

Picture shown may not reflect actual configuration

PVC405-415 MP02 Monocrystalline PERC Photovoltaic (PV) Module

The monocrystalline PERC (passivated emitter rear cell) photovoltaic modules provide excellent performance even under low temperature or low light environment. The modules provide high power output at high levels of reliability.

Features



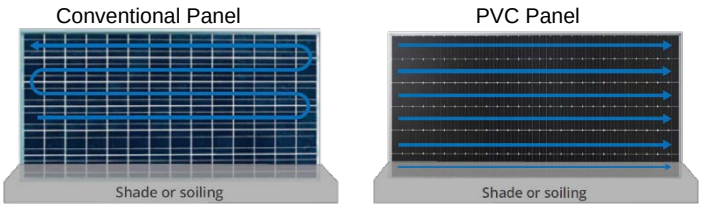
Proven Energy Yield
- 19.6% up to 20.1% efficiency
- +5%/-0% positive power tolerance

Higher Efficiency and Reliability
The panel design minimizes white space between solar cells, eliminates reflective metal lines on the cells, and lowers electrical resistance between cells by using aerospace grade conductive adhesive and redundant cell to cell connections that increases efficiency compared to conventional commercial modules.

Anti-PID
- Anti-PID (performance induced degradation) techniques for processing solar cells and encapsulation of modules applied.

Adaptability to Harsh Environments
- Excellent anti-salt mist and anti-ammonia capability; adaptable to harsh environments such as desert and coastal regions.

Increased Energy Production
- Unique parallel circuitry for linear shading response
- Minimized energy production losses due to row-to-row shading, or panel soiling.
- With single-axis tracking systems, linear shading response enables true-tracking. This generates more energy than conventional monocrystalline modules that require backtracking.
- Reduced panel temp. due to unique electrical bus.

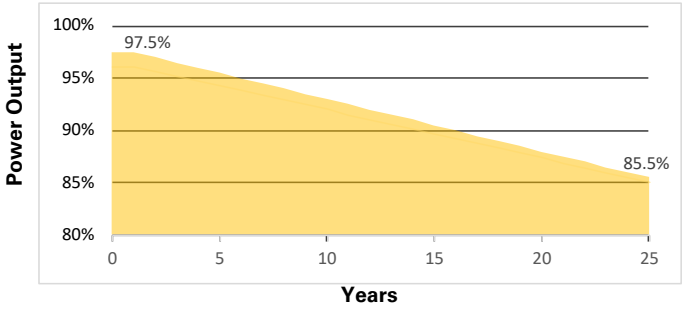


Tests
- Standard Tests: IEC 61215, IEC 61730 Class C according to UL790
- IEC62716 Ammonia Test
- MIL-STD-810G Desert Test
- IEC 61701 (maximum severity) Salt Spray Test
- LeTID Test[1] IEC 61215 (MQT 23.1 LeTID detection) draft standard
- Potential-induced degradation free: 1500V

Certifications
- Available listings: TUV Rheinland, CE
- ISO 9001:2008: ISO Quality Management System
- ISO 14001:2004: ISO Environment Management System
- OHSAS 18001: 2007 Occupational Health and Safety

Worldwide Product Support
- Cat® dealers have over 1,800 dealer branch stores operating in over 200 countries
- Your local Cat dealer provides extensive pre-sale and post-sale support, including design consultation, service contracts, and all maintenance agreement.

Module Warranty
- 25-year warranty for materials and processing
- 25-year power assurance program for linear power output. Produces more than 97.5% power in the first year, then declining by 0.5% per year, ending at 85.5% power after 25 years.



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MODULE RATING†				
Model‡	**PVC**	**405 MP02**	**410 MP02**	**415 MP02**
Test Conditions		STC	STC	STC
Nominal Power (+5/-0 W)	P_{MPP} (W)	405	410	415
Voltage at P_{MAX}	V_{MPP} (V)	44.0	44.5	45.0
Current at P_{MAX}	I_{MPP} (A)	9.20	9.21	9.22
Open Circuit Voltage (± 3%)	V_{OC} (V)	53.3	53.9	54.1
Short Circuit Current (± 3%)	I_{SC} (A)	9.88	9.89	9.90
Module Efficiency	%	19.6%	19.9%	20.1%
Maximum System Voltage	V_{SYS} (V)	DC 1500 V		
Maximum Series Fuse	I_{CF} (A)	18A		
Standard Test Conditions	STC	Irradiance 1000W/m2, Spectra AM 1.5, cell temperature 25°C		

TEMPERATURE CHARACTERISTICS	(STC)	
Module Operating Temp. Range	(°C)	-40 to +85
Temperature Coefficient of P_{MPP}	$T_K(P_{MPP})$	-0.36%/°C
Temperature Coefficient of V_{OC}	$T_K(V_{OC})$	-0.29%/°C
Temperature Coefficient of I_{SC}	$T_K(I_{SC})$	+0.05%/°C

MECHANICAL LOADS	
Front Snow Load Rating	5400 Pa
Front & Back Wind Load Rating	2400 Pa
Impact Resistance	25 mm hailstone at 23 m/s

MECHANICAL DETAILS	
Cell Type	Shingled Monocrystaline PERC
Junction Box	IP67, three diodes
Leadwire	4 mm^2, 1200 mm ± 15mm
Connectors (Polymetric)	Stäubli MC4-EVO2
Application Safety Class	Class II (per IEC 61140)
Tempered Glass	High-transmission tempered anti-reflective
Frame Material	Class 2 silver anodized

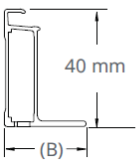
DIMENSION DETAILS		
Length	2066 mm	(81.3 in)
Width	998 mm	(39.3 in)
Thickness	40 mm	(1.6 in)
Weight	22.3 kg	(49.2 lbs.)
Area	2.06 m^2	(22.2 ft^2)

1 Fraunhofer CSP LID Sensitivity according to IEC 61215 (MQT 23.1 LeTID detection), <1% power loss

† Listed ratings are dependent on project time frames and may not all be available.
Contact your local Cat dealer to confirm module rating availability.

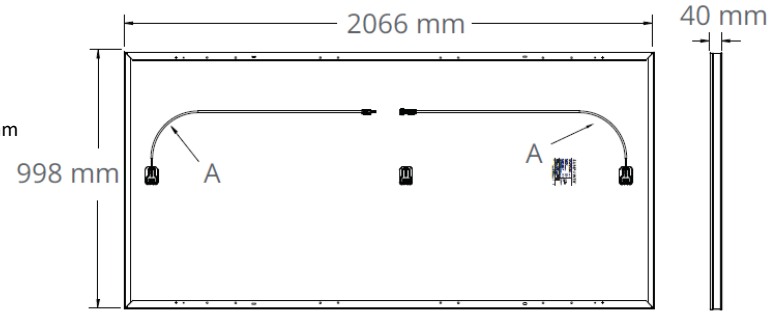
‡ Models and ratings are subject to change without notice and may vary by territory.

FRAME PROFILE



Units: mm
Tolerance:
(A) Cable Length: 1200 mm ± 15 mm
(B) Long Side: 32 mm
Short Side: 24 mm

Designed in USA
assembled in China



Materials and specifications are subject to change without notice.
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