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TEST REPORT
IEC 61727: 2004
Photovoltaic (PV) systems - Characteristics of the utility interface
IEC 62116: 2014
Utility-interconnected photovoltaic inverters-Test procedure of islanding prevention measures

Report Reference No..... ES160219010P-2
Compiled by (name + signature) Double Lee
Approved by (name + signature) William Guo
Date of issue..... September 20, 2016
Total number of pages..... 33 pages



Testing Laboratory name..... EMTEK (SHENZHEN) CO., LTD.
Address..... Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China
Testing location/ address..... Same as above

Applicant's name FLIN TECHNOLOGIES PRIVATE LIMITED
Address..... 1601 Montreal Tower, Shastri Nagar, Andheri West, Mumbai - 400 053, India

Test specification:
Standard IEC 61727:2004
..... IEC 62116:2014
Test procedure CE/LVD
Non-standard test method..... N/A

Test Report Form No..... EN61727A
Test Report Form(s) Originator EMTEK
Master TRF..... Dated 2013-06

Test item description FlinInfini Lite On-grid Inverter with Energy storage
Trade Mark **Flin Energy**
Manufacturer..... FLIN TECHNOLOGIES PRIVATE LIMITED
Address..... 1601 Montreal Tower, Shastri Nagar, Andheri West, Mumbai - 400 053, India
Model/Type reference..... FlinInfini Lite 3kW-48V, FlinInfini Lite 4kW-48V, FlinInfini Lite 5kW-48V
Ratings..... See the rating labels.

Summary of testing:
The product has been tested according to standard IEC 61727: 2004 & IEC 62116: 2014.

Possible test case verdicts:

- test case does not apply to the test object : N(/A, Not applicable)
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement : F (Fail)

Testing

Date of receipt of test item..... : February 20, 2016
 Date (s) of performance of tests..... : February 20, 2016

General remarks:











"(see Attachment #)" refers to additional information appended to the report.
 "(see appended table)" refers to a table appended to the report.
 The tests results presented in this report relate only to the object tested.
 This report shall not be reproduced except in full without the written approval of the testing laboratory.
 List of test equipment must be kept on file and available for review.
 Additional test data and/or information provided in the attachments to this report.
 Throughout this report a comma / point is used as the decimal separator.

General product information:











1. Between the charger and PV input there has to be a 150VDC/60A circuit breaker. Between the charger and battery there has to be a 60VDC/120A breaker for model FlinInfini Lite 3kW-48V.
 Between the charger and PV input there has to be a 150VDC/60A circuit breaker. Between the charger and battery there has to be a 60VDC/120Abreaker for model FlinInfini Lite 4kW-48V.
 Between the charger and PV input there has to be a 150VDC/60A circuit breaker. Between the charger and battery there has to be a 60VDC/200Abreaker for model FlinInfini Lite 5kW-48V.
2. It is manufactured to be mounted on a wall and its degree of protection is IP20.
3. Battery is not provided by manufacturer and is not checked in this report. A battery is only used as component for test.
4. All models have the same constructions, circuit diagram and PCB layout. Only model name, appearance and MPP tracker numbers are different. Unless otherwise stated, all tests were performed on model FlinInfini Lite 5kW-48V which means the typical model.

Copy of marking plate:


1. Rating labels for model FlinInfini Lite 3kW-48V:


Model No. : FlinInfini Lite 3kW-48V Serial No. :  96121512100001	
PV INPUT	Nominal operating voltage 80Vdc
	Vmax PV 145Vdc
	PV input voltage range 60-145Vdc
	Isc PV 80A
	MPPT voltage range 60 ~ 115Vdc
GRID/AC OUTPUT	Nominal operating voltage 230 Vac
	Nominal output current 13A
	Nominal operating frequency 50/60Hz
	Maximum power 3000W
	Power factor range 0.9 lead-0.9lag
AC INPUT	Nominal operating voltage 230Vac
	Maximum input current 40A
	Nominal operating frequency 50/60Hz
BATTERY	Battery voltage range 42~56Vdc
	Maximum battery current 82A
Ambient temperature:-10~+55°C Enclosure:IP 21 Safety class I	
	
   	
   	
WARNING-FIRE HAZARD. 5min SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY CAUTION:THE DC AND AC BREAKER MUST HAVE BEEN TURNED OFF BEFORE SERVICING Flin Technologies Private Limited 1601 Montreal Tower, Shastri Nagar, Andheri West, Mumbai - 400 053, India	

2. Rating labels for model FlinInfini Lite 4kW-48V:

Model No. : FlinInfini Lite 4kW-48V Serial No. :  96121512100001	
PV INPUT	Nominal operating voltage 80Vdc
	Vmax PV 145Vdc
	PV input voltage range 80-145Vdc
	Isc PV 80A
	MPPT voltage range 80 ~ 115Vdc
GRID/AC OUTPUT	Nominal operating voltage 230 Vac
	Nominal output current 17.4A
	Nominal operating frequency 50/60Hz
	Maximum power 4000W
	Power factor range 0.9 lead-0.9lag
AC INPUT	Nominal operating voltage 230Vac
	Maximum input current 40A
	Nominal operating frequency 50/60Hz
BATTERY	Battery voltage range 42~56Vdc
	Maximum battery current 110A
Ambient temperature:-10~+55°C Enclosure:IP 21 Safety class I	
	
   	
   	
WARNING-FIRE HAZARD. SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY CAUTION:THE DC AND AC BREAKER MUST HAVE BEEN TURNED OFF BEFORE SERVICING Flin Technologies Private Limited 1601 Montreal Tower, Shastri Nagar, Andheri West, Mumbai - 400 053, India	


3. Rating labels for model FlinInfini Lite 5kW-48V:


Model No. : FlinInfini Lite 5kW-48V	
Serial No. :  96131512100001	
PV INPUT	Nominal operating voltage 80Vdc
	Vmax PV 145Vdc
	PV input voltage range 60-145Vdc
	Isc PV 60A*2
	MPPT voltage range 60 ~ 115Vdc
GRID/AC OUTPUT	Nominal operating voltage 230 Vac
	Nominal output current 21.7A
	Nominal operating frequency 50/60Hz
	Maximum power 5000W
	Power factor range 0.9 lead-0.9lag
AC INPUT	Nominal operating voltage 230Vac
	Maximum input current 40A
	Nominal operating frequency 50/60Hz
BATTERY	Battery voltage range 42~56Vdc
	Maximum battery current 137A


Ambient temperature:-10~+55°C 


Enclosure:IP 21


Safety class I




















WARNING-FIRE HAZARD. 5min

SUITABLE FOR MOUNTING ON CONCRETE OR OTHER
NON-COMBUSTIBLE SURFACE ONLY

CAUTION:THE DC AND AC BREAKER MUST HAVE BEEN
TURNED OFF BEFORE SERVICING

Flin Technologies Private Limited
1601 Montreal Tower, Shastri Nagar, Andheri West,
Mumbai - 400 053, India

IEC 61727																			
Clause	Requirement – Test	Result - Remark	Verdict																
4	Utility compatibility		P																
4.1	Voltage, current and frequency	(see appended table)	P																
4.2	Normal voltage operating range		P																
4.3	Flicker	(see appended table)	P																
	The operation of the PV system should not cause voltage flicker in excess of limits stated in the relevant sections of IEC 61000-3-3 for systems less than 16 A or IEC 61000-3-5 for systems with current of 16 A and above		P																
4.4	DC injection	(see appended table)	P																
	The PV system shall not inject DC current greater than 1 % of the rated inverter output current, into the utility AC interface under any operating condition.		P																
4.5	Normal frequency operating range	(see appended table)	P																
	The PV system shall operate in synchronism with the utility system, and within the frequency trip limits defined in 5.2.2.		P																
4.6	Harmonics and waveform distortion	(see appended table)	P																
	Total harmonic current distortion shall be less than 5 % at rated inverter output. Each individual harmonic shall be limited to the percentages listed in Table 1		P																
	Table 1 – Current distortion limits																		
	<table border="1"> <thead> <tr> <th>Odd harmonics</th> <th>Distortion limit</th> </tr> </thead> <tbody> <tr> <td>3rd through 9rd</td> <td>Less than 4,0 %</td> </tr> <tr> <td>11rd through 15rd</td> <td>Less than 2,0 %</td> </tr> <tr> <td>17rd through 21rd</td> <td>Less than 1,5 %</td> </tr> <tr> <td>23rd through 33rd</td> <td>Less than 0,6 %</td> </tr> <tr> <td>Even harmonics</td> <td>Distortion limit</td> </tr> <tr> <td>2rd through 8rd</td> <td>Less than 1,0 %</td> </tr> <tr> <td>10rd through 32rd</td> <td>Less than 0,5 %</td> </tr> </tbody> </table>	Odd harmonics	Distortion limit	3 rd through 9 rd	Less than 4,0 %	11 rd through 15 rd	Less than 2,0 %	17 rd through 21 rd	Less than 1,5 %	23 rd through 33 rd	Less than 0,6 %	Even harmonics	Distortion limit	2 rd through 8 rd	Less than 1,0 %	10 rd through 32 rd	Less than 0,5 %		
Odd harmonics	Distortion limit																		
3 rd through 9 rd	Less than 4,0 %																		
11 rd through 15 rd	Less than 2,0 %																		
17 rd through 21 rd	Less than 1,5 %																		
23 rd through 33 rd	Less than 0,6 %																		
Even harmonics	Distortion limit																		
2 rd through 8 rd	Less than 1,0 %																		
10 rd through 32 rd	Less than 0,5 %																		
4.7	Power factor	(see appended table)	P																
	The PV system shall have a lagging power Factor greater than 0.9 when the output is Greater than 50% of the rated inverter		P																
	Output power		P																
5	Personnel safety and equipment protection		P																

IEC 61727															
Clause	Requirement – Test	Result - Remark	Verdict												
5.1	Loss of utility voltage		P												
	To prevent islanding ,a utility connected PV system shall cease to energize the utility System from a de-energized Distribution line irrespective of connected loads or other generators within specified Time limits	See clause 5.3	P												
	A utility distribution line can become de-energized for several reasons. For example a substation breaker opening due to fault conditions or the distribution line switched out during maintenance	AC relay is used	P												
	If inventers (single or multiple) have DC SELV Input and have accumulated power below 1 KW then no mechanical disconnect (relay) is required		P												
5.2	Over/under voltage and frequency		P												
5.2.1	Over/under voltage	See appended table	P												
	<p>When the interface voltage deviates Outside the conditions specified in Table 2, the photovoltaic system shall cease to energize the utility distribution system. This applies to any phase of a multiphase system</p> <p>Table 2 – Response to abnormal voltages</p> <table border="1"> <thead> <tr> <th>Voltage (at point of utility connection)</th> <th>Maximum trip time*</th> </tr> </thead> <tbody> <tr> <td>$V < 0,5 \times V \text{ nominal}$</td> <td>0,1 s</td> </tr> <tr> <td>$50 \% \leq V < 85 \%$</td> <td>2,0 s</td> </tr> <tr> <td>$85 \% \leq V \leq 110 \%$</td> <td>Continuous operation</td> </tr> <tr> <td>$110 \% < V < 135 \%$</td> <td>2,0 s</td> </tr> <tr> <td>$135 \% \leq V$</td> <td>0,05 s</td> </tr> </tbody> </table> <p>* Trip time refers to the time between the abnormal condition occurring and the inverter ceasing to energize the utility line. The PV system control circuits shall actually remain connected to the utility to allow sensing of utility electrical conditions for use by the “reconnect” feature.</p>	Voltage (at point of utility connection)	Maximum trip time*	$V < 0,5 \times V \text{ nominal}$	0,1 s	$50 \% \leq V < 85 \%$	2,0 s	$85 \% \leq V \leq 110 \%$	Continuous operation	$110 \% < V < 135 \%$	2,0 s	$135 \% \leq V$	0,05 s		P
Voltage (at point of utility connection)	Maximum trip time*														
$V < 0,5 \times V \text{ nominal}$	0,1 s														
$50 \% \leq V < 85 \%$	2,0 s														
$85 \% \leq V \leq 110 \%$	Continuous operation														
$110 \% < V < 135 \%$	2,0 s														
$135 \% \leq V$	0,05 s														
5. 2. 2	Over/under frequency	See appended table	P												
	When the utility frequency deviates outside the		P												

IEC 61727			
Clause	Requirement – Test	Result - Remark	Verdict
	specified conditions the photovoltaic system shall cease to energize the utility line. The unit does not have to cease to energize if the frequency returns to the normal utility continuous operation condition within the specified trip time.		
	When the utility frequency is outside the range of ± 1 Hz, the system shall cease to energize the utility line within 0,2 s. The purpose of the allowed range and time delay is to allow continued operation for short-term disturbances and to avoid excessive nuisance tripping in weak-utility system conditions.		P
5.3	Islanding protection	See appended table	P
	The PV system must cease to energize the utility line within 2 s of loss of utility.	The test is performed in accordance with IEC62116	P
5.4	Response to utility recovery		P
	Following an out-of-range utility condition that has caused the photovoltaic system to cease energizing, the photovoltaic system shall not energize the utility line for 20 s to 5 min after the utility service voltage and frequency have recovered to within the specified ranges.	90S	P
5.5	Earthing		P
	The utility interface equipment shall be earthed/grounded in accordance with IEC 60364-7-712.	Protective bonding conductors are installed and they are parallel to and in close contacts with DC cables and AC cables	P
5.6	Short circuit protection		P
	The photovoltaic system shall have short-circuit Protection in accordance with IEC 60634-7-712		P
5.7	Isolation and switching		P
	A method of isolation and switching shall be provided in accordance with IEC 60634-7-712		P

IEC 61727			
Clause	Requirement – Test	Result - Remark	Verdict

Table 4.1a Voltage					P
	Measure(V)	Rated(V)	deviation	limit	Verdict
Model: FlinInfini Lite 3kW-48V					
L	230.78	230	0.339%	+7%, -7%	P
Model: FlinInfini Lite 4kW-48V					
L	231.21	230	0.526%	+7%, -7%	P
Model: FlinInfini Lite 5kW-48V					
L	231.52	230	0.661%	+7%, -7%	P
Remark; This measured is signal phase voltage and at 100% load					

TABLE 4.1 b Frequency					P
	Measured	Rate	deviation	limit	Verdict
Model: FlinInfini Lite 3kW-48V					
L	50.005Hz	50Hz	+0.005Hz	±0.5Hz	P
Model: FlinInfini Lite 4kW-48V					
L	50.005Hz	50Hz	+0.005Hz	±0.5Hz	P
Model: FlinInfini Lite 5kW-48V					
L	50.005Hz	50Hz	+0.005Hz	±0.5Hz	P

TABLE 4.3:flicker			P
Model: FlinInfini Lite 5kW-48V			
Interval(10min)	Pst	Limits	
1	0.312	1	
2	0.341		
3	0.327		
4	0.326		
5	0.341		
6	0.345		
7	0.451		
8	0.312		
9	0.325		
10	0.337		
11	0.283		
12	0.332		
Plt		Limits	
0.41		0.65	

TABLE 4.4 DC current injection					
Mains frequency Isolation transformer	Max output Current (A)	Required limit (mA)	Adc (mA)		
			10% output Power	50% output Power	100% output Power
Model: FlinInfini Lite 3kW-48V					
No	13	65	L:10	L:21	L: 54
Model: FlinInfini Lite 4kW-48V					
No	17.4	87	L:25	L:41	L:85
Model: FlinInfini Lite 5kW-48V					
No	21.7	108.5	L:53	L:68	L:76

TABLE 4.6 Harmonic	
Model: FlinInfini Lite 5kW-48V	
ODD HARMONIC CURRENT (L1)	EVEN HARMONIC CURRENT (L1)

IEC 61727							
Clause	Requirement – Test			Result - Remark			Verdict
Order	Limits	Measurements(%)	Verdict	Order	Limits	Measurements(%)	Verdict
3rd	4.00%	1.470	P	2nd	1.00%	0.542	P
5th	4.00%	1.396	P	4th	1.00%	0.289	P
7th	4.00%	1.351	P	6th	1.00%	0.702	P
9th	4.00%	1.324	P	8th	1.00%	0.224	P
11th	2.00%	1.263	P	10th	0.50%	0.206	P
13th	2.00%	1.150	P	12th	0.50%	0.167	P
15th	2.00%	0.921	P	14th	0.50%	0.149	P
17th	1.50%	0.703	P	16th	0.50%	0.109	P
19th	1.50%	0.681	P	18th	0.50%	0.190	P
21st	1.50%	0.339	P	20th	0.50%	0.112	P
23rd	0.60%	0.218	P	22nd	0.50%	0.089	P
25th	0.60%	0.099	P	24th	0.50%	0.149	P
27th	0.60%	0.110	P	26th	0.50%	0.068	P
29th	0.60%	0.085	P	28th	0.50%	0.104	P
31st	0.60%	0.255	P	30th	0.50%	0.043	P
33rd	0.60%	0.158	P	32nd	0.50%	0.174	P
Total harmonic distortion (to the 33rd harmonic)							
LIMITS			MEASUREMENTS			Verdict	
5%			3.799			P	
Model: FlinInfini Lite 4kW-48V							
ODD HARMONIC CURRENT (L2)				EVEN HARMONIC CURRENT (L2)			
Order	Limits	Measurements(%)	Verdict	Order	Limits	Measurements(%)	Verdict
3rd	4.00%	1.851	P	2nd	1.00%	0.652	P
5th	4.00%	1.765	P	4th	1.00%	0.469	P
7th	4.00%	1.638	P	6th	1.00%	0.240	P
9th	4.00%	1.400	P	8th	1.00%	0.245	P
11th	2.00%	1.268	P	10th	0.50%	0.334	P
13th	2.00%	1.013	P	12th	0.50%	0.351	P
15th	2.00%	0.836	P	14th	0.50%	0.254	P
17th	1.50%	0.553	P	16th	0.50%	0.172	P
19th	1.50%	0.401	P	18th	0.50%	0.147	P
21st	1.50%	0.238	P	20th	0.50%	0.090	P
23rd	0.60%	0.164	P	22nd	0.50%	0.036	P
25th	0.60%	0.185	P	24th	0.50%	0.086	P
27th	0.60%	0.166	P	26th	0.50%	0.107	P
29th	0.60%	0.262	P	28th	0.50%	0.233	P
31st	0.60%	0.251	P	30th	0.50%	0.152	P
33rd	0.60%	0.232	P	32nd	0.50%	0.183	P
Total harmonic distortion (to the 33rd harmonic)							
LIMITS			MEASUREMENTS			Verdict	
5%			4.164			P	
Model: FlinInfini Lite 3kW-48V							
Order	Limits	Measurements(%)	Verdict	Order	Limits	Measurements(%)	Verdict
3rd	4.00%	2.451	P	2nd	1.00%	0.627	P
5th	4.00%	2.245	P	4th	1.00%	0.602	P
7th	4.00%	1.744	P	6th	1.00%	0.566	P
9th	4.00%	1.303	P	8th	1.00%	0.516	P
11th	2.00%	0.978	P	10th	0.50%	0.448	P
13th	2.00%	0.839	P	12th	0.50%	0.370	P
15th	2.00%	0.713	P	14th	0.50%	0.282	P
17th	1.50%	0.640	P	16th	0.50%	0.270	P

IEC 61727							
Clause	Requirement – Test			Result - Remark			Verdict
19th	1.50%	0.550	P	18th	0.50%	0.422	P
21st	1.50%	0.488	P	20th	0.50%	0.331	P
23rd	0.60%	0.323	P	22nd	0.50%	0.329	P
25th	0.60%	0.295	P	24th	0.50%	0.153	P
27th	0.60%	0.283	P	26th	0.50%	0.043	P
29th	0.60%	0.248	P	28th	0.50%	0.154	P
31st	0.60%	0.275	P	30th	0.50%	0.232	P
33rd	0.60%	0.277	P	32nd	0.50%	0.178	P
Total harmonic distortion (to the 33rd harmonic)							
LIMITS				MEASUREMENTS			Verdict
5%				4.718			P
Remark: this test is performed at full load							

Table 4.7: power factor				P
Load%	measured		limit	Verdict
Model: FlinInfini Lite 3kW-48V				
50%	L:0.993		>0.9	P
100%	L:0.998		>0.9	P
Model: FlinInfini Lite 4kW-48V				
50%	L:0.993		>0.9	P
100%	L:0.996		>0.9	P
Model: FlinInfini Lite 5kW-48V				
50%	L:0.995		>0.9	P
100%	L:0.997		>0.9	P
Remark:				

Table 5.2: Under/over Voltage				P
Voltage (V)	Time (ms)		Limit (s)	Reconnection time (s)
114V ($U < 0.5 \times U_{nominal}$)	99.2ms		0.1s	90
194V ($0.5 \times U_{nominal} < U < 0.85 \times U_{nominal}$)	110.8ms		2.0s	90
195V ($U = 0.85 \times U_{nominal}$)	Continuous operation		Continuous operation	90
297V ($U = 1.1 \times U_{nominal}$)	Continuous operation		Continuous operation	90
253V ($1.1 \times U_{nominal} < U < 0.85 \times U_{nominal}$)	117.4ms		2.0s	90
310V ($1.35 \times U_{nominal} < U$)	28.45ms		0.05s	90
Remark:				

Table 5.2: Under/over frequency					P
Frequency (Hz)	Time (ms)			limit	Reconnection time (s)
	20%load	50%load	100%load		
51Hz	107.2ms	118.4ms	112.8ms	0.2s	90
49Hz	214.0ms	195.0ms	112.8ms	0.2s	90
Remark:					

IEC 62116			
Clause	Requirement – Test	Result - Remark	Verdict

Table 5.3: Islanding protection								P
Test No.	P _{EUT} (%EUT rating)	Reactive Power (%Q _L)	P _{AC} (% of nominal)	Q _{AC} (% of nominal)	Cut off time (ms)	P _{EUT} (kW)	V _{DC}	Remark
1	100	100	0	0	117.4	4.98	100	Test A BL
2	66	66	0	0	184.3	3.32	85	Test B BL
3	33	33	0	0	229.0	1.65	70	Test CBL
4	100	100	-5	-5	62.46	4.98	100	Test A IB
5	100	100	-5	0	102.15	4.98	100	Test A IB
6	100	100	-5	+5	57.36	4.98	100	Test A IB
7	100	100	0	-5	65.27	4.98	100	Test A IB
8	100	100	0	+5	71.57	4.98	100	Test A IB
9	100	100	+5	-5	65.17	4.98	100	Test A IB
10	100	100	+5	0	111.5	4.98	100	Test A IB
11	100	100	+5	+5	35.18	4.98	100	Test A IB
12	66	66	0	-5	156.3	3.32	85	Test B IB
13	66	66	0	-4	184.5	3.32	85	Test B IB
14	66	66	0	-3	132.1	3.32	85	Test B IB
15	66	66	0	-2	157.7	3.32	85	Test B IB
16	66	66	0	-1	173.3	3.32	85	Test B IB
17	66	66	0	+1	168.8	3.32	85	Test B IB
18	66	66	0	+2	151.3	3.32	85	Test B IB
19	66	66	0	+3	145.7	3.32	85	Test B IB
20	66	66	0	+4	210.6	3.32	85	Test B IB
21	66	66	0	+5	199.8	3.32	85	Test B IB
22	33	33	0	-5	197.3	1.65	70	Test C IB
23	33	33	0	-4	240.1	1.65	70	Test C IB
24	33	33	0	-3	192.6	1.65	70	Test C IB
25	33	33	0	-2	165.7	1.65	70	Test C IB
26	33	33	0	-1	186.4	1.65	70	Test C IB
27	33	33	0	+1	174.5	1.65	70	Test C IB
28	33	33	0	+2	145.2	1.65	70	Test C IB
29	33	33	0	+3	178.1	1.65	70	Test C IB
30	33	33	0	+4	167.8	1.65	70	Test C IB
31	33	33	0	+5	152.6	1.65	70	Test C IB

Remark: this test is performed in accordance with IEC62116

Pictures



Fig. 1 -- FlinInfini Lite 5kW-48V over view I



Fig. 2 -- FlinInfini Lite 5kW-48V over view II

Pictures



Fig. 3 -- FlinInfini Lite 5kW-48V over view III



Fig. 4 -- FlinInfini Lite 5kW-48V input/output port view

Pictures

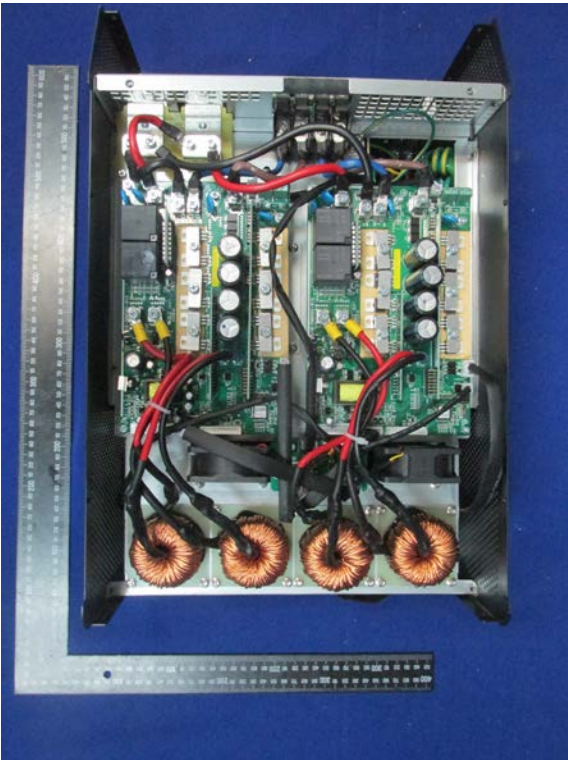


Fig. 5 -- FlinInfini Lite 5kW-48V inside view I

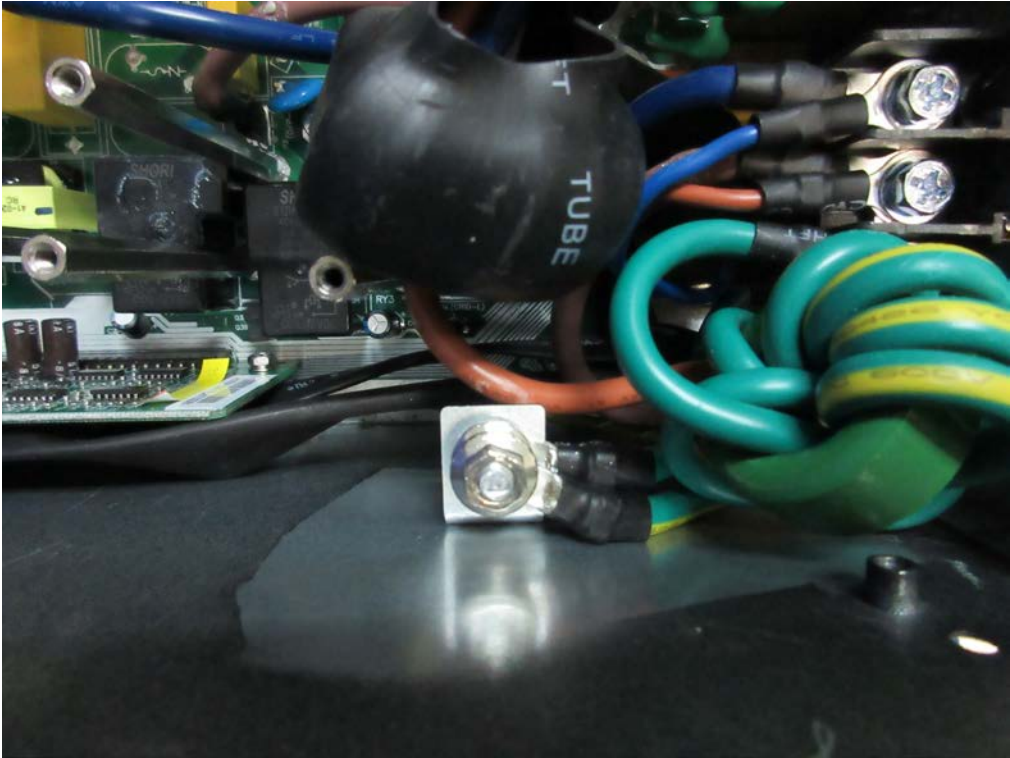


Fig. 6 -- FlinInfini Lite 5kW-48V protective earthing connection and earth marking

Pictures

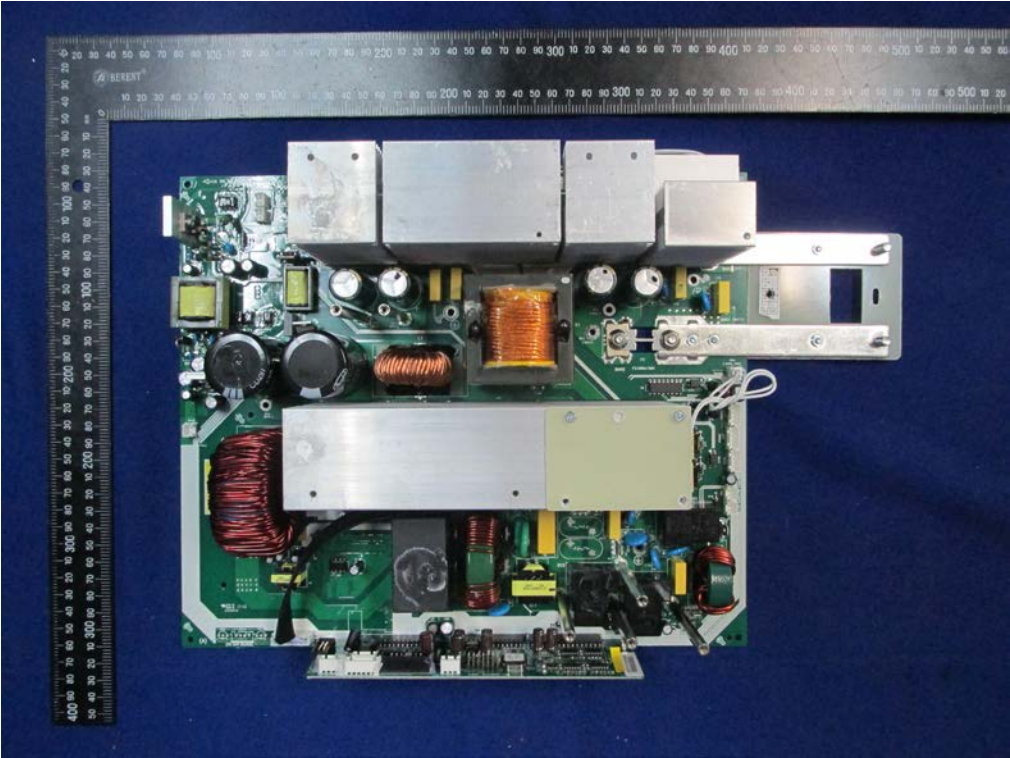


Fig. 7 -- FlinInfini Lite 5kW-48V PCB of main board components view

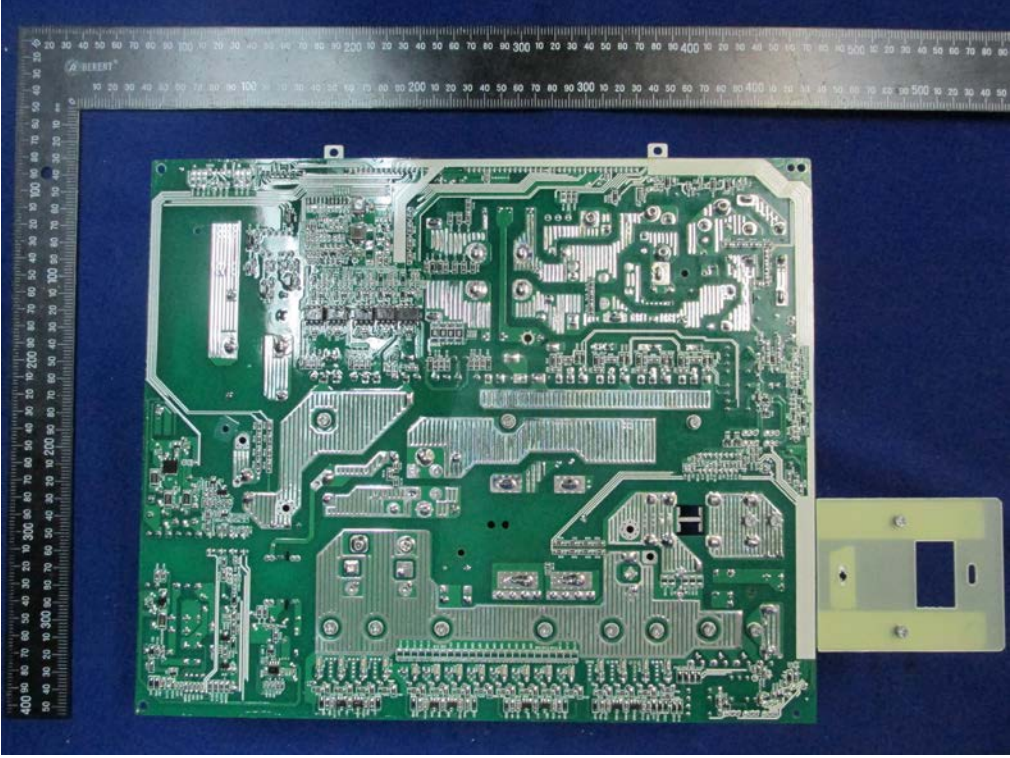


Fig. 8 -- FlinInfini Lite 5kW-48V PCB of main board trace view

Pictures

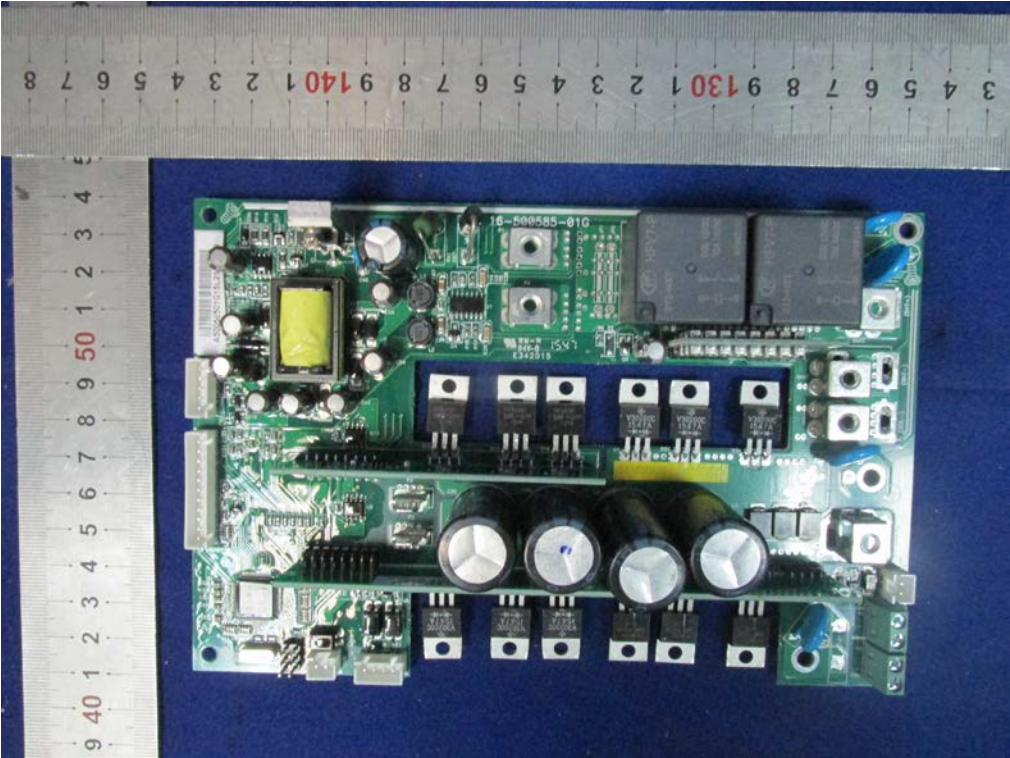


Fig. 9 -- FlinInfini Lite 5kW-48V PCB of MPPT charger board components view

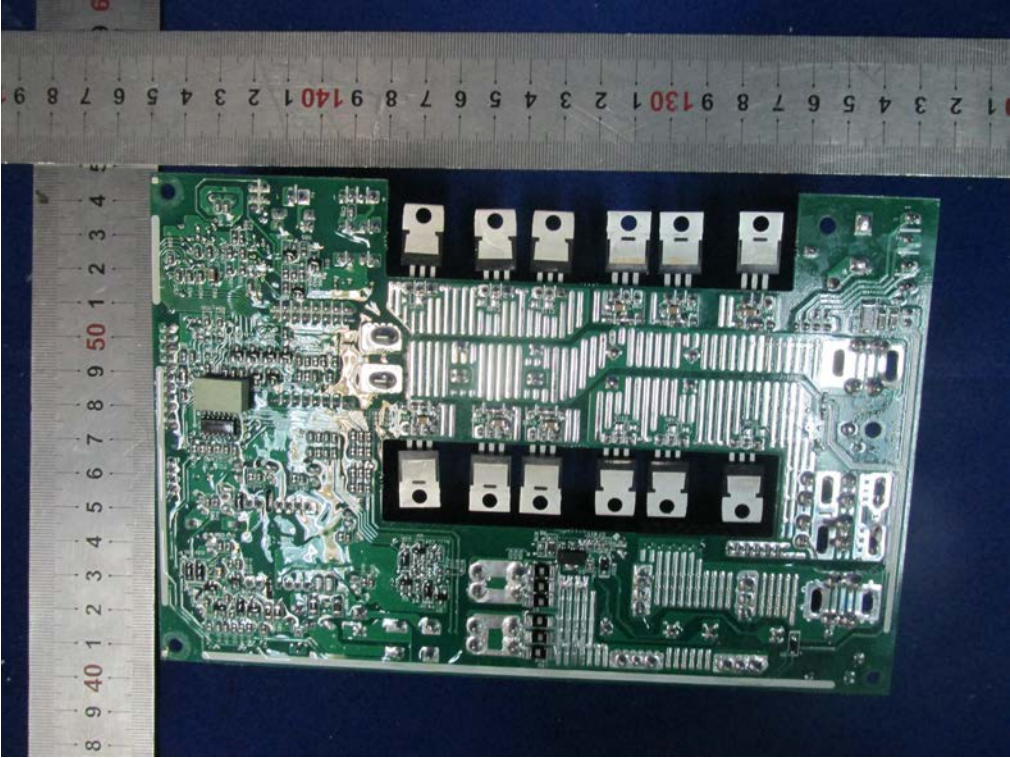


Fig. 10 -- FlinInfini Lite 5kW-48V PCB of MPPT charger board trace view

Pictures

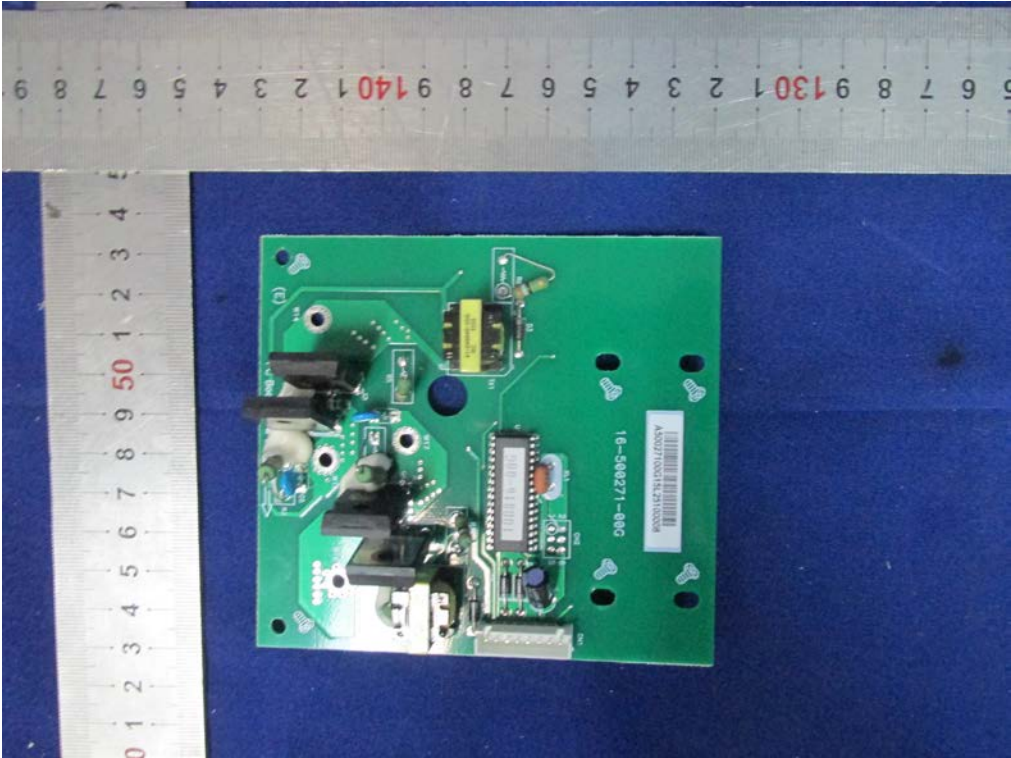


Fig. 11 -- FlinInfini Lite 5kW-48V PCB of SCR board components view

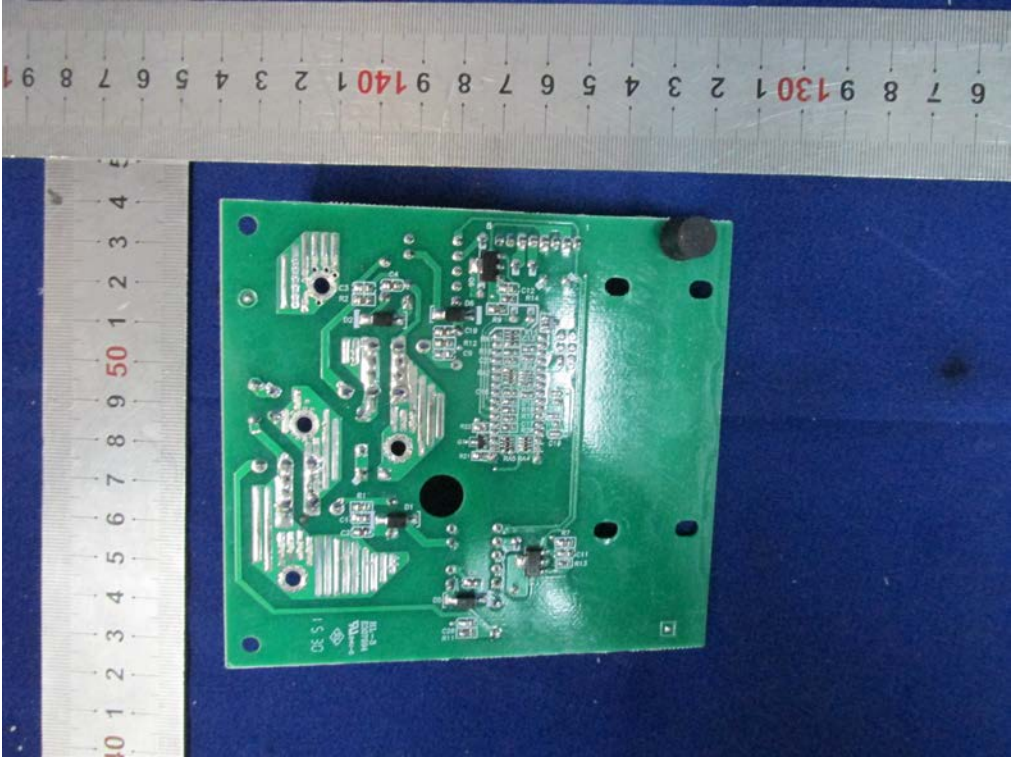


Fig. 12 -- FlinInfini Lite 5kW-48V PCB of SCR board trace view

Pictures

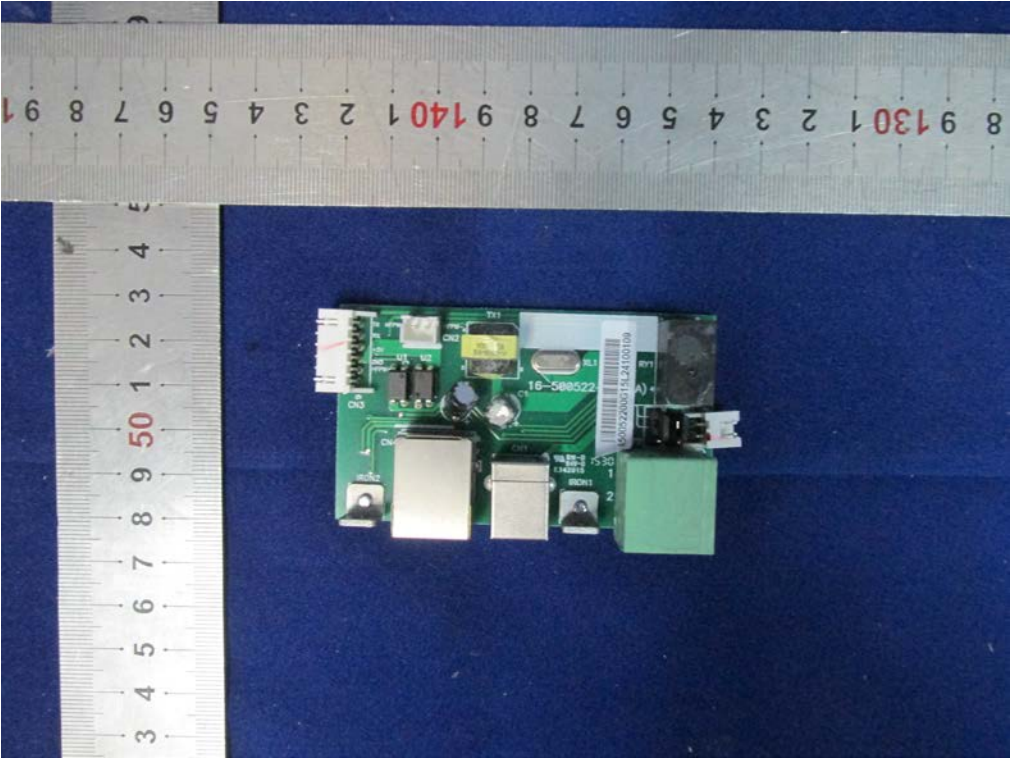


Fig. 13 -- FlinInfini Lite 5kW-48V of COMM board components view

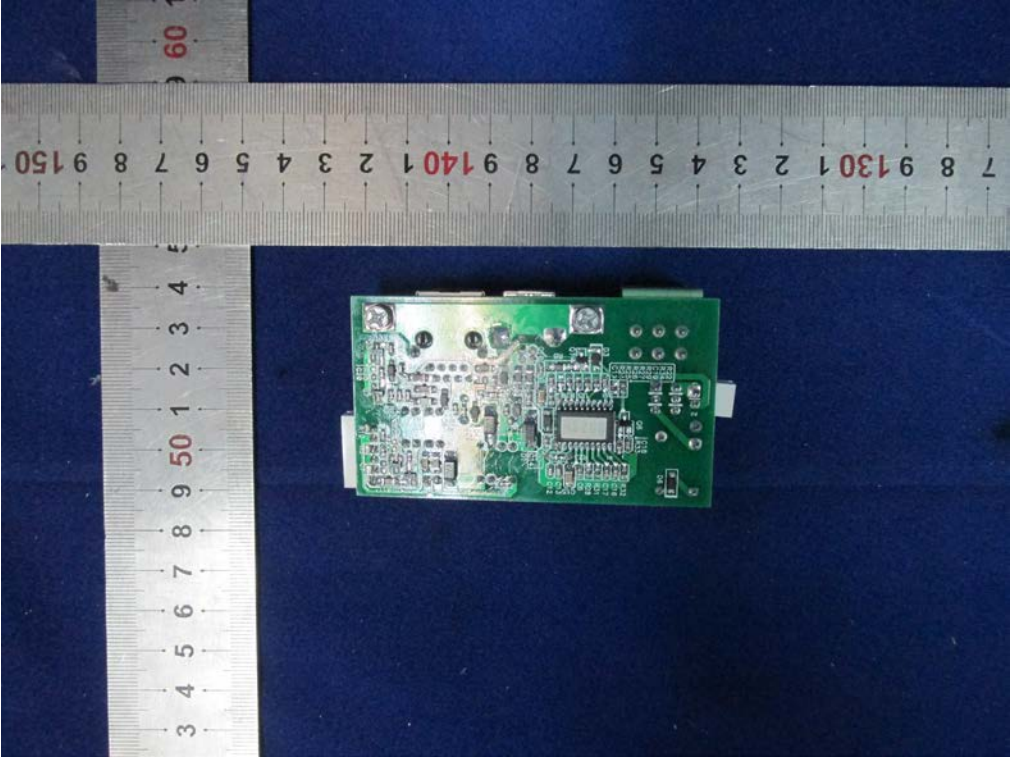


Fig. 14 -- FlinInfini Lite 5kW-48V PCB of COMM board trace view

Pictures

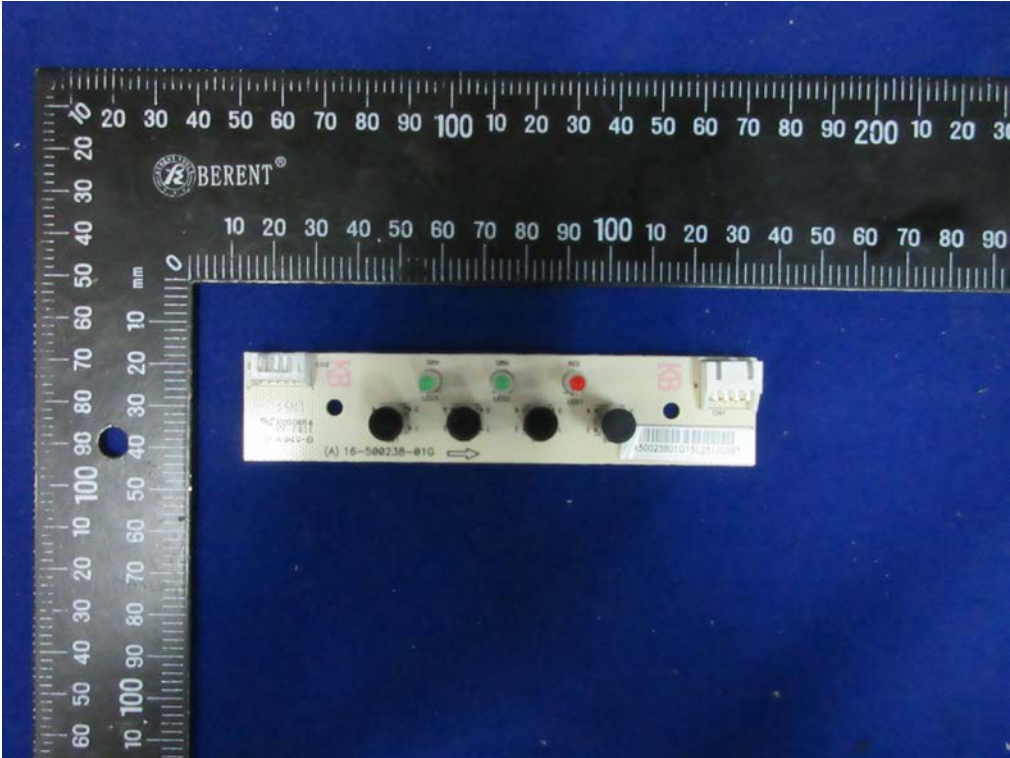


Fig. 15 -- FlinInfini Lite 5kW-48V PCB of panel board components view

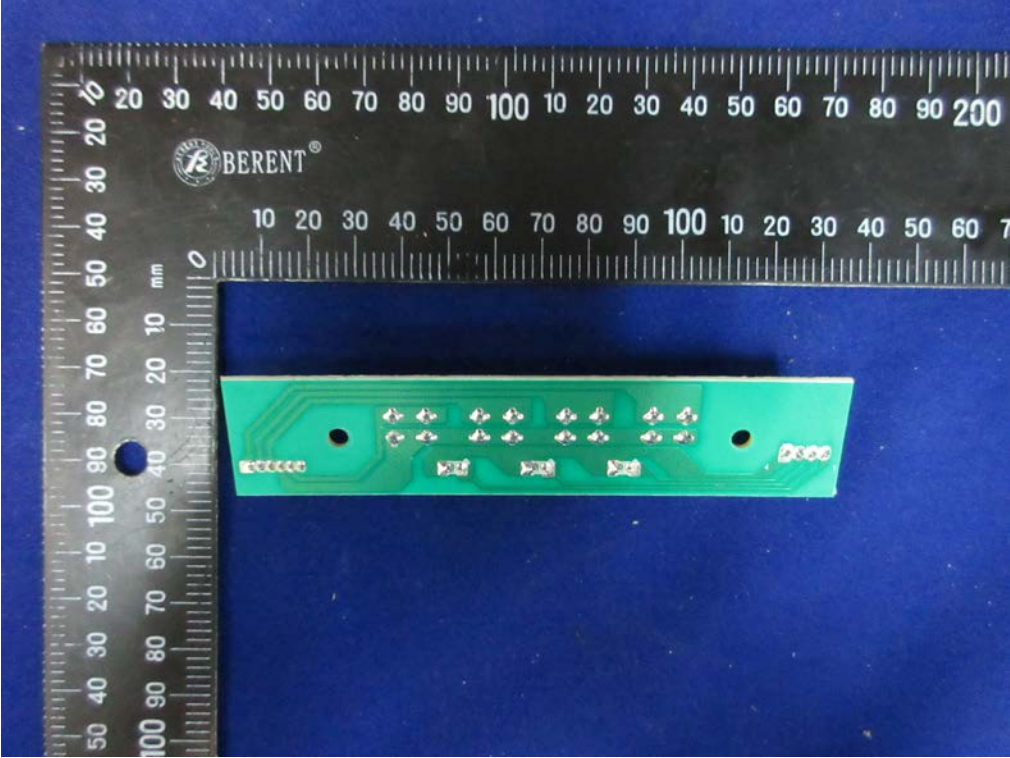


Fig. 16 -- FlinInfini Lite 5kW-48V PCB of panel board trace view

Pictures

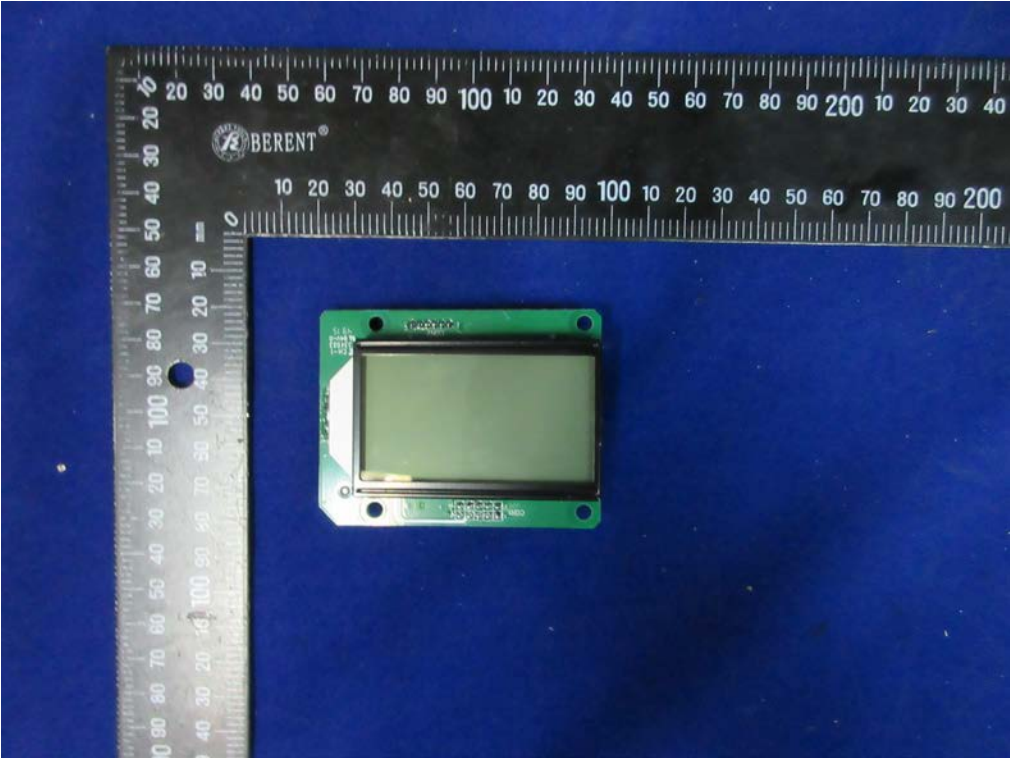


Fig. 17 -- FlinInfini Lite 5kW-48V PCB of LCD display board components view

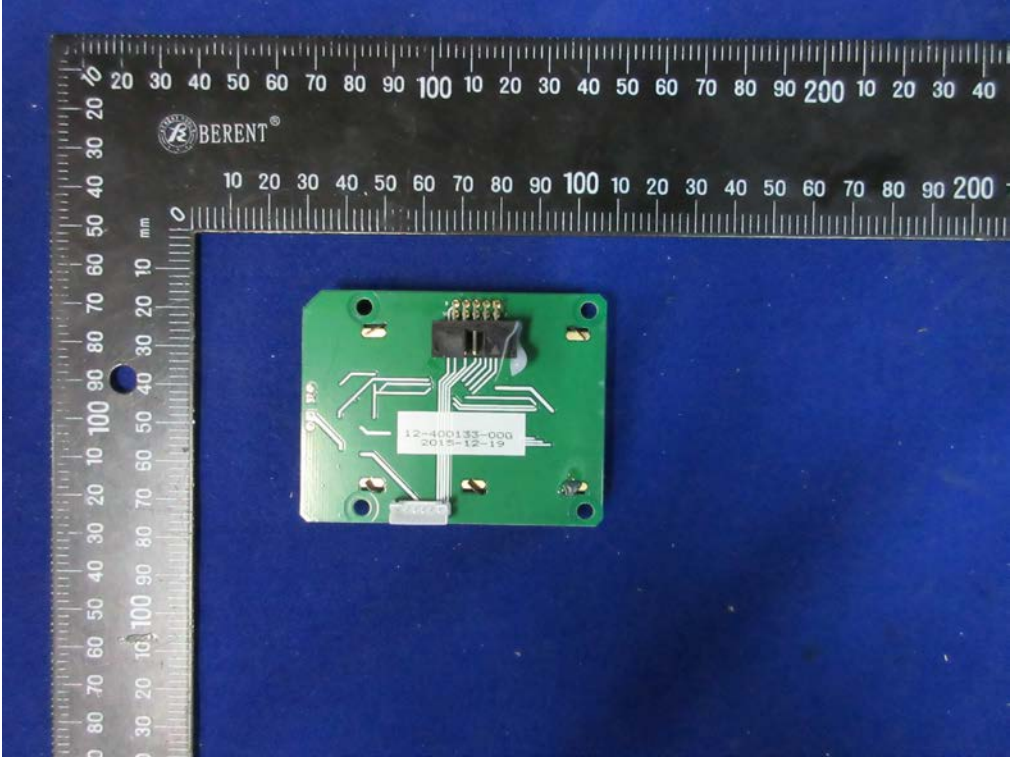


Fig. 18 -- FlinInfini Lite 5kW-48V PCB of LCD display board trace view

Pictures

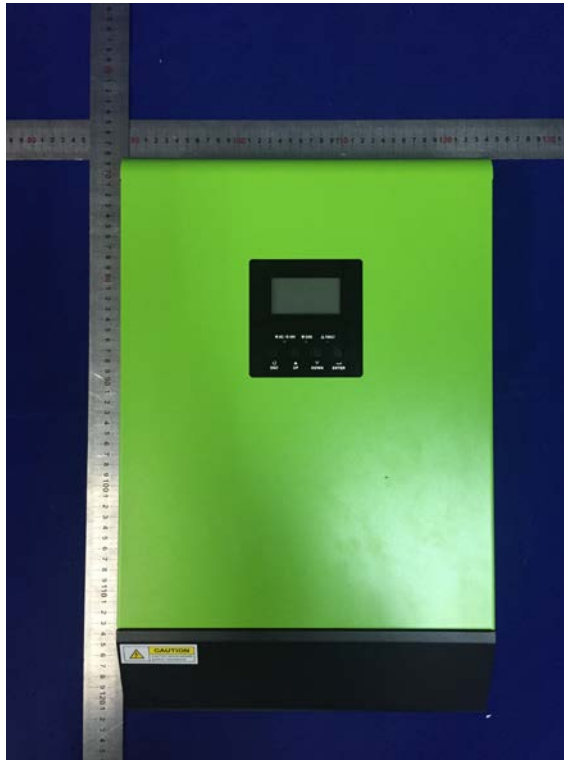


Fig. 19 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V over view I



Fig. 20 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V over view II

Pictures



Fig. 21 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V over view III

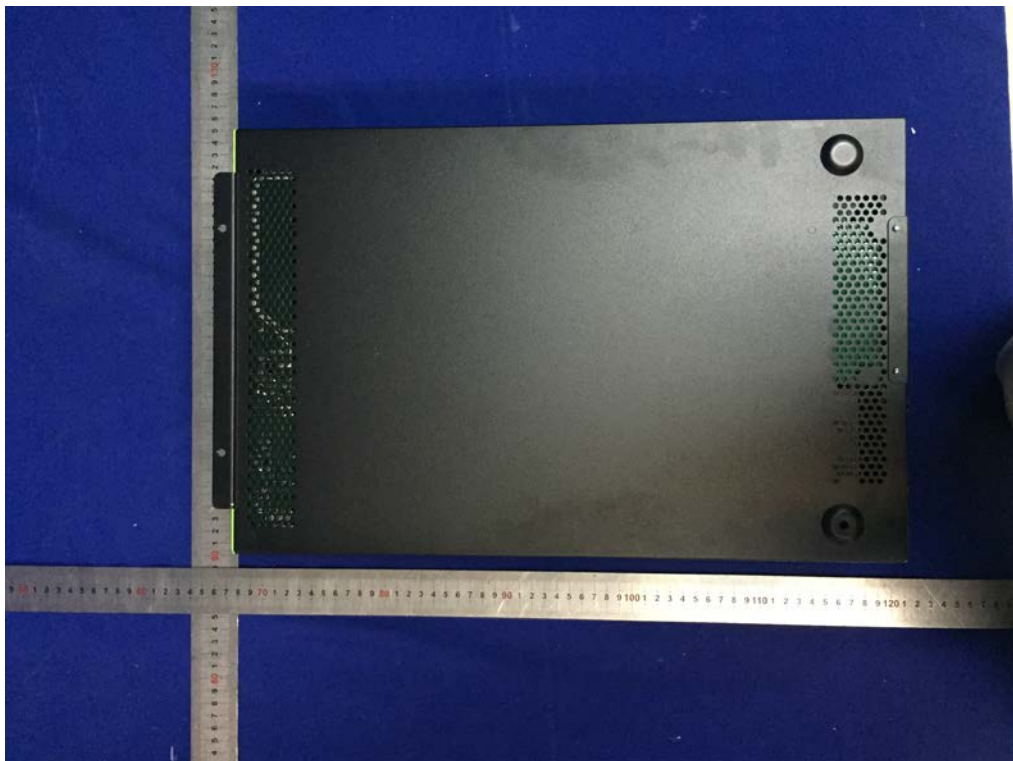


Fig. 22 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V over view V

Pictures



Fig. 23 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V input/output port view



Fig. 24 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V inside view I

Pictures



Fig. 25 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V inside view II

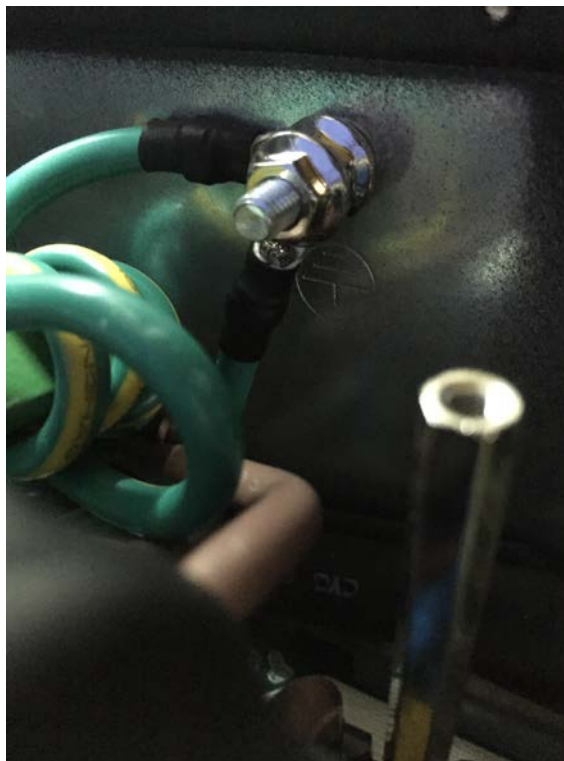


Fig. 26 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V protective earthing connection and earth marking

Pictures

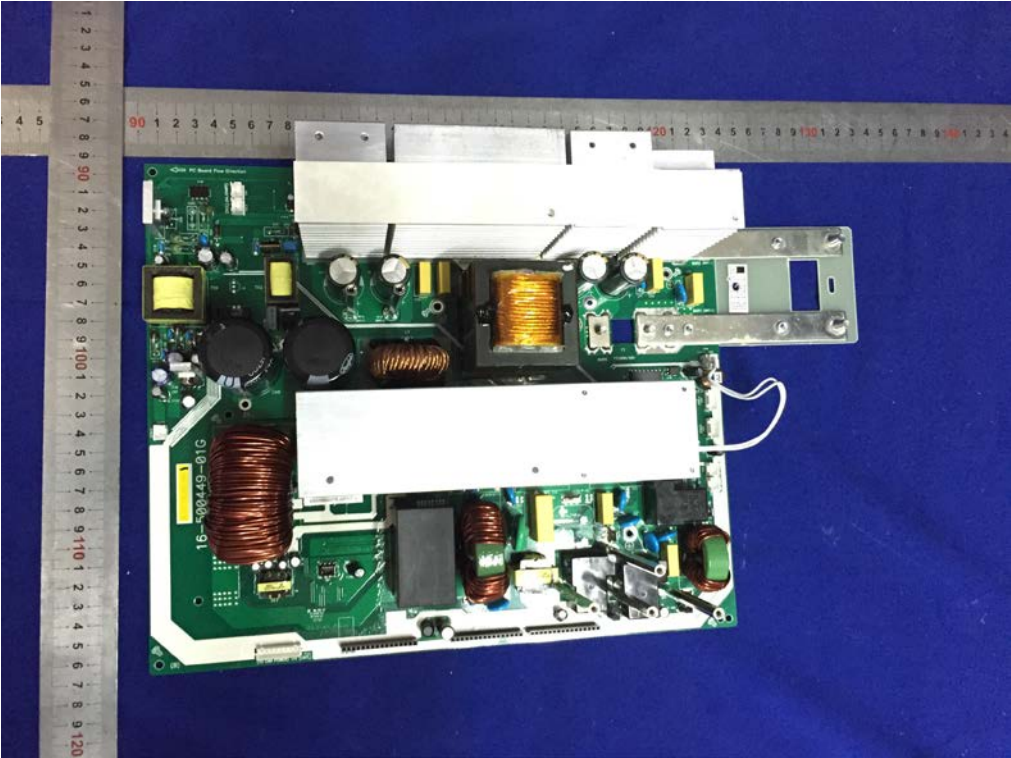


Fig. 27 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of main board components view

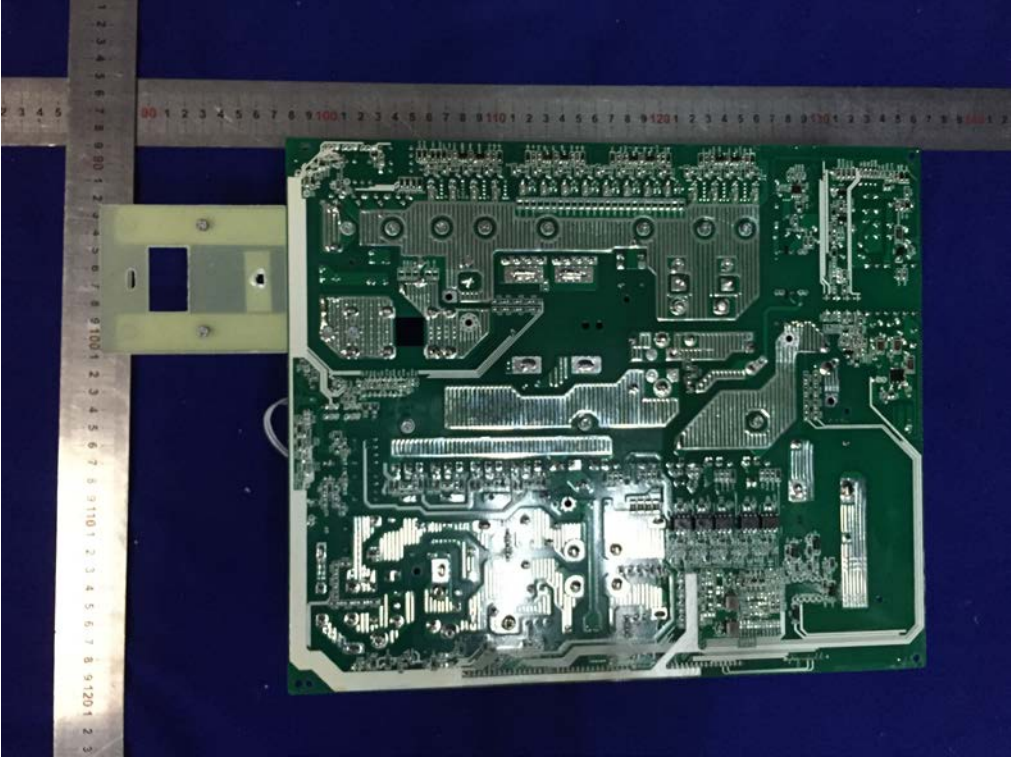


Fig. 28 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of main board trace view

Pictures

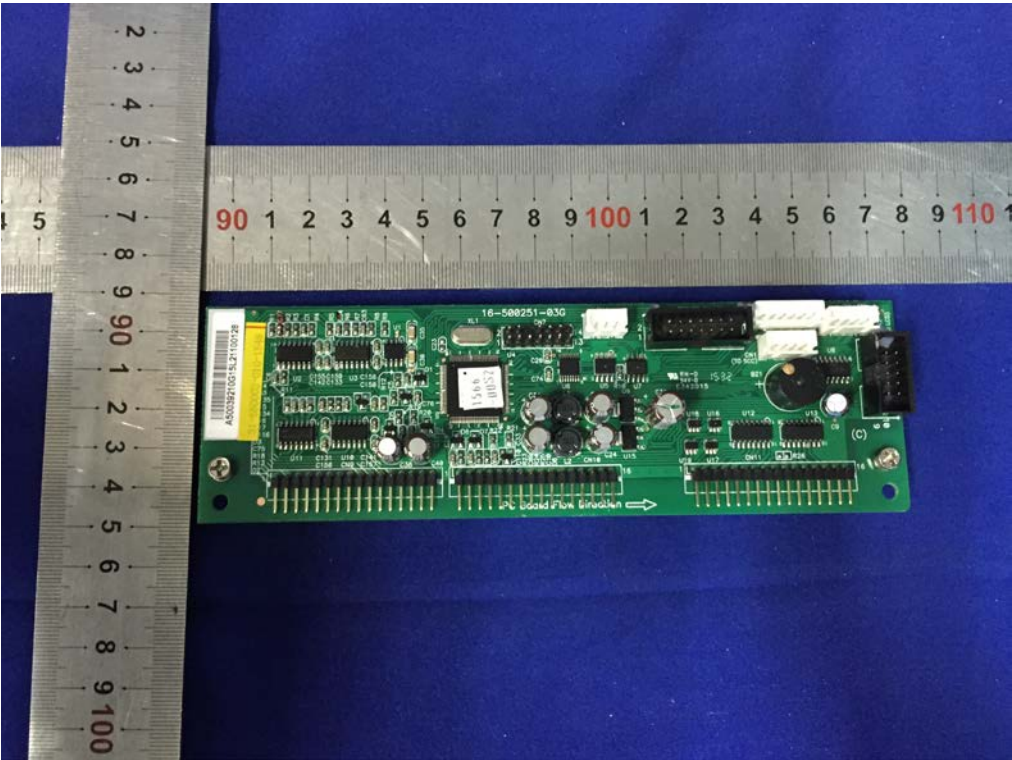


Fig. 29 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of control board components view

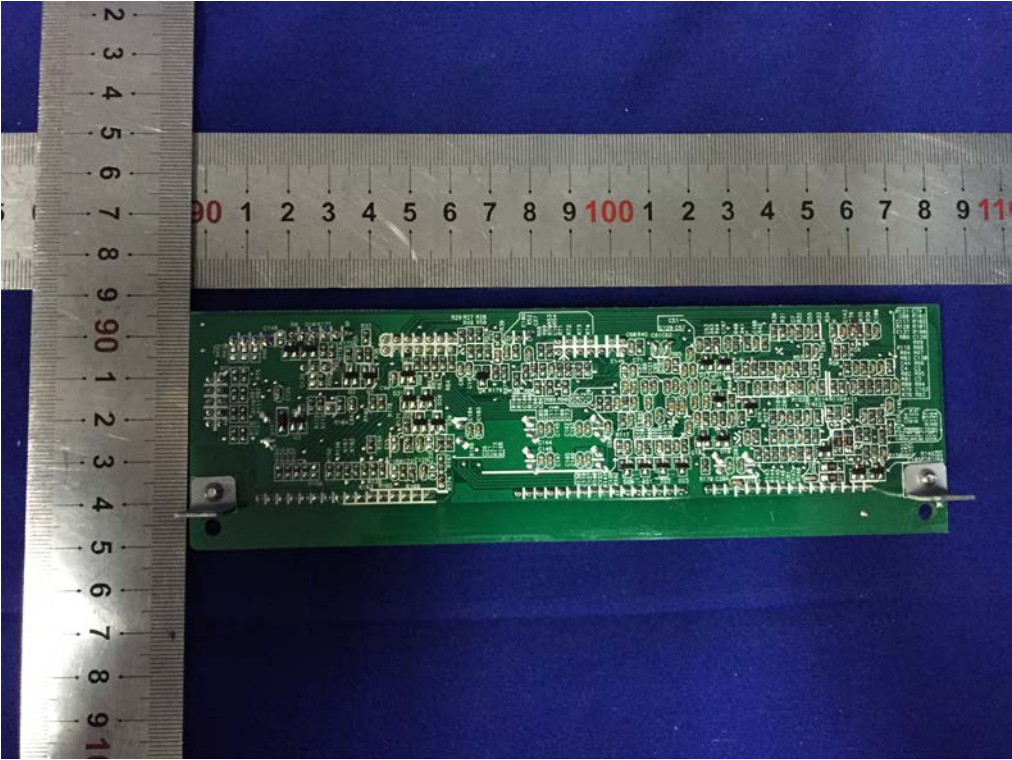


Fig. 30 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of control board trace view

Pictures

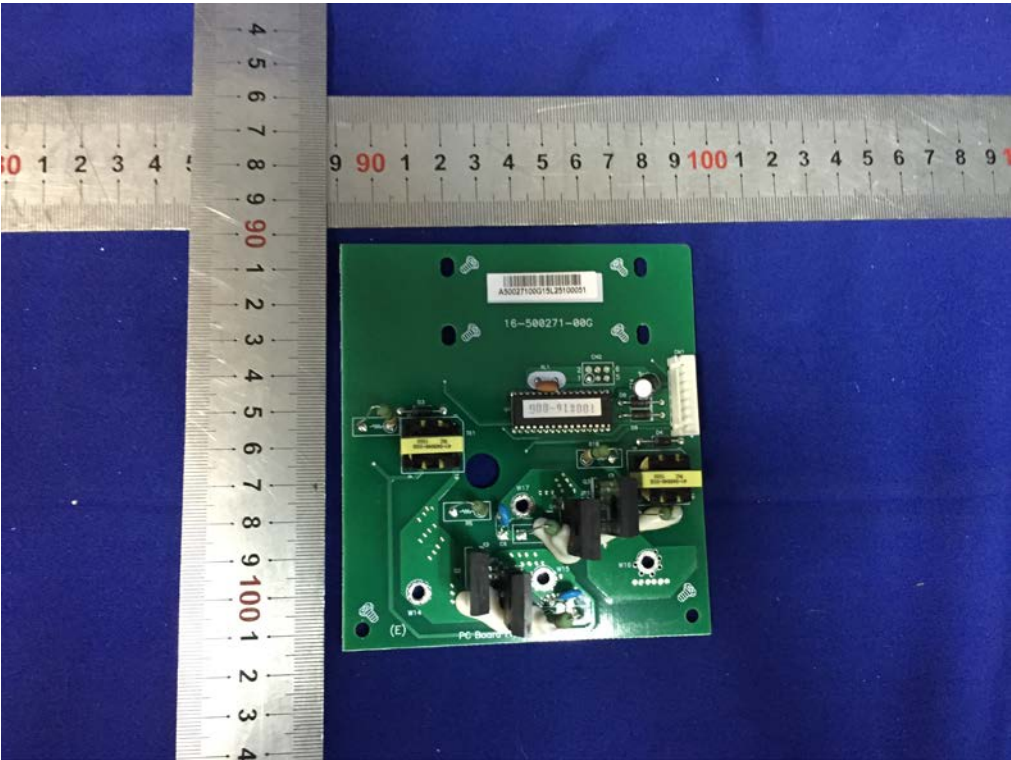


Fig. 31 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of SCR board components view

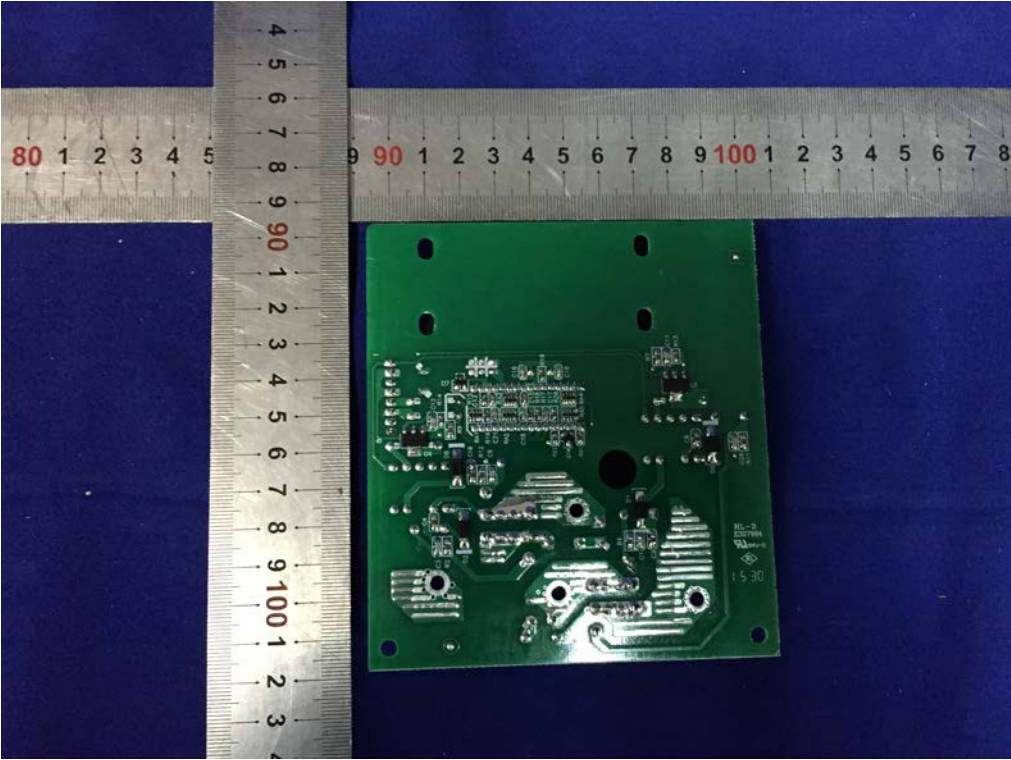


Fig. 32 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of SCR board trace view

Pictures

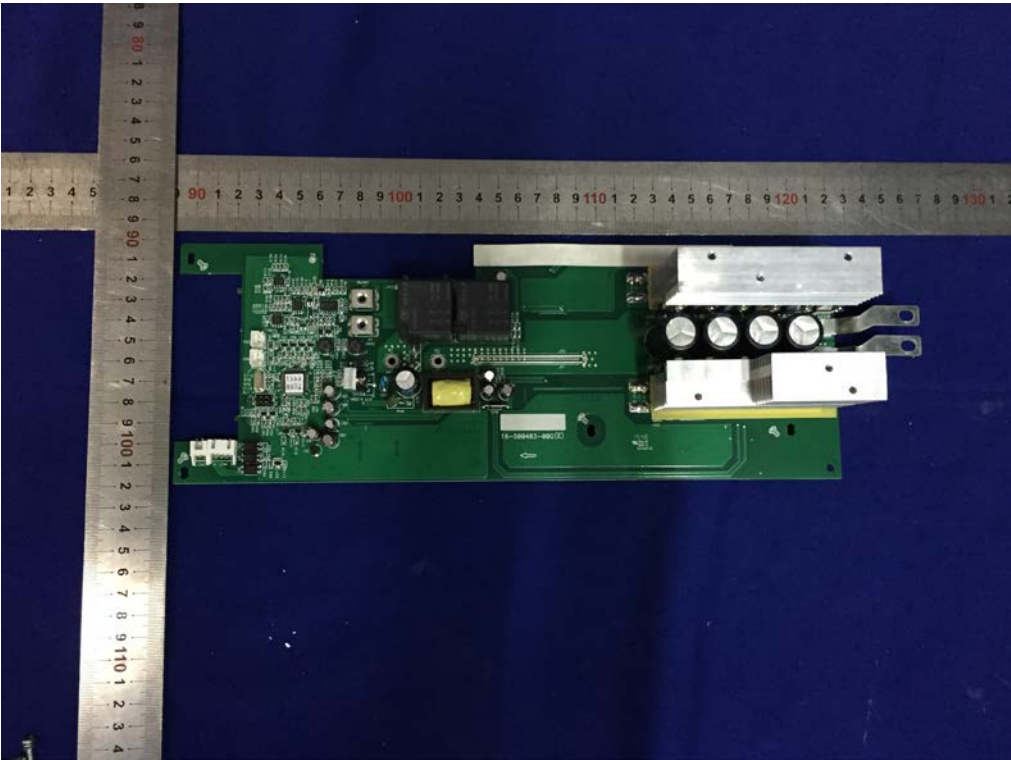


Fig. 33 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of MPPT charger board components view

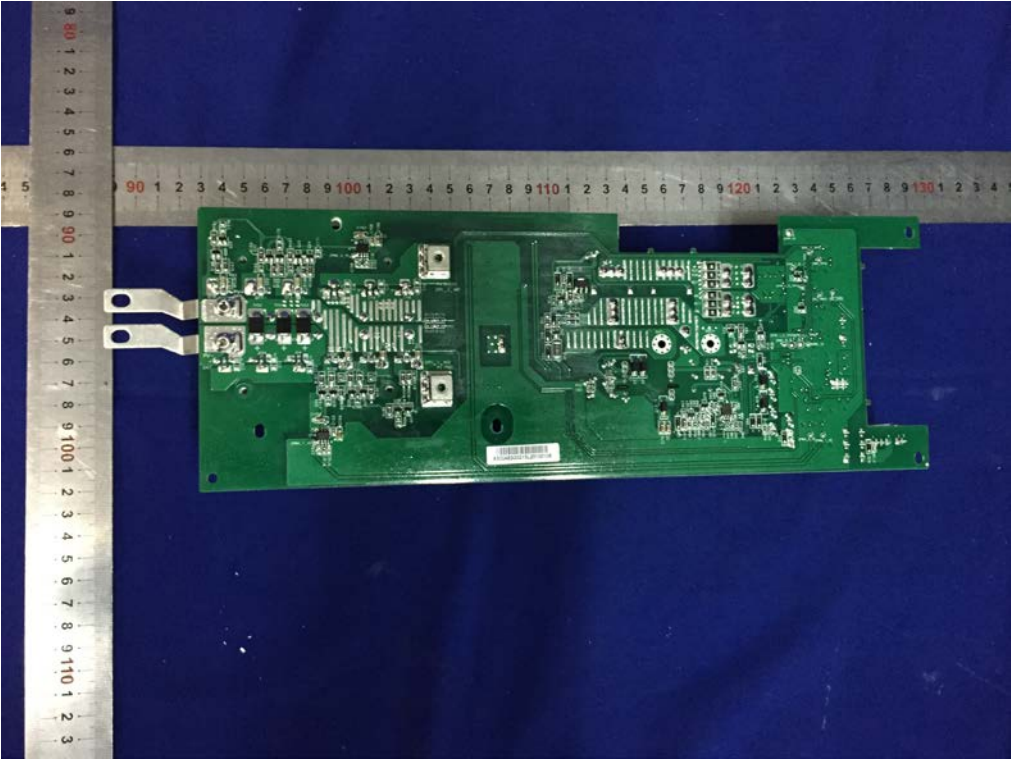


Fig. 34 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of MPPT charger board trace view

Pictures

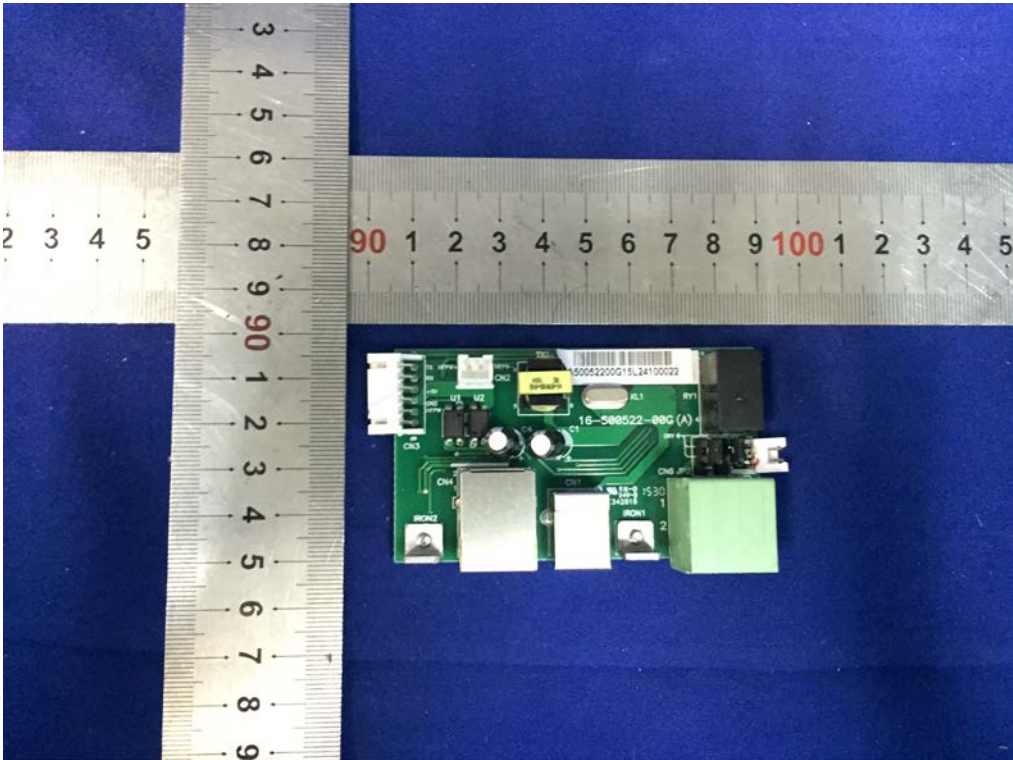


Fig. 35 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of COMM board components view

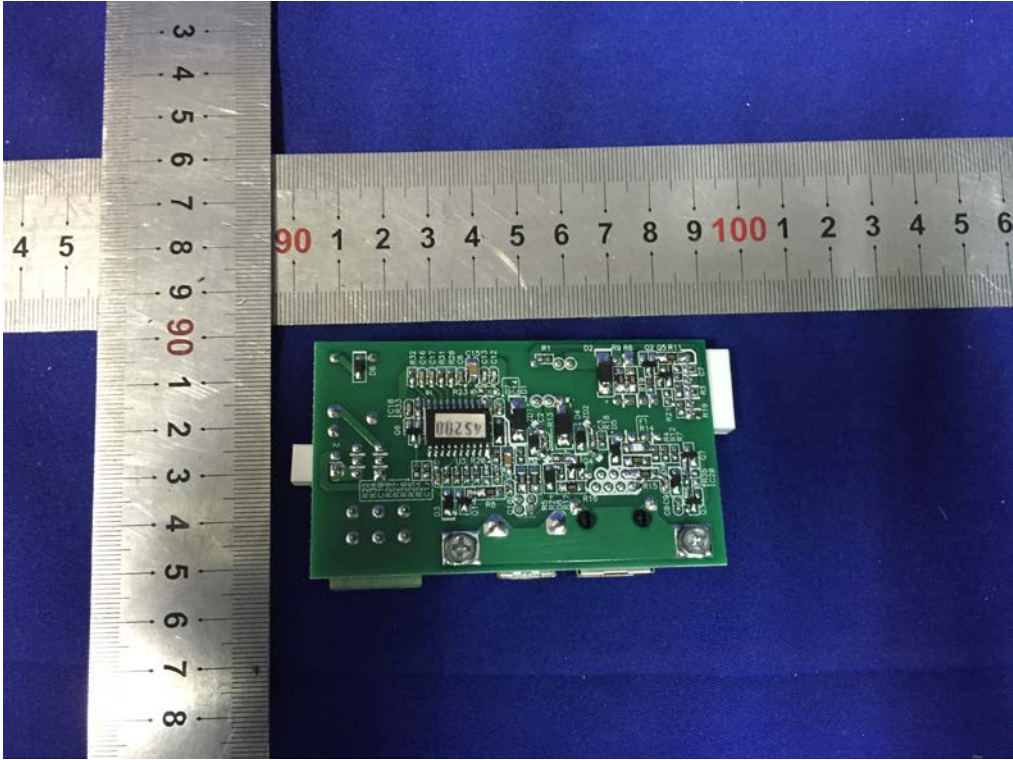


Fig. 36 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of COMM board trace view

Pictures

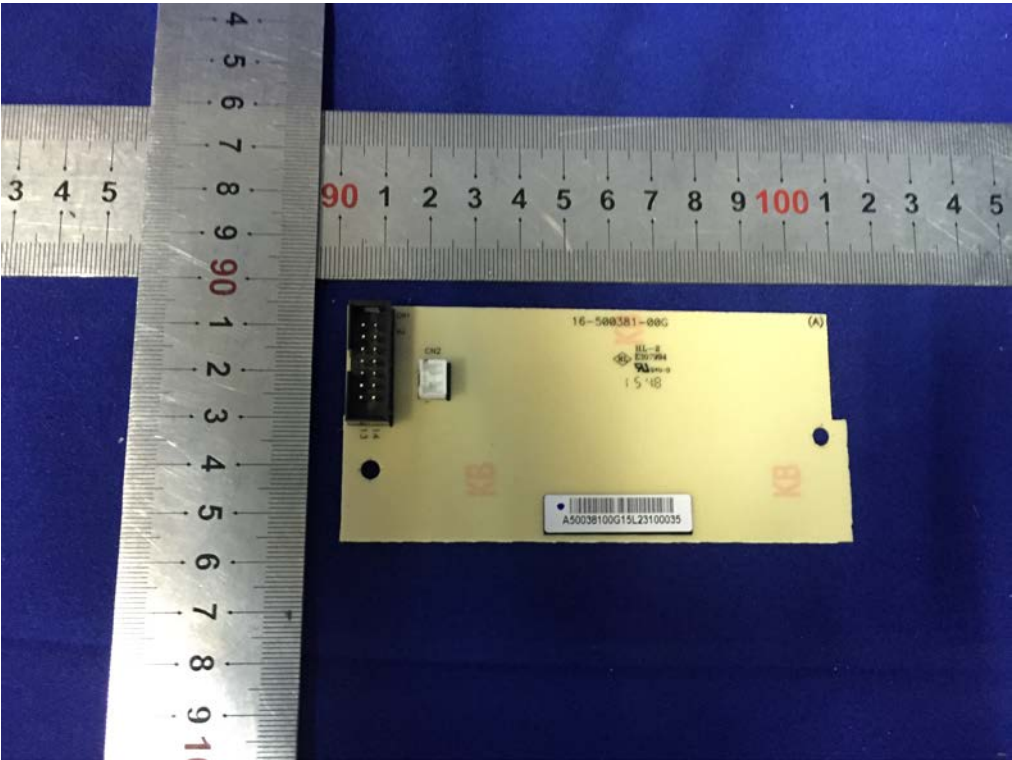


Fig. 37 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of PAR fake board components view

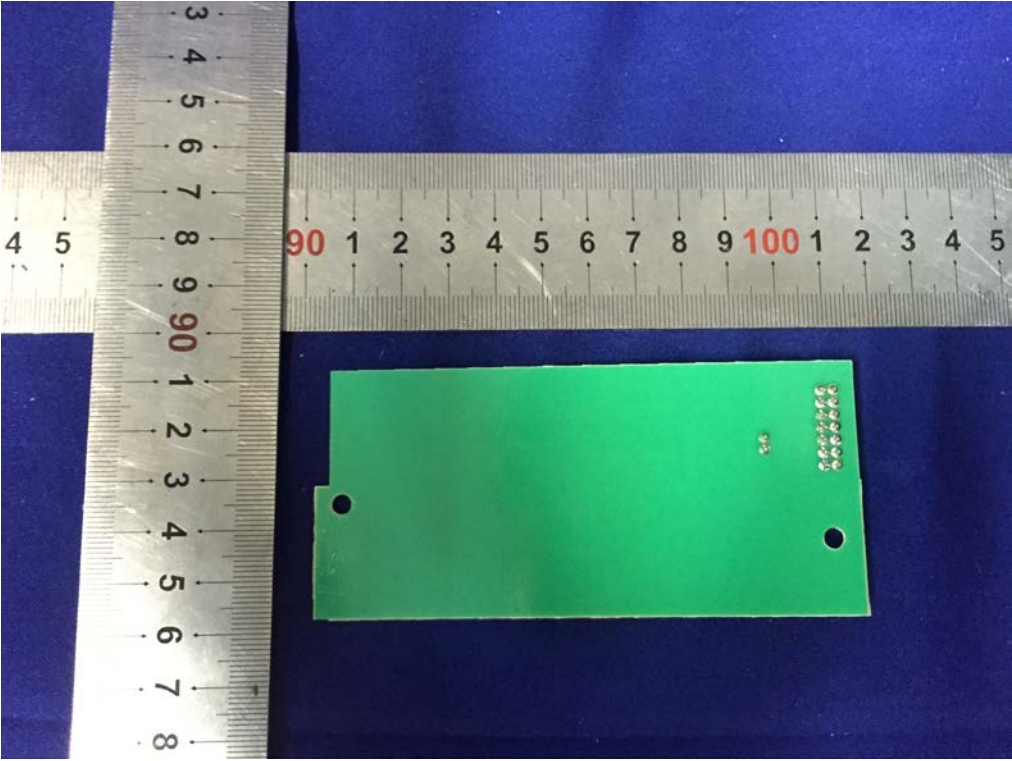


Fig. 38 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of PAR fake board trace view

Pictures

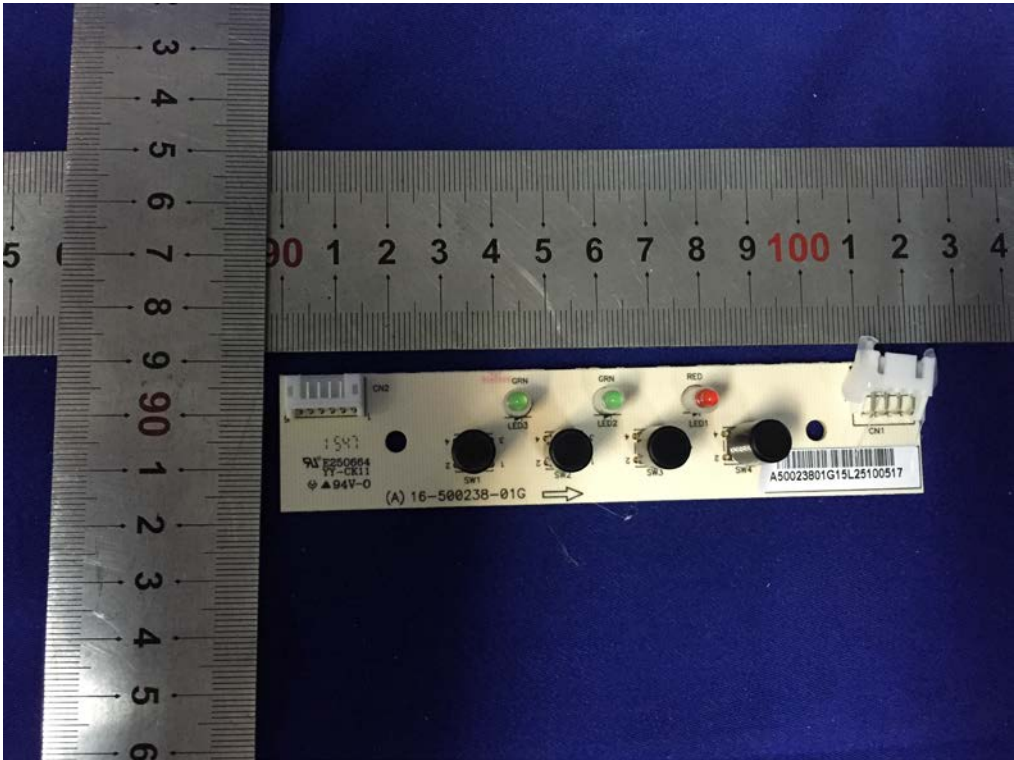


Fig. 39 -- FlnInfini Lite 3kW-48V&FlnInfini Lite 4kW-48V PCB of panel board components view

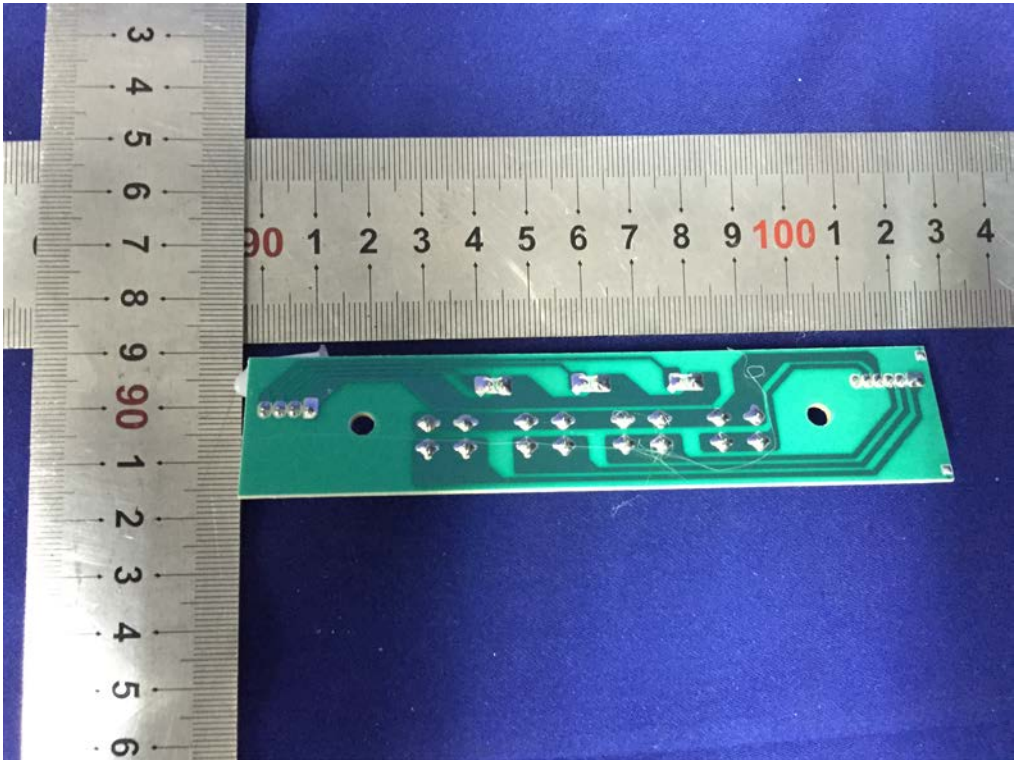


Fig. 40 -- FlnInfini Lite 3kW-48V&FlnInfini Lite 4kW-48V PCB of panel board trace view

Pictures

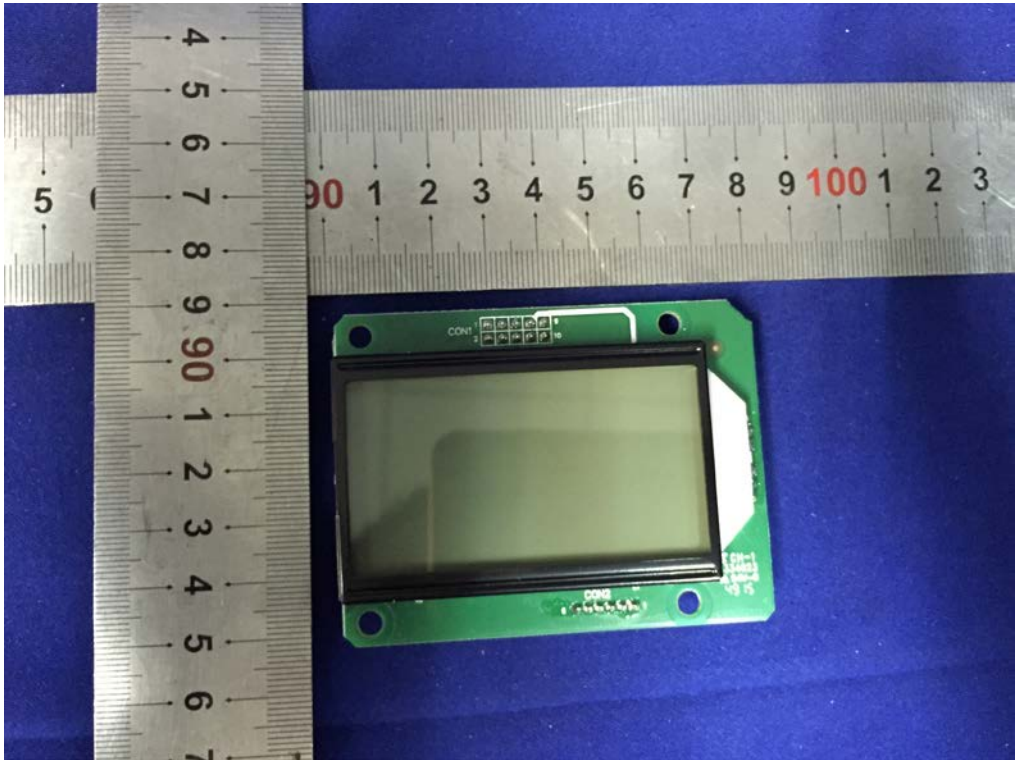


Fig. 41 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of LCD display board components view

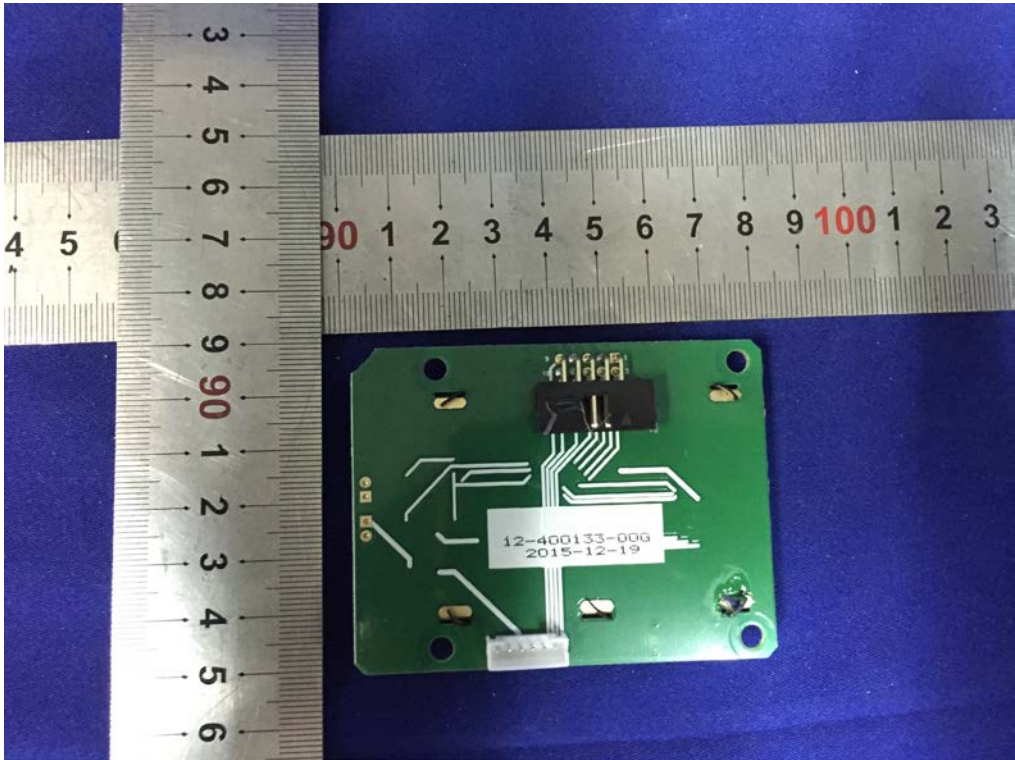


Fig. 42 -- FlinInfini Lite 3kW-48V&FlinInfini Lite 4kW-48V PCB of LCD display board board trace view