FLAME

µQMCV MIDI to CV interface
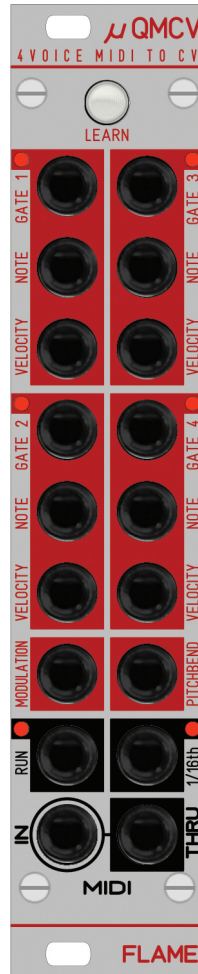
MANUAL

Version 1.00

Contents

1. Short description

The "µQMCV" module is a compact up to 4 voice MIDI-to-CV interface with additional CV outputs for modulation and pitch bend, as well as two MIDI clock outputs for RUN and 16th clock. The range of notes is 8 octaves. The MIDI interface is multi-mode capable, which means that the individual voices can be used separately on different MIDI channels in defined modes in groups. For example, voices 1-3 can be used in three voices on one midi channel and the remaining fourth voice can be used monophonically on another midi channel. The module uses the "Round Robin" algorythm for polyphonic voice assignment.

The module is programmable via LEARN function with a MIDI keyboard or via SYSEX data (via computer). Some SYSEX files with default settings already exist.

The module has two MIDI sockets (mini jacks in TRS-B standard) INPUT and THRU. The data received at MIDI-IN is forwarded via MIDI-THRU. Additional MIDI modules can then be connected there.

2. Hardware / connections

2.1 Connection to the euro rack modular system (Doepfer bus)

The module is delivered with a connected ribbon cable for the Doepfer bus. The red lead marks -12 volt. Connecting the module please note the right polarity!

If the module is poled accidentally wrong safety diodes avoid the immediate destruction of the module but further damages cannot be excepted.

So please pay attention: Check the connection various times before switching on!

The current consumption of the module is on average +70mA.

CAUTION!
Do not accidentally connect the MIDI THRU output to high CV voltages! This can possibly damage the hardware!
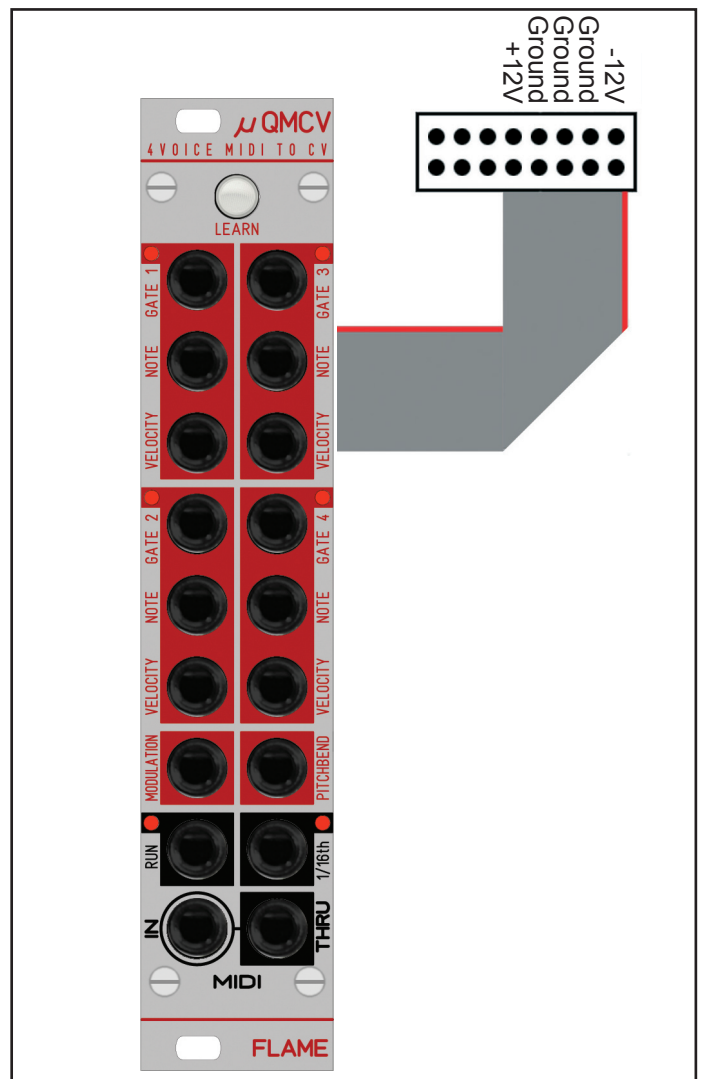
2.2 Module overview

❶ LEARN button

❷ Gate Note/Velocity CV outputs voice 1

❸ Gate Note/Velocity CV outputs voice 2

❹ Gate Note/Velocity CV outputs voice 3

❺ Gate Note/Velocity CV outputs voice 4

❻ MIDI Clock RUN output

❼ 1/16th MIDI Clock output

❽ MIDI Input (MIDI TRS-B Standard)

❾ MIDI THRU Output (MIDI TRS-B Standard)

❿ CV outputs Modulation and Pitchbend
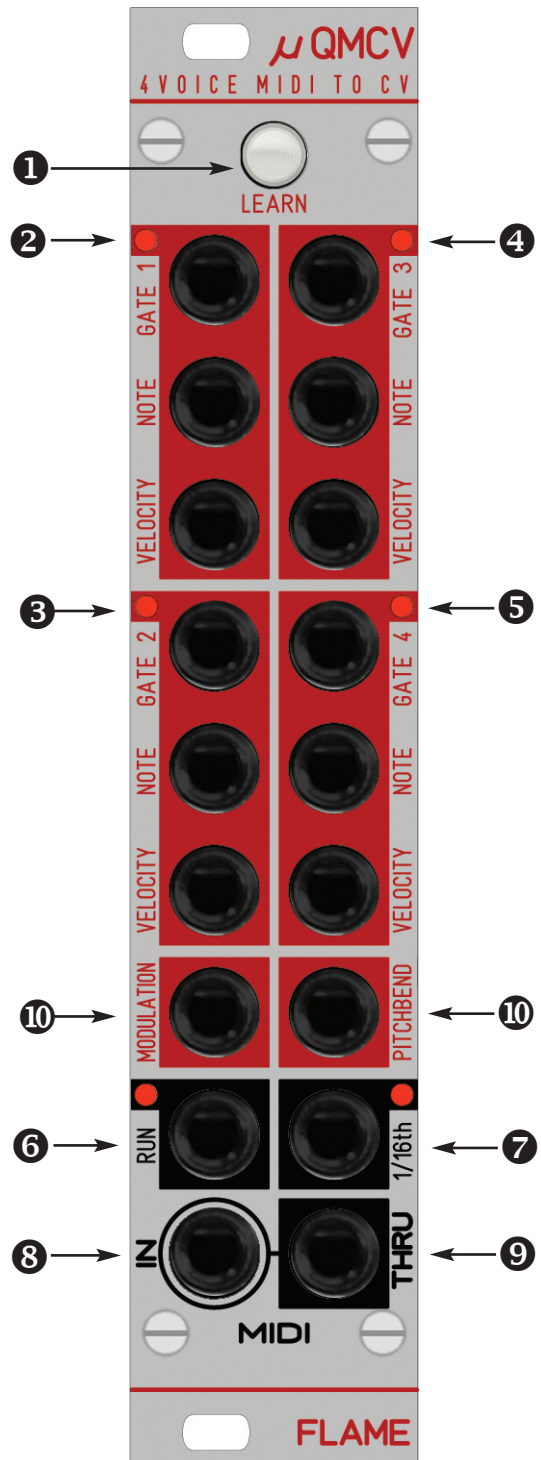
2.3 MIDI connections

The module has two MIDI sockets (TRS-B standard mini jacks) INPUT and THRU. Connect the MIDI input to the MIDI output of your keyboard / controller or computer. The data received at MIDI-IN is forwarded via MIDI-THRU. A corresponding 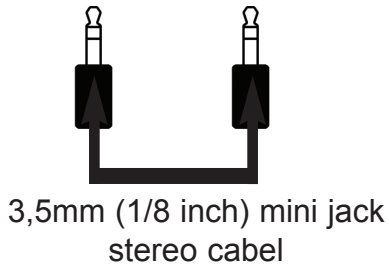commercially available adapter (MIDI-DIN to Mini TRS-B) or a 3.5mm (1/8 inch) stereo jack cable is used for the MIDI connection.

3,5mm (1/8 inch) mini jack stereo cabel

Adaptor schemata
MIDI DIN jack to
3,5mm (1/8 inch) mini jack
MIDI TRS-B standard

3,5mm stereo jack

GND   RING   TIP

MIDI DIN JACK

(bottom view)
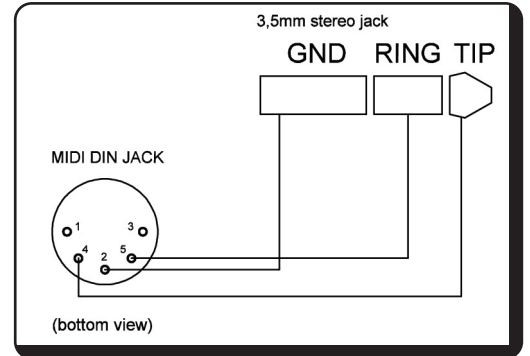
Examples of possible connections:

COMPUTER

KEYBOARD/CONTROLLER

μ QMCV
4 VOICE MIDI TO CV
LEARN

μ MCLK
MIDI CLOCK DIVIDER
LEARN

μ 16MCC
MIDI CC TO CV
LEARN

Forwarding the MIDI data via THRU to other MIDI modules
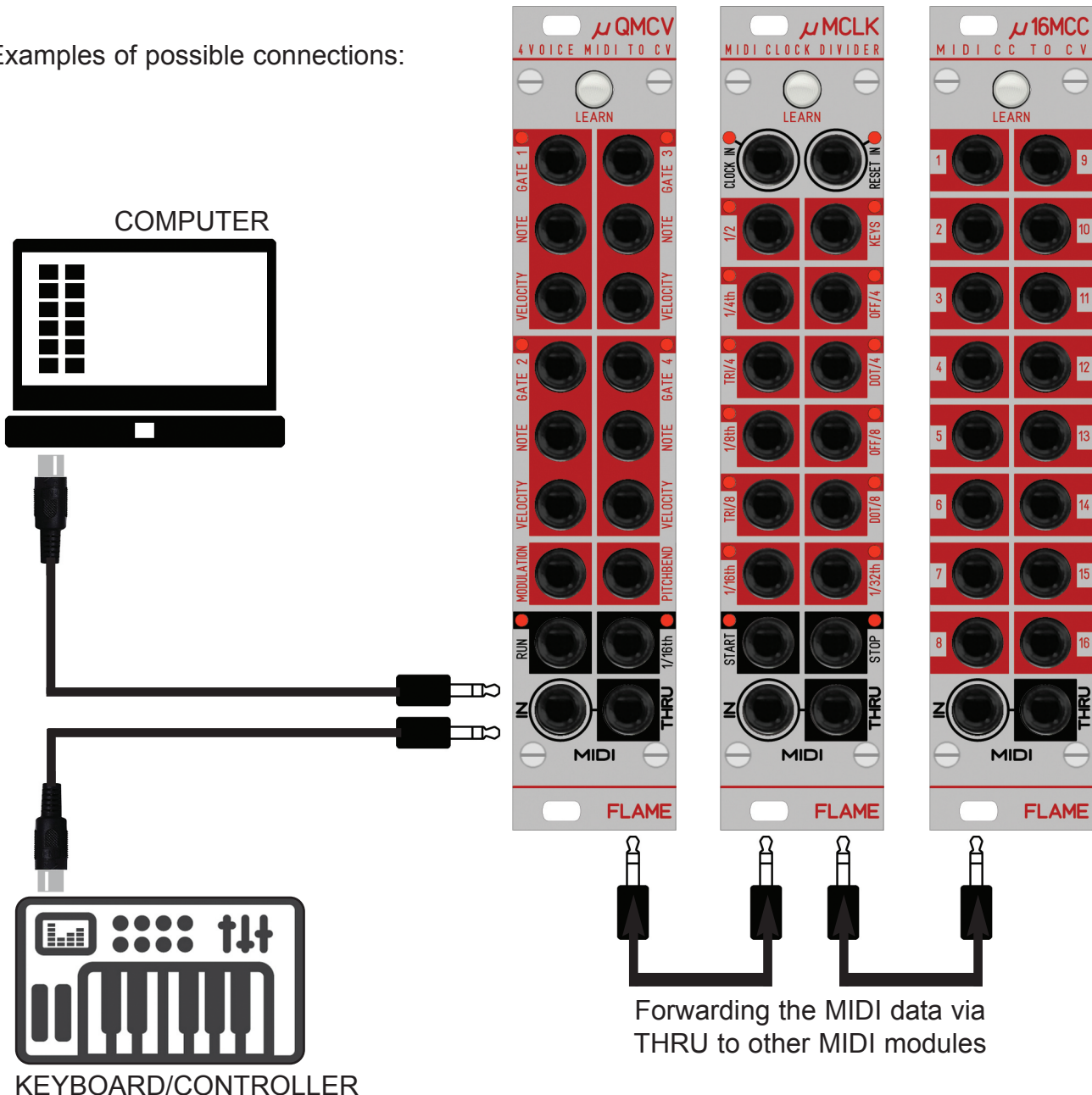
3. Handling

3.1 Quad MIDI-to-CV Interface

The module is preset as a four-way MIDI-to-CV interface on midi channel 1. The two controllers MODULATION and PITCHBEND also work on this midi channel. Send notes from a connected MIDI keyboard over an 8 octave range of note numbers 12-108. The module can output the GATE and CV voltages for up to 4 notes at the same time. The "Round Robin" algorythm is used. If more than 4 notes are pressed at the same time, the last played note replaces the first played note.
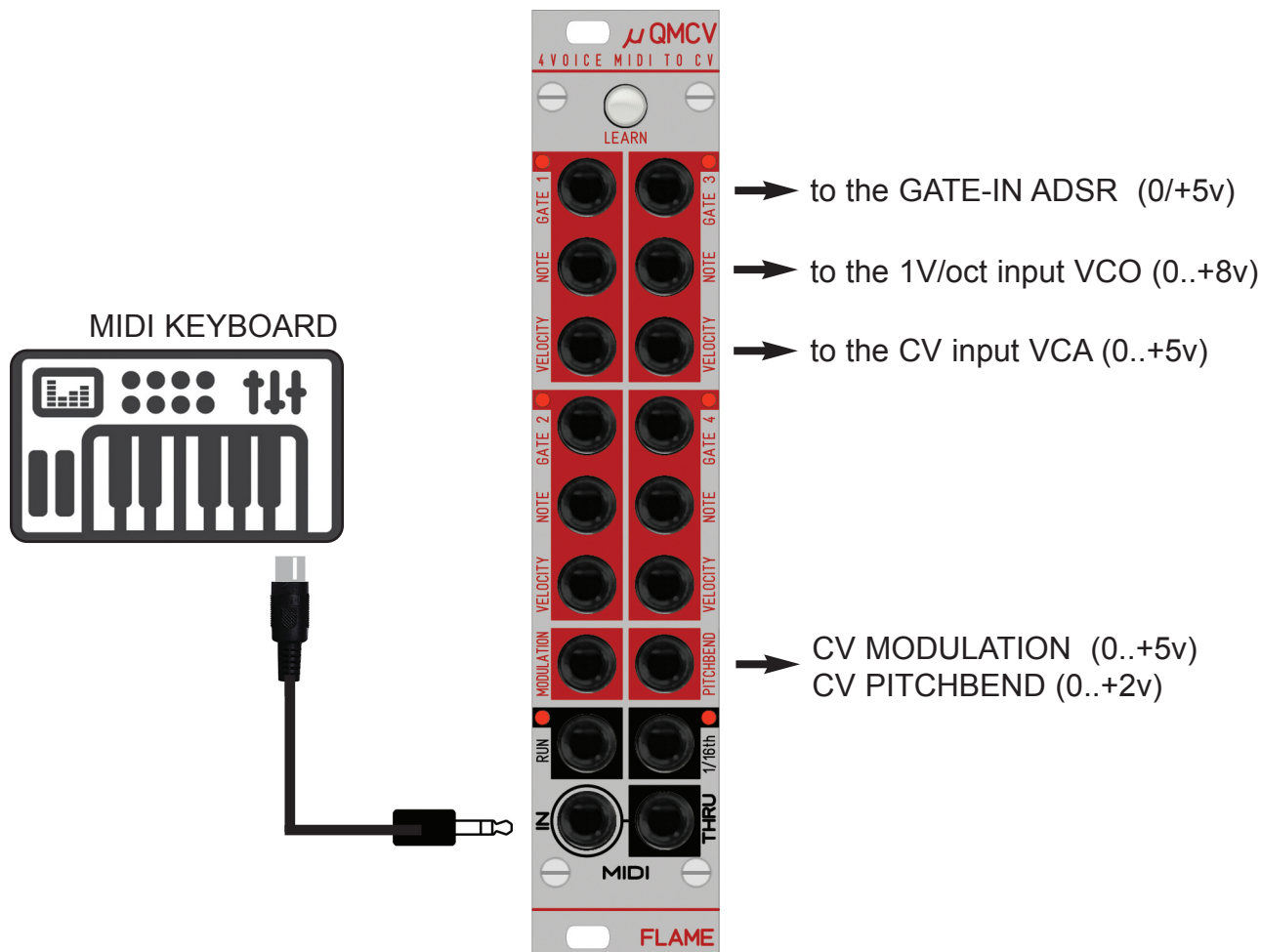
Classic standard connection in the modular system:
Connect the GATE output of a voice to the GATE input of an ADSR generator, the NOTE output to the 1V / octave input of a VCO and the VELOCITY output to the CV input of a VCA. You need this four times for all voices.
The CV output MODULATION can be used for filter modulation and the PITCHBEND output for pitch changes of the VCOs.

How to change the MIDI channel:
Press the LEARN button once (until it flashes). Then send 4 notes in succession on the same desired midi channel (the GATE LEDs light up in succession when they are received). After receiving the fourth note, the LEARN function ends automatically (LEARN key stops flashing). The new midi channel is saved permanently. This now also applies to the two CV outputs MODULATION and PITCHBEND.

MIDI KEYBOARD

to the GATE-IN ADSR (0/+5v)

to the 1V/oct input VCO (0..+8v)

to the CV input VCA (0..+5v)

CV MODULATION (0..+5v)
CV PITCHBEND (0..+2v)

μ QMCV
4 VOICE MIDI TO CV
LEARN
GATE 1 GATE 3
NOTE NOTE
VELOCITY VELOCITY
GATE 2 GATE 4
NOTE NOTE
VELOCITY VELOCITY
MODULATION PITCHBEND
RUN 1/16th
IN THRU
MIDI
FLAME

3.2 MULTIMODE

The four voices of the module (each with GATE / NOTE / VELOCITY outputs) can also be used separately in other defined groups. To do this, the voices must be assigned to other midi channels. There are 5 modes that can be set with the LEARN function (or via SYSEX):

A   quad polyphon (all same midi channel) -> see also chapter 3.1
B   Voices 1-3 polyphonic and voice 4 monophonic (2 different midi channels)
C   Voices 1 + 2 duophones and voices 3 + 4 duophones (2 different midi channels)
D   Voices 1 + 2 duophones, voices 3 and 4 monophonic (3 different midi channels)
E   Voices 1-4 monophonic (all different midi channels)

Note: The voices of the module can only be used in these 5 combinations. So it is not possible eg. use voice 1 monophone and voice 2-4 in three voices!

How to change the MODE with LEARN:
Press the LEARN button once (until it flashes). Then send 4 notes in succession on the desired midi channels in the correct order, as mentioned above in point **A-E** (the GATE LEDs light up in succession when they are received). The corresponding mode is automatically recognized by the module. After receiving the fourth note, the LEARN function ends automatically (LEARN key stops flashing). The new midi channels (and thus the Mode) are saved permanently.

Caution: If the midi channels of the sent notes were sent in the wrong order, the LEARN mode is aborted with the LED flashing twice. The old settings are retained!

Note: To simplify the operation of the LEARN function, the midi channel of the first voice is automatically assigned to the two CV outputs MODULATION and PITCHBEND. However, it is possible to set the midi channel of these two CV outputs individually via SYSEX.

Example 1:
With LEARN, send a note twice on midi channel 1, then a third note on midi channel 2 and a fourth note on midi channel 16. The module recognizes Mode D with the following settings:

        - Voices 1 + 2 duphone on midi channel 1
        - Voice 3 monophonic on midi channel 2
        - Voice 4 monophonic on midi channel 16
        - CV outputs modulation and pitch bend on midi channel 1

Example 2:
With LEARN, send a note on midi channel 3 three times and then the fourth note on midi channel 10. The module uses this to recognize mode B with the following settings:

        - Voices 1-3 three-part polyphonic on midi channel 3
        - Voice 4 monophonic on midi channel 10
        - CV outputs modulation and pitch bend on midi channel 3

3.3 MODULATION / PITCHBEND CV outputs

The module has two additional CV outputs:

The CV output MODULATION reacts to MODWHEEL (Control Change No. 1) and supplies a voltage of 0 .. + 5V

The CV output PITCHBEND reacts to the pitch bend wheel and supplies a voltage of 0 .. + 2v. After switching on, the voltage is set to + 1v (middle position of the pitch bend wheel). If the pitch bend wheel is turned down, the voltage drops to zero volts, if it is turned up, the voltage rises to a maximum of + 2v. The module only evaluates the MSB data byte (since most pitch benders do not use the high resolution).

Midi channel setting:
Normally, the two CV outputs are automatically assigned to the midi channel of the first voice. However, you can also change the midi channel for both individually using the SYSEX file.
-> see chapter SYSEX

CONTROL CHANGE number setting:
The CV output MODULATION is set to control change number 1. This number can also be changed using SYSEX.
-> see chapter SYSEX

3.4 RUN and 1/16th outputs

The module has two additional clock / gate outputs:

The GATE output **RUN** is switched on when a MIDI START or CONTINUE command is received and switched off when a MIDI STOP is received.

The clock output **1/16th** delivers 16th clock impulses which are generated from the received MIDI clock. The impulses have a duty cycle of 50% (32nd note length). The clock is only output after receiving MIDI START or CONTINUE.

Both outputs deliver approximately + 5v in the ON state.

3.5 Settings via SYSEX files

As an alternative to the LEARN function, the module can also be programmed via SYSEX. Some SYSEX files are available for this. These can be loaded with a MIDI SYSEX dump program (e.g. MIDI-OX or Elektron C6) from a computer via MIDI. After receiving the SYSEX file, the data is saved permanently.

NOTE:

When the SYSEX data is received, the LEARN LED lights up permanently and goes out when reception is successful. If the SYSEX reception was faulty, the LED flashes several times in quick succession, it is then not saved and the old data are retained. The reception can also be canceled with the LEARN key.

DETAILS:

There are three types of files:

    Type 1: change all data
    Type 2: set midi channel and control change number from the MODULATION output
    Type 3: set midi channel from the PITCHBEND output

You can download some ready-made SYSEX files from the FLAME website.

You can also create your own SYSEX files (for example with the freeware program MIDI-OX).

An overview and documentation of the implemented SYSEX data formats can be found in the next chapter.

3.6 SYSEX Data format

The assignment of the MIDI data for the voices (and thus the multimodes 1-5) and for the two controller outputs (modulation and pitch bend) can be done with the help of SYSEX data. The module understands different types of SYSEX files:

Typ 1: SYX file for all data

11110000	**F0**	Exclusive Status
01111101	7D	Header Flame module
00001011	0C	Flame module "µQMCV"
00000001	01	version 1
00000110	06	data type 1 (dump all data)
0000xxxx	nch1	4 data bytes MIDI channels for voices 1-4
|	|	(range: 00=channel 1 .. 0F=channel 16)
0000xxxx	nch4	
0xxxxxxx	ccnr	1 data byte control change number of Modulation output
		(range: 00=CCnr 0 .. 7F=CCnr 127)
0000xxxx	ccch	1 data byte MIDI channel of Modulation output
0000xxxx	pbch	1 data byte MIDI channel of Pitchbend output
		(range: 00=channel 1 .. 0F=channel 16)
11110111	**F7**	End of Exclusive

(total 13 bytes)

Typ 2: SYX file for setting the control change number and the
midi channel from CV output modulation

11110000	**F0**	Exclusive Status
01111101	7D	Header
00001011	0C	Flame module "µQMCV"
00000001	01	version 1
00000111	07	data type 2 (dump data Modulation output)
0xxxxxxx	ccnr	1 data byte control change number of Modulation output
		(range: 00=CCnr 0 .. 7F=CCnr 127)
0000xxxx	ccch	1 data byte MIDI channel of Modulation output
		(range: 00=channel 1 .. 0F=channel 16)
11110111	**F7**	End of Exclusive

(total 8 bytes)

Typ 3: SYX file for setting the midi channel from the CV output pitch bend

11110000	**F0**	Exclusive Status
01111101	**7D**	Header
00001011	**0C**	Flame module "µQMCV"
00000001	**01**	version 1
00000111	**08**	data type 3 (dump midi channel pitchbend output)
0000xxxx	**pbch**	1 data byte MIDI channel of Pitchbend output
		(range: 00=channel 1 .. 0F=channel 16)
11110111	**F7**	End of Exclusive

(total 7 bytes)

4. Appendix

4.1. Technical details

Connections:

Ribbon cable adapter for Doepfer bus +/-12Volt

Inputs:	1x MIDI (TRS-B standard) 1/8th inch stereo jack
Outputs:	1x MIDI (TRS-B standard) 1/8th inch stereo jack
	4x CV 0..+8V, 1/8th inch mono jacks
	5x CV 0..+5V, 1/8th inch mono jacks
	1x CV 0..+2V, 1/8th inch mono jack
	6x GATE/Clock 0/5V, 1/8th inch mono jacks

Control elements:

1 push button with LED (LEARN key)

Current consumption: ca. + 70mA / - 20 mA

Size: Euro rack format 3U / 6HP   30x128,5x40 mm

4.2 Warrenty

Beginning from the date of purchase a 2-year warranty is guaranteed for this device in case of any manufacturing errors or other functional deficiencies during runtime.The warranty does not apply in case of:
- damage caused by misuse
- mechanical damage arising from careless treatment (dropping, vigorous shaking, mishandling, etc)
- damage caused by liquids penetrating the device
- heat damage caused by overexposure to sunlight or heating
- electric damage caused by improper connecting
  (wrong power supply/ jacks/ MIDI connections/ voltage problems).

If you have any complaints please contact your dealer or send an e-mail to:
service@flame-instruments.de

4.3 Terms of production

conformity: CE, RoHS, UL

4.4 Disposal

The device is produced with RoHS-conformity (subject to the regulations of the European Union) and is free of hazardous substances (like mercury, plumb, cadmium and hexavalent chrome). But electronical scrap is hazardous waste. Please don't add this to consumer waste. For an environment friendly disposal of waste please contact your distributor or specialist dealer.

4.3 Support

Updated and additional informations, updates, downloads and more see:
www.flame-instruments.de

4.4 Acknowledgment

For help and assistance big thanks to: Alex4 and Schneiders Büro Berlin, Shawn Cleary (Analogue haven, Los Angeles), Thomas Wagner, Robert Junge, Anne-Kathrin Metzler, Lena Bünger and Alex Wolter.