KENTON electronics

GS-2

MIDI Guitar Amplifier Foot-Switch Controller

User Instructions

Introduction

At last, an affordable unit which enables you to put your amplifier foot-switches (channel/overdrive/graphic etc.) under MIDI control, enabling to control them from your MIDI pedal board or MIDI seqeuncer. For playing live or in a studio, the GS-2 makes your set-up work for you freeing you to get on with your playing.

Setting Up

MIDI Connections

The GS-2 must be connected to your MIDI set-up. Using a standard MIDI cable, connect one end into the MIDI Out of your MIDI effects processor or other MIDI device, and plug the other end into the MIDI In of the GS-2. Connect the MIDI Thru on the GS-2 to the MIDI In of any other MIDI device if necessary.

Foot-Switch Connections

To connect the GS-2 to the foot-switch inputs;
Connect the outputs `TO AMP A (/B)` to the foot-switch inputs on your amplifiers or A/B amp-switcher box.

The Three Edit Modes

Switching On

When you first switch on the GS-2, it will momentarily display the software version number, then revert to Patch Edit Mode, displaying the current patch number (default patch 1).

Loading factory defaults;
If the unit is switched on whilst holding down both the `+` and `-` keys, the display will read `Fd` indicating that the GS-2 has been reset and the factory defaults loaded into the memories.

**The GS-2 has two edit modes as indicated by the LED bars `PATCH/CHAN**nel`;

When the green LED next to `**PAT**ched` is on, the GS-2 is in patch edit mode.
When the yellow LED next to `**CH**annel` is on, it is in Channel/System edit mode.

There is a third special edit mode called Controller Assignment Mode which is described later in the manual.

A red dot will flash on the right of the display to indicate when the GS-2 is receiving MIDI data (except MIDI clock messages).

1, Channel and System Settings

To be in Channel edit mode, the yellow `CHannel` LED must be lit. If the `PATch` LED is lit, press the `PATCH/CHAN` key.

The display will now show the current MIDI channel number 1 to 16.

The system settings consist of;

MIDI channel
Whether foot-switch control AMP A is a normal or momentary type control
Whether foot-switch control AMP B is a normal or momentary type control

Editing the MIDI channel;

To edit the MIDI receive channel number, use the `+` and `-` keys.
If you press and hold the `+` key, then also hold the `-` key, the channel number will increase faster. If you press and hold the `-` key then also hold the `+` key, the channel number will decrease faster.

If you try to go past 16, the channel number will `wrap-round` back to channel 1. The opposite also applies.

Changing foot-switches from normal to momentary type;

To change the foot-switch outputs `AMP A` and `AMP B` from normal to momentary, press and hold the AMP A/B keys till the yellow LED by `MOMentary` lights. To change to output back to a normal foot-switch control, again, press and hold the AMP A/B key till the LED is off.

Storing system settings;

To store the system settings, press and hold the `PATCH/CHAN` key till the display reads `st`.

Sticky keys;
If a setting has been changed (and the red dot in the centre of the display is lit), you will notice it will take two presses of the `PATCH/CHAN` key to change to Patch Edit Mode (`CH` LED lit). This `sticky key` function is so that the GS-2 remains in Channel/System edit mode if the `PATCH/CHAN` key is pressed and held to store the settings.

2, Patch Edit Mode

Selecting patches;

To be in patch edit mode, the green `PATch` LED must be lit. If the `CH` LED is lit, press the `PATCH/CHAN` key.
The display will now show the current patch number 1 to 128.

As the GS-2 only has a two digit display, a special method is employed to display numbers larger than 99. When displaying numbers above 99, the following format is used :-

a dash " - " at the bottom of the left-hand display = 100+
a dash " - " in the middle of the left-hand display = 110+
a dash " - " at the top of the left-hand display = 120+

For example, supposing the display reads " - 7 "
if the dash is at the bottom, this means 107
if the dash is in the middle, this means 117
if the dash is at the top, this means 127

Note, that no values above 128 are used.

Select a patch number from 1 to 128 by pressing the `+` and `-` keys.
If you press and hold the `+` key, then also hold the `-` key, the patch number will increase faster. If you press and hold the `-` key then also hold the `+` key, the patch number will decrease faster.

If you try to go past 128, the patch number will `wrap-round` back to patch 1. The opposite also applies.

As you change patches you will see the orange LEDs turn on or off indicating which effects pedals or foot-switches are active.

The relays will not actually switch (i.e. the patch will not physical change your set-up) till you release the `+` or `-` key. This is to stop the relays from frantically trying to switch as you scroll through patches to get to the one you need.
When you release either the `+` or `-` key, you will hear the relays click, changing your set-up.

Editing patches;

You can manually switch on or off any of the foot-switches by pressing the relevant keys.

If you change any of the patch settings, you will see a red dot appear in the centre of the display. This shows that one or more of the settings has been edited and not yet stored. By changing the settings back to their original values, the dot will disappear (now indicating the patch is unaltered).

Storing patches;

To store the patch settings, press and hold the `PATCH/CHAN` key till the display reads `st`.

Sticky keys;

If a patch has been changed (and the red dot in the centre of the display is lit), you will notice it will take two presses of the `PATCH/CHAN` key to change to Channel/System Settings Mode (`PAT` LED lit). This `sticky key` function is so that the GS-2 remains in Patch Edit Mode if the `PATCH/CHAN` key is pressed and held to store the edited patch settings.

3, Controller Assignment Mode

This is an `advanced` programming mode is for those who wish to control each of the amplifier foot-switches individually (as opposed to all at once within a patch) from their sequencer or other MIDI device. Each device can be activated by its own MIDI controller (or several MIDI controllers at once).

This mode is not likely to be used live by a guitarist, but used within a studio or home set-up being controlled by a computer sequencer.

To enter this mode, you must press and hold the `**PATCH/CHAN**` key whilst switching on the GS-2.

The display will then read `Cn` letting you know you are in Controller Assignment Mode.

The orange LEDs for each pedal or amp control will let you know if any of them have a MIDI controller assigned to them.

At this point, the controllers can be de-activated (but not activated) from the switches by pressing the relevant key for that switch.

Assigning MIDI controllers to each of the Switches;

There are 121 (0 to 120) MIDI controllers to choose from in MIDI.
Press the `+` or `-` keys to select a controller from 0 to 120. Numbers above 99 are displayed in the same ways as patch numbers, previously described.

If you press and hold the `+` key, then also hold the `-` key, the controller number will increase faster. If you press and hold the `-` key then also hold the `+` key, the controller number will decrease faster.

If you try to go past 120, the controller number will `wrap-round` back to controller 0. The opposite also applies.

A quick way to call up the controller you wish to assign is to move that controller on your synth (or send controller data from your sequencer). The GS-2 will then display that controller number, and then assignments can be made as described below.

Once a controller has been selected, press any of the pedal or amp Switch keys to assign the selected MIDI controller to that Switch. More than one controller at a time can be assigned to any number of pedal or amp Switches.

Storing Controller Assignments;

If you change any of the controller assignments, you will see a red dot appear in the display. This shows that a setting has been edited and not yet stored. If a device has a controller assigned to it, any new assignment will cancel the original controller.

To store the controller assignments, press and hold the `**PATCH/CHAN**` key till the display reads `st`. The GS-2 will now go to normal Patch mode.

Using MIDI controllers to activate Foot-Switches;

To activate a Foot-Switch, a MIDI controller message must be sent to the GS-2. The controller must be sent on the same MIDI channel as the GS-2 is set to, and be the correct controller number assigned to the Switch. A controller value over 65 activates the Switch, and a value below de-activates it. See `Controller Numbers` section (later in manual) for a list of controller use.

GS-2 System Exclusive Information

The first five bytes are always the same for all data types;

[1]	F0h	- Sysex command
[2]	00h	- Company identity first byte
[3]	20h	- Company identity second byte
[4]	13h	- Company identity third byte
[5]	11h	- Product code

[6]   0dddnnnn   - where nnn = MIDI channel & ddd = data type
                    if ddd = 000 = set system parameters
                    if ddd = 001 = set output relays
                    if ddd = 010 = information request
                    if ddd = 011 = memory request
                    if ddd = 100 = switch `Thru` to `Thru`
                    if ddd = 101 = switch `Thru` to `Out`

Note that the unit must be set to channel nnnn for any ddd to have effect.

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ddd = 000 = set system parameters

[7]   0000nnnn   - where nnnn = the new MIDI channel
[8]   0000BA00   - where A & B = set amp. #A & B to `MOM`

Note that all bits are active high.

[9]   F7h   - end of exclusive

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ddd = 001 = set output relays

[7]   00000000   - where 4321 = out #4, 3, 2, & 1
[8]   0000AB00   - where AB= amp. # A & B

Note that all bits are active high.

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ddd = 010 = information request

[7]   000000bb   - where bb = memory area
                    valid = 00 = patch data 01-64
                             01 = patch data 65-128
                             02 = controller assignment & system set-up

[8]   F7h   - end of exclusive

Note that the GS-2 saves the area requested via the MIDI Thru socket. The Thru socket must be switched to `Out` (ddd=101) prior to any information request or this command is ignored.

ddd = 011 = memory dump

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[ 7]     000000bb     - where bb = memory area as per info request
[ 8]     00yyyyy      - where yyyyy = number of bytes

[ 9]     0000xxxx     - where xxxx = low 4 bits of data
[10]     0000zzzz     - where zzzz = high 4 bits of data
```

Note that bytes 9 & 10 are repeated the number of times specified in 8.

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[11]     0xxxxxxx     - where xxxxxxx = the lowest 7 bits of the CRC
[12]     0yyyyyyy     - where yyyyyyy = the middle 7 bits of the CRC
[13]     000000zz     - where zz = the highest 2 bits of the CRC

[14]          F7h     - end of exclusive
```

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ddd = 100 = switch `Thru` to `Thru`

```
[ 7]          F7h     - end of exclusive
```

Restores the MIDI Thru socket to a `Thru` of the incoming data.

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ddd = 101 = switch `Thru` to `Out`

```
[ 7]          F7h     - end of exclusive
```

Switches the MIDI Thru socket to become a MIDI Out.

Note that no incoming MIDI is transmitted via the `Thru` socket once this command has been accepted.

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General Notes;

A, Following an information request (ddd = 010) and assuming the MIDI Thru socket is switched as an Out (ddd = 101), the GS-2 will save the memory area specified, formatted as per a dump (ddd = 011).

B, The CRC is calculated from the `number of bytes` byte [8], onwards. Since both of the patch memory areas are of the same length, it is possible to modify where the patch data is loaded by changing byte [7]. I.e. you can load the high patches to the lower memory area or vice versa. If [7] = 00 load = low area, if [7] = 01 = high area.

The system data is of a different length and will only load as stored.

C, Patch data is loaded/saved to/from EEPROM only. To access a new patch you must change it. System data (controller assignments, MIDI channel, and MOM/AMP status) are all updated on completion of a successful load operation.

Controller Numbers

Controller Number		Control Function
Decimal	**Hex**	
0	00H	Bank switch MSB
1	01H	Modulation wheel/lever
2	02H	Breath controller
3	03H	Undefined
4	04H	Foot controller
5	05H	Portamento time
6	06H	Data entry MSB
7	07H	Main volume
8	08H	Balance
9	09H	Undefined
10	0AH	Pan
11	0BH	Expression controller
12-15	0C-0FH	Undefined
16-19	10-13H	General purpose controllers (1-4)
20-31	14-1FH	Undefined
32-63	20-3FH	LSB for values 0-31
64	40H	Damper pedal (sustain)
65	41H	Portamento
66	42H	Sostenuto
67	43H	Soft pedal
68	44H	Undefined
69	45H	Hold 2
70-79	46-4FH	Undefined
80-83	50-53H	General purpose controllers (5-8)
84-90	54-5AH	Undefined
91	5BH	External effects depth
92	5CH	Tremolo depth
93	5DH	Chorus depth
94	5EH	Celeste (detune) depth
95	5FH	Phaser depth
96	60H	Data increment
97	61H	Data decrement
98	62H	Non-registered parameter number LSB
99	63H	Non-registered parameter number MSB
100	64H	Registered parameter number LSB
101	65H	Registered parameter number MSB
102-120	66-78H	Undefined
121-127	79-7FH	Reserved for channel mode messages

Specifications

Power;   240V, 50Hz

Note; The GS-2 has a built in mains transformer factory set to 240 volts AC 50Hz unless otherwise marked. The transformer also has tappings for 220/120/100 volts AC, but these adjustments must only be made by qualified service personnel. There are two internal fuses fitted but replacement of these should also be confined to qualified service personnel.

Inputs;   5 push buttons
                      1 power switch
                      MIDI In   5 pin DIN type
                      Power input   IEC power socket

Outputs;   6 LED indicators
                      2 digit 7 segment LED display
                      MIDI Thru (/Out)   5 pin DIN type
                      2 foot-switches   1/4`` mono jacks

Accessories;   IEC power lead, User manual

Warranty

The GS-2 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). The GS-2 must be returned to us in it`s original packaging, as we will not accept responsibility for damaged caused in transit by insufficient packaging.

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