



TEST DATA OF LDA10F-15 (200V INPUT)

Regulated DC Power Supply

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コーセル株式会社

COSEL CO., LTD.



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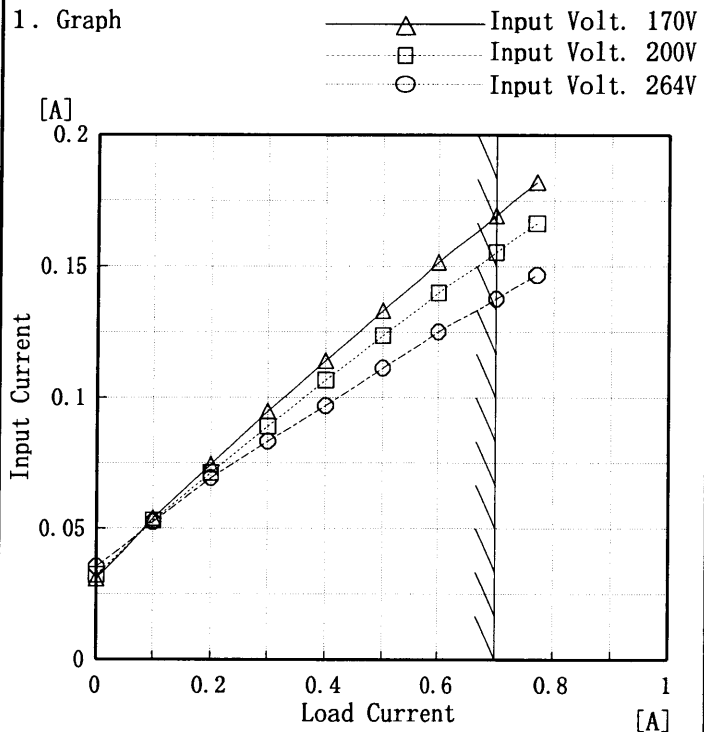
Model		LDA10F-15	Temperature		25°C																																
Item		Line Regulation 静的入力変動	Testing Circuitry		Figure A																																
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Input Voltage [V]	Output Voltage [V]																																				
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Model	LDA10F-15
Item	Input Current (by Load Current) 入力電流 (負荷特性)
Output	_____

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	0.031	0.032	0.036
0.10	0.054	0.053	0.053
0.20	0.074	0.071	0.069
0.30	0.095	0.089	0.083
0.40	0.114	0.107	0.097
0.50	0.133	0.124	0.111
0.60	0.152	0.140	0.125
0.70	0.169	0.155	0.138
0.77	0.182	0.166	0.147
—	—	—	—
—	—	—	—
—	—	—	—

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

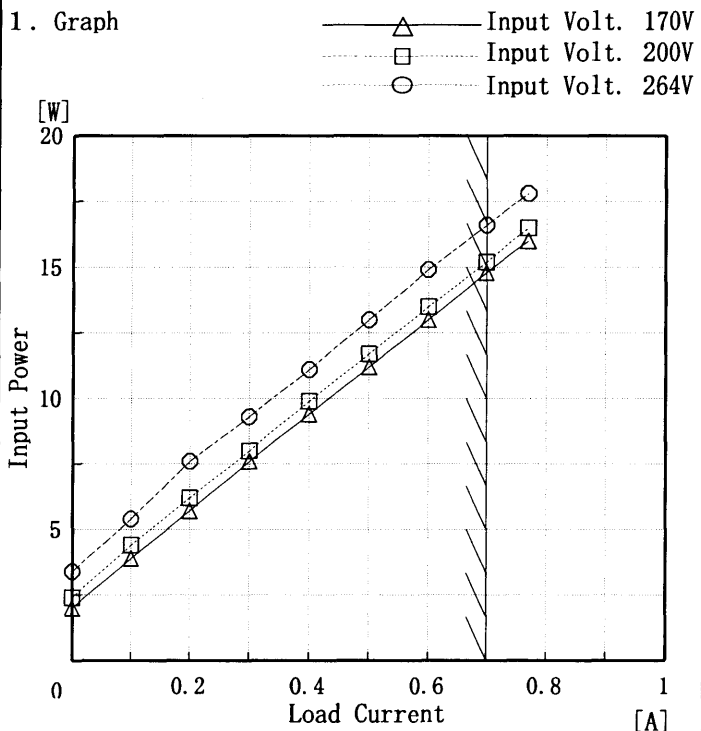
(注) 斜線は定格負荷電流範囲を示す。



Model	LDA10F-15
Item	Input Power (by Load Current) 入力電力 (負荷特性)
Output	—————

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	2.00	2.40	3.40
0.10	3.90	4.40	5.40
0.20	5.70	6.20	7.60
0.30	7.60	8.00	9.30
0.40	9.40	9.90	11.10
0.50	11.20	11.70	13.00
0.60	13.00	13.50	14.90
0.70	14.80	15.20	16.60
0.77	16.00	16.50	17.80
—	—	—	—
—	—	—	—
—	—	—	—

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

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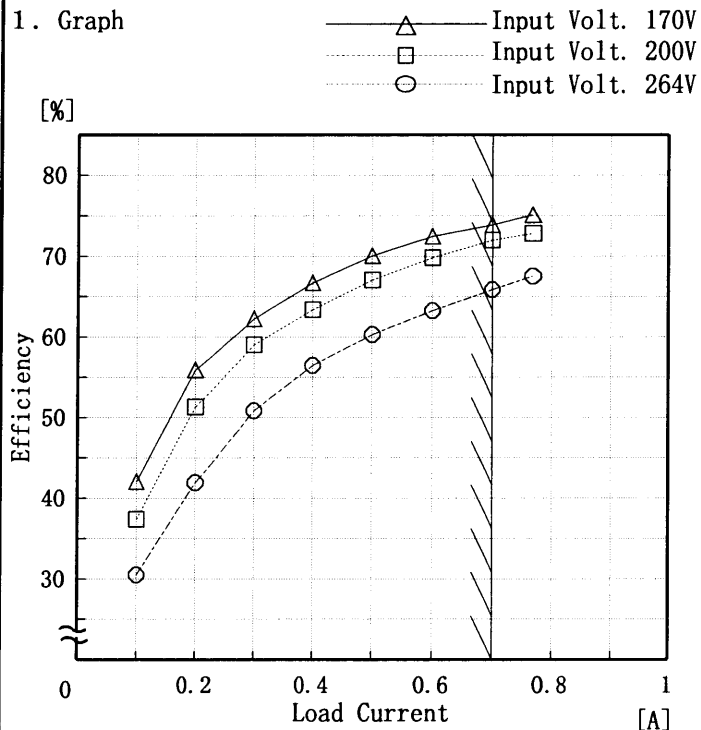
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Model	LDA10F-15
Item	Efficiency (by Load Current) 効率 (負荷電流特性)
Output	_____

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.10	42.1	37.4	30.5
0.20	55.9	51.3	41.9
0.30	62.3	59.0	50.9
0.40	66.7	63.4	56.5
0.50	70.1	67.1	60.3
0.60	72.4	69.8	63.3
0.70	73.9	72.0	65.9
0.77	75.1	72.8	67.5
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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。



Model		LDA10F-15		Temperature	25°C																																
Item		Hold-Up Time 出力保持時間		Testing Circuitry	Figure A																																
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<p> □ Load 50% △ Load 100% </p> <p> 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. </p> <p> 出力保持時間とは、入力電圧断から出力電圧が、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。 </p>			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Hold-Up Time [mS]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>150</td><td>136</td><td>68</td></tr> <tr><td>160</td><td>155</td><td>79</td></tr> <tr><td>170</td><td>174</td><td>90</td></tr> <tr><td>180</td><td>195</td><td>101</td></tr> <tr><td>200</td><td>239</td><td>126</td></tr> <tr><td>220</td><td>286</td><td>153</td></tr> <tr><td>240</td><td>337</td><td>183</td></tr> <tr><td>264</td><td>402</td><td>221</td></tr> <tr><td>280</td><td>449</td><td>249</td></tr> </tbody> </table>			Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	150	136	68	160	155	79	170	174	90	180	195	101	200	239	126	220	286	153	240	337	183	264	402	221	280	449	249
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<p>Model LDA10F-15</p> <p>Item Instantaneous Interruption Compensation 瞬時停電保障</p> <p>Object +15.0V0.7A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																			
<p>1. Graph</p> <p>—△— Input Volt. 170 V - - -□- - - Input Volt. 200 V ...○... Input Volt. 264 V</p> <p>Instantaneous Compensation Time [mS]</p> <p>Load Current [A]</p> <p>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 load current.</p> <p>瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。 (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 rowspan="2">Load Current [A]</th> <th colspan="3">Time [mS]</th> </tr> <tr> <th>Input Volt. 170[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 264[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>0.10</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>0.20</td><td>267</td><td>363</td><td>597</td></tr> <tr><td>0.30</td><td>197</td><td>271</td><td>456</td></tr> <tr><td>0.40</td><td>151</td><td>210</td><td>361</td></tr> <tr><td>0.50</td><td>122</td><td>171</td><td>298</td></tr> <tr><td>0.60</td><td>101</td><td>144</td><td>255</td></tr> <tr><td>0.70</td><td>85</td><td>123</td><td>220</td></tr> <tr><td>0.77</td><td>77</td><td>112</td><td>203</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]	Time [mS]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.00	—	—	—	0.10	—	—	—	0.20	267	363	597	0.30	197	271	456	0.40	151	210	361	0.50	122	171	298	0.60	101	144	255	0.70	85	123	220	0.77	77	112	203	—	—	—	—	—	—	—	—
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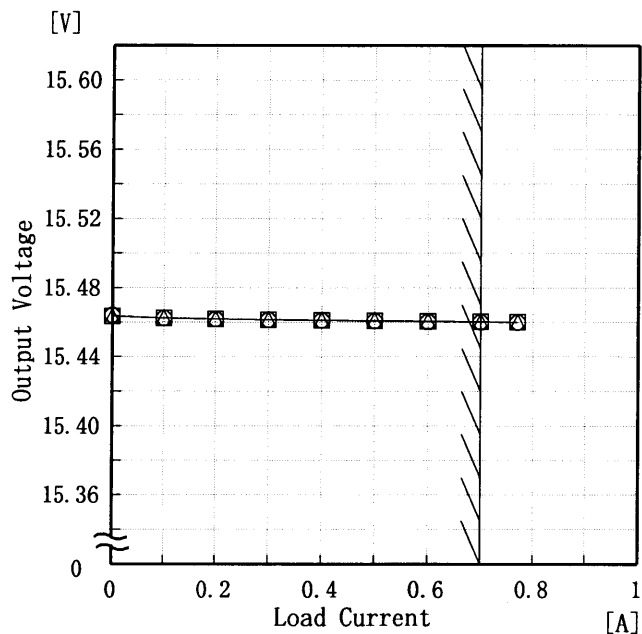


Model	LDA10F-15
Item	Load Regulation 静的負荷変動
Object	+15.0V0.7A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

—△— Input Volt. 170 V
 - - -□- - - Input Volt. 200 V
 - - -○- - - Input Volt. 264 V



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]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	15.464	15.463	15.464
0.10	15.463	15.462	15.463
0.20	15.462	15.462	15.462
0.30	15.462	15.461	15.461
0.40	15.461	15.461	15.461
0.50	15.461	15.461	15.461
0.60	15.461	15.461	15.460
0.70	15.461	15.460	15.460
0.77	15.460	15.460	15.460
—	—	—	—



COSEL																																									
Model	LDA10F-15	Temperature	25°C																																						
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷電流特性)	Testing Circuitry	Figure A																																						
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<p>1. Graph</p> <p>[mV]</p> <p>□ Input Volt. 170V</p> <p>△ Input Volt. 264V</p> <p>Ripple Voltage</p> <p>Load Current [A]</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th>Input Volt. 170 [V]</th> <th>Input Volt. 264 [V]</th> </tr> <tr> <th>Ripple Output Volt. [mV]</th> <th>Ripple Output Volt. [mV]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>10</td><td>10</td></tr> <tr><td>0.10</td><td>10</td><td>10</td></tr> <tr><td>0.20</td><td>10</td><td>10</td></tr> <tr><td>0.30</td><td>10</td><td>10</td></tr> <tr><td>0.40</td><td>10</td><td>10</td></tr> <tr><td>0.50</td><td>10</td><td>10</td></tr> <tr><td>0.60</td><td>15</td><td>15</td></tr> <tr><td>0.77</td><td>15</td><td>15</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Load Current [A]	Input Volt. 170 [V]	Input Volt. 264 [V]	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]	0.00	10	10	0.10	10	10	0.20	10	10	0.30	10	10	0.40	10	10	0.50	10	10	0.60	15	15	0.77	15	15	—	—	—	—	—	—	—	—	—
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<p>Fig. Complex Ripple Wave Form</p> <p>図 リップル波形詳細図</p>																																									



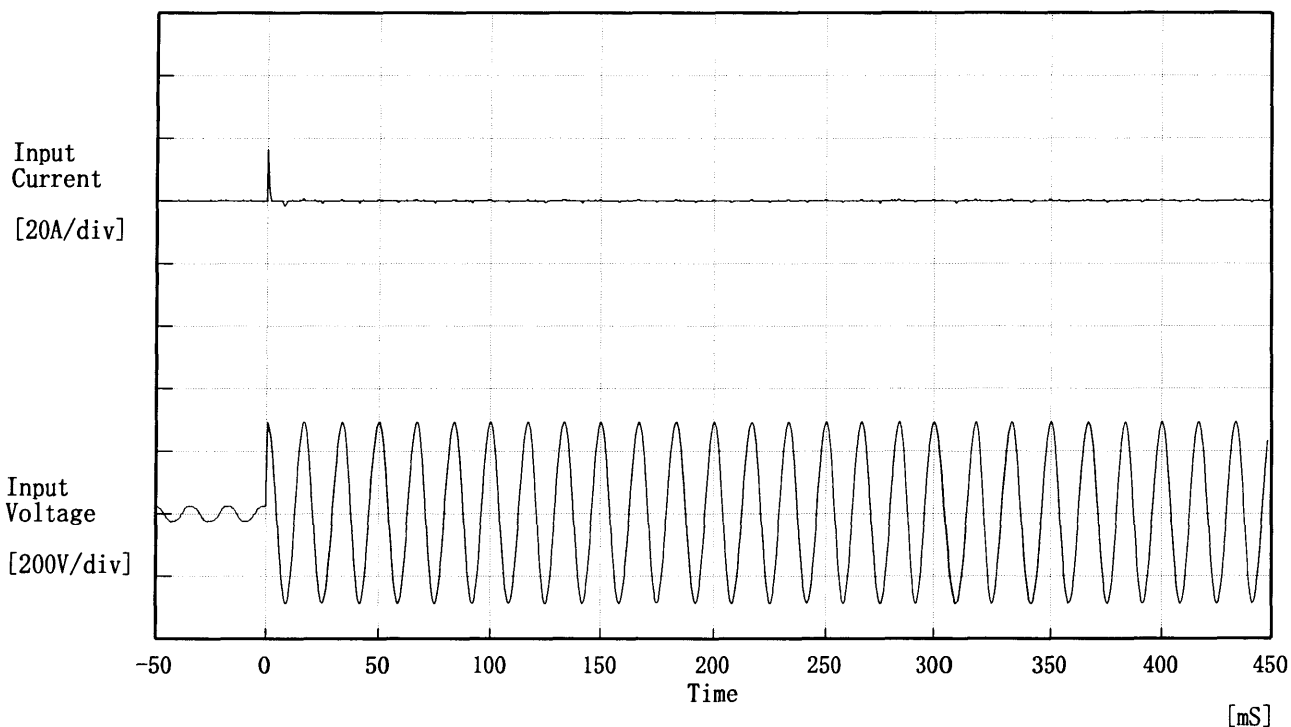
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—	—	—																																							
<p>Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>リップルノイズは、下図 p-p 値で示される。 (注)斜線は定格負荷電流範囲を示す。</p> <p>T1: Due to AC Input Line 入力商用周期 T2: Due to Switching スイッチング周期</p> <p style="text-align: center;">Ripple-Noise [mVp-p]</p>																																									
<p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>																																									



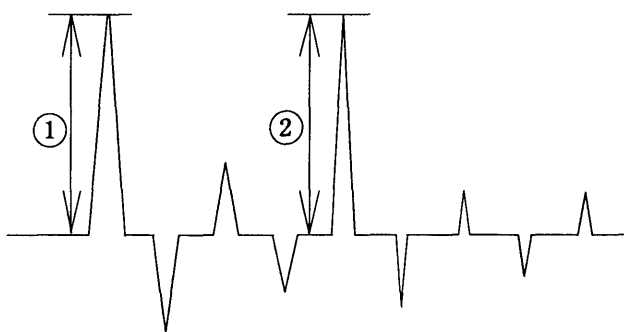
<p>Model LDA10F-15</p> <p>Item Overcurrent Protection 過電流保護</p> <p>Object +15.0V0.7A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																							
<p>1. Graph</p> <p>[V]</p> <p>Input Volt. 170 V</p> <p>Input Volt. 200 V</p> <p>Input Volt. 264 V</p> <p>Output Voltage</p> <p>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 rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 170[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 264[V]</th> </tr> </thead> <tbody> <tr><td>15.00</td><td>1.03</td><td>1.02</td><td>1.02</td></tr> <tr><td>14.25</td><td>1.06</td><td>1.04</td><td>1.04</td></tr> <tr><td>13.50</td><td>1.08</td><td>1.07</td><td>1.06</td></tr> <tr><td>12.00</td><td>1.13</td><td>1.11</td><td>1.11</td></tr> <tr><td>10.50</td><td>1.18</td><td>1.16</td><td>1.15</td></tr> <tr><td>9.00</td><td>1.22</td><td>1.20</td><td>1.19</td></tr> <tr><td>7.50</td><td>1.26</td><td>1.22</td><td>1.23</td></tr> <tr><td>6.00</td><td>1.27</td><td>1.24</td><td>1.24</td></tr> <tr><td>4.50</td><td>1.27</td><td>1.24</td><td>1.26</td></tr> <tr><td>3.00</td><td>1.23</td><td>1.21</td><td>1.24</td></tr> <tr><td>1.50</td><td>1.11</td><td>1.11</td><td>1.17</td></tr> <tr><td>0.00</td><td>0.90</td><td>0.93</td><td>1.01</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	15.00	1.03	1.02	1.02	14.25	1.06	1.04	1.04	13.50	1.08	1.07	1.06	12.00	1.13	1.11	1.11	10.50	1.18	1.16	1.15	9.00	1.22	1.20	1.19	7.50	1.26	1.22	1.23	6.00	1.27	1.24	1.24	4.50	1.27	1.24	1.26	3.00	1.23	1.21	1.24	1.50	1.11	1.11	1.17	0.00	0.90	0.93	1.01
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COSEL

Model	LDA10F-15	Temperature	25°C
Item	Inrush Current 突入電流	Testing Circuitry	Figure A
Object	_____		



Input Voltage 200 V
 Frequency 60 Hz
 Load 100 %
 Inrush Current
 ① 16.40 [A]
 ② 0.80 [A]



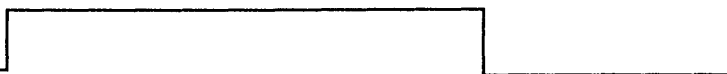
COSEL

Model	LDA10F-15	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+15V0.7A		

Input Volt. . 200 V

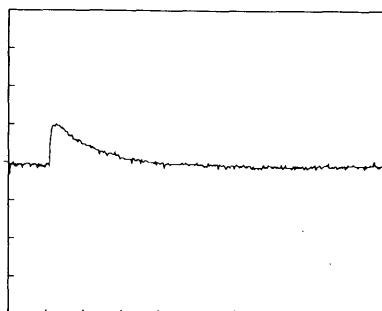
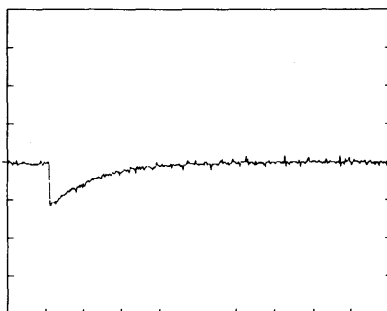
Cycle 1000 mS

Load Current



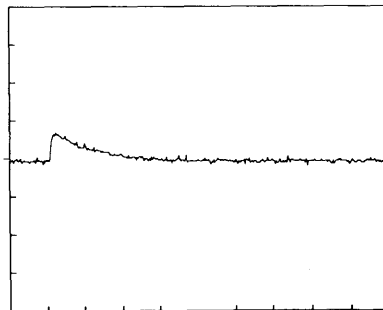
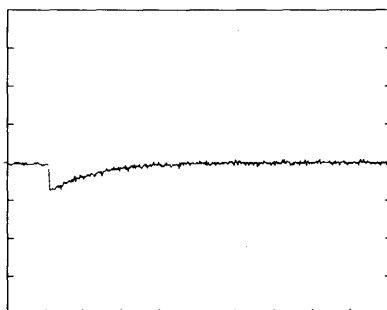
Load 0% ←→

Load 100 %



Load 0% ←→

Load 50 %



200 mV/div

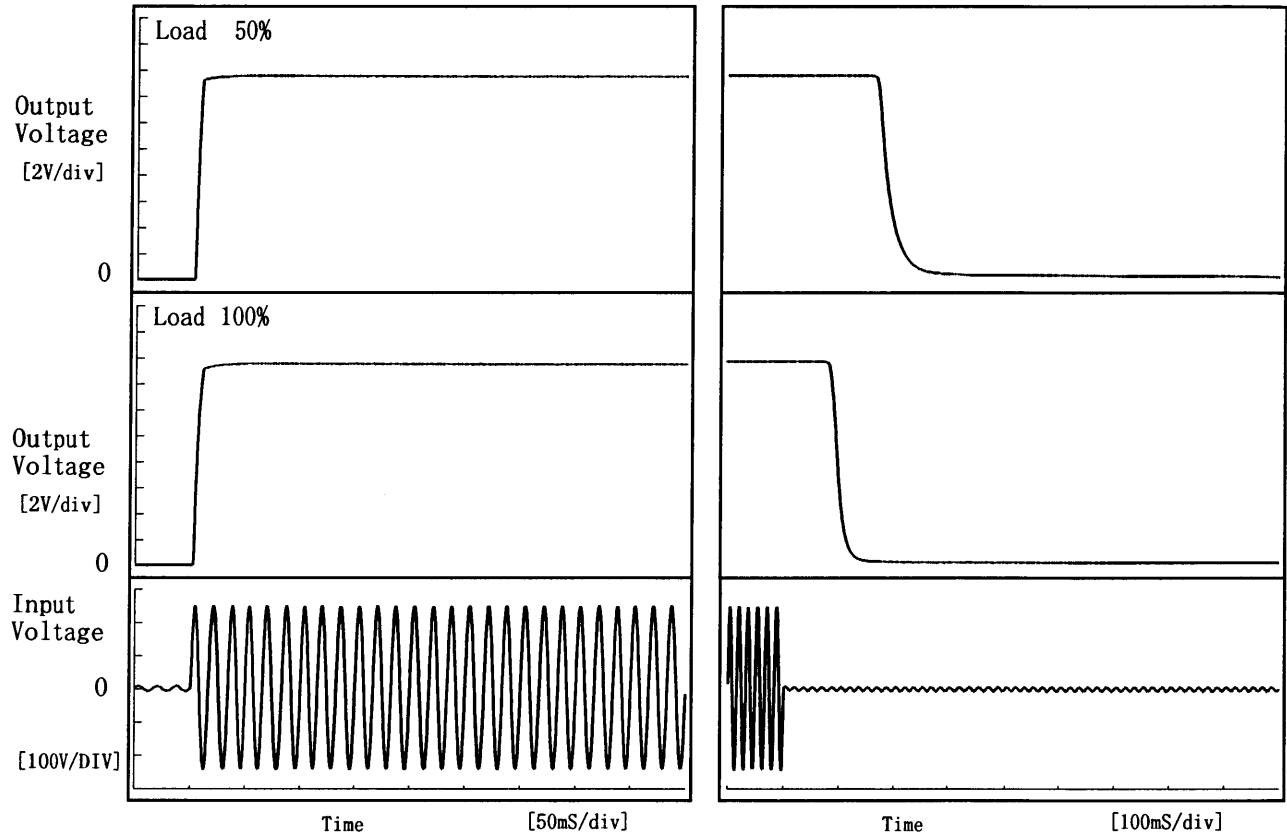
10 mS/div



Model	LDA10F-15	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+15.0V0.7A		

1. Graph

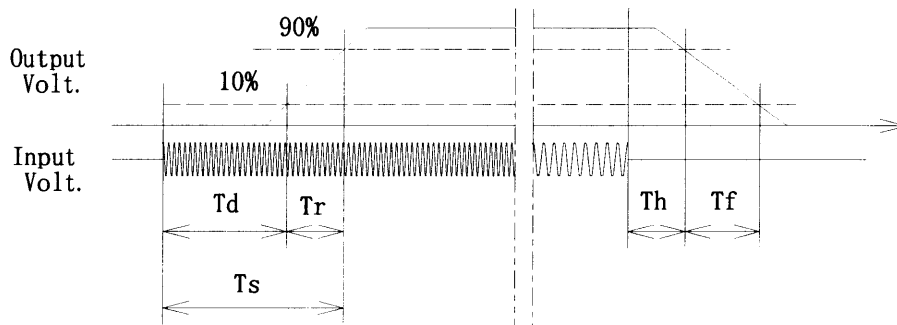
Input Volt. 170 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	2.3	5.5	7.8	175.0	52.0
100 %	2.3	7.0	9.3	90.0	29.0



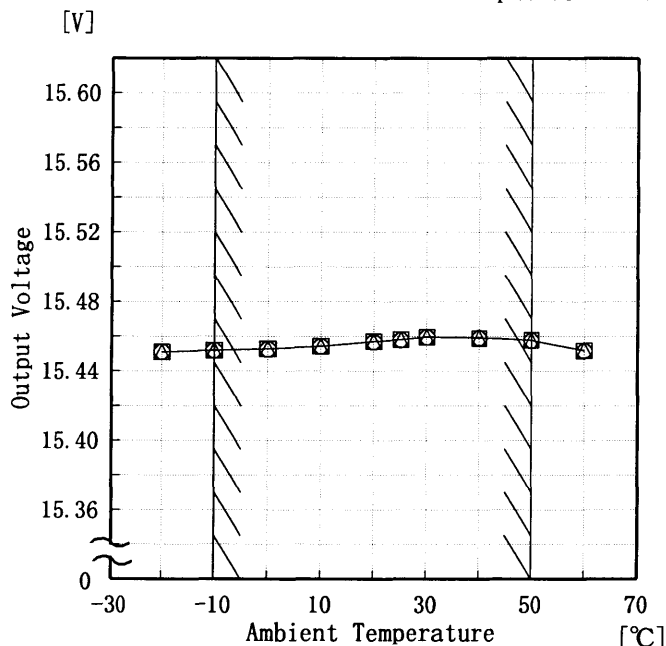


Model	LDA10F-15
Item	Ambient Temperature Drift 周囲温度変動
Object	+15.0V0.7A

Testing Circuitry Figure A

1. Graph

—△— Input Volt. 170V
 - - -□- - - Input Volt. 200V
 - - -○- - - Input Volt. 264V



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

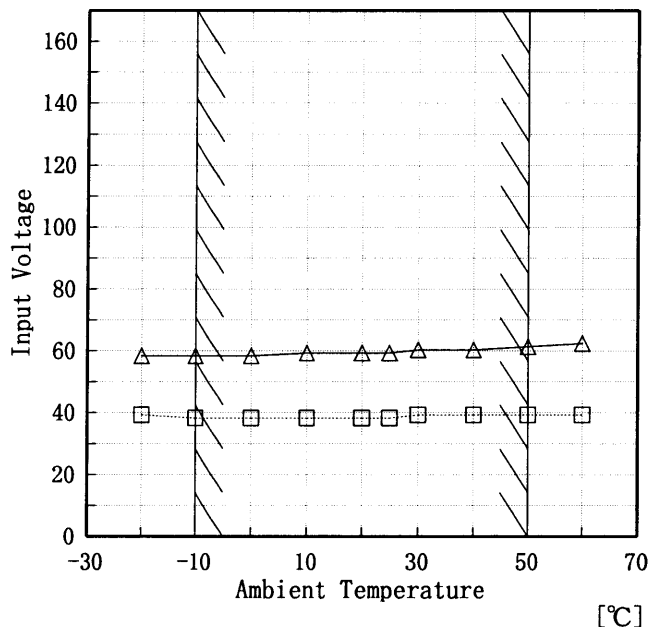
Temperature [°C]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	15.451	15.451	15.451
-10	15.452	15.452	15.452
0	15.453	15.453	15.453
10	15.454	15.454	15.454
20	15.457	15.457	15.457
25	15.458	15.458	15.458
30	15.460	15.460	15.459
40	15.459	15.459	15.459
50	15.458	15.458	15.458
60	15.452	15.452	15.451
-	-	-	-



Model	LDA10F-15
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15.0V0.7A

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 Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	39	58
-10	38	58
0	38	58
10	38	59
20	38	59
25	38	59
30	39	60
40	39	60
50	39	61
60	39	62
—	—	—



COSEL																																								
Model	LDA10F-15																																							
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)	Testing Circuitry Figure A																																						
Object	+15.0V0.7A																																							
<p>1. Graph</p> <p style="text-align: right;">□ Load 50% —△— Load 100%</p> <p>[mV]</p> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: center;">Input Volt. 200 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>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. [°C]</th> <th>Load 50%</th> <th>Load 100%</th> </tr> <tr> <th>Ripple Output Volt. [mV]</th> <th>Ripple Output Volt. [mV]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>20</td><td>40</td></tr> <tr><td>-10</td><td>10</td><td>20</td></tr> <tr><td>0</td><td>15</td><td>20</td></tr> <tr><td>10</td><td>15</td><td>10</td></tr> <tr><td>20</td><td>10</td><td>10</td></tr> <tr><td>25</td><td>10</td><td>10</td></tr> <tr><td>30</td><td>10</td><td>10</td></tr> <tr><td>40</td><td>10</td><td>10</td></tr> <tr><td>50</td><td>10</td><td>10</td></tr> <tr><td>60</td><td>10</td><td>10</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temp. [°C]	Load 50%	Load 100%	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]	-20	20	40	-10	10	20	0	15	20	10	15	10	20	10	10	25	10	10	30	10	10	40	10	10	50	10	10	60	10	10	—	—	—
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—	—	—																																						



COSEL																									
Model	LDA10F-15	Temperature	25°C																						
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A																						
Object	+15.0V0.7A																								
<p>1. Graph</p> <p style="text-align: center;">Time [H]</p> <p style="text-align: center;">Input Volt. 200V Load 100%</p>		<p>2.Values</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>15.459</td></tr> <tr><td>0.5</td><td>15.453</td></tr> <tr><td>1.0</td><td>15.454</td></tr> <tr><td>2.0</td><td>15.454</td></tr> <tr><td>3.0</td><td>15.453</td></tr> <tr><td>4.0</td><td>15.454</td></tr> <tr><td>5.0</td><td>15.454</td></tr> <tr><td>6.0</td><td>15.454</td></tr> <tr><td>7.0</td><td>15.454</td></tr> <tr><td>8.0</td><td>15.453</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	15.459	0.5	15.453	1.0	15.454	2.0	15.454	3.0	15.453	4.0	15.454	5.0	15.454	6.0	15.454	7.0	15.454	8.0	15.453
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7.0	15.454																								
8.0	15.453																								



Model		LDA10F-15	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+15.0V0.7A	

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 : 170~264 V

Load Current : 0~0.7 A

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

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

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 170~264 V

負荷電流 0~0.7 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) = $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	25	264	0.0	15.464	±7	±0.1
Minimum Voltage	-10	264	0.7	15.452		



COSEL		
Model	LDA10F-15	
Item	Condensation 結露特性	Testing Circuitry Figure A
Object	+15.0V0.7A	

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 40%RH.
- ③ Testing electrical characteristics of the unit to confirm there be no fault.

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40%RHの状態におき結露させ、その電気的特性の測定を行い、異常のないことを確認する。

2. Values

Item	Data	Testing Conditions
Output Voltage [V]	15.46	Input Volt.: 200V, Load Current:0.7A
Line Regulation [mV]	3	Input Volt.: 170~264V, Load Current:0.7A
Load Regulation [mV]	5	Input Volt.: 200V, Load Current:0~0.7A



Model		LDA10F-15	Temperature	25°C
Item		Leakage Current 漏洩電流	Testing Circuitry	Figure B
Object		_____		

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	—	—	—
(B) IEC60950	—	—	—

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 230 [V]	Input Volt. 264 [V]
(B) IEC60950	0.23	0.25	0.28

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。



Model		LDA10F-15	Temperature 25°C Testing Circuitry Figure C
Item		Line Noise Tolerance 入力雑音耐量	
Object		+15.0V0.7A	

1. Results

Pulse Width [nS]	MODE	No protection failure should occur 保護回路の誤動作がない	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	OK	no fluctuation
	NORMAL	OK	no fluctuation
1000	COMMON	OK	no fluctuation
	NORMAL	OK	no fluctuation

2. Conditions

Input Voltage : 200 V
 Pulse Voltage : 2000 V
 Pulse Cycle : 10 mS
 Pulse Input Duration : 1 min. or more
 Load : 100 %



Model	LDA10F-15	Temperature	25°C
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object			

1. Graph

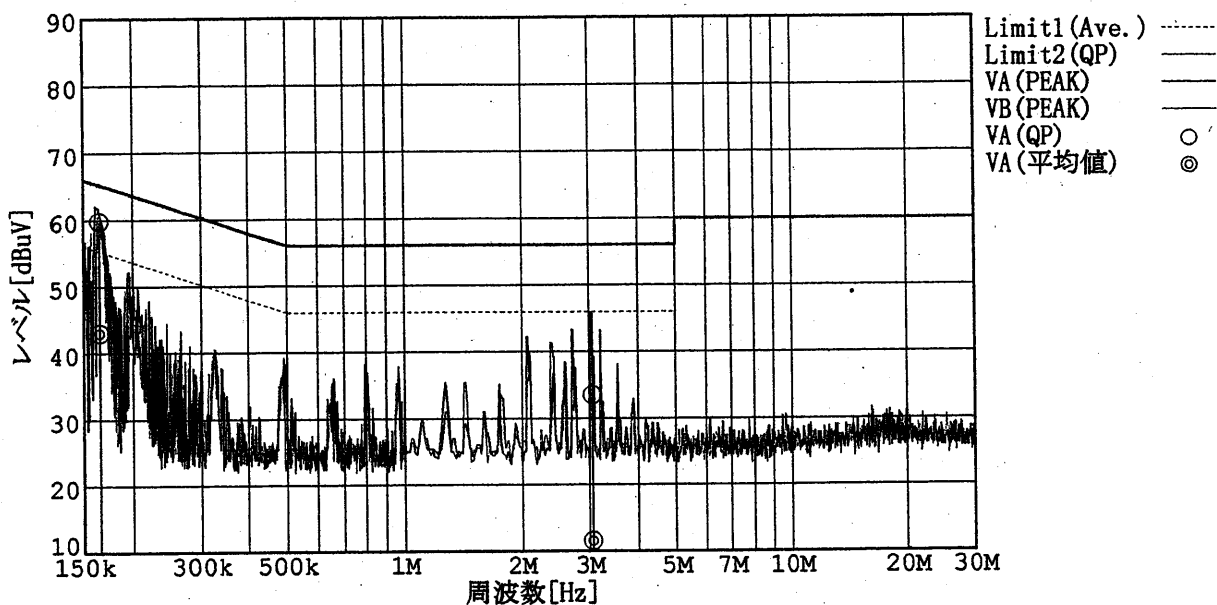
Remarks

Input Volt. 230 V

Load 100 %

規格 1: [EN 55022] Class B(平均値)

規格 2: [EN 55022] Class B(QP)



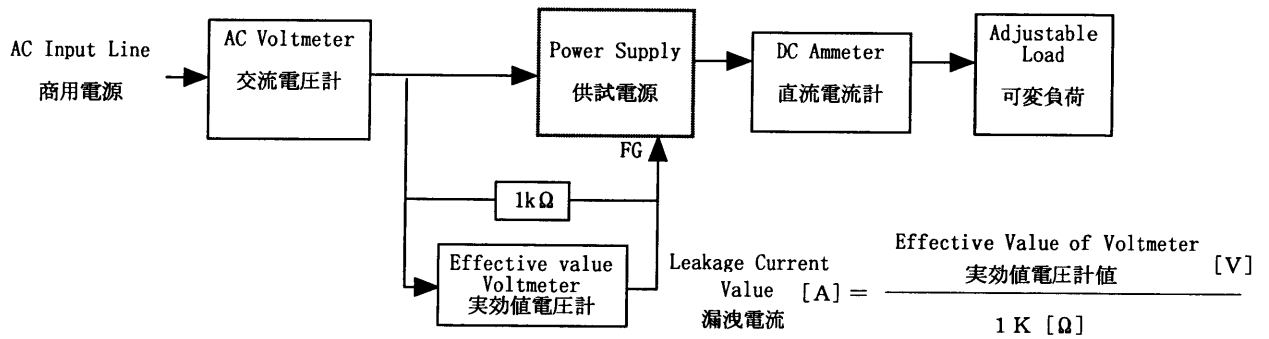
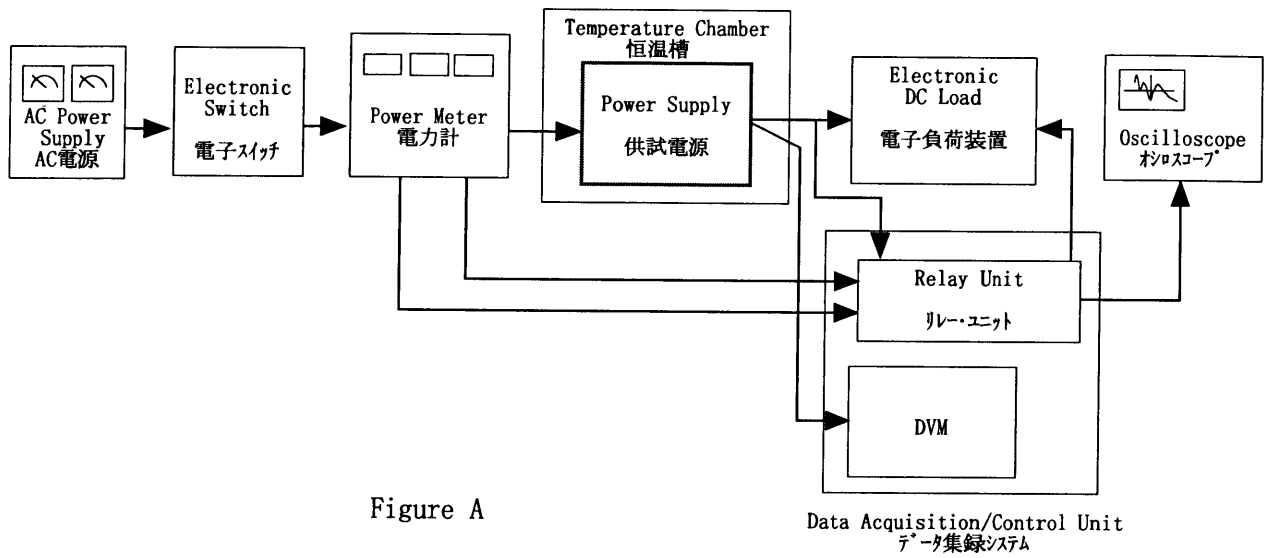


Figure B (DENTORI)

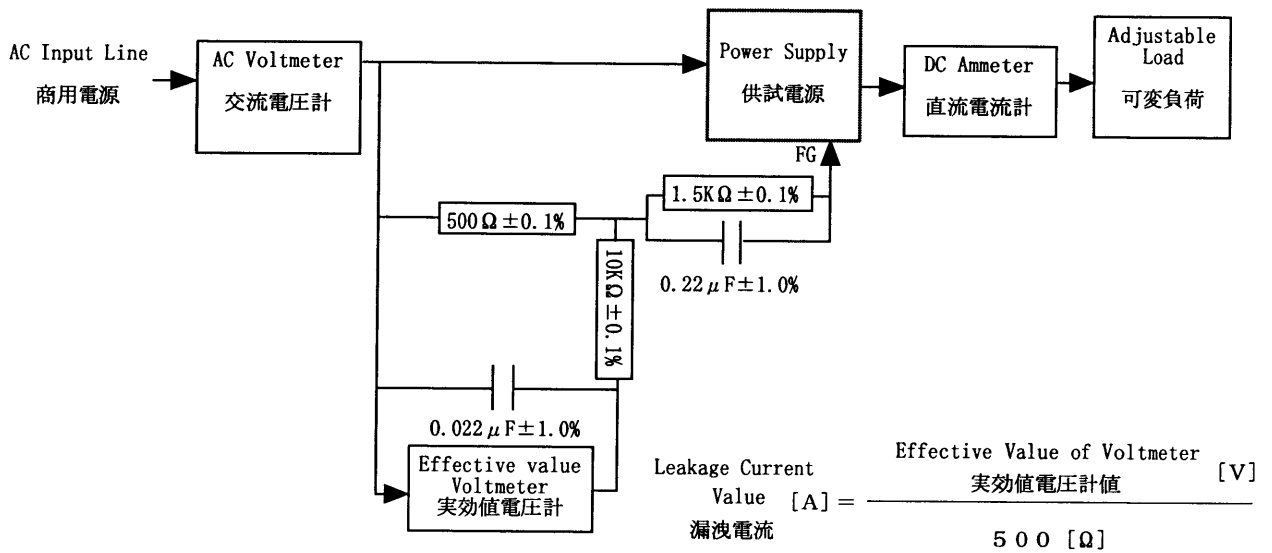


Figure B (IEC 60950)

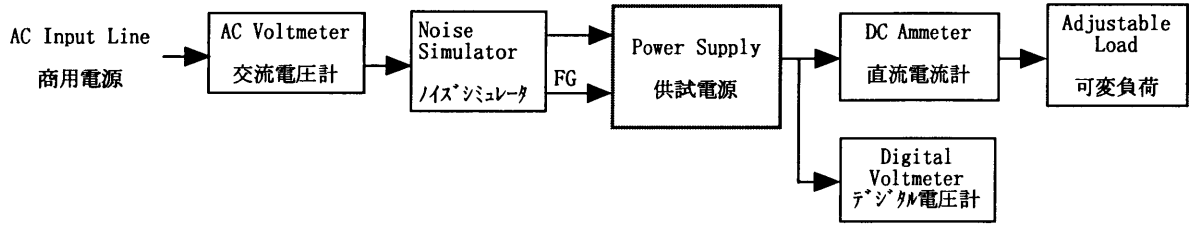


Figure C

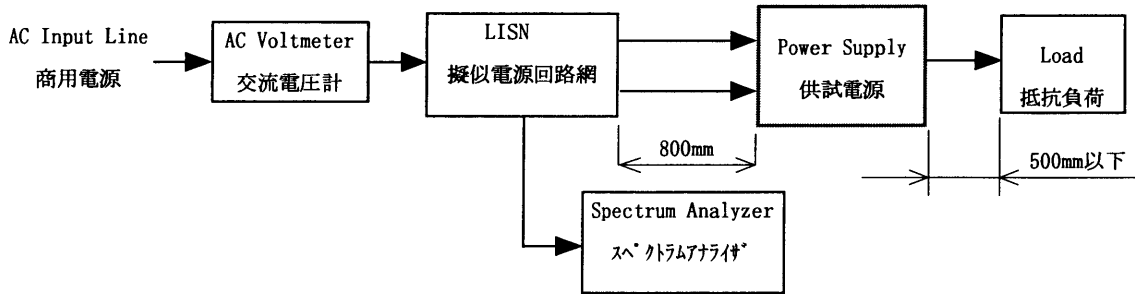


Figure D

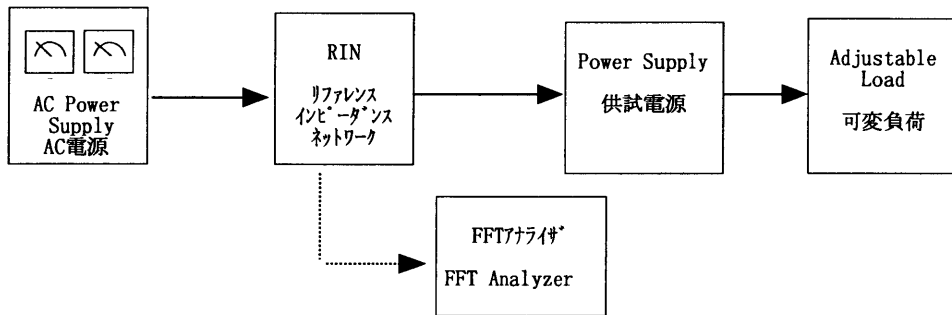


Figure E