

Certificate of compliance

Applicant: SolarEdge Technologie Ltd.

1 HaMada Street
Herzliya 467335
Israel

Product: Photovoltaic inverter

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

The device is designed to work as a generation unit of the type: A

Inverter for three-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:

EN 50549-1:2019/A1:2023

Requirements for parallel connection of installations with distribution networks - Part 1: Connection to an LV distribution network - Production of installations up to and including Type B

- 4.4 Normal operating range
- 4.5 Immunity to disturbances
- 4.6 Active response to frequency deviation
- 4.7 Power response to voltage variations and voltage changes
- 4.8 EMC and power quality
- 4.9 Interface protection
- 4.10 Connection and starting to generate electrical power
- 4.11 Ceasing and reduction of active power on set point
- 4.13 Requirements regarding single fault tolerance of interface protection system and interface switch

EN 50549-10:2022

Requirements for generating plants to be connected in parallel with distribution networks - Part 10: Tests for conformity assessment of generating units

Compliance with the parameters in Annex C of the standard
(see appendix parameter table)

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 plants.

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

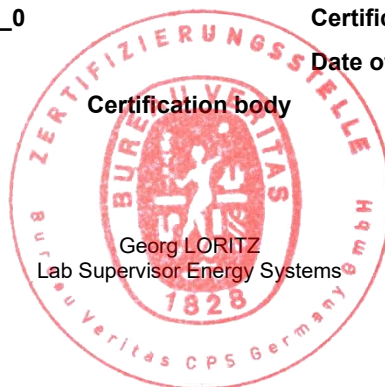
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Accreditation



Accredited certification body by Deutsche Akkreditierungsstelle GmbH (DAkkS) according to ISO/IEC 17065. The accreditation is valid only for the scope listed in the annex of the accreditation certificate D-ZE-12024-01-00. The Deutsche Akkreditierungsstelle GmbH (DAkkS) is signatory of the multilateral arrangements of EA, ILAC and IAF for mutual recognition.

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Type Approval and declaration of compliance with the requirements of EN 50549-1 and Commission Regulation (EU) 2016/631 of 14 April 2016

Manufacturer	SolarEdge Technologie Ltd. 1 HaMada Street Herzliya 467335 Israel			
Product type	Photovoltaic inverter			
Static converter model	SE5K-RWB48	SE7K-RWB48	SE8K-RWB48	SE10K-RWB48
Input DC (photovoltaic)				
Input voltage range [V]	750 - 900	750 - 900	750 - 900	750 - 900
Max. input voltage [V]	900	900	900	900
Max. input current per Input [A]	13,3	17,3	17,3	20
Input DC (battery)				
DC voltage range [V]	40 - 62	40 - 62	40 - 62	40 - 62
Max. DC voltage [V]	62	62	62	62
Max. DC current per DC input [A]	125	125	125	125
Output AC				
Rated AC voltage [V]	380 / 220; 400 / 230	380 / 220; 400 / 230	380 / 220; 400 / 230	380 / 220; 400 / 230
Rated output current [A]	8	11,5	13	16
Max. output current [A]	8	11,5	13	16
Nom. converter output (P_{NINV}) [W]	5000	7000	8000	10000
Rated apparent power [VA]	5000	7000	8000	10000
In on-grid battery mode AC				
P_{sn} (nom. discharge power) [W]	5000	5000	5000	5000
P_{cn} (nom. charging power) [W]	5000	5000	5000	5000
P_{smax} (max. discharge power) [W]	5000	5000	5000	5000
P_{cmax} (max. charging power) [W]	5000	5000	5000	5000
Type	Bidirectional	Bidirectional	Bidirectional	Bidirectional
In off-grid battery mode				
P_{sn} (nom. discharge power) [W]	5000	5000	5000	5000
P_{smax} (max. discharge power) [W]	5000	5000	5000	5000

Batteries that can be used with the above static converter				
Brand	SolarEdge Technologies Ltd	--	--	--
Technology	Li-Ion	--	--	--
Model	BAT-05K48	--	--	--
CUS module (kWh)	4,6 / 5,12	--	--	--
Firmware version of the BMS	1.1407	--	--	--
Number of modules	1 - 5	--	--	--
Note Batteries are not integrated into the inverter and must be installed according to local regulations.				
Interface protection system and interface switch (Network and system protection “NS-protection”)				
Type of protection	integrated NS-protection			
Assigned to generation unit type	SE5K-RWB48, SE7K-RWB48, SE8K-RWB48, SE10K-RWB48			
Integrated interface switch	Type of switching equipment 1: Relay (Model AZ2150)			
	Type of switching equipment 2: Relay (Model AZ2150)			
	Note: The output is switched off by the inverter bridge and two relay in series in each line and neutral.			
Firmware version	Main DSP 1.20 / AUX DSP 2.20			
Note The settings of the product are password protected adjustable. In case the 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 and the 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.				

Software version		Main DSP 1.20 / AUX DSP 2.20		
Name of parameter set		147 France		
specific technical requirement (e.g, grid codes)		Enedis-PRO-RES_10E, Enedis-PRO-RES_64E 2023, FD C11-519-11_2023-10		
Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Parameter^a	Remarks/ additional information^b	configurable value range	default value
4.3.2 Interface switch	Single fault tolerance for interface switch	--	yes no	yes
4.4.2 Operating frequency range	47,0 – 47,5 Hz Duration	--	0 s – 20 s	0 s
	47,5 – 48,5 Hz Duration	--	30 – 90 min	30 min
	48,5 – 49,0 Hz Duration	--	30 – 90 min	30 min
	49,0 – 51,0 Hz Duration	--	not configurable	unlimited
	51,0 – 51,5 Hz Duration	--	30 – 90 min	30 min
	51,5 – 52,0 Hz Duration	--	0 – 15 min	0 s
4.4.3 Minimal requirement for active power delivery at underfrequency	Reduction threshold	--	not configurable	Electronic inverter, no power reduction take place 49,5 Hz
	Maximum reduction rate	--	not configurable	≤ 2% P _M /Hz
4.4.4 Continuous operating voltage range	Upper limit	--	configurable 1,0 U _n – 1,3 U _n	1,15 U _n
	Lower limit	--	configurable 0,2 U _n – 1,0 U _n	0,85 U _n
4.5.2 Rate of change of frequency (ROCOF) immunity	ROCOF withstand capability (defined with a sliding measurement window of 500 ms) non-synchronous generating technology (inverter):	--	configurable 0 – 10 Hz/s	2 Hz/s

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Name of parameter set		147 France			
specific technical requirement (e.g, grid codes)		Enedis-PRO-RES_10E, Enedis-PRO-RES_64E 2023, FD C11-519-11_2023-10			
Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Parameter^a	Remarks/ additional information^b	configurable value range	default value	
4.5.3.2 Under-voltage ride through (UVRT) Generating plant with non-synchronous generating technology (inverter)	Voltage-Time- Diagram	--	see Figure 6 of EN 50549-1:2019 and EN 50549-2:2019	Time [s]	U [p.u.]
		--		0,00	0,20
		--		0,15	0,20
		--		1,50	0,85
		--		180	0,85
		--		180	0,90
	Fast fault current	--	Configurable, 1,1 I _{nom}	SE10K-RWB48: 16,00 A SE8K-RWB48: 13,00 A SE7K-RWB48: 11,50 A SE5K-RWB48: 8,00 A	
	Active power recovery after a short circuit	--	configurable	Start at 90% U _n	
	Fault recovery of active power (times calculated from the removal of the short circuit)	--	Non configurable	≤ 0,5 s	
	Value for recovered active power	--	configurable	≥ 90%	
	Accuracy for recovery of active power	--	not configurable	≤ 10%	
	Reactive power contribution has priority	--	yes no	Yes	
4.5.4 Over-voltage ride through (OVRT)	Voltage-Time- Diagram	--	not configurable see Figure 8 of EN 50549-1:2019 and EN 50549-2:2019	Time [s]	U [p.u.]
		--		0,0	1,25
		--		0,1	1,25
		--		0,1	1,20
		--		5,0	1,20
		--		5,0	1,15
		--		60,0	1,15
		--		60,0	1,10
	Active power recovery after a short circuit	--	configurable	Start at 90% U _n	
	Fault recovery of active power (times calculated from the removal of the short circuit)	--	configurable	≤ 0,5 s	
	Value for recovered active power	--	configurable	≥ 90%	

Software version		Main DSP 1.20 / AUX DSP 2.20		
Name of parameter set		147 France		
specific technical requirement (e.g, grid codes)		Enedis-PRO-RES_10E, Enedis-PRO-RES_64E 2023, FD C11-519-11_2023-10		
Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Parameter ^a	Remarks/ additional information ^b	configurable value range	default value
	Accuracy for recovery of active power	--	not configurable	≤ 10%
4.6.1 Power response to overfrequency	Threshold frequency f ₁	--	50,2 Hz – 52,0 Hz	50,2 Hz
	Droop	--	2% – 12%	5%
	Power reference	--	P _M P _{max}	P _{max} , for synchronous generating technology and EESS P _M for other non-synchronous generating technology (inverter)
	Intentional delay	--	0 s – 2 s	0 s
	Deactivation threshold f _{stop}	--	50,0 Hz – f ₁	disable
	Deactivation time t _{stop}	--	0 s – 600 s	disable
	Acceptance of staged disconnection	--	yes no	yes
4.6.2 Power response to underfrequency	Threshold frequency f ₁	--	49,8 Hz – 46,0 Hz	Disable
	Droop	--	2% – 12%	Disable
	Power reference	--	P _M P _{max}	Disable
	Intentional delay	--	0 s – 2 s	Disable
4.7.2.2 voltage support by reactive power - Capabilities	Active factor / Reactive power (%P _d) range overexcited	--	0,60 – 1 / 80% P _d - 0	0,9
	Active factor / Reactive power (%P _d) range underexcited	--	0,60 – 1 / 80% P _d - 0	0,9
4.7.2.3 voltage support by reactive power - Control modes	Enabled control mode	--	Q setp, Q(U) Q(P) cos φ setp, cos φ (P)	deactivated deactivated deactivated activated deactivated
4.7.2.3.2 voltage support by reactive power - Set point control modes	Q set point and excitation	--	0% – 80% P _D ,	deactivated
	cos φ set point and excitation	--	1,0 – 0,6	0,9
4.7.2.3.3 voltage support by reactive power - Voltage related control modes	Characteristic curve	--	cos φ (P) Q(P)	deactivated
	Time constant	--	3 s – 60 s	10 s
	Min cos φ	--	0,0 – 1	0,9
	Lock-in power	--	0% – 20%	deactivated

Software version		Main DSP 1.20 / AUX DSP 2.20		
Name of parameter set		147 France		
specific technical requirement (e.g, grid codes)		Enedis-PRO-RES_10E, Enedis-PRO-RES_64E 2023, FD C11-519-11_2023-10		
Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Parameter^a	Remarks/ additional information^b	configurable value range	default value
	Lock-out power	--	0% – 20%	deactivated
4.7.2.3.4 voltage support by reactive power - Power related control mode	Characteristic curve	--	Q(U) P(U)	Q(U) (P(U) deactivated
only EN 50549-2:2019. 4.7.4.2.1 Voltage support during faults and voltage steps – General	Enabling	--	enable disable	disabled
	Static voltage range overvoltage	--	100% U _c – 120% U _c	
	Static voltage range undervoltage	--	80% U _c – 100% U _c	
/ Generating Plant with non-synchronous generator (inverter)	Insensitivity range of ΔU50per	--		disabled
	Gradient k1	--	0 – 6	disabled
	Gradient k2	--	0 – 6	disabled
	Fast fault current	--	Rated value	1,1 I _{nom}
only EN 50549-2:2019. 4.7.4.2.1.2 Optional Modes / Generating Plant with non-synchronous generator	Active power priority	--	enable disable	disable
	Reactive current limitation [% rated current]	--	0% – 100%	disable
	Zero current threshold	--	20% U _c – 100% U _c	disable
4.7.4.2.2 Zero current mode for converter connected generating technology / Generating Plant with non-synchronous generator	Enabling	--	enable disable	disable
	Static voltage range overvoltage	--	100% U _n – 120% U _n	120% U _n
	Static voltage range undervoltage	--	20% U _n – 100% U _n	50% U _n

Software version		Main DSP 1.20 / AUX DSP 2.20		
Name of parameter set		147 France		
specific technical requirement (e.g, grid codes)		Enedis-PRO-RES_10E, Enedis-PRO-RES_64E 2023, FD C11-519-11_2023-10		
Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Parameter^a	Remarks/ additional information^b	configurable value range	default value
4.9.3 Requirements on voltage and frequency protection	Threshold for protection as dedicated device [in A or kW, kVA]	--	SE10K-RWB48: 10,00 A SE8K-RWB48: 40,00 A SE7K-RWB48: 40,00 A SE5K-RWB48: 40,00 A Note: Rated current of internal safety device!	Internal safety device
	Undervoltage threshold stage 1	--	57,0 V – 1 U _n	0,8 U _n
	Undervoltage operate time stage 1	--	0,1 s – 100 s	0,08 s
	Undervoltage threshold stage 2	--	57,0 V – 1 U _n	N/A
	Undervoltage operate time stage 2	--	0,1 s – 5 s	N/A
	Overvoltage threshold stage 1	--	1,0 U _n – 1,2 U _n	1,15 U _n
	Overvoltage operate time stage 1	--	0,1 s – 100 s	0,08 s
	Overvoltage threshold stage 2	--	1,0 U _n – 1,3 U _n	N/A
	Overvoltage operate time stage 2	--	0,1 s – 5 s	N/A
	Overvoltage threshold 10 min mean protection	--	1,0 U _n – 1,15 U _n	N/A
	Overvoltage operate time 10 min mean protection	--	60 – 600 s	N/A
	Underfrequency threshold stage 1	--	47,0 Hz – 50,0 Hz	47,5 Hz
	Underfrequency operate time stage 1	--	0,1 s – 100 s	0,08 s
	Underfrequency threshold stage 2	--	47,0 Hz – 50,0 Hz	N/A
	Underfrequency operate time stage 2	--	0,1 s – 5 s	N/A
	Overfrequency threshold stage 1	--	50,0 Hz – 52,0 Hz	51,5 Hz
	Overfrequency operate time stage 1	--	0,1 s – 100 s	0,08 s

Software version		Main DSP 1.20 / AUX DSP 2.20		
Name of parameter set		147 France		
specific technical requirement (e.g, grid codes)		Enedis-PRO-RES_10E, Enedis-PRO-RES_64E 2023, FD C11-519-11_2023-10		
Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Parameter ^a	Remarks/ additional information ^b	configurable value range	default value
	Overfrequency threshold stage 2	--	50,0 Hz – 52,0 Hz	N/A
	Overfrequency operate time stage 2	--	0,1 s – 5,0 s	N/A
	Loss of mains according EN 62116 (LoM)	--	0 s – 6000 s	ROCOF 2,5 Hz/s (0,5 s) active 2 s
only EN 50549-2:2019. 4.9.3 Requirements on voltage and frequency protection	Positive sequence under-voltage protection threshold	--	20% – 100%	
	Positive sequence under-voltage protection operate time	--	0,2 s – 100 s	
	Negative sequence over-voltage protection threshold	--	1% – 100%	
	Negative sequence over-voltage protection operate time	--	0,2 s – 100 s	
	Zero sequence over-voltage protection threshold	--	1% – 100%	
	Zero sequence over-voltage protection operate time	--	0,2 s – 100 s	
4.10.2 Automatic reconnection after tripping	Lower frequency	--	47,0 Hz – 50,0 Hz	49,5 Hz
	Upper frequency	--	50,0 Hz – 52,0 Hz	50,1 Hz
	Lower voltage	--	50% U _n – 100% U _n	85% U _n
	Upper voltage	--	100% U _n – 120% U _n	110% U _n
	Observation time	--	10 s – 600 s	60 s
	Active power increase gradient	--	6% – 3000% / min	10% / min
4.10.3 Starting to generate electrical power	Lower frequency	--	47,0 Hz – 50,0 Hz	49,5 Hz
	Upper frequency	--	50,0 Hz – 52,0 Hz	50,1 Hz
	Lower voltage	--	50% – 100% U _n	85% U _n
	Upper voltage	--	100% – 120% U _n	110% U _n
	Observation time	--	10 s – 600 s	60 s
	Active power increase gradient	--	6% – 3000% / min	N/A
4.11.1 Ceasing active power	activation option	--	Yes (RS485, DI)	

Software version		Main DSP 1.20 / AUX DSP 2.20		
Name of parameter set		147 France		
specific technical requirement (e,g, grid codes)		Enedis-PRO-RES_10E, Enedis-PRO-RES_64E 2023, FD C11-519-11_2023-10		
Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Parameter ^a	Remarks/ additional information ^b	configurable value range	default value
4.11.2 Reduction of active power on set point	activation option	--	Yes (RS485, DI)	
4.12 Remote information exchange	available communication standards	--	No	
^a If additional parameters have been evaluated during the test, these shall be added as additional lines in the table,				
^b This column should be used for manufacturer specific parameter descriptions,				