

Tunnel Series Thermoelectric Cooler Assembly

The DAT-040-12-02 is a thermoelectric based air conditioner designed to temperature control small chambers used in analytical and medical diagnostic instruments. The unique design offers premium fans pushing air across-high density heat sinks to minimize the number of air flow paths required to operate. The design utilizes custom thermoelectric modules to maximize cooling capacity with a high coefficient of performance. Moisture resistant insulation is used to keep condensation from penetrating the thermoelectric module cavity. The unit operates on DC and is designed for an indoor lab use environment. It has a maximum Q_c of 40 Watts when $\Delta T = 0$ and a maximum ΔT of 40 °C at $Q_c = 0$.

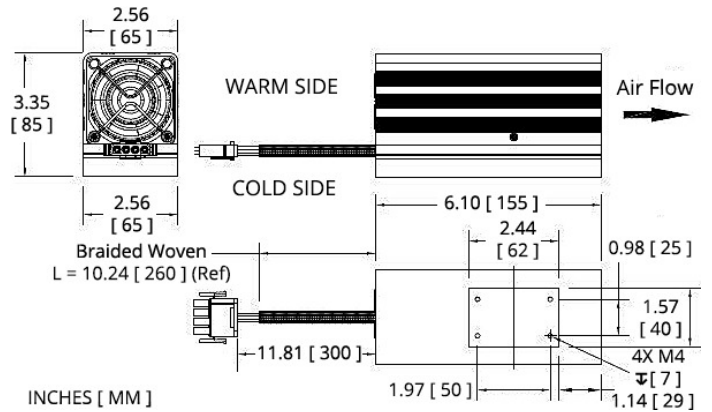


Features

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

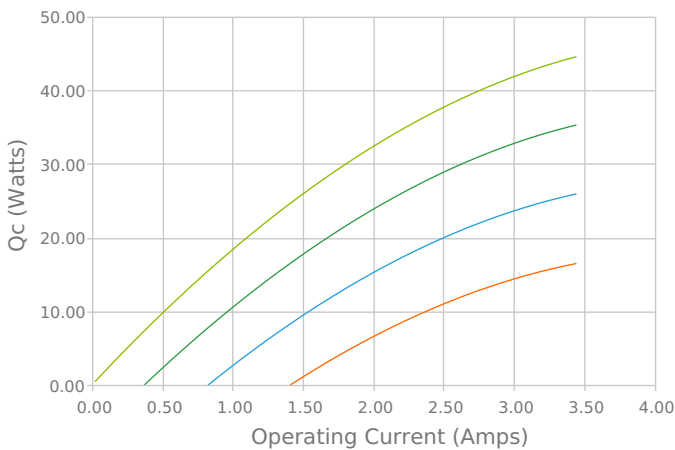
Applications

- Thermoelectric Coolers and Assemblies for Medical Applications
- Liquid Cooling Options for PET and SPECT Scanners
- Peltier Cooling for Refrigerated Centrifuges
- High-Performance Liquid Chromatography (HPLC)
- Thermal Management Solutions for Beverage Cooling
- Heating and Cooling for Liquid Chromatography Systems

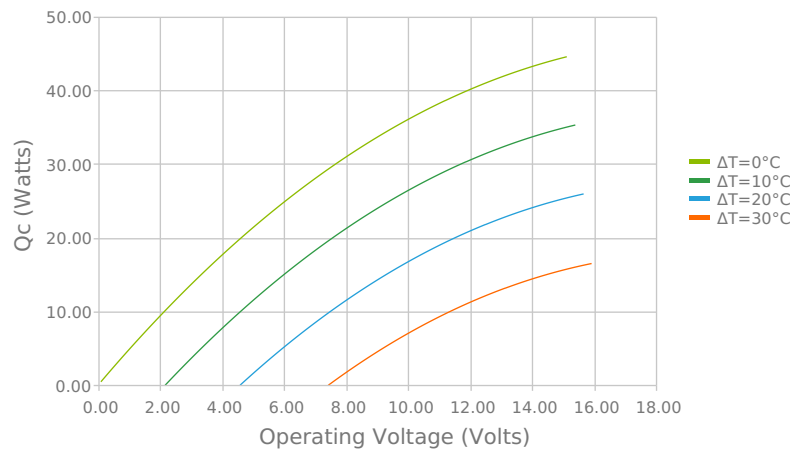


Electrical and Thermal Performance

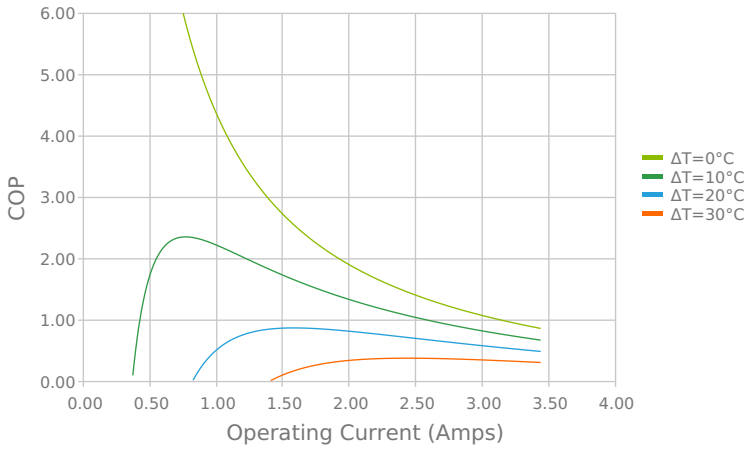
Heat Pumped at Cold Side (Q_c)
Tambient = 35°C



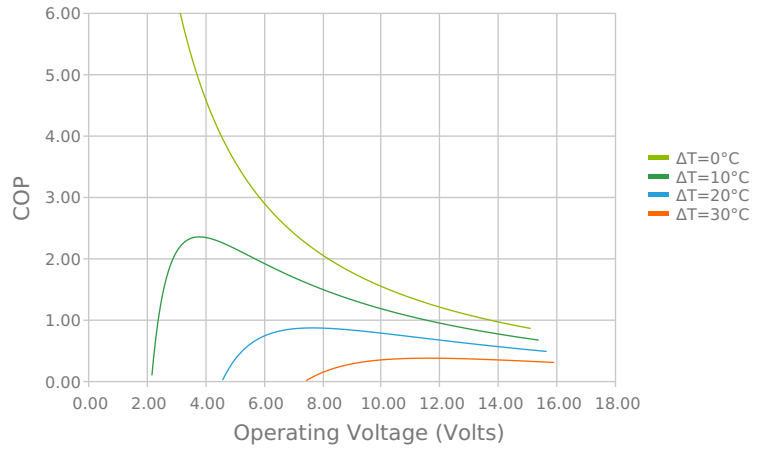
Heat Pumped at Cold Side (Q_c)
Tambient = 35°C



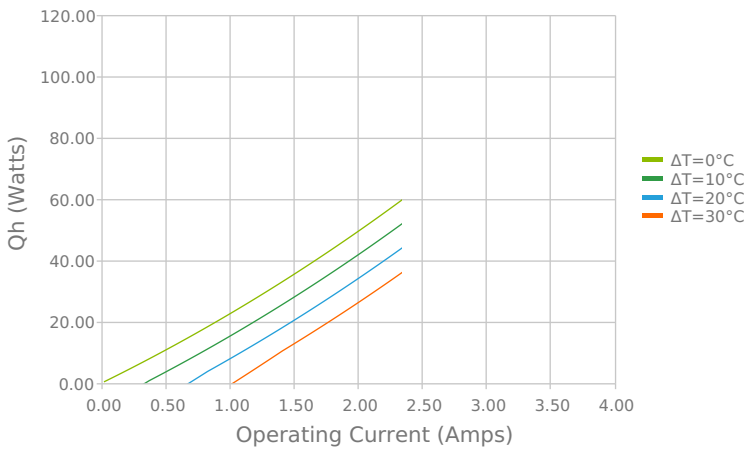
Coefficient of Performance (COP = Q_c/P_{in})
 $T_{ambient} = 35^{\circ}\text{C}$



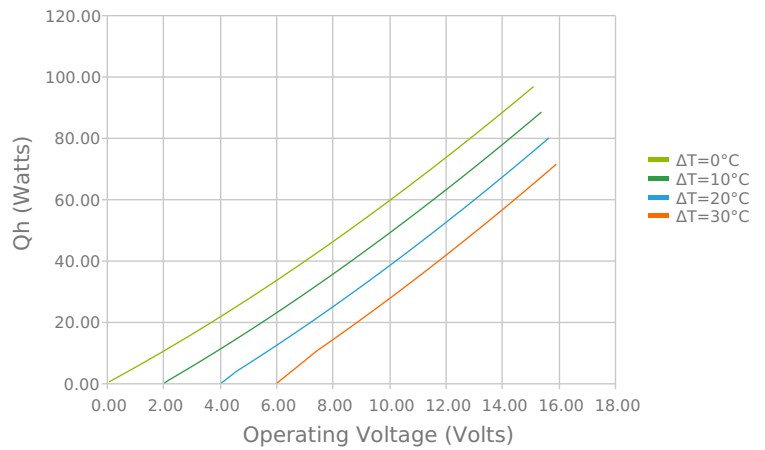
Coefficient of Performance (COP = Q_c/P_{in})
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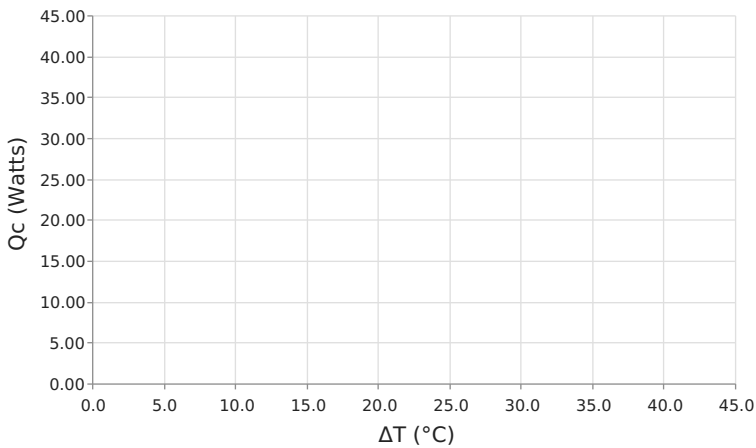
Total Heat Dissipated at Hot Side ($Q_h=Q_c+P_{in}$)
 $T_{ambient} = 35^{\circ}\text{C}$



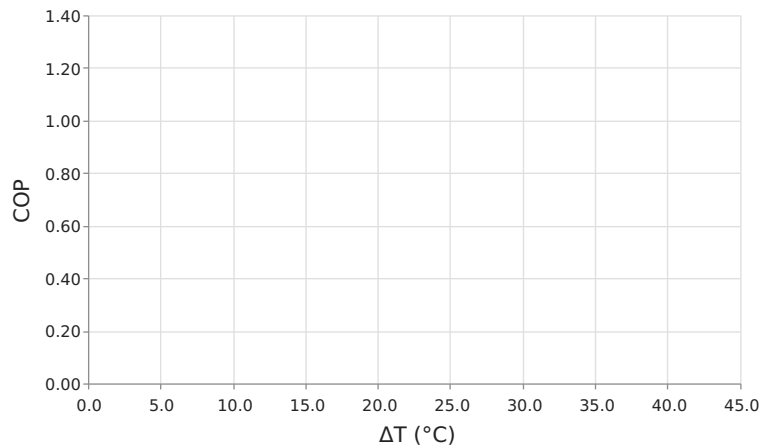
Total Heat Dissipated at Hot Side ($Q_h=Q_c+P_{in}$)
 $T_{ambient} = 35^{\circ}\text{C}$



Heat Pumped at Cold Side (Q_c)
 $V_{operating} = 12 \text{ Volts}$ | $I_{operating} = 2.77 \text{ Amps}$



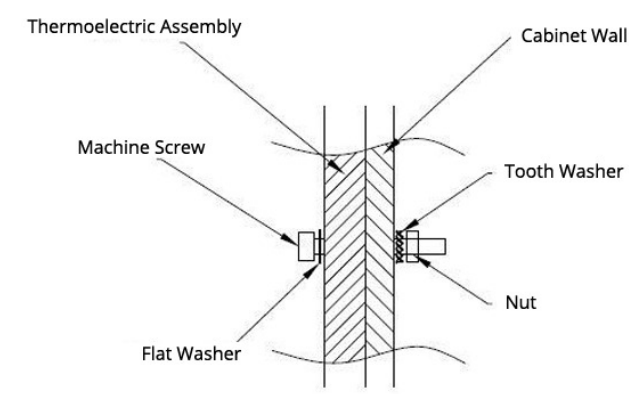
Coefficient of Performance (COP = Q_c/P_{in})
 $V_{operating} = 12 \text{ Volts}$ | $I_{operating} = 2.77 \text{ Amps}$



Specifications

Heat Transfer Mechanism, Cold Side	Direct - Conduction
Heat Transfer Mechanism, Hot Side	Air - Forced Convection
Operating Temperature Range	-10°C to 50°C
Supply Voltage	12.0 VDC nominal / 15.0 VDC maximum
Current Draw	2.9 A running / 3.4 A startup
Power Supply	38.0 Watts
Performance Tolerance	10%
Hi-Pot Testing	750 VDC
Fan MTBF	50000 hours
Weight	0.80 kg
Panel Mounting	6-M4 deep 7 mm Holes on the cold block

Mounting Hole Location



Wiring Schematic

PIN #	OBJECT	WIRE SIZE	COLOR	SUPPLIED CONNECTOR		MATING CONNECTOR	
				PLUG	PIN	RECEPTACLE	SOCKET
1	TEM +	AWG #20	Red				
2	TEM -		Black				
3	FAN HOT SIDE +		White				
4	FAN HOT SIDE -		Green				

Notes

- ¹For indoor use only
- ²Units are generally maintenance free, however occasionally it is recommended to clean the heat sinks and fans of debris. This is best done with compressed air.

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