AC-094 Peltier-Thermoelectric Air Cooler

- **Ideal for small to medium-sized refrigerators and biomedical equipment; good for electronic enclosures, as well.**
- **High-efficiency heat sink provides good cooling capacity cooling in a compact space.**
- **The low fin density cold sink allows the condensate to easily drain off in applications where water vapor condensation will occur.**
- **Maintains enclosure at NEMA 12 rating, but can be customized for NEMA 4.**
- **Can easily be customized for production sized orders to meet your exact requirements.**
- **CE marked, RoHS compliant.**

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AC-094
Specifications

Thermoelectric (TE) Power (typical)[1,3]:	24 VDC at 9.4 A
Thermoelectric (TE) Power (maximum)[2,3]:	24 VDC at 11.8 A
External (ambient) Fan Power:	24 VDC at 0.35 A
Internal (enclosure) Fan Power:	24 VDC at 0.15 A
External (ambient) Fan Noise:	46 dBA
Internal (enclosure) Fan Noise:	39 dBA

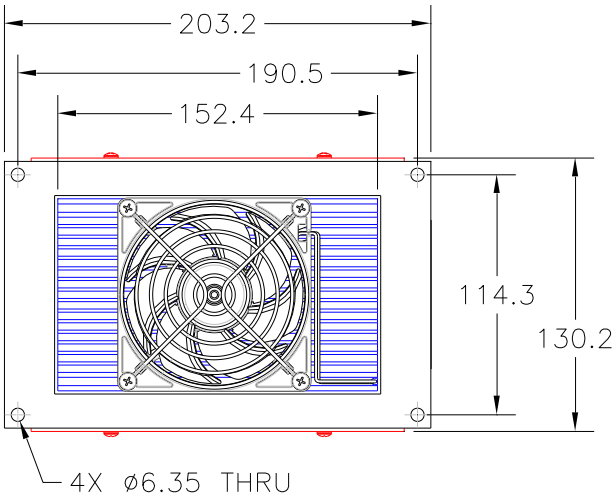
NEMA Rating: 12

Weight (kg): 3.6

⚠ Please review the *Thermoelectric Cooling Assembly (TCA) Instruction Manual* (or manual in other languages), ordering information, and FAQ's for related technical information before purchasing or using this product.

Performance is based on unrestricted air flow to fans and from air-flow outlets. Do not operate if the ambient, enclosure air, heat sink, or cold sink temperatures exceed 70 °C. Do not operate fan at air temperatures below -20 °C or above 70 °C.

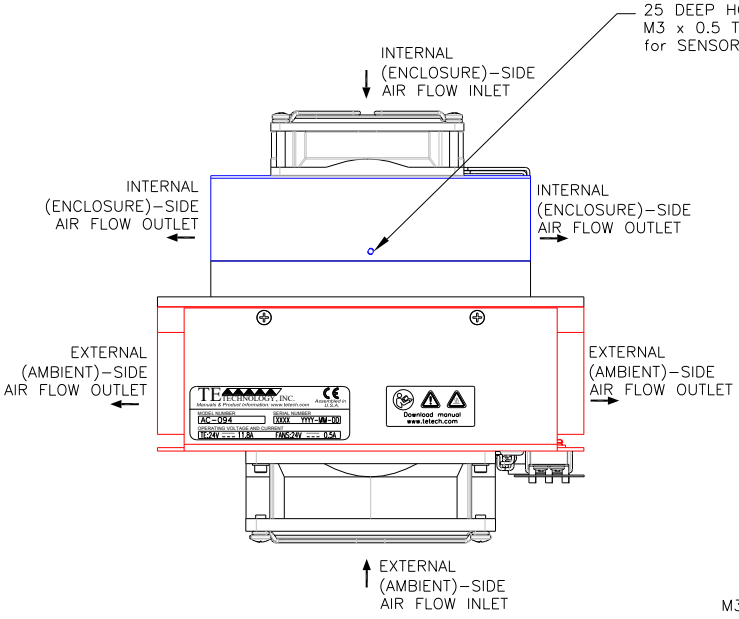
[1]Current, at steady-state, is rated at +25 °C ambient, +25 °C internal, maximum heat removal. At -20 °C internal, the typical steady-state current is 9.2 A.
[2]Current, at steady-state operation under-worst case conditions, is rated at -20 °C ambient, +70 °C internal, maximum heat removal.
[3]Total current consumption is sum of TE current and Fan current.

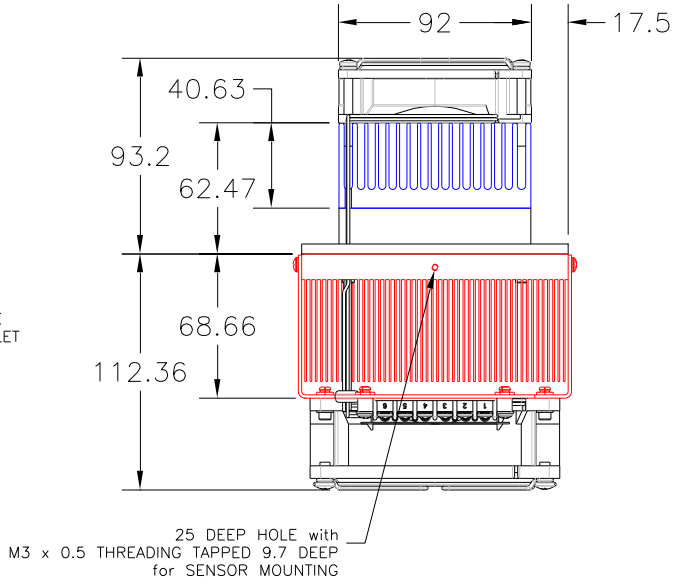


CE RoHS Compliant Directive 2011/65/EU

A 3D PDF, .stp, and .x_t solid models are also available from the website. Contact TE Technology for 3D solid models in other formats.

All dimensions in millimeters.
Internal (enclosure) side shown in blue;
External (ambient) side shown in red.





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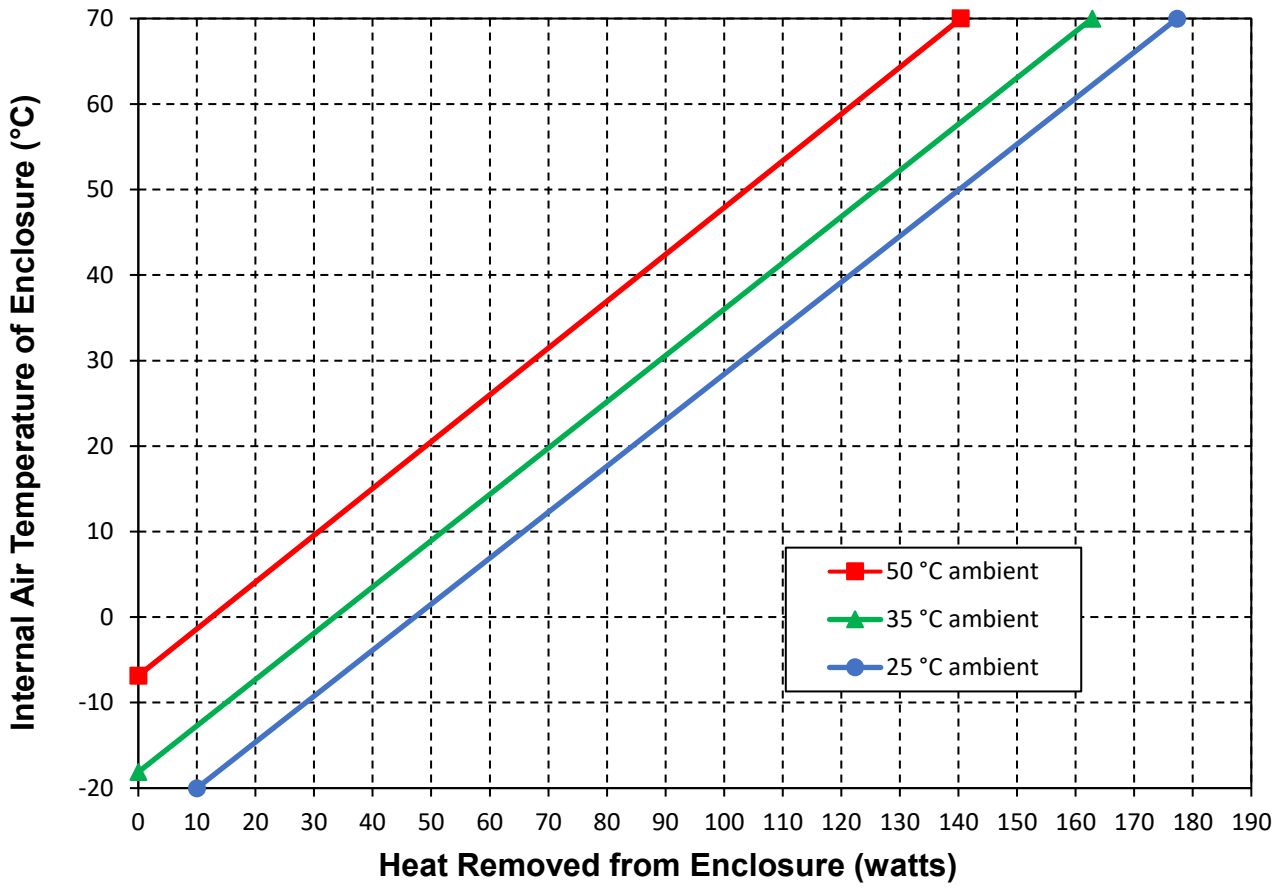
AC-094 Cooling Performance Graph

(removing heat from enclosure)



How to use the Performance Graph:

1. Select Performance Line

The diagonal lines represent cooling performance at the indicated ambient air temperature (intake temperature on the ambient-side fan). If the cooler is to operate at a different ambient, then you must sketch in a new performance line. This can be drawn parallel to one of the existing lines, using the distance between the existing lines as a scale to properly locate the new line.

2. Select Enclosure Temperature

Draw a horizontal line on the graph corresponding to the desired internal air temperature of the enclosure. Make the line intersect with the performance line corresponding to the ambient temperature at which the cooler is to operate.

3. Determine Cooling Capacity

The maximum amount of heat that the cooler can remove from the enclosure is determined by the intersection point (determined in the previous step). *The cooler will be able to maintain the desired enclosure temperature if the cooling capacity exceeds the heat load. If the heat load exceeds the cooling capacity then a higher capacity cooler will be needed.*

Example: You need to maintain the enclosure at 40 °C while in a 50 °C ambient. The cooler can remove a maximum of approximately 85 W of heat from the enclosure. If the heat load (internally generated heat plus the heat gain through insulation, solar, vapor condensation, etc.) in the enclosure exceeds this, you would need more coolers and/or a larger cooler.

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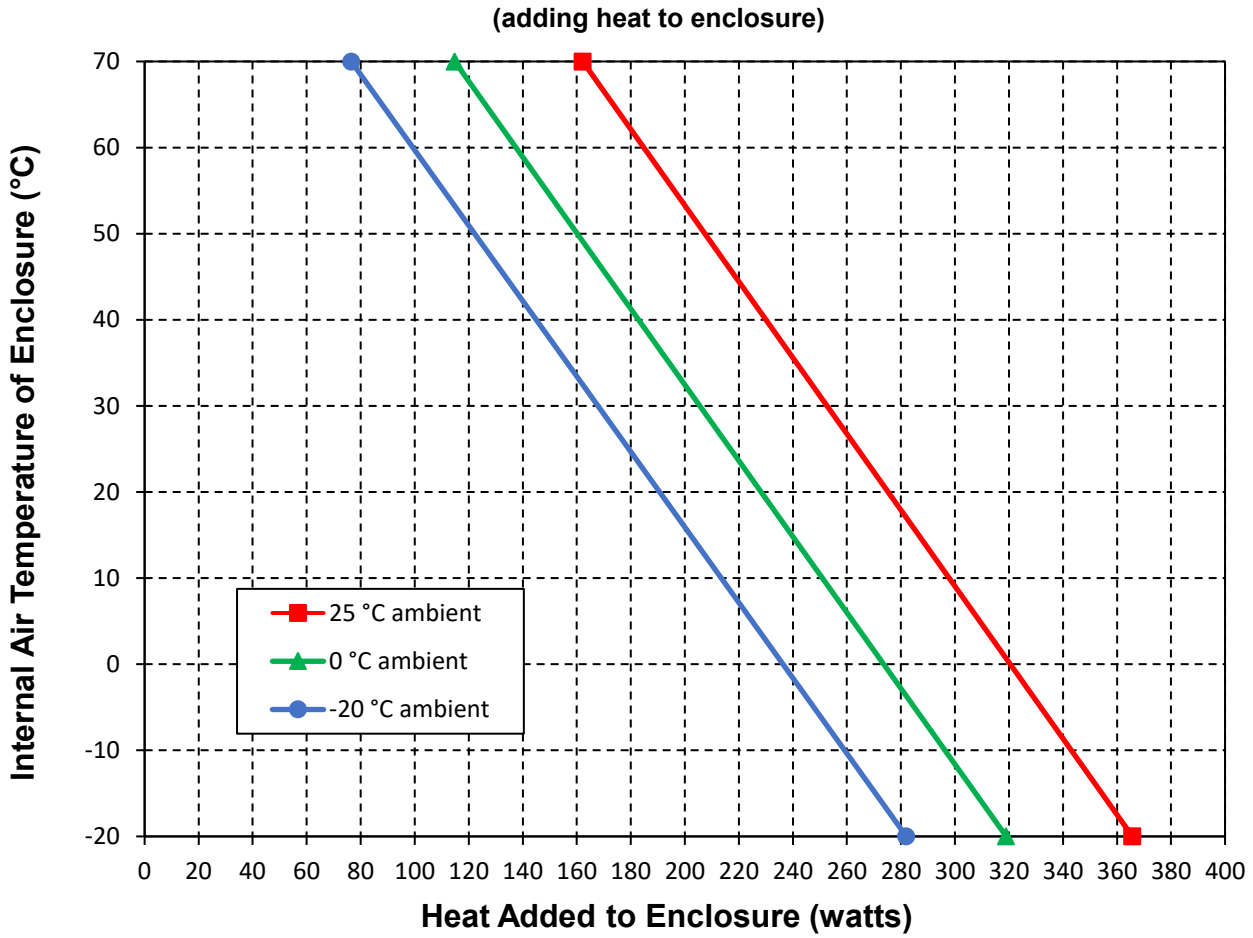
AC-094 Heating Performance Graph



How to use the Performance Graph:

1. Select Performance Line

The diagonal lines represent heating performance at the indicated ambient air temperature (intake temperature on the ambient-side fan). If the cooler is to operate at a different ambient, then you must sketch in a new performance line. This can be drawn parallel to one of the existing lines, using the distance between the existing lines as a scale to properly locate the new line.

2. Select Enclosure Temperature

Draw a horizontal line on the graph corresponding to the desired internal air temperature of the enclosure. Make the line intersect with the performance line corresponding to the ambient temperature at which the cooler is to operate.

3. Determine Heating Capacity

The maximum amount of heat that the cooler can add to the enclosure is determined by the intersection point (determined in previous step). *If the heat added to the enclosure (including heat generated by equipment inside) is greater than the enclosure's heat loss, then the cooler will be able to heat to the desired temperature. A higher capacity cooler will be needed if the total heat added is less than the enclosure's heat loss.*

Example: You need to maintain the enclosure at 30 °C while in a -20 °C ambient. The cooler can add a maximum of approximately 170 W of heat to the enclosure. If the heat dissipation from the enclosure exceeds this (plus anything else generating heat), you would need more coolers and/or a larger cooler.

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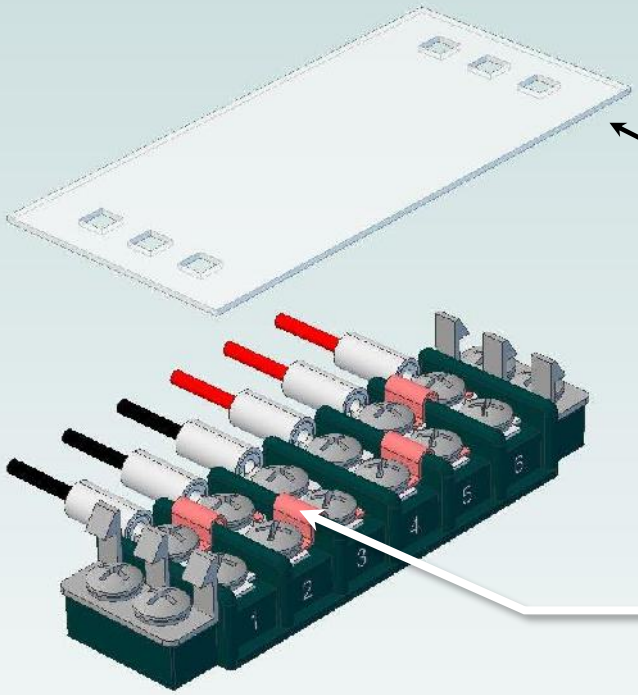
Terminal Block Configuration for Continuous Operation at Full Power
As-Shipped Configuration 1 of 2

1



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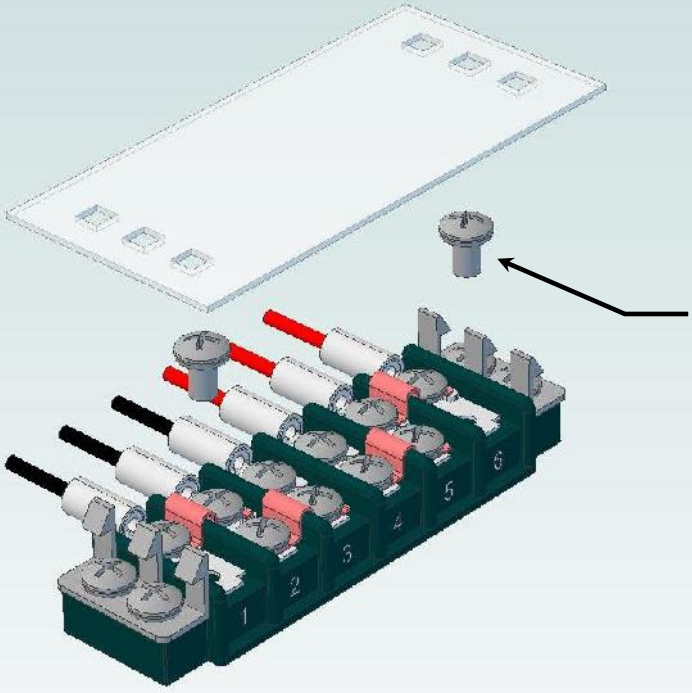

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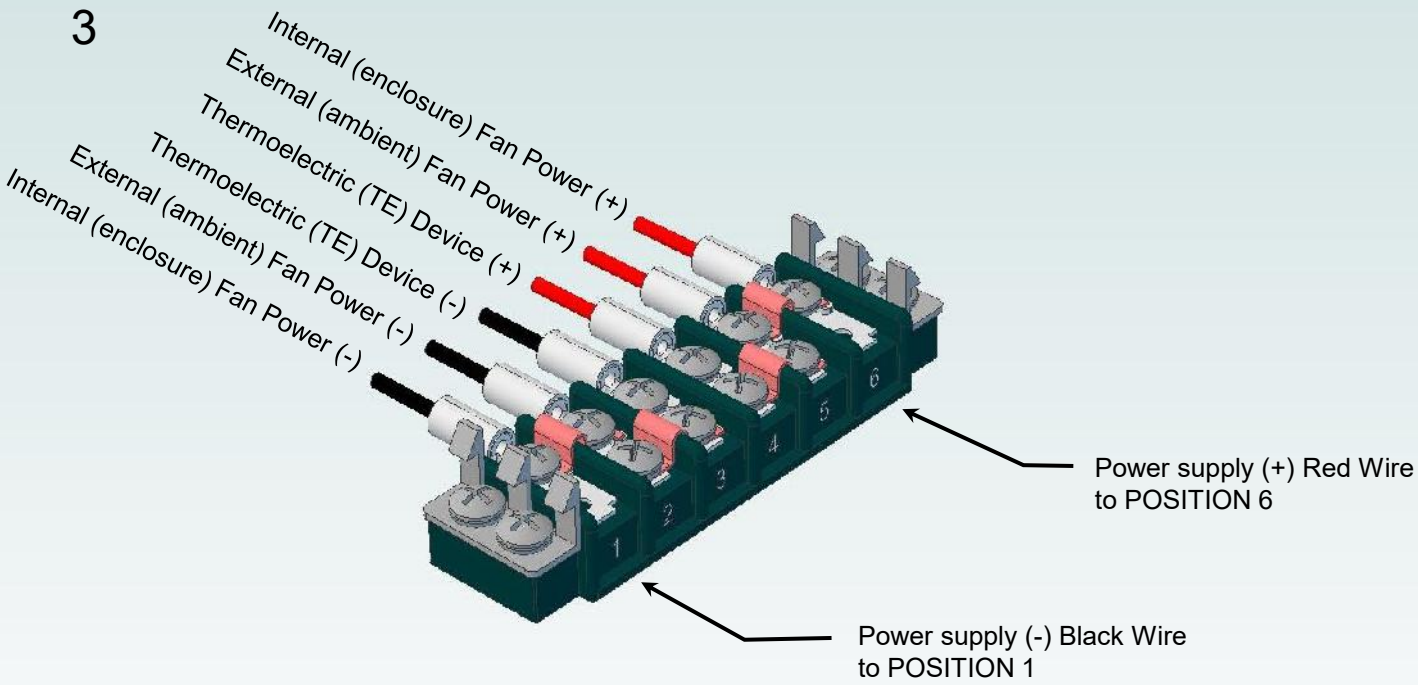
Terminal Block Configuration for Continuous Operation at Full Power
2 of 2

3



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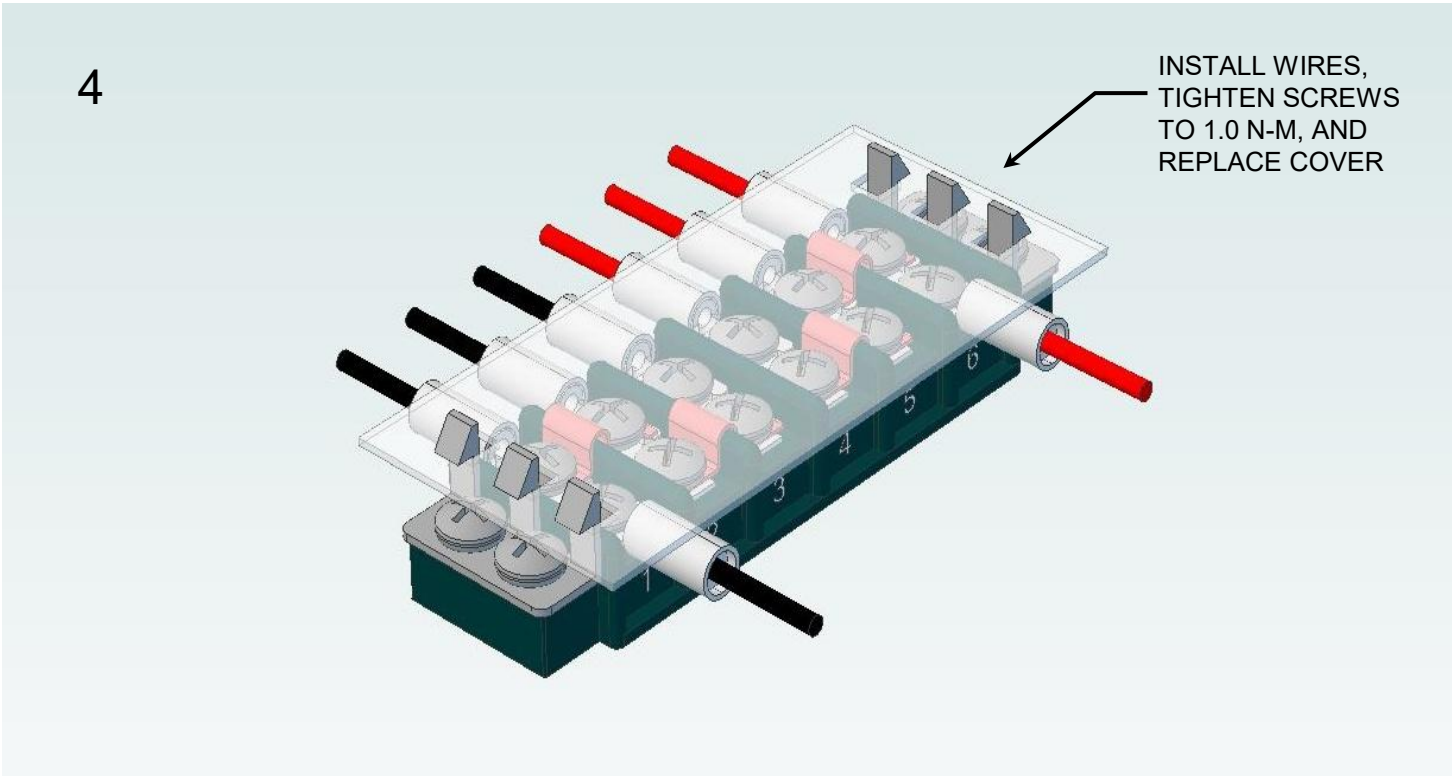

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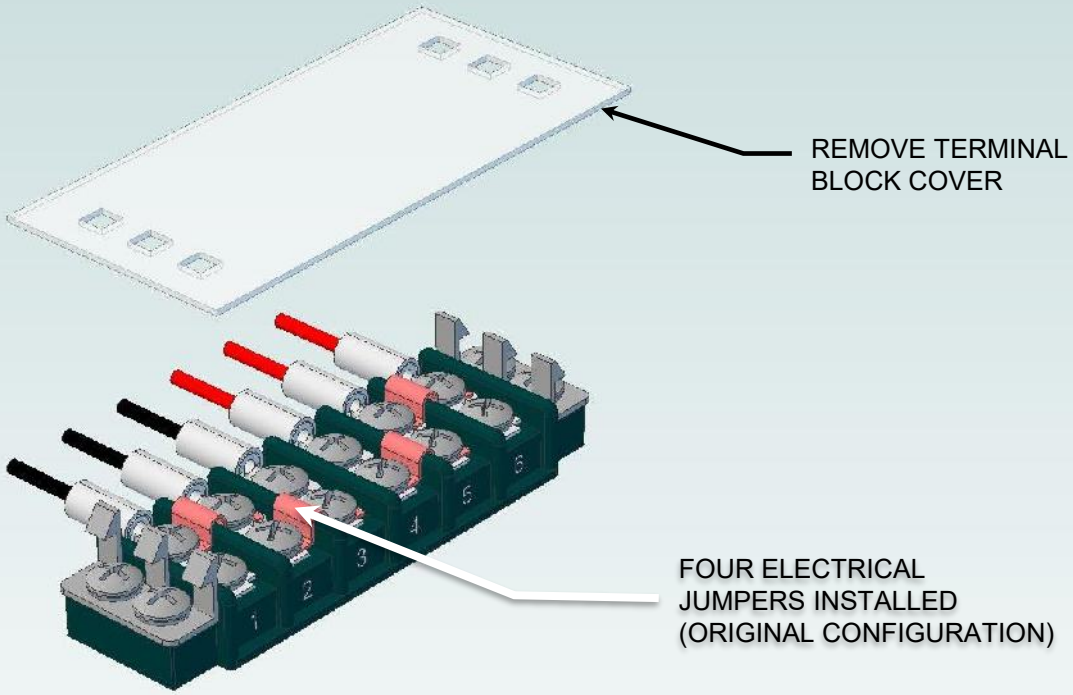
Terminal Block Configuration for Operation with Temperature Controller
1 of 2

1



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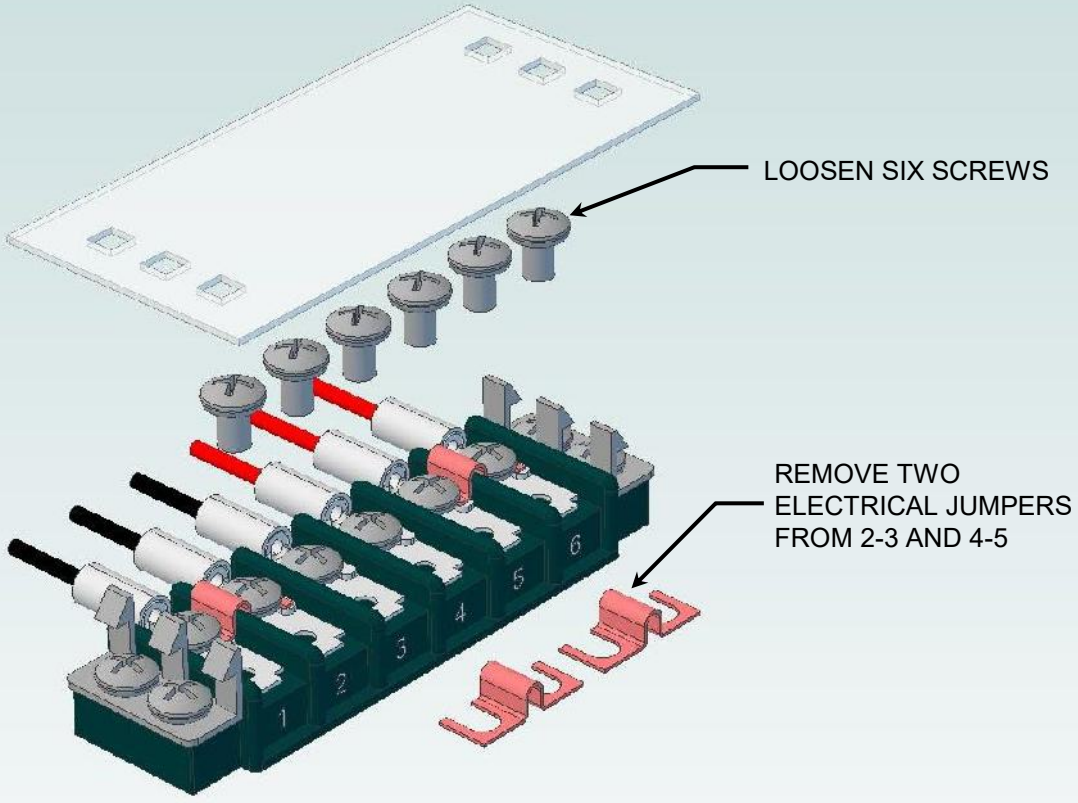

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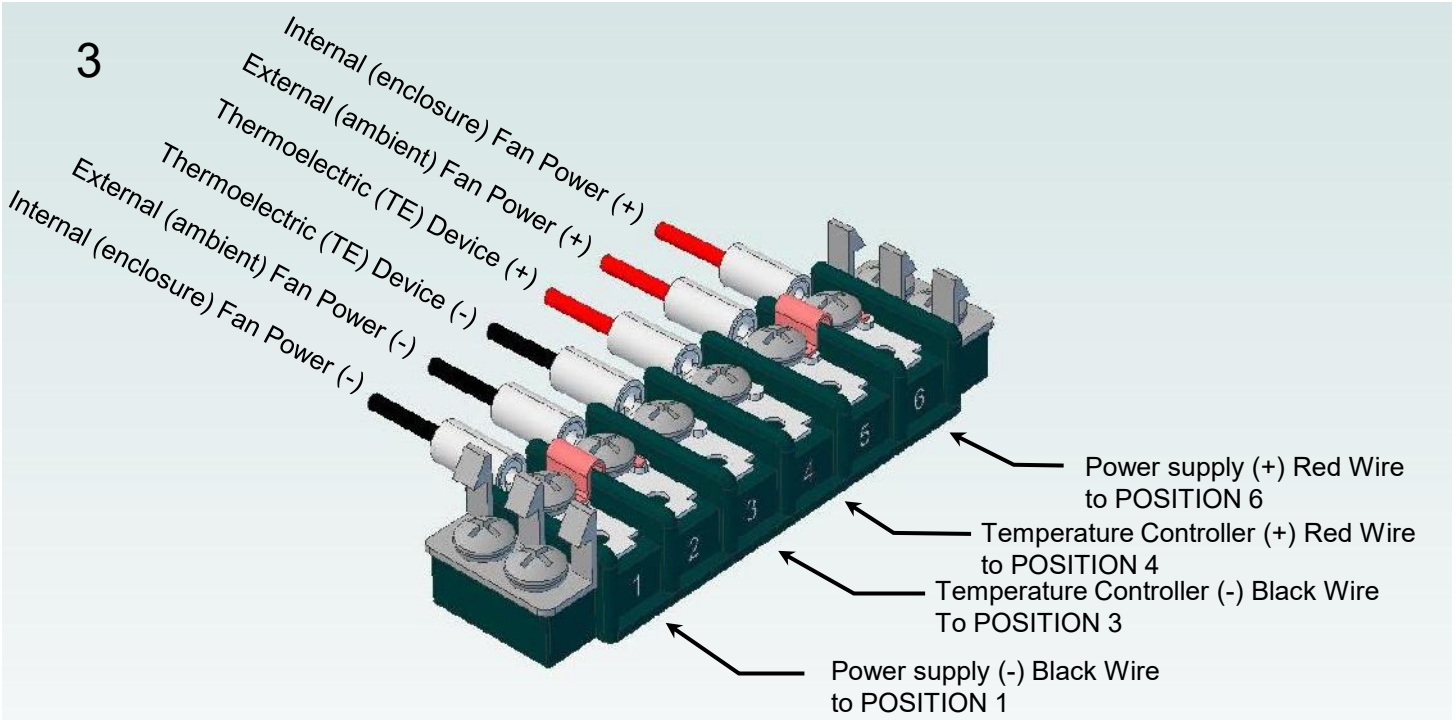
Terminal Block Configuration for Operation with Temperature Controller
2 of 2

3



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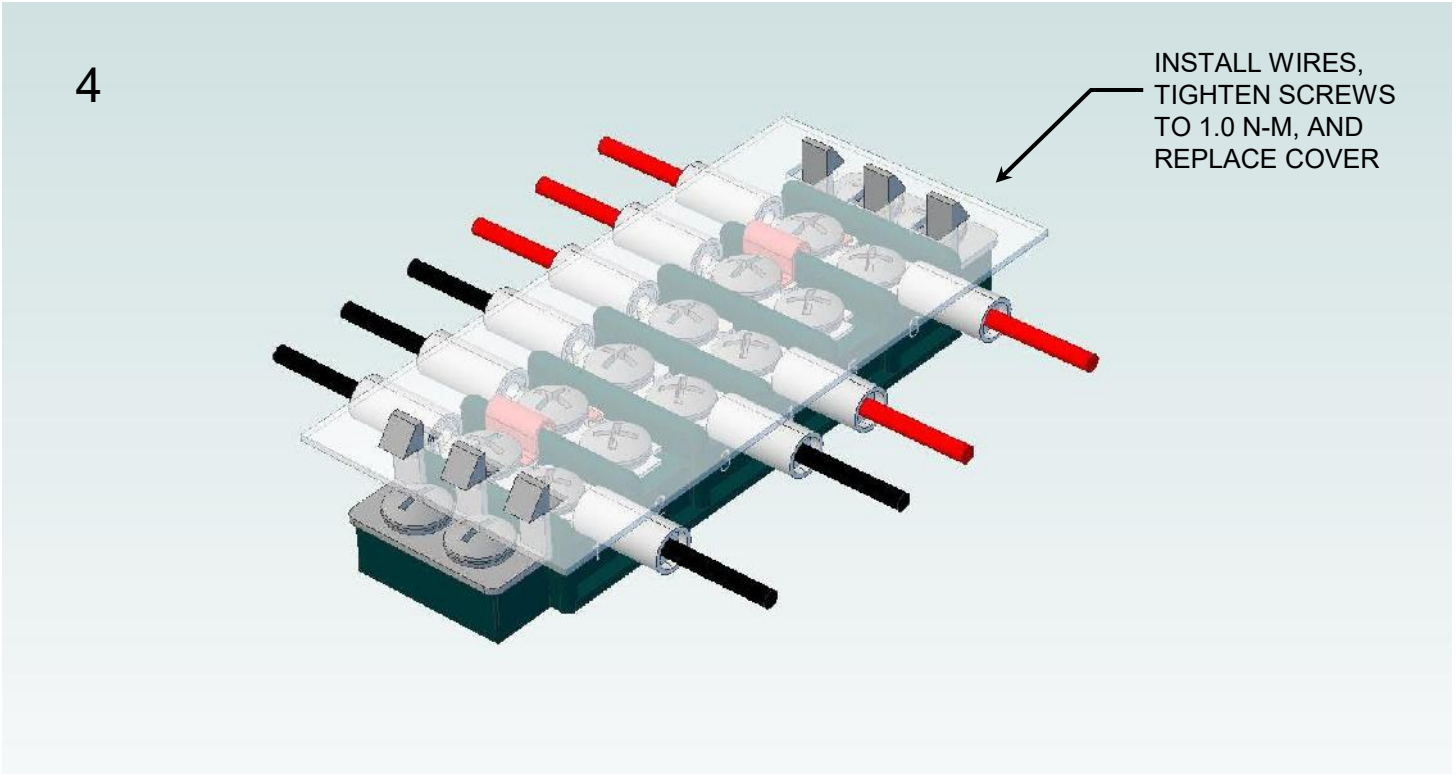

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