



TEST DATA OF LCA150S-24-H (100V INPUT)

Regulated DC Power Supply

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コーセル株式会社

COSEL CO., LTD.

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Model		LCA150S-24-H		Temperature Testing Circuitry	25℃ Figure A																																
Item		Line Regulation 静的入力変動																																			
Object		+24.0V6.3A																																			
1. Graph				2. Values																																	
<div><div>□</div>Load 50%</div> <div><div>△</div>Load 100%</div> <div><div>Output Voltage [V]</div><div><div><div>24.070</div><div>24.050</div><div>24.030</div><div>24.010</div><div>23.990</div><div>23.970</div><div>23.950</div><div>0</div></div><div><div>0</div><div>80</div><div>90</div><div>100</div><div>110</div><div>120</div><div>130</div><div>140</div><div>150</div></div><div>Input Voltage [V]</div></div></div>				<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Output Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>75</td><td>24.001</td><td>24.001</td></tr><tr><td>80</td><td>24.001</td><td>24.001</td></tr><tr><td>85</td><td>24.001</td><td>24.001</td></tr><tr><td>90</td><td>24.001</td><td>24.001</td></tr><tr><td>100</td><td>24.001</td><td>24.001</td></tr><tr><td>110</td><td>24.001</td><td>24.001</td></tr><tr><td>120</td><td>24.001</td><td>24.001</td></tr><tr><td>132</td><td>24.001</td><td>24.001</td></tr><tr><td>140</td><td>24.001</td><td>24.001</td></tr></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	24.001	24.001	80	24.001	24.001	85	24.001	24.001	90	24.001	24.001	100	24.001	24.001	110	24.001	24.001	120	24.001	24.001	132	24.001	24.001	140	24.001	24.001
Input Voltage [V]	Output Voltage [V]																																				
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<div>Note: Slanted line shows the range of the rated input voltage.</div> <div>(注)斜線は定格入力電圧範囲を示す。</div>																																					

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Model		LCA150S-24-H		Temperature		25℃	
Item		Input Current (by Load Current) 入力電流（負荷特性）		Testing Circuitry		Figure A	
Output		_____					
1. Graph				2. Values			
<div><div>—△—</div>Input Volt. 85V</div>							
<div><div>—□—</div>Input Volt. 100V</div>							
<div><div>—○—</div>Input Volt. 132V</div>							

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Model		LCA150S-24-H	
Item		Input Power (by Load Current) 入力電力（負荷特性）	
Output		_____	

1. Graph

△

□

○

Input Volt. 85V

Input Volt. 100V

Input Volt. 132V

Input Power [W]

500

400

300

200

100

0

0

2

4

6

8

Load Current [A]

2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	5.98	7.05	9.19
1.00	33.10	33.98	36.20
2.00	59.59	60.30	62.20
3.00	87.30	87.70	89.40
4.00	115.00	114.90	116.00
5.00	143.10	142.60	142.90
6.00	172.60	171.40	171.10
6.30	180.30	178.90	178.30
6.93	199.40	197.50	196.30
—	—	—	—
—	—	—	—
—	—	—	—

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

(注)斜線は定格負荷電流範囲を示す。

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Model		LCA150S-24-H		Temperature		25℃																																	
Item		Efficiency (by Input Voltage) 効率（入力電圧特性）		Testing Circuitry		Figure A																																	
Object																																							
1. Graph				2. Values																																			
<div><div><div>□ Load 50%</div><div>△ Load 100%</div></div><div>Efficiency [%]</div><div>Input Voltage [V]</div></div> <div>Note: Slanted line shows the range of the rated input voltage.</div> <div>(注)斜線は定格入力電圧範囲を示す。</div>				<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>75</td><td>84.7</td><td>83.8</td></tr><tr><td>80</td><td>85.0</td><td>84.2</td></tr><tr><td>85</td><td>84.9</td><td>84.6</td></tr><tr><td>90</td><td>84.9</td><td>84.9</td></tr><tr><td>100</td><td>84.7</td><td>85.2</td></tr><tr><td>110</td><td>84.3</td><td>85.4</td></tr><tr><td>120</td><td>84.0</td><td>85.5</td></tr><tr><td>132</td><td>83.2</td><td>85.6</td></tr><tr><td>140</td><td>82.7</td><td>85.5</td></tr></table>				Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	75	84.7	83.8	80	85.0	84.2	85	84.9	84.6	90	84.9	84.9	100	84.7	85.2	110	84.3	85.4	120	84.0	85.5	132	83.2	85.6	140	82.7	85.5
Input Voltage [V]	Efficiency [%]																																						
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Model		LCA150S-24-H	
Item		Efficiency (by Load Current) 効率（負荷特性）	
Output		_____	

1. Graph

—△—

Input Volt. 85V

---□---

Input Volt. 100V

---○---

Input Volt. 132V

Efficiency

[%]

Load Current [A]	85V Efficiency [%]	100V Efficiency [%]	132V Efficiency [%]
1.00	77.9	76.0	71.3
2.00	83.3	82.3	79.7
3.00	84.9	84.6	82.3
4.00	85.2	85.3	84.5
5.00	85.2	85.5	85.2
6.00	84.8	85.4	85.5
6.30	84.7	85.4	85.6
6.93	84.3	85.1	85.6
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Load Current

[A]

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

(注)斜線は定格負荷電流範囲を示す。

2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
1.00	77.9	76.0	71.3
2.00	83.3	82.3	79.7
3.00	84.9	84.6	82.3
4.00	85.2	85.3	84.5
5.00	85.2	85.5	85.2
6.00	84.8	85.4	85.5
6.30	84.7	85.4	85.6
6.93	84.3	85.1	85.6
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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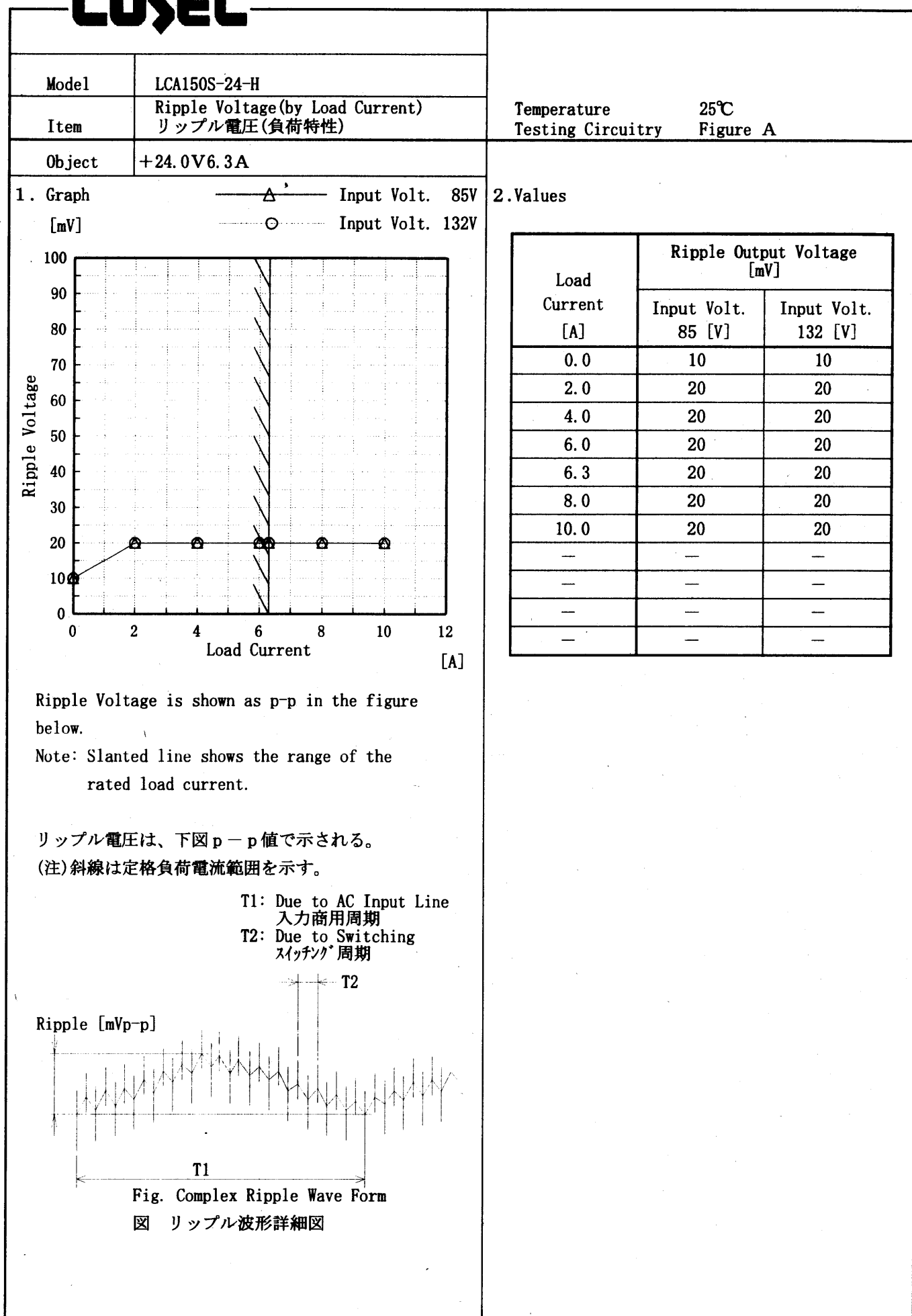
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Model		LCA150S-24-H		Temperature		25℃																																																				
Item		Instantaneous Interruption Compensation 瞬時停電保障		Testing Circuitry		Figure A																																																				
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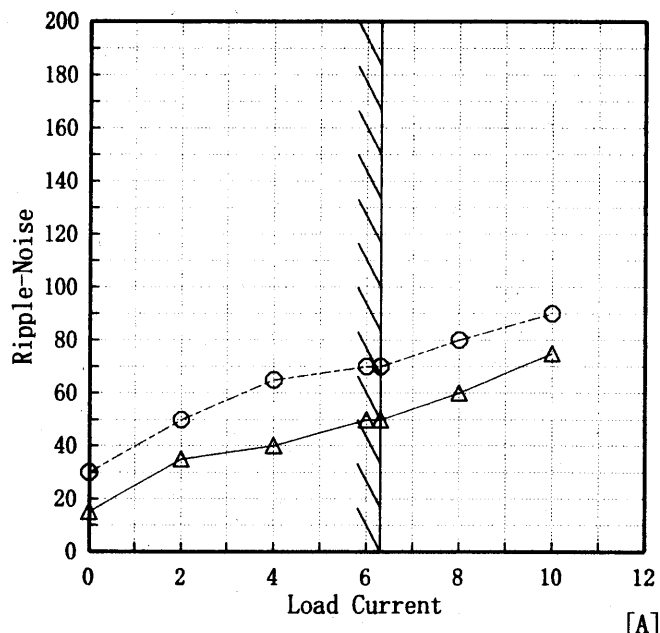
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Model	LCA150S-24-H
Item	Ripple-Noise リップルノイズ
Object	+24.0V6.3A

Temperature 25°C
Testing Circuitry Figure A

1. Graph
- △— Input Volt. 85V
—○— Input Volt. 132V



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

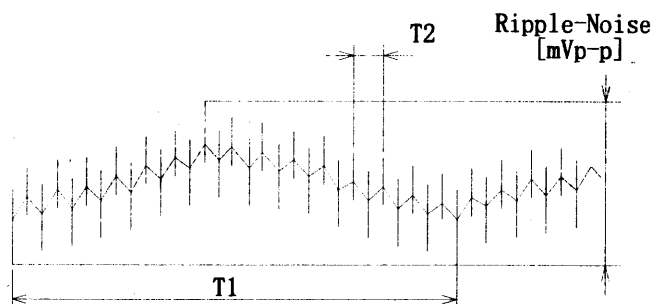


Fig. Complex Ripple Wave Form

図 リップル波形詳細図

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	15	30
2.0	35	50
4.0	40	65
6.0	50	70
6.3	50	70
8.0	60	80
10.0	75	90
—	—	—
—	—	—
—	—	—
—	—	—

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Model		LCA150S-24-H	Temperature 25℃ Testing Circuitry Figure A																																																							
Item		Overcurrent Protection 過電流保護																																																								
Object		+24.0V6.3A																																																								
1. Graph			2. Values																																																							
<div><div><div>-----</div><div>—————</div><div>—————</div></div><div>Input Volt. 85 V</div><div>Input Volt. 100 V</div><div>Input Volt. 132 V</div></div> <div><div>Output Voltage [V]</div><div><div>40.0</div><div>30.0</div><div>20.0</div><div>10.0</div><div>0.0</div></div><div><div>0</div><div>5</div><div>10</div><div>15</div></div><div>Load Current [A]</div></div> <div><div>Note: Slanted line shows the range of the rated load current.</div><div>(注)斜線は定格負荷電流範囲を示す。</div></div>			<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>24.00</td><td>12.430</td><td>12.377</td><td>12.392</td></tr><tr><td>22.80</td><td>12.417</td><td>12.370</td><td>12.392</td></tr><tr><td>21.60</td><td>12.424</td><td>12.386</td><td>12.426</td></tr><tr><td>19.20</td><td>12.468</td><td>12.453</td><td>12.477</td></tr><tr><td>16.80</td><td>12.519</td><td>12.499</td><td>12.558</td></tr><tr><td>14.40</td><td>12.552</td><td>12.546</td><td>12.585</td></tr><tr><td>12.00</td><td>12.577</td><td>12.564</td><td>12.650</td></tr><tr><td>9.60</td><td>12.615</td><td>12.611</td><td>12.700</td></tr><tr><td>7.20</td><td>12.634</td><td>12.641</td><td>12.707</td></tr><tr><td>4.80</td><td>12.596</td><td>12.615</td><td>12.718</td></tr><tr><td>2.40</td><td>12.553</td><td>12.513</td><td>12.513</td></tr><tr><td>0.00</td><td>12.476</td><td>12.528</td><td>12.774</td></tr></table>	Output Voltage [V]	Load Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	24.00	12.430	12.377	12.392	22.80	12.417	12.370	12.392	21.60	12.424	12.386	12.426	19.20	12.468	12.453	12.477	16.80	12.519	12.499	12.558	14.40	12.552	12.546	12.585	12.00	12.577	12.564	12.650	9.60	12.615	12.611	12.700	7.20	12.634	12.641	12.707	4.80	12.596	12.615	12.718	2.40	12.553	12.513	12.513	0.00	12.476	12.528	12.774
Output Voltage [V]	Load Current [A]																																																									
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COSEL

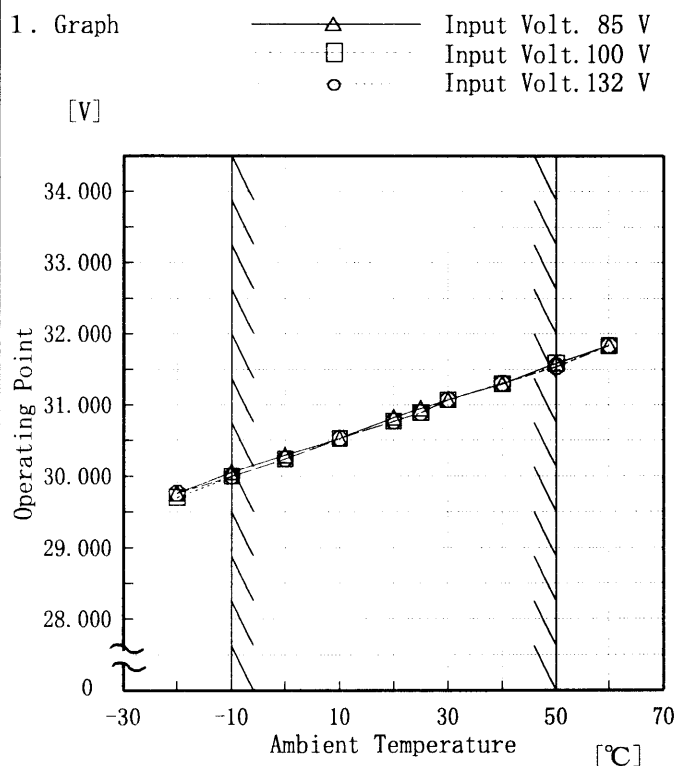
Model LCA150S-24-H

Item Overvoltage Protection
過電圧保護

Object +24.0V6.3A

Testing Circuitry Figure A

1. Graph

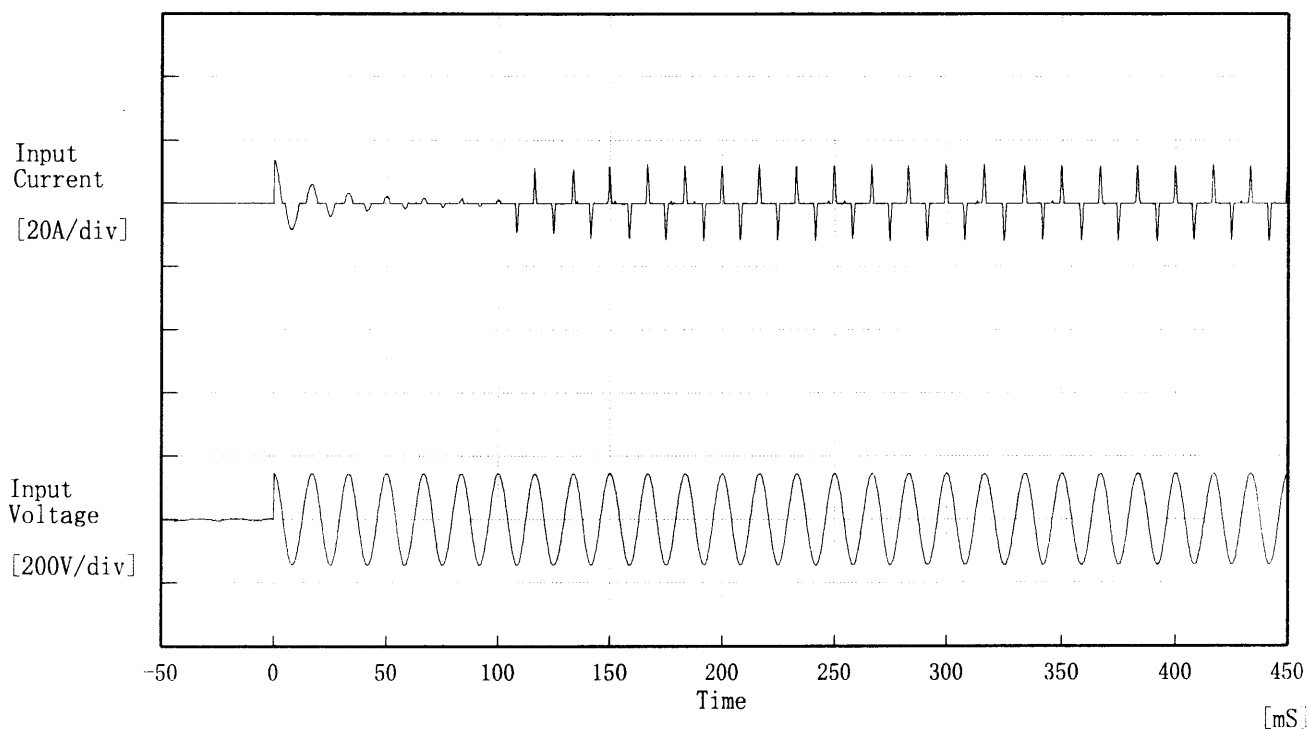


2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	29.76	29.70	29.76
-10	30.06	30.00	30.00
0	30.29	30.24	30.24
10	30.53	30.53	30.53
20	30.82	30.77	30.77
25	30.95	30.89	30.89
30	31.07	31.07	31.07
40	31.30	31.30	31.31
50	31.59	31.59	31.54
60	31.84	31.83	31.84
—	—	—	—

COSEL

Model	LCA150S-24-H	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current 突入電流	
Object	_____	



Input Voltage 100 V

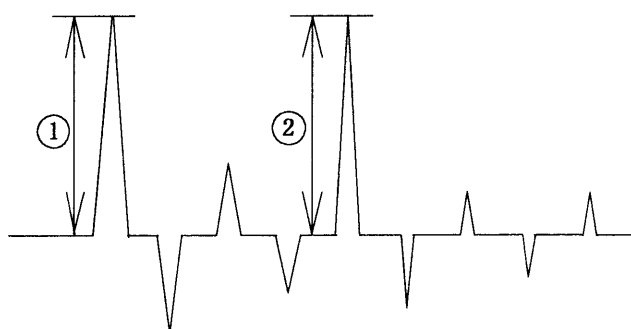
Frequency 60 Hz

Load 100 %

Inrush Current

① 13.56 [A]

② 12.36 [A]



COSEL

Model	LCA150S-24-H	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Responce 動的負荷変動	
Object	+24.0V 6.3A	

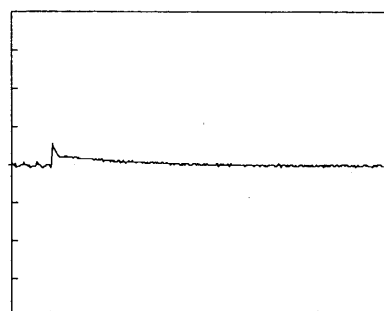
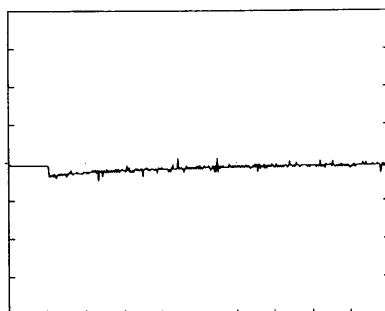
Input Volt. 100 V

Cycle 1000 mS

Load Current

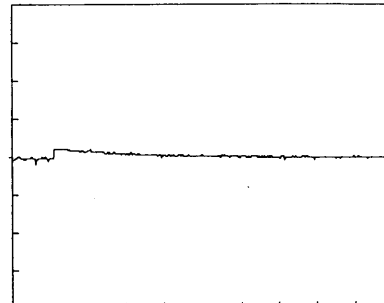
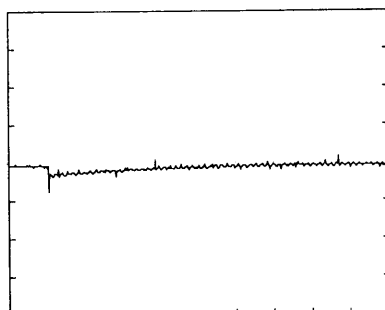
Load 0% ←→

Load 100 %



Load 0% ←→

Load 50 %



100 mV/div

10 mS/div

COSEL

Model	LCA150S-24-H	Temperature 25℃ Testing Circuitry Figure A
Item	Dynamic Load Responce 動的負荷変動	
Object	+24.0V6.3A	

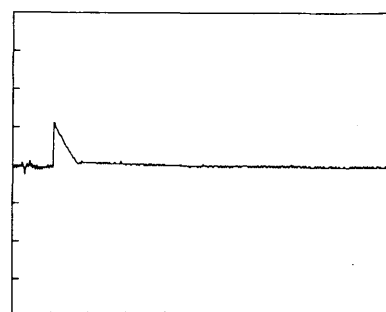
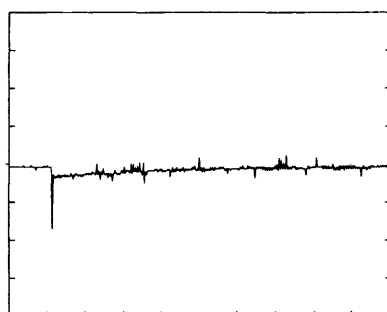
Input Volt. 100 V

Cycle 1000 mS

Load Current

Load 0% ←→

Load Peak



100 mV/div

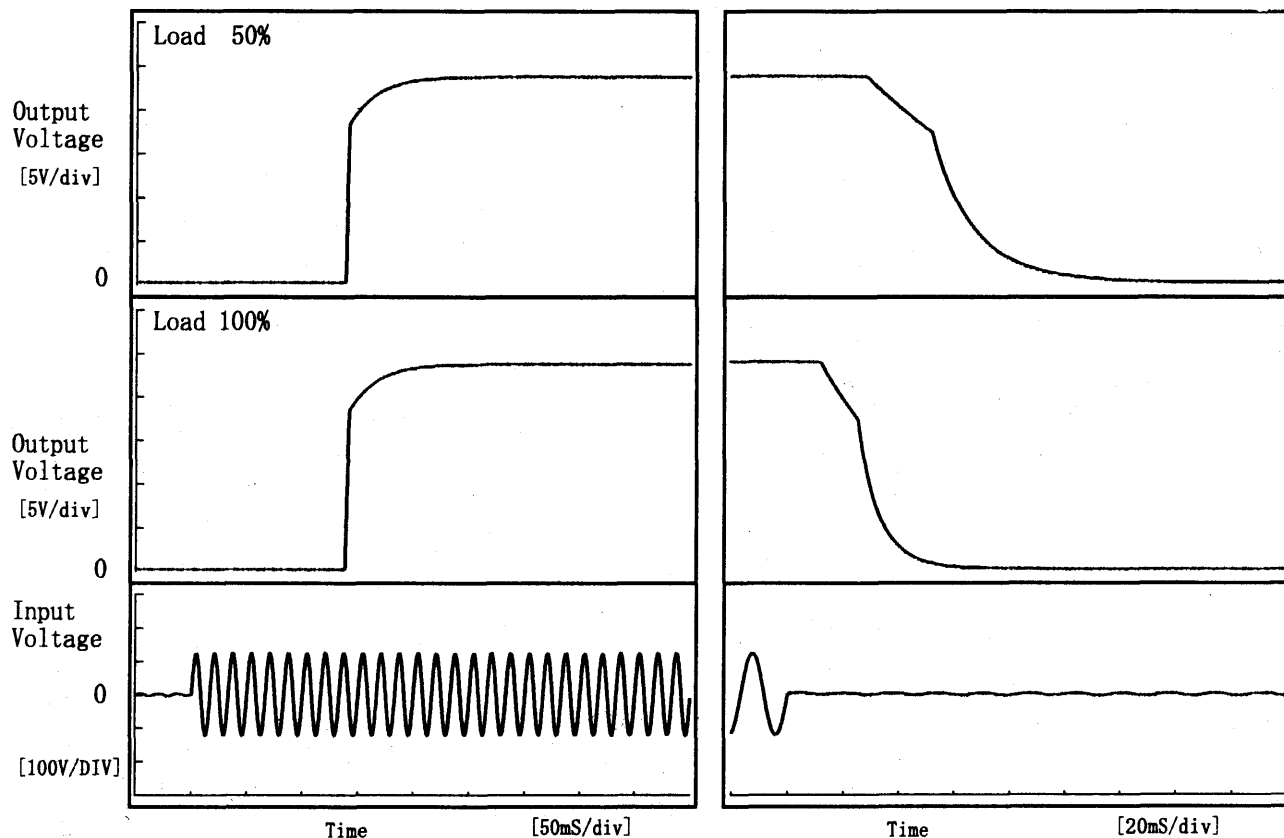
10 mS/div

COSEL

Model	LCA150S-24-H	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+24.0V6.3A		

1. Graph

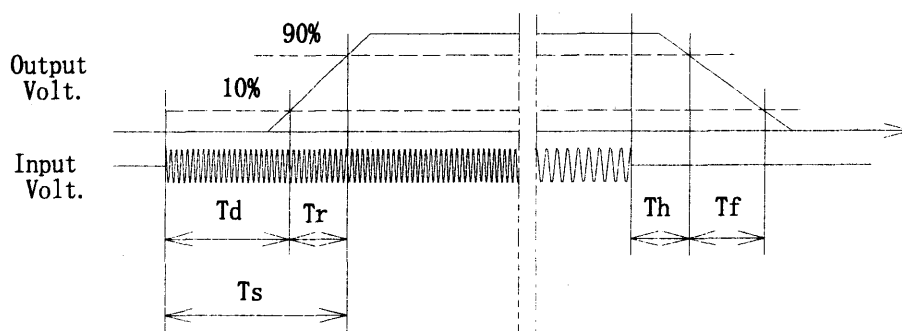
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	138.5	28.0	166.5	35.6	47.9
100 %	138.5	27.5	166.0	16.3	25.5



COSEL

Model		LCA150S-24-H	Testing Circuitry Figure A																																																			
Item		Ambient Temperature Drift 周囲温度変動																																																				
Object		+24.0V6.3A																																																				
1. Graph		<div><div>△</div> Input Volt. 85V</div> <div><div>□</div> Input Volt. 100V</div> <div><div>○</div> Input Volt. 132V</div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>	2. Values																																																			
			<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>-20</td><td>23.969</td><td>23.969</td><td>23.969</td></tr><tr><td>-10</td><td>23.979</td><td>23.979</td><td>23.979</td></tr><tr><td>0</td><td>23.987</td><td>23.987</td><td>23.987</td></tr><tr><td>10</td><td>23.993</td><td>23.994</td><td>23.993</td></tr><tr><td>20</td><td>23.998</td><td>23.998</td><td>23.998</td></tr><tr><td>25</td><td>24.001</td><td>24.001</td><td>24.001</td></tr><tr><td>30</td><td>24.002</td><td>24.002</td><td>24.002</td></tr><tr><td>40</td><td>24.004</td><td>24.004</td><td>24.004</td></tr><tr><td>50</td><td>24.006</td><td>24.006</td><td>24.006</td></tr><tr><td>60</td><td>24.008</td><td>24.008</td><td>24.007</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>	Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	-20	23.969	23.969	23.969	-10	23.979	23.979	23.979	0	23.987	23.987	23.987	10	23.993	23.994	23.993	20	23.998	23.998	23.998	25	24.001	24.001	24.001	30	24.002	24.002	24.002	40	24.004	24.004	24.004	50	24.006	24.006	24.006	60	24.008	24.008	24.007	—	—	—	—
Ambient Temperature [°C]	Output Voltage [V]																																																					
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																			
-20	23.969	23.969	23.969																																																			
-10	23.979	23.979	23.979																																																			
0	23.987	23.987	23.987																																																			
10	23.993	23.994	23.993																																																			
20	23.998	23.998	23.998																																																			
25	24.001	24.001	24.001																																																			
30	24.002	24.002	24.002																																																			
40	24.004	24.004	24.004																																																			
50	24.006	24.006	24.006																																																			
60	24.008	24.008	24.007																																																			
—	—	—	—																																																			
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。																																																						

COSEL

Model		LCA150S-24-H	
Item		Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧	
Object		+24.0V6.3A	
1. Graph		2. Values	

□ Load 50%

△ Load 100%

Input Voltage [V]

Ambient Temperature [°C]

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	64	68
-10	64	67
0	63	67
10	63	67
20	63	67
25	63	67
30	63	67
40	63	67
50	63	67
60	62	67
—	—	—

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。

COSEL

Model		LCA150S-24-H	
Item		Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)	
Object		+24.0V 6.3A	

1. Graph

□

Load 50%

—△—

Load 100%

[mV]

200

180

160

140

120

100

80

60

40

20

0

Ripple Voltage

-30

-10

10

30

50

70

Ambient Temperature

[°C]

Input Volt. 100 V

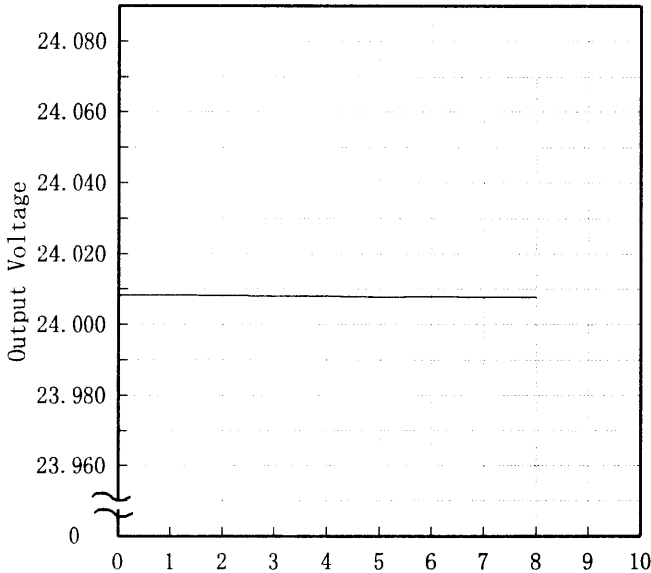
Note: Slanted line shows the range of the rated ambient temperature.

(注)斜線は定格周囲温度範囲を示す。

2. Values

Ambient Temperature [°C]	Ripple Output Voltage [mV]	
	Load 50%	Load 100%
-20	20	30
-10	20	30
0	20	20
10	20	20
20	15	20
25	15	20
30	15	20
40	15	20
50	15	20
60	15	20
—	—	—

COSEL

COSEL																									
Model	LCA150S-24-H	Temperature 25℃ Testing Circuitry Figure A																							
Item	Time Lapse Drift 経時ドリフト																								
Object	+24.0V6.3A																								
1. Graph		2.Values																							
<div>[V]</div> <div></div> <div>Output Voltage [V]</div> <div>Time [H]</div> <div>Input Volt. 100V</div> <div>Load 100%</div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>24.008</td></tr><tr><td>0.5</td><td>24.008</td></tr><tr><td>1.0</td><td>24.008</td></tr><tr><td>2.0</td><td>24.008</td></tr><tr><td>3.0</td><td>24.008</td></tr><tr><td>4.0</td><td>24.008</td></tr><tr><td>5.0</td><td>24.008</td></tr><tr><td>6.0</td><td>24.008</td></tr><tr><td>7.0</td><td>24.008</td></tr><tr><td>8.0</td><td>24.008</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	24.008	0.5	24.008	1.0	24.008	2.0	24.008	3.0	24.008	4.0	24.008	5.0	24.008	6.0	24.008	7.0	24.008	8.0	24.008
Time since start [H]	Output Voltage [V]																								
0.0	24.008																								
0.5	24.008																								
1.0	24.008																								
2.0	24.008																								
3.0	24.008																								
4.0	24.008																								
5.0	24.008																								
6.0	24.008																								
7.0	24.008																								
8.0	24.008																								

COSEL

Model		LCA150S-24-H	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+24.0V6.3A	

1. Output Voltage Accuracy

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

Temperature -10~50 °C

Input Voltage : 85~132 V

Load Current : 0~6.3 A

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

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

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、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

負荷電流 0~6.3 A

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

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

2. Values

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	50	100	0.0	24.008	±14	±0.1
Minimum Voltage	-10	85	6.3	23.981		

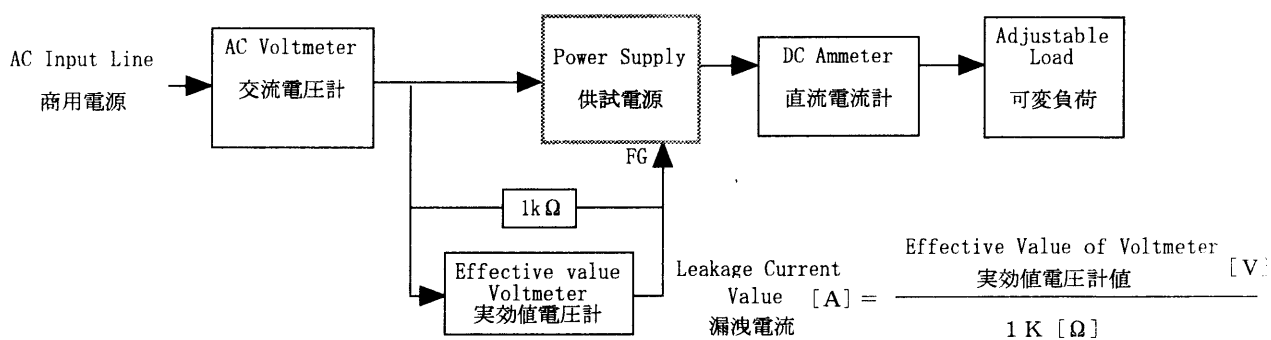
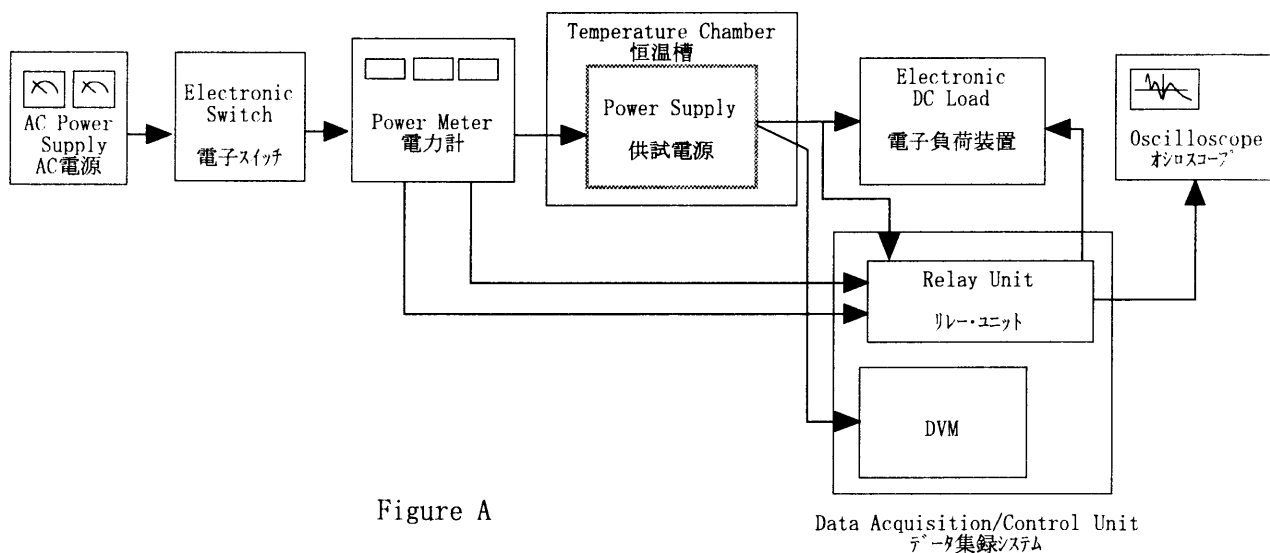


Figure B (DENTORI)

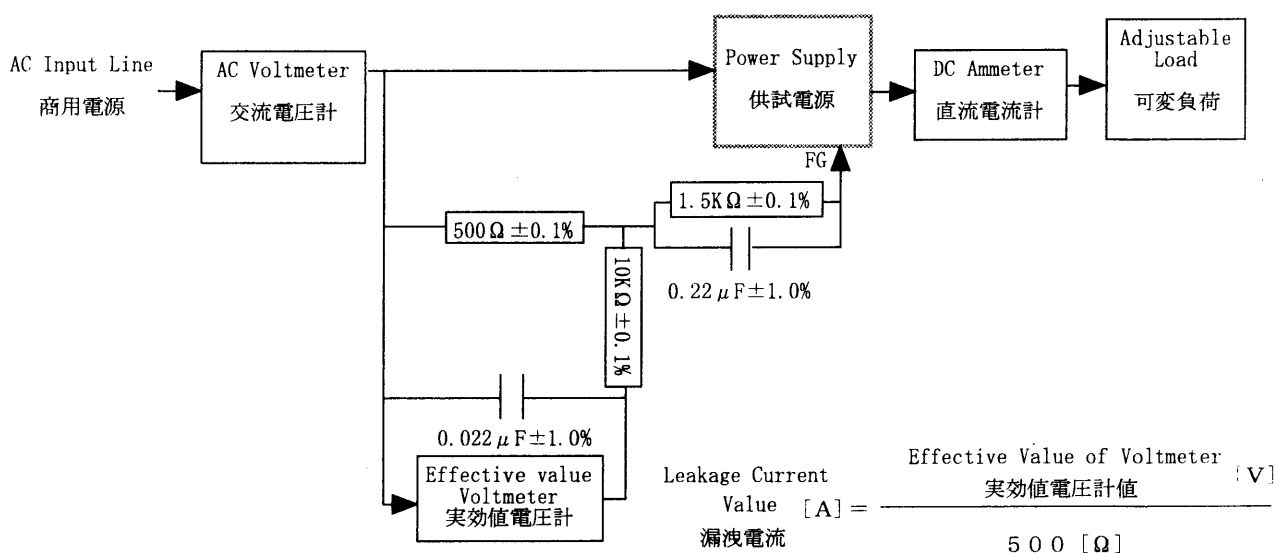


Figure B (IEC 60950)

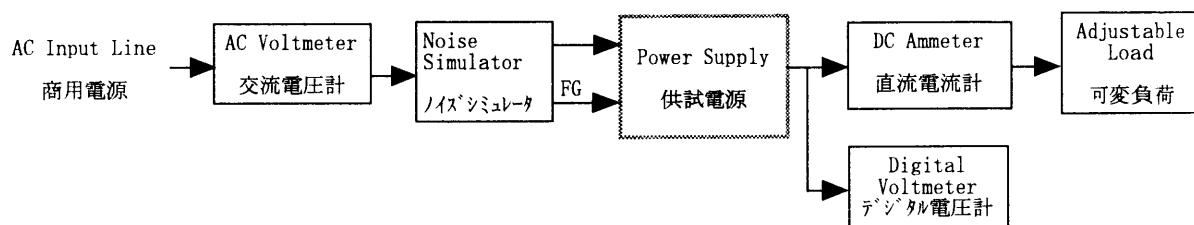


Figure C

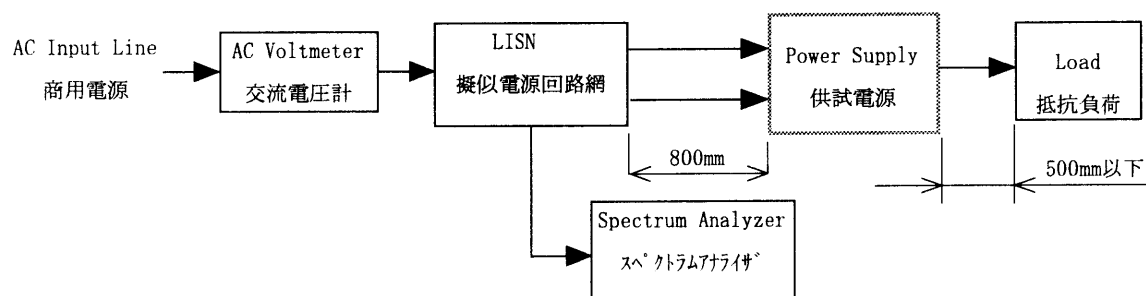


Figure D

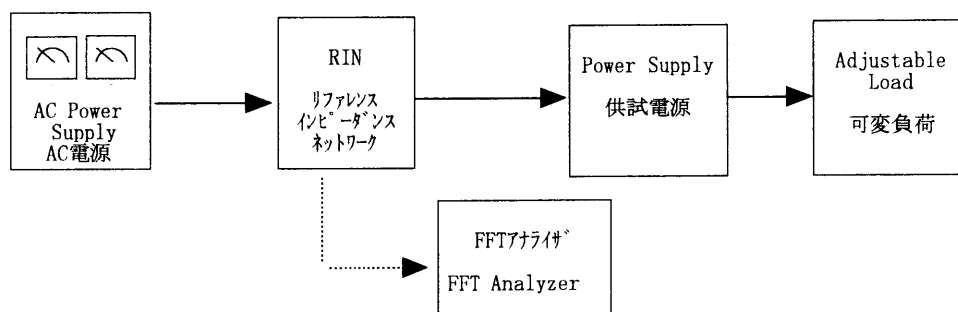


Figure E