



TEST DATA OF PBA15F-15

Regulated DC Power Supply
Sep 29, 2005

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COSEL CO.,LTD.

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COSEL

Model

PBA15F-15

Item

Input Current (by Load Current)

Object

Temperature

25°C

Testing Circuitry

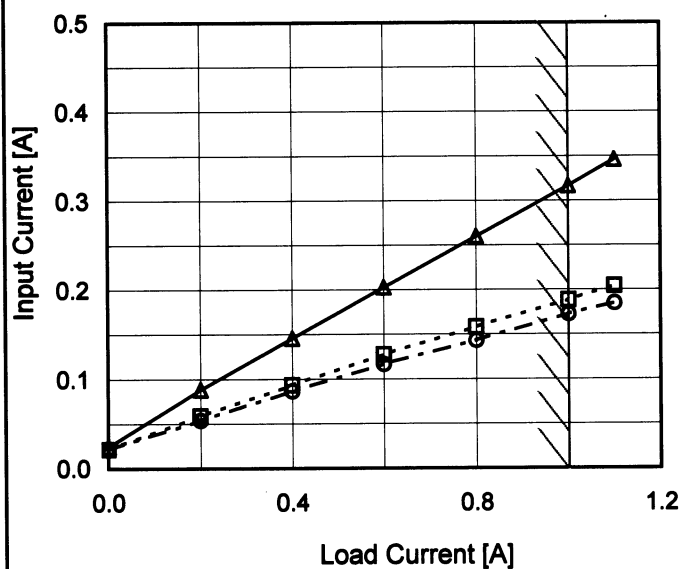
Figure A

1. Graph

—△— Input Volt. 100V

---□--- Input Volt. 200V

---○--- Input Volt. 230V



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	0.024	0.021	0.021
0.2	0.088	0.059	0.054
0.4	0.146	0.094	0.086
0.6	0.203	0.128	0.117
0.8	0.260	0.158	0.143
1.0	0.317	0.189	0.173
1.1	0.346	0.204	0.185
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model

PBA15F-15

Item

Efficiency (by Input Voltage)

Object

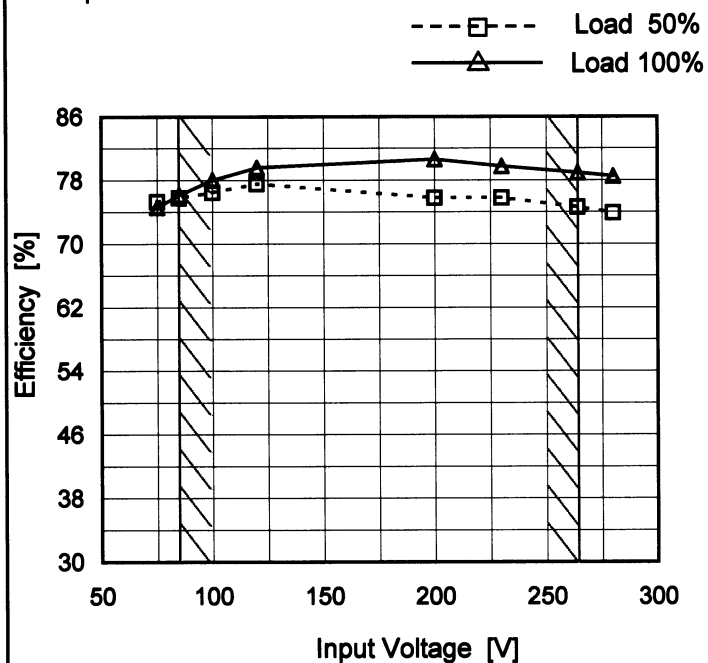
Temperature

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	75.3	74.6
85	75.8	76.1
100	76.5	78.0
120	77.6	79.6
200	75.8	80.6
230	75.8	79.8
264	74.6	78.9
280	73.9	78.5
--	-	-

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Model PBA15F-15

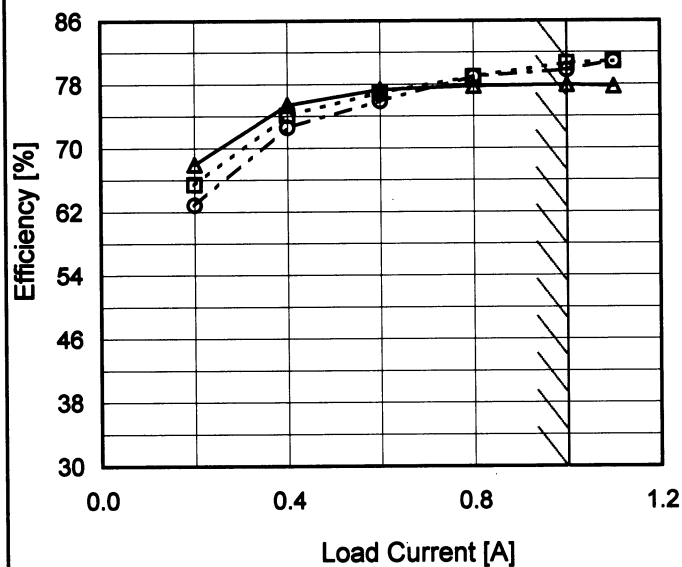
Item Efficiency (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 200V
 -·-○-·- Input Volt. 230V



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	-	-	-
0.2	68.0	65.5	62.9
0.4	75.4	74.1	72.6
0.6	77.3	76.9	75.9
0.8	77.8	79.0	79.0
1.0	78.0	80.7	79.8
1.1	77.8	80.9	80.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model

PBA15F-15

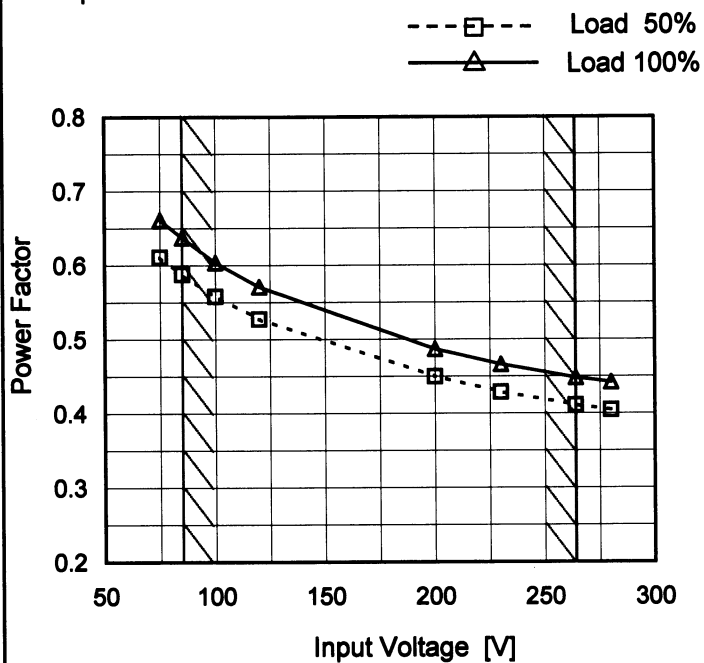
Item

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	0.611	0.661
85	0.588	0.638
100	0.558	0.604
120	0.528	0.571
200	0.450	0.487
230	0.429	0.467
264	0.411	0.448
280	0.405	0.442
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Model

PBA15F-15

Item

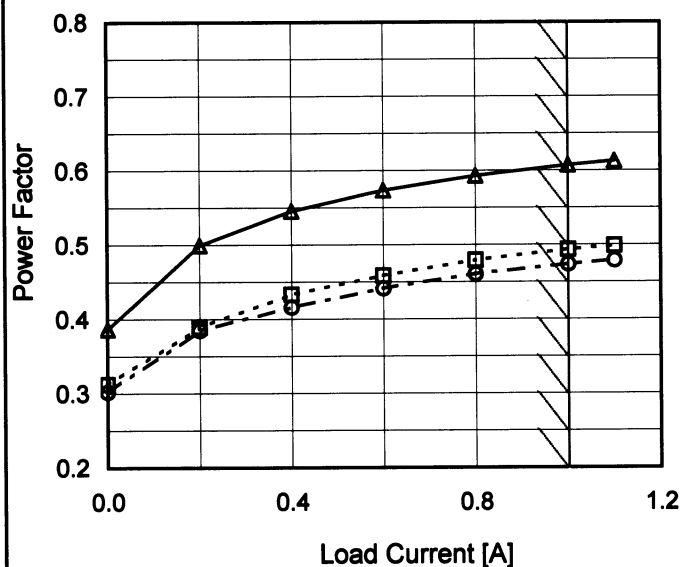
Power Factor (by Load Current)

Object

 Temperature 25°C
 Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 200V
 - - -○- - - Input Volt. 230V



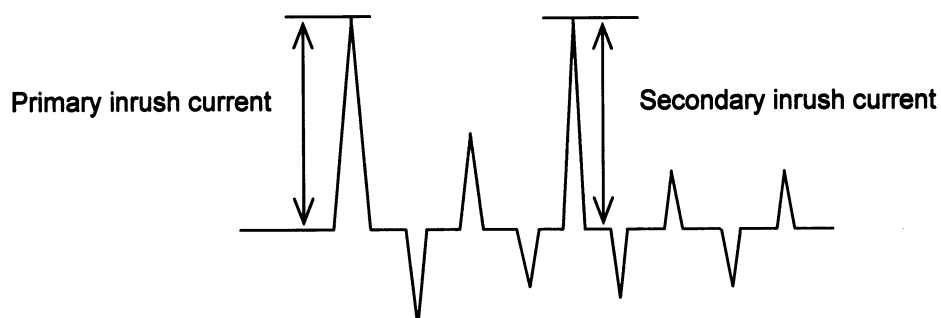
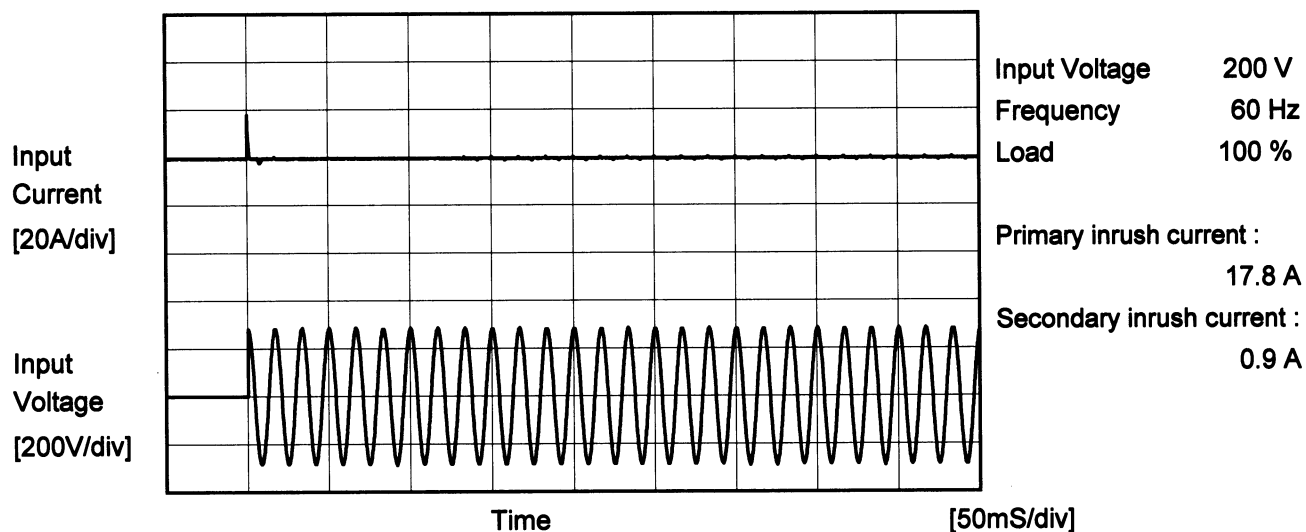
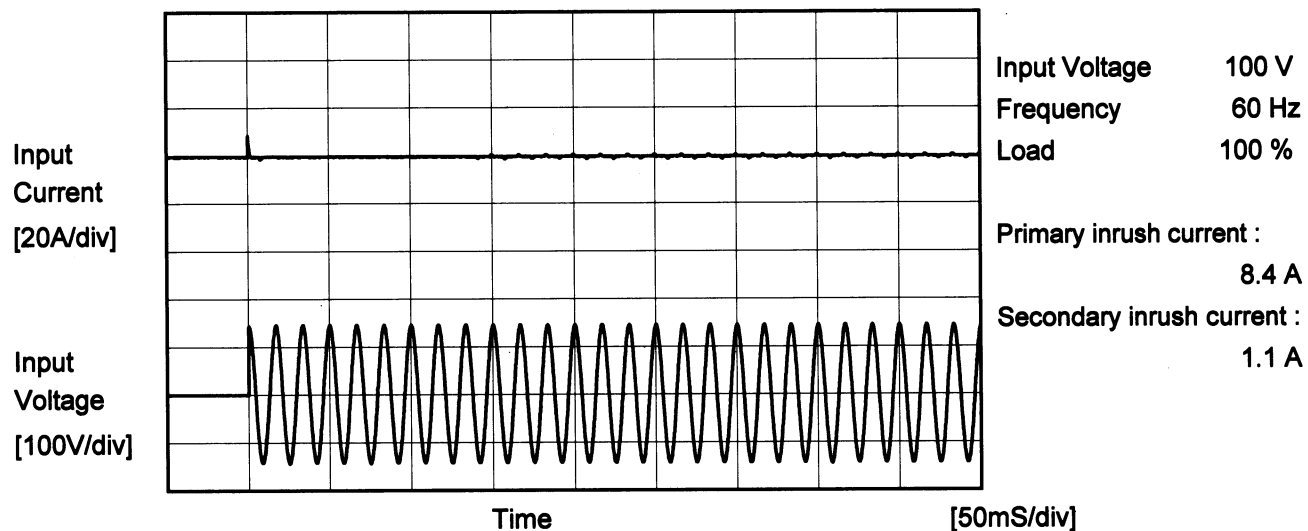
Note: Slanted line shows the range of the rated load current.

2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.387	0.312	0.302
0.2	0.499	0.389	0.385
0.4	0.546	0.433	0.416
0.6	0.574	0.459	0.442
0.8	0.593	0.479	0.461
1.0	0.607	0.493	0.474
1.1	0.613	0.499	0.479
--	-	-	-
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--	-	-	-
--	-	-	-

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Model	PBA15F-15	Temperature 25°C Testing Circuitry Figure A	
Item	Inrush Current		
Object	_____		





		Temperature 25°C Testing Circuitry Figure B
Model	PBA15F-15	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.06	0.12	0.14	Operation
	One of phase	0.10	0.22	0.27	stand by
IEC60950	Both phases	0.07	0.15	0.18	Operation
	One of phase	0.10	0.22	0.27	stand by

The value for "One of phase" 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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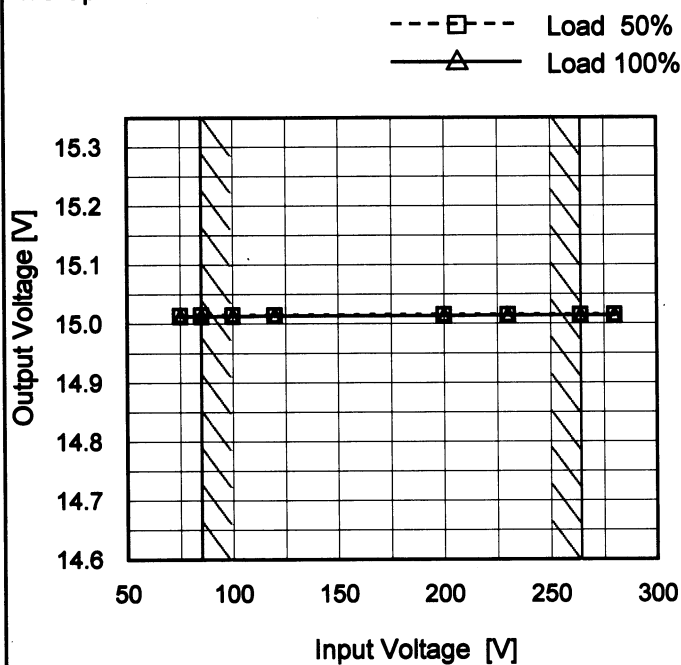
Model PBA15F-15

Item Line Regulation

Object +15V1A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	15.014	15.013
85	15.015	15.013
100	15.015	15.013
120	15.015	15.014
200	15.015	15.014
230	15.015	15.014
264	15.015	15.014
280	15.015	15.014
--	-	-

Temperature 25°C
Testing Circuitry Figure A



Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	15.016	15.017	15.017
0.2	15.016	15.016	15.016
0.4	15.015	15.016	15.016
0.6	15.014	15.015	15.015
0.8	15.014	15.015	15.015
1.0	15.013	15.014	15.014
1.1	15.013	15.014	15.014
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--	-	-	-
--	-	-	-
--	-	-	-

- 10 -

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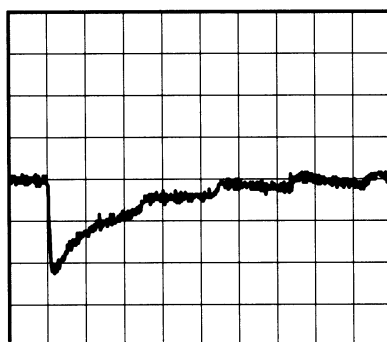
Model	PBA15F-15	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+15V1A		

Input Volt. 100 V
Cycle 1000 ms

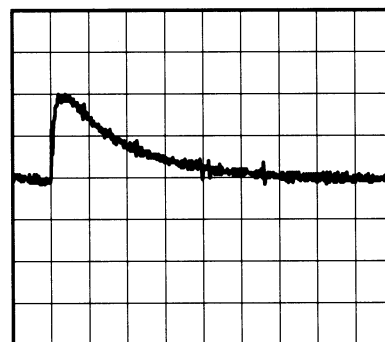
Load Current

Min. Load (0A) \longleftrightarrow
Load 100% (1A)

100 mV/div



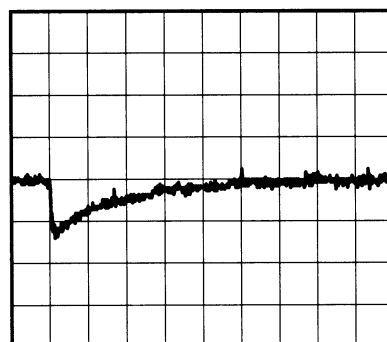
5 ms/div



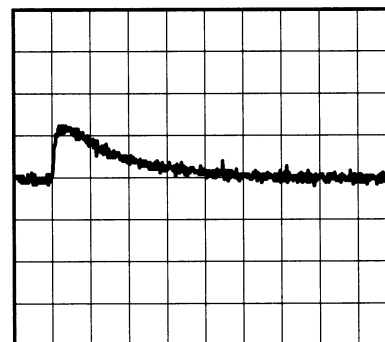
5 ms/div

Min. Load (0A) \longleftrightarrow
Load 50% (0.5A)

100 mV/div



5 ms/div



5 ms/div

* The characteristic of AC200V is equal.

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Model	PBA15F-15																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
Object	+15V1A	Testing Circuitry	Figure A																																						
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 100V</div><div>-·-○-·- Input Volt. 200V</div></div><div>Ripple Voltage [mV]</div><div>Load Current [A]</div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 200 [V]</th></tr><tr><td>0.0</td><td>5</td><td>5</td></tr><tr><td>0.2</td><td>5</td><td>5</td></tr><tr><td>0.4</td><td>10</td><td>5</td></tr><tr><td>0.6</td><td>15</td><td>5</td></tr><tr><td>0.8</td><td>20</td><td>5</td></tr><tr><td>1.0</td><td>25</td><td>5</td></tr><tr><td>1.1</td><td>30</td><td>10</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 100 [V]	Input Volt. 200 [V]	0.0	5	5	0.2	5	5	0.4	10	5	0.6	15	5	0.8	20	5	1.0	25	5	1.1	30	10	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 100 [V]	Input Volt. 200 [V]																																							
0.0	5	5																																							
0.2	5	5																																							
0.4	10	5																																							
0.6	15	5																																							
0.8	20	5																																							
1.0	25	5																																							
1.1	30	10																																							
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<div>Measured by 20 MHz Oscilloscope.</div> <div>Ripple Voltage is shown as p-p in the figure below.</div> <div>Note: Slanted line shows the range of the rated load current.</div>																																									
<div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div><div>Ripple [mVp-p]</div><div>T1</div><div>T2</div></div>																																									
Fig. Complex Ripple Wave Form																																									

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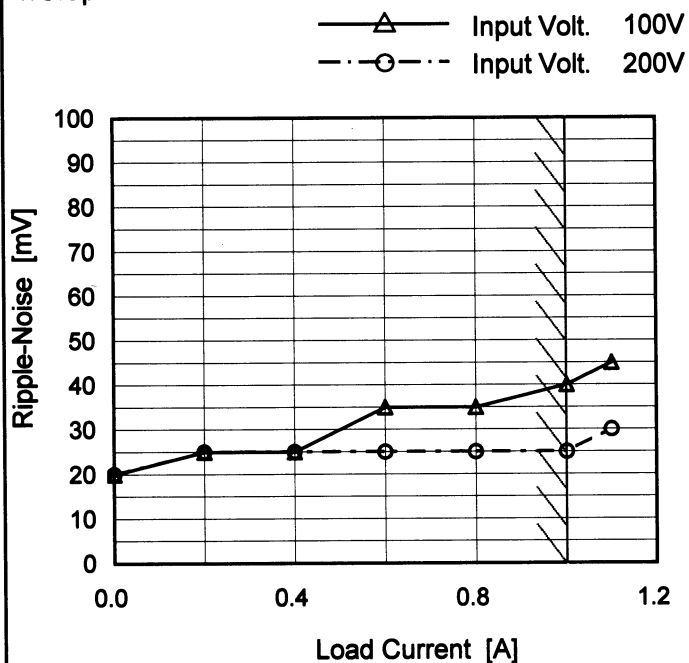
Model PBA15F-15

Item Ripple-Noise

Object +15V1A

Temperature 25°C
Testing Circuitry Figure A

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. 100 [V]	Input Volt. 200 [V]
0.0	20	20
0.2	25	25
0.4	25	25
0.6	35	25
0.8	35	25
1.0	40	25
1.1	45	30
--	-	-
--	-	-
--	-	-
--	-	-

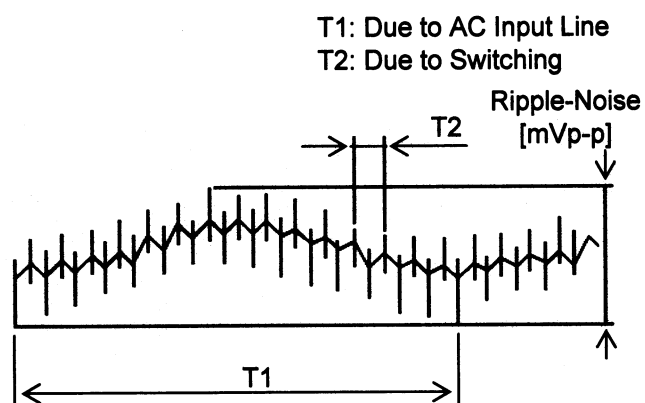


Fig. Complex Ripple Wave Form

COSEL

Model

PBA15F-15

Item

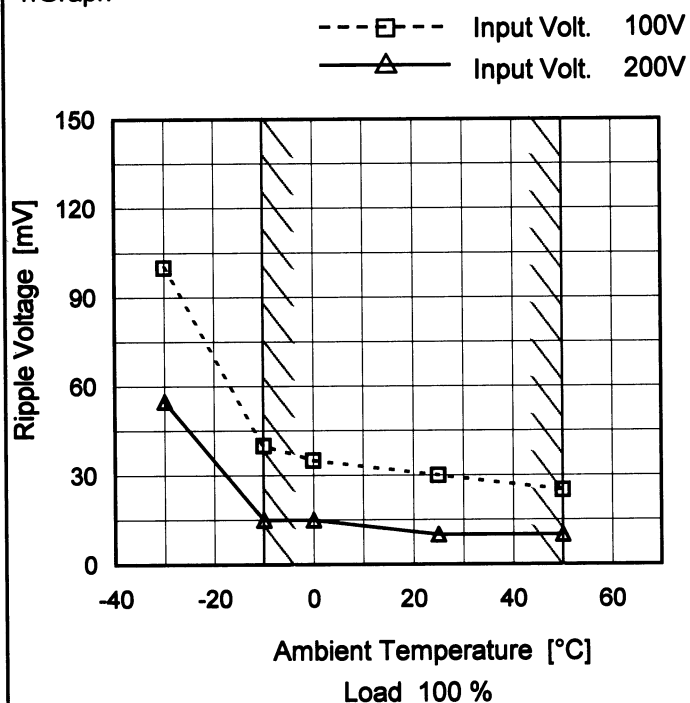
Ripple Voltage (by Ambient Temp.)

Object

+15V1A

Testing Circuitry Figure A

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. 200 [V]
-30	100	55
-10	40	15
0	35	15
25	30	10
50	25	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model

PBA15F-15

Item

Ambient Temperature Drift

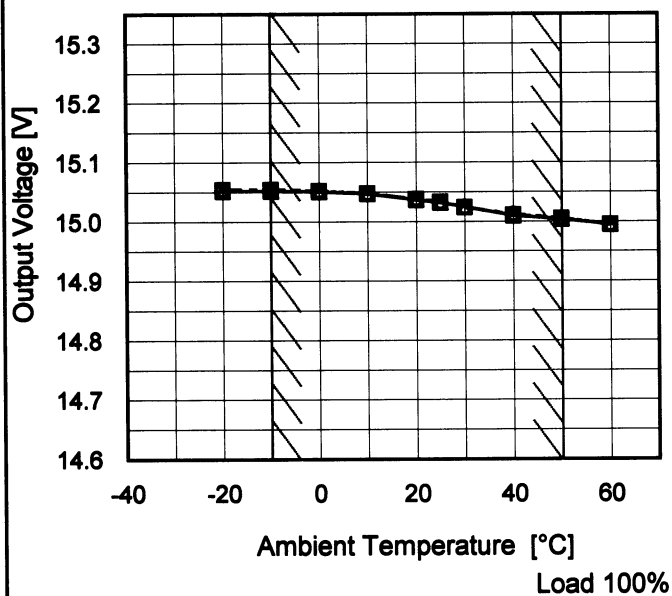
Object

+15V1A

Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 200V
 -·-○-·- Input Volt. 230V



2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	15.052	15.054	15.054
-10	15.052	15.054	15.054
0	15.051	15.052	15.052
10	15.047	15.048	15.048
20	15.037	15.038	15.038
25	15.032	15.033	15.033
30	15.025	15.024	15.024
40	15.010	15.011	15.012
50	15.004	15.005	15.005
60	14.995	14.995	14.995
--	-	-	-

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		Testing Circuitry Figure A
Model	PBA15F-15	
Item	Output Voltage Accuracy	
Object	+15V1A	

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 - 1A

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* 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	-10	264	0	15.057	±27	±0.2
Minimum Voltage	50	85	1	15.004		

COSEL

Model

PBA15F-15

Item

Time Lapse Drift

Object

+15V1A

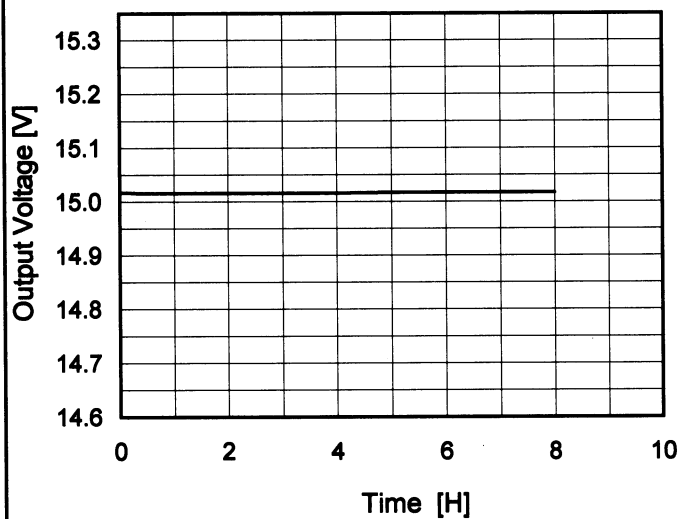
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



Input Volt. 100V

Load 100%

* The characteristic of AC200V is equal.

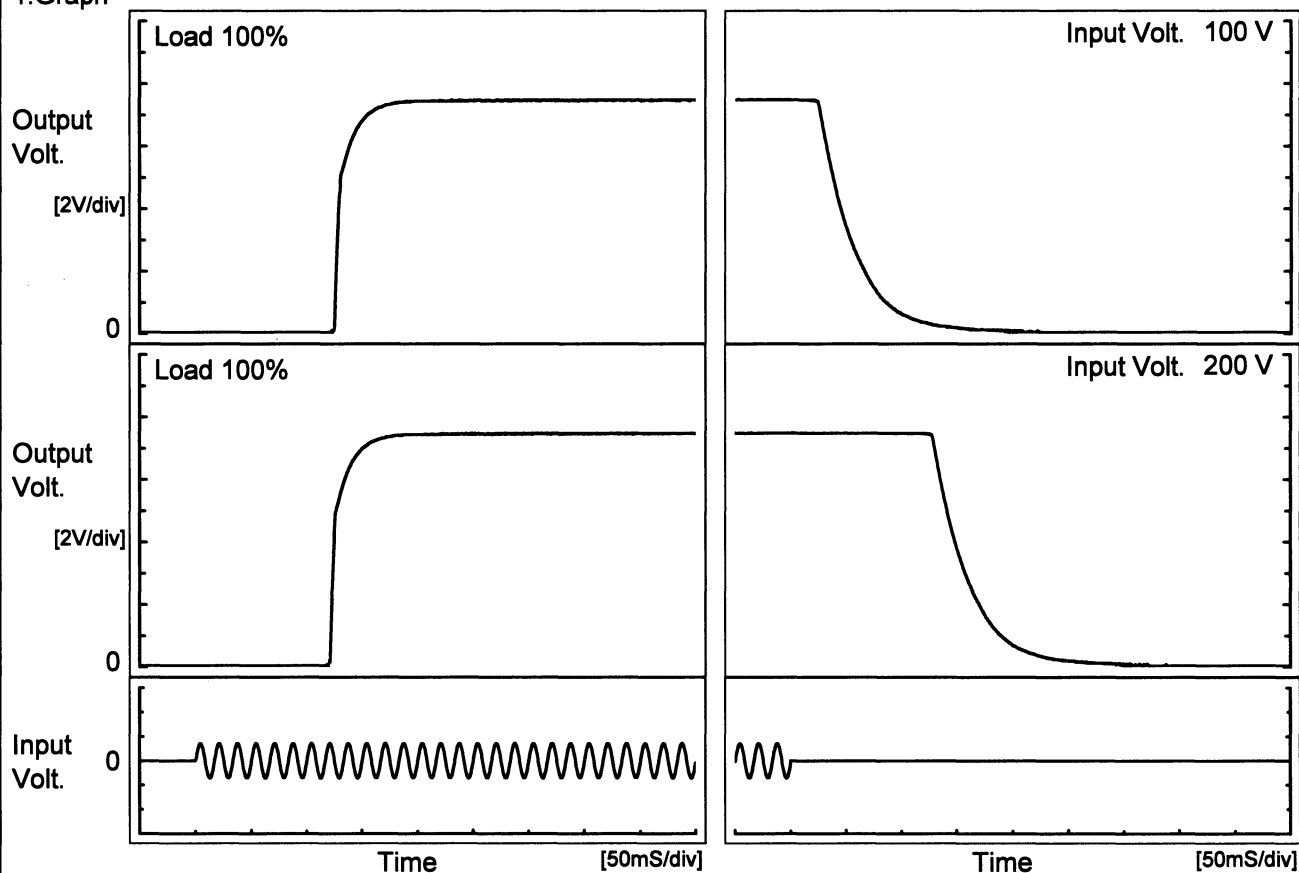
2. Values

Time since start [H]	Output Voltage [V]
0.0	15.018
0.5	15.016
1.0	15.016
2.0	15.016
3.0	15.016
4.0	15.016
5.0	15.017
6.0	15.017
7.0	15.017
8.0	15.017

COSEL

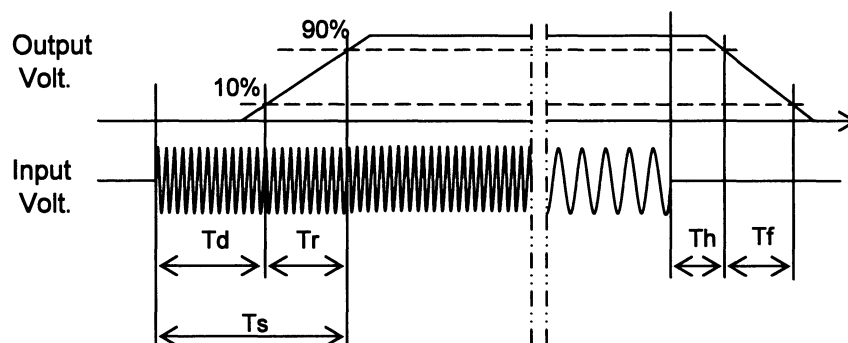
Model	PBA15F-15	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+15V1A		

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		125.8	24.3	150.1	27.5	65.3
200 V		121.5	24.0	145.5	131.0	66.0



COSEL

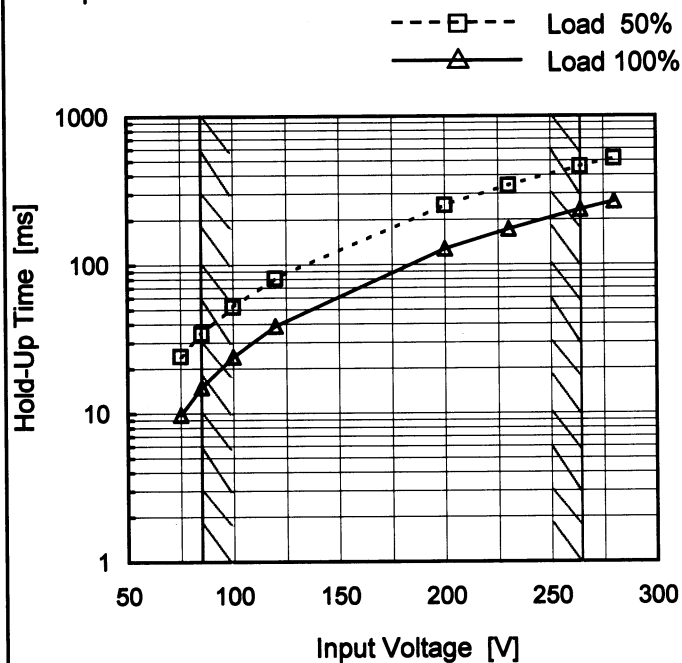
Model PBA15F-15

Item Hold-Up Time

Object +15V1A

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	24	10
85	34	15
100	52	24
120	81	39
200	252	128
230	340	174
264	457	234
280	518	266
--	-	-

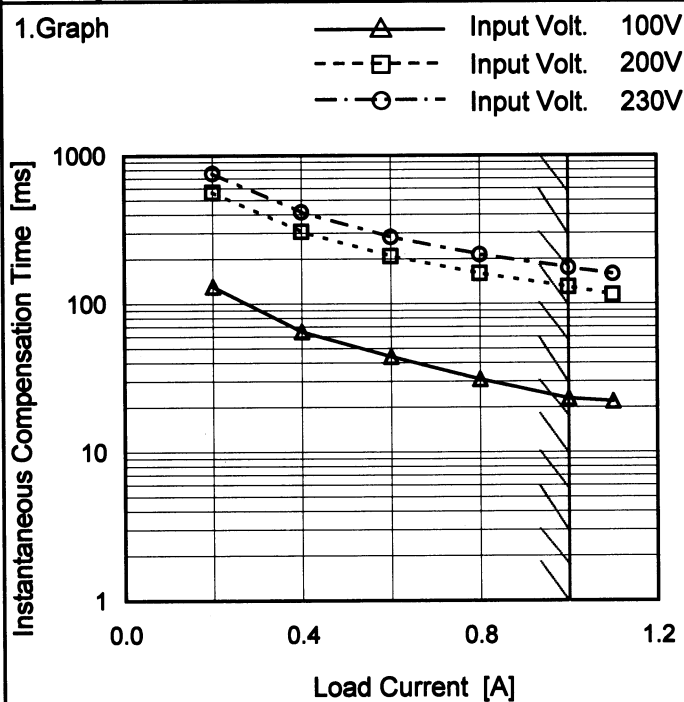
COSEL

Model PBA15F-15

Item Instantaneous Interruption Compensation

Object +15V1A

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	-	-	-
0.2	131	565	757
0.4	65	307	415
0.6	44	209	282
0.8	31	160	215
1.0	23	130	175
1.1	22	115	159
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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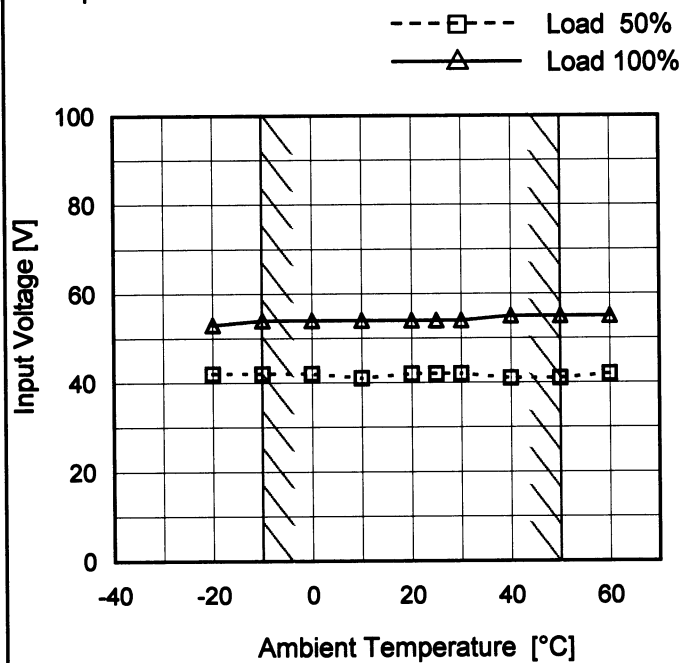
Model PBA15F-15

Item Minimum Input Voltage
for Regulated Output Voltage

Object +15V1A

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	53
-10	42	54
0	42	54
10	41	54
20	42	54
25	42	54
30	42	54
40	41	55
50	41	55
60	42	55
--	-	-

COSEL

Model		PBA15F-15	
Item		Overcurrent Protection	
Object		+15V1A	

1.Graph

△

Input Volt. 100V

○

Input Volt. 200V

Output Voltage [V]

20

16

12

8

4

0

0

1

2

3

Load Current [A]

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

Intermittent operation occurs when the output voltage is less than rated output voltage.

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
15.00	1.91	2.35
14.25	-	-
13.50	-	-
12.00	-	-
10.50	-	-
9.00	-	-
7.50	-	-
6.00	-	-
4.50	-	-
3.00	-	-
1.50	-	-
0.00	-	-

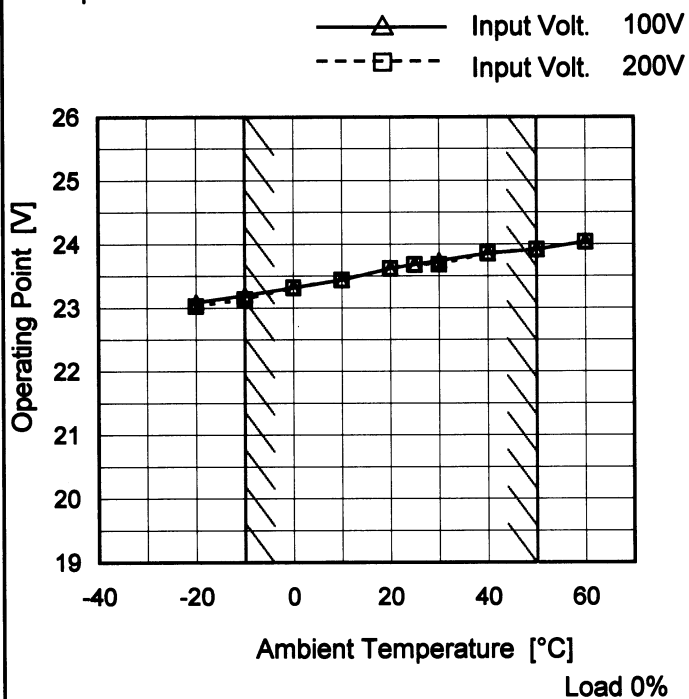
COSEL

Model PBA15F-15

Item Overvoltage Protection

Object +15V1A

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]
-20	23.09	23.03
-10	23.20	23.14
0	23.32	23.32
10	23.44	23.44
20	23.62	23.62
25	23.68	23.68
30	23.74	23.68
40	23.86	23.86
50	23.92	23.92
60	24.04	24.04
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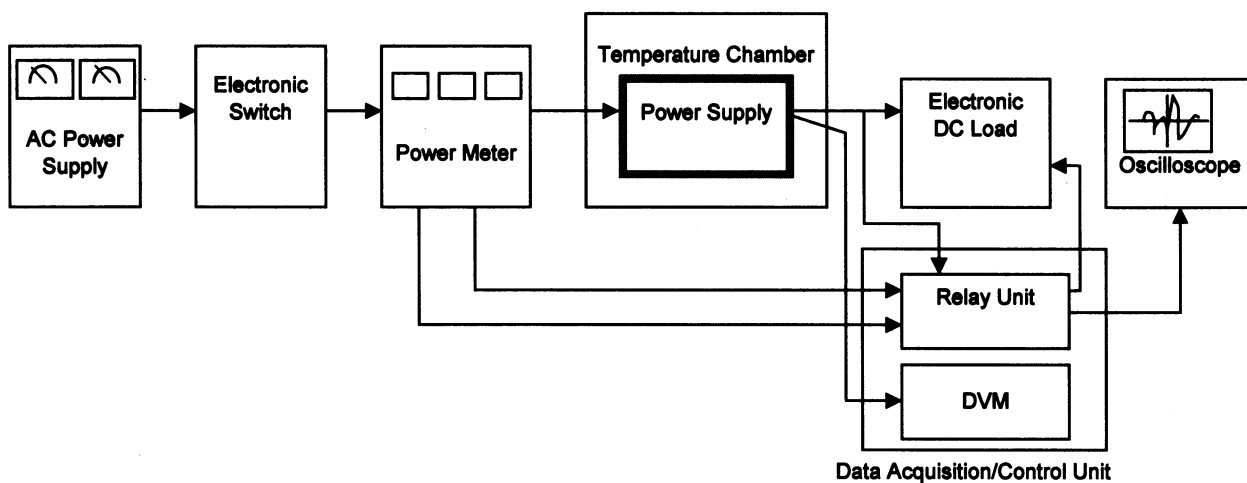


Figure A

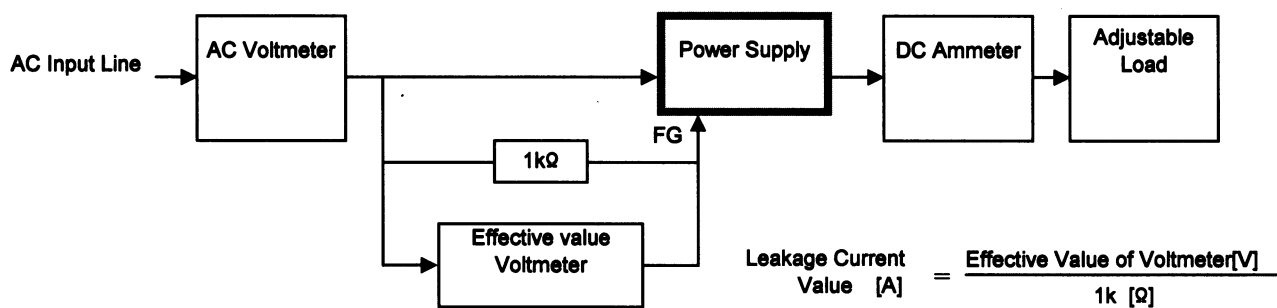


Figure B (DEN-AN)

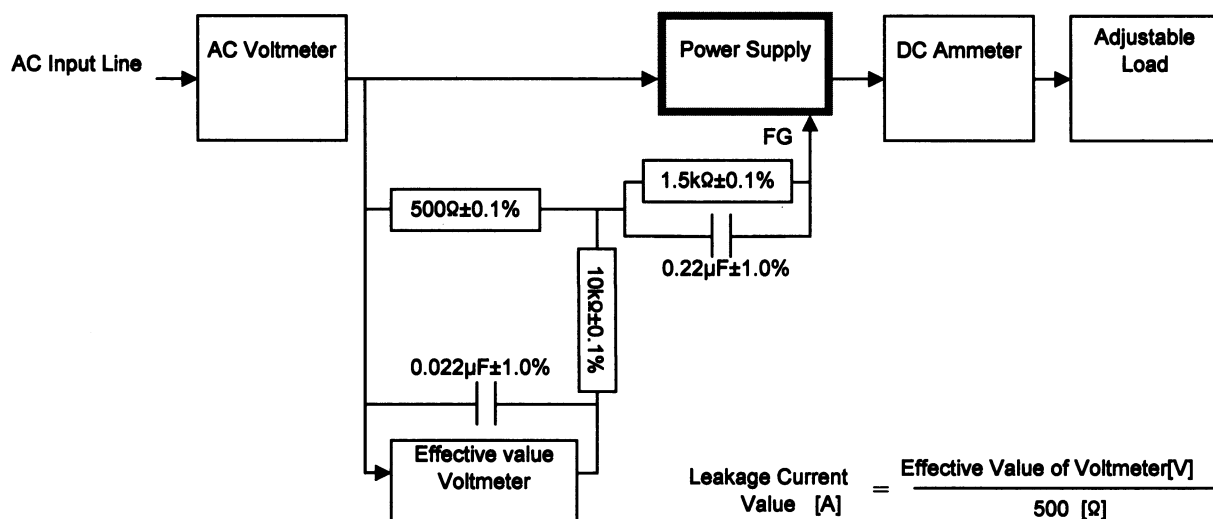


Figure B (IEC60950)