

# TEST DATA OF PCA600F-24

Regulated DC Power Supply  
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**COSEL CO.,LTD.**

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Model		PCA600F-24		Temperature		25°C																																																				
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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>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>0.0</td><td>0.197</td><td>0.144</td><td>0.145</td></tr><tr><td>4.0</td><td>1.175</td><td>0.634</td><td>0.571</td></tr><tr><td>8.0</td><td>2.180</td><td>1.115</td><td>0.988</td></tr><tr><td>12.0</td><td>3.212</td><td>1.625</td><td>1.431</td></tr><tr><td>16.0</td><td>4.251</td><td>2.131</td><td>1.868</td></tr><tr><td>20.0</td><td>5.311</td><td>2.642</td><td>2.339</td></tr><tr><td>24.0</td><td>6.390</td><td>3.180</td><td>2.788</td></tr><tr><td>27.0</td><td>7.203</td><td>3.567</td><td>3.124</td></tr><tr><td>29.7</td><td>7.937</td><td>3.921</td><td>3.428</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	0.197	0.144	0.145	4.0	1.175	0.634	0.571	8.0	2.180	1.115	0.988	12.0	3.212	1.625	1.431	16.0	4.251	2.131	1.868	20.0	5.311	2.642	2.339	24.0	6.390	3.180	2.788	27.0	7.203	3.567	3.124	29.7	7.937	3.921	3.428	--	-	-	-	--	-	-	-
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Item		Efficiency (by Input Voltage)		Testing Circuitry Figure A																																	
Object																																					
1.Graph				2.Values																																	
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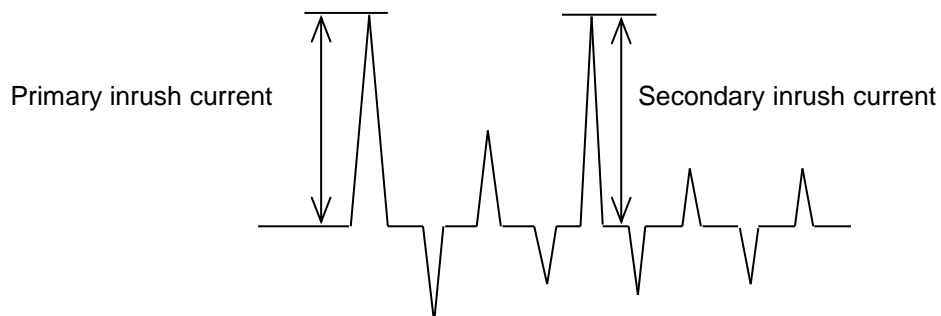
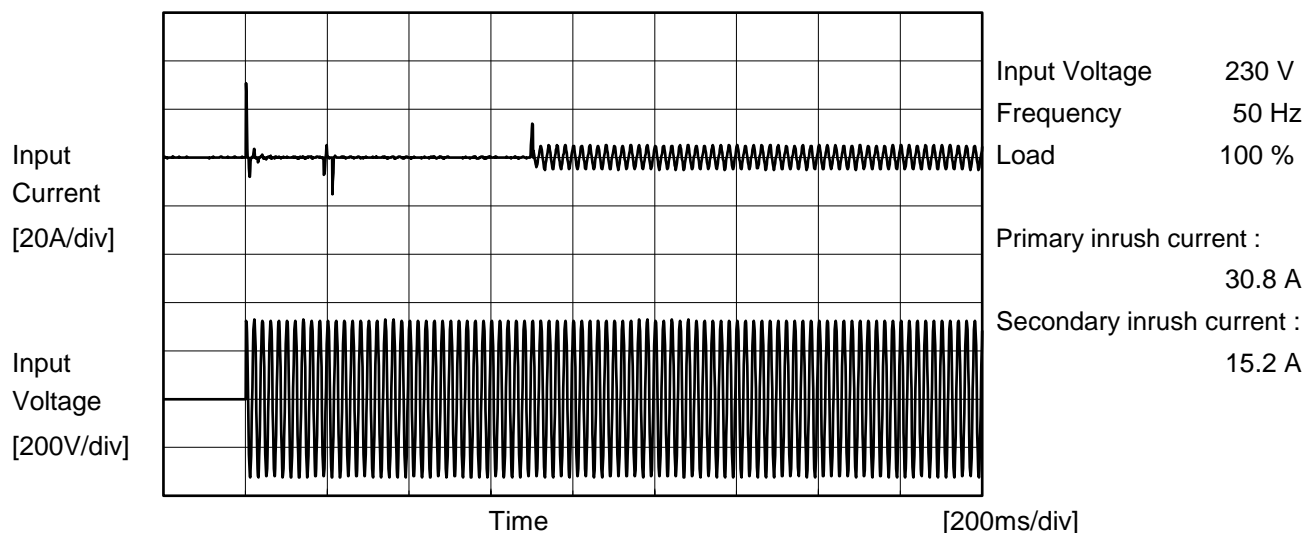
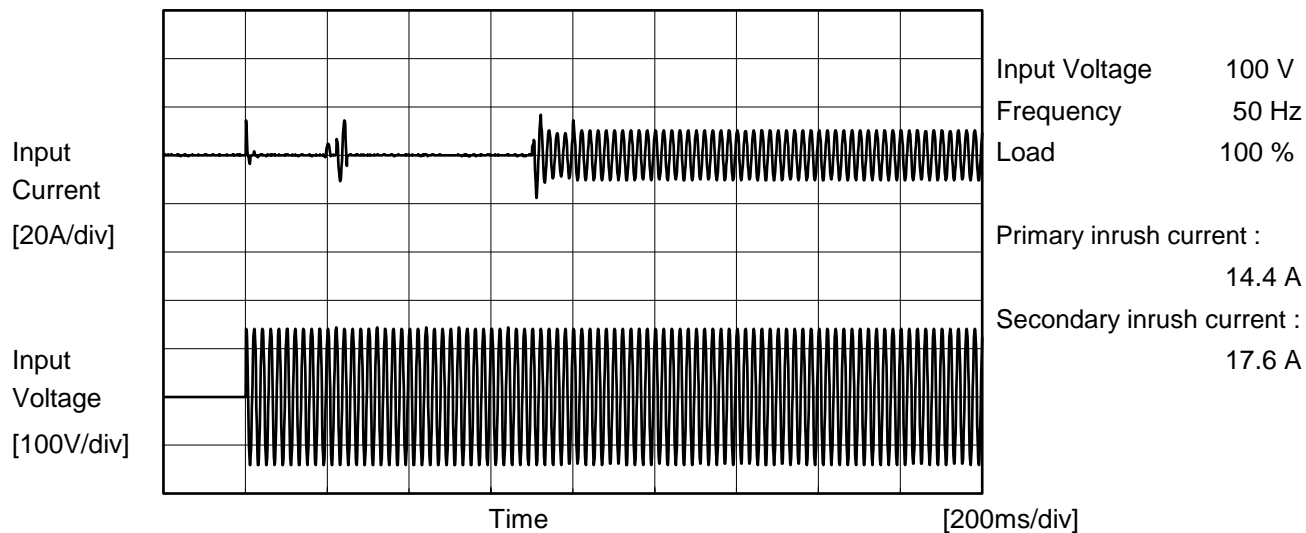
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**COSEL**

Model	PCA600F-24	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





Model		PCA600F-24	Temperature 25°C Testing Circuitry Figure B
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	0.13	0.30	0.31	Operation
		One of phases	0.25	0.56	0.58	Stand by
IEC62368-1	Figure B-2	Both phases	0.12	0.29	0.30	Operation
		One of phases	0.25	0.54	0.56	Stand by
	Figure B-3	Both phases	0.12	0.29	0.30	Operation
		One of phases	0.25	0.54	0.57	Stand by
IEC60601-1	Figure B-4	Both phases	0.12	0.29	0.30	Operation
		One of phases	0.24	0.53	0.55	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		PCA600F-24	
Item		Line Regulation	
Object		+24V27A	
1.Graph		2.Values	

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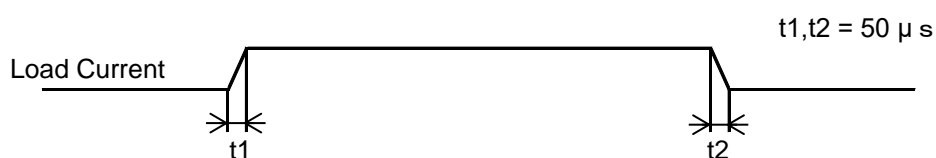


Model		PCA600F-24		Temperature		25°C																																																	
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Model	PCA600F-24	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+24V27A	

Input Volt. 100 V  
Cycle 1000 ms



Min.Load (0A) ←→  
Load 100% (27A)

1 V/div

2 ms/div

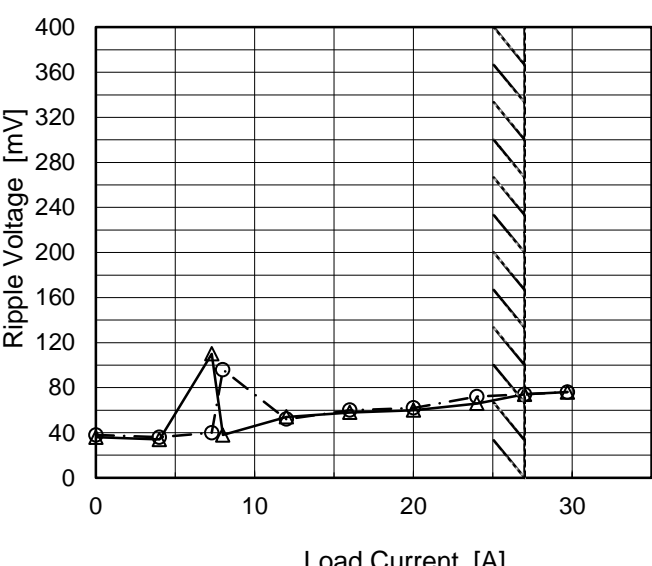
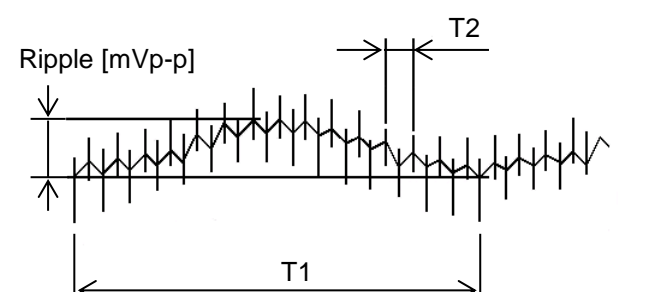
10 ms/div

Min.Load (0A) ←→  
Load 50% (13.5A)

1 V/div

2 ms/div

10 ms/div

Model		PCA600F-24		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure C																																							
Object		+24V27A																																									
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<div><div><div>—△— Input Volt. 100V</div><div>- -○- - Input Volt. 230V</div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0.0</td><td>36</td><td>38</td></tr><tr><td>4.0</td><td>34</td><td>36</td></tr><tr><td>7.3</td><td>110</td><td>40</td></tr><tr><td>8.0</td><td>38</td><td>96</td></tr><tr><td>12.0</td><td>54</td><td>52</td></tr><tr><td>16.0</td><td>58</td><td>60</td></tr><tr><td>20.0</td><td>60</td><td>62</td></tr><tr><td>24.0</td><td>66</td><td>72</td></tr><tr><td>27.0</td><td>74</td><td>74</td></tr><tr><td>29.7</td><td>76</td><td>76</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 100 [V]	Input Volt. 230 [V]	0.0	36	38	4.0	34	36	7.3	110	40	8.0	38	96	12.0	54	52	16.0	58	60	20.0	60	62	24.0	66	72	27.0	74	74	29.7	76	76	--	-	-
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Model	PCA600F-24																																								
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Object	+24V27A	Testing Circuitry	Figure C																																						
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Model		PCA600F-24
Item		Ripple Voltage (by Ambient Temp.)
Object		+24V27A
1.Graph		
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Model		PCA600F-24																																																				
Item		Ambient Temperature Drift																																																				
Object		+24V27A																																																				
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>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>-30</td><td>24.164</td><td>24.163</td><td>24.163</td></tr><tr><td>-20</td><td>24.180</td><td>24.180</td><td>24.179</td></tr><tr><td>-10</td><td>24.199</td><td>24.198</td><td>24.197</td></tr><tr><td>0</td><td>24.215</td><td>24.214</td><td>24.214</td></tr><tr><td>10</td><td>24.234</td><td>24.233</td><td>24.232</td></tr><tr><td>25</td><td>24.266</td><td>24.264</td><td>24.264</td></tr><tr><td>30</td><td>24.277</td><td>24.275</td><td>24.274</td></tr><tr><td>40</td><td>24.295</td><td>24.293</td><td>24.293</td></tr><tr><td>50</td><td>-</td><td>24.313</td><td>24.313</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</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]	-30	24.164	24.163	24.163	-20	24.180	24.180	24.179	-10	24.199	24.198	24.197	0	24.215	24.214	24.214	10	24.234	24.233	24.232	25	24.266	24.264	24.264	30	24.277	24.275	24.274	40	24.295	24.293	24.293	50	-	24.313	24.313	--	-	-	-	--	-	-	-
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Model		PCA600F-24	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+24V27A	

### 1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -20 - 50°C

Input Voltage : 85 - 264V

Load Current : 0 - 27A

\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* Output Voltage Accuracy (Ratio) =  $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

### 2. Values

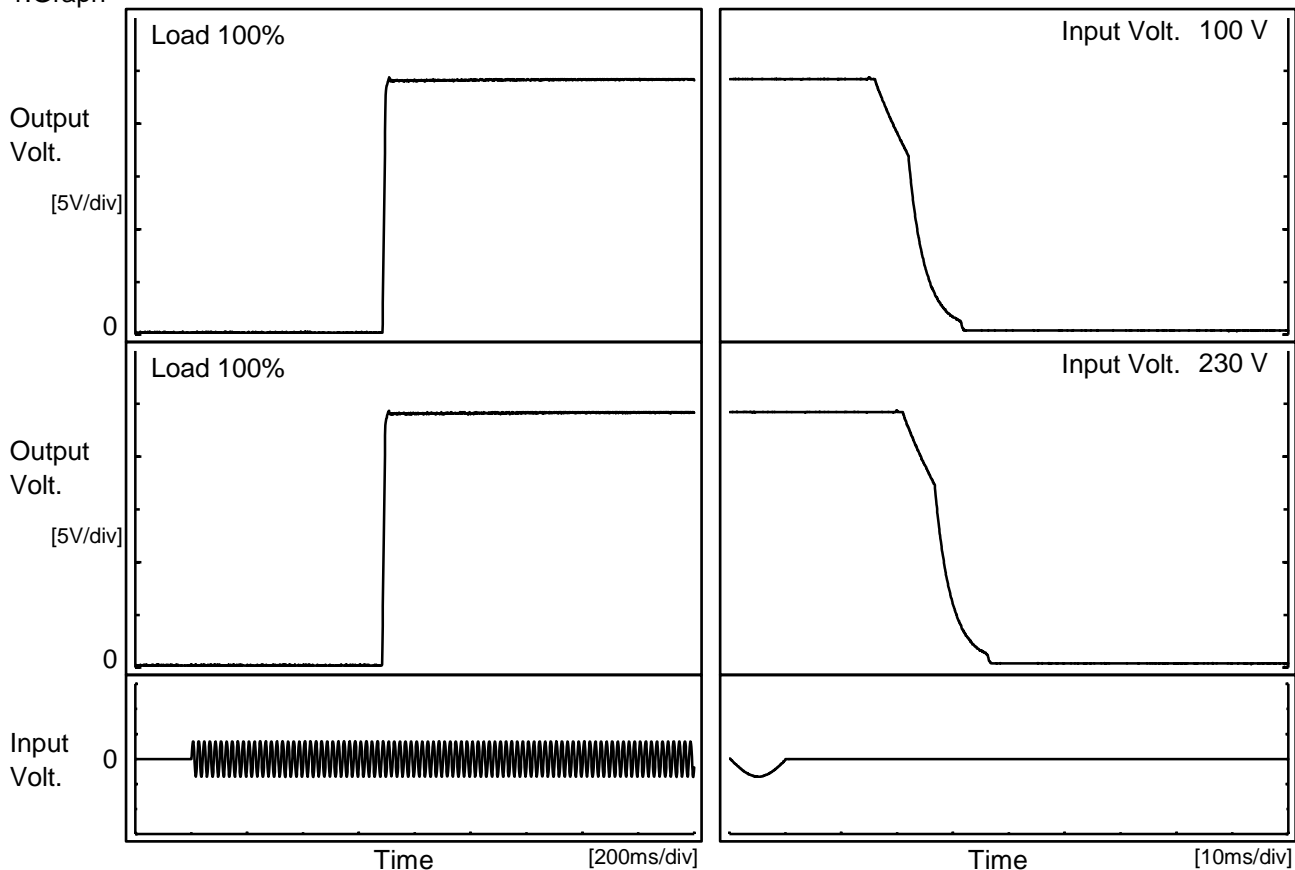
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	264	0	24.291	±57	±0.2
Minimum Voltage	-20	264	27	24.177		

# COSEL

LUSEL			
Model	PCA600F-24		
Item	Time Lapse Drift	Temperature	25°C
		Testing Circuitry	Figure A
Object	+24V27A		
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><di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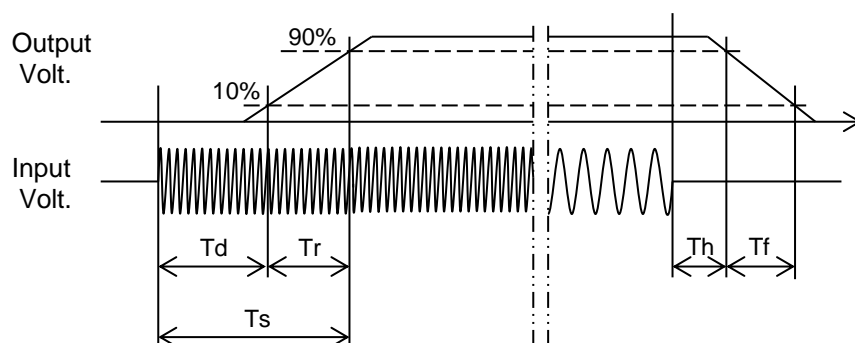
Model	PCA600F-24	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+24V27A		

1.Graph



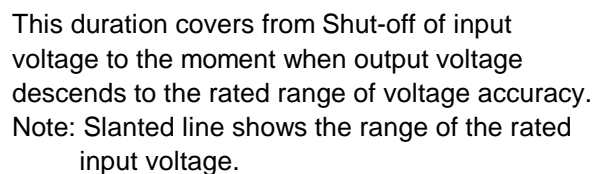
2.Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		686.0	10.0	696.0	17.8	10.5
230 V		685.0	9.0	694.0	22.8	10.2



Temperature 25°C  
Testing Circuitry Figure A

## 2.Values

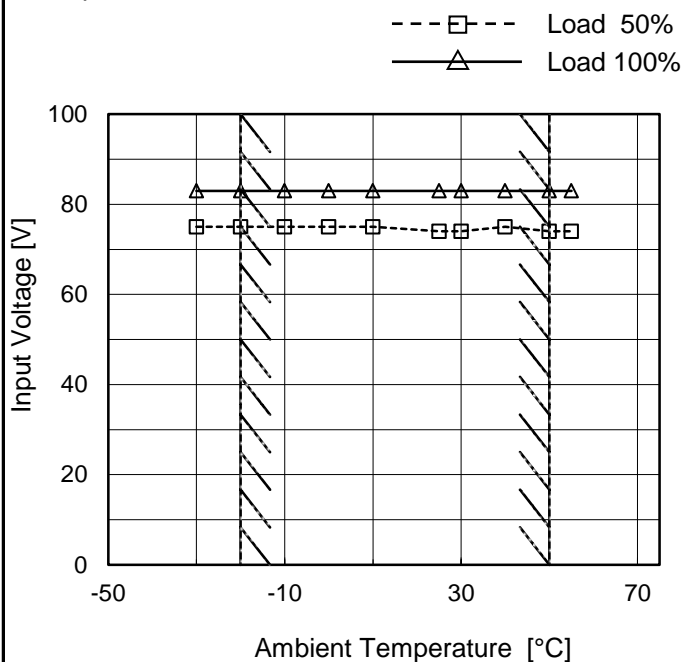


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<div>LOREL</div>																																																						
Model	PCA600F-24																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
Object	+24V27A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><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>1000</div><div>100</div><div>10</div><div>1</div></div><div><div>0</div><div>10</div><div>20</div><div>30</div></div><div><div>Load Current [A]</div></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>4.0</td><td>96</td><td>145</td><td>147</td></tr><tr><td>8.0</td><td>67</td><td>86</td><td>80</td></tr><tr><td>12.0</td><td>45</td><td>61</td><td>60</td></tr><tr><td>16.0</td><td>36</td><td>45</td><td>45</td></tr><tr><td>20.0</td><td>26</td><td>36</td><td>35</td></tr><tr><td>24.0</td><td>20</td><td>29</td><td>26</td></tr><tr><td>27.0</td><td>16</td><td>26</td><td>25</td></tr><tr><td>29.7</td><td>15</td><td>21</td><td>22</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	-	-	-	4.0	96	145	147	8.0	67	86	80	12.0	45	61	60	16.0	36	45	45	20.0	26	36	35	24.0	20	29	26	27.0	16	26	25	29.7	15	21	22	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
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<div>Note: Slanted line shows the range of the rated load current.</div>																																																						

Model	PCA600F-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V27A

## 1.Graph



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

## Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	75	83
-20	75	83
-10	75	83
0	75	83
10	75	83
25	74	83
30	74	83
40	75	83
50	74	83
55	74	83
--	-	-

Model		PCA600F-24		Temperature 25°C																																													
Item		Overcurrent Protection		Testing Circuitry Figure A																																													
Object		+24V27A																																															
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>Intermittent operation occurs when the output voltage is from 12V 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>30.74</td><td>30.84</td></tr><tr><td>21.6</td><td>30.74</td><td>30.79</td></tr><tr><td>19.2</td><td>30.76</td><td>30.78</td></tr><tr><td>16.8</td><td>30.73</td><td>30.80</td></tr><tr><td>14.4</td><td>30.78</td><td>30.78</td></tr><tr><td>12.0</td><td>30.68</td><td>30.74</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	30.74	30.84	21.6	30.74	30.79	19.2	30.76	30.78	16.8	30.73	30.80	14.4	30.78	30.78	12.0	30.68	30.74	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Output Voltage [V]	Load Current [A]																																																
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Model		PCA600F-24
Item		Overvoltage Protection
Object		+24V27A

1.Graph

△

Input Volt. 100V

□

Input Volt. 230V

Operating Point [V]

</

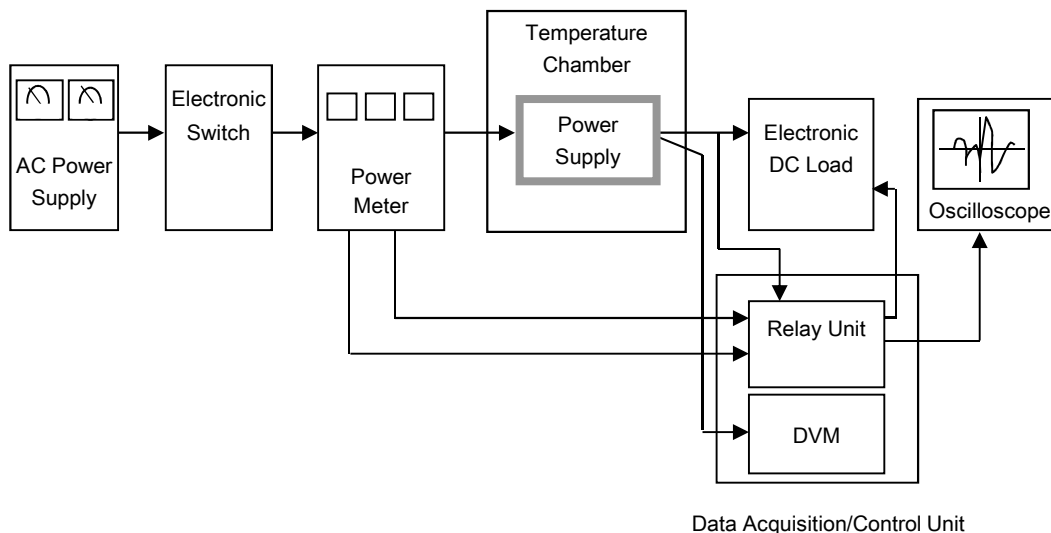


Figure A

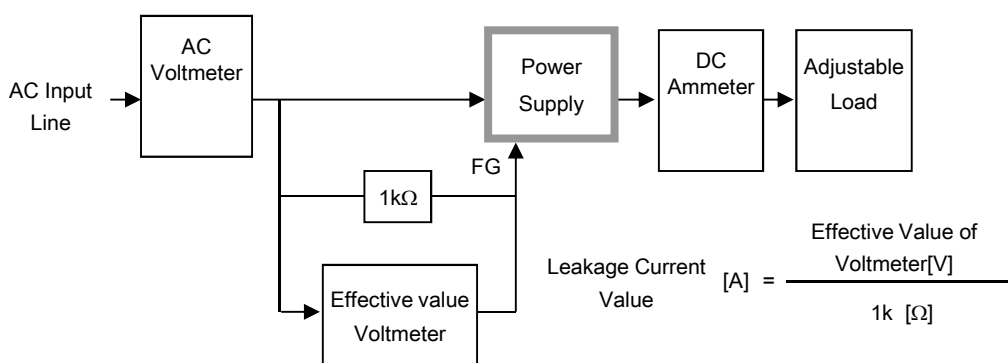


Figure B-1 ( DEN-AN )

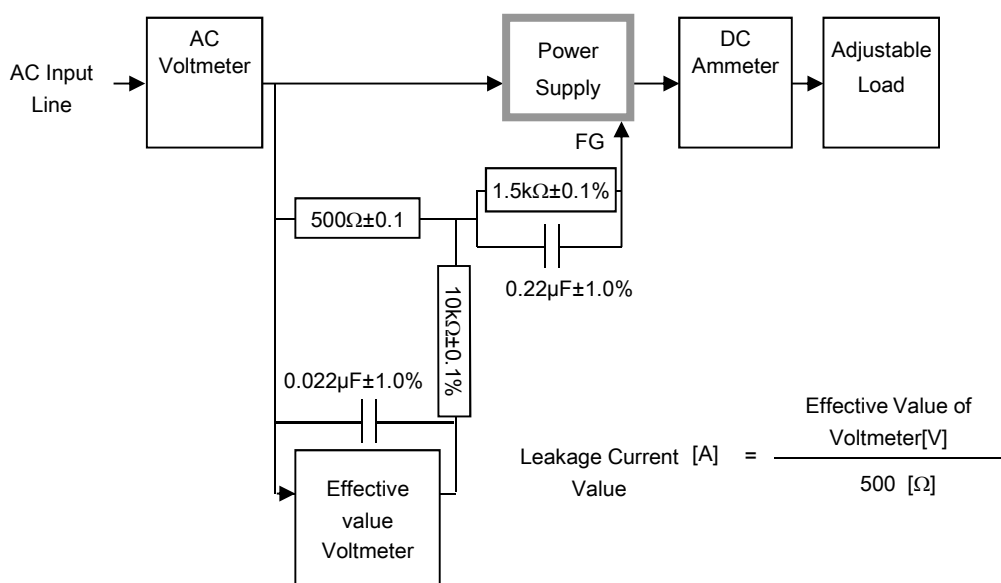


Figure B-2 ( IEC62368-1 refer to IEC60990 Fig.4 )

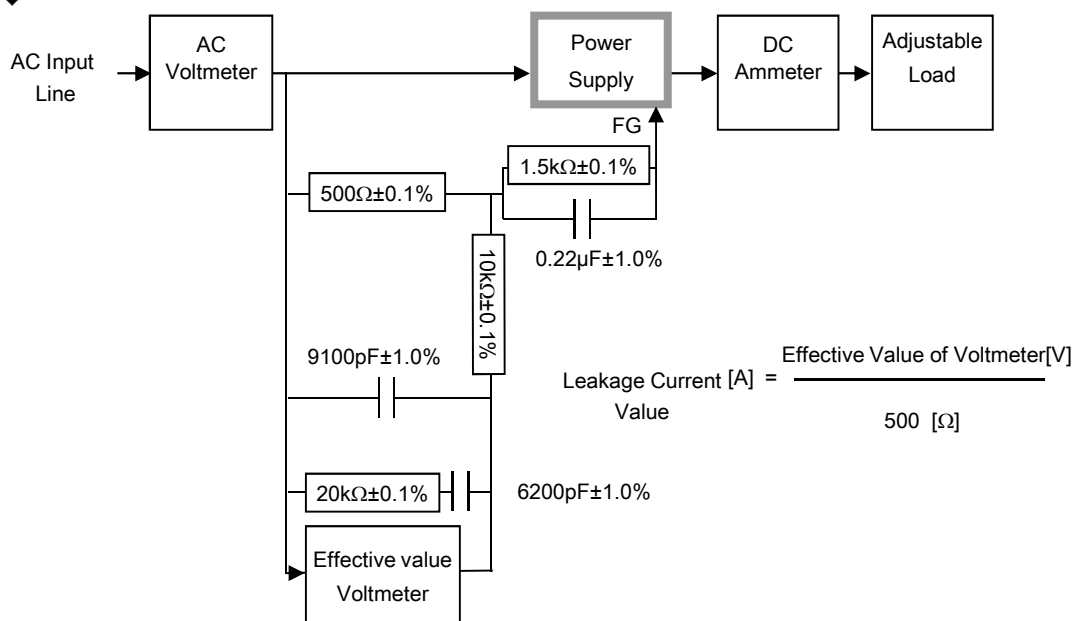


Figure B-3 ( IEC62368-1 refer to IEC60990 Fig.5 )

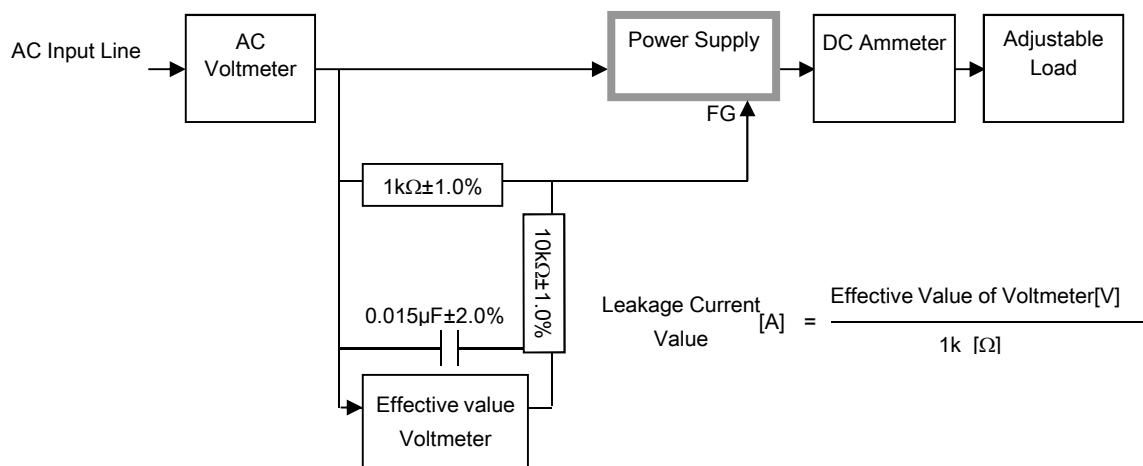


Figure B-4 ( IEC60601-1)

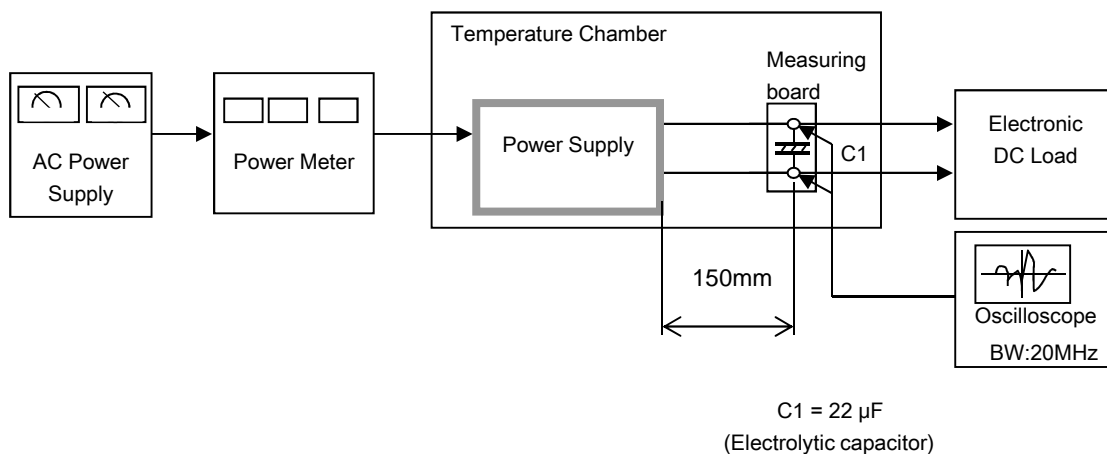


Figure C