



Greiner Engineering Tools

sum.mation

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Limited Warranty

Greiner Engineering Tools warrants this product, when purchased new from an authorized Greiner Engineering Tools dealer in the United States of America, to be free of defects in materials and manufacturing workmanship for a period of one year from the date of original purchase. During the warranty period Greiner Engineering Tools will, at its option, either repair or replace any product that proves to be defective upon inspection by us. Final determination of warranty coverage lies solely with Greiner Engineering Tools. We reserve the right to update any unit returned for repair, and change or improve the design of the product at any time without notice. This is your sole warranty. Greiner Engineering Tools does not authorize any third party to make any other warranty. Service and repairs of Greiner Engineering Tools equipment are to be performed only at the factory or an authorized service center. Unauthorized service, repair or modification, or misuse will void this warranty. To obtain factory service, contact Greiner Engineering Tools at (510) 931-7682. If necessary, you will be given a return authorization number. Products returned without an RA number will be refused. Proof of the original date of purchase in the form of a dated copy of the original authorized dealer's invoice or sales receipt is required. Pack the product in its original packaging and attach a description of the problem along with your name and a phone number where we can contact you if necessary. Ship the product insured and freight prepaid to:

Greiner Engineering Tools

32 Glen Eyrie Ave.

San Jose, CA 95125

Warranty Disclaimer And Limitation

Greiner Engineering Tools makes no other warranties, express, implied, or otherwise, regarding its products. The exclusion of implied warranties is not permitted in some states and the exclusions specified herein may not apply to you. This warranty provides you with specific legal rights. There may be other rights that you have which vary from state to state. In no event will Greiner Engineering Tools be liable for any lost profits, or for any consequential, direct or indirect damages, however caused and on any theory of liability, arising from this warranty and sale.

Important Safety Instructions

Be sure to read all of the safety and operating instructions before operating this product. Please retain these safety instructions and owner's manual for future reference. Operating

and safety instructions for your Greiner Engineering Tools equipment must be followed to enable this warranty.

Unit should be operated only from the power source indicated in this documentation or on the product itself. Do not install or operate this product near water or moisture. This product should be situated away from sources of heat. Sum.mation is supplied with an IEC grounded power cable & plug. This plug must be plugged into an outlet that is properly installed and grounded in accordance with all local rules and ordinances. Do not modify the plug provided with the equipment. If the plug will not fit into your outlet, have a proper outlet installed by a qualified electrician.

Several options can be internally selected, however opening the chassis of this product will expose you to hazardous voltages. If you are unsure of how to perform these internal changes, please refer service to a qualified professional.

To take advantage of the warranty and product upgrades, please register your product online via the contact page at:

<http://www.greinerengineering.com/contact>

Enter your name, address and your sum.mation serial number in the message window.

RoHS Notice

Greiner Engineering Tools LLC has conformed and this product conforms, where applicable, to the European Union's Directive 2002/95/EC on Restrictions of Hazardous Substances (RoHS) as well as the following sections of California law which refer to RoHS, namely sections 25214.10, 25214.10.2, and 58012, Health and Safety Code; Section 42475.2, Public Resources Code.

FCC Statements

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the

user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Trademark Notices

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Introduction

Thank you for purchasing sum.mation - the first analog summing unit with DAW driven automation. In our continued effort to bring the classic "big studio" experience to the smaller project studio environment, we have designed sum.mation to take full advantage of the incredible control that DAW's have to offer, and combined that with superior analog automation circuitry, for a classic analog mixing experience at a fraction of the cost traditionally associated with this technology.

Why analog?

First and foremost, mixing in the analog domain eliminates the latency and comb filter problems associated with digital mixing - especially when parallel processing signals (drum mixing for example). Latency due to any digital signal processing has been a problem since digital audio was introduced. Many attempted solutions, or "work-arounds" have been introduced, but the best solution is to avoid the problem all together.

Secondly, the sound of analog and the vast variety of colors it can introduce has been sorely missed in digital. There's a reason why old recordings sound the way they do, and frankly we like that. With sum.mation, you're free to experiment with the many flavors that analog mixing has to offer, and still retain the control of a modern, automated mix.

What's In The Box

Inside the box you will find the sum.mation unit, an IEC AC power cord, and a USB cable - that's it! There are no drivers to install as sum.mation is class-compliant with both Mac OS and Windows. Also, in an effort to save on land fill garbage, we've decided not to package the plug-ins on a disk, but make them available as a download from the website. To get the latest plug-ins, go here:

<http://www.greinerengineering.com/downloads>

System Requirements

sum.mation requires a computer and a DAW of course, and an available USB port. Beyond that, a Mac running OS 10.6 and above. For Windows, a PC running Windows 7.

Installation

Once you have downloaded the plug-ins from the downloads section of the website, simply run the installer, which will place each plug-in version in the appropriate folder for each DAW application.

On the Mac:

RTAS plug-ins go here: Library/Application Support/Digidesign/Plug-ins

AAX plug-ins go here: Library/Application Support/Avid/Audio/Plug-Ins

Logic Pro AU plug-ins go here: Library/Audio/Plug-Ins/Components

VST plug-ins go here: Library/Audio/Plug-Ins/VST

On Windows:

RTAS plug-ins go here: Program Files/Common Files/Digidesign/DAE/Plug-Ins

AAX plug-ins go here: Program Files/Common Files/Avid/Audio/Plug-Ins

VST plug-ins go here: Program Files/VSTPlugins

Pro Tools 10 users will notice a dialog window at launch saying "Pro Tools could not load the following plug-ins because no valid authorization could be found: sum.mation.aaxplugin". This is because there is no 32 bit AAX version for Pro Tools 10 (only RTAS) and it has no idea what to do with a 64 bit aax plug-in. Simply ignore the message, or if you're not using Pro Tools 11 yet, you can move the plug-in to the unused plug-ins folder.

There are no drivers to install, as sum.mation is USB class-compliant. If you are installing multiple sum.mation units on the same computer, you should plug them in and power them up one at a time. This way you will have the opportunity to name each one in your audio setup, so as not to get them confused with one another.

On the Mac, launch Apple's Audio Midi Setup application (found in the utilities folder). Each sum.mation unit will automatically appear in the MIDI Studio window as you plug them in and press "Rescan MIDI". We suggest naming them something simple like: "sum.mation1", "sum.mation2", etc.

On Windows 7, there currently is no way to change the name of a device in the Device Manager. This unfortunately means that multiple sum.mation units will have the same name. However, they do appear in the plug-in's pull-down menu in the order that they were plugged in.

Specifications

Frequency Response:	20Hz - 20KHz +/- 0.25dB
Dynamic Range	110dB
THD	0.027% input to stereo bus output
Maximum Input Level	greater than +30dBu
Input Impedance	48 k Ω
Maximum Output Level	22.5dBu
Output Impedance	50 Ω

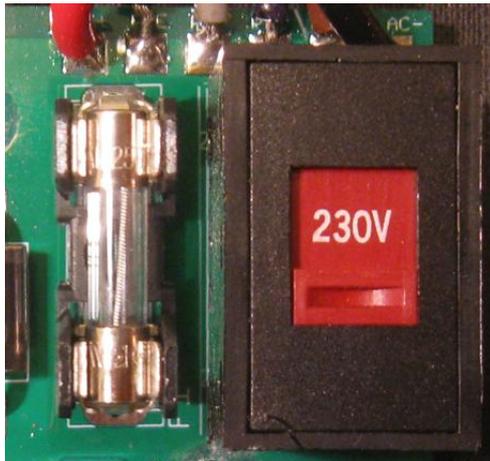
Voltage Selection, Fuse Replacement & Summing Mode Switch

*****Caution: Always unplug unit before removing cover!*****

Voltage Selection

The operating voltage of your sum.mation is set at the factory and marked on the rear of the chassis. It can accept from 100-240 volts AC. If you change locations and need to set it to a new operating voltage, here's how:

- unplug the unit from its power source
- remove the screws on the top and gently lift off the cover
- in the back to the right, near the AC plug you will find the voltage



switch:

- simply slide it to the nearest appropriate voltage: 115V setting for anything between 100-120V; and the 230V setting for anything from 220-240V.
- changing the voltage requires also changing the fuse value:

Fuse Replacement

In the event that the fuse should need to be replaced first unplug the AC plug; remove the top cover; locate the fuse holder towards the back of the circuit board near the round power transformer; remove the existing fuse and replace it with the appropriate value:

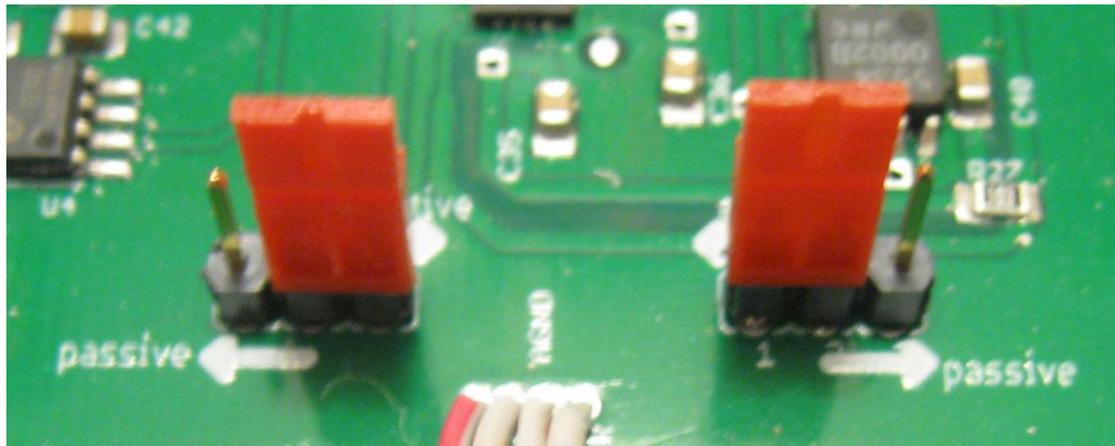
115V setting requires a 1 Amp slo-blo fuse

230V setting requires a 0.5 Amp slo-blo fuse

Summing Mode Switch

Please turn your monitors all the way down, and switch off the power to sum.mation before making any internal changes!! sum.mation is equipped

with both a built-in active summing network, as well as a passive summing node - basically an amplified and unamplified mode. Due to the nature of the servo controlled summing amp design, both modes **can not** be used at the same time. To select passive mode simply unplug the AC cable; remove the top cover; and switch the left & right stereo bus jumpers from "active" to "passive" as marked on the circuit board:



A sum.mation unit **must** be in passive mode in order to cascade **into** another sum.mation unit. A maximum of two units may be cascaded together on the same summing bus. The receiving unit may be in passive or active mode as the user sees fit. Failure to follow these instructions may damage the unit and void the warranty.

When using sum.mation in passive mode with external microphone preamps as makeup gain, **be aware** that 48V phantom power can damage the sum.mation circuitry. Please be sure to turn off phantom power on your mic pre's before connecting sum.mation to them.

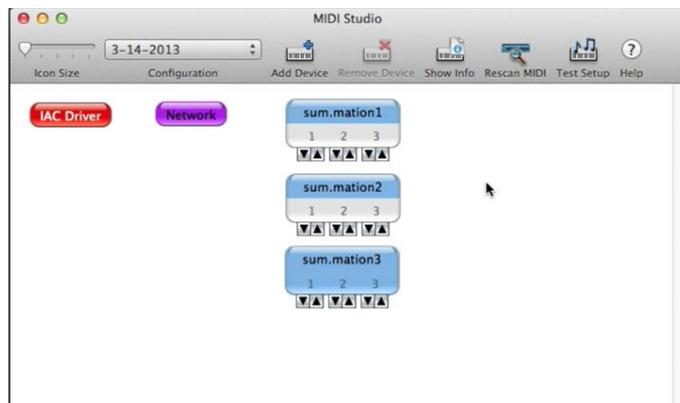
****A few words about grounding****

When using sum.mation, the user must be aware that there are several ground paths possible: the sum.mation chassis; the chassis of the equipment feeding *into* sum.mation; the chassis of the equipment sum.mation is feeding *into*; and the USB connection to the host computer.

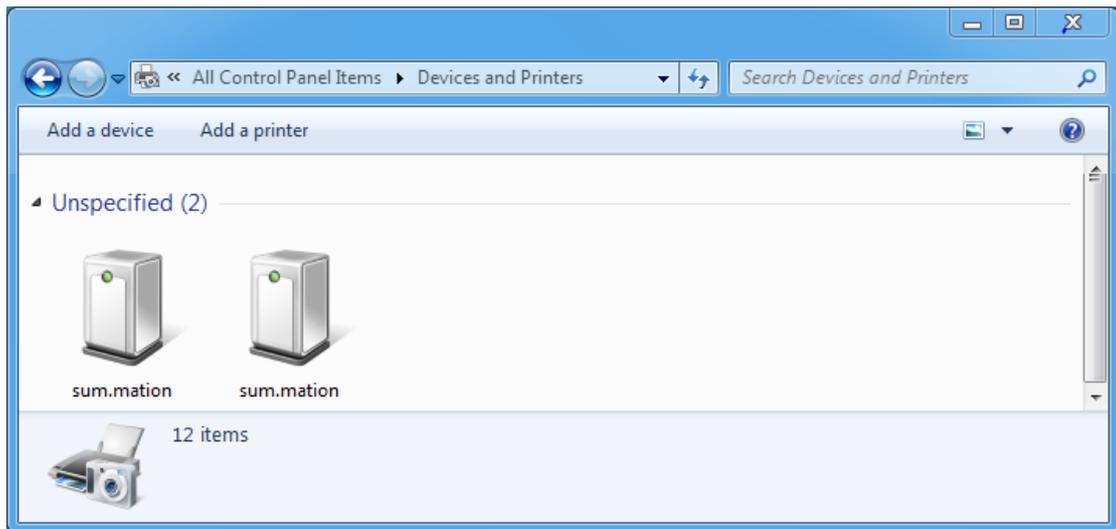
Under normal circumstances, no extra provisions will be necessary for proper grounding. Occasionally, circumstances may arise (most often when operating sum.mation in passive mode) where a ground loop may induce hum into the audio signal. In these cases it may be necessary to lift the ground of the equipment peripheral to sum.mation; and in some cases isolate the USB connection. As in all cases of ground loops, a bit of investigation and experimentation is necessary, as every studio environment is different.

First Time Use

After installing the plug-ins in the correct places, verify that your sum.mation is being recognized. On the Mac, open the Audio MIDI Setup utility, and look in the midi window. You will see an icon for each sum.mation unit that's plugged into the computer. Here you can name each unit for easier identification.



On Windows, look in the device manager in your control panel under "Devices & Printers". If you have multiple units, now is a good time to label them, so you can tell them apart in your session. Windows 7 unfortunately does not let you change the name of class-compliant devices, however they do appear in the order in which they were plugged in.



Be sure to have the sum.mation hardware powered up with the USB cable plugged in before launching your DAW. Sum.mation powers up at unity gain. When you instantiate a sum.mation plug-in in your session, it defaults to unity gain as well.

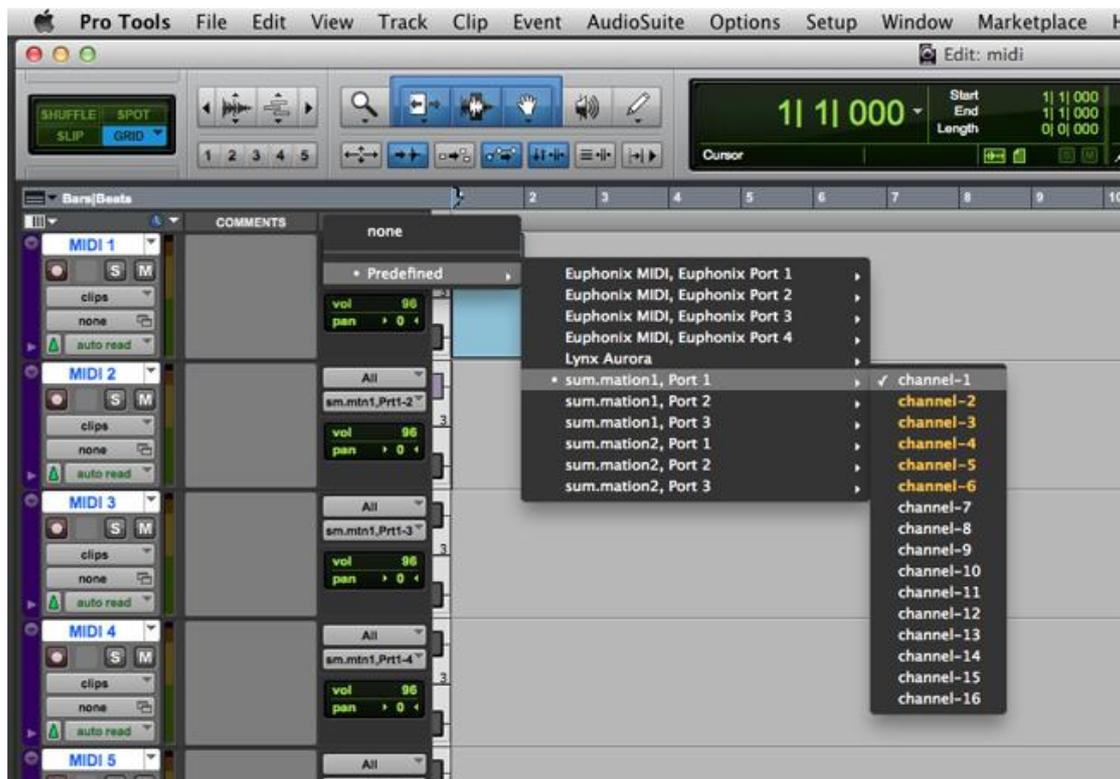
You will notice that sum.mation has multiple midi ports per unit. This allows it to communicate with your DAW in several different ways:

- Port 1 is for assigning plug-ins or midi tracks to sum.mation channels.
- Port 2 is for HUI communication between your DAW and sum.mation channels 1-8
- Port 3 is for HUI communication between your DAW and sum.mation channels 9-16

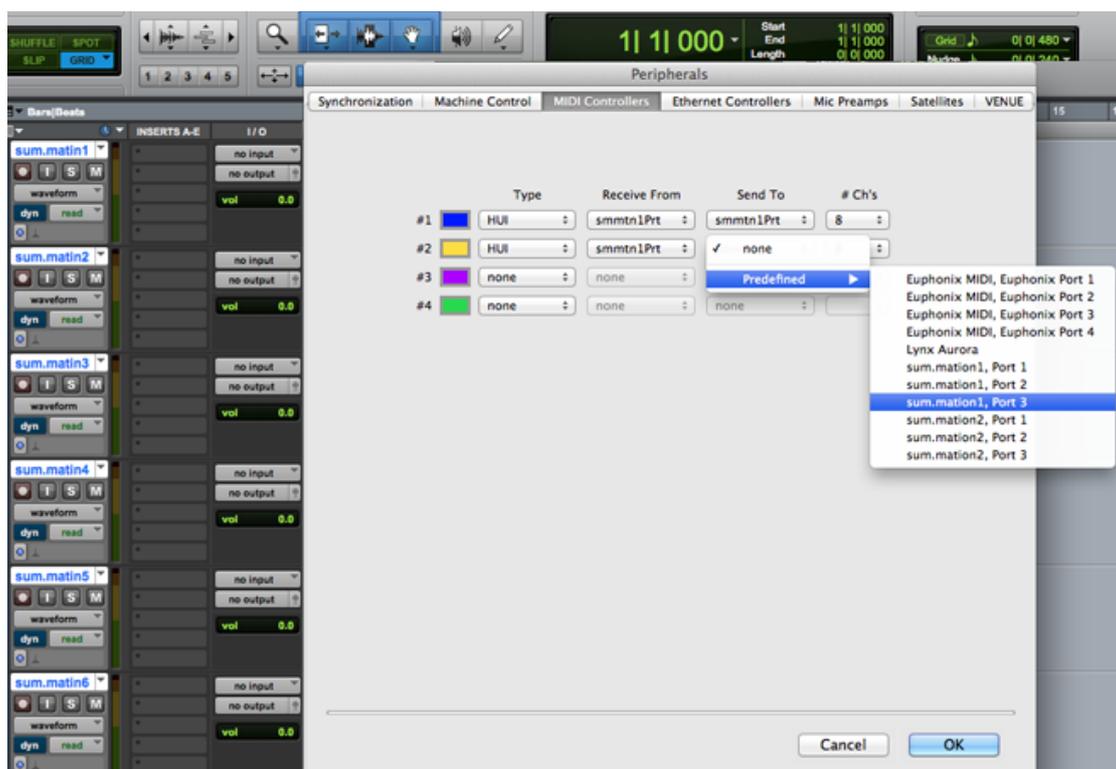
To control sum.mation using the fader plug-in, simply place a plug-in for each sum.mation channel you wish to automate wherever it's convenient in your session, and assign it to a sum.mation channel using port 1:



To control sum.mation from midi tracks, create 16 midi tracks in your session, and assign each one to a corresponding sum.mation channel using port 1:

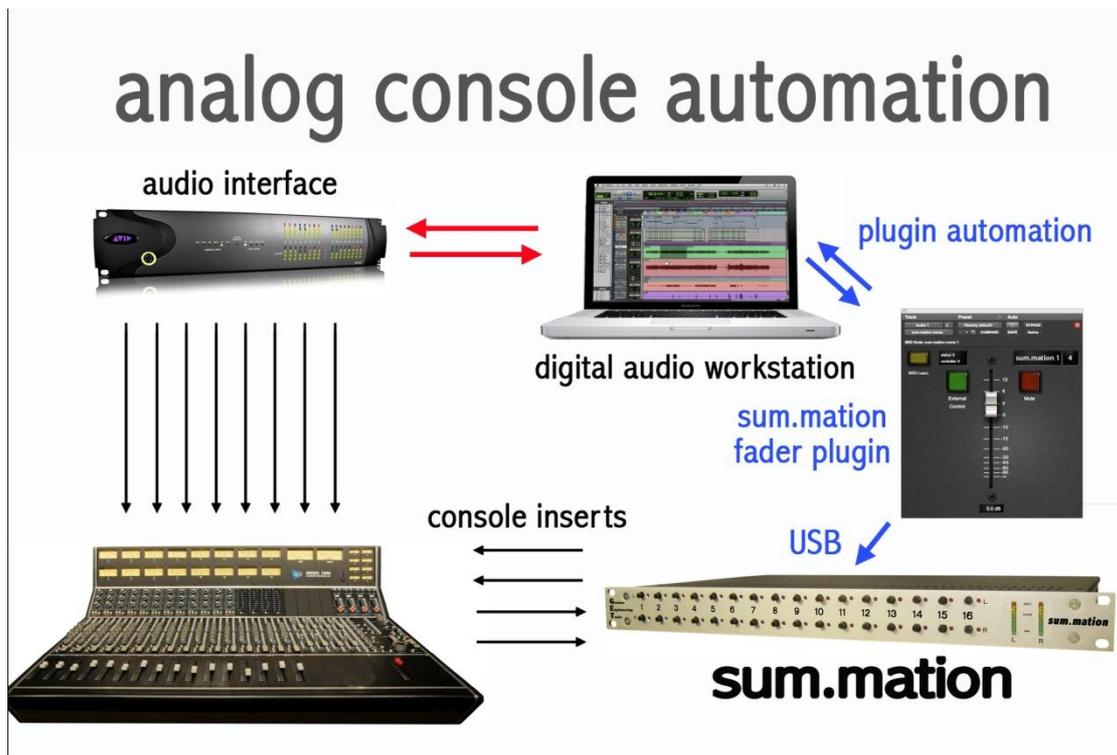
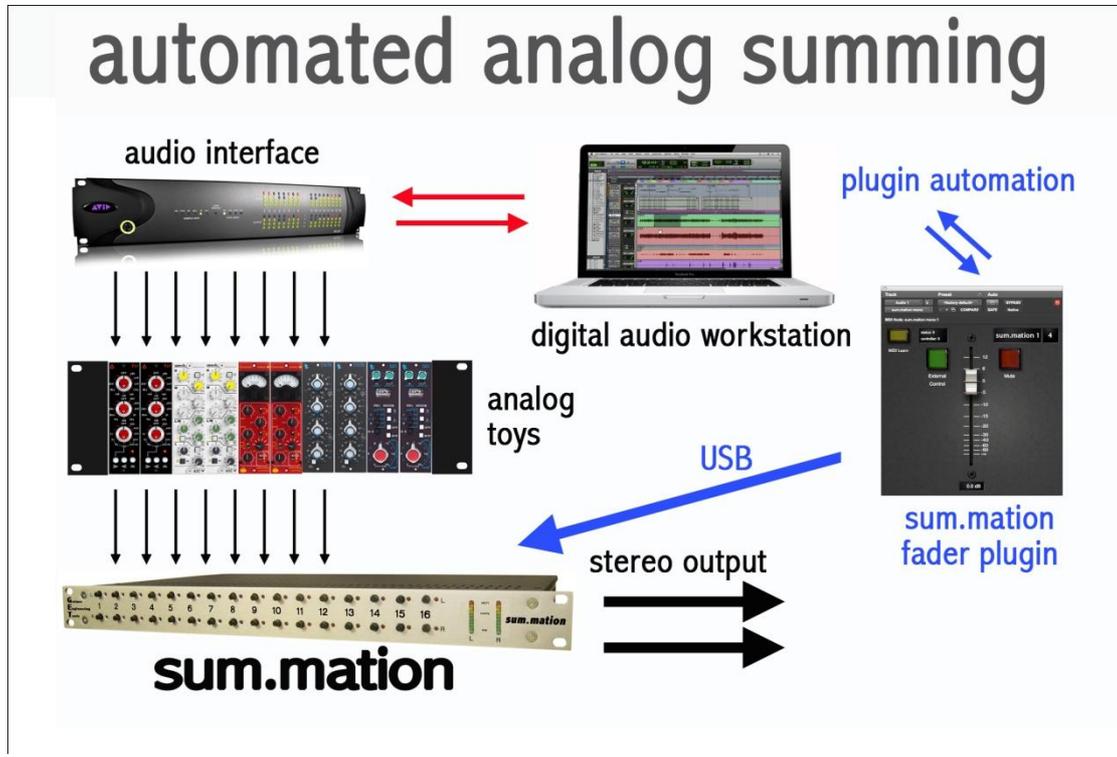


To control sum.mation directly from the faders of spare tracks in your DAW, go to the controllers setup page of your DAW and add two HUI control units. Assign the first HUI to send and receive on sum.mation port 2 - this will be for sum.mation channels 1-8. Create a second HUI and assign its send and receive to sum.mation port 3 - this will be for channels 9-16:

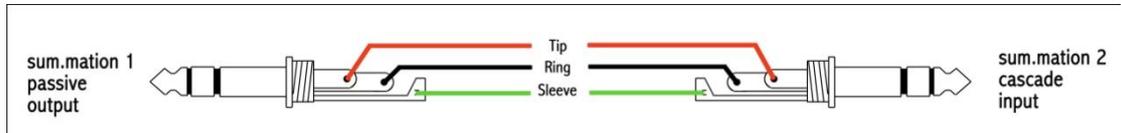


Be sure to place the 16 empty tracks you'll be using to control sum.mation first in your session. This is how HUI identifies these tracks to sum.mation. If you move them, they will no longer be associated with the correct sum.mation channels.

Example Setups & Wiring



Cascading multiple sum.mation units



Passive summing node output to external mic pre input

