

AbstractAVR Ltd 2006 Tel:0116 278 8078
<http://www.abstractavr.com>



LMD04 – LMD08 – LMD16

AVR

4, 8 and 16 way RGB LED driver

Specifications

Control protocol: DMX512

Channel usage: 16 channels occupied for LMD04, 32 channels for LMD08, 64 channels for LMD16. If options set to RGBD+Dimmer disable, then 12, 24 and 48 channels are used. In macro mode, 3 channels used.

DC output to LMC-08: 12V unregulated

Connector pinouts

4 way RJ11 connector for LMC08 input

Pin 1 GND

Pin 2 DMX+

Pin 3 DMX-

Pin 4 +12V (unreg)

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

Start-up configuration

Some options may be set on the unit using the start-up configuration mode.

To enter start-up configuration, switch ON all switches with the power off. Then turn on the power and flip switch 1 up and down 4 times (i.e. up – down – up – down). You have 10 seconds to start the switch sequence after power up, after that the switch is used for DMX addressing or pattern selection.

The green LED will flash. This indicates that you are in start-up configuration mode. Dip switches 2-10 then have the following functions.

1	Turn off to store configuration
2	ON=RGBW mode (DMX ch4=White), OFF=RGBD mode (DMX ch4=dimmer)
3	ON=Use preprograms when no dmx, OFF=hold last state when no dmx (disable preprograms)
4	ON=Enable DMX, OFF=disable DMX *note 1
5	ON=Enable dimmer, OFF=Disable dimmer (no effect if in RGBW mode) *note 2
6	not used
7	not used
8	not used
9	not used
10	not used

*1: This option may be used when the unit is in internal preprogram mode, but interference causes it to think it is detecting DMX.

*2: When Dimmer is disabled, the unit only uses 3 DMX channels per output, i.e. RGB-RGB-RGB.... If option 2 is set to RGBW this option has no effect.

The ON option is always the default (factory) setting.

To store the configuration, turn off switch 1. The green LED will flash rapidly. Then turn off the unit and select the correct dip switch settings for normal operation. Repower the unit.

The configuration will be stored indefinitely in the unit's non-volatile memory. It is only necessary to set the options when the unit is first installed.

If linking multiple units in a master-slave setup or for DMX Macro, ensure options 2 and 5 are set to OFF (default) on all the units.

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 ARI 11 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 red light on the unit indicates power to the unit is OK. The green light indicates that DMX data is being received OK.

If you are using the LMC-08 controller, the green light should be on.

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.

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 dip switches

The dip switches allow you to set the DMX start address of the unit, or select built in programmes.

The switches may be changed at any time and the unit will begin to use the new settings immediately.

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.

Note: When using pattern 1 "Static colour", switches 1-3 should be set to OFF. This ensures that the system identifies the Master unit correctly. If any of switches 1-3 is on when using pattern 1, stand alone master-slave may not operate correctly.

☐ = off (switch up) ☑ = on (switch down)

1 2 3	Time select	4 5 6	Colour select	7 8 9 10	Pattern select
☐☐☐	0.5 sec	☐☐☐	White	☐☐☐☐	1-Static colour
☐☐☐	1 sec	☐☐☐	Red	☐☐☐☐	2-Static pastel colour
☐☐☐	5 sec	☐☐☐	Orange	☐☐☐☐	3-Swap snap (snap chase of alternate fixtures)
☐☐☐	15 sec	☐☐☐	Green	☐☐☐☐	4-Swap fade (fade chase of alternate fixtures)
☐☐☐	1 min	☐☐☐	Cyan	☐☐☐☐	5-Colour Fade (all channels change colour)
☐☐☐	15 min	☐☐☐	Blue	☐☐☐☐	6-Pastel Fade (all channels change colour)
☐☐☐	30 min	☐☐☐	Magenta	☐☐☐☐	7-Wipe Snap (wipes colour across 16)
☐☐☐	1 hr	☐☐☐	All	☐☐☐☐	8-Wipe Fade (wipes colour across 16)
				☐☐☐☐	9-Block wipe (snap chase of 4 fixtures across 16)
				☐☐☐☐	10-Block fade (fade chase of 4 fixtures across 16)
				☐☐☐☐	11-Bouncing wipe (add across 16)
				☐☐☐☐	12-Colour Comet (snap in fade out across 16)
				☐☐☐☐	13-Background Comet (back colour + white dot)
				☐☐☐☐	14-Pastel theme fade (across 16)
				☐☐☐☐	15-Rainbow fade (offset across 16 fixtures)
				☐☐☐☐	16-Auto pattern

Pattern descriptions

1 – Static colour	All 16 outputs are set to the colour selected on switches 4-5-6. Time select should be set to 0.5 sec (1-3 off). Colour “All” selects white.
2 – static pastel colour	All 16 outputs are set to a pastel version of the colour selected on switches 4-5-6. Time select not used. Colour “All” selects white.
3 – swap snap	Outputs snap alternately between the colour selected on 4-5-6 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 on 4-5-6 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.
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.

DMX control

The DMX base address is set on the dip switches using binary code. Each switch adds a value to the address as shown. The start address may be set at any channel from 1 to 510.

Switch	1	2	3	4	5	6	7	8	9
Value	1	2	4	8	16	32	64	129	256

Switch 10 sets DMX Macro mode, allowing DMX control of the internal programmes:

sw 10 OFF (up) = standard DMX mode (RGB control of each fixture),
sw 10 ON (down) = DMX macro mode (control of internal programmes),

Standard DMX mode

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

Base	Red
Base + 1	Green
Base + 2	Blue
Base + 3	White

Output channels (relative to start address set on dip switches)

1-4	Output 1
5-8	Output 2
9-12	Output 3
13-16	Output 4
17-20	Output 5
21-24	Output 6
25-28	Output 7
29-32	Output 8
33-36	Output 9
37-40	Output 10
41-44	Output 11
45-48	Output 12
49-52	Output 13
53-56	Output 14
57-60	Output 15
61-64	Output 16

Special DMX modes

Using the start-up configuration mode, it is possible to set different DMX modes for the unit.

If RGBD mode is enabled, then the White output is not used, and the 4th DMX channel becomes an overall dimmer for each output.

Base	Red
Base+1	Green
Base+2	Blue
Base+3	Dimmer

If RGBD mode is enabled and Disable Dimmer is set, then each output reduces to 3 DMX channels. So 1-3 is output 1, 4-6 is output 2, 7-9 is output 3 etc. This may be useful for compatibility with some DMX controllers or to reduce the number of DMX channels used.

DMX Macro mode

With Dip switch 10 ON, DMX controls MACRO mode. 3 DMX channels are used. Dip switches 3-9 set the DMX base address of the unit in blocks of 4 channels. Dip switches 1 and 2 set the Macro Group of the unit. The Macro Group is used to allow you to choose which of the 16 fixtures' worth of output will be shown when using LMD04 or LMD08 units. (For example if you had 4 LMD04 units, you would set them to Macro Groups 1, 2, 3 and 4 so that you would see the patterns displayed properly).

1	2	Macro group
Off	Off	1 (no output offset)
Off	On	2 (outputs offset by 4)
On	Off	3 (outputs offset by 8)
On	On	4 (outputs offset by 12)

Macro channel functions

Base	Macro Pattern
Base+1	Macro Time
Base+2	Macro Colour

Macro pattern selects one of the 16 patterns as listed in the Internal Programmes section.

Macro time sets the time for each step of the pattern from 0=0.5 sec to 100%=1hr





Macro Colour selects the colour for the pattern. 0-12% sets white. 88%-100% sets rainbow colours. 13%-87% sets a variable fixed colour.

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 every few hours to ensure the units remain synchronised. All units will resynchronise when a new pattern is selected.

Internal Programmes

If no DMX is detected, the dip switches are used to select internal programmes.

Master-slave operation is possible with internal programmes. The master unit (whether 4/8/16) will output full 16 fixtures information (64 DMX channels) to slave units. The slave units run in standard DMX mode.

LMD04 Slave 1 / LMD08 Slave 1/LMD16 slave 1	1	1 2 3 4 5 6 7 8 9 10 
LMD04 Slave 2	17	1 2 3 4 5 6 7 8 9 10 
LMD04 Slave 3 / LMD08 Slave 2	33	1 2 3 4 5 6 7 8 9 10 
LMD04 Slave 4	49	1 2 3 4 5 6 7 8 9 10 

If you want the unit to hold the last DMX state when DMX signal is lost, rather than starting a pre-program, pre-programs may be disabled when DMX is lost using the start-up configuration option 3 – see later section.