

TEST REPORT

Note:


1. This report does not imply the compliance of all requirements of above standards. It is only partial checking according to above standards.
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3. When determining of test conclusion, measurement uncertainty of test has been considered.

Electrical Rating:

Input: 70V-550Vdc, Max. 15A/15A, Full load MPPT range: 175-500Vdc

Output: 230Vac, 50Hz, 5000VA, 21.8A

Class I, IP 65

GROWATT PV Grid Inverter	
Model Name	Growatt 5500MTL-S
Certificate Number	SAA150836
U_{DC max}	550V
I_{DC max}	15A/15A
U_{DC range}	70V-550V
V_{AC nom}	230V
f_{AC nom}	50Hz
S_{AC nom}	5000VA
I_{AC nom}	21.8A
Power Factor	0.8leading-0.95laging
Protection Degree	IP65
Protection Class	Class I
Operation Ambient Temperature	-25°C~+60°C
AS 4777	IEC62109
 SAA N136	

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TEST REPORT

Test Results:

<u>Clause</u>	<u>Title/ Description</u>	<u>Pass</u>	<u>Fail</u>	<u>N.A.</u>	<u>Comment¹</u>
IEC 61683: 1999 (Cl.6)	Power efficiency	✓			
IEC 61683: 1999 (Cl.7)	Loss measurement	✓			
IEC 60068-2-1:2007 (Cl. 5.2)	Test A: Cold	✓			
IEC 60068-2-2:2007 (Cl. 5.2)	Test B: Dry heat	✓			
IEC 60068-2-14:2009 (Cl. 7)	Test N: Change of temperature	✓			
IEC 60068-2-30:2005 (Cl. 7)	Test Db: Damp heat, cyclic	✓			

Remark:

1. If there is special attention or condition needed to be pointed out, it can be written down in the column of "comment".

***** End of Page *****

TEST REPORT

Test Results:

IEC 61683: 1999

Power efficiency

a) Test condition: Rated input voltage: 175.0 Vdc, Resistive load:

Power level	10%	25%	50%	75%	100%	120%
Input voltage (V)	174.851	175.032	175.26	175.502	175.580	--
Input current (A)	2.988	7.473	14.573	22.290	29.650	--
Input power (kW)	0.5224	1.308	2.554	3.912	5.206	--
Output voltage (V)	230.732	230.852	230.960	230.968	230.851	--
Output current (A)	2.137	5.445	10.621	16.201	21.451	--
Output power (kW)	0.493	1.257	2.453	3.742	4.952	--
Efficiency (%)	94.367	96.100	96.045	95.655	95.121	--
Power factor	0.9548	0.9902	0.9943	0.9973	0.9984	--

b) Test condition: Rated input voltage: 370.0 Vdc, Resistive load:

Power level	10%	25%	50%	75%	100%	120%
Input voltage (V)	365.415	365.093	365.022	364.825	364.610	--
Input current (A)	1.383	3.586	7.167	10.777	14.332	--
Input power (kW)	0.505	1.309	2.615	3.824	5.220	--
Output voltage (V)	230.789	230.944	230.894	230.854	230.889	--
Output current (A)	2.177	5.544	11.019	16.044	21.790	--
Output power (kW)	0.486	1.273	2.539	3.703	5.024	--
Efficiency (%)	96.238	97.250	97.094	96.836	96.245	--
Power factor	0.9685	0.9944	0.9983	0.9986	0.9989	--

c) Test condition: Rated input voltage: 500.0 Vdc, Resistive load:

Power level	10%	25%	50%	75%	100%	120%
Input voltage (V)	491.547	498.285	497.456	497.870	502.157	--
Input current (A)	1.025	2.624	5.229	7.793	10.387	--
Input power (kW)	0.504	1.307	2.601	3.879	5.208	--
Output voltage (V)	230.791	230.953	230.923	230.905	230.968	--
Output current (A)	2.249	5.571	10.996	16.334	21.823	--
Output power (kW)	0.481	1.268	2.524	3.754	5.016	--
Efficiency (%)	95.436	97.016	97.040	96.777	96.313	--
Power factor	0.9273	0.9857	0.9942	0.9954	0.9952	--

***** End of Page *****

TEST REPORT

Test Results:

IEC 61683: 1999
Power efficiency

7 Loss measurement

7.1 No-load loss

a) manufacturer's minimum rated input voltage: 175.0Vdc

Input voltage (V)	Input current (mA)	Input power W1 (W)	Output voltage (V)	Frequency (Hz)	Output power W2 (W)
176.244	34.450	6.073	--	--	0

b) the inverter's nominal voltage or average of its rated input range: 370.0Vdc

Input voltage (V)	Input current (mA)	Input power W1 (W)	Output voltage (V)	Frequency (Hz)	Output power W2 (W)
370.865	20.006	7.420	--	--	0

c) 90% of the inverter's maximum input voltage: 500.0Vdc

Input voltage (V)	Input current (mA)	Input power W1 (W)	Output voltage (V)	Frequency (Hz)	Output power W2 (W)
502.590	16.625	8.356	--	--	0

7.2 Standby loss

Input voltage (V)	Input power W1 (W)	Output voltage (V)	Frequency (Hz)	Output current (A)	Output power W2 (W)
--	--	230.567	50	0.1448	0.017

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TEST REPORT

Test Results:

IEC 60068-2-1: 2007 Test A: Cold

Clause 5.2 Test Ab: Cold for non heat-dissipating specimens with gradual change of temperature

The specimen is introduced into the chamber which is at the temperature of the laboratory. The temperature is then adjusted to the temperature appropriate to the degree of severity, as specified in the relevant specification. After temperature stability of the test specimen has been reached, the specimen is exposed to these conditions for the specified duration. For specimens that are required to be operational (even though they do not meet the requirements of being heat dissipating), power shall then be applied to the specimen and a functional test is performed as necessary. A further period of stabilization may be necessary and the specimen shall then be exposed to the low temperature conditions for a duration as specified in the relevant specification. Specimens under test are normally in non-operating conditions.
Specimens under test are normally in non-operating conditions.

Test condition:

Test Temperature : -15°C
Test Duration : 16h

Test result:

After the test, the specimens can operation normally.

IEC 60068-2-2: 2007 Test B: Dry heat

Clause 5.2 Test Bb: Dry heat for non heat-dissipating specimens with gradual change of temperature

The specimen is introduced into the chamber, which is at the temperature of the laboratory. The temperature is then adjusted to the temperature appropriate to the degree of severity as specified in the relevant specification. After temperature stability of the test specimen has been reached, the specimen is exposed to these conditions for the specified duration. For specimens that are required to be operational (even though they do not meet the requirements of being heat dissipating) power shall then be applied to the specimen and a functional test is performed as necessary. A further period of stabilization may be necessary and the specimen shall then be exposed to the high temperature conditions for a duration as specified in the relevant specification.
Specimens under test are normally in non-operating conditions.

Test condition:

Test Temperature : +60°C
Test Duration : 16h

Test result:

After the test, the specimens can operation normally.

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TEST REPORT

Test Results:

IEC 60068-2-14: 2009 Test N: Change of temperature

Clause 7 Test Na: Rapid change of temperature with prescribed time of transfer

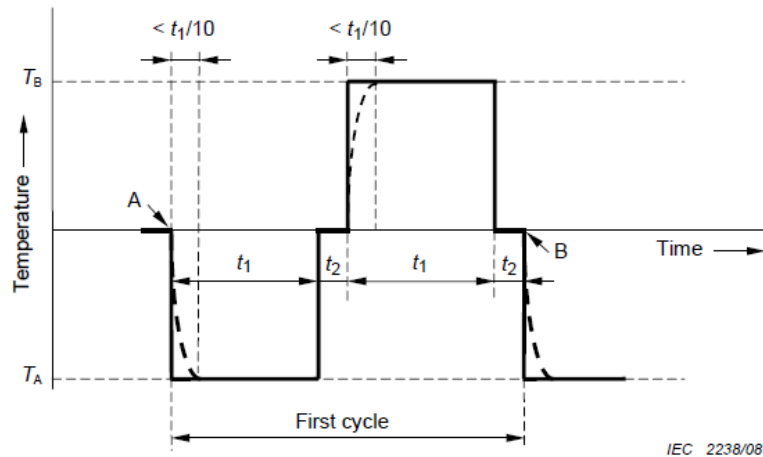
The severity of the test is defined by the combination of the two temperatures, the transfer time, the exposure time of the specimen and the number of cycles.

The lower temperature, T_A , shall be specified in the relevant specification and should be chosen from the test temperatures of IEC 60068-2-1 and IEC 60068-2-2.

The higher temperature, T_B , shall be specified in the relevant specification and should be chosen from the test temperatures of IEC 60068-2-1 and IEC 60068-2-2.

The exposure time, t_1 , of each of the two temperatures depends upon the heat capacity of the specimen. It may be 3 h, 2 h, 1 h, 30 min or 10 min, or as specified in the relevant specification. Where no exposure period is specified in the relevant specification, it is understood to be 3 h.

The preferred number of test cycles is five, unless otherwise specified in the relevant specification.



Key

- A start of first cycle
- B end of first cycle and start of second cycle

NOTE The dotted curve is explained above.

Figure 2 – Na test cycle

Test condition:

- Low temperature T_A : -15°C
- High temperature T_B : +60°C
- Duration of exposure time t_1 : 3h
- Duration of transfer time t_2 : 3min
- Number of cycles: 5
- Recovery: 2h

Test result:

Initial measurements: Input: 388Vdc; 13.415A; 5.207kW Output: 230Vac; 21.747A; 5.013kW; 50Hz
 Final measurements: Input: 388Vdc; 13.266A; 5.143kW Output: 230Vac; 21.526A; 4.962kW; 50Hz

After the test, the specimens can operation normally.

***** End of Page *****

TEST REPORT

Test Results:

IEC 60068-2-30: 2005 Test Db: Damp heat, cyclic

Clause 7 Test Na: Rapid change of temperature with prescribed time of transfer

Variant 2 (see Figure 2b)

The temperature shall be lowered to $25\text{ }^{\circ}\text{C} \pm 3\text{ K}$ within 3 h to 6 h, but without the additional requirement for the first hour and one half as in variant 1. The relative humidity shall be not less than 80 % RH.

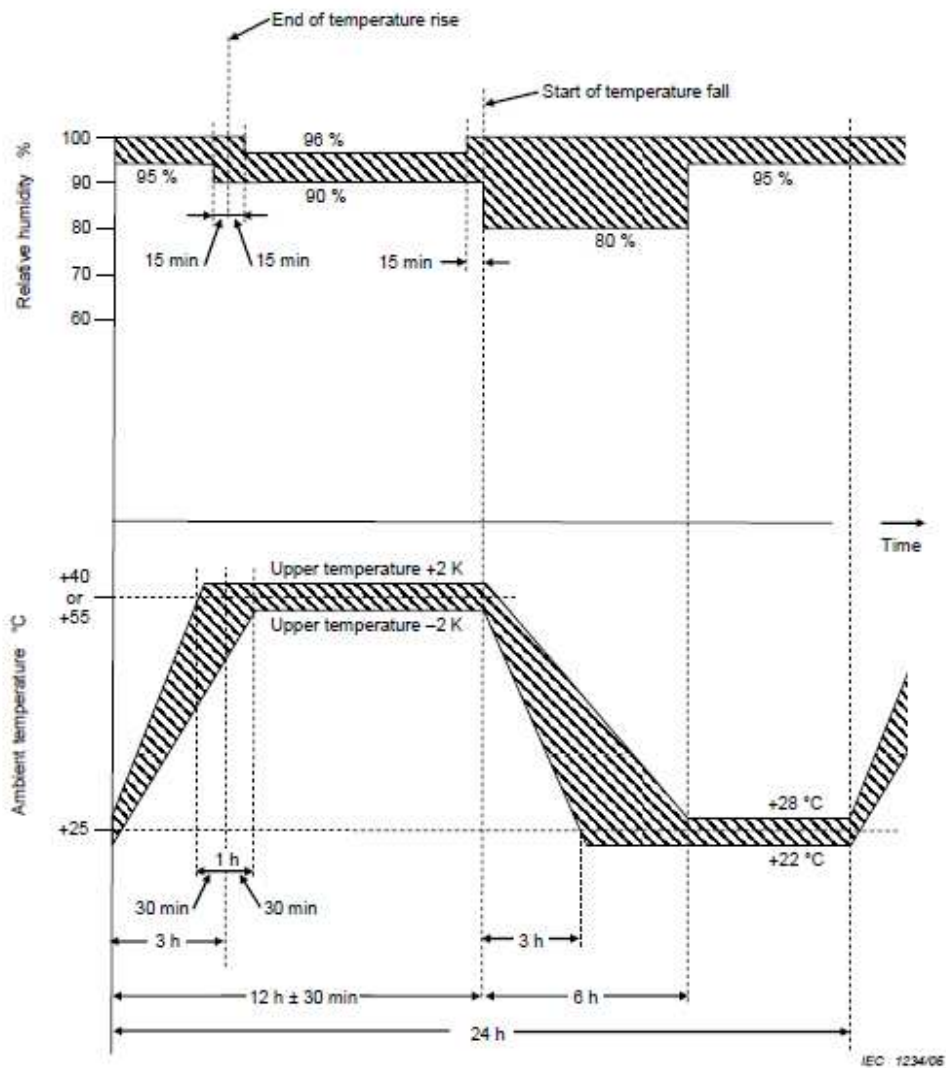


Figure 2b – Test Db – Test cycle – Variant 2

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TEST REPORT

Test Results:

Test condition:

Test Db, variant 2, b-cycle
The humidity level shall be 95 % ± 5 %
A minimum number of 3 cycles
Lower temperature: 25°C
Upper temperature: 40°C

Test result:

Initial measurements: Input: 388Vdc; 13.418A; 5.208kW Output: 230Vac; 21.752A; 5.014kW, 50Hz
Final measurements: Input: 388Vdc; 13.356A; 5.157kW Output: 230Vac, 21.543A, 4.966kW, 50Hz

After the test, the specimens can operation normally.

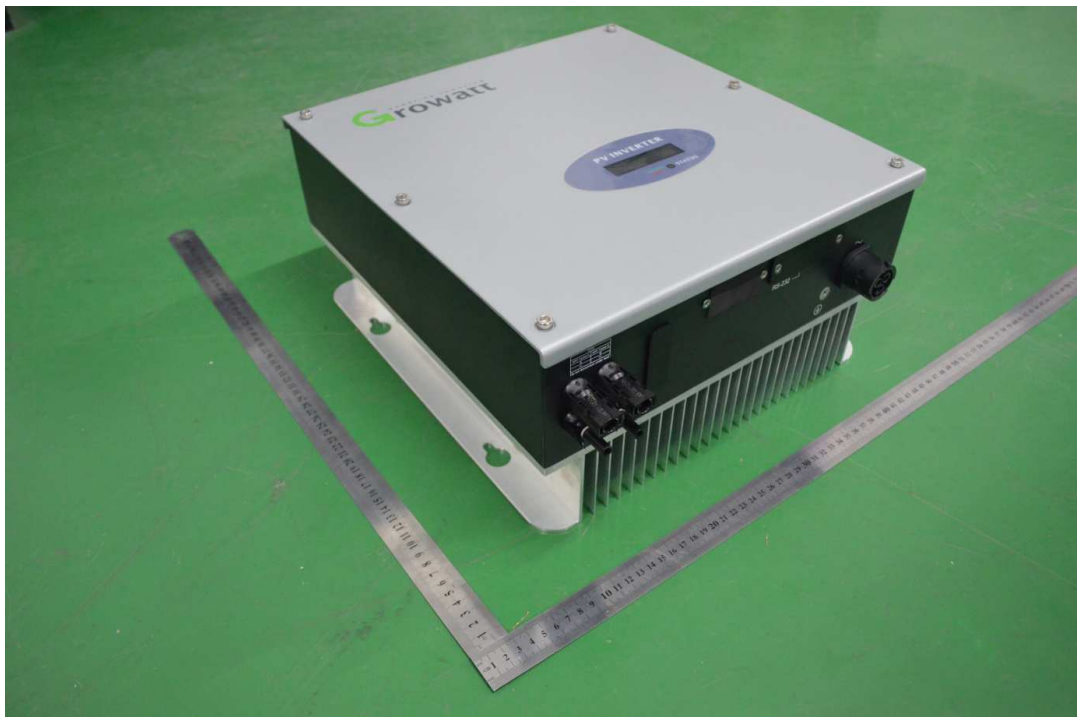
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TEST REPORT

Appendix 1: Photo document

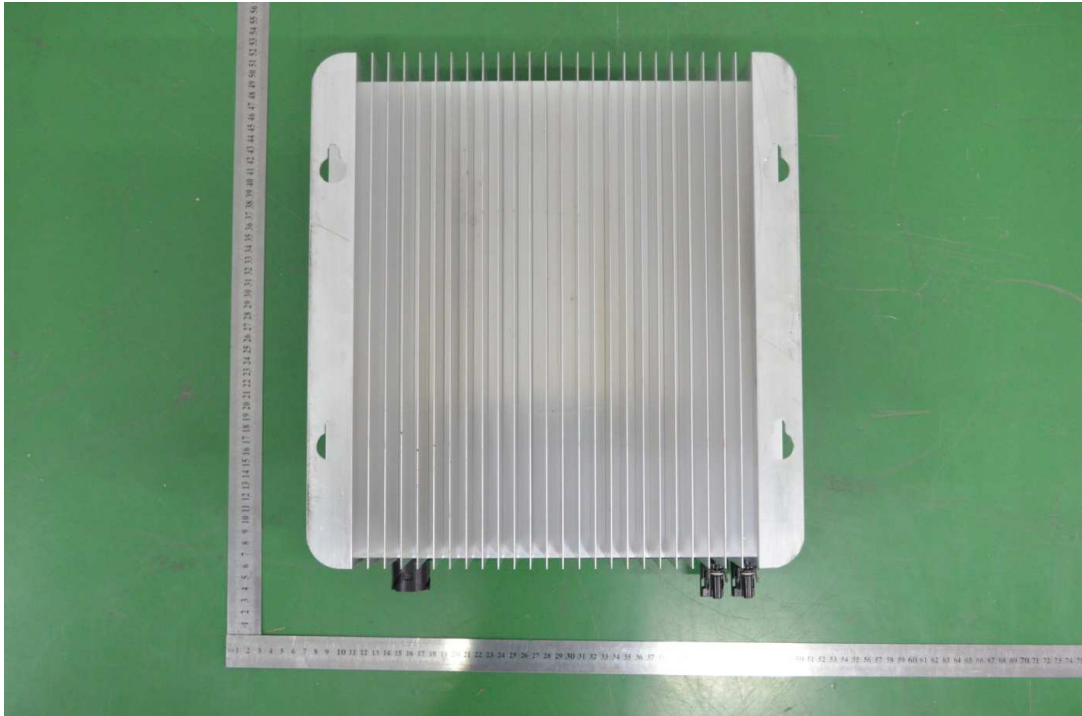


Top view of the unit

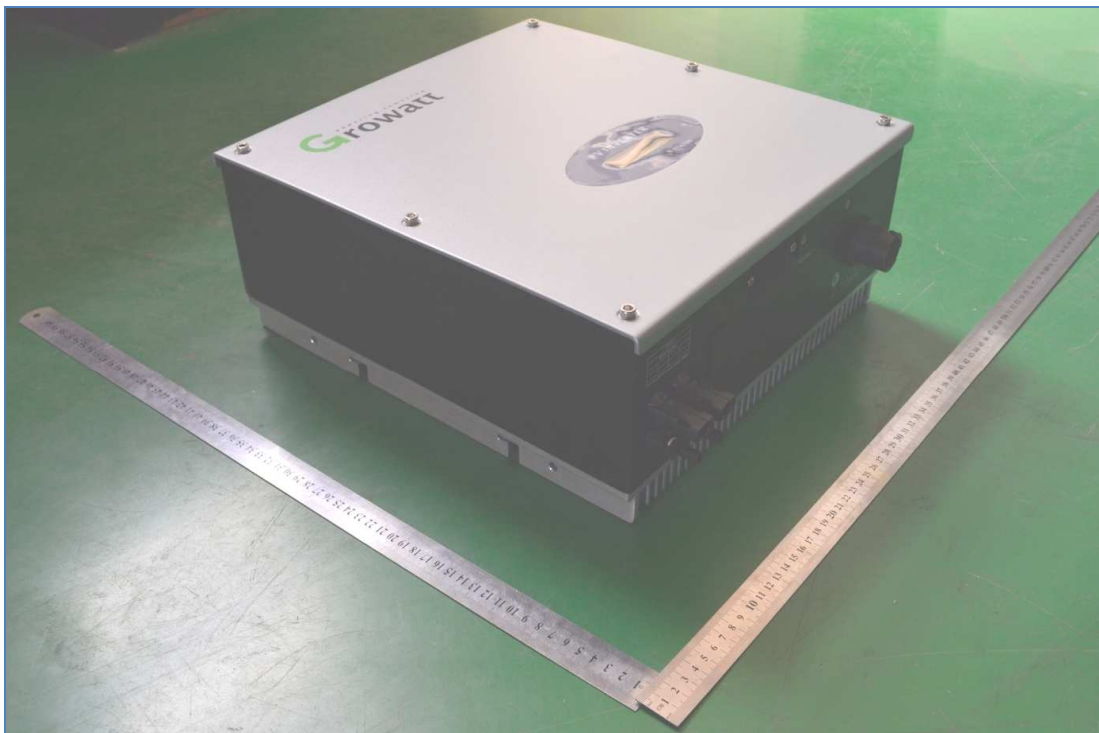


Side view of the unit (with the heat-sink for model GROWATT 5500MTL-S)

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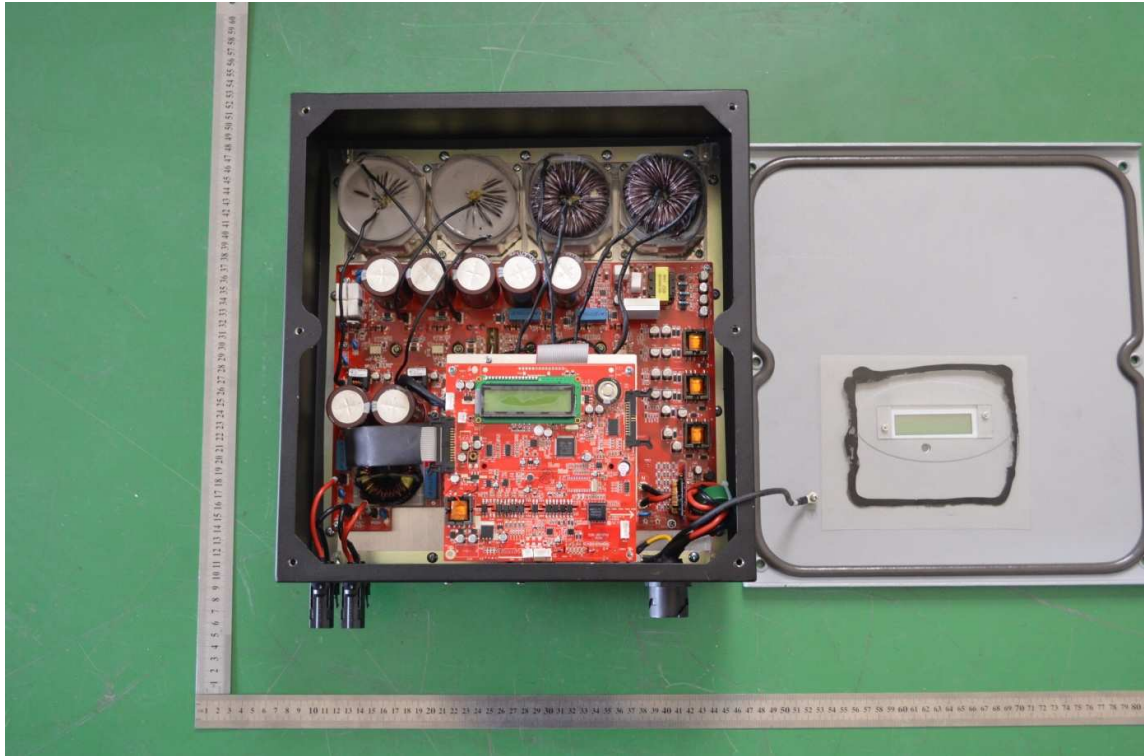


Back view of the unit (with the heat-sink for model GROWATT 5500MTL-S)

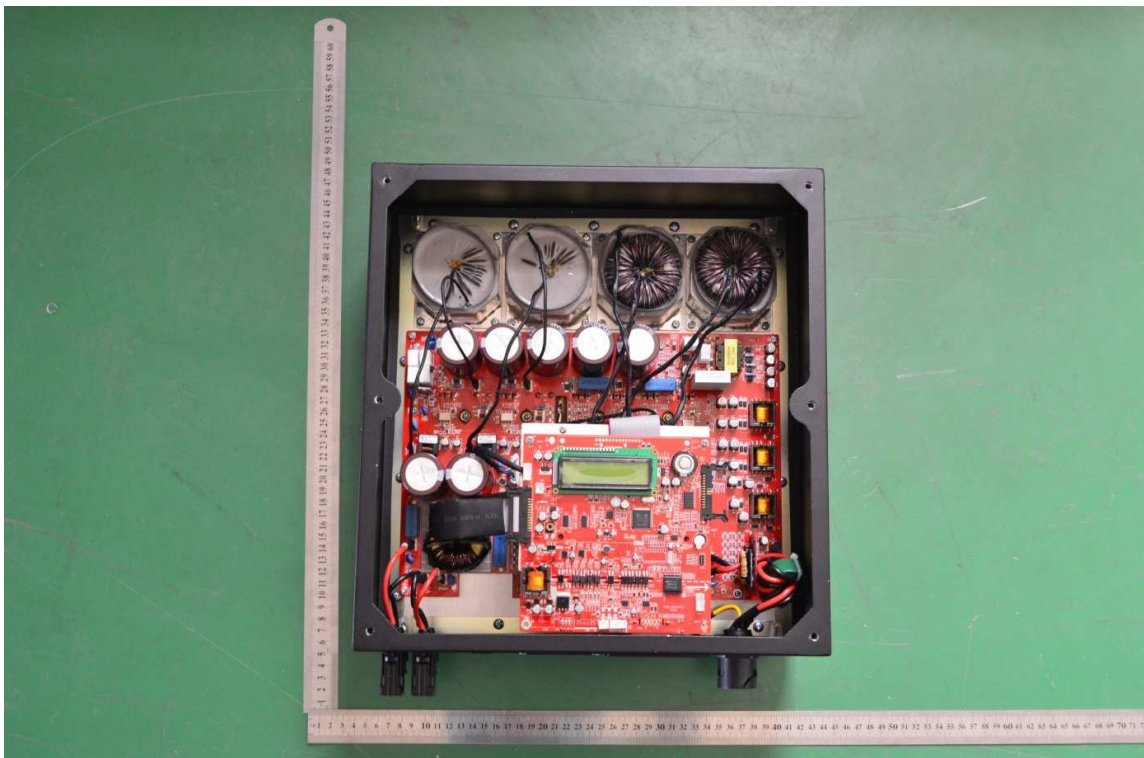


Side view of the unit (with the heat-sink 1 for other than model GROWATT 5500MTL-S)

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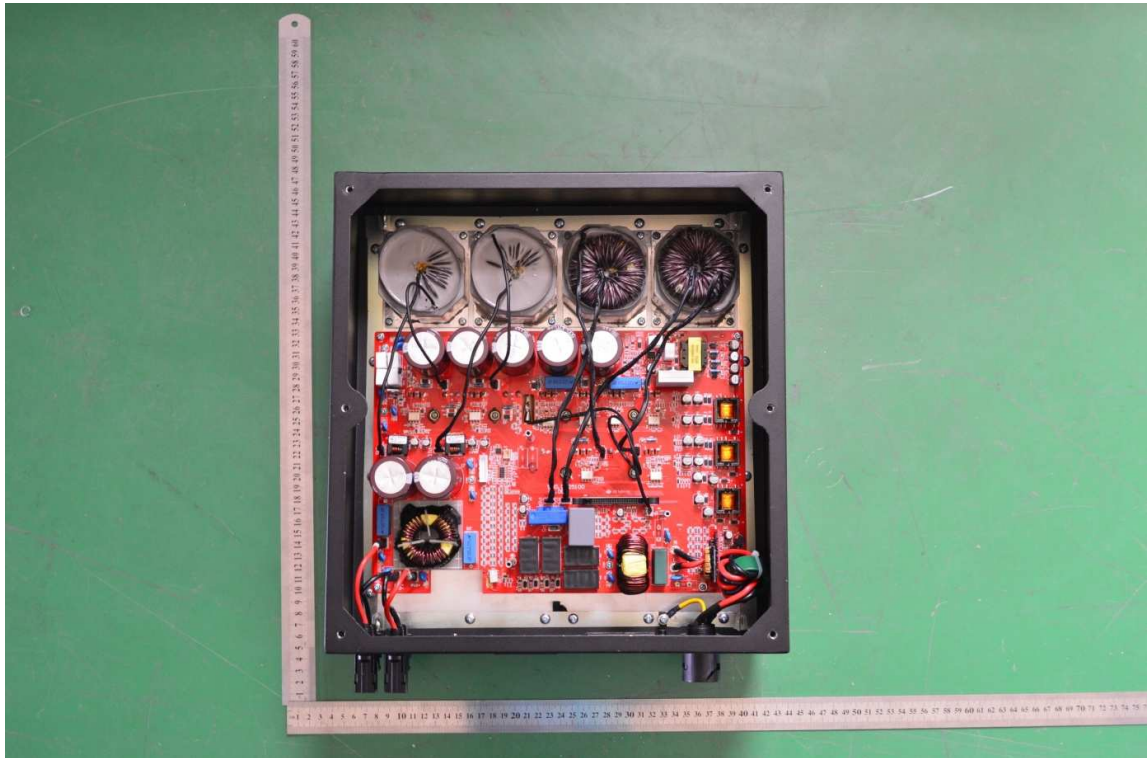


Internal view of the unit

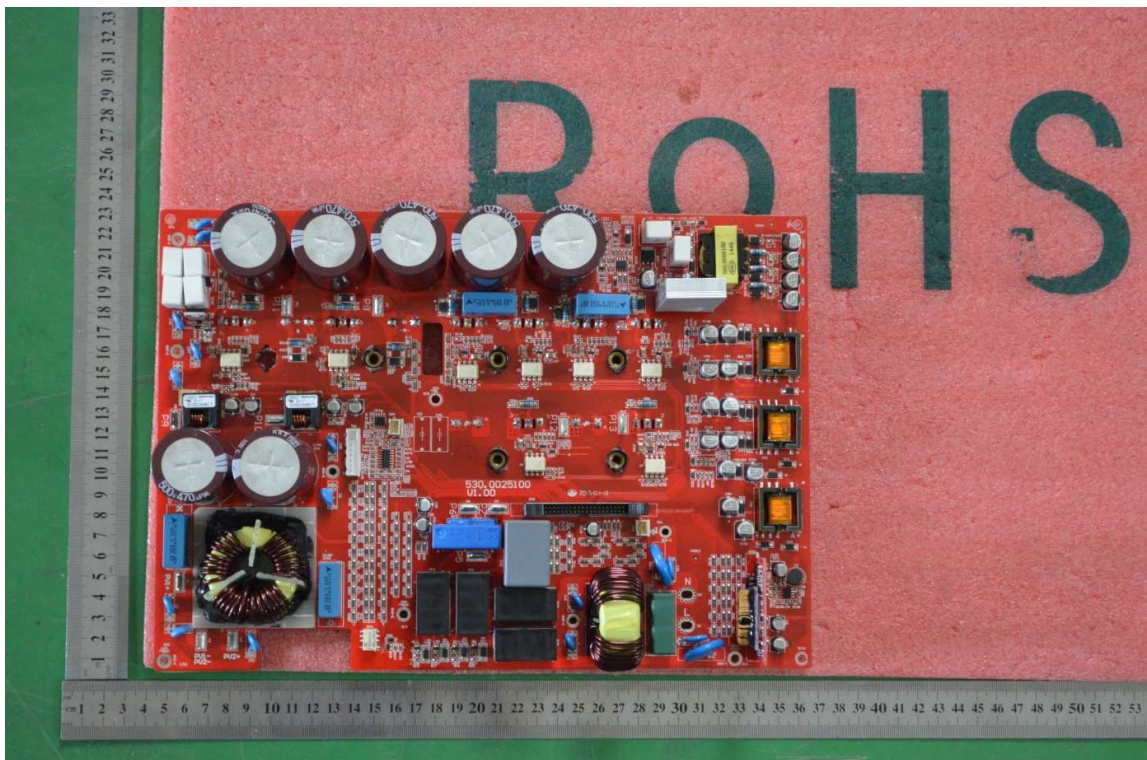


Internal view of the unit

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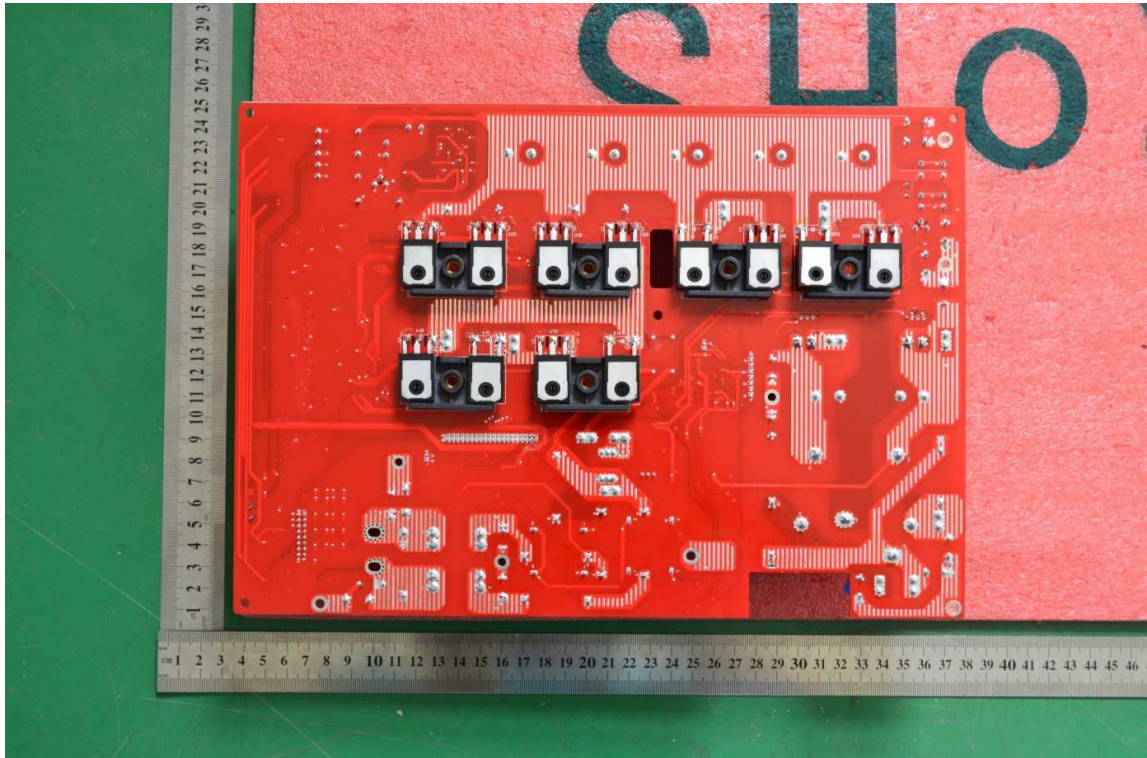


Internal view of the unit

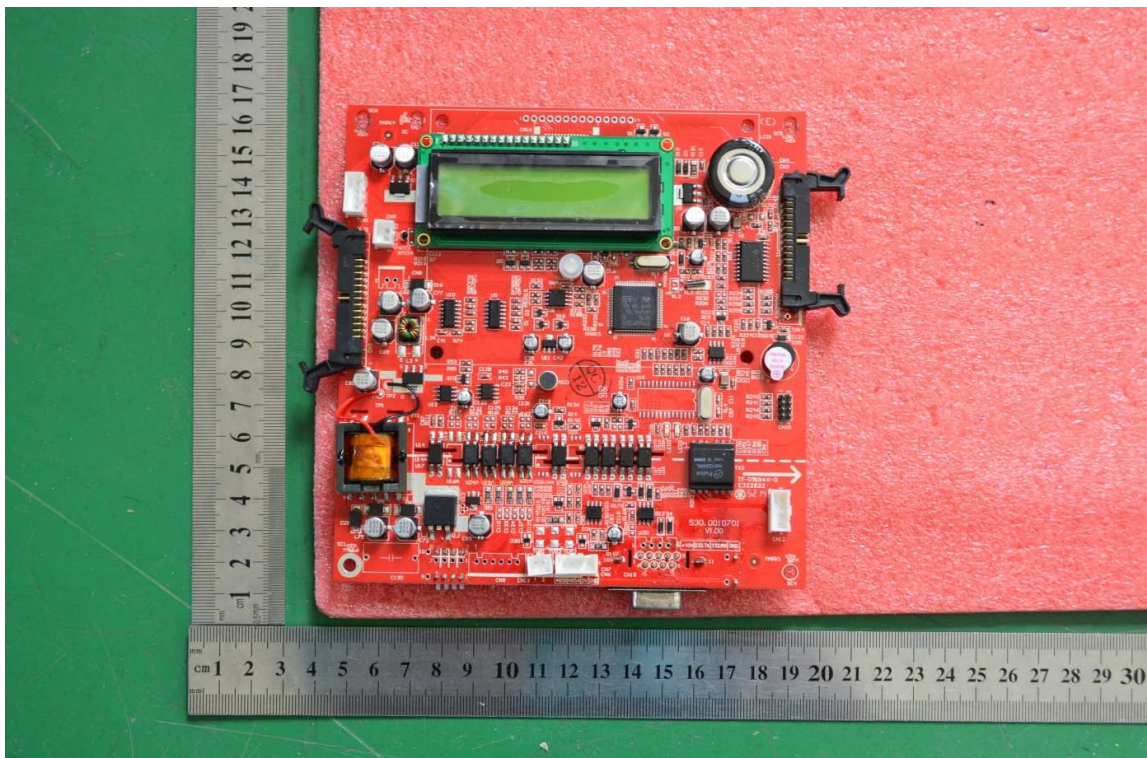


Front view of the power board

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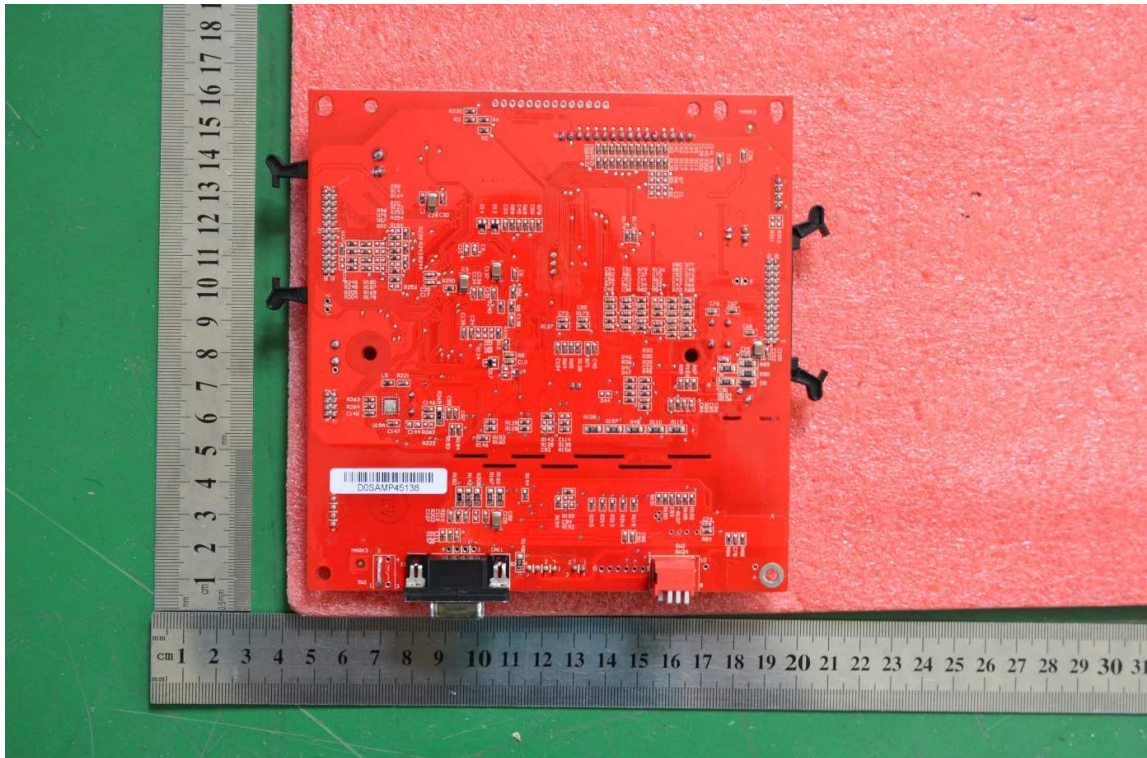


Back view of the power board

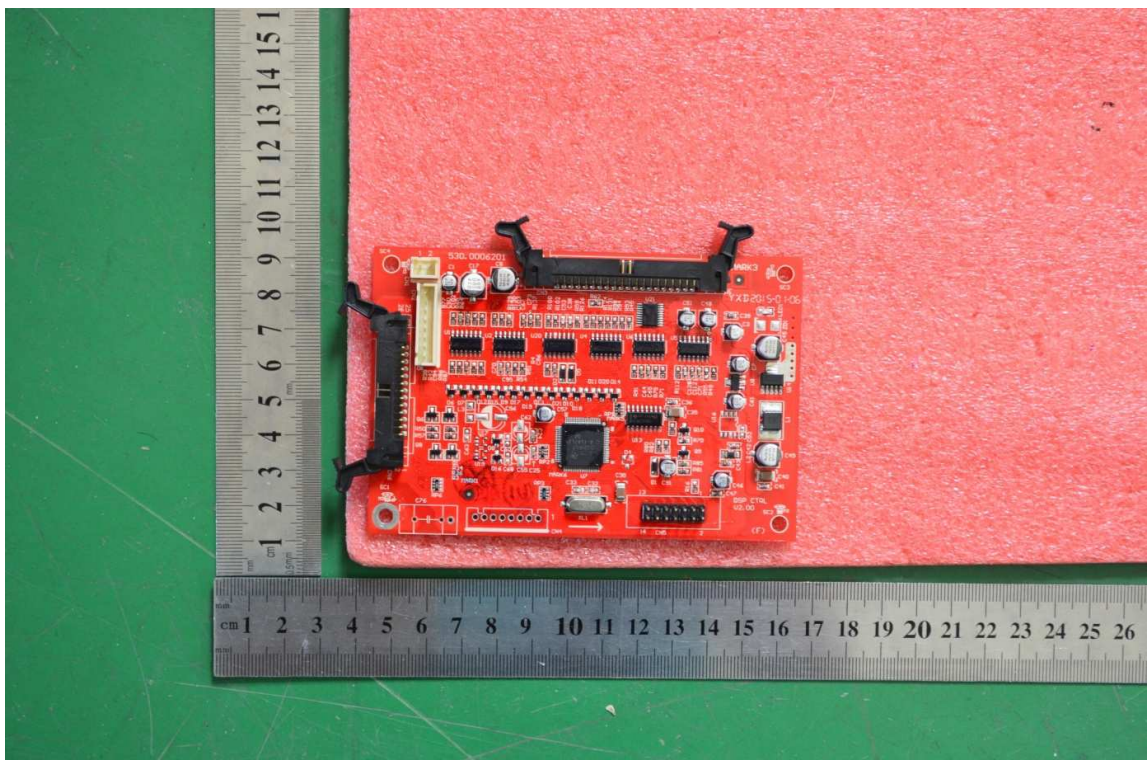


Front view of display board

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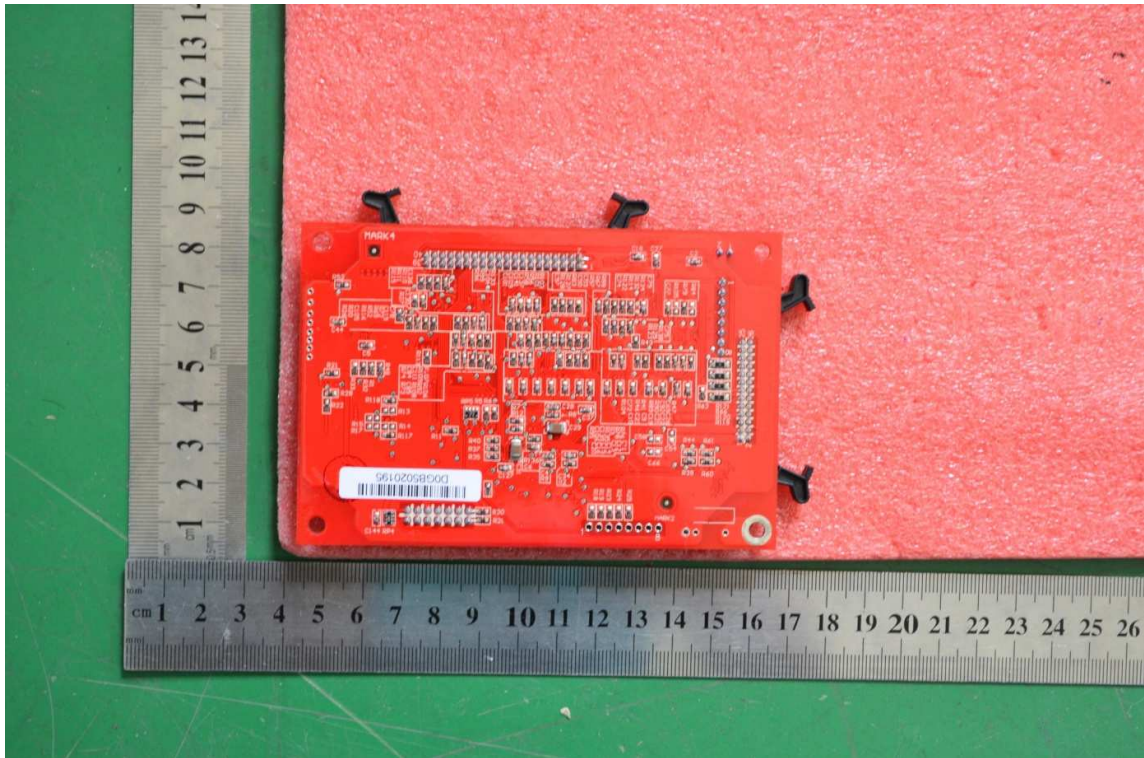


Back view of the display board

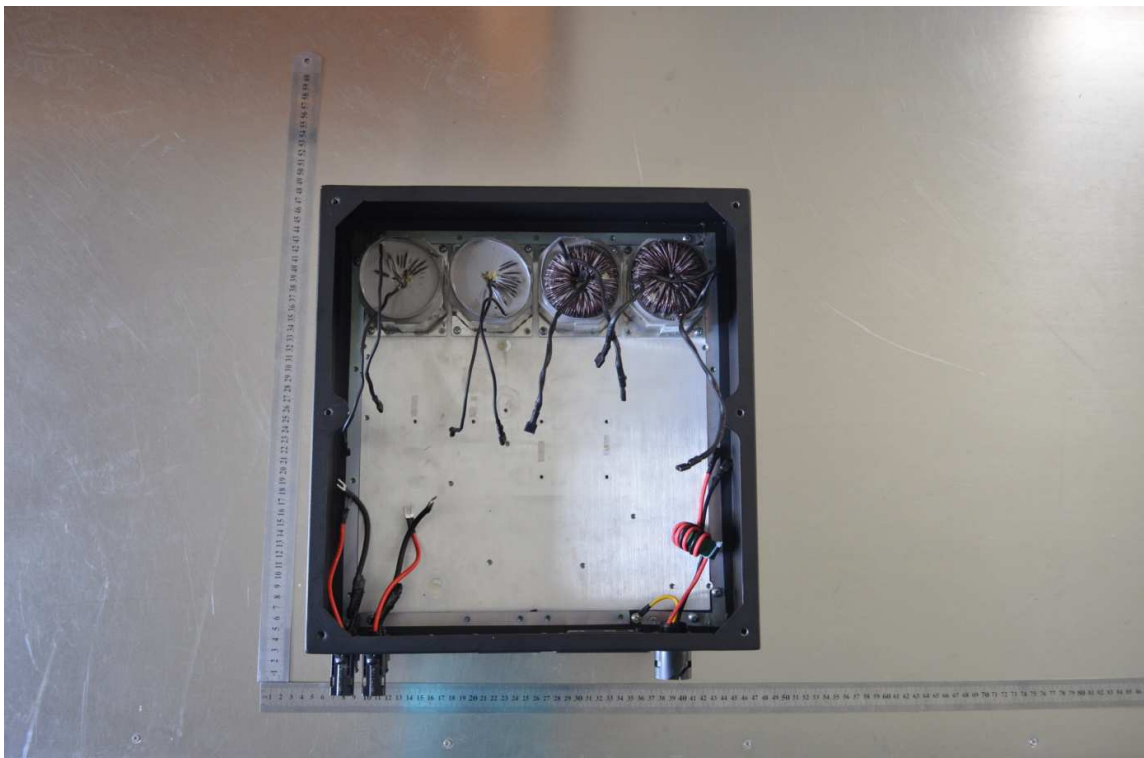


Front view of control board

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Back view of the display board

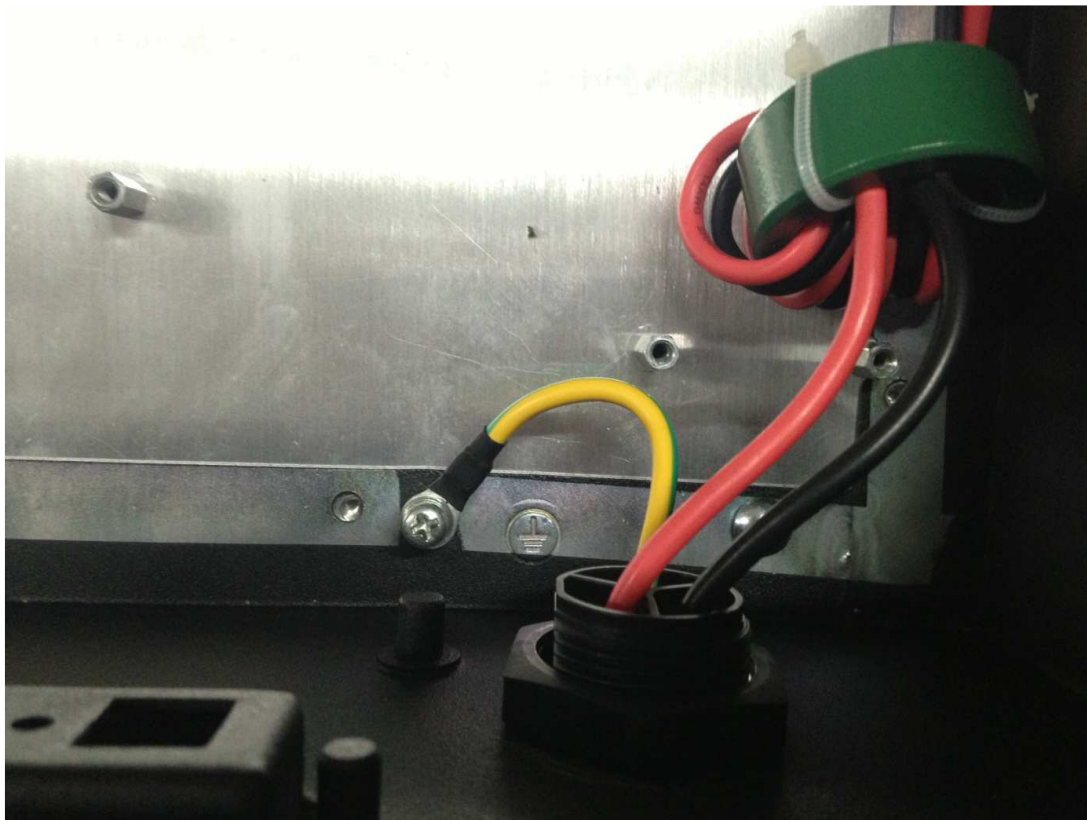


Internal view of the unit

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Connection interface of the unit



Earthing of the unit

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