



AVR Ledion System

LUD192 driver unit

Software version 2.14

About this unit

The LUD192 is an LED driver for the AVR Ledion system. It has 4 individually controllable LED outputs. Each output can drive up to 48 one-watt LED emitters in 4 channels, 12 per channel. So for example it could drive the following:

12 LU3 or LU4 fixtures on one channel

6 LU6 fixtures on the second channel

1 LUS1200/36 batten on the third channel

1 LUS1200/36 batten on the fourth channel

The LEDs may be controlled from DMX512, or from the unit's on board programs.

Multiple units may be linked up by DMX512, or in a stand-alone master-slave configuration.

The LUD192 is configured using a letter/number display system with pushbuttons.

The LUD192 is fully protected against short circuits on its LED output.

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Notes

Connecting it up

The power cable of the unit should be connected to AC mains, 80-260V, 50-60Hz.

If the unit is installed, ensure there is clear airflow around the unit for cooling, or it may overheat and shut down.

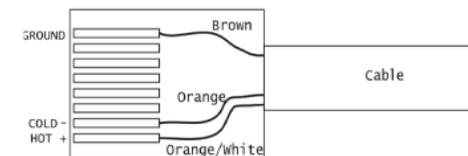
There are six control sockets.



The DMX sockets (in and link through) allow control from a DMX desk or master-slave linking of units. Pin 1 is the leftmost pin in the above picture. The 48V switch puts out power on unused pins of the DMX sockets to power an external controller.

Warning: Although this unit uses similar connectors to a computer network, it is not compatible. Network equipment may be damaged if you connect this unit to a computer network.

DMX pins: Pin 1=Data Hot, Pin 2=Data Cold, Pin 8=Ground
RJ45 viewed from contact side

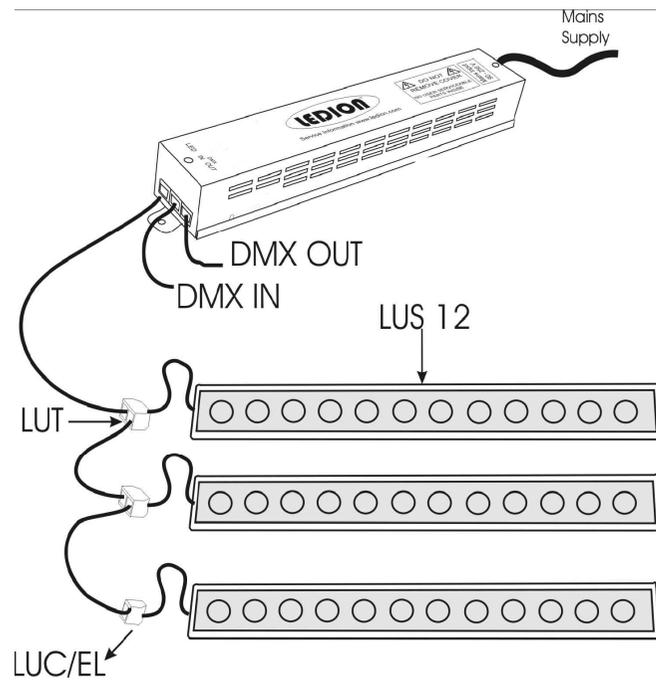


The LED fixtures link to the four LED sockets. If you want to connect more than one fixture, multiple fixtures (up to a total of 12 LED emitters) can be connected using the LUT tee-piece.

All fixtures should be connected to the LUD192 power supply with RJ45 data cables into the LUT (tee piece). The fixture is plugged into the port marked LED, the cable coming from the LUD192 is plugged into the port marked IN and the cable to the next fixture is plugged into the port marked OUT.

When you come to the last fixture on each output, an LUC/EL should be used in place of the tee as you do not need to carry on to any other fixtures. The LUC/EL can be used for the end of the line or as an in line connector to extend data cables.

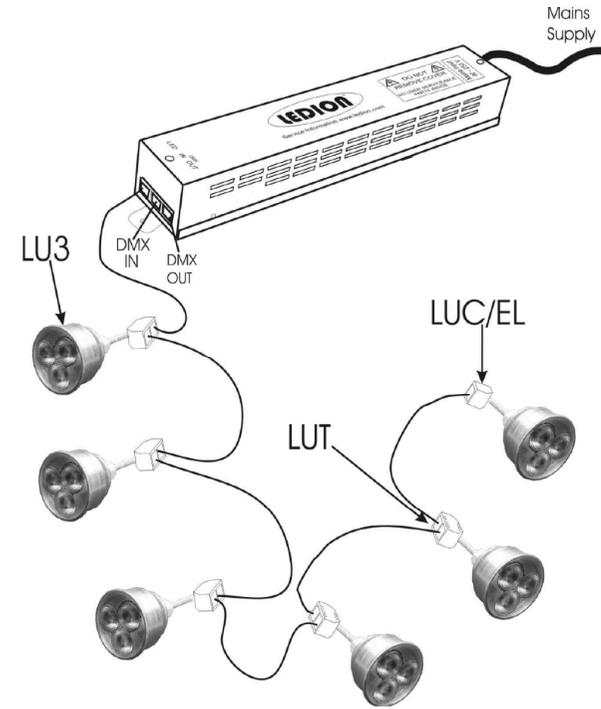
Note: All tee-piece sockets must have either a fixture or another tee-piece connected – if there are any open sockets in tee-pieces, none of the fixtures will light.



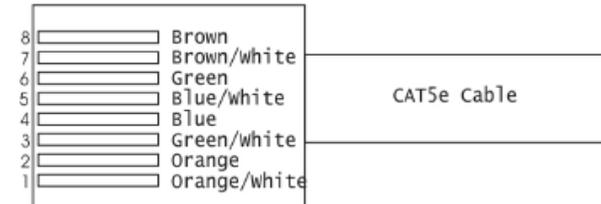
Notes

Specifications

Unit type: Switch mode constant current LED driver
 Outputs: 4 ports each with 4 dimmed outputs 0-350mA per output, 48 volt
 Input: AC 80V-260V 50-60Hz 0.6A
 Control: DMX512 or internal control
 Protection: LED outputs protected against short circuit and miswiring.
 Driver protected by progressive thermal shutdown.



LED cable wiring: Pin 1=Red pos, pin 2=Green pos, pin 3=Blue pos, pin 4=White pos, pin 5=Red neg, pin 6=Green neg, pin 7=Blue neg, pin 8=White neg.

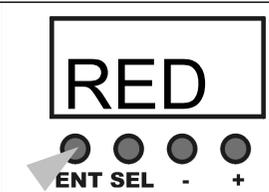


Operating the LUD192

Test operating mode

When the unit powers up for the first time, or after being reset to factory defaults, it runs a simple option system giving various static colours and fades. The Test Mode setting is remembered after a power off. Press ENT to change to the next option or SEL to go back to the previous option.

TEST mode does not operate when DMX is present. To use TEST mode ensure all DMX is disconnected.

	<p>Runs a simple R-G-B fade. You can set speed using the SPD menu option and you can switch to snapping by setting FADE option to OFF.</p>
	<p>RED / YELL / GREE / CYAN/ BLUE / PURP: sets these colours.</p>
	<p>Use the +/- buttons to select a user colour.</p>

Status displays

In DMX mode the display shows

_001

The _ is replaced by a rotating circle if DMX is being received.

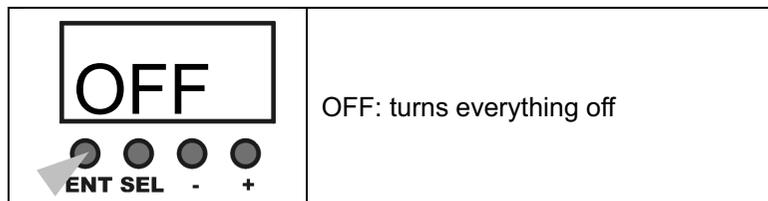
To enter the menu system hold the ENT button (above the _)

	<p>Press the ENT button to store the calibration setting. Then to exit CAL mode, hold down ENT, or press ENT/SEL to calibrate another colour.</p>
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NOTE: setting the calibration to 0 or a low number will turn off the output completely.

The calibration is the same for all 4 outputs of the driver (ie all reds are calibrated the same, all greens are the same etc). You cannot independently calibrate each output.

	<p>White emitters only (if LED fixtures are RGB only, no light will be on).</p>
	<p>ALL: turns on all LEDs</p>
	<p>Runs an RGBW fade. You can set speed using the SPD menu option and you can switch to snapping by setting FADE option to OFF.</p>
	<p>Rainbow output, with each of the 4 outputs showing a different colour.</p>
	<p>Replay the stored DMX state. Use the STOR menu option to record this state.</p>
	<p>Runs random colours, sound triggered</p>



OFF: turns everything off

If DMX is received while the unit is in Test mode, then it will switch to DMX mode. If DMX is lost, it will revert to Test mode.

Test mode can be disabled by setting the TST menu option to OFF.

Linking units in master-slave mode

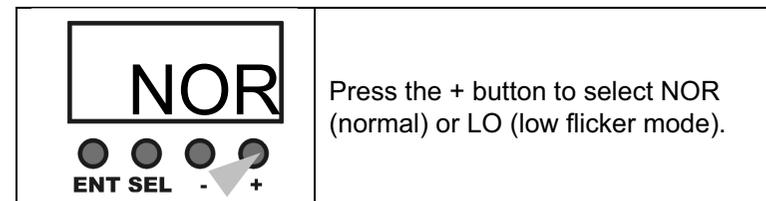
You can link multiple units together in Stand Alone mode and they will slave together. Slave units should have ADDR set to 001, and the MODE option set to RGBW (the default options).

Important: Do not connect DMX when units are slaved in stand alone mode. The DMX will conflict with the stand alone information and cause flickering.

Operation in DMX mode

In its normal mode, the unit is controlled by sixteen DMX channels:

1	Output 1 Red
2	Output 1 Green
3	Output 1 Blue
4	Output 1 White
5	Output 2 Red
6	Output 2 Green
7	Output 2 Blue
8	Output 2 White
9	Output 3 Red
10	Output 3 Green
11	Output 3 Blue



Press the + button to select NOR (normal) or LO (low flicker mode).

Colour calibration

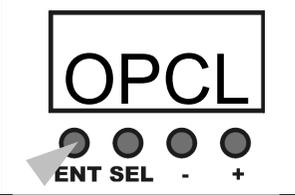
The CAL option allows you to calibrate the colour output/white balance of the unit, by setting the maximum brightness of each colour.

	<p>Keep pressing the ENT button to get to the CAL option.</p>
	<p>Press the + button to enter CAL mode. Then press the ENT/SEL buttons to select CALR, CALG, CALB or CALU (red, green, blue or white)</p>
	<p>Press the + or – buttons to set the calibration. 255 is the default setting (no change to the output)</p>
	<p>Press the ENT button to store the calibration setting.</p>

Other configuration

Option Clear to factory defaults

Resets all options and patterns to factory defaults when you press the right hand button. This will erase any patterns you have programmed.

	<p>Keep pressing the ENT button to get to the OPCL option.</p>
	<p>Press the + button. The display will show WAIT while the memory is cleared.</p>

Flicker reduction mode

Sets a reduced flicker mode (by increasing the dimming frequency of the LEDs). This can be needed when TV cameras are in use. When set to LO, dimming at low levels is slightly more “steppy”.

	<p>Keep pressing the ENT button to get to the FLIC option.</p>
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12	Output 3 White
13	Output 4 Red
14	Output 4 Green
15	Output 4 Blue
16	Output 4 White

You set the base DMX address using the ADDR option (hold the left hand button for 3 sec).

The display will show the base DMX address, with a rotating status symbol when DMX is being received.

The following options affect DMX operation:

CHAN may be set to 4, 8, 16 - 4 links the 4 outputs together, 8 links 1 to 3 and 2 to 4, 16 is 4 independent outputs
 MODE may be set to RGBW, RGB, or COND. (COND links the 4 colours on each output to be controlled by a single channel)

The following table shows how the DMX control channels are used in the different configurations.

DMX control channels

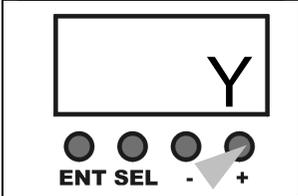
Chan	4			8			16		
Mode	rgbw	rgb	cond	rgbw	rgb	cond	rgbw	rgb	cond
DMX chan									
1	R1-4	R1-4	A1-4	R1+3	R1+3	A1+3	R1	R1	A1
2	G1-4	G1-4		G1+3	G1+3	A2+4	G1	G1	A2
3	B1-4	B1-4		B1+3	B1+3		B1	B1	A3
4	W1-4			W1+3	R2+4		W1	R2	A4
5				R2+4	G2+4		R2	G2	
6				G2+4	B2+4		G2	B2	
7				B2+4			B2	R3	
8				W2+4			W2	G3	
9							B3	R3	
10							R4	G3	
11							G4	B3	
12							B4	W3	
13							R4		
14							G4		
15							B4		
16							W4		

R=Red, G=Green, B=Blue, W=White

A=all outputs i.e. RGBW

DMX store mode

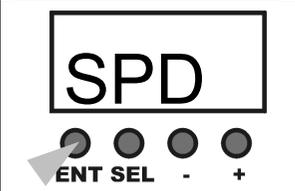
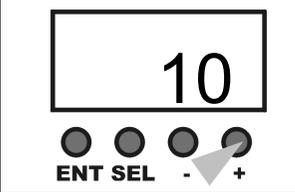
You can capture a DMX state and store it. This allows you to program a particular state then remove the DMX controller, the LED output will remain as you set it.

	<p>Keep pressing the ENT button to get to the STOR option.</p>
	<p>Set the input DMX state you want to store. Use the +/- button to set option to Y.</p>
	<p>Press the ENT button to store.</p>

To output the stored state, ensure TST mode is set to ON, then go round the test menu until the option is STOR. This setting will be remembered when the unit is powered off and on.

Speed / Fade mode

Sets speed and fade mode for the internal standalone programs

	Keep pressing the ENT button to get to the SPD or FADE option.
	Use the +/- button to set speed from 1-20, or Fade ON or OFF
	Press the ENT button to store.

DMX control values

Red, Green, Blue, White

DMX	Output
0	Off
1-254	Variable output 1-99%
255	Full On

DMX control options

To enter the option menu, hold the ENT button for 3 sec. Press ENT to go to the next option, or SEL to go back to the previous option.

Use the +/- buttons to change the option setting.



DMX address

Sets the DMX address the unit is to respond to

	<p>Hold down the ENT button to get to the ADDR option.</p>
	<p>Use the +/- buttons to set the address</p>
	<p>Press the ENT button to store the DMX address.</p>

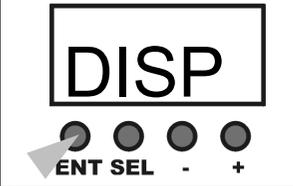
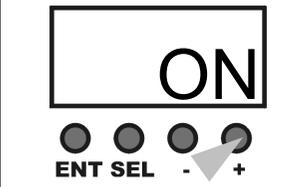
Test mode

Sets whether the internal test / standalone mode will operate when DMX is not present

	<p>Keep pressing the ENT button to get to the TST option.</p>
	<p>Use the +/- button to set test mode on or off.</p>
	<p>Press the ENT button to store.</p>

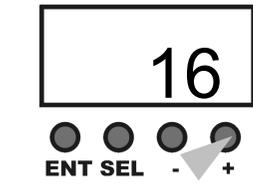
Display enable mode

Blanks the display after 20sec if set to OFF

	Keep pressing the ENT button to get to the DISP option.
	Use the +/- button to set ON (Display constantly on) or OFF (display blanks after 20sec)
	Press the ENT button to store..

Multiple output mode

You can link the outputs together if you need to save DMX channels.

	Keep pressing the ENT button to get to the CHAN option.
	Use the +/- button to set 4, 8, 16 mode. 4: all 4 outputs are the same, only 4 DMX channels are used. 8: outputs 1+3 are the same and 2+4 are the same, 8 DMX channels are used. 16: all outputs independent, 16 DMX channels are used.
	Press the ENT button to store.

Colour mode

Sets the colour mode

	Keep pressing the ENT button to get to the MODE option.
	Use the +/- button to set RGBW, RGB or COND. RGBW: each output uses 4 channels RGB: each output uses 3 channels, white output disabled COND: each output uses 1 channel, all colours output the same
	Press the ENT button to store.

Power balance mode

This mode limits the LED brightness when 2 or more colours are lit to keep the overall brightness constant

	Keep pressing the ENT button to get to the PBAL option.
	Use the +/- button to turn on or off.
	Press the ENT button to store.