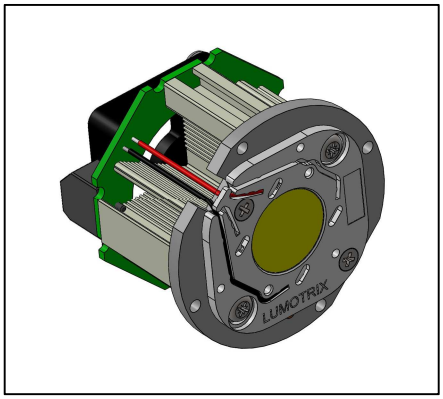
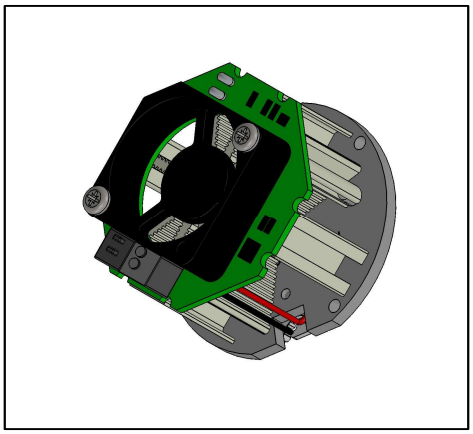
LEDengine-C





50 Watt LEDengine
Up to 4900 lumens

Fig.1 LEDengine uses Sharp MegaZeni LEDs

Description

The Lumotrix LEDengine-C is a compact high power LED light engine comprising a Lumotrix Lumoclip mounted on a LEDisk heat-spreader plate and integrated with a heat-sink, fan and control electronics. The Lumoclip is the light source of the LEDengine and is available in a choice of color temperature and CRI with a power rating of up to 50W. Lumoclip is available separately and has its own datasheet. LEDengine-C requires a constant current power supply for the LED and has on board electronics to generate the supply for the fan. The level of the constant current will determine the light output of the LEDengine.

There is another type of LEDengine – type T for the Sharp TigerZeni 2 colour LED. There is a separate datasheet for this.

Features:

- High Power LED light source with heat-sink, fan and control electronics.
- Fan speed controlled according to LED temperature.
- Constant current power supply required.
- Uses world class Sharp LEDs.
- Low profile flat surface to fit most reflectors.
- Or use Lumotrix compatible Optosource reflector.

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LEDengine-C

Specification:

Operating Temperature Range: -10ºC ~ +49ºC

Storage Temperature Range: -40ºC ~ +70ºC Humidity: 95% RH max

LED life expectancy: 40,000 hours with light output reduced to 70%

Fan life expectancy: L10 (10% failure):98,000 hours, L2 (2% failure): 48000 hours. All @30ºC air input.

LED supply: variable constant current up to 950 mA depending on lumens output required at up to 50V typical, 52V max.

Supplied with connection wires or poke-in connector.

LEDengine Selection:

				Standard Light Output				Boosted Light Output							
				Standard Lumen @ 25 ºC	LED Supply Const.Curr	Max LED temp	Maximum Ambient	Boost Lumen	LED Supply Const.Curr	Max LED temp	Max ambient	LED (max) Vf	LED (abs. max) If		
Power (W)	LEDengine	CRI	CCT (K)	Lumen	If (mA)	ºC	ºC	Lumen	If (mA)	ºC	ºC	V dc	mA	Sharp LED inside	
50	LE-50-827	83	2700	4010	950	95	49	4330	1050	90	40	51.5	1200	GW6DME27XFC	
50	LE-50-830	83	3000	4230	950	95	49	4575	1050	90	40	51.5	1200	GW6DME30XFC	
50	LE-50-840	82	4000	4530	950	95	49	4892	1050	90	40	51.5	1200	GW6DME40XFC	
50	LE-50-850	82	5000	4550	950	95	49	4912	1050	90	40	51.5	1200	GW6DME50XFC	
50	LE-50-927	93	2700	3500	950	95	49	3780	1050	90	40	51.5	1200	GW6DGE27XFC	
50	LE-50-930	93	3000	3690	950	95	49	3982	1050	90	40	51.5	1200	GW6DGE50XFC	
50	LE-50-940	92	4000	3910	950	95	49	4176	1050	90	40	51.5	1200	GW6DGE40XFC	
50	LE-50-950	92	5000	4140	950	95	49	4227	1050	90	40	51.5	1200	GW6DGE50XFC	

Fig.2 LEDengine selection chart

Sharp LEDs can be operated to give a standard lumen output, or they may be operated with increased drive current to give a boosted lumen output. This boosted output comes at the cost of reduced efficiency and increased operating temperature of the LED. The increased operating temperature also means that the LED life will be shorter. The boost option is only recommended for experienced users. The LEDengine selection chart Fig.2 shows the standard LED operating conditions in blue and the boosted ones in red. Users must then confirm in practice that measured temperatures are what they expect. Standard operating current and light output in the chart are based on the datasheets of the Sharp LEDs, as is the maximum LED temperature. The maximum ambient temperature is based on the expected temperature rise of the LED. For example

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LE-50-830-C has an expected temperature rise at 950 mA LED current is 46ºC (measured experimentally). The absolute maximum temperature allowed for the LED is 95ºC. This means that the maximum allowable ambient temperature (shown in the chart) is 49ºC (i.e.95ºC - 46ºC). Looking at the boosted output for the same LEDengine, we see a suggested increase in LED current to 1050mA. Straight away the LED maximum temperature has to be de-rated to 90ºC according to the Sharp LED datasheet and at the same time the temperature rise increases to 50ºC. This means that the maximum allowable ambient temperature has been reduced to 40ºC (shown in the chart). This is probably the lowest maximum ambient that is allowable in real world operation, and this is what determines the amount of boost current that can be applied.

On the LEDengine-C the fan is powered by an internal buck regulator. It adds about 10mA to the power consumption at the normal operating voltages which are in excess of 35VDC. This additional current is small and has not been shown in the LED selector chart. If the fan stops during operation of the LEDengine the heat-sink temperature will rise rapidly. Unchecked, this will destroy the LED.

Power supplies

Lumotrix offers 40W and 60W constant current power supplies, from Mean Well, which have a current output programmable via our Softstart pcb. The arrangement is shown in Fig.3 below. LED engines come with pre-soldered wires (24awg, 7/0.2 mm) length 200mm for connection to a power supply. The red wire should be connected to the positive output of the supply and the black wire should be connected to the negative output. Alternatively LEDengines can be supplied with a poke-in connector as illustrated in Fig.1. The poke-in nearest the edge of the pcb is for the negative wire. Also, the polarity of the connections is marked on the pcb.

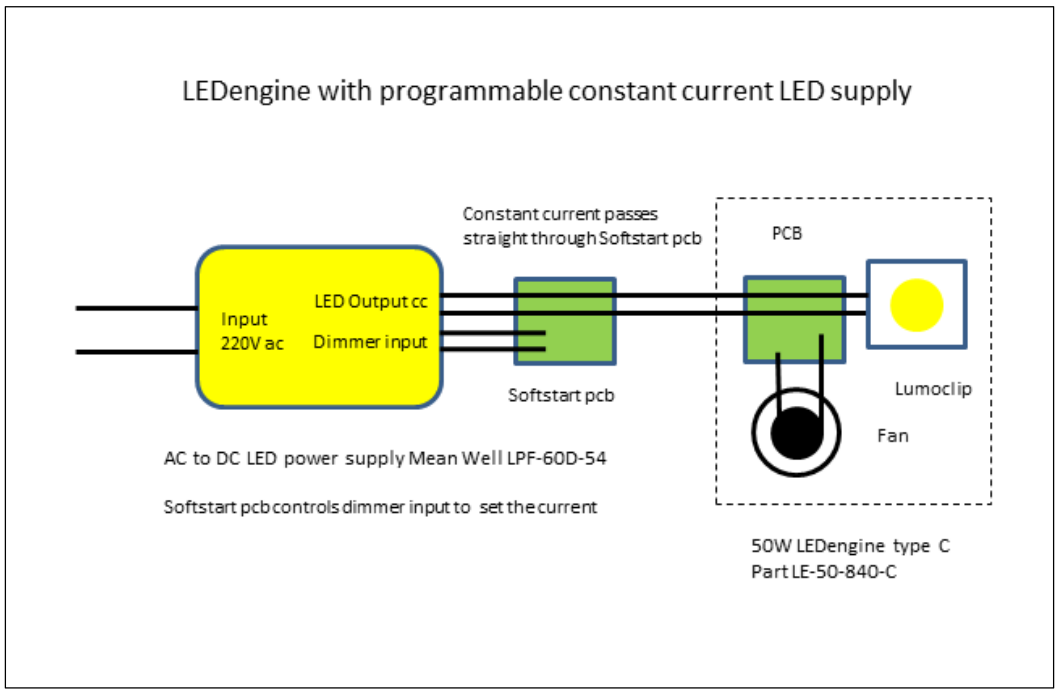

Fig.3 Programmable constant current power supply with LEDengine

For the LED supply, maximum current ratings should be observed as shown in Fig.2 or overheating may occur. This will appear as black burn marks under the yellow surface of the LED phosphor.

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Mounting

The LEDengine can be mounted to a surface using the M4 square nut inserted in one of the T slots in the heat-sink. The T-slots can be seen at the top of the LEDengines in Fig. 1. Alternatively the LEDisk on the front of the LEDengine has 4 holes diameter 2.6mm which can be used with M2.5 screws or No.4 self-tapping screws to provide a front fixing. This front fixing method is used to fix LEDengines to Lumotrix array plates (see website for sizes). The location of the holes is shown in Fig.4.

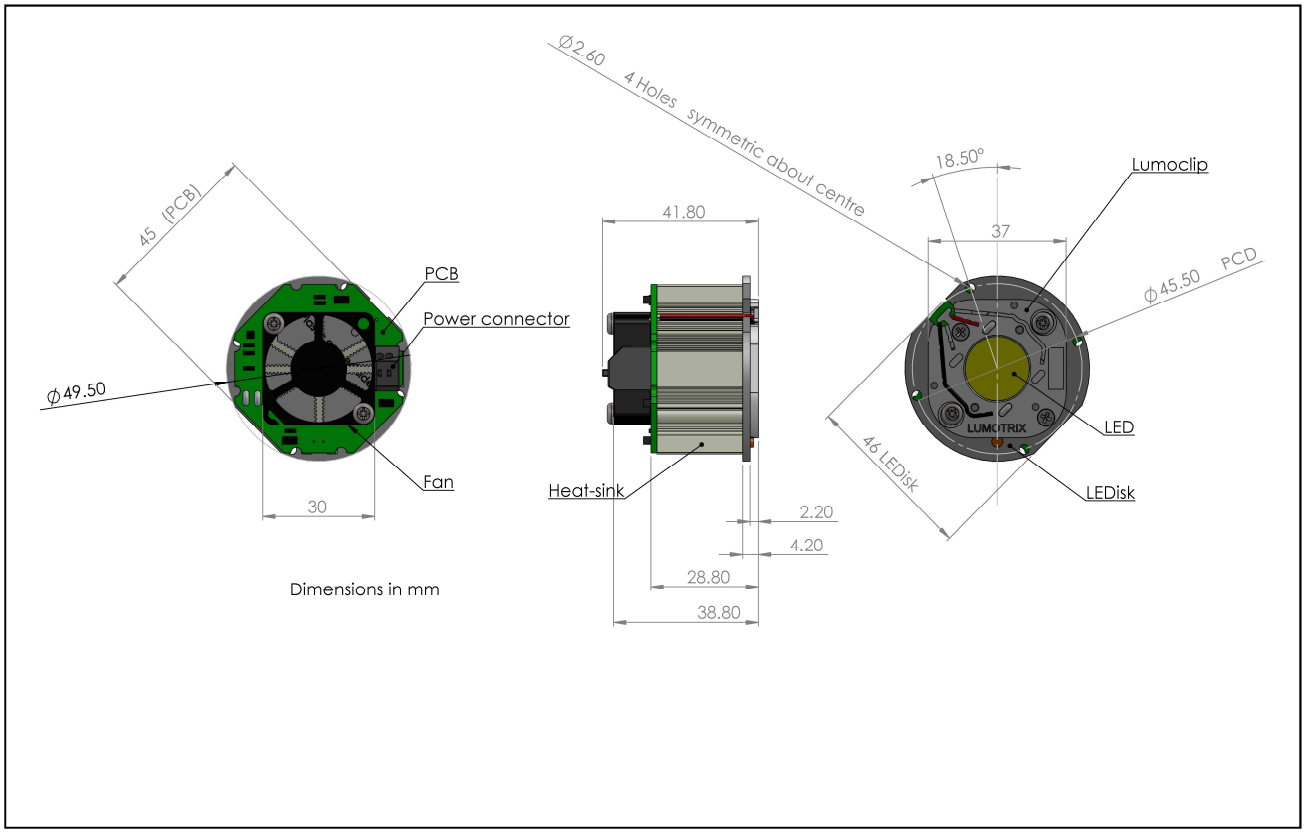

Fig.4 LEDengine Parts and Dimensions

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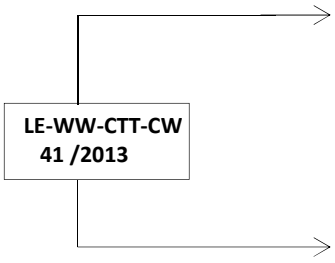
LEDengine-C

LEDengine Label information

Located on side of fan. Format:



LE = LEDengine
WW = Power e.g. 50 Watt =50
CTT = **C**RI + Colour **T**emperature e.g. CRI 82 and CCT 3000K = 830
C = **C**onstant current supply required
W = with wires (P is with Poke-in connector)
So LEDengine detailed above has code LE-50-830-CW

Week /Year

The Lumoclip on the front of the LEDengine will have its own Label.

Packing information

Individually boxed.

Contact:

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