LED COOLING SOLUTIONS
For Zhaga LED modules

- Validated Thermal Designs
- Adaptable to your Needs
- Functional & Aesthetic
Zhaga & ECO Partnerships

In conjunction with several world leading LED manufacturers and other stakeholders in the field, MechaTronix wholeheartedly 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, Lustrous, Osram, Osram Opto Semiconductors, Philips Lighting, Philips Lumileds, 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.
For Zhaga Book 2 socketable LED engines

Zhaga Interface Specification Book 2 defines the interfaces of a type-A LED light engine (socketable with integrated control gear).

The LED light engine has a round drum shape with maximum dimensions of 70.2 mm diameter and 45 mm height. It has a circular light-emitting surface with a typical diameter of 59 mm and a PHJ65d type base.

**Zhaga Book 2 compliant LED engines**

- Megaman Teco
- Philips Fortimo TDL
- Tridonic Talexx Stark DLE twist

*1 This list is a non-binding overview of available Zhaga book 2 LED engines at press.

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For Zhaga Book 5 socketable LED engines

Zhaga Interface Specification Book 5 defines the interfaces of a type-B LED light engine (socketable LED module with separate electronic control gear).

**Zhaga Book 5 compliant LED engines**

- GE Infusion LED modules M1000, M1500, M2000, M3000, M4500 and NPM

*1 This list is a non-binding overview of available Zhaga book 5 LED engines at press.

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For Zhaga Book 6 socketable LED engines

Zhaga Interface Specification Book 6 defines the interfaces of a type-A LED light engine (socketable with integrated control gear).

**Zhaga Book 6 compliant LED engines**

- Toshiba E-Core LED Light Engine LED LEV11 and LEV16

*1 This list is a non-binding overview of available Zhaga book 6 LED engines at press.

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For Zhaga Book 11 Spot Light Modules

Zhaga Interface Specification Book 11 defines the interfaces of LED light engines (LLEs) comprising a circular, non-socketable LED module with a separate LED driver (electronic control gear). The LED modules in Book 11 have an overall diameter of 35 mm and a height of 3.5 mm. It is suitable for spot-lighting and other applications that benefit from a small, circular source.

**LED COB's for which Zhaga book 11 LED holders are available**

- Bridgelux V10, V13
- Citizen CitiLED CLU024, CLU026, CLU044, CLU046
- Cree XLamp CXA13/15, CXB13/15
- Edison Opco HM25, HM30, HM40
- Lextar Nimbus 2800, 3000
- LG Innotek LEDWM18, LEDWM28
- Lumileds Luxeon 1203, 1204, 1205, 1208, 1211 and 1216 Luxeon K12 and K16
- Lustrous Lustron LL613F, LL620F, LL630F, LL630D, LL660D
- Nichia J216, J360, L110, L121, L204
- Osram Soleriq P13, S13, S19, E30
- Prolight Opto PABA, PAC, PACD, PACT, PAG
- Samsung LC026, LC040
- Seoul Semiconductor ZC12, ZC18, ZC25, ZC40, ZC60
- Sharp Mega Zenigata and Tiger Zenigata
- Tridonic Talexx Stark SLE Gen3 Mini LES 17

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For Zhaga Book 3 Spot Light Modules

Zhaga Interface Specification Book 3 defines the interfaces of a type-D LED light engine (non-socketable LED module with separate electronic control gear). The LED light engine LLE has a round disc shape with a maximum height of 7.2 mm and a typical diameter of 50 mm.

It is suitable for spot-lighting and other applications that benefit from a small, circular source. Book 3 specifies a circular light-emitting surface (LES) that can have a range of diameters, namely 9 mm, 13.5 mm, 19 mm and 23 mm.

**Zhaga book 3 compliant LED Spot Light modules**

- Edison Edilex SLM
- Osram PrevaLED
- Tridonic Talexx Stark DLE twist
- Philips Fortimo SLM
- Tridonic Talexx Stark SLE

*1 This list is a non-binding overview of available Zhaga book 3 LED engines at press.

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For Zhaga Book 3 mounting through the use of LED holders and connectors

With the use of Zhaga Book 3 mechanical compatible LED holders, a wide variety of LED COB's can be mounted in the same way on these LED coolers.

Zhaga Book 3 compatible LED holders can be found from BJB, Tyco Electronics Connectivity (TE), Molex, AAG Stucchi and Ideal.

**LED COB's for which Zhaga book 3 LED holders are available**

- Edison Edilex SLM
- Osram PrevaLED
- Tridonic Talexx Stark DLE twist
- Philips Fortimo SLM
- Tridonic Talexx Stark SLE
- Vexica Lumaera
- Vossloh Schwabe Luga Shop

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LED COOLING SOLUTIONS

For Zhaga Book 11 Spot Light Modules

Zhaga Interface Specification Book 11 defines the interfaces of LED light engines (LLEs) comprising a circular, non-socketable LED module with a separate LED driver (electronic control gear). The LED modules in Book 11 have an overall diameter of 35 mm and a height of 3.5 mm. It is suitable for spot-lighting and other applications that benefit from a small, circular source. Book 11 specifies a circular light-emitting surface (LES) that can have a range of diameters, namely 6.3 mm, 9.0 mm, 13.5 mm.

**LED COB's for which Zhaga book 11 LED holders are available**

- Bridgelux V15, V18, ES rectangular
- Citizen CitiLED CLU024, CLU034, CLU044, CLU046
- Cree XLamp CXA13/15, CXB13/15
- Edison Opco HM25, HM30, HM40
- Lextar Nimbus 2800, 3000
- LG Innotek LEDWM18, LEDWM28
- Lumileds Luxeon 1203, 1204, 1205, 1208, 1211 and 1216 Luxeon K12 and K16
- Lustrous Lustron LL613F, LL620F, LL630F, LL630D, LL660D
- Nichia J216, J360, L110, L121, L204
- Osram Soleriq P13, S13, S19, E30
- Prolight Opto PABA, PAC, PACD, PACT, PAG
- Samsung LC026, LC040
- Seoul Semiconductor ZC12, ZC18, ZC25, ZC40, ZC60
- Sharp Mega Zenigata and Tiger Zenigata
- Tridonic Talexx Stark SLE Gen3 Mini LES 17
- Osm Soleriq P6, P9, P13, S13
- Prolight Opto PAC, PAC
- Seoul Semiconductor ZC6
- Sharp Mini Zenigata
- Tridonic Talexx Stark SLE Gen3 Mini LES 17
- Edison Opto HM05, HM09, HM13
- Lextar Nimbus 1500
- Lustrous Lustron LL613F, LL620F, LL630F, LL630D, LL660D
- Nichia J216, J360, L110, L121, L204
- Osram Soleriq P13, S13, S19, E30
- Prolight Opto PABA, PAC, PACD, PACT, PAG
- Samsung LC026, LC040
- Seoul Semiconductor ZC12, ZC18, ZC25, ZC40, ZC60
- Sharp Mega Zenigata and Tiger Zenigata
- Tridonic Talexx Stark SLE Gen3 Mini LES 17
LED COOLING SOLUTIONS
For Zhaga LED modules

LPF3550-ZHC
LED Pin Fin cooler
For Zhaga Book 11 LED modules
ø35mm - h50mm
Cooling performance 300 - 1,000 lm
Thermal resistance Rth 7.41°C/W

LPF6050-ZHC
LED Pin Fin cooler
For Zhaga Book 3, Book 11 LED modules
ø60mm - h50mm
Cooling performance 500 - 1,700 lm
Thermal resistance Rth 4.0°C/W

LPF8050-ZHC
LED Pin Fin cooler
For Zhaga Book 3 LED modules
ø80mm - h50mm
Cooling performance 1,000 - 3,000 lm
Thermal resistance Rth 2.34°C/W

LPF11180-ZHE
LED Pin Fin cooler
For Zhaga Book 3 LED modules
ø111mm - h80mm
Cooling performance 2,000 - 6,000 lm
Thermal resistance Rth 1.07°C/W

LPF4768-ZHP
LED Pin Fin cooler
For Zhaga Book 3, Book 11 LED modules
ø47mm - h68mm
Cooling performance 600 - 2,200 lm
Thermal resistance Rth 3.9°C/W

LPF6768-ZHP
LED Pin Fin cooler
For Zhaga Book 3, Book 11 LED modules
ø67mm - h68mm
Cooling performance 1,100 - 3,300 lm
Thermal resistance Rth 2.1°C/W

LPF8668-ZHC
LED Pin Fin cooler
For Zhaga Book 3 LED modules
ø86mm - h68mm
Cooling performance 1,500 - 4,600 lm
Thermal resistance Rth 1.46°C/W
ModuLED Nano 7080
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø70mm - h80mm
Cooling performance 1,200 - 3,800 lm
Thermal resistance Rth 1.8°C/W

ModuLED Xtra 9980
Modular Passive LED Star cooler
For Zhaga Book 2, Book 3, Book 5, Book 6, Book 11 LED modules
ø99mm - h80mm
Cooling performance 2,100 - 6,400 lm
Thermal resistance Rth 1.02°C/W

ModuLED Pico 4780
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø47mm - h80mm
Cooling performance 600 - 1,800 lm
Thermal resistance Rth 4.2°C/W

ModuLED Nano 7050
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø70mm - h50mm
Cooling performance 1,000 - 3,100 lm
Thermal resistance Rth 2.2°C/W

ModuLED Xtra 9950
Modular Passive LED Star cooler
For Zhaga Book 2, Book 3, Book 5, Book 6, Book 11 LED modules
ø99mm - h50mm
Cooling performance 1,600 - 5,000 lm
Thermal resistance Rth 1.34°C/W

ModuLED Micro 8650
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø86mm - h50mm
Cooling performance 1,500 - 4,500 lm
Thermal resistance Rth 1.5°C/W

ModuLED Micro 8630
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø86mm - h30mm
Cooling performance 1,200 - 3,800 lm
Thermal resistance Rth 1.8°C/W

ModuLED Micro 8680
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø86mm - h80mm
Cooling performance 1,800 - 5,500 lm
Thermal resistance Rth 1.2°C/W

ModuLED Mega 13420
Modular Passive LED Star cooler
For Zhaga Book 3 LED modules
ø134mm - h20mm
Cooling performance 1,600 - 5,000 lm
Thermal resistance Rth 1.32°C/W

ModuLED Pico 4750
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø47mm - h50mm
Cooling performance 400 - 1,400 lm
Thermal resistance Rth 5.3°C/W

ModuLED Micro 8680
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø86mm - h80mm
Cooling performance 1,800 - 5,500 lm
Thermal resistance Rth 1.2°C/W

ModuLED Pico 4750
Modular Passive LED Star cooler
For Zhaga Book 3, Book 11 LED modules
ø47mm - h50mm
Cooling performance 400 - 1,400 lm
Thermal resistance Rth 5.3°C/W
<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Dimensions</th>
<th>Cooling Performance</th>
<th>Thermal Resistance Rθh</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ModuLED Mega 13450-HBG</strong></td>
<td>High Bay LED cooler with direct mounting holes for Mean Well HBG series driver</td>
<td>ø134mm - h50mm</td>
<td>2,400 - 7,300 lm</td>
<td>0.88°C/W</td>
</tr>
<tr>
<td><strong>ModuLED Mega 134100-HBG</strong></td>
<td>High Bay LED cooler with direct mounting holes for Mean Well HBG series driver</td>
<td>ø134mm - h100mm</td>
<td>3,300 - 10,000 lm</td>
<td>0.67°C/W</td>
</tr>
<tr>
<td><strong>ModuLED Giga 15220</strong></td>
<td>Modular Passive LED Star cooler</td>
<td>ø152mm - h20mm</td>
<td>2,000 - 6,000 lm</td>
<td>1.13°C/W</td>
</tr>
<tr>
<td><strong>ModuLED Giga 15250</strong></td>
<td>Modular Passive LED Star cooler</td>
<td>ø152mm - h50mm</td>
<td>3,000 - 9,000 lm</td>
<td>0.7°C/W</td>
</tr>
<tr>
<td><strong>ModuLED Giga 152100-HBG</strong></td>
<td>High Bay LED cooler with direct mounting holes for Mean Well HBG series driver</td>
<td>ø152mm - h100mm</td>
<td>8,000 - 14,000 lm</td>
<td>0.52°C/W</td>
</tr>
<tr>
<td><strong>ModuLED Giga 152150-HBG</strong></td>
<td>High Bay LED cooler with direct mounting holes for Mean Well HBG series driver</td>
<td>ø152mm - h150mm</td>
<td>10,000 - 16,000 lm</td>
<td>0.46°C/W</td>
</tr>
<tr>
<td><strong>CoolBay® Giga-A</strong></td>
<td>High Bay LED cooler with CoolTube® heat tube and direct mounting holes for Mean Well HBG series driver</td>
<td>ø152mm - h200mm</td>
<td>12,000 - 22,000 lm</td>
<td>0.34°C/W</td>
</tr>
<tr>
<td><strong>CoolBay® Tera-A</strong></td>
<td>High Bay LED cooler with CoolTube® heat tube and direct mounting holes for Mean Well HBG series driver</td>
<td>ø192mm - h250mm</td>
<td>15,000 - 35,000 lm</td>
<td>0.22°C/W</td>
</tr>
<tr>
<td><strong>IceLED Xtra 550</strong></td>
<td>Modular Active LED Star cooler</td>
<td>ø99mm - h55mm</td>
<td>4,200 - 12,800 lm</td>
<td>0.46°C/W</td>
</tr>
<tr>
<td><strong>IceLED Xtra Ultra</strong></td>
<td>Modular Active LED Star cooler</td>
<td>ø99mm - h75mm</td>
<td>5,000 - 20,000 lm</td>
<td>0.25°C/W</td>
</tr>
</tbody>
</table>