参考資料

COSEL

TEST DATA OF PBA600F-24

Regulated DC Power Supply
October 14, 2008

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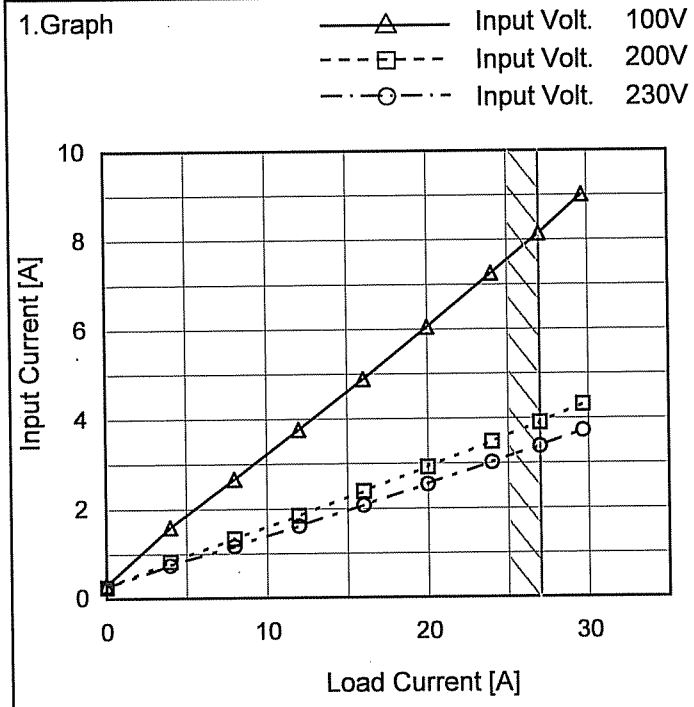
Model	PBA600F-24
Item	Input Current (by Load Current)
Object	———————

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]
0.0	0.296	0.241	0.242
4.0	1.588	0.821	0.737
8.0	2.660	1.326	1.166
12.0	3.760	1.840	1.610
16.0	4.880	2.379	2.066
20.0	6.040	2.920	2.536
24.0	7.240	3.475	3.014
27.0	8.130	3.900	3.380
29.7	9.000	4.300	3.718
--	-	-	-
--	-	-	-

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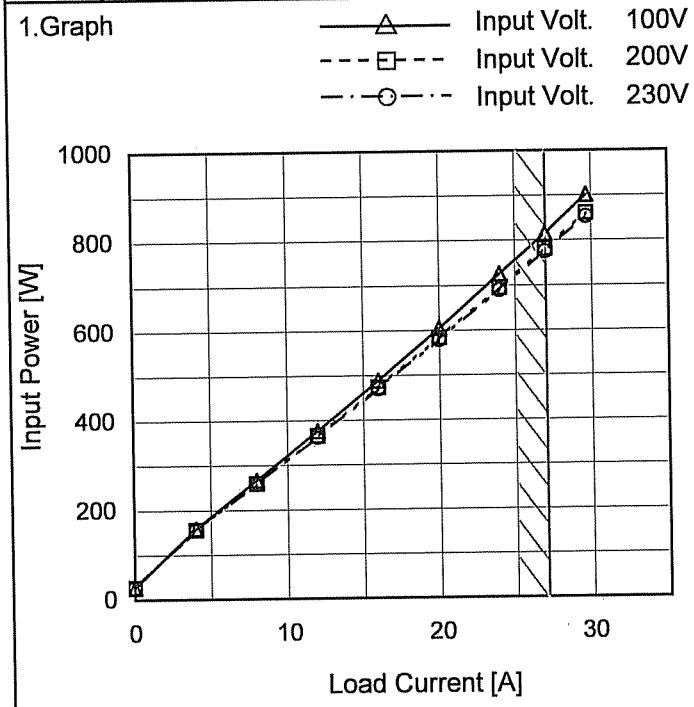
COSEL

Model	PBA600F-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. 200[V]	Input Volt. 230[V]
0.0	26.5	26.6	26.4
4.0	158.4	155.3	155.2
8.0	265.5	258.8	257.8
12.0	376.0	365.0	363.0
16.0	488.0	473.0	470.0
20.0	604.0	583.0	579.0
24.0	725.0	694.0	690.0
27.0	814.0	781.0	775.0
29.7	901.0	860.0	853.0
--	-	-	-
--	-	-	-

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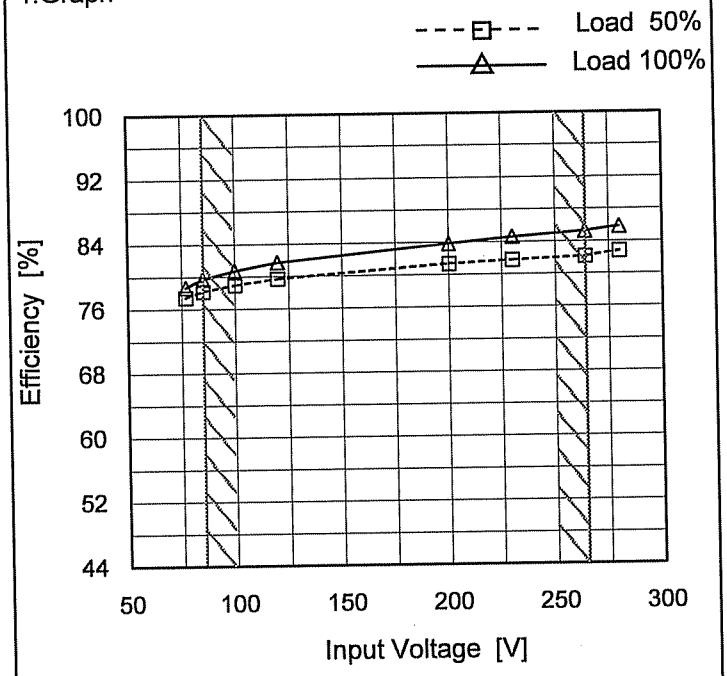
COSEL

Model	PBA600F-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%
77	77.4	78.6
85	78.2	79.7
100	79.0	80.7
120	79.7	81.7
200	81.3	83.8
230	81.7	84.6
264	82.1	85.2
280	82.8	85.8
--	-	-

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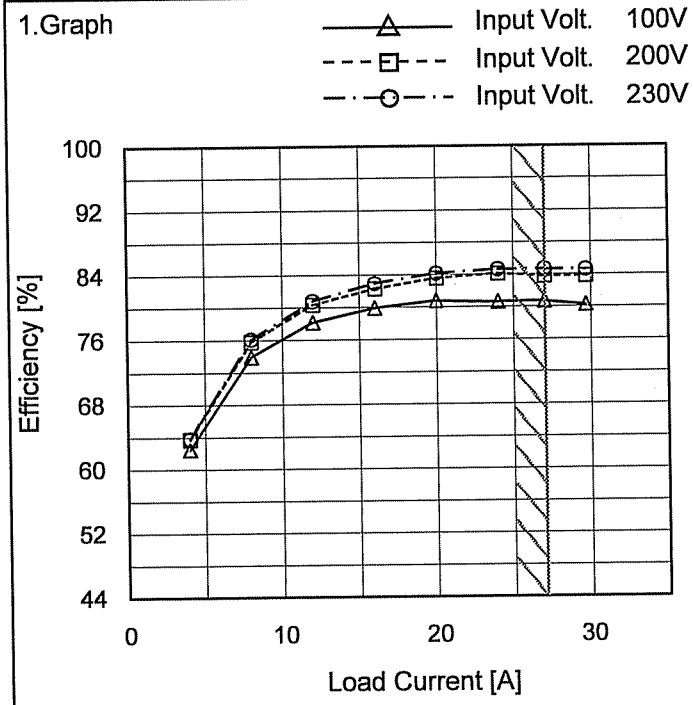
Model	PBA600F-24
Item	Efficiency (by Load Current)
Object	———————

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. 200[V]	Input Volt. 230[V]
0.0	-	-	-
4.0	62.4	63.7	63.8
8.0	73.9	75.8	76.1
12.0	78.1	80.3	80.8
16.0	79.9	82.3	83.0
20.0	80.8	83.6	84.1
24.0	80.6	84.1	84.6
27.0	80.7	83.8	84.7
29.7	80.2	83.8	84.6
--	-	-	-
--	-	-	-

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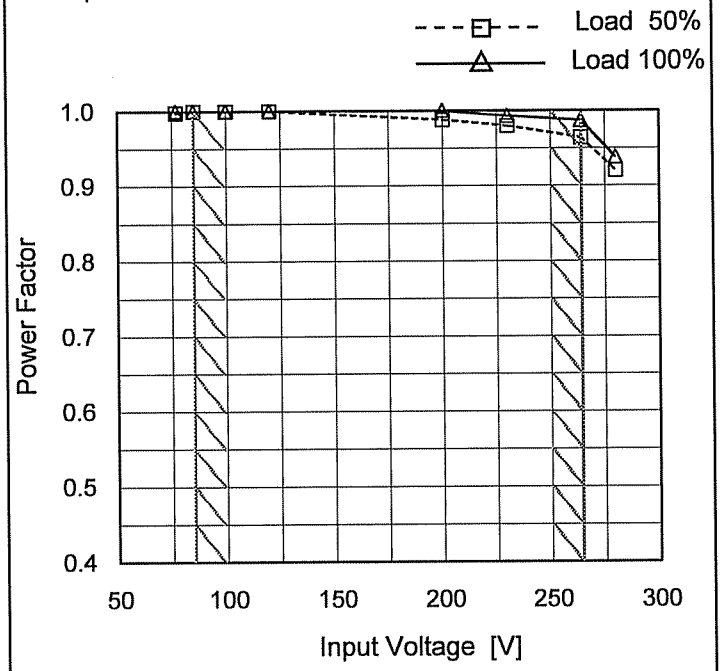
COSEL

Model	PBA600F-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%
77	0.998	0.999
85	0.999	0.999
100	0.999	0.999
120	0.999	0.999
200	0.988	0.999
230	0.980	0.993
264	0.964	0.987
280	0.920	0.938
--	-	-

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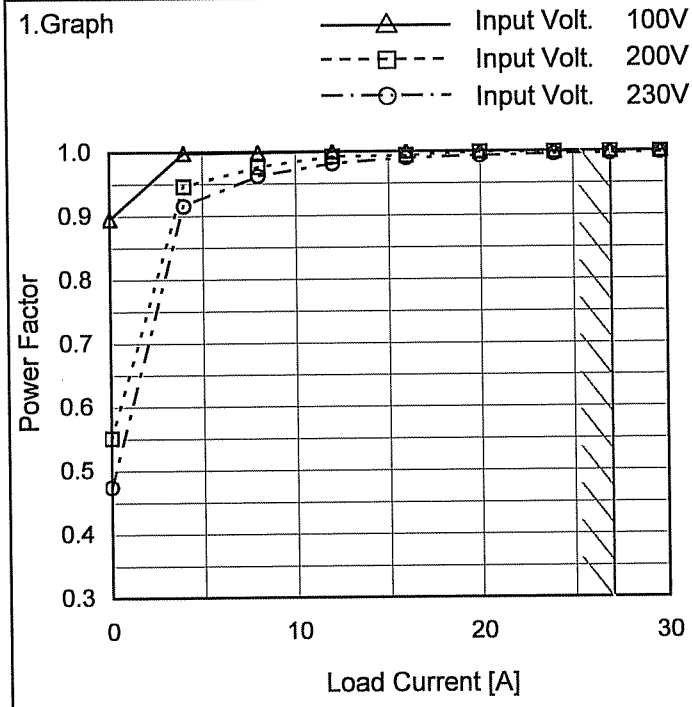
Model	PBA600F-24
Item	Power Factor (by Load Current)
Object	———————

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. 200[V]	Input Volt. 230[V]
0.0	0.895	0.551	0.474
4.0	0.998	0.946	0.915
8.0	0.998	0.976	0.962
12.0	0.999	0.992	0.981
16.0	0.999	0.994	0.989
20.0	0.999	0.998	0.993
24.0	0.999	0.999	0.996
27.0	0.999	0.999	0.996
29.7	0.999	0.999	0.998
--	-	-	-
--	-	-	-

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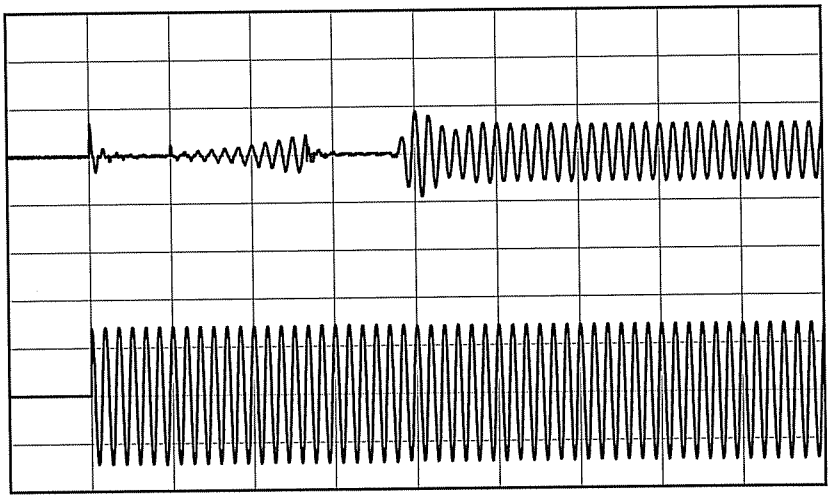
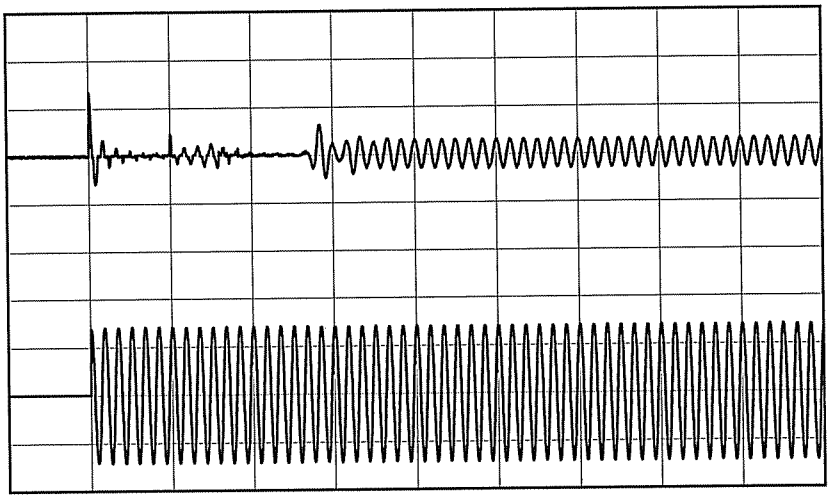
Model	PBA600F-24
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



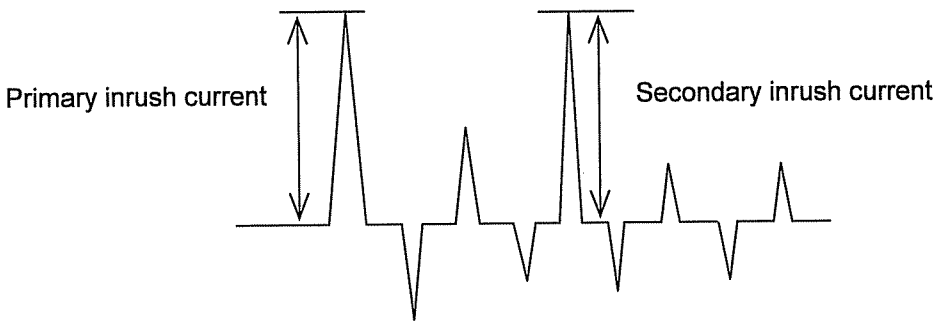
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
13.5 A
Secondary inrush current :
17.7 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
26.4 A
Secondary inrush current :
12.4 A



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Model	PBA600F-24	
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	0.25	0.38	0.46	Operation
	One of phases	0.34	0.73	0.89	Stand by
IEC60950	Both phases	0.20	0.41	0.50	Operation
	One of phases	0.35	0.75	0.93	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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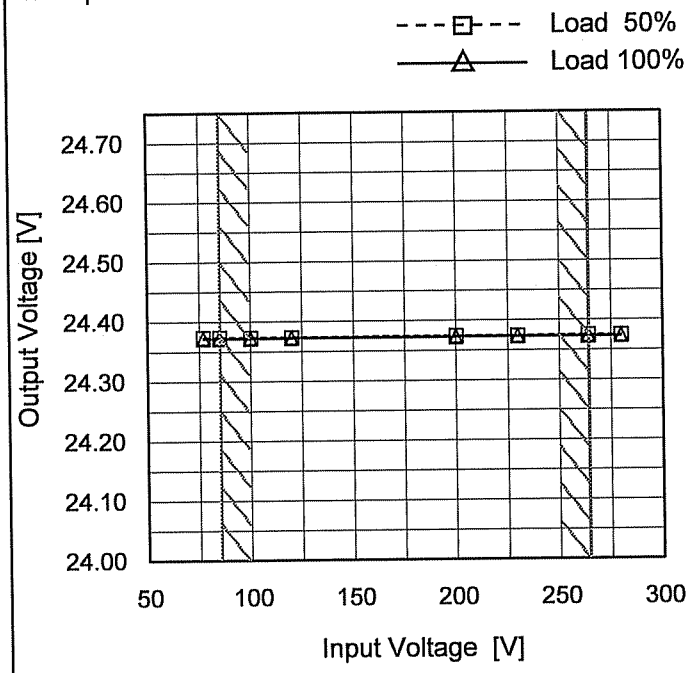
Model	PBA600F-24
Item	Line Regulation
Object	+24V27A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

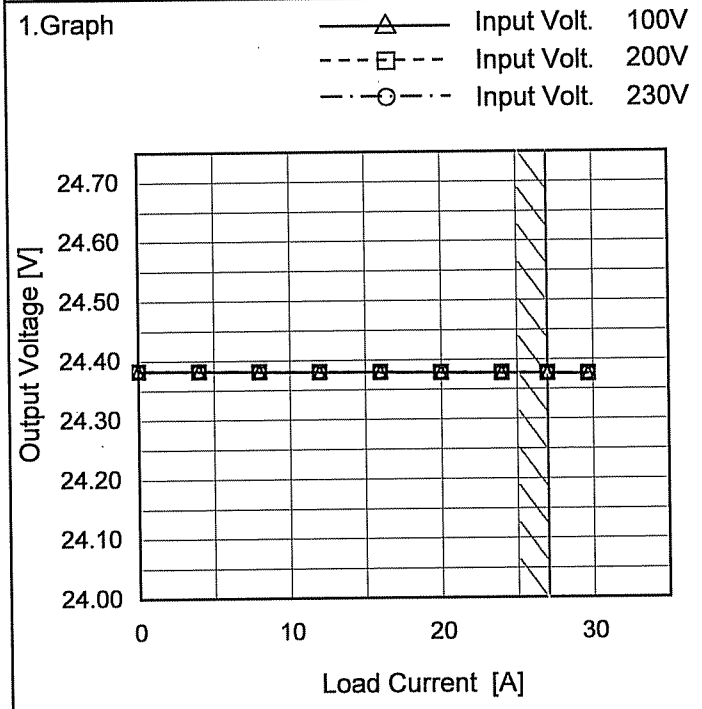
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
77	24.373	24.372
85	24.374	24.372
100	24.374	24.372
120	24.374	24.372
200	24.374	24.372
230	24.374	24.373
264	24.375	24.373
280	24.375	24.373
--	-	-

COSEL

Model	PBA600F-24
Item	Load Regulation
Object	+24V27A

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]
0.0	24.383	24.382	24.383
4.0	24.382	24.382	24.382
8.0	24.381	24.381	24.381
12.0	24.380	24.380	24.380
16.0	24.379	24.379	24.379
20.0	24.378	24.378	24.378
24.0	24.377	24.378	24.377
27.0	24.376	24.377	24.377
29.7	24.376	24.376	24.376
--	-	-	-
--	-	-	-

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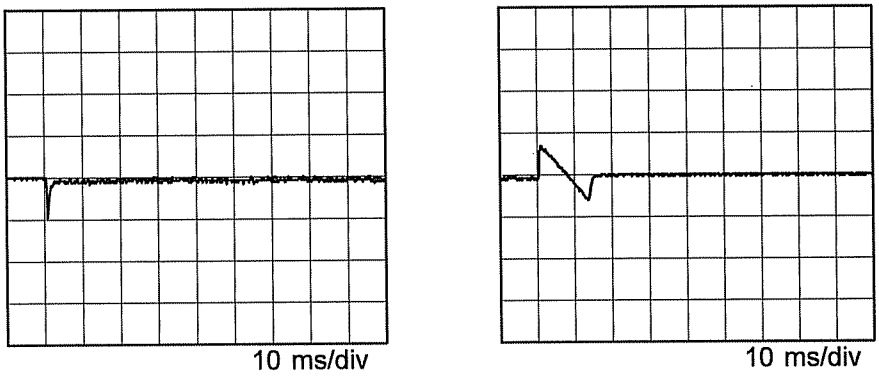
Model	PBA600F-24		
Item	Dynamic Load Response	Temperature Testing Circuitry	25˚C Figure A
Object	+24V27A		

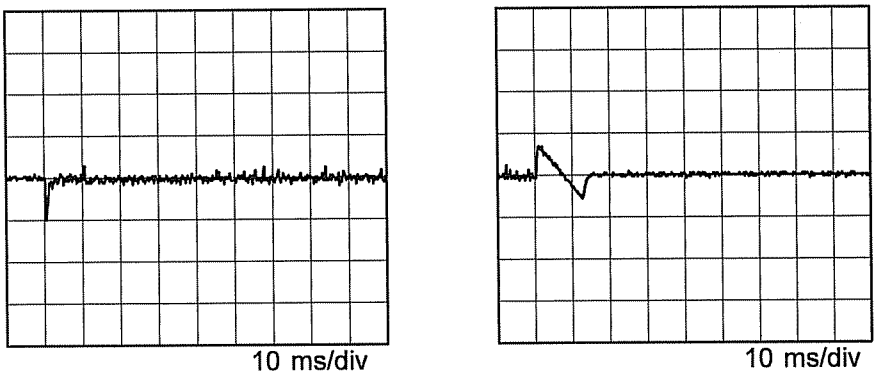
Input Volt. 100 V
Cycle 1000 ms

Response. t1=t2=50 μ s. Typ

Min. Load (0A) ⟷
Load 100% (27A)



Min. Load (0A) ⟷
Load 50% (13.5A)



* The characteristic of AC200V is equal.

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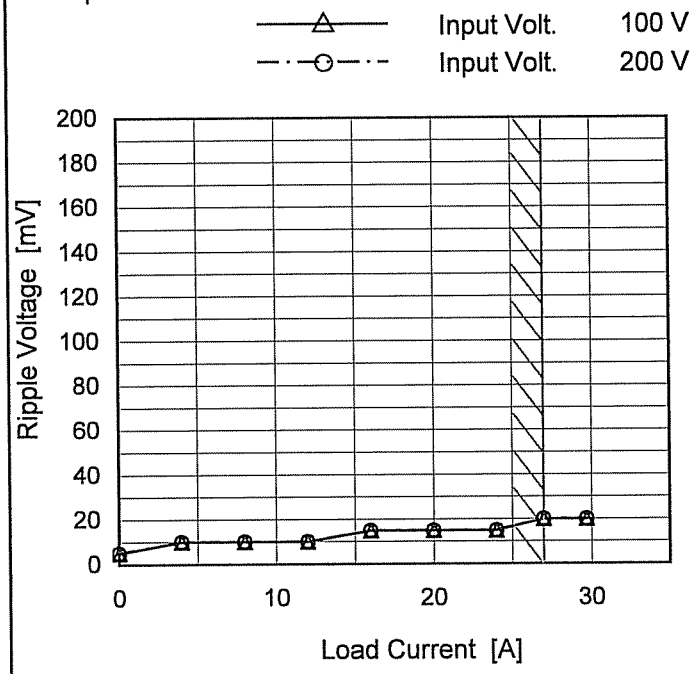
Model	PBA600F-24
Item	Ripple Voltage (by Load Current)
Object	+24V27A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20MHz 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

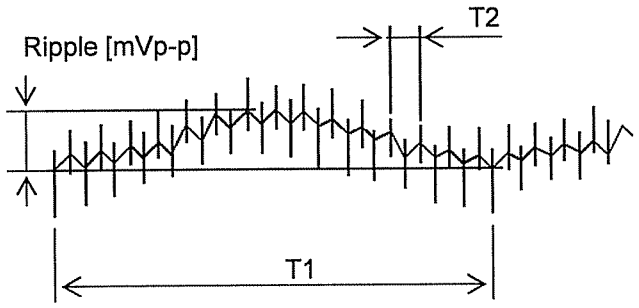


Fig. Complex Ripple Wave Form

2.Values

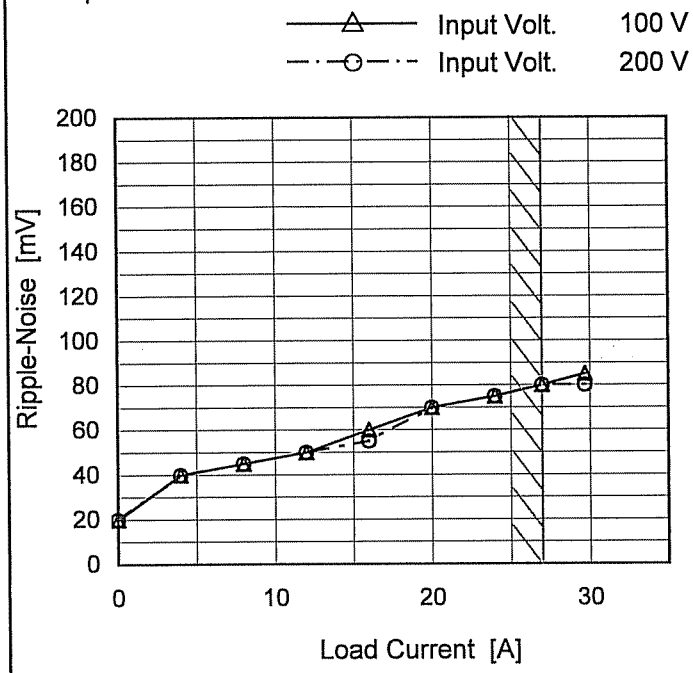
Load Current [A]	Ripple Output Voltage [mV]	
	Input Volt. 100[V]	Input Volt. 200[V]
0.0	5	5
4.0	10	10
8.0	10	10
12.0	10	10
16.0	15	15
20.0	15	15
24.0	15	15
27.0	20	20
29.7	20	20
--	--	--
--	--	--

COSEL

Model	PBA600F-24
Item	Ripple-Noise
Object	+24V27A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20MHz 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

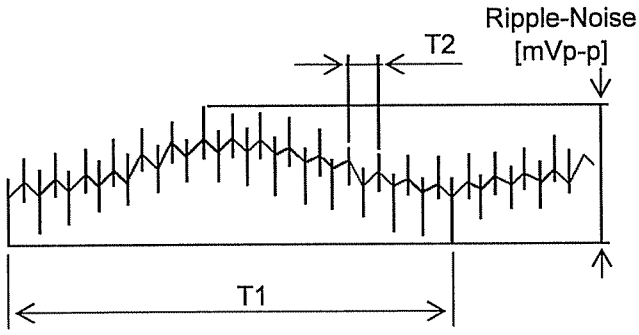


Fig. Complex Ripple Wave Form

2.Values

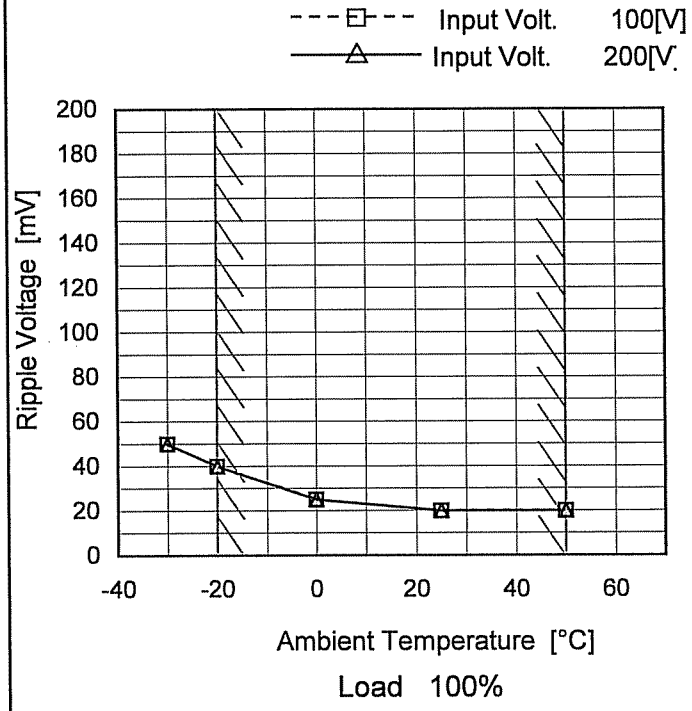
Load Current [A]	Ripple-Noise [mV] Input Volt. 100[V]	Ripple-Noise [mV] Input Volt. 200[V]
0.0	20	20
4.0	40	40
8.0	45	45
12.0	50	50
16.0	60	55
20.0	70	70
24.0	75	75
27.0	80	80
29.7	85	80
--	--	--
--	--	--

COSEL

Model	PBA600F-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V27A

Testing Circuitry Figure A

1.Graph



Load 100%

Measured by 20MHz 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. 200[V]
-30	50	50
-20	40	40
0	25	25
25	20	20
50	20	20
--	--	--
--	--	--
--	--	--
--	--	--
--	--	--
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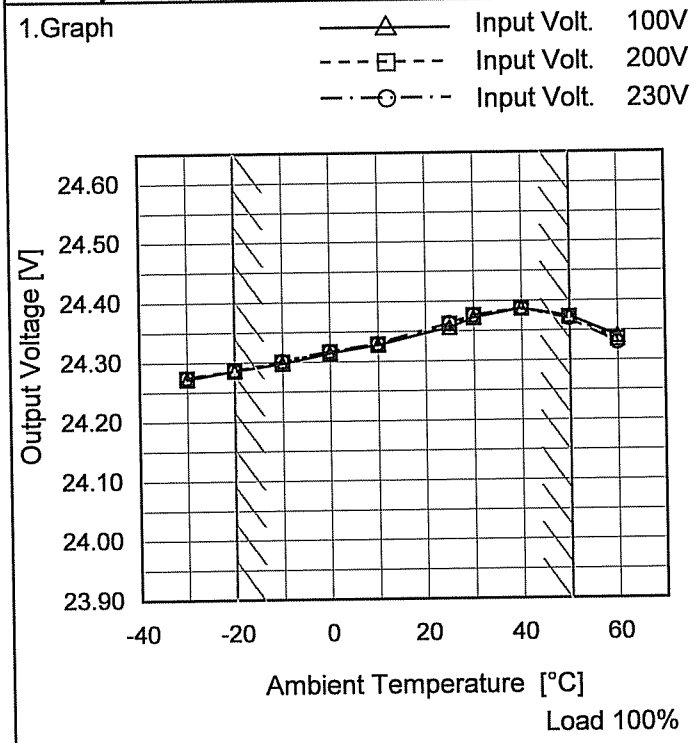
COSEL

Model	PBA600F-24
Item	Ambient Temperature Drift
Object	+24V27A

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]
-30	24.272	24.273	24.274
-20	24.285	24.286	24.286
-10	24.297	24.299	24.301
0	24.314	24.316	24.317
10	24.327	24.328	24.329
25	24.356	24.361	24.363
30	24.372	24.375	24.376
40	24.387	24.387	24.387
50	24.374	24.372	24.370
60	24.340	24.334	24.329
--	-	-	-

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Model	PBA600F-24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V27A	

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 - 50°C
Input Voltage : 85 - 264V
Load Current : 0 - 27A

* 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	200	0	24.394	±55	±0.2
Minimum Voltage	-20	85	27	24.285		

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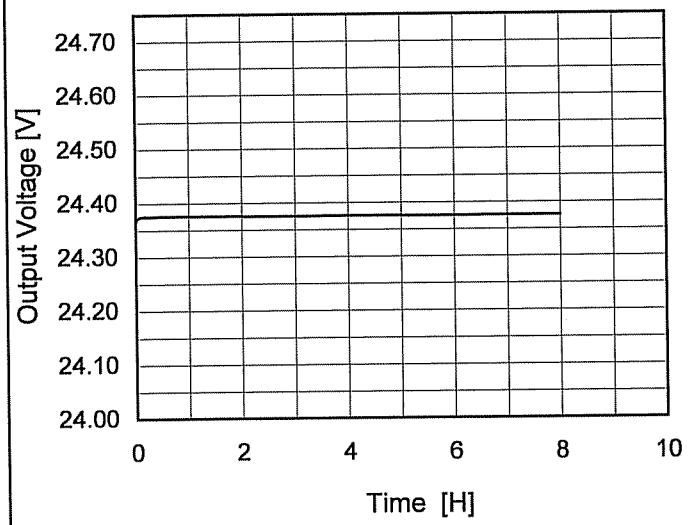
Model	PBA600F-24
Item	Time Lapse Drift
Object	+24V27A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

2.Values

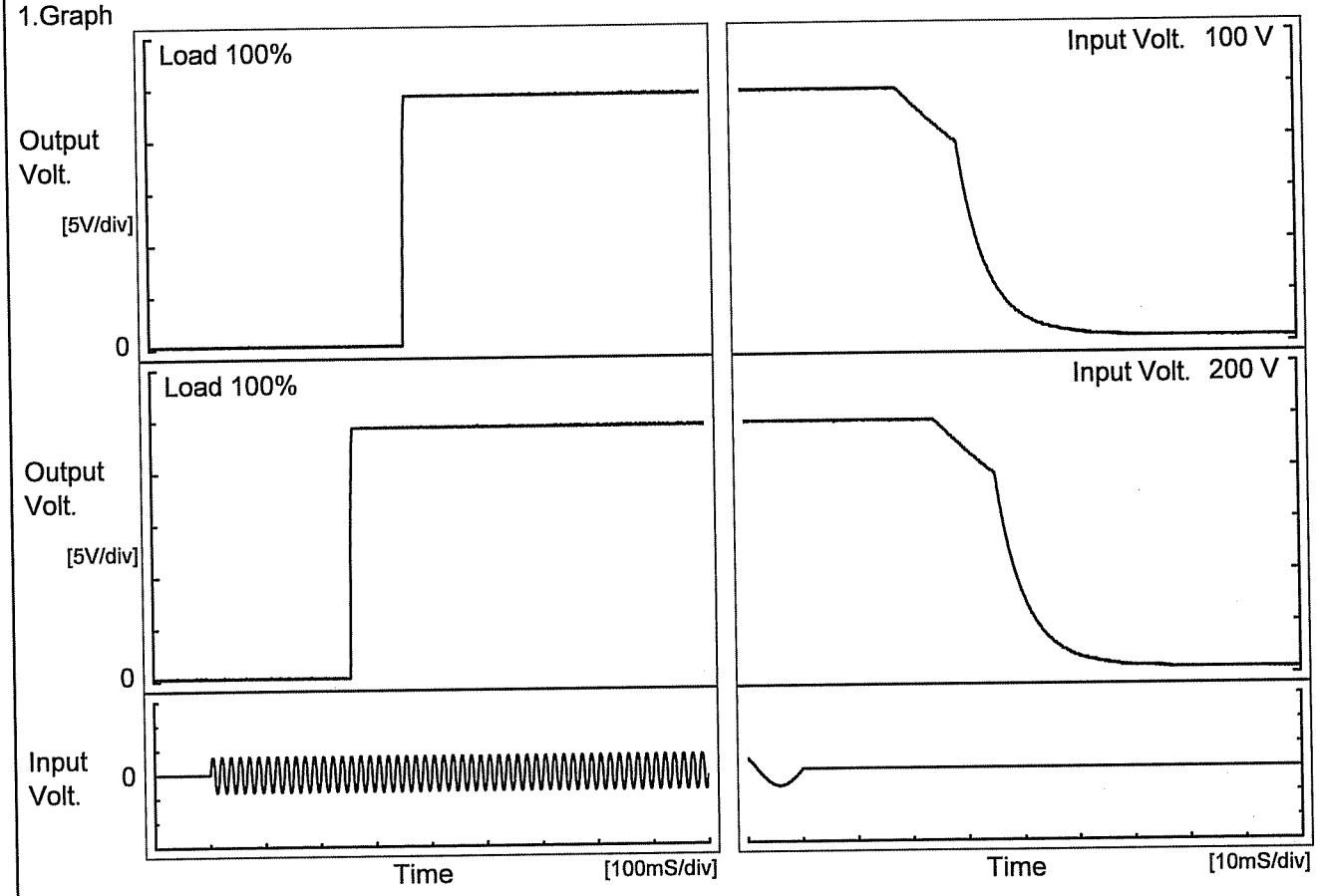
Time since start [H]	Output Voltage [V]
0.0	24.366
0.5	24.375
1.0	24.375
2.0	24.375
3.0	24.375
4.0	24.375
5.0	24.375
6.0	24.375
7.0	24.376
8.0	24.375

COSEL

Model	PBA600F-24
Item	Rise and Fall Time
Object	+24V27A

Temperature 25°C
Testing Circuitry Figure A

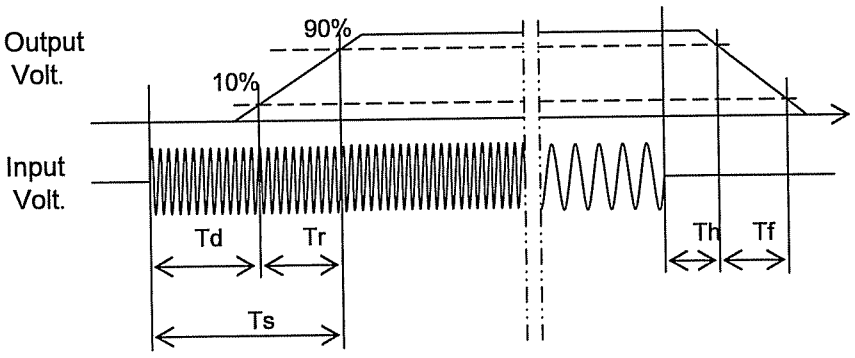
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	359.5	5.0	364.5	23.4	17.2
200 V	256.5	5.0	261.5	29.5	17.3



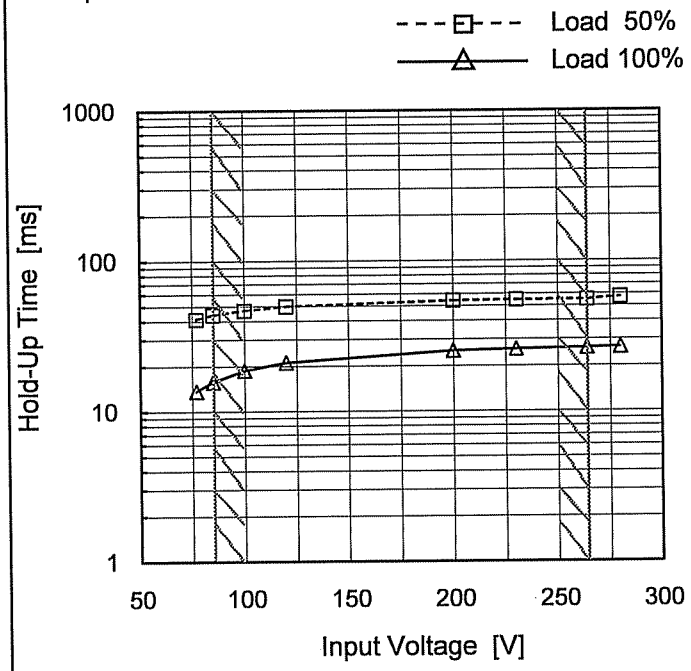
BC-10163

COSEL

Model	PBA600F-24
Item	Hold-Up Time
Object	+24V27A

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

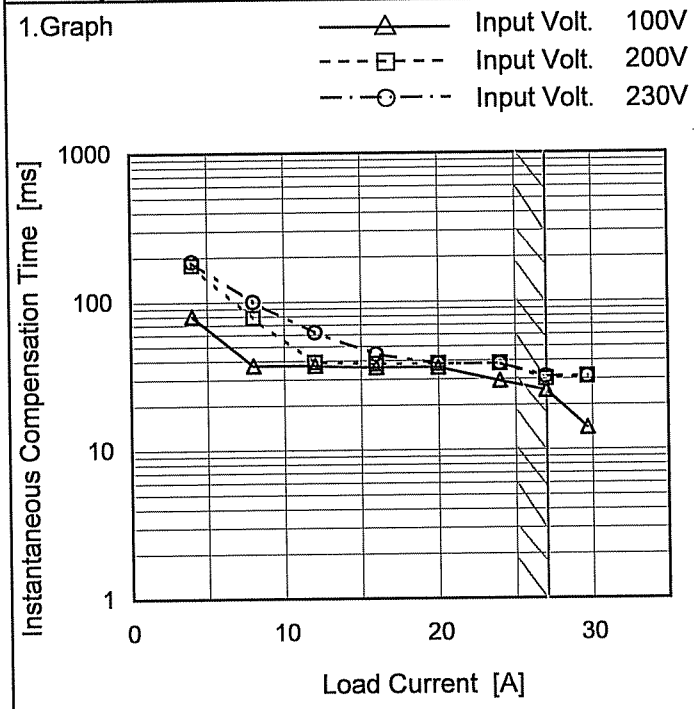
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
77	41	14
85	44	16
100	47	19
120	50	21
200	54	25
230	55	26
264	55	26
280	57	27
--	-	-

COSEL

Model	PBA600F-24
Item	Instantaneous Interruption Compensation
Object	+24V27A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

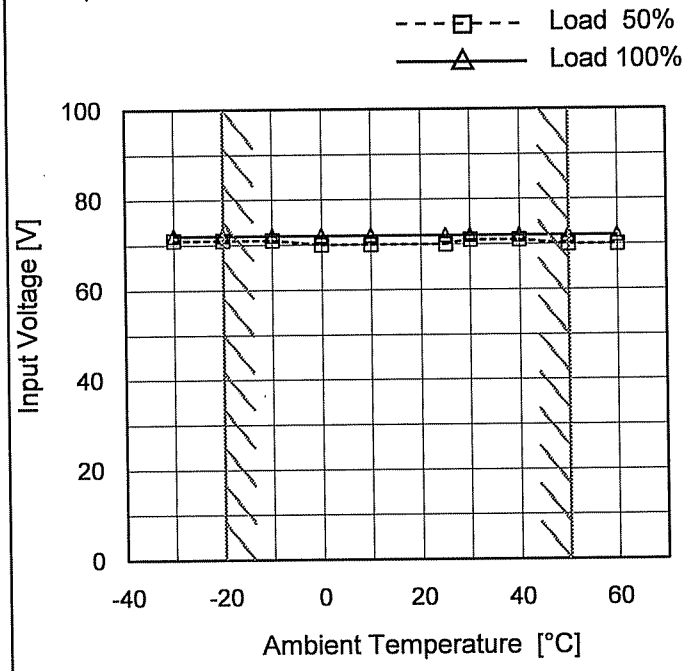
Load Current [A]	Time [ms] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
4.0	80	177	187
8.0	37	78	100
12.0	37	39	62
16.0	36	38	44
20.0	36	38	38
24.0	29	38	38
27.0	25	30	31
29.7	14	31	31
--	-	-	-
--	-	-	-

COSEL

Model	PBA600F-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V27A

Testing Circuitry Figure A

1.Graph



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

2.Values

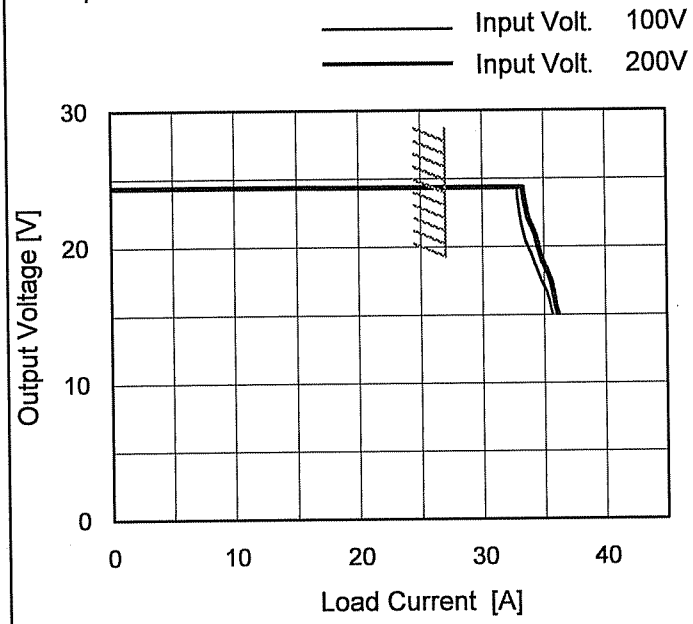
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	71	72
-20	71	72
-10	71	72
0	70	72
10	70	72
25	70	72
30	71	72
40	71	72
50	70	72
60	70	72
--	-	-

COSEL

Model	PBA600F-24
Item	Overcurrent Protection
Object	+24V27A

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 14.9V to 0V.

2.Values

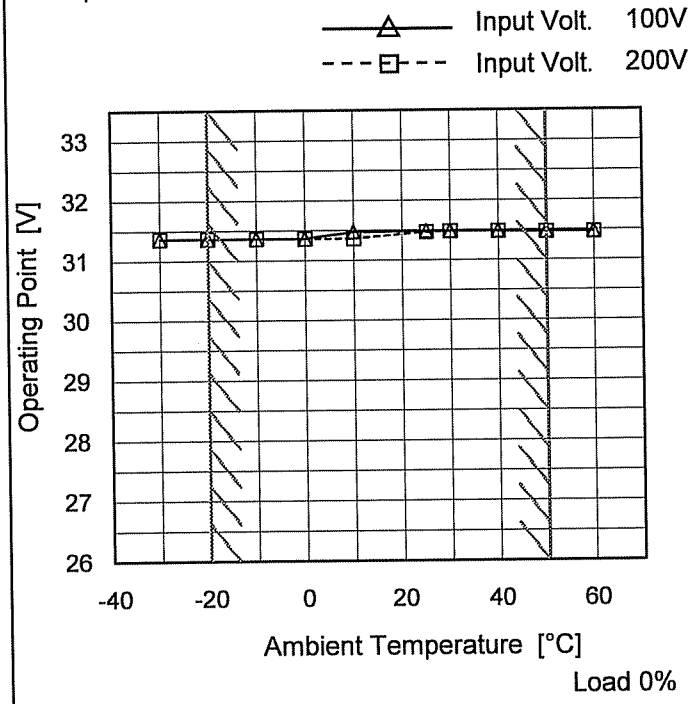
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
24.0	32.83	33.30
22.8	32.98	33.58
21.6	33.17	33.88
19.2	34.04	34.74
16.8	35.13	35.70
---	-	-
---	-	-
---	-	-
---	-	-
---	-	-
---	-	-
---	-	-

COSEL

Model	PBA600F-24
Item	Overvoltage Protection
Object	+24V27A

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. 200[V]
-30	31.36	31.36
-20	31.36	31.36
-10	31.36	31.36
0	31.36	31.36
10	31.47	31.36
25	31.48	31.47
30	31.48	31.48
40	31.48	31.48
50	31.47	31.47
60	31.47	31.47
--	-	-

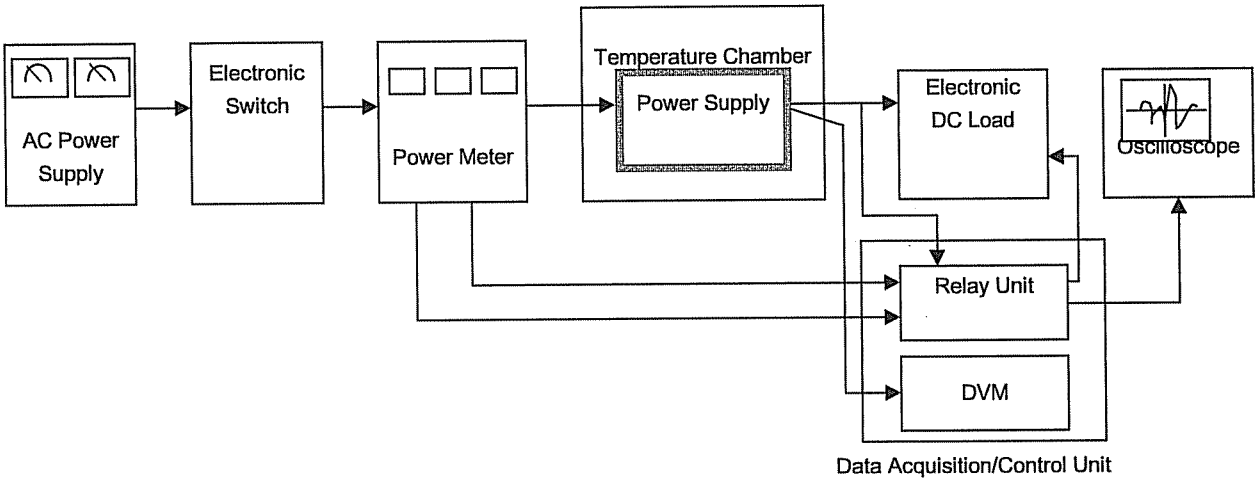


Figure A

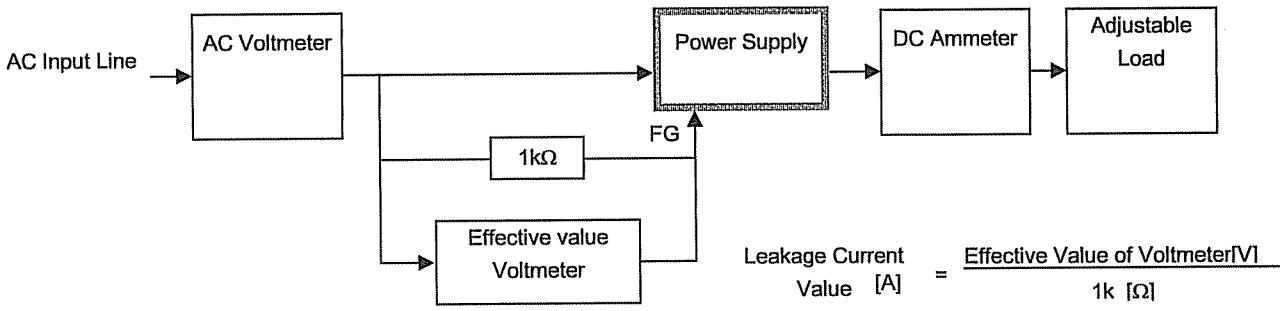


Figure B (DEN-AN)

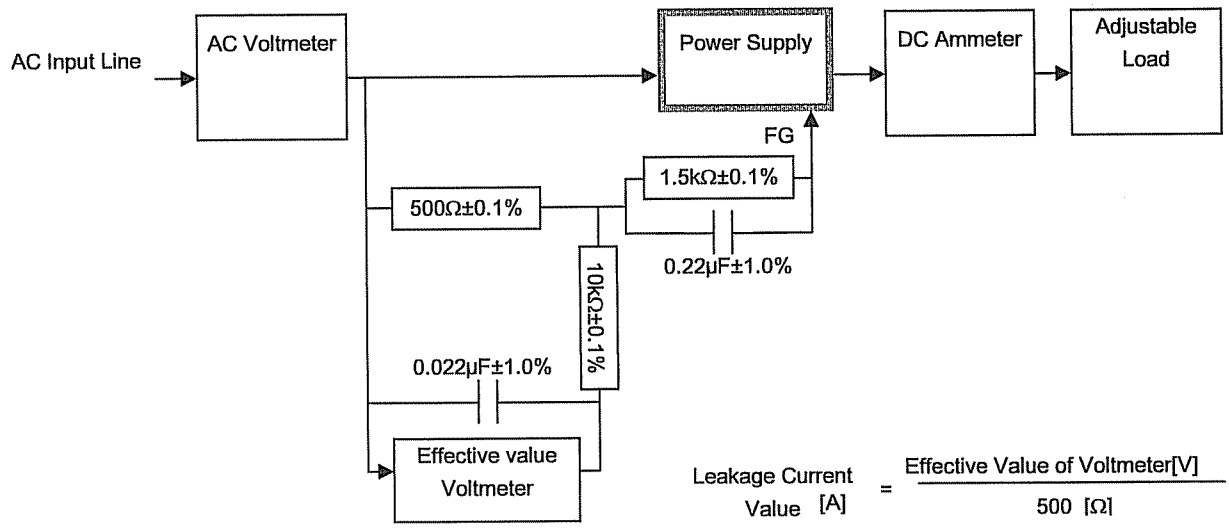


Figure B (IEC60950)