参考資料

TEST DATA OF MODULE G4

(AME series)

Regulated DC Power Supply
October 30, 2020

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COSEL CO.,LTD.

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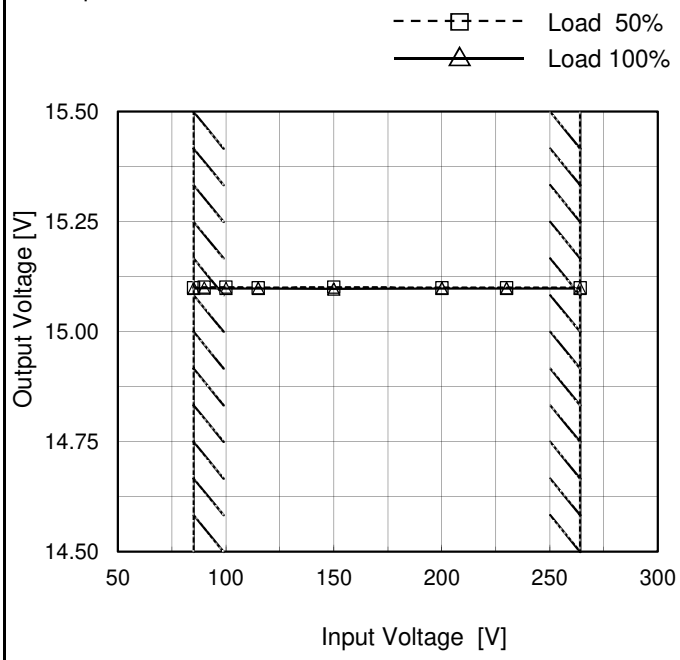
Model	MODULE G4
Item	Line Regulation
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



Note:
Hatched line shows the input voltage range.

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	15.100	15.098
90	15.101	15.099
100	15.101	15.098
115	15.100	15.098
150	15.101	15.097
200	15.100	15.098
230	15.100	15.098
264	15.100	15.098
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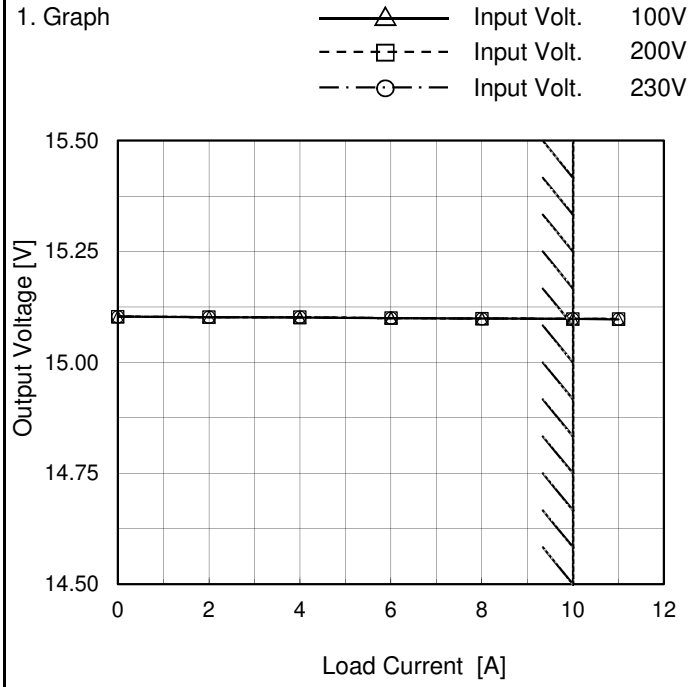
Model	MODULE G4
Item	Load Regulation
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



Note: Hatched 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	15.103	15.103	15.103
2	15.102	15.102	15.102
4	15.101	15.102	15.102
6	15.100	15.100	15.100
8	15.099	15.099	15.099
10	15.098	15.098	15.098
11	15.097	15.098	15.098
--	-	-	-
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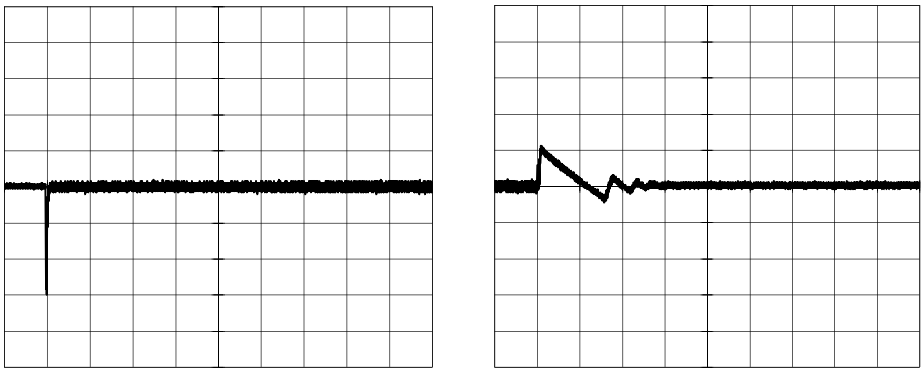
Model	MODULE G4		
Item	Dynamic Load Response	Temperature Testing Circuitry	25° C Figure A
Object	+15V10A		

Input Volt. 100 V
Cycle 1000 ms

Response t1=t2=50us. Typ

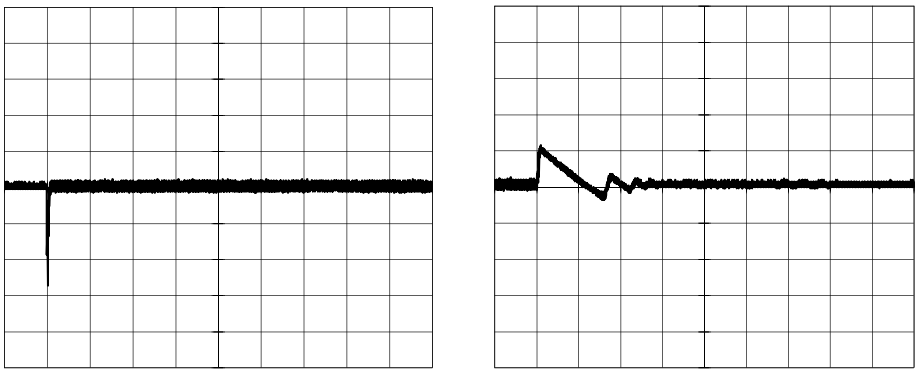
Min. Load (0A) ←→
Load 100% (10A)



200 mV/div

2 ms/div 2 ms/div

Min. Load (0A) ←→
Load 50% (5A)



200 mV/div

2 ms/div 2 ms/div

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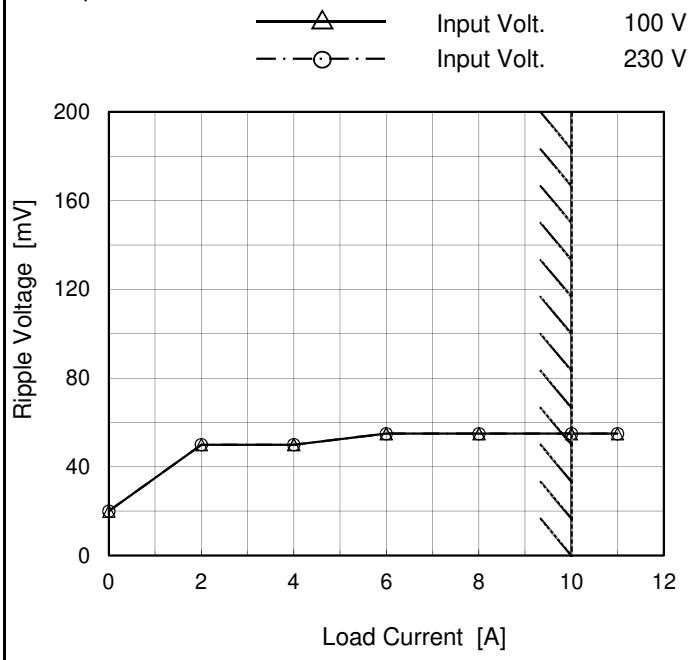
Model	MODULE G4
Item	Ripple Voltage (by Load Current)
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100[V]	Input Volt. 230[V]
0	20	20
2	50	50
4	50	50
6	55	55
8	55	55
10	55	55
11	55	55
--	--	--
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Note:
Measured by 20MHz Oscilloscope.

Ripple Voltage is shown as p-p in the figure below.

Hatched line shows the range of the rated load current.

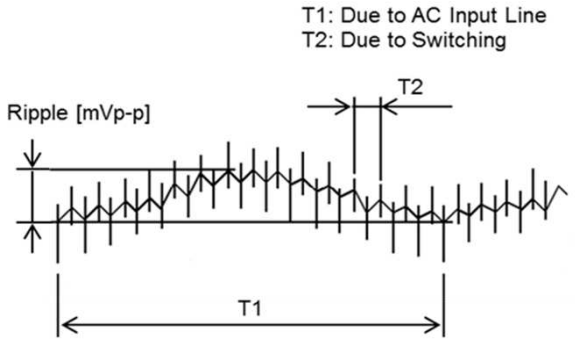

Fig. Complex Ripple Wave Form

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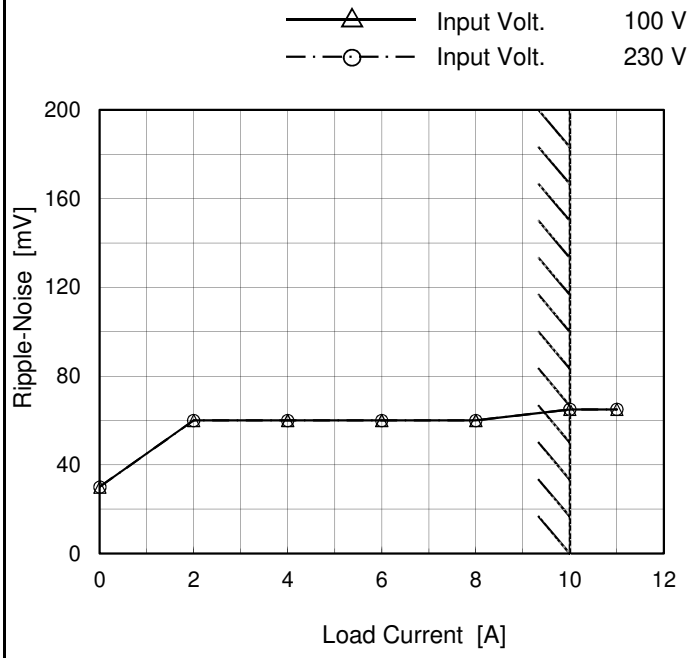
Model	MODULE G4
Item	Ripple Noise
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Noise [mV]	
	Input Volt. 100[V]	Input Volt. 230[V]
0	30	30
2	60	60
4	60	60
6	60	60
8	60	60
10	65	65
11	65	65
--	--	--
--	--	--
--	--	--
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Note:
Measured by 20MHz Oscilloscope.

Ripple Noise is shown as p-p in the figure below.

Hatched line shows the range of the rated load current.

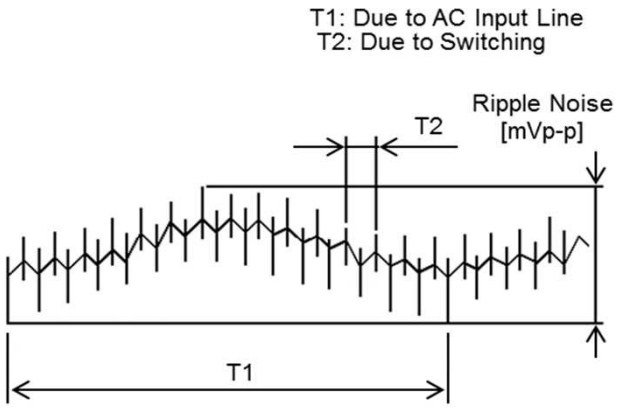

Fig. Complex Ripple Wave Form

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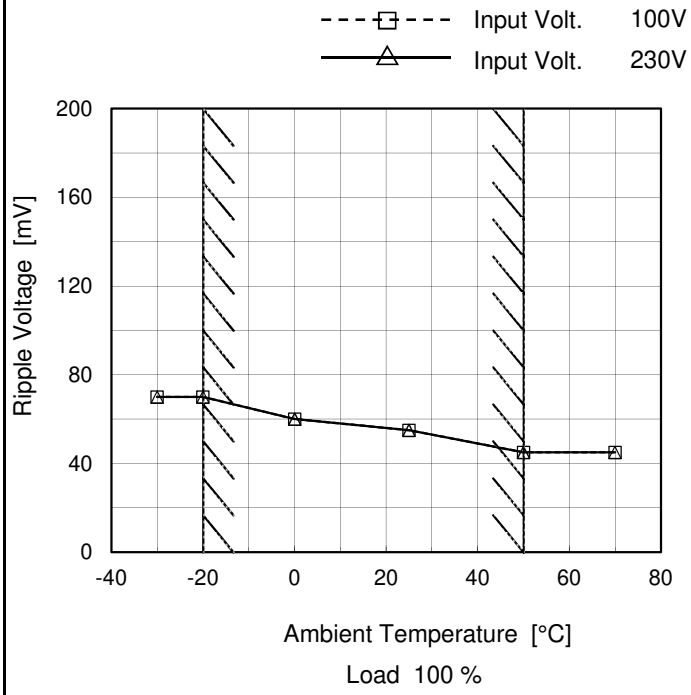
Model	MODULE G4
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V10A

Testing Circuitry Figure B

1. Graph



Load 100 %

Note:
Measured by 20MHz Oscilloscope.

Hatched line shows the range of the rated operating temperature.

2. Values

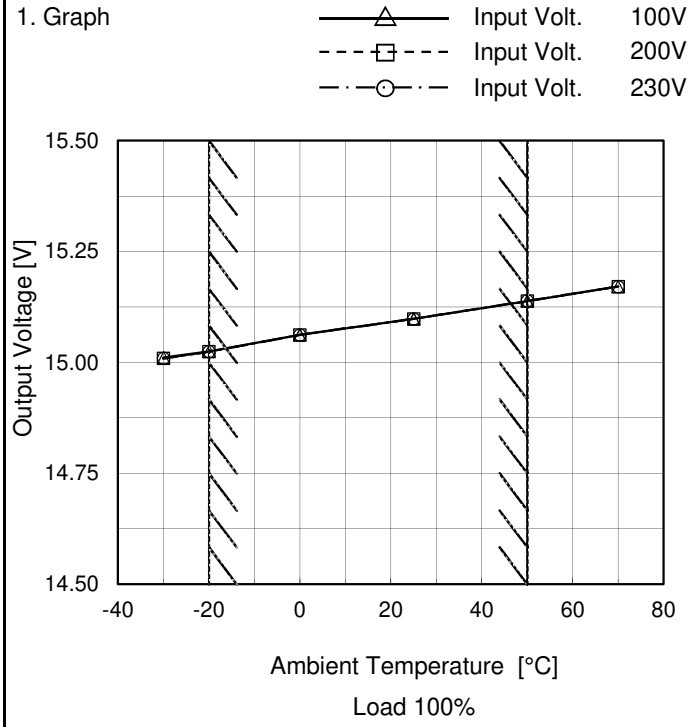
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-30	70	70
-20	70	70
0	60	60
25	55	55
50	45	45
70	45	45
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MODULE G4
Item	Ambient Temperature Drift
Object	+15V10A

Testing Circuitry Figure A

1. Graph



Note:
Hatched line shows the range of the rated operating temperature.

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-30	15.011	15.009	15.009
-20	15.025	15.024	15.024
0	15.062	15.062	15.062
25	15.098	15.098	15.098
50	15.138	15.138	15.139
70	15.171	15.171	15.171
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MODULE G4	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V10A	

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 - 10A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

$$\text{* Output Voltage Accuracy (Ratio)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	230	0	15.139	±60	±0.4
Minimum Voltage	-20	85	10	15.020		

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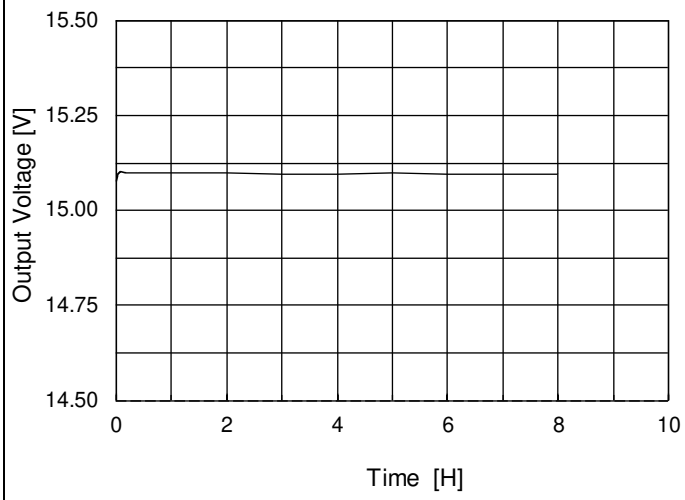
Model	MODULE G4
Item	Time Lapse Drift
Object	+15V10A

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	15.079
0.5	15.099
1.0	15.098
2.0	15.097
3.0	15.097
4.0	15.096
5.0	15.098
6.0	15.096
7.0	15.096
8.0	15.096

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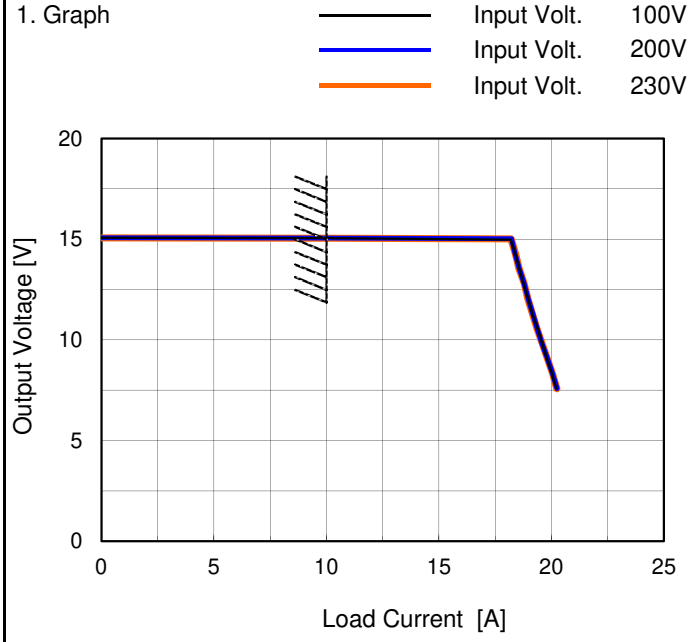
Model	MODULE G4
Item	Overcurrent Protection
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



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

Hiccup mode activates when the output voltage is below 7.5V.

2. Values

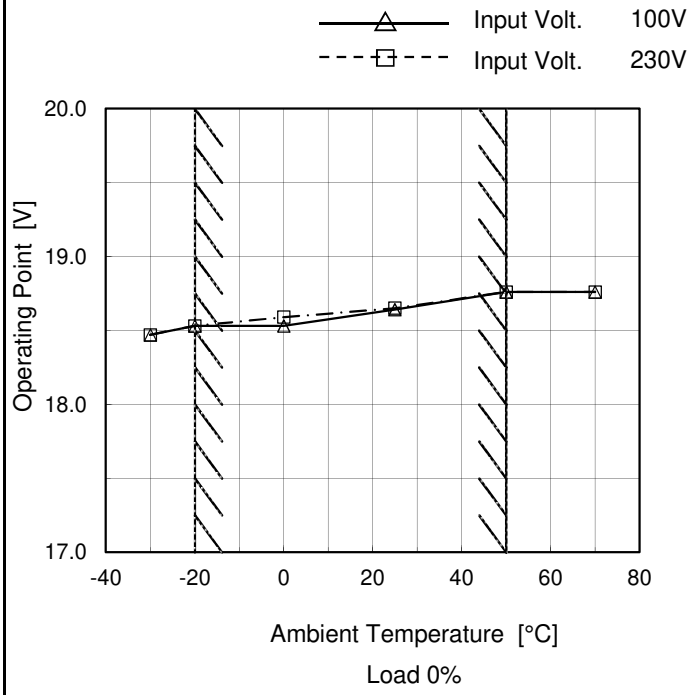
Output Voltage [V]	Load Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
14.3	18.41	18.39	18.41
13.5	18.58	18.58	18.56
12.0	18.97	18.97	18.95
10.5	19.39	19.36	19.37
9.0	19.80	19.83	19.81
7.5	20.23	2.25	20.24
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MODULE G4
Item	Overvoltage Protection
Object	+15V10A

Testing Circuitry Figure A

1. Graph



Note:
Hatched line shows the range of the rated operating temperature.

2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 230[V]
-30	18.47	18.47
-20	18.53	18.53
0	18.53	18.59
25	18.64	18.65
50	18.76	18.76
70	18.76	18.76
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

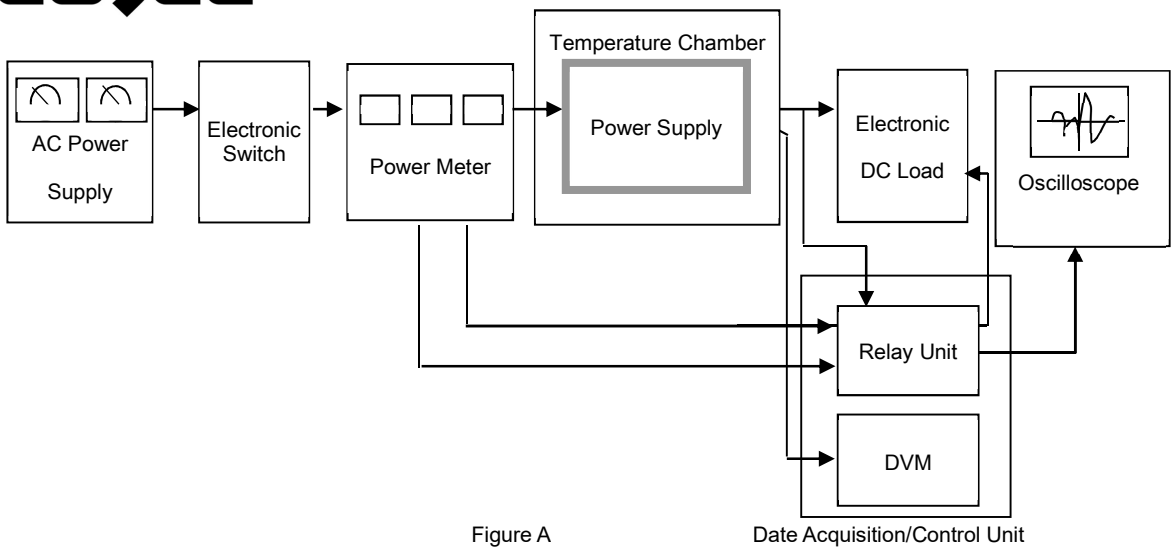


Figure A

Date Acquisition/Control Unit

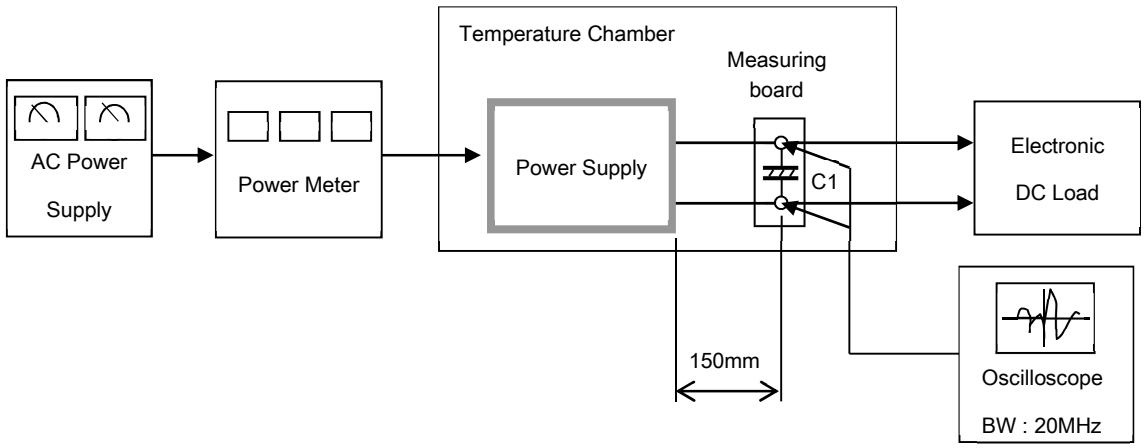


Figure B

C1 = 22 μF
(Electrolytic capacitor)