

**Liquid Series Thermoelectric Cooler Assembly**

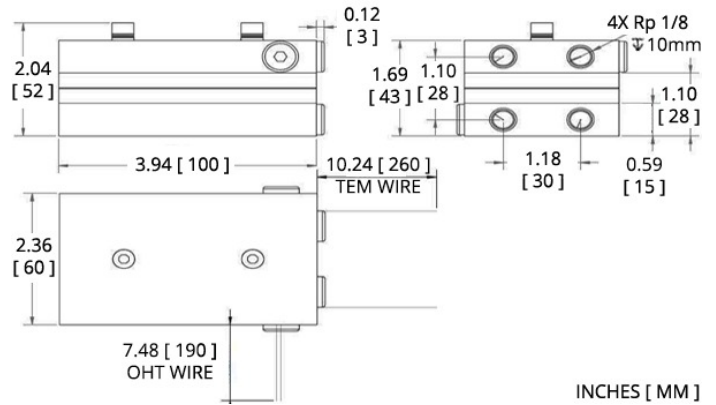
The LL-060-12-00 thermoelectric cooler assembly offers dependable, compact performance by cooling objects via liquid to transfer heat. Heat is absorbed through one liquid heat exchanger and dissipated thru a second liquid heat exchanger. The thermoelectric modules are custom designed to achieve a high coefficient of performance (COP) to minimize power consumption. It has a maximum Qc of 61 Watts when  $\Delta T = 0$  and a maximum  $\Delta T$  of 42 °C at Qc = 0. Heat exchangers are designed to accommodate distilled water with glycol. Corrosion resistant turbulators are enclosed inside channels to increase heat transfer. Mating port adaptors are sold separately.

**Features**

- Compact design
- Precise temperature control
- Reliable solid-state operation
- DC operation
- RoHS-compliant

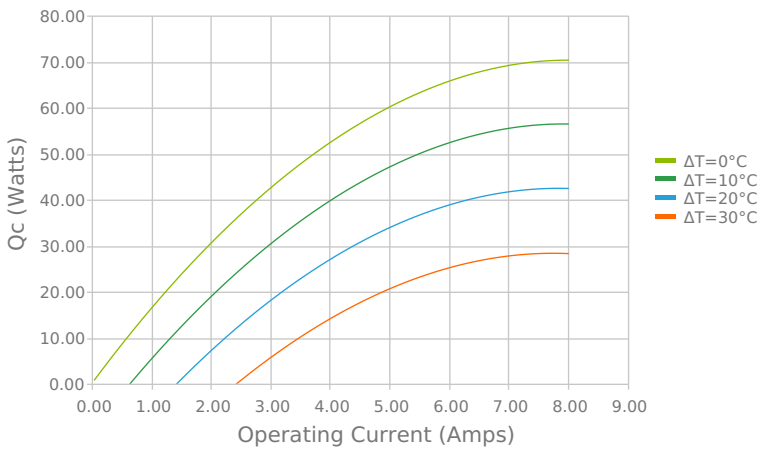
**Applications**

- Medical Diagnostics
- Industrial Lasers
- Medical Lasers
- Analytical Instrumentation

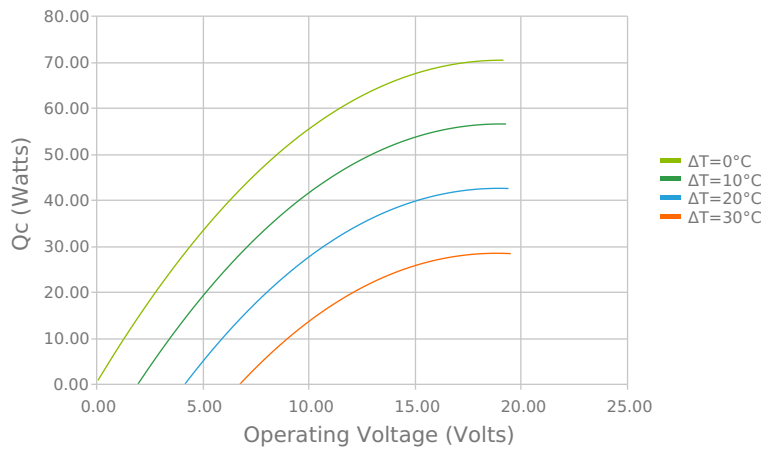


**ELECTRICAL AND THERMAL PERFORMANCE**

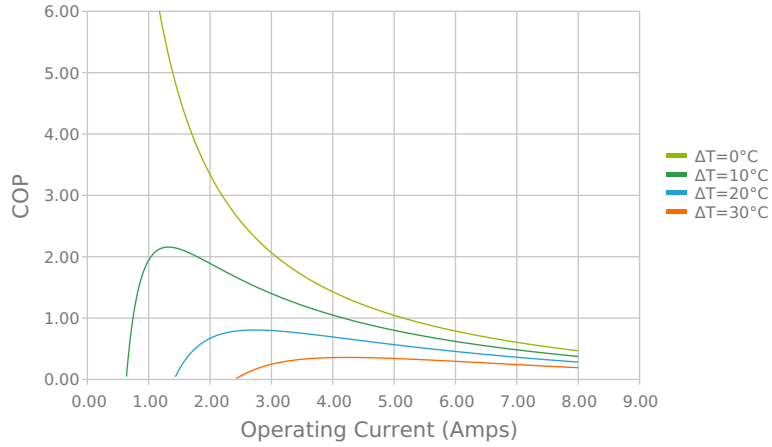
Heat Pumped at Cold Side (Qc)  
 Tambient = 35°C | Tcontrol = 20°C



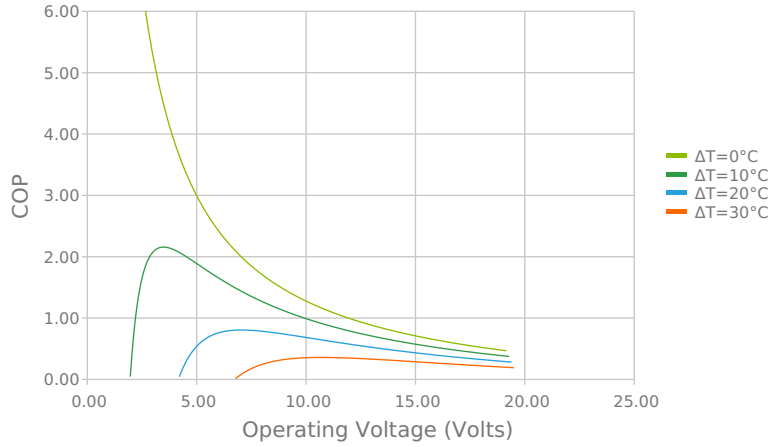
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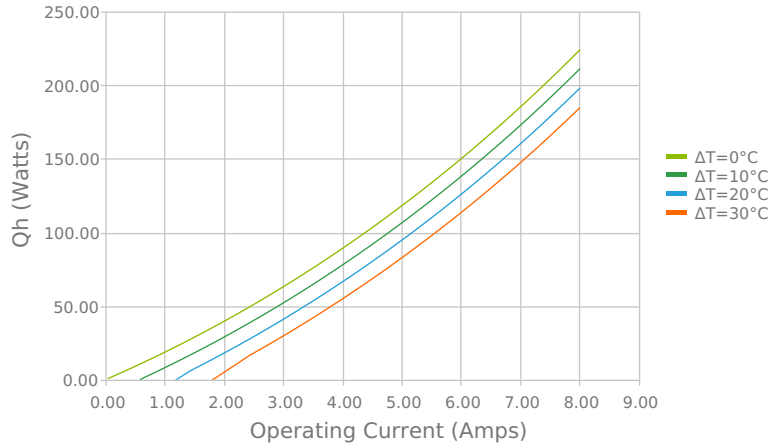
Coefficient of Performance (COP = Qc/Pin)  
 Tambient = 35°C | Tcontrol = 20°C



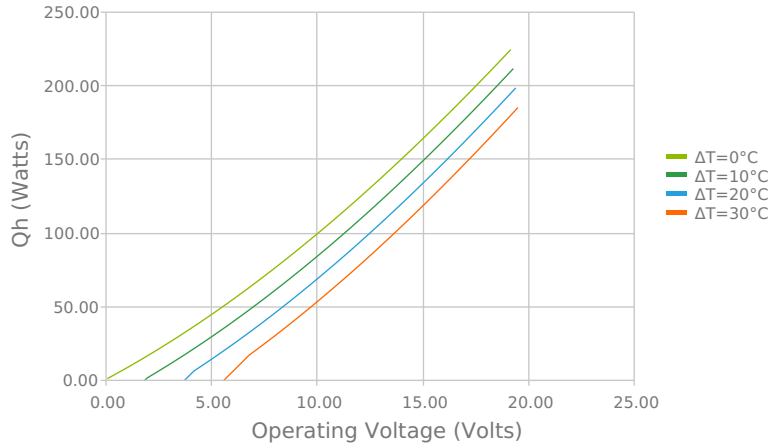
Coefficient of Performance (COP = Qc/Pin)  
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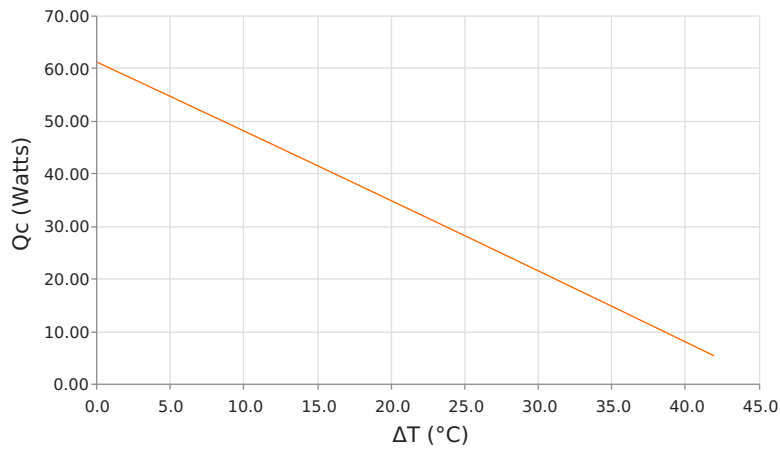
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)  
 Tambient = 35°C | Tcontrol = 20°C



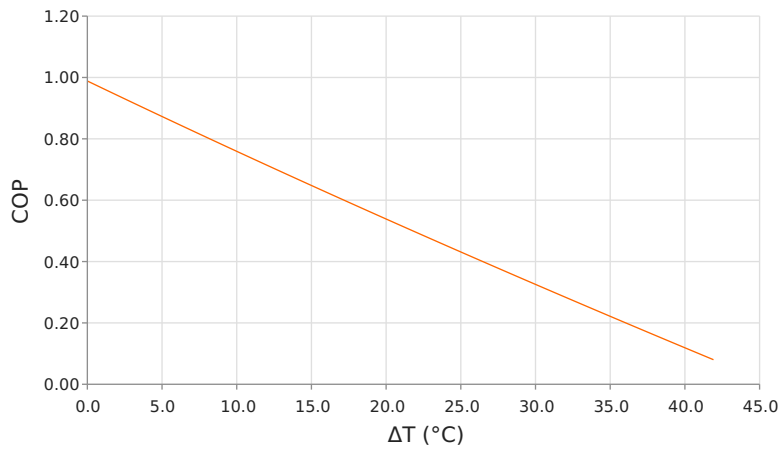
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)  
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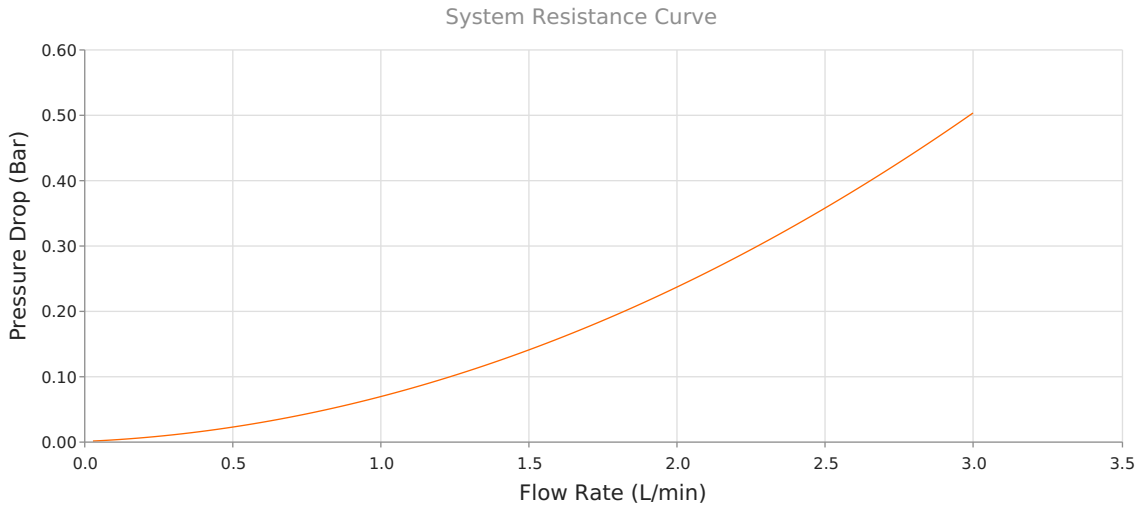


Heat Pumped at Cold Side (Qc)  
 Voperating = 12.02 Volts | Ioperating = 5.19 Amps



Coefficient of Performance (COP = Qc/Pin)  
 Voperating = 12.02 Volts | Ioperating = 5.19 Amps





**SPECIFICATIONS**

**Heat Transfer Mechanism, Cold Side**

**Heat Transfer Mechanism, Hot Side**

**Operating Temperature Range**

**Supply Voltage**

**Current Draw**

**Power Supply**

**Performance Tolerance**

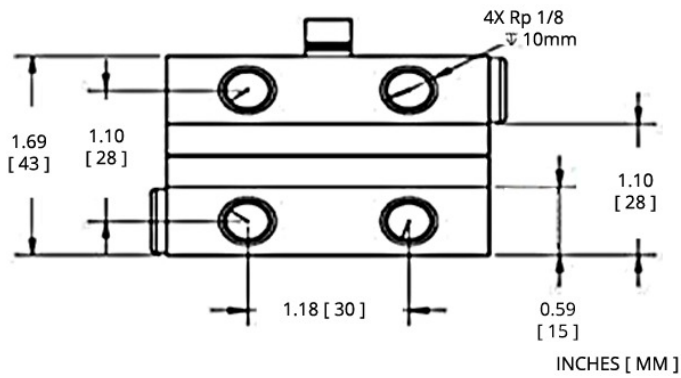
**Hi-Pot Testing**

**Over-Temp Thermostat (Hot and Cold Side Heat Sink)**

**Weight**

Liquid - Forced Convection
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-40°C to 62°C
12.0 VDC nominal / 15.0 VDC maximum
3.9 A running / 4.3 A startup
56.0 Watts
10%
750 VDC
75°C ±5°C (hot side heat sink)
0.50 kg

**MOUNTING HOLE LOCATION**



**ELECTRICAL CONNECTIONS**

TEM+ : Red  
 TEM- : Black

Wire Size: 20 AWG

The overheat protection (OHT) bimetal thermostat has a maximum current of 8 Amps. For systems 8 Amps or less, the thermostat can be connected directly in series with thermoelectric modules (TEMs). Otherwise connect the TEMs to the power source through a relay of suitable rating which state is controlled with the bimetal thermostat.

**NOTES**

<sup>1</sup>For indoor use only

<sup>2</sup>Turbulators are mounted inside liquid channels to create turbulent flow

<sup>3</sup>Cold block requires insulation to minimize moisture buildup under dew point conditions.

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