



Programa is a highly controllable 8-bit, 8hp modulation source that can generate complex yet synchronized control voltages. Inputs trigger the rise and fall of the voltage, hold the voltage at its current position, reset it back to zero, and change the rise and fall speed. Rise and fall times range from 25 seconds to a fraction of a second.

Inputs:

The Up, Down, Pause, and Reset inputs are triggered from positive voltages of 2.5 volts or higher. Gates, triggers, LFOs, and other positive voltages can be used to trigger the inputs.

Up:

From its current position the output voltage will rise until it reaches 5 volts then it will reset to 0 volts

Down:

From its current position the output voltage will fall until it reaches 0 volts. If the current position of the output voltage is already 0 volts the voltage will jump to 5 volts and then fall to 0v.

Pause:

The current output voltage will hold steady until another input is triggered.

Reset:

Regardless of the output position the output voltage will reset to 0 volts.

Speed:

The lower the input voltage the slower the rise and fall time. The higher the input voltage the faster the rise and fall time.

The speed input voltage is added to the current position of the speed knob. If the speed knob is set fully to the right, counterclockwise, the input voltage range will be 0-5V for the full range of speeds. If the speed knob is set fully to the left, clockwise, then the input voltage range will be -5-0 V for the full range of speeds. If the speed knob is set to the middle position the input voltage range should swing from negative to positive for the full range of speeds.

Clock:

The clock input overrides the internal clock that controls the speed. When a jack is inserted into the clock input the speed knob, speed input, and exp knob no longer function. The up, down, pause, and reset inputs function normally.

Instead of normal speed control, the faster the clock input, the faster the speed of the rise or fall. This allows for slower rise and fall times than what is normally available. Also, various rise and fall slope shapes can be created with external modules.

Since Programa is an 8-bit digitally controlled module 256 clock pulses will complete one rise cycle or one fall cycle. At slower speeds clock signals of +2.5 volts will work. At higher speeds, such as using a vco on the clock input, +5volts may be needed.

Output:

The output voltage range is 0-5V

Speed Knob:

The speed knob controls the speed of the rise and fall time, clockwise for faster speeds and counterclockwise for slower speeds. The speed knob is added to the speed input jack.

Exp Knob:

The Exp knob or exponential knob controls the slope of the rise and fall time. Turning the knob right will morph the output slope from fully linear to exponential. The exponential knob also speeds up the rise and fall time, so the slowest rise and fall times are not available with an exponential knob turned up.

Loop Mode / LFO mode:

A rise or fall cycle will continually repeat while the pause voltage is held high. When the pause input goes low the rise or fall cycle will stop repeating.

For the loop mode to work the pause input must be triggered before or at the same time as the up or down input.

Basic Envelopes:

If the up or down input is triggered at the same time as the reset input, simple attack or release envelopes can be created. A passive splitter from a single gate output can be used to trigger both these inputs (up+reset or down+reset) for simple envelopes at the output. The speed controls on the module can be used for voltage control of the attack or release respectively.

A basic attack/release envelope can be created with a passive splitter connected to the output of the module. One output of the splitter is the main output and the other output is connected to the down input of the module. Each time the up input is triggered it will rise until the output reaches 2.5V at which point the down input is triggered and the output will fall.

Exponential / Logarithmic Slopes Using the External Clock Input:

If a VCO or an LFO with voltage control over the speed is used for the clock input, different slope shapes can be created. If a passive splitter is connected to the Programa's output, one output from the splitter is the main output. The other output from the splitter can be connected to the speed or frequency of the LFO or VCO to create exponential slopes. Logarithmic slopes can be created by running the output of the module through an inverter and connected the inverted signal to the speed control of the VCO/LFO.

Power requirements

- 12 mA +12V
- 23 mA -12V
- 29 mA 5V