COSEL

参考資料

TEST DATA OF KLNA120F-48

Regulated DC Power Supply
May 25, 2015

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COSEL CO.,LTD.

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CONTENTS

1.Input Current (by Load Current) · 1
2.Input Power (by Load Current) · 2
3.Efficiency (by Input Voltage) · 3
4.Efficiency (by Load Current) · 4
5.Power Factor (by Input Voltage) · 5
6.Power Factor (by Load Current) · 6
7.Inrush Current · 7
8.Leakage Current · 8
9.Line Regulation · 9
10.Load Regulation · 10
11.Dynamic Load Response · 11
12.Ripple Voltage (by Load Current) · 12
13.Ripple-Noise · 13
14.Ripple Voltage (by Ambient Temperature) · · · · · · · · · · · · · · · · · 14
15.Ambient Temperature Drift · 15
16.Output Voltage Accuracy · 16
17.Time Lapse Drift · 17
18.Rise and Fall Time · 18
19.Hold-Up Time · 19
20.Instantaneous Interruption Compensation · · · · · · · · · · · · · · · · · 20
21.Minimum Input Voltage for Regulated Output Voltage · · · · · · · · · · · 21
22.Overcurrent Protection · 22
23.Overvoltage Protection · 23
24.Figure of Testing Circuitry · 24
(Final Page 25)

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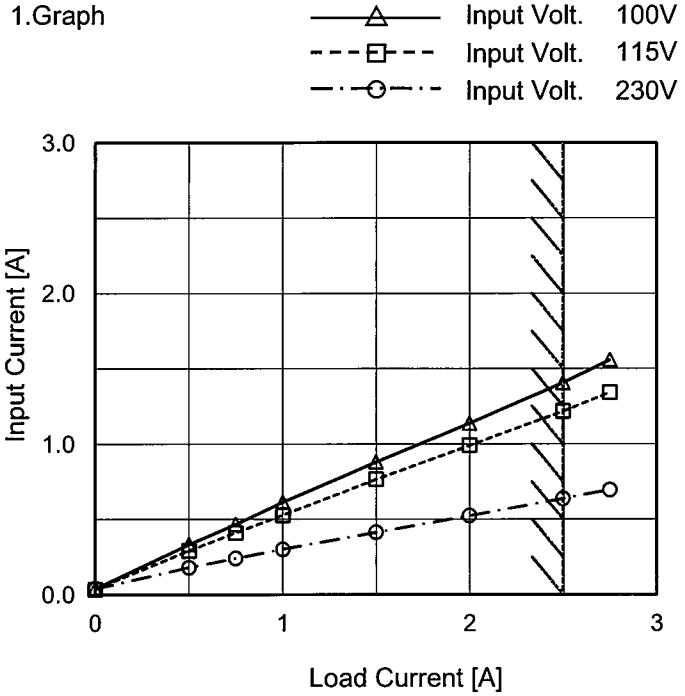
Model	KLNA120F-48
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.038	0.036	0.039
0.50	0.332	0.292	0.180
0.75	0.467	0.410	0.241
1.00	0.614	0.528	0.301
1.50	0.880	0.765	0.414
2.00	1.138	0.991	0.525
2.50	1.407	1.217	0.637
2.75	1.558	1.342	0.696
--	-	-	-
--	-	-	-
--	-	-	-

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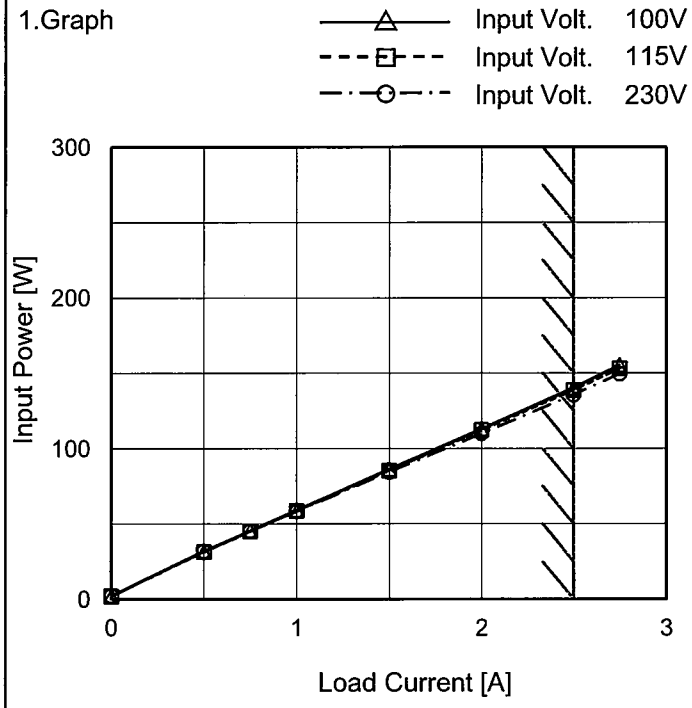
Model	KLNA120F-48
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	2.0	2.0	2.2
0.50	31.6	31.3	31.9
0.75	45.4	45.0	45.2
1.00	59.1	58.6	58.4
1.50	86.2	85.4	84.5
2.00	113.0	112.1	110.0
2.50	140.1	138.7	135.7
2.75	155.4	153.1	149.5
--	-	-	-
--	-	-	-
--	-	-	-

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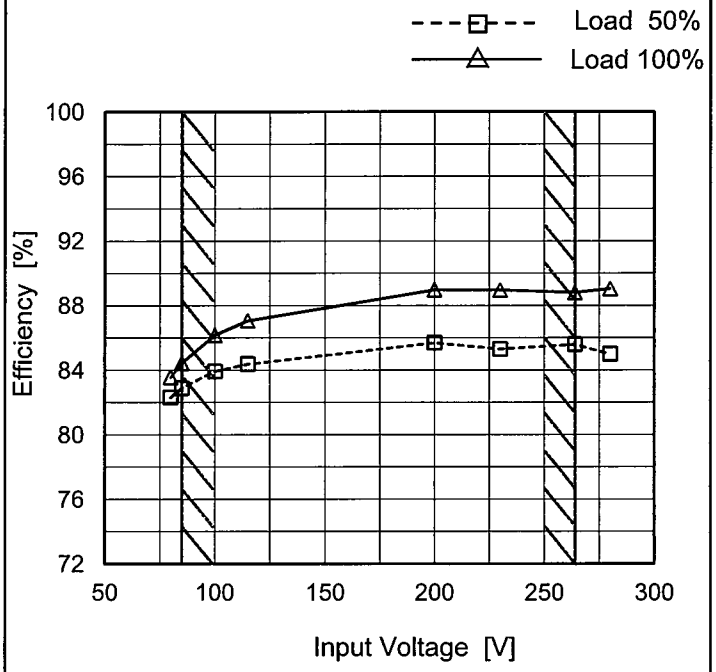
Model	KLNA120F-48
Item	Efficiency (by Input Voltage)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
80	82.3	83.6
85	82.9	84.4
100	83.9	86.2
115	84.4	87.1
200	85.7	89.0
230	85.3	89.0
264	85.6	88.8
280	85.0	89.0
--	-	-

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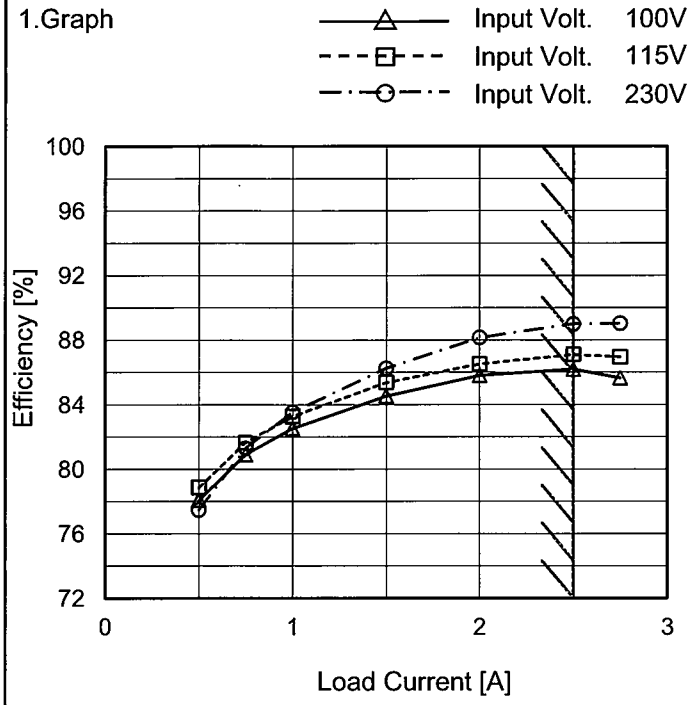
Model	KLNA120F-48
Item	Efficiency (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Efficiency [%] Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
0.50	78.1	78.9	77.5
0.75	80.9	81.6	81.3
1.00	82.5	83.3	83.5
1.50	84.5	85.4	86.3
2.00	85.8	86.5	88.2
2.50	86.2	87.1	89.0
2.75	85.6	87.0	89.0
--	-	-	-
--	-	-	-
--	-	-	-

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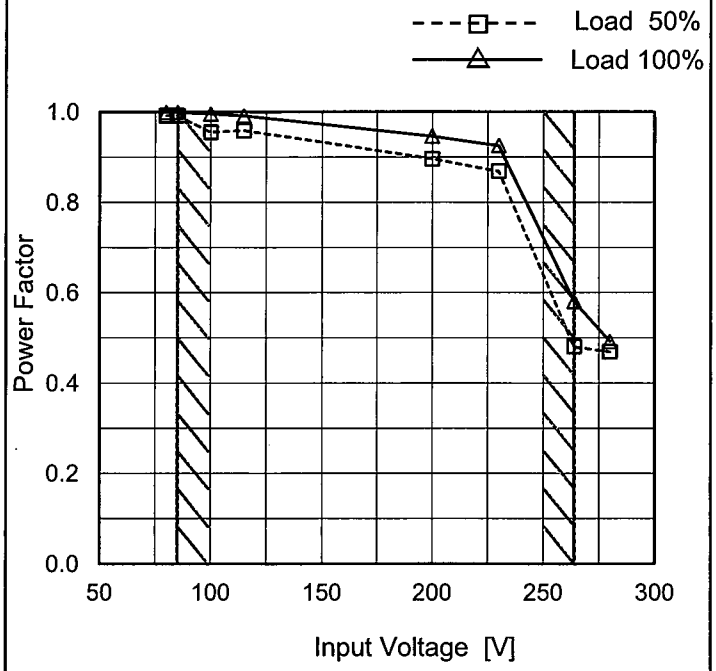
Model	KLNA120F-48
Item	Power Factor (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
80	0.992	0.999
85	0.992	0.999
100	0.955	0.996
115	0.959	0.991
200	0.896	0.946
230	0.869	0.926
264	0.480	0.581
280	0.469	0.492
--	-	-

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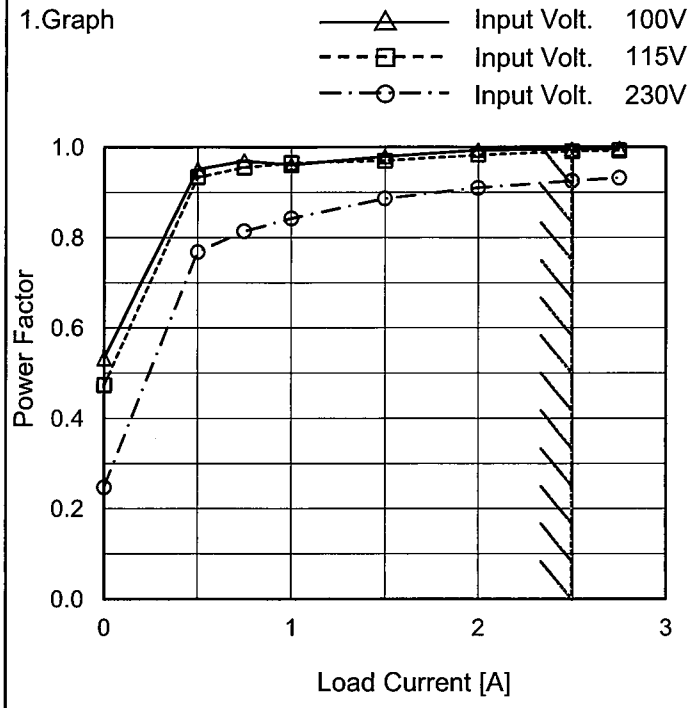
Model	KLNA120F-48
Item	Power Factor (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.533	0.473	0.247
0.50	0.951	0.934	0.769
0.75	0.970	0.955	0.814
1.00	0.961	0.965	0.843
1.50	0.980	0.970	0.887
2.00	0.994	0.983	0.911
2.50	0.996	0.991	0.926
2.75	0.997	0.993	0.933
--	-	-	-
--	-	-	-
--	-	-	-

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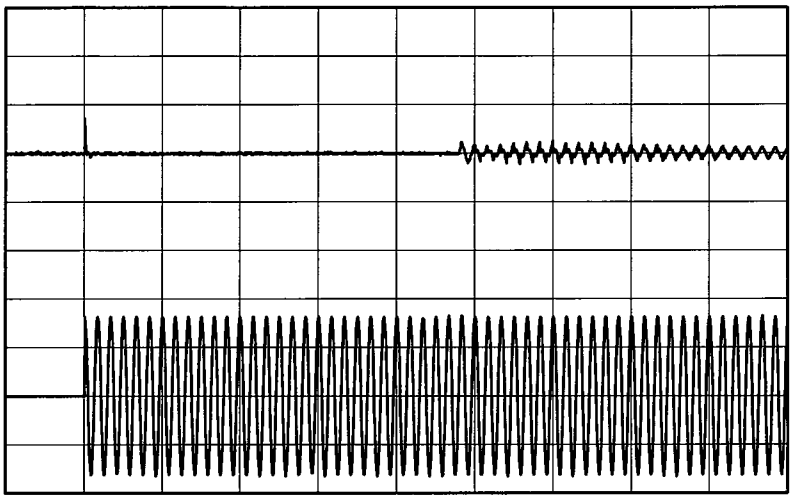
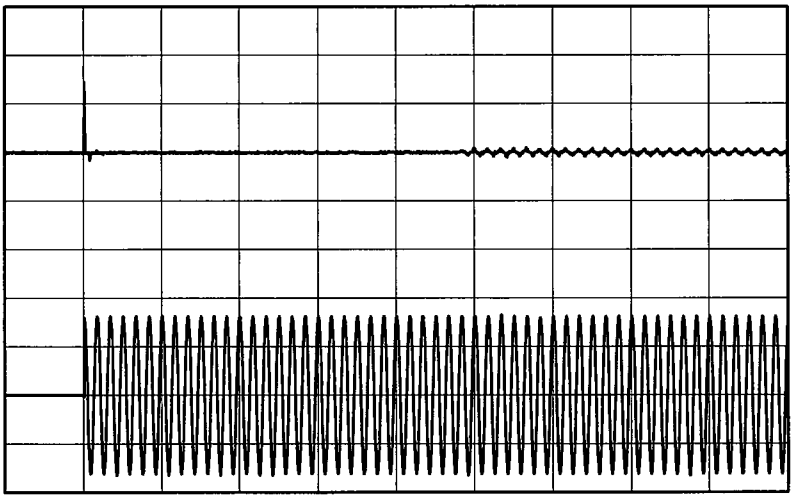
Model	KLNA120F-48
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



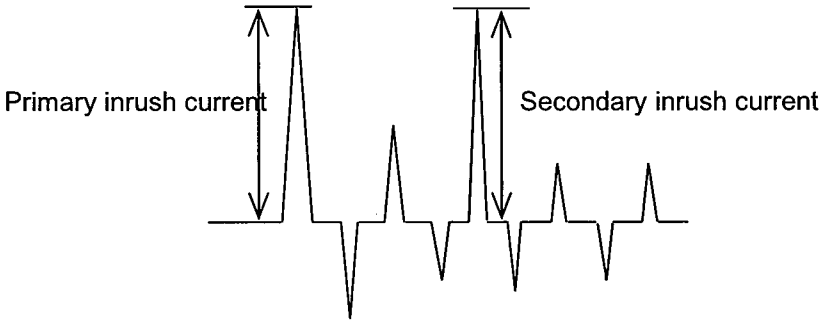
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current
14.3 A
Secondary inrush current
4.8 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current
29.1 A
Secondary inrush current
2.1 A



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Model	KLNA120F-48	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	———————————	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	115 [V]	240 [V]	
DEN-AN	Both phases	0.15	0.18	0.40	Operation
	One of phases	0.28	0.34	0.73	Stand by
IEC60950-1	Both phases	0.16	0.19	0.39	Operation
	One of phases	0.30	0.35	0.73	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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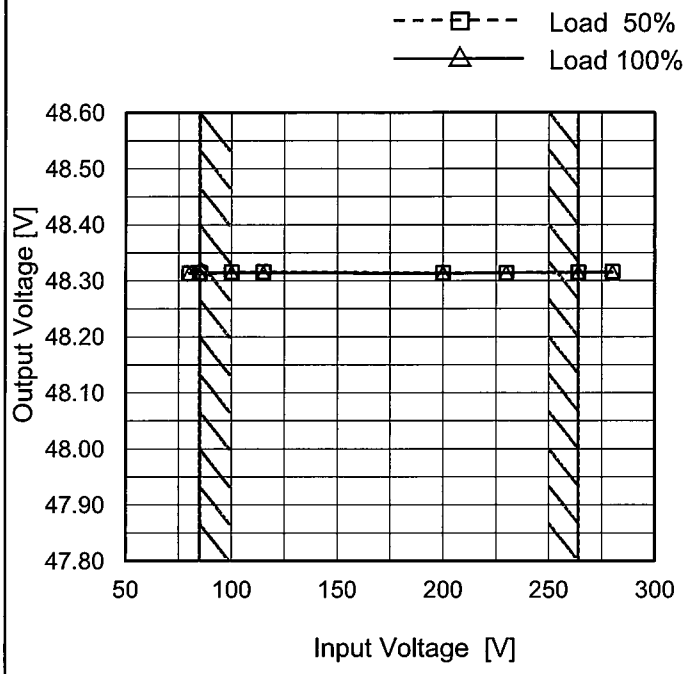
Model	KLNA120F-48
Item	Line Regulation
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
80	48.314	48.313
85	48.315	48.313
100	48.315	48.314
115	48.316	48.314
200	48.314	48.313
230	48.314	48.315
264	48.315	48.315
280	48.316	48.315
--	-	-

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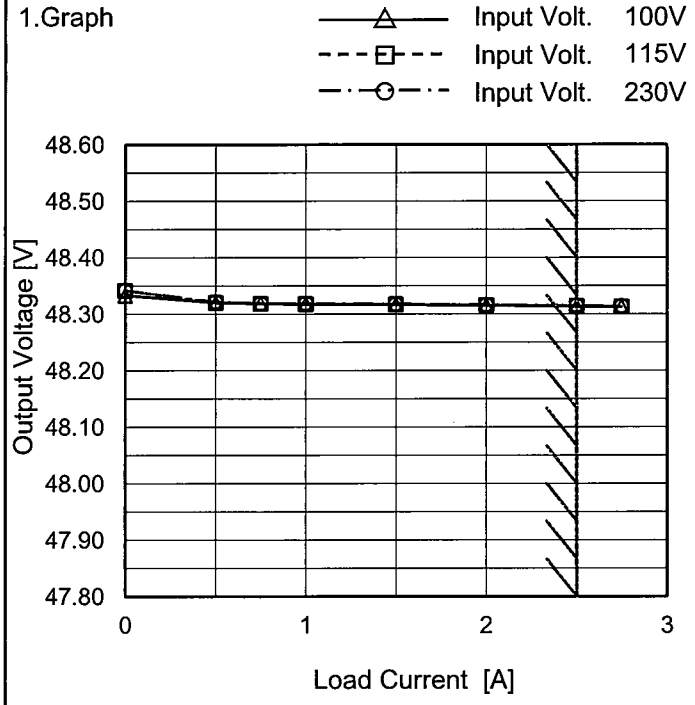
Model	KLNA120F-48
Item	Load Regulation
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	48.333	48.342	48.342
0.50	48.320	48.320	48.322
0.75	48.319	48.319	48.319
1.00	48.318	48.318	48.319
1.50	48.317	48.317	48.318
2.00	48.315	48.316	48.317
2.50	48.314	48.314	48.315
2.75	48.313	48.313	48.314
--	-	-	-
--	-	-	-
--	-	-	-

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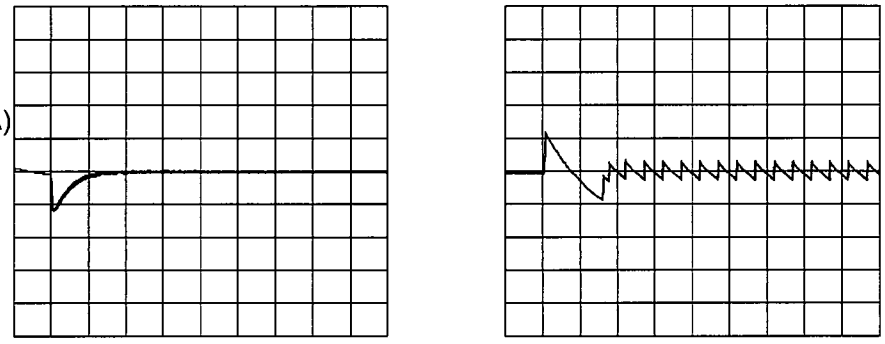
Model	KLNA120F-48		
Item	Dynamic Load Response	Temperature	25˚C
		Testing Circuitry	Figure A
Object	+48V2.5A		

Input Volt. 230 V
Cycle 1000 ms

Response. t1=t2=50us. Typ

Min.Load (0A) ⟷
Load 100% (2.5A)

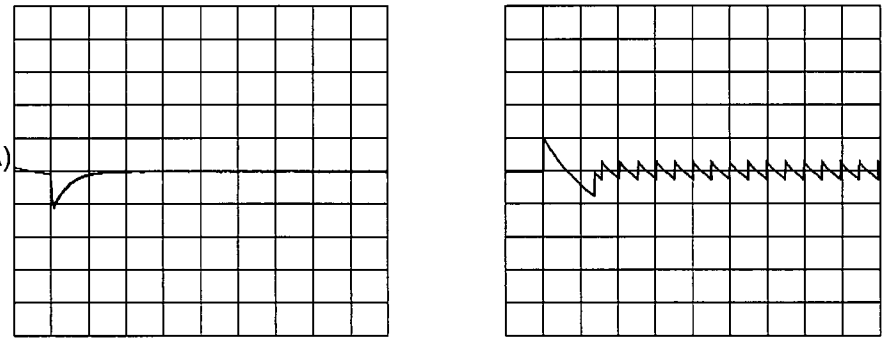
500mV/div



10 ms/div 100 ms/div

Min.Load (0A) ⟷
Load 50% (1.25A)

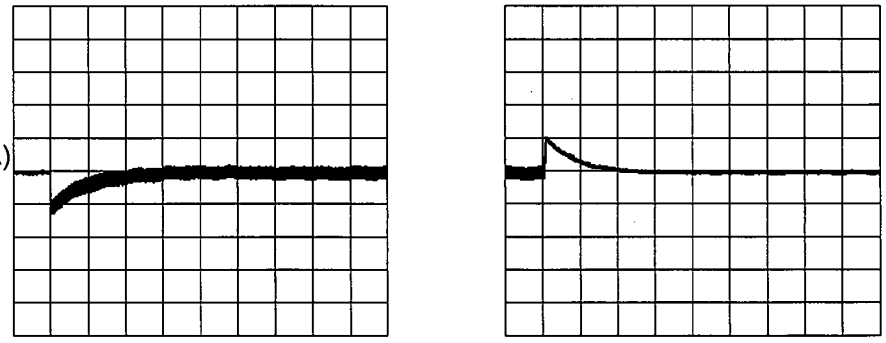
500mV/div



10 ms/div 100 ms/div

Load 30% (0.75A) ⟷
Load 100% (2.5A)

100mV/div



10 ms/div 10 ms/div

＊The characteristic of AC115V is equal.

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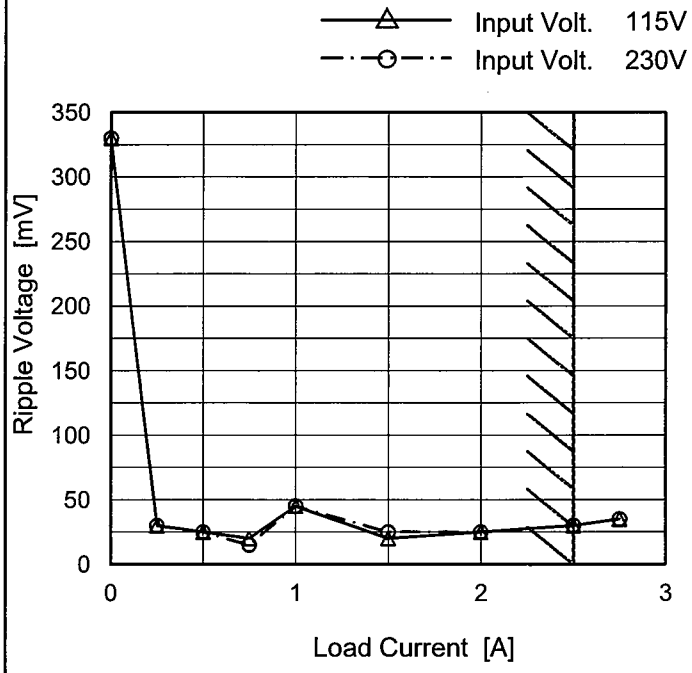
Model	KLNA120F-48
Item	Ripple Voltage (by Load Current)
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

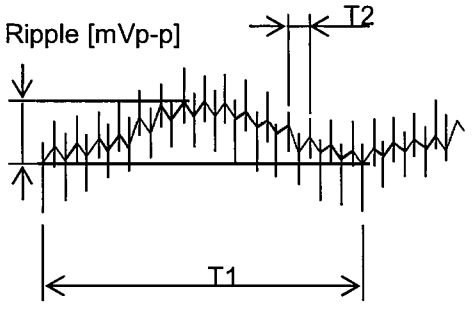


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	330	330
0.25	30	30
0.50	25	25
0.75	20	15
1.00	45	45
1.50	20	25
2.00	25	25
2.50	30	30
2.75	35	35
--	-	-
--	-	-

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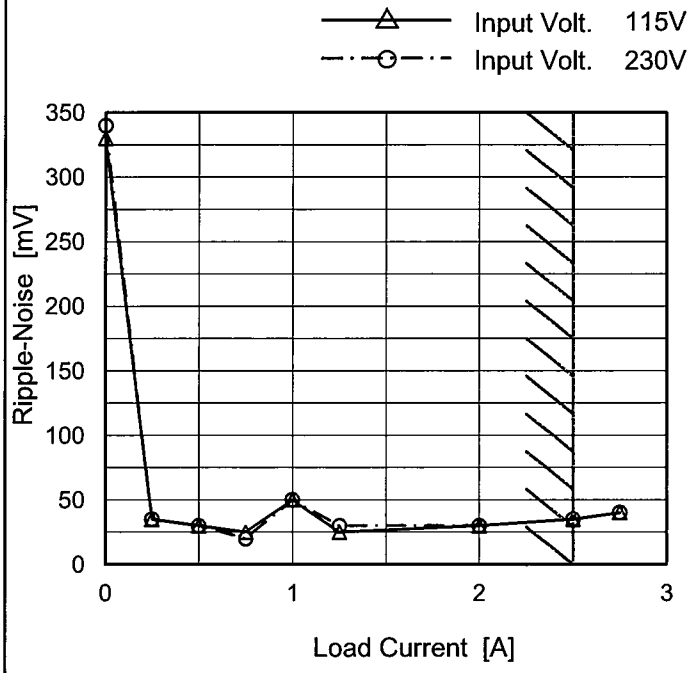
Model	KLNA120F-48
Item	Ripple-Noise
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	330	340
0.25	35	35
0.50	30	30
0.75	25	20
1.00	50	50
1.25	25	30
2.00	30	30
2.50	35	35
2.75	40	40
--	-	-
--	-	-

T1: Due to AC Input Line
T2: Due to Switching

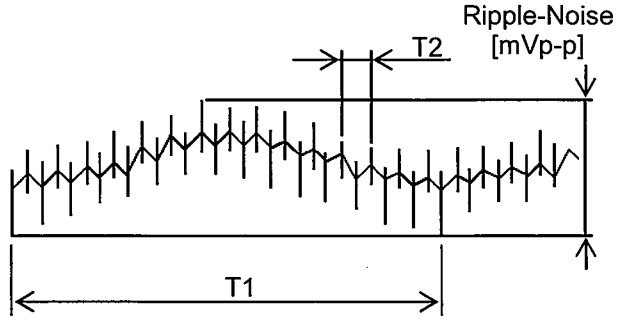


Fig. Complex Ripple Wave Form

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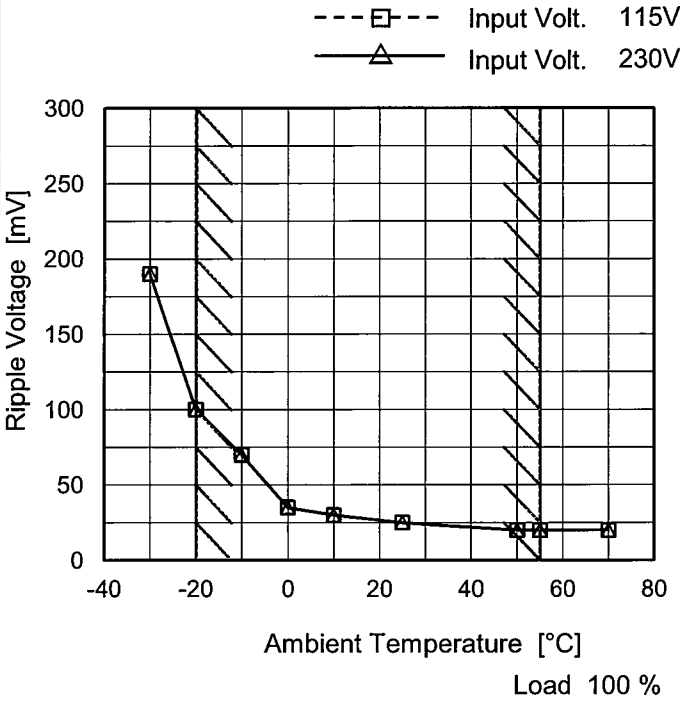
Model	KLNA120F-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V2.5A

Testing Circuitry Figure C

1.Graph



Load 100 %

Measured by 20 MHz Oscilloscope.

Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
-30	190	190
-20	100	100
-10	70	70
0	35	35
10	30	30
25	30	30
50	20	20
55	20	20
70	20	20
--	-	-
--	-	-

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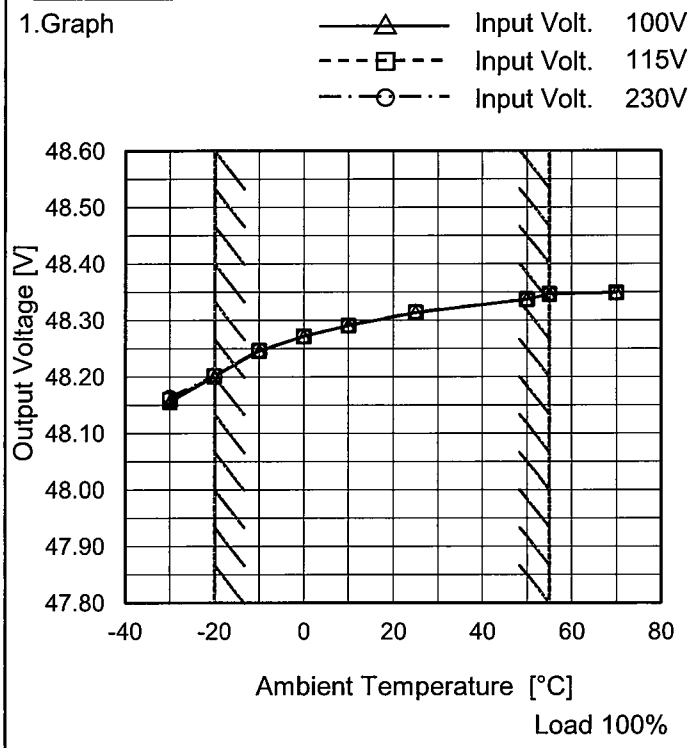
Model	KLNA120F-48
Item	Ambient Temperature Drift
Object	+48V2.5A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
-30	48.156	48.160	48.164
-20	48.201	48.202	48.203
-10	48.246	48.247	48.247
0	48.272	48.272	48.272
10	48.291	48.291	48.292
25	48.314	48.314	48.315
50	48.337	48.338	48.337
55	48.347	48.347	48.347
70	48.350	48.349	48.349
--	-	-	-
--	-	-	-

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Model	KLNA120F-48	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V2.5A	

1.Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -20 - 70°C
Input Voltage : 85 - 264V
Load Current : 0.75 - 2.5A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	70	100	0.75	48.355	±77	±0.2
Minimum Voltage	-20	100	2.5	48.201		

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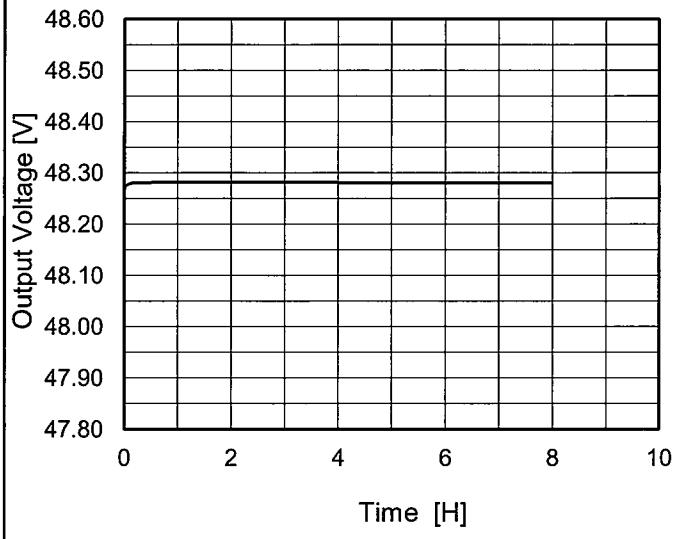
Model	KLNA120F-48
Item	Time Lapse Drift
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	48.315
0.5	48.333
1.0	48.333
2.0	48.333
3.0	48.333
4.0	48.333
5.0	48.333
6.0	48.332
7.0	48.332
8.0	48.332

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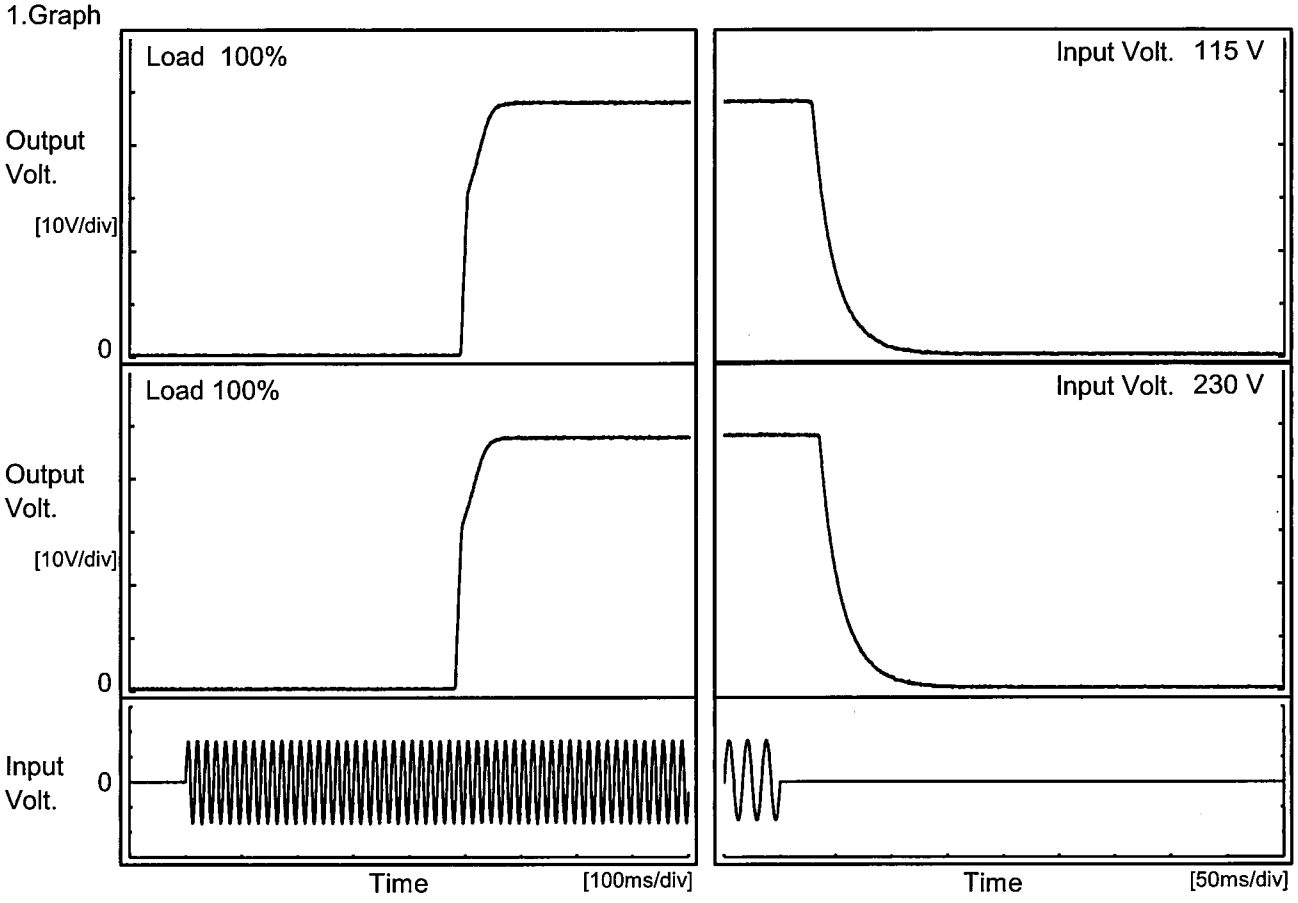
Model	KLNA120F-48
Item	Rise and Fall Time
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure A

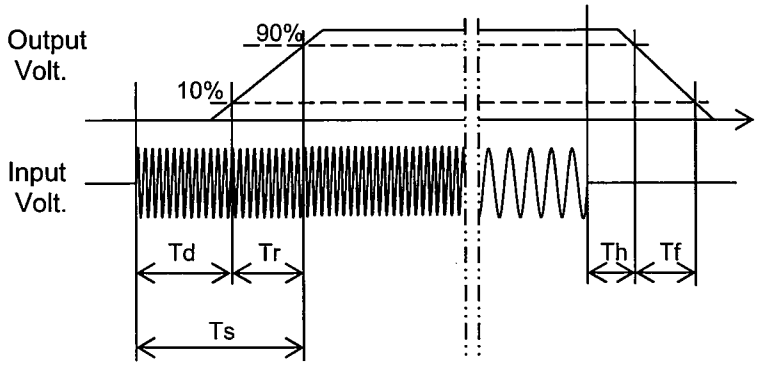
1.Graph



2.Values

[ms]

Input Volt \ Time	Td	Tr	Ts	Th	Tf
115 V	493.5	43.0	536.5	30.8	43.8
230 V	483.5	44.5	528.0	37.0	44.5



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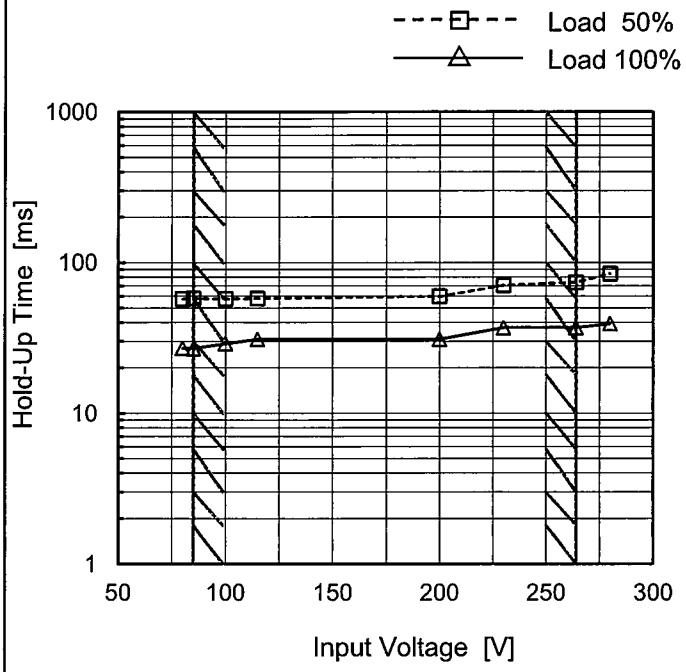
Model	KLNA120F-48
Item	Hold-Up Time
Object	+48V2.5A

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.
Note: Slanted line shows the range of the rated input voltage.

2.Values

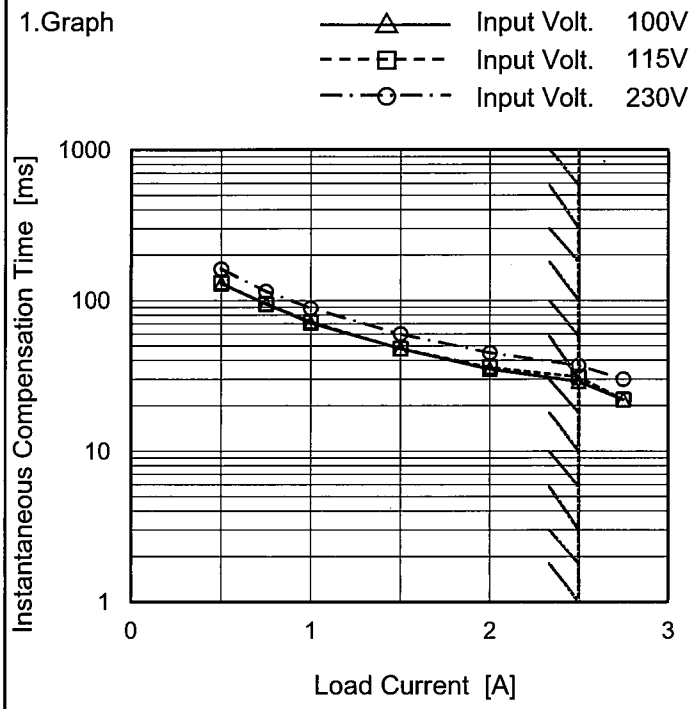
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
80	57	27
85	58	27
100	57	29
115	58	31
200	60	31
230	71	37
264	74	37
280	84	39
--	-	-

COSEL

Model	KLNA120F-48
Item	Instantaneous Interruption Compensation
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

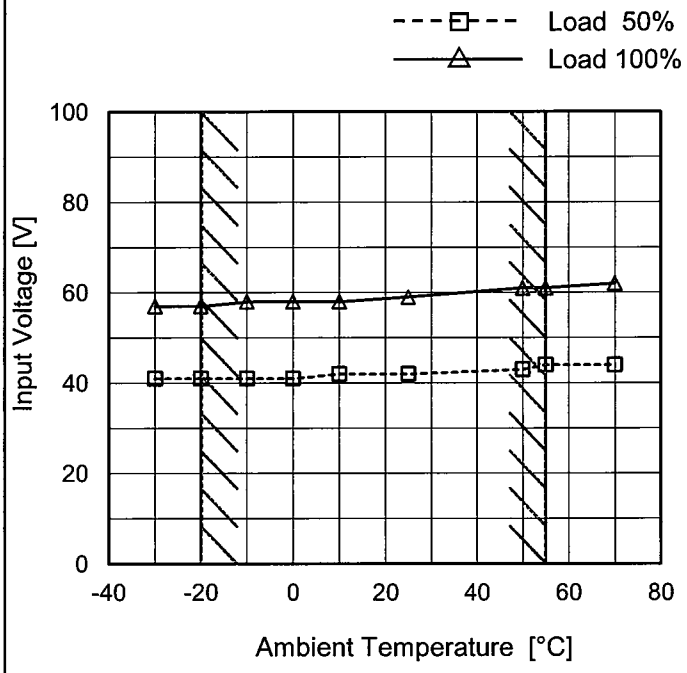
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
0.50	130	131	162
0.75	95	95	115
1.00	71	72	89
1.50	48	48	60
2.00	35	36	45
2.50	29	31	37
2.75	22	22	30
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	KLNA120F-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V2.5A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

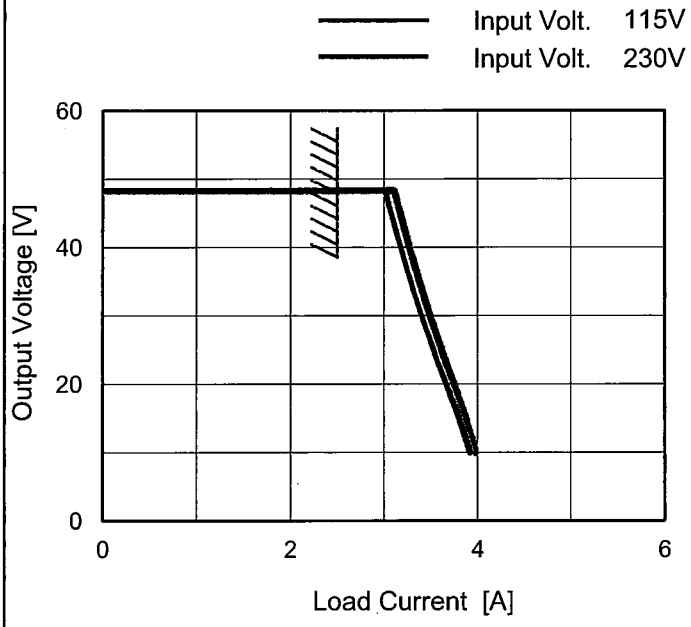
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	41	57
-20	41	57
-10	41	58
0	41	58
10	42	58
25	42	59
50	43	61
55	44	61
70	44	62
--	-	-
--	-	-

COSEL

Model	KLNA120F-48
Item	Overcurrent Protection
Object	+48V2.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent operation occurs when the output voltage is from 10V to 0V.

2.Values

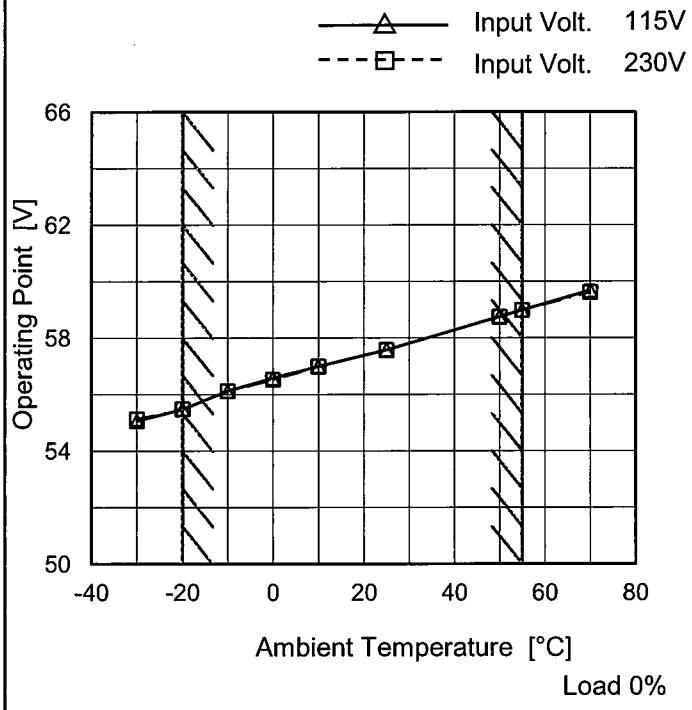
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
45.6	3.06	3.17
43.2	3.11	3.21
38.4	3.21	3.31
33.6	3.31	3.42
28.8	3.44	3.53
24.0	3.56	3.64
19.2	3.68	3.77
14.4	3.81	3.89
10.0	3.92	3.98
4.8	3.97	4.03
0.0	3.98	4.05
--	-	-

COSEL

Model	KLNA120F-48
Item	Overvoltage Protection
Object	+48V2.5A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 115[V]	Input Volt. 230[V]
-30	55.07	55.13
-20	55.48	55.48
-10	56.12	56.12
0	56.59	56.53
10	57.00	57.00
25	57.58	57.58
50	58.75	58.75
55	58.99	58.99
70	59.68	59.62
--	-	-
--	-	-

BC-10888

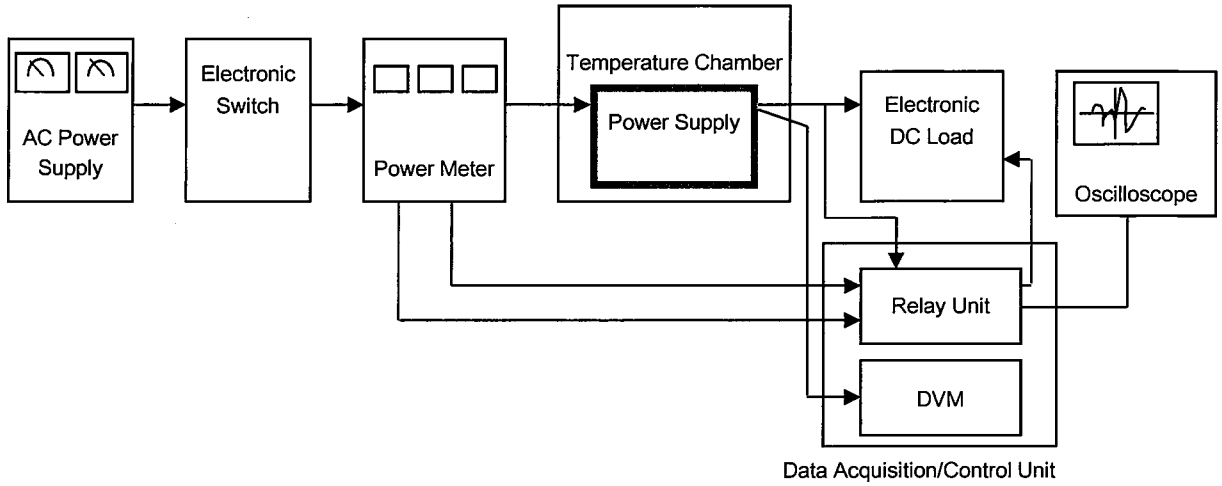


Figure A

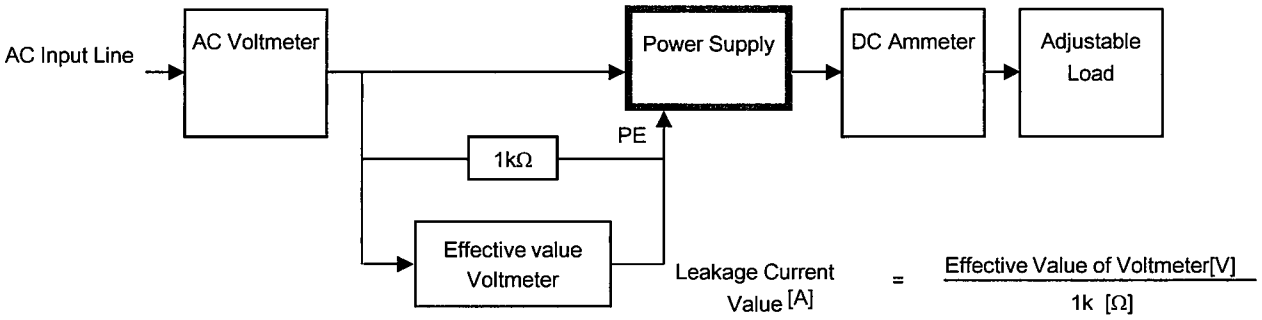


Figure B (DEN-AN)

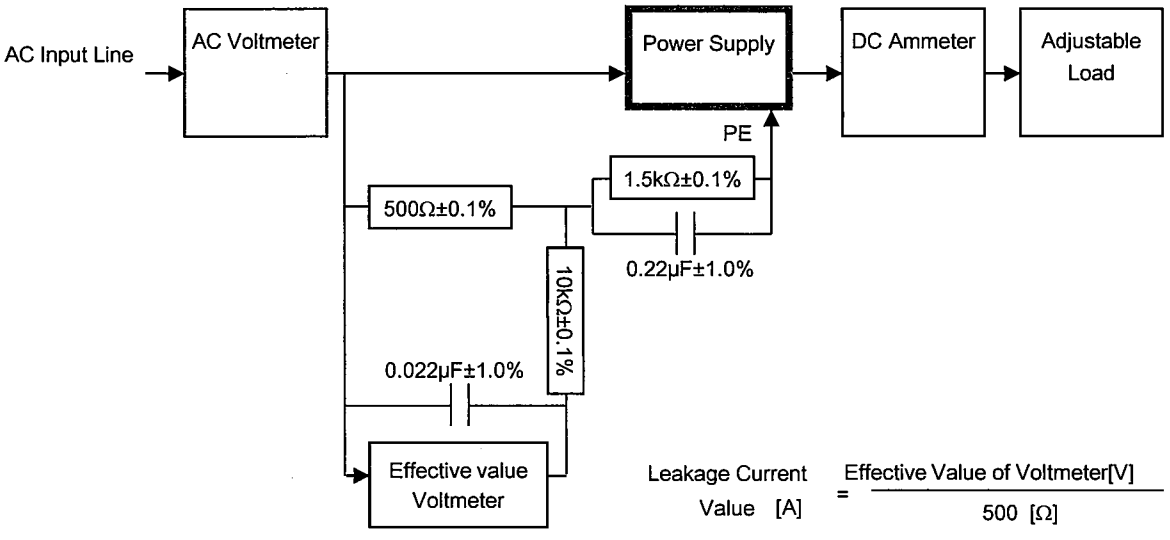
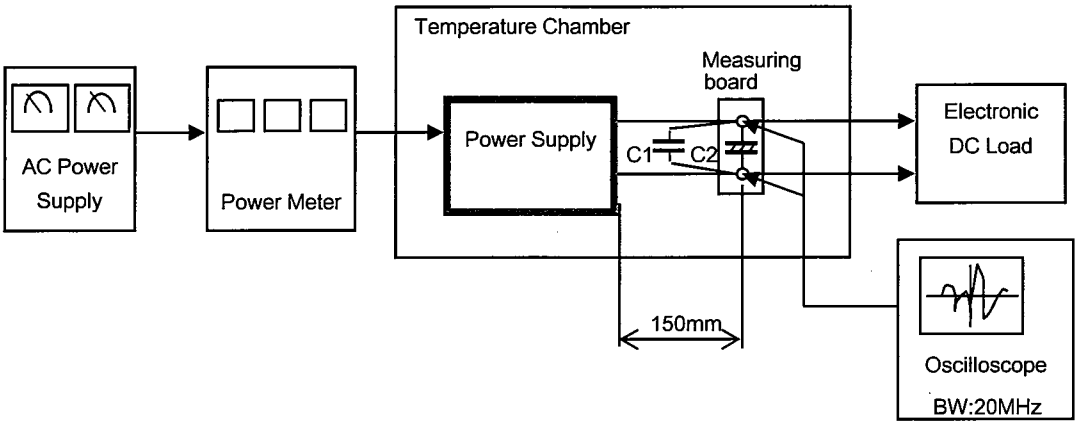


Figure B (IEC60950-1)



C1= 0.1 μF
(Ceramic capacitor)
C2= 22 μF
(Electrolytic capacitor)

Figure C