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# Verklaring van geen bezwaar

**Aanvrager:** SolarEdge Technologies Ltd.  
1 HaMada Street  
Herzliya 4673335  
Israel

**Product:** Photovoltaic inverter

<b>Model:</b>	<b>SE50K</b>	<b>SE55K</b>	<b>SE66.6K</b>	<b>SE82.8K</b>
	<b>SE90K</b>	<b>SE100K</b>	<b>SE66.6K*</b>	<b>SE80K*</b>
	<b>SE100K*</b>	<b>SE120K*</b>	--	--

**Opmerking:** \* 480 V mains voltage models

Omvormer voor driefasige parallele aansluiting op een MV-distributienetwerk.

#### 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 50549-2:2019, NEN-EN 50549-2:2019**

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

- 4.4 Normaal werkbereik
- 4.5 Immunititeit 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
- 4.12 Informatie-uitwisseling op afstand
- 4.13 Vereisten met betrekking tot tolerantie voor één fout van interfacebeveiligingssysteem

#### TG3 Rev. 25:2018

Bepaling van de elektrische kenmerken van stroomopwekkingseenheden en -systemen, opslagsystemen en hun componenten in midden-, hoog- en extrahoogspanningsnetten

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

Opstellen van een netwerkcode over vereisten voor netaansluiting van generatoren (NC RFG).  
Typegoedkeuring voor productie-eenheden voor gebruik in installaties van type B, type C en type D.

#### Opmerking:

Dit certificaat bewijst de conformiteit van een productie-eenheid op basis van NC RFG. Sommige vereisten, zoals frequentiegevoelige modus (FSM), blindvermogen, enz. Kunnen echter van toepassing zijn op het niveau van de productie-installatie, welke beoordeling buiten het toepassingsgebied van dit certificaat kan vallen. Bijgevolg is het mogelijk dat de conformiteitsbeoordeling van een productie-eenheid niet alle aspecten van de bovengenoemde normalisatiedocumenten omvat, meestal wanneer een vereiste eerder op fabrieksniveau wordt geëvalueerd.

Een representatief testpatroon van het hoger vermelde product voldoet aan de op het moment van de uitreiking van dit attest geldende veiligheid technische eisen van de vermelde controlegrondbeginselen voor een reglementair voorgeschreven gebruik.

**Rapportnummer:** 20TH0532-EN50549-2\_0  
20TH0532-FRT\_0  
20TH0532-Power Quality\_0

**Certificatie-programma:** NSOP-0032-DEU-ZE-V01

**Certificate number:** U21-0431

**Date of issue:** 2021-05-18

**Certification body**



Thomas Lammel



Certification body Bureau Veritas Consumer Products Services Germany GmbH accreditation to DIN EN ISO/IEC 17065

A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH



BUREAU  
VERITAS

Annex to the EN 50549-2 certificate of compliance No. U21-0431

Appendix

Extract from test report according to EN 50549-2

Nr. 20TH0532-EN50549-2\_0  
20TH0532-FRT\_0  
20TH0532-Power Quality\_0

Type Approval and declaration of compliance with the requirements of EN 50549-2 and Commission Regulation (EU) 2016/631 of 14 April 2016.

<b>Manufacturer / applicant</b>	SolarEdge Technologies Ltd. 1 HaMada Street Herzliya 4673335 Israel
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<b>Micro-generator Type</b>	Photovoltaic inverter			
	<b>SE50K</b>	<b>SE55K</b>	<b>SE66.6K</b>	<b>SE82.8K</b>
<b>Input DC voltage range [V]</b>	680 - 1000	680 - 1000	680 - 1000	680 - 1000
<b>Input DC current [A]</b>	2 x 36,25	2 x 40	2 x 48,25	3 x 40
<b>Output AC voltage [V]</b>	220 / 380 230 / 400	220 / 380 230 / 400	220 / 380 230 / 400	220 / 380 230 / 400
<b>Output AC current [A]</b>	72,5	80	96,5	120
<b>Output power [VA]</b>	50000	55000	66600	82800

	<b>SE90K</b>	<b>SE90K</b>	<b>SE100K</b>	<b>SE66.6K*</b>
<b>Input DC voltage range [V]</b>	680 - 1000	680 - 1000	680 - 1000	680 - 1000
<b>Input DC current [A]</b>	3 x 43,5	3 x 43,5	3 x 48,25	2 x 40
<b>Output AC voltage [V]</b>	220 / 380 230 / 400	220 / 380 230 / 400	220 / 380 230 / 400	277 / 480
<b>Output AC current [A]</b>	130,5	130,5	145	80
<b>Output power [VA]</b>	89970	90000	100000	66600

	<b>SE80K*</b>	<b>SE100K*</b>	<b>SE120K*</b>	--
<b>Input DC voltage range [V]</b>	680 - 1000	680 - 1000	680 - 1000	--
<b>Input DC current [A]</b>	2 x 48,25	3 x 40	3 x 48,5	--
<b>Output AC voltage [V]</b>	277 / 480	277 / 480	277 / 480	--
<b>Output AC current [A]</b>	96,5	120	145	--
<b>Output power [VA]</b>	80000	100000	120000	--

<b>Firmware version</b>	Beginning with DSP1: 1.20 / DSP2: 2.20
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<b>Measurement period</b>	2019-11-29 – 2020-05-29, 2020-06-01 – 2020-07-31
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**Description of the structure of the power generation unit:**

The power generation unit is equipped with a PV 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 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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Nr. 20TH0532-EN50549-2\_0  
20TH0532-FRT\_0  
20TH0532-Power Quality\_0

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**Parameter Table:**

Clause EN 50549-1	Ref	Parameter	Micro generator setting range
4.3.2 Interface switch	n.a.	Single fault tolerance for interface switch	yes   no
4.4.2 Operating frequency range (Netcode elektriciteit Article 3.13)	A,B	47,0 – 47,5 Hz Duration	0,06 – unlimited
	A,B	47,5 – 48,5 Hz Duration	0,06 – unlimited
	A,B	48,5 – 49,0 Hz Duration	0,06 – unlimited
	A,B	49,0 – 51,0 Hz Duration	0,06 – unlimited
	A,B	51,0 – 51,5 Hz Duration	0,06 – unlimited
	A,B	51, 5 – 52 Hz Duration	0,06 – 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
	A,B	Maximum reduction rate	1 – 12 % P <sub>M</sub> /Hz
4.4.4 Continuous operating voltage range	n.a.	Upper limit	1,0 U <sub>n</sub> – 335V
	n.a.	Lower limit	0,0 U <sub>n</sub> – 1,0 U <sub>n</sub>
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
4.5.3.2 Generating plant with non- synchronous generating technology (FRT) (Netcode elektriciteit Article 3.17)	B	Maximum power resumption time	not defined
	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).
4.5.3.3 Generating plant with synchronous generating technology (FRT) (Netcode elektriciteit Article 3.17)	B	Maximum power resumption time	not defined
	B	Voltage-Time-Diagram	see Figure 7, EN 50549-1



BUREAU  
VERITAS

Annex to the EN 50549-2 certificate of compliance No. U21-0431

Appendix

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Nr. 20TH0532-EN50549-2\_0

20TH0532-FRT\_0

20TH0532-Power Quality\_0

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



BUREAU  
VERITAS

Annex to the EN 50549-2 certificate of compliance No. U21-0431

Appendix

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Nr. 20TH0532-EN50549-2\_0

20TH0532-FRT\_0

20TH0532-Power Quality\_0

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
	B	Undervoltage threshold stage 1	$0,0 U_n - 1 U_n$
	B	Undervoltage operate time stage 1	0,04 s – 20 min
	B	Undervoltage threshold stage 2	$0,0 U_n - 1 U_n$
	B	Undervoltage operate time stage 2	0,04 s – 20 min
	B	Overvoltage threshold stage 1	$1,0 U_n - 335V$
	B	Overvoltage operate time stage 1	0,04 s – 20 min
	B	Overvoltage threshold stage 2	$1,0 U_n - 335V$
	B	Overvoltage operate time stage 2	0,04 s – 20 min
	B	Overvoltage threshold 10 min mean protection <sup>a</sup>	$1,0 U_n - 335V$
	B	Overvoltage operate time 10 min mean protection <sup>a</sup>	3 s
	B	Underfrequency threshold stage 1	44,0 Hz – 60,0 Hz
	B	Underfrequency operate time stage 1	0,06 s – 20 min
	B	Underfrequency threshold stage 2	44,0 Hz – 60,0 Hz
	B	Underfrequency operate time stage 2	0,06 s – 20 min
	B	Overfrequency threshold stage 1	50,0 Hz – 66,0 Hz
	B	Overfrequency operate time stage 1	0,06 s – 20 min
	B	Overfrequency threshold stage 2	50,0 Hz – 66,0 Hz
	B	Overfrequency operate time stage 2	0,06 s – 20 min
B	Loss of mains according EN 62116 (LoM)	0-100 s	
4.10.2 Automatic reconnection after tripping (Netcode elektriciteit Article 3.13, 3.17)	B	Lower frequency	44,0 Hz – 60,0 Hz
	B	Upper frequency	50,0 Hz – 66,0 Hz
	B	Lower voltage	$0,0 U_n - 1,0 U_n$
	B	Upper voltage	$1,0 U_n - 315 V$
	B	Observation time	1 s – 20 min
	B	Active power increase gradient	1 % – 10000 %/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
	A,B	Upper frequency	50,0 Hz – 66,0 Hz
	A,B	Lower voltage	$0,0 U_n - 1,0 U_n$
	A,B	Upper voltage	$1,0 U_n - 315 V$
	A,B	Observation time	0s – 20 min
	A,B	Active power increase gradient	1 % – 10000 %/min
4.11.1 Ceasing active power	A,B	Remote operation of the logic interface	yes   no
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
4.12 Remote information exchange	B	Remote information exchange required NOTE: If yes further definition is provided by the DSO	yes   no



BUREAU  
VERITAS

## Annex to the EN 50549-2 certificate of compliance No. U21-0431

### Appendix

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Nr. 20TH0532-EN50549-2\_0  
20TH0532-FRT\_0  
20TH0532-Power Quality\_0

#### Note:

<sup>a</sup> 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.