



**MASTERING  
LED COOLING**

**MTx**  
**MechaTronix**



## An introduction

**MechaTronix was formed in 2007, comprised of five already successful manufacturing companies, with each of them in excess of a decade of continuous operation. MechaTronix provides a wide variety of mechanical and electromechanical parts as well as assemblies for the international Original Equipment Manufacturers market.**

Starting off with the production of metal and plastic enclosures for electronic applications and the assembly of half-products and elaborate cables, MechaTronix utilised several production processes, amongst which die casting, forging, extrusion and plastic injection.

The application of secondary processes such as CNC grinding and cutting and finishing such as anodising, painting and silk screen printing enable us to offer a very high degree of customisation and personalisation to our customers. It was through the expertise in these processes that MechaTronix found its stride as a serious contender in the market of heat sinks and cooling engines. What started as a one-off venture into the extrusion of aluminium heat sinks resulted in a very comprehensive package of cooling solutions for the booming international LED market.

In 2016 the knowledge made an extra jump with the acquisition of Cooling House, based in Taipei Wugu. This high end design and development center specializes in the deep matters of advanced thermal management, which goes much further than LED cooling – heat exchangers for data centers, renewable energy and high power conversions are their field of play.

With this extension also the LED cooling activities showed new possibilities with technologies introduced like heat pipes and loop thermosyphons.

As a result MechaTronix started in 2017 with their second core mission – the design, development and manufacturing of LED grow lights for use in a wide score of horticulture applications.

Seen the rising demand of PPFD values growers want to apply to their crops, similar like what has been seen in the evolution of SON-T HPS grow lamps, the thermal management of LED grow lights is absolutely key for the lifetime of high power LED applications.

From this perspective we started developing complete LED grow light concepts which outstand on lifetime, PPF values out of a single luminaire, light distribution and canopy penetration.

With the first horti LED top lights brought to the market in early 2018, MechaTronix instituted a dedicated team working around LED grow light solutions for the future.

## OUR PROCESS STARTS WITH LISTENING



## Mastering LED Cooling

With the evolution of LED lighting over the last years, the demand for professional thermal solutions has grown exponentially. And now that we no longer remain in the realm of low power LED's, thermal management becomes a critical factor within LED fixtures. To that end, MechaTronix has developed several series of pin-fin and star heat sinks, manufactured through die casting, forging or extrusion. This has resulted in a comprehensive range of more than 400 off-the-shelf available LED coolers, for passive or active heat dissipation.

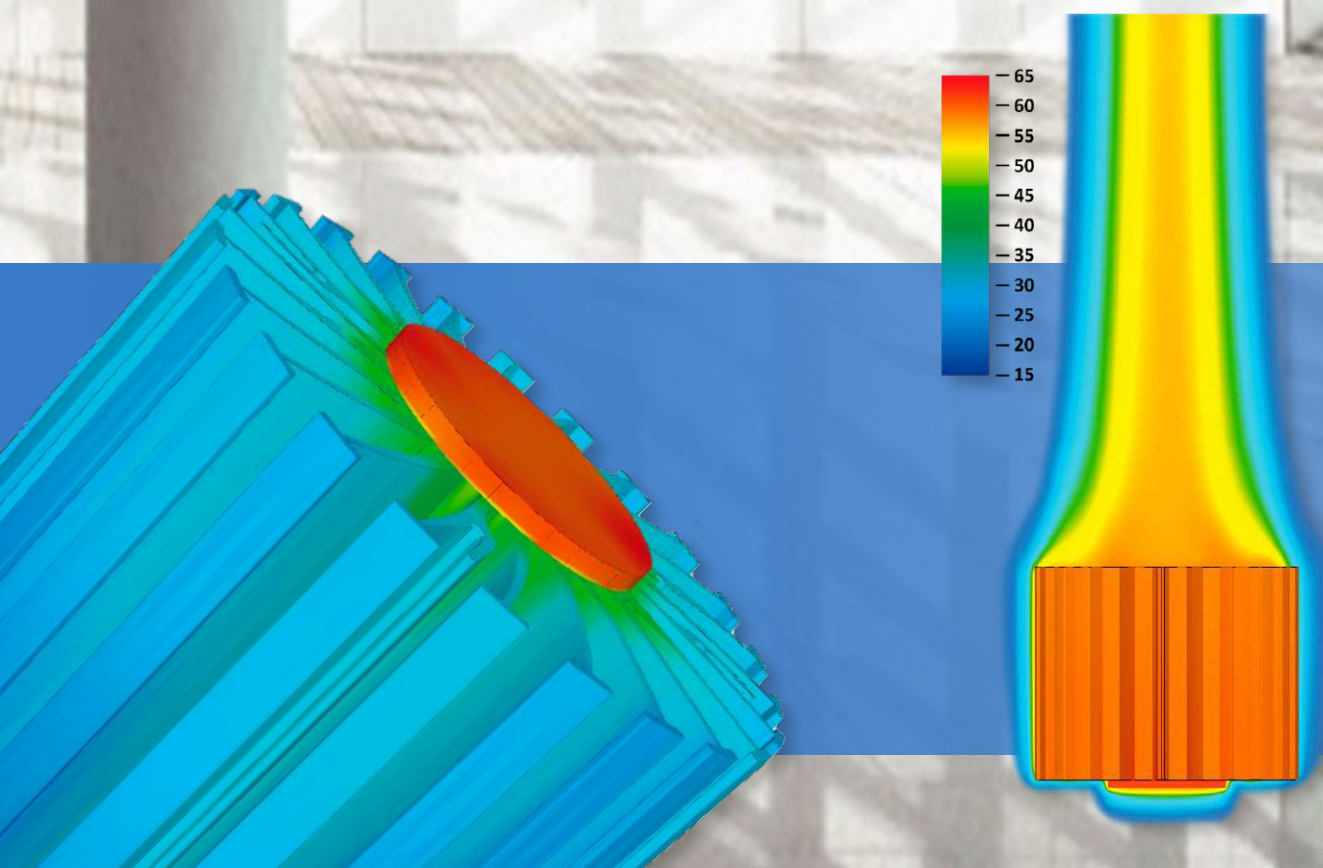
After initial reservations concerning active LED coolers, specialists have found that there really is no better option, when closing in on the 8000 lumen mark. Admittedly, the fan's lifespan becomes somewhat of a focal point in the application of an active LED cooler, but given that the lifespan of the LED engine itself dramatically decreases at high temperatures, the lifespan of the fan looks rather favourable all of a sudden.

MechaTronix' ground breaking ModuLED coolers and its actively cooled sibling IceLED have garnered a lot of attention and positive reviews in the LED market. ModuLED and IceLED are just precursors of a complete range of dedicated and highly effective LED coolers for professional deployment in spotlights, downlights, high bays and a further score of architectural and utility LED applications.

Both ModuLED and IceLED, as well as their upcoming descendants are Zhaga-ready and have a matrix of mounting holes that allows for very easy attachment of a great number of market-leading LED engines. Simply apply a thermal interface of your choice, put the LED engine in place and fasten with self-tapping screws and you are good to go! No drilling, customisation or special mounting brackets are needed.

Thanks to an extremely thorough thermal verification of all heat sink lines, MechaTronix provides total thermal disclosure for each model, coupled with several brands and categories of LED COB's and engines. All thermal data is available in the product specifications, that come with every MechaTronix heat sink. In this way, engineers save time and effort during the design stage of their LED fixture and will significantly shorten their time to market.

## OUR PROCESS STARTS WITH LISTENING





## Zhaga & ECO Partnerships

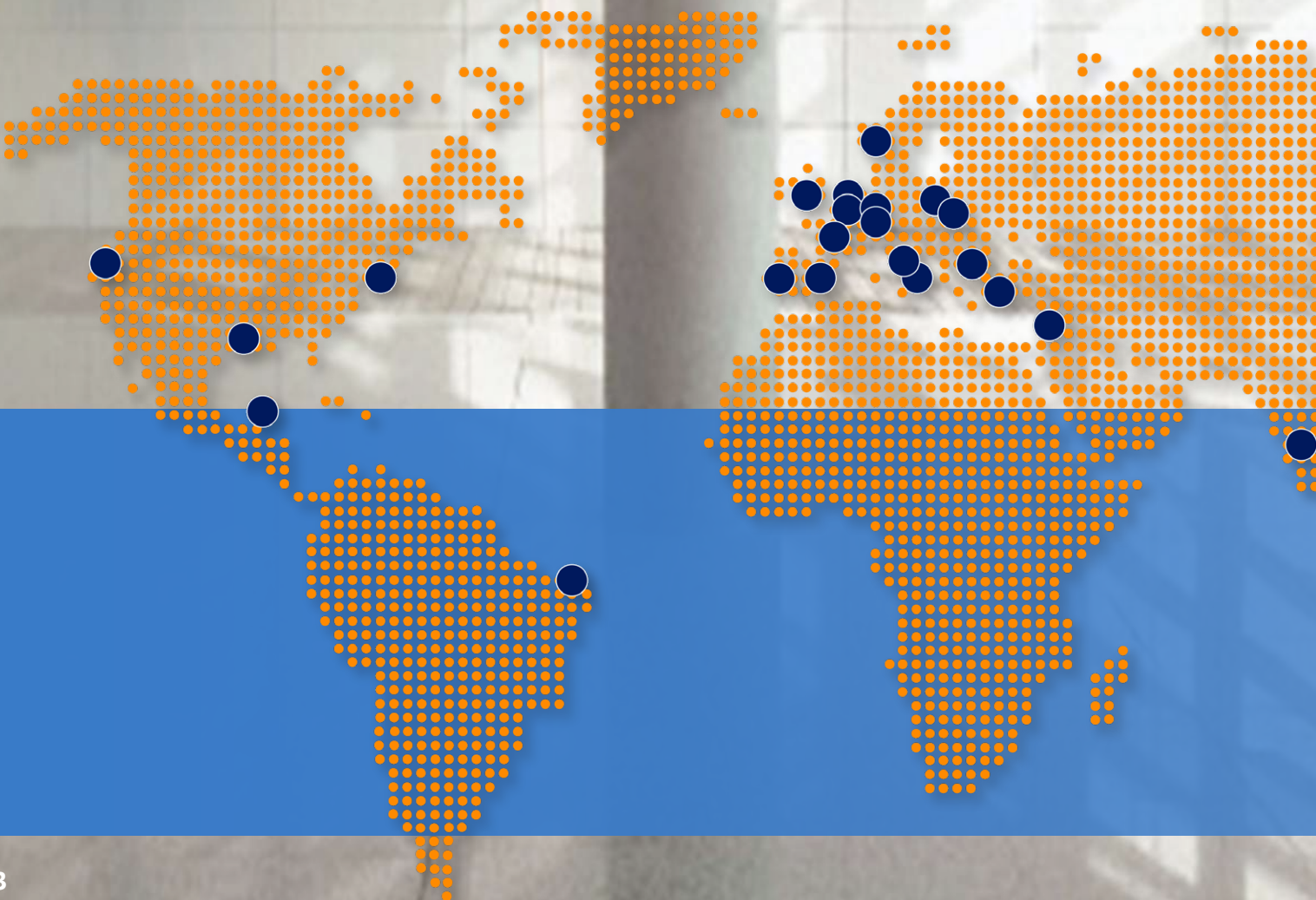
In conjunction with several world leading LED manufacturers and other stakeholders in the field, MechaTronix whole heartedly supports the emerging Zhaga industry standard. To that end, many off-the-shelf MechaTronix heat sinks-passive as well as active- are compatible with these Zhaga specifications, making them instantly ready for assembly with Zhaga designed LED engines or secondary optics, such as lenses or reflectors.

Despite Zhaga's efforts, the international market still offers a great diversity in unique mechanical formats for LED engines. MechaTronix appreciates the need for LED coolers to be modular plug and play components, matching all varieties of LED engines and secondary optics.

Not surprisingly, MechaTronix has been able to forge strong alliances with- and establish specific heat sink ranges for many leading LED manufacturers. Amongst these are the likes of Bridgelux, Citizen, Cree, Edison, GE Lighting, LG Innotek, Lumileds, Luminus, Osram, Osram Opto Semiconductors, Philips Lighting, Prolight Opto, Seoul Semiconductor, Sharp, Tridonic, Vossloh Schwabe and Xicato. Countless hours of compatibly testing enable us to present you with complete and validated thermal data of all feasible combinations of heat sinks and LED engines.

As a result of these efforts, MechaTronix has found a score of LED manufacturers and other specialist parties in the business to form ECO partnerships with. The mutual sharing of data and R&D and the adherence to Zhaga specifications comes with great benefits to all involved, not forgetting the end users. MechaTronix now is being endorsed as the preferred brand of heat sinks within these ECO Partnerships, guaranteeing a perfect mechanical fit, reliable thermal performance and an overall aesthetic design.

## OUR PROCESS STARTS WITH LISTENING









## Horti LED Grow Lights – The Next Dimension

A new era for MechaTronix started in early 2017, with the design and manufacturing of advanced LED grow light systems.

Our dedicated team of specialists has dived in the science of horticultural lighting and translated this science to new unprecedented technologies which created The Next Dimension in LED grow lights.

High power LED top light systems, ideal for SON-T replacement in greenhouses, where developed based on advanced heat pipe cooling technology.

As a result of all these new technology implementations, the CoolFin®, CoolPack® and CoolStack® are now among the most appreciated LED grow lights in the market.

A complete new approach in LED light for vertical farming and propagation has seen the light with the CoolGrow® VF and CoolGrow® Linear, resulting in absolute market leading PPFD values per watt.

A complete wireless control system nicknamed the CoolControls®, dedicated for use in horticulture lighting, has found its way to the market.

And that's not where it stops...

MechaTronix will strive over the next years to bring more advanced technologies into the world of horticulture lighting, surpassing the goal of providing the ideal light for plant growth and creating the Next Dimension.



OUR PROCESS STARTS WITH LISTENING — (( ))



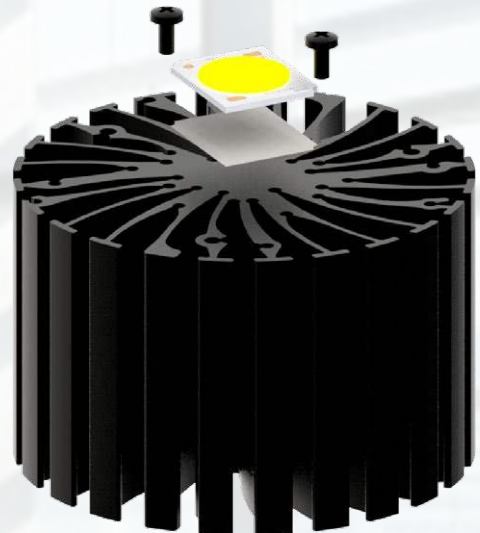
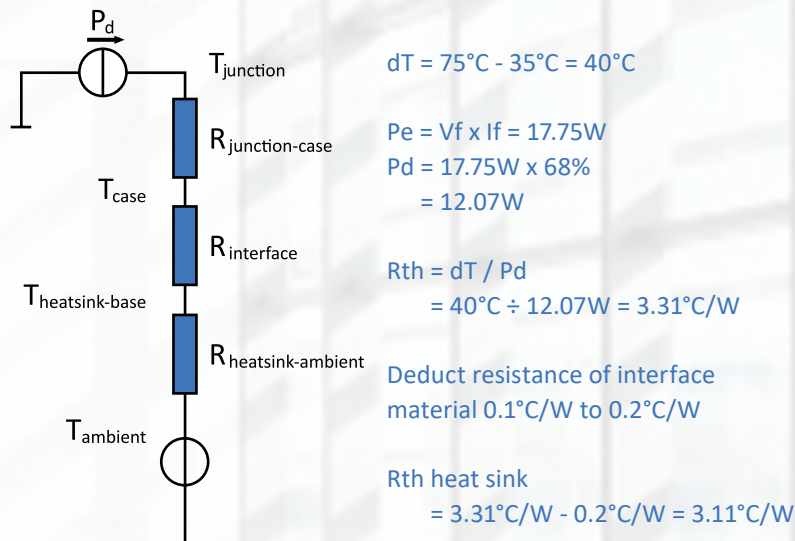
# THERMAL CALCULATION

## 1. Calculation of the required LED Cooler Thermal Resistance Rth

In this document we show how to calculate the required thermal resistance of the LED cooler

As an example we take a LED COB model, which has a nominal forward current  $I_f$  of 450mA and a maximal forward current of 900mA. We will drive the module at a forward current of 500mA with a forward voltage  $V_f$  of 35.5V. The maximal case temperature  $T_c$  is 105°C but in our design we aim at a life time case temperature of 75°C. The ambient temperature for our application is 35°C.

A LED luminaire can be seen as an electrical scheme with the thermal resistances of the LED internally, the interface material and the LED cooler in series.



The electrical power  $P_e = V_f \times I_f$  or  $35.5\text{V} \times 0.5\text{A} = 17.75\text{W}$

The dissipated power  $P_d = P_e \times \text{efficiency}$  where the efficiency of the COB is around 32% or  $17.75\text{W} \times 0.68 = 12.07\text{W}$

This is the amount of energy which needs to be cooled down

$dT$  is the temperature difference between the case temperature  $T_c$  we want to acquire and the ambient temperature  $T_a$   
 $dT = T_c - T_a$  or  $75^\circ\text{C} - 35^\circ\text{C} = 40^\circ\text{C}$

The required maximal thermal resistance  $R_{th}$  of the LED cooler + the thermal interface material  $R_{th} = dT / P_d = 40^\circ\text{C} / 12.07\text{W} = 3.31^\circ\text{C/W}$

The thermal interface you use has a major impact on the performance

We recommend to use either arctic silver, a good thermal grease or a thin 0.1 to 0.15mm phase change or graphite thermal pad

In this case the thermal resistance from the interface material will be between 0.1 and  $0.2^\circ\text{C/W}$

This interface resistance you subtract from the calculated interface resistance to determine the cooling performance your heat sink needs to be

So  $R_{th \text{ heatsink}} = 3.31^\circ\text{C/W} - 0.2^\circ\text{C/W} = 3.11^\circ\text{C/W}$  maximal

Any LED cooler which does better than a thermal resistance (lower value) of  $3.11^\circ\text{C/W}$  in free air conditions would make that our LED case temperature  $T_c$  will remain below the required  $75^\circ\text{C}$

Keep in mind that an enclosure around the LED cooler, tilting and other variations will affect the performance of the LED cooler – contact us in case assistance is needed

## 2. Lab measurement of the required LED cooler

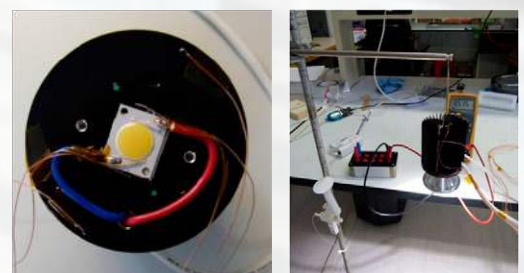
MechaTronix has performed over 1000 hours of lab measurements on the combination of world leading LED manufacturers LED COB's and modules, with various LED coolers and alternative driving currents

These lab tests are done under free air convection environment, vertical positioning with the LED on the bottom

For the tests we use a phase change thermal interface Laird TPCM 585

To conduct thermal measurement we use good digital meter (2 channels or more) and thin wire thermocouples which can easily measure the  $T_c$  point under operation. Besides a thermocouple on the  $T_c$  point, also attach a thermocouple on the base of the LED cooler near the LED module.

When we see a temperature difference of more than  $5^\circ\text{C}$  between the two points, we will verify if it's caused by interface material or wetting surface (the contact between the LED module and the LED cooler)



# MECHATRONIX LED COOLER OVERVIEW

MTX LED cooler model name	Style	Dimension (mm)		Rth* <sup>1</sup> (°C/W)	Cooling performance (lm)	Electrical Power Pe (W)* <sup>2</sup>	Dissipated Power Pd (W)* <sup>3</sup>
		Ø Diameter	Height				
LPF3550-ZHC	Forging AL1070	Ø35	50	7.41	700 - 1,300	10	6.8
LPF4768-ZHP		Ø47	68	3.9	1,300 - 2,500	19	13
LPF6050-ZHC		Ø60	50	4.0	1,200 - 2,300	18	12
LPF6768-ZHP		Ø67	68	2.1	2,300 - 4,600	35	24
LPF8050-ZHC		Ø80	50	2.34	2,000 - 4,000	31	21
LPF8668-ZHC		Ø86	68	1.46	3,300 - 6,500	50	34
LPF11180-ZHE		Ø111	80	1.07	4,800 - 9,600	74	50
CoolStar® 3445	Extrusion AL6063-T5	Ø34.5	45	8.13	600 - 1,200	9	6
CoolStar® 4740		Ø47	40	5	1,000 - 2,000	15	10
CoolStar® 4760			60	4.17	1,200 - 2,400	18	12
CoolStar® 6730		Ø67	30	3.13	1,600 - 3,100	24	16
CoolStar® 6760			60	2.27	2,100 - 4,200	32	22
CoolStar® 8630		Ø86	30	2.08	2,300 - 4,600	35	24
CoolStar® 8660			60	1.56	3,100 - 6,100	47	32
ModuLED Pico 4750	Extrusion AL6063-T5	Ø47	50	5.3	900 - 1,800	14	9.6
ModuLED Pico 4780			80	4.2	1,200 - 2,300	18	11.9
ModuLED Nano 7050		Ø70	50	2.2	2,200 - 4,300	33	22.7
ModuLED Nano 7080			80	1.8	2,700 - 5,300	41	28
ModuLED Micro 8630		Ø86	30	1.8	2,700 - 5,300	41	28
ModuLED Micro 8650			50	1.5	3,200 - 6,400	49	33
ModuLED Micro 8680			80	1.2	4,000 - 8,000	62	42
ModuLED 9950 / Xtra 9950		Ø99	50	1.34	3,600 - 7,200	55	37.3
ModuLED 9980 / Xtra 9980			80	1.02	4,700 - 9,400	72	48.9
ModuLED Mega 13420	Extrusion AL6063-T5	Ø134	20	1.32	3,700 - 7,300	56	38
ModuLED Mega 13450			50	0.88	5,500 - 11,000	84	57
ModuLED Mega 134100-HBG			100	0.67	7,200 - 14,300	110	75
ModuLED Giga 15220		Ø152	20	1.13	4,300 - 8,500	65	44
ModuLED Giga 15250			50	0.7	6,800 - 13,500	104	71
ModuLED Giga 152100-HBG			100	0.52	9,000 - 18,000	140	95
ModuLED Giga 152150-HBG			150	0.46	10,500 - 21,000	162	110



# MECHATRONIX LED COOLER OVERVIEW

MTX LED cooler model name	Style	Dimension (mm)		Rth* <sup>1</sup> (°C/W)	Cooling performance (lm)	Electrical Power Pe (W)* <sup>2</sup>	Dissipated Power Pd (W)* <sup>3</sup>
		Ø Diameter	Height				
CoolBay® Giga-A / Giga-B	<b>Extrusion AL6063-T5 (Heat sink body) + Closed-loop copper heat pipe (Heat sink core)</b>	Ø152	200	0.34	14,500 - 29,000	221	150
CoolBay® Tera-A / Tera-B		Ø192	250	0.22	22,000 - 44,000	335	228
CoolBlock® SQ-01 2x2MX	<b>Die-casting ADC12</b>	W96 - L96 - H61.5		1.45	3,300 - 6,500	50	34
CoolBeam® SQ3-01 (3x) CoolBlock® SQ-01 2x2MX	<b>SPCC</b>	W107 - L316 - H150.5		1.45	9,500 - 19,000	144	98
CoolBeam® SQ4-01 (4x) CoolBlock® SQ-01 2x2MX		W107 - L418 - H150.5		1.45	12,500 - 25,000	191	130
CoolBeam® SQ Dual (8x) CoolBlock® SQ-01 2x2MX		W240 - L418 - H125		1.45	25,000 - 50,000	382	260
CoolBeam® SQ Triple (12x) CoolBlock® SQ-01 2x2MX		W370 - L418 - H125		1.45	37,500 - 75,000	574	390
CoolBlock® HB-28	<b>Die-casting ADC12</b>	W106 - L106 - H62		1.16	3,800 - 7,600	63	42.8
CoolBlock® LX-01-2x6 / -02-2x6		W80 - L192 - H45		1.09	4,400 - 8,700	67	45.6
CoolBlock® ARENA-48		W180 - L180 - H80		0.47	10,000 - 20,000	156	106
CoolBlock® HC-01-3x11		W98 - L340 - H61.5		0.47	10,000 - 20,000	156	106
CoolFin® Giga	<b>Stackfin + Heat pipe</b>	W468 - L446 - H226		0.1	50,000 - 100,000	735	500
CoolFin® Giga Tilt		W468 - L446 - H394		0.1	50,000 - 100,000	735	500
CoolCube® Giga	<b>Stackfin + Heat pipe</b>	W200 - L575 - H417		0.1	50,000 - 100,000	735	500
IceLED 450	<b>Extrusion AL6063-T5 (Heat sink body) + Plastic injection (Fan)</b>	Ø99	45	0.58	8,200 - 16,400	126	85.5
IceLED 550 / Xtra 550			55	0.46	10,500 - 21,000	160	109
IceLED Ultra / Xtra Ultra			75	0.25	19,000 - 38,000	294	200
IceLED Ultra VS			75	0.26	14,500 - 29,000	221	150

\*<sup>1</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>2</sup> ηL, LED Light efficiency is based on 32%

\*<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



# LPF - PIN FIN LED COOLERS

## LPF3550-ZHC



LED Pin Fin cooler

For Zhaga Book 11 LED modules & 13.5x13.5mm LED COB direct mounting holes

ø35mm - H50mm - Rth 7.41°C/W

Cooling performance 700 - 1,300 lm

Black or clear anodised

## LPF4768-ZHP



LED Pin Fin cooler

For Zhaga Book 3, Book 11 LED modules & 16x19mm, 20x24mm LED COB direct mounting holes

ø47mm - H68mm - Rth 3.9°C/W

Cooling performance 1,300 - 2,500 lm

Black or clear anodised

## LPF6050-ZHC



LED Pin Fin cooler

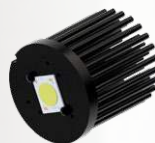
For Zhaga Book 3, Book 11 LED modules & 13.5x13.5mm LED COB direct mounting holes

ø60mm - H50mm - Rth 4.0°C/W

Cooling performance 1,200 - 2,300 lm

Black anodised

## LPF6768-ZHP



LED Pin Fin cooler

For Zhaga Book 3, Book 11 LED modules & 16x19mm, 20x24mm LED COB direct mounting holes

ø67mm - H68mm - Rth 2.1°C/W

Cooling performance 2,300 - 4,600 lm

Black or clear anodised

## LPF8050-ZHC



LED Pin Fin cooler

For Zhaga Book 3 LED modules & 19x19mm LED COB direct mounting holes

ø80mm - H50mm - Rth 2.34°C/W

Cooling performance 2,000 - 4,000 lm

Black anodised

## LPF8668-ZHC



LED Pin Fin cooler

For Zhaga Book 3 LED modules & 19x19mm LED COB direct mounting holes

ø86mm - H68mm - Rth 1.46°C/W

Cooling performance 3,300 - 6,500 lm

Black or clear anodised

## LPF11180-ZHE



LED Pin Fin cooler

For Zhaga Book 3 LED modules mounting holes

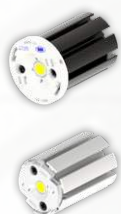
ø111mm - H80mm - Rth 1.07°C/W

Cooling performance 4,800 - 9,600 lm

Black or clear anodised



# COOLSTAR® - DESIGNER LED STAR COOLERS



## CoolStar® Black / White 3445

Designer LED Star cooler

Zhaga Book 11 LED modules & 2 mounting holes for direct assembly of all LED COB brands

ø34.5mm - H45mm - Rth 8.13°C/W

Cooling performance 600 - 1,200 lm

Black anodized or white electro-coating finishing



## CoolStar® Black / White 4740

Designer LED Star cooler

Zhaga Book 3, Book 11 LED modules & 5 mounting holes for direct assembly of all LED COB brands

ø47mm - H40mm - Rth 5°C/W

Cooling performance 1,000 - 2,000 lm

Black anodized or white electro-coating finishing



## CoolStar® Black / White 4760

Designer LED Star cooler

Zhaga Book 3, Book 11 LED modules & 5 mounting holes for direct assembly of all LED COB brands

ø47mm - H60mm - Rth 4.17°C/W

Cooling performance 1,200 - 2,400 lm

Black anodized or white electro-coating finishing



## CoolStar® Black / White 6730

Designer LED Star cooler

Zhaga Book 3 LED modules & 7 mounting holes for direct assembly of all LED COB brands

ø67mm - H30mm - Rth 3.13°C/W

Cooling performance 1,600 - 3,100 lm

Black anodized or white electro-coating finishing



## CoolStar® Black / White 6760

Designer LED Star cooler

Zhaga Book 3 LED modules & 7 mounting holes for direct assembly of all LED COB brands

ø67mm - H60mm - Rth 2.27°C/W

Cooling performance 2,100 - 4,200 lm

Black anodized or white electro-coating finishing



## CoolStar® Black / White 8630

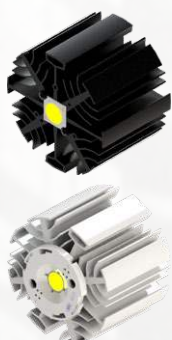
Designer LED Star cooler

Zhaga Book 3 LED modules & 7 mounting holes for direct assembly of all LED COB brands

ø86mm - H30mm - Rth 2.08°C/W

Cooling performance 2,300 - 4,600 lm

Black anodized or white electro-coating finishing



## CoolStar® Black / White 8660

Designer LED Star cooler

Zhaga Book 3 LED modules & 7 mounting holes for direct assembly of all LED COB brands

ø86mm - H60mm - Rth 1.56°C/W

Cooling performance 3,100 - 6,100 lm

Black anodized or white electro-coating finishing



# MODULED - MODULAR LED COOLERS



## ModuLED Pico 4750

Modular Passive LED Star cooler  
Zhaga Book 3, Book 11 LED modules  
& 20 mounting holes for direct  
assembly of all LED COB brands  
ø47mm - H50mm - Rth 5.3°C/W  
Cooling performance 900 - 1,800 lm  
Black or clear anodised



## ModuLED Pico 4780

Modular Passive LED Star cooler  
Zhaga Book 3, Book 11 LED modules  
& 20 mounting holes for direct  
assembly of all LED COB brands  
ø47mm - H80mm - Rth 4.2°C/W  
Cooling performance 1,200 - 2,300 lm  
Black or clear anodised



## ModuLED Nano 7050

Modular Passive LED Star cooler  
Zhaga Book 3, Book 11 LED modules  
& 20 mounting holes for direct  
assembly of all LED COB brands  
ø70mm - H50mm - Rth 2.2°C/W  
Cooling performance 2,200 - 4,300 lm  
Black or clear anodised



## ModuLED Nano 7080

Modular Passive LED Star cooler  
Zhaga Book 3, Book 11 LED modules  
& 20 mounting holes for direct  
assembly of all LED COB brands  
ø70mm - H80mm - Rth 1.8°C/W  
Cooling performance 2,700 - 5,300 lm  
Black or clear anodised



## ModuLED Micro 8630

Modular Passive LED Star cooler  
Zhaga Book 3, Book 11 LED modules  
& 30 mounting holes for direct  
assembly of all LED COB brands  
ø86mm - H30mm - Rth 1.8°C/W  
Cooling performance 2,700 - 5,300 lm  
Black or clear anodised



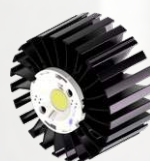
## ModuLED Micro 8650

Modular Passive LED Star cooler  
Zhaga Book 3, Book 11 LED modules  
& 30 mounting holes for direct  
assembly of all LED COB brands  
ø86mm - H50mm - Rth 1.5°C/W  
Cooling performance 3,200 - 6,400 lm  
Black or clear anodised



## ModuLED Micro 8680

Modular Passive LED Star cooler  
Zhaga Book 3, Book 11 LED modules  
& 30 mounting holes for direct  
assembly of all LED COB brands  
ø86mm - H80mm - Rth 1.2°C/W  
Cooling performance 4,000 - 8,000 lm  
Black or clear anodised



## ModuLED 9950

Modular Passive LED Star cooler  
Zhaga Book 3 LED modules & 25  
mounting holes for direct assembly of  
all LED COB brands  
ø99mm - H50mm - Rth 1.34°C/W  
Cooling performance 3,600 - 7,200 lm  
Black or clear anodised



# MODULED - MODULAR LED COOLERS



## ModuLED 9980

Modular Passive LED Star cooler  
Zhaga Book 3 LED modules & 25 mounting holes for direct assembly of all LED COB brands  
ø99mm - H80mm - Rth 1.02°C/W  
Cooling performance 4,700 - 9,400 lm  
Black or clear anodised



## ModuLED Xtra 9950

Modular Passive LED Star cooler  
Zhaga Book 2, Book 3, Book 5, Book 6, Book 11 LED modules & 22 mounting holes for direct assembly of all LED COB brands  
ø99mm - H50mm - Rth 1.34°C/W  
Cooling performance 3,600 - 7,200 lm  
Black or clear anodised



## ModuLED Xtra 9980

Modular Passive LED Star cooler  
Zhaga Book 2, Book 3, Book 5, Book 6, Book 11 LED modules & 22 mounting holes for direct assembly of all LED COB brands  
ø99mm - H80mm - Rth 1.02°C/W  
Cooling performance 4,700 - 9,400 lm  
Black or clear anodised



## ModuLED Mega 13420

Modular Passive LED Star cooler  
Zhaga Book 3 LED modules & 36 mounting holes for direct assembly of all LED COB brands  
ø134mm - H20mm - Rth 1.32°C/W  
Cooling performance 3,700 - 7,300 lm  
Black anodised



## ModuLED Mega 13450

Modular Passive LED Star cooler  
Zhaga Book 3 LED modules & 36 mounting holes for direct assembly of all LED COB brands  
ø134mm - H50mm - Rth 0.88°C/W  
Cooling performance 5,500 - 11,000 lm  
Black anodised



## ModuLED Mega 134100

Modular Passive LED Star cooler  
Zhaga Book 3 LED modules & 36 mounting holes for direct assembly of all LED COB brands  
ø134mm - H100mm - Rth 0.67°C/W  
Cooling performance 7,200 - 14,300 lm  
Black anodised



## ModuLED Giga 15220

Modular Passive LED Star cooler  
Zhaga Book 3 LED modules & 27 mounting holes for direct assembly of all LED COB brands  
ø152mm - H20mm - Rth 1.13°C/W  
Cooling performance 4,300 - 8,500 lm  
Black anodised



## ModuLED Giga 15250

Modular Passive LED Star cooler  
Zhaga Book 3 LED modules & 27 mounting holes for direct assembly of all LED COB brands  
ø152mm - H50mm - Rth 0.7°C/W  
Cooling performance 6,800 - 13,500 lm  
Black anodised



# ICELED ACTIVE LED COOLING

## IceLED 450



Modular Active LED Star cooler  
Zhaga Book 3 LED modules & 25 mounting holes for direct assembly of all LED COB brands  
ø99mm - H45mm - Rth 0.58°C/W  
Fan Voltage 12Vdc - 50mA  
Fan Speed 1500RPM  
Cooling performance 8,200 - 16,400 lm

## IceLED 550



Modular Active LED Star cooler  
Zhaga Book 3 LED modules & 25 mounting holes for direct assembly of all LED COB brands  
ø99mm - H55mm - Rth 0.46°C/W  
Fan Voltage 12Vdc - 50mA  
Fan Speed 1500RPM  
Cooling performance 10,500 - 21,000 lm

## IceLED Xtra 550



Modular Active LED Star cooler  
Zhaga Book 2, Book 3, Book 5, Book 6, Book 11 LED modules & 22 mounting holes for direct assembly of all LED COB brands  
ø99mm - H55mm - Rth 0.46°C/W  
Fan Voltage 12Vdc - 50mA  
Fan Speed 1500RPM  
Cooling performance 10,500 - 21,000 lm

## IceLED Ultra



Modular Active LED Star cooler  
Zhaga Book 3 LED modules & 25 mounting holes for direct assembly of all LED COB brands  
ø99mm - H75mm - Rth 0.25°C/W  
Fan Voltage 12Vdc - 230mA  
Fan Speed 3000RPM  
Cooling performance 19,000 - 38,000 lm

## IceLED Xtra Ultra



Modular Active LED Star cooler  
Zhaga Book 2, Book 3, Book 5, Book 6, Book 11 LED modules & 22 mounting holes for direct assembly of all LED COB brands  
ø99mm - H75mm - Rth 0.25°C/W  
Fan Voltage 12Vdc - 230mA  
Fan Speed 3000RPM  
Cooling performance 19,000 - 38,000 lm

## IceLED Ultra VS



Modular Active LED Star cooler  
Zhaga Book 2, Book 3, Book 5, Book 6, Book 11 LED modules & 22 mounting holes for direct assembly of all LED COB brands  
ø99mm - H75mm - Rth 0.26°C/W  
Fan Voltage 12Vdc - 160mA  
Fan Speed 2600RPM  
Cooling performance 14,500 - 29,000 lm

# HBG & COOLBAY® - HIGH BAY LED COOLING

## Total assembly example of ModuLED Giga 152100-HBG



## Total assembly example of CoolBay® Tera-A





# HBG & COOLBAY® - HIGH BAY LED COOLING



## ModuLED Mega 13450-HBG

High Bay LED cooler with direct mounting holes for Mean Well HBG series driver  
Zhaga Book 3 LED modules & 36 mounting holes for direct assembly of all LED COB brands  
ø134mm - H50mm - Rth 0.88°C/W  
Cooling performance 5,500 - 11,000 lm  
Black anodised



## ModuLED Mega 134100-HBG

High Bay LED cooler with direct mounting holes for Mean Well HBG series driver  
Zhaga Book 3 LED modules & 36 mounting holes for direct assembly of all LED COB brands  
ø134mm - H100mm - Rth 0.67°C/W  
Cooling performance 7,200 - 14,300 lm  
Black anodised



## ModuLED Giga 152100-HBG

High Bay LED cooler with direct mounting holes for Mean Well HBG series driver  
Zhaga Book 3 LED modules & 27 mounting holes for direct assembly of all LED COB brands  
ø152mm - H100mm - Rth 0.52°C/W  
Cooling performance 9,000 - 18,000 lm  
Black anodised



## ModuLED Giga 152150-HBG

High Bay LED cooler with direct mounting holes for Mean Well HBG series driver  
Zhaga Book 3 LED modules & 27 mounting holes for direct assembly of all LED COB brands  
ø152mm - H150mm - Rth 0.46°C/W  
Cooling performance 10,500 - 21,000 lm  
Black anodised



## CoolBay® Giga-A

Advanced High Bay LED cooler with CoolTube® quadruple closed-loop heat pipe structure  
Direct connection for Citizen CLU056, Edison HM 120W/150W, Seoul ZC100 high power COB LEDs, and for Mean Well HBG-160 LED driver & various accessories  
ø152mm - H200mm - Rth 0.34°C/W  
Cooling performance 14,500 - 29,000 lm  
Black nano coating



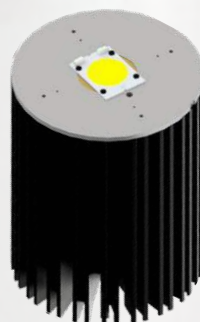
## CoolBay® Giga-B

Advanced High Bay LED cooler with CoolTube® quadruple closed-loop heat pipe structure  
Direct connection for Bridgelux Vero 29, Cree CXA/CXB35xx, Tridonic FLE high power COB LEDs, and for Mean Well HBG-160 LED driver & various accessories  
ø152mm - H200mm - Rth 0.34°C/W  
Cooling performance 14,500 - 29,000 lm  
Black nano coating



## CoolBay® Tera-A

Advanced High Bay LED cooler with CoolTube® quadruple closed-loop heat pipe structure  
Direct connection for Citizen CLU056, Edison HM 120W/150W, Seoul ZC100 high power COB LEDs, and for Mean Well HBG-240 LED driver & various accessories  
ø192mm - H250mm - Rth 0.22°C/W  
Cooling performance 22,000 - 44,000 lm  
Black nano coating



## CoolBay® Tera-B

Advanced High Bay LED cooler with CoolTube® quadruple closed-loop heat pipe structure  
Direct connection for Bridgelux Vero 29, Cree CXA/CXB35xx, Tridonic FLE high power COB LEDs, and for Mean Well HBG-240 LED driver & various accessories  
ø192mm - H250mm - Rth 0.22°C/W  
Cooling performance 22,000 - 44,000 lm  
Black nano coating

# HIGH BAY LED ACCESSORIES



## ModuLED Optics Adaptor v2 for Reflector & Lens connection

- **ModuLED Mega optics adaptor v2**
- **ModuLED Giga optics adaptor v2**

Specific designed adaptor plate for assembly of CoolView® 10 series lenses and CoolBay® Reflectors on ModuLED Mega / Giga series high bay LED Coolers

4 screws M5x10mm included

ø158mm - Weight 60g - AL1050



## CoolView® 10 AG - High End Anti-glare glass lens set

- **CoolView® 10-60AG**
- **CoolView® 10-90AG**
- **CoolView® 10-120AG**

High end patented anti-glare glass lens set with beam angle 60°, 90° or 120°.

Compatible with ModuLED Mega / Giga -HBG & CoolBay® series high bay LED Coolers, uniform light dispersion with high transparency 94% efficient.

Lens set content : - Borosilicate glass lens  
- Silica sealing ring  
- AL6063 Metal frame lens holder

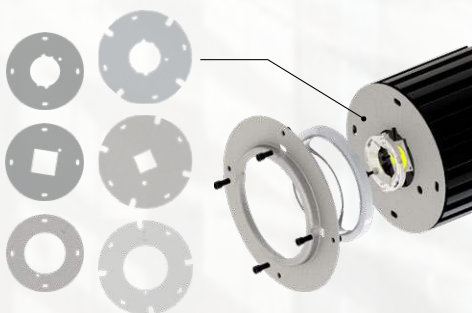


## CoolBay® Reflector - High reflectivity rate reflector set

- **CoolBay® Reflector 45** ø420 x H255 - Weight 615g - AL1070
- **CoolBay® Reflector 45 PC** ø425 x H287.5 - Weight 850g - Polycarbonate
- **CoolBay® Reflector 90** ø520 x H185 - Weight 665g - AL1070
- **CoolBay® Reflector 120** ø490 x 140 - Weight 585g - AL1070

A limited range of high-end off-the-shelf available high bay reflectors in high transfective coated aluminium or polycarbonate with beam angle 45°, 90° or 120°.

Compatible with ModuLED Mega / Giga -HBG & CoolBay® series high bay LED Coolers, uniform light dispersion with high reflectivity rate.



## DPP - Dust Protection Plate

- **DPP-Mega-2828-01 / -02**
- **DPP-Mega-3838-01 / -02**
- **DPP-Mega-ZHAGA3-01 / -02**
- **DPP-Mega-BW431 / -BW458**
- **DPP-Giga-2828**
- **DPP-Giga-3838**
- **DPP-Giga-ZHAGA3**
- **DPP-Giga-BW431 / -BW458**

Designed for the combination of the MechaTronix ModuLED Mega / Giga series high bay LED Coolers equipped with lens or any reflector with cover to avoid dust accumulation through open structure of the cooling fins.

Compatible with various LED sizes - COB 28x28mm, 38x38mm, Zhaga Book 3 standards LED modules and COBs with Bender+Wirth LED holders.

Cable hole position foreseen for Mean Well HBG-60, HBG100, HBG-160 LED driver.



# HIGH BAY LED ACCESSORIES



## CoolBox

Universal high bay LED driver box with direct mounting holes for ModuLED-HBG and CoolBay® series LED Cooler.

Almost all drivers available in the market up to 160 Watt can be mounted inside without the need of drilling or mechanical adaptations.

W180mm - L300mm - H130mm  
Weight 1076g



## Driver Box Connector ring

The connector ring creates an ideal bridge between any driver box in the market and our high bay coolers to allow free air convection

Dedicated mounting holes with MechaTronix ModuLED-HBG and CoolBay® series LED coolers  
ø55mm - H20mm - Weight 37g  
AL6063

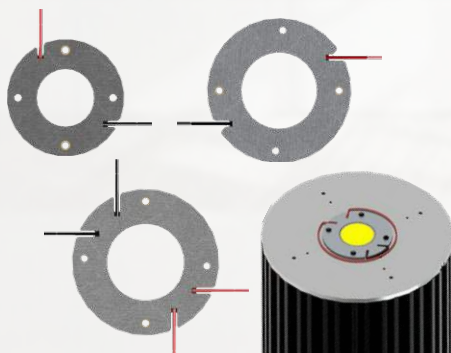


## HBG Connector set for MW HBG drivers

- HBG-60 Connector set
- HBG-100 Connector set
- HBG-160 Connector set
- HBG-240 Connector set

Connector set for Mean Well HBG series LED drivers with interchangeability towards all the ModuLED-HBG and CoolBay® series LED coolers. Creates an 11mm gap between the cooler and the driver to allow free air convection.

Screws M5x20mm x 4pcs ( Head 8.7mm ) and M5x12mm x 4pcs included  
AL1060



## CoolConnect® COB holder

- CoolConnect® holder COB 28x28
- CoolConnect® holder COB 38x38
- CoolConnect® holder COB 38x38 dual

LED holder constructed out of mica for 28x28mm COB, 38x38mm COB for single or dual-drive. Compatible with ModuLED Mega / Giga and CoolBay® Giga / Tera series high bay LED coolers.

Pre-wired 400mm



## HBG driver ring

HBG driver ring for Mean Well HBG series LED driver; Stainless 304.

01 for MW HBG-100, HBG-160:  
High quality M10, Max load weight 0.15T (ton)

02 for MW HBG-240:  
High quality M12, Max load weight 0.22T (ton)



## SUS304 Screws

SUS304 Stainless steel Black Socket Button Head Screw.

Multiple order quantity: 500/box

- M3x4
- M3x6
- M3x8
- M3x16
- M4x10
- M5x6

# HIGH BAY LED ACCESSORIES



## LCM - Dimming synchronization cable for MW drivers

- LCM-030-SYNC
- LCM-100-SYNC
- LCM-300-SYNC
- LCM-500-SYNC
- LCM-030-SYNC25
- LCM-100-SYNC25
- LCM-300-SYNC25
- LCM-500-SYNC25

Dimming synchronization cable for Mean Well LCM-40, LCM-60 or LCM-25 LED driver. Blue-white twin cable with UL2468 recognition.

Standard length 30cm / 100cm / 300cm / 500cm

Custom made lengths on request



## MTX-SR Cable Strain Reliefs for Standard LED Coolers

- MTX-SR-25-05
- MTX-SR-25-15
- MTX-SR-35-05
- MTX-SR-35-15
- MTX-SR-25-CP
- MTX-SR-35-CP

Cable Strain Reliefs in various clamp heights - gap 0.5mm or 1.5mm.

Fits on all Zhaga standard MTX LED Coolers:

- Mounting pitch 35mm Zhaga Book 3
- Mounting pitch 25mm Zhaga Book 11

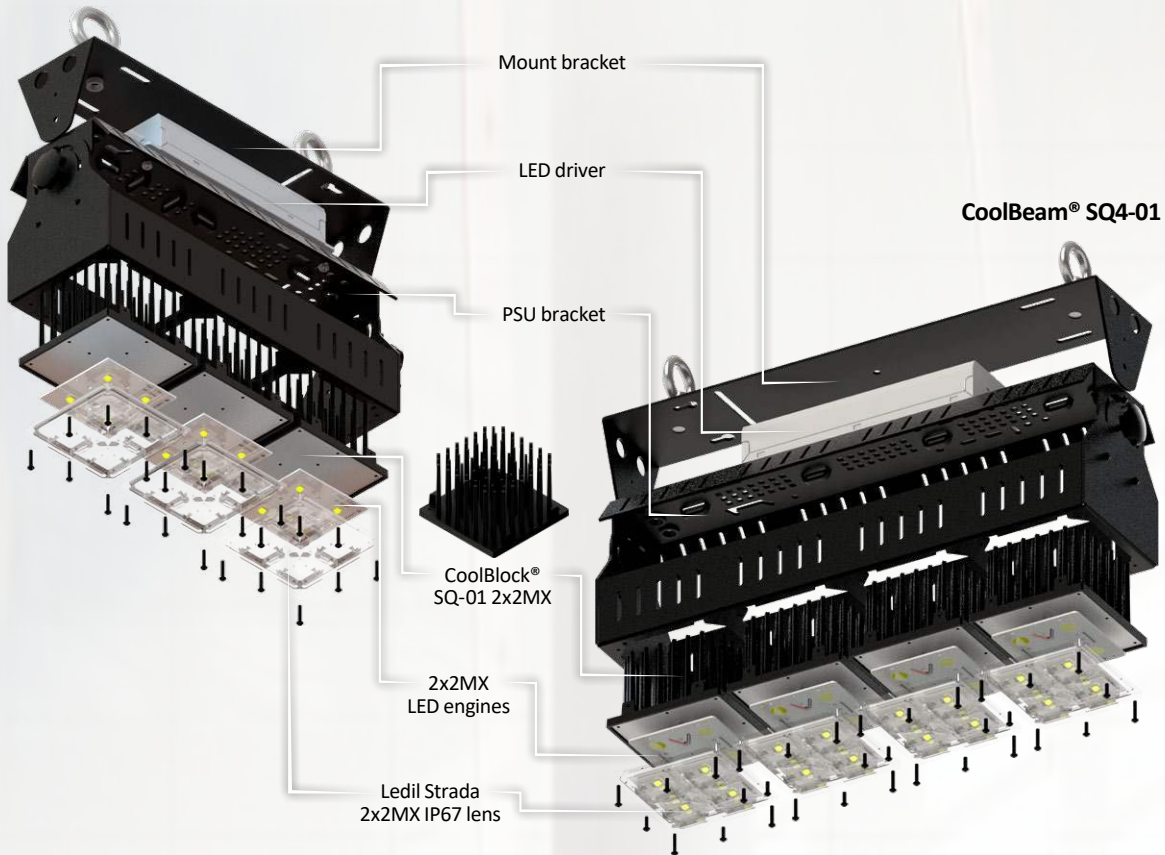
Made from PP UL-V0 plastics



# COOLBLOCK® & COOLBEAM® 2x2MX FAMILY

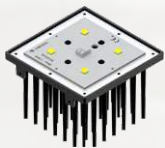
## Total assembly example of CoolBeam® & CoolBlock®

CoolBeam® SQ3-01



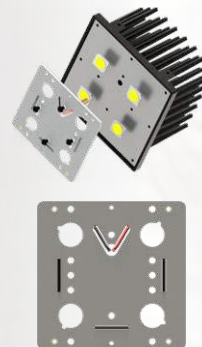
CoolBeam® SQ4-01

### CoolBlock® SQ-01 2x2MX



Square Pin Fin LED Cooler for 2x2MX platform. Accommodating LED boards with 4 high power LEDs like the Lumileds XR-M, Cezos 2x2MX (Osram P10), Citizen CLU028, Luminus CHM-9/CXM-9, Cree CXA15 / CXB15, Adura Sinkpad 2x2MX and Ledil Strada 2x2MX lenses for IP67 waterproof with just a few screws  
W96mm - L96mm - H61.5mm  
Thermal resistance  $R_{th}$  1.45°C/W  
Cooling performance 3,300 - 6,500 lm  
Black electro-coating

### CoolConnect® holder 2x2MX



LED holder constructed out of mica enabling 4pcs COB LED modules to be placed in the 2x2MX platform.

- **CoolConnect® holder 2x2MX-01**  
Fits with (4x) LED COB 15.85x15.85mm
- **CoolConnect® holder 2x2MX-02**  
Fits with (4x) LED COB 13.5x13.5mm  
Pre-wired 200mm

### CoolBeam® SQ3 / SQ4



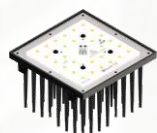
Patented fixture kit accommodating 3 or 4 CoolBlock® 2x2MX LED engines. For industrial flood lights or high bay designs up to 16,000 lumen. Various wall mount and suspended mounting options  
Smart PSU bracket for drivers of Mean Well, Inventronics, Osram,...  
SQ3: W107mm - L316mm - H150.5mm  
SQ4: W107mm - L418mm - H150.5mm  
Black electro-coating

### CoolBeam® SQ Dual / Triple



Mounting bracket for 2 or 3 CoolBeam® SQ4-01 luminaires. Creates an industrial flood light, high mast or high bay luminaire up to 60,000 lumen. Free tilting of the individual CoolBeam® arrays for flexible beam patterns  
Dual: W240mm - L418mm - H125mm  
Triple: W370mm - L418mm - H125mm  
Weight 1387g - Black electro-coating

# COOLBLOCK® 28 / 2X6 / 48 / 3X11 PCB COOLING



## CoolBlock® HB-28

Square Pin Fin LED Cooler accommodating LED boards with 28 high power LEDs like the Adura Stradella SinkPAD PCB 2019-A, 2020-A, 2021-A, 12176-A and Cezos Osram K219; Direct fit with Ledil Stradella IP-28 family lenses for IP67 waterproof designs in various beam patterns.

W106mm - L106mm - H62mm

Thermal resistance  $R_{th}$  1.16°C/W

Cooling performance 3,800 - 7,600 lm

Black electro-coating



## CoolBlock® LX-01 2x6

Rectangle Pin Fin LED Cooler for 2x6 platform. Accommodating LED boards with 12 high power LEDs like the Lumileds Luxeon XR-TX, Cezos Osram 2x6 LED PCB's and Ledil Strada / HB 2x6 lenses for IP67 waterproof with just a few screws

W80mm - L192mm - H45mm

Thermal resistance  $R_{th}$  1.09°C/W

Cooling performance 4,400 - 8,700 lm

Black electro-coating



## CoolBlock® LX-02 2x6

Rectangle Pin Fin LED Cooler for 2x6 platform. Accommodating LED boards with 12 high power LEDs like the Adura Sinkpad, Cezos Osram 2x6 LED PCB's and Ledil Strada / HB 2x6 lenses for IP67 waterproof with just a few screws

W80mm - L192mm - H45mm

Thermal resistance  $R_{th}$  1.09°C/W

Cooling performance 4,400 - 8,700 lm

Black electro-coating



## CoolBlock® ARENA-48

Square Pin Fin LED Cooler accommodating LED boards with 48 high power LEDs like the Cezos Osram K319, K321, K322, K323, K324; Direct fit with Khatod Arena family reflectors for IP65 waterproof designs in various beam patterns.

W180mm - L180mm - H80mm

Thermal resistance  $R_{th}$  0.47°C/W

Cooling performance 10,000 - 20,000 lm

Black electro-coating



## CoolBlock® HC-01 3x11

High Power rectangle pin fin cooler for industrial or horticultural lighting projects. Designed for Ledil Florence with 3x11 lens pockets and Ledil Dahlia with 120 individual lens pockets up to led size 3535; Standard Led boards available from Cezos and Adura for both platforms.

W98mm - L340mm - H61.5mm

Thermal resistance  $R_{th}$  0.47°C/W

Cooling performance 10,000 - 20,000 lm

Black electro-coating



## CoolConnect® Inter-01

M4 double head threaded screw as connection bridge for multiple CoolBlock® LED coolers combination.

Compatible with CoolBlock® LX-01-2x6, CoolBlock® LX-02-2x6 and CoolBlock® HC-01-3x11.

Black electro plate steel



## IP Cable gland & Stopper

### • CoolConnect® Gland 2-Pole 01

M6 Waterproof cable gland for 2 wires cable; Nickel plated brass With a 2 pole insert for 1.8mm wire.

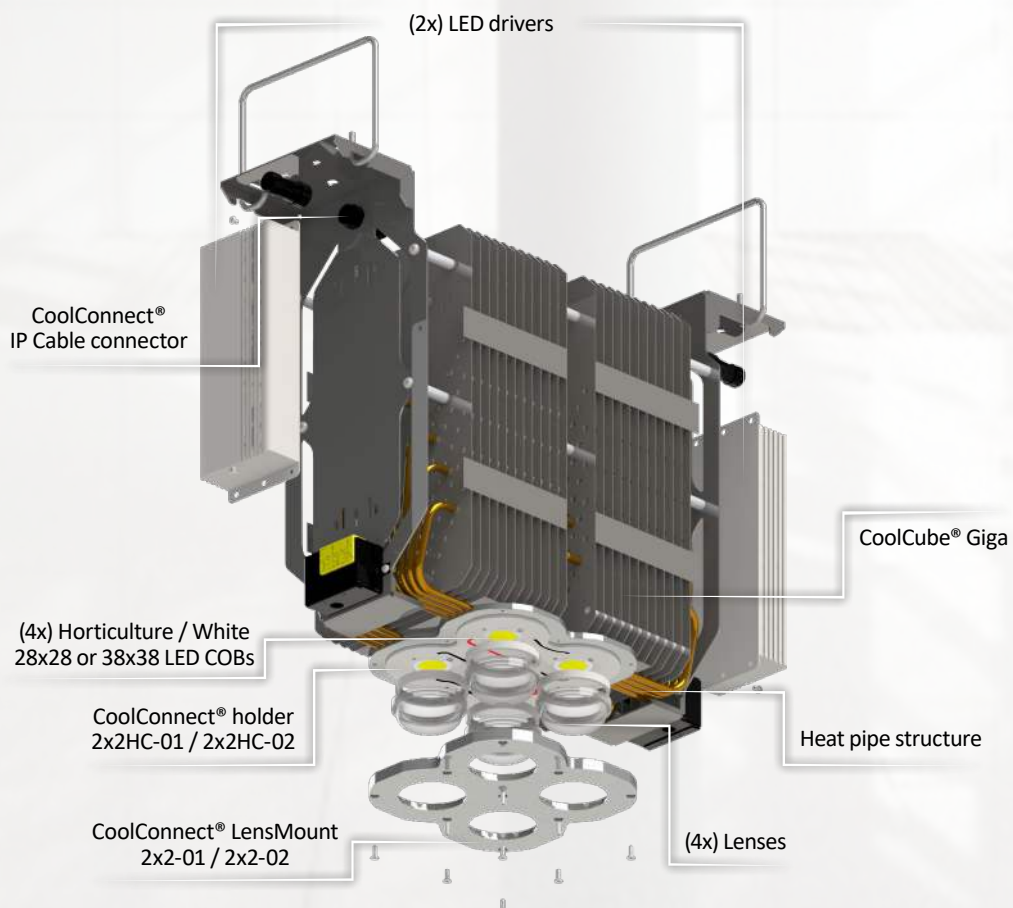
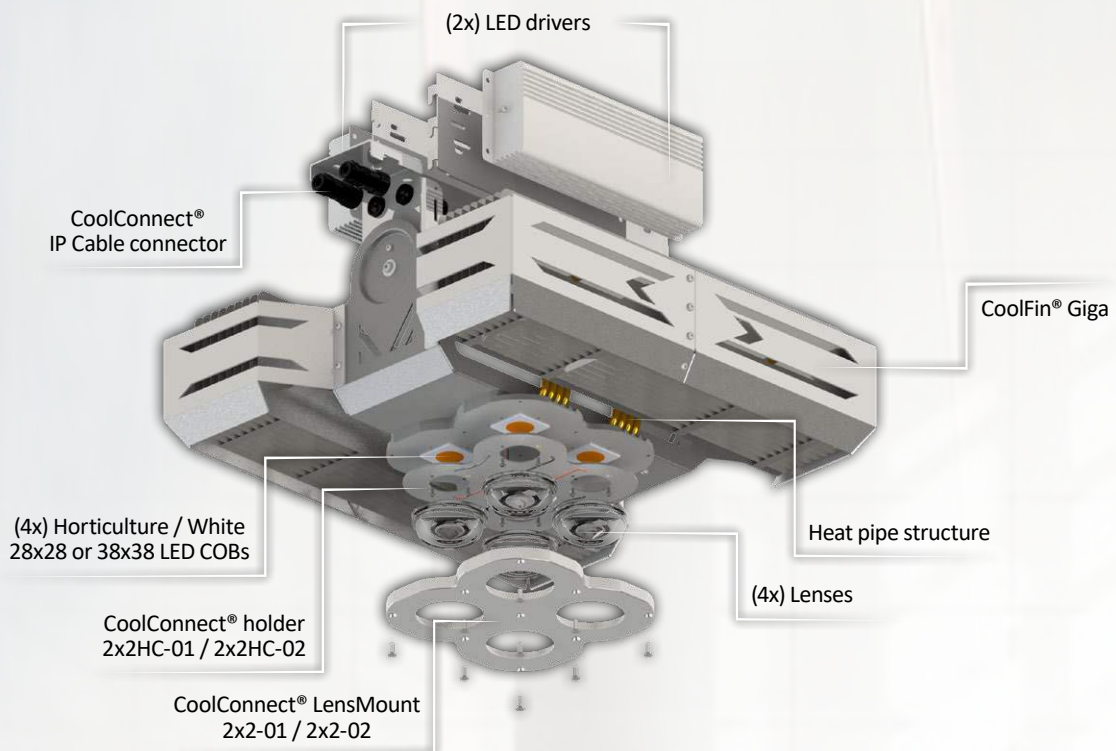
### • CoolConnect® Stopper Gland

M6 stopper for unused entries, Nickel plated brass.



# COOLFIN® & COOLCUBE® ADVANCED LED COOLING

Total assembly example of CoolFin® & CoolCube®



# COOLFIN® & COOLCUBE® ADVANCED LED COOLING



## CoolFin® Giga / CoolFin® Giga Tilt

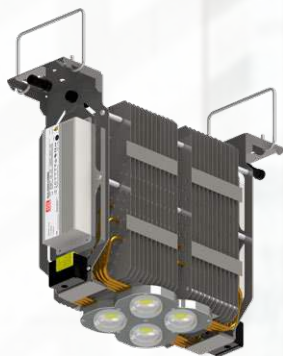
Advanced Ultra High power LED cooler with stackfin and heat pipe structure

Accommodating 28x28 LED COB like Citizen CLU04H, Lumileds Sunplus 1211 with CoolConnect® holder 2x2HC-01, and 38x38 LED COB like Citizen CLU05H, Lumileds Sunplus 1825 with CoolConnect® holder 2x2HC-02 and for multiple brands LED driver & accessories.

W468mm - L446mm - H226mm - (Tilt) H394mm

Thermal resistance Rth 0.1°C/W

Cooling performance for high bay or high mast application up to 100,000lm, for horticulture top lighting up to 1,500 µmol/s



## CoolCube® Giga

Advanced Ultra High power LED cooler with stackfin and heat pipe structure; Ultra compact size with minimal shading surface

Accommodating 28x28 LED COB like Citizen CLU04H, Lumileds Sunplus 1211 with CoolConnect® holder 2x2HC-01 and 38x38 LED COB like Citizen CLU05H, Lumileds Sunplus 1825 with CoolConnect® holder 2x2HC-02 and for multiple brands LED driver & accessories

W200mm - L575mm - H417mm

Thermal resistance Rth 0.1°C/W

Cooling performance for high bay or high mast application up to 100,000lm, for horticulture top lighting up to 1,500 µmol/s



## CoolConnect® LensMount

Lens holder plate with double internal gasket for a perfect IP67 design for CoolFin® and CoolCube® series LED cooler.

- **CoolConnect® LensMount 2x2-01**  
Fits with (4x) Ledil Stella series lenses  
W259mm - L239mm - Weight 767g
- **CoolConnect® LensMount 2x2-02**  
Fits with (4x) CoolView® 7 series lenses  
W200mm - L200mm - Weight 567g



## CoolConnect® holder 2x2HC

LED holder constructed out of mica enabling 4pcs COB or LOB to be placed in the CoolFin® / CoolCube®; 2 LED engines placed in series with in 4 wires to control 2 individual strings.

- **CoolConnect® holder 2x2HC-01**  
Fits with (4x) LED COB/LOB 28x28mm
- **CoolConnect® holder 2x2HC-02**  
Fits with (4x) LED COB/LOB 38x38mm



## CoolView® 7 AG (Anti-glare) / BW (Batwing) - High End glass lens set

- **CoolView® 7-60AG**
- **CoolView® 7-90AG**
- **CoolView® 7-90BW**
- **CoolView® 7-120BW**

High end patented glass lens set

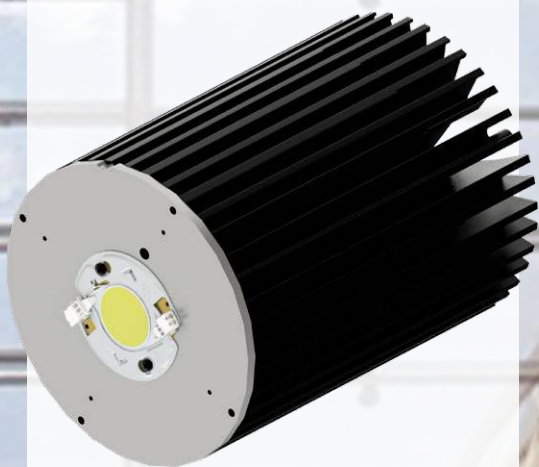
AG - Anti-glare with beam angle 60°, 90°

BW - Batwing lighting curve with beam angle 90°, 120°

Compatible with ModuLED CoolFin® & CoolCube® series advanced LED Coolers, uniform light dispersion with high transparency 94% efficient.

Lens set content : - Borosilicate glass lens  
- Silica sealing ring





OUR PROCESS STARTS WITH LISTENING



Simpex Electronic AG  
Binzackerstrasse 33  
CH-8620 Wetzikon  
Telefon +41 44 931 10 60

[www.simpex.ch](http://www.simpex.ch)  
[contact@simpex.ch](mailto:contact@simpex.ch)  
CHE-108.018.777 MWST

