INSTRUō | SPECIALIST SYNTHESIZERS

tàin
Switch Utility Module
User Manual

Contents

 - Control Voltage Switching
 - Audio Rate Waveform Splicing
 - Manual Trigger Pattern Switching
 - Waveform Routing

Description ━━

The Instruō **tàin** is a two channel analogue bidirectional switch, similar to those found on classic semi-modular systems of the 1970s.

With momentary and latching functionality, external control and a manual button per channel, **tàin** can seamlessly switch between control voltage contours, trigger/gate patterns as well as audio signals all the way into audio rate.

Features ━━

- Dual analogue bidirectional switching
- Manual button per channel
- Momentary and latching functionality
- Audio and CV compatibility

Installation ━━

- Confirm that the Eurorack synthesizer system is powered off.
- Locate 4 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 **tàin** in your Eurorack synthesizer case.
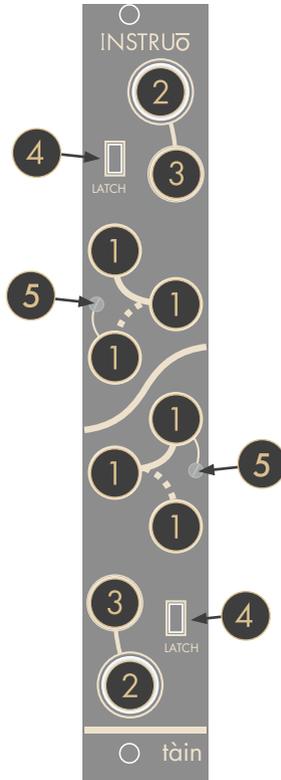- Power your Eurorack synthesizer system on.

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

Specifications ━━

- Width: 4 HP
- Depth: 27mm
- +12V: 10mA
- -12V: 5mA

tàin | tɤæːɤnʲ | **verb** (close) to block up, to move so as to cover an opening, bring two parts together, to make continuous as in a circuit.

Key ━━

1. I/O
2. Switch Button
3. Switch Control Input
4. Mode Toggle
5. Reference Trimmer

I/O: Because **tàin** is an analogue switch, inputs and outputs are both bidirectional and multipurpose. We'll refer to the two switch states as the primary state and the secondary state

- This means that each channel can act as a 1 input, 2 output switch, or a 2 input, 1 output switch.
- This also means that **tàin** can switch between control voltage as well as audio and can be modulated at both control rate and audio rate.
- Throughout the patch examples, these jacks will be referred to as, "the two **Inputs** and the **Output**" or "the two **Outputs** and the **Input**" on a patch-by-patch basis.

Switch Button: Pressing the **Switch Button** will change the state of **tàin**. The button will illuminate white every time the secondary state is active.

- XOR logic is implemented for the **Switch Button** when **Momentary Mode** is selected with the **Mode Toggle**. For instance, if a square waveform is used to control the switching, pressing and holding the **Switch Button** will effectively invert the control logic. In other words, the switch state always flips on each trigger or button press.

Switch Input: The **Switch Input** is a trigger/gate input used for changing the switch state of **tàin**.

Mode Toggle: The **Mode Toggle** changes the functionality of the **Switch Input** and **Switch Button**.

- If the toggle is in the up position, **Momentary Mode** is set and the **Switch Input** and **Switch Button** have momentary functionality. This means that **tàin** will change from the primary state to the secondary state as long as the signal present at the **Switch Input** is held high or the **Switch Button** is pressed down. Once the signal present at the **Switch Input** goes low or the **Switch Button** is released, the switch returns to the primary state.

- If the toggle is in the down position, **Latching Mode** is set and the **Switch Input** and **Switch Button** have latching functionality. This means that **tàin** will change between the primary state and the secondary state with every rising edge signal present at the **Switch Input** or as the **Switch Button** is pressed.

Reference Trimmer: The **Reference Trimmer** sets a reference voltage that is normalled to the bottom **I/O Jack**.

- It can be manually adjusted -/+10V.

Patch Examples ━━

Control Voltage Switching:

- Connect two different LFO outputs of øchd to the two **Inputs** of **tàin**.
- Connect a third LFO output of øchd to the **Switch Input**.
- Set the switch mode of **tàin** to **Latching**.
- Patch from the output of **tàin** to the modulation destination.


Modulation
Destination
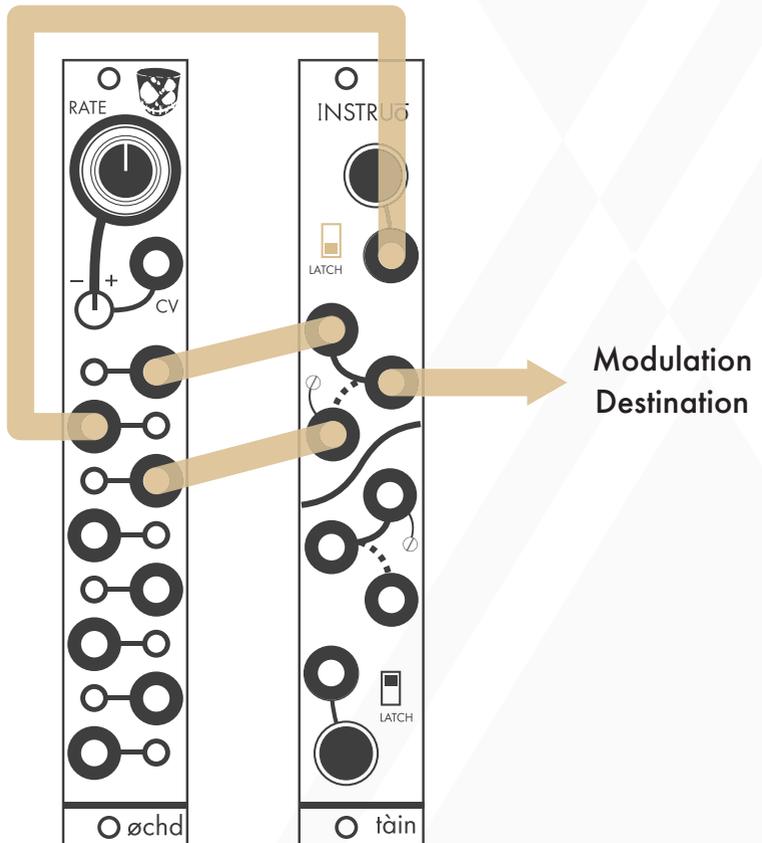
Audio Rate Waveform Splicing:

- Connect the PWM and fold waveforms of Tš-L to the two **Inputs** of tàin.
- The square waveform of Tš-L is connected to the **Switch Input**.
- Monitor the **Output** of **tàin**.
- Changing the octave of the square waveform of Tš-L and the **Toggle Mode** of **tàin** will create different timbral results.


Tš-L Output
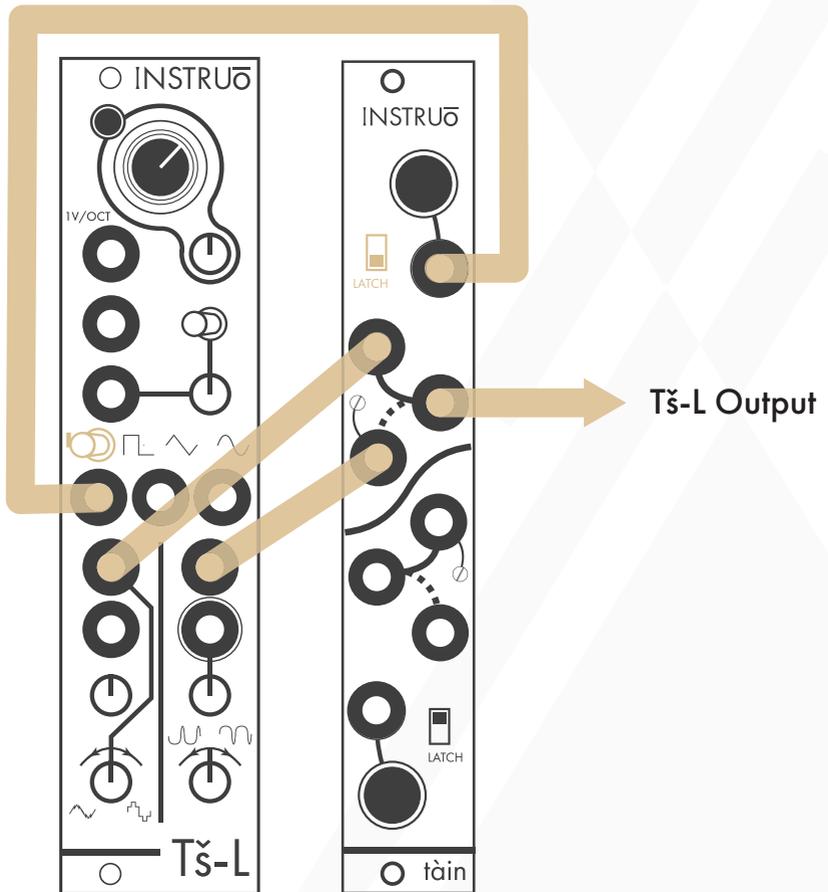
Manual Trigger Pattern Switching

- Connect two different trigger patterns to the two **Inputs** of **tàin**.
- Set the **Toggle Mode** of **tàin** to **Momentary**.
- Patch from the **Output** of **tàin** to the trigger destination.
- **tàin** will switch to the secondary state as long as the **Switch Button** is pressed.

Trigger Pattern 1

Trigger Pattern 2

Trigger Destination
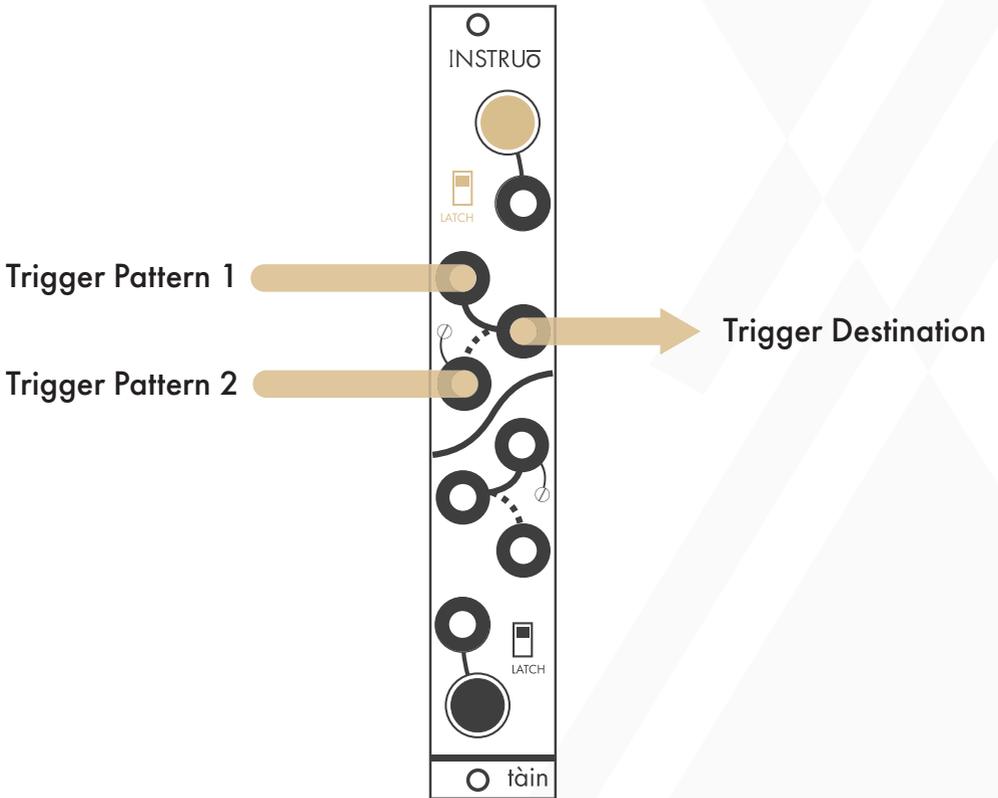
Waveform Routing

- Connect the waveform output of an oscillator to the **Input** of **tàin**.
- Set the **Toggle Mode** to **Latching**.
- Connect the two **Outputs** of **tàin** to two different audio paths (like two different filters).
- Monitor both audio paths via a mixer.
- **tàin** will switch the routing of the oscillator to both audio paths everytime the **Switch Button** is pressed.
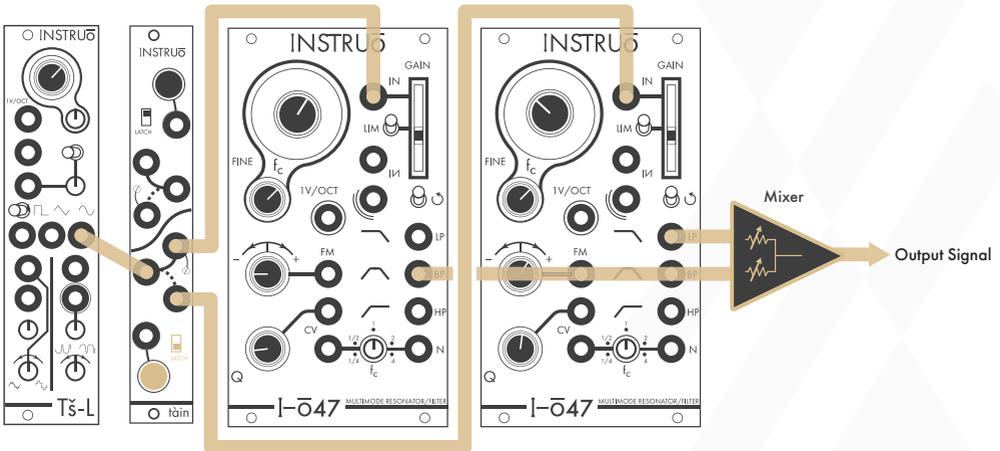
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Manual Design: Dominic D'Sylva

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