

TEST DATA OF SPLFA100F-12

Regulated DC Power Supply

October 19, 2011

Approved by : Jakahiro Yoneda
Takahiro Yoneda Design Manager

Prepared by : Satoshi Kinoshita
Satoshi Kinoshita Design Engineer

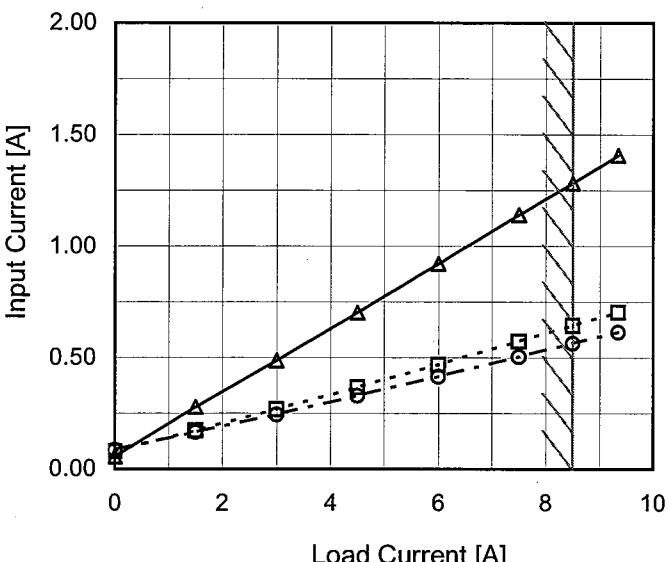
COSEL CO.,LTD.

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Model	SPLFA100F-12	Temperature 25°C Testing Circuitry Figure A																																																					
Item	Input Current (by Load Current)																																																						
Object	—																																																						
1.Graph	—△— Input Volt. 100V ---□--- Input Volt. 200V -○--- Input Volt. 230V	2.Values																																																					
																																																							
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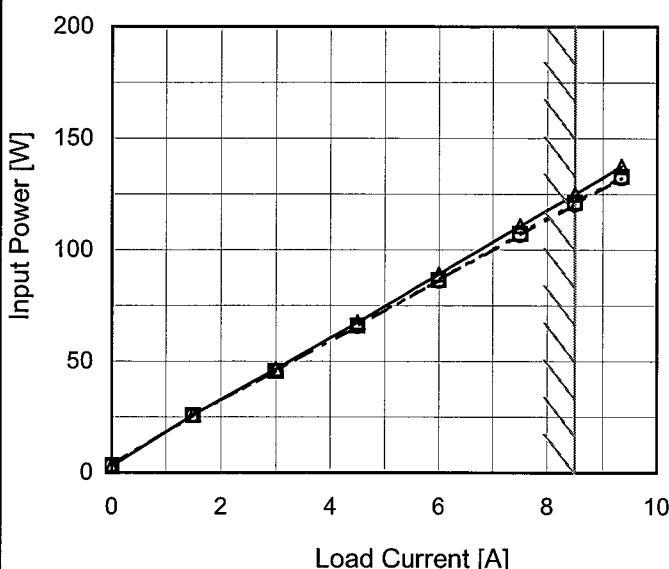
Model SPLFA100F-12

Item Input Power (by Load Current)

Object _____

1. Graph

- △— Input Volt. 100V
- -□--- Input Volt. 200V
- -○--- Input Volt. 230V



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

Temperature 25°C
Testing Circuitry Figure A

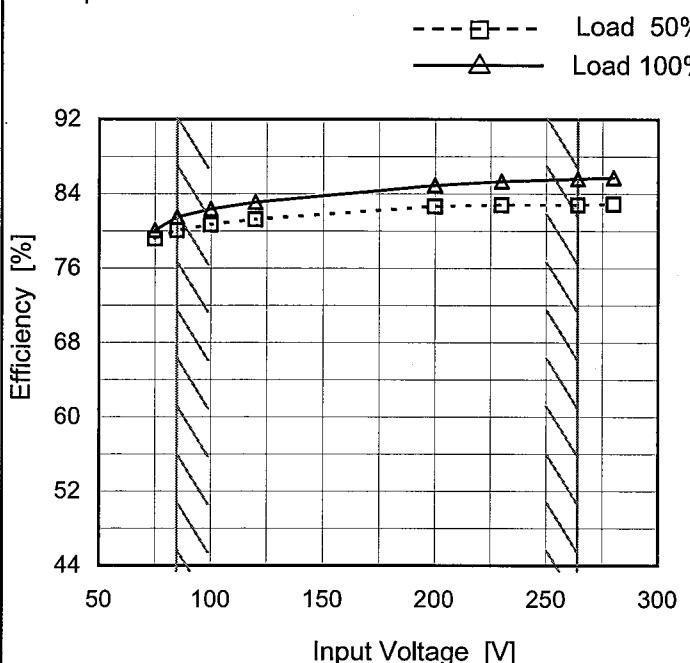
2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	2.9	3.3	3.3
1.50	26.0	25.7	25.8
3.00	46.5	45.6	45.6
4.50	67.5	66.0	65.8
6.00	89.0	86.5	86.2
7.50	110.8	107.3	106.8
8.50	125.0	121.3	120.6
9.35	137.5	132.9	132.3
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SPLFA100F-12
Item	Efficiency (by Input Voltage)
Object	_____

1. Graph



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

Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	79.2	80.1
85	80.1	81.5
100	80.7	82.4
120	81.2	83.1
200	82.6	84.9
230	82.8	85.3
264	82.8	85.6
280	82.9	85.8
--	-	-

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Model	SPLFA100F-12
Item	Efficiency (by Load Current)
Object	

1. Graph

Efficiency [%]

Load Current [A]

Legend:

- Input Volt. 100V
- Input Volt. 200V
- Input Volt. 230V

Load Current [A]	Efficiency [100V]	Efficiency [200V]	Efficiency [230V]
0.00	-	-	-
1.50	70.2	70.9	70.7
3.00	78.2	79.8	79.8
4.50	80.9	82.8	83.0
6.00	81.7	84.1	84.4
7.50	81.9	84.6	85.0
8.50	82.3	84.8	85.3
9.35	82.1	85.0	85.4
--	-	-	-
--	-	-	-
--	-	-	-

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

Temperature 25°C
Testing Circuitry Figure A

2. Values

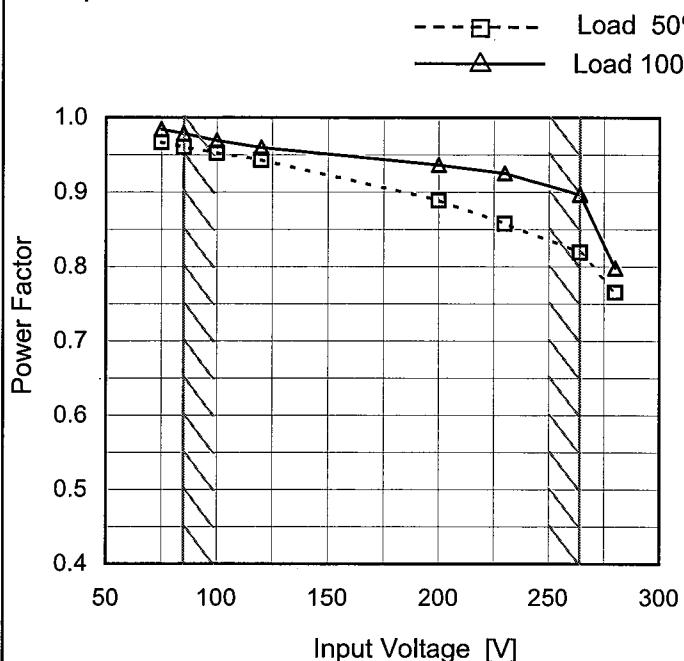
Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
1.50	70.2	70.9	70.7
3.00	78.2	79.8	79.8
4.50	80.9	82.8	83.0
6.00	81.7	84.1	84.4
7.50	81.9	84.6	85.0
8.50	82.3	84.8	85.3
9.35	82.1	85.0	85.4
--	-	-	-
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COSEL

Model	SPLFA100F-12
Item	Power Factor (by Input Voltage)
Object	_____

Temperature 25°C
Testing Circuitry Figure A

1.Graph

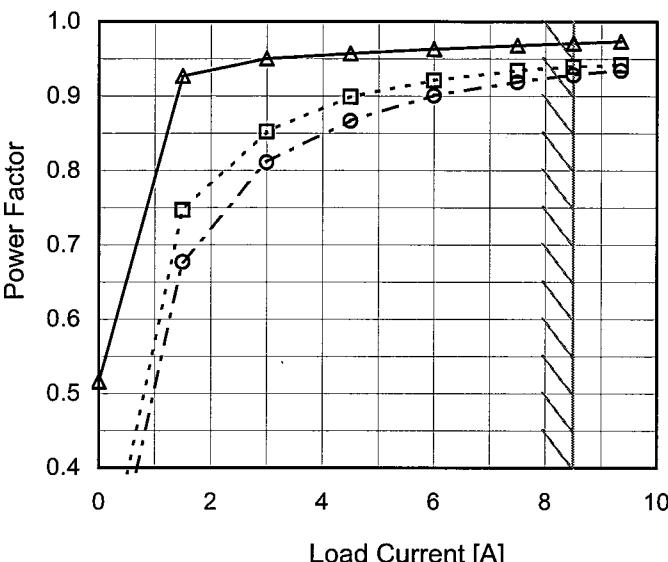


2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.967	0.984
85	0.960	0.979
100	0.952	0.970
120	0.943	0.960
200	0.889	0.937
230	0.858	0.925
264	0.819	0.897
280	0.766	0.798
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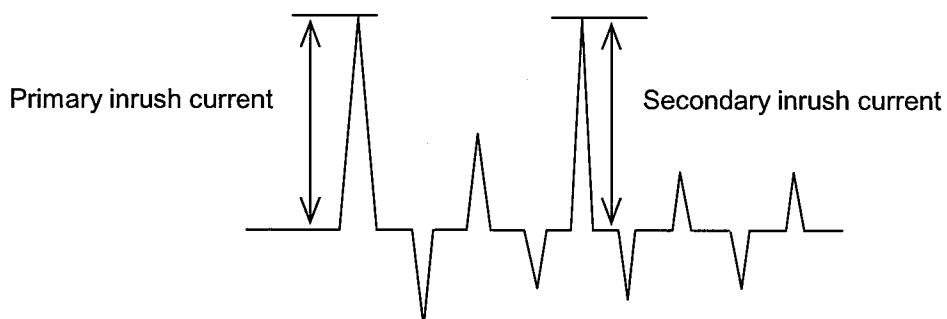
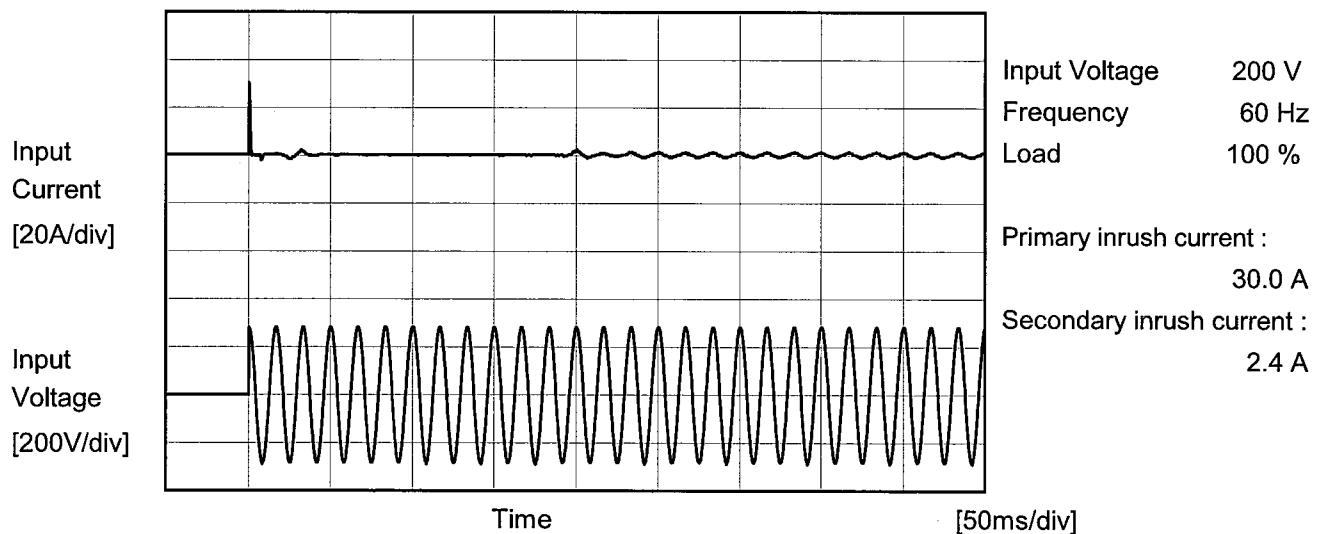
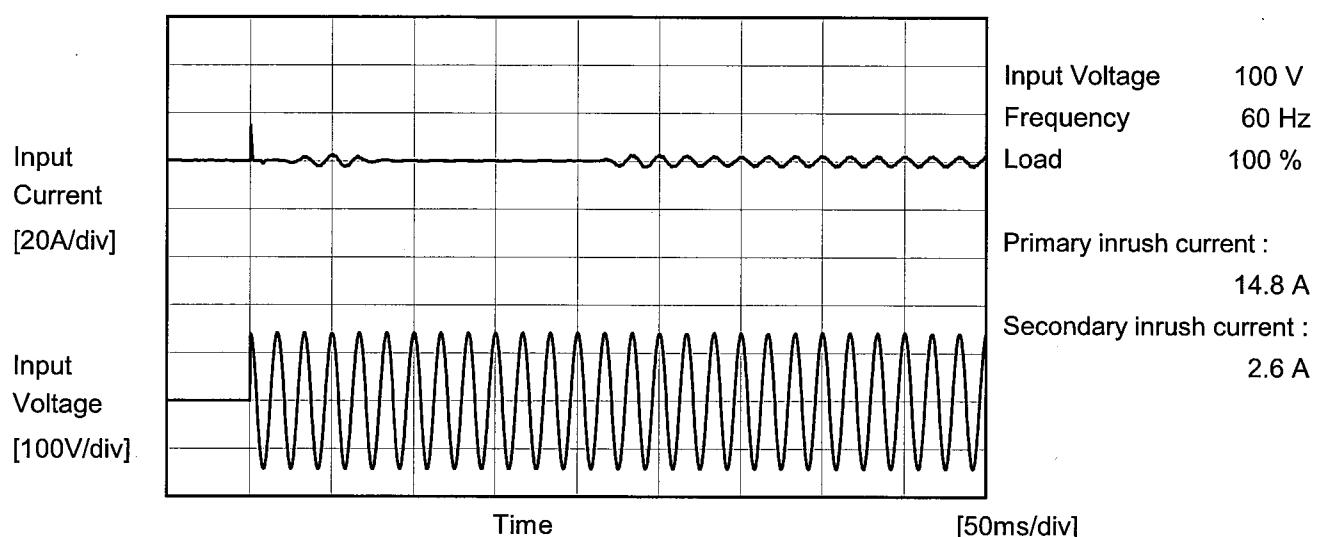
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Model	SPLFA100F-12																																																					
Item	Power Factor (by Load Current)																																																					
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1.Graph	<p style="text-align: center;"> —△— Input Volt. 100V ---□--- Input Volt. 200V ---○--- Input Volt. 230V </p>  <p>The graph plots Power Factor against Load Current for three different input voltages. The curves show that power factor increases with load current and is higher for higher input voltages. A slanted line on the graph indicates the rated load current range.</p>																																																					
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Note:	Slanted line shows the range of the rated load current.																																																					

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Model	SPLFA100F-12
Item	Inrush Current
Object	_____

Temperature 25°C
Testing Circuitry Figure A



Model	SPLFA100F-12	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	<hr/>		

1. Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.27	0.34	0.37	Operation
	One of phases	0.25	0.55	0.67	Stand by
IEC60950-1	Both phases	0.13	0.28	0.33	Operation
	One of phases	0.25	0.52	0.64	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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Model SPLFA100F-12

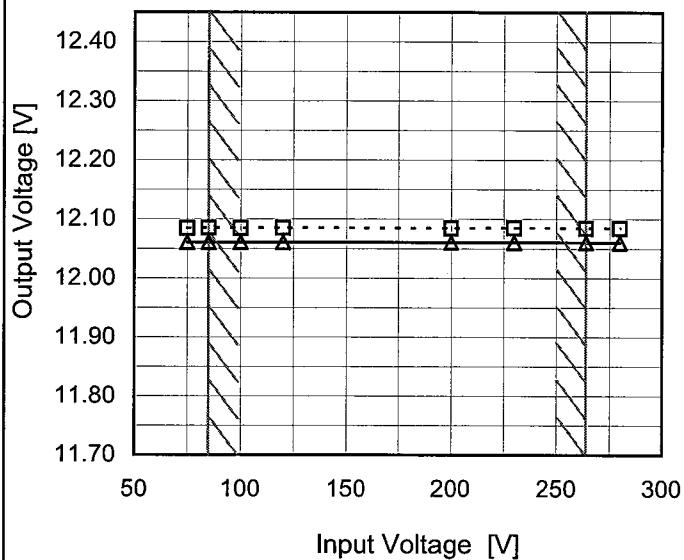
Item Line Regulation

Object +12V8.5A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

--- □ --- Load 50%
 —△— Load 100%



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

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	12.085	12.061
85	12.085	12.061
100	12.085	12.061
120	12.085	12.061
200	12.085	12.061
230	12.085	12.061
264	12.085	12.061
280	12.085	12.060
--	-	-

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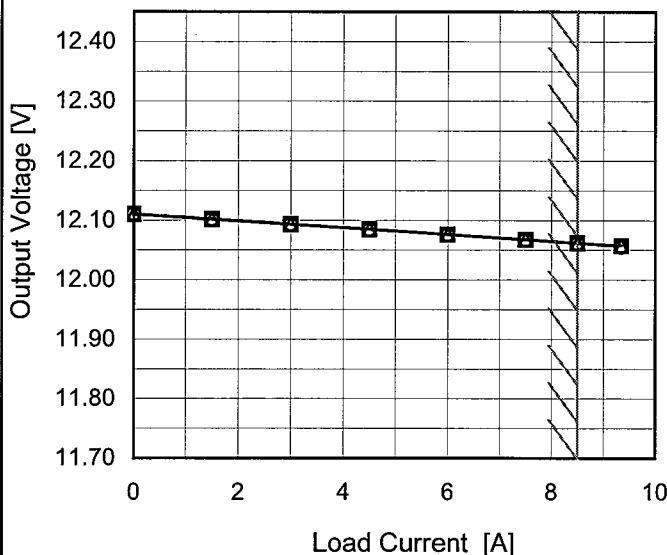
Model SPLFA100F-12

Item Load Regulation

Object +12V8.5A

1. Graph

—△— Input Volt. 100V
 - -□--- Input Volt. 200V
 - -○--- Input Volt. 230V

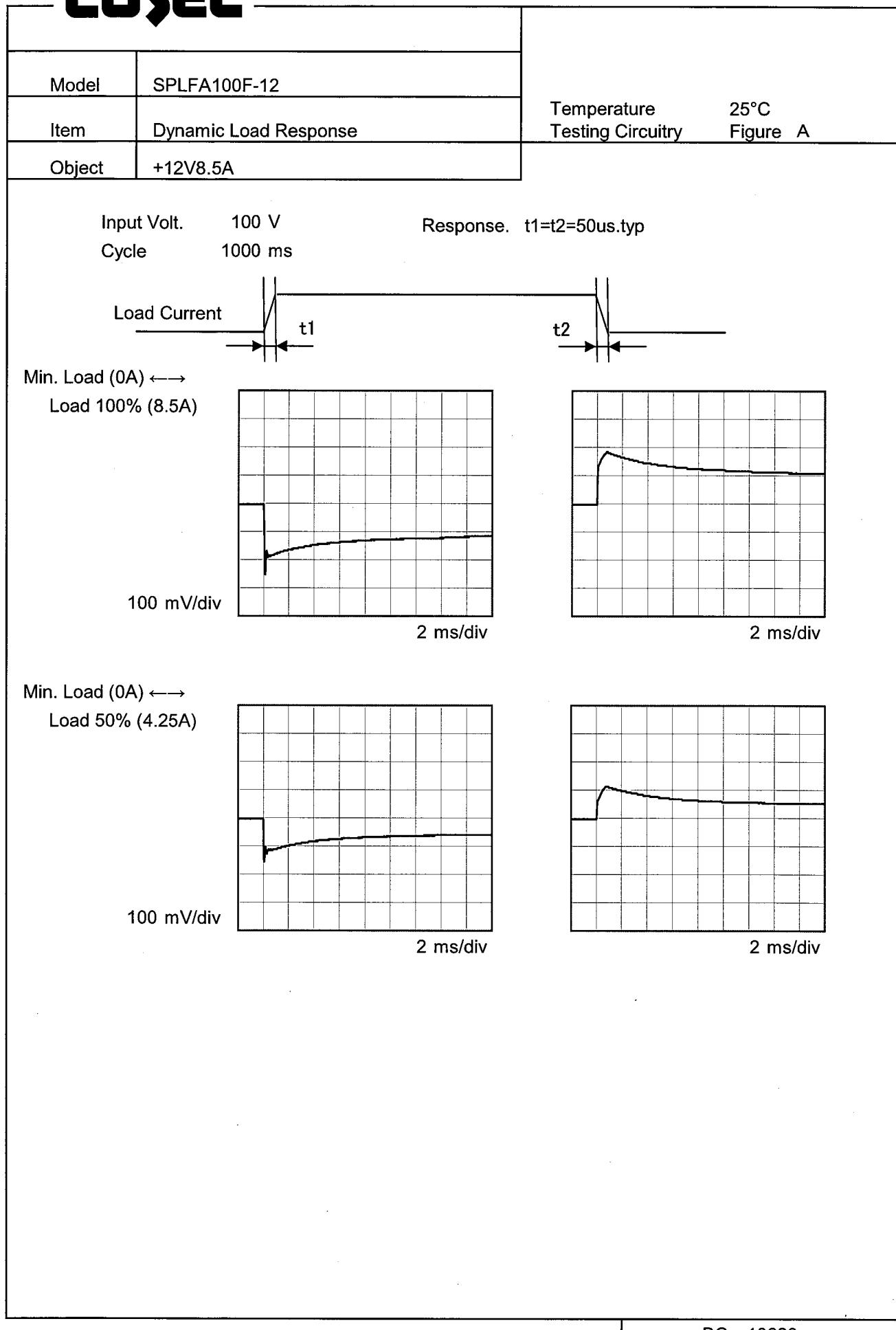


Note: Slanted line shows the range of the rated load current.

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	12.111	12.111	12.111
1.50	12.102	12.102	12.102
3.00	12.093	12.093	12.093
4.50	12.085	12.085	12.085
6.00	12.077	12.076	12.076
7.50	12.068	12.068	12.067
8.50	12.062	12.062	12.062
9.35	12.058	12.057	12.056
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--	-	-	-
--	-	-	-

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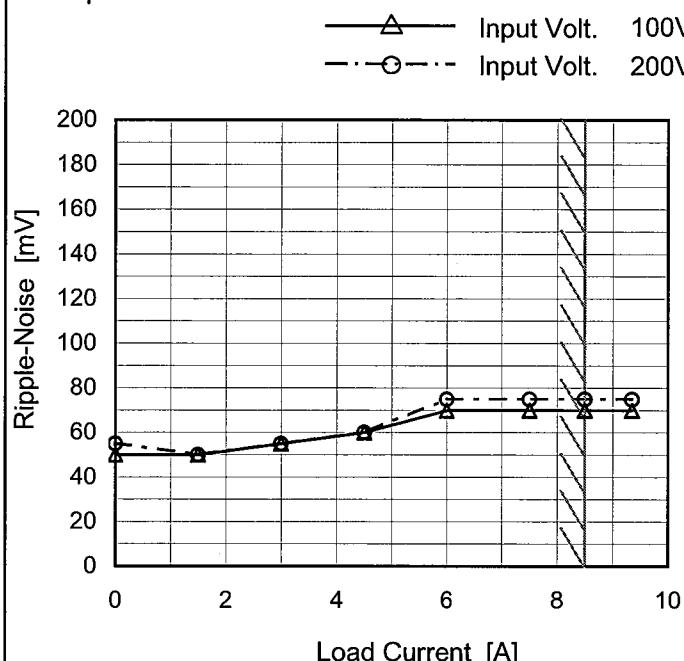
Model	SPLFA100F-12	Temperature Testing Circuitry	25°C Figure C																																				
Item	Ripple Voltage (by Load Current)																																						
Object	+12V8.5A																																						
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<p>Measured by 20 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>																																							
<p>T1: Due to AC Input Line T2: Due to Switching</p> <p>Ripple [mVp-p]</p>																																							
<p>Fig. Complex Ripple Wave Form</p>																																							

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Model	SPLFA100F-12
Item	Ripple-Noise
Object	+12V8.5A

 Temperature 25°C
 Testing Circuitry Figure C

1. Graph



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	50	55
1.50	50	50
3.00	55	55
4.50	60	60
6.00	70	75
7.50	70	75
8.50	70	75
9.35	70	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.

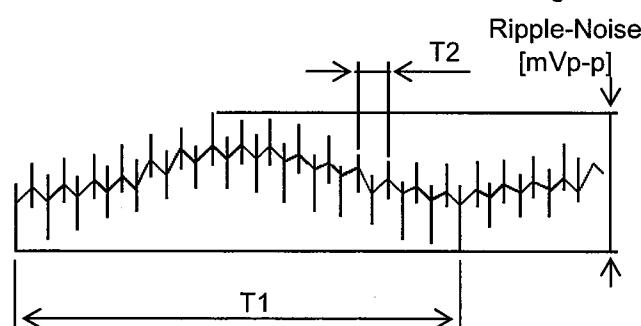
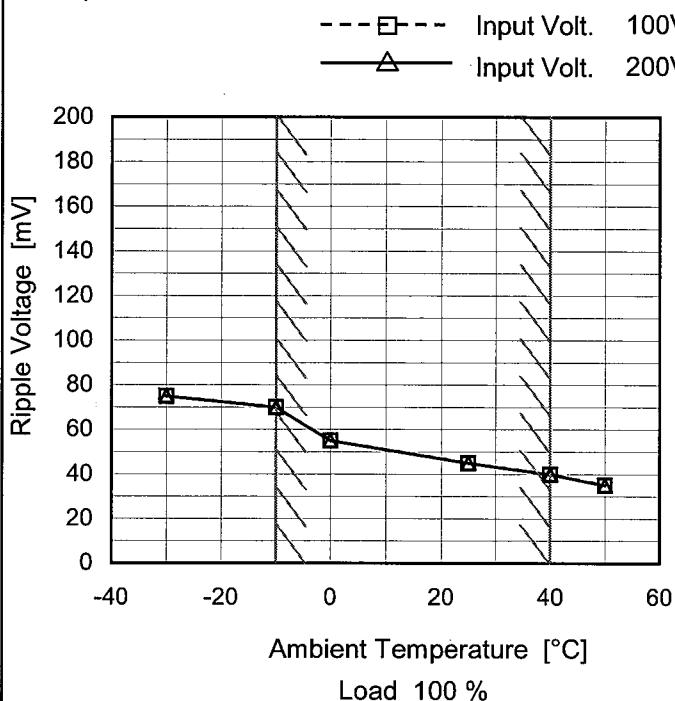
 T1: Due to AC Input Line
 T2: Due to Switching


Fig. Complex Ripple Wave Form



Model	SPLFA100F-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V8.5A

1. Graph



Measured by 20 MHz Oscilloscope.

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

Testing Circuitry Figure C

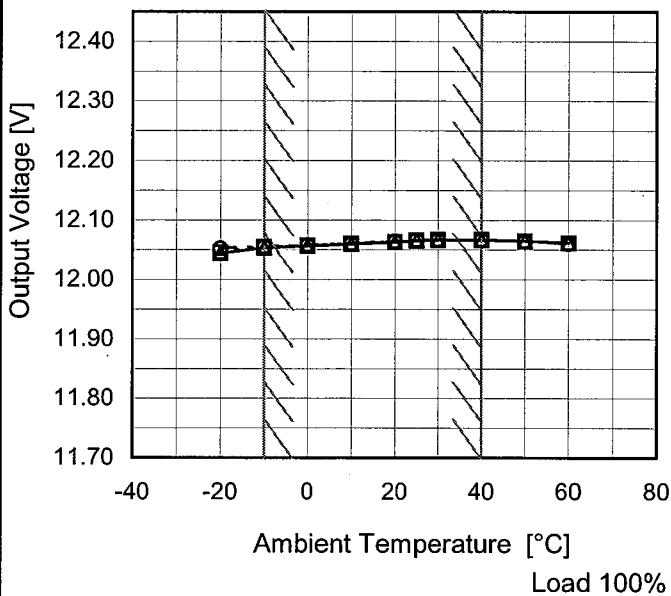
2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	75	75
-10	70	70
0	55	55
25	45	45
40	40	40
50	35	35
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Model	SPLFA100F-12
Item	Ambient Temperature Drift
Object	+12V8.5A

1. Graph

—△— Input Volt. 100V
 - - - □ - - Input Volt. 200V
 - - ○ - - Input Volt. 230V



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	12.045	12.046	12.052
-10	12.054	12.054	12.055
0	12.057	12.057	12.058
10	12.060	12.060	12.061
20	12.063	12.063	12.064
25	12.066	12.066	12.067
30	12.067	12.067	12.067
40	12.067	12.067	12.067
50	12.065	12.065	12.065
60	12.062	12.062	12.061
--	-	-	-

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



Model	SPLFA100F-12	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V8.5A	

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 - 8.5A

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

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	40	200	0	12.117	±32	±0.3
Minimum Voltage	-10	85	8.5	12.054		

COSEL

Model	SPLFA100F-12	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V8.5A																								
1. Graph			2. Values																						
<p>Output Voltage [V]</p> <p>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>12.060</td></tr> <tr><td>0.5</td><td>12.063</td></tr> <tr><td>1.0</td><td>12.064</td></tr> <tr><td>2.0</td><td>12.064</td></tr> <tr><td>3.0</td><td>12.065</td></tr> <tr><td>4.0</td><td>12.065</td></tr> <tr><td>5.0</td><td>12.065</td></tr> <tr><td>6.0</td><td>12.065</td></tr> <tr><td>7.0</td><td>12.065</td></tr> <tr><td>8.0</td><td>12.065</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.060	0.5	12.063	1.0	12.064	2.0	12.064	3.0	12.065	4.0	12.065	5.0	12.065	6.0	12.065	7.0	12.065	8.0	12.065
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* The characteristic of AC200V is equal.

COSEL

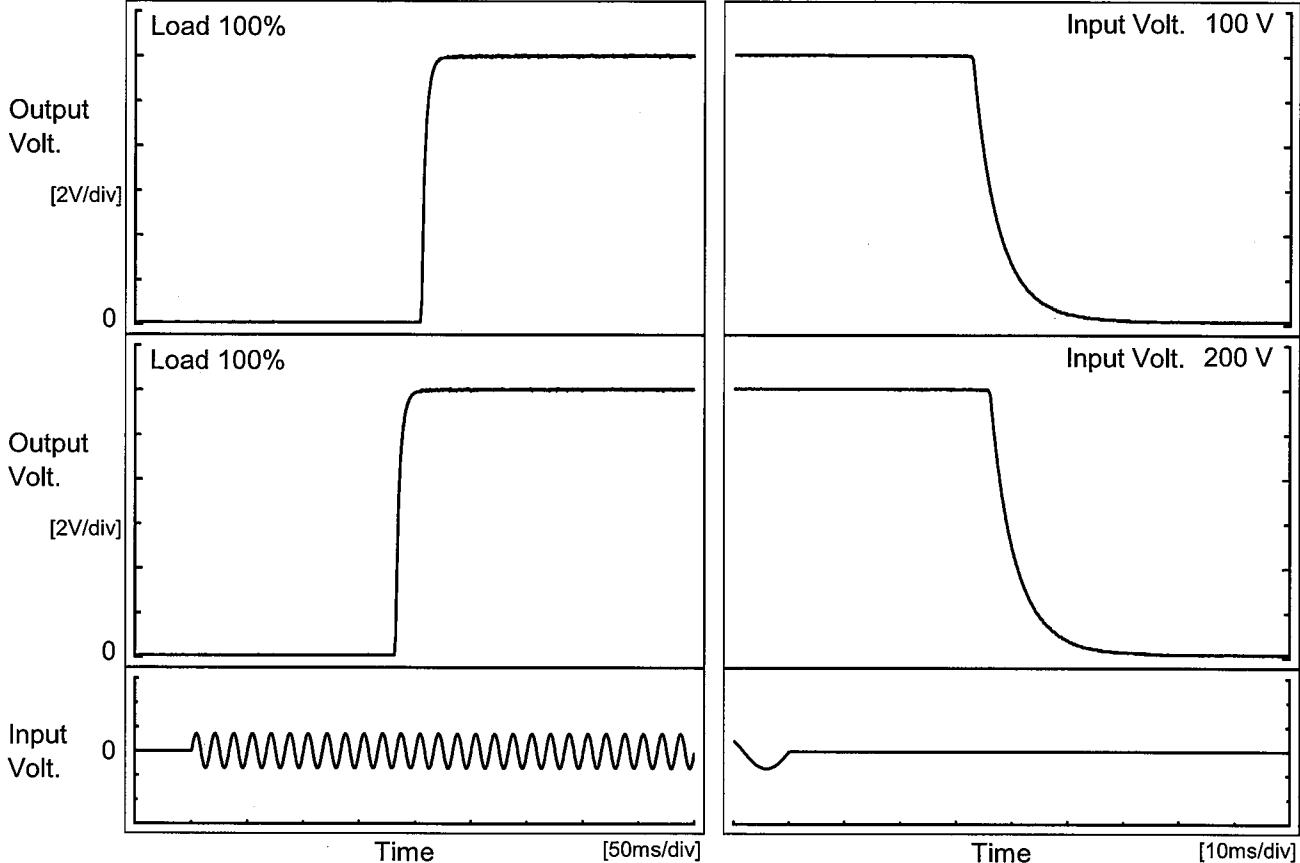
Model SPLFA100F-12

Item Rise and Fall Time

Object +12V8.5A

Temperature 25°C
Testing Circuitry Figure A

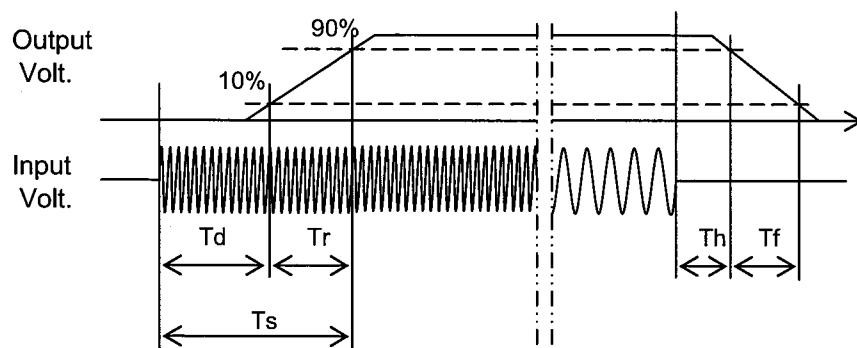
1. Graph



2. Values

[ms]

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		205.8	7.8	213.6	33.3	10.6
200 V		183.3	8.0	191.3	36.5	10.6



COSEL

Model	SPLFA100F-12																																	
Item	Hold-Up Time	Temperature 25°C Testing Circuitry Figure A																																
Object	+12V8.5A																																	
1. Graph																																		
<p>Legend: - - - □ - - Load 50% — ▲ — Load 100% </p>																																		
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Input Voltage [V]	Hold-Up Time [ms]																																	
	Load 50%	Load 100%																																
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230	75	37																																
264	77	38																																
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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>																																		

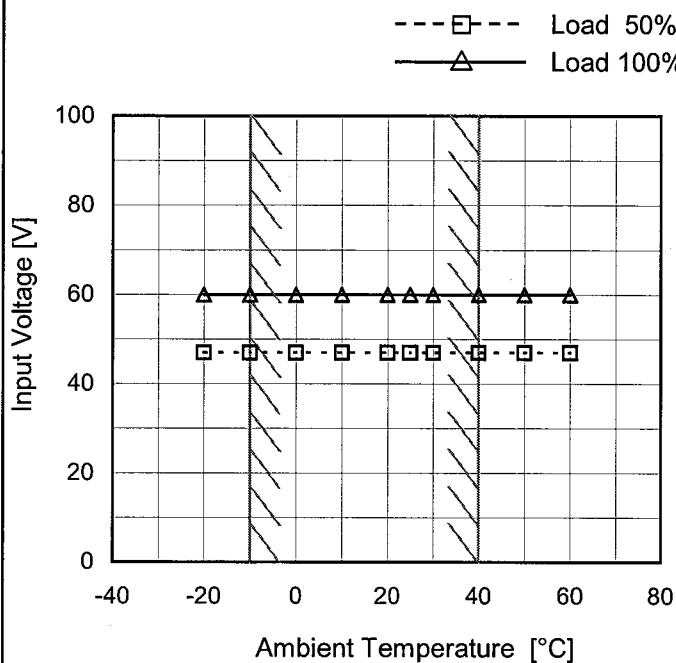
COSEL

Model	SPLFA100F-12	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Instantaneous Interruption Compensation																																																					
Object	+12V8.5A																																																					
1.Graph	<p>—△— Input Volt. 100V - - □ - - Input Volt. 200V - - ○ - - Input Volt. 230V</p> <table border="1"> <caption>Data points estimated from Graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>100V [ms]</th> <th>200V [ms]</th> <th>230V [ms]</th> </tr> </thead> <tbody> <tr><td>1.50</td><td>172</td><td>197</td><td>198</td></tr> <tr><td>3.00</td><td>89</td><td>105</td><td>106</td></tr> <tr><td>4.50</td><td>61</td><td>70</td><td>72</td></tr> <tr><td>6.00</td><td>46</td><td>53</td><td>54</td></tr> <tr><td>7.50</td><td>37</td><td>39</td><td>40</td></tr> <tr><td>8.50</td><td>30</td><td>37</td><td>38</td></tr> <tr><td>9.35</td><td>27</td><td>31</td><td>31</td></tr> </tbody> </table>			Load Current [A]	100V [ms]	200V [ms]	230V [ms]	1.50	172	197	198	3.00	89	105	106	4.50	61	70	72	6.00	46	53	54	7.50	37	39	40	8.50	30	37	38	9.35	27	31	31																			
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Note:	Slanted line shows the range of the rated load current.																																																					

COSEL

Model	SPLFA100F-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V8.5A

1. Graph



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

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	47	60
-10	47	60
0	47	60
10	47	60
20	47	60
25	47	60
30	47	60
40	47	60
50	47	60
60	47	60
--	-	-

COSEL

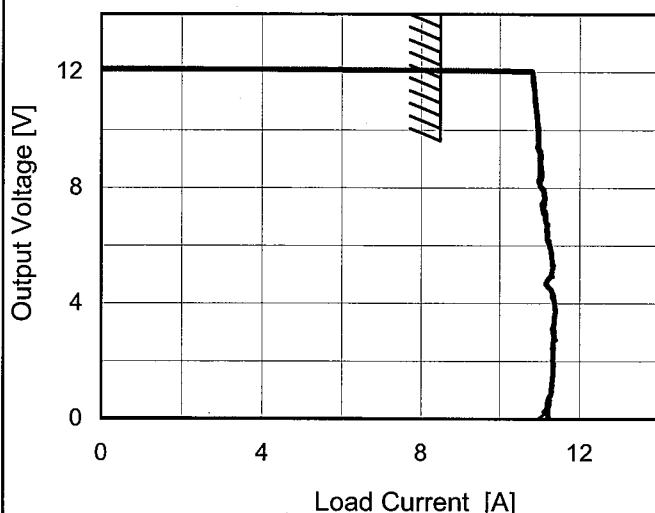
Model SPLFA100F-12

Item Overcurrent Protection

Object +12V8.5A

1. Graph

— Input Volt. 100V
 — Input Volt. 200V



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

Temperature 25°C
 Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
11.4	10.89	10.87
10.8	10.93	10.90
9.6	11.01	10.97
8.4	11.08	11.02
7.2	11.10	11.07
6.0	11.24	11.23
4.8	11.24	11.20
3.6	11.36	11.40
2.4	11.29	11.35
1.2	11.29	11.30
0.0	10.98	11.23
--	-	-

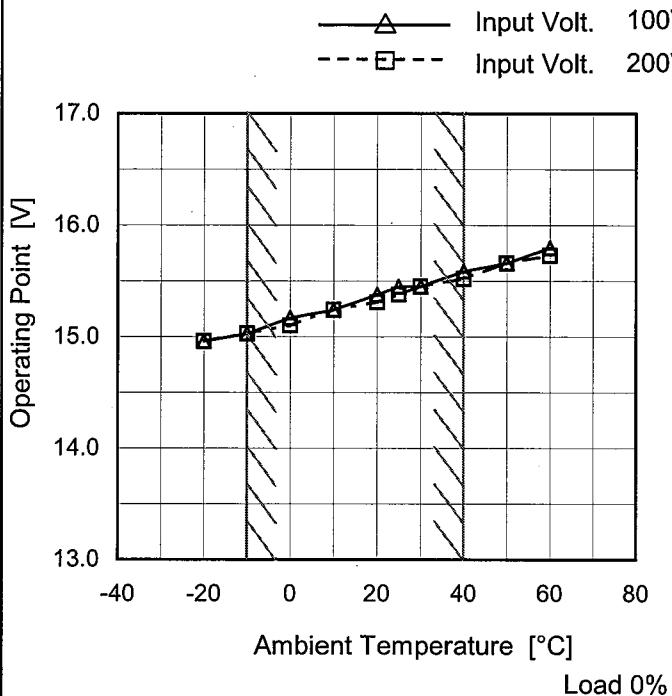
COSEL

Model SPLFA100F-12

Item Overvoltage Protection

Object +12V8.5A

1. Graph



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 200[V]
-20	14.96	14.96
-10	15.03	15.03
0	15.17	15.10
10	15.24	15.24
20	15.38	15.31
25	15.45	15.38
30	15.45	15.45
40	15.59	15.52
50	15.66	15.66
60	15.80	15.73
--	-	-

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

COSEL

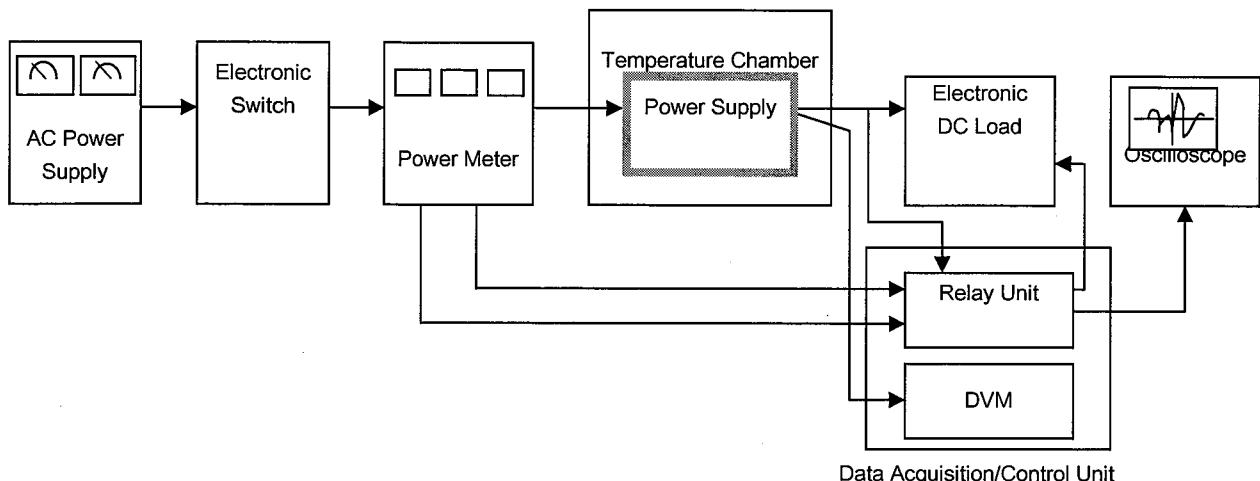


Figure A

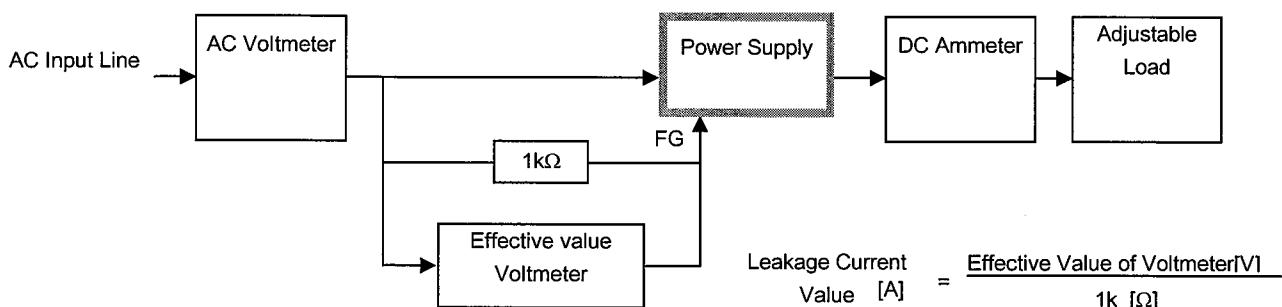


Figure B (DEN-AN)

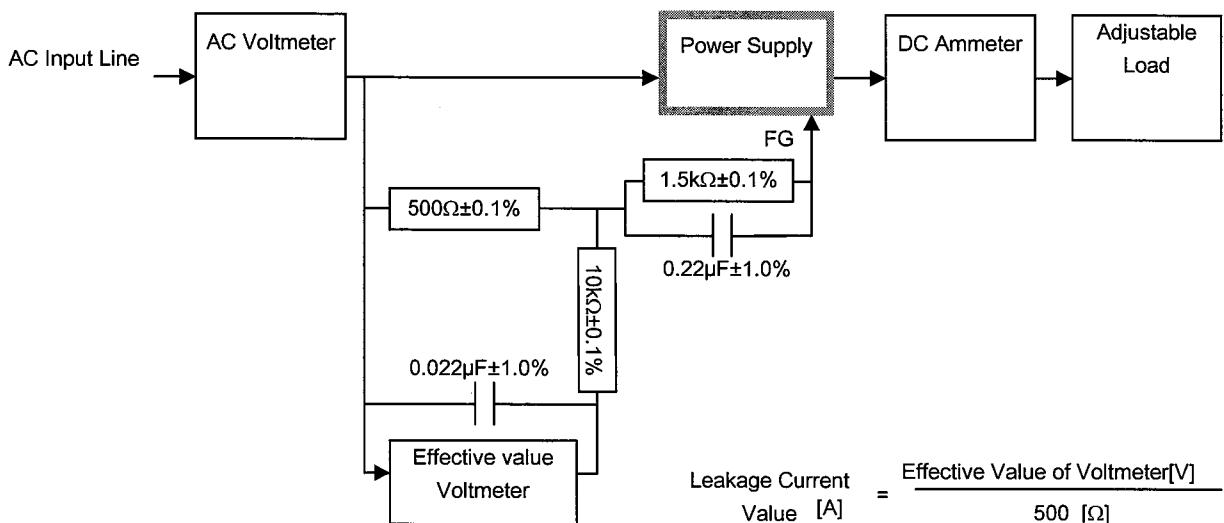


Figure B (IEC60950-1)

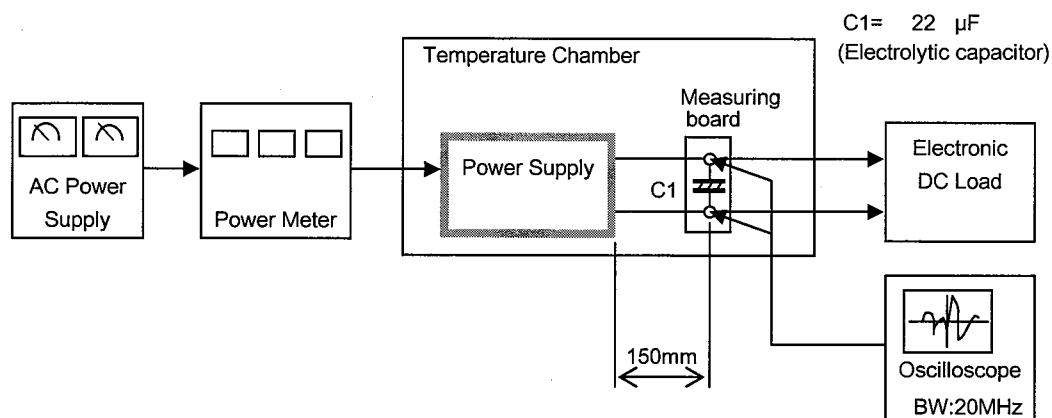
COSEL

Figure C