Safety instructions: GEN-0001

“ic” Intrinsic safety

THERMOELECTRIC GENERATOR

AEInnova
Alternative
Energy Innovations

Contents

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The following complementary documents are available in the Download Centre:

- *User Manual MUS-TGDuo*

Please scan the QR Code to access the Download Centre or click the link below: https://aeinnova.com/download-center	

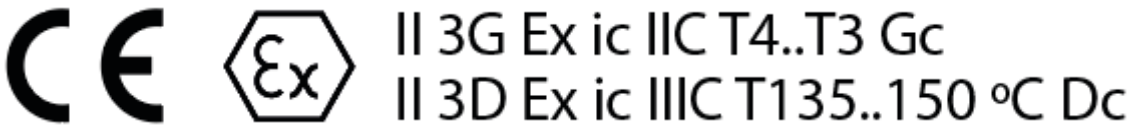
1 Safety information

- Carefully read and understand these instructions before installing or performing any maintenance on the module.
- Installation and maintenance of this module must be conducted exclusively by qualified and trained personnel, in strict accordance with applicable national regulations and relevant standards.
- This module is intended solely for use in **Zone 2 (gases)** and **Zone 22 (dusts)**. Installation in other ATEX zones is strictly prohibited.
- All technical specifications indicated on the ATEX marking label and in this manual must be strictly observed and complied with.
- Technical data provided on the enclosure labels must also be fully complied with.
- This equipment must only operate within its specified parameters. Do not use the device if it is damaged or malfunctioning. During installation, maintenance, and cleaning, compliance with all applicable explosion protection standards (e.g., **EN 60079-14**, **EN 60079-17**) and accident prevention regulations is mandatory.
- The equipment must not be stored or operated outside the temperature range specified in the Ex documentation.
- Prevent any accumulation of dust around the module.
- Clean the module only with a damp cloth and/or approved antistatic cleaning agents. Ensure the device is completely dry before reactivation.
- Do not paint or coat the enclosure in any way.
- Any modifications or design alterations to the equipment are strictly forbidden.
- Instruments containing electrostatically chargeable plastic components must take electrostatic charging and discharging into account. Affected elements include: plastic enclosures and parts, connection cables, and labels.
- To prevent electrostatic charging, avoid friction on surfaces and never dry-clean any part of the equipment.
- Ensure correct installation to minimize electrostatic risk during operation, maintenance, and cleaning, as well as process-related influences. Clean the equipment only with a damp cloth and/or antistatic cleaning agents and allow it to dry completely.
- **Warning labels** affixed to the equipment indicate potential hazards and must be observed at all times:

WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCCTIONS

2 Area of applicability

The equipment is designed for operation in the following ATEX zones: Zone 2 (gas atmosphere) and Zone 22 (dust atmosphere).



Ex ic IIC T4..T3 Gb = application in classified area of zone 2, without limitation by type of explosive substance whose auto-ignition temperature meets T4/T3 temperature classes.

II 3D Ex ic IIIC T135..150 °C Dc = application in classified areas of zone 22, without limitation by type of explosive substance whose auto-ignition temperature is higher than 135 °C or 150 °C in the form of a cloud of dust.

3 Installation

- Handle the components of this module with care. Read the installation instructions thoroughly before beginning the installation and follow them precisely during the installation process.
- Please contact the manufacturer or supplier in the following cases:
    - The installation instructions are unclear or if there is any uncertainty regarding the installation procedures or safety precautions.
    - If any component is found to be missing.
- The module must be installed strictly in accordance with the manufacturer's installation instructions and recommendations. **Do not use it for any purpose other than it is intended use**.
- **Alternative Energy Innovations S.L.** as the manufacturer, is not responsible for damages or consequences resulting from improper installation or installation in an unsuitable location or environment or use of the product outside its specified purpose.
- The installation of the module must be performed exclusively by qualified personnel.
- Installation shall comply with the **EN 60079-14** standard and/or applicable local/national regulations governing installations in hazardous areas.
- Installation must not be carried out until the installer has thoroughly read and understood all **warnings, cautions, and procedures** outlined in this manual.

	**Hot surface** Skin Burn hazard during operation. **Do not touch**
	**Danger of physical burns** with the surface of the appliance. Installation or handling of the equipment during operation or recently disconnected is prohibited. It is recommended to measure the surface temperature of the equipment whenever it requires handling to ensure an adequate contact temperature. The use of thermal protection gloves is strongly recommended whenever the equipment is manipulated.
	**Danger of cutting** by the heatsink of the Thermoelectric generator module. Handle the module with mechanical gloves to prevent cuts on your hands**.**
	Although the module is protected, none of its connectors should be left disconnected. They must either be connected or sealed with protective caps.

4 Electrical data

The following parameters apply to the Thermoelectric generator designed with intrinsic safety type of protection (Ex i):

Output power parameters:

- U_o = 5,88 V
- I_o = 0,876 A
- P_o = 1,31 W
- C_o = 4 µF (IIC) / 470 µF (IIB)
- L_o = 23 µH (IIC) / 92 µH (IIB)

These values represent the maximum permitted parameters for safe connection to intrinsically safe circuits, in accordance with the ATEX directive and the relevant standards.

5 Thermal data

The approval is valid under the following conditions:

- Compliance with the temperature range indicated in Table 1 (green-shaded cells).
- Ambient temperature range: -20 °C to 50 °C.
- Maximum surface temperature in contact with the module: 50 °C to 150 °C.
- Maximum temperature difference between ambient and surface temperature: 150 °C.

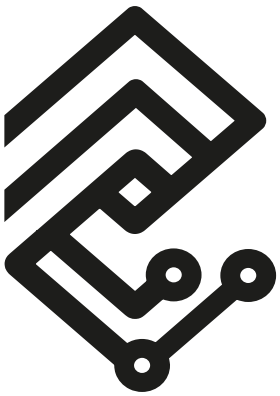
The operation of the module outside the conditions stated above is entirely at the operator's own risk and responsibility.

Note: The temperature values presented in Table 1 were determined under optimal installation conditions, with the module placed on a flat, thermally conductive surface.

Table 1.- Thermoelectric generator module - hot surface temperature range vs ambient temperature in °C.

T_{Source}→ T_{Amb}↓	50	60	70	80	90	100	110	120	130	140	150
50											
40											
30											
20											
10											
0											
-10											
-20											

Temperature Compliant
Temperature difference too small → electrical supply too small to power the external IIoT Wireless module
Temperature difference too high → equipment does not match ATEX requirements



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