



# TEST DATA OF LCA150S-36

Regulated DC Power Supply  
Sep.29. 2004

Approved by : Kenichi Shibutani  
Kenichi Shibutani Design Manager

Prepared by : Masami Horita  
Masami Horita Design Engineer

**COSEL CO.,LTD.**



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Model		LCA150S-36		Temperature 25°C																																																				
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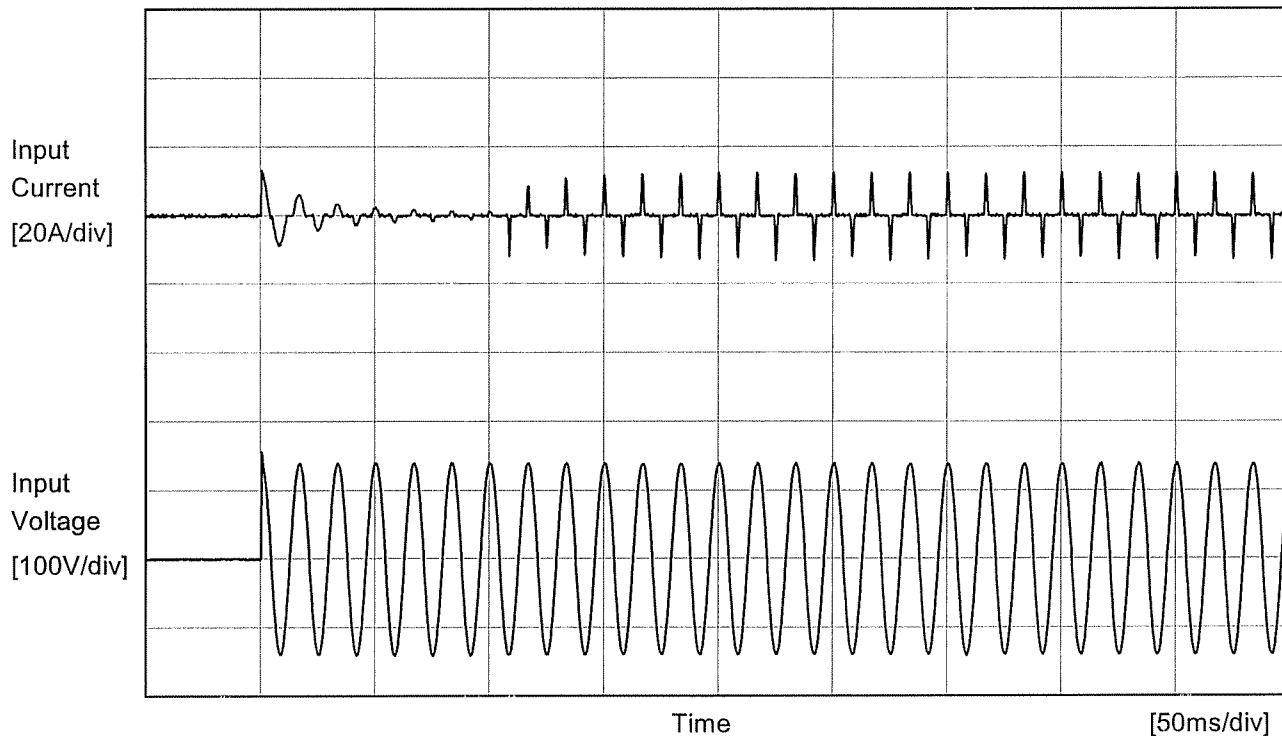
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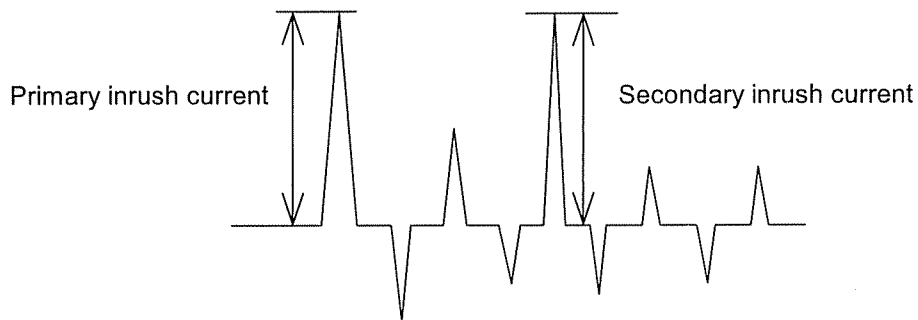


Model		LCA150S-36	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current	
Object		_____	



Input Voltage 100 V  
 Frequency 60 Hz  
 Load 100 %

Primary inrush current 13.1 A  
 Secondary inrush current 13.3 A





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Item		Dynamic Load Response 動的負荷変動		
Object		+36V4.2A		

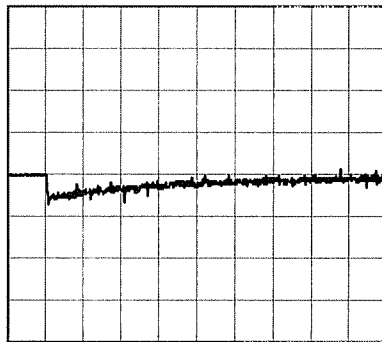
Input Volt. 100 V  
Cycle 1000 ms

Load Current

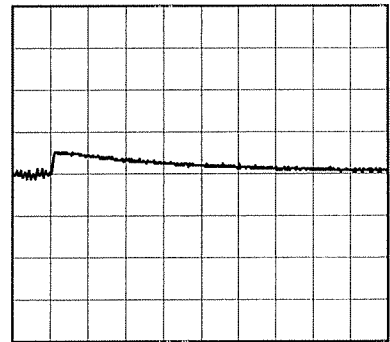


Min. Load (0A) ←→  
Load 100% (4.2A)

100 mV/div



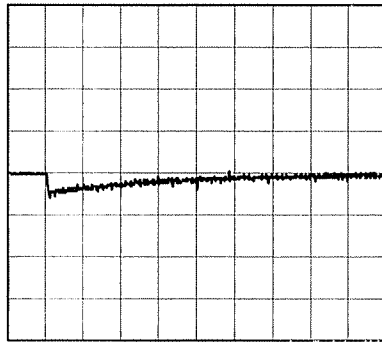
10 ms/div



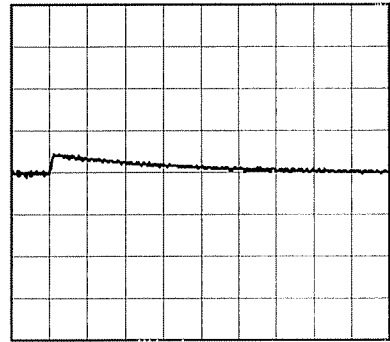
10 ms/div

Min. Load (0A) ←→  
Load 50% (2.1A)

100 mV/div



10 ms/div



10 ms/div



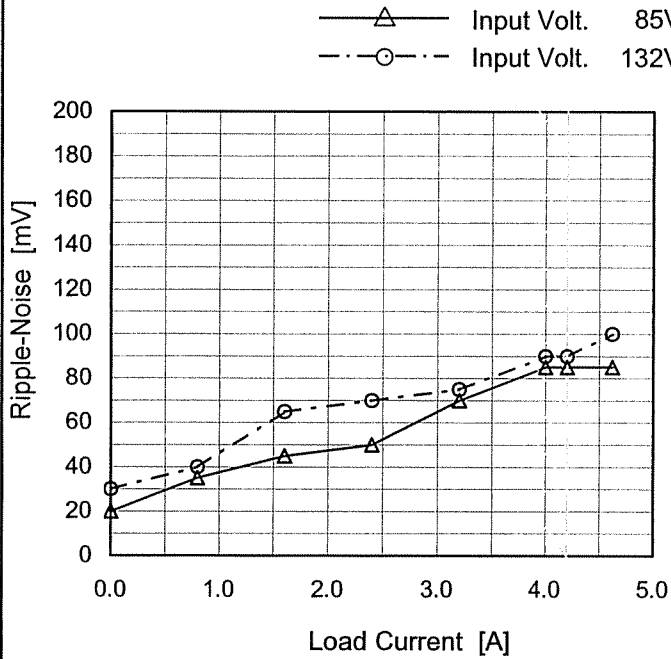
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<p>T1: Due to AC Input Line T2: Due to Switching</p> <p>Fig. Complex Ripple Wave Form</p>																																								



Model	LCA150S-36
Item	Ripple-Noise
Object	+36V4.2A

Temperature 25°C  
Testing Circuitry Figure A

1.Graph



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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	20	30
0.80	35	40
1.60	45	65
2.40	50	70
3.20	70	75
4.00	85	90
4.20	85	90
4.62	85	100
--	-	-
--	-	-
--	-	-

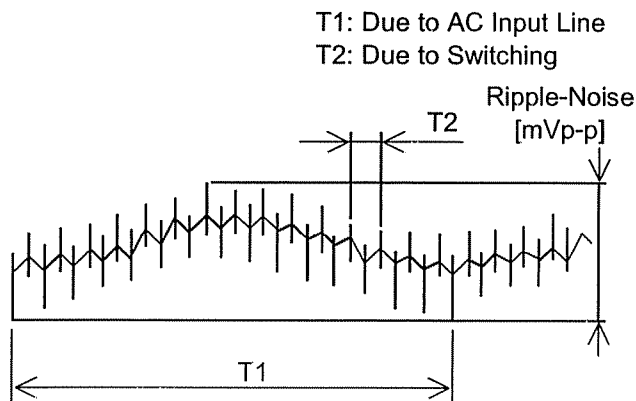


Fig. Complex Ripple Wave Form



<b>COSEL</b>																																								
Model	LCA150S-36																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure A																																						
Object	+36V4.2A																																							
<p>1.Graph</p> <p style="text-align: center;">Ambient Temperature [°C] Input Volt. 100V</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-20</td><td>40</td><td>50</td></tr> <tr><td>-10</td><td>40</td><td>45</td></tr> <tr><td>0</td><td>35</td><td>45</td></tr> <tr><td>10</td><td>30</td><td>35</td></tr> <tr><td>25</td><td>25</td><td>35</td></tr> <tr><td>30</td><td>30</td><td>30</td></tr> <tr><td>40</td><td>20</td><td>30</td></tr> <tr><td>50</td><td>20</td><td>25</td></tr> <tr><td>60</td><td>20</td><td>25</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]		Load 50%	Load 100%	-20	40	50	-10	40	45	0	35	45	10	30	35	25	25	35	30	30	30	40	20	30	50	20	25	60	20	25	--	-	-	--	-	-
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Model		LCA150S-36		Testing Circuitry Figure A																																																				
Item		Ambient Temperature Drift																																																						
Object		+36V4.2A																																																						
1.Graph		<p>                 —△— Input Volt. 85V                  - - - □ - - - Input Volt. 100V                  - · - ○ - · - - Input Volt. 132V             </p>		2.Values																																																				
<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>		<table border="1"> <thead> <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> </thead> <tbody> <tr><td>-20</td><td>36.146</td><td>36.145</td><td>36.144</td></tr> <tr><td>-10</td><td>36.135</td><td>36.134</td><td>36.132</td></tr> <tr><td>0</td><td>36.122</td><td>36.121</td><td>36.120</td></tr> <tr><td>10</td><td>36.106</td><td>36.105</td><td>36.103</td></tr> <tr><td>25</td><td>36.076</td><td>36.074</td><td>36.073</td></tr> <tr><td>40</td><td>36.041</td><td>36.040</td><td>36.038</td></tr> <tr><td>50</td><td>36.019</td><td>36.018</td><td>36.016</td></tr> <tr><td>60</td><td>35.999</td><td>35.998</td><td>35.995</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>				Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	-20	36.146	36.145	36.144	-10	36.135	36.134	36.132	0	36.122	36.121	36.120	10	36.106	36.105	36.103	25	36.076	36.074	36.073	40	36.041	36.040	36.038	50	36.019	36.018	36.016	60	35.999	35.998	35.995	--	-	-	-	--	-	-	-	--	-	-	-
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<b>COSEL</b>		
Model	LCA150S-36	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+36V4.2A	

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 - 132V

Load Current : 0 - 4.2A

\* 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	100	0	36.131	±63	±0.2
Minimum Voltage	50	132	4.2	36.005		



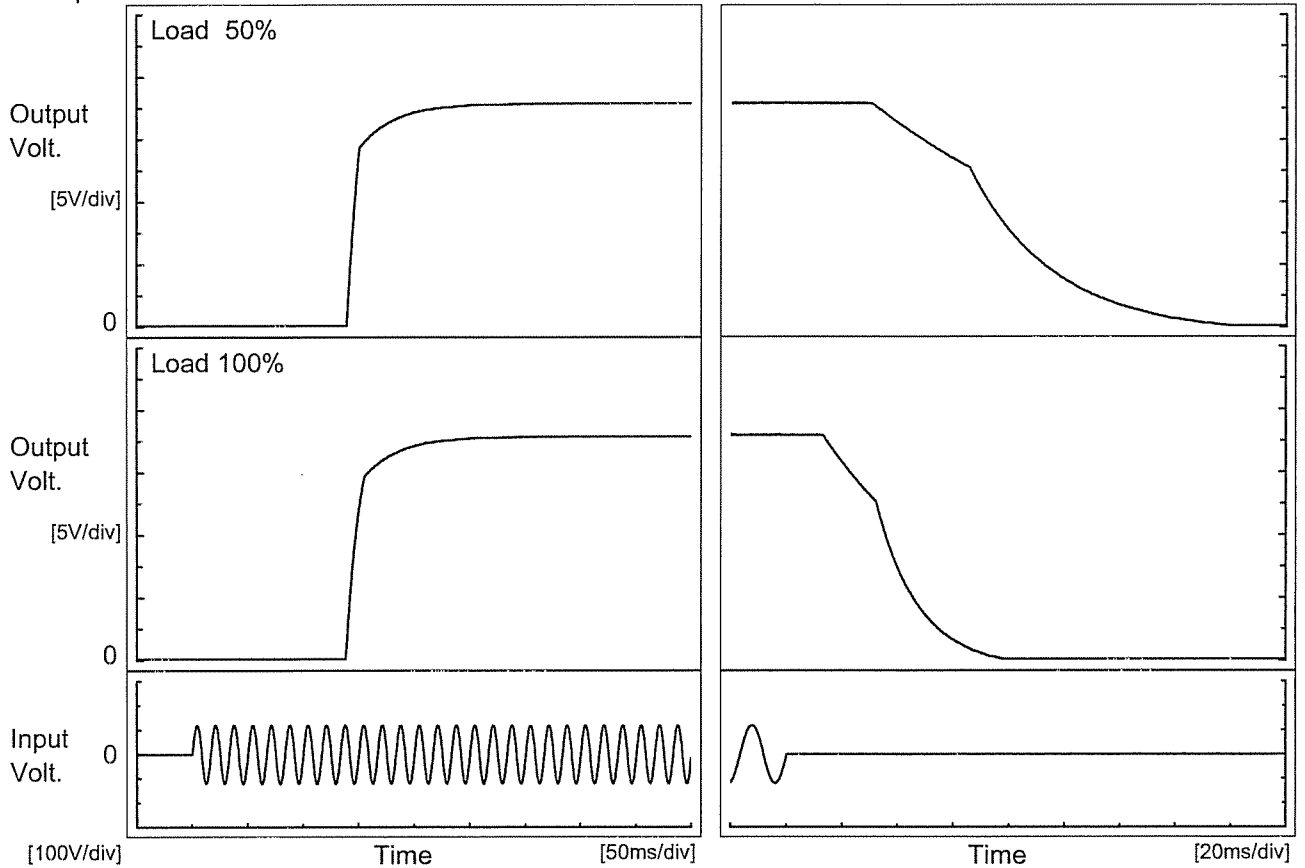
<b>COSEL</b>																									
Model	LCA150S-36	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+36V4.2A																								
1.Graph		2.Values																							
<p style="text-align: center;">Time [H]</p> <p>Input Volt.    100V Load            100%</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>36.104</td></tr> <tr><td>0.5</td><td>36.067</td></tr> <tr><td>1.0</td><td>36.066</td></tr> <tr><td>2.0</td><td>36.066</td></tr> <tr><td>3.0</td><td>36.066</td></tr> <tr><td>4.0</td><td>36.065</td></tr> <tr><td>5.0</td><td>36.065</td></tr> <tr><td>6.0</td><td>36.065</td></tr> <tr><td>7.0</td><td>36.065</td></tr> <tr><td>8.0</td><td>36.065</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	36.104	0.5	36.067	1.0	36.066	2.0	36.066	3.0	36.066	4.0	36.065	5.0	36.065	6.0	36.065	7.0	36.065	8.0	36.065
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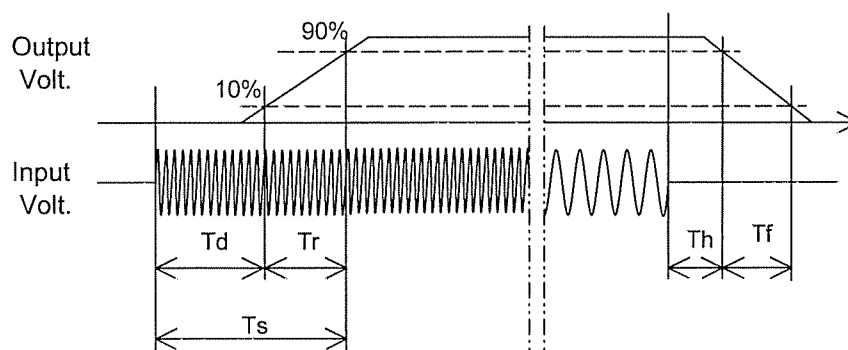
Model	LCA150S-36	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+36V4.2A		

1. Graph



2. Values

		[ms]				
Load	Time	Td	Tr	Ts	Th	Tf
50 %		140.0	35.3	175.3	40.2	78.0
100 %		139.5	36.5	176.0	20.3	40.2





Model		LCA150S-36																																	
Item		Hold-Up Time																																	
Object		+36V4.2A																																	
Temperature		25°C																																	
Testing Circuitry		Figure A																																	
1.Graph		2.Values																																	
<p>---□--- Load 50% —△— Load 100%</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>75</td><td>15</td><td>5</td></tr> <tr><td>80</td><td>23</td><td>9</td></tr> <tr><td>85</td><td>31</td><td>13</td></tr> <tr><td>90</td><td>40</td><td>18</td></tr> <tr><td>100</td><td>61</td><td>28</td></tr> <tr><td>110</td><td>83</td><td>40</td></tr> <tr><td>120</td><td>107</td><td>53</td></tr> <tr><td>132</td><td>140</td><td>70</td></tr> <tr><td>140</td><td>164</td><td>83</td></tr> </tbody> </table>		Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	75	15	5	80	23	9	85	31	13	90	40	18	100	61	28	110	83	40	120	107	53	132	140	70	140	164	83
Input Voltage [V]	Hold-Up Time [ms]																																		
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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>																																			

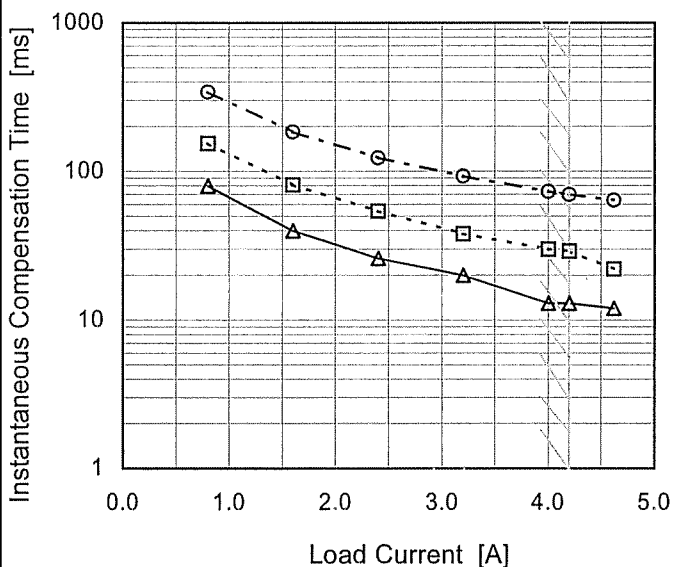


Model	LCA150S-36
Item	Instantaneous Interruption Compensation
Object	+36V4.2A

Temperature 25°C  
Testing Circuitry Figure A

1.Graph  
 —△— Input Volt. 85V  
 - - - □ - - - Input Volt. 100V  
 · · · ○ · · · Input Volt. 132V

2.Values



Load Current [A]	Time [ms]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	-	-	-
0.80	80	154	342
1.60	40	81	184
2.40	26	54	123
3.20	20	38	93
4.00	13	30	73
4.20	13	29	70
4.62	12	22	64
--	-	-	-
--	-	-	-
--	-	-	-

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



Model		LCA150S-36	Testing Circuitry Figure A																																						
Item		Minimum Input Voltage for Regulated Output Voltage																																							
Object		+36V4.2A																																							
1.Graph		<p>---□--- Load 50%</p> <p>—△— Load 100%</p> <p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p>	2.Values																																						
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Model		LCA150S-36		Temperature 25°C																																																								
Item		Overcurrent Protection		Testing Circuitry Figure A																																																								
Object		+36V4.2A																																																										
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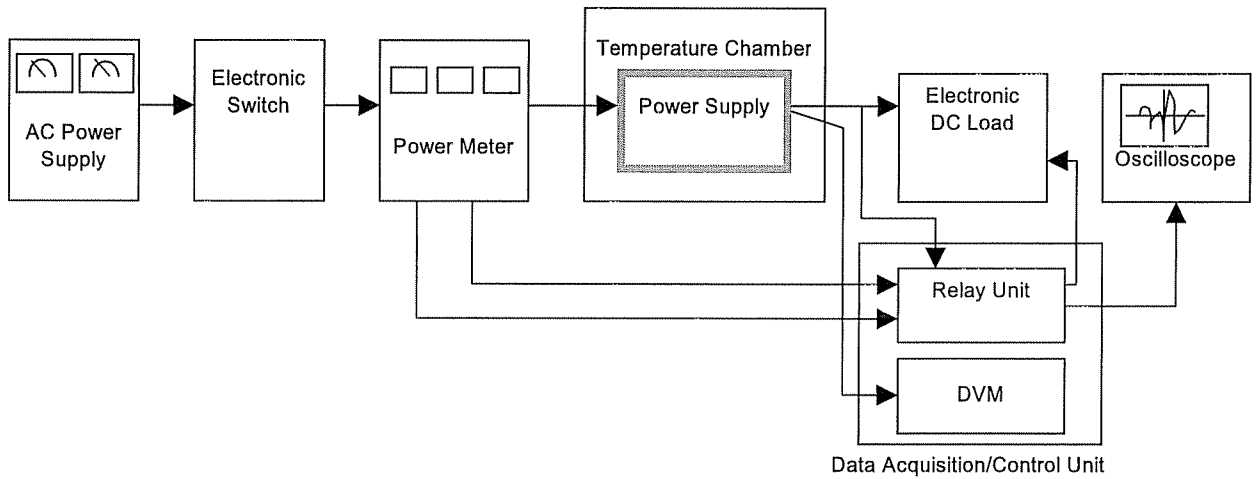


Figure A

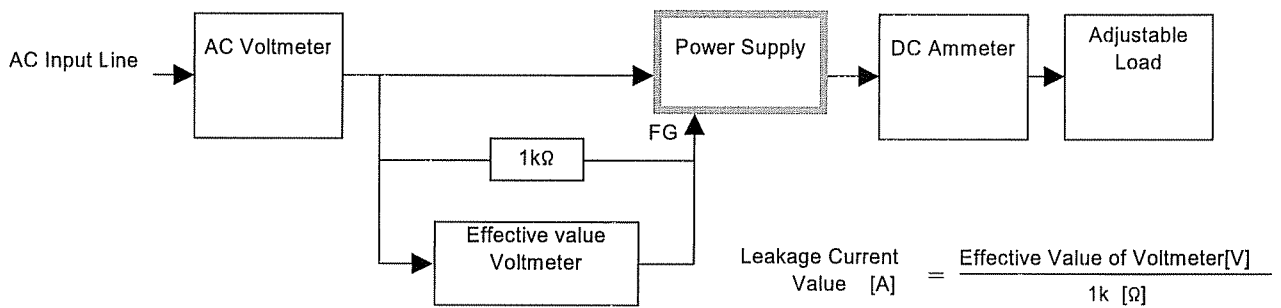


Figure B ( DEN-AN )

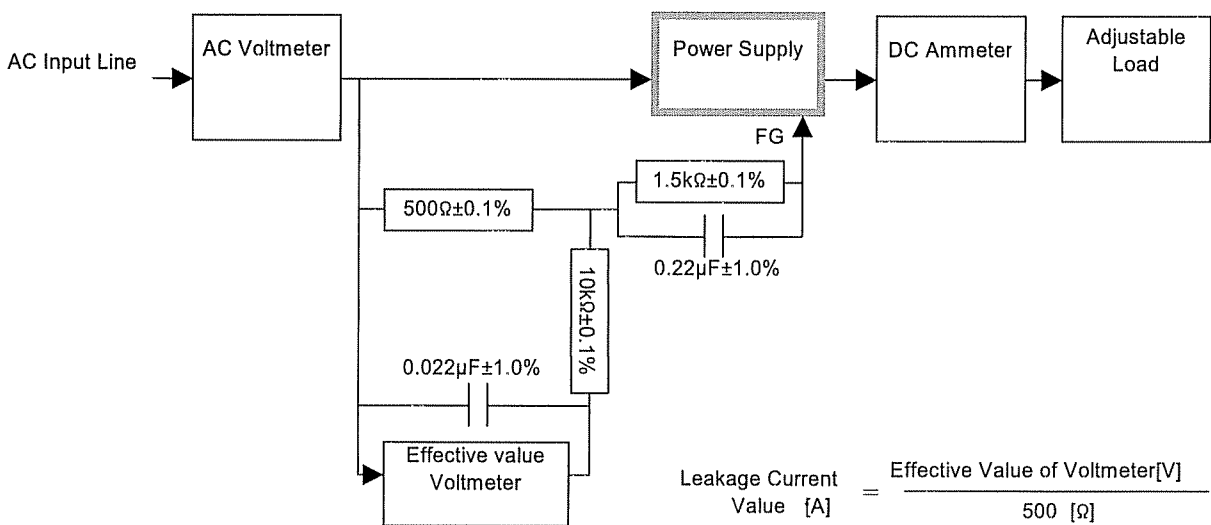


Figure B ( IEC60950 )