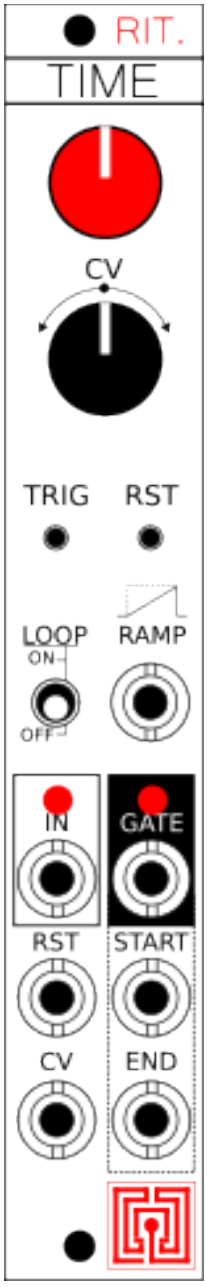
LARIX ELEKTRO

RITOURNELLE TIME

WHAT'S THAT THING ?

The **TIME** convert a trigger signal (any signals) into a gate signal.
There are all the necessary I/O to completely controle an ADSR enveloppe.
It can be used as a clock generator, trigger delay, rampe generator, and more.
And with CV controle of the time.



KNOBS :
TIME: Duration of the gate.
CV: Control of the duration by the CV input. This is an attenuverter controle, so you can reverse the signe of the incoming CV.

JACKS I/O:
IN: Signal input (trig or any). With an associated LED.

OUT: Gate output. With an associated LED.
START: Trigger output at the beginning of the gate.
Can be connected to the **retrig** input of an ADSR module, so the enveloppe wil re-play the A and D segments even if the GATE isn't finished.
END: Trigger at the end of the gate. Can be used to trig something at the end of the gate. Another process, or a complex enveloppe for the decay.
This is the output if you want to use the module as a trigger delay.

RST: Force the gate to zero (off).
CV: Input to control the duration with an external CV.

RAMP: 0 to 8V (approx.) rampe of the duration of the gate.
(see more later about the use of this output)

Push buttons:
TRIG: Manually Gate trigger.
RST: Manually stop the gate.

Loop ON/OFF: Using the module as a clock generator.

Typical use :
- GATE for ADSR manager (retrig. option)
- Trigger delay
- Clock generator
- Rampe generator

Technical specifications:

+12V : 20mA max.
-12V : 16mA
(5V is not used)
4HP, 35mm deep (Approx.) with PSU connector

GATE duration: 40ms to 3sec. approx.
START & END trigger durantion : 8ms approx.

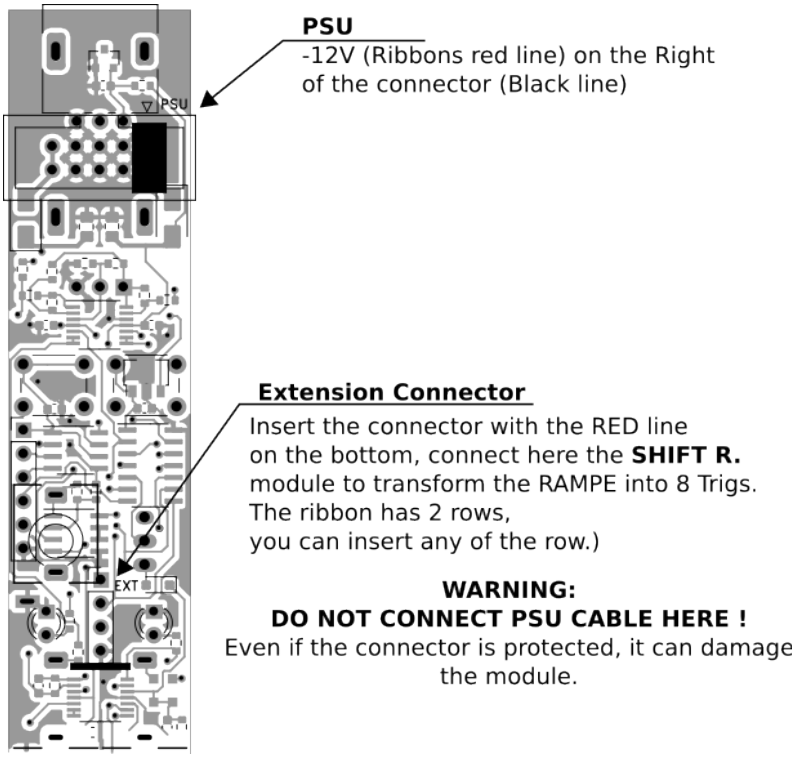
CV IN: 0 to 10V approx. 8bits resolution. (Clipped up and down)
RAMP output : 0 to 8V (approx.)

Installation:

At first, ensure that there is enough power to supply the module.
Beware of the orientation: the red strip on the ribbon cable should match the white line on the module, and on the PSU board (-12V).
Connect the PSU ribbon into the PSU connector, the small connector (2x5 pin) into the module, and the large one (2x8 pin) into the PSU Board.

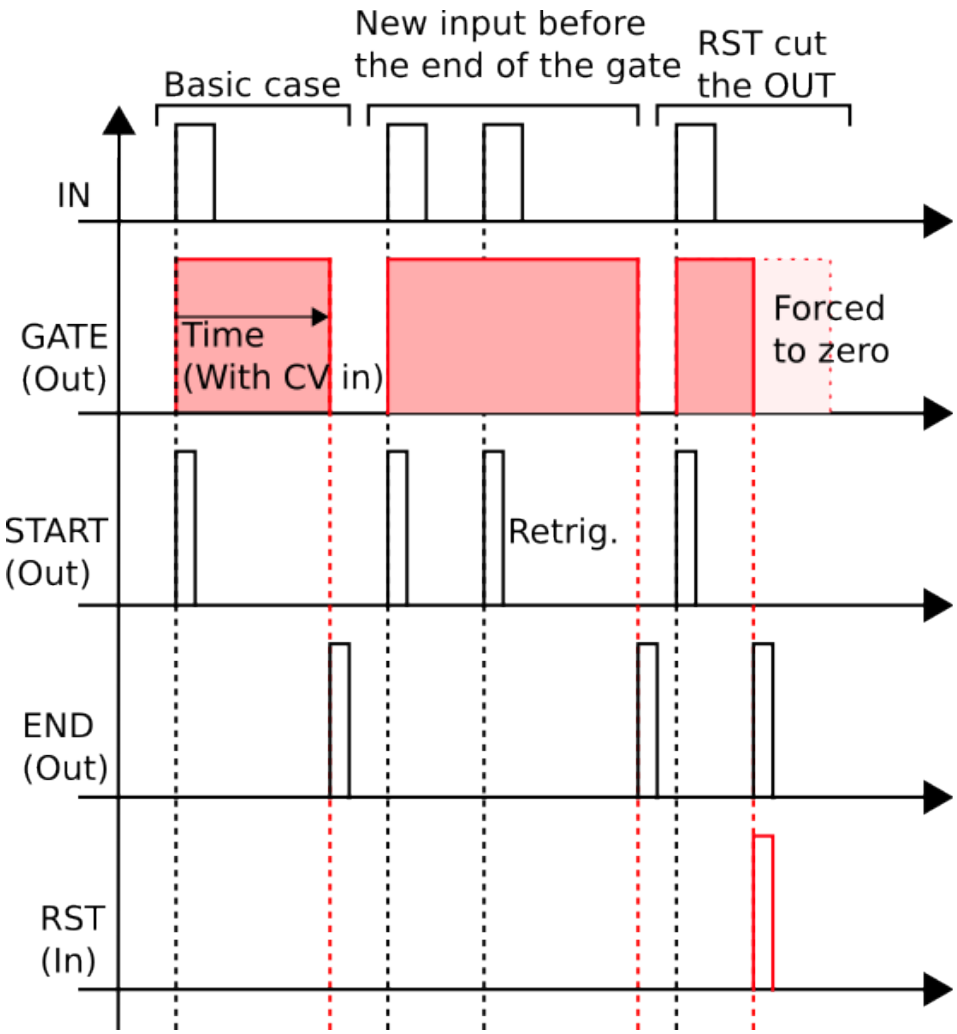
It is better to have a **well-insulated box** because parasites can be added to the signal of the modules. If you are not familiar with electronics, prefer commercial boxes. This is especially true for power supplies: a poorly designed power supply can damage the modules.

To avoid various problems, electromagnetic, but not only, **complete the empty spaces with blind front panels** (Blank panels).



For more informations about the Extension Connector: see below.

Technical explanation



The **IN** input can accept any signal. When the signal exceeds 0,85V (approx.), the module converts it into a trigger, available in the **START** output.
Also, it puts the **GATE** output in 5v (GATE ON).
The **GATE** stays at 5V during the time defined by the **TIME** Knob (and the CV input value too, of course).
When the **GATE** returns to zero (GATE OFF), a trigger is sent to the **END** output.
*On the diagram above, this is the « **Basic case** » part.*

If a trigger is detected from the **IN** input, before the end of the **GATE** (i.e. The GATE is not returned to 0), a trigger is sent to the **START** output.
The **GATE** stays at 5V (ON), and the duration of the gate restarts from the beguining.
*On the diagram above, this is the « **New input befor the end of the gate** » part.*

If a trigger is received from the RST input, the GATE is forced to 0 (OFF).
And a trigger is sent to the END output.
*On the diagram above, this is the « **RST cut the OUT** » part.*

Some details :

- If you send a **GATE** into the **IN**, the gate duration is not preserved, and replaced by the **TIME** duration.
- If you change the **TIME** during a GATE, it will change the duration on the fly.
- If you send a **RST**, and the **GATE** is already 0 (OFF), the **END** will not send a trigger.
- Both **IN** and **GATE** have a LED.
- The CV controle (Black knob) works with an attenuverting circuit. It means that when the knob is in the middle, the CV has no effect.
  When turning this knob on the right, the CV effect increase.
  And when turning on the left, the CV effect increase too, but reversed.

Both **IN** and **RST** can be manually triggered by the corresponding push button.
So the module can works without any input signal, if necessary..
The module can be used to launch a process, started by the various outputs.

CLOCK function

When the switch is in **LOOP ON** mode, the module can act as a Clock generator.
This is exactly like connecting the **END** output to the **IN** input :
When the gate is finished, it sends a trig into the **END** output, and then, retrig the **GATE**...

To start the clock, push the **IN button**, or send a signal into the **IN input**.
To stop the clock, push the switch in **LOOP OFF** mode.
The **RST**, like the **IN**, resets the time of the gate.

The « Clock » signal is present to the **START** output, or the **END**, as you prefer.
(Both a bit decayed)

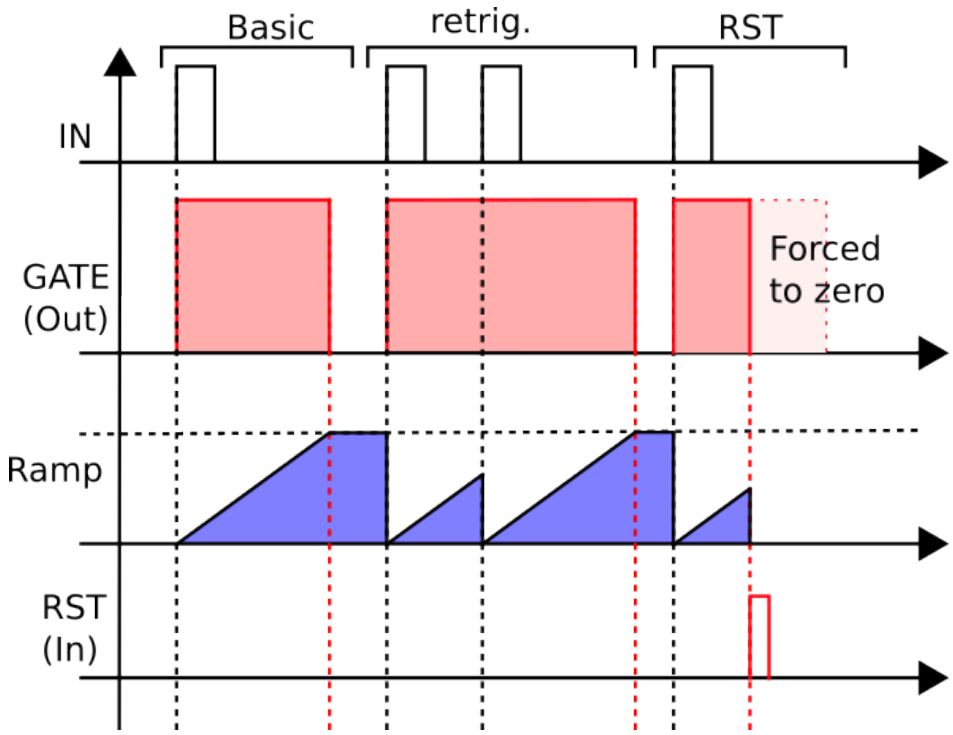
The « tempo » is adjustable by the **TIME** parameter (and then, of course, with the CV input too).
The clock has a good stability (its digital) for most use case.
Also, the setting is not done in BPM (of course...).

Don't forget all the others features that can be useful as a master clock generator :

- CV controle
- Rampe and extension module (see more below)

… and even as a « slave clock : try sending a clock signal at the IN input...

RAMP output



The slope of the ramp is a function of the duration of the gate. Thus, the maximum is reached at the end of the **GATE**. So if we change the duration, we also change the slope.

After reaching the maximum, the value stays at the maximum, until something is received at the **RST** or **IN**.
A retrig. will reset the ramp as the duration of the gate.
In **LOOP MODE**, the ramp becomes a saw wave generator.

But why this output ?

There are many use of a ramp like this one.
The Gate output does not tell anything about the time. It just ON or OFF, but we can't know where we are in the duration. The ramp transposes the time into a voltage.

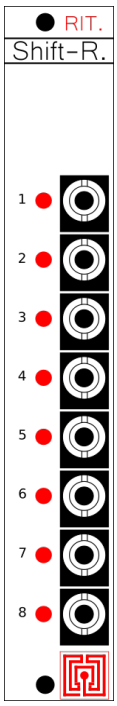
Some analog sequencer have an « analog » entry, like the Tiptop Buchla 245t sequencer, or the Joranalogue Step8. (Some modules are called « scanner » too)
So with the ramp, you can controle these kind of modules.

Also try to use waveshaper, and use the result as a complex CV signal.
The fact that the slope changes with the duration allows you to modify the duration of your CV curve without changing the waveform of the curve.

Try to use the module in LOOP mode (Clock generator) or not.

Electronicaly speaking, it's just adding a digital to analog converter.,,
To generate a gate signal, it needs a counter. To generate the rampe, it's just a bit of computation to have the right slope.

All this to talk about the extension connector :



Using the extension connector

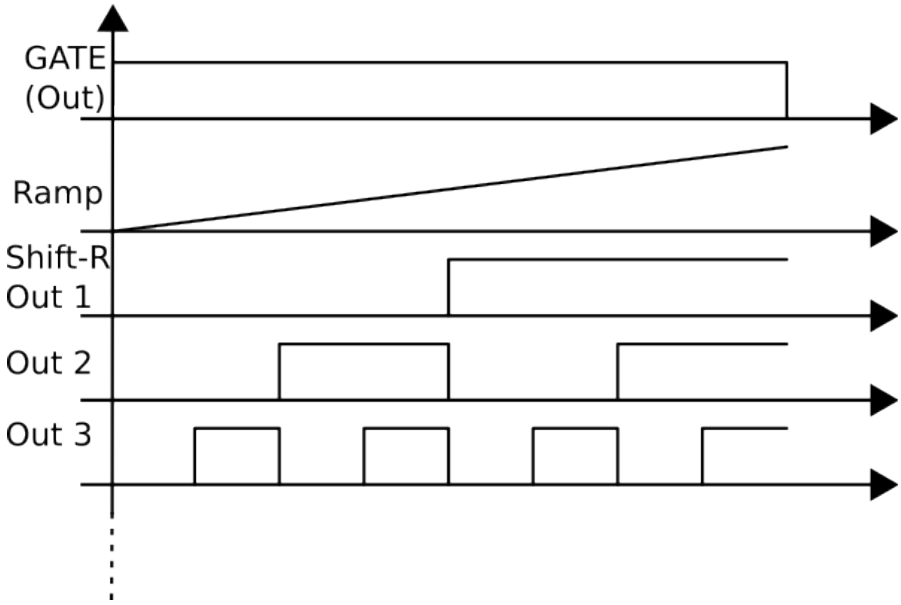
At the back of the module, there is a 4pins connector. It is used to connect the **Shift-R** module.

WARNING :
do not connect the PSU cable here, it will destroy you module !

The cable is available with the **Shift-R** module.

It adds 8 triggers outputs.
The idea is very simple : the digital value, used to generate the **RAMP** signal is dispatched into 8 outputs. Each output is one of the 8 bits.
(Ok, to be more precise, the RAMP is calculated with 12bits, so only the highest bits are used for the Shift-R...)

What does it do ?
In fact, it works like a clock divider :



Warning: the divisions may not be precise:
Steps may be a little longer, or missing, depending on the length of the GATE (or clock speed).
Indeed, between the counting of the duration of the GATE, and the calculation of the ramp, there is interpolation.
At very high speed, some steps are missing too.
That said, the result is more than acceptable and the differences inaudible in most cases.

The use ? Hm... it's up to you.,,
But one idea it to use one of the output as a clock source, to controle one or more sequencer (some **RITOURNELLE CV or TRIG Generator** for example) and then adjusting the speed.
Even more, the START or the END signal can be used to sync sequencers.

So the module with the **Shift-R** works like a Clock generator with 8 clock divisions of the speed.
The **TIME** will generate the BAR length of you sequence (the durantion of the loop), and the **Shift-R** will be various division of this BAR (2, 4, 8, 16... steps per bar).

The **RAMP** output will be the lenght of the bar, ideal to have some CV linked to the time of one BAR ;)

Another idea it to trigger events at specific moments into the duration of the GATE. For example launching another enveloppe at the middle.

Known Issues:

OK, this is not really issues, but if you are confronted with it, you may have some question, so :

Launching the **LOOP** doesn't works, when the speed it too high (TIME Knob at minimum).

In **LOOP mode** (again...), **RST** may stop the loop, sometime...but only if you're not lucky and you're pushing the **RST** button exaclty at the end of the cycle.

Contact : larix.elektro@gmail.com
www.larix-elektro.com