参考資料

COSEL

TEST DATA OF ADA1000F

ADA1000F-36
(200V INPUT)

Regulated DC power supply
Mar. 19, 2003

Approved by : Kuniaki Nagahara
Kuniaki Nagahara Design Manager

Prepared by : Toshihisa Miura
Toshihisa Miura Design Engineer

INPUT : AC 170～264V

OUTPUT : V1: 36V 28A

コーセル株式会社
COSEL CO.,LTD.

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Item	Line Regulation 静的入力変動
Object	V1:+36V28A

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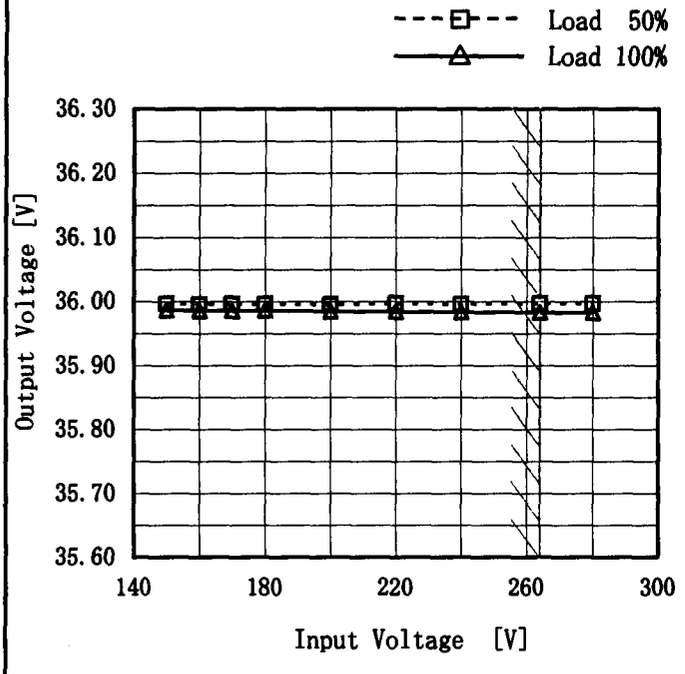
Testing Circuitry Figure A

1. Graph



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

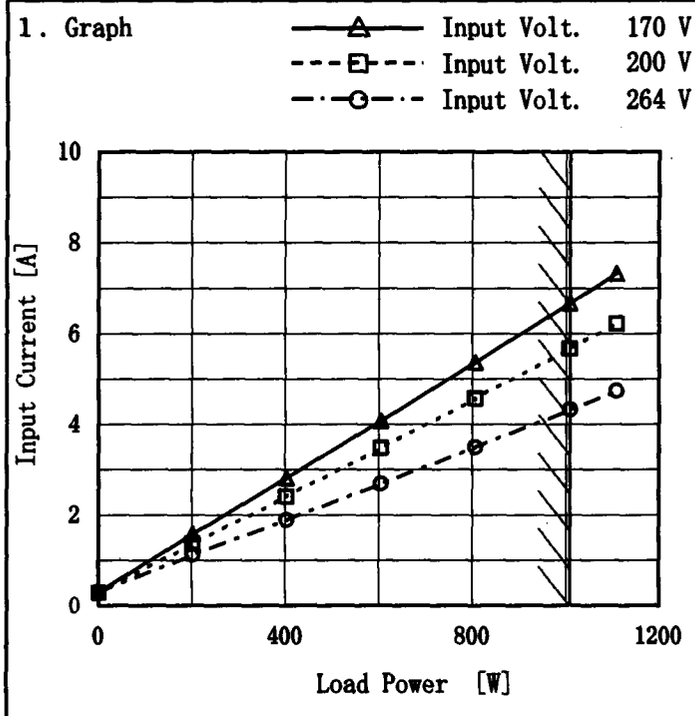
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
150	35.997	35.987
160	35.996	35.986
170	35.996	35.986
180	35.996	35.986
200	35.996	35.985
220	35.997	35.985
240	35.996	35.984
264	35.997	35.983
280	35.997	35.983

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Input Current (by Load Current) 入力電流（負荷電力特性）
Object	————————

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

（注）斜線は定格電力範囲を示す。

2. Values

Load Power [W]	Input Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	0.290	0.280	0.290
201.6	1.580	1.370	1.120
403.2	2.810	2.410	1.890
604.8	4.080	3.480	2.690
806.4	5.370	4.570	3.500
1008.0	6.670	5.670	4.330
1108.8	7.320	6.220	4.740
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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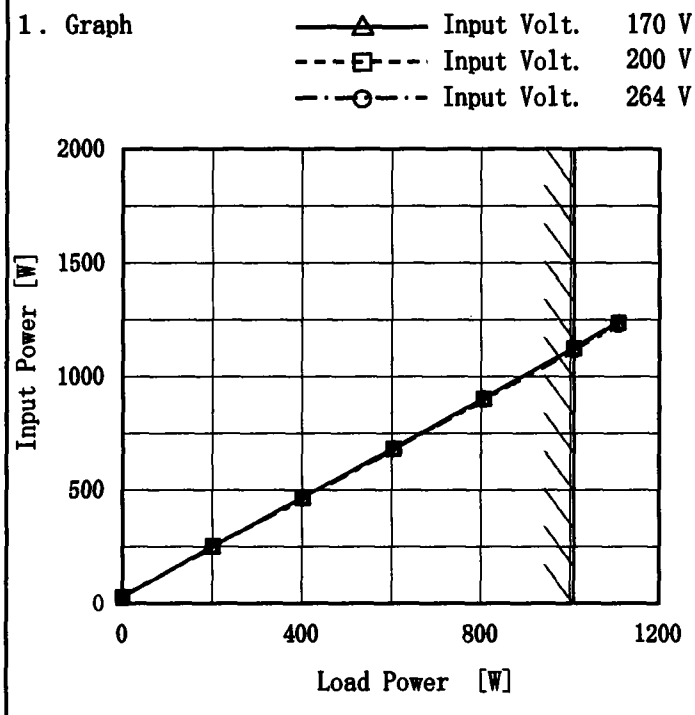
COSEL

Model	ADA1000F (ADA1000F-36)
Item	Input Power (by Load Power) 入力電力 (負荷電力特性)
Object	————————

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

(注) 斜線は定格電力範囲を示す。

2. Values

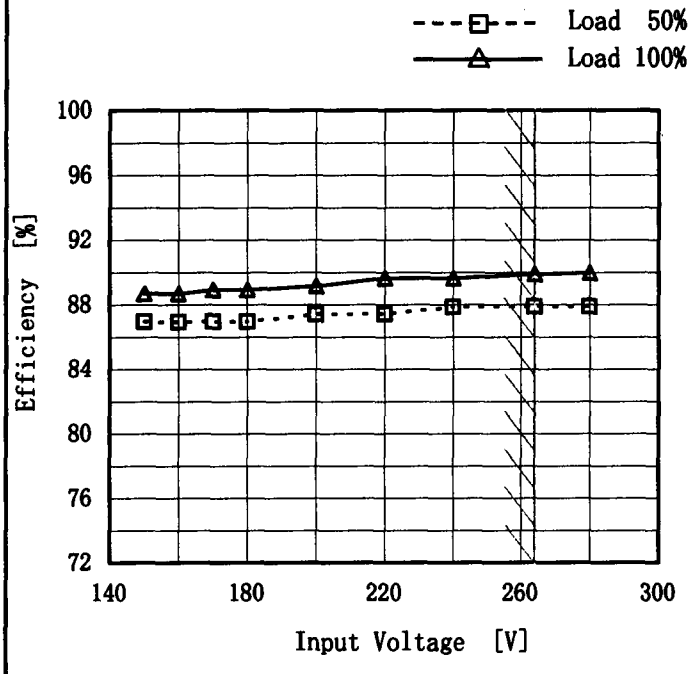
Load Power [W]	Input Power [W]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	27	27	27
201.6	252	252	249
403.2	468	465	462
604.8	684	681	678
806.4	906	901	897
1008.0	1128	1125	1116
1108.8	1240	1235	1227
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Efficiency (by Input Voltage) 効率 (入力電圧特性)
Object	———————————

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

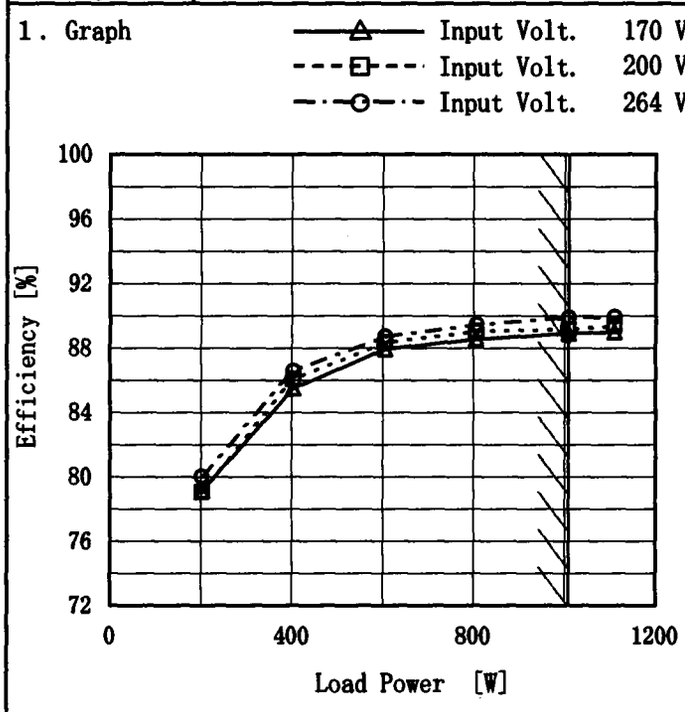
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
150	87.0	88.7
160	86.9	88.7
170	87.0	88.9
180	87.0	88.9
200	87.4	89.2
220	87.4	89.6
240	87.9	89.6
264	87.9	89.9
280	87.9	90.0

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Efficiency (by Load Power) 効率 (負荷電力特性)
Object	————————

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

(注) 斜線は定格電力範囲を示す。

2. Values

Load Power [W]	Efficiency [%]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
201.6	79.1	79.1	80.0
403.2	85.5	86.1	86.6
604.8	88.0	88.4	88.7
806.4	88.6	89.1	89.5
1008.0	88.9	89.2	89.9
1108.8	89.0	89.4	90.0
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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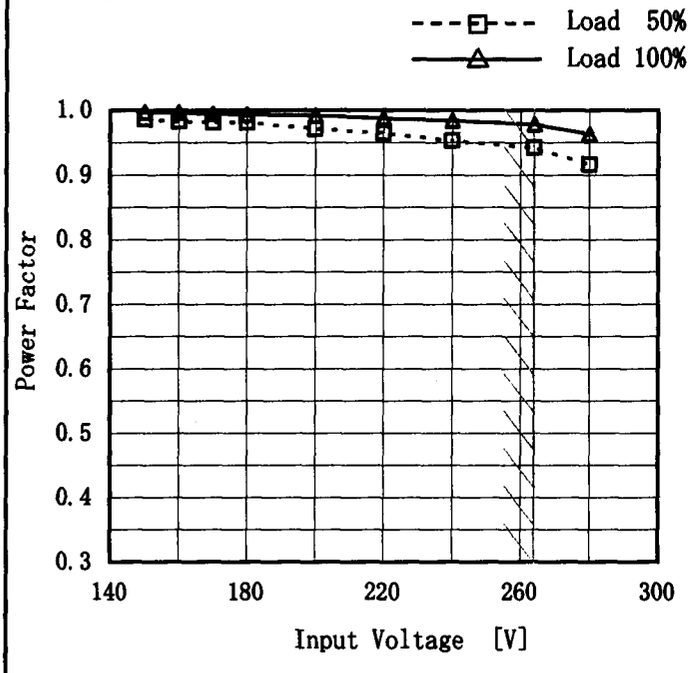
Model	ADA1000F (ADA1000F-36)
Item	Power Factor (by Input Voltage) 力率 (入力電圧特性)
Object	————————

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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	0.986	0.996
160	0.983	0.996
170	0.981	0.995
180	0.981	0.994
200	0.971	0.992
220	0.965	0.988
240	0.953	0.984
264	0.942	0.978
280	0.916	0.963

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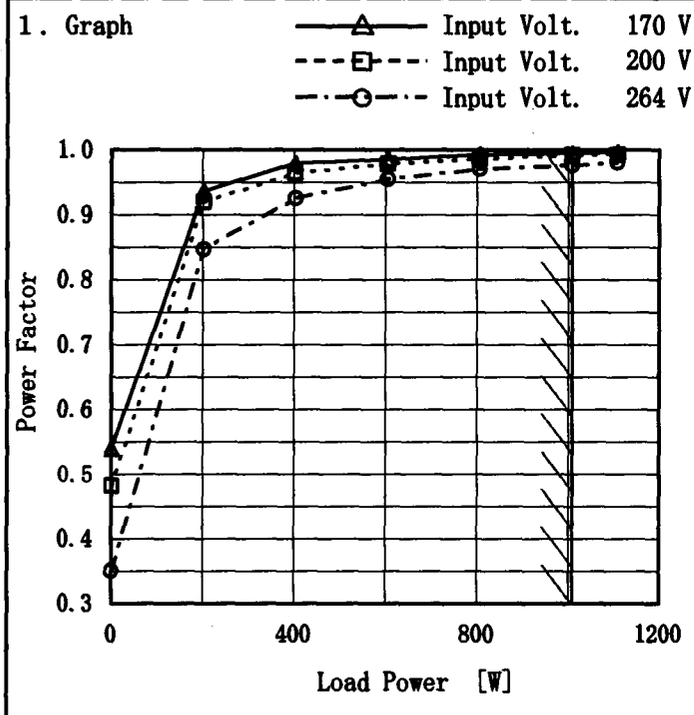
Model	ADA1000F (ADA1000F-36)
Item	Power Factor (by Load Power) 力率（負荷電力特性）
Object	————————

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

（注）斜線は定格電力範囲を示す。

2. Values

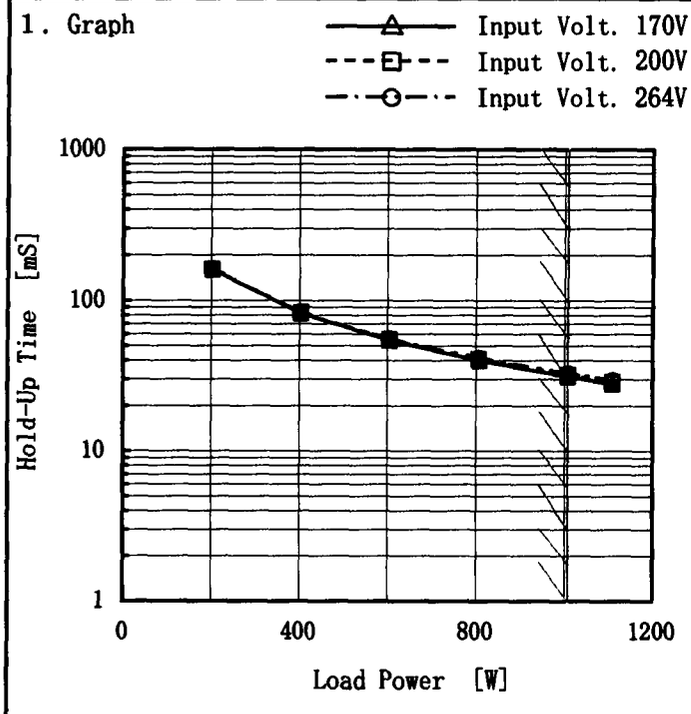
Load Power [W]	Power Factor		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	0.540	0.482	0.351
201.6	0.937	0.920	0.847
403.2	0.979	0.965	0.926
604.8	0.986	0.978	0.955
806.4	0.992	0.986	0.971
1008.0	0.995	0.992	0.976
1108.8	0.996	0.993	0.981
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Hold-Up Time (by Load Power) 出力保持時間（負荷電力特性）
Object	――――――――――

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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 power.

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範囲を保持しているところまでの時間。
（注）斜線は定格電力範囲を示す。

2. Values

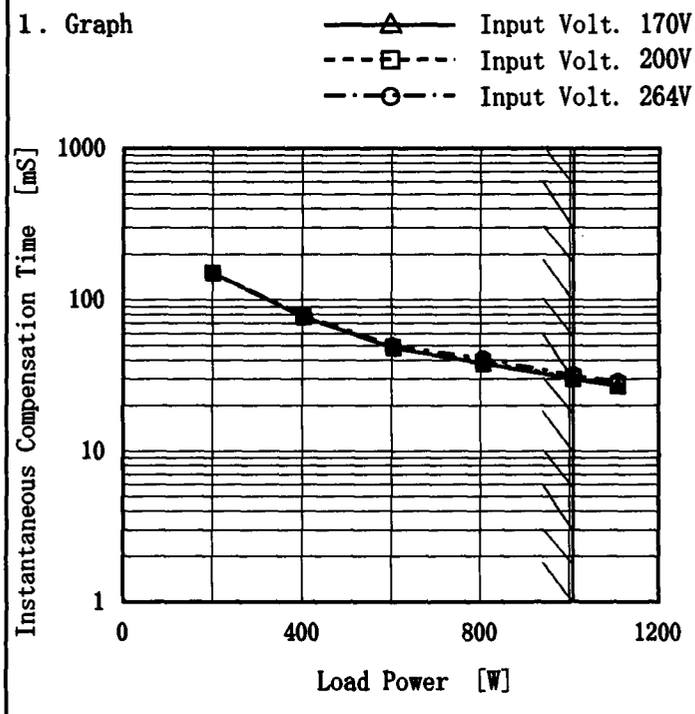
Load Power [W]	Hold-Up Time [mS]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
201.6	160	161	162
403.2	82	83	84
604.8	54	55	56
806.4	40	41	42
1008.0	31	32	33
1108.8	28	29	30
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Instantaneous Interruption Compensation (by Load Power) 瞬時停電保障（負荷電力特性）
Object	――――――――――

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

（注）斜線は定格電力範囲を示す。

2. Values

Load Power [W]	Time [mS] Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
201.6	150	151	152
403.2	77	78	80
604.8	48	49	50
806.4	38	39	41
1008.0	30	31	32
1108.8	27	28	29
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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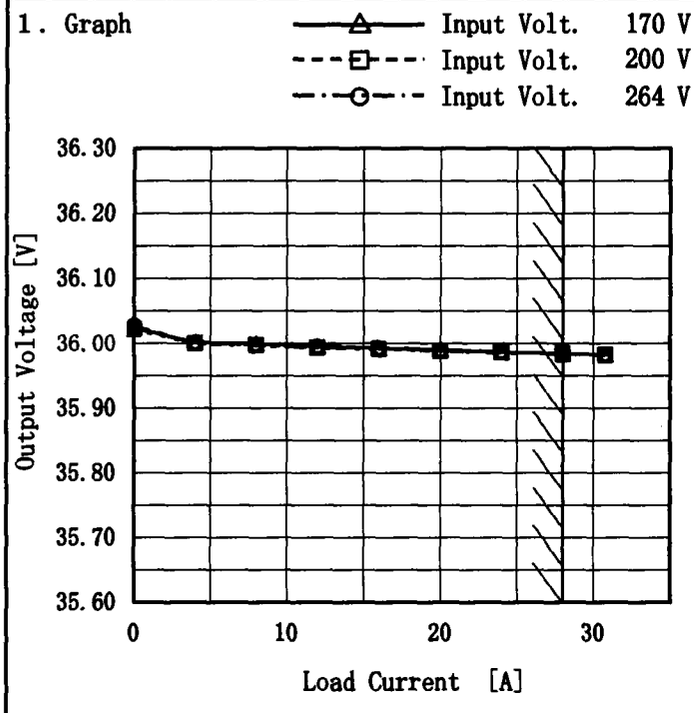
Model	ADA1000F (ADA1000F-36)
Item	Load Regulation 静的負荷変動
Object	V1:+36V28A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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	36.023	36.022	36.027
4.0	36.001	36.000	36.001
8.0	35.999	35.997	35.998
12.0	35.996	35.993	35.994
16.0	35.993	35.991	35.993
20.0	35.990	35.988	35.989
24.0	35.987	35.987	35.986
28.0	35.984	35.985	35.985
30.8	35.982	35.982	35.982
—	—	—	—
—	—	—	—

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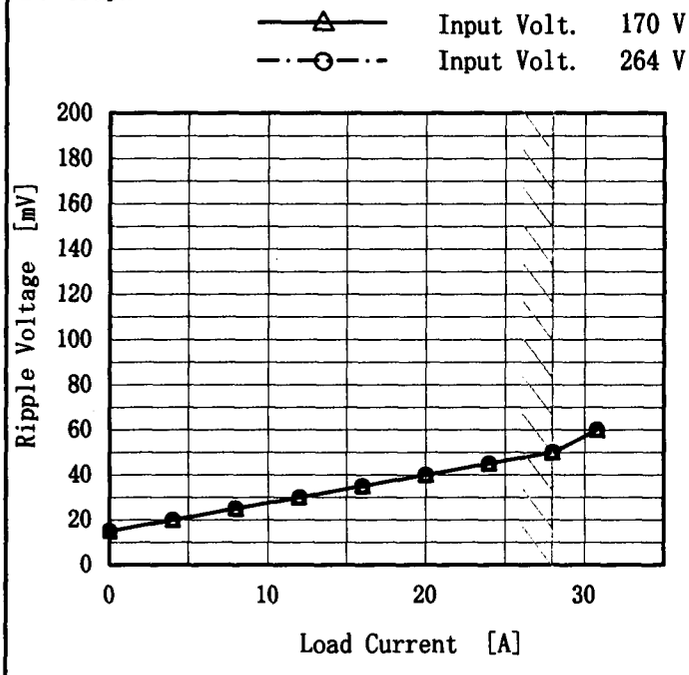
Model	ADA1000F (ADA1000F-36)
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷特性)
Object	V1:+36V28A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップル電圧は、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
ｽｲｯﾁﾝｸﾞ周期

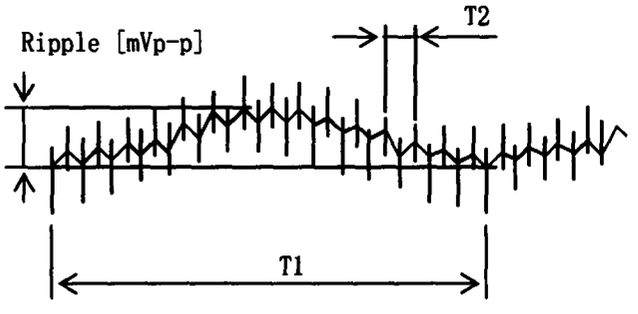


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

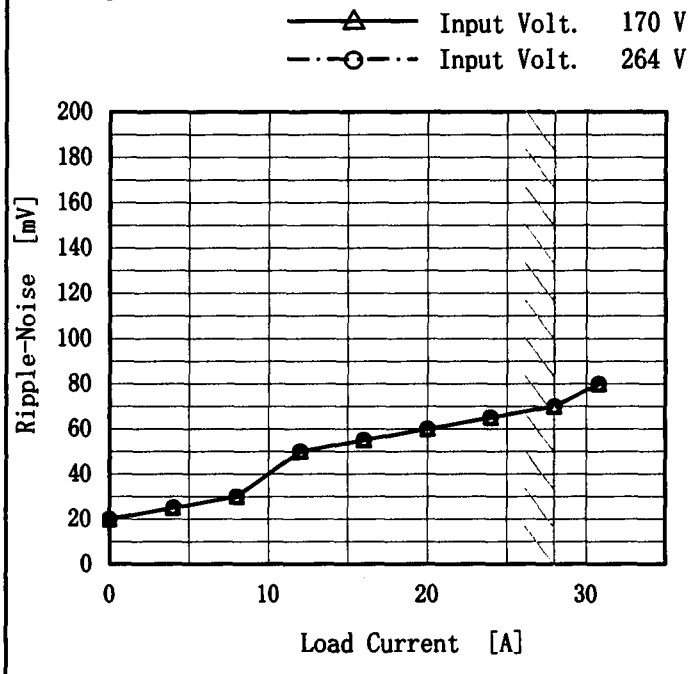
Load Current [A]	Ripple Output Voltage [mV]	
	Input Volt. 170[V]	Input Volt. 264[V]
0.0	15	15
4.0	20	20
8.0	25	25
12.0	30	30
16.0	35	35
20.0	40	40
24.0	45	45
28.0	50	50
30.8	60	60
—	—	—
—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Ripple-Noise リップルノイズ
Object	V1:+36V28A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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
ｽｲｯﾁﾝｸﾞ周期

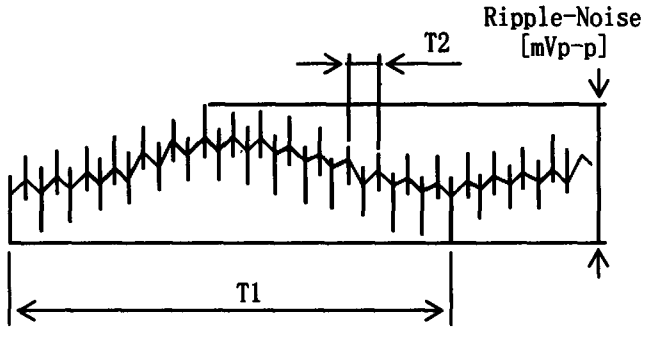


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

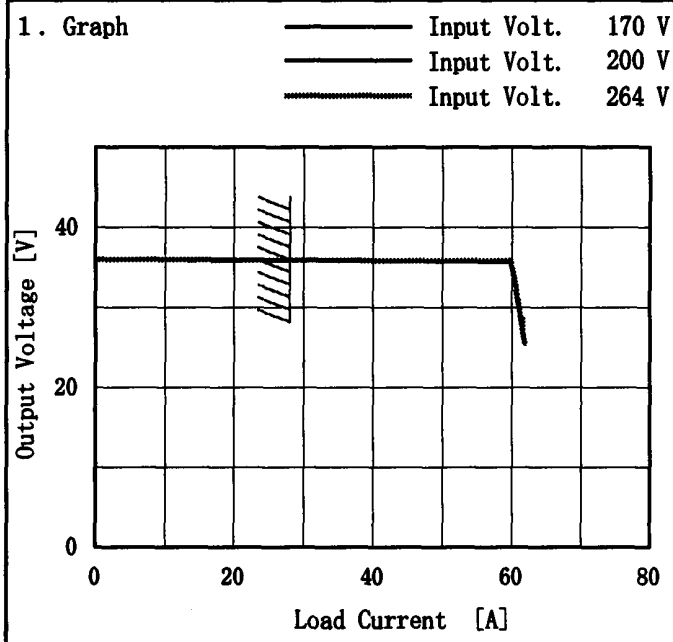
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 170[V]	Input Volt. 264[V]
0.0	20	20
4.0	25	25
8.0	30	30
12.0	50	50
16.0	55	55
20.0	60	60
24.0	65	65
28.0	70	70
30.8	80	80
—	—	—
—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Overcurrent Protection 過電流保護
Object	V1:+36V28A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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。

Intermittent operation occurs when the output voltage is from 25.2V to 0V.
25.2V～0V間は、間欠モードとなる。

2. Values

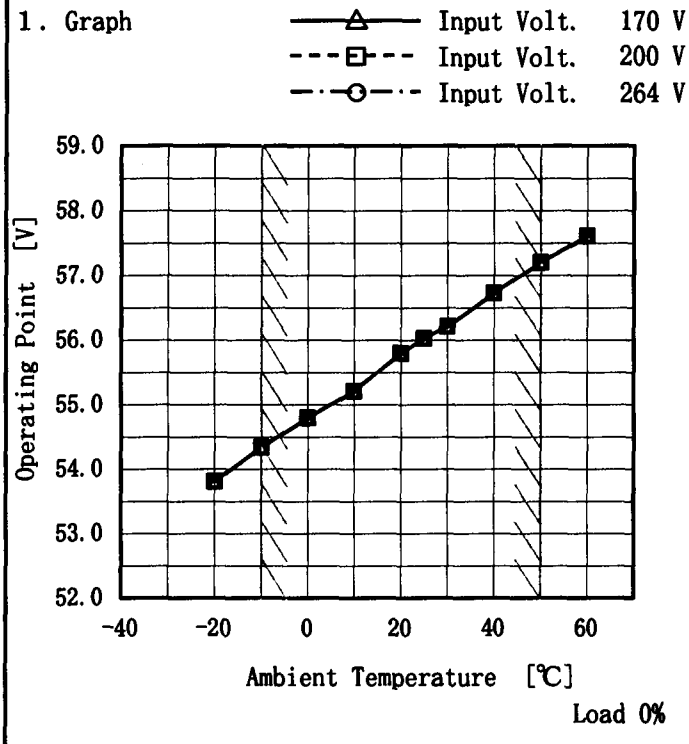
Output Voltage [V]	Load Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
36.0	59.72	59.77	59.85
34.2	60.07	60.13	60.21
32.4	60.52	60.59	60.59
28.8	61.22	61.19	61.22
25.2	61.80	61.86	61.93
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Overvoltage Protection 過電圧保護
Object	V1:+36V28A

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。

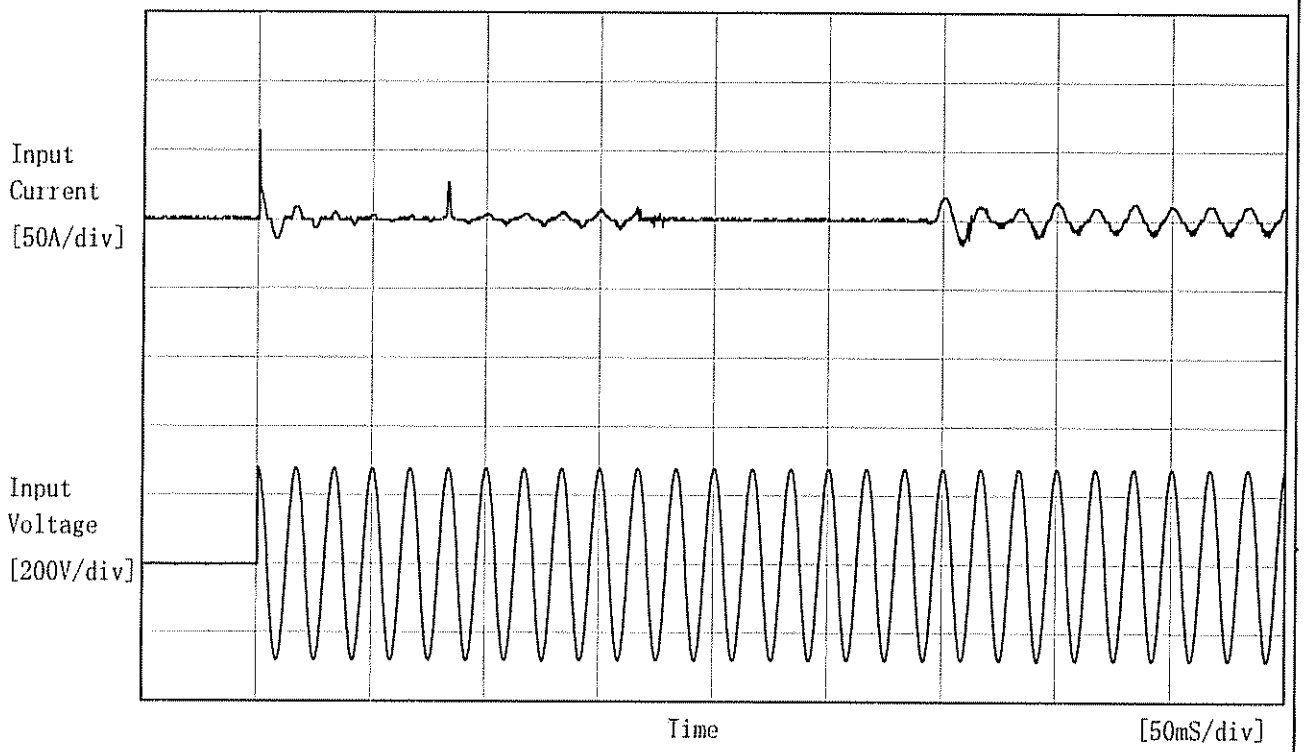
2. Values

Ambient Temperature [℃]	Operating Point [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	53.81	53.81	53.81
-10	54.34	54.34	54.34
0	54.80	54.80	54.80
10	55.21	55.21	55.21
20	55.80	55.80	55.80
25	56.03	56.03	56.03
30	56.21	56.21	56.21
40	56.73	56.73	56.73
50	57.20	57.20	57.20
60	57.61	57.61	57.61
—	—	—	—

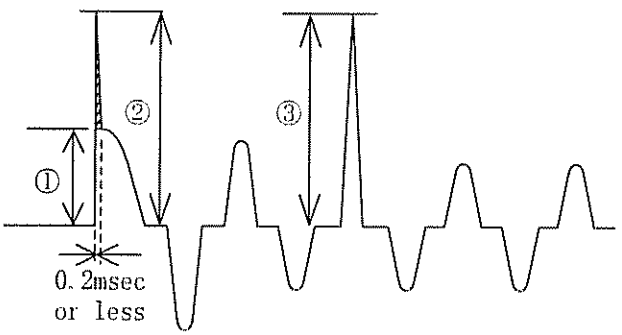
COSEL

Model	ADA1000F (ADA1000F-36)
Item	Inrush Current 突入電流
Object	――――――

Temperature 25℃
Testing Circuitry Figure A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %
Inrush Current
① 25.5 [A]
② 64.4 [A] (0.2msec or less)*1
③ 27.0 [A]



*1 The specification of the inrush current (primary surge) means that the surge current to a built-in noise filter (0.2msec or less : waveform ②) is excluded.

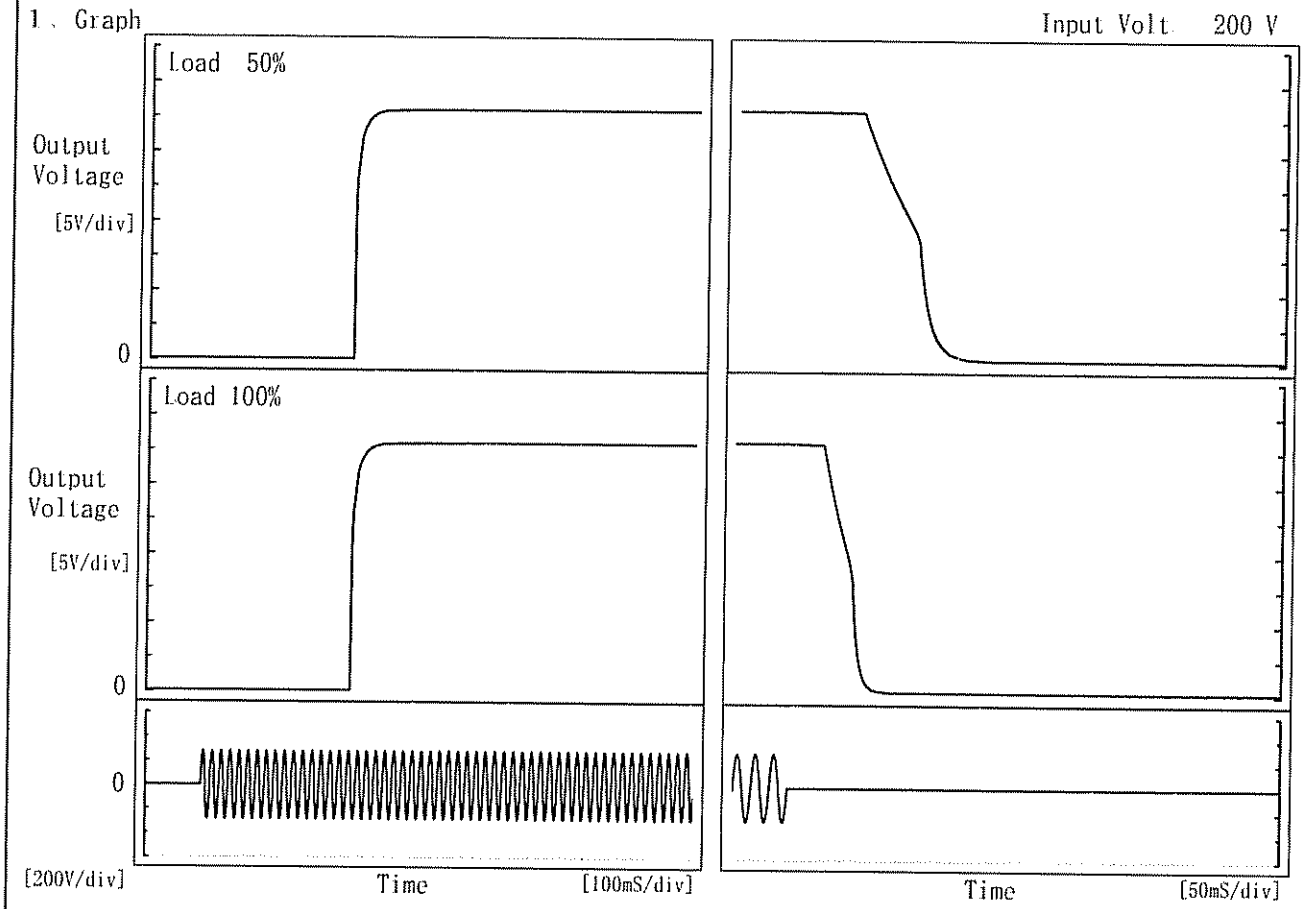
本製品の突入電流(1次ｻｰｼﾞ)の仕様は、内蔵ﾉｲｽﾞﾌｨﾙﾀ部への
ｻｰｼﾞ電流(0.2msec以下:波形②)を除きます。

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Rise and Fall Time 立上り、立下り時間
Object	V1:+36V28A

Temperature 25℃
Testing Circuitry Figure A

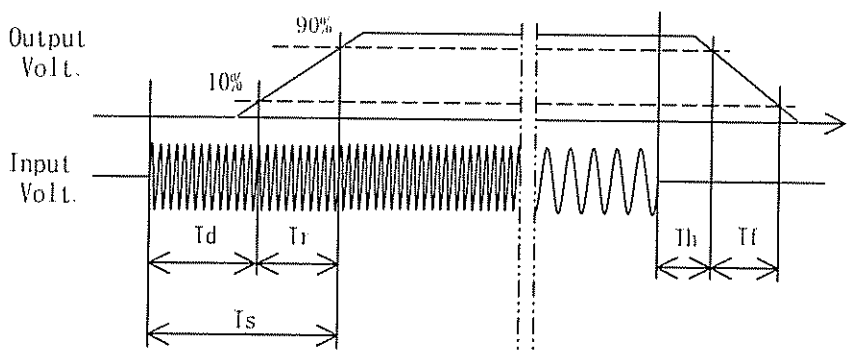
1. Graph



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	273.0	14.0	287.0	72.0	59.3
100 %	272.5	14.0	286.5	35.0	31.0

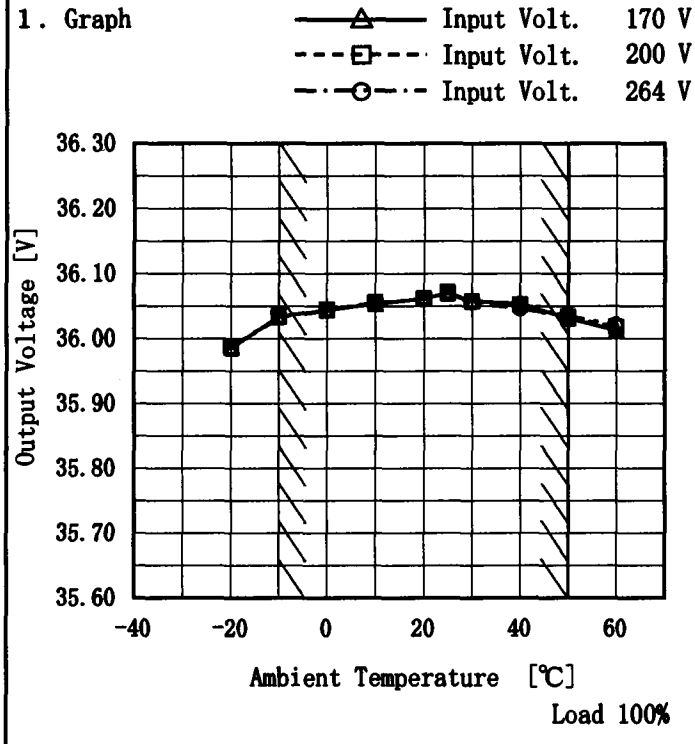


COSEL

Model	ADA1000F (ADA1000F-36)
Item	Ambient Temperature Drift 周囲温度変動
Object	V1:+36V28A

Testing Circuitry Figure A

1. Graph



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

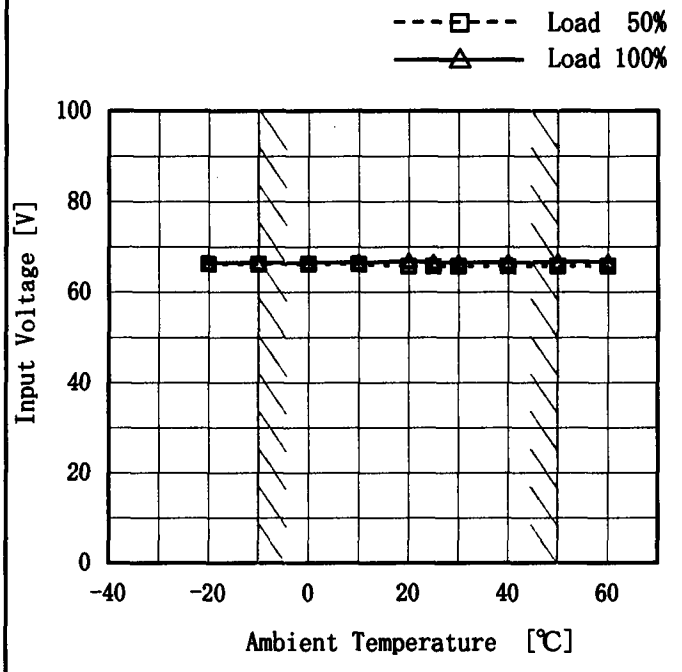
Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	35.986	35.986	35.986
-10	36.034	36.035	36.033
0	36.044	36.045	36.044
10	36.054	36.056	36.056
20	36.062	36.062	36.062
25	36.070	36.071	36.071
30	36.058	36.057	36.056
40	36.054	36.052	36.047
50	36.032	36.034	36.035
60	36.013	36.019	36.021
—	—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	V1:+36V28A

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

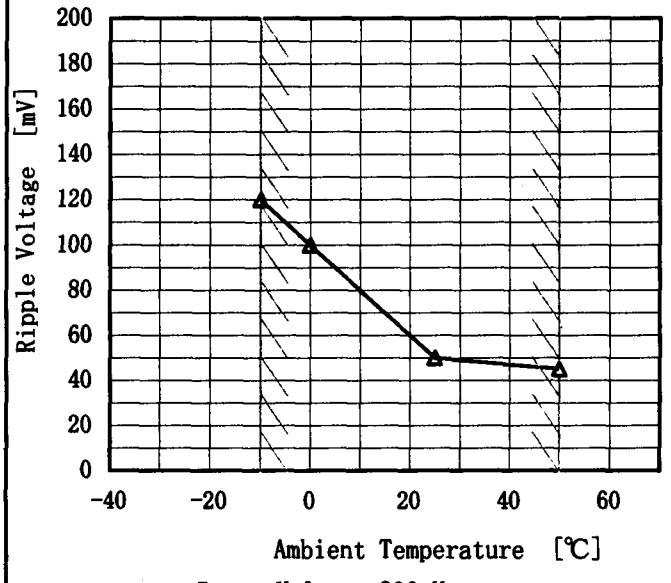
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	66	67
-10	66	67
0	66	67
10	66	67
20	66	67
25	66	67
30	66	67
40	66	67
50	66	67
60	66	67
—	—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	V1:+36V28A

Testing Circuitry Figure A

1. Graph



Input Volt. 200 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

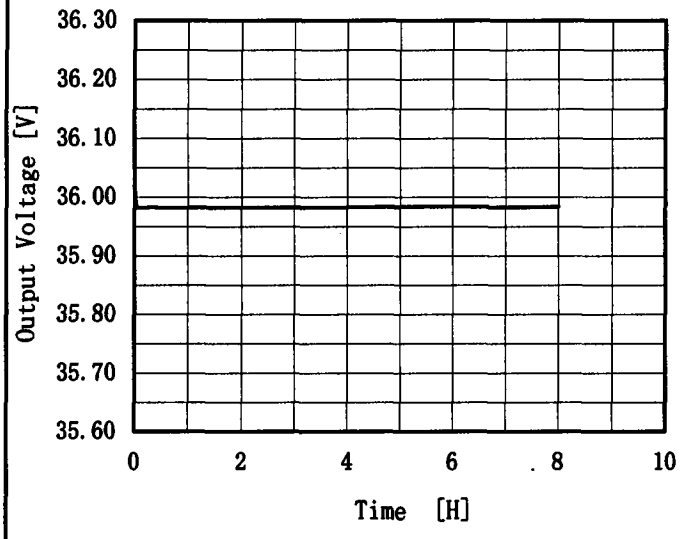
Ambient Temperature [℃]	Ripple Voltage [mV]
-10	120
0	100
25	50
50	45
—	—
—	—
—	—
—	—
—	—
—	—
—	—

COSEL

Model	ADA1000F (ADA1000F-36)
Item	Time Lapse Drift 経時ドリフト
Object	V1:+36V28A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Input Volt. 200V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	36.015
0.5	35.982
1.0	35.982
2.0	35.982
3.0	35.982
4.0	35.983
5.0	35.984
6.0	35.984
7.0	35.983
8.0	35.984

COSEL

Model	ADA1000F (ADA1000F-36)	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A
Object	V1:+36V28A	

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 ～ 50℃
Input Voltage : 170 ～ 264V
Load Current : 0 ～ 28A

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

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

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 ～ 50℃
入力電圧 : 170 ～ 264V
負荷電流 : 0 ～ 28A

* 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

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

2. Values

Item	Temperature [℃]	Input Voltage [V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	170	0	36.104	±46	±0.1
Minimum Voltage	50	170	28	36.013		

COSEL

Model	ADA1000F (ADA1000F-36)		
Item	Leakage Current 漏洩電流	Temperature Testing Circuitry	25℃ Figure B
Object	――――――――――		

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DEN-AN	―	―	―
(B) IEC60950	―	―	―

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 240 [V]	Input Volt. 264 [V]
(B) IEC60950	0.32	0.46	0.51

2. Condition

Leakage current value is concluded after measuring each phases of AC input and by choosing the larger one.

交流入力の各相について測定し、その大きい方を漏洩電流測定値とする。

COSEL

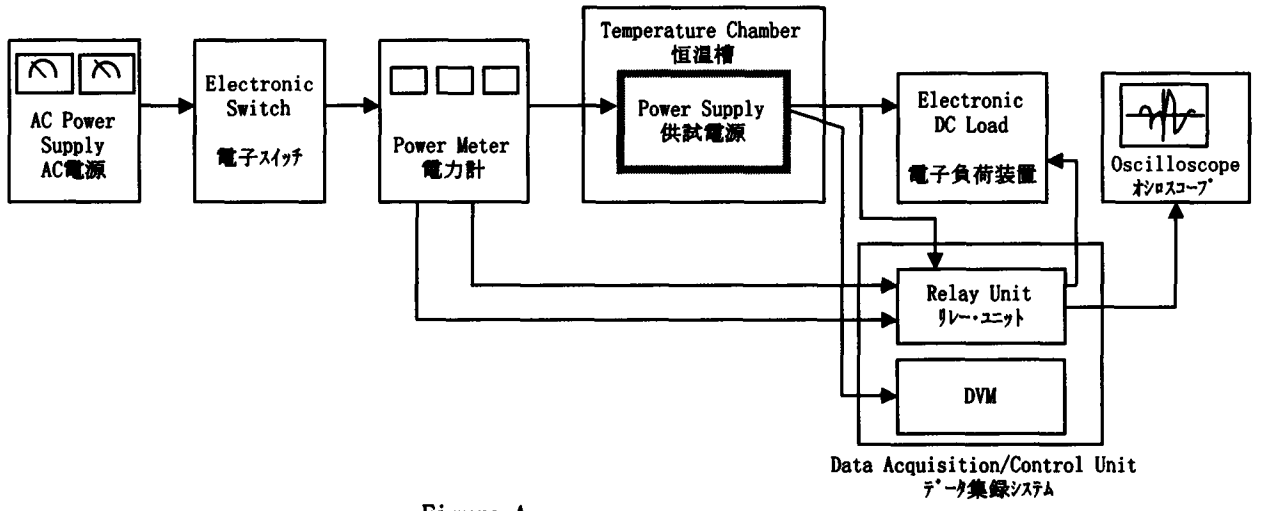


Figure A

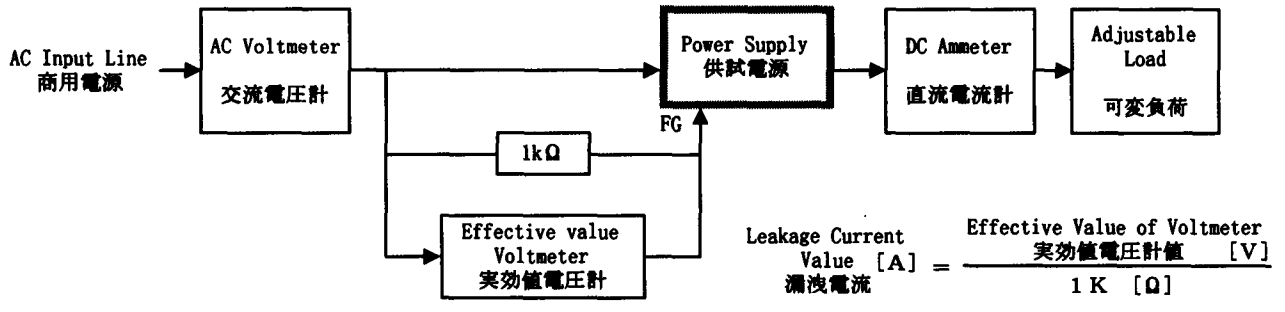


Figure B (DEN-AN)

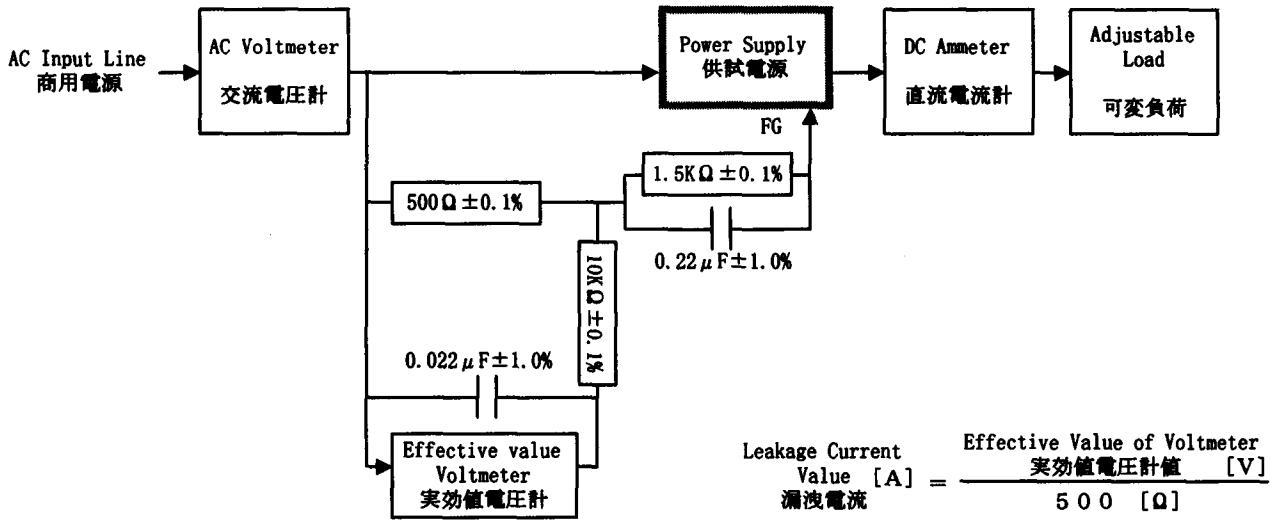


Figure B (IEC60950)