

GCL- NT12R/48GDF



440-455W

**Bifacial Dual Glass
Monocrystalline Module**

455W

Maximum Power
Output

22.77%

Maximum Module
Efficiency

0~+5W

Power Binnig
Range

GCL Delivers Reliable Performance Over Time

- World-class manufacturer of crystalline silicon photovoltaic modules
- Fully automatic facility and world-class technology
- Long term reliability tests
- 2×100% EL inspection ensuring defect-free modules



Highly transparent
self-cleaning glass brings
additional yield and easy
maintenance



Ideal choice for
residential rooftop



N type technology: The
N-type module has better
reliability

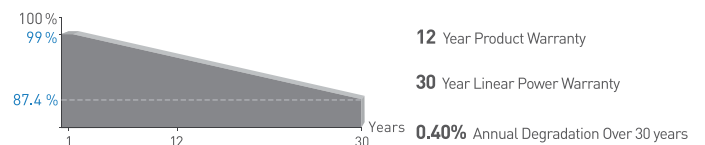


Special cutting and
soldering technology
leads to low hotspot
risk

Comprehensive System and Product Certifications

- IEC61215, IEC61730
- ISO9001:2015 Quality management systems
- ISO14001:2015 Environmental management systems
- ISO45001:2018 Occupational health and safety management systems
- IEC62941:2019 Terrestrial photovoltaic (PV modules-Quality system for PV module manufacturing)

Linear Performance Warranty



*Power degradation values above only apply to the frontside of the module and does not apply to the backside, please refer to GCL standard warranty for details

Additional Insurance Backed by Swiss RE

* Please refer to GCL for details



Electrical Specification (STC*)

Type		GCL-NT12R/48GDF 440	GCL-NT12R/48GDF 445	GCL-NT12R/48GDF 450	GCL-NT12R/48GDF 445
Maximum Power	P _{max} (W)	440	445	450	455
Maximum Power Voltage	V _{mp} (V)	29.24	29.48	29.71	29.94
Maximum Power Current	I _{mp} (A)	15.05	15.10	15.15	15.20
Open Circuit Voltage	V _{oc} (V)	34.55	34.80	35.05	35.30
Short Circuit Current	I _{sc} (A)	15.85	15.90	15.95	16.00
Module Efficiency	(%)	22.02	22.27	22.52	22.77

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

Electrical Specification (BNPI&BSI)

Test Condition		BNPI	BSI	BNPI	BSI	BNPI	BSI	BNPI	BSI
Maximum Power	P _{max} (W)	485.0	/	490.0	/	495.0	/	500.0	/
Maximum Power Voltage	V _{mp} (V)	29.29	/	29.50	/	29.71	/	29.92	/
Maximum Power Current	I _{mp} (A)	16.56	/	16.61	/	16.66	/	16.71	/
Open Circuit Voltage	V _{oc} (V)	34.65	/	34.90	/	35.15	/	35.40	/
Short Circuit Current	I _{sc} (A)	17.50	19.52	17.55	19.57	17.60	19.62	17.65	19.67

BNPI: Irradiance: Front 1000W/m², Rear 135W/m², Cell Temperature 25°C, Air Mass 1.5

BSI: Irradiance: Front 1000W/m², Rear 300W/m², Cell Temperature 25°C, Air Mass 1.5

*The Measurement Tolerance for the above electrical performance parameters: P_{max} ±3%, V_{oc} ±3%, I_{sc} ±4%

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

Maximum Power	P _{max} (W)	475.2	480.8	486.1	491.6
Maximum Power Voltage	V _{mp} (V)	29.24	29.48	29.71	29.94
Maximum Power Current	I _{mp} (A)	16.25	16.31	16.36	16.42
Open Circuit Voltage	V _{oc} (V)	34.55	34.80	35.05	35.30
Short Circuit Current	I _{sc} (A)	17.12	17.17	17.23	17.28

Mechanical Data

Number of Cells	96Cells (6×16)
Dimensions of Module L*W*H (mm)	1762×1134×30mm (69.37×44.65×1.18 inches)
Weight (kg)	21.5kg
Front Side Glass	1.6mm (0.06 inches), High transparency solar glass
Back Side Glass	1.6mm (0.06 inches), Heat strengthened glass
Frame	Anodized aluminium alloy
J-Box	IP68 Rated, 3 diodes
Cable	4.0mm ² , Portrait: +300/-200mm length can be customized
Connector	Refer to page 3 for optional connectors
Fire Rating	IEC Class C
Protection Class	Class II
Tested Load (-negative/+positive)	2400Pa/ 5400Pa*
Bifaciality	φP _{max} :80±5%, φV _{oc} :95±5%, φI _{sc} :80±5%

* For more details please check the installation manual of GCLSI

Temperature Ratings

Temperature Coefficient of I _{sc}	+0.045%/°C
Temperature Coefficient of V _{oc}	-0.25%/°C
Temperature Coefficient of P _{max}	-0.29%/°C

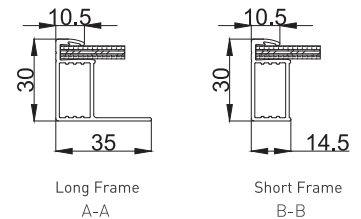
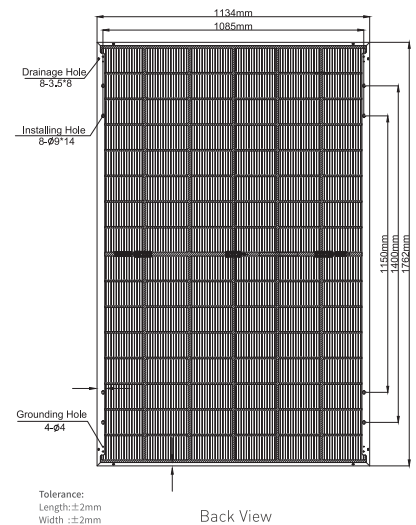
Maximum Ratings

Operational Temperature	-40~+70°C
Module (T ₉₈) max.	70°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	35A

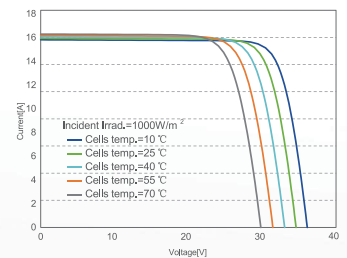
Packaging Configuration

Module per box	36 pieces
Module per 40' HQ	936 pieces

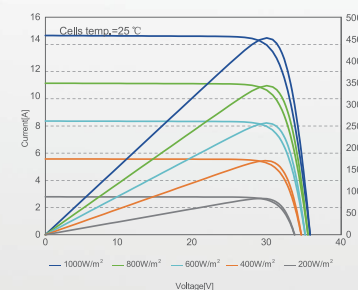
Module Dimension



I-V Curve at Different Temperature (455W)



I-V/P-V Curve at Different Irradiation (455W)



CAUTION: READ INSTALLATION MANUAL BEFORE USING THE PRODUCT

Contact Us for More Information

GCL System Integration Technology Co., Ltd.

address: Jianghai Economic Zone, Nanqiao Town Fengxian District, 201406 Shanghai P.R. China

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

Made in China



Optional / Connector

Manufacturer

Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.

Jiangsu Haitian Microelectronics Corp.

Hefei GCL System Integration New Energy Technology Co., Ltd.
Funing GCL System Integration Technology Co., Ltd.

Suzhou Xtong Photovoltaic Technologies Co., Ltd.

Stäubli Electrical Connectors AG

Specification

B01

PV-HT03x (x=0 or 1 or 2)

GCL-01 / GCL-02

PV-XT101.1

PV-XT101.2

XT2

PV-KST4-EVO 2/xy_UR (male)

PV-KBT4-EVO 2/xy_UR (female)

PV-KST4-EV02A/xy (male)

PV-KBT4-EV02A/xy (female)