参考資料

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TEST DATA OF PBA1500F-48

Regulated DC Power Supply
Jun.6.2003

Approved by : Takahiro Yonada
Design Manager

Prepared by : Tsukasa Suginoto
Design Engineer

COSEL CO.,LTD.

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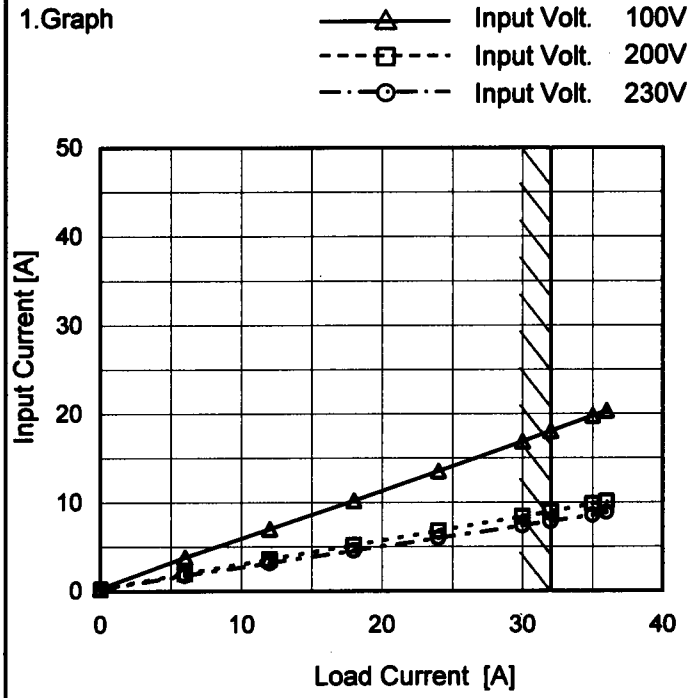
Model	PBA1500F-48
Item	Input Current (by Load Current)
Object	———————

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 Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.284	0.216	0.222
6.0	3.790	1.992	1.770
12.0	6.990	3.600	3.174
18.0	10.190	5.190	4.560
24.0	13.530	6.800	5.960
30.0	16.900	8.420	7.370
32.0	18.080	8.960	7.840
35.0	19.800	9.850	8.550
36.0	20.360	10.080	8.870
--	-	-	-
--	-	-	-

BC-3498

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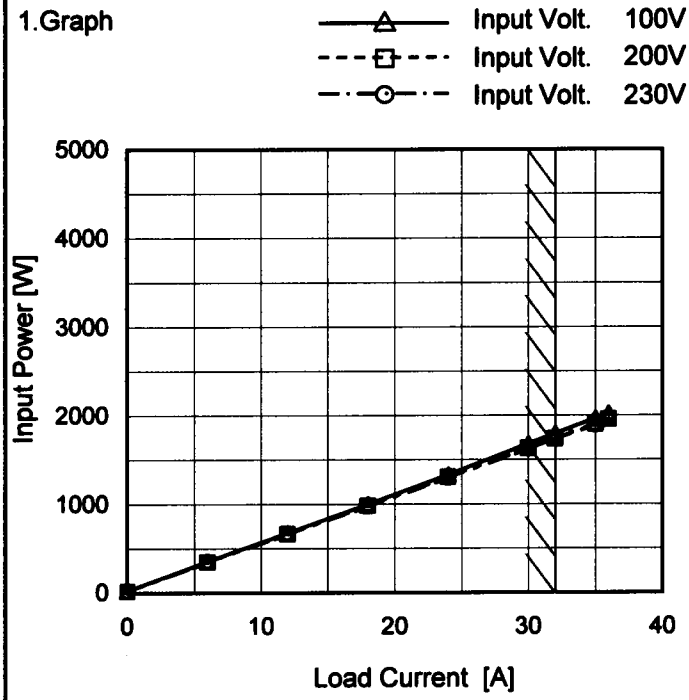
Model	PBA1500F-48
Item	Input Power (by Load Current)
Object	———————

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	20	17	15
6.0	354	349	349
12.0	674	665	661
18.0	998	983	978
24.0	1334	1306	1297
30.0	1680	1630	1624
32.0	1796	1740	1734
35.0	1967	1902	1891
36.0	2022	1956	1961
--	-	-	-
--	-	-	-

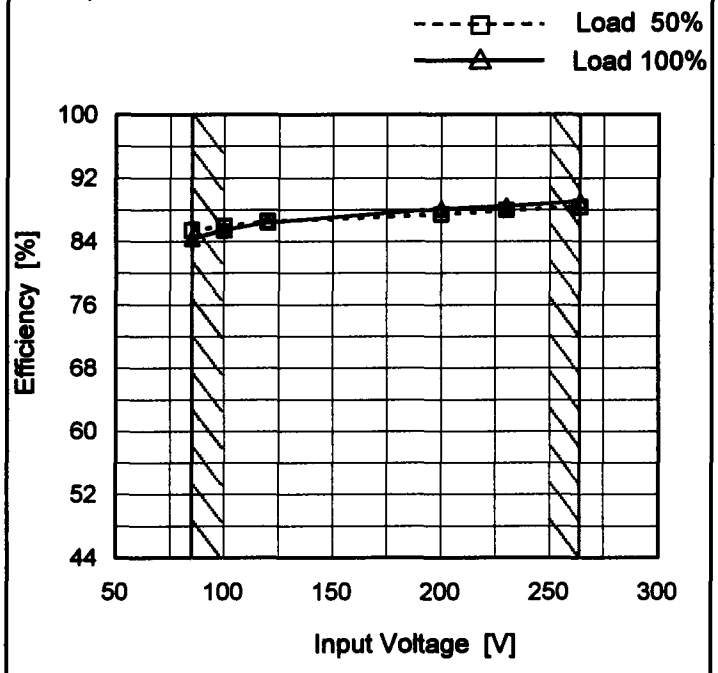
BC-3498

COSEL

Model	PBA1500F-48
Item	Efficiency (by Input Voltage)
Object	+48V32A

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%
85	85.4	84.4
100	86.0	85.5
120	86.5	86.5
200	87.4	88.1
230	87.9	88.5
264	88.3	89.0
–	-	-
–	-	-
–	-	-

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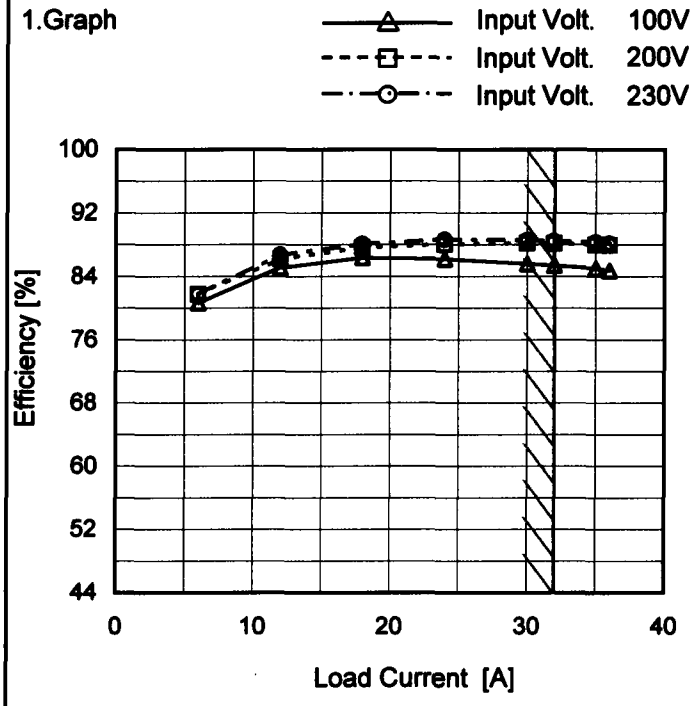
Model	PBA1500F-48
Item	Efficiency (by Load Current)
Object	————————

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	-	-	-
6.0	80.7	81.8	81.8
12.0	85.1	86.2	86.7
18.0	86.3	87.7	88.1
24.0	86.2	88.0	88.7
30.0	85.6	88.2	88.6
32.0	85.4	88.2	88.5
35.0	85.0	88.0	88.3
36.0	84.8	88.0	88.2
--	-	-	-
--	-	-	-

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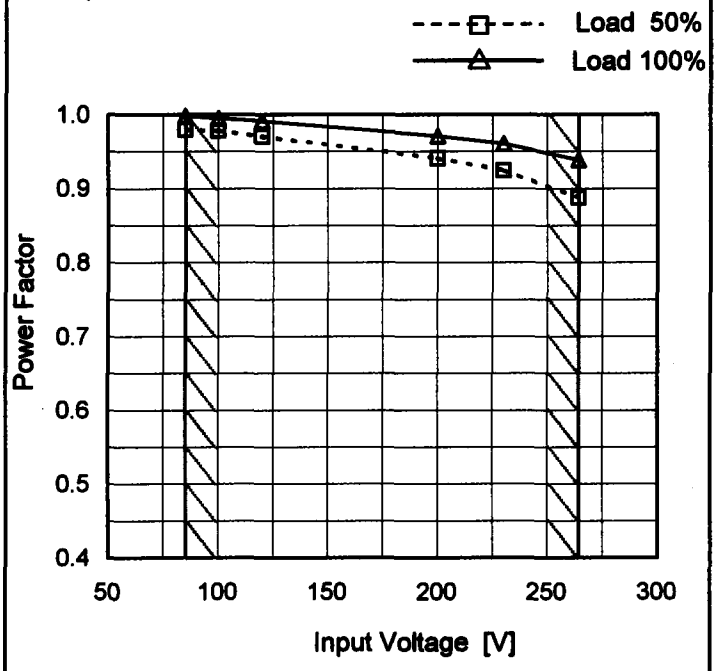
Model	PBA1500F-48
Item	Power Factor (by Input Voltage)
Object	+48V32A

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%
85	0.979	0.998
100	0.978	0.995
120	0.970	0.991
200	0.941	0.971
230	0.925	0.961
264	0.887	0.938
–	-	-
–	-	-
–	-	-

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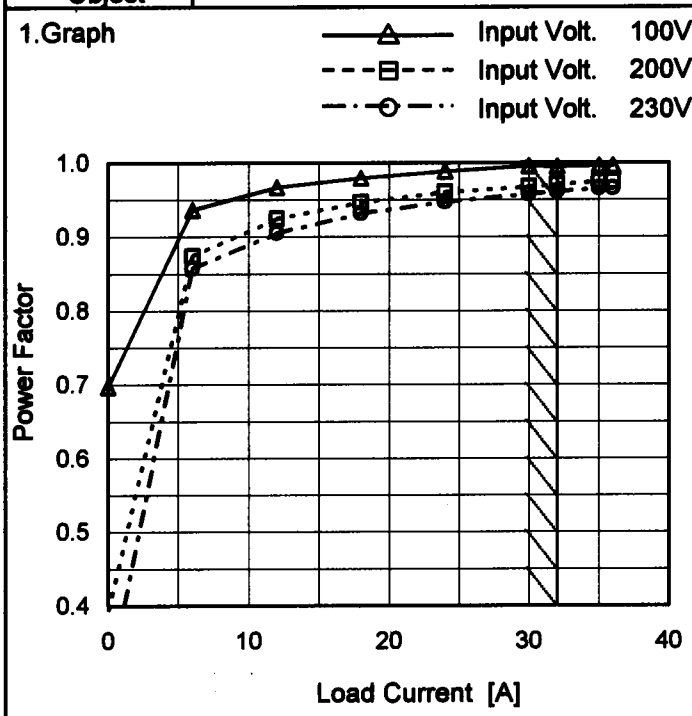
Model	PBA1500F-48
Item	Power Factor (by Load Current)
Object	———————

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	0.697	0.395	0.294
6.0	0.937	0.875	0.857
12.0	0.967	0.925	0.905
18.0	0.979	0.947	0.932
24.0	0.988	0.960	0.947
30.0	0.995	0.968	0.958
32.0	0.995	0.971	0.961
35.0	0.996	0.975	0.966
36.0	0.996	0.975	0.966
—	-	-	-
—	-	-	-

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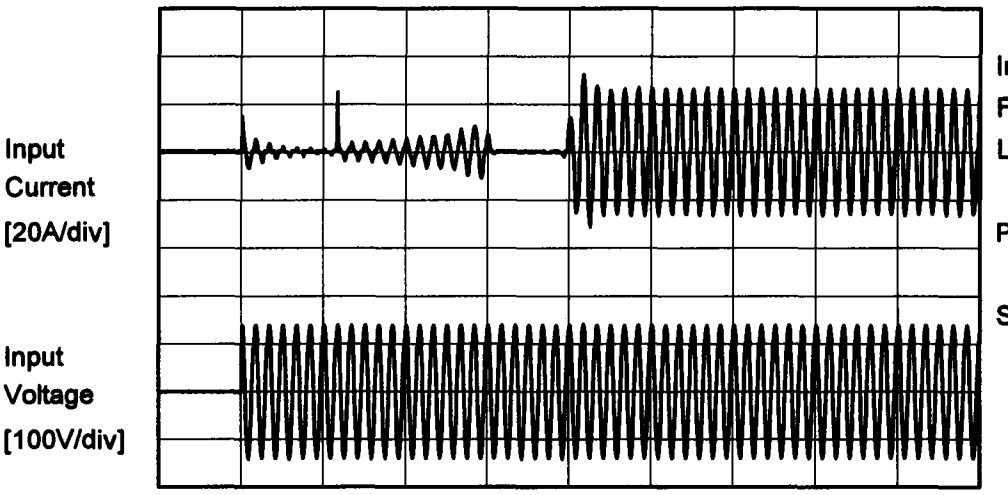
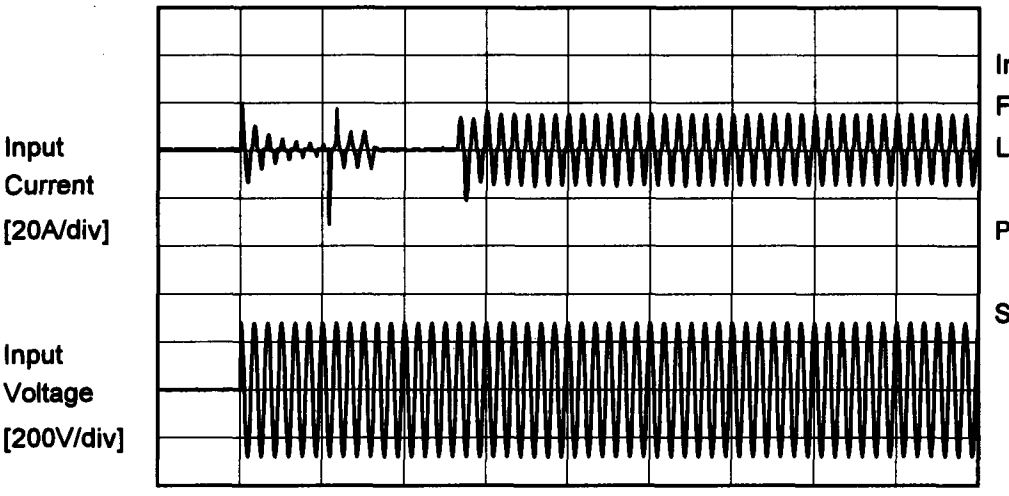
Model	PBA1500F-48		
Item	Inrush Current	Temperature	25°C
		Testing Circuitry	Figure A
Object	————————		



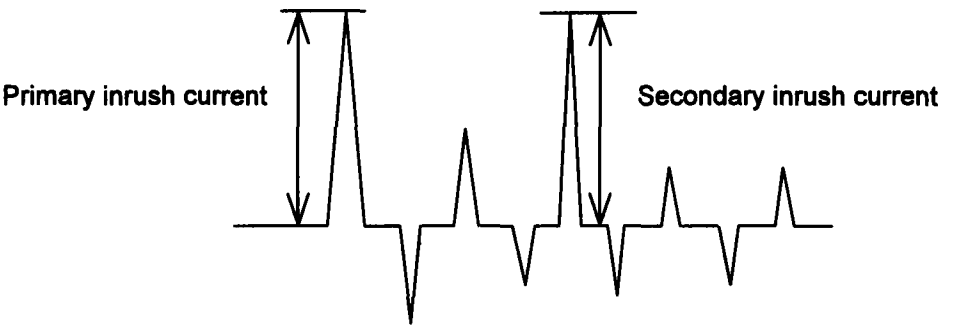
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
15.0 A
Secondary inrush current :
32.4 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
19.7 A
Secondary inrush current :
31.1 A



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Model	PBA1500F-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	0.31	0.58	0.71	Operation
	One of phase	0.57	1.20	1.36	stand by
IEC60950	Both phases	0.34	0.67	0.81	Operation
	One of phase	0.57	1.15	1.41	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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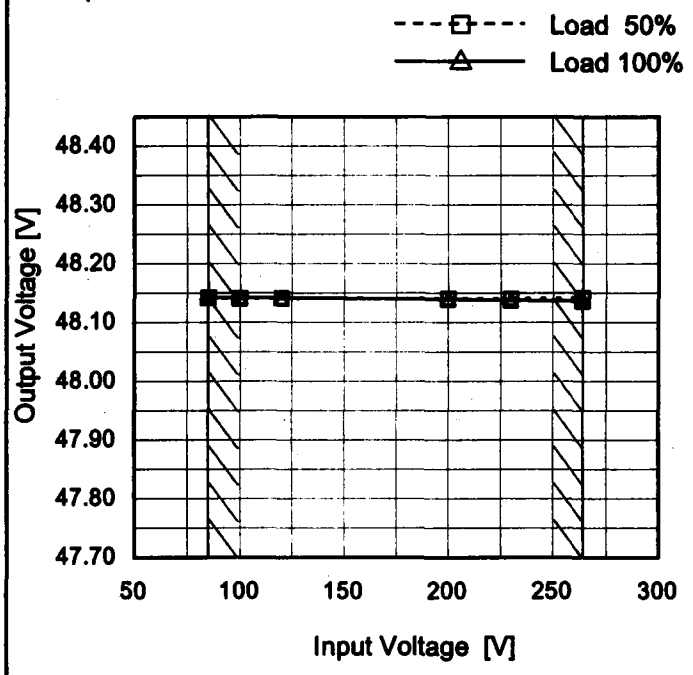
Model	PBA1500F-48
Item	Line Regulation
Object	+48V32A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

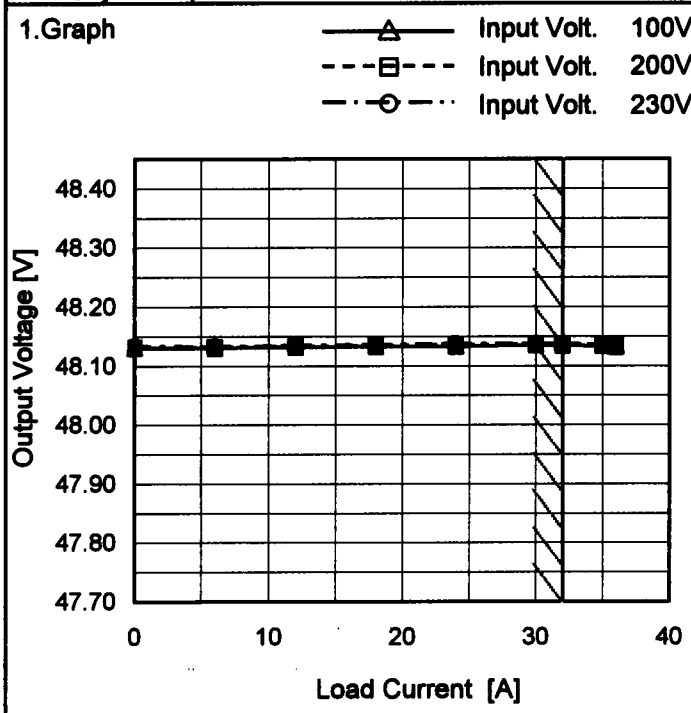
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	48.142	48.143
100	48.141	48.143
120	48.141	48.142
200	48.140	48.140
230	48.141	48.138
264	48.142	48.137
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA1500F-48
Item	Load Regulation
Object	+48V32A

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	48.130	48.132	48.134
6.0	48.130	48.132	48.133
12.0	48.132	48.134	48.135
18.0	48.133	48.135	48.136
24.0	48.133	48.136	48.137
30.0	48.135	48.137	48.138
32.0	48.135	48.137	48.138
35.0	48.133	48.136	48.137
36.0	48.132	48.135	48.135
—	-	-	-
—	-	-	-

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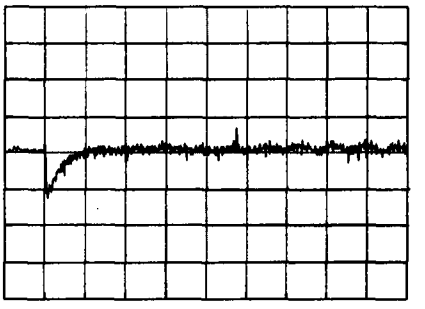
Model	PBA1500F-48
Item	Dynamic Load Response
Object	+48V32A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 100 V
Cycle 1000 mS

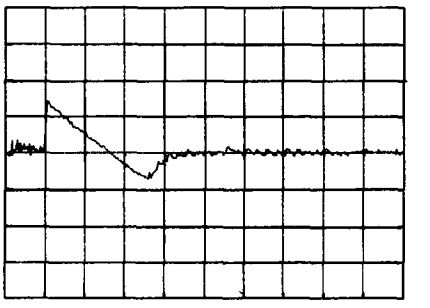
Load Current

Min.Load (0A) ⟷
Load 100% (32A)



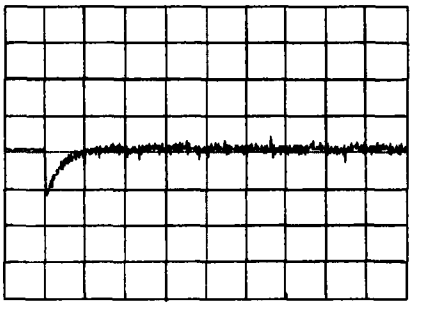
100mV/div

10mS/div



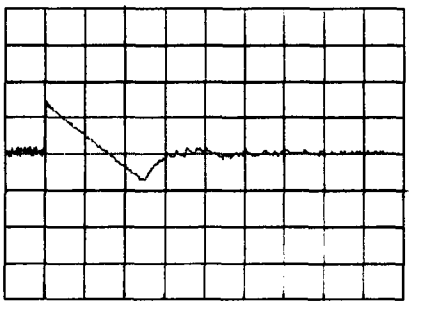
10mS/div

Min.Load (0A) ⟷
Load 50% (16A)



100mV/div

10mS/div



10mS/div

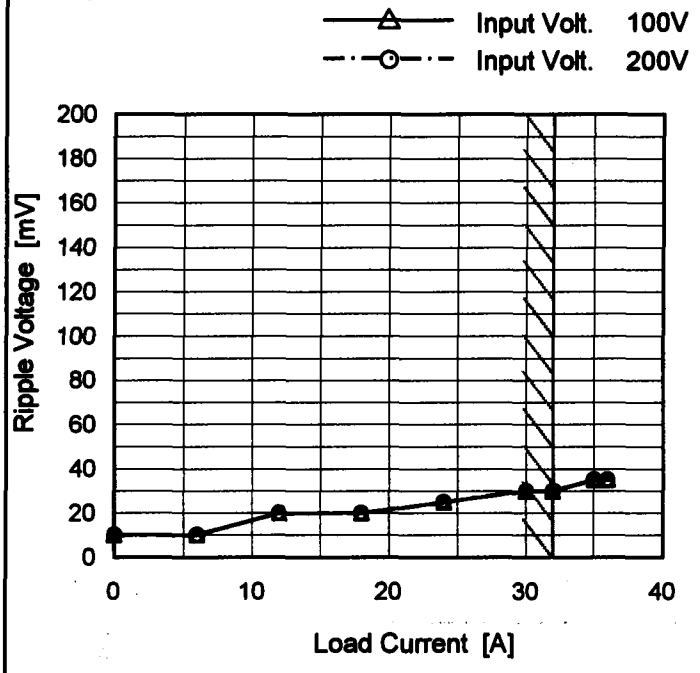
* The characteristic of AC200V is equal.

COSEL

Model	PBA1500F-48
Item	Ripple Voltage (by Load Current)
Object	+48V32A

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.

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	10	10
6.0	10	10
12.0	20	20
18.0	20	20
24.0	25	25
30.0	30	30
32.0	30	30
35.0	35	35
36.0	35	35
-	-	-
-	-	-

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

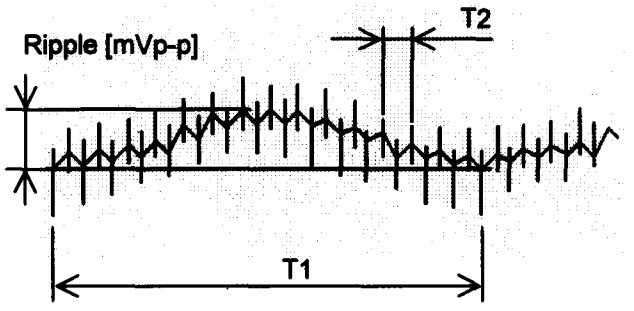


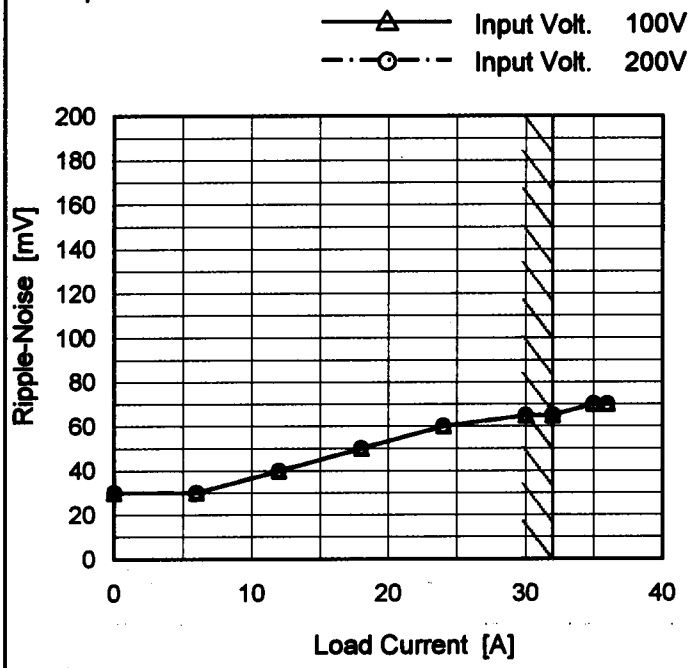
Fig. Complex Ripple Wave Form

COSEL

Model	PBA1500F-48
Item	Ripple-Noise
Object	+48V32A

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	30	30
6.0	30	30
12.0	40	40
18.0	50	50
24.0	60	60
30.0	65	65
32.0	65	65
35.0	70	70
36.0	70	70
--	-	-
--	-	-

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

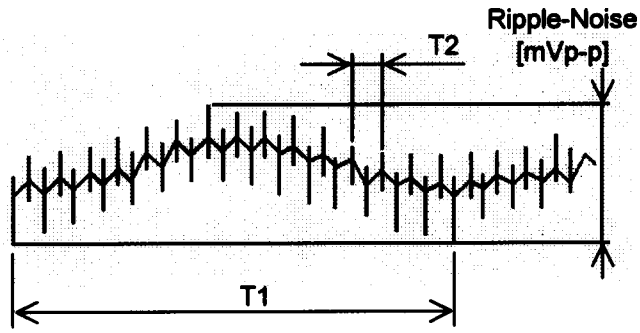


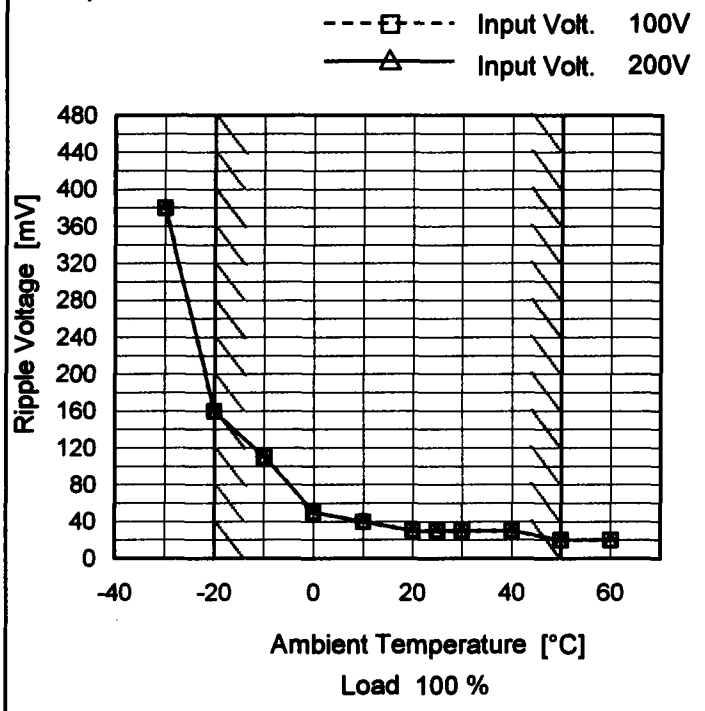
Fig. Complex Ripple Wave Form

COSEL

Model	PBA1500F-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V32A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.

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

2.Values

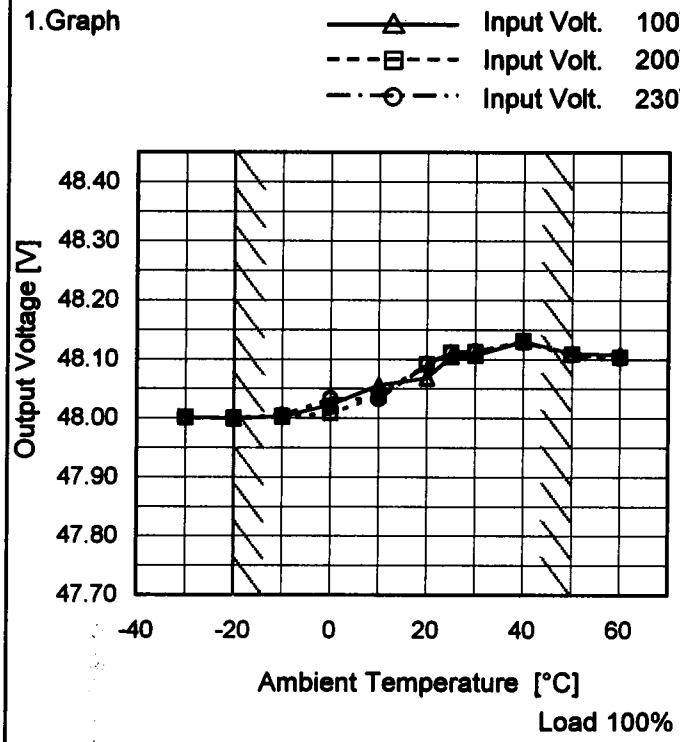
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	380	380
-20	160	160
-10	110	110
0	50	50
10	40	40
20	30	30
25	30	30
30	30	30
40	30	30
50	20	20
60	20	20

COSEL

Model	PBA1500F-48
Item	Ambient Temperature Drift
Object	+48V32A

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	48.002	48.002	48.001
-20	48.000	48.000	48.000
-10	48.003	48.004	48.005
0	48.023	48.008	48.033
10	48.056	48.038	48.032
20	48.068	48.091	48.092
25	48.105	48.111	48.112
30	48.107	48.113	48.114
40	48.130	48.131	48.130
50	48.111	48.108	48.107
60	48.108	48.104	48.101

COSEL

Model	PBA1500F-48	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V32A	

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 - 32A

* 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	85	32	48.134	±67	±0.1
Minimum Voltage	-20	85	32	48.001		

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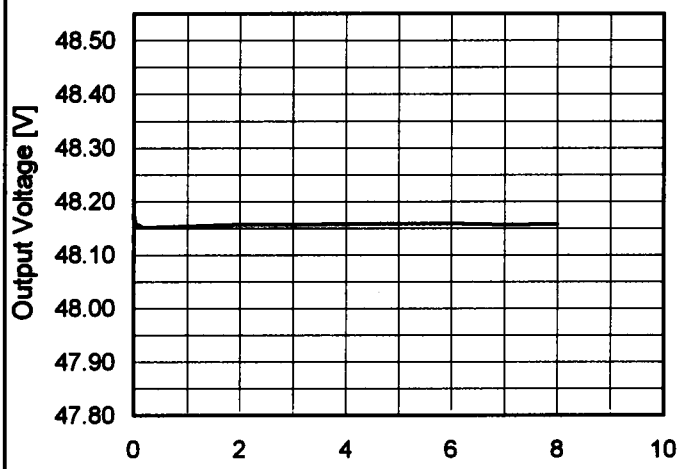
Model	PBA1500F-48
Item	Time Lapse Drift
Object	+48V32A

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	48.180
0.5	48.152
1.0	48.154
2.0	48.157
3.0	48.157
4.0	48.158
5.0	48.158
6.0	48.159
7.0	48.157
8.0	48.158

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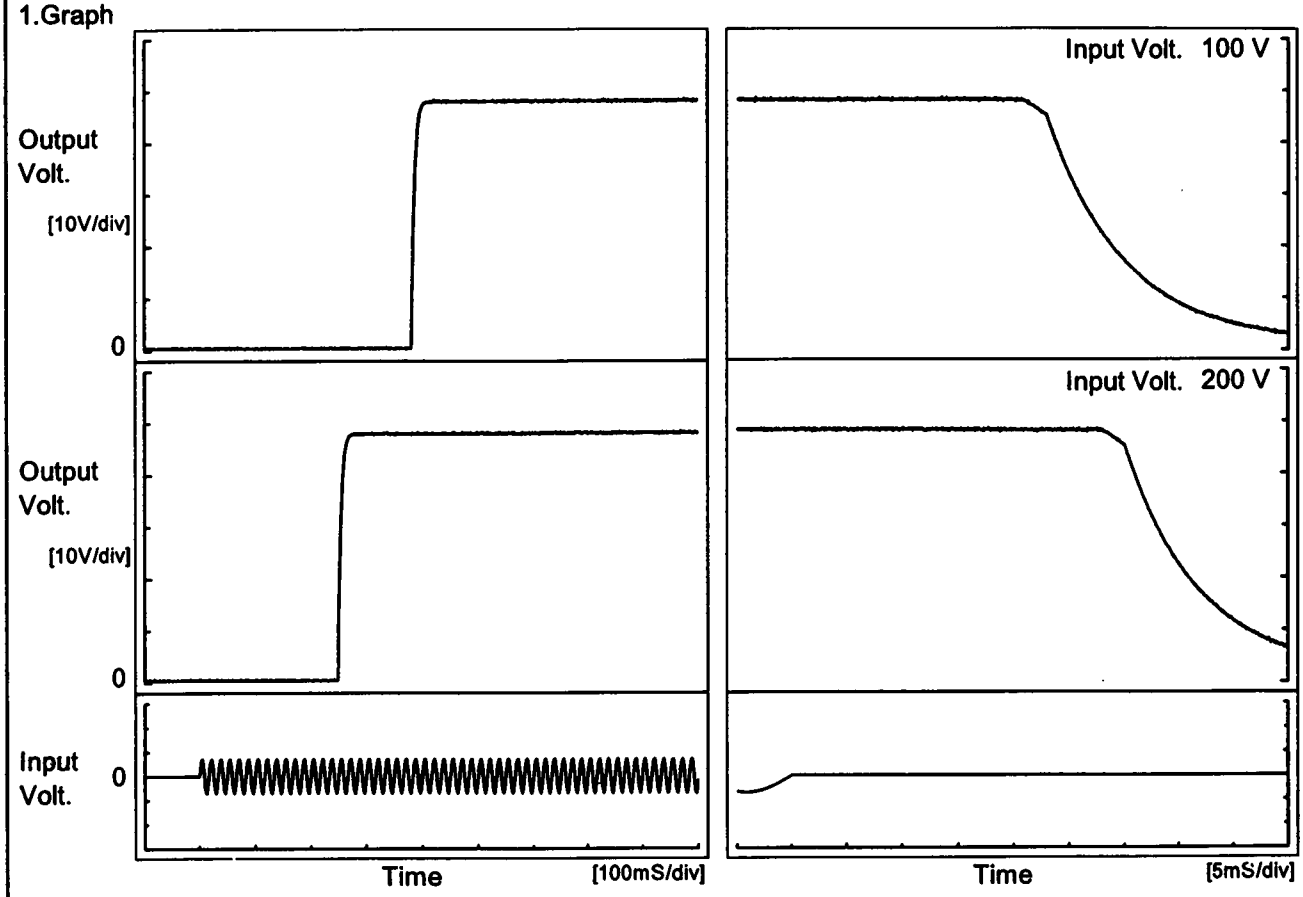
Model	PBA1500F-48
Item	Rise and Fall Time
Object	+48V32A

Temperature 25°C
Testing Circuitry Figure A

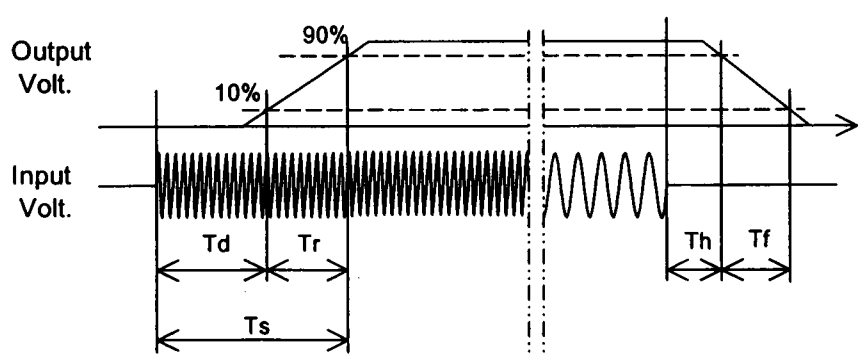
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	382.5	12.5	395.0	23.2	16.4
200 V	249.5	12.5	262.0	30.3	14.7

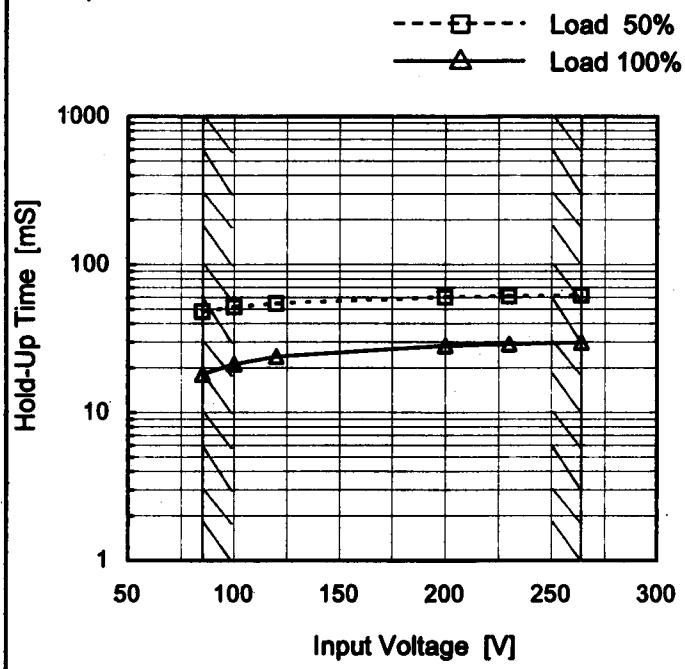


COSEL

Model	PBA1500F-48
Item	Hold-Up Time
Object	+48V32A

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

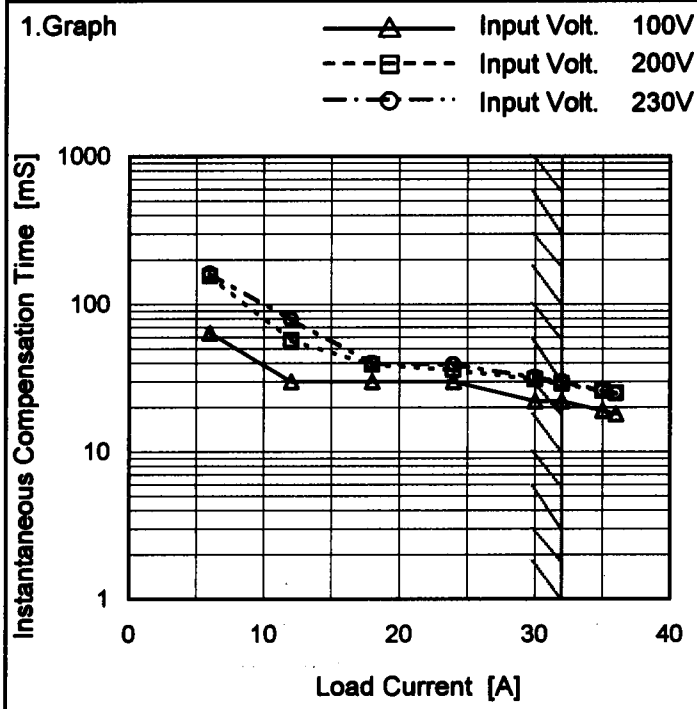
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
85	48	18
100	52	21
120	55	24
200	60	28
230	61	29
264	62	30
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA1500F-48
Item	Instantaneous Interruption Compensation
Object	+48V32A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

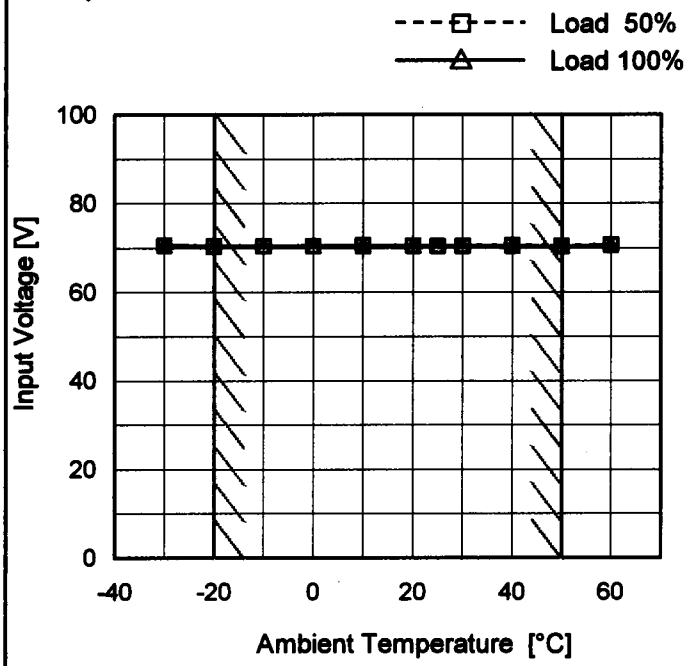
Load Current [A]	Time [mS] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
6.0	64	155	161
12.0	30	57	79
18.0	30	39	40
24.0	30	36	39
30.0	22	31	32
32.0	22	29	30
35.0	19	26	26
36.0	18	25	25
—	-	-	-
—	-	-	-

COSEL

Model	PBA1500F-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V32A

Testing Circuitry Figure A

1.Graph



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

2.Values

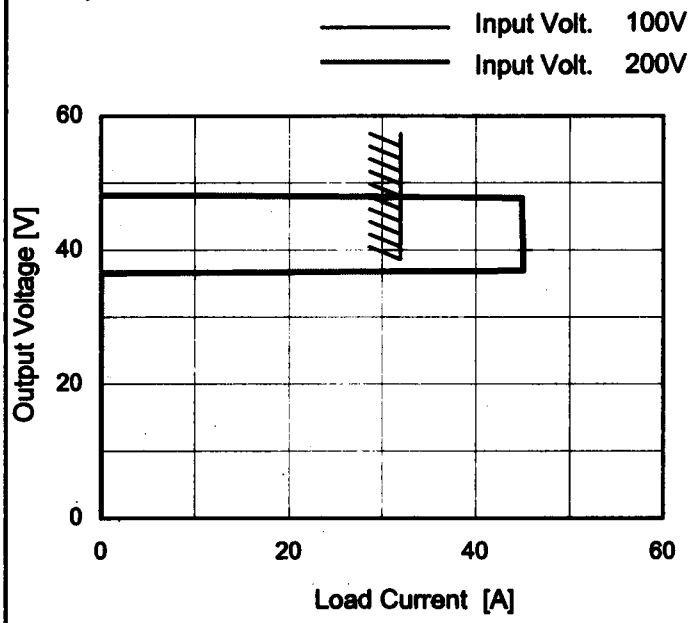
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	71	71
-20	71	71
-10	71	71
0	71	71
10	71	71
20	71	71
25	71	71
30	71	71
40	71	71
50	71	71
60	71	71

COSEL

Model	PBA1500F-48
Item	Overcurrent Protection
Object	+48V32A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

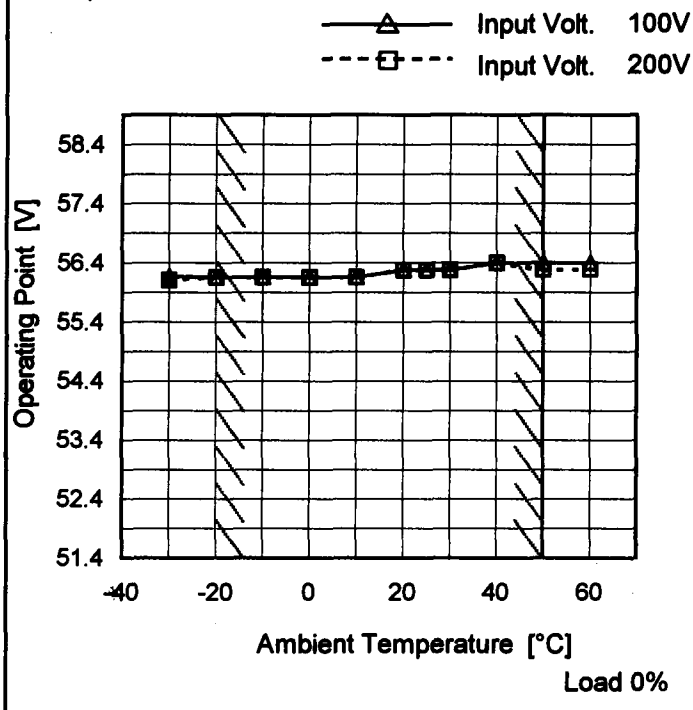
Output Voltage [V]	Load Current [A] Input Volt. 100[V]	Load Current [A] Input Volt. 200[V]
48.0	44.98	44.95
45.6	45.06	44.93
43.2	45.13	44.98
38.4	45.13	45.07
33.6	0.00	0.00
28.8	0.00	0.00
24.0	0.00	0.00
19.2	0.00	0.00
14.4	0.00	0.00
9.6	0.00	0.00
4.8	0.00	0.00
0.0	0.00	0.00

COSEL

Model	PBA1500F-48
Item	Overvoltage Protection
Object	+48V32A

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	56.14	56.08
-20	56.13	56.13
-10	56.13	56.13
0	56.13	56.13
10	56.13	56.13
20	56.25	56.25
25	56.25	56.25
30	56.25	56.25
40	56.37	56.37
50	56.37	56.25
60	56.37	56.26

COSEL

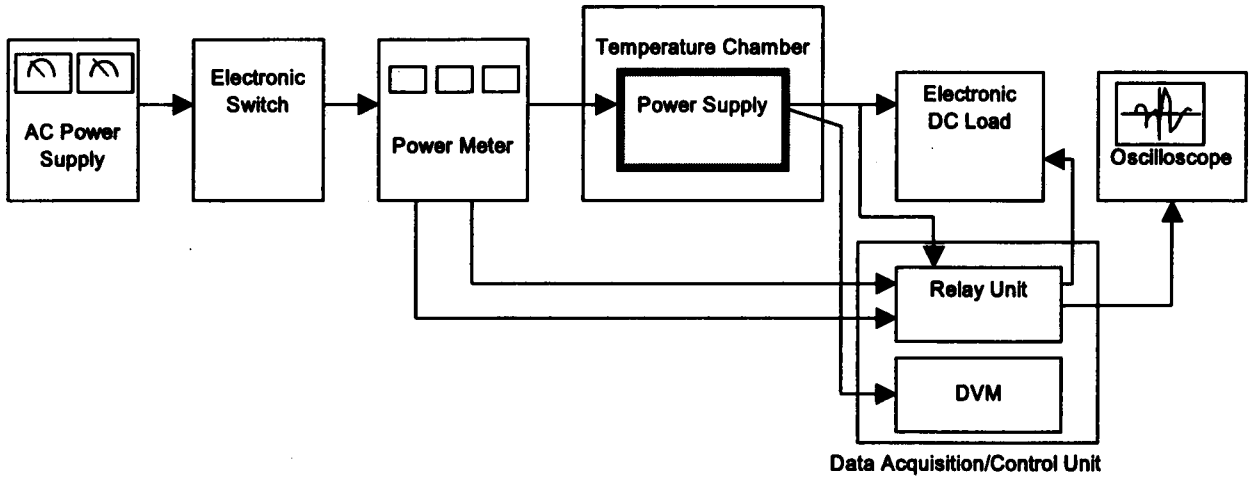


Figure A

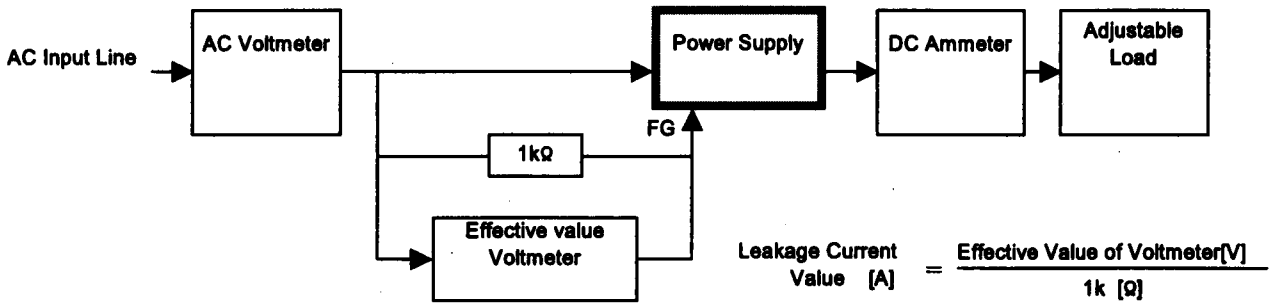


Figure B (DEN-AN)

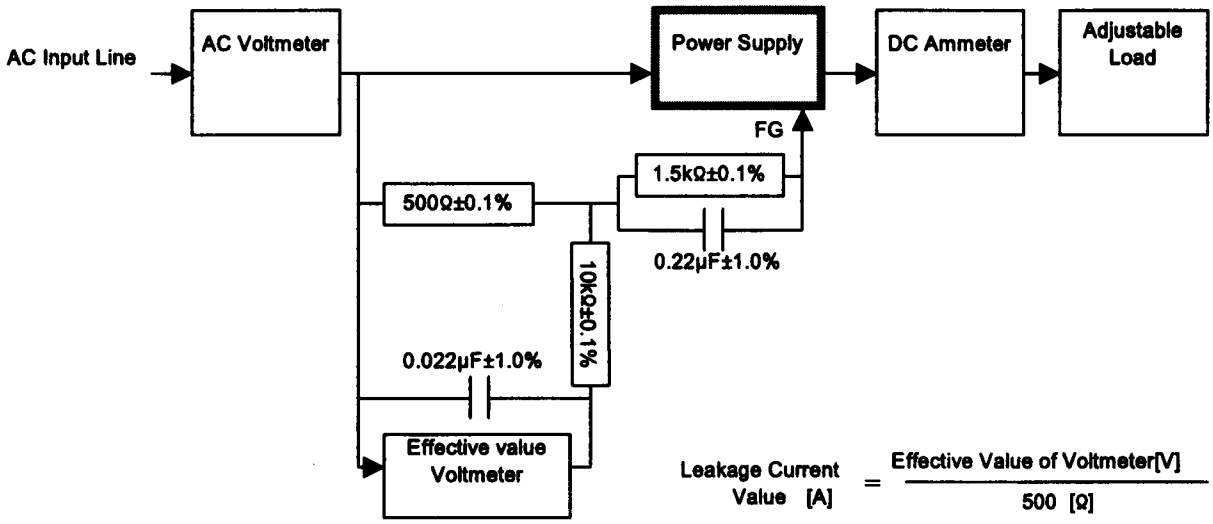


Figure B (IEC60950)