

## 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  $Q_c$  of 61 Watts when  $\Delta T = 0$  and a maximum  $\Delta T$  of 42 °C at  $Q_c = 0$ . 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.

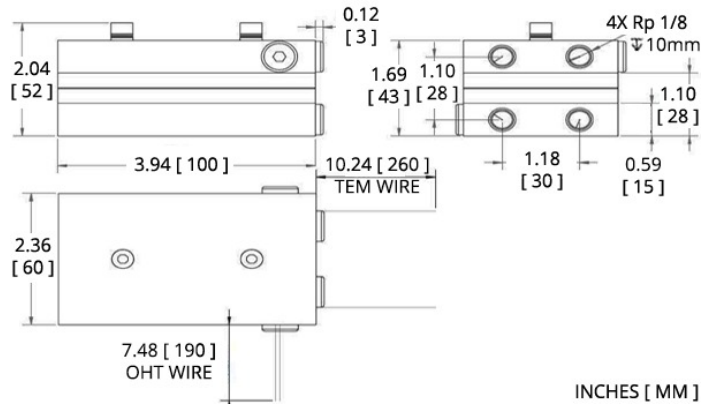


## Features

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

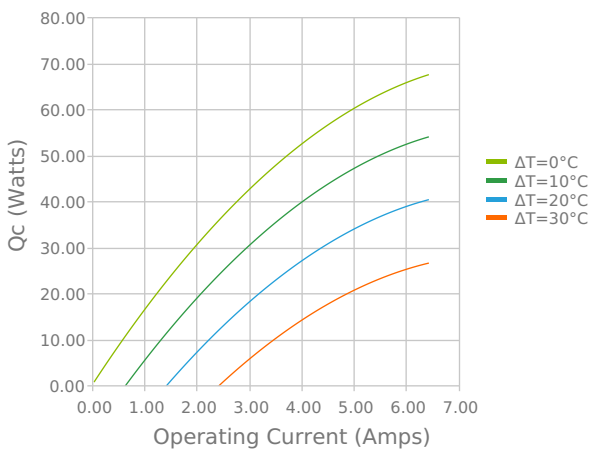
## Applications

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

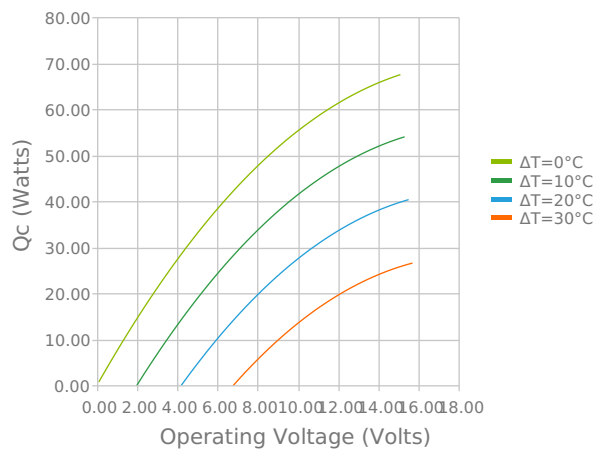


## Electrical and Thermal Performance

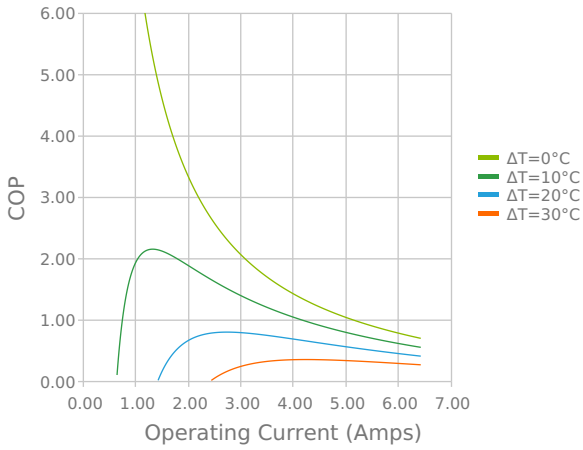
Heat Pumped at Cold Side ( $Q_c$ )  
 $T_{\text{ambient}} = 35^\circ\text{C}$



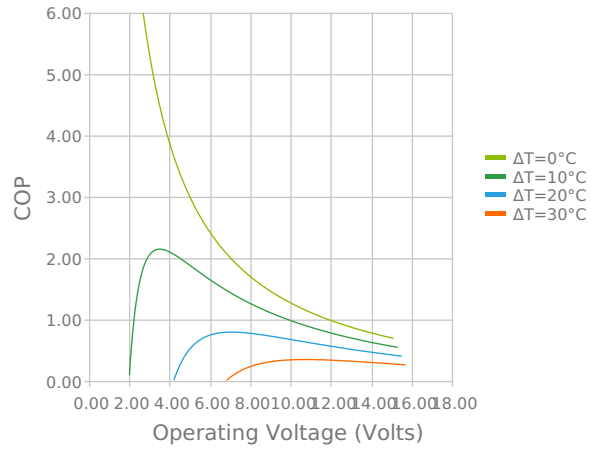
Heat Pumped at Cold Side ( $Q_c$ )  
 $T_{\text{ambient}} = 35^\circ\text{C}$



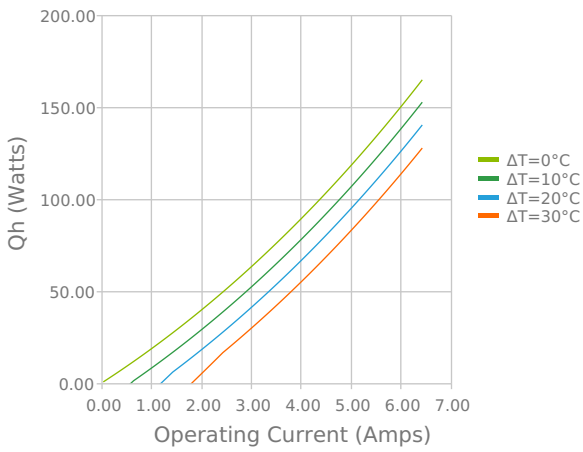
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{ambient} = 35^{\circ}C$



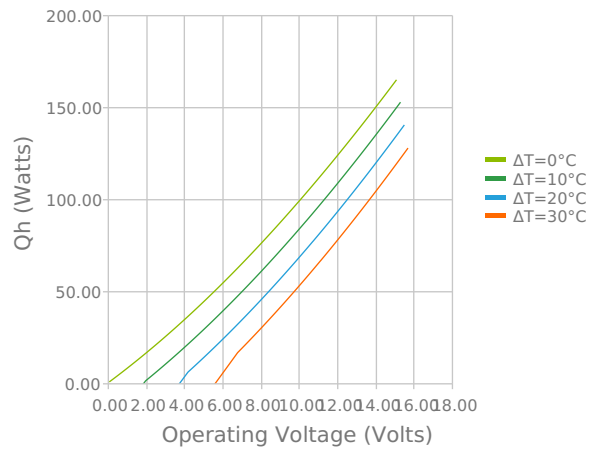
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{ambient} = 35^{\circ}C$



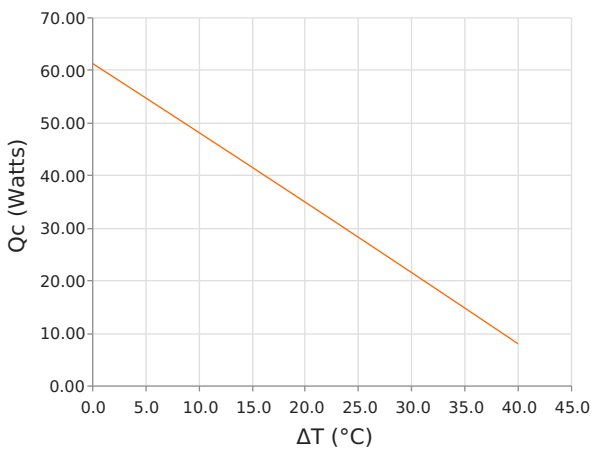
Total Heat Dissipated at Hot Side ( $Q_h = Q_c + P_{in}$ )  
 $T_{ambient} = 35^{\circ}C$



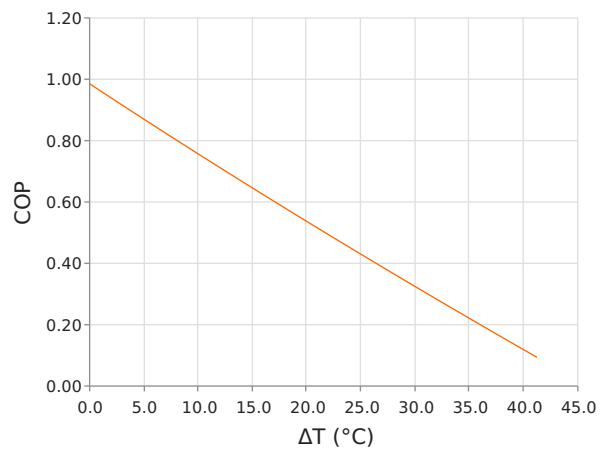
Total Heat Dissipated at Hot Side ( $Q_h = Q_c + P_{in}$ )  
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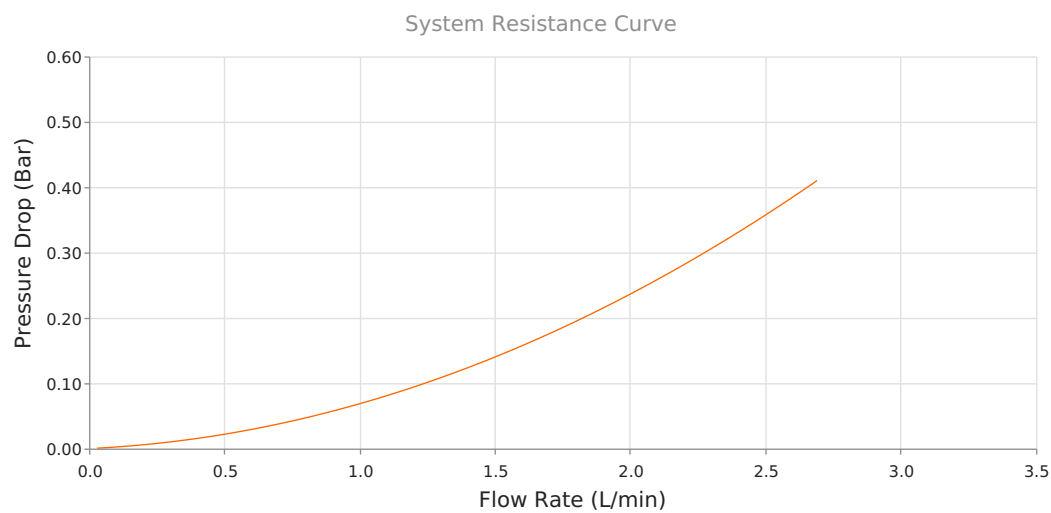


Heat Pumped at Cold Side ( $Q_c$ )  
 $V_{operating} = 12 \text{ Volts}$  |  $I_{operating} = 5.18 \text{ Amps}$



Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $V_{operating} = 12 \text{ Volts}$  |  $I_{operating} = 5.18 \text{ Amps}$

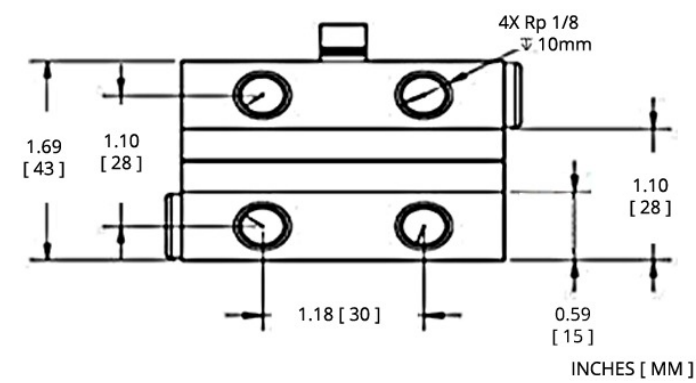




## Specifications

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