

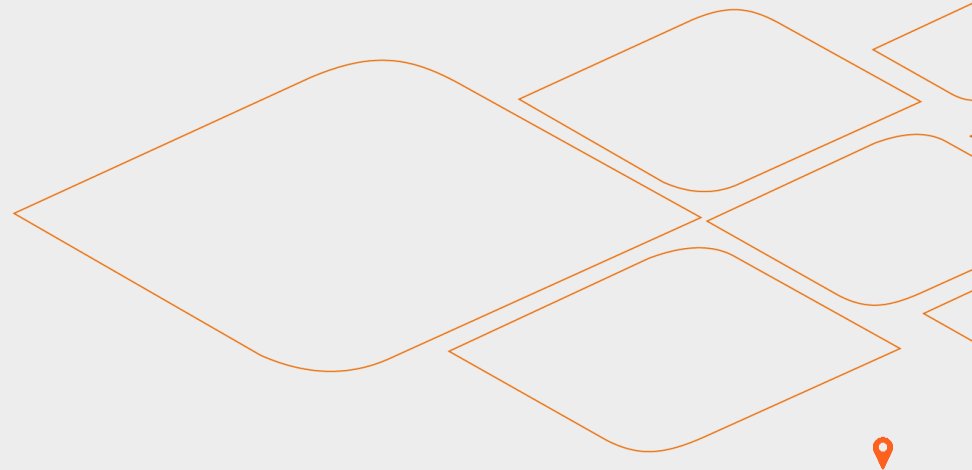


Sunways Energy Storage Solution

Advantages of Sunways Hybrid Inverter

CONTENTS

- 01 Solution & Design
- 02 Working Performance
- 03 Why Sunways





Solution & Design

01





Sunways Hybrid Inverter Family

Single Phase Hybrid



SUNWAYS STH 3-8KTL

Solution Available

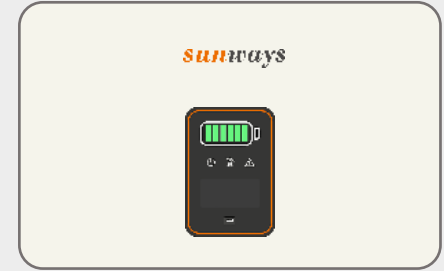
Three Phase Hybrid I



SUNWAYS STH 4-12KTL

Solution Available

Three Phase Hybrid II



SUNWAYS STH 15-40KTL

Available in Sep 2021

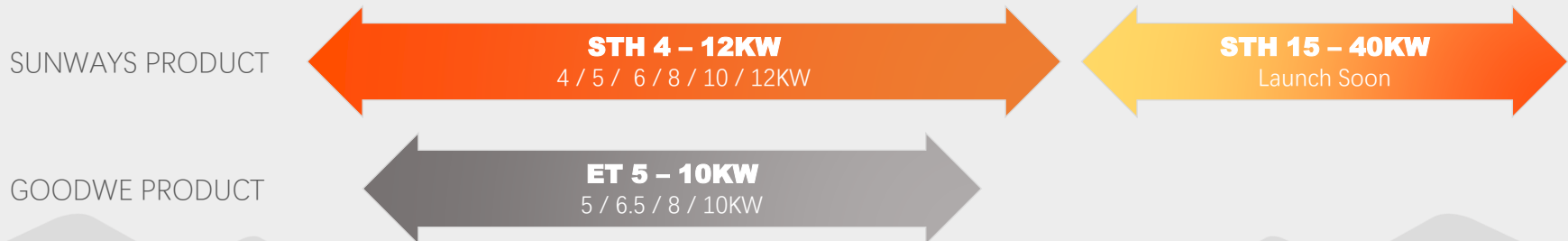


Wide Power Range Satisfy Various Demand

Single-phase Hybrid



Three-phase Hybrid





Modern Product Design with Technological Sense

GOODWE PRODUCT



VS

SUNWAYS PRODUCT



Sunways Advantages

Aluminum alloy die-casting shell

Better sealing performance, simplified appearance, high consistency of appearance

Hidden screw design

Concise design with hidden screws perfectly match the modern home decoration style

Multidata display screen

2.4 inches OLED color screen displays various data (includes PV, battery, inverter, grid, and meter, etc.)

Horizontal design

Spacious bottom space, convenient for installation and maintenance



Multi Authoritative Certifications



Attestation of Conformity
No. NBA 104339 0041 Rev. 00

Holder of Certificate: Ningbc
No. 1, Siao Green Ind
Chongzhou 315334 Co
PEOPLE'S

Product: Converter
HYBRID II

This Attestation of Conformity is issued on a 2014/35/EU relating to electrical equipment so that the listed equipment complies with the pr based on the technical specifications applicat sample submitted for testing and certification.

Test report no.: 70409200

Date: 2021-01-04

Page 1 of 6
After preparation of the necessary technical docum required CE marking can be affixed on the product responsibility of the manufacturer. Other relevant E
TUV SUD Product Service GmbH • Certification B



Compliance Document
No. D 104339 0043 Rev. 00

Holder of Certificate: Ningbc
No. 1, Siao Green Ind
Chongzhou 315334 Co
PEOPLE'S

Product: Converter
HYBRID II

This Compliance document confirms the com refers only to the sample submitted for testing safety of the serial products. For details see:

Test report no.: 70409200

Date: 2021-01-11

Page 1 of 3
TUV SUD Product Service GmbH • Certification B



ATTESTATION OF CONFORMITY

Issued to: Ningbo Sunways Technologies Co., Ltd.
No. 1, Second Road, Green Industrial Zone, Chongzhou Town 315334 Csi, Ningbo, Zhejiang, P.R. China

For the product: Hybrid Inverter

Trade name: **sunways**

Type/Model: STH-4KTL-HT, STH-5KTL-HT, STH-6KTL-HT, STH-8KTL-HT, STH-10KTL-HT, STH-12KTL-HT

Ratings: See Annex

Manufactured by: Ningbo Sunways Technologies Co., Ltd.
No. 1, Second Road, Green Industrial Zone, Chongzhou Town 315334 Csi, Ningbo, Zhejiang, P.R. China

Requirements: TOR Erzszege Type A Version 1.1:2019
CWE-Richtlinie R 25:2020

This Attestation is granted on account of an examination by DEKRA, the results of which are list down in a confidential file no 6096435300.

The examination has been carried out on one single specimen or several specimens of the product, submitted by the manufacturer. The Attestation does not include an assessment of the manufacturer's production. Conformity of his production with the specimen tested by DEKRA is not the responsibility of DEKRA.

Amhem, 6 May 2021 Number: 6096435301NDCC

DEKRA Testing and Certification (Shanghai) Ltd.

Kerry Lin
Certification Manager
In original publication of this attestation and adjoining reports is allowed

DEKRA Testing and Certification (Shanghai) Ltd.
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Page 1 of 2

Sunways STH4-12KTL Certification Plan

- Safety (IEC 62109) ✓
- EMC (EN 61000) ✓
- Europe (EN 50549) ✓
- South Africa (NRS 097-2-1) ✓
- Germany (4105/0124) ✓
- Austria (R 25:2019) ✓
- Austria (IEC62477) ✓
- Austria (EN 62477) ✓
- Italy (CEI 0-21) Sep.
- Australia (AS4777.2) Nov.
- UK (G99) Oct.



Outstanding Features of Sunways Hybrid Series

Wide Power Range in Application

Attractive and Functional Product Design

High Reliability Guaranteed by International Certification

Sunways keep leading on working behavior !

UPS Switchover < 10mS

180-750V Super Wide Battery Range

0-110% Phase Unbalanced Output





Working Performance

Sunways STH4-12KTL vs GoodWe ET5-10K





Advantages on PV Input

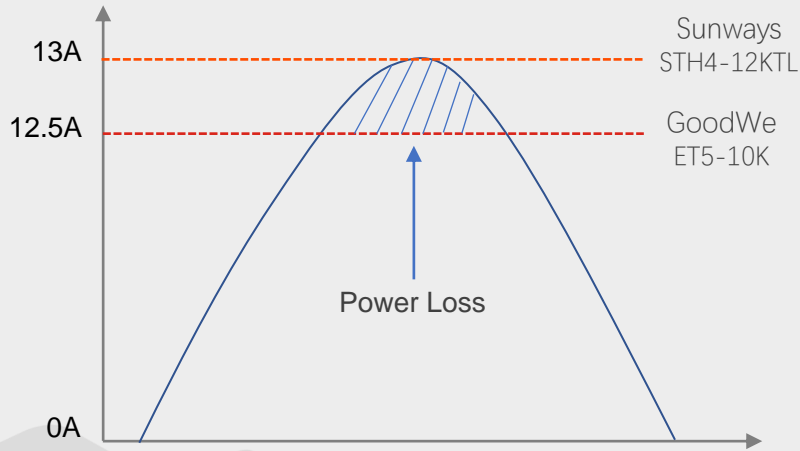
Key Parameters	Sunways STH4-12KTL	GoodWe ET5-10K	Sunways Advantages	Benefits
Start-up Voltage	150V	180V	20% Lower	<ul style="list-style-type: none">• The lower start-up voltage, the earlier PV starts and the later PV stops• Longer working hours of PV in everyday
MPPT Full-load Voltage Range	410 to 850V	460 to 850V	13% Wider	<ul style="list-style-type: none">• The wider MPPT full-load voltage range, the longer hours maximum current of the PV can be tracked by the inverter
Max Input Current	13A	12.5A	4% Higher	<ul style="list-style-type: none">• Much more compatible with 182-cell PV module
Max Short-circuit Current	18A	15.2A	18% Higher	<ul style="list-style-type: none">• Much easier to identify a short-circuit fault when PV string accidentally connected reversely• More reliable in some extreme applications



Advantages on PV Input

Compatibility to 182mm Solar Panel

Sunways hybrid inverter max input current is 13A which is compatible with the mainstream 182 PV panel and can be used in various applications.



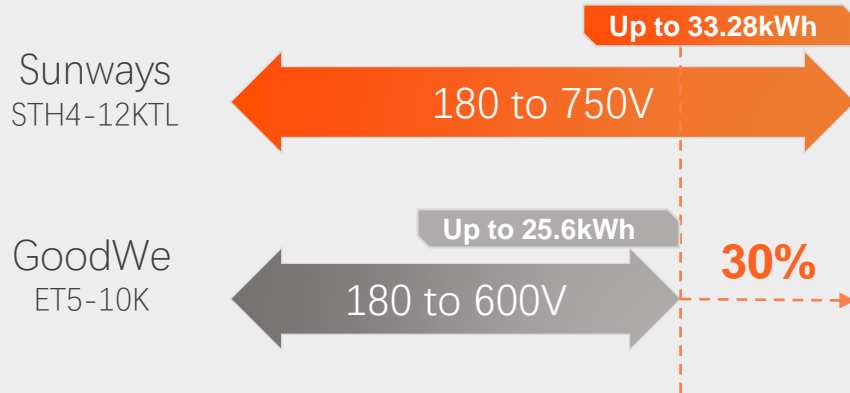
GoodWe inverter uses 182mm PV panel will make power loss

Main 182mm Solar Panel	Imp(A)
Longi	12.75-13.04
JA solar	12.73-13.13
Suntech	12.69-12.98
Jinko Solar	13.03-13.48



Advantages on Battery Input

Battery Voltage Range



Compatibility to BYD B-Box Series

According to the battery parameters declared in BYD HVS&HVM datasheet, Sunways three-phase hybrid inverter is compatible with BYD HVS from HVS5.1 to HVS 12.8 and HVM from HVM11 to HVM22.1. And Sunways hybrid inverter can connect 13 pcs @51.2V battery modules in one string.

Similarities	Sunways	GoodWe
The way of battery installation	Stackable	Stackable
Battery type	LiFePO4 high-voltage battery	LiFePO4 high-voltage battery
Max. charging/discharging current(A)	25	25
Depth of discharge(%)	90	90
Differences	Sunways	GoodWe
Max. connected battery capacity(kWh)	33.28	25.6
Battery Voltage Range(V)	180-750	180-600
Nominal Voltage Range(V)	204.8-512	204.8-409.6



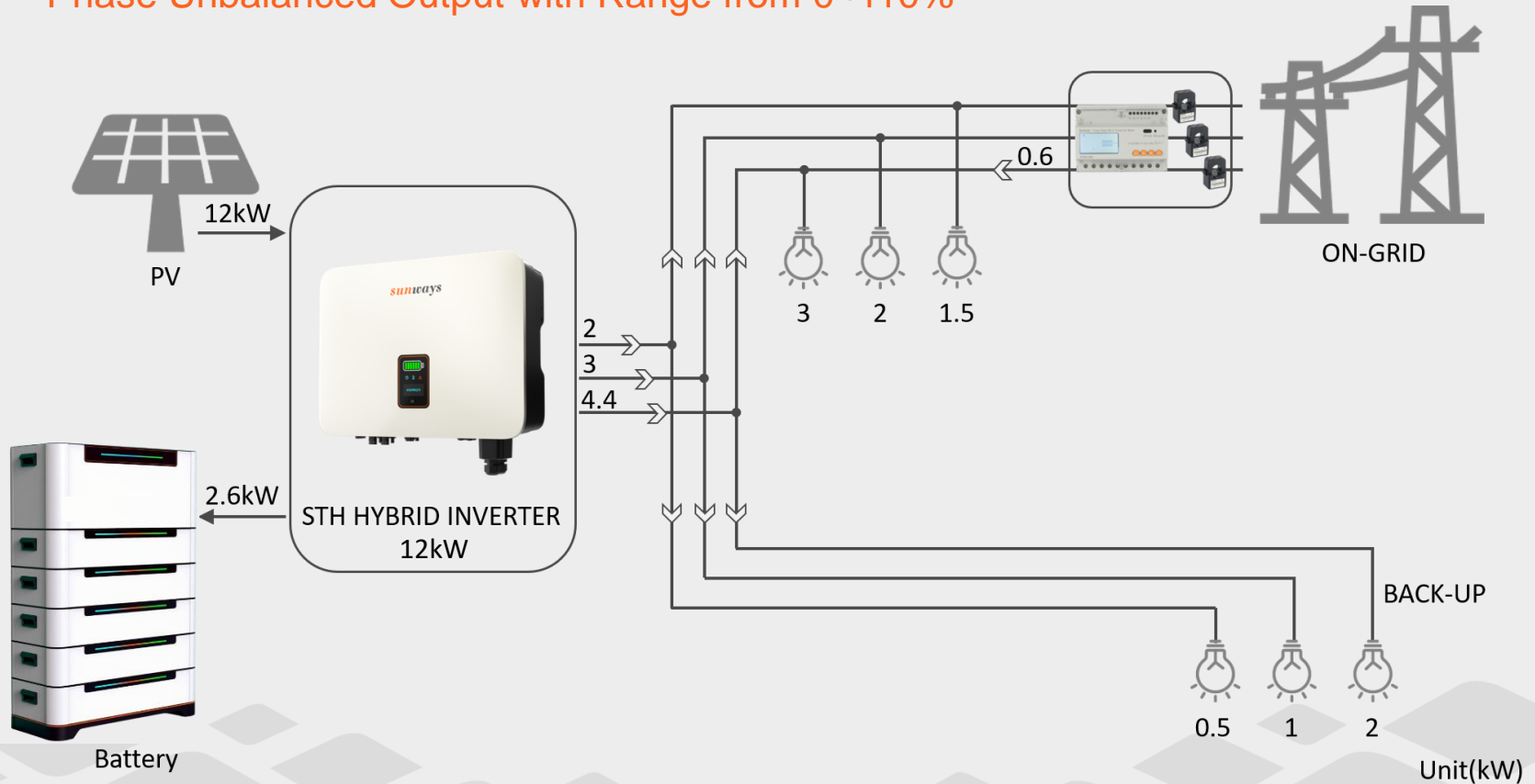
Advantages on Grid Output

Key Parameters	Sunways STH10KTL	GoodWe ET10KW	Sunways Advantages	Benefits
Max Input Apparent Power	16500VA	15000VA	10% Higher	<ul style="list-style-type: none">• More power for charging and faster charging speed when supply back-up loads
Max Phase Unbalanced Output Ability	0 to 3.67KW 0~110%@1/3 rated power	0 to 3.33kW 0~100%@1/3 rated power	10% Higher	<ul style="list-style-type: none">• Support a 0-110% variable output power in each phase in both on-grid and back-up output• Higher self-consumption rate, saving electricity bill



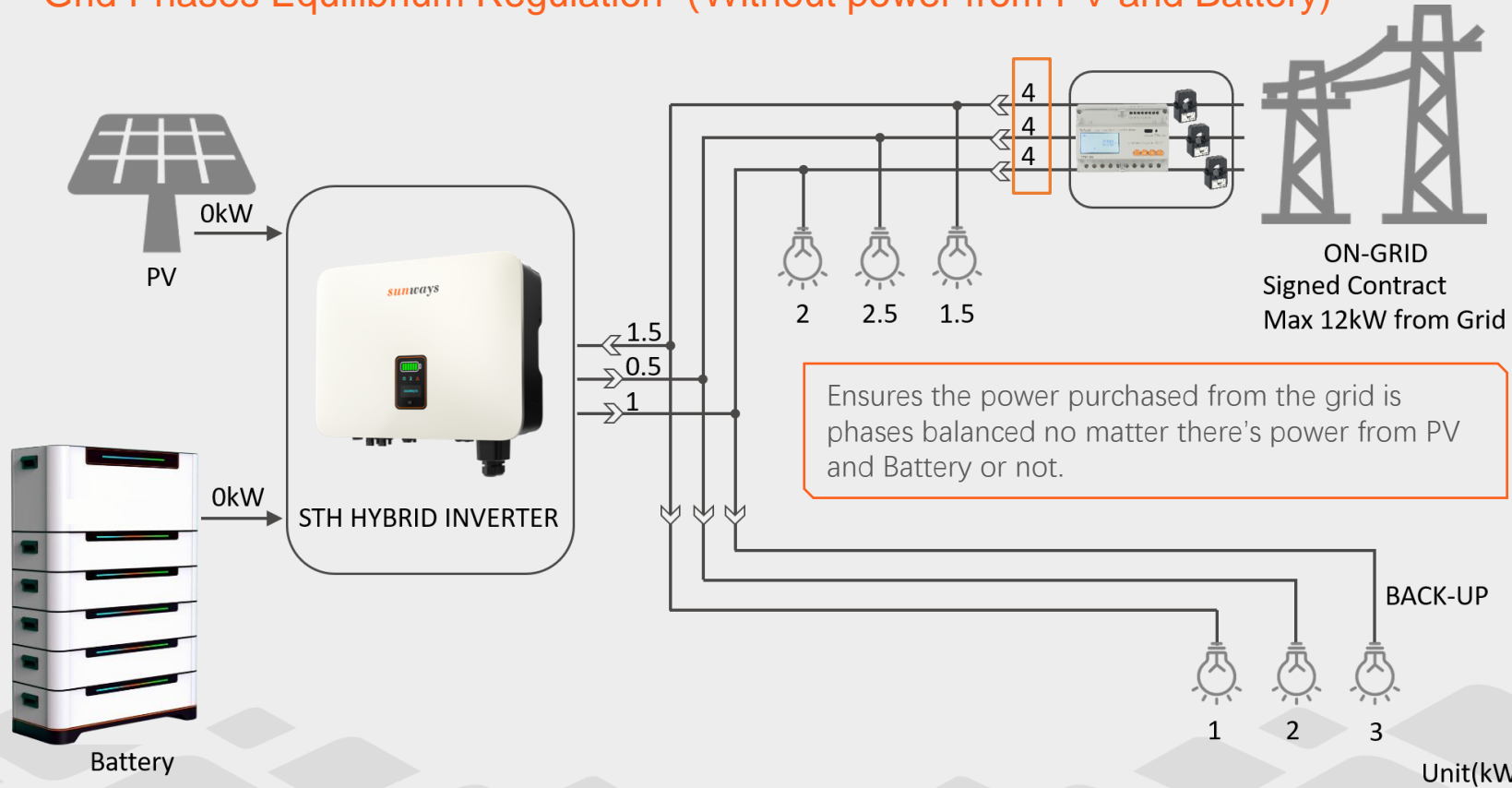
Advantages on Grid Output

Phase Unbalanced Output with Range from 0~110%



Advantages on Grid Output

Grid Phases Equilibrium Regulation (Without power from PV and Battery)





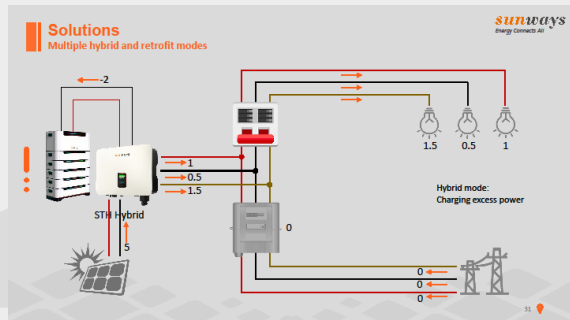
Diversified Work Modes

Work Mode	Description	Benefits
General Mode	Self-consumption first, excess energy stored in the battery for use when needed.	<ul style="list-style-type: none">Utilizing the power of PV to the greatest extent and reducing the power purchased from grid.
Economic Mode	Set charge and discharge power and time according to peak and valley electricity price	<ul style="list-style-type: none">Charge battery at valley price and discharge battery at peak price to maximize the peak-valley benefits.
UPS Mode	Use as an uninterrupted power supply when power grid outage	<ul style="list-style-type: none">< 10mS reaction time from normal mode to back-up mode, as far as possible to reduce the impact of power grid outage on the household.
Off-grid Mode	Use as a pure off-grid inverter in the area where no power supply	<ul style="list-style-type: none">Can be used as pure off-grid inverters for a long period with 1.1 times overloading ability.PV panels are allowed to connect to supply power compared with normal pure off-grid inverters.



Diversified Work Modes

Work Mode	Description	Benefits
Peak Power Control Mode	When the load exceeds the rated connection capacity of the grid, compensate for the overloaded power in each phase	<ul style="list-style-type: none"> Ensure the customer won't get fined for the power consumption that exceeds the rated power signed with the grid company.
Phase Equilibrium Mode	When the battery and PV power are low, and the customer has unbalanced loads or the load with power beyond the grid rated capacity, the inverter can realize phase equilibrium by buying power from the phase with small load to support the phase with big load	<ul style="list-style-type: none"> Ensure the power purchased from each phase is always in a balance.



A further detailed work modes explanation attached for your reference.



Advantages on Back-up Output

Key Parameters	Sunways STH10KTL	GoodWe ET10K	Sunways Advantages	Benefits
UPS Switchover Time	< 10ms UPS level	< 10ms UPS level	—	<ul style="list-style-type: none">• Most suppliers UPS reaction time longer than 20ms or even only support EPS level power supply• As far as possible to reduce the impact of power grid outage on the household
Max Output Apparent Power	11000VA	10000VA	10% Higher	<ul style="list-style-type: none">• Export more power to connect more loads in the case of power outages
Peak Overload Apparent Power	20000VA@60S	16500VA@60S	21% Higher	<ul style="list-style-type: none">• Two times overloading ability making greater inductive loads compatibility
Peak Output Apparent Power Per Phase	4000VA	3300VA	21% Higher	<ul style="list-style-type: none">• Allow more kinds of high-power single-phase load connected



Performance on Efficiency, Reliability and Safety

	Sunways STH4-12KTL	GoodWe ET5-10K
Max. Efficiency	98.2%	98.2%
European Efficiency	97.4%	97.5%
Max. Battery Charging Conversion Efficiency	97.3%	N/A
Max. Battery Discharging Conversion Efficiency	97.3%	97.5%
Rated Collector/Drain Current	80A@100°C	40A@100°C
Pulsed Collector/Drain Current	IGBT 320A	SiC 160A

Top Level Efficiency, and Higher Reliability and Safety based on high pulsed collector current IGBT

- Sunways STH4-12KTL has great efficiency performance as GoodWe ET5-10K, but **HIGHER RELIABILITY AND SAFETY** due to the 320A pulsed collector current IGBT power device used in hardware design compared to GoodWe with 160A pulsed drain current SiC.
- The reliability of IGBT has been well proven for long time using in PV industry. But the records for SiC power device is not enough.



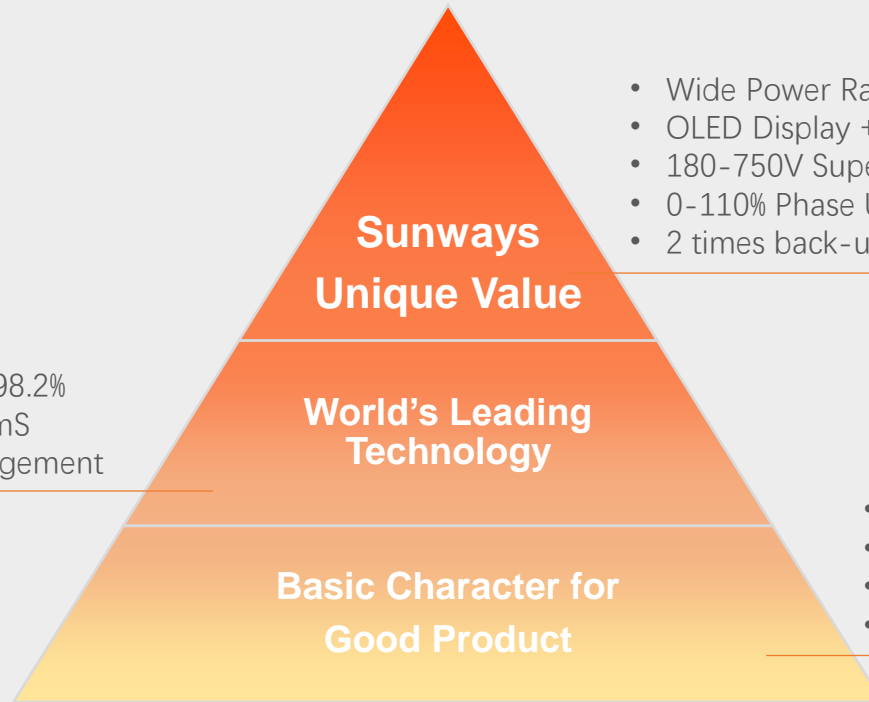
 **Why Sunways**

03





Choose Sunways, Choose Top Value



- Max Efficiency up to 98.2%
- UPS Switchover < 10mS
- Intelligent EMS management

- Wide Power Range Coverage
- OLED Display + App
- 180-750V Super Wide Battery Range
- 0-110% Phase Unbalanced Output
- 2 times back-up overloading ability

- International Certification
- IP65 Protection
- Easy to Use and Safe
- UPS Switchover 20-40mS



THANK YOU

