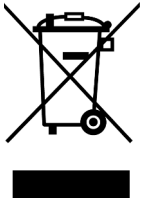
STEREOPING

SYNTH CONTROLLER

Owner´s Handbook

Hello

and thanks for getting a Stereoping Synth Controller. This manual's content:



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1. Features, power supply, editions

The Stereoping Synth Controller offers 16 knobs and 3 buttons to quickly tweak the sound of your favourite vintage music synthesizer in a comfortable way. Right at the moment you dial a knob, it sends the appropriate message over the Midicable into your synth, changing it's sound immediately.

Features

- Synthesizer hardware realtime editor
- Frontpanel designed to match the target synthesizer's design
- Beautiful lighted colored buttons of durable quality
- Tough and handsome steelcase
- works with any 9-12V power supply, no matter which polarity (since 2021)
- Built in 'CC *to SysEx*'-translator for changing and automating your synths parameters with standard Midi Control Change messages (not all editions)
- Useful '*Bypass Mode*' letting all Mididata pass unfiltered for smallest latency and ignoring pot changes
- Learnt Midichannel keeps stored in memory
- Firmwareupdate via SysEx-dump
- Hardware compatible throughout all editions
- Current draw 40 mA
- Weight without power supply 660g
- Size incl. Knobs and rubber feet about 180 x 130 x 60 mm

Technical handling

The Synth Controller was built to be used in a comfortable music studio environement. You can operate it under free skies of course. But please keep in mind, it uses electricity for proper operation and therefore is quite sensitive to water, drinks or other fluids. Excessive heat or exposition to sunlight is also not advised.

Power supply

You can use any ordinary 9 or 12 Volt DC powersupply to operate your controller. The Synth Controller shipped from 2021 (DIY Kits 2022) works with any polarity (plus or minus on center pin). The Synth Controllers built before 2021 should have **Plus on the outside** and Ground - sometime labeled as 'Minus' - on it's centerpin. Most guitar effects wallwarts use this pin-standard. In any case: the Synth Controller has a protection diode for not being damaged if the polarity of the power supply is wrong, it just won't work.

The current of the PSU should at least offer about 100 mA (=0.1 A). If it supplies more current (e.g. 500mA) this is fine and won't cause problems.

Please do NOT use a powersupply having an 'AC'-Output. AC means alternate current. AC-PSUs have the letter combination AC/AC or a sinewave symbol besides the word 'output'.

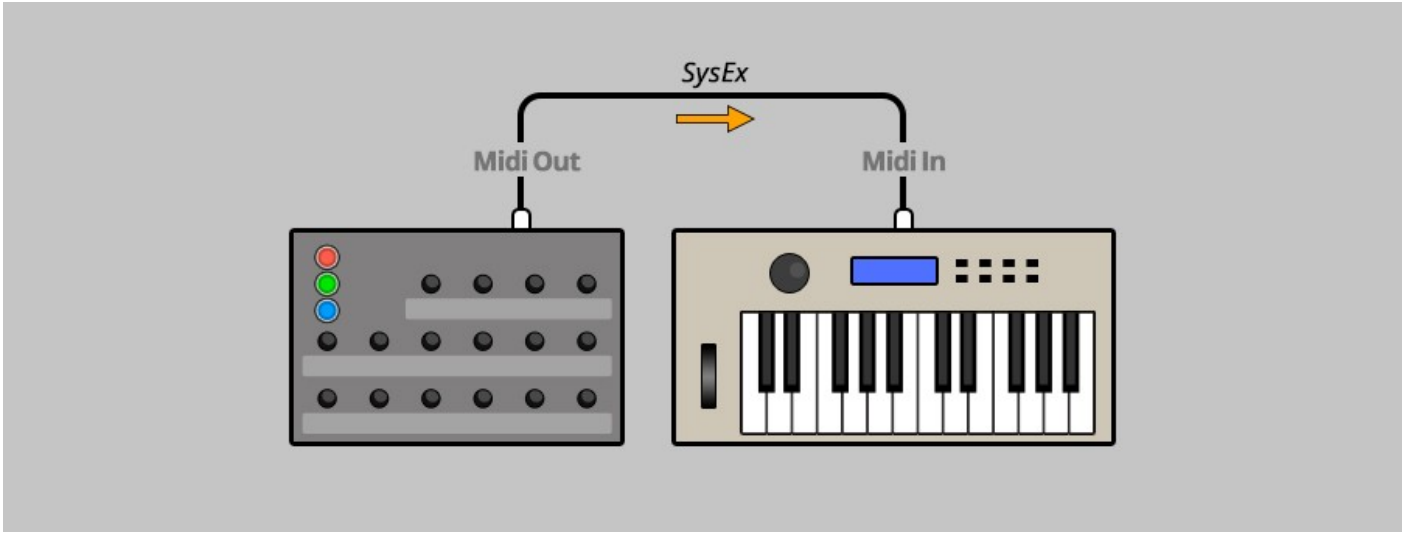
Editions and this manual

The Synth Controller is available in different versionen ('Editions') each carefully designed for a special target synthesizer. **This manual describes the properties common throughout all editions. Most editions offer further features which are documented in an addendum covering the details. All addendums are freely available for download on our website.**

2. Integration into your setup

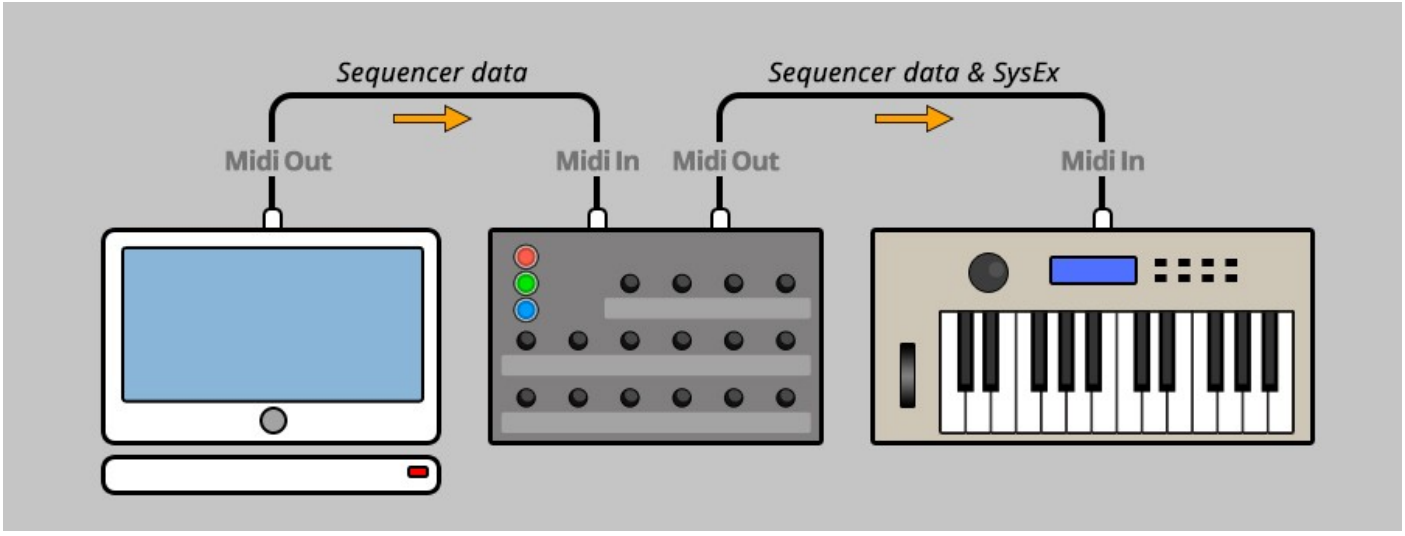
Example 1 - Synth Controller with a keyboard synth

Connect 'Midi Out' of the Synth Controller with a Midi cable to 'Midi In' of your synth:



Example 2 - Midi-Sequencer/DAW -> Synth Controller -> Synth

If you want to edit your Synth while it's being fired with notes from a sequencer you might prefer this setup:



The Synth Controller merges data (notes, velocity, pitchbend...) coming from the sequencer with the SysEx-data generated by itself and sends them all together into your synth.

Automating parameters in your DAW

Maybe you'd like to automate e.g. cutoff, envelope times or other parameters in your song? **Most editions are using SysEx-data** for editing your Snth. For these editions we do **not** recommend recording the Synth Controller's output into your DAW. Besides the fact few DAWs can record SysEx-Data at all, your recorded tweaks could not be edited further.

For SysEx-Editions the following makes much more sense: most DAWs allow collecting a set of tweakable controls/knobs/sliders into a 'dashboard' or 'mixermap' (or whatever). These controls can be programmed to send CC data (standing for „Continuous Controller“ or „Control Change“). You then configure these knobs to send the CC-numbers you will find on the Synth Controller's faceplate besides your desired parameter.

Now when you move / automate your DAW's knob, it sends CC-data into the Synth Controller which immediately translates the CCs into the SysEx-commands, your synth wants to see. More about that in chapter 4 about the CC to SysEx translator.

The cable-setup for this automation method is the same as shown above in example 2.

Some editions are using simple CC-midi data. With these editions it might be possible to record the edits in your DAW. You need to take care about the dataflow (midi splitters/filters) to avoid endless feedback loops. The following editions are using CC-data and not SysEx: AS1 (NRPN), Bit, Qfeld, ESI Granulizer, ESQ (NRPN), MircoGork, Monsta, Mirco (NRPN), Microwave Plugin, ND2, Pulse, SX240, Thet4 (NRPN), Juno66, SH1OH1, UniCC, SamplePolka und AX73VX90.

The term NRPN means that this edition does not use the simple Parameter/Value combination but it uses „nonrelated parameters“. These are two pairs of CC numbers (0x06/0x26 und 0x62/0x63) allowing more parameters and higher resolution than the 7 bit Midi protocol offers. Recording NRPN might look strange after recording.

3. Operation

After all midi cables are connected, 2 more things need to be checked before starting:

1. the midichannel of the Synth Controller and your synth have to be identical (not all editions).
How to set the Synth Controller's default channel is described below.

2. some synths have a parameter for 'allowing' SysEx-Data receiving
Some synthesizers have a special SysEx-receive/recognize-parameter which needs to be set accordingly. Otherwize the commands of the Synth Controller are ignored. Examples are Roland JX-8P, Yamaha TX81-Z, Kawai K3, Oberheim Matrix 6 Korg DW-/EX-8000 ... If your synth wont respond to the controller, even both midichannels are set to identical values please have a look into your editions addendum you can download from our shop, DOWNLOADS button in upper right corner.

On to operation: In the upper left corner you find 3 colored lighted buttons which activate one of the 3 color modes. Each color mode has a set of parameters printed on the frontpanel in exactly THAT color, which are sent out the MIDI Out jack when the appropriate pot is dialed. For example if you press the green button, it will light up and the parameters on the frontpanel printed in green will be sent to the synth as you move the pots. If you find a parameter you want to change next, have a look at it's color and change into that color mode with one of the 3 buttons - if it is not already selected.

Some editions have got some parameters like 'Volume' or 'Cutoff' in neutral color (white, grey, black). These parameters will always be sent, no matter which color mode is currently active.

Pot dialing without sending data (not available in all editions)

Changing between the color modes logically involves the unwanted side effect, the rotation angle of a pot often not corresponding the appropriate parameter value in your synth. Moving such a pot will cause the synthesizer's parameter to jump to the new value immediately, causing a sometimes unpleasant sonic experiance.

Example on a Korg DW-8000: the synths delay level is at 0 % and you want to increase the delay level softly. After switching into the blue color mode you realize, the last pot in the second row for the delaylevel unfortunately is set fully clockwize. If you would move the pot now, the delay level of the DW-8000 would most likely jump shortly to a high level, even if you tried turning the pot quickly to it's 0 % position.

We have a workaround: **pressing and holding an already lighted color-button will prevent the Synth Controller's pots from sending data**. Release the color-button and the messages will be sent again - of course from the new pot position on.

For the upper example, we would hold the lighted blue color button, dial the pot to the left, release the button and start to softly fade in the delay level dialing the pot clockwize.

Button Combinations and special modes

According to the edition you purchased, the one or other specialmode is available and can be engaged holding a button combination. If more 'special modes' are available than explained here, they are described in detail in the edition specific addendum you can download any time from sc-en.stereoping.com

All Notes off

For the unlikely case a ringing note of your synthesizer will not stop anymore (caused by a missing midi message called 'Note Off' which was lost for some reason), it is not necessary to power your synth or the controller off and on again. Send an 'All Notes Off' event to your synth, shortly press the button combination printed on the frontpanel. In most editions, the combination consists of the upper 2 buttons.

Midi channel learn mode

The Synth Controller has a Midi Channel Learn Mode. Once engaged, the Synth Controller waits for an incoming Midi note on it's Midi In jack.
*Exceptions for the editions '1016R' and 'Qfeld': they await a NoteOn **or** Pitchbend. More details in the edition's addendum. To keep things simple we just talk about midi notes in the following.*
Exception for 'Microwave' edition: your controller needs the midi channel only for the CC-SysEx-translator, not for normal operation. For midi channel learn mode on this edition hold ALL three buttons for 2 seconds.

To enter the Midi Channel Learn Mode, hold the button combination printed on the frontpanel for about 2 seconds. The lights of the pressed buttons will start flashing, you can release the buttons now. The Synth Controller awaits an incoming note on it's Midi In jack. If nothing comes in for about 30 seconds, the Synth Controller will return to normal operation mode, keeping it's old Midichannel. If the Synth Controller learnt which channel to use, it will nicely flash and return to normal operation. You can also leave this mode manually by shortly pressing any of the buttons.

Bypass Mode

This mode is for optimizing mididata flow and locking the user interface against unintended parameter changes at the same time. You can enter the Bypass Mode by holding the button combination printed on the frontpanel. The corresponding lights will flash to indicate your Synth Controller is in Bypass Mode.

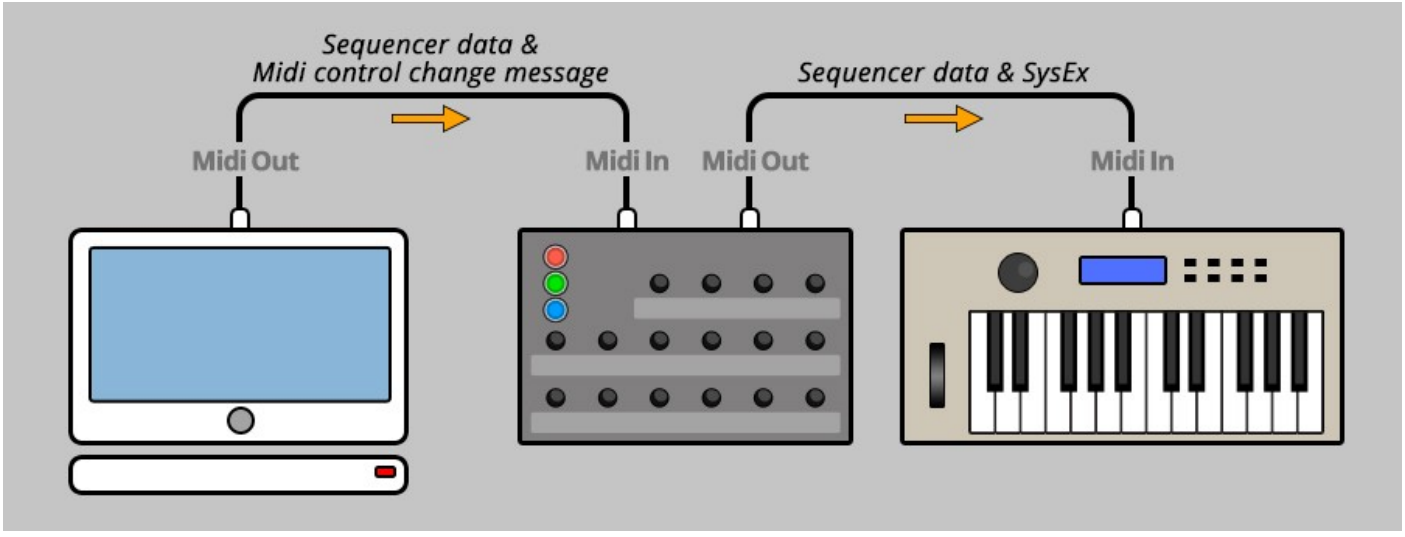
In Bypass Mode, most routines of the Synth Controller's software are skipped and incoming Midi is passed through unprocessed offering the least latency. In addition any dialing of the pots is ignored. This is useful for several situations:

- your perfect song is ready for being recorded and you want to ensure the smallest latency for mididata going through the Synth Controller
- you got kids or cats (or both) in your studio and want to prevent, they destroy your soundpatch masterpiece at the moment they see the awesome Synth Controller and can't stand to fiddle the pots

You can leave Bypass Mode by pressing any of the 3 buttons.

4. Midi CC to SysEx translator

As described in chapter 2, CC-data is the better choice for automation of parameters.
We therefore spent the Synth Controller a little data translator which offers the possibility to remote control the parameters on the frontpanel by incoming CC changes. The little numbers besides the parameters show the number you need to send into the Synth Controller to translate this parameter. To still allow the standard CCs like volume (#7) or paning (#10) the numbers mostly start with #11 and end with max. #63.



The CC message must be sent on the same midichannel as the Synth Controller's and the synthesizers midichannel. When the Synth Controller detects a CC message with a suitable controller number, it translates it into the appropriate SysEx message and sends it out to your synth.
Technical info: some editions do not have this translator because they already use CC-messages for changing parameters.

5. Technical limitations

Some synthesizers offer more parameters than the Synth Controller's concept can handle. Especially the Waldorf Microwave and the Oberheim Matrix 1000 / 6 / 6r with their extensive modulation capabilities can not be controled entirely with a small box with few knobs. We tried to find and implement the most relevant and interesting parameters into the Synth Controller, but your synth might offer much more. Please check your synth's manual to find out what it has to offer apart from the Synth Controller's frontpanel.

Parameter jumps

We already talked about that above: changing a color mode by pressing one of the unlighted buttons naturally leads to knobs, rotated to positions not corresponding with the parameter values in your synth. Dialing one of these pots lets the appropriate parameter jump immediately onto it's new value which might result in unpleasant sound changes. To overcome this issue, we implemented a handy shortcut feature (not in all editions) which helps in many cases: a pot's parameter is NOT sent to your synth as long as the already lighted button is held down. Let the button go and the messages will be sent again on dialing.

Notes laging in time

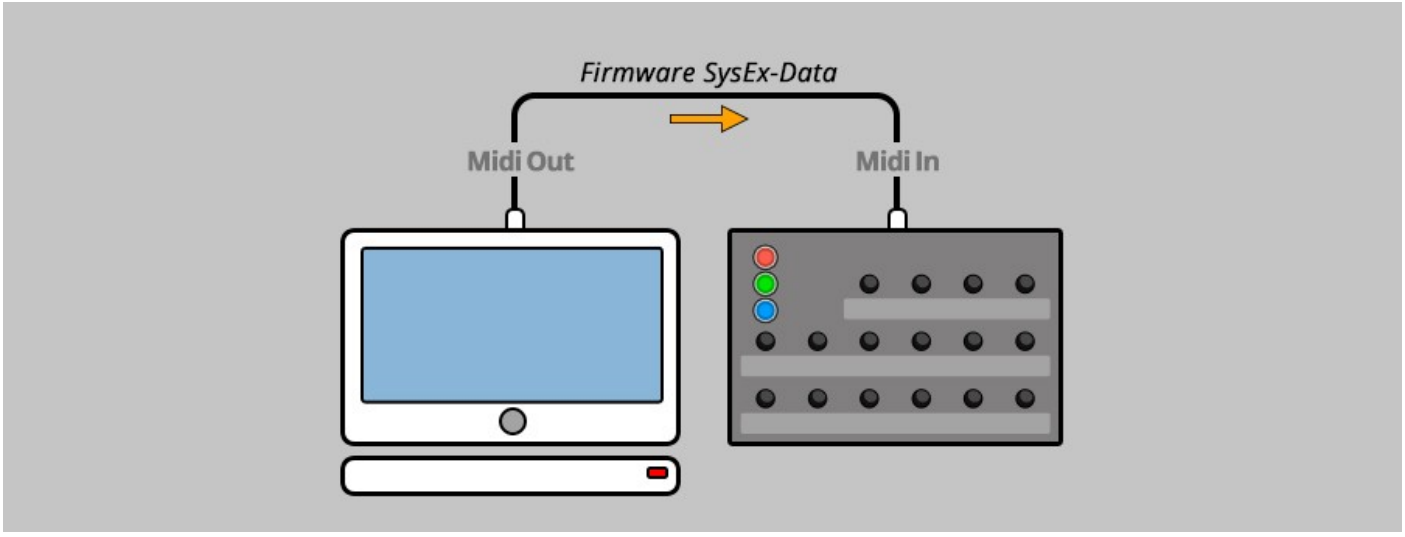
Another issue you might encounter while using the Synth Controller are delayed or timing related unprecise notes while excessive pot fiddling. This problem is not caused by the Synth Controller, it is dismantled by it. The lags arise when too much data wants to travel the small pipe of the Midi dataline. Synth editing through the Synth Controller is performed using so called 'Midi SysEx data' which uses quite many databytes and normaly plays a secondary role in everyday's Midi world. **To optimize note timing in a setup where you are using more than one midi devices: use a midi interface with multiple ports (IN/OUT jacks) and distribute the devices to them instead of separating the devices by midichannels while hanging on the same port.**

6. Updating firmware

To update the firmware you put the Controller in bootloader mode and send your desired edition into the MIDI IN jack. The firmwares in SysEx-format are all compatible to your controller and freely available in the shop under DOWNLOADS (upper right corner). You can dump it with any standard SysEx dump tool, e.g. midiOX on PC or SysExLibrarian on Mac.

We also offer a video of the process. Go to youTube and search for „Synth Controller - firmware flashing“ or tick this link: https://www.youtube.com/watch?v=KCmwcRw3gNI

The technical part: Plug 'Midi Out' of your midi-interface into the 'Midi In' of the Synth Controller, if possible without a midi-patchbay in between and with a short cable.



To enter bootloader mode, hold the topmost button while powering the Synth Controller on. The middle button will light up. You can release the button then of course. Configure the SysEx-dump-software to use the correct Midi Output, open the firmware file and send it into the Synth Controller.

While the incoming stream is valid and saved into the program memory, the lights are flashing slowly one after the other. The dump process should take less than a minute. If the button's lightshow ends and the lowest button keeps flashing, an error occured. Either the firmware file was corrupt (unlikely) or the incoming data was sent faster than the controller could write the data. The software you dump the Firmware-File into the controller should have a parameter somewhere like "Delay between Buffers". Set this parameter to at least 60 mS.

After the successful dump, the Synth Controller restarts again, welcoming you with some nicely flashing buttons going into normal operation.

7. Imprint

Stereoping is a registered brand of Gregor Zoll, Germany.

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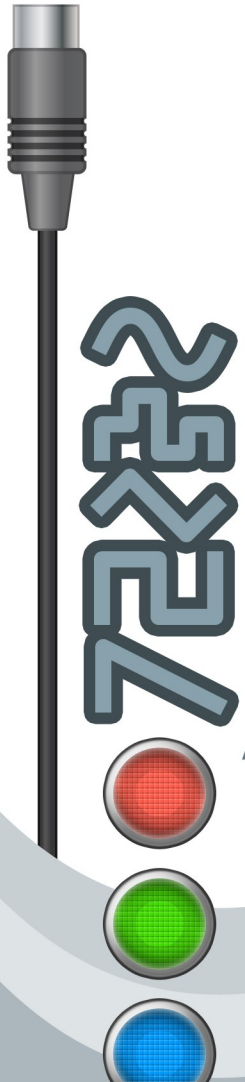

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TWEAK YOUR VINTAGE SYNTH WITH HARDWARE!