COSEL

参考資料

TEST DATA OF KLEA120F-24

Regulated DC Power Supply
May 25, 2015

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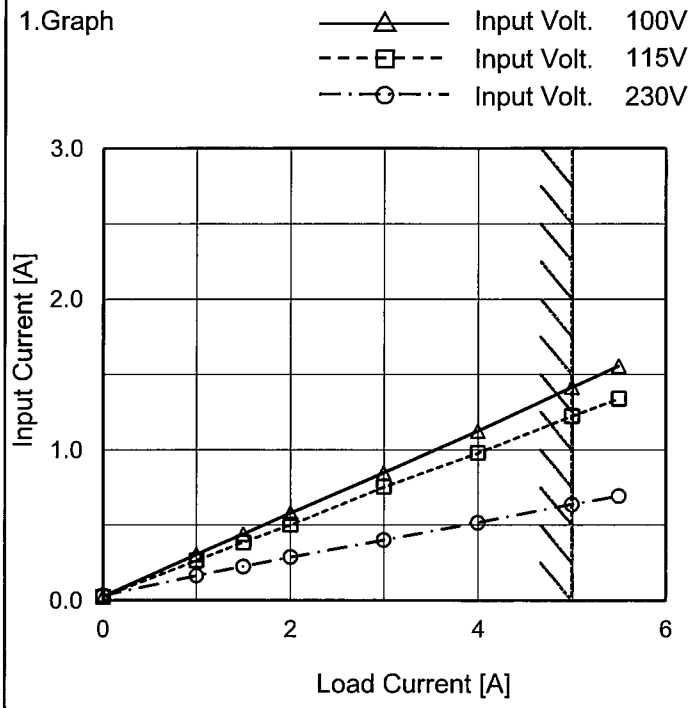

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.0	0.024	0.024	0.032
1.0	0.304	0.265	0.164
1.5	0.440	0.385	0.225
2.0	0.580	0.501	0.288
3.0	0.847	0.753	0.401
4.0	1.125	0.979	0.517
5.0	1.416	1.224	0.638
5.5	1.556	1.339	0.693
--	-	-	-
--	-	-	-
--	-	-	-

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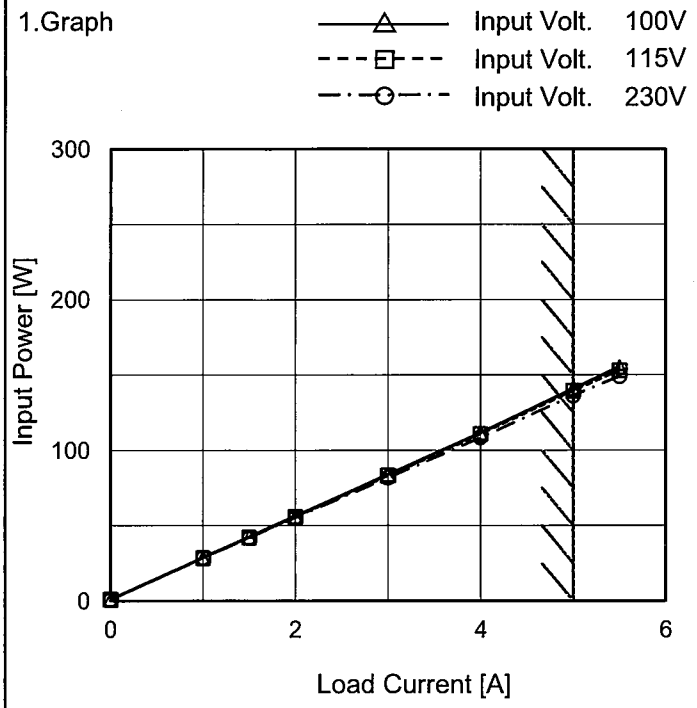
Model	KLEA120F-24
Item	Input Power (by Load Current)
Object	————————

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]
0.0	1.0	0.9	0.8
1.0	28.7	28.4	28.7
1.5	42.5	42.1	41.9
2.0	56.2	55.8	55.3
3.0	83.9	83.1	81.9
4.0	111.7	110.8	108.5
5.0	141.0	139.5	136.4
5.5	155.3	153.0	149.1
--	-	-	-
--	-	-	-
--	-	-	-

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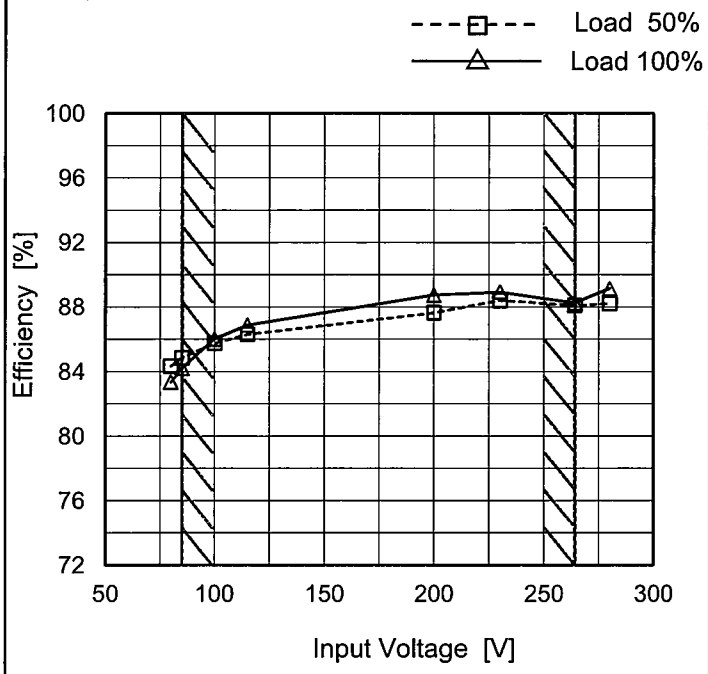
Model	KLEA120F-24
Item	Efficiency (by Input Voltage)
Object	———————

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	84.3	83.3
85	84.8	84.2
100	85.8	86.0
115	86.3	86.9
200	87.6	88.7
230	88.4	88.9
264	88.1	88.2
280	88.2	89.1
--	-	-

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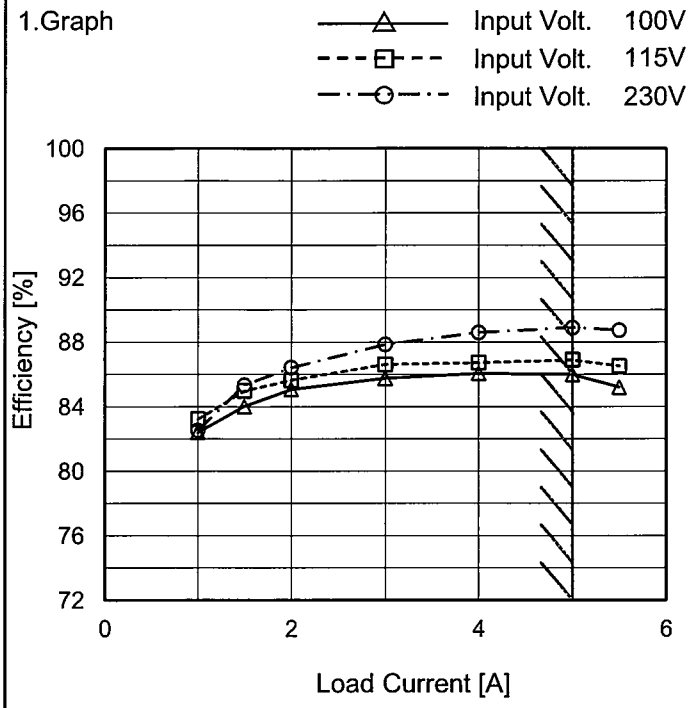
Model	KLEA120F-24
Item	Efficiency (by Load Current)
Object	———————

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]
0.0	-	-	-
1.0	82.4	83.2	82.5
1.5	84.0	85.0	85.3
2.0	85.1	85.6	86.4
3.0	85.8	86.6	87.9
4.0	86.1	86.7	88.6
5.0	86.0	86.9	88.9
5.5	85.2	86.5	88.7
--	-	-	-
--	-	-	-
--	-	-	-

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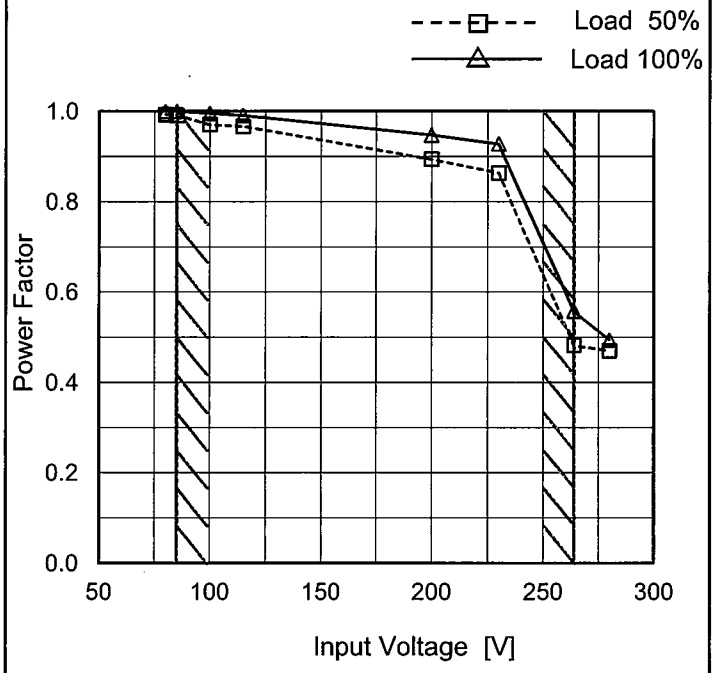
Model	KLEA120F-24
Item	Power Factor (by Input Voltage)
Object	————————

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	0.993	0.999
85	0.992	0.999
100	0.971	0.996
115	0.967	0.991
200	0.894	0.948
230	0.864	0.929
264	0.482	0.558
280	0.470	0.494
--	-	-

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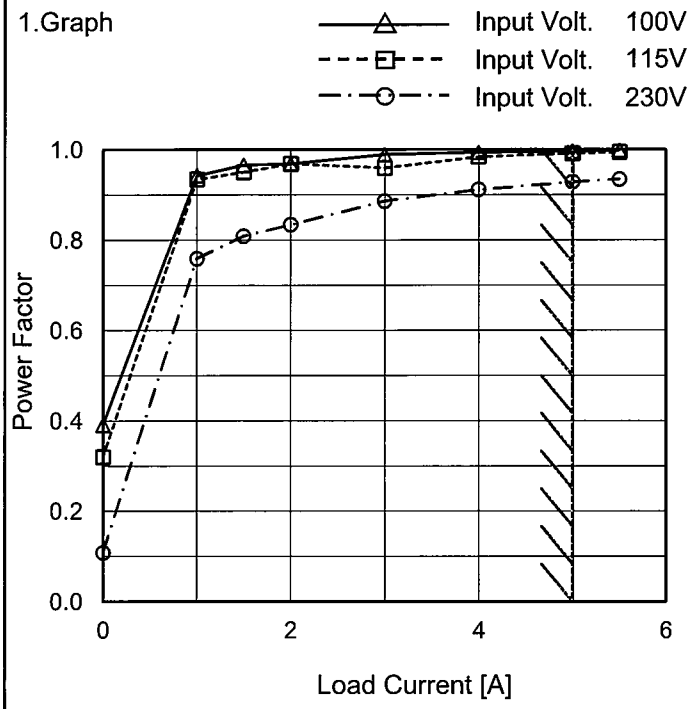
Model	KLEA120F-24
Item	Power Factor (by Load Current)
Object	————————

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]
0.0	0.391	0.320	0.108
1.0	0.943	0.934	0.759
1.5	0.966	0.950	0.809
2.0	0.969	0.969	0.834
3.0	0.989	0.960	0.886
4.0	0.994	0.984	0.912
5.0	0.996	0.991	0.929
5.5	0.999	0.994	0.935
--	-	-	-
--	-	-	-
--	-	-	-

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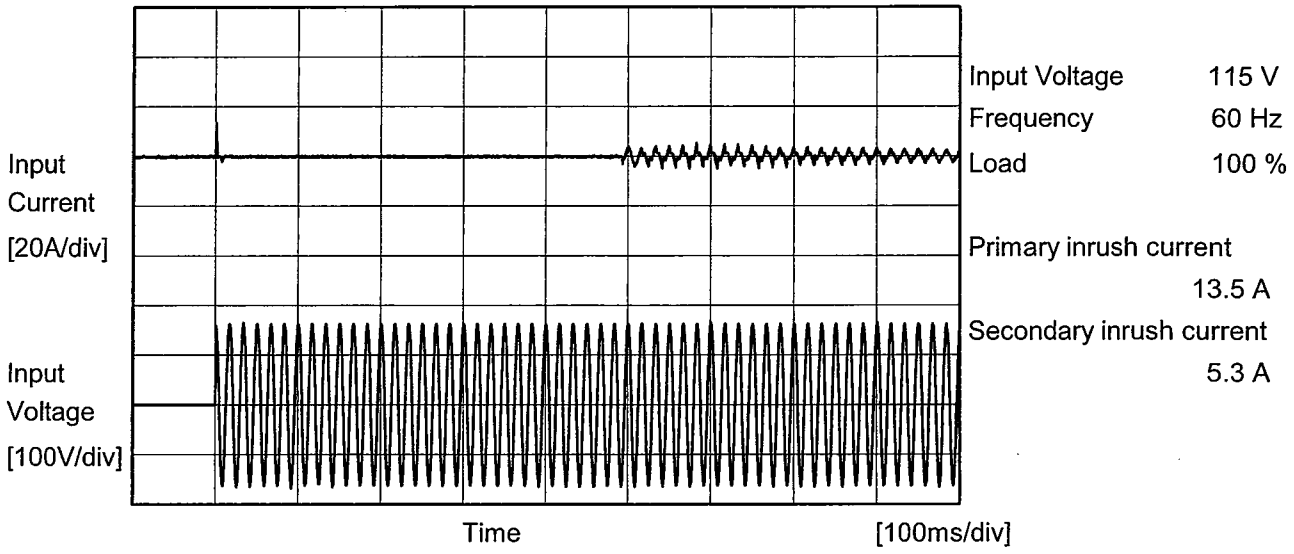
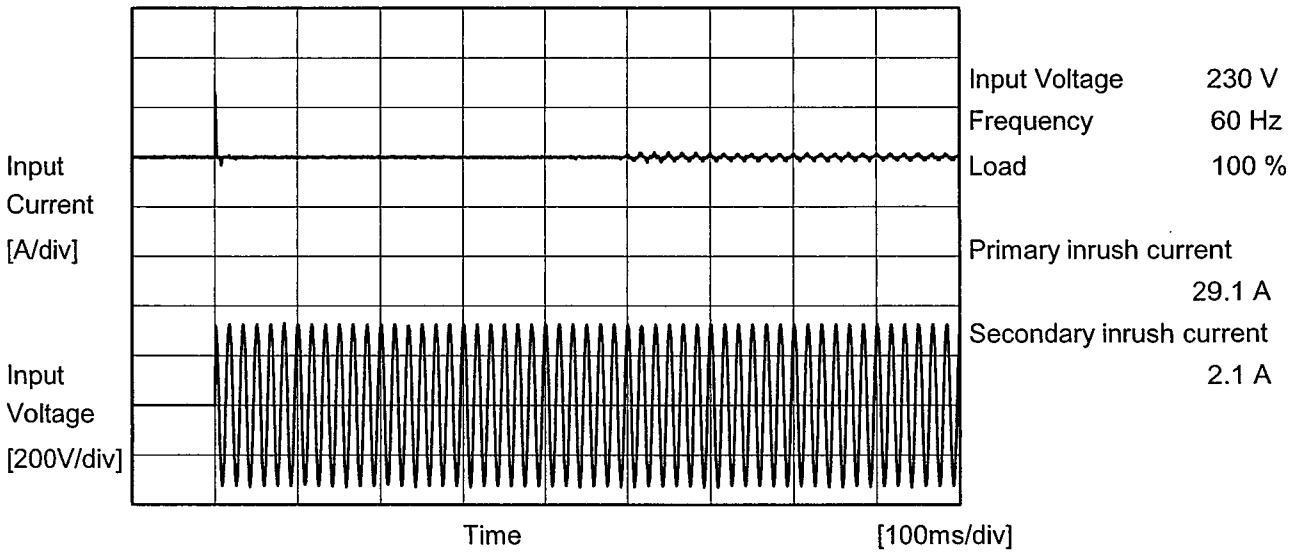
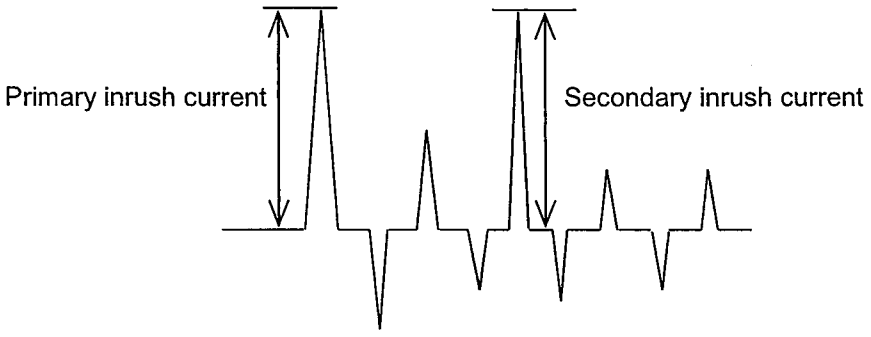
Model	KLEA120F-24
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A







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Model	KLEA120F-24	
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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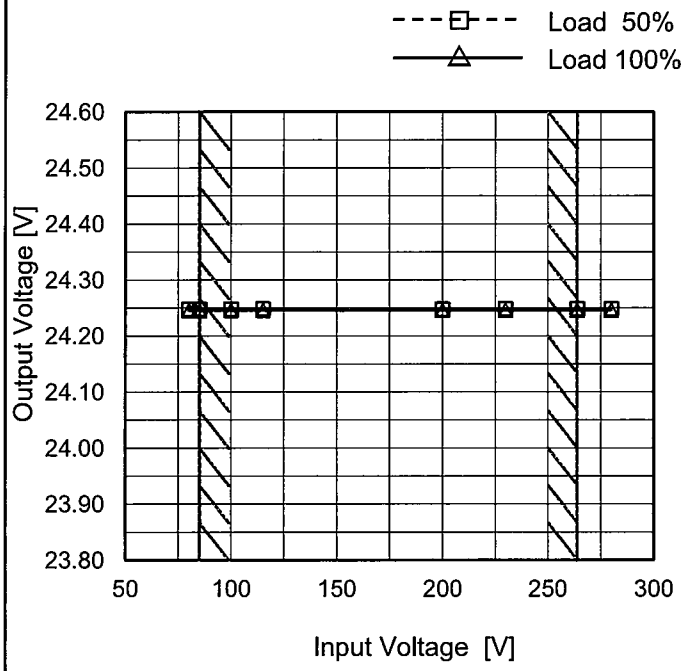
Model	KLEA120F-24
Item	Line Regulation
Object	+24V5A

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	24.248	24.246
85	24.248	24.246
100	24.248	24.246
115	24.248	24.246
200	24.248	24.246
230	24.248	24.246
264	24.248	24.246
280	24.248	24.246
--	-	-

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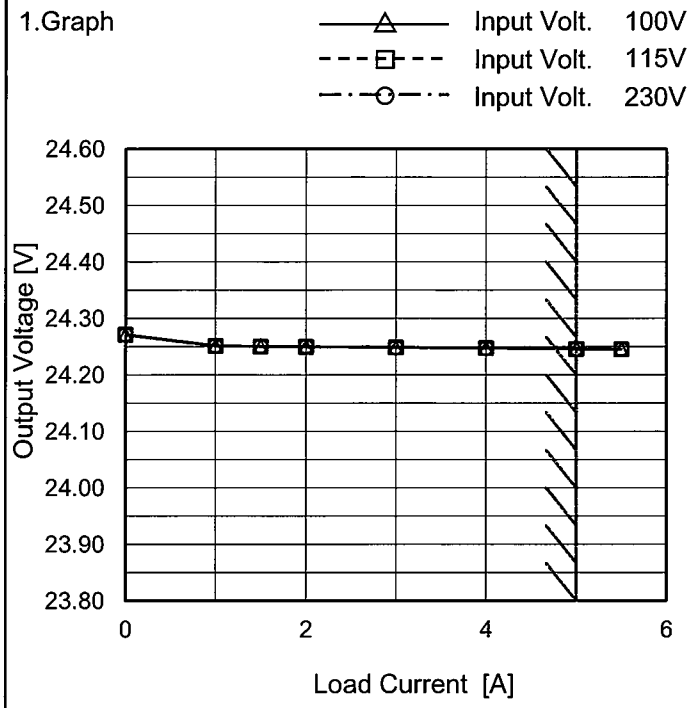
Model	KLEA120F-24
Item	Load Regulation
Object	+24V5A

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]
0.0	24.272	24.271	24.272
1.0	24.252	24.251	24.252
1.5	24.251	24.251	24.251
2.0	24.250	24.250	24.250
3.0	24.249	24.248	24.249
4.0	24.248	24.247	24.247
5.0	24.246	24.246	24.246
5.5	24.246	24.245	24.246
--	-	-	-
--	-	-	-
--	-	-	-

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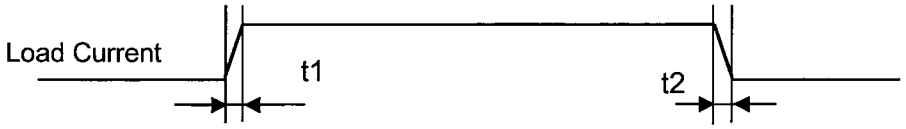
Model	KLEA120F-24		
Item	Dynamic Load Response	Temperature	25˚C
		Testing Circuitry	Figure A
Object	+24V5A		

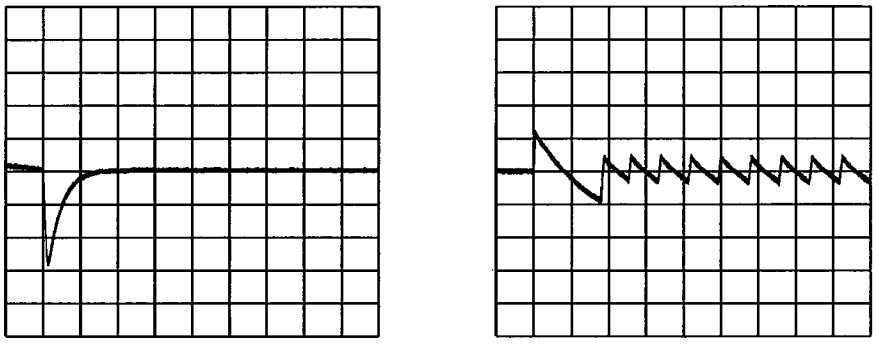
Input Volt. 230 V
Cycle 1000 ms

Response. t1=t2=50us. Typ



Min.Load (0A) ←→
Load 100% (5A)

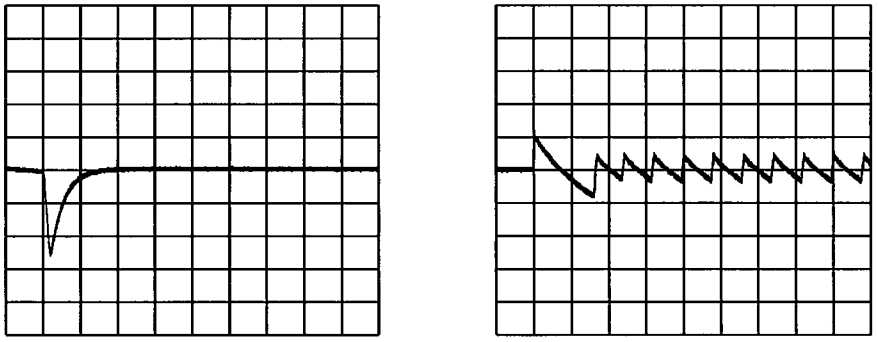
500mV/div



10 ms/div 100 ms/div

Min.Load (0A) ←→
Load 50% (2.5A)

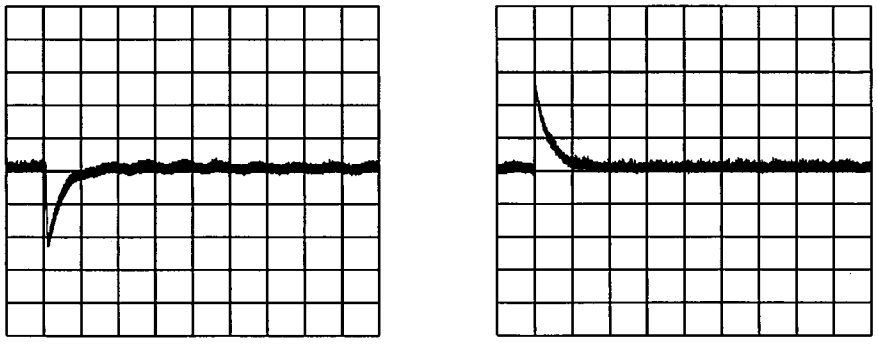
500mV/div



10 ms/div 100 ms/div

Load 30% (1.5A) ←→
Load 100% (5A)

50mV/div



10 ms/div 10 ms/div

＊The characteristic of AC115V is equal.

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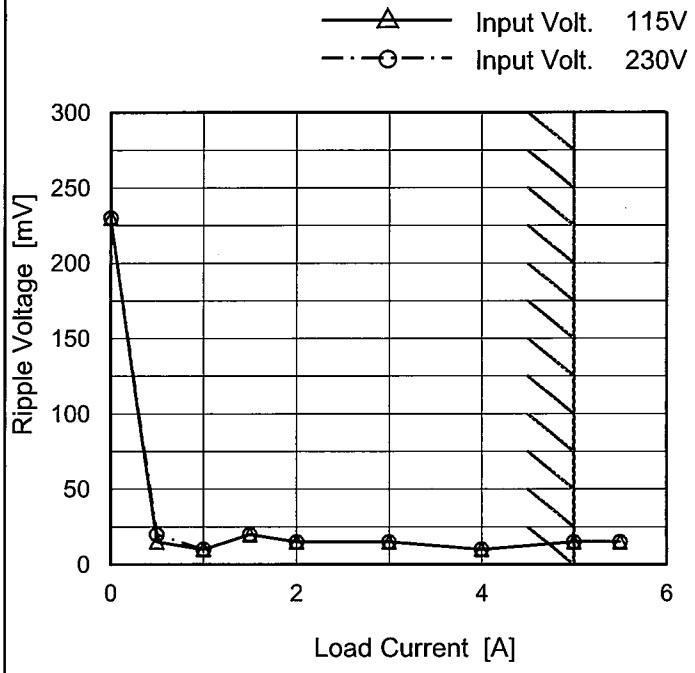
Model	KLEA120F-24
Item	Ripple Voltage (by Load Current)
Object	+24V5A

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

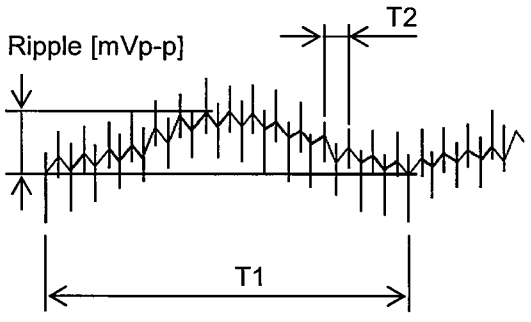


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.0	230	230
0.5	15	20
1.0	10	10
1.5	20	20
2.0	15	15
3.0	15	15
4.0	10	10
5.0	15	15
5.5	15	15
--	-	-
--	-	-

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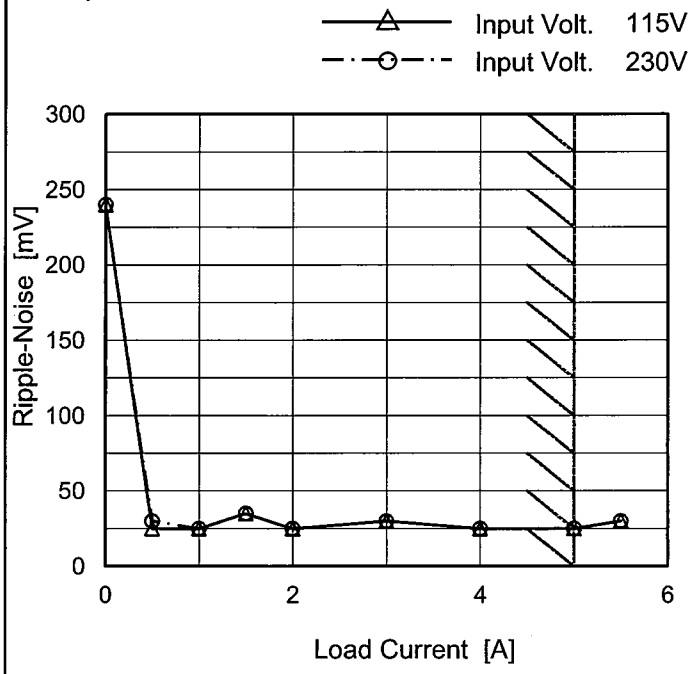
Model	KLEA120F-24
Item	Ripple-Noise
Object	+24V5A

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]
0.0	240	240
0.5	25	30
1.0	25	25
1.5	35	35
2.0	25	25
3.0	30	30
4.0	25	25
5.0	25	25
5.5	30	30
--	-	-
--	-	-

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

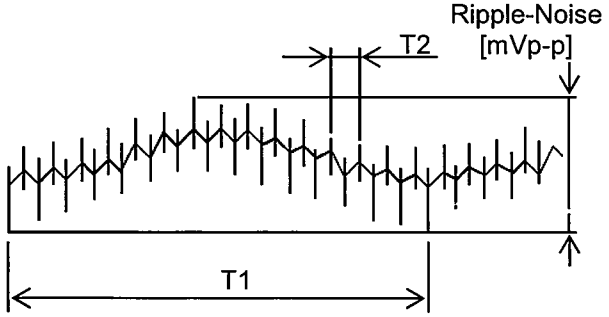


Fig. Complex Ripple Wave Form

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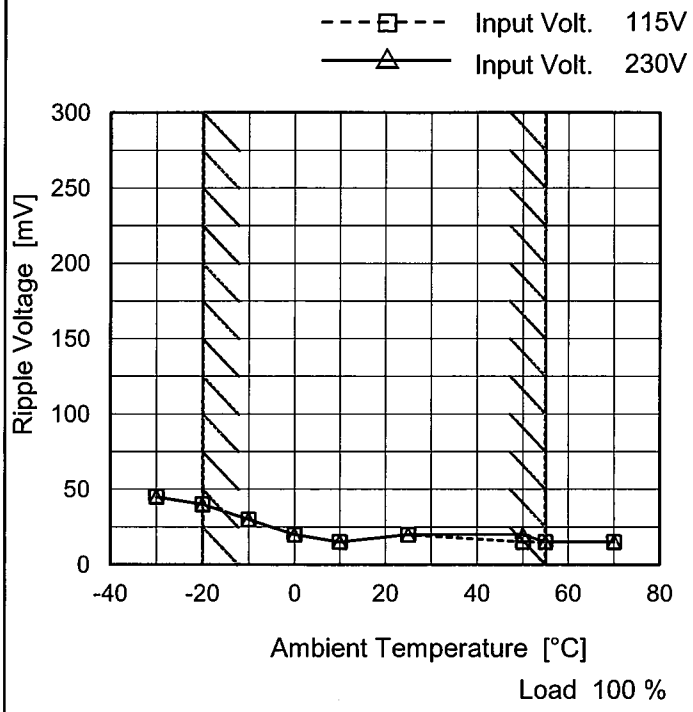
Model	KLEA120F-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V5A

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

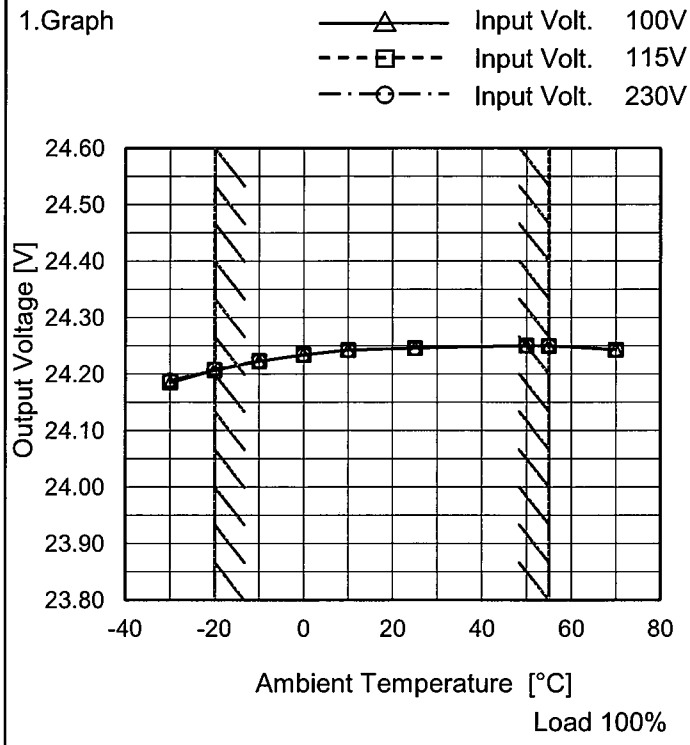
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
-30	45	45
-20	40	40
-10	30	30
0	20	20
10	15	15
25	30	30
50	15	20
55	15	15
70	15	15
--	-	-
--	-	-

COSEL

Model	KLEA120F-24
Item	Ambient Temperature Drift
Object	+24V5A

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	24.185	24.186	24.189
-20	24.207	24.207	24.209
-10	24.223	24.223	24.223
0	24.234	24.234	24.234
10	24.243	24.242	24.243
25	24.246	24.246	24.246
50	24.250	24.251	24.250
55	24.250	24.250	24.250
70	24.243	24.243	24.243
--	-	-	-
--	-	-	-

COSEL

Model	KLEA120F-24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V5A	

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 : 1.5 - 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	50	115	1.5	24.256	±25	±0.1
Minimum Voltage	-20	115	5	24.207		

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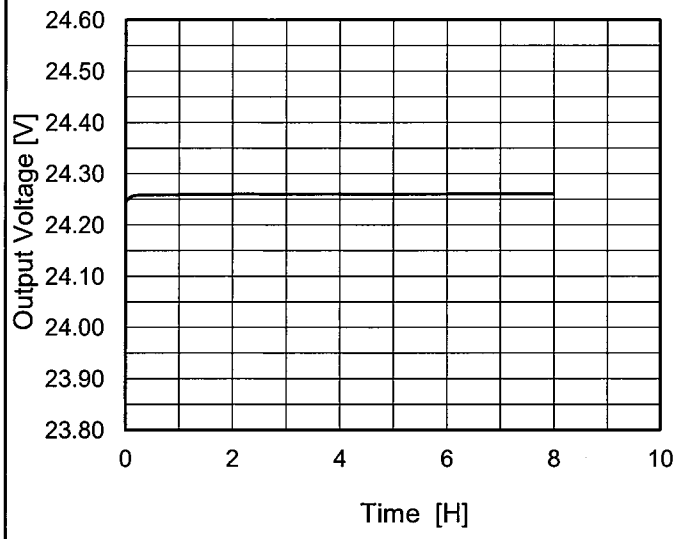
Model	KLEA120F-24
Item	Time Lapse Drift
Object	+24V5A

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	24.246
0.5	24.250
1.0	24.251
2.0	24.251
3.0	24.251
4.0	24.252
5.0	24.252
6.0	24.252
7.0	24.252
8.0	24.252

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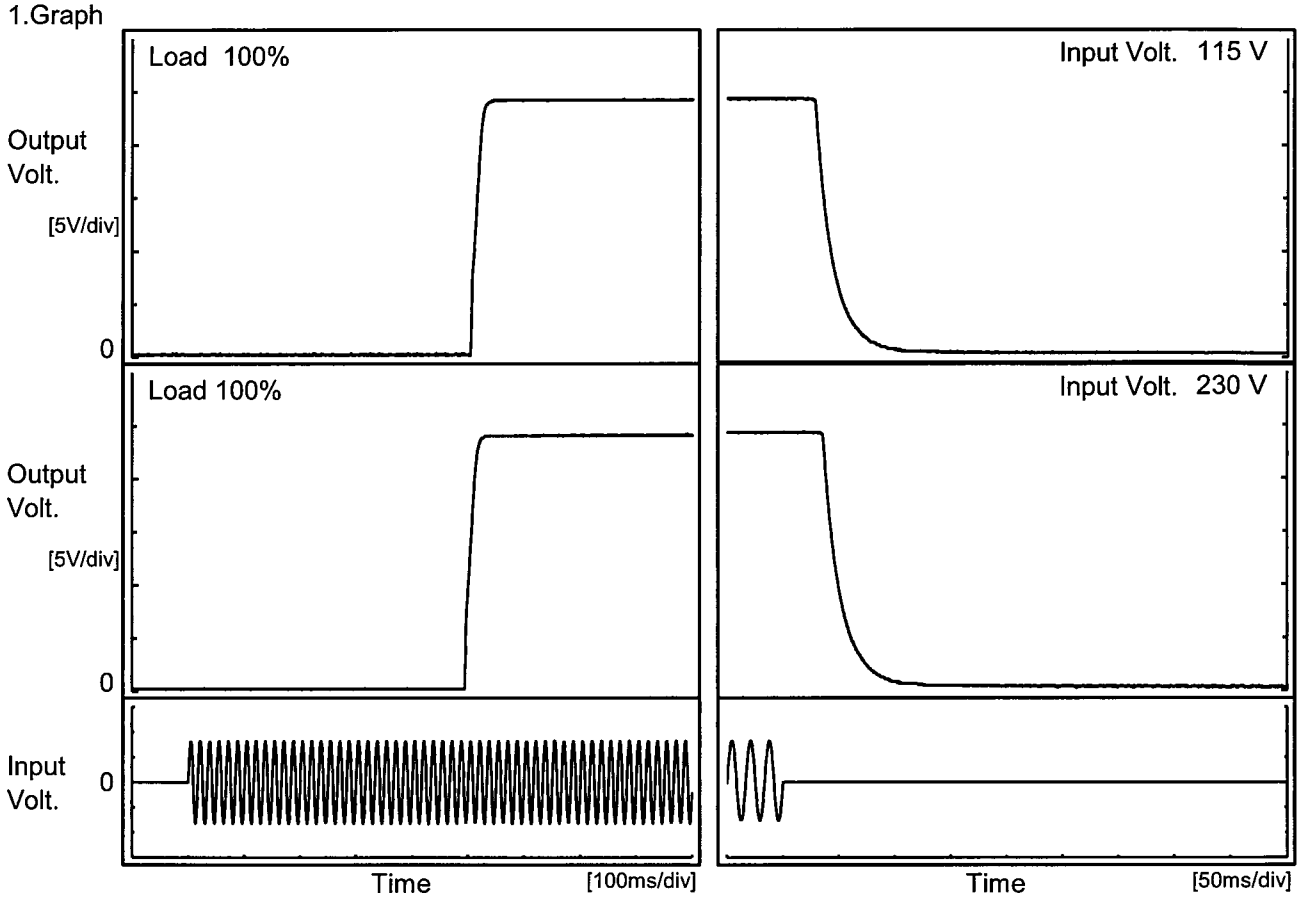
Model	KLEA120F-24	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+24V5A	

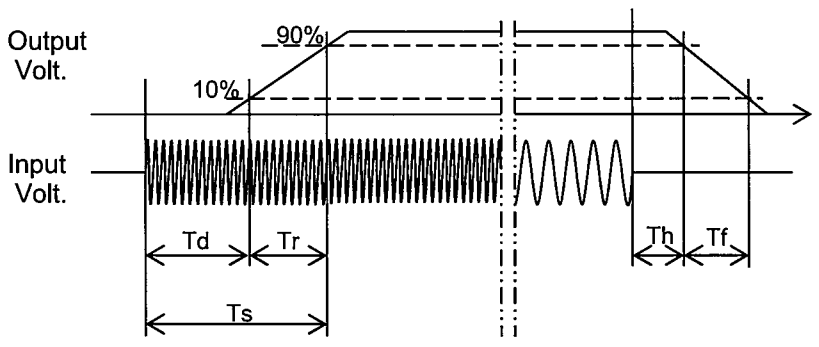
1.Graph



2.Values

[ms]

Input Volt \ Time	Td	Tr	Ts	Th	Tf
115 V	505.5	19.5	525.0	30.5	36.0
230 V	494.5	20.0	514.5	37.3	36.0



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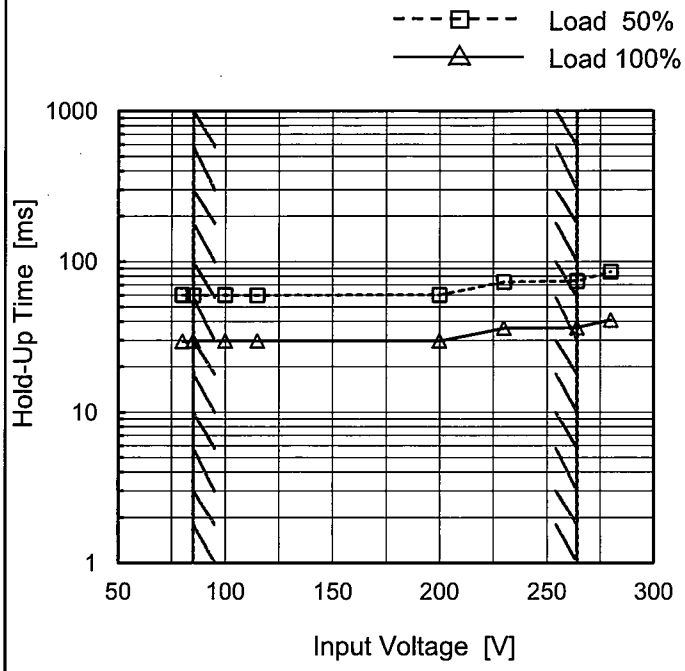
Model	KLEA120F-24
Item	Hold-Up Time
Object	+24V5A

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

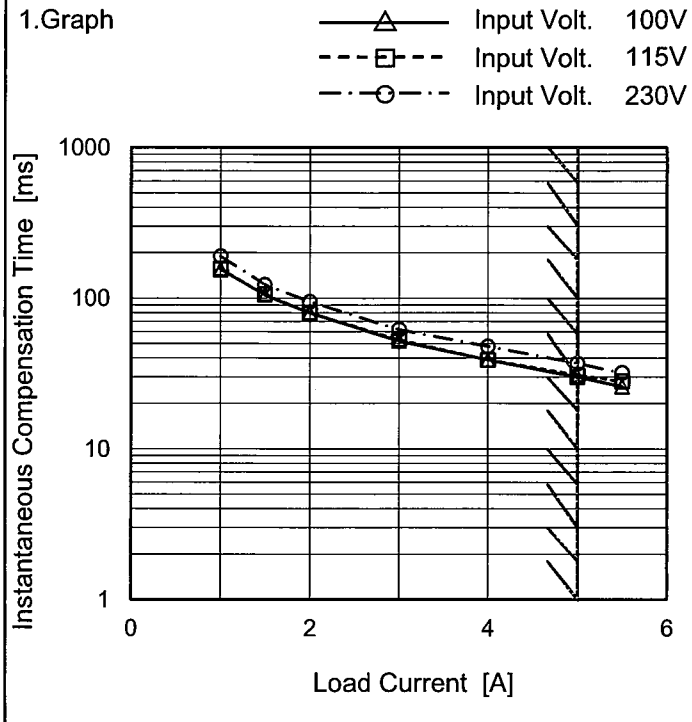
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
80	60	30
85	60	30
100	60	30
115	60	31
200	60	31
230	73	37
264	74	37
280	86	41
--	-	-

COSEL

Model	KLEA120F-24
Item	Instantaneous Interruption Compensation
Object	+24V5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

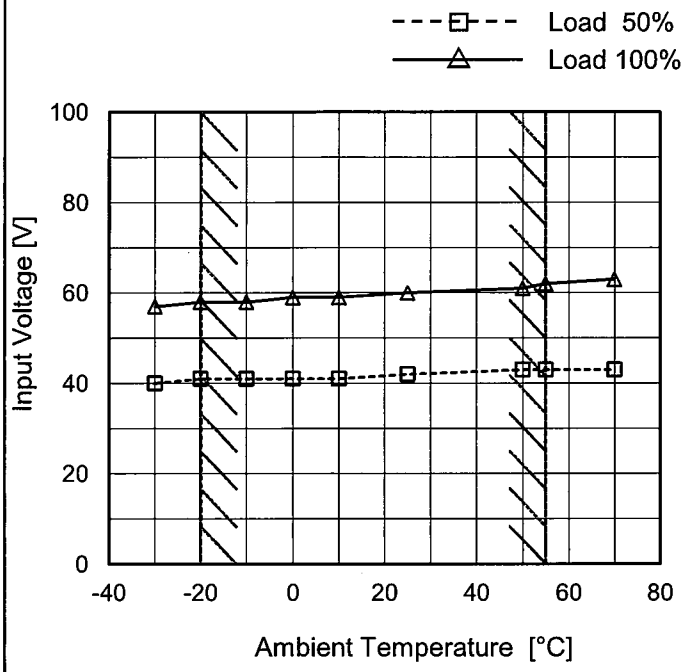
Load Current [A]	Time [ms] Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	155	156	190
1.5	105	106	123
2.0	80	80	95
3.0	52	53	62
4.0	39	39	48
5.0	30	31	37
5.5	26	28	32
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	KLEA120F-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V5A

Testing Circuitry Figure A

1.Graph



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

2.Values

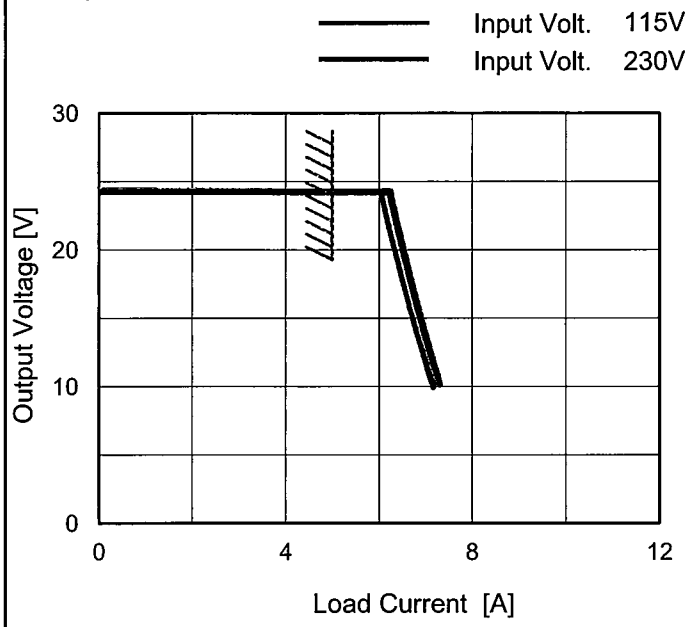
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	40	57
-20	41	58
-10	41	58
0	41	59
10	41	59
25	42	60
50	43	61
55	43	62
70	43	63
--	-	-
--	-	-

COSEL

Model	KLEA120F-24
Item	Overcurrent Protection
Object	+24V5A

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

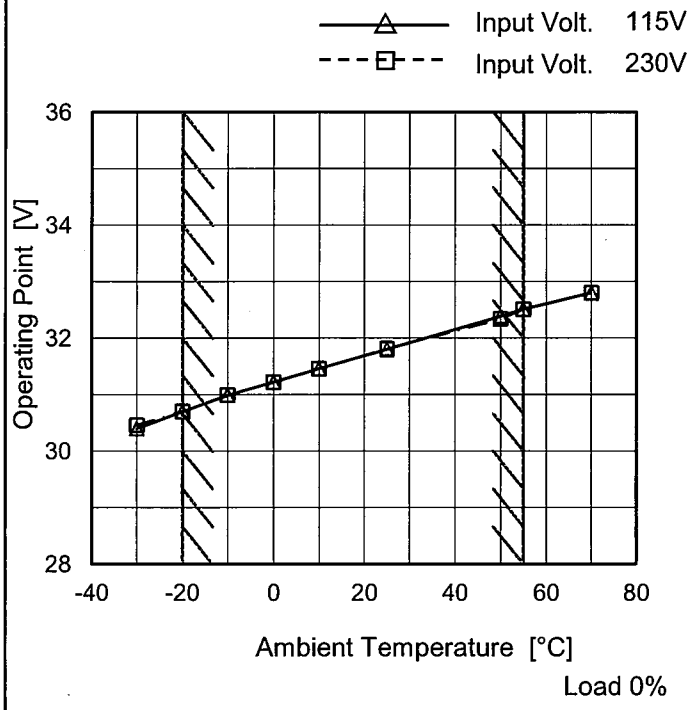
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
22.8	6.14	6.33
21.6	6.21	6.41
19.2	6.39	6.58
16.8	6.57	6.76
14.4	6.77	6.94
12.0	6.97	7.14
10.0	7.16	7.32
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	KLEA120F-24
Item	Overvoltage Protection
Object	+24V5A

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	30.40	30.46
-20	30.70	30.70
-10	30.99	30.99
0	31.22	31.22
10	31.46	31.46
25	31.80	31.81
50	32.39	32.34
55	32.51	32.51
70	32.80	32.80
--	-	-
--	-	-

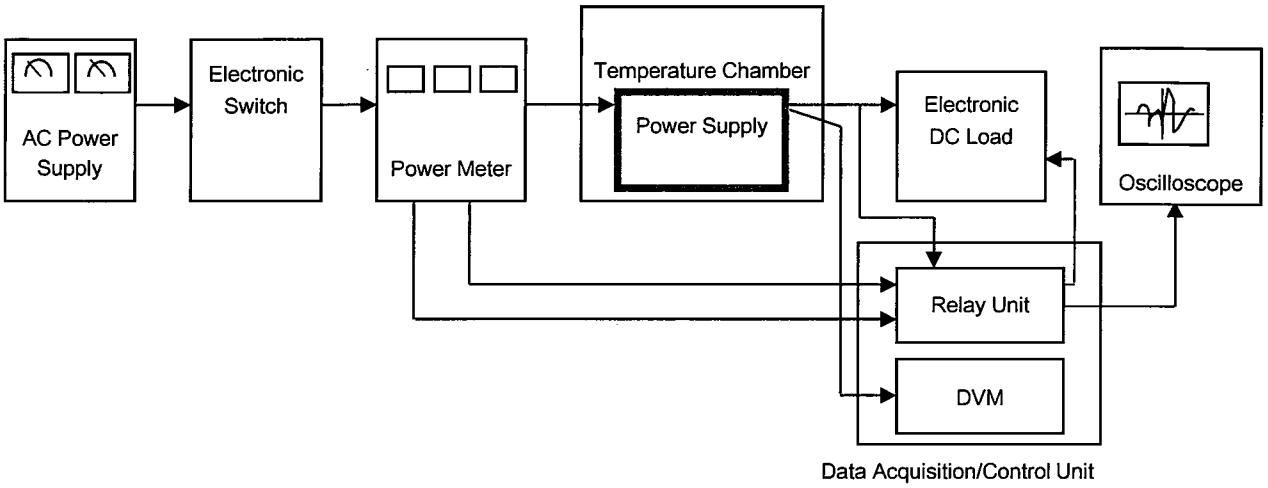


Figure A

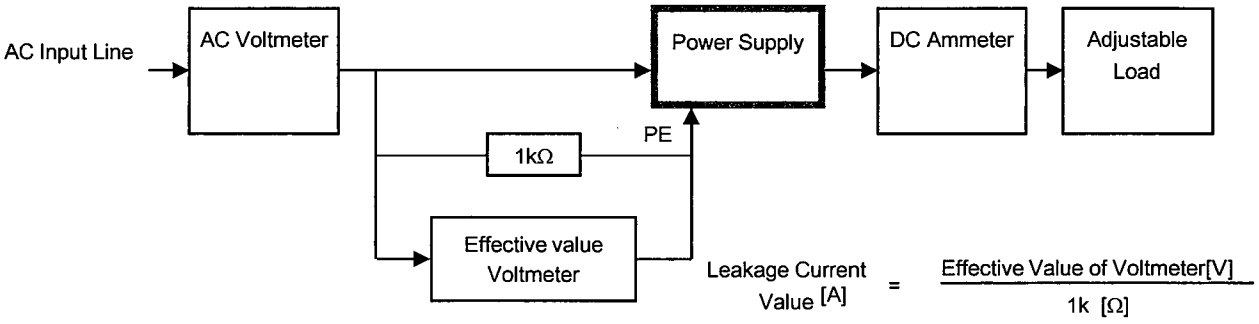


Figure B (DEN-AN)

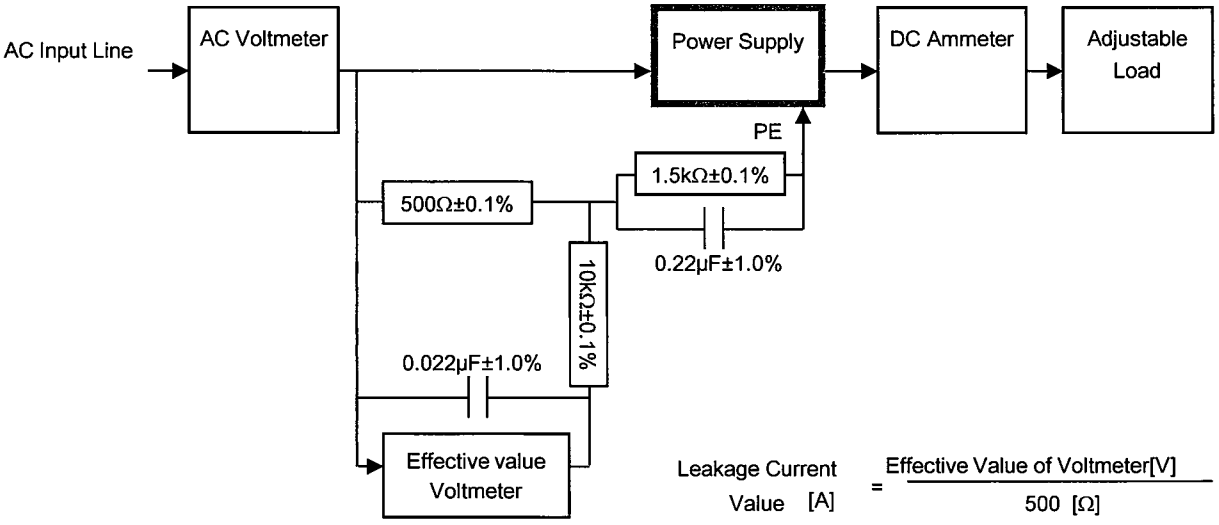
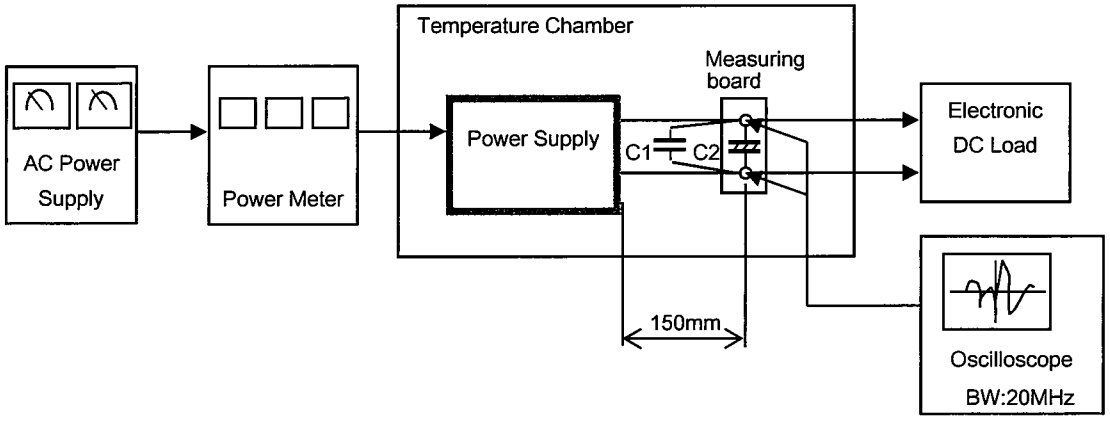


Figure B (IEC60950-1)



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

Figure C