



TEST DATA OF LFA75F-24

Regulated DC Power Supply
August 10, 2009

Approved by : 
Yoshiaki Shimizu Design Manager

Prepared by : 
Koji Takahashi Design Engineer

COSEL CO.,LTD.

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Model	LFA75F-24																																																					
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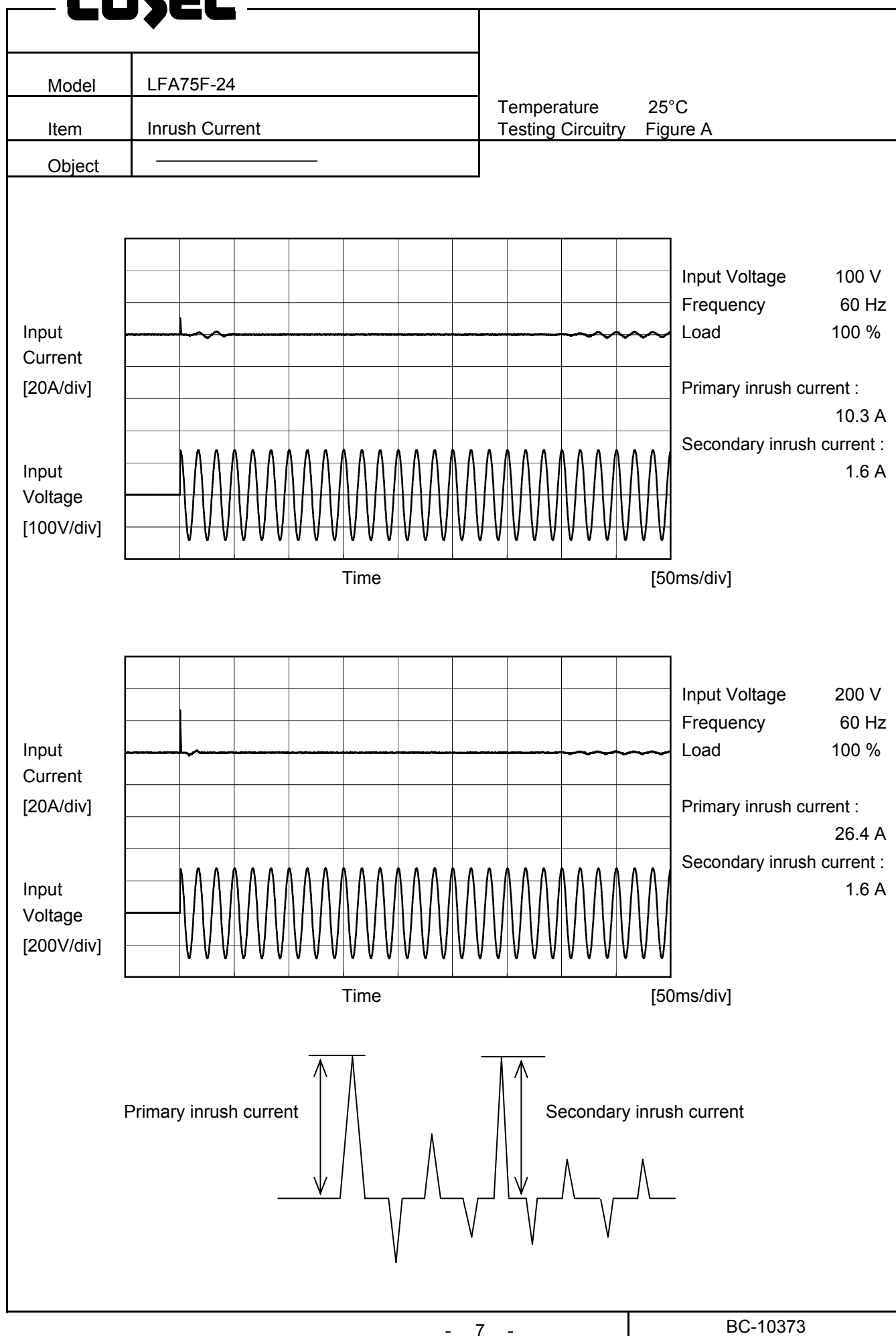
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		Temperature 25°C Testing Circuitry Figure B
Model	LFA75F-24	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.13	0.26	0.32	Operation
	One of phases	0.22	0.45	0.57	Stand by
IEC60950	Both phases	0.14	0.30	0.38	Operation
	One of phases	0.22	0.44	0.54	Stand by

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

2.Condition

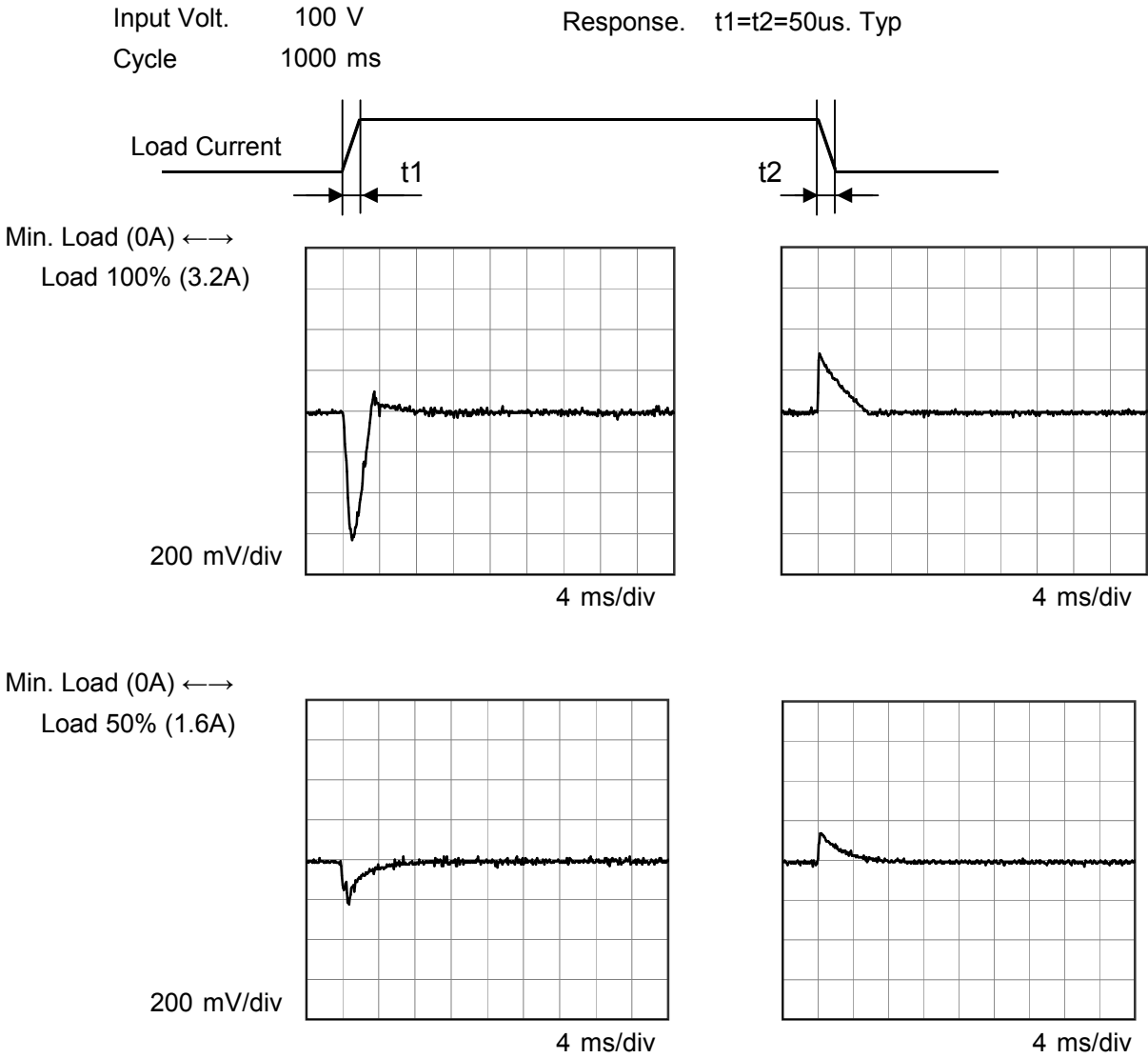
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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Object	+24V3.2A		



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<div><div><div>—△— Input Volt. 100V</div><div>-·-○-·- Input Volt. 200V</div></div><div>Ripple Voltage [mV]</div><div>Load Current [A]</div></div> <div>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.</div> <div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div><div>Ripple [mVp-p]</div><div>T1</div><div>T2</div></div> <div>Fig. Complex Ripple Wave Form</div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 200 [V]</th></tr><tr><td>0.00</td><td>10</td><td>10</td></tr><tr><td>0.60</td><td>10</td><td>10</td></tr><tr><td>1.20</td><td>15</td><td>15</td></tr><tr><td>1.80</td><td>15</td><td>15</td></tr><tr><td>2.40</td><td>15</td><td>15</td></tr><tr><td>3.00</td><td>15</td><td>15</td></tr><tr><td>3.20</td><td>15</td><td>15</td></tr><tr><td>3.52</td><td>15</td><td>15</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>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 100 [V]	Input Volt. 200 [V]	0.00	10	10	0.60	10	10	1.20	15	15	1.80	15	15	2.40	15	15	3.00	15	15	3.20	15	15	3.52	15	15	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 100 [V]	Input Volt. 200 [V]																																							
0.00	10	10																																							
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Model	LFA75F-24		
Item	Ripple-Noise	Temperature	25°C
Object	+24V3.2A	Testing Circuitry	Figure C
1.Graph		2.Values	
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> 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Model		LFA75F-24	Testing Circuitry Figure C																																						
Item		Ripple Voltage (by Ambient Temp.)																																							
Object		+24V3.2A																																							
1.Graph			2.Values																																						
<div><div><div>--- □ ---</div><div>Input Volt. 100V</div></div><div><div>— △ —</div><div>Input Volt. 200V</div></div></div> <p>Measured by 20 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>			<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 200 [V]</th></tr><tr><td>-30</td><td>25</td><td>25</td></tr><tr><td>-10</td><td>20</td><td>20</td></tr><tr><td>0</td><td>15</td><td>15</td></tr><tr><td>25</td><td>15</td><td>15</td></tr><tr><td>50</td><td>15</td><td>15</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>	Ambient Temperature [°C]	Ripple Voltage [mV]		Input Volt. 100 [V]	Input Volt. 200 [V]	-30	25	25	-10	20	20	0	15	15	25	15	15	50	15	15	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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Model	LFA75F-24																																																					
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Object	+24V3.2A																																																					
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<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>200V</div></div><div><div>---○---</div><div>Input Volt.</div><div>230V</div></div></div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<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. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-20</td><td>24.061</td><td>24.061</td><td>24.061</td></tr><tr><td>-10</td><td>24.060</td><td>24.059</td><td>24.060</td></tr><tr><td>0</td><td>24.057</td><td>24.057</td><td>24.057</td></tr><tr><td>10</td><td>24.055</td><td>24.055</td><td>24.055</td></tr><tr><td>20</td><td>24.054</td><td>24.054</td><td>24.054</td></tr><tr><td>25</td><td>24.055</td><td>24.055</td><td>24.055</td></tr><tr><td>30</td><td>24.054</td><td>24.053</td><td>24.054</td></tr><tr><td>40</td><td>24.050</td><td>24.049</td><td>24.049</td></tr><tr><td>50</td><td>24.041</td><td>24.041</td><td>24.041</td></tr><tr><td>60</td><td>24.029</td><td>24.028</td><td>24.028</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	-20	24.061	24.061	24.061	-10	24.060	24.059	24.060	0	24.057	24.057	24.057	10	24.055	24.055	24.055	20	24.054	24.054	24.054	25	24.055	24.055	24.055	30	24.054	24.053	24.054	40	24.050	24.049	24.049	50	24.041	24.041	24.041	60	24.029	24.028	24.028	--	-	-	-
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		Testing Circuitry Figure A
Model	LFA75F-24	
Item	Output Voltage Accuracy	
Object	+24V3.2A	

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 - 3.2A

* 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	-10	85	0	24.072	±16	±0.1
Minimum Voltage	50	264	3.2	24.040		

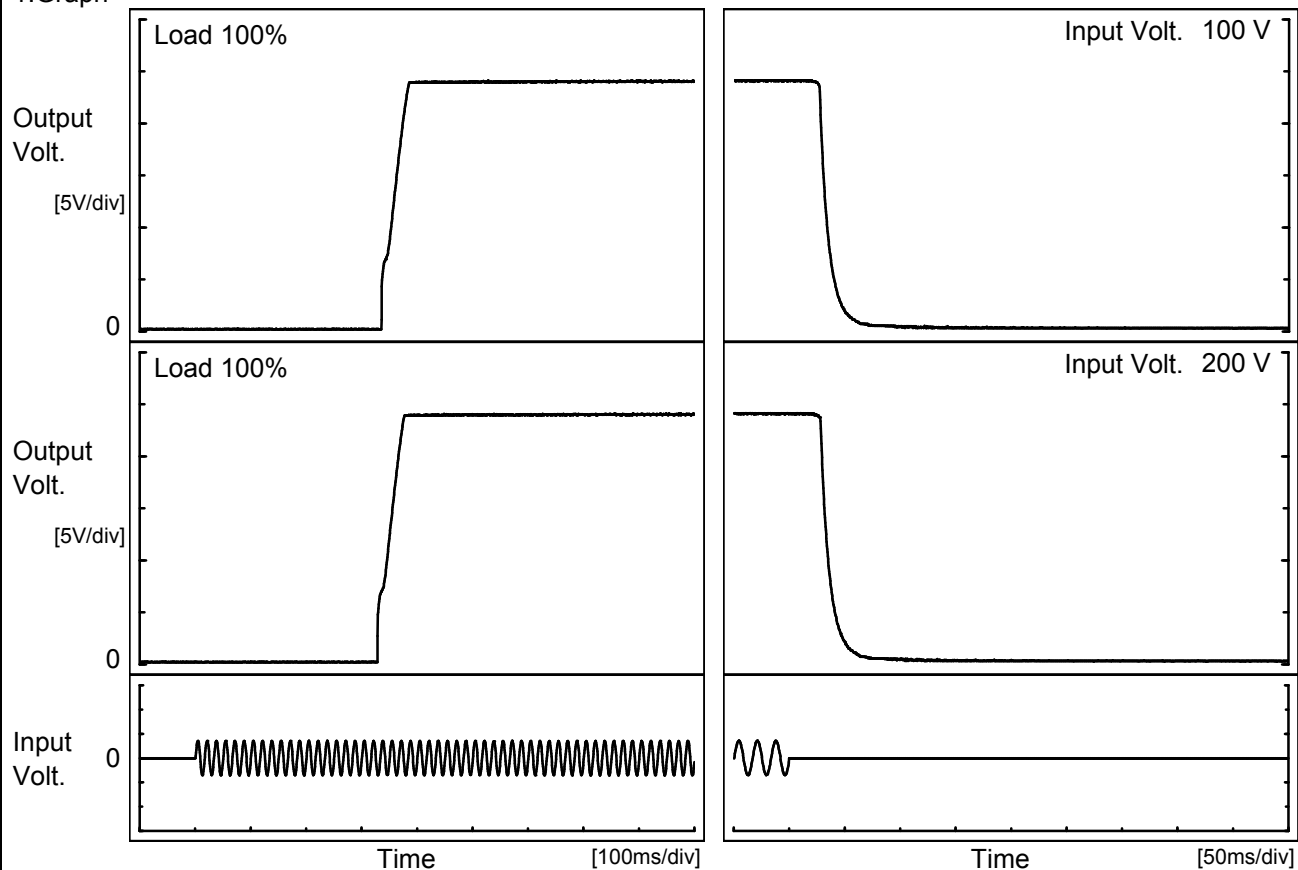


Model	LFA75F-24		
Item	Time Lapse Drift	Temperature	25°C
		Testing Circuitry	Figure A
Object	+24V3.2A		
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></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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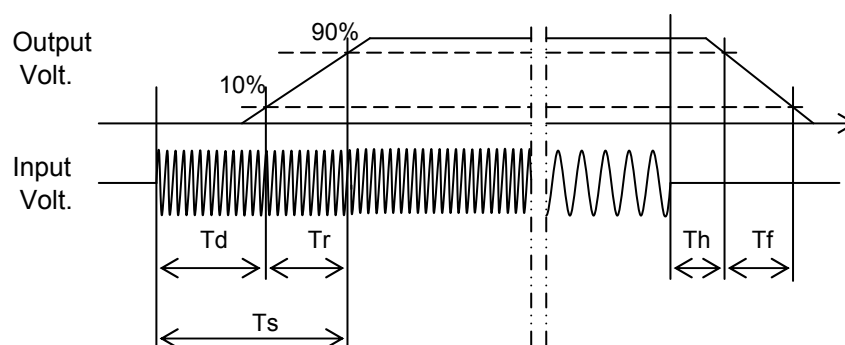
Model	LFA75F-24	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+24V3.2A		

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		336.5	43.0	379.5	27.3	19.0
200 V		329.0	42.0	371.0	28.8	19.0



Model	LFA75F-24																																		
Item	Hold-Up Time	Temperature	25°C																																
		Testing Circuitry	Figure A																																
Object	+24V3.2A																																		
1.Graph		2.Values																																	
<div><div><div>---□--- Load 50%</div><div>—△— Load 100%</div></div><div>Hold-Up Time [ms]</div><div>Input Voltage [V]</div></div> <div><p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p><p>Note: Slanted line shows the range of the rated input voltage.</p></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>75</td><td>47</td><td>24</td></tr><tr><td>85</td><td>48</td><td>25</td></tr><tr><td>100</td><td>49</td><td>26</td></tr><tr><td>120</td><td>50</td><td>26</td></tr><tr><td>200</td><td>51</td><td>27</td></tr><tr><td>230</td><td>51</td><td>27</td></tr><tr><td>264</td><td>52</td><td>28</td></tr><tr><td>280</td><td>54</td><td>28</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	75	47	24	85	48	25	100	49	26	120	50	26	200	51	27	230	51	27	264	52	28	280	54	28	--	-	-
Input Voltage [V]	Hold-Up Time [ms]																																		
	Load 50%	Load 100%																																	
75	47	24																																	
85	48	25																																	
100	49	26																																	
120	50	26																																	
200	51	27																																	
230	51	27																																	
264	52	28																																	
280	54	28																																	
--	-	-																																	

Model	LFA75F-24																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
Object	+24V3.2A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>200V</div></div><div><div>---○---</div><div>Input Volt.</div><div>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. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.60</td><td>113</td><td>122</td><td>123</td></tr><tr><td>1.20</td><td>56</td><td>64</td><td>64</td></tr><tr><td>1.80</td><td>36</td><td>45</td><td>45</td></tr><tr><td>2.40</td><td>27</td><td>31</td><td>35</td></tr><tr><td>3.00</td><td>22</td><td>29</td><td>29</td></tr><tr><td>3.20</td><td>21</td><td>26</td><td>27</td></tr><tr><td>3.52</td><td>14</td><td>20</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><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	-	-	-	0.60	113	122	123	1.20	56	64	64	1.80	36	45	45	2.40	27	31	35	3.00	22	29	29	3.20	21	26	27	3.52	14	20	20	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0.00	-	-	-																																																			
0.60	113	122	123																																																			
1.20	56	64	64																																																			
1.80	36	45	45																																																			
2.40	27	31	35																																																			
3.00	22	29	29																																																			
3.20	21	26	27																																																			
3.52	14	20	20																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			

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BC-10373

		Testing Circuitry Figure A
Model	LFA75F-24	
Item	Minimum Input Voltage for Regulated Output Voltage	
Object	+24V3.2A	
1.Graph		2.Values
<div><div>---□---</div>Load 50%</div> <div><div>—△—</div>Load 100%</div> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	37	50
-10	38	51
0	38	51
10	38	52
20	37	51
25	37	51
30	36	51
40	37	52
50	37	53
60	37	53
--	-	-

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BC-10373

Model	LFA75F-24																																											
Item	Overcurrent Protection	Temperature	25°C																																									
Object	+24V3.2A	Testing Circuitry	Figure A																																									
1.Graph		2.Values																																										
<div><div><div>△</div><div>Input Volt. 100V</div></div><div><div>○</div><div>Input Volt. 200V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when the output voltage is less than rated output voltage.</p>		<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. 200[V]</th></tr><tr><td>24.0</td><td>3.89</td><td>3.88</td></tr><tr><td>22.8</td><td>-</td><td>-</td></tr><tr><td>21.6</td><td>-</td><td>-</td></tr><tr><td>19.2</td><td>-</td><td>-</td></tr><tr><td>16.8</td><td>-</td><td>-</td></tr><tr><td>14.4</td><td>-</td><td>-</td></tr><tr><td>12.0</td><td>-</td><td>-</td></tr><tr><td>9.6</td><td>-</td><td>-</td></tr><tr><td>7.2</td><td>-</td><td>-</td></tr><tr><td>4.8</td><td>-</td><td>-</td></tr><tr><td>2.4</td><td>-</td><td>-</td></tr><tr><td>0.0</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]		Input Volt. 100[V]	Input Volt. 200[V]	24.0	3.89	3.88	22.8	-	-	21.6	-	-	19.2	-	-	16.8	-	-	14.4	-	-	12.0	-	-	9.6	-	-	7.2	-	-	4.8	-	-	2.4	-	-	0.0	-	-
Output Voltage [V]	Load Current [A]																																											
	Input Volt. 100[V]	Input Volt. 200[V]																																										
24.0	3.89	3.88																																										
22.8	-	-																																										
21.6	-	-																																										
19.2	-	-																																										
16.8	-	-																																										
14.4	-	-																																										
12.0	-	-																																										
9.6	-	-																																										
7.2	-	-																																										
4.8	-	-																																										
2.4	-	-																																										
0.0	-	-																																										

Model		LFA75F-24	Testing Circuitry Figure A																																						
Item		Overvoltage Protection																																							
Object		+24V3.2A																																							
1.Graph			2.Values																																						
<div><div><div><div><div></div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 200V</div></div></div><div><p>Operating Point [V]</p><p>Ambient Temperature [°C]</p><p>Load 0%</p></div><p>Note: Slanted line shows the range of the rated ambient temperature.</p></div></div>			<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Operating Point [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th></tr><tr><td>-20</td><td>30.24</td><td>30.18</td></tr><tr><td>-10</td><td>30.47</td><td>30.47</td></tr><tr><td>0</td><td>30.76</td><td>30.76</td></tr><tr><td>10</td><td>31.06</td><td>31.06</td></tr><tr><td>20</td><td>31.29</td><td>31.29</td></tr><tr><td>25</td><td>31.47</td><td>31.35</td></tr><tr><td>30</td><td>31.58</td><td>31.58</td></tr><tr><td>40</td><td>31.76</td><td>31.76</td></tr><tr><td>50</td><td>32.05</td><td>32.05</td></tr><tr><td>60</td><td>32.34</td><td>32.34</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>	Ambient Temperature [°C]	Operating Point [V]		Input Volt. 100[V]	Input Volt. 200[V]	-20	30.24	30.18	-10	30.47	30.47	0	30.76	30.76	10	31.06	31.06	20	31.29	31.29	25	31.47	31.35	30	31.58	31.58	40	31.76	31.76	50	32.05	32.05	60	32.34	32.34	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																								
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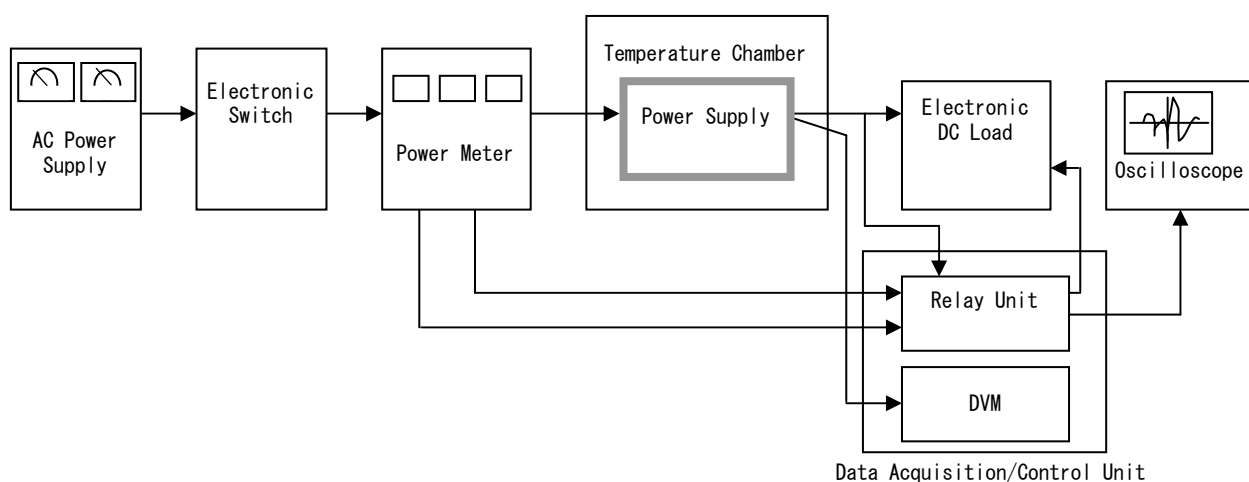


Figure A

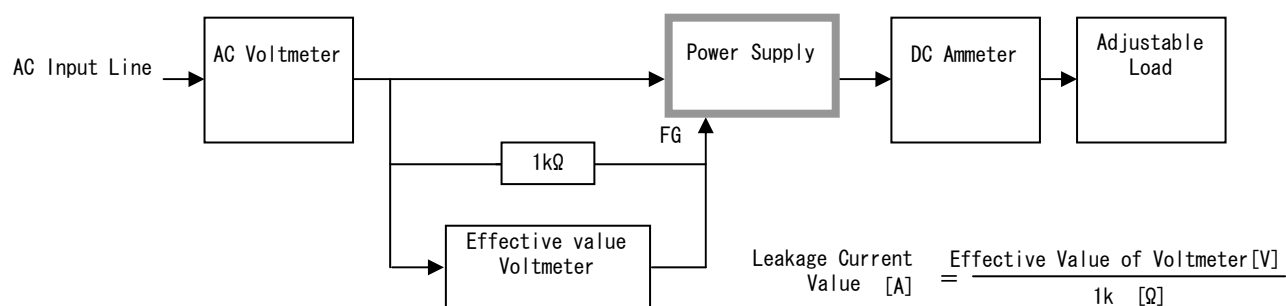


Figure B (DEN-AN)

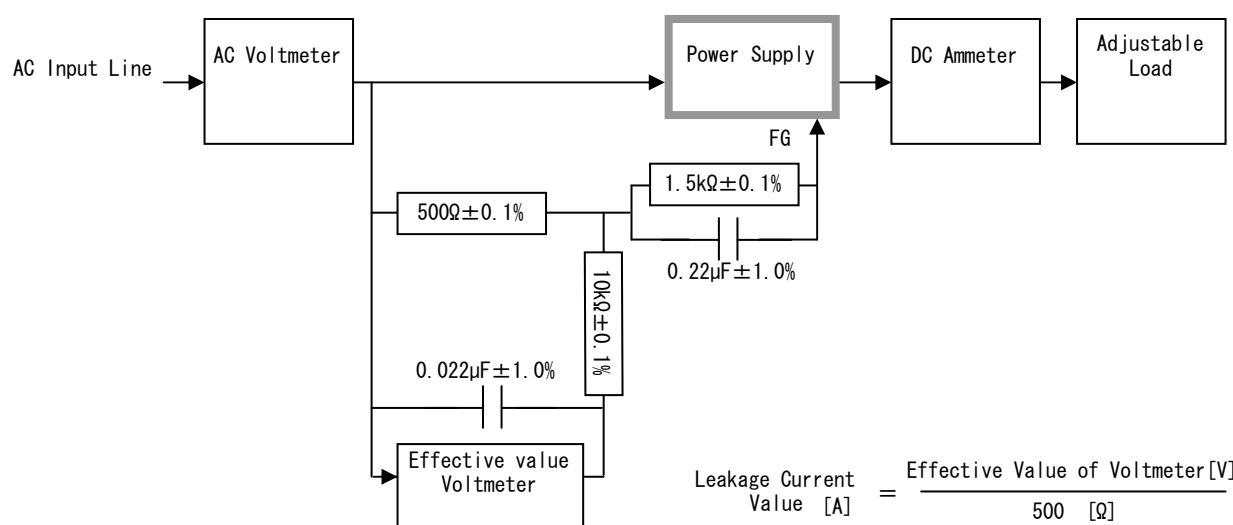


Figure B (IEC60950-1)

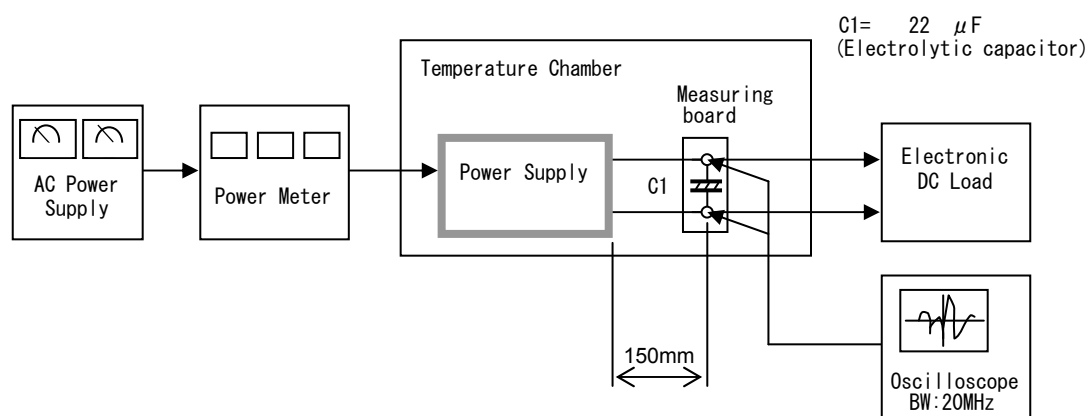


Figure C