LMD04 – LMD08 – LMD16

AVR

4, 8 and 16 way RGB LED driver

With onboard LED control panel

What will this unit do?

This unit is a dimmable power unit to control colour changing AVR Ledion fixtures. It is designed to be used with 5mm-LED based fixtures. It will not operate 1 watt or 3 watt Luxeon-based fixtures. It is controlled by a DMX512 lighting controller or its own built in programmes.

The LMD04 unit has four independent outputs. The LMD08 unit has eight independent outputs. The LMD16 unit has sixteen independent outputs. There is also an LMD8/16 which has eight pairs of outputs for driving higher powered fixtures.

Each output of the LMD unit can power 96 RGB LEDs or 128 RGBW LEDs. For example this would be: Two 300x300 wall panels, one 600x600 wall panel, one 600x600 dancefloor panel, two AR111 downlighter units.

The AVR website www.abstractavr.com gives more information on how many LEDs are used in each type of fixture.

Do not exceed the loading of each output as the LMD unit may be damaged.

Connecting up

First install the Ledion lighting units in the desired location, then connect them to the LMD driver units using 8-way straight-through RJ45 cables.

Install a mains power feed to the LMD unit.

If your installation includes several LMD units, you can control them all together by linking them using 3-pin XLR cables. The cables should be plug-to-socket, wired straight through.

The control display will light up which indicates power to the unit is OK. The control display has a rotating status symbol to indicate that DMX data is being received OK, or a status message will be shown if DMX is not present.

If you are using the LMC-08 controller, the DMX status should be showing.

System controllers

The system may be controlled using a LMC-08 programmable controller, or any other lighting controller using the DMX control standard. It can also run built in programmes with no controller. When using the LMC-08 controller with the LMD-16 unit, outputs 9-16 produce the same output as 1-8.

Specifications

Control protocol: DMX512
Channel usage: depends on mode

mode	LMD04	LMD08	LMD16
RGBD/RGBW	16	32	64
RGB/HSL	12	24	48
SNGL	4	8	16
RGBD/RGBW+COND	4	4	4
RGB/HSL+COND	3	3	3
SNGL+COND	1	1	1
MACR	4	4	4

LED outputs: 24Vdc 4 channels per output
        (Red/Green/Blue/White) 500mA max drive per output
LED outputs overload/short protected
DC output to LMC-08: 24Vdc 500mA max

Connector pinouts

4 way RJ11 connector for LMC08 input

Pin 1 GND
Pin 2 DMX+
Pin 3 DMX-
Pin 4 +24V power supply output
Pin 1 is the pin nearest the LEDs

8 way RJ45 connector to LED heads
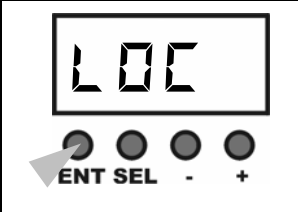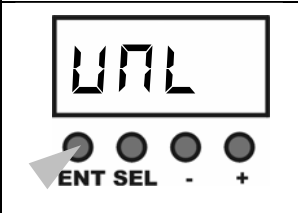
Pin 1 Common
Pin 2 Signal 1
Pin 3 Signal 2
Pin 4 Signal 3
Pin 5 Signal 4
Pin 6 Common
Pin 7 not used
Pin 8 not used

LOC ENT SEL - +	To lock, turn off the power, then hold down the ENT button while turning on the power. The unit will show LOC.
UNL ENT SEL - +	To unlock, turn off the power, then hold down the ENT button while turning on the power.

If you use a LMC-08 control unit, connect it to the first LMD unit in the line (the one with a free DMX input plug) using a 4-way cable into the small control socket.

The LMC-08 takes power from the driver box and does not need a power supply.

If you are using a standard DMX controller, connect it to the first LMD unit in the line (the one with a free DMX input plug). The wiring of the DMX signal should be ground on pin 1, "Hot" signal on pin 3, "Cold" signal on pin 2.

Setting options

The control panel allows you to set the DMX start address of the unit, set DMX options and select built in programmes.

Hold down the ENT button to get into the control panel menu.

Press ENT to go round the menu options. Press SEL to go back to the previous menu option.

The – and + buttons control the setting of the option, then press ENT to store the new option.

Stand alone operation

If no DMX is connected, and the STA option is set to ON, the unit will produce stand-alone patterns. You can control the pattern, colour and speed using the menu options. You cannot program your own patterns on this unit.
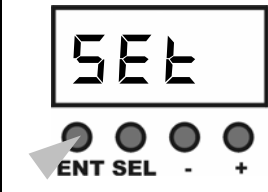
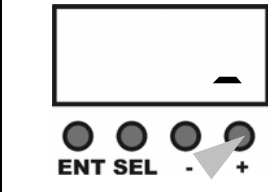|	
rEd	Press the – or + buttons to change the colour (jumps into COLR menu)

Set colour
This sets the colour used by each pattern

COLr	Hold down the SEL button to get into the COLR menu (or press one of the + or – buttons)
rEd	Select the colour using the + and – buttons. Default is ALL (rainbow)
SEt	Press the ENT button to store the colour setting.

The available colour settings are: WHIT, RED, ORNG, GRN, CYAN, BLUE, MAGE, ALL (rainbow)

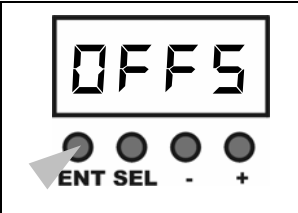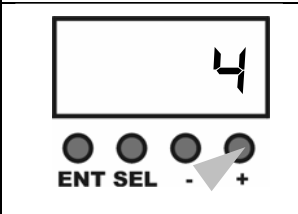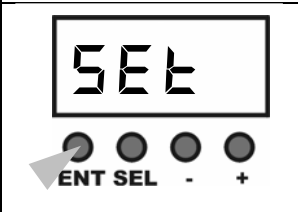|	
SEt	Press the ENT button to store the standalone mode.

Options Clear to default
Clears all menu options back to factory default

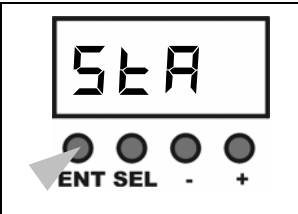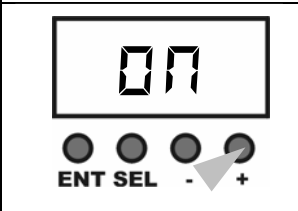|	
OPC	Keep pressing the ENT button to get to the OPC (Option Clear) option.
_	Press the + button.
dOnE	After a short delay the display will show DONE.

Control panel lock

If the unit is in a location where people might press the buttons and change the settings, you can lock the control panel. The display will show LOC at power up when locked. The control panel buttons have no effect when the unit is locked.
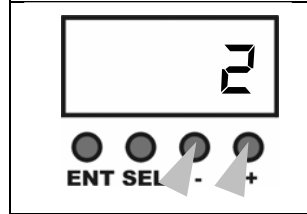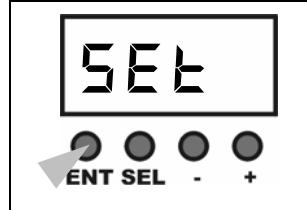
Set pattern

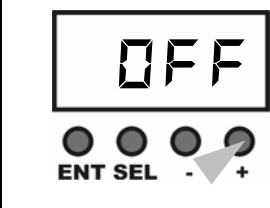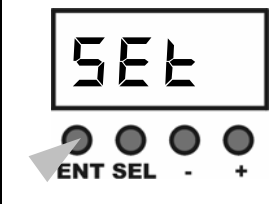|	
PAtt	Press the SEL button to get to the PATT option
2	Select the pattern using the + and – buttons. There are 16 patterns. Default is 1
SEt	Press the ENT button to store the pattern setting.

The patterns are:

Pattern descriptions

1 – Static colour	All 16 outputs are set to the colour selected using the COLR option. Colour "All" selects a static rainbow across 16 outputs.
2 – static pastel colour	All 16 outputs are set to a pastel version of the colour selected using the COLR option. Time select not used. Colour "All" selects a pastel rainbow across 16 outputs.
3 – swap snap	Outputs snap alternately between the colour selected using the COLR option and black (i.e. odd outputs are lit then even outputs). If colour "All" is selected the colour will change on each snap to run through all colours.
4 – swap fade	Outputs fade alternately between the colour selected using the COLR option and black.
5 – Colour fade	All 16 outputs fade through colours similar to the selected colour. If colour "All" is selected, the outputs fade through the full rainbow. All outputs are the same.

OFFS	Keep pressing the ENT button to get to the MACR option.
4	Use the + button to set macro offset. Settings are 0, 4, 8, 12. Default is 0.
SEt	Press the ENT button to store the macro offset.

Standalone enable

Controls whether the unit will produce standalone patterns when no DMX is received, or will hold the last DMX state.

StA	Keep pressing the ENT button to get to the COND option.
On	Use the + button to set on or off.

6 – Pastel fade	All 16 outputs fade through pastel versions of the selected colour. If colour "All" is selected, the outputs fade through a pastel version of the full rainbow. All outputs are the same.
7 – Wipe snap	The selected colour "wipes" across the 16 outputs. Then the outputs are "wiped" to black. If colour "All" is selected, the colour changes slightly for each wipe.
8 – Wipe fade	The selected colour "wipes" across the 16 outputs with a fade time. Then the outputs are "wiped" to black. If colour "All" is selected, the colour changes slightly for each wipe.
9 – Block wipe	A block of 4 outputs "wipes" the selected colour across the 16 outputs. Other outputs are black. If colour "All" is selected, the colour changes on each wipe to run through all colours.
10 – Block fade	A block of 4 outputs "wipes" the selected colour across the 16 outputs with a fade time. Other outputs are black. If colour "All" is selected, the colour changes on each wipe to run through all colours.
11 – Bouncing wipe	A block of 4 outputs "wipes" the selected colour across the 16 outputs, reversing direction at each end. Other outputs are black. If colour "All" is selected, the colour changes on each wipe to run through all colours.
12 – Colour comet	A single output "wipes" the selected colour across the 16 outputs, leaving a fading "tail" behind it. If colour "All" is selected, the colour changes on each wipe to run through all colours.
13 – Background comet	The selected colour sets a background colour, then a white "comet" runs across the outputs leaving a fading pastel "tail" behind it. If colour "All" is selected, the background is black and the comet tail fades through all colours as it fades out.
14 – Pastel theme fade	Each of the 16 outputs fades through pastel versions of the selected colour, but using an offset so they are all slightly different to the adjacent output. If colour "All" is selected the full rainbow of colours is used.
15 – Rainbow fade	Each of the 16 outputs fades through colours similar to the selected colour, but using an offset so they are all slightly different to the adjacent output. If colour "All" is selected the full rainbow of colours is used.
16 – Auto pattern	The unit runs through all patterns using the selected Time and Colour settings. Each pattern is run for 16 cycles.

Condensed mode

Switches all outputs to be controlled by the DMX channels for the first output (i.e. all outputs are the same)

COMd	Keep pressing the ENT button to get to the COND option.
OFF	Use the + button to set on or off.
SEt	Press the ENT button to store the condensed mode.

- When condensed mode is on, the unit will only occupy 4 DMX channels (3 if in RGB or HSL mode)
- If SNGL mode is also set the unit will only occupy one DMX channel, all colours of all outputs will be controlled by that one channel.
- This option has no effect in DMX macro mode

Macro offset option

The Macro Offset is used with LMD04 and LMD08 units to allow you to choose which of the 16 fixtures' worth of output will be shown. (For example if you had 4 LMD04 units, you would set them to Macro Offset 0, 4, 8 and 12 so that you would see the patterns for all 16 fixtures displayed properly).

Output channels (relative to start address set on display). (LMD4 and LMD8 stop at outputs 4 and 8 respectively)

	RGBD, RGBW	RGB, HSL	SNGL
Output 1	1-4	1-3	1
Output 2	5-8	4-6	2
Output 3	9-12	7-9	3
Output 4	13-16	10-12	4
Output 5	17-20	13-15	5
Output 6	21-24	16-18	6
Output 7	25-28	19-21	7
Output 8	29-32	22-24	8
Output 9	33-36	25-27	9
Output 10	37-40	28-30	10
Output 11	41-44	31-33	11
Output 12	45-48	34-36	12
Output 13	49-52	37-39	13
Output 14	53-56	40-42	14
Output 15	57-60	43-45	15
Output 16	61-64	46-48	16

Macro mode

Macro pattern selects one of the 16 patterns as listed in the "Stand Alone Programmes" section.
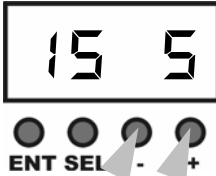
Macro time sets the time for each step of the pattern from 0=0.5 sec to 90%=1hr, then 100%=sound mode

Macro Colour selects the colour for the pattern. 0%-75% sets a variable fixed colour. 75% to 88% sets rainbow colours. 89%-100% sets white.

Dimmer sets the overall brightness of all outputs.

In DMX Macro mode, all units linked by DMX will process the macro commands independently, and synchronisation of multiple units cannot be guaranteed over a long time period. We recommend that the DMX controller is programmed to change the Pattern periodically to ensure the units remain synchronised. All units will resynchronise when a new pattern is selected.

Set the Step Time for the pattern

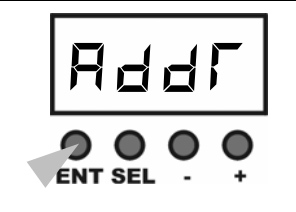|	
	Press the SEL button to get to the TIME option. (you can go back with the ENT button if you go past it)
	Use the + and – buttons to select the time duration of each pattern step. You can select 05 S (half second), 1 S (second), 2 S, 5 S, 15 S, 30 S, 1 M (minute), 2 M, 5 M, 15 M, 30 M, 60 M, SND (sound trig). (M is shown as ⊓)
	Press the ENT button to store the step time setting.

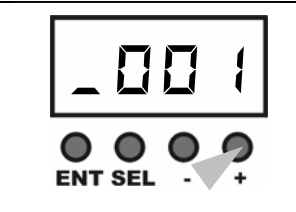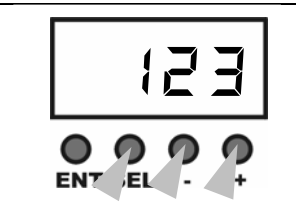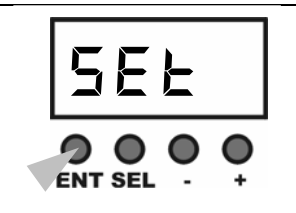## Linking units in master–slave mode

You can link multiple units together in Stand Alone mode and they will slave together. The master unit outputs information for 16 fixtures (64 DMX channels).

On the slave units, the MODE option should be set to RGBW and the MACR option set to OFF (the default options). ADDR should be set to 001

> ➤ Ensure the STA option is OFF for the slave units and ON for the master unit (otherwise the slaves may try to become masters).
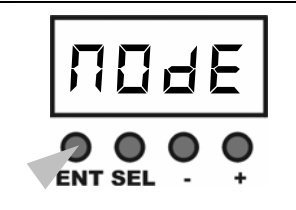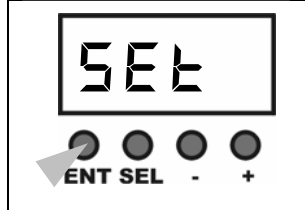
DMX control

The DMX base address is set using the ADDR option.

`Addr`	Hold down the ENT button to get to the ADDR option.
`_001`	Press the + button to enter Address setting mode.
`123`	Use the three right hand buttons to set the digit above them (hundreds, tens and units). The new address will take effect immediately but is not stored until you press ENT.
`SEt`	Press the ENT button to store the DMX address.

DMX control modes

The MODE option sets the DMX control mode for the unit

`MOdE`	Hold down the ENT button to get into menu mode, then press the ENT button to get to the MODE option.

`rGbU`	Use the + button to set the control mode. Modes are listed below.
`SEt`	Press the ENT button to store the control mode.

The available options, selected using the right hand buttons, are

- RGBD – individual control of each channel with overall master dimmer.
- RGB – individual control but no master dimmer
- RGBW – individual control including white output
- HSL (hue, saturation, luminance) – colour mix mode. Hue sets the colour from all available colours in the spectrum. Saturation sets the strength of the colour, from full colour at the bottom, through pastel colours, to white at the top. Luminance sets the brightness (dimmer control) for the colour.
- SNGL – all colours on each output are controlled by a single DMX channel. Used when single-colour fixtures are being controlled. Uses one DMX channel per output only.
- MACR – DMX controls the inbuilt programs. 4 DMX channels are used

DMX channels

The unit recognises the following DMX commands for each output channel:

	RGB	RGBD	RGBW*	HSL	SNGL	MACR
1	Red	Red	Red	Hue	Dim	Pattern
2	Green	Green	Green	Sat	-	Time
3	Blue	Blue	Blue	Lum	-	Colour
4	-	Dim	White	-	-	Dim

In MACR mode, the first 4 channels control all 16 outputs.