



TEST DATA OF PAA75F-12 (200V INPUT)

Regulated DC Power Supply

Date : Feb. 17. 1997

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Design Manager

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コーセル株式会社

COSEL CO., LTD.

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<p>Model PAA75F-12</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																														
<p>Item Line Regulation 静的入力変動</p>																																
<p>Object +12V6.3A</p>																																
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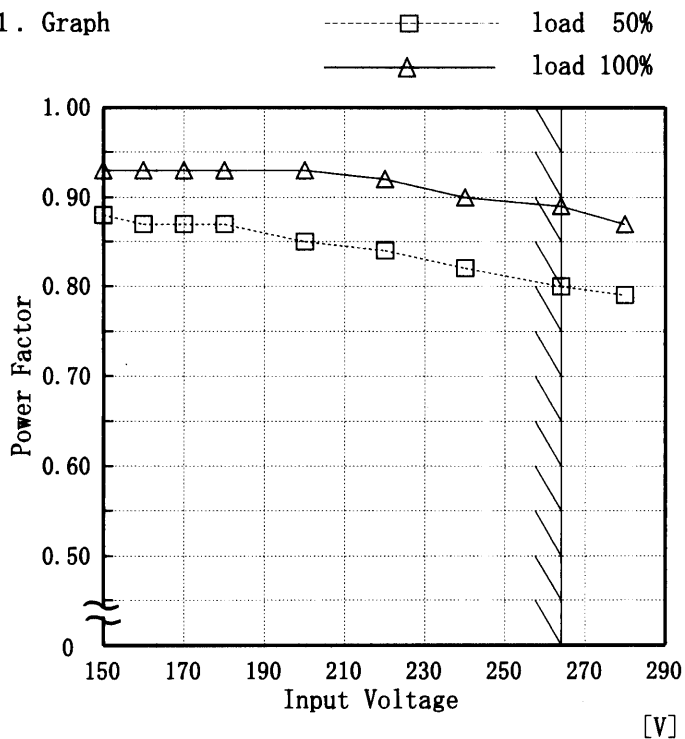
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Model	PAA75F-12
Item	Power Factor 力率
Object	+12V6.3A

Temperature 2°C
Testing Circuitry Figure A

1. Graph



2. Values

Input Voltage [V]	load 50%	load 100%
	Power Factor	Power Factor
150	0.88	0.93
160	0.87	0.93
170	0.87	0.93
180	0.87	0.93
200	0.85	0.93
220	0.84	0.92
240	0.82	0.90
264	0.80	0.89
280	0.79	0.87

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

(注) 斜線は定格入力電圧範囲を示す。



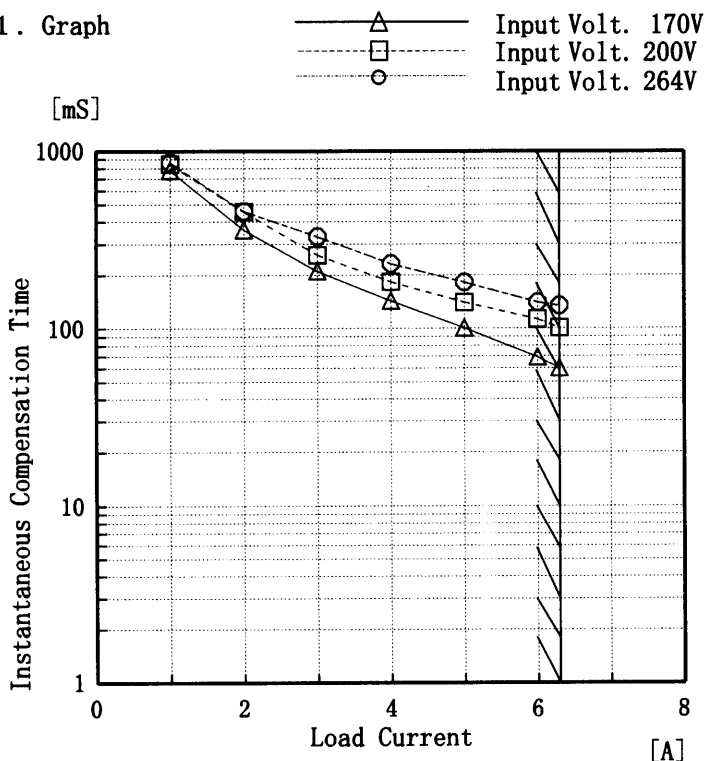
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Input Voltage [V]	Load 50%	Load 100%																																					
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<p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p> <p>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>																																							



Model	PAA75F-12
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+12V6.3A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



This duration counts between Shut-off and on of input voltage automatically.

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。

2. Values

Load Current [A]	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
	Time [mS]		
0.0	—	—	—
1.0	780	845	860
2.0	360	455	460
3.0	210	260	330
4.0	143	183	231
5.0	101	140	182
6.0	69	113	140
6.3	60	101	134
—	—	—	—
—	—	—	—
—	—	—	—



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[V] 12.19 12.15 12.11 12.07 12.03 11.99 11.95 0				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th>Input Volt. 170[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 264[V]</th> </tr> <tr> <th>Output Volt. [V]</th> <th>Output Volt. [V]</th> <th>Output Volt. [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>12.060</td><td>12.060</td><td>12.060</td></tr> <tr><td>1.0</td><td>12.059</td><td>12.059</td><td>12.058</td></tr> <tr><td>2.0</td><td>12.057</td><td>12.057</td><td>12.056</td></tr> <tr><td>3.0</td><td>12.055</td><td>12.055</td><td>12.055</td></tr> <tr><td>4.0</td><td>12.053</td><td>12.053</td><td>12.053</td></tr> <tr><td>5.0</td><td>12.052</td><td>12.052</td><td>12.051</td></tr> <tr><td>6.0</td><td>12.050</td><td>12.050</td><td>12.050</td></tr> <tr><td>6.3</td><td>12.049</td><td>12.050</td><td>12.049</td></tr> <tr><td>6.9</td><td>12.049</td><td>12.048</td><td>12.048</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>				Load Current [A]	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]	0.0	12.060	12.060	12.060	1.0	12.059	12.059	12.058	2.0	12.057	12.057	12.056	3.0	12.055	12.055	12.055	4.0	12.053	12.053	12.053	5.0	12.052	12.052	12.051	6.0	12.050	12.050	12.050	6.3	12.049	12.050	12.049	6.9	12.049	12.048	12.048	—	—	—	—
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<p>Model PAA75F-12</p> <p>Item Ripple Voltage (by Load Current) リップル電圧 (負荷電流特性)</p> <p>Object +12V6.3A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																						
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<p>Fig. Complex Ripple Wave Form</p> <p>図 リップル波形詳細図</p>																																								



<p>Model PAA75F-12</p> <p>Item Ripple-Noise リップルノイズ</p> <p>Object +12V6.3A</p>		<p>Temperature 1°C</p> <p>Testing Circuitry Figure A</p>																																						
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Item Overcurrent Protection 過電流保護																																																									
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<p>1. Graph</p> <p>[V]</p> <p>----- Input Volt. 170 V _____ Input Volt. 200 V _____ Input Volt. 264 V</p> <p>Output Voltage [V]</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>Input Volt. 170[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 264[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>7.55</td><td>7.34</td><td>7.16</td></tr> <tr><td>11.40</td><td>7.60</td><td>7.38</td><td>7.14</td></tr> <tr><td>10.80</td><td>7.66</td><td>7.44</td><td>7.18</td></tr> <tr><td>9.60</td><td>7.78</td><td>7.55</td><td>7.21</td></tr> <tr><td>8.40</td><td>7.90</td><td>7.68</td><td>7.30</td></tr> <tr><td>7.20</td><td>8.00</td><td>7.78</td><td>7.37</td></tr> <tr><td>6.00</td><td>8.11</td><td>7.91</td><td>7.46</td></tr> <tr><td>4.80</td><td>8.23</td><td>8.01</td><td>7.61</td></tr> <tr><td>3.60</td><td>8.36</td><td>8.15</td><td>7.80</td></tr> <tr><td>2.40</td><td>8.57</td><td>8.33</td><td>7.97</td></tr> <tr><td>1.20</td><td>8.81</td><td>8.53</td><td>8.03</td></tr> <tr><td>0.00</td><td>8.86</td><td>8.32</td><td>7.24</td></tr> </tbody> </table>	Output Voltage [V]	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	Load Current [A]	Load Current [A]	Load Current [A]	12.00	7.55	7.34	7.16	11.40	7.60	7.38	7.14	10.80	7.66	7.44	7.18	9.60	7.78	7.55	7.21	8.40	7.90	7.68	7.30	7.20	8.00	7.78	7.37	6.00	8.11	7.91	7.46	4.80	8.23	8.01	7.61	3.60	8.36	8.15	7.80	2.40	8.57	8.33	7.97	1.20	8.81	8.53	8.03	0.00	8.86	8.32	7.24
Output Voltage [V]	Input Volt. 170[V]	Input Volt. 200[V]		Input Volt. 264[V]																																																					
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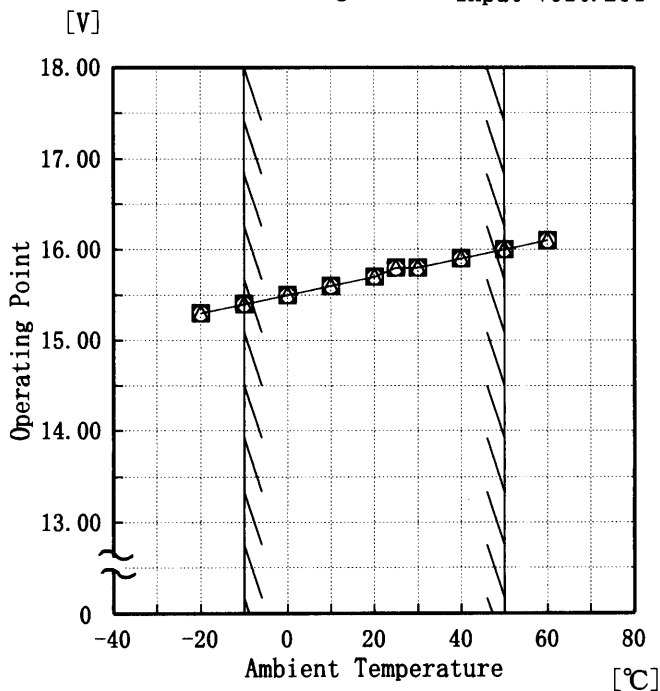


Model	PAA75F-12
Item	Overvoltage Protection 過電圧保護
Object	+12V6.3A

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 ambient temperature.

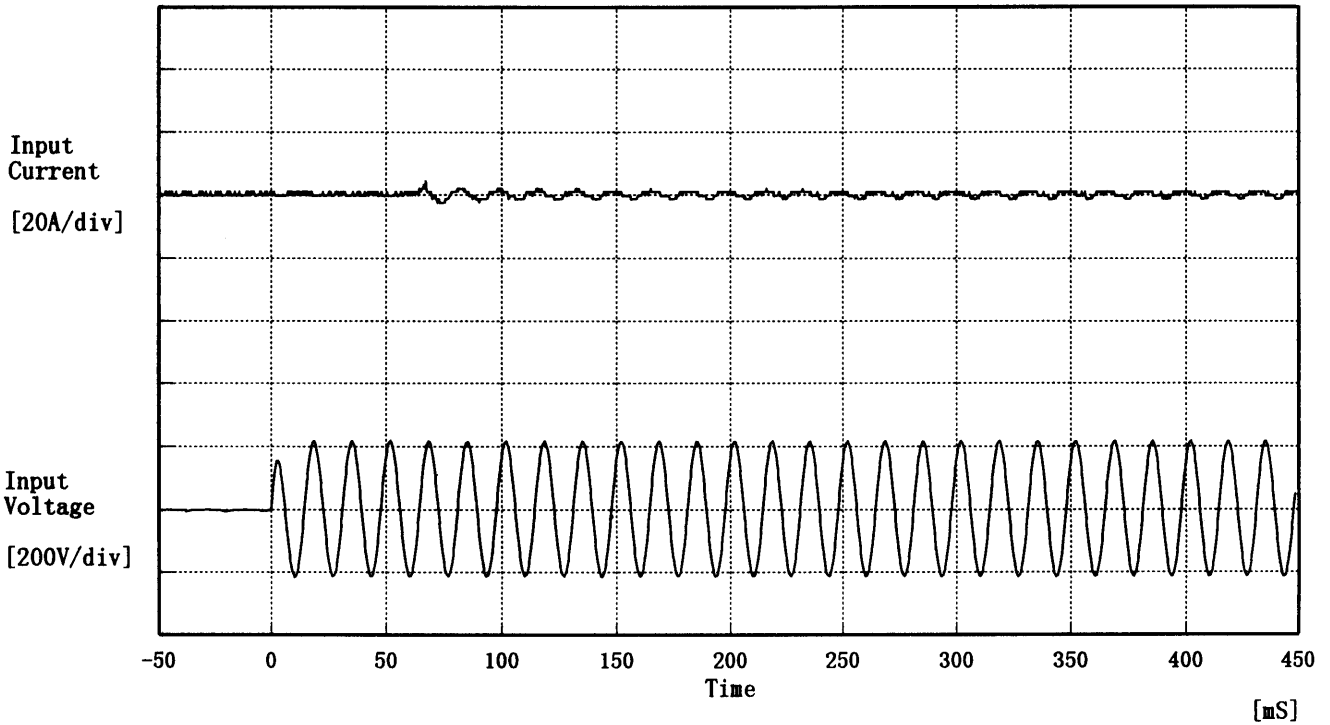
(注) 斜線は定格周囲温度範囲を示す。

2. Values

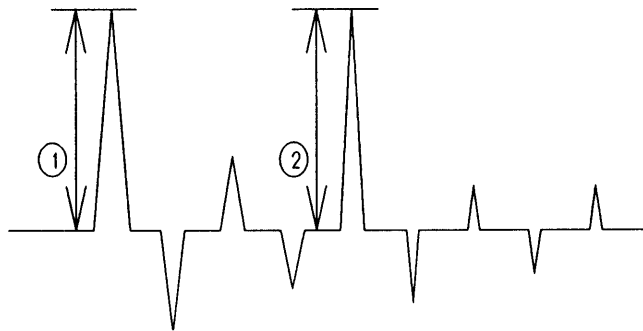
Ambient Temp. [°C]	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
	Operating Point [V]		
-20	15.30	15.30	15.30
-10	15.40	15.40	15.40
0	15.50	15.50	15.50
10	15.60	15.60	15.60
20	15.70	15.70	15.70
25	15.80	15.80	15.80
30	15.80	15.80	15.80
40	15.90	15.90	15.90
50	16.00	16.00	16.00
60	16.10	16.10	16.10
—	—	—	—

COSEL

Model	PAA75F-12	Temperature	25°C
Item	Inrush Current 突入電流	Testing Circuitry	Figure A
Object	+12V6.3A		



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



COSEL

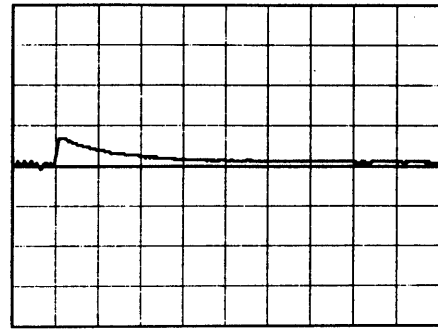
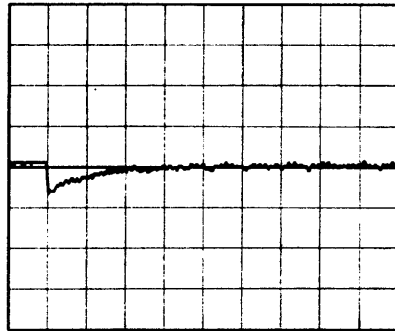
Model	PAA75F-12	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+12V6.3A		

Input Volt. 200 V
Cycle 200 mS

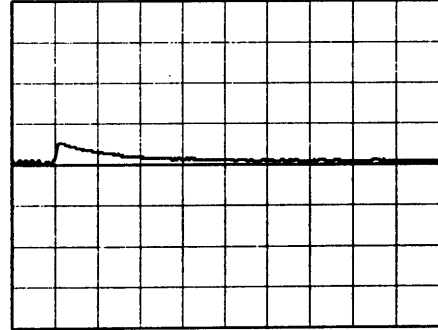
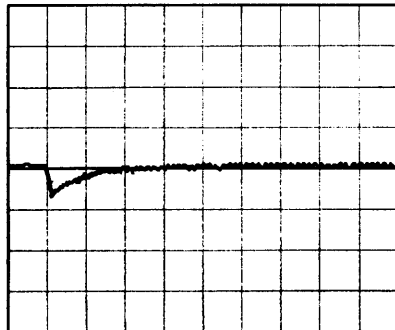


Min. Load ↔
Load 100 %

t 10 mS/div
Vo 100 mV/div



Min. Load ↔
Load 50 %

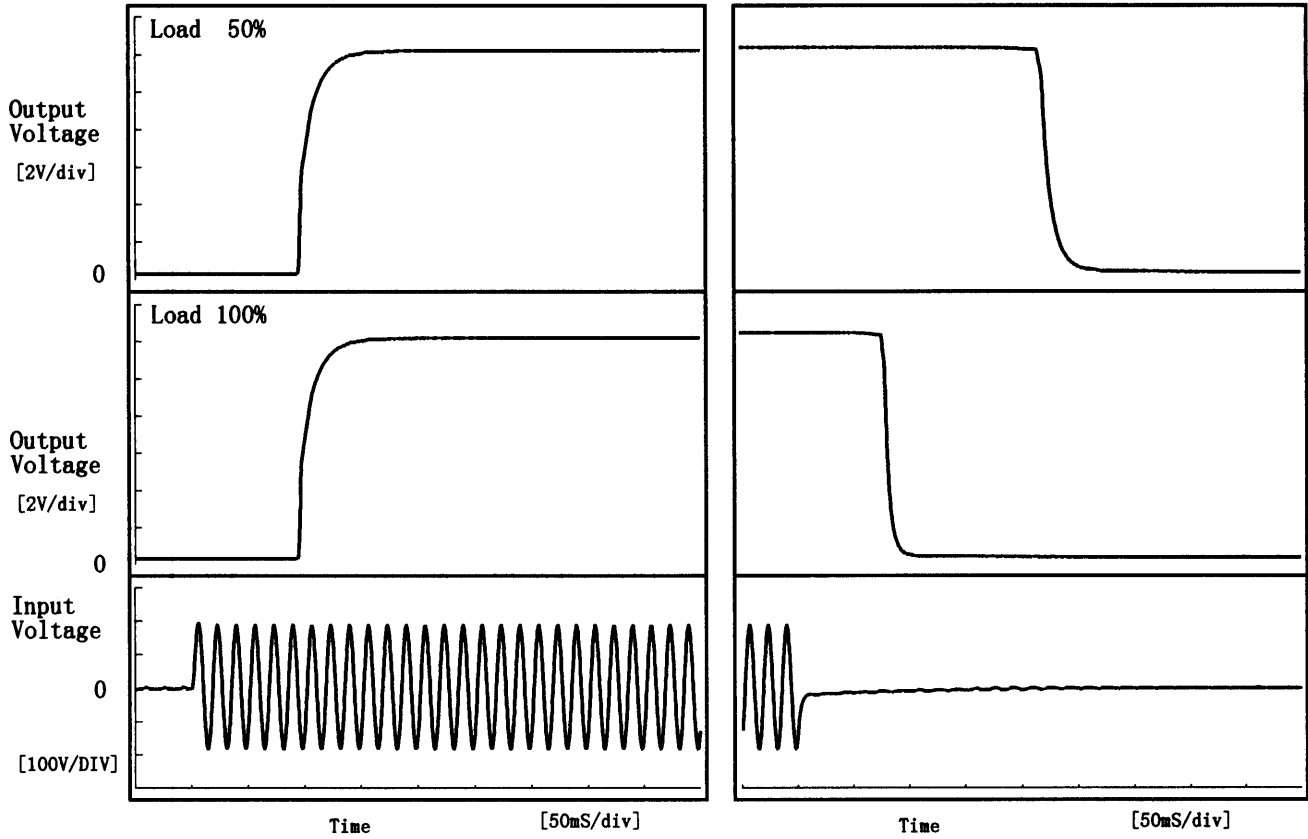




Model		PAA75F-12	
Item		Rise and Fall Time 立上り、立下り時間	
Object		+12V6.3A	
		Temperature	25°C
		Testing Circuitry	Figure A

1. Graph

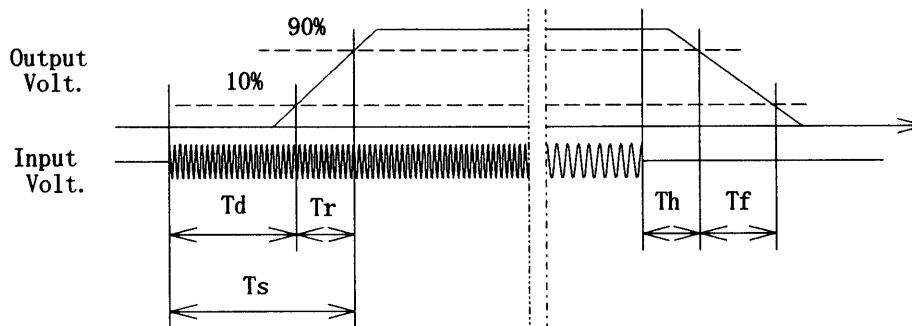
Input Volt. 170 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	95.3	24.8	120.0	217.8	20.0
100 %	95.3	24.8	120.0	78.5	10.5



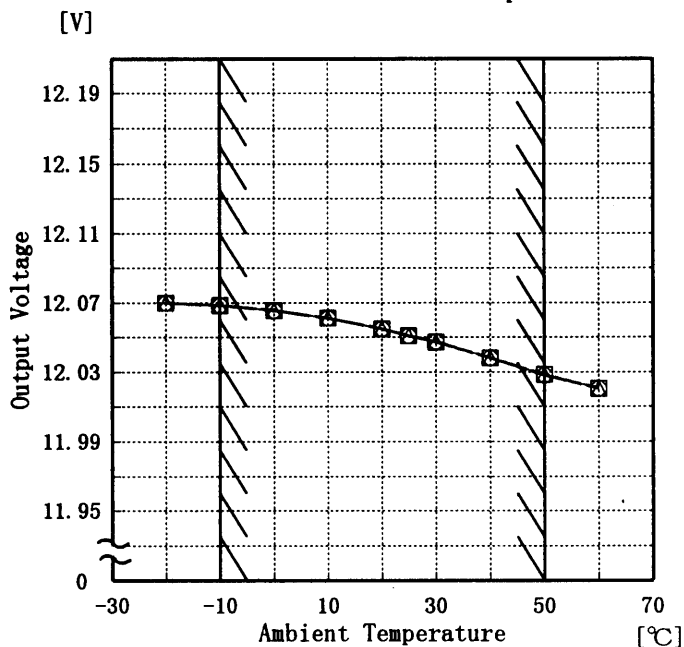


Model	PAA75F-12
Item	Ambient Temperature Drift 周囲温度変動
Object	+12V6.3A

Testing Circuitry Figure A

1. Graph

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



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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
-20	12.070	12.070	12.070
-10	12.069	12.068	12.068
0	12.066	12.066	12.065
10	12.061	12.061	12.061
20	12.055	12.055	12.055
25	12.051	12.051	12.051
30	12.048	12.047	12.047
40	12.038	12.038	12.038
50	12.028	12.028	12.028
60	12.020	12.021	12.020
-	-	-	-

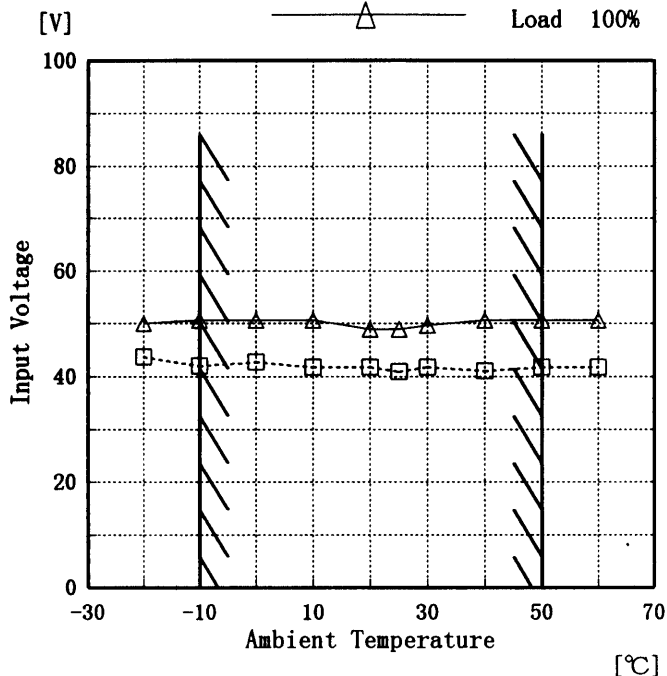


Model	PAA75F-12
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+12V6.3A

Testing Circuitry Figure A

1. Graph

-----□----- 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% Input Volt. [V]	Load 100% Input Volt. [V]
-20	44	50
-10	42	51
0	43	51
10	42	51
20	42	49
25	41	49
30	42	50
40	41	51
50	42	51
60	42	51
—	—	—



Model		PAA75F-12	Testing Circuitry Figure A																																				
Item		Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																					
Object		+12V6.3A																																					
1. Graph		<p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p> <p>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>	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>70</td><td>70</td></tr> <tr><td>-10</td><td>50</td><td>50</td></tr> <tr><td>0</td><td>50</td><td>50</td></tr> <tr><td>10</td><td>40</td><td>40</td></tr> <tr><td>20</td><td>40</td><td>40</td></tr> <tr><td>25</td><td>40</td><td>40</td></tr> <tr><td>30</td><td>40</td><td>40</td></tr> <tr><td>40</td><td>30</td><td>40</td></tr> <tr><td>50</td><td>30</td><td>40</td></tr> <tr><td>60</td><td>30</td><td>40</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	70	70	-10	50	50	0	50	50	10	40	40	20	40	40	25	40	40	30	40	40	40	30	40	50	30	40	60	30	40	—	—	—	
Ambient Temp. [°C]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]																																					
-20	70	70																																					
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40	30	40																																					
50	30	40																																					
60	30	40																																					
—	—	—																																					



COSEL																								
Model	PAA75F-12																							
Item	Time Lapse Drift 経時ドリフト	Temperature 25 ℃ Testing Circuitry Figure A																						
Object	+12V6.3A																							
<p>1. Graph</p> <p>[V]</p> <p>Output Voltage</p> <p>Time [H]</p> <p>Input Volt. 200V 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>12.055</td></tr> <tr><td>0.5</td><td>12.051</td></tr> <tr><td>1.0</td><td>12.051</td></tr> <tr><td>2.0</td><td>12.051</td></tr> <tr><td>3.0</td><td>12.051</td></tr> <tr><td>4.0</td><td>12.051</td></tr> <tr><td>5.0</td><td>12.050</td></tr> <tr><td>6.0</td><td>12.050</td></tr> <tr><td>7.0</td><td>12.051</td></tr> <tr><td>8.0</td><td>12.051</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.055	0.5	12.051	1.0	12.051	2.0	12.051	3.0	12.051	4.0	12.051	5.0	12.050	6.0	12.050	7.0	12.051	8.0	12.051
Time since start [H]	Output Voltage [V]																							
0.0	12.055																							
0.5	12.051																							
1.0	12.051																							
2.0	12.051																							
3.0	12.051																							
4.0	12.051																							
5.0	12.050																							
6.0	12.050																							
7.0	12.051																							
8.0	12.051																							



Model		PAA75F-12	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+12V6.3A	

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 : 0.0~6.3 A

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

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

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 170~264 V

負荷電流 0.0~6.3 A

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

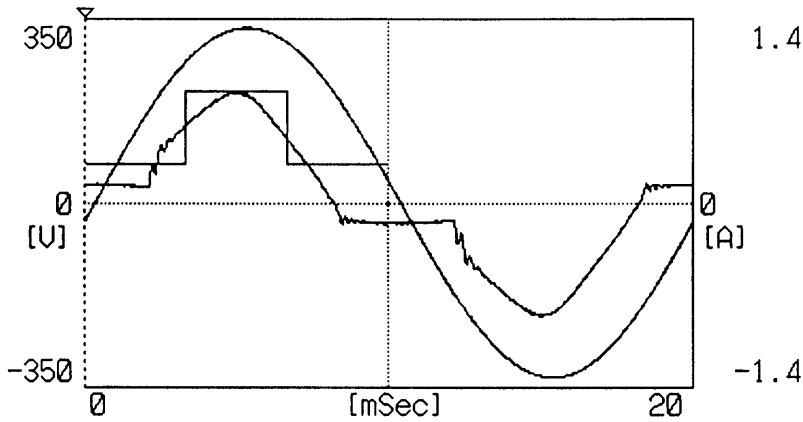
$$* \text{定電圧精度(変動率)} = \frac{\text{変動値}}{\text{定格出力電圧}} \times 100$$

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-10	200	0.0	12.078	±26	±0.3
Minimum Voltage	50	264	6.3	12.027		

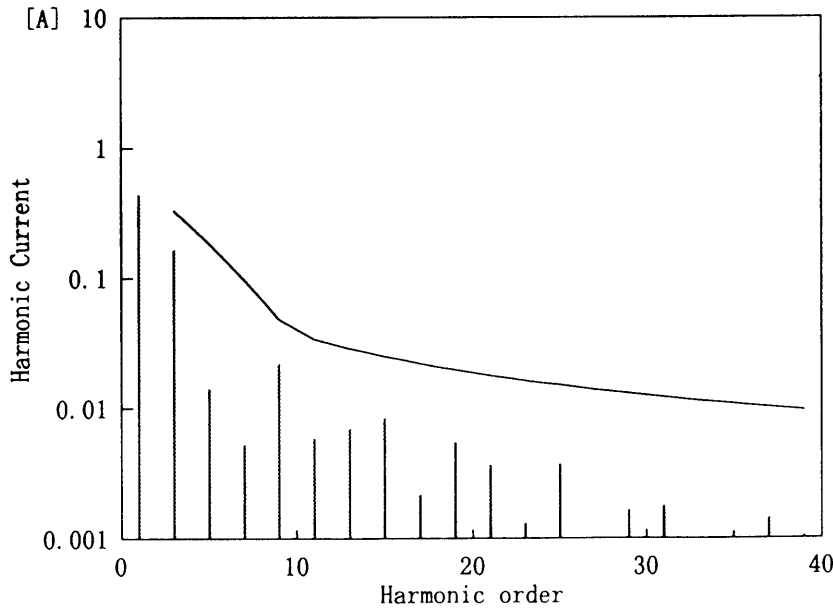


Model	PAA75F-12	Temperature	25°C
Item	Harmonic Current 高調波電流	Testing Circuitry	Figure E
Object	+12V6.3A		

Conditions	Values
Input Voltage [V]	230
Input Current [A]	0.47
Active Power [W]	96.7
Apparent Power [VA]	107.8
Frequency [Hz]	50
Power Factor	0.897
Output Power [W]	75.6



2. Harmonic Current



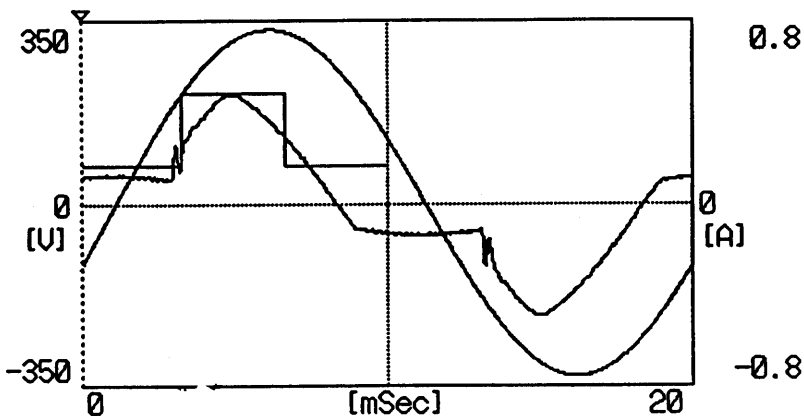
— Harmonic Current
 高調波電流
 - - - Limits for Class D equipment
 クラスDの機器に対する限度値

Harmonics order 高調波次数	Limits 限度値 [A]	Values 測定値 [A]
1	—	0.441
2	—	0.000
3	0.329	0.164
4	—	0.000
5	0.184	0.014
6	—	0.000
7	0.097	0.005
8	—	0.000
9	0.048	0.022
10	—	0.000
11	0.034	0.006
12	—	0.000
13	0.029	0.007
14	—	0.000
15	0.025	0.008
16	—	0.000
17	0.022	0.002
18	—	0.000
19	0.020	0.005
20	—	0.000
21	0.018	0.004
22	—	0.000
23	0.016	0.001
24	—	0.000
25	0.015	0.004
26	—	0.000
27	0.014	0.001
28	—	0.000
29	0.013	0.002
30	—	0.000
31	0.012	0.002
32	—	0.000
33	0.011	0.001
34	—	0.000
35	0.011	0.001
36	—	0.000
37	0.010	0.001
38	—	0.000
39	0.010	0.001
40	—	0.000

COSEL

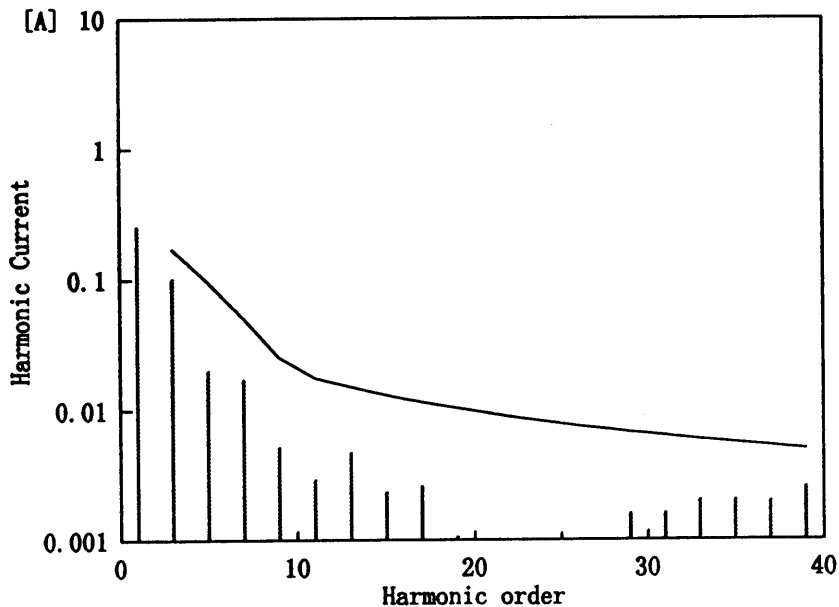
Model	PAA75F-12	Temperature	25°C
Item	Harmonic Current	Testing Circuitry	Figure E
Object	+12V6.3A		

Conditions	Values
Input Voltage [V]	230
Input Current [A]	0.28
Active Power [W]	50.4
Apparent Power [VA]	64.1
Frequency [Hz]	50
Power Factor	0.786
Output Power [W]	37.8



Harmonics order 高調波次数	Limits 限度値 [A]	Values 測定値 [A]
1	—	0.259
2	—	0.000
3	0.171	0.103
4	—	0.000
5	0.096	0.020
6	—	0.000
7	0.050	0.017
8	—	0.000
9	0.025	0.005
10	—	0.000
11	0.018	0.003
12	—	0.000
13	0.015	0.005
14	—	0.000
15	0.013	0.002
16	—	0.000
17	0.011	0.003
18	—	0.000
19	0.010	0.001
20	—	0.000
21	0.009	0.000
22	—	0.000
23	0.008	0.000
24	—	0.000
25	0.008	0.001
26	—	0.000
27	0.007	0.001
28	—	0.000
29	0.007	0.002
30	—	0.000
31	0.006	0.002
32	—	0.000
33	0.006	0.002
34	—	0.000
35	0.006	0.002
36	—	0.000
37	0.005	0.002
38	—	0.000
39	0.005	0.003
40	—	0.000

2. Harmonic Current



— Harmonic Current
 高調波電流
 — Limits for Class D equipment
 クラスDの機器に対する限度値



Model		PAA75F-12	Testing Circuitry	Figure A
Item		Condensation 結露特性		
Object		+12V6.3A		

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(Output Voltage,Ripple Voltage,Ripple noise) 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°C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°C、湿度40%RHの状態におき結露させ、その電気的特性（出力電圧、リップル、リップルノイズ）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	12.186	40	50
	2	12.186	40	50
	3	12.185	40	50
Load 100 %	1	12.180	40	50
	2	12.180	40	50
	3	12.180	40	50

Input Volt. 200 V



Model		PAA75F-12	Testing Circuitry	Figure A
Item	Leakage Current	漏洩電流		
Object	+12V6.3A			

1. Results

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

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 220 [V]	Input Volt. 264 [V]
(D) VDE	0.25	0.32	0.40

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 %

- (A) Input Resistance :1K Ω
- (B) Input Resistance :1.5K Ω
Input Capacitance :0.15 μ F
- (C) Input Resistance :1.5K Ω
Input Capacitance :0.15 μ F
- (D) Input Resistance :2K Ω
Input Capacitance :0.1 μ F



Model		PAA75F-12	Testing Circuitry Figure C
Item		Line Noise Tolerance 入力雑音耐量	
Object		+12V6.3A	

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	15.70	no regulation
	NORMAL	15.70	no regulation
1000	COMMON	15.80	no regulation
	NORMAL	15.80	no regulation

Conditions

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



Model	PAA75F-12
Item	Conducted Emission 雑音端子電圧
Object	+12V6.3A

Testing Circuitry Figure D

1. Graph

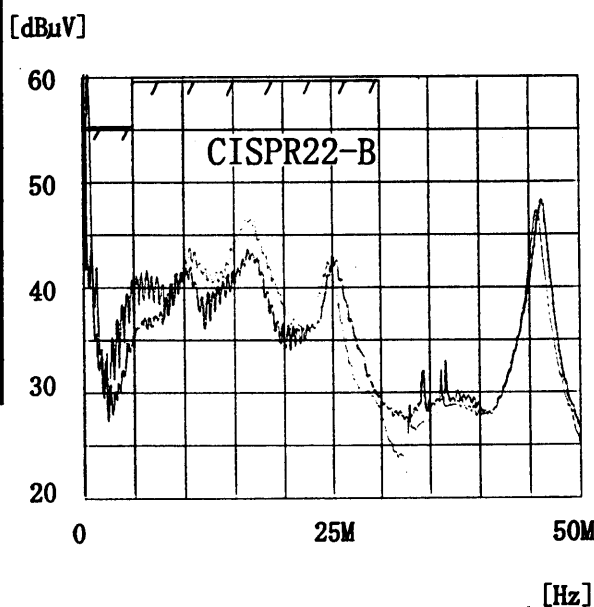
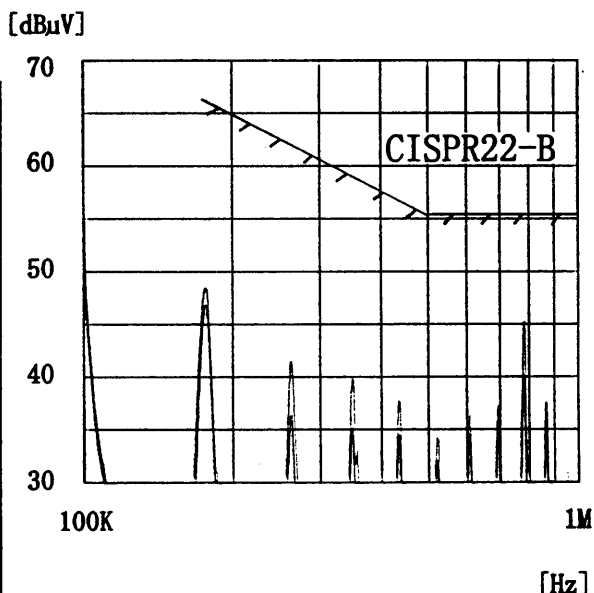
Remarks

Input Volt. 230 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	CISPR22-A		0.01~0.15	91-69.5
			0.15~0.5	66
			0.5~30	60
6	CISPR22-B	○	0.01~0.05	110
			0.05~0.15	90-80
			0.15~0.5	66-56
			0.5~5	56
			5~30	60



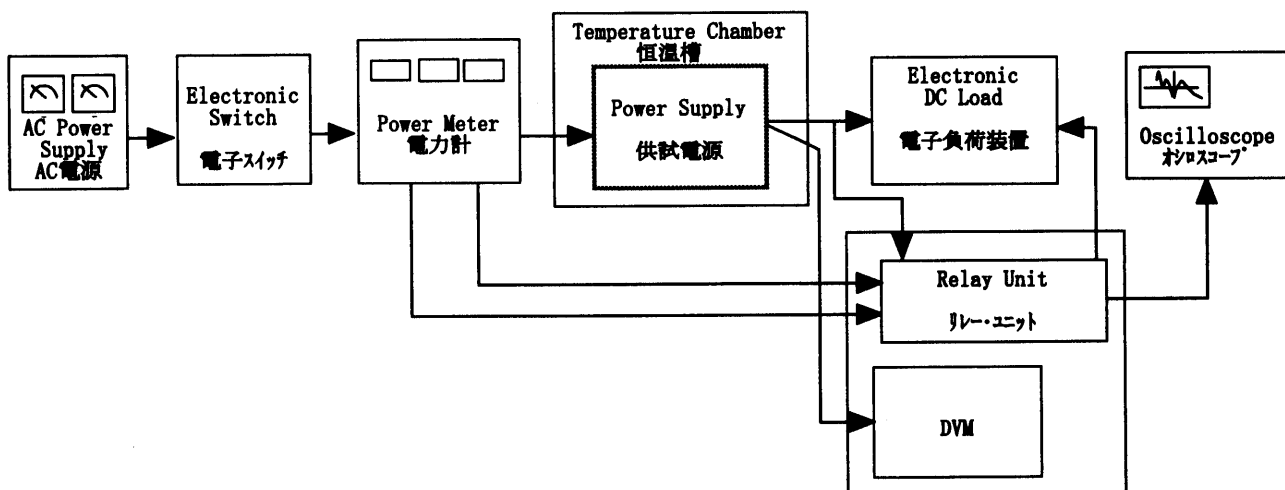


Figure A

Data Acquisition/Control Unit
データ集録システム

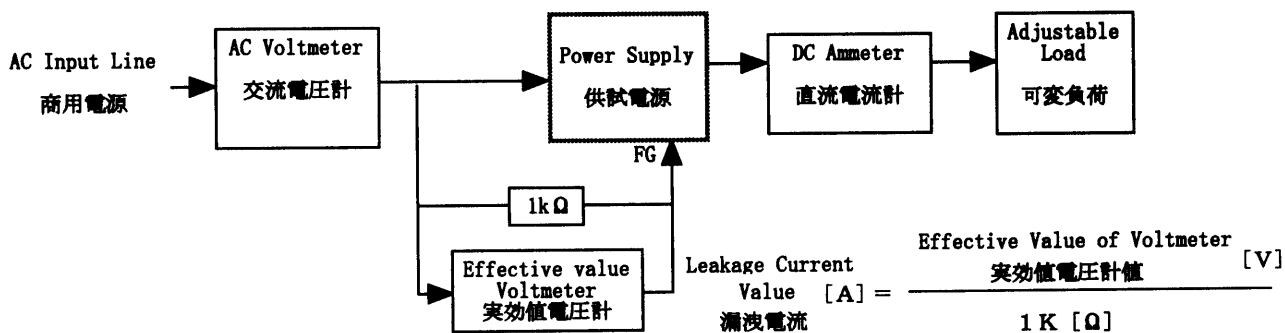


Figure B (DENTORI)

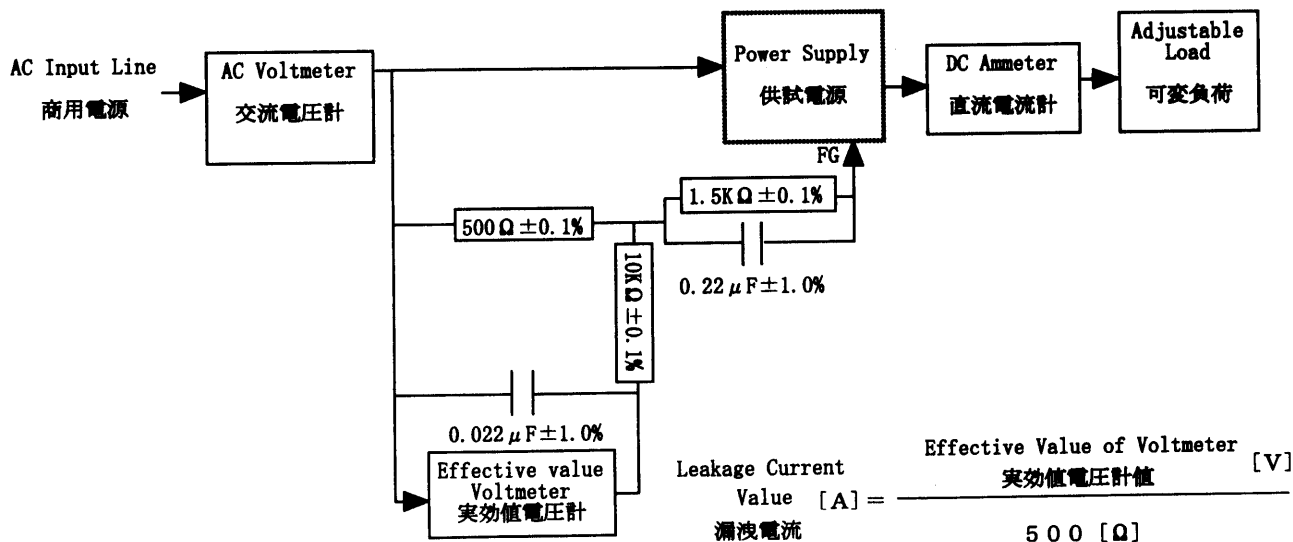


Figure B (UL, CSA, VDE)

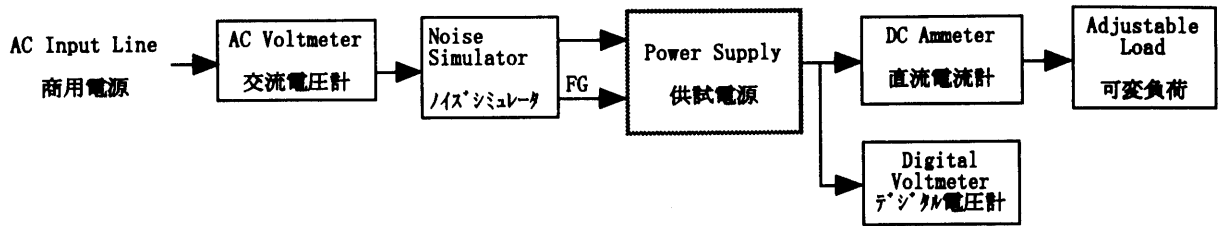


Figure C

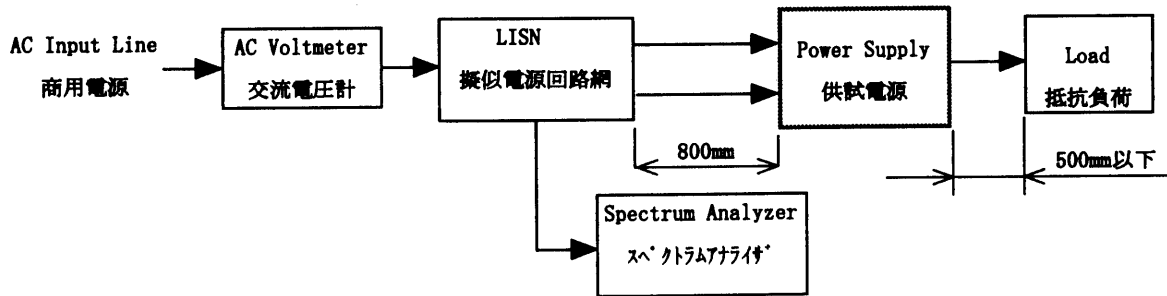


Figure D

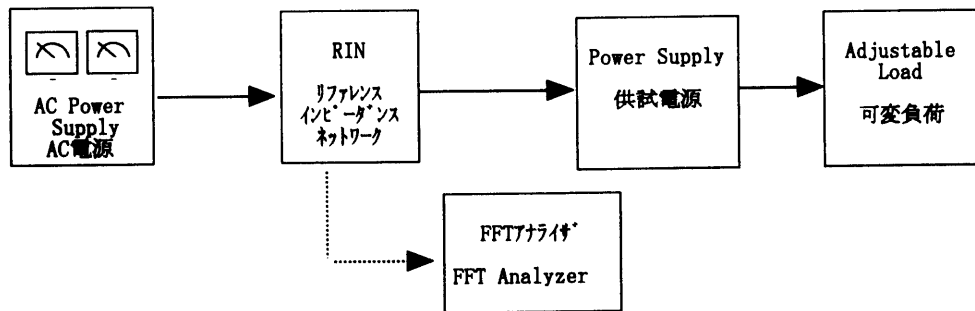


Figure E