AC-027 Peltier-Thermoelectric Air Cooler

- **Heats as well as cools (when used with heat & cool / bipolar controller) – great for refrigeration of small containers and small heat loads.**

- **High density extruded heat sink and cold sink for high performance at low cost.**

- **High quality dual ball bearing fans.**

- **Great for small heat loads and small container refrigeration.**

- **Keeps the air inside and outside of the enclosure separated, and 25 mm thick insulation can be used on the enclosure without impeding air flow to the cold sink.**

- **Maintains cabinet at NEMA 12 rating; production volumes can be customized for NEMA 4 (or other IP Ratings).**

- **Powered by 12 VDC, its low power consumption makes it compatible with a wide range of our temperature controllers.**

- **Can be customized for production-sized order to meet your exact requirements.**

- **CE marked, RoHS compliant.**

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AC-027
Specifications

Thermoelectric (TE) Power (typical)[1,3] :	12 VDC at 4.6 A
Thermoelectric (TE) Power (maximum)[2,3] :	12 VDC at 5.6 A
External (ambient) Fan Power:	12 VDC at 0.40 A
Internal (enclosure) Fan Power:	12 VDC at 0.18 A
External (ambient) Fan Noise:	44 dBA
Internal (enclosure) Fan Noise:	34 dBA

NEMA Rating: 12

Weight (kg): 2.1

⚠ 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 -10 °C internal, the typical steady-state current is 4.5 A.

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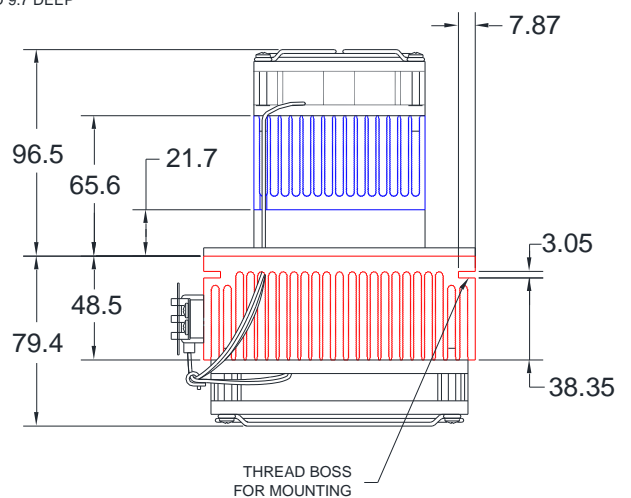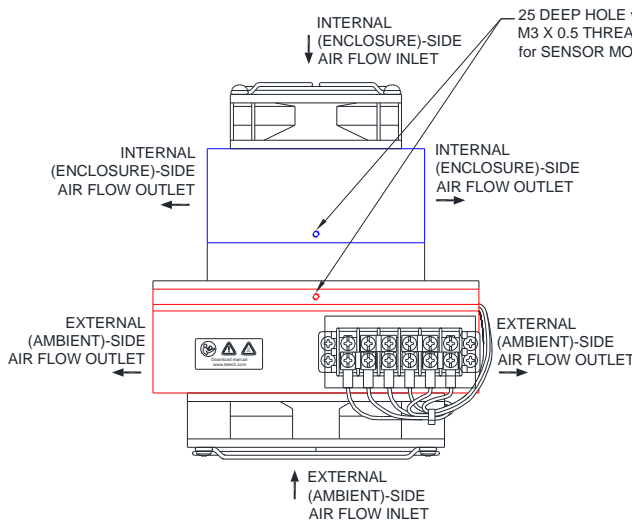
[3]Total current consumption is sum of TE current and Fan current.

CE
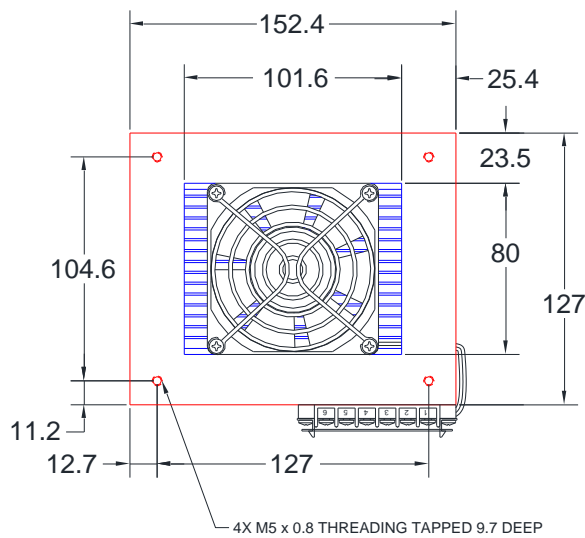
RoHS Compliant
Directive 2011/65/EU

A 3D PDF, .stp, and .sldprt 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;
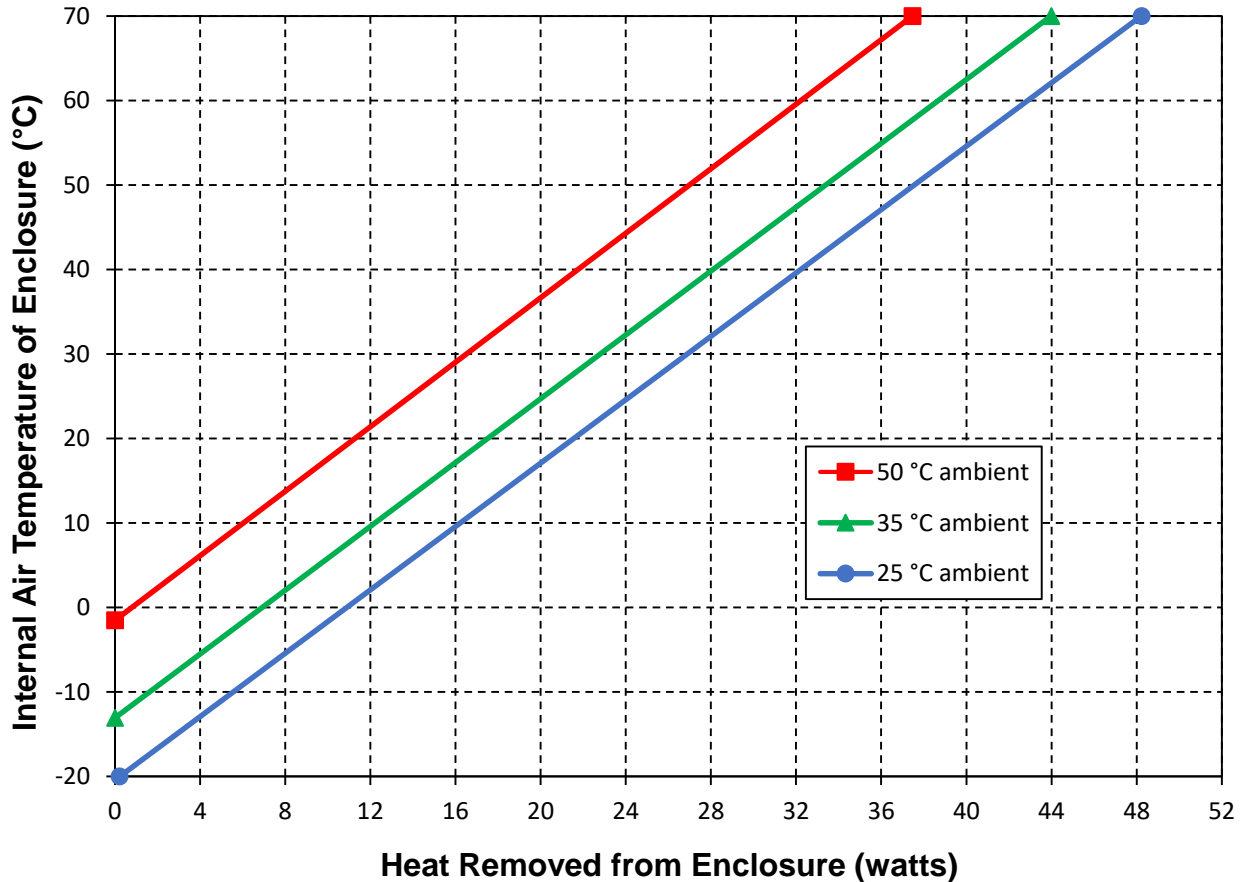External (ambient) side shown in red.

4X M5 x 0.8 THREADING TAPPED 9.7 DEEP

INTERNAL (ENCLOSURE)-SIDE AIR FLOW INLET

25 DEEP HOLE with M3 X 0.5 THREADING TAPPED 9.7 DEEP for SENSOR MOUNTING

INTERNAL (ENCLOSURE)-SIDE AIR FLOW OUTLET

INTERNAL (ENCLOSURE)-SIDE AIR FLOW OUTLET

EXTERNAL (AMBIENT)-SIDE AIR FLOW OUTLET

EXTERNAL (AMBIENT)-SIDE AIR FLOW OUTLET

EXTERNAL (AMBIENT)-SIDE AIR FLOW INLET

THREAD BOSS FOR MOUNTING

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AC-027 Cooling Performance Graph

(removing heat from enclosure)

Y-axis: Internal Air Temperature of Enclosure (°C)
X-axis: Heat Removed from Enclosure (watts)

Legend:
- 50 °C ambient
- 35 °C ambient
- 25 °C ambient

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.*
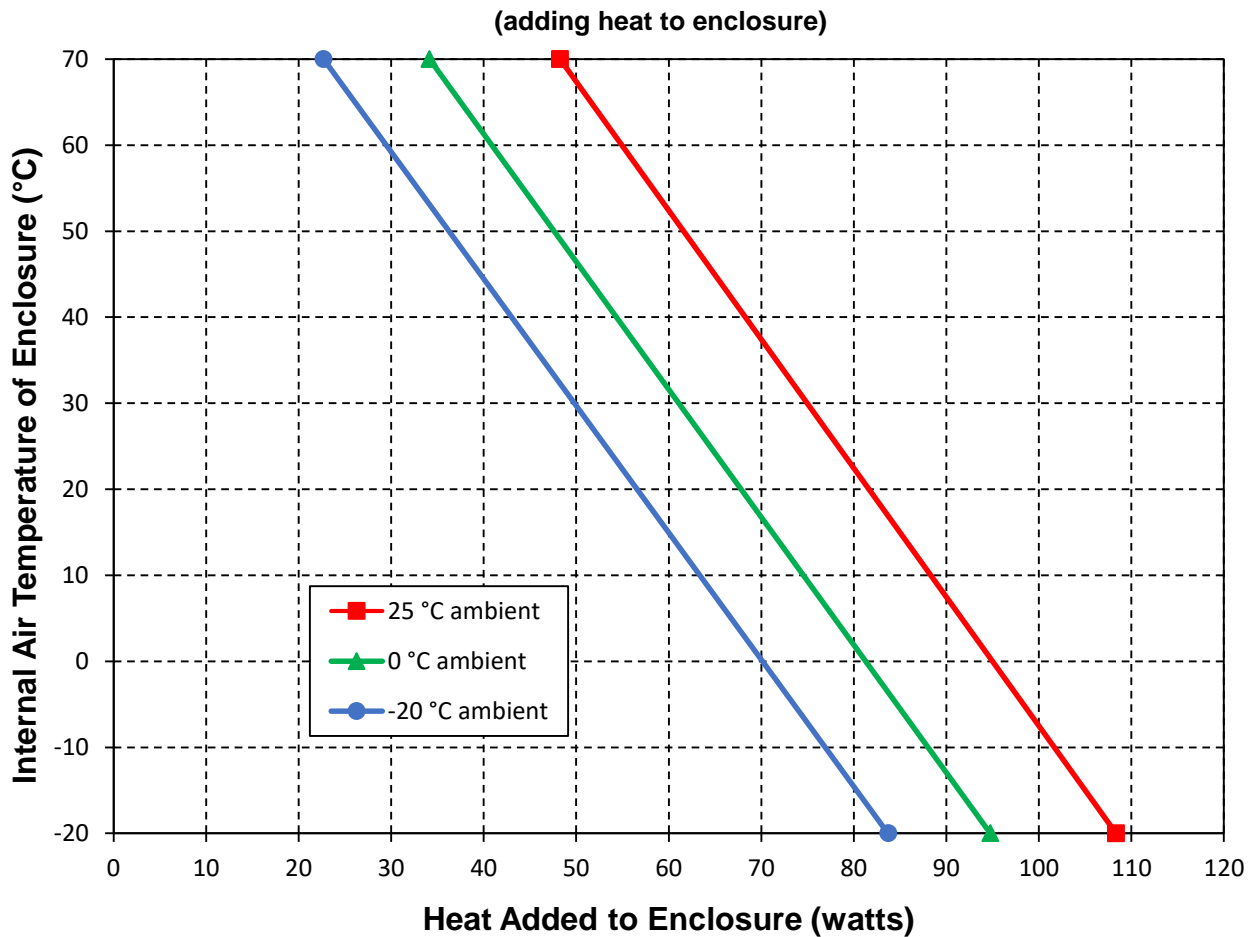
Example: You need to maintain the enclosure at 15 °C while in a 25 °C ambient. The cooler can remove a maximum of approximately 18 W of heat from the enclosure. If the heat load (internally generated heat plus the heat gain through insulation, solar, vapor condensation, etc.) in the enclosure exceeds this, you would need more coolers and/or a larger cooler.

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AC-027 Heating Performance Graph

(adding heat to enclosure)

Internal Air Temperature of Enclosure (°C) vs **Heat Added to Enclosure (watts)**

Legend:
- 25 °C ambient (red squares)
- 0 °C ambient (green triangles)
- -20 °C ambient (blue circles)

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 50 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.
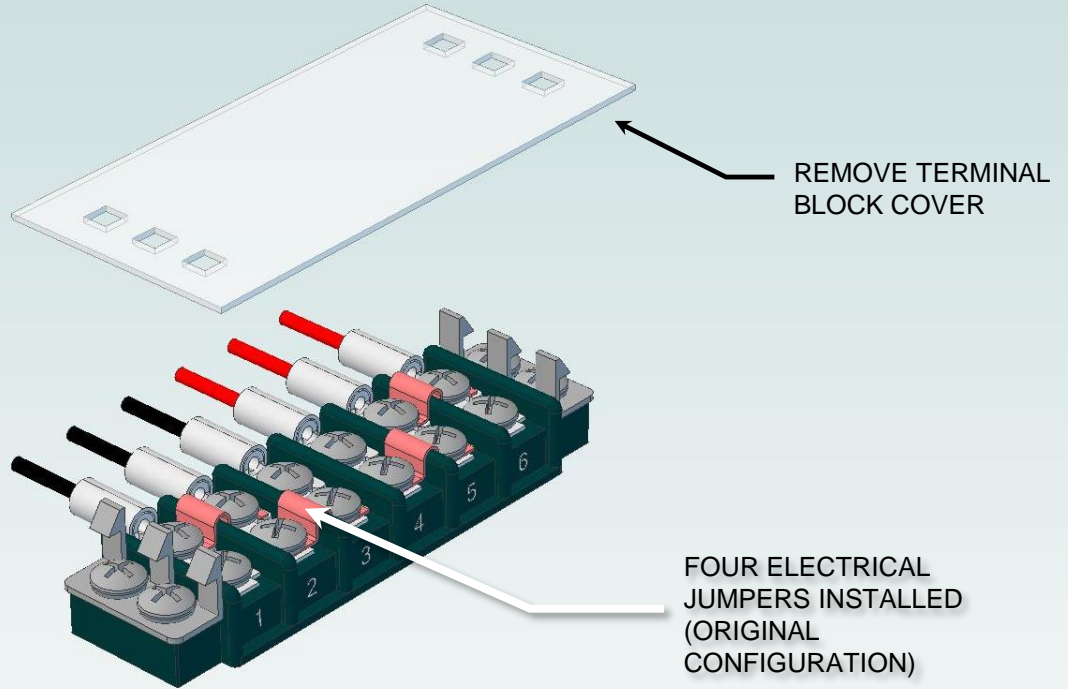
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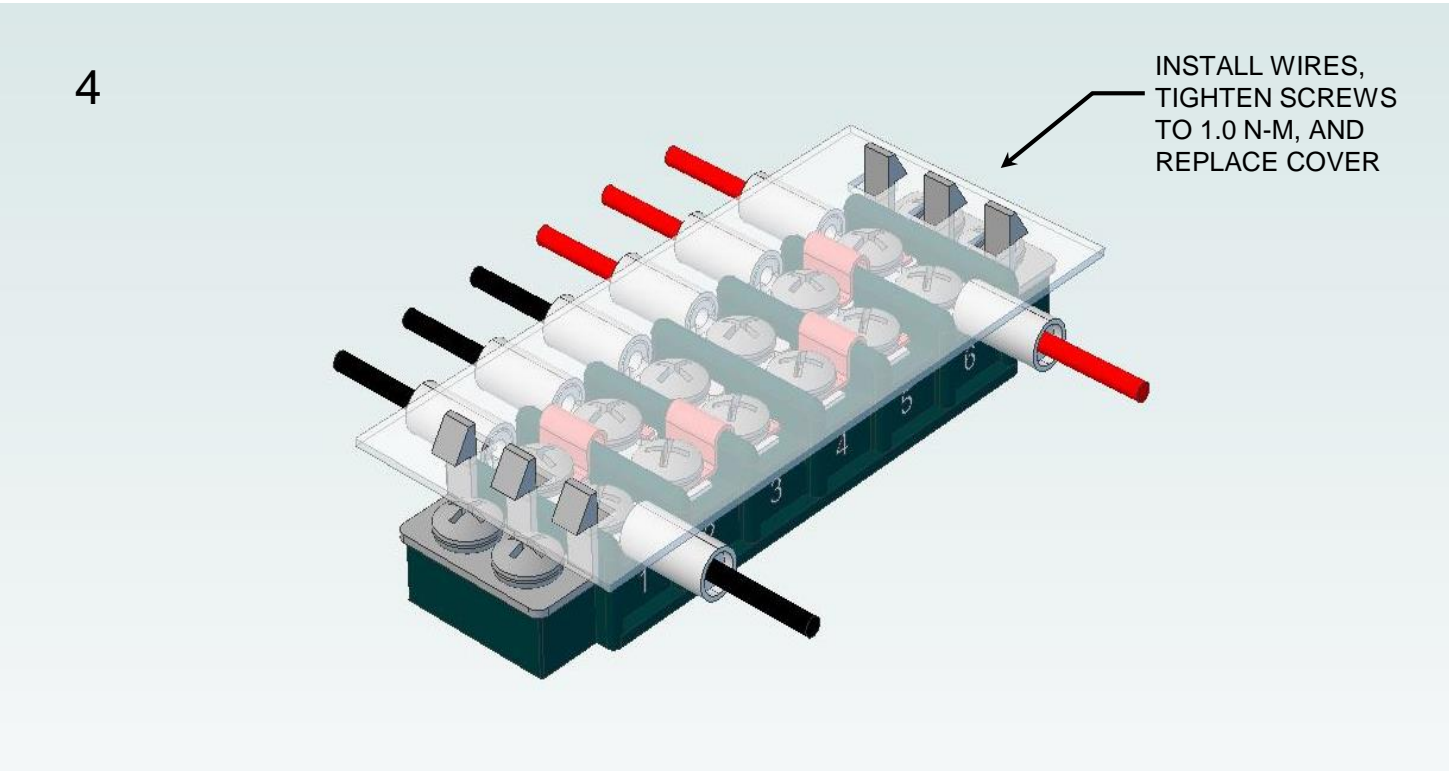## Expert Engineering, Precision Manufacturing:
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1

REMOVE TERMINAL
BLOCK COVER

FOUR ELECTRICAL
JUMPERS INSTALLED
(ORIGINAL
CONFIGURATION)

2

LOOSEN TWO SCREWS
KEEP JUMPERS INSTALLED

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3

Internal (enclosure) Fan Power (+)
External (ambient) Fan Power (+)
Thermoelectric (TE) Device (+)
Thermoelectric (TE) Device (-)
External (ambient) Fan Power (-)
Internal (enclosure) Fan Power (-)

Power supply (+) Red Wire to POSITION 6

Power supply (-) Black Wire to POSITION 1

4

INSTALL WIRES, TIGHTEN SCREWS TO 1.0 N-M, AND REPLACE COVER
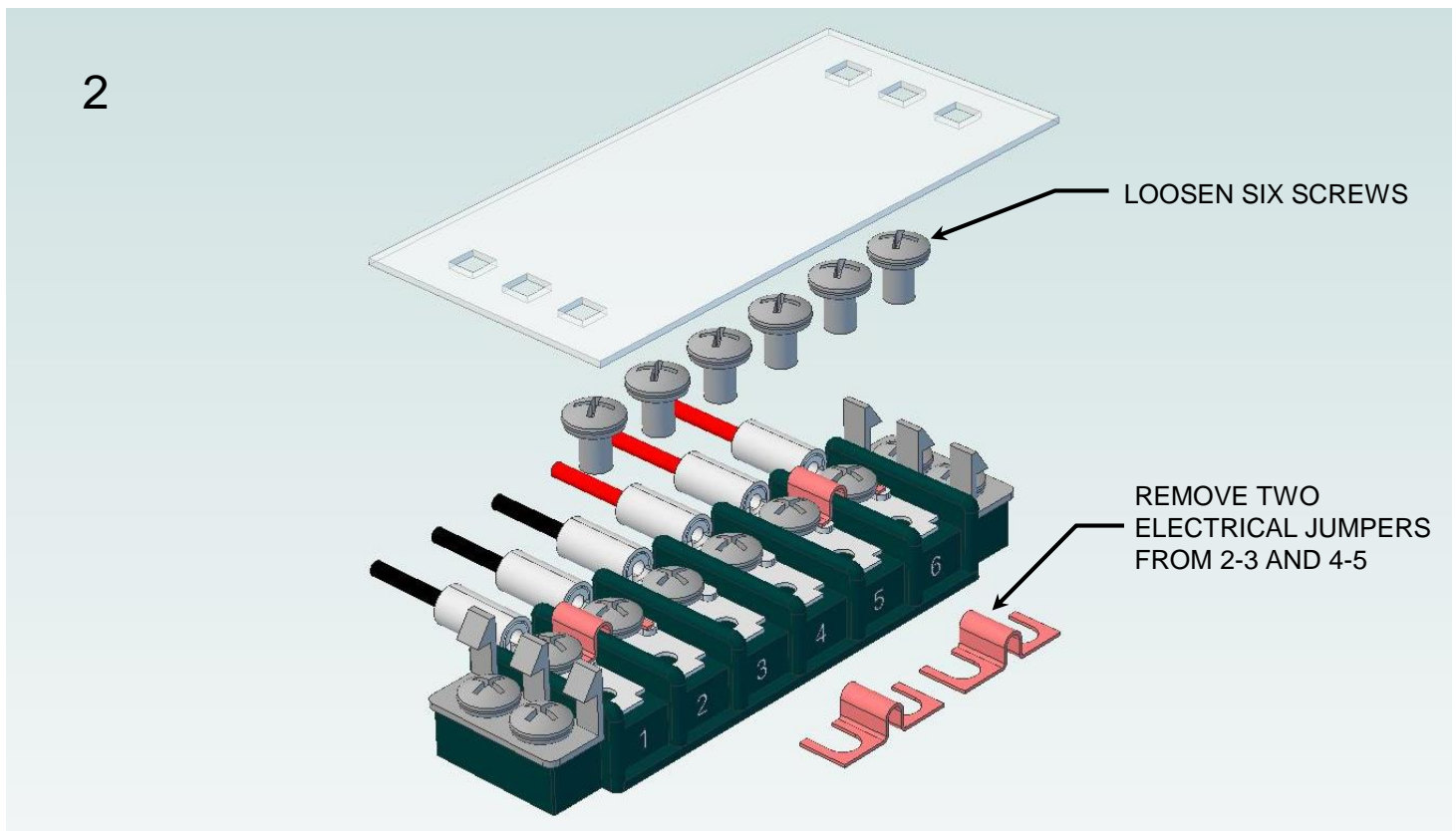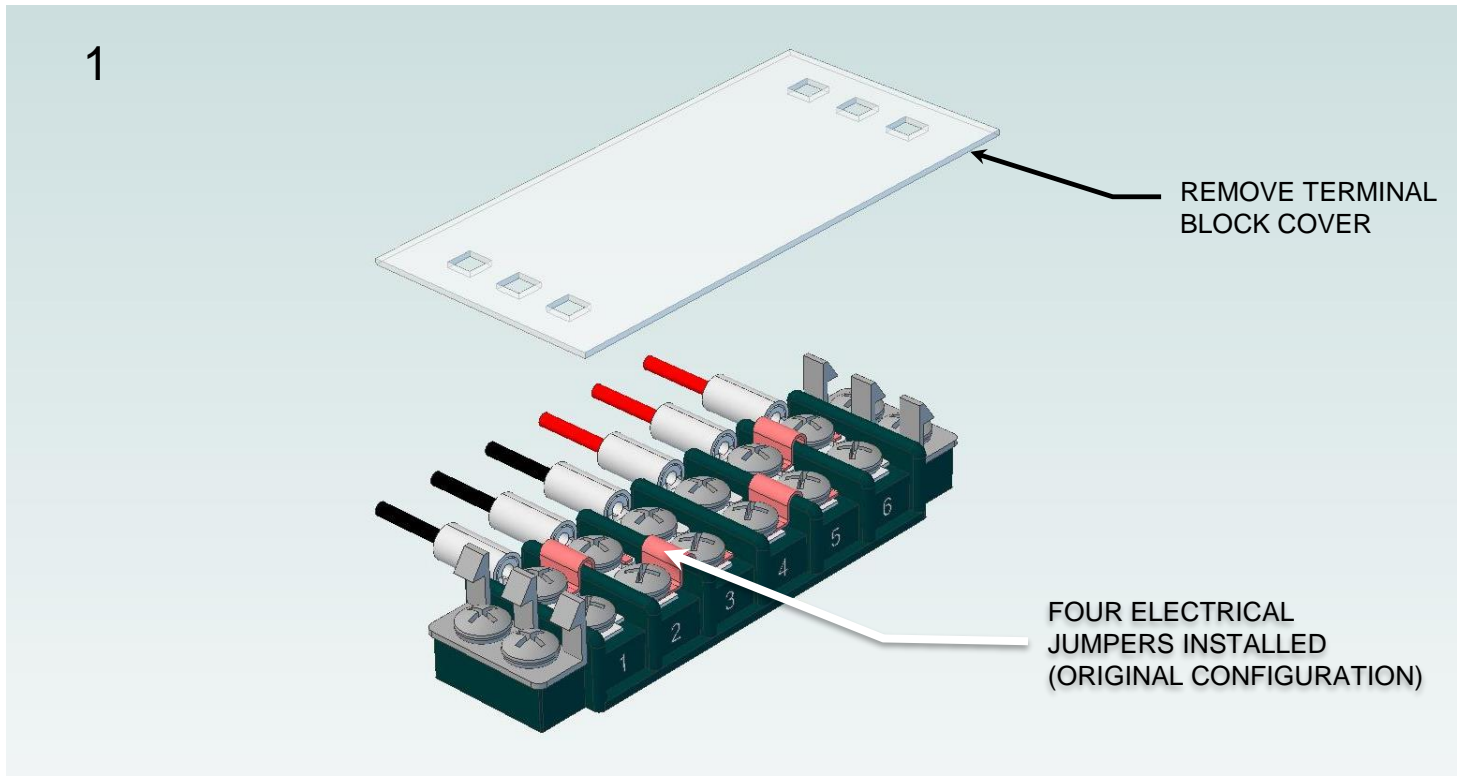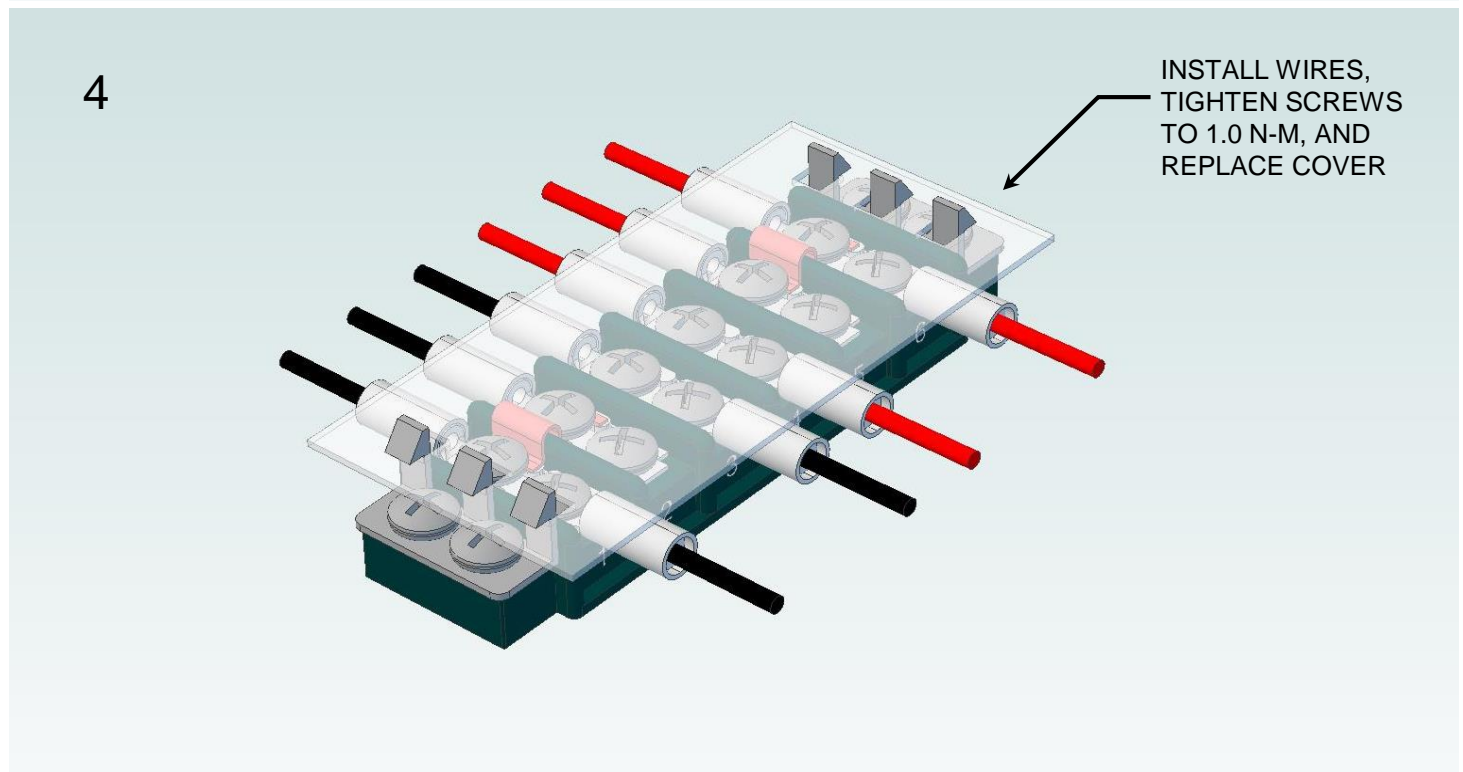
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1

REMOVE TERMINAL BLOCK COVER

FOUR ELECTRICAL JUMPERS INSTALLED (ORIGINAL CONFIGURATION)

2

LOOSEN SIX SCREWS

REMOVE TWO ELECTRICAL JUMPERS FROM 2-3 AND 4-5

TE **TECHNOLOGY, INC.** ®

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3

Internal (enclosure) Fan Power (+)

External (ambient) Fan Power (+)

Thermoelectric (TE) Device (+)

Thermoelectric (TE) Device (-)

External (ambient) Fan Power (-)

Internal (enclosure) Fan Power (-)

Power supply (+) Red Wire to POSITION 6

Temperature Controller (+) Red Wire to POSITION 4

Temperature Controller (-) Black Wire To POSITION 3

Power supply (-) Black Wire to POSITION 1

4

INSTALL WIRES, TIGHTEN SCREWS TO 1.0 N-M, AND REPLACE COVER

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