COSEL

Reference

TEST DATA OF WDA90F-24

Regulated DC Power Supply
August 17, 2022

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COSEL CO.,LTD.

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Object	+24V3.8A

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Testing Circuitry Figure A

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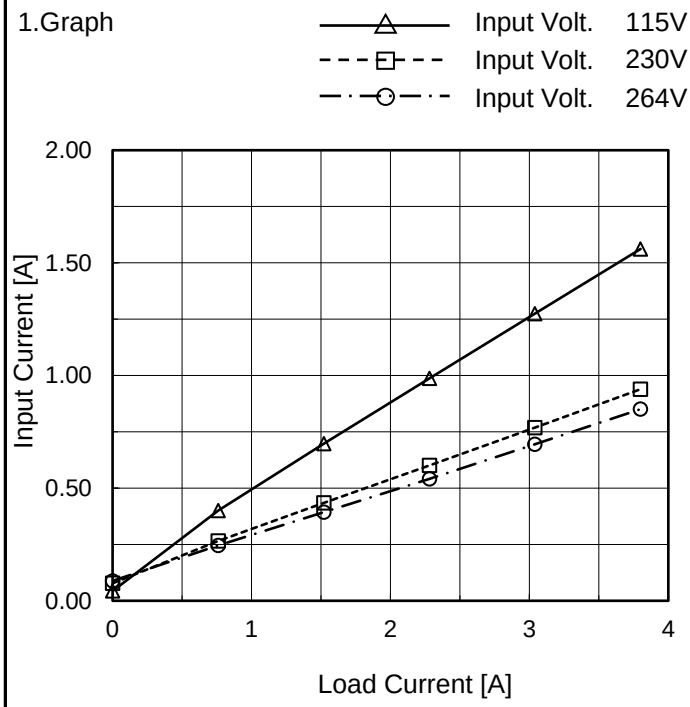

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	0.043	0.078	0.088
0.76	0.401	0.266	0.246
1.52	0.698	0.434	0.393
2.28	0.987	0.601	0.542
3.04	1.274	0.769	0.695
3.80	1.562	0.939	0.851
--	-	-	-
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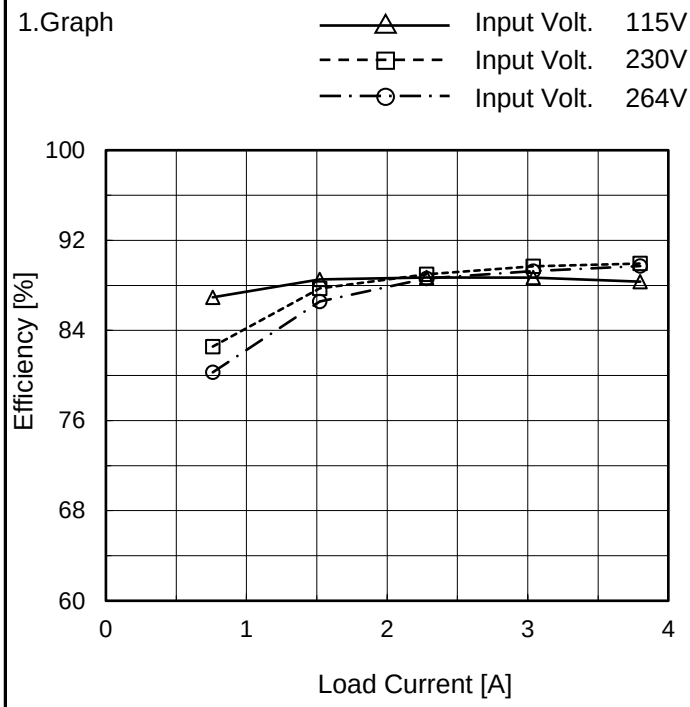
Model	WDA90F-24
Item	Efficiency (by Load Current)
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Current [A]	Efficiency [%] Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	-	-	-
0.76	86.9	82.6	80.3
1.52	88.5	87.7	86.6
2.28	88.7	89.0	88.6
3.04	88.7	89.7	89.3
3.80	88.3	89.9	89.7
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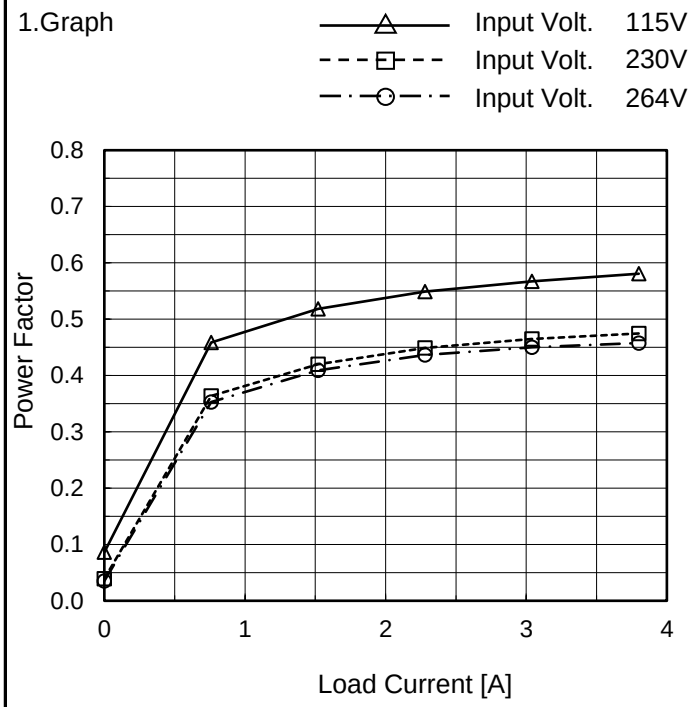
--	-	-	-
--	-	-	-
--	-	-	-

Model	WDA90F-24
Item	Power Factor (by Load Current)
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Current [A]	Power Factor Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	0.086	0.039	0.035
0.76	0.458	0.364	0.353
1.52	0.518	0.420	0.409
2.28	0.549	0.449	0.436
3.04	0.567	0.465	0.450
3.80	0.581	0.475	0.458
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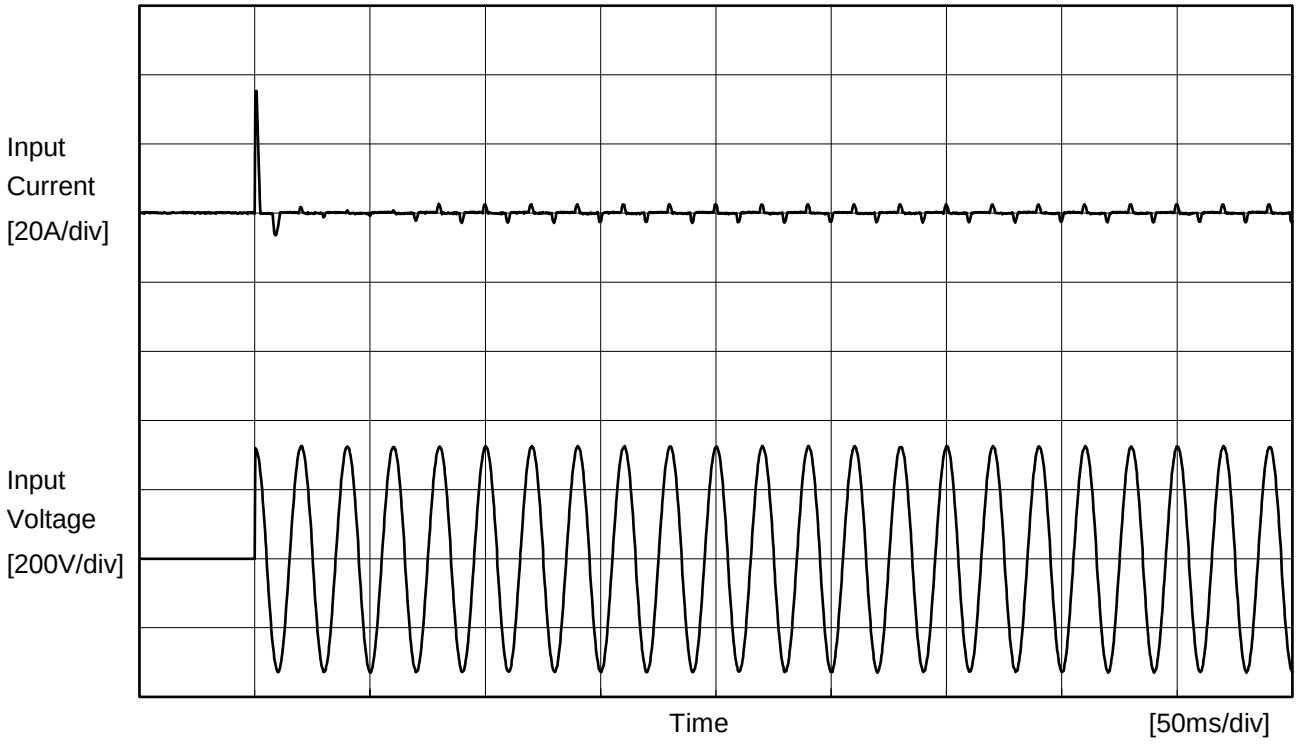
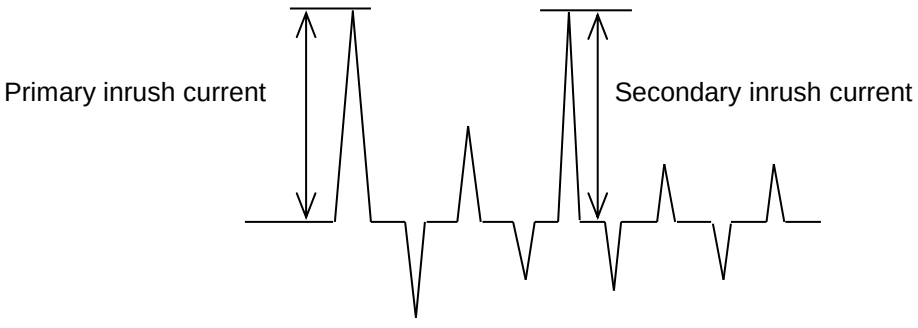
Model	WDA90F-24
Item	Inrush Current
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	230 V
Frequency	50 Hz
Load	100 %
Primary inrush current	35.2 A
Secondary inrush current	0.0 A



Model	WDA90F-24	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure C
Object	+24V3.8A	

1.Results

[mA]

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.

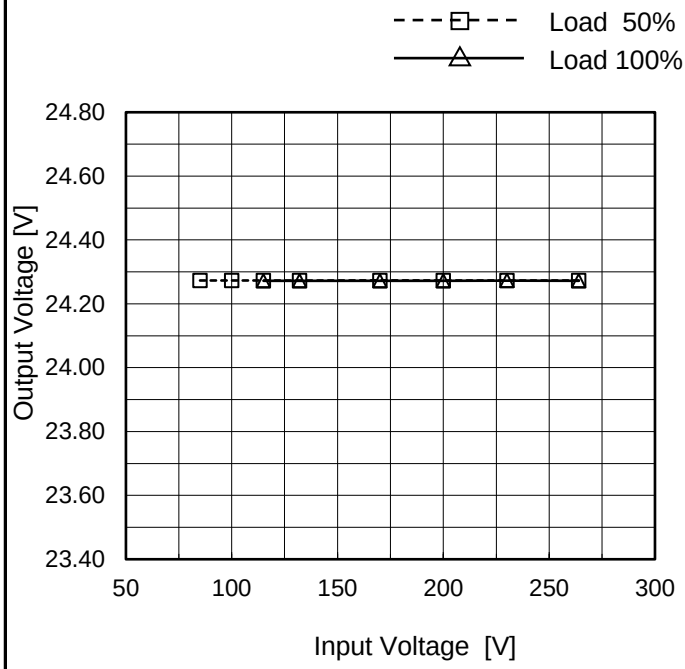
2.Condition

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

Model	WDA90F-24
Item	Line Regulation
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



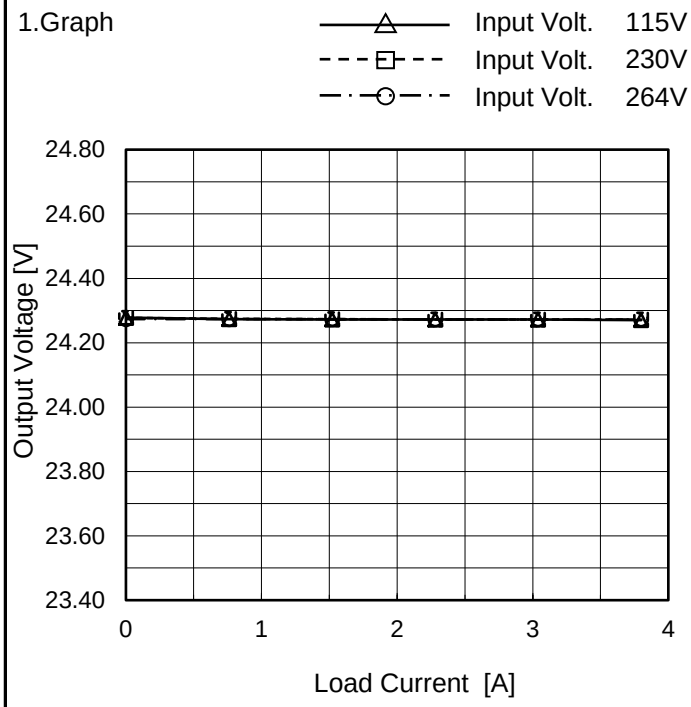
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	24.273	-
100	24.273	-
115	24.273	24.272
132	24.273	24.272
170	24.274	24.272
200	24.273	24.272
230	24.273	24.273
264	24.273	24.272
--	-	-

Model	WDA90F-24
Item	Load Regulation
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	24.278	24.277	24.274
0.76	24.273	24.274	24.274
1.52	24.272	24.273	24.273
2.28	24.272	24.273	24.272
3.04	24.272	24.272	24.272
3.80	24.270	24.272	24.272
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--	--	--	--
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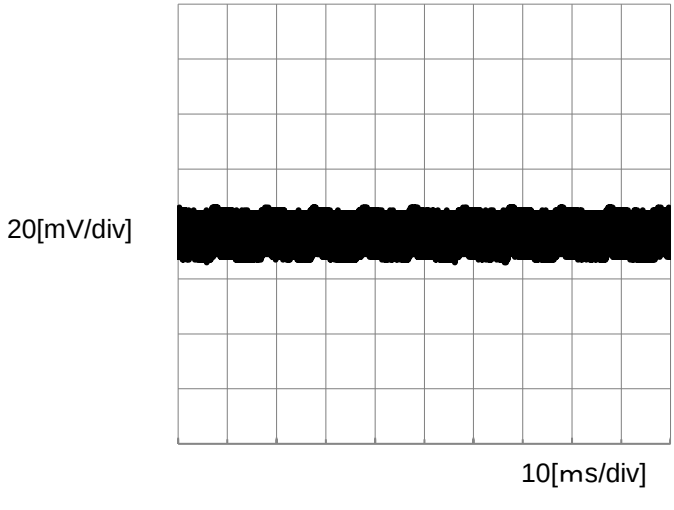
--	--	--	--

Item	Ripple-Noise
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

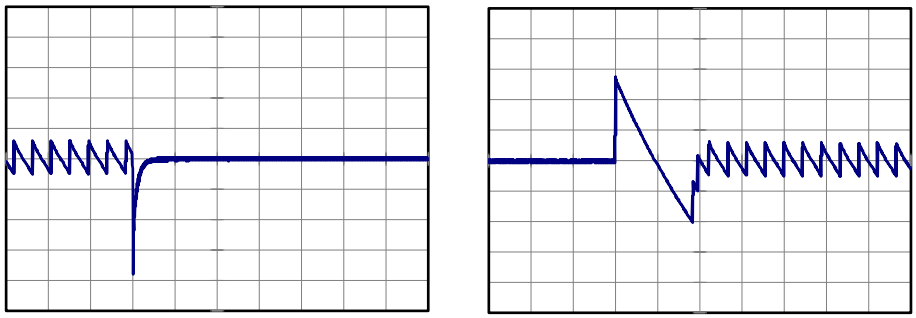
Input Voltage 230V
Load 100%



Model	WDA90F-24	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+24V3.8A	

Input Volt. 230 V
Cycle 1000 ms

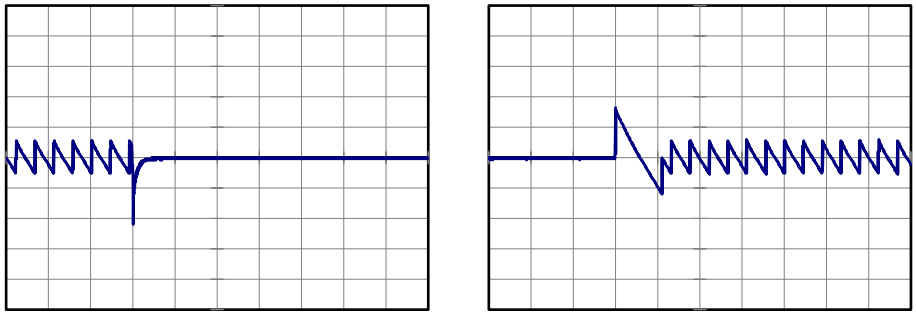
Min.Load (0A)←→
Load 100% (3.8A)



100 mV/div

40 ms/div 40 ms/div

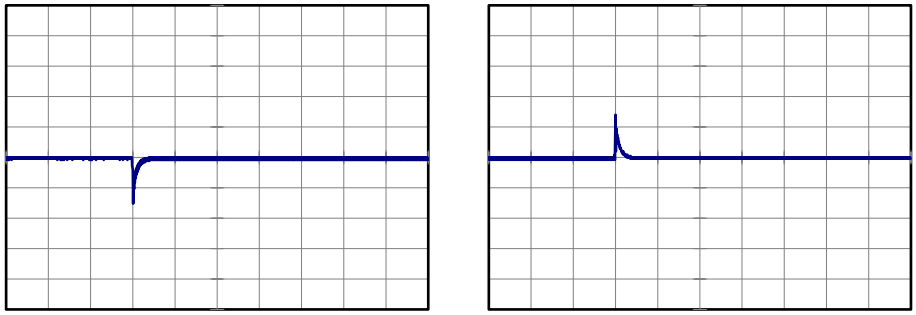
Min.Load (0A)←→
Load 50% (1.9A)



100 mV/div

40 ms/div 40 ms/div

Load 50% (1.9A)←→
Load 100% (3.8A)

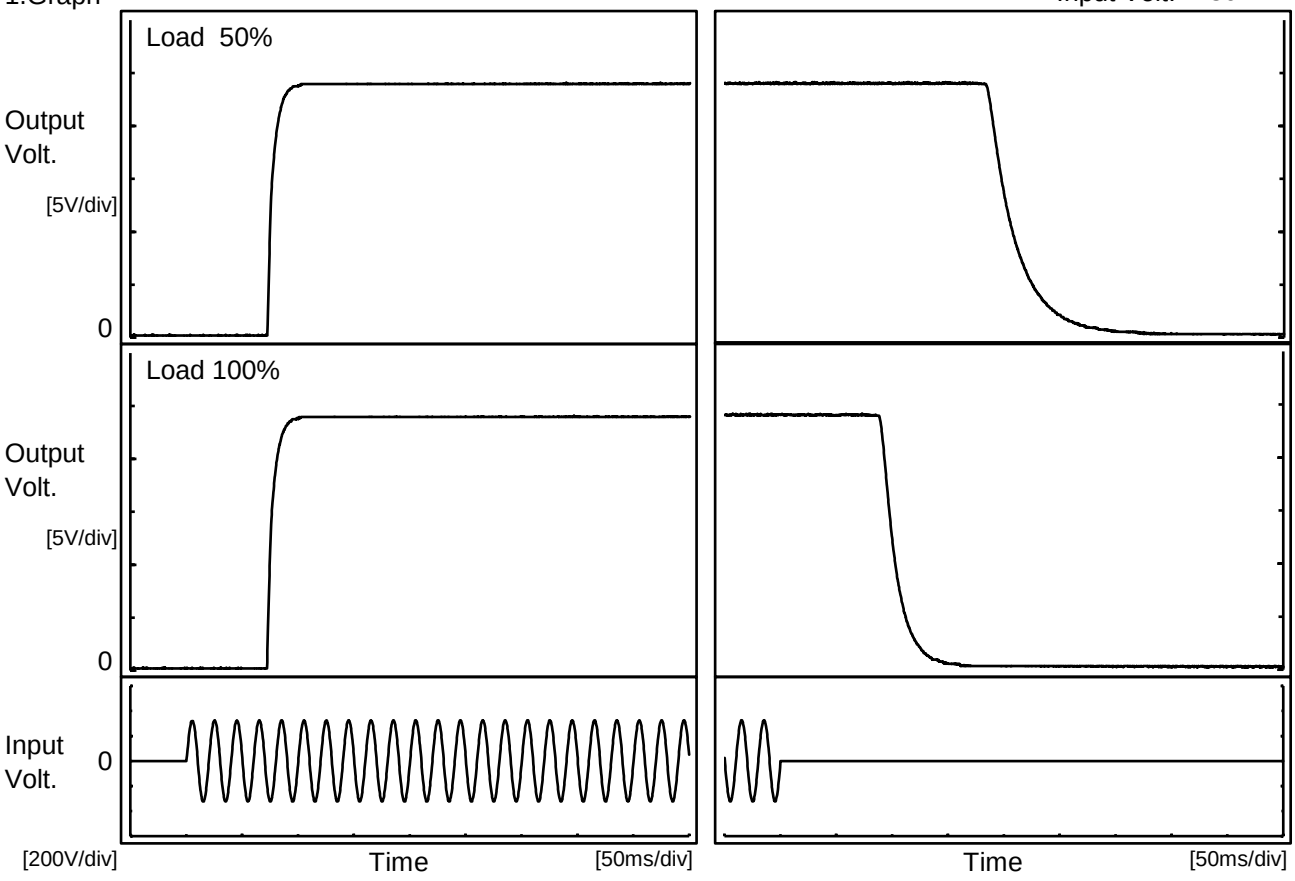


100 mV/div

40 ms/div 40 ms/div

Model	WDA90F-24	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+24V3.8A	

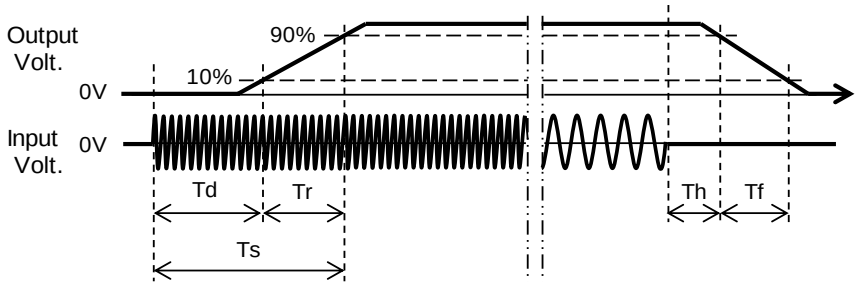
1.Graph



2.Values

[ms]

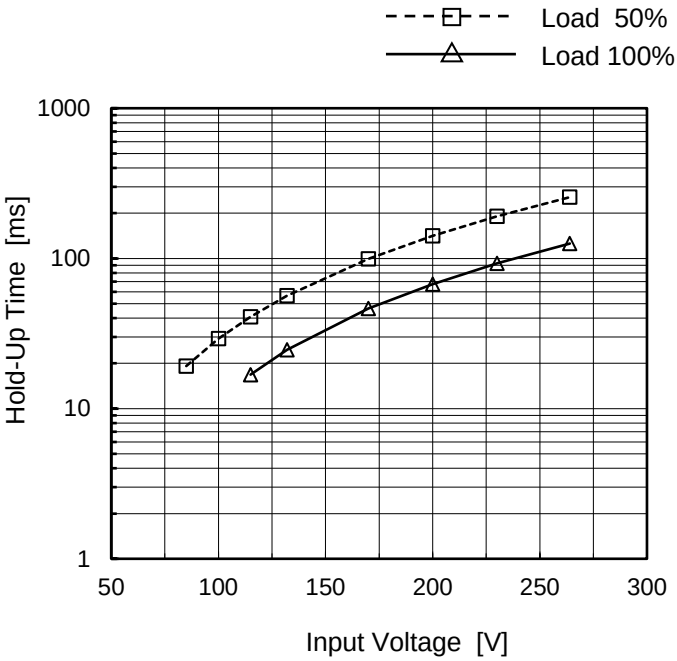
Load \ Time	Td	Tr	Ts	Th	Tf
50 %	73.3	11.8	85.1	187.8	55.0
100 %	72.8	12.0	84.8	91.3	30.0



Model	WDA90F-24
Item	Hold-Up Time
Object	+24V3.8A

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.

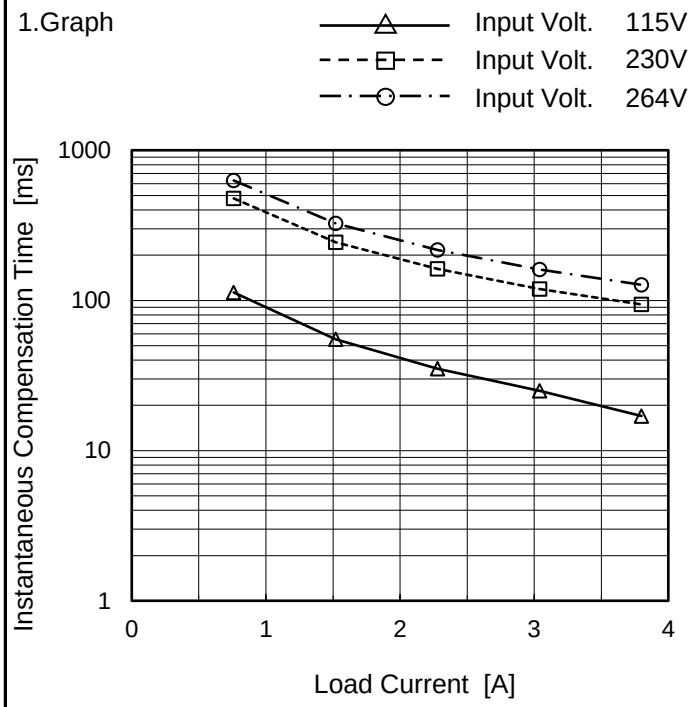
2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	19	-
100	29	-
115	41	17
132	56	25
170	99	46
200	141	68
230	191	93
264	256	126
--	-	-

Model	WDA90F-24
Item	Instantaneous Interruption Compensation
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



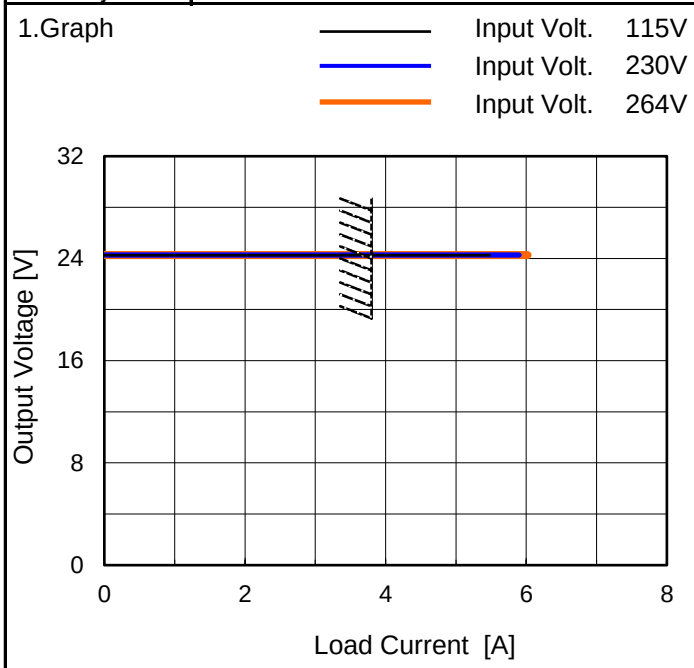
2.Values

Load Current [A]	Time [ms]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	-	-	-
0.76	113	478	629
1.52	55	244	325
2.28	35	162	217
3.04	25	119	161
3.80	17	94	127
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model	WDA90F-24
Item	Overcurrent Protection
Object	+24V3.8A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated load current.

Hiccup mode activates when the output voltage is from 1.0 to 0V.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
24	5.48	5.90	6.02
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model	WDA90F-24	
Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	+24V3.8A	

1.Values

Load 100%

Ambient Temperature[℃]	Output Voltage [V]		
	Input Volt. 115V	Input Volt. 230V	Input Volt. 264V
-20	24.238	24.238	24.239
25	24.271	24.273	24.273
50	24.273	24.275	24.275

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+24V3.8A	

1.Values

Ambient Temperature[℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	42	69
25	42	68
50	42	67

Item	Overvoltage Protection	Testing Circuitry Figure A
Object	+24V3.8A	

1.Values

Load 0%

Ambient Temperature[℃]	Operating Point [V]	
	Input Volt. 115V	Input Volt. 264V
-20	30.58	30.58
25	31.68	31.68
50	30.65	32.27

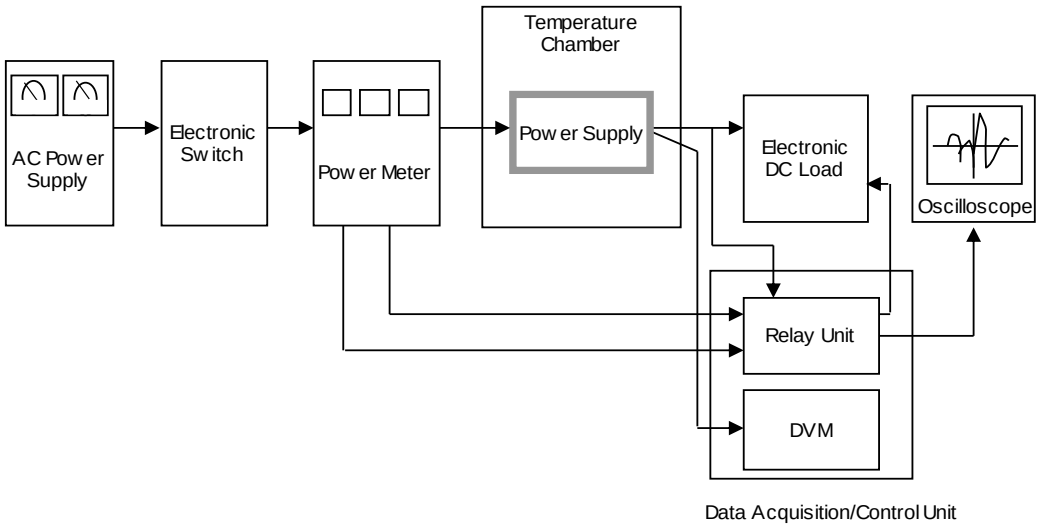
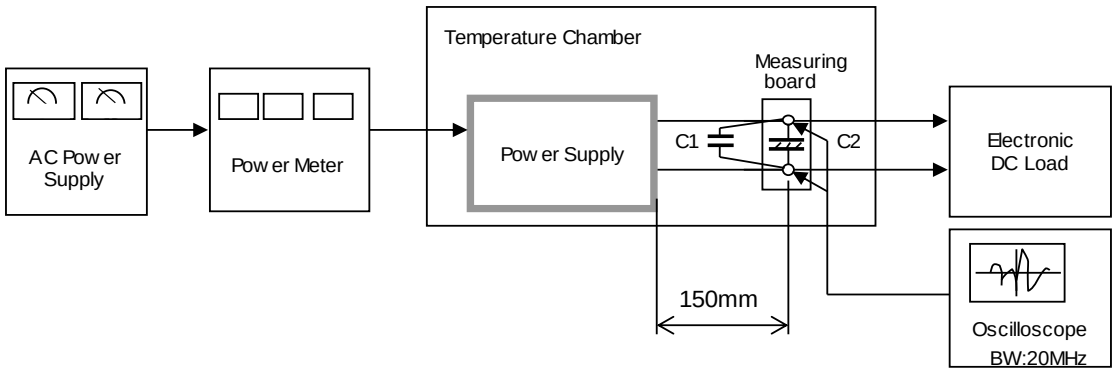


Figure A



C1= 0.1 μF
(Ceramic capacitor)

C2= 47 μF
(Electrolytic capacitor)

Figure B

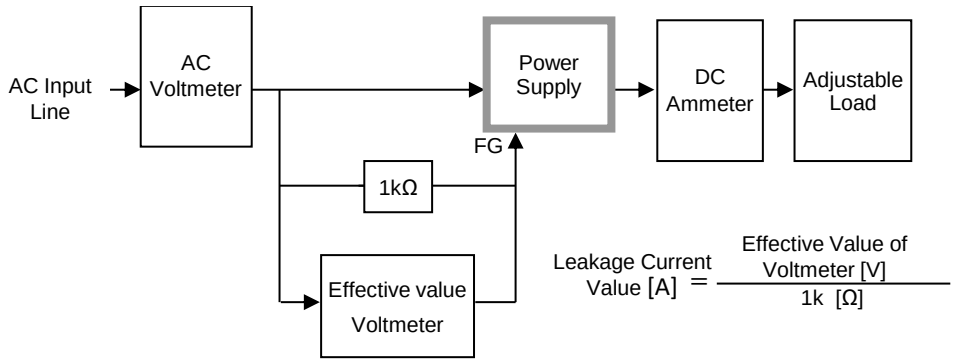


Figure C-1 (DEN-AN)

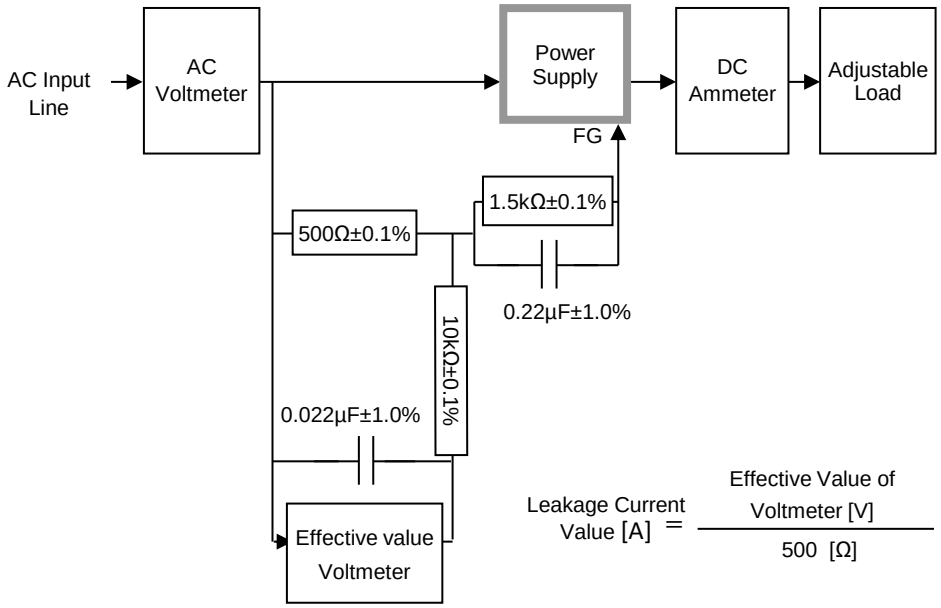


Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

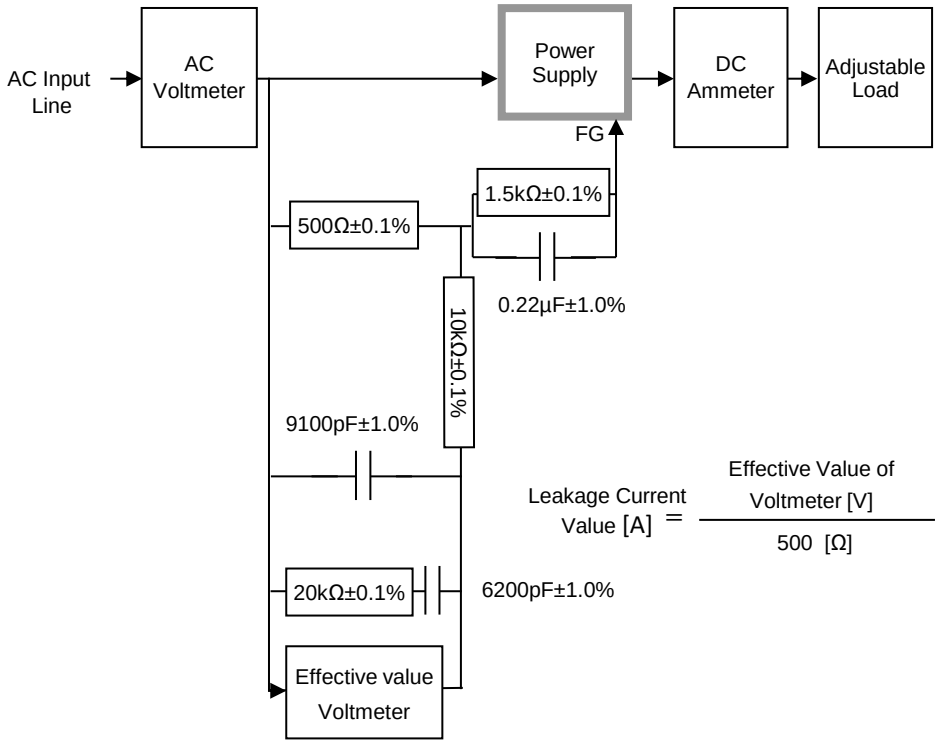


Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)