

## **410W Black Mono PERC Solar Panel**

### **Introduction:**

- Overview of Suntzu

Sun Tzu Power is an engineering, design and manufacturing company with its focus on the development and manufacturing of advanced Energy Storage products for residential, commercial and industrial applications. Sun Tzu Power factories are Tier One facilities, and have decades of experience in Energy Storage, to manufacture robust, state-of-the-art Energy Storage products. Sun Tzu Power will launch a new US based Energy Storage factory in California in 2025.

### **Product Specifications:**

- Key Features and Benefits

- **Better Temperature Coefficient**

- Excellent temperature coefficient gives higher yield in the long term

- **Low-light Performance**

- Outstanding performance in weak-light conditions

- **PID Free**

- Excellent PID resistance

- **Positive Tolerance**

- Positive tight power tolerance of +5w

- **Quality Assurance**

- Double stage 100% EL inspection warranting defect-free products, with 8 high tech cameras to zoom in for a closer examination

- **Durability and Weather Resistance**

- Severe salt mist, ammonia and blown. Certified for high snow (5400 pa) and wind (2400 pa) loads

- Technical Specifications

# MONO MODULE

STS-410P-54BB  
108 PCS HALF-CUT BLACK  
400W – 415W



## Better Temperature Coefficient

Excellent temperature coefficient gives higher yield in the long term



## Low-light Performance

Outstanding performance in weak-light conditions



## PID Free

Excellent PID resistance



## Positive Tolerance

Positive tight power tolerance of + 5W



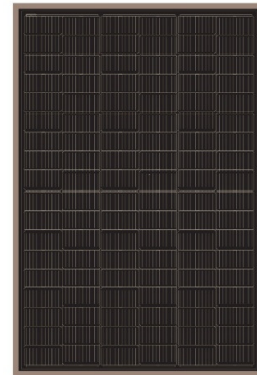
## Quality Assurance

Double stage 100% EL inspection warranting defect-free products, with 8 high tech cameras to zoom in for a closer examination



## Durability And Weather Resistance

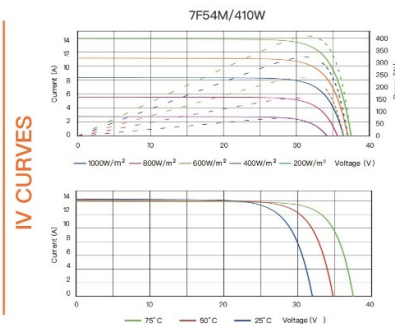
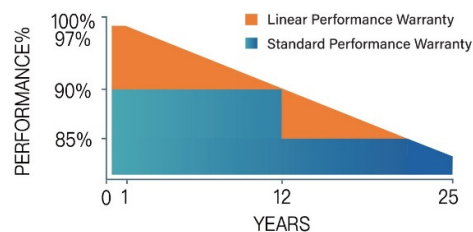
- Severe salt mist, ammonia & blown sand resistance for seaside, farm and desert environments.
- Certified for high snow (5400 pa) and wind (2400 pa) loads



MADE IN CALIFORNIA



25 years Product Warranty  
25 years Linear Warranty  
25 years Workmanship Warranty



## **ELECTRICAL CHARACTERISTICS AT STC**

Type	STS-400P-54BB	STS-405P-54BB	STS-410P-54BB	STS-415P-54BB
Maximum Power (Pmax)	400W	405W	410W	415W
Open Circuit Voltage (Voc)	37.2V	37.4V	37.6V	37.8V
Short Circuit Current (Isc)	13.70A	13.76A	13.82A	13.88A
Voltage at Maximum Power (Vmp)	31.0V	31.2V	31.4V	31.6V
Current at Maximum Power (Imp)	12.91A	12.99A	13.06A	13.14A
Module Efficiency(%)	20.49	20.74	21.00	21.25
Operating Temperature	-40°C to +85°C			
Maximum System Voltage	1000V DC/1500V DC			
Fire Resistance Rating	Type 1 (in accordance with UL 1703)/Class C(IEC61730)			
Maximum Series Fuse Rating	25A			
STC: Irradiance 1000W/m2, Cell temperature 25°C, AM1.5; Tolerance of Pmax: ±3%; Measurement Tolerance: ±3%				

## **ELECTRICAL CHARACTERISTICS AT NOCT**

Maximum Power (Pmax)	300W	304W	308W	312W
Open Circuit Voltage (Voc)	34.2V	34.4V	34.6V	34.8V
Short Circuit Current (Isc)	11.10A	11.15A	11.20A	11.25A
Voltage at Maximum Power (Vmp)	28.2V	28.4V	28.6V	28.8V
Current at Maximum Power (Imp)	10.64A	10.71A	10.77A	10.84A
NOCT: Irradiance 800W/m2, Ambient temperature 20°C, Wind Speed 1 mis				

## **MECHANICAL DATA**

Cell type	Monocrystalline PERC 182*91mm
Number of cells	108 (6x18)
Module dimensions	1722x1134x30mm (67.80x44.65x1.18inches)
Weight	21.5kg (47.4lbs)
Front cover	3.2mm (0.13inches) tempered glass with AR coating
Frame	Anodized aluminum alloy
Junction box	IP68, 3 diodes
Cable	4mm2 (0.006inches2), Portrait: 300mm (11.81 inches)
Landscape	1200mm (47.24inches)
Connector	MC4 or MC4 compatible

## **TEMPERATURE CHARACTERISTICS**

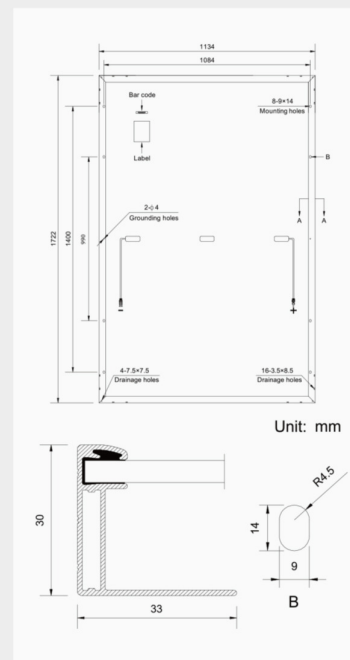
Nominal Operating Cell Temperature (NOCT)	43°C±2°C
Temperature Coefficients of Pmax	-0.36%/°C
Temperature Coefficients of Voc	-0.28%/°C
Temperature Coefficients of Isc	0.05%/°C

## **PACKAGING**

Standard packaging	31 pcs/pallet
Module quantity per 53' container	1054 pcs
Module quantity per 40' container	806 pcs

Specifications in this datasheet are subject to change without prior notice.

## **ENGINEERING DRAWINGS**



## **Warranty Information:**

### **GMI PHOTOVOLTAIC MODULE LIMITED WARRANTY (USA)**

**Effective Date:** February 7, 2025

**Applies to Product Reference Number:**

410W

555W

#### **Limited Warranties**

GMI, Inc. warrants that:

(1) Product Warranty. Your photovoltaic modules ("Modules") will be free from defects in design and materials for 25 years from the date your Modules are installed, except as otherwise provided in the Module Warranty below.

(2) Module Warranty. The power output capacity of your Modules will be at least 98.0% of the "Rated Peak Power"<sup>1</sup> specified on the Modules data sheet (under "STC" for Standard Test Conditions), 1 year after your Modules are installed. Then, the power output capacity will decline by no more than 0.54% per year for the following 24 years.

Note that this Limited Warranty (including its duration) is subject to certain exclusions and limitations that are set out in detail below.

#### **Remedies**

If your Modules fail to comply with the above Product or Module Warranties, GMI Inc will, in its sole discretion, repair, replace or compensate you for the defective Module(s) (using new or refurbished parts).

If your Modules are repaired or replaced under this Limited Warranty, the remainder of the original warranty period will apply to the repaired or replaced portion of your Modules. The original warranty period does not extend because your Modules are repaired or replaced. These remedies are your sole remedy, and GMI Inc's sole liability, for any claims arising from or relating to the Limited Warranty or your Modules.

#### **What Products are Covered?**

This Limited Warranty applies to any Modules that (1) were purchased from GMI Inc in the United States of America; (2) have one of the product reference numbers mentioned above; and (3) are installed in the United States of America.

This Limited Warranty does not cover (i) the workmanship of the installer of your Modules (including the installer's failure to comply with an applicable installation manual); (ii) materials and equipment supplied by your installer and not GMI Inc (which may include, for example, a roof underlayment); or (iii) power electronics (meaning as applicable, the inverter, rapid shut-down device and mid-circuit interrupters).

### **Who Can Make a Claim?**

Limited Warranty claims can be made by or on behalf of the end user who acquired the Modules for installation on his or her Home, or any subsequent owner of the Home who provides proof of ownership of the Home.

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<sup>1</sup> At the time of installation, the Modules' actual peak power may be up to 5% greater than the rated peak power indicated in the data sheet, but the Module Warranty is measured against the rated peak power.

**Agreement to Arbitrate.** Please carefully read this provision, which applies to any dispute between you and GMI Inc, Inc. and its affiliates (together "GMI Inc").

If you have a concern or dispute, please send a written notice describing it and your desired resolution to [support@greenmotorsindustry.com](mailto:support@greenmotorsindustry.com).

If not resolved within 60 days, you agree that any dispute arising out of or relating to any aspect of the relationship between you and GMI Inc will not be decided by a judge or jury but instead by a single arbitrator in an arbitration administered by the American Arbitration Association (AAA) under its Consumer Arbitration Rules. This includes claims arising before this Agreement, such as claims related to statements about our products. We will pay all AAA fees for any arbitration, which will be held in the city or county of your residence. To learn more about the Rules and how to begin an arbitration, you may call any AAA office or go to [www.adr.org](http://www.adr.org).

The arbitrator may only resolve disputes between you and GMI Inc, and may not consolidate claims without the consent of all parties. The arbitrator cannot hear class or representative claims or requests for relief on behalf of others purchasing or leasing GMI Inc products. In other words, you and GMI Inc may bring claims against the other only in your or its individual capacity and not as a plaintiff or class member in any class or representative action. If a court or arbitrator decides that any part of this agreement to arbitrate cannot be enforced as to a particular claim for relief or remedy (such as injunctive or declaratory relief), then that claim or remedy (and only that claim or remedy) shall be severed and must be brought in court and any other claims must be arbitrated.

If you prefer, you may instead take an individual dispute to small claims court.

You may opt out of arbitration within 30 days after signing this Agreement by sending a letter to: GMI Inc, 3200 Guasti Road, Ontario, California, 91761, USA, stating your name, product and intent to opt out of the arbitration provision. If you do not opt out, this agreement to arbitrate overrides any different arbitration agreement between us, including any arbitration agreement in a lease or finance contract.

### **Maintenance and Operation**

GMI Inc may provide you with an applicable owner's manual and/or operation and maintenance manual, and may provide updated versions of such manual, including by publication on GMI Inc's website (collectively, the "Owner's Manual"). The Owner's Manual may provide you with operation and maintenance instructions, answers to frequently asked questions, troubleshooting tips and service information. If applicable, you must use and maintain the Modules in accordance with the instructions in the Owner's Manual.

If you think there is a problem with your Modules, you may call us. As a first step we will review historical energy production data from your system to remotely diagnose and resolve any problems. If we determine that there is a problem but we cannot diagnose the specific problem remotely, we will send a qualified professional to your Home. If repairs are needed and covered by this Limited Warranty, you will not be charged for the repairs. If repairs are not covered by this Limited Warranty, we will charge you our then-current site visit fee plus the cost for any work you authorize us to do.

### **Limitations and Disclaimer**

**THIS LIMITED WARRANTY IS THE ONLY EXPRESS WARRANTY MADE IN CONNECTION WITH YOUR MODULES. Any other warranties, remedies and conditions, whether oral, written, statutory, express or implied (including any warranties of merchantability and fitness for purpose, and any warranties against latent or hidden defects) are expressly disclaimed. If such warranties cannot be disclaimed, GMI Inc limits the duration of and remedies for such warranties to the durations and remedies described in this Limited Warranty. This Limited Warranty does not warrant any specific electrical performance of your Modules other than that described in the Module Warranty.**

### **Relationship with Applicable Law**

This Limited Warranty gives you specific rights, and you may also have other rights which vary from state to state. For example, some states do not allow limitations on how long an implied warranty lasts, meaning the limitations in the "Limitations and Disclaimer" section above may not apply to you. The terms of this Limited Warranty will apply to the extent

permitted by applicable law. For a full description of your legal rights you should refer to the laws applicable in your jurisdiction.

### **General Exclusions**

This Limited Warranty does not apply to any breach of this Limited Warranty directly or indirectly caused by or resulting from any of the following: (i) abuse, misuse or negligence, (ii) accidents or other events beyond GMI Inc's (or its affiliates', subcontractors' or representatives') reasonable control, including but not limited to lightning, flood, earthquake, fire, wind events with a gust velocity greater than 139 miles per hour, hail, corrosion if the installation is within 50 meters of salt water, salt spray, or salt fog, and other extreme weather events; (iii) failure to operate or maintain your Modules in accordance with the Owner's Manual; (iv) removal or reinstallation of your Modules at a location other than the original installation location; (v) strikes by balls or other objects, dirt, dust, bird excrement, animals, insects, foliage or algae growth; (vi) water entering around a fitting, accessory or other material not supplied by GMI Inc; (vii) any material or equipment not supplied by GMI Inc that the Modules may be connected to; or (viii) someone other than GMI Inc installing, removing, re-installing or repairing the Modules (including, but not limited to, damaging the Modules during such work).

In addition, this Limited Warranty does not cover (a) conditions at your Home not caused by our breach of this Limited Warranty, including, but not limited to, unpermitted conditions, improper electrical wiring, defects in the roof structure that cause it to sag over time, chimney or exhaust vent heights that are reduced by your Modules, cracked or crumbling masonry, or inadequate attic ventilation; (b) normal wear and tear or deterioration, or superficial defects, dents or marks that do not impact the performance or functionality/integrity of your Modules; (c) damage or deterioration that occurs after the expiration or voiding of all or part of the Limited Warranty; or (d) theft or vandalism of your Modules or any of its components.

### **Modifications and Waivers**

No person or entity, including a GMI Inc employee or authorized representative, may modify or waive any part of this Limited Warranty, or make any additional promises to you about the Modules that are not in this Limited Warranty. GMI Inc may occasionally offer to pay some or all of the cost of certain repairs that are not covered by this Limited Warranty. GMI Inc reserves the right to do so without incurring any obligation to make a similar payment to other Module owners.

### **Limitation of Liability**

**GMI INC IS NOT LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGES ARISING OUT OF OR RELATED TO THIS LIMITED**

**WARRANTY, REGARDLESS OF THE FORM OF ACTION AND REGARDLESS OF WHETHER GMI INC HAS BEEN INFORMED OF, OR OTHERWISE MIGHT HAVE ANTICIPATED, THE POSSIBILITY OF SUCH DAMAGES. GMI INC IS NOT LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL, EXEMPLARY, PUNITIVE, OR OTHER DAMAGES OF ANY KIND RELATING TO ANY DAMAGE TO YOUR HOME OR TO YOUR HOME'S CONTENTS WHETHER FOR BREACH OF THIS LIMITED WARRANTY, NEGLIGENCE, STRICT LIABILITY OR OTHER CLAIMS DERIVED IN TORT OR FOR ANY OTHER CAUSE. GMI INC'S AGGREGATE LIABILITY ARISING OUT OF ALL CLAIMS MADE UNDER THIS LIMITED WARRANTY AND (IF APPLICABLE) ALL CLAIMS MADE UNDER ANY AGREEMENT WITH GMI INC FOR THE PURCHASE AND INSTALLATION OF YOUR MODULES, WILL NOT EXCEED THE AMOUNT YOU PAID FOR YOUR MODULES. SOME STATES DO NOT ALLOW, OR RESTRICT, THE EXCLUSION OR LIMITATION OF DAMAGES, INCLUDING INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU, OR MAY ONLY APPLY TO A LIMITED EXTENT.**

#### **Governing Law**

All matters arising under or relating to this Limited Warranty shall be governed by the internal substantive laws of the state where your Modules are installed, except to the extent inconsistent with or pre-empted by federal law and without regard to the state's choice of law rules. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded.

#### **Claims Process**

In order to make a claim under this Limited Warranty, please contact us as soon as possible after discovering the problem. Please have available (i) your name, address and a description of the alleged failure(s), (ii) any pictures or other materials you have that show the problem, and (iii) your Modules' original installation date (if known).

#### **GMI Inc Contact Details**

- GMI Inc website for submitting a Service Request Form:

[www.greenmotorsindustry.com](http://www.greenmotorsindustry.com)

- GMI Inc email: [support@greenmotorsindustry.com](mailto:support@greenmotorsindustry.com)

- GMI Inc address: GMI Inc, 3200 Guasti Road, Ontario, California, 91761, US