COSEL

TEST DATA OF ADA750F

ADA750F-48
(200V INPUT)

Regulated DC power supply
Mar. 24, 2003

Approved by : _Kuniaki Nagahara_
Kuniaki Nagahara   Design Manager

Prepared by : _Katsumi Ishikawa_
Katsumi Ishikawa   Design Engineer

INPUT   :   AC 170~264V

OUTPUT :   V1:   48V 15.5A

コーセル株式会社
COSEL CO.,LTD.

CO$EL

CONTENTS

(Final Page 23)

COSEL

Model	ADA750F (ADA750F-48)
Item	Line Regulation 静的入力変動
Object	V1:+48V15.5A

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]	Output Voltage [V]	
	Load 50%	Load 100%
150	47.953	47.943
160	47.952	47.943
170	47.952	47.943
180	47.952	47.943
200	47.952	47.943
220	47.952	47.943
240	47.952	47.942
264	47.952	47.942
280	47.950	47.940

BC−3484

COSEL

Model	ADA750F (ADA750F-48)
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

———△——— 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
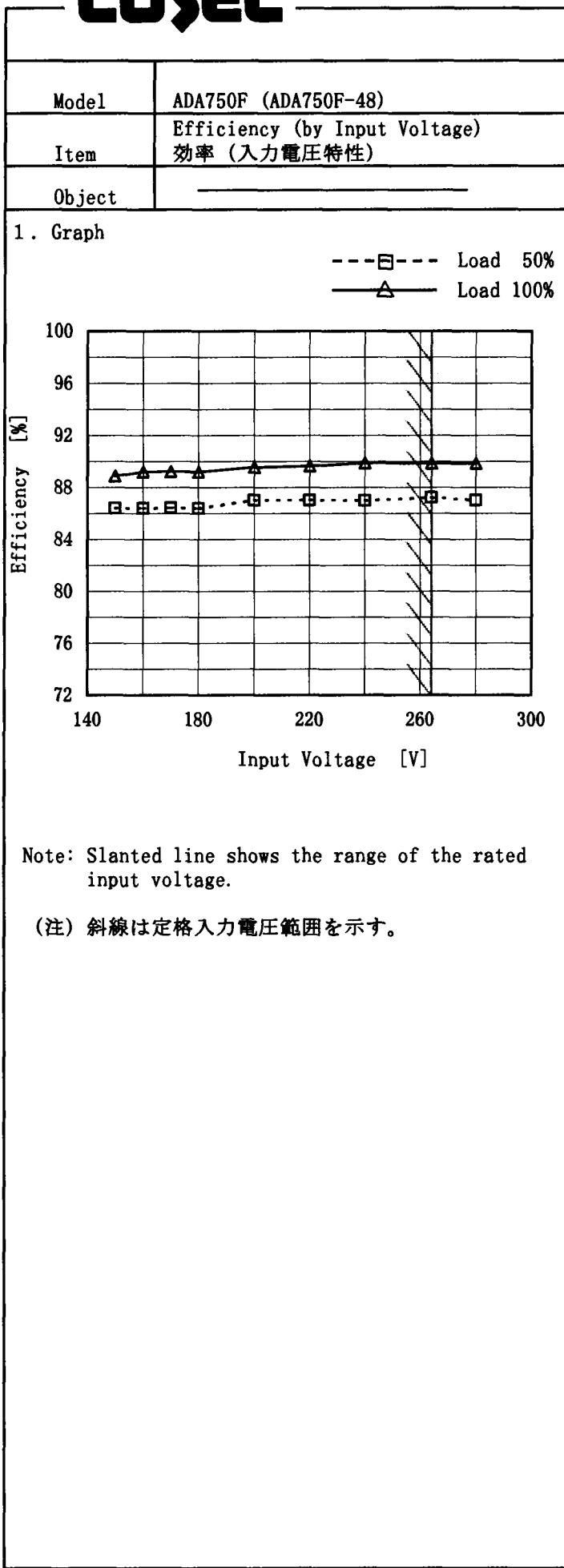
Load Power [W]	Input Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	0.260	0.270	0.270
148.8	1.190	1.050	0.900
297.6	2.140	1.820	1.490
446.4	3.050	2.630	2.080
595.2	4.010	3.420	2.680
744.0	4.950	4.220	3.270
818.4	5.430	4.620	3.580
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

BC－3484

COSEL

Model	ADA750F (ADA750F-48)
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
－－－日－－－ Input Volt.　200 V
—・—○—・・ Input Volt.　264 V

Load Power [W]

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	—	—	—
148.8	189.0	186.0	186.0
297.6	345.0	344.0	342.0
446.4	504.0	504.0	501.0
595.2	666.0	663.0	661.0
744.0	828.0	825.0	821.0
818.4	909.0	906.0	903.0
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

BC－3484

COSEL

Model	ADA750F (ADA750F-48)
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	86.4	88.9
160	86.4	89.2
170	86.4	89.2
180	86.4	89.2
200	87.0	89.5
220	87.0	89.7
240	87.0	89.9
264	87.2	89.9
280	87.0	89.9

BC－3484

COSEL

Model	ADA750F (ADA750F-48)
Item	Efficiency (by Load Power) 効率（負荷電力特性）
Object	

Temperature　25℃
Testing Circuitry　Figure A

1. Graph
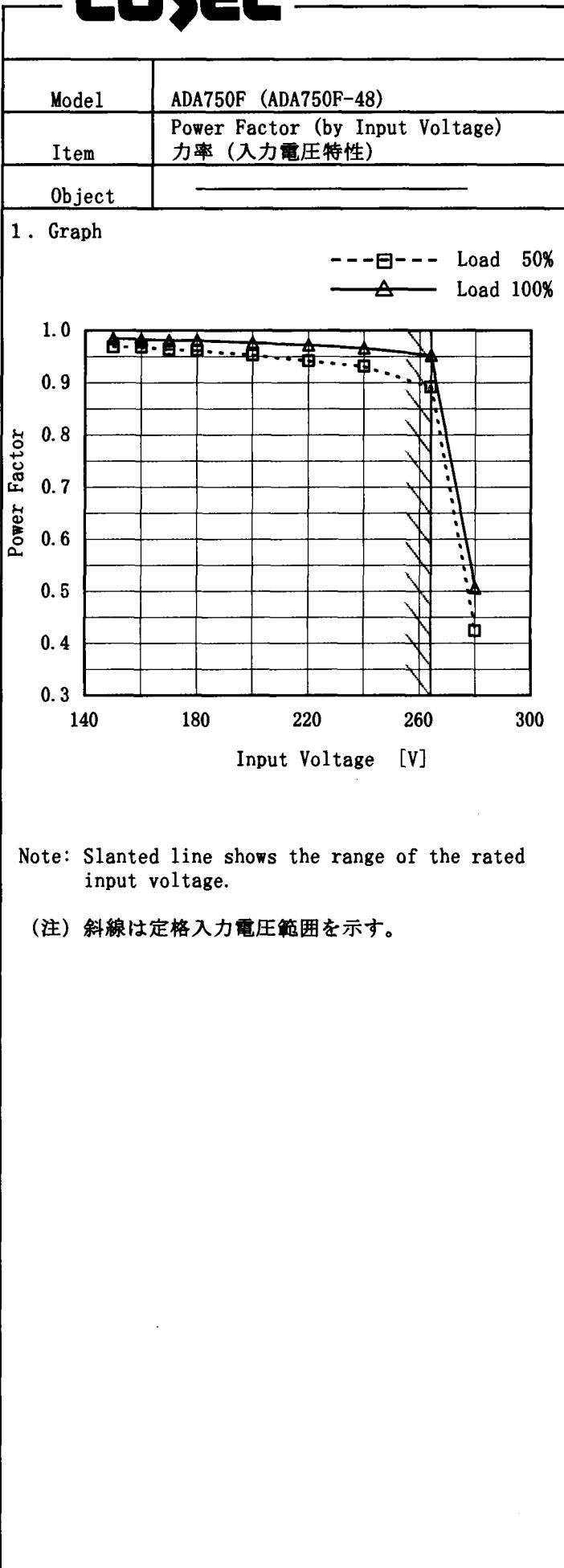
⎯△⎯ Input Volt.　170 V
---日--- Input Volt.　200 V
—·◯—·· Input Volt.　264 V

Load Power [W]

2. Values

Load Power [W]	Efficiency [%]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
148.8	77.1	78.3	78.3
297.6	85.2	85.5	86.0
446.4	87.8	87.8	88.3
595.2	88.7	89.1	89.3
744.0	89.2	89.5	90.0
818.4	89.4	89.7	90.0
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

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

（注）斜線は定格電力範囲を示す。

　BC−3484

COSEL

Model	ADA750F (ADA750F-48)
Item	Power Factor (by Input Voltage) 力率（入力電圧特性）
Object	

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

--- 日 --- 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	0.968	0.985
160	0.968	0.983
170	0.964	0.981
180	0.962	0.981
200	0.953	0.976
220	0.942	0.972
240	0.932	0.966
264	0.892	0.952
280	0.424	0.507

BC-3484

CO$EL

Model	ADA750F (ADA750F-48)
Item	Power Factor (by Load Power) 力率（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

Power Factor vs Load Power [W]

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	0.548	0.475	0.380
148.8	0.931	0.890	0.782
297.6	0.948	0.945	0.870
446.4	0.973	0.958	0.913
595.2	0.977	0.969	0.935
744.0	0.983	0.976	0.951
818.4	0.985	0.981	0.956
--	--	--	--
--	--	--	--
--	--	--	--
--	--	--	--

BC－3484

CO$EL

Model	ADA750F (ADA750F-48)
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

──△── Input Volt. 170V
---日--- Input Volt. 200V
─·-○-·· Input Volt. 264V

Hold-Up Time [mS] vs Load Power [W]

Load Power [W]

2．Values

| Load Power [W] | Hold-Up Time [mS] | | |
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
148.8	133	135	136
297.6	68	70	71
446.4	45	47	48
595.2	33	34	35
744.0	25	26	27
818.4	23	24	25
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

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。

　　BC-3484

CO$EL
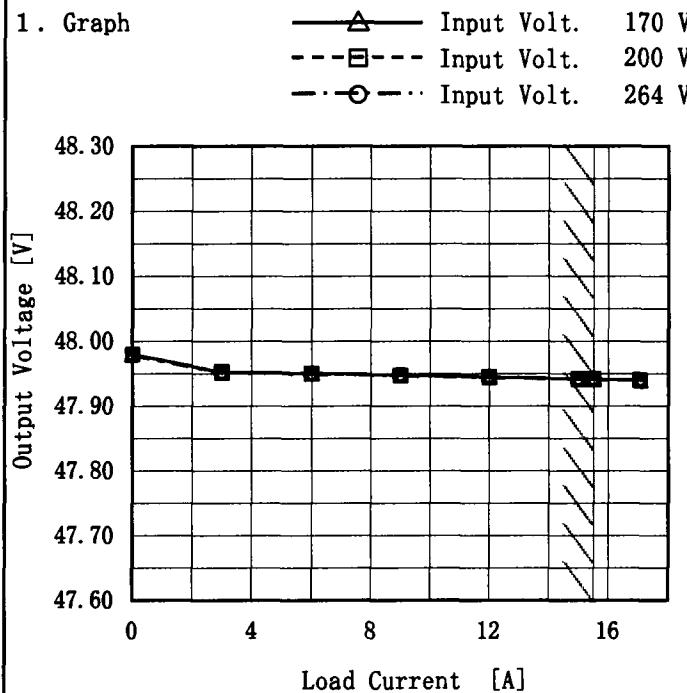
Model	ADA750F (ADA750F-48)
Item	Instantaneous Interruption Compensation (by Load Power) 瞬時停電保障（負荷電力特性）
Object	

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

———△——— Input Volt. 170V
---⊟--- Input Volt. 200V
—·-⊖-—·· Input Volt. 264V

Instantaneous Compensation Time [mS] vs Load Power [W]

2. Values

Load Power [W]	Time [mS]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
148.8	120	130	137
297.6	68	66	71
446.4	45	46	47
595.2	31	34	35
744.0	25	26	27
818.4	22	23	25
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

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

（注）斜線は定格電力範囲を示す。

BC－3484

COSEL

Model	ADA750F (ADA750F-48)
Item	Load Regulation 静的負荷変動
Object	V1:+48V15.5A

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

△ Input Volt. 170 V
日 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。

2. Values
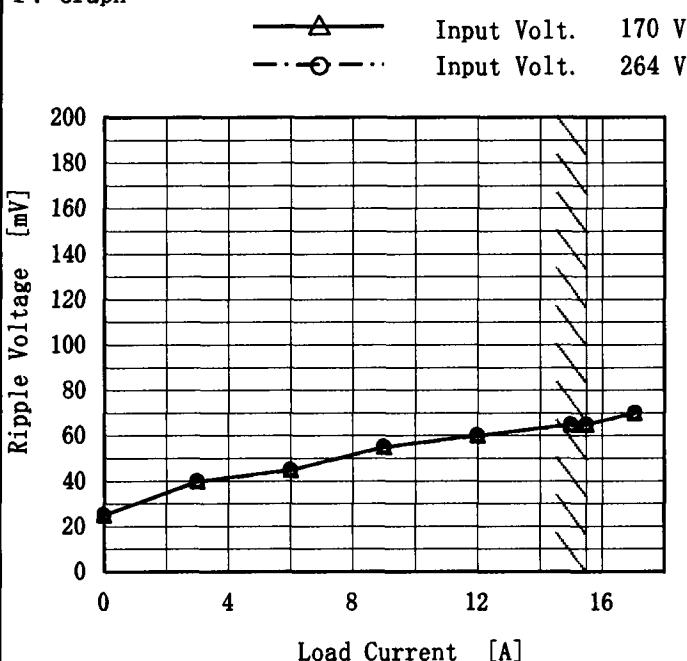
Load Current [A]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	47.980	47.980	47.979
3.00	47.952	47.953	47.952
6.00	47.951	47.950	47.950
9.00	47.948	47.947	47.948
12.00	47.945	47.945	47.945
15.00	47.942	47.942	47.942
15.50	47.942	47.942	47.942
17.05	47.939	47.940	47.940
--	―	―	―
--	―	―	―
--	―	―	―

BC-3484

CO$EL

Model	ADA750F (ADA750F-48)
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）
Object	V1:+48V15.5A

Temperature   25℃
Testing Circuitry   Figure A

1. Graph

——△—— Input Volt.   170 V
—・-○-・— Input Volt.   264 V

Load Current [A]

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。
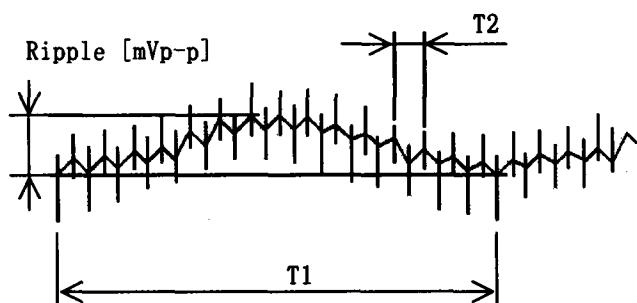
T1: Due to AC Input Line
    入力商用周期
T2: Due to Switching
    スイッチング周期

2. Values

Load Current [A]	Ripple Output Voltage [mV]	
	Input Volt. 170[V]	Input Volt. 264[V]
0.00	25	25
3.00	40	40
6.00	45	45
9.00	55	55
12.00	60	60
15.00	65	65
15.50	65	65
17.05	70	70
--	—	—
--	—	—
--	—	—

Ripple [mVp-p]

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

BC－3484

COSEL

Model	ADA750F (ADA750F-48)
Item	Ripple-Noise リップルノイズ
Object	V1:+48V15.5A

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

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

Load Current [A]

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 170[V]	Input Volt. 264[V]
0.00	30	30
3.00	45	45
6.00	50	50
9.00	60	60
12.00	65	65
15.00	70	70
15.50	70	70
17.05	75	75
--	—	—
--	—	—
--	—	—

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

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

BC－3484

CO$EL

Model	ADA750F (ADA750F-48)
Item	Overcurrent Protection 過電流保護
Object	V1:+48V15.5A

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 28.8V to 0V.
28.8V～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]
48.0	22.94	24.08	22.94
45.6	36.02	36.16	36.34
43.2	36.38	36.45	36.72
38.4	37.06	37.19	37.55
33.6	37.88	38.09	38.28
28.8	38.72	38.87	39.09
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—
--	—	—	—

BC-3484

COSEL

Model	ADA750F (ADA750F-48)
Item	Overvoltage Protection 過電圧保護
Object	V1:+48V15.5A

Testing Circuitry   Figure A

1. Graph

———△——— Input Volt.   170 V
———日——— Input Volt.   200 V
—·—⊖—·· Input Volt.   264 V

Ambient Temperature [℃]

Load 0%

2. Values

Ambient Temperature [℃]	Operating Point [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	67.86	67.74	67.74
-10	68.44	68.44	68.44
0	69.14	69.14	69.14
10	69.72	69.72	69.72
20	70.42	70.42	70.42
25	70.66	70.66	70.66
30	71.06	71.06	71.06
40	71.65	71.65	71.65
50	72.23	72.23	72.23
60	72.82	72.94	72.82
--	—	—	—

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。

BC-3484

COSEL

Model	ADA750F (ADA750F-48)		
Item	Inrush Current 突入電流	Temperature	25℃
		Testing Circuitry	Figure A
Object	————		

Input
Current
[20A/div]

Input
Voltage
[200V/div]

Time　　　　　　　　　　　　　　　　[50mS/div]

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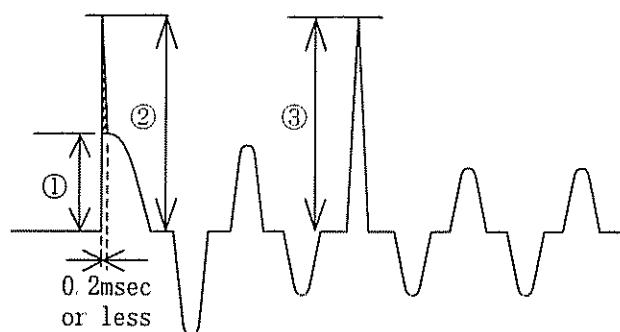
①
②
③
0.2msec
or less

*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次サージ)の仕様は、内蔵ノイズフィルタ部への
サージ電流(0.2msec以下：波形②)を除きます。

　　　BC-3484

CO$EL
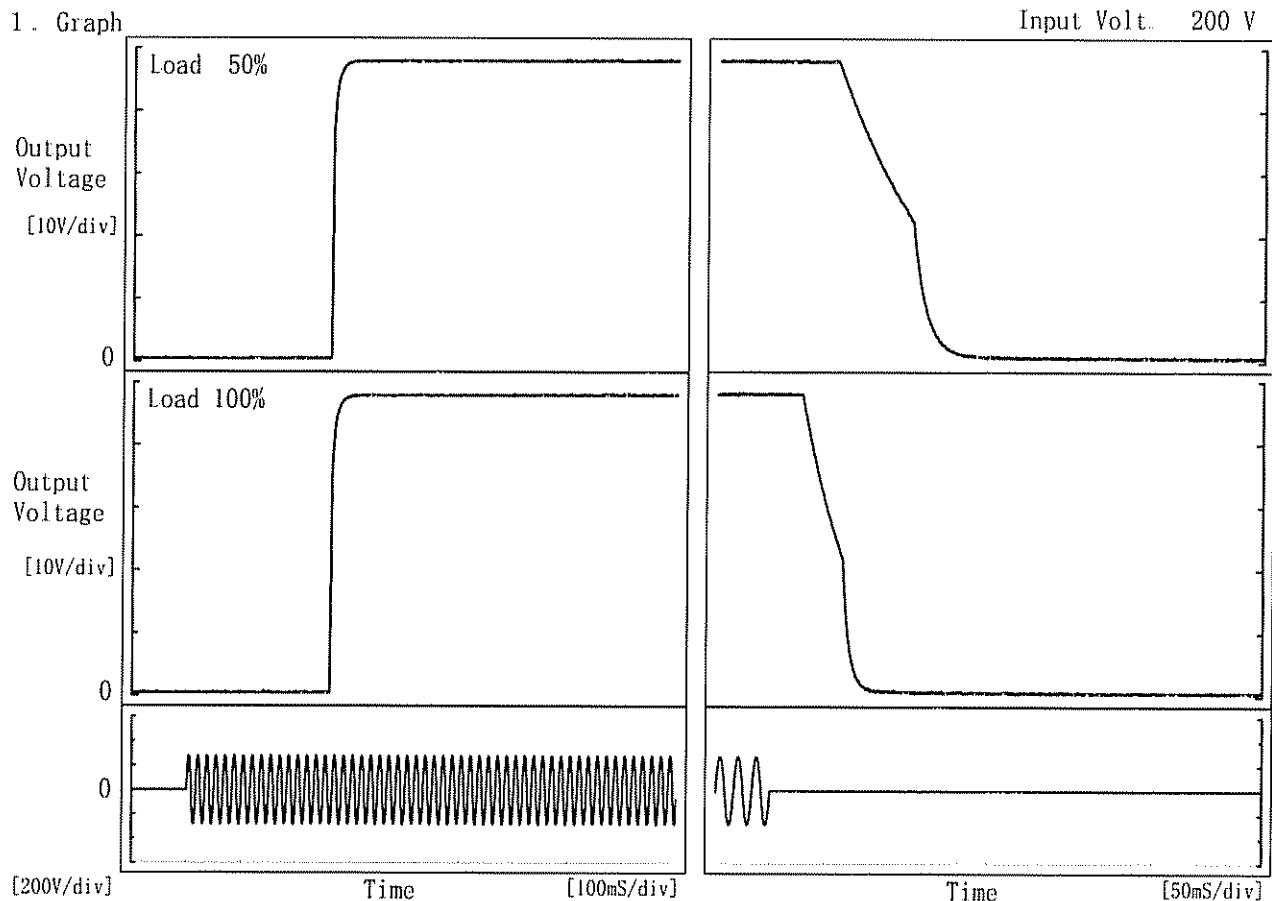
Model	ADA750F (ADA750F-48)		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	V1:+48V15.5A		

1. Graph

Input Volt. 200 V

Load 50%

Output
Voltage
[10V/div]

0

Load 100%

Output
Voltage
[10V/div]

0

0

[200V/div]   Time   [100mS/div]   Time   [50mS/div]
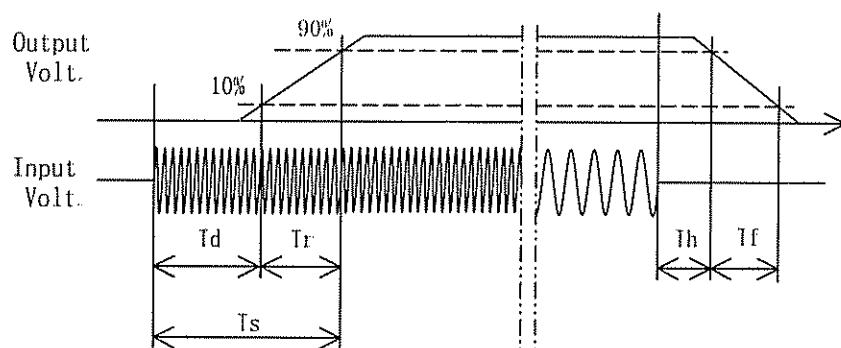
2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	262.0	10.0	272.0	69.0	78.5
100 %	262.0	9.5	271.5	33.8	41.8

Output
Volt.

90%

10%

Input
Volt.

Td | Tr   Th | Tf

Ts

BC-3484

CO$EL

Model	ADA750F (ADA750F-48)
Item	Ambient Temperature Drift 周囲温度変動
Object	V1:+48V15.5A

Testing Circuitry   Figure A

1. Graph

───△─── Input Volt.　170 V
---☐--- Input Volt.　200 V
─・─○─・─ Input Volt.　264 V

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]
-20	48.029	48.028	48.028
-10	48.015	48.014	48.014
0	48.005	48.004	48.003
10	47.993	47.992	47.992
20	47.987	47.987	47.986
25	47.982	47.981	47.981
30	47.977	47.977	47.976
40	47.952	47.951	47.950
50	47.925	47.924	47.922
60	47.866	47.865	47.864
--	—	—	—
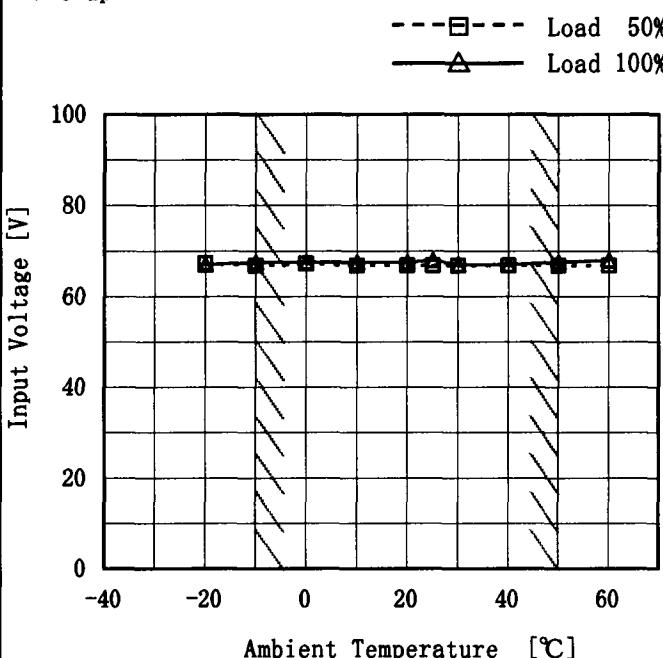
BC－3484

CO$EL

Model	ADA750F (ADA750F-48)
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	V1:+48V15.5A

Testing Circuitry   Figure A

1．Graph

--- 日 --- Load 50%
—— △ —— Load 100%

Ambient Temperature [℃]

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	68
0	67	68
10	67	68
20	67	68
25	67	68
30	67	67
40	67	67
50	67	68
60	67	68
---	—	—

BC－3484

COSEL
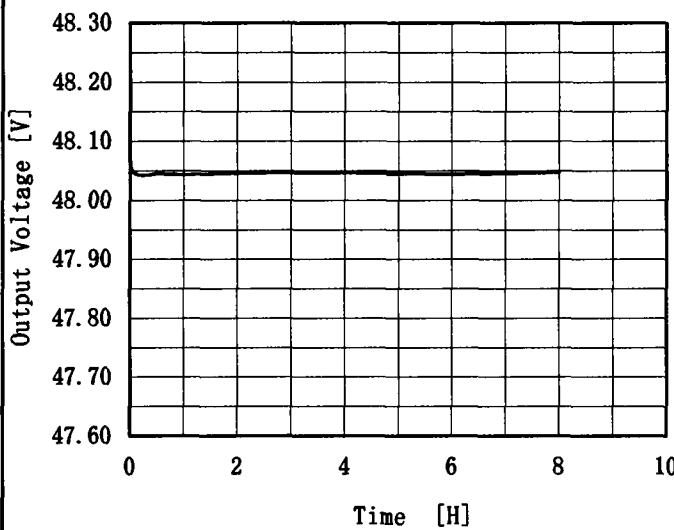
Model	ADA750F (ADA750F-48)
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	V1:+48V15.5A

Testing Circuitry   Figure A

1. Graph

Ripple Voltage [mV] vs Ambient Temperature [℃]

Input Volt.   100 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	110
0	100
25	65
50	45
---	—
---	—
---	—
---	—
---	—
---	—
---	—

BC－3484

COSEL

Model	ADA750F (ADA750F-48)
Item	Time Lapse Drift 経時ドリフト
Object	V1:+48V15.5A

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

Input Volt.   200V
Load   100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	48.073
0.5	48.045
1.0	48.043
2.0	48.046
3.0	48.047
4.0	48.047
5.0	48.045
6.0	48.044
7.0	48.046
8.0	48.048

BC-3484

CO$EL

Model	ADA750F (ADA750F-48)
Item	Output Voltage Accuracy 定電圧精度
Object	V1:+48V15.5A

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 ～ 15.5A

* 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 ～ 50℃
入力電圧   : 170 ～ 264V
負荷電流   : 0 ～ 15.5A

* 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 Value [mV]	Output Voltage Accuracy Ration [%]
Maximum Voltage	-10	264	0	48.041	±64	±0.1
Minimum Voltage	50	264	15.5	47.914		

BC－3484

参考資料

CO$EL

Model	ADA750F (ADA750F-48)		
Item	Leakage Current 漏洩電流	Temperature	25℃
		Testing Circuitry	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. 230 [V]	Input Volt. 264 [V]
(B) IEC60950	0.39	0.56	0.61

2．Condition

Leakage current value is concluded after measuring each phases of AC input and by choosing the larger one.
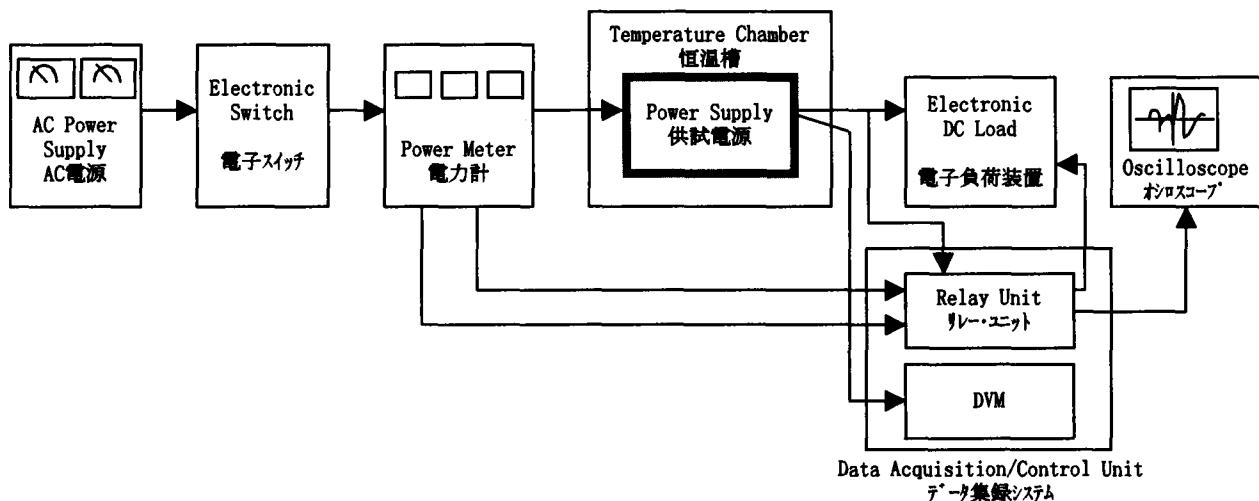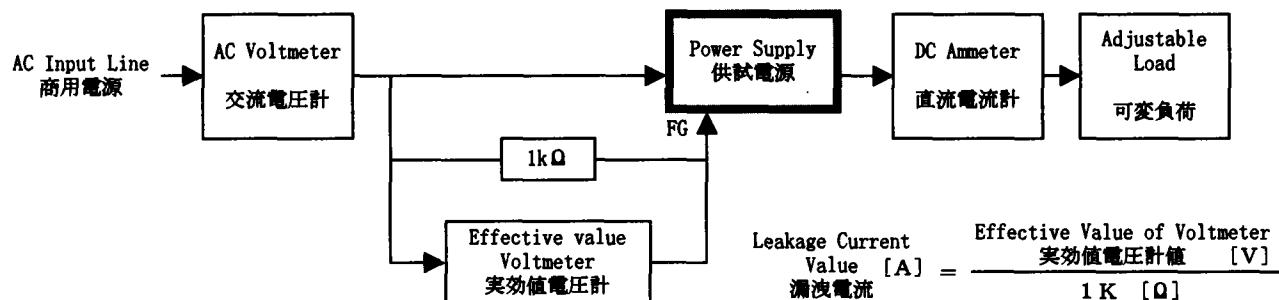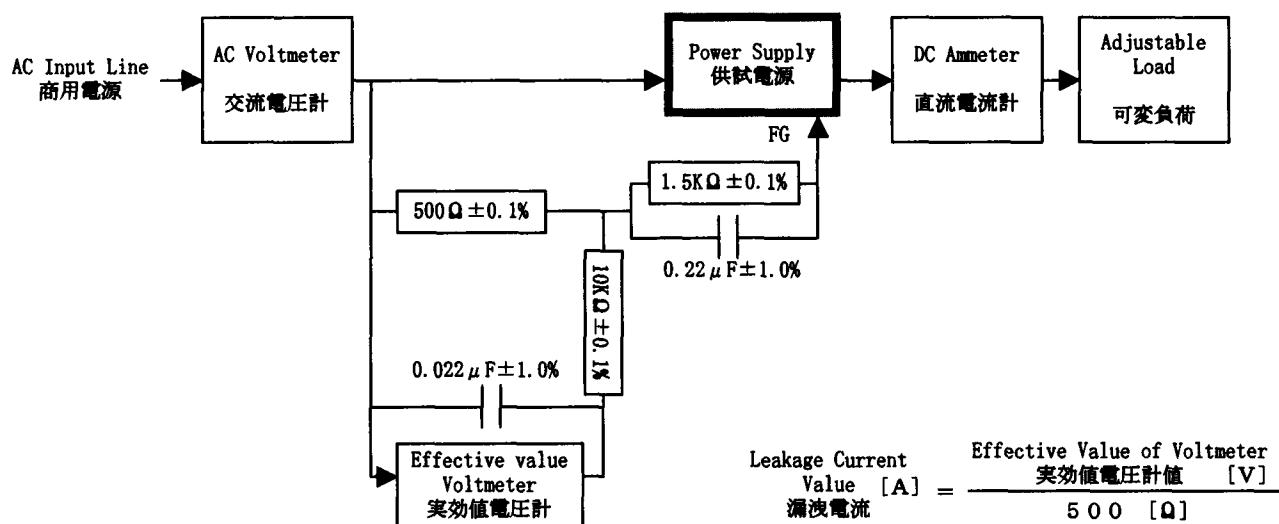
交流入力の各相について測定し、その大きい方を漏洩電流測定値とする。

BC－3484

COSEL

Figure A

Figure B (DEN-AN)

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

Figure B (IEC60950)

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

BC-3484