



## **TEG12VDC- 24AIR VDC FORCED AIR COOLING**

The TEG12VDC -24AIR has a peak rating of 30 watt . The forced air TEG Generator works up to a hot surface temperature of 400°C (750°F). A pipe vent should be used to allow cooler air to enter the intake fan to maintain DT (Not Supplied). The OUTPUT from the TEG is regulated with a Boost/Buck constant voltage/constant current DC to DC converter that can be adjusted from ~5V to 16V Factory set at 13.8V(VC) and .6amps (CC). This is ideal for charge a 5v to 12VDC battery when set at 6.8V to ~14.2V based on charging specifications found on the battery label. To adjust either Voltage↑ or Current ↑ turn screws clockwise slowly.

(OUTPUT BASED ON MAXIMUM HOT SIDE TEMPERATURE and DT).



DESIGNED & MANUFACTURED IN CANADA subcomponents from USA

<b>PART NUMBER</b>	<b>TEG12VDC-24</b>
<b>OUTPUT POWER</b>	<b>30 watts MAXIMUM</b>
<b>OUTPUT VOLTAGE</b>	<b>Preset by Factory to 13.8V Charge Voltage for 12VDC</b>
DC to DC Constant Voltage/ Constant Current Converter	Output Range 5VDC to 16VDC Factory set to 13.8V
<b>Output voltage for charging circuit</b>	Factory set to 13.8V Charge voltage
<b>Recommended Maximum Hot side temperature 400°C</b>	
<b>Fan Specification</b>	<b>5 watt 89 CFM 120mm 5" fan IP55</b>
<b>Dimensions</b>	<b>13"(33cm) x 5" (12.7cm) x 4.123" (10.47cm)</b>
<b>Weight</b>	<b>11 lbs.(5 Kgs.)</b>

**Designers of advanced TEG Generators using state of the art heat Transfer patented technology**

N.A.1-800-769-2395

International 1-905-751-1362

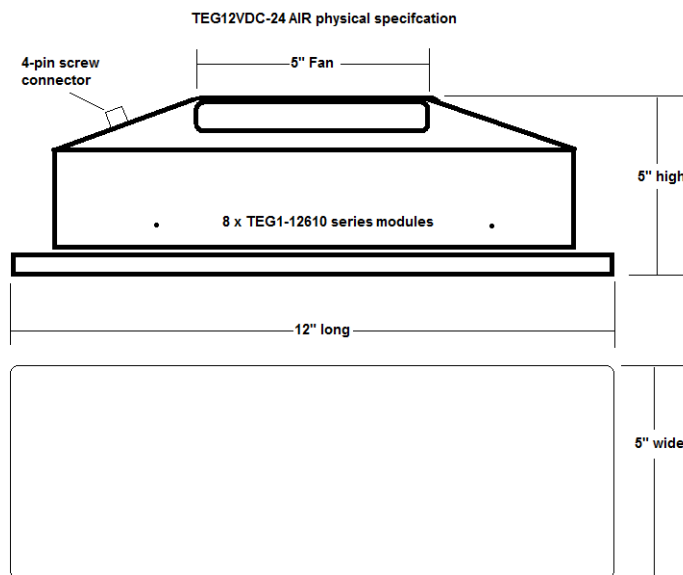
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## CRITICAL NOTES FOR OPERATION:

- **Attach to a Battery immediately so Voltage does not go above 30V which is the limit of DC to DC converter!** A diode is included to prevent reverse voltage to DC Converter.
- **GENERATOR REQUIRES cold air** on the fan side for best performance!
- We **STRONGLY** advise a 5" to 6" tube air duct from outside that will draw cold air through the fan onto the heat sinks which provides two critical requirements!
  1. Creates critical DT that will increase and maintain optimum power generation.
  2. Protects the fan from overheating. The fan is rated for 160°F or 70°C maximum.
- Do not exceed 750°F hot side temperature on the hot side or you will damage the TEG modules.
- The controller is a boost /buck constant voltage/constant current charge controller. It is set from the factory at 13.8V to 14.2V. Constant current set to 1.250 amps. If you see green light on you are charging at the max current.
- We also recommend charging a battery and drawing loads (lights, motors, etc...) from the battery NOT from the TEG output directly. **Never place the AIR TEG on a cold stove and allow the TEG to heat up with the stove as both the cold and hot side of the TEG will heat up together and NO DT will be established! Waiting for the Heat source to be fully HOT before placing the Air unit on it unless it is a flame. The fan should start in about 1 minute depending on source, always attach the clamps to the battery or load before the unit hot side heats up. The DC to DC converter max voltage is 30V and the TEG with No load can easily reach this with a good heat source.**
- FAN: 5 inch (120mm) IP55 protection. 3 watt consumption at ideal tested speed or 1.5 watt fan depending on model!



Design and specifications subject to change without notice



**WHAT IS NOT COVERED:** Any damage caused by misuse, abuse, accident (dropping or otherwise shocking the Generator) normal wear & tear, or physical damage. Also any incidental or consequential damage or loss is not covered. Improper installation will Null and void all warranty.

There are no warranties of merchantability or of fitness expressed or implied, which extend beyond the description on the face hereof. In no event shall Thermal Electronics Corp. be liable for damages in excess of the purchase price. Thermal Electronics Corp. neither assumes nor authorizes any other person to assume for it any liability in connection with this product.

Abuse, misuse or mistreatment (i.e. if you overheat or drop the Generator) VOIDS all warranties. We do our best to make all of our Generators as durable as possible. However there is no way for us to fully prevent all damage due to overheating, or dropping. Warranty is limited to replacement of parts at the full discretion of the manufacturer and is limited to 1 year from date of purchase.



Example above of a typical installation

## **Caution!**

**It is critical that the surface of the stove already be hot before the TEG is placed on the stove. This is because on stove start-up of the wood stove the stove warms up slowly not allowing a DT to take hold. Therefore, the entire TEG heats up cold and hot side together never allowing a Differential between the hot and cold side to be established. Once heat source is fully engaged then place the TEG air unit so, that the hot side heats up rapidly before the cold side can heat up and the fan will start.**

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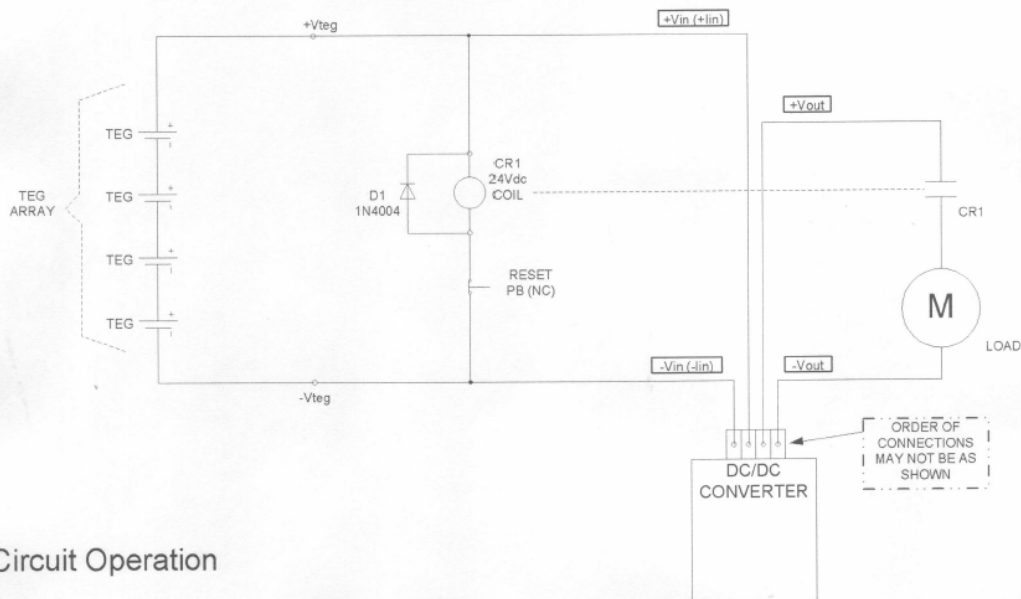
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Figure 4

Reliable DC/DC Converter start-up circuit removes the Load from the Output until TEGs produce enough Power to sustain continuous operation.



### Circuit Operation

- When  $V_{teg}$  is less than 8 Vdc, DC/DC Converter Output is OFF.
- When  $V_{teg}$  is 8 ~ 19Vdc, DC/DC Conv. Output is ON but Load is not connected to Output.
- When  $V_{teg}$  is > approx. 19Vdc, Control Relay CR1 Energizes and Load is connected to DC/DC Converter Output.
  - When Load is Connected,  $V_{teg}$  will reduce due to voltage drop across TEG source resistance.
- While  $V_{teg}$  is 8 ~ 24Vdc, Load will run with DC/DC Converter Output voltage & current as set by the Converter.
- When  $V_{teg}$  drops below approx. 4Vdc, or if Reset PB is pressed, Control Relay CR1 will de-energize and Load will be disconnected from the DC/DC Conv. Output.
  - This will permit  $V_{teg}$  to rise to near Open Cct Voltage

The switch and relay are a pre- caution only. As long as the clamps are connected to a load you will not exceed the Maximum voltage of the DC to DC converter. Always have a load ( Battery or Motors) on the output to reduce the possibility of exceeding maximum volatge of the converter which is 30V.