



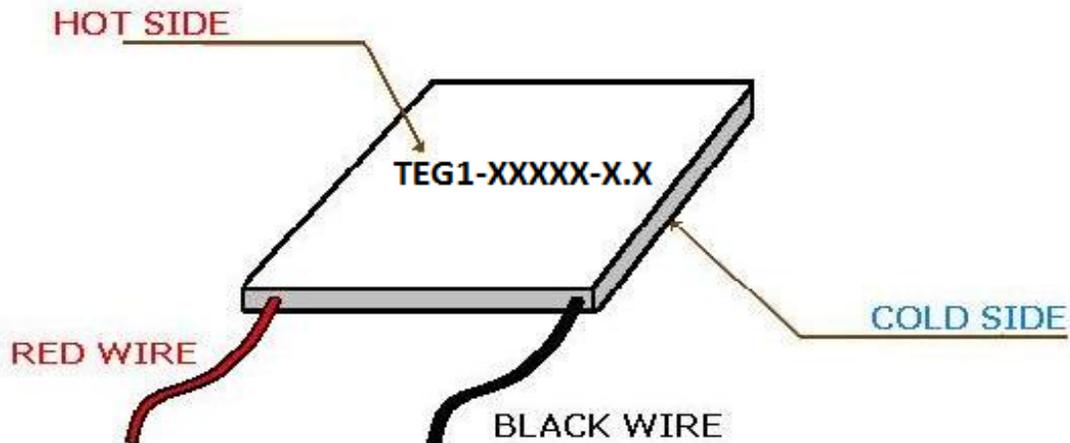
TM

Thermal Electronics Corp.

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Application Notes

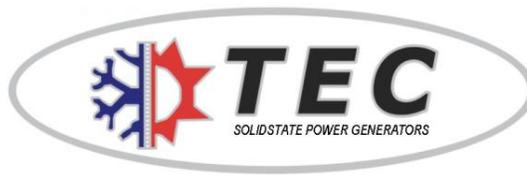
Installation must be performed as stated below. Failure to follow all instructions could result in premature destruction of the TEG module.



1. Look at the drawing above making sure that the module is in the correct orientation for assembly.
2. Assembler **MUST** attach "**HOT SIDE**" to the heat source.
3. Attach to cold source(example cold liquid sink or heat sink w/fan) before applying heat to hot side.
4. Make sure all surfaces are flat and smooth.
5. Always apply a "**load**" for better heat movement thru the modules.
6. **HOT SIDE** always has model number stamped or embossed on the face.

Modules that have Graphite covered require **NO** Thermal Grease

Uniform heat flux is essential for good power output. Make sure a minimum of ¼" or 5 mm material is used for both hot side and cold side assembly.



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Specification for Power Modules TEG1-XXXX-X.X:

Thermoelectric power module TEG1-XXXX-X.X is designed and manufactured using technology that allows for converting heat directly into electricity. These modules are constructed of Bismuth-Tellurium (Bi-Te) based thermoelectric semiconductor material. The modules are designed with the ability to operate at temperatures continuously to 320°C to 340C (608°F to 644°F) **HEAT SOURCE.**

It is advised to **regulate the TEG to temperatures not above 280°C (536°F) at the hot side junctions for longevity reasons.** The module will generate DC current as long as there is a temperature difference (ΔT) across the module. As the difference becomes larger, greater amounts of DC current will be produced.

Junction temperature- refers to temperature directly on the face of the hot side ceramic of the module.

*****PLEASE TAKE NOTE: Before applying a heat load.**

IMPORTANT:

Always makes sure that the cold side is active. The cold side of the TEG cannot go above 190°C. The construction of the TEG uses two methods of bonding. This allows the hot side to be exposed to greater temperature than the cold side.

Foot note: At 27°C the Module has an AC resistance of (Refer to website for your particular model) Ohms measured @ 1000 Hz Our limited warranty of this product from defect, but during assembly this procedure must be followed, failure to do so will null and void any warranty. We take no responsibility for improper assembly!

3. Clamping the modules by bolting. Clamping module between the heat source and the cold side sink by simply bolting along the edges of the assembly, you should take care and follow points below for assembly:

- 1.) Before bolting, apply a light load in line with center of module by using clamp or weights. Bolt carefully, by applying torque in small increments, alternating between screws. Use a torque limiting screw driver. The recommended compression for a module in such assembly is 40 to 50 pounds per square inch of module surface area.

Using the following equation to determine torque per screw:

$$T = (C \times D \times F \times \text{in}^2) / (\# \text{ of screws})$$

T = torque per screw (in-lbs)

C = torque coefficient (0.20 as received, 0.15 lubricated)

D = nominal screw size (4/40 = 0.112, 6/32 = 0.138, 8/32 = 0.164)

F = Force (lbs / in²)

in² = Module surface area (length x width)