

# TEST DATA OF PCA300F-12

Regulated DC Power Supply  
March 11, 2019

Approved by : Koji Todo  
Koji Todo Design Manager

Prepared by : Yuya Takeda  
Yuya Takeda Design Engineer

**COSEL CO.,LTD.**



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Model	PCA300F-12																																																					
Item	Input Current (by Load Current)	Temperature	25°C																																																			
Object	—	Testing Circuitry	Figure A																																																			
1.Graph			2.Values																																																			
<p>Graph showing Input Current [A] vs Load Current [A] for PCA300F-12 at 25°C. The graph plots Input Current [A] on the Y-axis (0.0 to 5.0) against Load Current [A] on the X-axis (0 to 30). Three curves are shown for Input Voltages: 100V (solid line with open triangles), 200V (dashed line with open squares), and 230V (dash-dot line with open circles). A slanted line indicates the rated load current range.</p>			<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>0.0</td><td>0.194</td><td>0.134</td><td>0.150</td> </tr> <tr> <td>4.0</td><td>0.671</td><td>0.386</td><td>0.359</td> </tr> <tr> <td>8.0</td><td>1.161</td><td>0.631</td><td>0.570</td> </tr> <tr> <td>12.0</td><td>1.673</td><td>0.883</td><td>0.791</td> </tr> <tr> <td>16.0</td><td>2.193</td><td>1.133</td><td>1.010</td> </tr> <tr> <td>20.0</td><td>2.728</td><td>1.393</td><td>1.237</td> </tr> <tr> <td>24.0</td><td>3.271</td><td>1.657</td><td>1.467</td> </tr> <tr> <td>27.0</td><td>3.680</td><td>1.853</td><td>1.639</td> </tr> <tr> <td>29.7</td><td>4.050</td><td>2.035</td><td>1.792</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]	Input Current [A]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	0.194	0.134	0.150	4.0	0.671	0.386	0.359	8.0	1.161	0.631	0.570	12.0	1.673	0.883	0.791	16.0	2.193	1.133	1.010	20.0	2.728	1.393	1.237	24.0	3.271	1.657	1.467	27.0	3.680	1.853	1.639	29.7	4.050	2.035	1.792	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.

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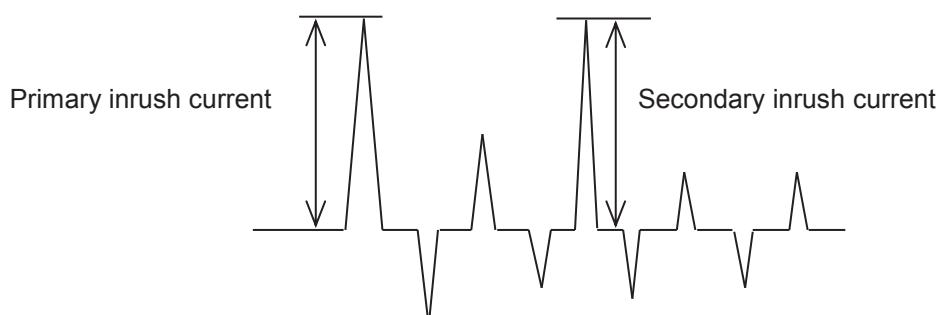
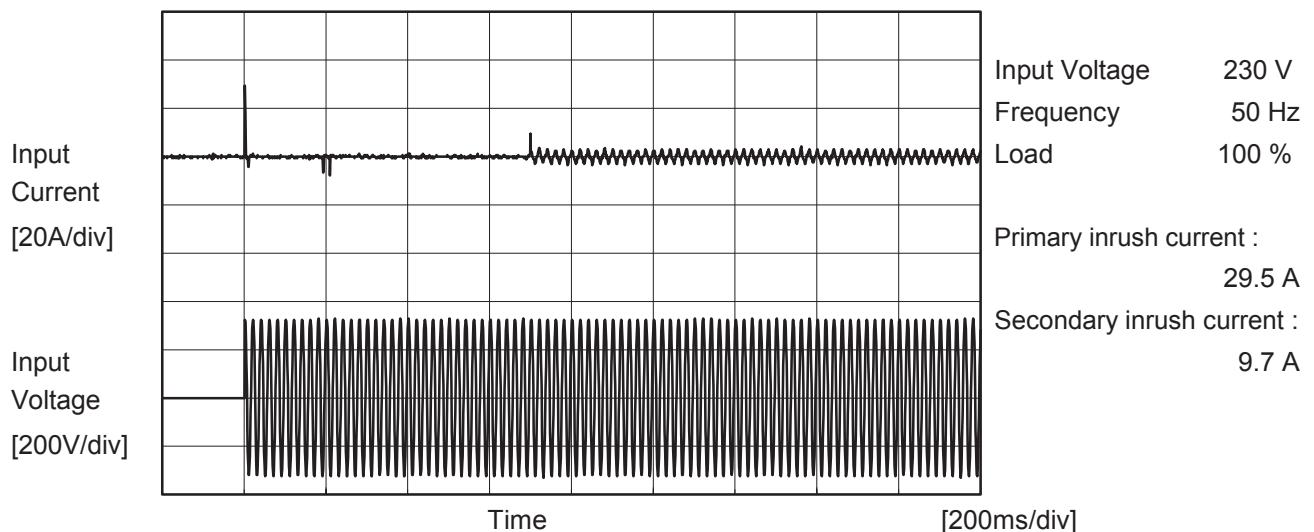
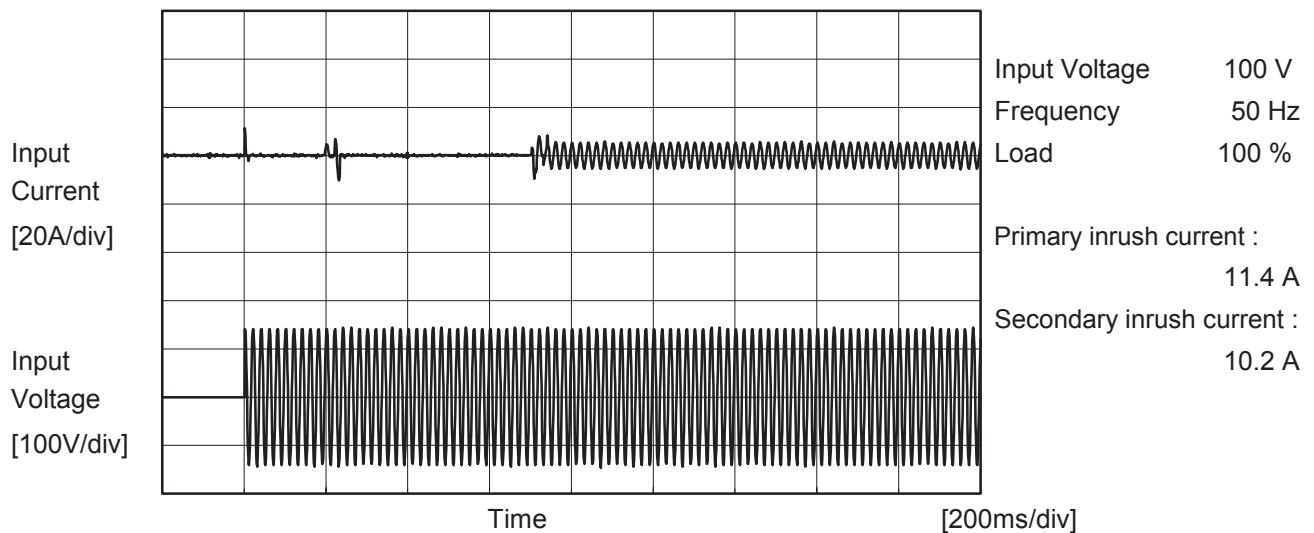
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Model	PCA300F-12	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





Model	PCA300F-12	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
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	0.13	0.30	0.31	Operation
		One of phases	0.24	0.55	0.58	Stand by
IEC62368-1	Figure B-2	Both phases	0.13	0.29	0.31	Operation
		One of phases	0.22	0.54	0.57	Stand by
IEC60601-1	Figure B-3	Both phases	0.13	0.29	0.30	Operation
		One of phases	0.24	0.54	0.56	Stand by
	Figure B-4	Both phases	0.12	0.30	0.31	Operation
		One of phases	0.24	0.55	0.58	Stand by

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

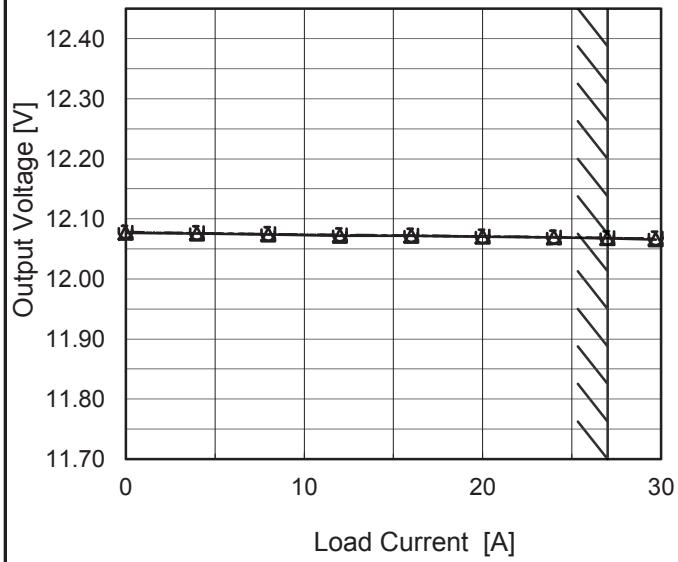
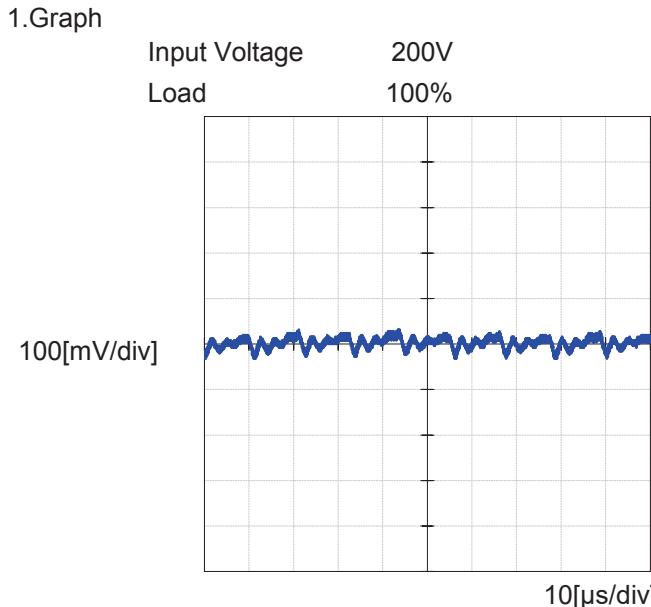
## 2. Condition

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

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Model	PCA300F-12																																	
Item	Line Regulation	Temperature 25°C Testing Circuitry Figure A																																
Object	+12V27A																																	
1.Graph																																		
<p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Legend: --- □--- Load 50% — △— Load 100%</p>																																		
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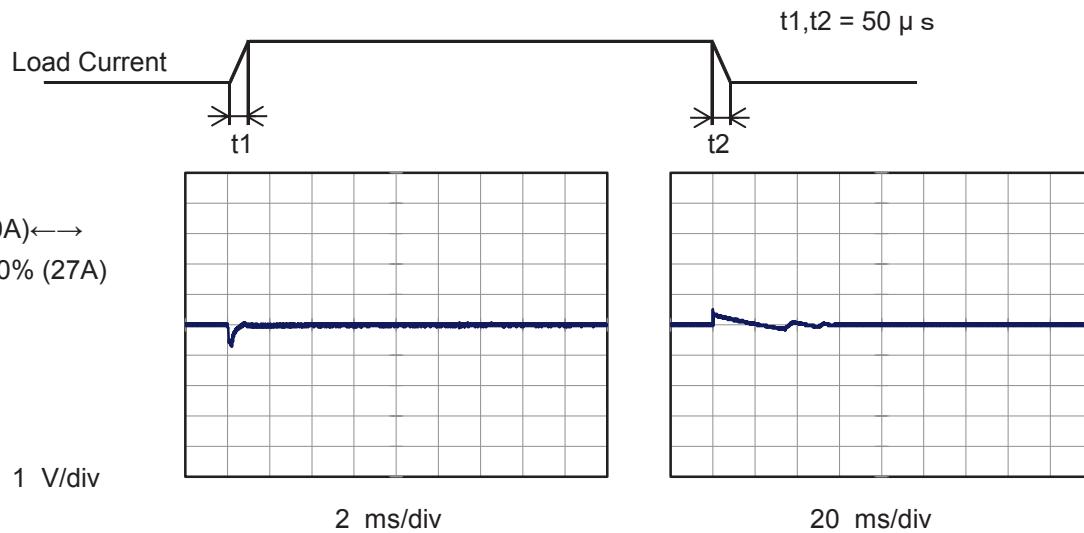
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Model	PCA300F-12	Temperature	25°C	
Item	Load Regulation	Testing Circuitry	Figure A	
Object	+12V27A	2. Values		
1. Graph	<p>—△— Input Volt. 100V      - - -□--- Input Volt. 200V      - - -○--- Input Volt. 230V</p>  <p>Output Voltage [V]</p> <p>Load Current [A]</p>			
	<p>Note: Slanted line shows the range of the rated load current.</p>			
Item	Ripple-Noise	Temperature	25°C	
Object	+12V27A	Testing Circuitry	Figure C	
1. Graph	<p>Input Voltage 200V      Load 100%</p>  <p>100[mV/div]</p> <p>10[μs/div]</p>			

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Model	PCA300F-12	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V27A		

Input Volt. 200 V  
 Cycle 1000 ms



Min.Load (0A)↔  
 Load 100% (27A)

1 V/div

2 ms/div

20 ms/div

Min.Load (0A)↔  
 Load 50% (13.5A)

1 V/div

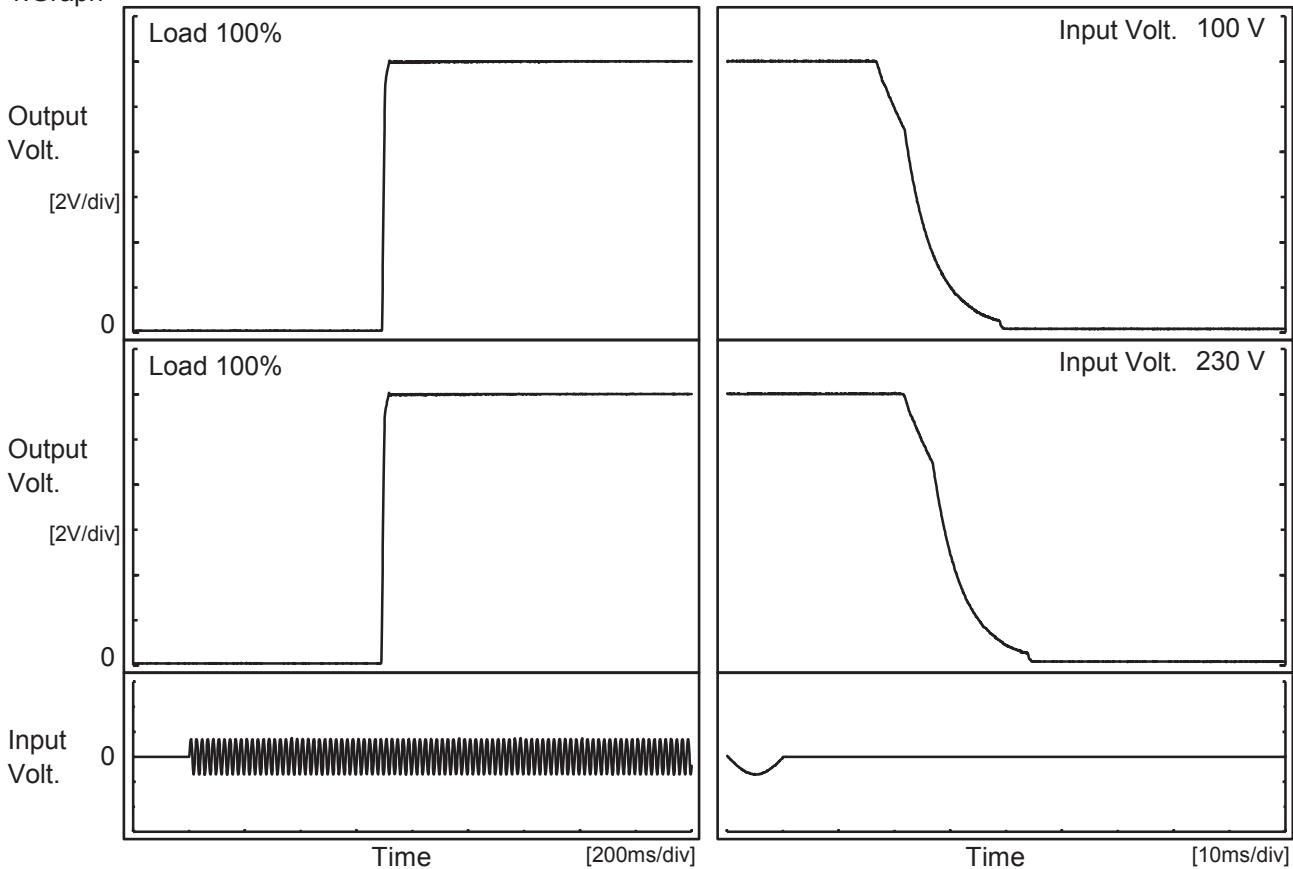
2 ms/div

20 ms/div

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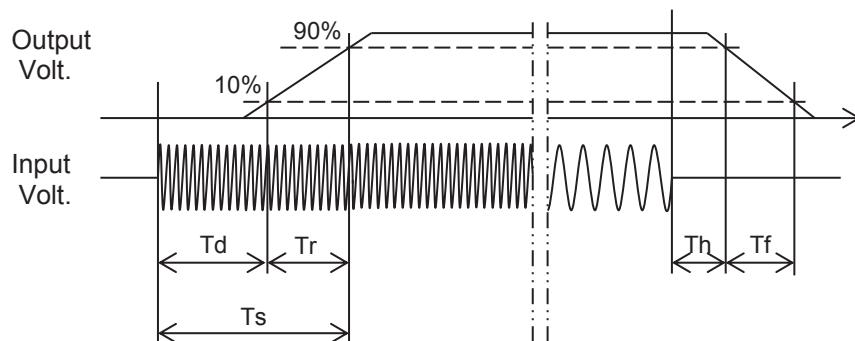
Model	PCA300F-12	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+12V27A		

## 1.Graph



## 2.Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf	[ms]
100 V		693.0	10.0	703.0	18.4	14.5	
230 V		691.0	10.0	701.0	23.3	14.7	



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Item	Hold-Up Time	Testing Circuitry	Figure A																														
Object	+12V27A																																
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<p>The graph plots Hold-Up Time [ms] on a logarithmic Y-axis (1 to 1000) against Input Voltage [V] on a linear X-axis (50 to 300). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a slight increase in hold-up time as input voltage increases. A slanted line on the graph indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Hold-Up Time [ms] (Load 50%)</th> <th>Hold-Up Time [ms] (Load 100%)</th> </tr> </thead> <tbody> <tr><td>80</td><td>34</td><td>-</td></tr> <tr><td>85</td><td>34</td><td>17</td></tr> <tr><td>100</td><td>34</td><td>17</td></tr> <tr><td>120</td><td>34</td><td>17</td></tr> <tr><td>200</td><td>44</td><td>22</td></tr> <tr><td>230</td><td>44</td><td>22</td></tr> <tr><td>264</td><td>45</td><td>22</td></tr> <tr><td>280</td><td>45</td><td>21</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>				Input Voltage [V]	Hold-Up Time [ms] (Load 50%)	Hold-Up Time [ms] (Load 100%)	80	34	-	85	34	17	100	34	17	120	34	17	200	44	22	230	44	22	264	45	22	280	45	21	--	-	-
Input Voltage [V]	Hold-Up Time [ms] (Load 50%)	Hold-Up Time [ms] (Load 100%)																															
80	34	-																															
85	34	17																															
100	34	17																															
120	34	17																															
200	44	22																															
230	44	22																															
264	45	22																															
280	45	21																															
--	-	-																															
<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**

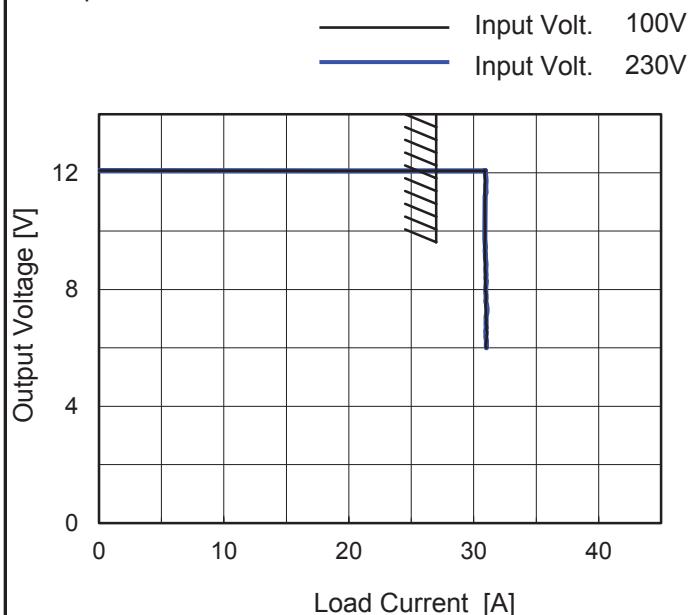
Model	PCA300F-12	Temperature	25°C																																																			
Item	Instantaneous Interruption Compensation	Testing Circuitry	Figure A																																																			
Object	+12V27A																																																					
1.Graph	<p>Graph showing Instantaneous Compensation Time [ms] vs Load Current [A]. The Y-axis is logarithmic from 1 to 1000 ms. The X-axis ranges from 0 to 30 A. Three curves are shown for Input Volt. 100V (triangles), Input Volt. 200V (squares), and Input Volt. 230V (circles). A slanted line indicates the rated load current range.</p>																																																					
2.Values	<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>0.0</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>4.0</td> <td>114</td> <td>145</td> <td>155</td> </tr> <tr> <td>8.0</td> <td>73</td> <td>88</td> <td>90</td> </tr> <tr> <td>12.0</td> <td>48</td> <td>61</td> <td>61</td> </tr> <tr> <td>16.0</td> <td>35</td> <td>45</td> <td>45</td> </tr> <tr> <td>20.0</td> <td>26</td> <td>35</td> <td>35</td> </tr> <tr> <td>24.0</td> <td>21</td> <td>26</td> <td>27</td> </tr> <tr> <td>27.0</td> <td>17</td> <td>22</td> <td>22</td> </tr> <tr> <td>29.7</td> <td>16</td> <td>18</td> <td>21</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]	Time [ms]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	-	-	-	4.0	114	145	155	8.0	73	88	90	12.0	48	61	61	16.0	35	45	45	20.0	26	35	35	24.0	21	26	27	27.0	17	22	22	29.7	16	18	21	--	-	-	-	--	-	-	-
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--	-	-	-																																																			
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Note:	Slanted line shows the range of the rated load current.																																																					

**COSEL**

Model	PCA300F-12
Item	Overcurrent Protection
Object	+12V27A

 Temperature 25°C  
 Testing Circuitry Figure A

## 1. Graph



## 2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 230[V]
11.4	30.89	30.89
10.8	30.90	30.89
9.6	30.90	30.89
8.4	30.93	30.98
7.2	30.97	31.07
6.0	31.01	31.01
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Hiccup mode activates when the output voltage is from 6V to 0V.



Model	PCA300F-12	
Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	+12V27A	

## 1.Values

Load 100%

Ambient Temperature[°C]	Output Voltage [V]		
	Input Volt. 100V	Input Volt. 200V	Input Volt. 230V
-20	12.027	12.027	12.027
25	12.064	12.064	12.064
50	12.089	12.089	12.089

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+12V27A	

## 1.Values

Ambient Temperature[°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	73	80
25	73	80
50	73	80

Item	Overvoltage Protection	Testing Circuitry Figure A
Object	+12V27A	

## 1.Values

Load 0%

Ambient Temperature[°C]	Operating Point [V]	
	Input Volt. 100V	Input Volt. 230V
-20	15.35	15.35
25	15.38	15.38
50	15.38	15.38

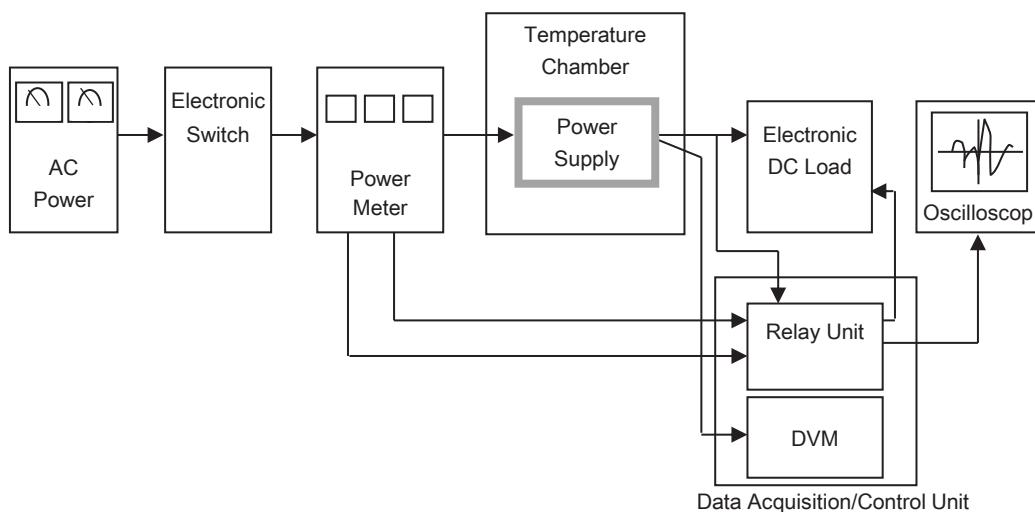


Figure A

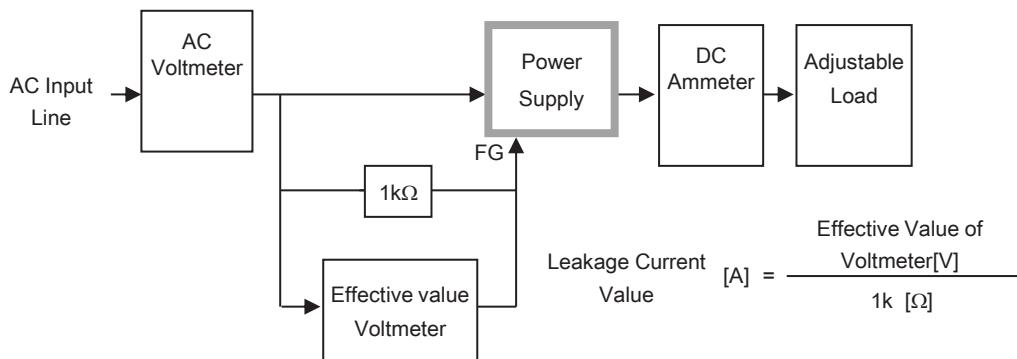


Figure B-1 ( DEN-AN )

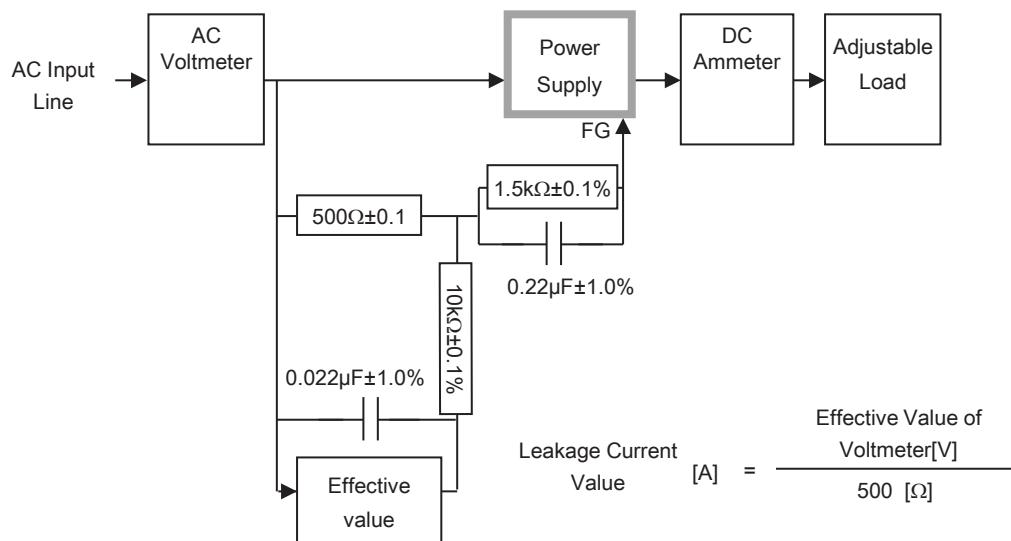


Figure B-2 ( IEC62368-1 refer to IEC60990 Fig.4 )

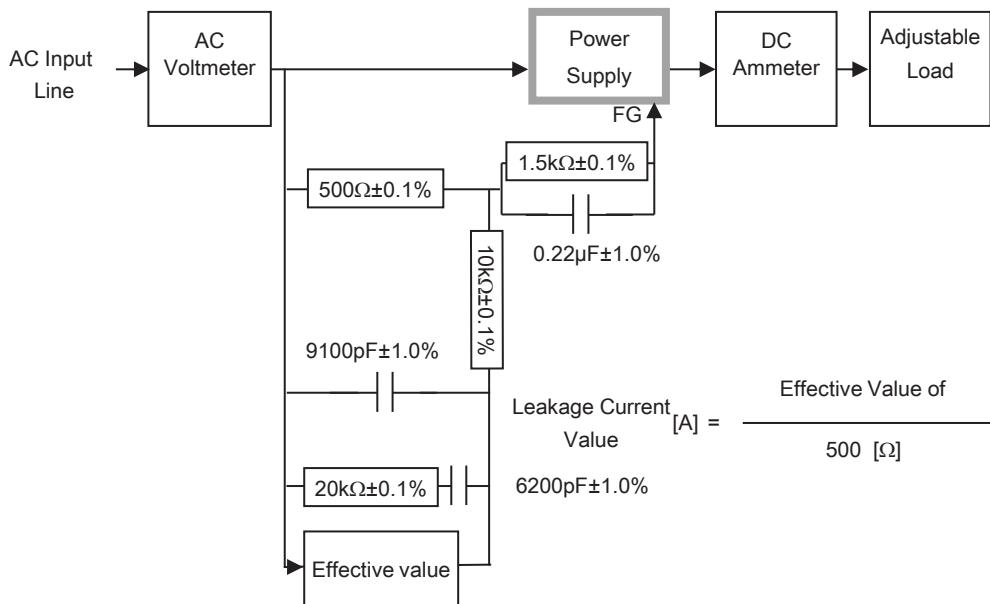


Figure B-3 ( IEC62368-1 refer to IEC60990 Fig.5 )

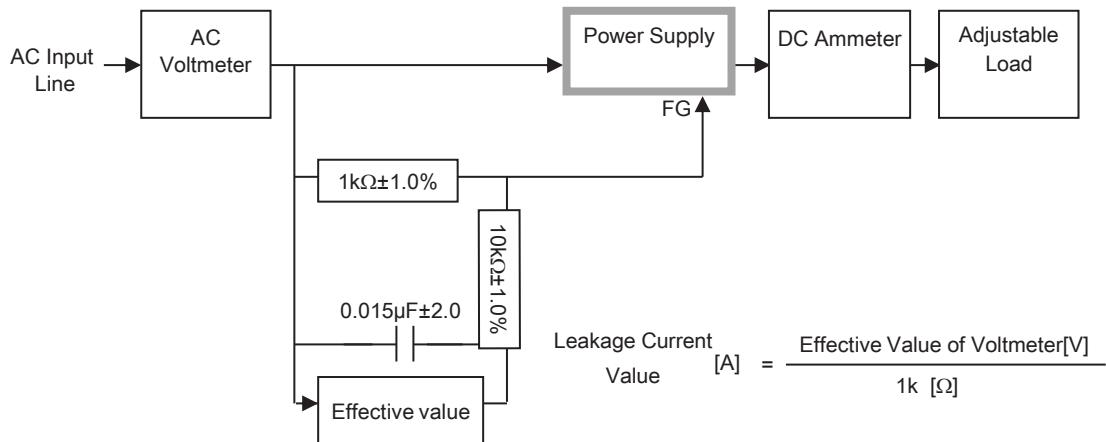
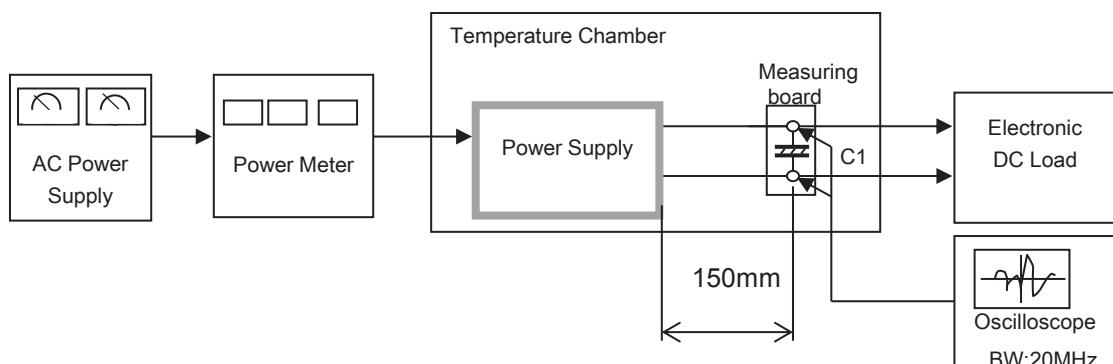


Figure B-4 ( IEC60601-1)



$C1 = 22 \mu F$   
(Electrolytic capacitor)

Figure C