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Verklaring van geen bezwaar

Aanvrager: SolarEdge Technologies Ltd.
1 HaMada Street
Herzliya 4673335
Israël

Product: Fotovoltaïsche en batterij-omvormer

Model: SE5K-RWB48
SE7K-RWB48
SE8K-RWB48
SE10K-RWB48

Omvormer voor driefasige parallele aansluiting op het openbare net. Het netbewakings- en scheidingsapparaat maakt integraal deel uit van bovengenoemd model.

Toepasselijke documenten:

Besluit van de Autoriteit Consument en Markt van 21 april 2016, kenmerk ACM/DE/2016/202151, houdende de vaststelling van de voorwaarden als bedoeld in artikel 31 van de Elektriciteitswet 1998 (Netcode elektriciteit)

Controlebasis:

EN 50549-1:2019, NEN-EN 50549-1:2019

Vereisten voor het parallel schakelen van installaties met distributienetwerken - Deel 1: Aansluiting op een LV-distributienetwerk - Productie van installaties tot en met Type B

- 4.4 Normaal werkbereik
- 4.5 Immuniteit voor storingen
- 4.6 Actieve reactie op frequentieafwijking
- 4.7 Krachtreactie op spanningsvariaties en spanningsveranderingen
- 4.8 EMC en vermogenskwaliteit
- 4.9 Interfacebescherming
- 4.10 Aansluiting en starten met het opwekken van elektrische stroom
- 4.11 Stoppen en verminderen van actief vermogen op instelpunt
- 4.13 Vereisten met betrekking tot tolerantie voor één fout van interfacebeveiligingssysteem en interfaceschakelaar

DIN V VDE V 0126-1-1:2006-02 (4.1 Functionele Veiligheid)

Automatisch schakelstation tussen een netparallele zelfopwekinstallatie en het openbare laagspanningsnet

Verordening (EU) 2016/631 Van De Commissie van 14 april 2016

Tot vaststelling van een netcode betreffende eisen voor de aansluiting van elektriciteitsproducenten op het net. Typegoedkeuring voor productie-eenheden voor gebruik in installaties van type A.

Op het ogenblik dat dit certificaat wordt afgegeven, beantwoordt het hierboven vermelde representatieve product aan de vermelde regels en normen.

Rapportnummer: 22TH0188-EN50549-1_1 **Certificatie-programma:** NSOP-0032-DEU-ZE-V01
Certificaatnummer: U21-0255 **Datum:** 2023-03-21

Certificatie-instelling



Certificatie-instelling Bureau Veritas Consumer Products Services Germany GmbH geaccrediteerd volgens DIN EN ISO/IEC 17065

Testlaboratorium geaccrediteerd volgens DIN-EN ISO/IEC 17025

Een gedeeltelijke weergave van het certificaat vereist de schriftelijke goedkeuring van Bureau Veritas Consumer Products Services Germany GmbH



Annex to the EN 50549-1 certificate of compliance No. U21-0255

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Appendix

Extract from test report according to EN 50549-1 Nr. 22TH0188-EN50549-1_1

Type Approval and declaration of compliance with the requirements of EN 50549-1, Commission Regulation (EU) 2016/631 of 14 April 2016 and "Netcode elektriciteit" for Netherlands

Manufacturer / applicant:	SolarEdge Technologies Ltd. 1 HaMada Street Herzliya 4673335 Israel
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Micro-generator Type	Photovoltaic and battery inverter			
	SE5K-RWB48	SE7K-RWB48	SE8K-RWB48	SE10K-RWB48
Input DC voltage range [V]	750 – 900	750 – 900	750 – 900	750 – 900
Input DC current [A]	900	900	900	900
Output AC voltage [V]	13,3	16,0	17,3	20,0
Rated AC current [A]	220/230 L-N 380/400 L-L 50 / 60 Hz	220/230 L-N 380/400 L-L 50 / 60 Hz	220/230 L-N 380/400 L-L 50 / 60 Hz	220/230 L-N 380/400 L-L 50 / 60 Hz
Max AC current [A]	8,0	11,5	13,0	16,0
Active Power [W]	5000	7000	8000	10000
Apparent power [VA]	5000	7000	8000	10000
Battery DC voltage range [V]	40 - 62	40 - 62	40 - 62	40 - 62
Battery charge current [A]	130	130	130	130
Battery discharge current [A]	130	130	130	130

Firmware version	Main DSP software version is 1.20 Aux DSP software version is 2.20
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Description of the structure of the power generation unit:

The power generation unit is equipped with a PV/DC 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 the inverter bridge and 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.



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Parameter Table:					
Clause EN 50549-1	Ref	Parameter	Micro generator setting range	Default settings used	
4.3.2 Interface switch	n.a.	Single fault tolerance for interface switch	yes no	yes	
4.4.2 Operating frequency range (Netcode elektriciteit Article 3.13)	A,B	47,0 – 47,5 Hz Duration	0,06 – unlimited	unlimited	
	A,B	47,5 – 48,5 Hz Duration	0,06 – unlimited	unlimited	
	A,B	48,5 – 49,0 Hz Duration	0,06 – unlimited	unlimited	
	A,B	49,0 – 51,0 Hz Duration	0,06 – unlimited	unlimited	
	A,B	51,0 – 51,5 Hz Duration	0,06 – unlimited	unlimited	
	A,B	51, 5 – 52 Hz Duration	0,06 – unlimited	unlimited	
4.4.3 Minimal requirement for active power delivery at under frequency (Netcode elektriciteit Article 3.13)	A,B	Reduction threshold	44 Hz – 60 Hz	Electronic inverter, no power reduction take place	
	A,B	Maximum reduction rate	1 – 12 % P _M /Hz	≤ 1 %	
4.4.4 Continuous operating voltage range	n.a.	Upper limit	1,0 U _n – 335V	N/A	
	n.a.	Lower limit	0,0 U _n – 1,0 U _n	N/A	
4.5.2 Rate of change of frequency (ROCOF) immunity	A,B	ROCOF withstand capability (defined with a sliding measurement window of 500 ms) non-synchronous generating technology: synchronous generating technology:	0 – 100 Hz/s	≥2,5 Hz/s	
4.5.3.2 Generating plant with non-synchronous generating technology (FRT) (Netcode elektriciteit Article 3.17)	B	Maximum power resumption time	1 – 12 % P _M /Hz	≤ 1 %	
	B	Voltage-Time-Diagram	see Figure 6, EN 50549-1 *The inverters have a DC to DC converter, so there are no limits. The inverters will stay connected till the NS protection setting (voltage and time are reached).	Time [s] N/A*	Time [s] N/A*



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4.5.4 Over-voltage ride through (OVRT) (Netcode elektriciteit Article 3.17)	n.a.	Voltage-Time-Diagram	*The inverters have a DC to DC converter, so there are no limits. The inverters will stay connected till the NS protection setting (voltage and time are reached).	Time [s]	U [p.u.]
				N/A*	N/A*
4.6.1 Power response to over frequency (LFSM-O) (Netcode elektriciteit Article 3.13)	A,B	Threshold frequency f_1	50,0 – 66 Hz	50,2 Hz	
	A,B	Droop	1 % – 12 %	5 %	
	A,B	Power reference	P_M P_{max}	P_M	
		P(f) soft start	0 – 20 min	10min	
		P(f) reset time	0 – 20 min	30 s	
	n.a.	Intentional delay	0 – 2 s	0 s	
	n.a.	Deactivation threshold f_{stop}	50,0 Hz – 66 Hz	deactivated	
	n.a.	Deactivation time t_{stop}	0 – 20 min	N/A	
	A	Acceptance of staged disconnection	yes no	no	
4.6.2 Power response to under frequency	n.a.	Threshold frequency f_1	0 – 20 min	N/A	
	n.a.	Droop	yes no	no	
	n.a.	Power reference	44 Hz – 60 Hz	N/A	
	n.a.	Intentional delay	1 – 12 %	N/A	
4.7.2.2 Capabilities	B	Active factor range overexcited	0,1 – 1	1,0	
	B	Active factor range underexcited	0,1 – 1	1,0	
4.7.2.3 Control modes	n.a.	Enabled control mode	0,1 – 1	1,0	
4.7.2.3.2 Set point control modes	n.a.	Q setpoint and excitation	0 – 90 % P_{nom}	N/A	
	n.a.	cos φ setpoint and excitation	0,1-1,0	1,0	
4.7.2.3.3 Voltage related control modes	n.a.	Characteristic curve	Q(U) P(U)	disabled Q(U) disabled P(U)	
	n.a.	Time constant	3 s – 60 s	3 s	
	n.a.	Min cos φ	0,0 – 1	disabled	
	n.a.	Lock in power	0 % – 20 %	deactivated	
	n.a.	Lock out power	0 % – 20 %	deactivated	
4.7.2.3.4 Power related control mode	n.a.	Characteristic curve	cos φ (P)	disabled	
4.7.4.2.2 Zero current mode for converter connected generating technology	n.a.	Enabling	enable disable	enable	
	n.a.	Static voltage range overvoltage	1,0 U_n – 335V	1,15 U_n	
	n.a.	Static voltage range undervoltage	0,2 U_n – 1,0 U_n	0,85 U_n	



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4.9.2 Requirements on voltage and frequency protection (Netcode elektriciteit Article 3.8, 3.14)	n.a	Threshold for protection as dedicated device [in A or kW, kVA]	All activated	N/A
	B	Undervoltage threshold stage 1	0,0 Un – 1 Un	0,80 Un
	B	Undervoltage operate time stage 1	0,04 s – 20 min	1,950 s
	B	Undervoltage threshold stage 2	0,0 Un – 1 Un	0,70 Un
	B	Undervoltage operate time stage 2	0,04 s – 20 min	0,2 s
	B	Overvoltage threshold stage 1	1,0 Un – 335V	1,10 Un
	B	Overvoltage operate time stage 1	0,04 s – 20 min	2 s
	B	Overvoltage threshold stage 2	1,0 Un – 335V	1,15 Un
	B	Overvoltage operate time stage 2	0,04 s – 20 min	0,08 s
	B	Overvoltage threshold 10 min mean protection ^a	1,0 Un – 335V	N/A
	B	Overvoltage operate time 10 min mean protection ^a	3 s	N/A
	B	Underfrequency threshold stage 1	44,0 Hz – 60,0 Hz	47,5 Hz
	B	Underfrequency operate time stage 1	0,06 s – 20 min	1,900 s
	B	Underfrequency threshold stage 2	44,0 Hz – 60,0 Hz	N/A
	B	Underfrequency operate time stage 2	0,06 s – 20 min	N/A
	B	Overfrequency threshold stage 1	50,0 Hz – 66,0 Hz	51,5 Hz
	B	Overfrequency operate time stage 1	0,06 s – 20min	1,900 s
	B	Overfrequency threshold stage 2	50,0 Hz – 66,0 Hz	N/A
	B	Overfrequency operate time stage 2	0,06 s – 20 min	N/A
B	Loss of mains according EN 62116 (LoM)	0-100 s	2,5 Hz / s (0,5s)	
4.10.2 Automatic reconnection after tripping (Netcode elektriciteit Article 3.13, 3.17)	B	Lower frequency	44,0 Hz – 60,0 Hz	49,9 Hz
	B	Upper frequency	50,0 Hz – 66,0 Hz	50,1 Hz
	B	Lower voltage	0,0 Un – 1,0 Un	0,90 Un
	B	Upper voltage	100 % Un – 335 V	1,10 Un
	B	Observation time	1 s – 20min	60 s
	B	Active power increase gradient	1 % – 10000 %/min	20 %/min
4.10.3 Starting to generate electrical power (Netcode elektriciteit Article 3.13, 3.17)	A,B	Lower frequency	44,0 Hz – 60,0 Hz	49,9 Hz
	A,B	Upper frequency	50,0 Hz – 66,0 Hz	50,1 Hz
	A,B	Lower voltage	0% – 100 % Un	90 % Un
	A,B	Upper voltage	100 % – 335 V	110 % Un
	A,B	Observation time	0s – 20 min	60 s
	A,B	Active power increase gradient	1% – 10000 %/min	20 %/min
4.11.1 Ceasing active power	A,B	Remote operation of the logic interface	yes no	yes (RS485, DI)
4.11.2 Reduction of active power on set point	B	Remote operation NOTE: If yes further definition is provided by the DSO	yes no	yes (RS485, DI)



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4.12 Remote information exchange	B	Remote information exchange required NOTE: If yes further definition is provided by the DSO	yes no	no
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Note:

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

The settings of the interface protection are password protected adjustable in the stated range above.

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 Commission Regulation (EU) 2016/631 of 14 April 2016. 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.