



## Danfoss Solar Inverters A/S

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### Introduction

The Danfoss TLX inverters TLX 10 k, TLX 12.5 k and TLX 15 k have been tested in accordance with IEC 61000-3-2 and IEC61000-3-12. The tests were conducted on a Spitzenberger grid simulator.

Harmonics content from 41-50 has been added to the table.

### Conclusion


The inverters have passed the tests.

### Test conditions

Date	Inverter parameter
2008-07-03	15 kW

### Test Equipment

No.	Equipment	Manufacturer
1	Grid simulator - Danfoss Drives	Spitzenberger

Date	Approved by
2009-08-05	
	Uffe Borup Senior Manager of Technology M.SC.E.E, Ph.D.

**Result**

Date:	2008-07-03		
Device:	TLX		
Type:	TLX 12.5 k & 15 k, 230V, phase L1		
Voltage:	230.83 Vrms	THDv:	0.02%
Current:	21.733 Arms	THDi:	3.28%
Power:	5011.9 W (15.0 kW total)		
Power factor:	-0.999		
Test:	Harmonic Analysis EN 61000-3-12		
Result:	Passed		

Harmonic	EN61000-3-12 Stage 1	Worst 2.5 min avg	PASS	FAIL
1	-	21.6816 A	X	
2	0.8693 A	0.0649 A	X	
3	4.6943 A	0.0123 A	X	
4	0.4346 A	0.0312 A	X	
5	2.3254 A	0.0191 A	X	
6	0.2897 A	0.0101 A	X	
7	1.5647 A	0.0201 A	X	
8	0.2173 A	0.0114 A	X	
9	0.8258 A	0.4575 A	X	
10	0.1738 A	0.0356 A	X	
11	0.6737 A	0.3856 A	X	
12	0.1449 A	0.0108 A	X	
13	0.4346 A	0.2523 A	X	
14	0.1242 A	0.0191 A	X	
15	----- A	0.1214 A	X	
16	0.1086 A	0.0203 A	X	
17	----- A	0.1367 A	X	
18	0.0966 A	0.0249 A	X	
19	----- A	0.1458 A	X	
20	0.0869 A	0.0120 A	X	
21	----- A	0.0567 A	X	
22	0.0790 A	0.0264 A	X	
23	----- A	0.0908 A	X	
24	0.0724 A	0.0209 A	X	
25	----- A	0.0407 A	X	
26	0.0669 A	0.0075 A	X	
27	----- A	0.0281 A	X	
28	0.0621 A	0.0041 A	X	
29	----- A	0.0195 A	X	
30	0.0580 A	0.0075 A	X	
31	----- A	0.0281 A	X	
32	0.0543 A	0.0041 A	X	
33	----- A	0.0195 A	X	
34	0.0511 A	0.0052 A	X	
35	----- A	0.0201 A	X	
36	0.0483 A	0.0047 A	X	
37	----- A	0.0176 A	X	
38	0.0458 A	0.0037 A	X	
39	----- A	0.0100 A	X	
40	0.0435 A	0.0435 A	X	
41	----- A	0.0200 A		
42	----- A	0.0050 A		
43	----- A	0.0330 A		
44	----- A	0.0050 A		
45	----- A	0.0170 A		
46	----- A	0.0050 A		
47	----- A	0.0150 A		
48	----- A	0.0050 A		
49	----- A	0.0090 A		
50	----- A	0.0050 A		

*The harmonics from 41-50 are not included in the THD calculation.*

## Result

Date:	2008-07-03		
Device:	TLX		
Type:	TLX 10 k, 230V, phase L1		
Voltage:	230.82 Vrms	THDv:	0.02%
Current:	12.969 Arms	THDi:	3.65%
Power:	2986.5 W (8.93 kW total)		
Power factor:	-0.998		
Test:	Harmonic Analysis EN 61000-3-2		
Result:	Passed		

Harmonic	EN61000-3-2 Stage 1	Worst 2.5 min avg	PASS	FAIL
1	-	12.9329 A	X	
2	1.0800 A	0.0479 A	X	
3	2.3000 A	0.0111 A	X	
4	0.4300 A	0.0366 A	X	
5	1.1400 A	0.0138 A	X	
6	0.3000 A	0.0122 A	X	
7	0.7700 A	0.0155 A	X	
8	0.2300 A	0.0237 A	X	
9	0.4000 A	0.3216 A	X	
10	0.1840 A	0.0427 A	X	
11	0.3300 A	0.2584 A	X	
12	0.1533 A	0.0184 A	X	
13	0.2100 A	0.1264 A	X	
14	0.1314 A	0.0147 A	X	
15	0.1500 A	0.0754 A	X	
16	0.1150 A	0.0212 A	X	
17	0.1324 A	0.0933 A	X	
18	0.1022 A	0.0118 A	X	
19	0.1184 A	0.0546 A	X	
20	0.0920 A	0.0071 A	X	
21	0.1071 A	0.0344 A	X	
22	0.0836 A	0.0061 A	X	
23	0.0978 A	0.0405 A	X	
24	0.0767 A	0.0099 A	X	
25	0.0900 A	0.0345 A	X	
26	0.0708 A	0.0050 A	X	
27	0.0833 A	0.0192 A	X	
28	0.0657 A	0.0046 A	X	
29	0.0776 A	0.0286 A	X	
30	0.0613 A	0.0047 A	X	
31	0.0726 A	0.0266 A	X	
32	0.0575 A	0.0025 A	X	
33	0.0682 A	0.0159 A	X	
34	0.0541 A	0.0041 A	X	
35	0.0643 A	0.0271 A	X	
36	0.0511 A	0.0037 A	X	
37	0.0608 A	0.0246 A	X	
38	0.0484 A	0.0026 A	X	
39	0.0577 A	0.0170 A	X	
40	0.0460 A	0.0041 A	X	
41	-,-,-,- A	0.0180 A		
42	-,-,-,- A	0.0050 A		
43	-,-,-,- A	0.0310 A		
44	-,-,-,- A	0.0050 A		
45	-,-,-,- A	0.0140 A		
46	-,-,-,- A	0.0050 A		
47	-,-,-,- A	0.0130 A		
48	-,-,-,- A	0.0050 A		
49	-,-,-,- A	0.0080 A		
50	-,-,-,- A	0.0050 A		

*The harmonics from 41-50 are not included in the THD calculation.*