

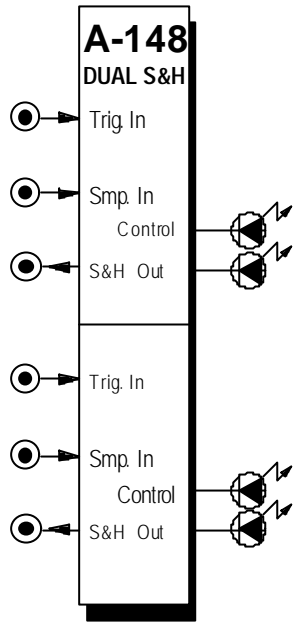
### 1. Introduction

Module **A-148 (Dual S&H)** has two identical sample & hold modules, designed to produce 'staircase' voltages.

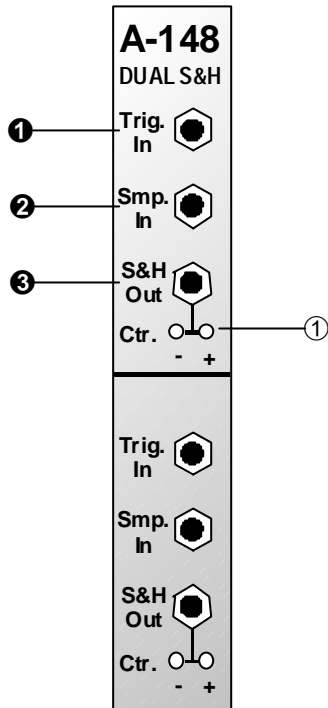
The signal present at the **sample input** is sampled at a rate set by the signal at the **trigger input**, and held at that voltage at the S&H output.

The exact shape of the staircase depends on the sort of waveform at the sample input: NOISE or RANDOM signals produce random patterns; an LFO produces rising or falling staircase patterns.

Two **LEDs** for each S&H indicate the voltage (positive or negative) of the sampled signal.



## 2. Dual S&H overview



### Indicators:

1 LEDs: sampled voltage status indicators

### In / Outputs:

! Trig In : Input for trigger signal

" Smp In : Input for signal to be sampled

§ S&H Out : Output for sampled (and held) voltage

### 3. Indicators

#### 1 LEDs

These LEDs give a visual indication of the voltage level of the sampled and held signal (- LED: negative voltages, + LED: positive voltages).

### 4. In / Outputs

#### ! Trig In

The trigger input signal decides the rate at which the sampling takes place. Triggering takes place at the leading edge of the waveform (see arrows in Fig. 1), so the width of the pulse isn't important.

#### " Smp. In

Socket " is the **sample input**, where the signal to be sampled is patched in.

#### § S&H Out

The 'sampled and held' voltage is available at the **S&H output** (see Fig. 1).

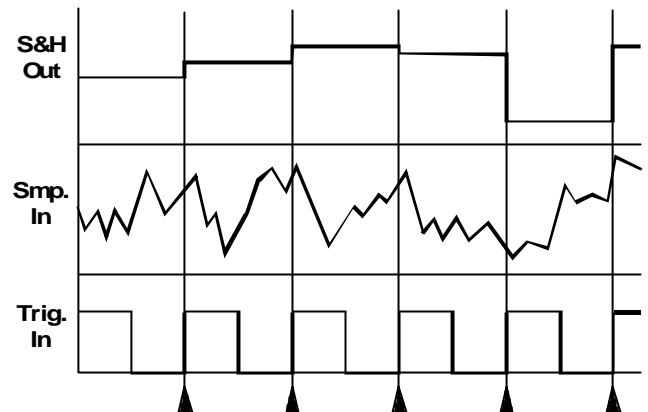


Fig. 1: S&H module signal diagram

## 5. User examples

### Random arpeggios

In the example in Fig. 2, an A-118 is used in conjunction with the A-148 to produce random voltages from the random output of the A-118. An LFO triggers the S&H module, so that with every oscillation of the LFO a new random voltage is output to the VCO's CV input.

If you patch an A-130 VCA in before the VCO, you can adjust the Gain and Out amounts to restrict the frequency range of the random voltages to whatever you want.

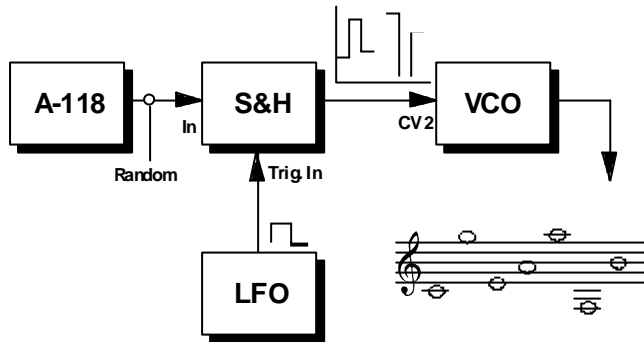


Fig. 2: Random arpeggios

P You can use the same basic set-up as in Fig. 2, but patch the S & H voltage output to the CV input of a filter set to high resonance, for some interesting rhythmic timbral changes (see page 6).

### Glissando

In Fig. 3 an A-148 produces a **staircase voltage**.

The pitch CV output from a keyboard is patched into an A-170 Slew Limiter. An A-148 triggered by the rising edge of an LFO samples the output from the slew limiter, and produces a staircase voltage which in turn controls a VCO's pitch.

Playing two notes, particularly widely spaced ones, produces interesting glissandi.

H It's important to adjust the slew limiter's time setting and the LFO's frequency to achieve the right speed and number of notes in the glissandi.

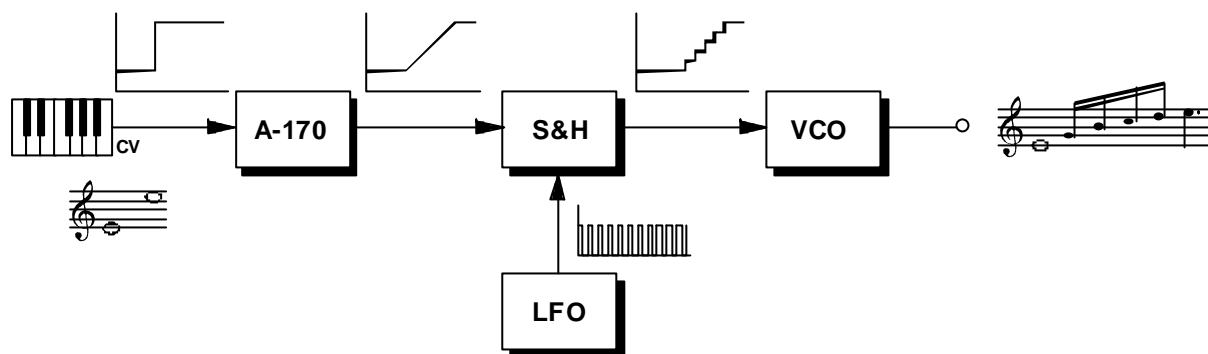
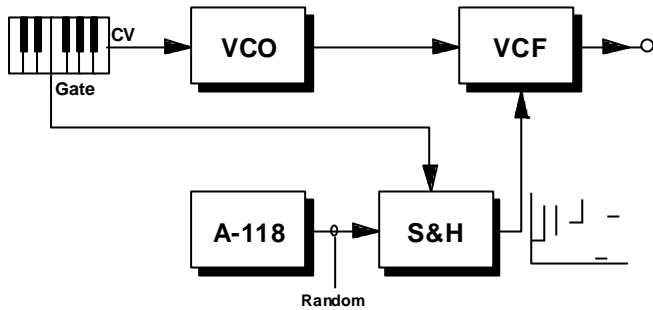


Abb. 3: Glissando

- P If you like you can patch the gate signal to the reset input of the LFO, so that its waveform starts at the beginning for each note. Instead of an LFO, you can also use the MIDI-Clock from a MIDI-CV interface. That will produce glissandi synced to MIDI.

### Random filter settings per note

With the patch in Fig. 4, every time a keyboard gate voltage is received, a new random filter CV is sent out. For best results, adjust the **resonance** to a **high** setting.



**Fig. 4:** keyboard gate triggering random filter settings

### 6. Patch-Sheet

The following diagrams of the module can help you recall your own **Patches**. They're designed so that a complete 19" rack of modules will fit onto an A4 sheet of paper.

Photocopy this page, and cut out the pictures of this and your other modules. You can then stick them onto another piece of paper, and create a diagram of your own system.

Make multiple copies of your composite diagram, and use them for remembering good patches and set-ups.

- P
- Draw in patchleads with colored pens.
  - Draw or write control settings in the little white circles.

