Certificate of Conformity

Certificate Number: CN-PV-230421

On the basis of the tests undertaken, the sample<s> of the below product have been found to comply with the requirements of the referenced specification<s>/standard<s> at the time the tests were carried out. It does not imply that Intertek has performed any surveillance or control of the manufacture(s). The manufacturer(s) shall ensure that the manufacturing process assures compliance of the production units with the examined products mentioned in this certificate.

Applicant:	REFU Elektronik GmbH Marktstrasse 185,72793, Pfullingen, Germany
Product: **Ratings & Principle Characteristics:**	Solar Grid-tied Inverter See appendix of Certificate of Conformity
Model:	REFUsol 15K-2T (853P015.200) REFUsol 17K-2T (853P017.200) REFUsol 20K-2T (853P020.200) REFUsol 22K-2T (853P022.200) REFUsol 24K-2T (853P024.200)
Brand Name<s>:	REFUsol
Product Complies with:	EN 50549-1: 2019, Requirements for generating plants to be connected in parallel with distribution networks Part 1: Connection to a LV distribution network - Generating plants up to and including type B Type approval for type B
Certificate Issuing Office Name & Address:	Intertek Testing Services Ltd. Shanghai West Area, 2nd Floor, No. 707, Zhangyang Road China (Shanghai) Pilot Free Trade Zone, Shanghai, P. R. China Accredited by ACCREDIA in accordance with ISO/IEC 17065:2012
Test Report No.<s>:	230524089GZU-003

According to Annex H of the standard EN 50549-1:2019, generating plants compliant with the clauses of this European Standard are considered to be compliant with the relevant Article of COMMISSION REGULATION (EU) 2016/631, provided that all settings as provided by the DSO and the responsible party are complied with. Additional information in Appendix.

Signature

Certification Manager: Grady Ye
Date: 26 July 2023

PRD N° 306B

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-230421

Model	REFUsol 15K-2T (853P015.200)	REFUsol 17K-2T (853P017.200)	REFUsol 22K-2T (853P022.200)	REFUsol 20K-2T (853P020.200)	REFUsol 24K-2T (853P024.200)
Max. DC input voltage	1100V				
Max. Input current	26A/26A				
Max. PV Isc	36A/36A				
Nominal Grid voltage	3/N/PE, 230V/400V				
Rated Output Current	3*21.7A	3*24.6A	3*31.9A	3*29.0A	3*34.8A
Nominal Grid frequency	50/60Hz				
Rated output Power	15000W	17000W	22000W	20000W	24000W
Rated Apparent Power	15000VA	17000VA	22000VA	20000VA	24000VA
Max. Output power	16500VA	18700VA	24200VA	22000VA	26400VA
Power Factor	1(adjustable +/-0.8)				
Ingress Protection	IP65				
Operating Temperature Range	-30℃ ~ +60℃				
Protective Class	Class I				
Software version	V010000				

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-230421

Interface protection settings according to EN 50549-1:2019			
Parameter	Max. disconnection time	Min. operate time	Trip value
Undervoltage threshold stage 1 [27 <]	100s	0.1s (0.1 s steps)	Trip value Config. from 0.2 to 1 Un (0.01 Un steps)
Undervoltage threshold stage 2 [27 <<]	5s	0.1s (0.05 s steps)	Trip value Config. from 0.2 to 1 Un (0.01 Un steps)
Overvoltage threshold stage 1 [59 >]	100s	0.1s (0.1 s steps)	Trip value Config. from 1.0 to 1.2 Un (0.01 Un steps)
Overvoltage threshold stage 2 [59>>]	5s	0.1s (0.05 s steps)	Trip value Config. from 1.0 to 1.3 Un (0.01 Un steps)
Overvoltage 10 min mean protection	Trip time Config≤ 3s not adjustable Time delay setting = 0 ms		Trip value Config. from 1.0 to 1.15Un (0.01 Un steps)
Underfrequency threshold stage 1 [81 <]	100s	0.1s (0.1s steps)	Trip value Config. from 47.0 to 50.0Hz (0.1Hz steps)
Underfrequency threshold stage 2 [81 <<]	5s	0.1s (0.05 s steps)	Trip value Config. from 47.0 to 50.0Hz (0.1Hz steps)
Overfrequency threshold stage 1 [81 >]	100s	0.1s (0.1s steps)	Trip value Config. from 50.0 to 52.0Hz (0.1Hz steps)
Overfrequency threshold stage 2 [81 >>]	5s	0.1s (0.05 s steps)	Trip value Config. from 50.0 to 52.0Hz (0.1Hz steps)
Starting to and reconnection settings for voltage		50%-120% adjustable, 85%Un≤ U≤1.10Un default	
Starting to generate electrical power		47Hz – 52Hz adjustable, 49.5Hz≤ U≤50.1Hz default	
Reconnection settings for frequency		47Hz – 52Hz adjustable, 49.5Hz≤ U≤50.2Hz default	
Observation time		10s-60s adjustable, 60s default	
Active power increase gradient		6%-3000%/min adjustable, 10%/min default	
Permanent DC injection		0.5% of rated inverter output	
Loss of mains according t0 EN 62116		Within 2s	