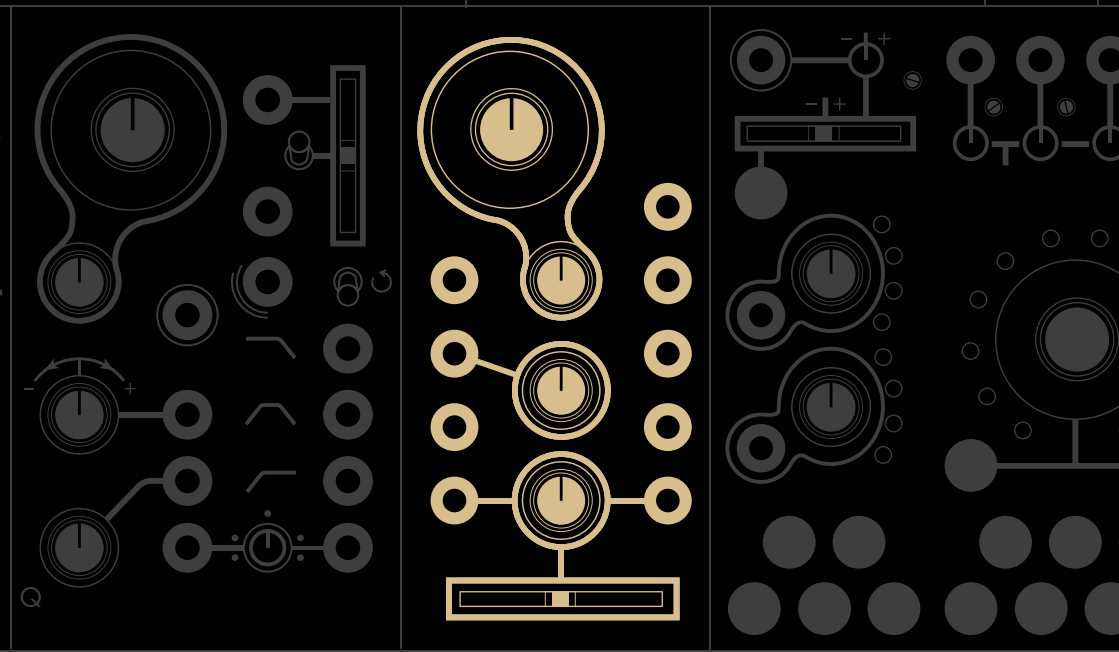
INSTRUŌ | SPECIALIST SYNTHESIZERS



tòna

Oscillator

User Manual

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Description

The Instruō **tòna** is an all analogue voltage controlled oscillator. **tòna** generates all four classic waveforms with the addition of a fifth output driven by a built in all analogue wavefolder. The wavefolder is derived from the classic West Coast "timbre" circuits and opens a world of rich harmonics and complex spectra, adding a touch of West Coast flavor to any subtractive synth voice.

Features

- 1V/Oct tracking
- Linear FM
- Hard synchronisation
- Wavefolding

Installation

1. Confirm that the Eurorack synthesizer system is powered off.
2. Locate 12 HP of space in your Eurorack synthesizer case.
3. 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.
4. 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.
5. Mount the Instruō **tòna** in your Eurorack synthesizer case.
6. 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: 12 HP
- Depth: 27mm
- +12V: 40mA
- -12V: 40mA

tòna | tɔːnə | **noun** (musical sound) a sound, tone or accent, from Greek Tonus; pitch, voice literally 'tension of string' can also refer to colour



Key

1. Square Output
2. Sawtooth/Ramp Output
3. Triangle Output
4. Sine Output
5. Wavefold Output
6. Coarse
7. Fine
8. 1V/Oct Input
9. Linear FM Input
10. Linear FM Attenuator
11. Wavefold Fader
12. Wavefold CV Input
13. Wavefold CV Attenuator
14. Sync Input

Waveforms

Square Output: Square waveform output.

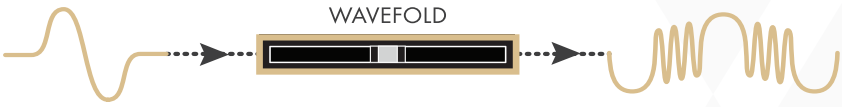
Sawtooth Output: Sawtooth/Ramp waveform output.

Triangle Output: Triangle waveform output.

Sine Output: Sine waveform output.

Wavefold Output: Folded waveform output.

- The waveform is determined by the **Wavefold** parameter.



Frequency/Pitch

Coarse: The **Coarse** knob controls the fundamental frequency of the oscillator, effectively changing the pitch of all waveforms.

- Turning the knob clockwise will increase the frequency.
- Turning the knob anticlockwise will decrease the frequency.

Fine: The **Fine** knob is used for minute control of the oscillator's fundamental frequency and is relative to the frequency defined by the **Coarse** knob. This will also effectively change the pitch of all waveforms.

- Turning the knob clockwise will increase the frequency.
- Turning the knob anticlockwise will decrease the frequency.

1V/Oct Input: The **1V/Oct Input** is a bipolar control voltage input that is calibrated to 1 volt per Octave.

- This is traditionally used for frequency control (musical pitch) sent from a sequencer or keyboard.
- Control voltage is summed with the values set by the **Coarse** and **Fine** knobs.

Frequency Modulation

Linear FM Input: The **Linear FM Input** is a bipolar control voltage input for the frequency parameter of the oscillator.

- A signal present at the **Linear FM Input** will affect the oscillator's frequency.
- Control voltage is summed with the values set by the **Coarse** and **Fine** knobs and scaled by the **FM Attenuator**.
- Audio rate signals will add non-harmonic sidebands to the original waveform.

Linear FM Attenuator: The **Linear FM Attenuator** determines the depth of applied frequency modulation.

- Turning the knob clockwise will increase the depth of frequency modulation.
- Turning the knob anticlockwise will decrease the depth of frequency modulation.

Wavefolding

Wavefold: The **Wavefold** fader controls the amount of wavefolding applied to the waveform present at the **Wavefold Output**.

- The oscillator's sine waveform is processed by the wavefolder circuit.
- Moving the fader fully left results in a waveform that resembles a sine waveform.
- Moving the fader fully right dynamically results in a rich, harmonic timbre.

Wavefold CV Input: The **Waveforld CV Input** is a bipolar control voltage input for the **Wavefold** parameter.

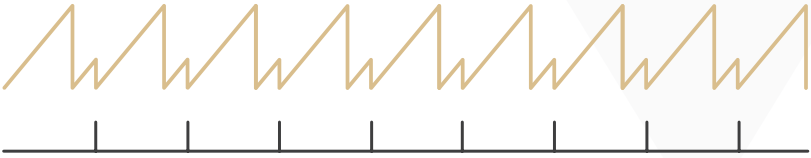
- Control voltage is summed with the fader position.

Wavefold CV Attenuator: The **Wavefold CV Attenuator** controls the depth of control voltage modulation applied to the wavefold parameter.

Oscillator Synchronisation

Sync Input: The **Sync Input** is a hard synchronisation input.

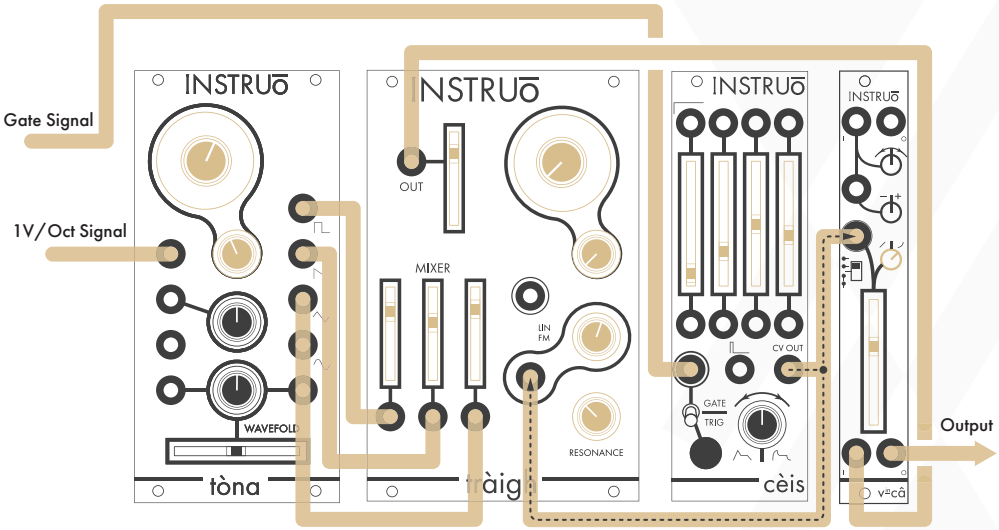
- On a rising edge signal the oscillator's cycle will reset.
- Hard edged signals such as Sawtooth/Ramp and Square waveforms work best for the **Sync Input**.
- Voltage threshold: 2.5V.



Patch Examples

East Coast Synth Voice

Summary: The sequencer or keyboard sends voltages to **tòna** while simultaneously triggering the envelope generator. The CV output of the envelope generator opens the filter and VCA, allowing **tòna**'s signal to pass through. More traditional East Coast patches would incorporate separate envelope generators for the filter and VCA.



Audio Path:

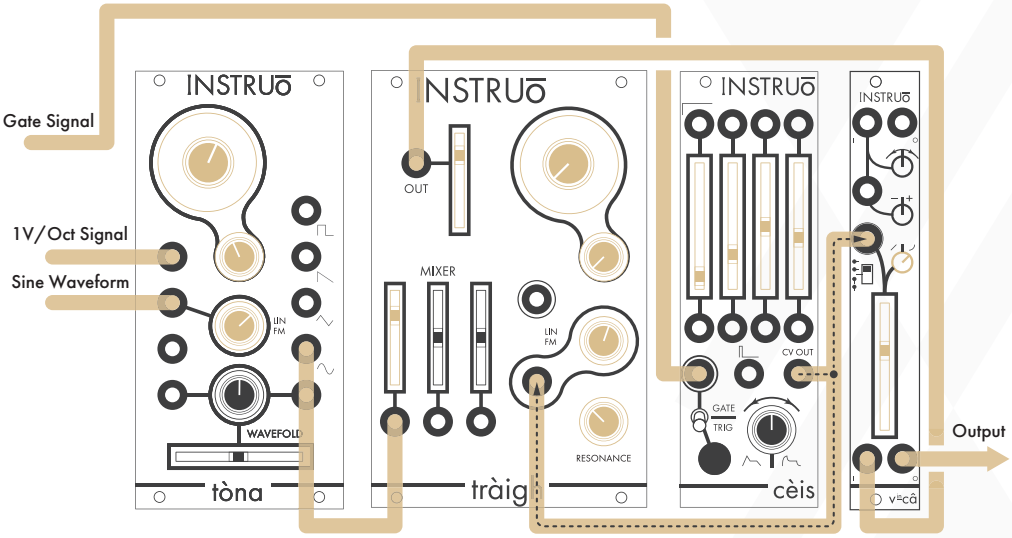
- Connect the **Square, Sawtooth/Ramp,** and **Triangle** waveforms of **tòna** to three inputs of a mixer.
- Connect the output of the mixer to the audio input of a filter.
- Connect the audio output of the filter to the audio input of a VCA.
- Monitor the audio output of the VCA.
- Set the fundamental frequency of **tòna** to a desired position.
- Set the levels of the mixer to desired positions.
- Set the cutoff frequency of the filter to a desired position.
- Set the resonance of the filter to a desired position.
- Set the level of the VCA to a desired position.

Control Path:

- Connect the 1V/Oct output of a sequencer or keyboard to the **1V/Oct Input** of **tòna.**
- Connect the gate output of the sequencer or keyboard to the trigger input of an envelope generator.
- Connect the CV output of the envelope generator to a multiple.
- Connect one copy of the envelope generator CV signal to the CV input of the filter and set the corresponding CV attenuator to a desired position.
- Connect a second copy of the envelope generator CV signal to the CV input of the VCA and set the corresponding CV attenuator to a desired position.
- Set the envelope stages to desired positions.

FM Synth Voice

Summary: The secondary oscillator, called the **Modulator** in an FM patch, is modulating the frequency of **tòna**, called the **Carrier** in an FM patch. The sequencer or keyboard sends voltages to **tòna** while simultaneously triggering the envelope generator. The CV output of the envelope generator opens the filter and VCA, allowing **tòna**'s signal to pass through. More traditional East Coast patches would incorporate separate envelope generators for the filter and VCA.



Audio Path:

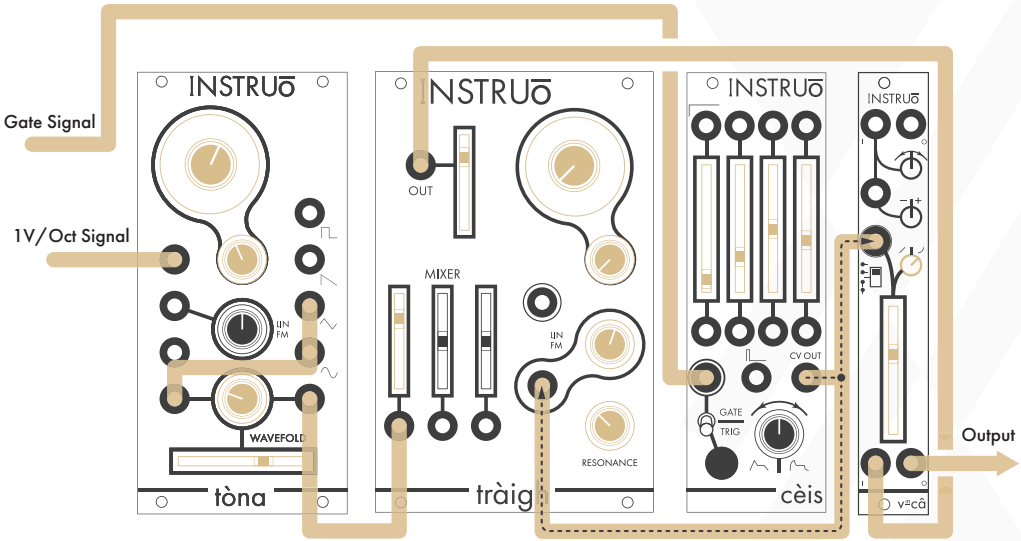
- Create an **East Coast Synth Voice** audio path using the sine waveform of **tòna**.

Control Path:

- Create an **East Coast Synth Voice** control path.
- Connect sine waveform of a separate oscillator to the **Linear FM Input** of **tòna**.
- Set the **Linear FM Attenuator** to a desired position.

Audio Rate Wavefolder

Summary: Connecting the **Sawtooth** waveform to the **Wavefold CV Input** allows for synchronised audio rate modulation of the wavefolder The sequencer or keyboard sends voltages to **tòna** while simultaneously triggering the envelope generator. The CV output of the envelope generator opens the filter and VCA, allowing **tòna**'s signal to pass through. More traditional East Coast patches would incorporate separate envelope generators for the filter and VCA.



Audio Path:

- Create an **East Coast Synth Voice** audio path using the **Wavefold Output** of **tòna**.
- Set the **Wavefold** fader to a desired position.

Control Path:

- Create an **East Coast Synth Voice** control path.
- Connect the **Sawtooth** waveform (or any of the other waveforms) of **tòna** to the **Wavefold CV Input** of **tòna**.
- Set the **Wavefold CV Attenuator** to a desired position

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.