

1. Introduction

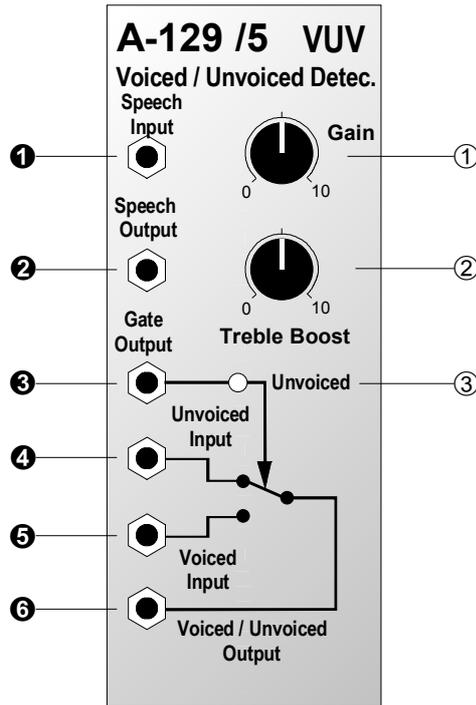
The **A-129 /x series of modules**, whose essential component parts are the **A-129 /1** (analysis section) and **A-129 /2** (synthesis section), builds into a **modular vocoder**.

Module **A-129 /5 (Voiced / Unvoiced Detector)** enables the vocoder to distinguish between **voiced** sounds and **unvoiced** sounds - i.e consonants like s, sh, v, f and z - and to **switch between two different carrier signals** to send to the instrument input in module **A-129 /2**.

Module **A-129 /5** has an adjustable **gain control** for the speech signal. There's also an adjustable **treble boost** control, to help speech intelligibility where desired.

A **gate output** with associated LED indicator (whose brightness is proportional to the amount of unvoiced signal detected) offers further help in the sound-making process.

2. Voiced/Unvoiced Detector overview



Controls:

- ① **Gain** : gain control for the speech input signal patched into socket ①
- ② **Treble Boost** : control to increase the treble content of the speech input signal
- ③ **LED** : LED indicator to show the presence and relative strength of the unvoiced signal

In / Outputs:

- ① **Speech Input** : input for speech signal
- ② **Speech Output** : output for speech signal after amplification and treble boost
- ③ **Gate Output** : gate output, active during unvoiced sections of the sound
- ④ **Unvoiced Input** : input for unvoiced carrier signal
- ⑤ **Voiced Input** : input for voiced carrier signal
- ⑥ **Voiced / Unvoiced Output** : output for the carrier signal: depending on the status of the switching, it sends out the carrier signal present at sockets ④ or ⑤

3. Controls

① Gain

Use control ① to set the level of **input gain** for the speech signal at socket ❶.

② Treble Boost

Control ② is used to **increase the level of the high frequencies** in the speech signal input. Often, using this control makes speech more easily intelligible.



To produce the best results, please also look at the general instructions (chapter 5) in the manual for the main vocoder modules, A-129 /1 and A-129 /2.

③ LED

This **LED indicator** ③ shows the status of the switching in the voiced / unvoiced detector:

- LED on : "Unvoiced"
- LED off : "Voiced"

4. In / Outputs

❶ Speech Input

The speech signal is patched into **Speech-input** ❶.

❷ Speech Output

Speech output ❷ puts out the amplified and equalised (treble-boosted) speech input signal. This output is patched to the speech input socket on the A-129 /1 analysis module.

❸ Gate Output

Gate output ❸ puts out a gate signal, depending on the status of the voiced/unvoiced detector:

- "Unvoiced" (LED 3 on) : "high"
- "Voiced" (LED 3 off) : "low"

You can use this gate signal for more elaborate sound manipulation (see 5. User examples).

④ Unvoiced Input

This **unvoiced carrier signal input ④** is used to patch in the sound source you wish to use for the **carrier signal for unvoiced sounds**.

As a rule, you'd tend to use the output from a noise module (A-117, A-118), a high-frequency sawtooth wave, or the 6 Oscillator output from an A-117 module.

⑤ Voiced Input

This **voiced carrier signal input ⑤** is used to patch in the sound source you wish to use for the **carrier signal for voiced sounds**.

Usually, you'd tend to find a low-mid frequency VCO or mix of several VCOs doing this job.

⑥ Voiced / Unvoiced Output

Depending on the status of the voiced/unvoiced detector switching, **output ⑥** relays the input signal from socket ④ or ⑤.

5. User examples

Vocoder block diagram including A-129 /5

The way the A-129/5 should be patched into the whole vocoder system is shown in fig. 2 (see next page).

Smoothing Voiced / Unvoiced transitions

Whereas the A-129/5's internal switch produces an abrupt change from voiced to unvoiced carrier and vice versa, it's possible to patch the gate output to a slew limiter, invert one of the carrier VCAs, and produce a smooth transition.

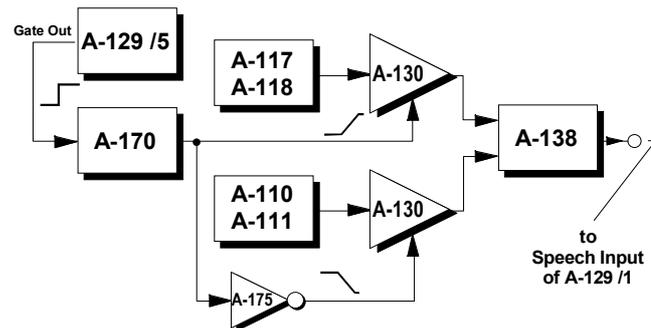


fig. 1: smoothing the change of carrier signals

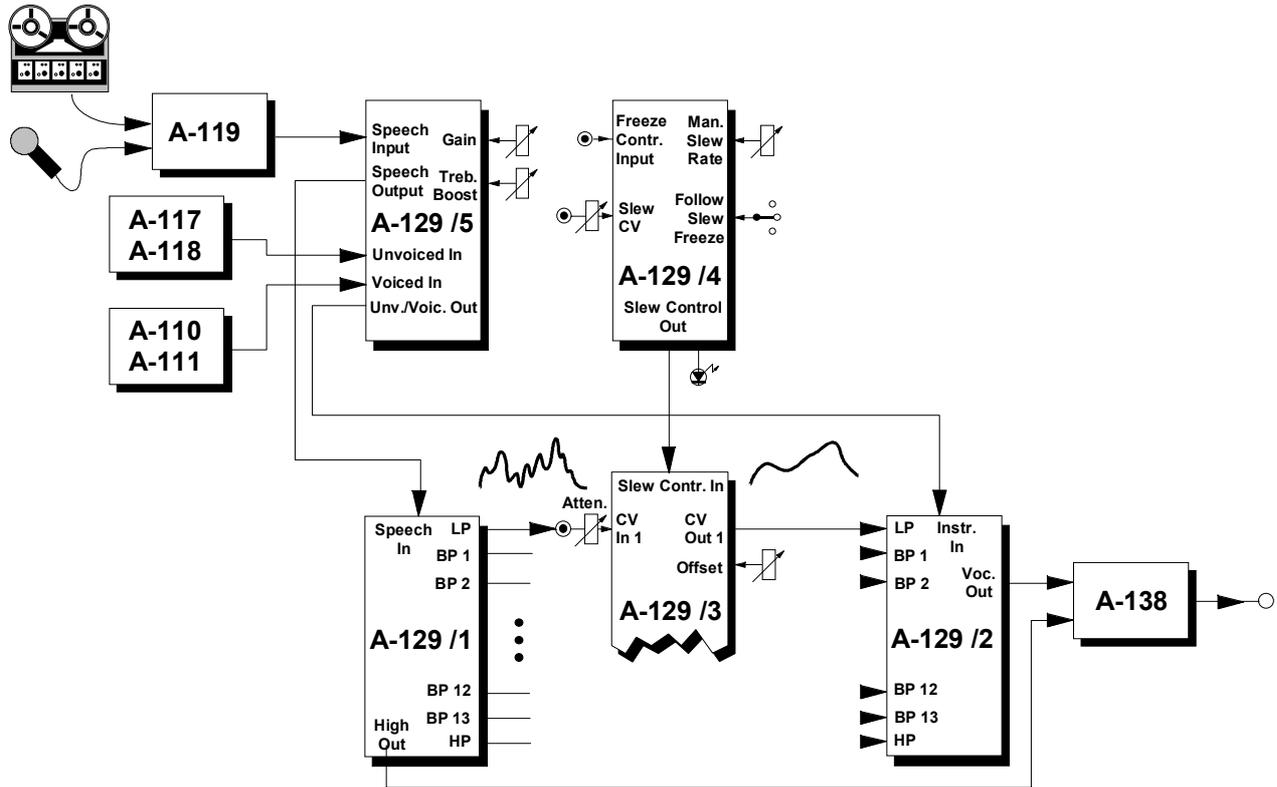


fig. 2: diagram showing how to patch the A-129 /5

