

1. Introduction

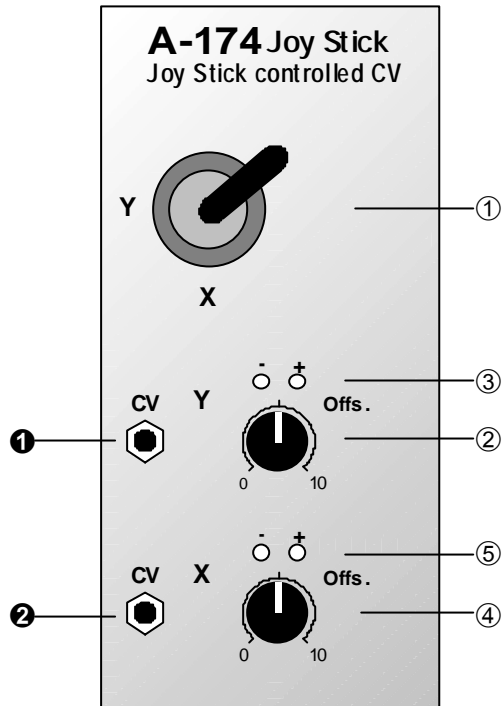
Module **A-174** (Joy Stick) outputs **2 control voltages** generated by a spring-loaded X/Y cross potentiometer (so-called joy stick). If the spring is removed for one direction the joy stick is no longer spring-loaded for this direction (as the spring is destroyed when removed this cannot be re-established !).

For each output the **voltage offset** (zero setting) can be adjusted. Each output is equipped with **2 LEDs** for positive/negative display of the output voltages.

Module A-174 is an universal two-dimensional control voltage source to control the parameters of other A-100 modules by hand, e.g. filter frequency or resonance (VCF), loudness or modulation depth (VCA), stereo-panning (A-134), quad-panning (2xA-134), phasing (A-125), frequency shift (A-126), morphing (A-135 + A-144), pitch bend (VCO), modulation speed (A-147), decay (A-142) or other envelope parameters (A-141) and many more.

A high quality joy stick manufactured by **ALPS** is used in the A-174.

2. Joy Stick - Overview



Controls:

- 1 **X Y** : Joy Stick (cross potentiometer)
- 2 **Offs.** : Offset control for Y control voltage
- 3 **LED's** : Display of Y control voltage
- 4 **Offs.** : Offset control for X control voltage
- 5 **LED's** : Display of X control voltage

In- / Outputs:

- ! **CV Y** : Control voltage output Y
- " **CV X** : Control voltage output X

(**X** = controlled by horizontal movement
Y = controlled by vertical movement)

3. Controls

1 X Y Joy Stick

With the Joy Stick 1 the **control voltages** appearing at the CV outputs ! resp. " are adjusted. The output voltage range is about 7 V, i.e. about -3.5 V ... +3.5 V with symmetrical offset adjustment (i.e. 0V in the neutral position).

The control voltage **CV X** is controlled by **horizontal**, **CV Y** by **vertical** movement of the joy stick lever. The following assignment applies:

X: -3.5 Y: +3.5	X: 0 Y: +3.5	X: +3.5 Y: +3.5
X: -3.5 Y: 0	X: 0 Y: 0	X: +3.5 Y: 0
X: -3.5 Y: -3.5	X: 0 Y: -3.5	X: +3.5 Y: -3.5

The actual voltages appearing at the CV outputs depend also on the settings of the offset controls 2 resp. 4.

P The joy stick used in the A-174 module is spring-loaded, i.e. the lever returns back to the neutral position as soon as it is released. If the spring is removed for one direction the joy stick is no longer spring-loaded for this direction. But as the spring is destroyed when removed this cannot be re-established ! The joy stick is available as spare part (about US\$35.00).

2 Offs. Y • 4 Offs. X

With the offset control 2 resp. 5 the **zero** point (offset) is adjusted. If 0V CV output is required in the neutral position the offset control is adjusted until both LEDs 3 resp. 5 of the direction in question are off. For some applications a positive offset may be useful (e.g. for A-132 VCA control).

3 LEDs Y • 5 LEDs X

The LEDs 3 resp. 5 **display the present voltages** appearing at the outputs ! resp. ". For both positive (+) and negative (-) voltages a separate LED is available.

4. In- / Outputs

! CV Y

This socket outputs the **Y control voltage** controlled by vertical movement of the joy stick lever.

" CV X

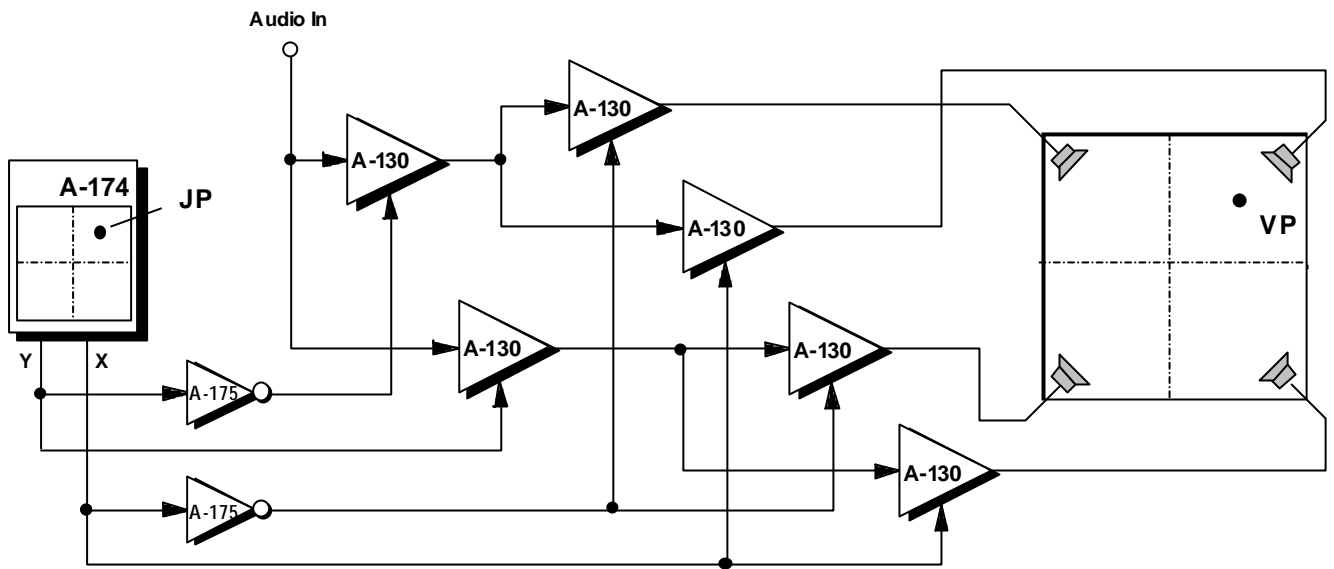
This socket outputs the **X control voltage** controlled by horizontal movement of the joy stick lever.

5. User examples

Module A-174 generates 2 manually adjusted control voltages that can be used to control any parameter in the A-100 system that is voltage controlled. Thus there are manifold applications depending upon the modules available in the existing A100 system.

Here is a list of some typical examples:

- **Filter control**
e.g. CV X : frequency, CV Y : resonance
- **Mixing of audio or CV signals**
e.g. CV X: CV for VCA 1 controlling level 1, CV Y: CV for VCA 2 controlling level 2, both VCA outputs are mixed together in an A-138
- **Panning / Loudness**
CV X : panorama position (CV for A-134),
CV Y : overall loudness (CV for 2 final VCAs)



The patch in fig. 1 shows how a A-174 can be used to move the position of an audio signal in the quadrophonic hearing space. The mechanical position "JP" of the joy stick lever corresponds to the virtual position "VP" of the audio signal.

Fig. 1: Controlling the virtual position of an audio signals in the quadrophonic hearing space (each combination of one A-175 and two A-130 can be replaced by a A-134 VC Panning module).

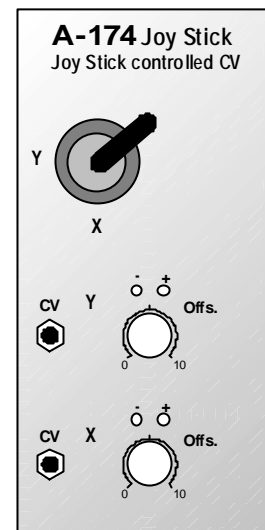
6. Patch-Sheet

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.



Remark:

The joy sticks are equipped with a M3 thread. In the factory a black plastic lever (about 4 cm in length) is screwed to this thread. You may unscrew this lever and replace it by any other lever equipped with a M3 thread (e.g. telescope antennas with M3 thread are available).