

SUNGROW



# SUNGROW EV Charging

## PRODUCTS AND SYSTEM SOLUTIONS



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RE100 EP100

EV Charger

**SUNGROW**  
Clean power for all



**SUNGROW CHARGER**  
CHARGE OUR FUTURE



ABOUT SUNGROW	04
SUNGROW EV Charging	06
Lean Manufacturing	07
Product Portfolio	08
System Solutions	09
AC Charger	16
DC Charger	22
Hybrid Inverter	26
Battery	30
iEnergyCharge	34
iSolarCloud	35
SUNGROW Service	36
Project References	37



## ABOUT SUNGROW

As a key high-tech enterprise in China, Sungrow Power Supply Co., Ltd. (Stock code: 300274) specializes in R&D, production, sales and services of new energy equipment, such as solar energy, wind energy, energy storage, hydrogen energy, electric vehicles, mainly provides photovoltaic inverters, wind energy converters, energy storage system, floating PV system, new energy automotive driving system, EV charging station, renewable hydrogen production system, smart operation and maintenance, and commits itself to providing first-class life cycle solutions of clean energy.

Since the establishment in 1997, the Company has been concentrating on the field of new energy power generation, adhering to market demand orientation, and taking technological innovation as the propellant for development. The Company has cultivated a professional R&D team with solid R&D experiences and strong capabilities of independent innovation. Sungrow has successively undertaken more than 20 national key science and technology programs, led the drafting of multiple national standards, and is one of the few companies in the industry that have mastered a number of independent core technologies.

Photovoltaic inverters, Sungrow's core products, have been accredited by TÜV, CSA, SGS, and other international authorities, and sold to more than 150 countries and regions in the world. Sungrow's cumulative installed capacity of inverter equipment across the world has been above 340GW by the end of December 2022.

The Company has successively won the awards of China Grand Awards for Industry, National Manufacturing Single Champion Demonstration Enterprise, Top 50 Innovative Chinese Companies, National Intellectual Property Demonstration Enterprise, Global Top 500 New Energy Enterprises, and Best Companies to Work For in Asia. Sungrow is a company with state-level post-doctoral research workstation, a national high-tech industrialization demonstration base, a national enterprise technology center, a national industrial design center, a national green factory, and ranks among the best in the global new energy power generation industry in terms of comprehensive strength.

In the future, Sungrow will adhere to its mission of "Clean power for all", accelerate the development of clean energy power generation system integration based on the new energy equipment business, innovate and expand new business in the field of clean power conversion technology, keep in close contact with the customers, actively participate in global competition, and strive to build itself into a respectable world-class company.



**1997**

Founded

**2011**

Listed on SZSE

**10000+**

40%+ R&D Personnel

**100**<sup>TOP</sup>

Top 100 Global New Energy

**100%**

The World's Most Bankable Inverter Brand

**RE 100**

All Clean Energy Supply in 2028





## SUNGROW EV Charging

SUNGROW EV Charging solutions are based on Sungrow 26 years of the experience in power electronics and the design and application of new energy equipment to develop and manufacture leading-edge electric vehicle charging equipment. SUNGROW EV Charging products are designed to meet the demand for efficient, stable, and safe charging in order to create more benefit and more revenue for clients.

SUNGROW EV Charging combines Sungrow Photovoltaic (PV) system and Energy Storage System (ESS) to provide an integrated PV+ESS+Charger intelligent solution for charging stations, forming a closed loop of green energy and allowing electric vehicles to use renewable energy.

## Lean Manufacturing

Comprehensive capacity of 140GW+, annual capacity of charger over 1GW



Sungrow headquarters factory provides shipments worldwide



Overseas factories with annual capacity of 20GW managing shipments to India and the United States market



Lean R&D and design create reliable products



Lean production process controls the details



## Product Portfolio

SUNGROW EV Charging offers both DC Chargers and AC Chargers equipped with iEnergyCharge monitoring platform. Chargers operate in stand-alone and PV+ESS+Charger modes. SUNGROW EV Charging provides integrated PV+ESS+Charger solutions covering all scenarios.

SUNGROW EV Charging provides ALM (Adaptive Load Management), DLB (Dynamic Load Balance), and DLM (Dynamic Load Management) functions to match power distribution capacity to avoid overload.



- AC007UK-01 L1  
AC007/11E-01 L1  
AC007/011E-01

- AC22E-01

- IDC30E



- IDC180E

- SH3.0/3.6/4.0/5.0/6.0RS

- SH5.0/6.0/8.0/10RT-20



- SBR096/128/160/192/224/256

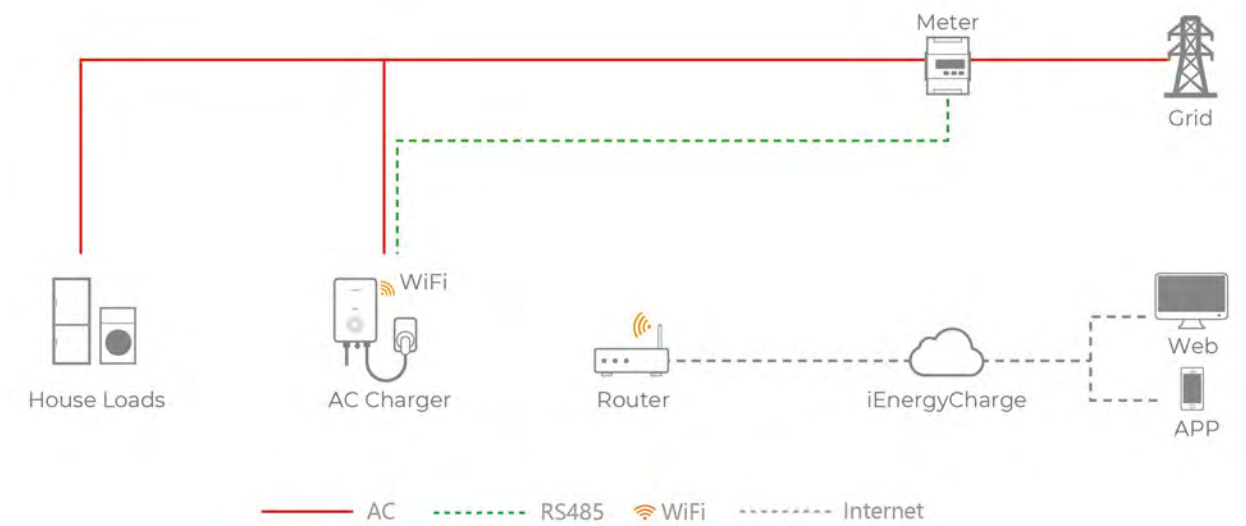
- iEnergyCharge

- iSolarCloud

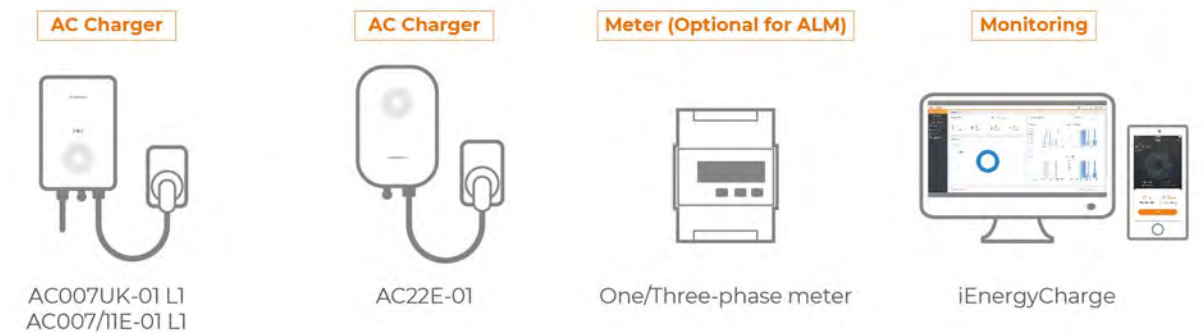
\*G1: 1<sup>st</sup> Generation, G2: 2<sup>nd</sup> Generation



### Private: AC Charger 7/11/22kW Stand-alone Solution



### Recommended Products

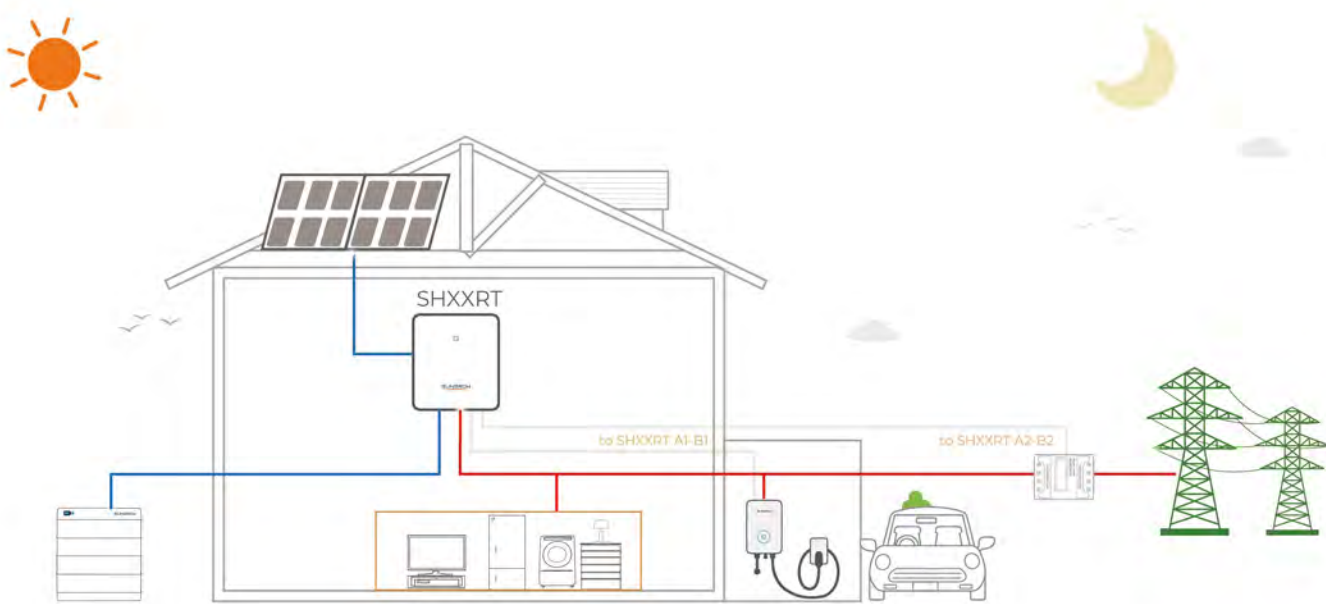




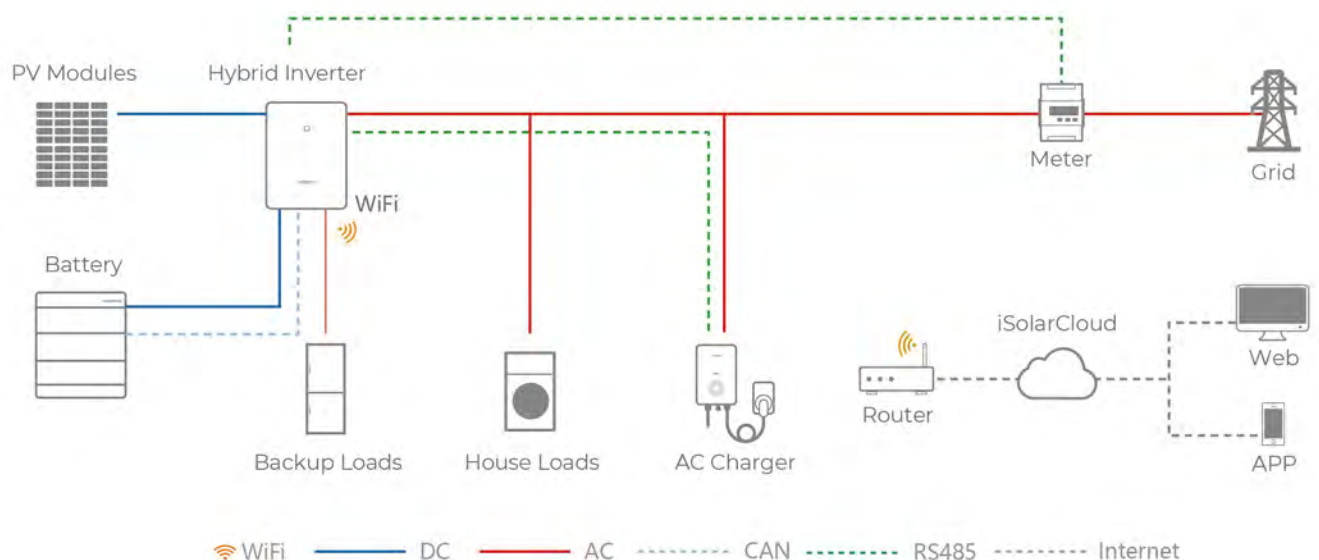


# Zero-carbon Life Home Charging

SUNGROW EV Charging combines Sungrow Photovoltaic (PV) system and Energy Storage System (ESS) with an intelligent Operation and Maintenance (O&M) management platform to provide an integrated PV+ESS+Charger intelligent solution for charging stations. While meeting the need for efficient, stable, and safe charging, it also provides the opportunity for revenue generation from photovoltaic power generation and charging. As a result, allowing electric vehicles to use renewable energy reduces the use of conventional energy and helps achieve the carbon neutrality goal.



## Private: AC Charger 7/11/22kW PV+ESS+Charger Solution



### Benefits of Sungrow's PV+ESS+Charger Solution

- Deliver one-stop design, commissioning, O&M.
- Address the issue of insufficient power distribution capacity in charging stations.
- Alleviate the load on the power supply during peak periods.
- Implement an Energy Storage System (ESS) to enable off-grid (during utility grid outage), improving the reliability of charging and reduce charging costs via increasing green electricity usage, peak shaving, and valley filling.
- Integrated Energy Management System (EMS) allocates energy to each unit within the system, maximizing energy utilization efficiency.
- Achieve a closed loop of green energy to enhance the utilization of clean energy and decrease carbon emissions and reduce the electricity cost.

### Recommended Products

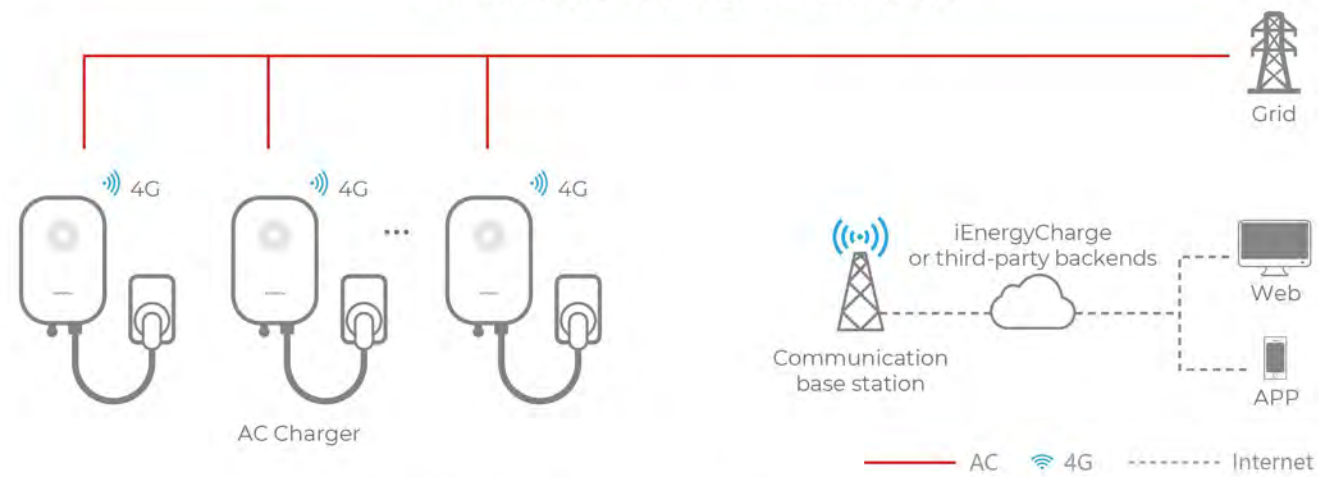
<b>AC Charger</b>	<b>AC Charger</b>	<b>Hybrid Inverter</b>	<b>Hybrid Inverter</b>	<b>Meter (For ALM)</b>	<b>Monitoring</b>
AC007/011E-01	AC22E-01	SH3.0/3.6/4.0/5.0/6.0RS	SH5.0/6.0/8.0/10RT-20	One/Three-phase meter	iSolarCloud



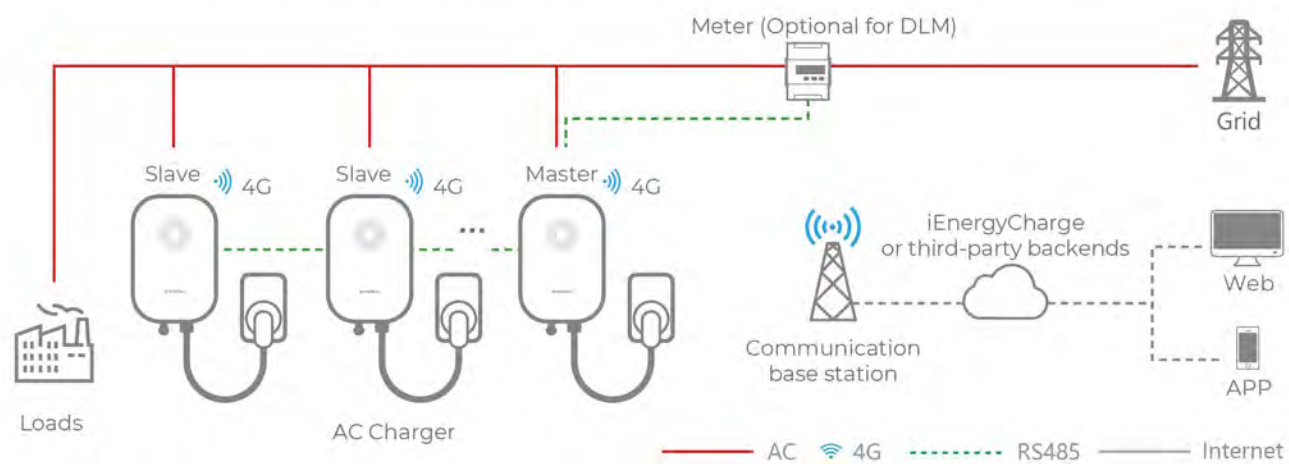


## Semi-public&Public Destination Charging: AC 22kW/DC 30kW Charger Solutions

### AC 22kW Charger Solution

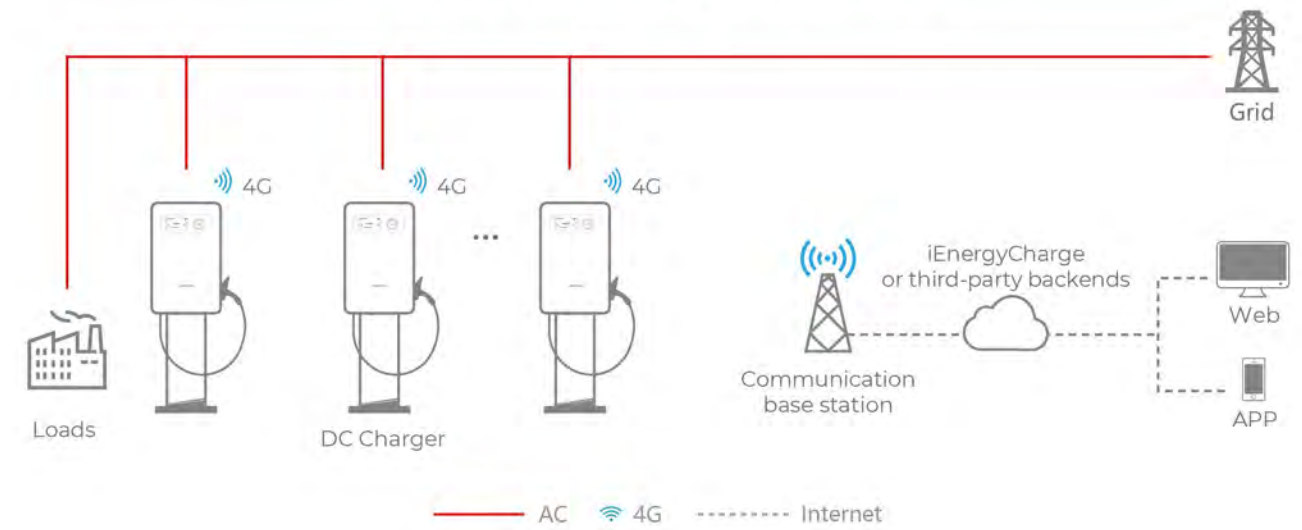


### AC 22kW Charger DLB/DLM Solution

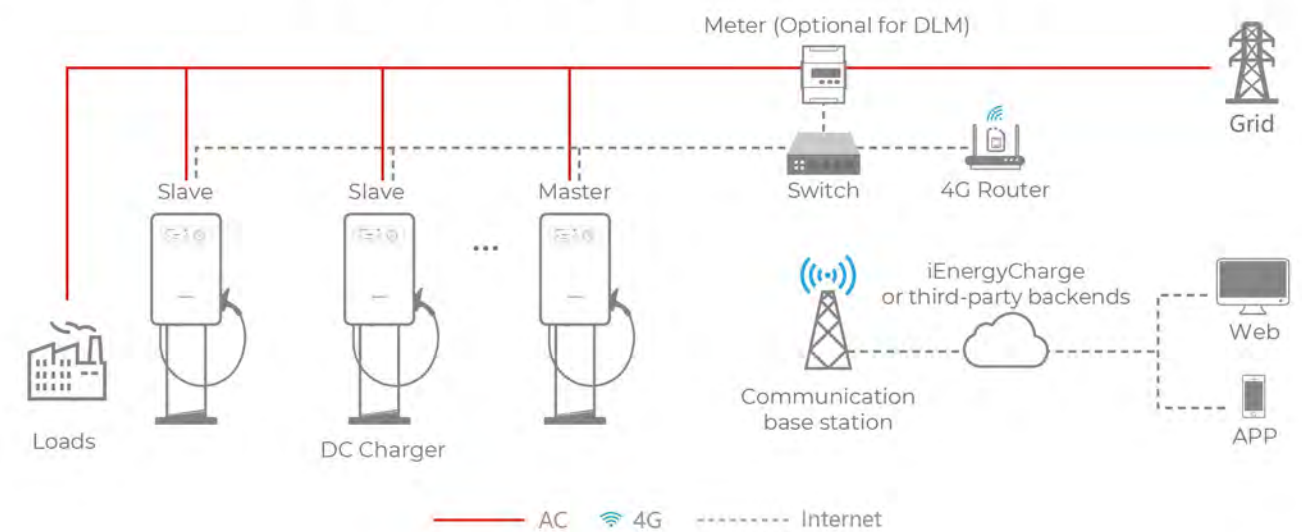


\* When the loads and chargers are connected to the same point of connection, DLM function is needed for dynamic load management. When only chargers are connected to the point of connection, the DLB function is required for dynamic load balance.

### DC 30kW Charger Solution



### DC 30kW Charger DLB/DLM Solution



\* When the loads and chargers are connected to the same point of connection, DLM function is needed for dynamic load management. When only chargers are connected to the point of connection, the DLB function is required for dynamic load balance.

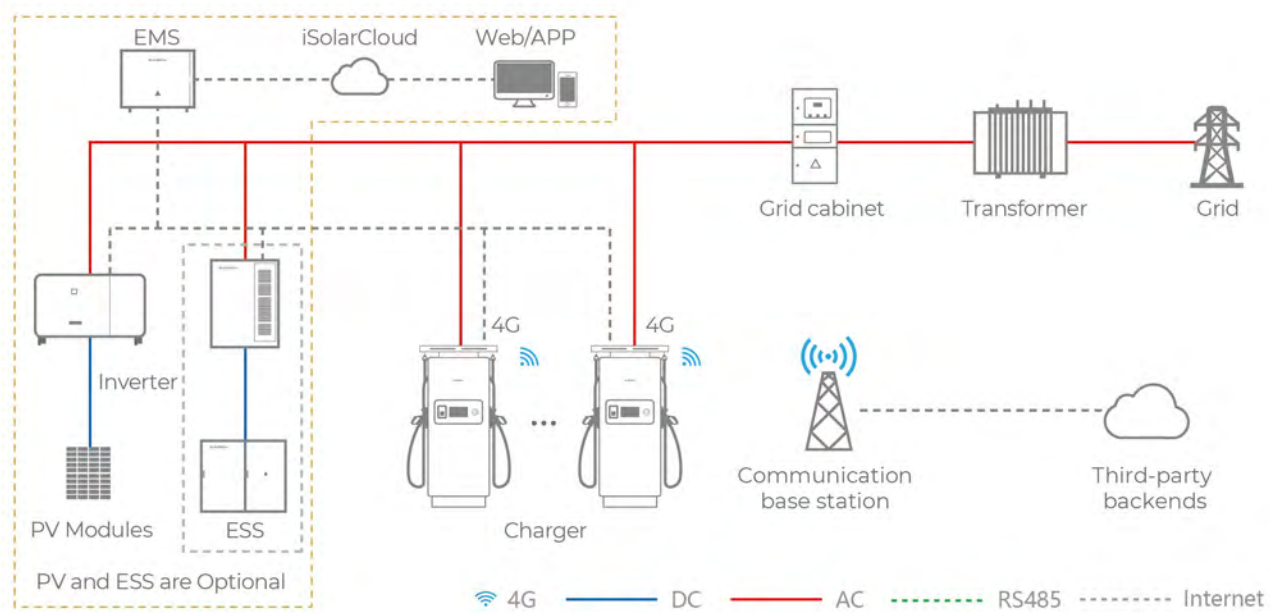
### Recommended Products







### Public Fast Charging: 180kW DC Charger Solution

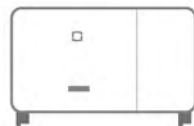


### Recommended Products

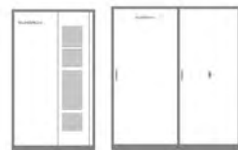
DC Charger



IDC180E



Inverter



ESS



EMS

## Benefits of PV+ESS+Charger Solution for Public Scenarios

### Challenges for Fast Charging Stations

- Fast charging stations pose significant challenges to the utility grid due to their high charging power. This results in utility grid pollution.
- It is difficult to enlarge distribution capacity to meet the growing electricity demand of charging station.
- Fast charging stations require large amounts of power, leading to high charging costs. The huge energy consumption leads to the financial burden during operating these stations.
- During periods of peak power consumption, high power EV chargers are unable to operate at full capacity. This reduces the availability of charging station and causes charging delay for users.

### Benefits of Sungrow PV+ESS+Charger Solution

- Delivering one-stop design, commissioning, O&M.
- EMS+AI algorithm for intelligent control strategy and complete system solutions.
- Competitive advantage in reducing energy cost via increasing green electricity usage, peak shaving, and valley filling.
- Reducing the impact on utility grid, alleviating the restriction of distribution capacity and avoiding expensive extension of grid connection.
- Ability to operate off-grid (during utility grid outage), improving the reliability of the charging.
- Increasing availability of charging stations.
- Enable electric vehicles to reduce carbon emissions via utilization of green electricity.



# AC007UK-01 L1

7 kW AC Charger for Electric Vehicles



## RELIABLE AND VERSATILE

- Standard Type 2 charging plug
- Integrated 6mA DC fault current detection
- Built in PEN fault protection

## USER FRIENDLY

- Premounted 7m charging cable
- Space-saving dimensions for wall-mounting
- Optional pole-mounting

## SMART AND EASY MANAGEMENT

- Adaptive Load Management
- Control and visualization via iEnergyCharge
- Capable for OCPP1.6J communication

## SUSTAINABLE

- RFID access control with 2 cards included
- Authentication via APP or RFID

Technical Data	AC007UK-01 L1
<b>AC Input and Output</b>	
Max. charge power	7.4 kW
Nominal voltage	230 V
Nominal grid frequency	50 Hz / 60 Hz
Max. current	32 A single-phase
Charge connector	Plug Type 2
Input cable cross-section	3 mm <sup>2</sup> * 6 mm <sup>2</sup>
Output cable length	7 m
<b>Protection</b>	
Residual current detection	6 mA DC
PEN fault protection	Yes
Over/Under voltage protection	Yes
Over load protection	Yes
Over temperature protection	Yes
Surge protection	II
Overvoltage category	III (grid) / II (car)
<b>General Data</b>	
Dimensions ( H * W * D )	310 mm * 205 mm * 92 mm
Weight	4.2 kg
Mounting method	Wall-mounting / Pole-mounting ( optional )
Impact resistance	IK08
Degree of protection	IP65
Operating ambient temperature range	-30l - to 50 -
Allowable relative humidity range ( non-condensing )	5 % - 95 %
Cooling method	Natural convection
Max. operating altitude	2000 m
Grid type	TN / TT
Display	LED indicator
Monitoring	Monta APP
Communication	WIFI
Charging protocol	OCPP 1.6 J
Power consumption for standby	< 5 W
Start mode	RFID card / APP
Compliance	UKCA , No.1467
Warranty	3 years ( standard )



# AC007/11E-01 L1

7 / 11 kW AC Charger for Electric Vehicles



## RELIABLE AND VERSATILE

- Type 2 charging plug – compatible with standard electric vehicles
- Integrated 6mA DC fault current detection



## SMART AND EASY MANAGEMENT

- Adaptive Load Management
- Control and visualization via iEnergyCharge
- Capable for OCPP1.6J communication



## USER FRIENDLY

- Premounted 7m charging cable
- Space-saving dimensions for wall-mounting
- Optional pole-mounting



## SUSTAINABLE

- RFID access control with 2 cards included
- Authentication via APP or RFID

Technical Data	AC007E-01 L1	AC011E-01 L1
<b>AC Input and Output</b>		
Max. charge power	7.4 kW	11 kW
Nominal voltage	230 V	400 V
Nominal grid frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Max. current	32 A single-phase	16 A three-phase
Charge connector	Plug Type 2	Plug Type 2
Input cable cross-section	3 mm <sup>2</sup> + 6 mm <sup>2</sup>	5 mm <sup>2</sup> + 2.5 mm <sup>2</sup>
Output cable length	7 m	7 m
<b>Protection</b>		
Residual current detection	6 mA DC	
Over/Under voltage protection	Yes	
Over load protection	Yes	
Over temperature protection	Yes	
Surge protection	II	
Overvoltage category	III (grid) / II (car)	
<b>General Data</b>		
Dimensions (H * W * D)	310 mm * 205 mm * 92 mm	310 mm * 205 mm * 92 mm
Weight	4.2 kg	3.8 kg
Mounting method	Wall-mounting / Pole-mounting (optional)	
Impact resistance	IK08	
Degree of protection	IP65	
Operating ambient temperature range	-30l - to 50 -	
Allowable relative humidity range ( non-condensing )	5 % - 95 %	
Cooling method	Natural convection	
Max. operating altitude	2000 m	
Grid type	TN / TT	
Display	LED indicator	
Monitoring	iEnergyCharge APP	
Communication	WIFI	
Charging protocol	OCPP 1.6J	
Power consumption for standby	< 5 W	
Start mode	RFID card / APP	
Compliance	EN / IEC 61851-1 ; EN / IEC 61851-21-2	
Warranty	3 years ( standard )	



# AC007/011E-01

7 / 11 kW AC Charger for Electric Vehicles



## RELIABLE AND VERSATILE

- Compatible with Sungrow 1/3-phase solution
- Integrated 6mA DC fault current detection

## USER FRIENDLY

- Premounted 7m Type 2 charging cable
- Space-saving dimensions for wall-mounting
- Optional pole-mounting

## SMART AND EASY MANAGEMENT

- Control and visualization via iSolarCloud
- RFID access control with 2 cards included

## SUSTAINABLE

- Beyond charging – for maximum usage of solar energy together with Sungrow 1/3-phase solution
- Different charging modes to fit all needs

	AC007E-01	AC011E-01
<b>AC Input and Output</b>		
Max. charge power	7.4 kW	11 kW
Nominal voltage	230 V	400 V
Nominal grid frequency	50 / 60 Hz	50 / 60 Hz
Max. current	32 A single-phase	16 A three-phase
Charge connector	Plug Type 2	Plug Type 2
Input cable cross-section	3 * 6 mm <sup>2</sup>	5 * 2.5 mm <sup>2</sup>
Output cable length	7 m	7 m
<b>Protection</b>		
Residual current detection	6 mA DC	
Over / Under voltage protection	Yes	
Over load protection	Yes	
Over temperature protection	Yes	
Surge protection	II	
Overvoltage category	III (grid) / II (car)	
<b>General Data</b>		
Dimensions (H * W * D)	310 * 205 * 92 mm	
Weight	4.2 kg	3.8 kg
Mounting method	Wall-mounting / Pole-mounting (optional)	
Impact resistance	IK 08	
Degree of protection	IP 65	
Operating ambient temperature range	-30 °C to 50 °C	
Allowable relative humidity range (non-condensing)	5 % - 95 %	
Cooling method	Natural convection	
Max. operating altitude	2000 m	
Grid type	TN / TT	
Display	LED indicator	
Monitoring	iSolarCloud APP (with Sungrow inverter)	
Communication	RS 485	
Power consumption for standby	< 5 W	
Start mode	RFID card / APP	
Compliance	EN/IEC 61851-1:2019; EN/IEC 61851-21-2:2018	
Warranty	5 years (standard)	

● Compatibility with Sungrow SHRS inverters, expected for H2/2023

● Compatibility with Sungrow SHRT inverters



# AC22E-01

22kW AC Charger for electric vehicles



## RELIABLE AND VERSATILE

- Integrated 6mA DC fault current detection
- IP65 proof for usage in nearly every environment
- Automatic phase-switching function

## USER FRIENDLY

- Fast installation with Poka-Yoke connector
- Adaptable access control with RFID-Cards
- Optional integrated MID meter

## SMART AND EASY MANAGEMENT

- Capable for load management and balancing
- Control and visualization via iSolarCloud or iEnergyCharge
- Applicable for OCPP communication

## SUSTAINABLE

- Beyond Charging maximum usage of solar energy together with Sungrow 1/3-phase solution
- Different charging modes to fit all needs

Technical Data	AC22E-01
<b>AC Input and Output</b>	
Max. charge power	22 kW
Nominal voltage	400 V
Nominal grid frequency	50 Hz / 60 Hz
Max. current	32 A three-phase
Charge connector	Plug Type 2
Input cable cross-section	5 mm <sup>2</sup> * 6 mm <sup>2</sup>
Output cable length	7 m
<b>Protection</b>	
Residual current detection	6 mA DC
Over/Under voltage protection	Yes
Over load protection	Yes
Over temperature protection	Yes
Surge protection category	Yes
Overvoltage category	III ( grid ) / II ( car )
<b>General Data</b>	
Dimensions (H * W * D)	346 mm * 214 mm * 125 mm
Weight	≤7kg
Mounting method	Wall-mounting / Pole-mounting (optional)
Impact resistance	IK 10
Degree of protection	IP 65
Operating ambient temperature range	- 30 °C to 50 °C
Allowable relative humidity range	5 % - 95 %
Cooling method	Natural convection
Max. operating altitude	3000 m
Grid type	TN / TT
Status indication	LED indicator
Communication	RS485 / Ethernet / WIFI / 4G ( Optional )
Power consumption for standby	< 5.5 W ( 6.5 W with MID meter )
Start mode	RFID-Card / App / Plug & Play
Compliance	EN / IEC 61851-1:2019 ; EN / IEC 61851-21-2:2018
MID meter	Optional
Warranty	3 years ( standard )



# IDC30E

Sungrow Urban Destination Charger



reddot winner 2023



## RELIABLE

- IP65 , dust and rain protection
- Service lifetime up to 10 years
- Easy maintenance without any filter

## FRIENDLY

- Extremely low noise < 50dB
- EMC Class B residential emission

## EFFICIENT

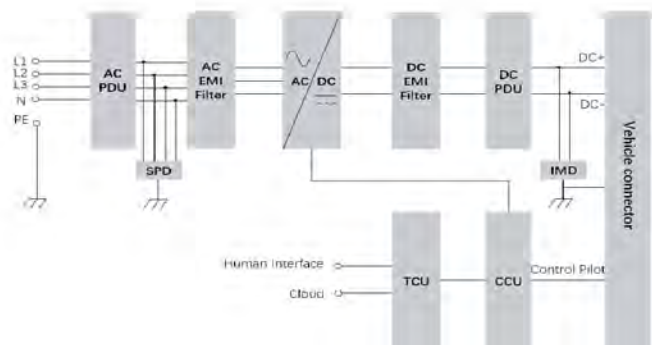
- Efficiency up to 96.5%
- Innovative cooling system

## FUTURE - PROOFED

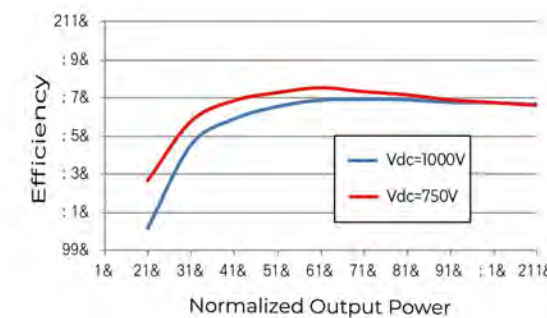
- Compatibility with new cars and backends
- Integration with PV and Energy Storage System

Model	IDC30E
<b>AC Input</b>	
Input voltage	400 Vac ± 10 %
Nominal frequency	50 Hz
Input current rating	46 A
Max. input current	52 A
Input cable specification	5 * 10 mm <sup>2</sup>
Connector types	3P + N + PE
<b>DC Output</b>	
DC output power	30 kW
DC output voltage	200-1000 Vdc, 375-1000 Vdc ( at nominal power )
Max. output current	80 A
Cable Length	5 m
Charge connector	CCS2
<b>Protection</b>	
Insulation monitor	Yes
Over/Under voltage protection	Yes
Over load protection	Yes
Short circuit protection	Yes
Over temperature protection	Yes
Lightning protection	Yes
Overvoltage level	III
<b>Interface</b>	
Touch screen	7-inch color touch screen
RFID card system	ISO / IEC 14443A / B, ISO / EC 15693
Communication interface	2G / 3G / 4G / Wifi / Ethernet
Communication protocol	OCPP 1.6 J
<b>General Data</b>	
Dimensions (H * W * D)	800 mm * 500 mm * 230 mm, 800 mm * 500 mm * 262 mm ( with backplane )
Weight	55 kg
Mounting method	Wall-mounting / Pole-mounting ( optional )
Operational noise level	≦ 50 dB
Degree of protection	IP65, IK10 ( enclosure ), IK08 ( screen )
Operating ambient temperature range	-35 - to 55 -
Allowable relative humidity range	5 % - 95 %
Efficiency	96.5 % Peak
Max. operating altitude	2000 m
Warranty	3 years ( extended warranty optional )

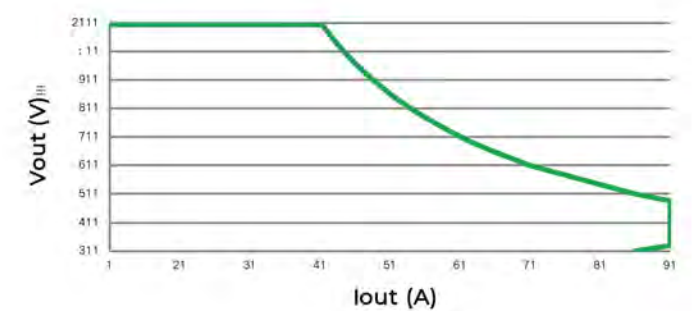
## CIRCUIT DIAGRAM



## EFFICIENCY CURVE



## VOUT-IOUT CURVE





# IDC180E

DC Fast Charging Station



## RELIABLE

- IP65, dust and rain protection
- Service lifetime up to 10 years
- Easy maintenance without any filter

## FRIENDLY

- Retractable cable management system
- Barrier-free design for easy access
- Various payment options

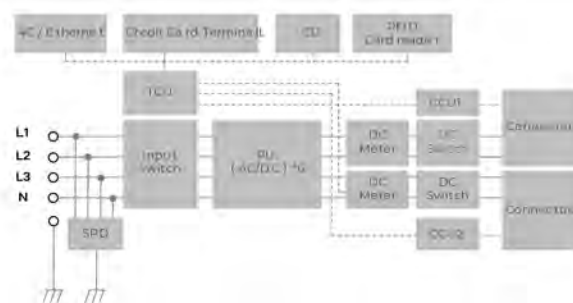
## EFFICIENT

- Efficiency up to 96%
- Dynamic power allocation between the outlets
- Innovative cooling system

## FUTURE-PROOFED

- Compatibility with new cars and backends
- Support OCPP 2.0.1 and Plug&Charge ready
- Integration with PV and Energy Storage System

## CIRCUIT DIAGRAM



Technical Data	IDC180E
<b>AC Input</b>	
Connector types	3P+N+PE
Input voltage	400 VAC +/- 10 % (50 Hz)
Input current rating	275 A
Max. input current	320 A
Power factor	≥ 0.99
Standby power	≤ 45 W
Grid type	TN-C, TN-S, TN-C-S, TT
THDI (Total harmonic distortion)	< 5 % (at nominal power)
<b>DC Output</b>	
DC output power	180 kW (90 kW / 90 kW; 0 kW / 180 kW)
Number of EV served	2
DC output voltage range	200 Vdc to 920 Vdc
CCS2 cables max. current	Outlet1: CCS2 250 A Outlet2: CCS2 250 A, 400 A (optional)
Energy Metering	MID and Eichrecht compliant meters available as option
Output Cable Length	5 m, 7 m (optional)
Efficiency	96 % Peak
<b>General Data</b>	
Dimensions (H * W * D)	2000 mm * 900 mm * 750 mm ( TBD )
Weight	450 KG ( TBD )
Cable Retraction System	Yes
Operating temperature range	-35 °C to + 55 °C
Operating Humidity Range	5 % to 95 % ( non-condensing )
Operational altitude	≤ 2000 m
Operational noise level	≤ 65 dB( A ) at 1m distance @ 25 °C ( at full load )
Degree of protection	IP65, IK10 ( enclosure ), IK08 ( screen)
<b>Configuration</b>	
Software update	Over-the-air updates via Sungrow iEnergyCharge APP
multilanguage system	English, Spanish, German, French, Dutch
Warranty	3 years (extended warranty optional)
<b>User Interface</b>	
User authentication	App, RFID, Credit card, Ready for Plug & Charge
User interface	10-inch color touch screen
RFID card system	ISO / IEC 14443A / B, ISO / IEC 15693
Communication interface	2G / 3G / 4G, Ethernet, Bluetooth
Communication protocol	OCPP 1.6J, Ready for 2.0.1
Emergency button	Yes
<b>Protection</b>	
Over/Under voltage protection	Yes
Over current protection	Yes
Over temperature protection	Yes
leakage protection	Yes
Lightning protection	Yes
Short circuit protection	Yes
Overvoltage category	III
<b>Norm and Certification</b>	
Certification	CE, UKCA, RED, EMC Class A
EU Directives	2014/35/EU (Low Voltage Directive), 2011/65/EU (RoHS), 2017/2102 (RoHS2), 2012/19/EU (WEEE), 1907/2006 (REACH Regulation)
Charging and safety standards	IEC 61851-1, IEC 61851-23, IEC 62477-1, IEC 61439-1, IEC TS 61439-7, EN 62311, EN 50364
Eichrecht Certification	DC meters available in accordance with German Law on Weights and Measurements
Communication to EV	DIN70121, ISO15118, IEC61851



# SH3.0/3.6/4.0/5.0/6.0RS

Residential Hybrid Single Phase Inverter



## FLEXIBLE APPLICATION

- 80~460 V wide battery voltage range
- Ideal for both retrofitting and new installations
- Built-in smart PID recovery function

## USER FRIENDLY SETUP

- Plug and play installation
- iSolarCloud monitoring available on App and Web
- Lightweight and compact, optimized for heat-dissipation

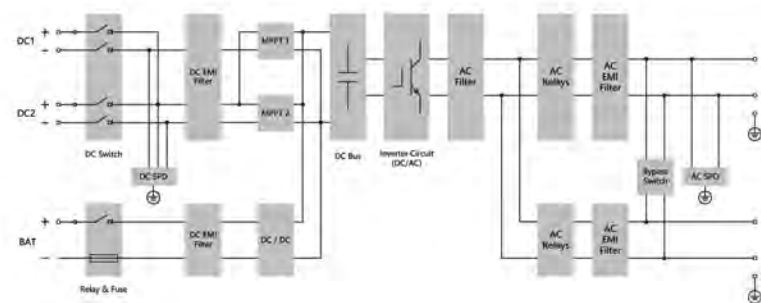
## ENERGY INDEPENDENCE

- Seamless transition to backup mode, for protection against power outages
- Fast Charging or discharging, enabling higher self-consumption results
- Built-in EMS with advanced customization

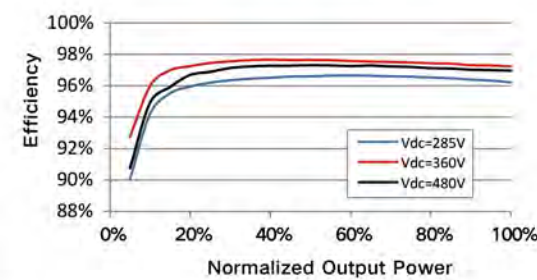
## SMART MANAGEMENT

- Real time data (10 seconds refresh sample)
- 24/7 live monitoring both online and with integrated display
- Online IV curve scan and diagnosis

## CIRCUIT DIAGRAM



## EFFICIENCY CURVE (SH6.0RS)



Type designation	SH3.0RS	SH3.6RS	SH4.0RS	SH5.0RS	SH6.0RS
<b>Input (DC)</b>					
Recommended max. PV input power	10000 Wp	10700 Wp	11000 Wp	12000 Wp	13000 Wp
Max. PV input voltage			600 V		
Min. PV input voltage / Startup input voltage			40 V / 50 V		
Rated PV input voltage			360 V		
MPP voltage range			40V - 560 V		
No. of independent MPP inputs			2		
No. of PV strings per MPPT			1 / 1		
Max. PV input current			32 A (16 A/16 A)		
Max. DC short-circuit current			40 A (20 A/20 A)		
Max. current for input connector			20A		
<b>Battery Data</b>					
Battery type			Li-ion battery		
Battery voltage			80V - 460V		
Max charge / discharge current			30A / 30A		
Max charge / discharge power			6600W		
<b>Input / Output (AC)</b>					
Max. AC power from grid	10000 VA	10700 VA	11000 VA	12000 VA	13000 VA
Rated AC output power	3000 W	3680 W	4000 W	5000 W	6000 W
Max. AC output apparent power	3000 VA	3680 VA	4000 VA	5000 VA	6000 VA
Max. AC output current	13.7 A	16 A	18.2 A	22.8 A	27.3A
Rated AC voltage			220 / 230 / 240 V		
AC voltage range			154 V - 276 V		
Rated grid frequency			50 Hz / 60 Hz		
Grid frequency range			45 - 55 Hz / 55 - 65 Hz		
Harmonic (THD)			<3 % (of rated power)		
Power factor at Rated power / Adjustable power factor			>0.99 at default value at rated power		
Feed-in phases / connection phases			1 / 1		
<b>Efficiency</b>					
Max. efficiency / European efficiency	97.4 % / 97.0 %	97.5 % / 97.1 %	97.6 % / 97.2 %	97.7 % / 97.3 %	97.7 % / 97.3 %
<b>Backup Data (on grid mode)</b>					
Rated output power for backup load			6000 W		
Rated output current for backup load			27.3 A		
<b>Backup Data (off-grid mode)</b>					
Rated voltage			220 V / 230 V / 240 V (±2 %)		
Frequency range			50 Hz / 60 Hz (±0.2 %)		
Output voltage harmonic (THD)			< 2 %		
Switch time to emergency mode			< 10 ms		
Rated output power	3000W / 3000VA	3680W / 3680VA	4000 W / 4000 VA	5000W / 5000VA	6000W / 6000VA
Peak output power			8400 VA, 10s		
<b>Protection &amp; Function</b>					
Grid monitoring			Yes		
DC reverse polarity protection			Yes		
AC short-circuit protection			Yes		
Leakage current protection			Yes		
DC switch(solar)			Yes		
DC Overcurrent Protection (Battery)			Yes		
Surge Protection			DC Type II / AC Type II		
PID recovery function			Yes		
Parallel operation on grid port / Max. No of inverters			Master-slave mode / 3		
Battery input reverse polarity protection			Yes		
<b>General Data</b>					
Topology (Solar / Battery)			Transformerless / Transformerless		
Degree of protection			IP65		
Dimensions (W * H * D)			490 * 340 * 170 mm		
Weight			18.5 kg		
Mounting method			Wall-mounting bracket		
Operating ambient temperature range			-25 °C to 60 °C		
Allowable relative humidity range			0 % - 100 %		
Cooling method			Natural convection		
Max. operating altitude			4000 m		
Noise emission			< 45dB(A)		
Display			LED digital display & LED indicator		
Communication			RS485 / Ethernet / WLAN / CAN		
DI / DO			DI * 4 / DO * 1 / DRM		
DC connection type			MC4 (PV) / Evo2 Compatible (Battery)		
AC connection type			Plug and Play		
Grid compliance			IEC/EN 62109-1, IEC/EN 62109-2, IEC62116, IEC61727, IEC/EN 61000-3-11, IEC/EN 61000-3-12, EN 62477-1, AS/NZS 4777.2:2020, EN 50549-1, CEI 0-21, G98 / G99, UNE 217002:2020, NTS V2 TypeA, C10/26		



# SH5.0/6.0/8.0/10RT-20

Residential Hybrid Three Phase Inverter



## FLEXIBLE APPLICATION

- DC 13.5A current input, compatible with high-power PV module
- Supports parallel connection with master-slave controlling
- Provides 100% power to unbalance loads in backup mode
- Supports application in retrofit scenario

## SMART MANAGEMENT

- Compatible with AC EV Charger for green energy to EV
- High self-consumption with optimised built-in EMS
- Free online monitoring to enhance energy management for end user, installer and retailer
- Remote firmware update and customisable settings

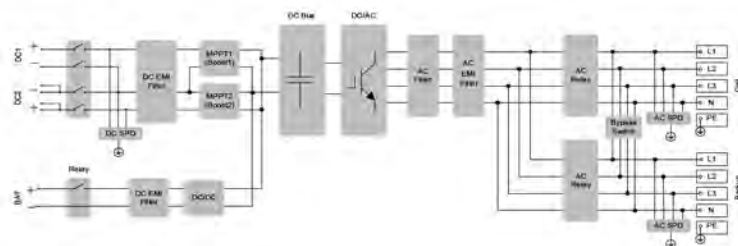
## ENERGY INDEPENDENCE

- Seamless transition to backup mode for protection against power outages
- Fast charging / discharging to meet the demand of higher consumption

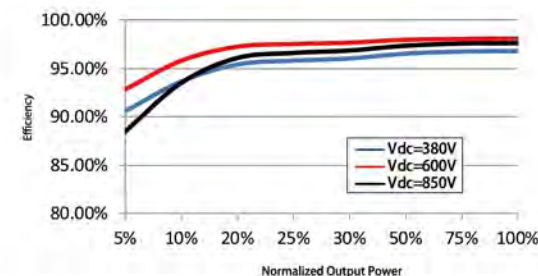
## EASY INSTALLATION

- Unique push-in connectors for time-saving installation
- Touch free commissioning with smartphone
- Lightweight and compact

## CIRCUIT DIAGRAM



## EFFICIENCY CURVE (SH5.0RT)



Type designation	SH5.0RT-20	SH6.0RT-20	SH8.0RT-20	SH10RT-20
<b>PV Input</b>				
Recommended max. PV input power	7500 W	9000 W	12000 W	15000 W
Max. PV input voltage			1000 V	
Min. PV input voltage / Startup input voltage	150 V / 180 V	200 V / 250 V	200 V / 250 V	200 V / 250 V
Rated PV input voltage			600 V	
MPP voltage range	150 V - 950 V	200 V - 950 V	200 V - 950 V	200 V - 950 V
No. of independent MPP inputs			2	
No. of PV strings per MPPT	1/1	1/1	1/1	1/2
Max. PV input current	27 A (13.5 A / 13.5 A)	27 A (13.5 A / 13.5 A)	27 A (13.5 A / 13.5 A)	40.5 A (13.5 A / 27 A)
Short-circuit current of PV input	36 A (18 A / 18 A)	36 A (18 A / 18 A)	36 A (18 A / 18 A)	54 A (18 A / 36 A)
Max. current for input connector			30 A	
<b>Battery Data</b>				
Battery type			Lithium battery	
Battery voltage			150V - 600V	
Max charge / discharge current			30A ** / 30A **	
Max charge / discharge power	7500W / 6000W	9000W / 7200W	10600W / 10600W	10600W / 10600W
<b>AC Input and Output</b>				
Max. AC input power to battery	11600W	14000W	18600W	20600W
Max. AC power from grid	12500W	15000W	18600W	20600W
Rated AC output power	5000W	6000W	8000W	10000W
Rated AC output apparent power	5000VA	6000VA	8000VA	10000VA
Max. AC output current	7.6A	9.1A	12.1A	15.2A
Rated AC voltage			3 / N / PE, 220 / 380 V; 230 / 400 V	
AC voltage range			270 - 480V	
Rated grid frequency			50Hz	
Grid frequency range			45 - 55Hz	
Harmonic (THD)			<3% (of rated power)	
DC current injection			<0.5% In	
Power factor at Rated power / Adjustable power factor			>0.99 / 0.8 leading to 0.8 lagging	
Feed-in phases/connection phases			3 / 3	
<b>Backup Data</b>				
Rated voltage			3 / N / PE, 220 Vac / 230 Vac	
Frequency range			50Hz	
Total harmonic factor output voltage (Linear load)			2%	
Switch time to emergency mode			<20ms	
Rated output power	5000W / 5000VA	6000W / 6000VA	8000W / 8000VA	10000W / 10000VA
Peak output power ***	6000W / 6000VA, 5min 10000W / 10000VA, 10s	7200W / 7200VA, 5min 10000W / 10000VA, 10s	12000W / 12000VA, 5min	12000W / 12000VA, 5min
Peak output power on single phase ****	2000 VA (≥9.6kWh)	2200 VA (≥12.8kWh)	2700 VA (≥12.8kWh)	3400 VA (≥12.8kWh)
Rated output current for backup load during on grid mode			3 x 18.5A	
<b>Efficiency</b>				
Max. efficiency / European efficiency	98% / 97.2%	98.2% / 97.5%	98.4% / 97.9%	98.4% / 97.9%
<b>Protection &amp; Function</b>				
Grid monitoring			Yes	
DC reverse polarity protection			Yes	
AC short-circuit protection			Yes	
DC switch (solar)			Yes	
DC Overcurrent Protection (Battery)			Yes	
Surge Protection			DC Type II / AC Type II	
Parallel operation on grid port / Max. No. of Inverters			Master-slave mode / 5 *	
Battery input reverse polarity protection			Yes	
<b>General Data</b>				
Topology (solar / battery)			Transformerless / Transformerless	
Degree of protection			IP65	
Dimensions (W * H * D)			460mm×540mm×170mm	
Weight			27kg	
Mounting method			Wall-mounting bracket	
Operating ambient temperature range			-25 °C ~ 60 °C	
Allowable relative humidity range (non-condensing)			0 % - 100 %	
Cooling method			Natural convection	
Max. operating altitude			4000 m	
Noise (Typical)			30 dB(A)	
Display			LED	
Communication			RS485, WLAN, Ethernet, CAN, 4 × DI, 1 × DO	
DI/DO			DI*4/DO*1/DRM	
DC connection type			MC4 (PV) / Evo2 Compatible (Battery)	
AC connection type			Plug and play connector	
Compliance			IEC / EN 62109-1/-2, IEC / EN 61000-6-1/2/3/4, EN 62477-1, IEC 61727, IEC 62116, IEC 61683, VDE-AR-N-4105, AS/NZS 4777.2:2020, EN50549-1, NRS 097-2-1, TOR Generator Type A, QVE-Richtlinie R25, NC RfG PTPIREE, PSE 2018, EIFS 2018.2, PPDS4, NTS 631 V2.0, UNE217002, RD 1699, CEI 0-21	

\*. Germany is available for 2 inverters parallel in maximum if no ripple control is used in system \*\* Depending on the connected battery \*\*\* Can be reached only if PV and battery power is sufficient. \*\*\*\*: Peak power only for Resistive loads. Detail refer to SHRT backup output power document.



# SBR096/128/160/192/ 224/256

High Voltage LFP Battery



## HIGH-PERFORMANCE

- Up to 30A continuous charging and discharging current with high efficiency
- Up to 100% usable energy

## SAFETY

- Lithium iron phosphate Battery
- Multi-stages protection design and extensive safety certification

## FLEXIBILITY

- Extendable during lifetime
- Support 3-8 modules per unit, max. 4 units in parallel, 9-100 kWh capacity range

## EASY INSTALLATION

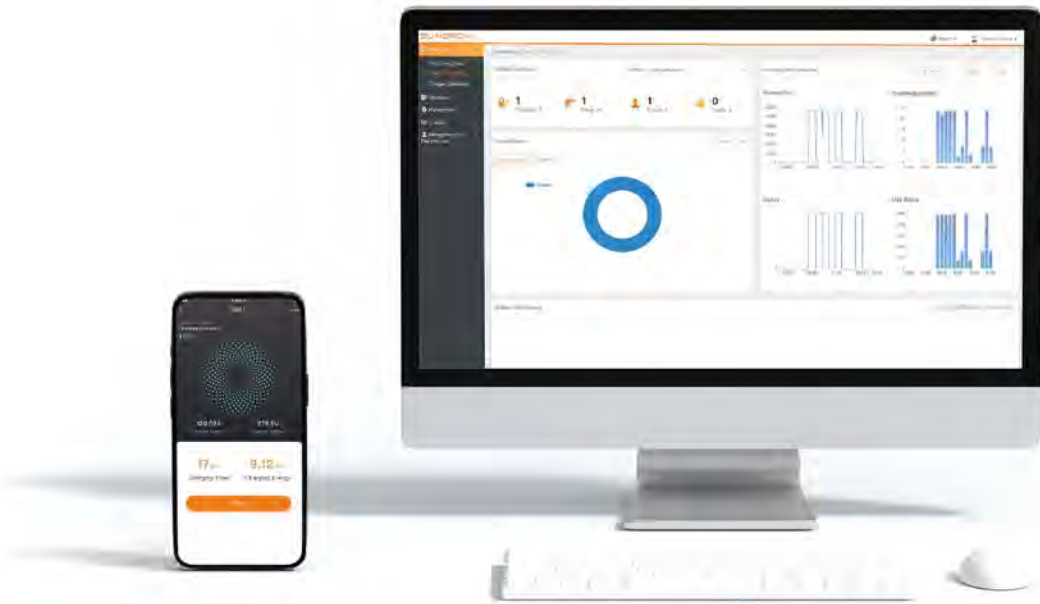
- Compact and light, single person installation
- Plug and play, no cables needed between battery modules

Type designation	SBR096	SBR128	SBR160	SBR192	SBR224	SBR256
Technical properties	3 modules	4 modules	5 modules	6 modules	7 modules	8 modules
<b>System Data</b>						
Battery type	LiFePO4 Prismatic Cell					
Battery module	3.2 kWh, 33 kg					
Energy (useable) <sup>1</sup>	9.6 kWh	12.8 kWh	16 kWh	19.2 kWh	22.4 kWh	25.6 kWh
Nominal voltage	192 V	256 V	320 V	384 V	448 V	512 V
Rated DC power	5.76 kW	7.68 kW	9.60 kW	11.52 kW	13.44 kW	15.36 kW
Max. charge / discharge power	6.57 kW	8.76 kW	10.95 kW	13.14 kW	15.33 kW	17.52 kW
Operating voltage	150 – 219 V	200 – 292 V	250 – 365 V	300 – 438 V	350 – 511 V	400 – 584 V
Max. charging / discharging current: continuous	30 A					
Max. charging / discharging current	42 A					
Depth of discharge	Max. 100 % DOD (settable)					
Short circuit current	3500 A					
Display	SOC indicator, Status indicator					
Communication interface	CAN					
<b>Protection</b>						
Over / under voltage protection	Yes					
Over current protection	Yes					
Over/under temperature protection	Yes					
DC breaker	Yes					
<b>General Data</b>						
Dimensions (W*H*D)	625*545*330 mm	625*675*330 mm	625*805*330 mm	625*935*330 mm	625*1065*330 mm	625*1195*330 mm
Weight	114 kg	147 kg	180 kg	213 kg	246 kg	279 kg
Installation location	Indoor / Outdoor					
Mounting method	Floor stand					
Operating ambient temperature range	Charge: 0 to 50 °C Discharge: -20 to 50 °C					
Degree of protection	IP55					
Allowable relative humidity range	0% to 95% no condensing					
Max. operating altitude	Max. 2000 m					
Cooling method	Natural convection					
Certificates	CE, CEC, IEC 62619, IEC 62040, UN38.3, VDE 2510-50					
Warranty <sup>2</sup>	10 Years					
Country of manufacture	China					

1: Test conditions: 25 °C, 100 % depth of discharge (DOD), 0.2C charge & discharge

2: Refer to battery warranty letter for conditional application.





## Sungrow Charge Management System

Sungrow Charge Management System employs Big Data Analytics and IoT technology to provide precise operation and automatic O&M, as well as intelligent diagnosis service. The system is compatible with mainstream operation platforms to maximize the operation efficiency of charging stations and reduce operation costs.

### • Monitoring Overview

Display information, such as the quantity of charging stations, map locations, real-time power, and other details of charging stations and EV chargers connected to the platform.

### • Station Management

Allow customer to create independent accounts for station information management, such as real-time power, status of EV chargers, and firmware upgrade of the chargers (OTA: Over The Air).

### • Alarm Management

Provide pre-warning system for various faults, such as over-temperature, over-voltage or under-voltage, insulation detection and so on.

### • User Management

Support user-defined roles, flexible allocation of permissions and creation of users accounts according to specific requirements.

### • O&M

Get user feedback timely, understand customer requirements well, guarantee quick response, increase service quality, improve customer experience, and promote product optimization and iteration.

## iEnergyCharge App

### • Intelligent Scanning

One-key scanning, easy operating.

### • Charger Station Details

Comprehensive display, precise control, convenient start/stop.

### • OTA (Over The Air)

Remote firmware update, lower O&M cost.

### • Scheduled Charging

Off-peak charging, easy and convenient management.

### • Bills Export

Various filtering, accurate energy consumption bills.

# iSolarCloud

Remote Monitoring and O&M Platform



### FLEXIBLE AND FRIENDLY

- Centralized power plant management, optimized OPEX
- Simple network infrastructure, fast platform deployment
- Flexible data access, Web portal and App



### SIMPLE AND EFFICIENT

- Full plant supervision via multi-dimensional analysis, automated reports
- Accurate positioning of faults, quick trouble shooting, realtime push of information, reducing time to resolve faults
- Parameter setting, firmware updates, smart IV curve diagnosis
- Support of plant maintenance by remote Web access of local data logger / SCADA



### SAFE AND RELIABLE

- Hierarchical access management
- Cyber security and redundant data storage over the lifecycle of plants, certified data security
- Full log for trace and audit

Type designation	iSolarCloud
<b>Monitoring Device</b>	
Device type	Inverter, combiner box, meteo station, energy meter, transformer and other plant devices
Monitoring Capacity	More than 100 GW (scalable)
<b>Data Collection</b>	
Time interval	5 minutes
<b>General Data</b>	
Language	Chinese, English, German, French, Spanish, Portuguese, Italian, Dutch, Polish, Japanese, Korean, Vietnamese, Traditional Chinese
Data storage time	> 25 years
Storage capability	> 100PB
System reliability	99.99%
<b>Minimum Web requirements</b>	
Browser	IE 11, Chrome 65, Safari 11, Firefox 60
Resolution	1366 * 768, 1920 * 1080 recommended
<b>Minimum Operating Environment for App</b>	
Dimensions (W * H)	1920 * 1080, 2001 * 1125, 1280 * 720
Mounting type	Android 5.0, iOS 10.0



## SUNGROW Service

SUNGROW has always kept the serving concept of custom orientation. By means of rigorous training, company has forged a team of professionals with high efficiency. With certificate of proven skills and knowledges, service teams can guarantee service quality and safety. Relying on the complete global service network, SUNGROW sustains stable operations of the projects and brings more profits for clients constantly.

### Pre-sales/under-sales service

- Project consulting
- PV plant experience
- Training and guidance
- Technical support
- Installation & debugging
- Intelligent services

### After-sales service and in-depth service

- System online monitoring
- Tour- inspection & upgrading
- Maintenance
- Generation performance evaluation and optimization
- Cloud platform service

### Service response time

**24h** China

**48h** Overseas

SUNGROW services cover more than 50% of the world's countries and regions

**85+**

Service Centers

**280+**

Authorized Service Partners

**340GW+**

Accumulatively Warranted Power Plants Capacity



SUNGROW

## Project References



EV charging station for taxi in Coburg, Germany 



BYD European HQ EV charging station in Schiedam, Netherlands 



Office area EV charging station in Munich, Germany 





Residential PV+ESS+Charger station, Germany 🇩🇪



Residential PV+ESS+Charger station, Germany 🇩🇪



Laboratory charging station in Delft, Netherlands 🇳🇱



Highway service area PV+ESS+Charger station in Anhui province, China 🇨🇳



PV+ESS+Charger station in Sungrow HQ in Hefei, China 🇨🇳



Chaohu public bus EV charging station in Hefei, China 🇨🇳



Zipeng mountain public bus EV charging station in Hefei, China 🇨🇳



Highway service area EV charging station in Shenzhen, China 🇨🇳



The first on-street parking EV charging station in Shanghai, China 🇨🇳





Huigangcheng EV charging station in Shenzhen, China



Public bus stop EV charging station in Chongqing, China



The first carbon neutral EV charging station in Chongqing, China



Qijian Technology EV charging station in Hefei, China



Guozhen Plaza EV charging station in Hefei, China



Changbai mountain public EV charging station in Jilin province, China

**SUNGROW**  
Clean power for all