参考資料

COSEL

TEST DATA OF ADA600F

ADA600F-24
(200V INPUT)

Regulated DC power supply
Jan. 23, 2003

Approved by : Kuniaki Nagahara
Kuniaki Nagahara Design Manager

Prepared by : Koji Todo
Koji Todo Design Engineer

INPUT : AC 170～264V

OUTPUT : V1: 24V 25A

コーセル株式会社
COSEL CO.,LTD.

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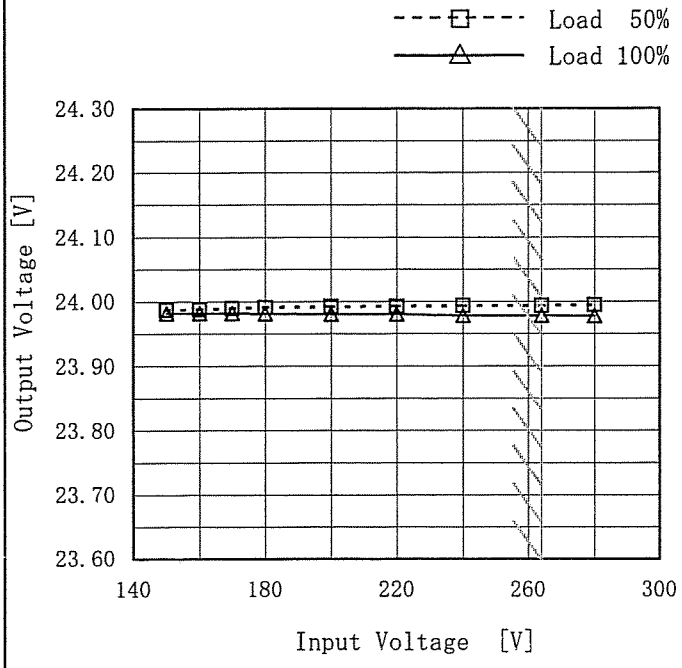
Model	ADA600F (ADA600F-24)
Item	Line Regulation 静的入力変動
Object	V1:+24V25A

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

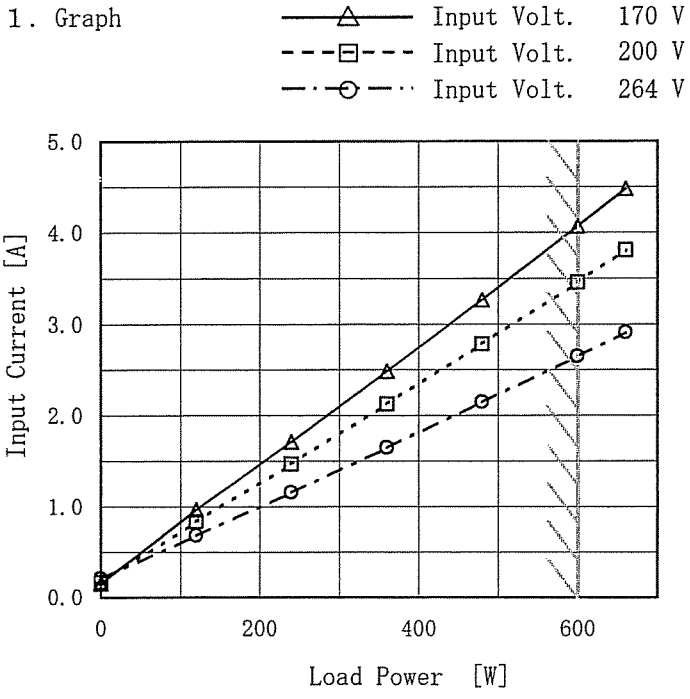
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
150	23.987	23.982
160	23.988	23.982
170	23.990	23.982
180	23.991	23.981
200	23.992	23.981
220	23.993	23.980
240	23.994	23.978
264	23.994	23.979
280	23.995	23.977

COSEL

Model	ADA600F (ADA600F-24)
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	0.151	0.168	0.210
120	0.965	0.836	0.682
240	1.714	1.473	1.158
360	2.484	2.125	1.649
480	3.267	2.783	2.146
600	4.070	3.458	2.649
660	4.480	3.810	2.908
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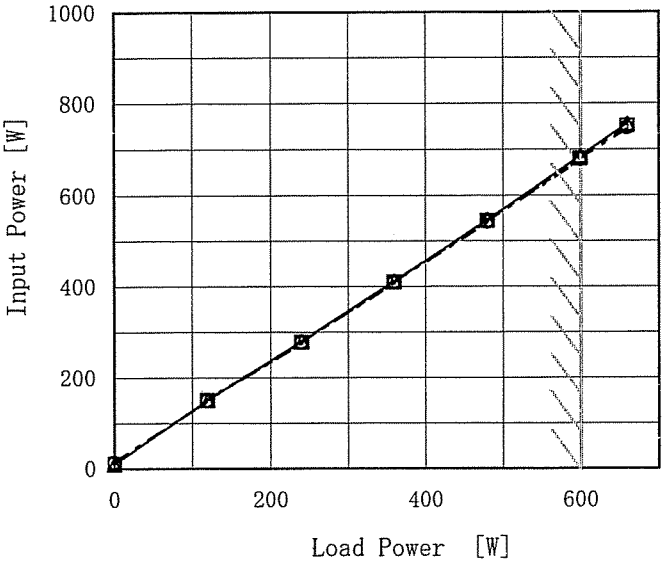
COSEL

Model	ADA600F (ADA600F-24)
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

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



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

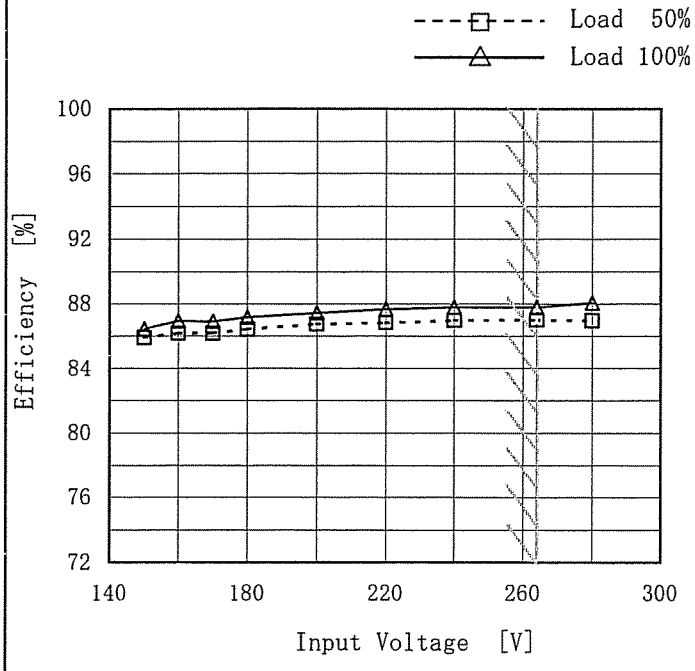
Load Power [W]	Input Power [W]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	9.6	10.4	12.9
120	150.2	149.8	149.3
240	280.0	277.9	276.9
360	412.0	410.0	409.0
480	546.0	544.0	541.0
600	685.0	680.0	677.0
660	755.0	751.0	746.0
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

COSEL

Model	ADA600F (ADA600F-24)
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

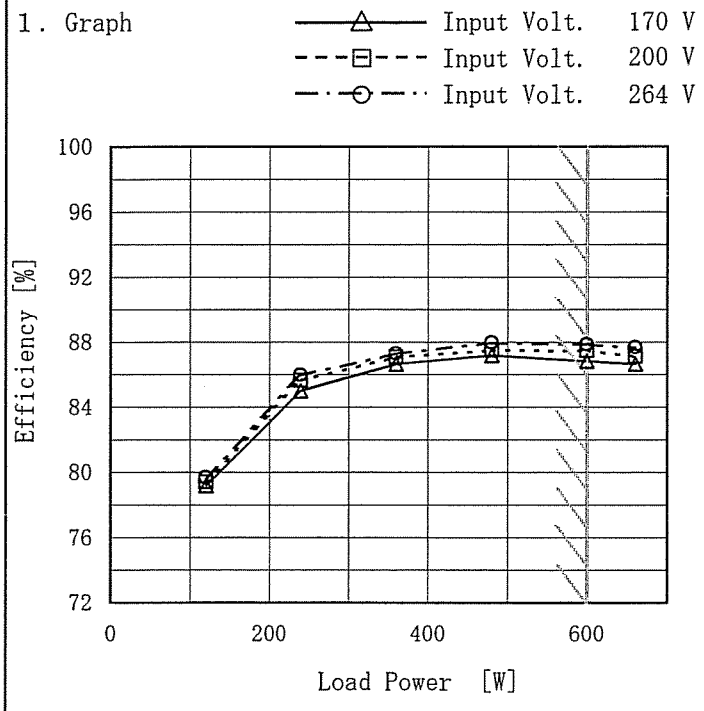
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
150	85.9	86.4
160	86.2	86.9
170	86.2	86.9
180	86.4	87.2
200	86.7	87.4
220	86.8	87.7
240	87.0	87.8
264	87.0	87.8
280	87.0	88.1

COSEL

Model	ADA600F (ADA600F-24)
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

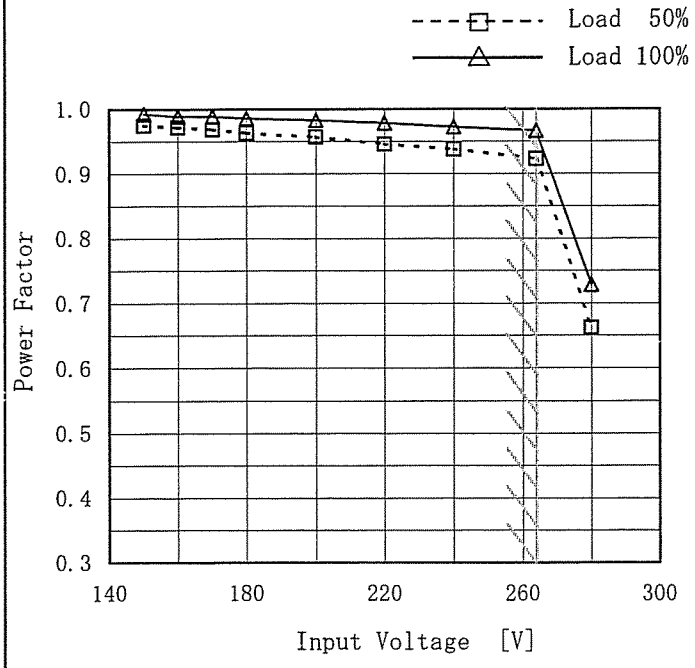
Load Power [W]	Efficiency [%]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	—	—	—
120	79.2	79.4	79.7
240	85.0	85.6	86.0
360	86.6	87.1	87.3
480	87.2	87.5	88.0
600	86.8	87.5	87.9
660	86.6	87.1	87.7
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

COSEL

Model	ADA600F (ADA600F-24)
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	0.975	0.993
160	0.972	0.988
170	0.969	0.988
180	0.964	0.986
200	0.957	0.983
220	0.946	0.978
240	0.938	0.973
264	0.924	0.967
280	0.663	0.729

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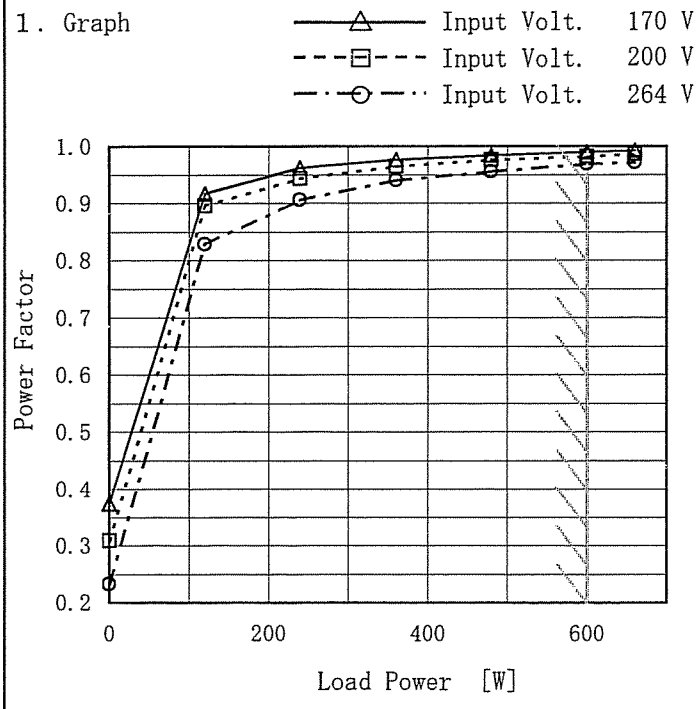
Model	ADA600F (ADA600F-24)
Item	Power Factor (by Load Power) 力率 (負荷電力特性)
Object	――――――

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

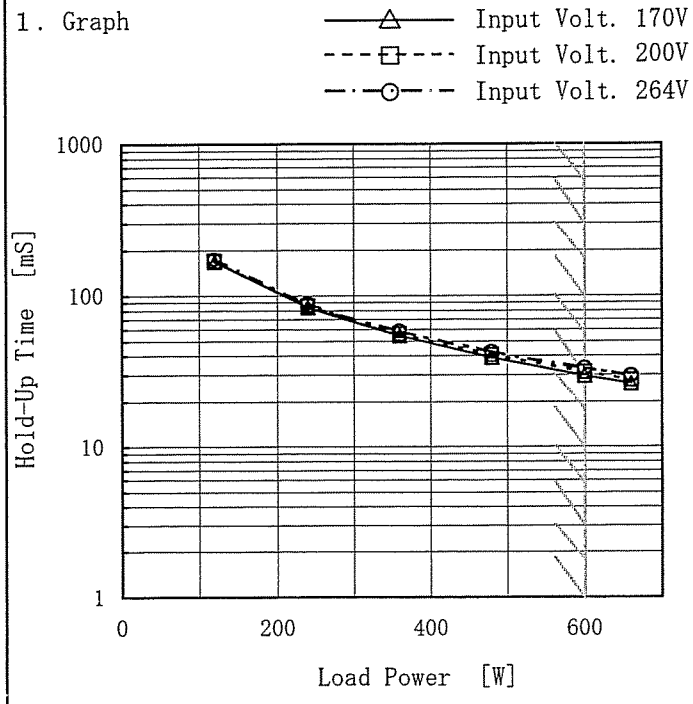
Load Power [W]	Power Factor		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	0.374	0.310	0.233
120	0.916	0.896	0.829
240	0.962	0.944	0.905
360	0.976	0.965	0.940
480	0.984	0.977	0.956
600	0.990	0.983	0.969
660	0.992	0.987	0.971
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ADA600F (ADA600F-24)
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	—	—	—
120	167	170	174
240	84	86	89
360	54	56	58
480	39	41	43
600	30	31	33
660	26	28	30
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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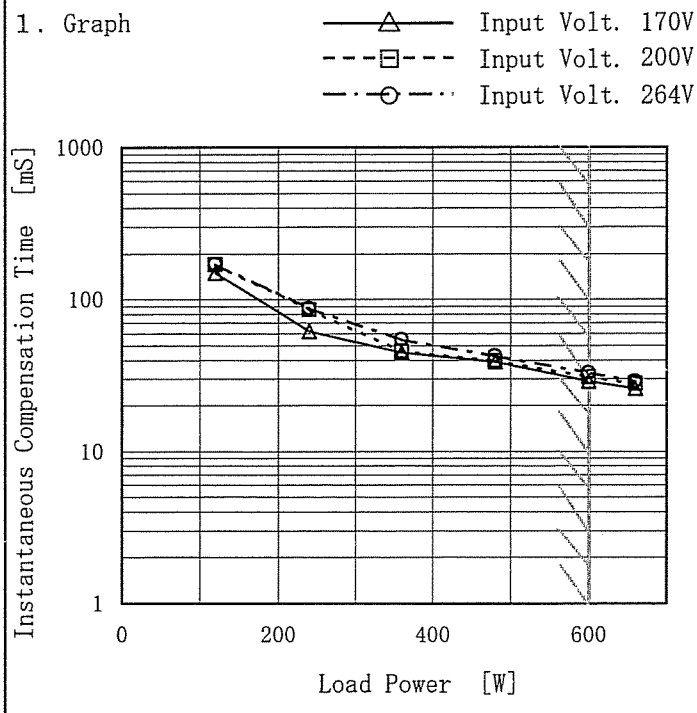
Model	ADA600F (ADA600F-24)
Item	Instantaneous Interruption Compensation (by Load Power) 瞬時停電保障（負荷電力特性）
Object	――――――――――

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	—	—	—
120	149	170	172
240	62	86	88
360	45	46	55
480	39	40	43
600	29	31	33
660	26	28	29
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

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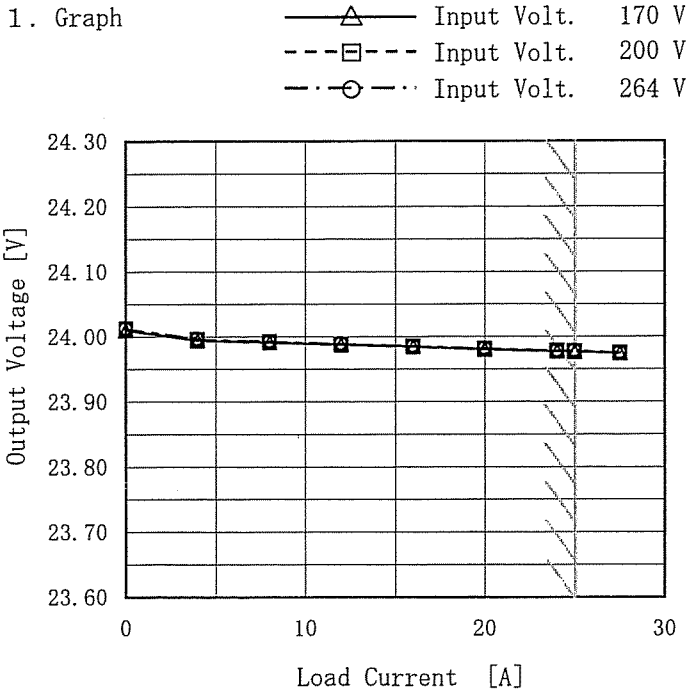
Model	ADA600F (ADA600F-24)
Item	Load Regulation 静的負荷変動
Object	V1:+24V25A

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

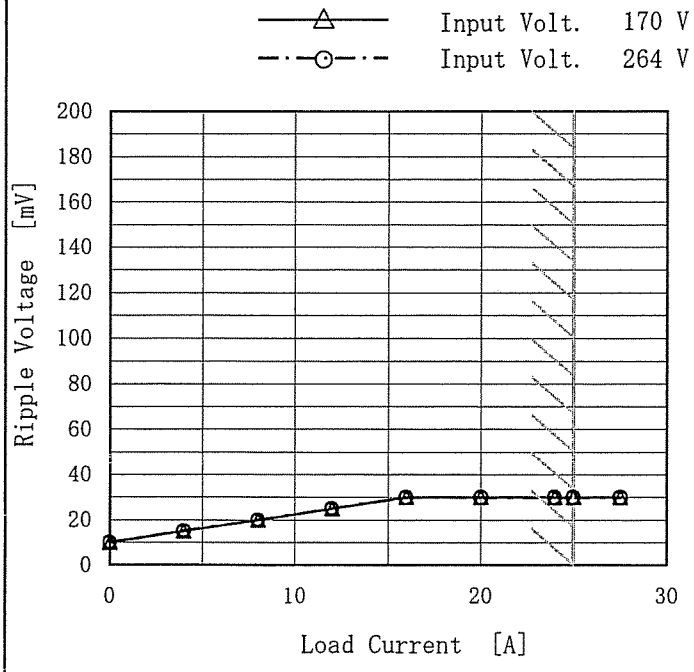
Load Current [A]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	24.010	24.013	24.013
4.0	23.994	23.996	23.996
8.0	23.991	23.993	23.993
12.0	23.988	23.988	23.989
16.0	23.984	23.985	23.986
20.0	23.981	23.981	23.982
24.0	23.977	23.978	23.978
25.0	23.976	23.977	23.978
27.5	23.974	23.975	23.975
—	—	—	—
—	—	—	—

COSEL

Model	ADA600F (ADA600F-24)
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷特性)
Object	V1:+24V25A

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

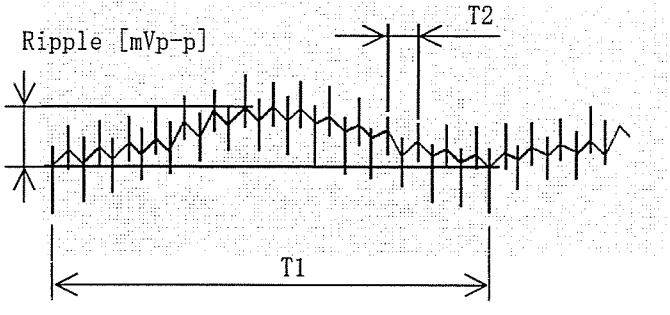


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

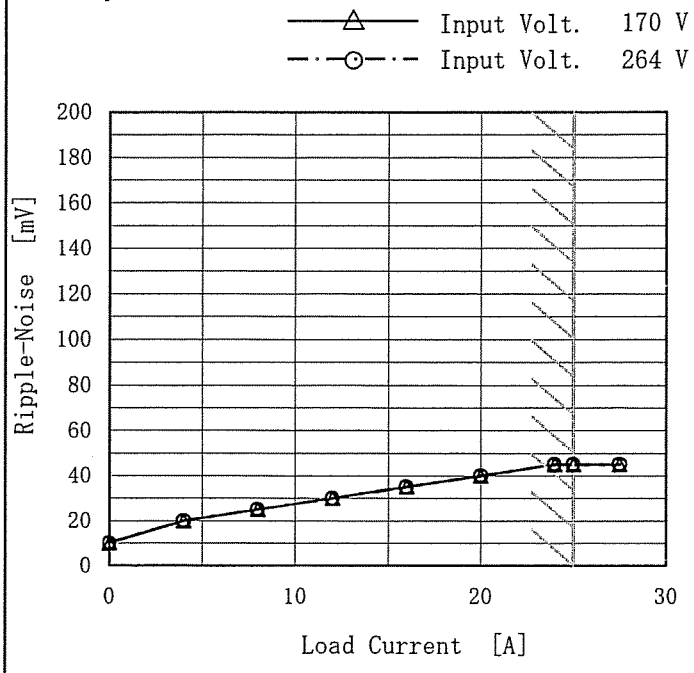
Load Current [A]	Ripple Output Voltage [mV]	
	Input Volt. 170[V]	Input Volt. 264[V]
0.0	10	10
4.0	15	15
8.0	20	20
12.0	25	25
16.0	30	30
20.0	30	30
24.0	30	30
25.0	30	30
27.5	30	30
—	—	—
—	—	—

COSEL

Model	ADA600F (ADA600F-24)
Item	Ripple-Noise リップルノイズ
Object	V1:+24V25A

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

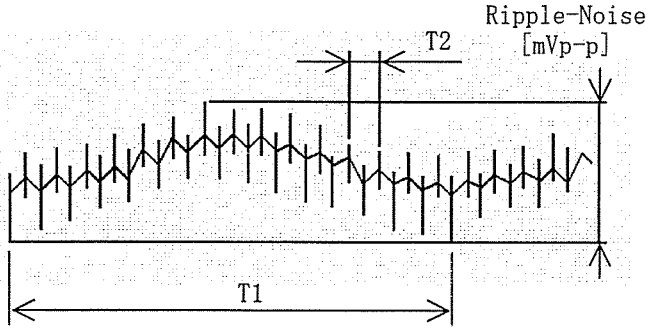


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 170[V]	Input Volt. 264[V]
0.0	10	10
4.0	20	20
8.0	25	25
12.0	30	30
16.0	35	35
20.0	40	40
24.0	45	45
25.0	45	45
27.5	45	45
--	—	—
--	—	—

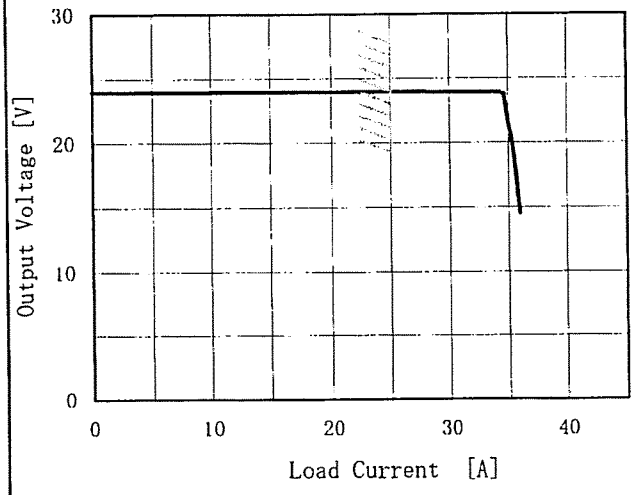
COSEL

Model	ADA600F (ADA600F-24)
Item	Overcurrent Protection 過電流保護
Object	V1:+24V25A

Temperature 25℃
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 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 14.4V to 0V.
14.4V～0V間は、間欠モードとなる。

2. Values

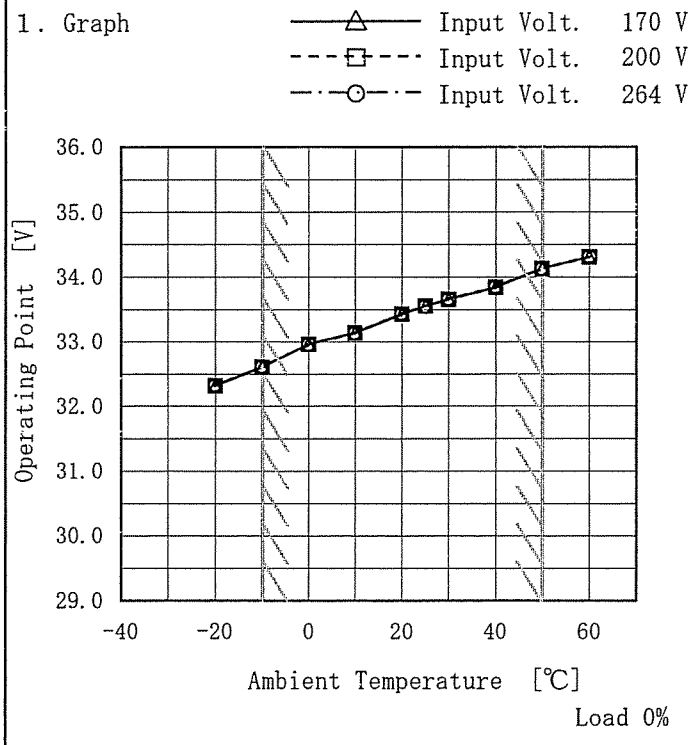
Output Voltage [V]	Load Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
24.0	31.76	34.37	34.35
22.8	34.78	34.78	34.81
21.6	34.98	34.99	35.03
19.2	35.40	35.40	35.40
16.8	35.70	35.68	35.67
14.4	35.92	35.91	35.91
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

COSEL

Model	ADA600F (ADA600F-24)
Item	Overvoltage Protection 過電圧保護
Object	V1:+24V25A

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。

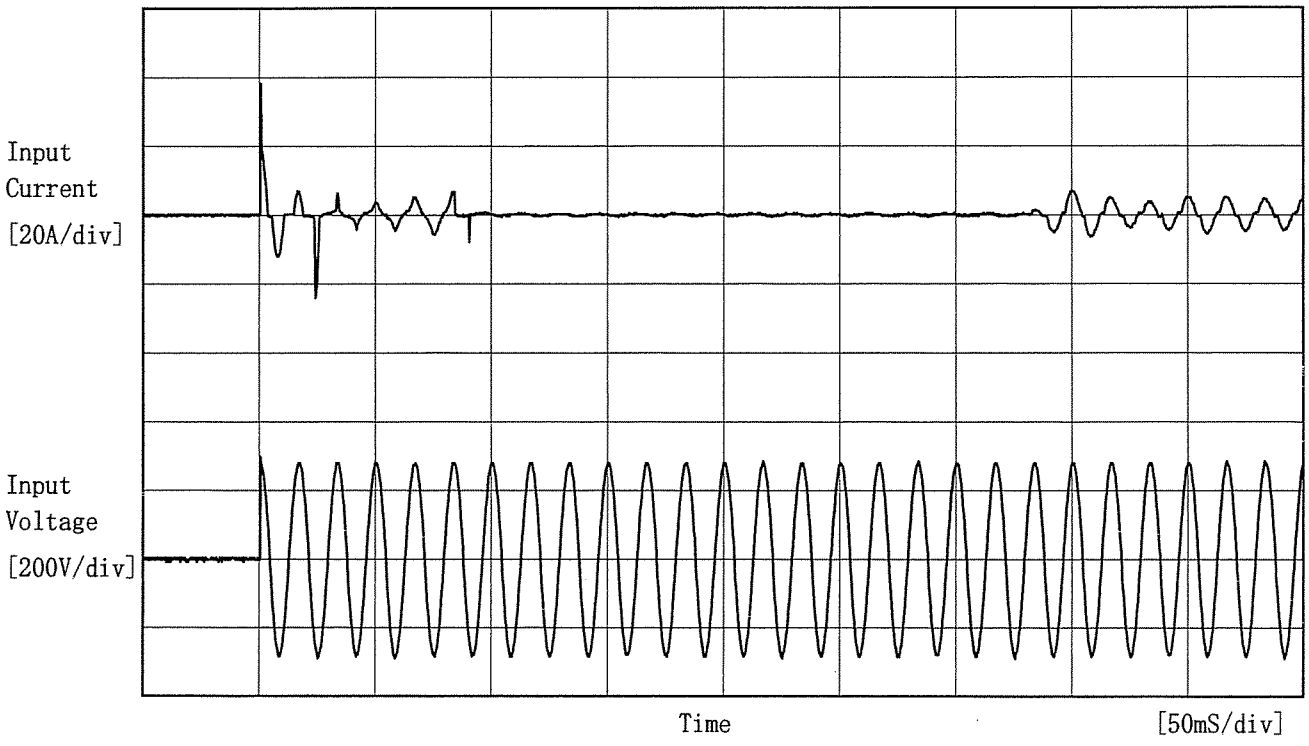
2. Values

Ambient Temperature [℃]	Operating Point [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	32.32	32.32	32.32
-10	32.61	32.61	32.61
0	32.96	32.96	32.96
10	33.14	33.14	33.14
20	33.43	33.43	33.43
25	33.55	33.55	33.55
30	33.66	33.66	33.66
40	33.84	33.84	33.84
50	34.13	34.13	34.13
60	34.31	34.31	34.31
--	—	—	—

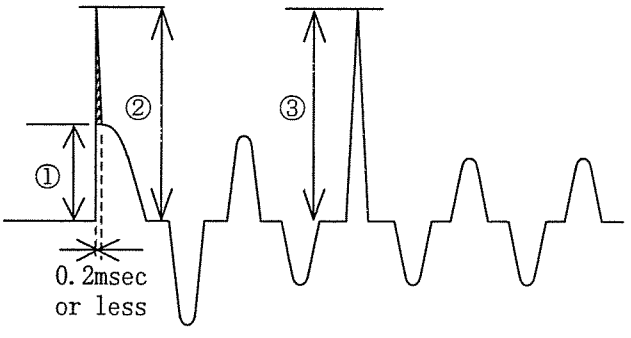
COSEL

Model	ADA600F (ADA600F-24)
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 20.6 [A]
② 38.1 [A] (0.2msec or less)*1
③ 21.6 [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

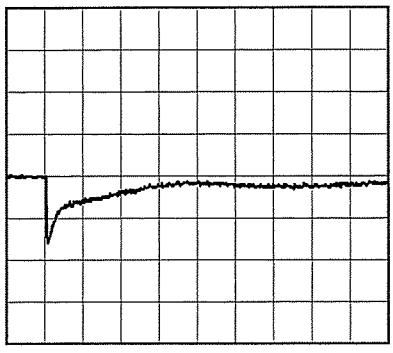
Model	ADA600F (ADA600F-24)		
Item	Dynamic Load Response 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	V1:+24V25A		

Input Volt. AC200 V

Cycle 1000 ms

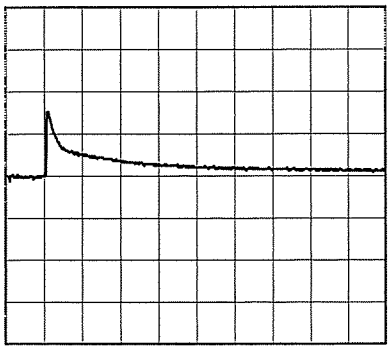
Load Current

Min. Load (0A) ⟷
Load 100% (25A)



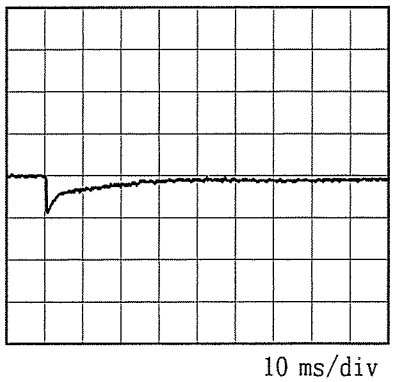
100 mV/div

10 ms/div



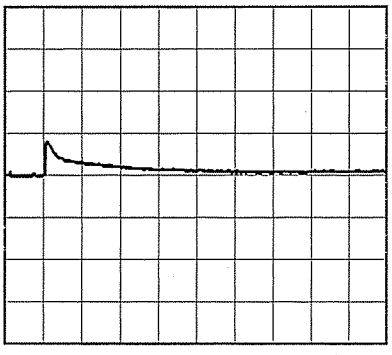
10 ms/div

Min. Load (0A) ⟷
Load 50% (12.5A)



100 mV/div

10 ms/div

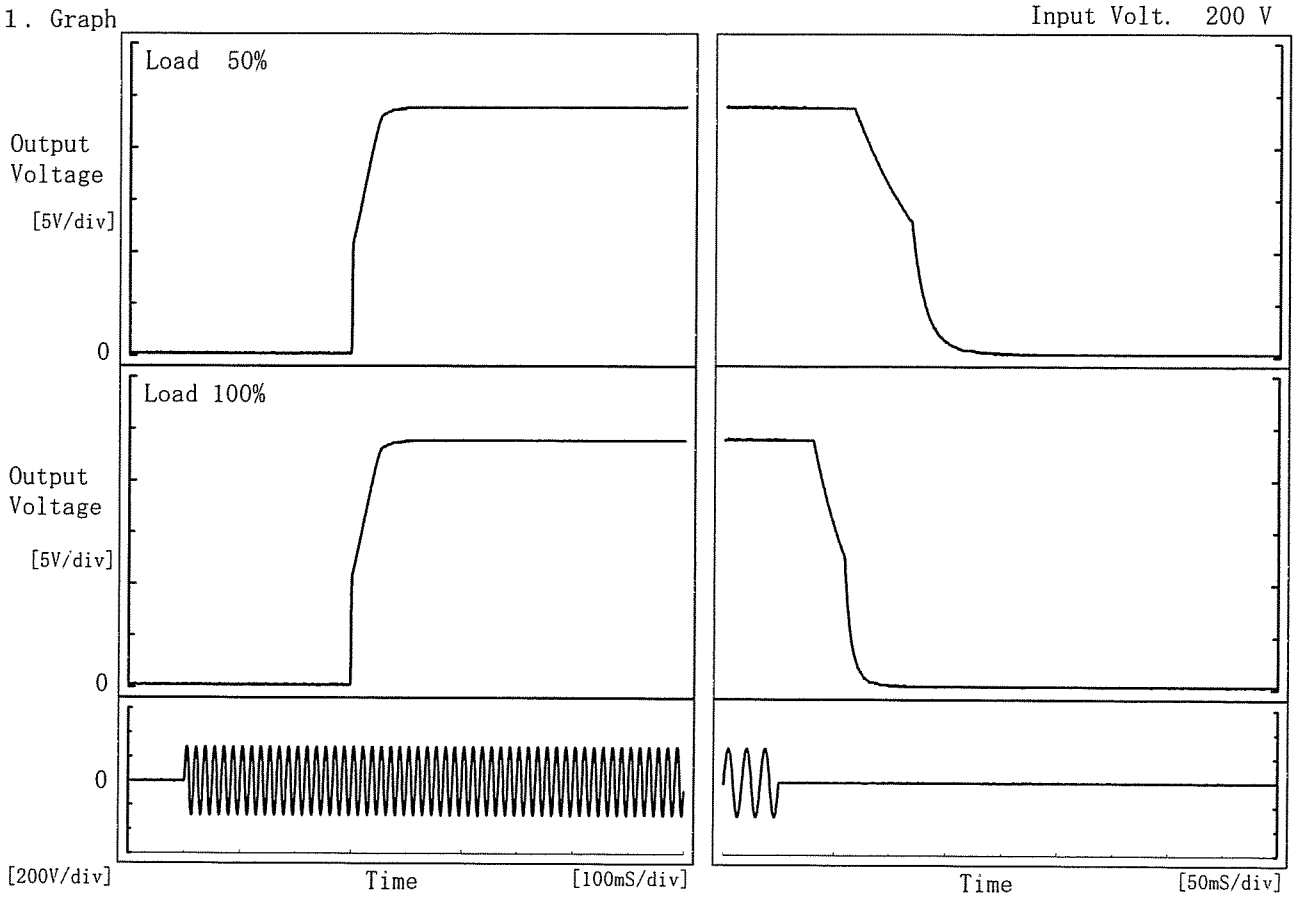


10 ms/div

COSEL

Model	ADA600F (ADA600F-24)		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	V1:+24V25A		

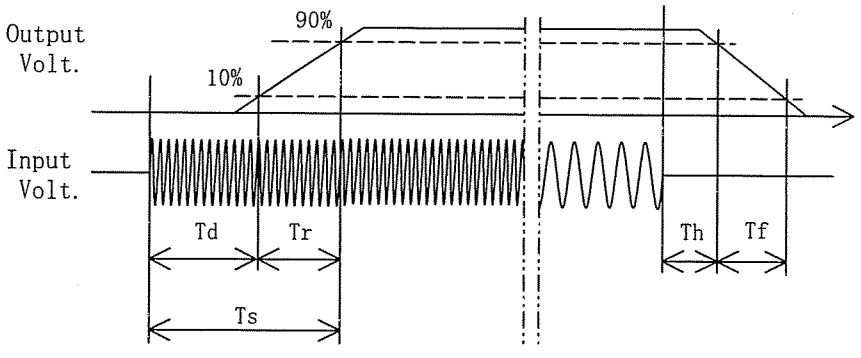
1. Graph



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	298.0	45.5	343.5	73.3	66.5
100 %	298.0	46.5	344.5	34.5	35.5



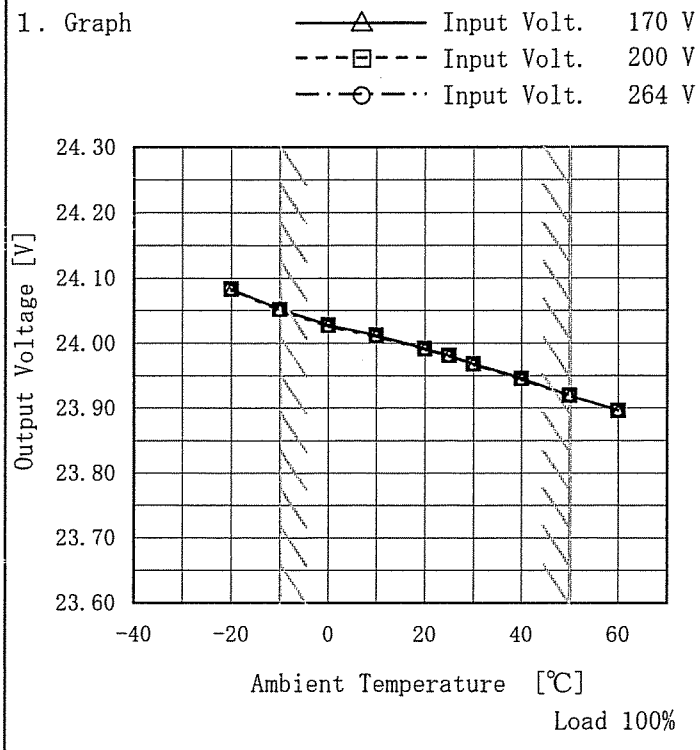
BC－3459

COSEL

Model	ADA600F (ADA600F-24)
Item	Ambient Temperature Drift 周囲温度変動
Object	V1:+24V25A

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

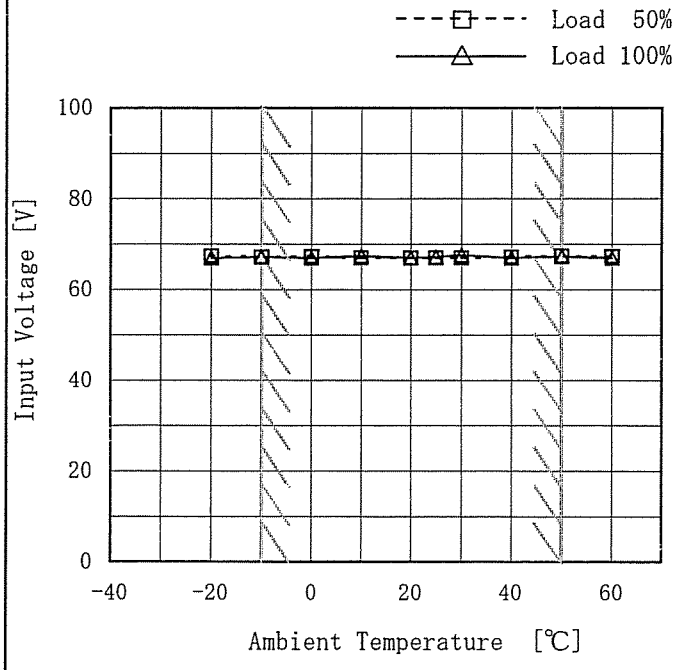
Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	24.083	24.084	24.083
-10	24.052	24.051	24.051
0	24.028	24.028	24.027
10	24.012	24.012	24.011
20	23.992	23.992	23.991
25	23.982	23.982	23.981
30	23.968	23.968	23.968
40	23.947	23.946	23.945
50	23.920	23.921	23.920
60	23.896	23.897	23.896
--	—	—	—

COSEL

Model	ADA600F (ADA600F-24)
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	V1:+24V25A

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

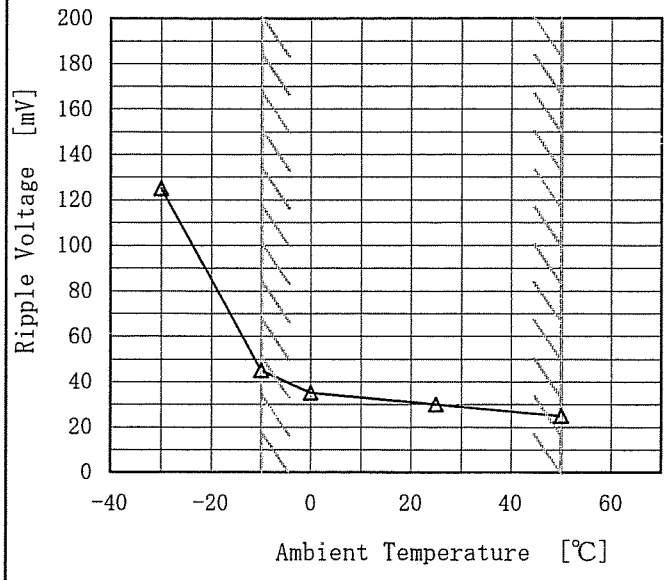
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	67	67
-10	67	67
0	67	67
10	67	67
20	67	67
25	67	67
30	67	68
40	67	67
50	67	67
60	67	67
--	—	—

COSEL

Model	ADA600F (ADA600F-24)
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	V1:+24V25A

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

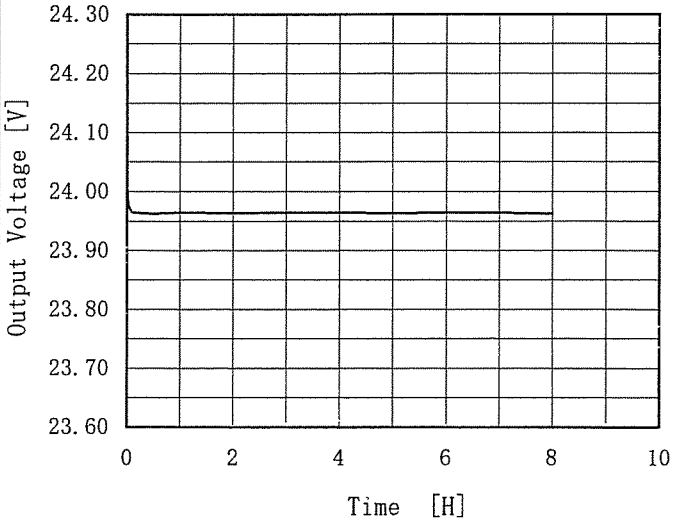
Ambient Temperature [℃]	Ripple Voltage [mV]
-30	125
-10	45
0	35
25	30
50	25
--	—
--	—
--	—
--	—
--	—
--	—

COSEL

Model	ADA600F (ADA600F-24)
Item	Time Lapse Drift 経時ドリフト
Object	V1:+24V25A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Input Volt. 200V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	24.011
0.5	23.963
1.0	23.964
2.0	23.964
3.0	23.964
4.0	23.964
5.0	23.963
6.0	23.965
7.0	23.964
8.0	23.962

COSEL

Model	ADA600F (ADA600F-24)
Item	Output Voltage Accuracy 定電圧精度
Object	V1:+24V25A

Testing Circuitry Figure A

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 ～ 25A

* 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 ～ 25A

* 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	-10	264	0	24.080	±79	±0.3
Minimum Voltage	50	170	25	23.922		

COSEL

Model	ADA600F (ADA600F-24)		
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	0.31	0.44	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

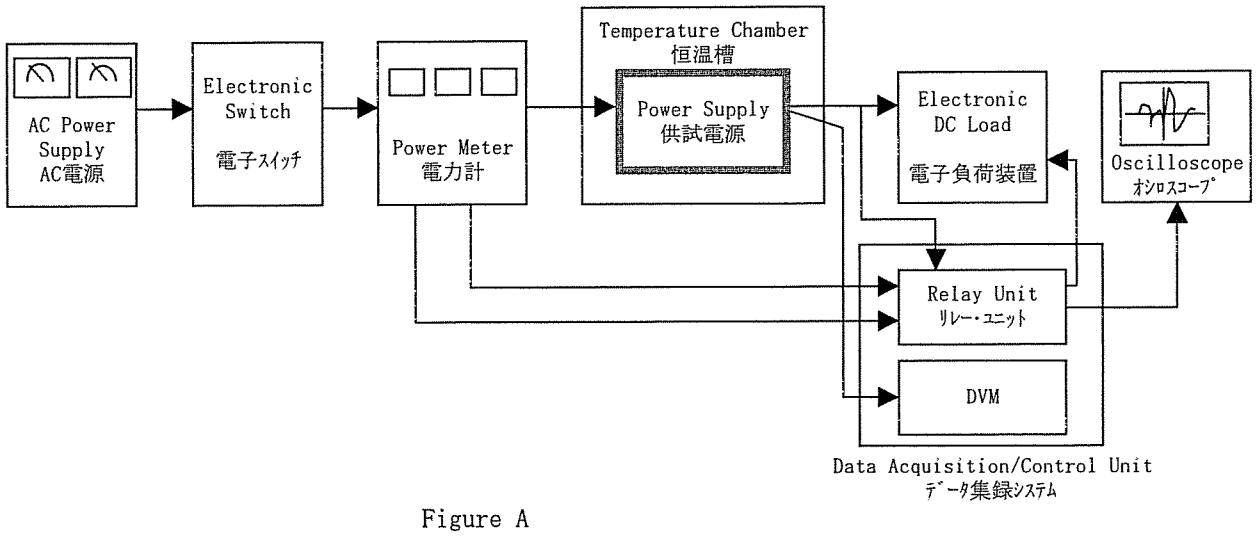


Figure A

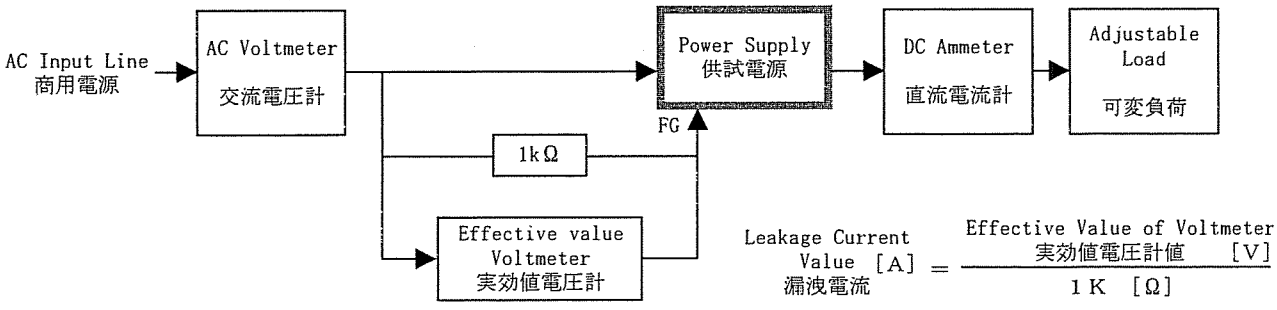


Figure B (DEN-AN)

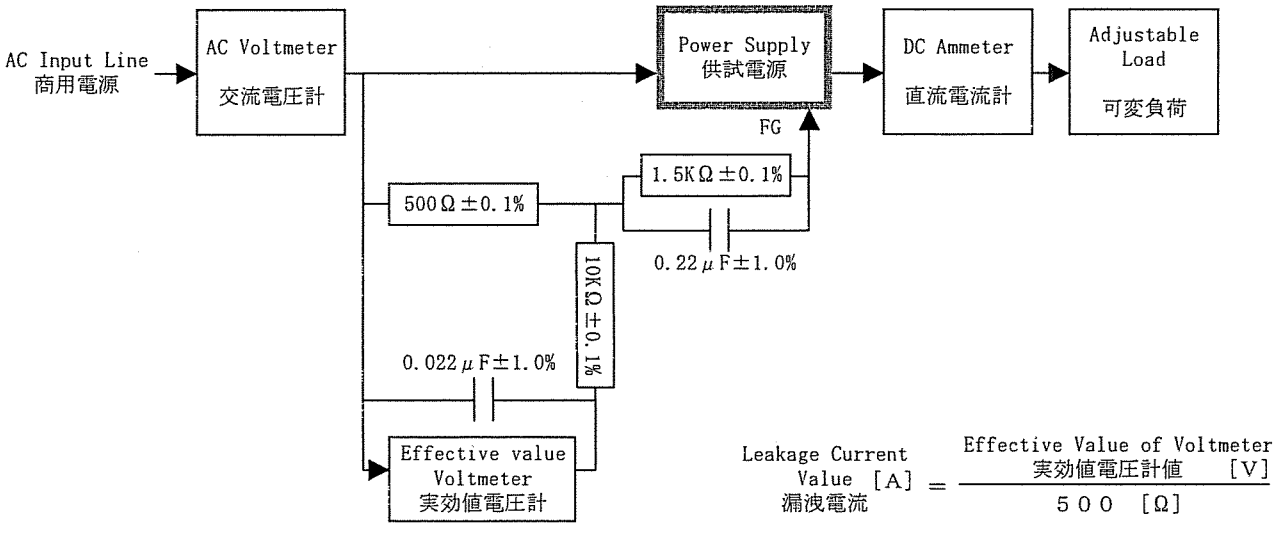


Figure B (IEC60950)