QUEEN SOLAR

Energy Storage System

Web: www.queen-solar.com

Main Operations

Electrical Connection

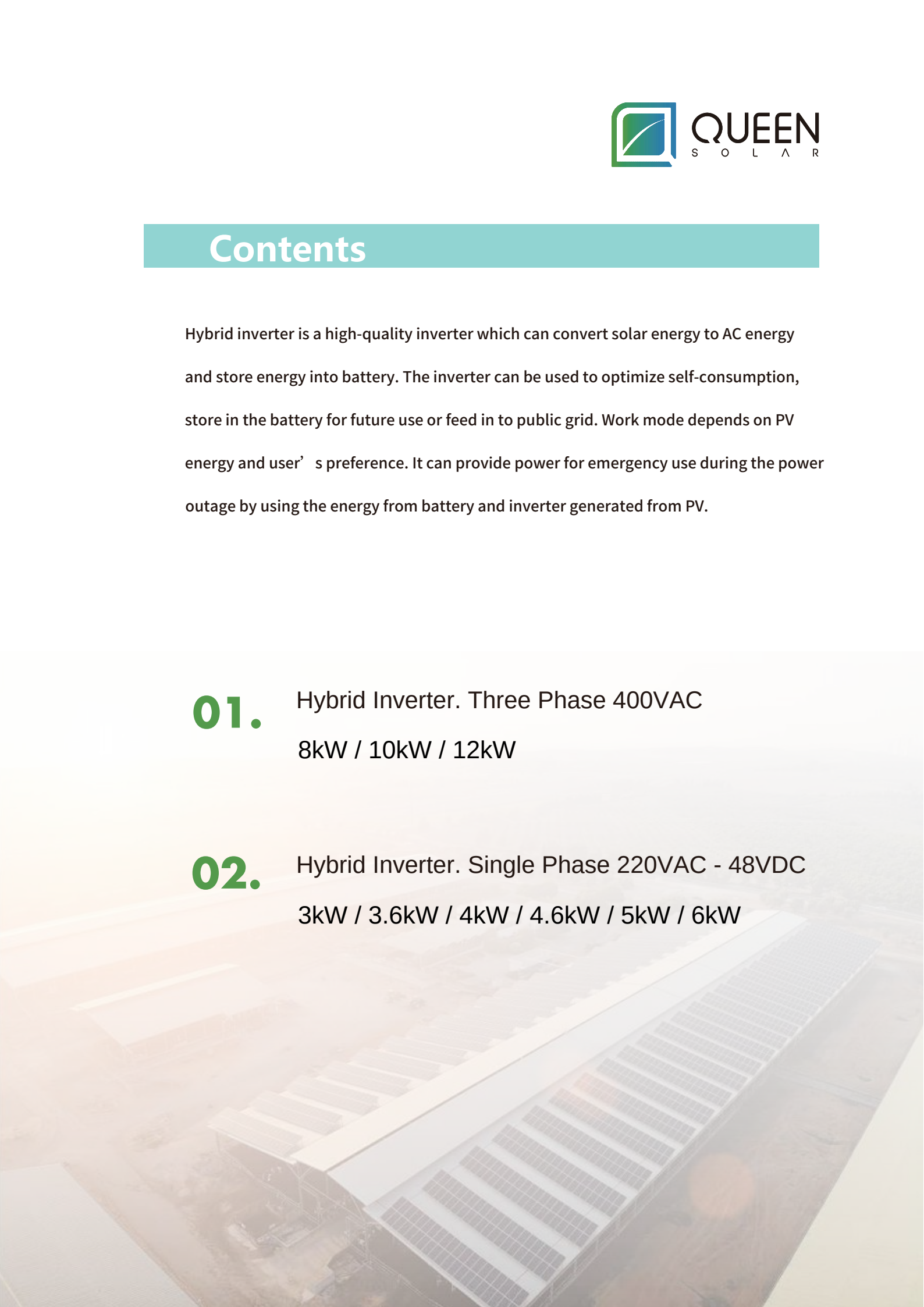
- 1.PV connection
- 2.Grid connection
- 3.EPS connection
- 4.Battery connection
- 5.CT connection
- 6.WIFI/GPRS connection

Setting

- 1.Date/Language
- 2.PV input type
- 3.1.Battery type
  3.2.Battery parameter
- 4.Grid Standards
- 5.Working mode
- 6.Charge/discharge time setting when select"Peak Shift"mode
- 7.Anti-reverse setting if needed.
- 8. Other settings if needed. (Run settings)

Contents

Hybrid inverter is a high-quality inverter which can convert solar energy to AC energy and store energy into battery. The inverter can be used to optimize self-consumption, store in the battery for future use or feed in to public grid. Work mode depends on PV energy and user’ s preference. It can provide power for emergency use during the power outage by using the energy from battery and inverter generated from PV.



QUEEN SOLAR

Energy Storage System

QS-HB-T Series

8kW / 10kW / 12kW

Three Phase Hybrid Inverter

QS-HB -T series Hybrid inverter is applicable with both on-grid and off-grid PV systems. It controls the flow of energy intelligently. End users can choose to charge batteries with free, clean solar electricity or grid electricity and discharge stored electricity when it is needed with flexible operation mode choices .

SMART MANAGEMENT VIA WEB & APP

EMERGENCY POWER SUPPLY

IP65 RATED

COMPATIBLE WITH LEAD-ACID AND LITHIUM ION BATTERIES

WITH BATTERY REVERSE CONNECTION PROTECTION

COMPATIBLE ANTI-REVERSE

SUPPORT FULL POWER DISCHARGE, AUTOMATIC MANAGEMENT OF BATTERY CHARGE AND DISCHARGE

Mode	QS-HB-8K-T	QS-HB-10K-T	QS-HB-12K-T
Battery			
Max.Charging/Discharging Power	8800W	11000W	13200W
Battery Voltage Range	150~600V	150~600V	150~600V
Max.Charging/Discharging	40A	40A	40A
Battery Type		Lithium and Lead Acid Battery	
Input DC (PV side)			
Max.PV Input Power	10400W	13000W	15600W
Max. PV voltage		1000V	
MPPT Voltage Range		200~950V	
Start-up voltage		200V	
Max. input current per MPPT	14/14A	14/14A	14/14A
Max. short-circuit current	15.6A	15.6A	15.6A
Number of MPP trackers	2	2	2
MPPT number/Max. input strings number	1/1	1/1	1/1
Norminal input voltage	600	600	600
AC Output Data(On-Grid)			
Nominal output power	8800VA	11000VA	13200VA
Max. Apparent power output to	8800VA	11000VA	13200VA
Max. Apparent power from Grid	8800VA	11000VA	13200VA
Nominal output to Grid	11.5	14.4	17.3
Max.output to Grid	12.7A	15.9A	19.1A
Grid voltage/Range		400V/360-440, 3W+N+PE	
Grid frequency		50Hz/60Hz	
THDI		< 3%	
AC Output Data(Off-Grid)			
Nominal output power	8800VA	11000VA	13200VA
Max. Apparent power	88000VA	11000VA	13200VA
Nominal grid voltage		400V,3W+N+PE	
Nominal grid frequency		50Hz/60Hz	
Automatic switchover time		<20ms	
THDI		< 2%	
Overload capacity		110%,30S / 120%,10S / 150%, 0.02S	
Max.Efficiency	97.9%	98.2%	98.2%
Europe Efficiency	97.2%	97.5%	97.5%
MPPT Efficiency	99.5%	99.5%	99.5%
Max.battery charge/discharge efficiency	96.6%	96.7%	96.8%
Mechanical parameters			
Dimensions (W*H*D)	530*600*200mm	530*600*200mm	530*600*200mm
Weight	29kg	29kg	2kg
Interface			
HMI		LCD;APP	
BMS		RS485,CAN	
EMS		RS485	
Meter		RS485	
Supported communication interface		WIFI OR GPRS	
General Data			
Ingress protection		IP65	
Operating Temperature Range		-35~60℃	
Relative Humidity		0~95%(non-condensing)	
Operating Altitude		2000m	
Cooling		Natural convection	
Noise emission		≤25dB	
Installation		wall mounted	
Protection			
Anti-islanding protection		YES	
Photovoltaic input connection		YES	
Reverse protection		YES	
Battery input connection reverse protection		YES	
Insulation monitor		YES	
Residual current detection		YES	
PV Input overvoltage overcurrent overpower		YES	
Battery input overvoltage		YES	
Overcurrent overpower protection		YES	
AC output input overvoltage overcurrent overpower		YES	
Over-temperature protection		YES	
Reference power failure protection		YES	
Short circuit protection		YES	

QUEEN SOLAR

Single Phase . Low Voltage

QS-HB-L Series

3kW/3.6kW/4kW/4.6kW/5kW/6kW

QS-HB-L Series hybrid inverters Compatible with low voltage battery system, applicable with both on-grid and off-grid P V systems. It controls the flow of energy intelligently.
End users can choose to charge batteries with free, clean solar electricity or grid electricity and discharge stored electricity when it is needed with flexible operation mode choices.

SMART MANAGEMENT VIA WEB & APP

EMERGENCY POWER SUPPLY

IP65 RATED

WITH BATTERY REVERSE CONNECTION PROTECTION , ANTI-REVERSE FUNCTION

COMPATIBLE WITH LEAD-ACID AND LITHIUM ION BATTERIES

EMS INTEGRATED MULTI-MACHINE PARALLEL CONNECTION

Technical Data

Model	QS-HB-3K-L	QS-HB-3.6K-L	QS-HB-4K-L	QS-HB-4.6K-L	QS-HB-5K-L	QS-HB-6K-L
DC input						
Max. Input Power	4600W		6000W		7000W	
Start-up voltage	125V					
Max. PV voltage	550V					
MPPT range/nominal	125V-500V /360V					
Max. input current	12A/12A					
MPPT tracker/strings	2/1					
AC output						
Rated power w/va	3000VA/3000W	3600VA/3600W	4000VA/4000W	600VA/4600W	5000VA/5000W	6000VA/6000W
Max. output current	13A	16A	17.4A	20A	21.7A	26A
Nominal voltage/range	230V /176Vac~270Vac					
Frequency	50 /60Hz					
PF	0.8lagging-0.8leading					
THDI	<3%					
AC output topology	L+N+PE					
Battery						
Battery voltage range	40~58V					
Max. charging voltage	58V					
Charge/discharge current	95A/62.2A	95A/75A	95A/83.3A	95A/95.8A	95A/104.2A	95A/110A
Battery type	lithium /Lead-acid					
Communication interface	CAN/RS485					
EPS output						
Rated power w/va	3000VA/3000W	3600VA/3600W	4000VA/4000W	4600VA/4600W	5000VA/5000W	6000VA/6000W
Rated voltage	230Vac					
Rated current	13A	16A	17.4A	20A	21.7A	26A
Rated frequency	50 / 60Hz					
Automatic switchover time	<20ms					
THDU	<2%					
Overload capacity	110%,30S / 120%,10S / 150%, 0.02S					
General data						
Battery chage/dischage	95%					
DC max. efficiency	97.6%					
Euro efficiency	97%					
MPPT efficiency	99.9%					
Protection class	IP65					
Noise emission (typical)	<35dB					
Operation temperature	-25ºC~+60ºC					
Cooling	Natural					
Relative humidity	0~95% (non-condensing)					
Altitude	2000m					
Dimensions (WXDXH)	550X200X515mm					
Weight	25kg					
Isolation transformer	No					
Self-consumption	<3W					
Display and communication						
Display	LCD					
Interface:RS485/Wifi/4G /CAN/DRM	Yes /Opt/Opt/Yes/Yes					
Certificates	CE、TUV、SAA、NRS					

Working modes introduction

1. Self-Use (Priority: Load>Battery>Grid)	**PV: √** **Grid: √** **Battery: √**	➢ Solar energy provides power to the loads as first priority, if solar energy is sufficient to power all connected loads, solar energy excess power will provide to charge battery, and then redundant power will feed to grid. ➢ Solar energy provides power to the loads as first priority, if solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. ➢ Solar energy provides power to the loads as first priority, if solar energy and battery are not sufficient to power all connected loads, utility energy (Main grid) will supply power to the loads with solar energy at the same time.
	PV: √ **Grid: √** **Battery: x**	➢ Solar energy provides power to the loads as first priority, if solar energy is sufficient, the excess power will feed into grid. ➢ Solar energy provides power to the loads as first priority, if solar energy is not sufficient to power all connected loads, grid energy will supply power the loads at the same time.
	PV: √ **Grid: x** **Battery: √**	➢ Solar energy provides power to the loads as first priority, if solar energy is sufficient to power all connected loads, solar energy will provide to charge battery. ➢ Solar energy provides power to the loads as first priority, if solar energy is not sufficient to power all connected loads, battery energy and solar energy will supply power to the loads at the same time.

2. Peak Shift	**PV: √** **Grid: √** **Battery: √**	➤ On charge time, solar energy will charge battery as first priority. The excess energy will supply power to the loads. If solar energy is sufficient to supply loads and charge battery, and if there' s still some extra energy, then the excess power will feed the power to grid. ➤ On charge time, solar energy will charge battery as first priority, then the excess solar energy will supply power to the loads. If solar energy is not sufficient to charge the battery and supply the loads, grid will supply all the connected loads with solar energy together. ➤ On discharge time, solar energy provides power to the loads as first priority, if solar energy is sufficient to supply loads, and if there' s still some extra energy from solar energy, then the excess power and battery will deliver the power to the grid at the same time.
	PV: x **Grid: √** **Battery: √**	➤ On charge time, grid will charge battery and supply power to the connected loads at the same time. ➤ On discharge time, if load power is less than battery power, battery will supply power to loads as first priority, the excess power will be feed-in to grid. ➤ On discharge time, if load power is more than battery power, battery and grid will supply power to the loads at the same time.
3. Battery Priority	**PV: √** **Grid: √** **Battery: √**	➤ Solar energy will charge battery as first priority, if solar energy is excess, the excess power will supply loads. If there' s still some extra energy, then the excess power will feed the power to grid. ➤ Solar energy will charge battery as first priority, if solar energy is excess, the excess power will supply loads. If solar energy is not sufficient to charge the battery and supply the loads, grid will supply power to loads.
	PV: x **Grid: √** **Battery: √**	➤ Grid will supply power to loads and charge the battery at the same time.

Note!

1. When select Peak shift mode, in the period of no charge or discharge, the solar power supply loads at first priority, excess energy to the grid.

2. When choosing battery priority mode, the corresponding charging current should be opted for according to the battery type.

3. If set anti-reverse function allowable, once on the work mode of self-use, peak shift, battery priority, the system will not feed power to grid.

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