参考資料

COSEL

TEST DATA OF PBA1500T-24

Regulated DC Power Supply
Apr. 24. 2007

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COSEL CO.,LTD.

COSEL

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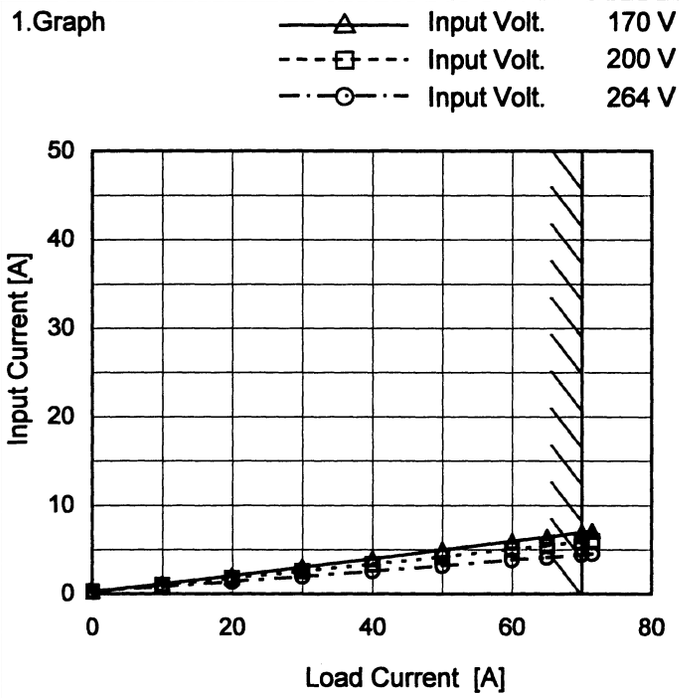
COSEL

Model	PBA1500T-24
Item	Input Current (by Load Current)
Object	————————

Input AC 3-phase
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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	0.241	0.267	0.333
10.0	1.112	0.967	0.800
20.0	2.051	1.753	1.360
30.0	3.009	2.554	1.949
40.0	3.955	3.357	2.555
50.0	4.945	4.182	3.166
60.0	5.926	5.012	3.790
65.0	6.425	5.430	4.101
70.0	6.930	5.856	4.416
71.5	7.082	5.979	4.512
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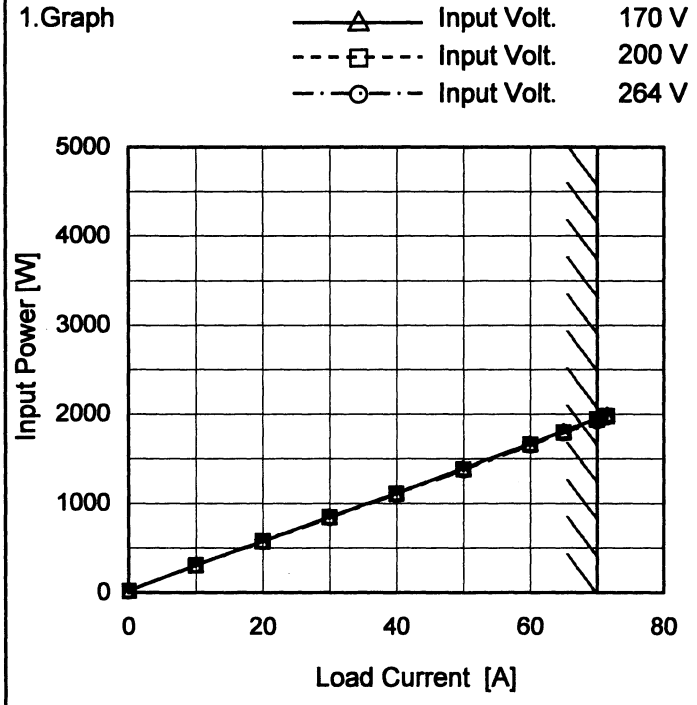
BC-10079

COSEL

Model	PBA1500T-24
Item	Input Power (by Load Current)
Object	———————

Input AC 3-phase
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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	20	19	16
10.0	304	302	301
20.0	572	570	565
30.0	844	839	831
40.0	1111	1107	1100
50.0	1389	1380	1370
60.0	1666	1655	1645
65.0	1806	1793	1781
70.0	1948	1935	1918
71.5	1991	1976	1960
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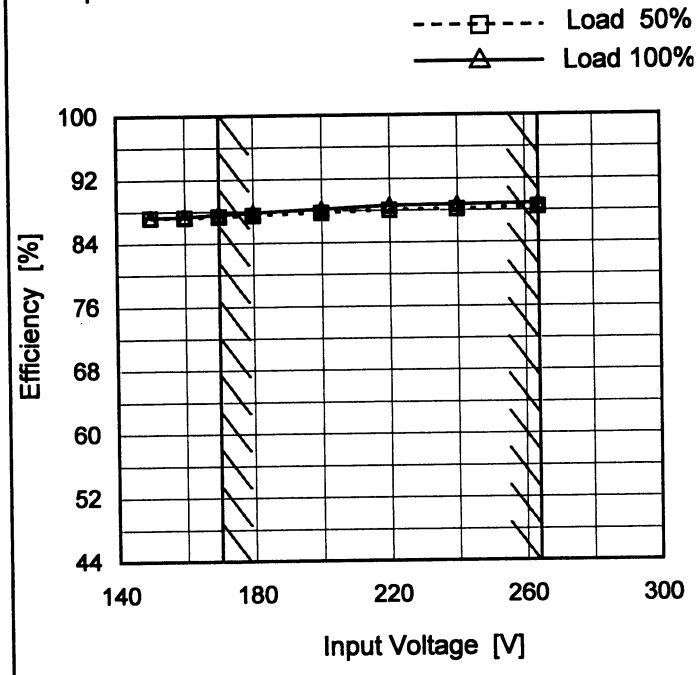
BC-10079

COSEL

Model	PBA1500T-24
Item	Efficiency (by Input Voltage)
Object	———————————

Input AC 3-phase
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%
150	87.2	87.2
160	87.2	87.3
170	87.3	87.6
180	87.4	87.8
200	87.7	88.2
220	88.0	88.6
240	88.1	88.7
264	88.4	88.8
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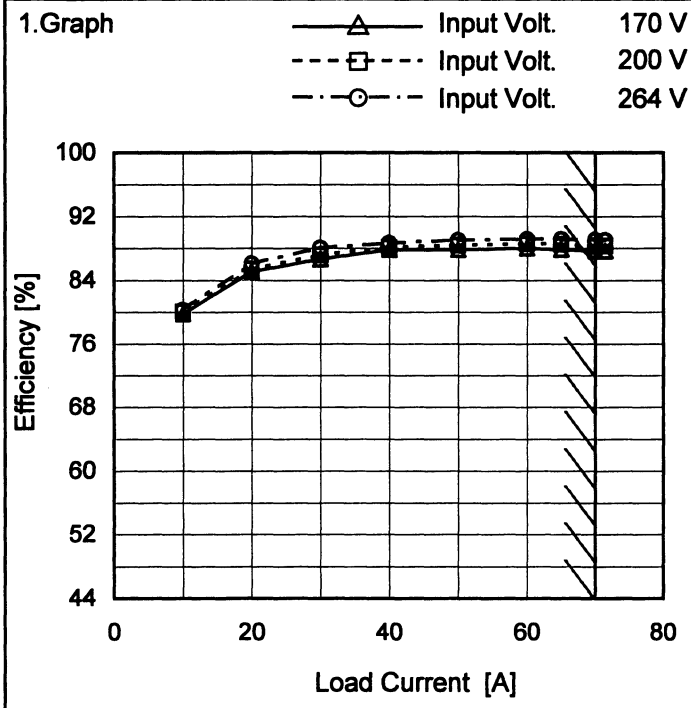
COSEL

Model	PBA1500T-24
Item	Efficiency (by Load Current)
Object	————————

Input AC 3-phase
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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	--	--	--
10.0	79.8	80.1	80.3
20.0	85.1	85.4	86.1
30.0	86.6	87.2	88.1
40.0	87.8	88.2	88.7
50.0	87.8	88.4	89.0
60.0	88.0	88.6	89.2
65.0	87.9	88.5	89.1
70.0	87.7	88.3	89.1
71.5	87.6	88.3	89.0
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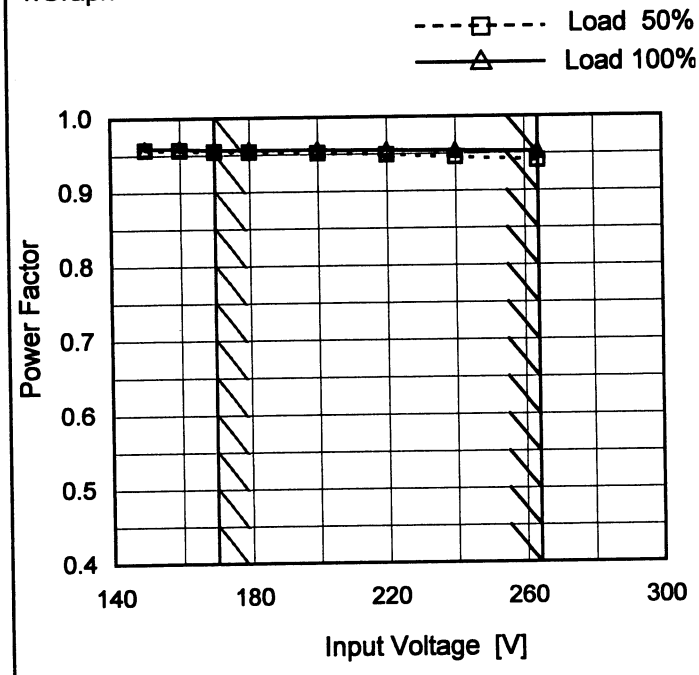
BC-10079

COSEL

Model	PBA1500T-24
Item	Power Factor (by Input Voltage)
Object	———————————

Input AC 3-phase
Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

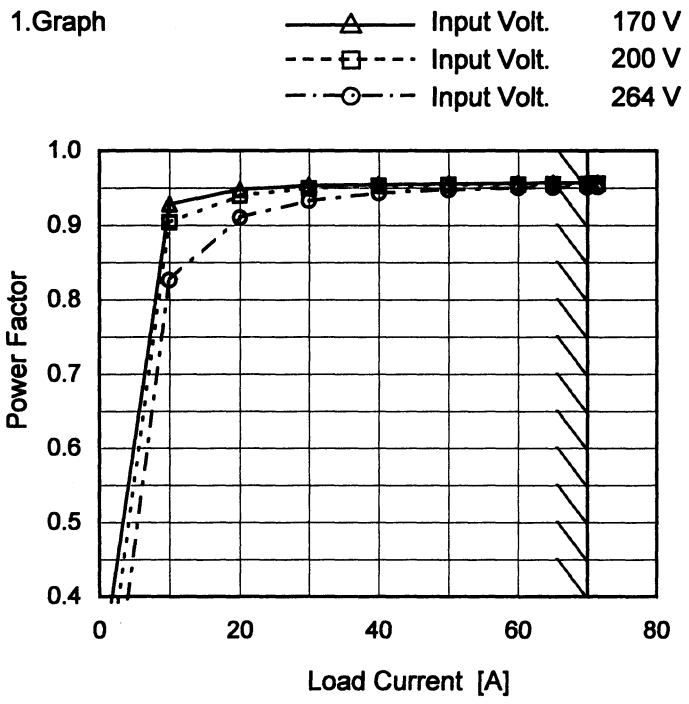
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
150	0.957	0.958
160	0.957	0.958
170	0.954	0.957
180	0.953	0.957
200	0.951	0.956
220	0.949	0.955
240	0.945	0.954
264	0.940	0.952
--	--	--

COSEL

Model	PBA1500T-24
Item	Power Factor (by Load Current)
Object	————————

Input AC 3-phase
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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	0.285	0.208	0.106
10.0	0.928	0.904	0.826
20.0	0.948	0.940	0.911
30.0	0.953	0.949	0.933
40.0	0.955	0.952	0.943
50.0	0.956	0.954	0.947
60.0	0.956	0.954	0.950
65.0	0.957	0.955	0.951
70.0	0.957	0.955	0.951
71.5	0.957	0.956	0.951
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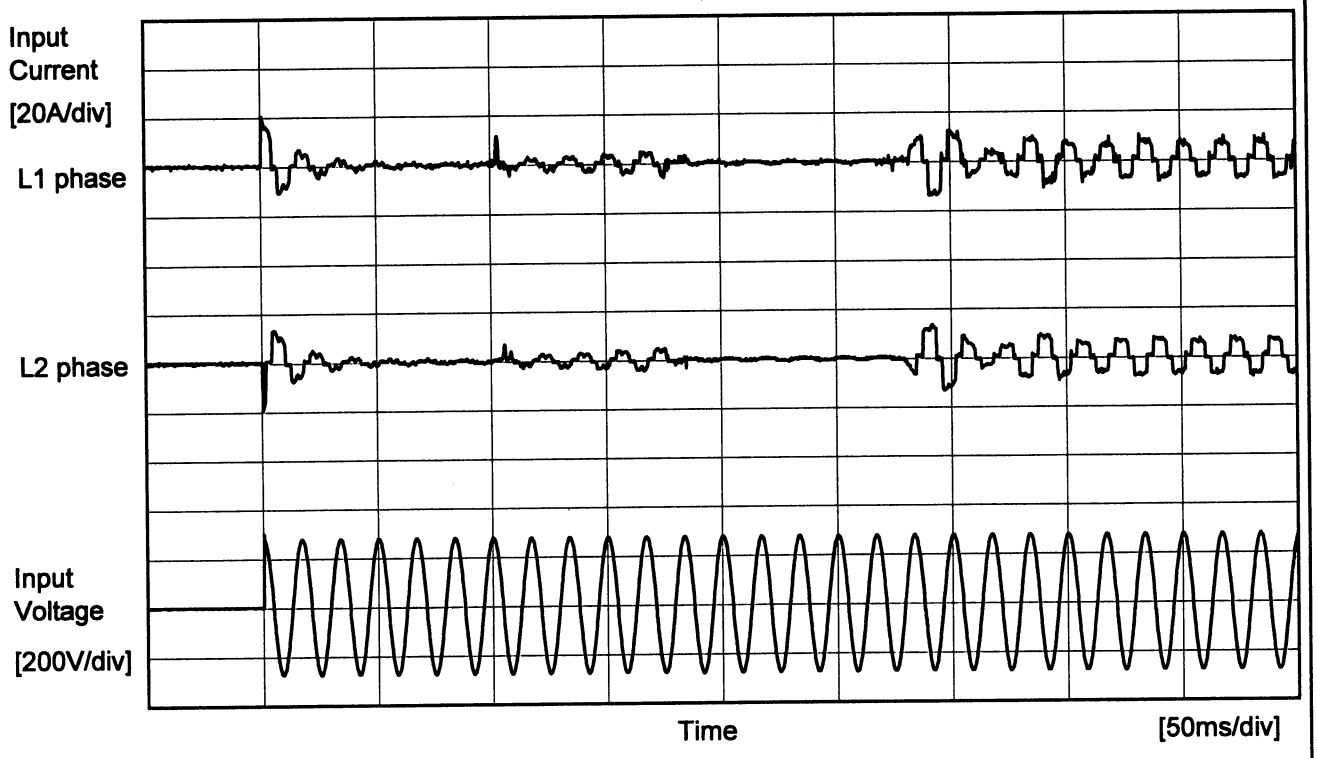
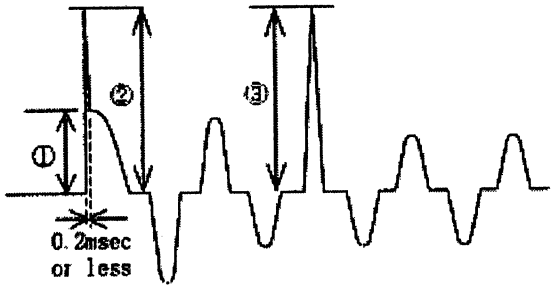
Model	PBA1500T-24	Input	AC 3-phase
Item	Inrush Current	Temperature	25°C
Object	———————	Testing Circuitry	Figure A



Input Voltage	200 V	
Frequency	60 Hz	
Load	100 %	
Inrush Current		
①	18.0 A	
②	20.8 A	(0.2ms or less)*1
③	15.6 A	



*1 The specification of the inrush current (primary surge) means that the surge current to a built-in noise filter (0.2ms or less :waveform②) is excluded

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Model	PBA1500T-24	Input AC 3-phase
Item	Leakage Current	Temperature 25°C
Object	————————	Testing Circuitry Figure B

1.Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A)DEN-AN	--	--	--
(B)IEC60950	--	--	--

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 240 [V]	Input Volt. 264 [V]
(B)IEC60950	0.77	1.12	1.25

2.Condition

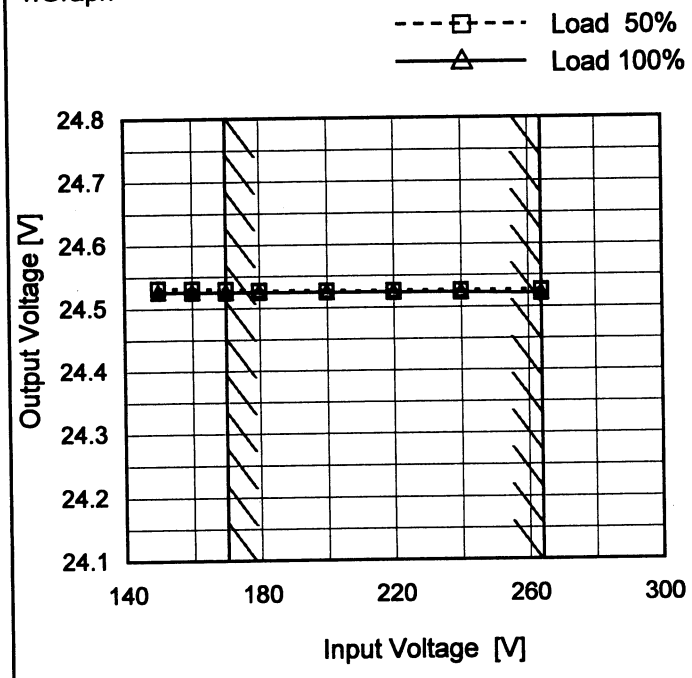
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

COSEL

Model	PBA1500T-24
Item	Line Regulation
Object	+24V70A

Input AC 3-phase
Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

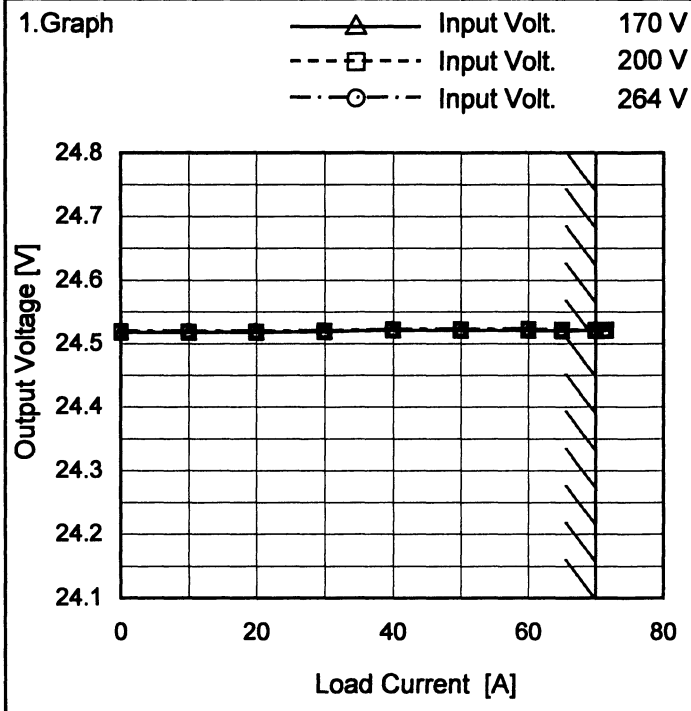
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
150	24.531	24.526
160	24.530	24.525
170	24.529	24.525
180	24.527	24.525
200	24.527	24.524
220	24.526	24.524
240	24.526	24.523
264	24.526	24.521
--	--	--

COSEL

Model	PBA1500T-24
Item	Load Regulation
Object	+24V70A

Input AC 3-phase
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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	24.518	24.519	24.519
10.0	24.518	24.519	24.520
20.0	24.517	24.518	24.519
30.0	24.518	24.520	24.520
40.0	24.521	24.522	24.522
50.0	24.521	24.522	24.523
60.0	24.521	24.522	24.523
65.0	24.520	24.521	24.522
70.0	24.520	24.521	24.521
71.5	24.521	24.521	24.522
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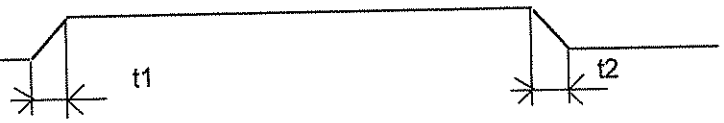
COSEL

Model	PBA1500T-24
Item	Dynamic Load Response
Object	+24V70A

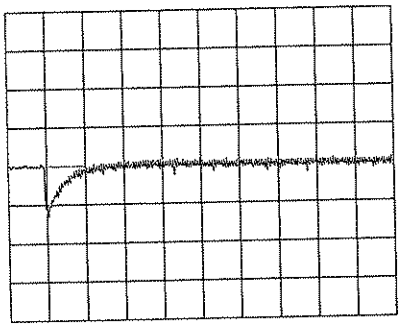
Input AC 3-phase
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 200 V
Cycle 1000 ms

Load Current
t1=t2=100 μ s

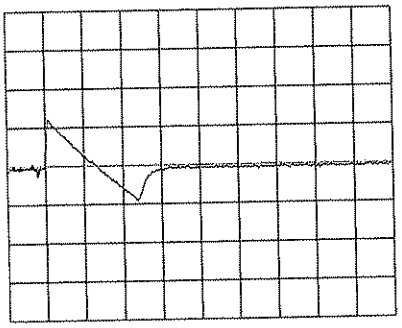


Min.Load (0A) ⟷
Load 100% (70A)



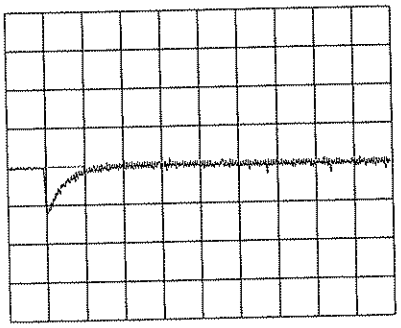
100mV/div

10ms/div



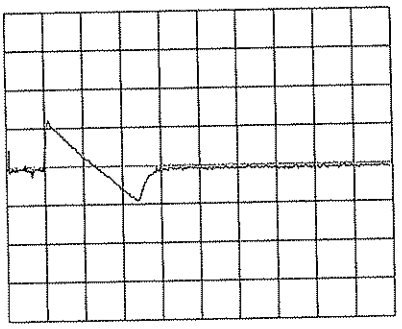
10ms/div

Min.Load (0A) ⟷
Load 50% (35A)



100mV/div

10ms/div



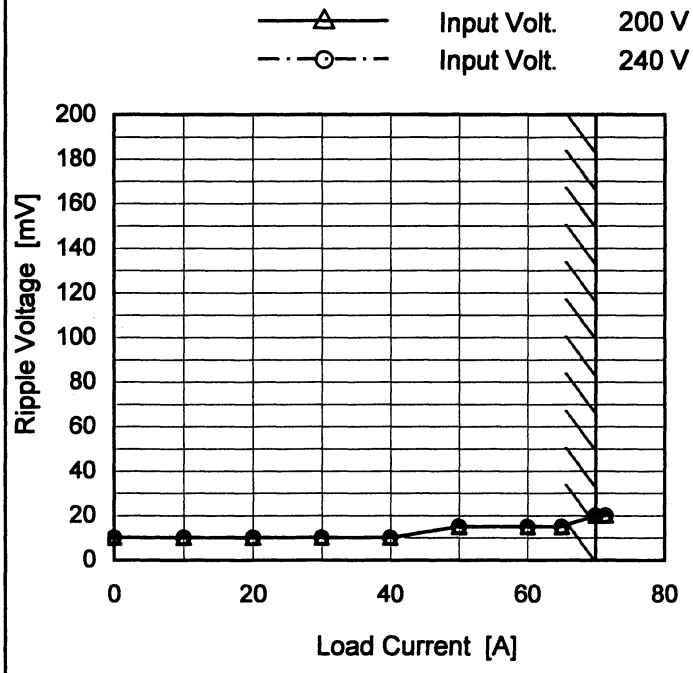
10ms/div

COSEL

Model	PBA1500T-24
Item	Ripple Voltage (by Load Current)
Object	+24V70A

Input AC 3-phase
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

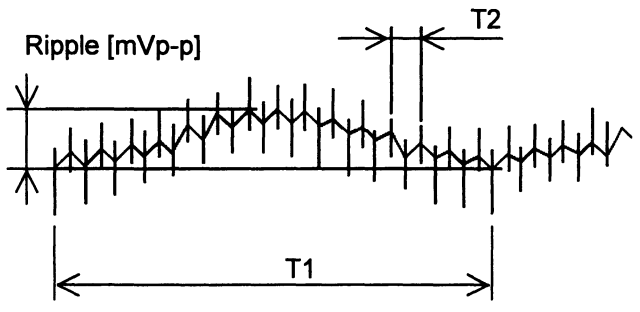


Fig. Complex Ripple Wave Form

2.Values

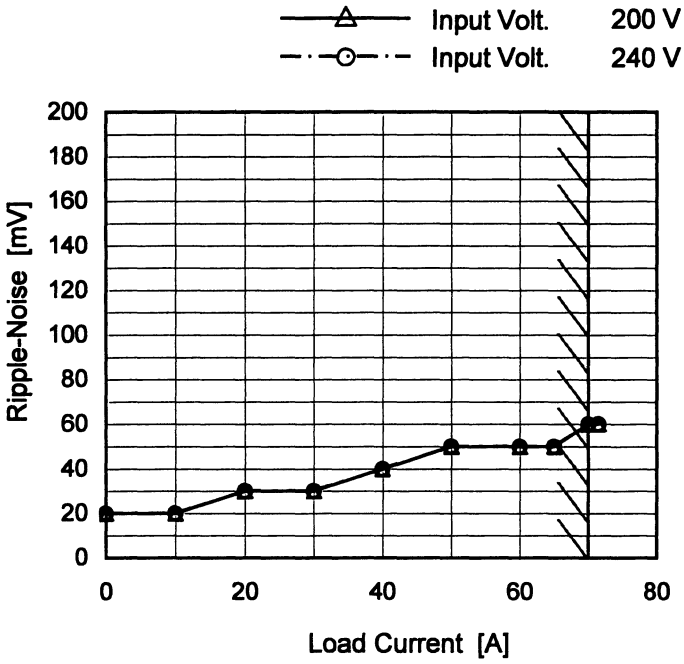
Load Current [A]	Ripple Output Voltage [mV]	
	Input Volt. 200[V]	Input Volt. 240[V]
0	10	10
10.0	10	10
20.0	10	10
30.0	10	10
40.0	10	10
50.0	15	15
60.0	15	15
65.0	15	15
70.0	20	20
71.5	20	20
--	--	--

COSEL

Model	PBA1500T-24
Item	Ripple-Noise
Object	+24V70A

Input AC 3-phase
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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 200[V]	Input Volt. 240[V]
0	20	20
10.0	20	20
20.0	30	30
30.0	30	30
40.0	40	40
50.0	50	50
60.0	50	50
65.0	50	50
70.0	60	60
71.5	60	60
--	--	--

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

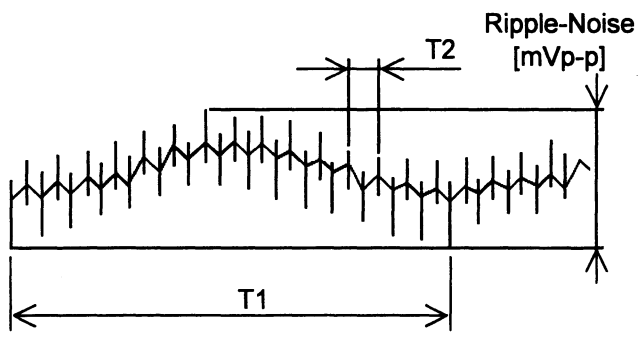


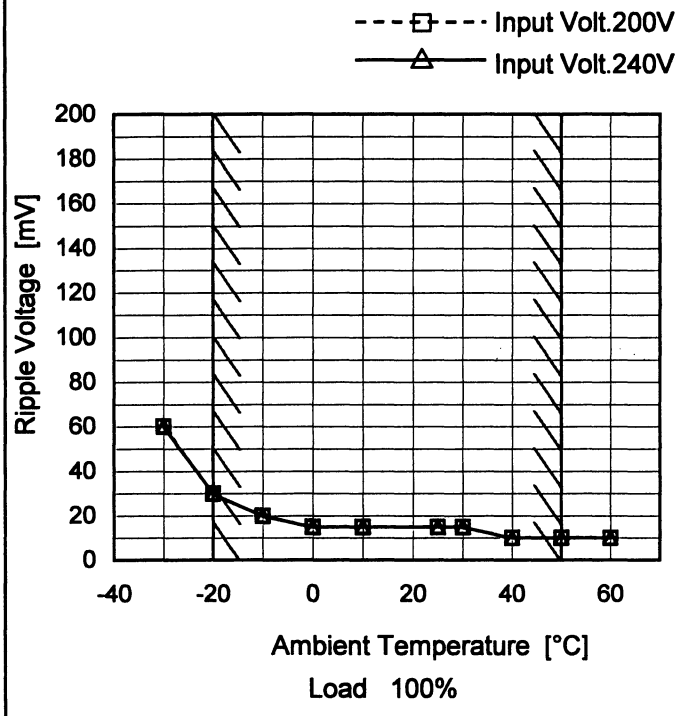
Fig. Complex Ripple Wave Form

COSEL

Model	PBA1500T-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V70A

Input AC 3-phase
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. 200 [V]	Input Volt. 240 [V]
-30	60	60
-20	30	30
-10	20	20
0	15	15
10	15	15
25	15	15
30	15	15
40	10	10
50	10	10
60	10	10
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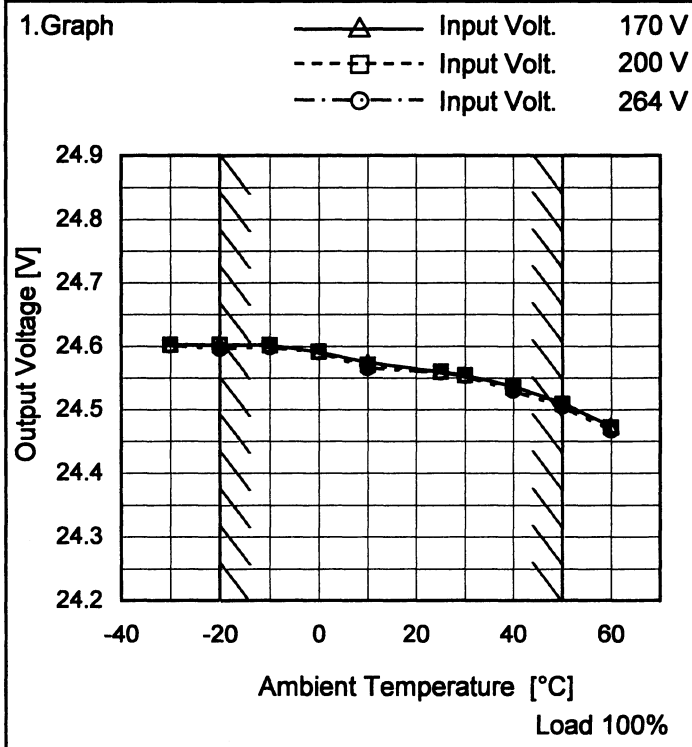
COSEL

Model	PBA1500T-24
Item	Ambient Temperature Drift
Object	+24V70A

Input AC 3-phase
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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-30	24.602	24.602	24.601
-20	24.602	24.602	24.596
-10	24.602	24.601	24.598
0	24.591	24.591	24.590
10	24.574	24.570	24.566
25	24.560	24.560	24.558
30	24.555	24.554	24.553
40	24.537	24.535	24.530
50	24.511	24.509	24.505
60	24.474	24.472	24.467
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COSEL

Model	PBA1500T-24	
Item	Output Voltage Accuracy	Input AC 3-phase Testing Circuitry Figure A
Object	+24V70A	

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 : 170 -- 264V
Load Current : 0 -- 70A

* 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

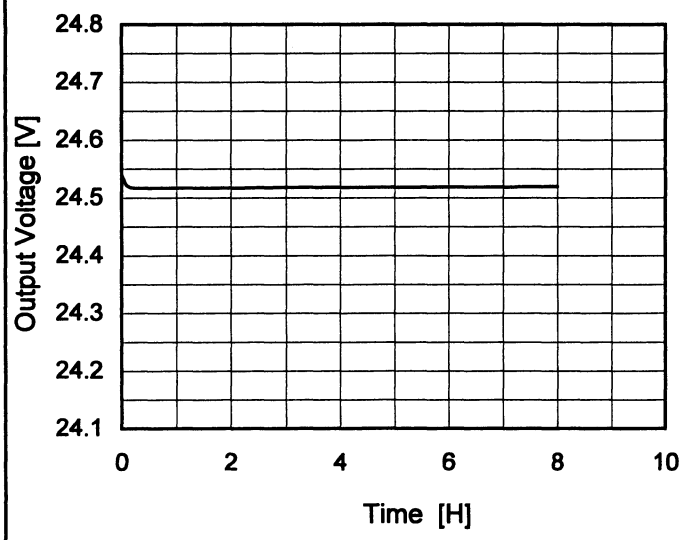
Item	Temperature [°C]	Input Voltage [V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	200	70	24.600	±59	±0.2
Minimum Voltage	50	170	0	24.482		

COSEL

Model	PBA1500T-24
Item	Time Lapse Drift
Object	+24V70A

Input AC 3-phase
Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 200V
Load 100%

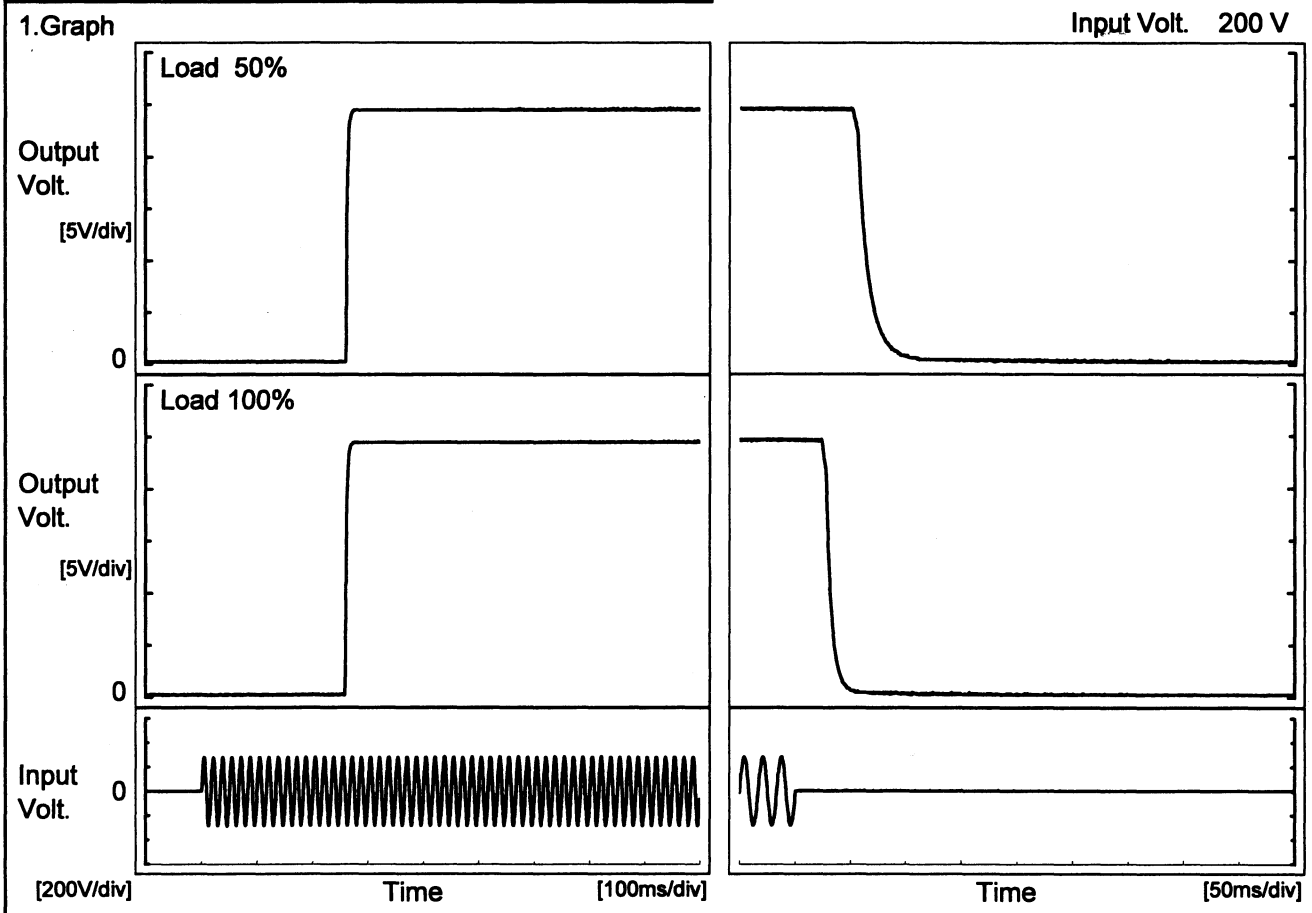
2.Values

Time since start [H]	Output Voltage [V]
0.0	24.541
0.5	24.516
1.0	24.517
2.0	24.517
3.0	24.518
4.0	24.518
5.0	24.518
6.0	24.518
7.0	24.519
8.0	24.519

COSEL

Model	PBA1500T-24	Input	AC 3-phase
		Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+24V70A		

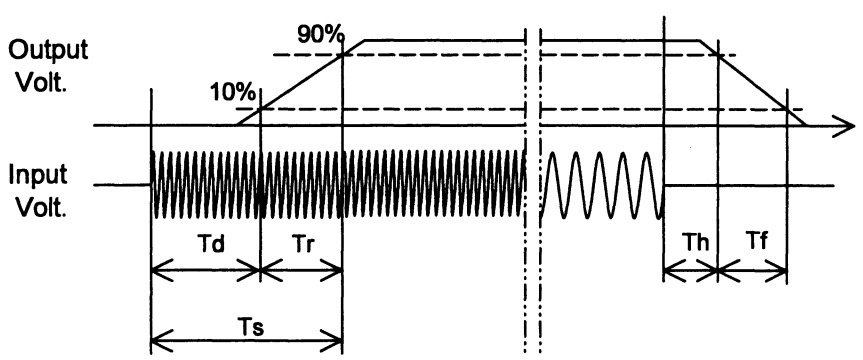
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	260.0	5.0	265.0	56.0	23.8
100 %	259.0	5.0	264.0	27.5	12.3

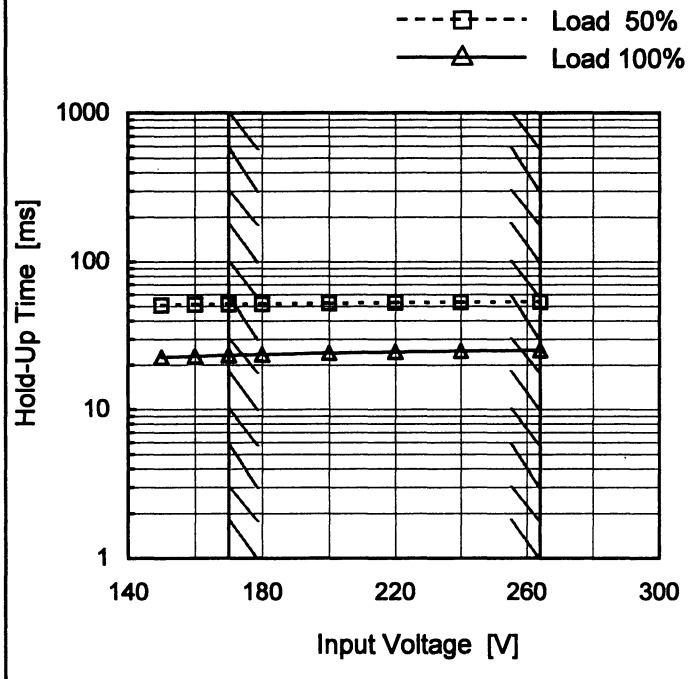


COSEL

Model	PBA1500T-24
Item	Hold-Up Time
Object	+24V70A

Input AC 3-phase
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

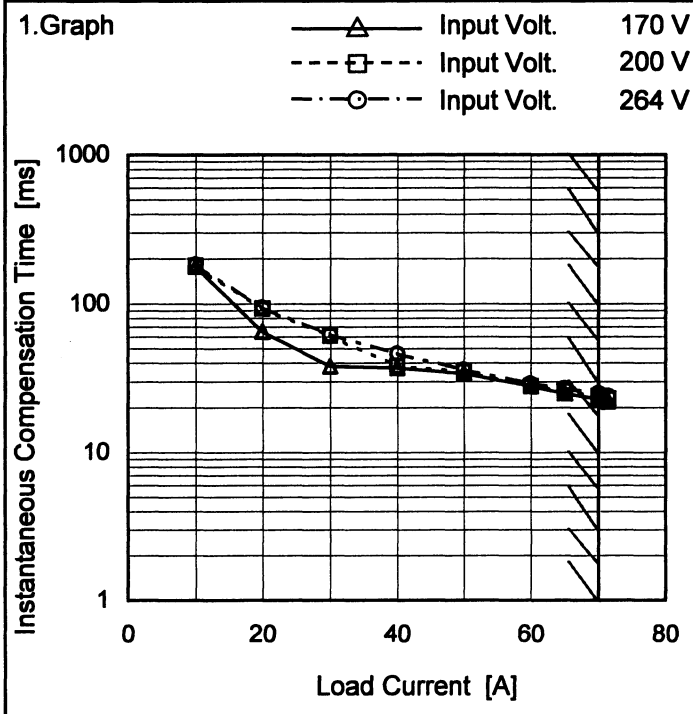
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
150	51	23
160	51	23
170	51	23
180	52	24
200	52	24
220	53	25
240	53	25
264	53	25
--	--	--

COSEL

Model	PBA1500T-24
Item	Instantaneous Interruption Compensation
Object	+24V70A

Input AC 3-phase
Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

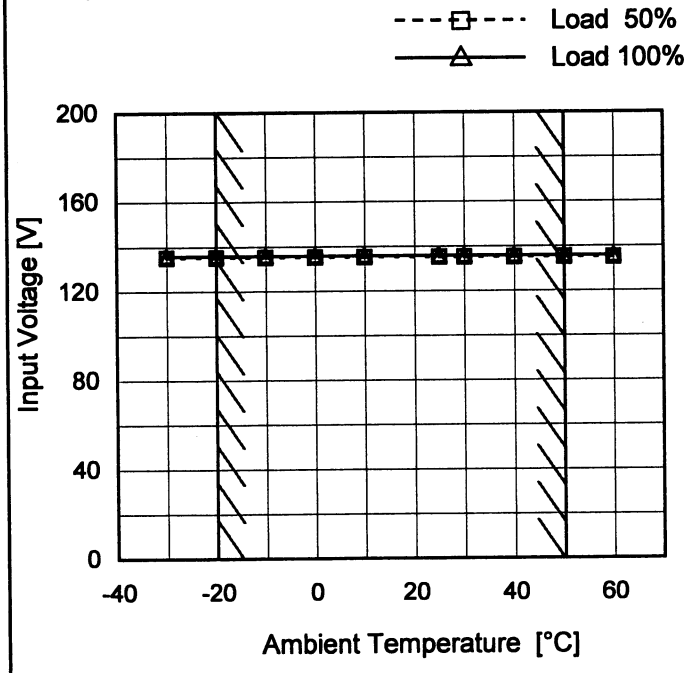
Load Current [A]	Time [ms] Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0	--	--	--
10.0	178	180	183
20.0	65	93	94
30.0	38	61	62
40.0	37	38	46
50.0	34	35	36
60.0	28	28	29
65.0	25	26	27
70.0	23	24	25
71.5	22	23	24
--	--	--	--

COSEL

Model	PBA1500T-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V70A

Input AC 3-phase
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	135	136
-20	135	136
-10	135	136
0	135	136
10	135	136
25	135	136
30	135	136
40	135	136
50	135	136
60	135	136
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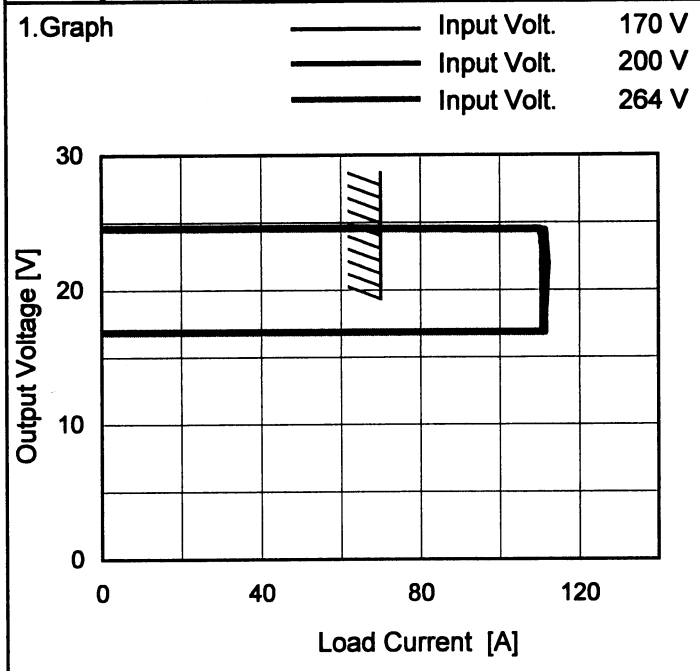
COSEL

Model	PBA1500T-24
Item	Overcurrent Protection
Object	+24V70A

Input AC 3-phase
Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

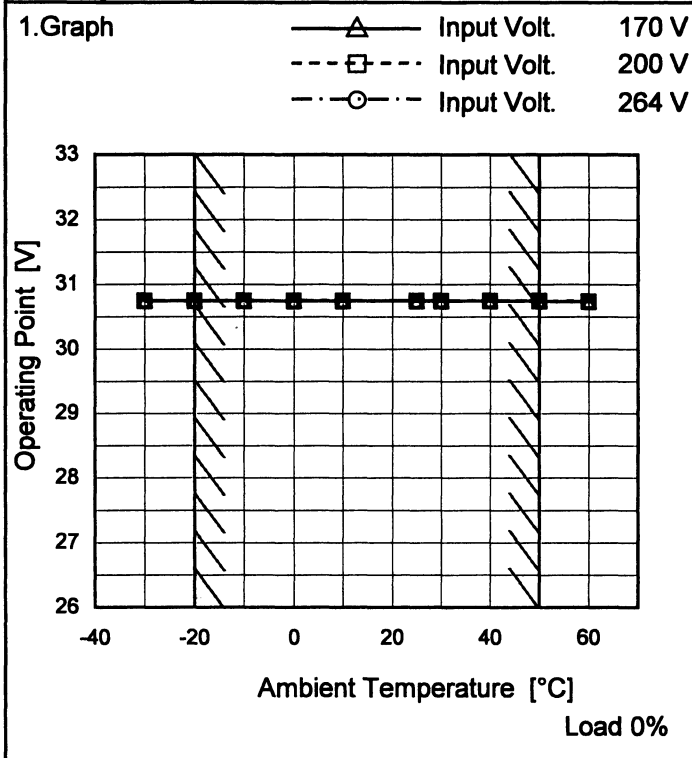
Output Voltage [V]	Load Current [A]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
24.0	111.53	110.73	110.45
22.8	111.97	111.24	110.98
21.6	112.12	111.29	110.92
19.2	111.74	111.22	111.02
16.8	111.39	111.24	110.81
14.4	0.00	0.00	0.00
12.0	0.00	0.00	0.00
9.6	0.00	0.00	0.00
7.2	0.00	0.00	0.00
4.8	0.00	0.00	0.00
2.4	0.00	0.00	0.00
0.0	0.00	0.00	0.00

COSEL

Model	PBA1500T-24
Item	Overvoltage Protection
Object	+24V70A

Input AC 3-phase
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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-30	30.74	30.74	30.74
-20	30.74	30.74	30.74
-10	30.74	30.74	30.74
0	30.74	30.74	30.74
10	30.74	30.74	30.74
25	30.74	30.74	30.74
30	30.74	30.74	30.74
40	30.74	30.74	30.74
50	30.74	30.74	30.74
60	30.73	30.73	30.73
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COSEL

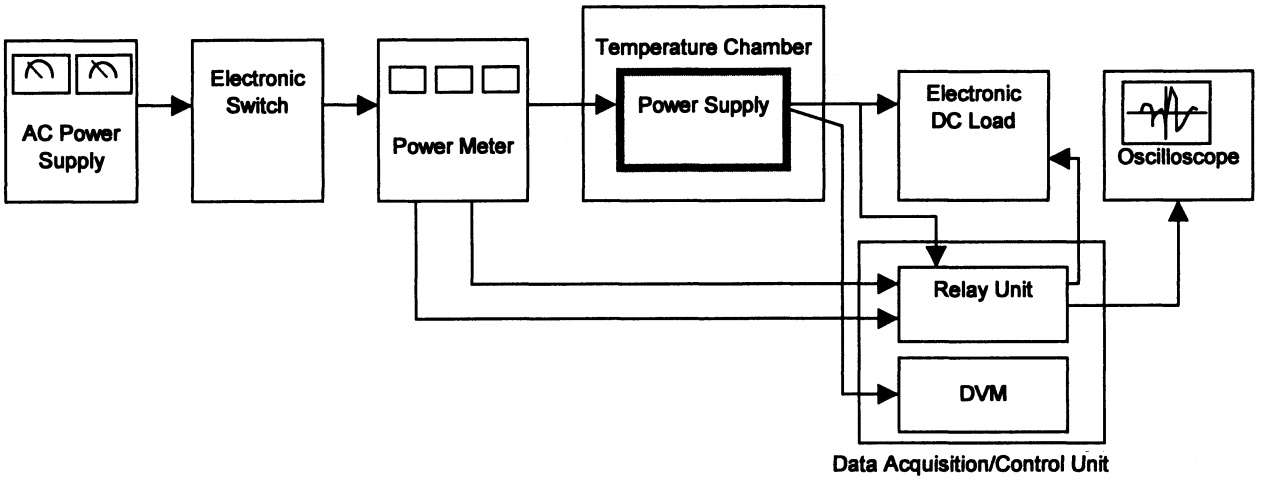

Figure A

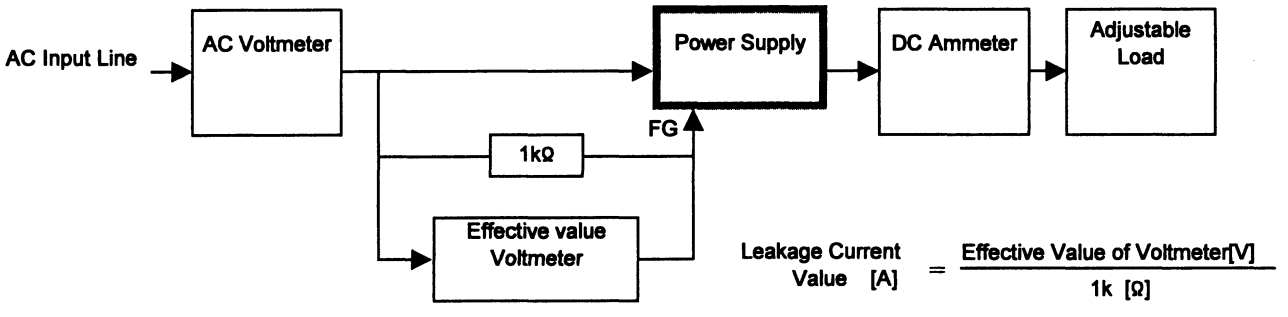

Figure B (DEN-AN)

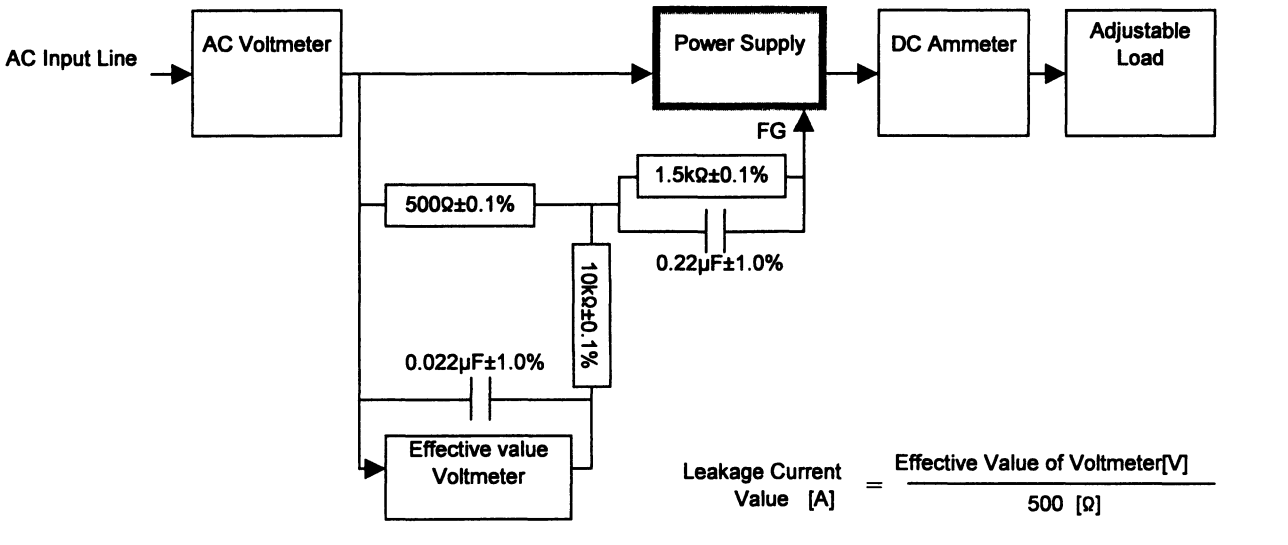

Figure B (IEC60950)