



TEST DATA OF VAF1012

(200V INPUT)

Regulated DC Power Supply

Date : May 28. 1999

Approved by : T. Yoneda
Design Manager

Prepared by : Y. Hirose
Design Engineer

コーセル株式会社

COSEL CO., LTD.

CONTENTS

1. Line Regulation	1
静的入力変動	
2. Input Current (by Load Current)	2
入力電流 (負荷特性)	
3. Input Power (by Load Current)	3
入力電力 (負荷特性)	
4. Efficiency (by Input Voltage)	4
効率 (入力電圧特性)	
5. Efficiency (by Load Current)	5
効率 (負荷特性)	
6. Power Factor (by Input Voltage)	6
力率 (入力電圧特性)	
7. Power Factor (by Load Current)	7
力率 (負荷特性)	
8. Hold-Up Time	8
出力保持時間	
9. Instantaneous Interruption Compensation	9
瞬時停電保障	
10. Load Regulation	10
静的負荷変動	
11. Ripple Voltage (by Load Current)	11
リップル電圧 (負荷特性)	
12. Ripple-Noise	12
リップルノイズ	
13. Overcurrent Protection	13
過電流保護	
14. Inrush Current	14
突入電流	
15. Dynamic Load Responce	15
動的負荷変動	
16. Rise and Fall Time	16
立上り、立下がり時間	
17. Ambient Temperature Drift	17
周囲温度変動	
18. Minimum Input Voltage for Regulated Output Voltage	18
最低レギュレーション電圧	
19. Ripple Voltage (by Ambient Temperature)	19
リップル電圧 (周囲温度特性)	
20. Time Lapse Drift	20
経時ドリフト	
21. Output Voltage Accuracy	21
定電圧精度	
22. Oscillator Frequency	22
発振周波数	
23. Condensation	23
結露特性	
24. Leakage Current	24
漏洩電流	
25. Line Noise Tolerance	25
入力雑音耐量	
26. Conducted Emission	26
雑音端子電圧	
27. Figure of Testing Circuitry	27
測定回路図	

(Final Page 28)

COSEL

Model		VAF1012	Temperature Testing Circuitry	25℃ Figure A
Item		Line Regulation 静的入力変動		
Object		+12.0V0.9A		

1. Graph

□

Load 50%

△

Load 100%

Output Voltage [V]

12.24

12.22

12.20

12.18

12.16

12.14

12.12

0

0

160

180

200

220

240

260

280

300

Input Voltage [V]

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。

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
150	12.173	12.172
160	12.173	12.173
170	12.173	12.173
180	12.173	12.173
200	12.173	12.173
220	12.173	12.173
240	12.173	12.173
264	12.173	12.173
280	12.174	12.173

COSEL

Model VAF1012		Temperature 25°C	
Item	Input Current (by Load Current) 入力電流 (負荷特性)	Testing Circuitry	Figure A
Output			

1. Graph

—△— Input Volt. 170V

—□— Input Volt. 200V

—○— Input Volt. 264V

Input Current [A]

0.2

0.15

0.1

0.05

0

Load Current [A]

0

0.2

0.4

0.6

0.8

1

1.2

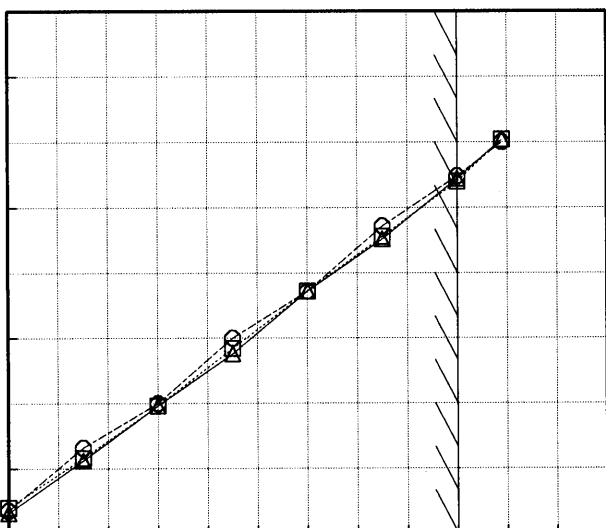
Note: Slanted line shows the range of the rated load current

(注)斜線は定格負荷電流範囲を示す。

2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	0.017	0.017	0.014
0.15	0.045	0.042	0.039
0.30	0.072	0.064	0.056
0.45	0.096	0.088	0.077
0.60	0.122	0.110	0.092
0.75	0.143	0.130	0.113
0.90	0.168	0.150	0.127
0.99	0.182	0.164	0.137
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model		VAF1012		Temperature		25℃																																																								
Item		Input Power (by Load Current) 入力電力（負荷特性）		Testing Circuitry		Figure A																																																								
Output		_____																																																												
1. Graph				2. Values																																																										
<div><div><div>—△—</div><div>Input Volt. 170V</div></div><div><div>—□—</div><div>Input Volt. 200V</div></div><div><div>—○—</div><div>Input Volt. 264V</div></div></div> <div><div><div>[W]</div><div>20</div><div>15</div><div>10</div><div>5</div><div>0</div></div><div>Input Power</div><div><div>0</div><div>0.2</div><div>0.4</div><div>0.6</div><div>0.8</div><div>1</div><div>1.2</div></div><div>Load Current</div><div>[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">Load Current [A]</th><th colspan="3">Input Power [W]</th></tr><tr><th>Input Volt. 170[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.00</td><td>0.80</td><td>1.00</td><td>0.90</td></tr><tr><td>0.15</td><td>2.80</td><td>2.90</td><td>3.30</td></tr><tr><td>0.30</td><td>4.90</td><td>4.90</td><td>5.00</td></tr><tr><td>0.45</td><td>6.90</td><td>7.10</td><td>7.50</td></tr><tr><td>0.60</td><td>9.30</td><td>9.30</td><td>9.30</td></tr><tr><td>0.75</td><td>11.30</td><td>11.40</td><td>11.80</td></tr><tr><td>0.90</td><td>13.60</td><td>13.50</td><td>13.70</td></tr><tr><td>0.99</td><td>15.10</td><td>15.10</td><td>15.00</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><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>				Load Current [A]	Input Power [W]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.00	0.80	1.00	0.90	0.15	2.80	2.90	3.30	0.30	4.90	4.90	5.00	0.45	6.90	7.10	7.50	0.60	9.30	9.30	9.30	0.75	11.30	11.40	11.80	0.90	13.60	13.50	13.70	0.99	15.10	15.10	15.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Input Power [W]																																																													
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]																																																											
0.00	0.80	1.00	0.90																																																											
0.15	2.80	2.90	3.30																																																											
0.30	4.90	4.90	5.00																																																											
0.45	6.90	7.10	7.50																																																											
0.60	9.30	9.30	9.30																																																											
0.75	11.30	11.40	11.80																																																											
0.90	13.60	13.50	13.70																																																											
0.99	15.10	15.10	15.00																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											
—	—	—	—																																																											

COSEL

Model		VAF1012	
Item		Efficiency 効率	
Object			

1. Graph

□

Load 50%

△

Load 100%

Efficiency

[%]

86

82

78

74

70

66

62

0

0

160

180

200

220

240

260

280

300

Input Voltage

[V]

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。

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
150	79.9	80.1
160	79.9	80.2
170	79.8	80.1
180	79.9	80.1
200	79.8	80.2
220	79.7	80.2
240	79.8	80.2
264	79.9	80.2
280	79.9	80.2

COSEL

Model		VAF1012	
Item	Efficiency (by Load Current) 効率 (負荷電流特性)		
Output			

1. Graph

—△—

Input Volt. 170V

—□—

Input Volt. 200V

—○—

Input Volt. 264V

Efficiency [%]

</

COSEL

Model VAF1012		Temperature 25°C Testing Circuitry Figure A																																
Item	Power Factor (by Input Voltage) 力率 (入力電圧特性)																																	
Object																																		
<p>1. Graph</p> <p>□ Load 50% △ Load 100%</p> <p>Power Factor</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p> <p>(注) 斜線は定格入力電圧範囲を示す。</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th><th colspan="2">Power Factor</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>150</td><td>0.46</td><td>0.51</td></tr> <tr><td>160</td><td>0.45</td><td>0.51</td></tr> <tr><td>170</td><td>0.46</td><td>0.51</td></tr> <tr><td>180</td><td>0.46</td><td>0.51</td></tr> <tr><td>200</td><td>0.46</td><td>0.51</td></tr> <tr><td>220</td><td>0.46</td><td>0.51</td></tr> <tr><td>240</td><td>0.46</td><td>0.51</td></tr> <tr><td>264</td><td>0.46</td><td>0.51</td></tr> <tr><td>280</td><td>0.46</td><td>0.51</td></tr> </tbody> </table>	Input Voltage [V]	Power Factor		Load 50%	Load 100%	150	0.46	0.51	160	0.45	0.51	170	0.46	0.51	180	0.46	0.51	200	0.46	0.51	220	0.46	0.51	240	0.46	0.51	264	0.46	0.51	280	0.46	0.51
Input Voltage [V]	Power Factor																																	
	Load 50%	Load 100%																																
150	0.46	0.51																																
160	0.45	0.51																																
170	0.46	0.51																																
180	0.46	0.51																																
200	0.46	0.51																																
220	0.46	0.51																																
240	0.46	0.51																																
264	0.46	0.51																																
280	0.46	0.51																																

COSEL

Model		VAF1012	
Item	Power Factor (by Load Current) 力率 (負荷電流特性)		
Output	_____		

1. Graph

—△—

Input Volt. 170V

---□---

Input Volt. 200V

---○---

Input Volt. 264V

Power Factor

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]	Power Factor		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	0.29	0.30	0.24
0.15	0.37	0.35	0.32
0.30	0.40	0.38	0.34
0.45	0.42	0.40	0.37
0.60	0.45	0.42	0.38
0.75	0.46	0.44	0.40
0.90	0.48	0.45	0.41
0.99	0.49	0.46	0.41
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model VAF1012		Temperature 25°C Testing Circuitry Figure A																																
Item	Hold-Up Time 出力保持時間																																	
Object	+12.0V0.9A																																	
1. Graph <div style="float: right; margin-right: 50px;"> □ Load 50% —△— Load 100% </div> <div style="clear: both;"></div> <div style="text-align: center;"> <p>[mS]</p> <p>Hold-Up Time</p> <p>Input Voltage [V]</p> </div> <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。</p> <p>(注) 斜線は定格入力電圧範囲を示す。</p>		2. Values <table border="1" style="margin-top: 10px; width: 100%;"> <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>117</td><td>50</td></tr> <tr><td>160</td><td>133</td><td>58</td></tr> <tr><td>170</td><td>151</td><td>66</td></tr> <tr><td>180</td><td>170</td><td>75</td></tr> <tr><td>200</td><td>211</td><td>95</td></tr> <tr><td>220</td><td>256</td><td>116</td></tr> <tr><td>240</td><td>305</td><td>140</td></tr> <tr><td>264</td><td>370</td><td>172</td></tr> <tr><td>280</td><td>417</td><td>194</td></tr> </tbody> </table>	Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	150	117	50	160	133	58	170	151	66	180	170	75	200	211	95	220	256	116	240	305	140	264	370	172	280	417	194
Input Voltage [V]	Hold-Up Time [mS]																																	
	Load 50%	Load 100%																																
150	117	50																																
160	133	58																																
170	151	66																																
180	170	75																																
200	211	95																																
220	256	116																																
240	305	140																																
264	370	172																																
280	417	194																																

COSEL

Model		VAF1012		Temperature		25℃																																																				
Item		Instantaneous Interruption Compensation 瞬時停電保障		Testing Circuitry		Figure A																																																				
Object		+12.0V0.9A																																																								
1. Graph				2. Values																																																						
<div><div>—△— Input Volt. 170 V - - □ - - Input Volt. 200 V - - ○ - - Input Volt. 264 V</div><div><p>[mS]</p><p>Instantaneous Compensation Time</p><p>Load Current [A]</p></div></div> <div><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 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。</p><p>(注)斜線は定格負荷電流範囲を示す。</p></div>				<table><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><tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.15</td><td>295</td><td>443</td><td>768</td></tr><tr><td>0.30</td><td>152</td><td>219</td><td>419</td></tr><tr><td>0.45</td><td>94</td><td>144</td><td>268</td></tr><tr><td>0.60</td><td>68</td><td>102</td><td>202</td></tr><tr><td>0.75</td><td>68</td><td>93</td><td>159</td></tr><tr><td>0.90</td><td>52</td><td>69</td><td>143</td></tr><tr><td>0.99</td><td>44</td><td>68</td><td>119</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></table>				Load Current [A]	Time [mS]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.00	—	—	—	0.15	295	443	768	0.30	152	219	419	0.45	94	144	268	0.60	68	102	202	0.75	68	93	159	0.90	52	69	143	0.99	44	68	119	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Time [mS]																																																									
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]																																																							
0.00	—	—	—																																																							
0.15	295	443	768																																																							
0.30	152	219	419																																																							
0.45	94	144	268																																																							
0.60	68	102	202																																																							
0.75	68	93	159																																																							
0.90	52	69	143																																																							
0.99	44	68	119																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							

COSEL

Model		VAF1012	
Item		Load Regulation 静的負荷変動	
Object		+12.0V0.9A	
1. Graph		2. Values	

COSEL

Model	VAF1012	Temperature	25℃																																						
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷電流特性)	Testing Circuitry	Figure A																																						
Object	+12.0V 0.9A																																								
1. Graph		2. Values																																							
<div><div>-----□----- Input Volt. 170V</div><div>-----△----- Input Volt. 264V</div><div><div>[mV]</div><div></div><div>Ripple Voltage</div><div>Load Current [A]</div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 170 [V]</th><th>Input Volt. 264 [V]</th></tr><tr><td>0.00</td><td>5</td><td>5</td></tr><tr><td>0.15</td><td>10</td><td>10</td></tr><tr><td>0.30</td><td>10</td><td>10</td></tr><tr><td>0.45</td><td>10</td><td>10</td></tr><tr><td>0.60</td><td>15</td><td>10</td></tr><tr><td>0.75</td><td>15</td><td>10</td></tr><tr><td>0.90</td><td>20</td><td>15</td></tr><tr><td>0.99</td><td>25</td><td>20</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></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 170 [V]	Input Volt. 264 [V]	0.00	5	5	0.15	10	10	0.30	10	10	0.45	10	10	0.60	15	10	0.75	15	10	0.90	20	15	0.99	25	20	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 170 [V]	Input Volt. 264 [V]																																							
0.00	5	5																																							
0.15	10	10																																							
0.30	10	10																																							
0.45	10	10																																							
0.60	15	10																																							
0.75	15	10																																							
0.90	20	15																																							
0.99	25	20																																							
—	—	—																																							
—	—	—																																							
—	—	—																																							
<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。</p> <p>(注) 斜線は定格負荷電流範囲を示す。</p> <div><div>T1: Due to AC Input Line 入力商用周期</div><div>T2: Due to Switching スイッチング周期</div><div><div>Ripple [mVp-p]</div><div></div><div>T1</div><div>T2</div></div></div>																																									
Fig. Complex Ripple Wave Form																																									
図 リップル波形詳細図																																									

COSEL

Model		VAF1012	
Item		Ripple-Noise リップルノイズ	
Object		+12.0V0.9A	

1. Graph

-----□-----

Input Volt. 170V

-----△-----

Input Volt. 264V

Ripple-Noise

[mV]

200

180

160

140

120

100

80

60

40

20

0

0

0.2

0.4

0.6

0.8

1

1.2

Load Current

[A]

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

T2

Ripple-Noise

[mVp-p]

T1

Fig. Complex Ripple Wave Form

図 リップル波形詳細図

Temperature

25℃

Testing Circuitry

Figure A

2. Values

Load Current	Ripple-Noise	
	Input Volt. 170 [V]	Input Volt. 264 [V]
0.00	10	10
0.15	15	15
0.30	15	15
0.45	15	15
0.60	20	20
0.75	25	20
0.90	30	25
0.99	35	25
—	—	—
—	—	—
—	—	—

COSEL

Model		VAF1012	Temperature25℃ Testing CircuitryFigure A
Item		Overcurrent Protection 過電流保護	
Object		+12.0V0.9A	

1. Graph

[V]

20.0

15.0

10.0

5.0

0.0

0

1

2

3

4

Output Voltage

Load Current

[A]

Input Volt.170 V

Input Volt.200 V

Input Volt.264 V

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
12.00	1.89	2.01	2.19
11.40	1.95	2.03	2.21
10.80	2.02	2.09	2.26
9.60	2.14	2.25	2.43
8.40	2.31	2.44	2.60
7.20	2.51	2.62	2.78
6.00	2.70	2.76	2.96
4.80	2.90	3.00	3.15
3.60	3.11	3.22	3.25
2.40	3.30	3.33	3.33
1.20	—	—	—
0.00	—	—	—

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

Note2: The lines shows peak current of intermittent operation of power supply when output voltage drops less than rated voltage value at overcurrent.

(注1)斜線は定格負荷電流範囲を示す。

(注2)垂下部分は間欠モード時のピーク電流を示す。

Note1: Slanted line shows the range of the rated load current.

Note2: The lines shows peak current of intermittent operation of power supply when output voltage drops less than rated voltage value at overcurrent.

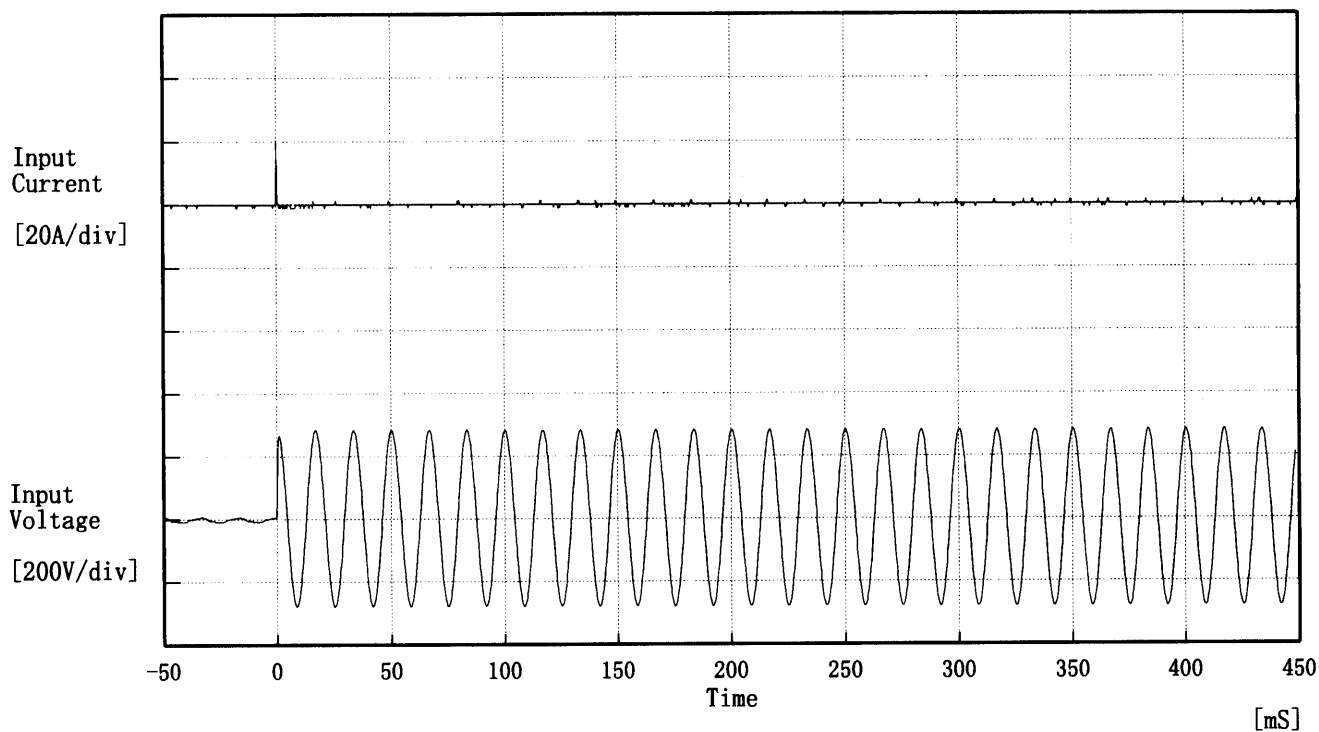
(注1) 斜線は定格負荷電流範囲を示す。

(注2) 垂下部分は間欠モード時のピーク電流を示す。

Output Voltage [V]	Load Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
12.00	1.89	2.01	2.19
11.40	1.95	2.03	2.21
10.80	2.02	2.09	2.26
9.60	2.14	2.25	2.43
8.40	2.31	2.44	2.60
7.20	2.51	2.62	2.78
6.00	2.70	2.76	2.96
4.80	2.90	3.00	3.15
3.60	3.11	3.22	3.25
2.40	3.30	3.33	3.33
1.20	—	—	—
0.00	—	—	—

COSEL

Model	VAF1012	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current 突入電流	
Object		



Input Voltage 200 V

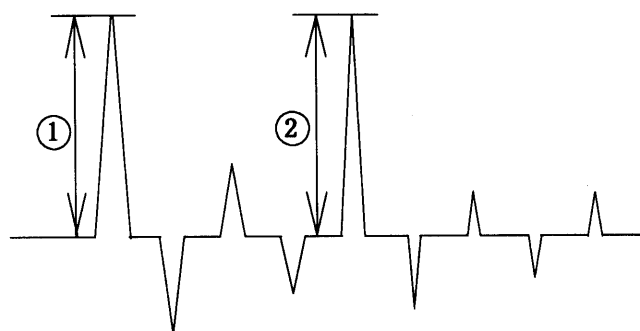
Frequency 60 Hz

Load 100 %

Inrush Current

① 20.15 [A]

② 1.16 [A]



COSEL

Model	VAF1012	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Responce 動的負荷変動	
Object	+12.0V0.9A	

Input Volt. 200 V

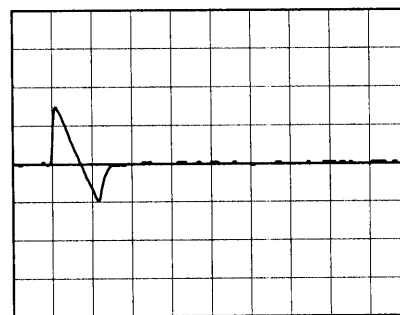
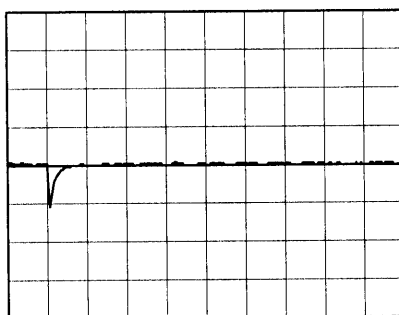
Cycle 1000 mS

Load Current



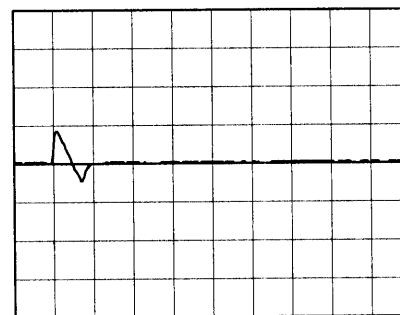
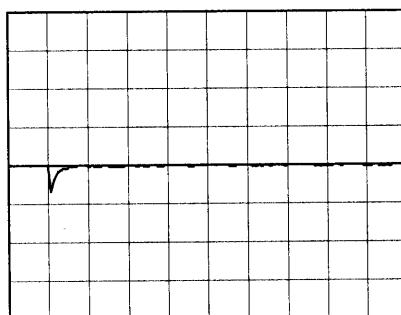
Min. Load \longleftrightarrow

Load 100 %



Min. Load \longleftrightarrow

Load 50 %



100 mV/div

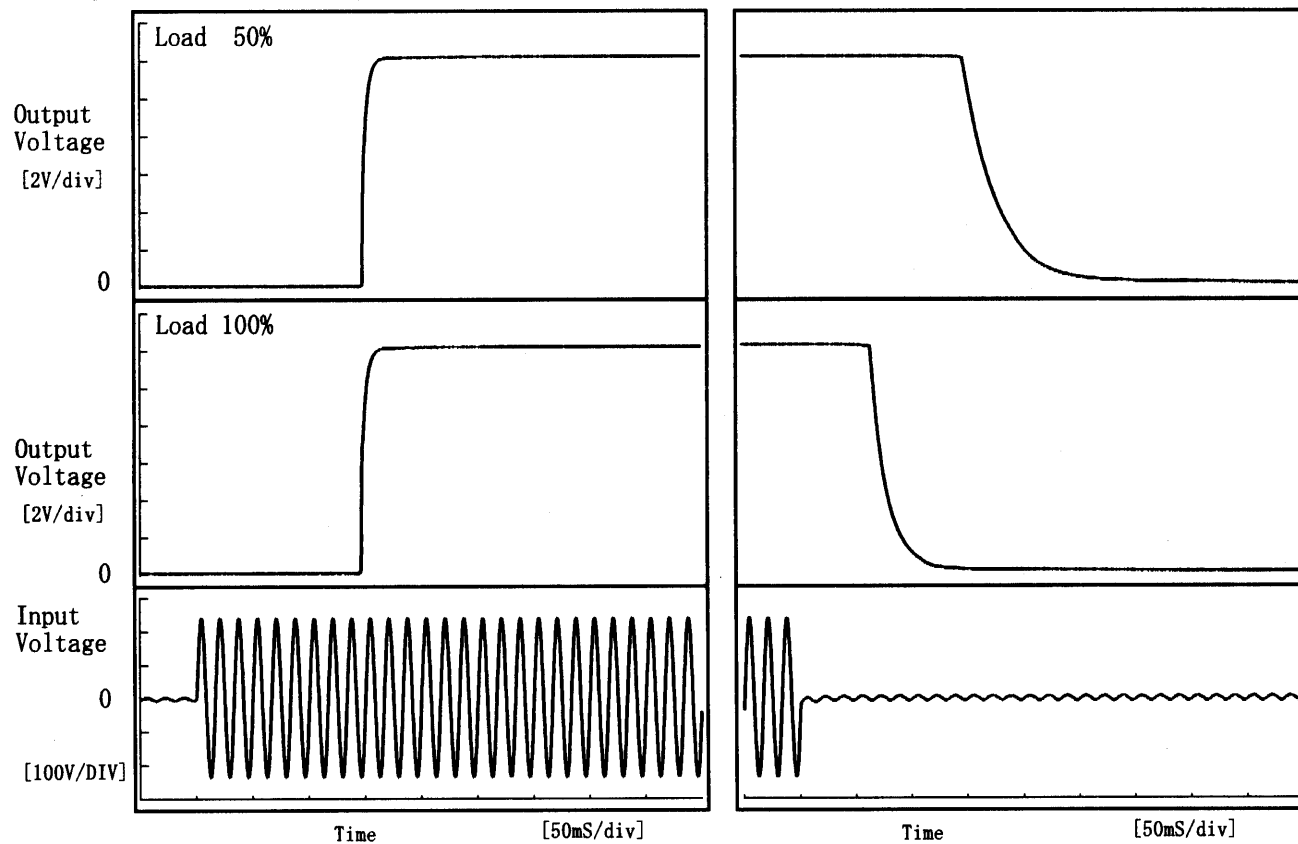
20 mS/div

COSEL

Model	VAF1012	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V0.9A		

1. Graph

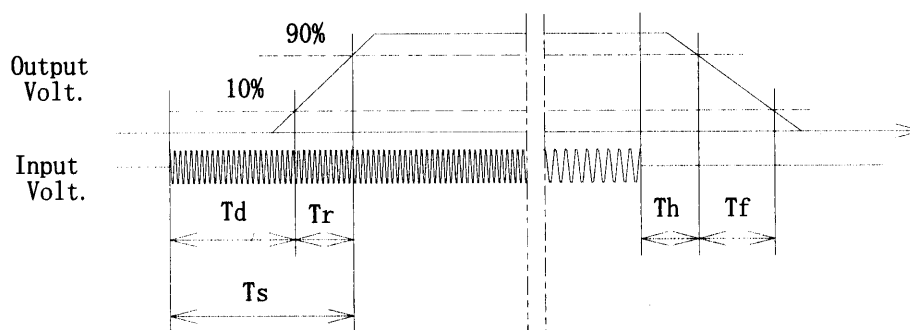
Input Volt. 170 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	147.5	7.3	154.8	150.8	66.3
100 %	146.3	7.3	153.5	66.3	34.5



COSEL

Model		VAF1012
Item		Ambient Temperature Drift 周囲温度変動
Object		+12.0V0.9A

1. Graph

△

Input Volt. 170V

□

Input Volt. 200V

○

Input Volt. 264V

Output Voltage

[V]

-30

-10

10

30

50

70

Ambient Temperature

[°C]

12.30

12.26

12.22

12.18

12.14

12.10

12.06

0

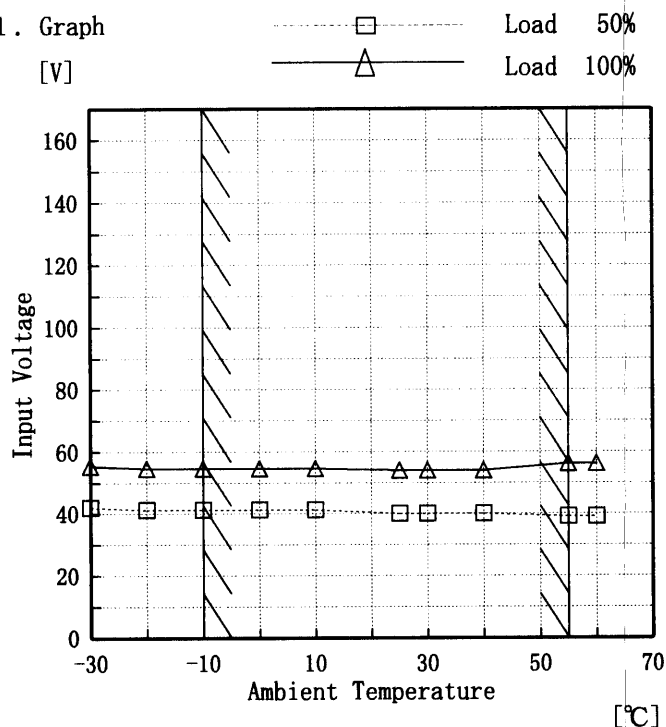
</

COSEL

Model	VAF1012
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+12.0V0.90A

Testing Circuitry Figure A

1. Graph



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%
-30	42	55
-20	41	55
-10	41	55
0	41	55
10	41	55
25	40	54
30	40	54
40	40	54
55	39	56
60	39	56
—	—	—

COSEL

Model		VAF1012
Item		Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object		+12.0V0.9A

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. 200 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 Voltage [mV]	
	Load 50%	Load 100%
-20	35	50
-10	25	40
0	20	40
10	15	40
20	15	30
25	10	25
30	10	20
40	10	20
50	10	20
60	10	20
—	—	—

COSEL

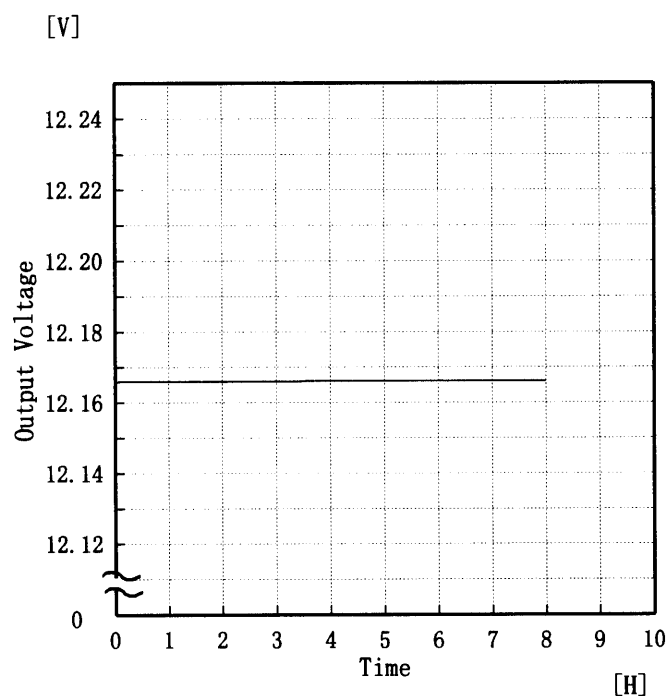
Model VAF1012

Item Time Lapse Drift 経時ドリフト

Object +12.0V0.9A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph



2. Values

Time since start [H]	Output Voltage [V]
0.0	12.166
0.5	12.166
1.0	12.166
2.0	12.166
3.0	12.166
4.0	12.166
5.0	12.166
6.0	12.166
7.0	12.166
8.0	12.166

COSEL

Model		VAF1012	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+12.0V0.9A	

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 : -10~55 °C

Input Voltage : 170~264 V

Load Current : 0.0~0.9A

* 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 : -10~55 °C

入力電圧 : 170~264 V

負荷電流 : 0.0~0.9A

* 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	55	264	0.0	12.175	±11	±0.1
Minimum Voltage	-10	170	0.9	12.154		

COSEL

Model		VAF1012		Temperature 25℃																																																				
Item		Oscillator Frequency 発振周波数		Testing Circuitry Figure A																																																				
Object		+12.0V0.9A																																																						
1. Graph				2. Values																																																				
<div><div><div>—△—</div><div>—□—</div><div>—○—</div></div><div><div>Input Volt. 170 V</div><div>Input Volt. 200 V</div><div>Input Volt. 264 V</div></div></div> <div><div>[KHz]</div><div>1000</div><div>Oscillator Frequency</div><div>100</div><div>10</div><div>0</div><div>0.2</div><div>0.4</div><div>0.6</div><div>0.8</div><div>1</div><div>1.2</div><div>Load Current [A]</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>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Oscillator Frequency [KHz]</th></tr><tr><th>Input Volt. 170[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.00</td><td>101</td><td>101</td><td>101</td></tr><tr><td>0.15</td><td>101</td><td>101</td><td>101</td></tr><tr><td>0.30</td><td>101</td><td>101</td><td>101</td></tr><tr><td>0.45</td><td>101</td><td>101</td><td>101</td></tr><tr><td>0.60</td><td>101</td><td>101</td><td>101</td></tr><tr><td>0.75</td><td>101</td><td>101</td><td>101</td></tr><tr><td>0.90</td><td>101</td><td>101</td><td>101</td></tr><tr><td>0.99</td><td>101</td><td>101</td><td>101</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></table>		Load Current [A]	Oscillator Frequency [KHz]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.00	101	101	101	0.15	101	101	101	0.30	101	101	101	0.45	101	101	101	0.60	101	101	101	0.75	101	101	101	0.90	101	101	101	0.99	101	101	101	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Oscillator Frequency [KHz]																																																							
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]																																																					
0.00	101	101	101																																																					
0.15	101	101	101																																																					
0.30	101	101	101																																																					
0.45	101	101	101																																																					
0.60	101	101	101																																																					
0.75	101	101	101																																																					
0.90	101	101	101																																																					
0.99	101	101	101																																																					
—	—	—	—																																																					
—	—	—	—																																																					
—	—	—	—																																																					

COSEL

LOREL

		Testing Circuitry Figure A
Model	VAF1012	
Item	Condensation 結露特性	
Object	+12.0V0.9A	

1. Condensation test

Testing procedure is as follows.

① Keeping and cooling the unit in a tank at -10℃ 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℃ 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－1 0℃に冷却しておき、約1時間後に恒温槽から取り出し、室温2 5℃、湿度4 0 %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]	12.004	Input Volt. : 200V, Load Current:0.9A
Line Regulation [mV]	1	Input Volt. : 170～264V, Load Current:0.9A
Load Regulation [mV]	3	Input Volt. : 200V, Load Current:0.0～0.9A

COSEL

Model	VAF1012	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	0.16	0.21	0.24

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。

COSEL

Model	VAF1012	Temperature Testing Circuitry	25°C Figure C
Item	Line Noise Tolerance 入力雑音耐量		
Object	+12.0V0.9A		

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 %

COSEL

Model	VAF1012	Temperature	25°C
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object	_____		

1. Graph

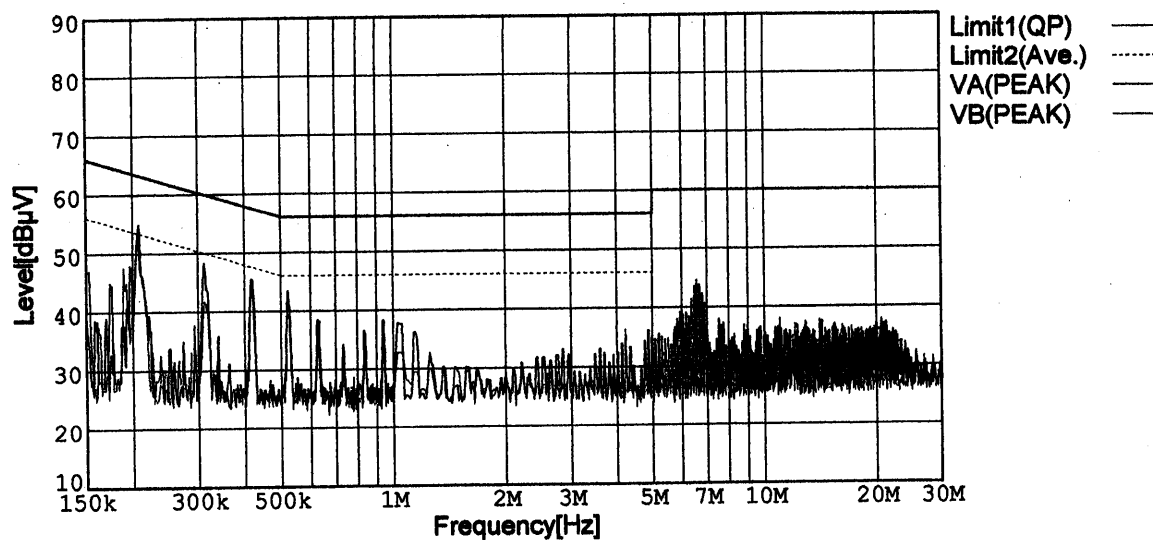
Remarks

Input Volt. 230 V (CISPR Pub22 Class B)

Load 100 %

Limit1: [CISPR Pub22] Class B(QP)

Limit2: [CISPR Pub22] Class B(Ave.)



COSEL

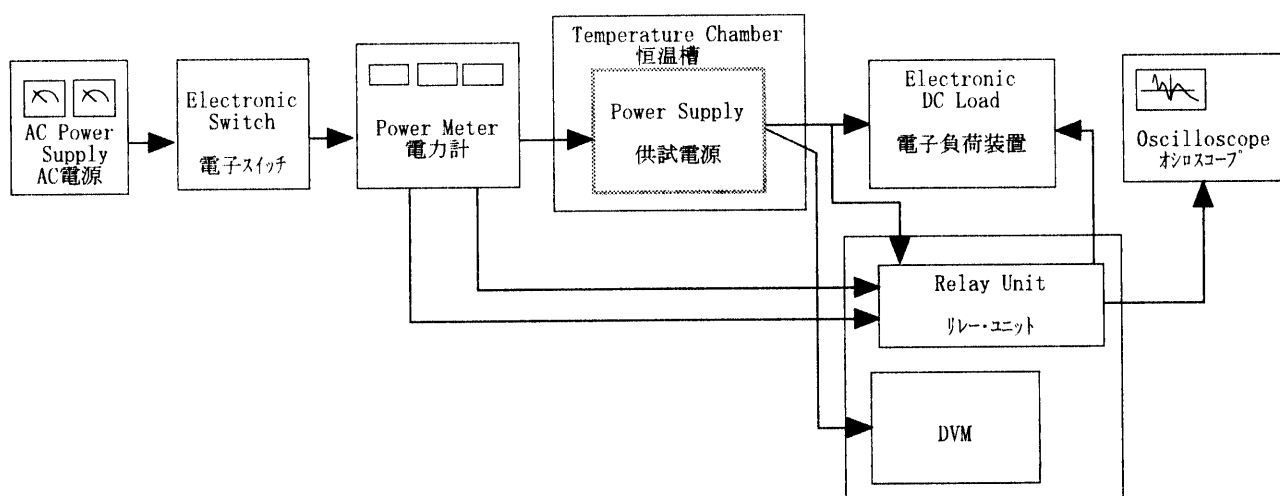


Figure A

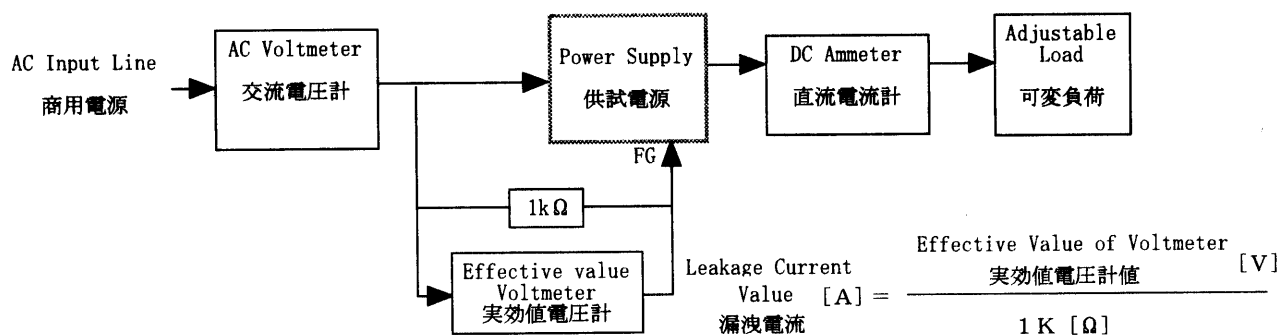
Data Acquisition/Control Unit
データ集録システム

Figure B (DENTORI)

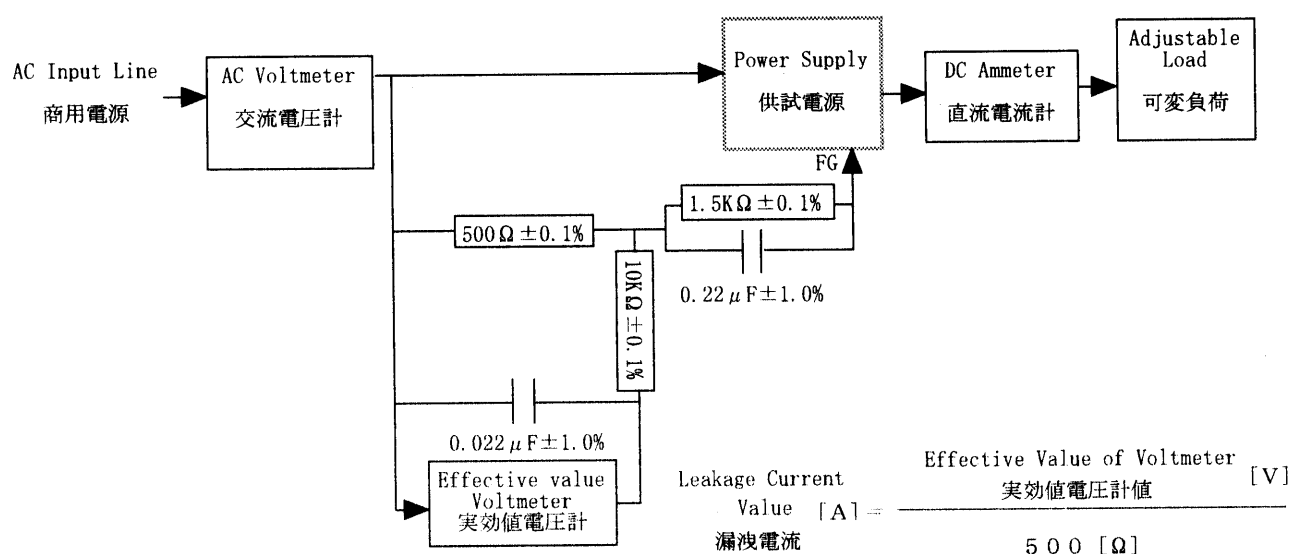


Figure B (IEC 60950)

COSEL

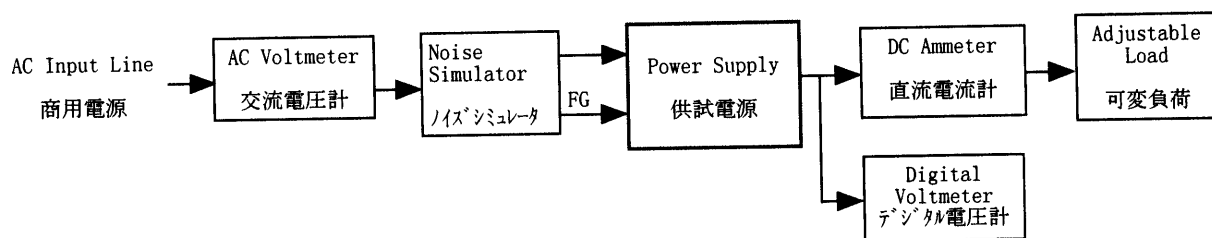


Figure C

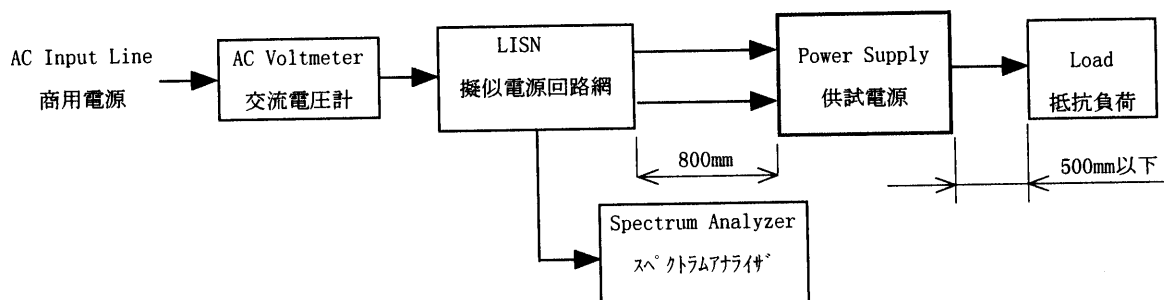


Figure D

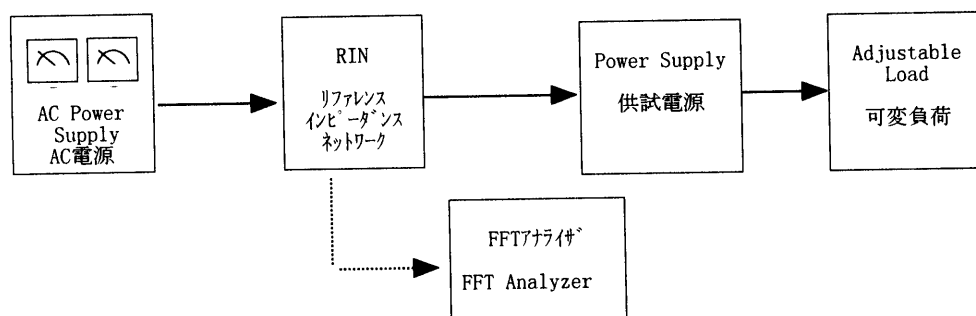


Figure E