

# 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



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) <sup>*1</sup>	ø99 x h45	ø99 x h55
Fan Voltage (Vdc) <sup>*2</sup>	12	12
Fan Speed (RPM)	1500	1500
Noise @ 1m (dBA)	<21	<21
Weight (gr)	223	294
Thermal Resistance (°C/W) <sup>*3</sup>	0.58	0.46
Power Pd (W) <sup>*4</sup>	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 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

\*4 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.

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### Mounting Options

#### Citizen CITED LED engines

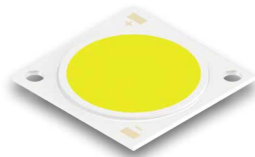
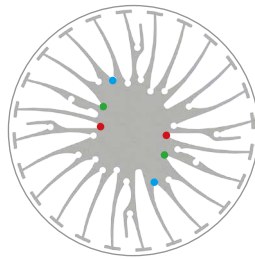
IceLED modular active LED coolers are standard foreseen for mounting of the Citizen CITED CLL030, 040 and 050 series LED engines

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.

**CITED 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

**CITED 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

**CITED 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



#### Zhaga LED engines

Zhaga compliant ( book 3 ) LED holders and secondary optics



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 CITED CLL030, CLL040 and CLL050

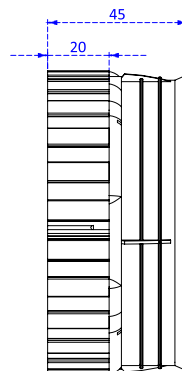
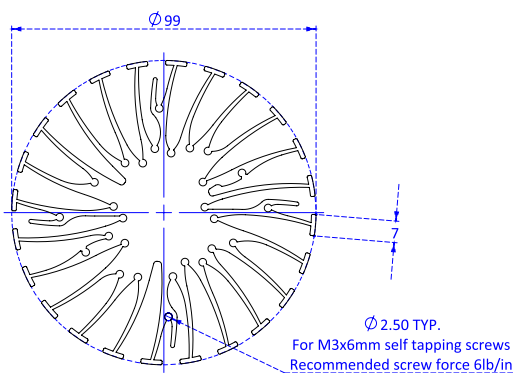
Modularity tests have been performed with LED holders from BJB and Tyco Electronics Connectivity and reflectors from Ledil and Ledlink



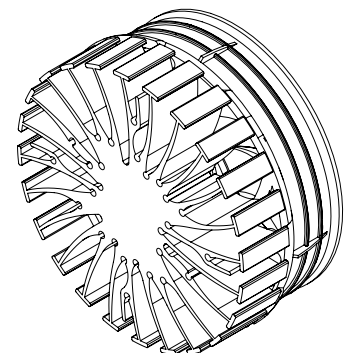
For more information on compatibility products please contact MechaTronix



### Drawings & Dimensions



#### Example: IceLED 450



# MechaTronix in LED

## IceLED Citizen Modular Active LED Cooler

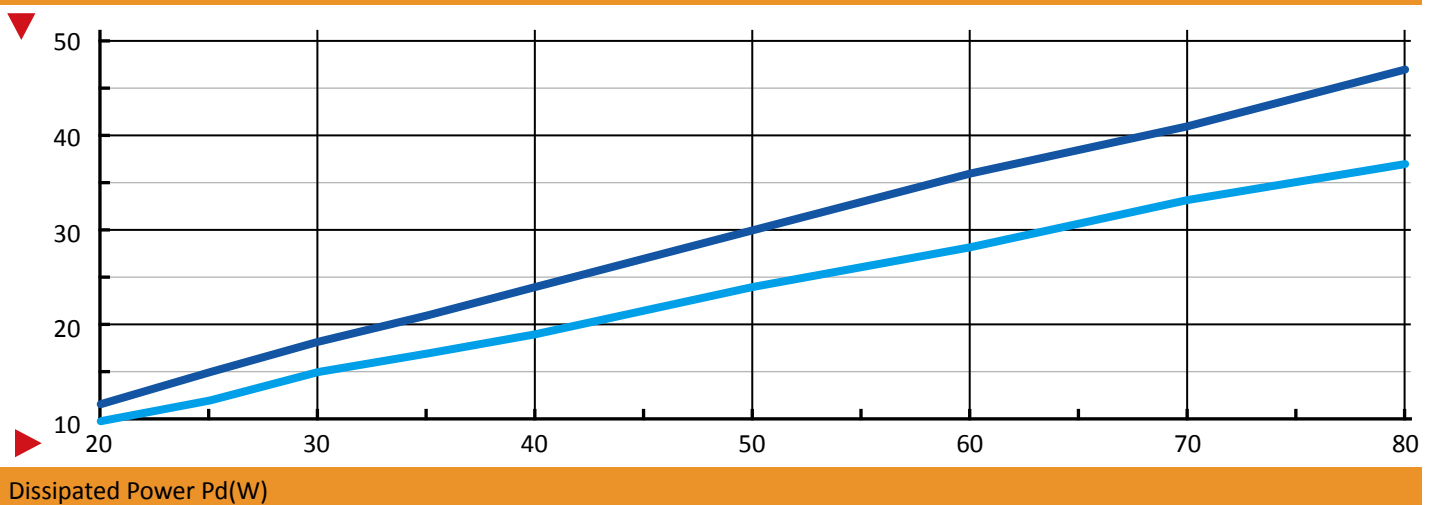


### Thermal Data

$P_d = P_e \times (1 - \eta_L)$			LED Light efficiency, $\eta_L$ (%)			Heat sink to ambient thermal resistance $R_{hs-amb}$ ( $^{\circ}C/W$ )		Heat sink to ambient temperature rise $T_{hs-amb}$ ( $^{\circ}C$ )	
			17%	20%	25%	IceLED 450	IceLED 550	IceLED 450	IceLED 550
Dissipated Power $P_d(W)$	20	Electrical Power $P_e(W)$	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  $T_{hs-amb}$  ( $^{\circ}C$ )

IceLED 450 IceLED 550



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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 $^\circ\text{C}$		Case Temperature $T_c$ ( $^\circ\text{C}$ ) @ Ambient Temperature $T_a$ 40 $^\circ\text{C}$		Case Temperature $T_c$ ( $^\circ\text{C}$ ) @ Ambient Temperature $T_a$ 50 $^\circ\text{C}$	
			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	-	-	-	-