



TEST DATA OF LDA300W-5

(100V INPUT)

Regulated DC Power Supply

Date : Feb. 22. 1997

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COSEL CO.,LTD.

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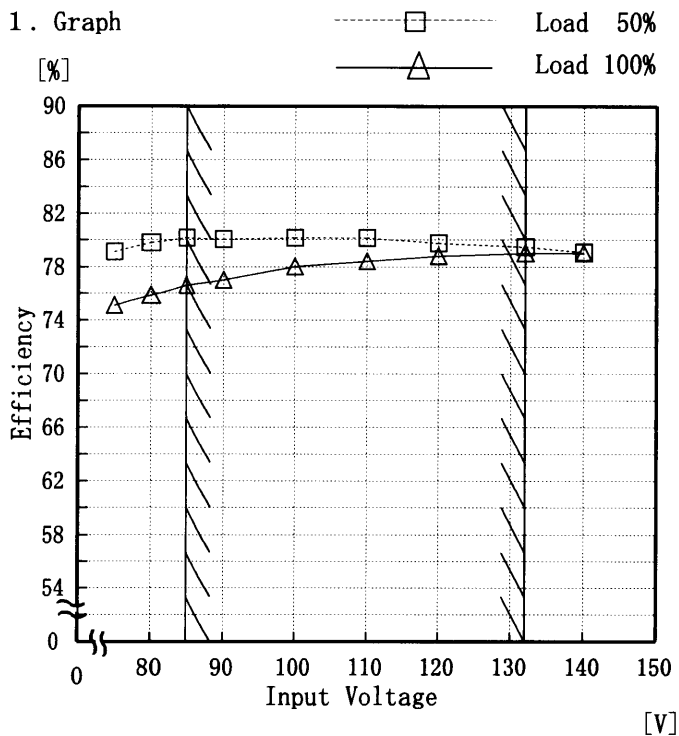


Model		LDA300W-5	Temperature 25°C Testing Circuitry Figure A																																
Item		Line Regulation 静的入力変動																																	
Object		+5V60A																																	
1. Graph		<div style="display: flex; justify-content: space-around;"> □----- Load 50% △----- Load 100% </div>	2. Values																																
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Model	LDA300W-5
Item	Efficiency 効率
Object	_____

Temperature	25°C
Testing Circuitry	Figure A



2. Values

Input Voltage [V]	Load 50%	Load 100%
	Efficiency [%]	Efficiency [%]
75	79.12	75.10
80	79.80	75.85
85	80.14	76.62
90	80.06	77.01
100	80.14	78.01
110	80.14	78.42
120	79.76	78.82
132	79.47	79.03
140	79.08	79.03



Model	LDA300W-5
Item	Hold-Up Time 出力保持時間
Object	+5V60A

1. Graph

-----□-----

Load 50%

-----△-----

Load 100%

This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

Note: Slanted line shows the range of the rated input voltage.

出力保持時間とは、AC入力断から出力電圧が、定電圧精度の規格範囲を保持しているところまでの時間。

(注) 斜線は定格入力電圧範囲を示す。

Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Load 50%	Load 100%
	Hold-Up Time [mS]	Hold-Up Time [mS]
75	24	4
80	31	8
85	42	13
90	51	18
100	71	28
110	93	40
120	118	52
132	150	69
140	174	80



Model	LDA300W-5
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+5V60A

1. Graph

—△— Input Volt. 85V

- -□- - Input Volt. 100V

- -○- - Input Volt. 132V

This duration covers from Shut-off of AC-IN to the moment when output voltage descends to its 95% of the rated.

Note: Slanted line shows the range of the rated load current.

瞬時停電保障時間とは、出力電圧が定格値の95%になる時の瞬時停電時間をいう。
(注)斜線は定格負荷電流範囲を示す。

Testing Circuitry Figure A 25°C

2. Values

Load Current [A]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Time [mS]		
0.0	—	—	—
10.0	99	181	396
20.0	51	91	205
30.0	27	58	136
40.0	17	34	96
50.0	11	26	71
60.0	7	18	57
66.0	6	18	53
—	—	—	—
—	—	—	—
—	—	—	—



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Model	LDA300W-5	Temperature	25°C																																												
Item	Load Regulation 静的負荷変動	Testing Circuitry	Figure A																																												
Object	+5V60A																																														
<p>1. Graph</p> <p style="text-align: right;"> —△— Input Volt. 85V - - -□- - - Input Volt. 100V —○— Input Volt. 132V </p> <p style="text-align: center;">Output Voltage [V]</p> <p style="text-align: center;">Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>(注) 斜線は定格負荷電流範囲を示す。</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 85[V] Output Volt. [V]</th> <th>Input Volt. 100[V] Output Volt. [V]</th> <th>Input Volt. 132[V] Output Volt. [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>5.025</td><td>5.025</td><td>5.025</td></tr> <tr><td>10.0</td><td>5.022</td><td>5.022</td><td>5.023</td></tr> <tr><td>20.0</td><td>5.020</td><td>5.020</td><td>5.020</td></tr> <tr><td>30.0</td><td>5.017</td><td>5.017</td><td>5.017</td></tr> <tr><td>40.0</td><td>5.015</td><td>5.015</td><td>5.015</td></tr> <tr><td>50.0</td><td>5.012</td><td>5.012</td><td>5.012</td></tr> <tr><td>60.0</td><td>5.009</td><td>5.009</td><td>5.010</td></tr> <tr><td>66.0</td><td>5.008</td><td>5.008</td><td>5.008</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Load Current [A]	Input Volt. 85[V] Output Volt. [V]	Input Volt. 100[V] Output Volt. [V]	Input Volt. 132[V] Output Volt. [V]	0.0	5.025	5.025	5.025	10.0	5.022	5.022	5.023	20.0	5.020	5.020	5.020	30.0	5.017	5.017	5.017	40.0	5.015	5.015	5.015	50.0	5.012	5.012	5.012	60.0	5.009	5.009	5.010	66.0	5.008	5.008	5.008	—	—	—	—	—	—	—	—
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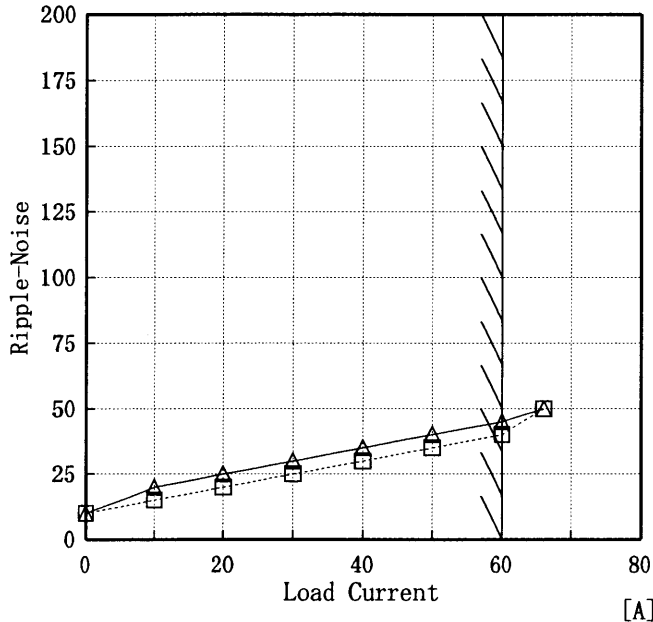


<p>Model LDA300W-5</p> <p>Item Ripple Voltage (by Load Current) リップル電圧(負荷電流特性)</p> <p>Object +5V60A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																						
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<p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>リップル電圧は、下図 p-p 値で示される。 (注)斜線は定格負荷電流範囲を示す。</p> <p>T1: Due to AC Input Line 入力商用周期</p> <p>T2: Due to Switching スイッチング周期</p>																																								
<p>Fig. Complex Ripple Wave Form</p> <p>図 リップル波形詳細図</p>																																								



Model	LDA300W-5	Temperature	25°C
Item	Ripple-Noise リップルノイズ	Testing Circuitry	Figure A
Object	+5V 60A		

1. Graph
 [mV]
 -----□----- Input Volt. 85V
 -----△----- Input Volt. 132V



2. Values

Load current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]
	Ripple-Noise [mV]	Ripple-Noise [mV]
0.0	10	10
10.0	15	20
20.0	20	25
30.0	25	30
40.0	30	35
50.0	35	40
60.0	40	45
66.0	50	50
—	—	—
—	—	—
—	—	—

Ripple-Noise is shown as p-p in the figure below.
 Note: Slanted line shows the range of the rated load current.

リップルノイズは、下図 p-p 値で示される。
 (注)斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
 入力商用周期
 T2: Due to Switching
 スイッチング周期

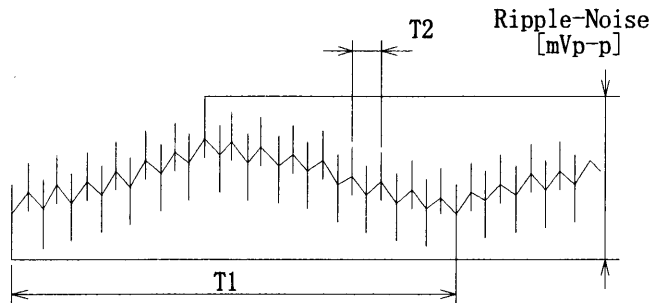


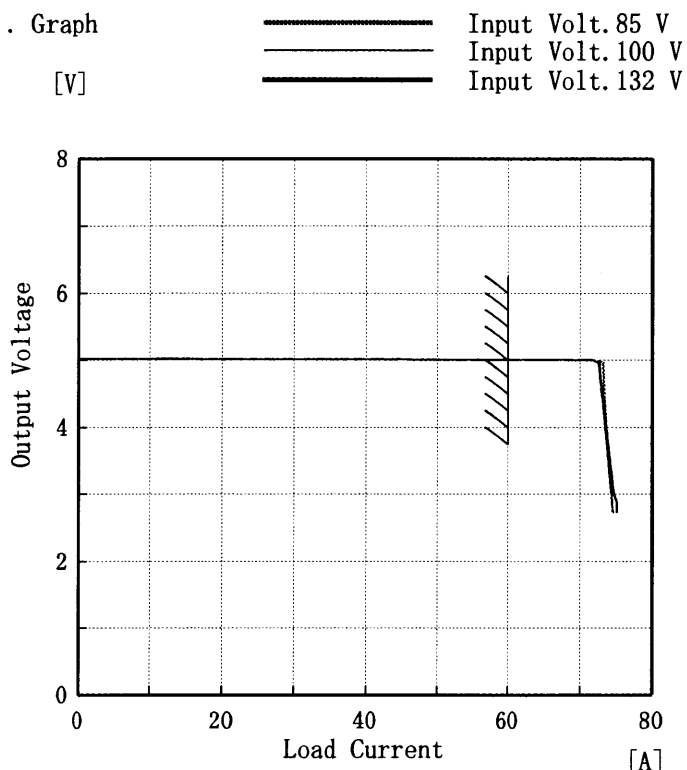
Fig. Complex Ripple Wave Form
 図 リップル波形詳細図

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Model	LDA300W-5
Item	Overcurrent Protection 過電流保護
Object	+5V 60A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



Note: Slanted line shows the range of the rated load current.

Hiccap operation occurs when the output voltage is under 3V.

(注)斜線は定格負荷電流範囲を示す。
3V以下は間欠動作となる。

2. Values

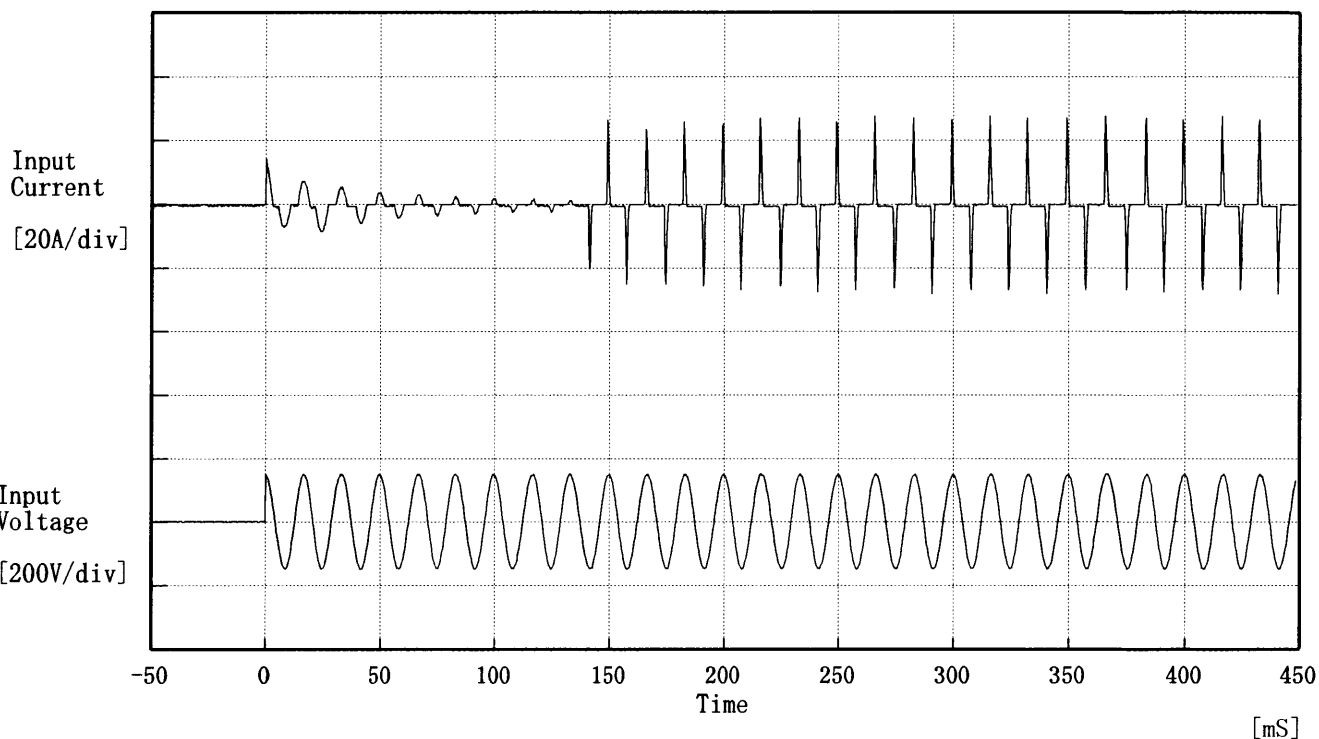
Output Voltage [V]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Load Current [A]	Load Current [A]	Load Current [A]
5.00	71.85	71.61	71.58
4.75	73.19	72.80	72.75
4.50	73.29	72.97	72.98
4.00	73.55	73.35	73.52
3.50	73.86	73.76	74.03
3.00	74.22	74.19	74.61
2.50	—	—	—
2.00	—	—	—
1.50	—	—	—
1.00	—	—	—
0.50	—	—	—
0.00	—	—	—



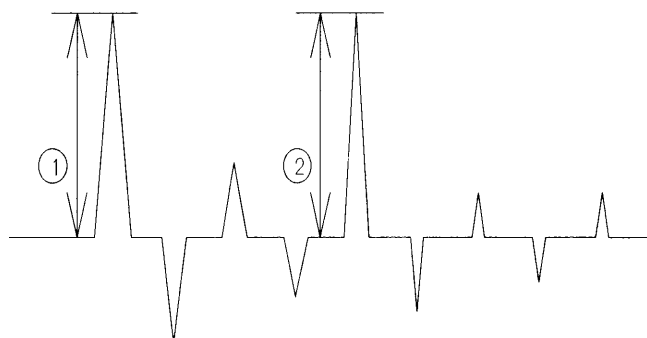
COSEL																																																						
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Item	Overvoltage Protection 過電圧保護	Testing Circuitry Figure A																																																				
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<p>1. Graph</p> <p style="text-align: right;"> —△— Input Volt. 85 V - - -□- - - Input Volt. 100 V - - -○- - - Input Volt. 132 V </p> <p style="text-align: center;">Note: Slanted line shows the range of the rated ambient temperature.</p> <p style="text-align: center;">(注)斜線は定格周囲温度範囲を示す。</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. [°C]</th> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> <tr> <th colspan="3">Operating Point [V]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>6.60</td><td>6.60</td><td>6.60</td></tr> <tr><td>-10</td><td>6.60</td><td>6.60</td><td>6.60</td></tr> <tr><td>0</td><td>6.60</td><td>6.60</td><td>6.60</td></tr> <tr><td>10</td><td>6.60</td><td>6.60</td><td>6.60</td></tr> <tr><td>20</td><td>6.59</td><td>6.59</td><td>6.59</td></tr> <tr><td>25</td><td>6.59</td><td>6.59</td><td>6.59</td></tr> <tr><td>30</td><td>6.59</td><td>6.59</td><td>6.59</td></tr> <tr><td>40</td><td>6.59</td><td>6.59</td><td>6.59</td></tr> <tr><td>50</td><td>6.58</td><td>6.58</td><td>6.58</td></tr> <tr><td>60</td><td>6.58</td><td>6.58</td><td>6.58</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Ambient Temp. [°C]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	Operating Point [V]			-20	6.60	6.60	6.60	-10	6.60	6.60	6.60	0	6.60	6.60	6.60	10	6.60	6.60	6.60	20	6.59	6.59	6.59	25	6.59	6.59	6.59	30	6.59	6.59	6.59	40	6.59	6.59	6.59	50	6.58	6.58	6.58	60	6.58	6.58	6.58	—	—	—	—
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Model		LDA300W-5	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current 突入電流	
Object		_____	



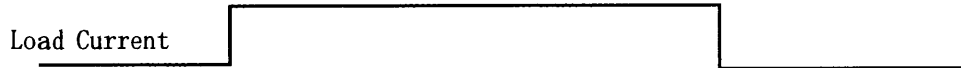
Input Voltage 100 V
 Frequency 60 Hz
 Load 100 %
 Inrush Current
 ① 14.40 [A]
 ② 28.20 [A]



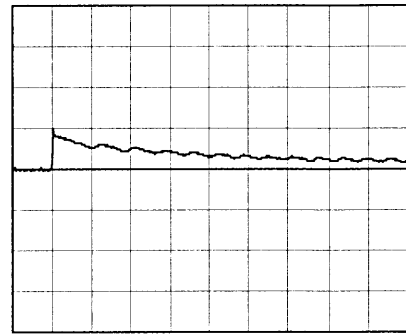
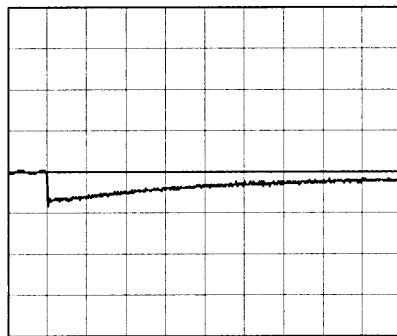


Model		LDA300W-5	Temperature		25°C
Item		Dynamic Load Responce 動的負荷変動	Testing Circuitry		Figure A
Object		+5V60A			

Input Volt. 100 V
Cycle 1000 mS

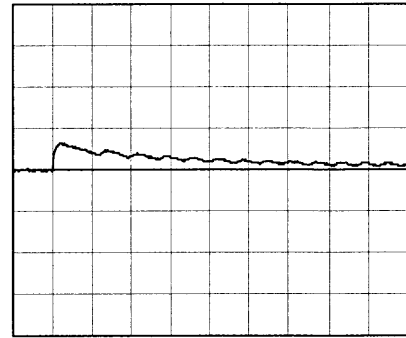
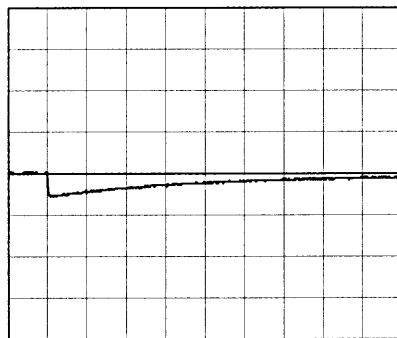


Min. Load ↔
Load 100 %



Min. Load ↔
Load 50 %

100 mV/div

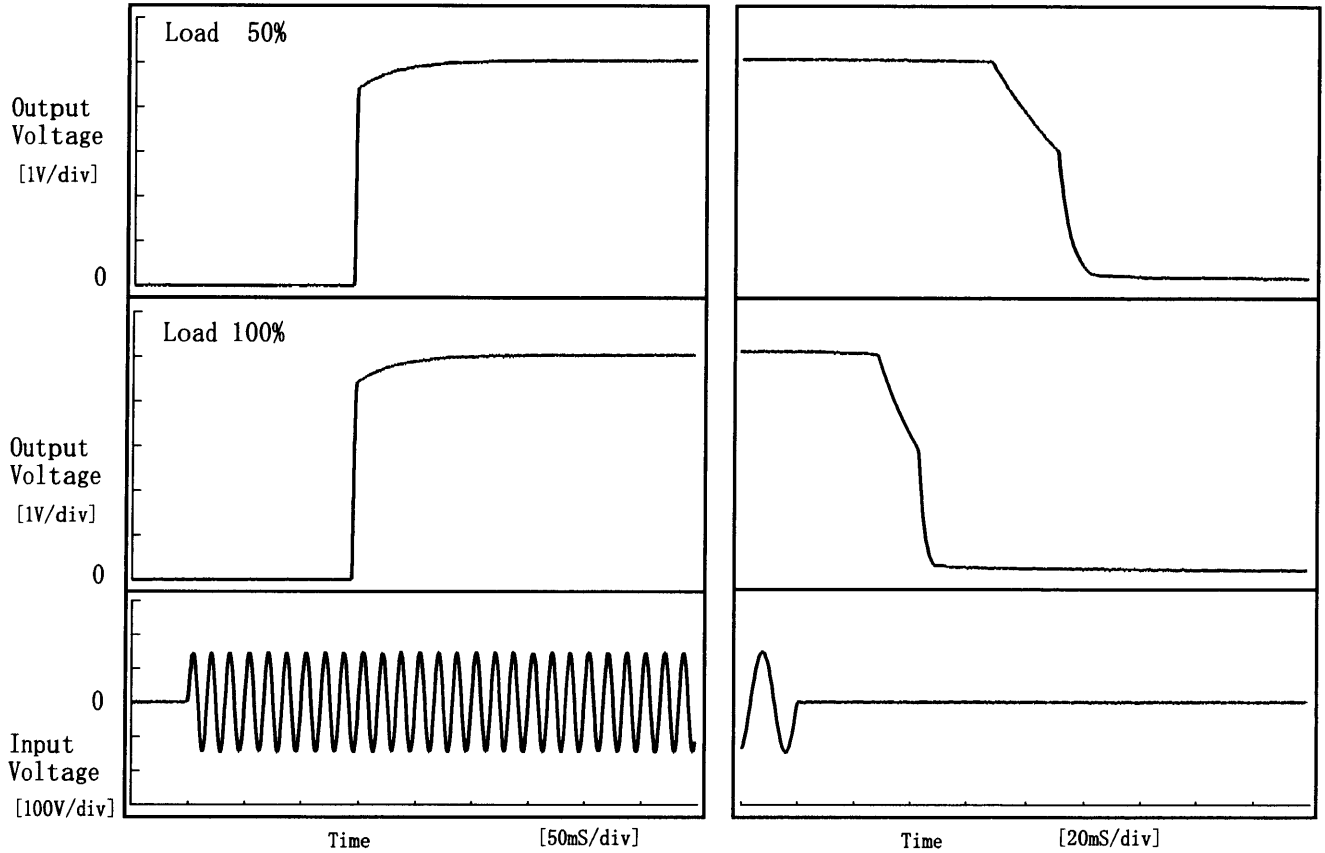


10 mV/div



Model	LDA300W-5	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+5V60A		

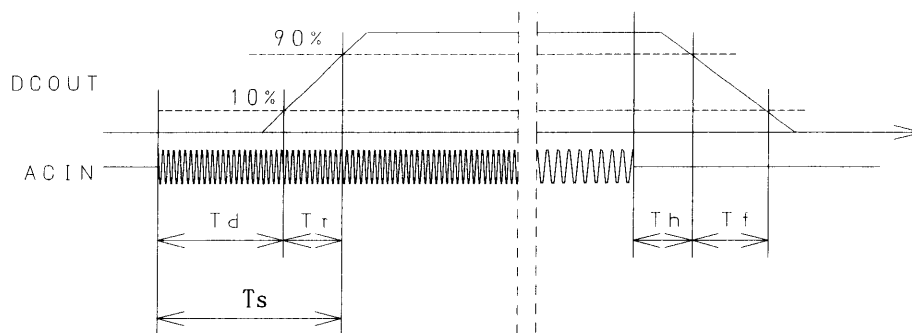
1. Graph



2. Values

[mS]

Load \ Time	T _d	T _r	T _s	T _h	T _f
50 %	144.5	8.0	152.5	72.8	26.1
100 %	144.3	6.3	150.5	31.3	15.9

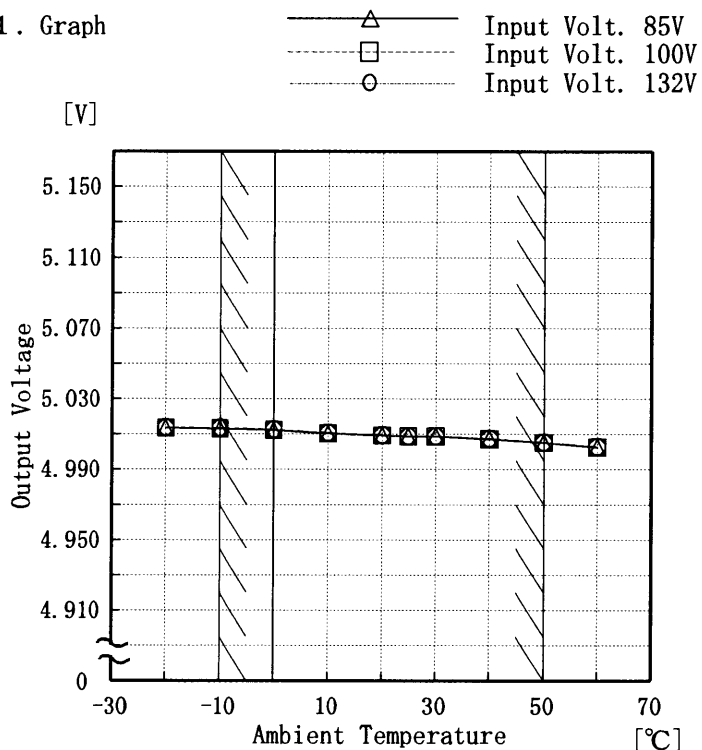




Model	LDA300W-5
Item	Ambient Temperature Drift 周囲温度変動
Object	+5V60A

Testing Circuitry Figure A

1. Graph



Load 100%

Note: Slanted line shows the range of the rated ambient temperature.

(注)斜線は定格周囲温度範囲を示す。

2. Values

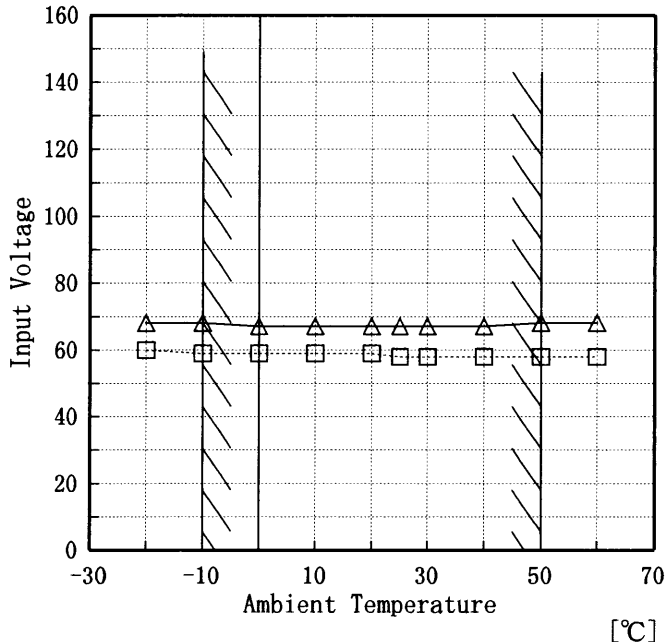
Temperature [°C]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
-20	5.014	5.014	5.014
-10	5.013	5.013	5.014
0	5.012	5.013	5.013
10	5.011	5.011	5.011
20	5.009	5.009	5.010
25	5.009	5.009	5.009
30	5.009	5.009	5.009
40	5.007	5.007	5.008
50	5.005	5.005	5.006
60	5.003	5.003	5.003
—	—	—	—



Model	LDA300W-5
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+5V60A

Testing Circuitry Figure A

1. Graph
 [V]
 -----□----- Load 50%
 -----△----- Load 100%



Note: Slanted line shows the range of the rated ambient temperature.

(注)斜線は定格周囲温度範囲を示す。

2. Values

Ambient Temp. [°C]	Load 50%	Load 100%
	Input Volt. [V]	Input Volt. [V]
-20	60	68
-10	59	68
0	59	67
10	59	67
20	59	67
25	58	67
30	58	67
40	58	67
50	58	68
60	58	68
—	—	—



Model		LDA300W-5	Testing Circuitry	Figure A																																					
Item		Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																							
Object		+5V60A																																							
1. Graph		<p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p> <p>Input Volt. 85 V</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注)斜線は定格周囲温度範囲を示す。</p>	2. Values																																						
			<table border="1"> <thead> <tr> <th>Ambient Temp. [°C]</th> <th>Load 50% Ripple Output Volt. [mV]</th> <th>Load 100% Ripple Output Volt. [mV]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>35</td><td>50</td></tr> <tr><td>-10</td><td>30</td><td>45</td></tr> <tr><td>0</td><td>25</td><td>40</td></tr> <tr><td>10</td><td>20</td><td>35</td></tr> <tr><td>20</td><td>20</td><td>30</td></tr> <tr><td>25</td><td>20</td><td>30</td></tr> <tr><td>30</td><td>20</td><td>30</td></tr> <tr><td>40</td><td>20</td><td>30</td></tr> <tr><td>50</td><td>15</td><td>25</td></tr> <tr><td>60</td><td>15</td><td>25</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temp. [°C]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]	-20	35	50	-10	30	45	0	25	40	10	20	35	20	20	30	25	20	30	30	20	30	40	20	30	50	15	25	60	15	25	—	—	—		
Ambient Temp. [°C]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]																																							
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50	15	25																																							
60	15	25																																							
—	—	—																																							



COSEL																								
Model	LDA300W-5																							
Item	Time Lapse Drift 経時ドリフト	Temperature 25 °C Testing Circuitry Figure A																						
Object	+5V60A																							
<p>1. Graph</p> <p>[V]</p> <p>Output Voltage</p> <p>Time [H]</p> <p>Input Volt. 100V Load 100%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>5.013</td></tr> <tr><td>0.5</td><td>5.012</td></tr> <tr><td>1.0</td><td>5.012</td></tr> <tr><td>2.0</td><td>5.012</td></tr> <tr><td>3.0</td><td>5.012</td></tr> <tr><td>4.0</td><td>5.012</td></tr> <tr><td>5.0</td><td>5.012</td></tr> <tr><td>6.0</td><td>5.012</td></tr> <tr><td>7.0</td><td>5.012</td></tr> <tr><td>8.0</td><td>5.012</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	5.013	0.5	5.012	1.0	5.012	2.0	5.012	3.0	5.012	4.0	5.012	5.0	5.012	6.0	5.012	7.0	5.012	8.0	5.012
Time since start [H]	Output Voltage [V]																							
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5.0	5.012																							
6.0	5.012																							
7.0	5.012																							
8.0	5.012																							



Model		LDA300W-5	Testing Circuitry Figure A
Item	Output Voltage Accuracy 定電圧精度		
Object	+5V60A		

Output Voltage Accuracy

This is defined as the maximum value of the output voltage regulation load, temperature and input voltage vary at random in the range as specified below.

Temperature : -10~50 °C

Input Voltage : 85~132 V

Load Current : 0~60 A

* Output Voltage Accuracy = $\pm (\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

$$\text{Voltage Accuracy (Ration)} = \frac{\text{Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

定電圧精度

温度、入力電圧、負荷を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度 -10~50 °C

入力電圧 85~132 V

負過電流 0~60 A

* 定電圧精度(変動値) = $\pm (\text{出力電圧の最高値} - \text{出力電圧の最低値}) / 2$

$$\text{定電圧精度(変動率)} = \frac{\text{変動値}}{\text{定格出力電圧}} \times 100$$

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-10	132	0	5.028	±11	±0.227
Minimum Voltage	50	85	60	5.006		



Model		LDA300W-5	Testing Circuitry Figure A
Item		Condensation 結露特性	
Object		+5V60A	

1. Condensation test

Testing procedure is as follows.

- ① Keeping and cooling the unit in a tank at -10°C for an hour with the input off.
- ② Taking it out of the tank and dewing itself in a room where the temperature is 25°C and the humidity is 45%RH.
- ③ Testing electrical characteristics of the unit to confirm there be no fault.
- ④ Repeating ①, ② and ③ three times.

1. 結露特性試験

入力を切った状態で、恒温槽で-10℃に冷却しておき、約1時間後に恒温槽から取り出し、室温25℃、湿度45%RHの状態におき結露させ、その電気的特性の測定を3度行い、異常のないことを確認する。

2. Values

	Times	Output Voltage [V]	Ripple Voltage [mV]	Ripple Noise [mV]
Load 50%	1	5.083	30	40
	2	5.083	30	40
	3	5.083	30	40
Load 100%	1	5.083	30	40
	2	5.083	30	40
	3	5.083	30	40

Input Volt. 100 V



Model		LDA300W-5	Testing Circuitry Figure B
Item		Leakage Current 漏洩電流	
Object		+5V60A	

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.19	0.23	0.31
(B) UL	0.19	0.23	0.31
(C) CSA	0.19	0.23	0.31

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 220 [V]	Input Volt. 264 [V]
(D) VDE	—	—	—

2. Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

交流入力 of 両相について測定し、その大きい方を漏洩電流測定値とする。

Load 100 %

COSEL

Model		LDA300W-5	Testing Circuitry Figure C
Item		Line Noise Tolerance 入力雑音耐量	
Object		+5V60A	

1. Results

Pulse Width [n S]	MODE	Operating Point of Overvoltage Protection [V] 過電圧保護動作値	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	6.62	no regulation
	NORMAL	6.62	no regulation
1000	COMMON	6.62	no regulation
	NORMAL	6.62	no regulation

Conditions

Input Voltage :100 V
 Pulse Voltage :2000 V
 Pulse Cycle :10 mS
 Pulse Input Duration:1 min. or more
 Load :100 %



Model	LDA300W-5
Item	Conducted Emission 雑音端子電圧
Object	+5V60A

Testing Circuitry Figure D

1. Graph

Remarks

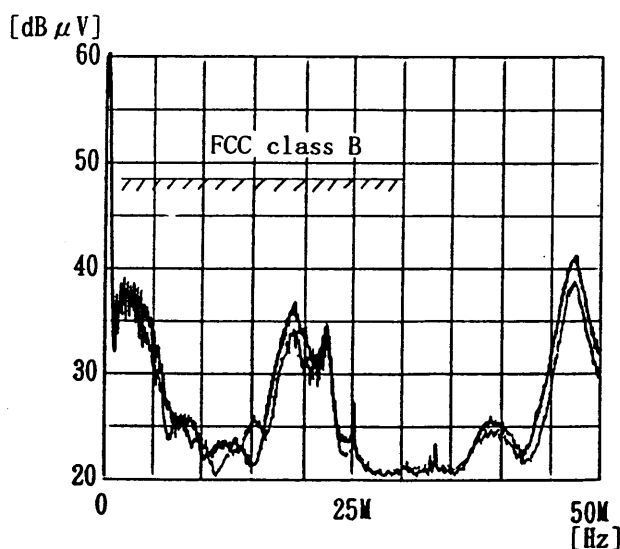
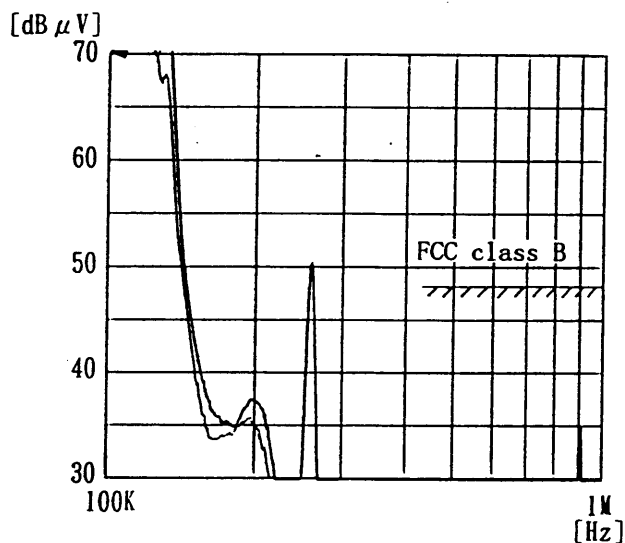
Input Volt. 120 V

Load 100 %

Note: Slanted line shows the range of Tolerance.

(注)斜線は許容値を示す。

NO	Standards	Standards Complied	Frequency [MHz]	Tolerance [dB/μV]
1	FCC Class A		0.45~1.6	60
			1.6~30	69.5
2	FCC Class B	○	0.45~30	48
3	VCCI -1		0.15~0.5	79
			0.5~30	73
4	VCCI -2	○	0.15~0.5	66-56
			0.5~5	56
			5~30	60
5	CISPR 22 Class A (EN55022)		0.15~0.5	79
			0.5~30	73
6	CISPR 22 Class B (EN55022)		0.15~0.5	66-56
			0.5~5	56
			5~30	60



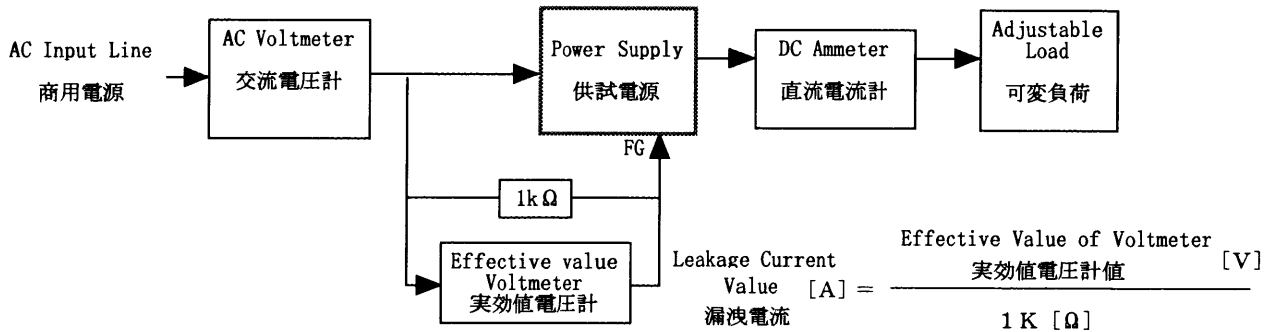
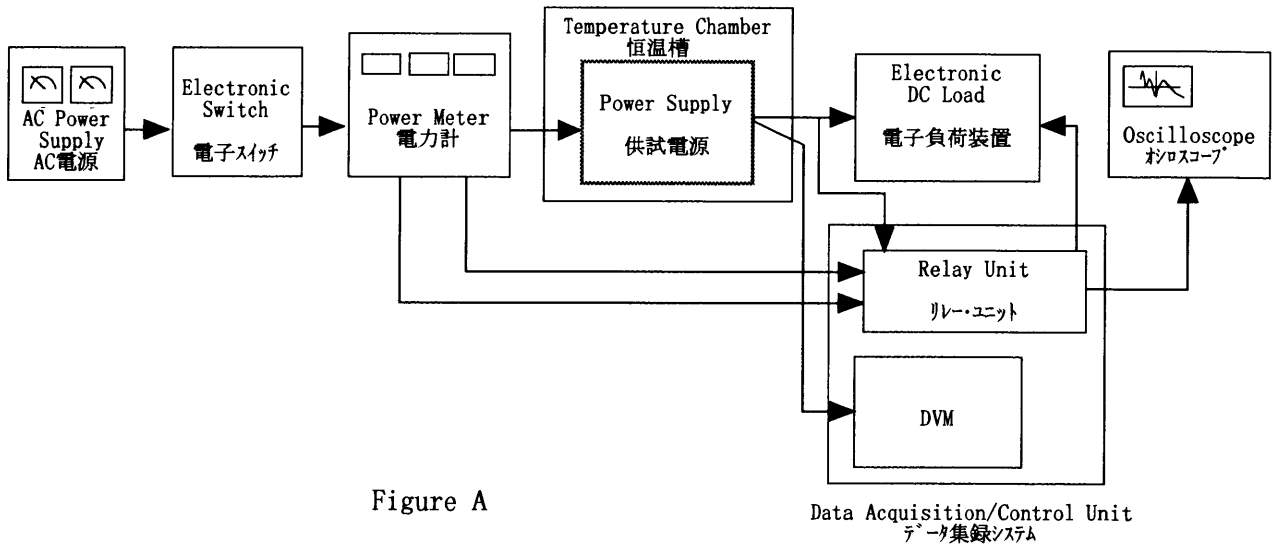


Figure B (DENTORI)

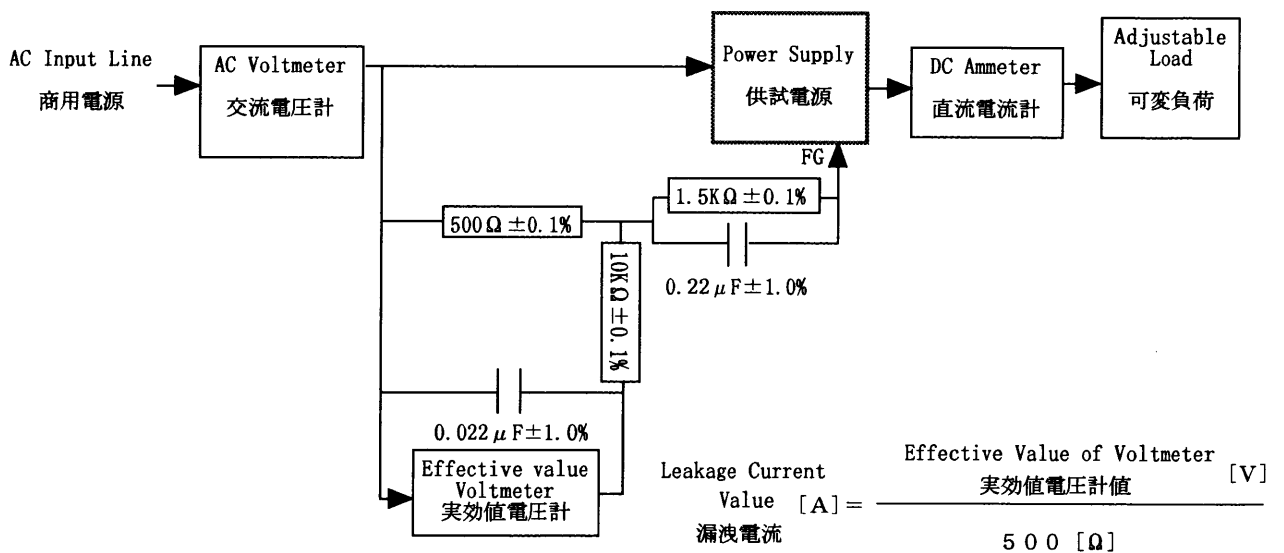


Figure B (UL, CSA, VDE)

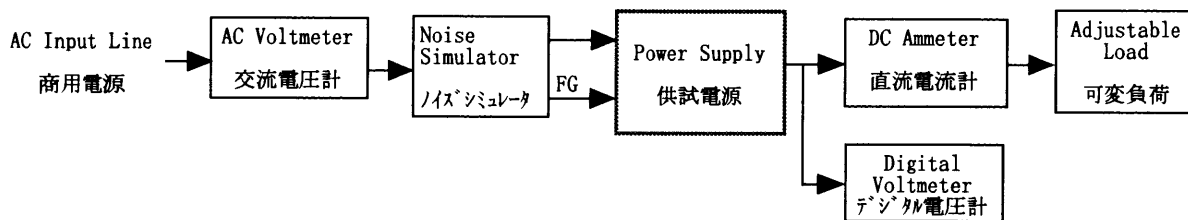


Figure C

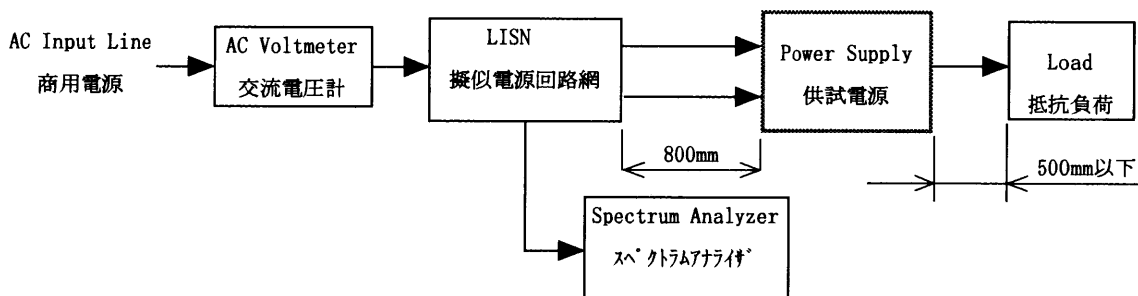


Figure D

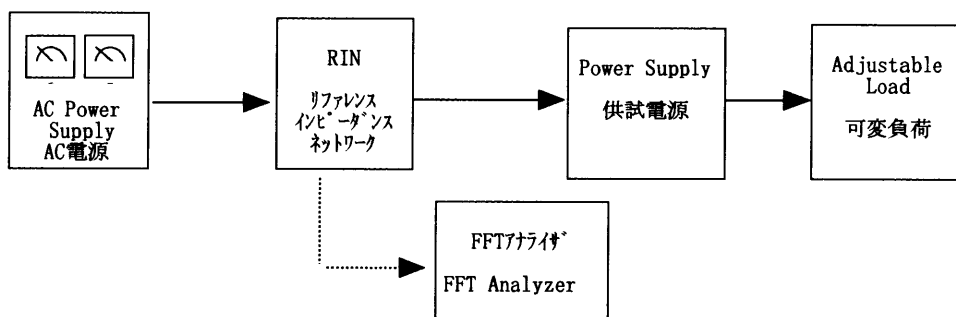


Figure E