

# Buff Mult 1U

Dual 1 x 4 Buffered Mult



## Compliance



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by Intellijel Designs, Inc. could void the user's authority to operate the equipment.

Any digital equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.



This device meets the requirements of the following standards and directives:

EMC: 2014/30/EU

EN55032:2015 ; EN55103-2:2009 (EN55024) ; EN61000-3-2 ; EN61000-3-3

Low Voltage: 2014/35/EU

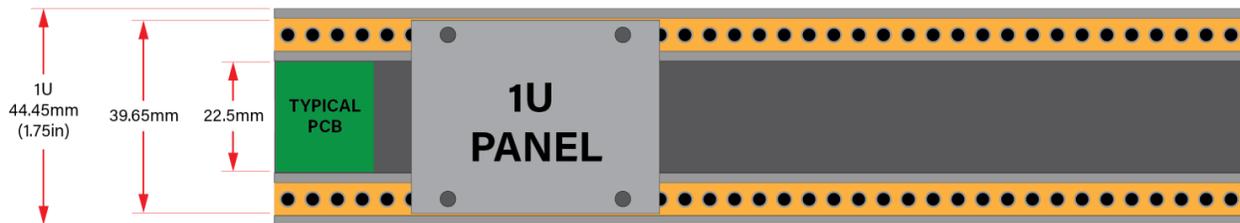
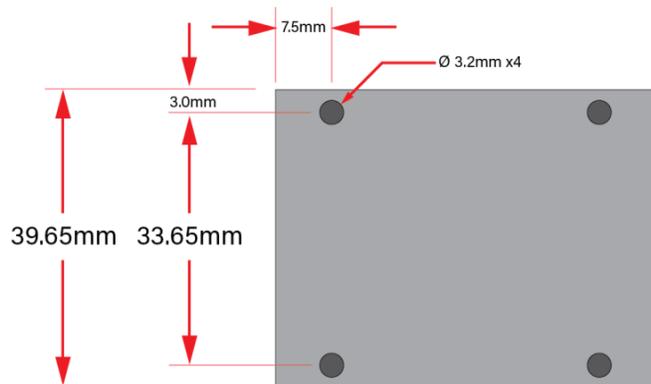
EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011

RoHS2: 2011/65/EU

WEEE: 2012/19/EU

## Installation

This module is designed for use within an Intellijel-standard 1U row, such as contained within the Intellijel 4U and 7U Eurorack cases. Intellijel's 1U specification is derived from the Eurorack mechanical specification set by Doepfer that is designed to support the use of lipped rails within industry standard rack heights.



## Before Your Start

Intellijel Eurorack modules are designed to be used with a Eurorack-compatible case and power supply. We recommend you use Intellijel cases and power supplies.

Before installing a new module in your case, you must ensure your power supply has a free power header and sufficient available capacity to power the module:

- Sum up the specified +12V current draw for all modules, including the new one. Do the same for the -12 V and +5V current draw. The current draw will be specified in the manufacturer's technical specifications for each module.
- Compare each of the sums to specifications for your case's power supply.
- Only proceed with installation if none of the values exceeds the power supply's specifications. Otherwise you must remove modules to free up capacity or upgrade your power supply.

You will also need to ensure your case has enough free space (hp) to fit the new module. To prevent screws or other debris from falling into the case and shorting any electrical contacts, not leave gaps between adjacent modules, and cover all unused areas with blank panels. Similarly, do not use open frames or any other enclosure that exposes the backside of any module or the power distribution board.

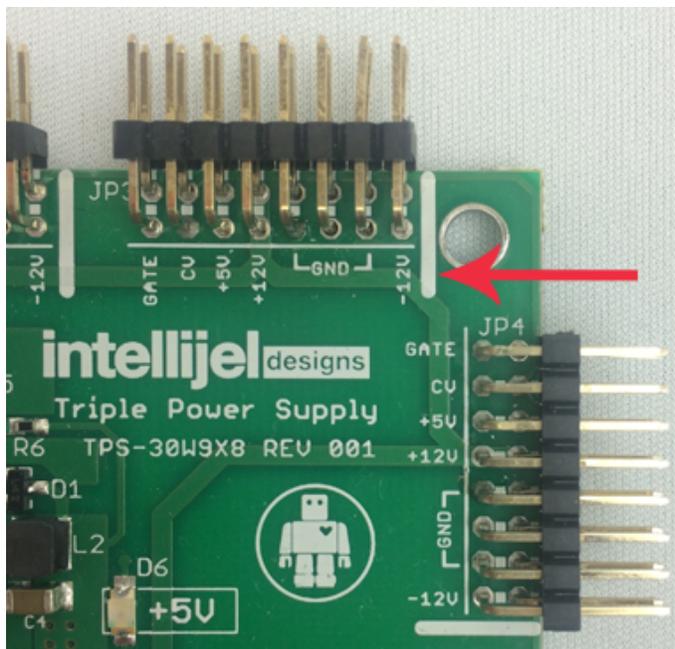
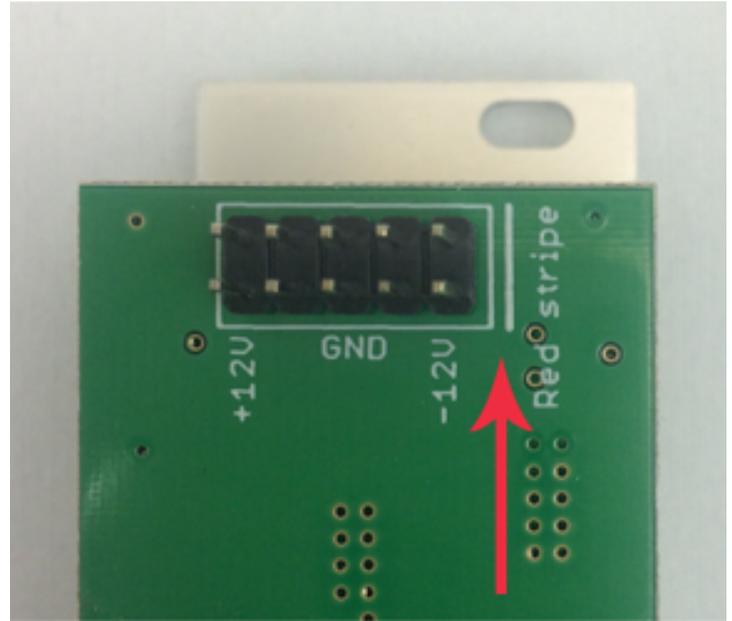
You can use a tool like [ModularGrid](#) to assist in your planning. Failure to adequately power your modules may result in damage to your modules or power supply. If you are unsure, please [contact us](#) before proceeding.

## Installing Your Module

When installing or removing a module from your case always turn off the power to the case and disconnect the power cable. Failure to do so may result in serious injury or equipment damage.

Ensure the 10-pin connector on the power cable is connected correctly to the module before proceeding. The red stripe on the cable must line up with the -12V pins on the module's power connector. The pins are indicated with the label -12V, a white stripe next to the connector, the words "red stripe", or some combination of those indicators.

Most modules will come with the cable already connected but it is good to double check the orientation. Be aware that some modules may have headers that serve other purposes so ensure the cable is connected to the right one.



The other end of the cable, with a 16-pin connector, connects to the power bus board of your Eurorack case. Ensure the red stripe on the cable lines up with the -12V pins on the bus board. On Intellijel power supplies the pins are labelled with the label "-12V" and a thick white stripe:

If you are using another manufacturer's power supply, check their documentation for instructions.

Once connected, the cabling between the module and power supply should resemble the picture below:



Before reconnecting power and turning on your modular system, double check that the ribbon cable is fully seated on both ends and that all the pins are correctly aligned. If the pins are misaligned in any direction or the ribbon is backwards you can cause damage to your module, power supply, or other modules.

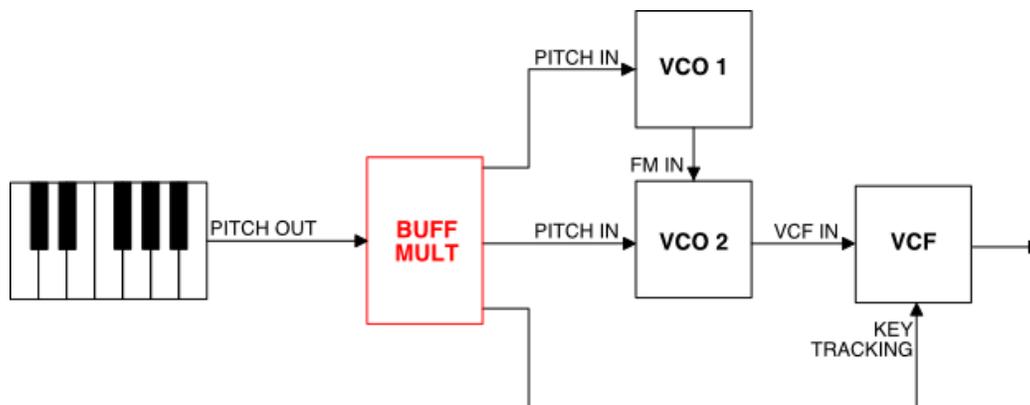
After you have confirmed all the connections, you can reconnect the power cable and turn on your modular system. You should immediately check that all your modules have powered on and are functioning correctly. If you notice any anomalies, turn your system off right away and check your cabling again for mistakes.

After you have confirmed all the connections, you can reconnect the power cable and turn on

## Operation



Buff Mult 1U is a dual 1 x 4 buffered signal multiplier. A signal multiplier takes an input signal and routes it to multiple outputs simultaneously. For example, you might want to route keyboard's pitch CV to three different destinations: one to govern the pitch of your main oscillator; another to govern the pitch of a second oscillator; and the third to open and close a filter so that it tracks across the keyboard.



Unlike a passive mult, which merely splits the incoming signal and shares it across multiple outputs (much like a Y-cable), buffered mults make electrical copies of an input voltage and duplicate that voltage at the outputs.

Buffered mults have a few advantages over passive mults. Because buffered mults isolate their outputs from the input, any faults or shorts present at the input will not pass through to a connected module. Also, in a passive mult, what you connect to an output can cause a slight

variation in the voltages that it sends. In some situations (like an LFO or envelope), this probably won't have any sonic effect on your patch. But for voltage-critical functions (like an oscillator, where only a slight change in voltage is easily heard), it's often better to use a buffered mult, since this insures that the 1V/Oct signal arriving at its input will be electrically and accurately duplicated across all its outputs.

Buff Mult 1U is divided into two sections — upper and lower. Each section is its own 1 IN x 4 OUT buffered multiplier. Plug an audio or CV signal into the upper section's left-most jack [1] and Buff Mult sends a buffered duplicate of that signal out the other four jacks [2] in the group. Similarly, an audio or CV signal patched into the bottom section's left-most jack [3] is duplicated at the other three jacks [4] in the group.

The top input jack [1] is normalled to the bottom input jack [3]. So if nothing is plugged into the bottom input [3], then the top input [1] is duplicated across all 8 outputs, making Buff Mult act as a single 1 x 8 buffered signal multiplier.

## Technical Specifications

Width	14 hp
Maximum Depth	29 mm
Current Draw	4 mA @ +12V 4 mA @ -12V