



TEST DATA OF R10A-12  
(100V INPUT)

Regulated DC Power Supply

Date : Apr. 28. 1999

Approved by :     *H. Goto*      
Design Manager

Prepared by :     *Y. Sakahashi*      
Design Engineer

**コーセル株式会社**

**COSEL CO., LTD.**



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# COSEL

Model		R10A-12	Temperature		25°C																																
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Object		+12V0.9A																																			
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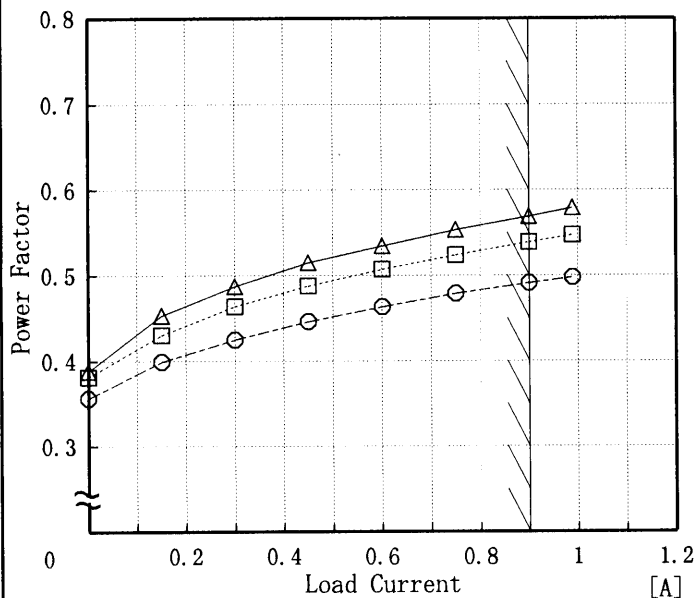




Model	R10A-12	Temperature	25°C
Item	Power Factor (by Load Current) 力率 (負荷電流特性)	Testing Circuitry	Figure A

1. Graph

—△— Input Volt. 85V  
 - - -□- - - Input Volt. 100V  
 - - -○- - - Input Volt. 132V



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]	Power Factor		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	0.39	0.38	0.36
0.15	0.45	0.43	0.40
0.30	0.49	0.46	0.43
0.45	0.52	0.49	0.45
0.60	0.53	0.51	0.46
0.75	0.55	0.52	0.48
0.90	0.57	0.54	0.49
0.99	0.58	0.55	0.50
—	—	—	—
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Model		R10A-12	Temperature		25°C																																																			
Item		Instantaneous Interruption Compensation 瞬時停電保障	Testing Circuitry		Figure A																																																			
Object		+12V0.9A																																																						
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<p> <input type="checkbox"/> —△— Input Volt. 85 V  <input type="checkbox"/> - - -□- - - Input Volt. 100 V  <input type="checkbox"/> - - -○- - - Input Volt. 132 V                 </p> <p>Instantaneous Compensation Time [mS]</p> <p>Load Current [A]</p>			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> <tr> <th colspan="3">Time [mS]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>0.15</td><td>104</td><td>142</td><td>235</td></tr> <tr><td>0.30</td><td>60</td><td>85</td><td>147</td></tr> <tr><td>0.45</td><td>39</td><td>57</td><td>104</td></tr> <tr><td>0.60</td><td>27</td><td>40</td><td>78</td></tr> <tr><td>0.75</td><td>15</td><td>29</td><td>60</td></tr> <tr><td>0.90</td><td>10</td><td>20</td><td>47</td></tr> <tr><td>0.99</td><td>5</td><td>14</td><td>39</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</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]	Input Volt. 100[V]	Input Volt. 132[V]	Time [mS]			0.00	—	—	—	0.15	104	142	235	0.30	60	85	147	0.45	39	57	104	0.60	27	40	78	0.75	15	29	60	0.90	10	20	47	0.99	5	14	39	—	—	—	—	—	—	—	—	—	—	—	—
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Model		R10A-12		Temperature		25°C																																																
Item		Load Regulation 静的負荷変動		Testing Circuitry		Figure A																																																
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# COSEL

Model		R10A-12	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																																						
Object		+12V0.9A	2. Values																																								
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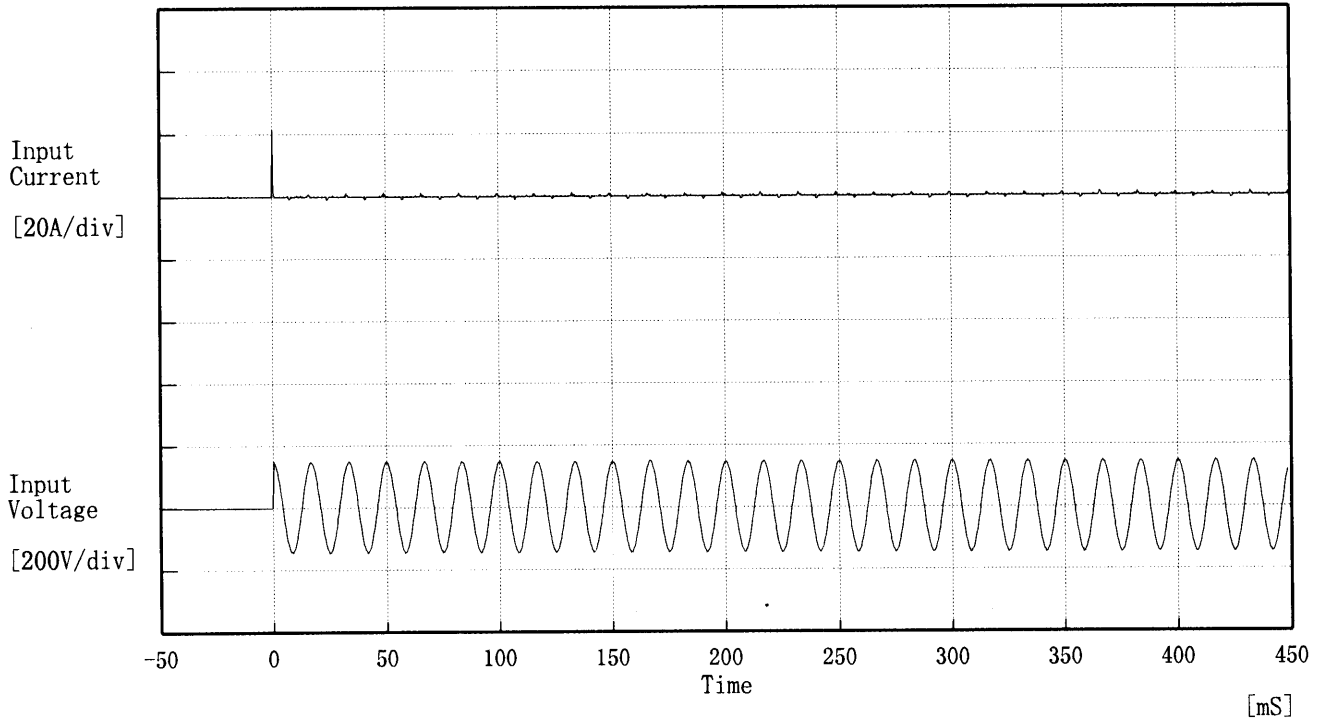
Model		R10A-12	Temperature		25°C																																						
Item		Ripple-Noise リップルノイズ	Testing Circuitry		Figure A																																						
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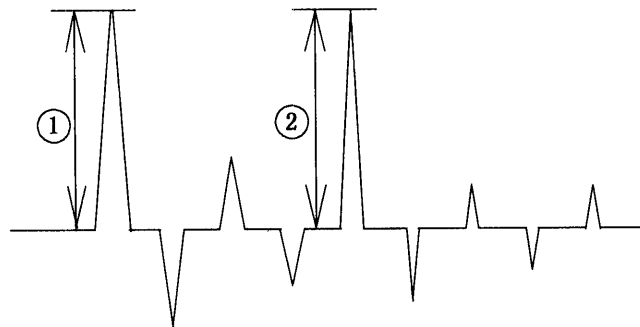
Model R10A-12		Temperature 25°C Testing Circuitry Figure A																																																							
Item Overcurrent Protection 過電流保護																																																									
Object +12V0.9A																																																									
<p>1. Graph</p> <p>[V]</p> <p>Output Voltage</p> <p>20.0</p> <p>15.0</p> <p>10.0</p> <p>5.0</p> <p>0.0</p> <p>0 0.2 0.4 0.6 0.8 1 1.2</p> <p>Load Current [A]</p> <p>----- Input Volt. 85 V          _____ Input Volt. 100 V          _____ Input Volt. 132 V</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>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> <tr> <th>Load Current [A]</th> <th>Load Current [A]</th> <th>Load Current [A]</th> </tr> </thead> <tbody> <tr><td>12.00</td><td>1.08</td><td>1.14</td><td>1.13</td></tr> <tr><td>11.40</td><td>1.08</td><td>1.14</td><td>1.12</td></tr> <tr><td>10.80</td><td>1.08</td><td>1.13</td><td>1.10</td></tr> <tr><td>9.60</td><td>1.07</td><td>1.11</td><td>1.08</td></tr> <tr><td>8.40</td><td>1.05</td><td>1.08</td><td>1.05</td></tr> <tr><td>7.20</td><td>1.02</td><td>1.05</td><td>1.01</td></tr> <tr><td>6.00</td><td>0.98</td><td>1.00</td><td>0.97</td></tr> <tr><td>4.80</td><td>0.93</td><td>0.95</td><td>0.92</td></tr> <tr><td>3.60</td><td>0.86</td><td>0.88</td><td>0.86</td></tr> <tr><td>2.40</td><td>0.79</td><td>0.81</td><td>0.80</td></tr> <tr><td>1.20</td><td>0.72</td><td>0.73</td><td>0.73</td></tr> <tr><td>0.00</td><td>0.61</td><td>0.63</td><td>0.64</td></tr> </tbody> </table>	Output Voltage [V]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	Load Current [A]	Load Current [A]	Load Current [A]	12.00	1.08	1.14	1.13	11.40	1.08	1.14	1.12	10.80	1.08	1.13	1.10	9.60	1.07	1.11	1.08	8.40	1.05	1.08	1.05	7.20	1.02	1.05	1.01	6.00	0.98	1.00	0.97	4.80	0.93	0.95	0.92	3.60	0.86	0.88	0.86	2.40	0.79	0.81	0.80	1.20	0.72	0.73	0.73	0.00	0.61	0.63	0.64
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# COSEL

Model	R10A-12	Temperature	25°C
Item	Inrush Current 突入電流	Testing Circuitry	Figure A
Object	_____		



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

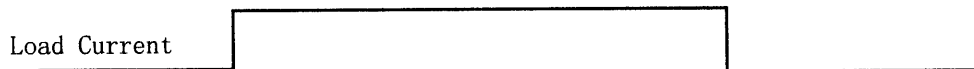




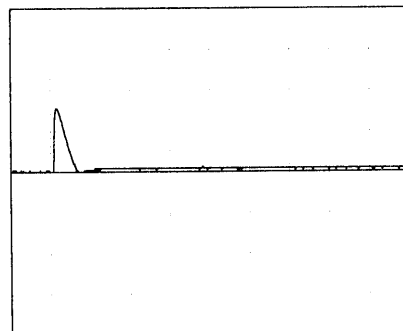
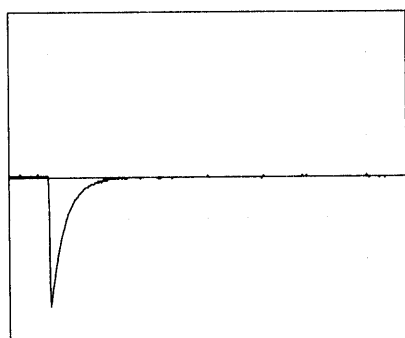


Model		R10A-12	Temperature 25°C Testing Circuitry Figure A
Item		Dynamic Load Responce 動的負荷変動	
Object		+12V0.9A	

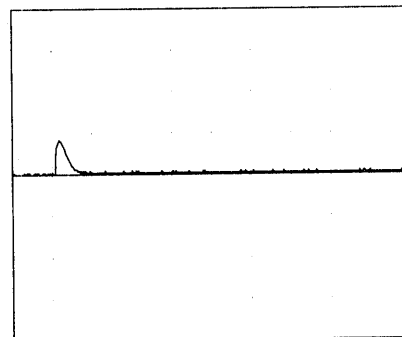
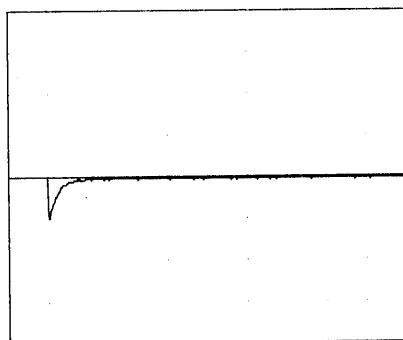
Input Volt. 100 V  
Cycle 1000 mS



Min. Load ↔  
Load 100 %



Min. Load ↔  
Load 50 %



100 mV/div

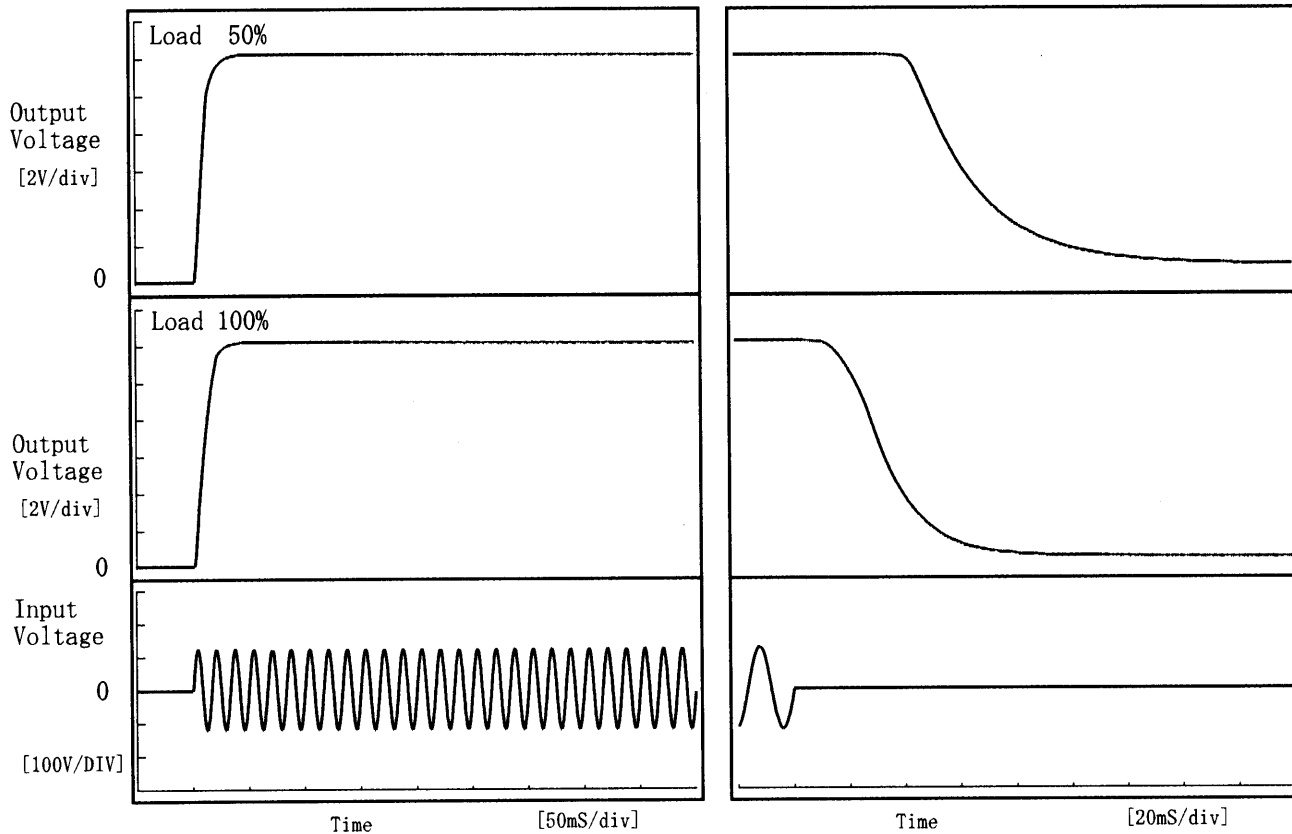
20 ms/div



Model	R10A-12	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12V0.9A		

1. Graph

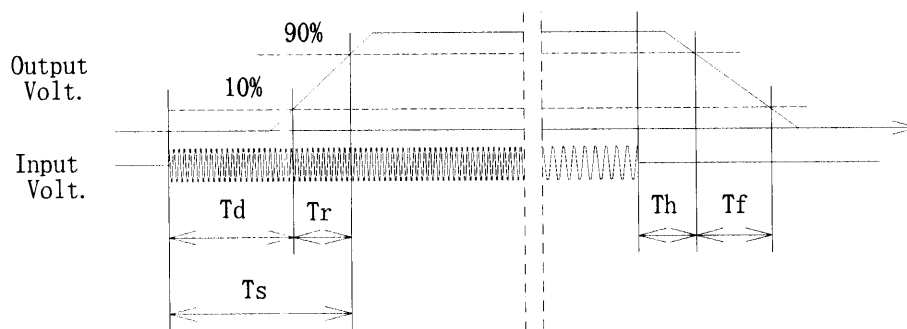
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	3.5	13.5	17.0	45.9	78.9
100 %	3.8	16.8	20.5	19.2	40.8





Model		R10A-12		Testing Circuitry Figure A																																																				
Item		Ambient Temperature Drift 周囲温度変動																																																						
Object		+12V0.9A																																																						
1. Graph		<p> <input type="checkbox"/> —△— Input Volt. 85V  <input type="checkbox"/> - - - □ - - - Input Volt. 100V  <input type="checkbox"/> ····· ○ ····· Input Volt. 132V                 </p>		2. Values																																																				
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Model		R10A-12																																						
Item		Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧	Testing Circuitry Figure A																																					
Object		+12V0.9A																																						
1. Graph		<p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p>	2. Values																																					
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Model		R10A-12	Testing Circuitry		Figure A																																				
Item		Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																							
Object		+12V0.9A																																							
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																																						
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<p>Model R10A-12</p>		<p>Temperature 25 °C Testing Circuitry Figure A</p>																						
<p>Item Time Lapse Drift 経時ドリフト</p>																								
<p>Object +12V0.9A</p>																								
<p>1. Graph</p>		<p>2. Values</p>																						
<p>[V]</p> <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V Load 100%</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>12.048</td></tr> <tr><td>0.5</td><td>12.043</td></tr> <tr><td>1.0</td><td>12.043</td></tr> <tr><td>2.0</td><td>12.043</td></tr> <tr><td>3.0</td><td>12.043</td></tr> <tr><td>4.0</td><td>12.043</td></tr> <tr><td>5.0</td><td>12.043</td></tr> <tr><td>6.0</td><td>12.043</td></tr> <tr><td>7.0</td><td>12.043</td></tr> <tr><td>8.0</td><td>12.044</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.048	0.5	12.043	1.0	12.043	2.0	12.043	3.0	12.043	4.0	12.043	5.0	12.043	6.0	12.043	7.0	12.043	8.0	12.044
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Model		R10A-12	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+12V0.9A	

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 : 0.00~0.9 A

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

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

定電圧精度

周囲温度、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
- 負荷電流 0.00~0.9 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	-10	132	0.00	12.062	±19	±0.2
Minimum Voltage	50	132	0.90	12.026		



Model		R10A-12		Temperature		25°C																																																				
Item		Oscillator Frequency 発振周波数		Testing Circuitry		Figure A																																																				
Object		+12V0.9A																																																								
1. Graph				2. Values																																																						
<p> <input type="checkbox"/> —△— Input Volt. 85 V  <input type="checkbox"/> - - - □ - - - Input Volt. 100 V  <input type="checkbox"/> - - - ○ - - - Input Volt. 132 V                 </p> <p>                     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。                 </p>				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> <tr> <th colspan="3">Oscillator Frequency [KHz]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>444</td><td>450</td><td>456</td></tr> <tr><td>0.15</td><td>250</td><td>280</td><td>310</td></tr> <tr><td>0.30</td><td>183</td><td>200</td><td>228</td></tr> <tr><td>0.45</td><td>140</td><td>158</td><td>177</td></tr> <tr><td>0.60</td><td>115</td><td>126</td><td>146</td></tr> <tr><td>0.75</td><td>95</td><td>106</td><td>123</td></tr> <tr><td>0.90</td><td>82</td><td>92</td><td>106</td></tr> <tr><td>0.99</td><td>72</td><td>85</td><td>100</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</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]	Input Volt. 100[V]	Input Volt. 132[V]	Oscillator Frequency [KHz]			0.00	444	450	456	0.15	250	280	310	0.30	183	200	228	0.45	140	158	177	0.60	115	126	146	0.75	95	106	123	0.90	82	92	106	0.99	72	85	100	—	—	—	—	—	—	—	—	—	—	—	—
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# COSEL

Model		R10A-12	Testing Circuitry Figure A												
Item		Condensation 結露特性													
Object		+12V0.9A													
<p>1. Condensation test</p> <p>Testing procedure is as follows.</p> <p>① Keeping and cooling the unit in a tank at <math>-10^{\circ}\text{C}</math> for an hour with the input off.</p> <p>② Taking it out of the tank and dewing itself in a room where the temperature is <math>25^{\circ}\text{C}</math> and the humidity is 40%RH.</p> <p>③ Testing electrical characteristics of the unit to confirm there be no fault.</p> <p>1. 結露特性試験</p> <p>入力を切った状態で、恒温槽で<math>-10^{\circ}\text{C}</math>に冷却しておき、約1時間後に恒温槽から取り出し、室温<math>25^{\circ}\text{C}</math>、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。</p>															
2. Values															
<table border="1"> <thead> <tr> <th>Item</th> <th>Data</th> <th>Testing Conditions</th> </tr> </thead> <tbody> <tr> <td>Output Voltage [V]</td> <td>12.044</td> <td>Input Volt.: 100V, Load Current:0.9A</td> </tr> <tr> <td>Line Regulation [mV]</td> <td>1</td> <td>Input Volt.: 85~100V, Load Current:0.9A</td> </tr> <tr> <td>Load Regulation [mV]</td> <td>6</td> <td>Input Volt.: 100V, Load Current:0.0~0.9A</td> </tr> </tbody> </table>				Item	Data	Testing Conditions	Output Voltage [V]	12.044	Input Volt.: 100V, Load Current:0.9A	Line Regulation [mV]	1	Input Volt.: 85~100V, Load Current:0.9A	Load Regulation [mV]	6	Input Volt.: 100V, Load Current:0.0~0.9A
Item	Data	Testing Conditions													
Output Voltage [V]	12.044	Input Volt.: 100V, Load Current:0.9A													
Line Regulation [mV]	1	Input Volt.: 85~100V, Load Current:0.9A													
Load Regulation [mV]	6	Input Volt.: 100V, Load Current:0.0~0.9A													



Model		R10A-12	Temperature 25°C Testing Circuitry Figure B
Item		Leakage Current 漏洩電流	
Object		_____	

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.08	0.09	0.12
(B) IEC60950	0.08	0.09	0.12

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。

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



Model		R10A-12	Temperature 25°C Testing Circuitry Figure C
Item		Line Noise Tolerance 入力雑音耐量	
Object		+12V0.9A	

1. Results

Pulse Width [n S]	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

Conditions

Input Voltage :100 V  
 Pulse Voltage :1000 V  
 Pulse Cycle :10 mS  
 Pulse Input Duration:1 min. or more  
 Load :100 %



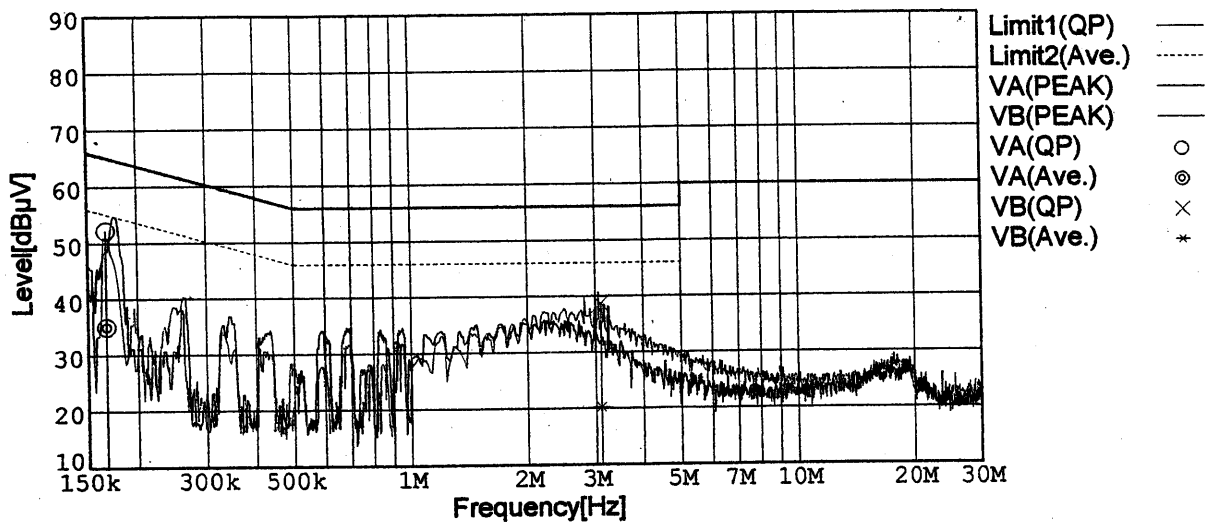
Model		R10A-12	
Item		Conducted Emission 雑音端子電圧	Temperature 25°C Testing Circuitry Figure D
Object			

1. Graph

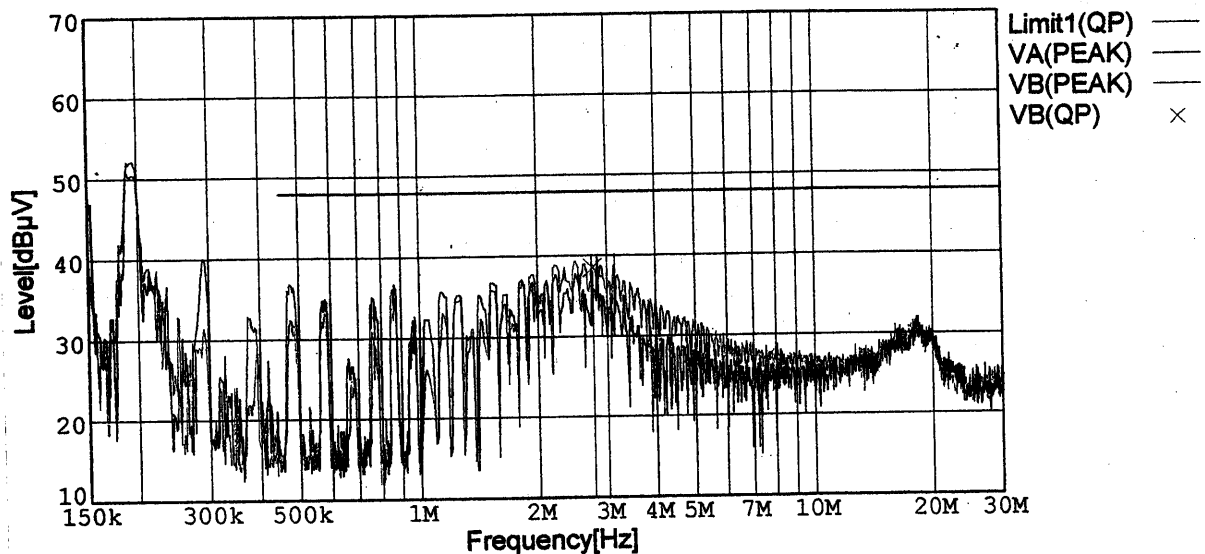
Remarks

Input Volt. 100V ( VCCI Class B )  
120V ( FCC Class B )  
Load 100 %

Limit1: [VCCI] Class B(QP)  
Limit2: [VCCI] Class B(Ave.)



Limit1: [FCC Part15] Class B



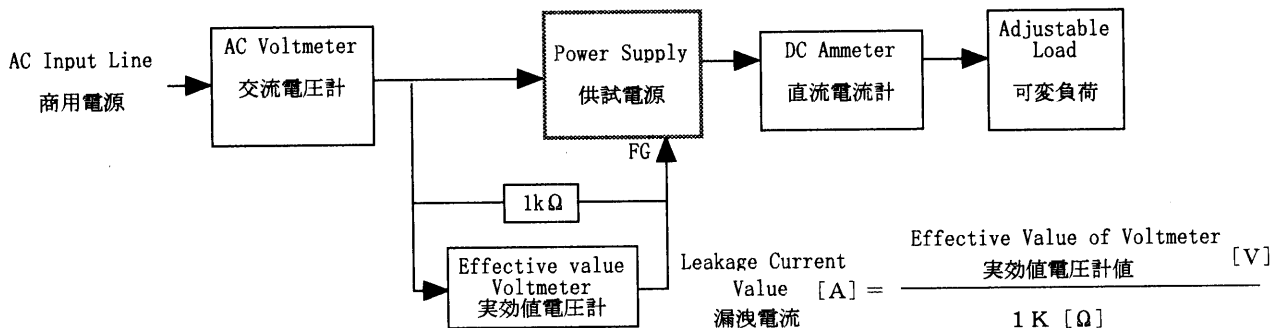
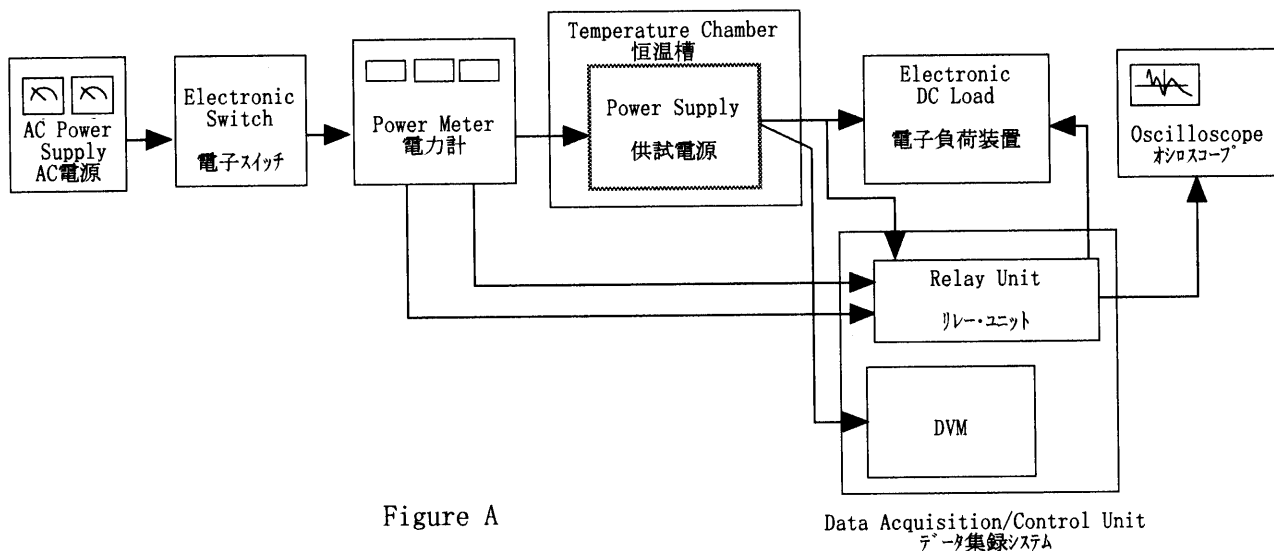


Figure B (DENTORI)

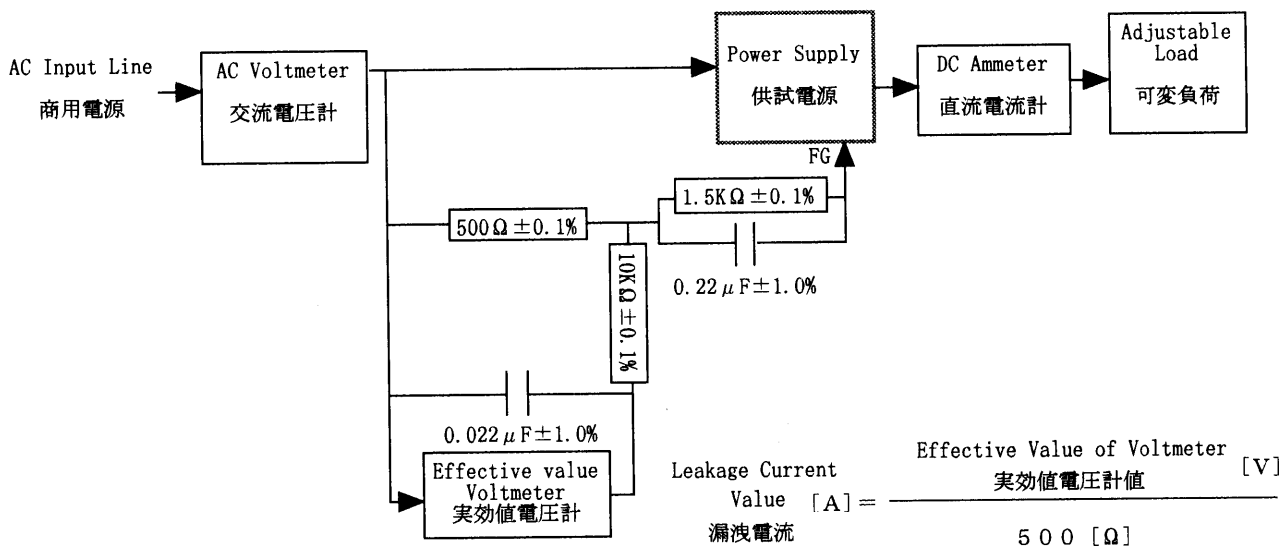


Figure B (IEC60950)

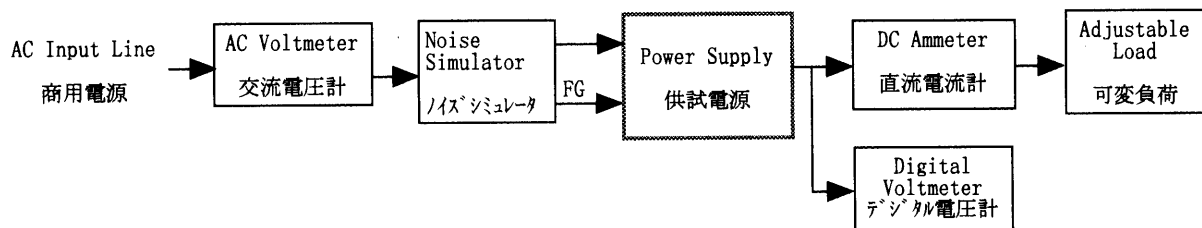


Figure C

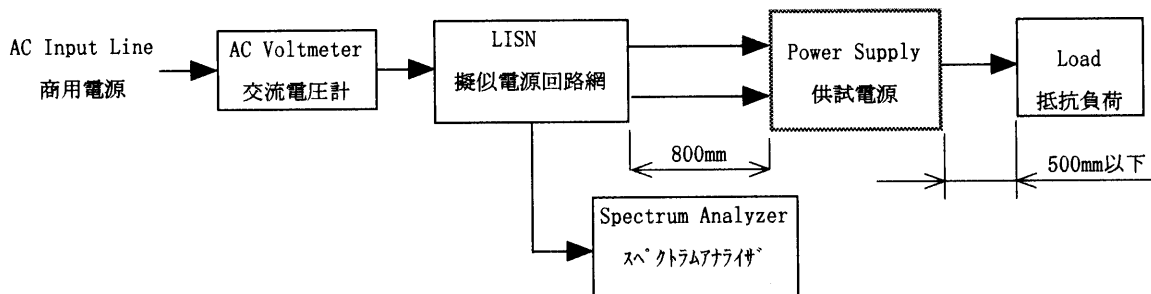


Figure D

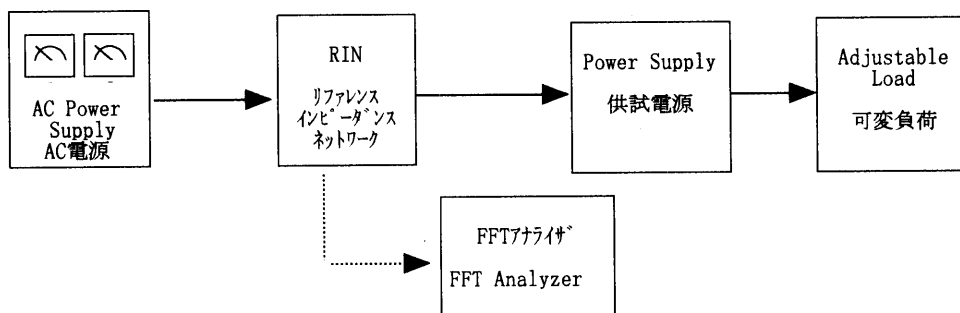


Figure E