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AtoVproject 16n Rework –User Manual

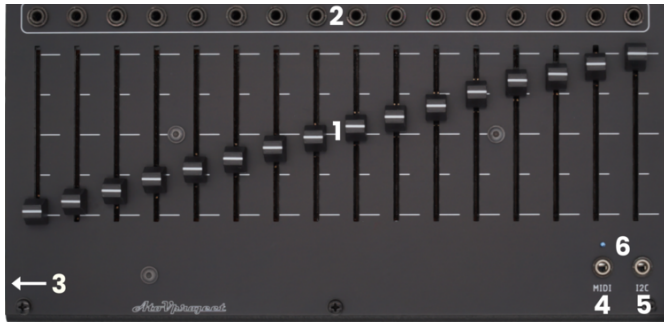


Concept

The AtoVproject 16n Rework is aimed at solving a problem specific to modular synthesis. As a patch gets increasingly complex, a forest of cables has grown over your system before you know it. The 16n allows you to take the control of a modular system into with a very ergonomic controller that integrates perfectly into a modern studio.

The AtoVproject 16n Rework can be used either as a Eurorack module or as a standalone unit using the bundled enclosure.

The AtoVproject 16n Rework is a faderbank sending CV, I2C, MIDI jack compatible with all standards, USB MIDI (compatible PC, Mac, iPad etc...). This, makes it the absolute ultimate controller for any of your hardware and software all in one!

[News](#) [Products](#) [Manuals](#)[Dealers](#) [About](#)

1 – FADERS

The 16n AtoVproject Rework has 16 faders. Each fader controls the voltage of a CV output, a MIDI CC (jack output), a USB MIDI CC and i2c controller data.

2 – CV output

3.5mm jack Eurorack compatible can output analog control voltage. The range can be configured to be either 0–5V or 0–10V. This setting is accessed using dip switches on the back of the unit (see Configuration). The voltage control generation of these output is fully analogue giving you a step free control over your modular gear. The circuitry has been heavily modified compared to the original version of the 16n to provide maximum voltage stability and minimum noise.

3 – USB

The USB connector is on the left side of the unit. It is used to transmit MIDI data, for configuration and for firmware updates. USB is also used for power when the unit is in standalone mode. When connected through USB to a computer the unit should appear as 16n. Each fader can then be used to send MIDI CC controller data. The MIDI channel and CC number can be modified using the [online editor](#). The channels and CC numbers sent by each fader can be different for USB and MIDI jack.

Note that since the version V2.1.0 of the firmware, the MIDI data sent to the 16n through USB is echoed to the hardware MIDI output jack.

[News](#) [Products](#) [Manuals](#)[Dealers](#) [About](#)

MIDI channel and CC number can be modified using the [online editor](#). The polarity of the jack can be switched using the MIDI Mode switch on the back of the unit (see [Configuration](#)). This allows you to connect a standard 3.5mm stereo cable from the 16n to any other MIDI devices using this type of connection. To access this switch, the unit must be removed from the optional standalone enclosure. (See [Optional enclosure section](#)) . The supplied 3.5mm jack to MIDI din adapter follows the standard described by the MIDI association. All configuration related to the MIDI functions are accessible in the [online editor](#).

Note that since the version V2.1.0 of the firmware, the MIDI data sent to the 16n through USB is echoed to the hardware MIDI output jack.

5 – i2c

i2c is a digital communication protocol used by other modules, such as the Orthogonal Devices ER301, Monome Teletype, Expert Sleepers Disting EX etc... The 16n can be set to Master or Slave. All configuration related to the i2c functions are accessible in the [online editor](#) under the “Device Options” tab (see [Configuration](#)). The i2c bus in this unit has pullup resistors already installed.

16n as Master (Leader)

If the device you want to send data to is set as Slave (Follower) (e.g.: ER301, Ansible, TXo...) please set the 16n as Master (Leader).

- 0x31 in hexa or 49 in decimal – standard for ER301
- 0x20 in hexa or 32 in decimal – standard for Ansible
- 0x60 in hexa or 96 in decimal – standard for TXo

If your device is not receiving data properly please change the address of the receiving device. Please refer to the user manual of the device you want to connect.

News Products Manuals

Dealers About



(follower). This is required to use the 16n with the Monome Teletype

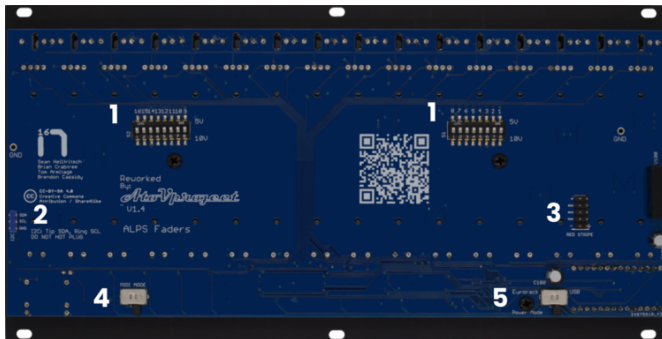
The i2c address of the 16n is 0x34 or 52

6 – Status LED

This LED can be configured in a few ways (see Software configuration) (configuration of the LED not possible on units with serial numbers between 00002 and 00006)

- The LED can be permanently on when the unit is powered
- The LED can be set to flash with the MIDI activity

Rear side



1-CV output voltage switches

These 16 switches allow you to change the voltage range of each CV output from 0-5V to 0-10V. If you wish to change the voltage range of a selected CV

output, then flick set the corresponding switch down for 0-10V or up for 0-5V. These switches remain accessible when the optional enclosure is installed, j. Just remove the dust covers using a flat screwdriver or a small coin. (see Optional enclosure).

2 – i2c connector

This connector allows you to connect the AtoVproject 16n Rework to other i2c modules. This allows to keep the connection inside the Eurorack case. Cables to connect modules using these pins are called Dupont. Please contact us if you need such cable.

News Products Manuals

Dealers About



supply. The -12V rail is on the bottom of the connector, this is where the red stripe should be. This unit is equipped with diode protection. This will , protecting the unit as well as your power supply in case the module is plugged incorrectly.

4 – MIDI Mode Switch

The polarity of the jack can be switched using the MIDI Mode switch on the back of the unit. This allows you to connect a standard 3.5mm stereo cable from the 16n to any other MIDI devices using this type of connection. If the device you want to control follows the **type A** mini-jack MIDI standard, set the **switch to the left**. If the device you want to control follows the **type B** mini-jack MIDI standard, set the **switch to the right**.

The provided jack to MIDI din DIN adapter follows the standard described by the MIDI association and is therefore type A, the switch must be set to the left.

5– Power mode Switch

This switch allows you to select the power source used for the module. Set it to Eurorack if you are planning on using the 16n as a Eurorack module and power it using a Eurorack power supply. Set it to USB if you are using the 16n in its optional aluminium enclosure and power it with a USB cable.

Warning!

If set incorrectly the unit will not work properly, maximum MIDI and CV values will not be reached.

If your unit appear not to function properly – Please check the position of this switch.

Software configuration

News Products Manuals

Dealers About

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16n please go to this address:

<https://16n-faderbank.github.io/editor/>.

You need the 16n to be connected to your computer for the editor to be active.

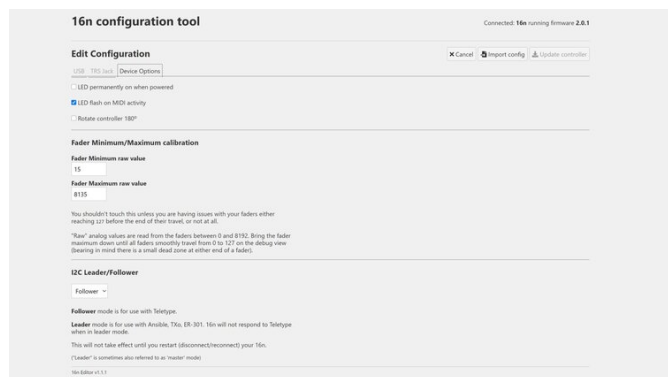
Please note that the editor will warn you if the firmware of your unit is out of date.

MIDI Monitor page

When first opening the editor, you will be greeted with a monitor page displaying the position and the USB MIDI CC channel, number and values sent by each fader. Clicking on the TRS Jack tab allows you to display the MIDI CC channels and numbers sent through the TRS MIDI Jack.

1 – Edit Config

When clicking the Edit Config button on the top right side of the window. This allows you to edit which CC channel and which CC number to assign to each faders. This configuration is independent for the USB MIDI and for the “TRS Jack” MIDI. The MIDI signal will be sent simultaneously on each connector.



2 – Device Options

This tab allows you to set numerous options in the software of the 16n.

LED options

[News](#) [Products](#) [Manuals](#)[Dealers](#) [About](#)

Fader Minimum/Maximum calibration

This calibration setting is aimed at making sure the faders are acting on their whole length and that the maximum and minimum MIDI values are reached. If you the AtoVproject 16n Rework you acquired is a factory build unit, this calibration was performed during manufacturing.

i2c Leader/Follower

Here you can choose whether the 16n is acting as Leader (Master) or Follower (Slave) in the i2c connection. Please refer to the i2c section of the "interface" part of this Owners Manual.

Software Update

The most reliable way to install 16n Firmware is to load a compiled binary with Teensy Loader.

<https://www.pjrc.com/teensy/loader.html>

Pick the version for your OS. You just need the "Teensy Loader application". Run Teensy Loader.

Download a firmware hex file from the Github releases page from the original 16n project. Please download the firmware for 16n using Teensy LC as the AtoVproject 16n Rework is using this micro-controller.

Open the firmware hex file in Teensy Loader, either by dragging it on to the loader, or with File -> Open Hex File. Click the "Auto" button on the toolbar, so that the button is lit up green.

[News](#) [Products](#) [Manuals](#)[Dealers](#) [About](#)

to push the button on the teensy LC. First you need to remove the AtoVproject 16n Rework out of its optional enclosure. This is the button at the far right of the Teensy board. This is quite easy to do with a flat object – e.g. a screwdriver blade, ruler. When you push the button, the firmware will flash and your 16n will reboot.

[← AtoVproject 16n Rework – DIY Kit](#)

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