

TEST DATA OF PLA600F-48

Regulated DC Power Supply
August 19, 2011

Approved by : Katsumi Ishikawa Ishikawa
Katsumi Ishikawa Design Manager

Prepared by : Shintaro Oki
Shintaro Oki Design Engineer

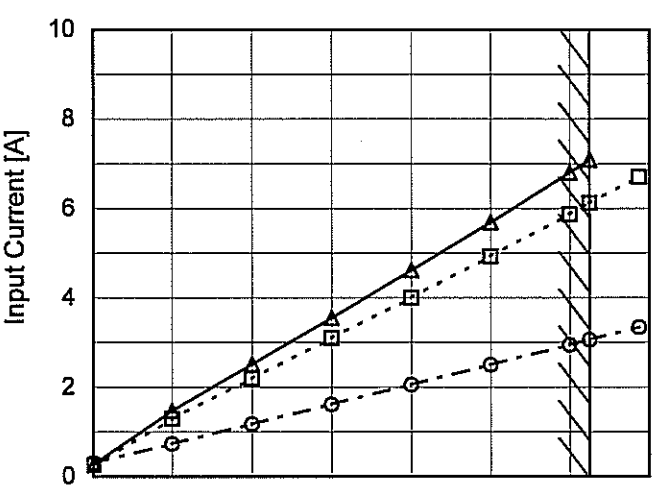
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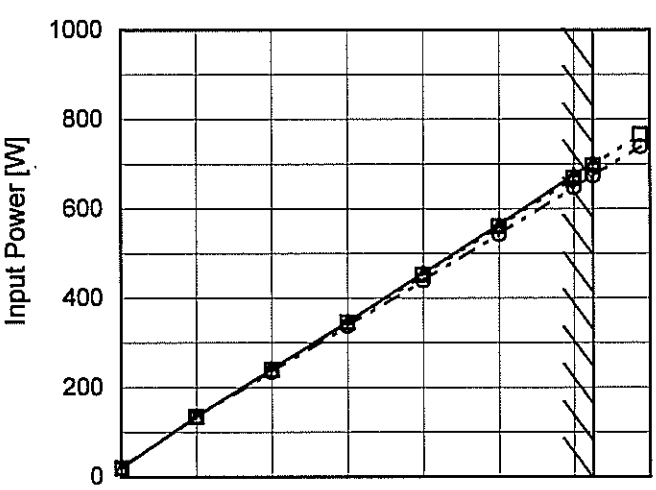
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Model		PLA600F-48		Temperature		25°C																																																				
Item		Input Current (by Load Current)		Testing Circuitry		Figure A																																																				
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Model		PLA600F-48	
Item	Efficiency (by Input Voltage)		
Object			

Temperature 25°C
Testing Circuitry Figure A

1.Graph

---□--- Load 50%
—△— Load 100%

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	82.2	83.8 ※1
100	83.2	85.0 ※2
115	83.7	85.8
200	85.2	88.5
230	85.7	88.9
264	86.2	89.1
280	86.0	89.3
--	-	-
--	-	-

Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	82.2	83.8 ※1
100	83.2	85.0 ※2
115	83.7	85.8
200	85.2	88.5
230	85.7	88.9
264	86.2	89.1
280	86.0	89.3
--	-	-
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※1: Load 80%
※2: Load 90%

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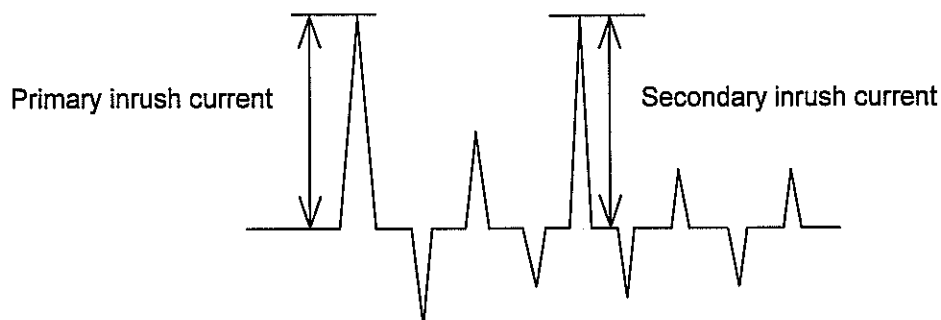
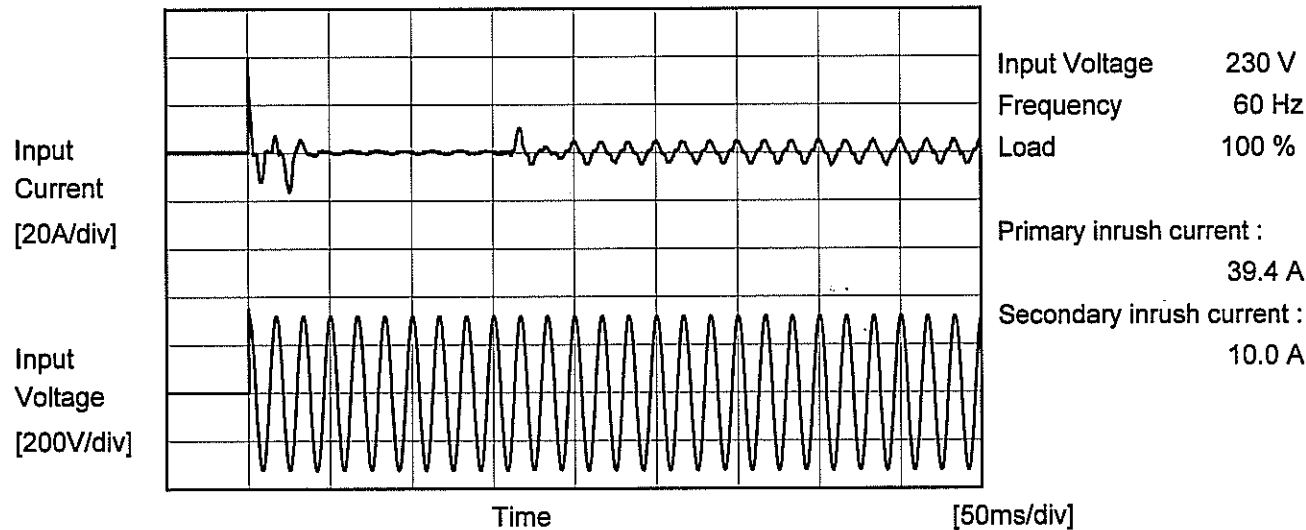
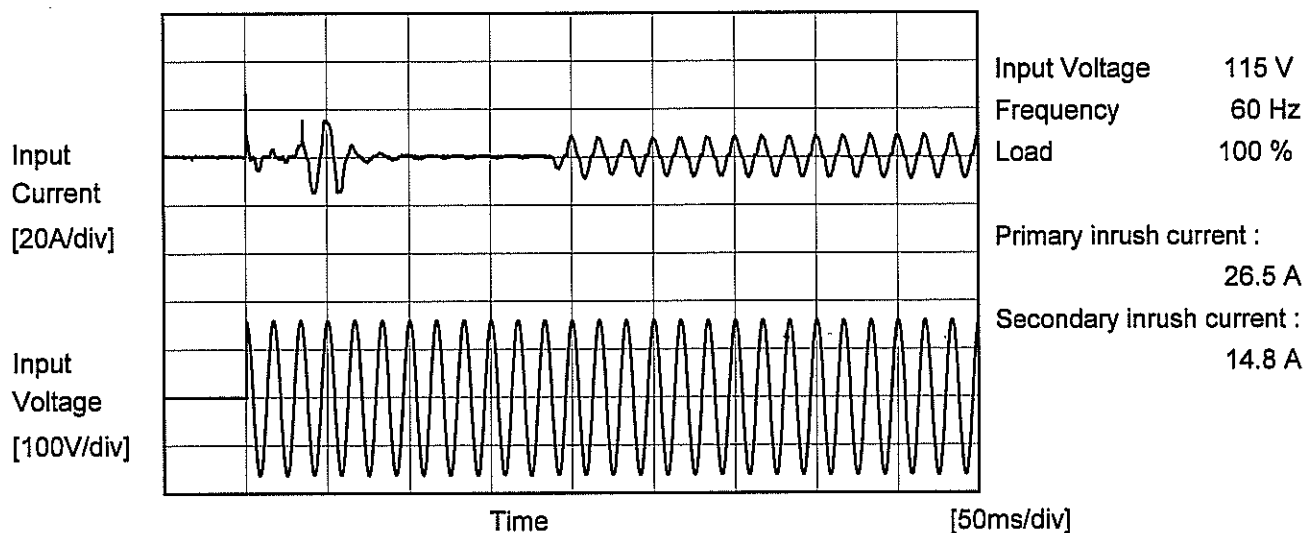
Model		PLA600F-48	
Item		Power Factor (by Input Voltage)	
Object			
1.Graph		2.Values	

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Model	PLA600F-48	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current	
Object		





		Temperature 25°C Testing Circuitry Figure B
Model	PLA600F-48	
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.

Model	PLA600F-48		
Item	Line Regulation	Temperature	25°C
Object	+48V12.5A	Testing Circuitry	Figure A

1.Graph

---□--- Load 50%
 —△— Load 100%

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	48.040	48.024 ※1
100	48.036	48.015 ※2
115	48.031	48.010
200	48.028	48.006
230	48.026	48.006
264	48.025	48.009
280	48.024	48.010
--	-	-
--	-	-

※1: Load 80%
 ※2: Load 90%

Note: Slanted line shows the range of the rated input voltage.

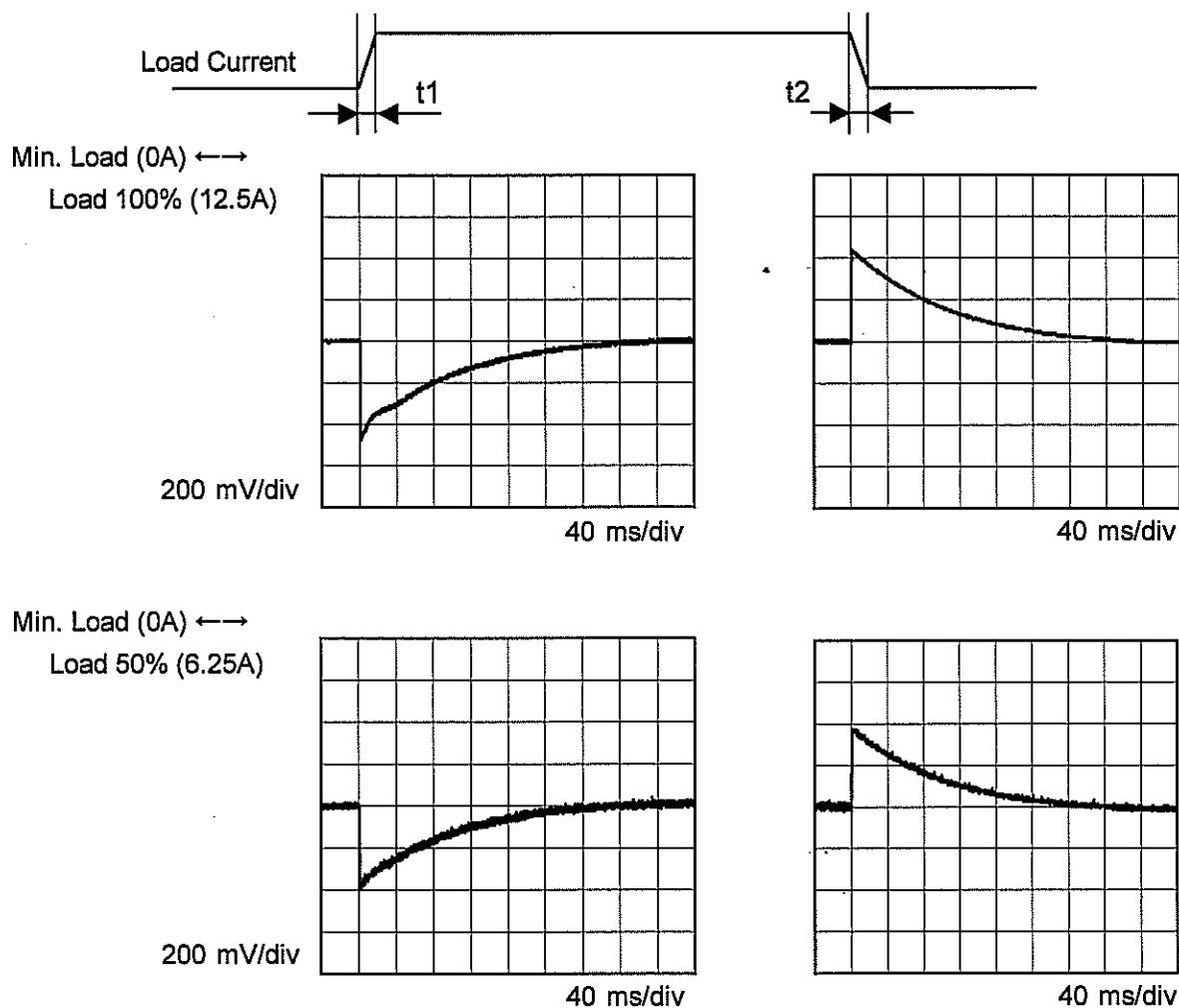
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Model	PLA600F-48	Temperature	25° C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+48V12.5A		

Input Volt. 115 V
Cycle 1000 ms

Response. $t_1=t_2=50\mu\text{s}$. Typ



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Model		PLA600F-48		Temperature Testing Circuitry	25°C Figure A																																						
Item		Ripple Voltage (by Load Current)																																									
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<p>Measured by MHz Oscilloscope.</p> <p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p>																																											
<div><div><div><div></div><div>T1: Due to AC Input Line</div></div><div><div></div><div>T2: Due to Switching</div></div></div><div><p>Ripple [mVp-p]</p><p>T1</p><p>T2</p></div></div>																																											
Fig. Complex Ripple Wave Form																																											

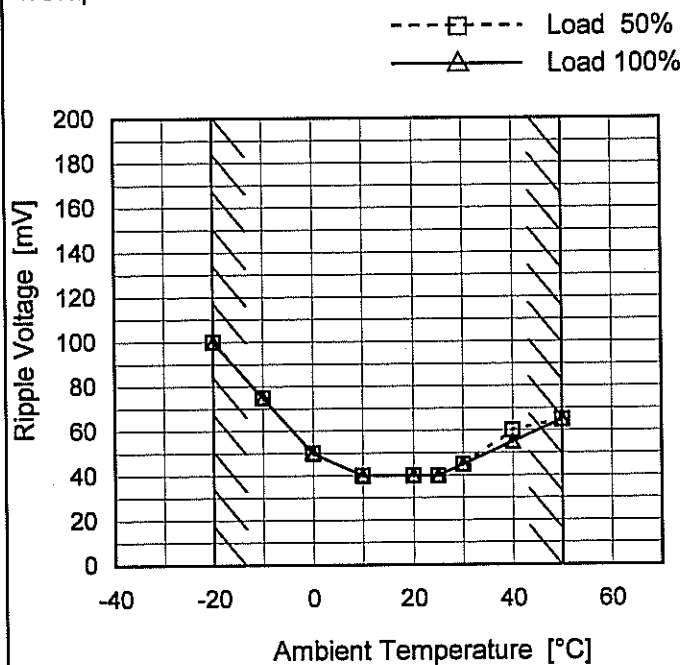
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<div><div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div><p>Fig. Complex Ripple Wave Form</p></div>																																																																													

COSEL

Model	PLA600F-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V12.5A

1. Graph



Measured by 20 MHz Oscilloscope.

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

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-20	100	100
-10	75	75
0	50	50
10	40	40
20	40	40
25	40	40
30	45	45
40	60	55
50	65	65
--	-	-
--	-	-

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

COSEL

Model		PLA600F-48																																																				
Item		Ambient Temperature Drift																																																				
Object		+48V12.5A																																																				
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 115V</div></div><div><div>---○---</div><div>Input Volt. 230V</div></div></div> <div><div>Output Voltage [V]</div><div><div>50.250</div><div>49.750</div><div>49.250</div><div>48.750</div><div>48.250</div><div>47.750</div><div>47.250</div><div>46.750</div><div>46.250</div><div>45.750</div><div>45.250</div></div><div><div>-40</div><div>-20</div><div>0</div><div>20</div><div>40</div><div>60</div></div><div>Ambient Temperature [°C]</div></div> <div>Note: Slanted line shows the range of the rated ambient temperature.</div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-20</td><td>48.237</td><td>48.241</td><td>48.211</td></tr><tr><td>-10</td><td>48.231</td><td>48.226</td><td>48.200</td></tr><tr><td>0</td><td>48.204</td><td>48.197</td><td>48.184</td></tr><tr><td>10</td><td>48.178</td><td>48.173</td><td>48.163</td></tr><tr><td>25</td><td>48.141</td><td>48.135</td><td>48.126</td></tr><tr><td>30</td><td>48.119</td><td>48.118</td><td>48.116</td></tr><tr><td>40</td><td>48.116</td><td>48.114</td><td>48.111</td></tr><tr><td>50</td><td>48.111</td><td>48.112</td><td>48.109</td></tr><tr><td>60</td><td>48.108</td><td>48.107</td><td>48.107</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table> <div>Note: In case of Input Volt. 100V, Load 90%. Other case Load 100%.</div>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	-20	48.237	48.241	48.211	-10	48.231	48.226	48.200	0	48.204	48.197	48.184	10	48.178	48.173	48.163	25	48.141	48.135	48.126	30	48.119	48.118	48.116	40	48.116	48.114	48.111	50	48.111	48.112	48.109	60	48.108	48.107	48.107	--	-	-	-	--	-	-	-
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		Testing Circuitry Figure A
Model	PLA600F-48	
Item	Output Voltage Accuracy	
Object	+48V12.5A	

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 - 12.5A

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

* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-20	115	12.5	48.241	±66	±0.1
Minimum Voltage	50	264	12.5	48.109		

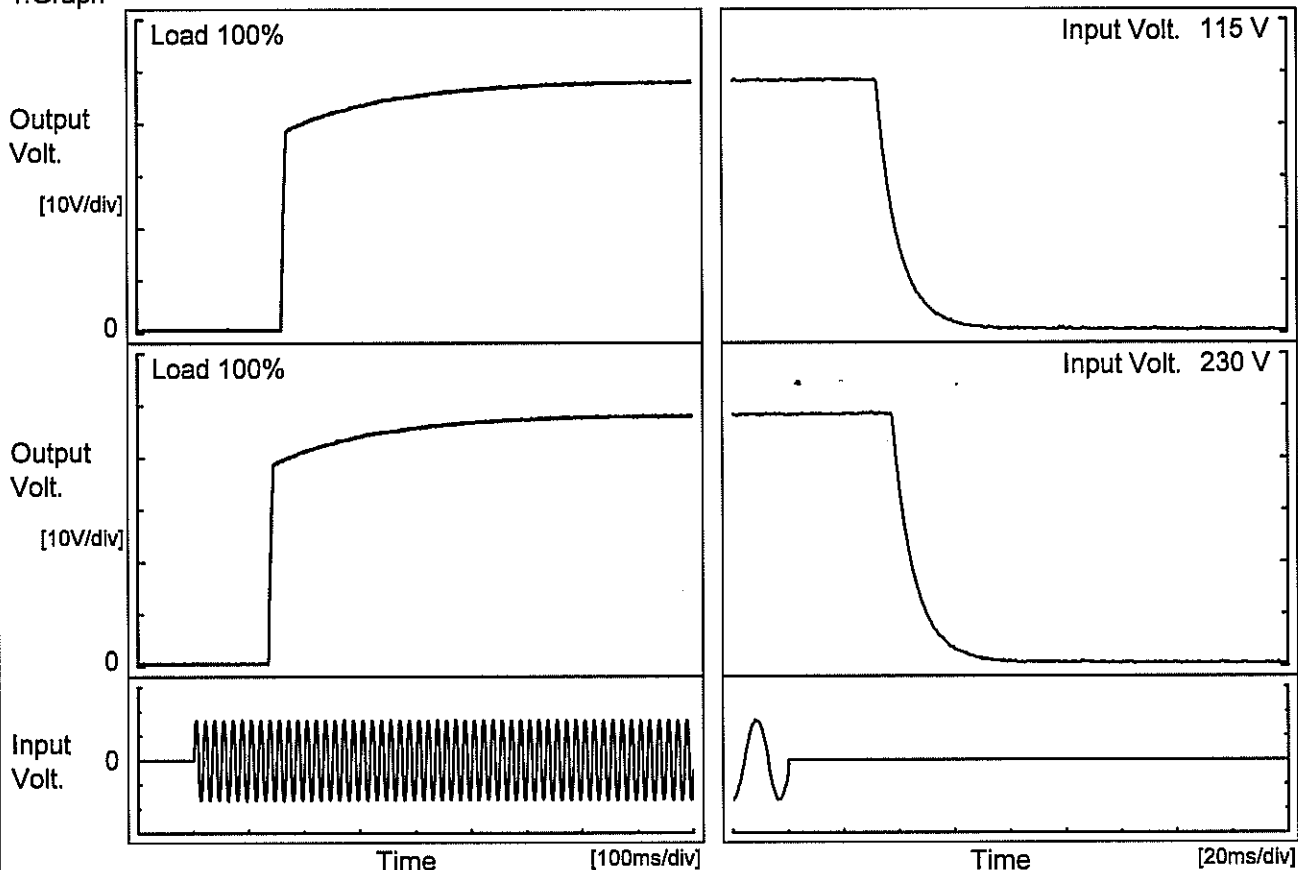
COSEL

Model		PLA600F-48		Temperature25°C Testing CircuitryFigure A
Item		Time Lapse Drift		
Object		+48V12.5A		
1.Graph				
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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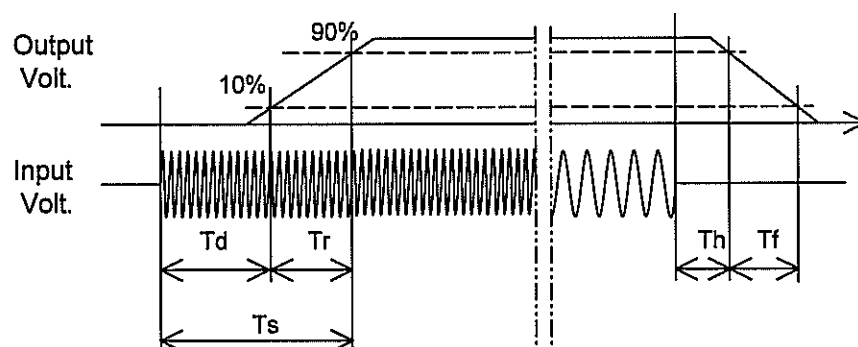
Model	PLA600F-48	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+48V12.5A		

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
115 V		161.0	141.5	302.5	32.5	17.5
230 V		137.0	144.0	281.0	38.0	18.0



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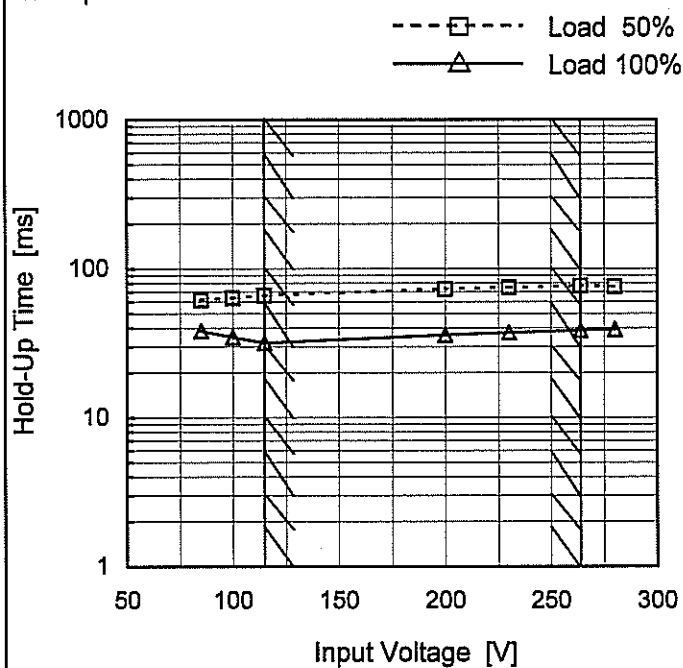
Model PLA600F-48

Item Hold-Up Time

Object +48V12.5A

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	62	38 ※1
100	64	35 ※2
115	66	32
200	73	36
230	75	37
264	76	39
280	76	39
--	-	-
--	-	-

※1: Load 80%

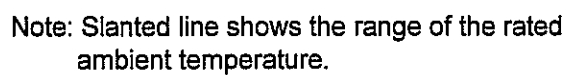
※2: Load 90%

COSEL

Model	PLA600F-48																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
		Testing Circuitry	Figure A																																																			
Object	+48V12.5A																																																					
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 115V</div></div><div><div>-·-○-·-</div><div>Input Volt. 230V</div></div></div> <p>Instantaneous Compensation Time [ms]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2.00</td><td>139</td><td>156</td><td>170</td></tr><tr><td>4.00</td><td>86</td><td>88</td><td>89</td></tr><tr><td>6.00</td><td>61</td><td>64</td><td>77</td></tr><tr><td>8.00</td><td>47</td><td>47</td><td>55</td></tr><tr><td>10.00</td><td>39</td><td>39</td><td>46</td></tr><tr><td>12.00</td><td>31</td><td>31</td><td>26</td></tr><tr><td>12.50</td><td>30</td><td>31</td><td>25</td></tr><tr><td>13.75</td><td>-</td><td>28</td><td>20</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0.00	-	-	-	2.00	139	156	170	4.00	86	88	89	6.00	61	64	77	8.00	47	47	55	10.00	39	39	46	12.00	31	31	26	12.50	30	31	25	13.75	-	28	20	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
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Testing Circuitry Figure A

2.Values



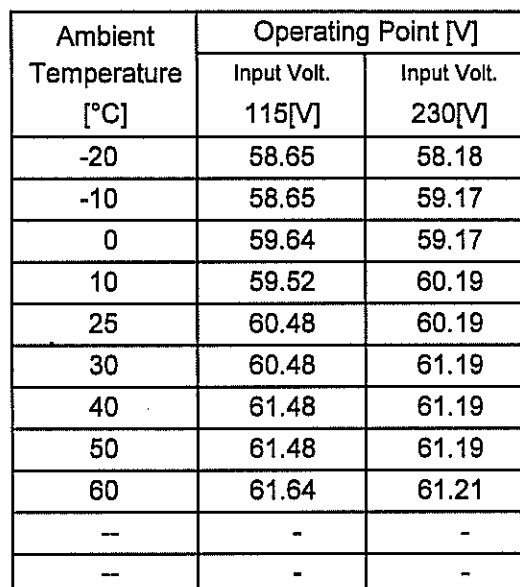
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	48	59
-10	48	59
0	47	59
10	47	59
25	48	59
30	47	59
40	48	60
50	48	60
60	48	61
--	-	-
--	-	-

COSEL

Model	PLA600F-48																																														
Item	Overcurrent Protection	Temperature	25°C																																												
Object	+48V12.5A	Testing Circuitry	Figure A																																												
1.Graph		2.Values																																													
<div><div><div></div><div>Input Volt. 115V</div></div><div><div></div><div>Input Volt. 230V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="2">Load Current [A]</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>45.6</td><td>14.07</td><td>14.01</td></tr><tr><td>43.2</td><td>14.11</td><td>14.02</td></tr><tr><td>38.4</td><td>14.14</td><td>14.04</td></tr><tr><td>33.6</td><td>14.13</td><td>13.97</td></tr><tr><td>28.8</td><td>14.04</td><td>13.95</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]		Input Volt. 115[V]	Input Volt. 230[V]	45.6	14.07	14.01	43.2	14.11	14.02	38.4	14.14	14.04	33.6	14.13	13.97	28.8	14.04	13.95	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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Testing Circuitry Figure A

2.Values



- 23 -

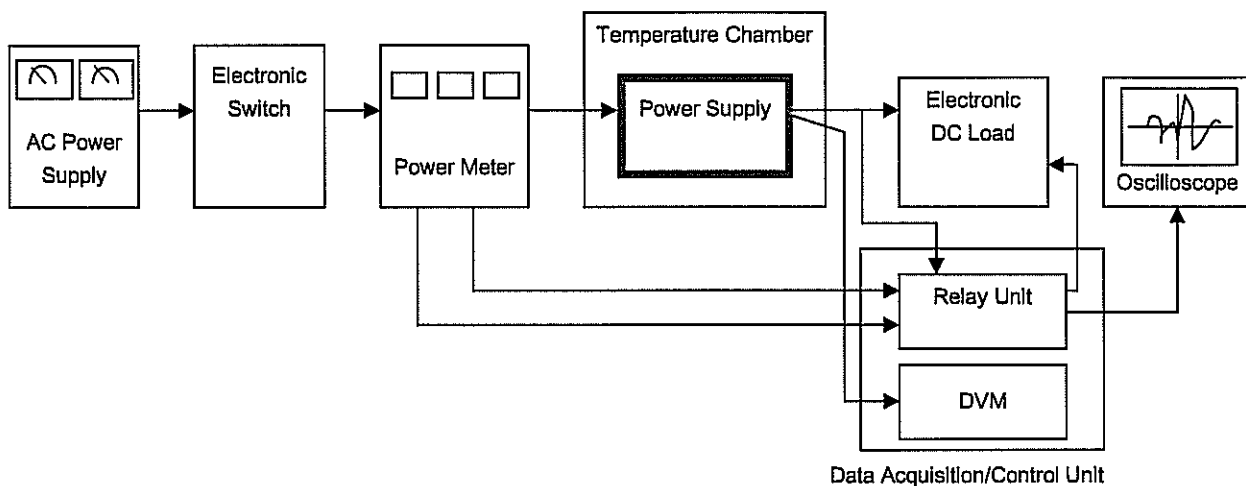


Figure A

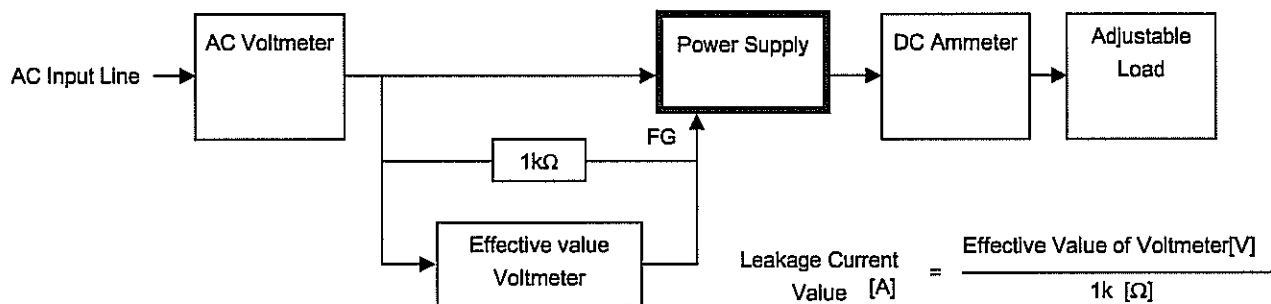


Figure B (DEN-AN)

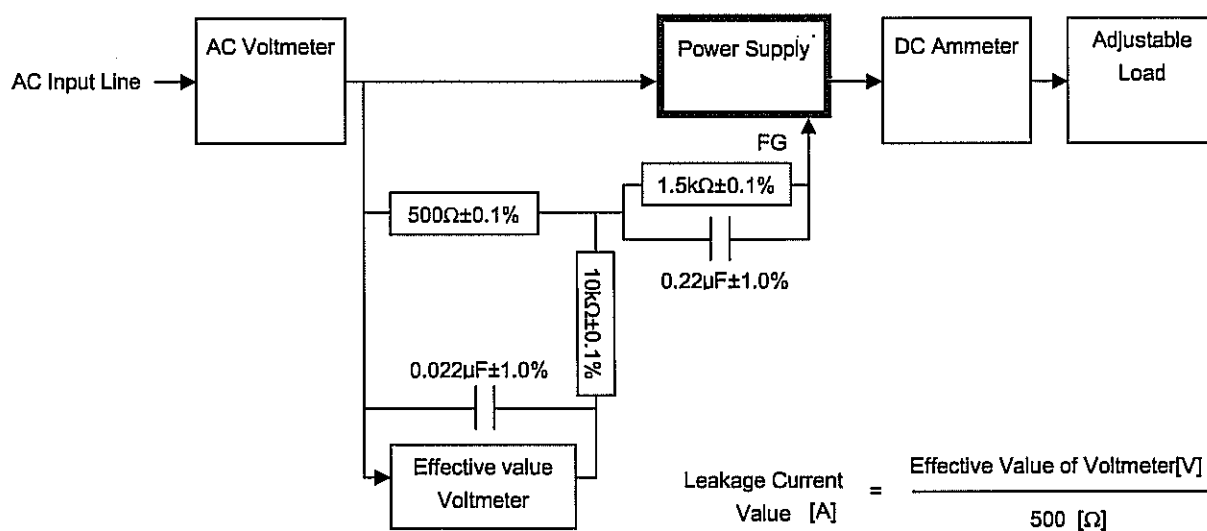


Figure B (IEC60950-1)

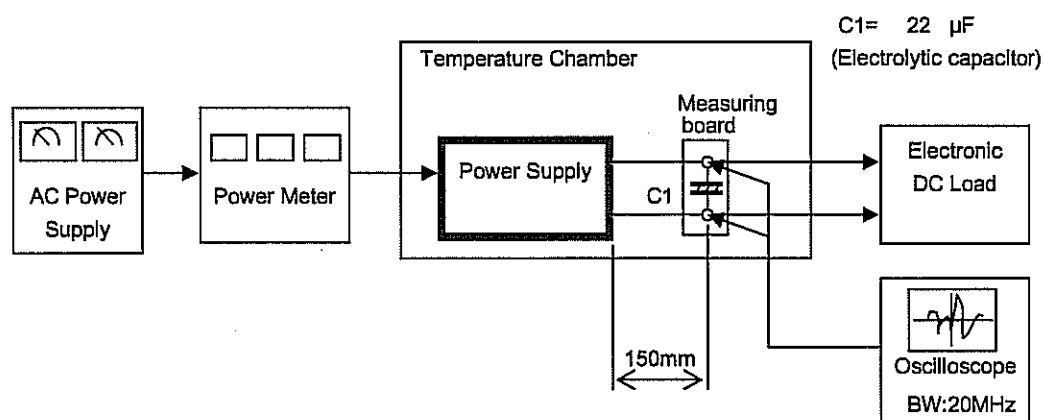


Figure C