Q114 Mixer++

Mar 30, 2018

The Q114 Mixer++ is a 4-channel mixer, a dual 2-channel mixer, and a signal distributor in a single-wide MU format module. The Q114 also provides many processing functions including signal inverting, amplifying and offsetting.

The unique design connects channels together until you insert a plug. This allows various combinations of mixing, distributing and processing simultaneously.

Each channel's knob attenuates its input from 0% to 100%, and the toggle switch selects an optional function. Use X1 for normal mixing.

Several Q114 Mixer++ modules can be daisy-chained together for 8, 12 or more channels.

The rules of operation are simple and powerful:

Input and output jacks are switching jacks. Inserting a plug breaks the connection to the next channel. This allows an amazing variety of mixing and processing possibilities in a small space.

INPUTS
Without a plug inserted into an input, that channel receives its signal from the input above it. When a plug is inserted into an input, that channel receives its signal from the plug. The first input is 5 volts without a plug inserted.

OUTPUTS
Without a plug inserted into an output, that output is mixed into the next channel below it. When a plug is inserted into an output, the processing of that channel is sent out, and the signal is not mixed into the next channel, the chain is broken.

Q114 Mixer++ Specifications

Panel Size: Single Width 2.125"w x 8.75". Moog Unit (MU) format.
Functions: 2, 3, 4-channel mixing, distribution, attenuation, amplification, offset, AC/DC coupling.
Power Requirement: +15V@60ma, -15V@60ma.
Power Connector: Synthesizers.com standard 6-pin keyed MTA connector.

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The Q114 Mixer++ has 4 channels with each channel connected to the one above until plugs are inserted. Each channel has a switch offering 3 different functions. This combination of functions and daisy-chaining provides an incredible amount of signal processing options.

The knob attenuates the input jack's signal 0% to 100%.

Signal Input for each channel. If no plug is inserted, the signal comes from the input jack of the previous channel. Inserting a plug breaks the chain.

The switch determines the function of each channel. 3 options.

The output jack for this channel's function. If no plug is inserted, the signal is mixed down to the channel below. Inserting a plug breaks the chain.

With no plug in channel 1, its input is 5 volts. This creates variable voltage sources.

Switch functions can be changed with jumpers on the circuit board.

Options are:
x2 amplification
x100 amplification
DC/AC coupling
Inverting
5V offset

Multiple Q114 Mixer++ modules can be daisy-chained together for 8 or more channels. The daisy chain cable is included on the circuit board.

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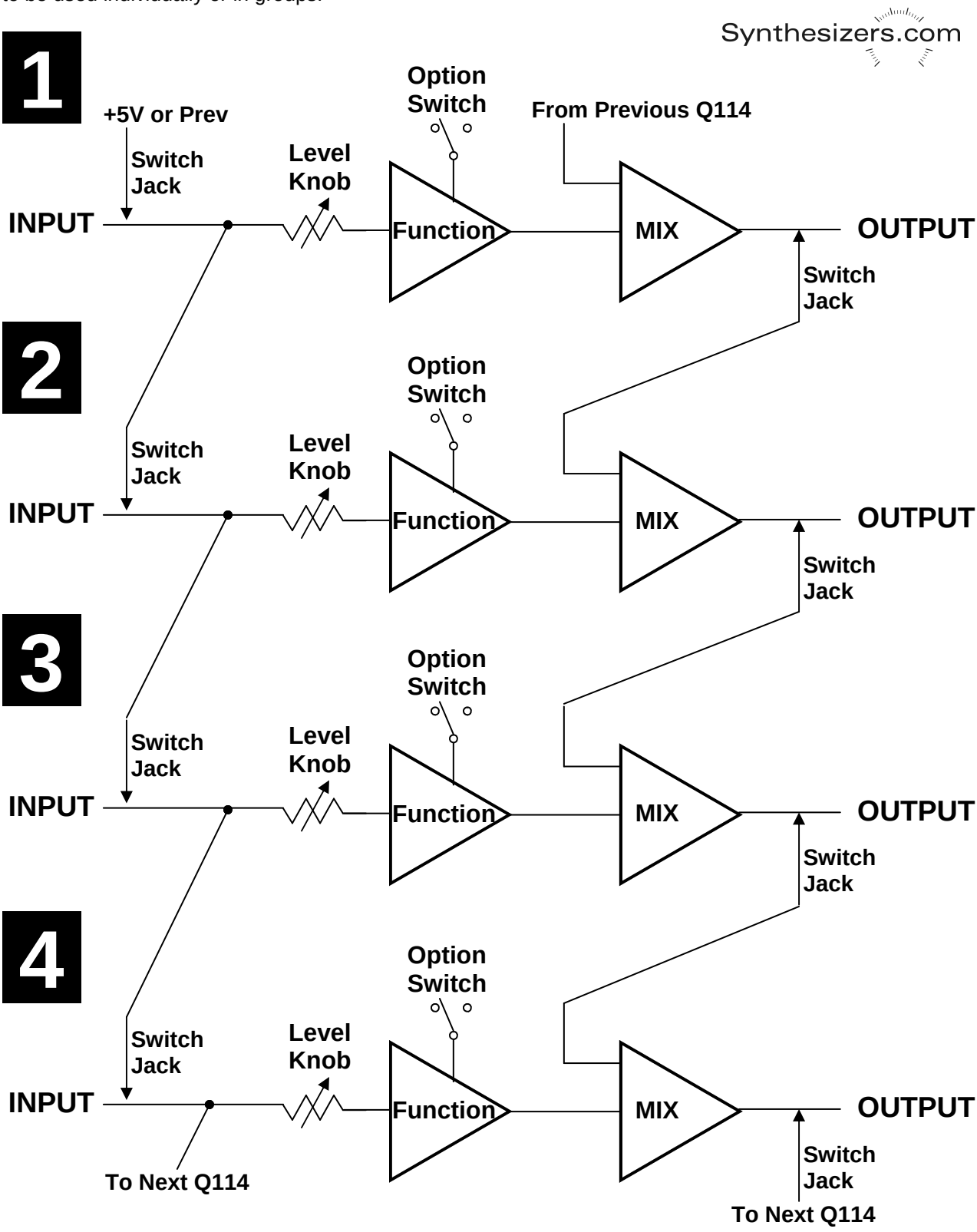
Functional Diagram

The Q114 Mixer++ is a chain of function blocks and mixers. The blocks are connected together with switching jacks on the inputs and the outputs. Inserting plugs breaks the chain and allows the functions to be used individually or in groups.



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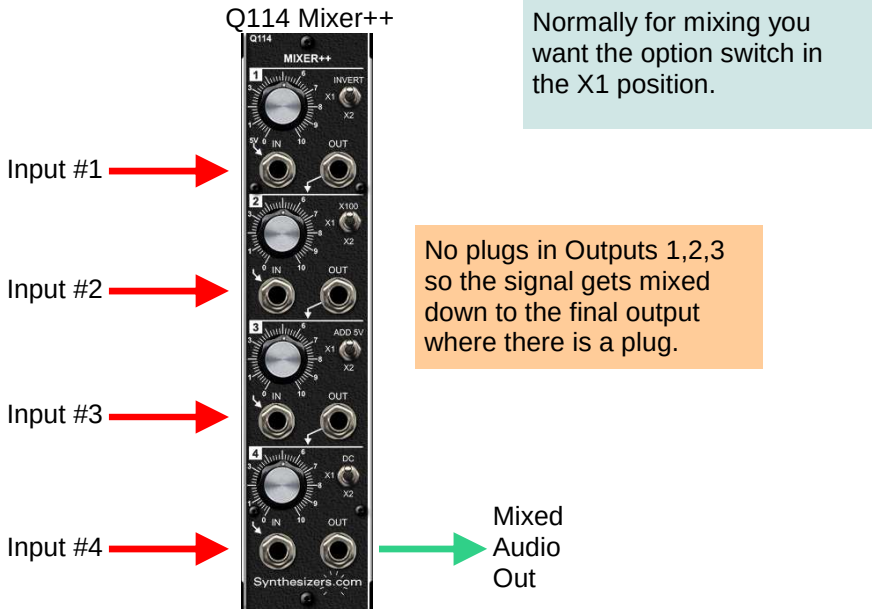
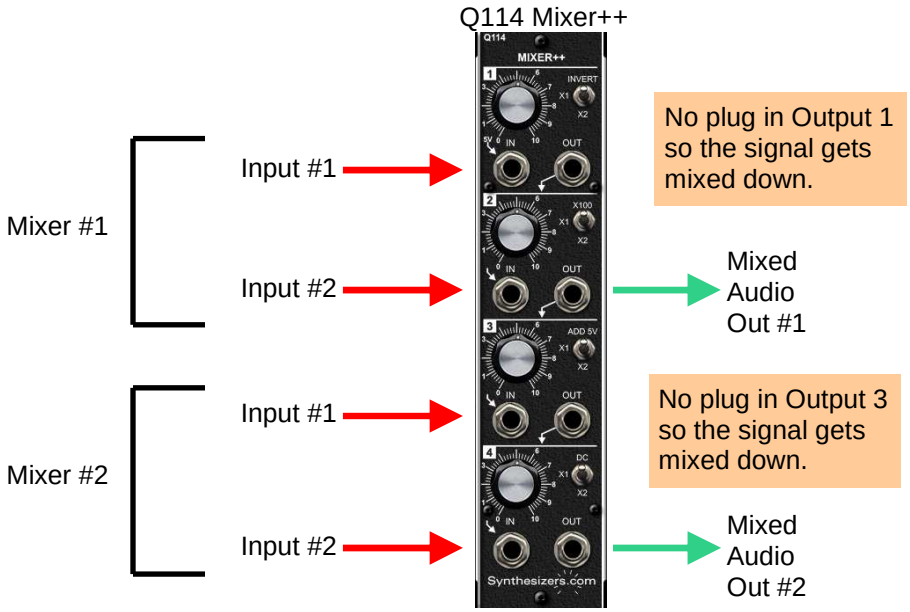
Basic Mixer Patch
Here's an example of the Q114 being used as a simple multi-channel mixer. Each channel has its own attenuator. The output is at the bottom of the chain.



Dual 2-Channel Mixer
This patch shows how inserting plugs into the output jacks breaks the chain creating groups of functions. Here we have a 2-channel mixer on the top 2 channels, and a 2 channel mixer on the bottom 2 channels.



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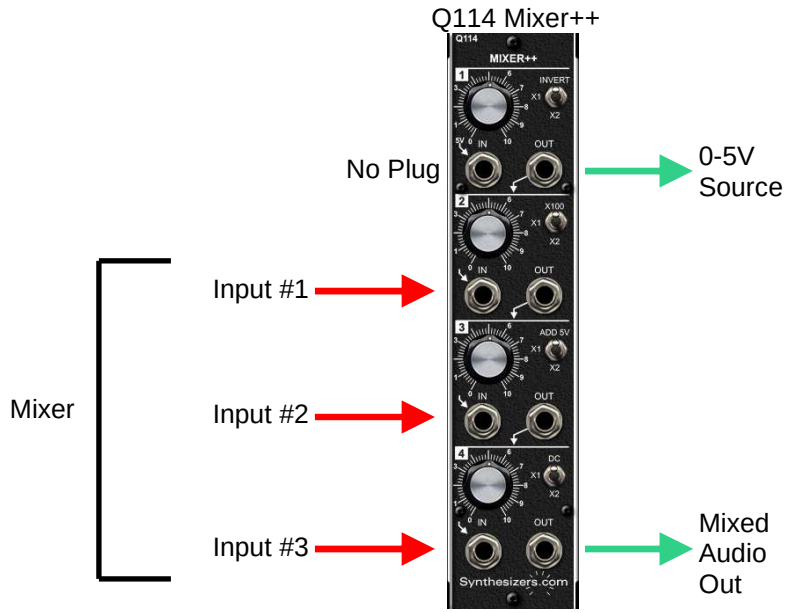
Voltage Source and 3-Channel Mixer
In this example, the top channel is used as a voltage source. Channel #1 has 5 volts at its input if there is no plug inserted into its input. Channel 1's knob sets the output voltage from 0 to 5 volts.



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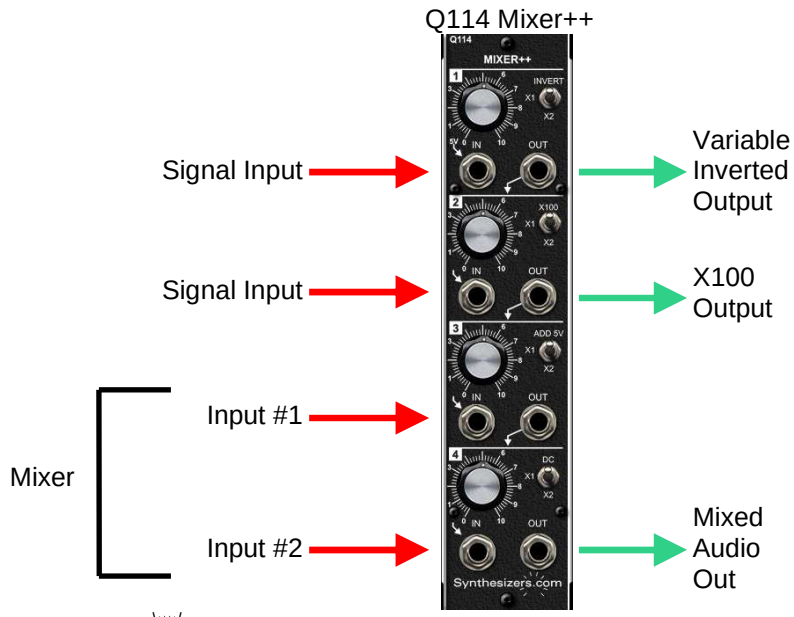
2 Functions and 2-Channel Mixing
Inserting a plug in an output breaks it from the chain and its output is NOT sent to the next channel. This is how channels are used as individual functions or grouped. This example shows the bottom 2 channels being used as a mixer, channel #1 is a variable inverter, and channel #2 is a X100 amplifier for an external device.



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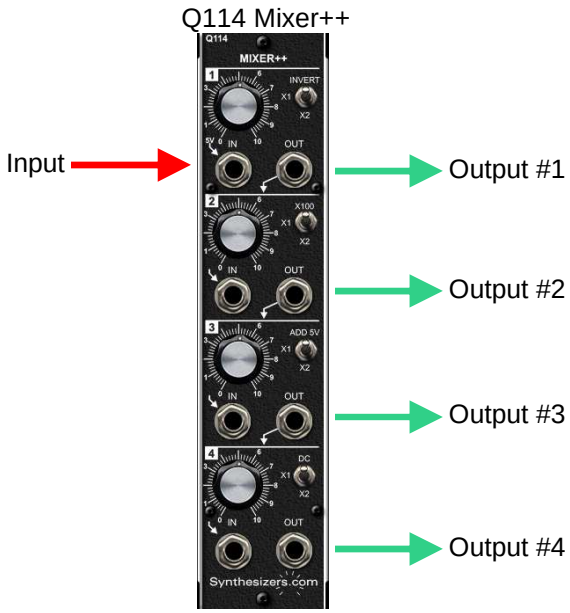
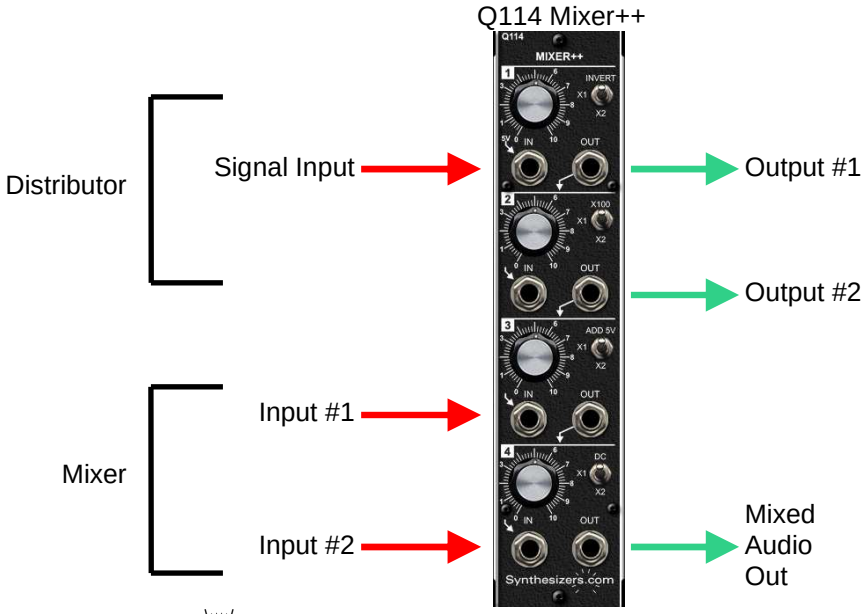
Signal Distributor
Sometimes you want to send a signal to multiple places and have control over each one, this is basically the reverse of mixing and it's easy with the Q114. Each channel has control of signal level and features from the option switches. This can be used with any type of signal - control voltage, pitch voltage or gate.



Distributing and Mixing
Here's an example showing a 2-channel distributor and a 2-channel mixer just to give you an idea of how flexible this module is.



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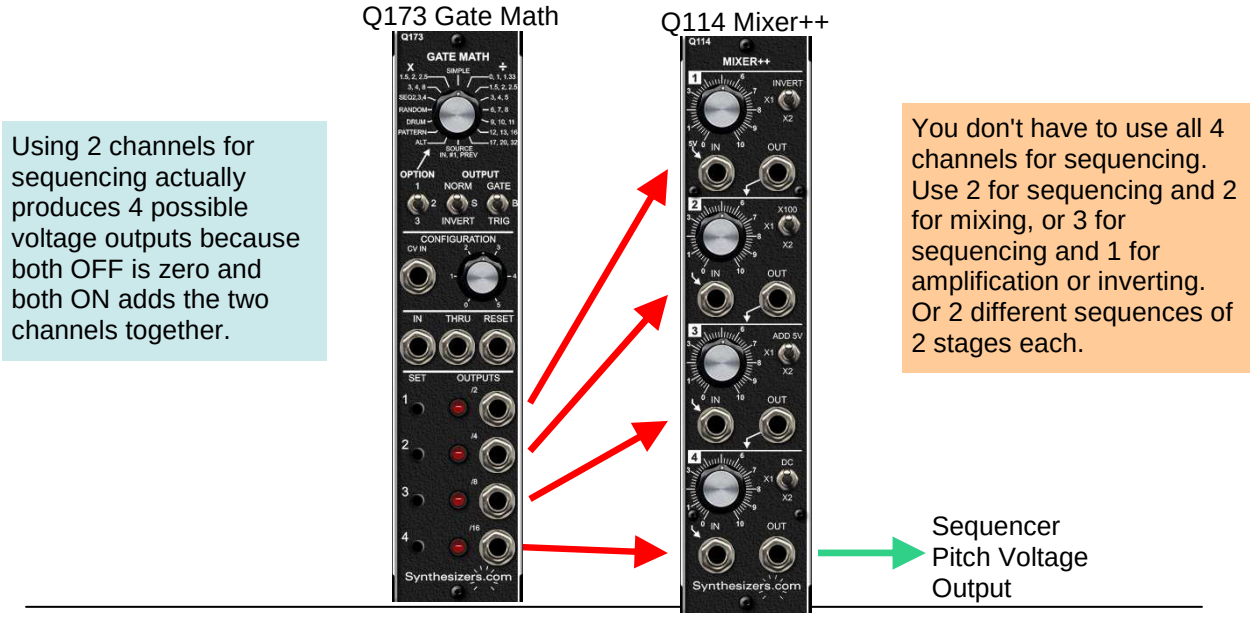
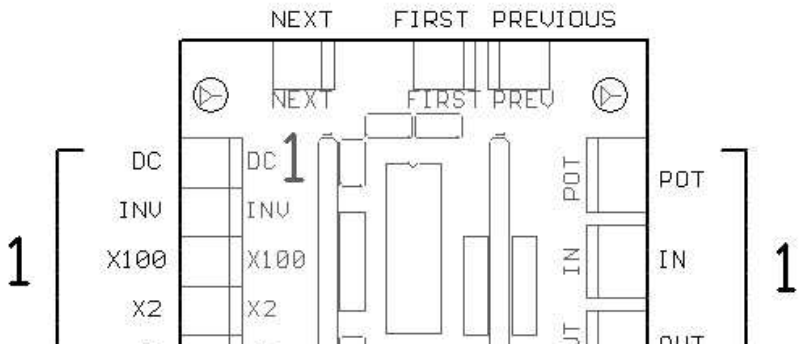
Sequencing with a Mixer
The Q114 has a knob to control the level of each input, and when mixing, all of these are added together. Mixing is adding voltages. This means 5 volt inputs can be varied from 0-5 volts at each output. Patching 5V gate signals from a Q173 Gate Math module effectively turns the Q114 into a 4-stage pitch sequencer. The Q173 has special modes just for sequencing and some very strange and random patterns too.



Daisy-Chaining Multiple Q114 Mixer++ Modules
The Q114 has a special cable on the circuit board for daisy-chaining to another Q114. Each Q114 that is connected adds 4 more channels. Two Q114's produces an 8-channel mixer, three a 12-channel and so on. You do not lose any functionality by connecting Q114's this way, you can still use the channels independently or grouped in any way. The possibilities are finite but huge.

Q114 modules are shipped with a short cable between the PREVIOUS and FIRST connectors on the circuit board - see below. To add a second Q114, remove its cable from the FIRST connector and attach it to NEXT connector on the first Q114.

No matter how many Q114 modules you have connected together, the NEXT connector will attach to the PREVIOUS connector on the next module. It's very logical. The first module in the chain will always have a cable between PREVIOUS and FIRST - this sets 5V for the first channel when no plug is inserted.



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Configuring Option Switches
Each of the 4 channels has a 3-position toggle switch to select a special function for that channel. In the middle position, the function is X1 meaning that the input signal is equal to the output signal. This is what we want for most mixing situations. The switch has a 2-pin cable for the UP position and the DOWN position. You can place these cables on any option you want for any channel. The options are plainly marked on the circuit board.

Options are:

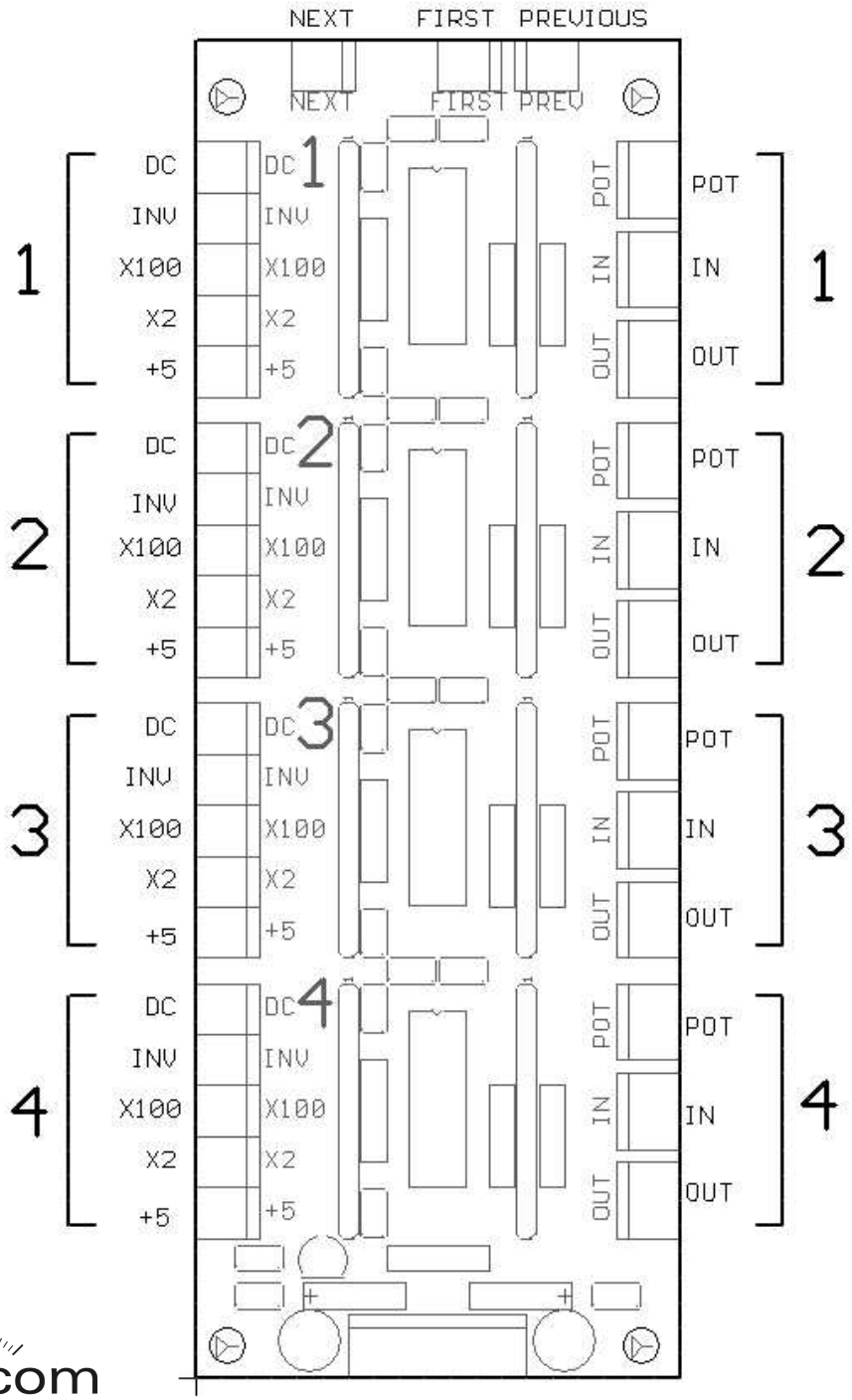
DC
DC coupling, otherwise AC coupling. AC removes any offset voltage a signal might have. Normally you want a jumper on this for DC operation.

INV
Invert input signal. This allows inverting control voltages or gates and can also be used along with 5V inputs to generate -5V.

X100
This multiplies the input signal by 100. This is used for amplifying weak signals. The output will clip at about 14VPP which can provide some useful effects.

X2
This multiplies the input signal by a factor of 2. This allows signals to be boosted relative to each other.

+5
This adds an offset of 5V to the signal. In conjunction with inverting it can be used to modify gate signals or convert audio to gate or vice-versa.



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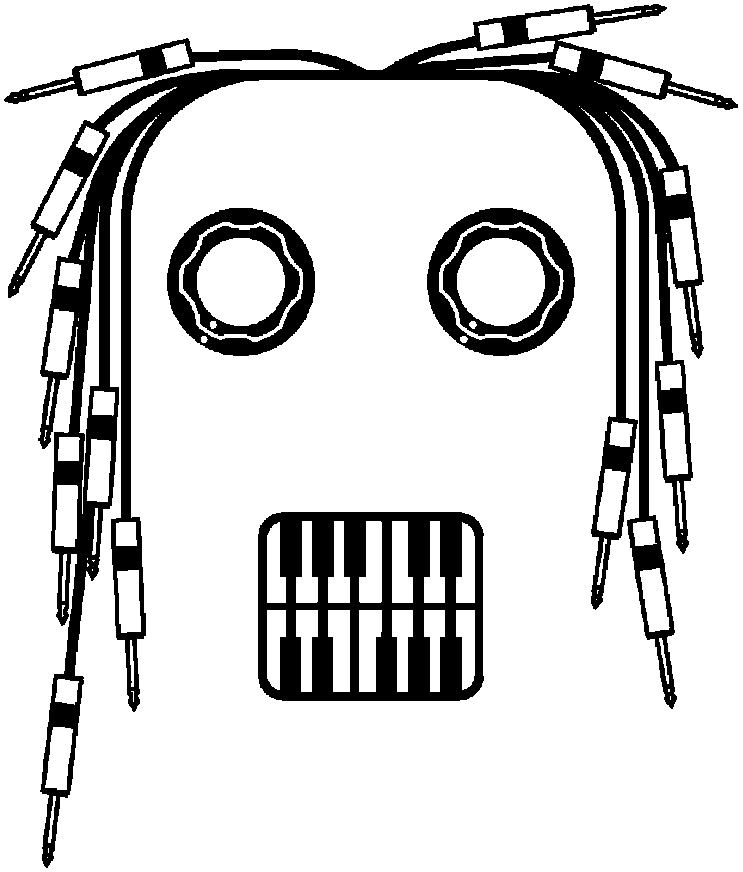
Patcher Jack



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