Certificate of compliance

Applicant:	**Maitian Energy Co., Ltd** Room A203, Building C, No 205, Binghai Six Road, New Airport Industry Area, Longwan District, Wenzhou, Zhejiang Province **P. R. China**
Product:	**Photovoltaic (PV) inverter**
Model:	**S700** **S1000** **S1500** **S2000** **S2500** **S3000** **S3300**

Inverter for single-phase parallel connection to the public grid. The network monitoring and disconnection device is an integral part of the above-mentioned model.

Applied rules and standards:

C10/11:2019-09
Specific technical requirements for generator in parallel operation with the distribution network

D.3 Integrated automatic separation system
D.4 Operating ranges
D.5 Immunity to disturbances
D.6 Active response to frequency deviations
D.7 Power response to voltage changes
D.8 Connection and reconnection
D.9 Ceasing and reduction of active power on set point

DIN V VDE V 0126-1-1:2006 (4.1 Functional safety)
Automatic disconnection device between a generator and the public low-voltage grid

Commission Regulation (EU) 2016/631 of 14 April 2016
Establishing a network code on requirements for grid connection of generators (NC RFG).
Type approval for generation units to use in Type A and Type B plants.

The safety concept of an aforementioned representative product corresponds at the time of issue of this certificate to the valid safety specifications for the specified use in accordance with regulations.

Report number:	**AVSV-ESH-P21020209**	**Certification program:**	**NSOP-0032-DEU-ZE-V01**
Certificate number:	**U21-0294**	**Date of issue:**	**2021-04-01**

Certification body

Thomas Lammel

Certification body of Bureau Veritas Consumer Products Services Germany GmbH Accredited according to DIN EN ISO/IEC 17065

Annex to the C10/11 certificate of compliance No. U21-0294

Appendix

Extract from test report according to C10/11 **No. AVSV-ESH-P21020209**

Type Approval and declaration of compliance with the requirements of C10/11 and Commission Regulation (EU) 2016/631 of 14 April 2016				
Manufacturer / applicant	Maitian Energy Co., Ltd Room A203, Building C, No 205, Binghai Six Road, New Airport Industry Area, Longwan District, Wenzhou, Zhejiang Province P. R. China			
Micro-generator Type	Photovoltaic inverter			
	S700	S1000	S1500	S2000
MPP DC voltage range [V]	50-500			
Input DC voltage range [V]	500			
Input DC current [A]	12,5			
Output AC voltage [V]	220/230/240V, 50/60Hz			
Output AC current [A]	3,5	4,8	7,2	9,6
Output power [VA]	700	1000	1500	2000
	S2500	S3000	S3300	--
MPP DC voltage range [V]	50-550			--
Input DC voltage range [V]	550			--
Input DC current [A]	12,5			--
Output AC voltage [V]	220/230/240V, 50/60Hz			--
Output AC current [A]	12,0	14,3	14,3	--
Output power [VA]	2500	3000	3300	--
Firmware version	Master V1.13 Slave V1.03 ARM V2.18			
Measurement period	2020-10-21 to 2021-03-08			
Description of the structure of the power generation unit: The power generation unit is equipped with a PV and line-side EMC filter. The power generation unit has no galvanic isolation between DC input and AC output. Output switch-off is performed with single-fault tolerance based on two series-connected relays in (each) line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.				

Appendix

Extract from test report according to C10/11 **No. AVSV-ESH-P21020209**

Setting of the interface protection:		
Parameter	**Max. disconnection time**	**Trip value**
Over voltage	0,2s	230V +15% (264,5V)
Under voltage	0,2s	230V -20% (184V)
Over frequency	0,2s	50Hz +3% (51,5Hz)
Under frequency	0,2s	50Hz -5% (47,5Hz)
Reconnection settings for voltage (normal operational startup)	$0{,}85V_n$ (195,5V) ≤ V ≤ $1{,}10V_n$ (253V)	
Reconnection settings for frequency (normal operational startup)	49,9Hz ≤ f ≤ 50,1Hz	
Reconnection time (normal operational startup)	≥ 60s	
Active power gradient (normal operational startup)	20% P_{Emax} / per minute	
Reconnection settings for voltage (automatic reconnection after tripping)	$0{,}85V_n$ (195,5V) ≤ V ≤ $1{,}10V_n$ (253V)	
Reconnection settings for frequency (automatic reconnection after tripping)	49,9Hz ≤ f ≤ 50,1Hz	
Reconnection time (automatic reconnection after tripping)	≥ 60s	
Active power gradient after reconnection	10% P_{Emax} / per minute	
Active power delivery at under frequency	electronic inverter, no active power reduction	
Power response to over frequency (frequency / droop s)	50,2Hz / 5%	
Permanent DC-injection	0,5% of rated inverter output current or 20mA	
Rate of change of frequency (ROCOF)	2Hz/s	
Loss of mains according EN 62116 (LoM)	2,0s	

Note:

[a] Over voltage – stage1: 10 min-mean-value corresponding to EN 50160.

Default interface setting according to C10/11:2019-09 are used.

The settings of the interface protection are password protected adjustable.

In case the above stated generators are used with an external protection device, the protection settings of the inverters are to be adjusted according to the manufacturer's declaration.

The above stated generators are tested according to the requirements in the EN 50549-1:2019 and C10/11:2019. Any modification that affects the stated tests must be named by the manufacturer/supplier of the product to ensure that the product meets all requirements of the EN 50549-1:2019 and C10/11:2019.