Certificate of Conformity

Certificate Number: CN-PVES-240316

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 25K-3T, REFUsol 30K-3T, REFUsol 33K-3T, REFUsol 36K-3T REFUsol 40K-4T, REFUsol 45K-4T, REFUsol 50K-4T
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>:	240618134GZU-001, 27 June 2024

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: 08 July 2024

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PRD N° 306B

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PVES-240316

Model	REFUsol 25K-3T	REFUsol 30K-3T	REFUsol 33K-3T	REFUsol 36K-3T	REFUsol 40K-4T	REFUsol 45K-4T	REFUsol 50K-4T
DC Input							
Max. input voltage	1100 V				1100 V		
MPPT operating voltage range	180 V~1100 V				180 V~1100 V		
Max. input current	3*40A				4*40A		
Max. PV Isc	3*50A				4*50A		
AC Output							
Nominal grid voltage	3/N/PE,380/400 Vac						
Nominal grid frequency	50Hz/60Hz						
Nominal Output Power	25 kW	30 kW	33 kW	36 kW	40 kW	45 kW	50 kW
Max. Output Power	28 kVA	34 kVA	37 kVA	40 kVA	44 kVA	50 kVA	55 kVA
Max. Output Current	42.4 A	51.5 A	56.0 A	60.6A	66.7 A	75.8 A	83.3 A
Power factor	1(adjustable +/-0.8)						
General Data							
Safety level	Class I						
Ingress Protection	IP 65						
Operation Ambient Temperature	-30°C - 60°C						
Topology	Transformerless						

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PVES-240316

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	