

Test Verification of Conformity

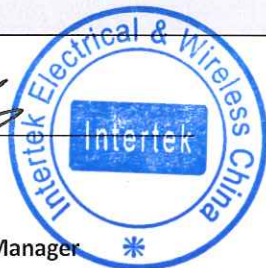
In the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

Applicant Name & Address:	SHENZHEN GROWATT NEW ENERGY TECHNOLOGY CO., LTD 1st East & 3rd Floor of Building A, Building B, Jiayu Industrial Park, #28, GuangHui Road, LongTeng Community, Shiyan Street, Baoan District, Shenzhen, P.R.China
Product Description:	PV Grid inverter
Ratings & Principle Characteristics:	See Annex to Test Verification of Conformity
Models:	Growatt 8000 TL3-S, Growatt 9000 TL3-S Growatt 10000 TL3-S, Growatt 11000 TL3-S
Brand Name:	Growatt(logo)
Relevant Standards	EN 50438: 2013, Requirements for micro-generating plants to be connected in parallel with public low-voltage distribution networks Type Verification for Poland,Norway,Hungary,Switzerland, Turkey
Verification Issuing Office:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Date of Tests:	28 Feb., 2017 – 09 Mar., 2017
Test Report Number(s):	161118023GZU-001

This verification is part of the full test report(s) and should be read in conjunction with them.

Signature

Name: Grady Ye
Position: Assistant Manager
Date: 17 Mar 2017



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Annex to Verification of Conformity

This is an Annex to Test Verification of Conformity with Verification/Report Number(s):
161118023GZU-001. the issuing office is Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
(Address: Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD,
Guangzhou, China).

Ratings & Principle Characteristics:	<p>For all models: Ambient Temperature: -25°C - +60°C, IP65, Class I AC output rating: Nominal Output Voltage: 3W/N/PE 230Vac/400Vac; Nominal Frequency: 50Hz; Power Factor:0.8 Leading – 0.8 Lagging For model: Growatt 8000 TL3-S DC input: Max. PV Voltage: 1000Vdc; DC Voltage Range: 160-1000Vdc; MPPT Voltage Range: 360-850Vdc; PV Isc: 16A/16A AC output: Max. Apparent Power: 8.8kVA; Max Output Current: 3*13.3A;</p> <p>For model: Growatt 9000 TL3-S DC input: Max. PV Voltage: 1000Vdc; DC Voltage Range: 160-1000Vdc; MPPT Voltage Range: 400-850Vdc; PV Isc: 16A/16A AC output: Max. Apparent Power: 9.9kVA; Max Output Current: 3*15A;</p> <p>For model: Growatt 10000 TL3-S DC input: Max. PV Voltage: 1000Vdc; DC Voltage Range: 160-1000Vdc; MPPT Voltage Range: 450-850Vdc; PV Isc: 16A/16A AC output: Max. Apparent Power: 11kVA; Max Output Current: 3*16.7A;</p> <p>For model: Growatt 11000 TL3-S DC input: Max. PV Voltage: 1000Vdc; DC Voltage Range: 160-1000Vdc; MPPT Voltage Range: 450-850Vdc; PV Isc: 16A/16A AC output: Max. Apparent Power: 12.1kVA; Max Output Current: 3*18.3A;</p>
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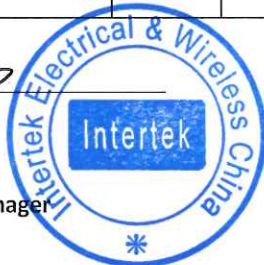
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D.2.3 Over-/under-voltage				P	
		Over Voltage		Under Voltage	
Parameter		Voltage	Disconnection Time	Voltage	Disconnection Time
Protection limit		264.5V	0.1s-0.2s	195.5V	1.2s-1.5s
Actual setting (as applied to interface protection)		264.5V	0.15s	195.5V	1.40s
Trip value (test result)-1	All phases	265.30	0.1480	195.40	1.421
	Phase R	264.46	0.1530	195.88	1.431
	Phase S	264.39	0.1445	195.37	1.426
	Phase T	264.43	0.1500	195.18	1.416
Trip value (test result)-2	All phases	264.42	0.1610	195.31	1.426
	Phase R	264.47	0.1435	195.42	1.396
	Phase S	264.38	0.1445	195.32	1.416
	Phase T	264.42	0.1395	195.32	1.426

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Trip value (test result)-3	All phases	264.3V	0.191s	195.4V	1.462s
	Phase R	264.3V	0.199s	195.4V	1.454s
	Phase S	264.3V	0.193s	195.4V	1.458s
	Phase T	264.3V	0.194s	195.4V	1.474s
Trip value (test result)-4	All phases	264.3V	0.191s	195.4V	1.450s
	Phase R	264.3V	0.173s	195.4V	1.474s
	Phase S	264.3V	0.1912s	195.4V	1.456s
	Phase T	264.3V	0.193s	195.4V	1.443s
Trip value (test result)-5	All phases	264.3V	0.196s	195.4V	1.444s
	Phase R	264.3V	0.187s	195.4V	1.442s
	Phase S	264.3V	0.193s	195.4V	1.445s
	Phase T	264.3V	0.195s	195.4V	1.441s
Over-voltage stage 1*	253V (according to EN 50160), the disconnection after detection of a overvoltage at 1 or 10 min –mean-value takes place within 3s				

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Over- /under-frequency				
Parameter	Over Frequency		Under Frequency	
	Frequency	Time	Frequency	Time
Protection limit	52.0Hz	0.3-0.5s	47.5Hz	0.3-0.5s
Actual setting (as applied to interface protection)	52.0Hz	0.4s	47.5Hz	0.4s
Trip value (test result)-1	52.01Hz	0.358s	47.49Hz	0.384s
Trip value (test result)-2	52.01Hz	0.370s	47.49Hz	0.388s
Trip value (test result)-3	52.01Hz	0.366s	47.49Hz	0.396s
Trip value (test result)-4	52.01Hz	0.390s	47.49Hz	0.394s
Trip value (test result)-5	52.01Hz	0.376s	47.49Hz	0.394s

LOM test						
Method used	EN 62116					
Balancing load on island network	33% of -5% Q Test 22	66% of -5% Q Test 12	100% of -5% P Test 5	33% of +5% Q Test 31	66% of +5% Q Test 21	100% of +5% P Test 10
Trip time	129.0ms	103.0ms	126.0ms	118.0ms	98.0ms	123.0ms

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