COSEL

参考資料

TEST DATA OF PLA100F-12

Regulated DC Power Supply
May 23, 2013

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COSEL CO.,LTD.

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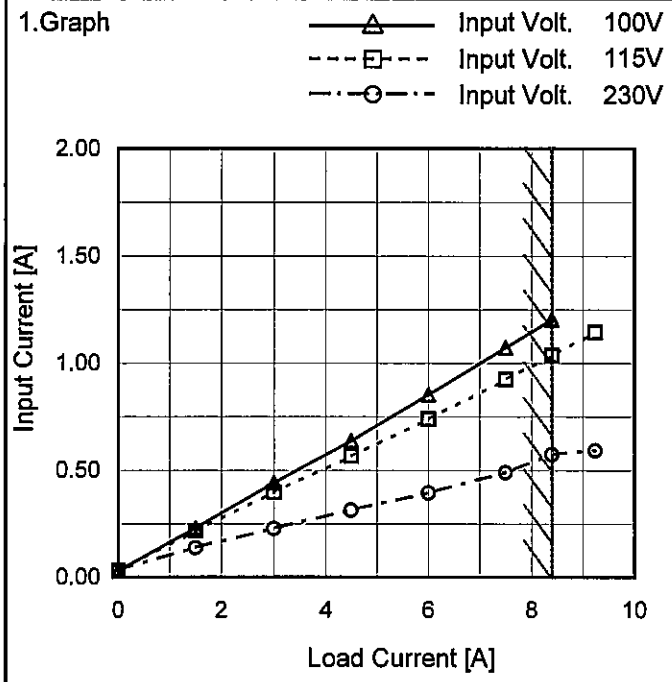

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A] Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.030	0.030	0.034
1.50	0.232	0.216	0.140
3.00	0.442	0.396	0.229
4.50	0.638	0.564	0.314
6.00	0.854	0.738	0.395
7.50	1.073	0.924	0.490
8.40	1.204	1.036	0.574
9.24	-	1.144	0.593
--	-	-	-
--	-	-	-
--	-	-	-

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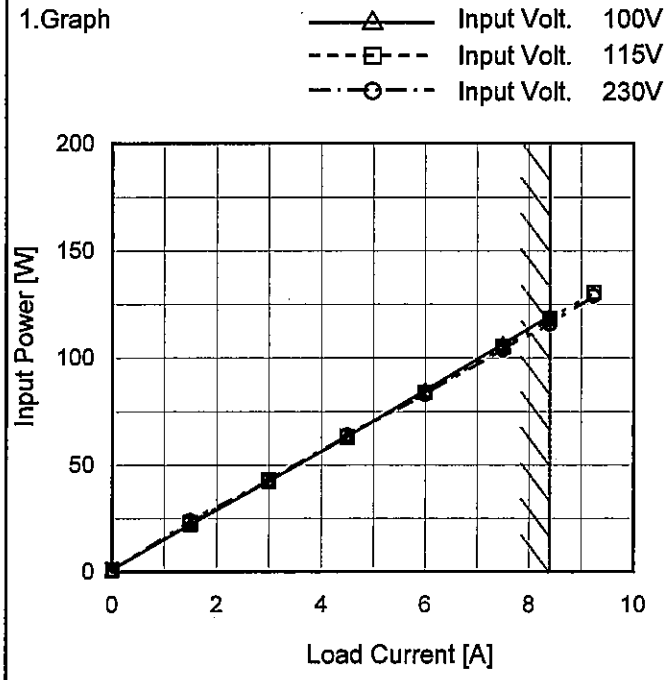
Model	PLA100F-12
Item	Input Power (by Load Current)
Object	———————

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. 115[V]	Input Volt. 230[V]
0.00	1.0	1.0	0.8
1.50	22.2	22.8	24.0
3.00	42.6	42.9	43.0
4.50	63.2	63.1	64.0
6.00	84.9	83.7	83.0
7.50	106.6	105.2	104.0
8.40	119.7	118.2	116.0
9.24	-	130.5	129.0
--	-	-	-
--	-	-	-
--	-	-	-

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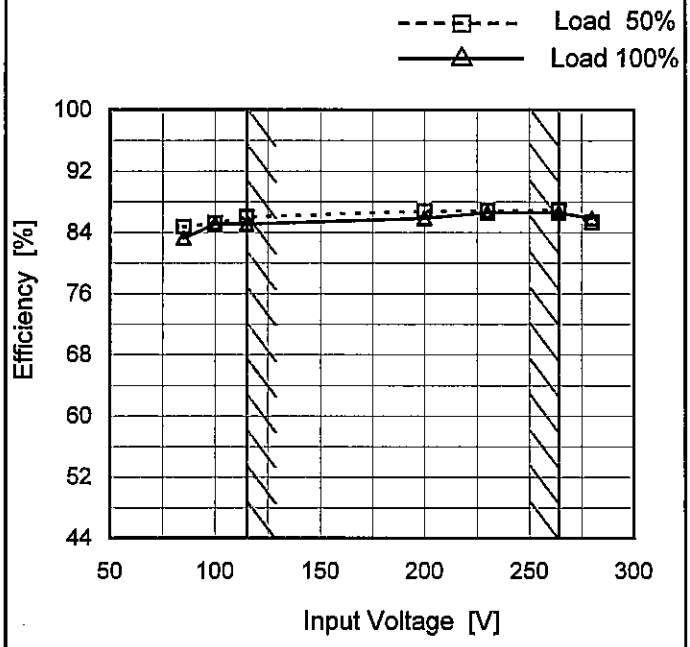
Model	PLA100F-12
Item	Efficiency (by Input Voltage)
Object	———————

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%
85	84.7	83.2 ※1
100	85.2	85.1 ※2
115	86.0	85.1
200	86.8	85.9
230	86.8	86.6
264	86.9	86.6
280	85.3	85.9
—	-	-
—	-	-

※1:Load 80%
※2:Load 90%

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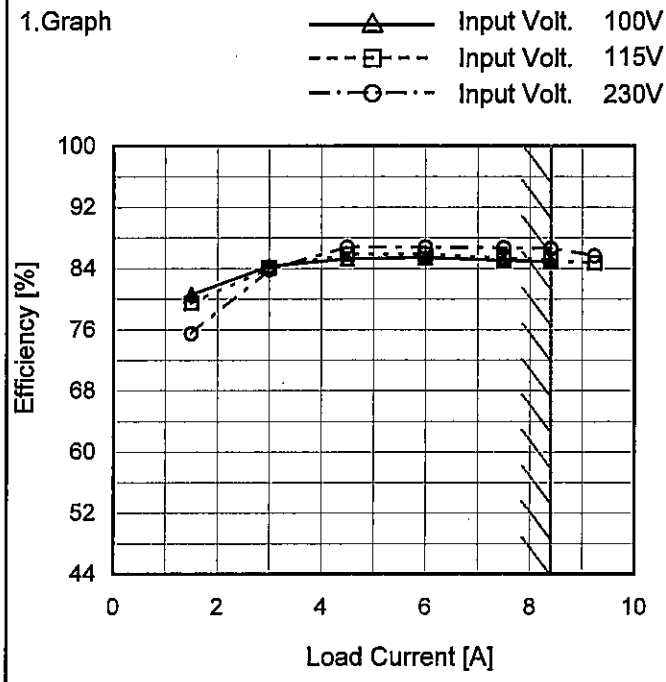
Model	PLA100F-12
Item	Efficiency (by Load Current)
Object	———————

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. 115[V]	Input Volt. 230[V]
0.00	-	-	-
1.50	80.6	79.5	75.5
3.00	84.3	84.0	83.8
4.50	85.3	85.8	86.8
6.00	85.4	85.8	86.8
7.50	85.1	85.3	86.7
8.40	84.9	85.1	86.6
9.24	-	84.7	85.6
--	-	-	-
--	-	-	-
--	-	-	-

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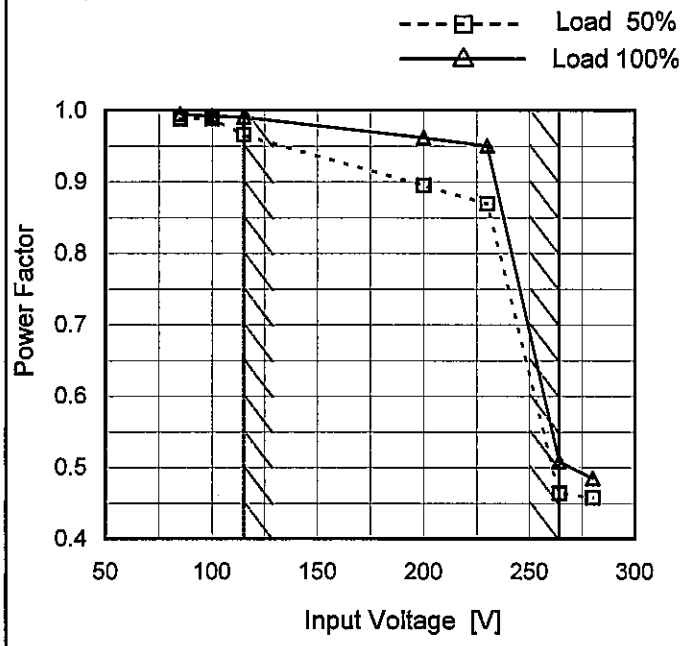
Model	PLA100F-12
Item	Power Factor (by Input Voltage)
Object	———

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%
85	0.988	0.995 ※1
100	0.988	0.993 ※2
115	0.965	0.991
200	0.895	0.962
230	0.870	0.951
264	0.464	0.509
280	0.457	0.485
---	-	-
---	-	-

※1:Load 80%
※2:Load 90%

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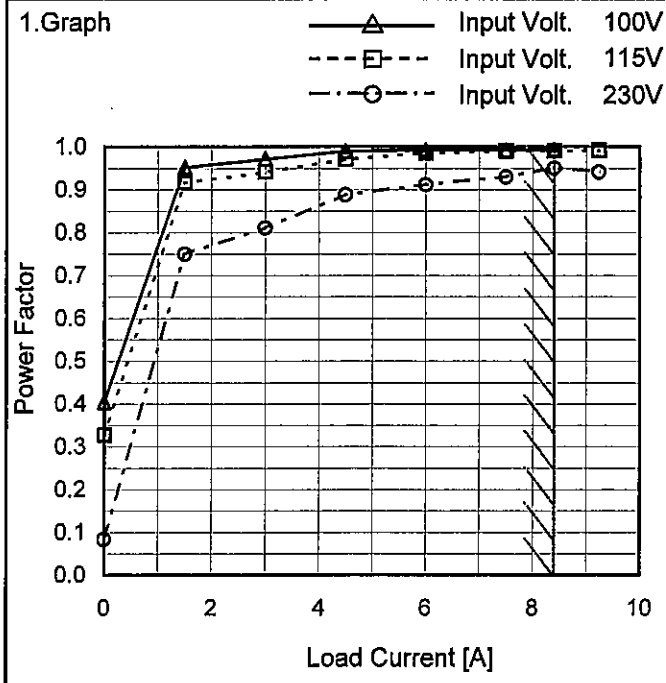
Model	PLA100F-12
Item	Power Factor (by Load Current)
Object	———————

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. 115[V]	Input Volt. 230[V]
0.00	0.404	0.327	0.084
1.50	0.953	0.916	0.750
3.00	0.972	0.941	0.811
4.50	0.991	0.971	0.889
6.00	0.993	0.986	0.912
7.50	0.993	0.990	0.930
8.40	0.993	0.991	0.951
9.24	-	0.992	0.942
--	-	-	-
--	-	-	-
--	-	-	-

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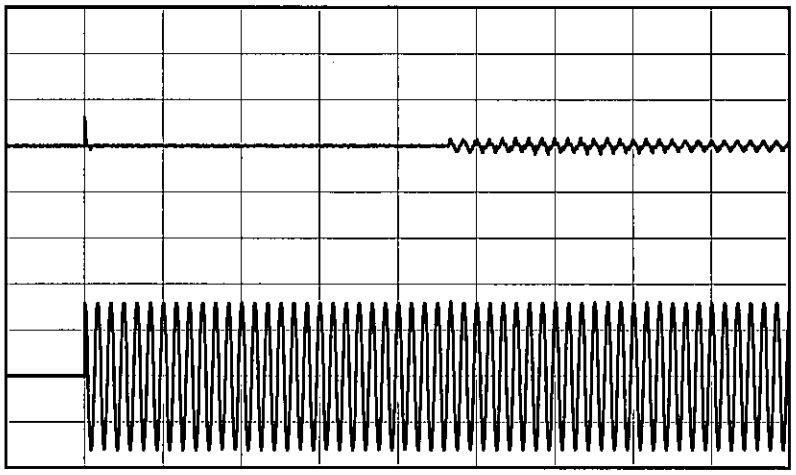
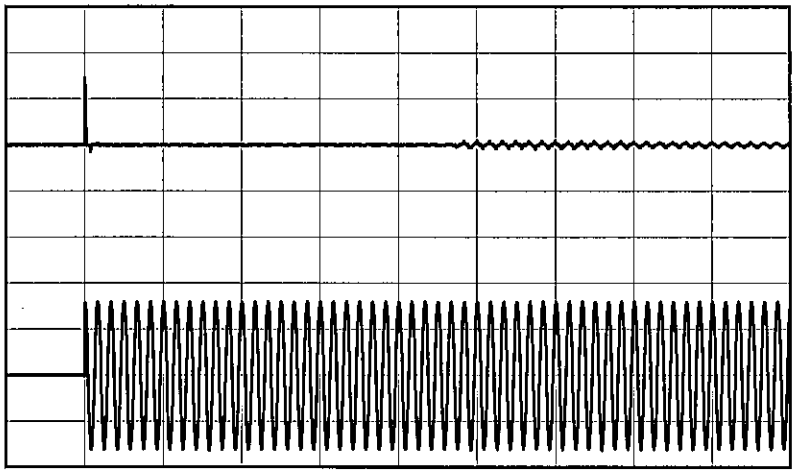
Model	PLA100F-12
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



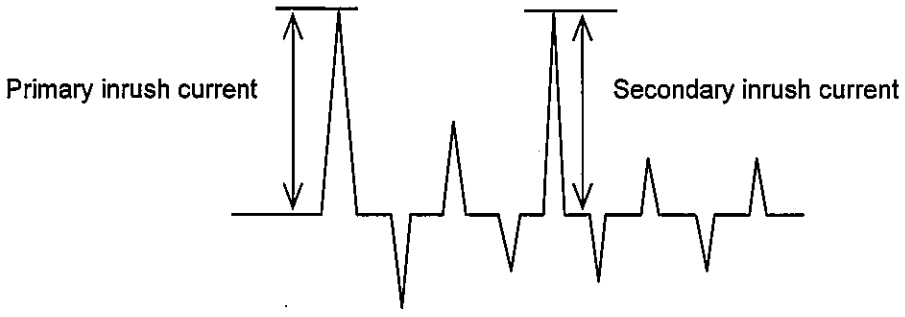
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
12.4 A
Secondary inrush current :
3.7 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
29.1 A
Secondary inrush current :
1.8 A



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Model	PLA100F-12	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	———————	

1.Results

[mA]

Standards		Input Volt.			Note
		100[V]	115[V]	240[V]	
DEN-AN	Both phases	0.34	0.34	0.62	Operation
	One of phases	0.30	0.34	0.77	Stand by
IEC60950-1	Both phases	0.25	0.28	0.55	Operation
	One of phases	0.27	0.32	0.71	Stand by

The value for "One of phases" 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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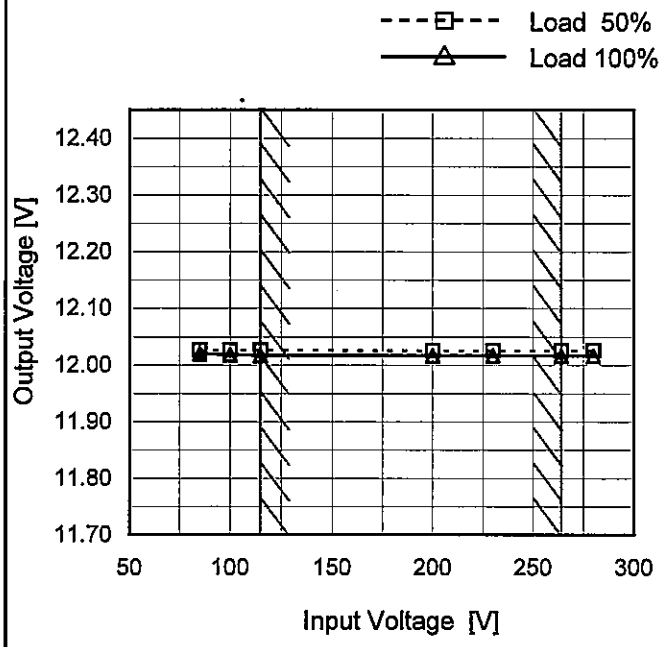
Model	PLA100F-12
Item	Line Regulation
Object	+12V8.4A

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	12.026	12.020 ※1
100	12.026	12.019 ※2
115	12.026	12.017
200	12.026	12.017
230	12.025	12.017
264	12.025	12.017
280	12.025	12.017
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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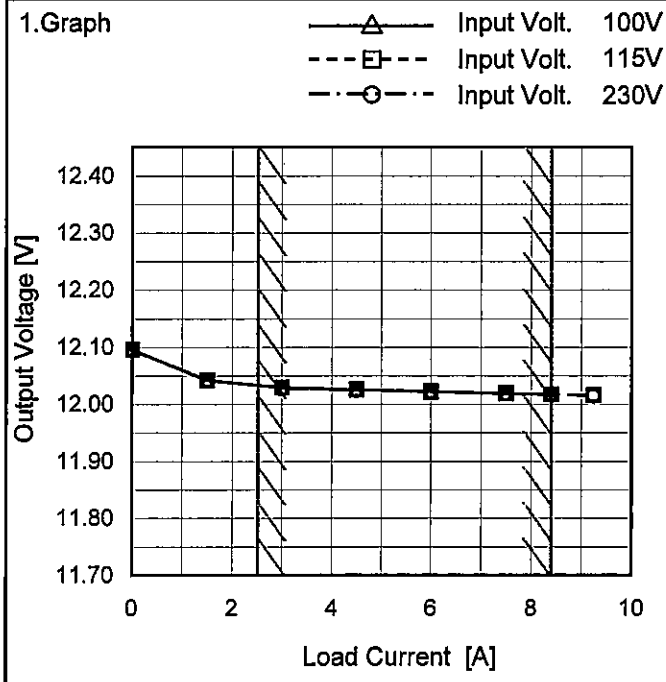
Model	PLA100F-12
Item	Load Regulation
Object	+12V8.4A

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. 115[V]	Input Volt. 230[V]
0.00	12.097	12.097	12.096
1.50	12.042	12.042	12.042
3.00	12.030	12.029	12.028
4.50	12.026	12.026	12.025
6.00	12.022	12.022	12.022
7.50	12.019	12.019	12.019
8.40	12.018	12.017	12.017
9.24	-	12.016	12.015
--	-	-	-
--	-	-	-
--	-	-	-

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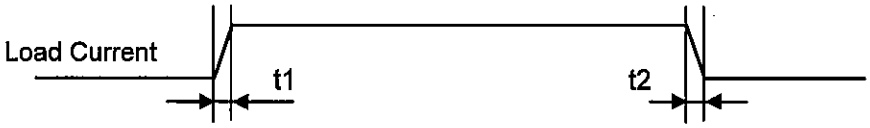
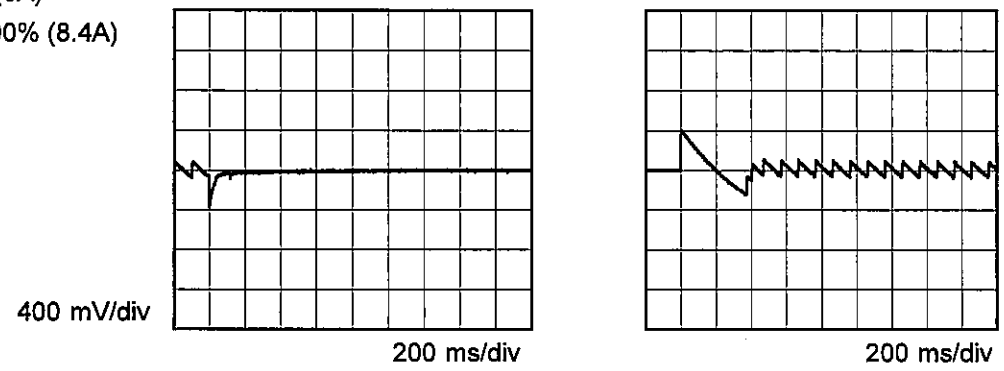
Model	PLA100F-12		
Item	Dynamic Load Response	Temperature	25˚C
		Testing Circuitry	Figure A
Object	+12V8.4A		

Input Volt. 115 V
Cycle 1000 ms

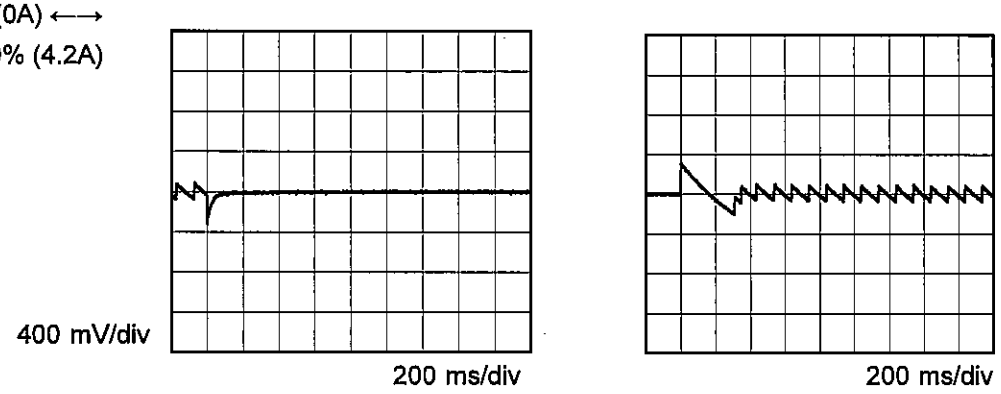
Response. t1=t2=50us. Typ



Min. Load (0A) ⟷
Load 100% (8.4A)



Min. Load (0A) ⟷
Load 50% (4.2A)



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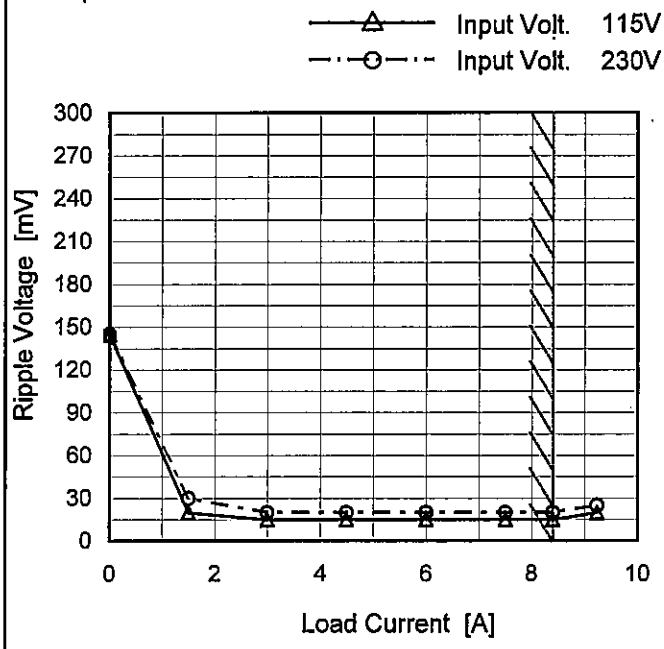
Model	PLA100F-12
Item	Ripple Voltage (by Load Current)
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure C

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

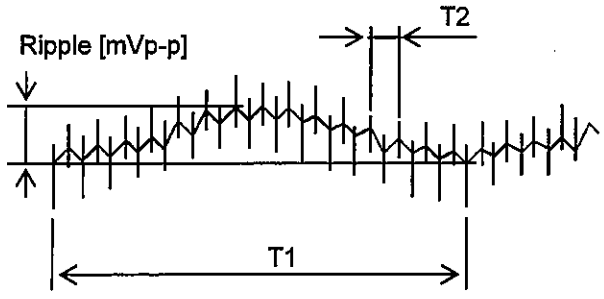


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	125	125
1.50	20	30
3.00	15	20
4.50	15	20
6.00	15	20
7.50	15	20
8.40	15	20
9.24	20	25
---	-	-
---	-	-
---	-	-

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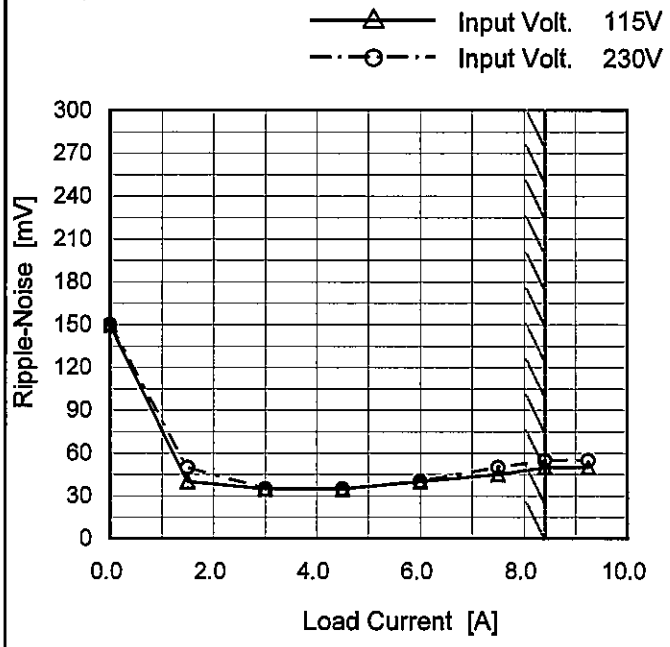
Model	PLA100F-12
Item	Ripple-Noise
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure C

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. 115 [V]	Ripple-Noise [mV] Input Volt. 230 [V]
0.00	150	150
1.50	40	50
3.00	35	35
4.50	35	35
6.00	40	40
7.50	45	50
8.40	50	55
9.24	50	55
---	-	-
---	-	-
---	-	-

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

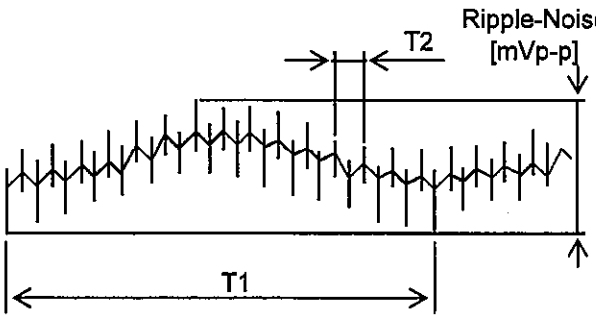


Fig. Complex Ripple Wave Form

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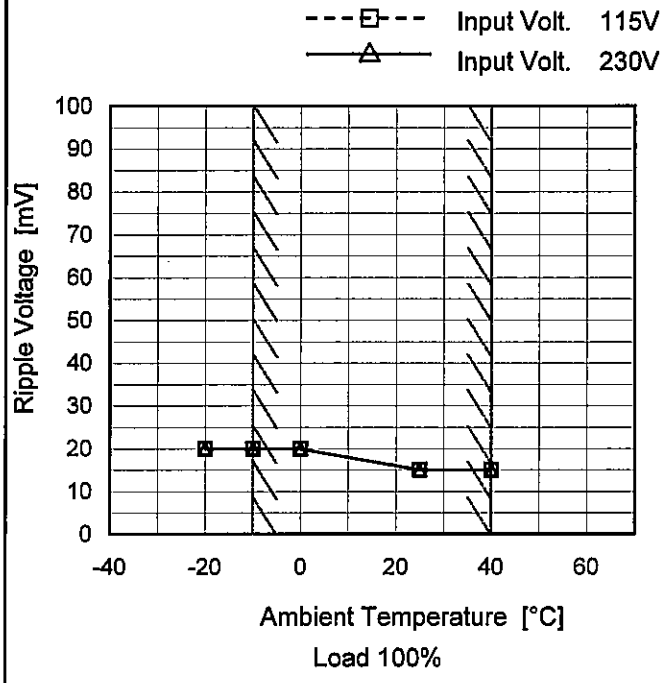
Model	PLA100F-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V8.4A

Testing Circuitry Figure C

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. 115 [V]	Input Volt. 230 [V]
-20	20	20
-10	20	20
0	20	20
25	15	15
40	15	15
—	-	-
—	-	-
—	-	-
—	-	-
—	-	-
—	-	-

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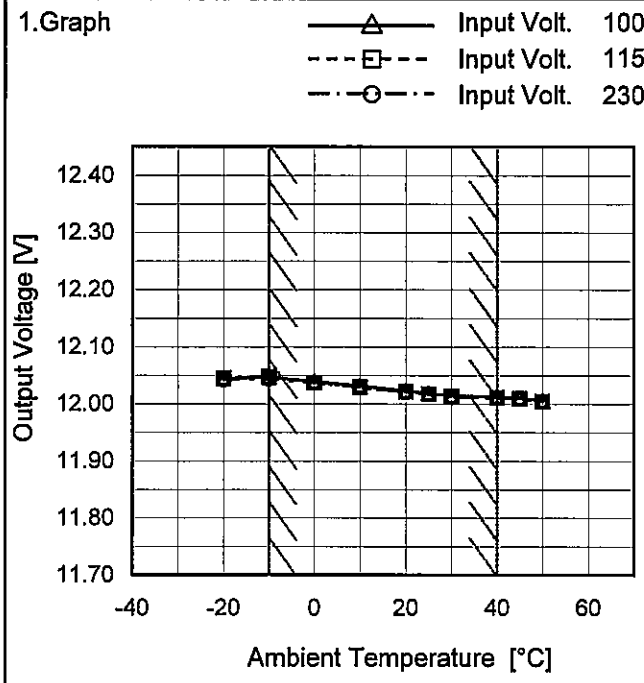
Model	PLA100F-12
Item	Ambient Temperature Drift
Object	+12V8.4A

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. 115[V]	Input Volt. 230[V]
-20	12.045	12.045	12.042
-10	12.047	12.047	12.044
0	12.040	12.037	12.037
10	12.032	12.029	12.029
20	12.024	12.021	12.021
25	12.019	12.017	12.017
30	12.015	12.013	12.012
40	12.013	12.011	12.011
45	12.012	12.009	12.011
50	12.006	12.004	12.005
--	-	-	-

Note: In case of Input Volt. 100V, Load 90%.
Other case Load 100%.

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Model	PLA100F-12	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V8.4A	

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 - 40°C
Input Voltage : 115 - 264V
Load Current : 2.52 - 8.4A

* 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	-10	115	2.52	12.060	±25	±0.2
Minimum Voltage	40	230	8.4	12.011		

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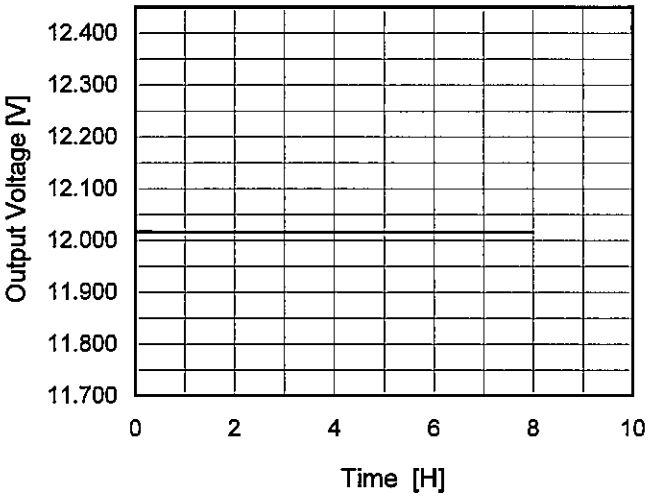
Model	PLA100F-12
Item	Time Lapse Drift
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC115V is equal.

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.017
0.5	12.016
1.0	12.016
2.0	12.016
3.0	12.016
4.0	12.016
5.0	12.016
6.0	12.016
7.0	12.016
8.0	12.016

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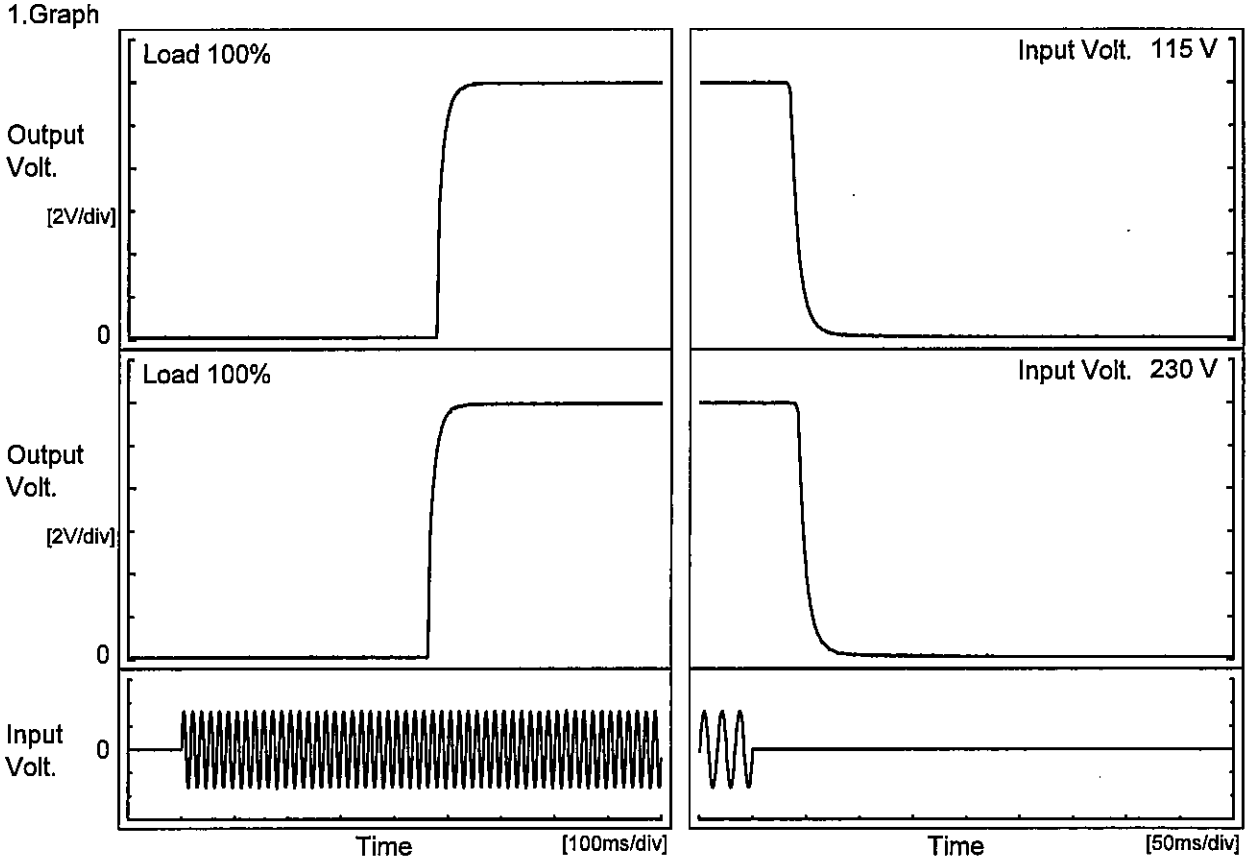
Model	PLA100F-12
Item	Rise and Fall Time
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure A

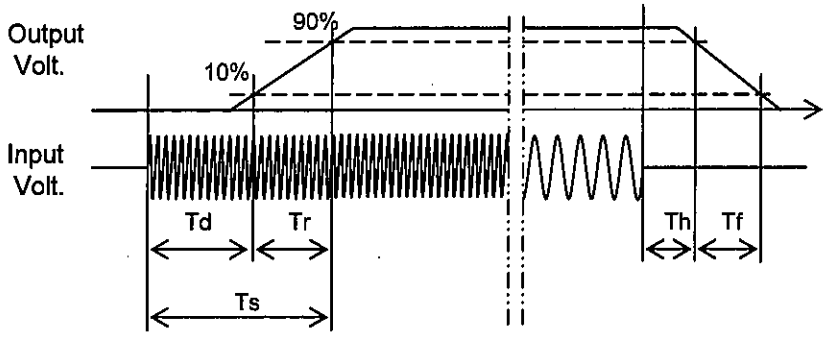
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	480.0	24.0	504.0	35.0	17.5
230 V	464.5	24.0	488.5	42.8	17.5



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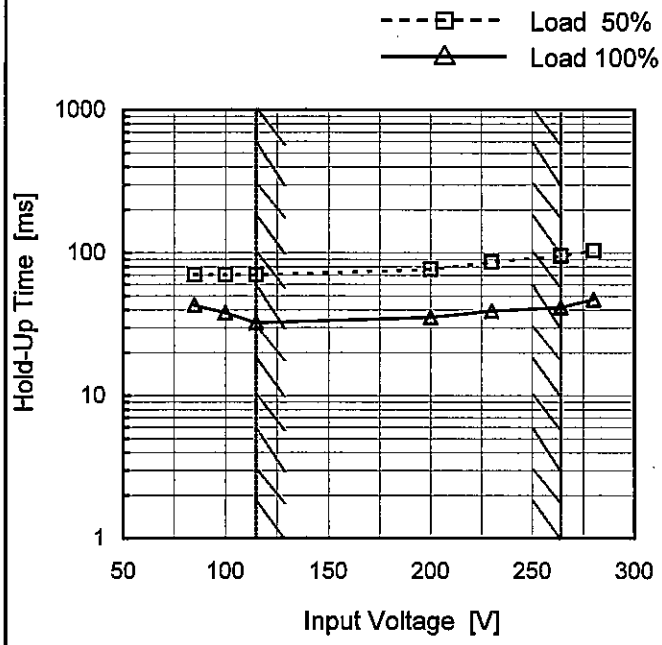
Model	PLA100F-12
Item	Hold-Up Time
Object	+12V8.4A

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	70	43 ※1
100	70	38 ※2
115	70	33
200	77	36
230	86	39
264	95	42
280	104	47
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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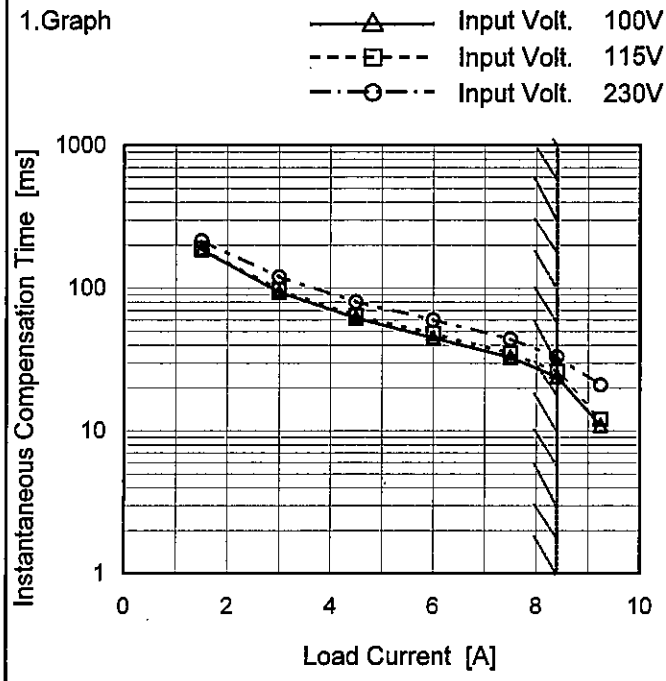
Model	PLA100F-12
Item	Instantaneous Interruption Compensation
Object	+12V8.4A

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. 115[V]	Input Volt. 230[V]
0.00	-	-	-
1.50	186	189	215
3.00	94	97	120
4.50	62	64	80
6.00	45	48	60
7.50	33	35	44
8.40	24	26	33
9.24	11	12	21
---	-	-	-
---	-	-	-
---	-	-	-

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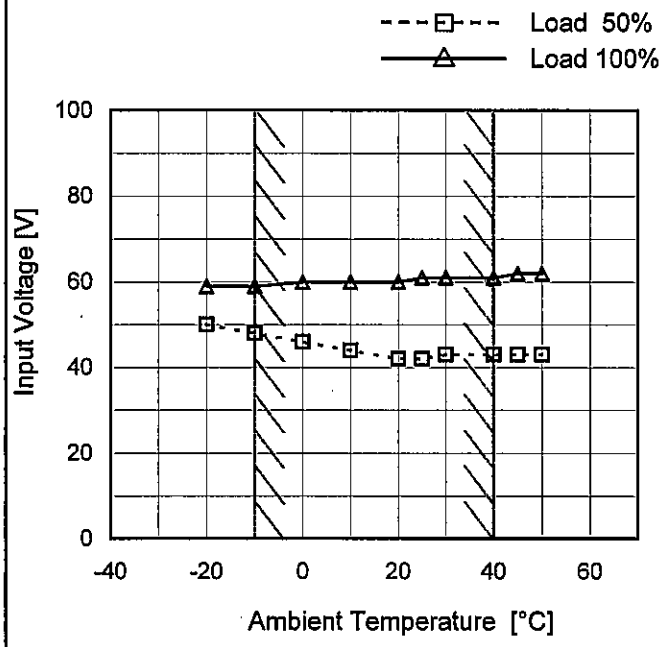
Model	PLA100F-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V8.4A

Testing Circuitry Figure A

1.Graph



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

2.Values

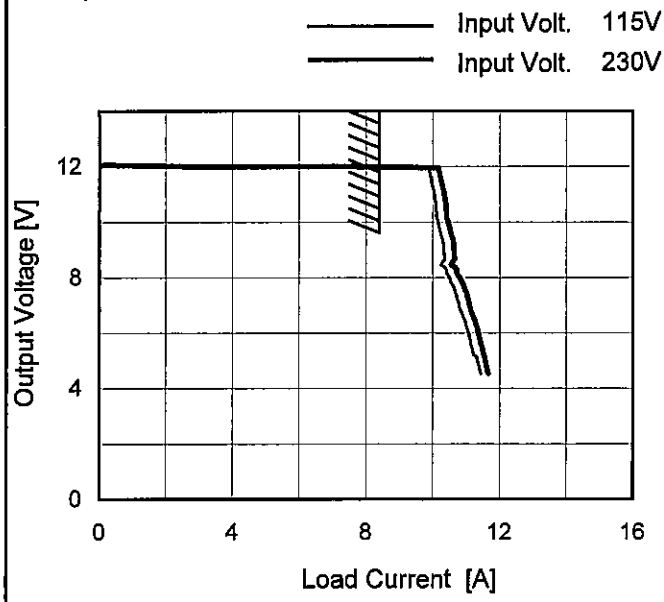
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	50	59
-10	48	59
0	46	60
10	44	60
20	42	60
25	42	61
30	43	61
40	43	61
45	43	62
50	43	62
--	-	-

COSEL

Model	PLA100F-12
Item	Overcurrent Protection
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent operation occurs when the output voltage is from 4.5V to 0V.

2.Values

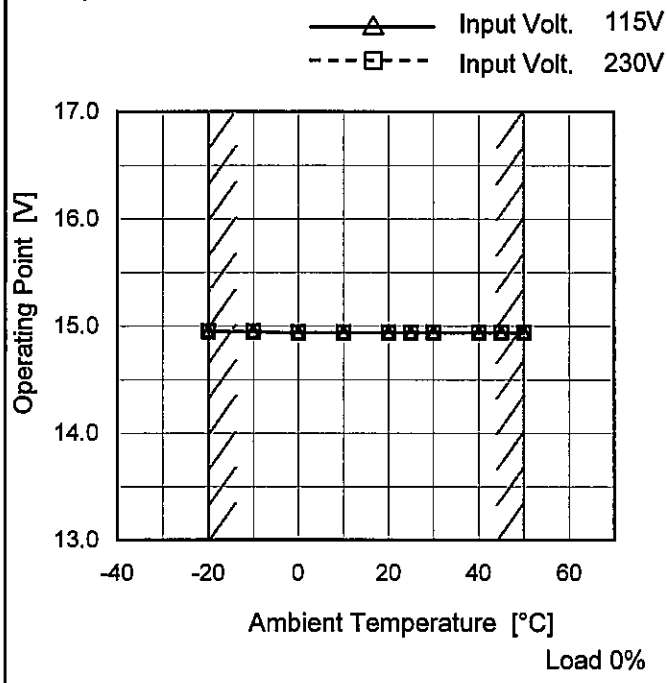
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
11.4	9.97	10.28
10.8	9.95	10.37
9.6	10.14	10.53
8.4	10.09	10.55
7.2	10.69	11.05
6.0	11.11	11.36
4.8	11.38	11.60
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PLA100F-12
Item	Overvoltage Protection
Object	+12V8.4A

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. 115[V]	Input Volt. 230[V]
-20	14.95	14.95
-10	14.95	14.95
0	14.94	14.94
10	14.94	14.94
20	14.94	14.94
25	14.94	14.94
30	14.94	14.94
40	14.94	14.94
45	14.94	14.94
50	14.94	14.94
---	-	-

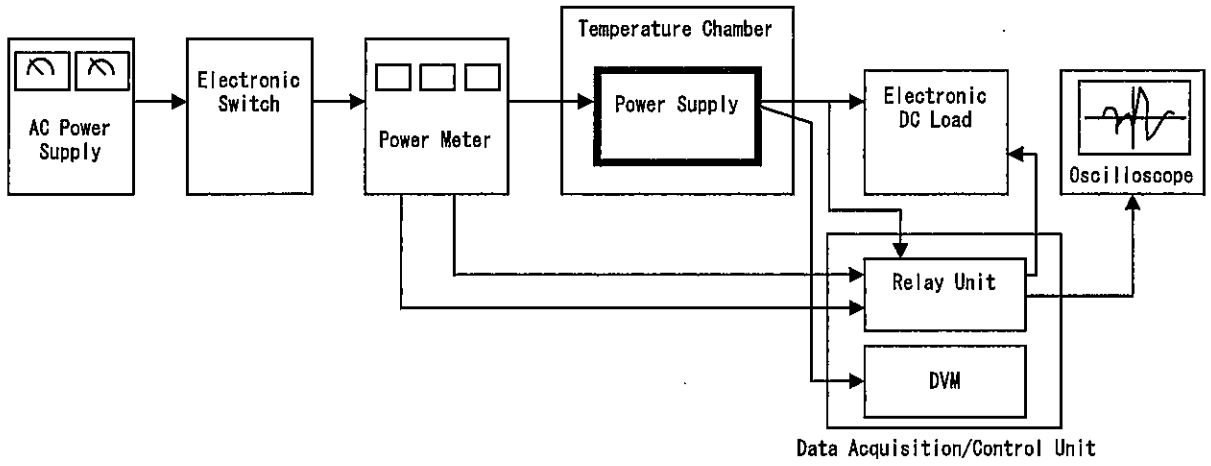


Figure A

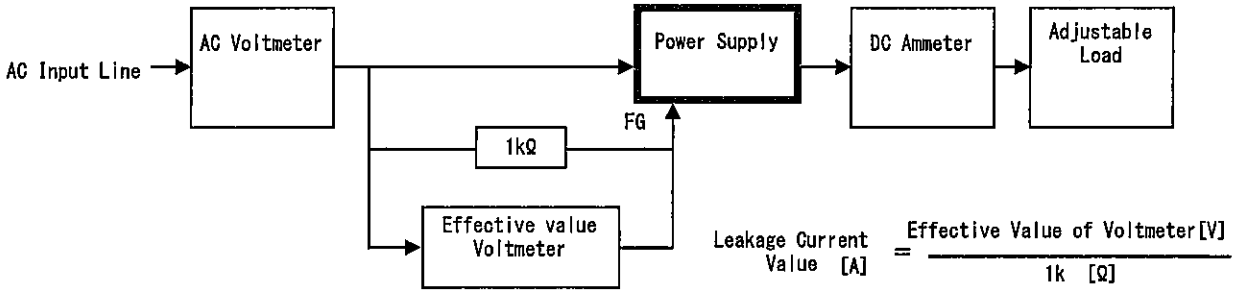


Figure B (DEN-AN)

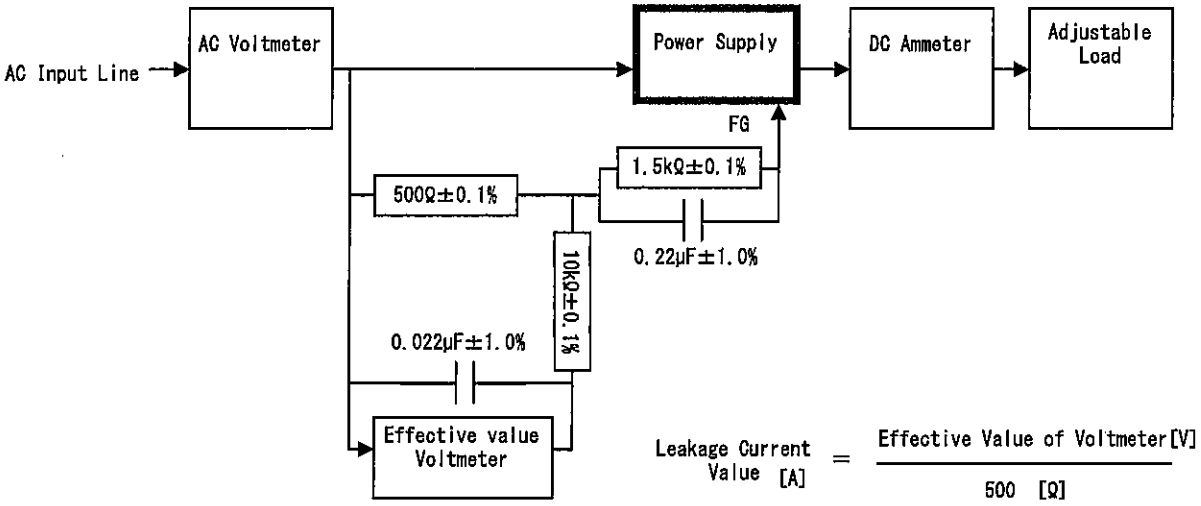


Figure B (IEC60950-1)

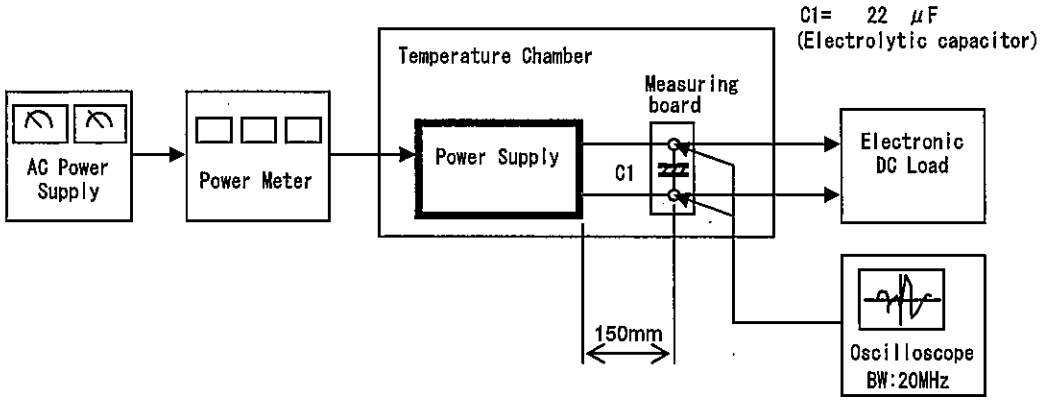

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C