MIC 750~3300TL-X

- Maximum efficiency of 97.6%
- Compact design
- Touch key& OLED display
- Flexible monitoring options
- AFCI optional

GROWATT

POWER-ING TOMO-RROW

www.ginverter.com

Datasheet	MIC 750TL-X	MIC 1000TL-X	MIC 1500TL-X	MIC 2000TL-X	MIC 2500TL-X	MIC 3000TL-X	MIC 3300TL-X
Input data (DC)							
Max. recommended PV power (for module STC)	1050W	1400W	2100W	2800W	3500W	4200W	4290W
Max. DC voltage	500V	500V	500V	500V	550V	550V	550V
Start voltage	50V	50V	50V	50V	80V	80V	80V
Nominal voltage	120V	180V	250V	360V	360V	360V	360V
MPP voltage range	50V-500V	50V-500V	50V-500V	50V-500V	65V-550V	65V-550V	65V-550V
No. of MPP trackers	1						
No. of PV strings per MPP tracker	1						
Max. input current per MPP tracker	13A						
Max. short-circuit current per MPP tracker	16A						
Output data (AC)							
AC nominal power	750W	1000W	1500W	2000W	2500W	3000W	3300W
Max. AC apparent power	750VA	1000VA	1500VA	2000VA	2500VA	3000VA	3300VA
Nominal AC voltage(range*)	230V (180-280V)						
AC grid frequency(range*)	50/60 Hz (45-55Hz/55-65 Hz)						
Max. output current	3.6A	4.8A	7.1A	9.5A	11.9A	14.3A	14.3A
Adjustable power factor	0.8leading…0.8lagging						
THDi	<3%						
AC grid connection type	Single phase						
Efficiency							
Max.efficiency	97.4%	97.4%	97.4%	97.4%	97.6%	97.6%	97.6%
European efficiency	96.5%	96.5%	97.0%	97.0%	97.0%	97.1%	97.1%
MPPT efficiency	99.9%						
Protection devices							
DC reverse polarity protection	Yes						
DC switch	Yes						
AC/DC surge protection	Type III / Type III						
Insulation resistance monitoring	Yes						
AC short-circuit protection	Yes						
Ground fault monitoring	Yes						
Grid monitoring	Yes						
Anti-islanding protection	Yes						
Residual-current monitoring unit	Yes						
AFCI protection	Optional						
General data							
Dimensions (W / H / D)	274/254/138mm						
Weight	6kg	6kg	6kg	6kg	6.2kg	6.2kg	6.2kg
Operating temperature range	–25°C ... +60°C						
Nighttime power consumption	< 0.5W						
Topology	Transformerless						
Cooling	Natural convection						
Protection degree	IP65						
Relative humidity	0-100%						
Altitude	4000m						
DC connection	H4/MC4(Optional)						
AC connection	Connector						
Display	OLED+LED/WIFI+APP						
Interfaces: RS485 / USB/Wi-Fi/ GPRS/ RF/LAN	Yes/Yes/Optional/Optional/Optional /Optional						
Warranty: 5 years / 10 years	Yes /Optional						
CE,AS4777, AS/NZS 3100, CEI 0-21, VDE-AR-N 4105, VDE 0126-1-1, UTE C 15-712-1, EN50549, IEC 60068, IEC 61683, IEC 62116, IEC 61727, INMETRO, G98, C10/C11, UNE217001, UNE206007, PO12.2							

* The AC voltage and frequency range may vary depending on specific country grid standard.
All specifications are subject to change without notice.

SHENZHEN GROWATT NEW ENERGY CO.,LTD. A: 4-13/F,Building A,Sino-German(Europe)Industrial Park,Hangcheng Ave,Bao'an District,Shenzhen,China
T: + 86 755 2747 1900 F: + 86 755 2749 1460 E: info@ginverter.com

Warranty claim procedure:

Please report the potentially defective devices to your supplier to identify.

Supplier is required to send the warranty claim form to Growatt or authorized service partner with all the necessary information.

Customers must present this warranty card, inverter purchasing & Installation invoice, and other related materials as well if required.

Please fill in the required information below when your device is defective, scan and send or email it to your supplier with all the information or contact Growatt service team directly.

Please note Growatt reserve the ultimate explanation right on this warranty card.

End User Information
Customer name:
Phone number:
Email:
Detailed address:

Product Information
Inverter Model:
Serial No.(S/N):
Purchase date:
Dealer/Installer:
Commissioning data:

Warranty Card

powering tomorrow
Growatt

Growatt New Energy Co.,Ltd
www.ginverter.com
T: +86 755 2747 1942
F: +86 755 2749 1460
service@ginverter.com

Growatt Factory Warranty

For the inverter with this warranty card you purchased, you receive a Growatt factory warranty valid for 10 years from the date of installation and no more than five and a half years from the delivery date from Growatt New Energy Co.,Ltd.

Warranty Exclusions

- Breaking the product seal (opening the casing) without proper approval
- Failure to observe the user manual, the installation guide, and the maintenance regulations
- Unauthorized Modifications, changes, or attempted repairs
- Incorrect use or inappropriate operation
- Insufficient ventilation of the device
- Failure to observe the applicable safety regulations
- Force majeure (e.g., lightning, over voltage, storm, fire)
- Goods bought from one-off sales by private sellers, such as a private garage sale or school fetes
- Goods purchased at a traditional auction
- Goods purchased to be resold or transformed into a product that is on-sold
- Services for transportation or storage of business goods, or
- Fitness for purpose of professional services provided by a qualified architect or engineer

If you would like to purchase an extension of Growatt factory warranty based on the 5 year term of Growatt factory warranty, please contact Growatt to get the price and an extending warranty card for apply.

Warranty condition

If a device becomes defective during the agreed Growatt factory warranty period and provided that it will not be impossible or unreasonable, the device will be, as selected by Growatt:

- repaired by Growatt, or
- repaired on-site, or
- exchanged for a replacement device of equivalent value according to model and age.

Note： UK models only provide warranty service for UK and Ireland client.

In the latter case, the remainder of the warranty entitlement will be transferred to the replacement device. In this case, you do not receive a new certificate since your entitlement is documented at Growatt.

Excessiveness in the meaning above exists in particular if the cost of the measures for Growatt would be unreasonable

- after consideration of alternative workaround possibilities that Growatt customers could revert to without significant inconvenience.

Form C: Type Test Verification Report

Type Approval and **Manufacturer** declaration of compliance with the requirements of G98.

This form should be used when making a Type Test submission to the Energy Networks Association (ENA).

If the **Micro-generator** is **Fully Type Tested** and already registered with the ENA **Type Test Verification Report** Register, the **Installation Document** should include the **Manufacturer**'s Reference Number (the Product ID), and this form does not need to be submitted.

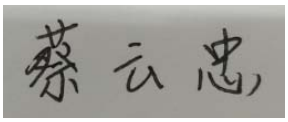
Where the **Micro-generator** is not registered with the ENA **Type Test Verification Report** Register this form needs to be completed and provided to the **DNO**, to confirm that the **Micro-generator** has been tested to satisfy the requirements of this EREC G98.

Manufacturer's reference number	Growatt 3000S 2019
Micro-generator technology	Growatt 750-S , Growatt 1000-S , Growatt 1500-S , Growatt 2000-S, Growatt 2500-S, Growatt 3000-S
Manufacturer name	Growatt New Energy Technology Co., Ltd.
Address	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

Tel	+86 755 2951 5888	Fax	+86 755 2951 5888
E-mail	yunzhong.cai@growatt.com	Web site	www.ginverter.com

Registered Capacity, use separate sheet if more than one connection option.	Connection Option	
	0.75-3	kW single phase, single, split or three phase system
	N/A	kW three phase
	N/A	kW two phases in three phase system
	N/A	kW two phases split phase system

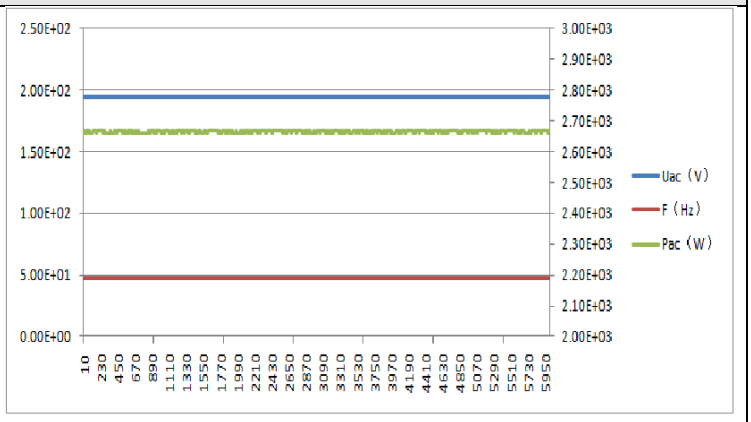
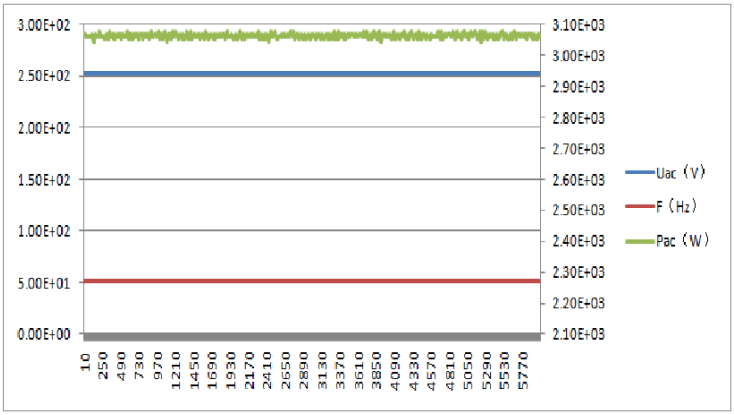
Manufacturer Type Test declaration. - I certify that all products supplied by the company with the above **Type Tested** reference number will be manufactured and tested to ensure that they perform as stated in this document, prior to shipment to site and that no site modifications are required to ensure that the product meets all the requirements of EREC G98.

Signed		On behalf of	Growatt New Energy Technology Co., Ltd.

Note that testing can be done by the **Manufacturer** of an individual component or by an external test house.

Where parts of the testing are carried out by persons or organisations other than the **Manufacturer** then that person or organisation shall keep copies of all test records and results supplied to them to verify that

the testing has been carried out by people with sufficient technical competency to carry out the tests.
1.Operating Range: This test should be carried out as specified in EN 50438 D.3.1. **Active Power** shall be recorded every second. The tests will verify that the **Micro-generator** can operate within the required ranges for the specified period of time. The **Interface Protection** shall be disabled during the tests. In case of a PV **Micro-generator** the PV primary source may be replaced by a **DC** source. In case of a full converter **Micro-generator** (eg wind) the primary source and the prime mover **Inverter**/rectifier may be replaced by a **DC** source. In case of a DFIG **Micro-generator** the mechanical drive system may be replaced by a test bench motor.

Test 1 Voltage = 85% of nominal (195.5 V) Frequency = 47.5 Hz Power factor = 1 Period of test 90 minutes	
Test 2 Voltage = 110% of nominal (253 V). Frequency = 51.5 Hz Power factor = 1 Period of test 90 minutes	

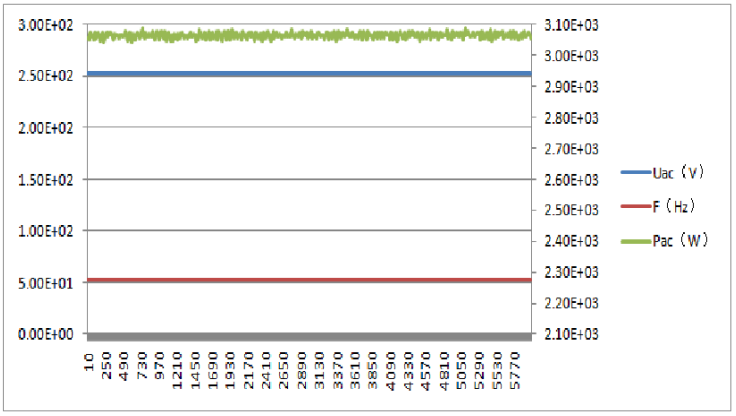
Test 3

Voltage = 110% of nominal (253 V).

Frequency = 52.0 Hz

Power factor = 1

Period of test 15 minutes



2.Power Quality – Harmonics: These tests should be carried out as specified in BS EN 61000-3-2. The chosen test should be undertaken with a fixed source of energy at two power levels a) between 45 and 55% and b) at 100% of Registered Capacity. The test requirements are specified in Annex A1 A.1.3.1 (Inverter connected) or Annex A2 A.2.3.1 (Synchronous).

Micro-generator tested to BS EN 61000-3-2

Micro-generator rating per phase (rpp)			3	kW		
Harmonic	At 45-55% of **Registered Capacity**		100% of **Registered Capacity**			
	Measured Value MV in Amps	Normalised Value (NV) in Amps	Measured Value MV in Amps	Normalised Value (NV) in Amps	Limit in BS EN 61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2	0.065	0.080	0.11	0.135	1.080	
3	0.187	0.229	0.21	0.258	2.300	
4	0.027	0.033	0.04	0.049	0.430	
5	0.113	0.139	0.131	0.161	1.140	
6	0.019	0.023	0.029	0.036	0.300	
7	0.069	0.085	0.079	0.097	0.770	
8	0.007	0.009	0.009	0.011	0.230	
9	0.045	0.055	0.059	0.072	0.400	
10	0.005	0.006	0.019	0.023	0.184	
11	0.027	0.033	0.049	0.060	0.330	

12	0.007	0.009	0.009	0.011	0.153	
13	0.007	0.009	0.051	0.063	0.210	
14	0.007	0.009	0.021	0.026	0.131	
15	0.008	0.010	0.031	0.038	0.150	
16	0.008	0.010	0.021	0.026	0.115	
17	0.017	0.021	0.049	0.060	0.132	
18	0.007	0.009	0.019	0.023	0.102	
19	0.027	0.033	0.049	0.060	0.118	
20	0.007	0.009	0.019	0.023	0.092	
21	0.037	0.045	0.069	0.085	0.107	0.160
22	0.017	0.021	0.019	0.023	0.084	
23	0.027	0.033	0.059	0.072	0.098	0.147
24	0.007	0.009	0.029	0.036	0.077	
25	0.037	0.045	0.059	0.072	0.090	0.135
26	0.007	0.009	0.009	0.011	0.071	
27	0.027	0.033	0.037	0.045	0.083	0.124
28	0.007	0.009	0.007	0.009	0.066	
29	0.038	0.047	0.049	0.060	0.078	0.117
30	0.008	0.010	0.009	0.011	0.061	
31	0.018	0.022	0.029	0.036	0.073	0.109
32	0.007	0.009	0.017	0.021	0.058	
33	0.017	0.021	0.027	0.033	0.068	0.102
34	0.007	0.009	0.019	0.023	0.054	
35	0.017	0.021	0.029	0.036	0.064	0.096
36	0.007	0.009	0.009	0.011	0.051	
37	0.007	0.009	0.019	0.023	0.061	0.091
38	0.007	0.009	0.009	0.011	0.048	

39	0.007	0.009	0.019	0.023	0.058	0.087
40	0.008	0.010	0.011	0.013	0.046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

3.Power Quality – Voltage fluctuations and Flicker: These tests should be undertaken in accordance with EREC G98 Annex A1 A.1.3.3 (**Inverter** connected) or Annex A2 A.2.3.3 (Synchronous).

	Starting			Stopping			Running	
	d max	d c	d(t)	d max	d c	d(t)	P_{st}	P_{lt} 2 hours
Measured Values at test impedance	1.08	0.03	0	1.08	0.25	0	0.21	0.15
Normalised to standard impedance	1.08	0.03	0	1.08	0.25	0	0.21	0.15
Normalised to required maximum impedance	--	--	--	--	--	--	--	--
Limits set under BS EN 61000-	4%	3.3%	3.3%	4%	3.3%	3.3%	1.0	0.65

3-11								
Test Impedance	R	0.4	Ω	X	0.25	Ω		
Standard Impedance	R	0.4	Ω	X	0.25	Ω		
Maximum Impedance	R	-	Ω	X	-	Ω		

Applies to three phase and split single phase **Micro-generators**.

^ Applies to single phase **Micro-generators** and **Micro-generators** using two phases on a three phase system.

For voltage change and flicker measurements the following formula is to be used to convert the measured values to the normalised values where the power factor of the generation output is 0.98 or above.

Normalised value = Measured value*reference source resistance/measured source resistance at test point.

Single phase units reference source resistance is 0.4 Ω

Two phase units in a three phase system reference source resistance is 0.4 Ω.

Two phase units in a split phase system reference source resistance is 0.24 Ω.

Three phase units reference source resistance is 0.24 Ω.

Where the power factor of the output is under 0.98 then the X to R ratio of the test impedance should be close to that of the Standard Impedance.

The stopping test should be a trip from full load operation.

The duration of these tests need to conform to the particular requirements set out in the testing notes for the technology under test. Dates and location of the test need to be noted below.

Test start date	12,DEC,2018	Test end date	12,DEC,2018
Test location	Growatt R&D Test Lab		

4.Power quality – DC injection: This test should be carried out in accordance with EN 50438 Annex D.3.10

Test power level(3KW)	20%	50%	75%	100%
Recorded value in Amps	15.5 mA	13.1 mA	14.8mA	15.7mA
as % of rated	0.12%	0.1%	0.11%	0.12%

AC current				
Limit	0.25%	0.25%	0.25%	0.25%
Test power level(2.5KW)	20%	50%	75%	100%
Recorded value in Amps	12.8 mA	11.5mA	13.1mA	12.6mA
as % of rated AC current	0.11%	0.1%	0.12%	0.11%
Limit	0.25%	0.25%	0.25%	0.25%
Test power level(2KW)	20%	50%	75%	100%
Recorded value in Amps	12.1 mA	12.5 mA	11.1mA	12.4mA
as % of rated AC current	0.13%	0.12%	0.11%	0.14%
Limit	0.25%	0.25%	0.25%	0.25%
Test power level(1.5KW)	20%	50%	75%	100%
Recorded value in Amps	11.2mA	11.5 mA	11.3mA	12.1mA
as % of rated AC current	0.17%	0.7%	0.17%	0.18%
Limit	0.25%	0.25%	0.25%	0.25%
Test power level(1KW)	20%	50%	75%	100%
Recorded value in Amps	7.5mA	7.8mA	7.5mA	8.1mA

as % of rated AC current	0.17%	0.17%	0.17%	0.18%
Limit	0.25%	0.25%	0.25%	0.25%
Test power level(0.75KW)	20%	50%	75%	100%
Recorded value in Amps	6.3 mA	6.7 mA	6.1mA	6.5mA
as % of rated AC current	0.19%	0.21%	0.19%	0.20%
Limit	0.25%	0.25%	0.25%	0.25%

5.Power Quality – Power factor: This test shall be carried out in accordance with EN 50548 Annex D.3.4.1 but with nominal voltage -6% and +10%. Voltage to be maintained within ±1.5% of the stated level during the test.

	216.2 V	230 V	253 V
20% of **Registered Capacity**	0.99182	0.99038	0.98096
50% of **Registered Capacity**	0.99845	0.99799	0.99777
75% of **Registered Capacity**	0.99913	0.99924	0.99861
100% of **Registered Capacity**	0.99932	0.99929	0.99928
Limit	>0.95	>0.95	>0.95

6.Protection – Frequency tests: These tests should be carried out in accordance with EN 50438 Annex D.2.4 and the notes in EREC G98 Annex A1 A.1.2.3 (**Inverter** connected) or Annex A2 A.2.2.3 (Synchronous)

Function	Setting		Trip test		"No trip tests"	
	Frequency	Time delay	Frequency	Time delay	Frequency /time	Confirm no trip
U/F stage	47.5 Hz	20 s	47.51Hz	20.04s	47.7 Hz	No Trip

1					25 s	
U/F stage 2	47 Hz	0.5 s	47.01Hz	0.52s	47.2 Hz 19.98 s	No Trip
					46.8 Hz 0.48 s	No Trip
O/F stage 1	52 Hz	0.5 s	52.0Hz	0.988s	51.8 Hz 89.98 s	No Trip
					52.2 Hz 0.48 s	No Trip
Note. For frequency trip tests the frequency required to trip is the setting ± 0.1 Hz. In order to measure the time delay a larger deviation than the minimum required to operate the projection can be used. The "No trip tests" need to be carried out at the setting ± 0.2 Hz and for the relevant times as shown in the table above to ensure that the protection will not trip in error.						
7.Protection – Voltage tests: These tests should be carried out in accordance with EN 50438 Annex D.2.3 and the notes in EREC G98 Annex A1 A.1.2.2 (**Inverter** connected) or Annex A2 A.2.2.2 (Synchronous)						
Function	Setting		Trip test		"No trip tests"	
	Voltage	Time delay	Voltage	Time delay	Voltage /time	Confirm no trip
U/V	184 V	2.5 s	184.5V	2.655s	188 V 3.50 s	No Trip
					180 V 2.48 s	No Trip
O/V stage 1	262.2 V	1.0 s	262.78V	1.052s	258.2 V 2.0 s	No Trip
O/V stage 2	273.7 V	0.5 s	274V	0.574s	269.7 V 0.98 s	No Trip
					277.7 V 0.48 s	No Trip
Note for Voltage tests the Voltage required to trip is the setting ±3.45 V. The time delay can be measured at a larger deviation than the minimum required to operate the protection. The No trip tests need to be carried out at the setting ±4 V and for the relevant times as shown in the table above to ensure that the protection will not trip in error.						
8.Protection – Loss of Mains test: For PV Inverters shall be tested in accordance with BS EN 62116. Other Inverters should be tested in accordance with EN 50438 Annex D.2.5 at 10%, 55% and 100% of rated power.						
To be carried out at three output power levels with a tolerance of plus or minus 5% in Test Power levels.						
Test Power	10%	55%	100%	10%	55%	100%

Balancing load on islanded network	95% of **Registered Capacity**	95% of **Registered Capacity**	95% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**
Trip time. Limit is 0.5 s	0.29s	0.34s	0.31s	0.32s	0.31s	0.30s
For Multi phase **Micro-generators** confirm that the device shuts down correctly after the removal of a single fuse as well as operation of all phases.						
Test Power	10%	55%	100%	10%	55%	100%
Balancing load on islanded network	95% of **Registered Capacity**	95% of **Registered Capacity**	95% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**
Trip time. Ph1 fuse removed	/	/	/	/	/	/
Test Power	10%	55%	100%	10%	55%	100%
Balancing load on islanded network	95% of **Registered Capacity**	95% of **Registered Capacity**	95% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**
Trip time. Ph2 fuse removed	/	/	/	/	/	/
Test Power	10%	55%	100%	10%	55%	100%
Balancing load on islanded network	95% of **Registered Capacity**	95% of **Registered Capacity**	95% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**	105% of **Registered Capacity**
Trip time. Ph3 fuse removed	/	/	/	/	/	/
Note for technologies which have a substantial shut down time this can be added to the 0.5 s in establishing that the trip occurred in less than 0.5 s. Maximum shut down time could therefore be up to 1.0 s for these technologies.						
Indicate additional shut down time included in above results.				0.3ms		
For **Inverters** tested to BS EN 62116 the following sub set of tests should be recorded in the following table.						
Test Power and imbalance	33% -5% Q Test 22	66% -5% Q Test 12	100% -5% P Test 5	33% +5% Q Test 31	66% +5% Q Test 21	100% +5% P Test 10

Trip time. Limit is 0.5 s	0.31s	0.31s	0.30s	0.34s	0.29s	0.29s

9.Protection – Frequency change, Vector Shift Stability test: This test should be carried out in accordance with EREC G98 Annex A1 A.1.2.6 (**Inverter** connected) or Annex A2 A.2.2.6 (Synchronous).

	Start Frequency	Change	Confirm no trip
Positive Vector Shift	49.0 Hz	+50 degrees	No Trip
Negative Vector Shift	50.0 Hz	- 50 degrees	No Trip

10.Protection – Frequency change, RoCoF Stability test: The requirement is specified in section 11.3, test procedure in Annex A.1.2.6 (**Inverter** connected) or Annex A2 A.2.2.6 (Synchronous).

Ramp range	Test frequency ramp:	Test Duration	Confirm no trip
49.0 Hz to 51.0 Hz	+0.95 Hzs^{-1}	2.1 s	No Trip
51.0 Hz to 49.0 Hz	-0.95 Hzs^{-1}	2.1 s	No Trip

11.Limited Frequency Sensitive Mode – Overfrequency test: This test should be carried out in accordance with EN 50438 Annex D.3.3 Power response to over- frequency. The test should be carried out using the specific threshold frequency of 50.4 Hz and **Droop** of 10%.

Test sequence at **Registered Capacity** >80%	Measured **Active Power** Output	Frequency	Primary Power Source	**Active Power** Gradient
Step a) 50.00 Hz ±0.01 Hz	3001.32W	50.002Hz	3016.03W	-
Step b) 50.45 Hz ±0.05 Hz	2968.71W	50.451Hz		-
Step c) 50.70 Hz ±0.10 Hz	2818.73W	50.7Hz		-
Step d) 51.15 Hz ±0.05 Hz	2550.85W	50.152Hz		-
Step e) 50.70 Hz ±0.10 Hz	2818.35W	50.701Hz		-
Step f) 50.45 Hz ±0.05 Hz	2968.43W	50.451Hz		-
Step g) 50.00 Hz ±0.01 Hz	3002.59W	50.001Hz		
Test sequence at **Registered Capacity** 40% - 60%	Measured **Active Power** Output	Frequency	Primary Power Source	**Active Power** Gradient
Step a) 50.00 Hz ±0.01 Hz	1502.12W	50Hz	1513.37W	-
Step b) 50.45 Hz ±0.05 Hz	1485.7W	50.451Hz		-
Step c) 50.70 Hz ±0.10 Hz	1410.13W	50.701Hz		-

Step d) 51.15 Hz ±0.05 Hz	1270.2W	51.151Hz		-
Step e) 50.70 Hz ±0.10 Hz	1410.38W	50.701Hz		-
Step f) 50.45 Hz ±0.05 Hz	1485.41W	50.45Hz		-
Step g) 50.00 Hz ±0.01 Hz	1505.13W	50Hz		
Steps as defined in EN 50438				

12.Power output with falling frequency test: This test should be carried out in accordance with EN 50438 Annex D.3.2 active power feed-in at under-frequency.

Test sequence	Measured **Active Power** Output	Frequency	Primary power source
Test a) 50 Hz ± 0.01 Hz	3032.02 W	49.999 Hz	3253.08 W
Test b) Point between 49.5 Hz and 49.6 Hz	3038.58 W	49.551 Hz	3260.83 W
Test c) Point between 47.5 Hz and 47.6 Hz	2910.21 W	47.552 Hz	3188.49 W
NOTE: The operating point in Test (b) and (c) shall be maintained for at least 5 minutes			

13.Re-connection timer.

Test should prove that the reconnection sequence starts after a minimum delay of 20 s for restoration of voltage and frequency to within the stage 1 settings of Table 2.

Time delay setting	Measured delay		Checks on no reconnection when voltage or frequency is brought to just outside stage 1 limits of table 2.			
20s	20s		At 266.2 V	At 196.1V	At 47.4 Hz	At 52.1 Hz
Confirmation that the **Micro-generator** does not re-connect.			Yes	Yes	Yes	Yes

14.Fault level contribution: These tests shall be carried out in accordance with EREC G98 Annex A1 A.1.3.5 (**Inverter** connected) and Annex A2 A.2.3.4 (Synchronous).

For machines with electro-magnetic output			For **Inverter** output		
Parameter	Symbol	Value	Time after fault	Volts	Amps
Peak Short Circuit current	i_p	/	20 ms	81.2V	29.3A
Initial Value of aperiodic current	A	/	100 ms	77.3V	22.5A
Initial symmetrical short-circuit	I_k	/	250 ms	76.9V	16.1A

current*					
Decaying (aperiodic) component of short circuit current*	i_{DC}	/	500 ms	73.5V	8.6A
Reactance/Resistance Ratio of source*	$^{X}/_{R}$	/	Time to trip	0.11	In seconds
For rotating machines and linear piston machines the test should produce a 0 s – 2 s plot of the short circuit current as seen at the **Micro-generator** terminals. * Values for these parameters should be provided where the short circuit duration is sufficiently long to enable interpolation of the plot					

15.Logic Interface.	Yes
This equipment is equipped with RJ45 terminal for logic interface that being received the signal from the DNO, the connection should be installed per installation manual, and the signal should be a simple binary output that captured by RJ45 terminal(PIN 5 and 1 for detecting the signal). Once the signal actived, the inverter will reduce its active power to zero within 5s.	
16.Self-Monitoring solid state switching: No specified test requirements. Refer to EREC G98 Annex A1 A.1.3.6 (**Inverter** connected).	Yes/or NA
It has been verified that in the event of the solid state switching device failing to disconnect the **Micro-generator**, the voltage on the output side of the switching device is reduced to a value below 50 V within 0.5 s.	NA
Additional comments	