

Cigs-2000A1 Series

High Performance Cd-Free CIGS

Thin Film Modules

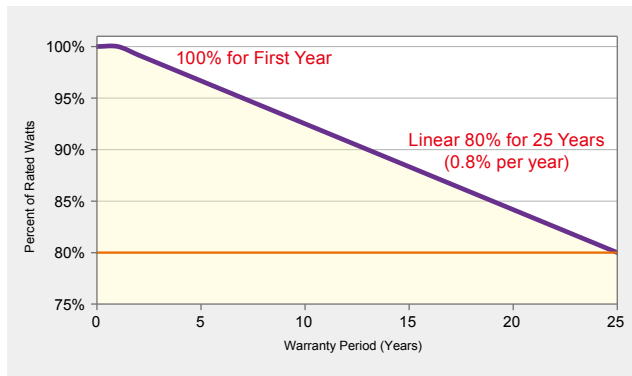
MAX SYSTEM 1000V CIGS MODULES

CIGS Competitive Advantages

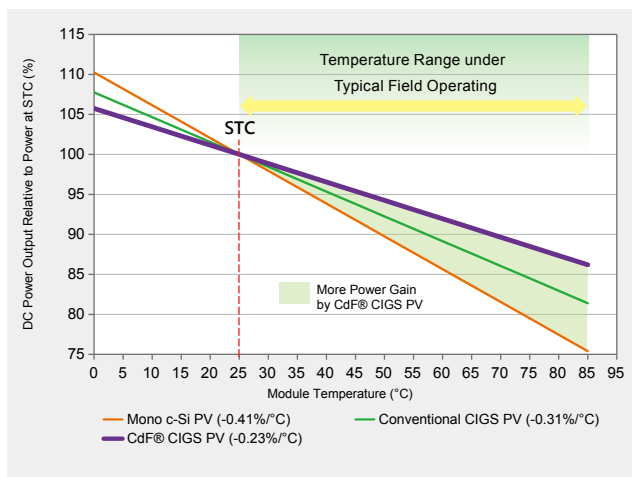
- PID- free, LID-free
- No microcrack problem
- Less solder joints than C-Si
- No glint/glare problem
- Low shadow impact
- RoHs compliant
- Free of Lead, Cadmium, Tellurium, Arsenic



Linear Pmax. Performance Warranty

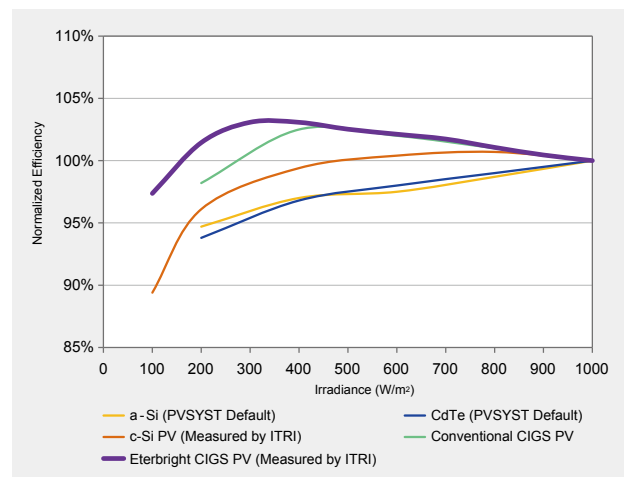


Lowest Temperature Coefficient (-0.28%/°C)



In tropical areas i.e. desert regions, equatorial regions, subtropical regions or high temperature areas, CIGS module will be the only choice.

High Performance Cd-Free CIGS PV Technology Comparison of Normalized Efficiency



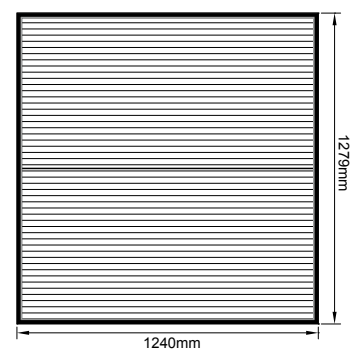
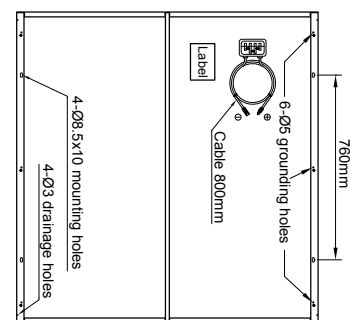
Eterbright Cd-Free CIGS PV performs better normalized efficiency under lower irradiance.



Mechanical Specification

Dimensions	1279mm x 1240mm x 45mm (50.4 inches x 48.8 inches x 1.77 inches)
Weight	23 kg (50.71lbs)
Cell type	CIGS thin film
Front cover	2.5mm tempered glass with ARC
Cell substrates	1.8mm ultra-thin soda lime glass x 2
Back cover	Al back sheet
Encapsulant	EVA
Frame	Anodized Al frame (black) with screw mounting
Junction Box	IP67 rated with bypass diode
Connectors	MC4 compatible
Cable length	800mm (31.5 inches)

Module Drawing



Electrical Specification

Power performance at STC (STC: 1000W/m², 25°C/77°F, AM 1.5)*

Module Models	Cigs-	2150A1	2200A1	2250A1	2300A1	2350A1	2400A1
Nominal power	P _{MPP} [W]	215	220	225	230	235	240
Power tolerance	[W]	0~+5	0~+5	0~+5	0~+5	0~+5	0~+5
Open circuit voltage	V _{OC} [V]	75.4	75.4	75.5	75.5	75.6	75.6
Short circuit current	I _{SC} [A]	4.38	4.40	4.42	4.43	4.45	4.47
Voltage at P _{MPP}	V _{MPP} [V]	56.1	56.5	57.0	57.4	57.9	58.3
Current at P _{MPP}	I _{MPP} [A]	3.83	3.88	3.94	4.00	4.05	4.11
Module efficiency	[%]	≥ 13.5	≥ 13.8	≥ 14.1	≥ 14.5	≥ 14.8	≥ 15.1

Power performance at NOCT (NOCT: 800W/m², 20°C/68°F, AM1.5)*

Module Models	Cigs-	2150A1	2200A1	2250A1	2300A1	2350A1	2400A1
Nominal power	P _{MPP} [W]	164.3	168.1	169.8	175.6	179.3	183.1
Open circuit voltage	V _{OC} [V]	71.8	71.9	71.9	71.9	72.0	72.0
Short circuit current	I _{SC} [A]	3.52	3.53	3.54	3.56	3.57	3.58
Voltage at P _{max}	V _{MPP} [V]	52.8	53.4	54.0	54.6	55.2	55.8
Current at P _{max}	I _{MPP} [A]	3.11	3.14	3.14	3.21	3.24	3.28

*All STC characteristics are measured after pre-treatment of 43kWh/m² light soaking.
Measurement uncertainty: (P_{MPP}: +5%/-3%; I_{SC}, V_{OC}, I_{MPP}, V_{MPP}: ±10%)

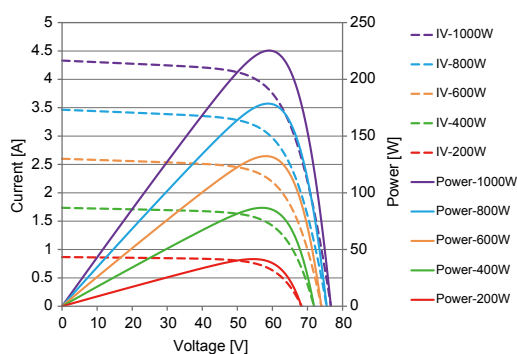
Temperature coefficients

NOCT	TC I _{SC} (α)	TC V _{OC} (β)	TC P _{MPP} (δ)
46°C	+0.01%/°C	-0.27%/°C	-0.28%/°C

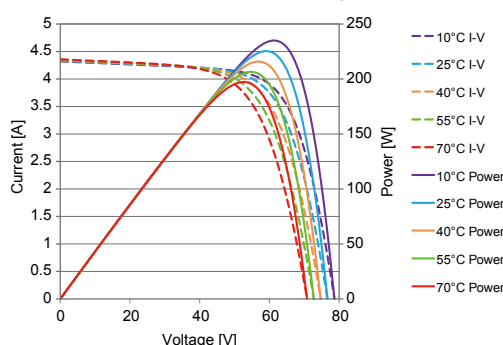
Properties for solar system construction design

Max. system voltage (V _{sys})	Max. series overcurrent protective devices	Mechanical load	Safety class	Fire rating	Operating temperature
1000V	15A	5400Pa	II	Class C(IEC) Type 1(UL)	-40 ~ 85°C

I-V curves at various irradiation



I-V curves at various temperature



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