

**KENTON**

***LD-2 mkII***

**level display unit**

***Operating Manual***

## **FCC STATEMENT FOR LD-2 MkII:**

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 wheelee 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.

## Introduction

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Congratulations on your purchase. Mainly intended as a MIDI volume level indicator where high visibility is needed, the LD2 displays the level both numerically 0-127 or 0-20, and on a 20 segment bargraph. The **LD-2 mkII** can easily be re-configured to display the data value sent by any controller on any MIDI channel, or to display program changes.

## Connections

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### MIDI In

Plug your MIDI pedal, controller or sequencer's MIDI Out into here. The **LD-2 mkII** has no MIDI thru, so it will need to be at the end of your MIDI chain, or fed from a thru box. Note that if you are using several MIDI devices "daisy chained" together, data may get corrupted to the devices at the end of the line. Best practise is to use a "Thru Box" if there are more than 3 devices chained together.

### DC IN 9-12V

Plug the supplied power adapter into here. The unit will take an adapter with an output in the range of 9-12V either regulated or unregulated. The socket is a 2.1mm type with centre positive. Do not use an adaptor with an output voltage higher than 12V, also the **LD-2 mkII** 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 **LD-2 mkII** and/or the power supply.

## Display

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The display has two types of readout. Firstly, values are displayed in numeric format. This can be either 0-127 as used by MIDI or alternatively 0-20. Secondly, there is a 20-segment bar readout where a value of zero will show no bars, and a value of 127 will show all bars, with intermediate values showing a proportionate number of bars. See **Changing the Display Mode** on page 6 for instructions on configuring the display.

## Using the LD-2

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First connect the supplied power supply to the DC input socket on the left side of the unit, then connect your MIDI signal cable to the MIDI In socket.

When power is applied to the **LD-2 mkII** the words **KENTON LD-2** will scroll across the display, then three horizontal bars will show, indicating that no valid message has been received yet.

The factory default is to display the value of any message sent by controller #7 on MIDI channel #1.

## Changing the Controller & MIDI Channel

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To change the MIDI message being displayed, use a small screwdriver or matchstick (or similar) to press (then release) the learn button. The display will then show the letters “L r n” for learn. The learn button is deliberately recessed to prevent accidental re-assignment.

The next valid MIDI message received on any MIDI channel will be stored, so that any subsequent message received from that controller / program / note number / aftertouch value / pitchbend value on that MIDI channel will be displayed both on the 7-segment display, and on the bargraph.

The learned message and channel information is saved in non-volatile memory, so the unit will “remember” its assignments for the next time it is used.

### LEARNING PROGRAM CHANGES

MIDI program changes can be displayed as either 0 to 127 or 1 to 128 on your keyboard. In order to ensure that the **LD-2 mkII** displays the correct program number, press the recessed button to put the unit into learn mode, then press the program change button on your synth with the number "2" on it. This will either be the 2nd or 3rd button depending which scheme your keyboard uses. The **LD-2 mkII** will now match your keyboard.

**Notes:** LD-2s with firmware earlier than #1126 cannot display program changes.  
LD-2s with firmware up to #2004 will not learn program changes if your keyboard sends Bank Select messages.  
From firmware #3009, Bank Select messages are ignored in learn mode, so cannot be displayed by the LD-2.

## List of Controller numbers

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<b>Controller Number</b>	<b>Control Function</b>
0	Bank select MSB
1	Modulation wheel or lever
2	Breath controller
3	Undefined
4	Foot controller
5	Portamento time
6	Data entry MSB
7	Main volume
8	Balance
9	Undefined
10	Pan
11	Expression controller
12	Effect control 1
13	Effect control 2
14-15	Undefined
16-19	General purpose controllers (1-4)
20-31	Undefined
32-63	LSB for controllers 0-31
64	Damper pedal (sustain) (Hold 1)
65	Portamento on/off
66	Sostenuto
67	Soft pedal
68	Legato footswitch (val 0-63=normal 64-127=legato)
69	Hold 2
70	Sound controller 1 (default=sound variation)
71	Sound controller 2 (default=timbre/harmonic content)
72	Sound controller 3 (default=release time)
73	Sound controller 4 (default=attack time)
74	Sound controller 5 (default=brightness)
75-79	Sound controllers 6-10 (no defaults)
80-83	General purpose controllers (5-8)
84	Portamento control
85-90	Undefined
91	Effects 1 depth (formerly external effects depth)
92	Effects 2 depth (formerly tremolo depth)
93	Effects 3 depth (formerly chorus depth)
94	Effects 4 depth (formerly celeste (detune) depth)
95	Effects 5 depth (formerly phaser depth)
96	Data increment
97	Data decrement
98	Non-registered parameter number LSB
99	Non-registered parameter number MSB
100	Registered parameter number LSB
101	Registered parameter number MSB
102-119	Undefined
120-127	Reserved for channel mode messages

## Changing the Numeric Display Mode

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To change the display mode to 0-20 or back to 0-127, hold the learn button in for a few seconds. At first it will display L r n (learn), but after several seconds it will show 20 for 0-20 mode or 127 for 0-127 mode. If you continue to hold the button in, it will continue to toggle between the two modes. When the mode you want to use is displayed, release the button and the unit will be ready to use again. This setting is also stored in the non-volatile memory. If you learn program change, then display mode will be reset to 0-127.

## SysEx Messages

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You can control every segment of both the numeric and bargraph displays using SysEx messages if required using the format: F0 00 20 13 07 HB L1 L2 L3 L4 L5 F7. For HB (high bits) bit 7 of L1 data goes in b0 of HB, bit 7 of L2 data goes in b1 of HB, etc. Bits 5,6,7 of HB must always be zero.

L1 to L5 are the displays from left to right, e.g. L1 is the leftmost digit and L5 is the rightmost bargraph.

Example to light all segments of the bargraphs you would send F0 00 20 13 07 18 00 00 00 7F 7F F7.

Example to put 888 in all 3 digits & blank bargraph you would send F0 00 20 13 07 00 7F 7F 7F 00 00 F7.

## Factory defaults

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If you want to reset your **LD-2 mkII** to its factory default settings, you can do so by applying power to the unit whilst holding the learn button pressed. **Fd** (factory defaults) will momentarily be displayed when this has been done.

The factory default settings are:

MIDI channel #1

Controller #7 (MIDI volume)

Numeric display in 0-127 mode

## Check Firmware Version

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To see what version of the firmware your **LD-2 mkII** is running, turn on the power whilst holding down the learn button (and keep it held). The four-digit firmware number is displayed as two pairs of digits. Note that this will reset the **LD2 mkII** to factory default.

## Firmware Upgrade

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If a new version of the firmware is made available, this can be sent to the **LD2 mkII** via MIDI from a computer as a SysEx message. Full instructions will be included in the firmware update zip file.

Note: You need to start transmission of the SysEx file within 20 seconds of “- - -” appearing on the display at power-on (i.e. as soon as the start-up message has finished scrolling across the display), or else it will be ignored.

The following numbers will show on the display, with the following meanings:

- |   |                                |
|---|--------------------------------|
| 2 | Data being received            |
| 3 | All received                   |
| 4 | CRC check OK, writing firmware |
| 5 | Successful upgrade             |

### WARNING:

It is essential that power is maintained during the firmware upgrade process. Failure of power during stage 4 will leave the **LD2 mkII** unusable and will require the return of the unit to Kenton.

Once 5 is showing on the display, indicating a successful upgrade, wait 10 seconds and turn off the power. After another 10 seconds, turn the power back on.

If the unit hangs during stage 2, not enough bytes have been received. If 8 shows on the display, the data is corrupt. A possible cause for these is a non-compliant MIDI interface (we have found that some do not transmit SysEx messages properly). Cycle power to recover.

## Specifications

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Power Input	9-12V DC – mains adaptor supplied (or phantom power from LD-3 or 4)
Power	110mA, 2.1mm plug (centre positive)
MIDI	In only. 5 pin 180 deg DIN socket. Valid learned messages are: Controllers (CCs), Program changes, Note numbers, Aftertouch & Pitchbend.
Display	3 x 7 segment display and 2 x 10 segment bargraph
Weight	285g
Dimensions	119 x 54 x 40 mm
Non-volatile memory	EEPROM (no back-up battery required)

## Warranty

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The **LD-2 mkII** 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).



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