参考資料

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TEST DATA OF PLA150F-48

Regulated DC Power Supply
June 26, 2013

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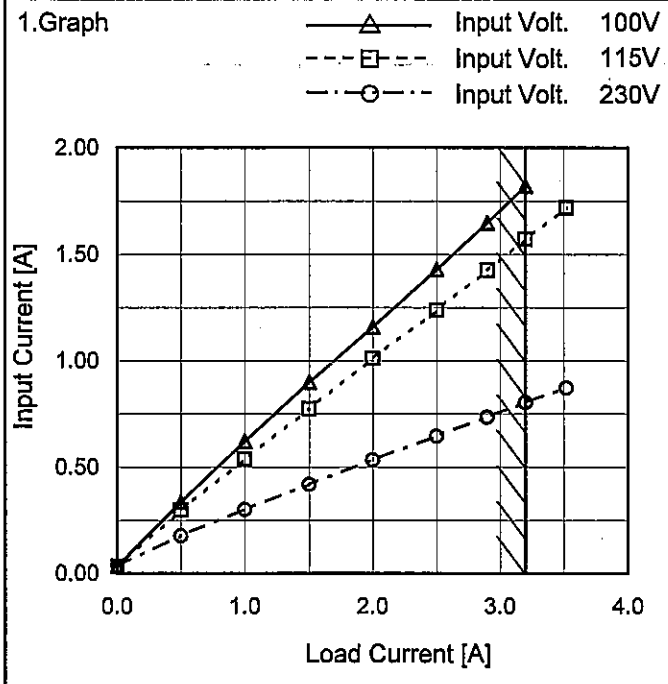
Model	PLA150F-48
Item	Input Current (by Load Current)
Object	————————

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. 115[V]	Input Volt. 230[V]
0.00	0.034	0.033	0.034
0.50	0.337	0.298	0.178
1.00	0.623	0.539	0.302
1.50	0.901	0.775	0.420
2.00	1.160	1.011	0.534
2.50	1.429	1.237	0.646
2.90	1.650	1.425	0.736
3.20	1.822	1.571	0.804
3.52	-	1.719	0.873
--	-	-	-
--	-	-	-

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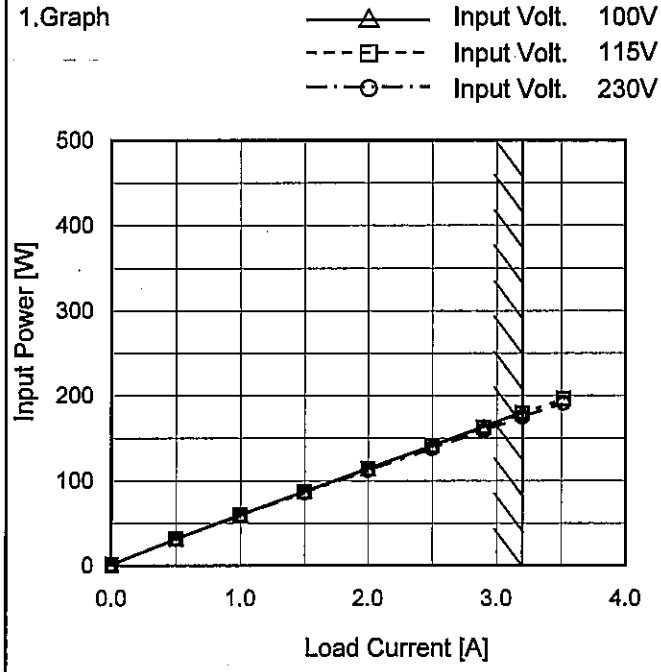
Model	PLA150F-48
Item	Input Power (by Load Current)
Object	———————

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. 115[V]	Input Volt. 230[V]
0.00	1.3	1.3	1.0
0.50	32.0	31.7	31.6
1.00	60.3	59.7	59.0
1.50	87.2	86.5	85.7
2.00	114.6	113.8	112.2
2.50	141.7	140.4	137.8
2.90	163.9	162.2	158.8
3.20	181.1	179.1	174.8
3.52	-	196.1	191.0
--	-	-	-
--	-	-	-

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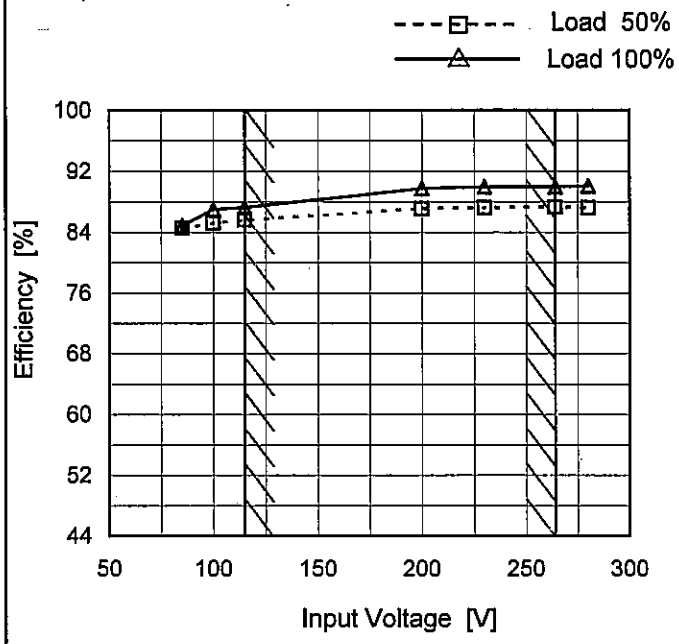
Model	PLA150F-48
Item	Efficiency (by Input Voltage)
Object	———

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%
85	84.5	84.9 ※1
100	85.2	87.0 ※2
115	85.6	87.3
200	87.1	89.8
230	87.2	90.0
264	87.3	90.0
280	87.2	90.1
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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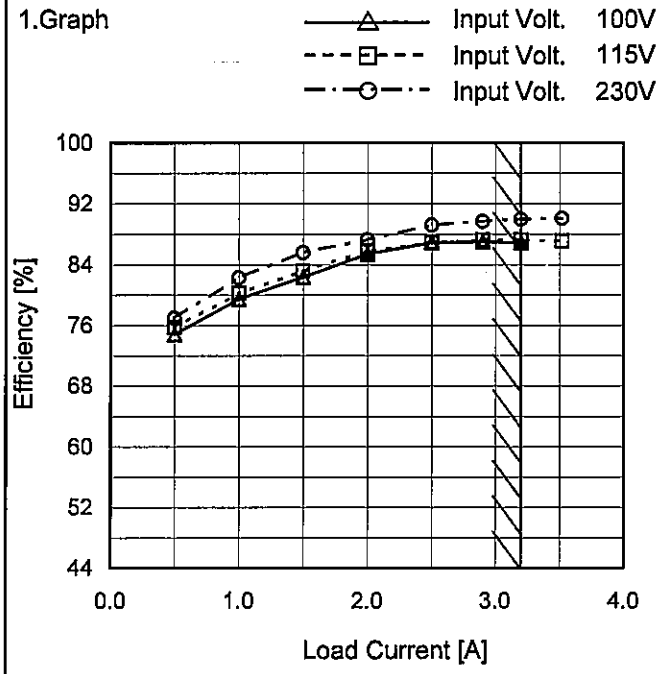
Model	PLA150F-48
Item	Efficiency (by Load Current)
Object	———

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. 115[V]	Input Volt. 230[V]
0.00	-	-	-
0.50	74.8	75.8	77.0
1.00	79.5	80.2	82.3
1.50	82.4	83.1	85.6
2.00	85.4	85.8	87.3
2.50	86.9	86.9	89.2
2.90	87.0	87.2	89.7
3.20	86.9	87.2	90.0
3.52	-	87.1	90.1
--	-	-	-
--	-	-	-

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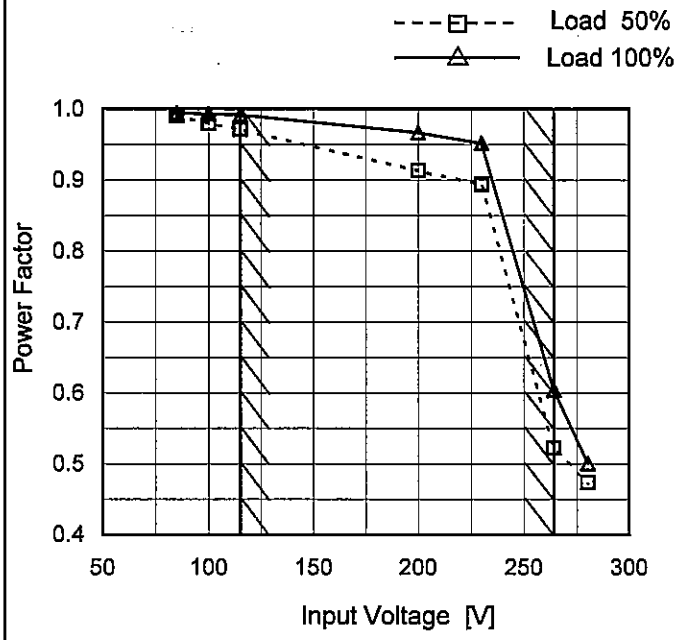
Model	PLA150F-48
Item	Power Factor (by Input Voltage)
Object	———————

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%
85	0.990	0.995 ※1
100	0.980	0.993 ※2
115	0.971	0.992
200	0.913	0.967
230	0.894	0.952
264	0.522	0.604
280	0.474	0.501
--	-	-
--	-	-

※1 : Load 80%
※2 : Load 90%

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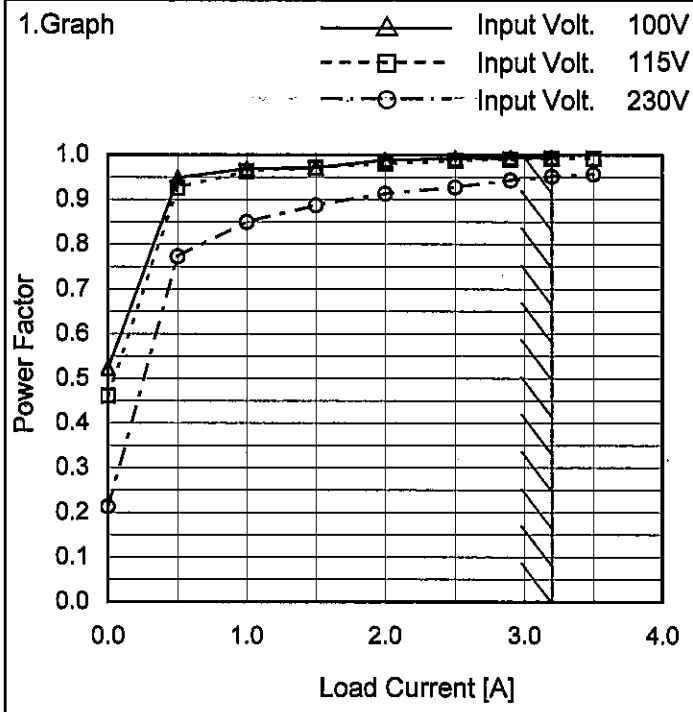
Model	PLA150F-48
Item	Power Factor (by Load Current)
Object	————————

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. 115[V]	Input Volt. 230[V]
0.00	0.523	0.461	0.213
0.50	0.949	0.926	0.773
1.00	0.969	0.964	0.850
1.50	0.971	0.971	0.887
2.00	0.989	0.980	0.913
2.50	0.992	0.987	0.927
2.90	0.993	0.990	0.943
3.20	0.995	0.992	0.952
3.52	-	0.992	0.957
--	-	-	-
--	-	-	-

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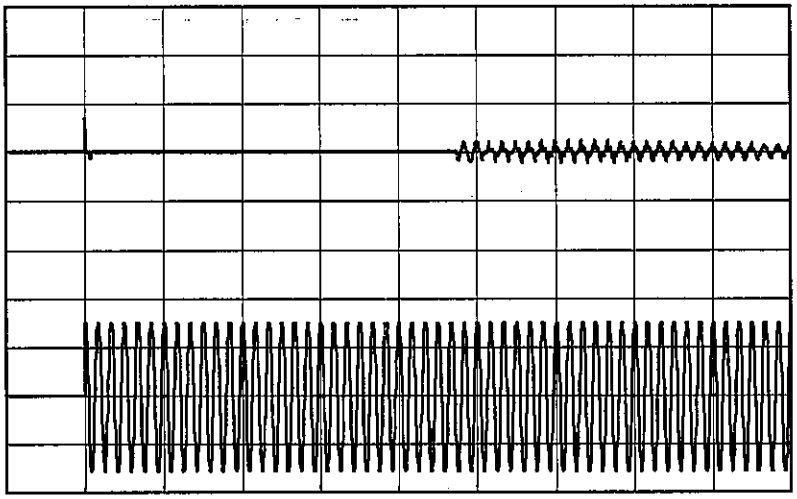
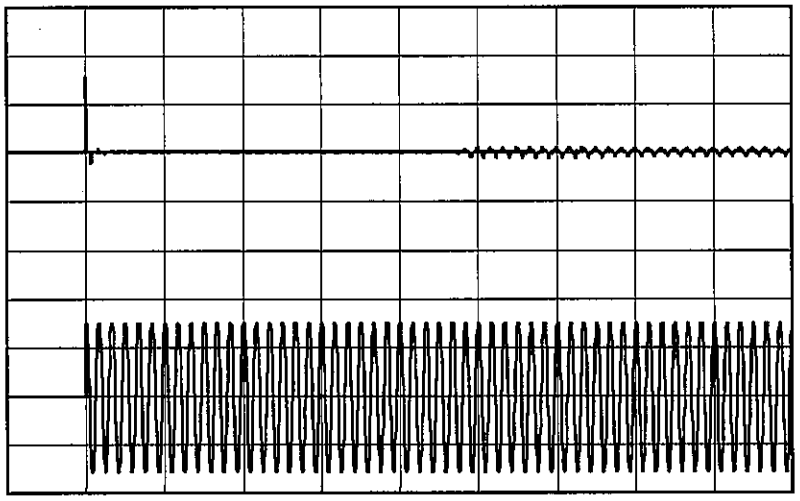
Model	PLA150F-48
Item	Inrush Current
Object	———

Temperature 25°C
Testing Circuitry Figure A



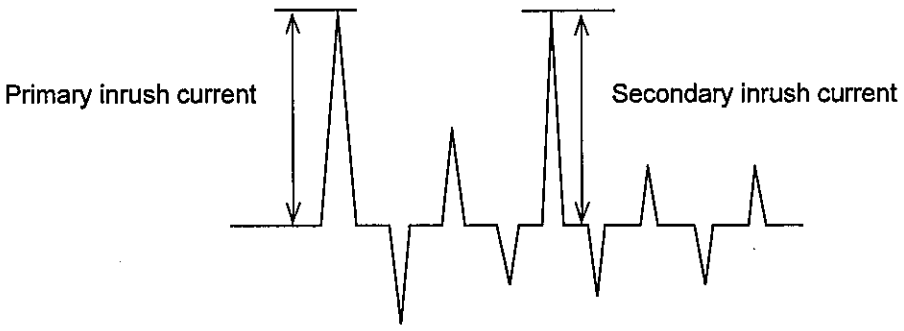
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
14.0 A
Secondary inrush current :
4.6 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
31.5 A
Secondary inrush current :
2.1 A



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Model	PLA150F-48	
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	0.45	0.50	0.65	Operation
	One of phases	0.30	0.35	0.78	Stand by
IEC60950-1	Both phases	0.30	0.31	0.55	Operation
	One of phases	0.27	0.31	0.72	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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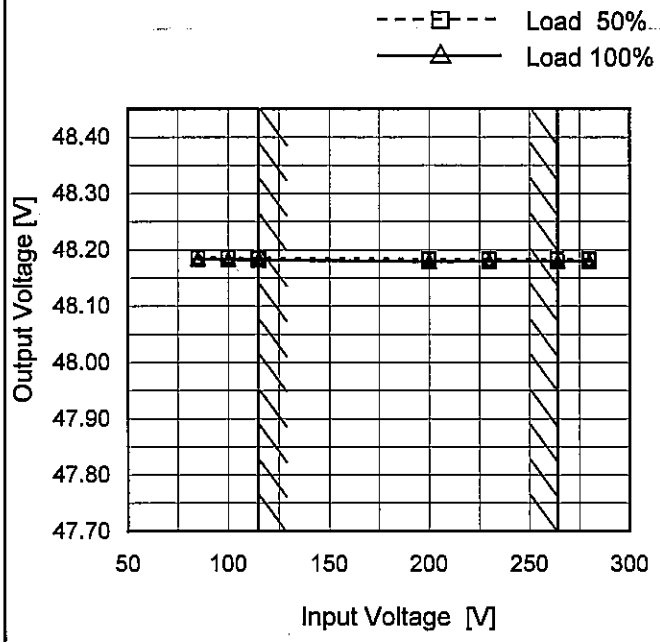
Model	PLA150F-48
Item	Line Regulation
Object	+48V3.2A

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	48.186	48.184 ※1
100	48.186	48.183 ※2
115	48.185	48.182
200	48.183	48.180
230	48.183	48.180
264	48.183	48.180
280	48.183	48.180
---	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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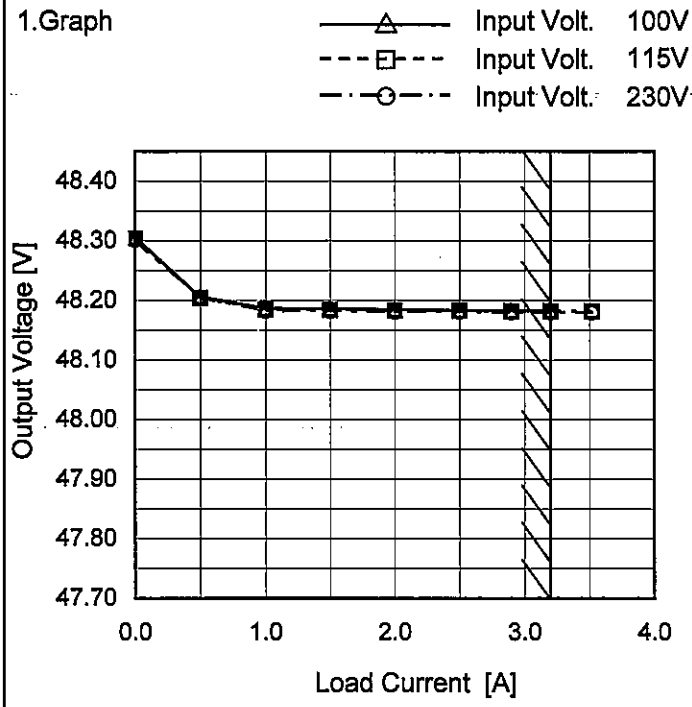
Model	PLA150F-48
Item	Load Regulation
Object	+48V3.2A

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	48.306	48.304	48.302
0.50	48.207	48.205	48.205
1.00	48.187	48.185	48.183
1.50	48.186	48.184	48.182
2.00	48.185	48.183	48.181
2.50	48.184	48.183	48.181
2.90	48.183	48.182	48.180
3.20	48.183	48.182	48.180
3.52	-	48.182	48.180
--	-	-	-
--	-	-	-

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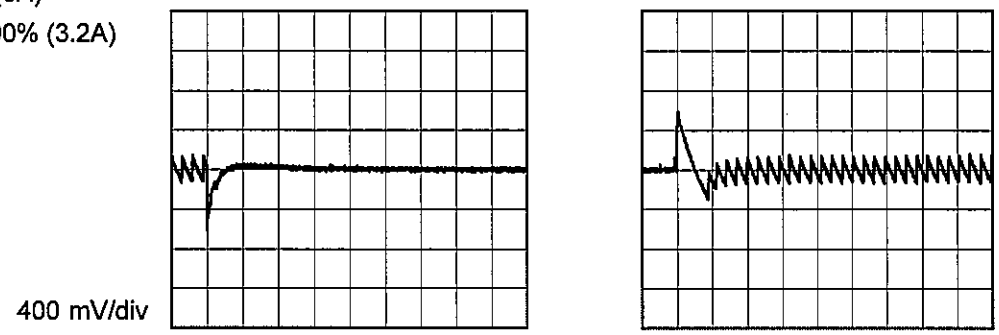
Model	PLA150F-48		
Item	Dynamic Load Response	Temperature	25˚C
		Testing Circuitry	Figure A
Object	+48V3.2A		

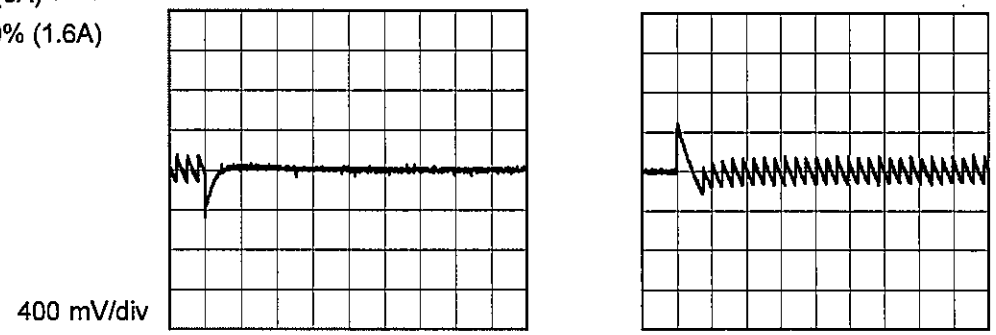
Input Volt. 115 V
Cycle 1000 ms

Response. t1=t2=50us. Typ

Min. Load (0A) ⟷
Load 100% (3.2A)



Min. Load (0A) ⟷
Load 50% (1.6A)



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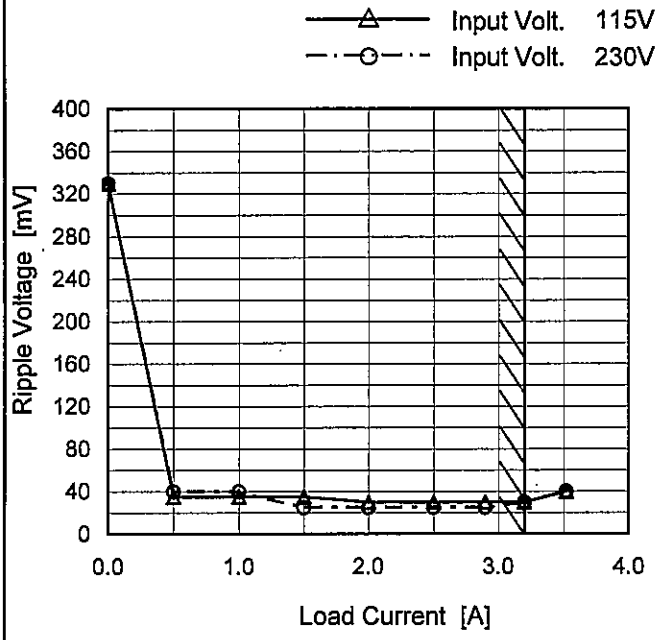
Model	PLA150F-48
Item	Ripple Voltage (by Load Current)
Object	+48V3.2A

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

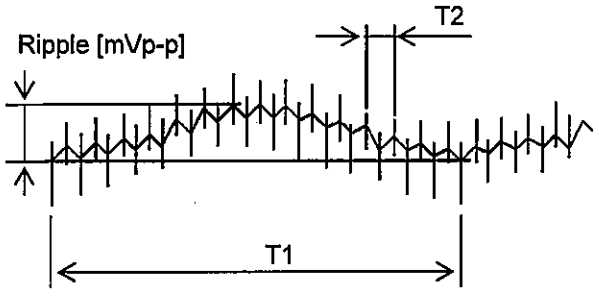


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV] Input Volt. 115 [V]	Ripple Voltage [mV] Input Volt. 230 [V]
0.00	330	330
0.50	35	40
1.00	35	40
1.50	35	25
2.00	30	25
2.50	30	25
2.90	30	25
3.20	30	30
3.52	40	40
---	-	-
---	-	-

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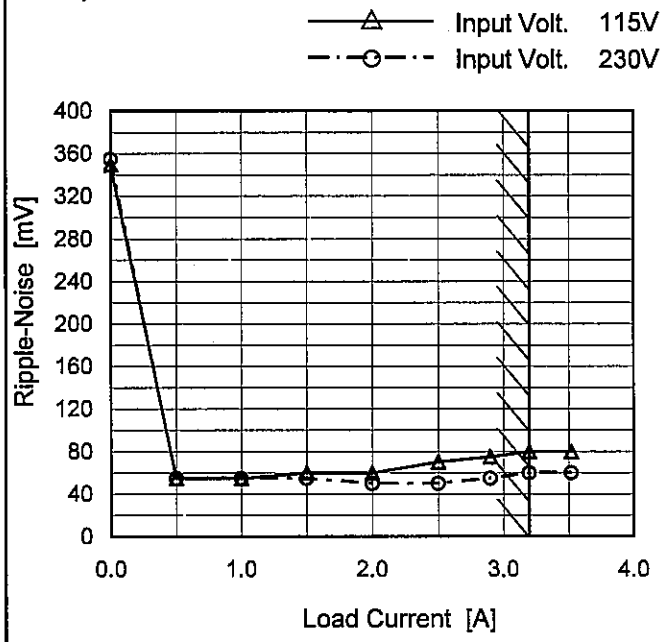
Model	PLA150F-48
Item	Ripple-Noise
Object	+48V3.2A

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]	Input Volt. 230 [V]
0.00	350	355
0.50	55	55
1.00	55	55
1.50	60	55
2.00	60	50
2.50	70	50
2.90	75	55
3.20	80	60
3.52	80	60
--	-	-
--	-	-

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

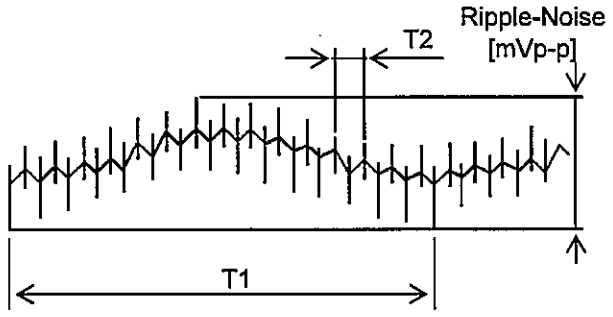


Fig. Complex Ripple Wave Form

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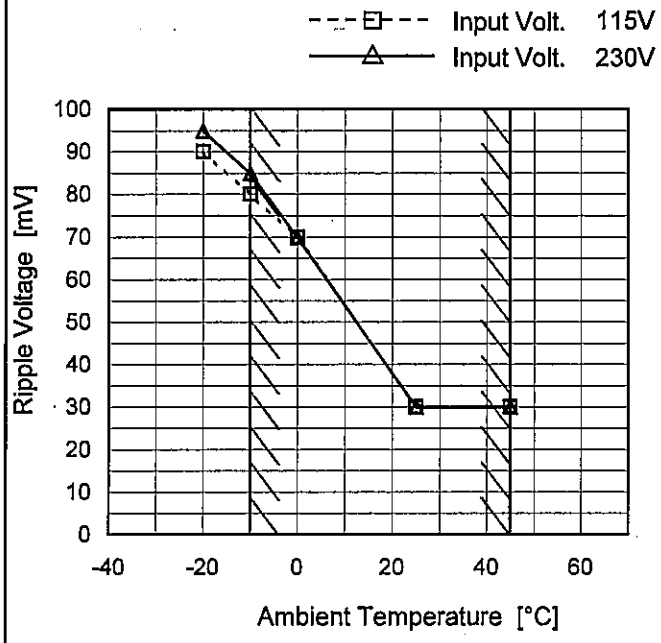
Model	PLA150F-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V3.2A

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	90	95
-10	80	85
0	70	70
25	30	30
45	30	30
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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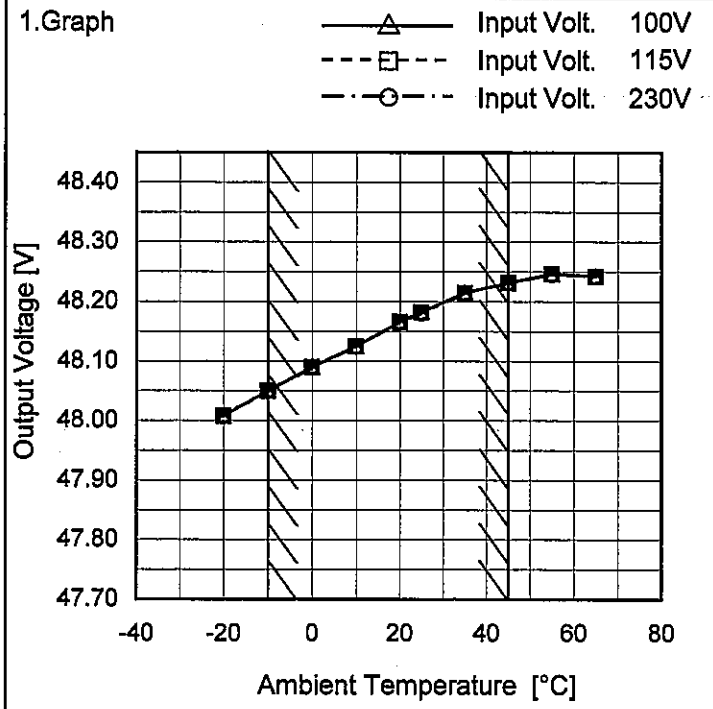
Model	PLA150F-48
Item	Ambient Temperature Drift
Object	+48V3.2A

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	48.008	48.008	48.007
-10	48.050	48.050	48.049
0	48.090	48.090	48.089
10	48.125	48.124	48.124
20	48.166	48.166	48.165
25	48.183	48.182	48.180
35	48.215	48.215	48.214
45	48.232	48.232	48.231
55	48.247	48.247	48.245
65	48.243	48.242	48.242
—	-	-	-

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

COSEL

Model	PLA150F-48	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V3.2A	

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 : 0.96 - 3.2A

* 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	45	115	0.96	48.237	±94	±0.2
Minimum Voltage	-10	264	3.2	48.049		

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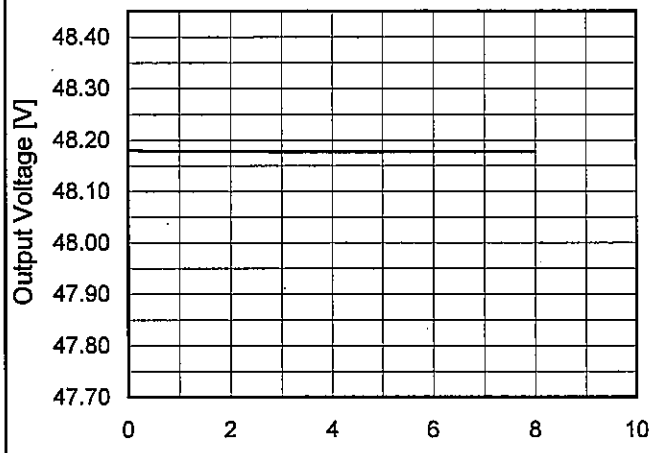
Model	PLA150F-48
Item	Time Lapse Drift
Object	+48V3.2A

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	48.180
0.5	48.179
1.0	48.179
2.0	48.179
3.0	48.178
4.0	48.178
5.0	48.178
6.0	48.178
7.0	48.178
8.0	48.178

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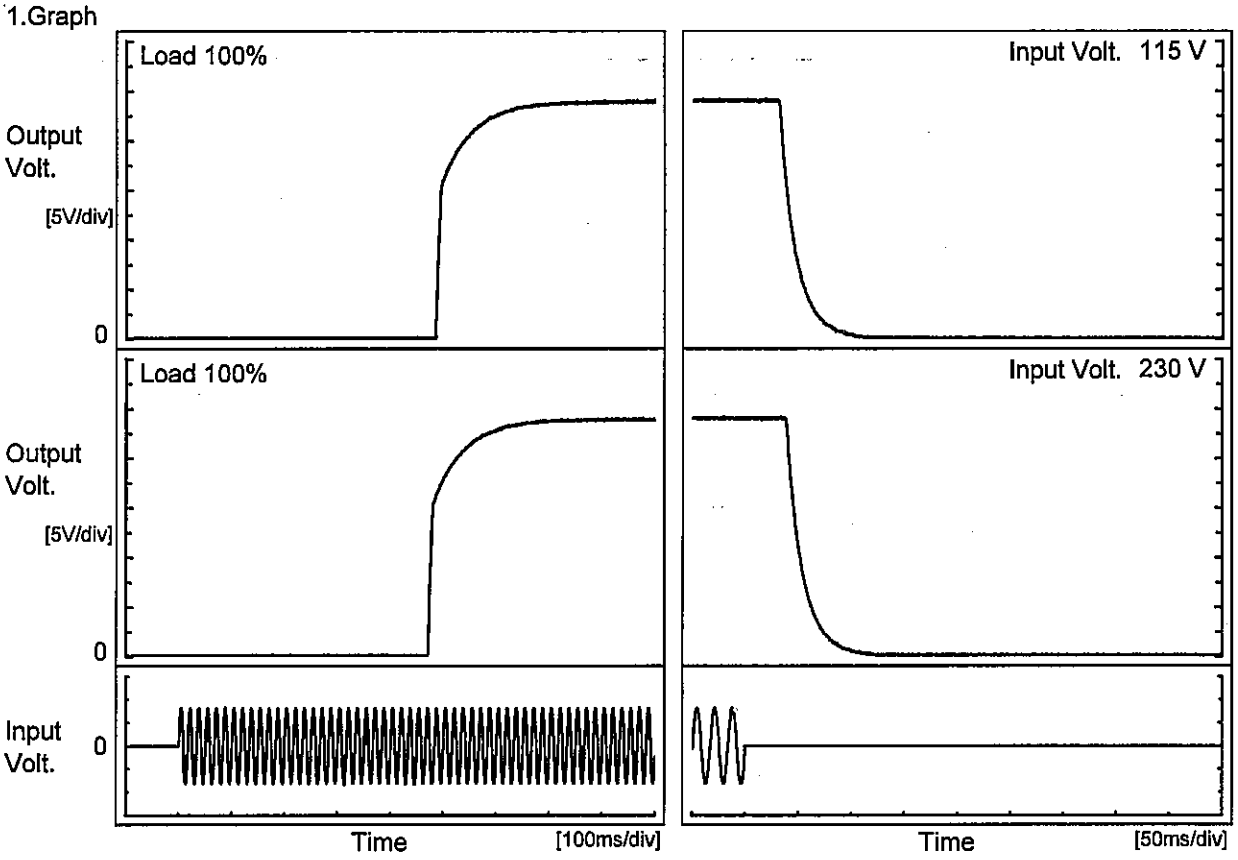
Model	PLA150F-48	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+48V3.2A	

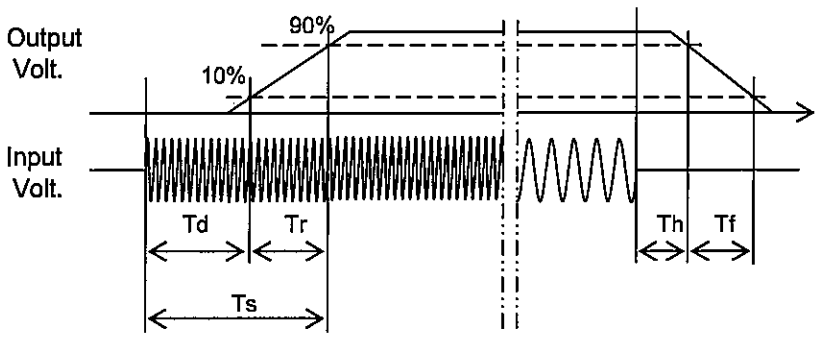
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	486.5	86.5	573.0	33.8	33.8
230 V	473.5	82.5	556.0	34.0	37.3



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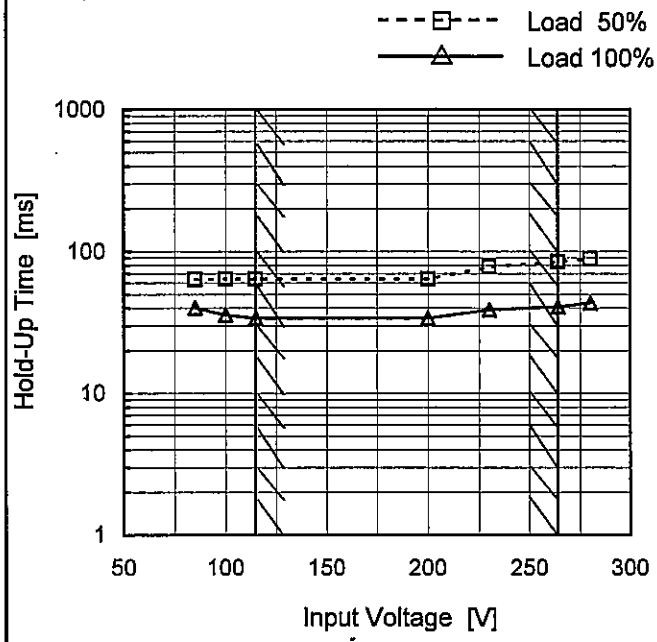
COSEL

Model	PLA150F-48
Item	Hold-Up Time
Object	+48V3.2A

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	64	40 ※1
100	64	36 ※2
115	64	34
200	64	34
230	78	39
264	85	41
280	89	43
--	-	-
--	-	-

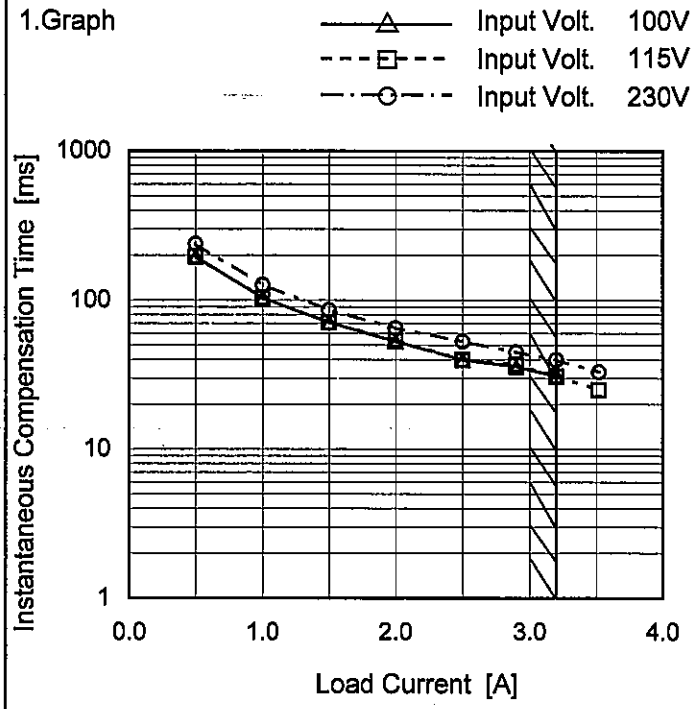
※1:Load 80%
※2:Load 90%

COSEL

Model	PLA150F-48
Item	Instantaneous Interruption Compensation
Object	+48V3.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

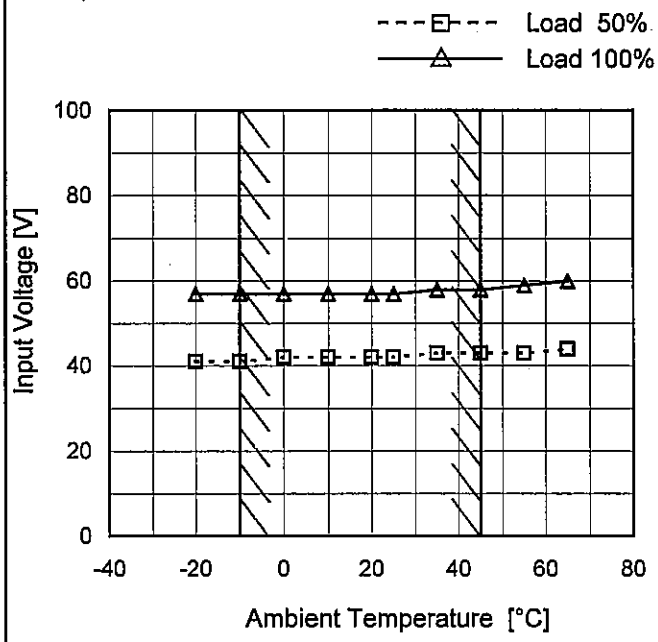
Load Current [A]	Time [ms] Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
0.50	196	197	240
1.00	104	104	127
1.50	71	71	86
2.00	53	54	65
2.50	40	40	53
2.90	36	37	45
3.20	31	31	40
3.52	-	25	33
--	-	-	-
--	-	-	-

COSEL

Model	PLA150F-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V3.2A

Testing Circuitry Figure A

1.Graph



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

2.Values

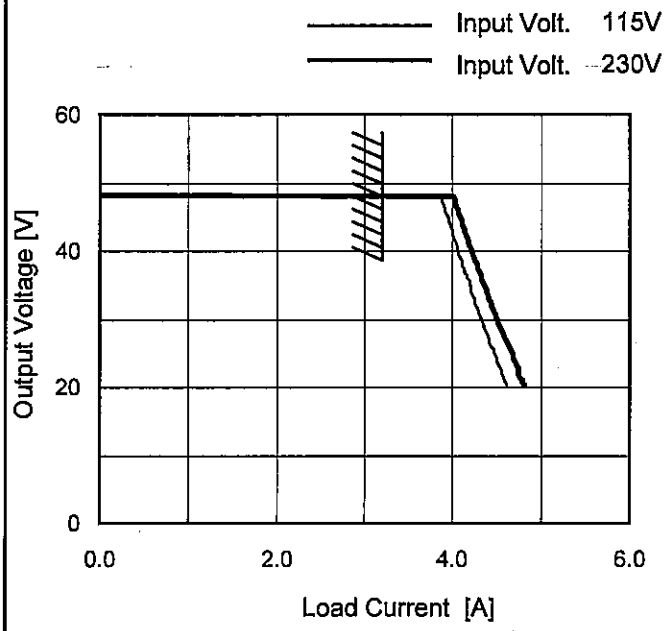
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	41	57
-10	41	57
0	42	57
10	42	57
20	42	57
25	42	57
35	43	58
45	43	58
55	43	59
65	44	60
--	-	-

COSEL

Model	PLA150F-48
Item	Overcurrent Protection
Object	+48V3.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

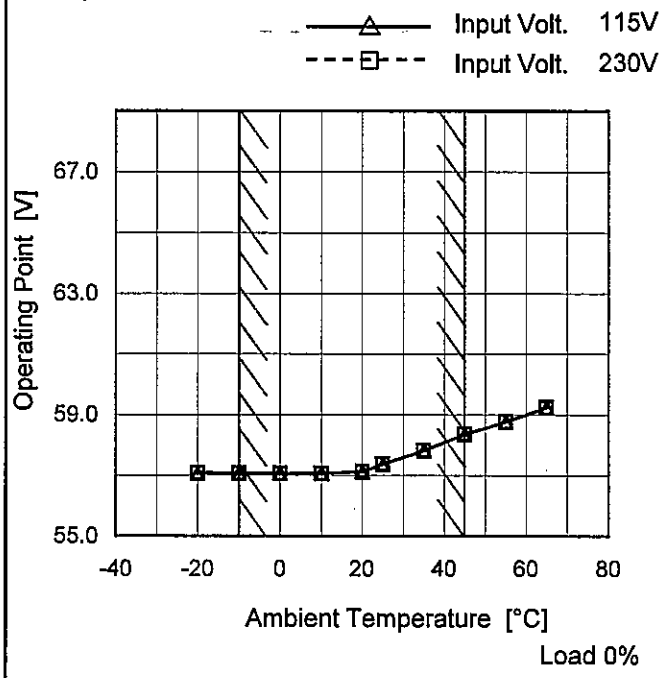
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
45.6	3.93	4.07
43.2	3.86	4.13
38.4	4.10	4.25
33.6	4.23	4.39
28.8	4.36	4.53
24.0	4.51	4.70
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PLA150F-48
Item	Overvoltage Protection
Object	+48V3.2A

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	57.08	57.08
-10	57.07	57.07
0	57.07	57.07
10	57.07	57.07
20	57.13	57.13
25	57.37	57.37
35	57.83	57.83
45	58.36	58.36
55	58.77	58.77
65	59.24	59.24
--	-	-

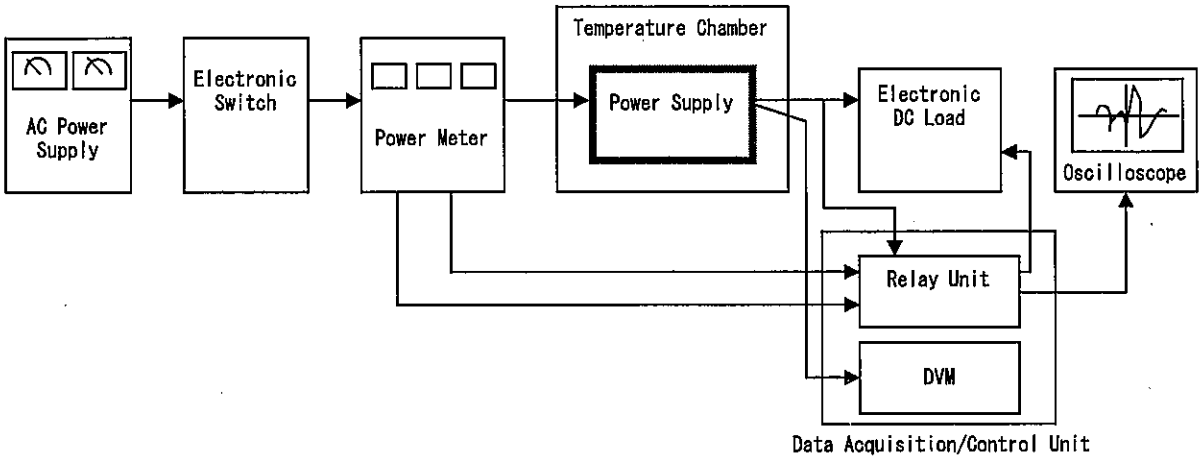


Figure A

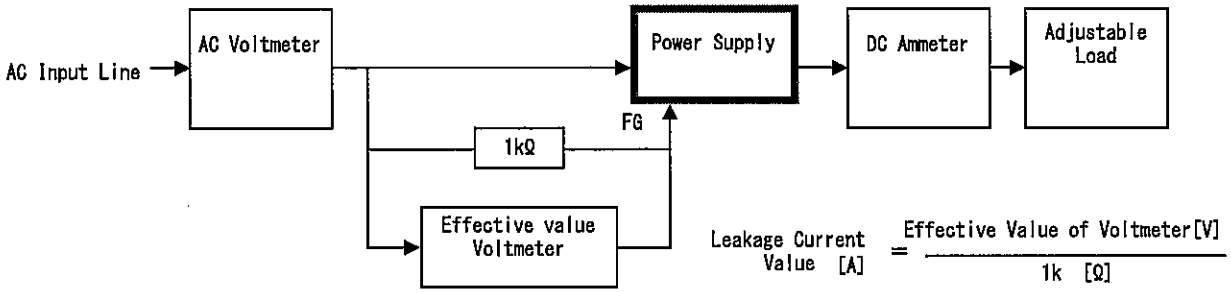


Figure B (DEN-AN)

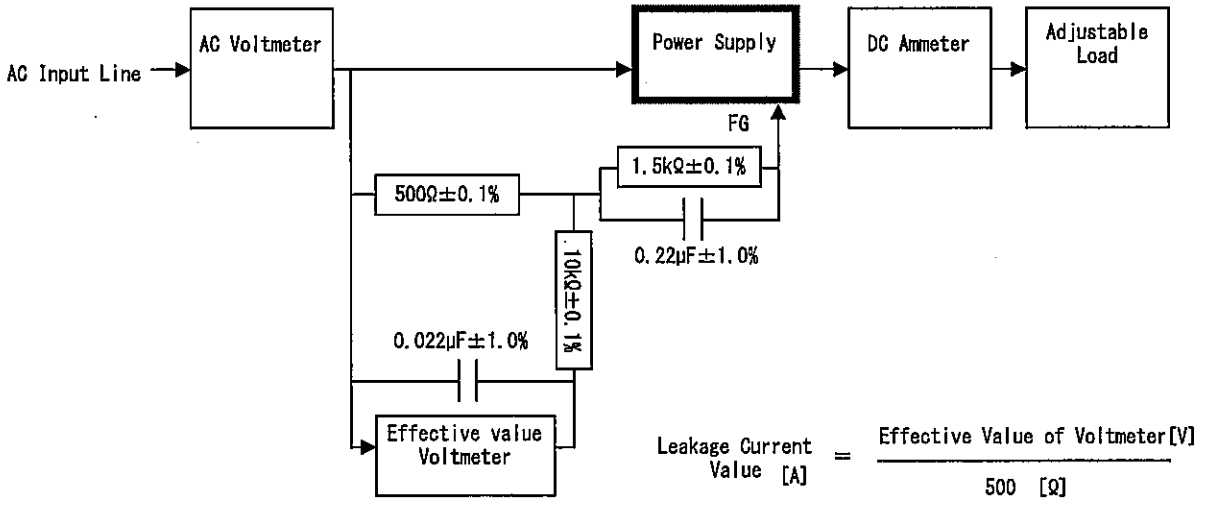


Figure B (IEC60950-1)

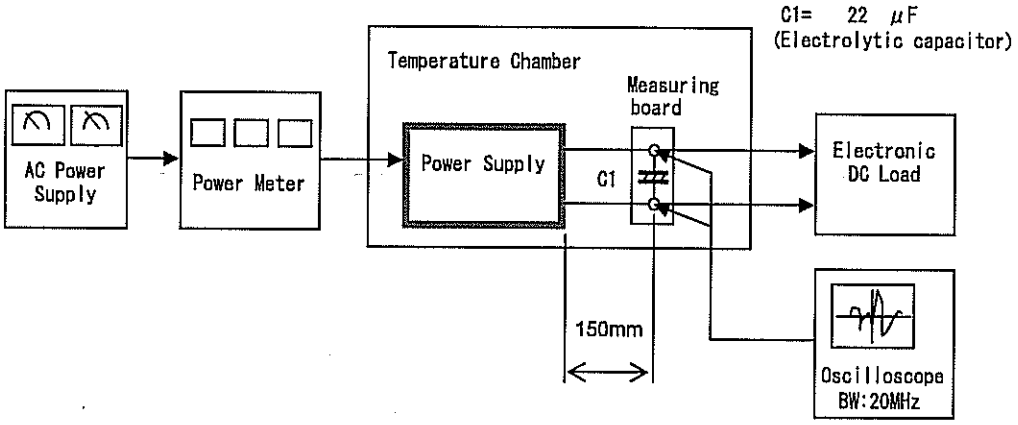

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C