For Reference

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TEST DATA OF UMA60F-15

Regulated DC Power Supply
January 16, 2023

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Item	Input Current (by Load Current)
Object	+15V3.5A

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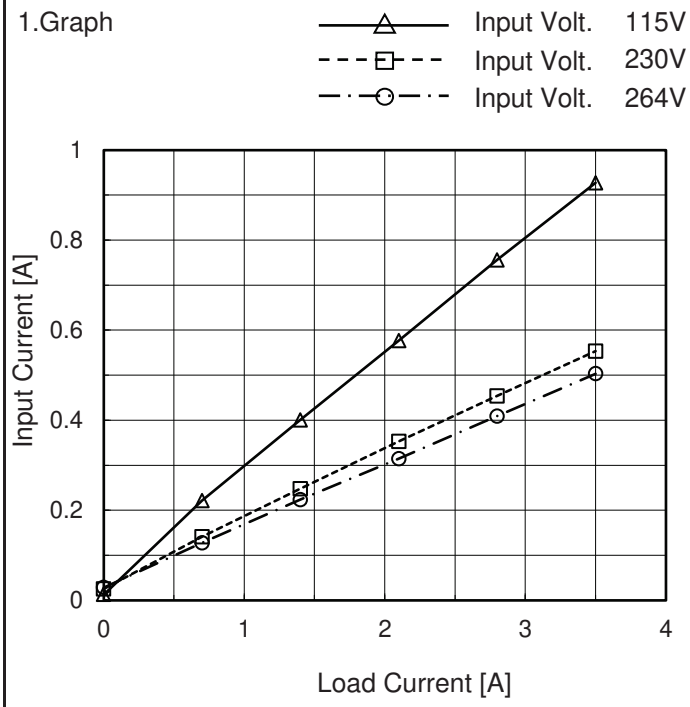
Testing Circuitry Figure A

1.Graph



2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.0	0.013	0.026	0.029
0.7	0.222	0.142	0.128
1.4	0.401	0.248	0.224
2.1	0.577	0.353	0.315
2.8	0.756	0.454	0.409
3.5	0.927	0.553	0.503
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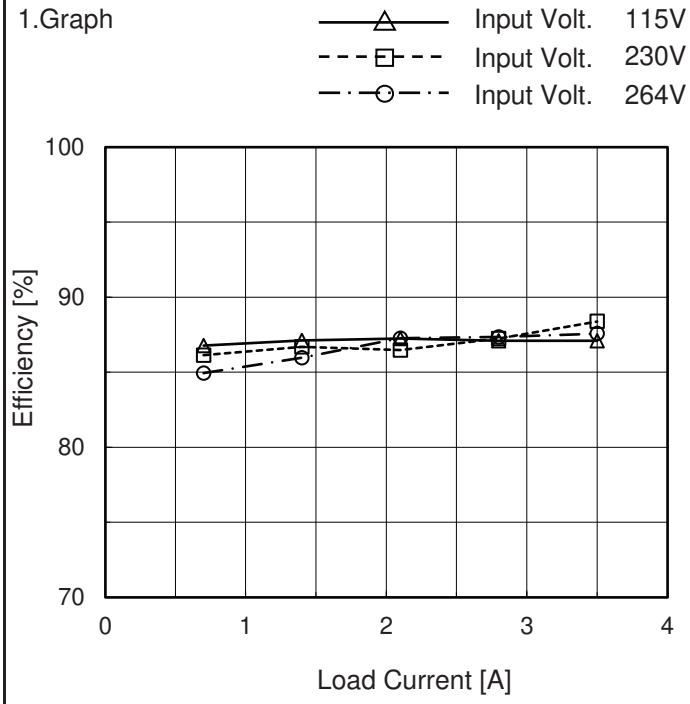
Model	UMA60F-15
Item	Efficiency (by Load Current)
Object	+15V3.5A

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]
0.0	-	-	-
0.7	86.8	86.1	84.9
1.4	87.1	86.7	86.0
2.1	87.2	86.5	87.3
2.8	87.1	87.2	87.3
3.5	87.1	88.4	87.6
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--	-	-	-
--	-	-	-
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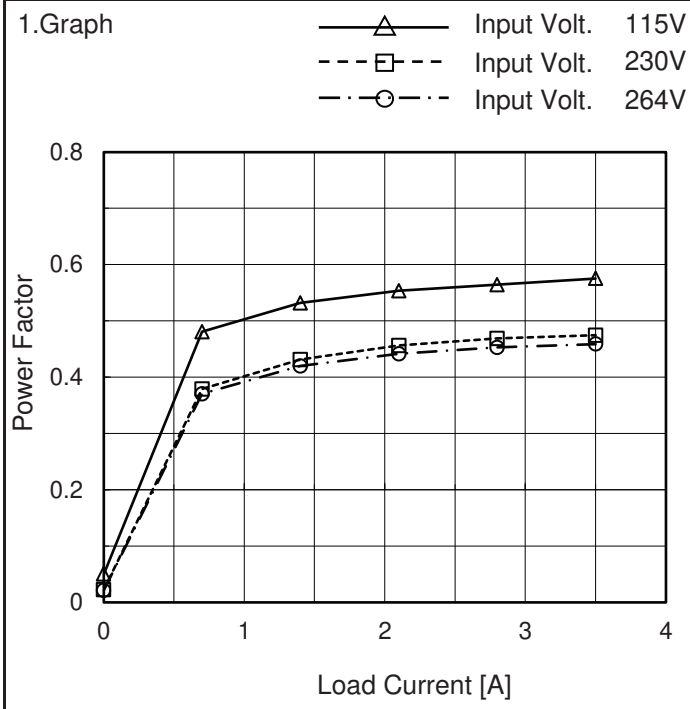
Model	UMA60F-15
Item	Power Factor (by Load Current)
Object	+15V3.5A

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]
0.0	0.050	0.023	0.022
0.7	0.481	0.379	0.370
1.4	0.532	0.432	0.420
2.1	0.554	0.457	0.441
2.8	0.565	0.469	0.453
3.5	0.575	0.475	0.459
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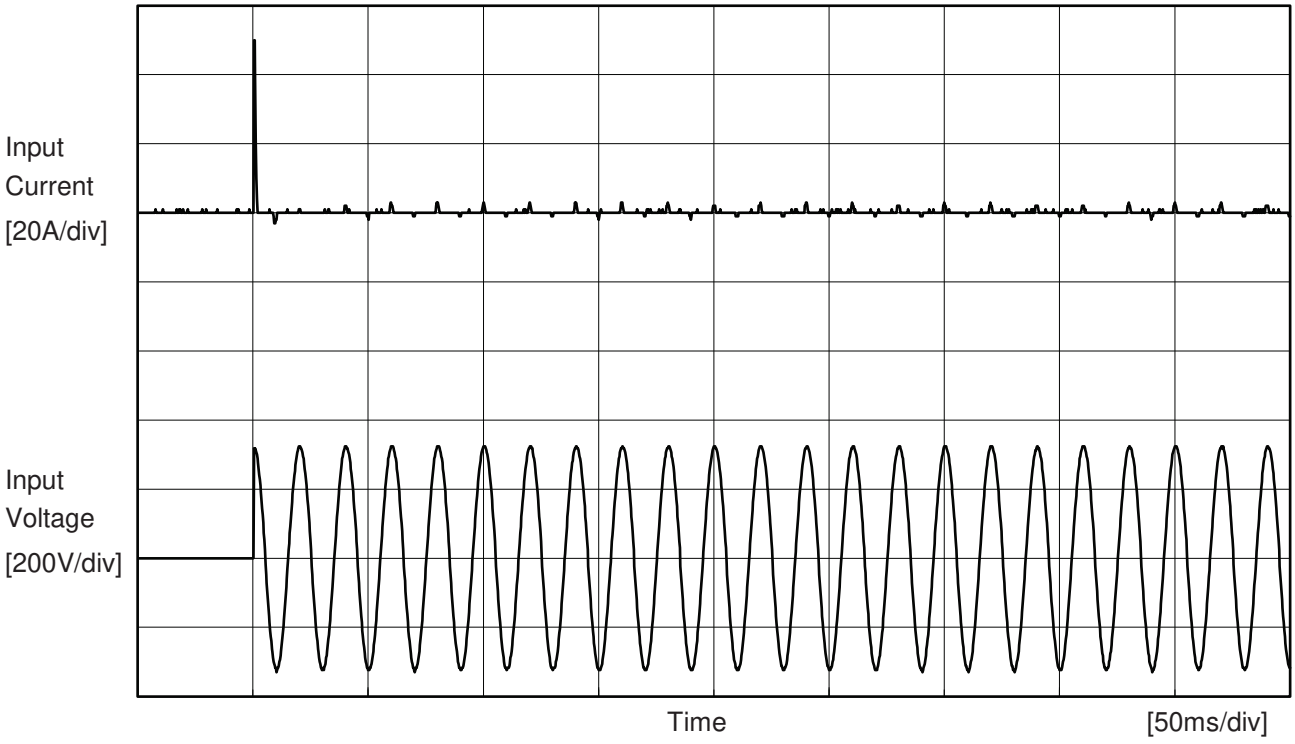
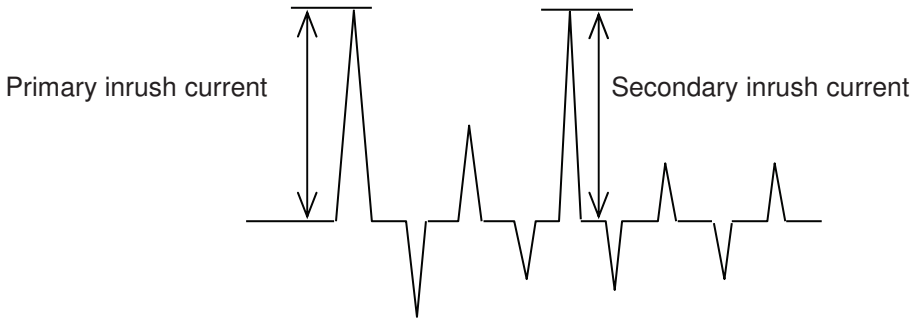
Model	UMA60F-15
Item	Inrush Current
Object	+15V3.5A

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	230 V
Frequency	50 Hz
Load	100 %
Primary inrush current	50.0 A
Secondary inrush current	3.0 A



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Model	UMA60F-15	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure C
Object	+15V3.5A	

1.Results

[mA]

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			115 [V]	230 [V]	264 [V]	
IEC60601-1	Figure C-1	Both phases	0.05	0.11	0.13	Operation
		One of phases	0.10	0.21	0.25	Stand by
IEC62368-1	Figure C-2	Both phases	0.05	0.11	0.13	Operation
		One of phases	0.10	0.21	0.25	Stand by
	Figure C-3	Both phases	0.05	0.11	0.13	Operation
		One of phases	0.10	0.21	0.25	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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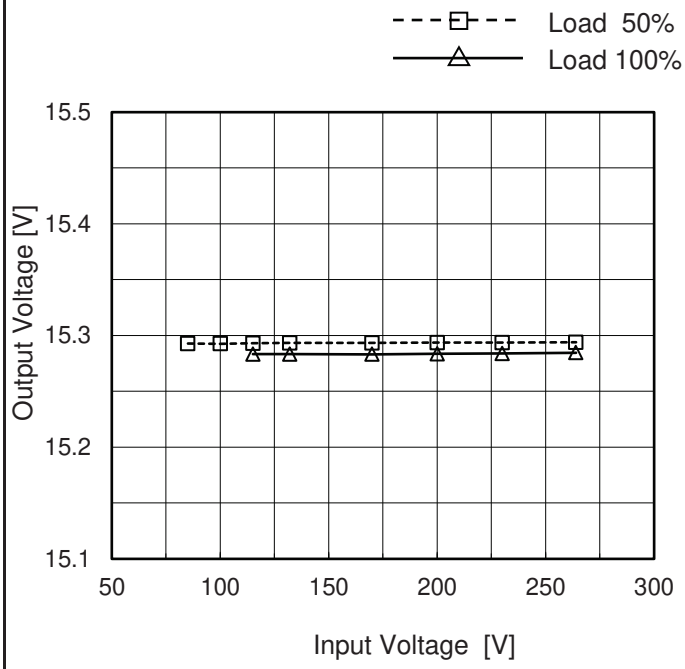
Model	UMA60F-15
Item	Line Regulation
Object	+15V3.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	15.293	-
100	15.293	-
115	15.293	15.283
132	15.293	15.283
170	15.293	15.283
200	15.294	15.284
230	15.294	15.284
264	15.294	15.285
--	-	-

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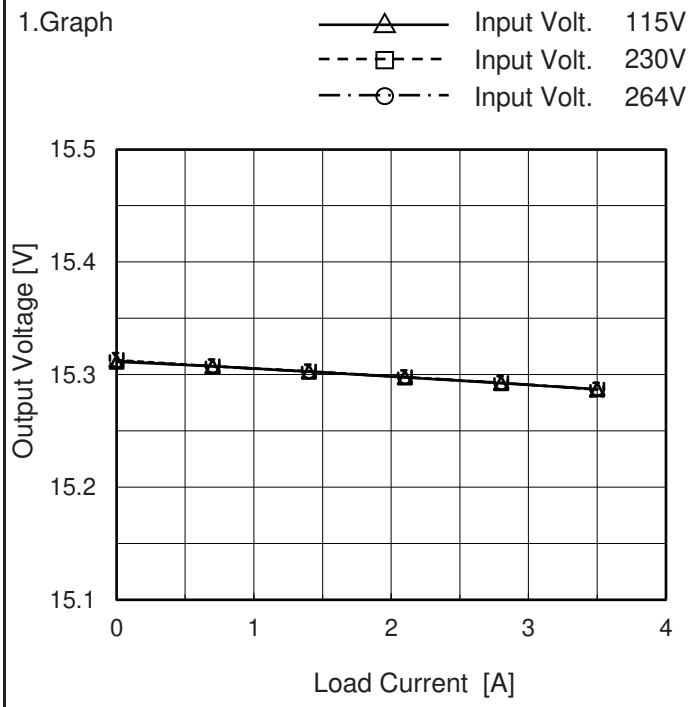
Model	UMA60F-15
Item	Load Regulation
Object	+15V3.5A

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]
0.0	15.311	15.313	15.312
0.7	15.307	15.308	15.307
1.4	15.303	15.303	15.303
2.1	15.298	15.298	15.298
2.8	15.292	15.293	15.293
3.5	15.287	15.287	15.287
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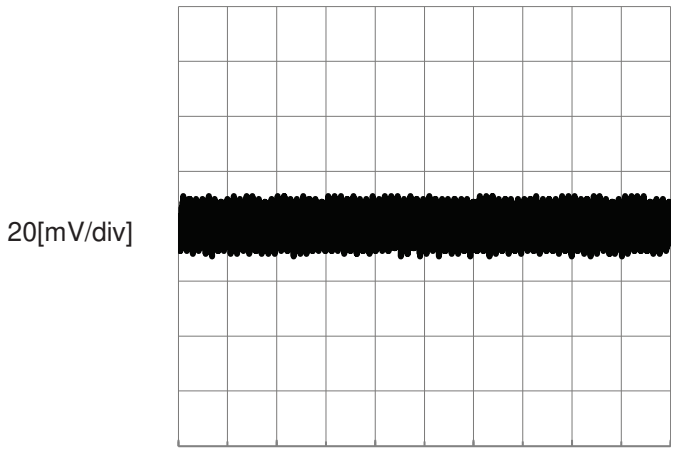
Item	Ripple-Noise
Object	+15V3.5A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 230V
Load 100%



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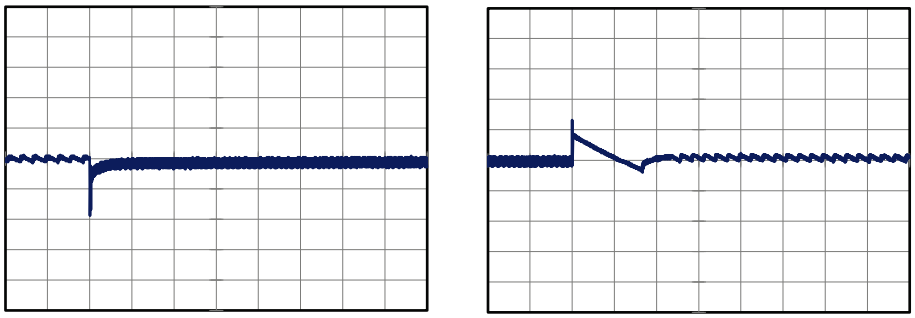
Model	UMA60F-15
Item	Dynamic Load Response
Object	+15V3.5A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 230 V
Cycle 1000 ms

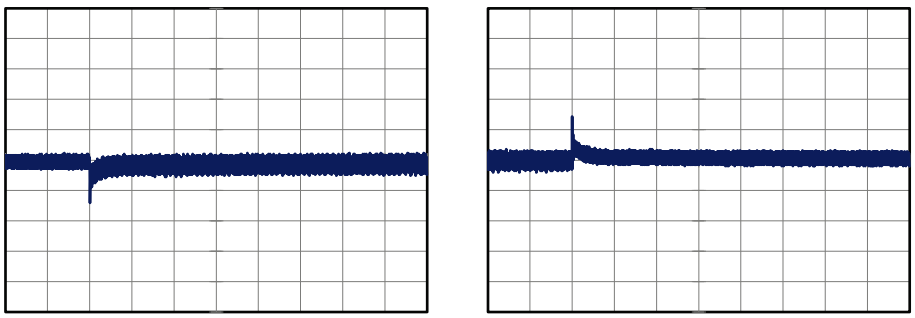
Min.Load (0A)←→
Load 100% (3.5A)



200 mV/div

10 ms/div 10 ms/div

Load 50% (1.75A)←→
Load 100% (3.5A)



100 mV/div

10 ms/div 10 ms/div

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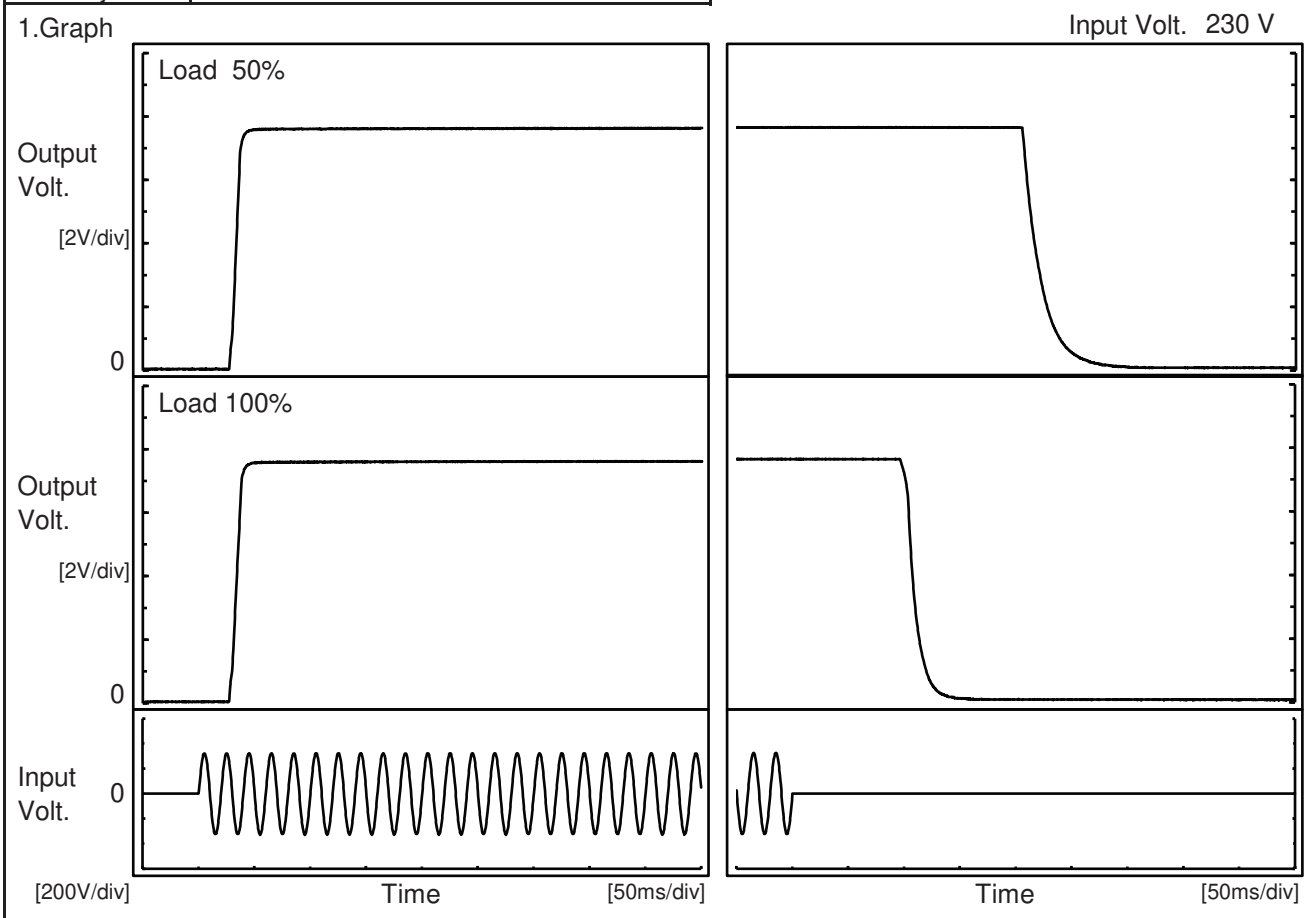
Model	UMA60F-15
Item	Rise and Fall Time
Object	+15V3.5A

Temperature 25°C
Testing Circuitry Figure A

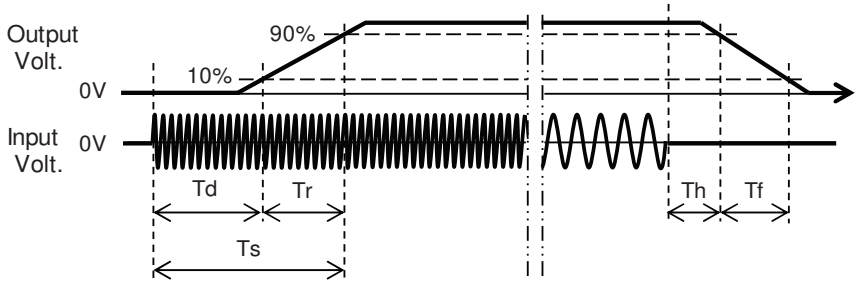
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	29.3	8.0	37.3	207.8	35.8
100 %	29.3	9.0	38.3	102.3	19.5



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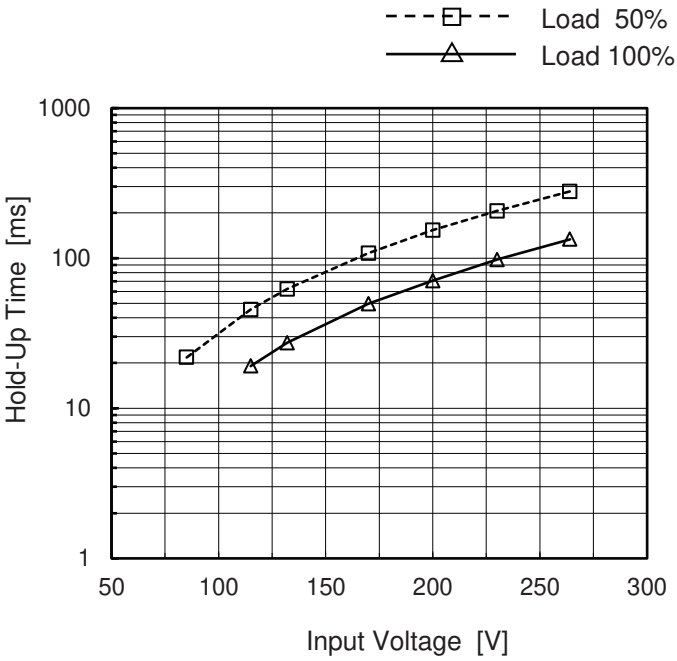
Model	UMA60F-15
Item	Hold-Up Time
Object	+15V3.5A

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	22	-
100	33	-
115	46	19
132	62	27
170	108	50
200	154	71
230	207	98
264	279	134
--	-	-

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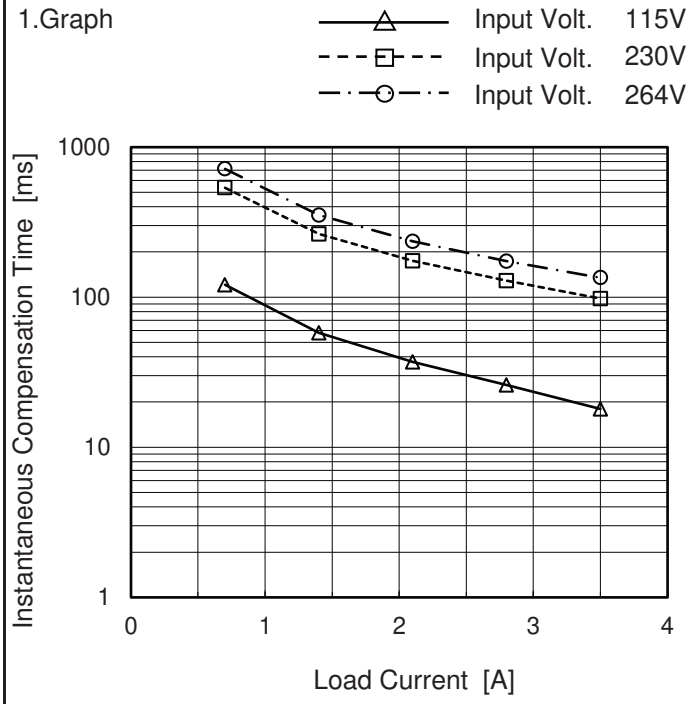
Model	UMA60F-15
Item	Instantaneous Interruption Compensation
Object	+15V3.5A

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]
0.0	-	-	-
0.7	121	536	717
1.4	58	264	353
2.1	37	175	235
2.8	26	129	174
3.5	18	98	135
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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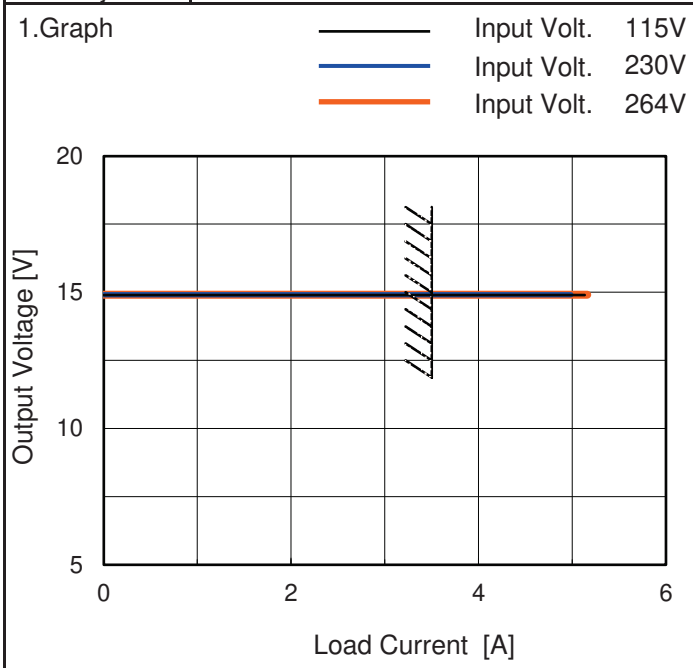
Model	UMA60F-15
Item	Overcurrent Protection
Object	+15V3.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Overcurrent protection is Hiccup mode.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
15	5.13	4.99	5.16
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	UMA60F-15
Item	Ambient Temperature Drift
Object	+15V3.5A

Testing Circuitry Figure A

1.Values

Load 100%

Ambient Temperature[℃]	Output Voltage [V]		
	Input Volt. 115V	Input Volt. 230V	Input Volt. 264V
-20	15.221	15.224	15.226
25	15.281	15.281	15.282
40	15.293	15.293	15.293

Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V3.5A

Testing Circuitry Figure A

1.Values

Ambient Temperature[℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	35	56
25	35	57
40	34	56

Item	Overvoltage Protection
Object	+15V3.5A

Testing Circuitry Figure A

1.Values

Load 0%

Ambient Temperature[℃]	Operating Point [V]	
	Input Volt. 115V	Input Volt. 264V
-20	18.79	18.75
25	19.42	19.42
40	19.56	19.69

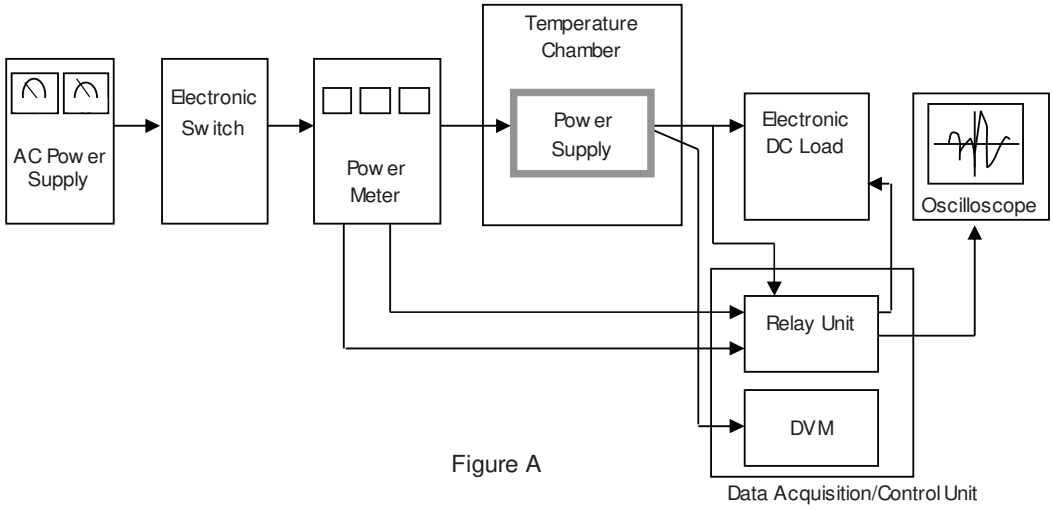
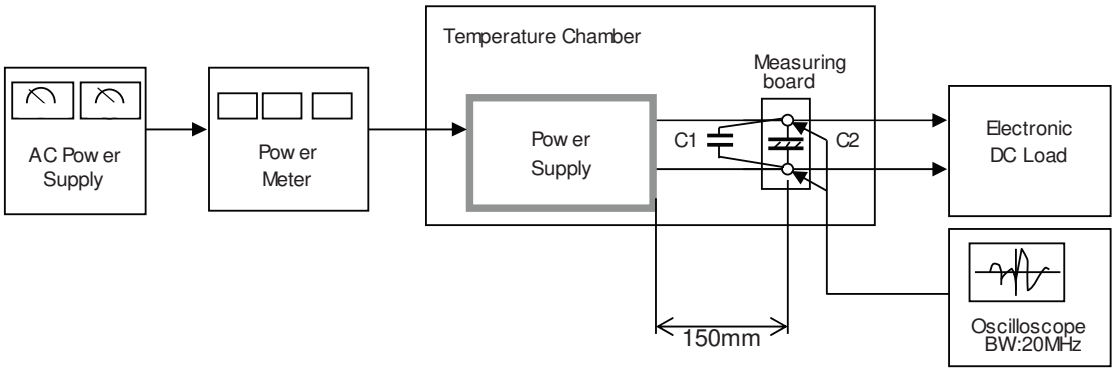


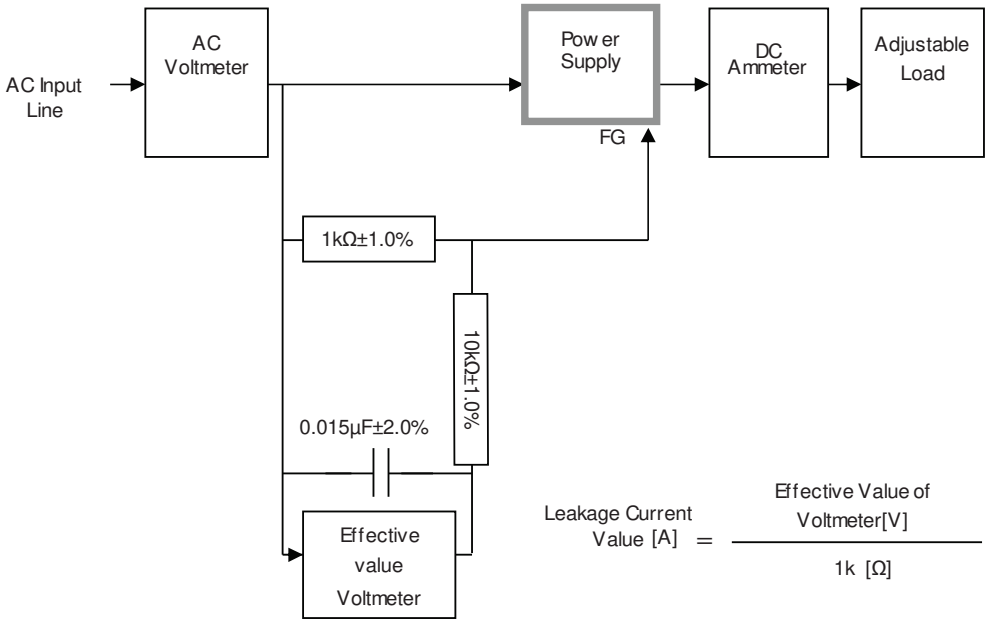
Figure A



(Ceramic capacitor)
C1= 0.1 μF

(Electrolytic capacitor)
C2= 47 μF

Figure B



$$\text{Leakage Current Value [A]} = \frac{\text{Effective Value of Voltmeter[V]}}{\text{1k [Ω]}}$$

Figure C-1 (IEC60601-1)

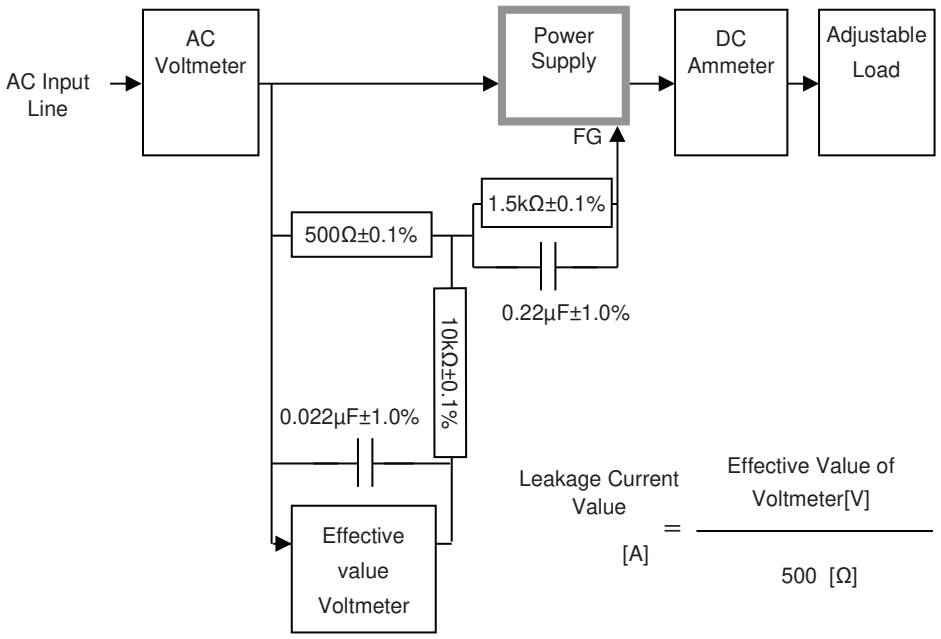


Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

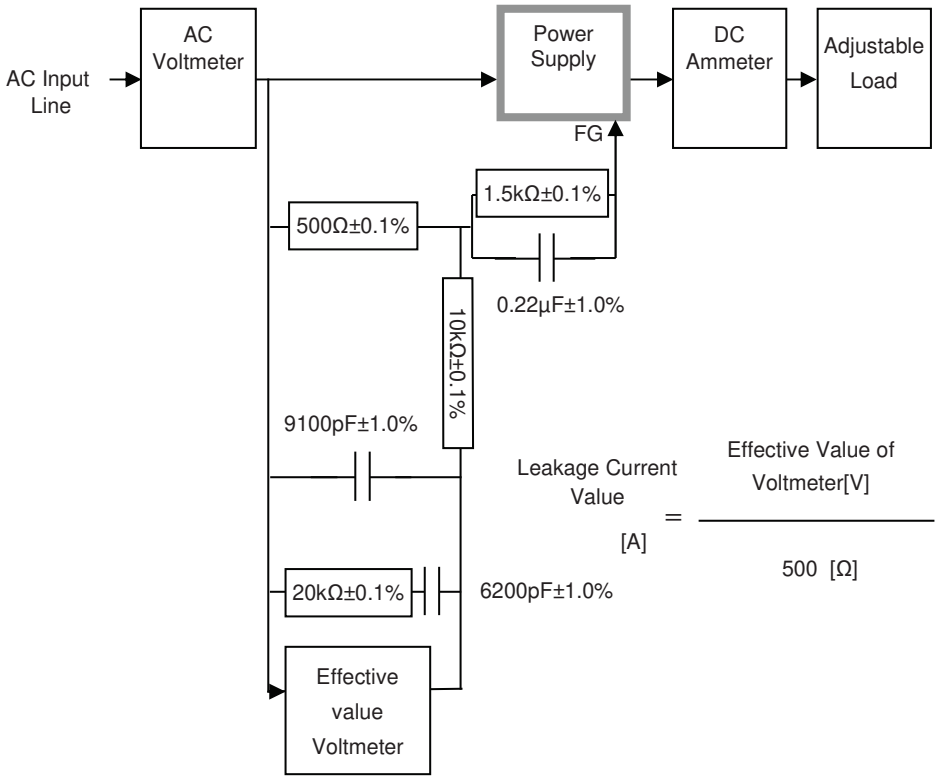


Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)