

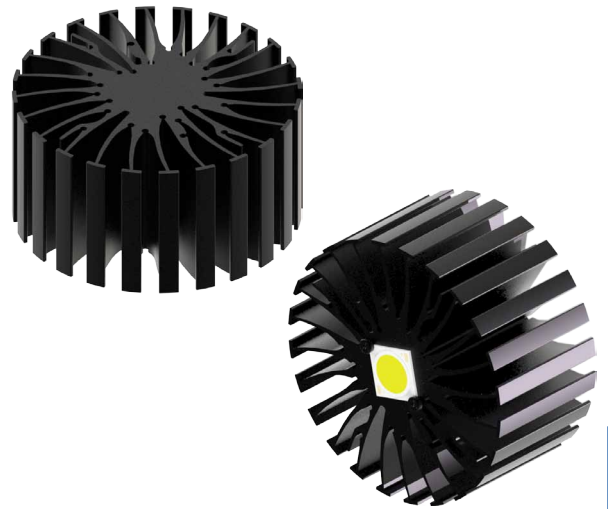
# MechaTronix in LED

## ModuLED Citizen Modular Passive LED Cooler



### Features & Benefits

- For spot and downlight designs from 700 to 3000 lumen
- Thermal resistance range Rth 1.02 - 1.34°C/W
- Modular design with mounting holes foreseen for direct mounting of the Citizen CITED LED CLL030, CLL032, CLL40, CLL42 and related secondary optics from Kathod, Ledil, ...
- Aesthetic design with high cooling performance and flexible mechanical adaptation for reflector options
- Diameter 99mm
- Standard height 50mm & 80mm  
Other heights on request
- Extruded from highly conductive aluminum



### Order Information



Your Connection to Light



Example : ModuLED 9950-B

ModuLED 99 **1** - **2** - **3**

- 1** Height (mm)
- 2** Anodising Color  
B - Black  
C - Clear
- 3** Mounting options  
On request:  
mounting holes, cable holes,  
screw thread, thermal interface pad

*ModuLED* is designed in this way that you can mount LED modules from various manufacturers on the same LED cooler

Simple mounting with M3 x 6mm self tapping screws

Recommended screw force 6lb/in

Screws are available from MechaTronix

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### Product Details

Model n°	ModuLED 9950	ModuLED 9980
Dimension (mm) <sup>*1</sup>	ø99 x h50	ø99 x h80
Volume (mm <sup>3</sup> )	137181	219491
Cooling Surface (mm <sup>2</sup> )	104563	164008
Weight (gr)	356	573
Thermal Resistance (°C/W) <sup>*2</sup>	1.34	1.02
Power Pd (W) <sup>*3</sup>	37.3	48.9
Heat Sink Material	AL6063-T5	AL6063-T5

<sup>\*1</sup> 3D files are available in ParaSolid, STP and IGS on request

<sup>\*2</sup> The thermal resistance Rth is determined with a calibrated heat source of 30mm x 30mm central placed on the heat sink, Tamb 40° and an open environment. Reference data @ heat sink to ambient temperature rise Ths-amb 50°C  
The thermal resistance of a LED cooler is not a fix value and will vary with the applied dissipated power Pd

<sup>\*3</sup> Dissipated power Pd. Reference data @ heat sink to ambient temperature rise Ths-amb 50°C  
The maximal dissipated power needs to be verified in function of required case temperature Tc or junction temperature Tj and related to the estimated ambient temperature where the light fixture will be placed  
Please be aware the dissipated power Pd is not the same as the electrical power Pe of a LED module

To calculate the dissipated power please use the following formula:  $Pd = Pe \times (1 - \eta_L)$

Pd - Dissipated power

Pe - Electrical power

$\eta_L$  = Light efficiency of the LED module

### Notes:

- MechaTronix reserves the right to change products or specifications without prior notice.
- Mentioned models are an extraction of full product range.
- For specific mechanical adaptations please contact MechaTronix.

# MechaTronix in LED

## ModuLED Citizen Modular Passive LED Cooler



### Mounting Options

#### Citizen CITELED CLL LED engines

ModuLED modular passive LED coolers are standard foreseen for mounting of the Citizen CITELED CLL030, 040 and 050 series LED engines

Right side illustration can be used to easily determine the required mounting holes  
A flipchart with transparent overlays is available online and as hardcopy  
MechaTronix advises the use of self tapping mounting screws M3 x 6mm  
Mounting torque 6lb/in - Compliant high end screws available on request

CITELED CLL030 - Red indicator marks cooling example CLL030-1212 @ Ta 40°C  
If 1440mA - Vf 36.6Vdc  
advised cooling - ModuLED9950 - Rth 1.34°C/W

CITELED CLL040 - Green indicator marks cooling example CLL040-1818 @ Ta 25°C  
If 1620mA - Vf 36.6Vdc  
advised cooling - ModuLED9980 - Rth 1.02°C/W

CITELED CLL050 - Blue indicator marks no passive cooling with ModuLED possible  
advised cooling - IceLED 550 - Rth 0.46°C/W



#### Zhaga LED engines

Zhaga compliant ( book 3 ) LED holders and secondary optics



ModuLED Citizen modular passive LED coolers are standard foreseen for mounting of all Zhaga book 3 compatible LED holders and secondary optics like lenses and reflectors, specifically developed for Citizen CITELED CLL030, CLL040 and CLL050

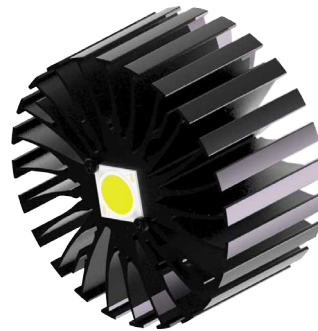
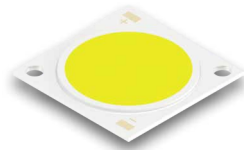
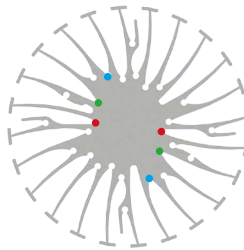
Modularity tests have been performed with LED holders from BJB and Tyco Electronics Connectivity and reflectors from Ledil and Ledlink



Your Connection to Light

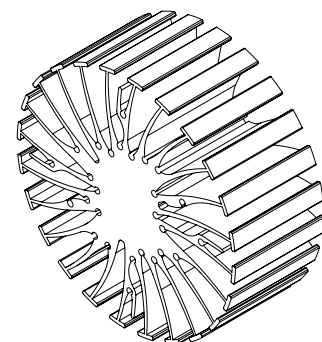
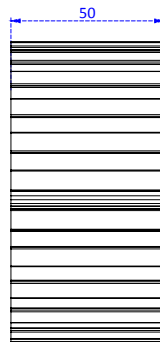
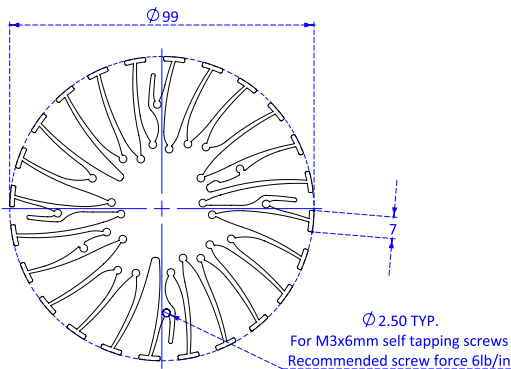


For more information on compatibility products please contact MechaTronix



### Drawings & Dimensions

#### Example: ModuLED 9950



# MechaTronix in LED

## ModuLED Citizen Modular Passive LED Cooler

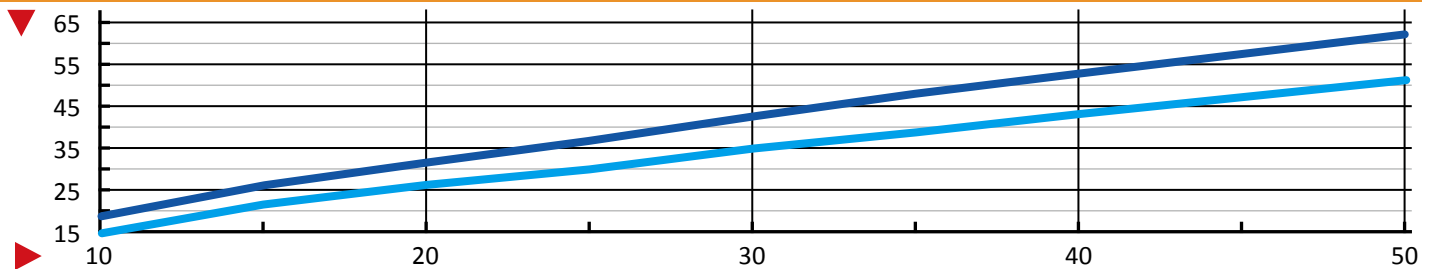


### Thermal Data

$P_d = P_e \times (1 - \eta_L)$			LED Light efficiency, $\eta_L$ (%)			Heat sink to ambient thermal resistance $R_{hs-amb}$ (°C/W)		Heat sink to ambient temperature rise $T_{hs-amb}$ (°C)	
			17%	20%	25%	ModuLED9950	ModuLED9980	ModuLED9950	ModuLED9980
Dissipated Power $P_d$ (W)	10	Electrical Power $P_e$ (W)	12.0	12.5	13.3	1.9	1.5	19	15
	15		18.1	18.8	20.0	1.7	1.4	26	21
	20		24.1	25.0	26.7	1.6	1.3	32	26
	25		30.1	31.3	33.3	1.5	1.2	37	30
	30		36.1	37.5	40.0	1.4	1.2	43	35
	35		42.2	43.8	46.7	1.4	1.1	48	39
	40		48.2	50.0	53.3	1.3	1.1	53	43
	50		60.2	62.5	66.7	1.2	1.0	62	51

Heat sink to ambient temperature rise  $T_{hs-amb}$  (°C)

— ModuLED9950 — ModuLED9980



Dissipated Power  $P_d$ (W)

### Citizen recommended case temperature $T_c \leq 85^\circ\text{C}$

Model	Forward Current $I_f$ (mA)	Electrical Power $P_e$ (W)	Case Temperature $T_c$ (°C) @ Ambient Temperature $T_a$ 25°C		Case Temperature $T_c$ (°C) @ Ambient Temperature $T_a$ 40°C		Case Temperature $T_c$ (°C) @ Ambient Temperature $T_a$ 50°C	
			ModuLED9950	ModuLED9980	ModuLED9950	ModuLED9980	ModuLED9950	ModuLED9980
CLL-030-1205	300	10.9	41	36	56	51	66	61
CLL-030-1205	600	24.4	57	52	72	67	82	77
CLL-030-1206	360	13.1	41	39	56	54	66	64
CLL-030-1206	720	29.2	60	56	75	71	85	81
CLL-030-1208	480	17.3	45	42	60	57	70	67
CLL-030-1208	960	38.1	69	62	84	77	-	-
CLL-030-1212	720	27.7	58	47	73	62	83	72
CLL-030-1212	1440	59.3	-	84	-	-	-	-
CLL-040-1218	1080	41.4	73	51	-	66	-	76
CLL-040-1218	2160	88.6	-	-	-	-	-	-
CLL-040-1818	1080	59.7	-	66	-	81	-	-