

# TEST DATA OF PJA100F-48

Regulated DC Power Supply  
August 30, 2016

Approved by : Yukihiro Takehashi  
Yukihiro Takehashi Design Manager

Prepared by : Atsushi Nishikawa  
Atsushi Nishikawa 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)

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Model		PJA100F-48																																																				
Item		Input Current (by Load Current)																																																				
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1.Graph <div><div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>115V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>230V</div></div></div><div>Input Current [A]</div><div>Load Current [A]</div><div>Note: Slanted line shows the range of the rated load current.</div></div>																																																						
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# COSEL

Model

PJA100F-48

Item

Power Factor (by Load Current)

Temperature

25°C

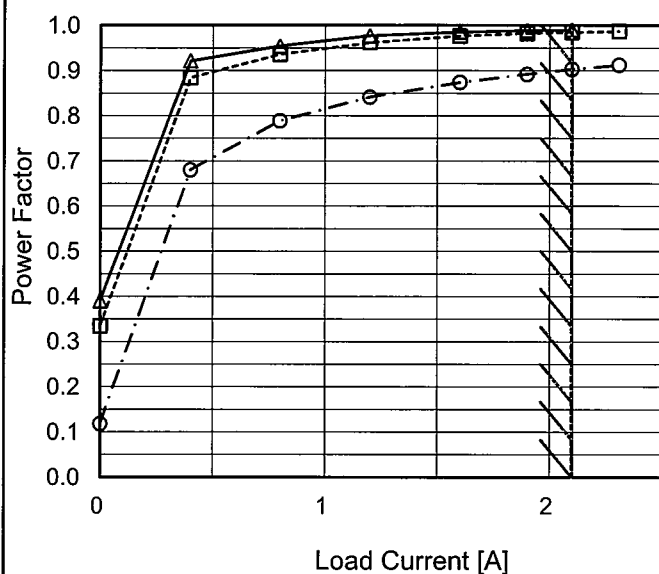
Testing Circuitry

Figure A

Object

1. Graph

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



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

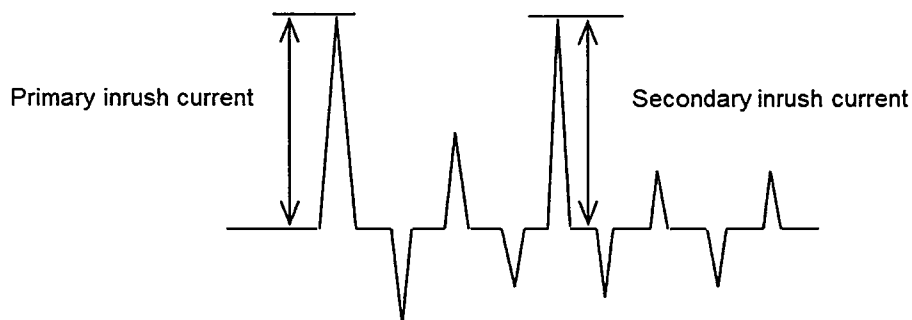
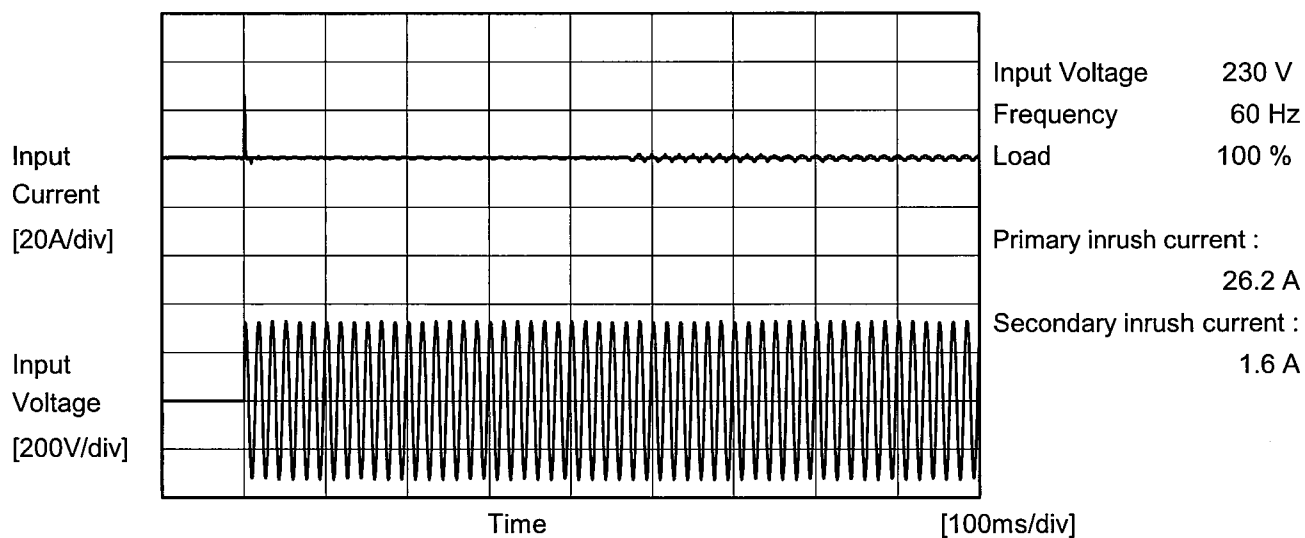
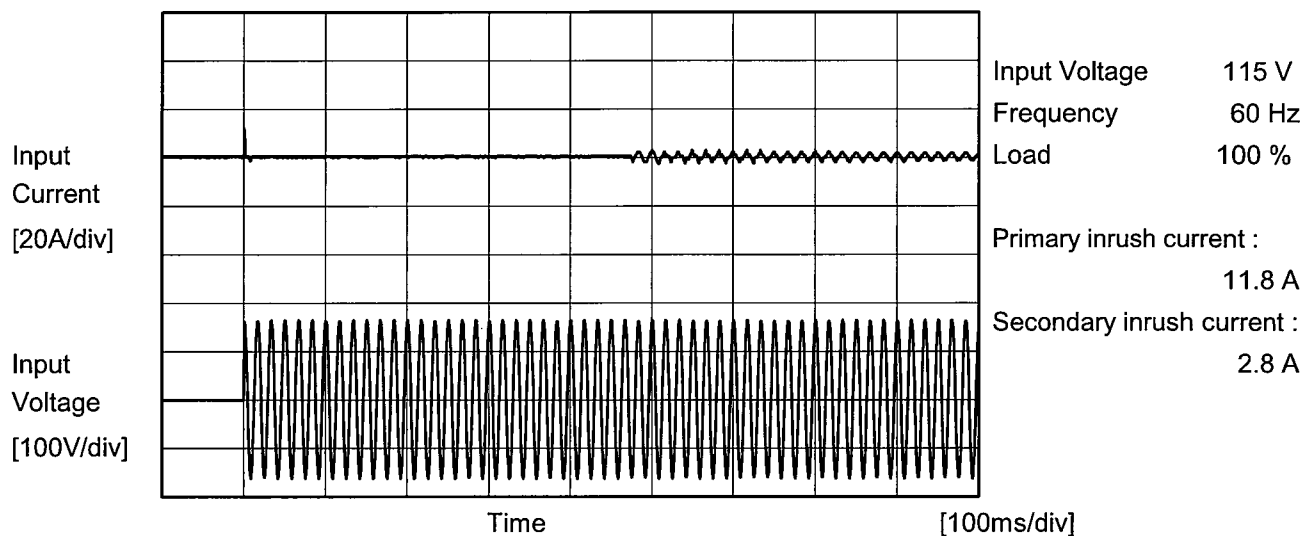
2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.390	0.334	0.118
0.40	0.922	0.884	0.680
0.80	0.955	0.936	0.789
1.20	0.977	0.962	0.842
1.60	0.986	0.977	0.874
1.90	0.989	0.982	0.892
2.10	0.990	0.985	0.903
2.31	-	0.987	0.912
--	-	-	-
--	-	-	-
--	-	-	-



**COSEL**

Model	PJA100F-48	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		



**COSEL**

		Temperature 25°C Testing Circuitry Figure B
Model	PJA100F-48	
Item	Leakage Current	
Object	_____	

## 1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	115 [V]	240 [V]	
DEN-AN	Both phases	0.19	0.21	0.42	Operation
	One of phases	0.28	0.32	0.71	Stand by
IEC60950-1	Both phases	0.14	0.16	0.43	Operation
	One of phases	0.26	0.31	0.72	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	PJA100F-48	Temperature 25°C Testing Circuitry Figure A																															
Item	Line Regulation																																
Object	+48V2.1A																																
1.Graph		2.Values																															
<div><div><div>Output Voltage [V]</div><div><div>48.40</div><div>48.30</div><div>48.20</div><div>48.10</div><div>48.00</div><div>47.90</div><div>47.80</div><div>47.70</div></div></div><div><div>Input Voltage [V]</div><div><div>50</div><div>100</div><div>150</div><div>200</div><div>250</div><div>300</div></div></div></div> <div><div><div>---</div><div>□</div><div>---</div></div><div>Load 50%</div></div> <div><div>---</div><div>△</div><div>---</div></div> <div>Load 100%</div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>85</td><td>48.307</td><td>48.308 ※1</td></tr><tr><td>100</td><td>48.307</td><td>48.307 ※2</td></tr><tr><td>115</td><td>48.307</td><td>48.307</td></tr><tr><td>200</td><td>48.308</td><td>48.307</td></tr><tr><td>230</td><td>48.308</td><td>48.308</td></tr><tr><td>264</td><td>48.309</td><td>48.308</td></tr><tr><td>280</td><td>48.309</td><td>48.309</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	85	48.307	48.308 ※1	100	48.307	48.307 ※2	115	48.307	48.307	200	48.308	48.307	230	48.308	48.308	264	48.309	48.308	280	48.309	48.309	--	-	-	--	-	-	<div>※1:Load 80%</div> <div>※2:Load 90%</div>	
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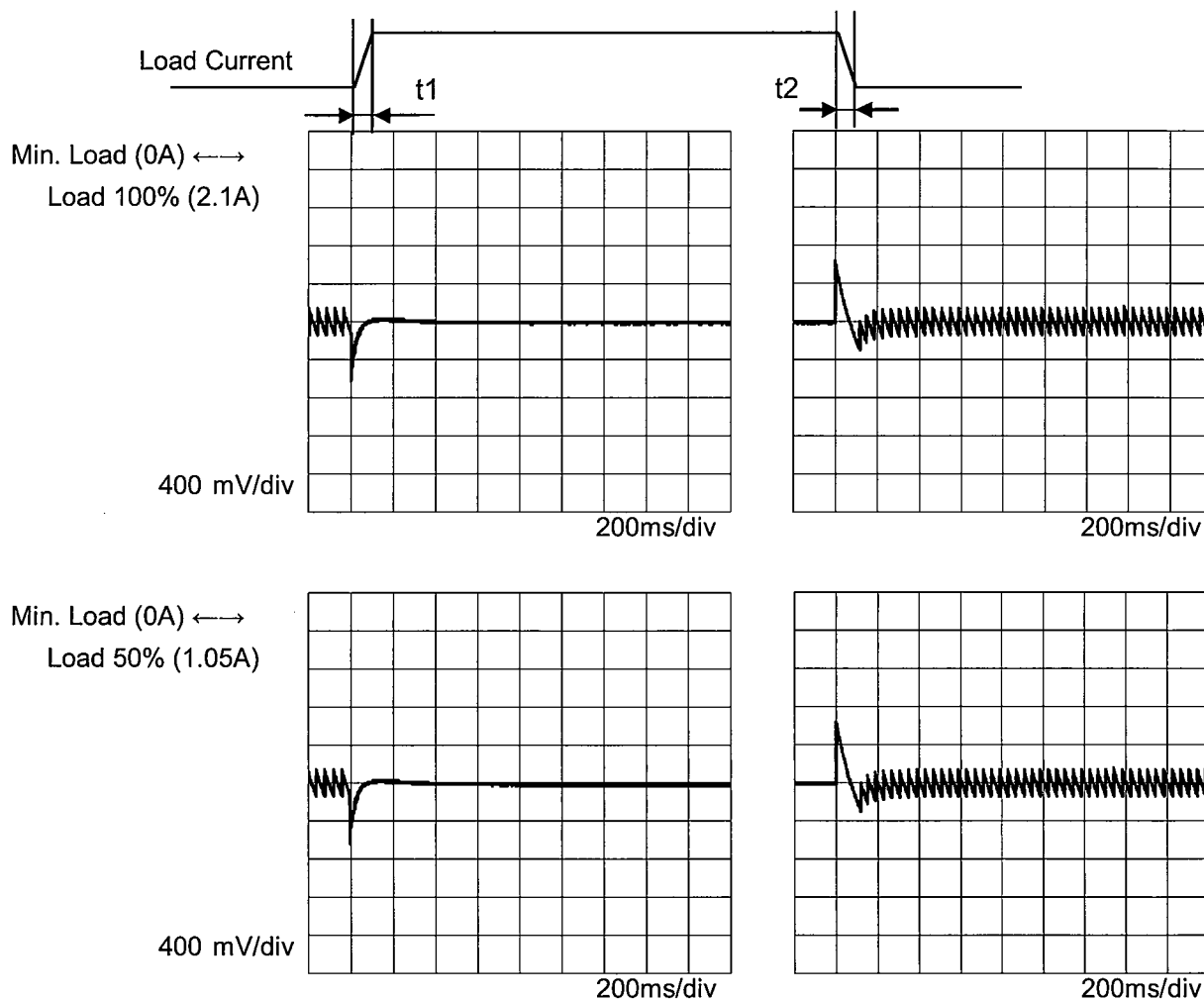
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1.Graph <div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>115V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>230V</div></div></div> <table><thead><tr><th rowspan="2">Load 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>48.270</td><td>48.243</td><td>48.317</td></tr><tr><td>0.40</td><td>48.292</td><td>48.292</td><td>48.295</td></tr><tr><td>0.80</td><td>48.289</td><td>48.289</td><td>48.290</td></tr><tr><td>1.20</td><td>48.287</td><td>48.287</td><td>48.288</td></tr><tr><td>1.60</td><td>48.285</td><td>48.286</td><td>48.287</td></tr><tr><td>1.90</td><td>48.284</td><td>48.285</td><td>48.285</td></tr><tr><td>2.10</td><td>48.283</td><td>48.284</td><td>48.285</td></tr><tr><td>2.31</td><td>-</td><td>48.283</td><td>48.284</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> <p>Note: Slanted line shows the range of the rated load current.</p>					Load Current [A]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0.00	48.270	48.243	48.317	0.40	48.292	48.292	48.295	0.80	48.289	48.289	48.290	1.20	48.287	48.287	48.288	1.60	48.285	48.286	48.287	1.90	48.284	48.285	48.285	2.10	48.283	48.284	48.285	2.31	-	48.283	48.284	--	-	-	-	--	-	-	-	--	-	-	-
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2.Values																																																							

**COSEL**

Model	PJA100F-48	Temperature Testing Circuitry	25° C Figure A
Item	Dynamic Load Response		
Object	+48V2.1A		

Input Volt. 115 V  
Cycle 1000 ms

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

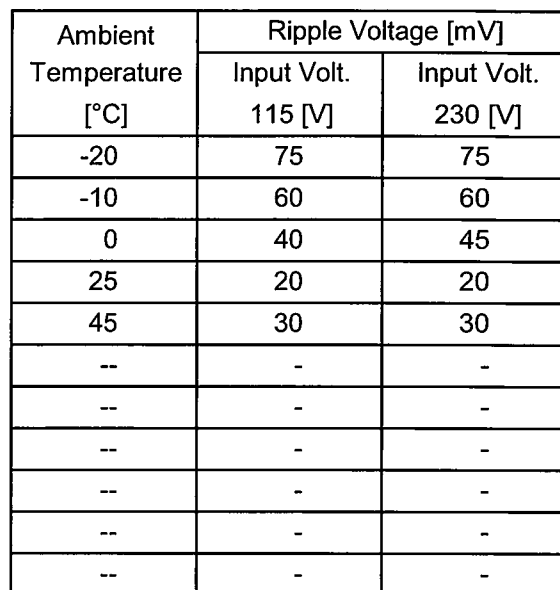


Model		PJA100F-48	Temperature 25°C Testing Circuitry Figure C
Item		Ripple Voltage (by Load Current)	
Object		+48V2.1A	
1.Graph			2.Values
<div><div><div><div><div></div><div></div></div><div>Input Volt. 115V</div></div><div><div><div></div><div></div></div><div>Input Volt. 230V</div></div></div><div><p>Ripple Voltage [mV]</p><p>Load Current [A]</p></div></div>			
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Model		PJA100F-48	Temperature		25°C																																																																										
Item		Ripple-Noise	Testing Circuitry		Figure C																																																																										
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<p>Measured by 20 MHz Oscilloscope.</p> <p>Ripple-Noise 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>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div><p>Fig. Complex Ripple Wave Form</p></div>																																																																															

Testing Circuitry Figure C

## 2.Values



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



Model		PJA100F-48
Item		Ambient Temperature Drift
Object		+48V2.1A

1.Graph

—△—

Input Volt. 100V

---□---

Input Volt. 115V

---○---

Input Volt. 230V

Output Voltage [V]

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	48.121	48.117	48.121
-10	48.153	48.152	48.154
0	48.194	48.194	48.195
10	48.225	48.225	48.226
20	48.254	48.253	48.254
25	48.267	48.266	48.267
35	48.287	48.286	48.287
45	48.305	48.304	48.305
55	48.323	48.322	48.323
65	48.335	48.334	48.334
--	-	-	-

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

**COSEL**

		Testing Circuitry Figure A
Model	PJA100F-48	
Item	Output Voltage Accuracy	
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 (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	45	230	2.1	48.305	±77	±0.2
Minimum Voltage	-10	115	2.1	48.152		

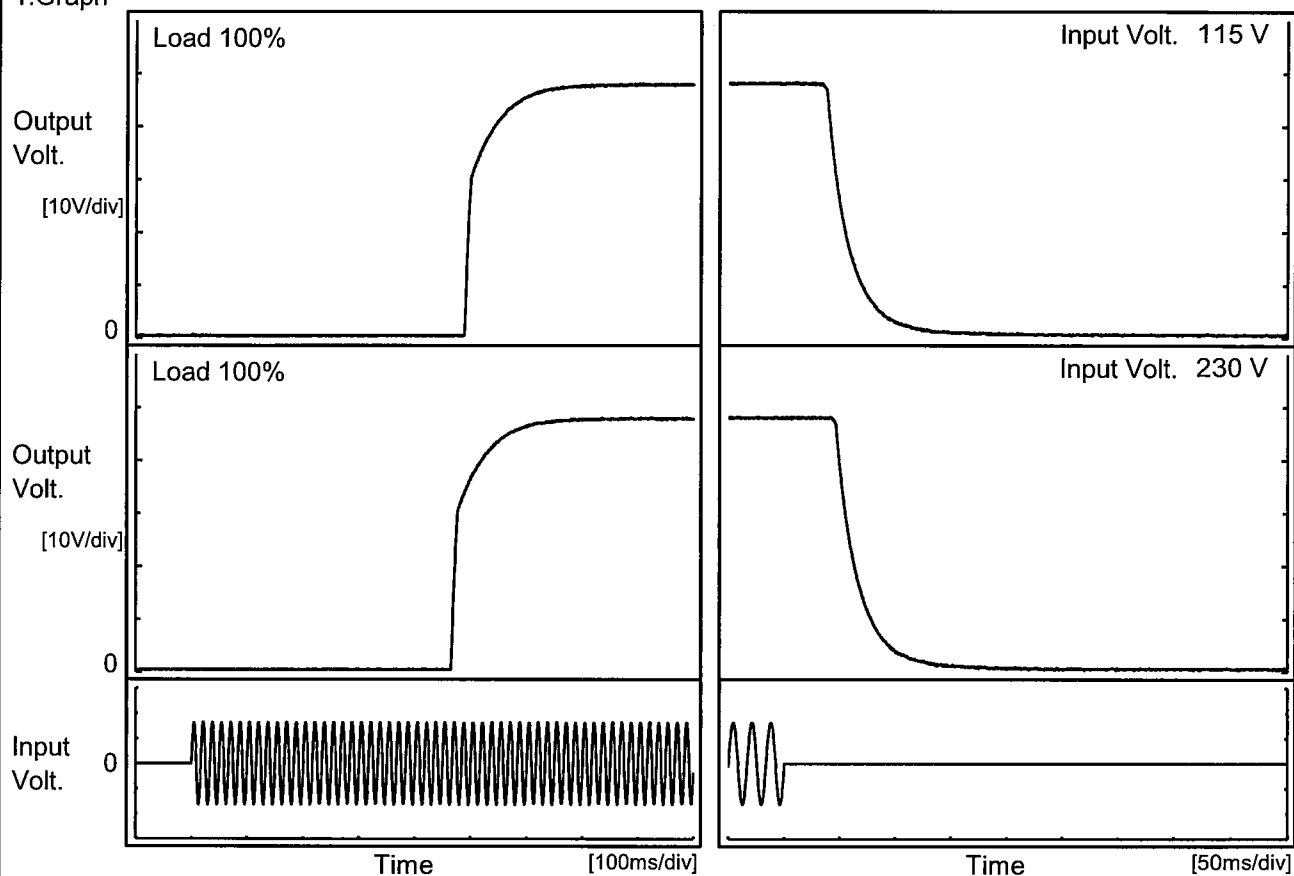


Model		PJA100F-48	
Item		Time Lapse Drift	
Object		+48V2.1A	
1.Graph		2.Values	
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# COSEL

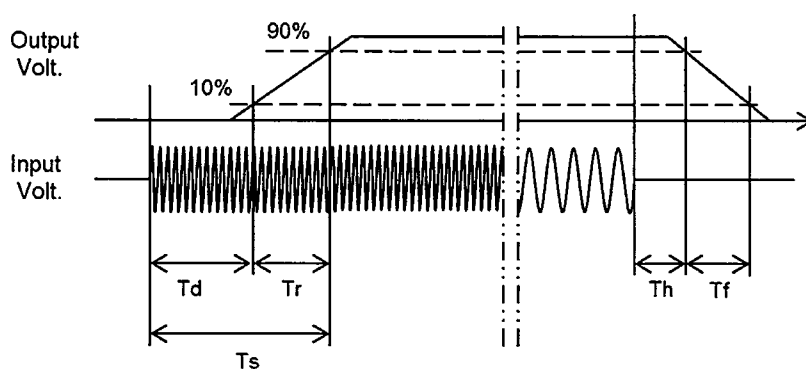
Model	PJA100F-48	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+48V2.1A		

## 1.Graph



## 2.Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
115 V		490.5	82.5	573.0	39.3	45.3
230 V		467.0	83.0	550.0	47.8	45.8



# COSEL

Model		PJA100F-48	Temperature 25°C Testing Circuitry Figure A																																
Item		Hold-Up Time																																	
Object		+48V2.1A																																	
1.Graph			2.Values																																
<div><div><div>Hold-Up Time [ms]</div><div><div>1000</div><div>100</div><div>10</div><div>1</div></div></div><div><div>50</div><div>100</div><div>150</div><div>200</div><div>250</div><div>300</div></div><div>Input Voltage [V]</div></div> <div><div><div>---</div><div>□</div><div>---</div><div>Load 50%</div></div><div><div>---</div><div>△</div><div>---</div><div>Load 100%</div></div></div>			<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Hold-Up Time [ms]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>85</td><td>46</td><td>74 ※1</td></tr><tr><td>100</td><td>42</td><td>75 ※2</td></tr><tr><td>115</td><td>38</td><td>74</td></tr><tr><td>200</td><td>38</td><td>79</td></tr><tr><td>230</td><td>47</td><td>91</td></tr><tr><td>264</td><td>47</td><td>93</td></tr><tr><td>280</td><td>47</td><td>93</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>	Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	85	46	74 ※1	100	42	75 ※2	115	38	74	200	38	79	230	47	91	264	47	93	280	47	93	--	-	-	--	-	-
Input Voltage [V]	Hold-Up Time [ms]																																		
	Load 50%	Load 100%																																	
85	46	74 ※1																																	
100	42	75 ※2																																	
115	38	74																																	
200	38	79																																	
230	47	91																																	
264	47	93																																	
280	47	93																																	
--	-	-																																	
--	-	-																																	
<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>																																

Model		PJA100F-48	Temperature		25°C																																																			
Item		Instantaneous Interruption Compensation	Testing Circuitry		Figure A																																																			
Object		+48V2.1A																																																						
1.Graph			2.Values																																																					
<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>115V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>230V</div></div></div> <div><div><div>Instantaneous Compensation Time [ms]</div><div>1000</div><div>100</div><div>10</div><div>1</div></div><div></div><div><div>0</div><div>1</div><div>2</div></div><div><div>Load Current [A]</div></div></div> <div><div>Note: Slanted line shows the range of the rated load current.</div></div>			<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>0.40</td><td>165</td><td>170</td><td>200</td></tr><tr><td>0.80</td><td>95</td><td>95</td><td>117</td></tr><tr><td>1.20</td><td>65</td><td>65</td><td>81</td></tr><tr><td>1.60</td><td>48</td><td>48</td><td>61</td></tr><tr><td>1.90</td><td>39</td><td>39</td><td>50</td></tr><tr><td>2.10</td><td>31</td><td>34</td><td>43</td></tr><tr><td>2.31</td><td>-</td><td>27</td><td>35</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></table>			Load Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0.00	-	-	-	0.40	165	170	200	0.80	95	95	117	1.20	65	65	81	1.60	48	48	61	1.90	39	39	50	2.10	31	34	43	2.31	-	27	35	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																							
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]																																																					
0.00	-	-	-																																																					
0.40	165	170	200																																																					
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1.20	65	65	81																																																					
1.60	48	48	61																																																					
1.90	39	39	50																																																					
2.10	31	34	43																																																					
2.31	-	27	35																																																					
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Model	PJA100F-48																																								
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry    Figure A																																							
Object	+48V2.1A																																								
1.Graph		2.Values																																							
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <div>Input Voltage [V]</div> <div>Ambient Temperature [°C]</div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>-20</td><td>45</td><td>64</td></tr><tr><td>-10</td><td>45</td><td>64</td></tr><tr><td>0</td><td>45</td><td>64</td></tr><tr><td>10</td><td>46</td><td>64</td></tr><tr><td>20</td><td>46</td><td>65</td></tr><tr><td>25</td><td>46</td><td>65</td></tr><tr><td>35</td><td>46</td><td>65</td></tr><tr><td>45</td><td>47</td><td>65</td></tr><tr><td>55</td><td>47</td><td>66</td></tr><tr><td>65</td><td>47</td><td>66</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-20	45	64	-10	45	64	0	45	64	10	46	64	20	46	65	25	46	65	35	46	65	45	47	65	55	47	66	65	47	66	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																								
	Load 50%	Load 100%																																							
-20	45	64																																							
-10	45	64																																							
0	45	64																																							
10	46	64																																							
20	46	65																																							
25	46	65																																							
35	46	65																																							
45	47	65																																							
55	47	66																																							
65	47	66																																							
--	-	-																																							
Note: Slanted line shows the range of the rated ambient temperature.																																									

Model		PJA100F-48	
Item		Overcurrent Protection	
Object		+48V2.1A	

1.Graph

Input Volt. 115V

Input Volt. 230V

Output Voltage [V]

60

40

20

0

0

1

2

3

4

Load Current [A]

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

Intermittent operation occurs when the output voltage is from 27.6V to 0V.

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
45.6	2.54	2.60
43.2	2.10	2.63
38.4	2.64	2.70
33.6	2.72	2.77
28.8	2.80	2.85
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-





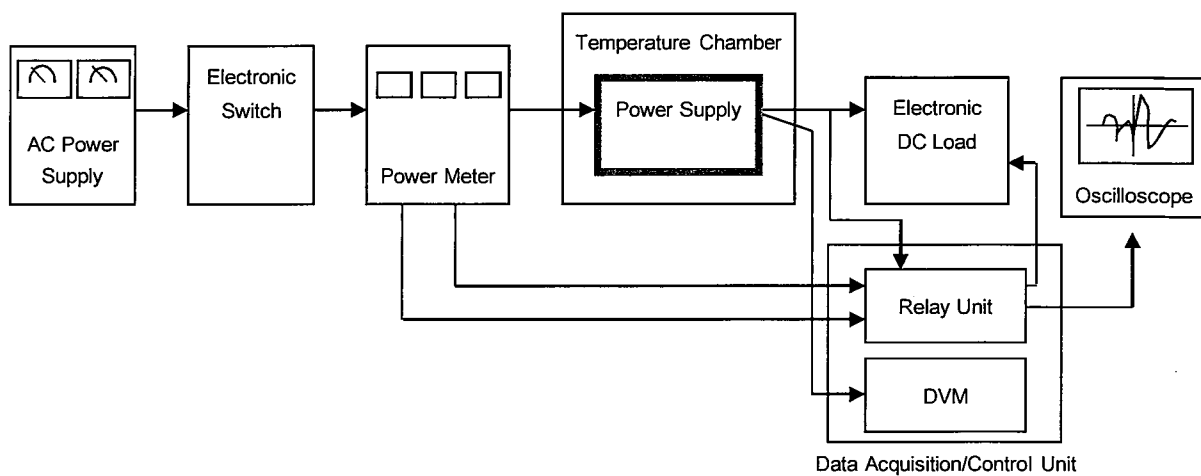


Figure A

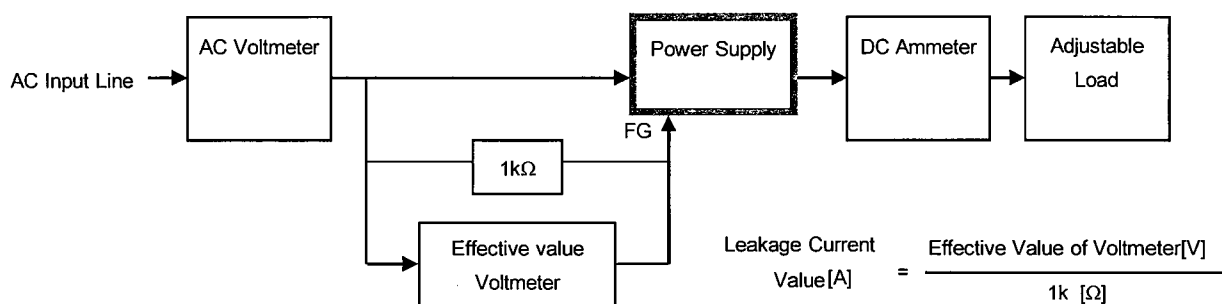


Figure B ( DEN-AN )

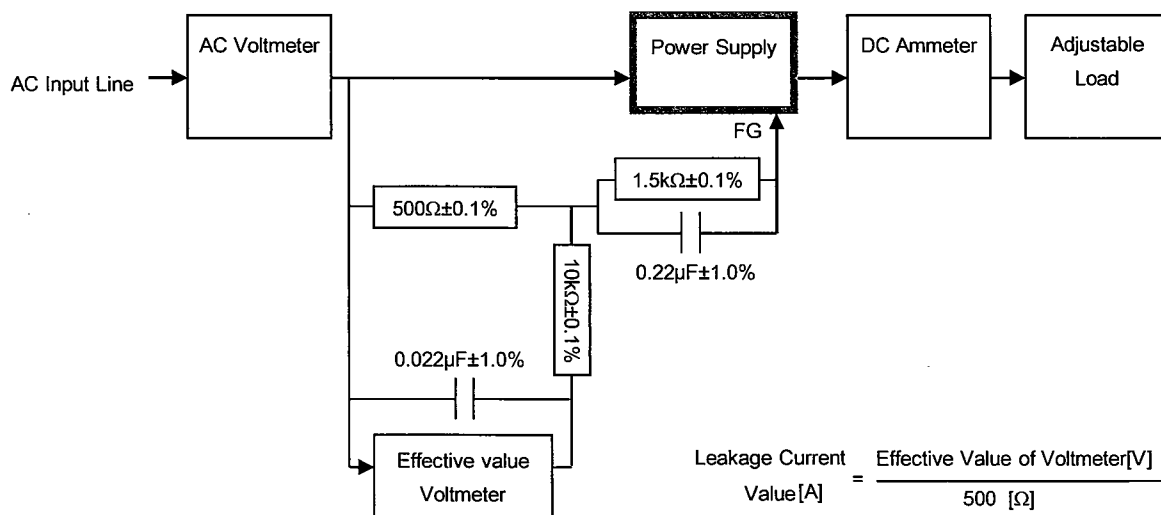


Figure B ( IEC60950-1 )

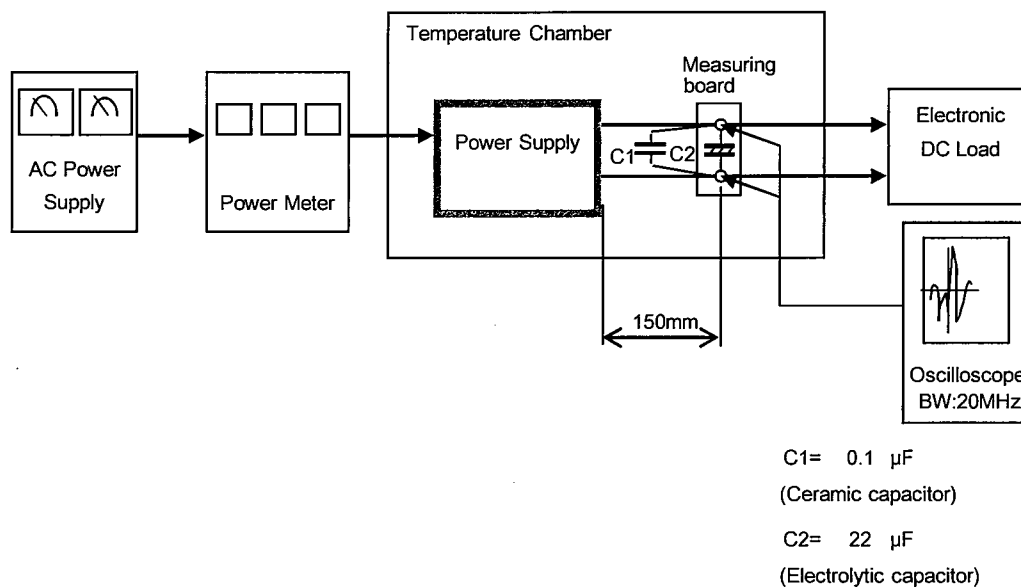


Figure C