



TEST DATA OF UMA60F-36

Regulated DC Power Supply
September 4, 2023

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Design Manager

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Design Engineer

COSEL CO.,LTD.



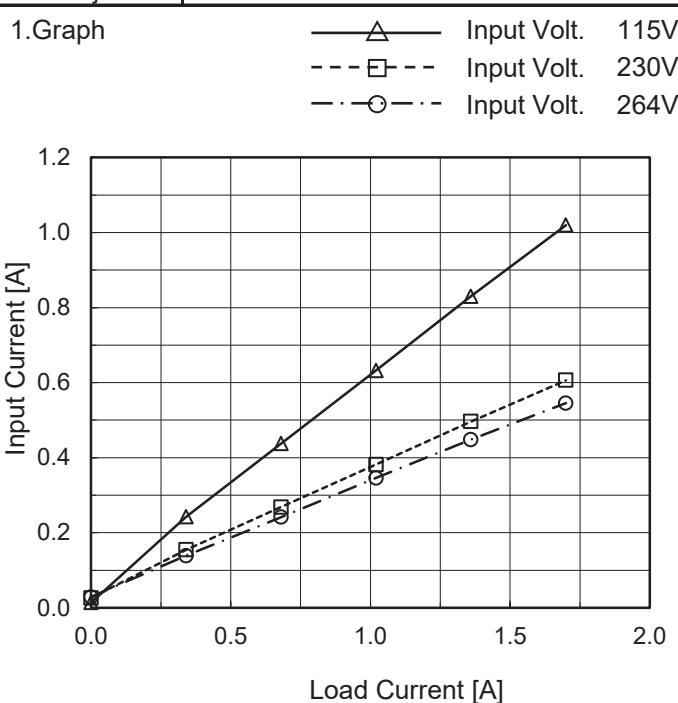
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Model	UMA60F-36
Item	Input Current (by Load Current)
Object	+36V1.7A


 Temperature 25°C
 Testing Circuitry Figure A

2.Values

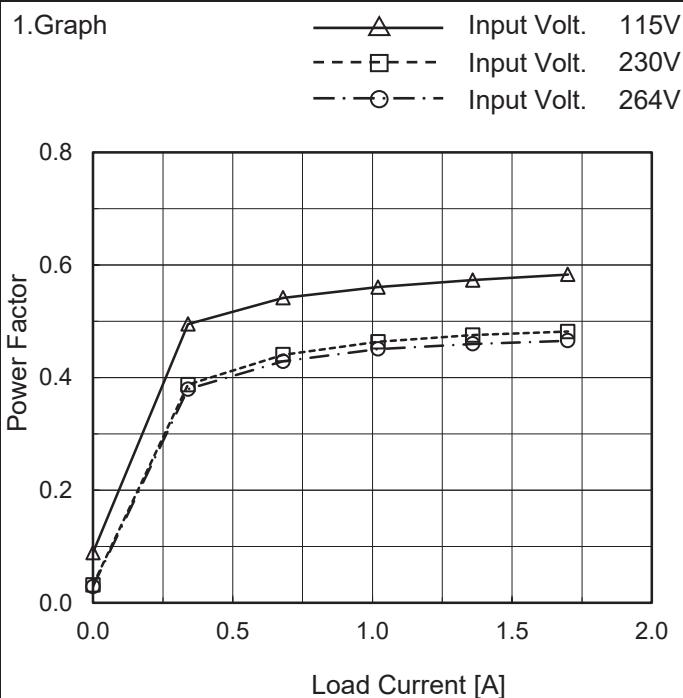
Load Current [A]	Input Current [A]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	0.014	0.026	0.029
0.34	0.242	0.155	0.139
0.68	0.438	0.268	0.241
1.02	0.633	0.382	0.346
1.36	0.830	0.496	0.448
1.70	1.020	0.606	0.545
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Model	UMA60F-36	Temperature	25°C																																																																											
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1.Graph		2.Values																																																																												
<p>Graph showing Efficiency [%] vs Load Current [A]. The Y-axis ranges from 70 to 100. The X-axis ranges from 0.0 to 2.0. Three curves are plotted for Input Voltages: 115V (solid line with open triangles), 230V (dashed line with open squares), and 264V (dash-dot line with open circles). All curves show efficiency slightly increasing with load current.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>115[V]</th> <th>230[V]</th> <th>264[V]</th> </tr> </thead> <tbody> <tr><td>0.34</td><td>89.2</td><td>88.9</td><td>88.4</td></tr> <tr><td>0.68</td><td>89.5</td><td>89.7</td><td>89.2</td></tr> <tr><td>1.02</td><td>89.8</td><td>90.1</td><td>89.0</td></tr> <tr><td>1.36</td><td>89.4</td><td>90.1</td><td>89.8</td></tr> <tr><td>1.70</td><td>89.4</td><td>91.0</td><td>91.2</td></tr> </tbody> </table>		Load Current [A]	115[V]	230[V]	264[V]	0.34	89.2	88.9	88.4	0.68	89.5	89.7	89.2	1.02	89.8	90.1	89.0	1.36	89.4	90.1	89.8	1.70	89.4	91.0	91.2	<table border="1"> <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>0.34</td><td>89.2</td><td>88.9</td><td>88.4</td></tr> <tr><td>0.68</td><td>89.5</td><td>89.7</td><td>89.2</td></tr> <tr><td>1.02</td><td>89.8</td><td>90.1</td><td>89.0</td></tr> <tr><td>1.36</td><td>89.4</td><td>90.1</td><td>89.8</td></tr> <tr><td>1.70</td><td>89.4</td><td>91.0</td><td>91.2</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	-	-	-	0.34	89.2	88.9	88.4	0.68	89.5	89.7	89.2	1.02	89.8	90.1	89.0	1.36	89.4	90.1	89.8	1.70	89.4	91.0	91.2	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model	UMA60F-36
Item	Power Factor (by Load Current)
Object	+36V1.7A

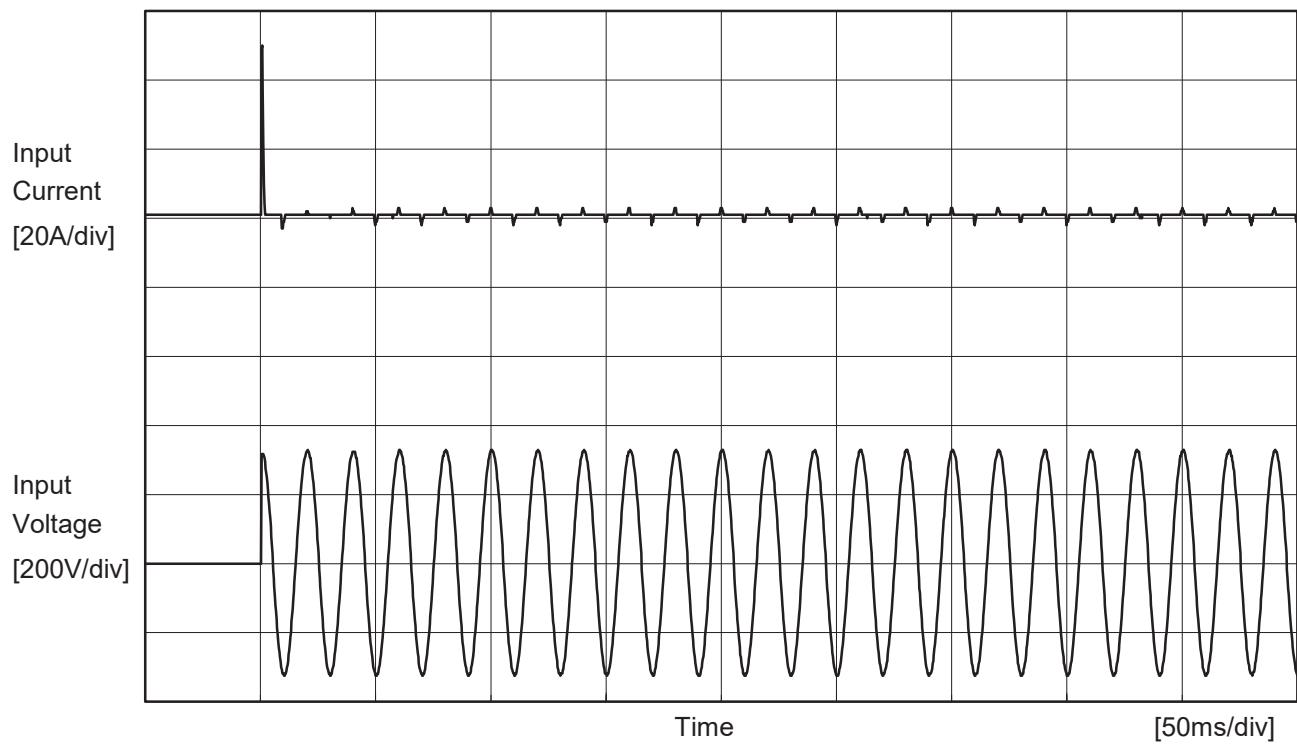

 Temperature 25°C
 Testing Circuitry Figure A

2.Values

Load Current [A]	Power Factor		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	0.089	0.032	0.029
0.34	0.495	0.388	0.380
0.68	0.542	0.441	0.429
1.02	0.561	0.464	0.451
1.36	0.573	0.476	0.460
1.70	0.583	0.482	0.465
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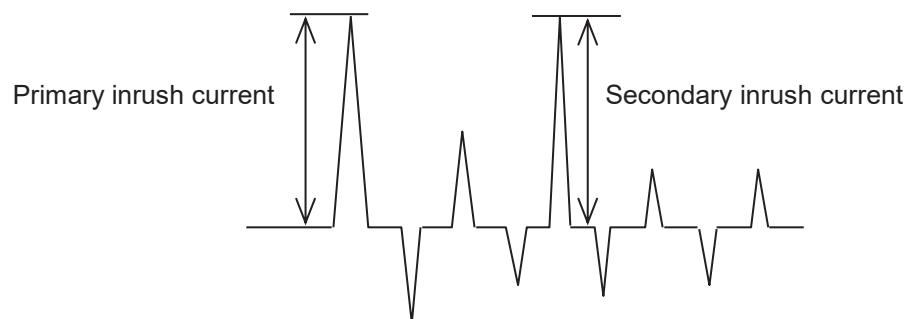
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Model	UMA60F-36	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	+36V1.7A		



Input Voltage	230 V
Frequency	50 Hz
Load	100 %

Primary inrush current	49.5 A
Secondary inrush current	2.5 A





Model	UMA60F-36	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure C
Object	+36V1.7A		

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

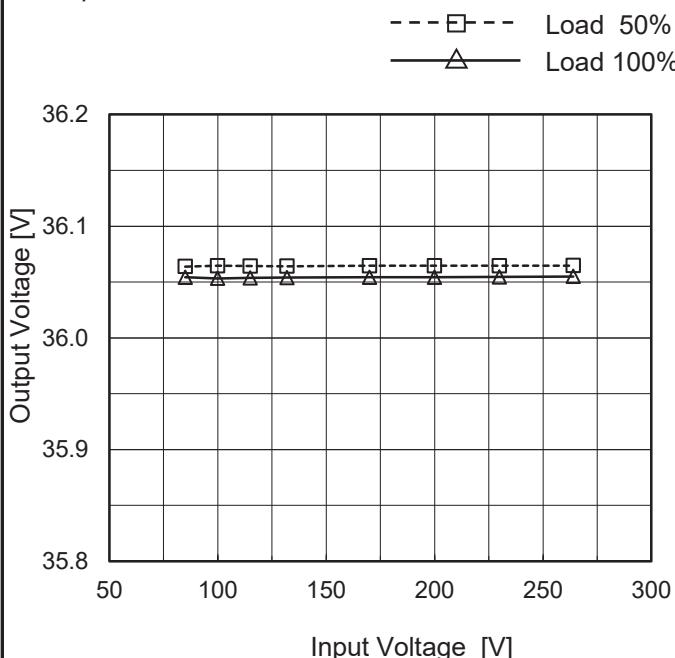
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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Model	UMA60F-36
Item	Line Regulation
Object	+36V1.7A

 Temperature 25°C
 Testing Circuitry Figure A

1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	36.064	36.054
100	36.065	36.053
115	36.064	36.054
132	36.064	36.054
170	36.065	36.054
200	36.065	36.054
230	36.065	36.055
264	36.065	36.055
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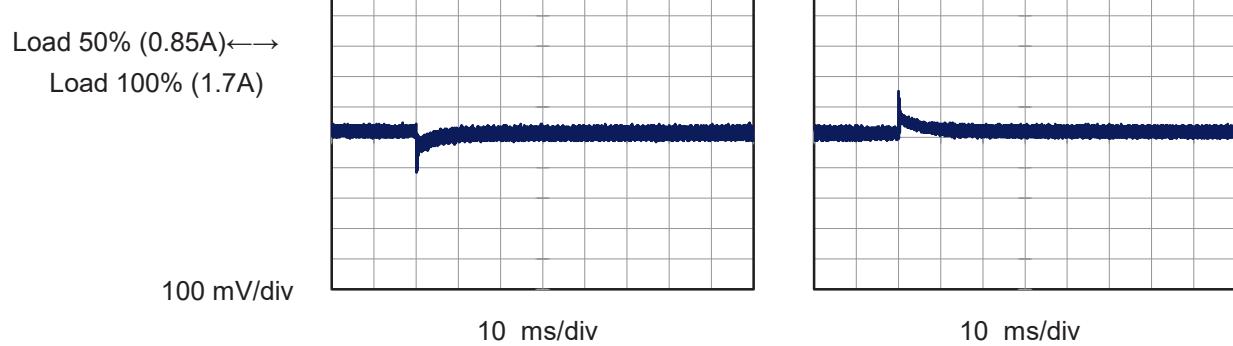
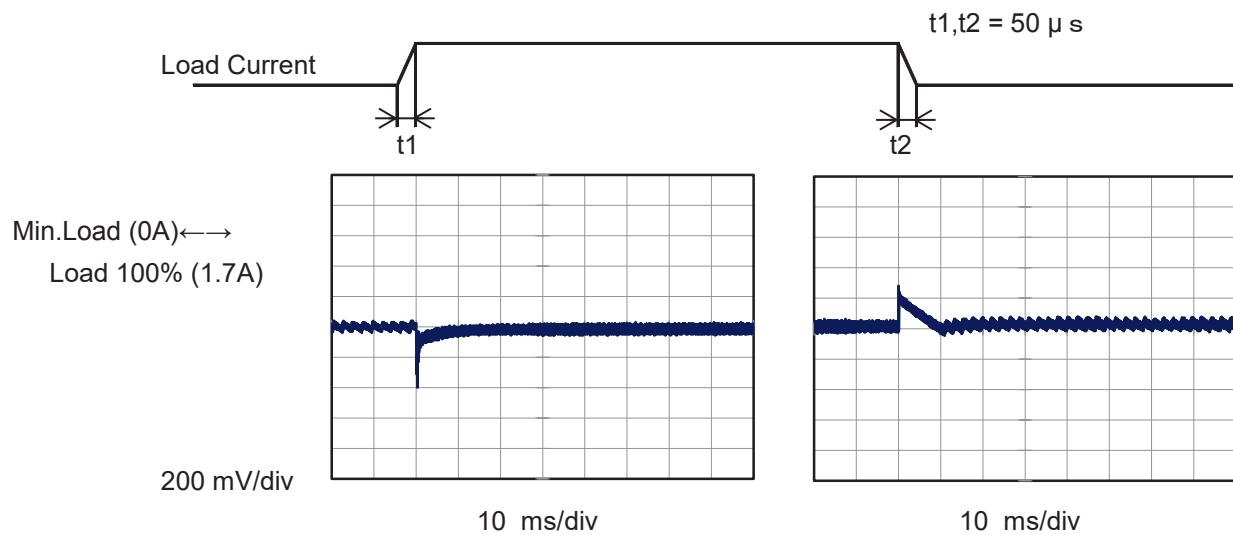
COSEL

Model	UMA60F-36	Temperature	25°C																																																				
Item	Load Regulation	Testing Circuitry	Figure A																																																				
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1.Graph	<p>—△— Input Volt. 115V - - -□- - Input Volt. 230V - - -○- - Input Volt. 264V</p> <table border="1"> <caption>Data for Figure A: Load Regulation</caption> <thead> <tr> <th>Load Current [A]</th> <th>Output Voltage [V] (115V)</th> <th>Output Voltage [V] (230V)</th> <th>Output Voltage [V] (264V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>36.082</td><td>36.083</td><td>36.084</td></tr> <tr><td>0.34</td><td>36.078</td><td>36.078</td><td>36.078</td></tr> <tr><td>0.68</td><td>36.073</td><td>36.073</td><td>36.073</td></tr> <tr><td>1.02</td><td>36.068</td><td>36.068</td><td>36.068</td></tr> <tr><td>1.36</td><td>36.062</td><td>36.063</td><td>36.062</td></tr> <tr><td>1.70</td><td>36.057</td><td>36.057</td><td>36.057</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]	Output Voltage [V] (115V)	Output Voltage [V] (230V)	Output Voltage [V] (264V)	0.00	36.082	36.083	36.084	0.34	36.078	36.078	36.078	0.68	36.073	36.073	36.073	1.02	36.068	36.068	36.068	1.36	36.062	36.063	36.062	1.70	36.057	36.057	36.057	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--				
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Item	Ripple-Noise	Temperature	25°C																																																				
Object	+36V1.7A	Testing Circuitry	Figure B																																																				
1.Graph	<p>Input Voltage 230V Load 100%</p> <p>20[mV/div]</p> <p>10[ms/div]</p>																																																						

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Model	UMA60F-36	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+36V1.7A		

Input Volt. 230 V
Cycle 1000 ms

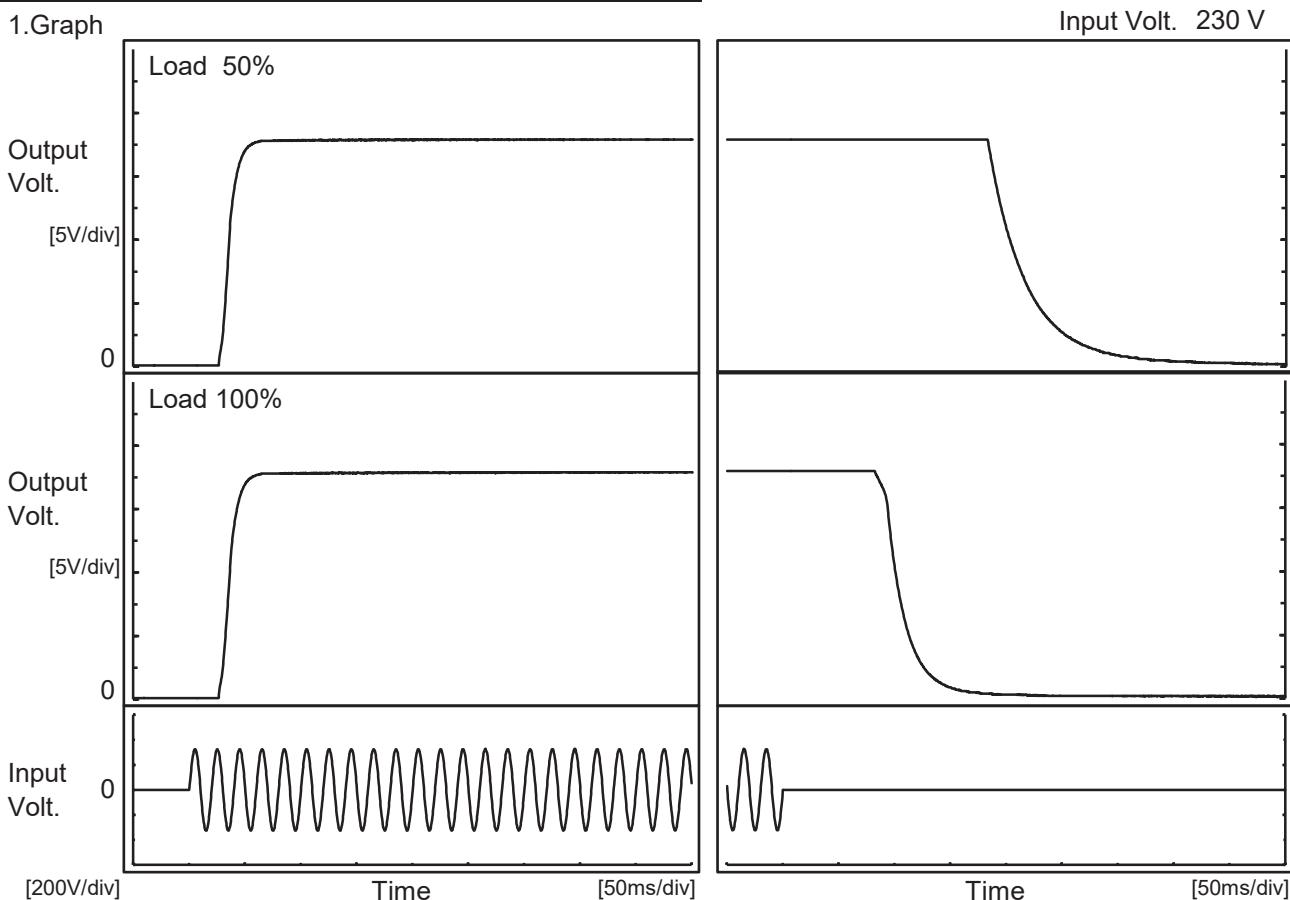


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Model	UMA60F-36
Item	Rise and Fall Time
Object	+36V1.7A

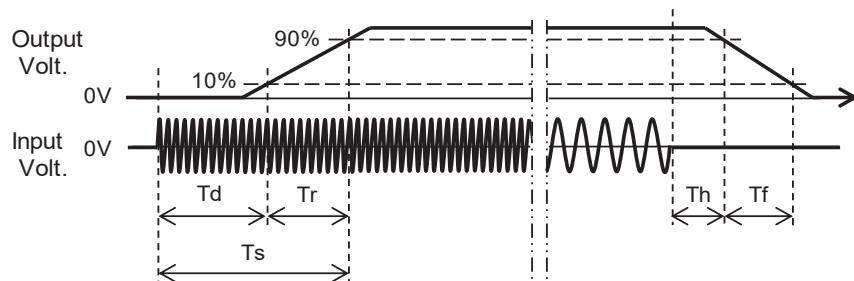
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		29.5	16.8	46.3	186.3	77.3	
100 %		29.5	17.3	46.8	90.8	40.3	

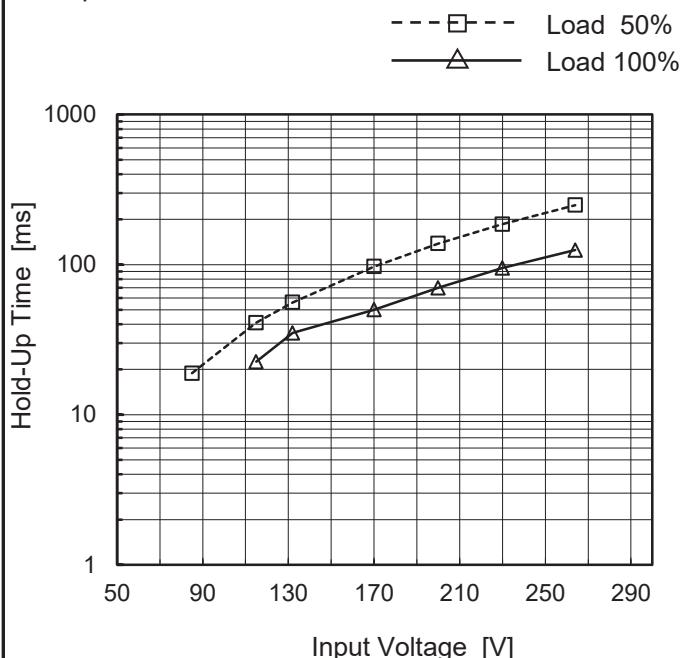


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Model	UMA60F-36
Item	Hold-Up Time
Object	+36V1.7A

 Temperature 25°C
 Testing Circuitry Figure A

1.Graph



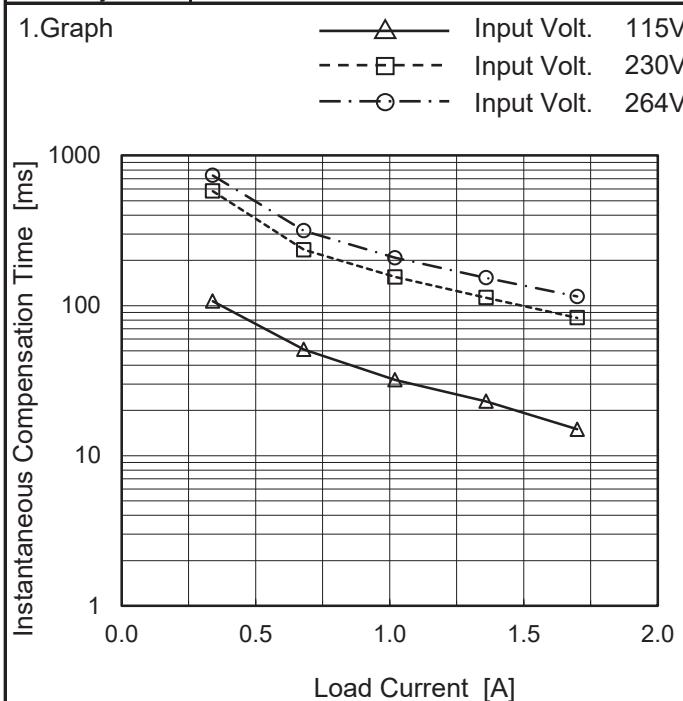
2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	19	-
100	30	-
115	41	23
132	56	35
170	97	50
200	138	70
230	186	95
264	249	125
--	-	-

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

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Model	UMA60F-36
Item	Instantaneous Interruption Compensation
Object	+36V1.7A


 Temperature 25°C
 Testing Circuitry Figure A

2.Values

Load Current [A]	Time [ms]		
	Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]
0.00	-	-	-
0.34	107	579	736
0.68	51	235	315
1.02	32	155	208
1.36	23	113	153
1.70	15	83	115
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

COSEL

Model	UMA60F-36	Temperature	25°C																																																																																							
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																																																							
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<p>The graph plots Output Voltage [V] on the Y-axis (20 to 50) against Load Current [A] on the X-axis (0.0 to 2.8). Three horizontal lines represent different input voltages: 115V (black), 230V (blue), and 264V (orange). A slanted line indicates the range of the rated load current.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</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>36</td><td>2.22</td><td>2.17</td><td>2.22</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Output Voltage [V]	Load Current [A]			Input Volt. 115[V]	Input Volt. 230[V]	Input Volt. 264[V]	36	2.22	2.17	2.22	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.



Model	UMA60F-36	Testing Circuitry Figure A
Item	Ambient Temperature Drift	
Object	+36V1.7A	

1.Values

Load 100%

Ambient Temperature[°C]	Output Voltage [V]		
	Input Volt. 115V	Input Volt. 230V	Input Volt. 264V
-20	35.907	35.912	35.913
25	36.051	36.051	36.051
50	36.090	36.091	36.090

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A	
Object	+36V1.7A		

1.Values

Ambient Temperature[°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	38	69
25	37	70
50	35	70

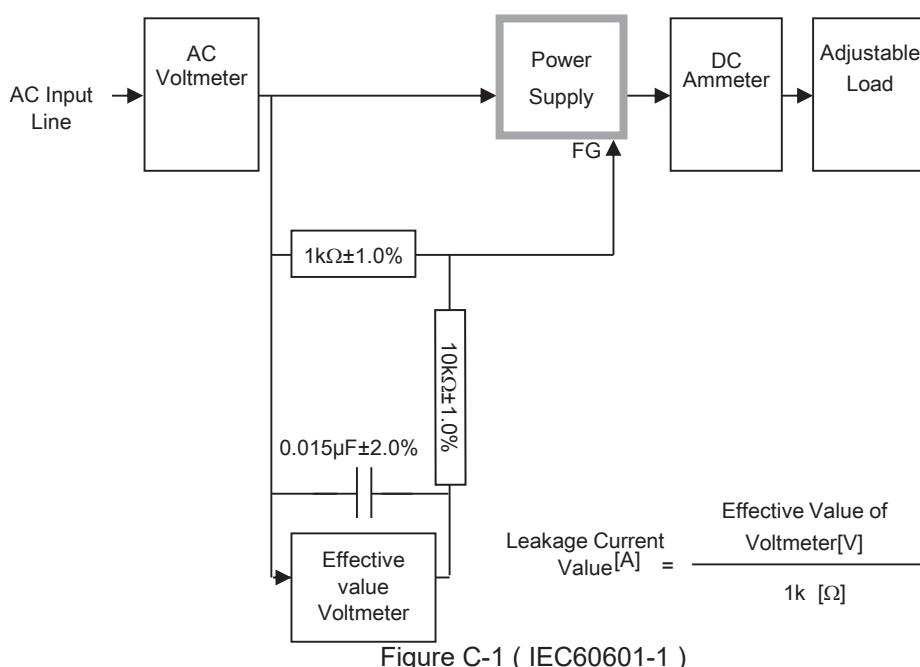
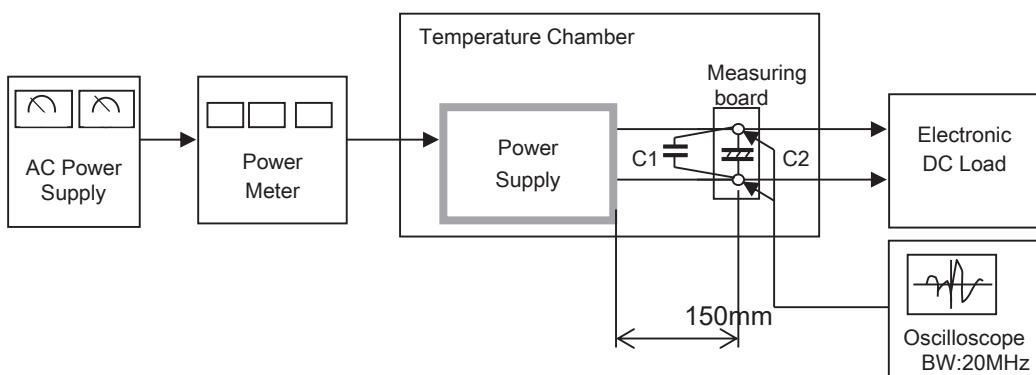
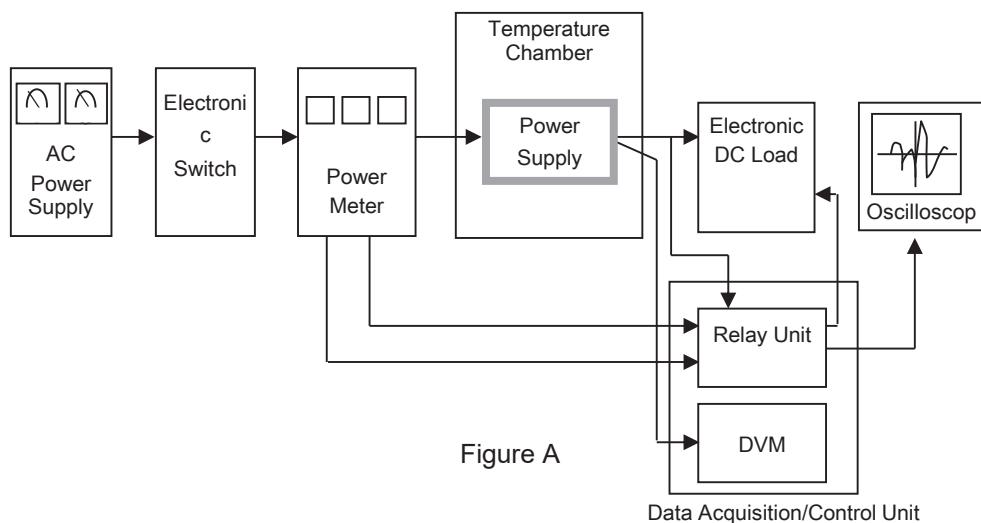
Item	Overvoltage Protection	Testing Circuitry Figure A	
Object	+36V1.7A		

1.Values

Load 0%

Ambient Temperature[°C]	Operating Point [V]	
	Input Volt. 115V	Input Volt. 264V
-20	44.40	43.82
25	46.20	42.80
50	47.16	41.81

COSEL



COSEL

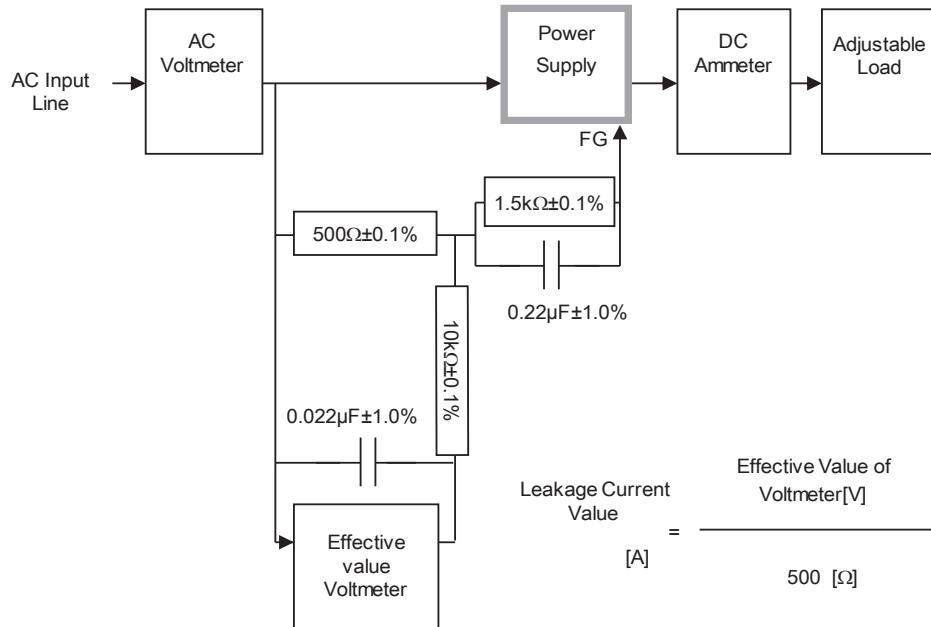


Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

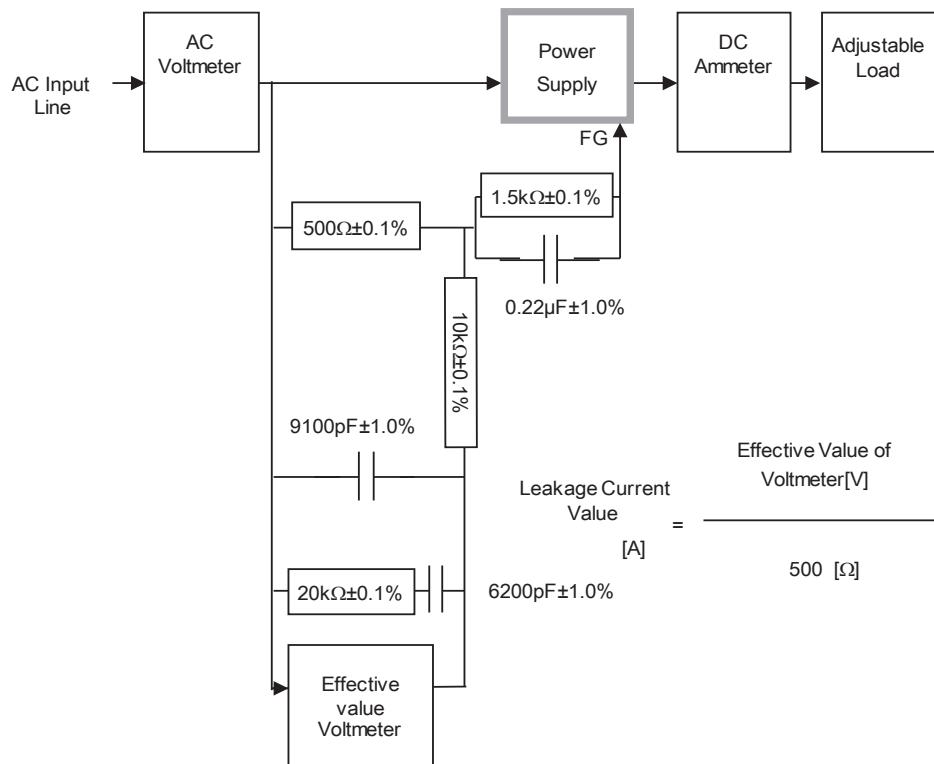


Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)