



Application Note - Thermal Management of XCM with a Cold Plate Cooler

SemiNex multi-chip module (XCM) is a high-power laser module comprised of multiple laser diode chip-on-submount devices coupled into a multi-mode optical fiber. The typical optical output power of XCM reaches 50 watts at 1470nm terminated with an SMA-905 connector or an optical fiber. With a peak power capable of 72W and the ability to achieve 55W @12A, it performs best in high power applications. The XCM is the ideal choice for industry professionals who are looking for high power devices with a high-level performance in medical, aerospace, defense, or industrial applications. The XCM's electrical power consumption is 220W at a drive current of 10A and voltage of 22V, and it delivers exceptional conversion efficiency. Key features of XCM include high heat load packaging design, embedded photodiode (PD) and thermistor to further enhance functionality.

This application note is to recommend cooling systems for proper thermal management of a high power XCM laser module. The proper cooling device needs to dissipate roughly 170W of power generated.

A cold plate cooler is usually the best method of cooling a high power electronic or photonics device, when the heat creating object can be attached directly to the cold plate. The list of recommended cold plate coolers (non-liquid type) below are simply examples suitable to cool the high power XCM with proper heat dissipation capacity. An XCM module should be properly attached to a cold plate by applying a layer of thermal epoxy with mechanical fasteners for ideal thermal interface. There are other commercially available cold plates in the market that can also be used for proper heat dissipation.

1. TE Technology, Inc.

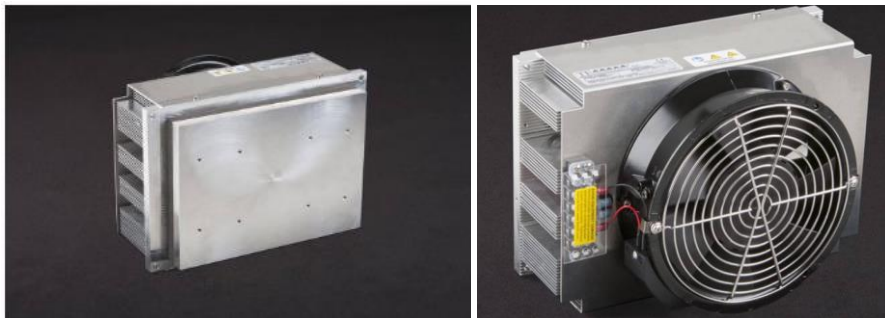
[CP-200HT](#)

Capacity Rating: 198 watts at a 0°C temperature difference. It can be used in a fan or liquid cooling setting.

Features:

- 216 x 161 mm (8.5 x 6.0 inch) cold plate surface
- Effective direct contact cooling
- Threaded holes in cold plate for easy attachment of object to be cooled
- Labeled wiring cables are included (thermoelectric cooling assembly or module, temperature controller and/or a power supply).
- The number of cables included (1-3 pairs) will depend on the number of components being interconnected.

You can find more information here: <https://tetech.com/product/cp-200ht/>



2. ThermoElectric Cooling America Corporation

[AHP-690CP](#)

Cooling Capacity: 163 Watt.

Features:

- Flat aluminum plate (8" x 4.70") [203 x 119]
- Standard 6-32X.25 UNC threads
- Compact (only 10" x 5.9" x 5.2") [254 x 150 x 132]
- Mounts and operates in any orientation: horizontal, vertical, etc.
- Low vibration and noise
- Environmentally safe
- No compressor, fluorocarbons or filters
- Cools and heats via reverse polarity

You can find the link and more information here: <https://www.thermoelectric.com/cold-plates/industrial/ahp-690cp/>

