

SP MIDI CONVERTER

Version 1.1

Thank you for checking out the SP MIDI converter. Its core implements *note off* on both incoming and outgoing messages. It also re-maps pads and their tuning levels to cover more MIDI channels and note numbers.

A MIDI keyboard can be used to play samples or loops with a controlled duration, not just pitch. By duplicating our sample we can cover multiple octaves. The SP MIDI makes it possible to sequence external gear that require *note off*, such as synthesizers. Two additional MIDI channels and all note numbers can be sequenced using *bank D* (*bank 1* on the SP-12).

Safety notes



- Keep the unit away from excessive heat, such as power amplifiers or heat radiators.
- Keep away from wet or moist environment.
- Use only the supplied power supply.
- Do not open, attempt to repair or modify the unit. Contact us in need of repair.

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In this package: 1x SP MIDI unit, 1x Power supply, 2x MIDI cable, 4x Rubber feet.

Set-up

A typical set-up is suggested in *figure 1*. A synthesizer's *MIDI Out* is connected to the SP MIDI's *MIDI In* port. *MIDI Out* is connected back to the synthesizer. The SP is connected by the *SP In/Out* ports, *Out* to *In* and vica versa. Other gear can be connected via *MIDI thru*.

After connecting the cables, enable *pitch keys* in **Set-up->22**. Set the SP, SP MIDI and MIDI controller to the same *MIDI channel*. The default channel is **1**. To use *external mode* set **Auto Correct** to **HiRes**.

Other gear have to be in *omni off/poly mode* to avoid being triggered by multiple MIDI channels. To bypass the SP MIDI, set the SP and controller to any channel which is not converted by the SP MIDI.

If your keyboard is a synthesizer the local triggering of notes should be switched off (*local off*). Please refer to your controllers manual. *Local off* will let you monitor the external devices in *external mode*, but give no throughput in *internal mode*.

Velocity

Velocity is sent by the controller. Since not all keyboards have a suitable or fixed velocity curve the *Control Change Number 7 (Volume)* can be used to override the minimum velocity. On most controllers this command is sent by one of its knobs. Please refer to your controller's manual. (CC# 71 is also implemented.)

Changing the MIDI channel

The primary MIDI channel can be set by pushing the REC MODE button for 3 seconds. You will notice the LEDs start flashing the selected channel. Change the channel by tapping the button and save by pushing for 3 seconds. The MIDI channel is stored even if power is turned off. Refer to *table 3* for the LED representation of channel number.

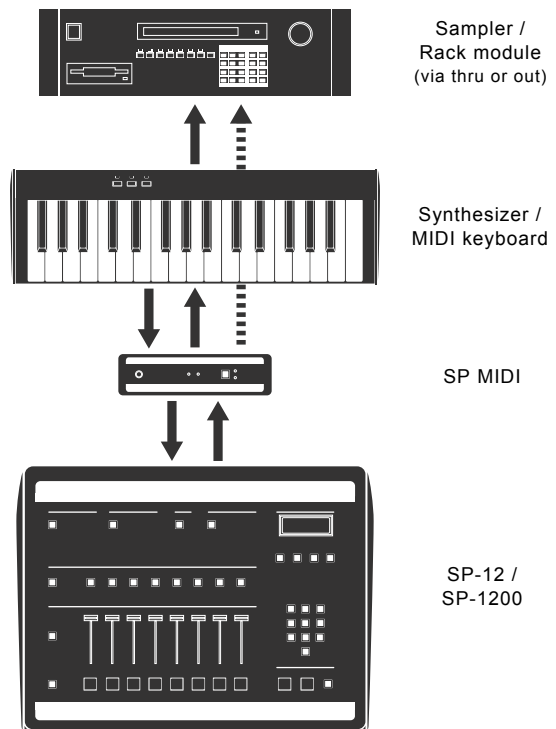


Figure 1: Typical set-up

MIDI conversion

Note off is converted by sending another *note on* with minimum velocity. Pad **D7** locked with **D8** hold octave and note to cover note numbers **0-127**. These events are mapped to the primary MIDI channel (*nn*). Pad **D1-D6** control notes **17-112** on the next channel (*nn+1*). See *table 1*. Pad **D1-D6** is pressed once (at each tuning) for *note on* and a second time for *note off*. Pads **A1-C8** can be used as normal to trigger oneshots two above the primary MIDI channel (*nn+2*).

Pressing *stop* on the SP issues an *all notes off* command to mute live notes.

MIDI CH: nn+1						MIDI CH: nn
F0-G1#	A1-C3	C3#-E4	F4-G5#	A5-C7	C7#-E8	C(-1) - G9
17-32	33-48	49-64	65-80	81-96	97-112	0 - 127
D1	D2	D3	D4	D5	D6	D7 D8

Table 1: Conversion map

"F1" oneshot

As of now *F1 (Soft Function 1)* is used to enable oneshot on pad **D1-D6**. This way **D1-D6** will trigger a note each time the pad is pressed, instead of toggling between *note on* and *note off*.

REC mode internal

Internal mode is used to control samples. First, a sample is selected by tapping the corresponding key. Pad and key number is shown in *table 2*. Second, the sample is played with the upper part of the keyboard. Up to three samples can be selected by holding the keys in the selection process. The playable pitch keys span note numbers **68-83** (1. sample), **84-99** (2. sample) and **100-115** (3. sample). A wide pitch range can be achieved by copying your sample and setting the *initial tune level* 16 semitones apart. To select both samples hold the flat sample key while selecting the sharp sample.

	1	2	3	4	5	6	7	8
A	C4 60	C4# 61	D4 62	D4# 63	E4 64	F4 65	F4# 66	G4 67
B	F2# 42	G2# 44	A2# 46	C3# 49	D3# 51	F3# 54	G3# 56	A3# 58
C	B2 47	C3 48	D3 50	E3 52	F3 53	G3 55	A3 57	B3 59
D	C2 36	D2 38	E2 40	F2 41	G2 43	A2 45	D2# 39	C2# 37

Table 2: Pad and corresponding key/note number

REC mode external

In this mode the keyboard is fixed to pad **D7** and **D8**. To sequence **D1-D6** switch the keyboard to the next MIDI channel. The external mode is semi-polyphonic and only fully supported in *HiRes*. Polyphony is achieved by sending one note with each step of the sequencer. Select double tempo to get minimum latency.

Note: When sequencing external gear the pads use their assigned voice channel. The whole bank can be assigned to the same channel.

Troubleshooting

- **Notes are hanging when recording with external mode.** The *Auto Correct* must be set to *HiRes*. The SP MIDI uses the *MIDI clock* signal from the SP to distribute notes in the step sequencer, be sure no other clock is present in the input MIDI chain. Also *note off*'s could have been overdubbed while recording.
- **Notes are hanging after stop is pressed.** The SP MIDI use an *all notes off* message to mute other devices. This MIDI command is common on most synthesizers, but may need to be enabled manually in DAWs or soft-synths.

Specifications

- **Dimensions:** 168x44x124 mm (WxHxD)
- **Power supply:** ±9-12 VDC @ 500 mA. Any polarity. (2.1mm)
- **Connectors:**
Input: MIDI In, SP In, DC IN.
Output: MIDI Out, SP Out.
- **Latency:** < 2 ms (internal mode), < 2 ms by each number of polyphony (external mode).

01				*
02			*	
03			*	*
04		*		
05		*		*
06		*	*	
07		*	*	*
08	*			
09	*			*
10	*		*	
11	*		*	*
12	*	*		
13	*	*		*
14	*	*	*	
15	*	*	*	*
16				

Table 3: LEDs to MIDI channel

Firmware update

The SP MIDI is able to update its firmware using SysEx messaging. Any PC/MAC with a standard MIDI interface can be used. For more information check www.otbelectronics.com.

Revision history

Version 1.1 (21.09.14)

- Samples can be spread over multiple octaves.
- Oneshot mode on D1-D6
- *Full Level* button

Version 1.0 (30.05.14)

- D1-D6 can turn notes on and off, by tapping.
- Pads D1-D6 maps a secondary MIDI channel.

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