



# Series 7 *TR1*.

## 465-500 Watt Thin Film Solar Module

Series 7 *TR1* modules combine First Solar's thin film technology with a larger form factor and an innovative new back rail mounting system to deliver improved efficiency, enhanced installation velocity, and unmatched lifetime energy performance for utility-scale PV projects.



### More Lifetime Energy per Nameplate Watt

- Industry's best (0.3%) warranted degradation rate
- Superior temperature coefficient, spectral, and shading response
- No power loss from LID or LeTID
- Anti-reflective coated glass enhances energy production



### Optimized Module Design

- Optimized back rails enhance installation velocity
- Frameless design improves soiling and snow shedding
- Dual junction box design reduces wire management complexity and cost



### Unmatched Quality and Reliability

- End-to-end manufacturing process for globally consistent quality
- Tested and certified to IEC standards and beyond
- Durable glass/glass construction
- Immune to and warranted against power loss from cell cracking
- 30-year Linear Performance Warranty
- 12-year Limited Product Warranty



### Industry's Most Eco-efficient PV Solution

- Industry-leading carbon footprint, water footprint and energy payback time
- Globally available PV module recycling services



### Responsibly Sourced & Manufactured

- Manufactured in India for the US market

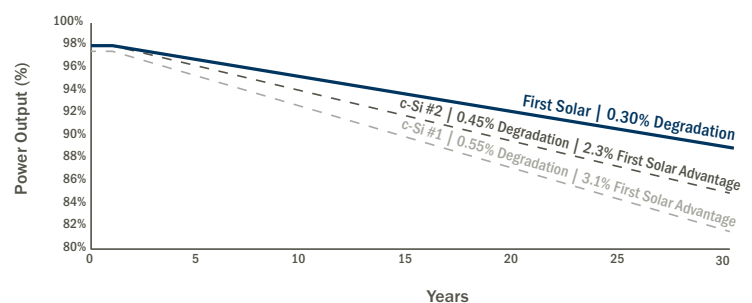
**17.9%**  
HIGH BIN EFFICIENCY

**30YR**  
LINEAR PERFORMANCE  
WARRANTY

**98%**  
WARRANTY START POINT

**0.3%**  
WARRANTED ANNUAL  
DEGRADATION RATE

**First Solar Lifetime Energy Advantage**  
From 30 Year Warranted Annual Power Degradation



Learn more about First Solar  
and Series 7 *TR1*  
at [firstsolar.com/S7](https://firstsolar.com/S7)

# Series 7 TR1.

## Electrical Specifications

MODEL TYPES: FS-7XXXA-TR1 (XXX = NOMINAL POWER)

RATINGS AT STANDARD TEST CONDITIONS (1000W/m<sup>2</sup>, AM 1.5, 25°C)<sup>2</sup>

|                                     |                      |                   |       |       |       |       |       |       |       |
|-------------------------------------|----------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|
| Nominal Power <sup>3</sup> (-0/+5%) | P <sub>MAX</sub> (W) | 465               | 470   | 475   | 480   | 485   | 490   | 495   | 500   |
| Efficiency (%)                      | %                    | 16.6              | 16.8  | 17.0  | 17.2  | 17.4  | 17.5  | 17.7  | 17.9  |
| Cell Efficiency (%)                 | %                    | 17.4              | 17.6  | 17.8  | 18.0  | 18.2  | 18.4  | 18.6  | 18.8  |
| Voltage at P <sub>MAX</sub>         | V <sub>MAX</sub> (V) | 175.1             | 176.0 | 177.0 | 177.9 | 178.8 | 179.7 | 180.7 | 181.6 |
| Current at P <sub>MAX</sub>         | I <sub>MAX</sub> (A) | 2.66              | 2.67  | 2.68  | 2.70  | 2.71  | 2.73  | 2.74  | 2.75  |
| Open Circuit Voltage                | V <sub>OC</sub> (V)  | 219.4             | 220.0 | 220.5 | 221.1 | 221.7 | 222.3 | 222.8 | 223.4 |
| Short Circuit Current               | I <sub>SC</sub> (A)  | 2.95              | 2.96  | 2.97  | 2.98  | 2.98  | 2.99  | 3.00  | 3.01  |
| Maximum System Voltage              | V <sub>sys</sub> (V) | 1500 <sup>5</sup> |       |       |       |       |       |       |       |
| Limiting Reverse Current            | I <sub>R</sub> (A)   | 5.0               |       |       |       |       |       |       |       |
| Maximum Series Fuse                 | I <sub>CF</sub> (A)  | 5.0               |       |       |       |       |       |       |       |

### TEMPERATURE CHARACTERISTICS

|   |                                    |   |
|---|------------------------------------|---|
| Module Operating Temperature Range          | (°C)                               | -40 to +85                                  |
| Temperature Coefficient of P <sub>MAX</sub> | T <sub>K</sub> (P <sub>MAX</sub> ) | -0.32%/°C [Temperature Range: 25°C to 75°C] |
| Temperature Coefficient of V <sub>OC</sub>  | T <sub>K</sub> (V <sub>OC</sub> )  | -0.28%/°C                                   |
| Temperature Coefficient of I <sub>SC</sub>  | T <sub>K</sub> (I <sub>SC</sub> )  | +0.04%/°C                                   |
| Nominal Operating Cell Temperature          | (°C)                               | 45  |

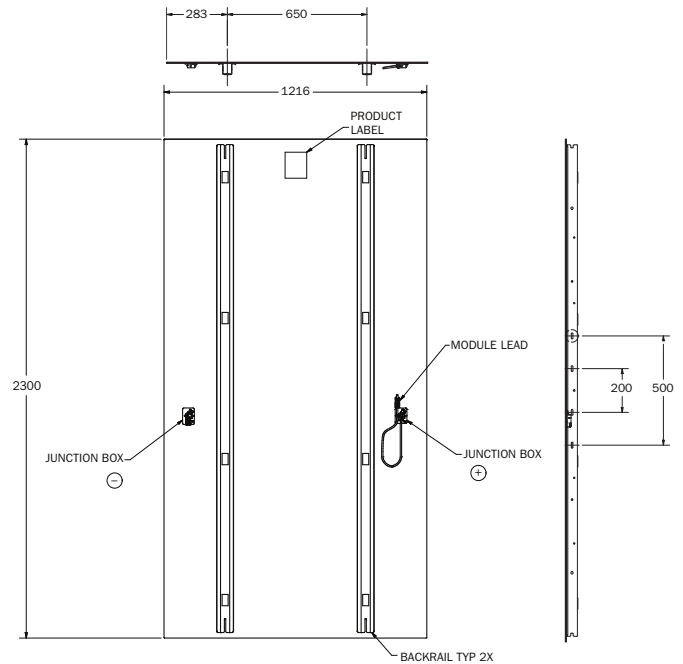
### MECHANICAL DESCRIPTION

|                         |   |
|-------------------------|---|
| Length                  | 2300mm  |
| Width                   | 1216mm  |
| Area                    | 2.80m <sup>2</sup>                            |
| Module Weight           | 39.7kg  |
| Leadwire <sup>6</sup>   | 2.5mm <sup>2</sup> , 650mm (+) & Bulkhead (-) |
| Connectors              | TE Connectivity PV4-S or alternate            |
| Junction Box            | IP68 Rated                                    |
| Bypass Diode            | N/A   |
| Cell Type               | Thin film CdTe semiconductor, up to 268 cells |
| Back Rail Material      | Galvanized steel                              |
| Front Glass             | Heat strengthened                             |
| Back Glass              | Heat strengthened                             |
| Encapsulation           | Laminate material with edge seal              |
| Frame to Glass Adhesive | Silicone                                      |
| Load Rating             | 2400Pa  |

### PACKAGING INFORMATION

| Model Type   | Modules Per Pack | Packs per 53' Container |
|--------------|------------------|-------------------------|
| FS-7XXXA-TR1 | 30               | 13                      |

## Mechanical Specifications



## Certifications & Tests<sup>4</sup>

### CERTIFICATIONS AND LISTINGS

UL 61730 1500V Listed  
IEC 61215:2021 & 61730-1:2016<sup>5</sup>  
IEC 61701 Salt Mist Corrosion  
IEC 60068-2-68 Dust and Sand Resistance  
IEC 62716 Ammonia Corrosion

### EXTENDED DURABILITY TESTS

IEC TS 63209-1 Extended Stress Test  
Long-Term Sequential  
Thresher Test  
PID Resistant

### QUALITY & EHS

ISO 9001:2015  
ISO 14001:2015  
ISO 45001:2018  
ISO 14064-3:2006  
EPEAT Silver Registered

Install in portrait only

- Limited power output and product warranties subject to warranty terms and conditions
- All ratings ±10%, unless specified otherwise. Specifications are subject to change
- Measurement uncertainty applies
- Testing Certifications/Listings pending
- IEC 61730-1: 2016 Class II
- Leadwire length from junction box exit to connector mating surface



LEADING THE WORLD'S  
SUSTAINABLE ENERGY FUTURE

First Solar

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