参考資料

COSEL

TEST DATA OF PBA600F-48

Regulated DC Power Supply
Sep.19. 2003

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COSEL CO.,LTD.

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Item	Input Current (by Load Current)
Object	———————

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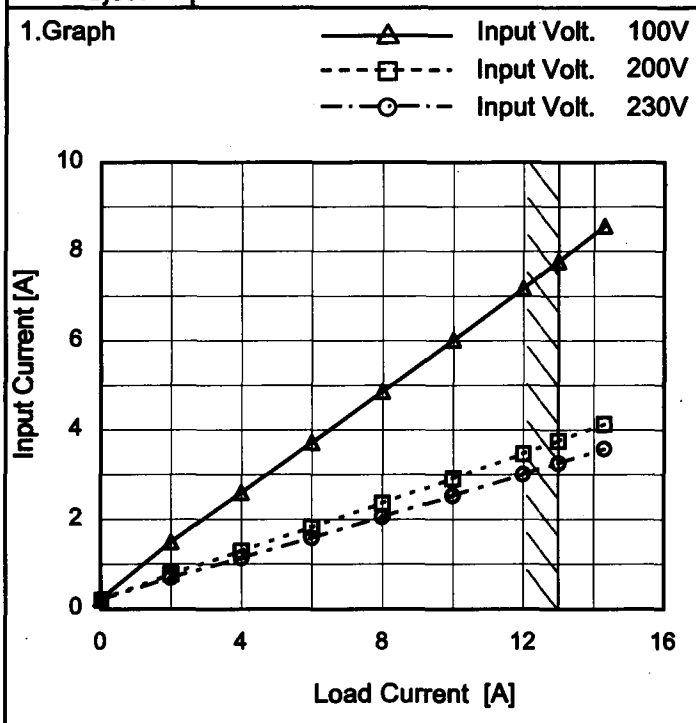
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.216	0.202	0.198
2.0	1.497	0.775	0.698
4.0	2.600	1.290	1.136
6.0	3.720	1.824	1.588
8.0	4.860	2.363	2.058
10.0	6.010	2.915	2.530
12.0	7.180	3.472	3.010
13.0	7.770	3.760	3.254
14.3	8.570	4.130	3.577
--	-	-	-
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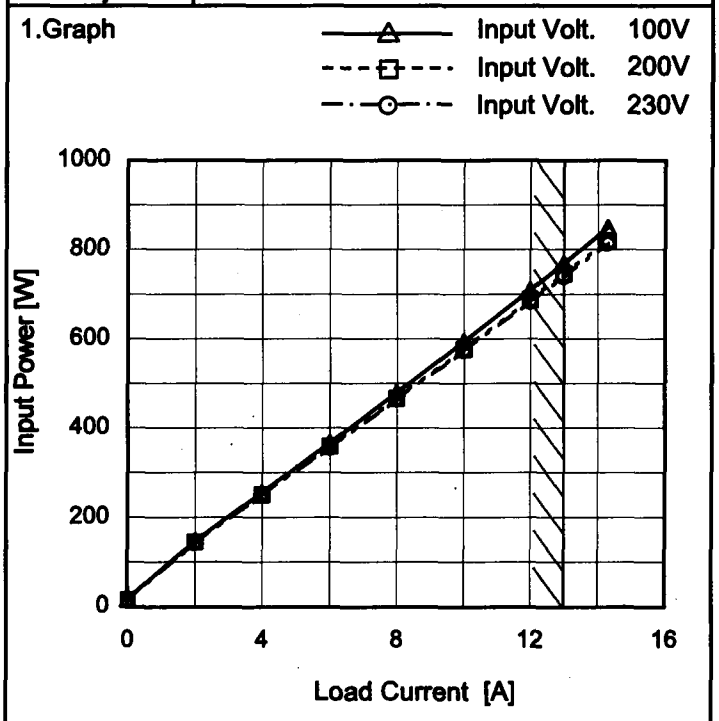
COSEL

Model	PBA600F-48
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

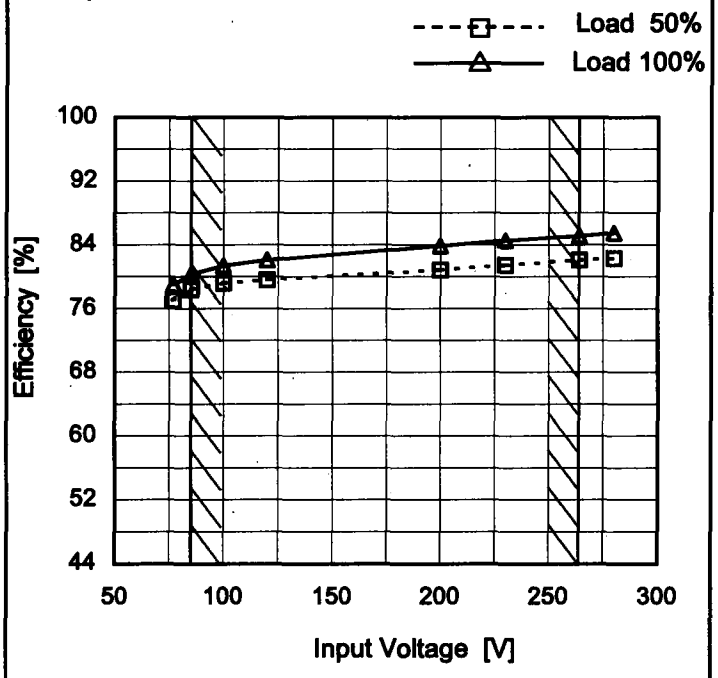
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	16.8	16.0	14.0
2.0	147.3	145.0	143.0
4.0	255.9	251.0	250.0
6.0	367.0	359.0	356.0
8.0	480.0	467.0	465.0
10.0	594.0	577.0	574.0
12.0	710.0	689.0	684.0
13.0	769.0	746.0	740.0
14.3	850.0	820.0	814.0
--	-	-	-
--	-	-	-

COSEL

Model	PBA600F-48
Item	Efficiency (by Input Voltage)
Object	———

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

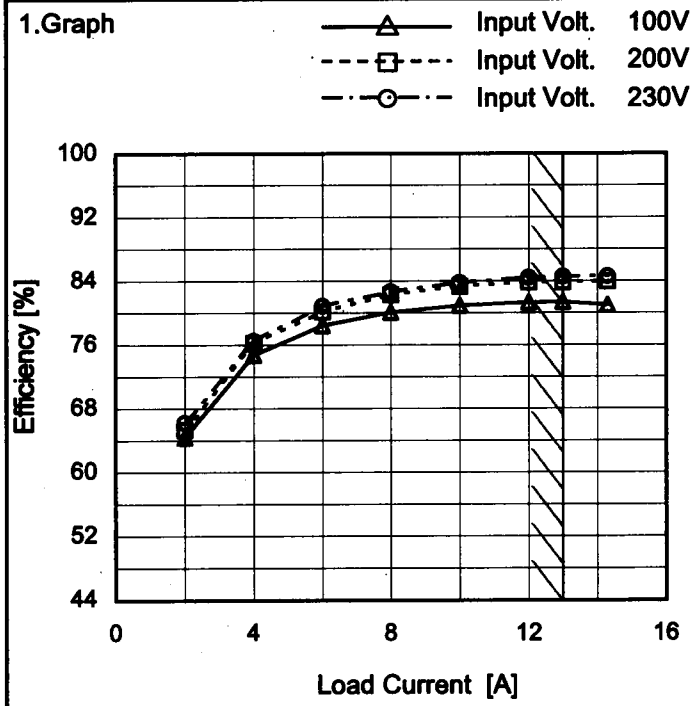
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
77	77.0	79.0
85	78.4	80.3
100	79.2	81.4
120	79.6	82.1
200	80.8	83.9
230	81.4	84.6
264	82.1	85.1
280	82.3	85.5
--	-	-

COSEL

Model	PBA600F-48
Item	Efficiency (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
2.0	64.4	65.4	66.2
4.0	74.7	76.2	76.5
6.0	78.4	80.2	80.9
8.0	80.1	82.3	82.7
10.0	80.9	83.4	83.8
12.0	81.3	83.8	84.4
13.0	81.4	83.9	84.6
14.3	81.0	84.0	84.6
--	-	-	-
--	-	-	-

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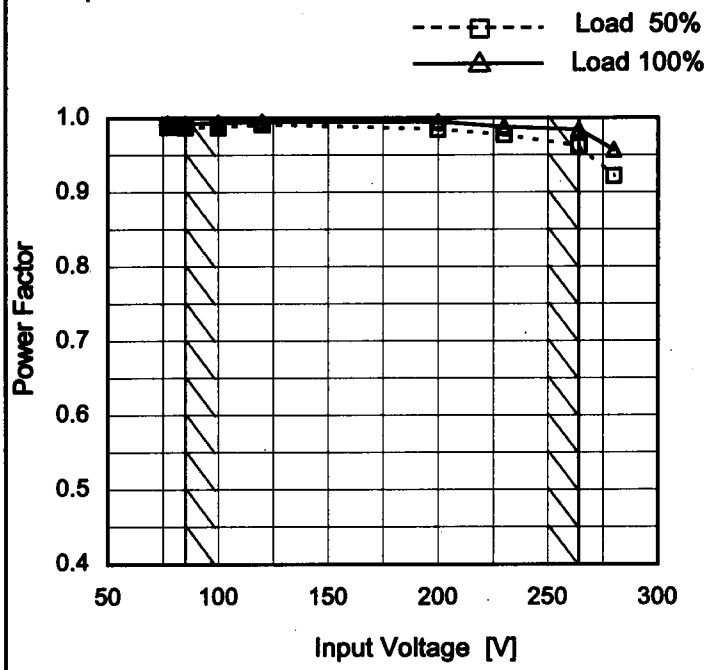
Model	PBA600F-48
Item	Power Factor (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

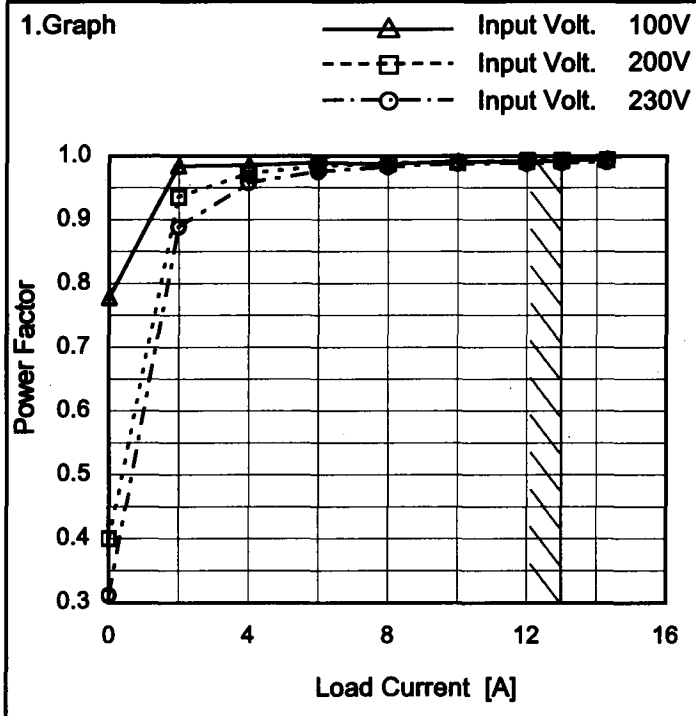
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
77	0.988	0.992
85	0.988	0.992
100	0.987	0.994
120	0.991	0.995
200	0.985	0.995
230	0.977	0.988
264	0.962	0.984
280	0.922	0.957
--	-	-

COSEL

Model	PBA600F-48
Item	Power Factor (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.778	0.400	0.311
2.0	0.985	0.935	0.888
4.0	0.985	0.973	0.958
6.0	0.989	0.984	0.975
8.0	0.988	0.989	0.983
10.0	0.992	0.990	0.988
12.0	0.992	0.993	0.988
13.0	0.992	0.993	0.989
14.3	0.995	0.994	0.990
--	-	-	-
--	-	-	-

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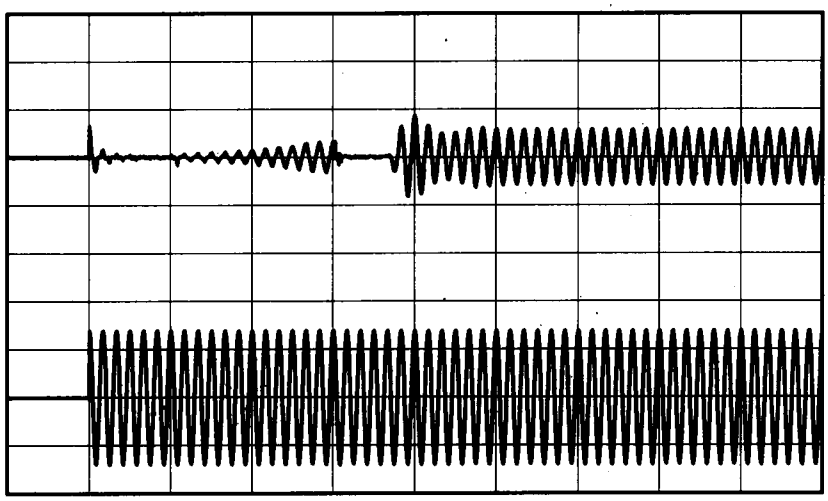
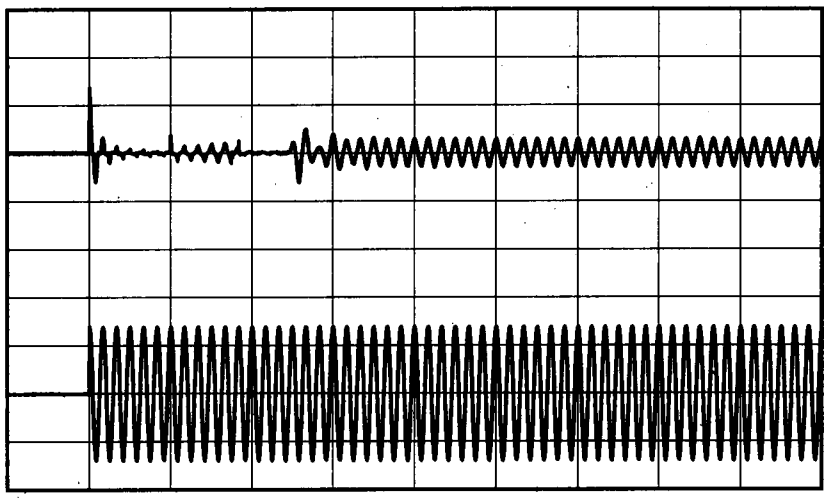
Model	PBA600F-48
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



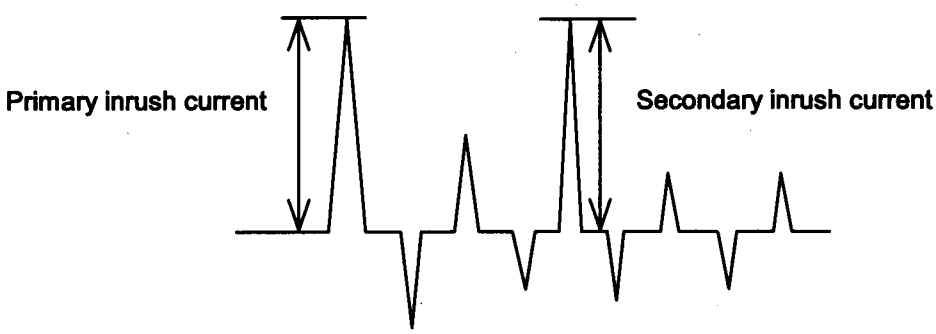
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
13.2 A
Secondary inrush current :
17.4 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
27.3 A
Secondary inrush current :
12.3 A



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Model	PBA600F-48		
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B	
Object	———		

1.Results

[mA]

Standards		Input Volt.			Note
		100[V]	200[V]	240[V]	
DEN-AN	Both phases	0.30	0.47	0.58	Operation
	One of phase	0.38	0.77	0.98	stand by
IEC60950	Both phases	0.24	0.42	0.56	Operation
	One of phase	0.34	0.77	0.91	stand by

The value for "One phase" is the reference value only.

2.Condition

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

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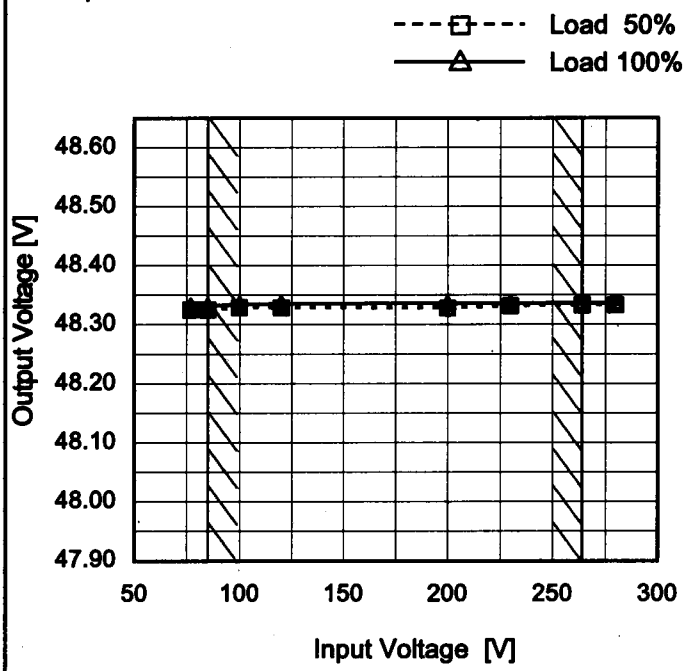
Model	PBA600F-48
Item	Line Regulation
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

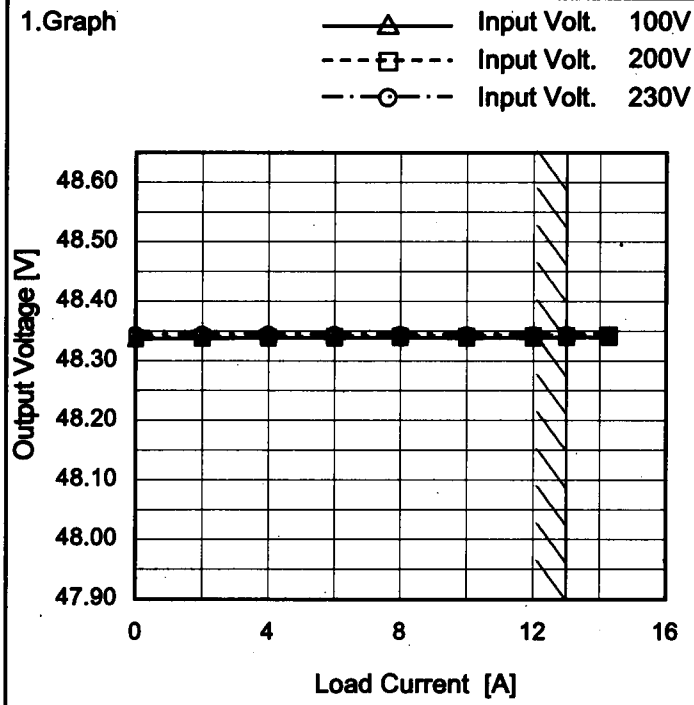
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
77	48.325	48.332
85	48.325	48.332
100	48.329	48.335
120	48.329	48.336
200	48.328	48.336
230	48.332	48.336
264	48.333	48.337
280	48.333	48.337
--	-	-

COSEL

Model	PBA600F-48
Item	Load Regulation
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	48.337	48.339	48.344
2.0	48.338	48.340	48.345
4.0	48.339	48.340	48.345
6.0	48.339	48.341	48.345
8.0	48.339	48.342	48.345
10.0	48.339	48.342	48.344
12.0	48.339	48.343	48.344
13.0	48.340	48.343	48.344
14.3	48.339	48.344	48.345
--	-	-	-
--	-	-	-

COSEL

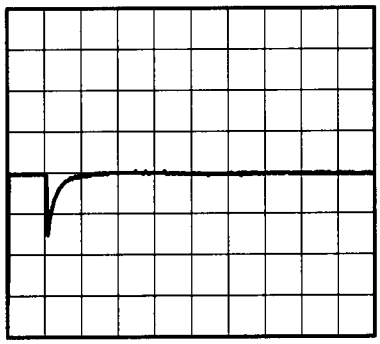
Model	PBA600F-48
Item	Dynamic Load Response
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 100 V
Cycle 1000 mS

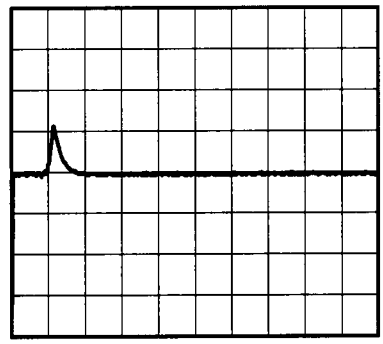
Load Current

Min.Load (0A) ⟷
Load 100% (13A)



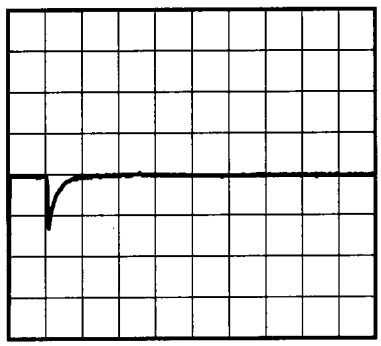
100mV/div

10ms/div



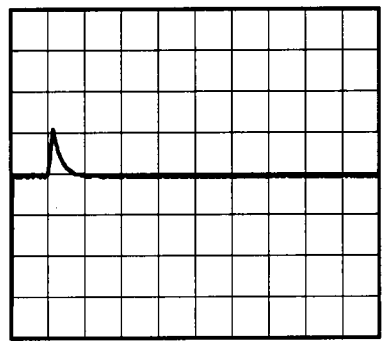
10ms/div

Min.Load (0A) ⟷
Load 50% (6.5A)



100mV/div

10ms/div



10ms/div

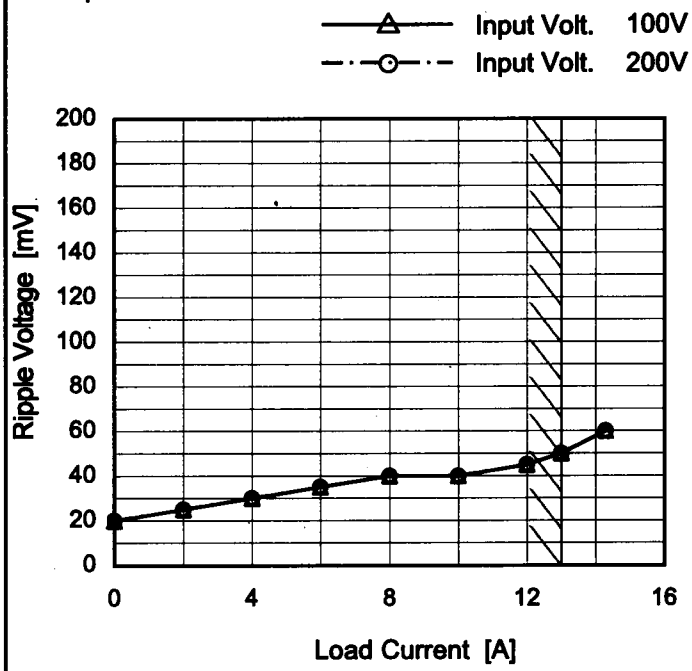
* The characteristic of AC200V is equal.

COSEL

Model	PBA600F-48
Item	Ripple Voltage (by Load Current)
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

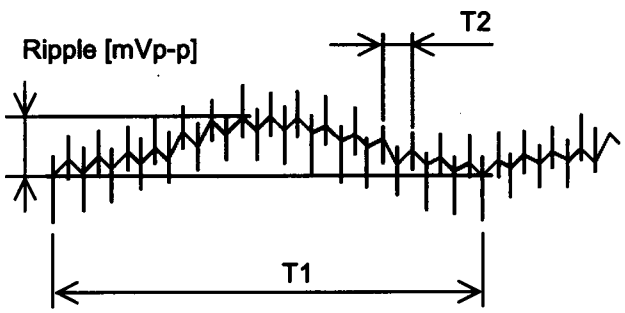


Fig. Complex Ripple Wave Form

2.Values

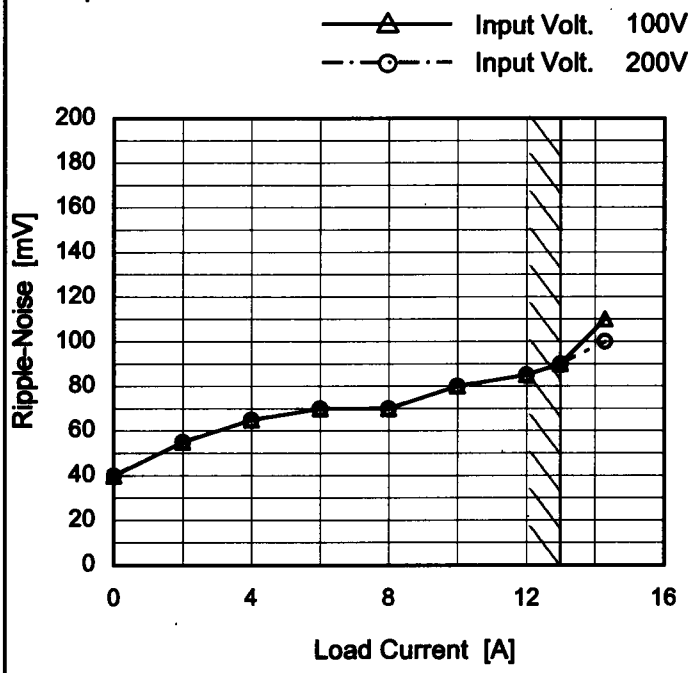
Load Current [A]	Ripple Voltage [mV] Input Volt. 100 [V]	Ripple Voltage [mV] Input Volt. 200 [V]
0.0	20	20
2.0	25	25
4.0	30	30
6.0	35	35
8.0	40	40
10.0	40	40
12.0	45	45
13.0	50	50
14.3	60	60
--	-	-
--	-	-

COSEL

Model	PBA600F-48
Item	Ripple-Noise
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	40	40
2.0	55	55
4.0	65	65
6.0	70	70
8.0	70	70
10.0	80	80
12.0	85	85
13.0	90	90
14.3	110	100
--	-	-
--	-	-

T1: Due to AC Input Line
T2: Due to Switching

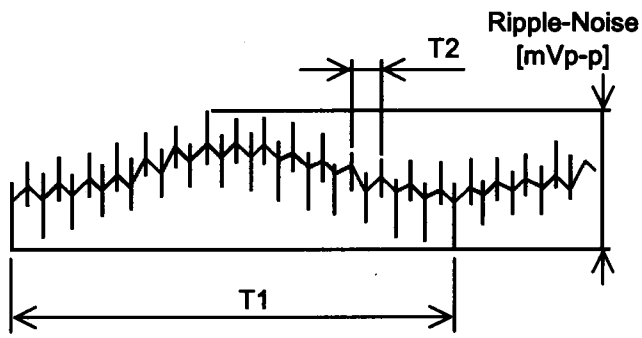


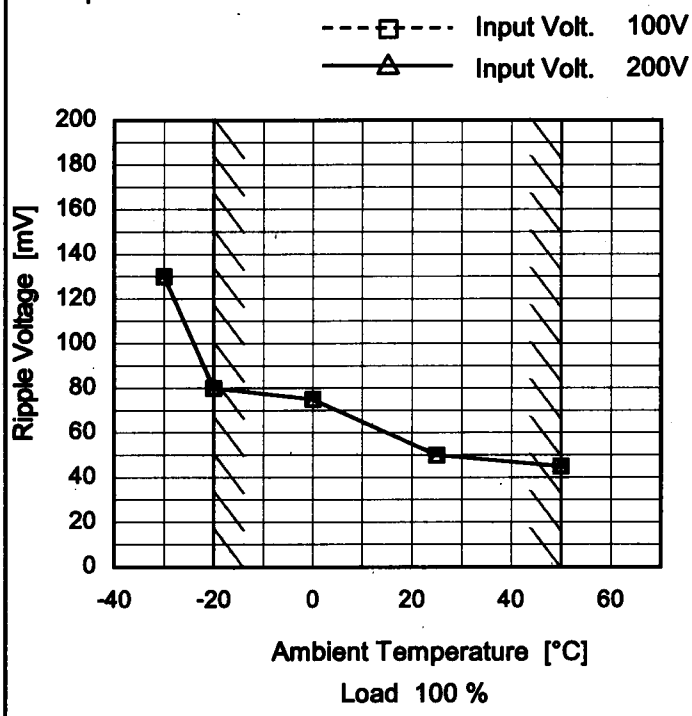
Fig. Complex Ripple Wave Form

COSEL

Model	PBA600F-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V13A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

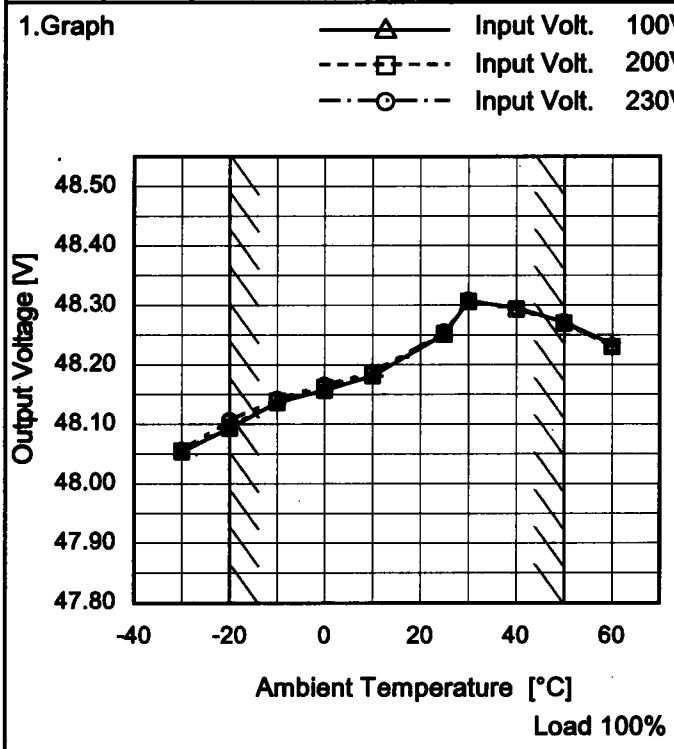
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	130	130
-20	80	80
0	75	75
25	50	50
50	45	45
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA600F-48
Item	Ambient Temperature Drift
Object	+48V13A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-30	48.054	48.055	48.057
-20	48.094	48.095	48.107
-10	48.137	48.139	48.142
0	48.157	48.162	48.166
10	48.182	48.185	48.187
25	48.251	48.253	48.255
30	48.307	48.307	48.308
40	48.296	48.294	48.294
50	48.271	48.270	48.272
60	48.234	48.230	48.229
--	-	-	-

COSEL

Model	PBA600F-48	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V13A	

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 : -20 - 50°C
Input Voltage : 85 - 264V
Load Current : 0 - 13A

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

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

2.Values

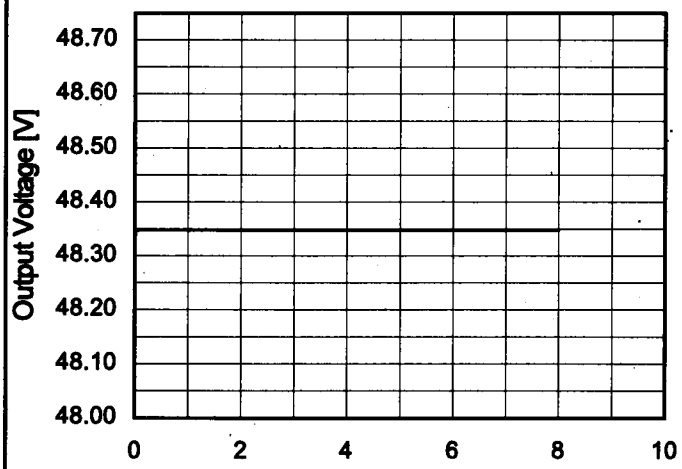
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	264	13	48.278	±84	±0.2
Minimum Voltage	-20	85	13	48.111		

COSEL

Model	PBA600F-48
Item	Time Lapse Drift
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

2.Values

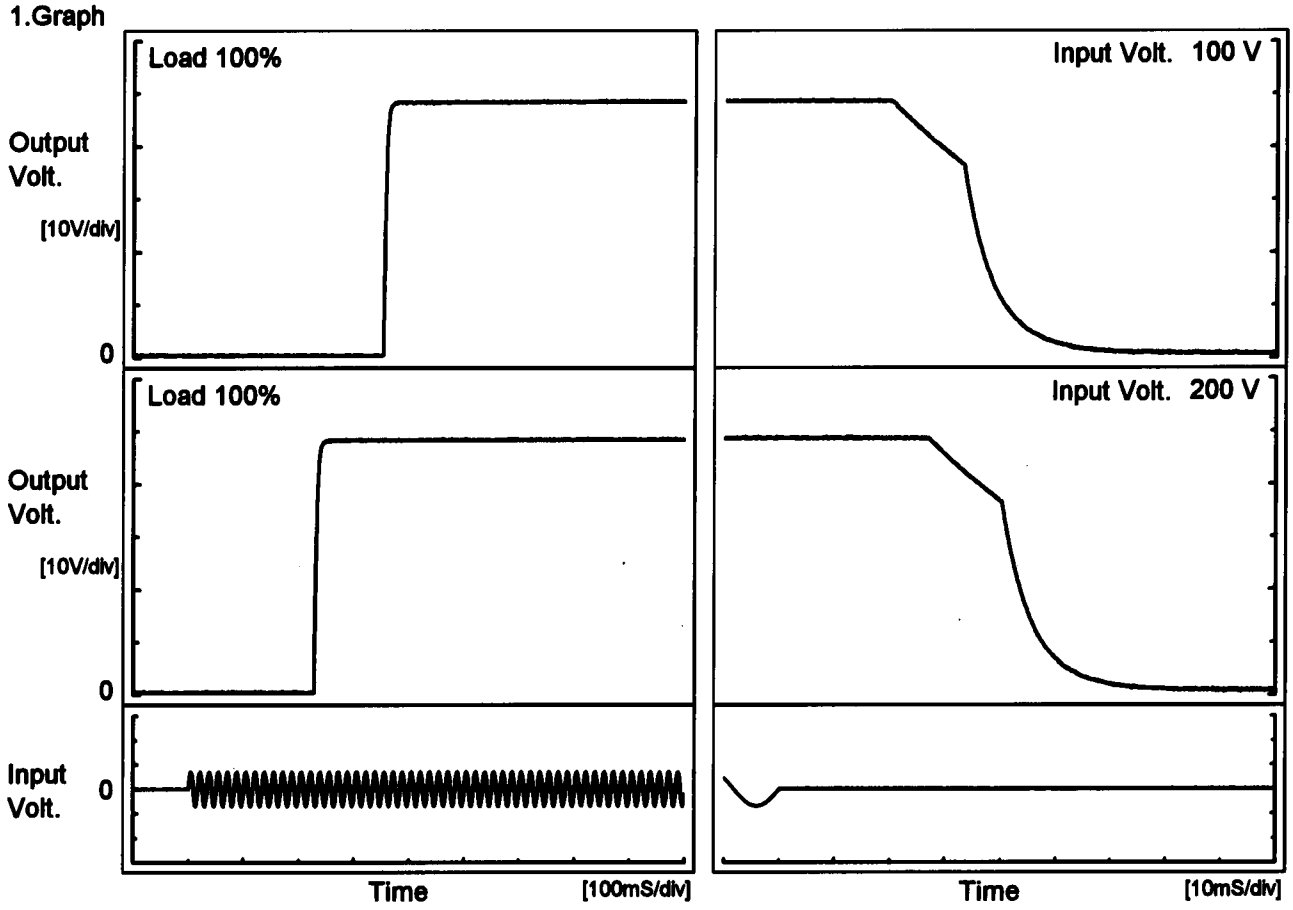
Time since start [H]	Output Voltage [V]
0.0	48.333
0.5	48.349
1.0	48.349
2.0	48.349
3.0	48.349
4.0	48.349
5.0	48.349
6.0	48.349
7.0	48.349
8.0	48.349

COSEL

Model	PBA600F-48
Item	Rise and Fall Time
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

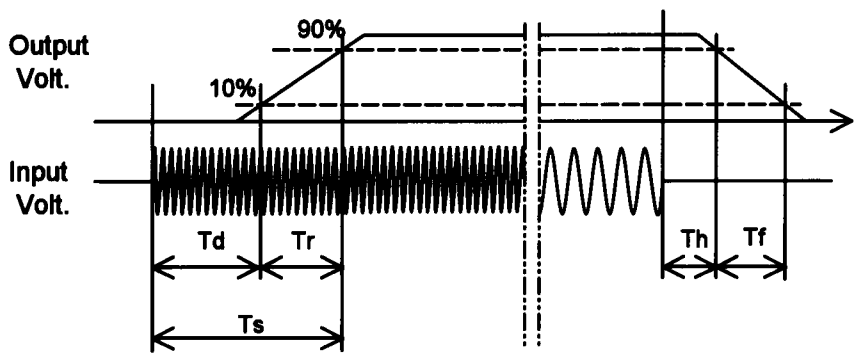
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	352.5	8.5	361.0	25.1	19.5
200 V	227.5	8.5	236.0	32.1	19.9

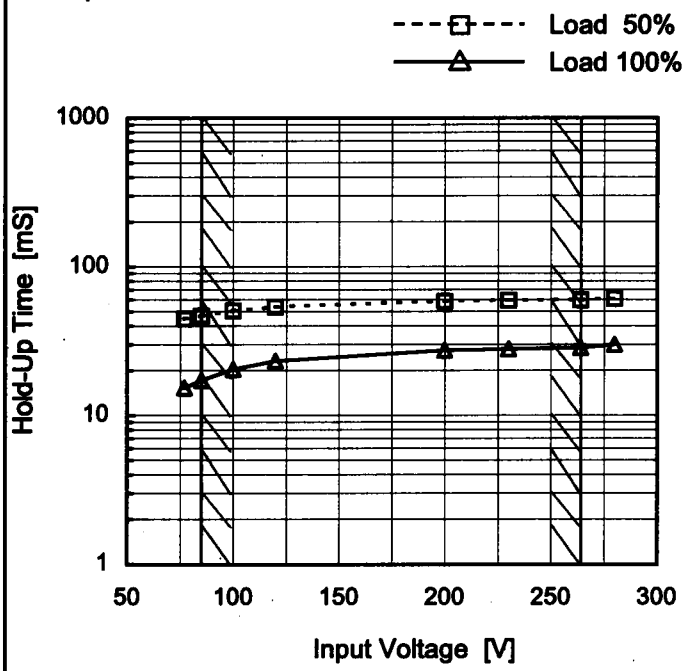


COSEL

Model	PBA600F-48
Item	Hold-Up Time
Object	+48V13A

Temperature 25°C
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 input voltage.

2.Values

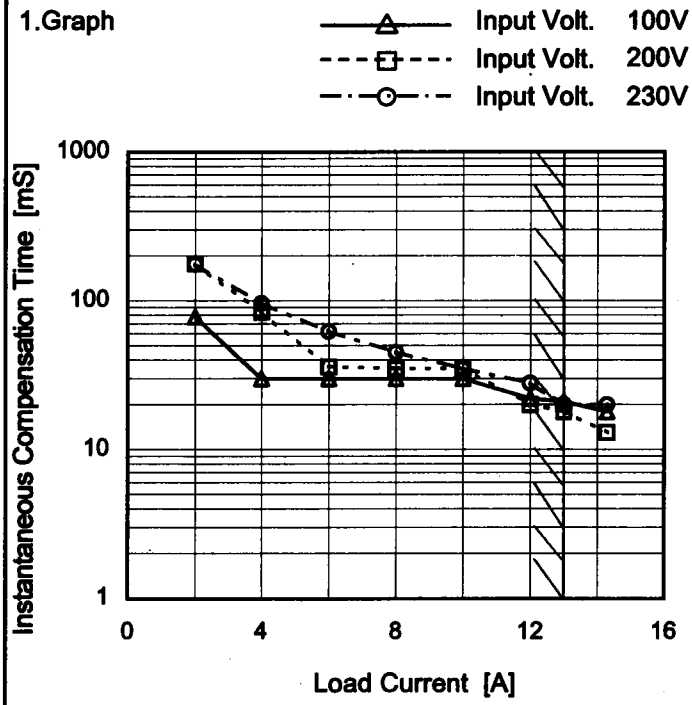
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
77	45	15
85	47	17
100	51	20
120	54	23
200	59	27
230	59	28
264	60	29
280	61	30
--	-	-

COSEL

Model	PBA600F-48
Item	Instantaneous Interruption Compensation
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

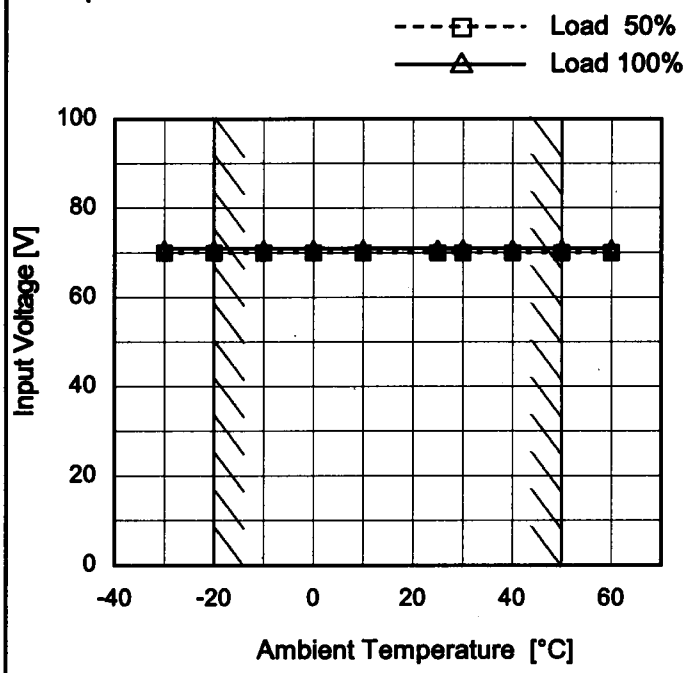
Load Current [A]	Time [mS] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
2.0	78	177	176
4.0	30	84	96
6.0	30	36	62
8.0	30	35	45
10.0	30	35	35
12.0	22	20	28
13.0	21	18	20
14.3	18	13	20
--	-	-	-
--	-	-	-

COSEL

Model	PBA600F-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V13A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

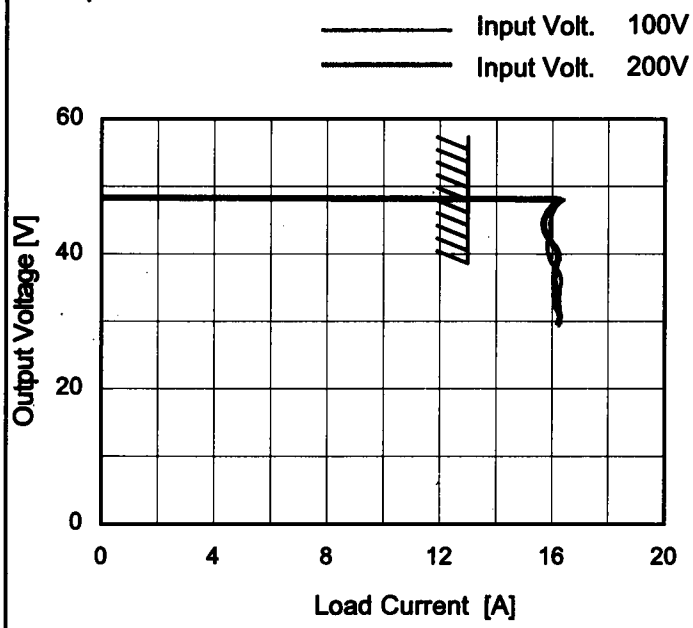
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	70	71
-20	70	71
-10	70	71
0	70	71
10	70	71
25	70	71
30	70	71
40	70	71
50	70	71
60	70	71
--	-	-

COSEL

Model	PBA600F-48
Item	Overcurrent Protection
Object	+48V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent opertion occurs when the output voltage is from 29.5V to 0V.

2.Values

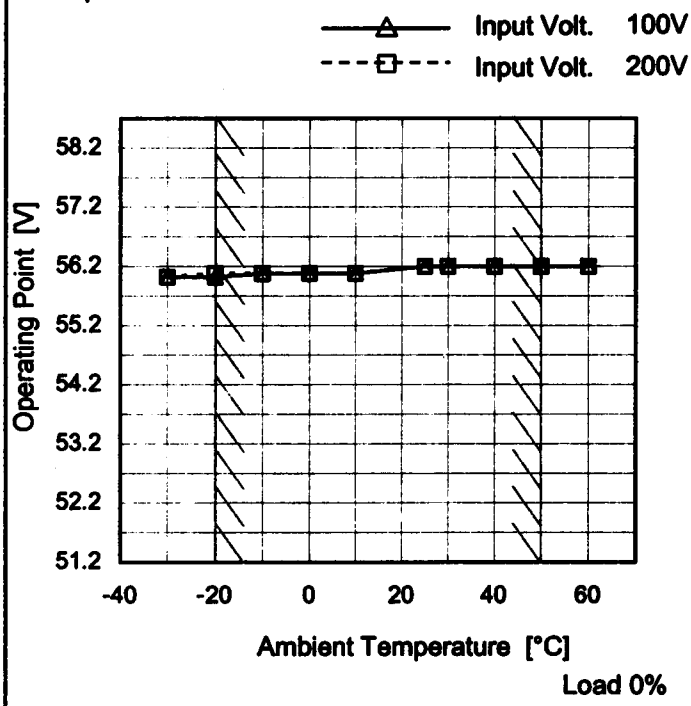
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
48.0	16.42	16.27
45.6	15.98	15.75
43.2	15.94	15.77
38.4	16.01	16.18
33.6	16.26	16.11
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA600F-48
Item	Overvoltage Protection
Object	+48V13A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 200[V]
-30	56.06	56.06
-20	56.06	56.12
-10	56.12	56.12
0	56.12	56.12
10	56.12	56.12
25	56.24	56.24
30	56.24	56.24
40	56.24	56.24
50	56.24	56.24
60	56.24	56.24
—	-	-

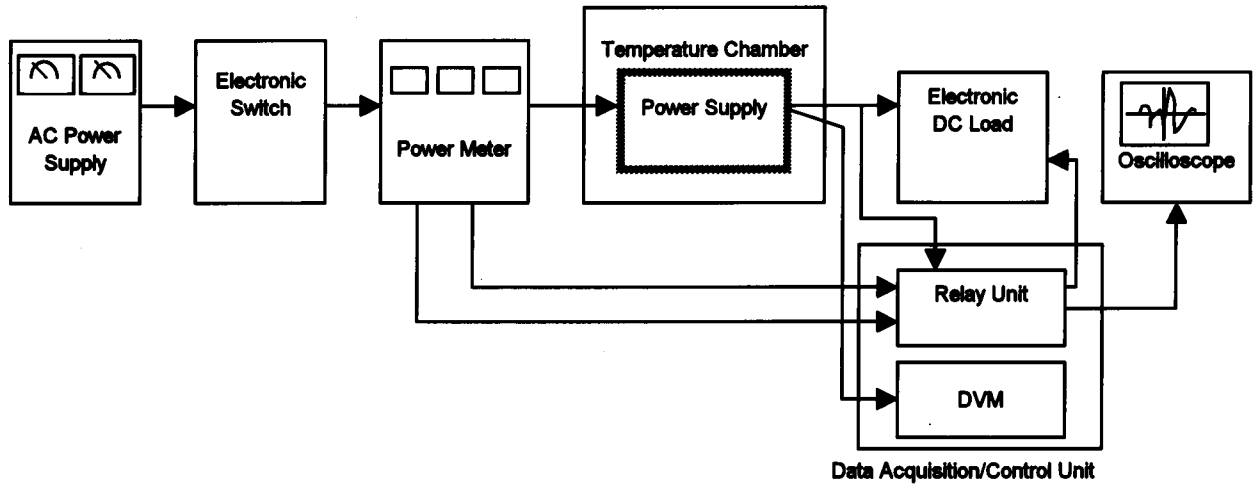


Figure A

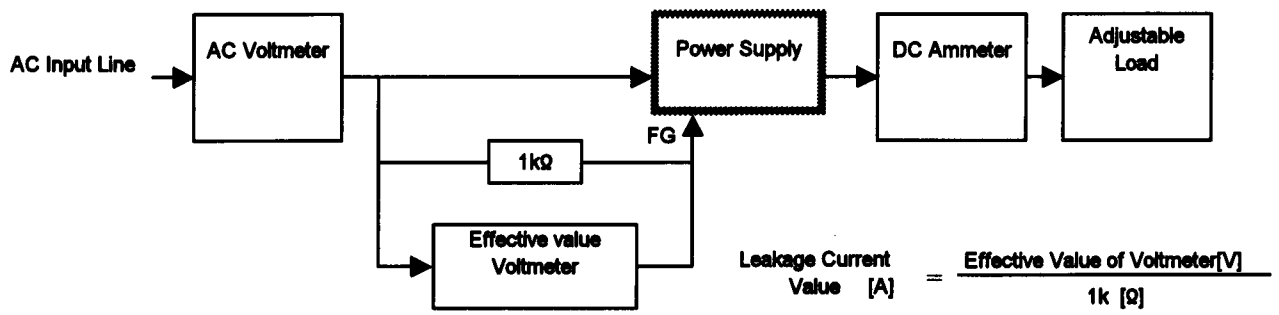


Figure B (DEN-AN)

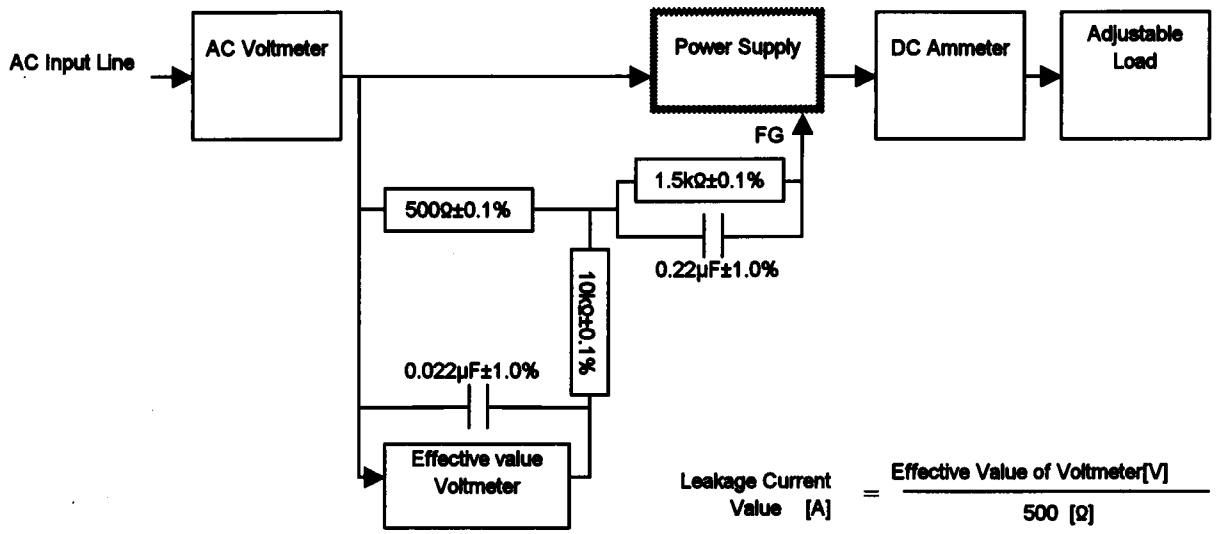


Figure B (IEC60950)