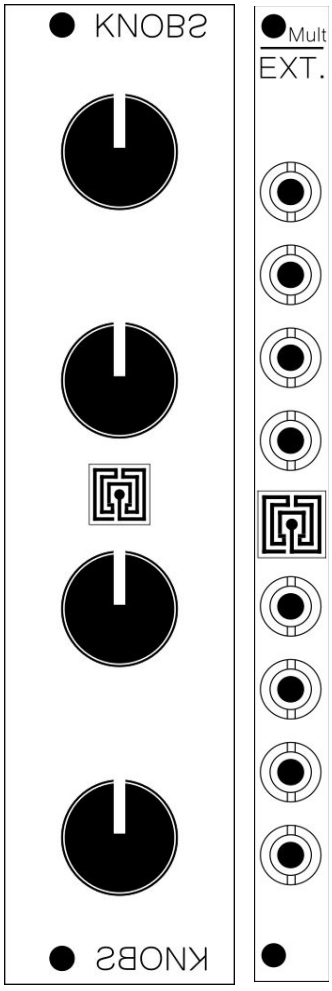
LARIX ELEKTRO

CONTROLE KNOBS

WHAT'S THAT THING ?

The **KNOBS** is just four big rotative potentiometers. They generate a CV value.

3U front panel + CV outputs module :



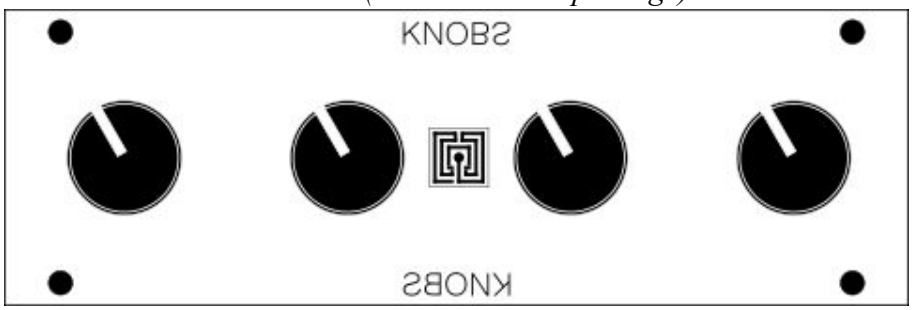
Typical use :
- Move your main controls to a more accessible place on your rack.
- Free your fingers from cumbersome cables.
- Have bigger knobs for a better precision.

The **KNOBS** package consists on two modules :
- The **KNOBS** itself (with the 4 knobs)
- The **EXT.**, a 2HP modules with 8 jacks, used to send the CV generated by the 4 knobs.

Of course, you have a ribbon cable to connect the two modules. You can thus move the outputs elsewhere in your rack, and no longer have your fingers bothered by the cables !

Finally, the package contains another front panel for the **KNOBS** module, to mount your module into a 1U rack.

1U version (included in the package)



Technical specifications:

+12V : 8mA
-12V : 8mA
(+5V is not used)
35mm deep (Approx.) with PSU connector

KNOBS : 3U 6HP
or 1U 24HP.

Mult EXT. : 3U 2HP

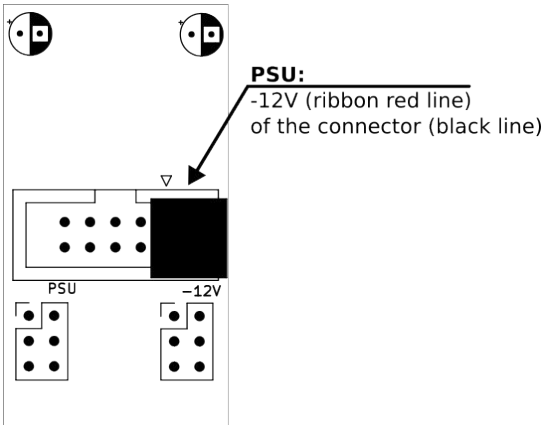
Installation:

PSU connection

At first, ensure that there is enough power to supply the module.

The package contains 2 cables, one for power and the other to connect the **KNOBS** module with the **EXT.** module. **Do not confuse these 2 cables**. For power, the cable is wider, and one of the connectors is larger than the other (as a lot of cables from other modules...).
In any case, you will have difficulty inserting the wrong cable into the module, and some pins will stick out on the side. You may have some problem and it may damage your 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).

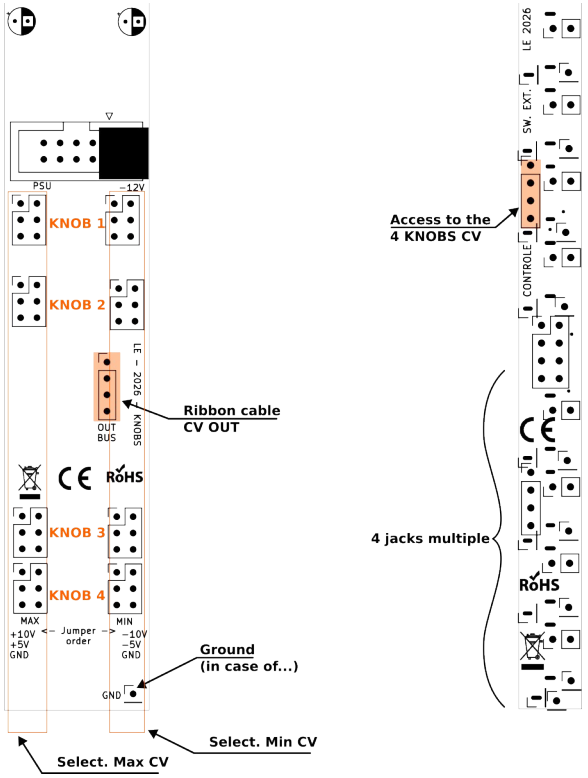
(*Note that the **EXT.** module don't need PSU)*

!!! WARNING: DO NOT CONNECT PSU to the other connectors !!!
It will damage the module.

Connecting the KNOB with the EXT.

Yes, there are no jacks on the **KNOBS** module, so how do we use this module?
Were they forgotten during the module's design???
No! Of course not! The idea is to have as much space as possible for the knobs and not be bothered by cables when using them.

Below are all the basic connections on each module :

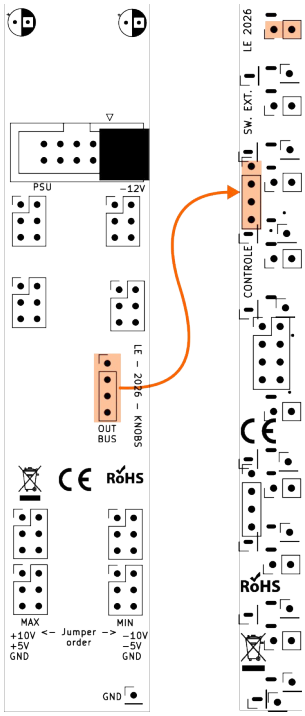


The intended way to connect the 2 modules together is to use the second cable provided in the package.

> ***WARNING****, it is not the same one used for the PSU. The cable in question here is thinner, and the connector is also smaller. Another detail, the cable has the same connector on both ends, unlike the PSU cable. If you reverse the cables for power, the module may malfunction or even be damaged. However, using a power cable to connect the 2* ***KNOBS*** *and* ***EXT.*** *modules will not cause any problems.*
> ***In fact, if the length of the cable does not suit you, it is possible to use a power cable as a replacement.***

The cable is connected between the **OUT BUS** connector of the **KNOBS** module and the top connector of the **EXT.** module.
The connector on the cable has 2 rows, but the connectors on both modules only have one row.

Why?
For the sake of rationality, a cable with 2 rows is used for other modules...
But anyway, it’s not a problem. You just need to connect the cable to the same row on both sides.
And if you made a mistake, it’s not a big deal; you just need to switch to the other row on one side.



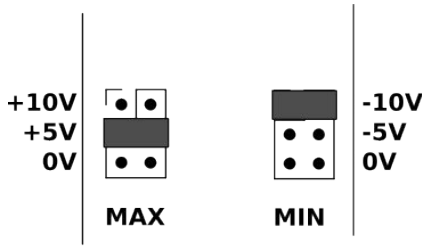
If the cable is not flipped (twisted), the CV from the top knob ends up on the top jack, and so on for the other knobs. If you want to reverse this order, simply flip the connector before inserting it. No worries, there is no reason this would cause problems or damage your modules.

By default, the 4 lower jacks are connected together to form a multiple. The jumpers connect each jack to a common bus. Depending on your needs, you can disconnect one or more jacks to leave it isolated.

The EXT. module has more access points, and so, more capabilities.
See the last part of this document to see all the possibilities of the EXT. module.

Configuring the KNOBS : CV range.

For the same reason as removing the front panel jacks from the module, to save space, which is always valuable in a rack, the voltage range adjustment for each knob is moved to the back.
Each knob has the option to select the maximum and minimum voltage, indicated by a 3-position jumper.
To change the voltage, simply move the jumper and choose a new position among the 3 possible options.
The minimum value can be chosen from -10V, -5V, and 0V.
The maximum value can be chosen from +10V, +5V, and 0V.



Exemple above:
Range from -10V to +5V

Changing the front panel, & Knobs indicator position.

In the package, there is a second front panel.
It allows you to use the module in a 1U line of your rack, enabling you to use the module horizontally.

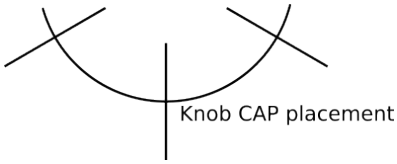
To replace the front panel, you will need a 10mm wrench or a large pliers.
A large flathead screwdriver is also useful.
To replace the indicator on the button, you will need a cutter or a thin blade.

The buttons are inserted by pressure; it is possible to use a screwdriver to lever them out.
Be careful not to damage the front panel!

Once the knobs are removed, unscrew the potentiometers. The front panel can now be removed and replaced with the other front panel. Reassembling is just as simple.

When switching to a 1U front panel, the buttons end up horizontally.
The indicator on the top of the button is no longer correctly positioned.
Fortunately, the tops of the caps can be removed and replaced as needed.

In the document provided with the module, a strange diagram can be seen at the top of the back panel. It helps to position the cap correctly:

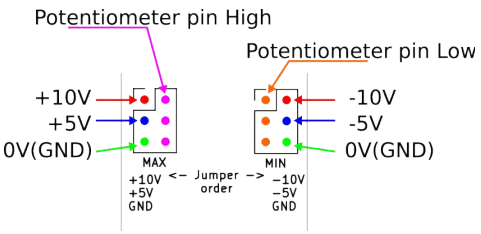


- Place the document under the button.
- Turn the button all the way to the left.
- Place the cap with the indicator as you wish, using the diagram as a guide.
  Note that the potentiometer has a travel of 300°. In other words, from -30° to +30°.

DIY tip :

Please take care, it's for those who know what they're doing !

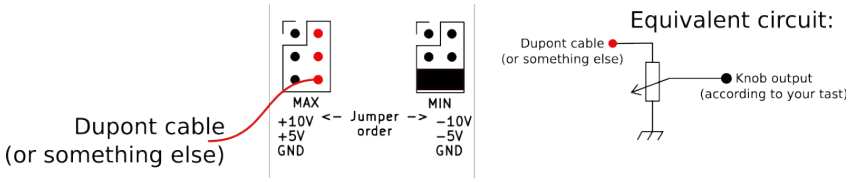
For **DIY**, you must have noticed that the voltage selection is done using jumpers. So there are pinheaders ! It means that you can connect something on them, with **Dupont wire**, for example.



… and a module like the **Mult.**, that has pinheaders to access each jacks !
So you can retrieve the **+10V, +5V, -5V and -10V**.
And these voltages are buffered for each knobs, so it will not interfere with others knobs ;)

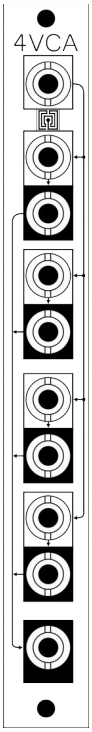
On the same idea, you can reverse le voltage of your knob...or doing more strange configuration like having a range of +5 to +10V.
Simply by selecting the min an max voltage you want by using **Dupont wire**.

Also you can modify the knobs as a direct volum knob :



Extension module : Alternative to the EXT. module.

The **KNOBS** module, along with its companion the **EXT.**, only 'generates' a voltage.
In the future, other modules will be offered to use the **KNOBS** module and replace the **EXT.** module.



The 4VCA module:
This first module consists of 4 independent VCAs, which can be used as a 4-input mixer controlled by voltage, or conversely as a 1-to-4 voltage-controlled splitter. Thanks to its common input and its output summing the 4 circuits.

The front panel does not have a control input; this is available through the same connector as the one on the EXT module.
Once connected, each knob simply controls one of the VCAs.

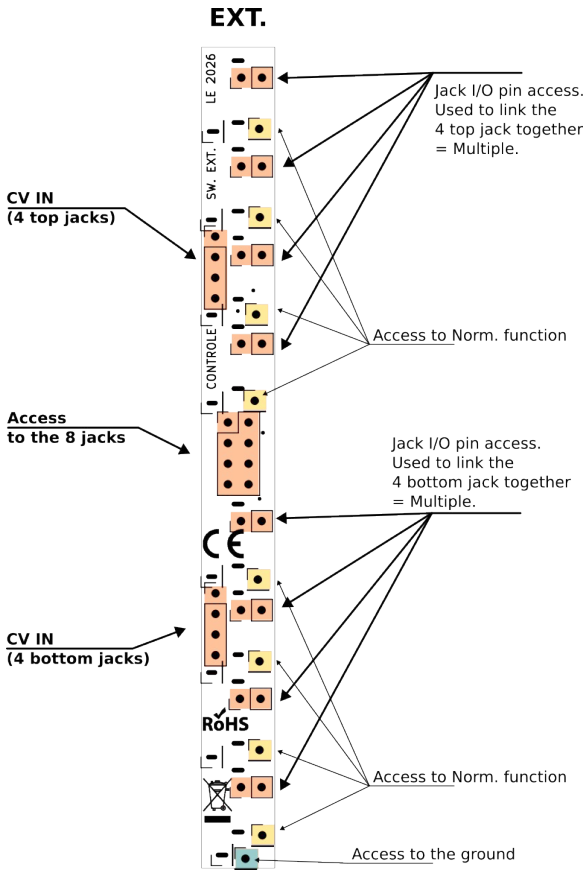
In this configuration, and to use the full range of the knob, set the jumpers to generate a voltage from 0 to 5V.

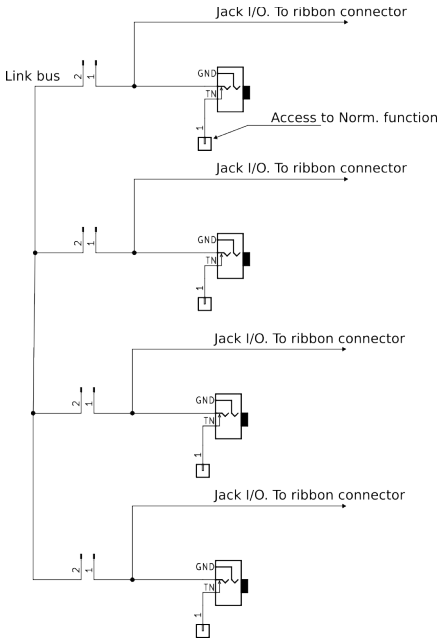
More modules will be compatible with the **KNOBS** in the future. Stay tuned:)

The EXT. module options

Here you will find explanations of all the connectors of the **EXT** module.
The **EXT** module you have in your hands only has some of the possible connectors.
Indeed, this module is designed to be used as an extension to several other modules.
The **KNOBS** and the **SWITCH**, for example.
Each having its characteristics, only the useful connectors have been soldered.
For example, the **KNOBS** only needs 4 jacks, the other 4 available jacks are configured as a multiple.
The **SWITCH** needs 8 jacks, so only the central connector giving access to the 8 jacks on the same connector has been soldered.

But it is possible to complete the connectors according to your needs.
For example, if you want to use your module with something other than the **EXT** module, the latter can be reused.
DIYers will know what to do;)





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