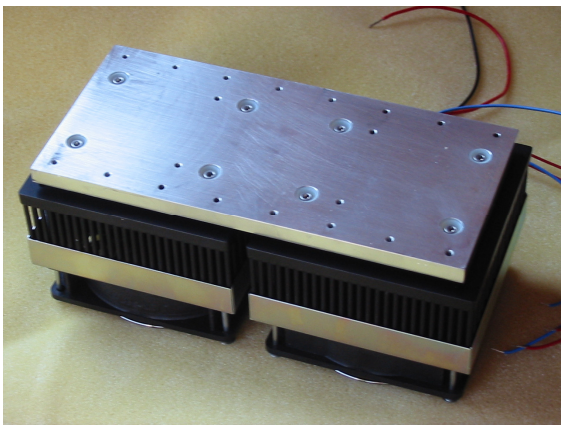
1. Introduction

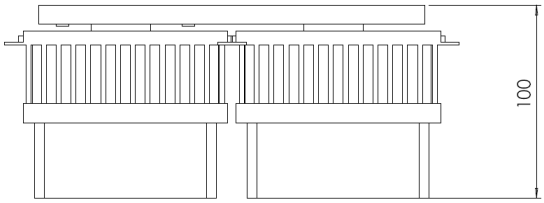


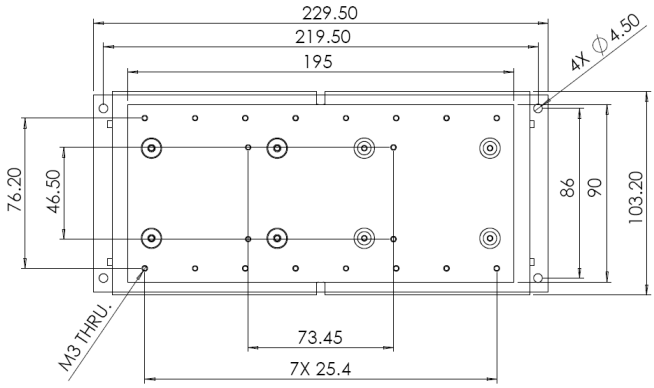
SCP-130 is a high performance cooling module with ETE's proprietary DCS (Distributed-Cooling-System) technology. It has 2 high performance fans mounted on high efficiency heatsinks. There are 2 high performance TECS (2 TECs per heatsink). The cold plate is made of copper with electrolytic tin. The cold plate has mounting patterns that matches the most popular high power lasers modules.

SCP-130 provides M3 threaded mounting holes at 1 inch pattern for clamping any diodes, please contact ETE for custom diode mounting options.

2. Performance curve

The following curve illustrates the performance of SCP-130. The X-axis is the heat load to the cold plate, the Y-axis shows lowest cold plate below ambient should be at a given heat load. Please notice that the cold plate temperature is an average figure, the temperature directly underneath the diode source will be higher and the edge of the cold plate will be lower.





3. Cooling Approach

The fans draw air from the bottom and blow air directly to the bottom of the heatsink; this cooling scheme is commonly called "impingement cooling". To ensure the performance of the cooling module, we highly recommend 25mm minimum clearance around all 4 sides and the bottom of the module so that the cooling air can move in and out of the heatsink freely.

4. Cooling Fan Specifications

The cooling fans require 24 VDC power, and they draw 0.22A each. We recommend driving the fans in parallel to ensure equally distributed cooling. Higher performance version of this module may use 12 VDC fans and they draw 1A each.

Parameters	Standard	Option: High flow fan available upon request
Rated voltage	24VDC	12VDC
Operating voltage range	12~28 VDC	7.0~13.8 VDC
Input power	5.3w	12.5w
Rated current	.22A	1A
Noise	47dBA	56.4dBA

The high flow fan has an output cable for fan RPM detection. And the wires are connectorized with stand power connectors for PCs.

5. TEC specifications

The maximum operating current for each TEC is 5.1 A, and maximum voltage is 48VDC. Exceeding the specified maximum current will reduce the performance and degrade the reliability of TECs.

The typical optimum current for each TEC is about 3~4 Amps depends on the set temperature, heat load, interface quality between the diode and cold plate, and ambient temperature.

Users are advised to manually ramp the TEC driving current after assembling the diode on the cold plate to identify the optimum current and set current limit accordingly so that the TEC will not runaway.

6. Diode Cooling Interface Guidelines

The actual performance of the cooling module is extremely sensitive to the quality of the thermal interface between the cold plate and the diode. For high power laser modules with large footprints, it is very difficult to maintain uniform high quality interface. Our cold plate is made of copper with very low spreading resistance so that the user can focus the attention primarily to the area directly underneath the laser diodes.

If diode set temperature is significantly below ambient, we highly recommend using thermal insulation materials such as silicone foam or ceramic based insulation to insulate laser from ambient.

We highly recommend users to use high performance thermal grease available from ETE, and follow the application guide religiously to use the full capability of our high performance cooling modules.

7. Contacts

If you need further information or clarification, please contact ETE in any of the following options:

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