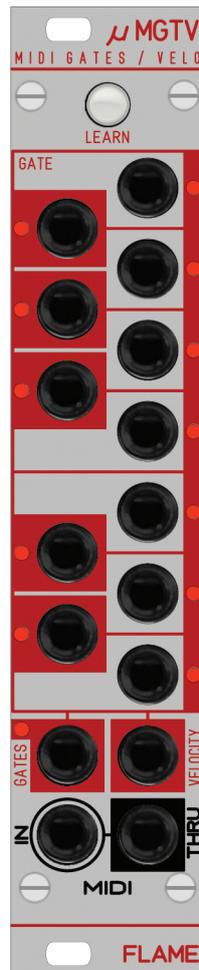


FLAME

μMGTV Gate/Velocity Interface



MANUAL

Version 1.00

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1. Short description

The "μMGTV" module is a compact MIDI interface, which outputs the gate and velocity of received MIDI note commands in CV voltages between 0 and + 5V. In addition, the module works via an octave as a MIDI clock divider, which is output as a GATE clock. The resolution of the data bytes of the velocity is 7bit. The outputs each have a passive lowpass filter, which smoothes the output voltages.

On 12 outputs either the gates (rhythms) or the velocity of notes can be output as CV or GATE voltage. There is also a GATE and a VELOCITY output for all notes (global outputs). The module is programmable via LEARN function with MIDI keyboard or via SYSEX commands.

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!

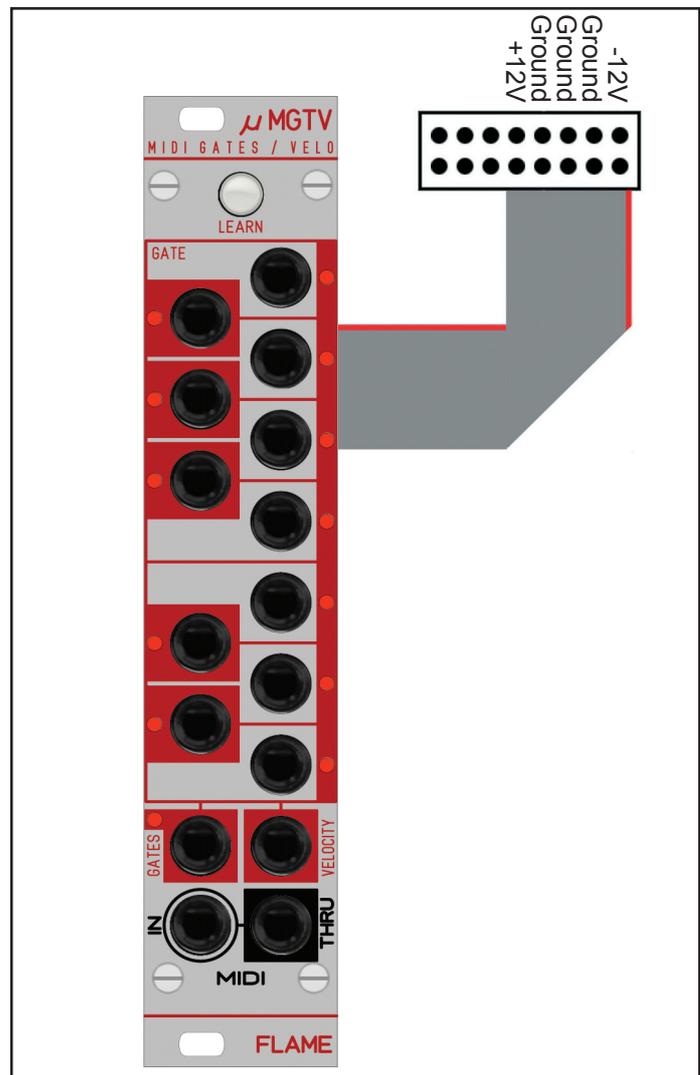
If the module is poled accidentally wrong safety diodes avoid the immediate destruction of the module but further damages cannot be expected.

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

The current consumption of the module is on average +60mA.

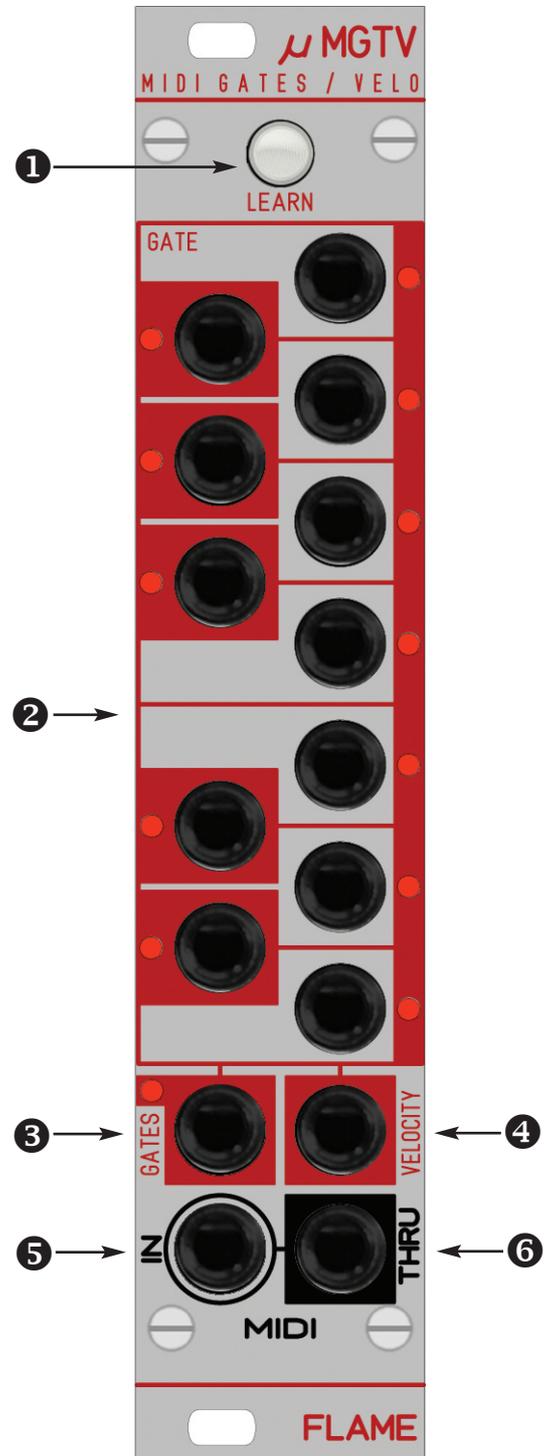
CAUTION!

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



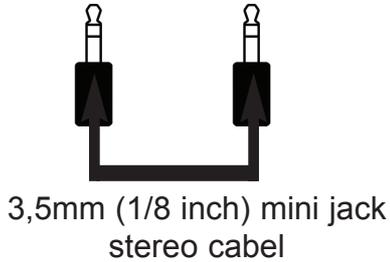
2.2 Module overview

- ❶ LEARN button
- ❷ 12 GATE or Velocity CV outputs (0..+5v)
- ❸ GATE global output (0/+5v)
- ❹ VELOCITY global CV output (0..+5v)
- ❺ MIDI Input (MIDI TRS-B Standard)
- ❻ MIDI THRU Output (MIDI TRS-B Standard)

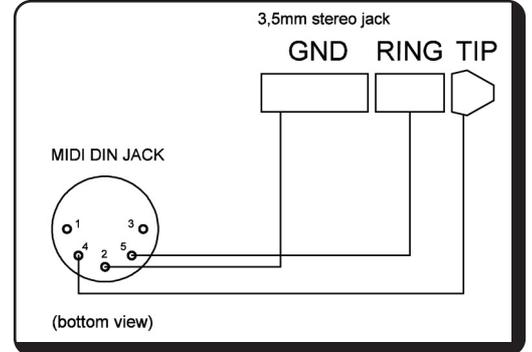


2.3 MIDI connections

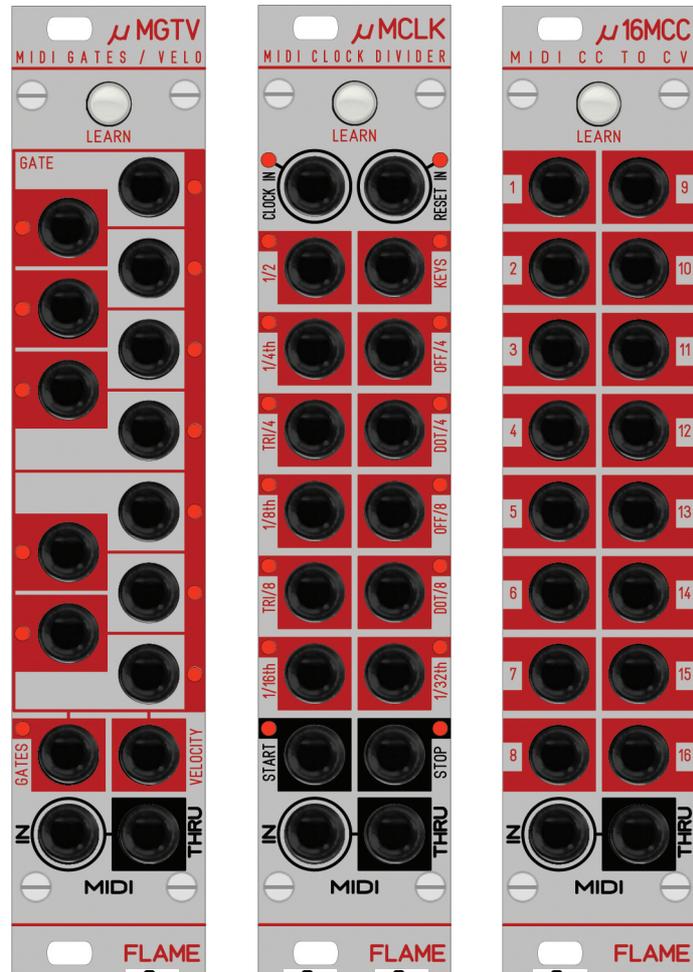
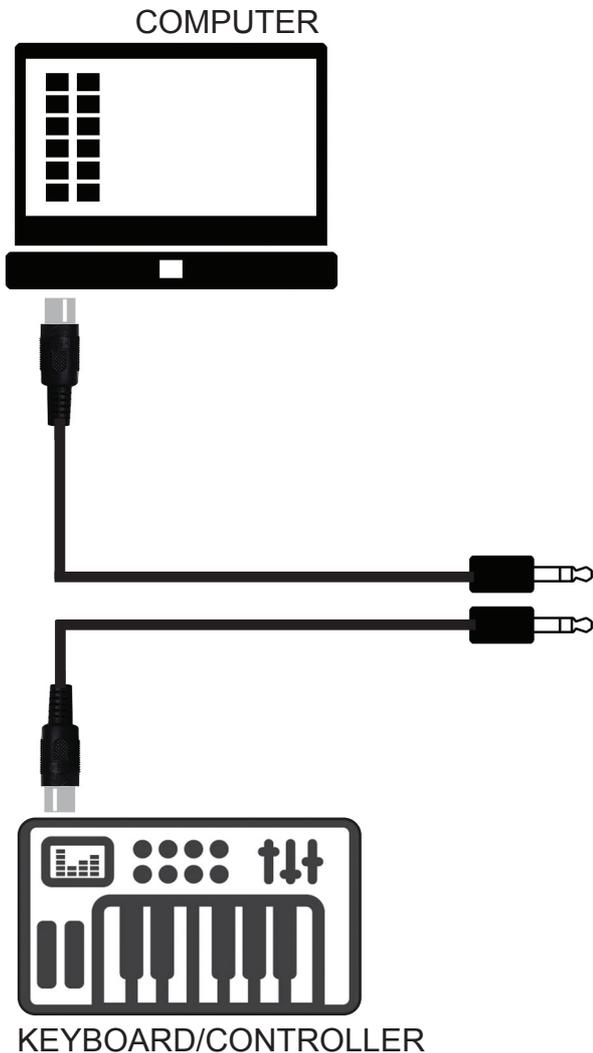
The module has two MIDI sockets (TRS-B standard mini jacks) INPUT and THRU. Connect the MIDI input to the MIDI output of your keyboard / controller or computer. The data received at MIDI-IN is forwarded via MIDI-THRU. A corresponding commercially available adapter (MIDI-DIN to Mini TRS-B) or a 3.5mm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



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



Examples of possible connections:



Forwarding the MIDI data via THRU to other MIDI modules

3. HANDLING

3.1 INTERFACE function overview

Connect the MIDI input of the module to the MIDI output of a device that can send MIDI note commands. The module is preset to MIDI channel 1. Therefore, make sure that your connected MIDI keyboard transmits on MIDI channel 1.

The 12 CV outputs are controlled by note commands from an external MIDI keyboard (or from a computer) over a range of four octaves (the default range is 36-83). A different operating mode is available for each area:

Octave 1: VELOCITY: The velocity of the received note is output as a CV.

Octave 2: GATE ON / OFF: As long as a key is pressed, a GATE voltage is generated.

Octave 3: GATE TOGGLE: The button switches the GATE voltage on and then off again.

Octave 4: CLOCK DIVIDER: Output of up to 12 different MIDI clock dividers.

The LEDs signal the current GATE state of the output.

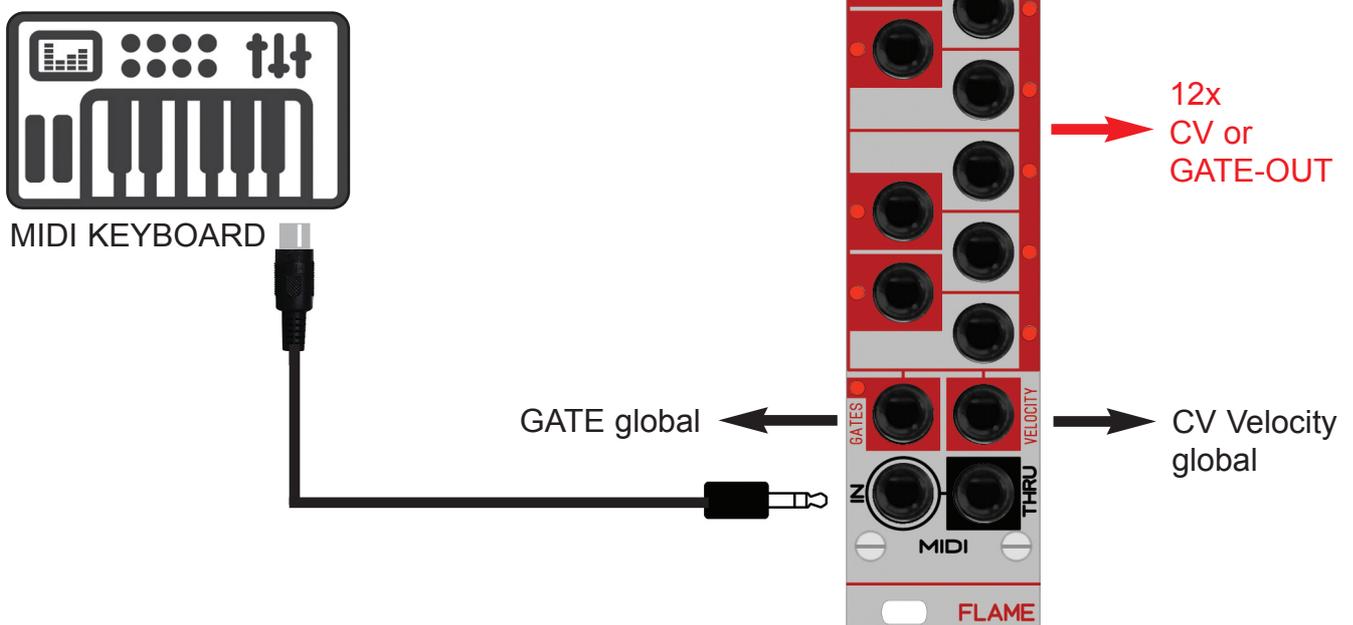
Note:

With the LEARN function you can shift the octave range up one octave. So you can generate GATE and VELOCITY with two modules on the same midi channel at the same time.

-> see also chapter LEARN

GATE/VELOCITY GLOBAL OUTPUTS:

The GATE signal of the currently pressed note is generated at the additional global GATE output. The GATE signal remains on as long as a key is pressed. The Velocity CV of the last played note is output at the VELOCITY output. After releasing the button, this voltage is maintained. These two outputs work across the entire keyboard range (note numbers 0..127).



3.2 INTERFACE MODI

Different operating modes are available for a range of 4 octaves:

Octave 1 (C1-B1 note numbers 36-47 or 48-59):

MODE VELOCITY:

The velocity of the received note is output as a CV on the output corresponding to the note.

Octave 2 (C2-B2 note numbers 48-59 or 60-71):

MODE GATE ON / OFF:

As long as a key is pressed, a GATE voltage is generated on the corresponding output.

Octave 3 (C3-B3 note numbers 60-71 or 72-83):

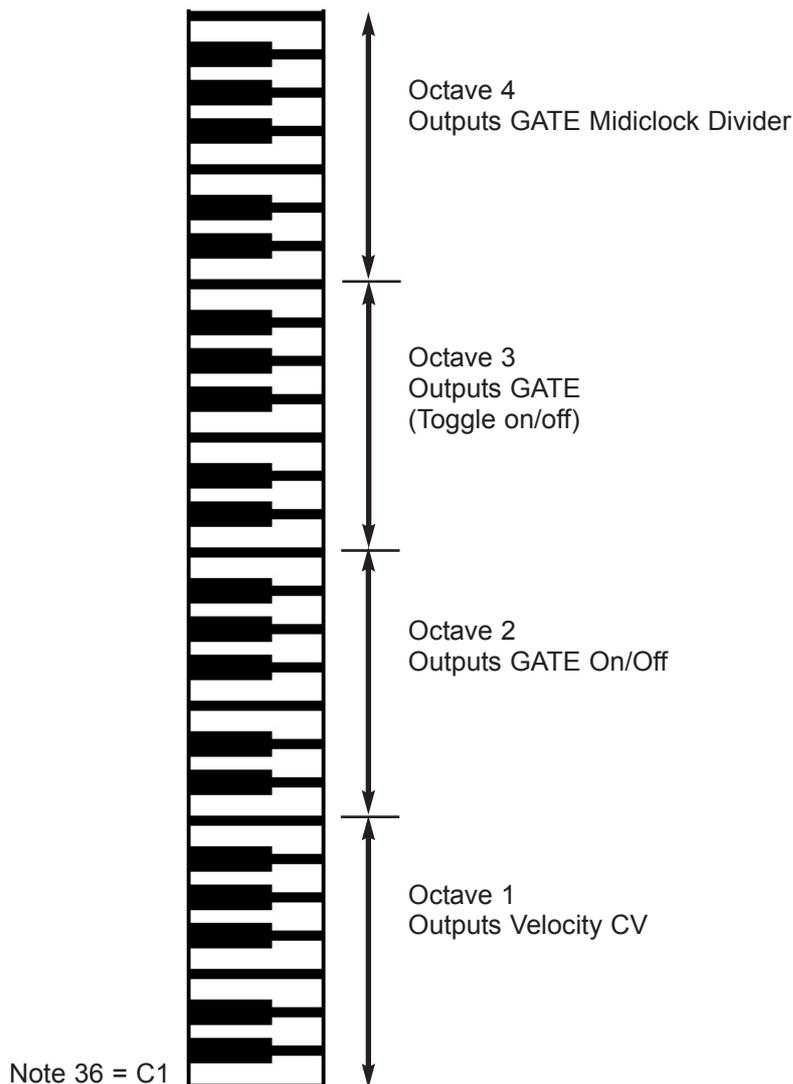
MODE GATE TOGGLE:

The button switches the GATE voltage of the corresponding output on the first press and off the second time.

Octave 4 (C4-B4 note numbers 72-83 or 84-95):

MODE MIDI CLOCK DIVIDER:

Output of up to 12 different MIDI clock dividers.



3.3 MIDI CLOCK DIVIDER

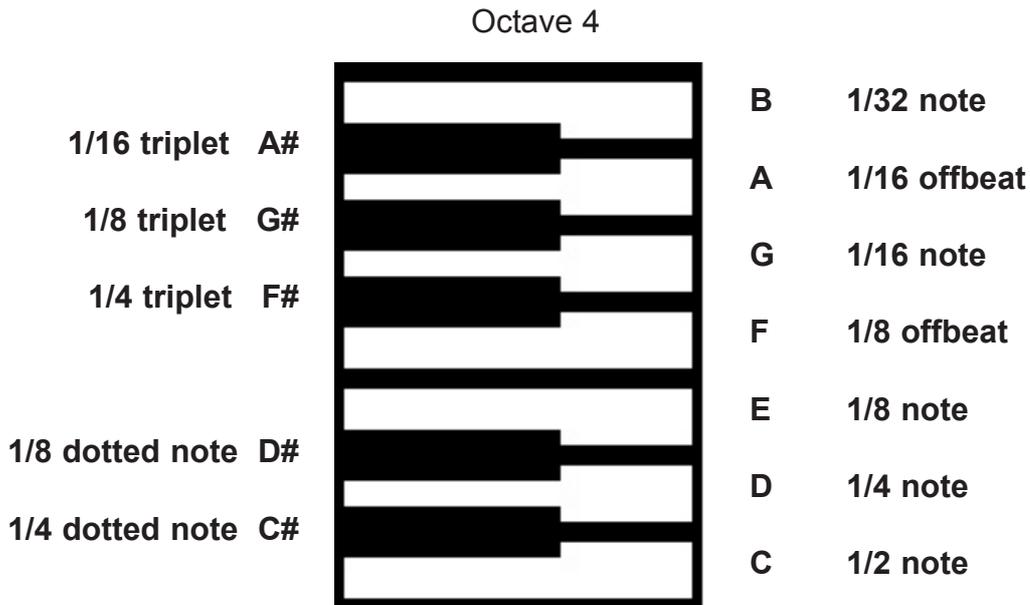
Octave 4 (C4-B4 note numbers 72-83 or 84-95):

MODE MIDI CLOCK DIVIDER: Output of up to 12 different MIDI clock dividers.

Different MIDI clock dividers are located on the 12 keyboard keys of the fourth octave range. See the preset divider values in the graphic. These can also be reprogrammed using the SYSEX file (see chapter SYSEX).

If no MIDI clock is running, the keys work as in the second octave range: when a key is pressed, GATE is switched on and when released, it is switched off again. However, if MIDI Clock is started, a divided midiclock is output as a rhythmic gate signal (pulse) with a pulse duty factor of 1: 1 as long as a key remains pressed.

These dividers are preset:



Pulse sequence of the outputs with 50% pulse width: 

3.4 LEARN function

You can change the MIDI channel and the lowest note (at which the 4 octave range begins) with the LEARN function:

To do this, press the LEARN button until it flashes.

Send a note from the connected MIDI keyboard on the desired MIDI channel. If the note number of the sent note is <48, the octave range begins with note number 36, that is note C1. The entire range of grades then ends at 83.

If the note number of the sent note is greater than or equal to 48, the octave range begins with note number 48, that is note C2. The entire range of grades then ends at 95.

The new MIDI channel and the octave range are automatically saved permanently. The LEARN mode is automatically ended again after receipt of the note (button LED off).

The default range of notes is 36-83 (C1 ... B4) on MIDI channel 1.

RESET (Restore factory settings):

You can restore the module's default data at any time: To do this, press and hold the LEARN button while the rack is switched on until it lights up and then release the button. The factory settings have now been loaded and saved permanently.

3.5 Setup via SYSEX files

Some assignments can also be made or only via SYSEX dump. Some SYSEX files are available for this. These can be loaded from a computer via MIDI using a MIDI SYSEX dump program (e.g. MIDI-OX or Elektron C6).

After successful receipt of a 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 SYX files:

Type 1: All dump: All data is transferred in a SYX file

Type 2: MIDI: only the MIDI receive channel and the octave range are transmitted

Type 3: DIVIDER: only the clock divider data (beats + offbeats) are transmitted

You can download pre-made 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 controller numbers and the MIDI channels for the respective CV outputs can be done with the help of SYSEX data. The module understands three different types of SYSEX files:

Typ 1: ALL DUMP: all data is transferred with just one file.

11110000	F0	Exclusive Status
01111101	7D	Header Flame module
00001011	0D	Flame module “μMGTV”
00000001	01	version 1
00000110	06	data type 1 (dump all data)
0000xxxx	ch	1byte MIDI channel (range: 00=channel 1 .. 0F=channel 16)
00xxxxxx	mn	1byte octave (values: 36 or 48)
000xxxxx	of1	1offset byte out 8-12 (notes G...B)
0xxxxxxx	of0	1offset byte out 1-7 (notes C...F#)
0xxxxxxx	bt1	12 data bytes MIDI clock divider (range: 1...127)
0xxxxxxx	bt12	
11110111	F7	End of Exclusive

(total 22 bytes)

Typ 2: MIDI: only the MIDI receive channel and the octave range are transmitted.

11110000	F0	Exclusive Status
01111101	7D	Header
00001011	0D	Flame module “μMGTV”
00000001	01	version 1
00000111	07	data type 2 (dump data MIDI channel / octave range)
0000xxxx	ch	1byte MIDI channel (range: 00=channel 1 .. 0F=channel 16)
00xxxxxx	mn	1byte octave (values: 36 or 48)
11110111	F7	End of Exclusive

(total 8 bytes)

Typ 3: DIVIDER: only the MIDI clock divider (offsets + divider) are transmitted.

11110000	F0	Exclusive Status
01111101	7D	Header Flame module
00001011	0D	Flame module "µMGTV"
00000001	01	version 1
00000110	08	data type 3 (dump data midi divider)
000xxxxx	of1	offset byte1 outputs 8-12 (outputs note G...B)
0xxxxxxx	of0	offset byte0 outputs 1-7 (outputs note C...F#)
0xxxxxxx	d1	12 data bytes MIDI clock divider (outputs note C...B)
		(range: 1...127 ticks)
0xxxxxxx	d12	
11110111	F7	End of Exclusive
(total 20 bytes)		

Description OFFSET:

The two bytes **of0** and **of1** determine whether a divider output is output with offset (shifted by half). 7 or 5 bits of each of the two bytes, for a total of 12 bits, are assigned to the outputs. If the bit is set, the offset is switched on. The following applies:

Byte of1: **000xxxxx** 5 bits from right to left = outputs 8-12 (notes G-B)

Byte of0: **0xxxxxxx** 7 bits from right to left = outputs 1-7 (notes C-F#)

example1: 00000000 01111111 outputs 1-7 offset ON (notes: C-F#)

example 2: 00010000 01000001 utputs 1, 7 und 12 Offset ON (notes: C, F#, B)

example 3: 00000000 00000000 all outputs offset OFF

example 4: 00011111 01111111 all outputs offset ON

Description DIVIDER:

The 12 bytes **d1** to **d2** define the MIDI clock divider of the respective output. The value corresponds to half of the beat's MIDI ticks. For example, the value 3 will generate a pulse train with a length of 6 ticks (3 ticks on and 3 ticks off), i.e. a 16th note, further examples in the table:

Value	MIDI ticks	Beat
3	6	1/16
6	12	1/8
9	18	1/8 dotted note
12	24	1/4
24	48	1/2
48	96	1 whole note
4	8	16th triplet
8	16	8th triplet
16	32	4th triplet

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

12x GATE/CV 0..+5V, 1/8th inch mono jack

1x GATE 0/+5V, 1/8th inch mono jack

1x CV 0..+5V, 1/8th inch mono jack

Control elements:

1 push button with LED (LEARN key)

Current consumption: ca. + 60mA / - 30 mA

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

4.2 Warranty

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 Büniger and Alex Wolter.