
VALID	Validation procedure, see next section

Figure 4: The event handler reads one or two values. For a program change (PRG) or channel aftertouch (PRESSURE), only one value is read. These values together with the channel from the 4 lower bits of the event command is sent to the validation procedure.

3.3 Function for Event Validation

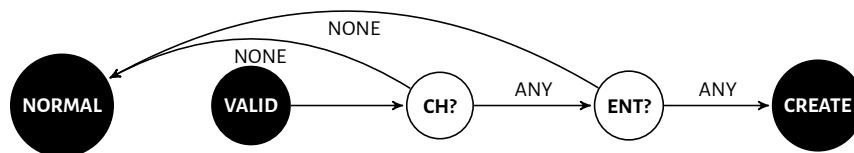


Figure 5: First the validation procedure checks all outputs if any has a corresponding channel, then for all matching check if the entity is linked to that output and channel. For all matching setups, write the change to the output matrix.

4 Custom Preset Notes

4.0.1 Preset _____

A	B	C	D
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E	F	G	H
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Notes

4.0.2 Preset _____

A	B	C	D
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E	F	G	H
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Notes

4.0.3 Preset _____

A	B	C	D
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E	F	G	H
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Notes

5 Warranty

Jiisuki Industries gives a 2-year warranty on this product and guarantees that it will be free of faults within this time period. The warranty does not cover any fault that has been caused by faulty operation or disregard to any instructions within this manual. The warranty does not cover error due to powering the module while still damp or wet after cleaning. **Jiisuki Industries** does not pay for delivery cost for any warranty errands. The user have to pay postage to ensure that the module reaches **Jiisuki Industries** in a safe and sound manner. However, **Jiisuki Industries** does stand for the postage fee for the return journey to the customer. **Jiisuki Industries** can not stand liable for any damage caused to anyone, or anything by the use of this product.