

# Compliance Document

No. D 083373 0091 Rev. 00

**Holder of Certificate:** **GoodWe Technologies Co., Ltd.**

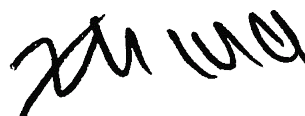
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PEOPLE'S REPUBLIC OF CHINA

**Product:** **PV inverter**  
**Micro Inverter**

This Compliance document confirms the compliance with the listed standards on a voluntary basis. It refers only to the sample submitted for testing and certification and does not certify the quality or safety of the serial products. For details see: [www.tuvsud.com/ps-cert](http://www.tuvsud.com/ps-cert)

**Test report no.:** 704092215905-00

**Date,** 2023-12-01



( Zhengdong Ma )

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**Model(s):** GW1600-MIS, GW1800-MIS, GW2000-MIS

**Parameters:**

Please see pages 3 to 5.

**Tested according to:** EN 50549-1:2019

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Models	GW1600-MIS	GW1800-MIS	GW2000-MIS
PV Input			
Max. DC Voltage	65 Vd.c.		
MPPT Voltage Range	16...60 Vd.c.		
Max. Input Current	16/16/16/16 Ad.c.		
Isc PV	25/25/25/25 Ad.c.		
AC Output			
Rated Output Power	1600 W	1800 W	2000 W
Rated Apparent Power	1600 VA	1800 VA	2000 VA
Max. Apparent Power	1600 VA	1800 VA	2000 VA
Rated Output Current	6.96 Aa.c.	7.83 Aa.c.	8.7 Aa.c.
Rated Voltage	1/N/PE~230 Va.c.		
Rated Frequency	50 Hz		
Power Factor	0.8cap...0.8ind		

Interface protection system default settings and power controls in inverter				
a) Default setting of EN 50549-1:2019				
Clause(s) / subclause(s) of this EN	Ref	Parameter	Typical value range	Value default
4.3.2 Interface switch	n.a.	Single fault tolerance for interface switch required	yes   no	yes
4.4.2 Operating frequency range	A,B	47,0 – 47,5 Hz Duration	0 – 20 s	5 s
	A,B	47,5 – 48,5 Hz Duration	30 – 90 min	unlimited
	A,B	48,5 – 49,0 Hz Duration	30 – 90 min	unlimited
	A,B	49,0 – 51,0 Hz Duration	not configurable	unlimited
	A,B	51,0 – 51,5 Hz Duration	30 – 90 min	unlimited
4.4.3 Minimal requirement for active power delivery at underfrequency	A,B	51, 5 – 52 Hz Duration	0 – 15 min	5 s
	A,B	Reduction threshold	49 Hz – 49,5 Hz	N/A
	A,B	Maximum reduction rate	2 – 10 % PM/Hz	N/A
4.4.4 Continuous operating voltage range	n.a.	Upper limit	not configurable	110% Un
	n.a.	Lower limit	not configurable	85% Un
4.5.2 Rate of change of frequency (ROCOF) immunity	A,B	ROCOF withstand capability (defined with a sliding measurement window of 500 ms)	not defined	2 Hz/s
		non-synchronous generating technology:		
		synchronous generating technology:		N/A
4.5.3.2 Generating plant with non-synchronous generating technology	B	Maximum power resumption time	not defined	1s
	B	Voltage-Time-Diagram	see Figure 6	Time [s]   U [p.u.]
				0,0   0,15
				0,2   0,15
4.5.3.3 Generating plant with synchronous generating technology	B	Maximum power resumption time	not defined	N/A
	B	Voltage-Time-Diagram	see Figure 7 (N/A)	Time [s]   U [p.u.]
				-   -
				-   -
4.5.4 Over-voltage ride through (OVRT)	n.a.	Voltage-Time-Diagram	not configurable	Time [s]   U [p.u.]
				0,0   1,25
				0,1   1,25

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				0,1	1,20
				5,0	1,20
				5,0	1,15
				60	1,15
				60	1,10
4.6.1 Power response to overfrequency	A,B	Threshold frequency f1	50,2 Hz – 52 Hz	50,2Hz	
	A,B	Droop	2 % – 12 %	5%	
	A,B	Power reference	PM   Pmax	PM	
	n.a.	Intentional delay	0 – 2 s	0s	
	n.a.	Deactivation threshold fstop	50,0 Hz – f1	deactivated	
	n.a.	Deactivation time tstop	0 – 600 s	-	
	A	Acceptance of staged disconnection	yes   no	yes	
4.6.2 Power response to underfrequency	n.a.	Threshold frequency f1	49,8 Hz – 46 Hz	49,8 Hz	
	n.a.	Droop	2 – 12 %	5%	
	n.a.	Power reference	PM   Pmax	Pmax	
	n.a.	Intentional delay	0 – 2 s	0s	
4.7.2.2 Capabilities	B	Active factor range overexcited	0,9 – 1	0,9	
	B	Active factor range underexcited	0,9 – 1	0,9	
4.7.2.3 Control modes	n.a.	Enabled control mode	Q setp. Q(U) cos φ setp. cos φ (P)	Q setpoint	
4.7.2.3.2 Setpoint control modes	n.a.	Q setpoint and excitation	0 – 60 % S <sub>max</sub>	±43,6 % S <sub>max</sub>	
	n.a.	cos φ setpoint and excitation	1 – 0,9	±0,9	
4.7.2.3.3 Voltage related control modes	n.a.	Characteristic curve	-	-	
	n.a.	Time constant	3 s – 60 s	10s	
	n.a.	Min cos φ	0,0 – 1	0,9	
	n.a.	Lock in power	0 % – 20 %	20%	
	n.a.	Lock out power	0 % – 20 %	5%	
4.7.2.3.4 Power related control mode	n.a.	Characteristic curve	-	-	
4.7.4.2.2 Zero current mode for converter connected generating technology	n.a.	Enabling	enable   disable	disable	
	n.a.	Static voltage range overvoltage	100 % Un – 120 % Un	120%Un	
	n.a.	Static voltage range undervoltage	20 % Un – 100 % Un	50%Un	
4.9.2 Requirements on voltage and frequency protection	n.a.	Threshold for protection as dedicated device [ in A or kW, kVA]	16 A – 250 kVA	Interface protection integrated	
	B	Undervoltage threshold stage 1	0,2 Un – 1 Un	0,85Un	
	B	Undervoltage operate time stage 1	0,1 s – 100 s	3s	
	B	Undervoltage threshold stage 2	0,2 Un – 1 Un	0,4Un	
	B	Undervoltage operate time stage 2	0,1 s – 5 s	1,5s	
	B	Overvoltage threshold stage 1	1,0 Un – 1,2 Un	1,2Un	
	B	Overvoltage operate time stage 1	0,1 s – 100 s	6s	
	B	Overvoltage threshold stage 2	1,0 Un – 1,3 Un	1,25Un	
	B	Overvoltage operate time stage 2	0,1 s – 5 s	0,2s	
	B	Overvoltage threshold 10 min mean protection	1,0 Un – 1,15 Un	1,1Un	
	B	Underfrequency threshold stage 1	47,0 Hz – 50,0 Hz	47,5Hz	
	B	Underfrequency operate time stage 1	0,1 s – 100 s	5s	
	B	Underfrequency threshold stage 2	47,0 Hz – 50,0 Hz	47Hz	
	B	Underfrequency operate time stage 2	0,1 s – 5 s	0,1s	
	B	Overfrequency threshold stage 1	50,0 Hz – 52,0 Hz	51,5Hz	
	B	Overfrequency operate time stage 1	0,1 s – 100 s	5s	
	B	Overfrequency threshold stage 2	50,0 Hz – 52,0 Hz	52Hz	
	B	Overfrequency operate time stage 2	0,1 s – 5 s	0,1s	
4.10.2 Automatic reconnection after tripping	B	Lower frequency	47,0 Hz – 50,0 Hz	49,5Hz	
	B	Upper frequency	50,0 Hz – 52,0 Hz	50,2Hz	
	B	Lower voltage	50 % Un – 100 % Un	85%Un	

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4.10.3 Starting to generate electrical power	B	Upper voltage	100 % Un – 120 % Un	110%Un
	B	Observation time	10 s – 600 s	60s
	B	Active power increase gradient	6 % – 3000 %/min	≤10%/min
	A,B	Lower frequency	47,0 Hz – 50,0 Hz	49,5Hz
	A,B	Upper frequency	50,0 Hz – 52,0 Hz	50,1Hz
	A,B	Lower voltage	50 % – 100 % Un	85%Un
	A,B	Upper voltage	100 % – 120 % Un	110%Un
4.11.1 Ceasing active power	A,B	Observation time	10 s – 600 s	60s
	A,B	Active power increase gradient	6 % – 3000 %/min	disable
4.11.2 Reduction of active power on set point	A,B	Remote operation of the logic interface	yes   no	yes
4.12 Remote information exchange	B	Remote operation	yes   no	no
		NOTE: If yes further definition is provided by the DSO		
		Remote information exchange required	yes   no	no
		NOTE: If yes further definition is provided by the DSO		
b) Default setting with national deviation of the Netherlands according to Netbeheer Nederland "Country settings Type A and B PGMs" (2022-06-20), and the PGU is considered as Type A PGMs based on manufacturer's requirements.				
Clause(s) / subclause(s) of this EN	Ref	Parameter	Typical value range	Value default
4.7.2.3.2 Setpoint control modes	n.a.	Q setpoint and excitation	0 – 60 % S <sub>max</sub>	±33 % S <sub>max</sub>
4.9.2 Requirements on voltage and frequency protection	n.a.	cos φ setpoint and excitation	1 – 0,9	±0,95
	n.a.	Threshold for protection as dedicated device [ in A or kW, kVA]	16 A – 250 kVA	Interface protection integrated
	B	Undervoltage threshold stage 1	0,2 Un – 1 Un	0,85Un
	B	Undervoltage operate time stage 1	0,1 s – 100 s	3s
	B	Undervoltage threshold stage 2	0,2 Un – 1 Un	0,7Un
	B	Undervoltage operate time stage 2	0,1 s – 5 s	0,2s
	B	Overvoltage threshold stage 1	1,0 Un – 1,2 Un	1,15Un
	B	Overvoltage operate time stage 1	0,1 s – 100 s	0s
	B	Overvoltage threshold stage 2	1,0 Un – 1,3 Un	-
	B	Overvoltage operate time stage 2	0,1 s – 5 s	-
	B	Overvoltage threshold 10 min mean protection	1,0 Un – 1,15 Un	1,1Un
	B	Underfrequency threshold stage 1	47,0 Hz – 50,0 Hz	47,5Hz
	B	Underfrequency operate time stage 1	0,1 s – 100 s	2s
	B	Underfrequency threshold stage 2	47,0 Hz – 50,0 Hz	-
	B	Underfrequency operate time stage 2	0,1 s – 5 s	-
	B	Overfrequency threshold stage 1	50,0 Hz – 52,0 Hz	51,5Hz
	B	Overfrequency operate time stage 1	0,1 s – 100 s	2s
	B	Overfrequency threshold stage 2	50,0 Hz – 52,0 Hz	-
	B	Overfrequency operate time stage 2	0,1 s – 5 s	-
4.10.2 Automatic reconnection after tripping	B	Lower frequency	47,0 Hz – 50,0 Hz	49,9Hz
	B	Upper frequency	50,0 Hz – 52,0 Hz	50,1Hz
	B	Lower voltage	50 % Un – 100 % Un	90%Un
	B	Upper voltage	100 % Un – 120 % Un	110%Un
	B	Observation time	10 s – 600 s	60s
	B	Active power increase gradient	6 % – 3000 %/min	≤10%/min
The Column Ref specifies if a parameter is relevant for COMMISSION REGULATION 2016/631 and for what type of generating module the parameter is relevant. If n.a. is set, this parameter is: not applicable for 2016/631, but is introduced into EN50549-1 for local DSO network management reasons and is not considered as cross border issues. Unauthorised access to factory safety parameters setting and software should be prohibited. A reset to the factory safety parameters requires retesting and verification in conjunction with the end-use system.				