CP-031HT Peltier-Thermoelectric Cold-Plate Cooler

- **Small, low-cost standard cold plate cooler.**

- **The High Temperature (HT) Series can be used to heat to 100°C. Non-HT Series units are limited to 70°C.**

- **Heats as well as cools (when used with heat & cool / bipolar controller).**

- **Provides effective, direct-contact cooling or heating.**

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

- **Threaded holes are located in the cold plate for easy attachment of a temperature sensor, interface plates, and other cooled plates.**

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

- **CE marked, RoHS compliant.**

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CP-031HT
Specifications

|	
Thermoelectric (TE) Power (typical)[1,3] :	12 VDC at 4.3 A
Thermoelectric (TE) Power (maximum)[2,3] :	12 VDC at 5.4 A
External (ambient) Fan Power:	12 VDC at 0.18 A
External (ambient) Fan Noise:	34 dBA

NEMA Rating: NA

Weight (kg): 0.9

⚠ 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 heat sink, or cold plate exceeds 100 °C. Do not operate fans at air temperatures below -20 °C or over 70 °C.

[1]Current, at steady-state, is rated at +25 °C ambient, +25 °C internal, maximum heat removal. At -23 °C cold plate, the typical steady-state current is 4.6 A.

[2]Current, at steady-state operation under-worst case conditions, is rated at -20 °C ambient, +100 °C internal, maximum heat removal.
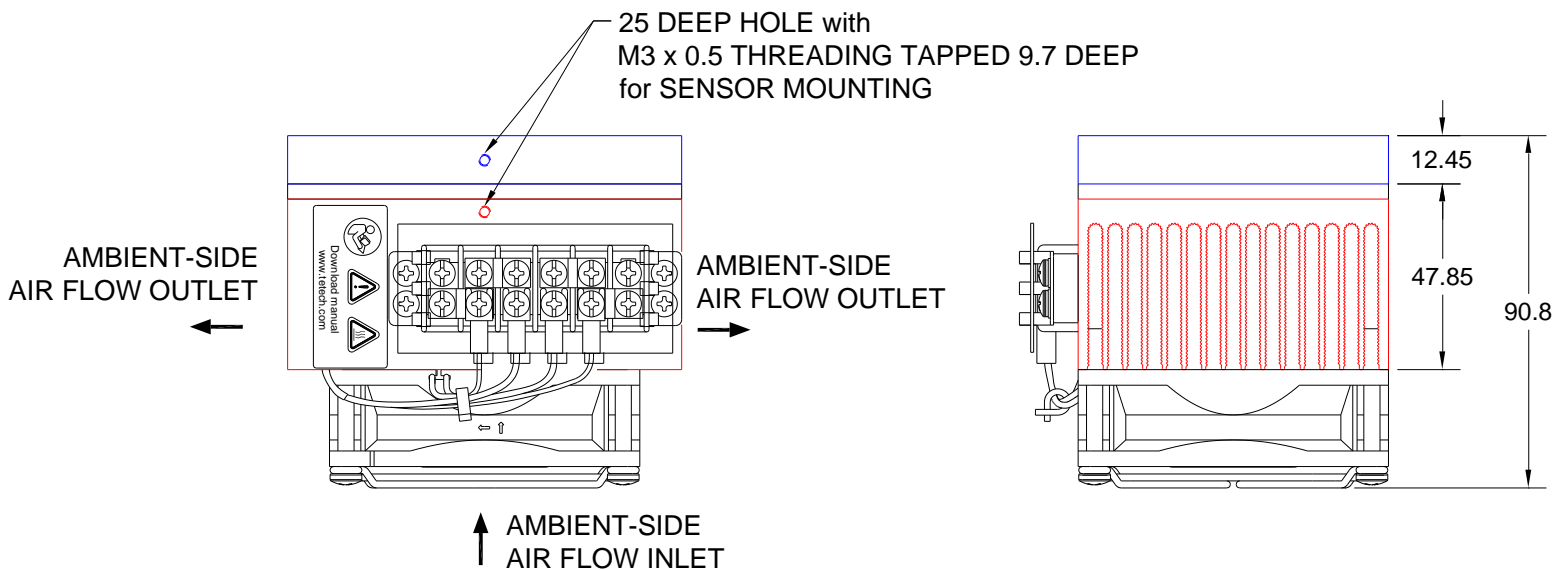
[3] Total current consumption is sum of TE current and Fan current.

101.6

63.5

41.91 80

4X M4 x 0.7 THREADING TAPPED 9.7 DEEP

CE
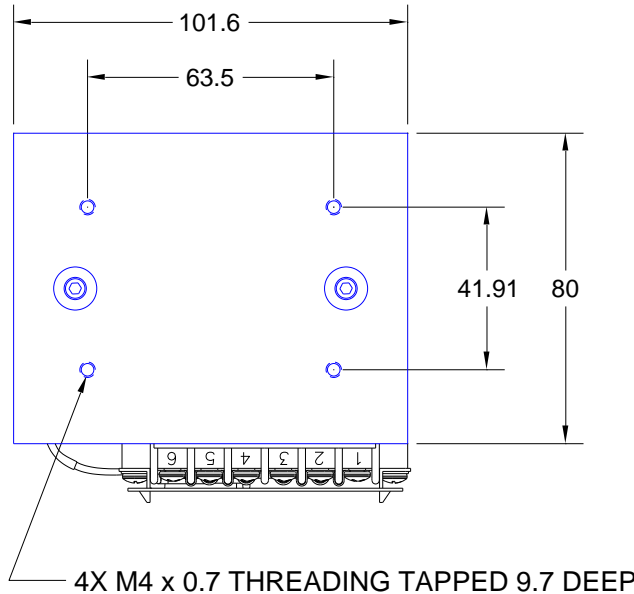
RoHS Compliant
Directive 2011/65/EU

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.
Cold plate shown in blue;
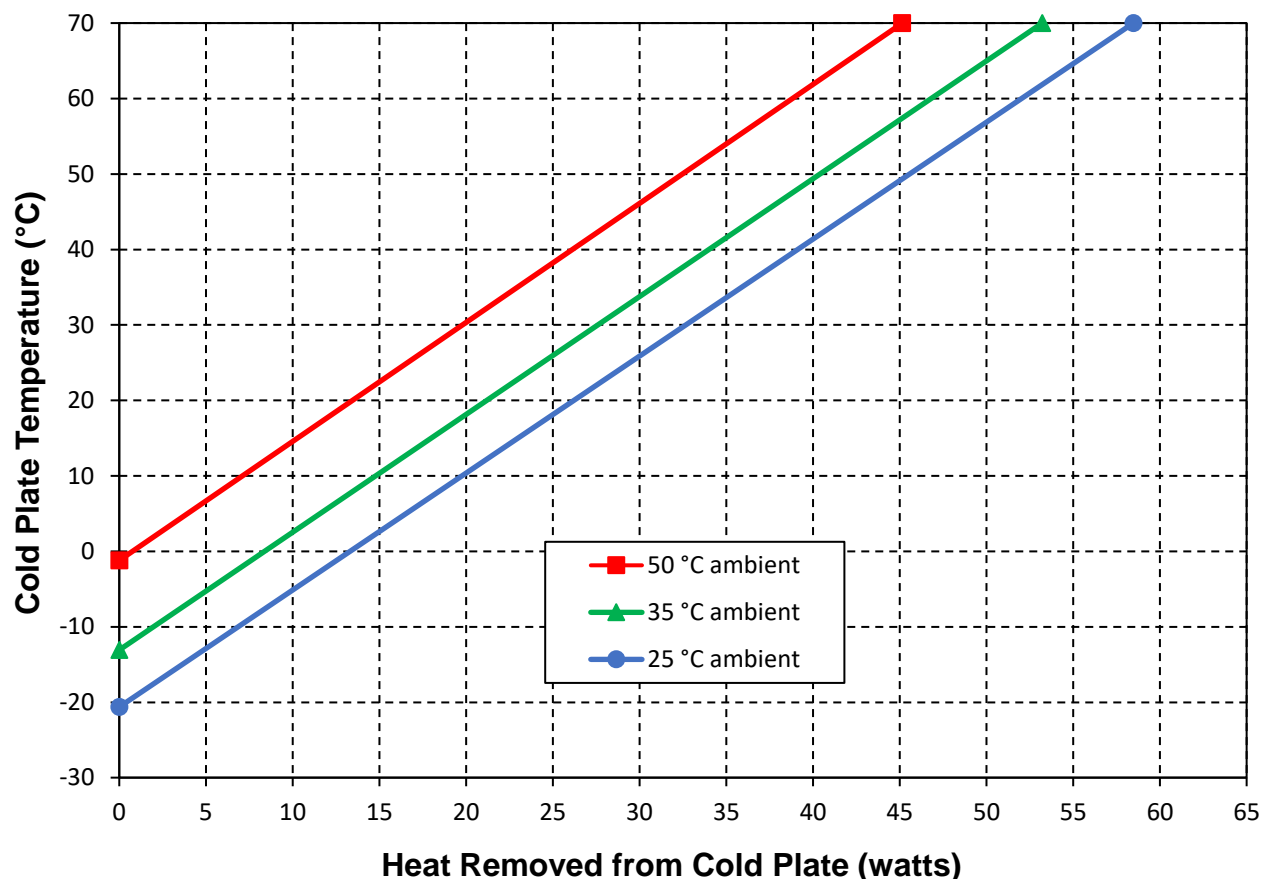External (ambient) side shown in red.

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

AMBIENT-SIDE
AIR FLOW OUTLET

Download manual
www.tetech.com

AMBIENT-SIDE
AIR FLOW OUTLET

AMBIENT-SIDE
AIR FLOW INLET

12.45

47.85

90.8

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CP-031HT Cooling Performance Graph

(removing heat from cold plate)

Chart — Cold Plate Temperature (°C) vs Heat Removed from Cold Plate (watts), with three performance lines: 50 °C ambient (red squares), 35 °C ambient (green triangles), 25 °C ambient (blue circles).

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 Plate Temperature

Draw a horizontal line on the graph corresponding to the desired cold-plate temperature. 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 cold plate is determined by the intersection point (determined in the previous step). *The cooler will be able to maintain the desired 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 cold plate at 10 °C while in a 25 °C ambient. The cooler can remove a maximum of approximately 22 W of heat from the cold plate. If the heat gain from the ambient plus anything else actively generating heat exceeds this, you would need a cooler with a larger cooling capacity or multiple coolers.
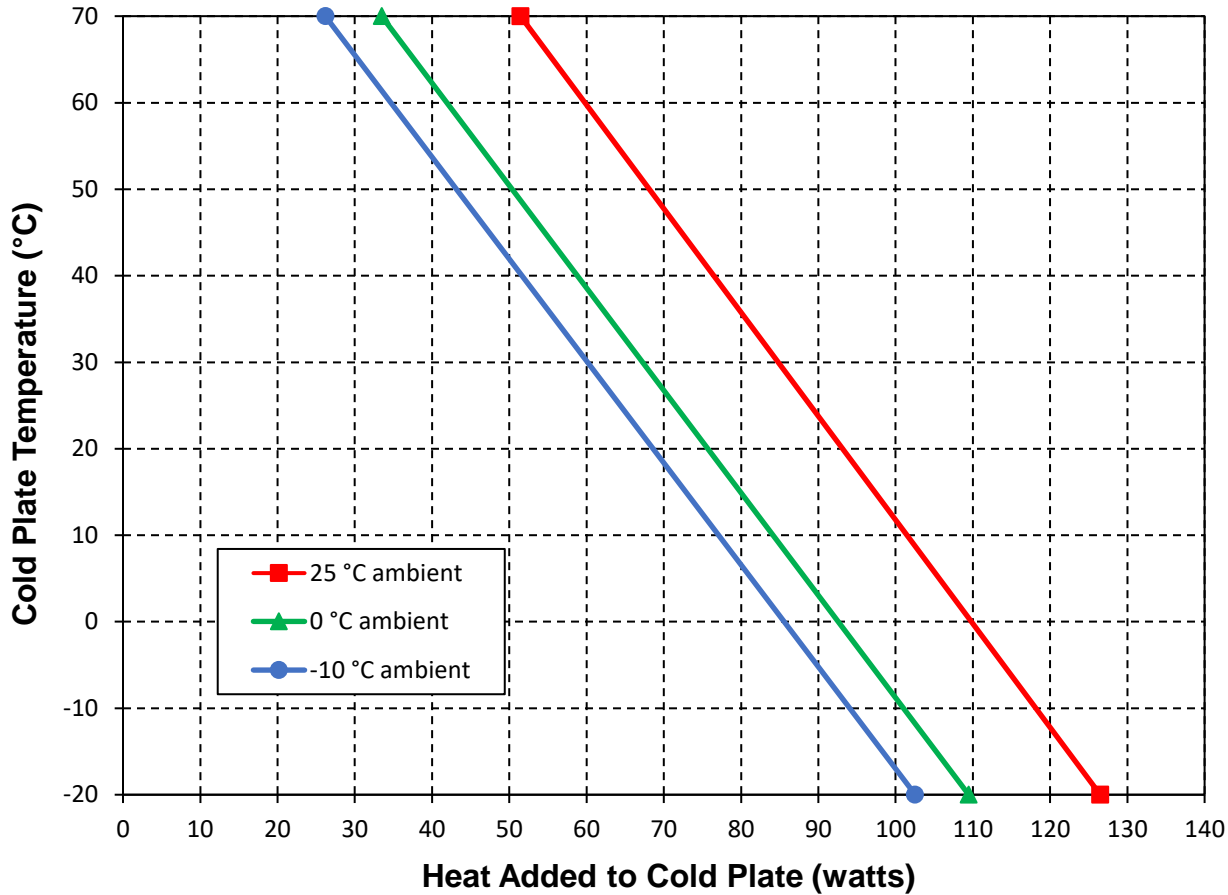
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CP-031HT Heating Performance Graph

(adding heat to cold plate)

Chart: Cold Plate Temperature (°C) vs Heat Added to Cold Plate (watts)

Legend:
- 25 °C ambient
- 0 °C ambient
- -10 °C ambient

How to use the Performance Graph:

1. <u>Select Performance Line</u>

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. <u>Select Plate Temperature</u>

Draw a horizontal line on the graph corresponding to the desired cold-plate temperature. Make the line intersect with the performance line corresponding to the ambient temperature at which the cooler is to operate.

3. <u>Determine Heating Capacity</u>

The maximum amount of heat that the cooler can add to the cold plate is determined by the intersection point (determined in the previous step). *If the heat added to the cold plate (including heat generated by equipment on the cold plate) is greater than the heat loss from the cold plate, then the cooler will be able to heat to the desired temperature.*

Example: You need to maintain the cold plate at 30 °C while in a 0 °C ambient. The cooler can add up to approximately 68 W of heat to the cold plate. If the heat dissipation from the cold plate to the ambient exceeds this (plus anything else generating heat), you would need multiple coolers or a cooler with a larger heating capacity.
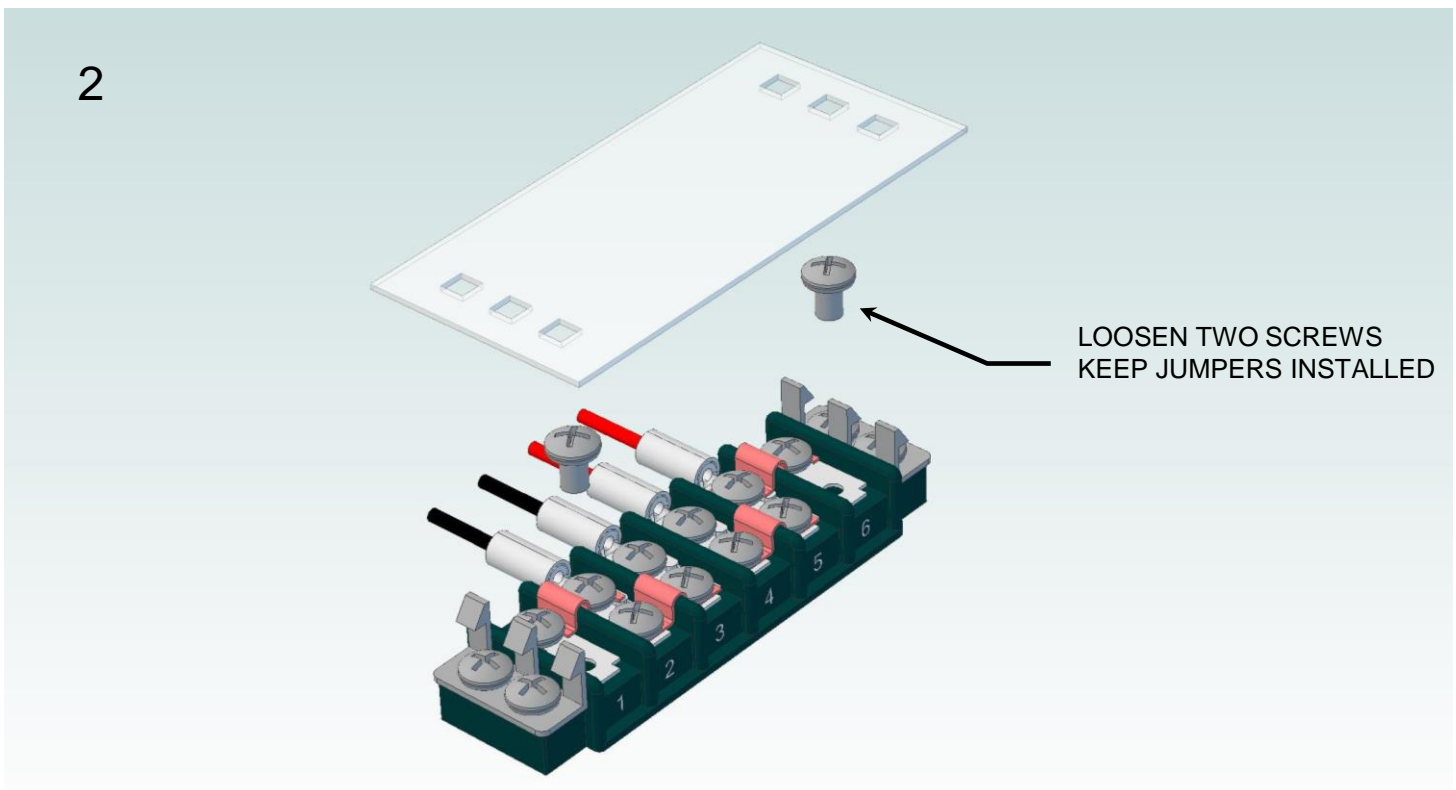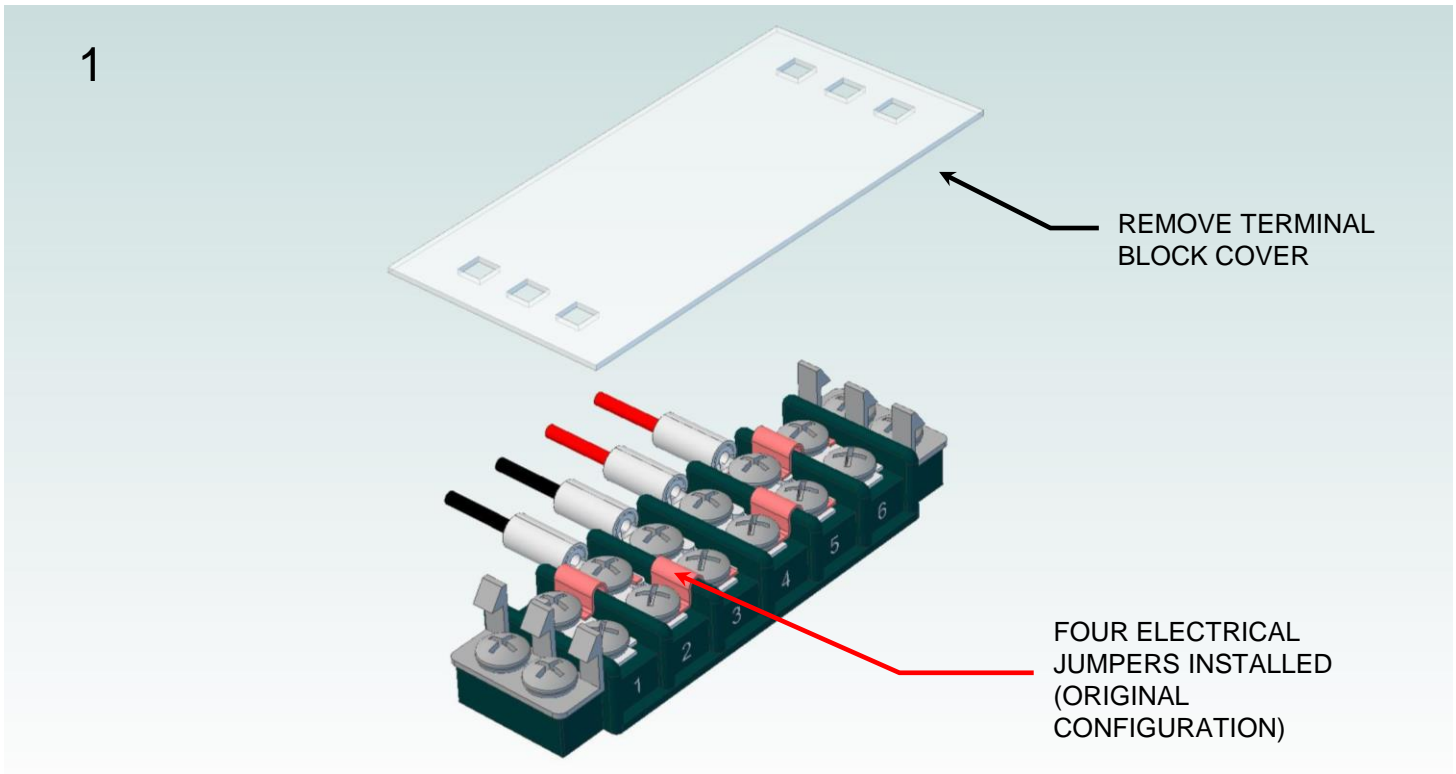
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1

REMOVE TERMINAL
BLOCK COVER

FOUR ELECTRICAL
JUMPERS INSTALLED
(ORIGINAL
CONFIGURATION)

2

LOOSEN TWO SCREWS
KEEP JUMPERS INSTALLED

TE ▲▲▲▲▲
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3

Thermoelectric (TE) Device (+)
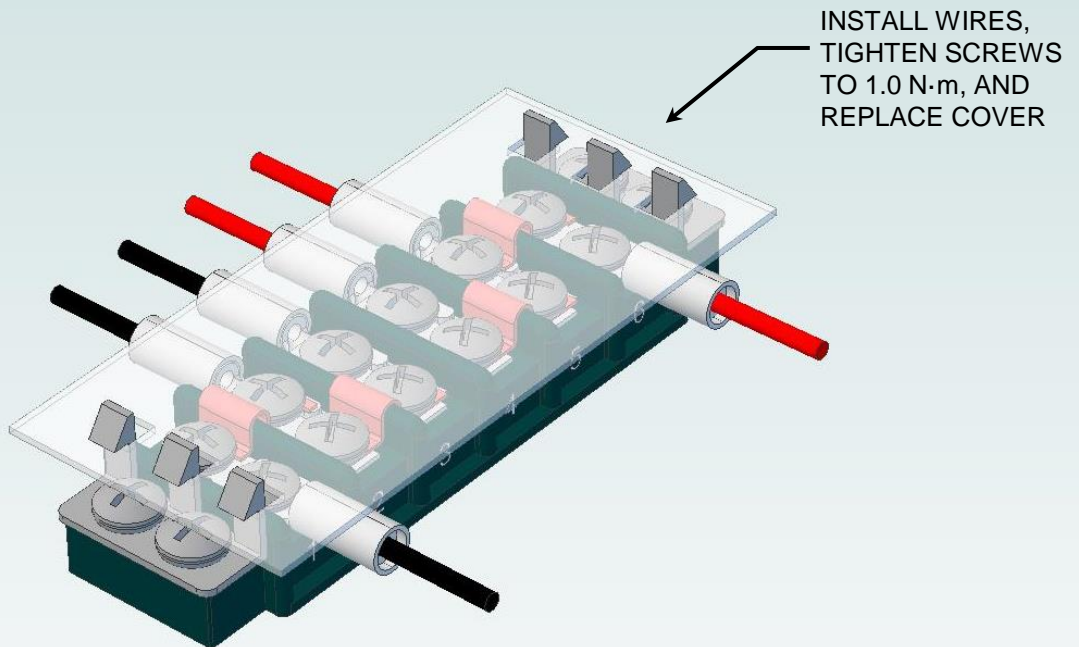Thermoelectric (TE) Device (-)
External Fan (+)
External Fan (-)

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

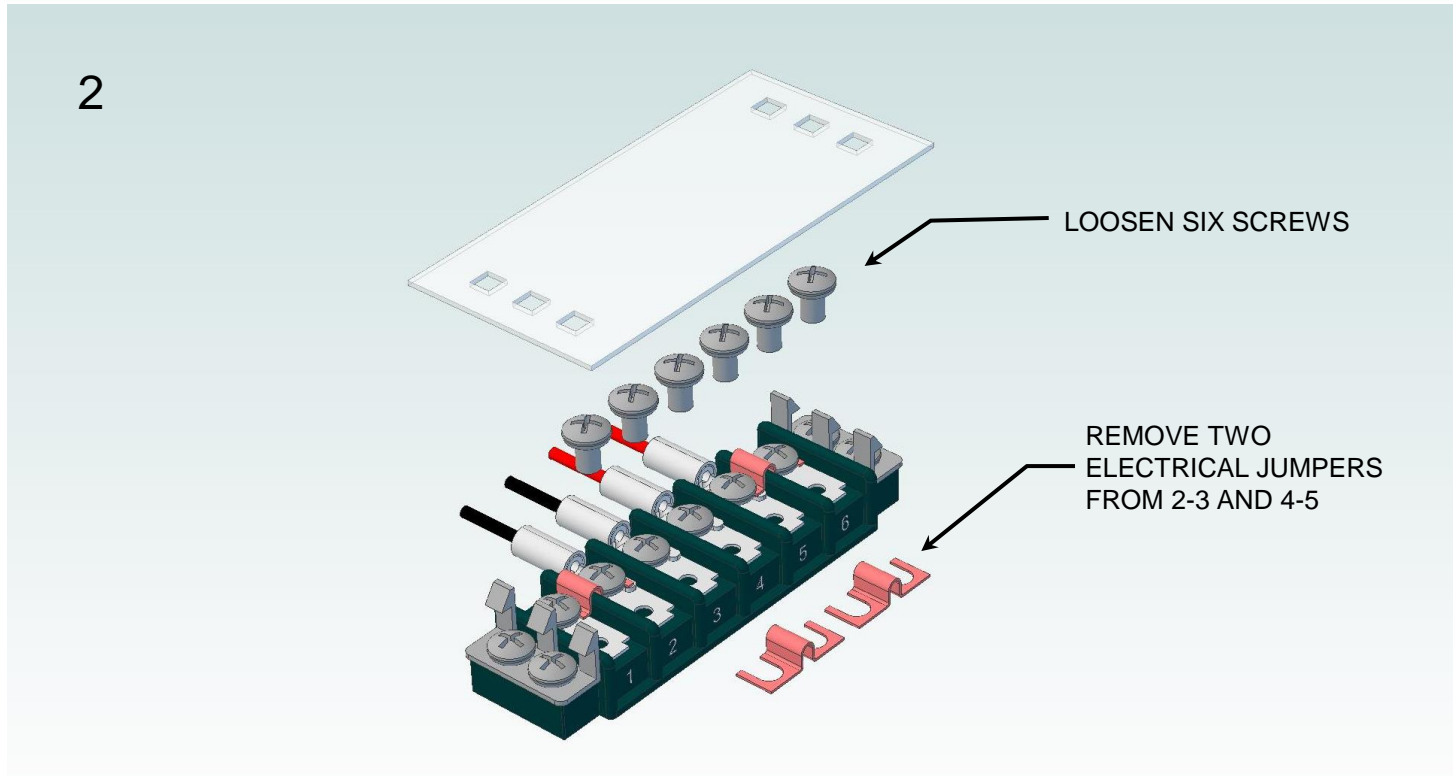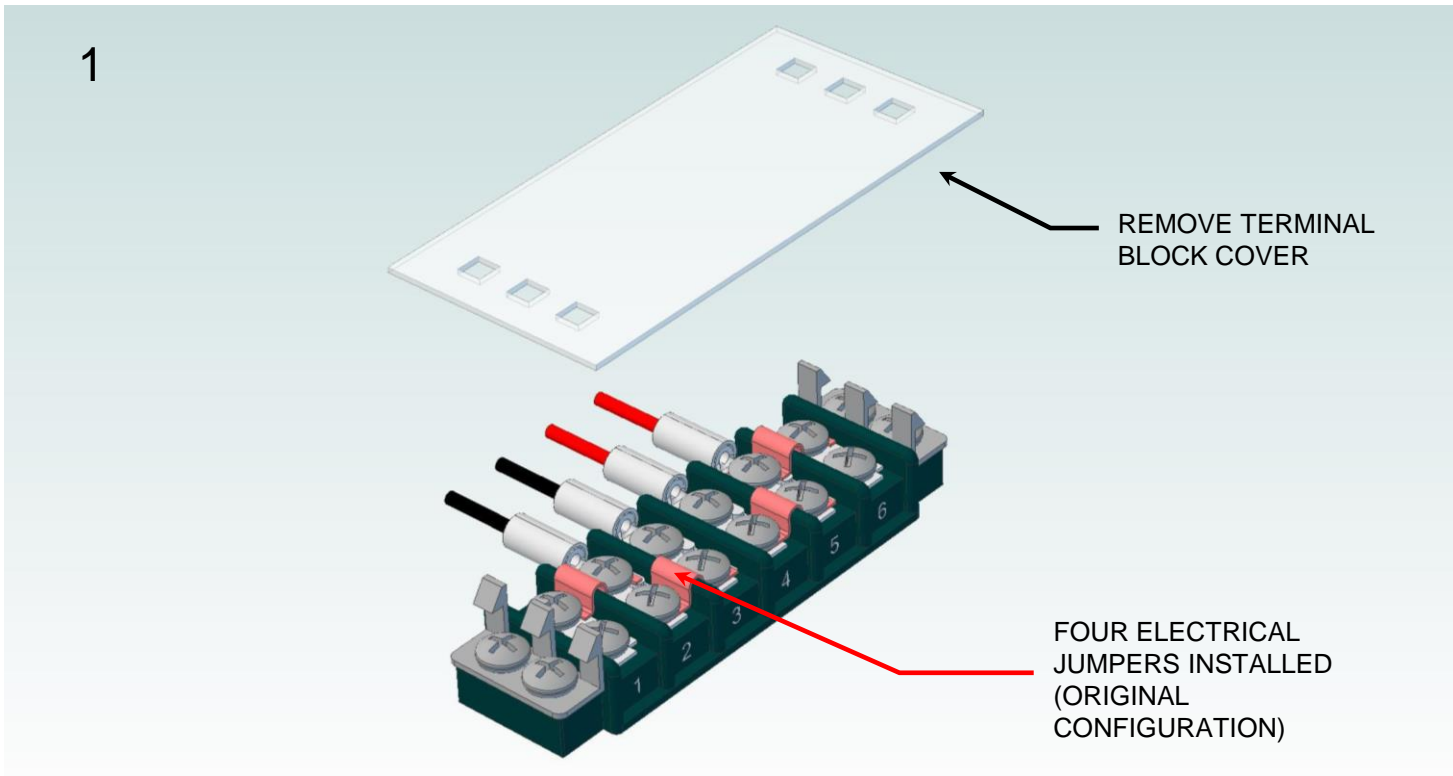# TE TECHNOLOGY, INC. ®

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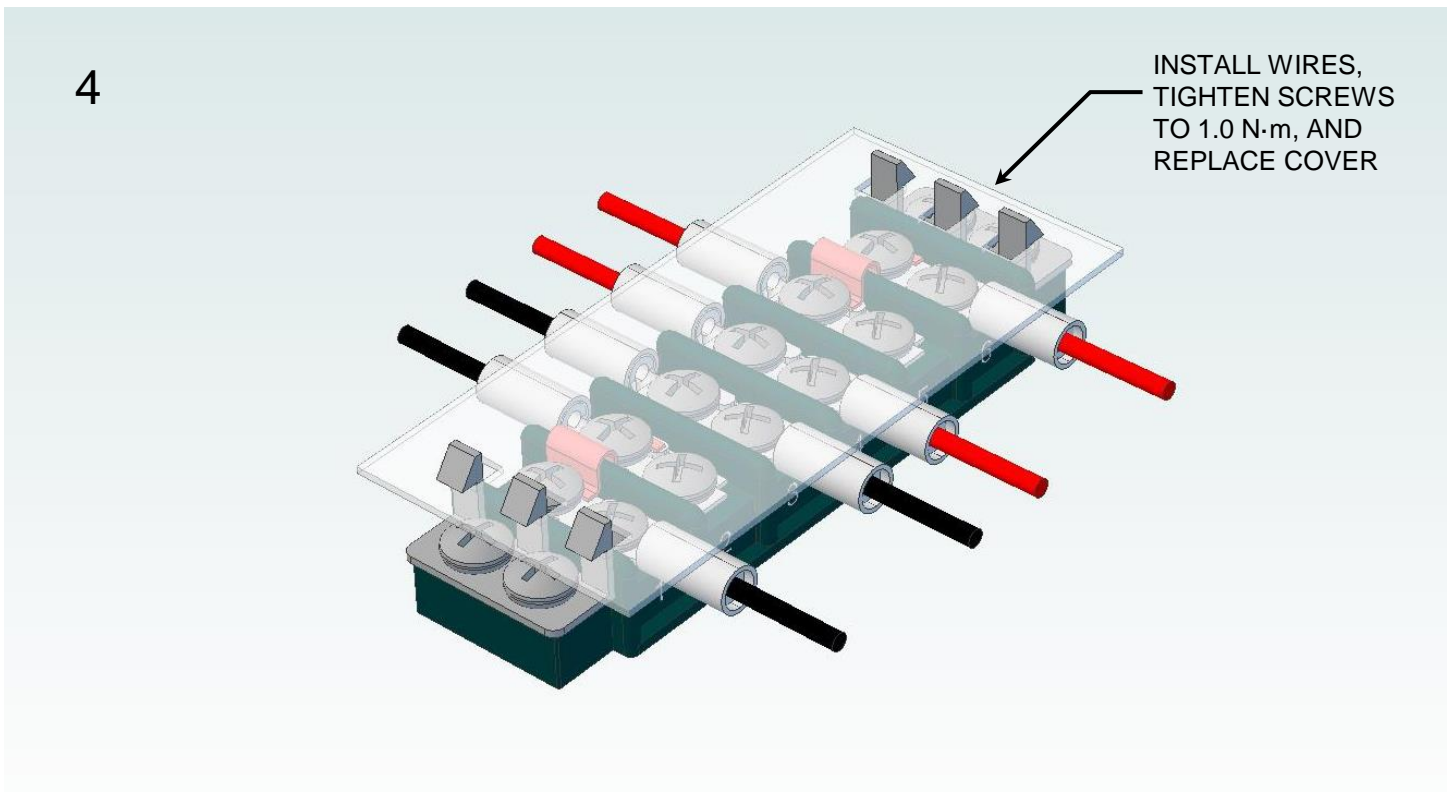https://tetech.com/ • cool@tetech.com • 231-929-3966 • 1590 Keane Drive • Traverse City, MI 49696

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

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3

External (ambient) Fan Power (+)

Thermoelectric (TE) Device (+)

Thermoelectric (TE) Device (-)

External (ambient) 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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