

Unit Certificate

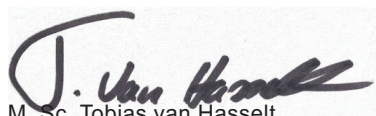
GoodWe Technologies Co., Ltd.
90 Zijin Road
New District
Suzhou 215011
China

Type of unit	Grid-Tied PV Inverter (Typ-2)	
Description of unit	GW700-XS, GW1000-XS, GW1500-XS, GW2000-XS, GW2500-XS, GW3000-XS, GW2500N-XS, GW700-XS-11, GW1000-XS-11, GW1500-XS-11, GW2000-XS-11, GW2500-XS-11, GW3000-XS-11, GW3000N-XS	
Technical data	Rated active power:	$P_{FE} = 0.7 - 3 \text{ kW}$
	Max. active power:	$P_{E_{max}} = 0.79 - 3.27 \text{ kW}$
	Max. apparent power:	$S_{E_{max}} = 0.79 - 3.30 \text{ kVA}$
	Rated voltage:	$U_r = 230 \text{ V}$
	Nominal frequency:	$f_n = 50/60 \text{ Hz}$
	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 7 pages.

Registration no. 44 798 23053402
 Assessment report no. 3534 5218

Validity
 Notes: TYPE 1a CERTIFICATE



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

Essen, 2023-12-21
 Rev. 1.0

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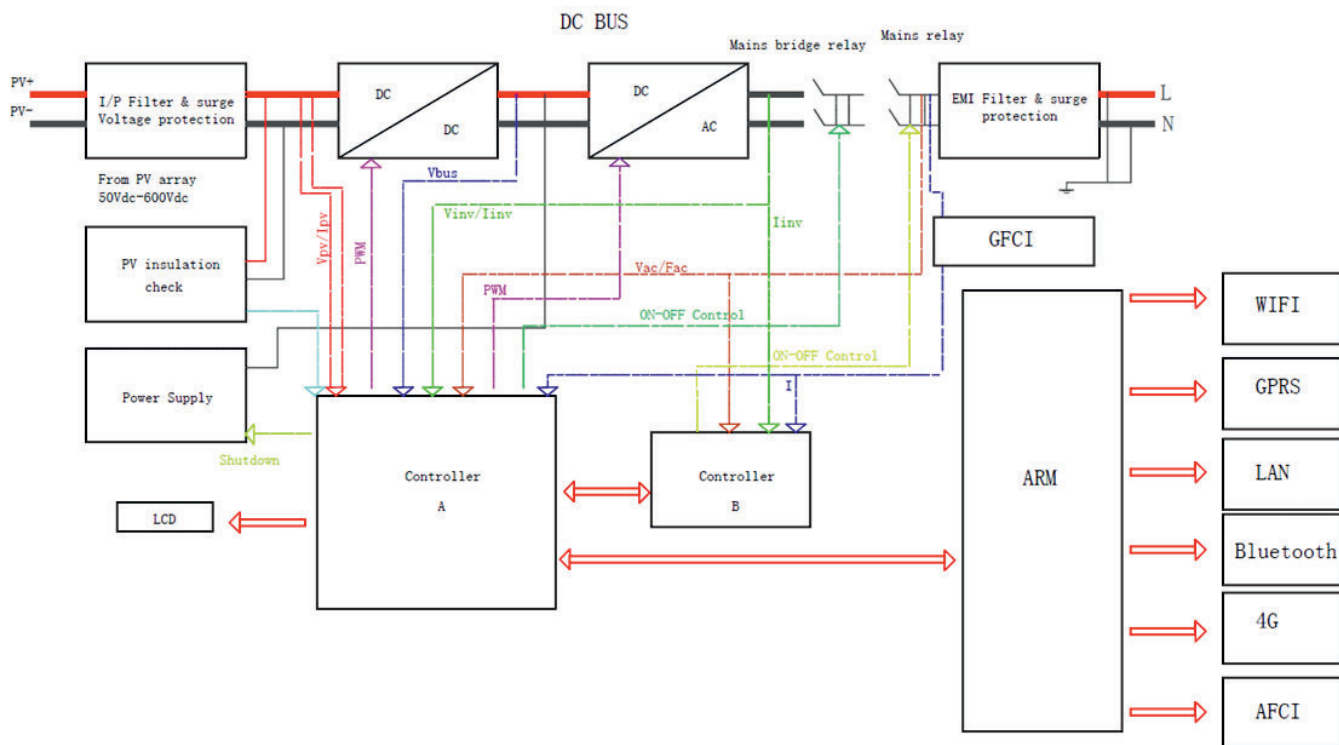
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Schematic structure



T. Van Hasselt

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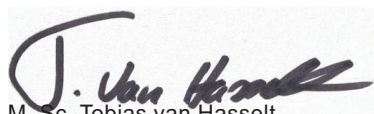
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Technical Data

General					
Type of generation unit	TYP 2 / Grid-Tied PV Inverter				
Designation	GW700-XS	GW1000-XS	GW1500-XS	GW2000-XS	GW2500-XS
Output variables					
Rated apparent power S_{IE}	0.70kVA 0.80kVA(max)	1.00kVA 1.10kVA(max)	1.50kVA 1.65kVA(max)	2.00kVA 2.20kVA(max)	2.50kVA 2.75kVA(max)
Rated effective power P_{IE}	0.70kW 0.80kW (max)	1.00kW 1.10kW(max)	1.50kW 1.65kW(max)	2.00kW 2.20kW(max)	2.50kW 2.75kW(max)
Max. effective power P_{Emax}	0.791 kW (0.989 $P_{E_{max}}$)	1.087 kW (0.988 $P_{E_{max}}$)	1.627kW (0.986 $P_{E_{max}}$)	2.194 kW (0.997 $P_{E_{max}}$)	2.699kW (0.981 $P_{E_{max}}$)
Max. apparent power S_{Emax}	0.793 kVA (0.991 $S_{E_{max}}$)	1.088 kVA (0.989 $S_{E_{max}}$)	1.629 kVA (0.987 $S_{E_{max}}$)	2.196 kVA (0.998 $S_{E_{max}}$)	2.701kVA (0.982 $S_{E_{max}}$)
Rated voltage U_r	230 V				
Rated current I_r	3.0A	4.3A	6.5A	8.7A	10.9A
Initial short-circuit alternating current I_k	3.6A	5.1A	7.8A	10.4A	13.0A
Reactive power setting range $\cos \varphi$	-0.8 to 0.8				
Nominal frequency	50/60 Hz				
Inverter power section					
Min. MPP voltage	40 V	40 V	50 V	50 V	50 V
Max. MPP voltage	450 V				
Max. DC input voltage	500 V				
Number of MPPT	1	1	1	1	1
DC - Input variables					
Type / IGBT module	650V 45A (Infineon/IKB40N65EH5)				
Quantity DC Link Capacitor	2	2	2	2	3



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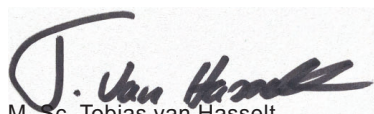
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Clock frequency	16kHz
Type of power control	PMW Inverter
Max. Output current	40A
Software versions	V1.54.19
Generation unit Control	
Manufacturer	GoodWe Technologies Co., Ltd.
Software versions	V1.54.19
Hardware version	290-10386
Protection device	
Manufacturer	GoodWe Technologies Co., Ltd.
Type	Integrated protection device
Switch-off unit (AC)	210H-2AH-F-C
Software versions	V1.54.19

General					
Type of generation unit	Typ 2 / Grid-Tied PV Inverter				
Designation	GW3000-XS	GW2500N-XS	GW3000N-XS	GW700-XS-11	GW1000-XS-11
Output variables					
Rated apparent power S_{rE}	3.00kVA 3.30kVA(max)	2.50kVA 2.75kVA(max)	3.00kVA 3.30kVA(max)	0.70kVA 0.80kVA(max)	1.00kVA 1.10kVA(max)
Rated effective power P_{rE}	3.00kW 3.30kW (max)	2.50kW 2.75kW(max)	3.00kW 3.30kW (max)	0.70kW 0.80kW (max)	1.00kW 1.10kW(max)
Max. effective power P_{Emax}	3.273 kW (0.992 P_{Emax})	2.699kW (0.981 P_{Emax})	3.273 kW (0.992 P_{Emax})	0.791 kW (0.989 P_{Emax})	1.087 kW (0.988 P_{Emax})
Max. apparent power S_{Emax}	3.299 kVA (1.000 S_{Emax})	2.701kVA (0.982 S_{Emax})	3.299 kVA (1.000 S_{Emax})	0.793 kVA (0.991 S_{Emax})	1.088 kVA (0.989 S_{Emax})
Rated voltage U_r	230 V				
Rated current I_r	13.0A	10.9A	13.0A	3.0A	4.3A
Initial short-circuit alternating current I_k	15.6A	13.0A	15.6A	3.6A	5.1A



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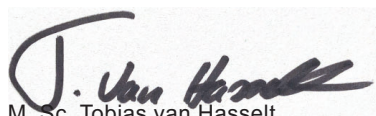
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Reactive power setting range cos φ	-0.8 to 0.8				
Nominal frequency	50/60 Hz				
Inverter power section					
Min. MPP voltage	50 V	50 V	50 V	40 V	40 V
Max. MPP voltage	450 V	550 V	550 V	450 V	450 V
Max. DC input voltage	500 V	600 V	600 V	500 V	500 V
Number of MPPT	1	1	1	1	1
DC - Input variables					
Type / IGBT module	650V 45A (Infineon/IKB40N65EH5)				
Quantity DC Link Capacitor	3	4	4	2	2
Clock frequency	16kHz				
Type of power control	PMW Inverter				
Max. Output current	40A				
Software versions	V1.54.19				
Generation unit Control					
Manufacturer	GoodWe Technologies Co., Ltd.				
Software versions	V1.54.19				
Hardware version	290-10386				
Protection device					
Manufacturer	GoodWe Technologies Co., Ltd.				
Type	Integrated protection device				
Switch-off unit (AC)	210H-2AH-F-C				
Software versions	V1.54.19				



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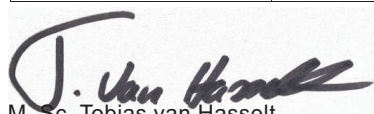
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General				
Type of generation unit	TYP 2 / Grid-Tied PV Inverter			
Designation	GW1500-XS-11	GW2000-XS-11	GW2500-XS-11	GW3000-XS-11
Output variables				
Rated apparent power S_{rE}	1.50kVA 1.65kVA(max)	2.00kVA 2.20kVA(max)	2.50kVA 2.75kVA(max)	3.00kVA 3.30kVA(max)
Rated effective power P_{rE}	1.50kW 1.65kW(max)	2.00kW 2.20kW(max)	2.50kW 2.75kW(max)	3.00kW 3.30kW (max)
Max. effective power $P_{E_{max}}$	1.627kW (0.986 $P_{E_{max}}$)	2.194 kW (0.997 $P_{E_{max}}$)	2.699kW (0.981 $P_{E_{max}}$)	3.273 kW (0.992 $P_{E_{max}}$)
Max. apparent power $S_{E_{max}}$	1.629 kVA (0.987 $S_{E_{max}}$)	2.196 kVA (0.998 $S_{E_{max}}$)	2.701kVA (0.982 $S_{E_{max}}$)	3.299 kVA (1.000 $S_{E_{max}}$)
Rated voltage U_r	230 V			
Rated current I_r	6.5A	8.7A	10.9A	13.0A
Initial short-circuit alternating current I_k	7.8A	10.4A	13.0A	15.6A
Reactive power setting range $\cos \varphi$	-0.8 to 0.8			
Nominal frequency	50/60 Hz			
Inverter power section				
Min. MPP voltage	50 V			
Max. MPP voltage	450 V	450 V	550 V	550 V
Max. DC input voltage	500 V	500 V	600 V	600 V
Number of MPPT	1	1	1	1
DC - Input variables				
Type / IGBT module	650V 45A (Infineon/IKB40N65EH5)			
Quantity DC Link Capacitor	2	2	4	4
Clock frequency	16kHz			
Type of power control	PMW Inverter			



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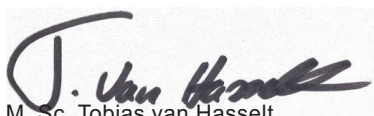
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Max. Output current	40A
Software versions	V1.54.19
Generation unit Control	
Manufacturer	GoodWe Technologies Co., Ltd.
Software versions	V1.54.19
Hardware version	290-10386
Protection device	
Manufacturer	GoodWe Technologies Co., Ltd.
Type	Integrated protection device
Switch-off unit (AC)	210H-2AH-F-C
Software versions	V1.54.19

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.

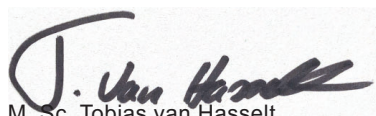
The inverter have an integrated tie breaker and no central tie breaker. The specifications of VDE-AR-N 4105 for central NA protection in combinations with central or integrated tie switches must be observed and implemented at the level of the generating plant.

Restrictions

None

Appendix to the certificate

- A1 Assessment report no. 35345218 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-DG2241016-201 A2 from 06.06.2023
- A3 Extract from the test report(according to VDE AR-N 4105 annex E.7) Dongguan BALUN Testing Technology Co., Ltd., extract No. BL-DG2241016-201 A1 from 06.06.2023
- A4 Manufacturer declaration for GW3000-XS-11 series from 31.10.2023



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