



SA164

MIDI Interface / Port Expander / Multi-Pedal Scene Saver

User's Guide



Welcome

Thank you for purchasing the Neuro Hub! The Hub unites your One Series and Soundblox 2 pedals into a single, stage-ready system. It features expression pedal and Hot Hand® inputs, control ports for up to five pedals, and USB connectivity for use with the Hub Manager, and for firmware updates. The Hub features a powerful Scene Saving functionality, which allows you to create up to 128 multi-pedal presets (scenes). Each scene is recallable via MIDI PC's, allowing you to control all the connected pedals with a single MIDI channel.

Getting Started

Your Neuro Hub package includes the following items:

- One Neuro Hub unit
- One 9 Volt DC power supply (negative tip, positive barrel)
- Three 1/8" TRRS sensor cables
- One USB A to mini B cable

The Hub is powered by the included 9 Volt DC power supply. It can also be powered by a 9V DC output providing 100mA from most pedal board power supplies, but please be sure to check the output voltage and polarity before connecting to the Hub. **Only regulated outputs should be used.**

The Hub uses a software application, the “Hub Manager,” for editing pedal presets, choosing hardware options, and updating the Hub’s firmware. You can download the Hub Manager here: <http://www.sourceaudio.net/support/downloads>

The Hub Manager is also used to update firmware for Soundblox 2 pedals. One Series pedals are updated using the Neuro Desktop Editor, also available on the previously linked page. The Hub adds a tremendous amount of new functionality, and **we recommend that you update your Hub firmware and the firmware for each of your pedals before using them together.**

Firmware Updates

To update your Hub’s firmware:

Connect your Hub to your computer over USB, and run the Hub Manager. From the top menu, select “Hub” then “Update Hub Firmware.” Select the correlating .hex file in the following window, and follow the prompts.

To update your One Series pedals’ firmware:

Download the “[Neuro Desktop 0.2.12 BETA](#)” software, install it, and run it. Connect your pedal directly, over USB. Select the downward arrow icon. In the following window, select “Yes.” A window will open with the latest firmware for all One Series pedals. Choose the firmware matching your pedal. Select, “Open,” and wait for the update to finish. **Do not disconnect your pedal during the update.**

To update your Soundblox 2 pedals’ firmware:

Disconnect all of your pedals from the Hub. Connect a Soundblox 2 pedal to Hub port 1. Open the Hub Manager and select the connected pedal in the top portion of the window, and then select, “Update Pedal Firmware.” Select the .hex file correlating to your pedal (number shown in the previous window). Select Open, then Ok. Allow the update process to complete. Select Ok. Disconnect your pedal, and follow the same process for your additional pedals.

Connections

Front

The front panel of the Hub features 5 Multi-Function outputs, USB, and the 9V DC power jack.



- **Multi-Function Outputs:** Connect your One Series “Control Inputs” or Soundblox 2 “Multi-Function” Inputs here via the included 1/8” TRRS sensor cables.
- **USB:** Connect to your computer via the included USB-Mini cable. The Hub will install automatically and can be used with the Hub Manager application. The Hub will also appear as a MIDI device for outputting MIDI directly to your pedals from a computer, without requiring another MIDI interface.
- **9V DC:** Power the Hub here with the included power supply. The power supply is negative tip, positive barrel. The Hub can also be powered by most 9V DC outputs providing 100mA, but be sure that the polarity and voltage are correct. **Only regulated supplies should be used.**

Connections

Rear

The rear panel of the Hub features MIDI I/O, an Expression Input, and a Sensor Input for use with Hot Hand.



- **Sensor Input:** Connect a Hot Hand receiver here using the provided 1/8" TRRS sensor cable. The Hot Hand receiver will be powered from the Hub. The Hot Hand signals will automatically be routed to any connected pedals.
- **MIDI IN:** Standard 5-pin DIN connectors can be used here to connect a MIDI controller to the MIDI IN jack. The Hub can receive and respond to a variety of MIDI commands. See the MIDI Features section for more detail.
- **MIDI OUT:** jack is by default a MIDI Thru connection. This means that any messages received on the MIDI IN port are immediately passed to the OUT port. The MIDI OUT jack can alternatively be used to convert incoming expression pedal or Hot Hand signal to MIDI CC messages. To do this, connect your Hub to the Hub Manager, and select "Edit Hub Hardware Settings." Change "MIDI Out Mode" from "MIDI Thru" to "MIDI Out." You can then configure your incoming expression pedal and Hot Hand signal to be translated into MIDI CC messages using the "Hot Hand X MIDI CC," "HOT HAND Y MIDI CC," and "Expression MIDI CC" parameters.
- **EXP IN:** Connect a passive expression pedal, such as the Source Audio Dual Expression Pedal or Source Audio Reflex Universal Expression Pedal. The port may be used with a 3rd party expression pedal, but the connection must be "Tip hot" and the value of the internal pot should be in the 10k to 50k range for best results.

Top Panel Controls



The Hub has a very simple interface on the top panel. The blue POWER LED should be lit whenever the device is powered. There are also two buttons that perform multiple functions:

- **Scan Devices (Hold – Save Scene):**
 - **Scan Devices:** Pressing the Scan button will send a “ping” message to all of the attached devices to check the connections and the state of the pedal. The Hub automatically scans the attached pedals when it power up. However, if a new pedal is connected later, press Scan to make sure that the Hub is properly connected to it. An LED on any connected pedals will blink to acknowledge.
 - **Save Scene:** Pressing and holding the button for two seconds will perform a “Scene Save” function. The Hub queries all of the attached pedals settings and stores them in flash memory inside the Hub. There are 128 Scene locations. By default, scenes are stored to location 1. To access the other locations, connect an external MIDI Program Change controller. The Hub will automatically save scenes to the last received MIDI Program Change number (1 through 128).
- **Recall Last (Hold – Copy):**
 - **Recall Last:** Pressing the Recall Last button to recall the scene corresponding to the last MIDI Program Change number received. On powering up, the Hub will recall the scene in location 1 when the Recall Last button is pressed. The LED next to the Recall button will also flash when the Hub receives an incoming MIDI message.
 - **Copy:** Press and hold the button for two seconds to put the Hub into Copy mode. The LED next to the button will begin to blink to indicate that the Hub is in Copy mode. While in Copy mode, the Hub will ignore any incoming MIDI Program Change messages. This allows you to cycle through PC numbers until you get to the desired PC number you wish to save the scene to. Press the Recall/Copy button again to recall the copied preset, then press and hold the Scan/Save button to complete the Scene Save to the new location. The LED will blink slowly to acknowledge that the save was successful. **Example:** The last PC number sent to the Hub was 10. Scene 10 was recalled. To save the same scene to location 37, enter copy mode. Cycle through PC numbers on your MIDI controller until 37 is reached. Press the Recall/Copy button again, then press and hold the Scan/Save button for two seconds. Scene 10 is now copied to location 37.

Scene Saving

One of the most powerful features of the Hub is the ability to save pedal board scenes for all of the connected devices. A scene is a snapshot of all the connected pedals including ON/OFF state, all knob settings, and all control options. Since all pedal settings are saved, you can save and store unique effect combinations that would otherwise not be possible with traditional pedals and stompboxes.

There are 128 scene memory locations that can be selected by received MIDI messages. The Hub requires the use of an external MIDI device or computer to set the current scene memory location to be saved or recalled. A simple MIDI PC switcher like the Tech 21 MIDI Mouse can be used for this purpose. More advanced MIDI controllers, such as the Source Audio Soleman, computers, and tablets can also be used.

MIDI Features

The Hub uses MIDI PC messages for saving and recalling scenes. Additionally, the Hub can also respond to MIDI Continuous Control (CC) messages and MIDI Clock.

MIDI CC messages received by the Hub are passed on to the connected pedals. The function of each CC number is hard mapped to pedal functions across the Soundblox 2 line. The Soundblox 2 implementation table is available at the end of this document. Each pedal type has an assigned CC number mapping so that they can be used as a single system when connected to the Hub.

One Series pedals allow you to create your own MIDI mappings for the One Series using the Neuro Desktop Editor. You may also map CC's to their knob parameters manually.

To create your own MIDI Mappings (One Series):

Connect your pedal to the Neuro Desktop Editor via USB.

From the top menu, select: Device // Edit Device MIDI Map.

In the following window, select which parameters you would like to be assigned to each MIDI CC number.

To map CC's to your One Series knob parameters (One Series):

Press the CONTROL INPUT button so that the top LED is not lit.

Hold down the CONTROL INPUT button until the top LED flashes a couple times.

Press the CONTROL INPUT button so that the top LED is lit.

Hold down the CONTROL INPUT button until the top LED flashes constantly.

Move your expression pedal over the full range of motion.

Press the Footswitch.

Move the knob(s) to your first desired value(s).

Press the Footswitch.

Move the knob(s) to your second desired value(s).

Press the Footswitch. The process is complete.

The Hub can accept MIDI clock messages to control the delay time of the Nemesis Delay, the rate of the Vertigo Tremolo, or even set the LFO speed of pedals with this function. MIDI clock is relayed to all connected pedals, so you may synchronize them all together, have a combination of MIDI clock disregarding and MIDI clock synchronizing pedals, or choose to disregard the incoming MIDI clock messages all together, all on a preset by preset basis.

The MIDI Output port functions as a MIDI Thru connection by default. This means that any incoming MIDI messages are immediately sent back out on the MIDI Out jack. However, it's possible to also use the MIDI Thru connection to take incoming Expression and Hot Hand messages and send them on the MIDI Out as Continuous Control messages. To do this, connect your Hub to the Hub Manager, and select "Edit Hub Hardware Settings." Change "MIDI Out Mode" from "MIDI Thru" to "MIDI Out." You can then configure your incoming expression pedal and Hot Hand signal to be translated into MIDI CC messages using the "Hot Hand X MIDI CC," "HOT HAND Y MIDI CC," and "Expression MIDI CC" parameters.

Specifications

- **Weight: 6 oz.**
- **Dimensions: 3.8 in. (W) x 2.1 in. (L) x 1.4 in. (H)**
- **Power requirements: 9 Volts DC @ 40mA (up to 80mA with Hot Hand accessories)**
- **Power plug size: 2.1mm (inner dia.), 5.5mm (outer dia.) center negative, barrel positive**
- **Expression Pedal input: Stereo ¼ in. plug, tip hot, 10k-50k Ohm resistance. Linear type.**
- **Multi-Function connector: 4 conductor, 3.5mm plug**

MIDI Continuous Control Table

This table describes the mapping of MIDI CC messages to functions on corresponding Soundblox 2 effect pedals.

SA220 Multiwave Distortion

MIDI CC#	Parameter Name
0	SA220_DRIVE
1	SA220_SUSTAIN
2	SA220_OUTPUT
3	SA220_TREBLE
4	SA220_MID
5	SA220_BASS
6	SA220_EFFECT
7	SA220_ONOFF
8	SA220_MORPH

SA221 Multiwave Bass Distortion

12	SA221_DRIVE
13	SA221_CLEANMIX
14	SA221_OUTPUT
15	SA221_TREBLE
16	SA221_MID
17	SA221_BASS
18	SA221_EFFECT
19	SA221_ONOFF
20	SA221_MORPH

SA223 Manta Bass Filter

36	SA223_DEPTH
37	SA223_FREQUENCY
38	SA223_MODSOURCE
39	SA223_SPEED
40	SA223_RESONANCE
41	SA223_MIX
42	SA223_OUTPUT
43	SA223_DISTORTION
44	SA223_DISTTYPE
45	SA223_EFFECT
46	SA223_ONOFF
47	SA223_DIRECTMOD

SA225 Dimension Reverb

60	SA225_TIME
61	SA225_PREDELAY
62	SA225_OUTPUT
63	SA225_DIFFUSION
64	SA225_LFORATE
65	SA225_BASS
66	SA225_LFODEPTH
67	SA225_TREBLE
68	SA225_MIX
69	SA225_EFFECT
70	SA225_SEND
71	SA225_ONOFF

SA226 Orbital Modulator

MIDI CC#	Parameter Name
72	SA226_FREQUENCY
73	SA226_DEPTH
74	SA226_SPEED
75	SA226_MODSOURCE
76	SA226_FEEDBACK
77	SA226_OUTPUT
78	SA226_LORETAIN
79	SA226_TREMOLO
80	SA226_MIX
81	SA226_EFFECT
82	SA226_ONOFF
83	SA226_DIRECTMOD

SA227 OFD Guitar microModeler

84	SA227_VOICE
85	SA227_DRIVE
86	SA227_OUTPUT
87	SA227_TREBLE
88	SA227_MID
89	SA227_BASS
90	SA227_EFFECT
91	SA227_ONOFF
92	SA227_MORPH

SA228 OFD Bass microModeler

96	SA228_MIX
97	SA228_DRIVE
98	SA228_OUTPUT
99	SA228_TREBLE
100	SA228_MID
101	SA228_BASS
102	SA228_EFFECT
103	SA228_ONOFF
104	SA228_MORPH

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