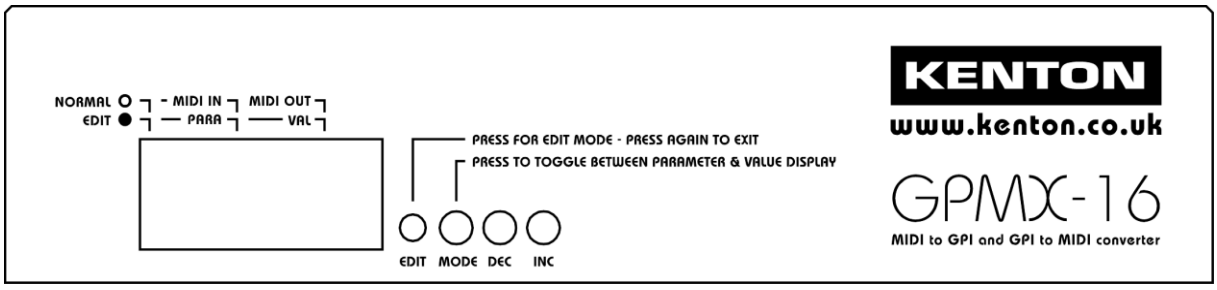
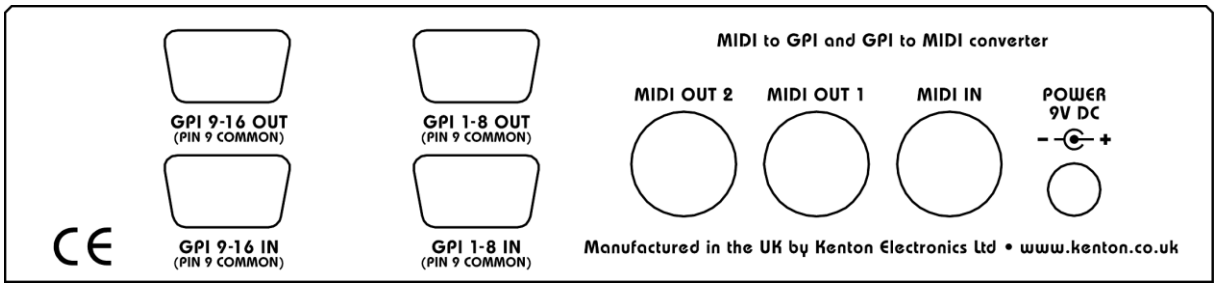
KENTON

GPMX-16

16 MIDI to GPOs and 16 GPIs to MIDI





Operating manual

FCC STATEMENT FOR GPMX-16:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, 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, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WEEE DIRECTIVE

(applies to the European Union & other European countries with separate collection systems)

The crossed-out wheelie bin symbol affixed to this product indicates that it should not be disposed of with other household wastes at the end of its working life. To prevent possible harm to the environment or to human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable re-use of material resources.

Household users should contact either the retailer where they purchased the product, or their local government office for details of where and how they can take this item for environmentally safe recycling. Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

For disposal in countries outside of the European Union
This symbol is only valid in the European Union (EU). If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Introduction

Welcome to the *GPMX-16* GPI to MIDI and MIDI to GPO unit. The *GPMX-16* is very easy to use, but please take a few moments to read through the manual to avoid any operational difficulties.

Connections

DC IN 9V
Plug the power adapter into here. The unit will take an adapter with an output of 9V either regulated or unregulated. The socket is a 2.1mm type with centre positive and is compatible with locking type plugs. Do not use a power supply with an output voltage higher than 9V, and the *GPMX-16* must not share an adaptor with any other device. Failure to observe this will invalidate your warranty, and will probably damage the other device, the *GPMX-16* and/or the power supply.

MIDI In
This input allows you to control the GPO outputs using MIDI. It also allows you to 'daisy chain' several boxes together. Any data received at the MIDI In socket is merged with any new data generated from the GPI inputs and everything is then sent to the MIDI outs 1 & 2. There is no limit to the number of *GPMX-16* units that can be daisy chained together as the data is re-generated rather than being merely copied.

MIDI out 1 & MIDI out 2
MIDI out 1 and MIDI out 2 carry identical MIDI information. The second output is provided so that data can be set to a backup computer system at the same time as supplying the primary computer.

Display

The display has several functions; In normal operating mode, the display will show three horizontal bars until a GPI input is received, it will then show a number between 1 and 16 to indicate the GPI input which was activated. Note that if two inputs are received in quick succession, it will show the later one. After a couple of seconds, the display will revert to the three dashes display. In this mode, the dots above the display will indicate MIDI In and MIDI out activity.

The display is also used for editing, see **Edit Mode** section later in this manual.

Using the GPMX-16

GP Inputs are on pins numbered 1 to 8 of the 9 pin D socket connectors (the lower row) – pin 9 is the common ground connection.

GP Outputs are on pins numbered 1 to 8 of the 9 pin D plug connectors (the upper row) – pin 9 is the common connection.

When power is applied to the *GPMX-16*, the words ***KENTON GPMX*** will scroll across the display, then three horizontal bars will show, indicating that no GPI input has recently been received.

Various parameters can be edited and stored – see **Edit Mode** section later in this manual.

The *GPMX-16* also contains a MIDI analyser – see the **MIDI analyser** section for more information.

Edit Mode

To put the *GPMX-16* into edit mode, use a screwdriver or pen to press the recessed edit button. The ***edit*** dot will light to show that it is in edit mode. The ***para*** dot will also light to show that the required parameter can be changed by using the **INC** & **DEC** buttons. When the required parameter has been selected, press the mode button. The ***para*** dot will go out and the ***val*** dot will light to indicate that the value can now be changed by using the inc and dec buttons.

When the required value has been set, either press the mode button again to select another parameter, or press the edit button again. This will return you to normal operating mode again. Whenever you return to Parameter mode the settings you have changed will be saved. Settings are stored in non-volatile EEPROM memory.

Note also that the *GPMX-16* will continue to function normally during the edit process, except that the display will not indicate an activated input. The parameter names below also scroll across the display.

GP Input Parameters

P10 **GP In MIDI transmit channel** (default: 1)
Range: 1 to 16

Sets the MIDI transmit channel for all GP Inputs.

P11 **GP In message type** (default: notes)

[not]	Notes
[con]	Controllers
[prg]	Program Changes

Sets the output MIDI message type for all GP Inputs.

P12 **GP In 1 note number** (default: 36)
Range: 0 to 120

Sets the note, controller or program number for GP Input number 1 (2 to 8 follow consecutively).

P13 **GP In 1-8 off send** (default: Yes)
Range: Yes or No

Sets whether MIDI note off or controller value=0 messages are sent for GP Inputs 1 to 8. Not applicable when using program changes.

P14 **GP In 9 note number** (default: 44)
Range: 0 to 120

Sets the note, controller or program number for GP Input number 9 (10 to 16 follow consecutively).

P15 **GP In 9-16 off send** (default: Yes)
Range: Yes or No

Sets whether MIDI note off or controller value=0 messages are sent for GP Inputs 9 to 16. Not applicable when using program changes.

P16 **GP In debounce time** (default: 20)
Range: 1 to 995 in 5ms steps

Sets the debounce value in milliseconds for all GP Inputs.

P17 **GP In On velocity** (default: 127)
Range: 1 to 127

Sets the On velocity value used for all GP Inputs when MIDI notes are being sent.

GP Output Parameters

P20 **GP Out Midi receive channel** (default: 2)
Range: 1 to 16

Sets the MIDI transmit channel for all GP Outputs.

P21 **GP Out message type** (default: Notes)

[not]	Notes
[con]	Controllers
[prg]	Program Changes

Sets the output MIDI message type for all GP Outputs.

P22 **GP Out 1 note number** (default: 36)
Range: 0 to 120

Sets the note, controller or program number for GP Output number 1 (2 to 8 follow consecutively).

P23 **GP Out 1-8 pulse length** (default: 100)
Range: [off], 1 to 250

Sets the pulse length in milliseconds for GP Outputs 1 to 8. If set to [off] then the outputs will remain on until an OFF message is received. Not applicable when using program changes.

P24 **GP Out 9 note number** (default: 44)
Range: 0 to 120

Sets the note, controller or program number for GP Output number 9 (10 to 16 follow consecutively).

P25 **GP Out 9-16 pulse length** (default: 100)
Range: [off], 1 to 250

Sets the pulse length in milliseconds for GP Outputs 9 to 16. If set to [off] then the outputs will remain on until an OFF message is received. Not applicable when using program changes.

P26 **GP Out CC data threshold** (default: 64)
Range: 1 to 127

Sets the data value at which GP outputs turn on when the MIDI source is set to controllers.

Common Parameters

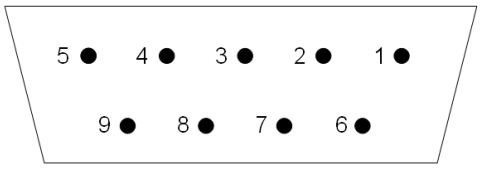
P30 **soft thru** (default: On)
Range: On or Off

Sets whether messages received at the MIDI Input are echoed to the MIDI outs.

Input Connections

Connections for the GP Inputs are on the lower pair of 9 pin D connectors. Below is the view looking at the back of the unit and is the same view as looking at the solder connections of the corresponding plug.

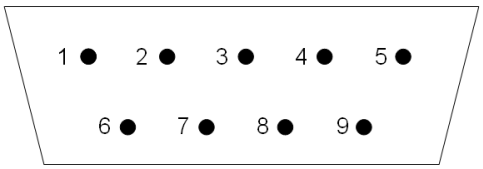
Pins 1 – 8 are the input pins and pin 9 is the common ground connection. The input pins are internally pulled up by 4K7 ohm pullups to +3.3 volts. Shorting an input to ground (pin 9) activates that input.



Output Connections

Connections for the GP Outputs are on the upper pair of 9 pin D connectors. Below is the view looking at the back of the unit and is the same view as looking at the solder connections of the corresponding socket.

Pins 1 – 8 are the output pins and pin 9 is the common connection. Pin 9 can be + or – relative to pins 1 to 8. The GPOs can switch up to 50 Volts at 100mA of resistive load. If you are switching inductive loads (such as conventional relays) ensure you use a snubber circuit or you will damage the solid-state relays inside the *GPMX-16*.



MIDI Analyser Mode

The *GPMX-16* has a built-in MIDI analyser function. This feature allows you to see what types of MIDI messages are being transmitted by your master keyboard/sequencer making the *GPMX-16* a useful diagnostic tool.

To enter analyser mode, power on the *GPMX-16* whilst holding the **MODE** button. [AnL] will be displayed while you hold the button down to indicate MIDI Analyser Mode. Upon release of the button, the display will show [rc] for *receive channel & status* mode. This means the display will show the MIDI receive channel of any messages it receives in the right hand two digits, and will show status in the left digit – this is explained further down the page.

Using the **INC**, **DEC**, and **MODE** buttons, different types of MIDI messages received may be displayed:

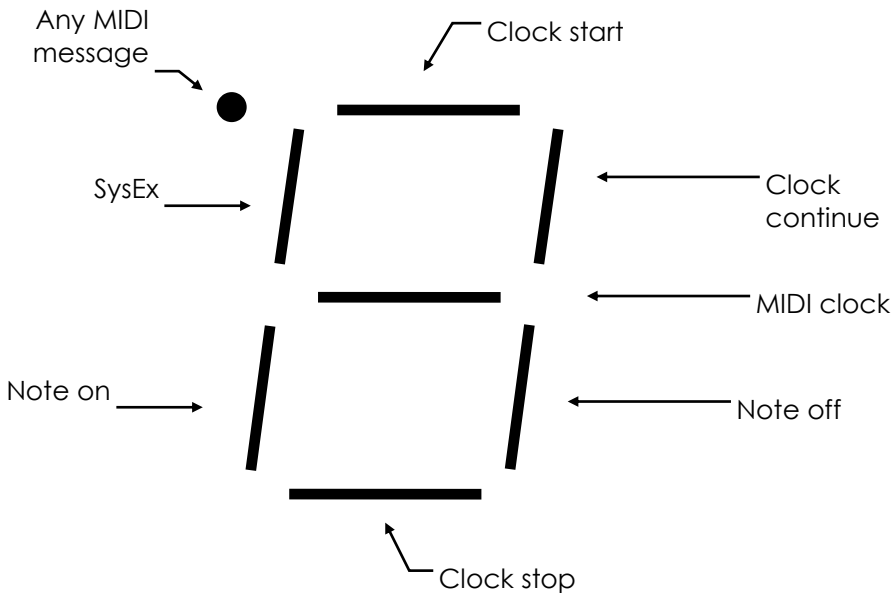
MODE	Short press	[rc] Receive channel & status
	Long press	[Pc] Program change
DEC	Short press	[nt] Note number
	Long press	[nv] Velocity
INC	Short press	[cn] Controller number
	Long press	[cv] Controller value

For whichever of the above selected, the *GPMX-16* will display the value it receives for the type of message currently selected.

Although pitchbend and after-touch are not strictly controllers, when *Controller number* [cn] mode is selected, [pb] will be displayed if a pitchbend message is received, and [af] will be displayed if an after-touch message is received. If *Controller value* [cv] mode is selected, and pitchbend or after-touch messages are received, their values will be displayed.

When *Receive channel & status* [rc] mode is selected, the right hand 2 digits show the received MIDI channel (if applicable) and the left-hand digit operates as a received MIDI message indicator. LED segments will flash when then following types of messages are received: Note on, Note off, SysEx, Timing clock (MIDI clock), Start, Stop, Continue.

The top left dot (any MIDI message) operates in all modes



To exit MIDI analyser mode, the power switch of the *GPMX-16* must be turned off then on again.

Factory Defaults

If you wish to reset your *GPMX-16* to factory defaults, you can do so by turning the power on whilst holding down all three push buttons (**MODE**, **DEC** & **INC**). This will return the *GPMX-16* to its default settings.

[Fd] (factory defaults) will momentarily be displayed when this has been done.

Displaying the Firmware Version

Power the unit on while holding the **INC** button pressed. While the **INC** button is held, the firmware revision number [2xxx] will be displayed in pairs – two dashes then digits 1 & 2 then digits 3 & 4 repeated. Releasing the **INC** button will revert to the normal operational mode.

Specifications

Power Input	9V DC – switch mode mains adaptor supplied
Power consumption	200mA max, 2.1mm plug (centre positive)
MIDI	In, Out1 & Out2 (out1 & out2 give the same data out)
Inputs	16 GPI – 8 on each of 2 x 9 pin D connectors – pin 9 common ground
Outputs	16 GPO – 8 on each of 2 x 9 pin D connectors – pin 9 common ground
Display	3 x 7 segment display
Weight	1Kg including PSU
Dimensions	190 x 110 x 45 mm
Non-volatile memory	EEPROM (no back-up battery required)

Warranty

The *GPMX-16* comes with a 12 month (from purchase date) back to base warranty, (i.e. customer must arrange and pay for carriage to and from Kenton Electronics Ltd). In the unlikely event of a problem, contact us by email through our website or by telephone.

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