

Percussa Wireless AudioCubes: MIDIBridge 3.0 Manual

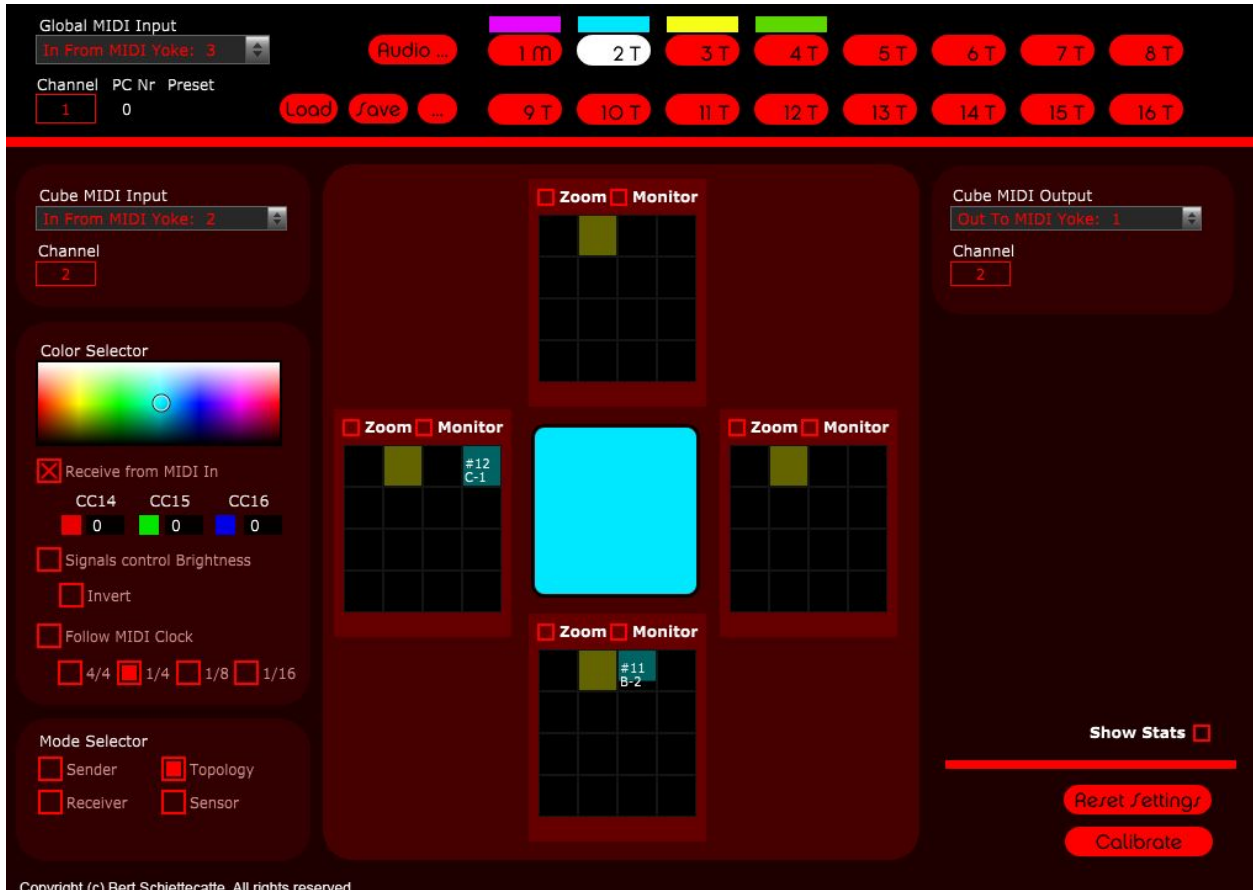
Last update: 6/1/2015

IMPORTANT: This is a manual for the Percussa Wireless AudioCubes. It is no longer possible to buy classic audiocubes, and we won't be releasing any updates anymore for the classic AudioCubes. To learn more about the difference between wireless and classic audiocubes check out this page.

If you are looking to start using the AudioCubes for the first time, check out the reference manual for audiocubes.

The MIDIBridge Application

MIDIBridge is one of the easiest applications you can use to start using audiocubes. It allows you to generate MIDI using AudioCubes, which can be sent to any MIDI compatible hardware or software. MIDIBridge generates note triggers, which can be used to start and stop sounds, or enable and disable effects and instruments. MIDIBridge also generates control changes which allow you to control effect and instrument parameters using hands and fingers.



Upgrading firmware of your Wireless AudioCubes

It is important to upgrade your wireless cubes to the latest version of the firmware. You can upgrade your Wireless AudioCubes to use this latest version of the software by:

- downloading the new firmware
- downloading the latest FWUpgrade tool
- following the firmware upgrade procedure for each of your cubes (see audiocubes manuals).

IMPORTANT: Do not install this new wireless firmware upgrade on your classic AudioCubes, as it will not work.

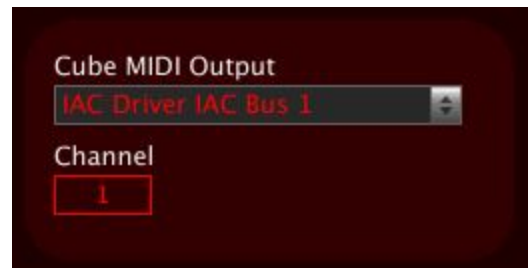
To understand more about how to upgrade the firmware of your AudioCubes, check out this video by SalamanderAnagram: <https://www.youtube.com/watch?v=ynDvgxEUEHg>

Mapping to and from MIDI Information



At the left side of the window you will find a panel for choosing a MIDI input port and channel. Through this input, MIDI messages can be received to change the colours of the cubes.

At the right side, there is a similar panel for selecting the port and channel through which MIDI notes and controllers can be sent. Of course it is possible to use both hardware ports here (from a MIDI interface, for example) as well as virtual ports (software drivers, such as the LoopBe1 on PC or to/from MIDIBridge ports on Mac).

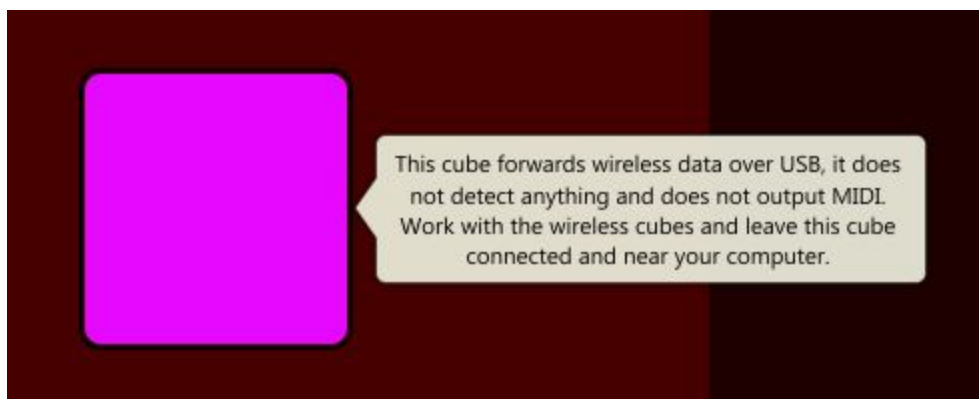


Master and slave cubes

At the top in MIDIBridge, you have 2 rows of 8 buttons, which are used to see the settings for all the cubes which you can connect to your computer.



You can use the rows of buttons at the top to look at the different cubes and change their settings, such as colour and mode (sender, receiver, sensor, topology, etc). Each cube has its own MIDI input and output ports as well (which can be chosen on the left and right hand side in MIDIBridge).



In this new version of MIDIBridge, you will just be connecting one cube with a cable while the other cubes remain wireless. In the past, the first cube connected was no different from the other cubes and you would be able to use

this cube actively just like your other cubes, but this is no longer the case, because we now forward a lot

more data over this cube, from the wireless network. Hence its role has been changed to be the "hub" of the cube network and nothing else.

The first cube you connect with a cable will become a *master *cube while the other cubes will become *slave *cubes. The master cube does not do anything and just forwards data from the cube network to MIDI Bridge over USB and back from MIDI Bridge to the cube network. When a cube is in master mode you will see a bubble message displayed over the cube, reminding you that you cannot use it to detect anything and that you should leave it connected with a cable near your computer, so other cubes (the slaves) can connect to it to forward data to your computer. To understand this master and slave cube concept check out this video by Rishabh Rajan: <https://www.youtube.com/watch?v=yWSPSxNEHRw>

Choosing and controlling colours



Each cube panel has a colour picker on the left hand side in MIDI Bridge which is used to change the colour of a cube. You will see the colour of the cubes in the rows of selector buttons at the top in MIDI Bridge as well which is handy in performance situations where you have to see which cube is which.

Besides manually setting colour you can also send MIDI continuous control (CC) messages through the MIDI input port chosen for a cube, on the left hand side. The CC numbers used are 14, 15 and 16 for red, green and blue. When data comes in you'll see it being displayed in the black number boxes under the colour picker.

You can also send MIDI clock data to the MIDI input port of a cube, and make the cube follow the MIDI clock tempo using the "follow MIDI clock" checkbox and the associated checkboxes 4/4, 1/4, 1/8 and 1/16.

When using the cube in sensor mode (see below), you can also link the sensor signals of the cubes to the brightness of the colour set on the cubes. Note that to link the sensor signals to brightness, you need to calibrate all four faces of the sensor cube. For instructions on how to do this, see Sensor Mode section.

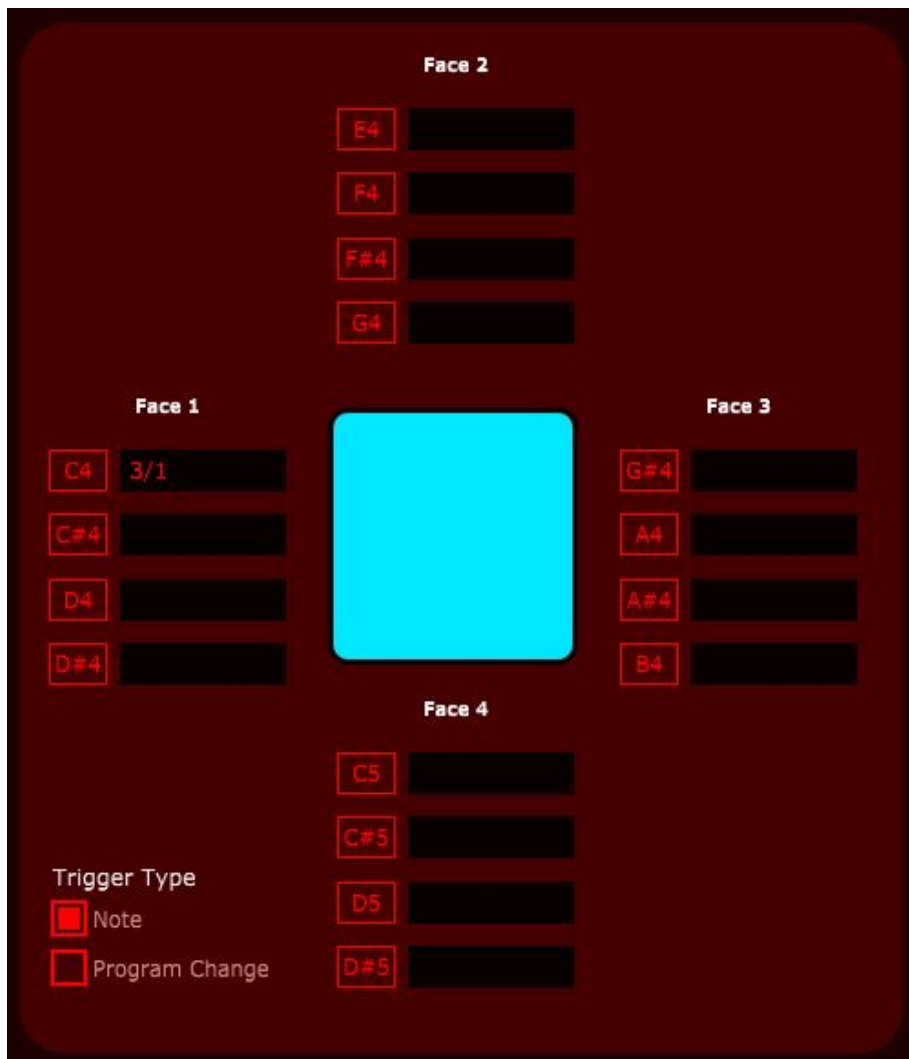
Cube mode I: Sender and Receiver



Sender and receiver mode work together: you configure one cube to be the sender and the other to be the receiver. This is still the same as in the previous version of MIDIBridge. When you put a sender cube next to a receiver cube and the sensors line up, you'll notice that the receiver cube detects the sender cube. For the receiver cube, you can choose a MIDI output port on the right hand side in MIDIBridge, and the receiver cube will output a note through that port when it detects the sender cube.

You can change the notes for the receiver cube by dragging the boxes with note names, such as C4, up or down to change the notes. When the receiver cube detects a sender it will send a note on, and when it stops

detecting the sender it sends a note off. You can use the note on/off in software such as Ableton Live to turn effects on or off or start or stop sound clips, for example. In other software you could use it to enable/disable a connection between two synthesizer modules or effects, etc.



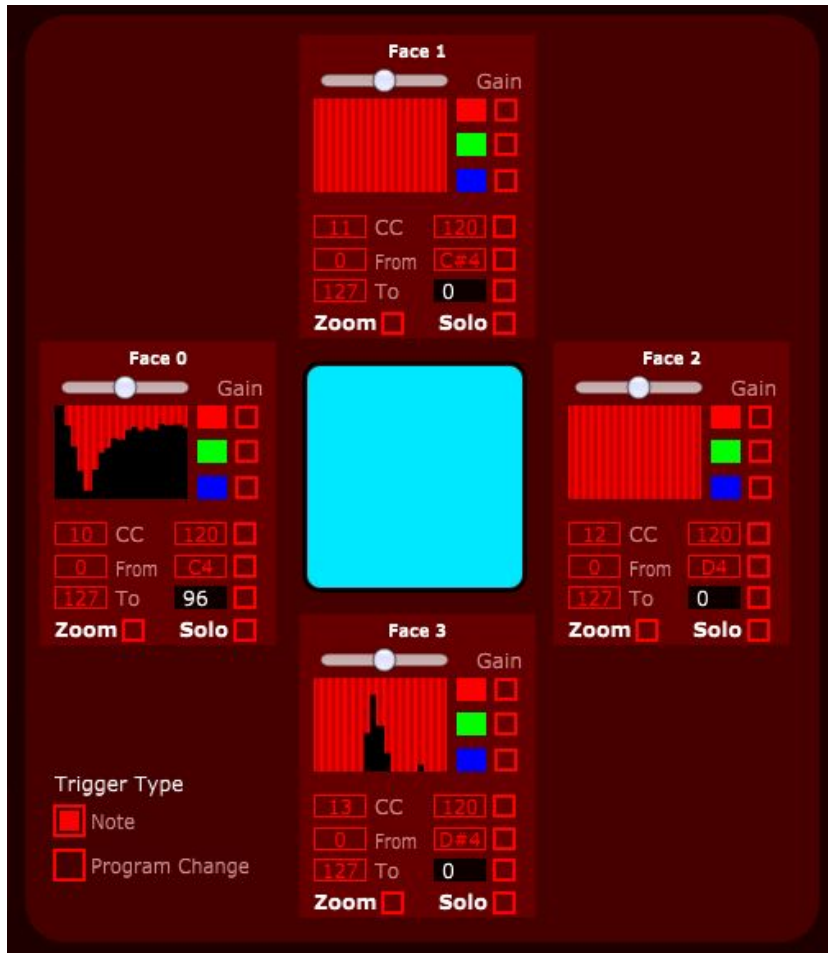
Alternatively you can send program changes instead of note on/off, there are radio buttons to change the type of trigger on the lower left hand side of the middle panel in MIDIBridge, when looking at a receiver cube. This way you can send a program change to a synth or effect unit when a sender and receiver cube detect each other which can be helpful to change a performance setup when performing live.

In receiver mode, the cube number and face number that is being detected will be shown such as 3/1 which means cube 3 is being detected, and the detected face of the cube is face 1. Faces are counted from the left hand side of the cube with the usb connector facing towards you, and in clockwise fashion.

To understand more about sender and receiver modes check out this video by Rishabh Rajan:
<https://www.youtube.com/watch?v=TojSYK0w6DQ>

Cube mode II: Sensor Mode

When you put a cube in sensor mode, it will work by itself, and doesn't detect any other cubes. It just measures distance to your hands or other objects nearby using its sensors.



Each of the faces has a graphical display that shows this distance. This distance is sensitive to lighting conditions, so you will notice that when using a sensor cube in total darkness is different from using it in daylight conditions, and again is different when using it in sunlight. This has always been the case, and you

can compensate for those differences using the Gain slider on top of the graphical display of the distance for each of the faces.

You should also use the "calibrate" button on the lower right hand side of MIDIBridge, to compensate for ambient light levels, and you should press this button for trying to use a cube in sensor mode. Pressing the button will let the cube measure the light in the environment and then subtract the light level from the level of light it outputs itself, giving you only the change of light that happens as you move your hand or an object closer or further away from a cube. The "reset settings" button can be used to reset all the settings of a cube panel, including the sensor settings.



Check out the tutorial video about sensor mode: <https://www.youtube.com/watch?v=hOnLN6PhS6Y>

Right next to the sensor mode graphical displays there are three checkboxes, for red, green and blue, which you can use to link the distance signal for that face to the red, green or blue colour of the built in lighting of the cube. You could link 3 faces of the cube to a different colour and then mix the colours using your hands this way. The possibilities are endless.



On the left hand side in MIDIBridge there is an additional checkbox "signals control brightness" and its associated checkbox "invert" which allow you to link the sensor distance signals to the brightness of the cube, rather than letting them control individual colours.

You can set the MIDI continuous controller (CC) number for each of the faces by dragging up or down the CC number box (10, 11, ...) directly under the graphical display, and you can also set the from / to value for the CC message using the two number boxes below it. The CC message will be output continuously through the MIDI port you can choose on the right hand side in MIDIBridge, and the value of the message will be shown in the black number box below the graphical

display of each face.

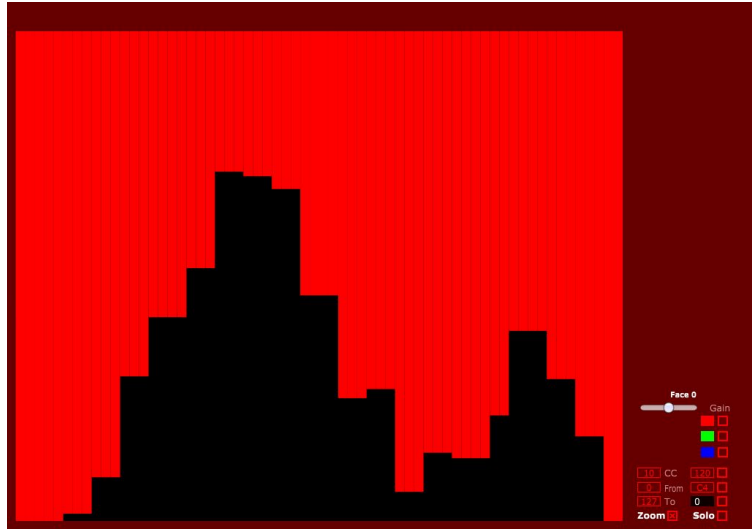
The checkbox directly to the right of it enables/disables the CC message output. Don't forget to enable this if you want to use the face to send CC messages! It is disabled by default to avoid sending a lot of messages you don't need or want.

Above the black number box you can set a trigger level for the distance. When the distance crosses this level a note on will be sent and when the distance drops below it a note off will be sent. You can adjust the trigger level and the note number using these number boxes by dragging up or down in the number boxes using your mouse.

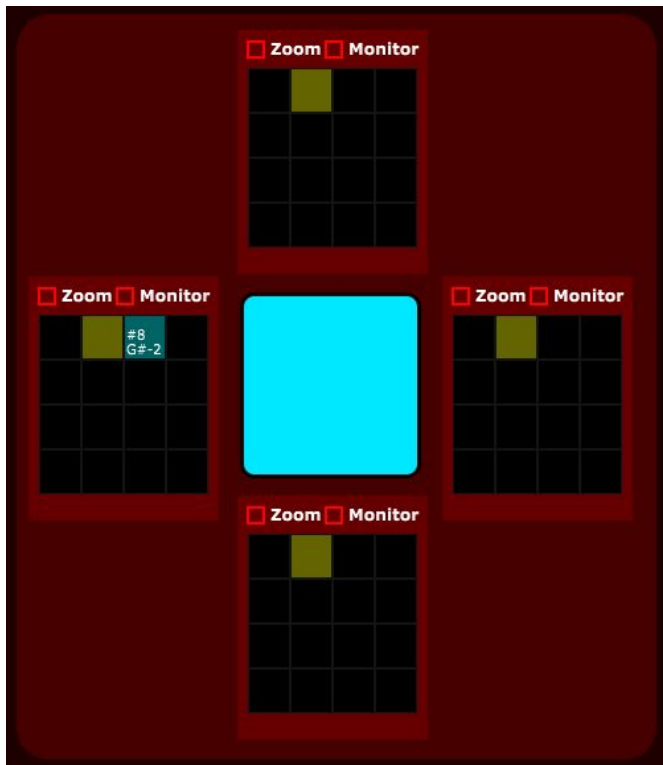
Do not forget to enable the checkboxes right next to the number boxes to enable the sending of the trigger note. If you don't want trigger notes but instead want program changes, you can use the "trigger type" radio button in the lower left hand corner of this sensor mode screen. This way you could switch to a different synth or effect preset when your hand comes close enough to a cube, in a live performance situation.

Finally, there is a zoom checkbox per face which will enlarge the graphical sensor display for easy viewing from a bit farther away from your computer,

and there is a solo checkbox to make sure only this distance signal is being sent out via MIDI, which is very handy if you are trying to MIDI-map a distance signal from one of the faces to an effect parameter in Ableton Live, or some other hardware or software MIDI device.

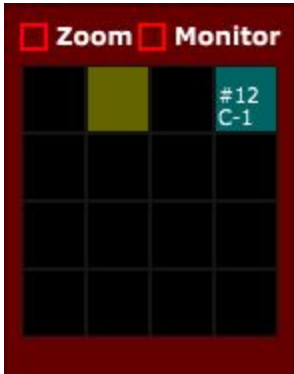


Cube mode III: Topology Mode



When MIDIBridge starts, cubes will now be configured in Topology mode per default. The reason for that is that the Topology mode offers the most possibilities of all modes, allowing you to generate MIDI trigger notes when 2 cubes detect each other, but at the same time giving you distance data between the 2 cubes as well.

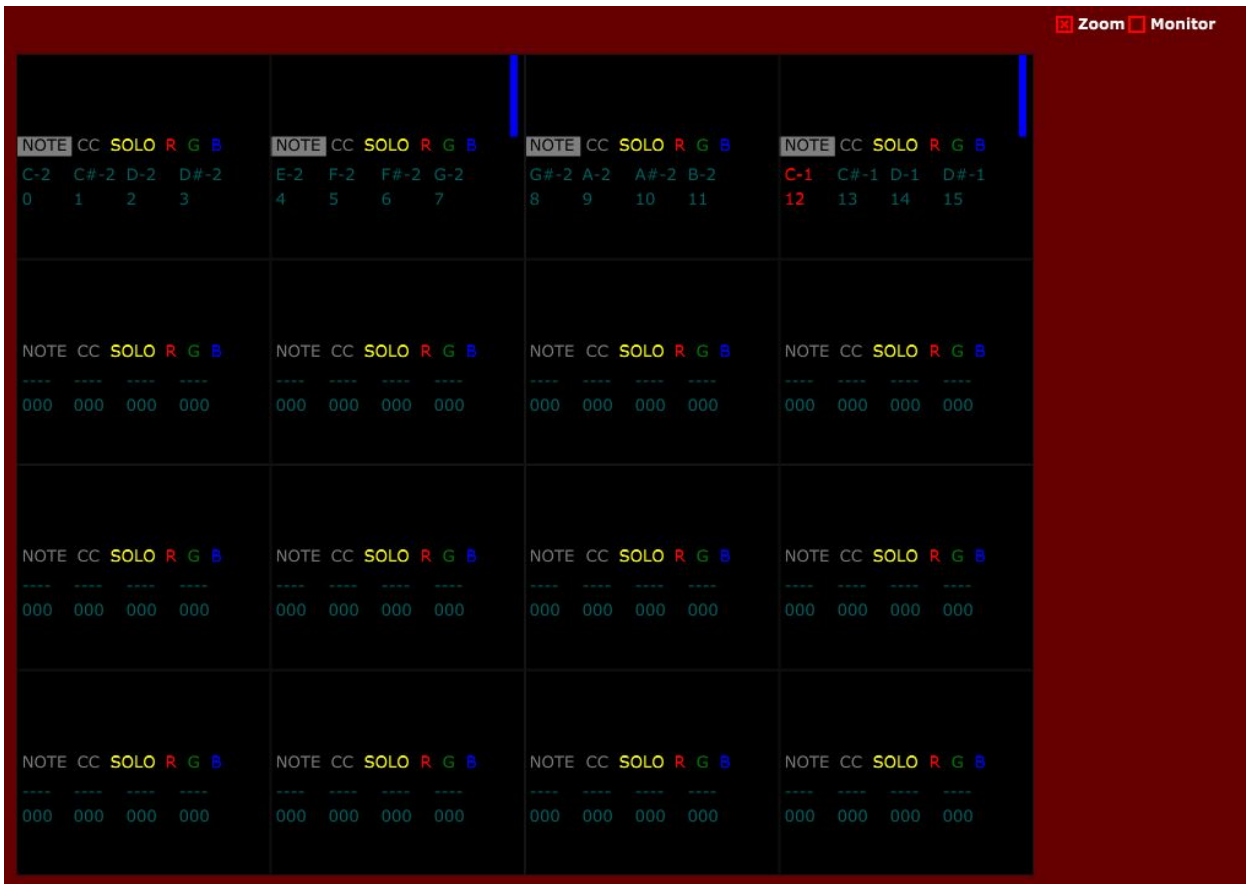
This allows you to control a modular software synthesizer for example, where the MIDI trigger note on/off is used to enable/disable a connection between two synthesis modules, while the MIDI continuous controller (CC) messages for the distance signal between the 2 cubes can be used to control modulation depth, for example. We are working on our own modular synthesizer called SYNTHOR, which will be part of the next MIDIBridge release. SYNTHOR will leverage the Topology mode.



When looking at a panel for a cube in Topology mode, you'll notice that each face displays a 4x4 grid. Each cell in this grid corresponds to a different cube it can detect on that face. When it detects cube number 5, it will show the trigger note and CC number in cell number 5 for that face. Additionally, the background of the cell will colour cyan, giving you visual feedback of the distance detected.

Initially, a cube will only transmit trigger notes when detecting cubes in topology mode. If you want to send the MIDI CC messages as well you have to click the Zoom checkbox, which will enlarge the 4x4 grid for that face to take up the entire window of MIDIBridge. For each of the cubes which can be detected, you can click the NOTE or CC buttons, to enable/disable MIDI note trigger or CC message output. You can

also click the SOLO button which will make sure only data is output when detecting that particular cube.



Similar to sensor mode, you can click R/G/B buttons to link the distance signal for a detected cube to the Red/Green/Blue colours of the detecting cube.

Below the row of NOTE/CC/SOLO/R/G/B toggle buttons, there is a row showing the MIDI trigger notes, and a row showing the MIDI CC message numbers. You can edit these notes and CC numbers simply by clicking them and typing in the number you want (notes are entered as numbers as well but instantly change into note names). You can cycle through the note/CC numbers associated with the 4 faces of the detected cube using the TAB key. You can press enter to confirm and use the up/down cursor keys to change the numbers as well. The moment you press the TAB key you automatically confirm the number entered. You can use the BACKSPACE key to erase a number.



When a cube is detected, you will notice that the text of the MIDI trigger/CC rows become red, for the detected face, in the grid cell associated with the detected cube.

When you are done editing in the zoomed in screen, you can click the Zoom checkbox again to zoom out again, and you will then find yourself back in the Topology mode view for the cube. You can Zoom in on other faces to change settings for other faces. When you are all done configuring cubes and faces you can of course save your work as a Preset, using the SAVE button.

Topology Mode and Reaktor

Check out the tutorial video: <https://www.youtube.com/watch?v=dSiwCIUCa5A>

Topology Mode and Ableton

Check out the tutorial video: <https://www.youtube.com/watch?v=6Rvc7ulqktU>

Loading, Saving and Controlling Presets



MIDI Bridge has a load / save button at the top left corner, which has always been there and allows you to save your settings to a preset file, such that you can load them later on. This way you don't have to go through all the setup all over again. There is also a "..." button closeby which you can use to specify a

folder where you keep your preset files. If you use that, you can send MIDI program changes to MIDI Bridge,

using the MIDI input port you chose in the "global MIDI input" dropdown, which will automatically load one of the preset files in the folder you specified using the "... " button. The program change numbers will decide which preset it is, and will correspond to items in a list when your preset file names are sorted in ascending (alphabetically) order. So when you three presets A, B and C, program change 0 will load A, 1 will load B and 2 will load C.

Conclusion and where to download

This concludes the overview of the new MIDIBridge. Head over to our downloads section at Percussa AudioCubes Software Downloads to grab the new firmware, the FWUpgrade utility, and the new MIDIBridge. If you have any questions don't hesitate to Contact us through the Percussa AudioCubes website and we'll get back to you as soon as we can.

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