



# TEST DATA OF LCA75S-48

Regulated DC Power Supply  
Mar 24, 2005

Approved by : K. Shiho Design Manager

Prepared by : M. Fujii Design Engineer

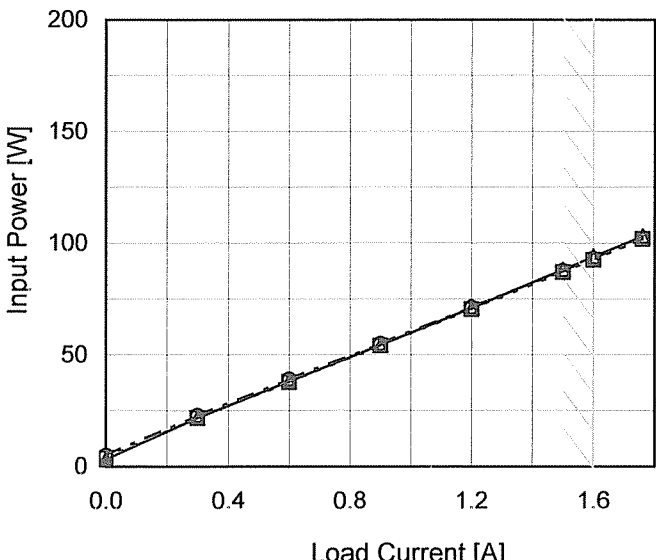
COSEL CO.,LTD.

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Model		LCA75S-48		Temperature		25°C	
Item		Input Current (by Load Current)		Testing Circuitry		Figure A	
Object							
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>85V</div></div><div><div>---□---</div><div>Input Volt.</div><div>100V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>132V</div></div></div>		2.Values			
<div><div><div><div>Input Current [A]</div><div>5.0</div><div>4.0</div><div>3.0</div><div>2.0</div><div>1.0</div><div>0.0</div></div><div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div><div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div></div><div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div><div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div></div> <div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div> <div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div> <div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div> <div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div> <div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div> <div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div> 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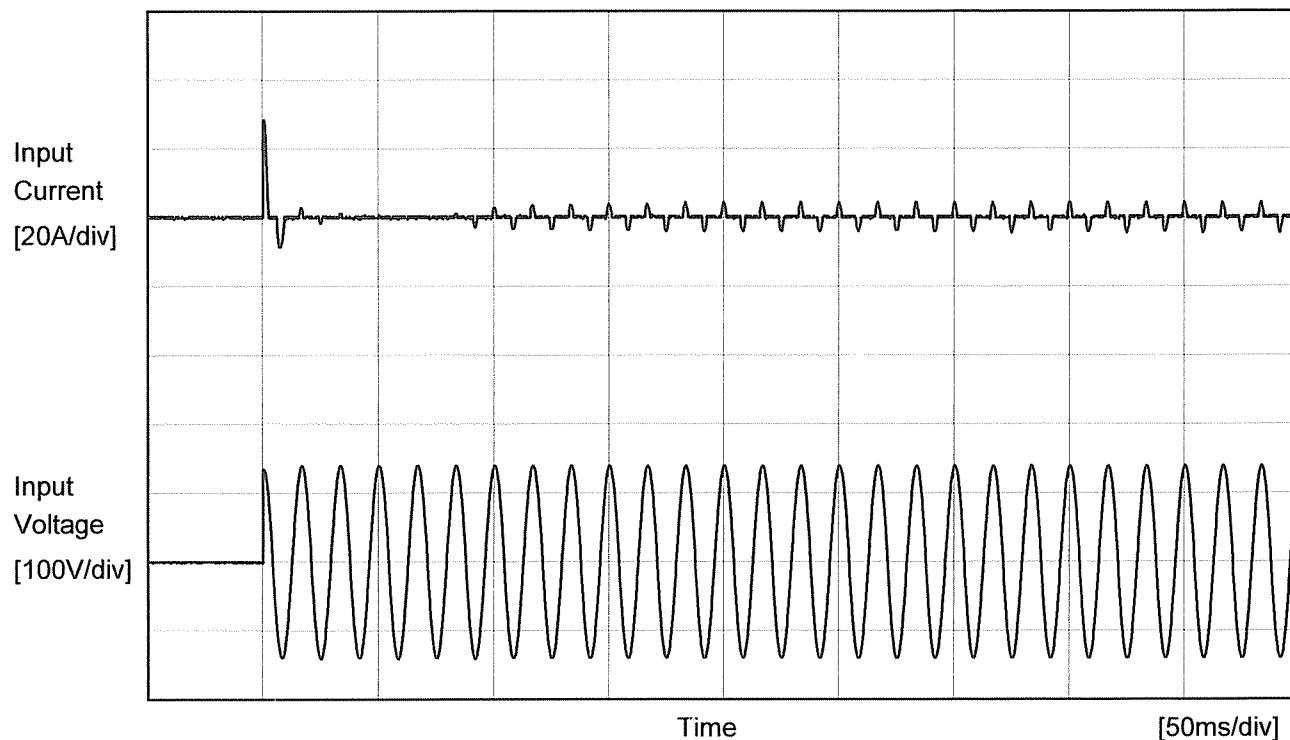
Model		LCA75S-48		Temperature		25°C			
Item		Input Power (by Load Current)		Testing Circuitry		Figure A			
Object									
1.Graph		—△— Input Volt. 85V ---□--- Input Volt. 100V -·-○-·- Input Volt. 132V						2.Values	
									
		Note: Slanted line shows the range of the rated load current.							

Model		LCA75S-48																																	
Item		Efficiency (by Input Voltage)																																	
Object																																			
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<div><div><div><div><div></div><div></div></div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div>Load 50%</div><div>Load 100%</div></div> <table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>75</td><td>77.7</td><td>80.7</td></tr><tr><td>80</td><td>78.9</td><td>81.9</td></tr><tr><td>85</td><td>79.5</td><td>82.9</td></tr><tr><td>90</td><td>79.9</td><td>83.3</td></tr><tr><td>100</td><td>80.2</td><td>83.9</td></tr><tr><td>110</td><td>80.0</td><td>84.1</td></tr><tr><td>120</td><td>79.6</td><td>83.8</td></tr><tr><td>132</td><td>78.3</td><td>83.4</td></tr><tr><td>140</td><td>77.5</td><td>83.1</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p>		Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	75	77.7	80.7	80	78.9	81.9	85	79.5	82.9	90	79.9	83.3	100	80.2	83.9	110	80.0	84.1	120	79.6	83.8	132	78.3	83.4	140	77.5	83.1		
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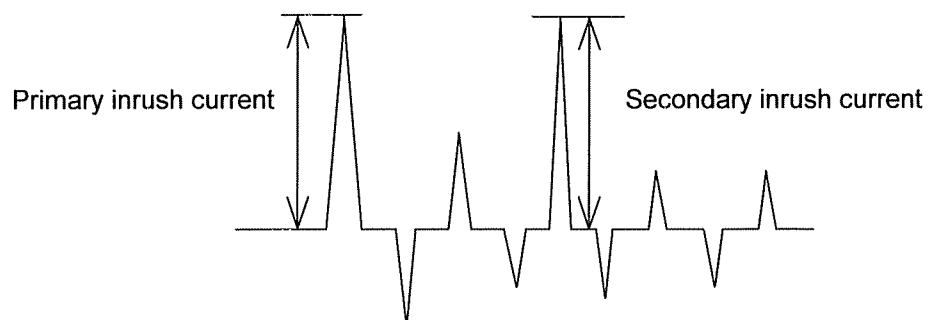


Model	LCA75S-48	Temperature Testing Circuitry	25°C Figure A
Item	Inrush Current		
Object	_____		



Input Voltage 100 V  
Frequency 60 Hz  
Load 100 %

Primary inrush current 28.1 A  
Secondary inrush current 9.6 A



Model	LCA75S-48																																
Item	Line Regulation	Temperature	25°C																														
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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>48.818</td><td>48.806</td></tr><tr><td>80</td><td>48.818</td><td>48.807</td></tr><tr><td>85</td><td>48.817</td><td>48.807</td></tr><tr><td>90</td><td>48.816</td><td>48.807</td></tr><tr><td>100</td><td>48.814</td><td>48.804</td></tr><tr><td>110</td><td>48.811</td><td>48.801</td></tr><tr><td>120</td><td>48.808</td><td>48.798</td></tr><tr><td>132</td><td>48.805</td><td>48.792</td></tr><tr><td>140</td><td>48.802</td><td>48.789</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p>		Input Voltage [V]	Output Voltage [V] (Load 50%)	Output Voltage [V] (Load 100%)	75	48.818	48.806	80	48.818	48.807	85	48.817	48.807	90	48.816	48.807	100	48.814	48.804	110	48.811	48.801	120	48.808	48.798	132	48.805	48.792	140	48.802	48.789		
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Model		LCA75S-48		Temperature		25°C																																																				
Item		Load Regulation		Testing Circuitry		Figure A																																																				
Object		+48V1.6A																																																								
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<div><div><div><div><div></div><div>—△—</div></div><div><div>Input Volt.</div><div>85V</div></div></div><div><div><div></div><div>---□---</div></div><div><div>Input Volt.</div><div>100V</div></div></div><div><div><div></div><div>-·-○-·-</div></div><div><div>Input Volt.</div><div>132V</div></div></div></div><div><div><div><div>Output Voltage [V]</div><div></div><div>49.10</div><div>49.00</div><div>48.90</div><div>48.80</div><div>48.70</div><div>48.60</div><div>48.50</div><div>48.40</div></div><div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div><div><div></div><div>Load Current [A]</div></div></div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>0.00</td><td>48.823</td><td>48.823</td><td>48.820</td></tr><tr><td>0.30</td><td>48.815</td><td>48.814</td><td>48.808</td></tr><tr><td>0.60</td><td>48.813</td><td>48.810</td><td>48.803</td></tr><tr><td>0.90</td><td>48.810</td><td>48.807</td><td>48.798</td></tr><tr><td>1.20</td><td>48.808</td><td>48.805</td><td>48.795</td></tr><tr><td>1.50</td><td>48.805</td><td>48.802</td><td>48.790</td></tr><tr><td>1.60</td><td>48.803</td><td>48.800</td><td>48.789</td></tr><tr><td>1.76</td><td>48.800</td><td>48.798</td><td>48.787</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]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0.00	48.823	48.823	48.820	0.30	48.815	48.814	48.808	0.60	48.813	48.810	48.803	0.90	48.810	48.807	48.798	1.20	48.808	48.805	48.795	1.50	48.805	48.802	48.790	1.60	48.803	48.800	48.789	1.76	48.800	48.798	48.787	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																									
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Note: Slanted line shows the range of the rated load current.																																																										

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BC-0997



Model	LCA75S-48		
Item	Dynamic Load Response 動的負荷変動	Temperature	25°C
Object	+48V1.6A	Testing Circuitry	Figure A

Input Volt. 100 V  
Cycle 1000 ms

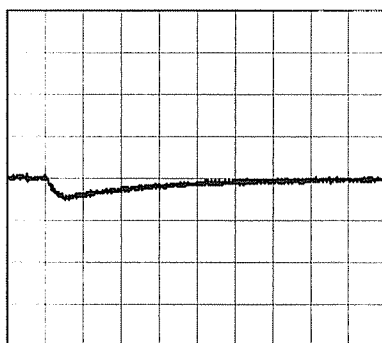
Load Current



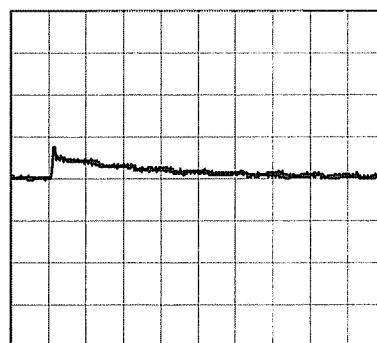
Min. Load (0A)  $\longleftrightarrow$

Load 100% (1.6A)

500 mV/div



10 ms/div

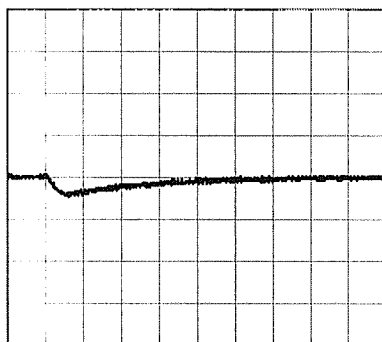


10 ms/div

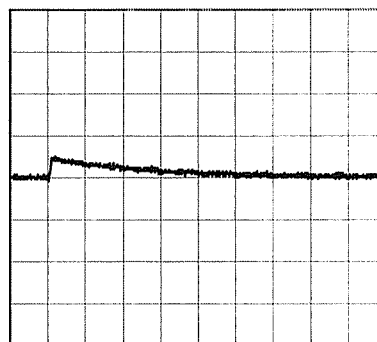
Min. Load (0A)  $\longleftrightarrow$

Load 50% (0.8A)

500 mV/div



10 ms/div



10 ms/div

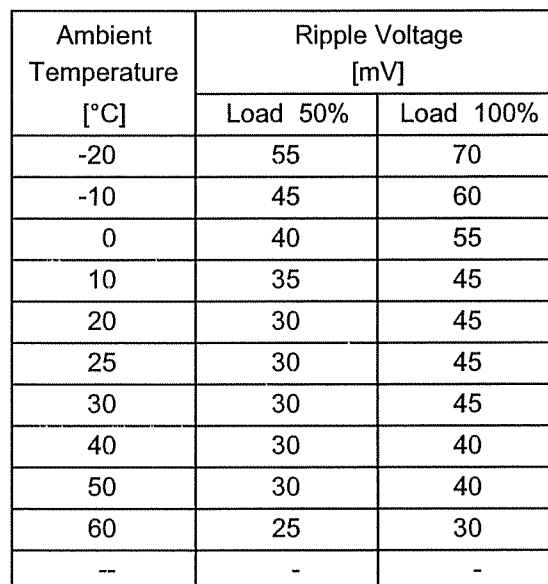
Model	LCA75S-48																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
		Testing Circuitry	Figure A																																						
Object	+48V1.6A																																								
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<div><div><div><div><div></div><div>Input Volt.</div><div>85V</div></div><div><div></div><div>Input Volt.</div><div>132V</div></div></div><div><p>Ripple Voltage [mV]</p><p>Load Current [A]</p></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>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 85 [V]</th><th>Input Volt. 132 [V]</th></tr><tr><td>0.0</td><td>10</td><td>10</td></tr><tr><td>0.2</td><td>15</td><td>15</td></tr><tr><td>0.4</td><td>15</td><td>15</td></tr><tr><td>0.6</td><td>25</td><td>15</td></tr><tr><td>0.8</td><td>30</td><td>20</td></tr><tr><td>1.0</td><td>35</td><td>20</td></tr><tr><td>1.2</td><td>40</td><td>20</td></tr><tr><td>1.4</td><td>45</td><td>20</td></tr><tr><td>1.6</td><td>55</td><td>25</td></tr><tr><td>1.8</td><td>60</td><td>25</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 85 [V]	Input Volt. 132 [V]	0.0	10	10	0.2	15	15	0.4	15	15	0.6	25	15	0.8	30	20	1.0	35	20	1.2	40	20	1.4	45	20	1.6	55	25	1.8	60	25	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
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--	-	-																																							
<div><div><div><div></div><div>T1: Due to AC Input Line</div></div><div><div></div><div>T2: Due to Switching</div></div></div><div><p>Ripple [mVp-p]</p><p>T1</p><p>T2</p></div></div> <div>Fig. Complex Ripple Wave Form</div>																																									

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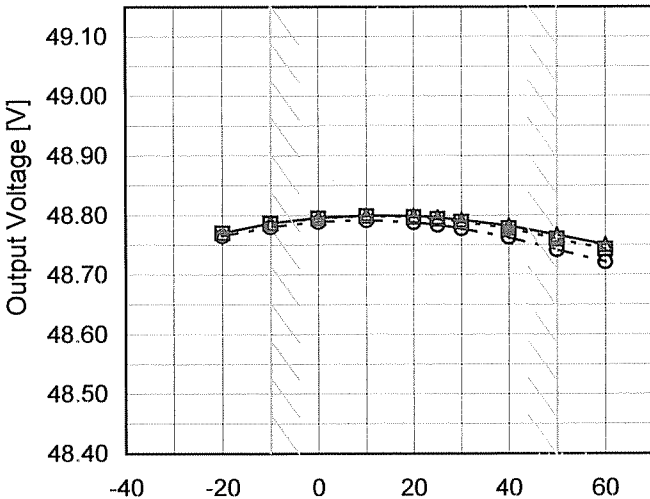
Model	LCA75S-48																																						
Item	Ripple-Noise	Temperature	25°C																																				
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<div><div><div><div></div><div>—△—</div><div>Input Volt. 85V</div></div><div><div></div><div>- -○- -</div><div>Input Volt. 132V</div></div></div><div><div><div><div>200</div><div>180</div><div>160</div><div>140</div><div>120</div><div>100</div><div>80</div><div>60</div><div>40</div><div>20</div><div>0</div></div><div><div>Ripple-Noise [mV]</div></div><div><div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div><div>2.0</div></div><div><div>Load Current [A]</div></div></div></div><div>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.</div></div><div><div><div><div></div><div>T1: Due to AC Input Line</div></div><div><div></div><div>T2: Due to Switching</div></div></div><div><div><div><div></div><div>Ripple-Noise [mVp-p]</div></div><div><div></div><div>T2</div></div><div><div></div><div>T1</div></div></div></div><div>Fig. Complex Ripple Wave Form</div></div><div><table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 85 [V]</th><th>Input Volt. 132 [V]</th></tr><tr><td>0.0</td><td>15</td><td>15</td></tr><tr><td>0.2</td><td>20</td><td>20</td></tr><tr><td>0.4</td><td>25</td><td>20</td></tr><tr><td>0.6</td><td>35</td><td>20</td></tr><tr><td>0.8</td><td>40</td><td>20</td></tr><tr><td>1.0</td><td>40</td><td>25</td></tr><tr><td>1.2</td><td>50</td><td>25</td></tr><tr><td>1.4</td><td>55</td><td>30</td></tr><tr><td>1.6</td><td>65</td><td>30</td></tr><tr><td>1.8</td><td>75</td><td>40</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table></div></div>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 85 [V]	Input Volt. 132 [V]	0.0	15	15	0.2	20	20	0.4	25	20	0.6	35	20	0.8	40	20	1.0	40	25	1.2	50	25	1.4	55	30	1.6	65	30	1.8	75	40	--	-	-
Load Current [A]	Ripple-Noise [mV]																																						
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1.8	75	40																																					
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Testing Circuitry Figure A

## 2.Values



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

Model	LCA75S-48																																																					
Item	Ambient Temperature Drift		Testing Circuitry    Figure A																																																			
Object	+48V1.6A																																																					
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.    85V</div></div><div><div>---□---</div><div>Input Volt.    100V</div></div><div><div>---○---</div><div>Input Volt.    132V</div></div></div>  <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>-20</td><td>48.771</td><td>48.770</td><td>48.765</td></tr><tr><td>-10</td><td>48.787</td><td>48.786</td><td>48.781</td></tr><tr><td>0</td><td>48.796</td><td>48.795</td><td>48.789</td></tr><tr><td>10</td><td>48.800</td><td>48.799</td><td>48.792</td></tr><tr><td>20</td><td>48.799</td><td>48.797</td><td>48.788</td></tr><tr><td>25</td><td>48.796</td><td>48.794</td><td>48.784</td></tr><tr><td>30</td><td>48.792</td><td>48.789</td><td>48.778</td></tr><tr><td>40</td><td>48.782</td><td>48.778</td><td>48.763</td></tr><tr><td>50</td><td>48.767</td><td>48.761</td><td>48.742</td></tr><tr><td>60</td><td>48.751</td><td>48.743</td><td>48.722</td></tr><tr><td>--</td><td>-</td><td>-</td><td>--</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	-20	48.771	48.770	48.765	-10	48.787	48.786	48.781	0	48.796	48.795	48.789	10	48.800	48.799	48.792	20	48.799	48.797	48.788	25	48.796	48.794	48.784	30	48.792	48.789	48.778	40	48.782	48.778	48.763	50	48.767	48.761	48.742	60	48.751	48.743	48.722	--	-	-	--
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Model		LCA75S-48	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+48V1.6A	

### 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 - 132V

Load Current : 0 - 1.6A

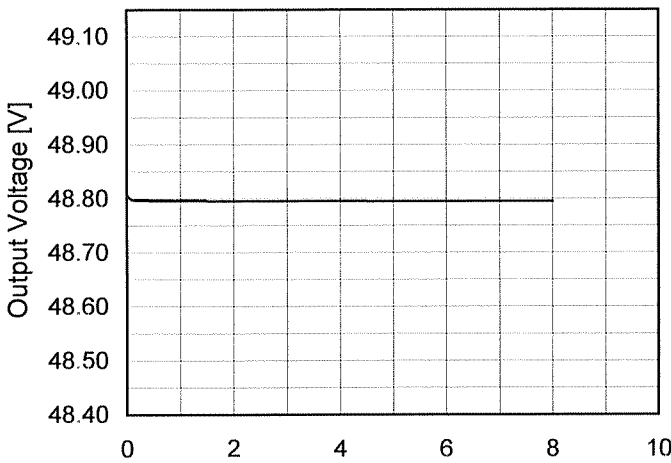
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* 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]	Ration [%]
Maximum Voltage	25	85	0	48.813	±39	±0.1
Minimum Voltage	50	132	1.6	48.735		



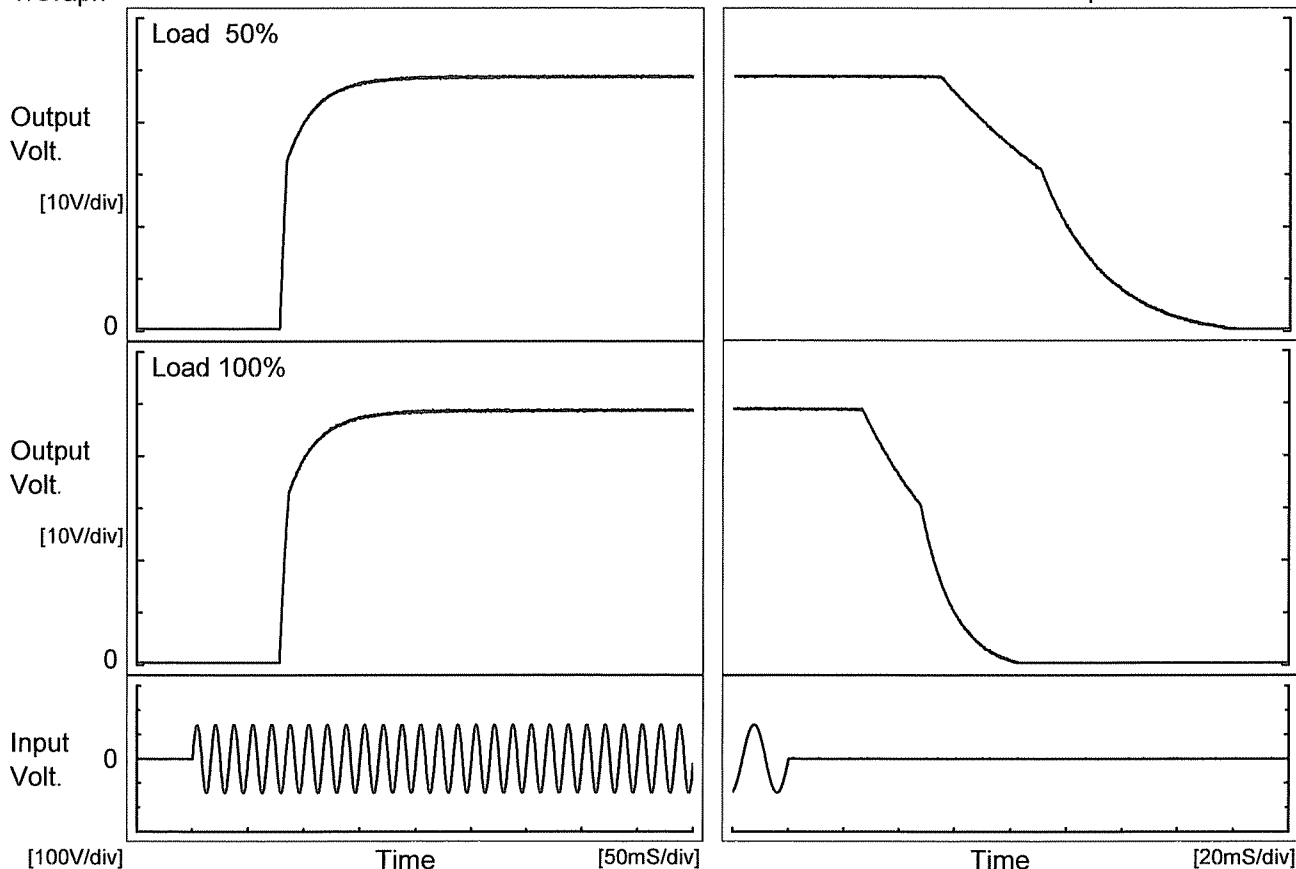
Model	LCA75S-48																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+48V1.6A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 100V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>48.809</td></tr><tr><td>0.5</td><td>48.796</td></tr><tr><td>1.0</td><td>48.796</td></tr><tr><td>2.0</td><td>48.796</td></tr><tr><td>3.0</td><td>48.796</td></tr><tr><td>4.0</td><td>48.796</td></tr><tr><td>5.0</td><td>48.795</td></tr><tr><td>6.0</td><td>48.795</td></tr><tr><td>7.0</td><td>48.795</td></tr><tr><td>8.0</td><td>48.795</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	48.809	0.5	48.796	1.0	48.796	2.0	48.796	3.0	48.796	4.0	48.796	5.0	48.795	6.0	48.795	7.0	48.795	8.0	48.795
Time since start [H]	Output Voltage [V]																								
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8.0	48.795																								





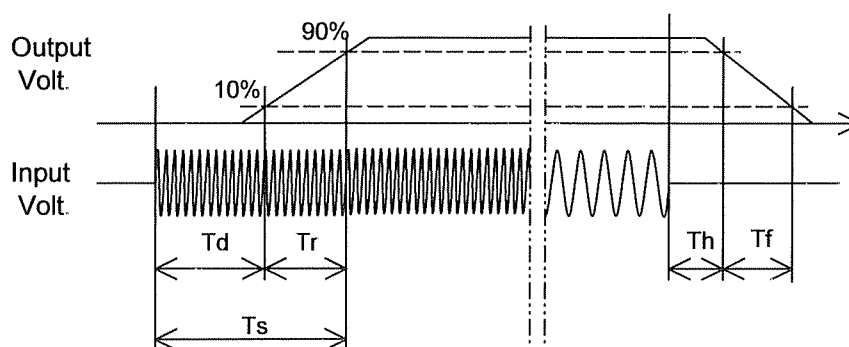
Model	LCA75S-48	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+48V1.6A		

# 1.Graph



# 2.Values

		[mS]				
Load	Time	Td	Tr	Ts	Th	Tf
50 %		78.8	35.0	113.8	63.3	64.5
100 %		78.8	36.5	115.3	31.4	35.2






BC-0997

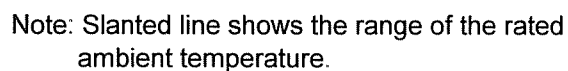
Model	LCA75S-48																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
Object	+48V1.6A	Testing Circuitry	Figure A																																																			
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<div><div>—△— Input Volt. 85V</div><div>---□--- Input Volt. 100V</div><div>-·-○-·- Input Volt. 132V</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. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.30</td><td>80</td><td>133</td><td>298</td></tr><tr><td>0.60</td><td>38</td><td>75</td><td>169</td></tr><tr><td>0.90</td><td>30</td><td>52</td><td>116</td></tr><tr><td>1.20</td><td>18</td><td>37</td><td>90</td></tr><tr><td>1.50</td><td>13</td><td>30</td><td>70</td></tr><tr><td>1.60</td><td>13</td><td>29</td><td>64</td></tr><tr><td>1.76</td><td>12</td><td>22</td><td>60</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. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0.00	-	-	-	0.30	80	133	298	0.60	38	75	169	0.90	30	52	116	1.20	18	37	90	1.50	13	30	70	1.60	13	29	64	1.76	12	22	60	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
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<div><div><div></div><div></div><div></div></div><div>Input Volt. 85V Input Volt. 100V Input Volt. 132V</div></div> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>48.0</td><td>2.02</td><td>1.99</td><td>2.05</td></tr><tr><td>45.6</td><td>2.02</td><td>2.02</td><td>2.05</td></tr><tr><td>43.2</td><td>2.06</td><td>2.08</td><td>2.07</td></tr><tr><td>38.4</td><td>2.08</td><td>2.05</td><td>2.07</td></tr><tr><td>33.6</td><td>2.05</td><td>2.07</td><td>2.09</td></tr><tr><td>28.8</td><td>2.09</td><td>2.08</td><td>2.08</td></tr><tr><td>24.0</td><td>2.05</td><td>2.09</td><td>2.08</td></tr><tr><td>19.2</td><td>2.08</td><td>2.10</td><td>2.10</td></tr><tr><td>14.4</td><td>2.14</td><td>2.12</td><td>2.12</td></tr><tr><td>9.6</td><td>2.09</td><td>2.12</td><td>2.10</td></tr><tr><td>4.8</td><td>2.08</td><td>2.04</td><td>2.03</td></tr><tr><td>0.0</td><td>2.08</td><td>2.14</td><td>2.07</td></tr></table>		Output Voltage [V]	Load Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	48.0	2.02	1.99	2.05	45.6	2.02	2.02	2.05	43.2	2.06	2.08	2.07	38.4	2.08	2.05	2.07	33.6	2.05	2.07	2.09	28.8	2.09	2.08	2.08	24.0	2.05	2.09	2.08	19.2	2.08	2.10	2.10	14.4	2.14	2.12	2.12	9.6	2.09	2.12	2.10	4.8	2.08	2.04	2.03	0.0	2.08	2.14	2.07
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1. Graph

	Input Volt.	85V
	Input Volt.	100V
	Input Volt.	132V



## 2.Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	58.62	58.56	58.51
-10	59.21	59.09	59.09
0	59.68	59.62	59.62
10	60.23	60.17	60.17
20	60.75	60.63	60.63
25	61.04	60.98	60.92
30	61.34	61.22	61.22
40	61.80	61.74	61.74
50	62.39	62.27	62.27
60	62.85	62.79	62.79
--	-	-	-

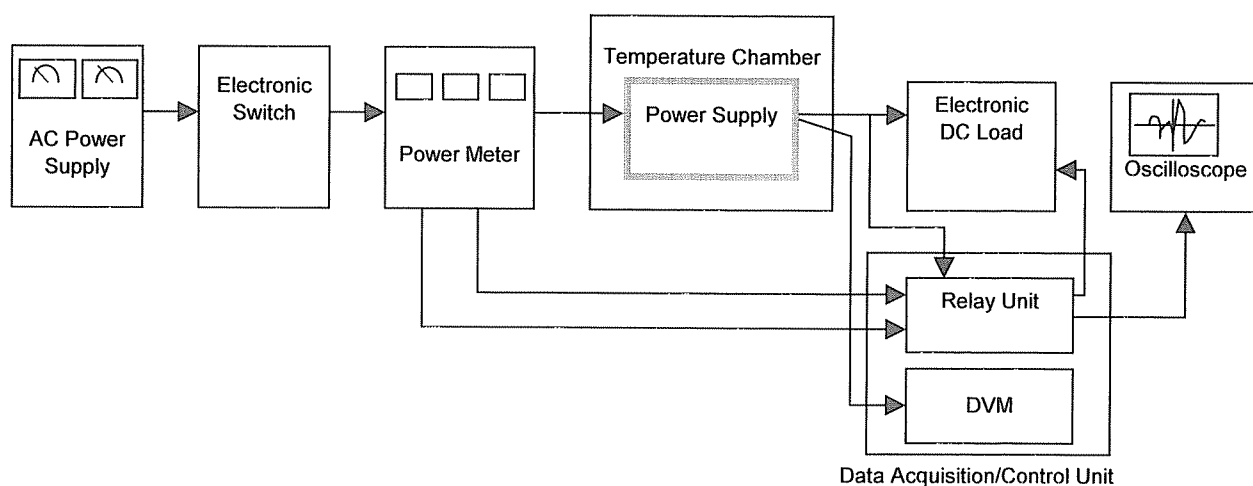


Figure A

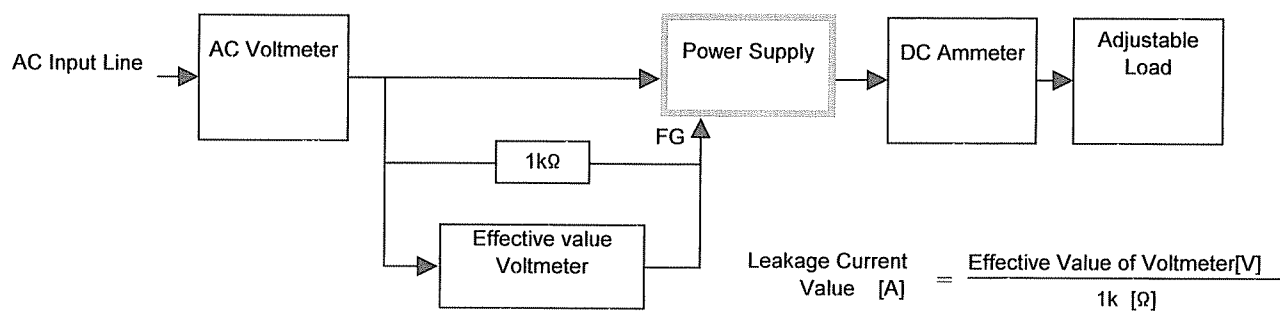


Figure B ( DEN-AN )

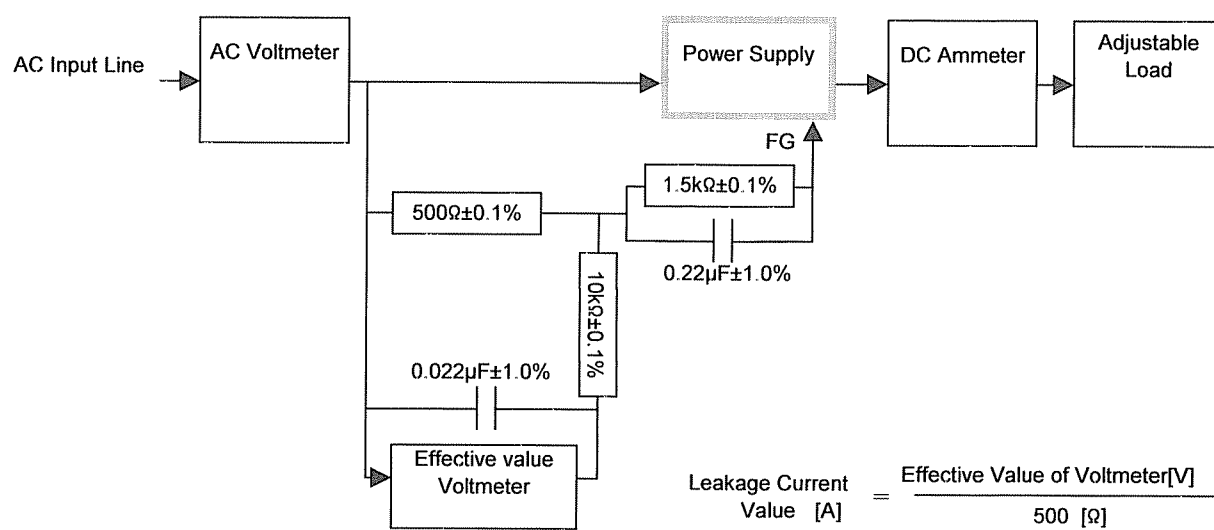


Figure B ( IEC60950 )