

# LARIX ELEKTRO

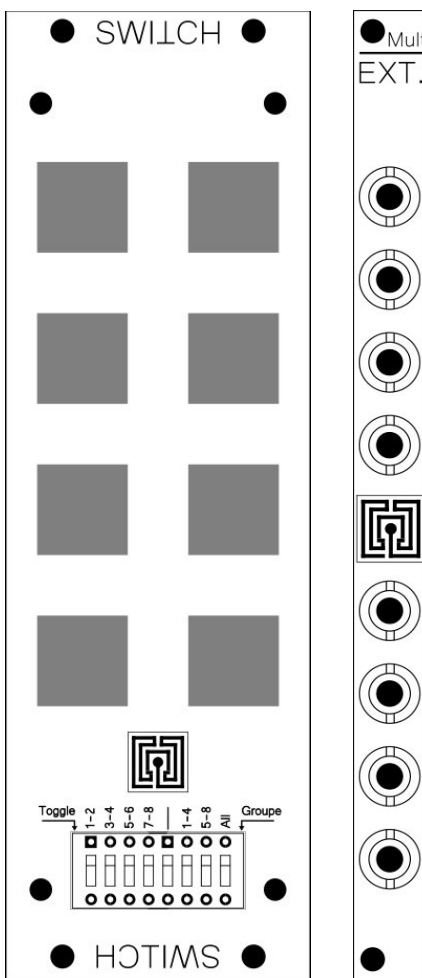
## CONTROLE SWITCH

### WHAT'S THAT THING ?

The **SWITCH** is eight big push buttons, with LED. And fully configurable.

The module is available in 3U or 1U.

### 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 buttons.

The **SWITCH** package consists on two modules :

The **SWITCH** itself (with the 8 buttons)

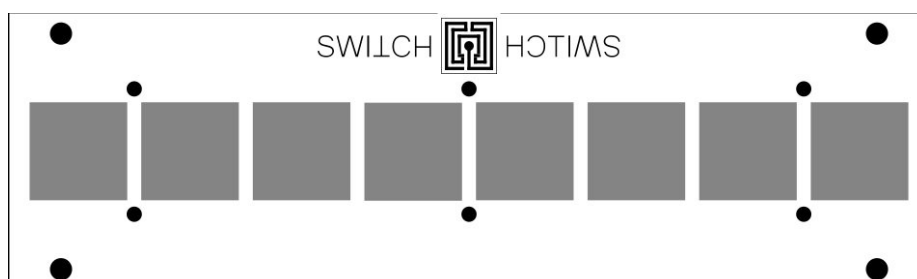
The **EXT.**, a 2HP modules with 8 jacks, used to receive the GATE generated by the 8 buttons.

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 !

*Unlike the **KNOBS** module, the package does not contain both 1U and 3U front panels :*

*The 2 versions are sold separately.  
But the operation remains the same.*



## Technical specifications:

+12V : 100mA (Max.)

-12V : 32mA (Max.) (+5V is not used)

*Note that the current is most of the time very low, this is the very maximum value, depending on the setting (number of LED, and when using the 'Groupe All' setting)*

25mm deep (Approx.) with PSU connector 3U

35mm deep (Approx.) with PSU connector 1U

SWITCH : 3U 8HP  
1U 26HP.

Mult EXT. : 3U 2HP

## Installation:

### PSU connection

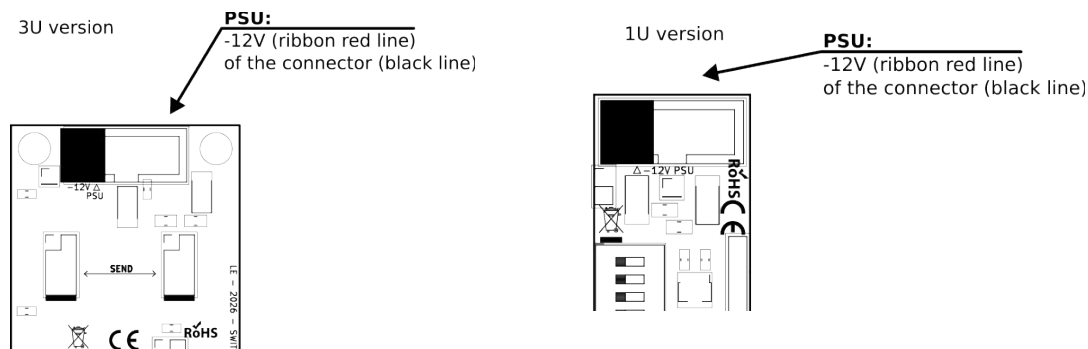
At first, ensure that there is enough power to supply the module.

The package contains 2 cables, one for power and the other to connect the **SWITCH** 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 connctors !!!**  
**It will damage the module.**

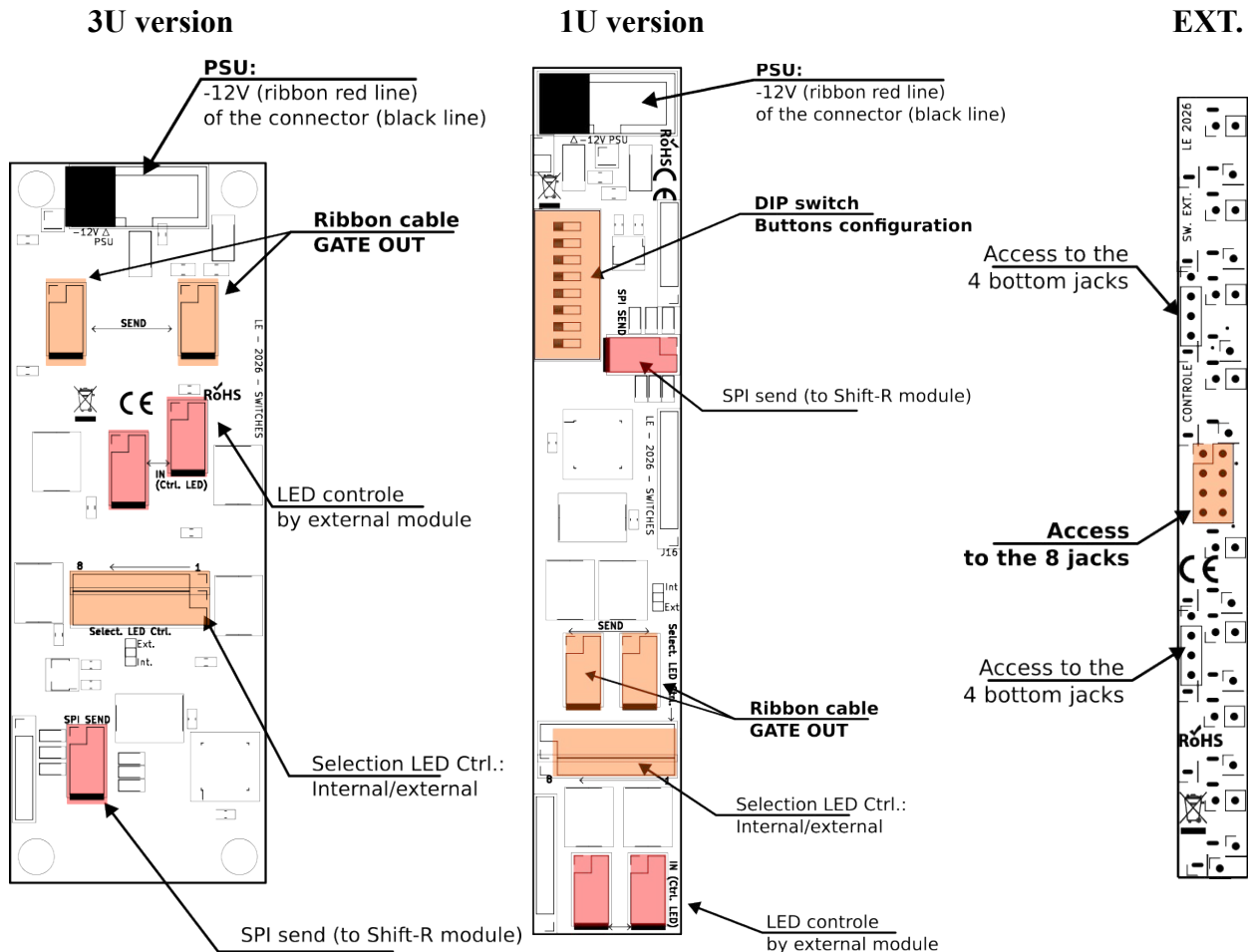
## Connecting the SWITCH with the EXT.

Yes, there are no jacks on the SWITCH 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 buttons and not be bothered by cables when using them.

Below are all the 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 SWITCH 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 one of the SEND connector of the SWITCH module and the center connector of the EXT. module.

Do not confuse with the SPI SEND connector.

**Module 3U :**

If the cable is not flipped (twisted), the GATE output from the first row of buttons is found in the 4 top jacks, in the same order. The second row is found in the 4 bottom jacks.

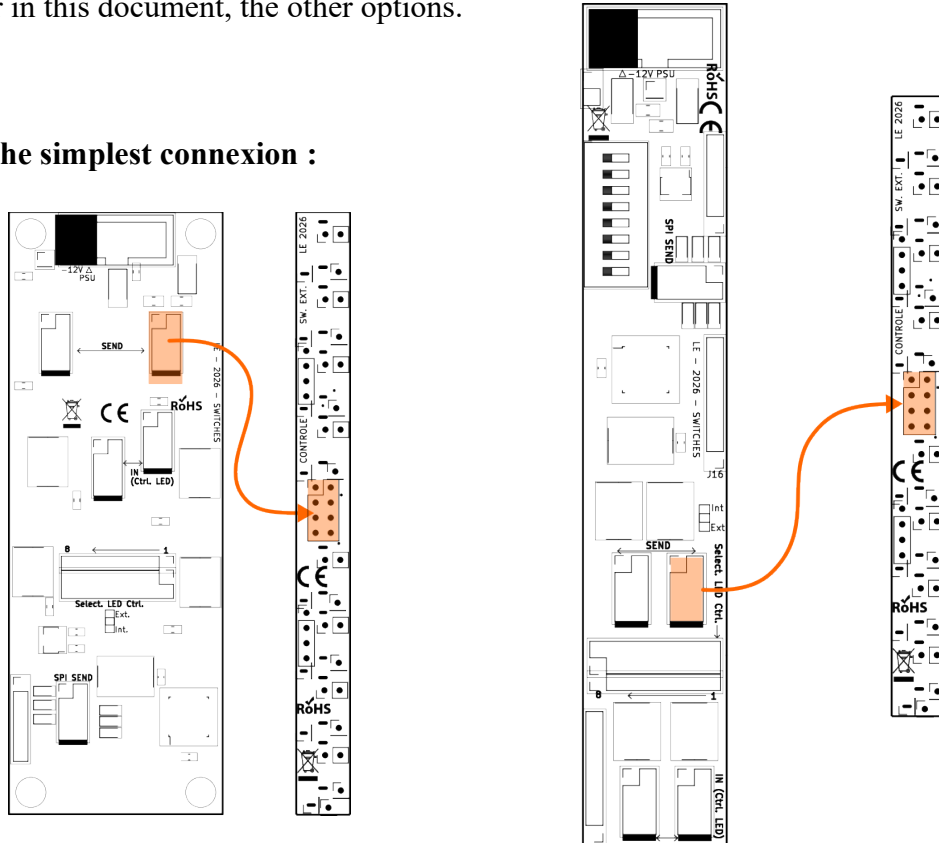
**Module 1U**

If the cable is not flipped (twisted), the GATE output from the rightmost button will be found in the top jack. The buttons and their corresponding jacks follow each other.

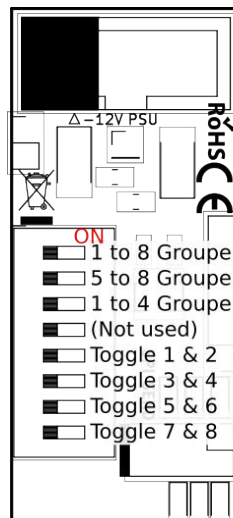
If you want to reverse this order, simply flip the connector before inserting it. No worries, there is no reason this would cause problems or damage your modules.

We will see later in this document, the other options.

**The simplest connexion :**



**1U switches configuration →**

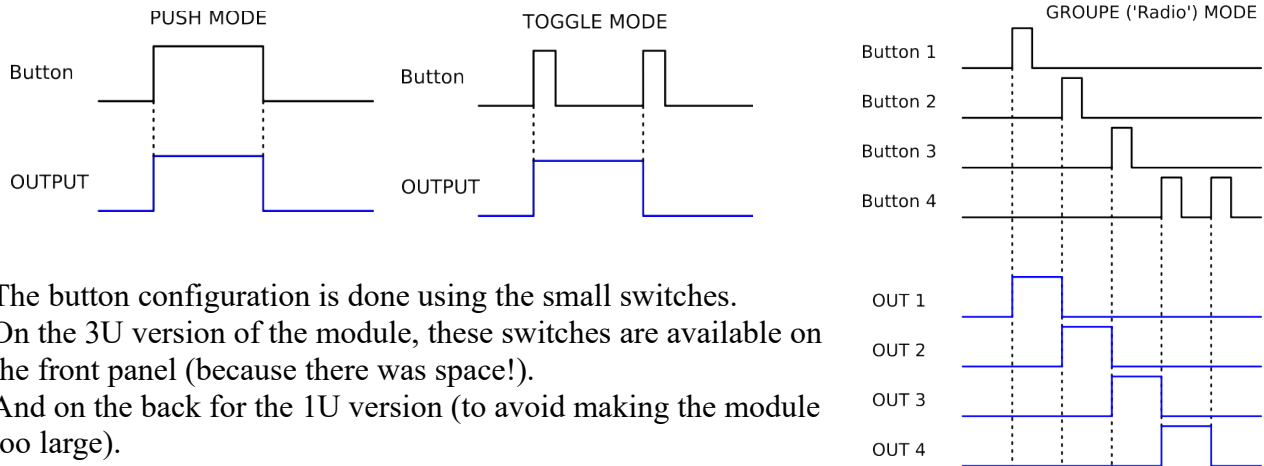


## Configuring the SWITCH

The buttons can have configurable behavior according to your needs.

There are 3 operating modes:

- **Push** : the output is 5V until you release the button
- **Toggle** : one push = 5V, next push = 0V
- **Group** (sometime called 'radio' buttons') : Only one output will be 5V, all others will have 0V.



The button configuration is done using the small switches.

On the 3U version of the module, these switches are available on the front panel (because there was space!).

And on the back for the 1U version (to avoid making the module too large).

When the **GROUP ALL** switch (the one on the far right) is set to ON, all the buttons work together as a group of 8 buttons. All the other switches then have no effect.

When the **GROUP 1-4** switch is set to ON (and the ALL GROUP is OFF, if you followed correctly), then a group is formed with buttons 1 to 4. In this case, the TOGGLE 1-2 and 3-4 buttons have no effect.

The principle is the same for the **GROUP 5-8** switch, for buttons 5 to 8. Similarly, the TOGGLE switches 5-6 and 7-8 have no effect.

In other cases, the buttons can be configured in pairs using the 4 **TOGGLE** switches.

- OFF, the 2 buttons in question operate in PUSH mode.
- ON, the 2 buttons in question operate in TOGGLE mode.

(Note that the 5th switch is not used.)

The DIP switches to configure the module are on the front for the 3U version, with all the indications on the front panel.

But the DIP switches are on the back for the 1U version, without any information :

See the schematic above.

## Other options and connectors:

### LED control:

By default, the LEDs are linked to the buttons and directly reflect their state. However, it may be useful to let another module handle the display functionality.

Thus, not only is the operation (pressing the button) relocated, but the display is also moved to a more ergonomic location.

For now, no module uses this function, but a DIYers will certainly find something to do with it ;)

A double connector provides access to each LED. Two like for the outputs, and it works identically : This way, each group of 4 buttons can be configured independently.

To enable the use of the external connection, the corresponding jumpers must also be moved.

### SPI OUTPUT

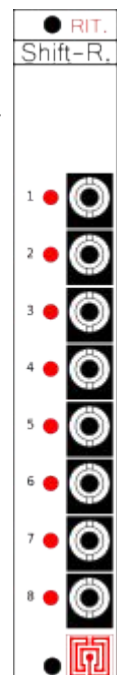
At the moment, no module is using this output.

Well, actually, **SHIFT-R** can be used to output the 8 GATES instead of the **EXT.** module.

The only purpose of **SHIFT-R** is to add an LED for each output.

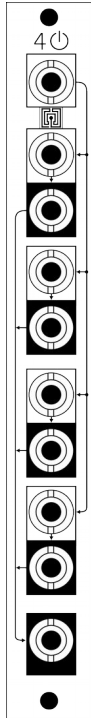
In fact, the SPI output simply send the status of all 8 buttons into à 8 bits word, and send it in serial. It will be useful for future modules.

As for the LED input, DIYers will certainly find something interesting to do with it !



## Extension module : Alternative to the EXT. module.

The **SWITCH** module, along with its companion the **EXT.**, only 'generates' a gate (as a 0 or 5V output). In the future, other modules will be offered to use the **SWITCH** module and replace the **EXT.** module.



### The 4ONOFF module:

This first module consists of 4 independent electronic switch.

It means that with this module, you can switch (ON/OFF) 4 different signals by using the **SWITCH** module. Too easy !

It can be used as a 4-input mixer/selector 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.

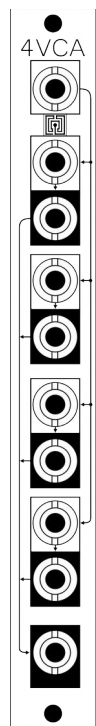
Once connected, each button simply controls one of the circuit.

It can work with any kind of signal : logic, CV, or audio.

### The 4VCA module :

This module has VCAs instead of digitally controlled switches. It will work perfectly and similarly with the **SWITCH**.

The **4VCA** is made for the **KNOBS** module. Maybe this module is less interesting because the **SWITCH** provides only 0 or 5V, unlike the **KNOBS** that generates a continuous CV value.



These 2 modules only have 4 circuits, whereas the **SWITCH** offers 8 buttons. You can get 2 of the modules above, or one of each, or just a single module and keep the **EXT.** module provided with the **SWITCH** for the remaining 4 buttons.

Refer to the section below about the **EXT.** module for more informations.

As described in the **SPI OUTPUT** section, the **SHIFT-R** module can also be connected to the **SWITCH** module, and replace the **EXT.** module.

More modules will be compatible with the **SWITCH** 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.

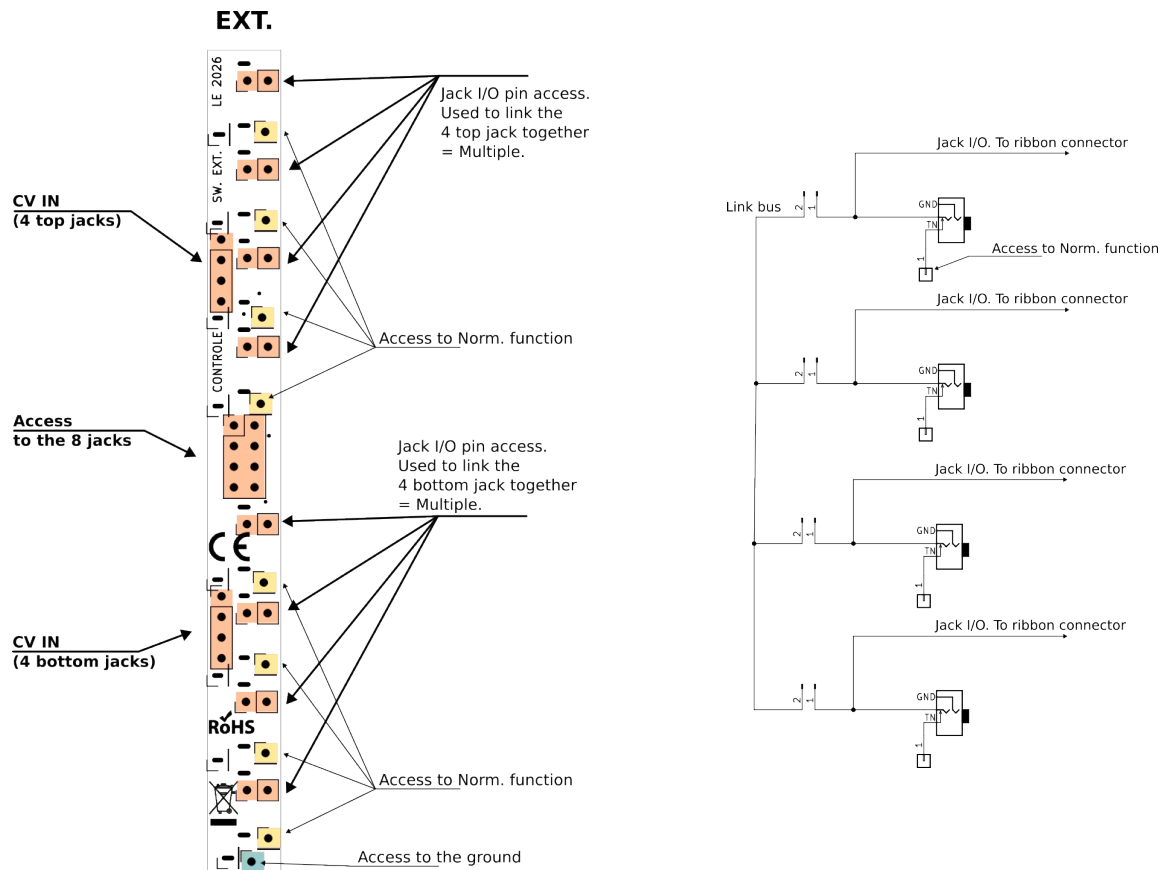
For example, the **KNOBS** only needs 4 jacks, the other 4 available jacks are configured as a multiple.

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;)



## Splitting the outputs of the SWITCH in two different locations :

One might need to control several modules using a single **SWITCH** module. Or to output the gates to different places in the rack.

Also, everything is designed to separate the operation of the **SWITCH** into 2 groups of buttons. By the way, there are several expansion modules that only have 4 circuits. (See above)

As explained above, the **SWITCH** module have 2 connectors truly identical:

The first column is dedicated to buttons 1 to 4, and the second to buttons 5 to 8.

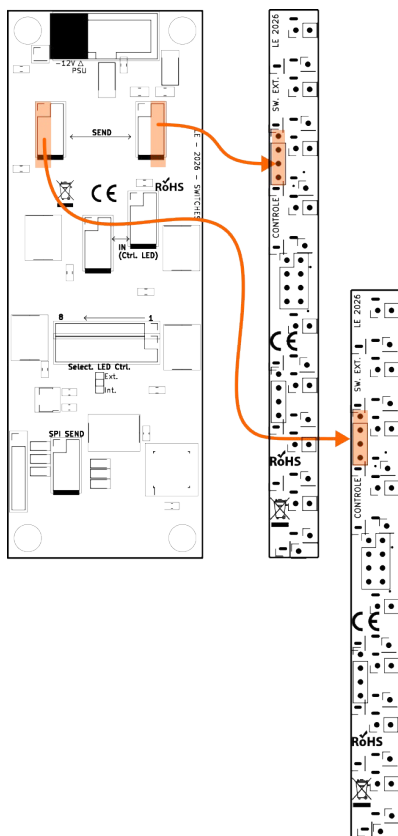
By inserting the connector only halfway into a column, only 4 switches are sent to the output module.

This makes it possible to choose which group of switches you want to use.

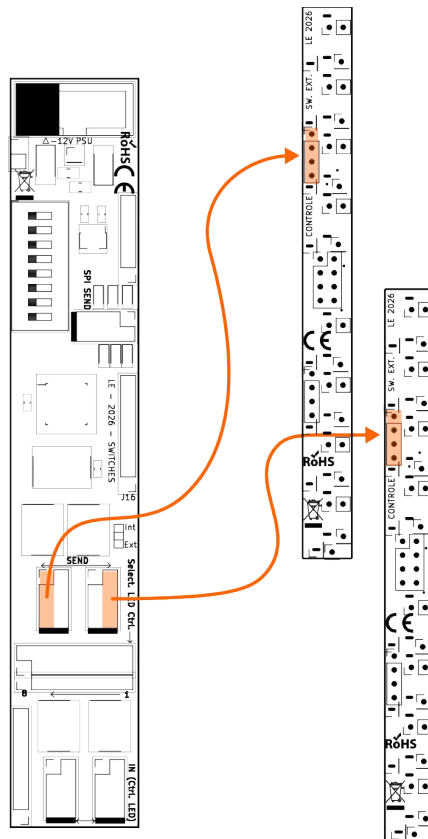
And as explained just above, the **EXT.** module has also two dedicated connectors : one for the upper jack, and the other for the lower jack. It's possible to use two **EXT.** module each sending 4 of the gate signals.

Example, using two **EXT.** module, at different place in your rack :

**3U version :**



**1U version :**



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