



Active Safety

AI Powered
Active Arcing Protection



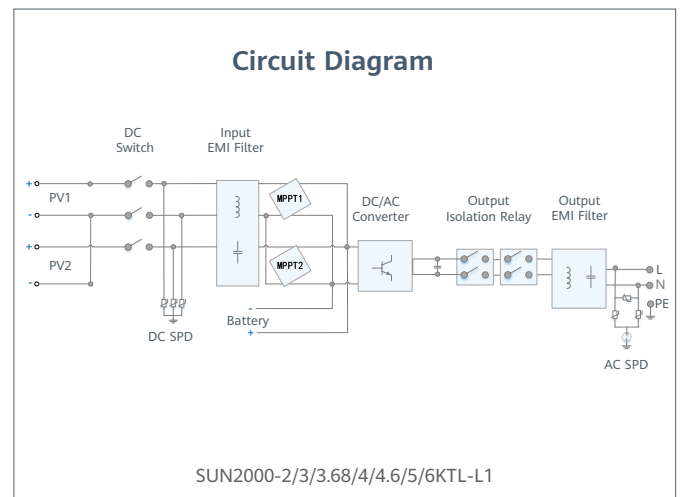
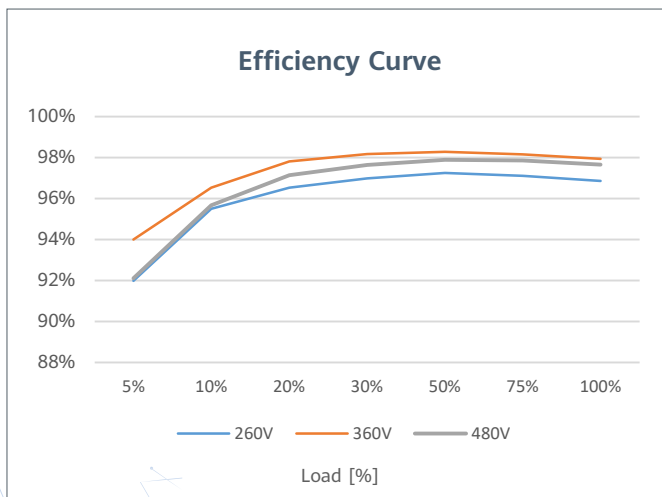
Higher Yields

Up to 30% More
Energy with Optimizer



2x POWER Battery Ready

5KW AC Output plus
5KW Battery Charge



SUN2000-2/3/3.68/4/4.6/5/6KTL-L1
Technical Specification

Technical Specification	SUN2000 -2KTL-L1	SUN2000 -3KTL-L1	SUN2000 -3.68KTL-L1	SUN2000 -4KTL-L1	SUN2000 -4.6KTL-L1	SUN2000 -5KTL-L1	SUN2000 -6KTL-L1
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Efficiency

Max. efficiency	98.2 %	98.3 %	98.4 %	98.4 %	98.4 %	98.4 %	98.4 %
European weighted efficiency	96.7 %	97.3 %	97.3 %	97.5 %	97.7 %	97.8 %	97.8 %

Input (PV)

Recommended max. PV power ¹	3,000 Wp	4,500 Wp	5,520 Wp	6,000 Wp	6,900 Wp	7,500 Wp	9,000 Wp
Max. input voltage	600 V ²						
Start-up voltage	100 V						
MPPT operating voltage range	90 V – 560 V ²						
Rated input voltage	360 V						
Max. input current per MPPT	12.5 A						
Max. short-circuit current	18 A						
Number of MPP trackers	2						
Max. input number per MPP tracker	1						

Input (DC Battery)

Compatible Battery	LG Chem RESU 7H_R / 10H_R						
Operating voltage range	350 ~ 450 Vdc						
Max operating current	10 A @7H_R / 15 A @10H_R						
Max charge power	3,500 W @7H_R / 5,000 W @10H_R						
Max discharge Power @7H_R	2,200 W	3,300 W	3,500 W	3,500 W	3,500 W	3,500 W	3,500 W
Max discharge Power @10H_R	2,200 W	3,300 W	3,680 W	4,400 W	4,600 W	5,000 W	5,000 W

Compatible Battery	HUAWEI Smart ESS Battery 5kWh – 30kWh						
Operating voltage range	350 ~ 560 Vdc						
Max operating current	15 A						
Max charge Power	5,000 W ³						
Max discharge Power	2,200 W	3,300 W	3,680 W	4,400 W	4,600 W	5,000 W	5,000 W

Output (On Grid)

Grid connection	Single phase						
Rated output power	2,000 W	3,000 W	3,680 W	4,000 W	4,600 W	5,000 W ⁴	6,000 W
Max. apparent power	2,200 VA	3,300 VA	3,680 VA	4,400 VA	5,000 VA ⁵	5,500 VA ⁶	6,000 VA
Rated output voltage	220 Vac / 230 Vac / 240 Vac						
Rated AC grid frequency	50 Hz / 60 Hz						
Max. output current	10 A	15 A	16 A	20 A	23 A ⁷	25 A ⁷	27.3 A
Adjustable power factor	0.8 leading ... 0.8 lagging						
Max. total harmonic distortion	≤ 3 %						

Output (Backup Power via Backup Box-B0)

Maximum apparent power	5,000 VA						
Rated output voltage	220 V / 230 V						
Maximum output current	22.7 A						
Power factor range	0.8 leading ... 0.8 lagging						

¹ Inverter max input PV power is 10,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.
² The maximum input voltage and operating voltage upper limit will be reduced to 495 V when inverter connects and works with LG battery.
³ 2,500 W @ 5kWh HUAWEI ESS battery
⁴ AS4777.2: 4,991W. ⁵ VDE-AR-N 4105: 4,600VA / AS4777.2: 4,999VA. ⁶ AS4777.2: 4,999VA / C10/11:5,000VA ⁷ AS4777.2: 21.7A.

SUN2000-2/3/3.68/4/4.6/5/6KTL-L1
Technical Specification

Technical Specification	SUN2000 -2KTL-L1	SUN2000 -3KTL-L1	SUN2000 -3.68KTL-L1	SUN2000 -4KTL-L1	SUN2000 -4.6KTL-L1	SUN2000 -5KTL-L1	SUN2000 -6KTL-L1 ¹
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Protection & Feature	
Anti-Islanding protection	Yes
DC reverse polarity protection	Yes
Insulation monitoring	Yes
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11
Residual current monitoring	Yes
AC overcurrent protection	Yes
AC short-circuit protection	Yes
AC overvoltage protection	Yes
Over-heat protection	Yes
Arc fault protection	Yes
Battery reverse charging from grid	Yes

General Data	
Operating temperature range	-25 ~ +60 °C
Relative operating humidity	0 %RH ~ 100 %RH
Operating altitude	0 ~ 4,000 m (Derating above 2,000 m)
Cooling	Natural convection
Display	LED indicators; integrated WLAN + FusionSolar APP
Communication	RS485, WLAN via inverter built-in WLAN module Ethernet via Smart Dongle-WLAN-FE (Optional); 4G / 3G / 2G via Smart Dongle-4G (Optional)
Weight (incl. mounting bracket)	12.0 kg (26.5 lb)
Dimension (incl. mounting bracket)	365mm * 365mm * 156 mm (14.4 x 14.4 x 6.1 inch)
Degree of protection	IP65
Nighttime Power Consumption	< 2.5 W

Optimizer Compatibility	
DC MBUS compatible optimizer	SUN2000-450W-P

Standard Compliance (more available upon request)	
Safety	EN/IEC 62109-1, EN/IEC 62109-2
Grid connection standards	G98, G99, EN 50549-1, CEI 0-21, VDE-AR-N-4105, AS 4777.2, C10/11, ABNT, UTE C15-712, RD 1699, TOR D4, IEC61727, IEC62116



EU Declaration of Conformity

(No. CE-06747210)

We **Huawei Technologies Co., Ltd.**
**Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
 Bantian, Longgang District, Shenzhen, 518129, P.R.C**

declare under our sole responsibility that the product

Name/Trademark	SOLAR INVERTER/HUAWEI
Model/Software	SUN2000-6KTL-L1,SUN2000-5KTL-L1,SUN2000-4.6KTL-L1,SUN2000-4KTL-L1,SUN2000-3.68KTL-L1,SUN2000-3KTL-L1,SUN2000-2KTL-L1/V200
Accessories	NA

comply with the following directives and regulations:

- **2014/53/EU(Radio Equipment Directive)**
- **2011/65/EU & (EU) 2015/863 (RoHS Directive)**

For the evaluation of the compliance with these Directives and Regulations, the following standards/requirements were applied:

Artificial 3.1 (a) Safety & Health	EN 62109-1:2010 EN 62109-2:2011 EN 50385:2017
Artificial 3.1 (b) EMC	EN 62920:2017 EN 55011:2016 EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2017+A1:2011 EN 61000-6-4:2017+A1:2011 EN 301 489-1 V2.2.3:2019 EN 301 489-17 draft V3.2.0:2017 EN 61000-3-11:2000 EN 61000-3-12:2011 EN 61000-3-2:2014 EN 61000-3-3:2013
Artificial 3.2 Radio	ETSI EN 300 328 V2.1.1
RoHS	EN 50581:2012

The conformity assessment procedure as referenced in Article 17 and detailed in Annex III of the Radio equipment Directive has been followed with the involvement of a notified body: Notified Body: TÜV SÜD Product Service GmbH NB No.:0123 Certificate No.: TPS-RED500229 i02

CE Marking Date: 2020-07-22

Responsible for making this declaration is the:

Manufacturer Authorised representative established within the EU

Person responsible for making this declaration

Print name/Title : LingHongDong Regulation Compliance Manager

China, Shenzhen 2020-07-22
 (Place) (Date)

Ling Hong Dong
 (Signature)



Product Service

EU Type Examination Certificate

Certificate No: TPS-RED500229 i02

Certificate Holder: Huawei Technologies Co., Ltd.
Administration Building
Headquarters of Huawei Technologies Co., Ltd.
Bantian, Longgang District
518129 Shenzhen
PEOPLE'S REPUBLIC OF CHINA

Product Type: Wireless LAN equipment
Solar Inverter

Model(s): SUN2000-6KTL-L1, SUN2000-5KTL-L1, SUN2000-4.6KTL-L1,
SUN2000-4KTL-L1, SUN2000-3.68KTL-L1, SUN2000-3KTL-L1,
SUN2000-2KTL-L1

We, as Notified Body number 0123, have examined the technical documentation and supporting evidence for the above listed equipment and found it to comply with the requirements of Annex III Module B of Radio Equipment Directive 2014/53/EU in relation to the following essential requirements covered by the examination

Essential Requirements: Article 3.1 (a) in respect of Health and Safety
Article 3.1 (b) in respect to EMC
Article 3.2 in respect to the use of the Radio Spectrum

This is based upon examination of the following Technical Data file. Please refer to the Annex for further technical details.

Technical Documentation: SUN2000-5KTL-L1 (v) up1 RED TCF

Valid from: 2020-07-29

(Laurentiu Dan Miiler)

Total pages: Page 1 of 3

The certificate has been issued in accordance with the Certification Regulations of TÜV SÜD Product Service GmbH (Notified Body Number 0123) and constitutes page 1 of the combined Certificate and Annex.

The CE marking may be used on the equipment described above subject to the equipment meeting the compliance requirements of all applicable EU directives.

The conditions for the validity of this certificate are listed in the Annex.
For further details related to this certification please contact ps-zert@tuev-sued.de

Issued by TÜV SÜD Product Service under document number: RED1A 041829 4254 Rev. 00

TÜV SÜD Product Service GmbH • Certification Body • Ridlerstraße 65 • 80339 Munich • Germany

TÜV®

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFICAT



Annex to EU-Type Examination Certificate

1 Equipment Description

Equipment is a Solar Inverter supporting WLAN technology.

1.1 Models

	Model	Variant HW/SW Differences	HW Version	SW Version
Original	SUN2000-5KTL-L1	All models have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with SOLAR INVERTER SUN2000-5KTL-L1. The differences among these models are only in the output power ratings and fan	V200	V200
Variant	SUN2000-4.6KTL-L1 SUN2000-4KTL-L1 SUN2000-3.68KTL-L1 SUN2000-3KTL-L1 SUN2000-2KTL-L1 SUN2000-6KTL-L1			

1.2 Supported Functions and Features

1.2.1 Non-radio features

d.c. Max. Input Voltage: 600VDC; d.c. Max. Input Current: 12.5A;

MPPT Voltage Range: 90VDC – 560VDC; Output Frequency: 50/60Hz

Output Voltage: 230V/240V for SUN2000-3.68KTL-L1, 220V/230V/240V for other models

1.2.2 Radio features

Radio	Features	Operating Spectrum / Power	
IEEE 802.11 – 2.4 GHz	b/g/n20/n40, Adaptive	2400-2483.5 MHz	17.77 dBm

1.3 Associated Parts

Model/Part Number	Description
N/A	N/A

2 Assessed Standards

Article 3.1(a)	Article 3.1(b)	Article 3.2
EN 62109-1:2010 EN 62109-2:2011 EN 50385:2017	EN 55011:2016 EN 62920:2017 EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2007/A1:2011 EN 61000-6-4:2007/A1:2011 EN 301 489-1 V2.2.3 Draft EN 301 489-17 V3.2.0 EN 61000-3-2:2014 EN 61000-3-3:2013 EN 61000-3-11:2000 EN 61000-3-12:2011	EN 300 328 V2.1.1



Annex to EU-Type Examination Certificate

3 Technical Documentation

3.1 Technical Documentation

Technical documentation and supporting evidence were examined and found to comply with the EU-type examination requirements in conjunction with Annex V requirements of the directive.

3.2 Declarations

Declaration of Conformity of SUN2000-5KTL-L1(v) up1 for RED, draft	Dated	2020-07-22
Declaration of multiple model difference up1	Dated	2020-07-10
Modification description for SUN2000-5KTL-L1(v) up1	Dated	2020-07-22

3.3 Strategic Documentation

Risk Assessment Letter for SUN2000-5KTL-L1(v) up1 for RED	Issued	2020-07-22
Justification of Conformity of SUN2000-5KTL-L1(v) up1 for RED	Modified	2020-07-29

3.4 Technical Compliance Documentation

3.4.1 Article 3.1(a)

083-52008202-100 part 1 of 2	Issued	2020-07-25
083-52008202-100 part 2 of 2	Issued	2020-07-25
SYBH(R-EMF)06535247-1	Issued	2020-05-25

3.4.2 Article 3.1(b)

68.760.20.0257.02	Issued	2020-07-22
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3.4.3 Article 3.2

SZEM200400223301	Issued	2020-04-15
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4 Additional Information

None

5 Conditions of Validity

None

Signature: _____

Date: _____

2020-07-29

On behalf of TÜV SÜD Product Service

TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD
ZERTIFIKAT ◆ CERTIFICATE ◆ 認證書 ◆ CERTIFICADO ◆ CERTIFICAT



This document is to declare the grid code compliance for SLOVENIA – according to EN50549-1: 2019 and SLOVENIAN grid code

This is to declare that the inverter model in following table are compliant to - EN50549-1: 2019 - Requirements for generating plants to be connected in parallel with distribution networks - Part 1: Connection to a LV distribution network - Generating plants up to and including Type B and - Slovenian Grid Code (defined by SONDSEE – March 2021)

Inverter Model	SUN2000-2KTL-L1, SUN2000-3KTL-L1, SUN2000-3.68KTL-L1, SUN2000-4KTL-L1, SUN2000-4.6KTL-L1, SUN2000-5KTL-L1, SUN2000-6KTL-L1; SUN2000-3KTL-M1, SUN2000-4KTL-M1, SUN2000-5KTL-L1, SUN2000-6KTL-M1, SUN2000-8KTL-M1, SUN2000-10KTL-M1; SUN2000-12KTL-M2, SUN2000-15KTL-M2, SUN2000-17KTL-M2, SUN2000-20KTL-M2; SUN2000-30KTL-M3, SUN2000-36KTL-M3, SUN2000-40KTL-M3; SUN2000-100KTL-M1
Type of Power Gener. plants	Type A and Type B (according to Commission Regulation (EU) 2016/631)

All inverters listed above can be used in Type A power generating plant (according to Commission Regulation EU 2016/631).

The inverter with the country setting Slovenia have grid protection parameters below (or can be set with the following grid protection parameters according to SIST EN50549-1):

Protection Parameter	Trip Setting	Time
Under-voltage level 1	0.85 Un	2000 ms
Under-voltage level 2	0.7 Un	200 ms
Over-voltage level 1	1.11 Un	2000 ms
Over-voltage level 2	1.15 Un	200 ms
Under-frequency level 1	47 Hz	200 ms
Under-frequency level 2	52 Hz	200 ms

10-min overvoltage protection threshold	253.0 V >	Level-1 overfrequency protection threshold	52.00 Hz >
10-min overvoltage protection time	200 ms >	Level-1 overfrequency protection time	200 ms >
Level-1 overvoltage protection threshold	255.3 V >	Level-2 overfrequency protection threshold	52.00 Hz >
Level-1 overvoltage protection time	2000 ms >	Level-2 overfrequency protection time	200 ms >
Level-2 overvoltage protection threshold	264.5 V >	Level-1 underfrequency protection threshold	47.00 Hz >
Level-2 overvoltage protection time	200 ms >	Level-1 underfrequency protection time	200 ms >
Level-1 undervoltage protection threshold	195.5 V >	Level-2 underfrequency protection threshold	47.00 Hz >
Level-1 undervoltage protection time	2000 ms >	Level-2 underfrequency protection time	200 ms >
Level-2 undervoltage protection threshold	161.0 V >		
Level-2 undervoltage protection time	200 ms >		

Grid connection parameters:

Lower frequency	49.9 Hz
Upper frequency	50.1 Hz
Lower voltage	0.9 Un
Upper voltage	1.1 Un
Grid monitoring time	60 s
Gradient	10% Pmax/min

Grid connection time after power grid recovery	60 s >	Grid reconnection voltage upper limit	253.0 V >
Maximum voltage of grid-tied startup	253.0 V >	Grid reconnection voltage lower limit	207.0 V >
Minimum voltage of grid-tied startup	207.0 V >	Grid reconnection frequency upper limit	50.10 Hz >
Maximum frequency of grid-tied startup	50.10 Hz >	Grid reconnection frequency lower limit	49.90 Hz >
Minimum frequency of grid-tied startup	49.90 Hz >	delay time for connecting automatically to the network	60 s >
Soft start time	600 s >		
Frequency change rate protection	<input type="checkbox"/>		
AFCI	<input checked="" type="checkbox"/>		
Soft start time after grid failure	600 s >		

The reactive power capability graph is according to SONDOSEE requirements and clarifications i.e. within the limit of the following graph for inductive and capacitive behavior, i.e. between $-0.23 \cdot PD$ and $0.52 \cdot PD$ where $PD = P_{max} \cdot \cos\phi_n$ and $\cos\phi_n = 0.9$



Inverters are able to limit the Idc, Dc injection, to 0.5% of nominal current.

On behalf of Huawei Technologies

Yours Faithfully,

Signed: _____

Date: _____

