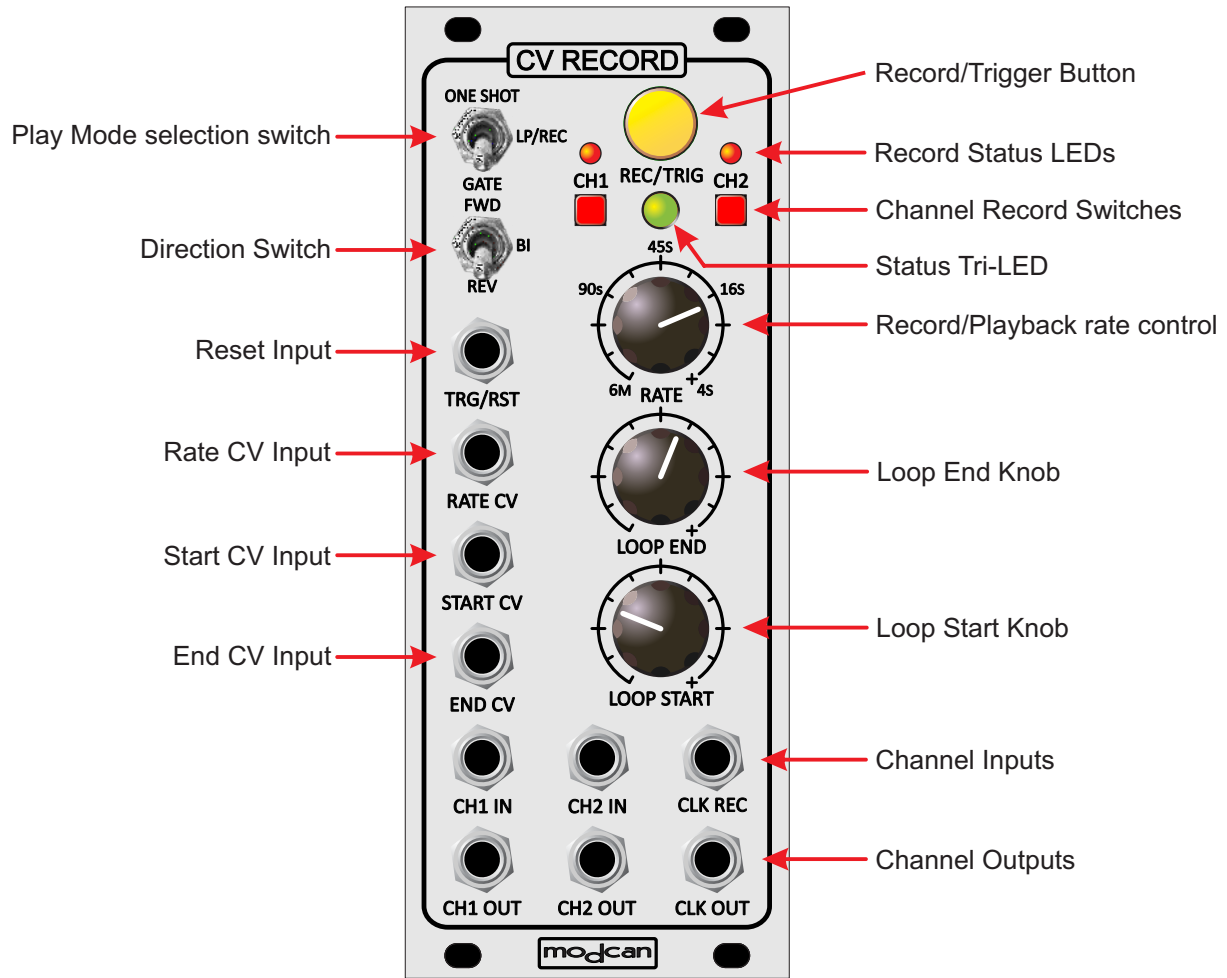


# CV Record(er)

The CV Recorder offers a new approach to generating modulation and voltage control signals. Concept: Combine the ability to record and playback control voltage signal events from standard modules with the tools to shape, mix, loop and time scale these performances in a simple and repeatable manner. See the following pages for more info on panel functions and operation.



## CV Recorder Guide

### Record/Trigger Button:

The REC/TRIG button has multiple functions depending on the state of the **Mode** selection switch next to it. See Chart below for Button functions relative to Switch settings

PLAY SWITCH			Direction Switch
Forward	Bi-Dir	Reverse	
Pressing once plays sample forward from Loop start to loop end as set by panel knobs	Pressing once plays sample forward from Loop start to loop end. Pressing twice plays in reverse	Pressing once plays sample in reverse from Loop end to loop start as set by panel knobs	<b>One Shot</b>
Pressing and holding plays the sample forward from Loop start to loop end until button is released	Pressing and holding plays the sample forward from Loop start to loop end and then in reverse until button is released	Pressing and holding plays the sample in reverse from Loop end to loop start until button is released	<b>Hold Play</b>
In Loop Mode with no channels active tapping the REC/TRIG button stores the contents of RAM to a backup memory for when power is removed from the module. The main LED will show RED during save operation which takes a few seconds to complete. When the module is powered up in a future session the RAM will automatically be reloaded. In Loop mode the Rec/Trig Button becomes the record button Activate the channel buttons (see below for explanation) before pressing to record.			<b>Loop</b>

### Overview:

The module has three main states.

- 1/ Playing back samples stored in memory. This is the default state on power-up.
- 2/ Monitoring the input channel jacks prior to recording
- 3/ Recording the input signals to RAM

### 1/Playback

While in playback state and upper switch set to **LP/REC** the Loop Start and Loop End knobs and corresponding CV jacks set the sample loop points. They also control the length of the recording by setting the start and end position of the recording in memory. The RATE control knob and rate CV jack control the sample rate of recording and playback. Higher sample rates (shorter durations) provide more samples per second which in turn providing a more accurate recording of fast transients and better resolution of slower moving signals. Some experimentation may be required to find the best sample rate/duration for the signal to be recorded. During playback the RATE control can be used to vary the playback speed of the recording. The direction switch allows the sample to be played forward, reverse or bi-directionally. Patching a pulse or clock to the RESET jack will reset the sample to the point set by the LOOP Start knob.

If the upper switch is set to ONE SHOT mode sample looping is suspended and now tapping on the REC/TRIG button or Pulsing the TRIG jack fires the sample and plays for the duration set by the start and end loop controls. Patching a pulse or clock to the RESET jack will have the same effect as manually tapping the TRIG button. In Gate mode the sample plays for as long as the REC/TRIG button is depressed. Patching a pulse or clock to the RESET jack will cause the sample to play for as long as the pulse is high.

### Memory Store

If the CHANNEL switches are not active (LEDs not lit) tapping the REC/TRIG button stores the samples from RAM to the internal non-volatile memory which are reloaded on next power up. This way you won't lose your work between sessions.

## 2/ Monitoring the input channel

While in loop mode depressing the CH1 or CH2 switches (indicated by LEDs above the switches) activates pass-thru of the signal from the input jacks to the output jacks and selects the channels that will be recorded to. If both channels are selected the CLOCK channel is also selected for recording of clocks and for monitoring before recording. It is also possible to use the module in this mode for real-time signal processing to apply sample rate reduction FX to add grunge to audio. Deselecting each channel returns to sample playback mode for each channel.

## 3/ Recording

As mentioned in section 2 above the CH1 and CH2 switches select the channels to be recorded. Setting the **LOOP START** and **LOOP END** knobs to determine where in the track to place the recording. Setting the **LOOP START** fully CCW and **LOOP END** fully CW provides the longest recording. Shorter recordings are made by placing the loop points closer together. This is also the method for chaining multiple recordings together. Simply record a short segment with loop points set near zero and then move loop points to the end of the first recording and record again. Now place loop start to the beginning and you will hear both recordings one after the other. At the end of recording the channel LEDs will extinguish to prevent accidentally recording over the track. To start recording tap the REC/TRIG button and the main large LED will go from yellow to RED indicating recording is active. When the CH1/CH2 LEDs go off it indicates the recording is complete. Pulsing the RESET/TRIG jack will also activate recording which is useful for recording a sequence from specific start point and then using a reset pulse to return to that point during playback.

## Channel I/O:

CH1 and CH2 inputs are capable of handling signals at +/-7V. Levels outside this range will be clipped. The output is 1:1 with the input. CLK IN works best with clock signals between 0-5V but signal up to 10V are possible. Non-clock signals can be recorded like envelopes or LFOs but they will be converted to square pulses on the output.

## Reset/Trig Input:

In loop mode Pulsing the reset input with logic high gate will reset the recorded loop to the beginning as set by the LOOP START. If Loop mode is set to **Reverse** it will be from the **LOOP END** point. In Record mode triggering the RESET jack will start the recording. In ONE shot mode a trigger will start playback. In Gate mode the sample will play for as long as the gate is held high.

## Quick Start Guide:

- 1/ Patch the output from an X/Y Controller or Sequencer or LFO etc. to CH1 input jack
- 2/ Patch the output of CH1 to the 1V/OCT input on a VCO or Filter etc.
- 3/ Set Mode switch to LP/REC position and direction switch to FWD
- 4/ Set RATE control knob to 4s position and turn LOOP START knob fully CCW and LOOP END fully CW
- 5/ Activate CH1 selector switch (LED lit) to arm channel one as indicated by the CH1 LED
- 6/ Monitor that input modulation signal is modulating the destination module patched to the output
- 7/ Once you are satisfied with the modulation signal you are about to record tap the REC/TRIG button  
Recording will start immediately and continue till the status LED resumes blinking yellow and the Channel LED extinguishes. The recording will immediately playback at the end of record.
- 8/ Experiment with different loop points and RATE settings and then try another recording on CH2  
Also try setting new loop points and recording over top of the original recording. Return the Loop knobs to fully left and right to hear all recordings on each channel.

## Experiments:

Try recording a sequence from an analogue sequencer on CH1 or CH2 and recording the master clock at the same time on CLK In channel. Then use the clock recording to clock the sequencer and you will have the pitch recording which can be synced to the sequencer to use for modulation. This frees up rows on the sequencer to do other things. Also use the clock recording to fire an envelope generator which will now be in sync with the pitch recording. You can also record the output from an envelope generator and a sequencer at the same time. Now you can use the recorded envelope shape to control a VCA etc. This can be further modified if using the BI setting for direction switch. Notice how the envelope changes duration as the playback rate is changed. Try recording the output from an LFO while changing the LFOs frequency or chaining together multiple recordings using different wave outputs from the LFO. This way you can have an LFO that goes from sine to triangle to saw etc. Put a VCA between the LFO and recorder and now record with different levels from the VCA allowing the LFO amplitude to fade in and out. Some of the most interesting effects happen by altering the loop points in odd ways. One way to use the loop points is to set for a very short loop and then use an LFO or X/Y Controller to sweep the using the LOOP ST, LOOP END CV input jacks. Patch the same control signal to both loop cv jacks to control the loop position with an audio sample for granular synthesis effects. As you can see there are many possibilities available.