TS1-115

USA Manufactured Thin-Film Solar Panels

Product Certifications

UL 61730 Certified

Compliant with European Directives

PID-Free

ISO 9001:2015 Certified

ISO 14001:2015 Compliant

CEC (California, USA)

IEC 61215/61646 1000V, IEC 61730 1000V, CE Certified

IEC 61701 Salt Mist Corrosion Compliant

IEC 60068-2-68 Dust and Sand Resistance Compliant

*Ratings are +/- 10% unless otherwise specified
*Specifications are subject to change without notice

Manufactured in America

100% manufactured in the USA using a proprietary, advanced deposition process in our production plant located in Perrysburg, OH

Superior Semiconductor

Cadmium Telluride will generally produce more electricity than silicon modules with a comparable power reading in real world conditions – between 7% and 10%

Impact Resistant and Environmentally Stable

Heat strengthened front glass with semiconductor film stack is laminated to the tempered back glass to form a hermetically sealed and impact resistant module

Aesthetic Design

Frameless module with an all-black face allows for installs with a sleeker and more minimalist aesthetic

Warranty

30

Fifteen year on workmanship and material
Thirty year on power output with 90% of minimum rated power for the first 10 years and 80% for 30 years

Sustainability

Toledo Solar offers no-cost reclamation and recycling of modules at the end of their life cycle

TOLEDO SOLAR

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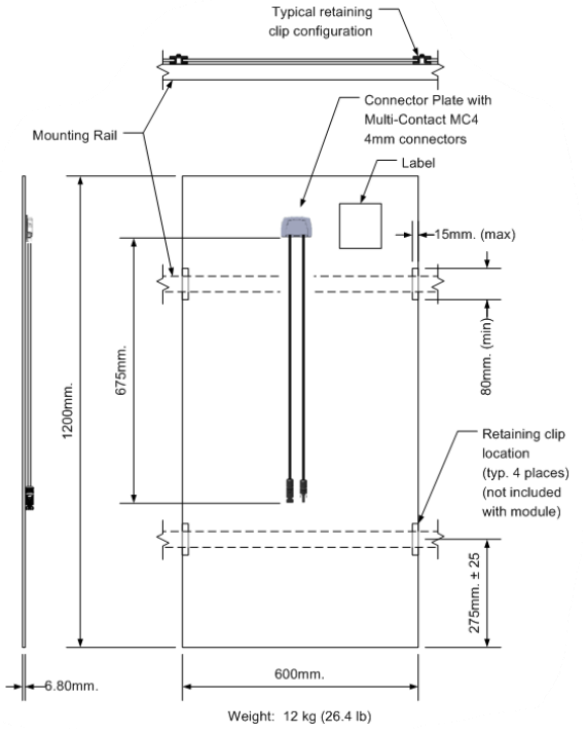
Mechanical Specification

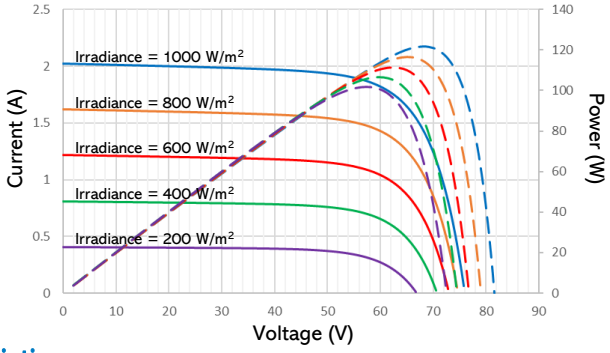
Cell Type	CdTe thin cell semiconductor, 216 active cells
Dimensions (L x W)	1200 mm x 600 mm
	47.24" x 23.62"
Thickness	6.80 mm
	0.27"
Weight	12 kg (26.4 lbs)
Front Cover Type	3.2 mm Heat Strengthened Glass
Back Cover Type	3.2 mm Tempered Glass
Encapsulant	Polyolefin
Bypass Diode	None
Load Rating	2400 Pa

System Properties

Maximum System Voltage	1000 V
Safety Class	Class 0
Application Class	Class B
Fire Rating	Type 3
Temperature Coefficient of P_{mpp}	-0.28% / °C (from 25° C to 75° C)
Temperature Coefficient of V_{oc}	-0.28% / °C
Temperature Coefficient of I_{sc}	+0.04% / °C
Efficiency at 200W/m^2	2% greater than efficiency at 1000 W/m^2
Normal Operating Cell Temperature (NOCT)	45°C
Limiting Reverse Current (I_R)	4A
Maximum Source Circuit Fuse (I_{CF})	4A



TS1-115 Power and Current vs. Voltage at 45 °C



Electrical Characteristics

Module Name	TS1-105		TS1-110		TS1-115		TS1-120	
Test Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (P_{mp}, W) (-0/+5W)	105.0	78.9	110.2	82.4	115.0	85.9	120.0	89.9
Voltage @ Max Power (V_{mp}, V)	66.2	62.1	67.5	63.4	69.3	64.6	70.8	66.6
Current @ Max Power (I_{mp}, A)	1.59	1.27	1.63	1.30	1.66	1.33	1.69	1.35
Open Circuit Voltage (V_{oc}, V)	78.0	73.8	78.6	74.3	79.1	74.8	79.6	75.2
Short Circuit Current (I_{sc}, A)	1.82	1.59	1.83	1.60	1.83	1.60	1.87	1.60

*STC is 1000 W/m^2 Irradiance, 25°C Cell Temperature, and AM 1.5 Spectrum
*NOCT is 800 W/m2 Irradiance, 45°C Cell Temperature, and AM 1.5 Spectrum

Packaging Information

				lbs/kg	53'	40'
50 Modules	54" 1372 mm	44" 1118 mm	35" 889 mm	1440 lbs (653.1 kg)	30 Pallets	32 Pallets
52 Modules				1490 lbs (675.9 kg)		

About Toledo Solar

Toledo Solar's mission is to domestically produce cost effective, energy efficient solar modules while managing all aspects of the product life cycle; from raw material sourcing, through end-of-life collection and recycling. Toledo Solar manages product life cycle while maintaining continuous improvement of our environmental health and safety management systems, and in the quality of our products, processes, and services.

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