

Unit Certificate

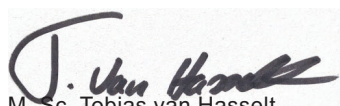
GoodWe Technologies Co., Ltd.
90 Zijin Road
New District
Suzhou 215011
China

Type of unit	Grid-Tied PV Inverter (Typ-2)	
Name of the Units	GW4K-DT, GW5K-DT, GW6K-DT, GW8K-DT, GW10KT-DT, GW12KT-DT, GW15KT-DT, GW4000-SDT-20, GW5000-SDT-20, GW6000-SDT-20	
Technical data	Rated active power: P_{rE} = 4-15 kW Max. active power: $P_{E_{max}}$ = 4.00 – 15.23 kW Max. apparent power: $S_{E_{max}}$ = 4.48 - 16.82 kVA Rated voltage: U_r = 400 V Nominal frequency: f_n = 50 Hz Rated current I_r = Detial see below on page 2 Initial short-circuit alternating current I_k = Detial see below on page 2	
Certification scheme	P30VA01 Rev. 08/10.22	TÜV NORD: Procedural instruction for grid connection certification
Standard	VDE-AR-N 4105: 2018-11	Generators connected to the low-voltage distribution network- Technical requirements for the connection to and parallel operation with low-voltage distribution networks
Additional standards	DIN VDE V 0124-100: 2020-06	Grid integration of generator plants - Low-voltage - Test requirements for generator units to be connected to and operated in parallel with low-voltage distribution networks

The generating units complies with the requirements contained in the certification programs and standards and directives listed above. Further details and technical data can be found in the annex 1, consisting of 6 pages.

Registration no. 44 798 23053403
Assessment report no. 3534 5219

Validity
Notes: TYPE 1a CERTIFICATE



M. Sc. Tobias van Hasselt
Certification body
at TÜV NORD CERT GmbH

Essen, 2023-12-12
Rev. 1.0

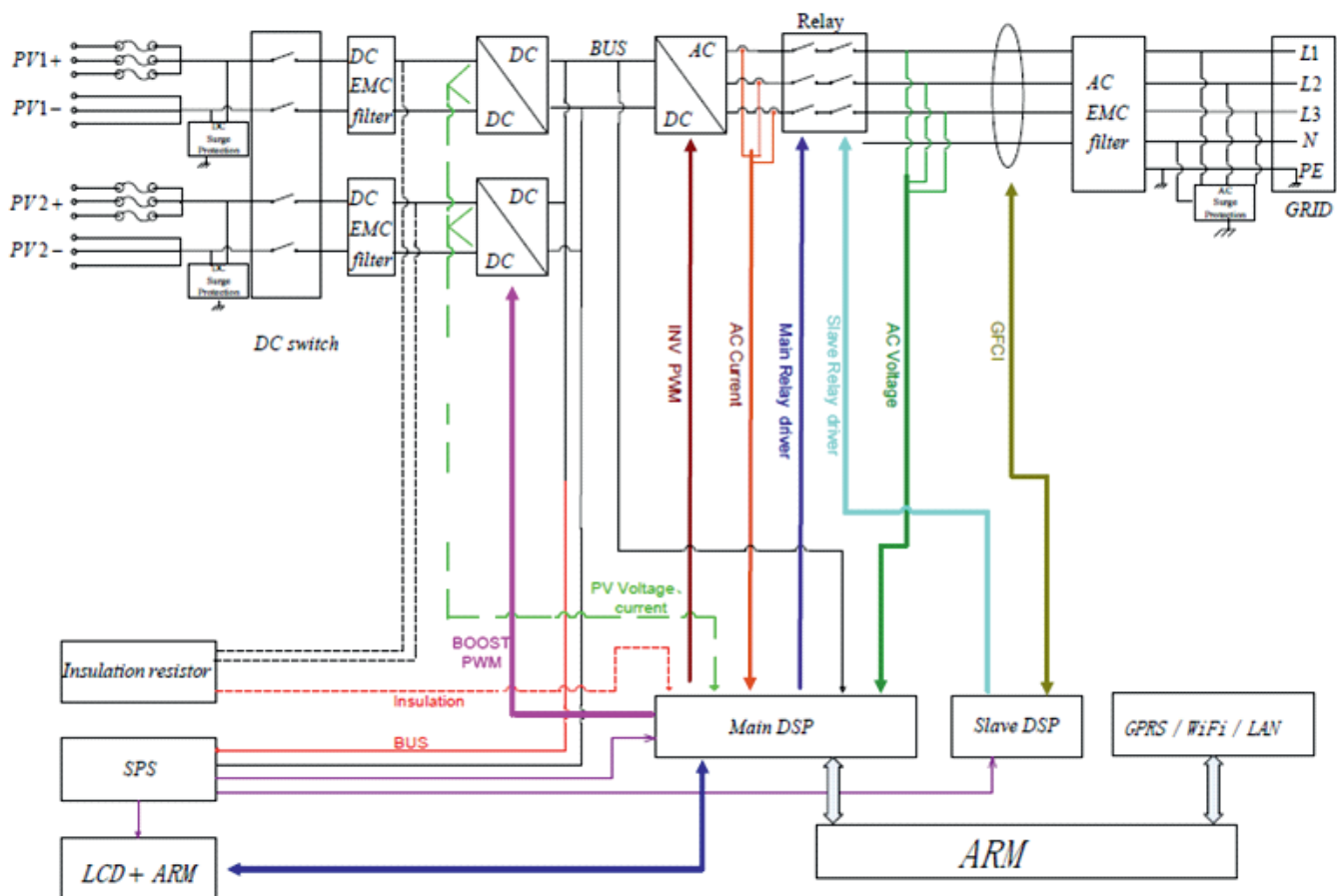
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ANNEX

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Schematic structure



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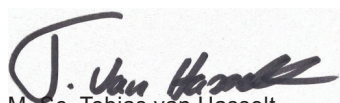
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Technical Data

General					
Type of generation unit	Typ 2 / Grid-Tied PV Inverter				
Designation	GW4K-DT	GW5K-DT	GW6K-DT	GW8K-DT	GW10KT-DT
Output variables					
Rated apparent power S_{rE}	4.0kVA 4.4kVA(max)	5.0kVA 5.5kVA(max)	6.0kVA 6.6kVA(max)	8.0kVA 8.8kVA(max)	10.0kVA 11.0 kVA(max)
Rated effective power P_{rE}	4.0kW 4.4kW (max)	5.0kW 5.5kW(max)	6.0kW 6.6kW(max)	8.0kW 8.8kW(max)	10.0kW 11.0 kW(max)
Max. effective power P_{Emax}	4.003 kW (1.001 P_{rE})	5.000 kW (1.000 P_{rE})	6.002 kW (1.003 P_{rE})	7.986 kW (0.998 P_{rE})	9.988 kW (0.999 P_{rE})
Max. apparent power S_{Emax}	4.478 kVA (1.018 S_{rE})	5.565 kVA (1.011 S_{rE})	6.692 kVA (1.014 S_{rE})	8.897 kVA (1.011 S_{rE})	10.995 kVA (1.000 S_{rE})
Rated voltage U_r	400 V, 3L/N/PE				
Rated current I_r	5.8A	7.2A	8.7A	11.6A	14.5A
Initial short-circuit alternating current I_k	6.96A	8.64A	10.44A	13.92A	17.40A
Reactive power setting range $\cos \varphi$	-0.8 to 0.8				
Nominal frequency	50 Hz				
Inverter power section					
Min. MPP voltage	180 V	180 V	180 V	180 V	180 V
Max. MPP voltage	850 V	850 V	850 V	850 V	850 V
Max. DC input voltage	1000V	1000V	1000V	1000V	1000V
Number of MPPT	2	2	2	2	2
DC - Input variables					
Type / IGBT module	Fairchild/ FGA60N65SMD				
Quantity DC Link Capacitor	2	2	2	2	2



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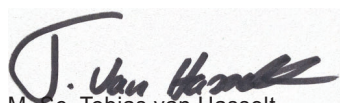
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Clock frequency	16kHz	
Type of power control	PMW Inverter	
Max. Output current	60 A	
Software versions	V1.00.00.01	
Generation unit Control		
Manufacturer	GoodWe Technologies Co., Ltd.	
Software versions	V1.00.00.01	
Hardware version	290-10098	290-10113
Protection device		
Manufacturer	GoodWe Technologies Co., Ltd.	
Type	Integrated protection device	
Switch-off unit (AC)	LF-G	
Software versions	V1.00.00.01	

General					
Type of generation unit	Typ 2 / Grid-Tied PV Inverter				
Designation	GW12KT-DT	GW15KT-DT	GW4000-SDT-20	GW5000-SDT-20	GW6000-SDT-20
Output variables					
Rated apparent power S_{rE}	12.0kVA 14.0kVA(max)	15.0kVA 16.5kVA(max)	4.0kVA 4.4kVA(max)	5.0kVA 5.5kVA(max)	6.0kVA 6.6kVA(max)
Rated effective power P_{rE}	12.0kW 14.0kW (max)	15.0kW 16.5kW(max)	4.0kW 4.4kW (max)	5.0kW 5.5kW(max)	6.0kW 6.6kW(max)
Max. effective power P_{Emax}	12.074 kW (1.006 P_{rE})	15.232 kW (1.015 P_{rE})	4.003 kW (1.001 P_{rE})	5.000 kW (1.000 P_{rE})	6.002 kW (1.003 P_{rE})
Max. apparent power S_{Emax}	13.531 kVA (0.967 S_{rE})	16.824 kVA (1.020 S_{rE})	4.478 kVA (1.018 S_{rE})	5.565 kVA (1.011 S_{rE})	6.692 kVA (1.014 S_{rE})
Rated voltage U_r	400 V, 3L/N/PE				
Rated current I_r	17.3A	21.7A	5.8A	7.2A	8.7A
Initial short-circuit alternating current I_k	20.76A	26.04A	6.96A	8.64A	10.44A



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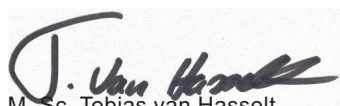
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Reactive power setting range cos φ	-0.8 to 0.8				
Nominal frequency	50 Hz				
Inverter power section					
Min. MPP voltage	180 V	180 V	180 V	180 V	180 V
Max. MPP voltage	850 V	850 V	850 V	850 V	850 V
Max. DC input voltage	1000V	1000V	1000V	1000V	1000V
Number of MPPT	2	2	2	2	2
DC - Input variables					
Type / IGBT module	Fairchild/ FGA60N65SMD				
Quantity DC Link Capacitor	4	4	2	2	2
Clock frequency	16kHz				
Type of power control	PMW Inverter				
Max. Output current	60 A				
Software versions	V1.00.00.01		V1.14.14.15		
Generation unit Control					
Manufacturer	GoodWe Technologies Co., Ltd.				
Software versions	V1.00.00.01		V1.14.14.15		
Hardware version	290-10113		290-10323		
Protection device					
Manufacturer	GoodWe Technologies Co., Ltd.				
Type	Integrated protection device				
Switch-off unit (AC)	LF-G				
Software versions	V1.00.00.01		V1.14.14.15		

The NA protection of the generation unit is an integrated NA protection. Central NA protection to be implemented at the level of the generating plant.



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Notes

The manufacturer has proven for the manufacturing facility of the Unit a certification of its quality management system according to ISO 9001. The manufacturer confirmed in a manufacturer declaration that the certification of the management system will be valid parallel to the period of this unit certification.

Additional technical data, according to VDE-ARN 4105, are given in the assessment report (appendix A1).

The use of other firmware and software version numbers is allowed if the differences are proved and confirmed by TÜV NORD CERT GmbH beforehand. Validity of a new software version is attested by written confirmation and becomes part of the certificate.

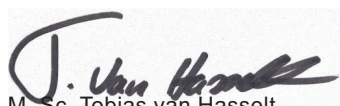
The inverter have an integrated tie breaker and no central tie breaker. The specifications of VDE-AR-N 4105 for central NA protection in combinations with central or integrated tie switches must be observed and implemented at the level of the generating plant.

Restrictions

None

Appendix to the certificate

- A1 Assessment report no. 35345219 version 1.0
- A2 Extract from the test report(according to VDE AR-N 4105 annex E.5) Dongguan BALUN Testing Technology Co., Ltd., extract BL-DG2241017-201 A2 from 02.06.2023
- A3 Extract from the test report(according to VDE AR-N 4105 annex E.7) Dongguan BALUN Testing Technology Co., Ltd., extract No. BL-DG2241017-201 A1 from 02.06.2023
- A4 Manufacturer declaration for GW15KT-DT series from 15.11.2023



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