COSEL

参考資料

TEST DATA OF PLA100F-24

Regulated DC Power Supply
May 23, 2013

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Object	———————

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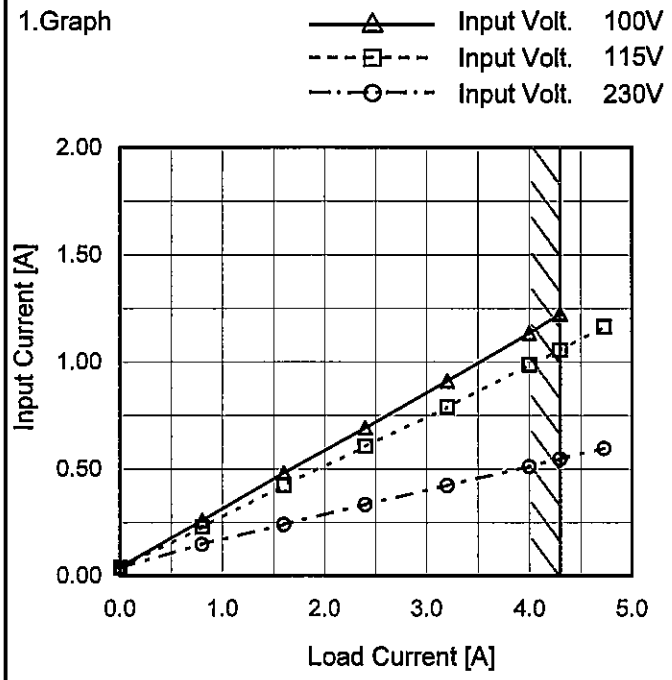

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.041	0.037	0.038
0.80	0.260	0.227	0.148
1.60	0.482	0.422	0.240
2.40	0.692	0.604	0.334
3.20	0.912	0.787	0.422
4.00	1.135	0.985	0.512
4.30	1.224	1.054	0.548
4.73	-	1.162	0.596
--	-	-	-
--	-	-	-
--	-	-	-

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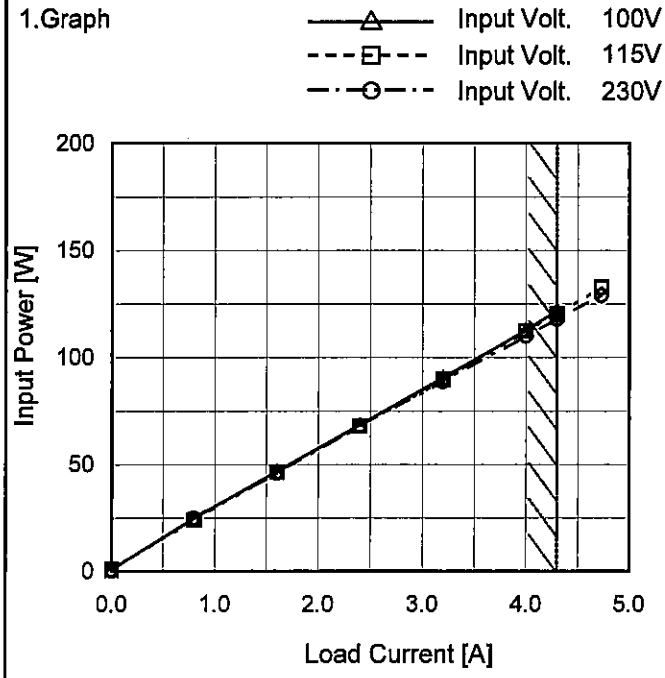
Model	PLA100F-24
Item	Input Power (by Load Current)
Object	————————

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. 115[V]	Input Volt. 230[V]
0.00	0.9	0.9	0.5
0.80	24.8	24.0	25.0
1.60	46.8	46.2	46.0
2.40	68.6	67.8	68.0
3.20	90.6	89.5	89.0
4.00	112.8	112.4	110.0
4.30	121.8	120.3	118.0
4.73	-	132.6	129.0
--	-	-	-
--	-	-	-
--	-	-	-

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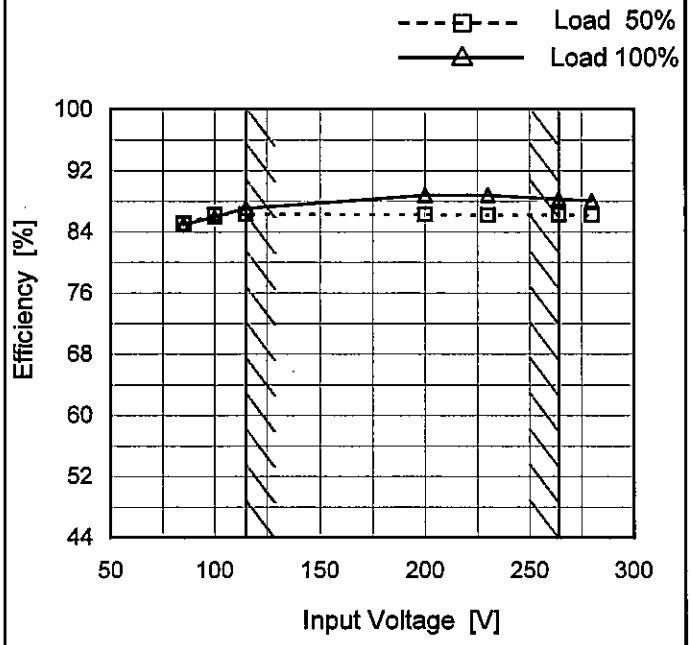
Model	PLA100F-24
Item	Efficiency (by Input Voltage)
Object	————————

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	85.1	85.0 ※1
100	86.2	86.0 ※2
115	86.3	87.1
200	86.2	88.8
230	86.2	88.8
264	86.2	88.3
280	86.1	88.1
—	-	-
—	-	-

※1:Load 80%
※2:Load 90%

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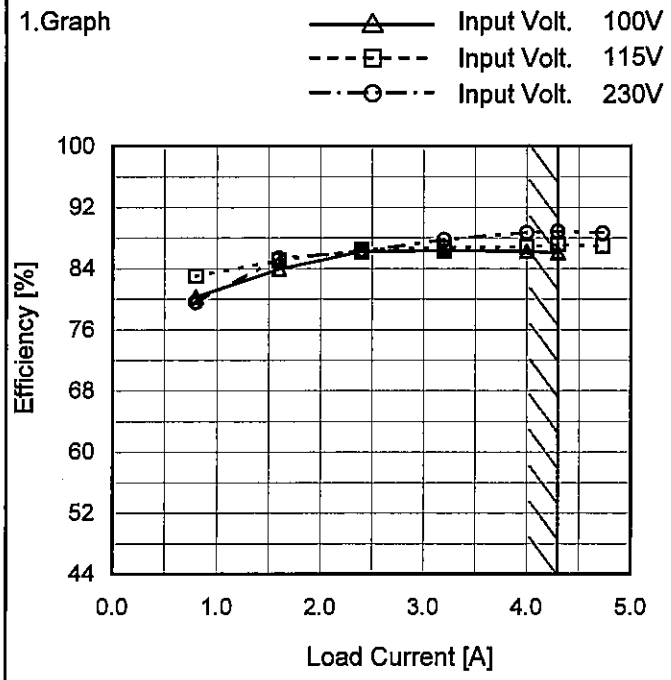
Model	PLA100F-24
Item	Efficiency (by Load Current)
Object	————————

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. 115[V]	Input Volt. 230[V]
0.00	-	-	-
0.80	80.3	83.0	79.6
1.60	83.9	85.0	85.4
2.40	86.3	86.4	86.2
3.20	86.4	86.7	87.8
4.00	86.3	86.8	88.7
4.30	86.1	87.1	88.8
4.73	-	86.9	88.7
--	-	-	-
--	-	-	-
--	-	-	-

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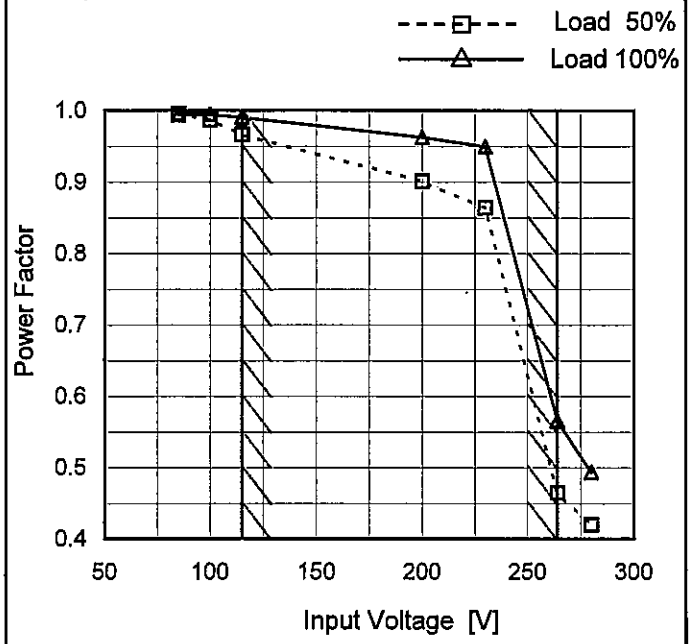
Model	PLA100F-24
Item	Power Factor (by Input Voltage)
Object	———————

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	0.995	0.995 ※1
100	0.987	0.995 ※2
115	0.966	0.991
200	0.901	0.963
230	0.864	0.950
264	0.465	0.566
280	0.420	0.494
—	-	-
—	-	-

※1:Load 80%
※2:Load 90%

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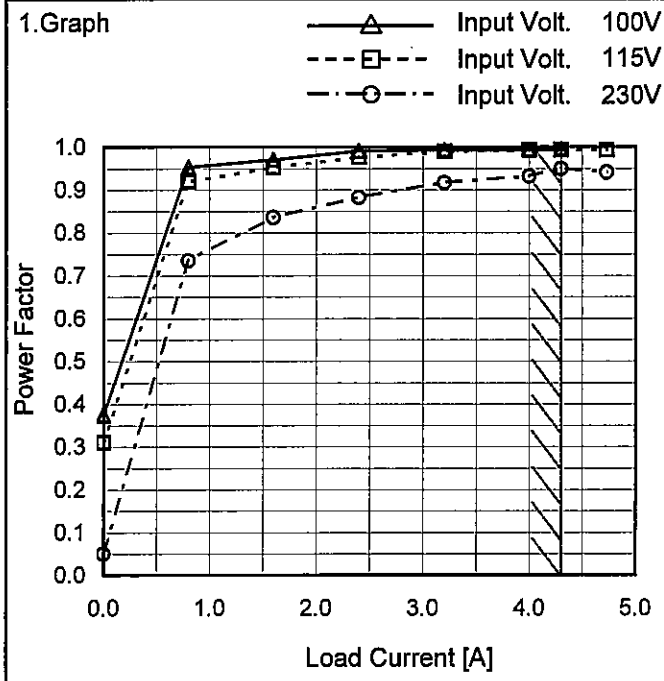
Model	PLA100F-24
Item	Power Factor (by Load Current)
Object	————————

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. 115[V]	Input Volt. 230[V]
0.00	0.375	0.310	0.051
0.80	0.954	0.920	0.735
1.60	0.971	0.953	0.836
2.40	0.991	0.976	0.883
3.20	0.993	0.989	0.918
4.00	0.993	0.992	0.932
4.30	0.996	0.993	0.950
4.73	-	0.993	0.942
--	-	-	-
--	-	-	-
--	-	-	-

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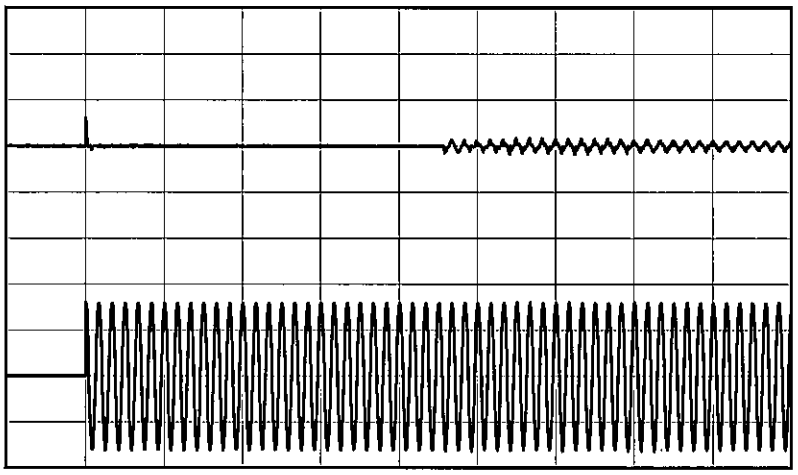
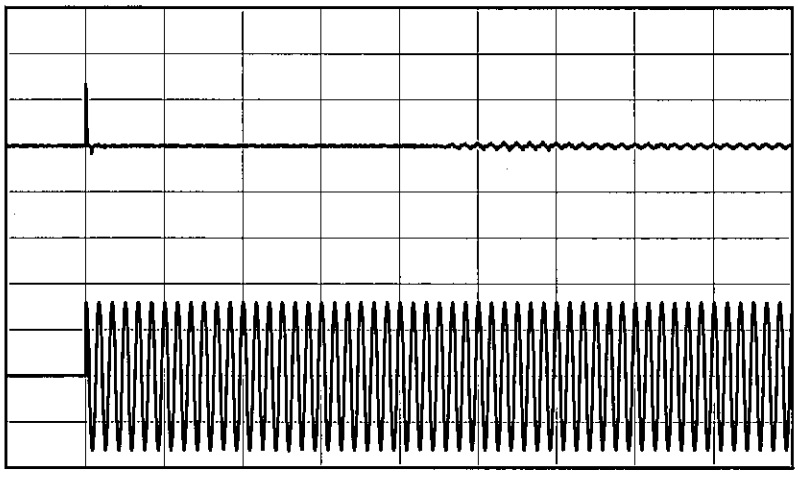
Model	PLA100F-24
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



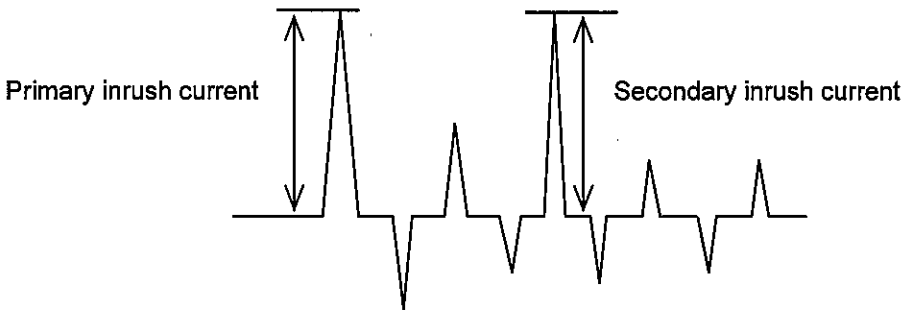
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
12.3 A
Secondary inrush current :
3.6 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
26.8 A
Secondary inrush current :
1.7 A



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Model	PLA100F-24	
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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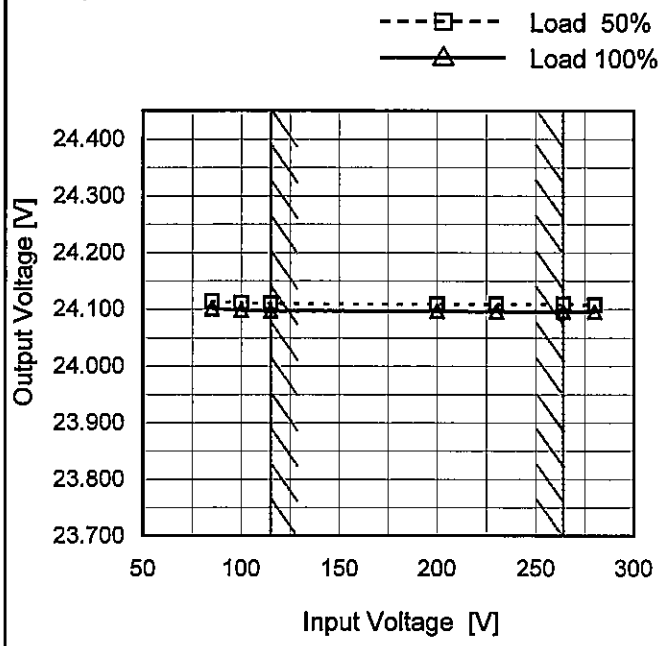
Model	PLA100F-24
Item	Line Regulation
Object	+24V4.3A

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	24.114	24.102 ※1
100	24.111	24.099 ※2
115	24.110	24.097
200	24.109	24.097
230	24.109	24.096
264	24.109	24.096
280	24.108	24.096
–	-	-
–	-	-

※1:Load 80%
※2:Load 90%

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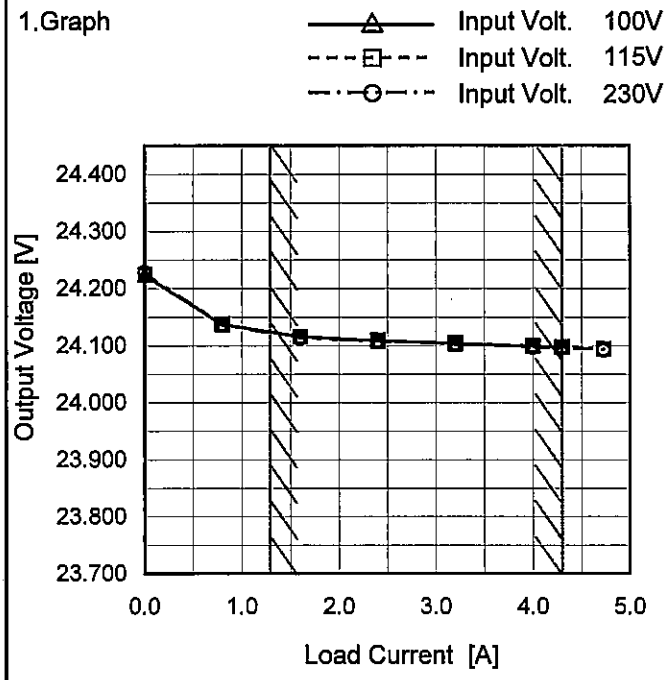
Model	PLA100F-24
Item	Load Regulation
Object	+24V4.3A

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	24.225	24.225	24.229
0.80	24.138	24.138	24.137
1.60	24.116	24.115	24.114
2.40	24.109	24.109	24.108
3.20	24.104	24.104	24.103
4.00	24.099	24.099	24.098
4.30	24.098	24.097	24.097
4.73	-	24.094	24.093
--	-	-	-
--	-	-	-
--	-	-	-

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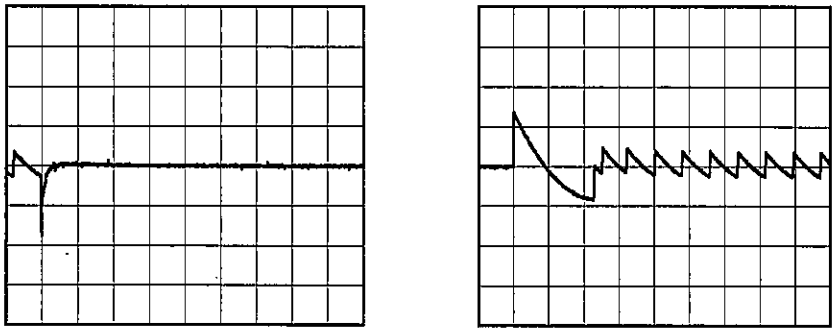
Model	PLA100F-24		
Item	Dynamic Load Response	Temperature Testing Circuitry	25° C Figure A
Object	+24V4.3A		

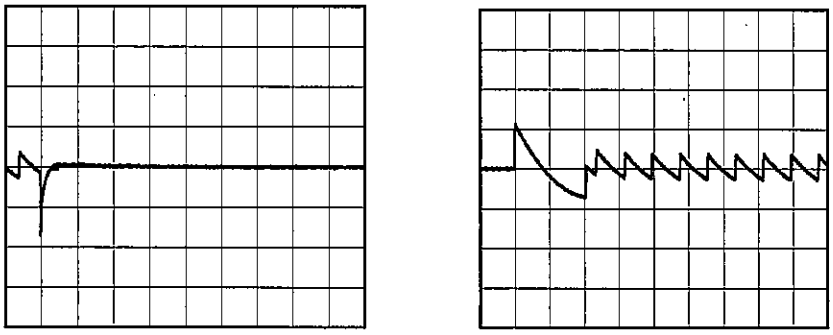
Input Volt. 115 V
Cycle 1000 ms

Response. t1=t2=50us. Typ

Min. Load (0A) ⟷
Load 100% (4.3A)



Min. Load (0A) ⟷
Load 50% (2.15A)



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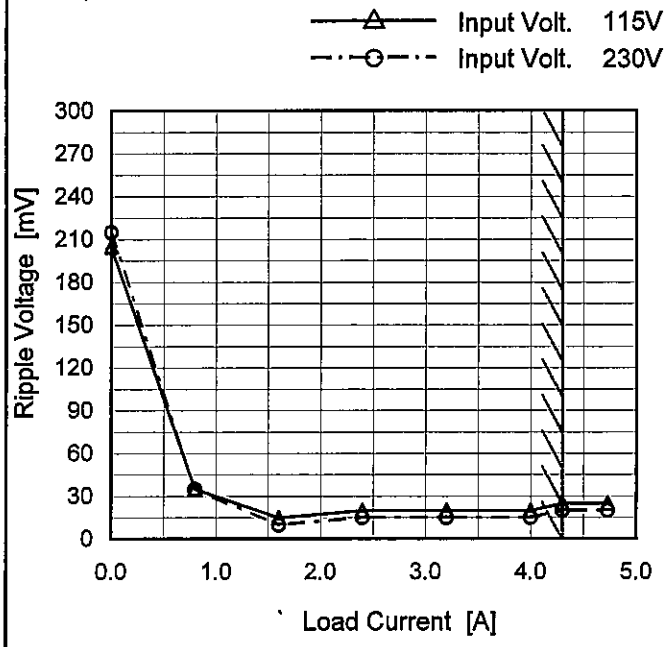
Model	PLA100F-24
Item	Ripple Voltage (by Load Current)
Object	+24V4.3A

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.

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.000	205	215
0.800	35	35
1.600	15	10
2.400	20	15
3.200	20	15
4.000	20	15
4.300	25	20
4.730	25	20
--	-	-
--	-	-
--	-	-

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

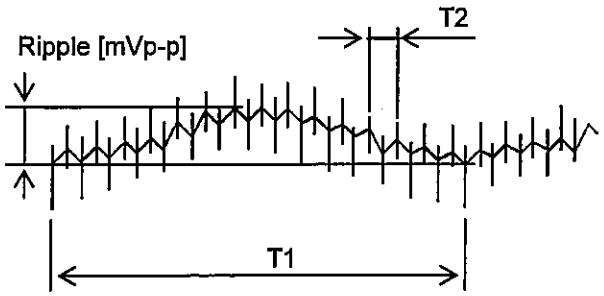


Fig. Complex Ripple Wave Form

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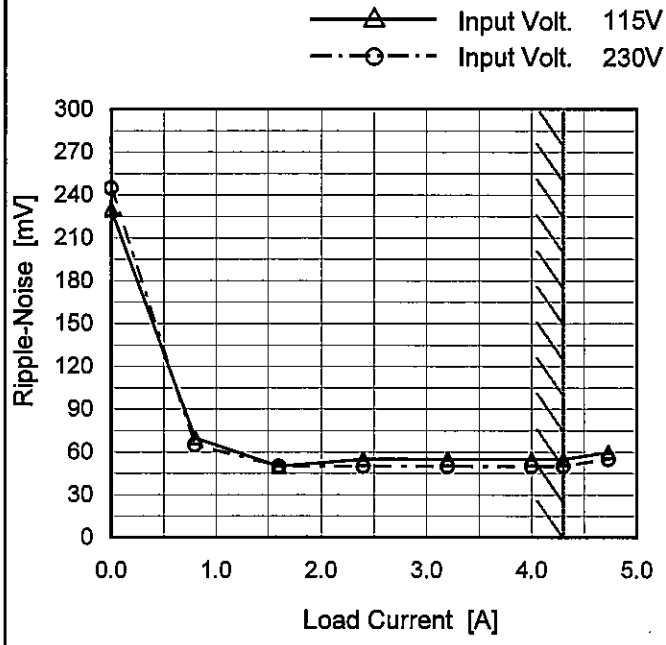
Model	PLA100F-24
Item	Ripple-Noise
Object	+24V4.3A

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]
0.000	230	245
0.800	70	65
1.600	50	50
2.400	55	50
3.200	55	50
4.000	55	50
4.300	55	50
4.730	60	55
---	-	-
---	-	-
---	-	-

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

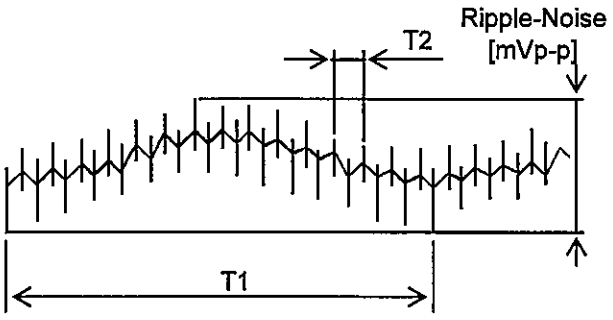


Fig. Complex Ripple Wave Form

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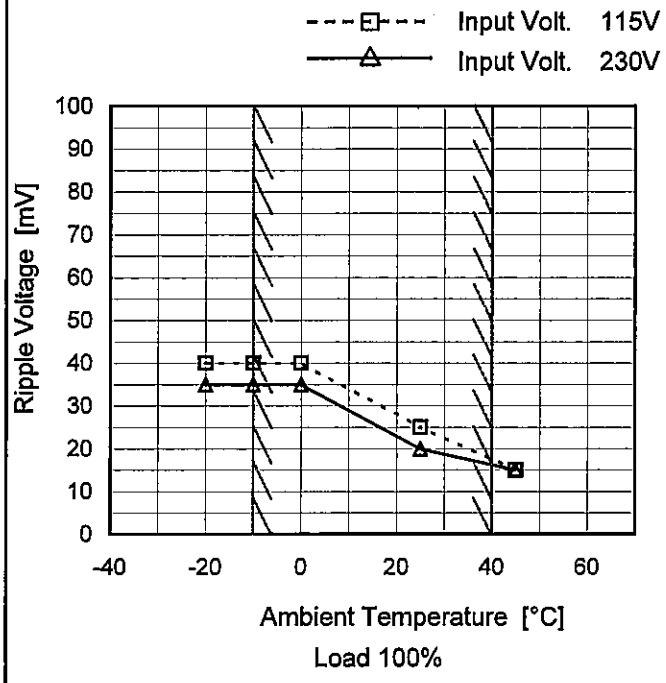
Model	PLA100F-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V4.3A

Testing Circuitry Figure C

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. 115 [V]	Input Volt. 230 [V]
-20	40	35
-10	40	35
0	40	35
25	25	20
45	15	15
—	-	-
—	-	-
—	-	-
—	-	-
—	-	-
—	-	-

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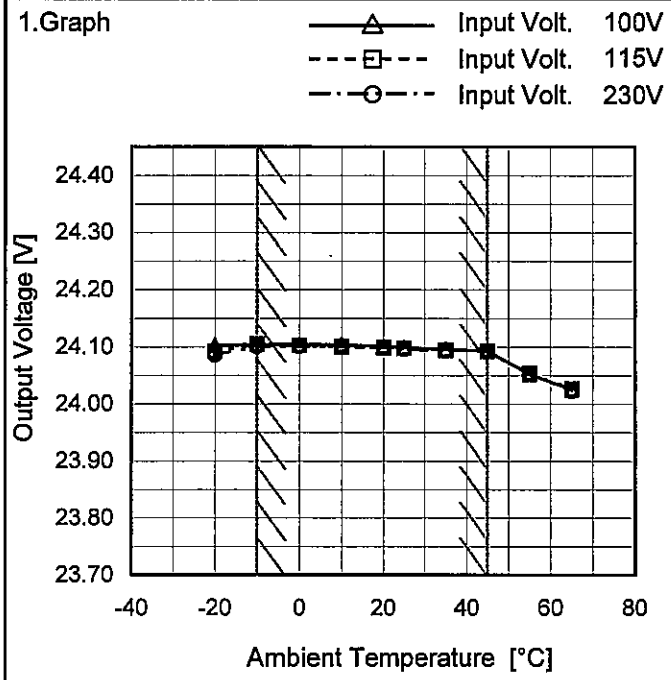
Model	PLA100F-24
Item	Ambient Temperature Drift
Object	+24V4.3A

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	24.103	24.092	24.086
-10	24.105	24.104	24.101
0	24.104	24.102	24.101
10	24.104	24.100	24.100
20	24.101	24.098	24.099
25	24.099	24.097	24.096
35	24.096	24.094	24.093
45	24.094	24.092	24.093
55	24.053	24.054	24.053
65	24.026	24.026	24.023
–	-	-	-

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

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Model	PLA100F-24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V4.3A	

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 - 45°C
Input Voltage : 115 - 264V
Load Current : 1.29 - 4.3A

* 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	230	1.29	24.121	±15	±0.1
Minimum Voltage	45	115	4.3	24.092		

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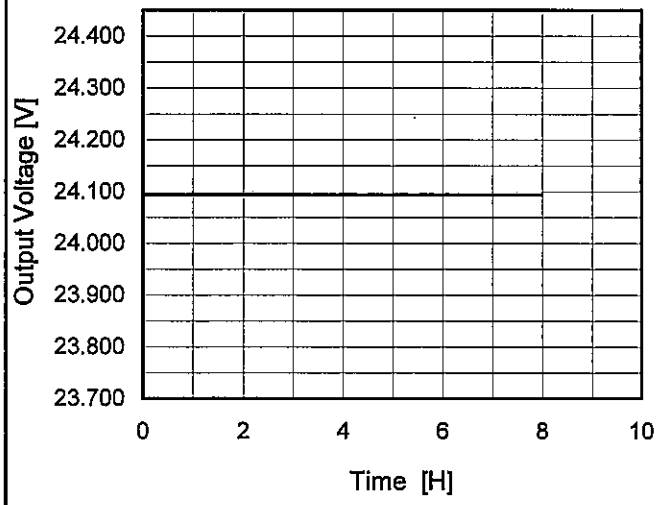
Model	PLA100F-24
Item	Time Lapse Drift
Object	+24V4.3A

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	24.096
0.5	24.094
1.0	24.094
2.0	24.094
3.0	24.094
4.0	24.094
5.0	24.094
6.0	24.094
7.0	24.094
8.0	24.094

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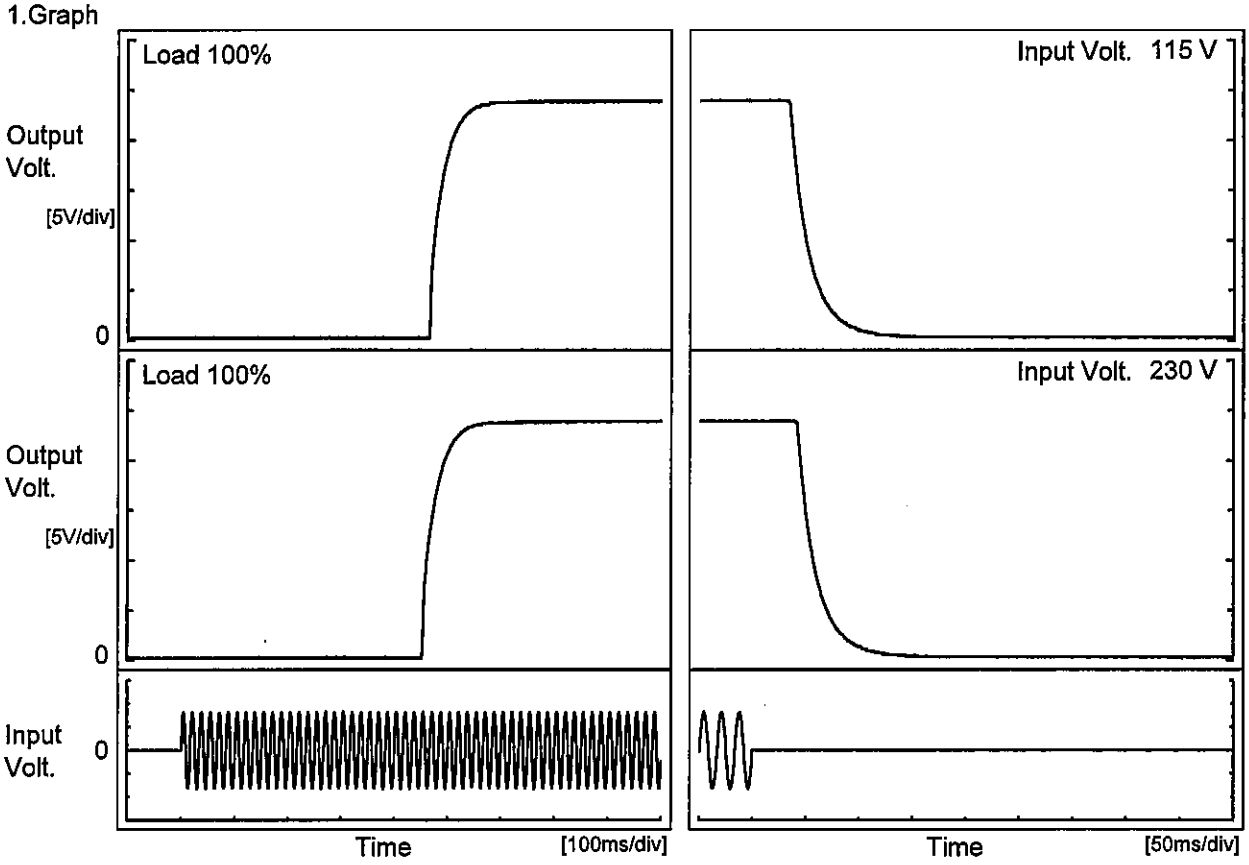
Model	PLA100F-24	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+24V4.3A	

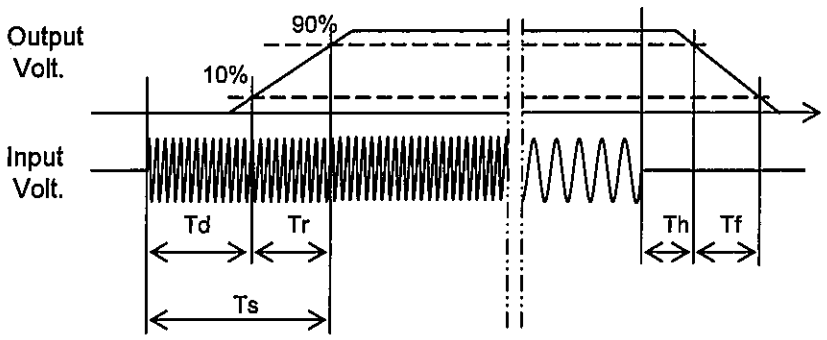
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	468.0	56.5	524.5	36.0	40.3
230 V	454.5	56.5	511.0	43.5	39.8



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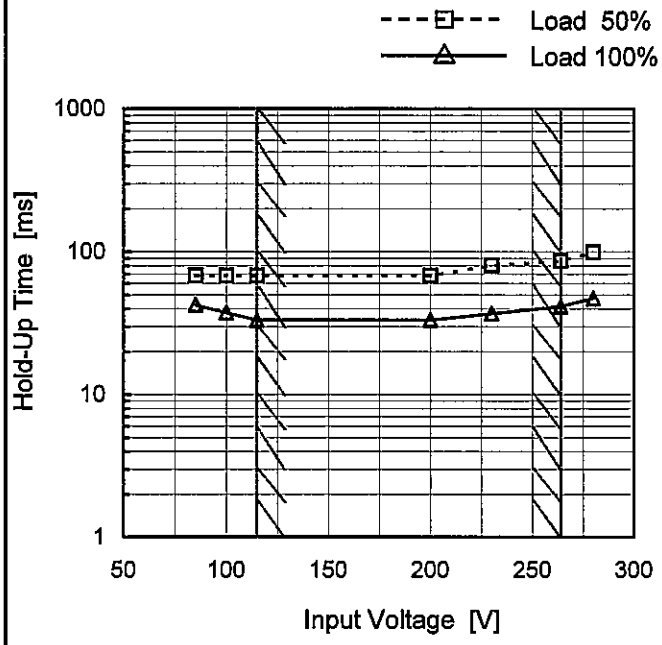
Model	PLA100F-24
Item	Hold-Up Time
Object	+24V4.3A

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	68	43 ※1
100	68	38 ※2
115	68	33
200	68	33
230	80	37
264	86	42
280	99	47
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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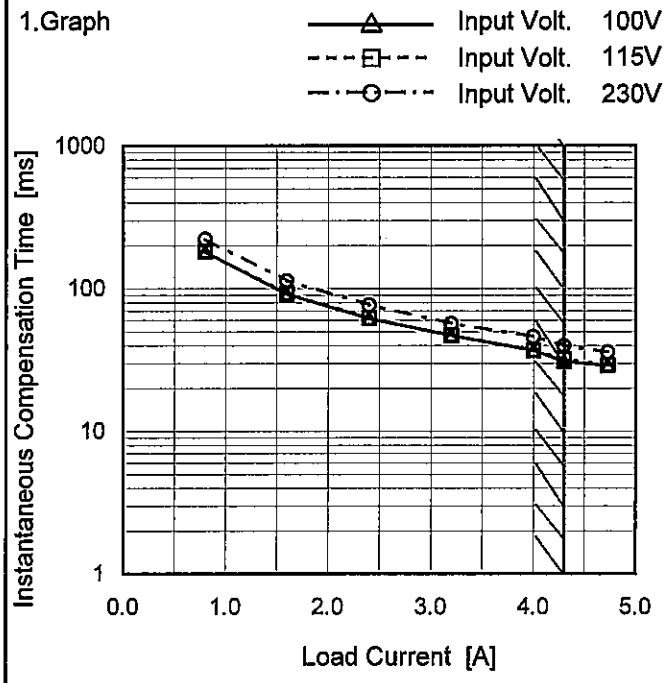
Model	PLA100F-24
Item	Instantaneous Interruption Compensation
Object	+24V4.3A

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	-	-	-
0.80	181	181	222
1.60	92	93	114
2.40	62	62	77
3.20	47	47	57
4.00	37	37	46
4.30	31	32	40
4.73	29	29	36
--	-	-	-
--	-	-	-
--	-	-	-

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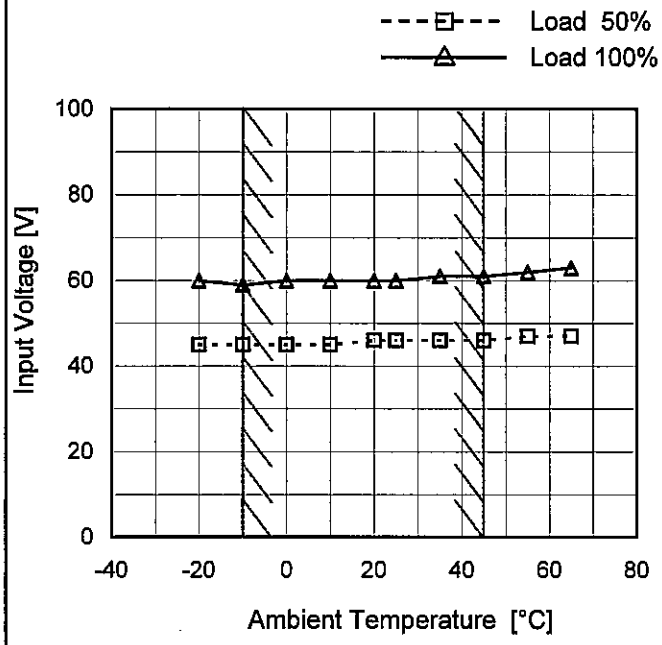
Model	PLA100F-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V4.3A

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	45	60
-10	45	59
0	45	60
10	45	60
20	46	60
25	46	60
35	46	61
45	46	61
55	47	62
65	47	63
--	-	-

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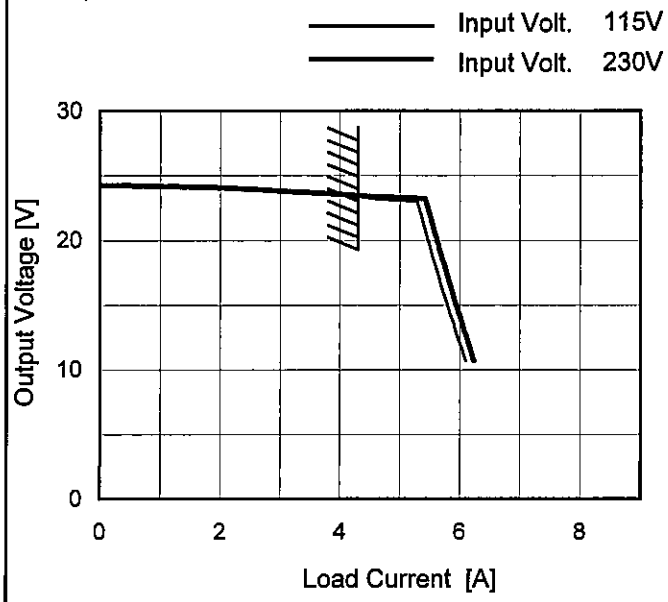
Model	PLA100F-24
Item	Overcurrent Protection
Object	+24V4.3A

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 10.7V to 0V.

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
22.8	5.30	5.45
21.6	5.38	5.52
19.2	5.51	5.66
16.8	5.68	5.83
14.4	5.83	5.98
12.0	6.00	6.14
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

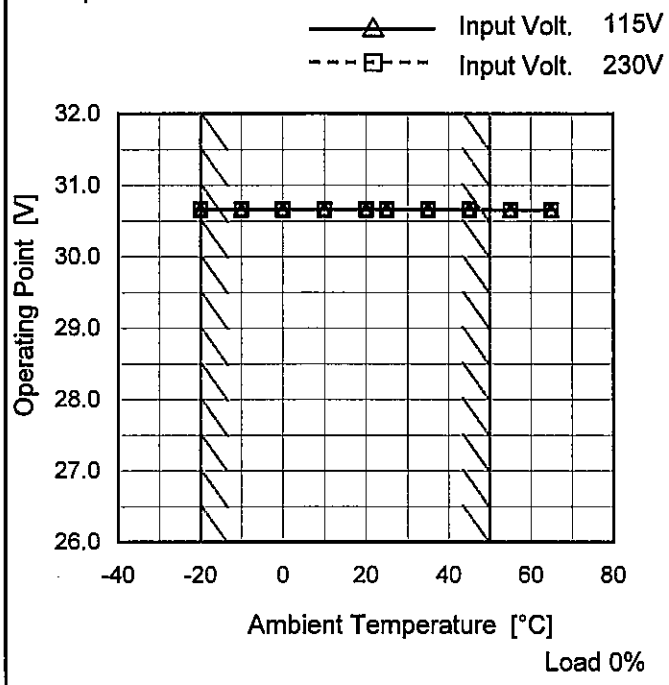
BC - 10751

COSEL

Model	PLA100F-24
Item	Overvoltage Protection
Object	+24V4.3A

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	30.66	30.66
-10	30.66	30.66
0	30.66	30.66
10	30.66	30.66
20	30.66	30.66
25	30.66	30.66
35	30.66	30.66
45	30.66	30.66
55	30.65	30.65
65	30.65	30.65
--	-	-

COSEL

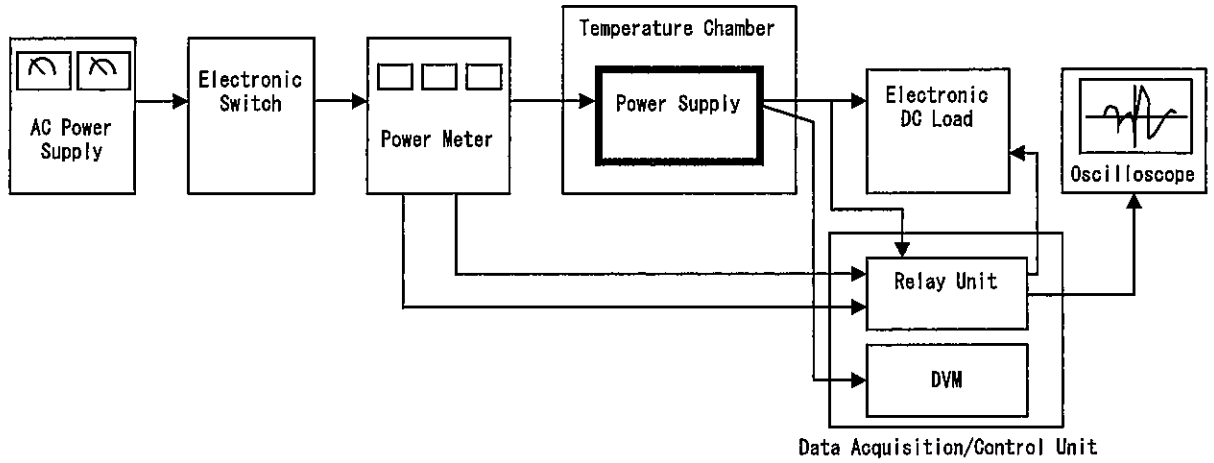


Figure A

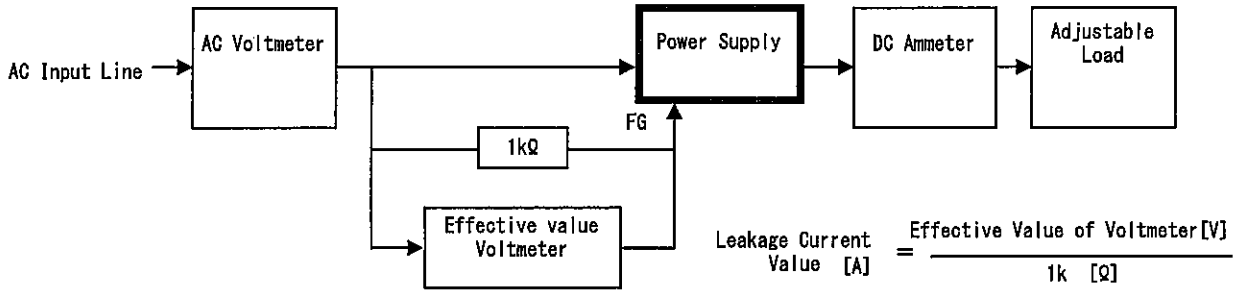


Figure B (DEN-AN)

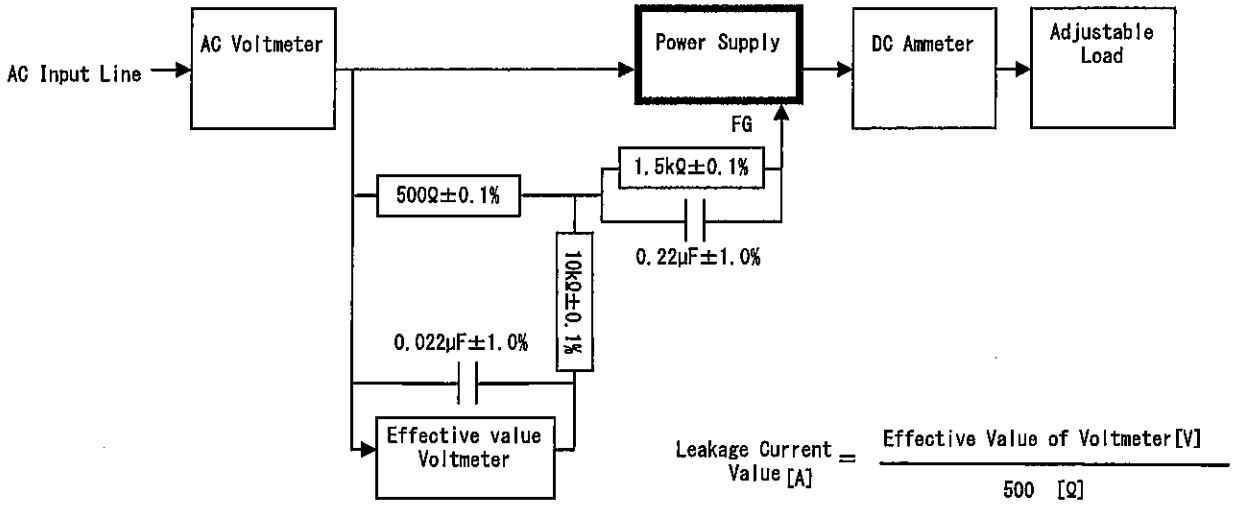


Figure B (IEC60950-1)

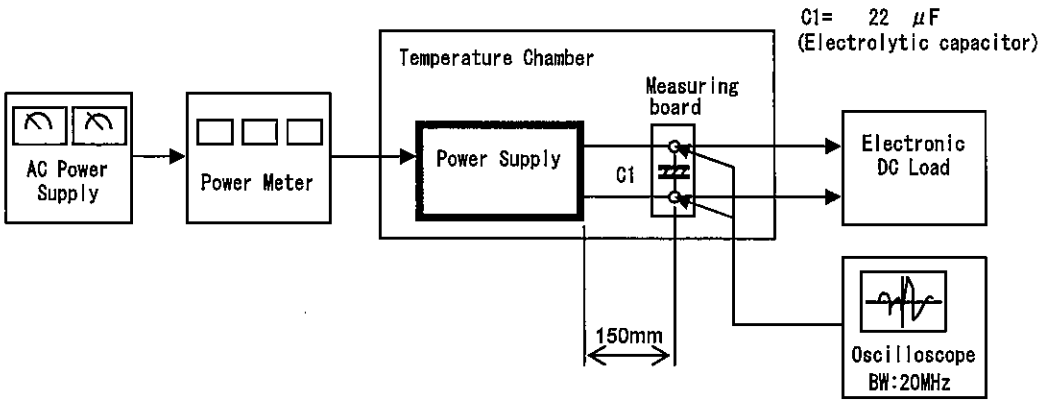

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope BW:20MHz

Figure C