

## Declaration of Manufacturer

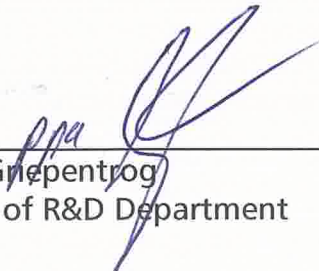
The manufacturer: **Steca Elektronik GmbH**  
**Mammostrasse 1**  
**D-87700 Memmingen**  
**Germany**

herby certifies, that its photovoltaic inverters for connection to the low voltage grid

**StecaGrid 8000+ 3ph**  
**StecaGrid 10000+ 3ph**

fulfil in the setting "EN 50438" the requirements of the EN 50438:2007

Memmingen, the 19<sup>th</sup> of March 2013

  
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Ralf Grepentrog  
Head of R&D Department

## TYPE CERTIFICATION TEST RESULTS SHEET

### Micro-generator details

MICRO-GENERATOR Type reference StecaGrid 8000+ 3ph / StecaGrid 10000+ 3ph		
Rated output power 8.000 W or rather 10.000 W		
Manufacturer	Tel +49 8331 8558-0	Address Mammostrasse 1 87700 Memmingen Germany
	Fax +49 8331 8558-132	
	E-mail info@steca.de	
Technical file reference No. MES100809		

### Test house details

Name and address of test house	see above
Telephone number	
Fax	
E-mail	

### Test details

Date of test	see MES100809
Name of test Engineer	Dipl.-Ing. (FH) Dietmar Zeller
Signature of test Engineer	<i>i.A. D. Zeller</i>
Test location (if different from above)	

### Power quality

Harmonic current emissions								
	EVS-EN 61000-3-2 Limit (A)							
Harmonic	2nd	3rd	5th	7th	9th	11th	13th	15th ≤ n ≤ 39th
Limit	1,08	2,3	1,14	0,77	0,4	0,33	0,21	0,15·(15/n)
Test value	0,16	0,28	0,09	0,08	0,14	0,05	0,05	<limit EN61000-3-2
Voltage fluctuation and flicker								
	Maximum permissible voltage fluctuation (expressed as percentage of nominal voltage at rated power) and flicker (standard EVS-EN 61000-3-3)							
	Starting		Stopping		Running (at rated power)			
Limit	3,3 %		3,3 %		$P_{st} = 1,0$		$P_{fl} = 0,65$	
Test value	0,2 %		0,2 %		0,101		0,101	
Power factor								
Limit	+ 0,95 -0,95 at three voltage levels							
Test level (AC voltage)	210 V		230 V		250 V			
Test value	0,97		0,98		0,98			

### Under / Over frequency tests

Parameter	Under frequency		Over frequency	
	Frequency	Time	Frequency	Time
Protection limit	47 Hz	0,5 s	51 Hz	0,5 s
Actual setting	47 Hz	0,5 s	51 Hz	0,5 s
Trip value (test result)	47,0 Hz	0,5 s	51,0 Hz	0,5 s

### Under / Over voltage tests (single stage protection)

Parameter	Under voltage		Over voltage	
	Voltage	Time	Voltage	Time
Protection limit	$U_N - 15 \% V$	1,5 s	$U_N + 15 \% V$	0,2 s
Actual setting	196 V	1,5 s	264 V	0,2 s
Trip value (test result)	196 V	1,5 s	264 V	0,2 s

### LoM protection

<b>Protection technique</b>	monitoring of line-to-line voltage		
<b>Testing method</b>	voltage dip test		
Output power level	Min.	Medium	Max.
Trip setting clearance time	<5 s	<5 s	<5 s
Trip value clearance time	< 0,5 s	< 0,5 s	< 0,5 s

### Fault level contribution

Short-circuit current at micro-generator terminals, A	see comments
Short-circuit applied to micro-generator at normal running condition	0 -2 s

### Comments

Steca inverters are line-commutated to ensure a very low harmonic distortion and a power factor very close to 1 (see above). The output current is directly controlled by the inverter and cannot exceed the maximum current, even in case of fault close to the inverter. Short circuit current cannot be a multiple of the nominal current like it can be at a synchronous generator or an induction generator.