

TEST DATA OF LHA10F-12

Regulated DC Power Supply
February 2, 2022

Approved by : Tetsukazu Okamoto
Design Manager

Prepared by : Naofumi Nakada
Design Engineer

COSEL CO.,LTD.

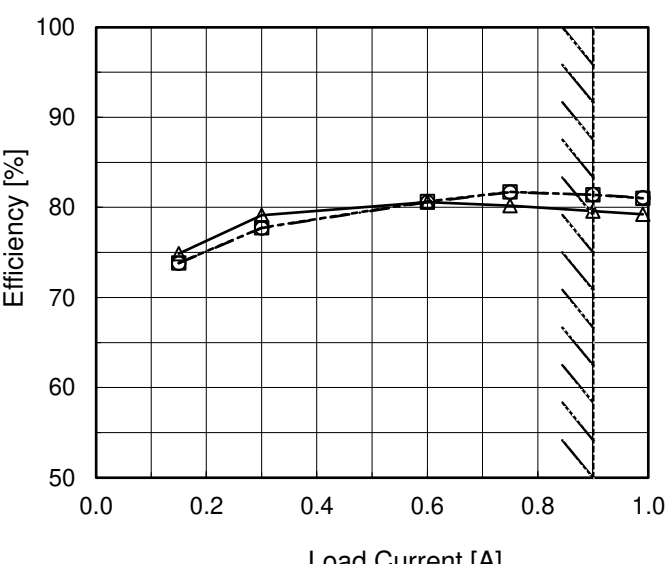
CONTENTS

1.Input Current (by Load Current)	1
2.Efficiency (by Load Current)	2
3.Power Factor (by Load Current)	3
4.Inrush Current	4
5.Leakage Current	5
6.Line Regulation	6
7.Load Regulation	7
8.Dynamic Load Response	8
9.Ripple-Noise (by Load Current)	9
10.Ambient Temperature Drift	10
11.Rise and Fall Time	11
12.Hold-Up Time	12
13.Instantaneous Interruption Compensation	13
14.Minimum Input Voltage for Regulated Output Voltage	14
15.Overcurrent Protection	15
16.Overvoltage Protection	16
17.Figure of Testing Circuitry	17

(Final Page 18)

Model		LHA10F-12																																																				
Item		Input Current (by Load Current)																																																				
Object																																																						
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>Input Current [A]</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">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>0.00</td><td>0.008</td><td>0.005</td><td>0.005</td></tr><tr><td>0.15</td><td>0.056</td><td>0.039</td><td>0.033</td></tr><tr><td>0.30</td><td>0.097</td><td>0.061</td><td>0.056</td></tr><tr><td>0.60</td><td>0.170</td><td>0.114</td><td>0.099</td></tr><tr><td>0.75</td><td>0.204</td><td>0.129</td><td>0.118</td></tr><tr><td>0.90</td><td>0.240</td><td>0.152</td><td>0.137</td></tr><tr><td>0.99</td><td>0.260</td><td>0.162</td><td>0.148</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><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]	0.00	0.008	0.005	0.005	0.15	0.056	0.039	0.033	0.30	0.097	0.061	0.056	0.60	0.170	0.114	0.099	0.75	0.204	0.129	0.118	0.90	0.240	0.152	0.137	0.99	0.260	0.162	0.148	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Current [A]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0.00	0.008	0.005	0.005																																																			
0.15	0.056	0.039	0.033																																																			
0.30	0.097	0.061	0.056																																																			
0.60	0.170	0.114	0.099																																																			
0.75	0.204	0.129	0.118																																																			
0.90	0.240	0.152	0.137																																																			
0.99	0.260	0.162	0.148																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			



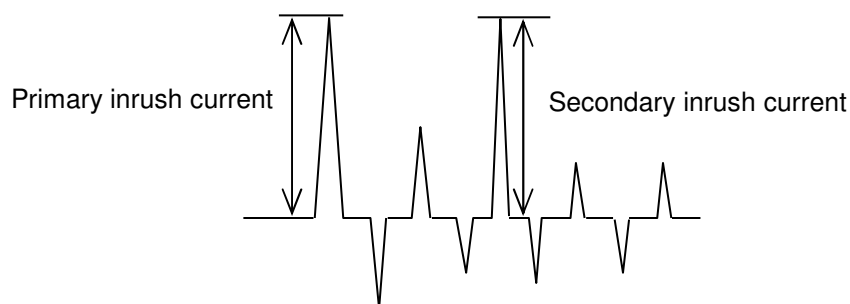
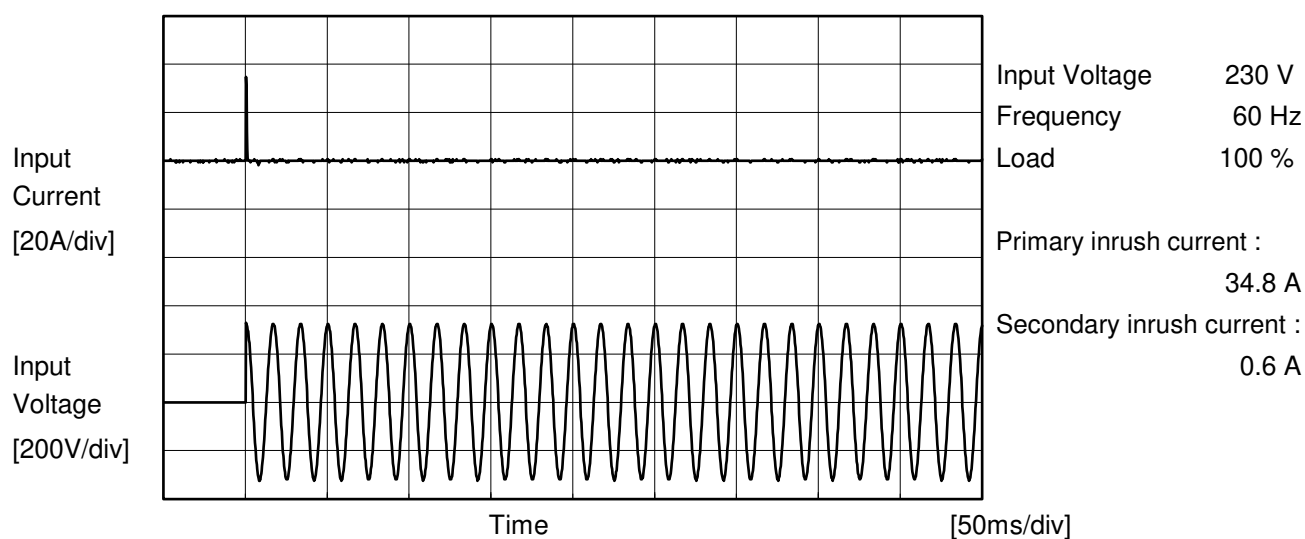
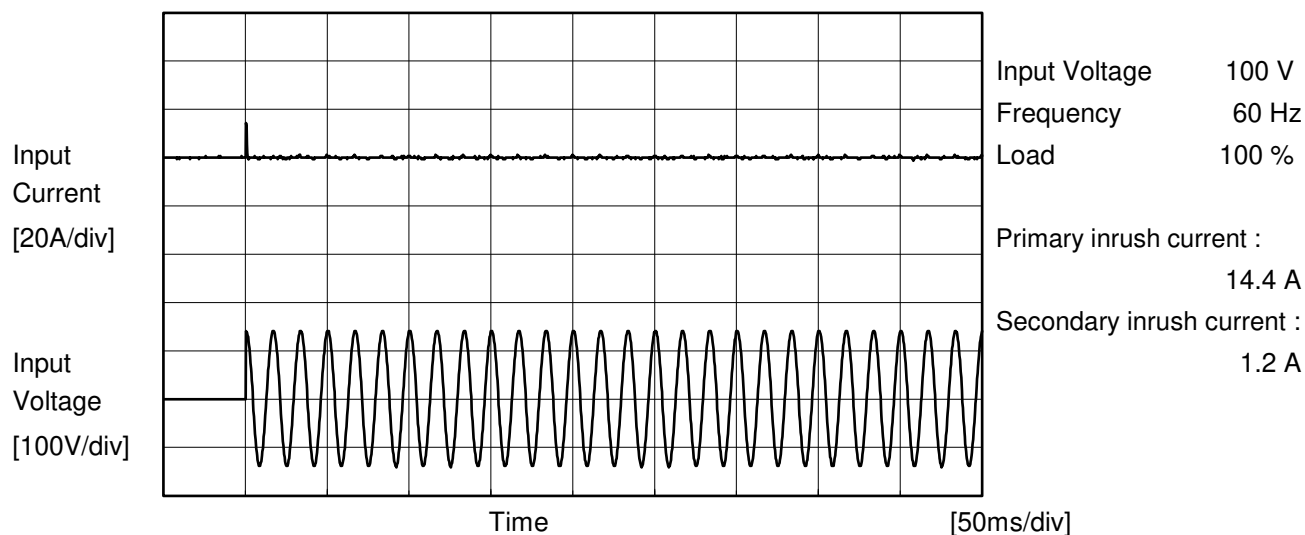
Model		LHA10F-12		Temperature 25°C Testing Circuitry Figure A																																																				
Item		Efficiency (by Load Current)																																																						
Object		_____																																																						
1.Graph		<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div><div>Input Volt. 100V</div><div>Input Volt. 200V</div><div>Input Volt. 230V</div></div></div>  <table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</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>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.15</td><td>74.9</td><td>73.8</td><td>73.8</td></tr><tr><td>0.30</td><td>79.1</td><td>77.7</td><td>77.7</td></tr><tr><td>0.60</td><td>80.6</td><td>80.6</td><td>80.6</td></tr><tr><td>0.75</td><td>80.2</td><td>81.7</td><td>81.7</td></tr><tr><td>0.90</td><td>79.6</td><td>81.4</td><td>81.4</td></tr><tr><td>0.99</td><td>79.2</td><td>81.0</td><td>81.1</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><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></tbody></table>		Load Current [A]	Efficiency [%]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	-	-	-	0.15	74.9	73.8	73.8	0.30	79.1	77.7	77.7	0.60	80.6	80.6	80.6	0.75	80.2	81.7	81.7	0.90	79.6	81.4	81.4	0.99	79.2	81.0	81.1	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	2.Values	
Load Current [A]	Efficiency [%]																																																							
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																					
0.00	-	-	-																																																					
0.15	74.9	73.8	73.8																																																					
0.30	79.1	77.7	77.7																																																					
0.60	80.6	80.6	80.6																																																					
0.75	80.2	81.7	81.7																																																					
0.90	79.6	81.4	81.4																																																					
0.99	79.2	81.0	81.1																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					



Model		LHA10F-12	Temperature		25°C																																																			
Item		Power Factor (by Load Current)	Testing Circuitry		Figure A																																																			
Object		_____																																																						
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> <div>Power Factor</div> <div>Load Current [A]</div> <div>Note: Slanted line shows the range of the rated load current.</div>			<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Power Factor</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>0.308</td><td>0.252</td><td>0.190</td></tr><tr><td>0.15</td><td>0.427</td><td>0.340</td><td>0.329</td></tr><tr><td>0.30</td><td>0.469</td><td>0.371</td><td>0.361</td></tr><tr><td>0.45</td><td>0.500</td><td>0.398</td><td>0.379</td></tr><tr><td>0.60</td><td>0.525</td><td>0.407</td><td>0.395</td></tr><tr><td>0.75</td><td>0.545</td><td>0.433</td><td>0.409</td></tr><tr><td>0.90</td><td>0.563</td><td>0.436</td><td>0.421</td></tr><tr><td>0.99</td><td>0.572</td><td>0.441</td><td>0.428</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]	Power Factor			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	0.308	0.252	0.190	0.15	0.427	0.340	0.329	0.30	0.469	0.371	0.361	0.45	0.500	0.398	0.379	0.60	0.525	0.407	0.395	0.75	0.545	0.433	0.409	0.90	0.563	0.436	0.421	0.99	0.572	0.441	0.428	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Power Factor																																																							
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																					
0.00	0.308	0.252	0.190																																																					
0.15	0.427	0.340	0.329																																																					
0.30	0.469	0.371	0.361																																																					
0.45	0.500	0.398	0.379																																																					
0.60	0.525	0.407	0.395																																																					
0.75	0.545	0.433	0.409																																																					
0.90	0.563	0.436	0.421																																																					
0.99	0.572	0.441	0.428																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					

COSEL

Model	LHA10F-12	Temperature Testing Circuitry	25° C Figure A
Item	Inrush Current		
Object	_____		



COSEL

		Temperature 25°C Testing Circuitry Figure B
Model	LHA10F-12	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			100 [V]	230 [V]	240 [V]	
DEN-AN	Figure B-1	Both phases	0.03	0.09	0.09	Operation
		One of phases	0.05	0.13	0.13	Stand by
IEC62368-1	Figure B-2	Both phases	0.03	0.09	0.09	Operation
		One of phases	0.05	0.13	0.13	Stand by
	Figure B-3	Both phases	0.03	0.09	0.09	Operation
		One of phases	0.05	0.13	0.13	Stand by

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

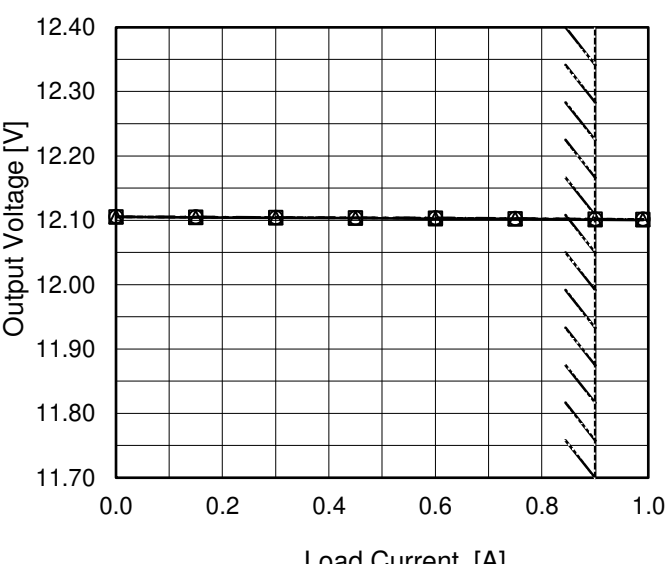
2.Condition

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



Model	LHA10F-12																																
Item	Line Regulation	Temperature	25°C																														
		Testing Circuitry	Figure A																														
Object	+12V0.9A																																
1.Graph		2.Values																															
<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>85</td><td>12.103</td><td>12.101</td></tr><tr><td>90</td><td>12.103</td><td>12.101</td></tr><tr><td>100</td><td>12.103</td><td>12.101</td></tr><tr><td>120</td><td>12.103</td><td>12.101</td></tr><tr><td>200</td><td>12.104</td><td>12.102</td></tr><tr><td>230</td><td>12.104</td><td>12.102</td></tr><tr><td>264</td><td>12.104</td><td>12.102</td></tr><tr><td>280</td><td>12.104</td><td>12.102</td></tr><tr><td>--</td><td>-</td><td>-</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%	85	12.103	12.101	90	12.103	12.101	100	12.103	12.101	120	12.103	12.101	200	12.104	12.102	230	12.104	12.102	264	12.104	12.102	280	12.104	12.102	--	-	-		
Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%																															
85	12.103	12.101																															
90	12.103	12.101																															
100	12.103	12.101																															
120	12.103	12.101																															
200	12.104	12.102																															
230	12.104	12.102																															
264	12.104	12.102																															
280	12.104	12.102																															
--	-	-																															

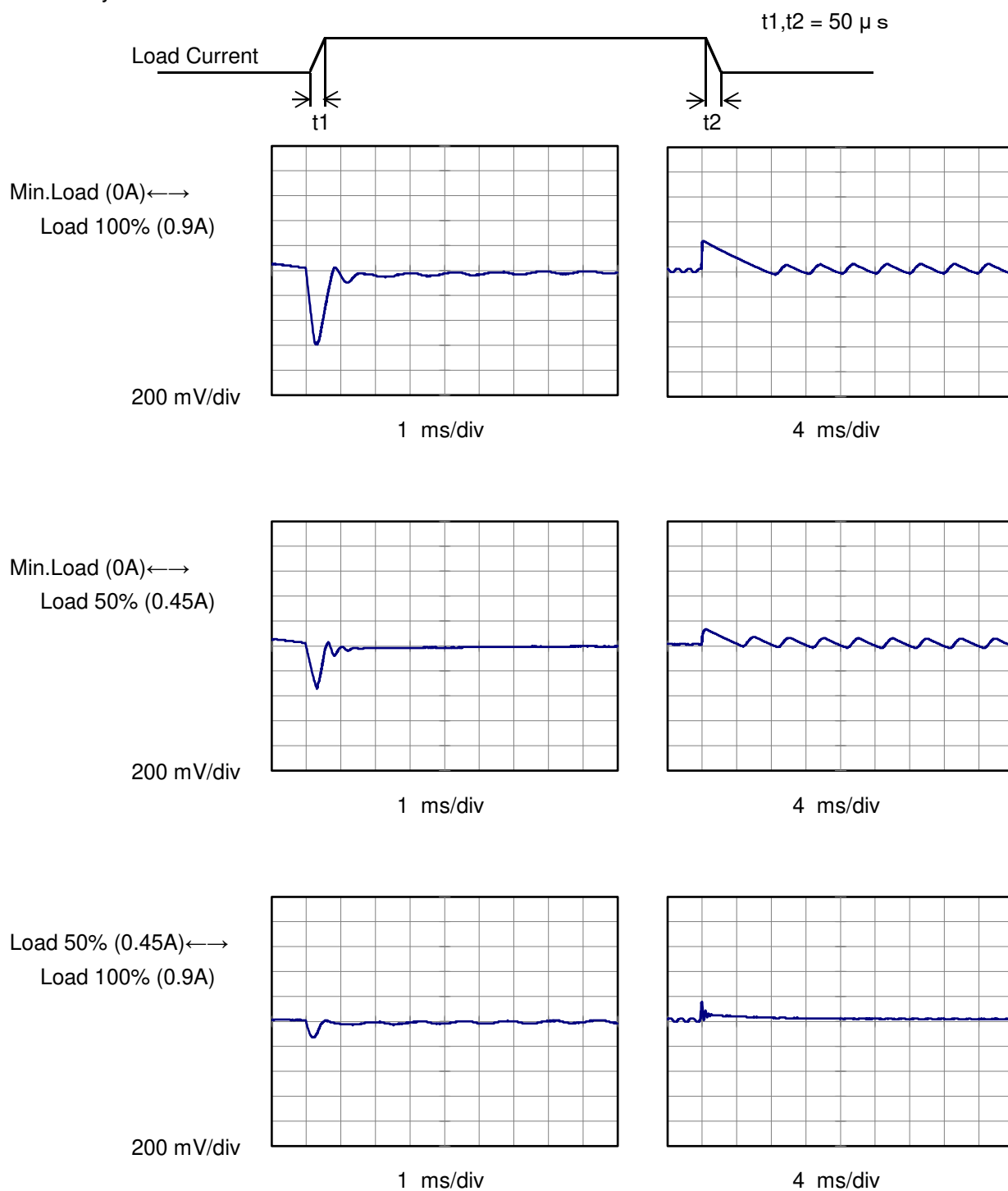


Model		LHA10F-12	Temperature 25°C Testing Circuitry Figure A																																																			
Item		Load Regulation																																																				
Object		+12V0.9A																																																				
1.Graph		<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div><div>Input Volt. 100V</div><div>Input Volt. 200V</div><div>Input Volt. 230V</div></div></div>  <div>Note: Slanted line shows the range of the rated load current.</div>	2.Values																																																			
		<table><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><tr><td>0.00</td><td>12.105</td><td>12.105</td><td>12.106</td></tr><tr><td>0.15</td><td>12.104</td><td>12.105</td><td>12.105</td></tr><tr><td>0.30</td><td>12.104</td><td>12.104</td><td>12.104</td></tr><tr><td>0.45</td><td>12.103</td><td>12.104</td><td>12.104</td></tr><tr><td>0.60</td><td>12.102</td><td>12.103</td><td>12.104</td></tr><tr><td>0.75</td><td>12.102</td><td>12.102</td><td>12.103</td></tr><tr><td>0.90</td><td>12.101</td><td>12.102</td><td>12.102</td></tr><tr><td>0.99</td><td>12.101</td><td>12.101</td><td>12.102</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. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	12.105	12.105	12.106	0.15	12.104	12.105	12.105	0.30	12.104	12.104	12.104	0.45	12.103	12.104	12.104	0.60	12.102	12.103	12.104	0.75	12.102	12.102	12.103	0.90	12.101	12.102	12.102	0.99	12.101	12.101	12.102	--	-	-	-	--	-	-	-	--	-	-	-	
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0.00	12.105	12.105	12.106																																																			
0.15	12.104	12.105	12.105																																																			
0.30	12.104	12.104	12.104																																																			
0.45	12.103	12.104	12.104																																																			
0.60	12.102	12.103	12.104																																																			
0.75	12.102	12.102	12.103																																																			
0.90	12.101	12.102	12.102																																																			
0.99	12.101	12.101	12.102																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			

COSEL

Model	LHA10F-12	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+12V0.9A	

Input Volt. 230 V
Cycle 1000 ms

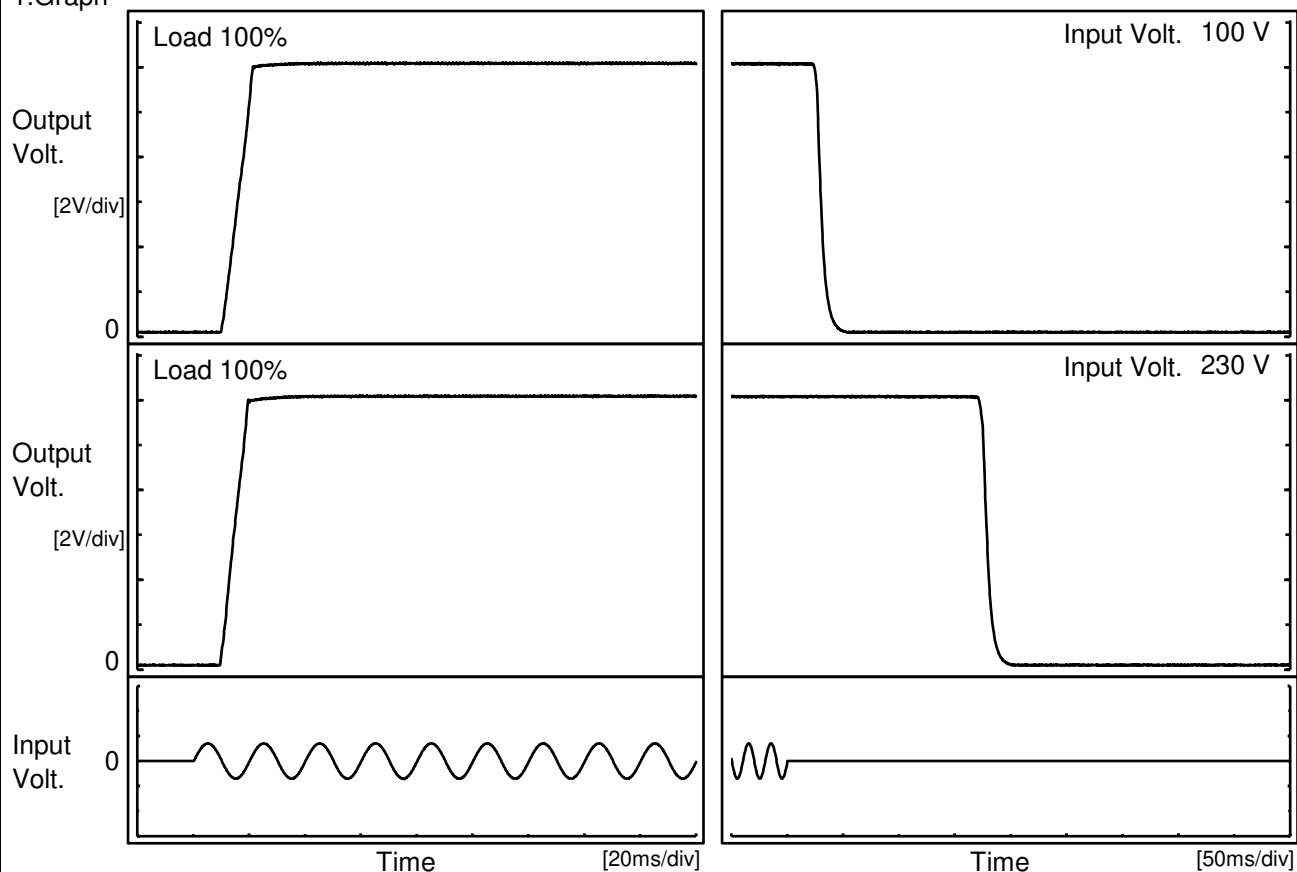


Model		LHA10F-12	Temperature		25°C																																						
Item		Ripple-Noise(by Load Current)	Testing Circuitry		Figure C																																						
Object		+12V0.9A																																									
1.Graph			2.Values																																								
<div><div><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><p>Ripple-Noise [mV]</p><p>Load Current [A]</p></div></div><div><p>Measured by 20 MHz Oscilloscope.</p><p>Ripple-Noise 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-Noise [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0.00</td><td>5</td><td>90</td></tr><tr><td>0.15</td><td>10</td><td>15</td></tr><tr><td>0.30</td><td>10</td><td>10</td></tr><tr><td>0.45</td><td>35</td><td>15</td></tr><tr><td>0.60</td><td>45</td><td>30</td></tr><tr><td>0.75</td><td>50</td><td>35</td></tr><tr><td>0.90</td><td>50</td><td>40</td></tr><tr><td>0.99</td><td>50</td><td>40</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-Noise [mV]		Input Volt. 100 [V]	Input Volt. 230 [V]	0.00	5	90	0.15	10	15	0.30	10	10	0.45	35	15	0.60	45	30	0.75	50	35	0.90	50	40	0.99	50	40	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																										
	Input Volt. 100 [V]	Input Volt. 230 [V]																																									
0.00	5	90																																									
0.15	10	15																																									
0.30	10	10																																									
0.45	35	15																																									
0.60	45	30																																									
0.75	50	35																																									
0.90	50	40																																									
0.99	50	40																																									
--	-	-																																									
--	-	-																																									
--	-	-																																									
<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-Noise [mVp-p]</p><p>T1</p><p>T2</p></div></div> <p>Fig. Complex Ripple Wave Form</p>																																											

Model		LHA10F-12																																																				
Item		Ambient Temperature Drift																																																				
Object		+12V0.9A																																																				
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> <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>12.004</td><td>12.009</td><td>12.009</td></tr><tr><td>-15</td><td>12.010</td><td>12.015</td><td>12.015</td></tr><tr><td>-10</td><td>12.017</td><td>12.020</td><td>12.021</td></tr><tr><td>0</td><td>12.029</td><td>12.030</td><td>12.030</td></tr><tr><td>25</td><td>12.051</td><td>12.052</td><td>12.052</td></tr><tr><td>40</td><td>12.061</td><td>12.062</td><td>12.063</td></tr><tr><td>50</td><td>12.066</td><td>12.067</td><td>12.067</td></tr><tr><td>55</td><td>12.067</td><td>12.069</td><td>12.069</td></tr><tr><td>60</td><td>12.069</td><td>12.069</td><td>12.070</td></tr><tr><td>70</td><td>12.071</td><td>12.071</td><td>12.071</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	12.004	12.009	12.009	-15	12.010	12.015	12.015	-10	12.017	12.020	12.021	0	12.029	12.030	12.030	25	12.051	12.052	12.052	40	12.061	12.062	12.063	50	12.066	12.067	12.067	55	12.067	12.069	12.069	60	12.069	12.069	12.070	70	12.071	12.071	12.071	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
-20	12.004	12.009	12.009																																																			
-15	12.010	12.015	12.015																																																			
-10	12.017	12.020	12.021																																																			
0	12.029	12.030	12.030																																																			
25	12.051	12.052	12.052																																																			
40	12.061	12.062	12.063																																																			
50	12.066	12.067	12.067																																																			
55	12.067	12.069	12.069																																																			
60	12.069	12.069	12.070																																																			
70	12.071	12.071	12.071																																																			
--	-	-	-																																																			

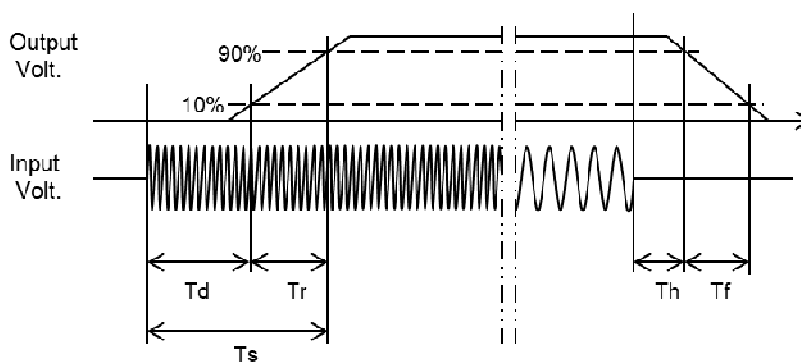
Model		LHA10F-12	Temperature 25°C Testing Circuitry Figure A
Item		Rise and Fall Time	
Object		+12V0.9A	

1.Graph



2.Values

		[ms]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		11.5	9.1	20.6	26.5	10.5
230 V		10.9	8.1	19.0	174.5	11.0



[illegible]

Model		LHA10F-12	Temperature		25°C																																																			
Item		Instantaneous Interruption Compensation	Testing Circuitry		Figure A																																																			
Object		+12V0.9A																																																						
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> <div><div><div>Instantaneous Compensation Time [ms]</div><div>10000</div><div>1000</div><div>100</div><div>10</div><div>1</div></div><div><div>0.0</div><div>0.2</div><div>0.4</div><div>0.6</div><div>0.8</div><div>1.0</div></div><div><div>Load Current [A]</div></div></div>			<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>0.15</td><td>173</td><td>842</td><td>1091</td></tr><tr><td>0.30</td><td>88</td><td>387</td><td>611</td></tr><tr><td>0.45</td><td>58</td><td>261</td><td>352</td></tr><tr><td>0.60</td><td>43</td><td>195</td><td>264</td></tr><tr><td>0.75</td><td>33</td><td>156</td><td>210</td></tr><tr><td>0.90</td><td>26</td><td>126</td><td>170</td></tr><tr><td>0.99</td><td>21</td><td>110</td><td>151</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	-	-	-	0.15	173	842	1091	0.30	88	387	611	0.45	58	261	352	0.60	43	195	264	0.75	33	156	210	0.90	26	126	170	0.99	21	110	151	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																							
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																					
0.00	-	-	-																																																					
0.15	173	842	1091																																																					
0.30	88	387	611																																																					
0.45	58	261	352																																																					
0.60	43	195	264																																																					
0.75	33	156	210																																																					
0.90	26	126	170																																																					
0.99	21	110	151																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					
<div>Note: Slanted line shows the range of the rated load current.</div>																																																								

Model		LHA10F-12
Item		Minimum Input Voltage for Regulated Output Voltage
Object		+12V0.9A

1.Graph

</

Model		LHA10F-12	Temperature Testing Circuitry	25°C Figure A																																												
Item		Overcurrent Protection																																														
Object		+12V0.9A																																														
1.Graph			2.Values																																													
<div><div><div></div><div>Input Volt. 100V</div></div><div><div></div><div>Input Volt. 230V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Overcurrent protection is Hiccup mode.</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. 230[V]</th></tr><tr><td>12.0</td><td>1.33</td><td>1.28</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><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]	12.0	1.33	1.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Output Voltage [V]	Load Current [A]																																															
	Input Volt. 100[V]	Input Volt. 230[V]																																														
12.0	1.33	1.28																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														
-	-	-																																														

Model	LHA10F-12																																								
Item	Overvoltage Protection	Testing Circuitry Figure A																																							
Object	+12V0.9A																																								
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 230V</div></div></div> <p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</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="2">Operating Point [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-20</td><td>17.44</td><td>17.31</td></tr><tr><td>-15</td><td>17.38</td><td>17.24</td></tr><tr><td>-10</td><td>17.38</td><td>17.24</td></tr><tr><td>0</td><td>17.38</td><td>17.24</td></tr><tr><td>25</td><td>17.37</td><td>17.24</td></tr><tr><td>40</td><td>17.37</td><td>17.24</td></tr><tr><td>50</td><td>17.35</td><td>17.23</td></tr><tr><td>55</td><td>17.35</td><td>17.23</td></tr><tr><td>60</td><td>17.34</td><td>17.20</td></tr><tr><td>70</td><td>17.34</td><td>17.20</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Operating Point [V]		Input Volt. 100[V]	Input Volt. 230[V]	-20	17.44	17.31	-15	17.38	17.24	-10	17.38	17.24	0	17.38	17.24	25	17.37	17.24	40	17.37	17.24	50	17.35	17.23	55	17.35	17.23	60	17.34	17.20	70	17.34	17.20	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																								
	Input Volt. 100[V]	Input Volt. 230[V]																																							
-20	17.44	17.31																																							
-15	17.38	17.24																																							
-10	17.38	17.24																																							
0	17.38	17.24																																							
25	17.37	17.24																																							
40	17.37	17.24																																							
50	17.35	17.23																																							
55	17.35	17.23																																							
60	17.34	17.20																																							
70	17.34	17.20																																							
--	-	-																																							

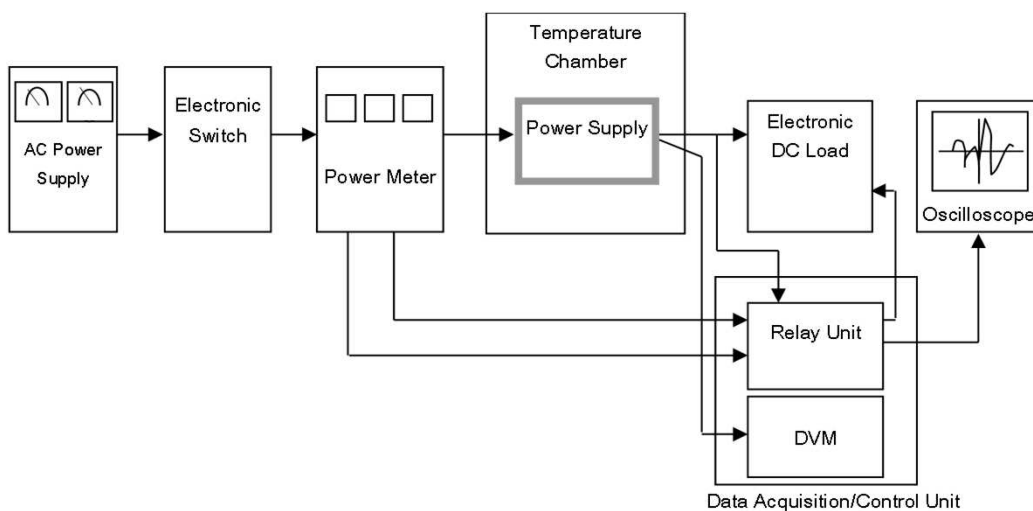


Figure A

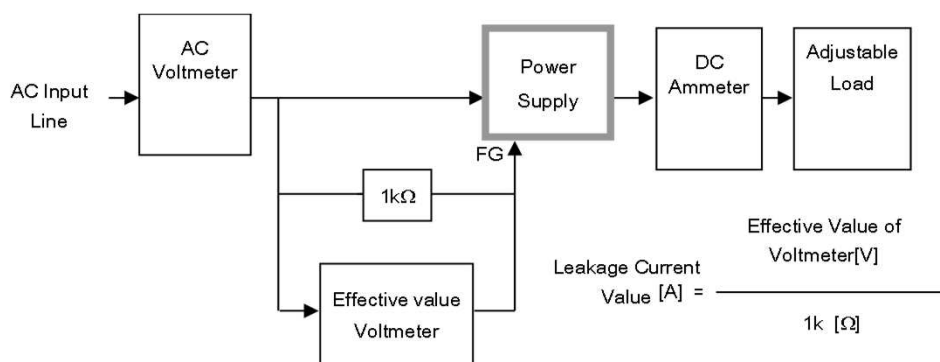


Figure B-1 (DEN-AN)

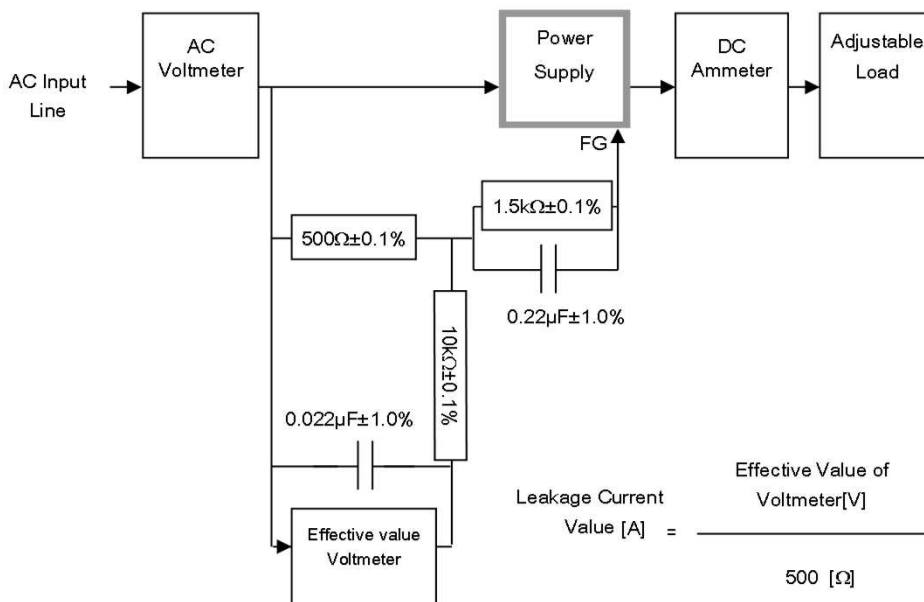


Figure B-2 (IEC62368-1 refer to IEC60990 Fig.4)

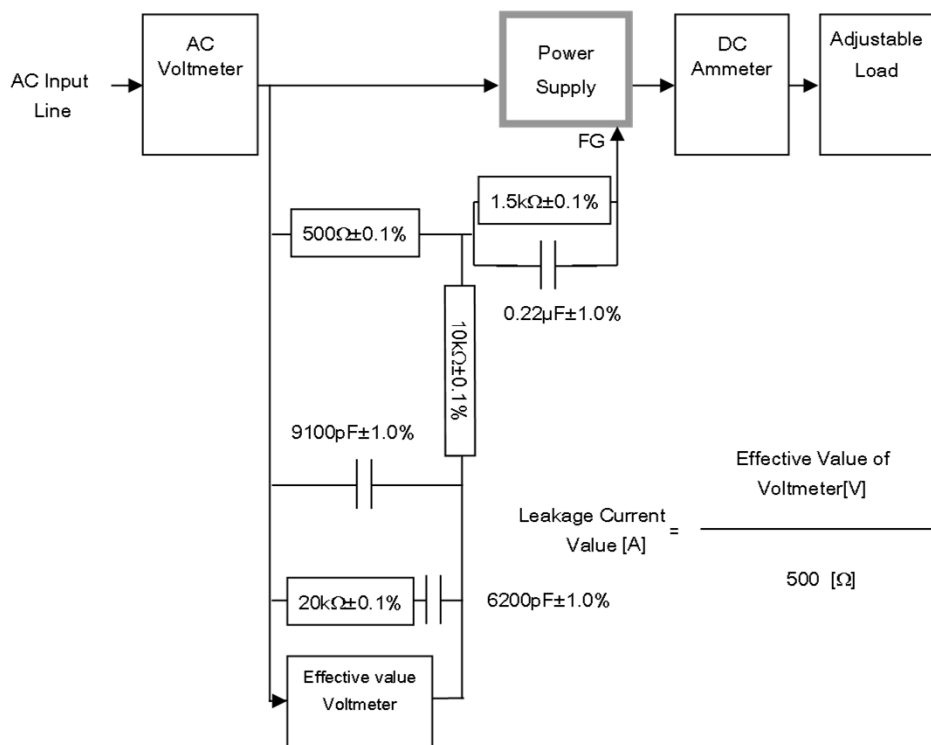


Figure B-3 (IEC62368-1 refer to IEC60990 Fig.5)

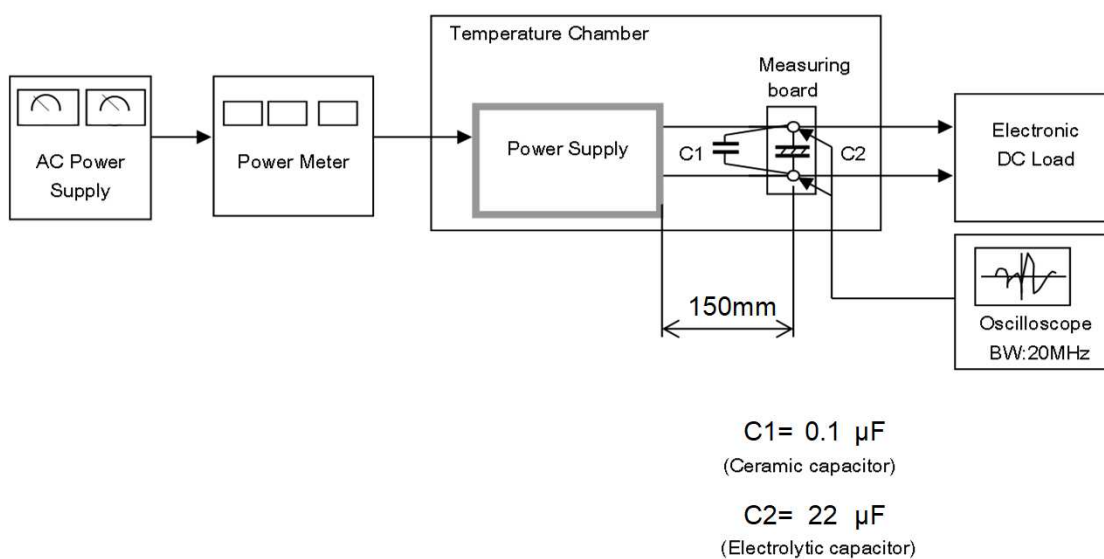


Figure C