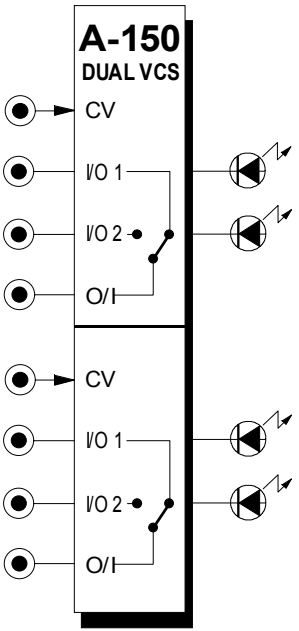


1. Introduction

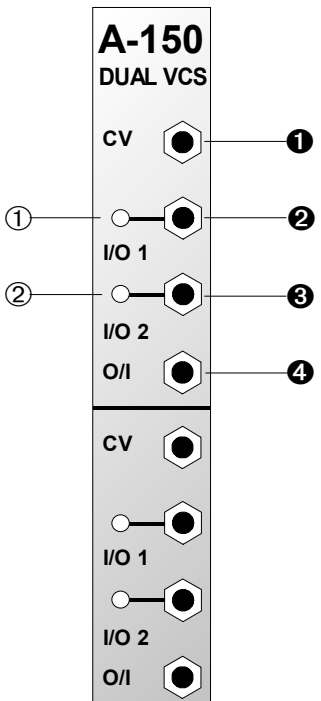
Module **A-150 (Dual VCS)** contains two separate **voltage-controlled switches**.

Each switch has a **control voltage input**, a **common Out / Input**, and two **In / Outputs**. The switches are **bi-directional:** they can work in both directions, so can connect one input to either of two outputs, or either of two inputs to one output. Voltages in the range -8V...+8V at the O/I resp. I/O sockets can be processed by the module.

Two **LED**s show which in / output is **active** (ie. which is connected to the common out / input).

From about March 2004 a new version of the A-150 is available. This allows the full A-100 voltage range -12V...+12V for the voltages at the O/I resp. I/O sockets. The new version can be identified at the pc board label "A-100 SYSTEM A-150 DUAL VC SWITCH VERSION 2" near the bus connector at the pc board edge.

2. Overview



Indicators:

① **LED**: indicator for in / output ❷

② **LED**: indicator for in / output ❸

In / Outputs:

❶ **CV** : input for digital control voltage

❷ **I/O 1** : in / output 1

❸ **I/O 2** : in / output 2

❹ **O/I** : common out / input

3. Indicators

① LED ... ② LED

LEDs ① and ② serve as status indicators, to show which of the two in / outputs ❷ and ❸ is at that moment connected to the common out / input ❹.

4. In / Outputs

❶ CV

Socket ❶ is the input for the **digital control voltage,** whose level determines the switch state (see Fig. 1):

- CV low (< ~3.6 V): O/I ---- I/O 1
- CV high (> ~3.6 V): O/I ---- I/O 2

If a high frequency control voltage is used for switching, audio frequency modulation results (see Fig. 4 on page 5).

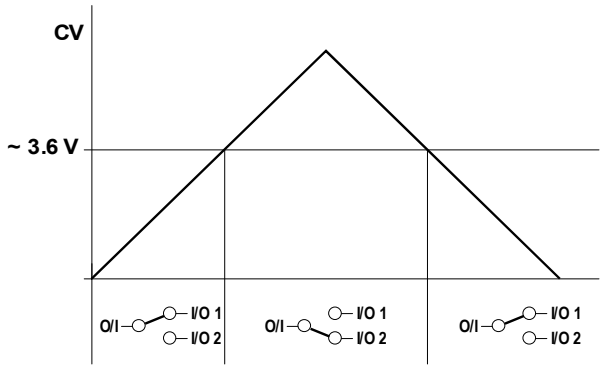


Fig. 1: The A-150's switching behaviour

❷ I/O 1 • ❸ I/O 2

These sockets are the **in / outputs**.

❹ O/I

Socket ❹ is the **common out / input**. Depending on the level of control voltage at input ❶ it's connected to socket ❷ or ❸ (see Fig.1).

☞ The switches are **bi-directional**: that is, two inputs can be connected to one output, and vice versa. The particular arrangement of inputs / outputs will always be clear from looking at what is patched to which socket.

☞ Any signal from -8 V to +8 V can be controlled by the A-150. Voltages less than -8V or more than +8V will lead to malfunction of the module ! It is possible to modify the module so that voltages in the range 0...+12V can be processed. You find a modification of the A-150 for signals in the range 0...+12V on our web site www.doepfer.com in the FAQ section (click to the FAQ button on the left side of the page).

☞ Another solution for signals beyond -8V resp. +8V is to attenuate and/or to change the offset voltage of the signal. The A-129/3 attenuator/ offset generator can be used for both purposes.

☞ From about March 2004 a new version of the A-150 is available. This allows the full A-100 voltage range -12V...+12V for the voltages at the O/I resp. I/O sockets. The new version can be identified at the pc board label "A-100 SYSTEM A-150 DUAL VC SWITCH VERSION 2" near the bus connector at the pc board edge.

5. User examples

Switching filter characteristics

In the example in Fig. 2, with the help of an A-150, a signal can be switched between a 12dB and 24dB low pass filter.
The control voltage $\mathbf{CV_S}$ can for instance come from the CV output of a MIDI-CV interface (e.g. A-191), so that, for instance, a MIDI controller could be assigned to switch between filter types.

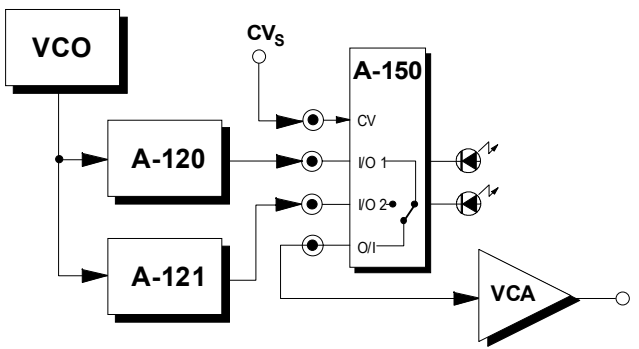


Fig. 2: Switching between two filters with the A-150

Switching between modulation sources

In the example in Fig. 3, the A-150 switches between two filter cut-off modulation sources. The control voltage **CV_S** (for instance from a MIDI controller) determines whether the **ADSR** (when **CV_S = 0 V**) or the output from the mod wheel **CV_M** (when **CV_S = +5 V**) controls the cut-off frequency of the filter.

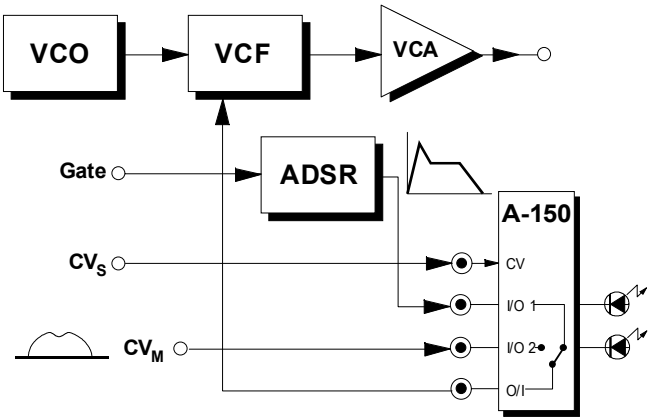


Fig. 3: Switching between modulation sources

Switching by audio-range signals

In Fig. 4, the A-150 is set up to switch the audio output of a VCO. The switching voltage is provided by the VCO's square wave output, with the result that at each half cycle, synchronised to the VCO frequency, the waveform changes to sawtooth. Try variations on this patch, with an independent VCO or LFO providing the switching voltage, different frequencies, etc..

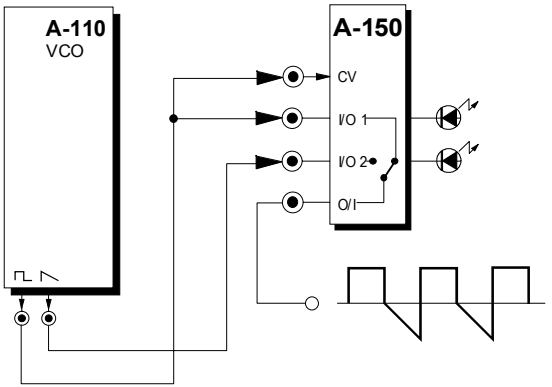


Fig. 4: Audio-range switching of an audio signal