



# TEST DATA OF LFP300F-48-TY

Regulated DC Power Supply  
November 8, 2011

Approved by : *Yoshiaki Shimizu*  
Yoshiaki Shimizu Design Manager

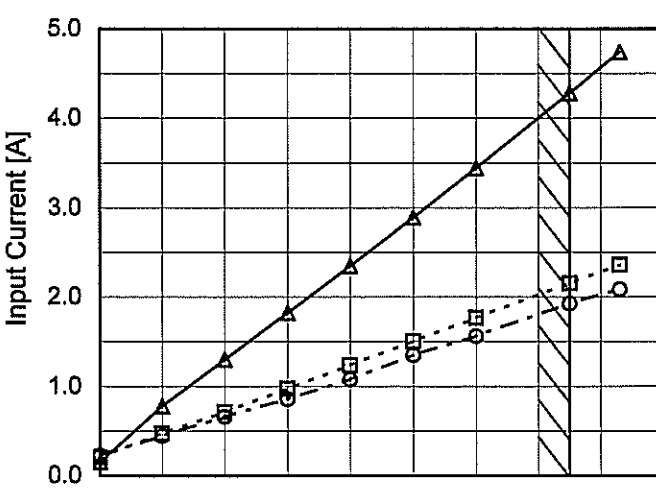
Prepared by : *Tomoyuki Mukaiyama*  
Tomoyuki Mukaiyama Design Engineer

**COSEL CO.,LTD.**

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Model		LFP300F-48-TY		Temperature 25°C																																																		
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																		
Object																																																						
1.Graph		<div><div>—△—</div>Input Volt. 100V</div> <div><div>---□---</div>Input Volt. 200V</div> <div><div>---○---</div>Input Volt. 230V</div>		2.Values																																																		
<div><div><div>Input Current [A]</div><div></div><div>Load Current [A]</div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>0.154</td><td>0.206</td><td>0.230</td></tr><tr><td>1.0</td><td>0.778</td><td>0.474</td><td>0.446</td></tr><tr><td>2.0</td><td>1.302</td><td>0.710</td><td>0.662</td></tr><tr><td>3.0</td><td>1.825</td><td>0.974</td><td>0.860</td></tr><tr><td>4.0</td><td>2.349</td><td>1.236</td><td>1.078</td></tr><tr><td>5.0</td><td>2.890</td><td>1.504</td><td>1.350</td></tr><tr><td>6.0</td><td>3.444</td><td>1.769</td><td>1.562</td></tr><tr><td>7.5</td><td>4.280</td><td>2.154</td><td>1.928</td></tr><tr><td>8.3</td><td>4.740</td><td>2.360</td><td>2.086</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]	Input Current [A]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	0.154	0.206	0.230	1.0	0.778	0.474	0.446	2.0	1.302	0.710	0.662	3.0	1.825	0.974	0.860	4.0	2.349	1.236	1.078	5.0	2.890	1.504	1.350	6.0	3.444	1.769	1.562	7.5	4.280	2.154	1.928	8.3	4.740	2.360	2.086	--	-	-	-	--	-	-	-
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**LOREL**

Model	LFP300F-48-TY
Item	Efficiency (by Input Voltage)
Object	

Temperature 25°C  
Testing Circuitry Figure A

### 1.Graph

Legend:  
---□--- Load 50%  
—△— Load 100%

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	82.3	81.7
85	82.8	83.4
100	83.6	85.4
120	84.3	86.5
200	85.2	88.3
230	85.2	88.5
264	86.0	88.6
280	86.0	88.9
--	-	-

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

### 2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	82.3	81.7
85	82.8	83.4
100	83.6	85.4
120	84.3	86.5
200	85.2	88.3
230	85.2	88.5
264	86.0	88.6
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Model		LFP300F-48-TY	
Item		Power Factor (by Input Voltage)	
Object			
1.Graph		2.Values	

Power Factor

---

□

---

Load 50%

---

△

---

Load 100%

1.0

0.9

0.8

0.7

0.6

0.5

0.4

50

100

150

200

250

300

Input Voltage [V]

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

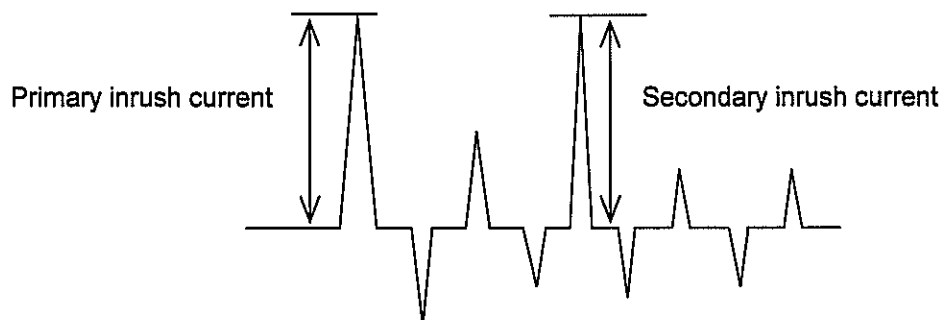
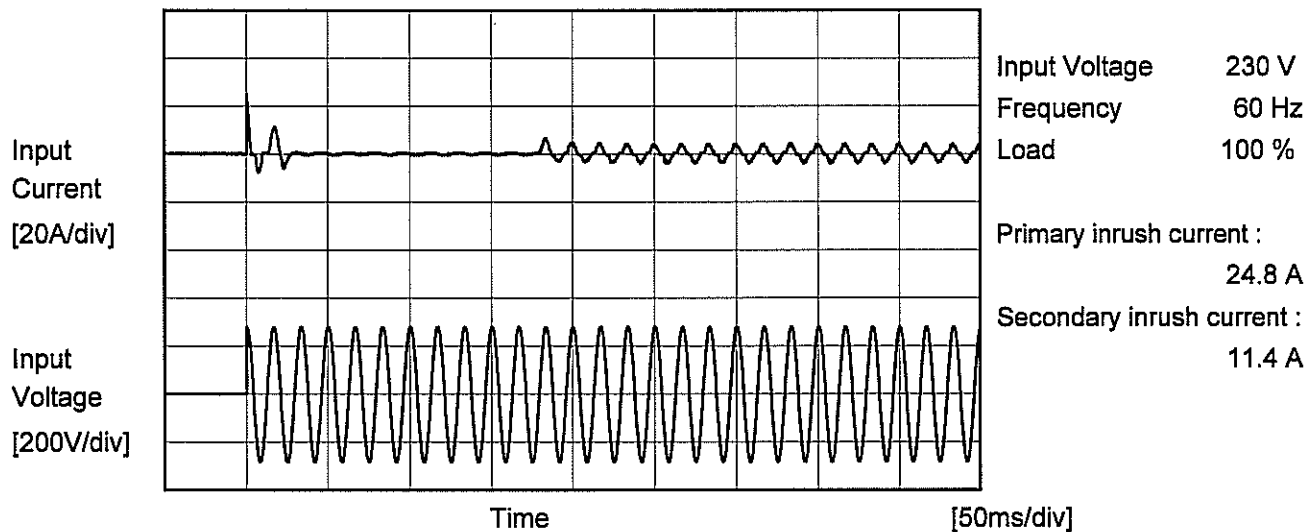
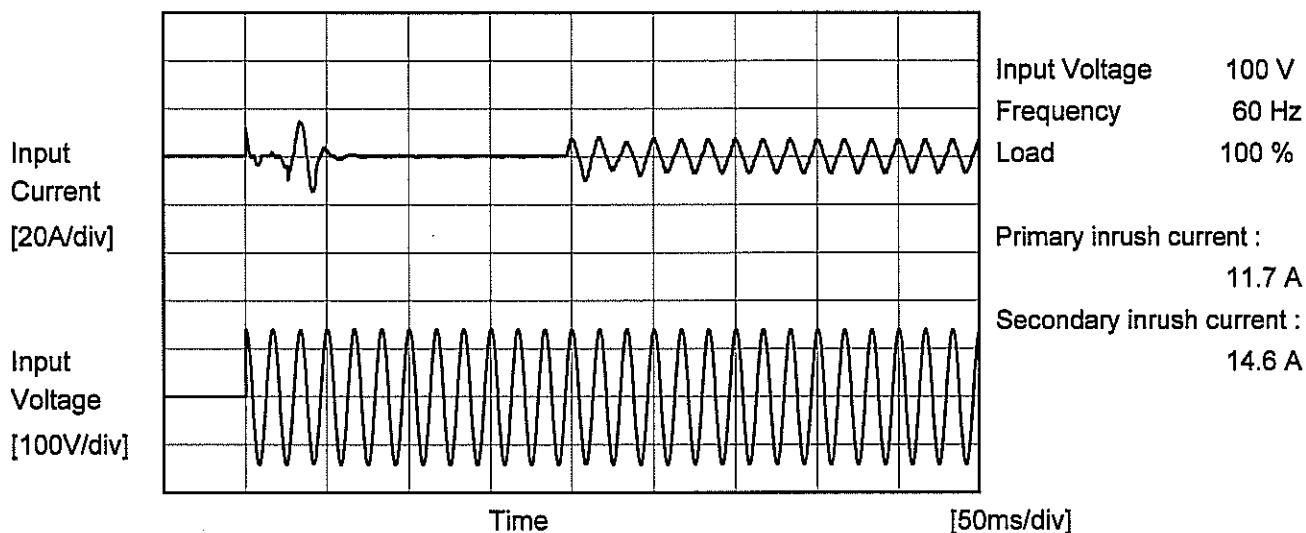
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.993	0.999
85	0.991	0.998
100	0.987	0.995
120	0.975	0.991
200	0.919	0.958
230	0.907	0.930
264	0.841	0.894
280	0.816	0.840
--	-	-

Model		LFP300F-48-TY		Temperature		25°C																																																				
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Model	LFP300F-48-TY	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





		Temperature 25°C Testing Circuitry Figure B
Model	LFP300F-48-TY	
Item	Leakage Current	
Object	_____	

## 1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.33	0.53	0.60	Operation
	One of phases	0.34	0.70	0.83	Stand by
IEC60950-1	Both phases	0.24	0.50	0.57	Operation
	One of phases	0.32	0.68	0.74	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	LFP300F-48-TY																																
Item	Line Regulation	Temperature	25°C																														
		Testing Circuitry	Figure A																														
Object	+48V7.5A																																
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<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></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>75</td><td>48.510</td><td>48.507</td></tr><tr><td>85</td><td>48.510</td><td>48.507</td></tr><tr><td>100</td><td>48.510</td><td>48.507</td></tr><tr><td>120</td><td>48.510</td><td>48.507</td></tr><tr><td>200</td><td>48.510</td><td>48.508</td></tr><tr><td>230</td><td>48.510</td><td>48.508</td></tr><tr><td>264</td><td>48.511</td><td>48.508</td></tr><tr><td>280</td><td>48.511</td><td>48.508</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%	75	48.510	48.507	85	48.510	48.507	100	48.510	48.507	120	48.510	48.507	200	48.510	48.508	230	48.510	48.508	264	48.511	48.508	280	48.511	48.508	--	-	-		
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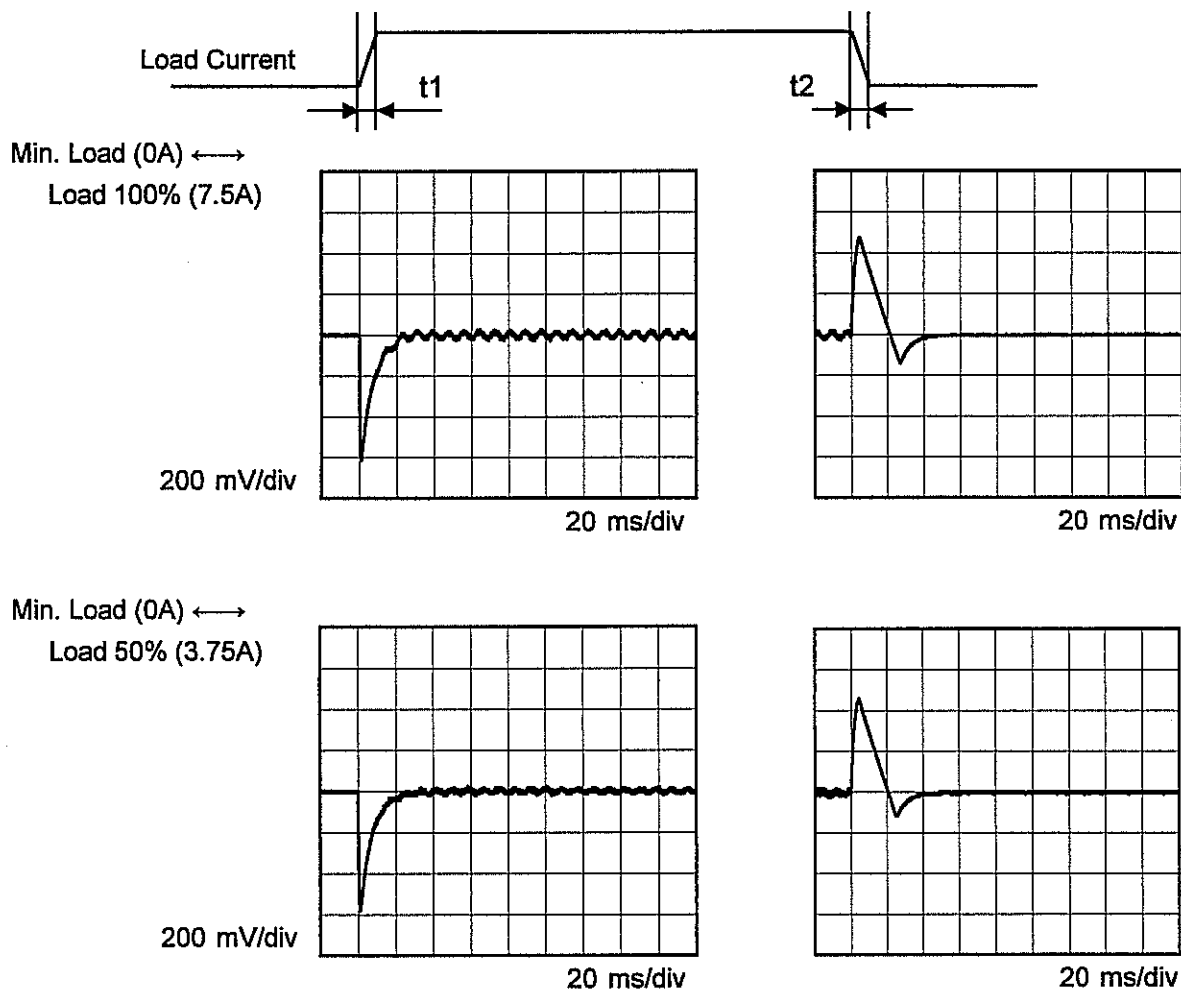
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<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div>Input Volt. 100V</div><div>Input Volt. 200V</div><div>Input Volt. 230V</div></div> <table><thead><tr><th>Load Current [A]</th><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr></thead><tbody><tr><td>0.0</td><td>48.523</td><td>48.523</td><td>48.523</td></tr><tr><td>1.0</td><td>48.512</td><td>48.512</td><td>48.513</td></tr><tr><td>2.0</td><td>48.511</td><td>48.511</td><td>48.512</td></tr><tr><td>3.0</td><td>48.510</td><td>48.511</td><td>48.511</td></tr><tr><td>4.0</td><td>48.509</td><td>48.510</td><td>48.510</td></tr><tr><td>5.0</td><td>48.508</td><td>48.510</td><td>48.510</td></tr><tr><td>6.0</td><td>48.508</td><td>48.509</td><td>48.509</td></tr><tr><td>7.5</td><td>48.507</td><td>48.508</td><td>48.508</td></tr><tr><td>8.3</td><td>48.506</td><td>48.507</td><td>48.507</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]	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	48.523	48.523	48.523	1.0	48.512	48.512	48.513	2.0	48.511	48.511	48.512	3.0	48.510	48.511	48.511	4.0	48.509	48.510	48.510	5.0	48.508	48.510	48.510	6.0	48.508	48.509	48.509	7.5	48.507	48.508	48.508	8.3	48.506	48.507	48.507	--	-	-	-	--	-	-	-	<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. 200[V]</th><th>Input Volt. 230[V]</th></tr></thead><tbody><tr><td>0.0</td><td>48.523</td><td>48.523</td><td>48.523</td></tr><tr><td>1.0</td><td>48.512</td><td>48.512</td><td>48.513</td></tr><tr><td>2.0</td><td>48.511</td><td>48.511</td><td>48.512</td></tr><tr><td>3.0</td><td>48.510</td><td>48.511</td><td>48.511</td></tr><tr><td>4.0</td><td>48.509</td><td>48.510</td><td>48.510</td></tr><tr><td>5.0</td><td>48.508</td><td>48.510</td><td>48.510</td></tr><tr><td>6.0</td><td>48.508</td><td>48.509</td><td>48.509</td></tr><tr><td>7.5</td><td>48.507</td><td>48.508</td><td>48.508</td></tr><tr><td>8.3</td><td>48.506</td><td>48.507</td><td>48.507</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. 200[V]	Input Volt. 230[V]	0.0	48.523	48.523	48.523	1.0	48.512	48.512	48.513	2.0	48.511	48.511	48.512	3.0	48.510	48.511	48.511	4.0	48.509	48.510	48.510	5.0	48.508	48.510	48.510	6.0	48.508	48.509	48.509	7.5	48.507	48.508	48.508	8.3	48.506	48.507	48.507	--	-	-	-	--	-	-	-
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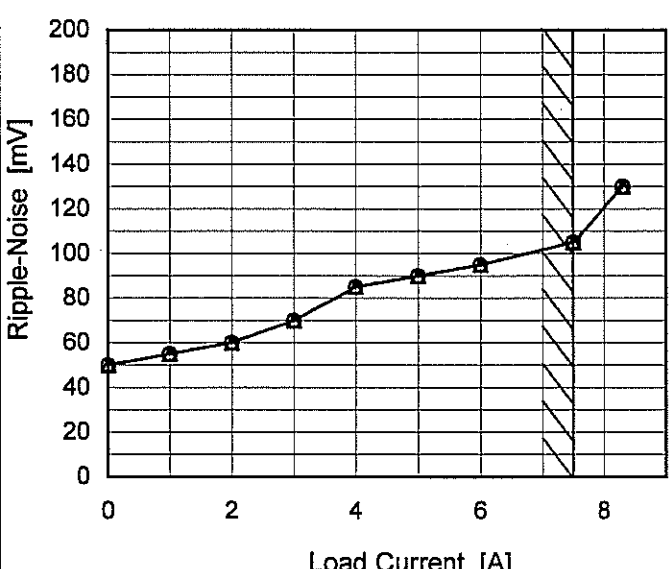
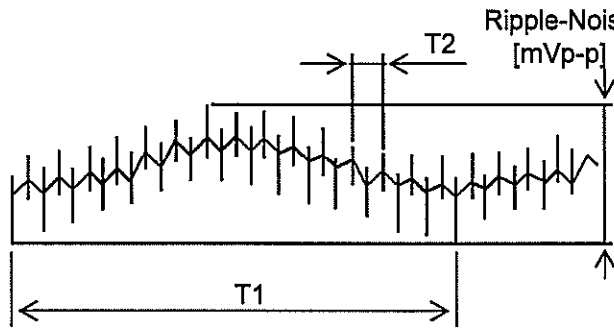
Model	LFP300F-48-TY	Temperature Testing Circuitry	25° C Figure A
Item	Dynamic Load Response		
Object	+48V7.5A		

Input Volt. 100 V  
Cycle 1000 ms

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



Model	LFP300F-48-TY	Temperature	25°C																																				
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure C																																				
Object	+48V7.5A	2.Values																																					
1.Graph																																							
<div><div><div><div><div></div><div>—△—</div><div>Input Volt. 100V</div></div><div><div></div><div>---○---</div><div>Input Volt. 230V</div></div></div><div><table><thead><tr><th>Load Current [A]</th><th>100V [mV]</th><th>230V [mV]</th></tr></thead><tbody><tr><td>0.0</td><td>20</td><td>20</td></tr><tr><td>1.0</td><td>35</td><td>35</td></tr><tr><td>2.0</td><td>40</td><td>40</td></tr><tr><td>3.0</td><td>45</td><td>45</td></tr><tr><td>4.0</td><td>50</td><td>50</td></tr><tr><td>5.0</td><td>55</td><td>55</td></tr><tr><td>6.0</td><td>60</td><td>60</td></tr><tr><td>7.5</td><td>75</td><td>75</td></tr><tr><td>8.3</td><td>80</td><td>80</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table></div></div><div><p>Measured by 20 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>		Load Current [A]	100V [mV]	230V [mV]	0.0	20	20	1.0	35	35	2.0	40	40	3.0	45	45	4.0	50	50	5.0	55	55	6.0	60	60	7.5	75	75	8.3	80	80	--	-	-	--	-	-		
Load Current [A]	100V [mV]	230V [mV]																																					
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Model		LFP300F-48-TY		Temperature 25°C																																							
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Load Current [A]	Ripple-Noise [mV]																																										
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Model		LFP300F-48-TY
Item		Ripple Voltage (by Ambient Temp.)
Object		+48V7.5A
1.Graph		
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# COSEL

Model LFP300F-48-TY

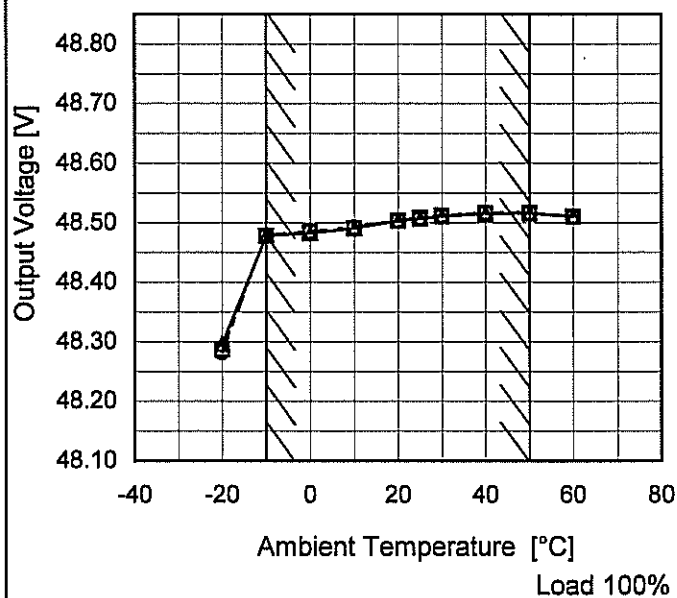
Item Ambient Temperature Drift

Object +48V7.5A

Testing Circuitry Figure A

## 1. Graph

—△— Input Volt. 100V  
 ---□--- Input Volt. 200V  
 ---○--- 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. 200[V]	Input Volt. 230[V]
-20	48.296	48.287	48.282
-10	48.479	48.478	48.479
0	48.483	48.484	48.485
10	48.491	48.491	48.492
20	48.503	48.504	48.504
25	48.507	48.508	48.508
30	48.511	48.512	48.512
40	48.516	48.516	48.517
50	48.516	48.517	48.517
60	48.510	48.511	48.511
—	-	-	-



		Testing Circuitry Figure A
Model	LFP300F-48-TY	
Item	Output Voltage Accuracy	
Object	+48V7.5A	

### 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 : -10 - 50°C

Input Voltage : 85 - 264V

Load Current : 0 - 7.5A

\* 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

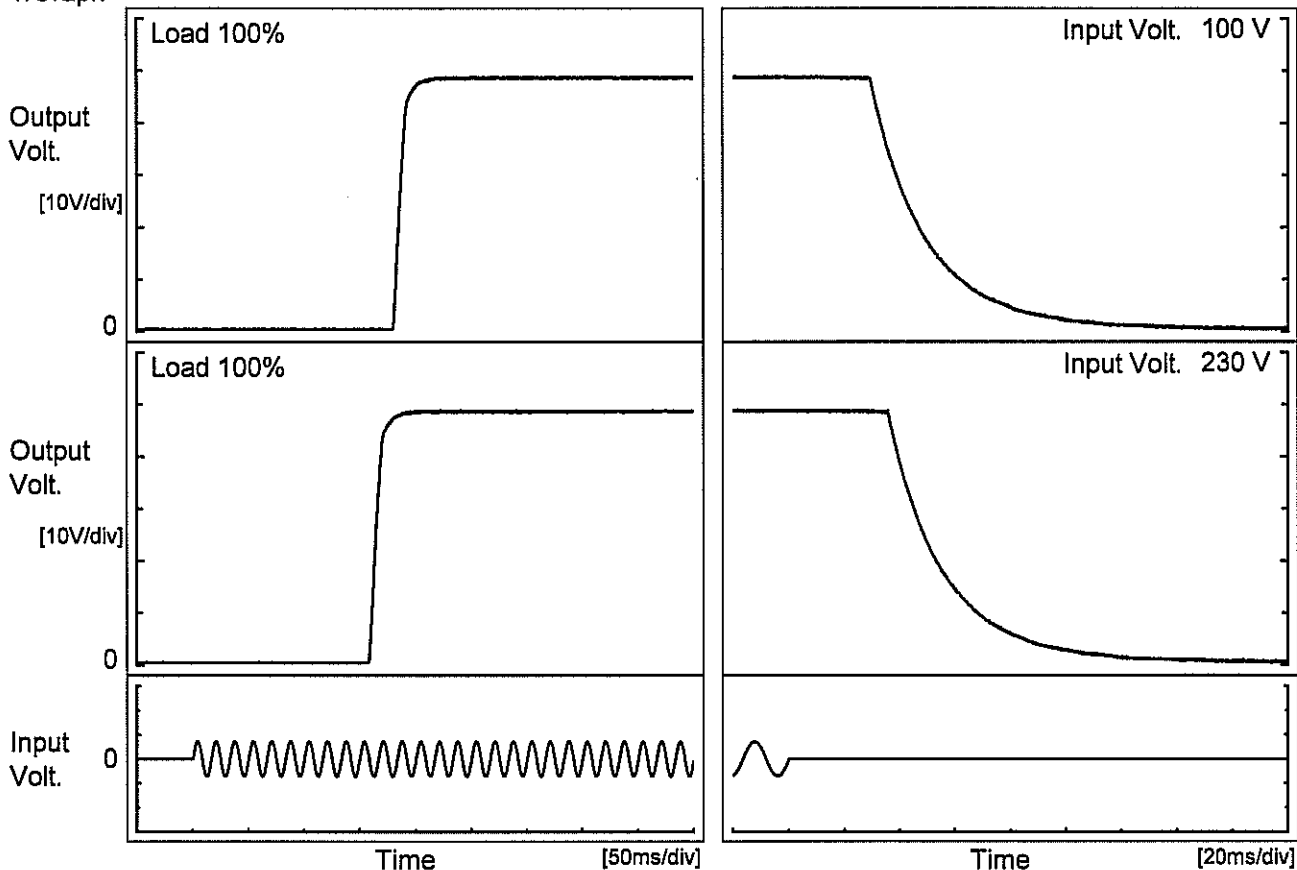
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	50	264	0	48.521	±29	±0.1
Minimum Voltage	-10	200	7.5	48.464		



Model		LFP300F-48-TY		Temperature25°C Testing CircuitryFigure A	
Item		Time Lapse Drift			
Object		+48V7.5A			
1.Graph				2.Values	
<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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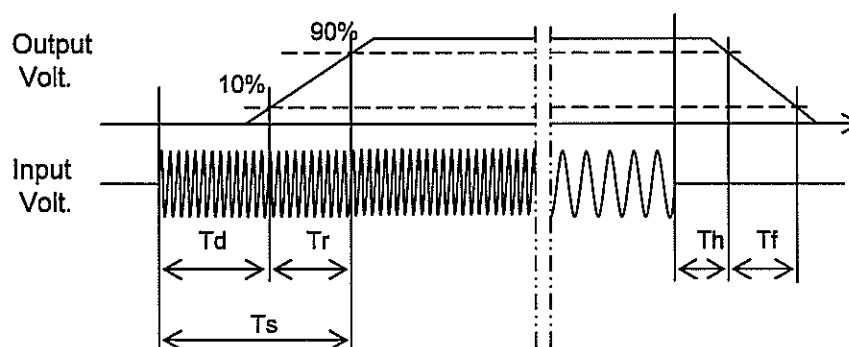
Model	LFP300F-48-TY	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+48V7.5A		

## 1. Graph



## 2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		181.5	10.8	192.3	31.2	46.8
230 V		160.3	10.5	170.8	37.8	46.2



**Model** LFP300F-48-TY

**Item** Hold-Up Time

**Object** +48V7.5A

Temperature 25°C  
Testing Circuitry Figure A

### 1.Graph

Input Voltage [V]	Hold-Up Time [ms] (Load 50%)	Hold-Up Time [ms] (Load 100%)
75	55	29
85	56	29
100	57	30
120	60	30
200	66	34
230	68	36
264	69	36
280	71	37

### 2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	55	29
85	56	29
100	57	30
120	60	30
200	66	34
230	68	36
264	69	36
280	71	37
--	-	-

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.



Model		LFP300F-48-TY		Temperature		25°C																																																				
Item		Instantaneous Interruption Compensation		Testing Circuitry		Figure A																																																				
Object		+48V7.5A																																																								
1.Graph				2.Values																																																						
<div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 200V</div></div><div><div>---○---</div><div>Input Volt. 230V</div></div></div> <table><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. 200[V]</th><th>Input Volt. 230[V]</th></tr></thead><tbody><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1.0</td><td>122</td><td>132</td><td>228</td></tr><tr><td>2.0</td><td>61</td><td>71</td><td>121</td></tr><tr><td>3.0</td><td>39</td><td>48</td><td>80</td></tr><tr><td>4.0</td><td>28</td><td>37</td><td>38</td></tr><tr><td>5.0</td><td>22</td><td>30</td><td>30</td></tr><tr><td>6.0</td><td>20</td><td>24</td><td>24</td></tr><tr><td>7.5</td><td>14</td><td>20</td><td>20</td></tr><tr><td>8.3</td><td>14</td><td>18</td><td>19</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. 200[V]	Input Volt. 230[V]	0.0	-	-	-	1.0	122	132	228	2.0	61	71	121	3.0	39	48	80	4.0	28	37	38	5.0	22	30	30	6.0	20	24	24	7.5	14	20	20	8.3	14	18	19	--	-	-	-	--	-	-	-				
Load Current [A]	Time [ms]																																																									
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Note: Slanted line shows the range of the rated load current.																																																										



Model		LFP300F-48-TY
Item		Minimum Input Voltage for Regulated Output Voltage
Object		+48V7.5A

1.Graph

Load 50%

Load 100%

Input Voltage [V]

Model	LFP300F-48-TY																																														
Item	Overcurrent Protection	Temperature	25°C																																												
Object	+48V7.5A	Testing Circuitry	Figure A																																												
1.Graph		2.Values																																													
<div><div><div>Input Volt. 100V</div><div>Input Volt. 230V</div></div><p>Note: Slanted line shows the range of the rated load current.</p><p>Intermittent operation occurs when the output voltage is from 33V to 0V.</p></div>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="2">Load Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>48.0</td><td>14.89</td><td>14.91</td></tr><tr><td>45.6</td><td>14.93</td><td>14.95</td></tr><tr><td>43.2</td><td>14.89</td><td>14.91</td></tr><tr><td>38.4</td><td>15.07</td><td>15.10</td></tr><tr><td>33.6</td><td>15.21</td><td>15.24</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. 100[V]	Input Volt. 230[V]	48.0	14.89	14.91	45.6	14.93	14.95	43.2	14.89	14.91	38.4	15.07	15.10	33.6	15.21	15.24	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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Model		LFP300F-48-TY
Item		Overvoltage Protection
Object		+48V7.5A

1.Graph

—△—

Input Volt. 100V

---□---

Input Volt. 230V

Operating Point [V]

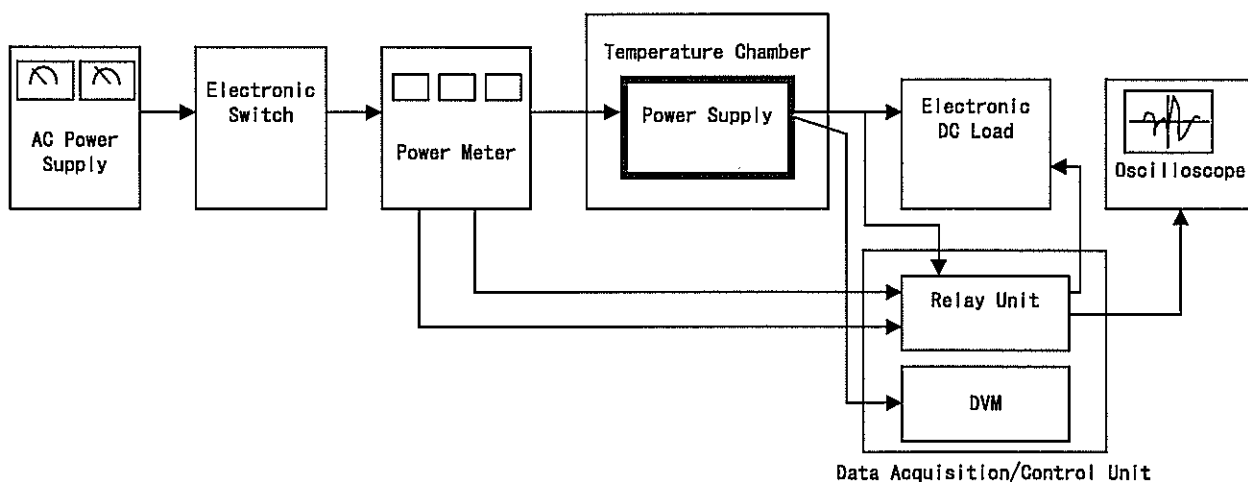


Figure A

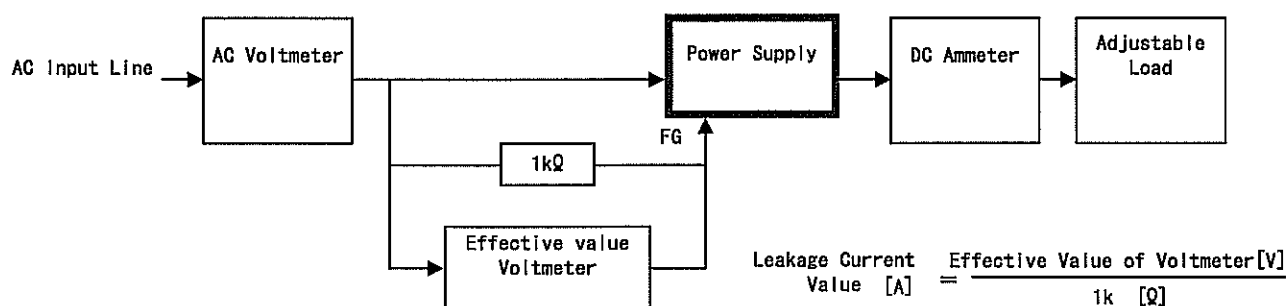


Figure B ( DEN-AN )

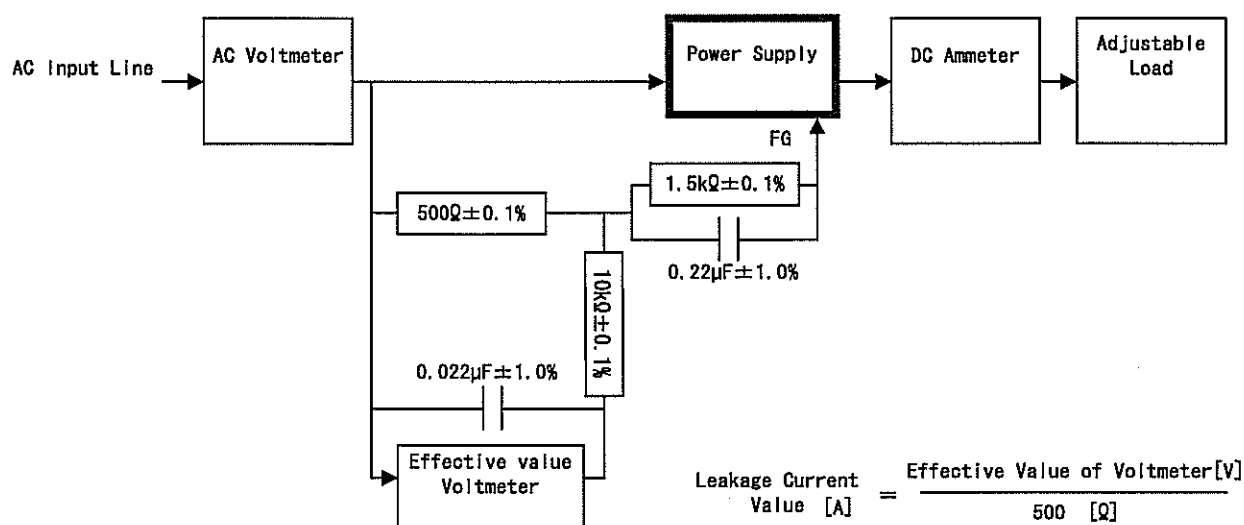


Figure B ( IEC60950-1 )

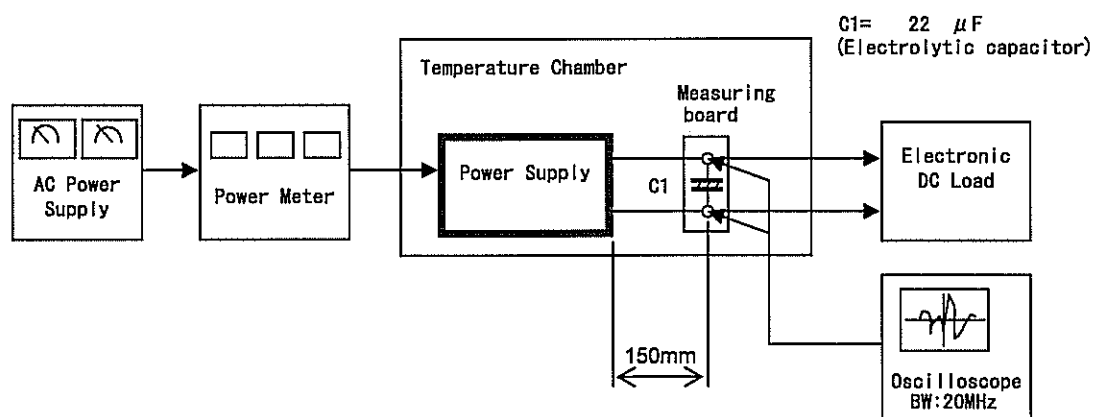


Figure C