

GCL- M10/60GDF



435-470 W

**Bifacial Dual Glass
Monocrystalline Module**

470W

Maximum Power
Output

21.7%

Maximum Module
Efficiency

0~+5W

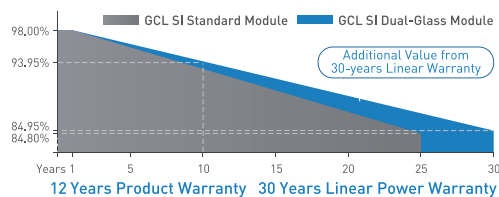
Power Output
Guarantee

GCL-GEMINI

GCL Delivers Reliable Performance Over Time

- World-class manufacturer of crystalline silicon photovoltaic modules
- Fully automatic facility and world-class technology
- Rigorous quality control to meet the highest standard: ISO 9001, ISO 14001 and ISO 45001
- Tested for harsh environments (salt mist, ammonia corrosion and sand blowing test: IEC 61701, IEC 62716, DIN EN 60068-2-68)
- Long term reliability tests
- 2x100% EL inspection ensuring defect-free modules

Linear Performance Warranty



* Please refer to GCL standard warranty for details



Ideal choice for large
scale ground installation



High conversion efficiency
due to top quality wafers and
advanced cell technology



Additional safety,
Fire class A certified



Withstand up to 1500V
system voltage effectively
reduce BOS cost



Selected encapsulating
material and stringent
production process control
ensure the product is highly
PID resistant and snail
trails free



Sand blowing test, salt
mist test and ammonia test
passed to endure harsh
environments

Additional Insurance Backed by Swiss RE

* Please refer to GCL for details



Electrical Specification (STC*)

Maximum Power	P _{max} (W)	435	440	445	450	455	460	465	470
Maximum Power Voltage	V _{mp} (V)	33.37	33.63	33.89	34.12	34.35	34.58	34.84	35.10
Maximum Power Current	I _{mp} (A)	13.04	13.09	13.14	13.19	13.24	13.29	13.34	13.39
Open Circuit Voltage	V _{oc} (V)	39.69	39.97	40.25	40.53	40.81	41.09	41.37	41.65
Short Circuit Current	I _{sc} (A)	13.58	13.63	13.68	13.73	13.78	13.83	13.88	13.93
Module Efficiency	(%)	20.1	20.3	20.6	20.8	21.0	21.3	21.5	21.7
Power Output Tolerance	(W)	0~+5							

* Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5

Electrical Specification (NMOT*)

Maximum Power	P _{max} (W)	327.3	331.1	334.8	338.6	342.3	346.1	349.9	353.6
Maximum Power Voltage	V _{mp} (V)	31.30	31.50	31.80	32.00	32.20	32.40	32.60	32.90
Maximum Power Current	I _{mp} (A)	10.47	10.51	10.54	10.59	10.64	10.68	10.72	10.75
Open Circuit Voltage	V _{oc} (V)	37.90	38.20	38.50	38.70	39.00	39.30	39.50	39.80
Short Circuit Current	I _{sc} (A)	10.95	10.99	11.03	11.07	11.11	11.15	11.19	11.23

* Irradiance 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Maximum Power	P _{max} (W)	465.5	470.8	476.2	481.5	486.9	492.2	497.6	502.9
Maximum Power Voltage	V _{mp} (V)	33.36	33.61	33.87	34.12	34.37	34.61	34.86	35.10
Maximum Power Current	I _{mp} (A)	13.95	14.01	14.06	14.11	14.17	14.22	14.27	14.33
Open Circuit Voltage	V _{oc} (V)	39.69	39.97	40.25	40.53	40.81	41.09	41.37	41.65
Short Circuit Current	I _{sc} (A)	14.53	14.58	14.64	14.69	14.74	14.80	14.85	14.91

Irradiance ratio (rear/front) 10%

Mechanical Data

Number of Cells	120 Cells (6×20)
Dimensions of Module L*W*H (mm)	1908×1134×30mm (75.12×44.65×1.18 inches)
Weight (kg)	27.3 kg
Front Side Glass	High transparency solar glass 2.0mm (0.08 inches)
Back Side Glass	High transparency solar glass 2.0mm (0.08 inches)
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated
Cable	4.0mm ² [0.006 inches ²], Portrait: 280/280mm (11.02inches)
Number of diodes	3
Wind/ Snow Load	2400Pa/ 5400Pa*
Connector	MC Compatible
Bifaciality	70±5%

* For more details please check the installation manual of GCLSI

Temperature Ratings

Nominal Module Operating Temperature(NMOT)	42±2°C
Temperature Coefficient of I _{sc}	+0.05%/°C
Temperature Coefficient of V _{oc}	-0.28%/°C
Temperature Coefficient of P _{MAX}	-0.35%/°C

Maximum Ratings

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	30A

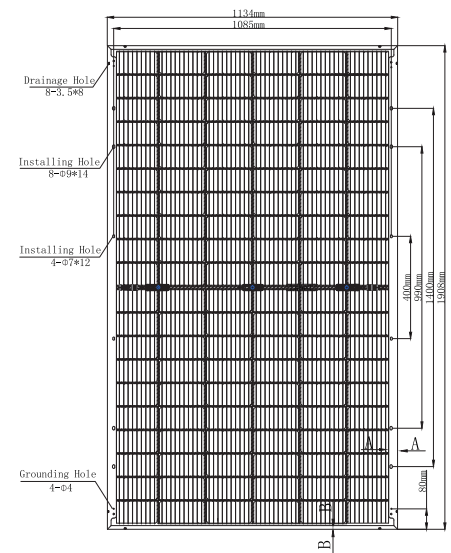
Optional

Connector: ☐ Original MC4

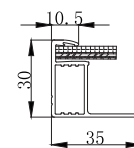
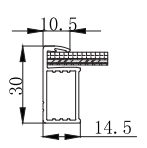
Packaging Configuration

Module per box	36 pieces
Module per 40' container	864 pieces

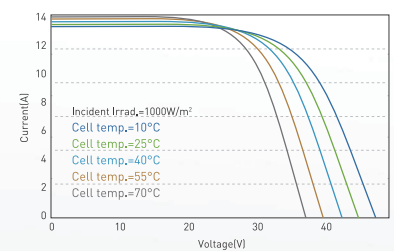
Module Dimension



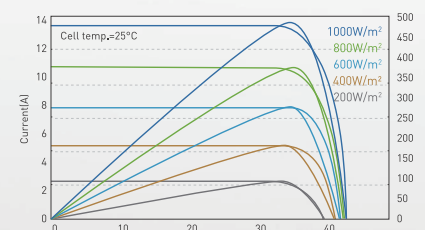
Back View

Long Frame
A-AShort Frame
B-B

I-V Curve at Different Temperature (470W)



I-V/P-V Curve at Different Irradiation (470W)



CAUTION: READ INSTALLATION MANUAL BEFORE USING THE PRODUCT

Contact Us for More Information

website: www.gclsi.com email: gclsisales@gclsi.com

Bringing Green Power To Life

GCL/XXJC/2-MKT-166-F2