

TEST DATA OF PCA1000F-24

Regulated DC Power Supply
February 21, 2019

Approved by : Koji Todo
Koji Todo Design Manager

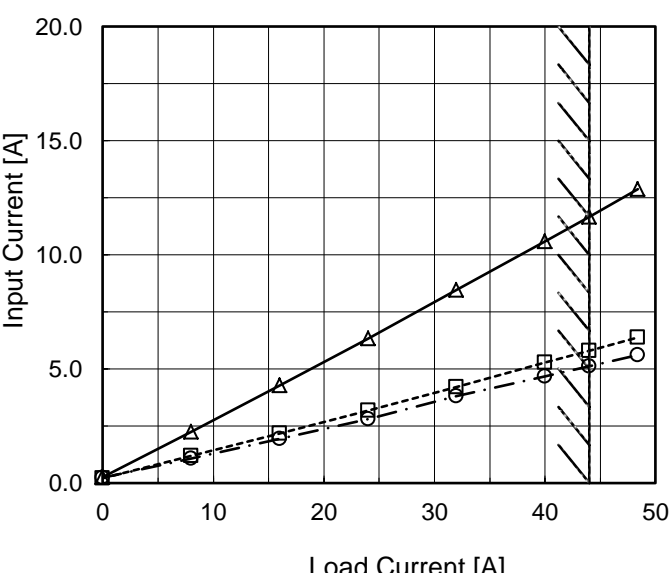
Prepared by : Terumasa Araki
Terumasa Araki Design Engineer

COSEL CO.,LTD.

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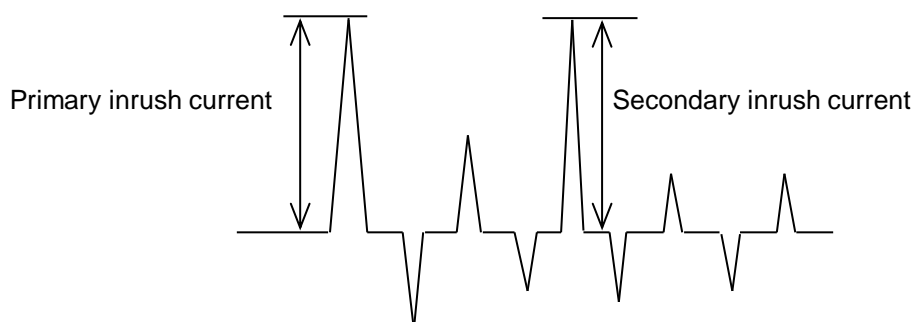
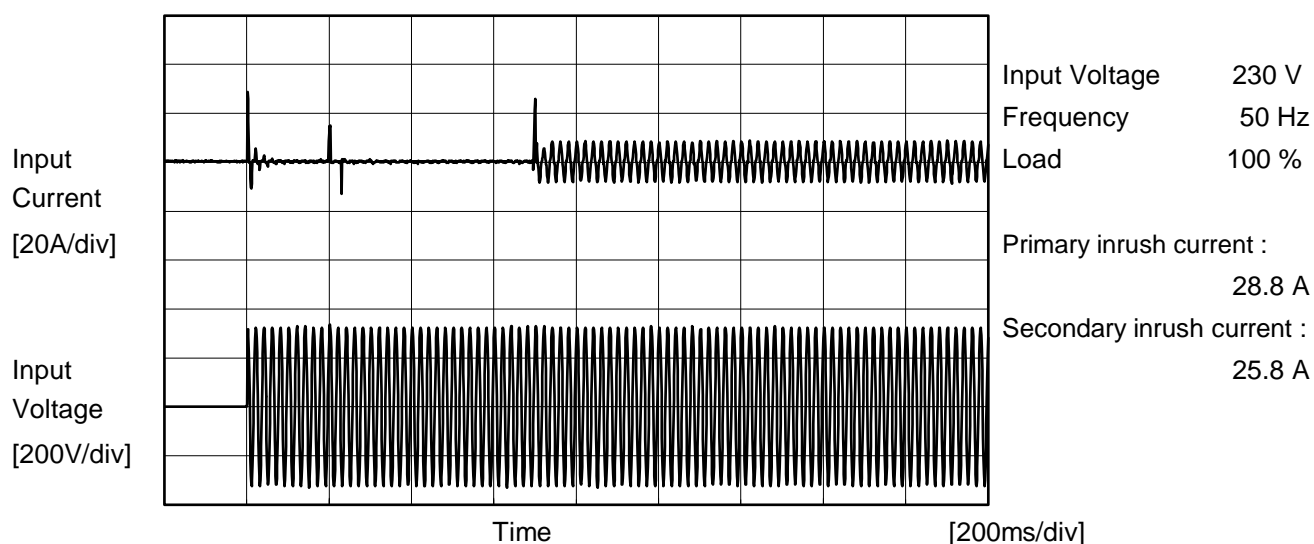
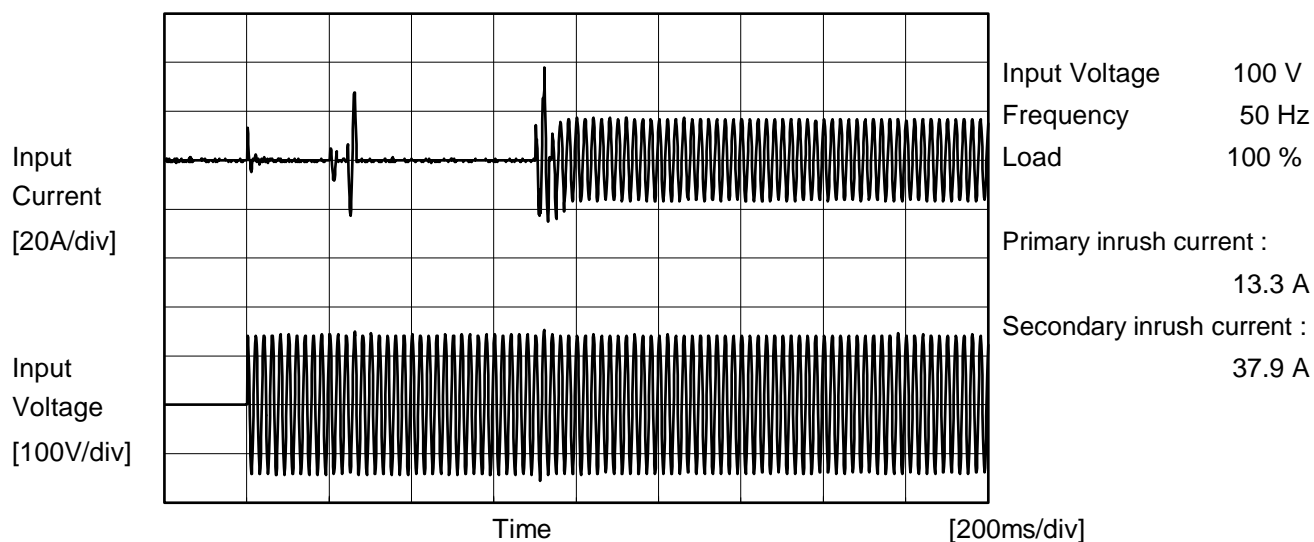
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1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>200V</div></div><div><div>---○---</div><div>Input Volt.</div><div>230V</div></div></div>  <p>Note: Slanted line shows the range of the rated load current.</p>		2.Values																																																				
		<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>0.0</td><td>0.241</td><td>0.214</td><td>0.236</td></tr><tr><td>8.0</td><td>2.241</td><td>1.189</td><td>1.065</td></tr><tr><td>16.0</td><td>4.270</td><td>2.177</td><td>1.928</td></tr><tr><td>24.0</td><td>6.340</td><td>3.178</td><td>2.798</td></tr><tr><td>32.0</td><td>8.450</td><td>4.200</td><td>3.800</td></tr><tr><td>40.0</td><td>10.590</td><td>5.290</td><td>4.680</td></tr><tr><td>44.0</td><td>11.670</td><td>5.800</td><td>5.120</td></tr><tr><td>48.4</td><td>12.890</td><td>6.380</td><td>5.610</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]	0.0	0.241	0.214	0.236	8.0	2.241	1.189	1.065	16.0	4.270	2.177	1.928	24.0	6.340	3.178	2.798	32.0	8.450	4.200	3.800	40.0	10.590	5.290	4.680	44.0	11.670	5.800	5.120	48.4	12.890	6.380	5.610	--	-	-	-	--	-	-	-	--	-	-	-
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Model	PCA1000F-24	Temperature 25°C Testing Circuitry Figure A	
Item	Inrush Current		
Object			





		Temperature 25°C Testing Circuitry Figure B
Model	PCA1000F-24	
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	0.11	0.29	0.31	Operation
		One of phases	0.22	0.56	0.59	Stand by
IEC62368-1	Figure B-2	Both phases	0.10	0.28	0.30	Operation
		One of phases	0.22	0.56	0.60	Stand by
	Figure B-3	Both phases	0.11	0.29	0.31	Operation
		One of phases	0.22	0.57	0.61	Stand by
IEC60601-1	Figure B-4	Both phases	0.11	0.28	0.29	Operation
		One of phases	0.22	0.55	0.57	Stand by

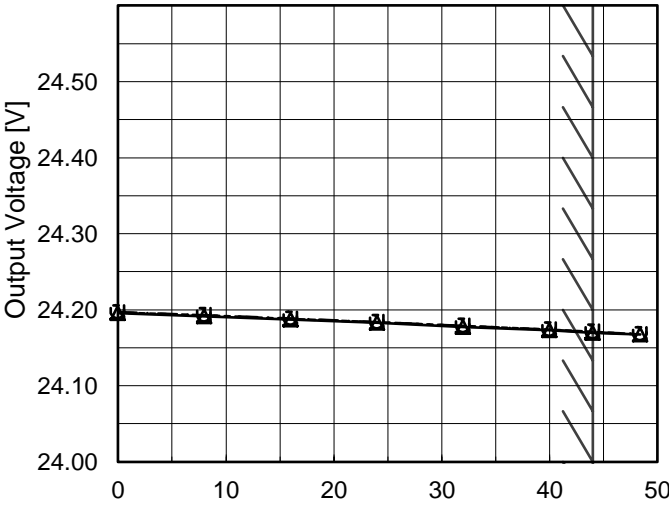
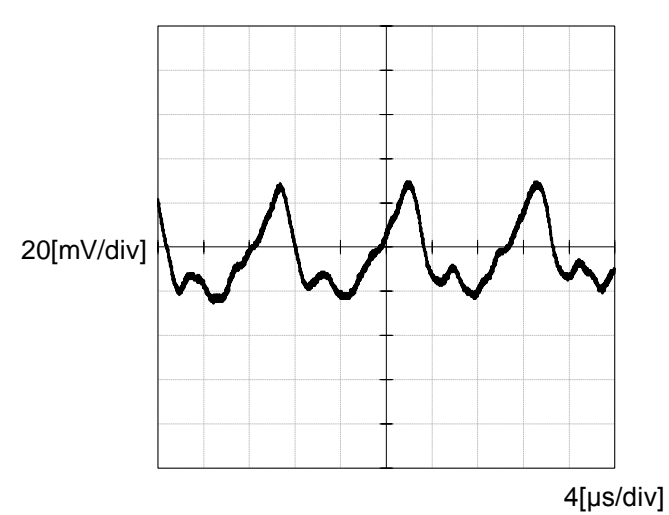
The value for "One of phases" is the reference value only.

2.Condition

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



Model		PCA1000F-24		Temperature		25°C																																	
Item		Line Regulation		Testing Circuitry		Figure A																																	
Object		+24V44A																																					
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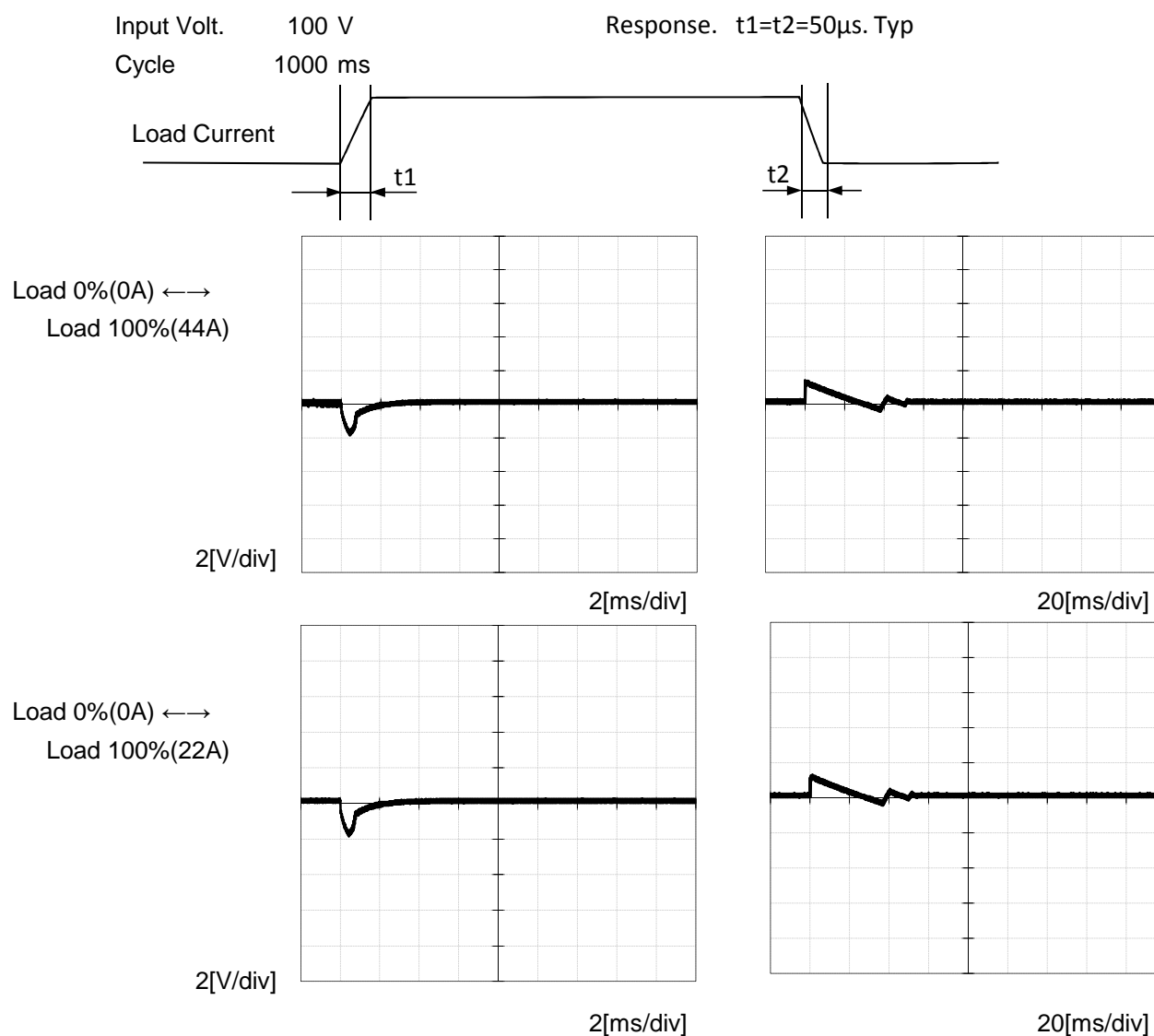
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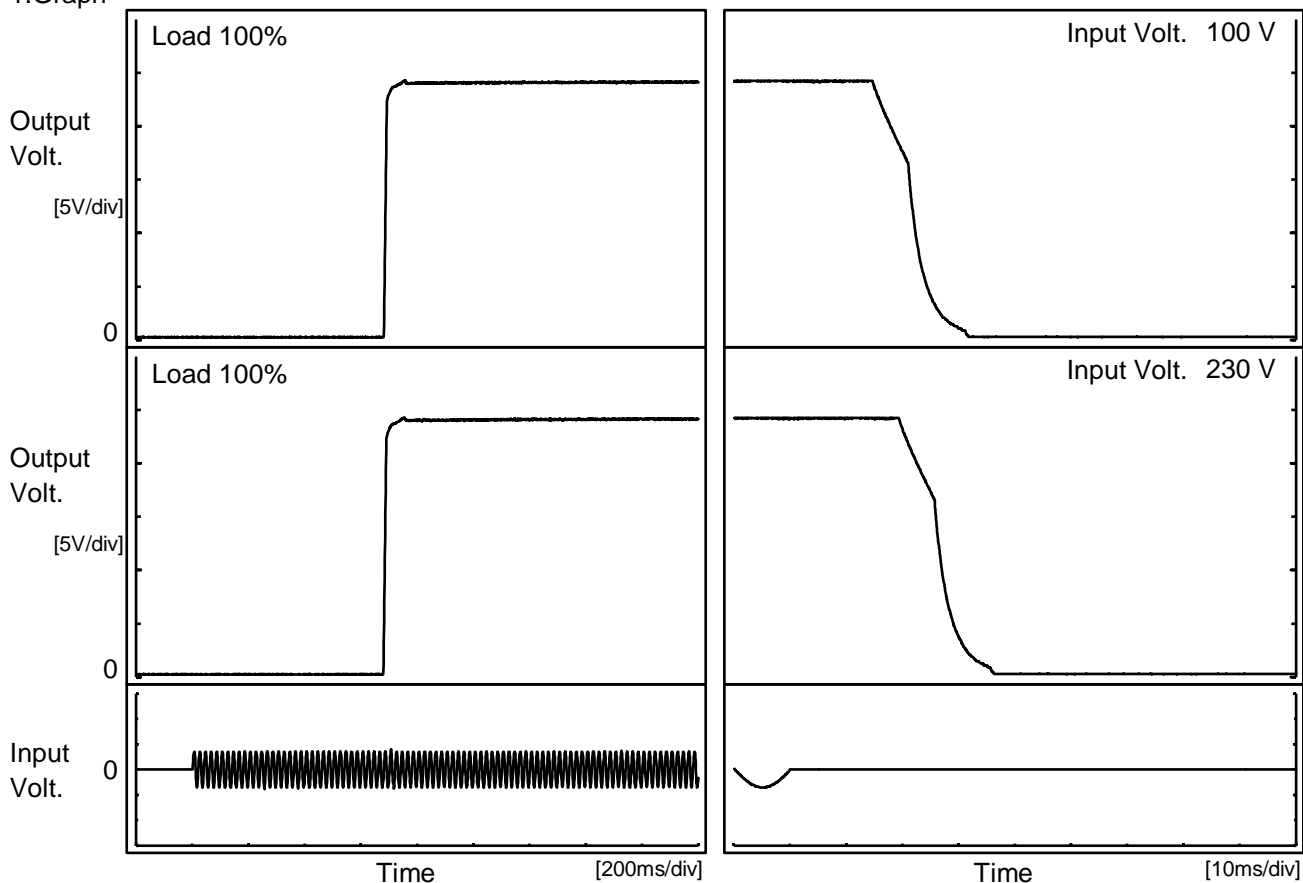
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Model	PCA1000F-24	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+24V44A		



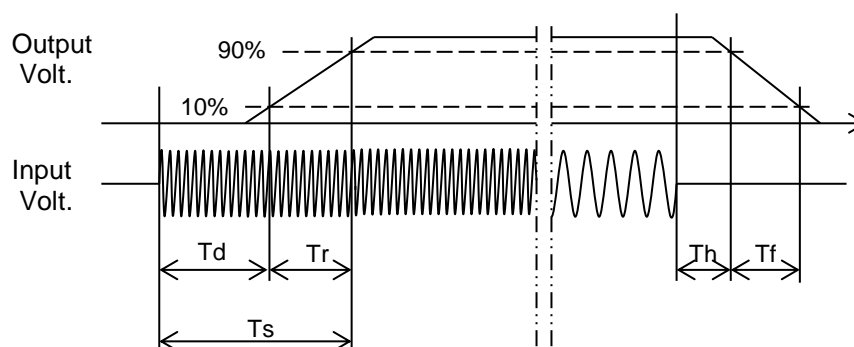
Model	PCA1000F-24		
Item	Rise and Fall Time	Temperature	25°C
Object	+24V44A	Testing Circuitry	Figure A

1.Graph



2.Values

		[ms]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		683.0	10.0	693.0	16.4	10.1
230 V		681.0	10.0	691.0	21.1	10.2



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<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <p>The graph shows the hold-up time in milliseconds on a logarithmic y-axis (1 to 1000) against the input voltage in volts on a linear x-axis (50 to 300). Two data series are plotted: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show an increase in hold-up time as input voltage increases. The Load 50% series starts at approximately 30 ms at 80V and reaches about 40 ms at 280V. The Load 100% series starts at approximately 15 ms at 80V and reaches about 20 ms at 280V. A slanted shaded region indicates the range of the rated input voltage, from approximately 80V to 280V.</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>80</td><td>30</td><td>-</td></tr><tr><td>85</td><td>30</td><td>-</td></tr><tr><td>100</td><td>30</td><td>15</td></tr><tr><td>120</td><td>30</td><td>15</td></tr><tr><td>200</td><td>39</td><td>20</td></tr><tr><td>230</td><td>39</td><td>20</td></tr><tr><td>264</td><td>39</td><td>20</td></tr><tr><td>280</td><td>40</td><td>20</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>				Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	80	30	-	85	30	-	100	30	15	120	30	15	200	39	20	230	39	20	264	39	20	280	40	20	--	-	-		
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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.</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>																																					

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Model		PCA1000F-24		Temperature Testing Circuitry	25°C Figure A																																												
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Object		+24V44A																																															
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<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>Hiccup mode activates when the output voltage is from 12 to 0V.</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>22.8</td><td>50.74</td><td>50.56</td></tr><tr><td>21.6</td><td>50.64</td><td>50.60</td></tr><tr><td>19.2</td><td>50.73</td><td>50.60</td></tr><tr><td>16.8</td><td>50.78</td><td>50.72</td></tr><tr><td>14.4</td><td>50.75</td><td>50.68</td></tr><tr><td>12.0</td><td>50.84</td><td>50.74</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]	22.8	50.74	50.56	21.6	50.64	50.60	19.2	50.73	50.60	16.8	50.78	50.72	14.4	50.75	50.68	12.0	50.84	50.74	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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Model	PCA1000F-24		
Item	Ambient Temperature Drift	Testing Circuitry Figure A	
Object	+24V44A		
1.Values		Load 100%	
Ambient Temperature[°C]	Output Voltage [V]		
	Input Volt. 100V	Input Volt. 200V	Input Volt. 230V
-20	24.100	24.100	24.099
25	24.172	24.172	24.173
40	24.197	24.196	24.196
50	-	24.199	24.199
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A	
Object	+24V44A		
1.Values			
Ambient Temperature[°C]	Input Voltage [V]		
	Load 50%	Load 100%	
-20	73	79	
25	73	78	
40	74	77	
Item	Overvoltage Protection	Testing Circuitry Figure A	
Object	+24V44A		
1.Values		Load 0%	
Ambient Temperature[°C]	Operating Point [V]		
	Input Volt. 100V	Input Volt. 230V	
-20	30.88	30.87	
25	30.87	30.87	
40	30.75	30.87	
50	30.75	30.75	

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BC-11338

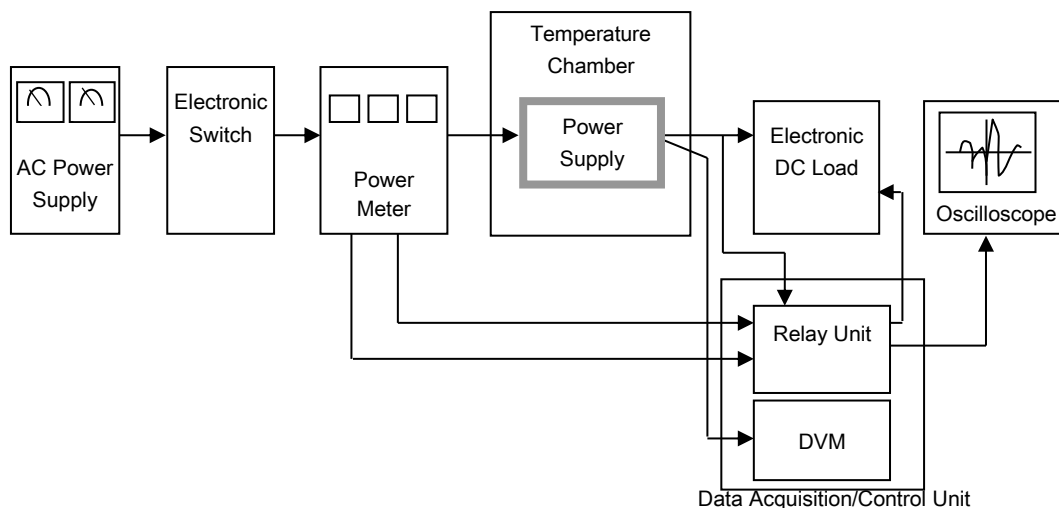


Figure A

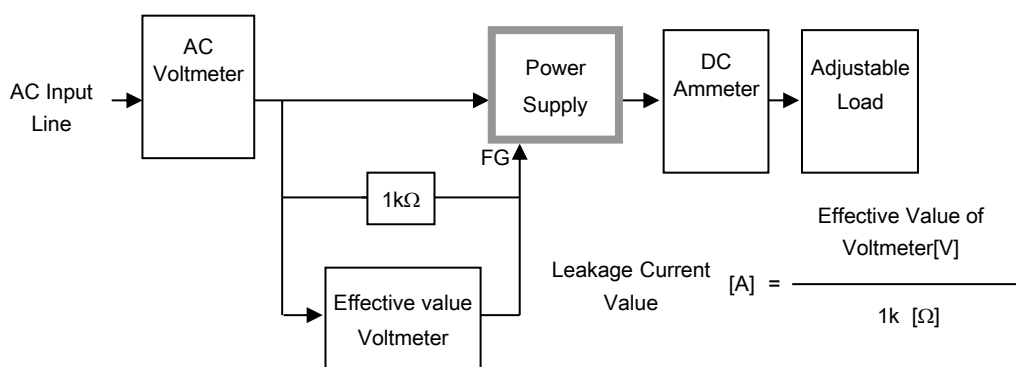


Figure B-1 (DEN-AN)

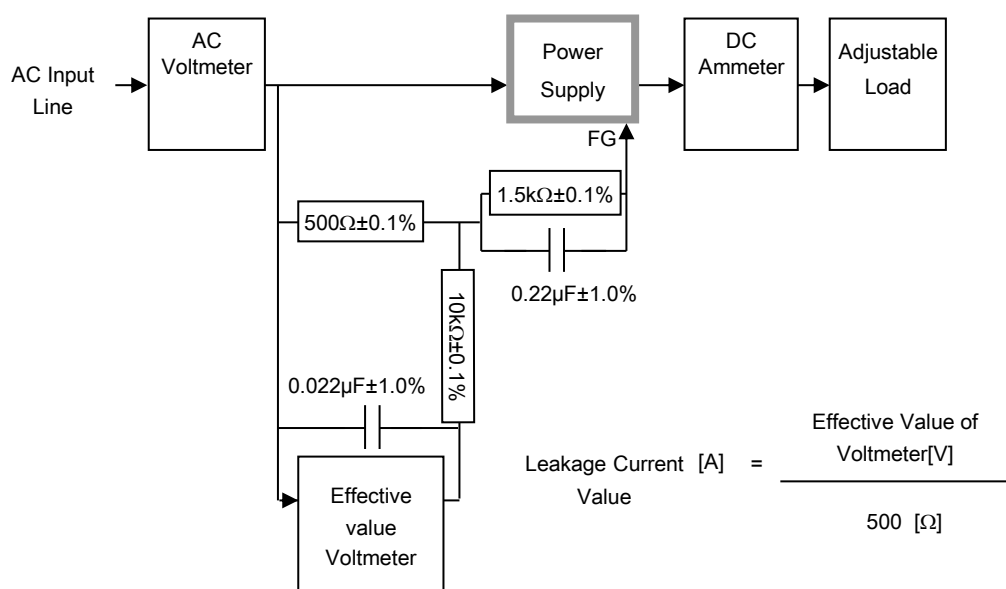


Figure B-2 (IEC62368-1 refer to IEC60990 Fig.4)

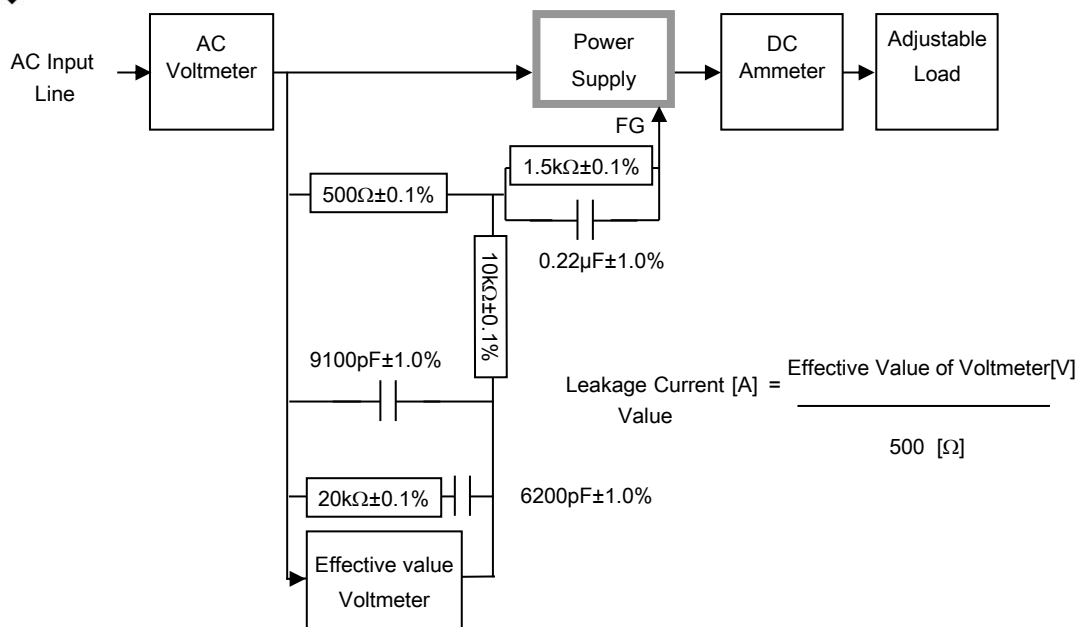


Figure B-3 (IEC62368-1 refer to IEC60990 Fig.5)

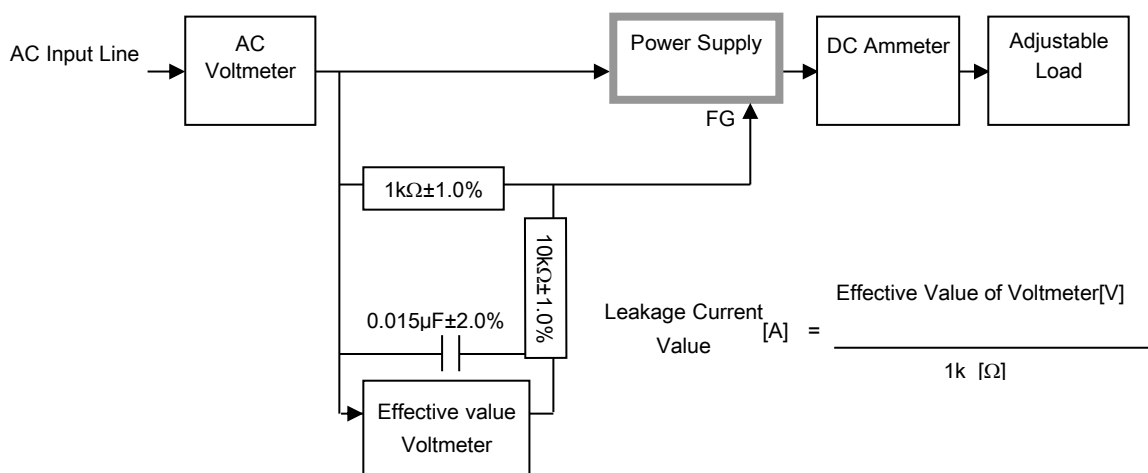


Figure B-4 (IEC60601-1)

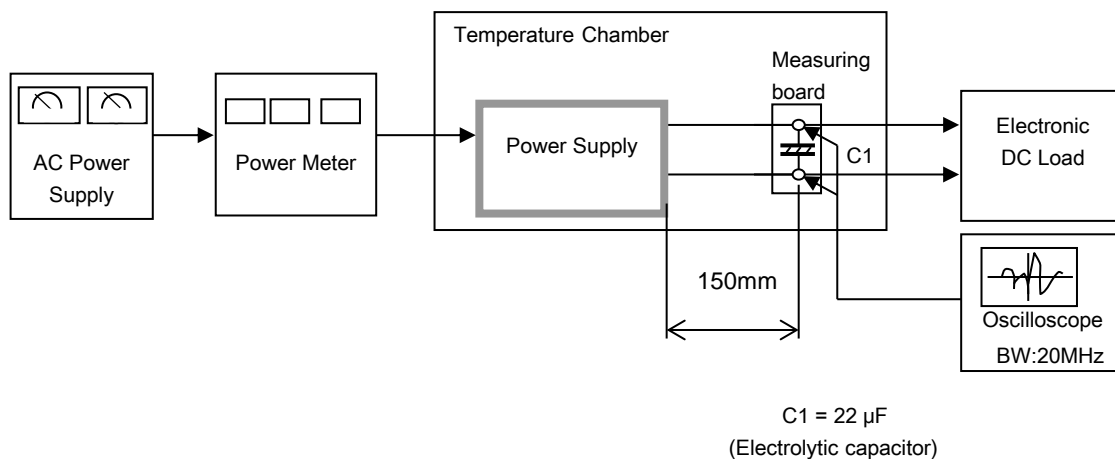


Figure C