

# TEST DATA OF WDA90F-48

Regulated DC Power Supply  
August 17, 2022

Approved by : Takashi Kajii  
Design Manager

Prepared by : Jeonghoon Yi  
Design Engineer

**COSEL CO.,LTD.**

## CONTENTS

1.Input Current (by Load Current) . . . . .	1
2.Efficiency (by Load Current) . . . . .	2
3.Power Factor (by Load Current) . . . . .	3
4.Inrush Current . . . . .	4
5.Leakage Current . . . . .	5
6.Line Regulation . . . . .	6
7.Load Regulation . . . . .	7
8.Ripple-Noise . . . . .	7
9.Dynamic Load Response . . . . .	8
10.Rise and Fall Time . . . . .	9
11.Hold-Up Time . . . . .	10
12.Instantaneous Interruption Compensation . . . . .	11
13.Overcurrent Protection . . . . .	12
14.Ambient Temperature Drift . . . . .	13
15.Minimum Input Voltage for Regulated Output Voltage . . . . .	13
16.Overvoltage Protection . . . . .	13
17.Figure of Testing Circuitry . . . . .	14

(Final Page 15)

Model WDA90F-48

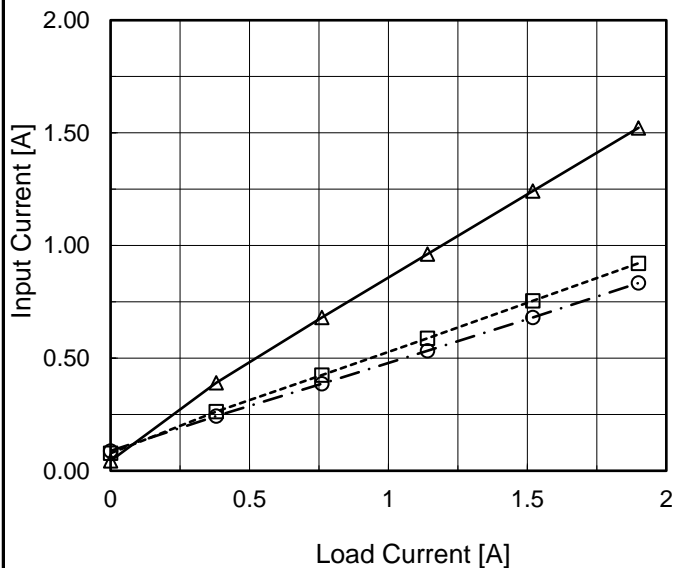
Item Input Current (by Load Current)

Object +48V1.9A

Temperature 25°C  
Testing Circuitry Figure A

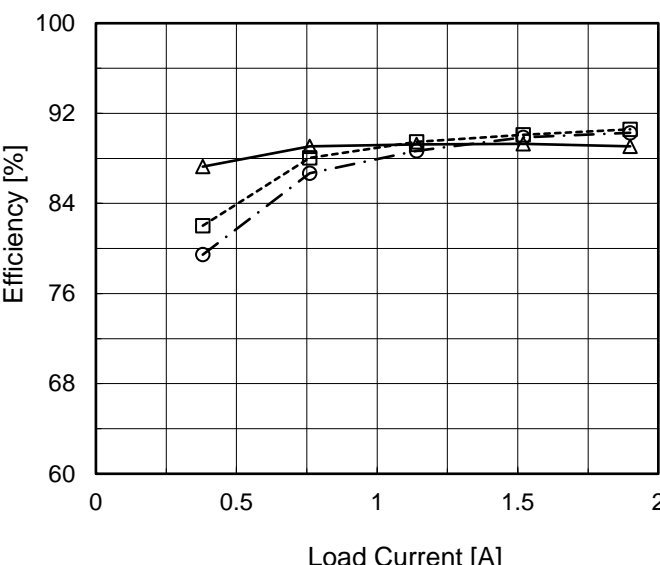
1.Graph

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



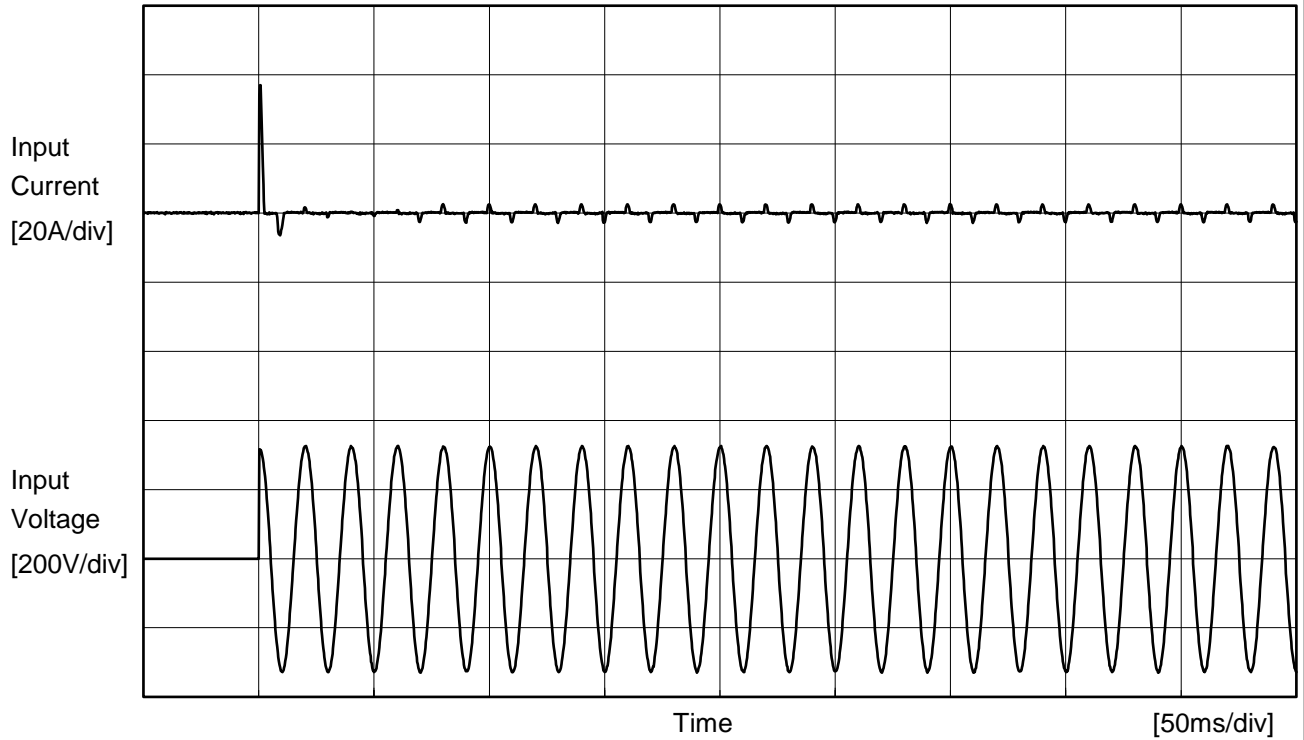
2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	0.044	0.078	0.088
0.38	0.391	0.262	0.243
0.76	0.680	0.425	0.386
1.14	0.961	0.588	0.532
1.52	1.241	0.754	0.680
1.90	1.522	0.921	0.833
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model		WDA90F-48	Temperature 25°C Testing Circuitry Figure A																																																				
Item		Efficiency (by Load Current)																																																					
Object		+48V1.9A																																																					
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>  <table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th><th>Input Volt. 264[V]</th></tr></thead><tbody><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.38</td><td>87.3</td><td>82.0</td><td>79.5</td></tr><tr><td>0.76</td><td>89.1</td><td>88.0</td><td>86.7</td></tr><tr><td>1.14</td><td>89.2</td><td>89.5</td><td>88.7</td></tr><tr><td>1.52</td><td>89.3</td><td>90.1</td><td>89.9</td></tr><tr><td>1.90</td><td>89.1</td><td>90.6</td><td>90.3</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></tbody></table>	Load Current [A]	Efficiency [%]			Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]	0.00	-	-	-	0.38	87.3	82.0	79.5	0.76	89.1	88.0	86.7	1.14	89.2	89.5	88.7	1.52	89.3	90.1	89.9	1.90	89.1	90.6	90.3	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	2.Values	
Load Current [A]	Efficiency [%]																																																						
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]																																																				
0.00	-	-	-																																																				
0.38	87.3	82.0	79.5																																																				
0.76	89.1	88.0	86.7																																																				
1.14	89.2	89.5	88.7																																																				
1.52	89.3	90.1	89.9																																																				
1.90	89.1	90.6	90.3																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				

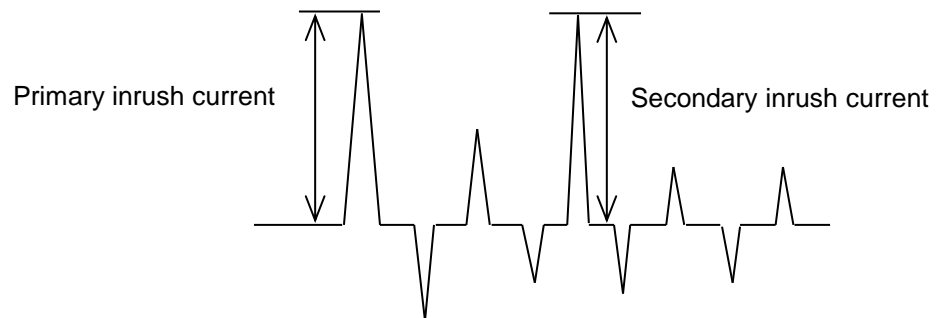
Model		WDA90F-48	Temperature 25°C Testing Circuitry Figure A																																																					
Item		Power Factor (by Load Current)																																																						
Object		+48V1.9A																																																						
1.Graph			2.Values																																																					
<div><div><div><div><div></div><div></div></div><div>—△—</div><div>Input Volt. 115V</div></div><div><div><div></div><div></div></div><div>---□---</div><div>Input Volt. 230V</div></div><div><div><div></div><div></div></div><div>-·-○-·-</div><div>Input Volt. 264V</div></div></div><div><table><thead><tr><th>Load Current [A]</th><th>115[V]</th><th>230[V]</th><th>264[V]</th></tr></thead><tbody><tr><td>0.00</td><td>0.104</td><td>0.045</td><td>0.041</td></tr><tr><td>0.38</td><td>0.463</td><td>0.367</td><td>0.356</td></tr><tr><td>0.76</td><td>0.522</td><td>0.423</td><td>0.412</td></tr><tr><td>1.14</td><td>0.553</td><td>0.451</td><td>0.438</td></tr><tr><td>1.52</td><td>0.571</td><td>0.466</td><td>0.452</td></tr><tr><td>1.90</td><td>0.584</td><td>0.475</td><td>0.459</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></tbody></table></div></div>			Load Current [A]	115[V]	230[V]	264[V]	0.00	0.104	0.045	0.041	0.38	0.463	0.367	0.356	0.76	0.522	0.423	0.412	1.14	0.553	0.451	0.438	1.52	0.571	0.466	0.452	1.90	0.584	0.475	0.459	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-		
Load Current [A]	115[V]	230[V]	264[V]																																																					
0.00	0.104	0.045	0.041																																																					
0.38	0.463	0.367	0.356																																																					
0.76	0.522	0.423	0.412																																																					
1.14	0.553	0.451	0.438																																																					
1.52	0.571	0.466	0.452																																																					
1.90	0.584	0.475	0.459																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					

Model	WDA90F-48	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current	
Object	+48V1.9A	



Input Voltage 230 V  
Frequency 50 Hz  
Load 100 %

Primary inrush current 36.9 A  
Secondary inrush current 0.0 A



		Temperature 25°C Testing Circuitry Figure C
Model	WDA90F-48	
Item	Leakage Current	
Object	+48V1.9A	

### 1.Results

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			115 [V]	240 [V]	264 [V]	
DEN-AN	Figure C-1	Both phases	0.20	0.44	0.49	Operation
		One of phases	0.36	0.79	0.87	Stand by
IEC62368-1	Figure C-2	Both phases	0.19	0.42	0.46	Operation
		One of phases	0.35	0.76	0.84	Stand by
	Figure C-3	Both phases	0.19	0.41	0.45	Operation
		One of phases	0.34	0.74	0.82	Stand by

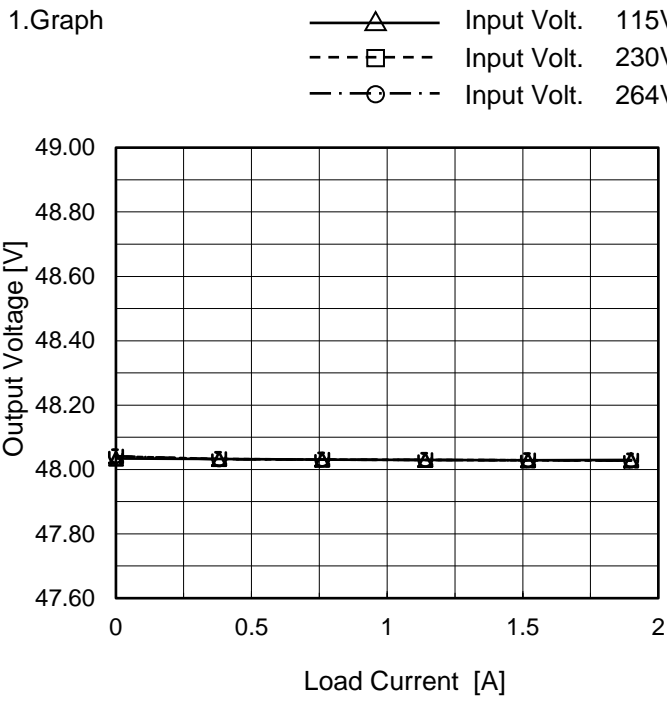
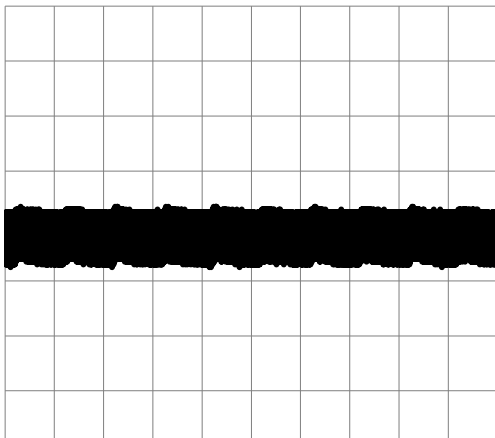
The value for "One of phases" is the reference value only.

### 2.Condition

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

Model	WDA90F-48																																
Item	Line Regulation	Temperature	25°C																														
		Testing Circuitry	Figure A																														
Object	+48V1.9A																																
1.Graph		2.Values																															
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>85</td><td>48.017</td><td>-</td></tr><tr><td>100</td><td>48.017</td><td>-</td></tr><tr><td>115</td><td>48.016</td><td>48.019</td></tr><tr><td>132</td><td>48.017</td><td>48.019</td></tr><tr><td>170</td><td>48.018</td><td>48.019</td></tr><tr><td>200</td><td>48.018</td><td>48.020</td></tr><tr><td>230</td><td>48.018</td><td>48.020</td></tr><tr><td>264</td><td>48.018</td><td>48.020</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	85	48.017	-	100	48.017	-	115	48.016	48.019	132	48.017	48.019	170	48.018	48.019	200	48.018	48.020	230	48.018	48.020	264	48.018	48.020	--	-	-		
Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%																															
85	48.017	-																															
100	48.017	-																															
115	48.016	48.019																															
132	48.017	48.019																															
170	48.018	48.019																															
200	48.018	48.020																															
230	48.018	48.020																															
264	48.018	48.020																															
--	-	-																															



Model	WDA90F-48																																																									
Item	Load Regulation	Temperature	25°C																																																							
Object	+48V1.9A	Testing Circuitry	Figure A																																																							
1.Graph		2.Values																																																								
<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>48.034</td><td>48.040</td><td>48.041</td></tr><tr><td>0.38</td><td>48.032</td><td>48.032</td><td>48.032</td></tr><tr><td>0.76</td><td>48.031</td><td>48.031</td><td>48.030</td></tr><tr><td>1.14</td><td>48.030</td><td>48.030</td><td>48.029</td></tr><tr><td>1.52</td><td>48.029</td><td>48.029</td><td>48.028</td></tr><tr><td>1.90</td><td>48.029</td><td>48.027</td><td>48.027</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	48.034	48.040	48.041	0.38	48.032	48.032	48.032	0.76	48.031	48.031	48.030	1.14	48.030	48.030	48.029	1.52	48.029	48.029	48.028	1.90	48.029	48.027	48.027	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Load Current [A]	Output Voltage [V]																																																									
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]																																																							
0.00	48.034	48.040	48.041																																																							
0.38	48.032	48.032	48.032																																																							
0.76	48.031	48.031	48.030																																																							
1.14	48.030	48.030	48.029																																																							
1.52	48.029	48.029	48.028																																																							
1.90	48.029	48.027	48.027																																																							
--	--	--	--																																																							
--	--	--	--																																																							
--	--	--	--																																																							
--	--	--	--																																																							
--	--	--	--																																																							
--	--	--	--																																																							
Item	Ripple-Noise	Temperature	25°C																																																							
Object	+48V1.9A	Testing Circuitry	Figure B																																																							
1.Graph																																																										
<div><div>Input Voltage</div><div>230V</div></div> <div><div>Load</div><div>100%</div></div> <div><div>20[mV/div]</div><div>10[ms/div]</div></div>																																																										

- 7 -

BC-11902

Model	WDA90F-48	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+48V1.9A		

Input Volt. 230 V  
Cycle 1000 ms

$t_1, t_2 = 50 \mu s$

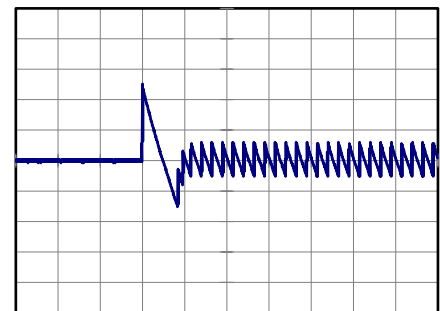
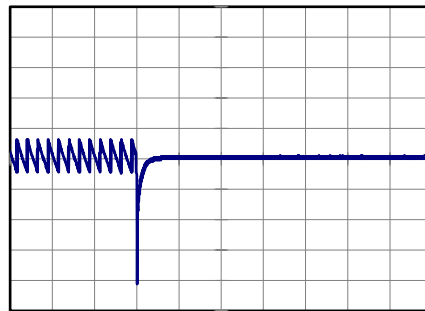
Load Current



Min. Load (0A)  $\longleftrightarrow$   
Load 100% (1.9A)

100 mV/div

40 ms/div

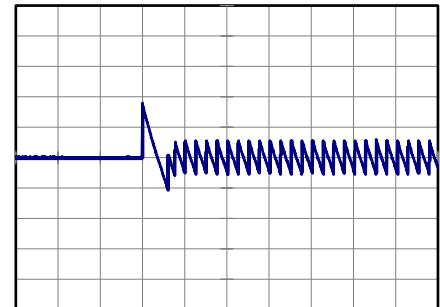
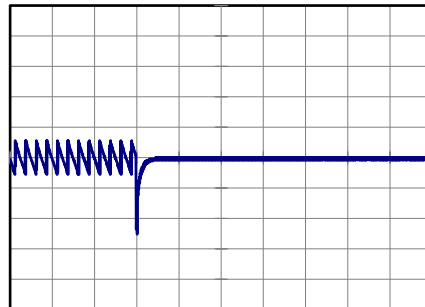


40 ms/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (0.95A)

100 mV/div

40 ms/div

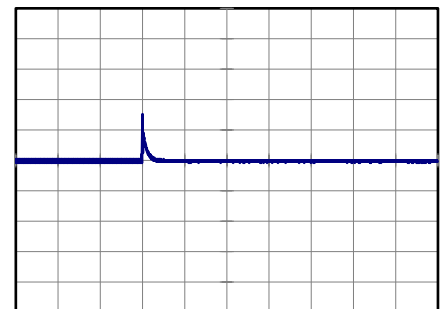


40 ms/div

Load 50% (0.95A)  $\longleftrightarrow$   
Load 100% (1.9A)

100 mV/div

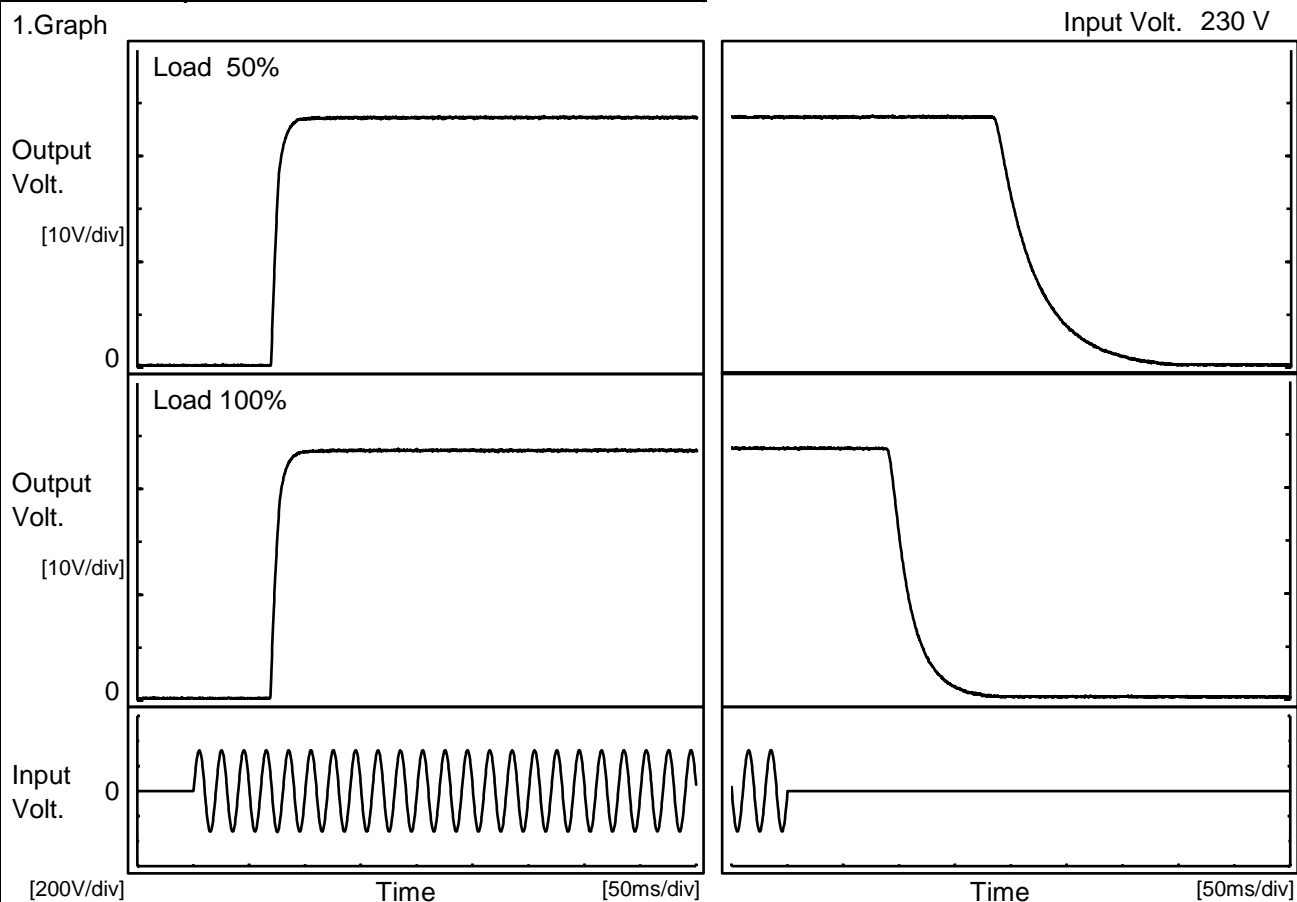
40 ms/div



40 ms/div

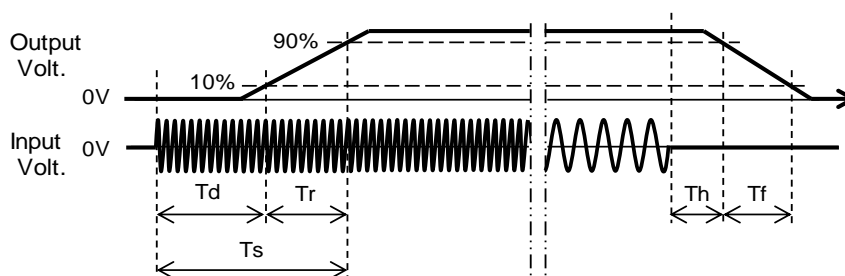
Model	WDA90F-48	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+48V1.9A		

### 1.Graph



### 2.Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	70.3	12.8	83.1	189.3	76.3
100 %	69.8	12.8	82.6	92.8	40.8



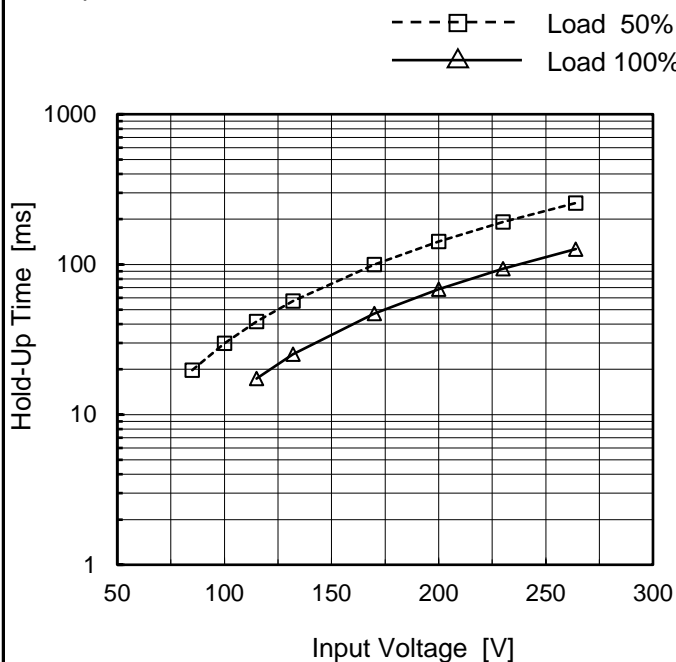
Model WDA90F-48

Item Hold-Up Time

Object +48V1.9A

Temperature 25°C  
Testing Circuitry Figure A

### 1.Graph



This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

### 2.Values

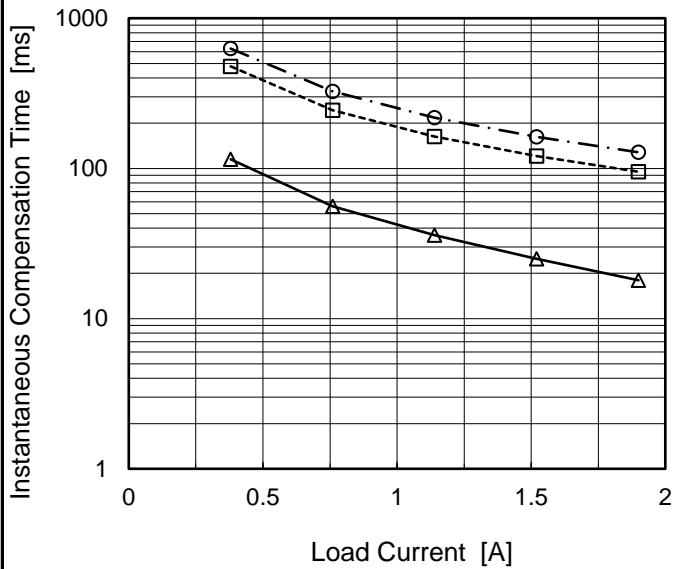
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	20	-
100	30	-
115	42	17
132	57	25
170	100	47
200	142	68
230	192	94
264	257	127
--	-	-

Model	WDA90F-48
Item	Instantaneous Interruption Compensation
Object	+48V1.9A

Temperature 25°C  
Testing Circuitry Figure A

1.Graph

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



2.Values

Load Current [A]	Time [ms]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	-	-	-
0.38	115	478	628
0.76	56	244	325
1.14	36	163	218
1.52	25	121	162
1.90	18	95	128
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model		WDA90F-48		Temperature 25°C Testing Circuitry Figure A
Item		Overcurrent Protection		
Object		+48V1.9A		
1.Graph				
		—	Input Volt. 115V	2.Values
		—	Input Volt. 230V	
		—	Input Volt. 264V	
<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><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div></div>				

		Testing Circuitry    Figure A																			
Model	WDA90F-48																				
Item	Ambient Temperature Drift																				
Object	+48V1.9A																				
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>47.923</td><td>47.923</td><td>47.925</td></tr><tr><td>25</td><td>48.021</td><td>48.021</td><td>48.021</td></tr><tr><td>50</td><td>48.028</td><td>48.030</td><td>48.030</td></tr></table>			Ambient Temperature[°C]	Output Voltage [V]			Input Volt. 115V	Input Volt. 230V	Input Volt. 264V	-20	47.923	47.923	47.925	25	48.021	48.021	48.021	50	48.028	48.030	48.030
Ambient Temperature[°C]	Output Voltage [V]																				
	Input Volt. 115V	Input Volt. 230V	Input Volt. 264V																		
-20	47.923	47.923	47.925																		
25	48.021	48.021	48.021																		
50	48.028	48.030	48.030																		
		Testing Circuitry    Figure A																			
Item	Minimum Input Voltage for Regulated Output Voltage																				
Object	+48V1.9A																				
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>41</td><td>67</td></tr><tr><td>25</td><td>41</td><td>66</td></tr><tr><td>50</td><td>41</td><td>66</td></tr></table>			Ambient Temperature[°C]	Input Voltage [V]		Load 50%	Load 100%	-20	41	67	25	41	66	50	41	66					
Ambient Temperature[°C]	Input Voltage [V]																				
	Load 50%	Load 100%																			
-20	41	67																			
25	41	66																			
50	41	66																			
		Testing Circuitry    Figure A																			
Item	Overvoltage Protection																				
Object	+48V1.9A																				
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>59.02</td><td>59.02</td></tr><tr><td>25</td><td>57.84</td><td>60.71</td></tr><tr><td>50</td><td>61.81</td><td>61.96</td></tr></table>			Ambient Temperature[°C]	Operating Point [V]		Input Volt. 115V	Input Volt. 264V	-20	59.02	59.02	25	57.84	60.71	50	61.81	61.96					
Ambient Temperature[°C]	Operating Point [V]																				
	Input Volt. 115V	Input Volt. 264V																			
-20	59.02	59.02																			
25	57.84	60.71																			
50	61.81	61.96																			

- 13 -

BC-11902

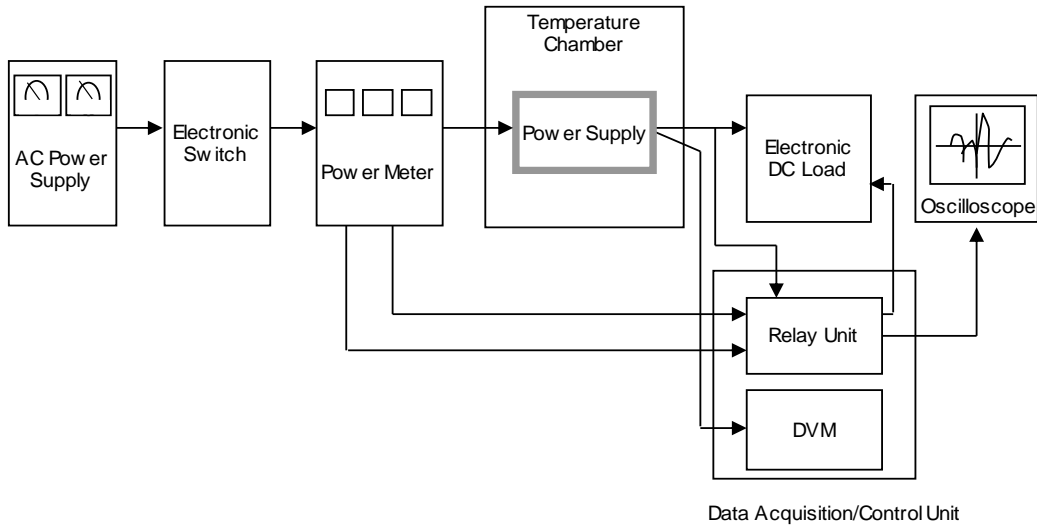


Figure A

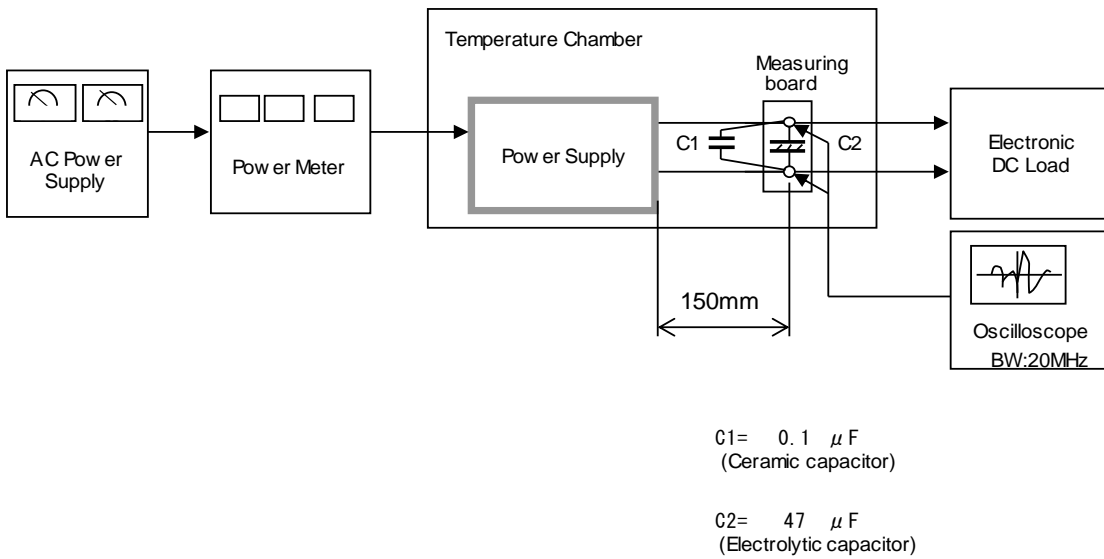


Figure B



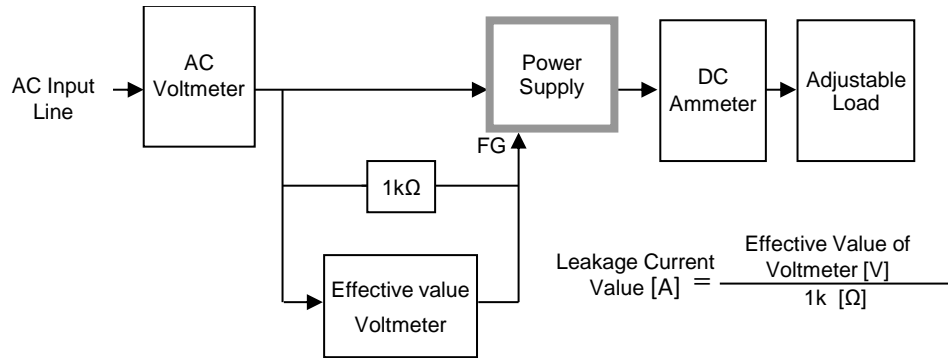


Figure C-1 ( DEN-AN )

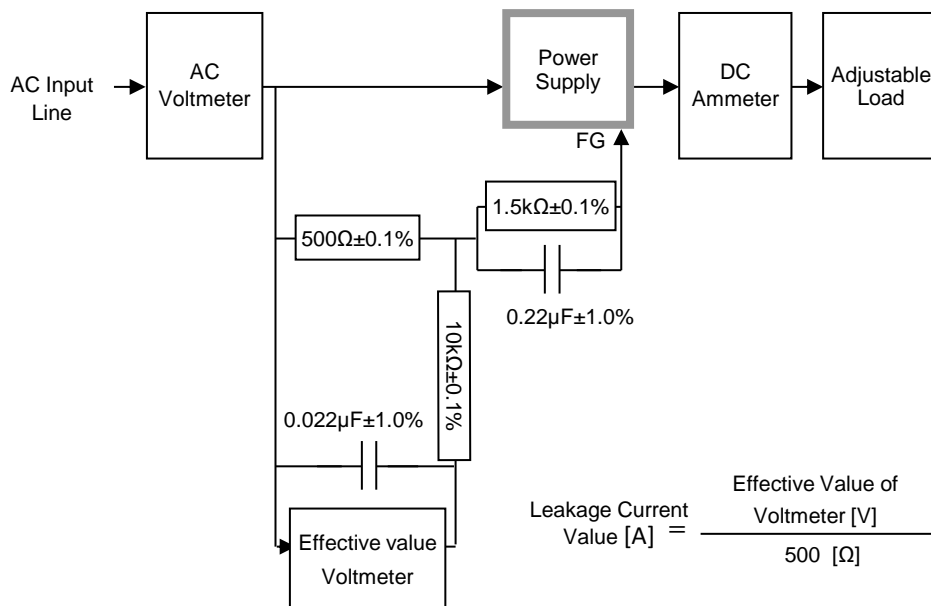


Figure C-2 ( IEC62368-1 refer to IEC60990 Fig.4 )

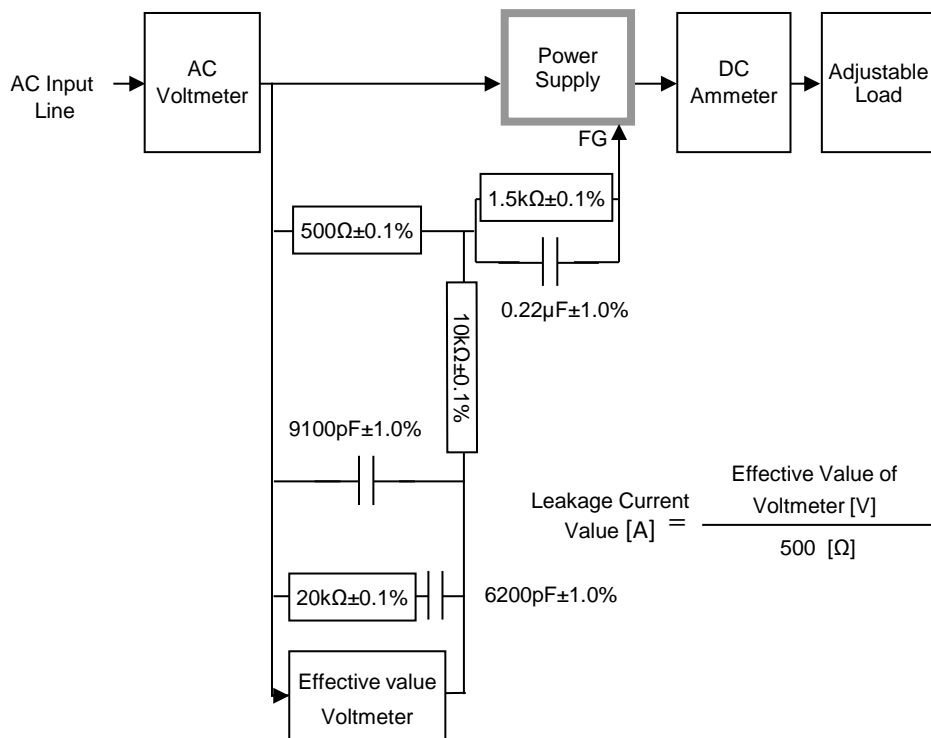


Figure C-3 ( IEC62368-1 refer to IEC60990 Fig.5 )