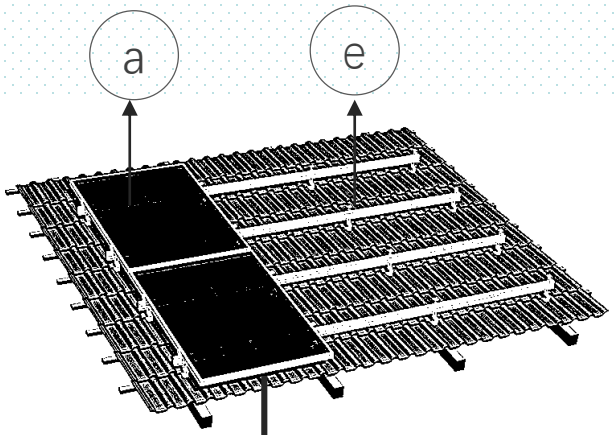
SMART SOLAR SYSTEM

Jiangyin Pvsolver Photovoltaic

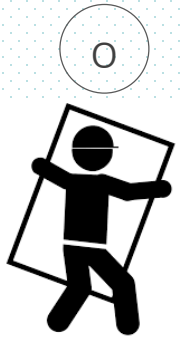
Engineering Co., Ltd

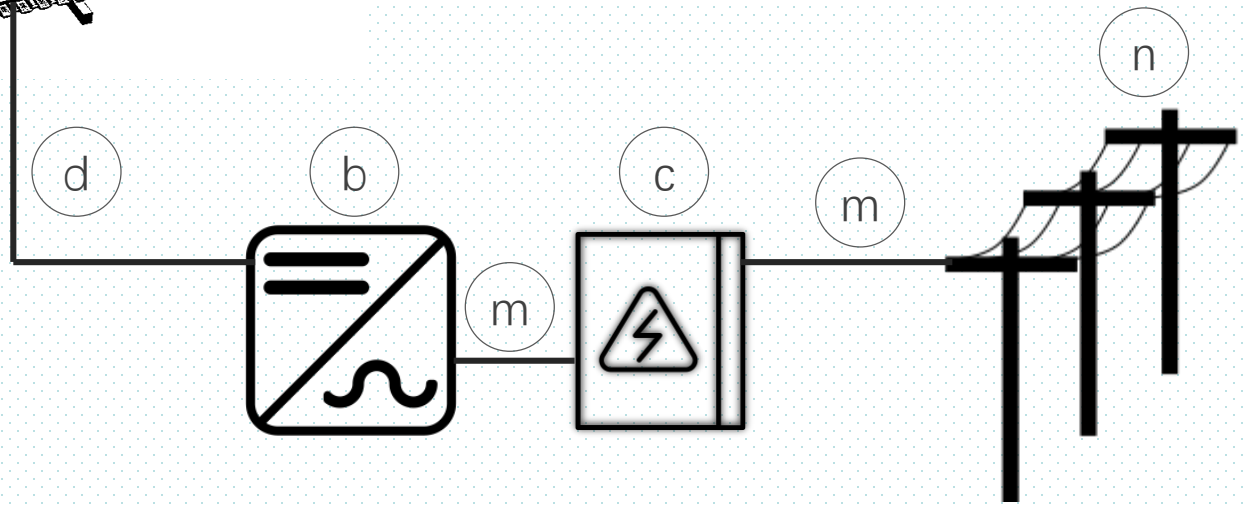
1. On-grid Solar PV System



SCOPE OF SUPPLY BY PVSOLVER:

a. Solar Module
b. Inverter from DC to AC
c. AC Distribution Box
d. PV DC Cables
e. Mounting Structures – to be Designed





SCOPE OF SUPPLY BY LOCAL DISTRIBUTOR:

m. AC Cables - Size to be designed
n. Power Grid
o. Labor

1. On-grid Solar PV System – Single Phase

Item	1.32kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	4
b	Inverter 1kW - SP	1
c	AC Distribution Box 1kW - SP	1
d	PV DC Cables 4mm^2 (Meter)	60
	MC 4 Connectors for DC Cable in Pair	6
e	Muonting Structures (Metal Roof)	1

Item	2.31kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	7
b	Inverter 2kW - SP	1
c	AC Distribution Box 2kW - SP	1
d	PV DC Cables 4mm^2 (Meter)	120
	MC 4 Connectors for DC Cable in Pair	12
e	Muonting Structures (Metal Roof)	1

Item	3.30kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	10
b	Inverter 3kW - SP	1
c	AC Distribution Box 3kW - SP	1
d	PV DC Cables 4mm^2 (Meter)	60
	MC 4 Connectors for DC Cable in Pair	6
e	Muonting Structures (Metal Roof)	1

Item	5.28kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	16
b	Inverter 5kW - SP	1
c	AC Distribution Box 5kW - SP	1
d	PV DC Cables 4mm^2 (Meter)	120
	MC 4 Connectors for DC Cable in Pair	12
e	Muonting Structures (Metal Roof)	1

SP.: Single Phase

Mounting Structures: the price is estimated based on common Trapezoidal Metal Roof, and the accurate price can only be provided upon receiving detailed roof information

1. On-grid Solar PV System – Three Phase

Item	5.28kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	16
b	Inverter 5kW - 3P	1
c	AC Distribution Box 5kW - 3P	1
d	PV DC Cables 4mm^2 (Meter)	120
	MC 4 Connectors for DC Cable in Pair	12
e	Muonting Structures (Metal Roof)	1

Item	6.60kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	20
b	Inverter 6kW - 3P	1
c	AC Distribution Box 6kW - 3P	1
d	PV DC Cables 4mm^2 (Meter)	120
	MC 4 Connectors for DC Cable in Pair	12
e	Muonting Structures (Metal Roof)	1

Item	8.58kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	26
b	Inverter 8kW - 3P	1
c	AC Distribution Box 8kW - 3P	1
d	PV DC Cables 4mm^2 (Meter)	120
	MC 4 Connectors for DC Cable in Pair	12
e	Muonting Structures (Metal Roof)	1

Item	11.88kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	36
b	Inverter 10kW - 3P	1
c	AC Distribution Box 10kW - 3P	1
d	PV DC Cables 4mm^2 (Meter)	160
	MC 4 Connectors for DC Cable in Pair	12
e	Muonting Structures (Metal Roof)	1

3P.: Three Phase

Mounting Structures: the price is estimated based on common Trapezoidal Metal Roof, and the accurate price can only be provided upon receiving detailed roof information

1. On-grid Solar PV System – Three Phase

Item	15.84kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	48
b	Inverter 15kW - 3P	1
c	AC Distribution Box 15kW - 3P	1
d	PV DC Cables 4mm^2 (Meter)	240
	MC 4 Connectors for DC Cable in Pair	18
e	Muonting Structures (Metal Roof)	1

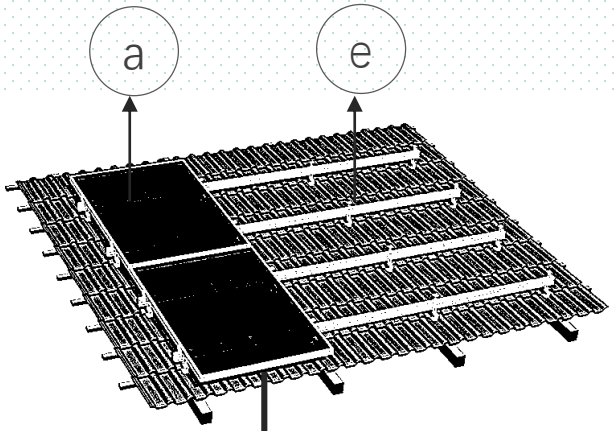
Item	21.12kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	64
b	Inverter 20kW - 3P	1
c	AC Distribution Box 20kW - 3P	1
d	PV DC Cables 4mm^2 (Meter)	320
	MC 4 Connectors for DC Cable in Pair	32
e	Muonting Structures (Metal Roof)	1

Item	35.64kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	108
b	Inverter 33kW - 3P	1
c	AC Distribution Box 33kW - 3P	1
d	PV DC Cables 4mm^2 (Meter)	480
	MC 4 Connectors for DC Cable in Pair	48
e	Muonting Structures (Metal Roof)	1

3P.: Three Phase

Mounting Structures: the price is estimated based on common Trapezoidal Metal Roof, and the accurate price can only be provided upon receiving detailed roof information

2. Hybrid Solar PV System HV



SCOPE OF SUPPLY BY PVSOLVER:

a. Solar Module

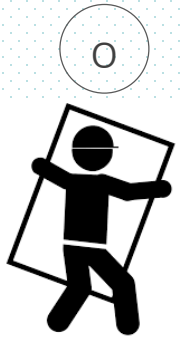
b. HV Hybrid Inverter from DC to AC

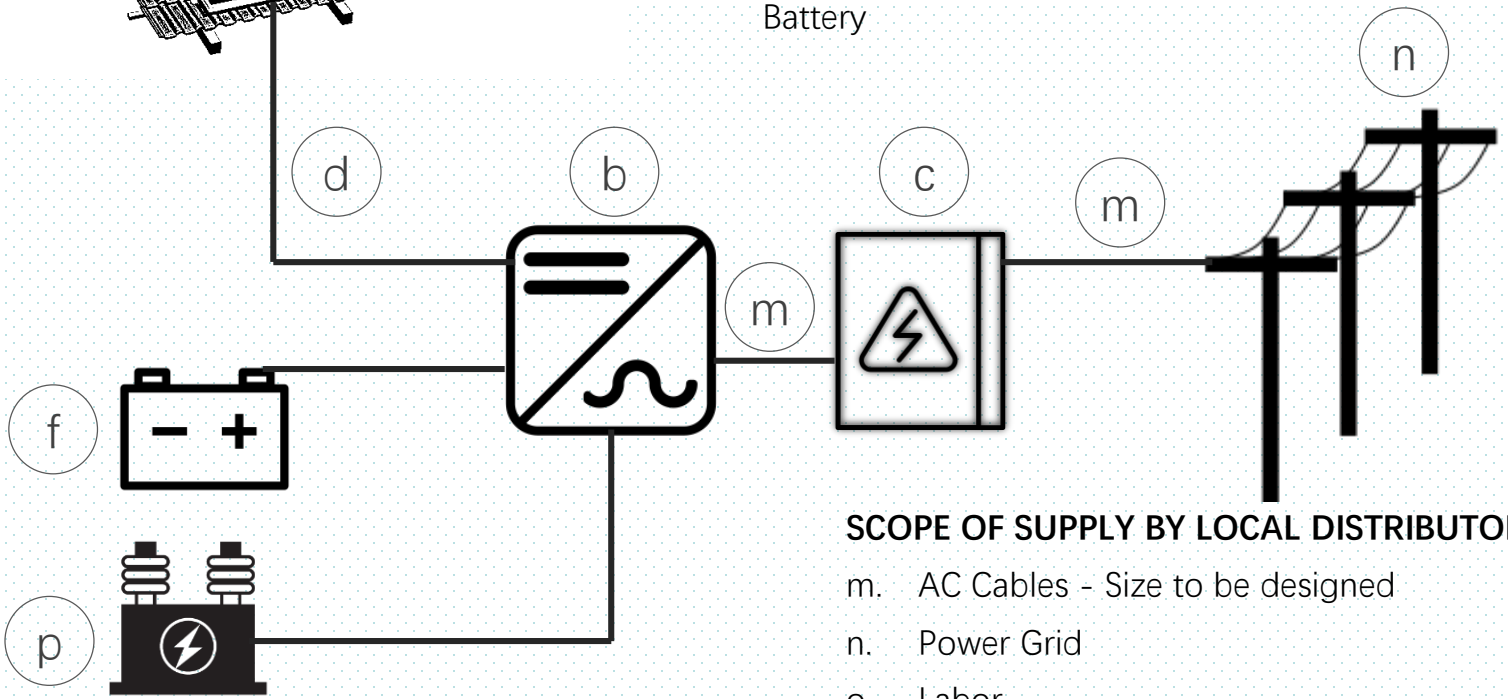
c. AC Distribution Box

d. PV DC Cables

e. Mounting Structures – to be Designed

f. Lead Acid, Lead Carbon or Lithium Battery





SCOPE OF SUPPLY BY LOCAL DISTRIBUTOR:

m. AC Cables - Size to be designed

n. Power Grid

o. Labor

p. Electrical Loads

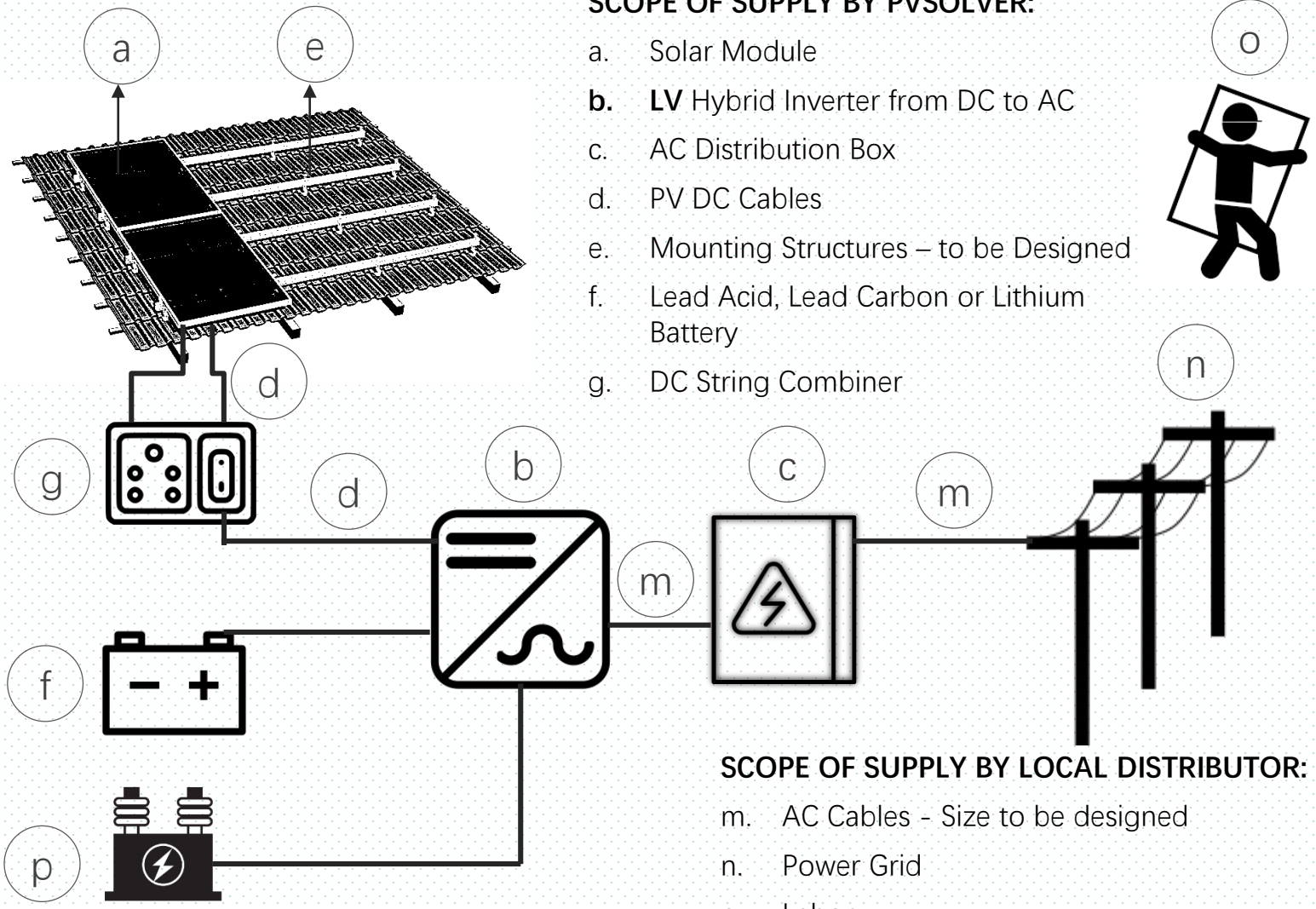
2. Hybrid Solar PV System HV

Item	5.12kWp Solar PV System	
	Name	Qty
a	Solar Module 320Wp	16
b	Hybrid Inverter HV 5kW - SP	1
c	AC Distribution Box 5kW - SP	1
d	PV DC Cables 4mm^2 (Meter)	120
	MC 4 Connectors for DC Cable in Pair	12
e	Muonting Structures (Metal Roof)	1
f	Lead Carbon Batteries 12V 50AH	8
p	Max AC Load: 5kW	-

SP.: Single Phase

Mounting Structures: the price is estimated based on common Trapezoidal Metal Roof, and the accurate price can only be provided upon receiving detailed roof information

3. Hybrid Solar PV System LV



SCOPE OF SUPPLY BY PVSOLVER:

a. Solar Module

b. LV Hybrid Inverter from DC to AC

c. AC Distribution Box

d. PV DC Cables

e. Mounting Structures – to be Designed

f. Lead Acid, Lead Carbon or Lithium Battery

g. DC String Combiner

SCOPE OF SUPPLY BY LOCAL DISTRIBUTOR:

m. AC Cables - Size to be designed

n. Power Grid

o. Labor

p. Electrical Loads

3. Hybrid Solar PV System LV

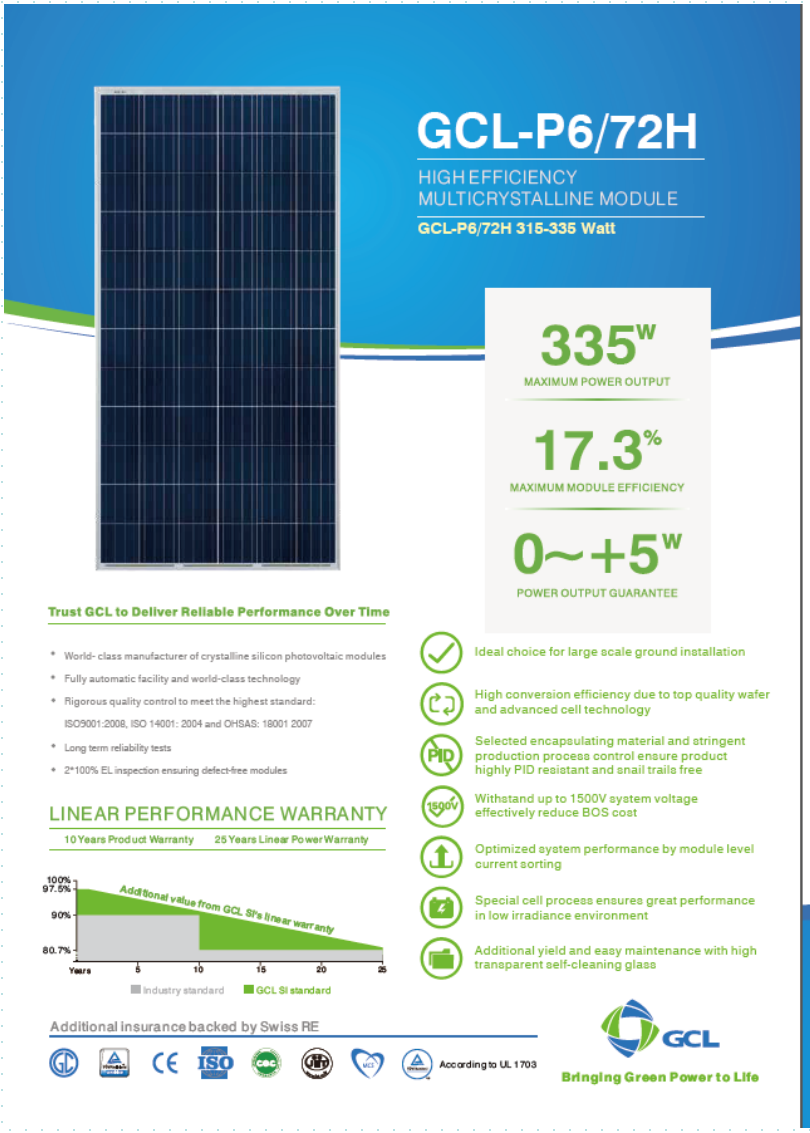
Item	4.95kWp Solar PV System	
	Name	Qty
a	Solar Module 330Wp	15
b	Hybrid Inverter LV 5kW - SP	1
c	AC Distribution Box 5kW - SP	1
d	PV DC Cables 4mm^2 (Meter)	300
	PV DC Cables 16mm^2 (Meter)	30
	MC 4 Connectors for DC Cable in Pair	60
e	Muonting Structures (Metal Roof)	1
f	Lead Carbon Batteries 12V 50AH	8
g	DC String Combiner 5in1	1
p	Max AC Load: 5kW	-

SP.: Single Phase

Mounting Structures: the price is estimated based on common Trapezoidal Metal Roof, and the accurate price can only be provided upon receiving detailed roof information

4. Products Specs

a. Solar Module



GCL-P6/72H

HIGH EFFICIENCY MULTICRYSTALLINE MODULE

GCL-P6/72H 315-335 Watt

335W MAXIMUM POWER OUTPUT

17.3% MAXIMUM MODULE EFFICIENCY

0~+5W POWER OUTPUT GUARANTEE

Trust GCL to Deliver 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: ISO9001:2008, ISO 14001: 2004 and OHSAS: 18001 2007
- Long term reliability tests
- 2*100% EL inspection ensuring defect-free modules

LINEAR PERFORMANCE WARRANTY

10 Years Product Warranty 25 Years Linear Power Warranty

100% 97.5% 90% 80.7% Additional value from GCL SI's linear warranty

Years 5 10 15 20 25

Industry standard GCL SI standard

- Ideal choice for large scale ground installation
- High conversion efficiency due to top quality wafer and advanced cell technology
- Selected encapsulating material and stringent production process control ensure product highly PID resistant and snail trails free
- Withstand up to 1500V system voltage effectively reduce BOS cost
- Optimized system performance by module level current sorting
- Special cell process ensures great performance in low irradiance environment
- Additional yield and easy maintenance with high transparent self-cleaning glass

Additional insurance backed by Swiss RE

According to UL 1703

GCL

Bringing Green Power to Life

GCL-P6/72H

HIGH EFFICIENCY MULTICRYSTALLINE MODULE

ELECTRICAL SPECIFICATION (STC)

TYPE (STC)	GCL-P6/72H 315	GCL-P6/72H 320	GCL-P6/72H 325	GCL-P6/72H 330	GCL-P6/72H 335
Maximum Power Pmax (W)	315	320	325	330	335
Maximum Power Voltage Vm(V)	37.2	37.4	37.6	37.8	38.0
Maximum Power Current Im(A)	8.47	8.56	8.64	8.73	8.82
Open Circuit Voltage Voc(V)	45.6	45.8	46	46.2	46.4
Short Circuit Current Isc(A)	9.08	9.17	9.24	9.33	9.41
Module Efficiency (%)	16.2	16.5	16.7	17.0	17.3
Power Output Tolerance Pm(W)	0~+5				

Values at Standard Test Conditions STC (Air Mass AM1.5, Irradiance 1000W/m², Cell Temperature 25°C).

ELECTRICAL DATA (NOCT)

Maximum Power Pmax (W)	227.14	231.2	234.61	237.71	240.47
Maximum Power Voltage Vm(V)	33.8	34.1	34.3	34.5	34.7
Maximum Power Current Im(A)	6.72	6.78	6.84	6.89	6.93
Open Circuit Voltage Voc(V)	42.4	42.5	42.7	42.9	43.1
Short Circuit Current Isc(A)	7.30	7.38	7.46	7.58	7.63

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Poly 156.75×156.75mm (6 inches)
Cell Orientation	72 Cells (6×12)
Module Dimensions	1956×992×40mm (77 × 39.05 × 1.57 inches)
Weight	22.5Kg/26Kg
Glass	High transparency solar glass 3.2mm (0.13 inches)or 4mm (0.16 inches)
Backsheet	White
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated
Cables	4.0mm²(0.006 inches²), 1200mm (47.2 inches)
Connector	Original MC4 or PV-ZH202B
Wind Load/ Snow Load	2400Pa/5400Pa*

*For more details please check the installation manual of GCLSI

TEMPERATURE RATINGS

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of P_{max}	-0.41%/°C
Temperature Coefficient of V_{oc}	-0.32%/°C
Temperature Coefficient of I_{sc}	+0.055%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC(IEC)
Max Series Fuse Rating	15A

WARRANTY

10 years Product Workmanship Warranty

25 years Linear Power Warranty

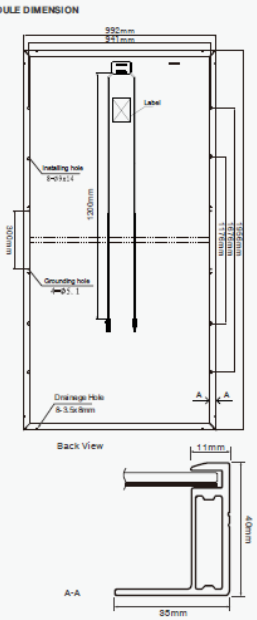
(Please refer to GCL standard warranty for details)

PACKAGING CONFIGURATION

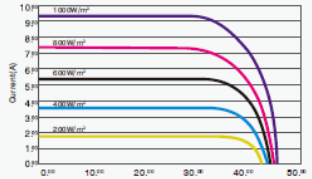
Modules per box: 26 pieces

Modules per 40'HD container: 624 pieces

MODULE DIMENSION



I-V CURVES OF MODULE(330W)



Excellent performance under weak light conditions: at an irradiation intensity of 200W/m² W/m(AM 1.5, 25 °C), 96.5% or higher of the STC ecciency (1000 W/m²) is achieved

Made in China

GCL

Bringing Green Power to Life

http://en.gclsi.com

GCL-EN-P6/72H-2017-V1.8

CAUTION: READ INSTALLATION MANUAL BEFORE USING THE PRODUCT

4. Products Specs

b. Inverter for On-grid Systems

Single-Phase String Inverters 1 kW to 3 kW

> Residential, Solar Inverters

Zeverlution Series

1000S/1500S/2000S/3000S

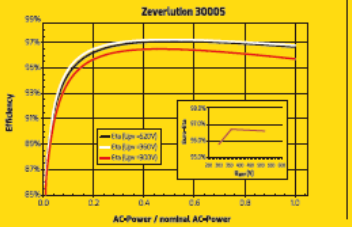
Introduction

The Zeverlution inverter generation combines all aspects of our beliefs into simple, reliable and affordable PV inverters. By introducing a patented inverter topology we used less power electronic components for further increased reliability. At the same time we have reduced the weight of the inverter by nearly 50%, making it even simpler to install and use. An increased efficiency of 97.5% makes the use of PV systems even more affordable.Furthermore integrated monitoring via Ethernet or Wi-Fi communication is available, whenever you want, our Zeverlution series.

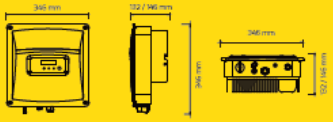
Features

- Extremely lightweight with only 6.5 kg
- Compact design with IP65 casing for outdoor use
- SUNCLIX connectors for toolless DC wiring
- Higher power yield with efficiency of 97.5%
- Extremely quiet with only 15dB noise
- Higher operating altitude up to 3000m without derating
- Optional integrated Ethernet and Wi-Fi communication
- Support remote firmware update

Conversion efficiency



Dimensions



Single-Phase String Inverters 1 kW to 3 kW

Technical data	Zeverlution 1000S	Zeverlution 1500S	Zeverlution 2000S	Zeverlution 3000S
Input (DC)				
Maximum PV array power (STC)	1430 Wp	2140 Wp	2860 Wp	3900 Wp
Maximum DC power at cos φ = 1	1150W	1750W	2350W	3150W
Max. input voltage	500V			600V
MPP voltage range / rated input voltage	70–450V / 360V			70–520V / 360V
Min. start voltage	80V			80V
Min. feed-in power	20W			20W
Max. input current per MPPT	11A			11A
Number of MPPTs	1			1
Number of independent MPP inputs	1			1
Output (AC)				
Rated active power	1000W	1500W	2000W	3000W
Max. apparent AC power	1100VA	1650VA	2200VA	3000VA
Nominal AC voltage / range	220V,230V,240V / 180V–280V			
AC power frequency / range	50,60 / ±5Hz			
Rated power frequency / rated grid voltage	50Hz / 230V			
Max. output current	5.5A	7.5A	10A	15A
Power factor (@rated power)	1			
Adjustable displacement power factor	0.8 inductive ... 0.8 capacitive			
Feed-in phases / connection phases	1 / 1			
Harmonic distortion (THD) at rated output	< 3%			
Efficiency				
Max. efficiency / European weighted efficiency	97% / 96.3%	97.2% / 96.5%	97.3% / 96.7%	97.5% / 97%
MPPT efficiency	99.50%	99.50%	99.50%	99.50%
Protective devices				
DC isolator	○			
PV iso / Grid monitoring	• / •			
DC reverse polarity protection / AC short-circuit current capability	• / •			
GFCI function	•			
Protection class (according to IEC 62103) / overvoltage category (according to IEC 60664-1)	I / II (DC), III (AC)			
General data				
Interfaces: RS485 / RS485[1] & Ethernet & Wi-Fi & a RJ45[2](DRED)	• / ○			
Earth Fault Alarm[3]	cloud based,audible and visible			
Display	16 x 2 characters			
Dimensions (W x H x D)	346 x 346 x 192mm			346 x 346 x 146mm
Weight	6.5kg			6.8kg
Cooling concept	convection			
Noise emission (typical)	< 15 dB(A)@1m			
Installation	indoor & outdoor			
Mounting information	wall mounting bracket			
DC connection technology	SUNCLIX			
AC connection technology	screw clamp terminal			
Operating temperature range	-25°C...+60°C / -13°F...+140°F			
Relative humidity (non-condensing)	0% ... 100%			
Max. operating altitude	4000m (>3000m derating)			
Degree of protection (according to IEC 60529)	IP65			
Climatic category (according to IEC 60721-3-4)	4K4H			
Topology	transformerless			
Self-consumption (night)	< 1W			
Standby power	< 6W			

• standard ○ optional - not available

As of January, 2018 / Technical data is subject to revisions

1) 2-pin RS485 for connection to approved smart meters in zero export installations (replacing standard RS485 on RJ45 connector)
2) Analog RJ45 interface to DRED in Australia & New Zealand
3) Selectable in ZeverCloud, audible alarm will only be activated in AS4777 setting

4. Products Specs

b. Inverter for On-grid Systems

Single-Phase String Inverters 3.68 kW to 5 kW

> Residential, Solar Inverters

Zeverlution Series
3680/4000/5000

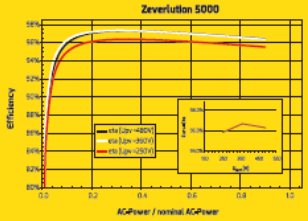
Introduction

The Zeverlution inverter generation combines all aspects of our beliefs into simple, reliable and affordable PV inverters. By introducing a patented inverter topology we use less power electronic components for further increased reliability. At the same time we have reduced the weight of the inverter by nearly 40%, making it even simpler to install and use. With an even wider MPPT range you can benefit from maximum power more often. Furthermore integrated monitoring via Ethernet or Wi-Fi communication is available,whenever you want, our Zeverlution series.

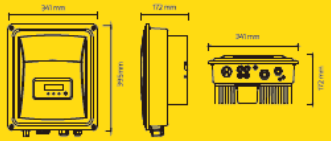
Features

- Dual MPPT for flexible installation
- Lightweight less than 11 kg
- Compact design with IP65 casing for outdoor use
- SUNCLIX connectors for toolless DC wiring
- Quiet with only 25dB noise
- High operating altitude up to 4000m
- Optional and retrofitable integrated Ethernet and Wi-Fi communication
- Support remote firmware update

Conversion efficiency



Dimensions



Single-Phase String Inverters 3.68 kW to 5 kW

Technical data	Zeverlution 3680	Zeverlution 4000	Zeverlution 5000
Input (DC)			
Maximum PV array power (STC)	4780 Wp	5720 Wp	6600 Wp
Maximum DC power at cos φ = 1	3900W	4650W	5300W
Max. input voltage		600V	
MPP voltage range / rated input voltage		100–520V / 360V	
Min. start voltage		80V	
Min. feed-in power		20W	
Max. input current per MPPT		11A / 11A	
Number of MPPTs		2	
Number of independent MPP inputs		1 / 1	
Output (AC)			
Rated active power	3680W	4000W	5000W[1]
Max. apparent AC power	3680VA	4400VA	5000VA[1]
Nominal AC voltage / range		220V,230V,240V / 180V–280V	
AC power frequency / range		50,60 / +-5Hz	
Rated power frequency / rated grid voltage		50Hz / 230V	
Max. output current	16A	20A	23A[2]
Power factor (@rated power)		1	
Adjustable displacement power factor		0.8 inductive ... 0.8 capacitive	
Feed-in phases / connection phases		1 / 1	
Harmonic distortion (THD) at rated output		< 3%	
Efficiency			
Max. efficiency / European weighted efficiency	97.2% / 96.5%	97.2% / 96.5%	97.2% / 96.5%
MPPT efficiency	99.50%	99.50%	99.50%
Protective devices			
DC isolator		○	
PV iso / Grid monitoring		• / •	
DC reverse polarity protection / AC short-circuit current capability		• / •	
GFDI function		•	
Protection class (according to IEC 62103) / overvoltage category (according to IEC 60664-1)		I / II (DC), III (AC)	
General data			
Interfaces: RS485 / RS485[3] & Ethernet & WiFi & a RJ45[4](DRED)		• / ○	
Earth Fault Alarm[5]		cloud based, audible and visible	
Display		16 x 2 characters	
Dimensions (W x H x D)		341 x 395 x 172mm	
Weight		11kg	
Cooling concept		convection	
Noise emission (typical)		< 25 dB(A)@1m	
Installation		indoor & outdoor	
Mounting information		wall mounting bracket	
DC connection technology		SUNCLIX	
AC connection technology		screw clamp terminal	
Operating temperature range		-25°C...+60°C / -13°F...+140°F	
Relative humidity (non-condensing)		0% ... 100%	
Max. operating altitude		4000m (>3000m derating)	
Degree of protection (according to IEC 60529)		IP65	
Climatic category (according to IEC 60721-3-4)		4K4H	
Topology		transformerless	
Self-consumption (night)		< 1W	
Standby power		8.5W	

• standard ○ optional – not available
As of January 2018 / Technical data is subject to revisions.

1) based on the VDE 4105 requirements active power and apparent power will be limited to 4600W and 4600VA
2) 21.7A according to AS/NZS4777.2:2015
3) 2-wire RS485 for connection to approved smart meters in zero export installations (replacing standard RS485 on RJ 45 connector)
4) Analog RJ45 interface to DRED in Australia & New Zealand
5) Selectable in ZeverCloud; audible alarm will only be activated in AS4777 setting

4. Products Specs

b. Inverter for On-grid Systems

Three-Phase String Inverters 4 kW to 10 kW

> Residential, Commercial, Solar Inverters

Evershine TLC Series

TLC4000/5000/6000/8000/10000

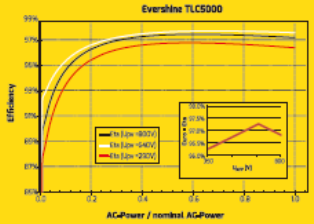
Introduction

We believe that the world would be a better place if everybody had easy access to the cleanest energy from the roof of their homes and businesses. By creating simple, easy to use, affordable and reliable inverters we are revolutionizing access to solar power and delivering financial savings to your home or business. Ideal for large residential or small commercial applications, our Evershine TLC three phase inverter.

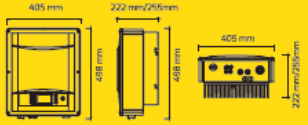
Features

- Efficiency 98.1%
- Max. input voltage 1000V
- Graphical display
- Multiple Maximum Powerpoint Tracking
- IP65 protection class
- RS485 and Modbus RTU communications
- Optional integrated Ethernet and Wi-Fi communication
- Grid management functions via integrated ComBox, ZeverCom, ZeverCom Wi-Fi or ZeverManager
- Easy handling for installation and maintenance

Conversion efficiency



Dimensions



Three-Phase String Inverters 4 kW to 10 kW

Technical data	Evershine TLC4000	Evershine TLC5000	Evershine TLC6000	Evershine TLC8000	Evershine TLC10000
Input (DC)					
Maximum PV array power (STC)	5280 Wp	6600 Wp	7200 Wp	10560 Wp	12000Wp
Maximum DC power at cos φ = 1	4650W	5800W	6300W	9250W	10500W
Max. input voltage	1000V			1000V	
MPP voltage range / rated input voltage	200-800V / 640V			200-800V / 640V	
Min. start voltage	250V			250V	
Min. feed-in power	25W			25W	
Max. input current per MPPT	11A / 11A			15A / 11A	15A / 11A
Number of MPPTs	2			2	2
Number of independent MPP inputs	1 / 1			2 / 1	2 / 1
Output (AC)					
Rated active power	4000W	5000W	6000W	8000W	10000W
Max. apparent AC power	4400VA	5500VA	6000VA	8800VA	10000VA
Nominal AC voltage	3/N/PE, 220/380V, 230/400V, 240/415V				
Nominal AC voltage range (line to line)	277-485V			277-520V	277-520V
AC power frequency / range	50 / ~5Hz			50 / ~5Hz	50 / ~5Hz
Rated power frequency / rated grid voltage	50Hz / 230V			50Hz / 230V	
Max. output current	3 x 6.8A	3 x 8.5A	3 x 9.2A	3 x 13.3A	3 x 15.1A
Power factor (@rated power)	> 0.99			> 0.99	
Adjustable displacement power factor	0.85 inductive ... 0.85 capacitive			0.85 inductive ... 0.85 capacitive	
Feed-in phases / connection phases	3 / 3			3 / 3	
Harmonic distortion (THD) at rated output	< 3%			< 3%	
Efficiency					
Max. efficiency / European weighted efficiency	98% / 97.5%			98.1% / 97.5%	
MPPT efficiency	99.50%			99.50%	
Protective devices					
DC isolator	○			○	
PV iso / Grid monitoring	• / •			• / •	
DC reverse polarity protection / AC short-circuit current capability	• / •			• / •	
GFCI function	•			•	
Protection class (according to IEC 62103) / overvoltage category (according to IEC 60664-1)	I / II (DC), III (AC)			I / II (DC), III (AC)	
General data					
Interfaces: RS485 / RS485[1] & Ethernet & Wi-Fi & a.RJ45[2] (DRED)	• / ○			• / ○	
Earth Fault Alarm[3]	cloud based, audible and visible			cloud based, audible and visible	
Display	graphical LCD			graphical LCD	
Dimensions (W x H x D)	405 x 498 x 222mm			405 x 498 x 255mm	
Weight	21kg			25kg	
Cooling concept	convection			convection	
Noise emission (typical)	< 40 dB(A)@1m			< 45 dB(A)@1m	
Installation	indoor & outdoor			indoor & outdoor	
Mounting information	wall mounting bracket			wall mounting bracket	
DC connection technology	SUNCLIX			SUNCLIX	
AC connection technology	plug-in			plug-in	
Operating temperature range	-25°C...+60°C / -13°F...+140°F			-25°C...+60°C / -13°F...+140°F	
Relative humidity (non-condensing)	0% ... 100%			0% ... 100%	
Max. operating altitude	2000m			2000m	
Degree of protection (according to IEC 60529)	IP65			IP65	
Climatic category (according to IEC 60721-3-4)	4K4H			4K4H	
Topology	transformerless			transformerless	
Self-consumption (night)	< 1W			< 1W	
Standby power	< 12W			< 12W	

• standard ○ optional - not available

As of January, 2019 / Technical data is subject to revisions.

1) 2-pin RS485 for connection to approved smart meters in zero export installations (replacing standard RS485 on RJ 45 connector)
2) Analog RJ45 interface to DRED in Australia & New Zealand
3) Selectable in ZeverCloud, audible alarm will only be activated in AS4777 setting

4. Products Specs

b. Inverter for On-grid Systems

Three-Phase String Inverters 15 kW to 20 kW

> Residential, Commercial, Solar Inverters

Eversol TLC Series

TLC15K/17K/20K

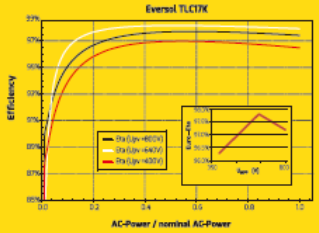
Introduction

We believe that the world would be a better place if everybody had easy access to the cleanest energy. By creating simple, easy to use, affordable and reliable inverters we are revolutionizing access to solar power for businesses and large scale PV developers. Ideal for small commercial scale PV plants, our Eversol TLC three phase inverter.

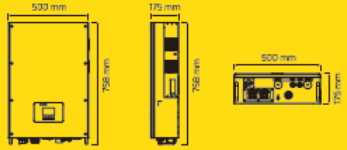
Features

- Efficiency 98.3%
- Max. input voltage 1000V
- Graphical display
- Multiple Maximum Powerpoint Tracking
- IP65 protection class
- RS485 and Modbus RTU communications
- Grid management functions via ZeverCom, ZeverCom WI-FI or ZeverManager
- Easy handling for installation and maintenance

Conversion efficiency



Dimensions



Three-Phase String Inverters 15 kW to 20 kW

Technical data	Eversol TLC15K	Eversol TLC17K	Eversol TLC20K
Input (DC)			
Maximum PV array power (STC	19500 Wp	22100 Wp	26000 Wp
Maximum DC power at cos φ = 1	16920W	19180W	20510W
Max. input voltage	1000V		
MPP voltage range / rated input voltage	270–850V / 640V		
Min. start voltage	250V		
Min. feed-in power	25W		
Max. input current per MPPT	22A / 22A		
Number of MPPTs	2		
Number of independent MPP inputs	2 / 2		
Output (AC)			
Rated active power	15000W	17000W	20000W
Max. apparent AC power	16500VA	18700VA	20000VA
Nominal AC voltage	3/N/PE, 220/380V, 230/400V, 240/415V		
Nominal AC voltage range (line to line)	277–520V		
AC power frequency / range	50,60 / ~5Hz		
Rated power frequency / rated grid voltage	50Hz / 230V		
Max. output current	3 x 24A	3 x 25.8A	3 x 30A
Power factor (@rated power)	> 0.99		
Adjustable displacement power factor	0.85 inductive ... 0.85 capacitive		
Feed-in phases / connection phases	3 / 3		
Harmonic distortion (THD) at rated output	< 3%		
Efficiency			
Max. efficiency / European weighted efficiency	98.3% / 97.9%		
MPPT efficiency	99.50%		
Protective devices			
DC isolator	○		
PV iso / Grid monitoring	• / •		
DC reverse polarity protection / AC short-circuit current capability	• / •		
GFCI function	•		
Protection class (according to IEC 62103) / overvoltage category (according to IEC 60664-1)	I / II (DC), III (AC)		
General data			
Interfaces: RS485 / RS485[2] & Ethernet & WI-FI & a RJ45[3] (DRED)	• / –		
Earth Fault Alarm[3]	cloud based, audible and visible		
Display	graphical, LCD		
Dimensions (W x H x D)	500 x 756 x 175mm		
Weight	43kg		
Cooling concept	fan cooling		
Noise emission (typical)	< 60 dB(A)@1m		
Installation	indoor & outdoor		
Mounting information	wall mounting bracket		
DC connection technology	SUNCLIX		
AC connection technology	plug-in		
Operating temperature range	-25°C...+60°C / -13°F...+140°F		
Relative humidity (non-condensing)	0% ... 100%		
Max. operating altitude	2000m		
Degree of protection (according to IEC 60529)	IP55 (fans), IP65 (others)		
Climatic category (according to IEC 60721-3-4)	4K4H		
Topology	transformerless		
Self-consumption (night)	< 1W		
Standby power	< 12W		

• standard ○ optional – not available
1) For connection to approved smart meters in zero export installations
2) Analog RJ45 interface to DRED in Australia & New Zealand
3) Selectable in ZeverCloud; audible alarm will only be activated in AS4777 setting

As of January, 2019 / Technical data is subject to revisions.

4. Products Specs

b. Inverter for On-grid Systems

Three-Phase String Inverter 33 kW

> Commercial, Industrial, Solar Inverter

Zeverlution Pro 33K

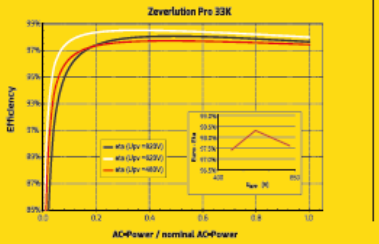
Introduction

We believe that the world would be a better place if everybody had easy access to the cleanest energy. Now we are also revolutionizing access to solar power for multi-MW utility grade PV plants. You will benefit from highest efficiency, lowest start voltage, wide MPPT range and Modbus support. Because great plants are not made with powerful words alone, our Zeverlution Pro series.

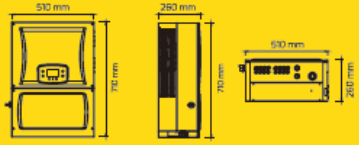
Features

- Efficiency up to 98.5%
- Lightweight, only 58kg
- Compact IP65 casing ideal for PV plants
- Integrated DC and AC surge protection for highest safety
- RS485 and Modbus RTU communications
- Separate wiring compartment for convenient and reliable installation
- Complete grid and plant management functions via ZeverManager, ZeverCom or Modbus-compliant 3rd party management devices
- Easy handling for installation and maintenance

Conversion efficiency



Dimensions



Three-Phase String Inverter 33 kW

Technical data	Zeverlution Pro 33K
Input (DC)	
Maximum PV array power (STC)	49500 Wp
Maximum DC power at cos φ = 1	33670W
Max. input voltage	1000V
MPP voltage range / rated input voltage	270–950V / 620V
Min. start voltage	250V
Min. feed-in power	25W
Max. input current per MPPT	34A / 34A
Max.input current per string	12A
Number of MPPTs	2
Number of independent MPP inputs	4 / 4
Output (AC)	
Rated active power	33000W
Max. apparent AC power	33000VA
Nominal AC voltage	3/N/PE, 220/380V, 230/400V
Nominal AC voltage range (line to line)	277-520V
AC power frequency / range	50,60 / –5Hz
Rated power frequency / rated grid voltage	50,60Hz / 230V
Max. output current	3 x 48A
Power factor (@rated power)	> 0.99
Adjustable displacement power factor	0.80 inductive ... 0.80 capacitive
Feed-in phases / connection phases	3 / 3
Harmonic distortion (THD) at rated output	< 3%
Efficiency	
Max. efficiency / European weighted efficiency	98.5% / 98.2%
MPPT efficiency	99.50%
Protective devices	
DC isolator	○
PV iso / Grid monitoring	• / •
DC reverse polarity protection / AC short-circuit current capability	• / •
GFCI function	•
Protection class (according to IEC 62103) / overvoltage category (according to IEC 60664-1)	I / II (DC), III (AC)
Surge protection DC (SPD Type II) / AC (MOV Type II)	• / •
General data	
Interfaces: RS485 / Ethernet / WiFi	• / – / –
Earth Fault Alarm	ZeverCloud based
Display	graphical LCD
Dimensions (W x H x D)	510 x 710 x 260mm
Weight	58kg
Cooling concept	fan cooling
Noise emission (typical)	< 60 dB(A)@1m
Installation	indoor & outdoor
Mounting information	wall mounting bracket
DC connection technology	SUNCLIX
AC connection technology	M40 cable gland + M6 OT terminal
Operating temperature range	-25°C...+60°C / -13°F...+140°F
Relative humidity (non-condensing)	0% ... 100%
Max. operating altitude	2000m
Degree of protection (according to IEC 60529)	IP65
Climatic category (according to IEC 60721-3-4)	4K4H
Topology	transformerless
Self-consumption (night)	< 1W
Standby power	< 12W

• standard ○ optional – not available

As of January, 2019 / Technical data is subject to revisions.

4. Products Specs

b. Inverter for Hybrid HV System

ES Series

The GoodWe ES series bi-directional energy storage inverter is applicable with both on-grid and off-grid PV systems. It can control the flow of energy intelligently. During daytime, the PV plant generates electricity which can be provided to the loads, fed into the grid or charge the battery. The electricity stored can be released when the loads require it during the night. Additionally, the power grid can also charge the storage devices via the inverter.

- Innovative solution for Energy Storage
- Charge controller and inverter integrated
- Intelligent battery management function
- Capable of being grid-interactive or grid-independent
- Compatible with both Lead-acid and Li-Ion battery
- More security & performance for same costs
- IP65 dust-proof and water-proof rating
- 45°C full-load output
- Monitoring inverters freely via computers or mobile phones
- Fanless low-noise design

Technical Data	GW5048D-ES	GW3648D-ES
Solar		
Max. recommended PV Power [W]	6000	4600
Nominal DC Power [W]	5000	4200
Max. DC voltage [V]	580	580
MPPT voltage range [V]	125~550	125~550
Starting voltage [V]	150	150
Max. DC current [A]	11/11	11/11
No. of DC connectors	2	2
No. of MPPTs	2 (can parallel)	2 (can parallel)
DC connector	MC4/ Phoenix/ Amphenol	MC4/ Phoenix/ Amphenol
Battery		
Battery type	Lead-acid or Li-Ion	Lead-acid or Li-Ion
Nominal Voltage [V]	48	48
Max Discharge power [W]	4600	3600
MAX Charge power [W]	2300, programmable	2300, programmable
Battery capacity [Ah]	>100 (depending requirement)	>100 (depending requirement)
Charging curve	3-stage adaptive with maintenance	3-stage adaptive with maintenance
Charging voltage [V]	60 (optional)	60 (optional)
Battery temperature compensation	Included (Li-Ion)	Included (Li-Ion)
Battery voltage sense	Integrated	Integrated
Current shunt	Integrated	Integrated
AC Output Data		
Nominal AC power [W]	4600	3600
Max. AC power [W]	4600/4850/4950/5100*	3600
Peak power (Back-up) [W]	1.5x Pnom, 10sec	1.5x Pnom, 10sec
Max. AC current [A]	20/21**	16
Nominal AC output	50/60Hz; 230Vac	50/60Hz; 230Vac
AC output range	45~55Hz/55~65Hz; 180~270Vac	45~55Hz/55~65Hz; 180~270Vac
AC output (Back-up)	230Vac ±2%, 50Hz(60Hz optional) ±0.2%, THDv<3% (linear load)	
THDi	<1.5%	<1.5%
Power factor	0.8 leading~0.8 lagging	0.8 leading~0.8 lagging
Grid connection	Single phase	Single phase
Efficiency		
Max. efficiency	97.6%	97.6%
Euro efficiency	>97.0%	>97.0%
MPPT adaptation efficiency	99.9%	99.9%
Protection		
Residual current monitoring unit	Integrated	Integrated
Anti-islanding protection	Integrated	Integrated
DC switch (PV)	Integrated (optional)	Integrated (optional)
AC over current protection	Integrated	Integrated
Insulation monitoring	Integrated	Integrated
Certifications&Standards		
Grid regulation	VDE-AR-N4105, VDE 0126-1-1, G83/2, G59/3, AS4777.2/.3	
Safety	IEC62109-1&-2, AS3100, IEC62040-1	
EMC	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4, EN61000-3-11, EN61000-3-12	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4, EN61000-3-2, EN61000-3-3
General Data		
Dimensions (WxHxD) [mm]	516*440*184	516*440*184
Weight [kg]	30	28
Mounting	Wall bracket	Wall bracket
Ambient temperature range	-25~60°C (>45°C derating)	-25~60°C (>45°C derating)
Relative humidity	0~95%	0~95%
Max. operating altitude	4000m(> 3000m derating)	4000m(> 3000m derating)
Protection degree	IP65	IP65
Topology	Transformerless	Transformerless
Standby losses [W]	<8	<8
Cooling	Natural convection	Natural convection
Noise emision [dB]	<25	<25
Display	LED light & APP	LED light & APP
Communication	USB2.0; WiFi	USB2.0; WiFi
Standard warranty [years]	5	5

*4600 for VDE-AR-N4105, 4850 for Thailand, 4950 for Australia, 5100 for other countries
**21 for Thailand, 20 for other countries

4. Products Specs

b. Inverter for Hybrid LV System

PH1800 Plus Series
On/Off Grid Hybrid Solar Inverter

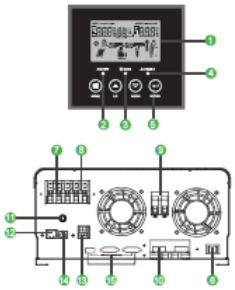
Feature:

- Rated power 1500W to 5000W
- Pure sine wave output
- Smart LCD setting（Working modes, Charge Current, Charge Voltage, etc.）
- Built-in MPPT 60A/80A solar charge controller
- New SUB working mode(Solar-Utility-Battery working mode)
- MPPT Efficiency max 98%
- Combining solar system, AC utility, and battery power source to supply continuous power
- Multiple operations: basic Grid-tie, Off-Grid, Grid-Interactive
- Parallel operation with up to 3 units (Available for 4KVA/5KVA only)
- Overload, short circuit and Deep discharge protection
- Cold start function
- Support USB, RS485 monitoring function with free CD
- WIFI/ GPRS remote monitoring (optional)
- Compatible to generator

Introduction:

This is a multi-function inverter/charger, combining functions of inverter, MPPT solar charger and battery charger to offer uninterruptible power support with portable size. Its comprehensive LCD display offers user-configurable and easy-accessible button operation such as battery charging current, AC/solar charger priority, and acceptable input voltage based on different applications.

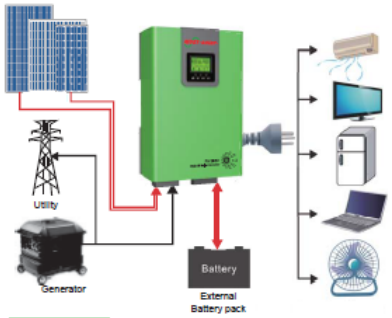
LCD Display Information



1. LCD display
2. Status indicator
3. Discharging/Charging indicator
4. Fault indicator
5. Function buttons
6. Power on/off switch
7. AC input
8. AC output
9. PV input
10. Battery input
11. Circuit breaker
12. RS485 communication port
13. Dry contact
14. USB
15. Parallel Connection (3KW-5KW available)

NOTE: For parallel model installation and operation, please check separate parallel installation guide for the details.

Solar System Connection



Back Panel

Specification

MODEL		PH18-1624 Plus	PH18-2024 Plus	PH18-2624 Plus	PH18-3048 Plus	PH18-4048 Plus	PH18-5048 Plus
Nominal Battery System Voltage		24VDC			48VDC		
INVERTER OUTPUT	Rated Power	1500W	2000W	2500W	3000W	4000W	5000W
	Surge Power	3000W	4000W	5000W	6000W	8000W	10000W
	Waveform	Pure Sine Wave					
	AC Voltage Regulation (Batt.Mode)	220VAC/230VAC/240VAC±5%					
	Electric Current	3.4A	7.0A		10.5A	13A	
	Output Frequency	50Hz/60Hz Auto Sensing					
	THD (Linear loads)	Off grid ≤2%					
		Grid discharge ≤3%					
		Grid charge ≤3%					
	Inverter Efficiency (Peak)	93%					
	Transfer Time	10ms(For PC) 20ms(For Other Home Appliance)					
AC INPUT	Voltage	230VAC					
	Selectable Voltage Range	170~280VAC(For Personal Computers)、90~280VAC(For Home Appliances)、184~253VAC(VDE4105)					
	Frequency Range	50Hz/60Hz Auto Sensing					
BATTERY	Normal Voltage	24VDC			48VDC		
	Floating Charge Voltage	27VDC			54VDC		
	Overcharge Protection	31VDC			60VDC		
SOLAR CHARGER & AC CHARGER	Maximum PV Array Open Circuit Voltage	145VDC					
	PV Array MPPT Voltage Range	30~130VDC			64~130VDC		
	Standby Power Consumption	2W					
	Rated Power	1500W/2000W			4000W	4000W	4000W
	Maximum Solar Charge Current	60A/80A			80A	80A	80A
	Maximum Efficiency	98%					
	Maximum AC Charge Current	20A or 30A			60A		
	Maximum Charge Current	80A	100A		140A	140A	140A
MECHANICAL SPECIFICATIONS	Machine Dimensions (W*H*D)(mm)	272*355*100			297.5*468*125		
	Net Weight (Kg)	7.4			14		
	Package Dimensions(W*H*D)(mm)	485*393*251			638*395*241		
	Gross Weight (Kg)	9.5			16.4		
OTHER	Humidity	5% to 95% Relative Humidity (Non-condensing)					
	Operating Temperature	0°C~55°C					
	Storage Temperature	-15°C~60°C					

* Product specifications are subject to change without further notice.

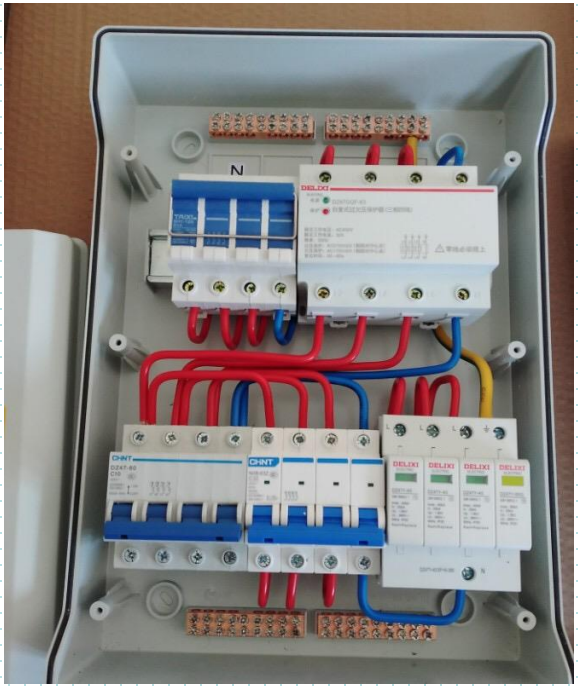
Approximate Back-up Time Table

Model	Load（W）	Backup Time@24V 100Ah(min)	Backup Time@24V 200Ah(min)
1500W	800W	112	269
	1500W	62	158
2000W	1000W	104	244
	2000W	41	102
2500W	800W	112	269
	1500W	62	158
	2500W	26	64

Model	Load（W）	Backup Time@48V 100Ah(min)	Backup Time@48V 200Ah(min)
3000W	300W	847	1694
	1500W	123	315
	3000W	50	123
4000W	1000W	208	488
	2000W	89	205
	4000W	38	89
5000W	1000W	208	488
	2000W	89	205
	3000W	50	123
	4000W	38	89
	5000W	21	72

4. Products Specs

c. AC Distribution Box



4. Products Specs

d. DC Cable and Connectors

6. Environmental characteristics

Halogen free	according TUV 2PfG 1169/08.2007 Annex B
Ozone resistance	according EN 50396
UV resistance	according HD 605/A1
Flame characteristics	according IEC 60332-1-2

7. Product Description

Product Code Number	Size(mm2)	Conductor dia. N/mm	Insulation dia.(mm)	Core colour	Nominal Jacket dia.(mm)	Jacket colour	Rated current at 60℃(A)
BY1-C2000	2.5	50/0.25	3.65	black	5.25	black	41
BY1-C2200	2.5	50/0.25	3.65	black	5.25	red	41
BY1-C1000	4.0	56/0.29	4.20	black	6.10	black	55
BY1-C1200	4.0	56/0.29	4.20	black	6.10	red	55
BY1-C0000	6.0	84/0.29	4.90	black	6.50	black	70
BY1-C0200	6.0	84/0.29	4.90	black	6.50	red	70

8.Marking

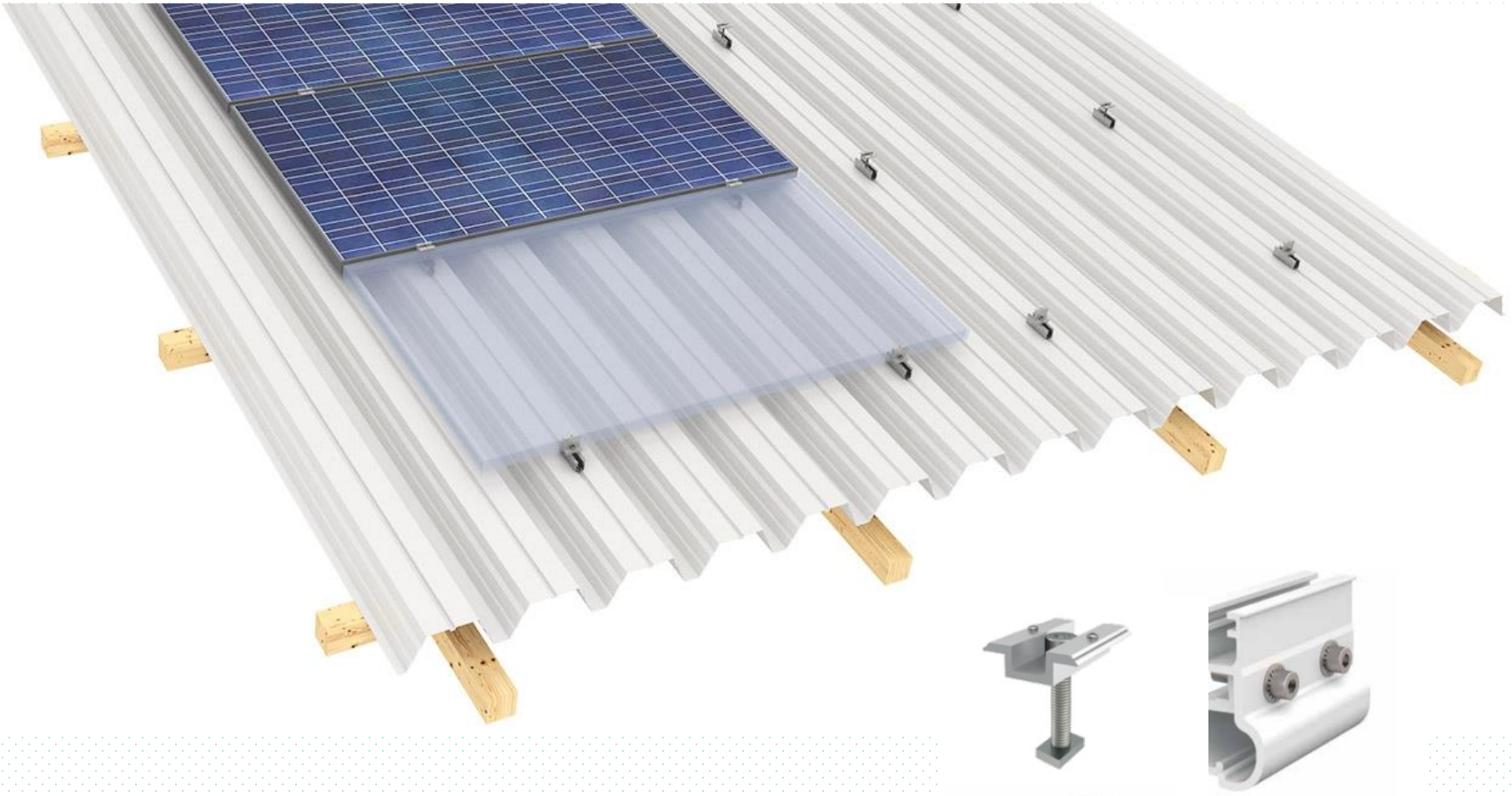
TÜV PHOTOVOLTAIC CABLE 2PFG 1169 PV1-F/EN50618 H1Z2Z2-K 1xXXXmm2 1000VAC 1500VDC -40℃ NINGBO FOLLOWRAY SPECIAL CABLE CO . , LTD.

9.Industry Standards

TUV 2Pfg 1169/08.2007
EN50618/2013

4. Products Specs

e. Mounting Structures for Solar System



4. Products Specs

f. Batteries

DCS12-50 12V50Ah

DCS series deep cycle battery is made of special high-tin corrosion-resistant alloy. It has optimized positive grid structure design and special negative active material improving charge acceptance ability and reducing negative plate sulphation. It is optimal battery for a wide range of household energy storage systems and suitable for partial state of charge (PSOC) applications.

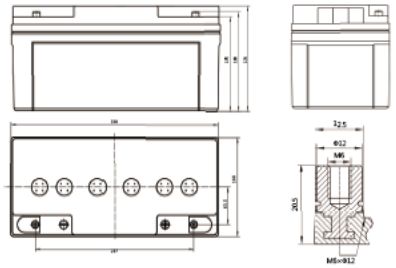
Benefits

- Very long life according to EUROBAT Classification
- More than 3000 cycles at 70% DOD
- Special negative active material formula, improve the charge acceptance ability, reduce the negative plate sulphation, more suitable for the partial state of charge (PSOC) application
- Modular design and horizontal installation, compact structure, saving the installation area and space, easy installation, convenient maintenance

Applications

- Household energy storage system
- Solar and wind energy system
- Emergency system
- Other cycling systems

Drawing



Standards

- IEC 60896-21/22
- IEC61427
- EUROBAT guide

Specifications

Battery Model	DCS12-50			
Design Life (years, 25℃)	15			
Capacity (Ah, 25℃)	10HR (5.0A, 1.80V)	5HR (8.5A, 1.80V)	3HR (12.5A, 1.80V)	100HR(0.627A, 1.80V)
	50.0	42.5	37.5	62.7
Dimensions (mm)	Length	Width	Height	Total Height
	350	166	174	174
Approx. Weight (kg)	25.5			
Reference Internal Resistance (mΩ)	4.8 (full charged @ 25℃)			
Short Circuit Current (A)	1500			
Self-Discharge (25℃)	<1% per month			
Charge Voltage (V/cell, 25℃)	Cycle use		Float use	
	2.40 (-4mV/℃/cell), max charge current: 20A		2.25 (-4mV/℃/cell)	

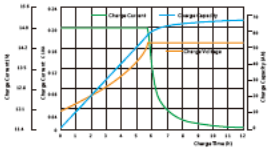
Constant Current Discharge Data (25℃, A)

End Voltage (V/cell)	h										
	1	2	3	5	8	10	20	50	100	120	240
1.70	28.3	20.8	13.6	9.2	7.02	5.30	3.14	1.26	0.651	0.561	0.297
1.75	27.5	20.2	13.0	9.0	6.84	5.24	3.09	1.24	0.639	0.555	0.295
1.80	26.9	19.6	12.5	8.5	6.50	5.00	2.96	1.19	0.627	0.545	0.291
1.85	26.0	18.7	12.0	8.0	6.00	4.80	2.80	1.14	0.601	0.528	0.281
1.90	24.0	17.2	10.9	7.2	5.44	4.36	2.55	1.04	0.563	0.491	0.258
1.95	21.6	15.2	9.3	6.2	4.66	3.75	2.04	0.83	0.452	0.402	0.215

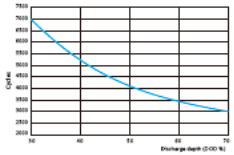
Constant Current Discharge Data (25℃, W/cell)

End Voltage (V/cell)	h										
	1	2	3	5	8	10	20	50	100	120	240
1.70	54.7	39.4	28.5	20.3	14.0	10.7	5.82	2.37	1.26	1.10	0.587
1.75	54.0	38.9	28.1	20.0	13.8	10.6	5.76	2.34	1.24	1.09	0.583
1.80	53.1	38.1	27.5	19.6	13.5	10.4	5.66	2.29	1.22	1.07	0.574
1.85	51.9	37.0	26.8	19.1	12.9	10.0	5.48	2.23	1.17	1.04	0.556
1.90	50.0	35.2	25.0	17.8	12.0	8.98	5.02	2.04	1.11	0.969	0.511
1.95	45.6	31.6	21.9	15.1	10.5	7.96	4.16	1.68	0.926	0.826	0.449

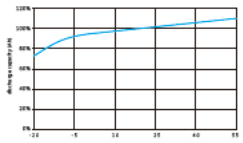
Performance Curve



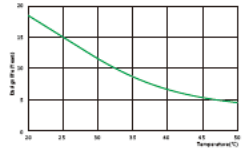
Charging characteristic



Cycle life vs. discharge depth



Discharge capacity vs. temperature



Design life vs. temperature

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4. Products Specs

g. DC String Combiner

Thank You!

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