参考資料

COSEL

TEST DATA OF PLA600F-15

Regulated DC Power Supply
August 19, 2011

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COSEL CO.,LTD.

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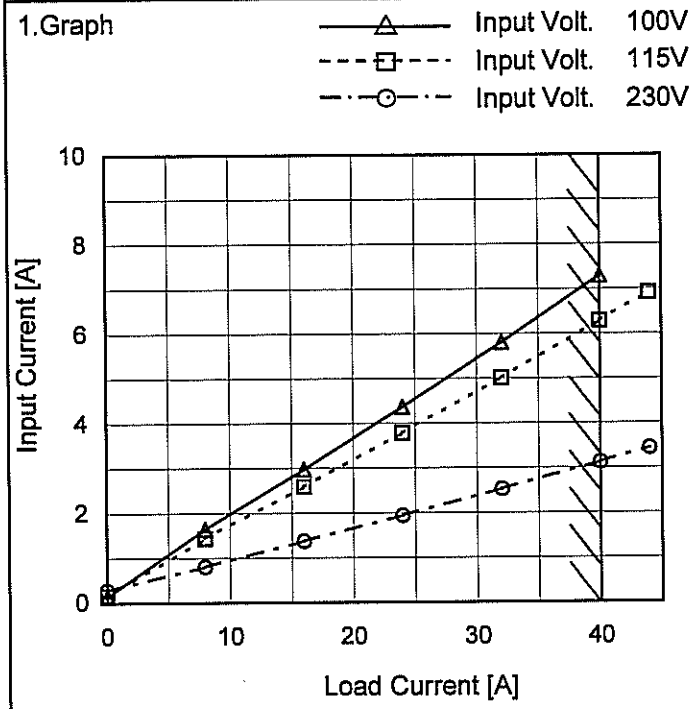

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0	0.143	0.155	0.278
8	1.642	1.439	0.806
16	2.975	2.584	1.369
24	4.366	3.784	1.942
32	5.807	5.014	2.528
40	7.290	6.284	3.127
44	-	6.912	3.440
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

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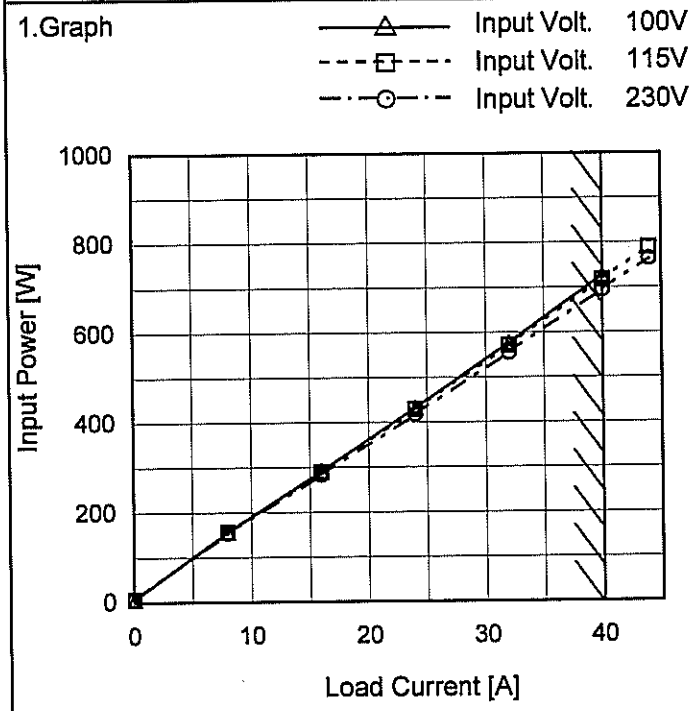
Model	PLA600F-15
Item	Input Power (by Load Current)
Object	————————

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	6.4	6.3	6.7
8	156.4	155.6	153.5
16	292.0	289.8	284.1
24	432.2	429.0	418.3
32	577.1	571.4	555.0
40	726.0	717.9	695.0
44	-	789.7	764.5
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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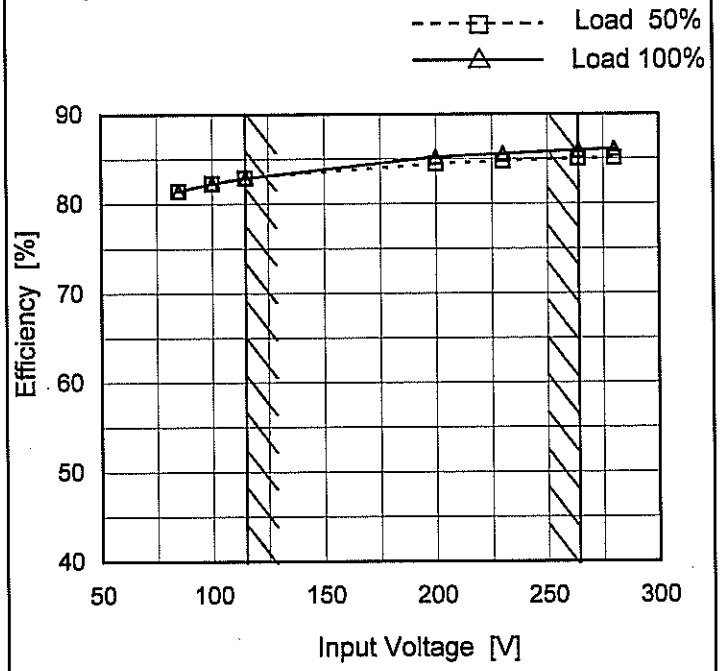
Model	PLA600F-15
Item	Efficiency (by Input Voltage)
Object	———————————

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	81.4	81.4 ※1
100	82.3	82.3 ※2
115	82.9	82.9
200	84.5	85.2
230	84.8	85.6
264	85.0	86.0
280	85.1	86.1
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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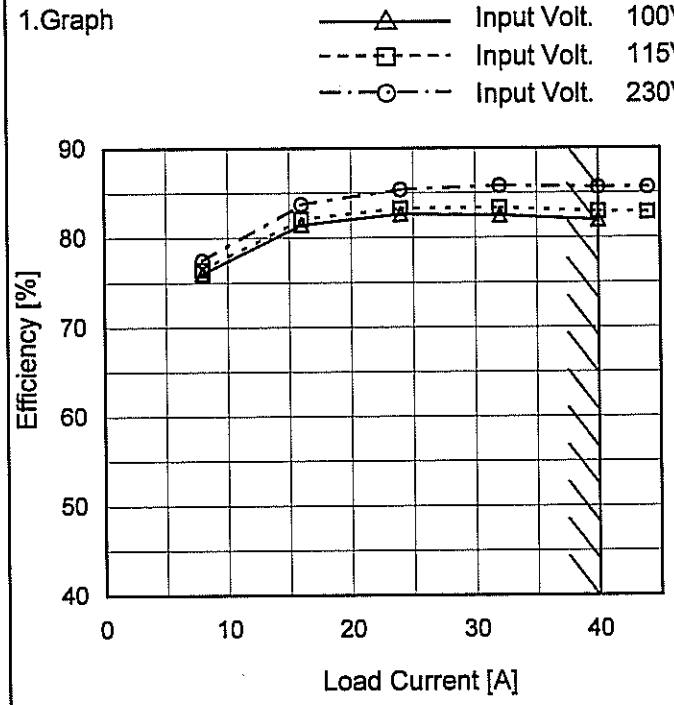
Model	PLA600F-15
Item	Efficiency (by Load Current)
Object	————————

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	76.0	76.4	77.5
16	81.4	82.1	83.7
24	82.6	83.3	85.4
32	82.5	83.3	85.8
40	82.0	82.9	85.6
44	-	82.8	85.6
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

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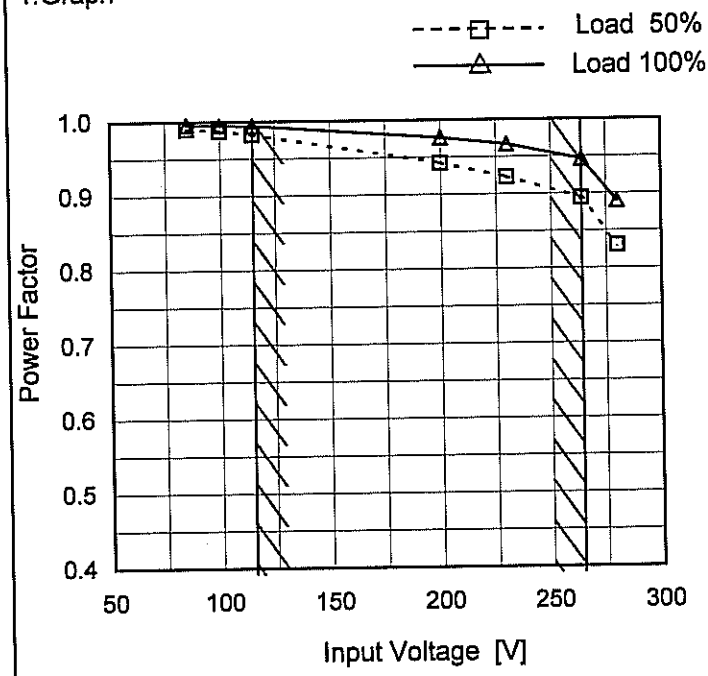
Model	PLA600F-15
Item	Power Factor (by Input Voltage)
Object	———————

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	0.996 ※1
100	0.988	0.995 ※2
115	0.982	0.994
200	0.942	0.976
230	0.923	0.967
264	0.894	0.947
280	0.830	0.890
--	-	-
--	-	-

※1 : Load 80%
※2 : Load 90%

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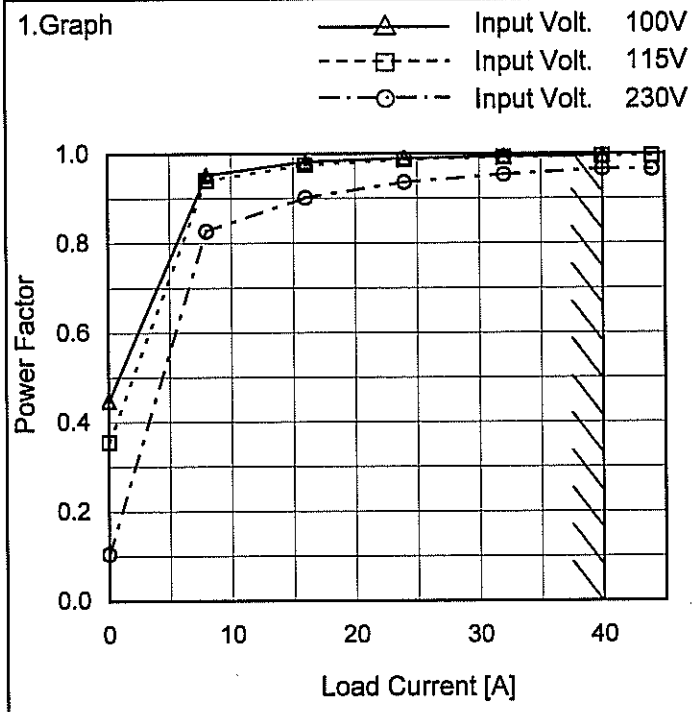
Model	PLA600F-15
Item	Power Factor (by Load Current)
Object	————————

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	0.448	0.355	0.105
8	0.952	0.940	0.827
16	0.982	0.975	0.901
24	0.990	0.986	0.936
32	0.994	0.991	0.954
40	0.996	0.994	0.965
44	-	0.994	0.965
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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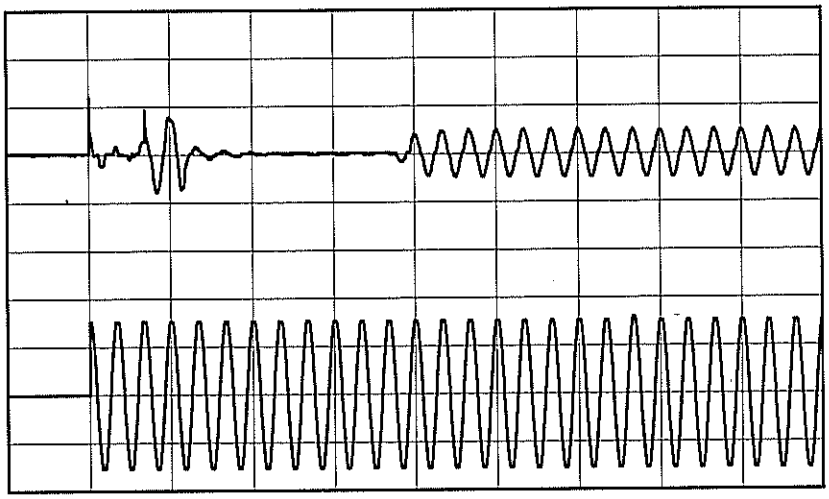
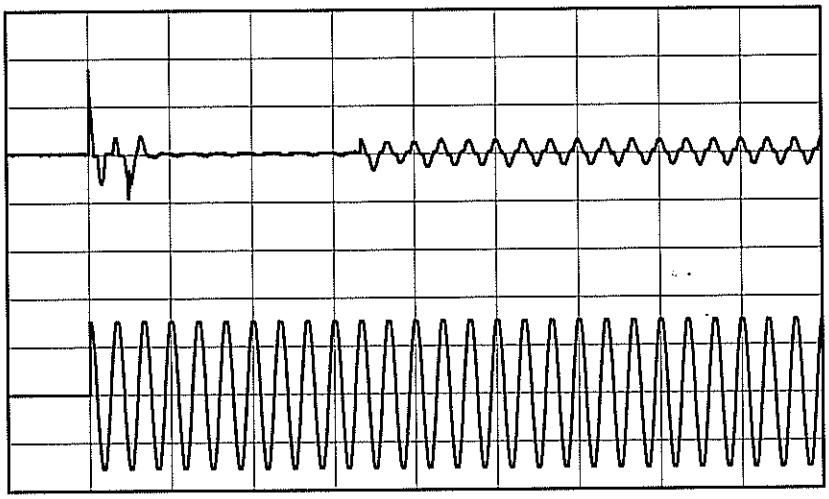
Model	PLA600F-15
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



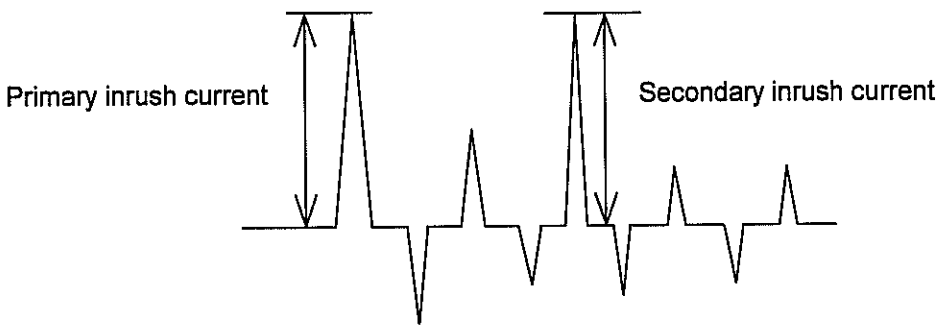
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
23.7 A
Secondary inrush current :
14.7 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
35.1 A
Secondary inrush current :
6.9 A



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Model	PLA600F-15	Temperature	25°C
Item	Leakage Current	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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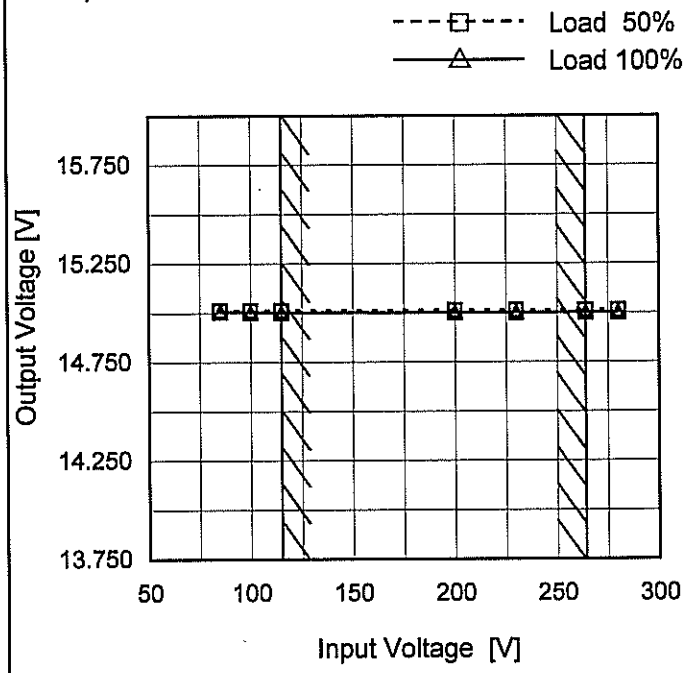
Model	PLA600F-15
Item	Line Regulation
Object	+15V40A

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	15.013	15.007 ※1
100	15.013	15.004 ※2
115	15.013	15.003
200	15.012	15.002
230	15.012	15.002
264	15.012	15.001
280	15.012	15.001
--	-	-
--	-	-

※1 : Load 80%
※2 : Load 90%

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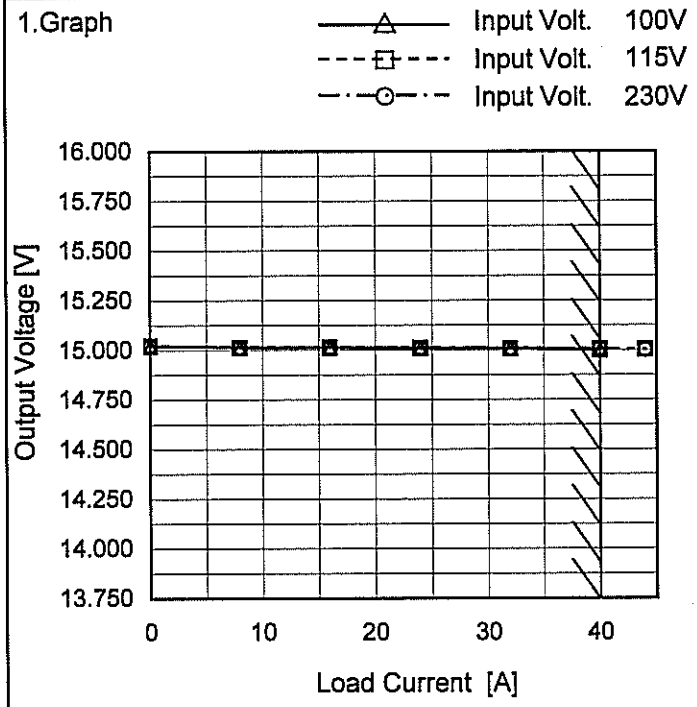
Model	PLA600F-15
Item	Load Regulation
Object	+15V40A

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	15.023	15.023	15.022
8	15.015	15.015	15.014
16	15.014	15.014	15.013
24	15.011	15.012	15.011
32	15.007	15.007	15.007
40	15.000	15.006	15.006
44	-	15.002	15.001
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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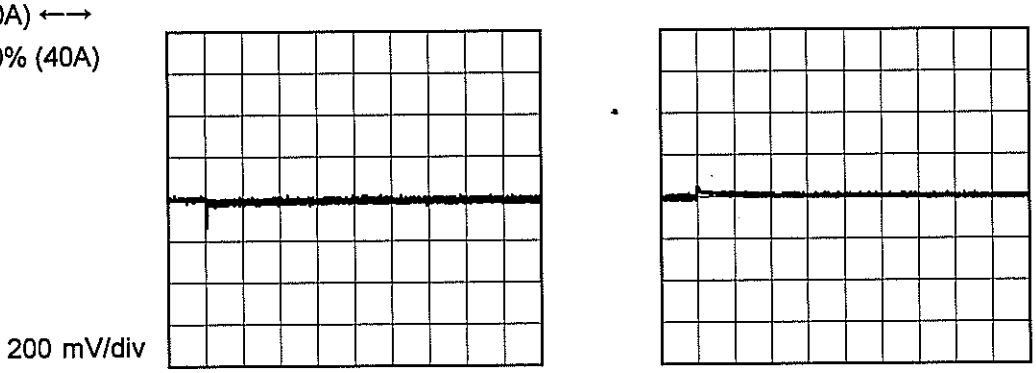
Model	PLA600F-15		
Item	Dynamic Load Response	Temperature Testing Circuitry	25˚C Figure A
Object	+15V40A		

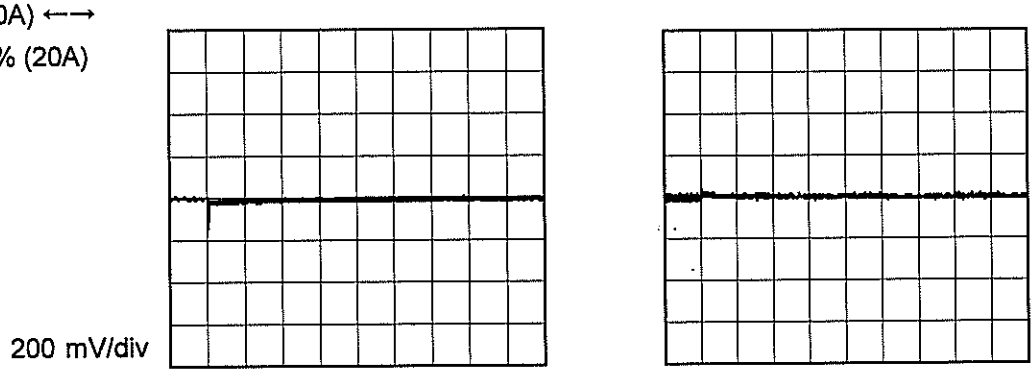
Input Volt. 115 V
Cycle 1000 ms

Response. t1=t2=50us. Typ

Min. Load (0A) ⟷
Load 100% (40A)



Min. Load (0A) ⟷
Load 50% (20A)



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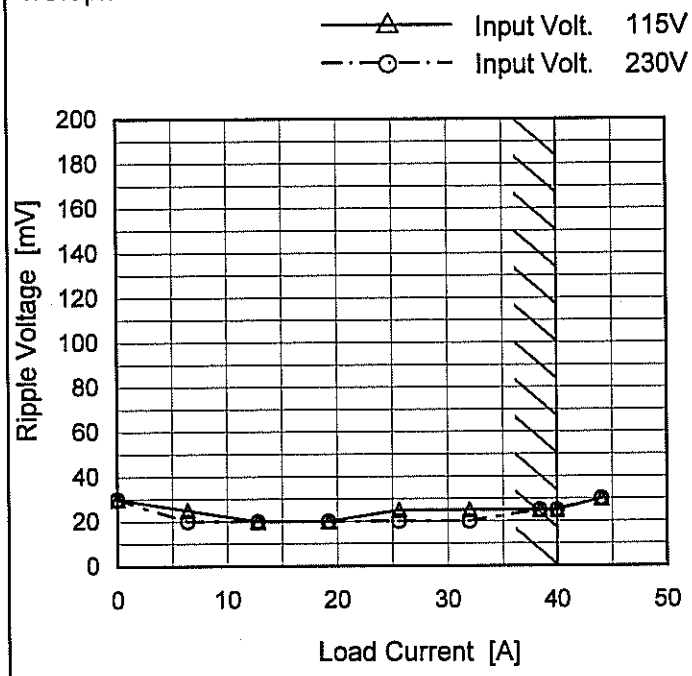
Model	PLA600F-15
Item	Ripple Voltage (by Load Current)
Object	+15V40A

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	30	30
6	25	20
13	20	20
19	20	20
26	25	20
32	25	20
38	25	25
40	25	25
44	30	30
--	-	-
--	-	-

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

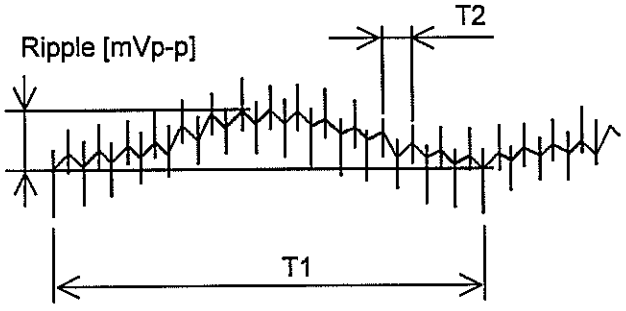


Fig. Complex Ripple Wave Form

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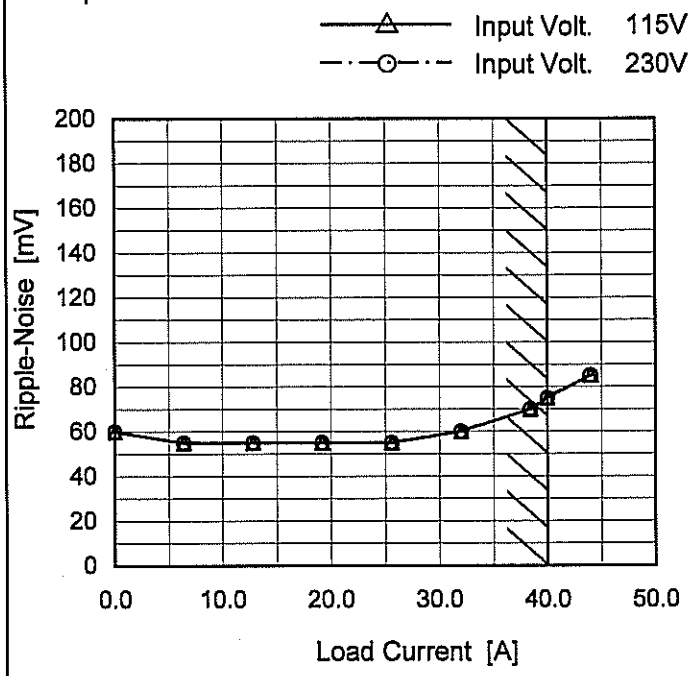
Model	PLA600F-15
Item	Ripple-Noise
Object	+15V40A

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	60	60
6	55	55
13	55	55
19	55	55
26	55	55
32	60	60
38	70	70
40	75	75
44	85	85
---	-	-
---	-	-

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

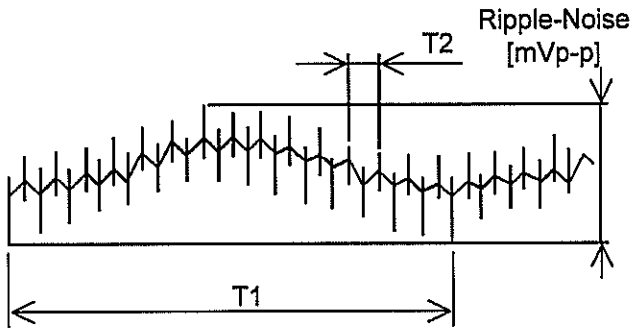


Fig. Complex Ripple Wave Form

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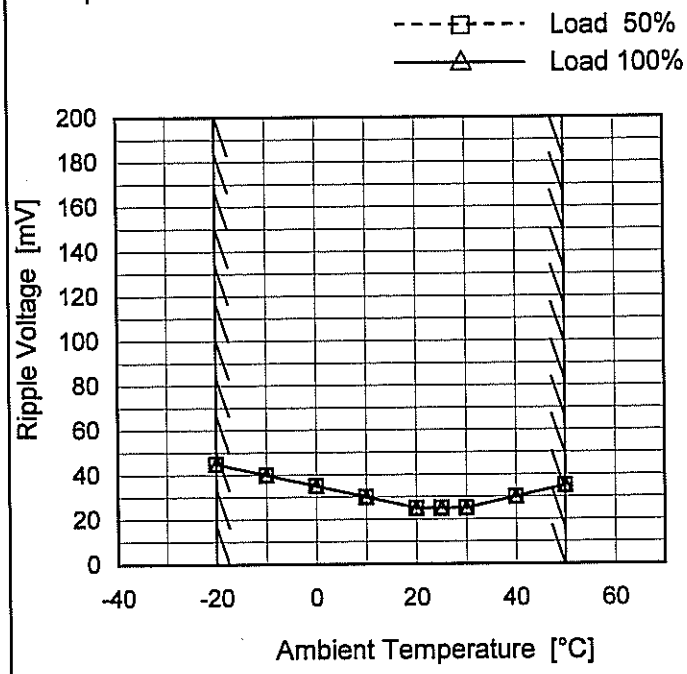
COSEL

Model	PLA600F-15
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V40A

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

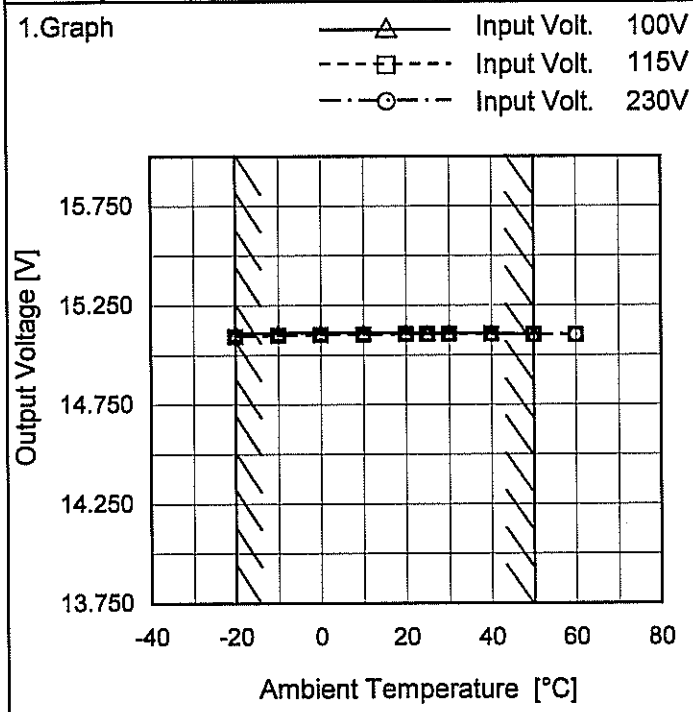
Note: In case of Input Volt. 100V, Load 90%.
Other case Load 100%.

COSEL

Model	PLA600F-15
Item	Ambient Temperature Drift
Object	+15V40A

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	15.110	15.094	15.093
-10	15.112	15.098	15.098
0	15.112	15.101	15.101
10	15.112	15.103	15.102
20	15.113	15.104	15.103
25	15.109	15.105	15.105
30	15.110	15.107	15.106
40	15.110	15.106	15.105
50	15.105	15.103	15.104
60	-	15.101	15.102
—	-	-	-

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

COSEL

Model	PLA600F-15	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V40A	

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 - 40A

* 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

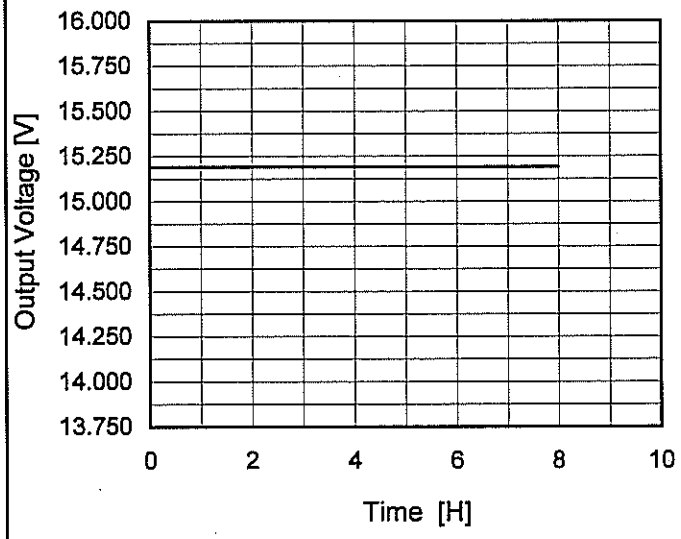
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	230	0	15.129	±18	±0.1
Minimum Voltage	-20	230	40	15.093		

COSEL

Model	PLA600F-15
Item	Time Lapse Drift
Object	+15V40A

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	15.192
0.5	15.191
1.0	15.191
2.0	15.191
3.0	15.191
4.0	15.191
5.0	15.191
6.0	15.191
7.0	15.191
8.0	15.191

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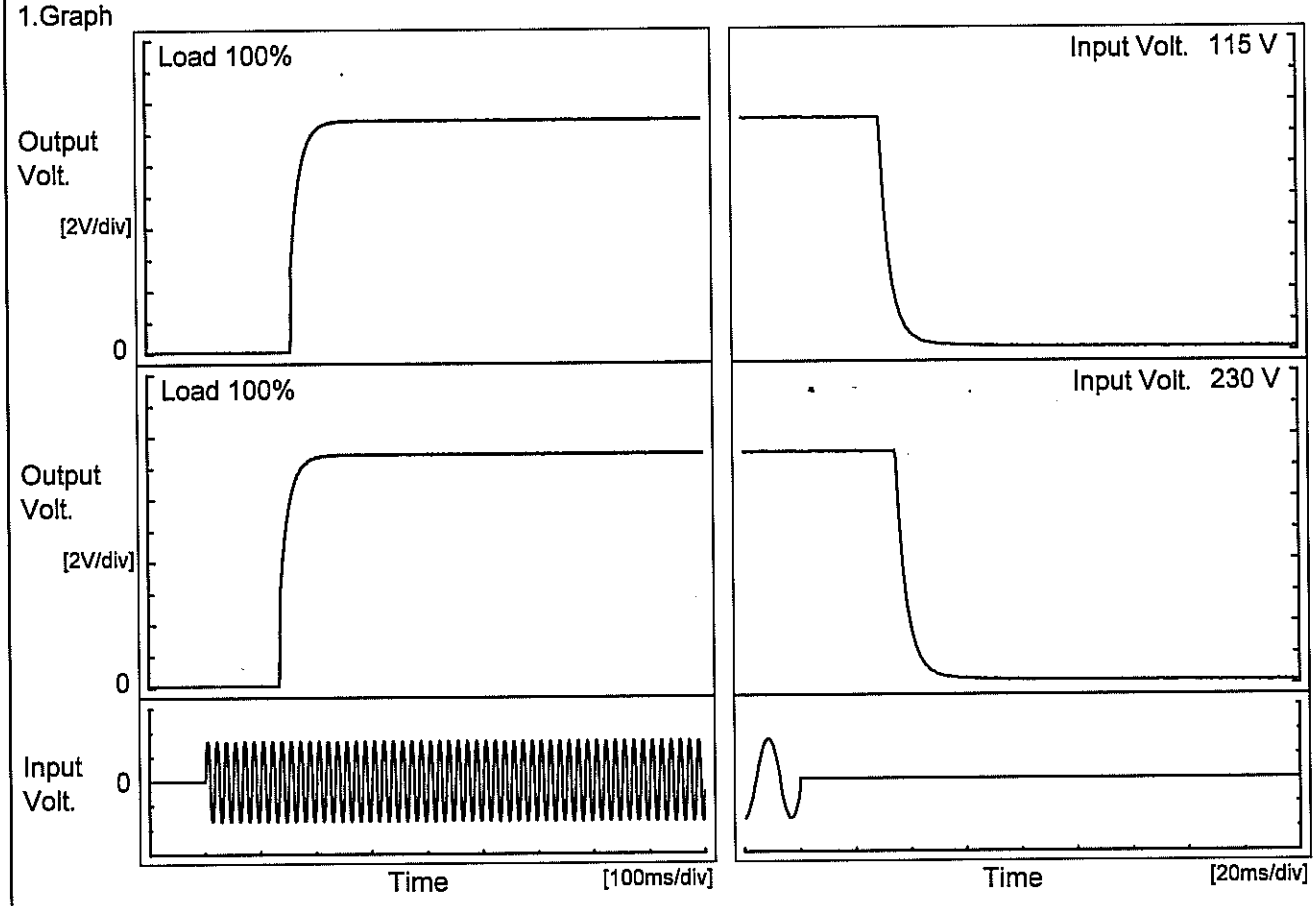
Model	PLA600F-15
Item	Rise and Fall Time
Object	+15V40A

Temperature 25°C
Testing Circuitry Figure A

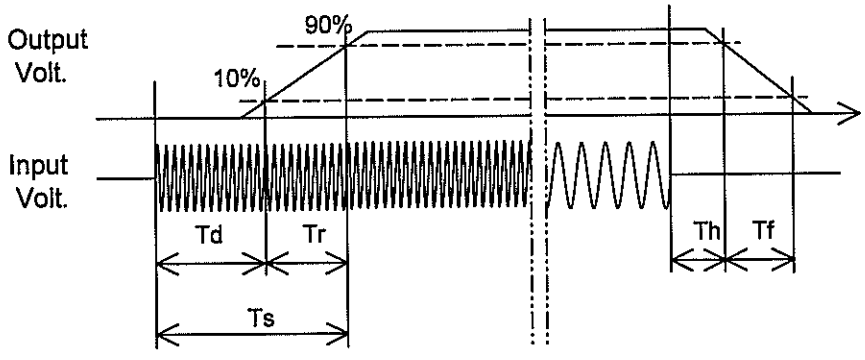
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	159.5	33.5	193.0	29.5	9.0
230 V	135.5	33.5	169.0	35.0	9.0



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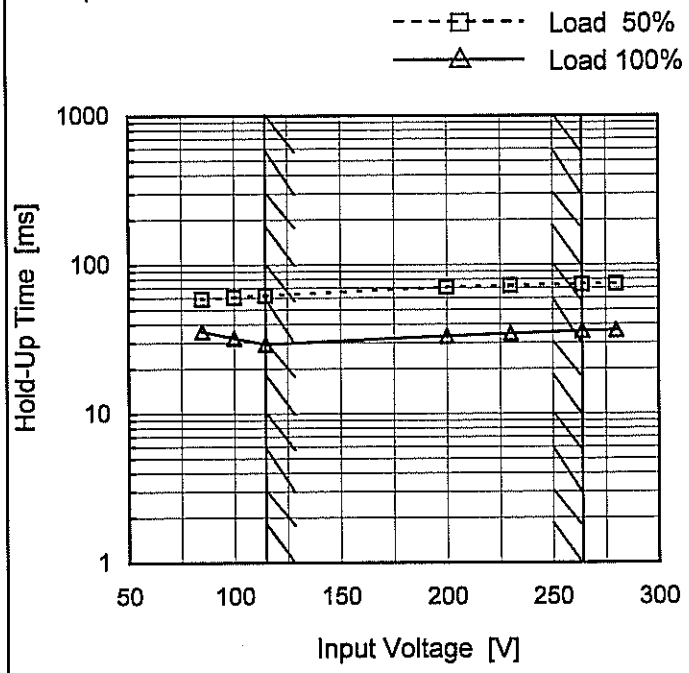
Model	PLA600F-15
Item	Hold-Up Time
Object	+15V40A

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	59	36 ※1
100	61	32 ※2
115	62	29
200	71	33
230	73	35
264	74	36
280	74	36
--	-	-
--	-	-

※1 : Load 80%
※2 : Load 90%

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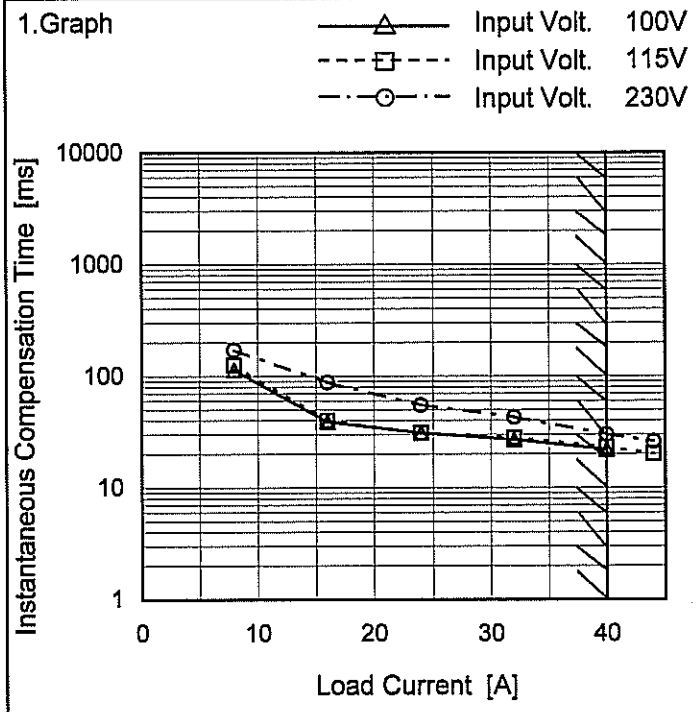
Model	PLA600F-15
Item	Instantaneous Interruption Compensation
Object	+15V40A

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	114	126	172
16	39	40	88
24	31	31	55
32	27	28	43
40	22	23	30
44	-	20	26
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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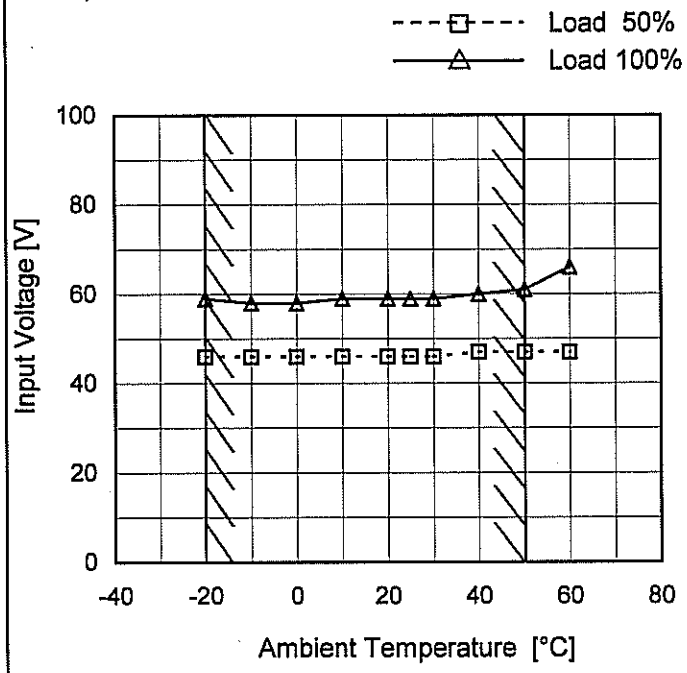
Model	PLA600F-15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V40A

Testing Circuitry Figure A

1.Graph



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

2.Values

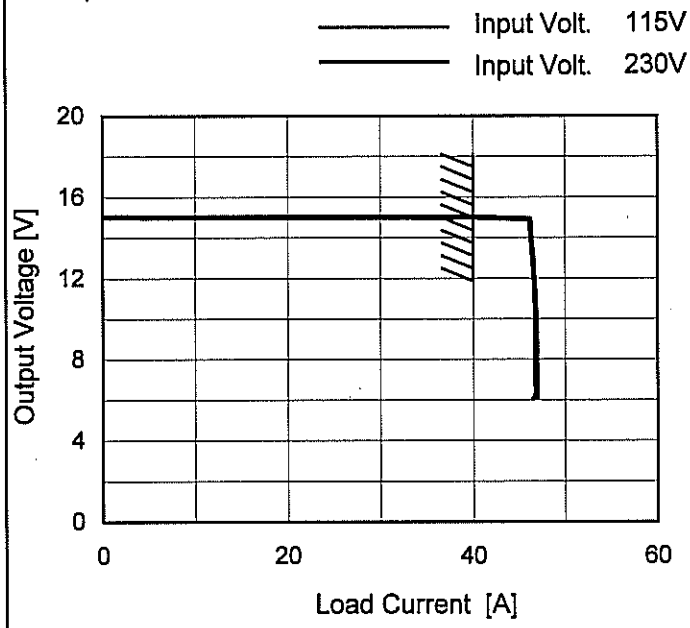
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	46	59
-10	46	58
0	46	58
10	46	59
20	46	59
25	46	59
30	46	59
40	47	60
50	47	61
60	47	66
--	-	-

COSEL

Model	PLA600F-15
Item	Overcurrent Protection
Object	+15V40A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

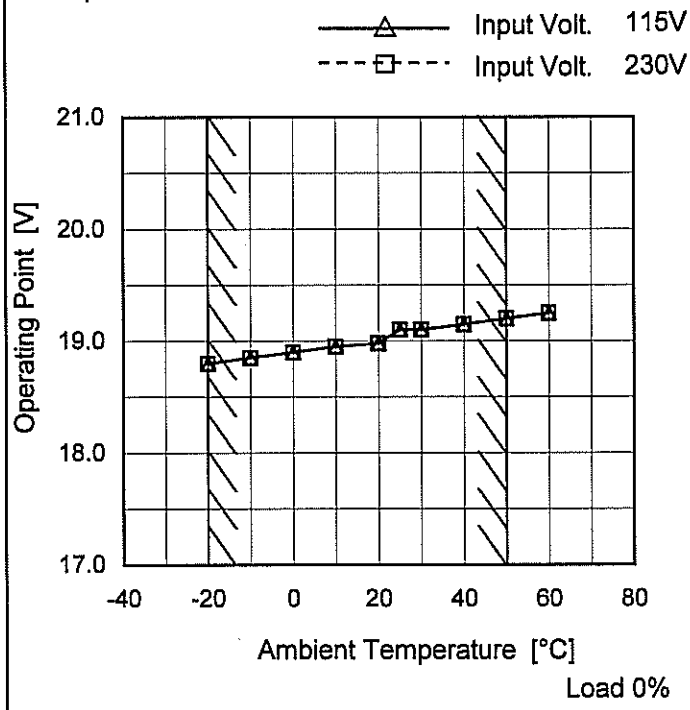
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
14.25	46.29	46.26
13.50	46.42	46.39
12.00	46.69	46.60
10.50	46.89	46.76
9.00	46.97	46.77
7.50	47.01	46.79
6.00	46.97	46.53
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PLA600F-15
Item	Overvoltage Protection
Object	+15V40A

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	18.80	18.80
-10	18.85	18.85
0	18.90	18.90
10	18.95	18.95
20	18.98	18.98
25	19.10	19.10
30	19.10	19.10
40	19.15	19.15
50	19.20	19.20
60	19.25	19.25
---	-	-

COSEL

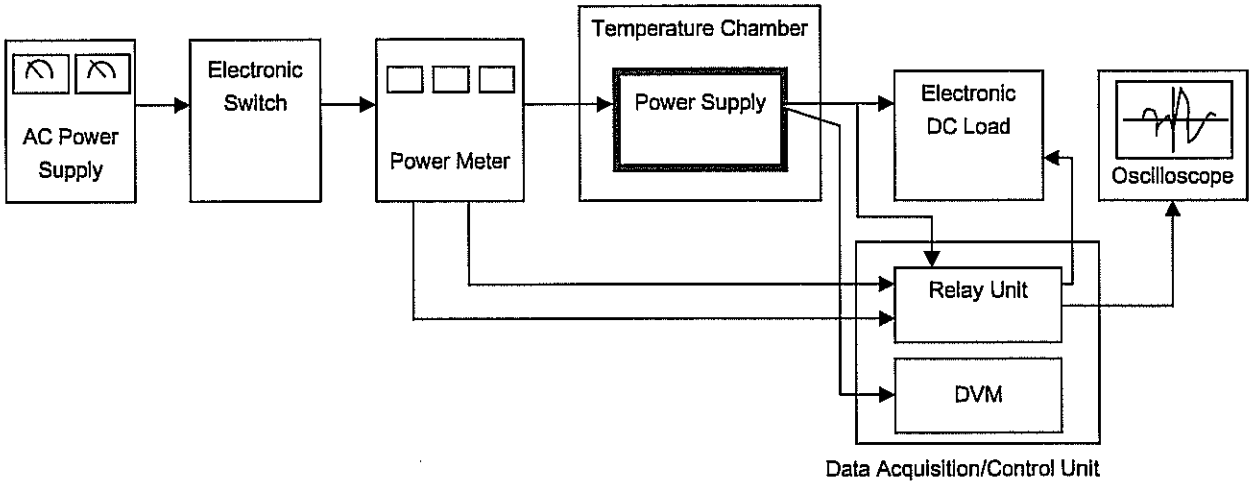


Figure A

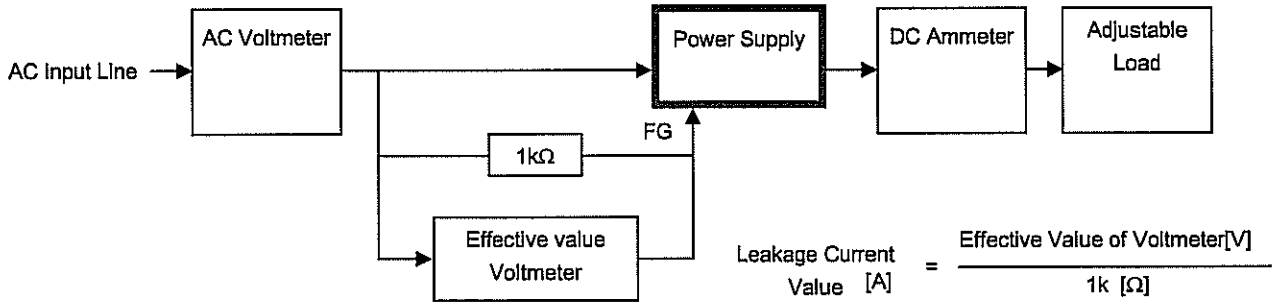


Figure B (DEN-AN)

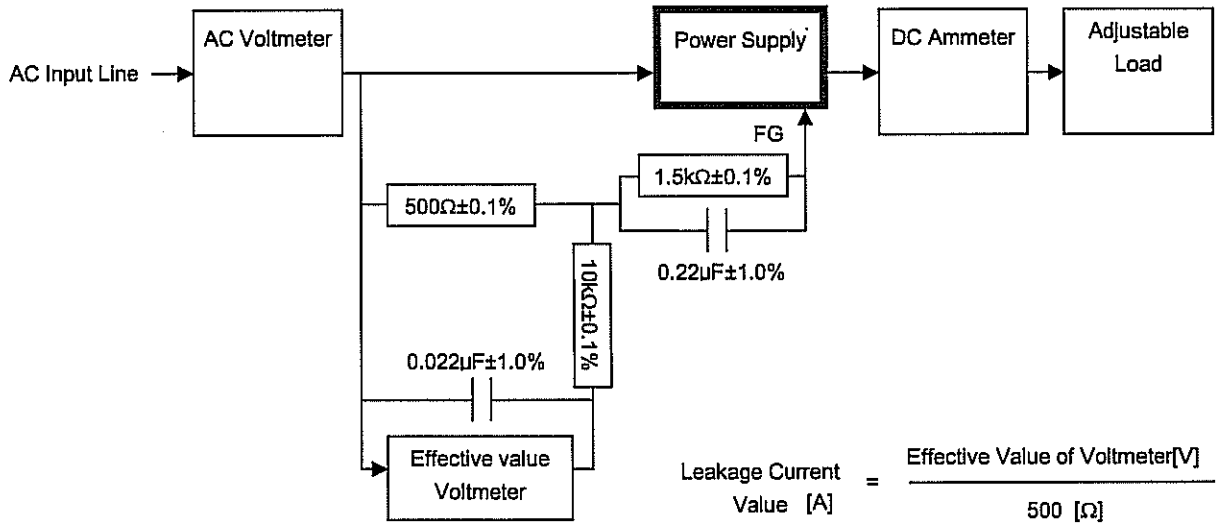


Figure B (IEC60950-1)

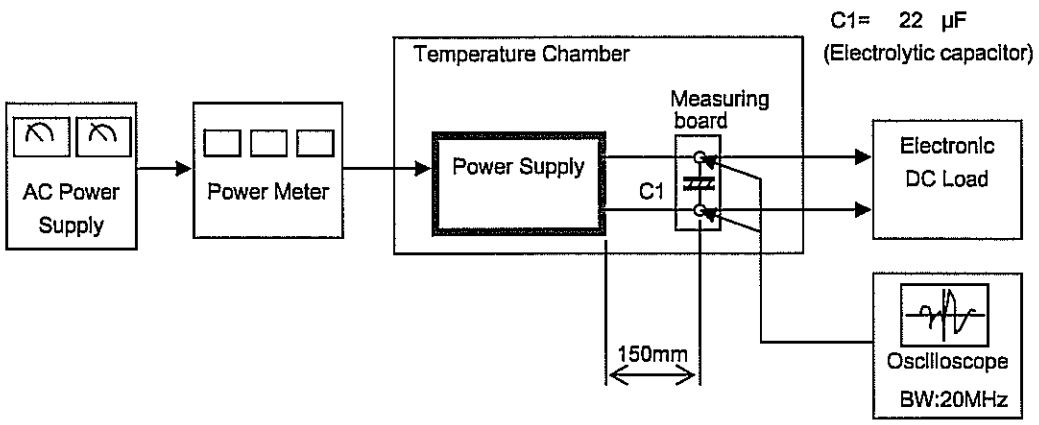

C1= 22 µF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C