E951 Looping Expander (for the E950 Bent VCO)

www.synthtech.com/eurorack/E951

What is the 951?

The E951 is an optional expansion module specifically for the E950 Circuit Bent VCO. *The E951 WILL ONLY WORK when attached to an E950*. It cannot operate 'stand-alone'. If an E950 is not detected, there will be a 'Disconnected' message in the display.

The functions of the E951 are as follows:

- Remotely change the BANK selection on the E950 by applying an external voltage
- View the morphing VCO waveforms
- Provide information on what word is being spoken by the E950 (what is being 'Indexed')
- Loops the LPC data into smaller sections, and allows you to play them like a VCO wave

Connecting to the power supply and to the E950 Bent VCO

The E951 uses a standard 16-pin Euro power cable. The -12V is the Red Stripe (Pin 1), and this is indicated on the pc board. Reverse-supply diodes will prevent the module from damage if the cable is reversed.

The 3-wire cable connects the E951 to the corresponding connector on the E950. Be sure you match the colors on the wires to the labels on the silkscreen (Yellow to Yellow, etc).

BEFORE YOU BEGIN

Go to the link at the top of this page, and watch the tutorial video. This video will cover all you need to know about the E951.

E951 USE WHEN IN VCO MODE

1) Turn the SPEECH AND EFFECT panel controls on the E950 fully CCW (minimum settings). Disconnect any CVs plugged into either module.
2) The E951 should display the first waveform in VCO A, position 0. This is a Triangle. When the E950 is in the two VCO banks, the OLED screen will show which Bank, and 1 cycle of the resultant wave. The two numbers above the wave indicate which pair of waves is being morphed in the bank.

As you turn the E950's EFFECT knob, the waveform will update in 'real time'.

E951 USE WHEN IN SPEECH MODE

The E951 contains a 'table of contents' of the three speech ROMS in the E950. The words are addressed by the E950 INDEX control/CV. As the E950 indexes through the ROMs, the OLED will indicate:

- Which ROM (1, 2 or 3) is being used
- Which word/phrase is being indexed and its relative position by a number (beginning at 0)
- Which of the 9 Speech Banks is selected
- If a '**S**' (Short Loop) or '**L**' (Long Loop) is active (a '**-**' is no loop)
- If the EFFECT is in '**GLITCH**' mode (non-normal speech)
- If the INDEX is at maximum and the E950 is speaking all the words in order, in the current Bank (the OLED will show '**Cont.**' for 'Continuous Speech')

For a full listing of the 3 Speech ROMs and their indexes, visit the E951 home page and select the DOCS link. There is a PDF file of the ROM contents for reference. Pressing the SPEAK button is the same as applying SYNC to the E950 (push-to-talk).

LOOPING SPEECH DATA

The E951 does not 'loop' audio data. In fact the E951 has no audio in or out. The looping is done by sending commands to/from the E950 over the 3-wire cable. The looping should be triggered when the E950 is speaking, or you will hear nothing (looping 'silence'). The E950 speaks when SYNC is detected or INDEX is at maximum (Continuous Speech).

LOOP MODE SWITCH

The toggle switch has a momentary (**MOMEN**) and a latched (**LATCH**) selection.

- **MOMEN** will loop the speech as long as either a panel button is depressed OR a CV/Gate is applied that exceeds the trip point (0.6V).
- **LATCH** is like a 'push on/push off' switch. The loop will be enabled until another push/trigger is applied.

SHORT VS LONG LOOPS

The loop lengths are Short (~40ms) and Long (~160ms). The words/phrases have 'markers' in the LPC data that indicate loop points that can be used, so that the LPC playback algorithm cannot 'lock up' and fail to generate audio. The loops can be activated for any pitch and any EFFECT setting. Once activated, the loops can be played just as if the VCO Bank was in use.

Each word/phrase has MANY individual loop points. Please note that due to the nature of the LPC formants, some loops (especially in Short) may be reduced greatly in volume or have silence in them.

EXTERNAL CV INPUTS

- Applying a CV to **BANK** is first attenuated by the **BANK MOD** control, and then added to the E950's SPEECH control. A positive applied voltage is the same as turning the SPEECH knob CW.
- Applying a Gate or CV to **SHORT** or **LONG** jacks is identical to pressing the corresponding panel control. The input voltage threshold for a 'push' is +0.6V.

General Info

CV Inputs: -5V to +5V, DC to 500Hz. *Note this sets the maximum 'speed' you can loop/bank swap.*
Power supply range: +-9V to +-15V. Power use at +12V is 40ma and -12V is 15ma maximum.