

### 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.

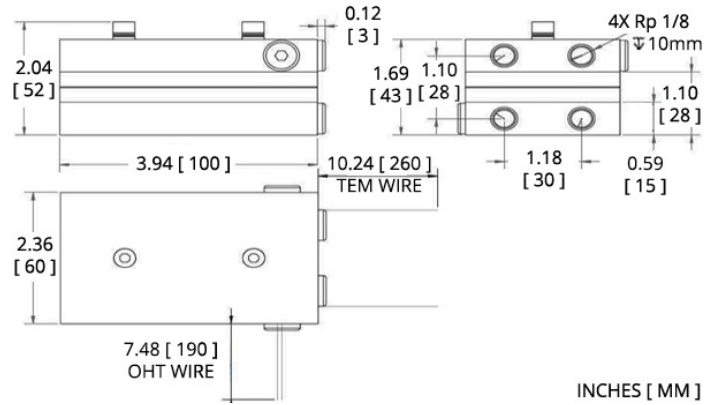


### Features

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

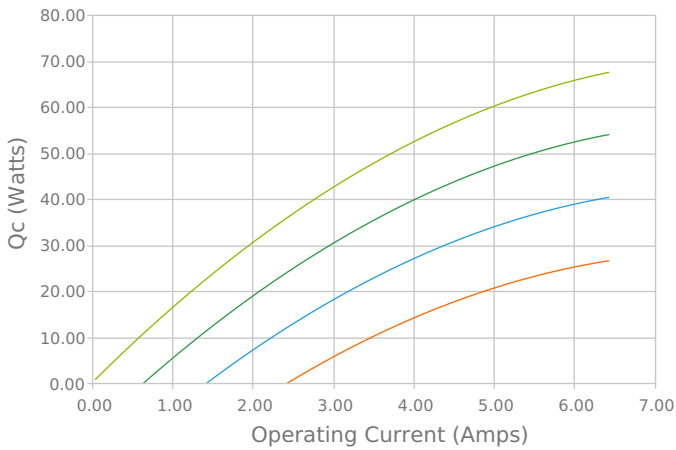
### Applications

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

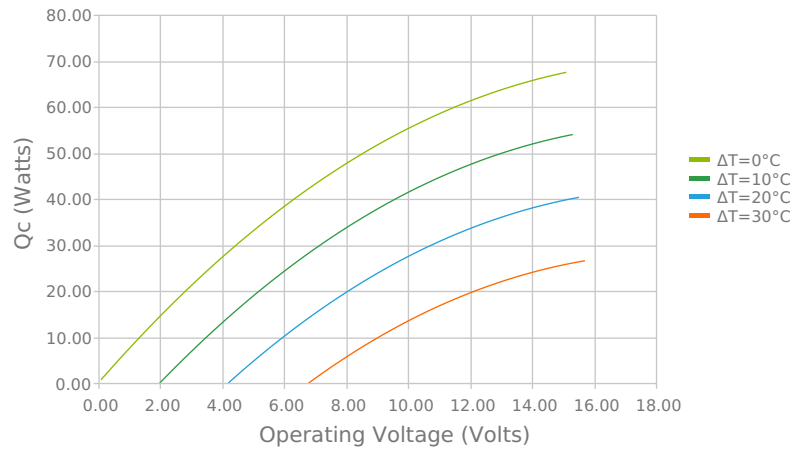


### Electrical and Thermal Performance

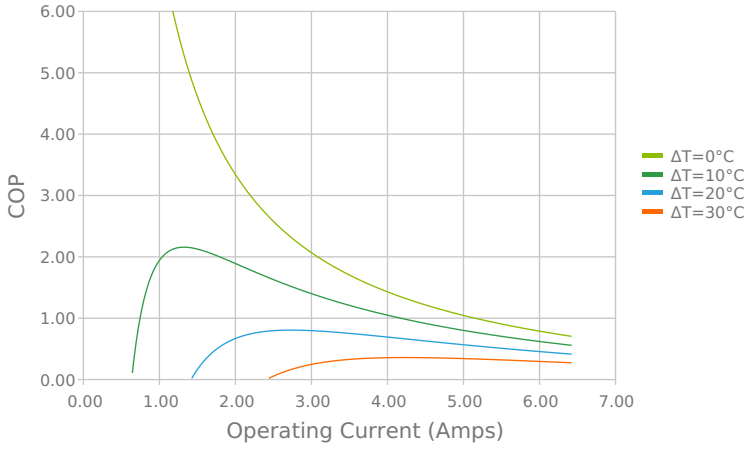
Heat Pumped at Cold Side (Qc)  
Tambient = 35°C



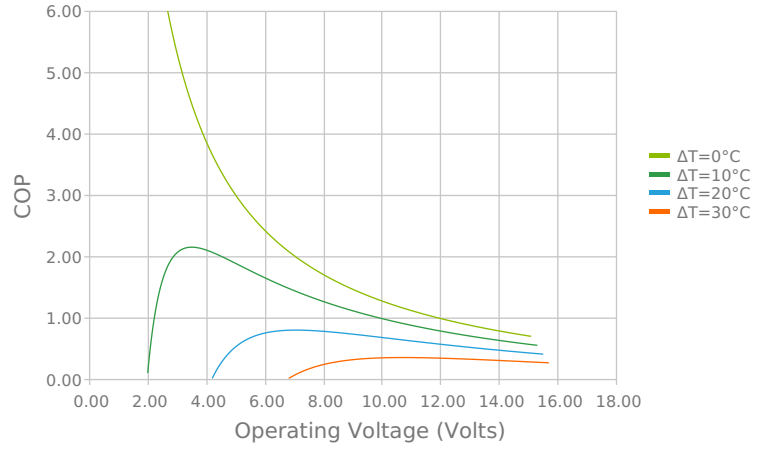
Heat Pumped at Cold Side (Qc)  
Tambient = 35°C



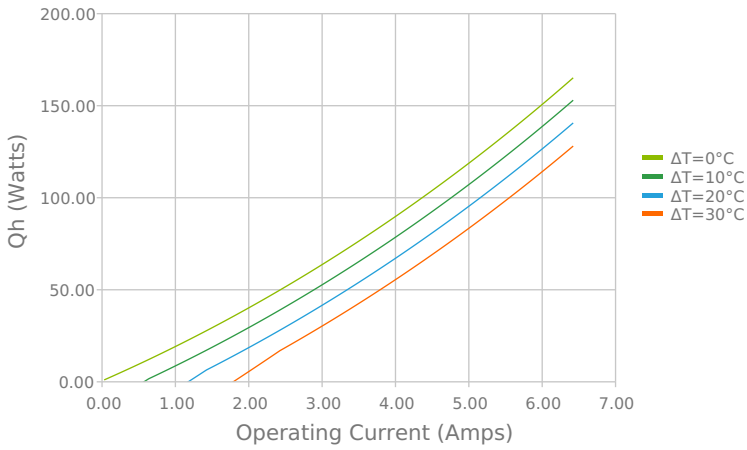
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
Tambient = 35°C



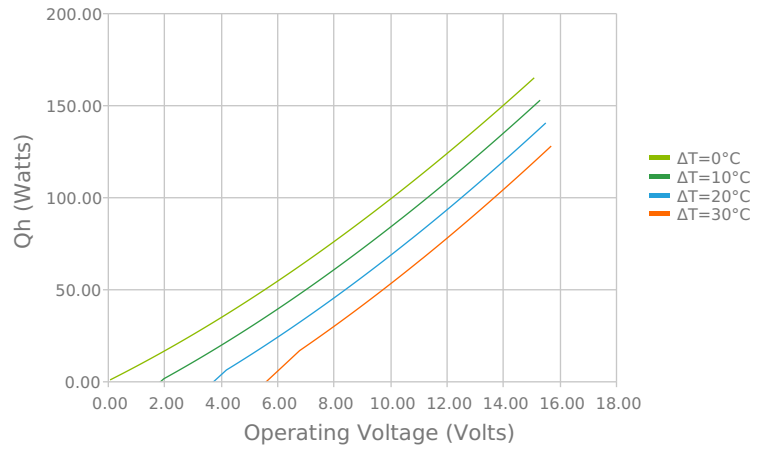
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
Tambient = 35°C



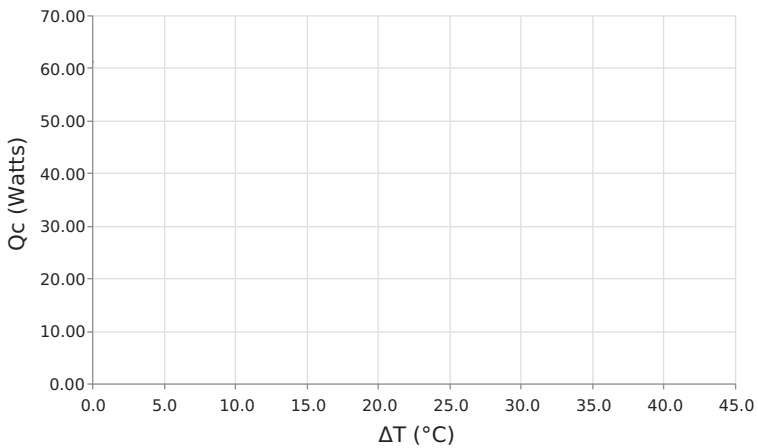
Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
Tambient = 35°C



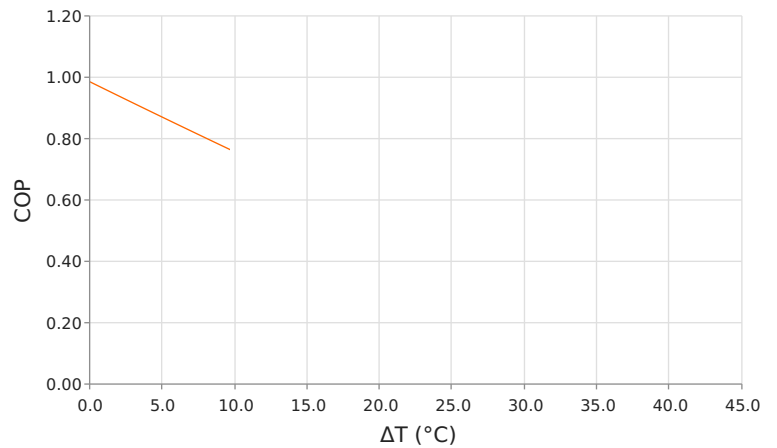
Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
Tambient = 35°C



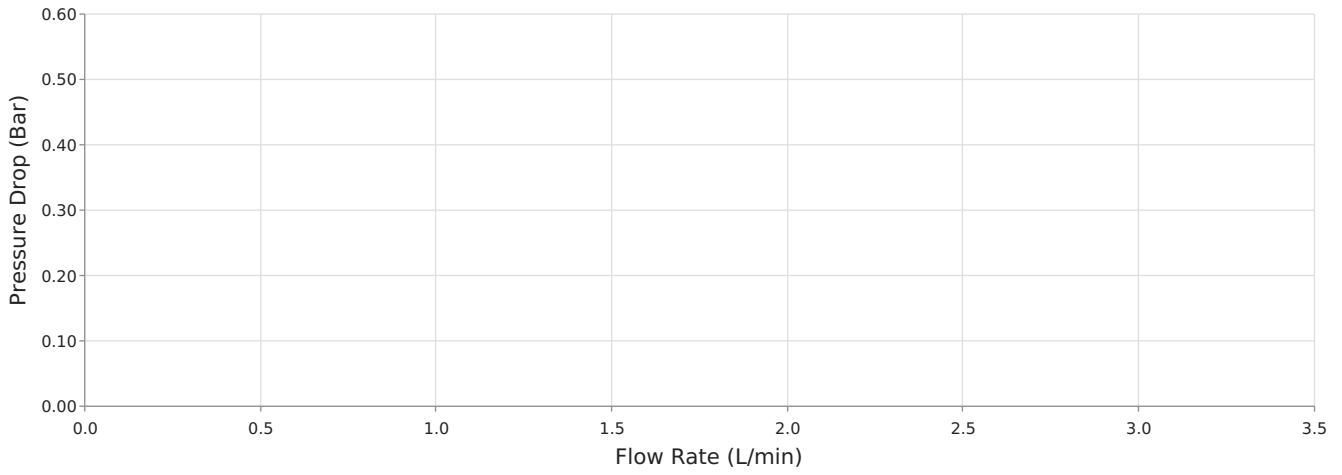
Heat Pumped at Cold Side ( $Q_c$ )  
Voperating = 12 Volts | Ioperating = 5.18 Amps



Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
Voperating = 12 Volts | Ioperating = 5.18 Amps



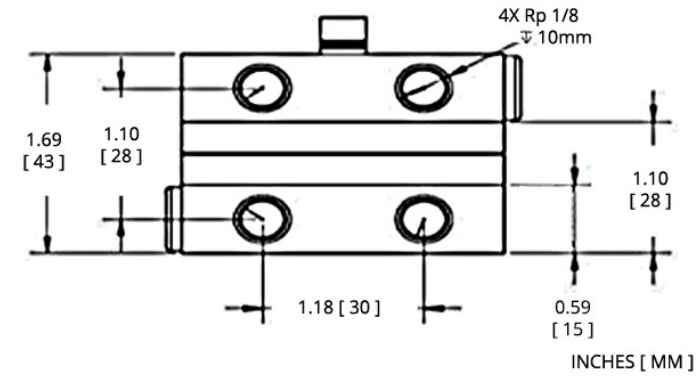
System Resistance Curve



## Specifications

<b>Heat Transfer Mechanism, Cold Side</b>	Liquid - Forced Convection
<b>Heat Transfer Mechanism, Hot Side</b>	Liquid - Forced Convection
<b>Operating Temperature Range</b>	-40°C to 62°C
<b>Supply Voltage</b>	12.0 VDC nominal / 15.0 VDC maximum
<b>Current Draw</b>	3.9 A running / 4.3 A startup
<b>Power Supply</b>	56.0 Watts
<b>Performance Tolerance</b>	10%
<b>Hi-Pot Testing</b>	750 VDC
<b>Over-Temp Thermostat (Hot and Cold Side Heat Sink)</b>	75°C ±5°C (hot side heat sink)
<b>Weight</b>	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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