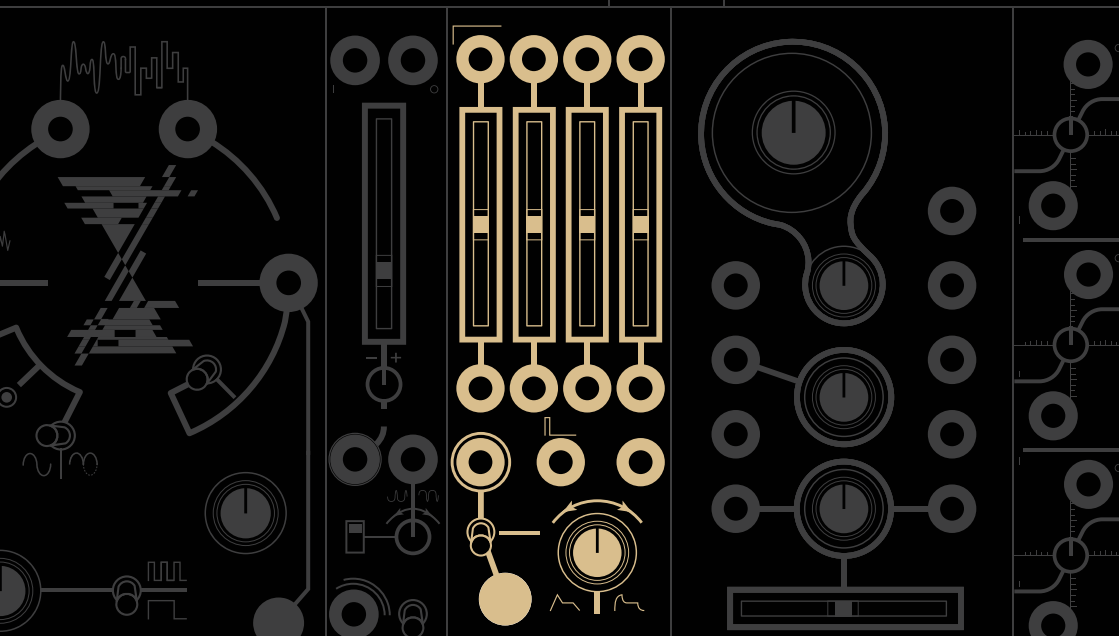
INSTRUŌ | SPECIALIST SYNTHESIZERS



cèis

ADSR

User Manual

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Description

The Instruō **cèis** is a fully analogue voltage controlled ADSR envelope generator. The ADSR function generator is the model pioneered by the East Coast mindset and is extensively used in subtractive synthesis patches. **cèis** gives the ability to externally control the attack, decay, sustain, and release stages of the envelope while also emitting trigger and gate signals for each segment, offering maximum versatility from a classic tool.

Features

- Voltage control over every stage
- Individual gate outputs for each stage
- Combined trigger output for all stages
- Linear to logarithmic/exponential envelopes
- Manual gate/trigger button
- Two envelope reset modes

Installation

1. Confirm that the Eurorack synthesizer system is powered off.
2. Locate 8 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 **cèis** in your Eurorack synthesizer case.
6. Power your Eurorack synthesizer system on.

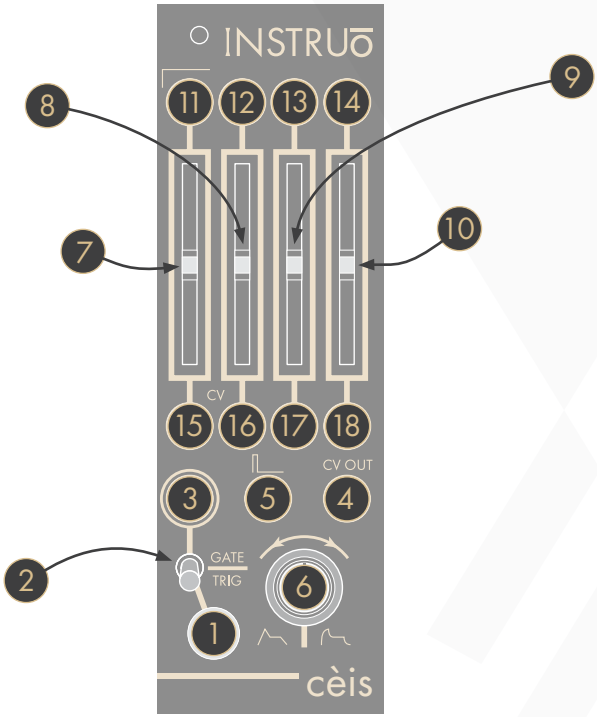
Note:

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

Specifications

- Width: 8HP
- Depth: 27mm
- +12V: 60mA
- -12V: 30mA

cèis | si:s | **noun** (envelope) a containing structure or layer, a curve joining the successive peaks of a modulated wave



Key

1. Gate/Trig Button
2. Gate/Trig Toggle
3. Gate/Trig Input
4. CV Output
5. Combined Trigger Output
6. Shape
7. Attack Fader
8. Decay Fader
9. Sustain Fader
10. Release Fader
11. Attack Gate Output
12. Decay Gate Output
13. Sustain Gate Output
14. Release Gate Ouput
15. Attack CV Input
16. Decay CV Input
17. Sustain CV Input
18. Release CV Input

Global Controls

CV Output: The **CV Output** is the envelope's control voltage output.

- Output range: 0V - 10V.

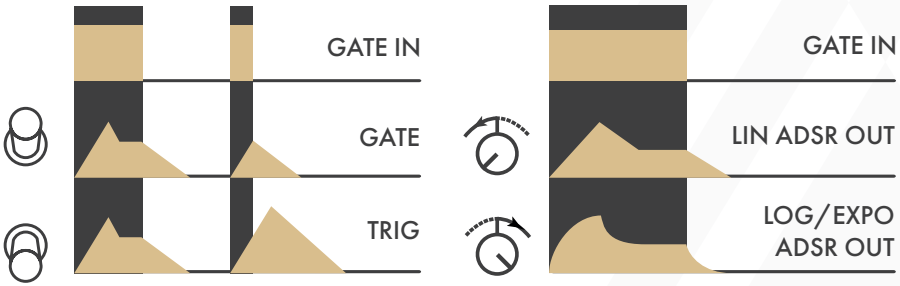
Gate/Trig Input: An envelope signal will output from the **CV Output** when a gate or trigger signal is present at the **Gate/Trig Input**.

- Voltage threshold: 3V.

Gate/Trig Button: An envelope signal will output from the **CV Output** when the **Gate/Trig Button** is pressed.

- This button will illuminate representing the contour of the generated envelope signal.

Gate/Trig Toggle: The **Gate/Trig Toggle** can be set to two different modes. Their names suggest the optimum control signal, but gates and triggers can be used effectively in either mode with differing results.



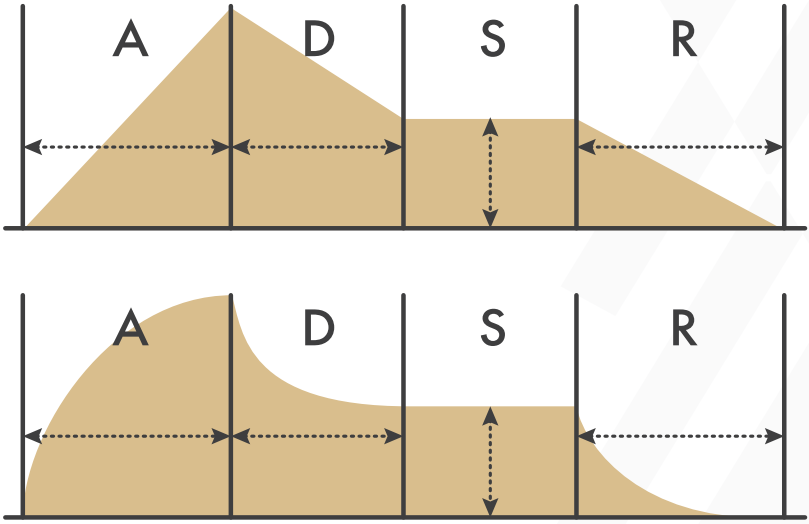
Gate Mode:

- When set to **Gate Mode** and gate signals are received at the **Gate/Trig Input**, all envelope stages will complete as expected. **Attack** and **Decay** will complete their durations while held. **Sustain** defines the voltage level of the envelope for as long as the gate is held. The **Release** stage activates on the falling edge of the gate and decays to 0V at its defined duration.

- A trigger signal at the **Gate/Trig Input** (or a gate signal with a duration shorter than the **Attack** and/or **Decay** stages), will force the envelope to prematurely jump to the **Release** stage.

Trig Mode:

- When set to **Trig Mode** and gate signals are received at the **Gate/Trig Input**, all envelope stages will complete as expected if the gate length exceeds the durations of both **Attack** and **Decay**.
- A trigger signal at the **Gate/Trig Input** will force the envelope to complete the **Attack** stage and then immediately enter the **Release** stage.



Shape: The **Shape** parameter controls the envelope's contours.

- Turning the knob anticlockwise will set the envelope to a linear response curve.
- Turning the knob clockwise will set the envelope to a logarithmic/exponential response curve. This setting will have a logarithmic

Attack contour with exponential **Decay** and **Release** contours, similar to classic East Coast ADSR circuits.

- The **Shape** parameter can smoothly morph between the two extreme response curves.

Combined Trigger Output: The **Combined Trigger Output** will generate trigger signals at the beginning of each envelope stage.

- Output voltage: 10V.



Attack

The **Attack** fader defines the onset duration of the envelope. The value set by this control is measured in the time domain.

- Moving the fader downward will increase the speed of the attack time.
- Moving the fader upward will decrease the speed of the attack time.
- Time range: ~3ms - ~10s.

Attack CV Input: The **Attack CV Input** is a unipolar positive control voltage input for the **Attack** parameter.

- Control voltage is summed with the fader position.
- Time range: With negative control voltage, the lowest time reduces to ~0.4ms.

Attack Gate Output: A gate signal will emit from the **Attack Gate Output** and will be high for the duration of the attack stage.

- Output voltage: 10V.

Decay

The **Decay** fader defines the time it takes to reach the sustain stage once the attack stage has been completed. The value set by this control is measured in the time domain.

- Moving the fader downward will increase the speed of the decay time.
- Moving the fader upward will decrease the speed of the decay time.
- Time range: ~3ms - ~12s.

Decay CV Input: The **Decay CV Input** is a unipolar positive control voltage input for the **Decay** parameter.

- Control voltage is summed with the fader position.
- Time range: With negative control voltage, the lowest time reduces to ~0.4ms.

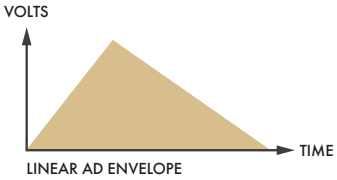
Decay Gate Output: A gate signal will emit from the **Decay Gate Output** and will be high for the duration of the decay stage.

- Output voltage: 10V.

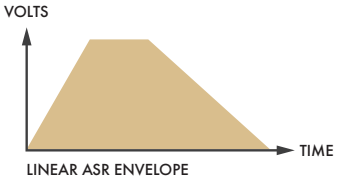
Sustain

The **Sustain** fader defines the resting voltage level of the envelope signal once the decay stage has been completed. The value set by this control is not measured in the time domain, but instead is measured as a variable voltage level. Once the attack and decay stages have been completed, the sustain stage will be active until the gate signal present at the **Gate/Trig Input** is low.

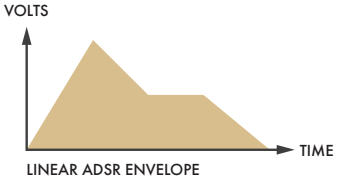
- Moving the fader downward will decrease the sustain level.
- Moving the fader upward will increase the sustain level.



AD Envelope: If the fader is in the down position, the sustain stage will be omitted and the envelope will act as an AD envelope (Attack Decay envelope).



ASR Envelope: If the fader is in the up position, the sustain stage will be as high as possible and the envelope will act as an ASR envelope (Attack Sustain Release).



ADSR Envelope: In other words, in order to access all stages of the ADSR envelope, the sustain stage cannot be in either of its extreme settings.

- Output range: 0V - 10V.

Sustain CV Input: The **Sustain CV Input** is a unipolar positive control voltage input for the Sustain parameter.

- Control voltage is summed with the fader position.
- Input range: 0V - 10V.

Sustain Gate Output: A gate signal will emit from the **Sustain Gate Output** and will be high for the duration of the sustain stage.

- Output voltage: 10V.

Release

The **Release** fader defines the time it takes to reach 0V once the sustain stage has been completed. The value set by this parameter is measured in the time domain.

- Moving the fader downward will increase the release time.
- Moving the fader upward will decrease the release time.
- Time range: ~3ms - ~12s.

Release CV Input: The **Release CV Input** is a unipolar positive control voltage input for the **Release** parameter.

- Control voltage is summed with the fader position.
- Time range: With negative control voltage, the lowest time reduces to ~0.4ms.

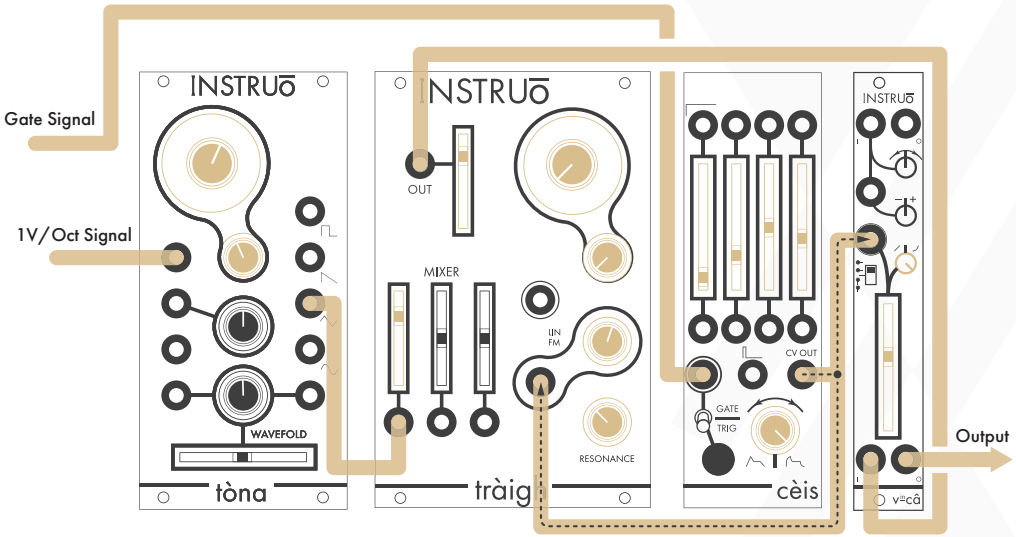
Release Gate Output: A gate signal will emit from the **Release Gate Output** and will be held high for the duration of the release stage.

- Output voltage: 10V.

Patch Examples

East Coast Synth Voice:

Summary: The sequencer or keyboard sends voltages to the oscillator while simultaneously triggering **cèis**. The **CV Output** of **cèis** opens the filter and VCA, allowing the oscillator signal to pass through. More traditional East Coast patches would incorporate separate **cèis** modules for the filter and VCA.



Audio Path:

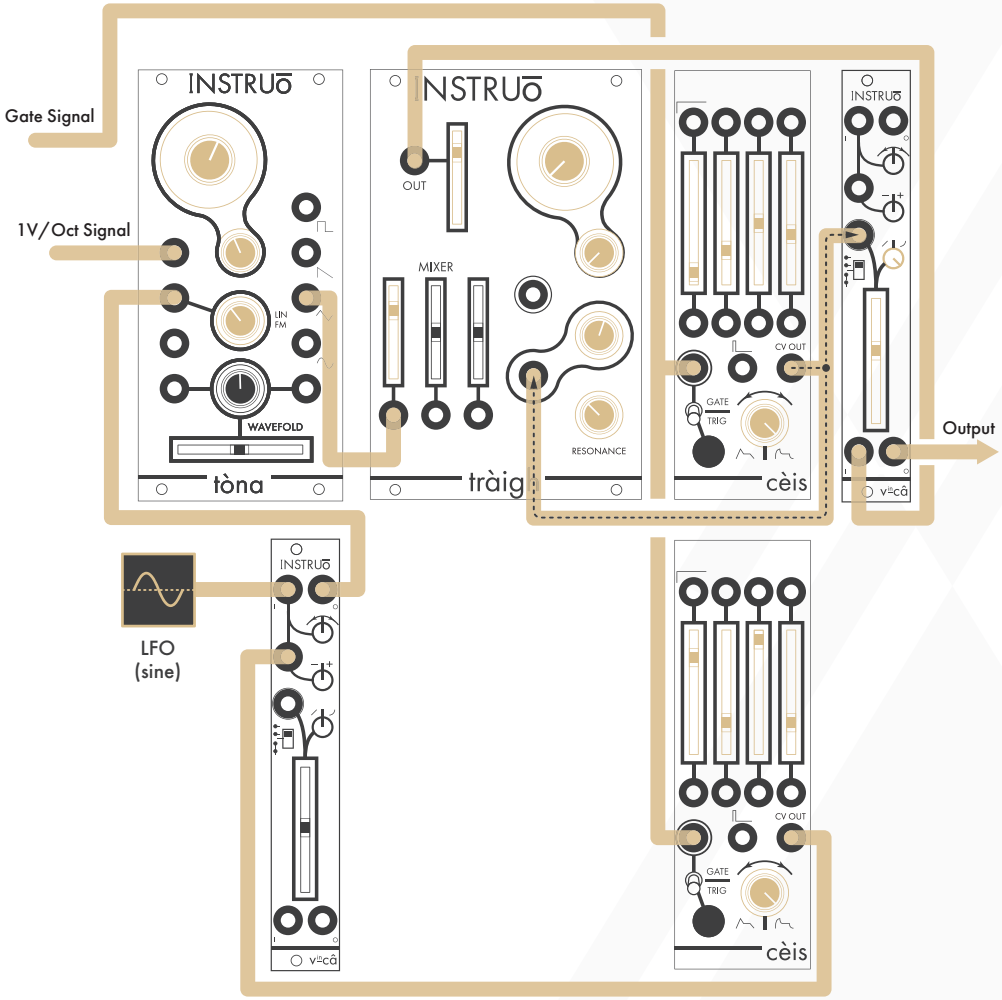
- Connect the desired waveform of an oscillator to the audio input of a filter.
- Connect the audio output of the filter to the audio input of a VCA.
- Monitor the audio output of the VCA.
- Set the fundamental frequency of the oscillator to a desired position.
- Set the cutoff frequency of the filter 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 the oscillator.
- Connect the gate output of the sequencer or keyboard to the **Gate/Trig input** of **cèis.**
- Connect **CV Output** of **cèis** to a multiple.
- Connect one copy of the **cèis** CV signal to the cutoff frequency CV input of the filter and set the corresponding CV attenuator to a desired position.
- Connect a second copy of the **cèis** CV signal to the CV input of the VCA and set the corresponding CV attenuator to a desired position.
- Set the **Shape** knob its maximum setting for a logarithmic/exponential response curve.
- Set the **Attack**, **Decay**, **Sustain**, and **Release** settings to a desired position.

Vibrato Swell:

Summary: Every time the sequencer or keyboard changes state, the CV signal of **cèis 2** slowly opens VCA 2, increasing the amount of modulation the LFO can apply to the FM input of the oscillator.



Audio Path:

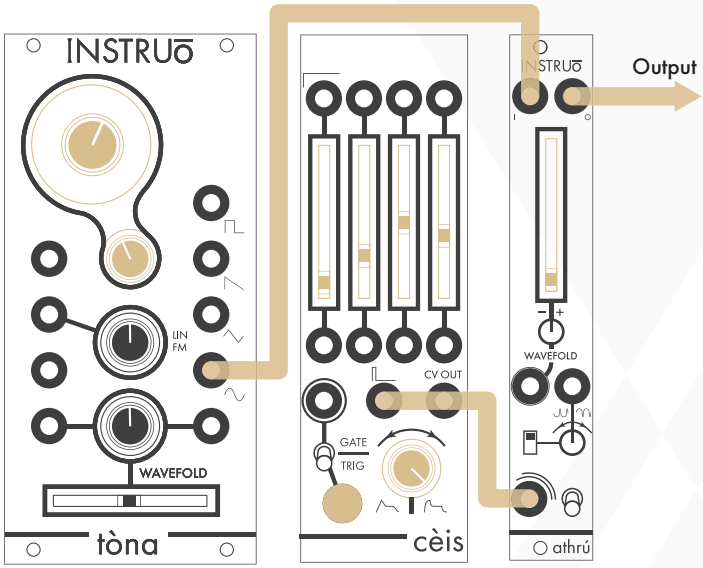
- Create the **East Coast Synth Voice** audio path.

Control Path:

- Create the **East Coast Synth Voice** control path.
- Connect the CV output of an unsynchronised LFO to the input of a VCA and set the rate of the LFO to a desired position.
- Connect the output of the VCA 2 to the FM input of the oscillator.
- Increase the CV attenuator of the FM input if needed.
- Instead of connecting the gate output of the sequencer or keyboard to the **Gate/Trig Input** of just one **cèis**, connect it to a multiple.
- Connect one copy of the sequencer or keyboard gate signal to the CV input of the **cèis 1**.
- The **CV Output** of **cèis 1** should still be connected to a multiple and modulating both the cutoff frequency of the filter and the amplitude of the VCA.
- Connect a second copy of the sequencer or keyboard gate signal to the **Gate/Trig Input** of the **cèis 2**.
- Connect the **CV Output** of **cèis 2** to the CV input of VCA 2 and set the corresponding CV attenuator to a desired position..
- Set a long **Attack**, short **Decay**, maximum **Sustain**, and short **Release.**

Burst Generator:

Summary: Everytime **cèis** is triggered, a burst of trigger signals will stike athrú's strike input allowing the oscillator's signal to pass through.



Audio Path:

- Connect the desired waveform of an oscillator to the audio input of athrú.
- Monitor the audio output of athrú.
- Set the fundamental frequency of the oscillator to a desired position.
- Monitor the output of athrú.

Control Path:

- Connect the **Combined Trigger Output** to a the strike input of athrú.
- Set the separate envelope stages at different positions to create the desired trigger burst.
- Trigger **cèis** via the **Gate/Trig Input** or the **Gate/Trig Button**.

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.