G·LAB
GUITAR LABORATORY

MGC-6

Midi
Guitar
Controller

☐ User Manual
☐ Instrukcja obsługi
☐ Bedienungsanleitung

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Dear Customer,
Congratulations for choosing our G LAB product!

MIDI Guitar Controller (MGC) is the programmable switching device of effects' loops (looper), the amp's switcher and the MIDI devices' controller in one for rack 19' systems. MGC-6 can be controlled by any foot controller or other MIDI device sending the Program Change commands. By choosing one of the presets MGC-6 enables:

– to activate selected effects (connected to LOOP1 up to LOOP6),

– to set the amp channel (or the pre-amp one) and other amp's functions controlled by its footswitch input,

– to set by Program Change command the MIDI device's program No (at MIDI devices for e.g. effects' processors) connected to MIDI OUTPUT,

– controlling the additional modules by auxiliary outputs.

Controller enables to store up to 100 presets. Posses the function of presets' programming and copying. To avoid accidental presets' changing controller posses the six level memory protection.

Basic features:

– true passive signal path,

– true bypassed (by electro-mechanical relay), high impedance input buffer,

– the TUNER output with the silent tuning function based on very high impedance circuit (no influence on a guitar signal) with galvanic separation,

– six TRUE BYPASS loops for connecting effects (using electro-mechanical relays),

– 2 outputs (2 lines each, latching type) for amp's switching by its footswitch input,

– MIDI INPUT to control the MGC by any MIDI controller using the Program Change and Control Change commands,

– MIDI OUTPUT to control three MIDI devices by Program Change command and one device by Control Change command for each preset, MIDI OUTPUT can be switched to Soft Thru mode,

– four AUX connectors for connecting additional modules e. g. AB switch, 2XLOOP,

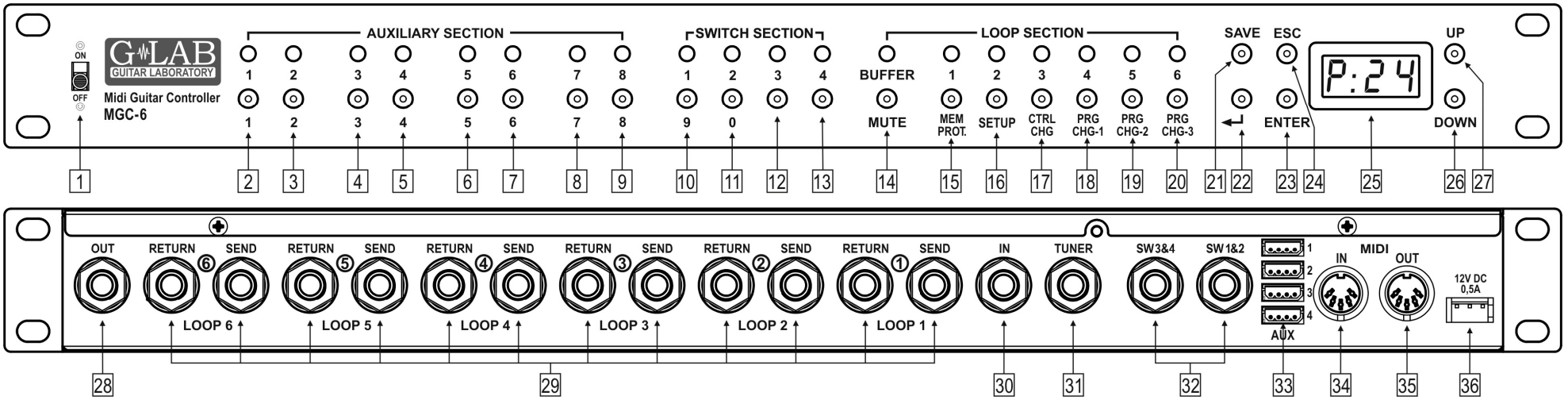
– 19 buttons switching directly particular functions.

Package content

Controller

Power supply adapter

User's manual



Structure

1 - ON/OFF switch

2 – 9 AUXILIARY section buttons:

2 - AUX 1 output switch or in **Fun** mode digit 1 of the numeric keyboard

3 - AUX 2 output switch or in **Fun** mode digit 2 of the numeric keyboard

4 - AUX 3 output switch or in **Fun** mode digit 3 of the numeric keyboard

5 - AUX 4 output switch or in **Fun** mode digit 4 of the numeric keyboard

6 - AUX 5 output switch or in **Fun** mode digit 5 of the numeric keyboard

7 - AUX 6 output switch or in **Fun** mode digit 6 of the numeric keyboard

8 - AUX 7 output switch or in **Fun** mode digit 7 of the numeric keyboard

9 - AUX 8 output switch or in **Fun** mode digit 8 of the numeric keyboard

10 – 13 SWITCH section buttons:

10 - SW 1 output switch or in **Fun** mode digit 9 of the numeric keyboard

11 - SW 2 output switch or in **Fun** mode digit 0 of the numeric keyboard

12 - SW 3 output switch

13 - SW 4 output switch

14 – 20 LOOP section buttons:

14 - BUFFER – on/off buffer switch or in **Fun** mode MUTE – silent tuning switch

15 - LOOP 1 switch or in **Fun** mode MEM PROT. – memory access lock switch

16 - LOOP 2 switch or in **Fun** mode SETUP switch

17 - LOOP 3 switch or in **Fun** mode CTRL CHG – controller value switch

18 - LOOP 4 switch or in **Fun** mode PRG CHG-1 – device 1 Program number switch

19 - LOOP 5 switch or in **Fun** mode PRG CHG-2 – device 2 Program number switch

20 - LOOP 6 switch or in **Fun** mode PRG CHG-3 – device 3 Program number switch

21 - SAVE – store

22 - shift button

23 - ENTER – confirm

24 - ESC – escape

25 - LED display

26 - DOWN decrease

27 - UP – increase

28 - OUT – output signal connector

29 - LOOP 1 to LOOP 6 – effects' connectors:
RETURN – effect loop input connector,
SEND –- effect loop output connector

30 - IN – guitar signal input

31 - TUNER – guitar tuner connector

32 - SW1&2, SW3&4 – output connectors to control the amp

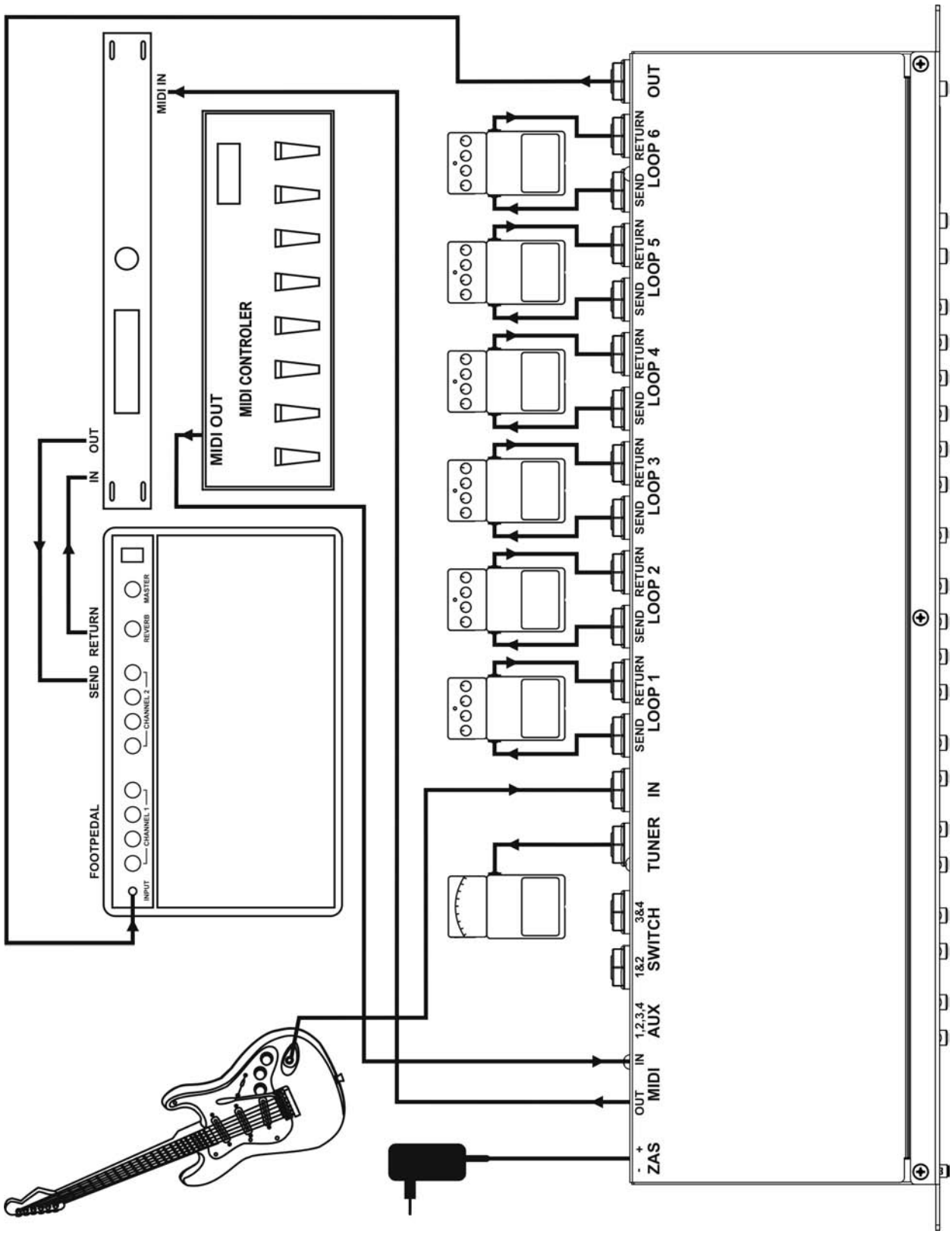
33 - AUX 1 to AUX 4 – connectors

34 - MIDI IN – MIDI input connector

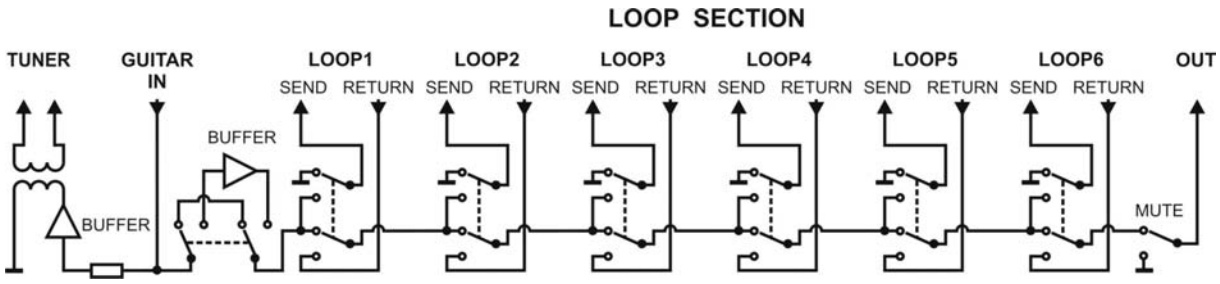
35 - MIDI OUT – MIDI output or Soft THRU connector

36 - 12V DC – Power supply connector

Diagram of devices connectable to the MGC-6



Signal's path diagram



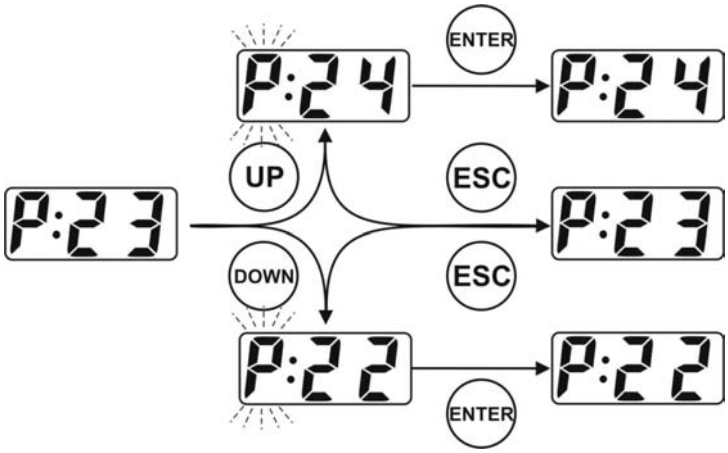
Guitar signal, thru very high impedance (>10 MΩ) tuner buffer and separating transformer, is transmitted to TUNER output. It enables using of the tuner during playing.
Controller features a switchable (by relay), true bypass input buffer circuit. Buffer which's input impedance is consistent with tube amps boost the guitar signal power (without the voltage gain).
Adding the buffer between the guitar and the effect can improve guitar sound (due to their low input impedance many of the effects change the guitar tone) and in case of using long cables (between the controller and the amp) it enables to avoid high tones loss caused by cables' parasitic capacitance appearing when all the effects are switched off.
SEND outputs should be connected with IN effects inputs and RETURN inputs should be connected with OUTPUTs of particular effects. MUTE block tunes out the signal during the silent tuning.

Preset selection

Controller enables saving a 100 of presets with numbers from 1 to 100 displayed as P01 to P00 (for preset No 100). Recalling of the presets can be done by:

– MIDI foot controller by sending Program Change command

– **UP**, **DOWN** buttons (by single pressing or pressing and holding)



– by entering the preset number

Preset programming

Preset is defined by:

– switched on effects (connected to LOOP1 to LOOP6) and switched on or off buffer,

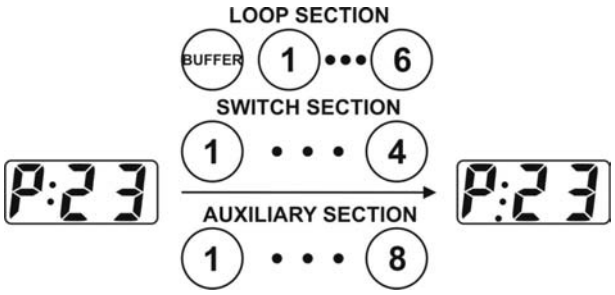
– amp's setting controlled by SW1 to SW4 outputs;

– AUX 1 to AUX 8 outputs' state

– MIDI Program Change numbers (and Control Change command) transmitted to MIDI devices.

Buffer, loops (LOOP 1 to LOOP 6), SWITCH outputs and AUX outputs

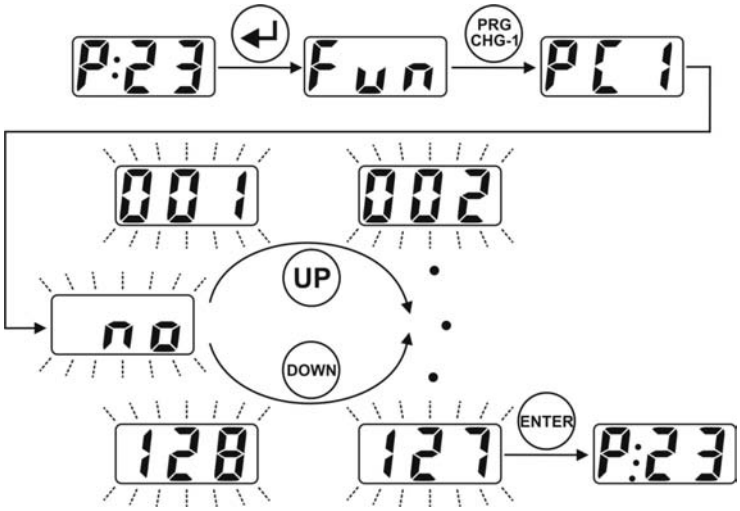
In order to switch on or off the buffer, particular effect LOOPs, SWITCH outputs and AUX outputs press the button placed under the indicator signalising their state. Lighting lamp means: the buffer is switched on, the effect connected to the loop is switched on, output shorting state of the particular SWITCH and high level of AUX output.



Lighting of the decimal point after the P letter means that actual preset was modified.

MIDI program numbers programming

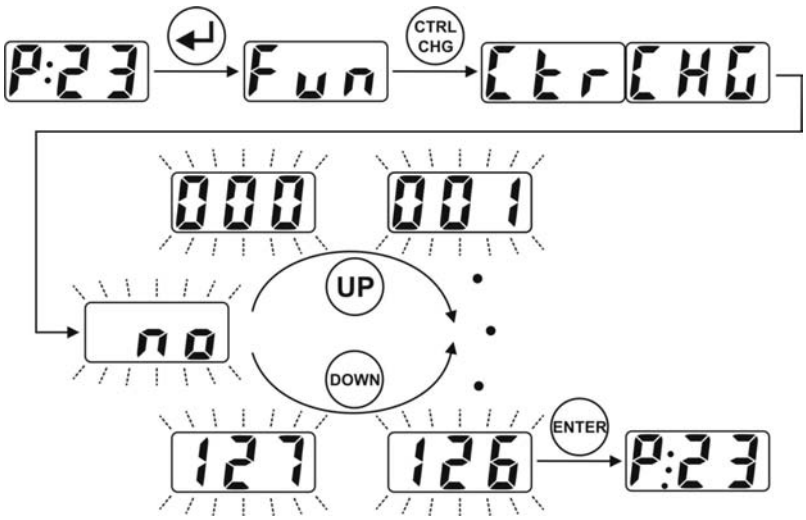
MGC-6 enables to control three MIDI devices separately (on different channels set on SETUP function) by the Program Change commands defined as PRG CHG-1, PRG CHG-2, PRG CHG-3.



Programming **no** value results in not sending for given preset Program Change command.

CC Contollers' value programming

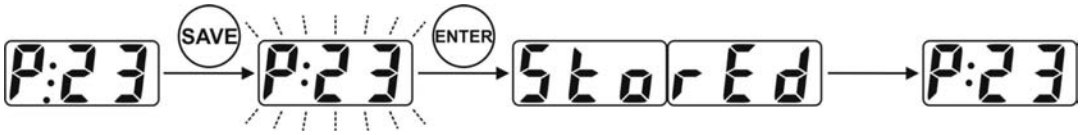
Controller enables to send Control Change command with controller No set on SETUP function and with the value programmed for each preset defined as CTRL CHG.



In order to not to send for given preset the Control Change command set the no value.

Preset's storing

After modifying the preset's parameters the preset should be saved. Controller enables saving modified preset under the same preset number or under a different number. Procedure of saving under the same number is shown below

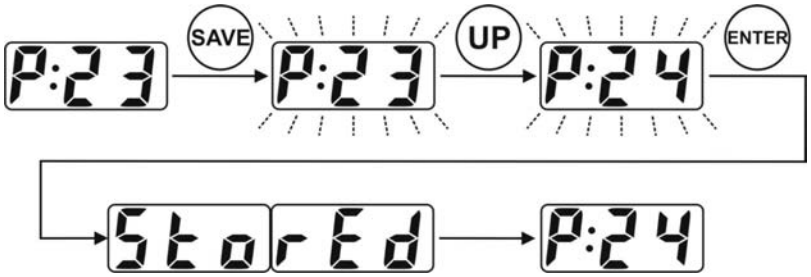


In case of saving the preset under a different number it is needed to press SAVE button, select the preset number by using the UP and DOWN buttons or numeric keys and after press the ENTER button.

Protec communicate means that we are trying to store in the protected memory space and that the preset will not be stored. In such case select other number to store or unlock the memory protection.

Preset's copying

Controller enables to copy the whole preset. The procedure is similar to preset's saving. Selecting the preset No to copy as well as storing could be done by the use of UP, DOWN buttons and also by using the numeric buttons.



Silent tuning

Controller posses the silent tuning function (MUTE).

Silent tuning mode is signalised by blinking **tun** text. To exit from this function use one of the following buttons: **ESC**, **MUTE** or **ENTER**.

Memory access lock

To avoid accidental changes in the programmed before presets controller posses memory access lock function. This is the six level protection. Information displayed on the LED display means:

Upr – memory unprotected (unlocked)

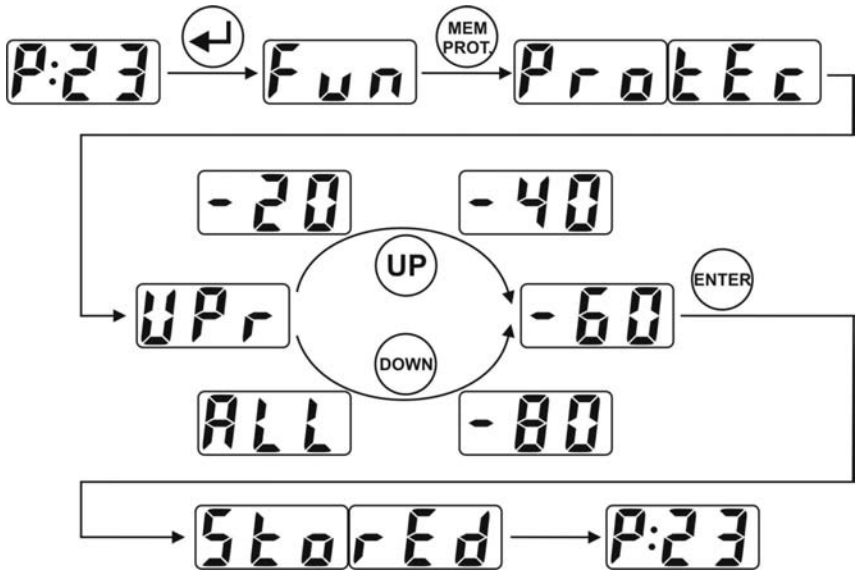
-20 – presets from 1 up to 20 inclusive locked

-40 – presets from 1 up to 40 inclusive locked

-60 – presets from 1 up to 60 inclusive locked

-80 – presets from 1 up to 80 inclusive locked

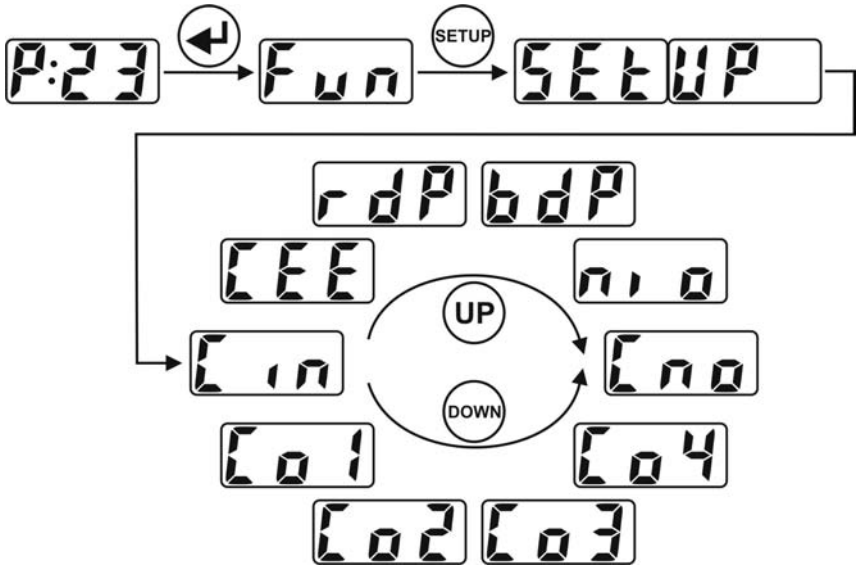
ALL – whole memory space locked



SETUP

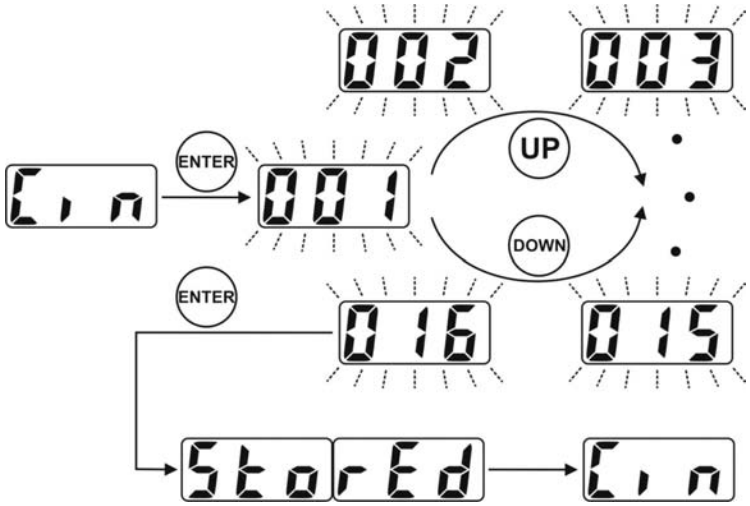
Setup features the following parameters and functions:

- **Cin** - MIDI input channel number,
- **Co1** - MIDI Program Change – 1 channel number,
- **Co2** - MIDI Program Change – 2 channel number,
- **Co3** - MIDI Program Change – 3 channel number
- **Co4** - Control Change channel number
- **Cno** - CC Controller's number,
- **nio** - MIDI output mode
- **bdP** - Bulk memory dump
- **rdP** - Memory dump permission
- **CEE** - Clearing of the presets' memory



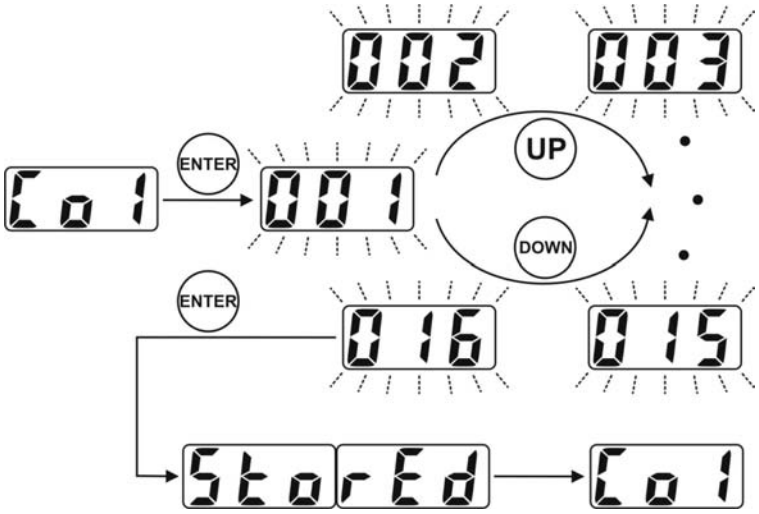
MIDI INPUT channel number programming

The channel number on which MGC-6 receive the Program Change and Control Change commands is programmable on the **Cin** position. The available range is from 1 to 16.



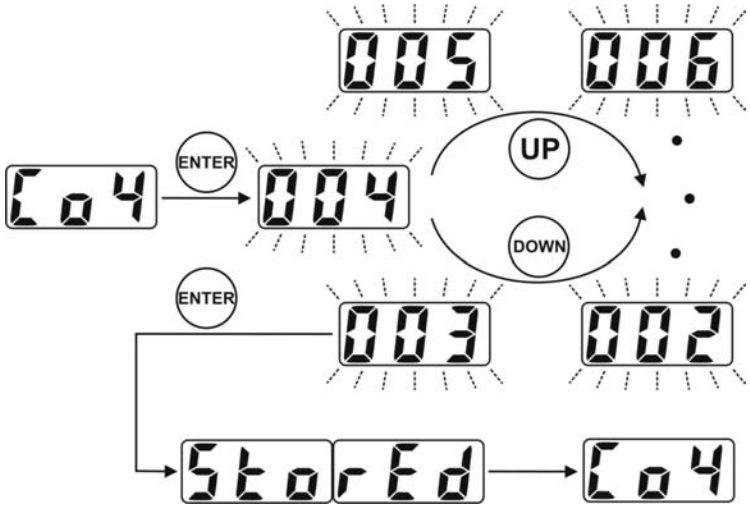
Programming of the channel numbers for MIDI Program Change 1, 2, 3

Next three positions in Setup defined as **Co1**, **Co2**, **Co3** enable channel number programming successively for PRG CHG-1, PRG CHG-2, PRG CHG-3 commands. The available range is from 1 to 16. Displaying of the **r** letter with the channel number means that the number of this channel is already reserved (**r**) for other Program Change command. Example below shows programming of the channel for PRG CHG-1. For others proceed analogically.



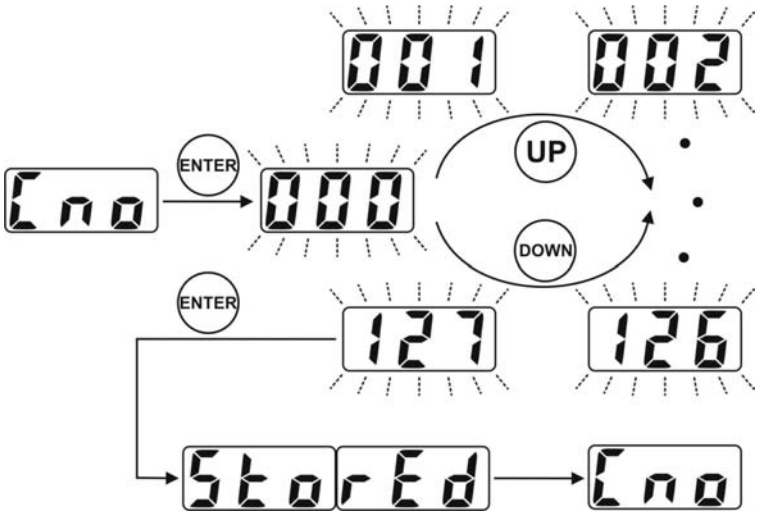
Programming of the channel number for Control Change command

Channel number for Control Change command is programmed in **Co4** function.



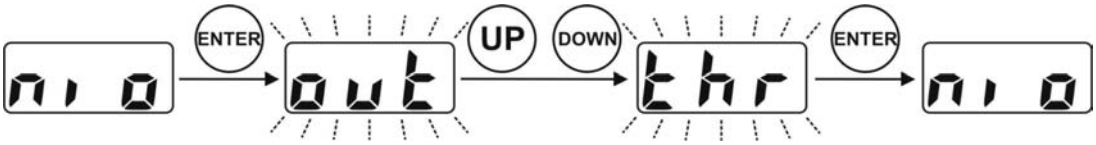
CC Controller's number programming

Controller's No sent to the MIDI device is the same for all of the presets. The available range is from 0 to 127.



MIDI OUTPUT mode programming

MIDI OUTPUT of the controller can be switched on so-called Soft Thru mode. In this mode controller rewrite in unchanged state data from MIDI INPUT to MIDI OUTPUT. In the Soft Thru mode controller doesn't send any Program Change and Control Change commands defined in the presets.



Bulk memory dump

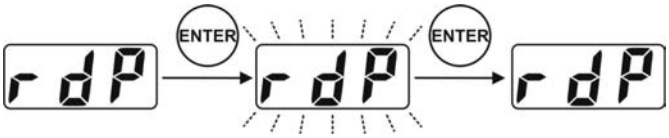
System Exclusive dump memory function enables to make controller's memory backup. Sending and receiving System Exclusive dump memory message enables editing the presets and setups on the computer.

Sending the System Exclusive dump memory message is only possible in out mode of the MIDI OUTPUT.

For more details see "System Exclusive dump memory message specification" chapter.

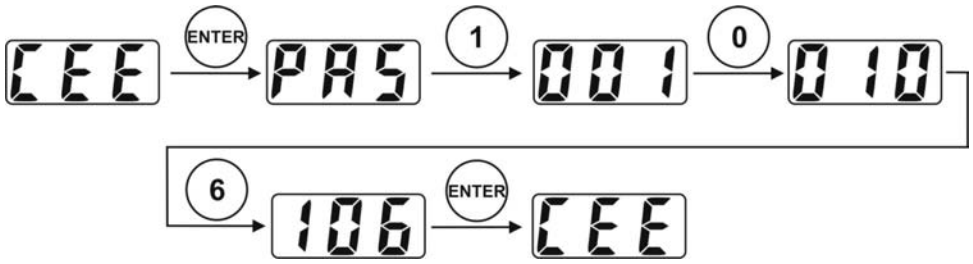
Memory dump permission

Receiving by controller the System Exclusive dump memory message is possible by setting the controller on the appropriate mode only. It is signalised by blinking **rdP** text.



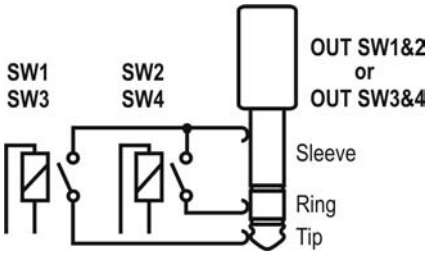
Clearing the presets' memory

In order to clear the presets' memory it is needed to enter the password by using the numeric keyboard. The password is **106**. Clearing range can be limited by memory protection function.



Amp's control connecting

The SW1 to SW4 outputs are used to control an amp by its footswitch input. Depending on the features of your amp they can be used for switching channels, switching on/off reverb or effects loop, BOOST function or other.
SW1&2 and SW3&4 outputs' circuit diagram is shown below.

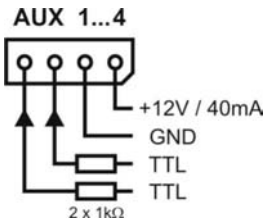


SW1 to SW4 lit indicators mean short-cutting of the adequate relay's contacts (latching type). This circuit is separated from the rest of the MGC-6 circuits. It is recommended to use connectors with plastic shielding to avoid incidental connection with a signal grounding. Lot of amps are equipped with such type of a foot-switch input so if your amp is equipped with footswitch input connector you should contact your dealer or the manufacturer of your amp to settle if such type of connection is possible to apply. Depending on an amp model this connection have to be done using mono or stereo Jack/Jack cable, Y type cable (stereo Jack – 2 x mono Jack) or need dedicated cable or adapter offered by G LAB. The actual list of available cables and adapters you'll find at www.glab.com.pl If you don't find on our site the cable you need please contact G LAB at help@glabocom.pl.

AUX connectors

MGC-6 has four AUX connectors for additional modules to extend the controller's functionality e.g. AUX A/B SWITCH or AUX 2xLOOP. The actual list of modules you'll find in accessories for the controller at www.glab.com.pl.

Single AUX output circuit diagram is shown below.



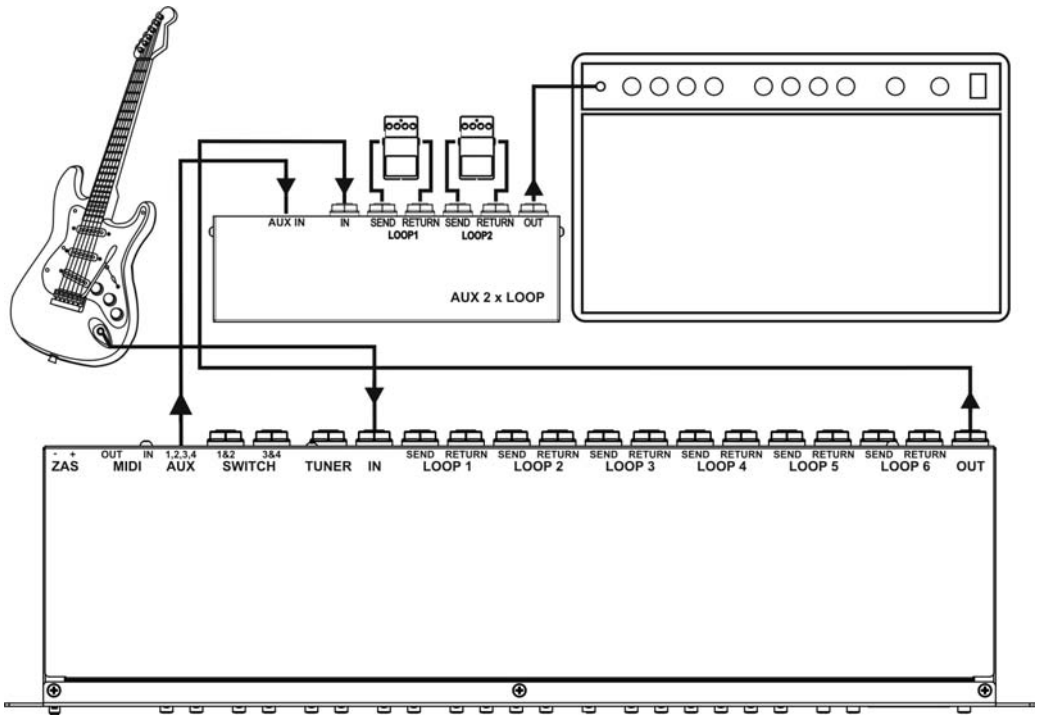
AUX 2xLOOP connection

AUX 2xLOOP enables controlling by MGC-6 two additional effect loops connected for e.g. to an amp effects loop or between OUT output and amp input. Looper has passive signal path and true bypass circuit for switched off effects.
Connection of the devices should be done by using the cable supplied to the AUX 2 x LOOP. With this cable we connect AUX IN connector of the AUX 2xLOOP with one of the AUX1-4 connectors of the MGC-

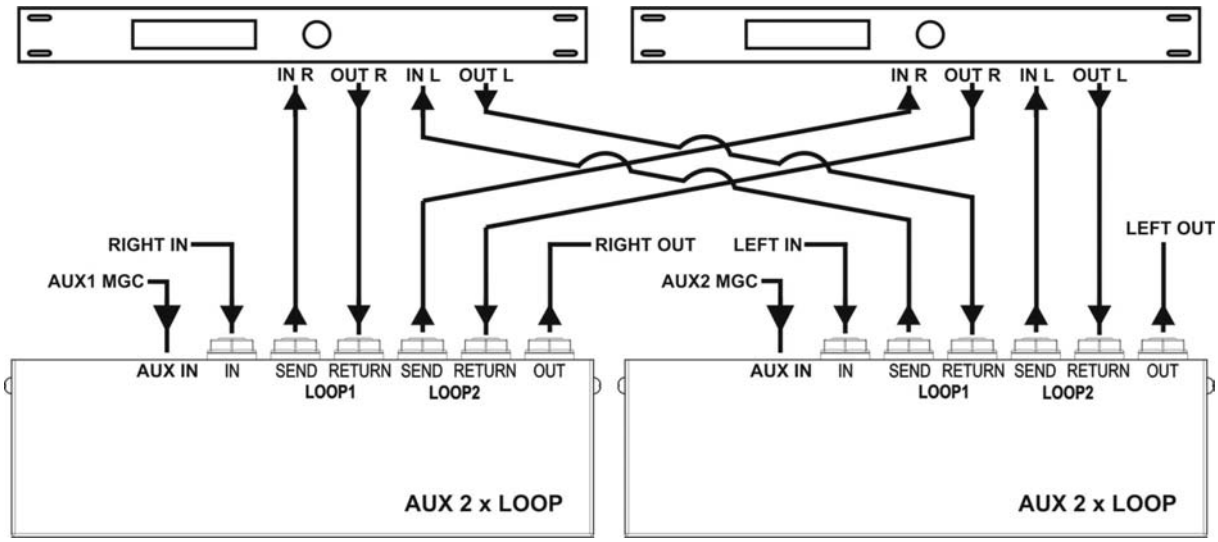
6. For switching the loops serve the corresponding buttons of AUXILIARY SECTION (for AUX 1 buttons 1 and 2, for AUX 2 buttons 3 and 4, AUX 3 buttons 5 and 6 and for AUX 4 buttons 7 and 8).

It is possible to connect four AUX 2xLOOPs to one MGC-6 maximally.

Below you will find the example of AUX 2 X LOOP connection.



Extending the MGC by two effect loops.



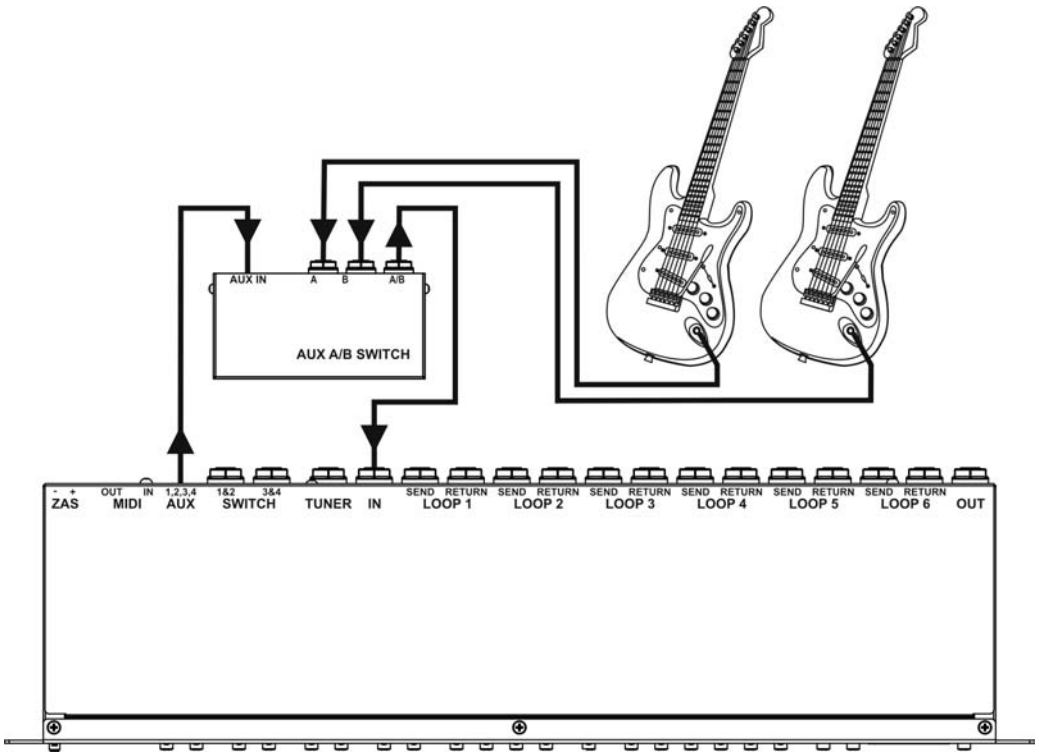
Two stereo effects switch (TRUE BYPASS)

AUX A/B SWITCH connection

AUX A/B SWITCH enables switching two different signal sources to one OUTPUT. Connection of the devices should be done by the cable supplied to AUX A/B SWITCH. With this cable we connect AUX IN AUX A/B SWITCH connector with one of the AUX1-4 connectors of the MGC-6. For switching the AUX A/B SWITCH serve the corresponding button of AUXILIARY SECTION.

It is possible to connect the second AUX A/B SWITCH to the one already connected to the MGC-6.

Below you will find the example of the AUX A/B SWITCH connection.



Guitar switch

MIDI specification

MIDI Input (MIDI IN)

Controller can attend following commands:

Program Change

Sent value	Program number	Function
0 - 99	1 – 100	Preset number
100	101	mute ON

Control Change

Controller's number	Controller's value	Function
20	0-63	AUX1 switching off
	64-127	AUX1 switching on
21	0-63	AUX2 switching off
	64-127	AUX2 switching on
22	0-63	AUX3 switching off
	64-127	AUX3 switching on
23	0-63	AUX4 switching off
	64-127	AUX4 switching on
24	0-63	AUX5 switching off
	64-127	AUX5 switching on

Controller's number	Controller's value	Function
25	0-63	AUX6 switching off
	64-127	AUX6 switching on
26	0-63	AUX7 switching off
	64-127	AUX7 switching on
27	0-63	AUX8 switching off
	64-127	AUX8 switching on
28	0-63	Switch1 switching off
	64-127	Switch1 switching on
29	0-63	Switch2 switching off
	64-127	Switch2 switching on
30	0-63	Switch3 switching off
	64-127	Switch3 switching on
31	0-63	Switch4 switching off
	64-127	Switch4 switching on
52	0-63	LOOP1 switching off
	64-127	LOOP1 switching on
53	0-63	LOOP2 switching off
	64-127	LOOP2 switching on
54	0-63	LOOP3 switching off
	64-127	LOOP3 switching on
55	0-63	LOOP4 switching off
	64-127	LOOP4 switching on
56	0-63	LOOP5 switching off
	64-127	LOOP5 switching on
57	0-63	LOOP6 switching off
	64-127	LOOP6 switching on
58	0-63	BUFFER switching off
	64-127	BUFFER switching on
59	0-63	LDR S * switching off
	64-127	LDR S * switching on
60	0-63	LDR R * switching off
	64-127	LDR R * switching on
7	0	Mute ON
	1-127	Mute OFF

* - for production tests only

System Exclusive (SysEx) type messages

Controller attend two messages SysEx type related to resending and receiving presets and setup memory content.

F0 00 20 71 14 01 01 F7 – message in this format is interpreted as memory content resending request. After receiving it the message with memory content is sent out (for more information see System Exclusive dump memory message specification chapter).

F0 00 20 71 14 01 00 ... - message in this format is interpreted as memory content. If controller is set on mode enabling to receive this message the data will be received and the whole preset and setup memory will be overwritten.

MIDI output (MIDI OUT)

Every of 100 presets can send one Control Change and three Program Change commands. For Control Change command the controller's number is common for all the presets. Commands are sent each time after selecting the preset. Successively are sent Program Change 3, Program Change 2, Program Change 1 and Control Change commands.

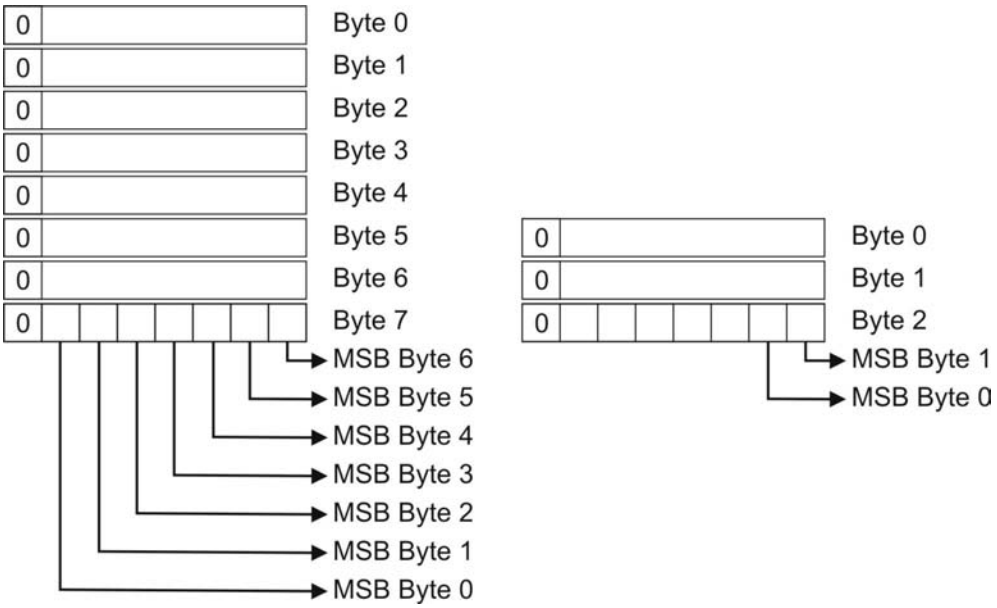
System Exclusive dump memory message specification

Controller attend one SysEx type message containing presets and setup memory data (memory dump). It enables to save memory backups and editing presets and setup on the computer. It is possible to copy the memory from one to another MGC. Sending out the memory contain can be recalled manually in **bdp** function (in controller's SETUP) or remotely by MIDI request message.

Memory contain message specification:

1) First byte 0xF0 - SysEx Start
2) Three bytes G LAB ID (0x00 0x20 0x71)
3) SysEx message channel (14h)
4) One byte device ID MGC-6 1.xx (01h)
5) Message statute byte (00h – data to store)
6) 101 frames with memory contain

MIDI specification is expected to send data with cleared eighth bite. Because of that the data is packed in eight or three data bytes in given way: seven bytes with MSB=0 + eighth with MSBs or two bytes + third as on the scheme below.



Memory frame containing 16 bytes is sent as a frame with 8+8+3 MIDI data bytes.

First frame contains the general information about the controller and its setup in following order:

a) 3 data signature bytes (03h , 05h , 09h)
b) 1 reserved data byte
c) 1 data byte with the input channel number (range 1-16)
d) 1 data byte with the output channel number for the Program Change 1 (range 1-16)

e) 1 data byte with the output channel number for the Program Change 2 (range 1-16)

f) 1 data byte with the output channel number for the Program Change 3 (range 1-16)

g) 1 data byte with the output channel number for the Control Change (range 1-16)

h) 1 data byte with the information about the memory access lock state
(1 - "UnP", 2 - "-20", 3 – "-40", 4 - "-60", 5 - "-80", 6 - "All")

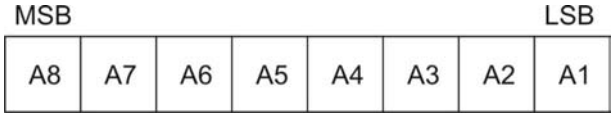
i) 1 data byte with the controller's number for Control Change
(range 1-128 interpreted as 0-127)

j) 1 byte with the information about the MIDI output mode (0 – out , 1 - thru)

k) 4 reserved data bytes

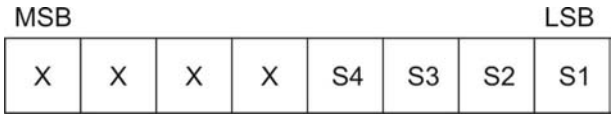
Next 100 frames contains the information about the presets:

a) 1 byte with the information about the AUXILIARY OUTPUTs state according to the scheme below



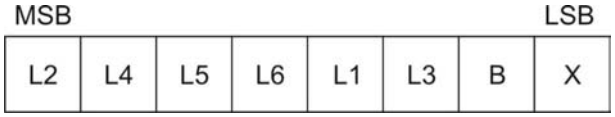
A1 - A8 – AUXILIARY 1 - AUXILIARY 8

b) 1 byte with the information about the SWITCH OUTPUTs state according to the scheme below



S1 – S4 - SWITCH 1 – SWITCH 4, X – reserved

c) 1 byte with the information about the LOOPs state according to the scheme below



L1 – L6 - LOOP1 – LOOP6, B – BUFFER, X - reserved

d) 1 byte with Program Change 1 value (range 1 – 128, 0 = not sent)

e) 1 byte with Program Change 2 value (range 1 – 128, 0 = not sent)

f) 1 byte with Program Change 3 value (range 1 – 128, 0 = not sent)

g) 1 byte with controller's Control Change command value
(range 1 – 128 interpreted as 0 =not sent and 0 – 127)

h) 9 reserved bytes

Next 27 frames contains reserved data bytes.

7) F7 – Sysex end byte

MIDI OUTPUT "Soft Thru" mode

Controller's output can be set on so-called Soft Thru mode. On this mode data received by MIDI input are sent in unchanged state by output. On this mode the controller doesn't send neither commands programmed within the presets' frame nor the special message dump memory.

MIDI implementation chart

G LAB MIDI Guitar Controller MGC-6 rev. 1.01 01.10.2008

Function	Transmitted	Recognised
Basic Channel		
Default	1,2,3,4	1
Changed	1-16	1-16
Mode		
Default		
Messages	X	X
Altered		
Note Number	X	X
True Voice	X	X
Velocity		
Note ON	X	X
Note OFF	X	X
After Touch		
Keys	X	X
Channels	X	X
Pitch Bend	X	X
Control Change	0 -127	7, 20-31, 52-61
Prog Change	1-128	1-101
System Excl.	O	O
System Common		
Song Pos	X	X
Song Sel	X	X
Tune	X	X
System real time		
Clock	X	X
Commands	X	X
Aux Messages		
Local ON/OFF	X	X
All Notes OFF	X	X
Active Sense	X	X
Reset	X	X

O: YES
X: NO

Errors' table

The table below shows the list of errors displayed by controller with their description and solving procedure.

Error1	Memory EEPROM error – contact your dealer
Error2	Disable to send SysEx memory dump message – set MIDI OUT on out mode
Error3	Entered wrong password – enter 106

EMC/EMI & Certificate of conformity

EMC/EMI

This device has been designed and manufactured to conform with directives and standards in the field of safety operations and electromagnetic interference.
This device uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However in spite of performing below standards there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception which can be determined by turning the device on and off, the user is encouraged to try to correct the interference by one or more of the following operations:

- Reorient or relocate the receiving antenna.
- Increase the separation between the device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Contact with the manufacturer (see: Before calling a service).
- Consult the dealer for help.

Certificate of Conformity

ELZAB S.A., ul. Kruczkowskiego 39, 41-813 Zabrze, Poland,
hereby declares on own responsibility that the following product:

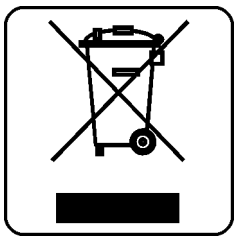
MGC-6 MIDI Guitar Controller (G LAB MGC-6)

that is covered by this certificate and marked with CE 07 label conforms with following standards:

PN-EN 60065:2004	Safety requirements for mains operated electronic and related apparatus for household and similar general use
PN-EN 55103-1:1998	Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1: Emission.
PN-EN 55103-2:1998	Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2: Immunity.

With reference to regulations in following directives:
73/23/EEC, 2004/108/EEC

Issued in Zabrze, October 2008
Jerzy Biernat
President of the ELZAB S.A. Board of Directors



DO NOT PLACE THIS PRODUCT INTO THE WASTE CONTAINER!

This device is marked with a cross-lined waste container symbol according to 2002/96/EU Directive on Waste Electric and Electronic Equipment.
Such marking informs that after usage equipment can not be trashed together with other household waste.
An user obligation is to return wasted equipment to a party collecting wasted electric and electronic equipment. Parties collecting such equipment organise a system, including local collection points, shops and other units, allowing to return such equipment. This Directive assures an user free of charge utilisation of such delivered equipment.
This device is made of materials which can be recycled or utilised after becoming out of use. Proper handling of wasted electric and electronic equipment reduce demand for row materials and contribute in avoiding harmful consequences for environment and health of people caused by dangerous components and not proper storing and utilising of such equipment.

Nr rys. G23INA00

COMPANY ADDRESS

ELZAB S. A.
ul. Kruczkowskiego 39, 41-813 Zabrze, Poland
phone +48 32 272 20 21, fax +48 32 272 81 90

Web site .....
www.glab.com.pl

Export Department .....
phone +48 32 272 30 51 inter. 34,
+48 32 272 20 21 inter. 366
e-mail: rydygier@elzab.com.pl

Technical Support .....
phone +48 32 272 26 23
+48 32 272 20 21 inter. 419, 220
e-mail: help@glab.com.pl