

Q-VCA - User manual

1 Introduction

The **ALYSEUM** Q-VCA module is a Quad versatile and dynamic VCA.

Each VCA can be controlled linearly or exponentially

Five control Modes are available:

1. Manually via the potentiometer.
2. By a programmable MIDI controller (CH+CC).
3. Crossing VCA & potentiometer values, in combination with the MS-MATRIX or MATRIX II and her Bank & Preset management.
4. Direct via the potentiometer, in combination with the MS-MATRIX or MATRIX II and her Bank & Preset management.
5. By a dedicated CV Input

In addition, Input chaining for multiple VCA and no connected output is routed to a MIX output.

Several Q-VCA and SELECTOR modules extend the number of I/O of your MS-MATRIX or MATRIX II, to create a powerful behemoth of immense functionality for your Eurorack system.

2 Table of Contents

1	Introduction	1
2	Table of Contents.....	1
3	Hardware	3
3.1	Package Content.	3
3.2	Installation.	3
3.2.1	Choose the installation location of your unit carefully:	3
3.2.2	Procedure:.....	3
3.2.3	Use with the MS-MATRIX or MATRIX II:	3
3.3	Features. 4	
3.4	Specifications.	4
3.5	Bloc diagram.	4
3.6	Wiring example to MS-MATRIX or MATRIX II	5

3.7	Wiring example from MS-MATRIX or MATRIX II.....	5
1.1	How to wiring a TRS 3.5mm Jack to MIDI DIN 5?	5
3.8	Front Panel.....	6
4	Use.	7
4.1	Initialization Sequence.....	7
4.2	Linear or Exponential VCA Selection.....	7
4.3	Mode Selection.	7
4.4	Mode 1 - Use in standalone.	7
4.5	Mode 2 - Controlled by an external MIDI devices.	8
4.5.1	Programming MIDI command.	8
4.5.2	Use MIDI command	8
4.6	Mode 3 - Controlled by MS-MATRIX or MATRIX II.....	8
4.6.1	PRESET from the MS-MATRIX.	8
4.6.2	BANK & PRESET from the MATRIX II.....	9
4.6.3	MIDI SYS-EX.....	9
4.7	Firmware upgrade.....	9
5	Miscellaneous	10
5.1	Disclaimer.....	10
5.2	Static Electricity, ESD	10
5.3	Warranty and repair	10

3 Hardware

3.1 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.

3.2 Installation.



3.2.1 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.

3.2.2 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.

3.2.3 Use with the MS-MATRIX or MATRIX II:

- Q-VCA modules must be powered by the same power supply, or generally powered ON/OFF simultaneously with the MS-MATRIX or MATRIX II.
- For user of the MS-MATRIX, you need to install a free of cost MIDI Out adapter (please, contact **ALYSEUM**).
- The MIDI Out of MS-MATRIX or MATRIX II module 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.

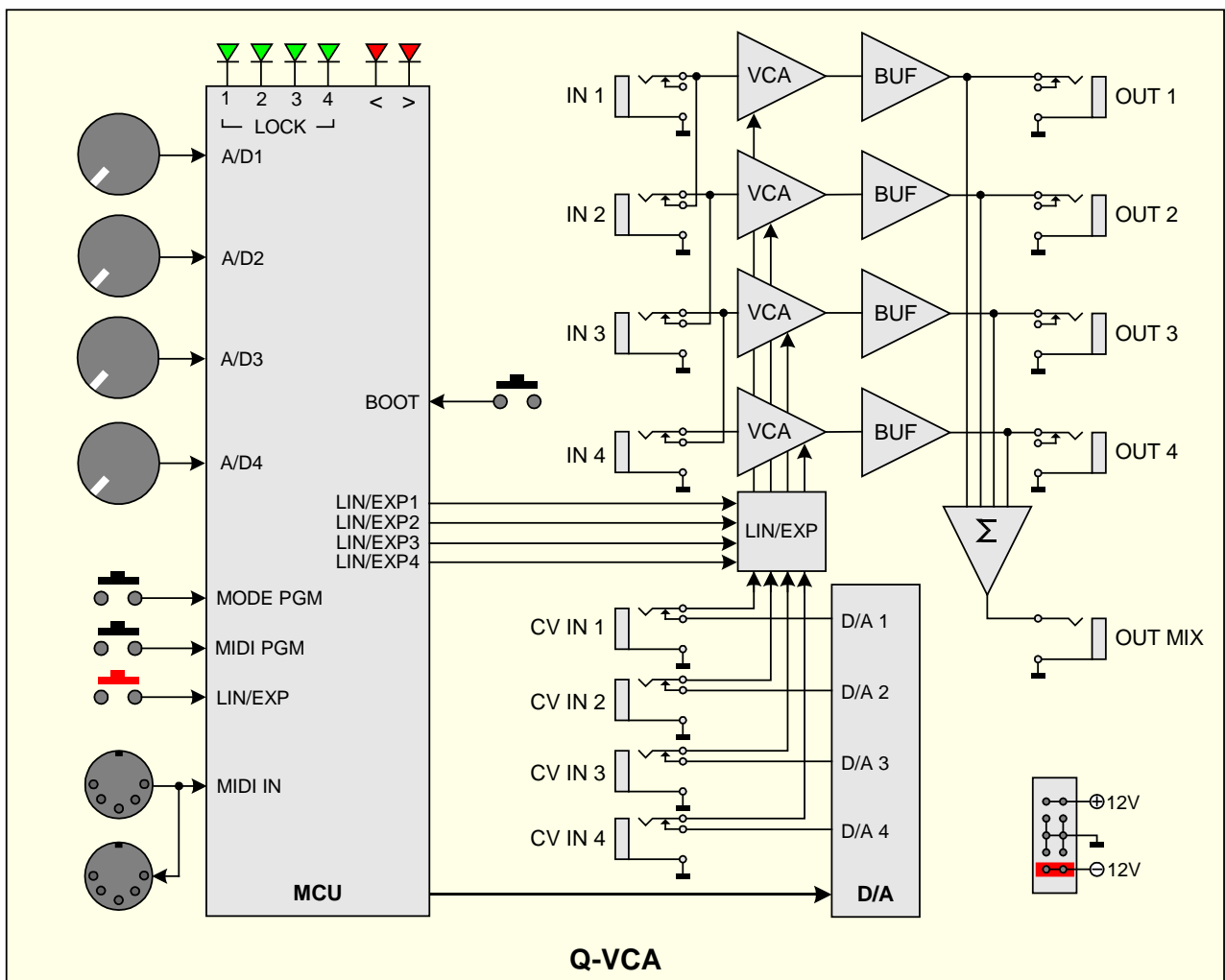
3.3 Features.

- Quad VCA type **AS3360** :
 - Wide signal range: from -10 Volts to +10 Volts
 - Isolation between any channels: -92dB at 1 KHz
 - Low distortion: less 1%
 - Low noise: typ. -110dB
 - High bandwidth DC up to 20KHz
- Power supply is fully protected against reverse ribbon cable insertion.
- Fast (1MHz) and low latency (4μS) optocoupler to connect by MIDI several modules in daisy chain.

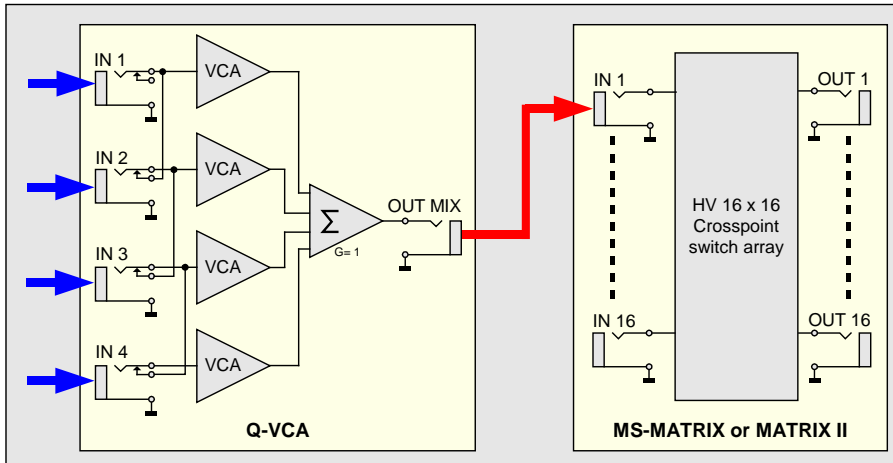
3.4 Specifications.

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

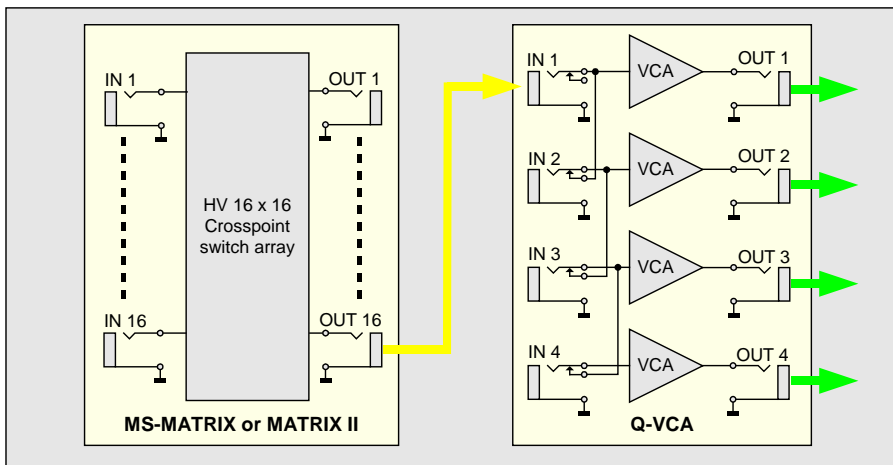
3.5 Bloc diagram.



3.6 Wiring example to MS-MATRIX or MATRIX II



3.7 Wiring example from MS-MATRIX or MATRIX II

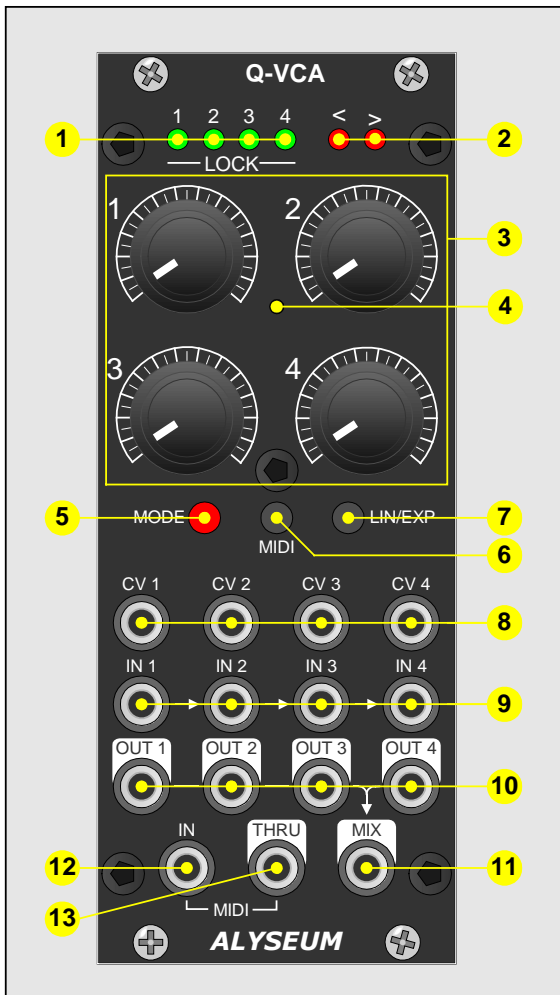


1.1 How to wiring a TRS 3.5mm Jack to MIDI DIN 5?

Q-VCA only uses the cabling "Type B", used by Novation, Arturia, 1010, and more.

TRS 3.5mm JACK	DIN 5
Tip contact	Pin 4 (+)
Ring contact	Pin 5 (-)
Sleeve contact	Pin 2 (GND)

3.8 Front Panel.



1. **4 Green LED LOCK:** Indicate that the angle of the potentiometer corresponding with the value of the VCA
2. **2 Red LED Comparator:** Indicate if you need to turn the active potentiometer left or right to catch the value of the VCA.
3. **4 rotary potentiometers**
4. **1 BOOT button**
5. **1 red push button MODE:** to select the differents modes.
6. **1 grey push button MIDI:** to program the MIDI channel and CC.
7. **1 grey push button LIN/EXP:** to select Linear or Expandatial control for each VCA.
8. **4 Inputs CV jack plug:** To control the VCA.
9. **4 Inputs jack plug:** connected signals to the input of VCAs.
10. **4 Outputs jack plug:** Connected signals from the output of VCAs.
11. **1 Output jack plug:** Connected signals from the output MIX (Gain= 1).
12. **1 Input MIDI jack plug:** MIDI In.
13. **1 Output MIDI jack Plug:** MIDI Thru.

4 Use.

4.1 Initialization Sequence.

1. Turn the Eurorack case power ON.
2. All LEDs light up one after the other.
3. Mode saved in the EEPROM is loaded.
4. THE Q-VCA is ready!

4.2 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.

4.3 Mode Selection.

- Press the 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 – Direct with the potentiometer	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 push 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 push 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.

4.4 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.

4.5 Mode 2 - Controlled by an external MIDI devices.

4.5.1 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:
 - 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.
 - OR - Press 2 seconds the button MIDI to quit.
 - 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.

4.5.2 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.

4.6 Mode 3 & 4 - Use with MS-MATRIX or MATRIX II.

4.6.1 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.

4.6.2 Mode 4 - Direct

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.

4.6.3 PRESET from the MS-MATRIX.

First: Make sure that you have installed the latest firmware version of your MS-MATRIX and installed the freecost MIDI OUT module at the back.

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

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

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

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

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

4.6.4 **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.

4.6.5 **MIDI SYS-EX.**

These commands are generate by the MS-MATRIX or MATRIX II.

Of course, if you will control the Q-VCA module by any software, welcome!

Commands	SYS EX (HEX)
Load a Bank & Preset	F0 00 20 09 00 1F 00 XX YY F7
Save a Bank & Preset	F0 00 20 09 00 1F 01 XX YY F7
Factory Reset	F0 00 20 09 00 01 7F 7F 7F F7

F0 00 20 09 00 1F= Header

XX= 00 for MS-MATRIX - OR - 00 until 06 for Banks (7 values) for MATRIX II

YY= 00 until 1F for Preset (32 values)

F7= End

4.7 **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.



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>.

5 Miscellaneous

5.1 Disclaimer

All rights reserved. Reproduction in whole or part of this document is prohibited without the express permission of **ALYSEUM**.

© 2011-2019 **ALYSEUM**.

The information and specifications described in this manual are subject to change without prior notice.

Throughout this manual, trademarked names might be used. We state herein that we are using the name to the benefit of the trademark owner, with no intention of infringement.

5.2 Static Electricity, ESD



Electrostatic discharge (ESD) can cause malfunction and/or damage to electronic devices if discharged into the module.

Despite **ALYSEUM** products having built-in protections against ESD, voltages might build up at levels that could harm your equipment.

Some tips and precautions for ESD sensitive environment:

- Make sure to discharge any built-up static electricity from yourself and your devices before touching or connecting one device to another.
- Ground yourself by touching an earth grounded metal surface before handling your module and other equipments.
- For fixed installations, place the module in a grounded metallic rack.
- Ensure air relative humidity is minimum 60%.
- Install ESD specific prevention items, such as grounding mats.
- Reduce movement speed when handling or (dis)connecting devices.
- Avoid carpet or other synthetic flooring.



5.3 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.