

Liquid Series Thermoelectric Cooler Assembly

The LA-045-24-02 thermoelectric cooler assembly offers dependable, compact performance by cooling objects via liquid to transfer heat. Heat is absorbed through a liquid heat exchanger and dissipated thru a high density heat sink equipped with an air ducted shroud and brand name fan. 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 47 Watts when $\Delta T = 0$ and a maximum ΔT of 42 °C at $Q_c = 0$. The liquid heat exchanger is designed to accommodate distilled water with glycol. Corrosion resistant turbulators are enclosed inside channels to increase heat transfer. Mating port adaptors are sold separately.

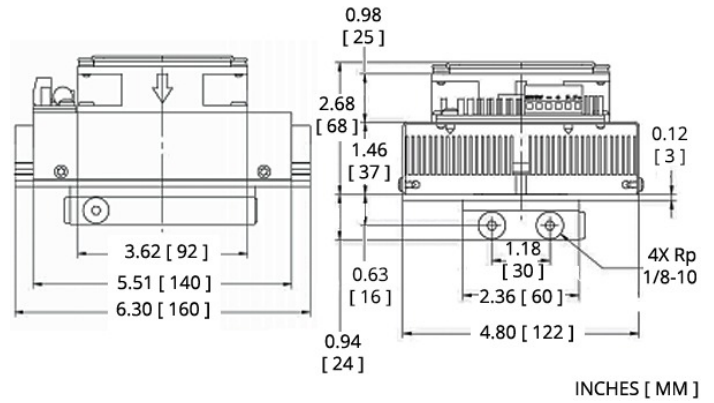


Features

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

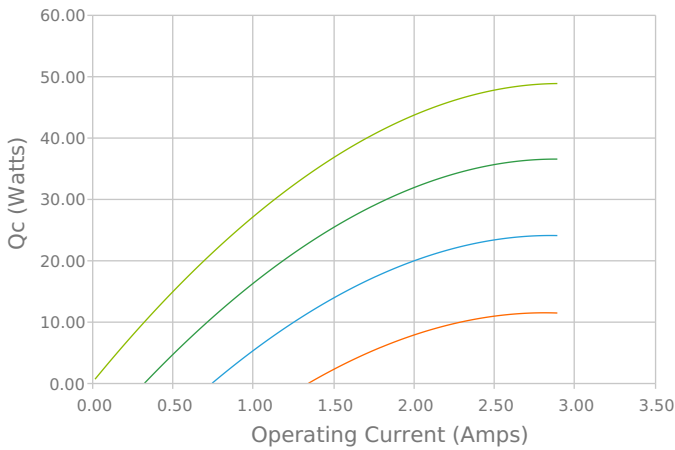
Applications

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

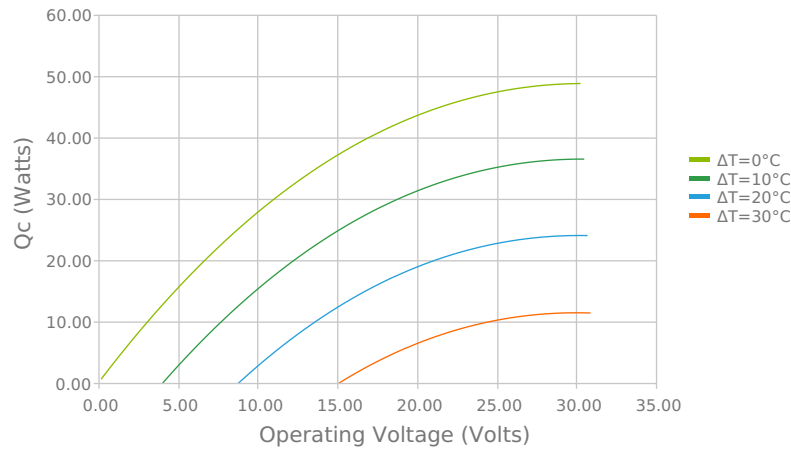


Electrical and Thermal Performance

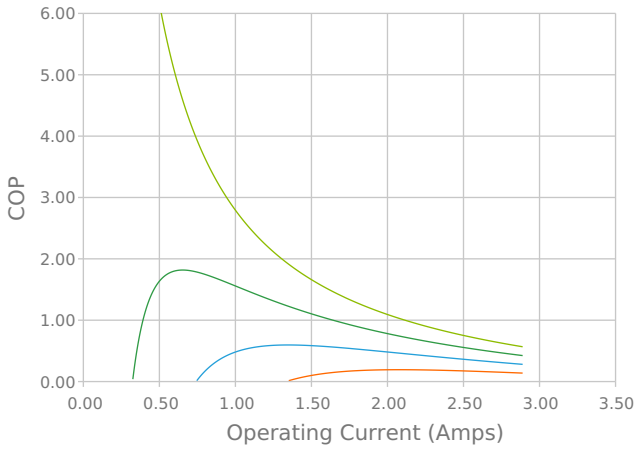
Heat Pumped at Cold Side (Q_c)
Tambient = 35°C



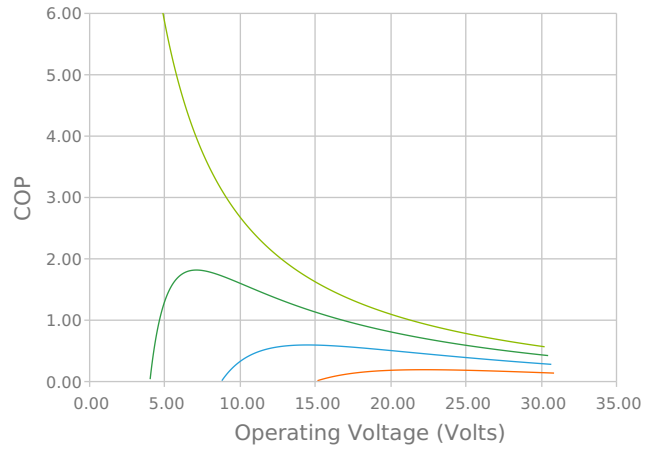
Heat Pumped at Cold Side (Q_c)
Tambient = 35°C



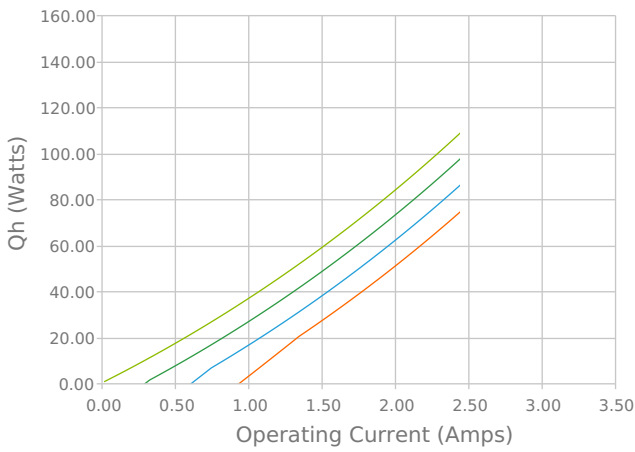
Coefficient of Performance (COP = Q_c/P_{in})
 $T_{ambient} = 35^{\circ}C$



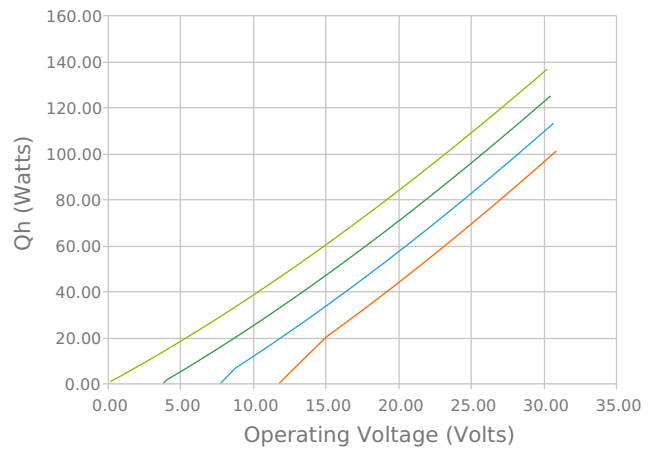
Coefficient of Performance (COP = Q_c/P_{in})
 $T_{ambient} = 35^{\circ}C$



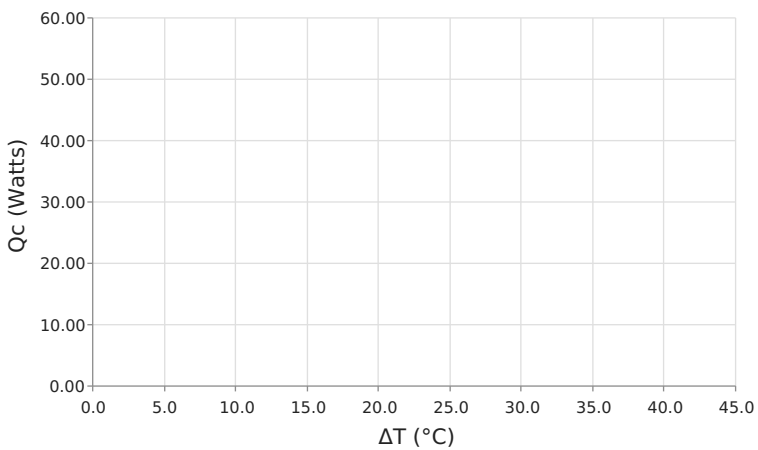
Total Heat Dissipated at Hot Side ($Q_h=Q_c+P_{in}$)
 $T_{ambient} = 35^{\circ}C$



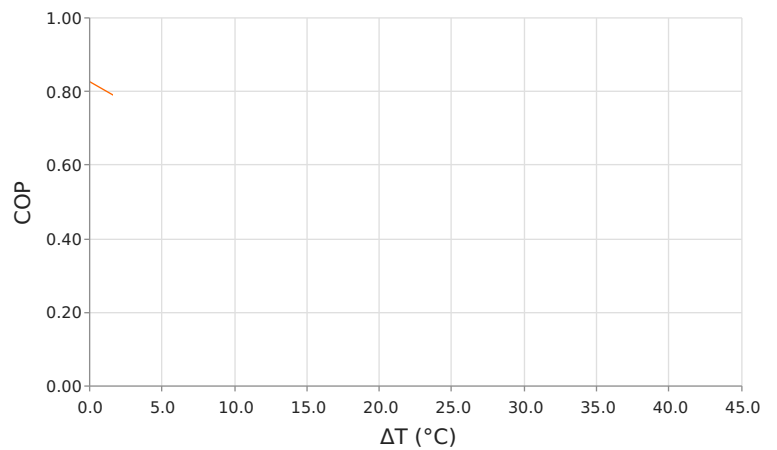
Total Heat Dissipated at Hot Side ($Q_h=Q_c+P_{in}$)
 $T_{ambient} = 35^{\circ}C$

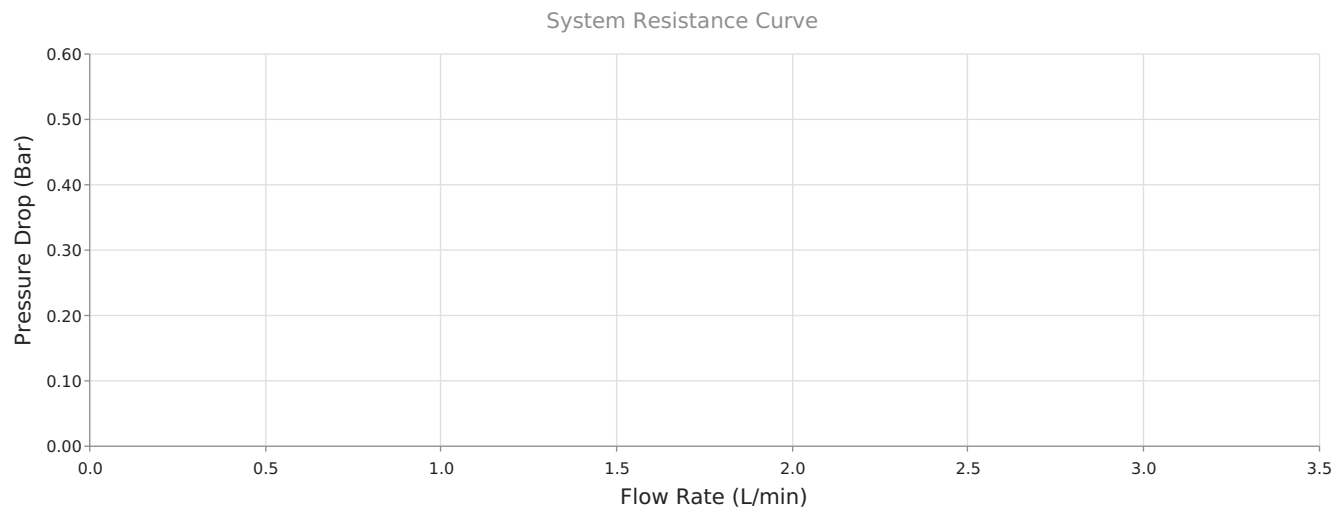


Heat Pumped at Cold Side (Q_c)
 $V_{operating} = 24$ Volts | $I_{operating} = 2.36$ Amps



Coefficient of Performance (COP = Q_c/P_{in})
 $V_{operating} = 24$ Volts | $I_{operating} = 2.36$ Amps

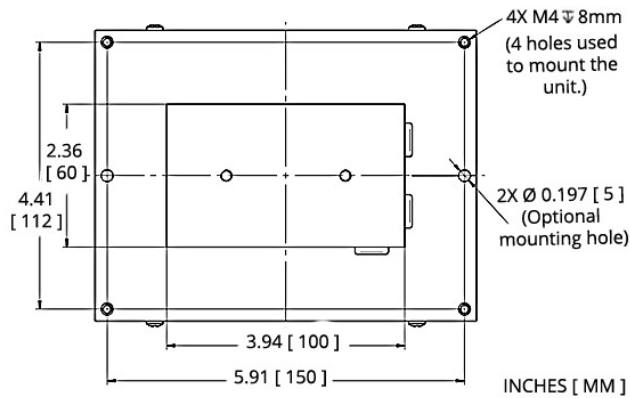




Specifications

Heat Transfer Mechanism, Cold Side	Liquid - Forced Convection
Heat Transfer Mechanism, Hot Side	Air - Forced Convection
Operating Temperature Range	-10°C to 48°C
Supply Voltage	24.0 VDC nominal / 30.0 VDC maximum
Current Draw	2.8 A running / 3.2 A startup
Power Supply	60.0 Watts
Performance Tolerance	10%
Hi-Pot Testing	750 VDC
Fan MTBF	50000 hours
Over-Temp Thermostat (Hot and Cold Side Heat Sink)	75°C ±5°C (hot side heat sink)
Weight	1.30 kg
Panel Mounting	Flush Mount

Mounting Hole Location

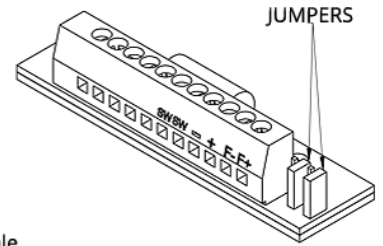


Electrical Connections

" + " : + TEM
" - " : - TEM
" F+ " : + FAN(S)
" F- " : - FAN(S)

To use single supply:
Lift the jumpers and rotate 90° to short-out the pin pairs.
Connect the unit to " + " & " - ".

Warning: Single supply not applicable in heating mode or with PWM-regulation.



Notes

¹ For indoor use only
² Turbulators are mounted inside liquid channels to create turbulent flow
³ Cold block requires insulation to minimize moisture buildup under dew point conditions.

Any information furnished by Tark Thermal Solutions and its agents, whether in specifications, data sheets, product catalogues or otherwise, is believed to be (but is not warranted as being) accurate and reliable, is provided for information only and does not form part of any contract with Tark Thermal Solutions. All specifications are subject to change without notice. Tark Thermal Solutions assumes no responsibility and disclaims all liability for losses or damages resulting from use of or reliance on this information. All Tark products are sold subject to the Tark Thermal Solutions Terms and Conditions of sale (including Tark's limited warranty) in effect from time to time, a copy of which will be furnished upon request.

© Copyright 2025 Tark Thermal Solutions, Inc. All rights reserved.

Revision: 00 Date: 06-01-2022

Print Date: 05-12-2025