



The PowerCool Series direct-to-air thermoelectric assembly is a high performance thermoelectric based heat pump. It is designed to temperature control small chambers used in medical diagnostics or sample storage compartments in analytical instrumentation. This unique design offers a high performance hot side heat dissipation mechanism that convects heat more efficiently than conventional heat exchanger technologies.

The design utilizes custom thermoelectric modules to maximize cooling capacity and premium grade fans to reduce noise. Moisture resistant insulation is used to keep condensation from penetrating into the TEM cavity. This unit operates on 48 VDC and is designed for indoor lab use environment. Custom configurations available upon request.

Laird Manufacturer Part Number: 387002415

### FEATURES

- High Performance
- Compact Form Factor
- Reliable Solid-State Operation
- RoHS Compliant

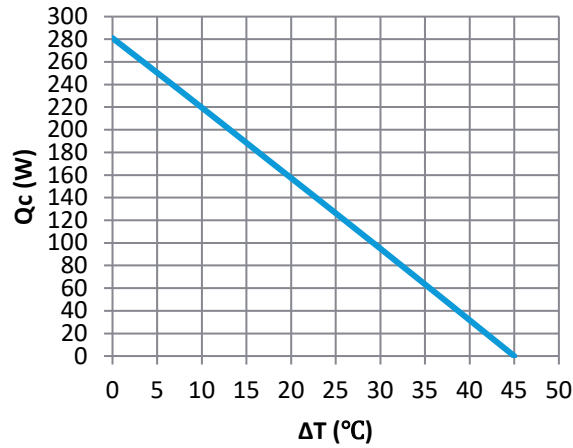
### APPLICATIONS

- Analytical storage compartment temperature control
- Medical diagnostic chamber refrigeration

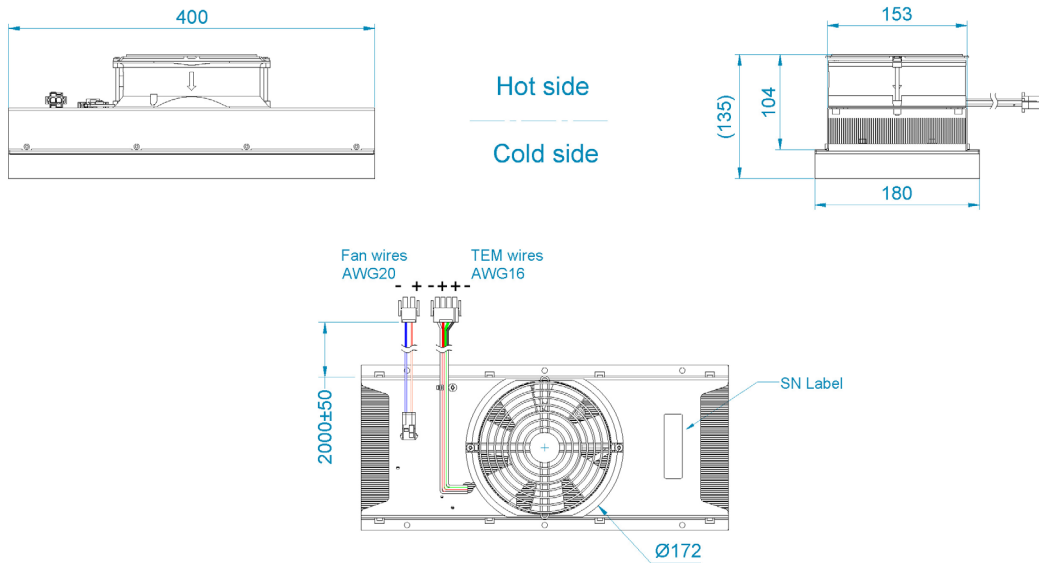
TECHNICAL SPECIFICATIONS	
TEA Model	DA-280-48-02-00-00
Heat Transfer, Cold Side	Direct
Heat Transfer, Hot Side	Air
Cooling Power @ $\Delta T=0^{\circ}\text{C}$ and $T_a=25^{\circ}\text{C}$ , Tolerance $\pm 10\%$ - W	281
TEM Input Power	
Voltage, Nominal, - VDC	48
Current, Nominal/Initial @ $\Delta T=0^{\circ}\text{C}$ and $T_a=25^{\circ}\text{C}$ , Tolerance $\pm 10\%$ - A	5.6/6.5
Fan Input Power	
Voltage, Nominal - VDC	24
Current, Nominal - A	0.7
Fan Noise - dBA	60
Dimensions (L x W x H) - mm	
Weight - kg	6.194
Operating Temperature - $^{\circ}\text{C}$	-20 to 55
Packaging	Individual cardboard box

PERFORMANCE QC VS ΔT

TEA performance at Ta=25°C

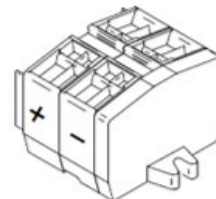


ISOMETRIC DRAWINGS



ELECTRICAL CONNECTIONS 48 VDC (CAGE CLAMP)

OBJECT	WIRE TYPE	COLOR	POLE
TEM +	18 AWG	Red	1
TEM -		Black	2
FAN +		Red	3
FAN -		Black	4



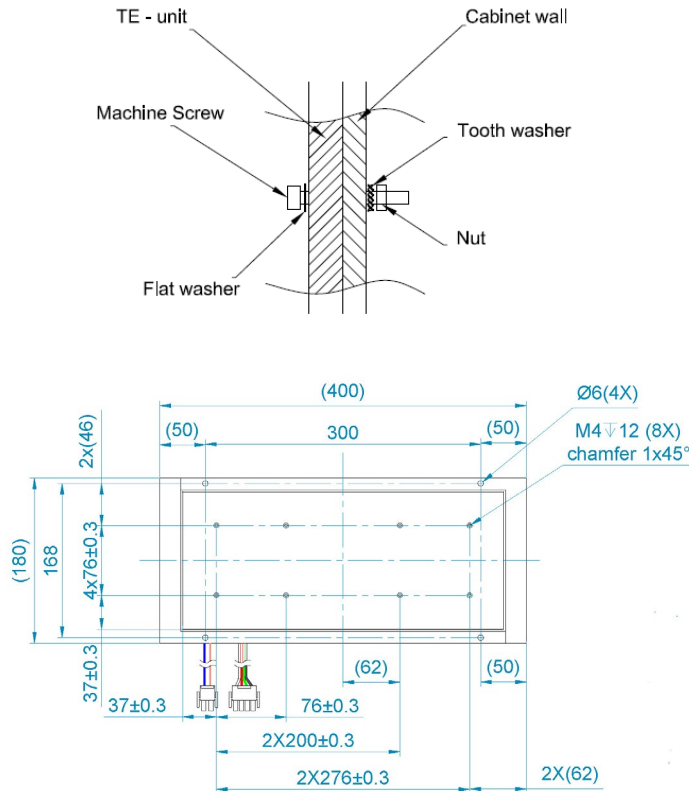
**Warning:** Do not reverse current or use PWM-regulation on fan supply.

SERVICE

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.

### INSTALLATION INSTRUCTIONS

1. The TE assembly must be protected from external force or violence.
2. The power line to the assembly needs to be protected by a fuse. The fuse rating should be of at least the nominal current of the assembly multiplied by 150% of rated current for at least 60 seconds. This is valid at  $T_a=35^{\circ}\text{C}$ . Fuse ratings for other ambient temperatures ( $X^{\circ}\text{C}$ ) can be calculated as  $I[X^{\circ}\text{C}]=I[35^{\circ}\text{C}]/(1+0.005*(X-35))$ . This is valid when regulating with an ON/OFF regulation. At rapid temperature cycling where this is applied, there is a need for even higher fuse ratings.
3. Cooled parts need to be isolated from air humidity to minimize risk for condensation and thermally insulated for best performance.
4. Max ripple on supplied power =5%.
5. Switching power to TEMs at frequencies between 0.01 Hz to 5 kHz will render premature failure of modules and must be avoided.



Laird warrants to the original end user customer of its products that its products are free from defects in material and workmanship. Subject to conditions and limitations Laird will, at its option, either repair or replace any part of its products that prove defective because of improper workmanship or materials. This limited warranty is in force for the useful lifetime of the original end product into which the Laird product is installed. Useful lifetime of the original end product may vary but is not to exceed five (5) years from the original date of the end product purchase.

Any information furnished by Laird Inc. and its agents is believed to be accurate and reliable. All specifications are subject to change without notice. Responsibility for the use and application of Laird materials rests with the end user, since Laird and its agents cannot be aware of all potential uses. Laird makes no warranties as to the fitness, merchantability or suitability of any Laird materials or products for any specific or general uses. Laird shall not be liable for incidental or consequential damages of any kind. All Laird products are sold pursuant to the Laird Terms and Conditions of sale in effect from time to time, a copy of which will be furnished upon request.

© Copyright 2018 Laird Inc. All Rights Reserved. Laird, Laird Technologies, the Laird Logo, and other marks are trademarks or registered trademarks of Laird Inc. or an affiliate company thereof. Other product or service names may be the property of third parties. Nothing herein provides a license under any Laird or any third party intellectual property rights.

Americas: +1.19.597.7300  
 Europe: +46.31.420530  
 Asia: +86.755.2714.1166  
 ets.sales@lairdtech.com  
 www.lairdtech.com