

MechaTronix in LED

IceLED Citizen Modular Active LED Cooler



Features & Benefits

- Ultra high cooling performance
- For spot & downlight designs from 2000 to 8000 lumen
- Modularity - Mounting compatible with most of the LED modules available on the market
- Anti-vibration low-noise fan <21dB@1m
- Super silent design over full spectrum (human and animals)
- Fan rated voltage 12Vdc
- High lifetime design >60Khrs (L 10 life time @40°C)
- Dust protection fan cover
- Warranty 5 years



Order Information

Zhaga

CITIZEN
Micro HumanTech



TE
connectivity

Example : IceLED 450

IceLED **1**

- 1** Height (mm)
Overall height top to bottom
(Fan height 25mm)
IceLED 450 - 45mm
IceLED 550 - 55mm

IceLED 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°	IceLED 450	IceLED 550
Dimension (mm)* ¹	ø99 x h45	ø99 x h55
Fan Voltage (Vdc)* ²	12	12
Fan Speed (RPM)	1500	1500
Noise @ 1m (dBA)	<21	<21
Weight (gr)	223	294
Thermal Resistance (°C/W)* ³	0.58	0.46
Power Pd (W)* ⁴	85.5	109
Heat Sink Material	AL6063-T5	AL6063-T5

*¹ 3D files are available in ParaSolid, STP and IGS on request

*² The fan requires a constant voltage power source of 12Vdc, 50mA

*³ The thermal resistance R_{th} is determined with a calibrated heat source of 30mm x 30mm central placed on the heat sink, T_{amb} 40° and an open environment. Reference data @ heat sink to ambient temperature rise T_{hs-amb} 50°C
The thermal resistance of a LED cooler is not a fix value and will vary with the applied dissipated power Pd

*⁴ Dissipated power Pd. Reference data @ heat sink to ambient temperature rise T_{hs-amb} 50°C
The maximal dissipated power needs to be verified in function of required case temperature T_c or junction temperature T_j 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: $P_d = P_e \times (1 - \eta_L)$

Pd - Dissipated power

Pe - Electrical power

η_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.

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Mounting Options

Citizen CITELED CLL LED engines

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

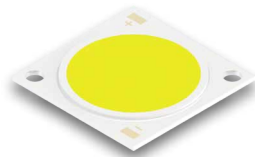
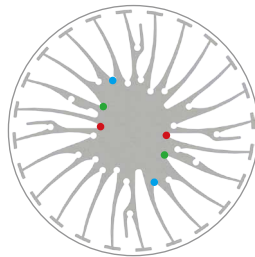
Right side illustration can be used to easily determine the required mounting holes
A flipchart with transparent overlays is available online and as hardcopy
MechaTronix advises the use of self tapping mounting screws M3 x 6mm
Mounting torque 6lb/in - Compliant high end screws available on request

CITELED CLL030 - Red indicator marks
cooling example CLL030-1212 @ Ta 40°C
If 1440mA - Vf 36.6Vdc
advised cooling - IceLED 450 - Rth 0.58°C/W

CITELED CLL040 - Green indicator marks
cooling example CLL040-1818 @ Ta 40°C
If 1080mA - Vf 54.9Vdc
advised cooling - IceLED 550 - Rth 0.46°C/W

CITELED CLL050 - Blue indicator marks
cooling example CLL050-1825 @ Ta 40°C
If 1620mA - Vf 54.9Vdc
advised cooling - IceLED 550 - Rth 0.46°C/W

CITIZEN
Micro HumanTech



Zhaga LED engines

Zhaga compliant (book 3) LED holders and secondary optics

Zhaga

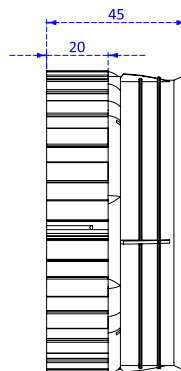
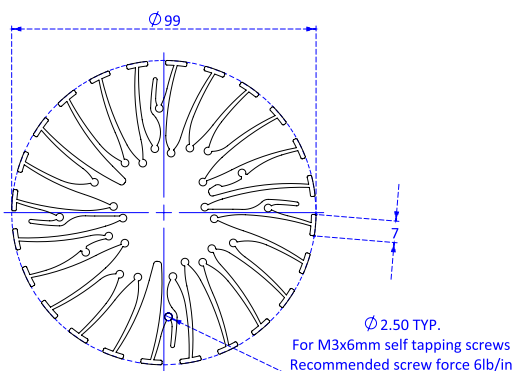
IceLED Citizen modular active LED coolers are standard foreseen for mounting of all Zhaga book 3 compatible LED holders and secondary optics like lenses and reflectors, specifically developed for Citizen CITELED CLL030, CLL040 and CLL050

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

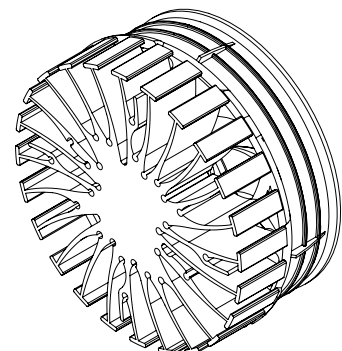
For more information on compatibility products please contact MechaTronix



Drawings & Dimensions



Example: IceLED 450



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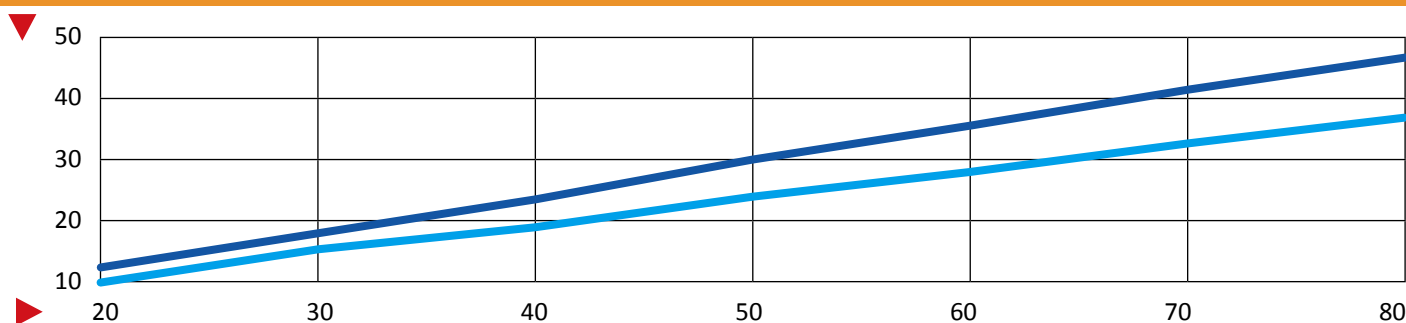


Thermal Data

$P_d = P_e \times (1 - \eta_L)$			LED Light efficiency, η_L (%)			Heat sink to ambient thermal resistance R_{hs-amb} ($^{\circ}\text{C}/\text{W}$)		Heat sink to ambient temperature rise T_{hs-amb} ($^{\circ}\text{C}$)	
			17%	20%	25%	IceLED 450	IceLED 550	IceLED 450	IceLED 550
Dissipated Power $P_d(\text{W})$	20	Electrical Power $P_e(\text{W})$	24.1	25.0	26.7	0.62	0.50	12	10
	25		30.1	31.3	33.3	0.62	0.49	15	12
	30		36.1	37.5	40.0	0.61	0.49	18	15
	35		42.2	43.8	46.7	0.61	0.49	21	17
	40		48.2	50.0	53.3	0.60	0.48	24	19
	50		60.2	62.5	66.7	0.60	0.48	30	24
	60		72.3	75.0	80.0	0.59	0.47	36	28
	70		84.3	87.5	93.3	0.59	0.47	41	33
	80		96.4	100.0	106.7	0.59	0.47	47	37

Heat sink to ambient temperature rise T_{hs-amb} ($^{\circ}\text{C}$)

IceLED 450 IceLED 550



Dissipated Power $P_d(\text{W})$

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Thermal Data

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 ($^\circ\text{C}$) @ Ambient Temperature T_a 25°C		Case Temperature T_c ($^\circ\text{C}$) @ Ambient Temperature T_a 40°C		Case Temperature T_c ($^\circ\text{C}$) @ Ambient Temperature T_a 50°C	
			IceLED 450	IceLED 550	IceLED 450	IceLED 550	IceLED 450	IceLED 550
CLL-030-1205	300	10.9	30	29	45	44	55	54
CLL-030-1205	600	24.4	36	34	51	49	61	59
CLL-030-1206	360	13.1	31	30	46	45	56	55
CLL-030-1206	720	29.2	38	36	53	51	63	61
CLL-030-1208	480	17.3	35	34	50	49	60	59
CLL-030-1208	960	38.1	46	43	61	58	71	68
CLL-030-1212	720	27.7	38	36	53	51	63	61
CLL-030-1212	1440	59.3	56	51	71	66	81	76
CLL-040-1218	1080	41.4	44	41	59	56	69	66
CLL-040-1218	2160	88.6	70	63	85	78	–	–
CLL-040-1818	1080	59.7	48	47	63	62	73	72
CLL-040-1818	2160	127.6	80	78	–	–	–	–
CLL-050-1825	1500	83.1	61	53	76	68	–	78
CLL-050-1825	1750	97.6	67	61	85	76	–	–
CLL-050-1825	2000	113.7	76	66	–	81	–	–
CLL-050-1825	2500	145.1	–	80	–	–	–	–