参考資料

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TEST DATA OF PLA600F-12

Regulated DC Power Supply
August 19, 2011

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COSEL CO.,LTD.

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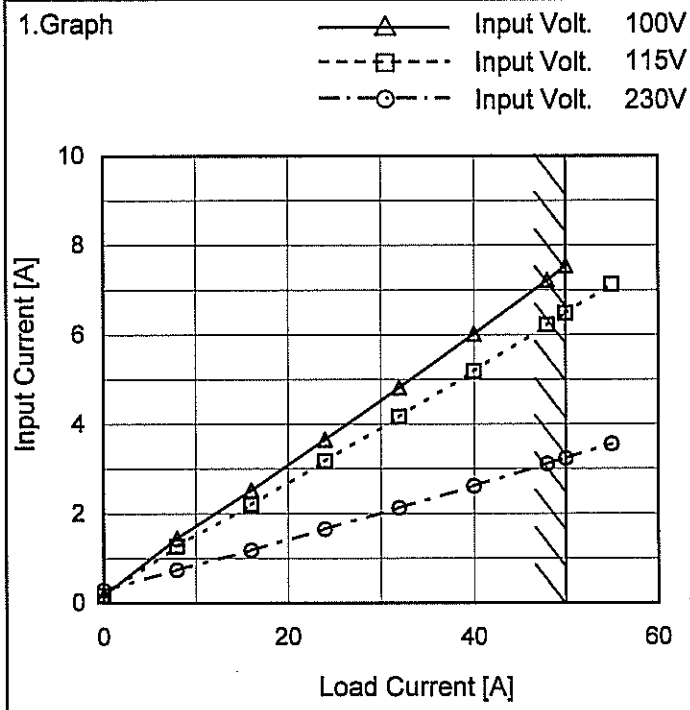
Model	PLA600F-12
Item	Input Current (by Load Current)
Object	———————

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	0.173	0.174	0.288
8	1.448	1.272	0.737
16	2.522	2.200	1.177
24	3.660	3.178	1.650
32	4.820	4.170	2.129
40	6.020	5.190	2.616
48	7.220	6.220	3.108
50	7.540	6.480	3.230
55	-	7.128	3.553
---	-	-	-
---	-	-	-

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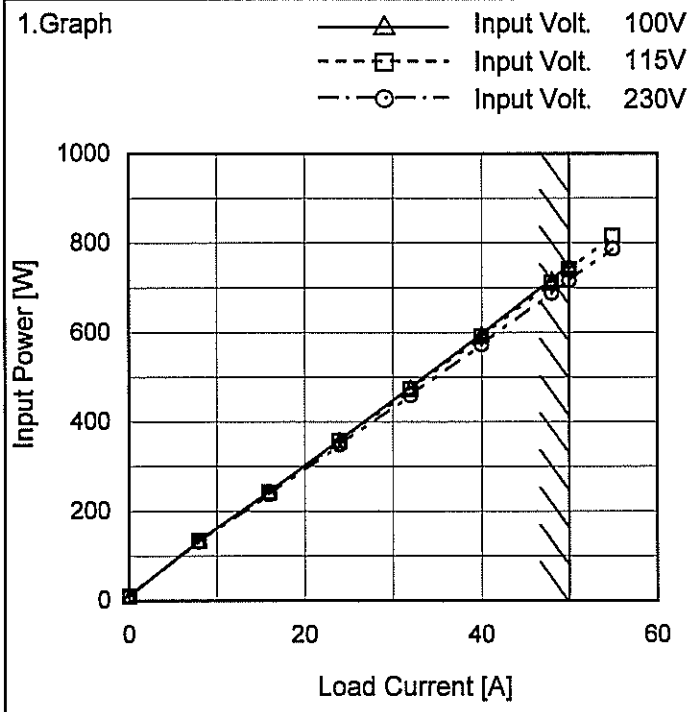
Model	PLA600F-12
Item	Input Power (by Load Current)
Object	————————

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	9.9	9.9	10.0
8	135.0	134.1	132.0
16	243.9	242.4	238.0
24	359.7	357.0	349.0
32	478.0	473.0	460.0
40	597.0	591.0	573.0
48	719.0	711.0	688.0
50	751.0	741.0	716.0
55	-	815.1	787.6
--	-	-	-
--	-	-	-

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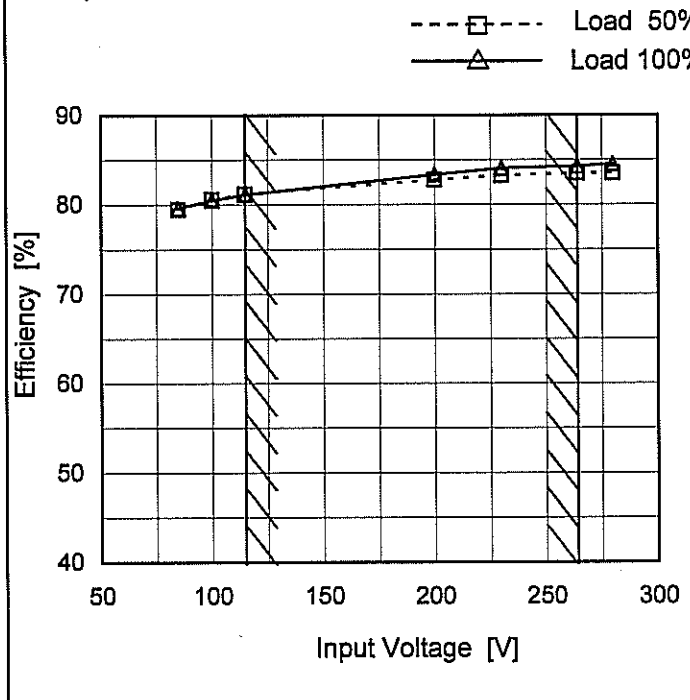
Model	PLA600F-12
Item	Efficiency (by Input Voltage)
Object	———————————

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	79.5	79.6 ※1
100	80.6	80.5 ※2
115	81.2	81.1
200	82.8	83.4
230	83.3	84.1
264	83.5	84.3
280	83.5	84.5
--	-	-
--	-	-

※1 : Load 80%
※2 : Load 90%

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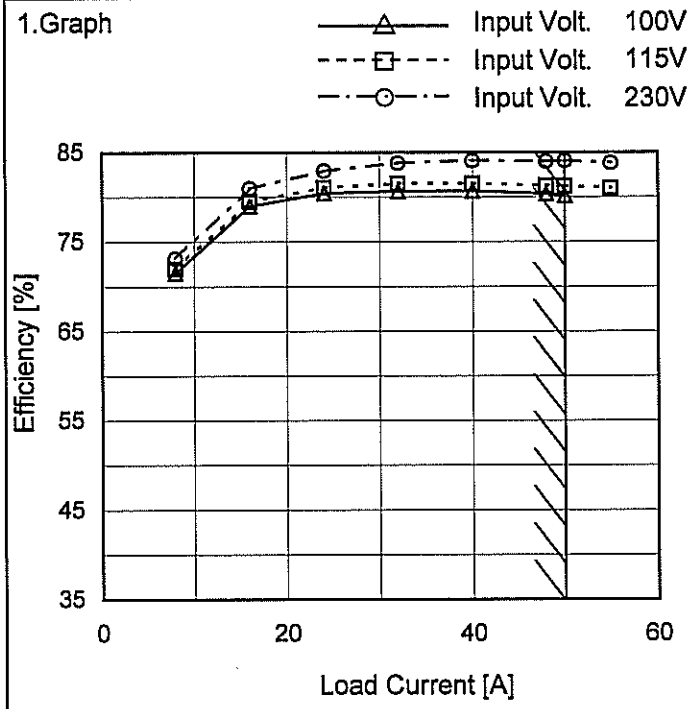
Model	PLA600F-12
Item	Efficiency (by Load Current)
Object	————————

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	-	-	-
8	71.5	72.0	73.1
16	79.0	79.5	81.0
24	80.5	81.1	82.9
32	80.7	81.5	83.8
40	80.7	81.5	84.1
48	80.4	81.3	84.0
50	80.1	81.2	84.1
55	-	81.0	83.8
--	-	-	-
--	-	-	-

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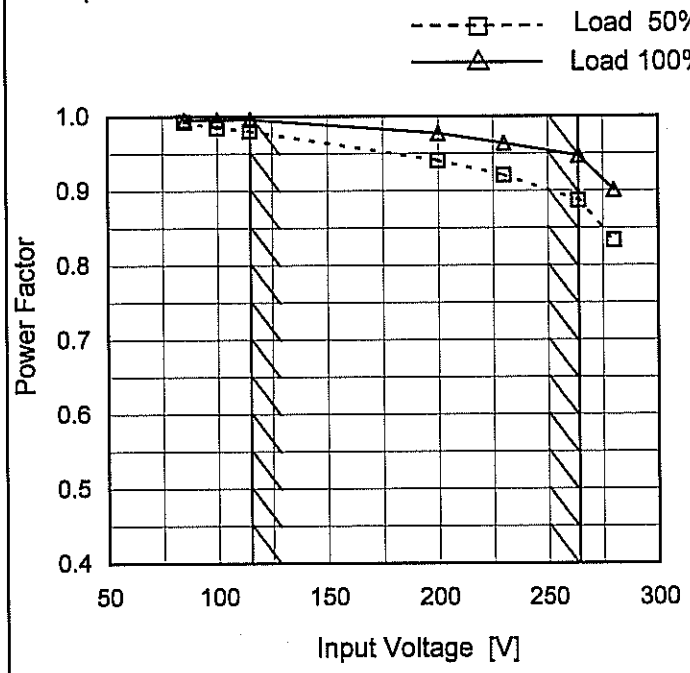
Model	PLA600F-12
Item	Power Factor (by Input Voltage)
Object	———————

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	0.992	0.995 ※1
100	0.985	0.996 ※2
115	0.980	0.996
200	0.941	0.977
230	0.921	0.964
264	0.887	0.947
280	0.833	0.901
--	-	-
--	-	-

※1 : Load 80%
※2 : Load 90%

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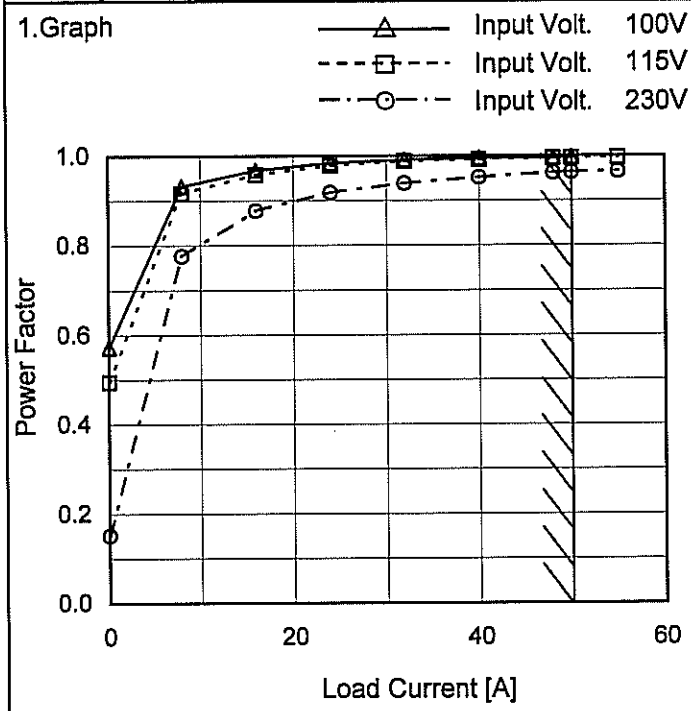
Model	PLA600F-12
Item	Power Factor (by Load Current)
Object	———————

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	0.572	0.495	0.152
8	0.932	0.917	0.776
16	0.967	0.958	0.878
24	0.984	0.978	0.918
32	0.992	0.987	0.939
40	0.995	0.992	0.952
48	0.996	0.994	0.962
50	0.997	0.995	0.964
55	-	0.996	0.965
---	-	-	-
---	-	-	-

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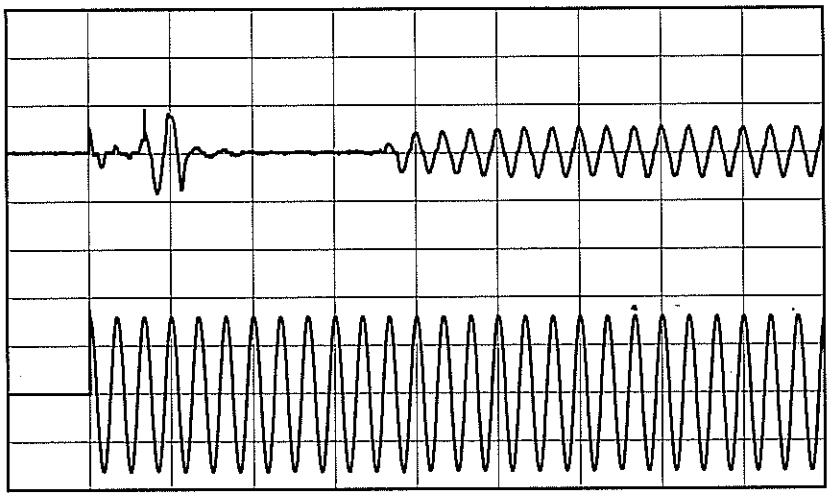
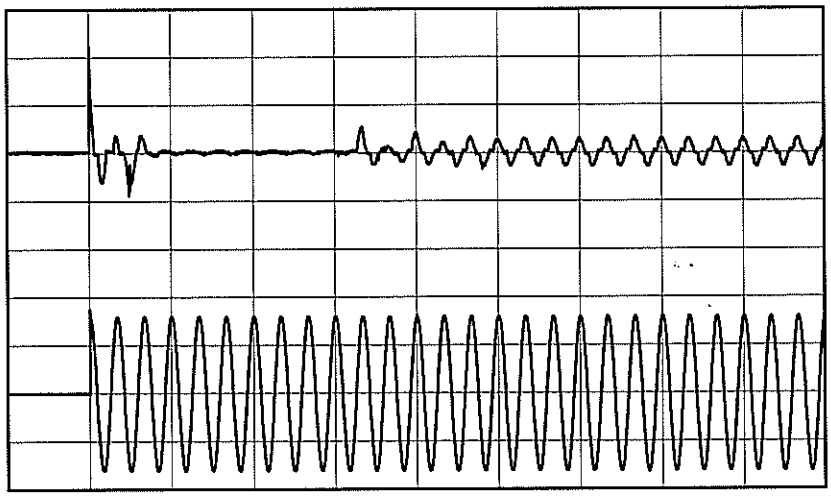
Model	PLA600F-12
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



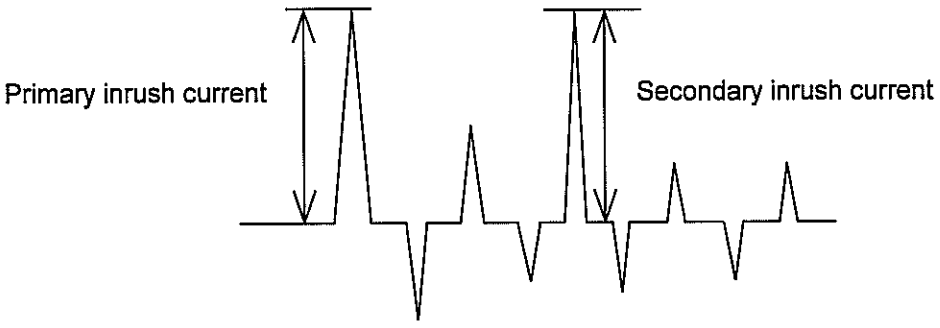
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
18.1 A
Secondary inrush current :
15.4 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
44.2 A
Secondary inrush current :
10.6 A



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Model	PLA600F-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	0.31	0.33	0.66	Operation
	One of phases	0.43	0.51	1.10	Stand by
IEC60950-1	Both phases	0.25	0.29	0.64	Operation
	One of phases	0.44	0.50	1.10	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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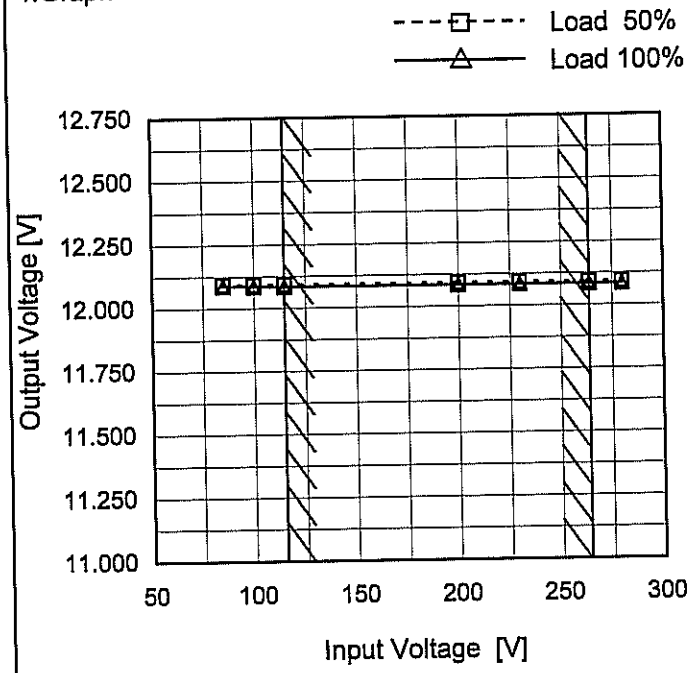
Model	PLA600F-12
Item	Line Regulation
Object	+12V50A

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	12.092	12.088 ※1
100	12.092	12.086 ※2
115	12.092	12.085
200	12.092	12.085
230	12.092	12.085
264	12.092	12.085
280	12.092	12.085
--	-	-
--	-	-

※1 : Load 80%
※2 : Load 90%

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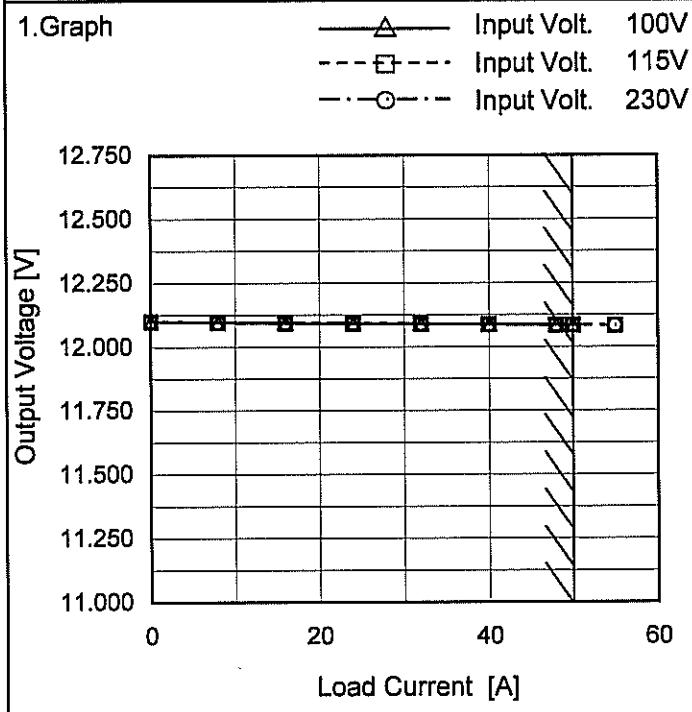
Model	PLA600F-12
Item	Load Regulation
Object	+12V50A

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	12.100	12.100	12.100
8	12.096	12.097	12.096
16	12.094	12.095	12.094
24	12.092	12.092	12.092
32	12.090	12.090	12.090
40	12.087	12.088	12.088
48	12.085	12.085	12.085
50	12.084	12.085	12.085
55	-	12.083	12.083
---	-	-	-
---	-	-	-

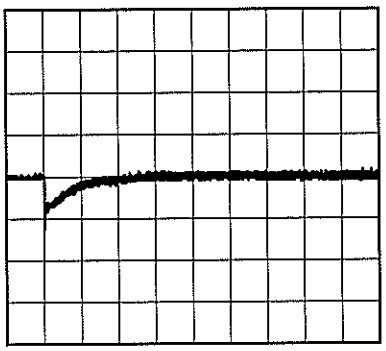
COSEL

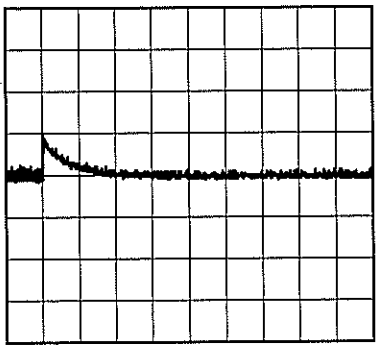
Model	PLA600F-12		
Item	Dynamic Load Response	Temperature Testing Circuitry	25˚C Figure A
Object	+12V50A		

Input Volt. 115 V
Cycle 1000 ms

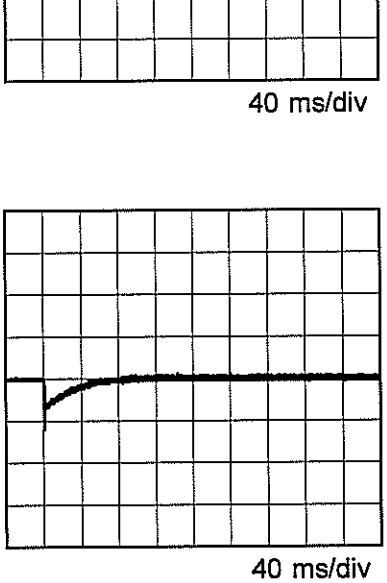
Response. t1=t2=50us. Typ

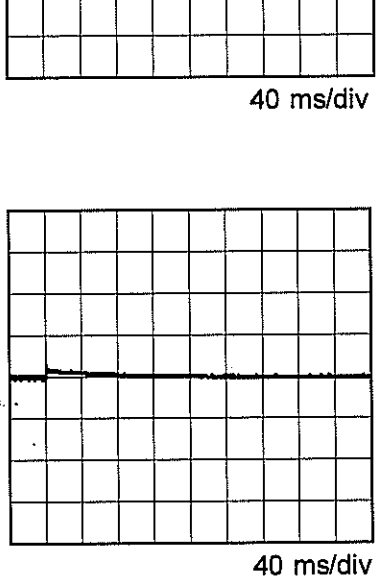
Min. Load (0A) ⟷
Load 100% (50A)





Min. Load (0A) ⟷
Load 50% (25A)





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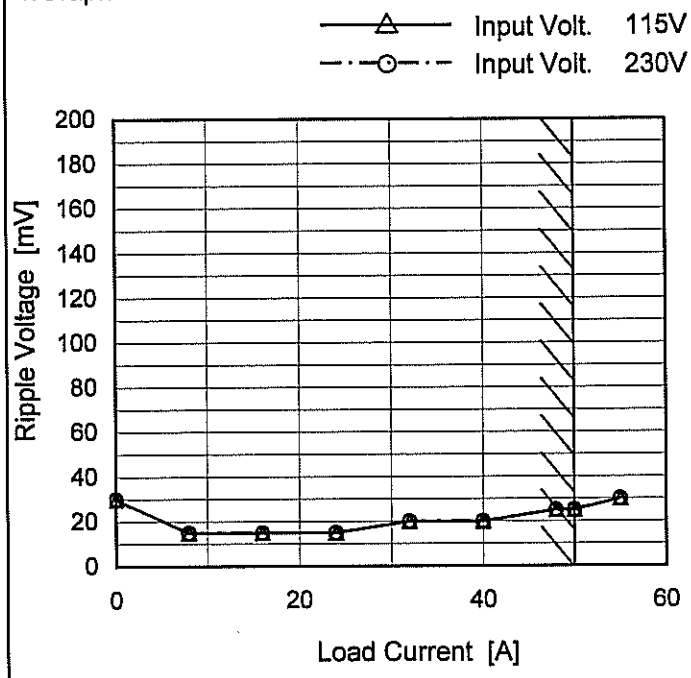
Model	PLA600F-12
Item	Ripple Voltage (by Load Current)
Object	+12V50A

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

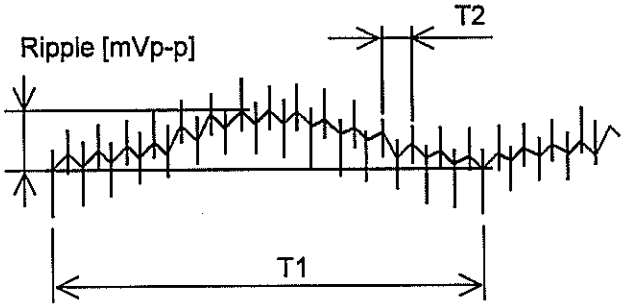


Fig. Complex Ripple Wave Form

2.Values

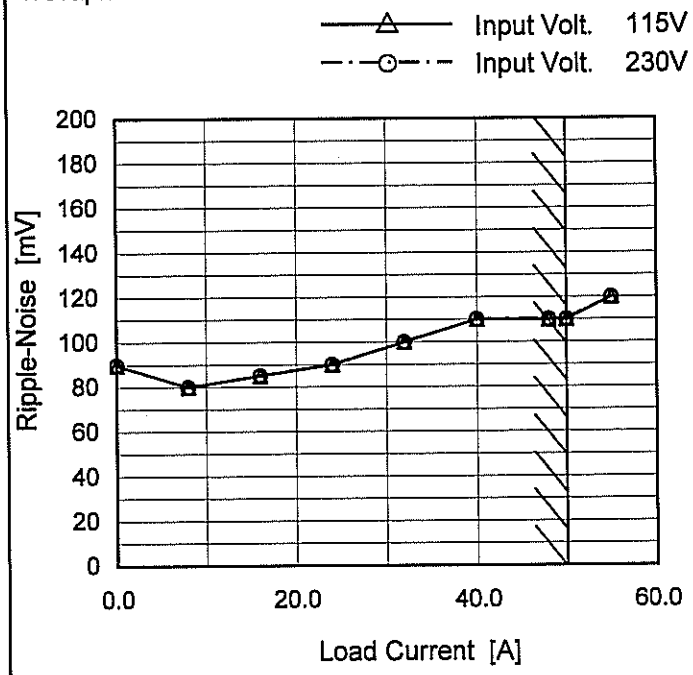
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0	30	30
8	15	15
16	15	15
24	15	15
32	20	20
40	20	20
48	25	25
50	25	25
55	30	30
--	-	-
--	-	-

COSEL

Model	PLA600F-12
Item	Ripple-Noise
Object	+12V50A

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	90	90
8	80	80
16	85	85
24	90	90
32	100	100
40	110	110
48	110	110
50	110	110
55	120	120
--	-	-
--	-	-

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

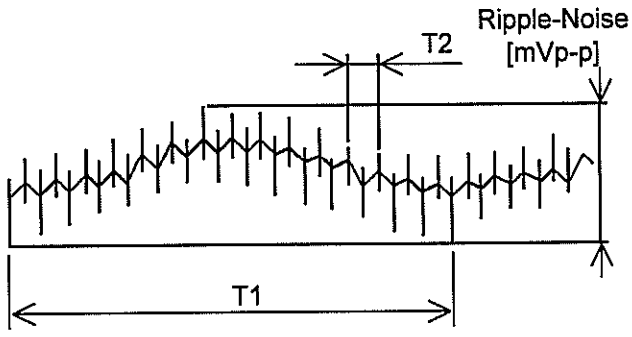


Fig. Complex Ripple Wave Form

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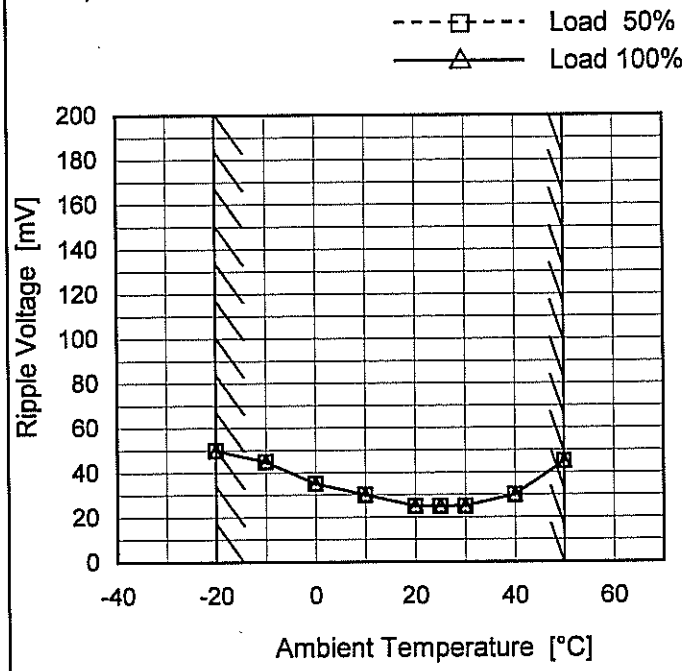
Model	PLA600F-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V50A

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	50	50
-10	45	45
0	35	35
10	30	30
20	25	25
25	25	25
30	25	25
40	30	30
50	45	45
--	-	-
--	-	-

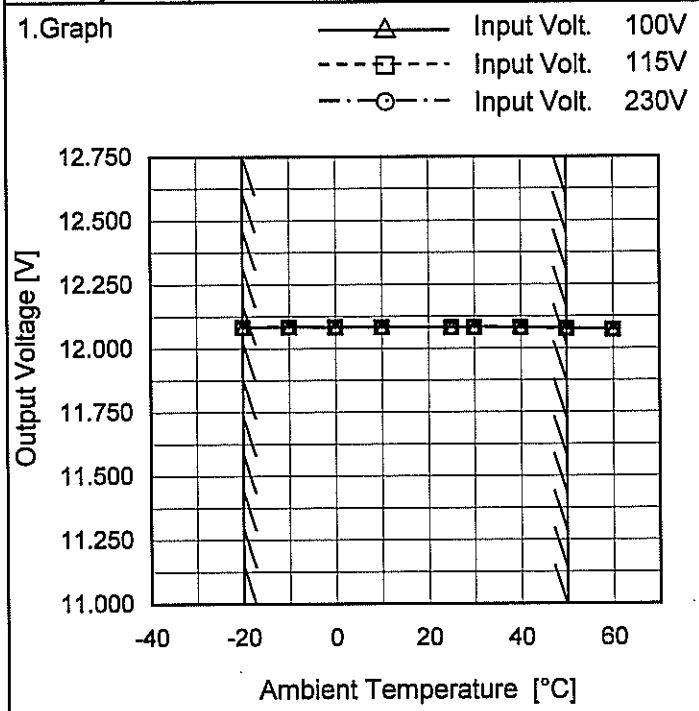
Note: In case of Input Volt. 100V, Load 90%.
Other case Load 100%.

COSEL

Model	PLA600F-12
Item	Ambient Temperature Drift
Object	+12V50A

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	12.084	12.082	12.083
-10	12.084	12.083	12.083
0	12.084	12.083	12.083
10	12.084	12.083	12.082
25	12.083	12.081	12.081
30	12.084	12.082	12.082
40	12.082	12.081	12.081
50	12.078	12.076	12.077
60	12.074	12.072	12.073
—	-	-	-
—	-	-	-

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

COSEL

Model	PLA600F-12	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V50A	

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 : 115 - 264V
Load Current : 0 - 50A

* 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	0	12.098	±11	±0.1
Minimum Voltage	50	264	50	12.076		

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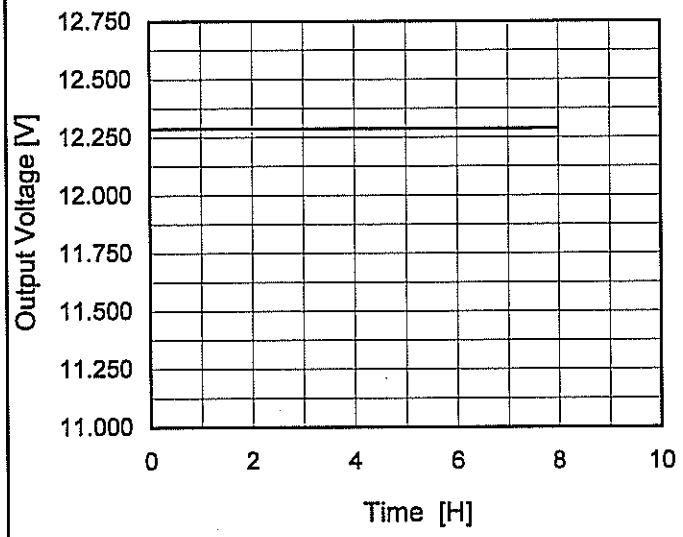
Model	PLA600F-12
Item	Time Lapse Drift
Object	+12V50A

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	12.287
0.5	12.288
1.0	12.288
2.0	12.288
3.0	12.288
4.0	12.288
5.0	12.288
6.0	12.288
7.0	12.288
8.0	12.289

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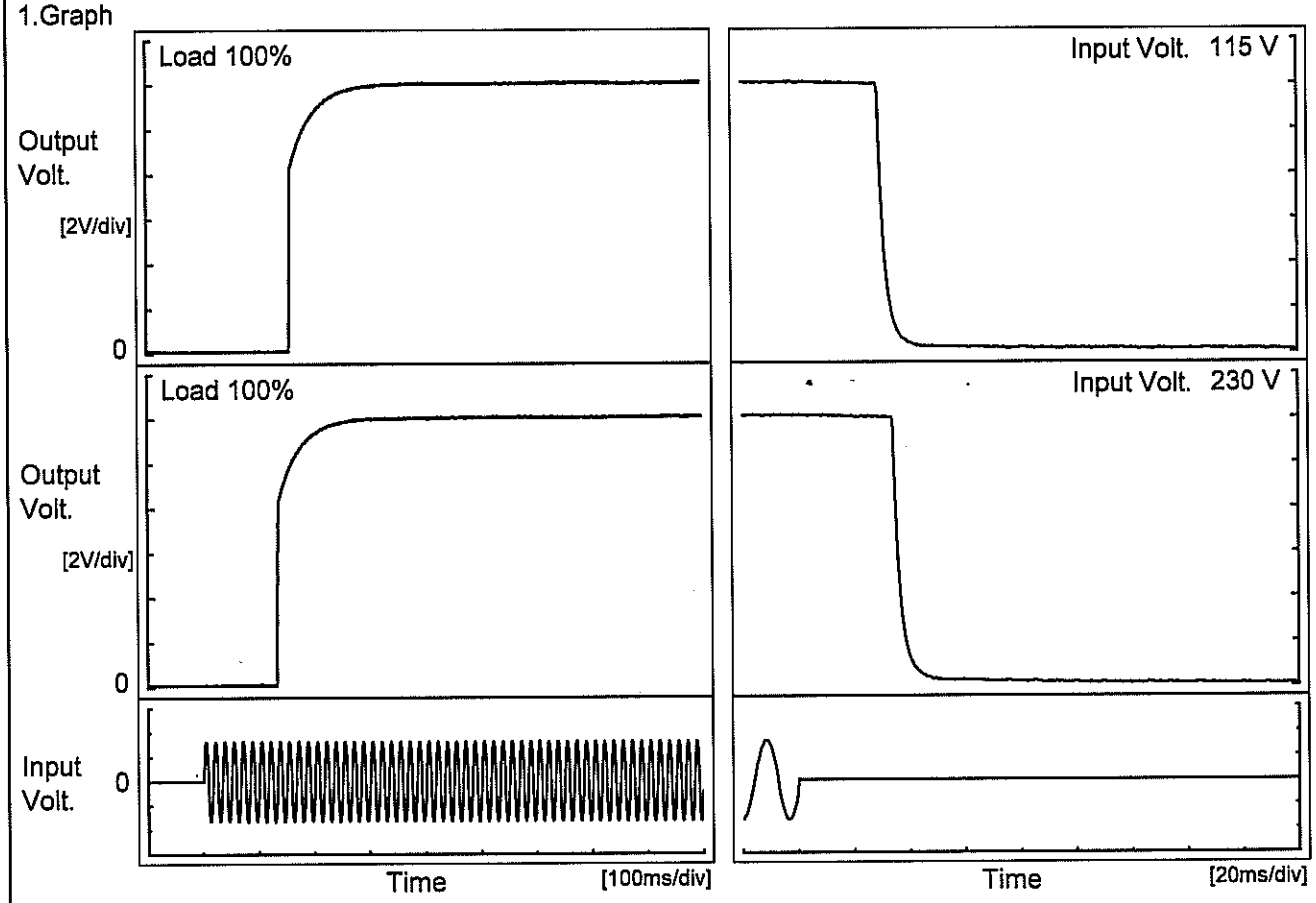
Model	PLA600F-12
Item	Rise and Fall Time
Object	+12V50A

Temperature 25°C
Testing Circuitry Figure A

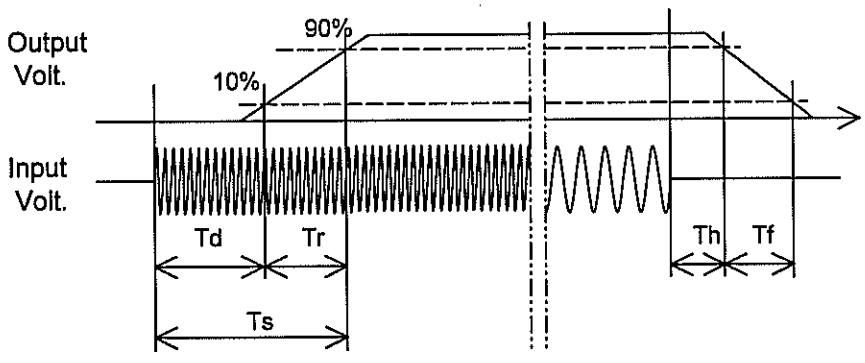
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	157.5	48.5	206.0	29.0	6.0
230 V	134.5	46.0	180.5	34.0	6.0

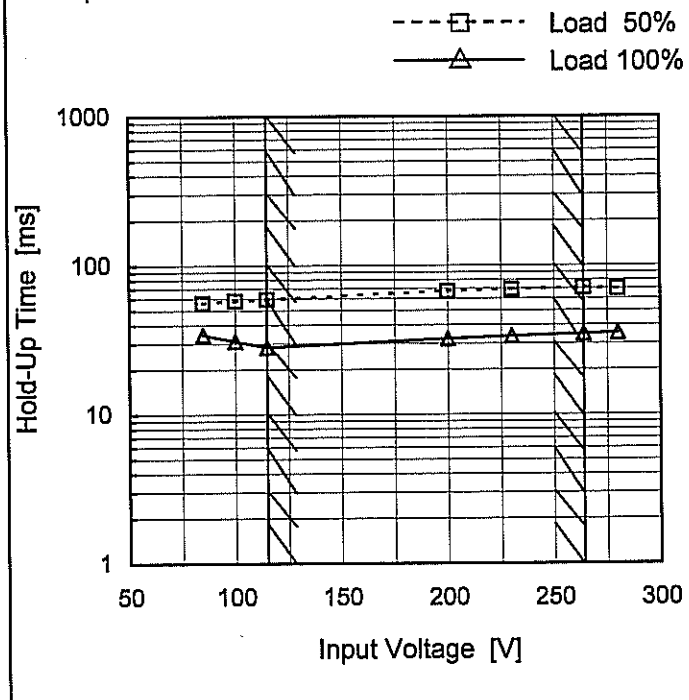


COSEL

Model	PLA600F-12
Item	Hold-Up Time
Object	+12V50A

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	56	34 ※1
100	58	31 ※2
115	59	28
200	67	32
230	69	34
264	71	35
280	70	35
--	-	-
--	-	-

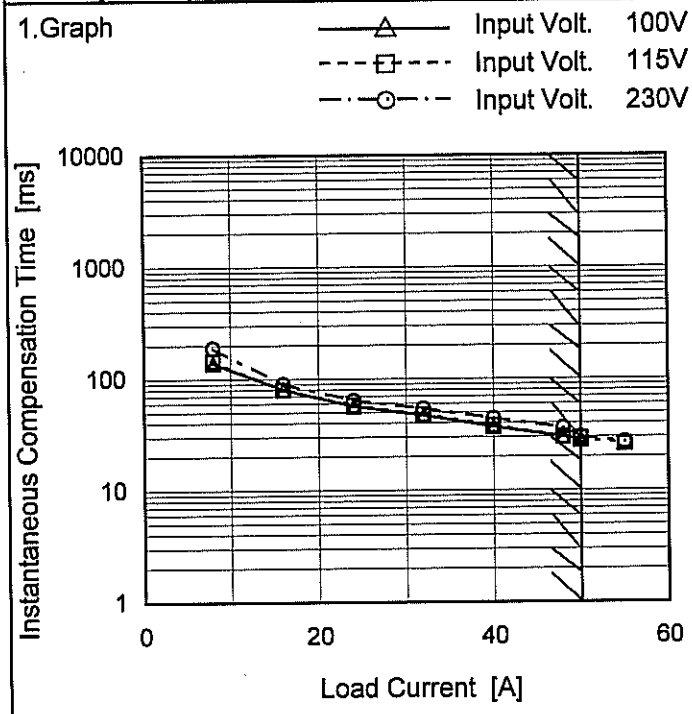
※1:Load 80%
※2:Load 90%

COSEL

Model	PLA600F-12
Item	Instantaneous Interruption Compensation
Object	+12V50A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

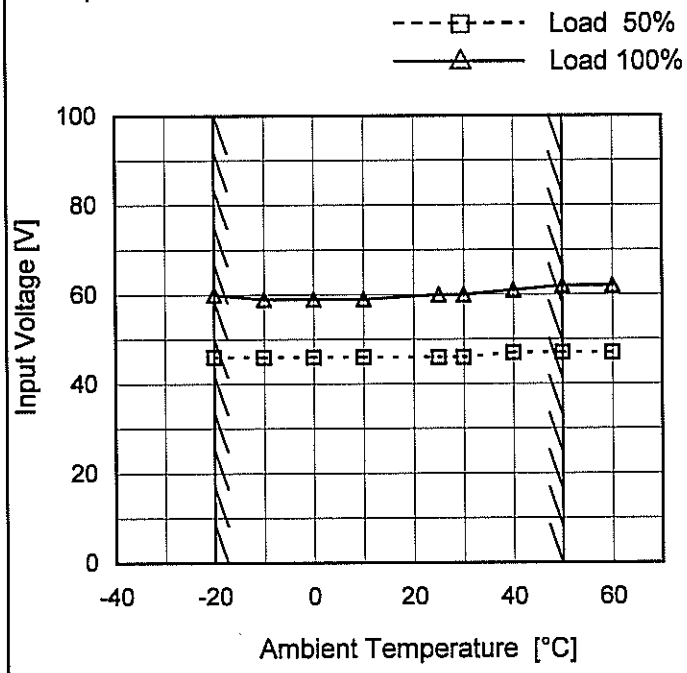
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0	-	-	-
8	139	145	190
16	81	80	90
24	57	58	64
32	47	48	54
40	37	38	44
48	30	30	36
50	28	29	30
55	-	26	27
--	-	-	-
--	-	-	-

COSEL

Model	PLA600F-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V50A

Testing Circuitry Figure A

1.Graph



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

2.Values

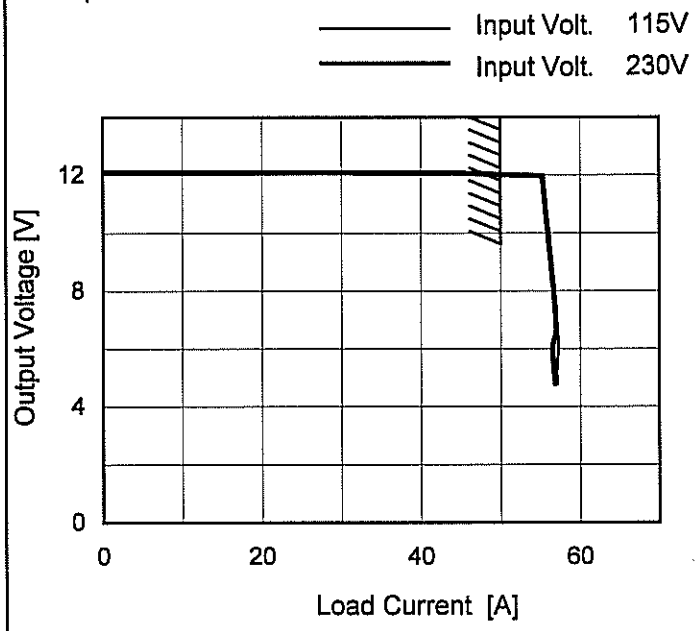
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	46	60
-10	46	59
0	46	59
10	46	59
25	46	60
30	46	60
40	47	61
50	47	62
60	47	62
--	-	-
--	-	-

COSEL

Model	PLA600F-12
Item	Overcurrent Protection
Object	+12V50A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

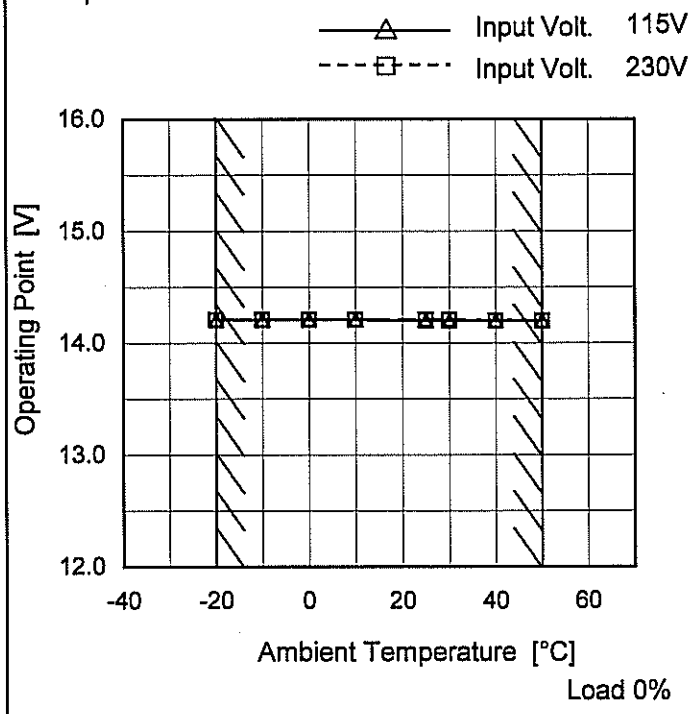
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
11.4	57.41	57.44
10.8	57.19	57.62
9.6	58.04	58.04
8.4	58.52	58.49
7.2	58.96	58.85
6.0	59.24	58.52
4.8	59.07	58.84
3.6	59.36	58.81
2.4	59.12	58.75
--	-	-
--	-	-
--	-	-

COSEL

Model	PLA600F-12
Item	Overvoltage Protection
Object	+12V50A

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	14.21	14.21
-10	14.21	14.21
0	14.21	14.21
10	14.21	14.21
25	14.20	14.21
30	14.20	14.21
40	14.20	14.20
50	14.20	14.20
--	-	-
--	-	-
--	-	-

COSEL

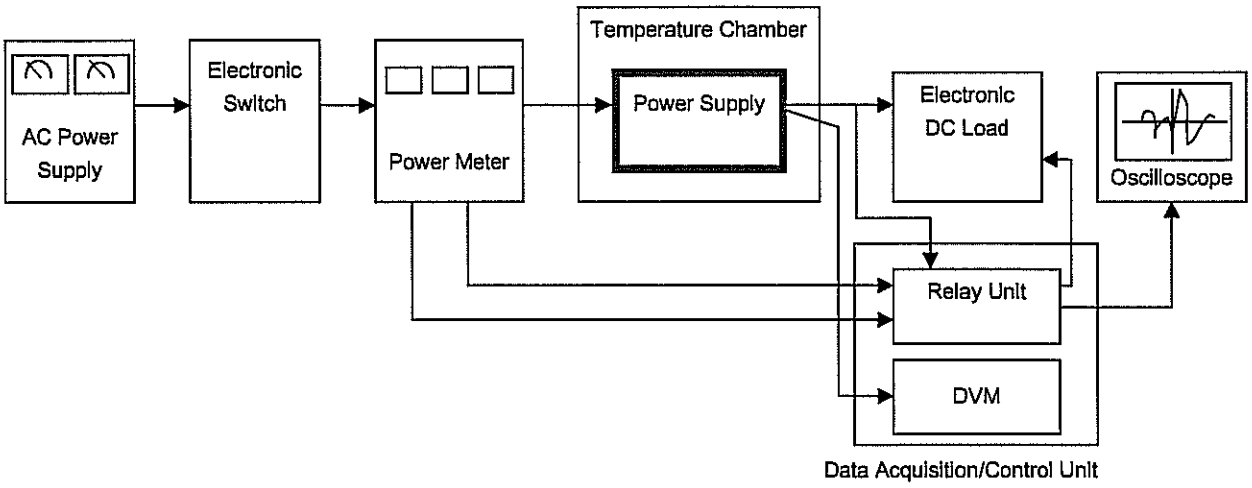


Figure A

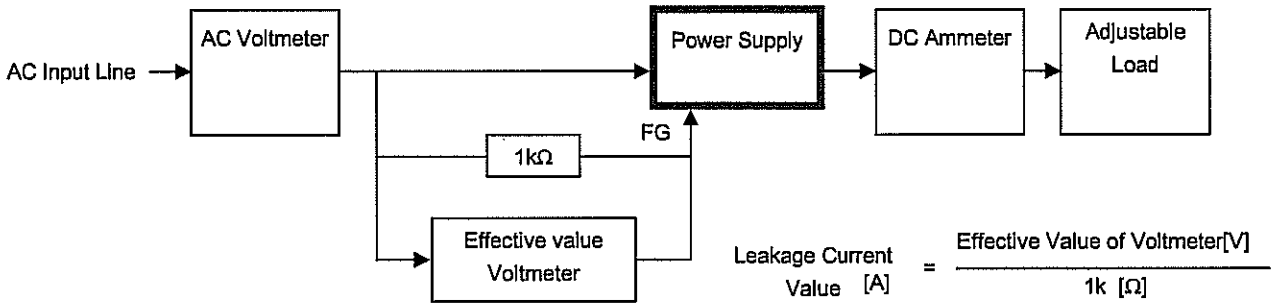


Figure B (DEN-AN)

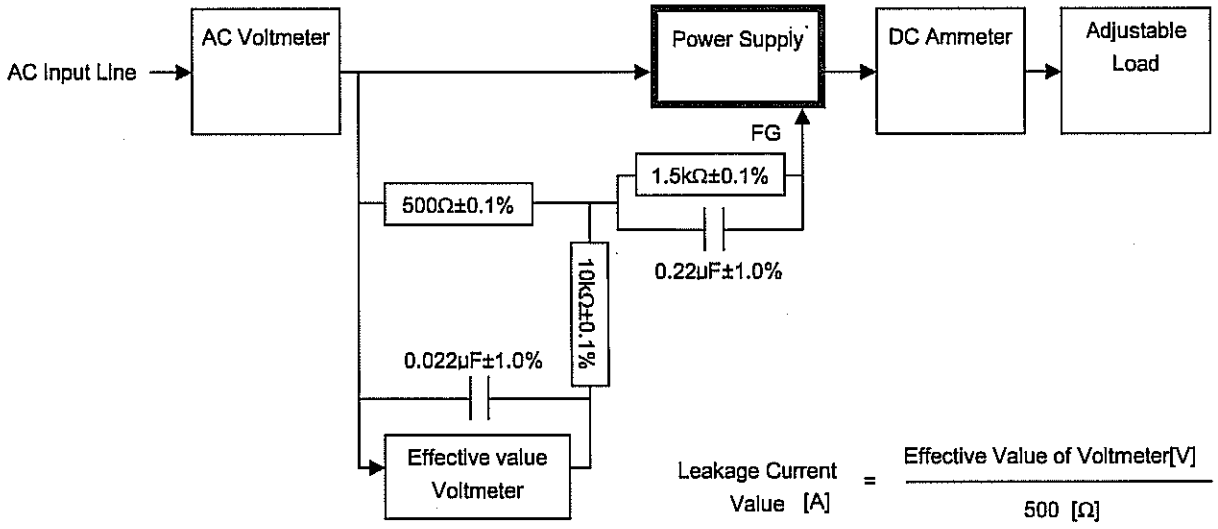


Figure B (IEC60950-1)

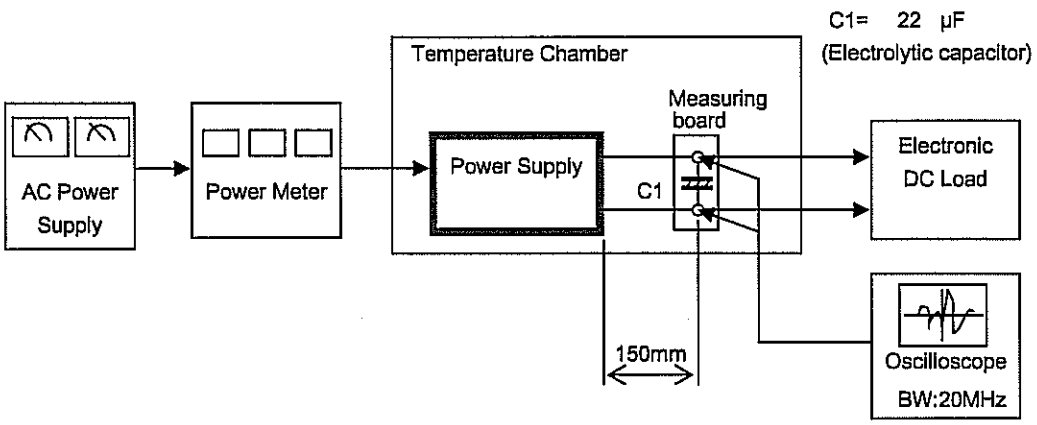

C1= 22 µF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C