

TEST DATA OF PLA600F-24

Regulated DC Power Supply
August 19, 2011

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Katsumi Ishikawa Design Manager

Prepared by : Shintaro Oki
Shintaro Oki Design Engineer

COSEL CO.,LTD.



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Model		PLA600F-24		Temperature		25°C																																																				
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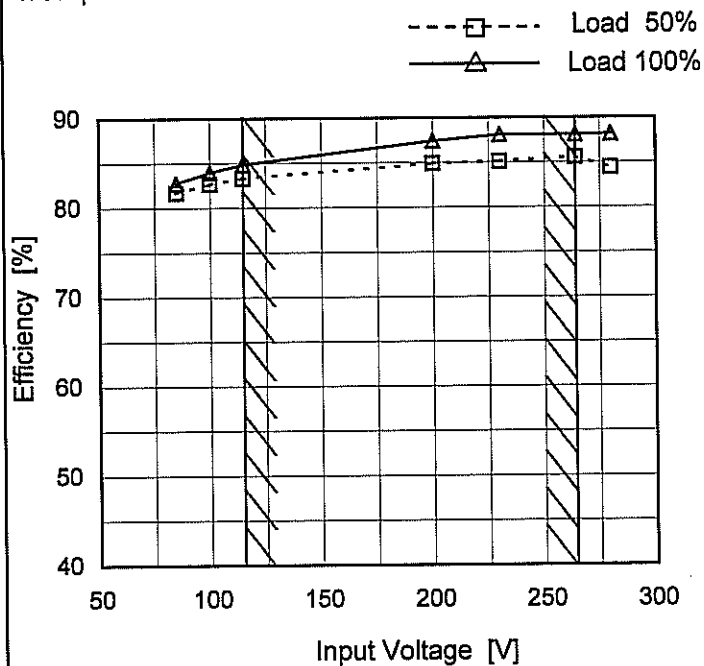
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Model	PLA600F-24
Item	Efficiency (by Input Voltage)
Object	_____

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	81.7	82.8 ※1
100	82.7	84.0 ※2
115	83.3	84.9
200	84.9	87.4
230	85.1	88.1
264	85.6	88.1
280	84.4	88.2
--	-	-
--	-	-

※1: Load 80%
※2: Load 90%

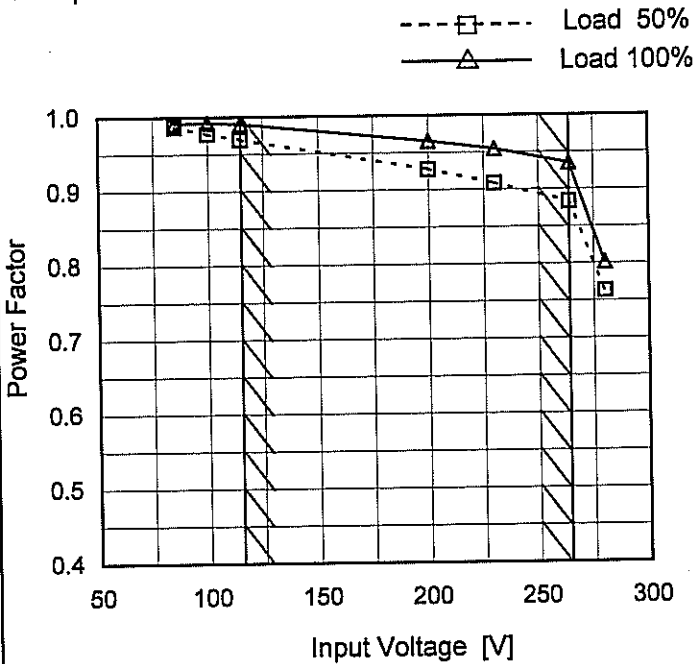


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Model	PLA600F-24	Temperature	25°C
Item	Power Factor (by Input Voltage)	Testing Circuitry	Figure A
Object	_____		

1. Graph



2. Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
85	0.987	0.992 ※1
100	0.977	0.992 ※2
115	0.969	0.990
200	0.928	0.965
230	0.909	0.955
264	0.883	0.935
280	0.763	0.802
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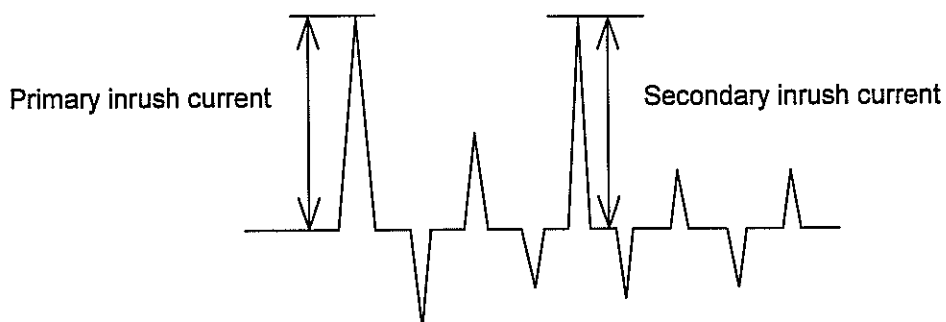
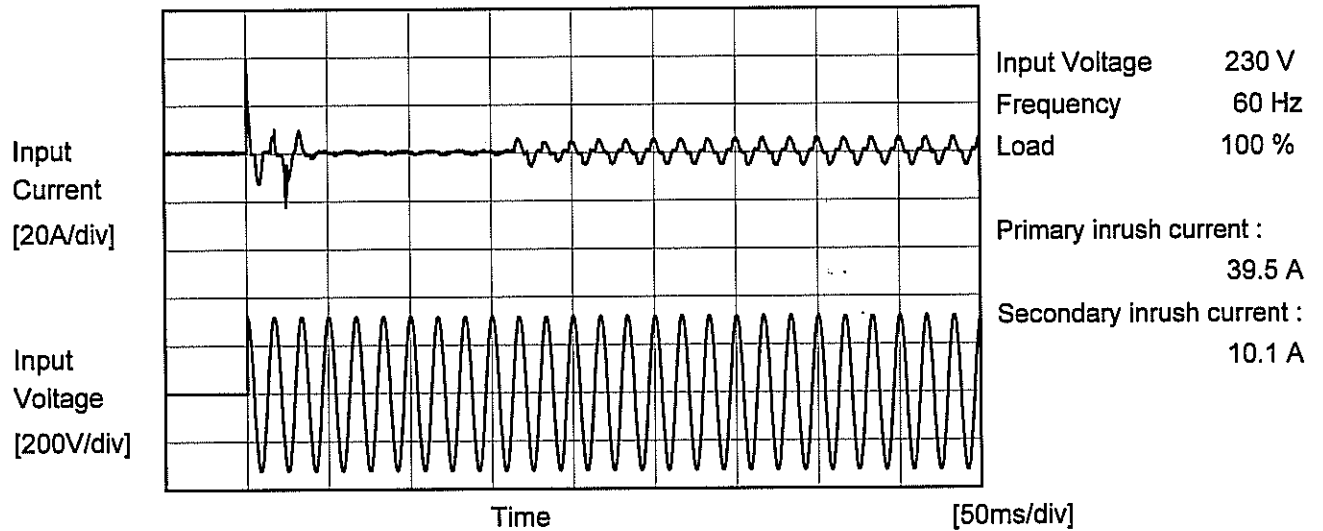
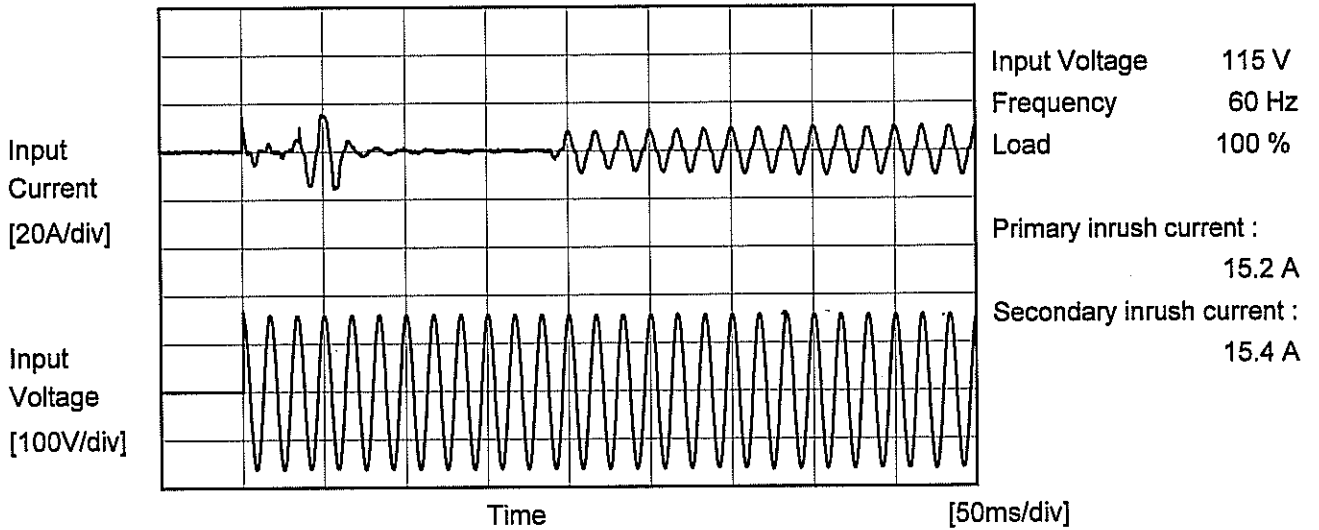
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Model		PLA600F-24	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current	
Object		_____	





COSEL		Temperature 25°C Testing Circuitry Figure B
Model	PLA600F-24	
Item	Leakage Current	
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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<p>Note: Slanted line shows the range of the rated load current.</p>																																																					



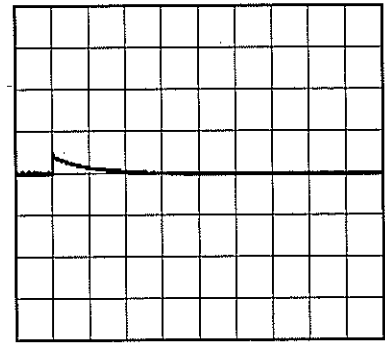
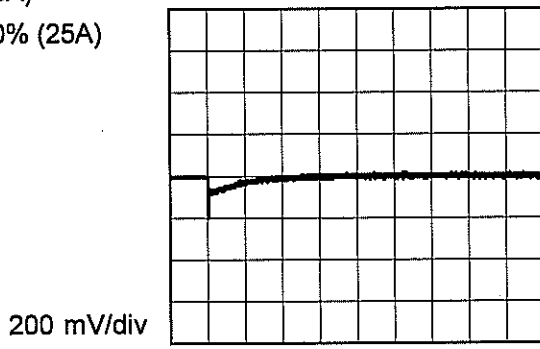
Model	PLA600F-24	Temperature	25° C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+24V/25A		

Input Volt. 115 V
Cycle 1000 ms

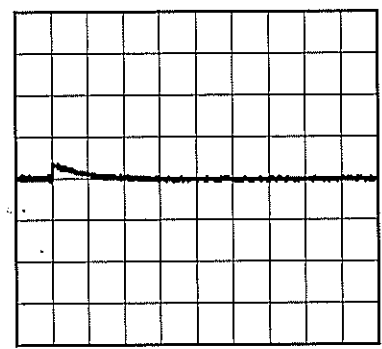
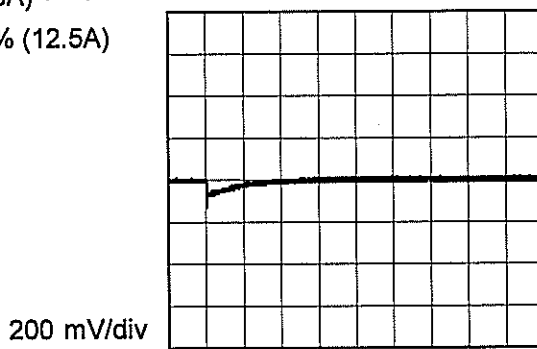
Response. $t_1=t_2=50\mu s$. Typ



Min. Load (0A) ←→
Load 100% (25A)



Min. Load (0A) ←→
Load 50% (12.5A)

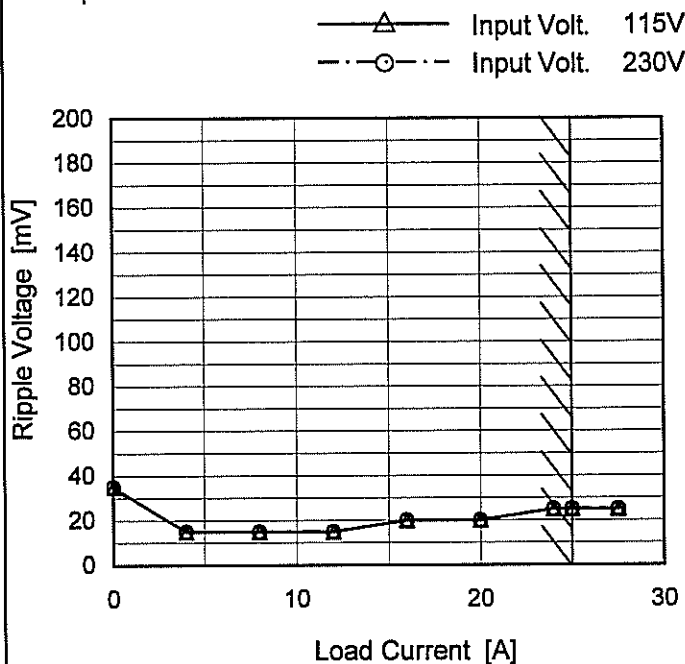




Model	PLA600F-24
Item	Ripple Voltage (by Load Current)
Object	+24V25A

Temperature 25°C
Testing Circuitry Figure C

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.0	35	35
4.0	15	15
8.0	15	15
12.0	15	15
16.0	20	20
20.0	20	20
24.0	25	25
25.0	25	25
27.5	25	25
--	-	-
--	-	-

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.

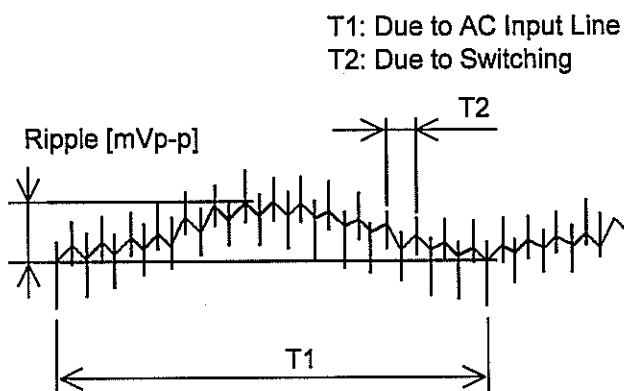


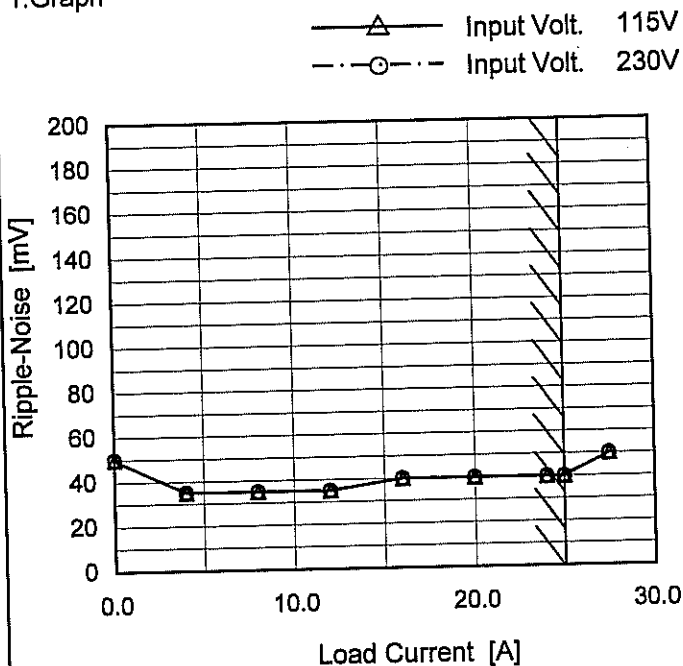
Fig. Complex Ripple Wave Form

COSEL

Model	PLA600F-24
Item	Ripple-Noise
Object	+24V25A

Temperature 25°C
Testing Circuitry Figure C

1. Graph



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.0	50	50
4.0	35	35
8.0	35	35
12.0	35	35
16.0	40	40
20.0	40	40
24.0	40	40
25.0	40	40
27.5	50	50
--	-	-
--	-	-

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.

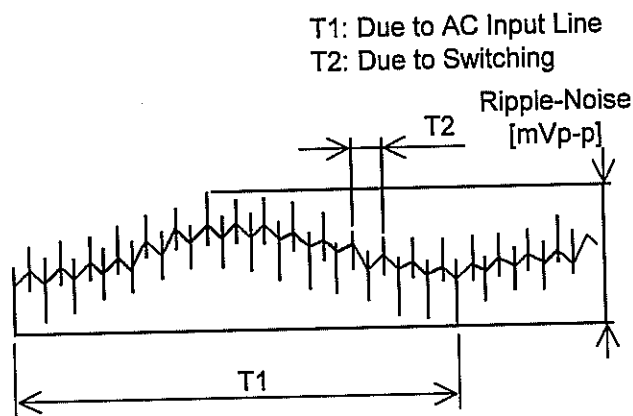


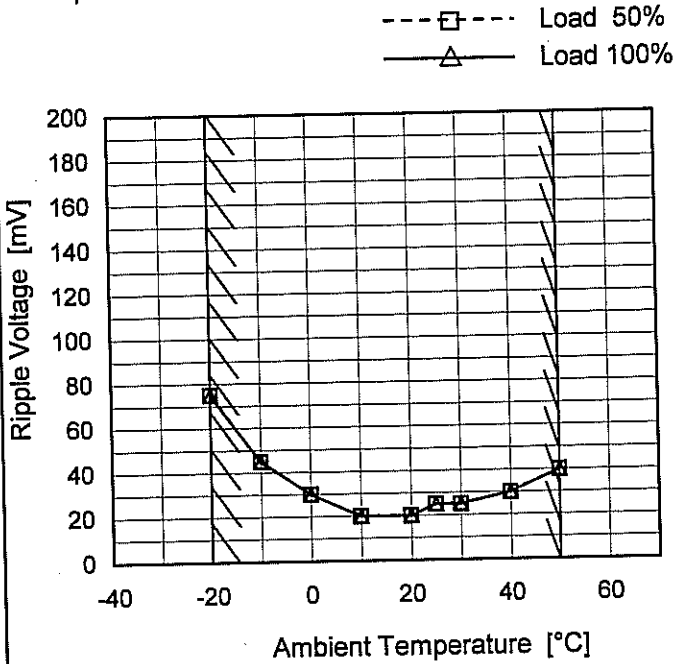
Fig. Complex Ripple Wave Form



Model	PLA600F-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V25A

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	75	75
-10	45	45
0	30	30
10	20	20
20	20	20
25	25	25
30	25	25
40	30	30
50	40	40
--	-	-
--	-	-

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

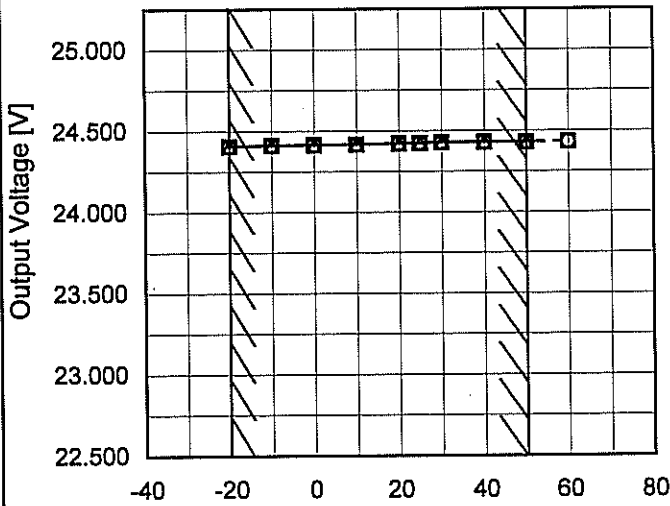


Model	PLA600F-24
Item	Ambient Temperature Drift
Object	+24V25A

Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 115V
 -·-○-·- Input Volt. 230V



Ambient Temperature [°C]

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	24.408	24.407	24.407
-10	24.412	24.412	24.412
0	24.415	24.415	24.415
10	24.418	24.417	24.417
20	24.422	24.422	24.422
25	24.425	24.424	24.425
30	24.429	24.429	24.429
40	24.431	24.431	24.430
50	24.431	24.430	24.430
60	-	24.431	24.431
--	-	-	-

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



COSEL		
Model	PLA600F-24	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+24V25A	

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 - 25A

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* 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	40	115	0	24.437	±15	±0.1
Minimum Voltage	-20	230	25	24.407		

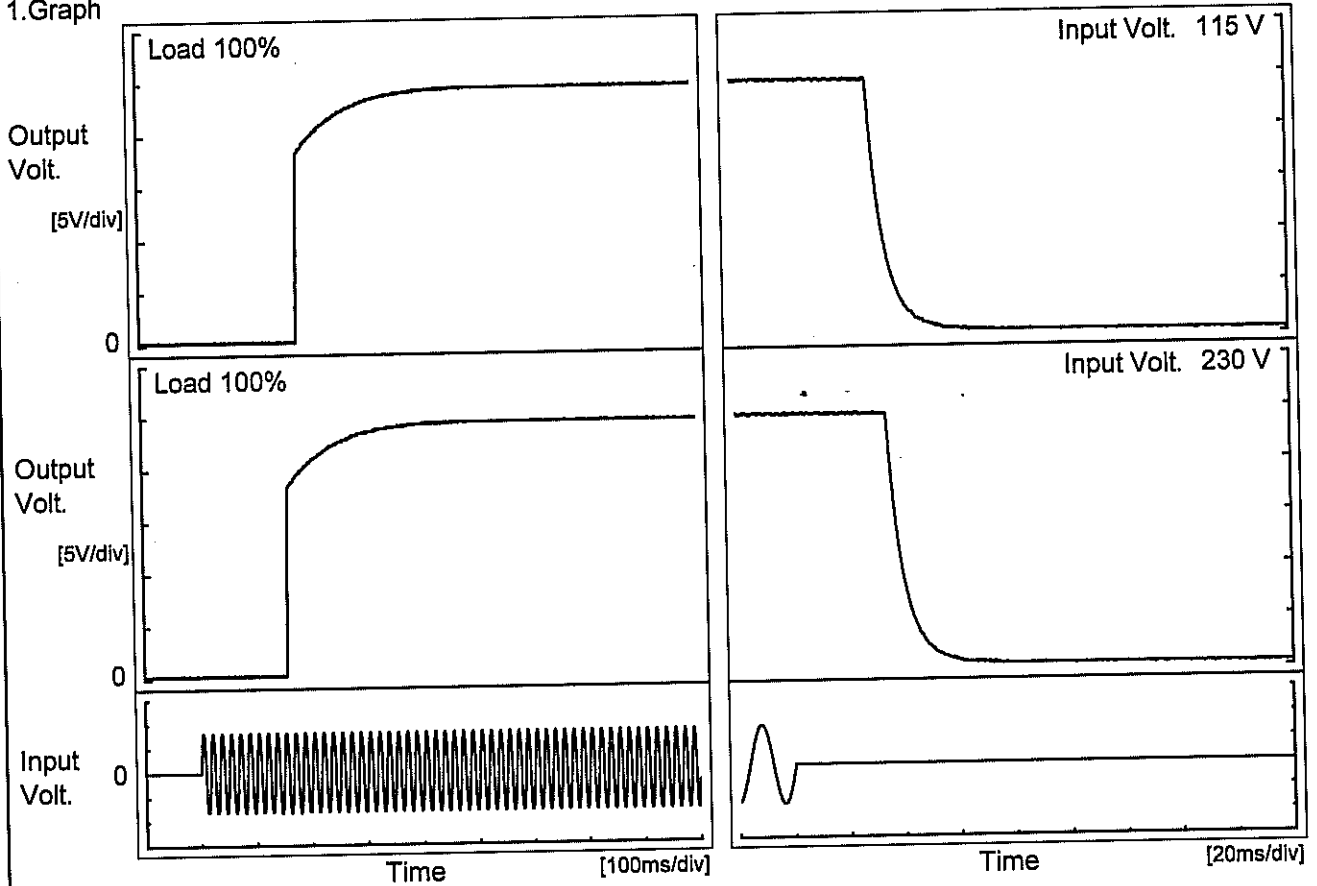


COSEL																									
Model	PLA600F-24	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+24V25A																								
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 230V Load 100%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>24.440</td></tr> <tr><td>0.5</td><td>24.439</td></tr> <tr><td>1.0</td><td>24.438</td></tr> <tr><td>2.0</td><td>24.438</td></tr> <tr><td>3.0</td><td>24.438</td></tr> <tr><td>4.0</td><td>24.439</td></tr> <tr><td>5.0</td><td>24.439</td></tr> <tr><td>6.0</td><td>24.439</td></tr> <tr><td>7.0</td><td>24.439</td></tr> <tr><td>8.0</td><td>24.439</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	24.440	0.5	24.439	1.0	24.438	2.0	24.438	3.0	24.438	4.0	24.439	5.0	24.439	6.0	24.439	7.0	24.439	8.0	24.439
Time since start [H]	Output Voltage [V]																								
0.0	24.440																								
0.5	24.439																								
1.0	24.438																								
2.0	24.438																								
3.0	24.438																								
4.0	24.439																								
5.0	24.439																								
6.0	24.439																								
7.0	24.439																								
8.0	24.439																								
<p>* The characteristic of AC115V is equal.</p>																									

COSEL

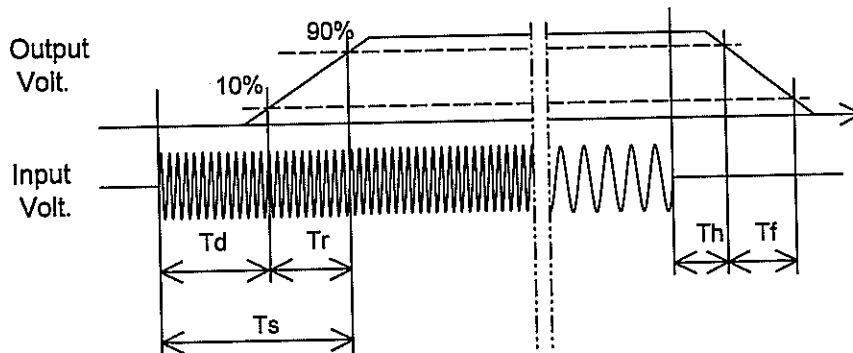
Model	PLA600F-24	Temperature 25°C Testing Circuitry Figure A
Item	Rise and Fall Time	
Object	+24V25A	

1. Graph



2. Values

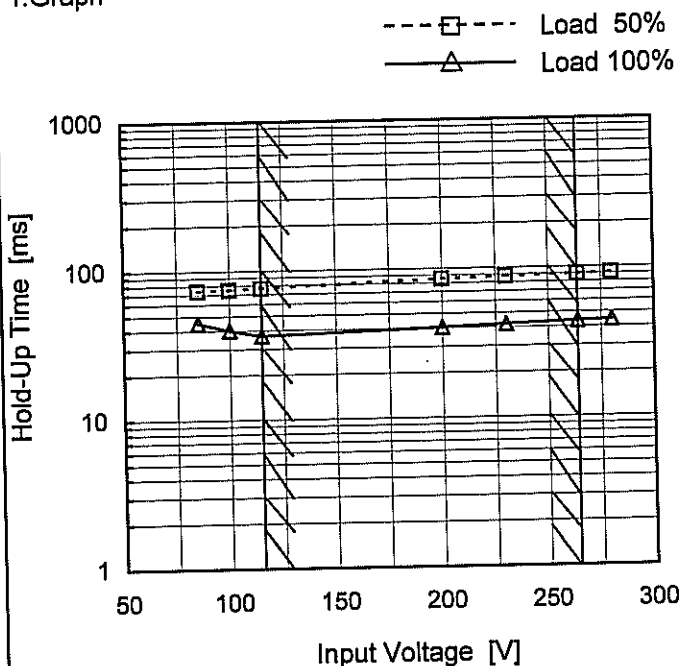
Input Volt.	Time	Td	Tr	Ts	Th	Tf
115 V		184.0	69.5	253.5	29.6	13.3
230 V		159.0	69.5	228.5	35.0	13.3





Model	PLA600F-24	Temperature	25°C
Item	Hold-Up Time	Testing Circuitry	Figure A
Object	+24V25A		

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	74	45 ※1
100	75	40 ※2
115	77	37
200	85	40
230	88	42
264	90	44
280	91	44
--	-	-
--	-	-

※1: Load 80%
※2: Load 90%

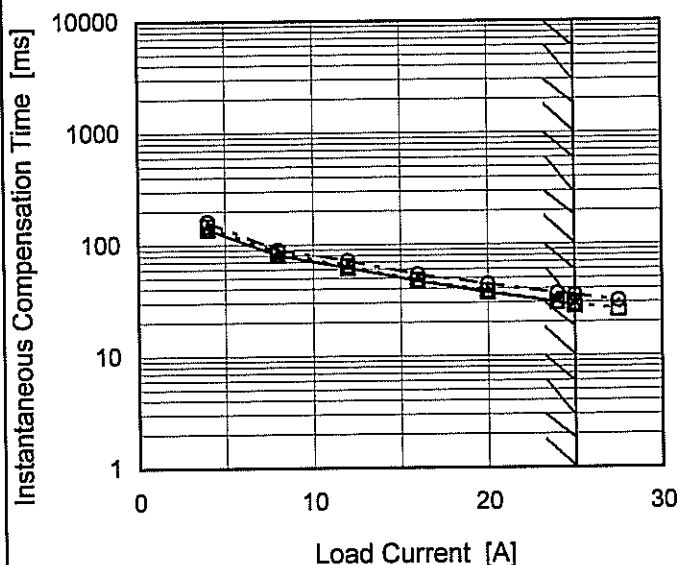


Model	PLA600F-24
Item	Instantaneous Interruption Compensation
Object	+24V25A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 115V
 -·-○-·- Input Volt. 230V



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

2. Values

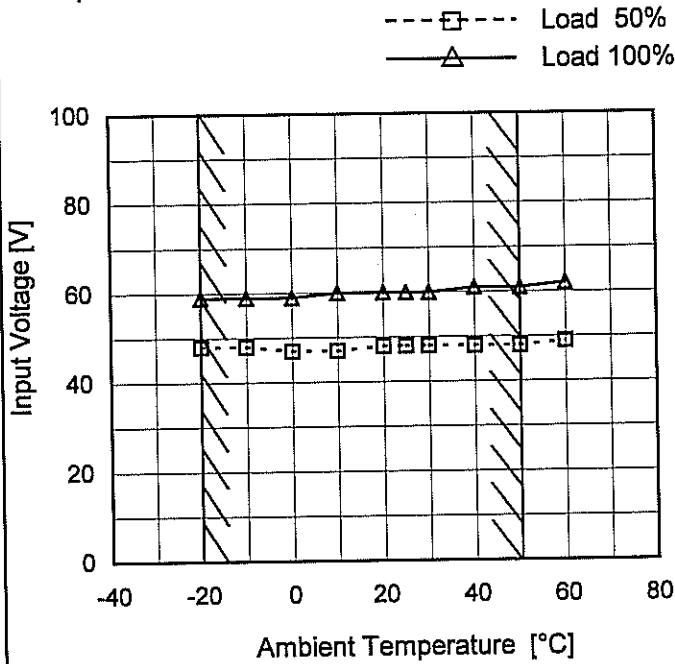
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.0	-	-	-
4.0	139	148	162
8.0	81	86	90
12.0	62	64	72
16.0	47	48	54
20.0	37	38	44
24.0	30	30	36
25.0	28	29	35
27.5	-	26	31
--	-	-	-
--	-	-	-



Model	PLA600F-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V25A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	48	59
-10	48	59
0	47	59
10	47	60
20	48	60
25	48	60
30	48	60
40	48	61
50	48	61
60	49	62
--	-	-

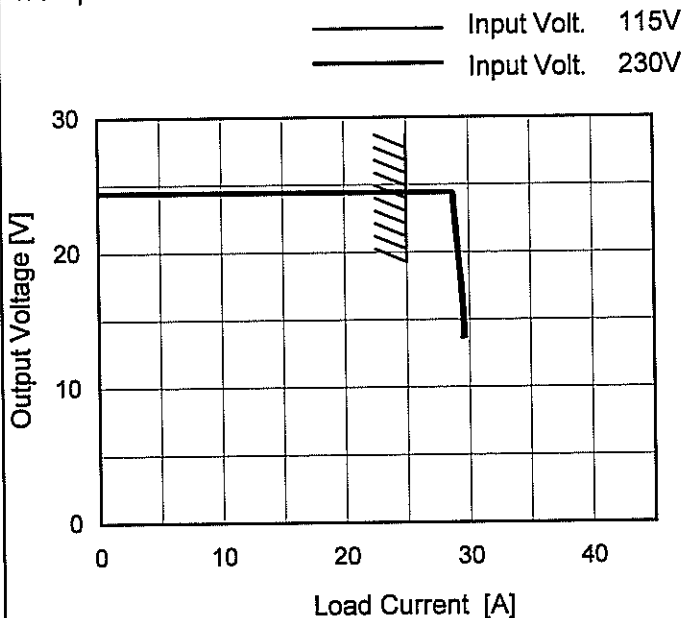
Note: Slanted line shows the range of the rated ambient temperature.



Model	PLA600F-24
Item	Overcurrent Protection
Object	+24V25A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



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

2. Values

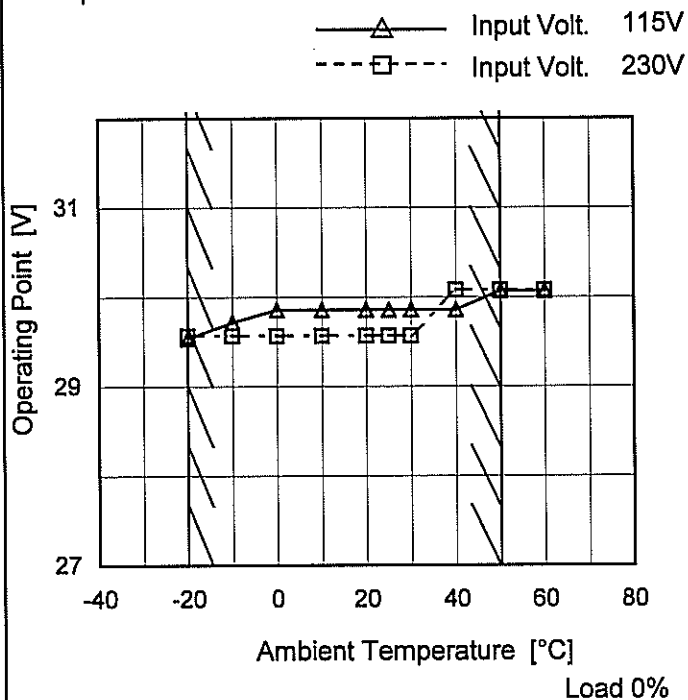
Output Voltage [V]	Load Current [A]	
	input Volt. 115[V]	Input Volt. 230[V]
22.8	29.02	28.83
21.6	29.13	28.95
19.2	29.35	29.19
16.8	29.56	29.40
14.4	29.74	29.53
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-



Model	PLA600F-24
Item	Overvoltage Protection
Object	+24V25A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 115[V]	Input Volt. 230[V]
-20	29.54	29.57
-10	29.72	29.57
0	29.86	29.57
10	29.86	29.57
20	29.86	29.57
25	29.86	29.57
30	29.86	29.57
40	29.86	30.08
50	30.07	30.08
60	30.07	30.08
-	-	-

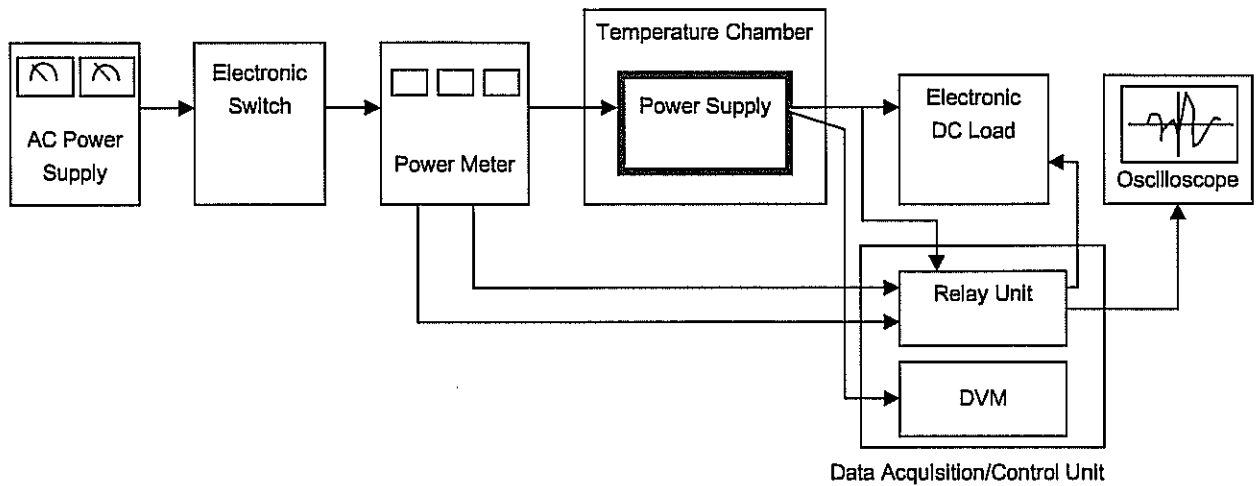


Figure A

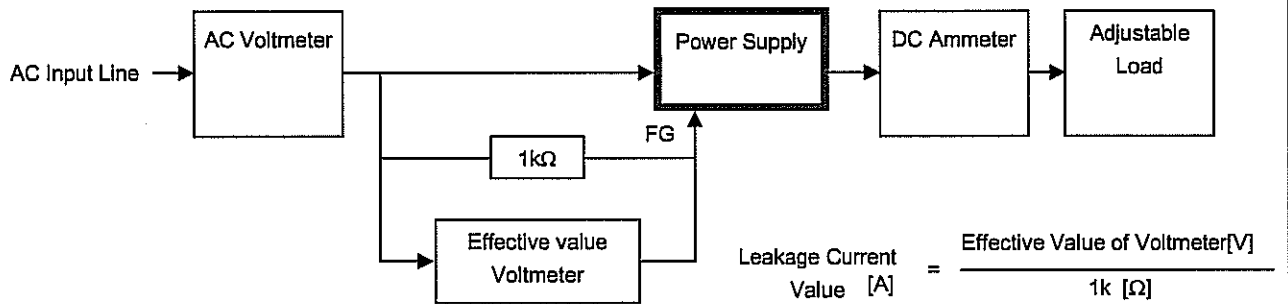


Figure B (DEN-AN)

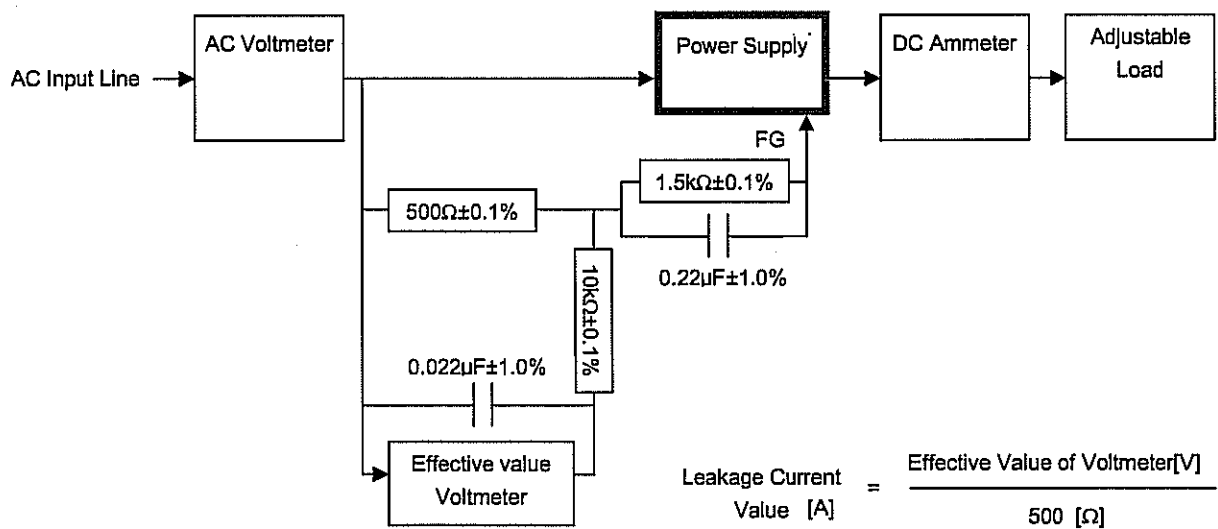


Figure B (IEC60950-1)

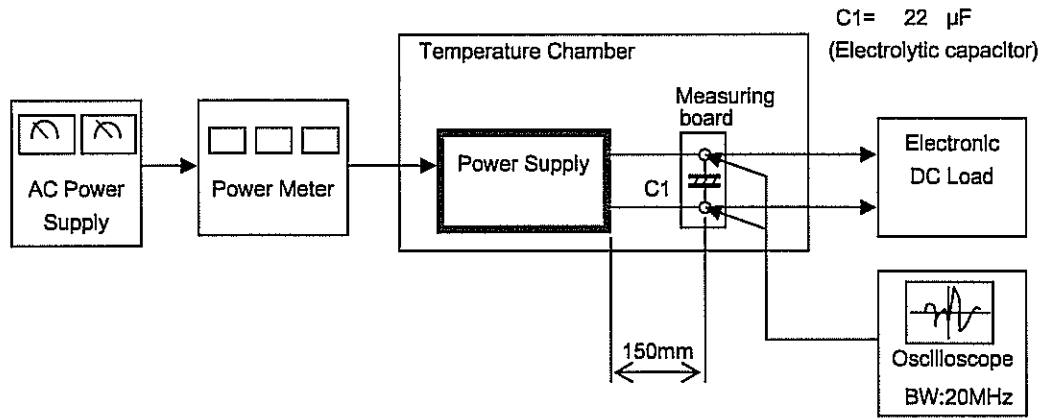


Figure C