

TEST DATA OF LHA30F-5

Regulated DC Power Supply
September 5, 2019

Approved by : Junya Kaneda
Junya Kaneda Design Manager

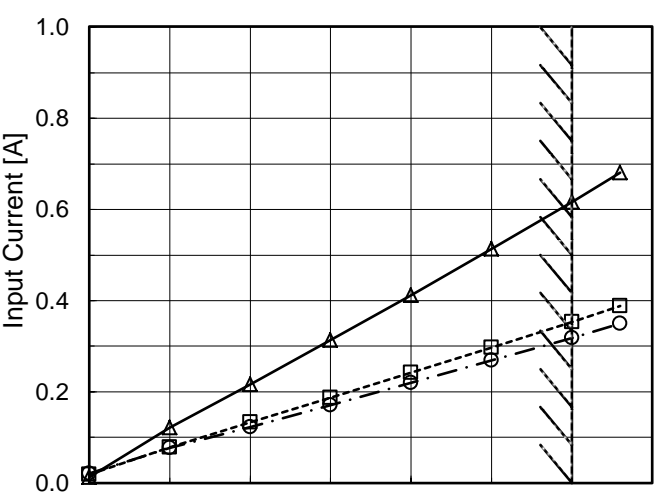
Prepared by : Yasushi Fukumura
Yasushi Fukumura Design Engineer

COSEL CO.,LTD.

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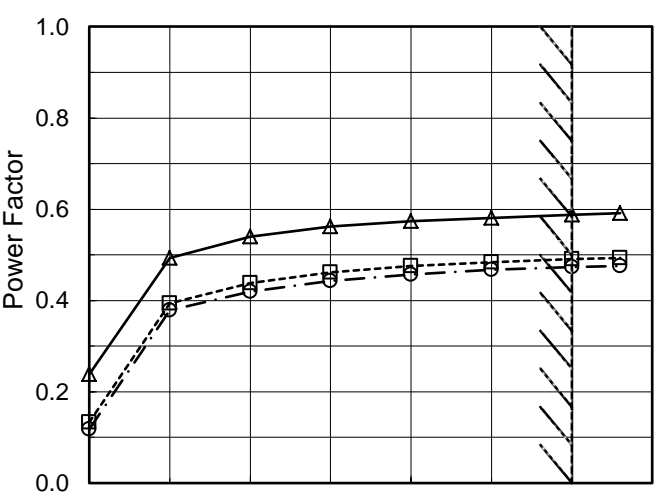
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Model		LHA30F-5		Temperature 25°C																																																				
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																				
Object		_____																																																						
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>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>Note: Slanted line shows the range of the rated load current.</p>		2.Values																																																				
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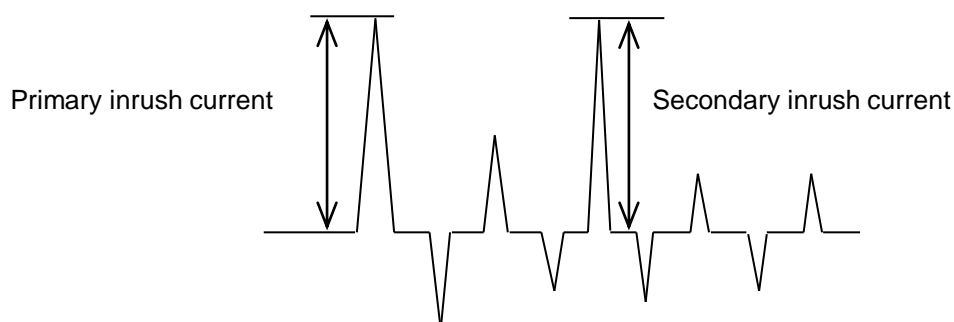
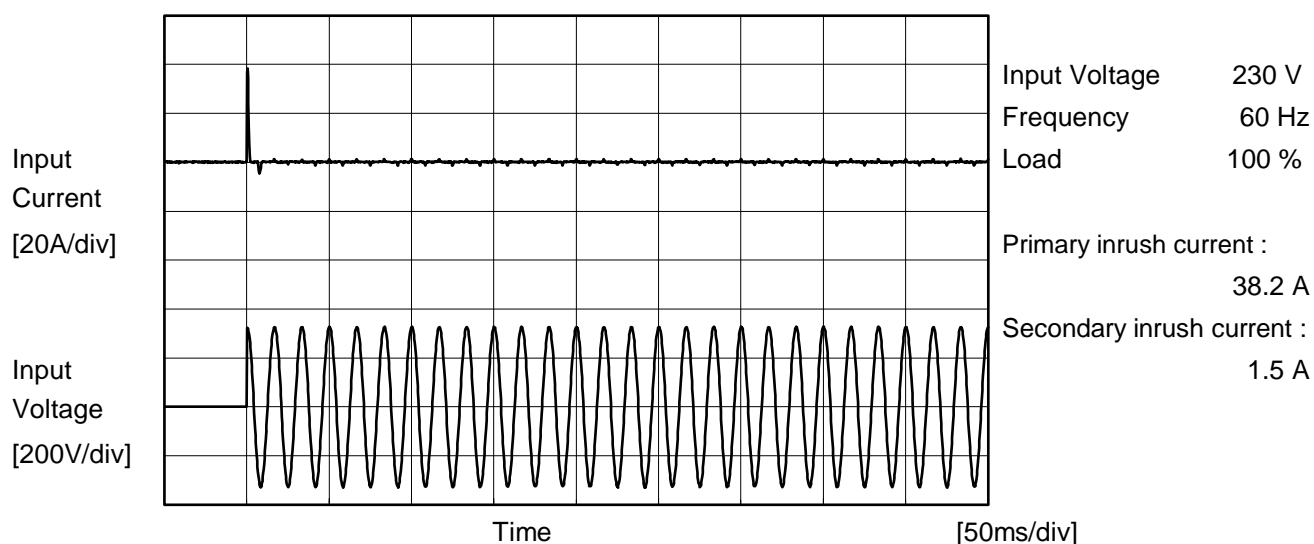
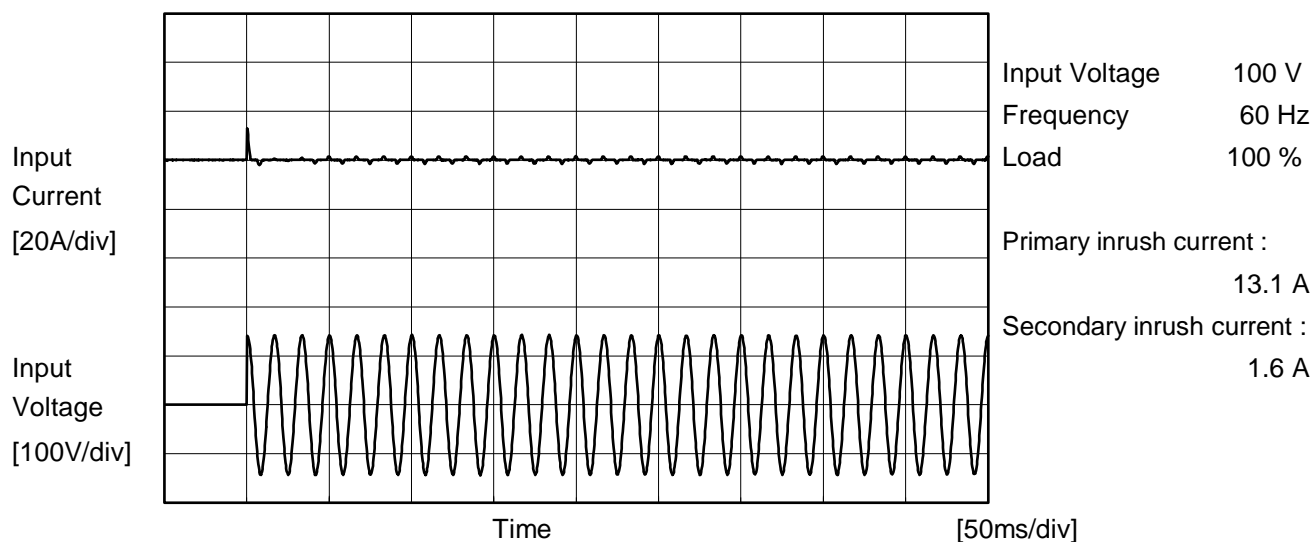
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Model	LHA30F-5	Temperature 25°C Testing Circuitry Figure A	
Item	Inrush Current		
Object	_____		





		Temperature 25°C Testing Circuitry Figure B
Model	LHA30F-5	
Item	Leakage Current	
Object	_____	

1.Results

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			100 [V]	230 [V]	240 [V]	
DEN-AN	Figure B-1	Both phases	0.10	0.17	0.17	Operation
		One of phases	0.16	0.44	0.45	Stand by
IEC62368-1	Figure B-2	Both phases	0.11	0.29	0.30	Operation
		One of phases	0.17	0.43	0.46	Stand by
	Figure B-3	Both phases	0.11	0.29	0.30	Operation
		One of phases	0.17	0.43	0.46	Stand by

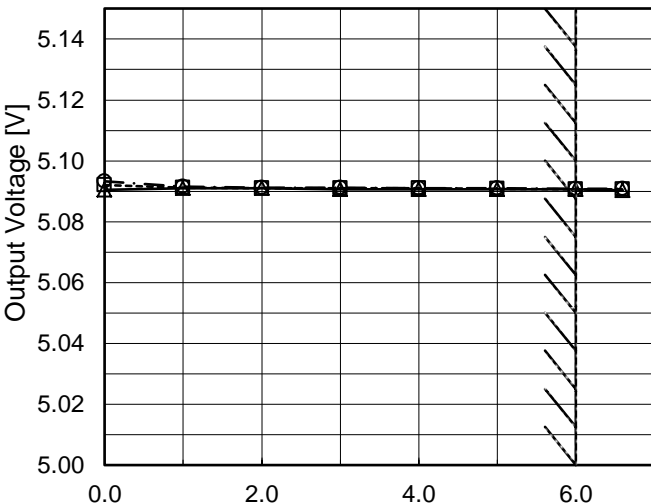
The value for "One of phases" is the reference value only.

2.Condition

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

Model		LHA30F-5	Temperature		25°C																																
Item		Line Regulation	Testing Circuitry		Figure A																																
Object		+5V6A																																			
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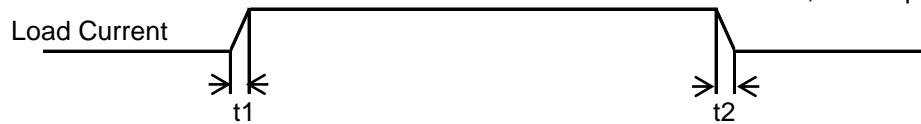
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Model	LHA30F-5		
Item	Dynamic Load Response	Temperature	25°C
Object	+5V6A	Testing Circuitry	Figure A

Input Volt. 230 V
Cycle 1000 ms

t1,t2 = 50 μ s



Min.Load (0A) \longleftrightarrow
Load 100% (6A)

200 mV/div

800 μ s/div

4 ms/div

Min.Load (0A) \longleftrightarrow
Load 50% (3A)

200 mV/div

800 μ s/div

4 ms/div

Load 50% (3A) \longleftrightarrow
Load 100% (6A)

200 mV/div

800 μ s/div

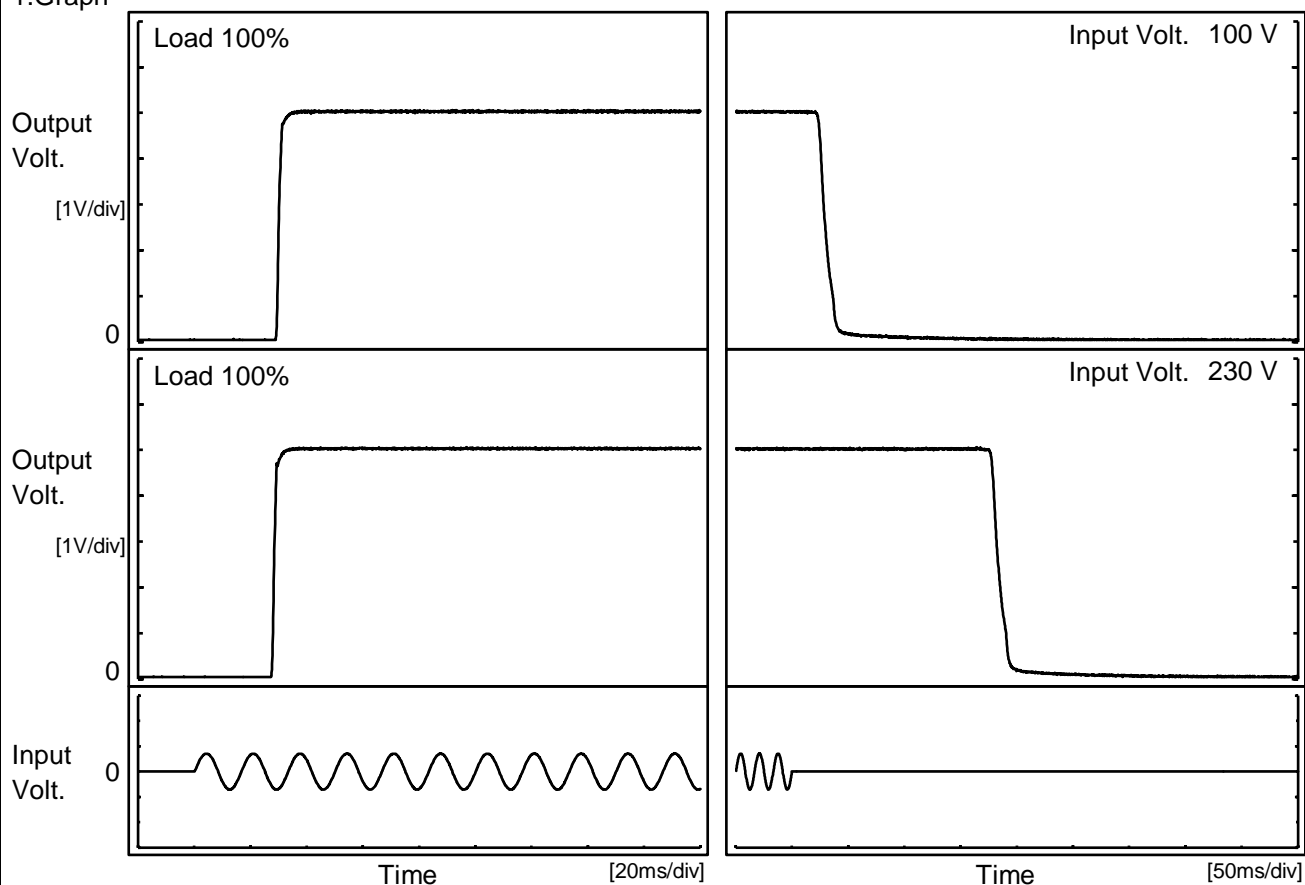
4 ms/div

Model		LHA30F-5	Temperature		25°C
Item		Ripple-Noise(by Load Current)	Testing Circuitry		Figure C
Object		+5V6A			
1.Graph			2.Values		
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Model		LHA30F-5																																																				
Item		Ambient Temperature Drift																																																				
Object		+5V6A																																																				
1.Graph		2.Values																																																				
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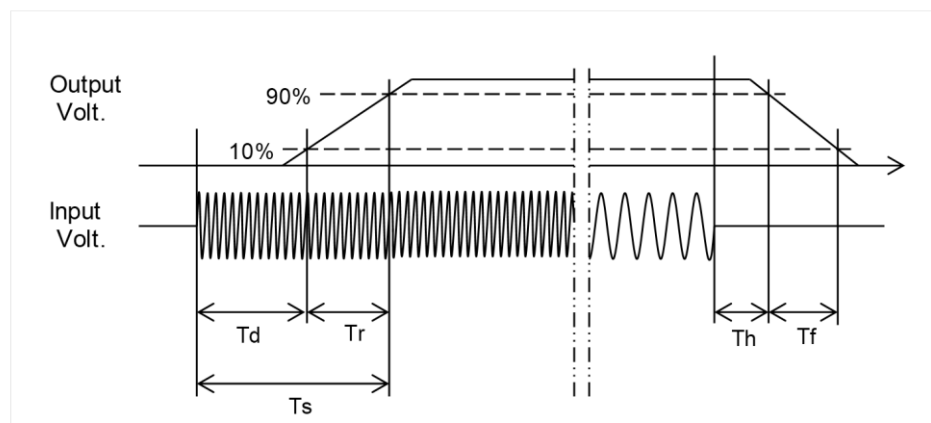
Model	LHA30F-5		
Item	Rise and Fall Time	Temperature	25°C
Object	+5V6A	Testing Circuitry	Figure A

1.Graph



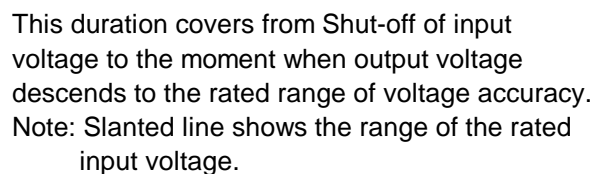
2.Values

		[ms]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		29.5	1.6	31.1	24.5	13.5
230 V		27.9	1.4	29.3	178.3	13.8



Temperature	25°C
Testing Circuitry	Figure A

2.Values



- 12 -

Model		LHA30F-5		Temperature		25°C																																																				
Item		Instantaneous Interruption Compensation		Testing Circuitry		Figure A																																																				
Object		+5V6A																																																								
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>2.0</div><div>4.0</div><div>6.0</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>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1.0</td><td>179</td><td>814</td><td>1083</td></tr><tr><td>2.0</td><td>93</td><td>417</td><td>562</td></tr><tr><td>3.0</td><td>59</td><td>281</td><td>377</td></tr><tr><td>4.0</td><td>40</td><td>207</td><td>281</td></tr><tr><td>5.0</td><td>31</td><td>163</td><td>221</td></tr><tr><td>6.0</td><td>23</td><td>132</td><td>180</td></tr><tr><td>6.6</td><td>20</td><td>116</td><td>160</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]	0.0	-	-	-	1.0	179	814	1083	2.0	93	417	562	3.0	59	281	377	4.0	40	207	281	5.0	31	163	221	6.0	23	132	180	6.6	20	116	160	--	-	-	-	--	-	-	-	--	-	-	-
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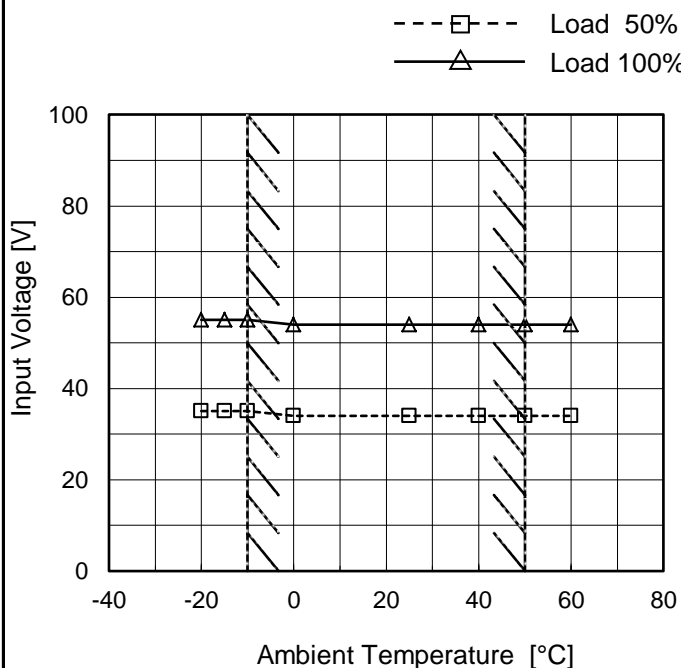
Model LHA30F-5

Item Minimum Input Voltage
for Regulated Output Voltage

Object +5V6A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	35	55
-15	35	55
-10	35	55
0	34	54
25	34	54
40	34	54
50	34	54
60	34	54
--	-	-
--	-	-
--	-	-

COSEL

Model		LHA30F-5																																													
Item		Overcurrent Protection																																													
Object		+5V6A																																													
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>5.00</td><td>7.31</td><td>7.45</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]	5.00	7.31	7.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Model		LHA30F-5
Item		Overvoltage Protection
Object		+5V6A

1.Graph

—△—

Input Volt. 100V

---□---

Input Volt. 230V

Operating Point [V]

Ambient Temperature [°C]

Load 0%

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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 230[V]
-20	6.35	6.35
-15	6.35	6.35
-10	6.35	6.35
0	6.35	6.35
25	6.35	6.35
40	6.28	6.28
50	6.28	6.28
60	6.28	6.28
--	-	-
--	-	-
--	-	-

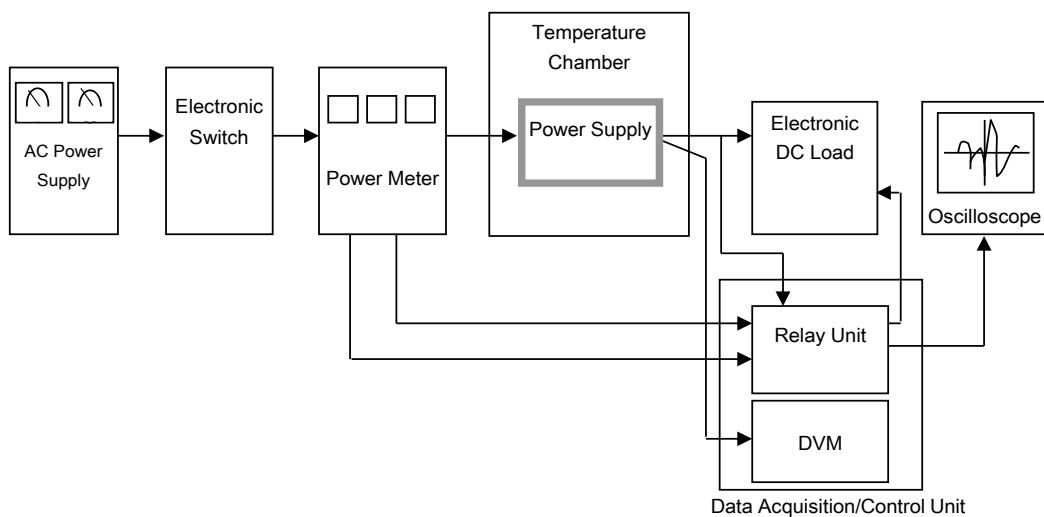


Figure A

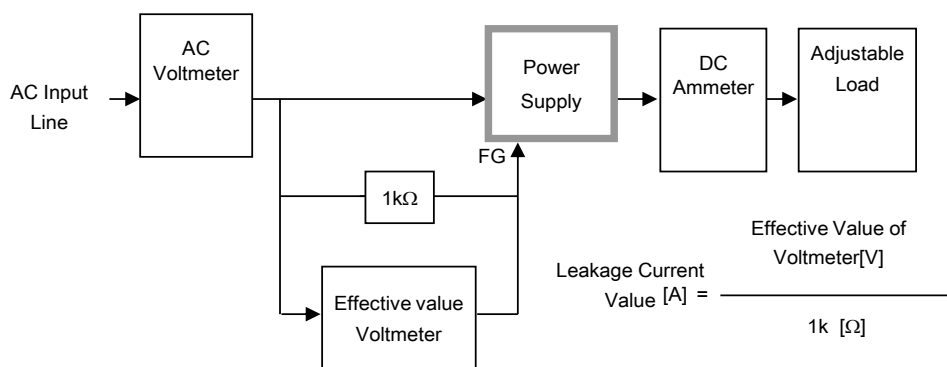


Figure B-1 (DEN-AN)

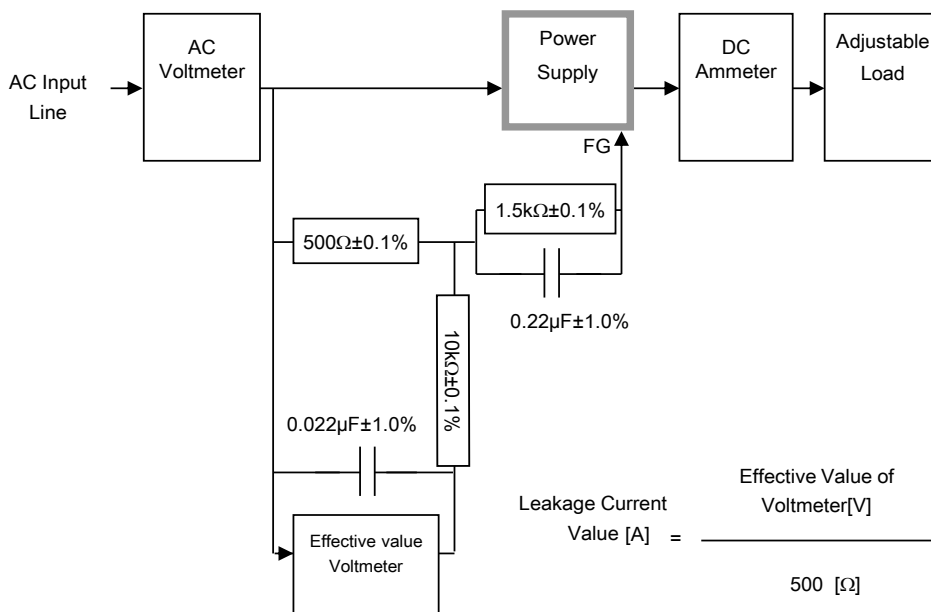


Figure B-2 (IEC62368-1 refer to IEC60990 Fig.4)

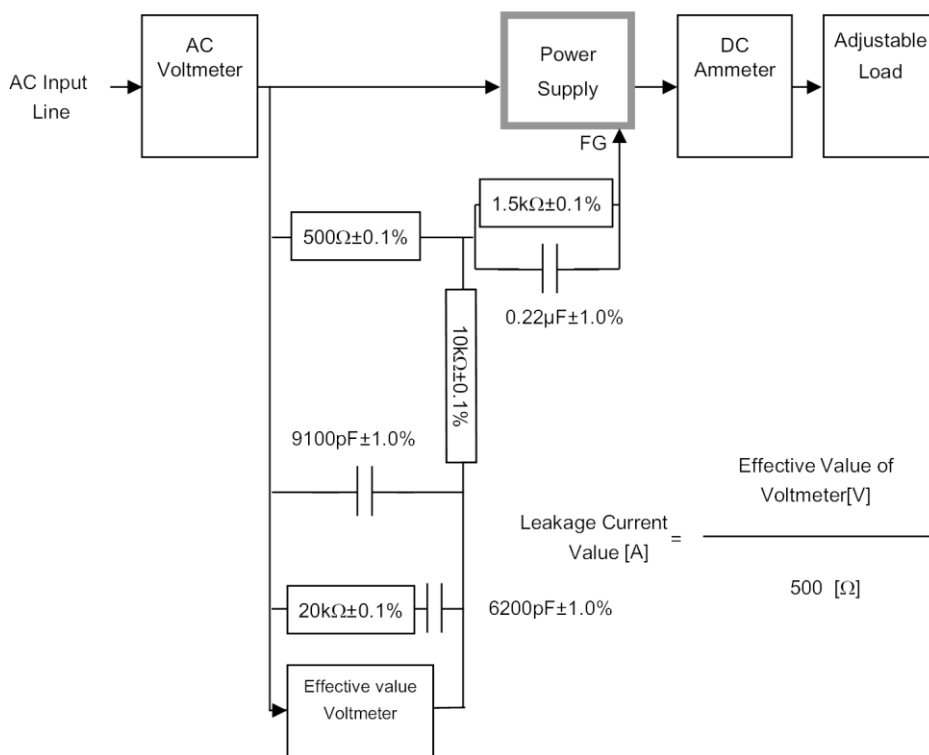


Figure B-3 (IEC62368-1 refer to IEC60990 Fig.5)

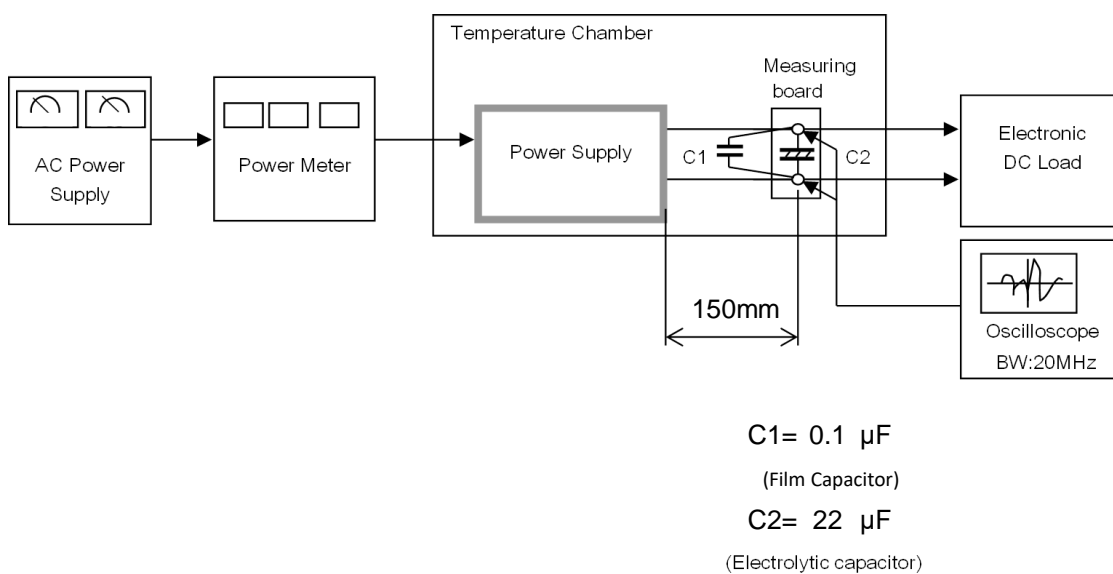


Figure C