COSEL

参考資料

TEST DATA OF LFP100F-24-Y

Regulated DC Power Supply
February 2, 2013

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COSEL CO.,LTD.

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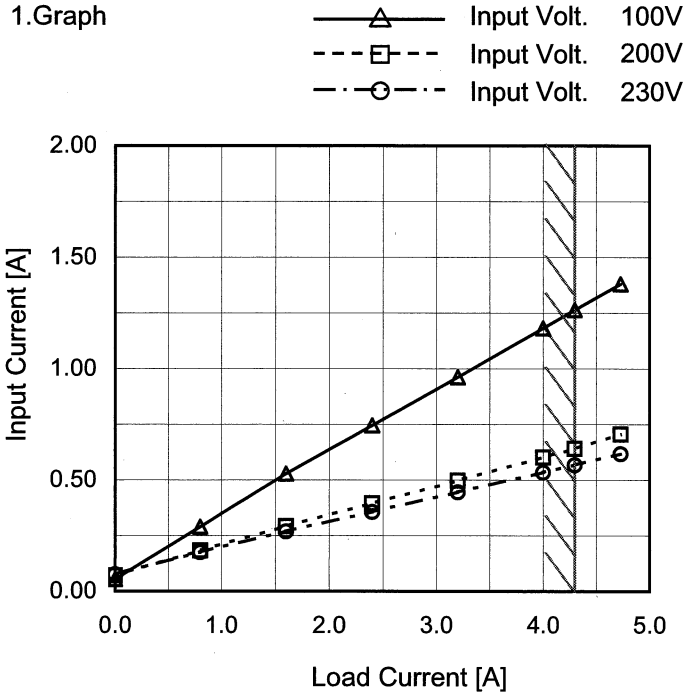
Model	LFP100F-24-Y
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

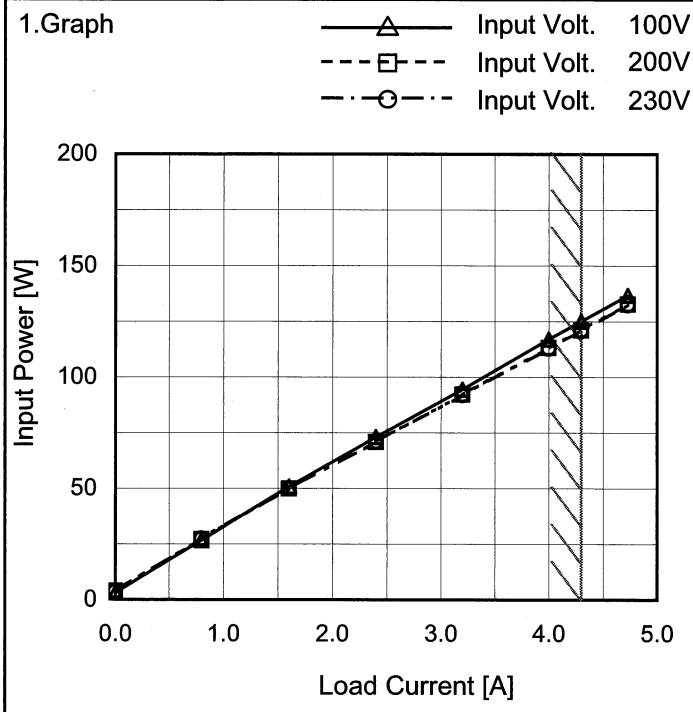
Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.055	0.070	0.076
0.80	0.290	0.182	0.175
1.60	0.529	0.291	0.268
2.40	0.746	0.395	0.356
3.20	0.963	0.498	0.445
4.00	1.183	0.603	0.535
4.30	1.265	0.641	0.568
4.73	1.381	0.706	0.618
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFP100F-24-Y
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

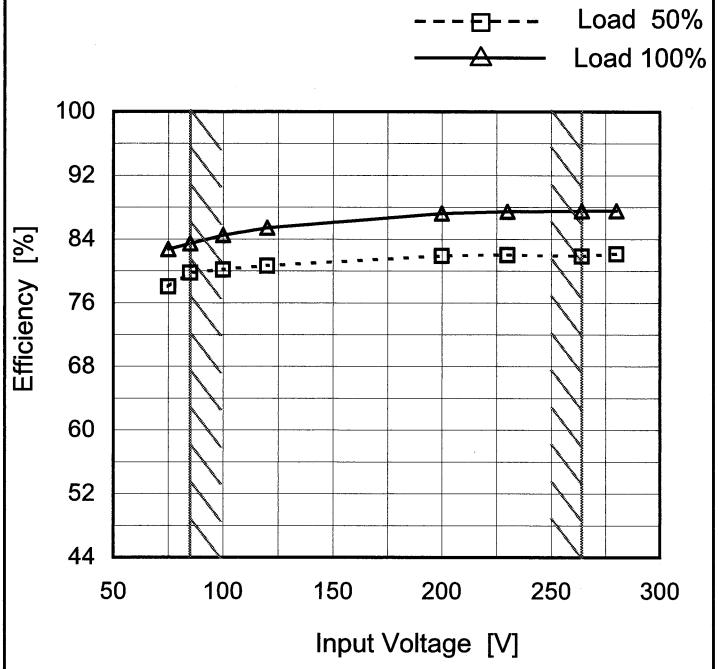
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	3.2	3.8	3.8
0.80	26.7	27.2	27.5
1.60	50.9	49.9	49.9
2.40	73.1	70.9	71.0
3.20	94.5	92.2	91.9
4.00	117.1	113.2	112.9
4.30	125.2	121.1	120.8
4.73	136.8	132.8	132.4
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFP100F-24-Y
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

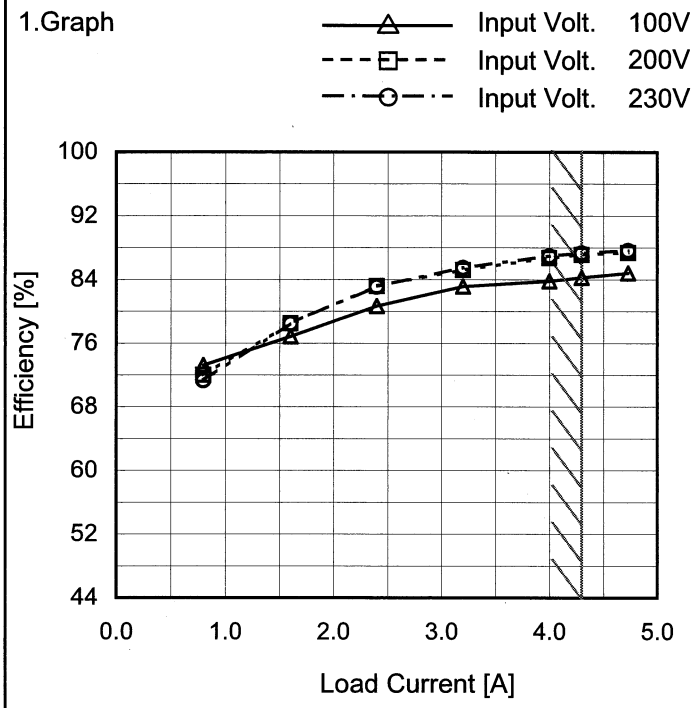
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	78.0	82.8
85	79.8	83.5
100	80.2	84.5
120	80.7	85.5
200	81.9	87.2
230	82.0	87.5
264	81.9	87.6
280	82.1	87.6
--	-	-

COSEL

Model	LFP100F-24-Y
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. 200[V]	Input Volt. 230[V]
0.000	-	-	-
0.800	73.2	72.0	71.3
1.600	76.9	78.5	78.5
2.400	80.7	83.2	83.1
3.200	83.1	85.2	85.5
4.000	83.8	86.7	86.9
4.300	84.3	87.1	87.3
4.730	84.8	87.4	87.6
--	-	-	-
--	-	-	-
--	-	-	-

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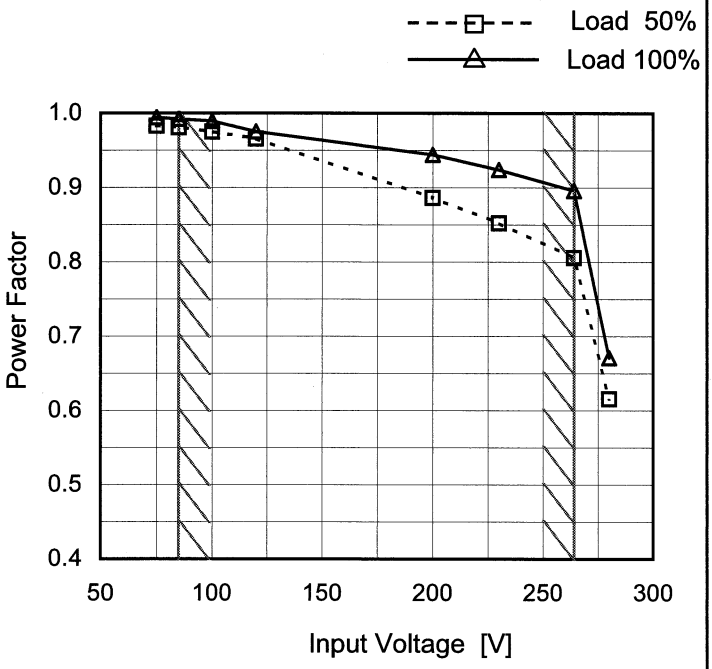
Model	LFP100F-24-Y
Item	Power Factor (by Input Voltage)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

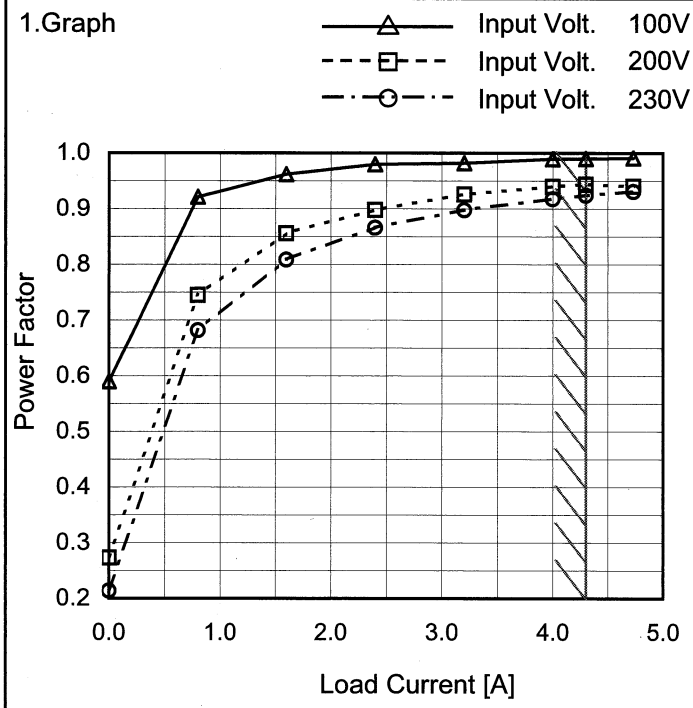
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.983	0.995
85	0.981	0.992
100	0.975	0.990
120	0.966	0.976
200	0.886	0.945
230	0.852	0.924
264	0.805	0.896
280	0.616	0.671
--	-	-

COSEL

Model	LFP100F-24-Y
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.

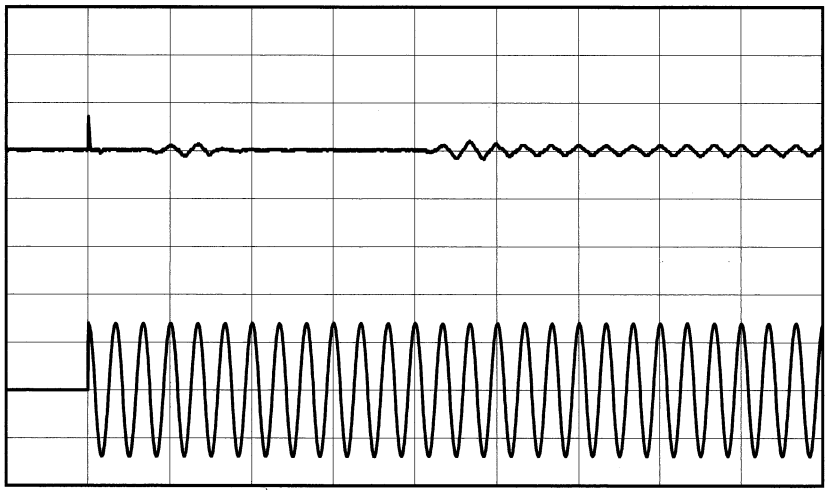
2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.590	0.273	0.214
0.80	0.921	0.745	0.682
1.60	0.962	0.856	0.809
2.40	0.980	0.897	0.866
3.20	0.982	0.926	0.897
4.00	0.990	0.939	0.918
4.30	0.991	0.944	0.924
4.73	0.991	0.941	0.931
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

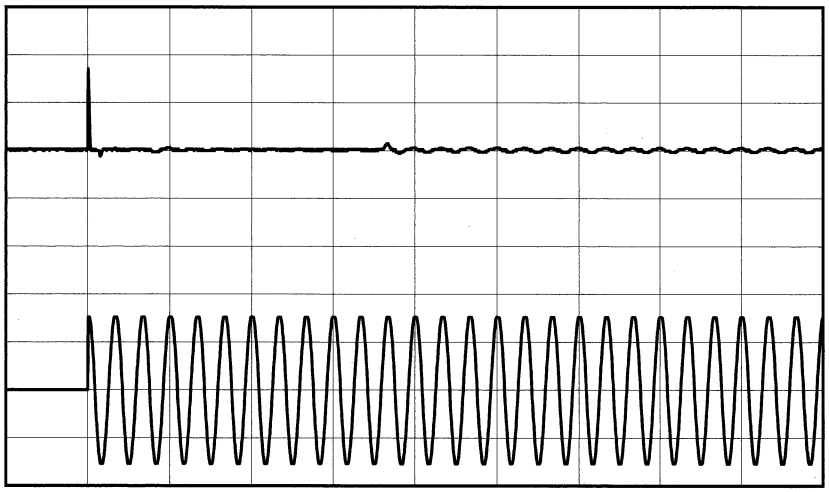
Model	LFP100F-24-Y
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



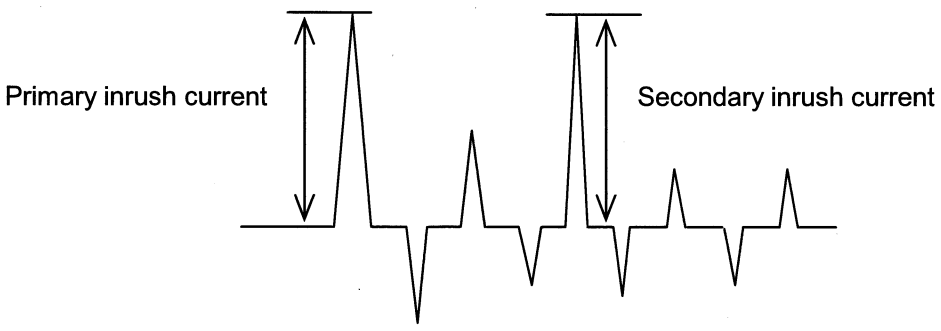
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
14.2 A
Secondary inrush current :
4.0 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
34.1 A
Secondary inrush current :
2.4 A



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Model	LFP100F-24-Y	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	———————	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.27	0.35	0.37	Operation
	One of phases	0.25	0.55	0.68	Stand by
IEC60950-1	Both phases	0.13	0.29	0.33	Operation
	One of phases	0.25	0.53	0.64	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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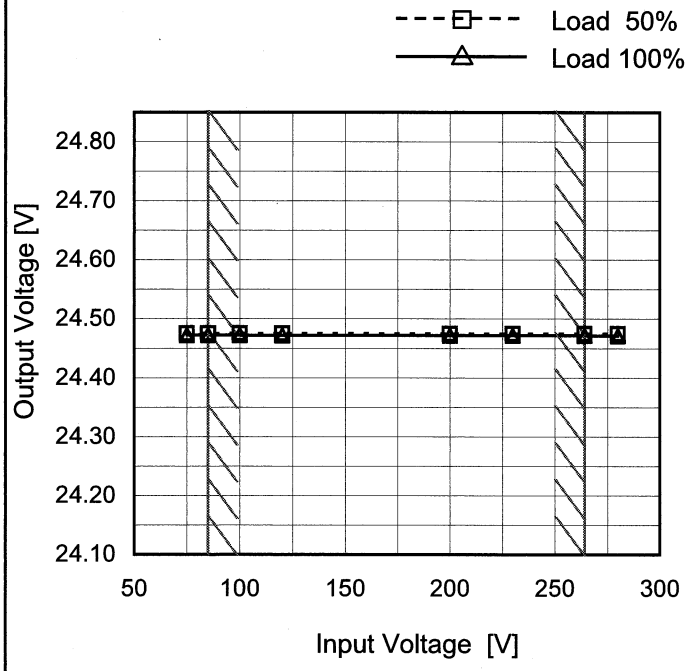
Model	LFP100F-24-Y
Item	Line Regulation
Object	+24V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

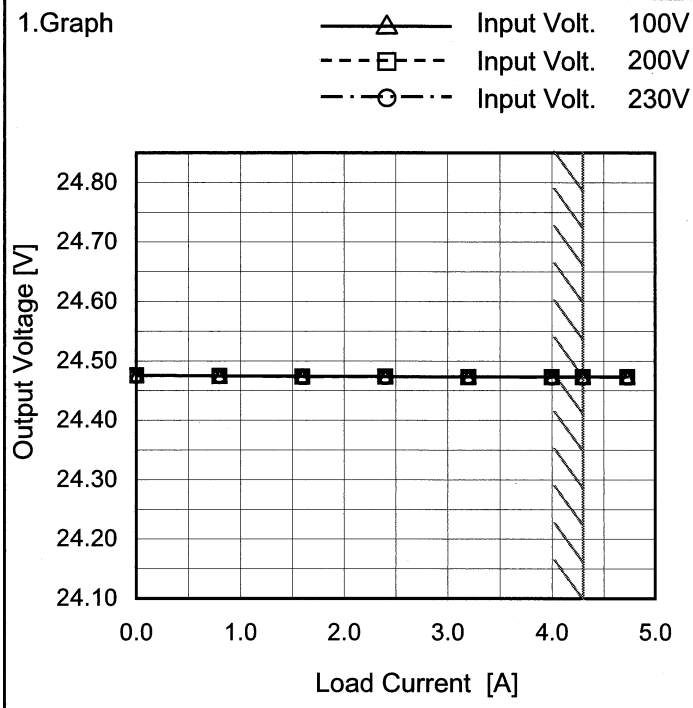
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	24.475	24.473
85	24.475	24.473
100	24.475	24.473
120	24.475	24.472
200	24.475	24.472
230	24.475	24.472
264	24.475	24.472
280	24.475	24.472
--	-	-

COSEL

Model	LFP100F-24-Y
Item	Load Regulation
Object	+24V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

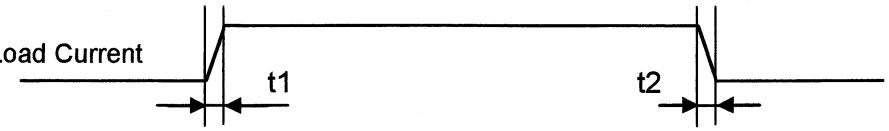
Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	24.476	24.475	24.475
0.80	24.475	24.475	24.474
1.60	24.474	24.474	24.473
2.40	24.474	24.473	24.473
3.20	24.474	24.473	24.473
4.00	24.473	24.473	24.473
4.30	24.473	24.473	24.472
4.73	24.473	24.473	24.472
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

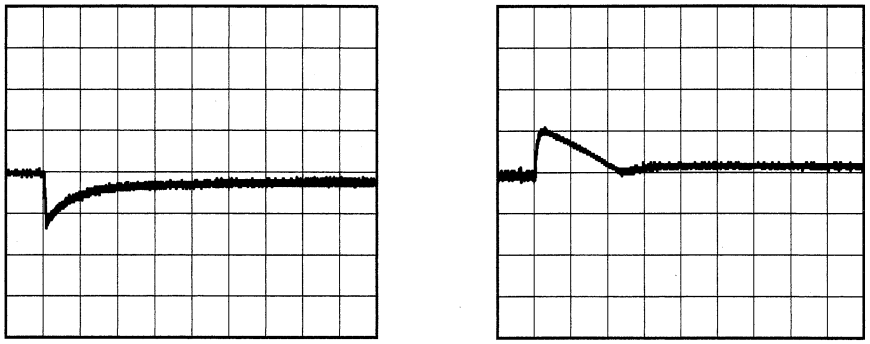
Model	LFP100F-24-Y		
Item	Dynamic Load Response	Temperature Testing Circuitry	25° C Figure A
Object	+24V4.3A		

Input Volt. 100 V
Cycle 1000 ms

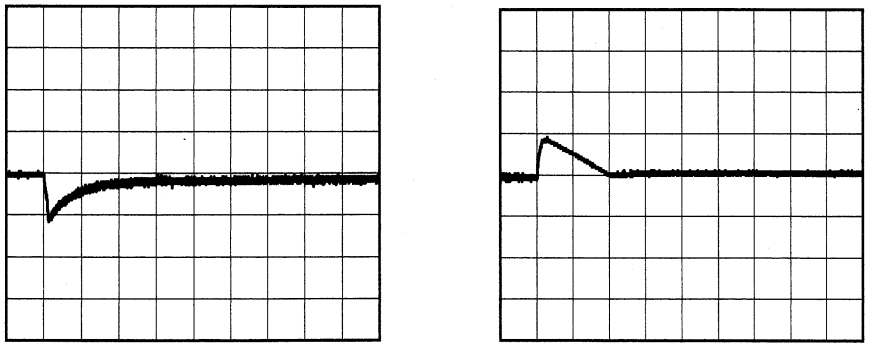
Response. t1=t2=50us. Typ



Min. Load (0A) ⟷
Load 100% (4.3A)



Min. Load (0A) ⟷
Load 50% (2.15A)

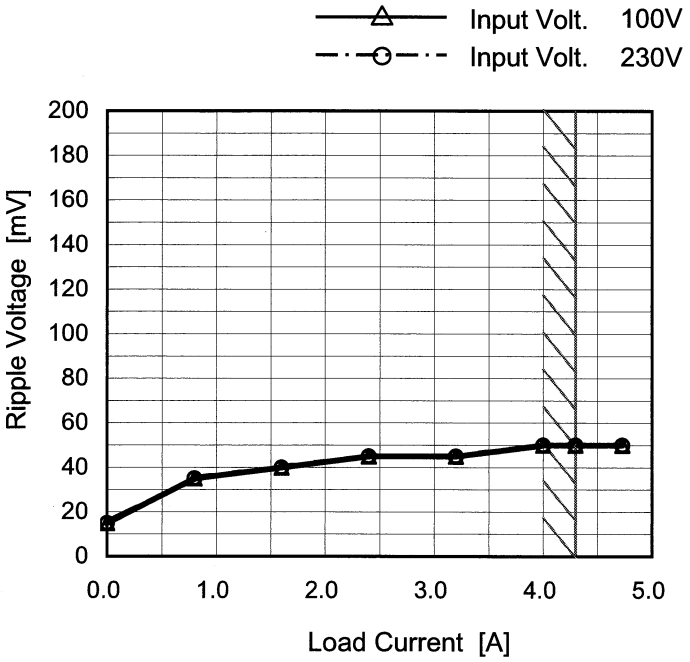


COSEL

Model	LFP100F-24-Y
Item	Ripple Voltage (by Load Current)
Object	+24V4.3A

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

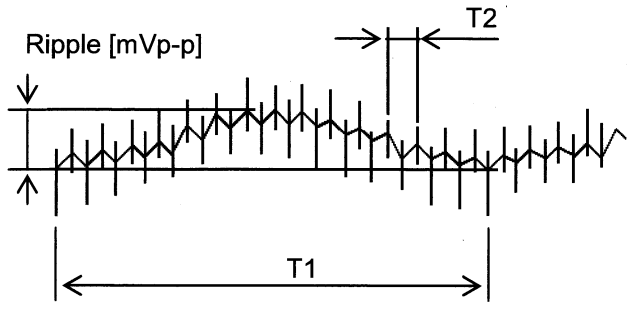


Fig. Complex Ripple Wave Form

2.Values

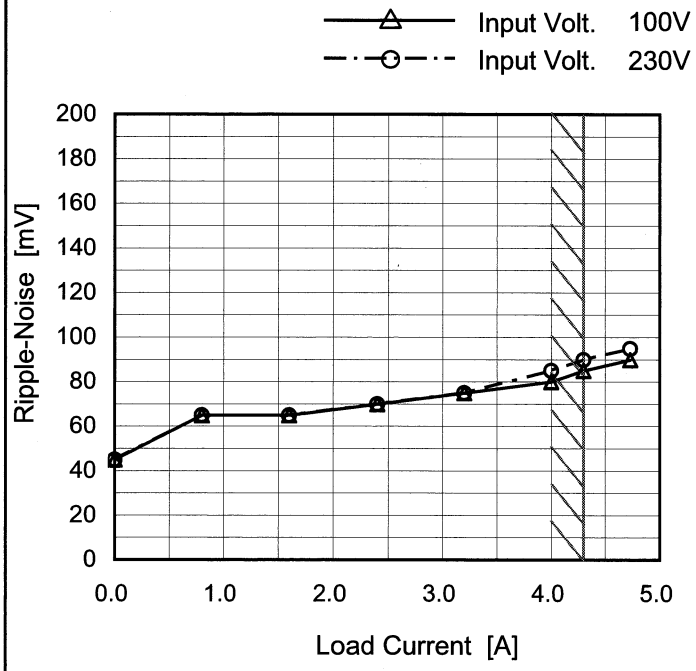
Load Current [A]	Ripple Voltage [mV] Input Volt. 100 [V]	Ripple Voltage [mV] Input Volt. 230 [V]
0.00	15	15
0.80	35	35
1.60	40	40
2.40	45	45
3.20	45	45
4.00	50	50
4.30	50	50
4.73	50	50
--	-	-
--	-	-
--	-	-

COSEL

Model	LFP100F-24-Y
Item	Ripple-Noise
Object	+24V4.3A

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.

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

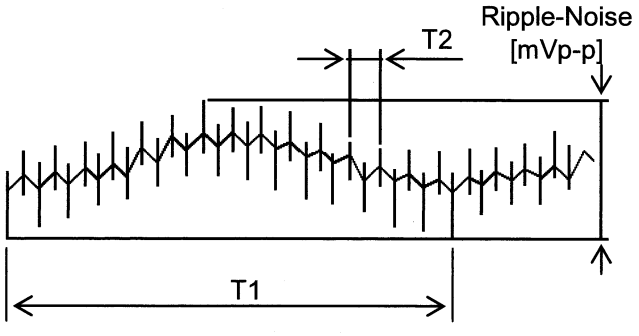


Fig. Complex Ripple Wave Form

2.Values

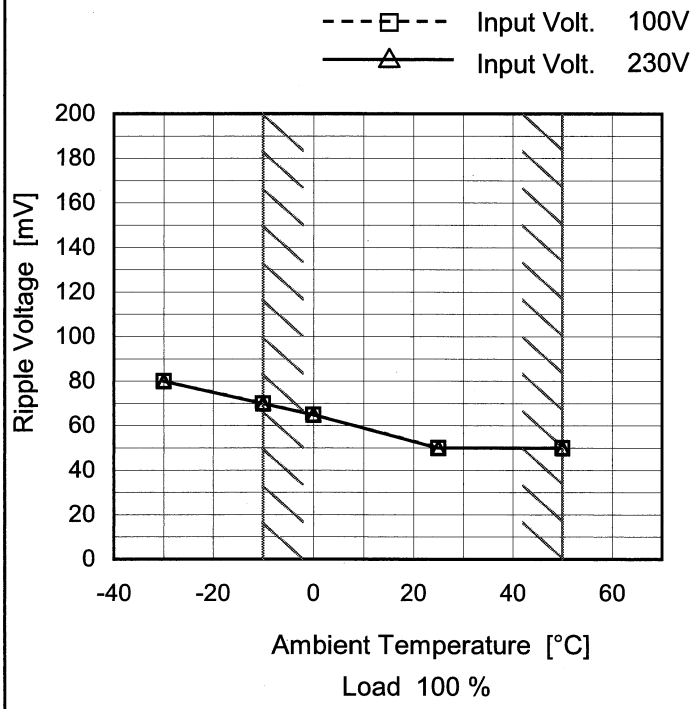
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
0.00	45	45
0.80	65	65
1.60	65	65
2.40	70	70
3.20	75	75
4.00	80	85
4.30	85	90
4.73	90	95
--	-	-
--	-	-
--	-	-

COSEL

Model	LFP100F-24-Y
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V4.3A

Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.

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

2.Values

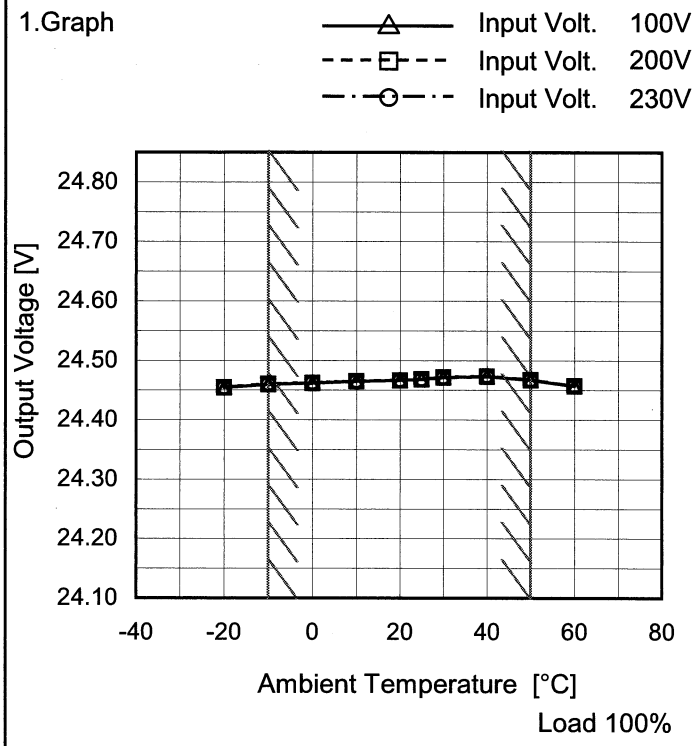
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-30	80	80
-10	70	70
0	65	65
25	50	50
50	50	50
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFP100F-24-Y
Item	Ambient Temperature Drift
Object	+24V4.3A

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. 200[V]	Input Volt. 230[V]
-20	24.454	24.454	24.454
-10	24.460	24.460	24.461
0	24.462	24.462	24.463
10	24.465	24.465	24.466
20	24.467	24.467	24.467
25	24.468	24.468	24.469
30	24.472	24.472	24.472
40	24.473	24.474	24.474
50	24.468	24.467	24.467
60	24.457	24.457	24.457
--	-	-	-

COSEL

Model	LFP100F-24-Y	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V4.3A	

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 : -10 - 50°C
Input Voltage : 85 - 264V
Load Current : 0 - 4.3A

* 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	40	85	0	24.476	±8	±0.1
Minimum Voltage	-10	85	4.3	24.460		

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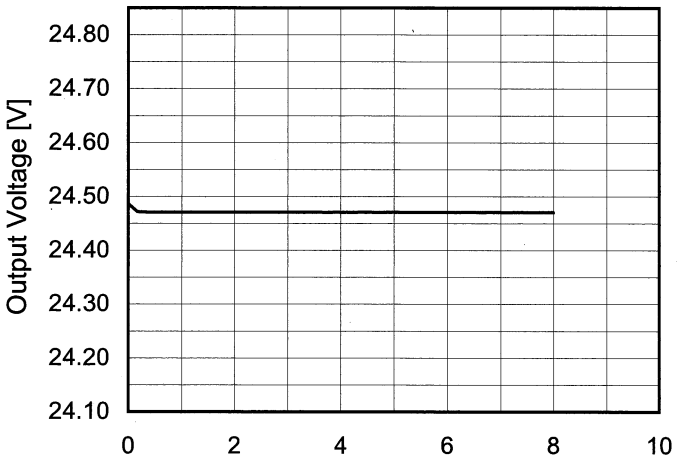
Model	LFP100F-24-Y
Item	Time Lapse Drift
Object	+24V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC230V is equal.

2.Values

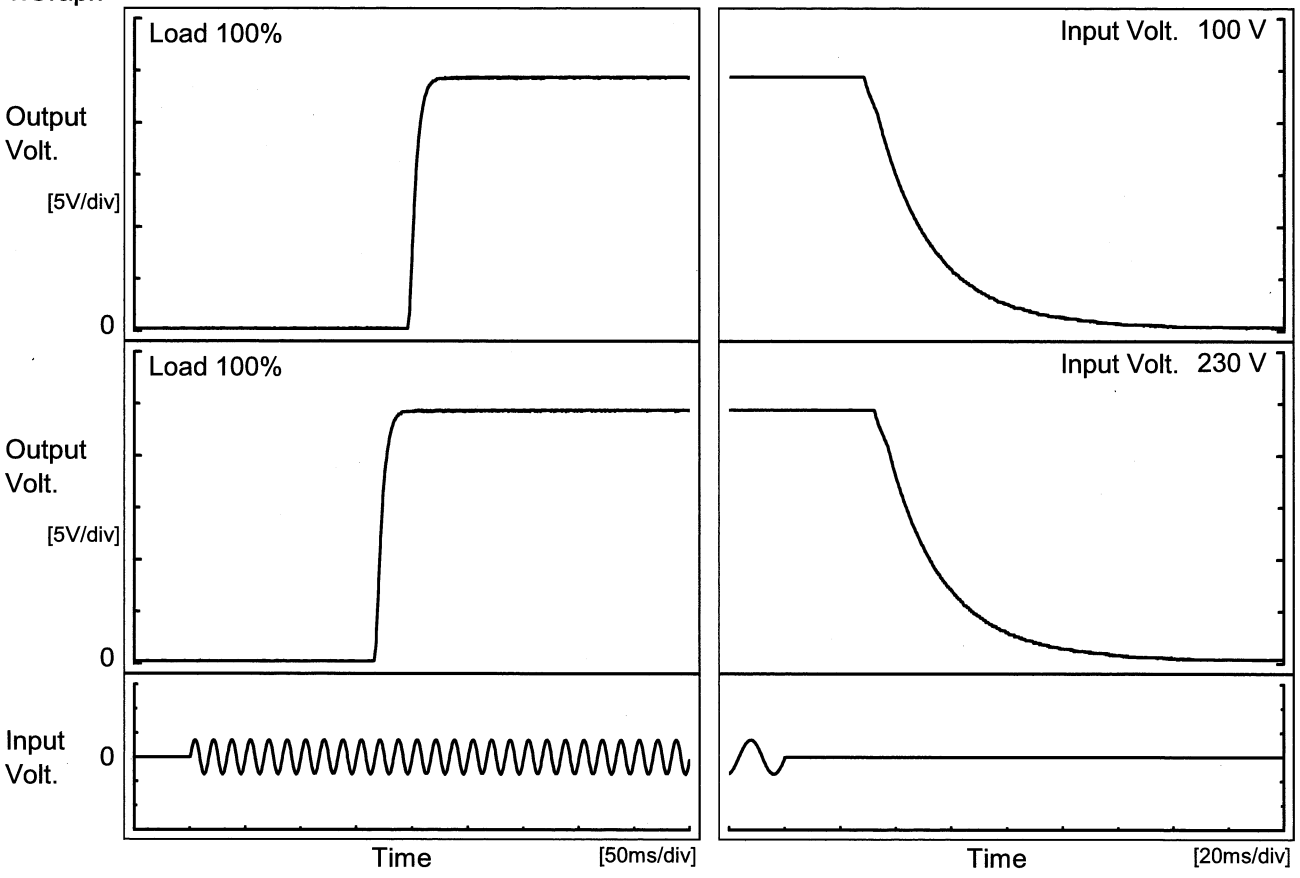
Time since start [H]	Output Voltage [V]
0.0	24.487
0.5	24.472
1.0	24.471
2.0	24.471
3.0	24.471
4.0	24.471
5.0	24.471
6.0	24.471
7.0	24.471
8.0	24.471

COSEL

Model	LFP100F-24-Y
Item	Rise and Fall Time
Object	+24V4.3A

Temperature 25°C
Testing Circuitry Figure A

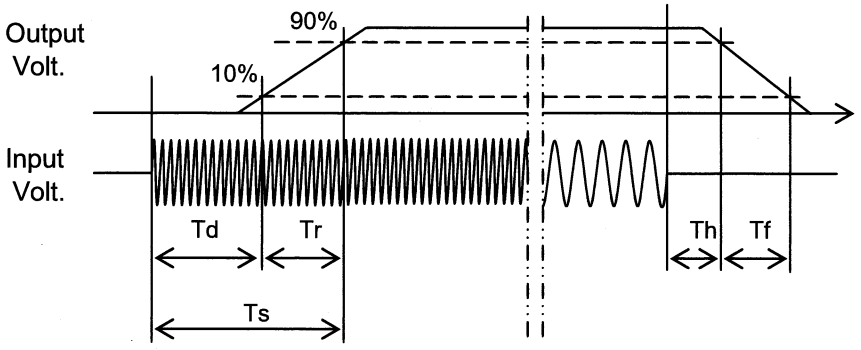
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	198.3	12.0	210.3	31.9	48.3
230 V	168.3	12.0	180.3	35.7	48.5

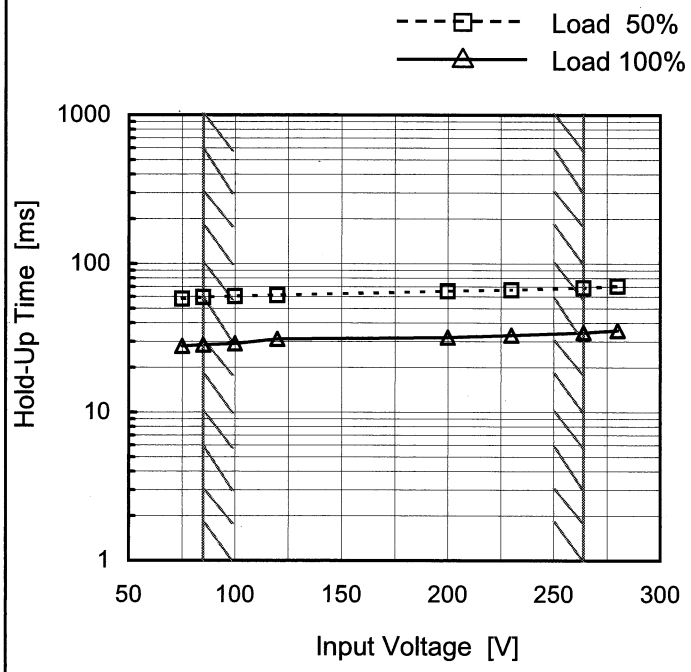


COSEL

Model	LFP100F-24-Y
Item	Hold-Up Time
Object	+24V4.3A

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

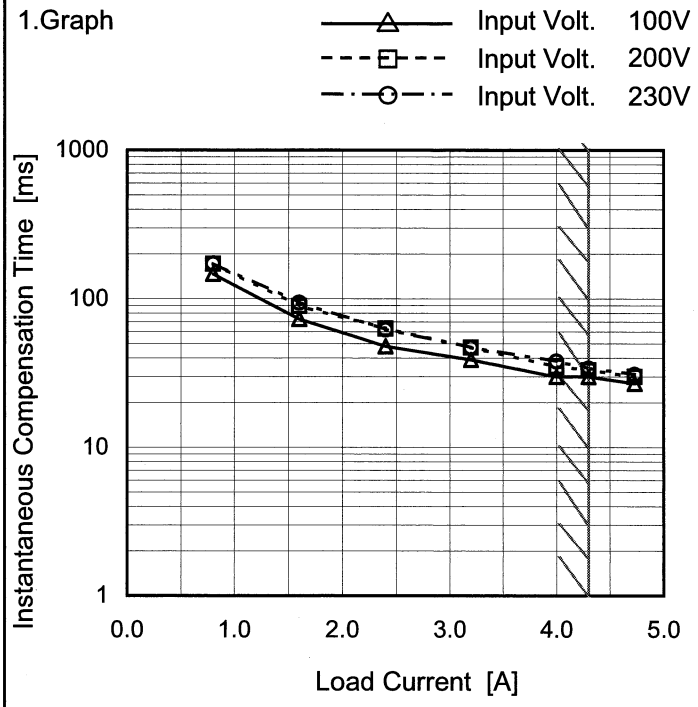
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	58	28
85	60	29
100	60	29
120	61	31
200	65	32
230	67	33
264	69	34
280	71	36
--	-	-

COSEL

Model	LFP100F-24-Y
Item	Instantaneous Interruption Compensation
Object	+24V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

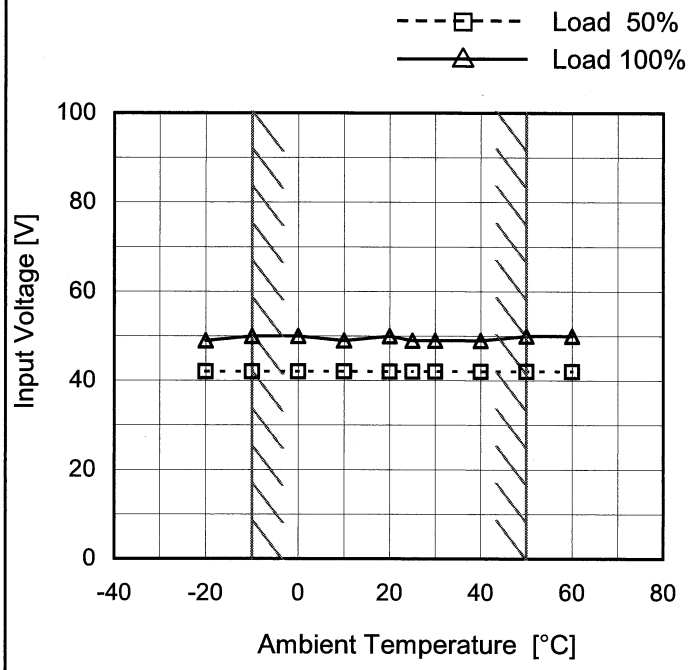
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.80	147	172	173
1.60	73	89	94
2.40	48	63	62
3.20	39	47	47
4.00	30	35	38
4.30	30	33	34
4.73	27	30	31
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFP100F-24-Y
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V4.3A

Testing Circuitry Figure A

1.Graph



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

2.Values

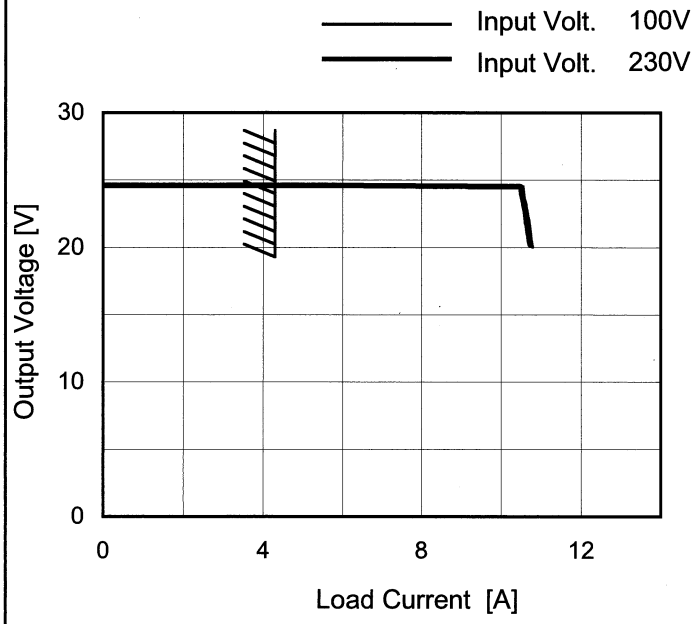
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	42	49
-10	42	50
0	42	50
10	42	49
20	42	50
25	42	49
30	42	49
40	42	49
50	42	50
60	42	50
--	-	-

COSEL

Model	LFP100F-24-Y
Item	Overcurrent Protection
Object	+24V4.3A

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 20V to 0V.

2.Values

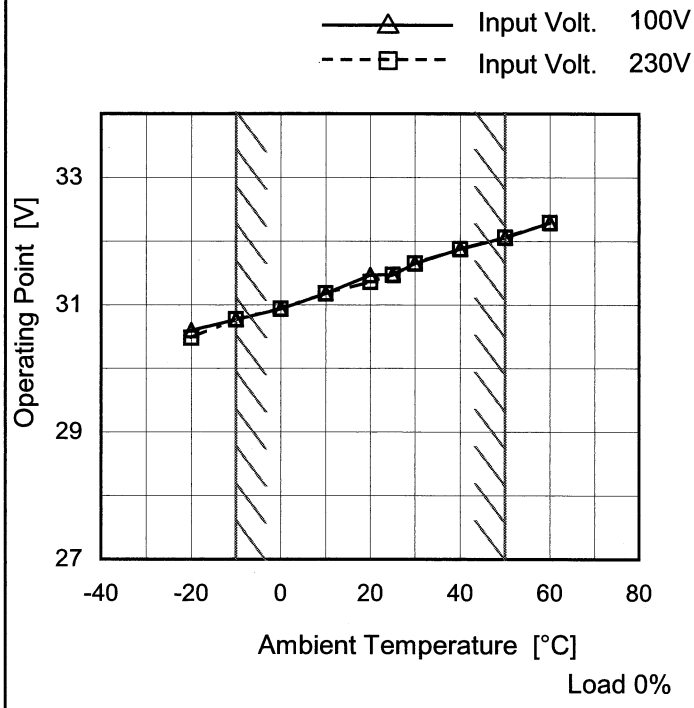
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 230[V]
22.8	10.64	10.59
21.6	10.71	10.65
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFP100F-24-Y
Item	Overvoltage Protection
Object	+24V4.3A

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. 100[V]	Input Volt. 230[V]
-20	30.60	30.48
-10	30.77	30.77
0	30.94	30.94
10	31.18	31.18
20	31.47	31.36
25	31.47	31.47
30	31.65	31.65
40	31.88	31.88
50	32.06	32.06
60	32.29	32.29
--	-	-

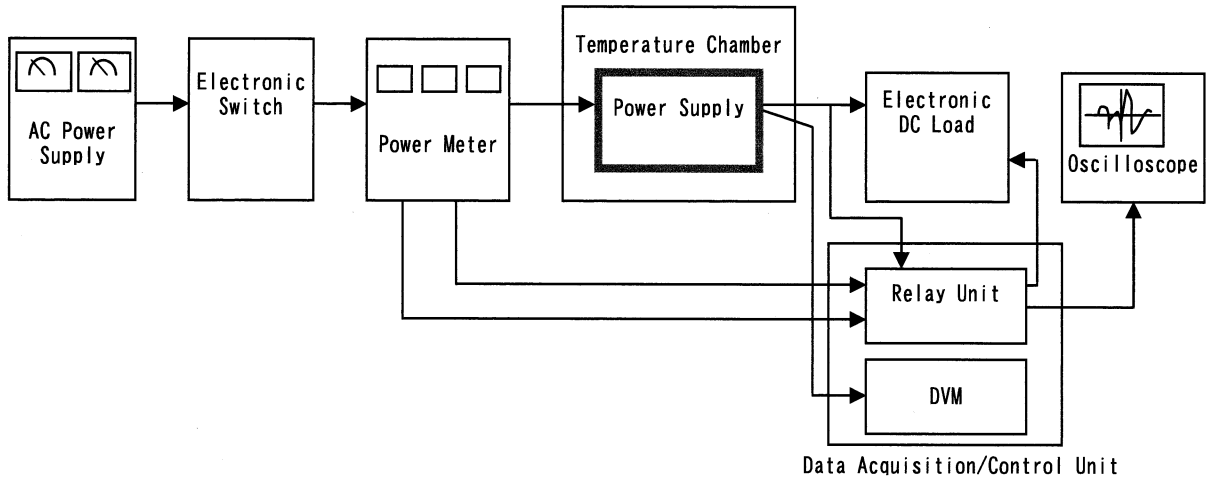


Figure A

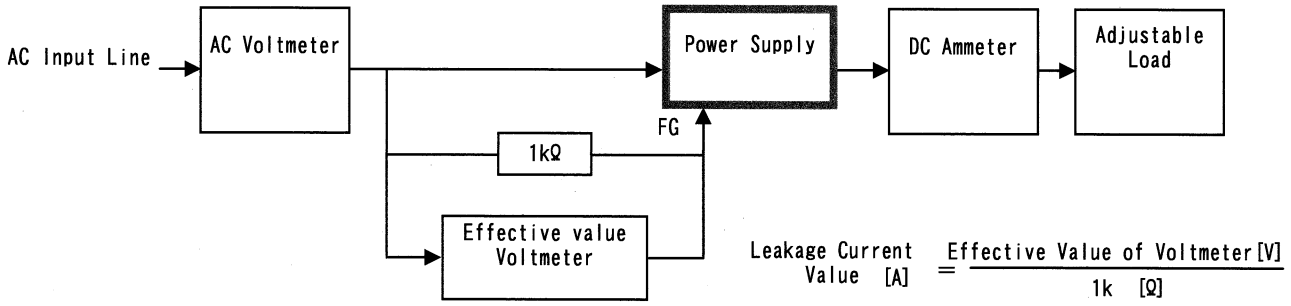


Figure B (DEN-AN)

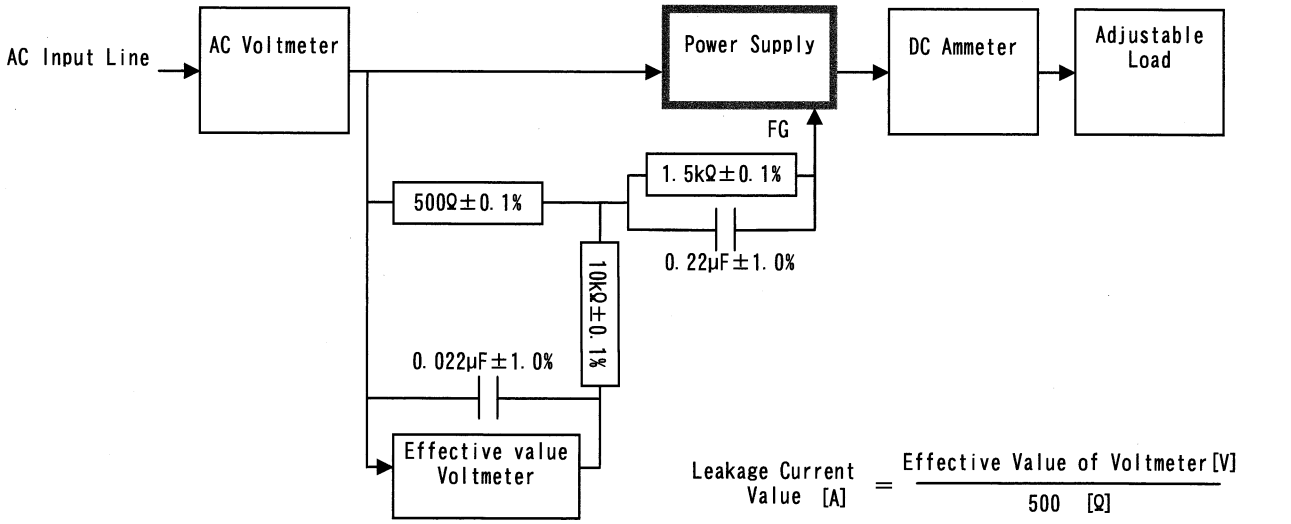


Figure B (IEC60950-1)

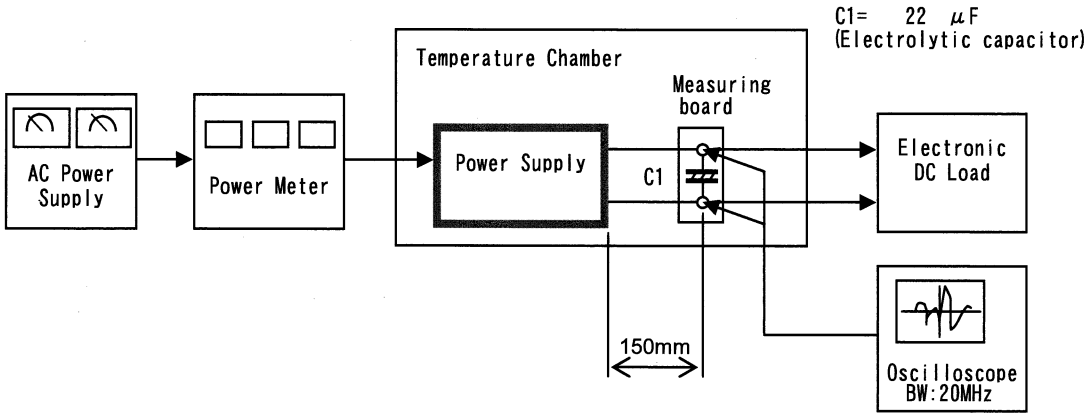

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope BW:20MHz

Figure C