



# Test Report: LAD-600DU/D

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600W Economical Security/ Fire Alarm PSU with Battery  
Charger/UPS

## ■ DESIGN VERIFY TEST

Output Function Test  
Input Function Test  
Protection Function Test  
Control Function Test  
Component Stress Test

## ■ SAFETY & E.M.C. TEST

Safety Test  
E.M.C. Test

## ■ RELIABILITY TEST

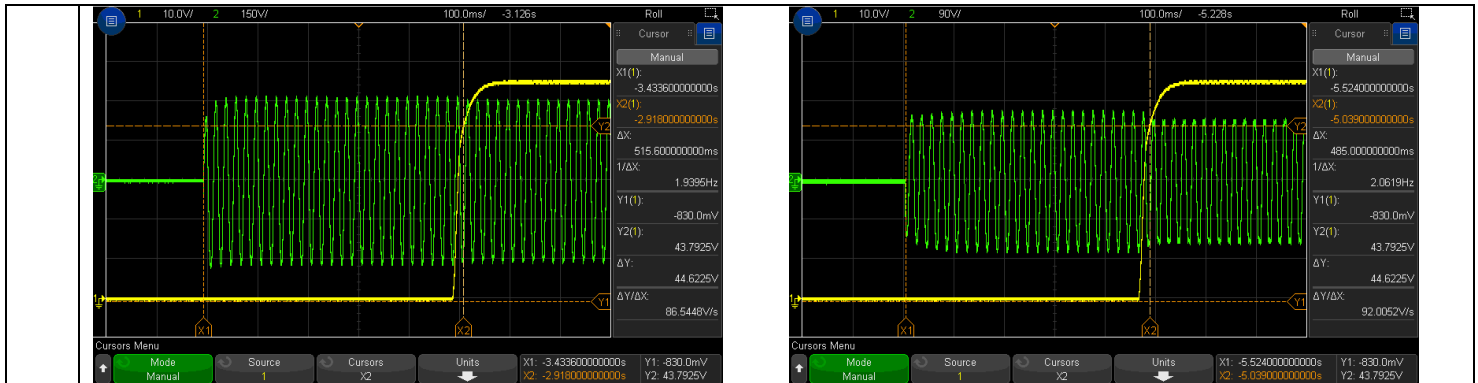
ENVIRONMENT TEST

# LAD-600DU

## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

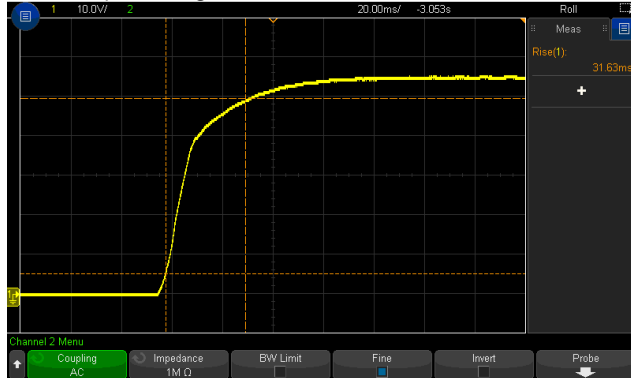
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 43.5V~ 58V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	41.144V~60.76V/230VAC 41.138V~60.78V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: -0.0544%~ 0.1451 %
3	LINE REGULATION (Max)	V1: -0.5 %~ +0.5 %	I/P: 90VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: -0.0182%~ 0.0182%
4	LOAD REGULATION(Max)	V1: -0.5 %~ +0.5 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.0544%~ 0.1451 %
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	1.02%
6	RIPPLE & NOISE(Max )	V1: 360mVp-p	I/P:230VAC O/P: TESTING LOAD Ta:25°C	V1: 242mVp-p
		<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>high frequency :</p> </div> <div style="text-align: center;"> <p>low frequency :</p> </div> </div>		
7	SET UP TIME(Max)	230VAC/2000ms 115VAC/2000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 515.6ms 115VAC/ 485.0ms
		<p>INPUT=230VAC/50HZ @ FULL LOAD      INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage      CH1 : Output Voltage CH2 : AC Input Voltage</p>		



8	RISE TIME (Max)	230VAC/50ms	I/P : 230 VAC	230VAC/ 31.63ms
		115VAC/50ms	I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	115VAC/ 31.69ms

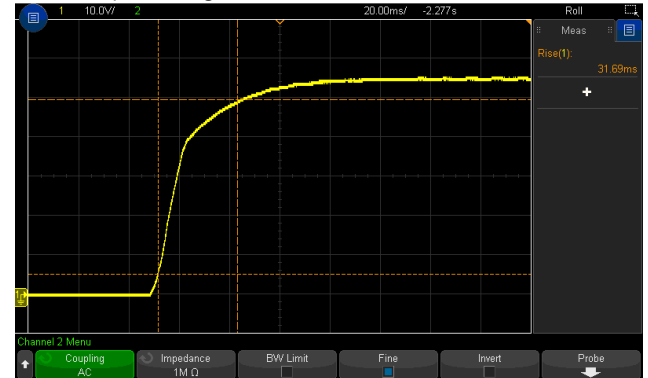
INPUT=230VAC/50HZ @ FULL LOAD

CH1 : Output Voltage



INPUT=115VAC/60HZ @ FULL LOAD

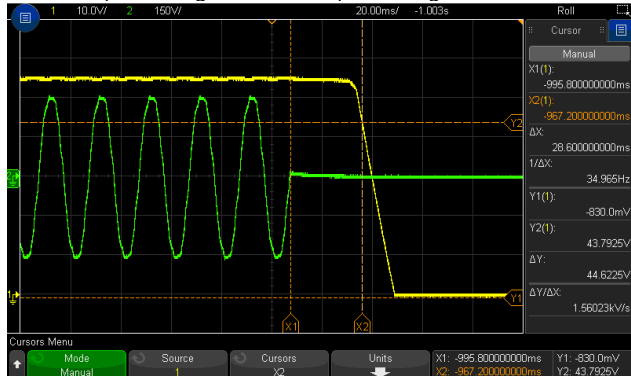
CH1 : Output Voltage



9	HOLD UP TIME (Typ.)	230VAC/16ms	I/P : 230 VAC	230VAC/ 28.6ms
		115VAC/12ms	I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	115VAC/ 22.0ms

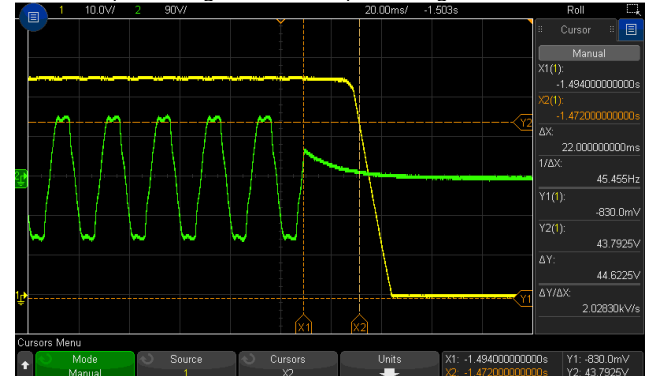
INPUT=230VAC/50HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage



10	DYNAMIC LOAD	V1: 5520mVp-p	I/P: 230VAC	2310mVp-p
			O/P: (1)FULL /MIN LOAD 50%DUTY / 120HZ (2)FULL /MIN LOAD 50%DUTY / 1KHZ Ta:25°C	1060mVp-p

	FULL /MIN LOAD 50%DUTY / 120HZ		FULL /MIN LOAD 50%DUTY / 1KHZ	
11	Battery static discharge current	After battery low protection <100uA	I/P : 230 VAC O/P : TESTING Ta : 25°C	0.22uA
12	BAT RATED CURRENT	3±0.3A	I/P: 230VAC O/P:CV=48V Ta:25°C	2.91A

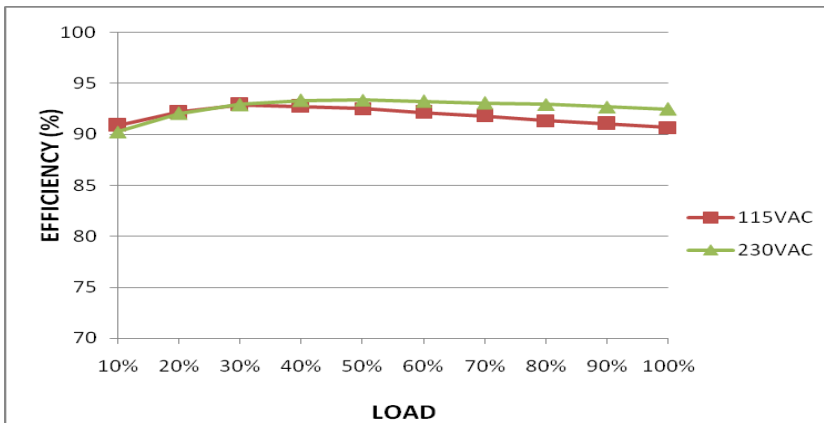
### INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90 ~ 132VAC / 180 ~ 264VAC by switch 240 ~ 370VDC (Default switch at 230VAC) 	(1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 80% LOAD (switch on 230VAC) (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 80% LOAD (switch on 230VAC) Ta:25°C  I/P: switch on 115VAC : LOW-LINE-3V=87 V HIGH-LINE+15%=150V  switch on 230VAC : LOW-LINE-3V=177 V HIGH-LINE+15%=300V VO/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN ( POWER ON/OFF NO DAMAGE )	(1) 92.89V~132V/ FULL LOAD 78.23V~132V/ 80% LOAD 175.06V~264V/ FULL LOAD 163.18V~264V/ 80% LOAD (switch on 230VAC) (2) 234.8Vdc~370Vdc/FULL LOAD 234.8Vdc~370Vdc/80% LOAD (3) 234.8Vdc~370Vdc/FULL LOAD 234.8Vdc~370Vdc/80% LOAD  TEST: OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 90 ~ 132VAC / 180 ~ 264VAC by switch O/P:FULL~MIN LOAD Ta:25°C	TEST: OK



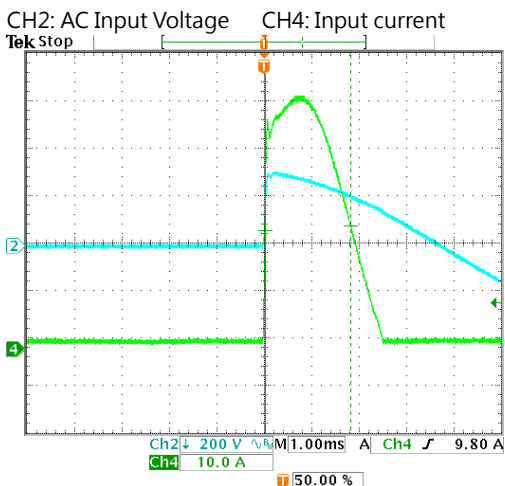
3	INPUT CURRENT (Typ.)	230V/ 7.5 A 115V/ 12 A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 5.53A/ 230VAC I = 9.22A/ 115VAC
4	LEAKAGE CURRENT	< 0.5mA Peak / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	<u>0.422</u> mA (PEAK) <u>0.207</u> mA (RMS)
5	EFFICIENCY(Typ.)	91%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	92.71%

EFFICIENCY vs LOAD

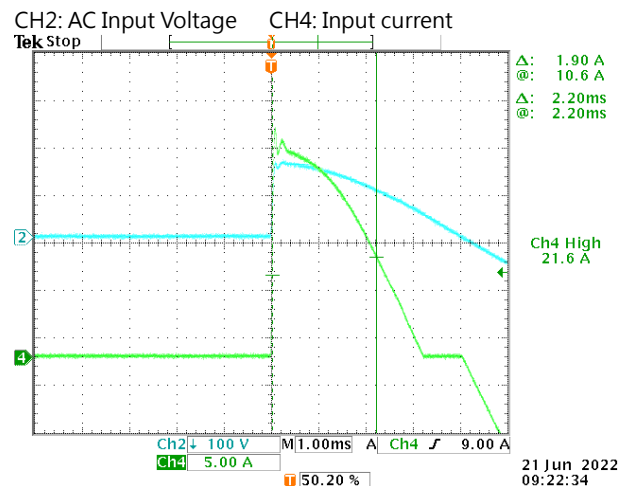


6	INRUSH CURRENT(Typ.)	230V/60A 115V/35A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 52.6A/ 230VAC T50=1.80ms/230V I = 21.6 A/ 115VAC T50=2.20ms/115V
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INPUT=230VAC/50HZ @ FULL LOAD



INPUT=115VAC/ 60HZ @ FULL LOAD



21 Jun 2022  
09:22:34

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	<p>CH1 : 105%~135%</p> <p>CH2 : 90 ~ 110%</p> <p>Protection type :</p> <p>CH1 OLP, CH2 with battery: The unit will enter to UPS mode when CH1 is around 105%~120%, when total output of CH1 + CH2 reach around 125%~135% output shuts down</p> <p>CH1 OLP, CH2 without battery: Shut down o/p voltage, re-power on to removed</p> <p>CH2 : Constant current limiting; fault condition does not affect CH1 working, recovers automatically after fault condition is removed (External fuse is mandatory in series connection with battery for protection)</p>	<p>I/P: 264VAC</p> <p>I/P: 230VAC</p> <p>I/P: 100VAC</p> <p>O/P:TESTING</p> <p>Ta:25°C</p>	<p>116.87%/ 264VAC</p> <p>116.87%/ 230VAC</p> <p>116.83%/100VAC</p> <p>Protection type :</p> <p>CH1 OLP, CH2 with battery: The unit will enter to UPS mode when CH1 is around 105%~120%, when total output of CH1 + CH2 reach around 125%~135% output shuts down</p> <p>CH1 OLP, CH2 without battery: Shut down o/p voltage, re-power on to removed</p> <p>CH2 : Constant current limiting; fault condition does not affect CH1 working, recovers automatically after fault condition is removed (External fuse is mandatory in series connection with battery for protection)</p>
2	OVER VOLTAGE PROTECTION	<p>CH1: 59V~69V</p> <p>Protection type : Shut down o/p voltage, re-power on to removed</p>	<p>I/P: 264VAC</p> <p>I/P: 230VAC</p> <p>I/P: 90VAC</p> <p>O/P:MIN LOAD</p> <p>Ta:25°C</p>	<p>63.8V/ 264VAC</p> <p>63.8V/ 230VAC</p> <p>63.8V/ 90VAC</p> <p>Protection type : Shut down o/p voltage, re-power on to removed</p>
3	OVER TEMPERATURE PROTECTION	<p>Protection type :</p> <p>Protection type : Shut down o/p voltage, re-power on to removed</p>	<p>I/P: 264VAC</p> <p>I/P: 90VAC</p> <p>O/P:FULL LOAD</p>	<p>O.T.P. Active OK</p> <p>Protection type :</p> <p>Protection type : Shut down o/p voltage, re-power on to removed</p>
4	BATTERY CUTOFF	<p>43±0.5V</p>	<p>I/P: 230 VAC</p> <p>O/P:BAT. LOAD</p> <p>Ta:25°C</p>	<p><u>43.41</u> V</p>
5	BATTERY REVERSE POLARITY	<p>Protection type :</p> <p>Protected by reverse polarity , no damage, recovers automatically after fault condition is removed</p>	<p>I/P: 230 VAC</p> <p>O/P:BAT. LOAD</p> <p>Ta:25°C</p>	<p>TEST : <u>OK</u></p>

### CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	AC OK	115VAC Input : Signals AC failure and activates when input voltage <75VAC Recover the main power supply when input voltage >87VAC 230VAC Input : Signals AC failure and activates when input voltage <165VAC Recover the main power supply when input voltage >175VAC	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST : ( 1 ) 115VAC : ≤ <u>77.28V</u> AC failure ≥ <u>88.69V</u> AC OK  ( 2 ) 230VAC : ≤ <u>169.03V</u> AC failure ≥ <u>179.87V</u> AC OK
2	CHARGER CIRCUIT FAIL	Battery disconnected, battery reverse polarity , signal failure	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST: <u>OK</u>
3	BUZZER ALARM	Battery low( fire alarm system selectable by UART)  AC fail, Battery low, battery disconnected, battery reverse connect, overload status (evacuation system selectable by UART)	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST: <u>OK</u>

### COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor ( D to S) or (C to E) Peak Voltage	Q 1/Q2 Rated : 26A/ 600V	AC ON/OFF I/P: High-Line +3V =267V VDS: O/P:(1) Full Load (2) Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C	Q1 Q2 VDS: VDS: (1) 412V (1) 405V (2) 412V (2) 405V (3) 416V (3) 405V (4) 412V (4) 405V (5) 412V (5) 405V (6) 416V (6) 401V (7) 416V (7) 409V



2	BAT BUCK Transistor ( D to S) or (C to E) Peak Voltage	Q 304 Rated : 53A/100V	AC ON/OFF I/P:High-Line +3V = 267 V VDS : O/P: (1)CV (max)-1=54.2V (2)CV(min)=43.5V (3)no load (4)OUTPUT SHORT Ta:25°C	Q304 VDS : (1) 67.1V (2) 67.1V (3) 64.1V (4) 65.3V
3	Diode Peak Voltage	D100 /D103 Rated : 20A/200V	AC ON/OFF I/P:High-Line +3V =267V <u>Vo=Vmax</u> O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8)NO LOAD ( 9 ) Before Burst mode <u>Vo=Vnormal</u> O/P: (1)Full Load Ta:25°C	D100: <u>Vo=Vmax</u> VDS: (1) 150V (2) 150V (3) 150V (4) 150V (5) 150V (6) 148V (7) 149V (8) 147V (9) 147V <u>Vo=Vnormal</u> (1) 144V D103: <u>Vo=Vmax</u> VDS: (1) 149V (2) 150V (3) 153V (4) 149V (5) 149V (6) 147V (7) 149V (8) 146V (9) 144V <u>Vo=Vnormal</u> (1) 144V
4	BAT BUCK Diode Peak Voltage	D320 Rated : 10A/100V	AC ON/OFF I/P:High-Line +3V = 267 V VDS : O/P: (1) CV (max)-1=54.2V (2) CV(min)=43.5V (3) no load (4) OUTPUT SHORT Ta:25°C	D320 VDS : (1) 58.1V (2) 58.1V (3) 58.4V (4) 56.4V
5	Input Capacitor Voltage	C5/C6 Rated: : 1000μ / 200V	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25°C	C5 C6 (1) 191V (1) 191V (2) 196V (2) 196V (3) 190V (3) 193V (4) 188V (4) 184V
6	Control IC Voltage Test	PWM IC U1 Rated 8.9 V~ 15.5V  MCU IC U300 Rated 2.4V~ 3.6V  BAT BUCK IC U304 Rated 8.4V~ 30V	AC ON/OFF U1/U300 I/P:High-Line +3V =267V O/P:(1) FULL LOAD (2) Output Short (3) O.L.P (4) O.V.P. (5) NO LOAD VRmin (LOW LINE)	U1 U304: (1) 14.26V (1) 11.52V (2) 14.10V (2) 11.52V (3) 14.18V (3) 11.52V (4) 14.10V (4) 11.52V (5) 13.86V  U300



			U304 I/P:High-Line +3V = 267 V VDS : O/P: (1) CV (max)-1=54.2V (2) CV(min)=43.5V (3) no load (4) OUTPUT SHORT Ta:25°C	(1) 3.31V (2) 3.31V (3) 3.31V (4) 3.31V (5) 3.31V
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## ■ SAFETY& E.M.C. TEST

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:0.6 KVAC/min Ta:25°C	I/P-O/P: 2.80mA I/P-FG: 2.65mA O/P-FG: 1.89 m A NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 600 VDC I/P-FG: 600 VDC O/P-FG: 600 VDC Ta:25°C	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG: 9999MΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE <100mΩ	40A / 2min Ta:25°C	8mΩ

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONDUCTION	BS EN/EN55032 (CISPR32), EAC TP TC 020 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
2	RADIATION	BS EN/EN55032 (CISPR32), EAC TP TC 020 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
3	E.S.D	BS EN/EN61000-4-2 Level 3, 8KV air Level 2, 6KV contact	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	<input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B
4	E.F.T	BS EN/EN61000-4-4 INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	<input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B
5	SURGE	BS EN/EN61000-4-5 Level 3, 1KV/Line-Line 2KV/Line-FG	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	<input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B
6	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

## LAD-600D

### CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	AC OK	TTL signal, High/Open : AC OK ; Low : AC Fail ; Ice : max. 30mA@ 50VDC	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	Test: <u>OK</u>
2	DISCHARGE	TTL signal, High/Open : Discharge ; Low : Charge ; Ice : max. 30mA@ 50VDC	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	Test: <u>OK</u>
3	BATTERY FULL	TTL signal, High/Open : Battery full ; Low : Battery charging ; Ice : max. 30mA@ 50VDC	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	Test: <u>OK</u>
4	BATTERY DISCONNECT/ REVERSE POLARITY	TTL signal, High/Open :Battery disconnect/reverse polarity ; Low : Battery connect/normal; Ice : max. 30mA@ 50VDC	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	Test: <u>OK</u>
5	BATTERY LOW	TTL signal, High/Open : Battery low ; Low : Battery normal; Ice : max. 30mA@ 50VDC	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	Test: <u>OK</u>
6	FORCE START	CN2 : PIN7&PIN8 SHORT	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	TEST : <u>OK</u>

## ■ SAFETY& E.M.C. TEST

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:0.6 KVAC/min Ta:25°C	I/P-O/P: 2.84mA I/P-FG: 2.77mA O/P-FG: 2.15 m A NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 600 VDC I/P-FG: 600 VDC O/P-FG: 600 VDC Ta:25°C	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG: 9999MΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100mΩ	40A / 2min Ta:25°C	8mΩ

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONDUCTION	BS EN/EN55032 (CISPR32), EAC TP TC 020 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
2	RADIATION	BS EN/EN55032 (CISPR32), EAC TP TC 020 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
3	E.S.D	BS EN/EN61000-4-2 Level 3, 8KV air Level 2, 6KV contact	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	<input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B
4	E.F.T	BS EN/EN61000-4-4 INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	<input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B
5	SURGE	BS EN/EN61000-4-5 Level 3, 1KV/Line-Line 2KV/Line-FG	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	<input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B
6	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

### RELIABILITY TEST

### ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																				
1	TEMPERATURE RISE TEST	MODEL : LAD-600DU 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C																																																						
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25 °C</th> <th>HIGH AMBIENT Ta= 50 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>ZNR1</td><td>23.9°C</td><td>51.4°C</td></tr> <tr><td>2</td><td>C10</td><td>24.8°C</td><td>52.7°C</td></tr> <tr><td>3</td><td>LF2</td><td>27.4°C</td><td>56.0°C</td></tr> <tr><td>4</td><td>RTH1</td><td>29.7°C</td><td>57.8°C</td></tr> <tr><td>5</td><td>BD1</td><td>37.4°C</td><td>65.5°C</td></tr> <tr><td>6</td><td>C94</td><td>29.6°C</td><td>57.7°C</td></tr> <tr><td>7</td><td>Q1</td><td>44.1°C</td><td>82.4°C</td></tr> <tr><td>8</td><td>RY1</td><td>27.8°C</td><td>56.1°C</td></tr> <tr><td>9</td><td>Q2</td><td>53.9°C</td><td>86.8°C</td></tr> <tr><td>10</td><td>C6</td><td>33.6°C</td><td>61.2°C</td></tr> <tr><td>11</td><td>RTH3</td><td>41.9°C</td><td>70.3°C</td></tr> <tr><td>12</td><td>C38</td><td>33.0°C</td><td>61.2°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 50 °C	1	ZNR1	23.9°C	51.4°C	2	C10	24.8°C	52.7°C	3	LF2	27.4°C	56.0°C	4	RTH1	29.7°C	57.8°C	5	BD1	37.4°C	65.5°C	6	C94	29.6°C	57.7°C	7	Q1	44.1°C	82.4°C	8	RY1	27.8°C	56.1°C	9	Q2	53.9°C	86.8°C	10	C6	33.6°C	61.2°C	11	RTH3	41.9°C	70.3°C	12	C38	33.0°C	61.2°C
NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 50 °C																																																					
1	ZNR1	23.9°C	51.4°C																																																					
2	C10	24.8°C	52.7°C																																																					
3	LF2	27.4°C	56.0°C																																																					
4	RTH1	29.7°C	57.8°C																																																					
5	BD1	37.4°C	65.5°C																																																					
6	C94	29.6°C	57.7°C																																																					
7	Q1	44.1°C	82.4°C																																																					
8	RY1	27.8°C	56.1°C																																																					
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230 VAC O/P : 113.5%LOAD Ta : 25°C	TEST : OK																																																																																																																																					
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 %LOAD Ta= -25°C	TEST : OK																																																																																																																																					
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50°C/95 %R.H NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 49.3°C HUMIDITY= 95 %R.H	TEST : OK																																																																																																																																					
5	TEMPERATURE COEFFICIENT	±0.03%/°C(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	±0.0078%/°C(0~50°C)																																																																																																																																					



6	STORAGE TEMPERATURE TEST	-30~85°C	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : STATIC
7	THERMAL SHOCK TEST	-20~50°C	1. Thermal shock Temperature : -25°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test
8	VIBRATION TEST	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 6G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C
9	CAPACITOR LIFE CYCLE	SUPPOSE C111 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME	(1) 2207518.8HRS (2) 301959.2HRS (3) 394202.4HRS (4) 483611.4HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction LAD-600D: 1154.4K hrs min. Telcordia SR-332 (Bellcore); 169.9K hrs min. MIL-HDBK-217F (25°C) LAD-600DU: 1019.6K hrs min. Telcordia SR-332 (Bellcore); 144.4K hrs min. MIL-HDBK-217F (25°C)	
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Yuwei	Liutt	Wangdz

2020.10.1 TAG-QA-009