

ALYSEUM - Q-VCA - User manual 2.4 - (Firmware 1.1)

1 Introduction



The Q-VCA module is a versatile, dynamic and high-quality Quad VCA. However, it offers much more than similar modules on the market.

The classic features are:

- Insert a jack into the CV IN input and the corresponding VCA is 100% Analog.
- Each VCA can be controlled linearly or exponentially.
- Inputs chaining for multiple VCA
- No connected output is routed to the MIX output.

In addition, 4 unique VCA control modes are:

1. Manually via the potentiometer.
2. By a programmable MIDI controller.
3. Use with the MATRIX II – Requires crossing between the potentiometer & VCA values and then activates the VCA update.
4. Use with the MATRIX II – Turn the potentiometer and the VCA are updated directly

In resume for point 3 & 4, one Q-VCA module, add mix 4 sources per MATRIX II input OR one Q-VCA module, add mix 4 destinations per MATRIX II output .

2 Hardware

2.1 Package Content

- One Q-VCA module with Eurorack compliant front panel.
- One plastic bag containing:
 - Four M3 screws + nylon washers.
 - One 10/16 pins power ribbon cable.
 - One short MIDI cable (stereo 3.5mm jack cable)
- Warranty & user manual access card.

2.2 Installation

Choose the installation location of your unit carefully:

- Avoid placing it in direct sunlight or close to a source of heat.
- Avoid locations subject to vibrations, excessive dust, heat, cold, moisture or rain.
- Make sure to discharge any built-up static electricity from yourself and your devices before touching or connecting one device to another.

Procedure:

1. Only connect the module to a Eurorack bus board powered by a specified A-100 power supply.
2. Switch OFF and disconnect the Eurorack case from the main power supply by unplugging it from the wall socket!
3. Make absolutely certain that the ribbon cable has the right orientation by connecting the indicated red stripe on the negative 12 Volt side of your Eurorack case bus board.
4. Carefully place the module on an appropriately spaced spot on your Eurorack and fasten it firmly in place with the supplied screws and nylon washers. Replace any covers or blanking plates that you removed to install the module and screw them in firmly.
5. Reconnect the Eurorack case power cable back into the main power supply and switch the case power on.
6. If it doesn't seem to be working as expected (Initialisation LED sequence), immediately disconnect the system from the main power supply again. In this case, double-check the connections, making completely sure that the ribbon cable is the right way round where it connects to the module and the bus.

Use with the MATRIX II:

- Q-VCA modules must be powered by the same power supply, or generally powered ON/OFF simultaneously with the MATRIX II.
- The MIDI Out must be connected to the MIDI Input of the Q-VCA module. You can easily chain several modules, please connect the MIDI THRU to the MIDI IN of the next module, and more as necessary.

NB: We use a very high speed optocoupler with only 4µS delay. The goal is to be able to cascade a large number of modules without adding a delay on the MIDI. the use of a THRU BOX to avoid a delay is totally useless.

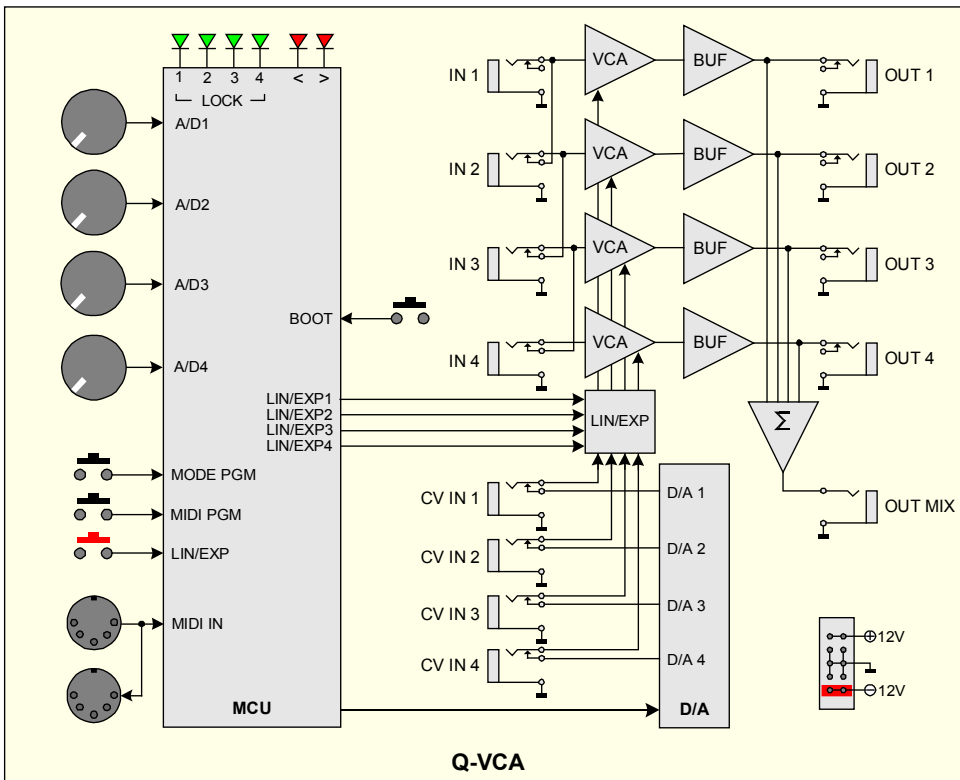
2.3 Features

- Full analog path
- Dual-VCA type **AS3360**
- Simple firmware upgrades by the front panel MIDI port.
- Polarized power header and protection against reverse polarity.
- Delivery with a short MIDI1.0 to Jack MIDI adapter.
- Delivery with a short Jack to Jack MIDI cable.
- Eurorack 10 HP wide.
- Fast (1MHz) and low latency (4μS) optocoupler to connect by MIDI several modules in daisy chain.

2.4 Specifications

- Front panel width: 50 mm (10HP)
- Module maximum depth: 26 mm
- CV and Digital input protected level: +/- +12 Volts
- Power requirements (measured with Joranalogue's TEST3 module):
 - o +12 Volts regulated at 40 mA
 - o -12 Volts regulated at 20 mA.

2.5 Bloc diagram.



3 Use

3.1 Initialization Sequence

1. Turn the Eurorack case power ON.
2. All LEDs Turn ON one by one.
3. Last Mode saved in the EEPROM is loaded.

THE Q-VCA is ready!

3.2 Linear or Exponential VCA Selection

Available with all modes.

- Press the red button LIN/EXP more as 1 second, the red LED > blink.
- Use the potentiometer corresponding to the VCA
 - Turn 0 to 50% to select Linear and the LED LOCK turn ON.
 - Turn 50 to 100% to select Exponential and the LED LOCK turn OFF.
- Afterwards:
 - To confirm, keep press 2 seconds
 - OR - Time out of 15 seconds.
- Red LED > turn OFF.

3.3 Mode Selection

- Press the red button MODE more as 1 second, the red LED < blink.
- Press several times to obtain wished mode, the Mode selected turn ON the corresponding green LED LOCK.

MODE #	Configuration	LOCK LED
1	Standalone (default)	1
2	External MIDI device	2
3	Use with the MS-MATRIX or MATRIX II – Crossing VCA & potentiometer values	3
4	Use with the MS-MATRIX or MATRIX II – Turn potentiometer for direct update	4
(5)	Insert a Jack plug into CV IN to control by CV the corresponding VCA	No matter

- Afterwards:
 - Press more as 2 seconds the button MODE to confirm your choice, the selected green LEDs flash 2 times to confirm the mode is programmed.
 - OR - Press less a 1 second the button MODE to quit.
 - OR - Time out of 15 seconds.
- Red LED < turn OFF.
- The selected green LEDs flash 3 times to confirm the mode is programmed.

3.4 Mode 1 - Use in standalone

Just turn a potentiometer and the corresponding VCA are updated.

At each time you turn the potentiometer, the corresponding green LED LOCK blink one time.

3.5 Mode 2 - Controlled by an external MIDI devices

Programming MIDI command

Only programmable if the Q-VCA module is configured in mode 2.

- Connect an external MIDI controller device on the MIDI input.
- Press the button MIDI more as 1 second, the 2 red LEDs < > blink.
- Afterwards:
 - o The first valid MIDI command assign the VCA 1 (MIDI CH + CC), the 2 red LEDs < > flash 3 times to confirm MIDI channel and CC are programmed.
 - o OR - Press 2 seconds the button MIDI to quit.
 - o OR - Time out of 15 seconds.
- The 2 red LEDs turn off.

NB 1: The VCAs 2, 3 and 4 are assigned to the 3 CC that follow the VCA 1.

NB 2: If you change the mode, Q-VCA module keep the MIDI CH + CC in EEPROM.

Use MIDI command

Similar as the Mode 1, but here, the control is operate by any external MIDI device with CC.

At each time a VCA receive a valid MIDI CH+CC, blink twice time the corresponding LOCK LED.

NB: The 4 potentiometers are not operant in this mode.

3.6 Mode 3 & 4 - Use with MS-MATRIX or MATRIX II

Mode 3 - Crossing

To avoid any significant jump of the level signal between a preset and a new value, you need to find with the potentiometer the same value of the VCA before being able to activating any change.

Two cases:

- 1) You are lucky: the green LED LOCK of the potentiometer that controls the VCA you want to change is ON, just rotate the potentiometer to set the new value of the VCA.
- 2) More generally: the green LED LOCK of the potentiometer that controls the VCA you want to change is OFF, slightly rotate the potentiometer towards any direction until the < or > red LED is turned ON.
 - If the > red LED is ON, rotate the potentiometer clockwise until the LOCK LED is turned ON.
 - If the < red LED is ON, rotate the potentiometer counter-clockwise until the LOCK LED is turned ON.
 - Once the green LED LOCK is On, the VCA is under the control of the potentiometer.

Mode 4 - Turn

Just turn a potentiometer and the corresponding VCA are updated, in combination with the MS-MATRIX or MATRIX II and her Bank & Preset management.

At each time you turn the potentiometer, the corresponding green LED LOCK blink one time.

BANK & PRESET from the MATRIX II

The current Bank & Preset number are SAVE/LOAD and displayed via the front panel of the MATRIX II, but the values are saved inside the Q-VCA module.

Please, read the user Manual of the MATRIX II to load and save Bank & Preset.

- A LOAD operation, recall the values of the 4 VCAs to the Bank & Preset number displayed by the MATRIX II.
- A SAVE operation, save the values of the 4 VCAs to the Bank & Preset number displayed by the MATRIX II.

During SAVE & LOAD operations, LOCK LEDs blink one time.

MIDI SYS-EX.

These commands are generated by the MATRIX II, of course, if you will control the Q-VCA by any software, welcome!

Commands SYS EX	Header + ID Device + Command # + Data + End
Load a Bank & Preset	F0 00 20 09 00 1F 00 XX YY F7 (XX=00 until 06 - YY= 00 until 1F)
Save a Bank & Preset	F0 00 20 09 00 1F 01 XX YY F7 (XX=00 until 06 - YY= 00 until 1F)

3.7 Firmware upgrade

The Q-VCA module is pre-programmed with the ability to receive firmware upgrades (for bugfixes, extra features, customizations etc...) via MIDI protocol (SysEx commands).

Please, fill in the page Firmware Upgrade <http://alyseum.com/firmwareupdate> to receive all new firmwares for your product.

In order to flash new firmware, please follow the instructions below:

1. Turn the Eurorack case power off.
2. Close all MIDI software on your computer.
3. Connect the computer and the Q-VCA with a MIDI cable.
4. Download Sys Ex utility at <http://www.elektron.se/support-and-downloads> (WIN and OSX).
5. Press and hold the BOOT button, while turning the Eurorack case power back on. The BOOT button is located behind the small hole in Q-VCA front panel – In the middle of the 4 potentiometers, and can be pressed using a thin, long object like for example, a toothpick.
6. All the LEDs flash 3 times, then release the BOOT button.
7. Open the Elektron C6 Sys Ex utility software, click **Load**, find the new firmware file and click Open.
8. Click **Configure**, select a MIDI Out port, set 400mS for Delay in the textbox, select x1 for Turbo limit field and click OK.
10. Click **Send**. During the firmware update, the 6 LEDs light up one after the other.
11. Wait until sending is complete. All the LEDs flash 3 times, and the module reboots to normal operating mode with new firmware.

NB: Please note that for the software to be able to send the MIDI commands successfully, no other software or Active Sensing message should be using the MIDI device simultaneously.

All parameters (lowest note, last used preset, last used midi channel or cv input, preset save mode) and all Banks + Presets are erased during new firmware flashing.

Thanks to Émilie Gillet from Mutable Instrument for his open Bootloader code: <https://github.com/pichenettes/avr-midi-bootloader>.

4 Miscellaneous

4.1 Disclaimer

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4.2 Warranty and repair

ALYSEUM warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for a period of two years following the date of purchase.

This warranty does not apply to any products which have been repaired or altered by other than **ALYSEUM**, or which have been subject to ESD, moisture, abuse, accident, improper installation or use.

ALYSEUM assumes no liability as a consequence of such events under the terms of this Warranty.

Please, consult your dealer for more details or visit our support page on alyseum.com/support before any action.

4.3 Special Thanks

Vyronas Dokimakis (the programmer), Philip Thoma, Cyril Colomb, and users for your comments.