



SSEG DETAILS

SSEG Type reference: Powador 3200, 4200, 4400, 5300, 5300 supreme, 5500, 6600		
SSEG Technology: Photovoltaik		
Manufacturer: KACO new energy GmbH	Tel: +49 7132 3818-0	Adress: 74172 Neckarsulm Carl-Zeiss-Straße 1
	Fax: +49 7132 3818-703	
Technical file reference No:	10TH0365-G59/2_0	
Maximum export capability 2600 VA / 3450 VA / 3600 VA / 4400 VA / 4400 VA / 4600 VA / 5500 VA (SSEG rating less parasitic load)		

TEST HOUSE DETAILS

Name and adress of test house	Bureau Veritas Consumer Product Service GmbH Duismesspark A96, 86842 Türkheim, Germany
Telephone number	+49 40 74041-0
Facsimile number	+49 40 74041-2499
E-mail adress	cps-tuerkheim@de.bureauveritas.com

POWER QUALITY

Harmonic current emissions (% = 100 In / I1)						
Minimal short circuit Ratio Rsce	33					
Value of short Circuit Power Ssc corresponding to Rsce	0.0858 MVA / 0.1138 MVA / 0.1188 MVA 0.1452 MVA / 0.1452 MVA / 0.1518 MVA / 0.1815 MVA					
Harmonic	5th	7th	11th	13th	THD	PWHD
Limit *	10.70	7.20	3.10	2	23	23
Test value	1.59	0.40	0.11	0.07	2.39	0.42

* Maximum permissible harmonic current. As per BS EN 61000-3-12 table 3.

Voltage Fluctuations and Flicker					
	P_{st}	P_{lt}	d(t) %	d_c %	d_{max} %
Limit *	1	0.65	3.30	3.30	3.30
Test value	0.0856	0.0856	3.30	3.30	4

* The device complies to EN 61000-3-11 with the maximum mains impedance of $|Z_{max}| = 0,22 \Omega$.

DC injection			
G59/2 Limit	0.25 % of rated output current, tested at three power levels		
Test level	10 %	55 %	100 %
Test value	0.01 mA	0.018 mA	0.035 mA

Power factor			
G59/2 Limit	0.95 lag - 0.95 lead at three voltage levels		
Test level	212 V (UN - 8 %)	230 V	248 V (UN + 12.7 %)
Test value	0.998i	0.998i	0.998i

PROTECTION TESTS

Overvoltage				
	Stage 1		Stage 2	
Parameter	Voltage	Time	Voltage	Time
G59/2 Limit	+10 % Un	1.0 sec	+15 % Un	0.5 sec
Actual setting	253.0 V	1.0 sec	264.0 V	0.5 sec
Trip value	251.9 V	0.995 sec	264.5 V	0.5 sec

Undervoltage				
	Stage 1		Stage 2	
Parameter	Voltage	Time	Voltage	Time
G59/2 Limit	-13 % Un	2.5 sec	-20 % Un	0.5 sec
Actual setting	201.0 V	2.5 sec	186.0 V	0.5 sec
Trip value	200.2 V	2.496 sec	184.0 V	0.496 sec

Over Frequency				
	Stage 1		Stage 2	
Parameter	Frequency	Time	Frequency	Time
G59/2 Limit	>=51.5 Hz	90 sec	52.0 Hz	max. 0.5 sec
Actual setting	51.5 Hz	90 sec	52.0 Hz	0.5 sec
Trip value	51.54 Hz	90.6 sec	52.0 Hz	0.456 sec

Under Frequency				
	Stage 1		Stage 2	
Parameter	Frequency	Time	Frequency	Time
G59/2 Limit	<=47.5 Hz	20 sec	47.0 Hz	max. 0.5 sec
Actual setting	47.5 Hz	20 sec	47.0 Hz	0.5 sec
Trip value	47.47 Hz	20.0 sec	47.0 Hz	0.308 sec

LOSS OF MAINS TEST

Method used	Frequency shift		
Output power level	10 %	55 %	100 %
G59/2 Limit	5 sec	5 sec	5 sec
Trip setting	1 sec	1 sec	1 sec
Trip value	1.331 sec	1.192 sec	1.339 sec

RECONNECTION TIMES

Reconnection Time	Under/Over voltage	Under/Over Frequency	Loss of mains
Minimum value	180 sec	180 sec	180 sec
Actual setting	180 sec	180 sec	180 sec
Recorded value	196 sec	196 sec	209.6 sec

FAULT LEVEL CONTRIBUTION

Short circuit Current Contribution
As Photovoltaic SSEGs are inverter connected, they are deemed to automatically comply with regulations and no further tests are required.

SELF MONITORING - SOLID STATE SWITCHING

Solid state Disconnection
Units do not provide solid state switching relays. In case the semiconductor bridge is switched off, then the voltage on the output drops to 0. In this case the relays on the output will also open.