CO$EL

TEST DATA OF VAF1003
(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	VAF1003
Item	Line Regulation 静的入力変動
Object	＋3.3V2A

Temperature	25℃
Testing Circuitry	Figure A

1．Graph

········· ▫ ········· Load　50%

────── △ ────── Load　100%

[V]

Output Voltage

3.380

3.360

3.340

3.320

3.300

3.280

3.260

3.240

140　160　180　200　220　240　260　280　300

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	3.316	3.314
160	3.316	3.314
170	3.316	3.314
180	3.316	3.314
200	3.316	3.314
220	3.316	3.314
240	3.316	3.314
264	3.316	3.314
280	3.316	3.314

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Model	VAF1003		
Item	Input Current (by Load Current) 入力電流（負荷特性）	Temperature	25℃
		Testing Circuitry	Figure A
Object	————		

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

[A]

Input Current

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]	Input Current		[A]
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	0.022	0.022	0.022
0.4	0.046	0.044	0.040
0.8	0.066	0.061	0.057
1.2	0.090	0.083	0.072
1.6	0.109	0.100	0.087
2.0	0.131	0.118	0.100
2.2	0.141	0.128	0.108
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—	—	—	—

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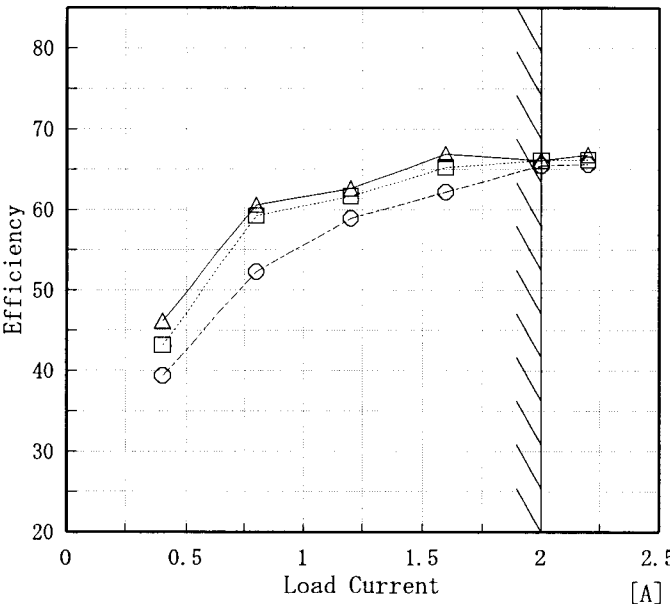
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Model	VAF1003		
Item	Input Power (by Load Current) 入力電力（負荷特性）	Temperature	25℃
		Testing Circuitry	Figure A
Object	———————		

1. Graph

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

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 Power [W]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	1.20	1.30	1.60
0.4	2.90	3.10	3.40
0.8	4.40	4.50	5.10
1.2	6.40	6.50	6.80
1.6	8.00	8.20	8.60
2.0	10.10	10.10	10.20
2.2	11.00	11.10	11.20
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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Model	VAF1003
Item	Efficiency (by Input Voltage) 効率（入力電圧特性）
Object	

Temperature	25℃
Testing Circuitry	Figure A

1．Graph   □┄┄ Load 50%

[%]   △── Load 100%

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	61.8	66.8
160	61.8	66.1
170	60.7	66.1
180	61.8	66.1
200	60.7	66.1
220	60.7	66.1
240	59.6	66.1
264	56.6	65.5
280	55.6	64.8

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Model	VAF1003
Item	Efficiency (by Load Current) 効率（負荷特性）
Object	————————

Temperature   25℃
Testing Circuitry   Figure A

1. Graph

────△──── Input Volt. 170V
┄┄□┄┄ Input Volt. 200V
┄┄○┄┄ Input Volt. 264V

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

(注)斜線は定格負荷電流範囲を示す。

2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.4	46.2	43.2	39.4
0.8	60.6	59.3	52.3
1.2	62.6	61.7	58.9
1.6	66.9	65.2	62.2
2.0	66.1	66.1	65.5
2.2	66.8	66.2	65.6
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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Model	VAF1003		
Item	Power Factor (by Input Voltage) 力率（入力電圧特性）	Temperature	25℃
		Testing Circuitry	Figure A
Object			

1. Graph
  ·······□······· Load 50%
  ————△———— Load 100%

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]	Power Factor	
	Load 50%	Load 100%
150	0.44	0.48
160	0.44	0.48
170	0.44	0.48
180	0.43	0.48
200	0.44	0.48
220	0.43	0.48
240	0.44	0.48
264	0.44	0.48
280	0.44	0.48

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Model	VAF1003
Item	Power Factor (by Load Current) 力率（負荷特性）
Object	————

Temperature   25℃
Testing Circuitry   Figure A

1. Graph

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

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]
0.0	0.31	0.31	0.27
0.4	0.37	0.35	0.31
0.8	0.39	0.37	0.34
1.2	0.42	0.39	0.36
1.6	0.43	0.41	0.38
2.0	0.45	0.43	0.39
2.2	0.46	0.44	0.39
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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Model	VAF1003
Item	Hold-Up Time 出力保持時間
Object	＋3.3V2A

Temperature 25℃
Testing Circuitry   Figure A

1. Graph

```
............ □ ............   Load   50%
————— △ —————   Load  100%
```


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.

　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。

2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
150	125	62
160	143	72
170	162	82
180	183	93
200	227	117
220	277	143
240	331	172
264	402	211
280	452	239

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Model	VAF1003
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	＋3.3V2A

Temperature　　　25℃
Testing Circuitry　　Figure A

1. Graph

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

[mS]

Instantaneous Compensation Time

Load Current　　[A]

2. Values

Load Current [A]	Time [mS]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
0.4	293	418	718
0.8	168	243	427
1.2	102	159	293
1.6	77	118	219
2.0	65	93	176
2.2	65	90	165
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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.

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。

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Model	VAF1003
Item	Load Regulation 静的負荷変動
Object	＋3.3V2A

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

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

[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]
0.0	3.319	3.319	3.319
0.4	3.318	3.318	3.318
0.8	3.317	3.317	3.317
1.2	3.316	3.316	3.316
1.6	3.315	3.315	3.315
2.0	3.314	3.314	3.314
2.2	3.313	3.313	3.314
—	—	—	—
—	—	—	—
—	—	—	—

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Model	VAF1003
Item	Overcurrent Protection 過電流保護
Object	+3.3V2A

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

———— Input Volt. 170 V
———— Input Volt. 200 V
———— Input Volt. 264 V

[V]

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。

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
3.30	6.08	6.30	6.90
3.13	6.09	6.30	6.91
2.97	6.15	6.35	6.94
2.64	6.40	6.65	7.14
2.31	6.72	6.92	7.40
1.98	7.06	7.25	7.73
1.65	7.43	7.65	8.11
1.32	7.89	8.12	8.55
0.99	—	—	—
0.66	—	—	—
0.33	—	—	—
0.00	—	—	—

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Model	VAF1003		
Item	Inrush Current 突入電流	Temperature	25℃
		Testing Circuitry	Figure A
Object			

Input Current

[20A/div]

Input Voltage

[200V/div]

-2 0 2 4 6 8 10 12 14 16 18

Time

[mS]
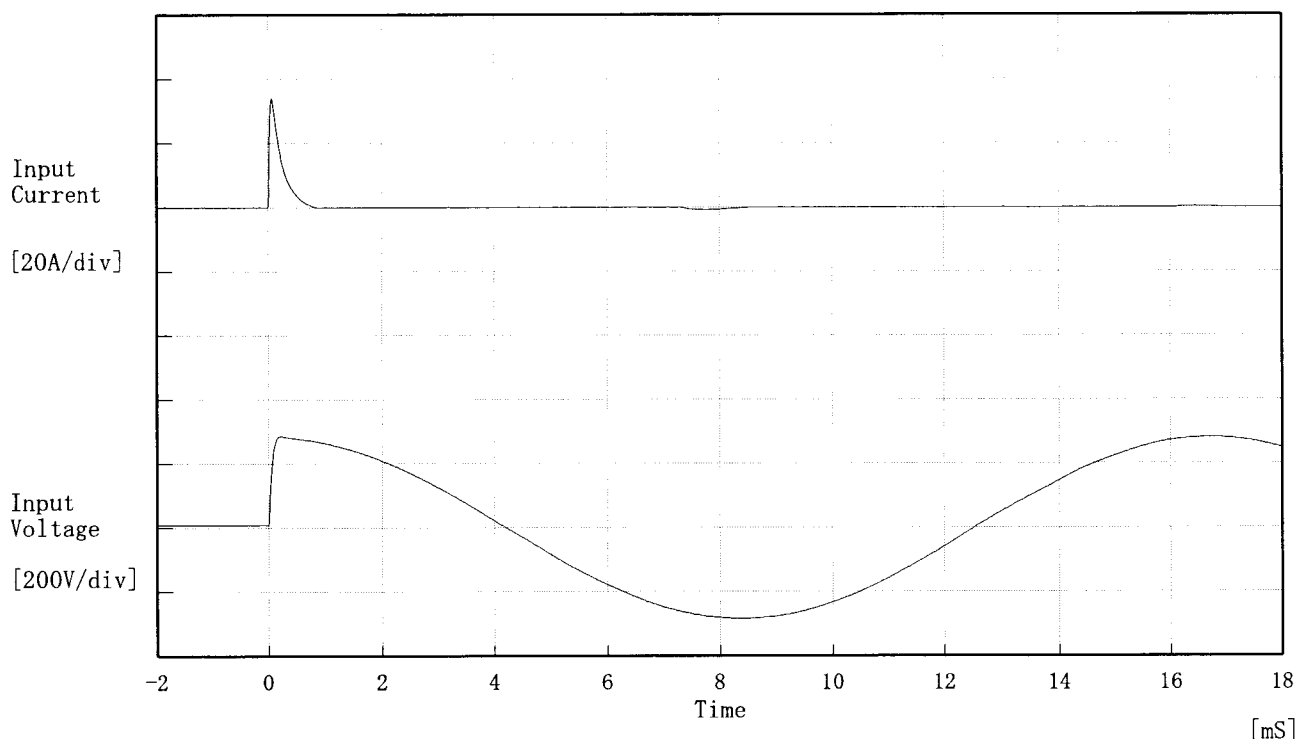
Input Voltage　200 V
Frequency　　60 Hz
Load　　　　100 %
Inrush Current
　① 33.98 [A]
　② 0.88 [A]

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参考資料
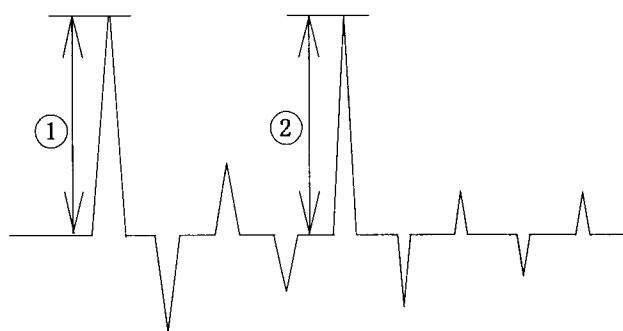
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Model	VAF1003		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+3.3V2A		

1. Graph

Input Volt. 170 V

Load 50%

Output Voltage [0.5V/div]

0

Load 100%

Output Voltage [0.5V/div]

0

Input Voltage

0

[100V/div]

Time [50mS/div]

Time [50mS/div]
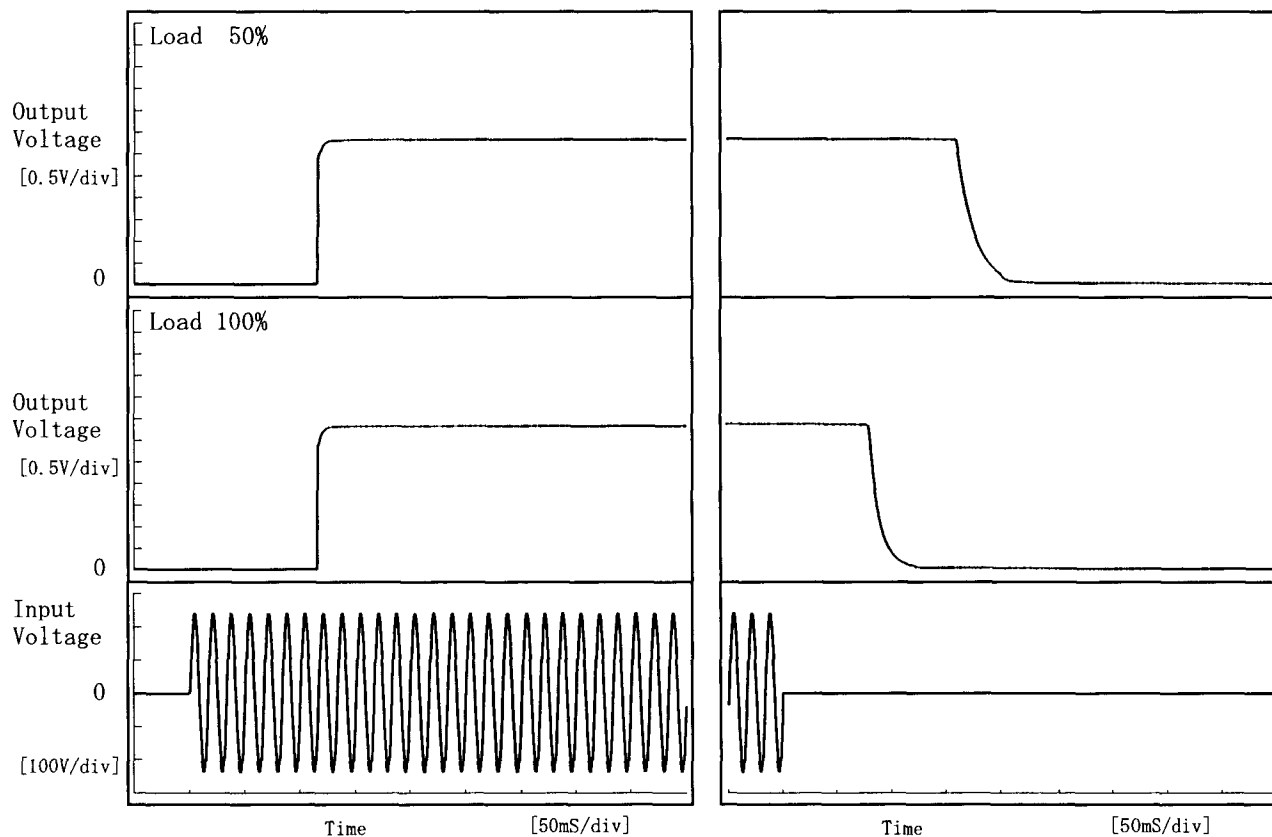
2. Values

[mS]

Load ＼ Time	T d	T r	T s	T h	T f
50 %	115.5	2.0	117.5	162.5	34.3
100 %	115.5	2.3	117.8	81.8	21.5

Output Volt.

90%

10%

Input Volt.

Td   Tr   Th   Tf

Ts

—13—

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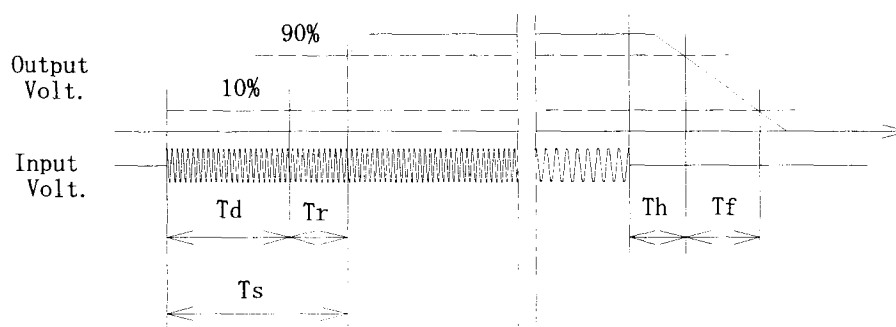
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Model	VAF1003
Item	Ambient Temperature Drift 周囲温度変動
Object	+3.3V2A

Testing Circuitry   Figure A

1. Graph

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

[V]

Output Voltage

Ambient Temperature   [℃]

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 [℃]	Output Voltage [V]		
	Input Volt. 170 [V]	Input Volt. 200 [V]	Input Volt. 264 [V]
-30	3.317	3.317	3.317
-20	3.317	3.317	3.317
-10	3.316	3.316	3.317
0	3.316	3.316	3.316
10	3.315	3.315	3.315
25	3.314	3.314	3.314
30	3.312	3.312	3.313
40	3.311	3.311	3.311
55	3.308	3.308	3.308
60	3.306	3.306	3.306
—	—	—	—

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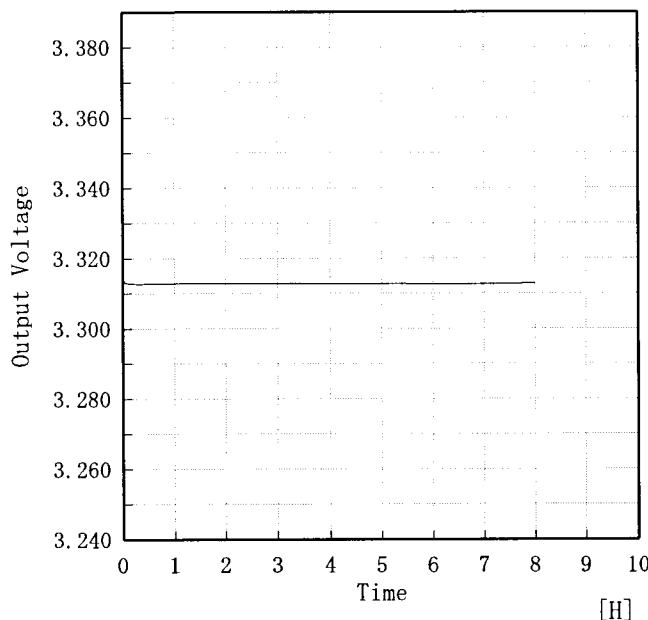
Model	VAF1003
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	＋3.3Ｖ2Ａ

Testing Circuitry　　Figure A

1．Graph　　　· · · · □ · · · · 　　Load　50%

[V]　　　　　　△　　　　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 [℃]	Input Voltage [V]	
	Load　50%	Load　100%
−30	43	53
−20	42	53
−10	42	53
0	41	53
10	41	53
25	41	52
30	40	51
40	40	52
55	40	53
60	40	53
—	—	—

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Model	VAF1003
Item	Time Lapse Drift 経時ドリフト
Object	＋3.3Ｖ2Ａ

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

[V]

Input Volt.   200V
Load   100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	3.315
0.5	3.313
1.0	3.313
2.0	3.313
3.0	3.313
4.0	3.313
5.0	3.313
6.0	3.313
7.0	3.313
8.0	3.313

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Model	VAF1003	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry　　Figure A
Object	＋3.3V2A	

1. Output Voltage Accuracy

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

  Temperature　：　−10〜55 ℃

  Input Voltage：　170〜264 V

  Load Current　：　0〜2 A

＊ Output Voltage Accuracy = ±(Maximum of Output Voltage　−　Minimum of Output Voltage)／2

＊ Output Voltage Accuracy (Ration)　=　$\dfrac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}}$　×100

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

  周囲温度　　　　　−10〜55 ℃

  入力電圧　　　　　170〜264 V

  負荷電流　　　　　0〜2 A

＊ 定電圧精度(変動値)　=　±(出力電圧の最高値−出力電圧の最低値)／2

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

2. Values

Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration)[%]
Maximum Voltage	−10	170	0	3.321	±7	±0.3
Minimum Voltage	55	264	2	3.307		

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Figure A

$$\text{Leakage Current Value} \, [A] = \frac{\text{Effective Value of Voltmeter} \, 実効値電圧計値 \, [V]}{1\,K \, [\Omega]}$$

漏洩電流

Figure B(DENTORI)

$$\text{Leakage Current Value} \, [A] = \frac{\text{Effective Value of Voltmeter} \, 実効値電圧計値 \, [V]}{500 \, [\Omega]}$$
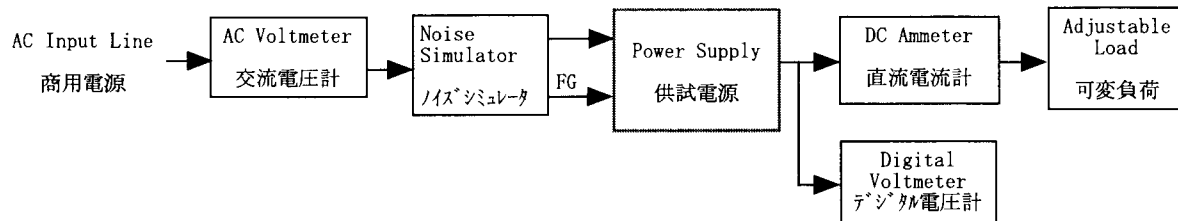
漏洩電流

Figure B(IEC60950)

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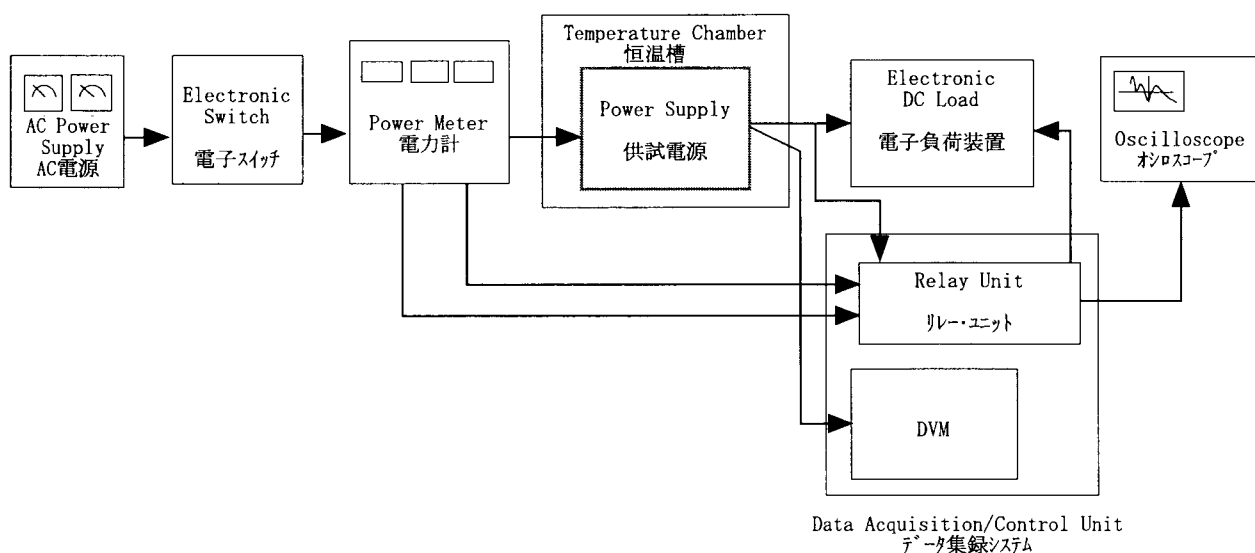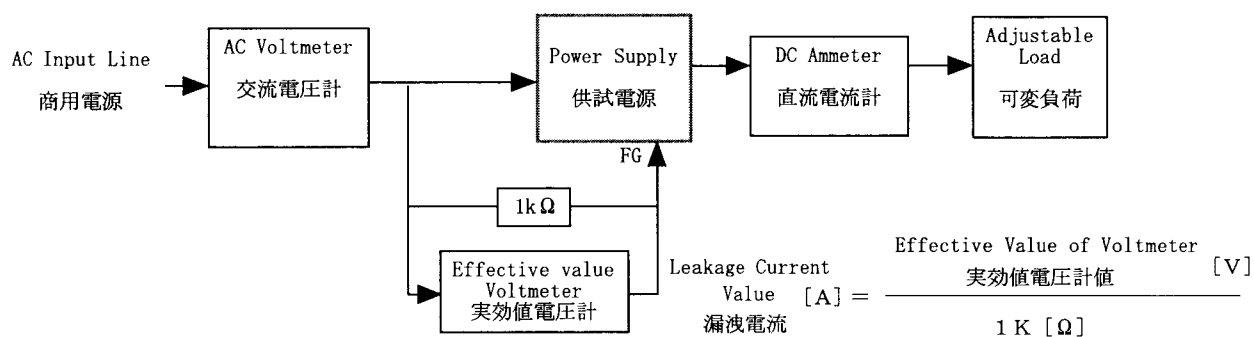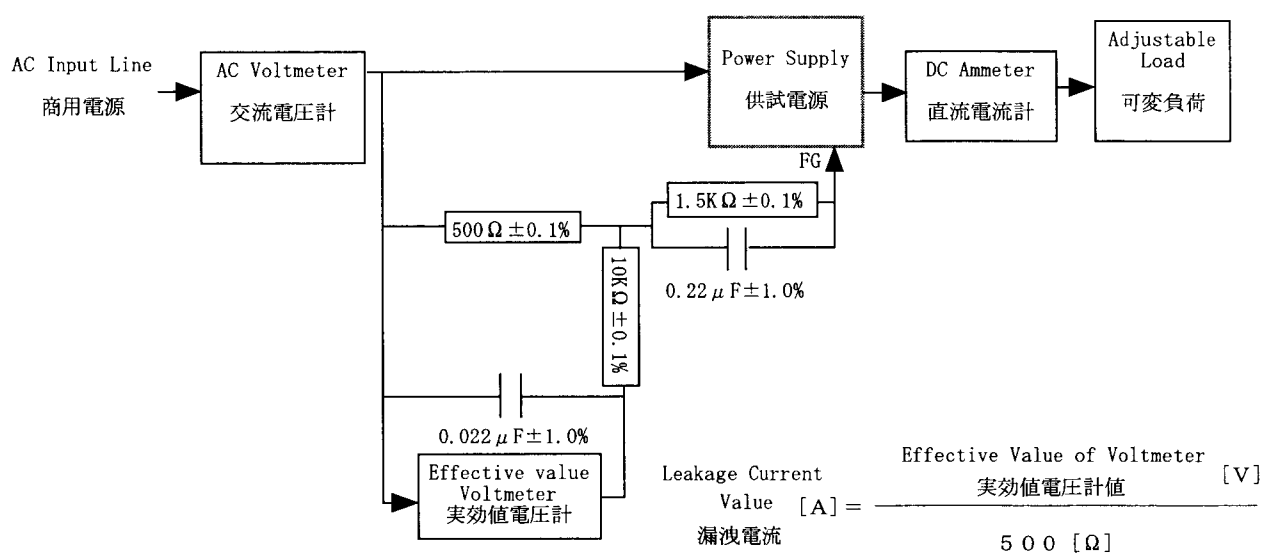
Figure C

Figure D

Figure E