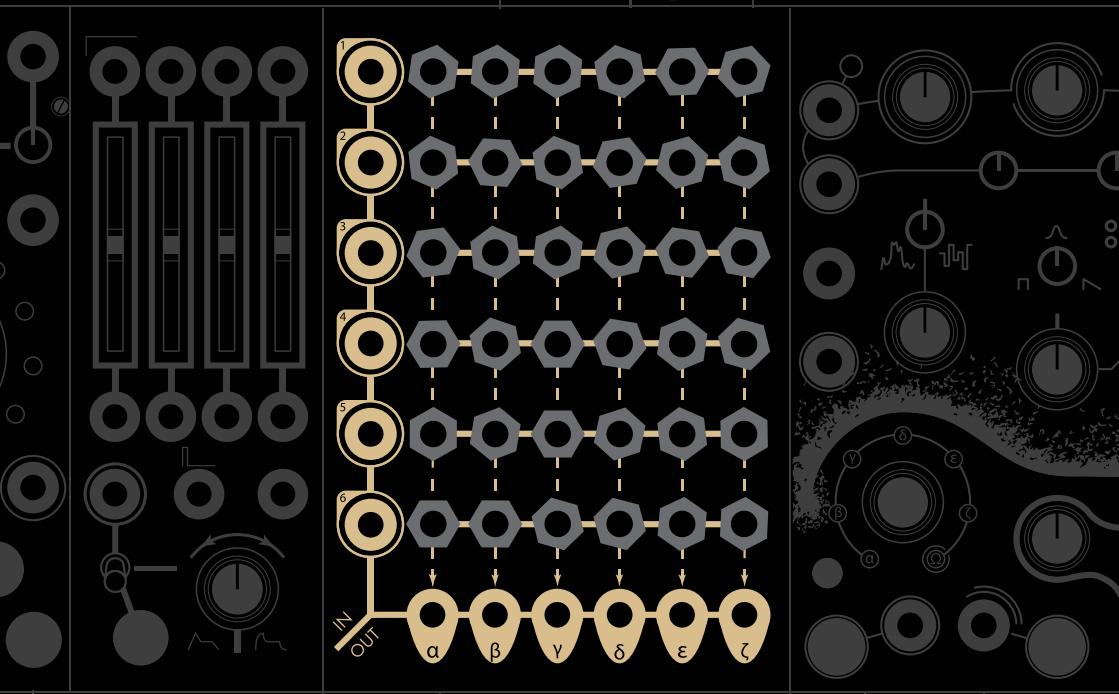
INSTRUO | SPECIALIST SYNTHESIZERS



lìon

Matrix Mixer

User Manual

Contents

Description

The Instruō **lìon** is a 6x6 matrix mixer with a pin style interface similar to those found on iconic modular synthesizers of the 1970s. Its applications range from signal routing and effect insert functionality to true summing with cascaded attenuation capabilities.

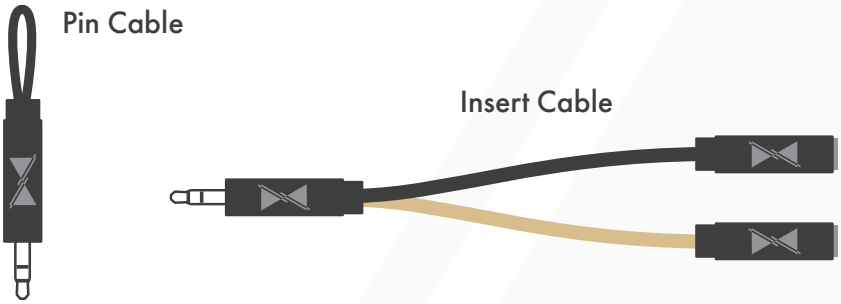
Live patching made easy with the use of the included pin and insert cables.

Need to patch to a new destination? Simply pin your patch on the fly.

Centralise your I/O network with **lìon**.

Features

- 6x6 pin-style matrix mixer
- Send & return insert capabilities
- True summing
- Passive multiple functionality
- Cascaded attenuation through channels 3-6
- Includes 10 pin cables
- Includes 2 insert cables (black = send, gold = return)



Installation

- Confirm that the Eurorack synthesizer system is powered off.
- Locate 16 HP of space in your Eurorack synthesizer case.
- Connect the 10 pin side of the IDC power cable to the 2x5 pin header on the back of the module, confirming that the red stripe on the power cable is connected to -12V.
- Connect the 16 pin side of the IDC power cable to the 2x8 pin header on your Eurorack power supply, confirming that the red stripe on the power cable is connected to -12V.
- Mount the Instruō **lìon** in your Eurorack synthesizer case.
- Power your Eurorack synthesizer system on.

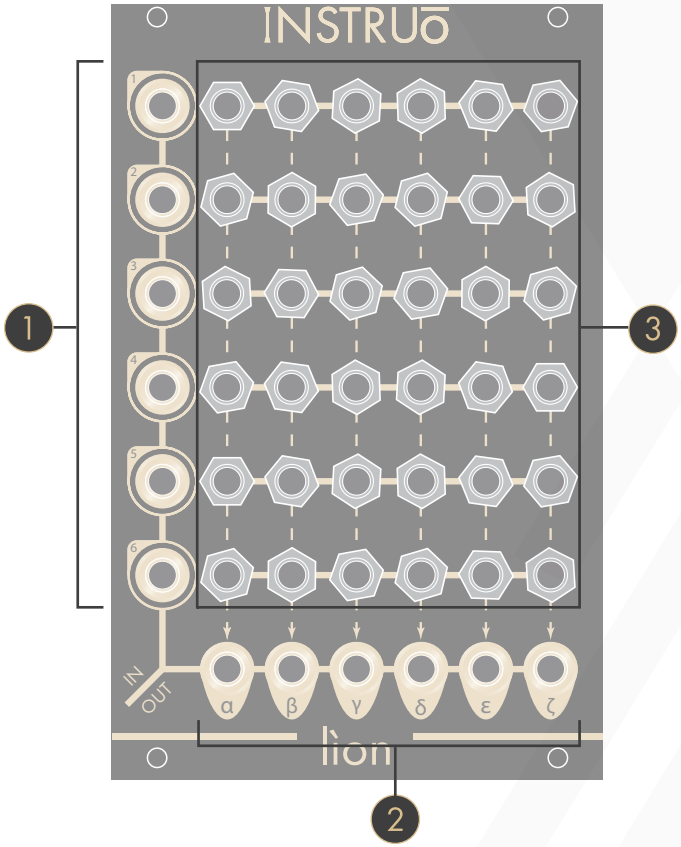
Note:

This module has reverse polarity protection.
Inverted installation of the power cable will not damage the module.

Specifications

- Width: 16 HP
- Depth: 27mm
- +12V: 30mA
- -12V: 30mA

lìon | lj**ð** | **noun** (networking) an open-meshed form, twisted, knotted, or woven together at regular intervals a group of communication stations operating under unified control

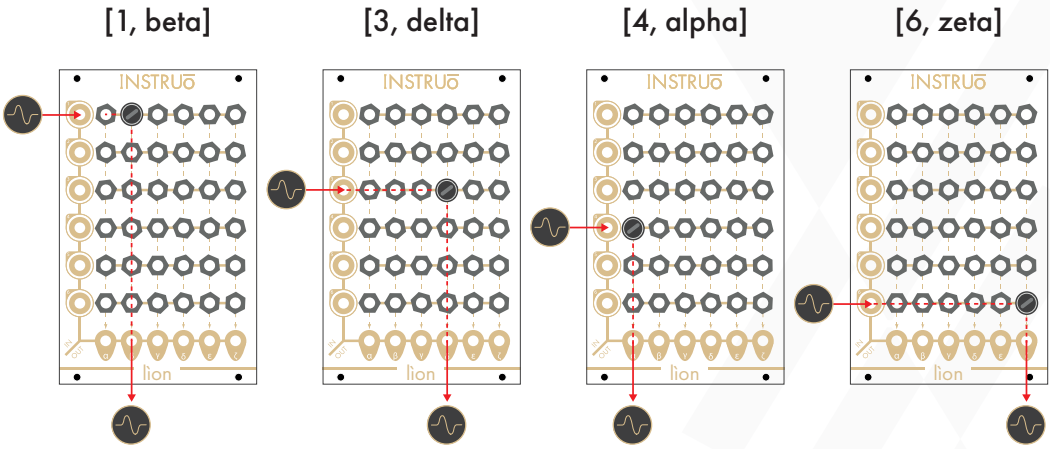


Key

1. Inputs
2. Outputs
3. Patch Points

When referring to matrix mixers, it's a good idea to refer to the different **Patch Points** by rows and columns. For instance, talking about **[1, alpha]** would refer to the **Patch Point** on the top row and first column (top left). **[4, gamma]** would refer to the **Patch Point** on the fourth row and third column.

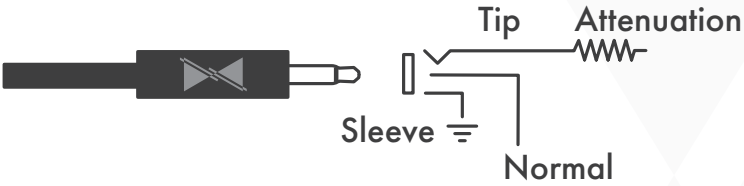
Inputs: lìon includes six DC coupled inputs for audio and control voltage signals, labeled **1**, **2**, **3**, **4**, **5**, and **6**.

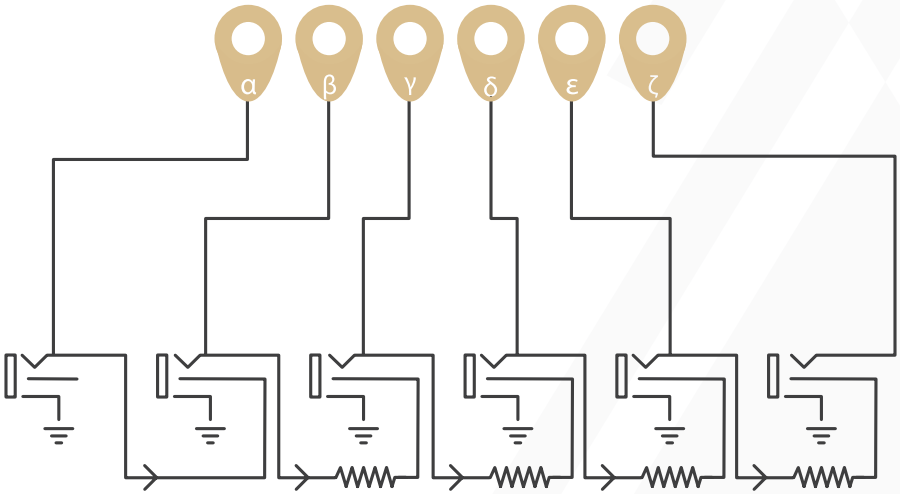


Outputs: lìon includes six DC coupled outputs for audio and control voltage signals, labeled **alpha**, **beta**, **gamma**, **delta**, **epsilon**, and **zeta**.

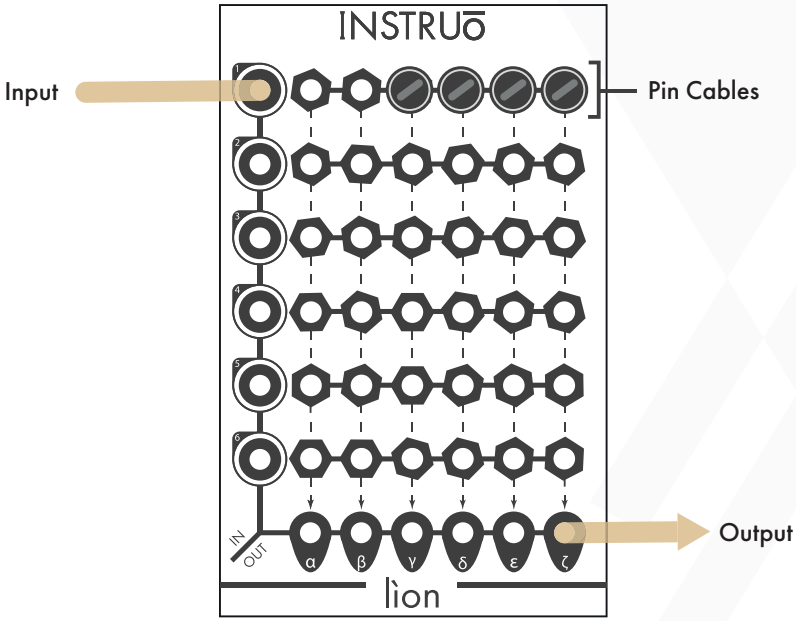
- The **alpha** and **beta Outputs** will always output summed signals at unity gain.
- The **gamma**, **delta**, **epsilon**, and **zeta** outputs mix at unity gain from pinned sources, but will also sum the signal from the output directly to their left (if that output is unpatched). This throughput has a gain reduction of 1/3. Multiple **Pin Cables** in the same row will add gain to the input signal.

Multiple **Pin Cables** in the same row will add gain to the input signal. For example, if an input signal is present at **Input 1**, and a **Pin Cable** is inserted to **[1, alpha]** the signal at the **alpha Output** and **beta Output** will be unity gain. At the **gamma Output**, the signal will be attenuated by 1/3. At the **delta Output**, another 1/3, cascading attenuation as the channel outputs are summed.





- Similarly, if an input signal is present at **Input 1** and a **Pin Cable** is inserted to **[1, zeta]** the signal at the **zeta Output** be unity gain. Adding another **Pin Cable** at **[1, epsilon]** will increase the signal's gain by 2/3. Adding yet another **Pin Cable** at **[1, delta]** will increase the signal's gain by another 2/3, so on and so forth, cascading gain as the channel outputs are summed.



Patch Points: The **Patch Points** are used for signal routing and effect insert functionality.

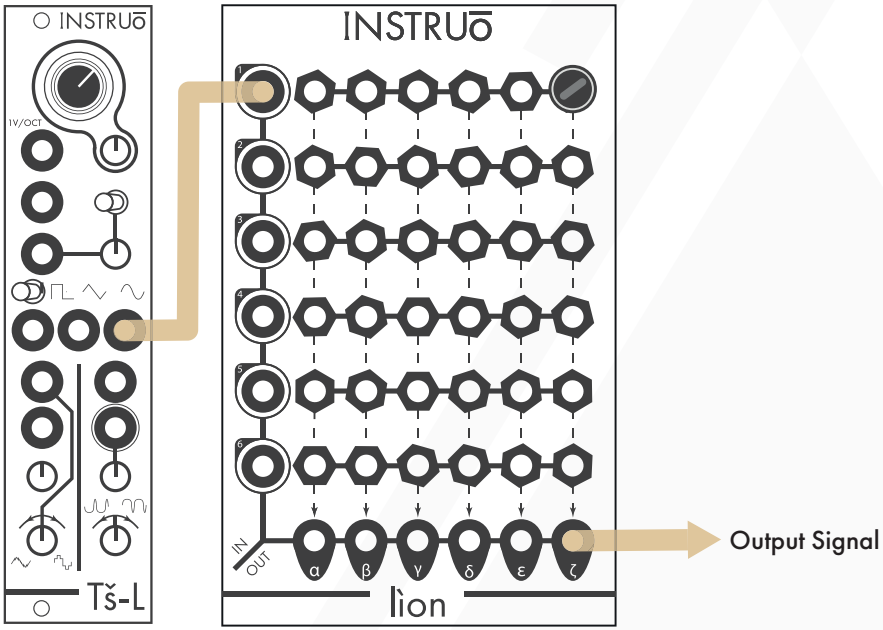
- Patching out from the **Patch Points** with a standard mono patch cable will serve as a passive multiple from the signal at the input.

Patch Examples

Mixing:

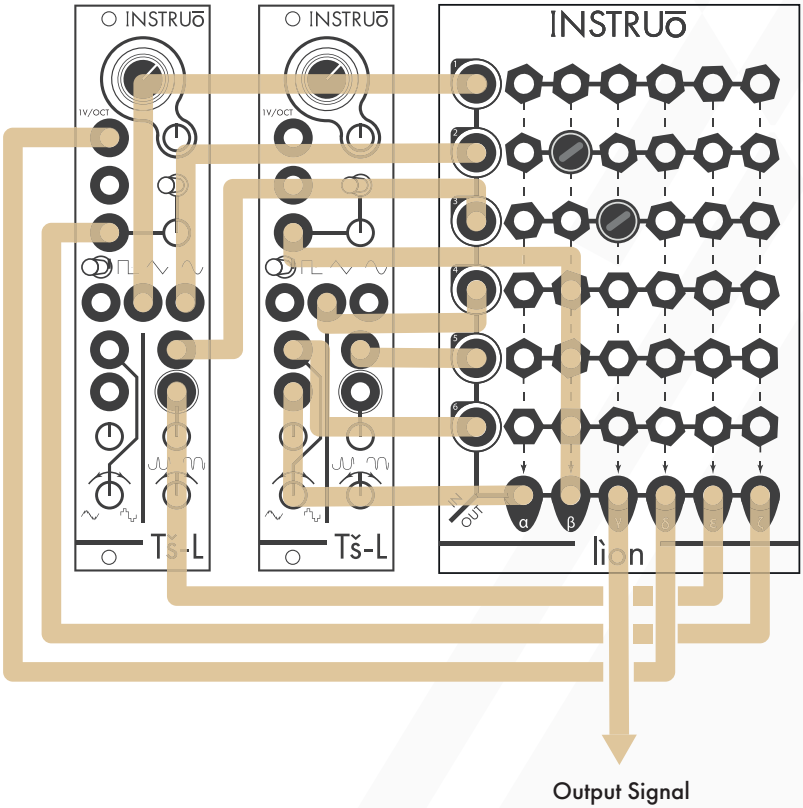
- Connect different signals to any of the **Inputs** and monitor from the **zeta Output**.
- Insert **Pin Cables** to the **Patch Points** on any of the corresponding rows.
- Different levels of attenuation are applied based on which **Patch Points** you insert **Pin Cables** into.
- Adding multiple **Pin Cables** in a row will add gain to the input signal.

For instance, with a signal present at **Input 1**, inserting a **Pin Cable** to **[1,zeta]** will pass the signal to the **zeta Output** at unity gain. As the **Pin Cable** is moved to the left, the signal will attenuate the signal by 1/3 with each consecutive **Patch Point** with the exception of the first two **Patch Points** which apply the same amount of attenuation.



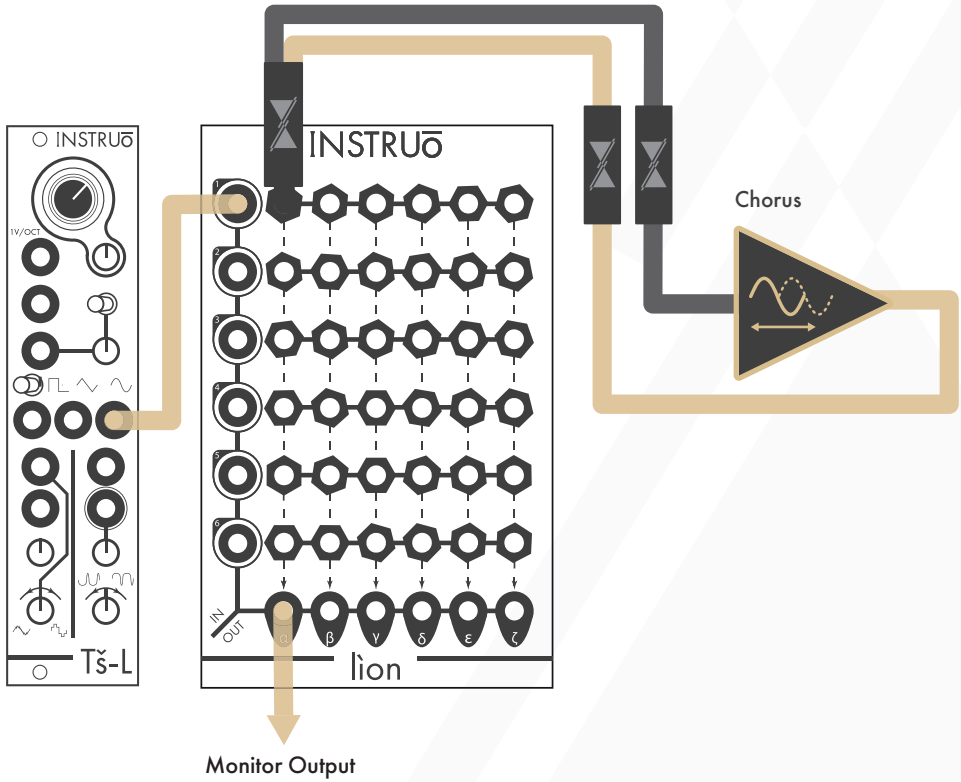
Cross Modulation:

- Insert three audio signals from one oscillator to **Inputs 1-3** of **lìon**.
- Insert another three audio signals from a second oscillatior to **Inputs 4-6** of **lìon**.
- Monitor from the **gamma Output**.
- Connect the **alpha** and **beta Outputs** to two inputs on the second oscillator (FM and wavefold amount, for instance).
- Connect the **delta**, **epsilon**, and **zeta Outputs** to three inputs on the first oscillatior.
- Any **Patch Point** on the **gamma** column will pass audio to the output.
- Any other **Patch Point** will connect the audio signals from the oscillators to modulation inputs on the opposing oscillators.



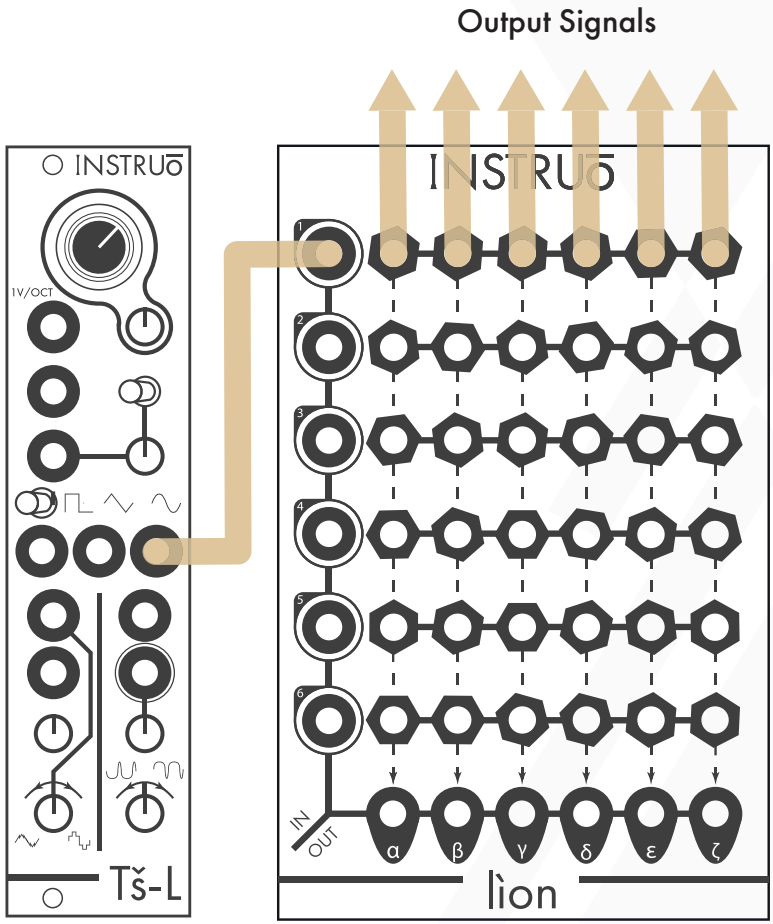
Effect Insert:

- Connect an audio signal to **Input 1** and monitor from the **alpha Output**.
- Patch an **Insert Cable** to **[1,alpha].**
- Connect the black end of the **Insert Cable** (send) to the input of the desired effect.
- Connect the output of the desired effect to the gold end of the **Insert Cable** (return).
- This can be done on any **Input** and **Output** as long as the **Patch Point** connects them.



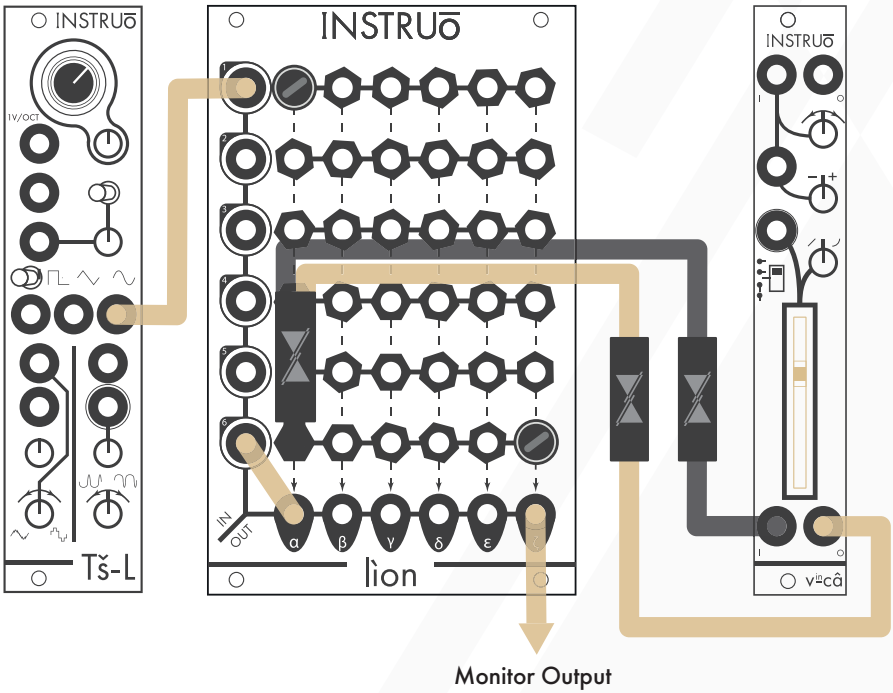
Passive Mult:

- Patching out from the **Patch Points** with a standard mono patch cable will serve as a passive multiple from the signal at the input
- Each row serves as a 1 to 6 passive mult.



Basic Feedback:

- Connect an audio signal to **Input 1** and monitor from the **zeta Output**.
- Insert a **Pin Cable** into **[6, zeta]**.
- Connect a patch cable from **alpha Output** back into **Input 6**.
- Patch an **Insert Cable** to **[6, alpha]**.
- Connect the black end of the **Insert Cable** (send) to the input of a VCA.
- Connect the output of the VCA to the gold end of the **Insert Cable** (return), this will create a VCA controlled feedback loop.
- In order to introduce your audio source into the loop, insert a **Pin Cable** into **[1, alpha]**.

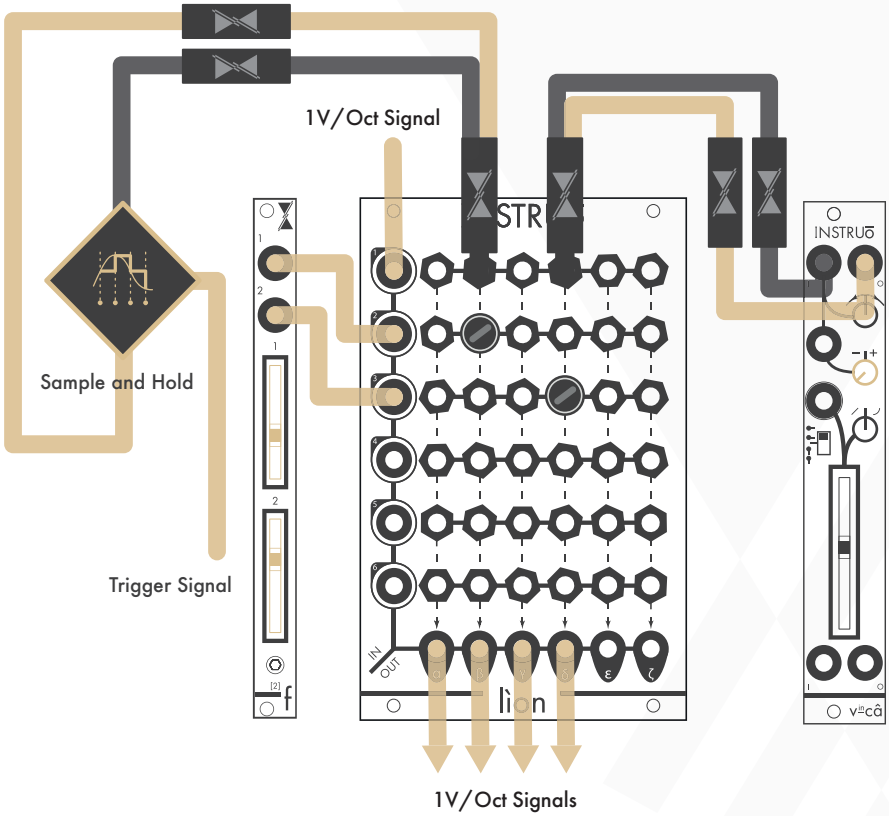


1V/Oct Routing:

Variations of the original 1V/Oct signal can be created by summing the original signal with the offset values of 2[f], inverting the original signal using the first channel of vincâ, sampling the original signal with the sample and hold.

- Connect a 1V/Oct signal to **Input 1**
- Connect 2[f] to **Input 2** and **Input 3**
- Patch an **Insert Cable** to **[1, beta]**
- Connect the black end of the **Insert Cable** (send) to the input of a sample and hold.
- Connect the output of the sample and hold to the gold end of the **Insert Cable** (return).
- Patch an **Insert Cable** to **[1, delta].**
- Connect the black end of the second **Insert Cable** (send) to the input of channel one of a v^{in}câ.
- Connect the output of channel one of the v^{in}câ to the gold end of the second **Insert Cable** (return).
- Insert **Pin Cables** to **[2, beta]** and **[3,delta]** .
- Send **alpha**, **beta**, **gamma** and **delta Outputs** to different 1V/Oct inputs.

(Diagram on next page)



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Manual Author: Collin Russell
Manual Design: Dominic D'Sylva

CE This device meets the requirements of the following standards: EN55032, EN55103-2, EN61000-3-2, EN61000-3-3, EN62311.