

TEST DATA OF WDA30F-48

Regulated DC Power Supply
August 17, 2022

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Design Manager

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Design Engineer

COSEL CO.,LTD.

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Model WDA30F-48

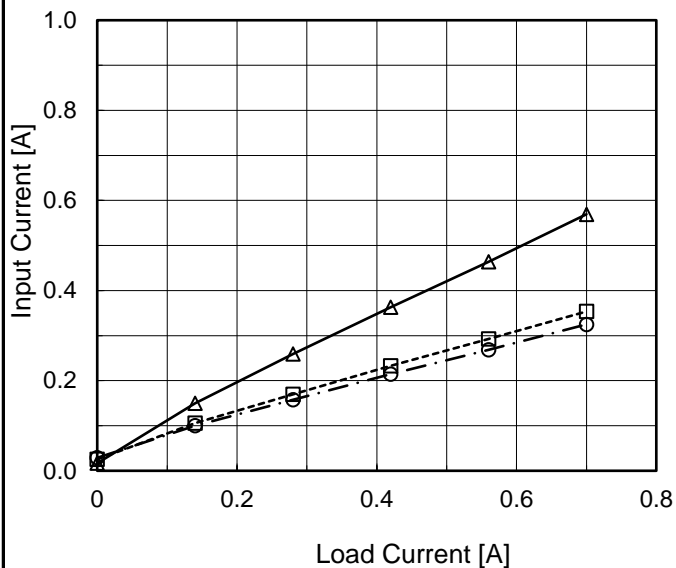
Item Input Current (by Load Current)

Object +48V0.7A

Temperature 25°C
Testing Circuitry Figure A

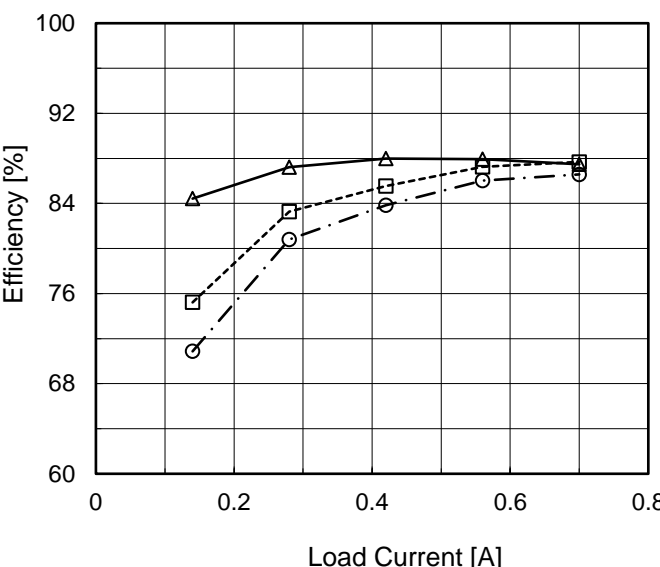
1. Graph

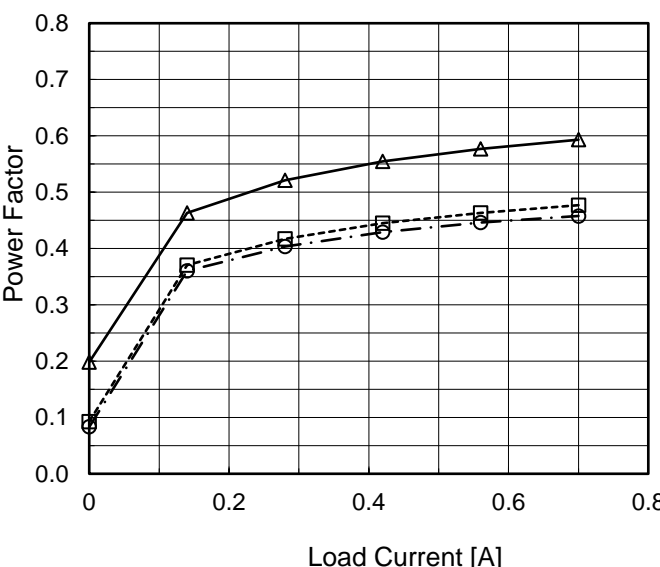
—△— Input Volt. 115V
 ---□--- Input Volt. 230V
 -·-○-·- Input Volt. 264V



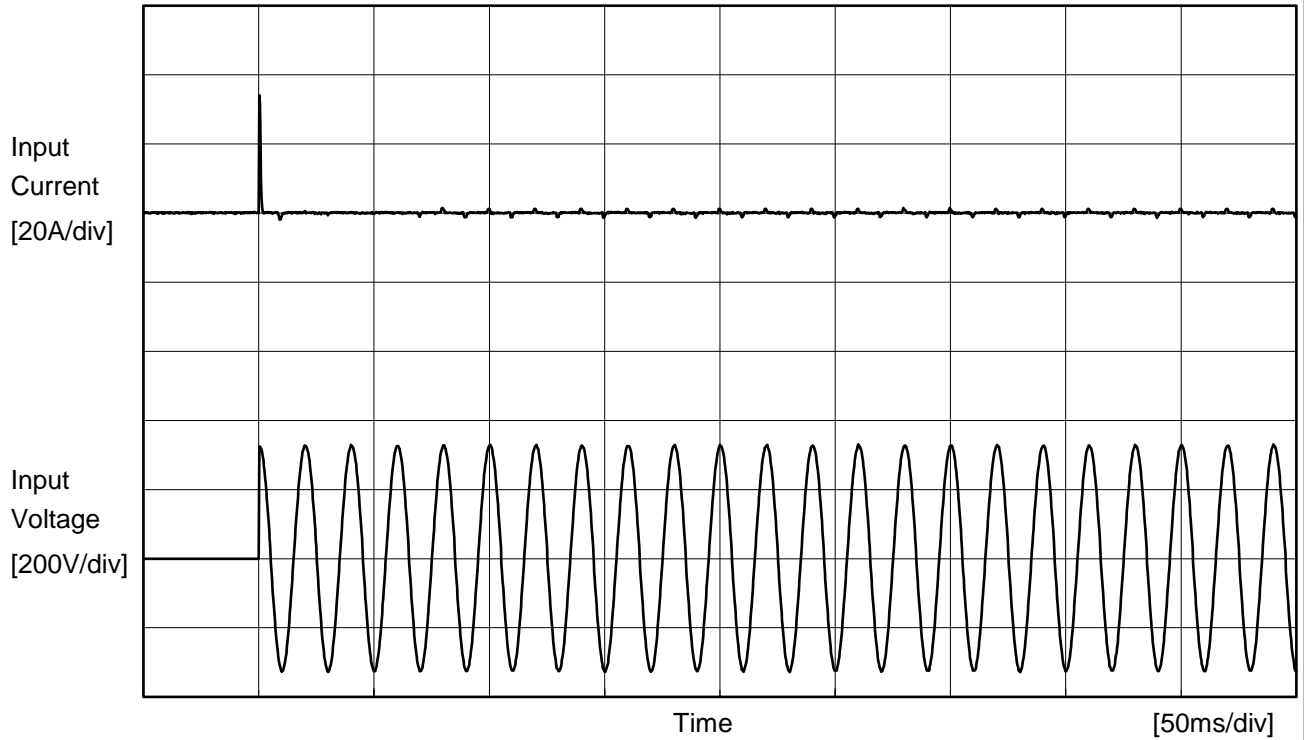
2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	0.017	0.025	0.029
0.14	0.150	0.106	0.100
0.28	0.259	0.170	0.158
0.42	0.363	0.233	0.214
0.56	0.464	0.292	0.269
0.70	0.569	0.354	0.325
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Model		WDA30F-48	Temperature 25°C Testing Circuitry Figure A																								
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<div><div><div>—△—</div><div>Input Volt. 115V</div></div><div><div>---□---</div><div>Input Volt. 230V</div></div><div><div>---○---</div><div>Input Volt. 264V</div></div></div>  <table><caption>Efficiency Data from Graph</caption><thead><tr><th>Load Current [A]</th><th>115V Efficiency [%]</th><th>230V Efficiency [%]</th><th>264V Efficiency [%]</th></tr></thead><tbody><tr><td>0.14</td><td>84.4</td><td>75.2</td><td>70.9</td></tr><tr><td>0.28</td><td>87.2</td><td>83.3</td><td>80.8</td></tr><tr><td>0.42</td><td>88.0</td><td>85.5</td><td>83.8</td></tr><tr><td>0.56</td><td>87.9</td><td>87.2</td><td>86.0</td></tr><tr><td>0.70</td><td>87.5</td><td>87.7</td><td>86.6</td></tr></tbody></table>				Load Current [A]	115V Efficiency [%]	230V Efficiency [%]	264V Efficiency [%]	0.14	84.4	75.2	70.9	0.28	87.2	83.3	80.8	0.42	88.0	85.5	83.8	0.56	87.9	87.2	86.0	0.70	87.5	87.7	86.6
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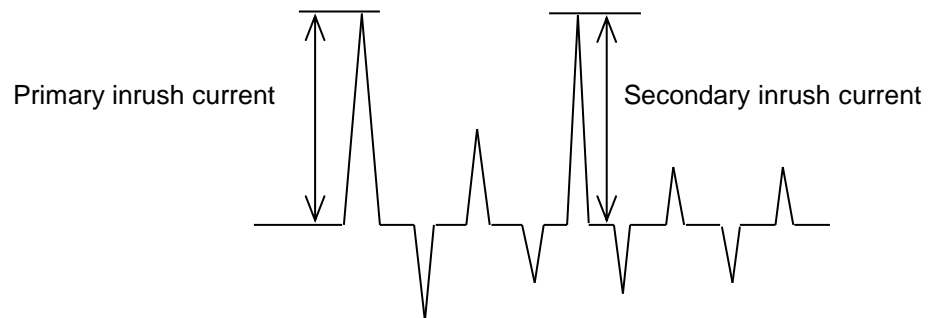
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<div><div><div>—△—</div><div>Input Volt.</div><div>115V</div></div><div><div>---□---</div><div>Input Volt.</div><div>230V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>264V</div></div></div> 			<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Power Factor</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.00</td><td>0.198</td><td>0.093</td><td>0.083</td></tr><tr><td>0.14</td><td>0.463</td><td>0.370</td><td>0.360</td></tr><tr><td>0.28</td><td>0.521</td><td>0.417</td><td>0.404</td></tr><tr><td>0.42</td><td>0.554</td><td>0.445</td><td>0.429</td></tr><tr><td>0.56</td><td>0.577</td><td>0.463</td><td>0.446</td></tr><tr><td>0.70</td><td>0.593</td><td>0.477</td><td>0.458</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><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]	Power Factor			Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]	0.00	0.198	0.093	0.083	0.14	0.463	0.370	0.360	0.28	0.521	0.417	0.404	0.42	0.554	0.445	0.429	0.56	0.577	0.463	0.446	0.70	0.593	0.477	0.458	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model	WDA30F-48	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current	
Object	+48V0.7A	



Input Voltage 230 V
Frequency 50 Hz
Load 100 %

Primary inrush current 34.1 A
Secondary inrush current 0.0 A



		Temperature 25°C Testing Circuitry Figure C
Model	WDA30F-48	
Item	Leakage Current	
Object	+48V0.7A	

1.Results

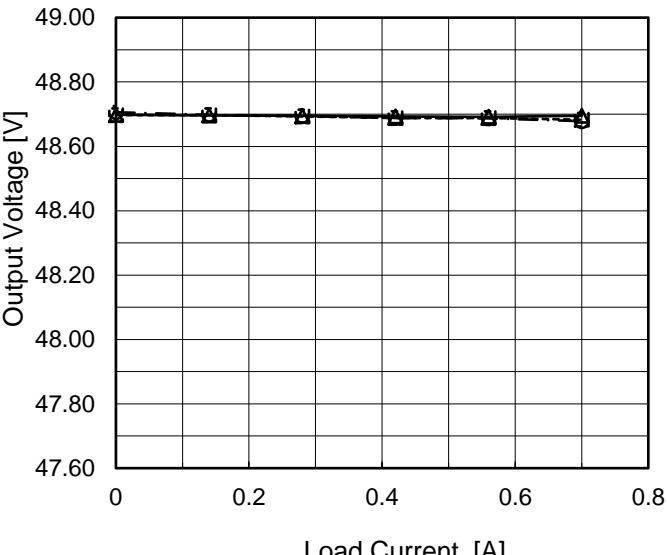
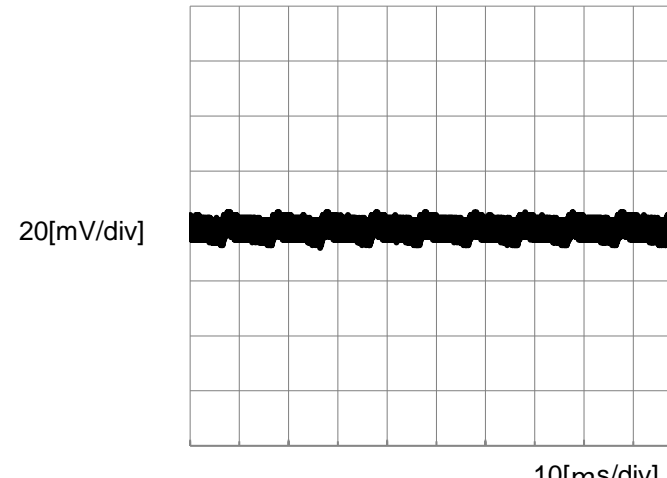
Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			115 [V]	240 [V]	264 [V]	
DEN-AN	Figure C-1	Both phases	0.14	0.33	0.37	Operation
		One of phases	0.27	0.62	0.69	Stand by
IEC62368-1	Figure C-2	Both phases	0.14	0.32	0.35	Operation
		One of phases	0.27	0.60	0.67	Stand by
	Figure C-3	Both phases	0.14	0.35	0.35	Operation
		One of phases	0.26	0.67	0.66	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		WDA30F-48	Temperature 25°C Testing Circuitry Figure A
Item		Line Regulation	
Object		+48V0.7A	
1.Graph			2.Values
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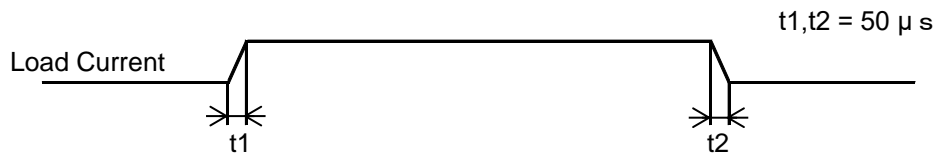
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<div><div><div>—△—</div><div>Input Volt.</div><div>115V</div></div><div><div>---□---</div><div>Input Volt.</div><div>230V</div></div><div><div>---○---</div><div>Input Volt.</div><div>264V</div></div></div> 		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.00</td><td>48.698</td><td>48.697</td><td>48.706</td></tr><tr><td>0.14</td><td>48.696</td><td>48.697</td><td>48.698</td></tr><tr><td>0.28</td><td>48.695</td><td>48.693</td><td>48.694</td></tr><tr><td>0.42</td><td>48.693</td><td>48.688</td><td>48.688</td></tr><tr><td>0.56</td><td>48.692</td><td>48.688</td><td>48.687</td></tr><tr><td>0.70</td><td>48.695</td><td>48.683</td><td>48.678</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><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. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]	0.00	48.698	48.697	48.706	0.14	48.696	48.697	48.698	0.28	48.695	48.693	48.694	0.42	48.693	48.688	48.688	0.56	48.692	48.688	48.687	0.70	48.695	48.683	48.678	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Load Current [A]	Output Voltage [V]																																																									
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Item	Ripple-Noise	Temperature	25°C																																																							
Object	+48V0.7A	Testing Circuitry	Figure B																																																							
1.Graph																																																										
<div><div><div>Input Voltage</div><div>230V</div></div><div><div>Load</div><div>100%</div></div></div> 																																																										

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BC-11895

Model	WDA30F-48	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+48V0.7A	

Input Volt. 230 V
Cycle 1000 ms



Min.Load (0A) ←→
Load 100% (0.7A)

100 mV/div

20 ms/div

20 ms/div

Min.Load (0A) ←→
Load 50% (0.35A)

100 mV/div

20 ms/div

20 ms/div

Load 50% (0.35A) ←→
Load 100% (0.7A)

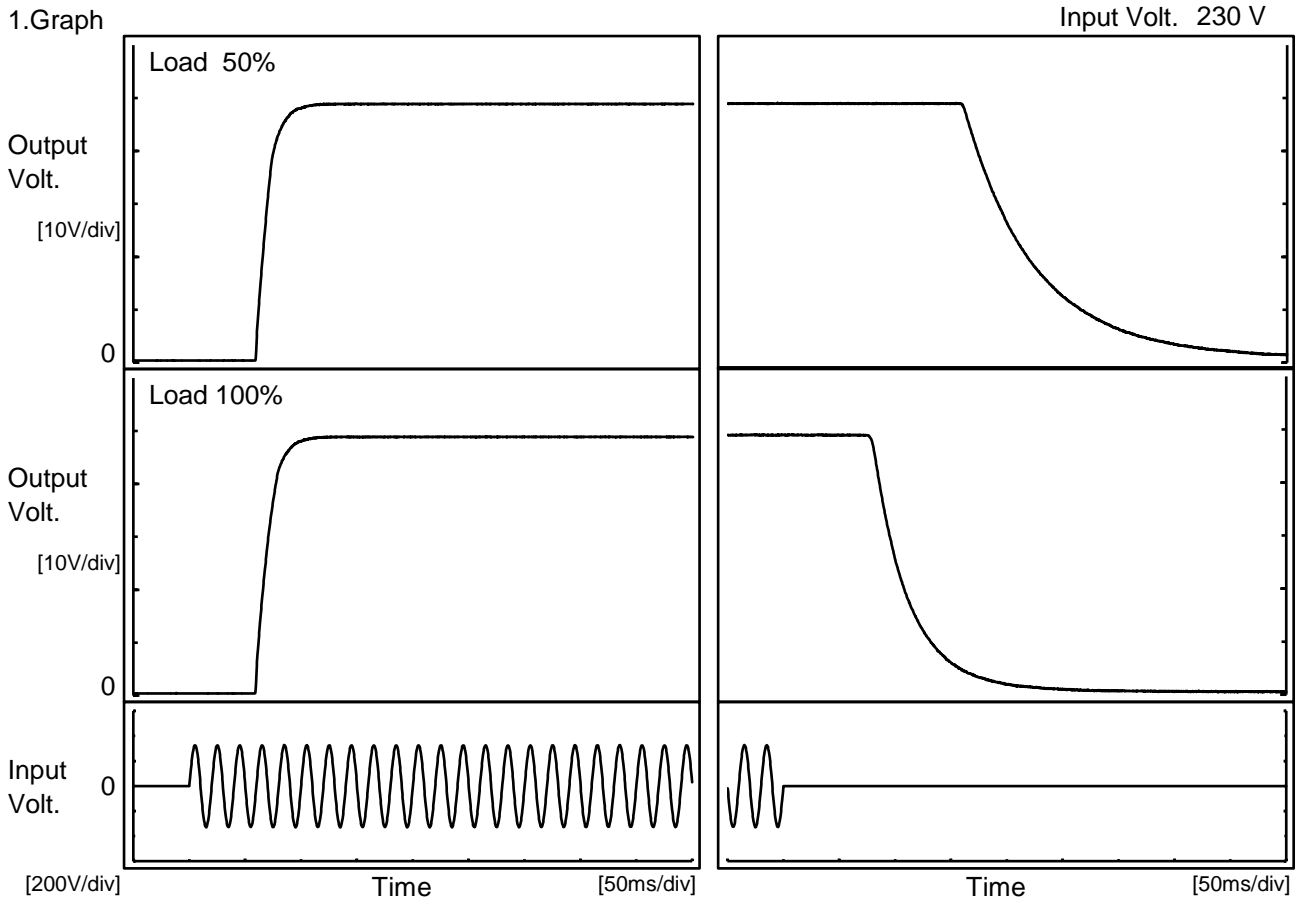
100 mV/div

20 ms/div

20 ms/div

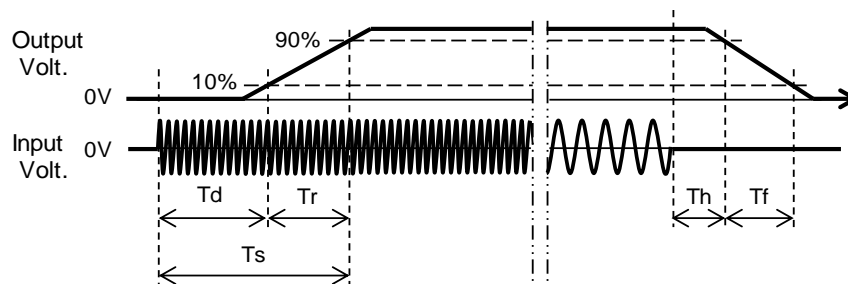
Model	WDA30F-48	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+48V0.7A		

1.Graph



2.Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	60.5	20.0	80.5	167.5	147.8
100 %	60.3	21.3	81.6	83.0	73.0



Model		WDA30F-48	Temperature 25°C Testing Circuitry Figure A																															
Item		Hold-Up Time																																
Object		+48V0.7A																																
1.Graph			2.Values																															
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div>Load 50%</div><div>Load 100%</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 increasing trend of hold-up time with increasing input voltage. The Load 50% series consistently shows higher hold-up times than the Load 100% series for the same input voltage.</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>85</td><td>18</td><td>-</td></tr><tr><td>100</td><td>26</td><td>-</td></tr><tr><td>115</td><td>36</td><td>15</td></tr><tr><td>132</td><td>50</td><td>22</td></tr><tr><td>170</td><td>86</td><td>41</td></tr><tr><td>200</td><td>122</td><td>59</td></tr><tr><td>230</td><td>163</td><td>80</td></tr><tr><td>264</td><td>217</td><td>108</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>				Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	85	18	-	100	26	-	115	36	15	132	50	22	170	86	41	200	122	59	230	163	80	264	217	108	--	-
Input Voltage [V]	Hold-Up Time [ms]																																	
	Load 50%	Load 100%																																
85	18	-																																
100	26	-																																
115	36	15																																
132	50	22																																
170	86	41																																
200	122	59																																
230	163	80																																
264	217	108																																
--	-	-																																
<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>																																		

Model		WDA30F-48	Temperature 25°C Testing Circuitry Figure A																																																								
Item		Instantaneous Interruption Compensation																																																									
Object		+48V0.7A																																																									
1.Graph		<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div><div>Input Volt. 115V</div><div>Input Volt. 230V</div><div>Input Volt. 264V</div></div></div> <div><div>Instantaneous Compensation Time [ms]</div><div>Load Current [A]</div></div>	2.Values																																																								
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.14</td><td>97</td><td>390</td><td>509</td></tr><tr><td>0.28</td><td>48</td><td>204</td><td>271</td></tr><tr><td>0.42</td><td>31</td><td>139</td><td>185</td></tr><tr><td>0.56</td><td>22</td><td>103</td><td>139</td></tr><tr><td>0.70</td><td>16</td><td>81</td><td>109</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><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. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]	0.00	-	-	-	0.14	97	390	509	0.28	48	204	271	0.42	31	139	185	0.56	22	103	139	0.70	16	81	109	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-		
Load Current [A]	Time [ms]																																																										
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]																																																								
0.00	-	-	-																																																								
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[illegible]

		Testing Circuitry Figure A																			
Model	WDA30F-48																				
Item	Ambient Temperature Drift																				
Object	+48V0.7A																				
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. 115V</td><td>Input Volt. 230V</td><td>Input Volt. 264V</td></tr><tr><td>-20</td><td>48.415</td><td>48.408</td><td>48.407</td></tr><tr><td>25</td><td>48.642</td><td>48.634</td><td>48.631</td></tr><tr><td>50</td><td>48.725</td><td>48.713</td><td>48.711</td></tr></table>			Ambient Temperature[°C]	Output Voltage [V]			Input Volt. 115V	Input Volt. 230V	Input Volt. 264V	-20	48.415	48.408	48.407	25	48.642	48.634	48.631	50	48.725	48.713	48.711
Ambient Temperature[°C]	Output Voltage [V]																				
	Input Volt. 115V	Input Volt. 230V	Input Volt. 264V																		
-20	48.415	48.408	48.407																		
25	48.642	48.634	48.631																		
50	48.725	48.713	48.711																		
		Testing Circuitry Figure A																			
Item	Minimum Input Voltage for Regulated Output Voltage																				
Object	+48V0.7A																				
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>38</td><td>75</td></tr><tr><td>25</td><td>38</td><td>74</td></tr><tr><td>50</td><td>38</td><td>74</td></tr></table>			Ambient Temperature[°C]	Input Voltage [V]		Load 50%	Load 100%	-20	38	75	25	38	74	50	38	74					
Ambient Temperature[°C]	Input Voltage [V]																				
	Load 50%	Load 100%																			
-20	38	75																			
25	38	74																			
50	38	74																			
		Testing Circuitry Figure A																			
Item	Overvoltage Protection																				
Object	+48V0.7A																				
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. 115V</td><td>Input Volt. 264V</td></tr><tr><td>-20</td><td>60.88</td><td>61.00</td></tr><tr><td>25</td><td>61.70</td><td>61.70</td></tr><tr><td>50</td><td>62.87</td><td>62.87</td></tr></table>			Ambient Temperature[°C]	Operating Point [V]		Input Volt. 115V	Input Volt. 264V	-20	60.88	61.00	25	61.70	61.70	50	62.87	62.87					
Ambient Temperature[°C]	Operating Point [V]																				
	Input Volt. 115V	Input Volt. 264V																			
-20	60.88	61.00																			
25	61.70	61.70																			
50	62.87	62.87																			
- 13 -																					
BC-11895																					

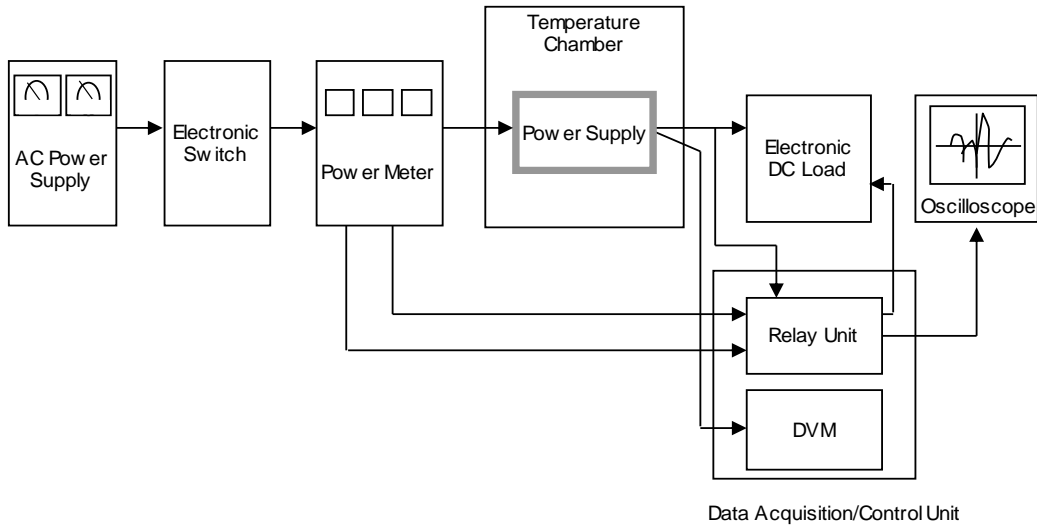


Figure A

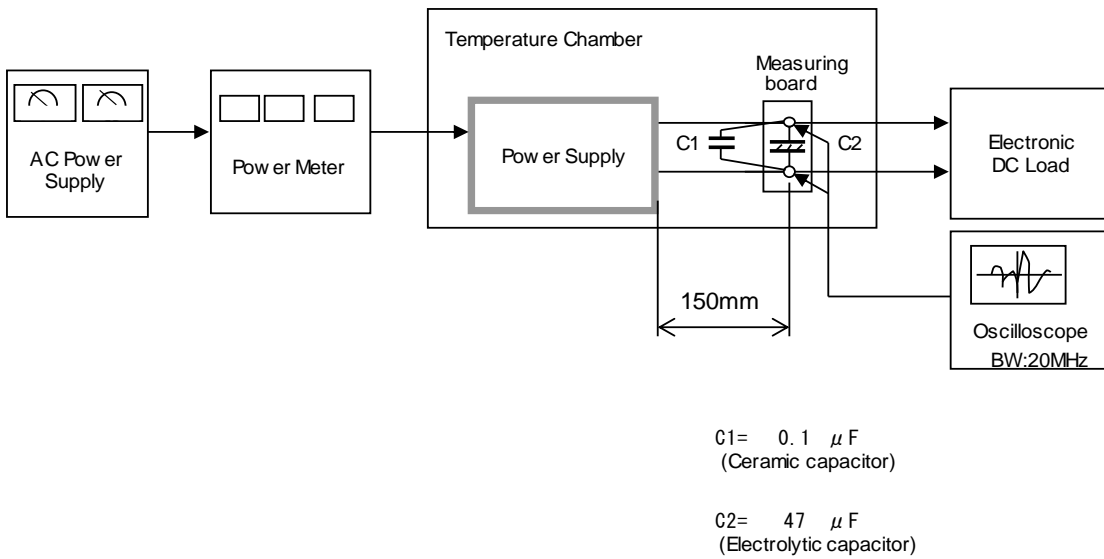


Figure B

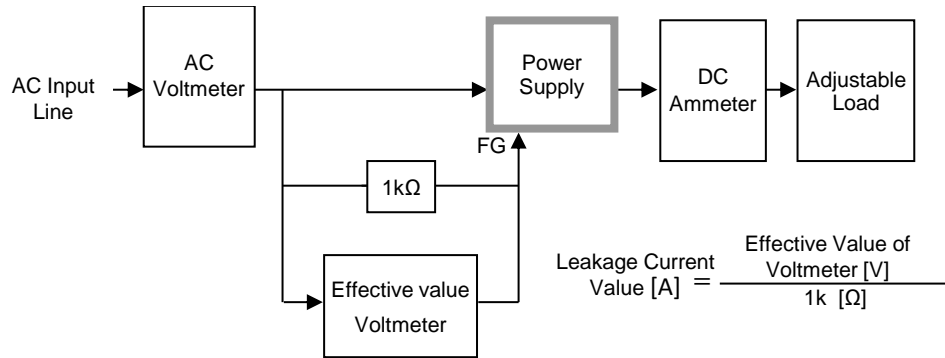


Figure C-1 (DEN-AN)

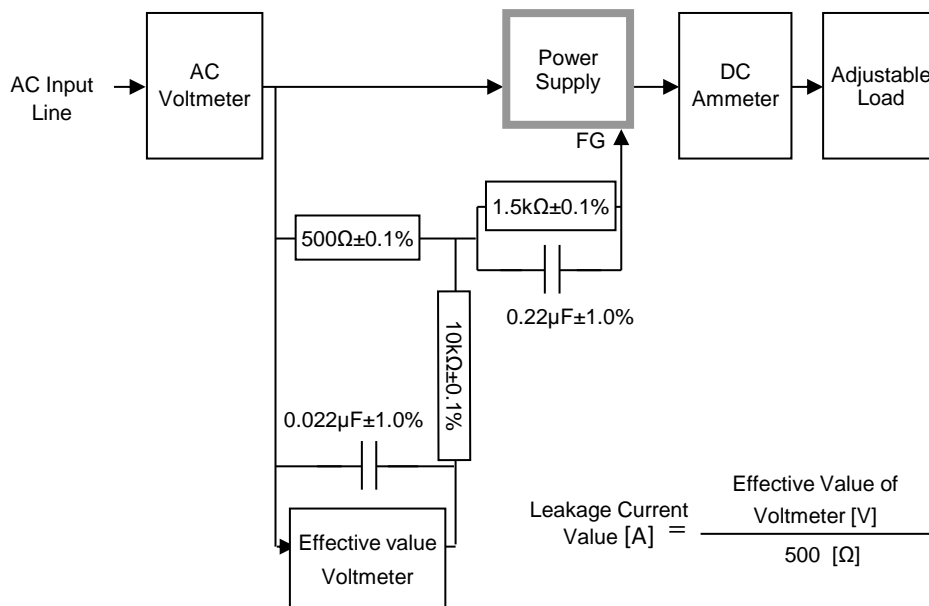


Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

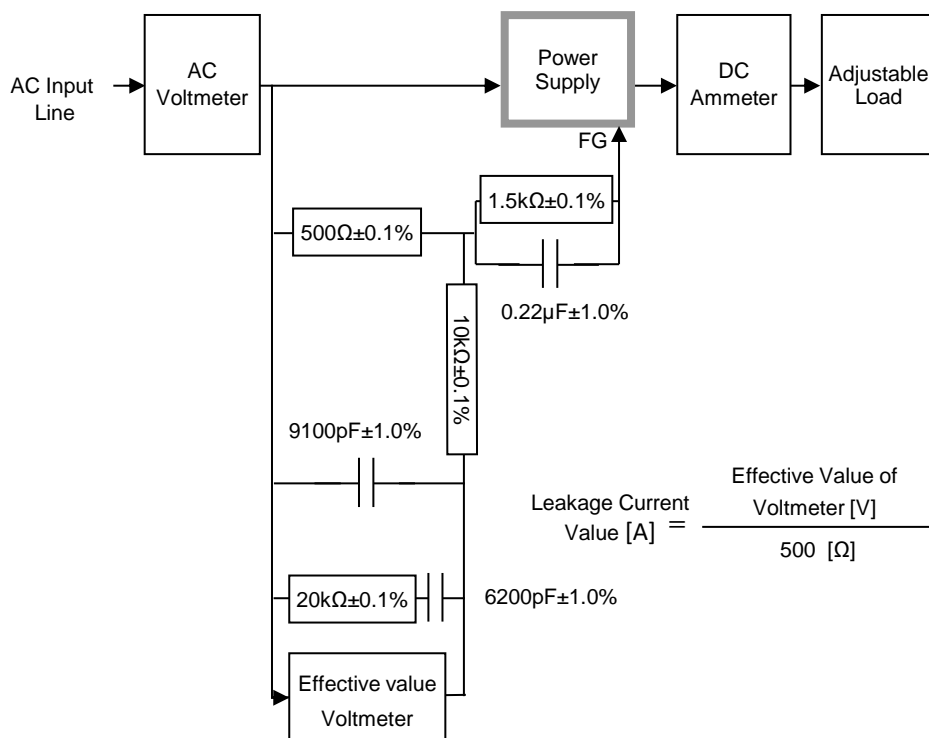


Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)