

**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  $\Delta T$  of 40 °C at  $Q_c = 0$ .

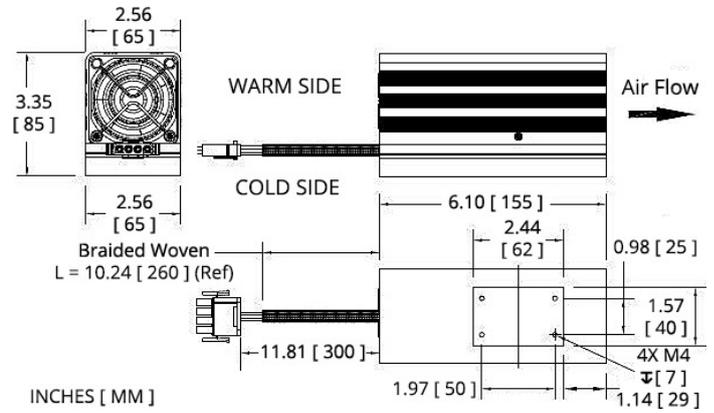


**Features**

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

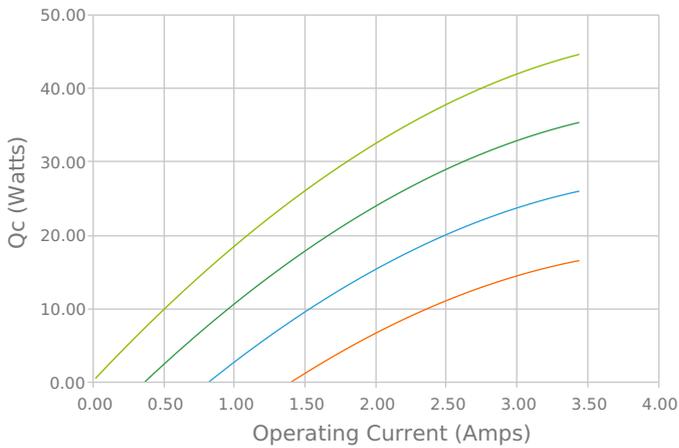
**Applications**

- 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

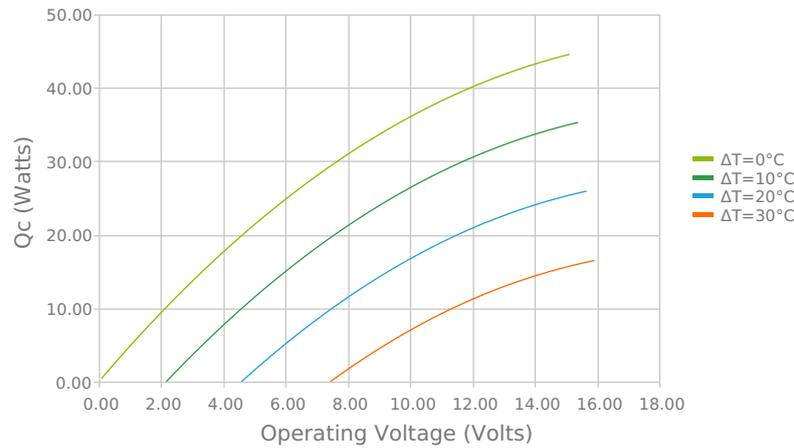


**Electrical and Thermal Performance**

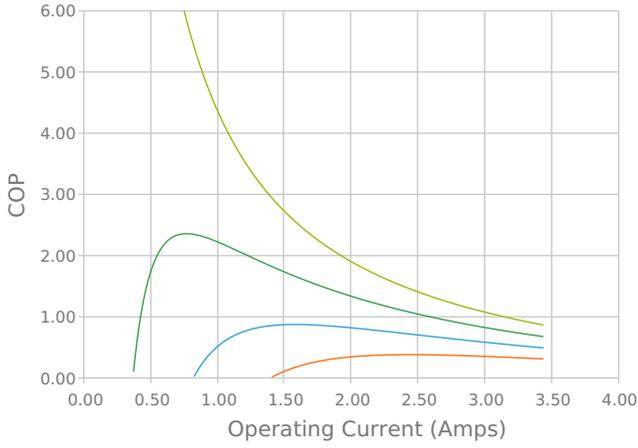
Heat Pumped at Cold Side ( $Q_c$ )  
Tambient = 35°C



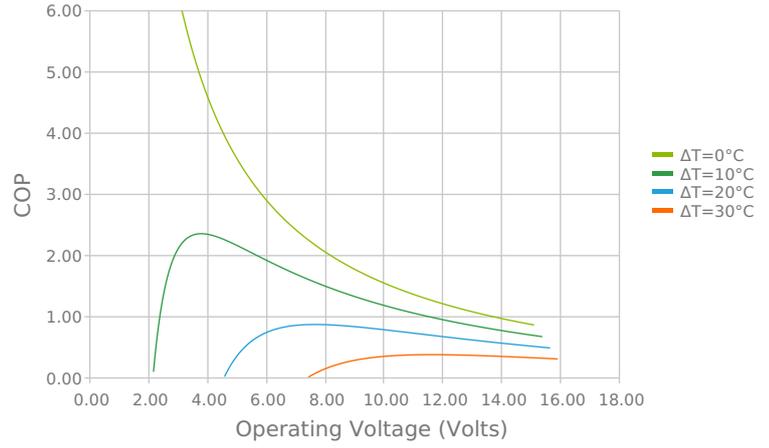
Heat Pumped at Cold Side ( $Q_c$ )  
Tambient = 35°C



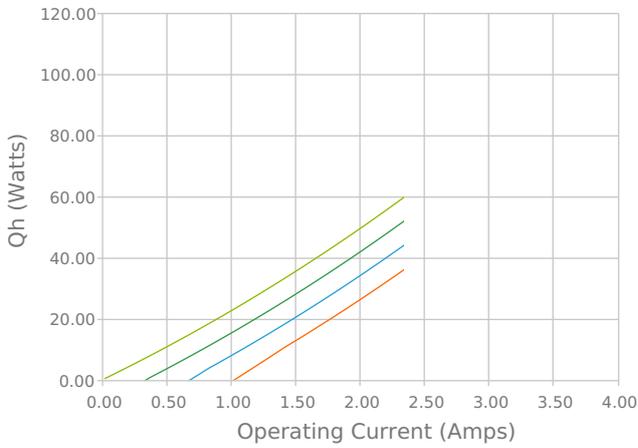
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
Tambient = 35°C



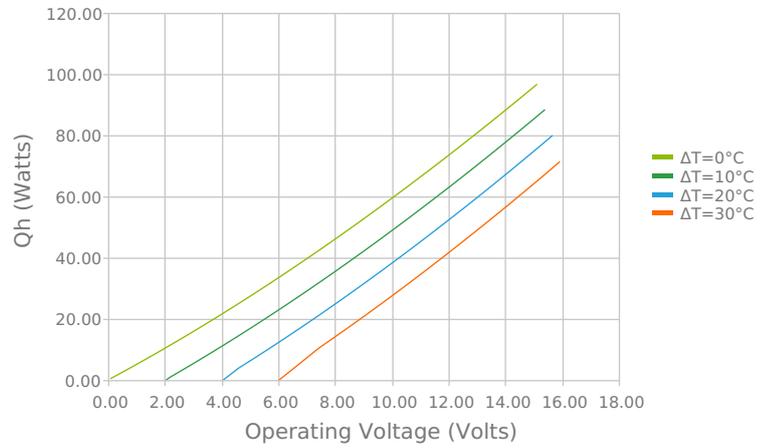
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
Tambient = 35°C



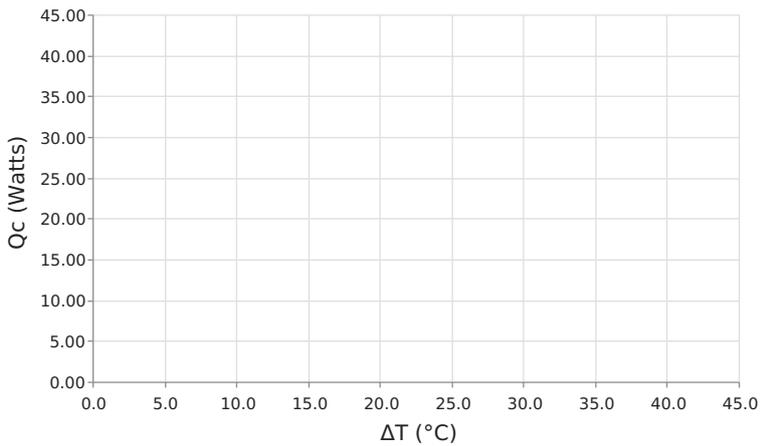
Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
Tambient = 35°C



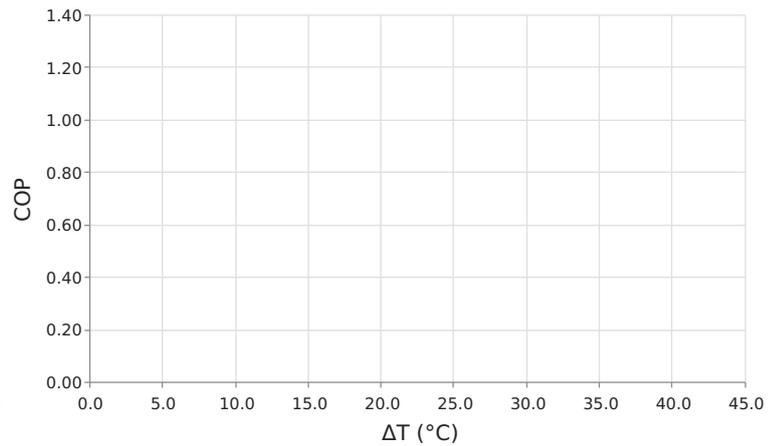
Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
Tambient = 35°C



Heat Pumped at Cold Side ( $Q_c$ )  
Voperating = 12 Volts | Ioperating = 2.77 Amps



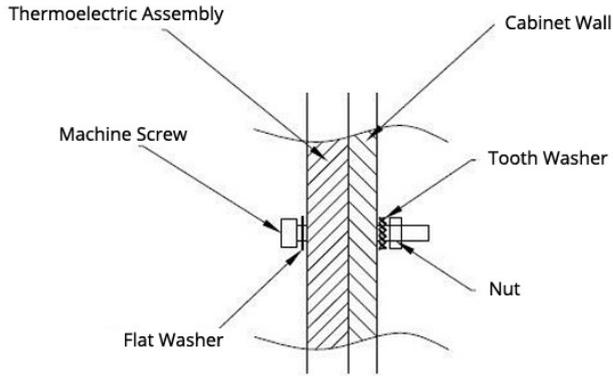
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
Voperating = 12 Volts | Ioperating = 2.77 Amps



## Specifications

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

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

<sup>2</sup>Units 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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