

# TEST DATA OF PLA300F-36

Regulated DC Power Supply  
August 28, 2017

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Yukihiro Takehashi Design Manager

Prepared by : Atsushi Nishikawa  
Atsushi Nishikawa Design Engineer

**COSEL CO.,LTD.**



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Model		PLA300F-36		Temperature 25°C																																																				
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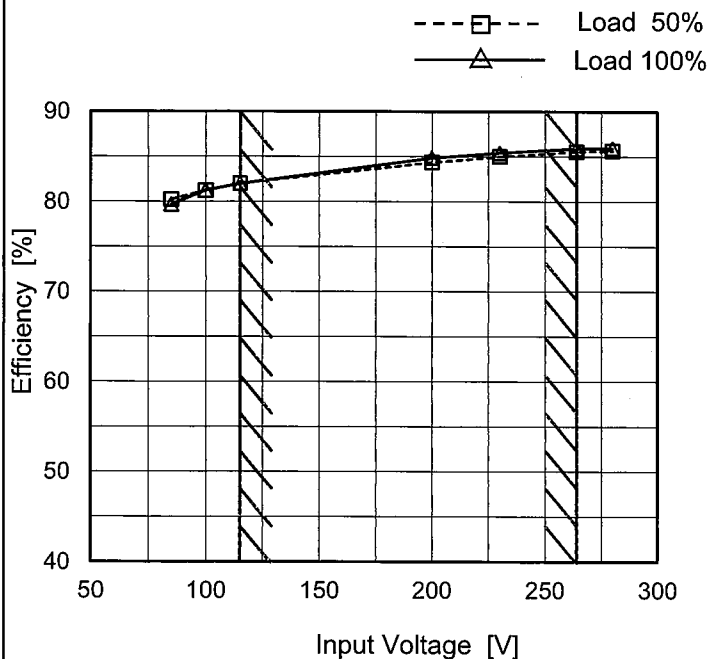
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Model	PLA300F-36
Item	Efficiency (by Input Voltage)
Object	_____

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	80.2	79.7 ※1
100	81.2	81.3 ※2
115	82.0	82.0
200	84.4	84.9
230	85.0	85.4
264	85.6	85.9
280	85.7	85.9
--	-	-
--	-	-

※1: Load 80%  
※2: Load 90%



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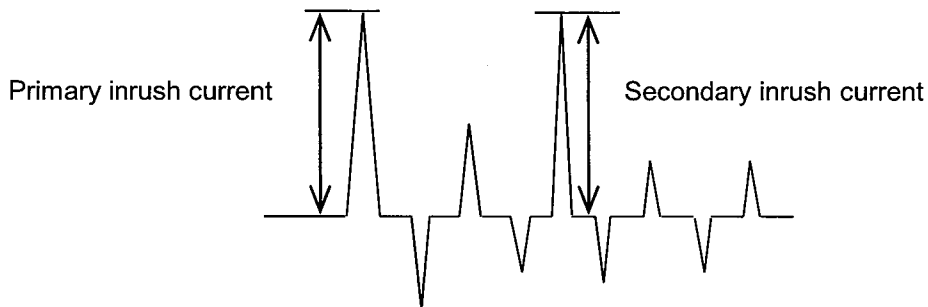
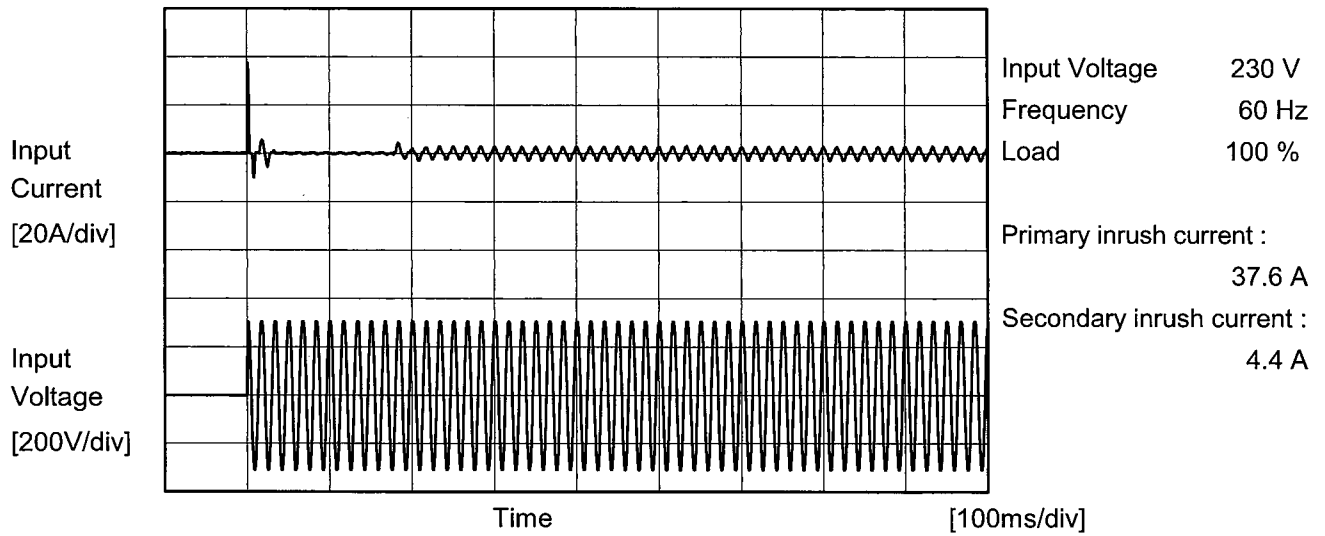
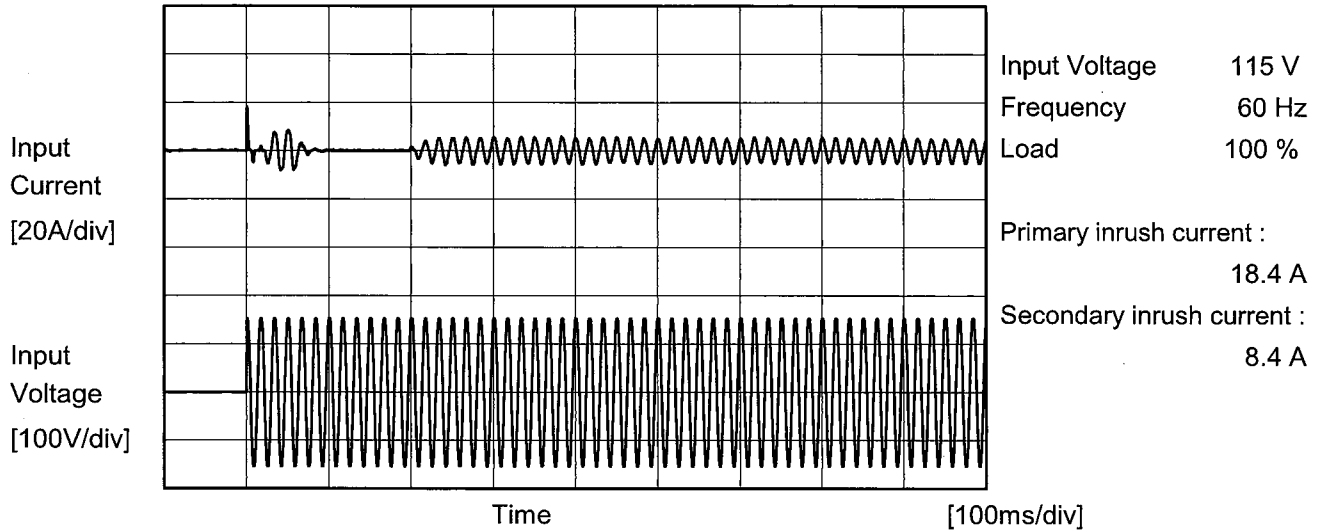


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Note: Slanted line shows the range of the rated load current.																																																							





Model		PLA300F-36	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current	
Object		_____	





<b>COSEL</b>		Temperature 25°C Testing Circuitry Figure B
Model	PLA300F-36	
Item	Leakage Current	
Object	_____	

1.Results

Standards		Input Volt.			Note
		100 [V]	115 [V]	240 [V]	
DEN-AN	Both phases	0.24	0.28	0.44	Operation
	One of phases	0.30	0.30	0.60	Stand by
IEC60950-1	Both phases	0.17	0.18	0.40	Operation
	One of phases	0.24	0.28	0.60	Stand by

The value for "One of phases" is the reference value only.

2.Condition

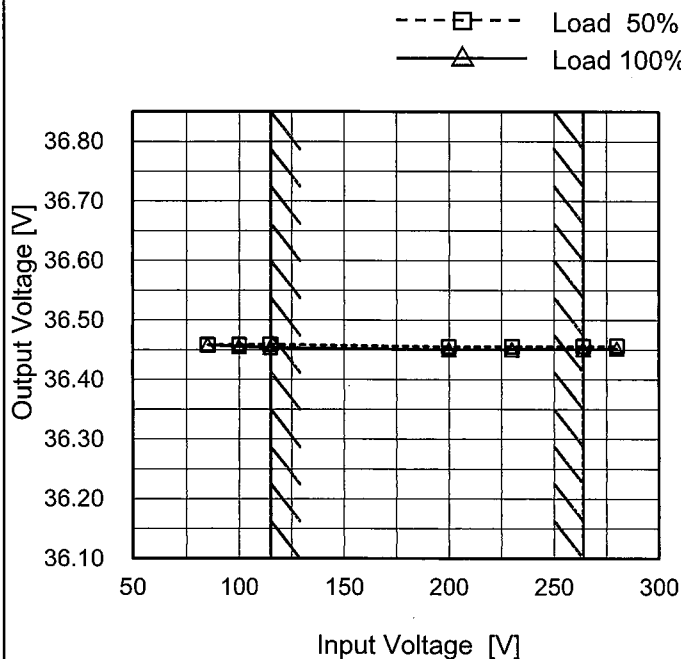
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.



Model	PLA300F-36
Item	Line Regulation
Object	+36V8.4A

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	36.459	36.459 ※1
100	36.459	36.456 ※2
115	36.459	36.454
200	36.455	36.451
230	36.456	36.451
264	36.456	36.451
280	36.457	36.453
--	-	-
--	-	-

※1: Load 80%  
 ※2: Load 90%

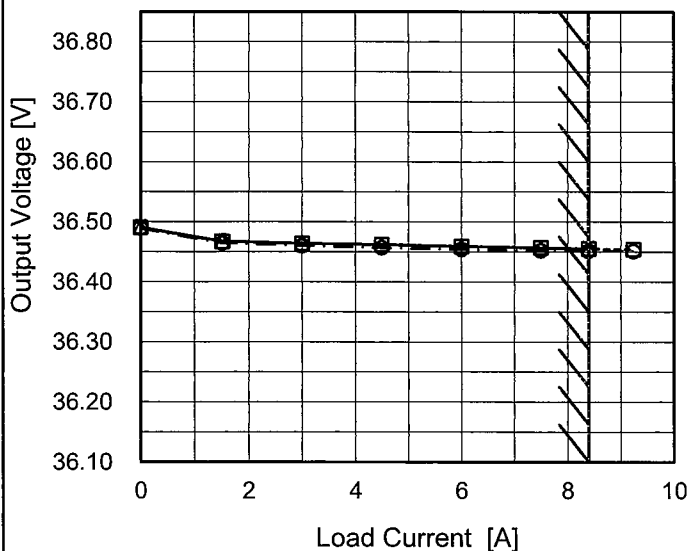


Model	PLA300F-36
Item	Load Regulation
Object	+36V8.4A

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

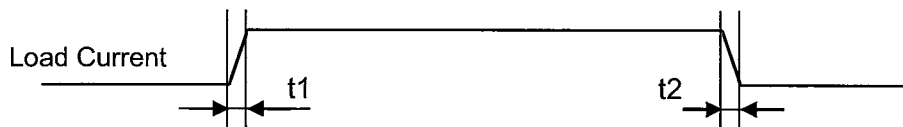
Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	36.491	36.491	36.490
1.50	36.468	36.468	36.465
3.00	36.465	36.464	36.461
4.50	36.462	36.462	36.457
6.00	36.459	36.459	36.454
7.50	36.457	36.457	36.452
8.40	36.456	36.456	36.452
9.24	-	36.455	36.452
--	-	-	-
--	-	-	-
--	-	-	-



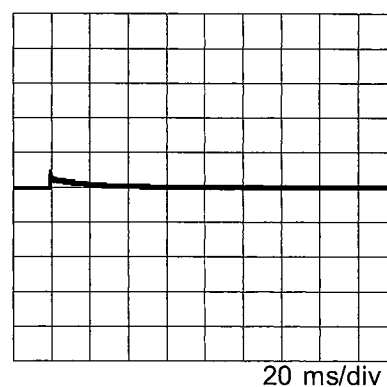
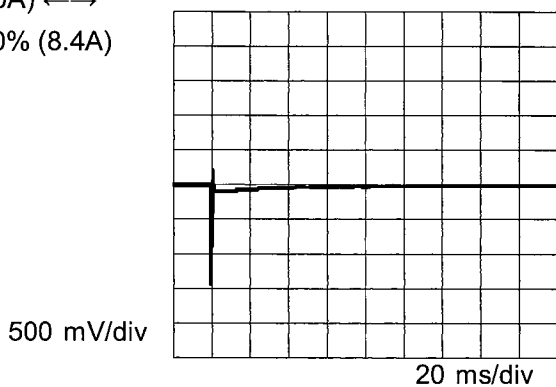
Model	PLA300F-36	Temperature	25° C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+36V8.4A		

Input Volt. 115 V  
Cycle 1000 ms

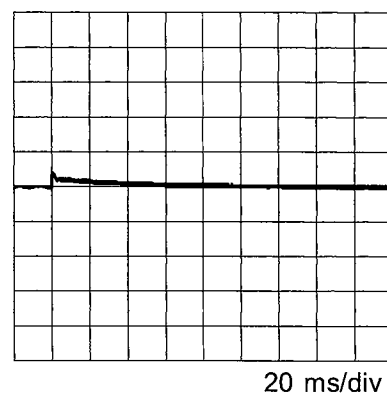
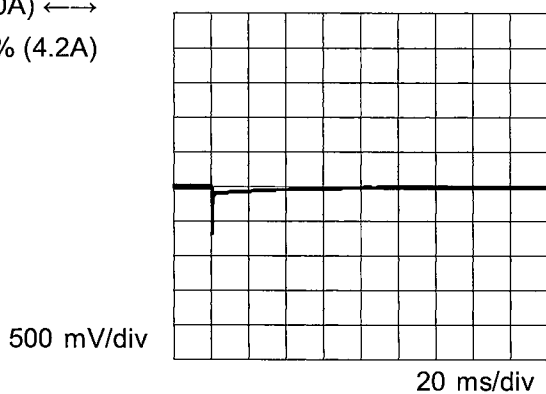
Response.  $t_1=t_2=50\mu\text{s}$ . Typ



Min. Load (0A) ←→  
Load 100% (8.4A)



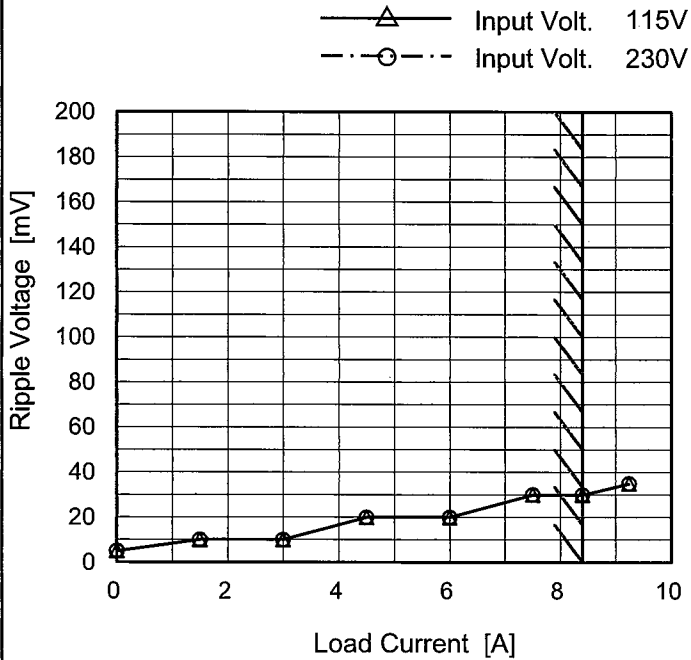
Min. Load (0A) ←→  
Load 50% (4.2A)





Model	PLA300F-36	Temperature	25°C
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure C
Object	+36V8.4A		

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	5	5
1.50	10	10
3.00	10	10
4.50	20	20
6.00	20	20
7.50	30	30
8.40	30	30
9.24	35	35
--	-	-
--	-	-
--	-	-

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.

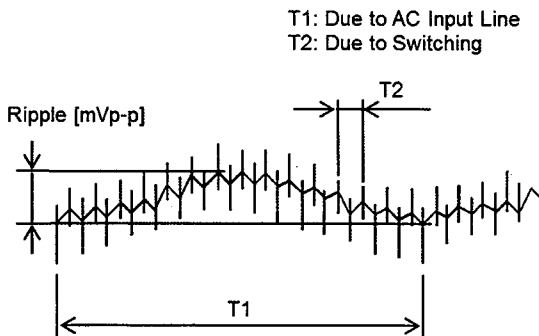
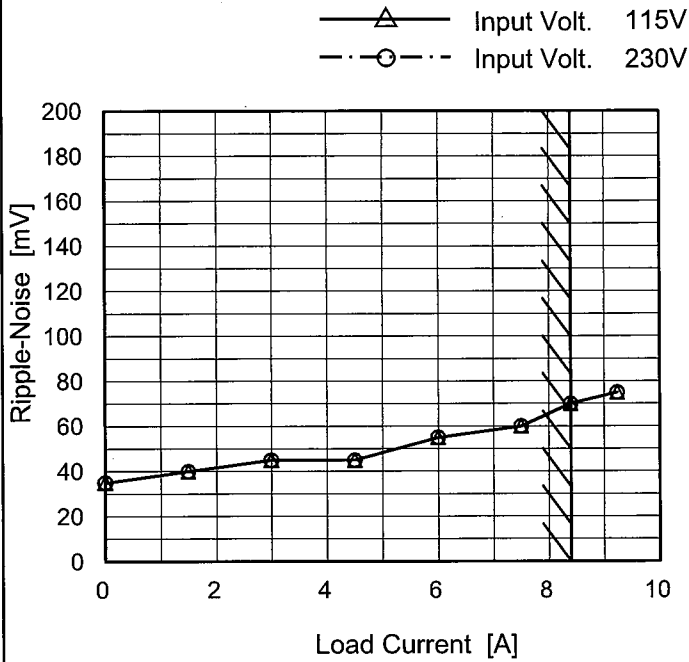


Fig. Complex Ripple Wave Form

Model	PLA300F-36	Temperature	25°C
Item	Ripple-Noise	Testing Circuitry	Figure C
Object	+36V8.4A		

1. Graph



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	35	35
1.50	40	40
3.00	45	45
4.50	45	45
6.00	55	55
7.50	60	60
8.40	70	70
9.24	75	75
--	-	-
--	-	-
--	-	-

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.

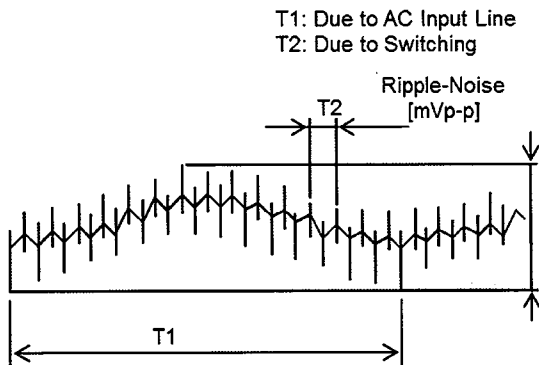


Fig. Complex Ripple Wave Form



<b>COSEL</b>																																								
Model	PLA300F-36																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure C																																						
Object	+36V8.4A																																							
<p>1. Graph</p> <div style="text-align: right; margin-bottom: 5px;"> <span style="border-bottom: 1px dashed black; padding: 0 5px;">□</span> Input Volt. 115V  <span style="border-bottom: 1px solid black; padding: 0 5px;">△</span> Input Volt. 230V         </div> <p style="text-align: center;">Ambient Temperature [°C] Load 100%</p>		<p>2. Values</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</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>-30</td><td>45</td><td>45</td></tr> <tr><td>-10</td><td>40</td><td>40</td></tr> <tr><td>0</td><td>30</td><td>30</td></tr> <tr><td>25</td><td>30</td><td>30</td></tr> <tr><td>50</td><td>20</td><td>20</td></tr> <tr><td>60</td><td>20</td><td>20</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>	Ambient Temperature [°C]	Ripple Voltage [mV]		Input Volt. 115 [V]	Input Volt. 230 [V]	-30	45	45	-10	40	40	0	30	30	25	30	30	50	20	20	60	20	20	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Measured by 20 MHz Oscilloscope.            Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



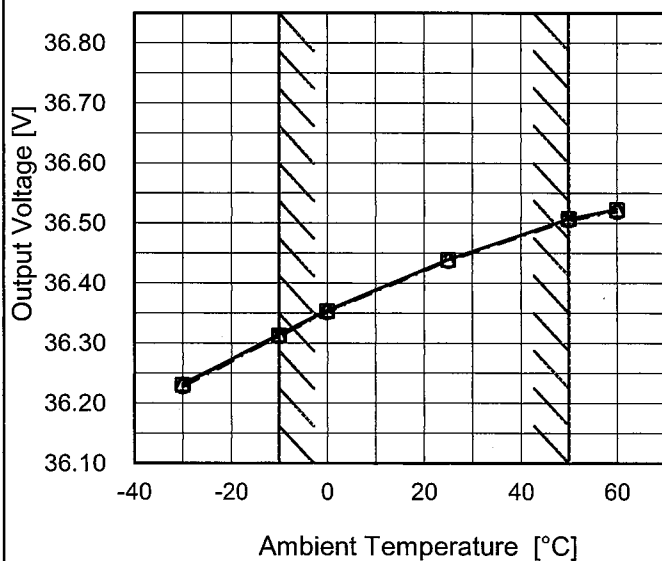


Model	PLA300F-36
Item	Ambient Temperature Drift
Object	+36V8.4A

Testing Circuitry Figure A

1. Graph

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



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]
-30	36.232	36.230	36.227
-10	36.314	36.313	36.311
0	36.355	36.353	36.351
25	36.440	36.439	36.437
50	36.508	36.507	36.505
60	36.523	36.522	36.519
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



<b>COSEL</b>		Testing Circuitry Figure A
Model	PLA300F-36	
Item	Output Voltage Accuracy	
Object	+36V8.4A	

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 - 50°C

Input Voltage : 115 - 264V

Load Current : 0 - 8.4A

\* 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	50	115	8.4	36.507	±98	±0.3
Minimum Voltage	-10	230	8.4	36.311		

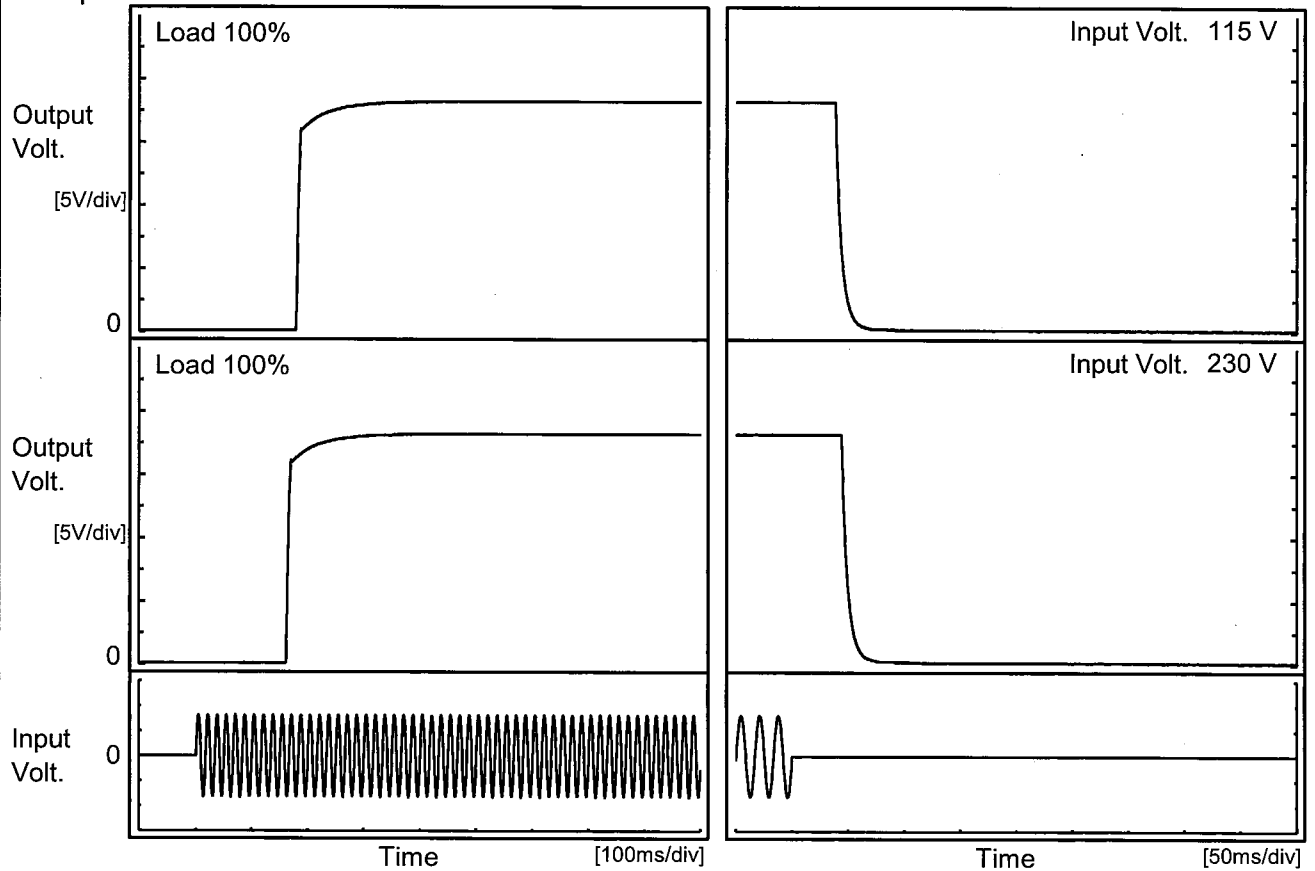


<b>COSEL</b>																								
Model	PLA300F-36																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+36V8.4A																							
<p>1. Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 230V Load 100%</p>		<p>2. 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>36.420</td></tr> <tr><td>0.5</td><td>36.461</td></tr> <tr><td>1.0</td><td>36.462</td></tr> <tr><td>2.0</td><td>36.462</td></tr> <tr><td>3.0</td><td>36.462</td></tr> <tr><td>4.0</td><td>36.462</td></tr> <tr><td>5.0</td><td>36.462</td></tr> <tr><td>6.0</td><td>36.463</td></tr> <tr><td>7.0</td><td>36.462</td></tr> <tr><td>8.0</td><td>36.463</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	36.420	0.5	36.461	1.0	36.462	2.0	36.462	3.0	36.462	4.0	36.462	5.0	36.462	6.0	36.463	7.0	36.462	8.0	36.463
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<p>* The characteristic of AC115V is equal.</p>																								



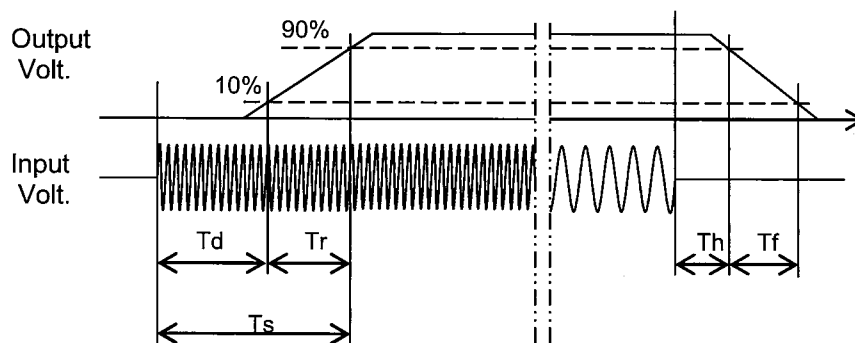
Model		PLA300F-36	Temperature 25°C Testing Circuitry Figure A
Item		Rise and Fall Time	
Object		+36V8.4A	

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
115 V		179.5	17.0	196.5	39.3	12.0
230 V		162.5	17.0	179.5	44.8	12.0





<p>Model PLA300F-36</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																																
<p>Item Hold-Up Time</p>																																		
<p>Object +36V8.4A</p>																																		
<p>1. Graph</p> <p>---□--- Load 50% —△— Load 100%</p>		<p>2. Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>85</td> <td>73</td> <td>46 ※1</td> </tr> <tr> <td>100</td> <td>75</td> <td>42 ※2</td> </tr> <tr> <td>115</td> <td>76</td> <td>39</td> </tr> <tr> <td>200</td> <td>86</td> <td>43</td> </tr> <tr> <td>230</td> <td>88</td> <td>44</td> </tr> <tr> <td>264</td> <td>90</td> <td>46</td> </tr> <tr> <td>280</td> <td>91</td> <td>47</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <p>※1: Load 80% ※2: Load 90%</p>	Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	85	73	46 ※1	100	75	42 ※2	115	76	39	200	86	43	230	88	44	264	90	46	280	91	47	--	-	-	--	-	-
Input Voltage [V]	Hold-Up Time [ms]																																	
	Load 50%	Load 100%																																
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100	75	42 ※2																																
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200	86	43																																
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264	90	46																																
280	91	47																																
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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>																																		

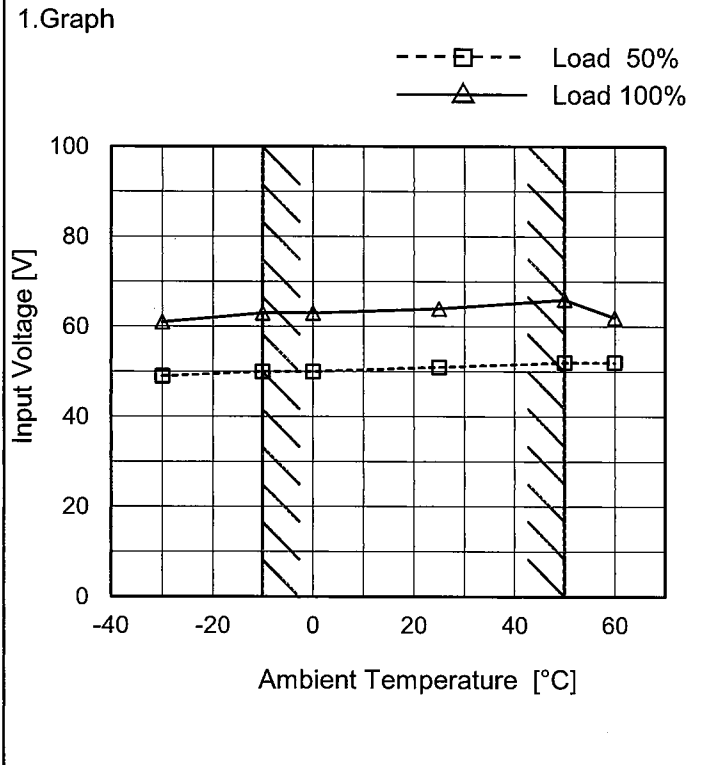


<p>Model PLA300F-36</p>		<p>Temperature 25°C</p>																																																				
<p>Item Instantaneous Interruption Compensation</p>		<p>Testing Circuitry Figure A</p>																																																				
<p>Object +36V8.4A</p>																																																						
<p>1. Graph</p> <p>                     —△— Input Volt. 100V                      - - □ - - Input Volt. 115V                      - · ○ · - - 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>1.50</td><td>199</td><td>206</td><td>239</td></tr> <tr><td>3.00</td><td>105</td><td>110</td><td>123</td></tr> <tr><td>4.50</td><td>70</td><td>71</td><td>82</td></tr> <tr><td>6.00</td><td>51</td><td>53</td><td>61</td></tr> <tr><td>7.50</td><td>38</td><td>39</td><td>48</td></tr> <tr><td>8.40</td><td>36</td><td>37</td><td>43</td></tr> <tr><td>9.24</td><td>-</td><td>30</td><td>39</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	-	-	-	1.50	199	206	239	3.00	105	110	123	4.50	70	71	82	6.00	51	53	61	7.50	38	39	48	8.40	36	37	43	9.24	-	30	39	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
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<p>Note: Slanted line shows the range of the rated load current.</p>																																																						



Model	PLA300F-36
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+36V8.4A

Testing Circuitry Figure A



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	49	61
-10	50	63
0	50	63
25	51	64
50	52	66
60	52	62
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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



Model		PLA300F-36	Temperature 25°C Testing Circuitry Figure A																																									
Item		Overcurrent Protection																																										
Object		+36V8.4A	2.Values																																									
1.Graph																																												
Output Voltage [V] 	—	Input Volt. 115V	<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>34.2</td><td>9.98</td><td>9.98</td></tr> <tr><td>32.4</td><td>9.92</td><td>10.03</td></tr> <tr><td>28.8</td><td>10.10</td><td>10.12</td></tr> <tr><td>25.2</td><td>10.19</td><td>10.21</td></tr> <tr><td>21.6</td><td>10.27</td><td>10.27</td></tr> <tr><td>18.0</td><td>10.32</td><td>10.33</td></tr> <tr><td>14.4</td><td>10.46</td><td>10.49</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]	34.2	9.98	9.98	32.4	9.92	10.03	28.8	10.10	10.12	25.2	10.19	10.21	21.6	10.27	10.27	18.0	10.32	10.33	14.4	10.46	10.49	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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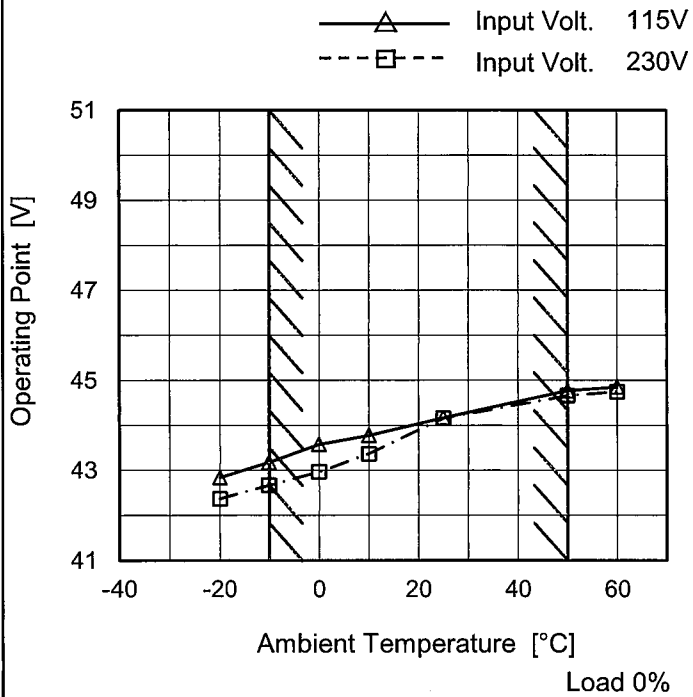




Model	PLA300F-36
Item	Overvoltage Protection
Object	+36V8.4A

Testing Circuitry Figure A

1.Graph



2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 115[V]	Input Volt. 230[V]
-20	42.84	42.37
-10	43.18	42.67
0	43.58	42.97
10	43.78	43.37
25	44.17	44.16
50	44.77	44.66
60	44.85	44.75
--	-	-
--	-	-
--	-	-
--	-	-

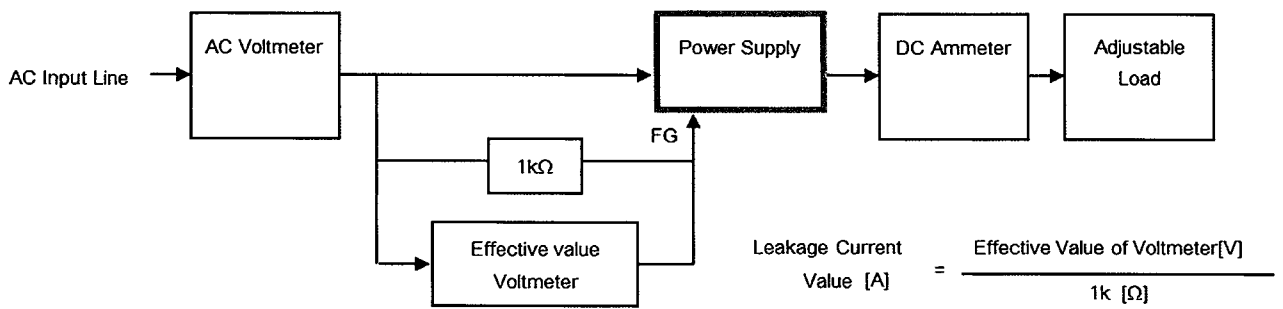
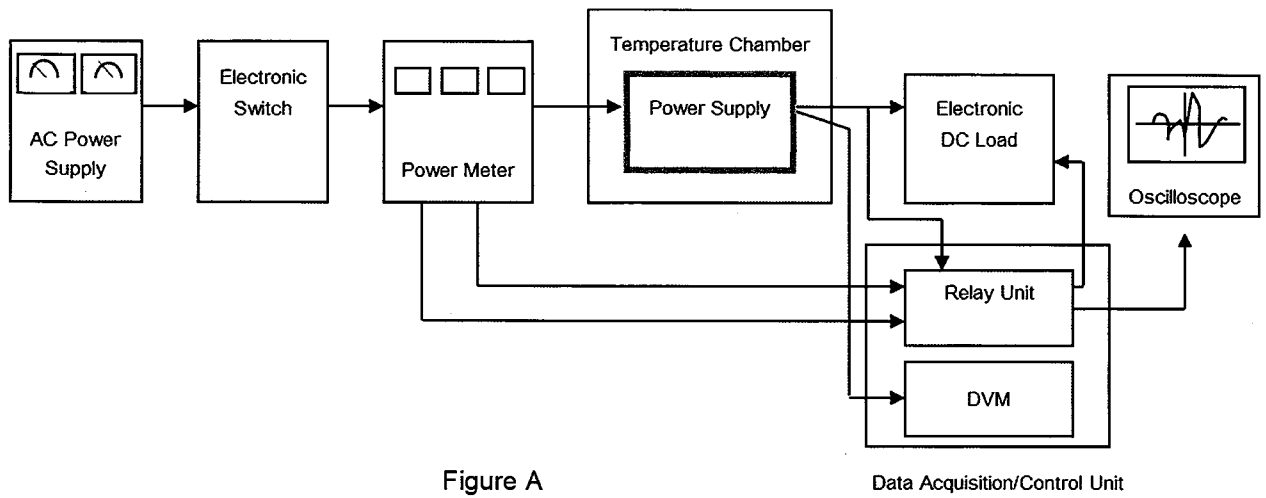


Figure B ( DEN-AN )

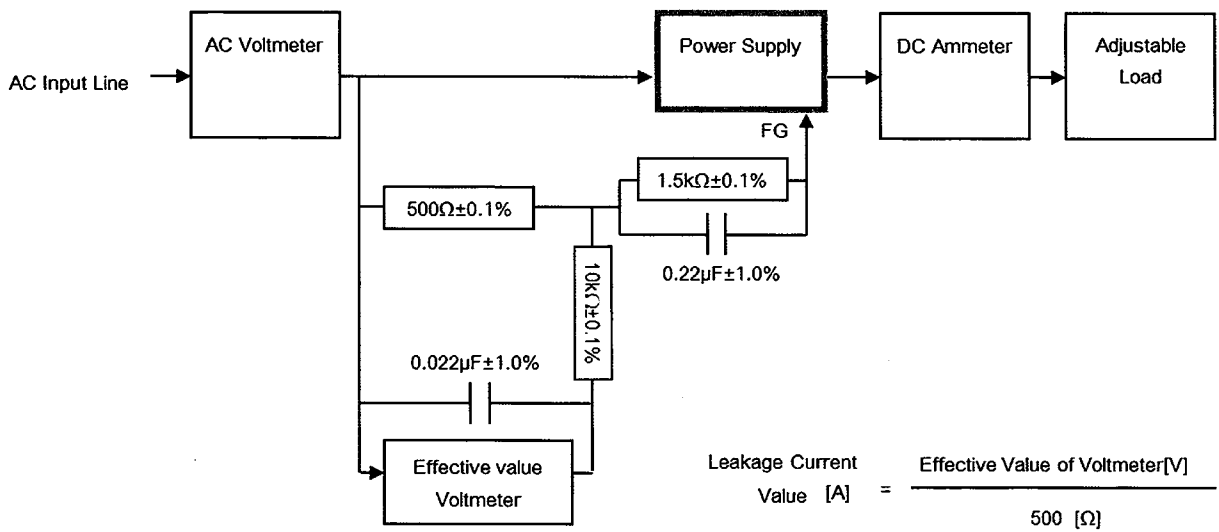


Figure B ( IEC60950-1 )

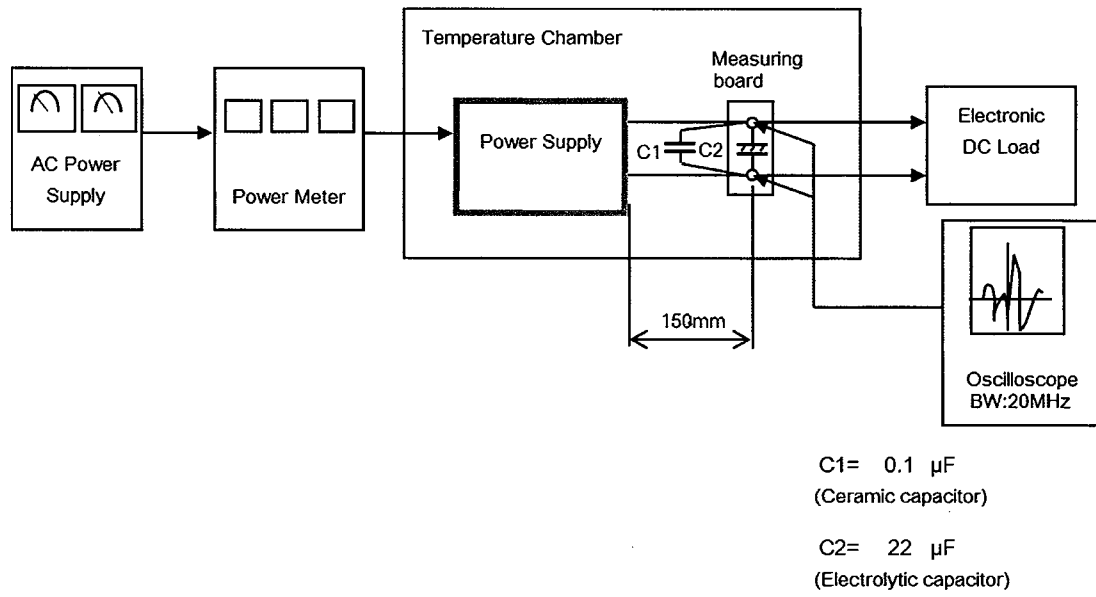


Figure C