





Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 62384</b> <b>DC or AC supplied electronic control gear for LED modules</b> <b>Performance requirements</b>	
<b>Report Number.....</b>	4789057363.1.2
<b>Date of issue.....</b>	2019-09-10; Amendment 1: 2020-03-29
<b>Total number of pages .....</b>	16 (Including attachment)
<b>Name of Testing Laboratory preparing the Report .....</b>	UL-CCIC Company limited GuangZhou Branch
<b>Applicant's name .....</b>	Energy Recovery Products (Zhuhai) Co., Ltd.
<b>Address.....</b>	Nanping Scientific Tec Industry Park No.8 Pingdong Rd 2, Zhuhai, Guangdong, 519060, China
<b>Test specification:</b>	
<b>Standard .....</b>	IEC 62384:2006, AMD1:2009
<b>Test procedure .....</b>	CB Scheme
<b>Non-standard test method .....</b>	N/A
<b>Test Report Form No. ....</b>	IEC62384C
<b>Test Report Form(s) Originator ....</b>	IMQ S.p.A.
<b>Master TRF .....</b>	Dated 2019-05-07
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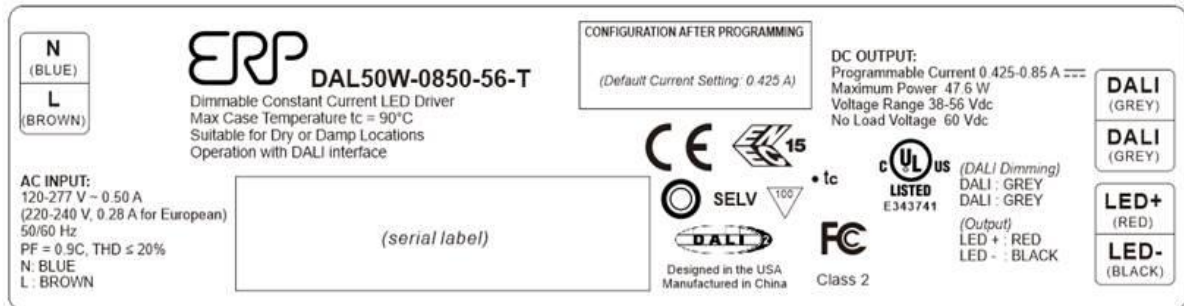
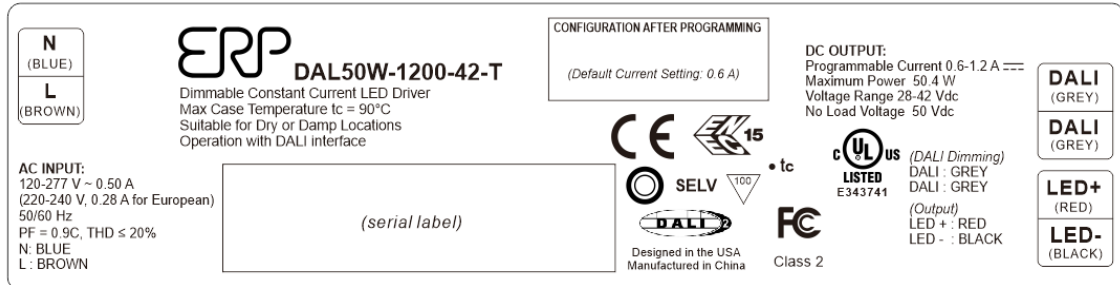
<b>Test item description</b> ..... :	D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES
<b>Trade Mark</b> ..... :	ERP
<b>Manufacturer</b> .....	Same as applicant
<b>Model/Type reference</b> .....	DALPPW-XXXX-VV-T-YYYYY-ZZZZZ
<b>Ratings</b> .....	Input: 220-240 Vac, 50/60 Hz, Max. 0.28 A; PF:0.9C Output : see model list Built-in, double insulation, SELV, constant current output, tc: 90 °C; non-inherently short circuit proof and 100 °C declared thermally protected lamp controlgear.

<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	
<b>Testing location/ address.....:</b>		UL-CCIC Company Limited Guangzhou Branch Electronic Building, Parage Electronic Industrial Park, No. 8 Nanyun Er Road, Guangzhou Science Park, Guangzhou 510670, China
<b>Tested by (name, function, signature).....:</b>		Ben Han / Project Handler 
<b>Approved by (name, function, signature)....:</b>		Anna Luo / Reviewer 
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name, function, signature).....:</b>		
<b>Approved by (name, function, signature)....:</b>		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name + signature) .....</b>		
<b>Witnessed by (name, function, signature) .:</b>		
<b>Approved by (name, function, signature)....:</b>		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	
<b>Testing location/ address.....:</b>		
<b>Tested by (name, function, signature).....:</b>		
<b>Witnessed by (name, function, signature) .:</b>		
<b>Approved by (name, function, signature)....:</b>		
<b>Supervised by (name, function, signature) :</b>		

<b>List of Attachments (including a total number of pages in each attachment):</b> Attachment 1: Europe National differences; total 1 page. Attachment 2: test data; total 2 pages Attachment 3: Product photos; total 2 pages	
<b>Summary of testing:</b> The LED drivers were found to comply with the requirement of IEC 62384: 2006 (First Edition) + A1: 2009.	
<b>Tests performed (name of test and test clause):</b> 6. Marking 7. Output Voltage and Current 8. Total Circuit Power 9. Circuit Power factor 10. Supply Current 11. Impedance at audio-Frequencies 12. Operational tests for abnormal conditions 13. Endurance6.	<b>Testing location:</b> <b>UL-CCIC Company Limited, Guangzhou Branch</b> <b>Electronic Building, Parage Electronic Industrial</b> <b>Park, No.8 Nanyun Er Road, Guangzhou</b> <b>Science Park, Guangzhou 510670, China</b>
<b>Summary of compliance with National Differences (List of countries addressed):</b>  European Group differences (Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom) <input checked="" type="checkbox"/> <b>The product fulfils the requirements of EN 62384:2006/A1:2009</b>	

**Copy of marking plate:**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

**Representative**

**Location: attached on the surface of enclosure**

<b>Test item particulars</b> .....:	
<b>Classification of installation and use</b> .....:	Double-Insulation and used for LED module
<b>Supply Connection</b> .....	Terminal block
.....:	
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....: N/A	
- test object does meet the requirement.....: P (Pass)	
- test object does not meet the requirement.....: F (Fail)	
<b>Testing</b> .....:	
<b>Date of receipt of test item</b> .....	2019-06-17 Amendment 1: 2020-03-16
<b>Date (s) of performance of tests</b> .....	2019-06-17 to 2019-08-23 Amendment 1: 2020-03-16 to 2020-03-29
<b>General remarks:</b>	
<p>"(See Enclosure #)" refers to additional information appended to the report.          "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:</b>	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> .....	Energy Recovery Products (Zhuhai) Co., Ltd. Nanping Scientific Tec Industry Park No.8 Pingdong Rd 2, Zhuhai, Guangdong, 519060, China

**General product information and other remarks:**

Products covered by this report is built-in, double insulated LED driver with lead wire for input and output.

It has the DALI dimming function that adjust the output current by DALI, the max. output current do not more than the limit in the model list, the DALI circuit have evaluated that isolated with output circuit.

These model are similar with the original model DAL50W-1200-42-T, they have same construction, electronic circuit and PCB-Layout except parameters of output and some components. Model DAL50W-1200-42-T was selected as the test model due to it have the Max. power and output current and confirmed by the manufacture.

The models are denoted by the following nomenclature:

Model: DALPPW-XXXX-VV-T-YYYY-ZZZZ

1. "PP" – Denotes output power (Pout) rating code. PP"– If  $P_{out} \leq 10W$ , "PP"=10; if  $10W < P_{out} \leq 20W$ , "PP"=20; if  $20W < P_{out} \leq 30W$ , "PP"=30; if  $30W < P_{out} \leq 40W$ , "PP"=40; if  $40W < P_{out} \leq 50.4W$ , "PP"=50.
2. "XXXX" – Denotes regulated output current. Regulated output current is not greater than Max. output regulated current within the output current range.
3. "VV" – Denotes Maximum output voltage, it may be "08-56" Vdc.
4. "-YYYY"-Denotes customer code for market purpose only. It could be blank, 2- 5 digits, any combination of alphanumeric characters or blank;
5. "-ZZZZ" - Denotes customer code for market purpose only. It could be blank, 2-5 digits, any combination of alphanumeric characters or blank.

Model List:

Models	programmable Max. current (mA))	Max output Voltage (V dc)	Max. no load Voltage (V dc)	Max. output power (W)
DAL10W-XXXX-VV-T-YYYY-ZZZZ	100-1200	56	60	10
DAL20W-XXXX-VV-T-YYYY-ZZZZ	100-1200	56	60	20
DAL30W-XXXX-VV-T-YYYY-ZZZZ	100-1200	56	60	30
DAL40W-XXXX-VV-T-YYYY-ZZZZ	100-1200	56	60	40
DAL50W-XXXX-VV-T-YYYY-ZZZZ	100-1200	56	60	50.4

**Original CB test report dated 2019-09-10, Amendment No. 1: 2020-03-29.**

**Amendment 1 Report: (Technical Amendment)**

**The Original test Report Ref. No. 4789057363.1.2, dated 2019-09-10 was modified on 2020-03-29 to include the following changes and /or additions:**

**Update Model/Type reference and add Model nomenclature for Series model DALPPW-XXXX-VV-T-YYYY-ZZZZ, the series are similar as DAL50W-1200-42-T except the parameters of output and some components. In addition to update Ratings and add Marking Plate.**

IEC 62384			
Clause	Requirement + Test	Result - Remark	Verdict
<b>5</b>	<b>CLASSIFICATION</b>		
5.1	Classification according to the load		P
	a) Single value load control gear ..... :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	P
	b) Multiple value load control gear ..... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
5.2	Classification according to the output voltage		P
	a) Control gear with stabilized output voltage ..... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
	b) Control gear without stabilized output voltage ... :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	P
5.3	Classification according to the output current		P
	a) Control gear with stabilized output current..... :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	P
	b) Control gear without stabilized output current.... :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
<b>6</b>	<b>MARKING</b>		
6.1	Mandatory marking		P
6.1.1	Circuit power factor..... :	0.9C	P
6.1.2	a) temperature range..... :	See page 4	P
	b) stabilized output voltage ..... :	See page 4	N/A
	c) stabilized output current ..... :	See page 4	P
	d) operation with a mains supply dimmer ..... :		N/A
	e) operation mode ..... :	DALI	P
6.2	Optional markings		P
	Total circuit power ..... :	See page 4	P
	b) Z symbol ..... :		N/A
	c) short-circuit proof type control gear. .... :	In manual	P
<b>7</b>	<b>OUTPUT VOLTAGE AND CURRENT</b>		<b>P</b>
7.1	Starting and connecting requirements		P
	The output should be within 110% of the rated value within 2 s		P
7.2	Voltage and current during operation		P
	- For non-stabilized output voltage, when supplied with the rated supply voltage, the output voltage shall not differ by more than $\pm 10\%$ of the rated voltage		P
	- For stabilized output voltage, when supplied between 92% and 106% of the rated supply voltage, the output voltage shall not differ by more than $\pm 10\%$ of the rated value		N/A



IEC 62384			
Clause	Requirement + Test	Result - Remark	Verdict
	- For non-stabilized output current, when supplied with the rated supply voltage, the output current shall not differ by more than $\pm 10\%$ of the rated voltage		N/A
	- For stabilized output current, when supplied between 92% and 106% of the rated supply voltage, the output current shall not differ by more than $\pm 10\%$ of the rated value		P
7.3	Capacitive load requirement		N/A
(A.2 fig. A.1a)	- The LED module or any additional control unit shall not disturb the control gear overcurrent detection		N/A
(A.2 fig. A.1b)	- The LED module or any additional control unit shall not disturb the starting process of the control gear		N/A
7.4	Voltage surges during switching and operation		N/A
	Voltage surges superimposed on the output voltage shall not exceed the values..... :	Under consideration	N/A
<b>8</b>	<b>TOTAL CIRCUIT POWER</b>		
	The total circuit power shall not be more than 110% of the value declared by the manufacturer		P
<b>9</b>	<b>CIRCUIT POWER FACTOR</b>		
	The measured circuit power factor shall not differ from the marked value by more than 0,05		P
<b>10</b>	<b>SUPPLY CURRENT</b>		
	The supply current shall not differ by more than +10% from the marked value		P
<b>11</b>	<b>IMPEDANCE AT AUDIO –FREQUENCIES (Appendix A, A.3)</b>		
	Audio frequency impedance (400 Hz - 2000 Hz)		N/A
<b>12</b>	<b>OPERATIONAL TESTS FOR ABNORMAL CONDITIONS</b>		
	a) without LED module(s) inserted		P
	at the end of this test the lamps(s) shall operate normally		P
	b) test for reduced LED module resistance	Under consideration	N/A
	c) Short-circuit proof control gear		P
	After the tests and after restoration of a protecting device, function normally		P
<b>13</b>	<b>ENDURANCE</b>		
13.1	a) temperature cycling shock test .....	-10°C and 90 °C	P
	5 cycles are carried out		P
	b) supply voltage switching test .....	240	P

IEC 62384			
Clause	Requirement + Test	Result - Remark	Verdict
	1000 cycles are carried out		P
13.2	The control gear shall then be operated at rated supply voltage and in ambient temperature which produces tc, until a test period of 200 h has elapsed		P
	at the end of this time the ballast shall correctly start and operate for 15 min		P

IEC 62384			
Clause	Requirement + Test	Result - Remark	Verdict

<b>14</b>	<b>TABLE: audio frequency impedance (400 Hz – 2000 Hz)</b>			<b>N/A</b>
fr (Hz)	Ur (V)	fs (Hz)	Z ( $\Omega$ )	Remarks
-	-	-	-	-
supplementary information:-				

<b>14</b>	<b>TABLE: audio frequency impedance (250 Hz – 400 Hz)</b>			<b>N/A</b>
fr (Hz)	Ur (V)	fs (Hz)	Z ( $\Omega$ )	Remarks
-	-	-	-	-
supplementary information:-				

IEC 62384
Attachment 1: Europe National Differences

<p align="center"><b>ATTACHMENT TO TEST REPORT IEC 62384 (EUROPE) NATIONAL DIFFERENCES</b> (DC OR AC SUPPLIED ELECTRONIC CONTROL GEAR FOR LED MODULES –PERFORMANCE REQUIREMENTS)</p>	
<b>Differences according to .....</b>	<b>EN 62384:2006/A1:2009</b>
<b>Attachment Form No.....</b>	N/A
<b>Attachment Originator .....</b>	N/A
<b>Master Attachment.....</b>	N/A
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>	<b>P</b>
	<b>No Common modifications</b>	<b>P</b>

IEC 62384
Attachment 2: test data

7.1	TABLE: Starting and connecting requirements						P
Model	Input		Output				
	U <sub>N</sub> [V]	F <sub>N</sub> [Hz]	V (a.c./d.c.) (meas.)	V (a.c./d.c.) (limit)	I (meas.) [A]	I (limit) [A]	Time [s] *
DAL50W-1200-42-T @	220	50	35.43	46.2	1.229	1.32	2
	220	60	35.49	46.2	1.229	1.32	2
	240	50	35.48	46.2	1.230	1.32	2
	240	60	35.52	46.2	1.231	1.32	2
DAL50W-1200-42-T @@	220	50	33.58	46.2	0.613	0.66	2
	220	60	33.63	46.2	0.613	0.66	2
	240	50	33.58	46.2	0.613	0.66	2
	240	60	33.60	46.2	0.613	0.66	2
DAL50W-1200-42-T @@@	220	50	35.36	46.2	1.213	1.32	2
	220	60	35.37	46.2	1.214	1.32	2
	240	50	35.45	46.2	1.213	1.32	2
	240	60	35.43	46.2	1.213	1.32	2
*) the output should be within 110 % of its rated value within 2 s Note: All tests carried out at the minimum power. @: test conducted without the dali dimmer @@: test conducted with the dali dimmer at the min. output current @@@: test conducted with the dali dimer at the max. output current.							

7.2	TABLE: Voltage and current during operation						P
Constant Voltage Mode							
Model	Input		Output				Loading
	UN [V]	FN [Hz]	V (meas.) [V]		V (limit) [V]		
			Min Load	Max Load	Min Load	Max Load	
DAL50W-1200-42-T	202.4	50	1.207	1.226	13.2	13.2	LED Module
		60	1.206	1.226			
	254.4	50	1.204	1.216	13.2	13.2	
		60	1.208	1.224			
	220	50	1.208	1.229	13.2	13.2	LED Module
		60	1.207	1.229			
	240	50	1.209	1.230	13.2	13.2	
		60	1.208	1.231			
		60	1.207	1.226			

IEC 62384
Attachment 2: test data

\*) when supplied at any supply voltage between 92 % and 106 % of the rated supply voltage, the output current shall not differ by more than  $\pm 10$  % from the rated current of the LED modules.

\*\*) when supplied with the rated supply voltage, the output voltage shall not differ by more than  $\pm 10$  % from the rated output voltage;

\*\*\*) the LED Modules used for testing provided by factory.

8 / 10	TABLE: Total circuit power and Supply current						P
Model	Input						Loading ( $\Omega$ )
	$U_N$ [V]	$F_N$ [Hz]	P(meas.) [W]	P (Upper limit*) [W]	I (meas.) [A]	I (Upper limit**) [A]	
DAL50W-1200-42-T	220	50	46.41	55.44	0.215.10	0.55	LED Module
	220	60	46.55	55.44	0.214.12	0.55	LED Module
	240	50	46.37	55.44	0.199.06	0.55	LED Module
	240	60	46.43	55.44	0.197.03	0.55	LED Module
<p>*) At rated voltage, the total circuit power shall not be more than 110 % of the rated value.</p> <p>**) At rated voltage, the supply current shall not differ by more than +10 % from the rated value.</p> <p>Note: The input power and supply current are obtained at rated maximum output power condition.</p>							

9	TABLE: Circuit power factor				P
Model	Input				Loading ( $\Omega$ )
	$U_N$ [V]	$F_N$ [Hz]	PF (meas.) [ $\lambda$ ]	PF (lower limit*) [ $\lambda$ ]	
DAL50W-1200-42-T	240	50	0.98	0.85	LED Module
	240	60	0.99	0.85	LED Module
	220	50	0.97	0.85	LED Module
	220	60	0.98	0.85	LED Module
*) PF (meas) shall not be less than the marked value by more than 0,05 when the control gear is operated on its rated condition, include the loading with rated maximum and minimum output power condition.					

IEC 62384

Attachment 3: product picture

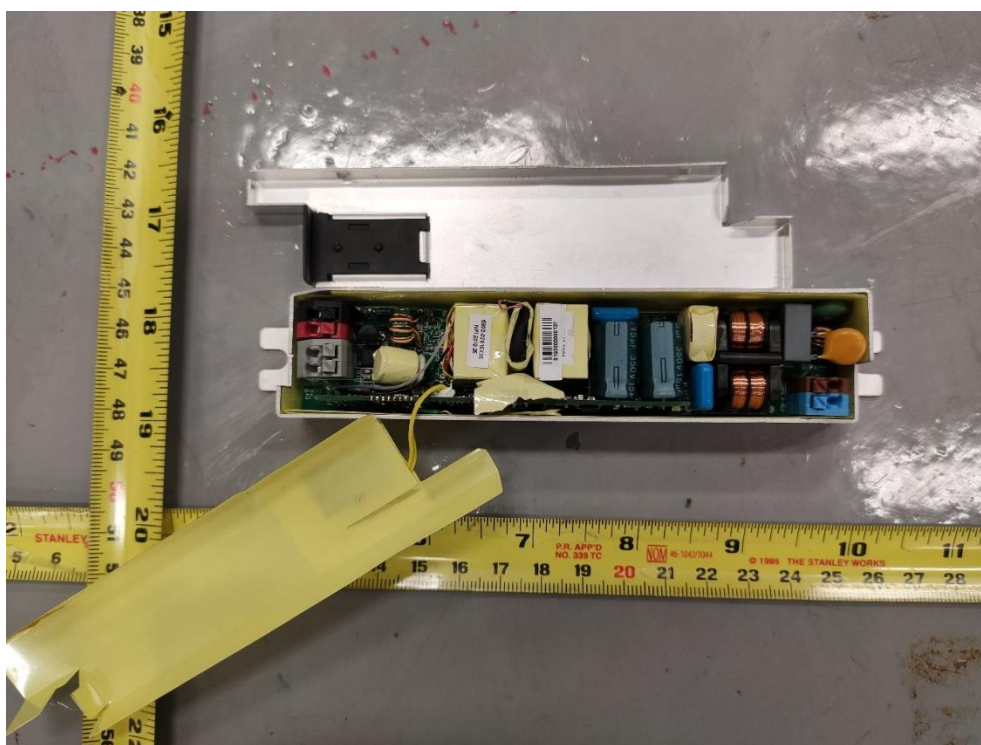


## Overall view



IEC 62384

Attachment 3: product picture



Exploded view

TRF No. IEC62384C