COSEL

参考資料

TEST DATA OF GT4-24

Regulated DC Power Supply
July 23, 2010

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Satoshi Kinoshita Design Engineer

COSEL CO.,LTD.

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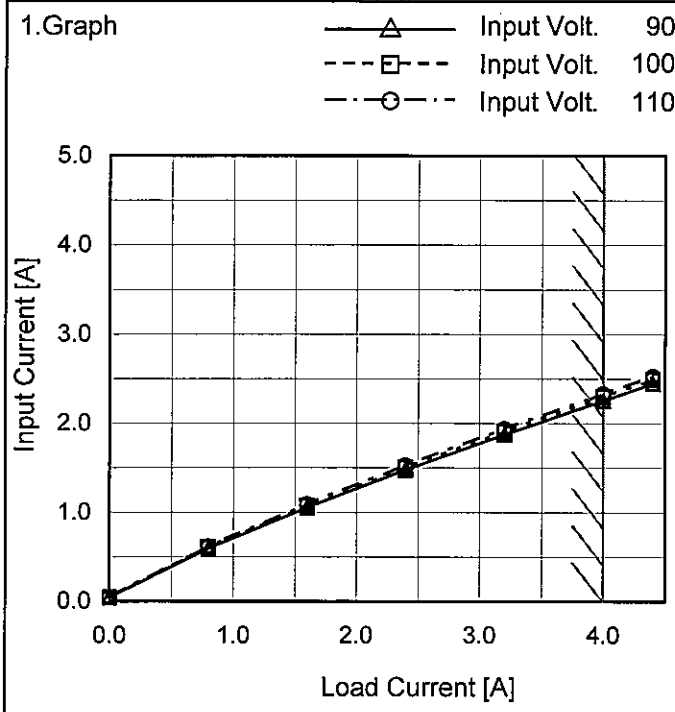
Item	Input Current (by Load Current)
Object	———————

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. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.0	0.042	0.044	0.046
0.8	0.596	0.607	0.617
1.6	1.055	1.074	1.091
2.4	1.480	1.505	1.530
3.2	1.876	1.908	1.940
4.0	2.260	2.300	2.336
4.4	2.448	2.491	2.530
---	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

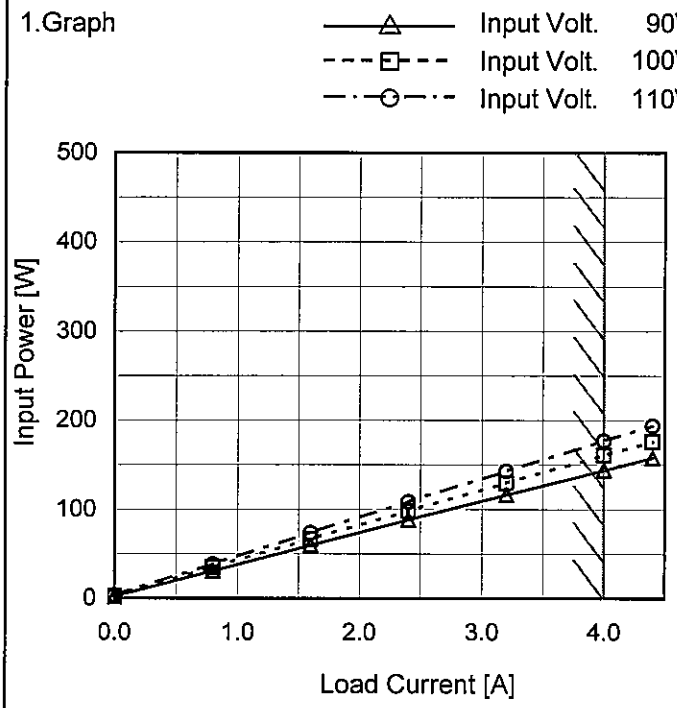
BC-10206

COSEL

Model	GT4-24
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. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.0	2.3	2.7	3.1
0.8	31.0	34.7	38.4
1.6	59.8	66.5	73.6
2.4	88.5	98.2	108.6
3.2	116.4	129.6	142.8
4.0	144.2	160.8	177.0
4.4	158.1	176.1	194.1
---	-	-	-
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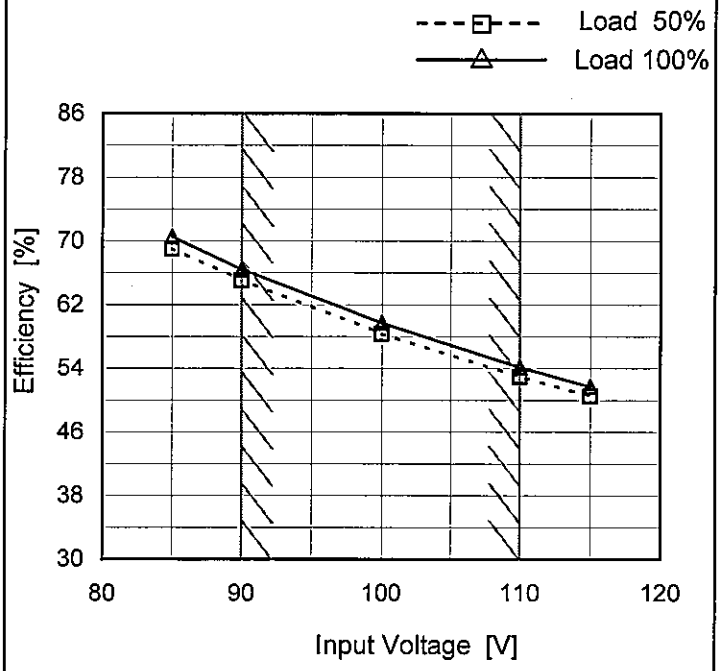
--	-	-	-
--	-	-	-

COSEL

Model	GT4-24
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%
85	69.0	70.6
90	65.1	66.5
100	58.4	59.7
110	53.0	54.2
115	50.5	51.7
--	-	-
--	-	-
--	-	-
--	-	-

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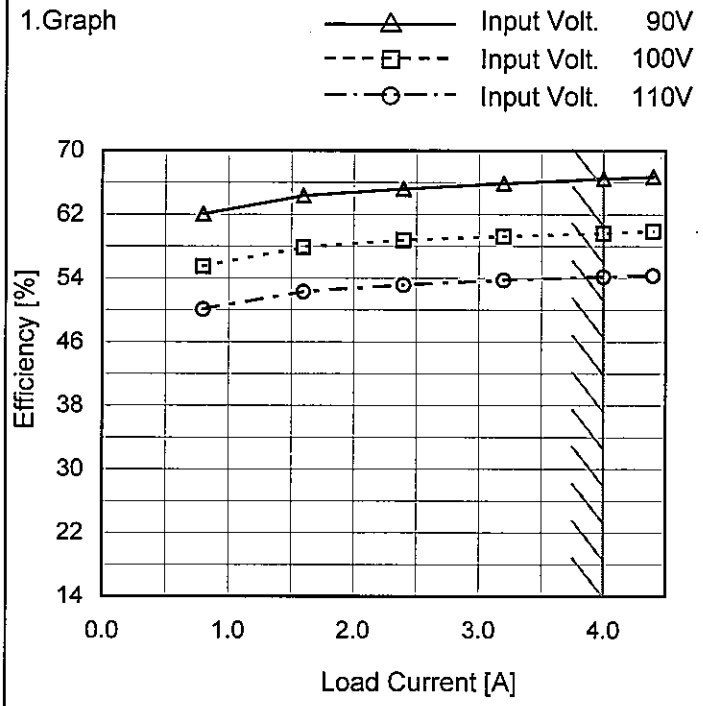
Model	GT4-24
Item	Efficiency (by Load Current)
Object	

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. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.0	-	-	-
0.8	62.1	55.5	50.1
1.6	64.4	57.9	52.3
2.4	65.2	58.8	53.1
3.2	65.9	59.2	53.7
4.0	66.5	59.6	54.2
4.4	66.7	59.9	54.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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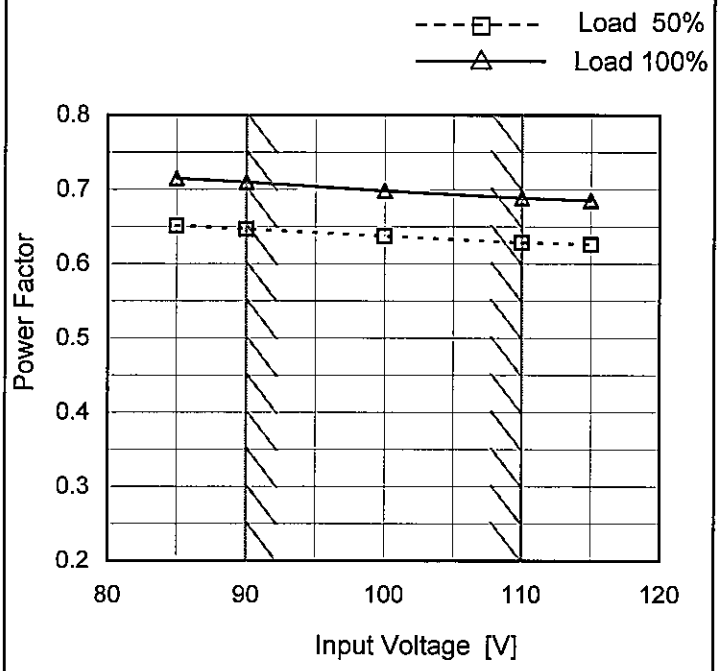
Model	GT4-24
Item	Power Factor (by Input Voltage)
Object	———————

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%
85	0.651	0.715
90	0.647	0.710
100	0.637	0.698
110	0.628	0.689
115	0.626	0.685
--	-	-
--	-	-
--	-	-
--	-	-

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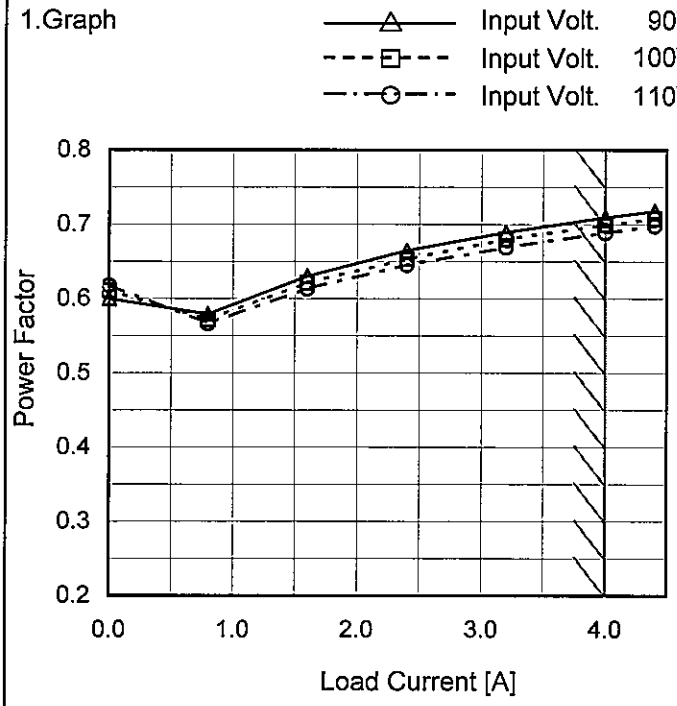
Model	GT4-24
Item	Power Factor (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



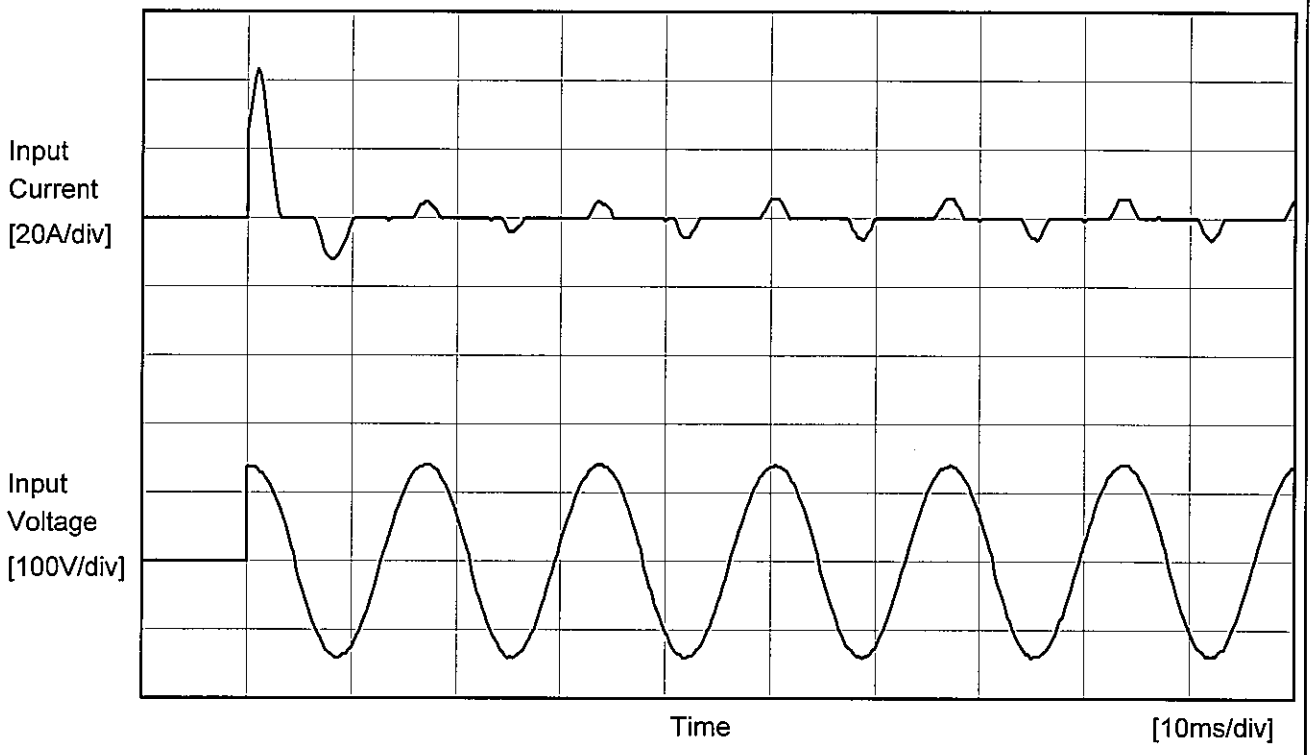
Note: Slanted line shows the range of the rated load current.

2.Values

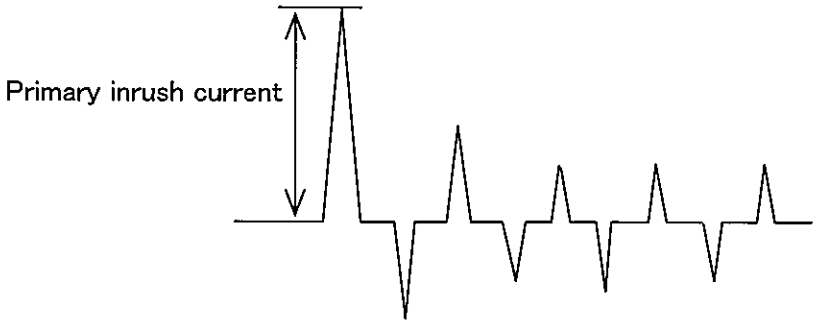
Load Current [A]	Power Factor		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.0	0.600	0.611	0.618
0.8	0.579	0.572	0.566
1.6	0.630	0.621	0.613
2.4	0.665	0.653	0.645
3.2	0.690	0.680	0.669
4.0	0.709	0.699	0.689
4.4	0.718	0.707	0.698
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GT4-24		
Item	Inrush Current	Temperature	25°C
Object	————————	Testing Circuitry	Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	43.2 A



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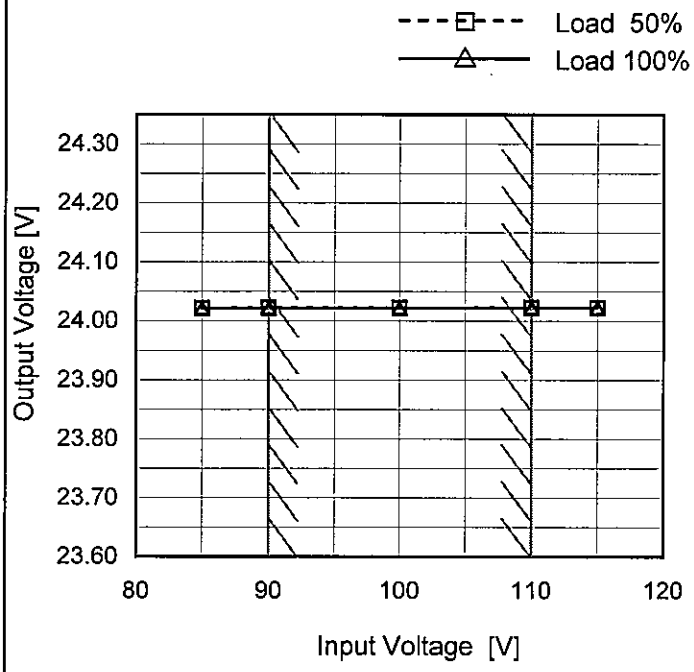
Model	GT4-24
Item	Line Regulation
Object	+24V4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

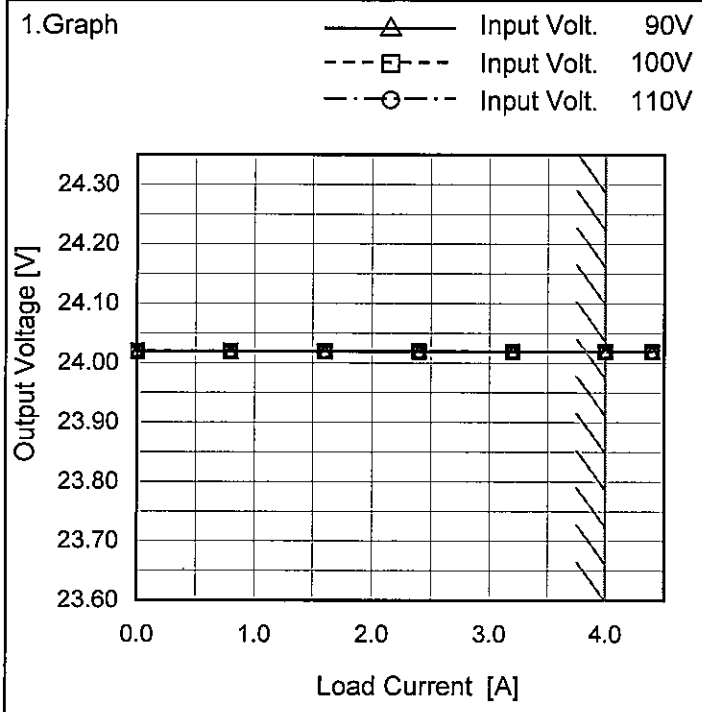
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	24.022	24.022
90	24.022	24.022
100	24.023	24.022
110	24.023	24.022
115	24.023	24.023
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT4-24
Item	Load Regulation
Object	+24V4A

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. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.0	24.019	24.020	24.020
0.8	24.019	24.020	24.020
1.6	24.019	24.019	24.020
2.4	24.019	24.019	24.020
3.2	24.019	24.019	24.019
4.0	24.019	24.019	24.019
4.4	24.019	24.019	24.019
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

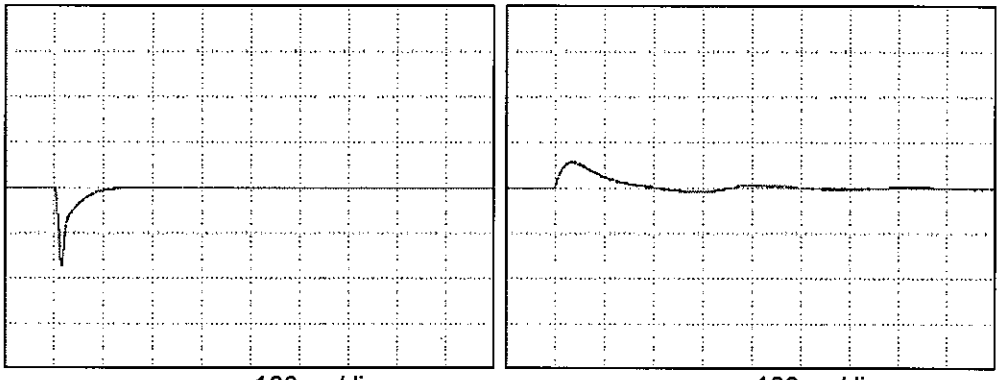
COSEL

Model	GT4-24		
Item	Dynamic Load Response	Temperature Testing Circuitry	25°C Figure A
Object	+24V4A		

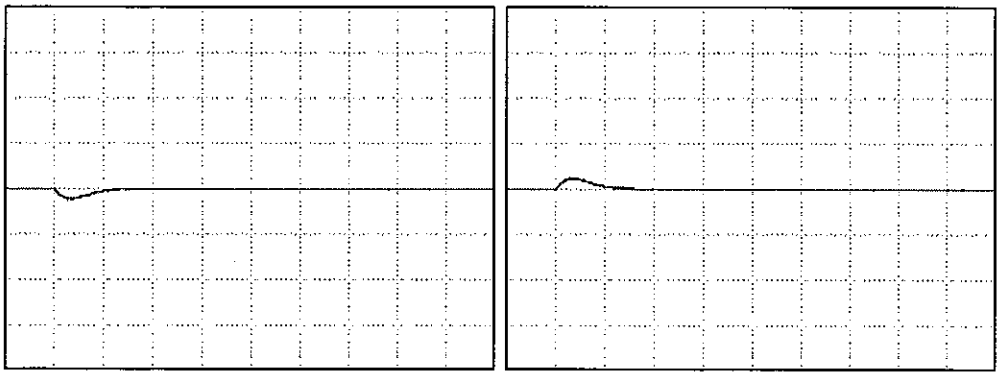
Input Volt. 100 V
Cycle 1000 ms

Load Current

Min. Load (0A) ⟷
Load 100% (4A)



Load 50% (2A) ⟷
Load 100% (4A)

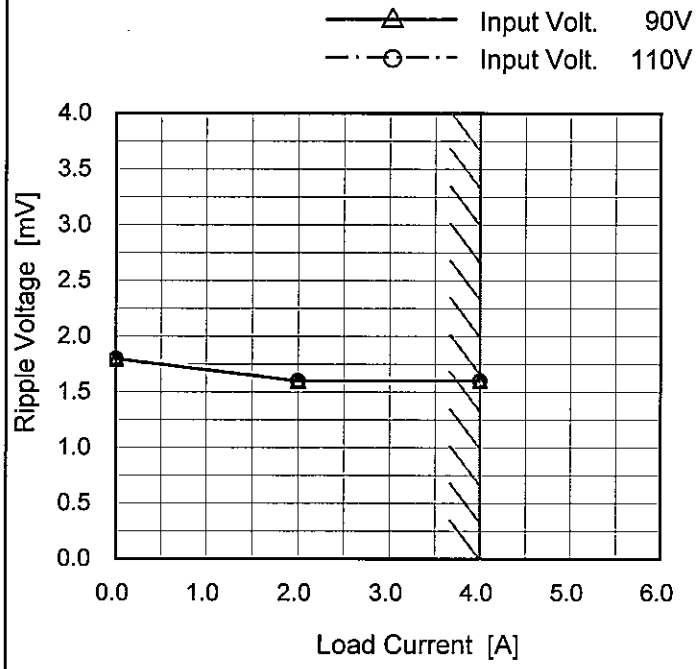


COSEL

Model	GT4-24
Item	Ripple Voltage (by Load Current)
Object	+24V4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated load current.

2.Values

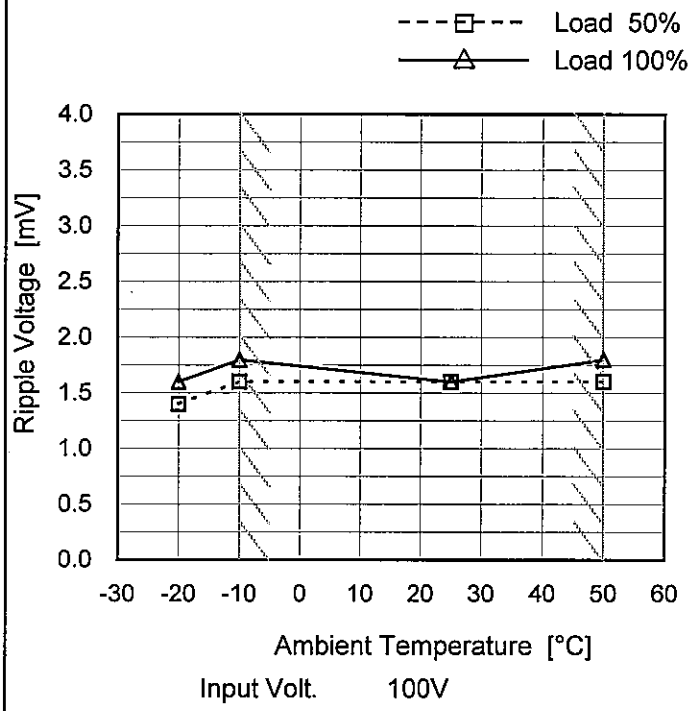
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 90 [V]	Input Volt. 110 [V]
0.0	1.8	1.8
2.0	1.6	1.6
4.0	1.6	1.6
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT4-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V4A

Testing Circuitry Figure A

1.Graph



Input Volt. 100V

Measured by 20 MHz Oscilloscope.

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

2.Values

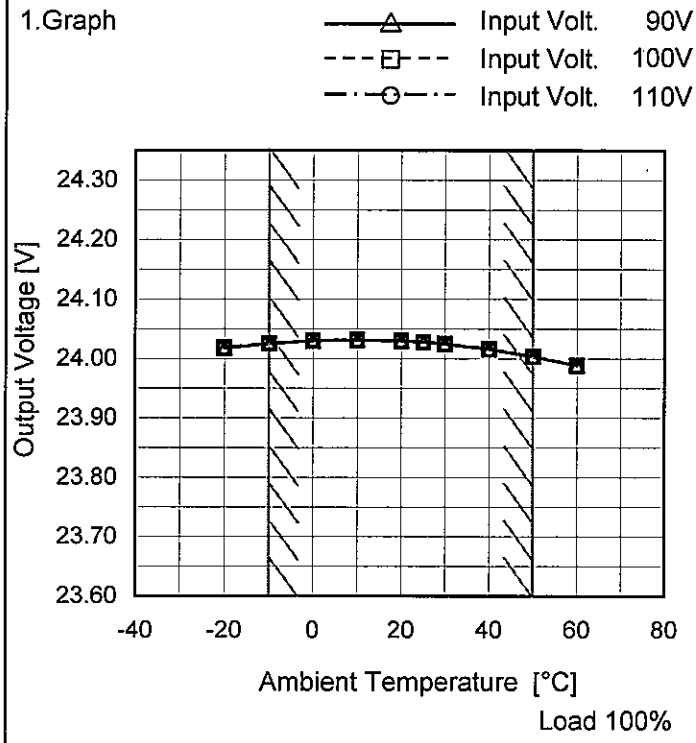
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	1.4	1.6
-10	1.6	1.8
25	1.6	1.6
50	1.6	1.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT4-24
Item	Ambient Temperature Drift
Object	+24V4A

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. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
-20	24.018	24.018	24.019
-10	24.025	24.025	24.026
0	24.030	24.031	24.031
10	24.031	24.031	24.032
20	24.030	24.031	24.031
25	24.028	24.028	24.028
30	24.025	24.025	24.025
40	24.016	24.016	24.017
50	24.004	24.004	24.004
60	23.988	23.989	23.988
--	-	-	-

COSEL

Model	GT4-24
Item	Output Voltage Accuracy
Object	+24V4A

Testing Circuitry Figure A

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 : 90 - 110V
Load Current : 0 - 4A

* 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

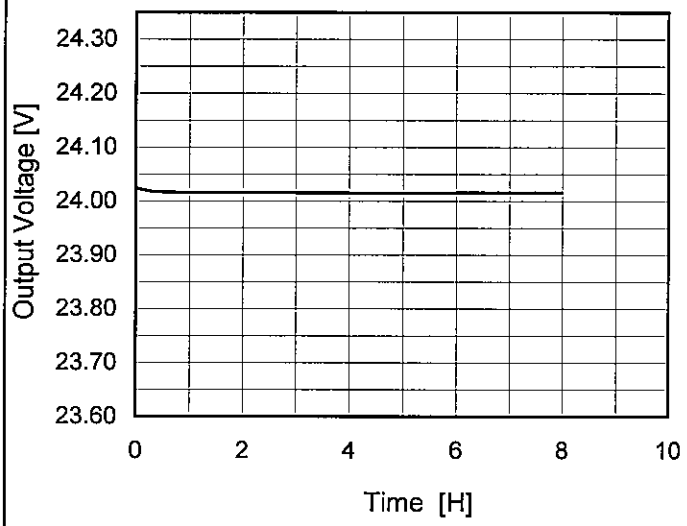
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	10	110	0	24.032	±14	±0.1
Minimum Voltage	50	90	4	24.004		

COSEL

Model	GT4-24
Item	Time Lapse Drift
Object	+24V4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	24.025
0.5	24.017
1.0	24.016
2.0	24.016
3.0	24.016
4.0	24.016
5.0	24.015
6.0	24.016
7.0	24.016
8.0	24.016

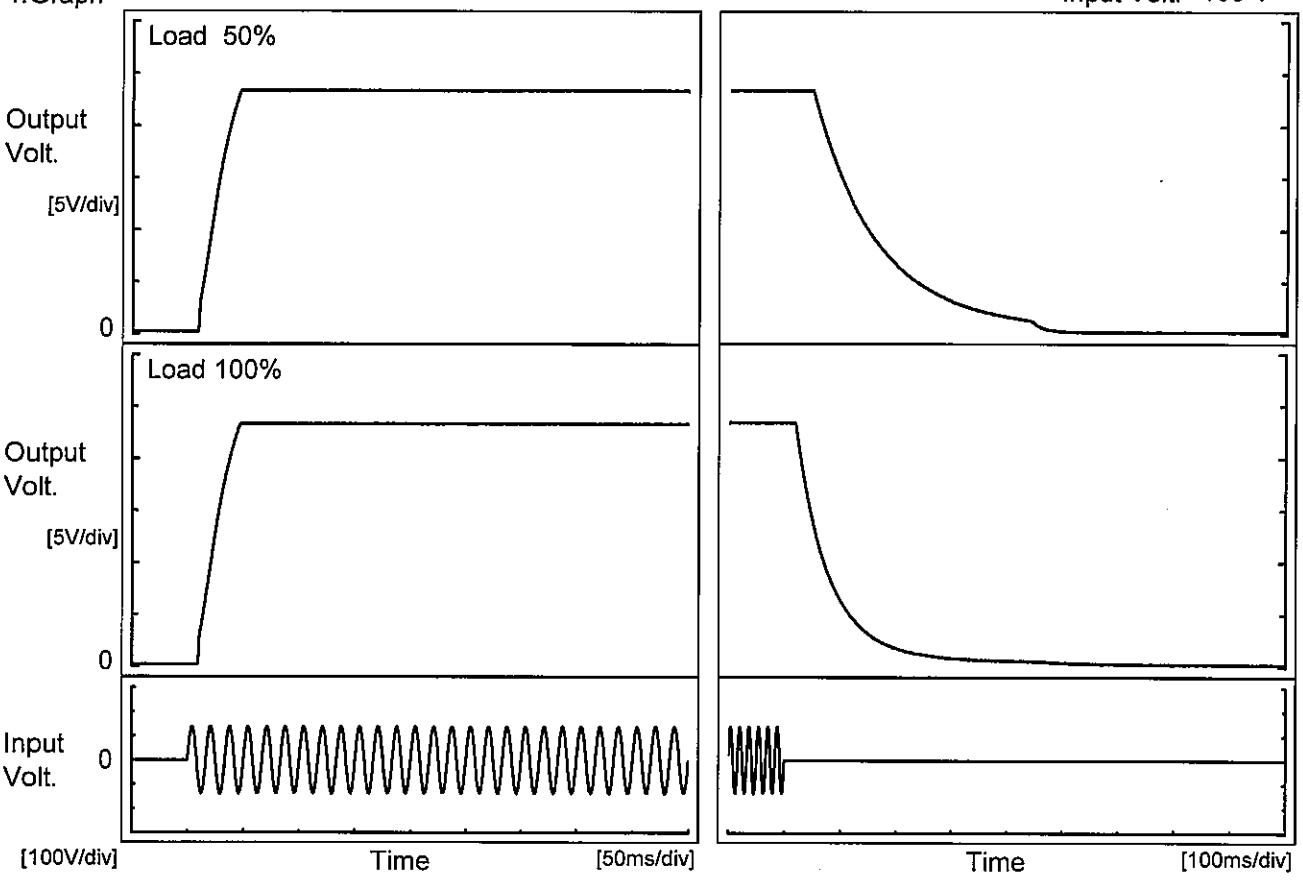
COSEL

Model	GT4-24
Item	Rise and Fall Time
Object	+24V4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

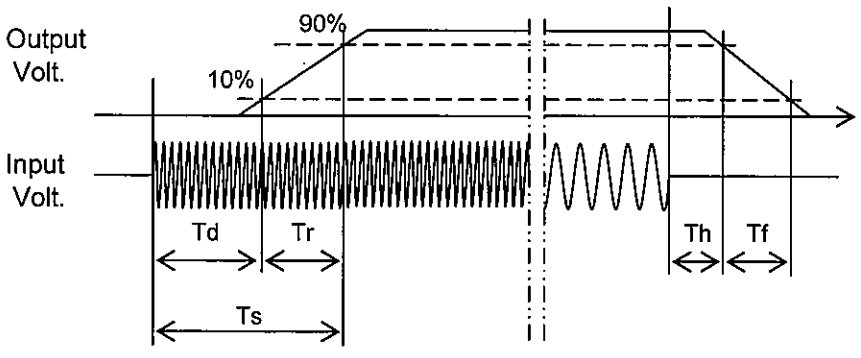
Input Volt. 100 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	10.5	31.5	42.0	57.0	275.5
100 %	10.5	31.5	42.0	23.5	143.0

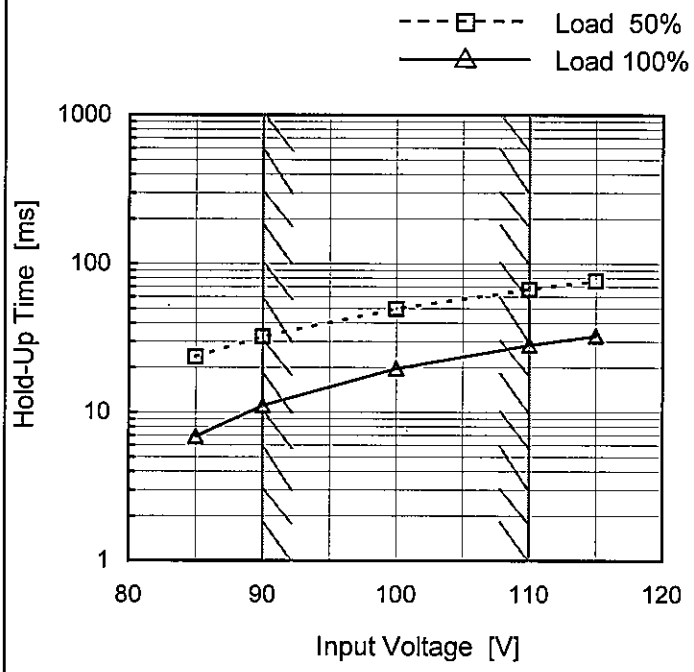


COSEL

Model	GT4-24
Item	Hold-Up Time
Object	+24V4A

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

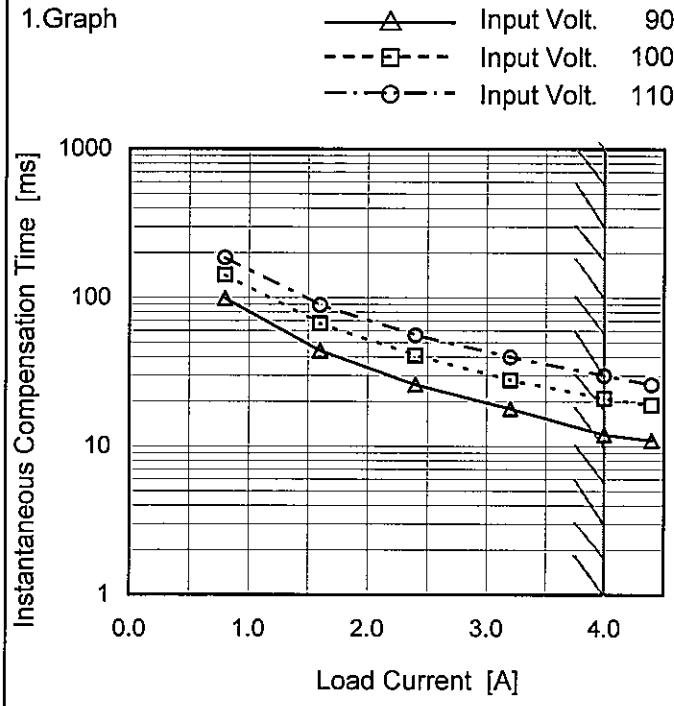
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	24	7
90	32	11
100	50	20
110	67	28
115	76	33
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT4-24
Item	Instantaneous Interruption Compensation
Object	+24V4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

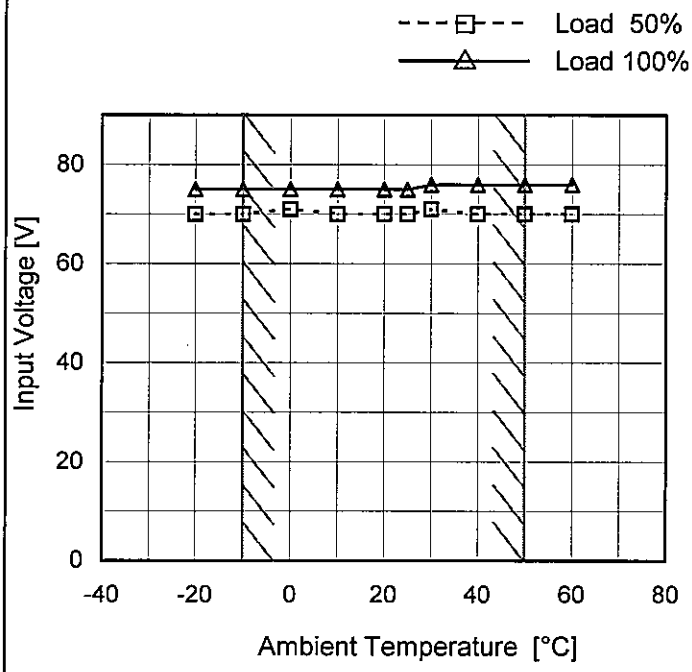
Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.0	-	-	-
0.8	99	142	186
1.6	44	67	89
2.4	26	41	56
3.2	18	28	40
4.0	12	21	30
4.4	11	19	26
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GT4-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V4A

Testing Circuitry Figure A

1.Graph



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

2.Values

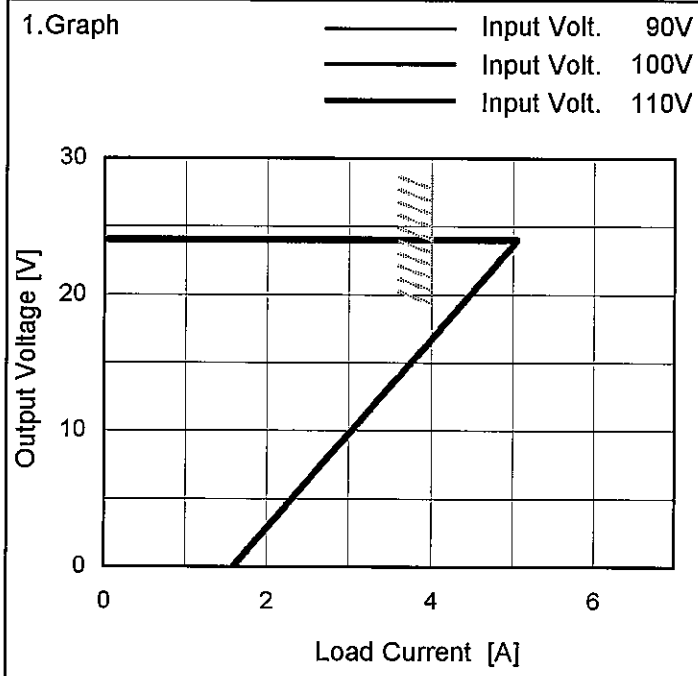
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	70	75
-10	70	75
0	71	75
10	70	75
20	70	75
25	70	75
30	71	76
40	70	76
50	70	76
60	70	76
--	-	-

COSEL

Model	GT4-24
Item	Overcurrent Protection
Object	+24V4A

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. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
24.0	5.05	5.05	5.05
22.8	4.87	4.87	4.87
21.6	4.74	4.73	4.73
19.2	4.41	4.40	4.40
16.8	4.02	4.02	4.02
14.4	3.67	3.67	3.67
12.0	3.33	3.33	3.33
9.6	2.98	2.98	2.98
7.2	2.64	2.64	2.64
4.8	2.29	2.29	2.29
2.4	1.94	1.94	1.94
0.0	1.58	1.58	1.59

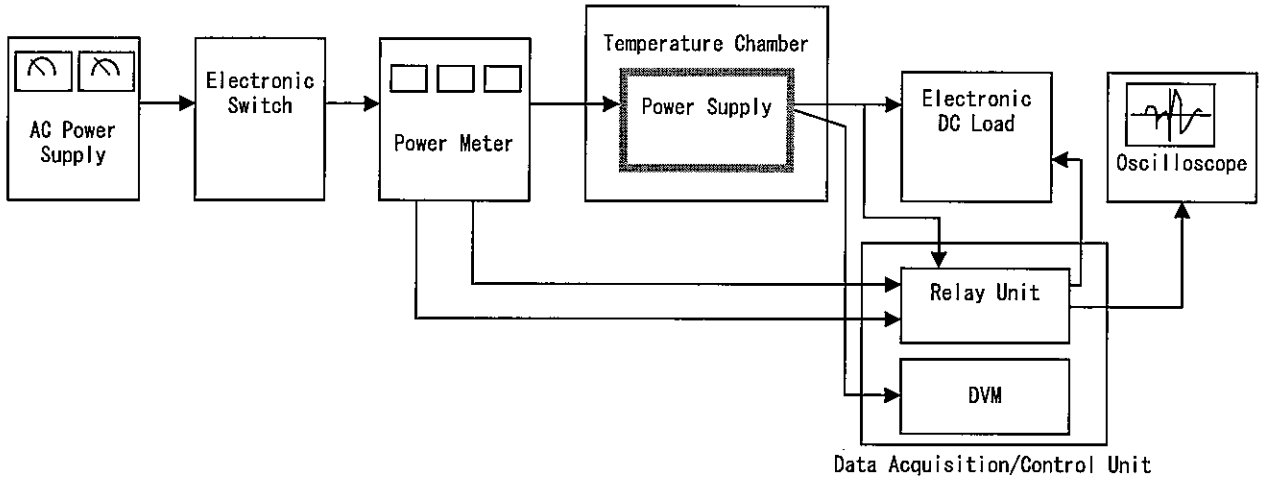

AC Power Supply
Electronic Switch
Power Meter
Temperature Chamber
Power Supply
Electronic DC Load
Oscilloscope
Relay Unit
DVM
Data Acquisition/Control Unit

Figure A