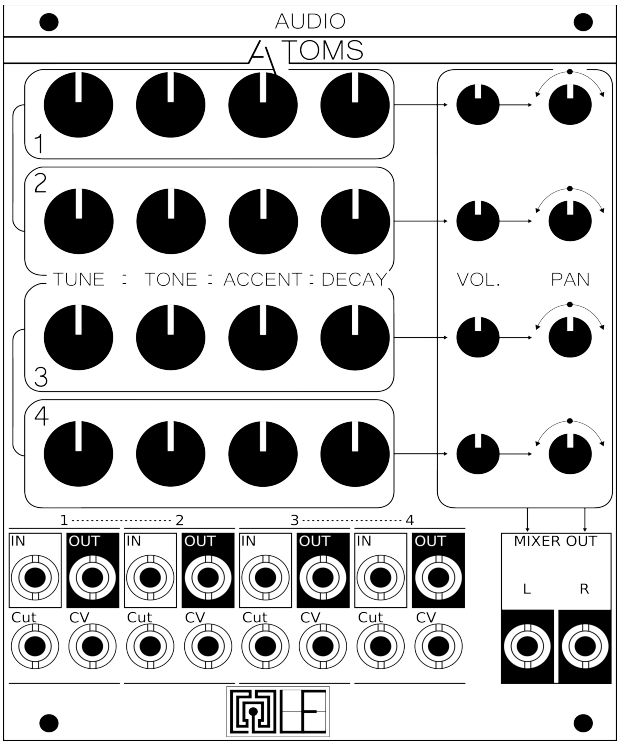
LARIX ELEKTRO

AUDIO 4TOMS

WHAT'S THAT THING ?

This is a set of **four percussive voices** with a full **stereo mixer**.
Each voice has four parameters : **Tune**, **Tone**, **Accent** and **Decay**.
Tune, Accent and Decay are **CV controlable**.
The stereo mixer provides volume and pan for each voice.



KNOBS:
For each of the four toms.
- **Tune** : Pitch of the TOM
2 ranges: 1&3 are low frequency, 2&4 are high frequency.
- **Tone** : from triangle, to sinus to square wave.
(Do not espect perfect waveform here !)
- **Accent** : Volume, but it has effect on the decay and on the attack too.
- **Decay**

Mixer section: For each of the four toms.
- **Volume**
- **Pan**

JACKS I/O:
for each of the four toms.
- **IN** : Trigger Input.
In fact, any signal can be applied here,to run the Tom. (try audio …)
- **OUT** : Individual output.
- **CV** : Input to control one of the parameter. (see below)
- **Cut** : Input to force the signal to zero.
(as applying the hand on the Drum Skin)

Note: Trig In & Cut In are normalled between 1&2, and 3&4.

Mixer section:
Common Left & Right outputs

Technical specifications:

+12V : 110mA
(180mA when Decay is at minimum for all toms)
-12V : 100 mA
(5V is not used)
20HP, 35mm deep (Approx.) with PSU connector

Installation:

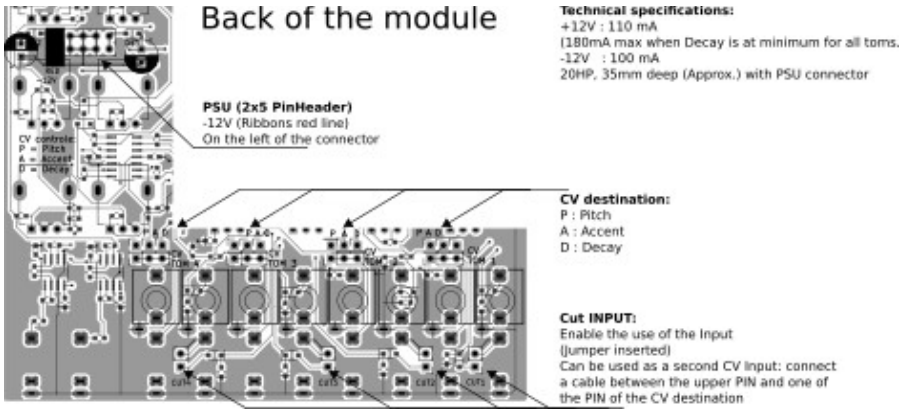
At first, ensure that there is enough power to supply the module.
Beware of the orientation: the red strip on the ribbon cable should match the white line on the module, and on the PSU board (-12V).

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).

Extension Connectors & jumper:



Each TOMS has two pinheaders with a jumper :

– **CV Destination :**

It's a 2x3 pinheaders, with a jumper inserted by default on the « P » column.
By changing the column, it changes the destination of the CV input :

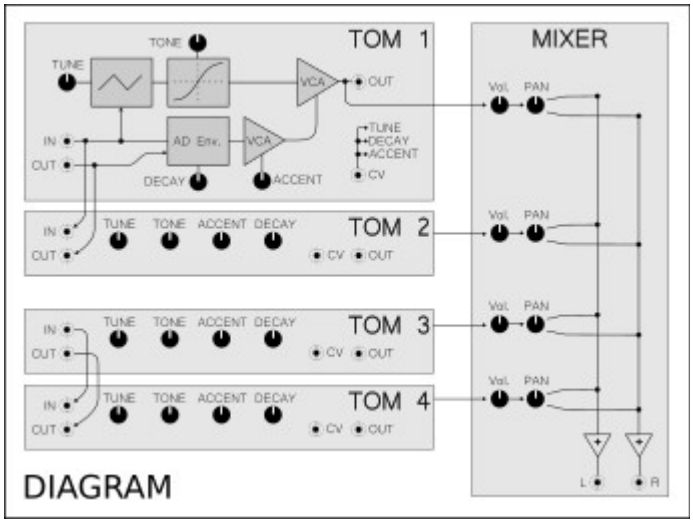
P : Pitch
A : Accent
D : Decay

It's possible to connect a wire to the 2 unused positions to add CV control for all the parameters. For example by using the **CONTROLE ATTV-4** module that provides the same connector and 4 cables.
Use the upper line of the connector (the lower line is connected to the CV Jack of the front panel.

– **CUT Input :**

Some users may not need this function (see below). This connector is here to avoid having a precious useless Jack.
To use this jack to contrôle another CV, simply remove the jumper and connect a wire between one of the CV input (Connector « CV Destination ») and the upper pin of the connector.
(The lower pin is connceted to the « CUT » circuit)
Note : The wire is not provided with the module.

Technical explanation :



The basis:

The **4TOMS**, as the name suggests, is a **percussion generator**.
A simple and gentle electronic Tom : **A sinus generator with a decay envelope on the volume.**
But it adds CV on most of the parameters. And there is also a small enveloppe on the pitch. This effect increases with the **Accent** parameter.
The Tone parameter modify the color of the sound. Something between a triangle and a square wave, with the sinus in between.

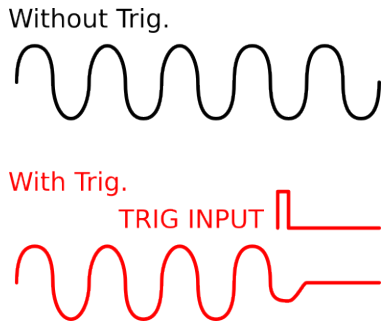
The pitch CV is linear. So **it's not a 1V/Oct input**.
(Try to insert an audio signal into this input...)

The four toms are grouped 2 by 2 : 1&2, and 3&4.
Firstly, the pith range of 1 and 3 are lower than the 2 and 4 cicuits.
Secondly, the 1&2 are connected together :
when connecting something into the INPUT of the Circuit 1, it also controls the 2.
This is the same for the CUT input.
And so, it's also the same between the 3 and 4 circuits.

This allows the 4TOMS to work as a dual complexe percussion :
Because each circuit has its own output (in addition to the stereo mixer) One of the two tom can modulate the seconde one (try cross-modulation too).
Maybe adding an attenuator, or an attenuverter, like the CONTROLE Attv-4, is a good idea here.

The 4TOMS provides its own mixer.
This is a stereo mixer with the controle of the volume and the pan for each circuit. So you don't need to add another module to mix your four toms, and place them in the stereo field. Of course, the individual outputs of each circuit are available (see above).

The CUT Input :
This is a new fonctionnality.
When applying a trigger into this input, it forces the sound to stop. As applying the hand on the Drum Skin to stop the sound.
Technically, it forces the Decay CV to its minimum value.
Depending on the values of the parameters, **a click can be heard**.



Beyond toms :
Simple electronic Toms can be annoying, sometime.
The 4TOMS can go beyond, first of all, thanks to all CV entries.

But also because of large range of the parameters :
Decay can be unusually long (for a tom...)
Accent at its maximum can generate distorted sounds (assymetrical waveform), and even hard clipping after passing through the mixer. This is not a default !

All inputs can works at audio rate. Not so useful for decay, or even Accent (although...), but excellent for FM with the Pitch CV.
Also try to enter audio into the INPUT, instead of a simple trigger.

Technical note about the TOMS :
The circuit is not a simple sinus generator with a decay enveloppe :

The audio source is a triangle wave generator, with diode overdrive that change this triangle into something like a sinus, and then, when pushing the value, into something more like a square wave. This is the **TONE** knob.

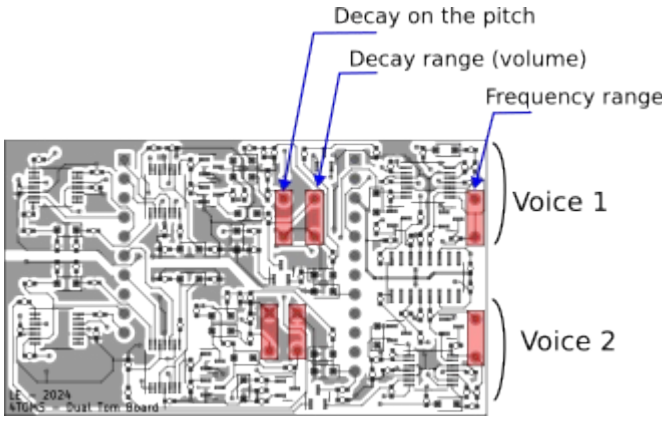
The **ACCENT** changes the volume of the sound, but not only :
It increase the effect of a small decay enveloppe that is applied to the pitch.
And it also increase the decay time of the volume.
As explained above, when pusing high, the waveform becomes not symetrical : the VCA does not works « correctly » and act in a different way for the positive and the negative part of the sound.

The module is entirely analog, the electronic components having small variations between them, this implies that the characteristics and therefore the sound can vary between 2 units.

Hacking the circuit :
In addition to the various connectors, it's possible to modify the circuit :
Each important capacitor are through holes, to allow for their replacement.

– Pitch range	Low	: 50Hz to 300Hz approx.	100nF
	High	: 110Hz to 630Hz approx.	47nF
– Decay range	<1ms to 3sec. approx.		10nF
– Decay of the (fixed) small enveloppe on the pitch.		3ms.	1nF

There are 2 smaller PCBs connected to the main PCB. Each produces two toms.



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