参考資料

COSEL

TEST DATA OF PBA1500F-24

Regulated DC Power Supply
Jun.10. 2003

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COSEL CO.,LTD.

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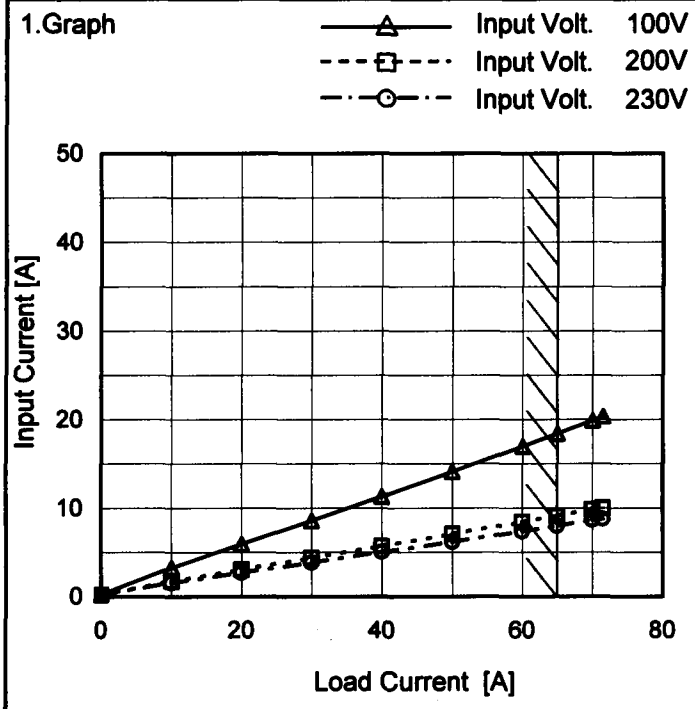
Object	———————

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	0.268	0.216	0.224
10.0	3.261	1.725	1.534
20.0	5.940	3.058	2.706
30.0	8.600	4.390	3.861
40.0	11.330	5.720	5.020
50.0	14.100	7.070	6.190
60.0	17.000	8.430	7.380
65.0	18.440	9.120	7.980
70.0	19.900	9.840	8.650
71.5	20.360	10.020	8.760
--	-	-	-

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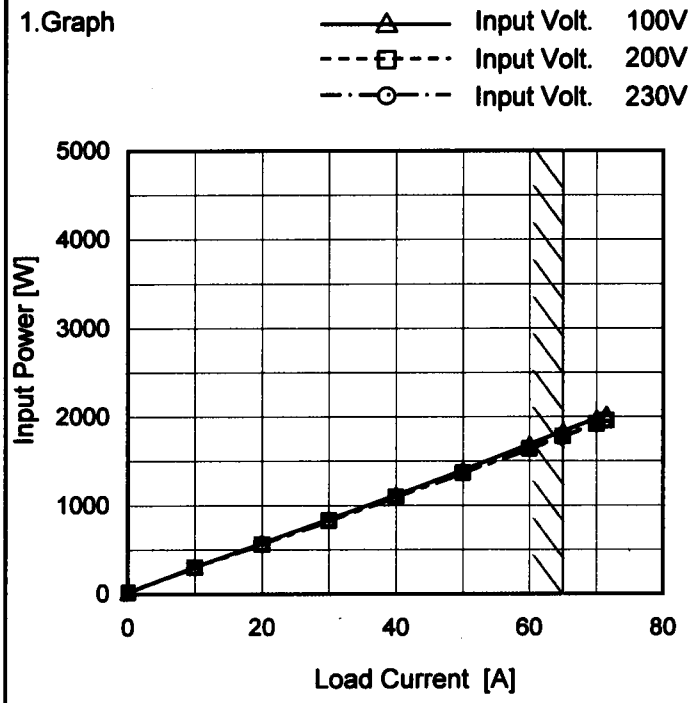
COSEL

Model	PBA1500F-24
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

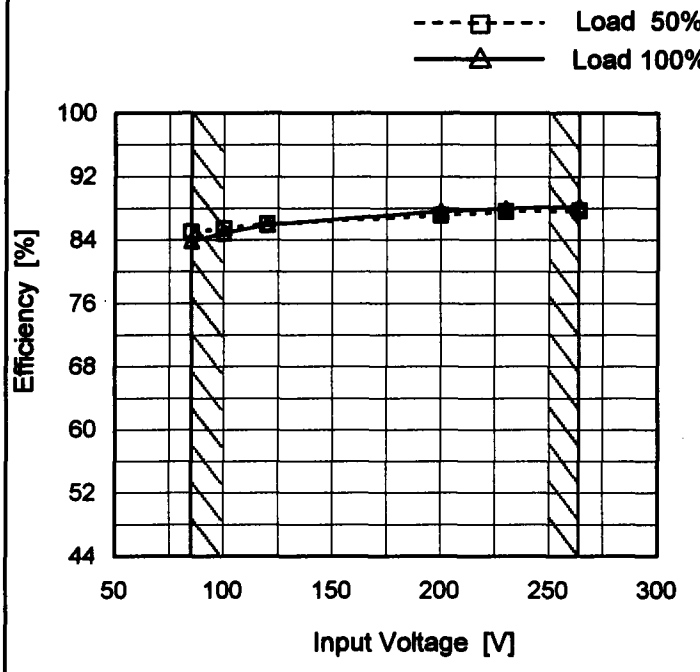
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	19	17	15
10.0	305	300	300
20.0	573	562	561
30.0	844	828	824
40.0	1117	1096	1091
50.0	1399	1368	1360
60.0	1692	1643	1636
65.0	1839	1781	1774
70.0	1984	1922	1915
71.5	2031	1963	1956
--	-	-	-

COSEL

Model	PBA1500F-24
Item	Efficiency (by Input Voltage)
Object	+24V65A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

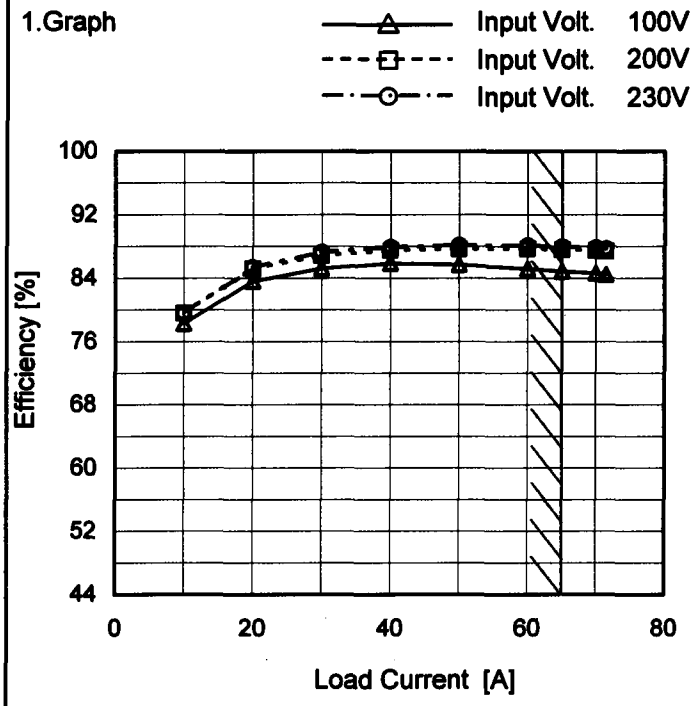
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	85.0	83.9
100	85.5	84.9
120	86.1	85.9
200	87.1	87.6
230	87.6	88.0
264	87.7	88.3
–	-	-
–	-	-
–	-	-

COSEL

Model	PBA1500F-24
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	-	-	-
10.0	78.3	79.6	79.6
20.0	83.6	85.2	85.4
30.0	85.2	86.9	87.3
40.0	85.9	87.5	87.9
50.0	85.7	87.7	88.2
60.0	85.2	87.7	88.1
65.0	84.9	87.6	88.0
70.0	84.6	87.5	87.8
71.5	84.5	87.4	87.7
--	-	-	-

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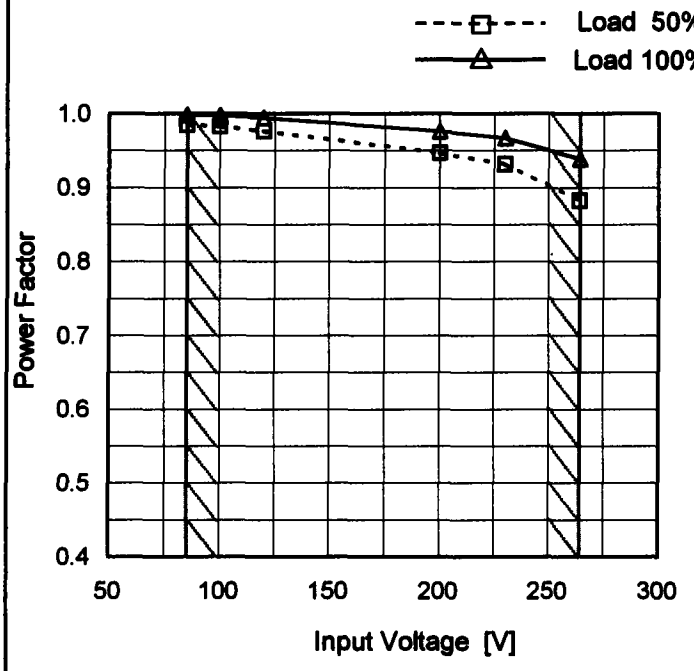
Model	PBA1500F-24
Item	Power Factor (by Input Voltage)
Object	+24V65A

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	0.985	0.998
100	0.983	0.997
120	0.976	0.995
200	0.947	0.976
230	0.932	0.967
264	0.883	0.939
–	-	-
–	-	-
–	-	-

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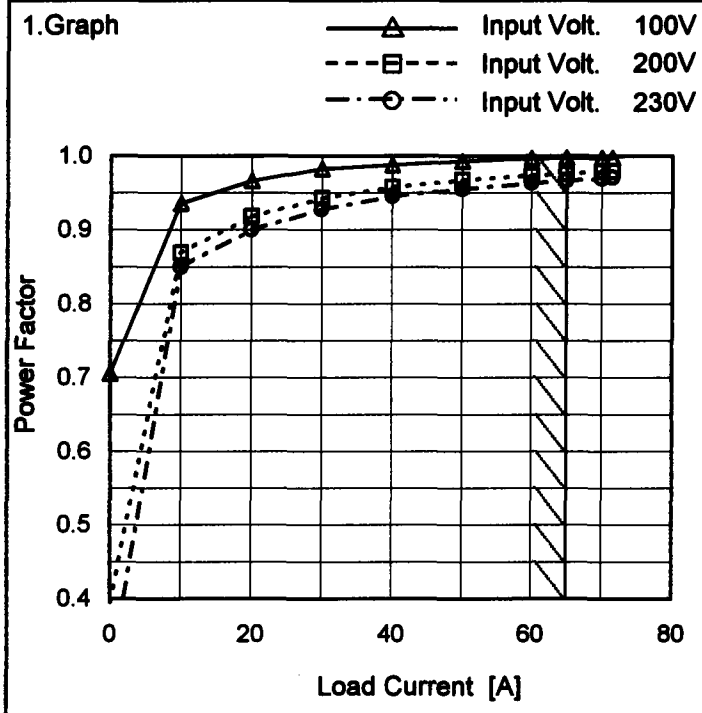
Model	PBA1500F-24
Item	Power Factor (by Load Current)
Object	———————

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	0.705	0.395	0.294
10.0	0.936	0.870	0.850
20.0	0.966	0.918	0.900
30.0	0.983	0.943	0.928
40.0	0.988	0.958	0.945
50.0	0.993	0.967	0.955
60.0	0.997	0.974	0.963
65.0	0.997	0.976	0.967
70.0	0.998	0.979	0.970
71.5	0.998	0.980	0.971
—	-	-	-

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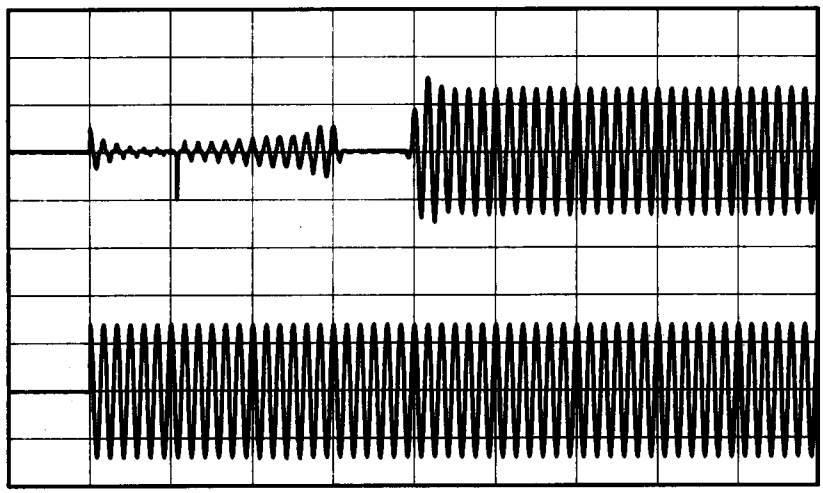
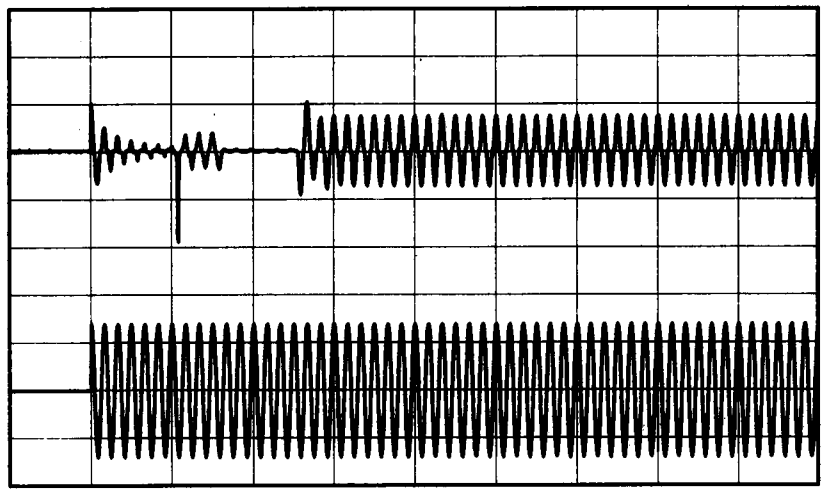
Model	PBA1500F-24
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



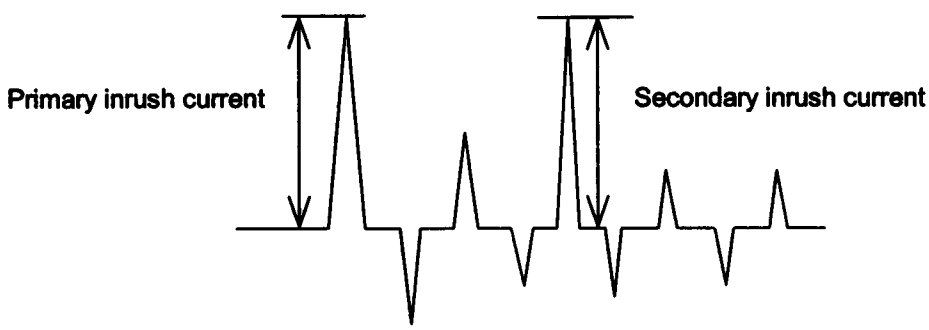
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
10.1 A
Secondary inrush current :
19.8 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
20.2 A
Secondary inrush current :
37.8 A



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Model	PBA1500F-24	
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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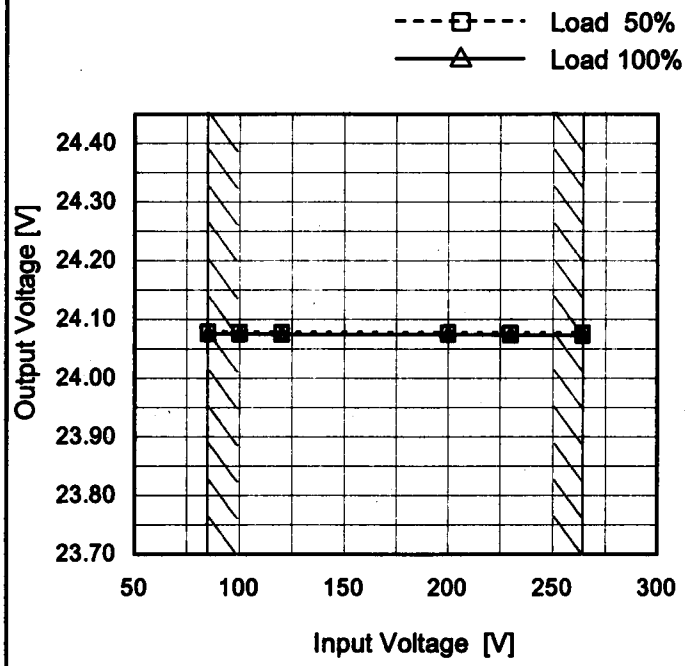
Model	PBA1500F-24
Item	Line Regulation
Object	+24V65A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

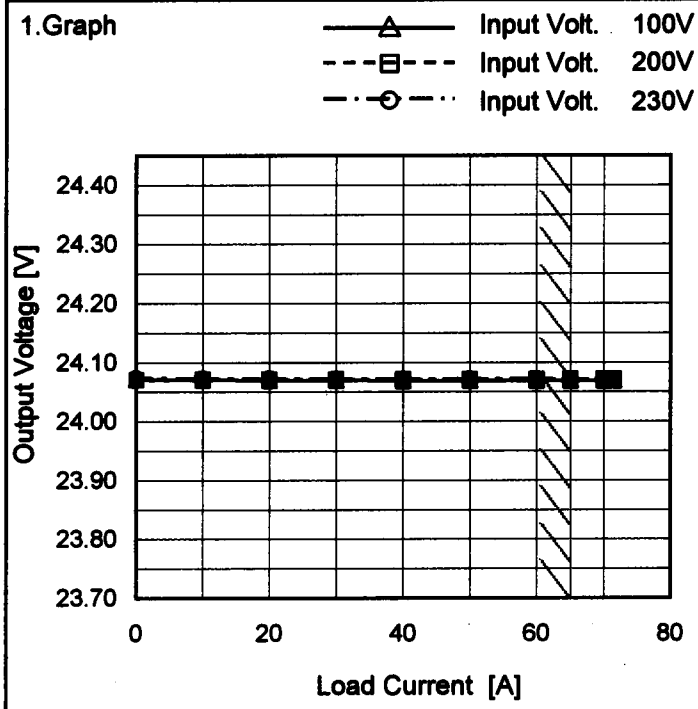
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	24.079	24.076
100	24.078	24.076
120	24.078	24.075
200	24.078	24.075
230	24.077	24.074
264	24.077	24.073
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA1500F-24
Item	Load Regulation
Object	+24V65A

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	24.071	24.071	24.074
10.0	24.070	24.071	24.073
20.0	24.070	24.071	24.073
30.0	24.070	24.071	24.072
40.0	24.069	24.071	24.072
50.0	24.069	24.071	24.072
60.0	24.069	24.071	24.072
65.0	24.069	24.071	24.072
70.0	24.069	24.071	24.071
71.5	24.069	24.071	24.071
–	-	-	-

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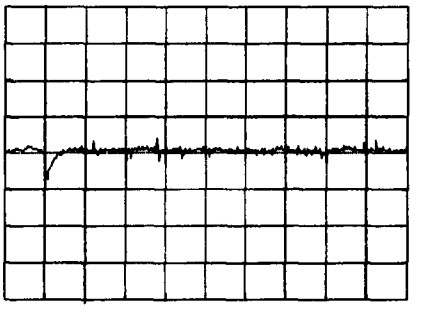
Model	PBA1500F-24
Item	Dynamic Load Response
Object	+24V65A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 100 V
Cycle 1000 mS

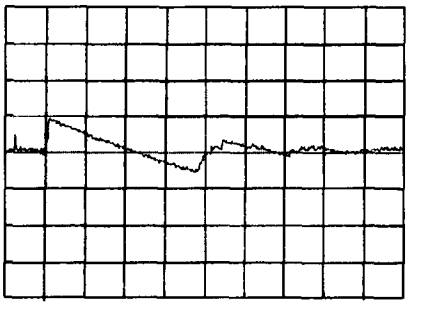
Load Current

Min.Load (0A) ⟷
Load 100% (65A)



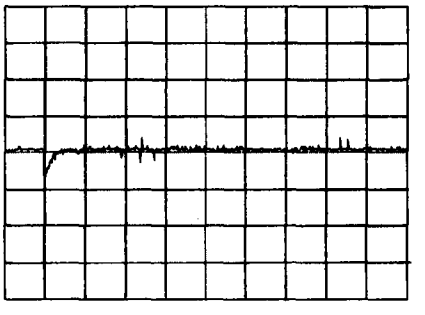
100mV/div

10mS/div



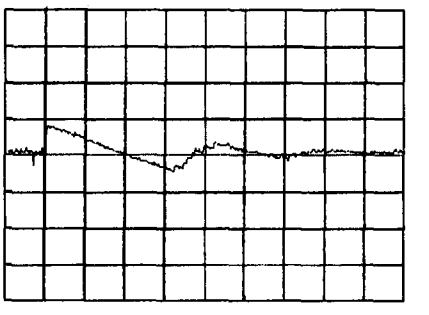
10mS/div

Min.Load (0A) ⟷
Load 50% (32.5A)



100mV/div

10mS/div



10mS/div

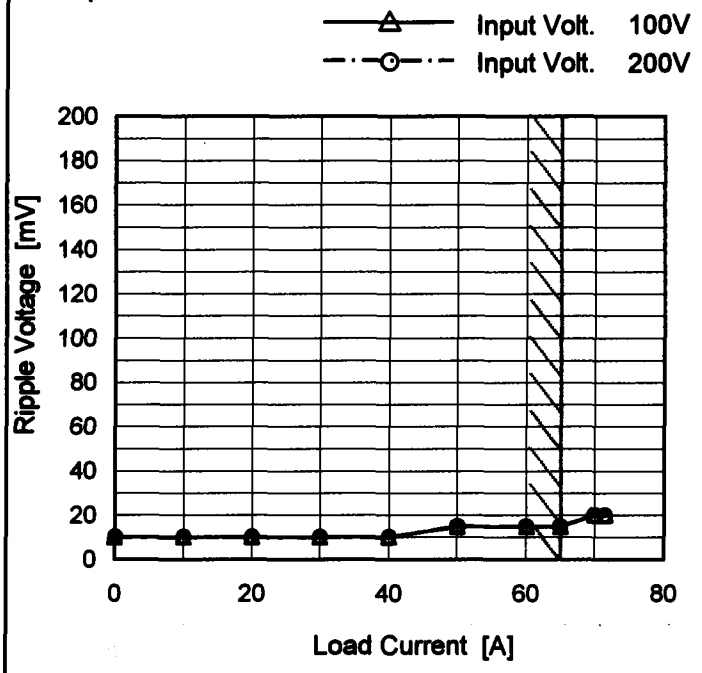
* The characteristic of AC200V is equal.

COSEL

Model	PBA1500F-24
Item	Ripple Voltage (by Load Current)
Object	+24V65A

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

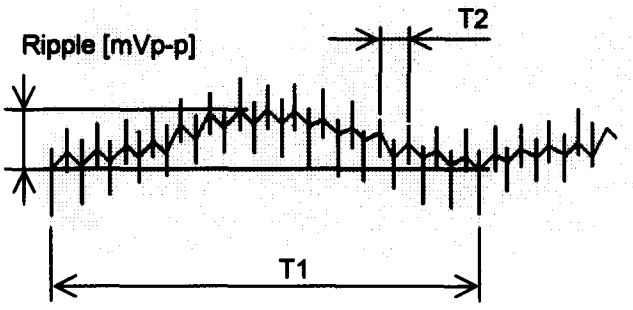


Fig. Complex Ripple Wave Form

2.Values

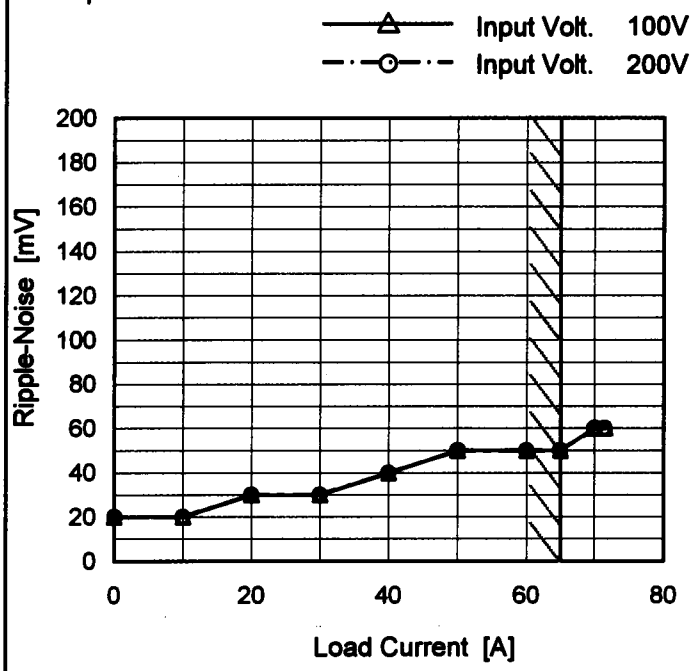
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	10	10
10.0	10	10
20.0	10	10
30.0	10	10
40.0	10	10
50.0	15	15
60.0	15	15
65.0	15	15
70.0	20	20
71.5	20	20
–	-	-

COSEL

Model	PBA1500F-24
Item	Ripple-Noise
Object	+24V65A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 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	20	20
10.0	20	20
20.0	30	30
30.0	30	30
40.0	40	40
50.0	50	50
60.0	50	50
65.0	50	50
70.0	60	60
71.5	60	60
–	-	-

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

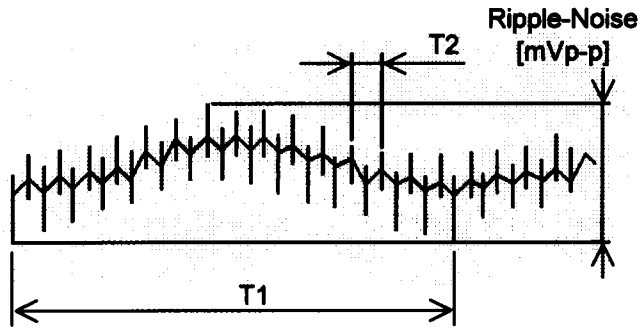


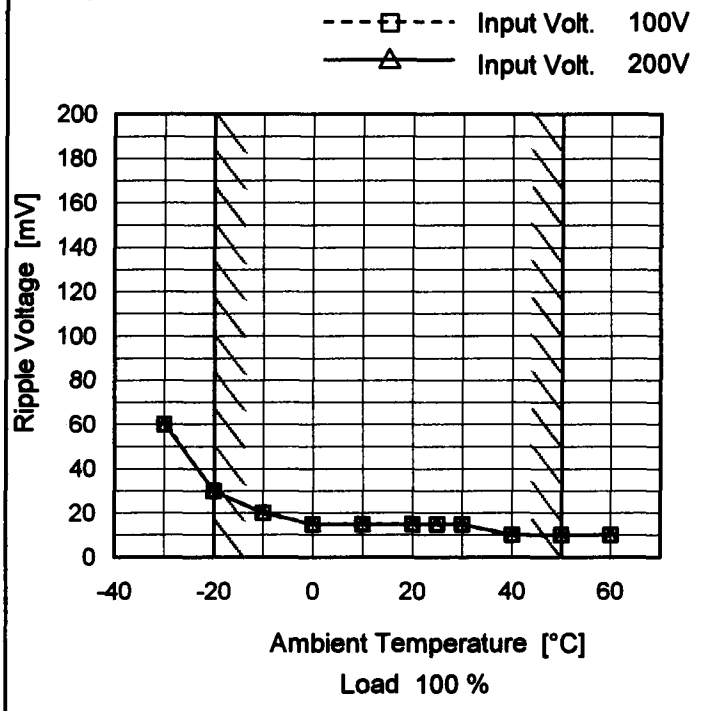
Fig. Complex Ripple Wave Form

COSEL

Model	PBA1500F-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V70A

Testing Circuitry Figure A

1.Graph



Load 100 %

Measured by 20 MHz Oscilloscope.

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

2.Values

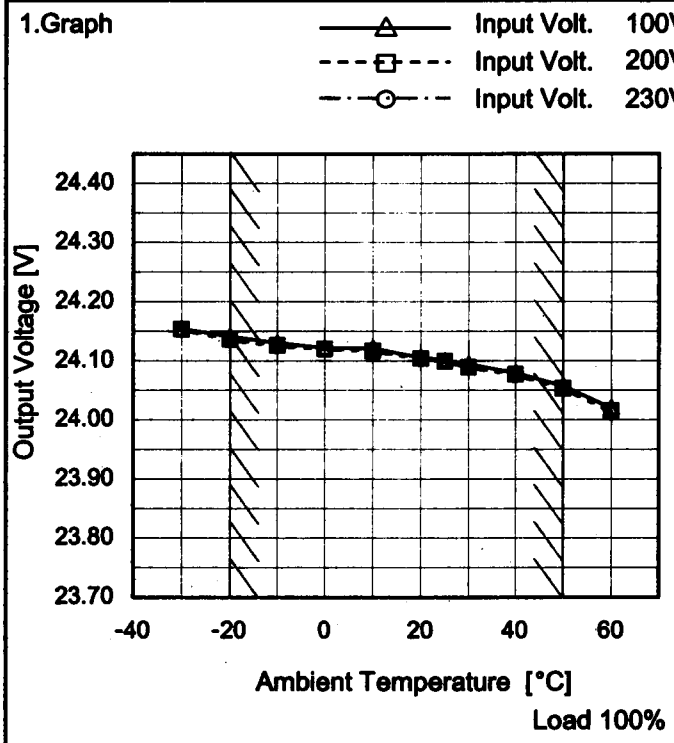
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	60	60
-20	30	30
-10	20	20
0	15	15
10	15	15
20	15	15
25	15	15
30	15	15
40	10	10
50	10	10
60	10	10

COSEL

Model	PBA1500F-24
Item	Ambient Temperature Drift
Object	+24V65A

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	24.154	24.153	24.152
-20	24.141	24.136	24.135
-10	24.131	24.126	24.125
0	24.122	24.120	24.119
10	24.122	24.117	24.115
20	24.106	24.104	24.103
25	24.101	24.099	24.098
30	24.094	24.089	24.089
40	24.080	24.077	24.076
50	24.058	24.054	24.052
60	24.021	24.015	24.012

COSEL

Model	PBA1500F-24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V65A	

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 - 65A

* 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

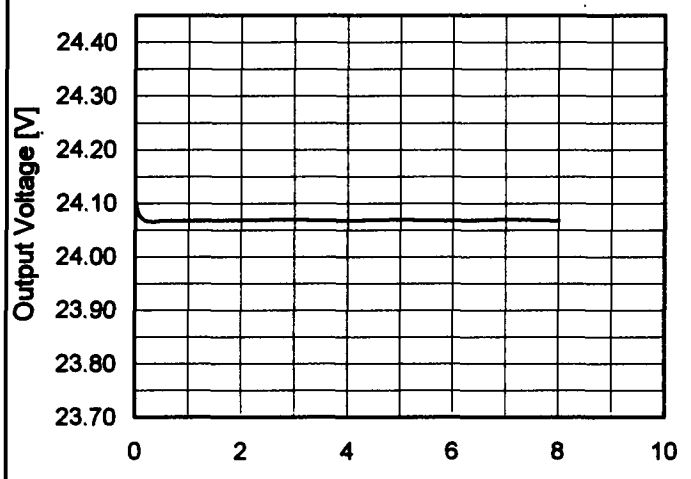
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	85	65	24.136	±50	±0.2
Minimum Voltage	50	264	65	24.036		

COSEL

Model	PBA1500F-24
Item	Time Lapse Drift
Object	+24V70A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

2.Values

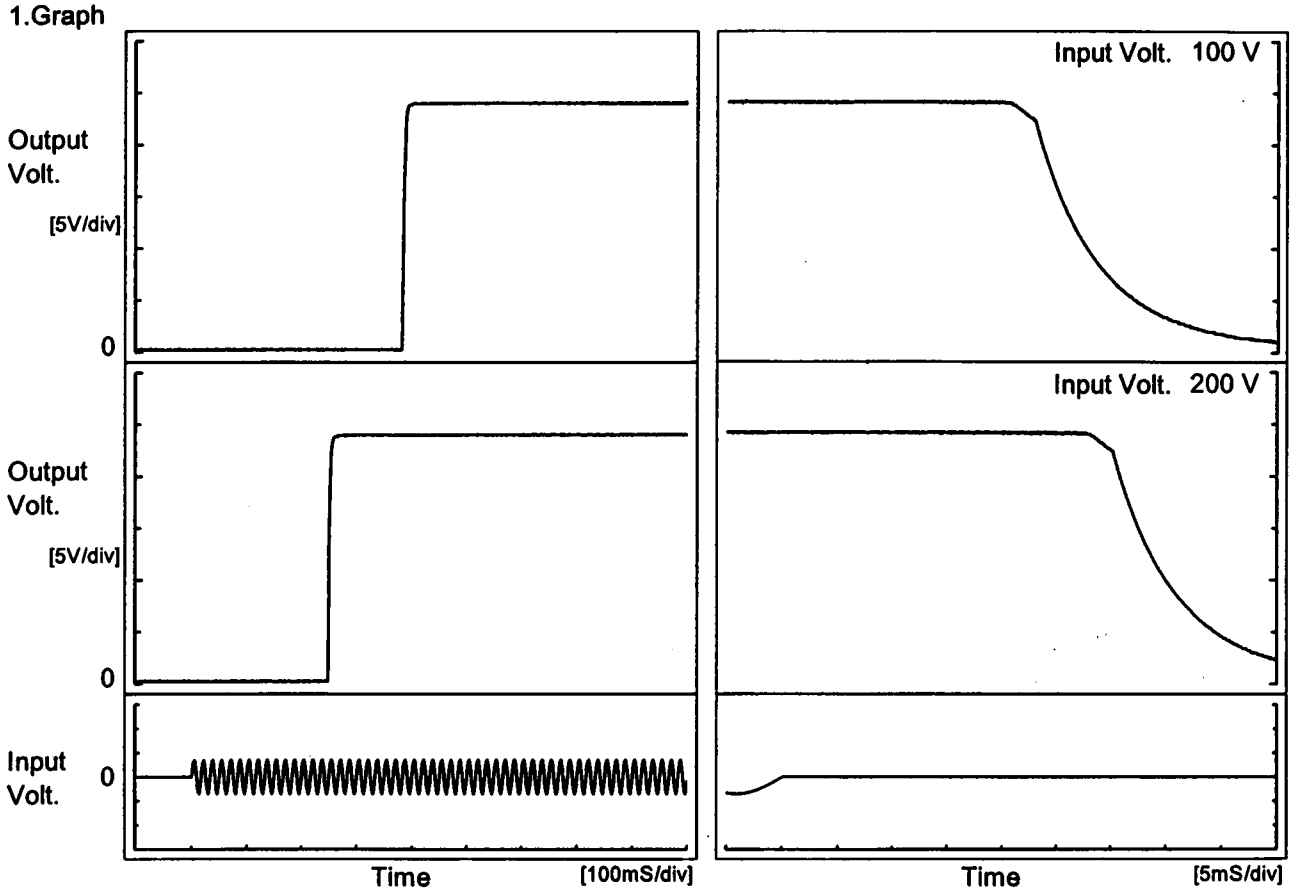
Time since start [H]	Output Voltage [V]
0.0	24.104
0.5	24.068
1.0	24.068
2.0	24.068
3.0	24.069
4.0	24.068
5.0	24.070
6.0	24.067
7.0	24.070
8.0	24.067

COSEL

Model	PBA1500F-24
Item	Rise and Fall Time
Object	+24V65A

Temperature 25°C
Testing Circuitry Figure A

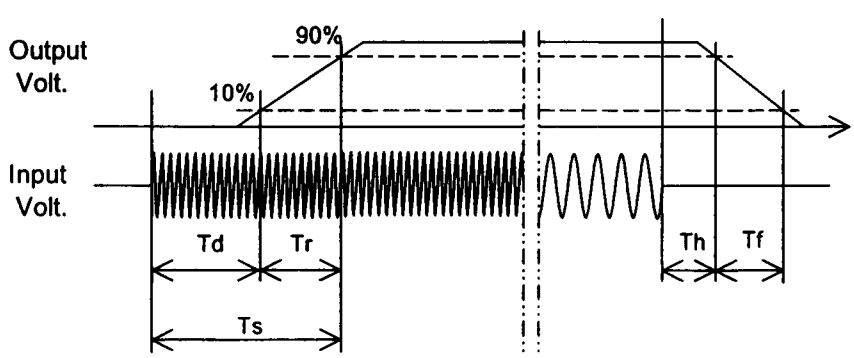
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	382.5	7.0	389.5	23.1	13.8
200 V	249.0	5.0	254.0	30.3	13.9

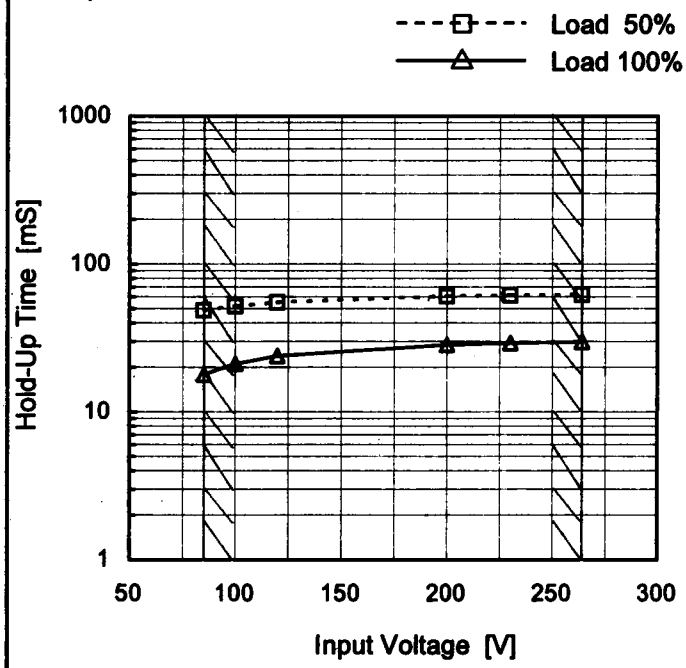


COSEL

Model	PBA1500F-24
Item	Hold-Up Time
Object	+24V65A

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

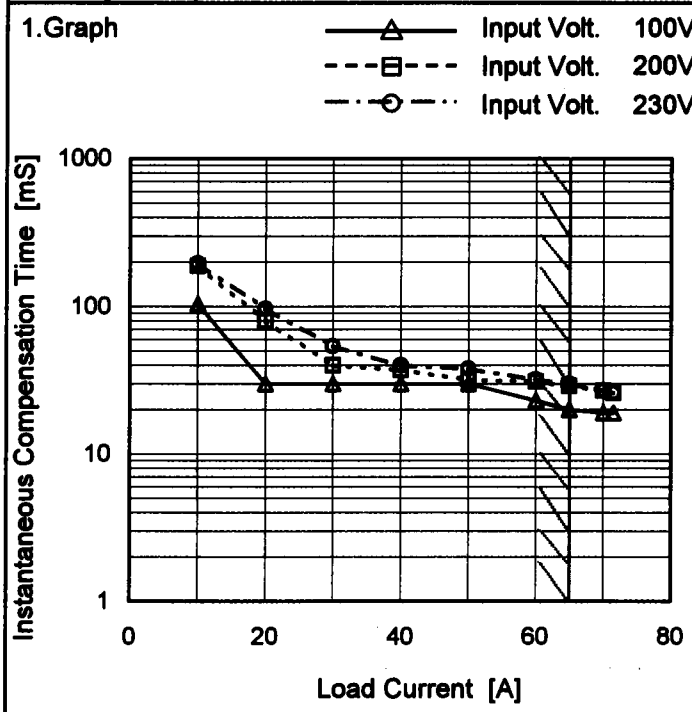
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
85	49	18
100	52	21
120	55	24
200	61	29
230	61	29
264	62	30
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA1500F-24
Item	Instantaneous Interruption Compensation
Object	+24V65A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

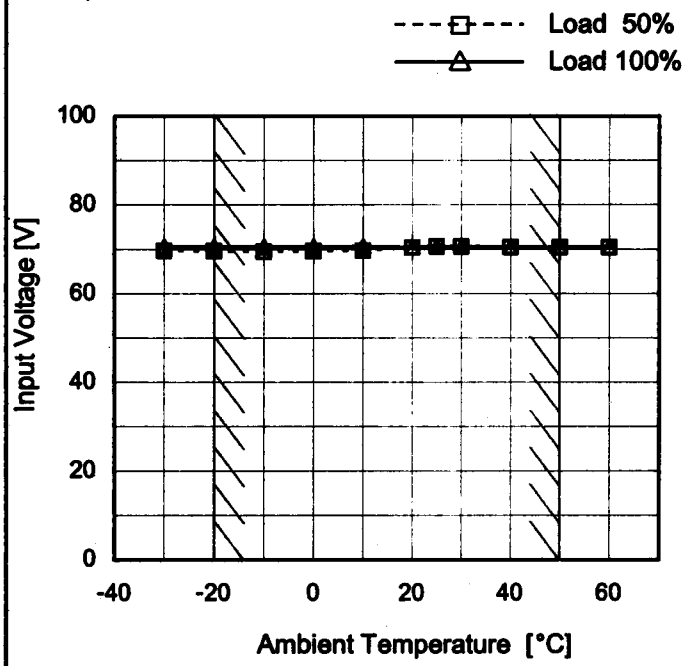
Load Current [A]	Time [mS] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
10.0	104	188	195
20.0	30	80	96
30.0	30	40	54
40.0	30	37	40
50.0	30	32	38
60.0	23	31	32
65.0	20	29	30
70.0	19	27	27
71.5	19	26	26
—	-	-	-

COSEL

Model	PBA1500F-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V65A

Testing Circuitry Figure A

1.Graph



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

2.Values

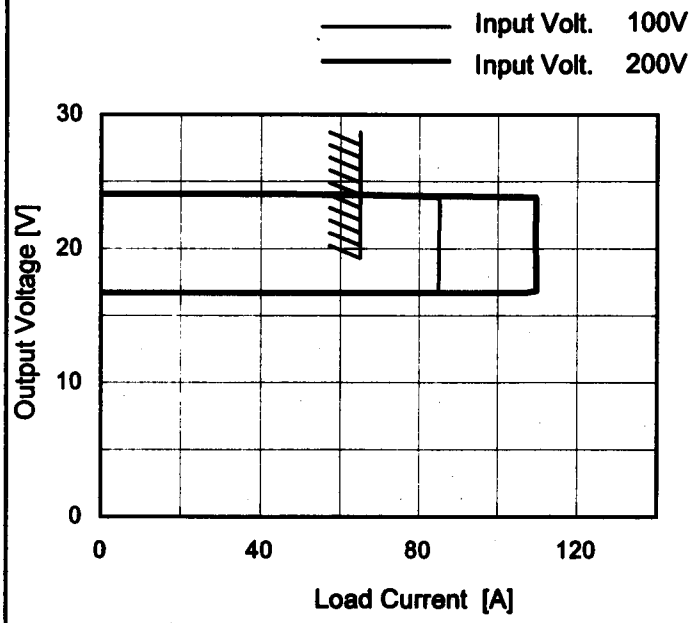
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	70	71
-20	70	71
-10	70	71
0	70	71
10	70	71
20	71	71
25	71	71
30	71	71
40	71	71
50	71	71
60	71	71

COSEL

Model	PBA1500F-24
Item	Overcurrent Protection
Object	+24V65A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

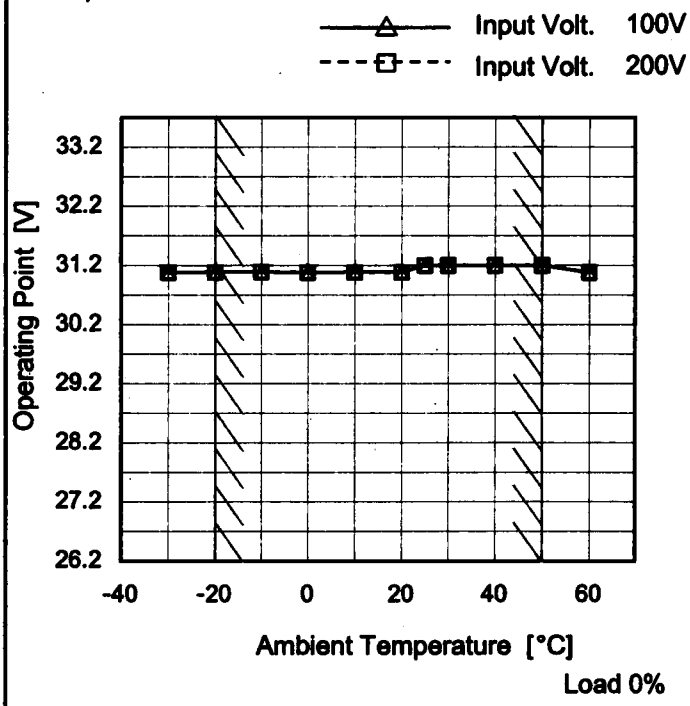
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
24.0	85.21	109.58
22.8	85.27	109.64
21.6	85.23	109.60
19.2	85.03	109.64
16.8	84.92	109.83
14.4	0.00	0.00
12.0	0.00	0.00
9.6	0.00	0.00
7.2	0.00	0.00
4.8	0.00	0.00
2.4	0.00	0.00
0.0	0.00	0.00

COSEL

Model	PBA1500F-24
Item	Overvoltage Protection
Object	+24V65A

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	31.05	31.05
-20	31.06	31.05
-10	31.06	31.06
0	31.05	31.05
10	31.06	31.05
20	31.06	31.05
25	31.17	31.17
30	31.17	31.17
40	31.17	31.17
50	31.17	31.17
60	31.05	31.05

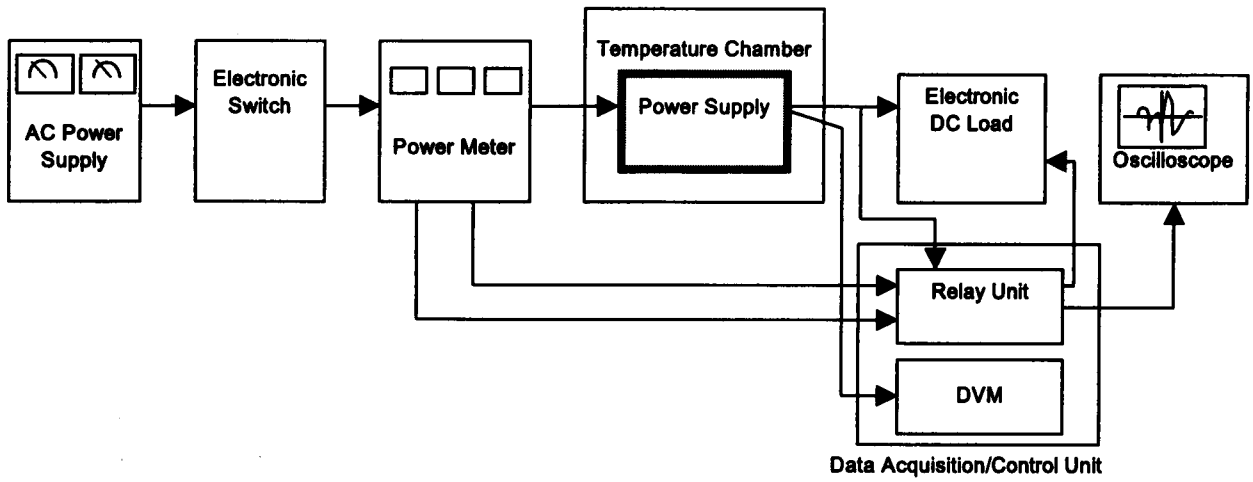


Figure A

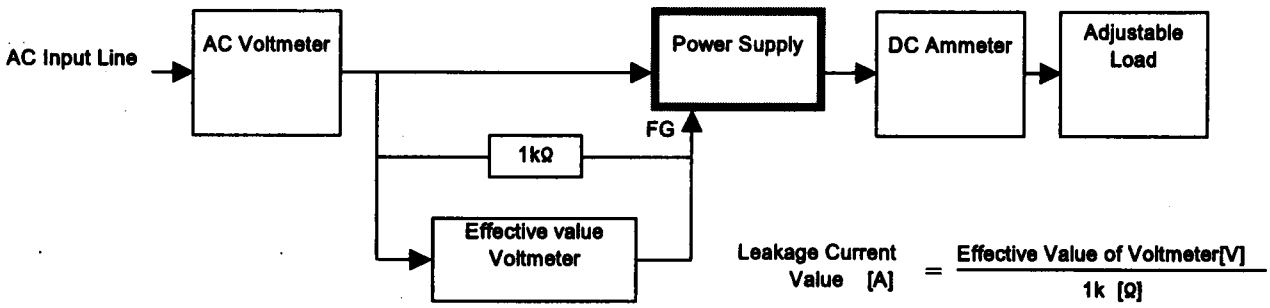


Figure B (DEN-AN)

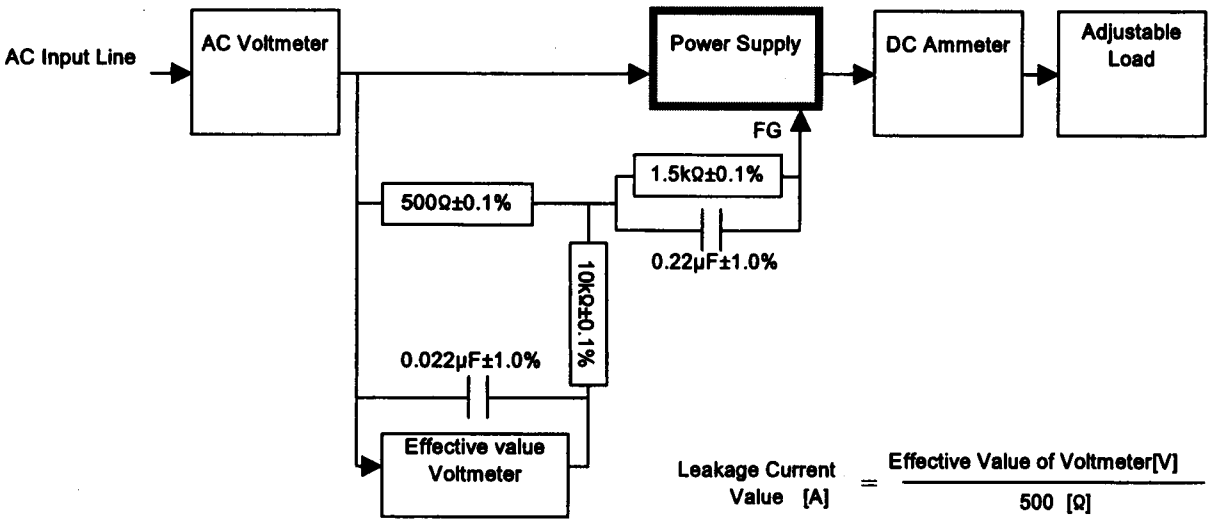


Figure B (IEC60950)