

TEST DATA OF PCA1000F-12

Regulated DC Power Supply
February 20, 2019

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Koji Todo Design Manager

Prepared by : Terumasa Araki
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COSEL CO.,LTD.

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Model		PCA1000F-12		Temperature 25°C																																																				
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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> <div><p>Input Current [A]</p><p>Load Current [A]</p></div> <div>Note: Slanted line shows the range of the rated load current.</div>		2.Values																																																				
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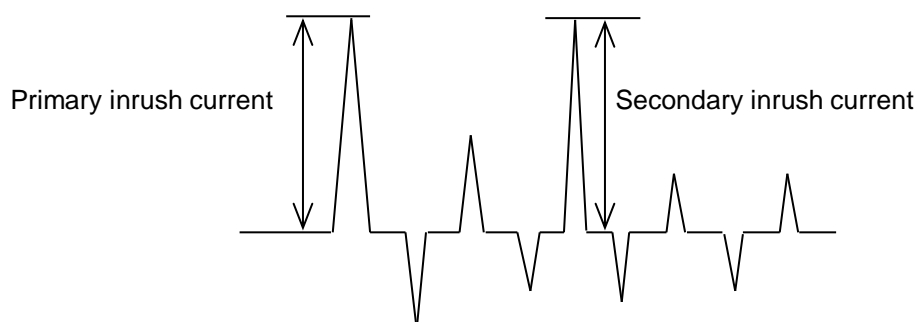
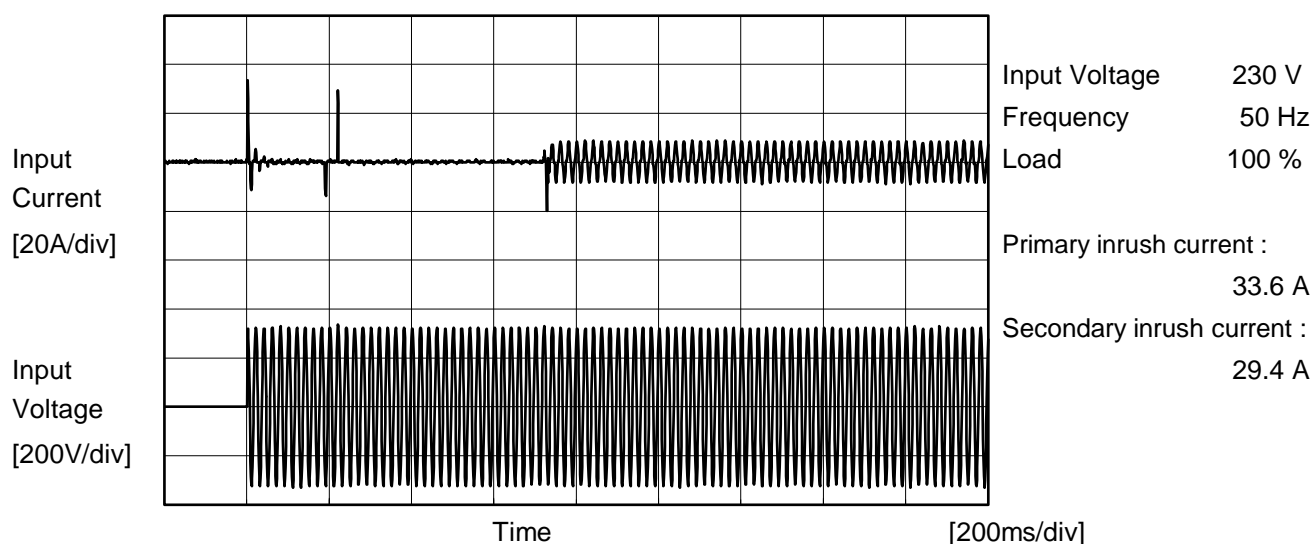
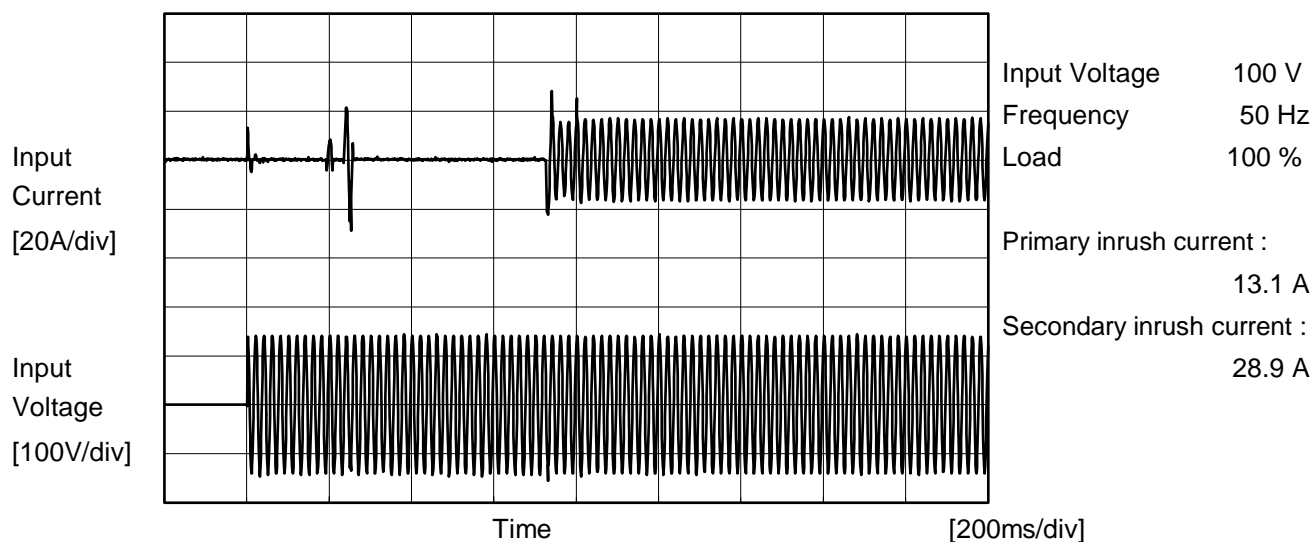


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COSEL

Model	PCA1000F-12	Temperature 25°C Testing Circuitry Figure A	
Item	Inrush Current		
Object			





		Temperature 25°C Testing Circuitry Figure B
Model	PCA1000F-12	
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

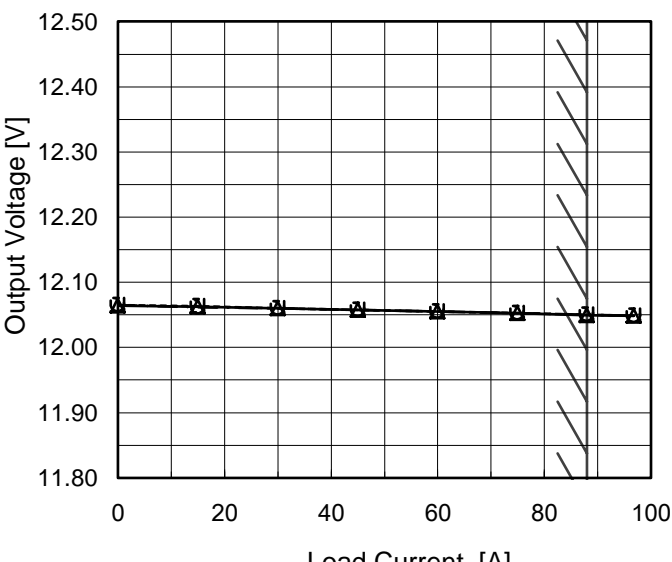
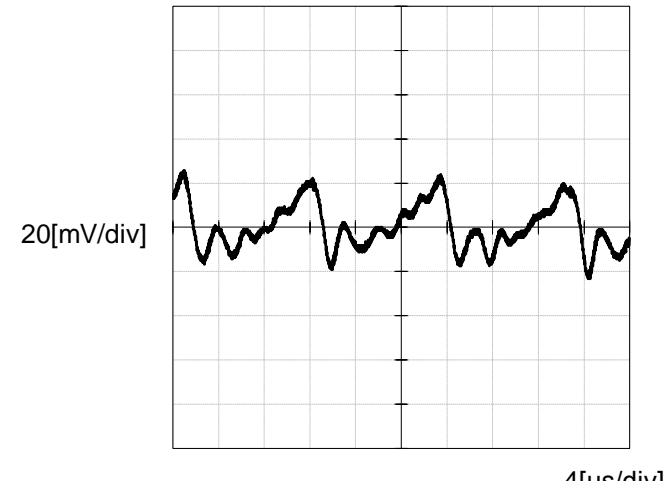
The value for "One of phases" is the reference value only.

2.Condition

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



Model		PCA1000F-12		Temperature		25°C	
Item		Line Regulation		Testing Circuitry		Figure A	
Object		+12V88A					
1.Graph				2.Values			
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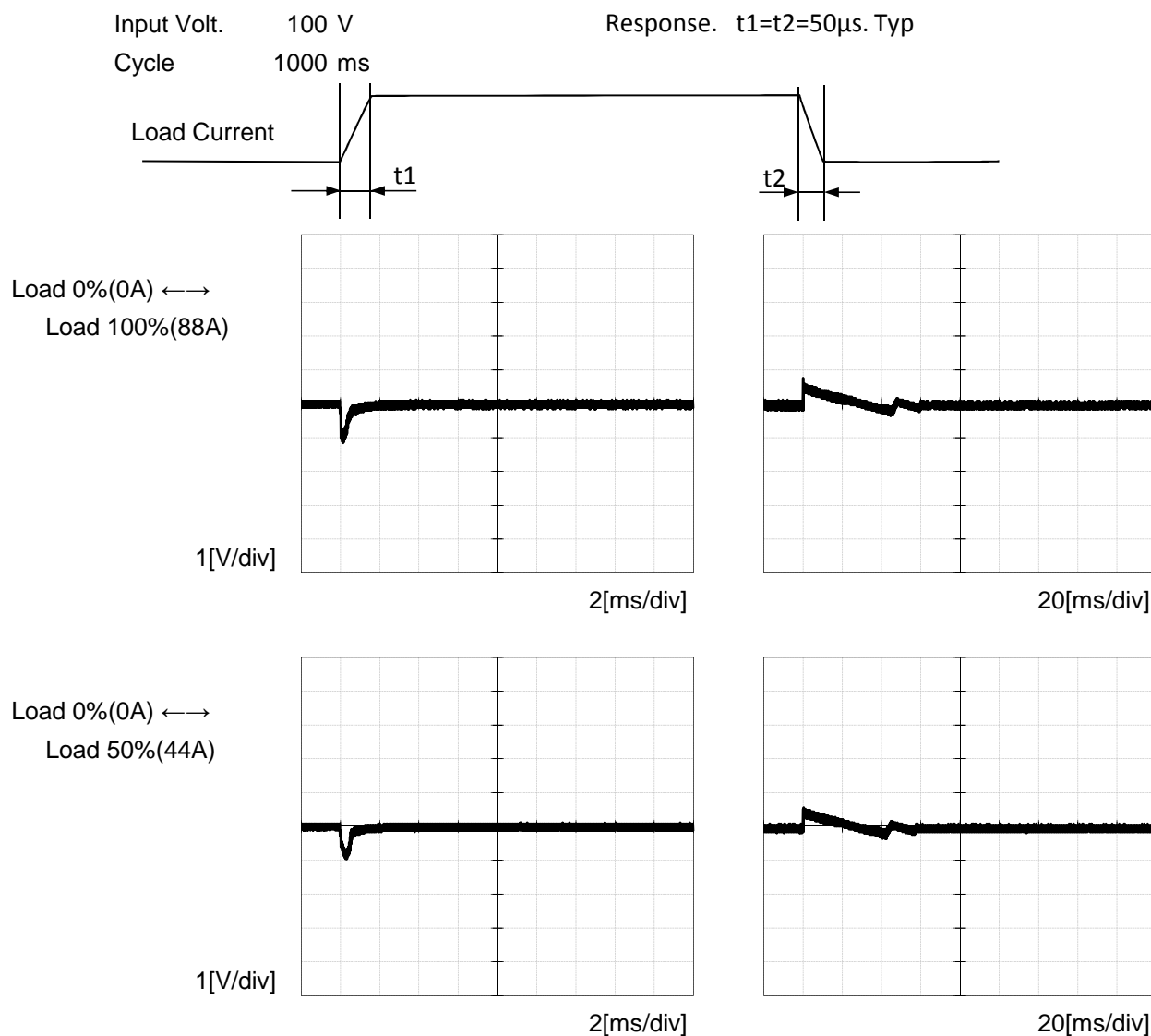
Model		PCA1000F-12		Temperature 25°C																																																				
Item		Load Regulation		Testing Circuitry Figure A																																																				
Object		+12V88A																																																						
1.Graph		<div><div><div>—△—</div><div>Input 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">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>0.0</td><td>12.064</td><td>12.065</td><td>12.065</td></tr><tr><td>15.0</td><td>12.063</td><td>12.063</td><td>12.062</td></tr><tr><td>30.0</td><td>12.060</td><td>12.060</td><td>12.060</td></tr><tr><td>45.0</td><td>12.058</td><td>12.058</td><td>12.058</td></tr><tr><td>60.0</td><td>12.055</td><td>12.055</td><td>12.056</td></tr><tr><td>75.0</td><td>12.053</td><td>12.053</td><td>12.052</td></tr><tr><td>88.0</td><td>12.050</td><td>12.050</td><td>12.050</td></tr><tr><td>96.8</td><td>12.048</td><td>12.048</td><td>12.049</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]	0.0	12.064	12.065	12.065	15.0	12.063	12.063	12.062	30.0	12.060	12.060	12.060	45.0	12.058	12.058	12.058	60.0	12.055	12.055	12.056	75.0	12.053	12.053	12.052	88.0	12.050	12.050	12.050	96.8	12.048	12.048	12.049	--	-	-	-	--	-	-	-	--	-	-	-
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--	-	-	-																																																					
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Item		Ripple-Noise		Temperature 25°C																																																				
Object		+12V88A		Testing Circuitry Figure C																																																				
1.Graph		<div><div>Input Voltage 200V</div><div>Load 100%</div></div> 																																																						

- 7 -

BC-11336

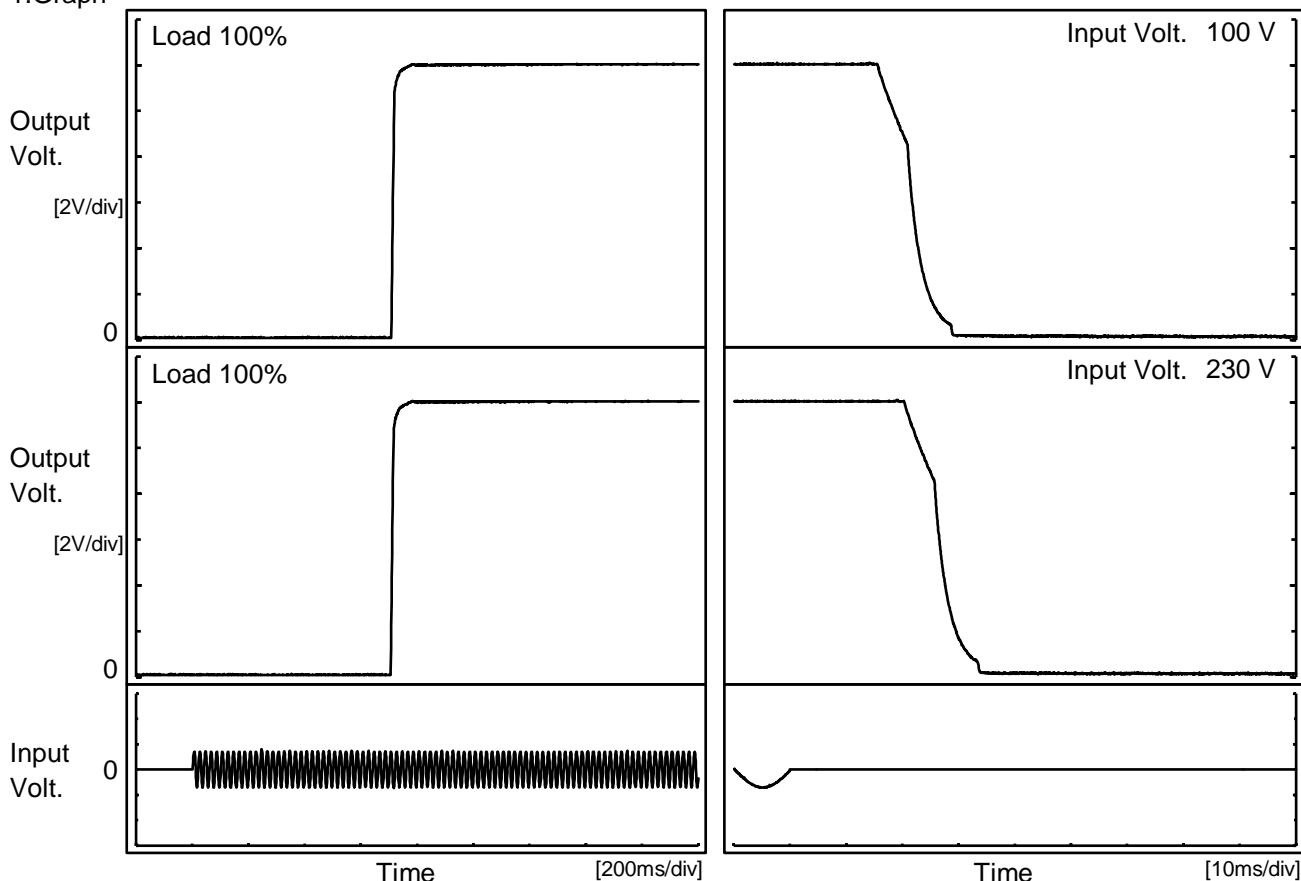


Model	PCA1000F-12	Temperature 25°C Testing Circuitry Figure A	
Item	Dynamic Load Response		
Object	+12V88A		



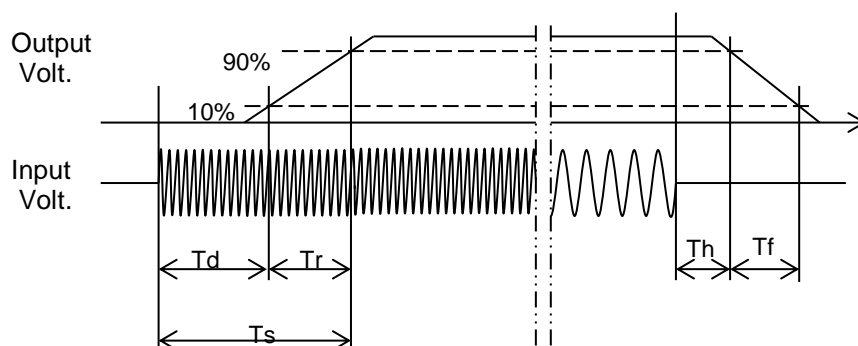
Model	PCA1000F-12		
Item	Rise and Fall Time	Temperature	25°C
Object	+12V88A	Testing Circuitry	Figure A

1.Graph



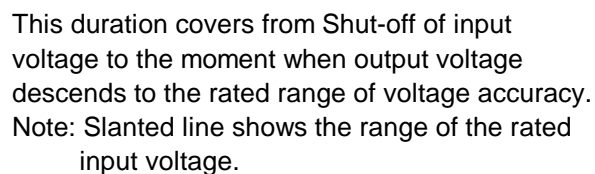
2.Values

		Testing Circuitry Figure C					[ms]
Input Volt.	Time	Td	Tr	Ts	Th	Tf	
100 V		710.0	10.0	720.0	17.0	9.1	
230 V		708.0	10.0	718.0	21.8	9.1	



Temperature	25°C
Testing Circuitry	Figure A

2.Values



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Model		PCA1000F-12		Temperature		25°C																																																				
Item		Instantaneous Interruption Compensation		Testing Circuitry		Figure A																																																				
Object		+12V88A																																																								
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>Instantaneous Compensation Time [ms]</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">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>15.0</td><td>76</td><td>105</td><td>106</td></tr><tr><td>30.0</td><td>52</td><td>65</td><td>66</td></tr><tr><td>45.0</td><td>36</td><td>47</td><td>51</td></tr><tr><td>60.0</td><td>25</td><td>32</td><td>38</td></tr><tr><td>75.0</td><td>17</td><td>25</td><td>26</td></tr><tr><td>88.0</td><td>15</td><td>21</td><td>22</td></tr><tr><td>96.8</td><td>15</td><td>18</td><td>20</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	-	-	-	15.0	76	105	106	30.0	52	65	66	45.0	36	47	51	60.0	25	32	38	75.0	17	25	26	88.0	15	21	22	96.8	15	18	20	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																									
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																							
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15.0	76	105	106																																																							
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45.0	36	47	51																																																							
60.0	25	32	38																																																							
75.0	17	25	26																																																							
88.0	15	21	22																																																							
96.8	15	18	20																																																							
--	-	-	-																																																							
--	-	-	-																																																							
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Model		PCA1000F-12		Temperature Testing Circuitry	25°C Figure A																																									
Item		Overcurrent Protection																																												
Object		+12V88A																																												
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>Hiccup mode activates when the output voltage is from 6 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>11.4</td><td>101.81</td><td>101.81</td></tr><tr><td>10.8</td><td>101.71</td><td>101.72</td></tr><tr><td>9.6</td><td>101.84</td><td>101.61</td></tr><tr><td>8.4</td><td>101.88</td><td>101.74</td></tr><tr><td>7.2</td><td>101.90</td><td>101.72</td></tr><tr><td>6.0</td><td>102.00</td><td>101.93</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]	11.4	101.81	101.81	10.8	101.71	101.72	9.6	101.84	101.61	8.4	101.88	101.74	7.2	101.90	101.72	6.0	102.00	101.93	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Output Voltage [V]	Load Current [A]																																													
	Input Volt. 100[V]	Input Volt. 230[V]																																												
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COSEL		Testing Circuitry Figure A																			
Model	PCA1000F-12																				
Item	Ambient Temperature Drift																				
Object	+12V88A																				
1.Values <div>Load 100%</div> <table><tr><td rowspan="2">Ambient Temperature[°C]</td><td colspan="3">Output Voltage [V]</td></tr><tr><td>Input Volt. 100V</td><td>Input Volt. 200V</td><td>Input Volt. 230V</td></tr><tr><td>-20</td><td>12.029</td><td>12.029</td><td>12.029</td></tr><tr><td>25</td><td>12.050</td><td>12.050</td><td>12.050</td></tr><tr><td>40</td><td>12.060</td><td>12.060</td><td>12.060</td></tr></table>			Ambient Temperature[°C]	Output Voltage [V]			Input Volt. 100V	Input Volt. 200V	Input Volt. 230V	-20	12.029	12.029	12.029	25	12.050	12.050	12.050	40	12.060	12.060	12.060
Ambient Temperature[°C]	Output Voltage [V]																				
	Input Volt. 100V	Input Volt. 200V	Input Volt. 230V																		
-20	12.029	12.029	12.029																		
25	12.050	12.050	12.050																		
40	12.060	12.060	12.060																		
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																			
Object	+12V88A																				
1.Values <table><tr><td rowspan="2">Ambient Temperature[°C]</td><td colspan="2">Input Voltage [V]</td></tr><tr><td>Load 50%</td><td>Load 100%</td></tr><tr><td>-20</td><td>75</td><td>78</td></tr><tr><td>25</td><td>76</td><td>78</td></tr><tr><td>40</td><td>76</td><td>78</td></tr></table>			Ambient Temperature[°C]	Input Voltage [V]		Load 50%	Load 100%	-20	75	78	25	76	78	40	76	78					
Ambient Temperature[°C]	Input Voltage [V]																				
	Load 50%	Load 100%																			
-20	75	78																			
25	76	78																			
40	76	78																			
Item	Overvoltage Protection	Testing Circuitry Figure A																			
Object	+12V88A																				
1.Values <div>Load 0%</div> <table><tr><td rowspan="2">Ambient Temperature[°C]</td><td colspan="2">Operating Point [V]</td></tr><tr><td>Input Volt. 100V</td><td>Input Volt. 230V</td></tr><tr><td>-20</td><td>15.46</td><td>15.46</td></tr><tr><td>25</td><td>15.45</td><td>15.45</td></tr><tr><td>40</td><td>15.45</td><td>15.45</td></tr></table>			Ambient Temperature[°C]	Operating Point [V]		Input Volt. 100V	Input Volt. 230V	-20	15.46	15.46	25	15.45	15.45	40	15.45	15.45					
Ambient Temperature[°C]	Operating Point [V]																				
	Input Volt. 100V	Input Volt. 230V																			
-20	15.46	15.46																			
25	15.45	15.45																			
40	15.45	15.45																			
		BC-11336																			

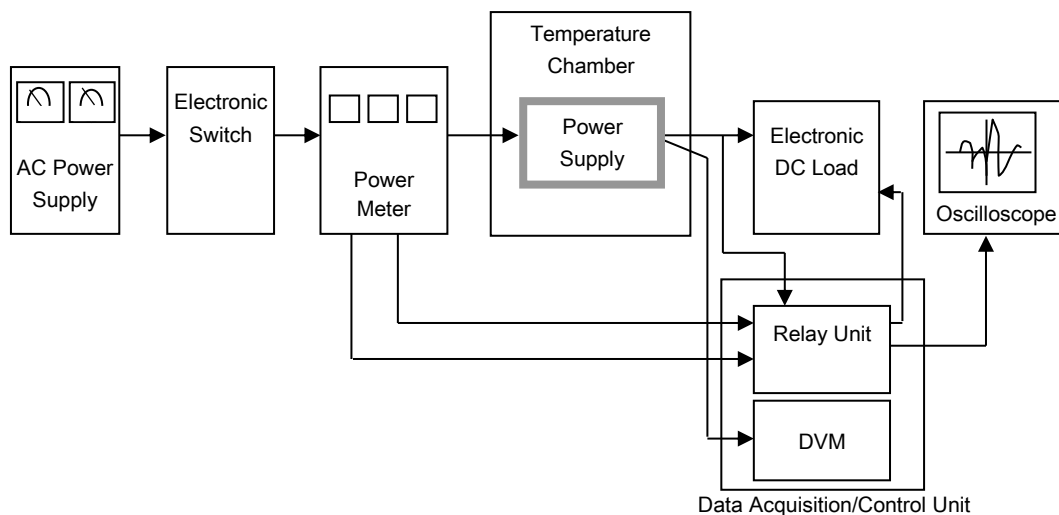


Figure A

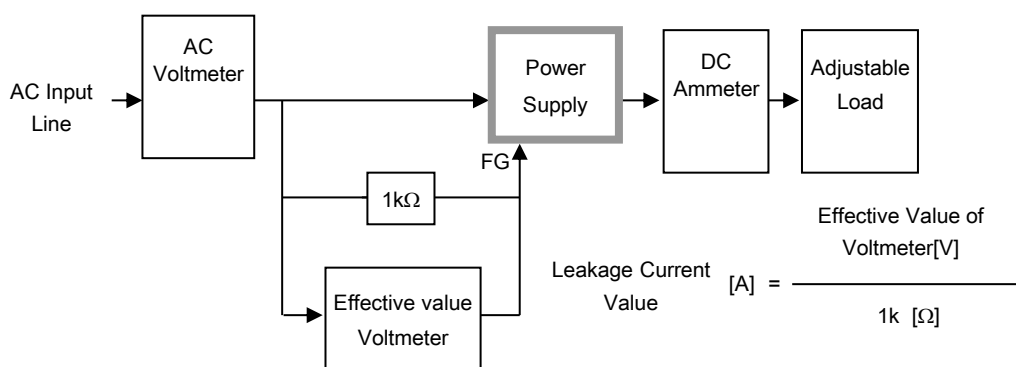


Figure B-1 (DEN-AN)

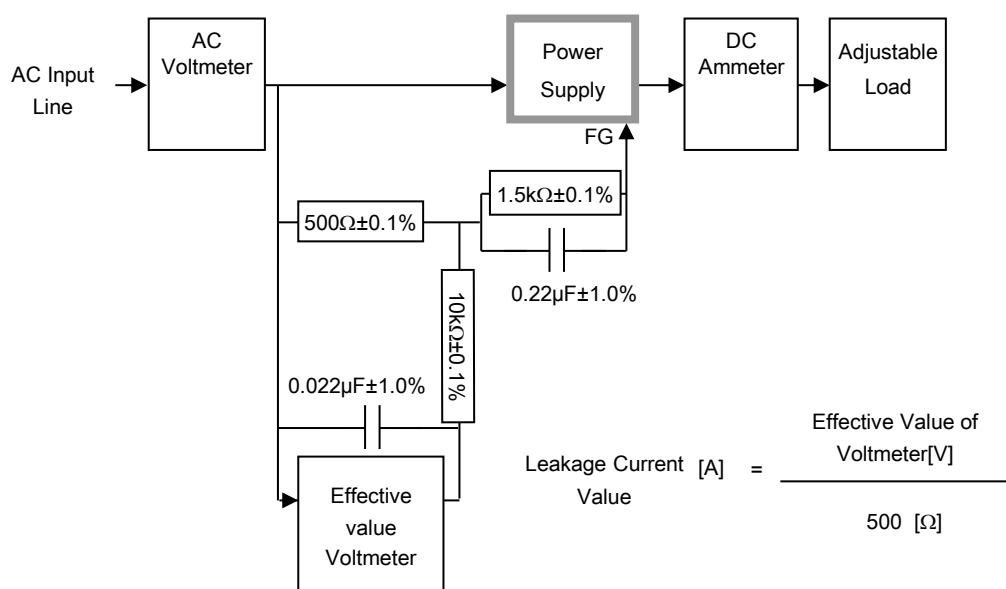


Figure B-2 (IEC62368-1 refer to IEC60990 Fig.4)

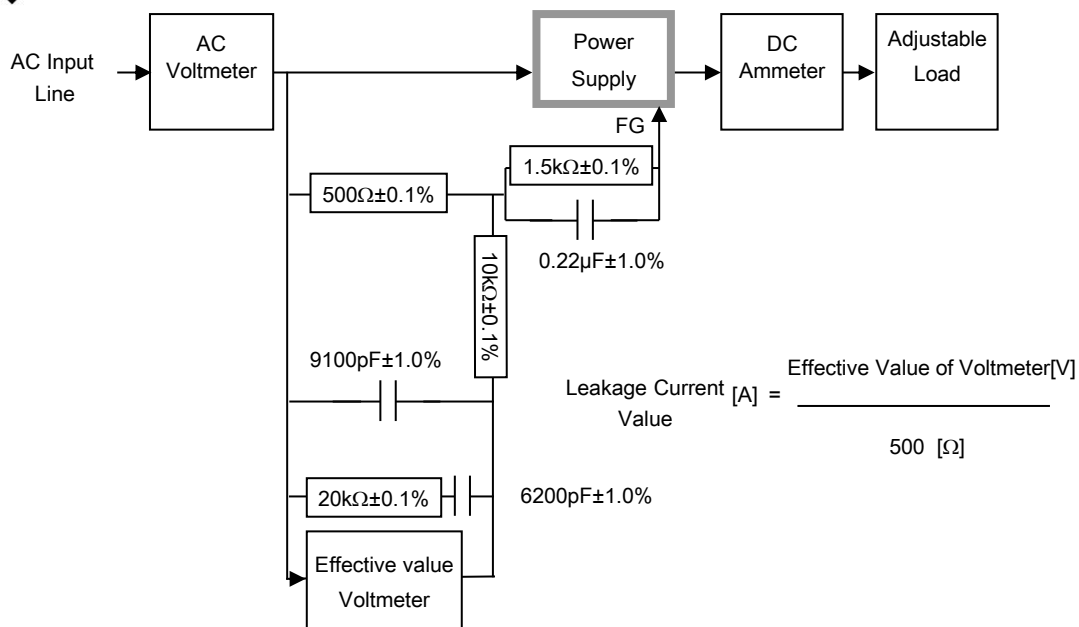


Figure B-3 (IEC62368-1 refer to IEC60990 Fig.5)

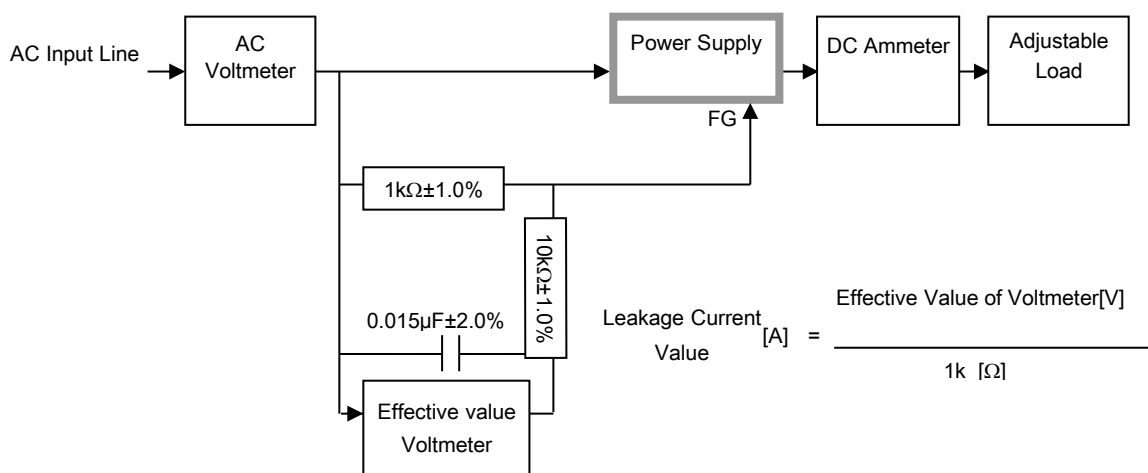


Figure B-4 (IEC60601-1)

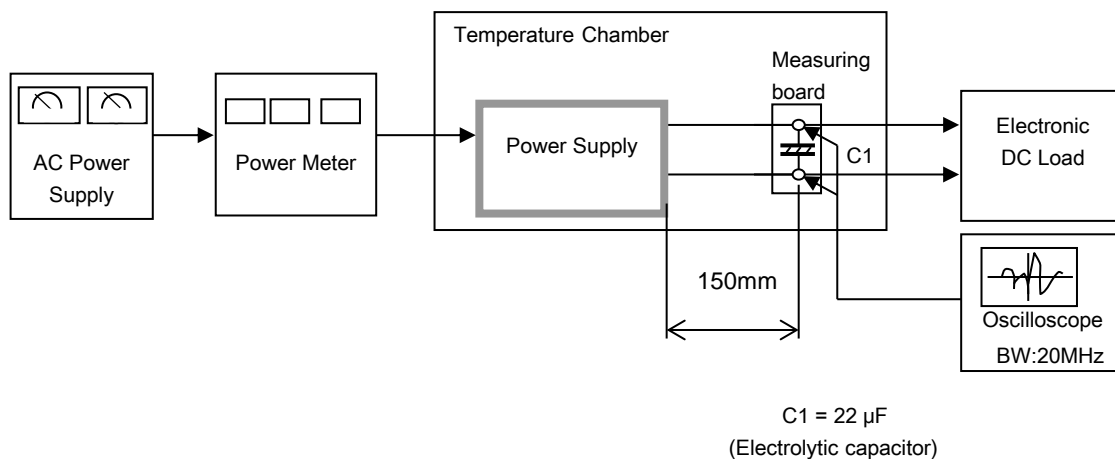


Figure C