ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

DAkkS Deutsche Akkreditierungsstelle D-ZE-11321-01-00

TÜV SÜD Product Service

Certificate of Conformity

No. ESY 114387 0116 Rev. 00

Holder of Certificate: **Huawei Digital Power Technologies Co., Ltd.**
Office 01, 39th Floor, Block A
Antuoshan Headquarters Towers
33 Antuoshan 6th Road, Futian District
518043 Shenzhen
PEOPLE'S REPUBLIC OF CHINA

Product: **Converter (Hybrid Inverter)**

Model(s): **SUN2000-8K-LC0, SUN2000-10K-LC0**

Parameters: See page 3-5

Applicable standards:
UNE 217001:2020
RD 244:2019

This Certificate of Conformity confirms the compliance with the above listed standards on a voluntary basis. It refers only to the sample submitted to TÜV SÜD Product Service GmbH and does not certify the quality or safety of the serial products. It was issued according to TÜV SÜD Product Service certification program Photovoltaics and Grid Integration. For details see: www.tuvsud.com/ps-cert

Test report no.: 64290233020801

Date, 2023-09-13

(Billy Qiu)

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

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Certification Body TÜV SÜD Product Service GmbH performed assessment of the products listed below:

Test requirement	The certification complies with the requirements of the following documents: **UNE 217001:2020**, Tests for systems that avoid energy discharge to the distribution network. **Royal Decree 244:2019**, of April 5, which regulates the administrative, technical and economic conditions of self-consumption of electrical energy.
Manufacturer	Huawei Digital Power Technologies Co.,Ltd. Office 01, 39th Floor, Block A Antuoshan Headquarters Towers 33 Antuoshan 6th Road, Futian District 518043 Shenzhen PEOPLE'S REPUBLIC OF CHINA
Product types used in power generation system	Inverter: Single-phase inverter Network analyzer/ SmartLogger /SmartGuard/Current transformer
Model and Technical Data	See page 3-5
Software version	Inverter: V100R023 Network analyzer: V1.03 SmartLogger: V300R001 SmartGuard:V100R023 EMMA: V100R023
Test Report	64.290.23.30208.01
Issued by	Testing lab: TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
Accreditation No.	D-PL-19065-01-01
Accreditation body ref.	DAkkS
Reference of the certification body	
Certification Body	TÜV SÜD Product Service GmbH
	DAKKS accreditation certificate D-ZE-11321-01-00 according to DIN EN ISO/IEC 17065:2013

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Inverter Parameters:

Model	SUN2000-8K-LC0	SUN2000-10K-LC0
PV input parameter		
Maximum DC input voltage	600 Vd.c.	
Rated voltage	360 Vd.c.	
MPPT voltage range	40~560 Vd.c.	
MPPT voltage range (full load)	260~510 Vd.c.	285~510 Vd.c.
Maximum input current	3*16 Ad.c.	
Isc PV	3*20 Ad.c.	
Maximum Input Power	12000 W	15000 W
Battery input/output parameter		
Battery type	Li-ion	
Rated voltage	360 Vd.c.	
Input voltage range	350-600 Vd.c.	
Maximum input/output voltage	600 Vd.c.	
Maximum charging/ discharging current	25 Ad.c.	
Maximum charging power	8000 W	10000 W
Maximum discharging power	8000 W	10000 W
Maximum charge power from grid to battery	5000 W	
Grid parameter		
Rated input/output voltage	230 Va.c., L+N+PE	
Rated input/output frequency	50 Hz	
Maximum input current	21.74 Aa.c.	
Maximum input active power	5000 W	
Maximum input apparent power	5000 VA	
Rated output current	34.8 Aa.c.	43.5 Aa.c.
Maximum continuous output current*	40.0 Aa.c.	45.5 Aa.c.
Rated output active power	8000 W	10000 W
Maximum output active power	8800 W	10000 W
Maximum output apparent power	8800 VA	10000 VA
Power factor	0.8 under-excited to 0.8 over-excited	

Remark: *:The maximum AC output current is the maximum current that can be withstood under low voltage(0.95Un) conditions.

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Network analyzer Parameters(Meter):

Model	DDSU666-H
Electrical parameter	
Voltage connect type	230 Va.c., L+N
Rated Frequency	50 Hz
Current specification	100A/40mA
Energy consumption	≤1W
Type	Through transformer
Precision parameter	
Maximum error limit percentage of various instruments	±1.0%
Precision class	Active Power class 1
Communications	
Communication type	RS485 ModBus RTU Protocol
Refresh time	≤1s

Model	EMMA-A02
Electrical parameter	
Voltage connect type	230 Va.c., L+N
Rated Frequency	50 Hz
Current specification	N/A
Energy consumption	≤4W
Type	Through transformer
Precision parameter	
Maximum error limit percentage of various instruments	±0.5%
Precision class	Active Power class 1
Communications	
Communication type	RS485 ModBus RTU Protocol
Refresh time	30ms

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SmartGuard Parameters:

Model	SmartGuard-63A-S0
Communication interface compatibility	RS485
Speed of the communication interface	1200/2400/4800/9600/19200/115200 bps (Default 9600 bps)

SmartLogger Parameters:

Model	SmartLogger 1000A	SmartLogger 1000	SmartLogger 2000	SmartLogger 3000A	SmartLogger 3000B
Communication interface compatibility	RS485, ETH, MBUS (optional) 4G				
Speed of the communication interface	1200/2400/4800/9600/19200/115200 bps (Default 9600 bps)				

Current transformer Parameters:

Model	CTF16-2K5-100
Rated primary current	100 Aa.c.
Rated transformation ratio	2500:1
Rated load	20Ω
Rated Frequency	50 Hz
Accuracy	± 0.5%, class 1.0

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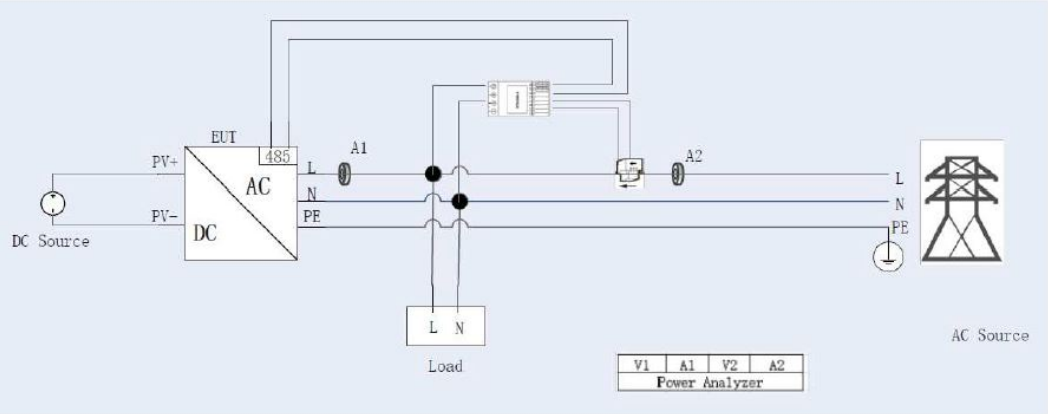
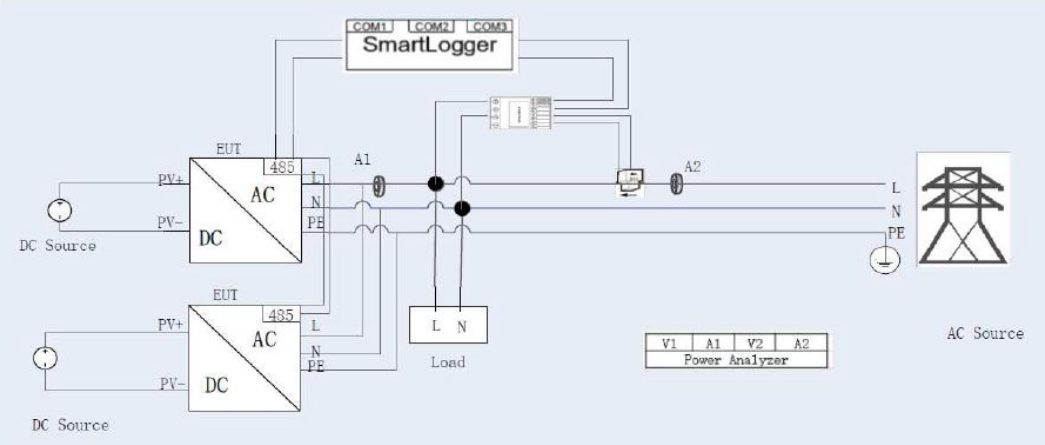
Electrical schematic diagram:

1. The following figure shows the operating diagram of single generator. Inverter communicates with DDSU666-H (Meter) through RS485, receives the grid connection point current collected by the CT current sensor, scheduling output active power to prevent energy from being injected into the grid in real time.



2. The following figure shows the operating diagram of two generators working in parallel. Different from working with a single generator, add the SmartLogger for communication between inverters and meters, and use the RS485 communication port as a means of communication between generators.



3. According to the test results of test clause “Determining the maximum number of generators”, the maximum number of generators that can be included in the system is 9.
4. The following figure shows another alternative operating diagram of single generator. Inverter connects to the COM port of SmartGuard, communicates through RS485 and receives the grid connection point current collected by EMMA-A02, scheduling output active power to prevent energy from being injected into the grid in real time.

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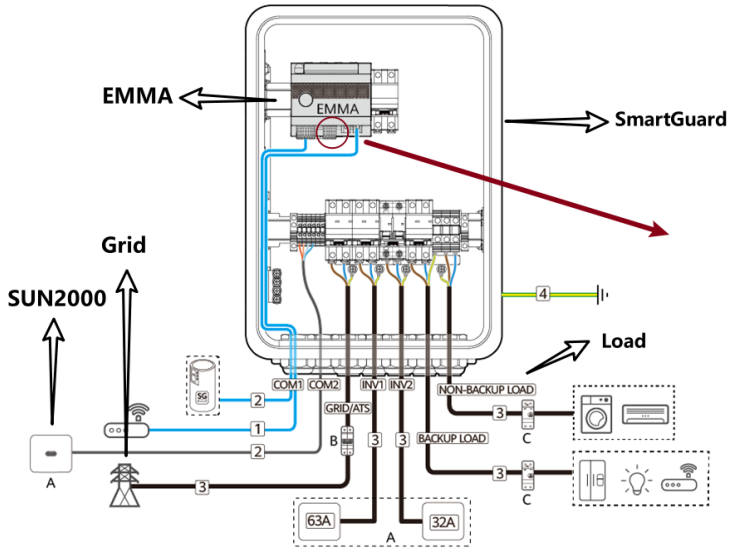
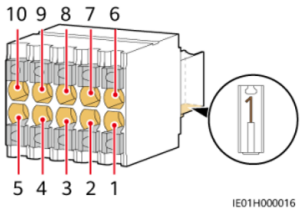
EMMA connects with SmartGuard through its 10 pin RS485 signal connector, pin 9 and pin 4 are used to communicate with SmartGuard. The SmartGuard system only operating in single generator.





Interface description	Pin Definitions	Signal Definition		clarification
12V_IN	10	+		Used for whole house power backup scenarios only. The Whole House Power Backup Box provides 12V DC power when off-grid for the EMMA with 12V DC power.
	5	-		
RS485	9	RS485 -1	A1	Used to connect the whole house power backup box in the whole house power backup scenario.
	4		B1	
CT input	8	Phase A	IA*	External current transformer input.
	3		IA	
	7	Phase B	IB*	
	2		IB	
	6	Phase C	IC*	
	1		IC	

5. Connect balance control equipment to limit phase imbalance to less than 5 kW in final system installation.

Note:

Note 1: Variant models of network analyzer (without control) and current and voltage transformer can be included in the certified solution, provided that they comply with:

- Same connection scheme (single-phase or three-phase)
- Same measurement tolerance
- Same or shorter refresh time
- Same type of communication
- If additional current or voltage transformers are required, the accuracy of the components shall be the same or higher.

Note 2: All the tests conducted to obtain this certificate have been passed by acting on the generation system to regulate the power generated. No cut-off or current limiting element is required to be installed redundantly to the tested solution.