For Reference

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TEST DATA OF UMA60F-5

Regulated DC Power Supply
January 16, 2023

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Item	Input Current (by Load Current)
Object	+5V6A

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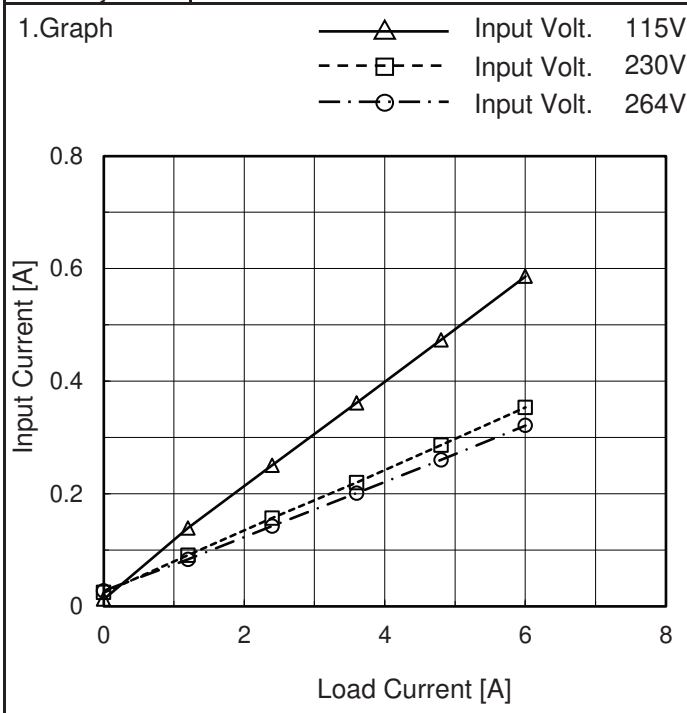
Testing Circuitry Figure A

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	0.025	0.028
1.2	0.139	0.091	0.084
2.4	0.251	0.157	0.142
3.6	0.361	0.220	0.201
4.8	0.474	0.287	0.260
6.0	0.587	0.354	0.321
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--	-	-	-
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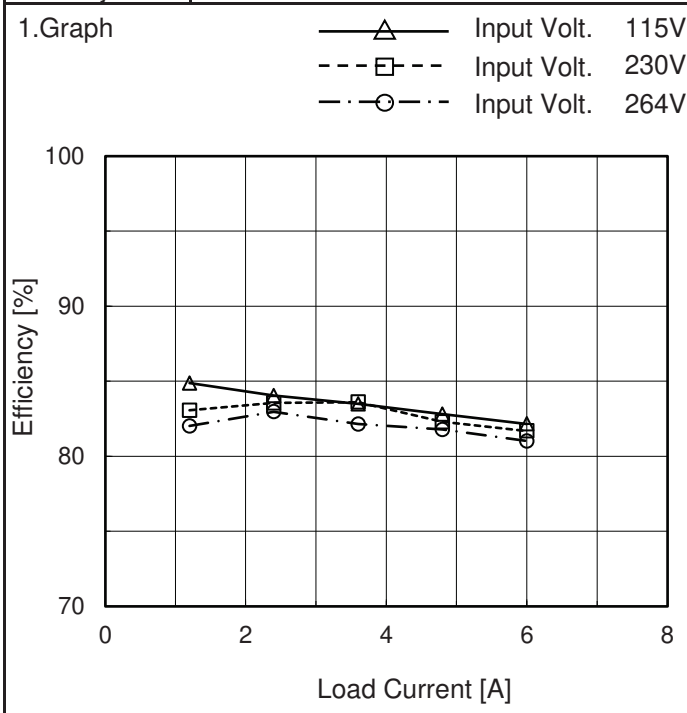
Model	UMA60F-5
Item	Efficiency (by Load Current)
Object	+5V6A

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	-	-	-
1.2	84.9	83.1	82.0
2.4	84.0	83.6	83.0
3.6	83.5	83.6	82.1
4.8	82.8	82.3	81.8
6.0	82.2	81.7	81.0
--	-	-	-
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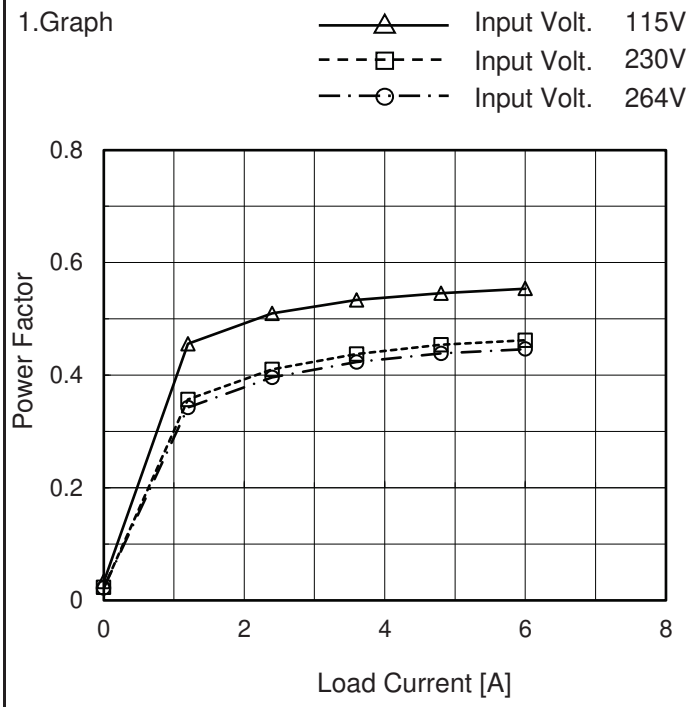
Model	UMA60F-5
Item	Power Factor (by Load Current)
Object	+5V6A

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	0.033	0.023	0.022
1.2	0.456	0.357	0.343
2.4	0.510	0.410	0.396
3.6	0.533	0.438	0.424
4.8	0.546	0.454	0.438
6.0	0.554	0.462	0.447
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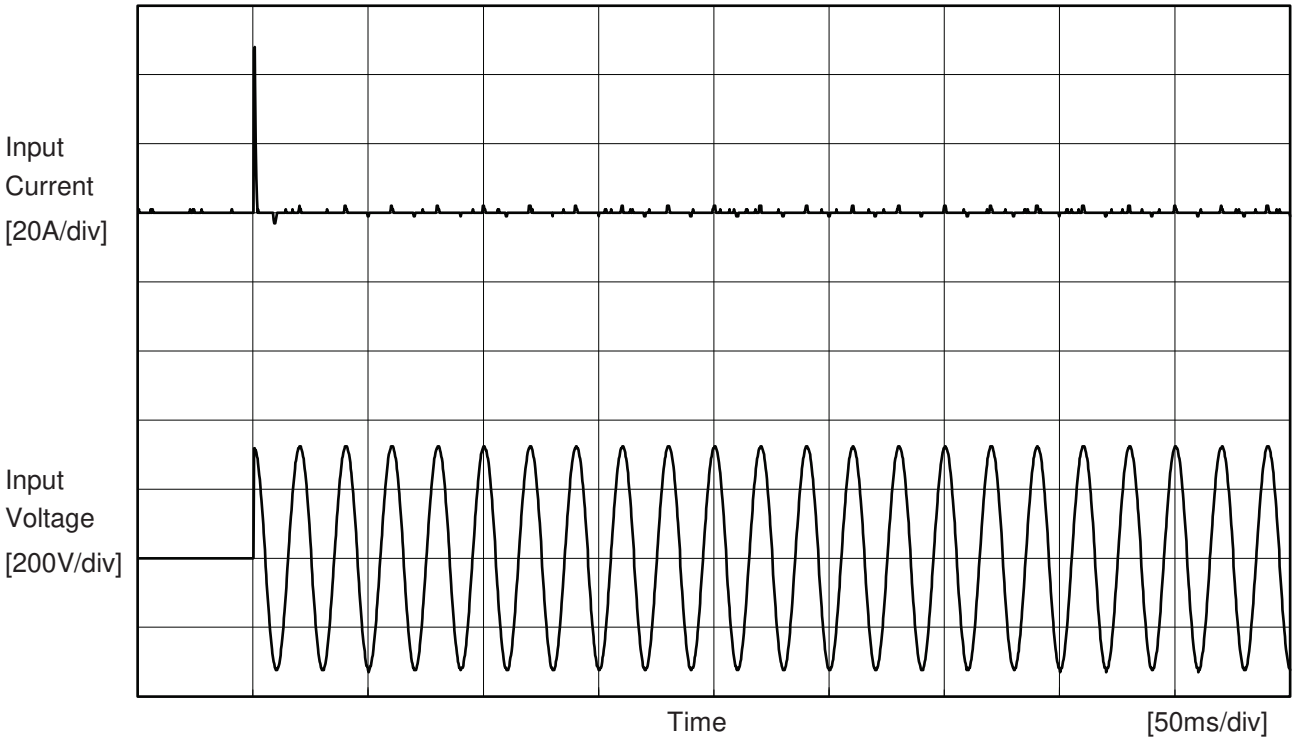
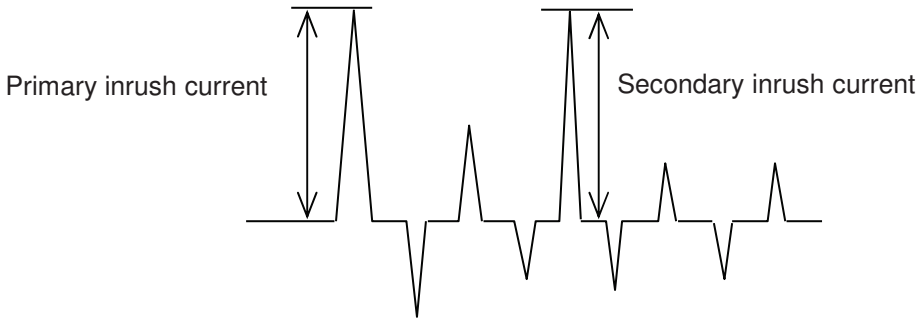
Model	UMA60F-5
Item	Inrush Current
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	230 V
Frequency	50 Hz
Load	100 %
Primary inrush current	48.0 A
Secondary inrush current	2.0 A



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Model	UMA60F-5	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure C
Object	+5V6A	

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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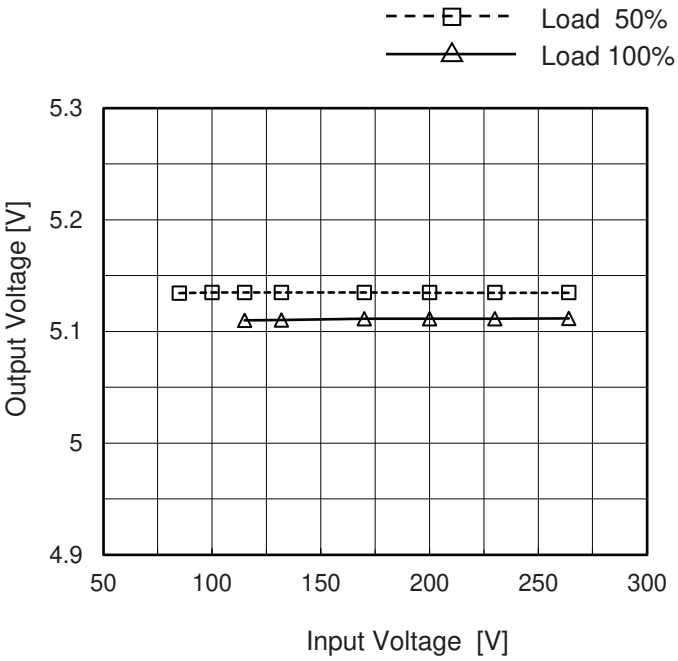
Model	UMA60F-5
Item	Line Regulation
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	5.134	-
100	5.135	-
115	5.135	5.110
132	5.135	5.110
170	5.135	5.111
200	5.135	5.111
230	5.135	5.111
264	5.135	5.112
--	-	-

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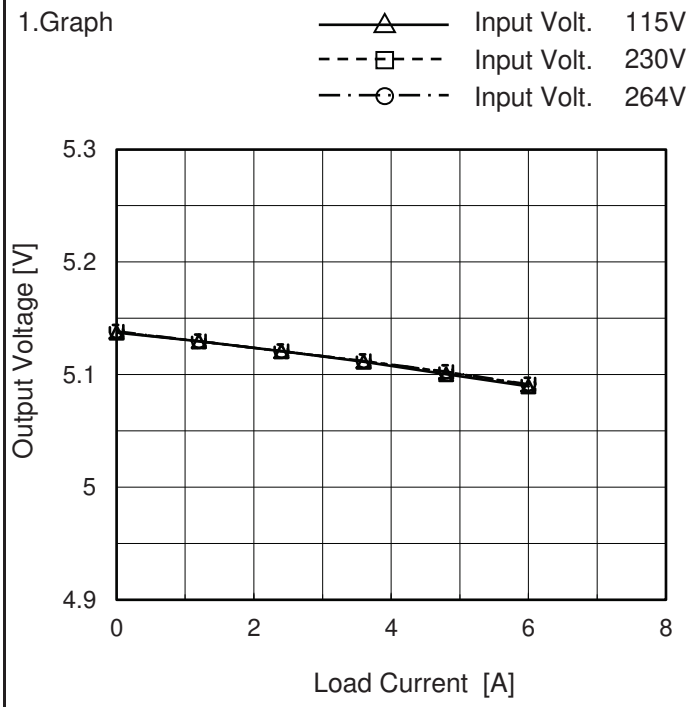
Model	UMA60F-5
Item	Load Regulation
Object	+5V6A

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	5.137	5.138	5.138
1.2	5.130	5.130	5.130
2.4	5.121	5.121	5.121
3.6	5.112	5.112	5.112
4.8	5.100	5.102	5.103
6.0	5.090	5.091	5.091
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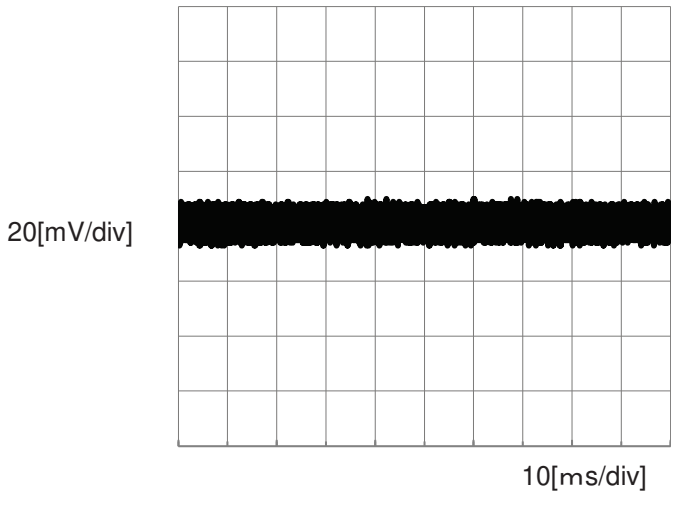
Item	Ripple-Noise
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 230V
Load 100%



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Model	UMA60F-5
Item	Dynamic Load Response
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure A

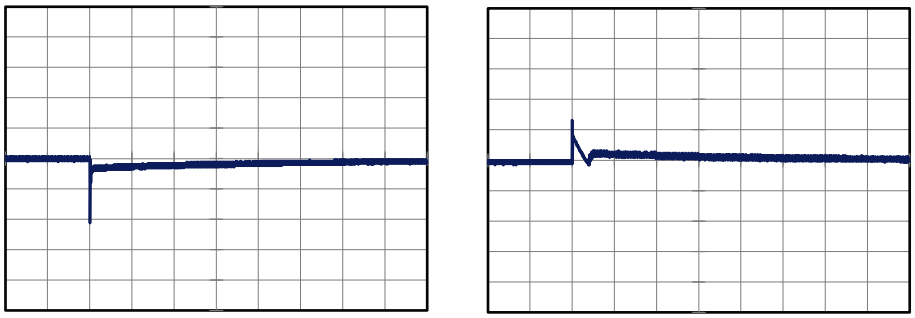
Input Volt. 230 V
Cycle 1000 ms

t1,t2 = 50 μ s

Load Current

t1 t2

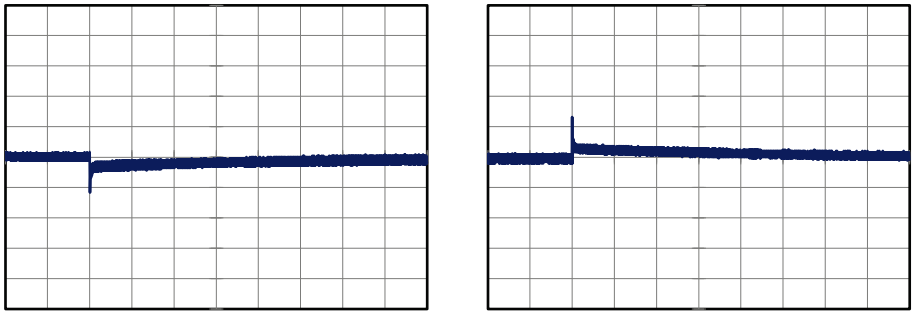
Min.Load (0A)←→
Load 100% (6A)



200 mV/div

40 ms/div 40 ms/div

Load 50% (3A)←→
Load 100% (6A)



100 mV/div

40 ms/div 40 ms/div

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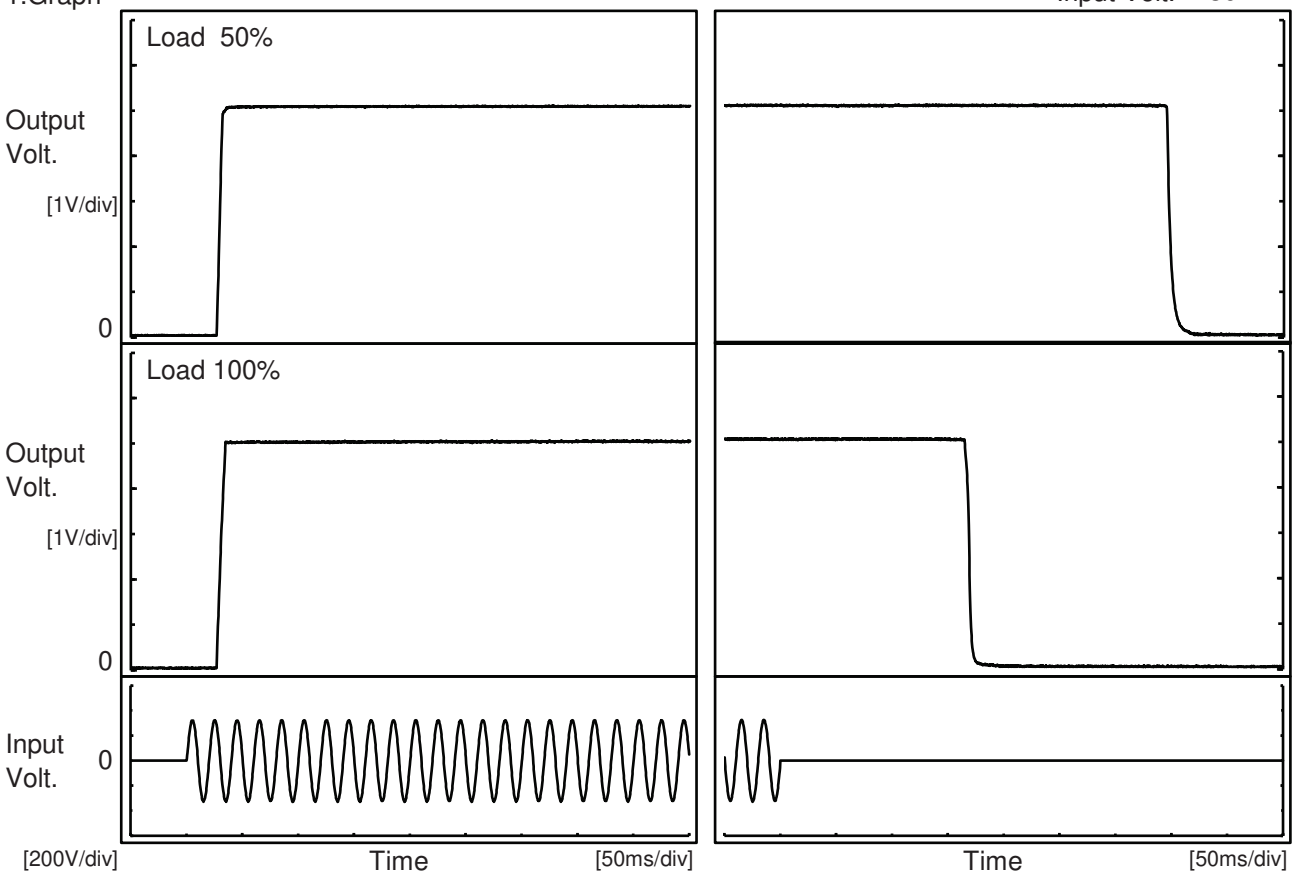
Model	UMA60F-5
Item	Rise and Fall Time
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure A

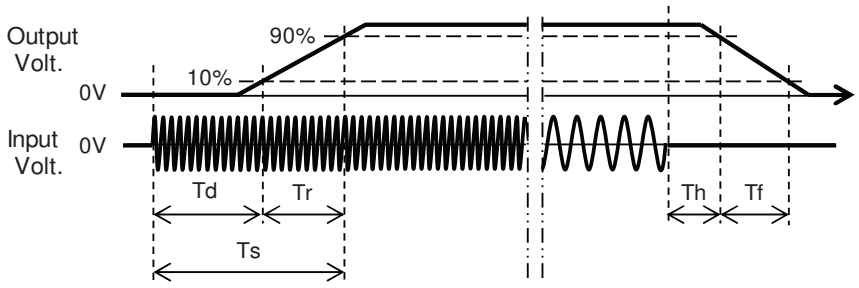
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	27.8	4.3	32.1	346.0	7.8
100 %	27.8	6.5	34.3	166.5	5.3



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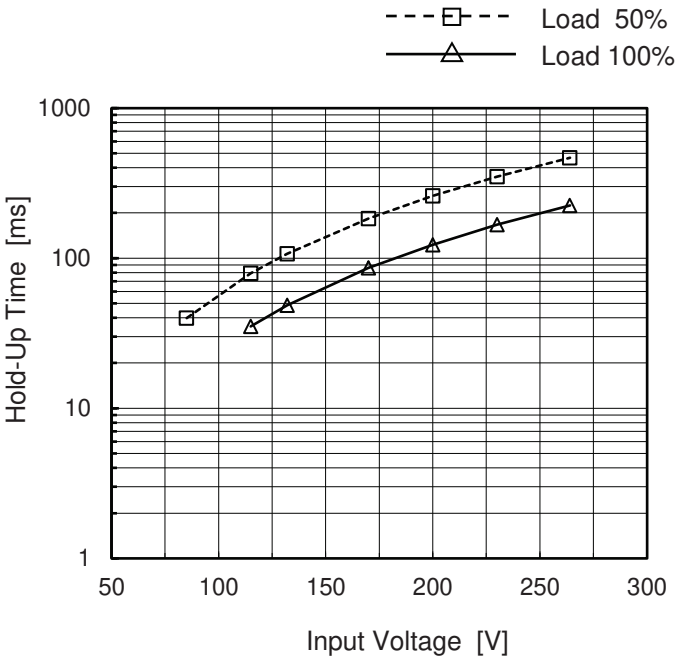
Model	UMA60F-5
Item	Hold-Up Time
Object	+5V6A

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	40	-
100	58	-
115	79	35
132	107	48
170	184	86
200	260	123
230	349	167
264	467	225
--	-	-

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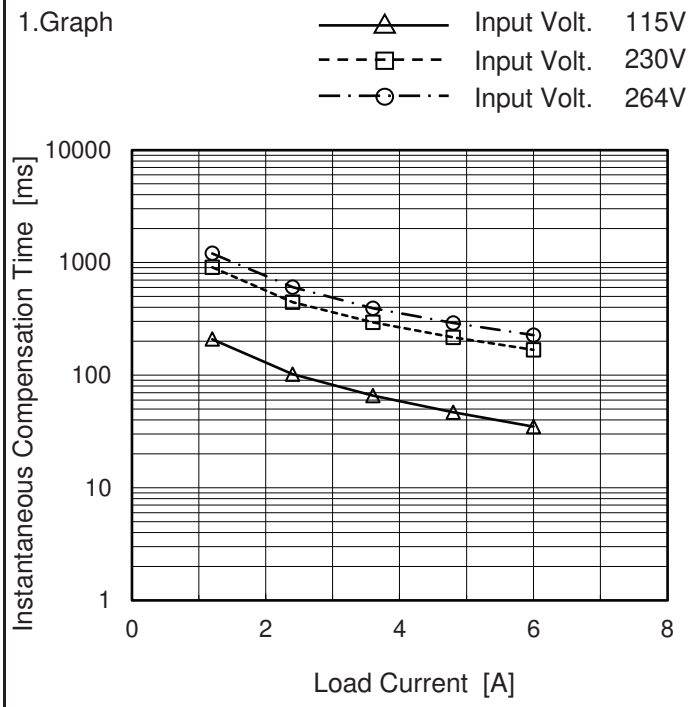
Model	UMA60F-5
Item	Instantaneous Interruption Compensation
Object	+5V6A

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	-	-	-
1.2	209	908	1210
2.4	102	446	605
3.6	66	294	393
4.8	47	217	291
6.0	35	168	227
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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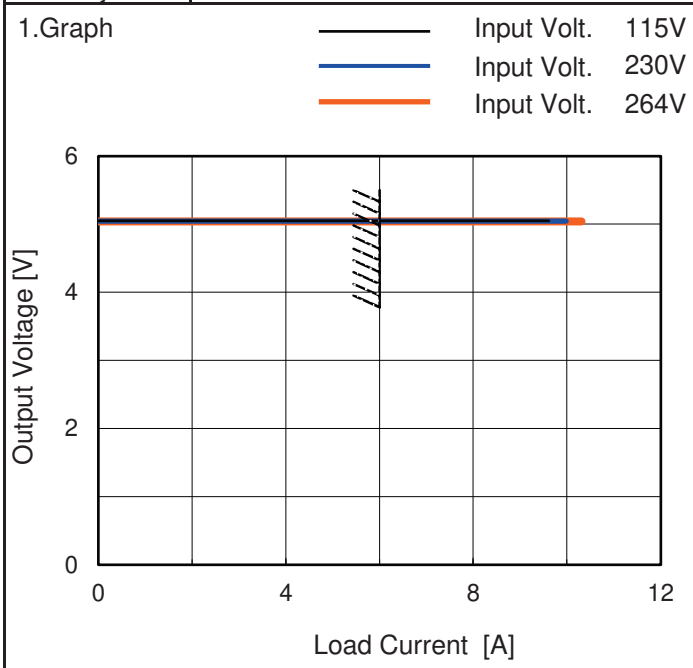
Model	UMA60F-5
Item	Overcurrent Protection
Object	+5V6A

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]
5	9.61	9.98	10.31
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	UMA60F-5	
Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	+5V6A	

1.Values

Load 100%

Ambient Temperature[℃]	Output Voltage [V]		
	Input Volt. 115V	Input Volt. 230V	Input Volt. 264V
-20	5.098	5.100	5.101
25	5.110	5.112	5.112
40	5.111	5.113	5.113

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+5V6A	

1.Values

Ambient Temperature[℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	30	46
25	29	45
40	28	45

Item	Overvoltage Protection	Testing Circuitry Figure A
Object	+5V6A	

1.Values

Load 0%

Ambient Temperature[℃]	Operating Point [V]	
	Input Volt. 115V	Input Volt. 264V
-20	6.62	6.62
25	6.62	6.61
40	6.62	6.61

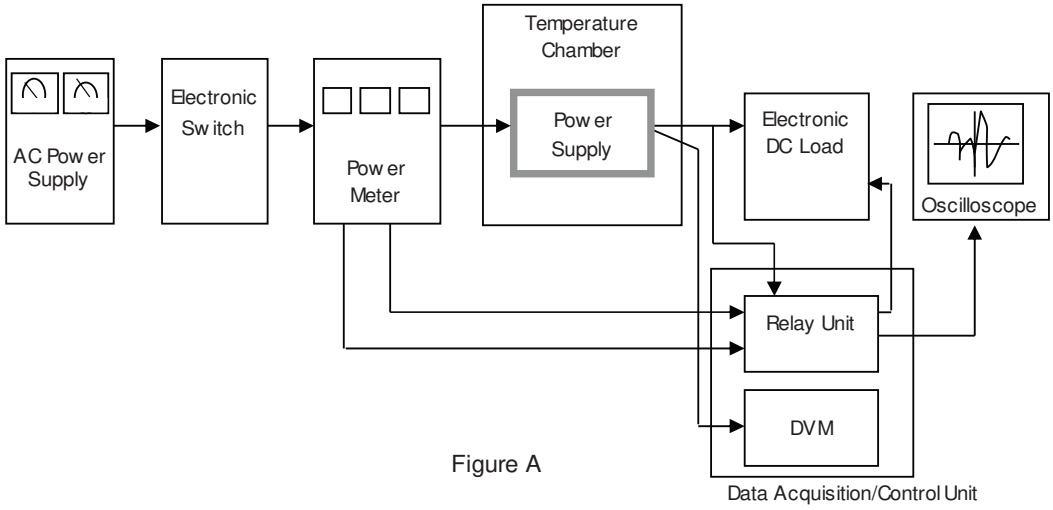
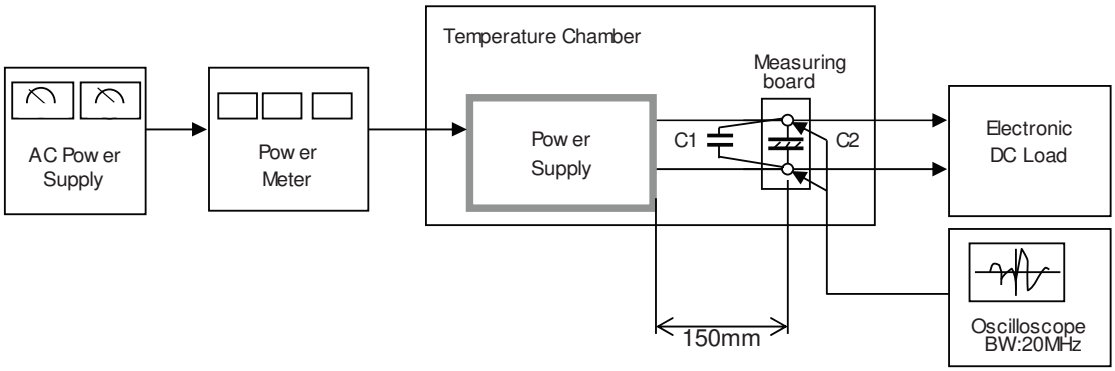


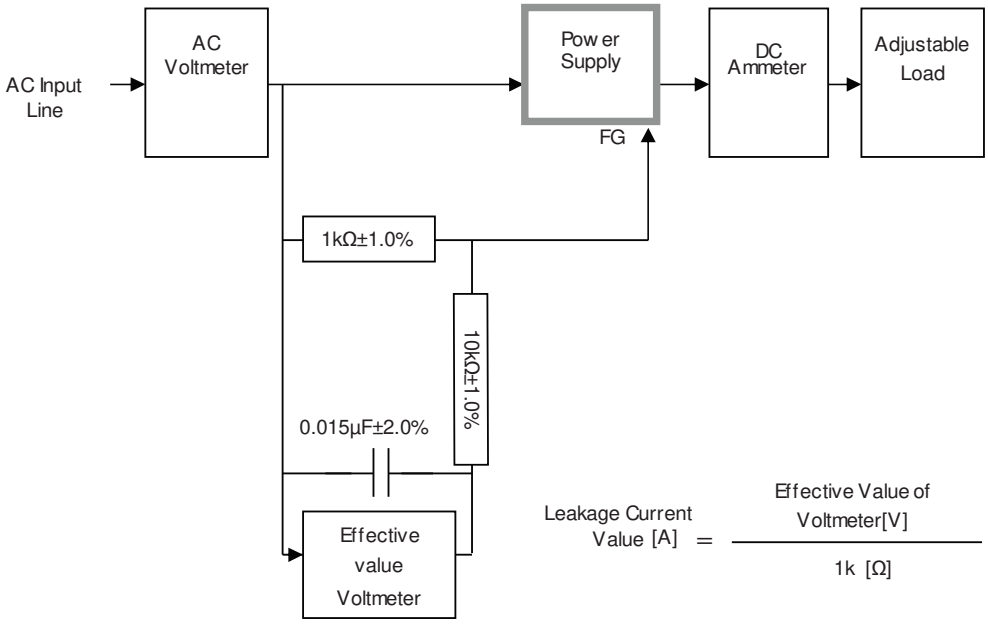
Figure A



(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)

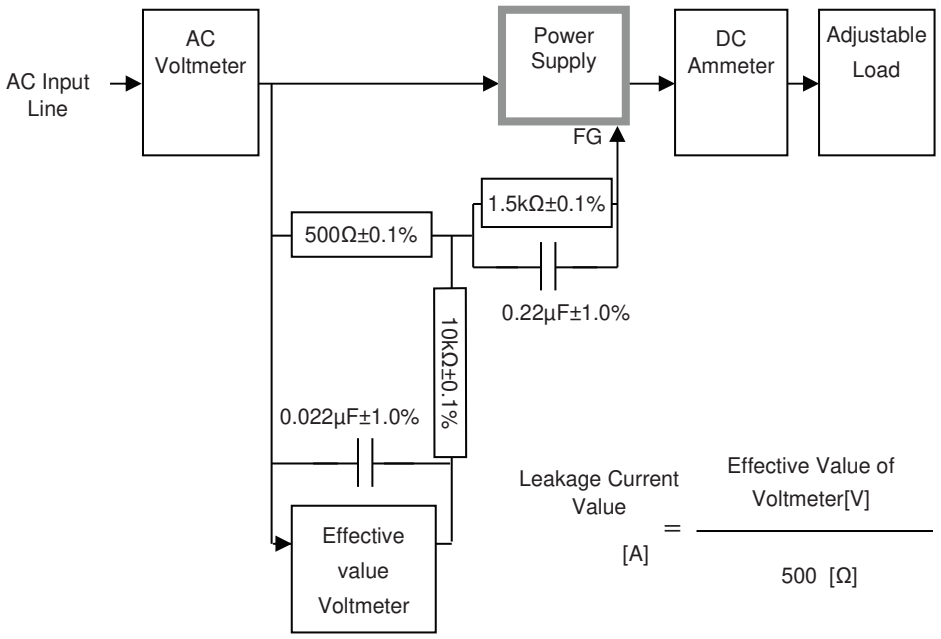


Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

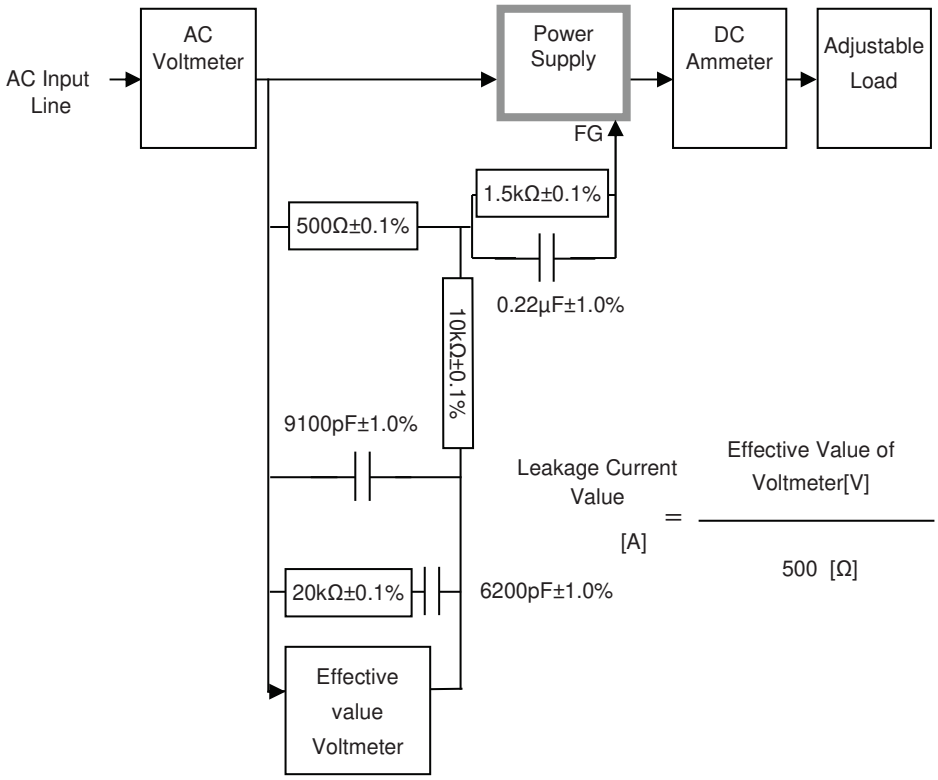


Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)