

Certificate of compliance

Applicant: SolarEdge Technologie Ltd.

1 HaMada Street
Herzliya 467335
Israel

Product: Photovoltaic inverter with optional battery support

Model:	SE3K	SE4K	SE5K	SE6K
	SE7K	SE8K	SE9K	SE10K
	SE3K-RWB	SE4K-RWB	SE5K-RWB	--

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.

* 4.5 Immunity to disturbances, only limited grid support mode was tested (zero current mode) for FRT function

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.

Report number: 16TH0276-EN50549-10_1

Certificate number: U25-0655

Certification Program: NSOP-0032-DEU-ZE-V10

Date of issue: 2025-07-18

Certification body

Accreditation



Domenik Koll
Head of Energy Systems Germany



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.

Without the written consent of Bureau Veritas Consumer Products Services Germany GmbH excerpts of this certificate of conformity shall not be reproduced.

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 with optional battery support			
Static converter model	SE3K	SE4K	SE5K	SE6K
Input DC (photovoltaic)				
Input voltage range [V]	680 – 950	680 – 950	680 – 950	680 – 950
Max. input voltage [V]	950	950	950	950
Max. input current per input [A]	5	7	8,5	10
Output AC				
Rated AC voltage [V]	230 / 400 3 wires, N, PE	230 / 400 3 wires, N, PE	230 / 400 3 wires, N, PE	230 / 400 3 wires, N, PE
Rated output current [A]	5	6,5	8	10
Max. output current [A]	5	6,5	8	10
Nom. converter output (P_{NINV}) [W]	3000	4000	5000	6000
Rated apparent power [VA]	3000	4000	5000	6000
Static converter model	SE7K	SE8K	SE9K	SE10K
Input DC (photovoltaic)				
Input voltage range [V]	680 – 950	680 – 950	680 – 950	680 – 950
Max. input voltage [V]	950	950	950	950
Max. input current per input [A]	12	13,5	15	16,5
Output AC				
Rated AC voltage [V]	230 / 400 3 wires, N, PE	230 / 400 3 wires, N, PE	230 / 400 3 wires, N, PE	230 / 400 3 wires, N, PE
Rated output current [A]	11,5	13	14,5	16
Max. output current [A]	11,5	13	14,5	16
Nom. converter output (P_{NINV}) [W]	7000	8000	9000	10000
Rated apparent power [VA]	7000	8000	9000	10000

Characteristics of inverter and storage system (Hybrid-System)				
Inverter model	SE3K-RWB	SE4K-RWB	SE5K-RWB	--
Input (PV DC)				
voltage range [V]	375 - 450	375 - 450	375 - 450	--
Max. input voltage [V]	450	450	450	--
Max. input current [A]	8,5	11,5	14,0	--
Input (battery DC)				
DC voltage range [V]	375 - 450	375 - 450	375 - 450	--
Max. DC voltage [V]	450	450	450	--
Max. DC current per DC input [A]	8,5	11,5	14,0	--
AC connection				
Nominal AC voltage [V]	380 / 220; 400 / 230	380 / 220; 400 / 230	380 / 220; 400 / 230	--
Nominal output current [A]	5	6,5	8,0	--
Max. output current [A]	5	6,5	8,0	--
Nominal output power inverter [W]	3000	4000	5000	--
Nominal apparent output power inverter [VA]	3000	4000	5000	--
On-grid battery mode				
P _{sn} (nominal discharge power) [W]	3000	4000	5000	--
P _{cn} (nominal charging power) [W]	3000	4000	5000	--
P _{smax} (max. discharge power) [W]	3000	4000	5000	--
P _{cmax} (max. charging power) [W]	3000	4000	5000	--
Type	Bidirectional	Bidirectional	Bidirectional	--
Characteristics of batteries used with the above stated storage system (Hybrid-System)				
Brand	SolarEdge Technologies Ltd	--	--	--
Technology	Li-Ion	--	--	--
Model	BAT-00K1P	--	--	--
CUS Module (kWh)	9,7	--	--	--
Version firmware BMS	1.0	--	--	--
No. of modules	1	--	--	--
Note:				
Batteries are not integrated in 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	SE3K, SE4K, SE5K, SE6K, SE7K, SE8K, SE9K, SE10K, SE3K-RWB, SE4K-RWB, SE5K-RWB
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

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: 16,00 A SE9K: 14,50 A SE8K: 13,00 A SE7K: 11,50 A SE6K: 10,00 A SE5K: 8,00 A SE5K-RWB: 8,00A SE4K: 7,00 A SE4K-RWB: 7,00 A SE3K: 5,00 A SE3K-RWB: 5,00 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%	
	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) $\cos \varphi$ setp, $\cos \varphi$ (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
	$\cos \varphi$ 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	--	$\cos \varphi$ (P) Q(P)	deactivated
	Time constant	--	3 s – 60 s	10 s
	Min $\cos \varphi$	--	0,0 – 1	0,9
	Lock-in power	--	0% – 20%	deactivated
	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 $\Delta U_{50\text{per}}$	--		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
4.9.3 Requirements on voltage and frequency protection	Threshold for protection as dedicated device [in A or kW, kVA]	--	SE10K: 40,0 A SE9K: 40,0 A SE8K: 40,0 A SE7K: 40,0 A SE6K: 40,0 A SE5K: 40,0 A SE5K-RWB: 40,0 A SE4K: 40,0 A SE4K-RWB: 40,0 A SE3K: 5,00 A SE3K-RWB: 5,00 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
	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)
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,			