



**BUREAU
VERITAS**

Certificate of compliance

Applicant: KATEK Memmingen GmbH
Mammostrasse 1
87700 Memmingen
Germany

Product: Photovoltaic (PV) inverter

Model: StecaGrid 1511; StecaGrid 2011; StecaGrid 2511; StecaGrid 3011_2; StecaGrid 3011; StecaGrid 3611; StecaGrid 3611_2; StecaGrid 4611_2; StecaGrid 5011_2

Use in accordance with regulations:

Automatic disconnection device with single-phase mains surveillance in accordance with DANSK ENERGI DK1/DK2:2019 for photovoltaic systems with a single-phase parallel coupling via an inverter in the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverter.

Applied rules and standards:

DANSK ENERGI DK1/DK2:2019

Technical requirements for connection of power-generating plants to the low-voltage grid ($\leq 1\text{kV}$) Type A

- 4.1 Tolerance of Frequency and voltage deviations
- 4.2 Start-up and reconnection of a power-generating plant
- 4.3 Active power control
- 4.4 Reactive power control
- 4.5 Protection
- 4.6 Power Quality

DIN V VDE V 0126-1-1:2006-02 (4.1 Functional safety)

Automatic disconnection device between a generator and the public low-voltage grid

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: 18TH0316_DK1/DK2_0

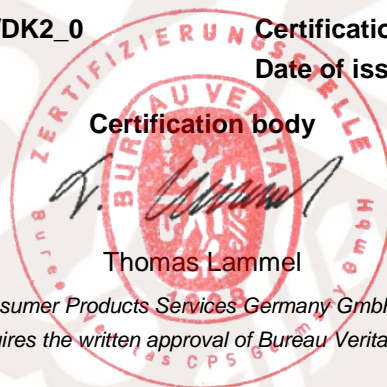
Certificate number: U20-0885

Certification Program: NSOP-0032-DEU-ZE-V01

Date of issue:

2020-09-23

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



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Annex to the DANKS ENERGI certificate of compliance No. U20-0885

Type Verification Test Report

Extract from test report according to DANSK ENERGI

Nr. 18TH0316_DK1/DK2_0

Type Approval and declaration of compliance with the requirements of DANKS ENERGI

Manufacturer / applicant:	KATEK Memmingen GmbH Mammostrasse 1 87700 Memmingen Germany
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Micro-generator Type	Photovoltaic inverter			
	StecaGrid 1511	StecaGrid 2011	StecaGrid 2511	StecaGrid 3011_2
MPP DC voltage range [V]	75-360	75-360	75-360	125-600
Input DC voltage range [V]	Max 450	Max 450	Max 450	Max 750
Input DC current [A]	13	13	13	13
Output AC voltage [V]	230; N; PE			
Output AC current [A]	12	12	14	14
Output power [VA]	1500	2000	2500	3000

	StecaGrid 3011	StecaGrid 3611	StecaGrid 3611_2	StecaGrid 4611_2
MPP DC voltage range [V]	125-600	125-600	150-600	150-600
Input DC voltage range [V]	Max 750			
Input DC current [A]	13	13	13	13
Output AC voltage [V]	230; N; PE			
Output AC current [A]	14	16	16	20
Output power [VA]	3000	3680	3680	4600

	StecaGrid 5011_2	--	--	--
MPP DC voltage range [V]	150-600	--	--	--
Input DC voltage range [V]	Max 750	--	--	--
Input DC current [A]	13	--	--	--
Output AC voltage [V]	230; N; PE	--	--	--
Output AC current [A]	22	--	--	--
Output power [VA]	5000	--	--	--

Firmware version	PU_APP_4.2.0 and PAR_23.0.16 or higher
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Measurement period:	2019-11-11 to 2020-08-25
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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.

Note:

The single-phase generation units StecaGrid 4611_2 and StecaGrid 5011_2 exceed the limit of 3.68 kVA for the maximum output power of single-phase connected generation units according to DANSK ENERGI DK1/DK2:2019. The plant installer must therefore take appropriate measures to ensure that the asymmetry of the entire generating plant is limited to a value of less than or equal to 3.68 kVA. With these generation units, the requirement of the symmetry behaviour of three-phase converter units is not met.



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Setting of the parameter values for DK1 and DK2:

	Settings for DK1	Setting for DK2
	LFSM-O	
Threshold frequency [Hz]	50,2	50,5
Droop [% of P _n]	5% (40% P _n /Hz)	4% (50% P _n /Hz)
Intentional Delay	500ms	500ms
	Reactive Power	
	Q fix	Q fix
Active/disabled [On/Off]	On	On
Q setpoint [VAR]	0	0
	cos φ fix	
Active/disabled [On/Off]	Off	Off
PF setpoint [PF]	1	1
	Settings for DK1	Setting for DK2
	cos φ (P)	
Active/disabled [On/Off]	Off	Off
Cos φ (P) P1 [% of P _n]	0	0
Cos φ (P) PF1 [PF]	1	1
Cos φ (P) P2 [% of P _n]	50	50
Cos φ (P) PF2 [PF]	1	1
Cos φ (P) P3 [% of P _n]	100	100
Cos φ (P) PF3 [PF]	0,9 inductive	0,9 inductive
Cos φ (P) Lockin [% of U _n]	105	105
Cos φ (P) Lockout [% of U _n]	100	100
	Connection and Reconnection	
Gradient [% of P _n /min]	20	20
Observation time [seconds]	180	180
U _{min} [% of U _n]	85	85
U _{max} [% of U _n]	110	110
f _{min} [Hz]	47,5	47,5
f _{max} [Hz]	50,2	50,5



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	System Protection	
f> [s]	0,2	0,2
f> [Hz]	51,5	51,5
f< [s]	0,2	0,2
f< [Hz]	47,5	47,5
U> [s]	60	60
U> [% of U _n]	110	110
U>> [s]	0,2	0,2
U>> [% of U _n]	115	115
U< [s]	50	50
U< [% of U _n]	85	85
	Loss of Mains Detection	
U<< [s]	0,2	0,2
U<< [% of U _n]	80	80

Note.

The settings of the interface protection are password protected adjustable.

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.