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Type Certificate

Applicant

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

Type of product	Photovoltaic inverter	SUN2000-15-50KTL-M3 (Inverter Family) (for details see Supplement of Certificate)
Technical data	Max. apparent power $S_{E_{max}}$	55 kVA
	Nominal voltage	400 / 480 V, 3(N)~ + PE
	Nominal frequency	50 Hz
Technical data determined by measurements	Max. active power $P_{E_{max}}$ / Max. active power peak P_{600}	(for details see Supplement of Certificate)
Firmware version	V100R001 or higher for 15-42 KTL-M3; V200R023 or higher for 50KTL-M3	
Software version	V100R001 or higher for 15-42 KTL-M3; V200R023 or higher for 50KTL-M3	
Validated model	Model file	Huawei_21-0001_0_TR4_SUN2000-15-42KTL-M3_V1.zip
	Identification number (MD5)	d3b4ceb528076b0b7802b399253f190c

Connection rule

VDE-AR-N 4110:2023-09 – Technical requirements for the connection and operation of customer installations to the medium voltage network (TCR medium voltage) [1]

VDE-AR-N 4120:2018-11 + A1:2024-04 – Technical requirements for the connection and operation of customer installations to the high voltage network (TCR high voltage) [2]

Applicable standards / directives

Technical guidelines: FGW TG 3 Rev. 25 [4], FGW TG 4 Rev. 09 [5], FGW TG 8 Rev. 09 [6]

The power generating units, stated in the certificate, were tested and certified according to the technical guidelines referenced to the grid connection regulation. The electrical characteristics fulfil the requirements of the grid connection regulation:

- Quasi-steady-state operation
- Dynamic network stability (reactive current characteristic according to TCR medium voltage & TCR high voltage)
- Active power output and network security management
- Active power adjustment as a function of the grid frequency
- Protection technology and protection settings on generating unit level.
- Power quality

Restrictions or deviations: see annex of certificate

The manufacturer has provided proof of certification of the quality management system of his production facility in accordance with ISO 9001

The certificate contains the following information:

- technical data of the power generating unit, the auxiliary equipment used and the software version used;
- schematic structure of the power generating units;
- summarized information on the properties of the power generating unit.

The certificate is comprised of 200 pages (including Annex of 199 pages).

Project number: 20TH0373

Certificate number: U21-0001_5

Issued: 2026-04-30

Certification Program: NSOP-0032-DEU-ZE-ES-V11

Valid until: 2031-01-11

Certification body

Accreditation



Georg LORITZ
Lab Supervisor Energy Systems



Accredited certification body by Deutsche Akkreditierungsstelle GmbH (DAkkS) according to ISO/IEC 17065. The accreditation is valid only for the scope listed in the annex of the accreditation certificate D-ZE-12024-01-00. The Deutsche Akkreditierungsstelle GmbH (DAkkS) is signatory of the multilateral arrangements of EA, ILAC and IAF for mutual recognition.

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Annex type certificate No. U21-0001_5

Type of power generating unit:

Technical data:

Technical data determined by measurements:

Grid-tied photovoltaic inverter	SUN2000-15KTL-M3	SUN2000-17KTL-M3	SUN2000-20KTL-M3
Nominal active output power ¹⁾	15,0 kW	17,0 kW	20,0 kW
Max. apparent / active output power:	16,5 kVA / kW	18,7 kVA / kW	22,0 kVA / kW
Nominal voltage:	400 V, 3(N)~ + PE		
Nominal frequency:	50 Hz		
Max. active power $P_{E_{max}}$ / Max. active power peak P_{600} ²⁾ :	3)	3)	3)

Type of power generating unit:

Technical data:

Technical data determined by measurements:

Grid-tied photovoltaic inverter	SUN2000-23KTL-M3	SUN2000-28KTL-M3	SUN2000-30KTL-M3
Nominal active output power ¹⁾	23,0 kW	27,5 kW	30,0 kW
Max. apparent / active output power:	23,0 kVA / kW	27,5 kVA / kW	33,0 kVA / kW
Nominal voltage:	400 V, 3(N)~ + PE	480 V, 3~ + PE	400/480 V, 3(N)~ + PE
Nominal frequency:	50 Hz		
Max. active power $P_{E_{max}}$ / Max. active power peak P_{600} ²⁾ :	3)	3)	3)

Type of power generating unit:

Technical data:

Technical data determined by measurements:

Grid-tied photovoltaic inverter	SUN2000-36KTL-M3	SUN2000-40KTL-M3	SUN2000-42KTL-M3
Nominal active output power ¹⁾	36,0 kW	40,0 kW	42,0 kW
Max. apparent / active output power:	40,0 kVA / kW	44,0 kVA / kW	47,0 kVA / kW
Nominal voltage:	400 / 480 V, 3(N)~ + PE		480 V, 3~ + PE
Nominal frequency:	50 Hz		
Max. active power $P_{E_{max}}$ / Max. active power peak P_{600} ²⁾ :	3)	44,26 kW ⁴⁾	47,31 kW

Firmware version:

Software version:

V100R001 or higher
V100R001 or higher



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Annex type certificate No. U21-0001_5

**Type of
power generating unit:**

Technical data:

**Technical data
determined by
measurements:**

Firmware version:

Software version:

Grid-tied photovoltaic inverter	SUN2000-50KTL-M3
Nominal active output power 1)	50 kW
Max. apparent / active output power:	55 kVA / kW
Nominal voltage:	400 / 480 V, 3(N)~ + PE
Nominal frequency:	50 Hz
Max. active power $P_{E_{max}}$ / Max. active power peak P_{600} 2):	3)
Firmware version:	V200R023 or higher
Software version:	V200R023 or higher

Note:

- 1) The nominal active output power P_n is just a nominal value defined by manufacturer, for details see p.108.
- 2) The P_{Emax} is the highest 10-min mean of the active power of a power generating unit defined according to VDE-AR-N 4110:2018 [1]. The P_{600} is the maximum active power peak of the overall system (averaging period 10 min) defined according to FGW TR 3 Rev. 25 [3].
- 3) Due to spot testing the tests marked were not conducted.
- 4) The stated measurement result was determined according to test 4.1.1, FGW TR 3 Rev. 25 [3].

The active power results of the *SUN2000-40KTL-M3 (400 V)* (tests were done on the variant with a line-to-line output voltage of 400 V), can be applied to the *SUN2000-40KTL-M3 (480 V)*, *SUN2000-15KTL-M3*, *SUN2000-17KTL-M3*, *SUN2000-20KTL-M3*, *SUN2000-23KTL-M3*, *SUN2000-28KTL-M3*, *SUN2000-30KTL-M3*, *SUN2000-36KTL-M3* and *SUN2000-50KTL-M3* scaled (by the factor $P_{max, notmeasure} / P_{max, SUN2000-40KTL-M3}$).

Restrictions, deviations or notes on usage:

- The PGUs in the series do not provide test terminals for on-site testing. For necessary on-site testing, a separate test terminal must be installed additionally.
- The PGUs in the series do not provide display for checking the protection setting. Settings of the integrated protection relay can only be checked per remote via WebUI or via SUN2000 app using a mobile phone. Authentic identification is ensured via the serial number of the device, which is displayed on the Web-UI.
- Only one Interface for specifying active power implemented on the PGU. Separate specifying active power by grid operator and direct seller is not possible. For prioritization of different setpoints must be carried out on the plant level e.g. in the superimposed PGS controller.
- The on the PGU level implemented dynamic of Q-setpoints shows a gradient behaviour and does not provide PT1 filtering effect (see Annex 5 – Certification-relevant parameters).
- The on the PGU level implemented Q(U) control function deviates from requirements according to VDE-AR-N 4110:2018-11 [1] and VDE-AR-N 4120:2018-11 [2].
The PGUs in the series provide only one kind of Q(U) control function. The on the PGU level implanted Q(U) control function can be used as *reactive power with voltage limitation function* by suitable setting of the characteristic curve. But this also deviates from requirements according to VDE-AR-N 4110:2018-11 [1].
These need to be considered for project planning. If needed, these have to be implemented on the plant level e.g. in the superimposed PGS controller.
- The default configuration of the units may not meet the reactive power requirement at the grid connection point. A permanent active power reduction may be needed (see p.106 to 108). This needs to be considered for project planning.
- Measurement results for type SUN2000 50KTL-M3 are available up to P_n . According to manufacturer data operation is possible to 55 kW. On power plant level a limitation to P_n is therefore required.
- Prioritization of different setpoints is not possible.

Description of the revisions of certificate U21-0001_5

Rev. 0	First issue
Rev. 1	- Type SUN2000 50KLT-M3 added - Updated references [7],[8],[9],[10],[11],[12],[13],[14],[18] - Annex 6 – Digital Annex of FGW for new type SUN2000 50KLT-M3 added
Rev. 2	- Scope of VDE-AR-N 4120-2018-11 added - Updated references [7], [8], [9], [10], [11], [14], [18], [19] - Annex 6 – Digital Annex of FGW updated - Updated restriction No. 4 - Added restriction of power limitation for SUN2000 50KTL
Rev. 3	- Updated section Restrictions, deviations or notes on usage - Annex 6 – Digital Annex of FGW updated - Updated references [7], [8], [9], [10], [11], [14], [18], [19]
Rev. 4	- Renewal of additional 5 year validity - Accreditation certificate of the certification body updated - Accreditation certificate according to FGW TG 3 of the testing laboratory updated - ISO 9001 certificate for the manufacturing sites for the equipment to be certified updated - Restriction of prioritization of different setpoints is not possible added.
Rev. 5	- Correction to Revision 4: - Change the description from “Connect a mobile phone that runs the SUN2000 or FusionSolar app to the inverter using a 4G Smart Dongle or WLAN-FE Smart Dongle” to “Connect a mobile phone that runs the app to the inverter using a 4G Smart Dongle or WLAN-FE Smart Dongle” on page 30 - Annex 1 – Accreditation certificate of the certification body updated due to accreditation update - Annex 7 – Manufacturer's declaration updated - Reference of TG3 Report updated