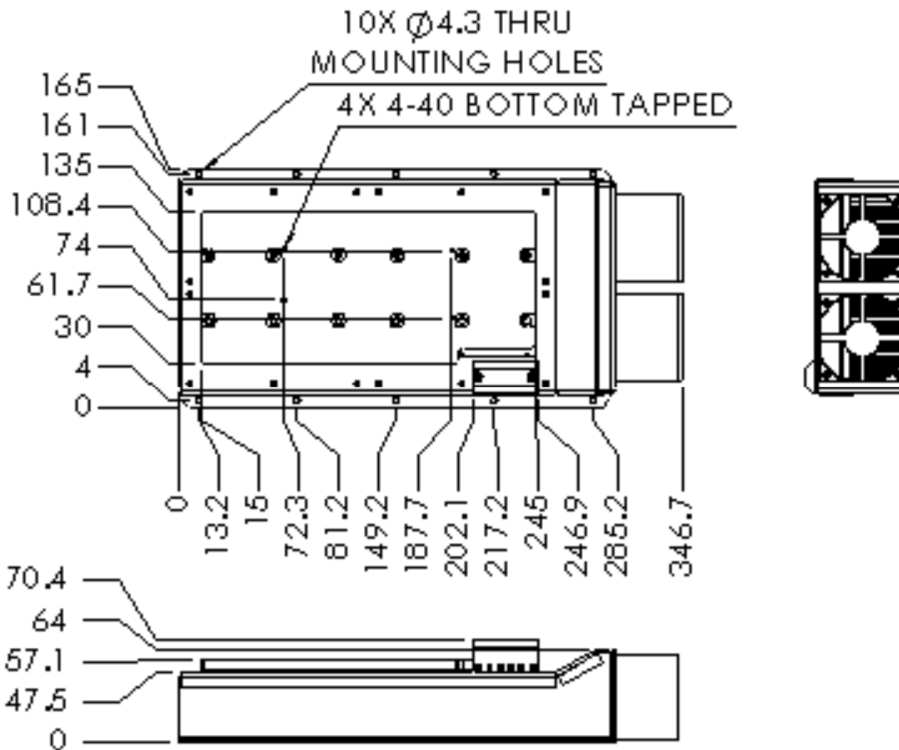
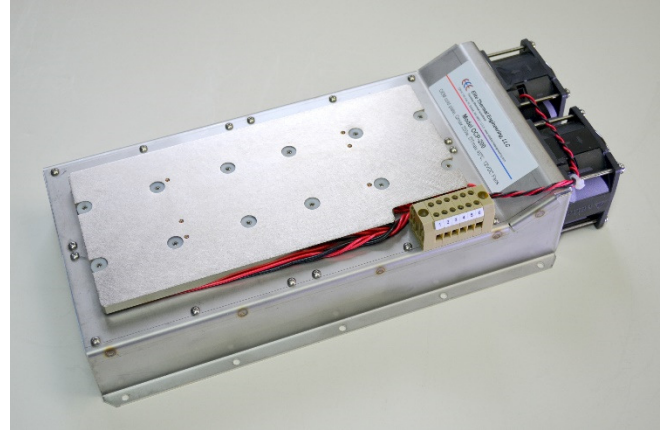


1. Introduction

OCP-200 is a high performance thermoelectric cooling module designed for OEM applications for high power laser products, medical equipments and semiconductor processing. It is also a convenient solution for general cooling of common fiber coupled lasers in laboratory environment.

The outline below provides the functional mounting hole patterns. It presently has mounting patterns for QPC Brightlase Ultra, Custom mounting hole pattern is available upon request. We also accept customer provided cold plates and install it in place of our standard cold plate.



The mass of OCP-200 is 9.8lbs.

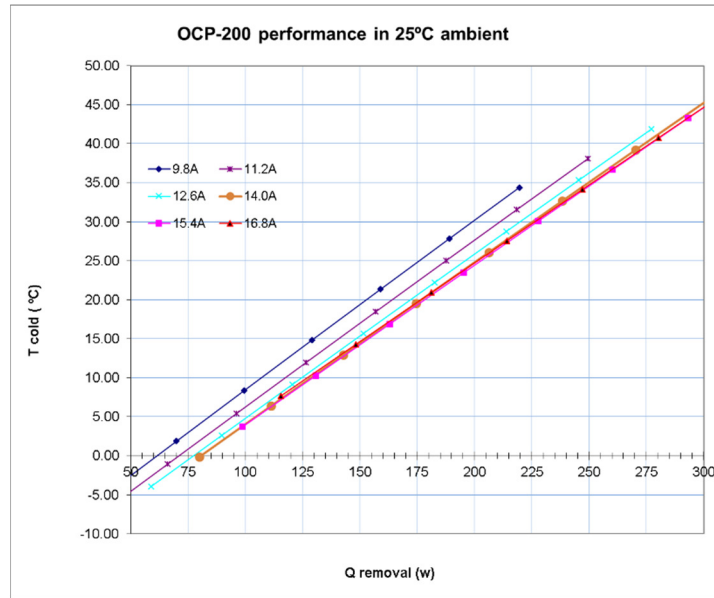
2. Performance curve

The performance curve illustrates the performance of OCP-200 at various currents in room ambient temperature. The X-axis is the heat load to the cold plate, the Y-axis is the cold plate temperature at the heat load. Please notice that the cold plate temperature is an average figure, the temperature of the cold plate is very uniform (<0.5°C) with evenly distributed

heat load; when used to cool high power laser diode, the temperature directly underneath the diode source will be slightly higher than the edge of the cold plate. The following curve indicates the optimum current to TEC is ~14A depends on the operating point. The performance, optimum current, maximum rating all changes depends on the heat load, cold side set temperature and ambient temperature.

3. TEC and fan specifications

The optimum operating current for each TEC set is 7.5A, and maximum voltage is 24VDC at room temperature. Maximum operating voltage increases if ambient is higher. Exceeding the specified optimum current may reduce the performance and degrade the reliability of TECs. The optimum current for each TEC set is a function of 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.



There are multiple TECs in OCP-200 that are pre-wired to 2 sets. We highly recommend driving the 2 TEC sets in series to ensure optimum performance. The TECs shall run from constant current source. Wiring the two sets of TECs in series (pin #1 +, pin #2 shorted to pin #3, pin #4 -) will require 7.5A x 48V source; wiring the two sets in parallel (pin 1 & 3 shorted to +, and pin #3 & 4 shorted to -) will require 15A x 24V source.

All TECs are environmentally sealed for operating below dew points. The maximum rated operating temperature for TECs is 85°C. The thermal resistance from TEC to ambient of OCP-200 heatsink is 0.06°C/w.

Below is the designations of the pin outs of the terminal block and the ratings for the connections:

Pin # marked on terminal block	Designation	Maximum rating
1	TEC set 1+	8A x 26V
2	TEC set 1 -	
3	TEC set 2+	8A x 26V
4	TEC set 2 -	
5	Fan +	1.66A x 12VDC
6	Fan -	

Below are the detail parameters of the fans:

Fan parameters	Specifications
Rated voltage	12VDC
Operating voltage range	5.5-13.8 VDC
Input power	9.9w
Rated current	1.66A
Noise	47dBA

4. 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.

5. Controlling OCP-200

ETE offers a controller for OCP-200. MC-1000 is our thermoelectric controller developed specifically for our cold plates. MC-1000 takes standard universal AC input, provides power to TEC and fans of the cold plate. A digital thermistor on the cold plate may be affixed to the cold plate. The user only need to run 6 wires from the cold plate to the controller. For more information, please contact us or visit our website.

6. Pricing and Contacts

For pricing and availability, please contact ETE in any of the following options:

Elite Thermal Engineering

22914 11th Ave, W, Bothell, WA 98021

Phone: 425-770-8147

Fax: 425-953-1333

Email: contact@elitethermalengineering.com

