

# TEST DATA OF PLA100F-48

Regulated DC Power Supply  
June 26, 2013

Approved by : Katsumi Ishikawa Ishikawa  
Katsumi Ishikawa Design Manager

Prepared by : Naoki Fujita  
Naoki Fujita Design Engineer

**COSEL CO.,LTD.**



## CONTENTS

1.Input Current (by Load Current) . . . . .	1
2.Input Power (by Load Current) . . . . .	2
3.Efficiency (by Input Voltage) . . . . .	3
4.Efficiency (by Load Current) . . . . .	4
5.Power Factor (by Input Voltage) . . . . .	5
6.Power Factor (by Load Current) . . . . .	6
7.Inrush Current . . . . .	7
8.Leakage Current . . . . .	8
9.Line Regulation . . . . .	9
10.Load Regulation . . . . .	10
11.Dynamic Load Response . . . . .	11
12.Ripple Voltage (by Load Current) . . . . .	12
13.Ripple-Noise . . . . .	13
14.Ripple Voltage (by Ambient Temperature) . . . . .	14
15.Ambient Temperature Drift . . . . .	15
16.Output Voltage Accuracy . . . . .	16
17.Time Lapse Drift . . . . .	17
18.Rise and Fall Time . . . . .	18
19.Hold-Up Time . . . . .	19
20.Instantaneous Interruption Compensation . . . . .	20
21.Minimum Input Voltage for Regulated Output Voltage . . . . .	21
22.Overcurrent Protection . . . . .	22
23.Overvoltage Protection . . . . .	23
24.Figure of Testing Circuitry . . . . .	24

(Final Page 25)



Model		PLA100F-48		Temperature		25°C																																																				
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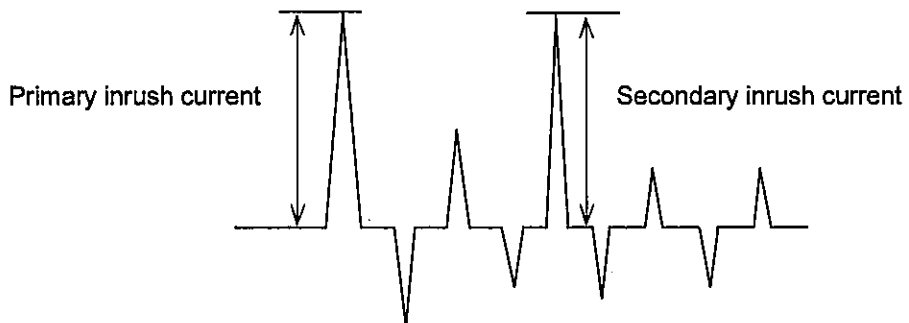
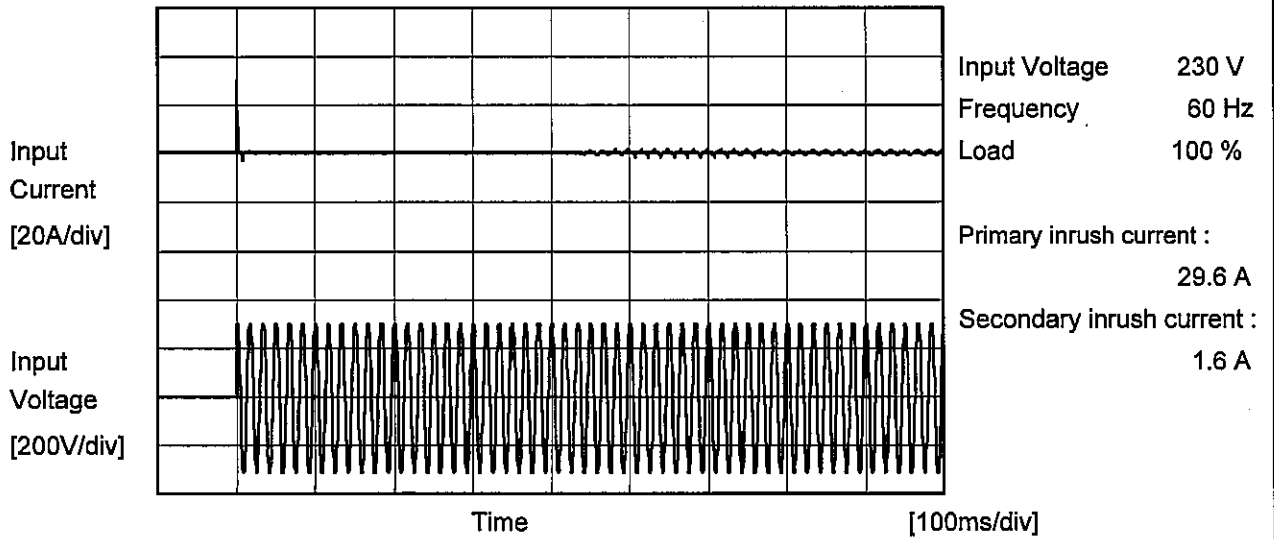
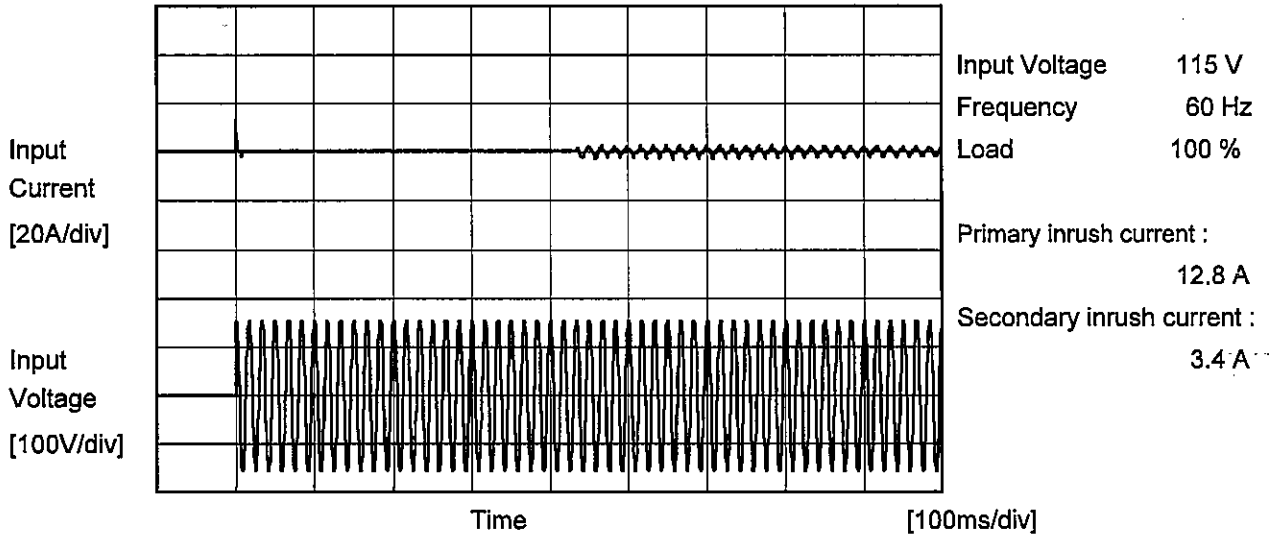
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Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





<b>COSEL</b>		
Model	PLA100F-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	0.34	0.34	0.62	Operation
	One of phases	0.30	0.34	0.77	Stand by
IEC60950-1	Both phases	0.25	0.28	0.55	Operation
	One of phases	0.27	0.32	0.71	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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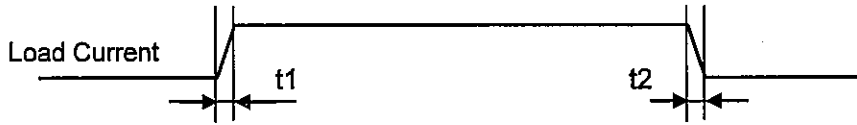
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1.Graph			—△— Input Volt. 100V - - - □ - - - Input Volt. 115V - · - ○ - · - - Input Volt. 230V	2.Values																																																			
Output Voltage [V]			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th 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> </thead> <tbody> <tr><td>0.00</td><td>48.268</td><td>48.268</td><td>48.266</td></tr> <tr><td>0.40</td><td>48.155</td><td>48.154</td><td>48.155</td></tr> <tr><td>0.80</td><td>48.137</td><td>48.136</td><td>48.135</td></tr> <tr><td>1.20</td><td>48.135</td><td>48.135</td><td>48.134</td></tr> <tr><td>1.60</td><td>48.133</td><td>48.133</td><td>48.132</td></tr> <tr><td>1.90</td><td>48.132</td><td>48.132</td><td>48.132</td></tr> <tr><td>2.10</td><td>48.132</td><td>48.132</td><td>48.131</td></tr> <tr><td>2.31</td><td>-</td><td>48.132</td><td>48.131</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Load Current [A]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0.00	48.268	48.268	48.266	0.40	48.155	48.154	48.155	0.80	48.137	48.136	48.135	1.20	48.135	48.135	48.134	1.60	48.133	48.133	48.132	1.90	48.132	48.132	48.132	2.10	48.132	48.132	48.131	2.31	-	48.132	48.131	--	-	-	-	--	-	-	-	--	-	-	-
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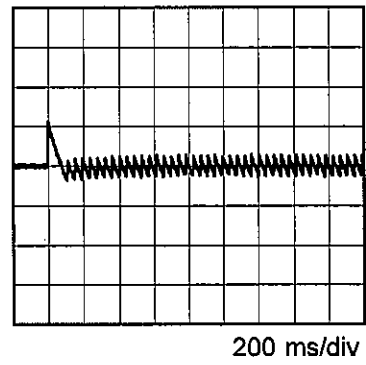
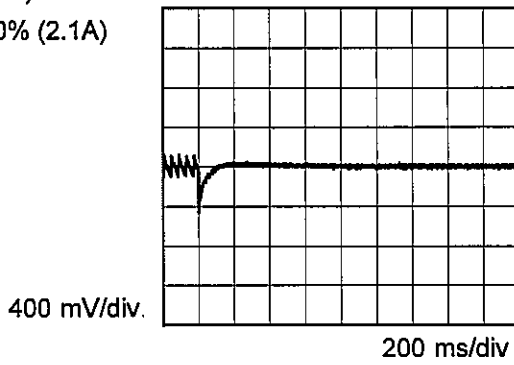
Model		PLA100F-48	Temperature	25° C
Item		Dynamic Load Response		
Object		+48V2.1A		

Input Volt. 115 V  
Cycle 1000 ms

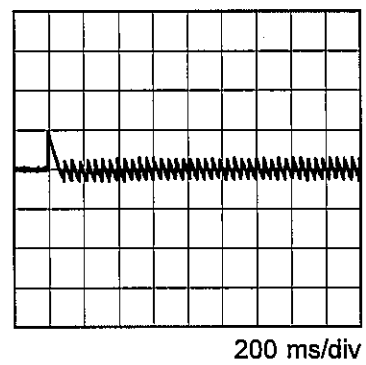
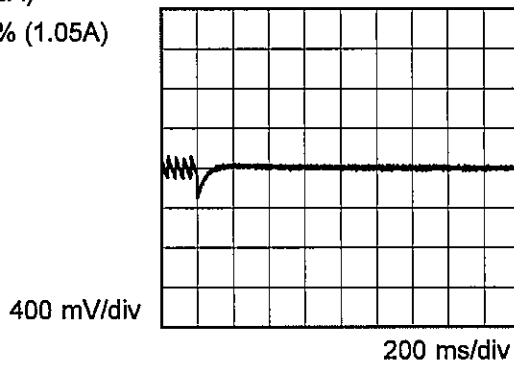
Response.  $t_1=t_2=50\mu\text{s}$ . Typ



Min. Load (0A) ←→  
Load 100% (2.1A)



Min. Load (0A) ←→  
Load 50% (1.05A)





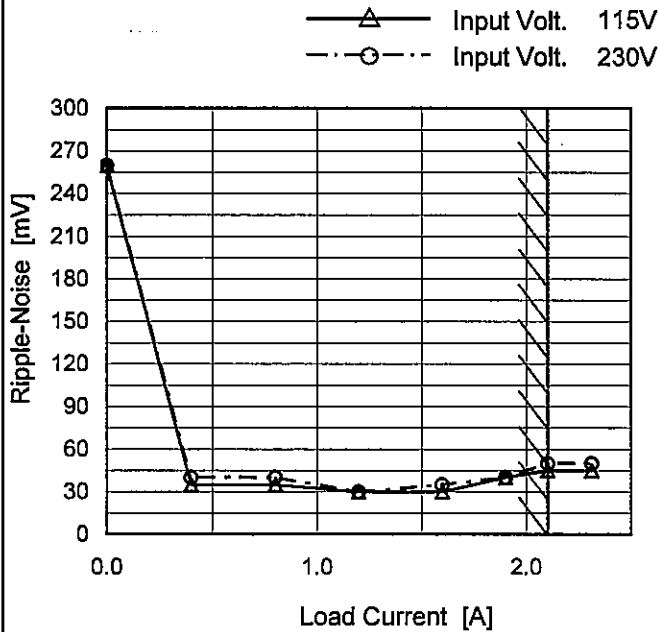
<p><b>Model</b> PLA100F-48</p> <p><b>Item</b> Ripple Voltage (by Load Current)</p> <p><b>Object</b> +48V2.1A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure C</p>																																						
<p>1. Graph</p> <div style="text-align: center;"> <p>—△— Input Volt. 115V</p> <p>- - -○- - - Input Volt. 230V</p> </div> <p>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.</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 115 [V]</th> <th>Input Volt. 230 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>255</td><td>255</td></tr> <tr><td>0.40</td><td>30</td><td>35</td></tr> <tr><td>0.80</td><td>30</td><td>35</td></tr> <tr><td>1.20</td><td>20</td><td>20</td></tr> <tr><td>1.60</td><td>15</td><td>20</td></tr> <tr><td>1.90</td><td>15</td><td>20</td></tr> <tr><td>2.10</td><td>30</td><td>30</td></tr> <tr><td>2.31</td><td>30</td><td>30</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> </tbody> </table>	Load Current [A]	Ripple Voltage [mV]		Input Volt. 115 [V]	Input Volt. 230 [V]	0.00	255	255	0.40	30	35	0.80	30	35	1.20	20	20	1.60	15	20	1.90	15	20	2.10	30	30	2.31	30	30	--	-	-	--	-	-	--	-	-
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<p>T1: Due to AC Input Line T2: Due to Switching</p> <p>Fig. Complex Ripple Wave Form</p>																																								



Model	PLA100F-48
Item	Ripple-Noise
Object	+48V2.1A

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]
0.00	260	260
0.40	35	40
0.80	35	40
1.20	30	30
1.60	30	35
1.90	40	40
2.10	45	50
2.31	45	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.

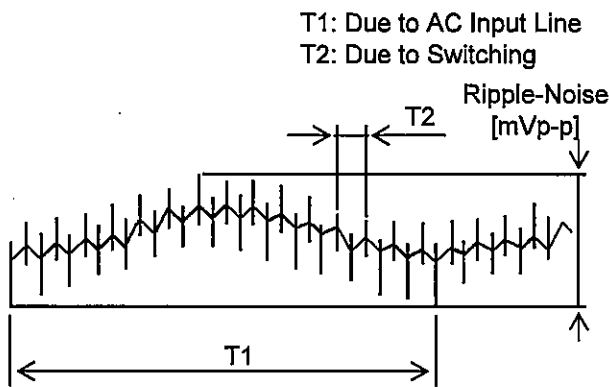


Fig. Complex Ripple Wave Form



Model		PLA100F-48	Testing Circuitry Figure C																																						
Item		Ripple Voltage (by Ambient Temp.)																																							
Object		+48V2.1A																																							
1.Graph		<p>---□--- Input Volt. 115V                      ---△--- Input Volt. 230V</p> <p>Measured by 20 MHz Oscilloscope.                      Note: Slanted line shows the range of the rated ambient temperature.</p>	2.Values																																						
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Model		PLA100F-48		Testing Circuitry Figure A																																																				
Item		Ambient Temperature Drift																																																						
Object		+48V2.1A																																																						
1.Graph			—△— Input Volt. 100V ---□--- Input Volt. 115V ---○--- Input Volt. 230V	2.Values																																																				
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Ambient Temperature [°C]	Output Voltage [V]																																																							
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Note: Slanted line shows the range of the rated ambient temperature.			Note: In case of Input Volt. 100V, Load 90%. Other case Load 100%.																																																					



<b>COSEL</b>		
Model	PLA100F-48	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V2.1A	

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 : 0.63 - 2.1A

\* 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	45	115	0.63	48.160	±66	±0.1
Minimum Voltage	-10	264	2.1	48.029		

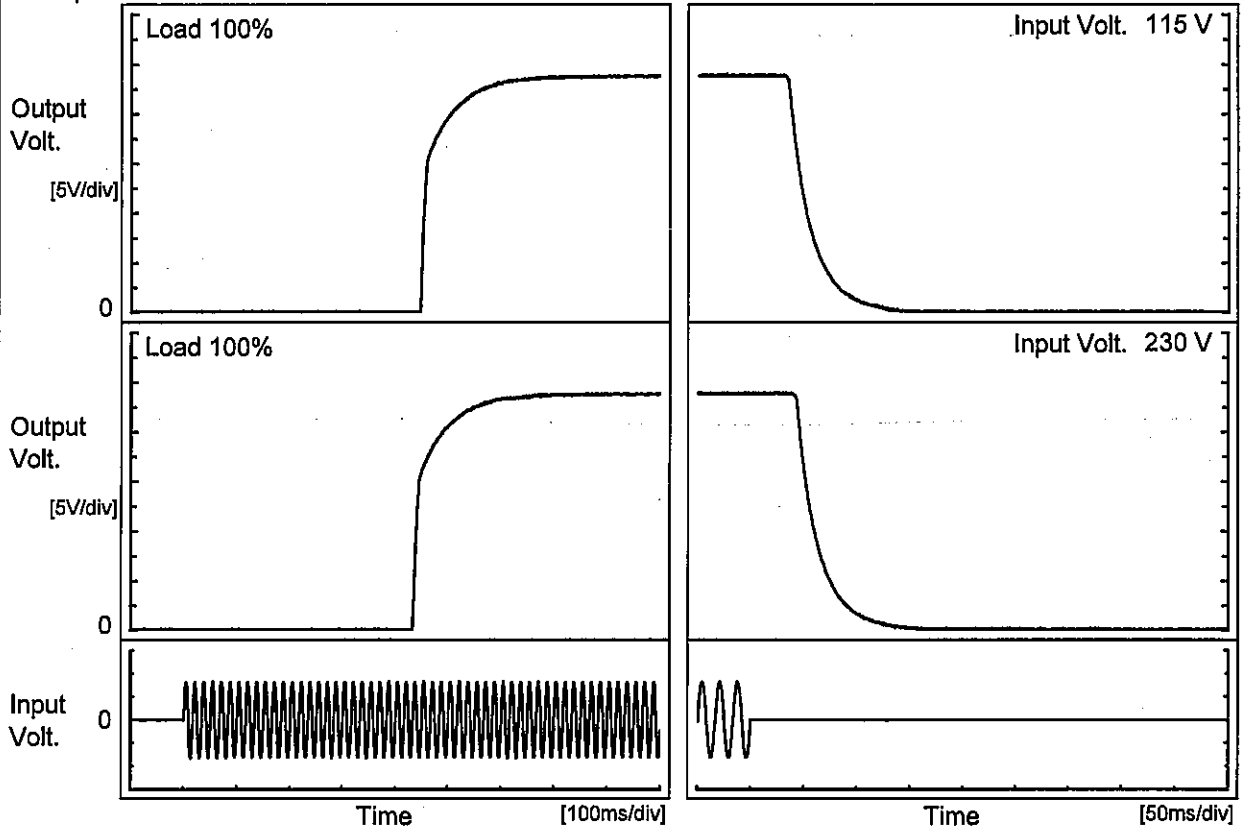


<b>Model</b> PLA100F-48		Temperature 25°C Testing Circuitry Figure A																						
<b>Item</b>	Time Lapse Drift																							
<b>Object</b>	+48V2.1A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 230V Load 100%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>48.131</td></tr> <tr><td>0.5</td><td>48.131</td></tr> <tr><td>1.0</td><td>48.130</td></tr> <tr><td>2.0</td><td>48.130</td></tr> <tr><td>3.0</td><td>48.130</td></tr> <tr><td>4.0</td><td>48.129</td></tr> <tr><td>5.0</td><td>48.129</td></tr> <tr><td>6.0</td><td>48.129</td></tr> <tr><td>7.0</td><td>48.129</td></tr> <tr><td>8.0</td><td>48.129</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	48.131	0.5	48.131	1.0	48.130	2.0	48.130	3.0	48.130	4.0	48.129	5.0	48.129	6.0	48.129	7.0	48.129	8.0	48.129
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8.0	48.129																							
<p>* The characteristic of AC115V is equal.</p>																								



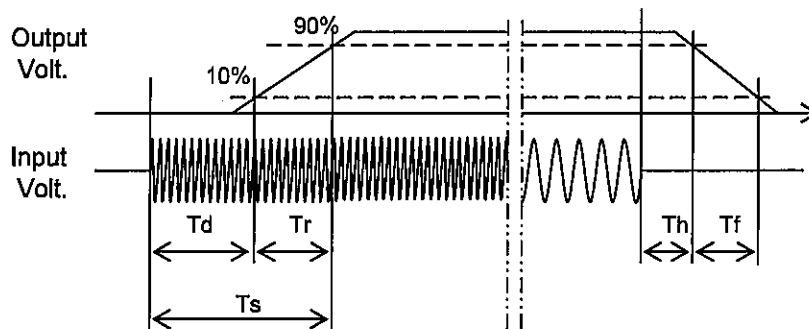
Model	PLA100F-48	Temperature 25°C Testing Circuitry Figure A
Item	Rise and Fall Time	
Object	+48V2.1A	

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
115 V		449.0	89.0	538.0	37.0	46.8
230 V		435.0	88.5	523.5	44.8	47.5





Model		PLA100F-48																																	
Item		Hold-Up Time																																	
Object		+48V2.1A																																	
Temperature		25°C																																	
Testing Circuitry		Figure A																																	
1.Graph		2.Values																																	
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Input Voltage [V]	Hold-Up Time [ms]																																		
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<p>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.</p>		<p>※1:Load 80%                  ※2:Load 90%</p>																																	



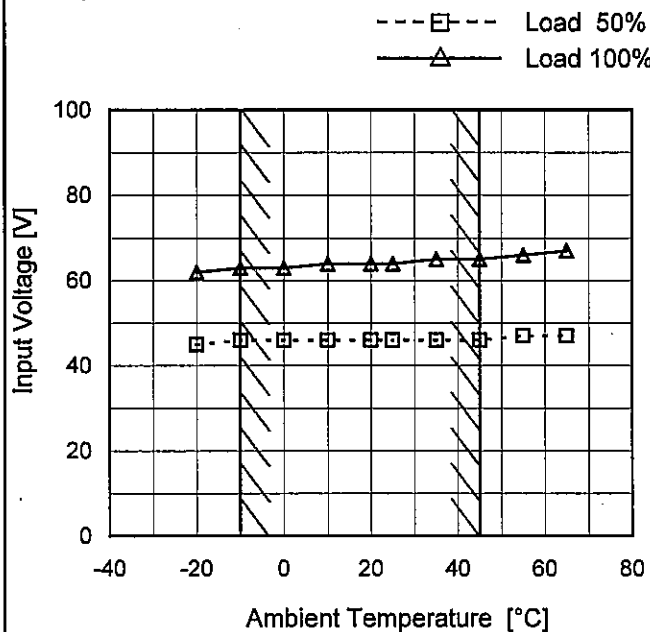
<p>Model PLA100F-48</p> <p>Item Instantaneous Interruption Compensation</p> <p>Object +48V2.1A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																			
<p>1. Graph</p> <p>—△— Input Volt. 100V</p> <p>- - □ - - Input Volt. 115V</p> <p>- · ○ - · Input Volt. 230V</p> <p>Instantaneous Compensation Time [ms]</p> <p>Load Current [A]</p>		<p>2. Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.40</td><td>172</td><td>172</td><td>213</td></tr> <tr><td>0.80</td><td>89</td><td>89</td><td>112</td></tr> <tr><td>1.20</td><td>62</td><td>63</td><td>77</td></tr> <tr><td>1.60</td><td>46</td><td>47</td><td>57</td></tr> <tr><td>1.90</td><td>38</td><td>38</td><td>48</td></tr> <tr><td>2.10</td><td>31</td><td>35</td><td>43</td></tr> <tr><td>2.31</td><td>-</td><td>28</td><td>38</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	Load Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0.00	-	-	-	0.40	172	172	213	0.80	89	89	112	1.20	62	63	77	1.60	46	47	57	1.90	38	38	48	2.10	31	35	43	2.31	-	28	38	--	-	-	-	--	-	-	-	--	-	-	-
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<p>Note: Slanted line shows the range of the rated load current.</p>																																																					



Model	PLA100F-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V2.1A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	45	62
-10	46	63
0	46	63
10	46	64
20	46	64
25	46	64
35	46	65
45	46	65
55	47	66
65	47	67
--	-	-

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



<p>Model PLA100F-48</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																																												
Item	Overcurrent Protection																																													
Object	+48V2.1A																																													
<p>1.Graph</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>————— Input Volt. 115V</p> <p>————— Input Volt. 230V</p> </div> </div> <p>Note: Slanted line shows the range of the rated load current.</p>		<p>2.Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>45.6</td><td>2.49</td><td>2.57</td></tr> <tr><td>43.2</td><td>2.53</td><td>2.27</td></tr> <tr><td>38.4</td><td>2.60</td><td>2.67</td></tr> <tr><td>33.6</td><td>2.68</td><td>2.75</td></tr> <tr><td>28.8</td><td>2.77</td><td>2.84</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> </tbody> </table>	Output Voltage [V]	Load Current [A]		Input Volt. 115[V]	Input Volt. 230[V]	45.6	2.49	2.57	43.2	2.53	2.27	38.4	2.60	2.67	33.6	2.68	2.75	28.8	2.77	2.84	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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<p><b>Model</b> PLA100F-48</p> <p><b>Item</b> Overvoltage Protection</p> <p><b>Object</b> +48V2.1A</p>		<p>Testing Circuitry Figure A</p>																																						
<p>1.Graph</p> <div style="text-align: center;"> <p>—△— Input Volt. 115V</p> <p>---□--- Input Volt. 230V</p> </div> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: right;">Load 0%</p>			<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Operating Point [V]</th> </tr> <tr> <th>Input Volt. 115[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>57.08</td><td>57.08</td></tr> <tr><td>-10</td><td>57.08</td><td>57.08</td></tr> <tr><td>0</td><td>57.08</td><td>57.08</td></tr> <tr><td>10</td><td>57.08</td><td>57.08</td></tr> <tr><td>20</td><td>57.25</td><td>57.25</td></tr> <tr><td>25</td><td>57.48</td><td>57.48</td></tr> <tr><td>35</td><td>57.95</td><td>57.95</td></tr> <tr><td>45</td><td>58.36</td><td>58.36</td></tr> <tr><td>55</td><td>58.83</td><td>58.83</td></tr> <tr><td>65</td><td>59.24</td><td>59.24</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Ambient Temperature [°C]	Operating Point [V]		Input Volt. 115[V]	Input Volt. 230[V]	-20	57.08	57.08	-10	57.08	57.08	0	57.08	57.08	10	57.08	57.08	20	57.25	57.25	25	57.48	57.48	35	57.95	57.95	45	58.36	58.36	55	58.83	58.83	65	59.24	59.24	--	-
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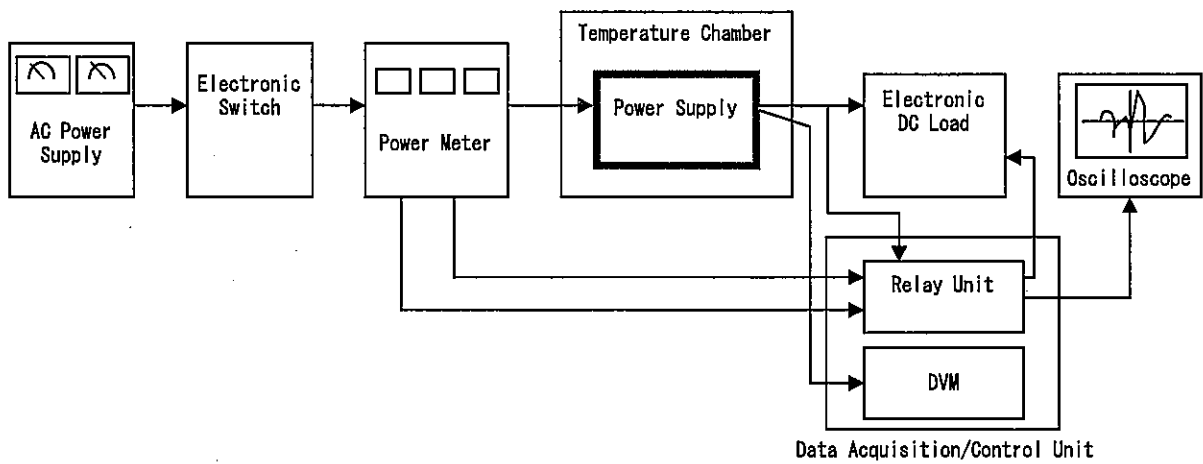


Figure A

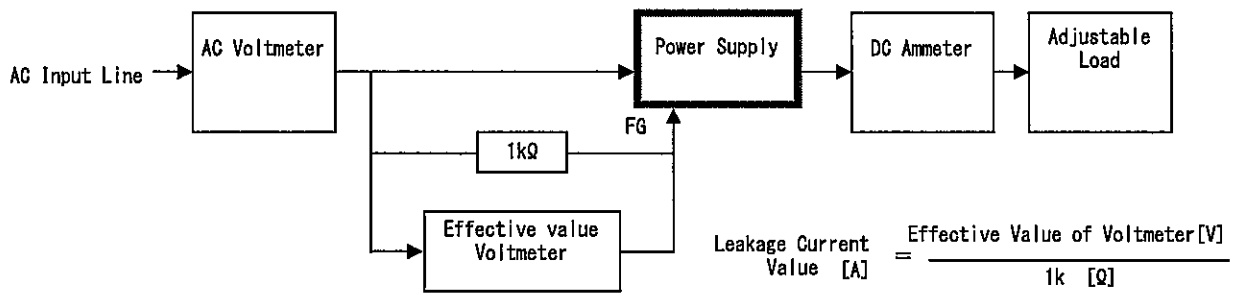


Figure B ( DEN-AN )

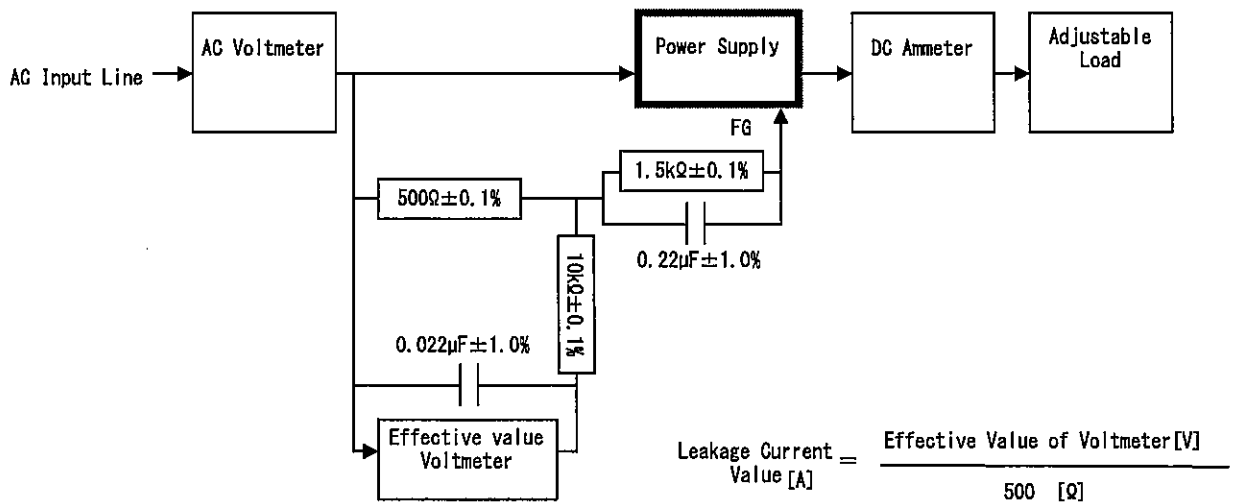


Figure B ( IEC60950-1 )

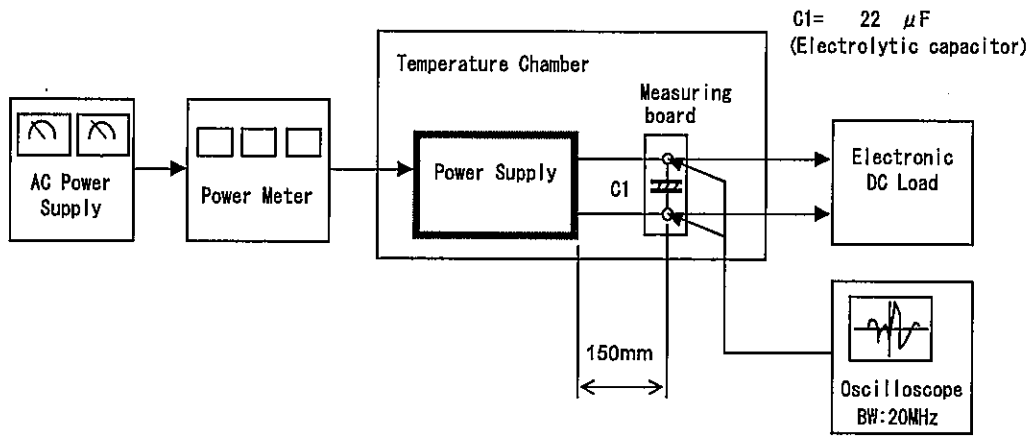


Figure C