



Let Our Power Give You Freedom

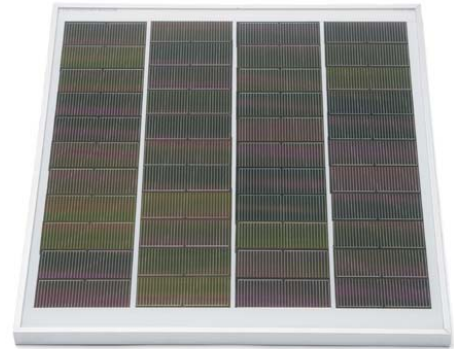
GSF Solar Power Module - 12 Watt

The GSF Solar Power Module uses high efficiency thin-film Copper Indium Gallium DiSelenide (CIGS) solar cells encapsulated in advanced polymers. This is the next generation of solar power modules intended for off grid applications needing reliable lower wattage power designed to last for years.

Product Features

GSF Solar Power Modules use Copper Indium Gallium diSelenide (CIGS) technology:

- High efficiency thin-film technology
- Cell efficiency increases after outdoor exposure
- Highest daily energy yield per rated watt
- Proven outdoor reliability
- CIGS technology has no light-induced degradation
- CIGS technology is superior under low light level conditions
- Operating voltage designed for optimal charging of lead-acid batteries



Applications

GSF Solar Power Modules can be used in these applications:

- Sailboat charging systems
- Railroad signals
- Recreational vehicles
- Emergency communication systems
- Water quality and environmental data monitoring systems
- Microwave/Radio repeater stations
- Aviation obstruction lights
- Desalination systems
- Medical facilities in rural areas
- Remote lighting

Physical Features

GSF Solar Power Modules have these physical features:

- Lightweight design including frame
- Standard frame for easy installation
- Low iron tempered glass for maximum light transmission and weather resistance
- Sealed junction box with lead wires for easy installation in the field
- Highly rated lead wiring to prevent premature aging of covering and insulation

Easy to install:

- Torsion and corrosion resistant anodized aluminum frame ensures dependable performance under harsh weather conditions
- Junction box with 15' (4.6 m), 18 AWG cable with stripped leads
- 6 mounting holes per module
- 1 grounding hole
- Blocking Diode



Performance Warranty

GSF Solar Power Modules performance warranty provides:

- 2 year limited warranty on workmanship and materials
- 10 year limited warranty on power output

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Electrical Features

Electrical Specifications	PN 33010-O
Maximum Power	12 W
Current at Operating Voltage	0.76 A
Operating Voltage	15.8 V
Open Circuit Voltage (Voc)	23 V
Short Circuit Current (Isc)	.9 A
Temperature Coefficient for Power	-0.5% / °C
Temperature Coefficient for Voltage	-0.5% / °C

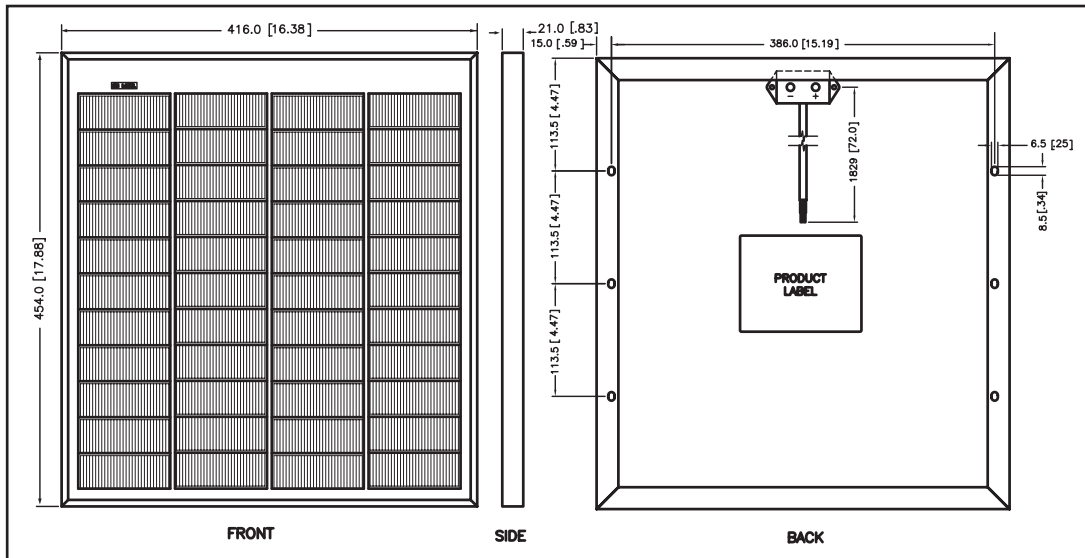
Data at Standard Test Conditions (STC)
 STC: irradiance level 1000W / m², spectrum AM 1.5 and cell temperature 25° C
 Expose the module to sunlight for 1-2 days for best measurement results. Rating tolerance +/- 15%

Physical Features

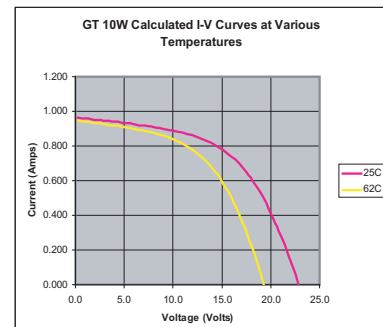
Dimensions	PN 33010-O
Length	454 (17.88 in)
Width	416 (16.38 in)
Depth	21.0 (.83 in)
Weight (with frame)	2 (4.5 lbs)

Quality Assurance

- High humidity cycling test
- Extensive field exposure test
- Light exposure test



WARNING – Solar Power Modules generate electricity when exposed to light, even when not connected in a circuit. Shocks and burns can result from contact with module output wiring, misuse or improper connections. Check with installer.



The I/V graph above shows the typical performance of the solar module at STC