COSEL

TEST DATA OF MODULE S
(AME series)

Regulated DC Power Supply
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Model	MODULE S
Item	Line Regulation
Object	+7.5V24A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

- - - ⊟ - - - Load 50%
————△———— Load 100%

Note:
  Hatched line shows the input voltage range.

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	7.520	7.526
90	7.521	7.527
100	7.521	7.527
115	7.522	7.527
150	7.522	7.527
200	7.522	7.528
230	7.523	7.529
264	7.524	7.529
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Model	MODULE S
Item	Load Regulation
Object	+7.5V24A

Temperature   25°C
Testing Circuitry   Figure A

1. Graph

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

Output Voltage [V] vs Load Current [A]

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]
0.0	7.528	7.528	7.527
4.8	7.528	7.527	7.527
9.6	7.527	7.527	7.527
12.0	7.527	7.527	7.526
14.4	7.527	7.527	7.526
19.2	7.527	7.527	7.526
24.0	7.527	7.527	7.526
26.4	7.527	7.526	7.525
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Model	MODULE S
Item	Dynamic Load Response
Object	+7.5V24A

Temperature	25° C
Testing Circuitry	Figure A

Input Volt.   100 V

Cycle   1000 ms

Response   t1=t2=50us. Typ

Load Current   t1   t2

Min. Load (0A) ←→

Load 100% (24A)

200 mV/div

2 ms/div   2 ms/div

Min. Load (0A) ←→

Load 50% (12A)

200 mV/div

2 ms/div   2 ms/div

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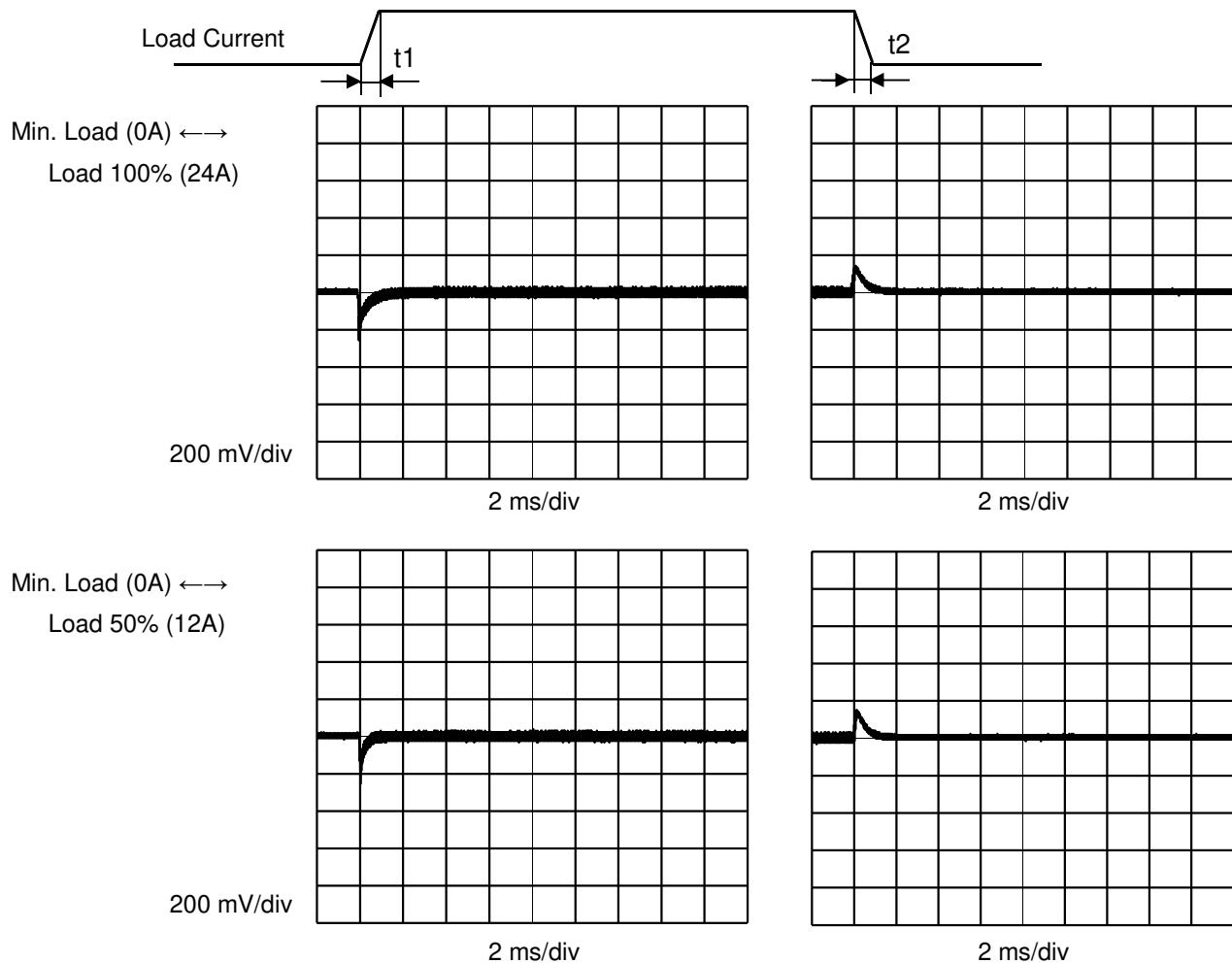
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Model	MODULE S
Item	Ripple Voltage (by Load Current)
Object	+7.5V24A

Temperature 25°C
Testing Circuitry Figure B

1. Graph

		Input Volt.	100 V
		Input Volt.	230 V
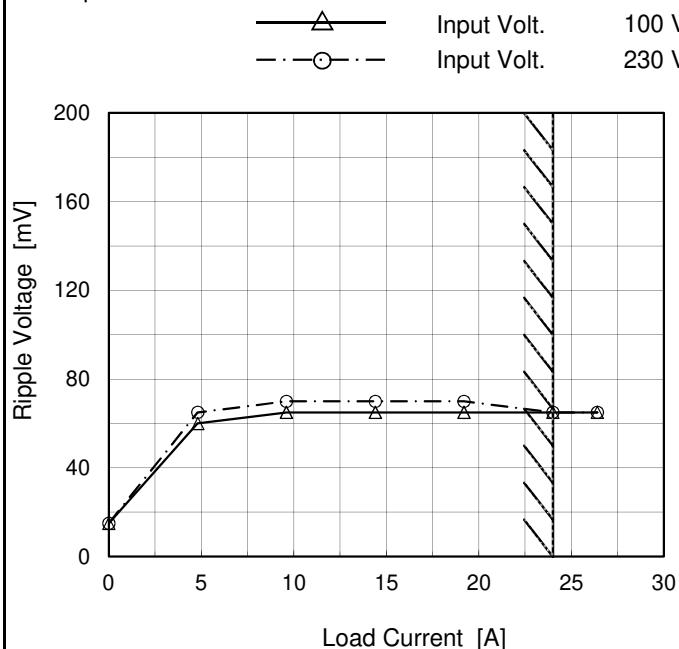
Load Current [A]

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100[V]	Input Volt. 230[V]
0.0	15	15
4.8	60	65
9.6	65	70
14.4	65	70
19.2	65	70
24.0	65	65
26.4	65	65
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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.

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

Fig. Complex Ripple Wave Form

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Model	MODULE S
Item	Ripple Noise
Object	+7.5V24A

Temperature 25°C
Testing Circuitry Figure B

1. Graph

Legend:
△ Input Volt. 100 V
○ Input Volt. 230 V
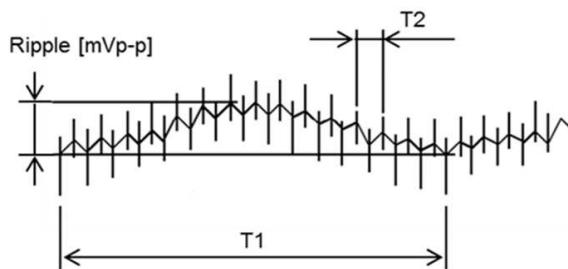
Ripple-Noise [mV] vs Load Current [A]
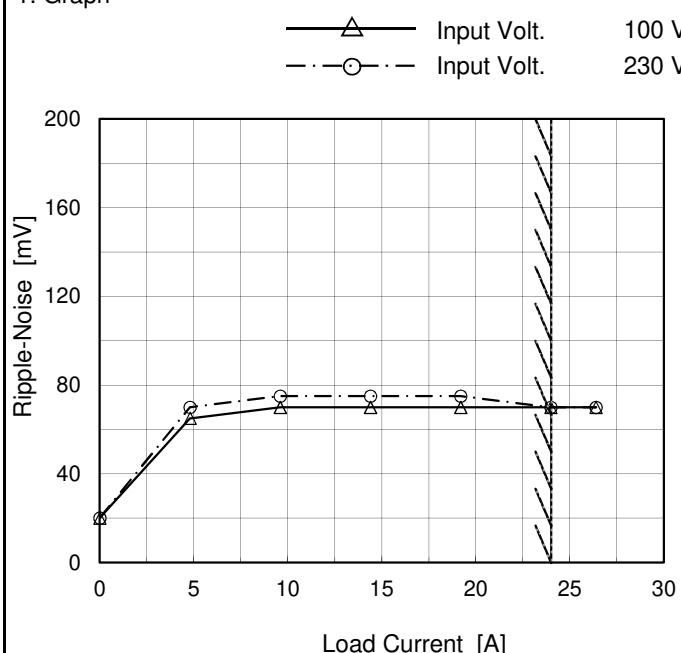
2. Values

Load Current [A]	Ripple Noise [mV]	
	Input Volt. 100[V]	Input Volt. 230[V]
0.0	20	20
4.8	65	70
9.6	70	75
14.4	70	75
19.2	70	75
24.0	70	70
26.4	70	70
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--	--	--
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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.

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

Ripple Noise [mVp-p]

T2

T1

Fig. Complex Ripple Wave Form

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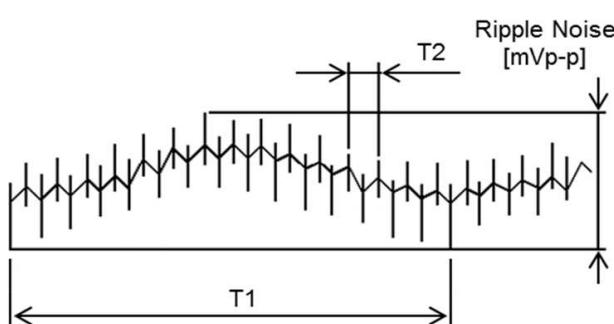
Model	MODULE S
Item	Ripple Voltage (by Ambient Temp.)
Object	+7.5V24A

Testing Circuitry   Figure B

1. Graph

- - -□- - - Input Volt.   100V

───△─── Input Volt.   230V

Ambient Temperature [°C]

Load   100 %

Note:
  Measured by 20MHz Oscilloscope.

  Hatched line shows the range of the rated
  operating temperature.
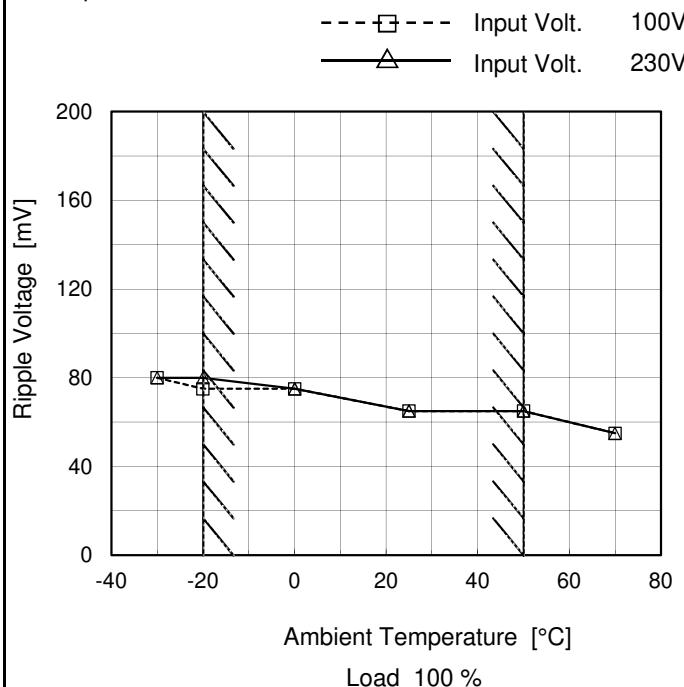
2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-30	80	80
-20	75	80
0	75	75
25	65	65
50	65	65
70	55	55
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--	-	-
--	-	-
--	-	-
--	-	-

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Model	MODULE S
Item	Ambient Temperature Drift
Object	+7.5V24A

Testing Circuitry   Figure A

1. Graph

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

Output Voltage [V]

Ambient Temperature [°C]

Load 100%

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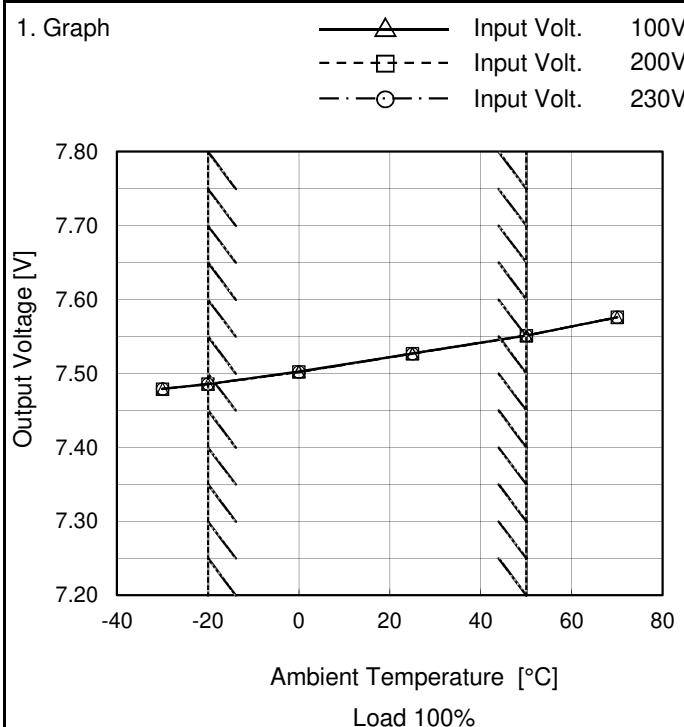
2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-30	7.479	7.479	7.479
-20	7.486	7.486	7.486
0	7.503	7.502	7.502
25	7.527	7.527	7.527
50	7.551	7.551	7.551
70	7.576	7.576	7.576
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MODULE S
Item	Output Voltage Accuracy
Object	+7.5V24A

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　:　-20　-　50°C

Input Voltage　:　85　-　264V

Load Current　:　0　-　24A

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

* Output Voltage Accuracy (Ratio) = $\dfrac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}}$ × 100

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	264	24	7.553	±39	±0.5
Minimum Voltage	-20	85	0	7.475		

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Model	MODULE S
Item	Time Lapse Drift
Object	+7.5V24A

Temperature   25°C
Testing Circuitry   Figure A

1. Graph

Time [H]

Input Volt.   100V
Load   100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	7.523
0.5	7.523
1.0	7.523
2.0	7.523
3.0	7.524
4.0	7.523
5.0	7.523
6.0	7.524
7.0	7.524
8.0	7.524

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Model	MODULE S
Item	Overcurrent Protection
Object	+7.5V24A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

Input Volt. 100V
Input Volt. 200V
Input Volt. 230V

Output Voltage [V] vs Load Current [A]

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

Hiccup mode activates when the output voltage is below 3.75V.

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
7.13	27.59	27.61	27.63
6.75	27.89	27.91	27.93
6.00	28.78	28.77	28.77
5.25	29.78	29.79	29.81
4.50	30.67	30.67	30.71
3.75	31.67	31.69	31.70
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MODULE S
Item	Overvoltage Protection
Object	+7.5V24A

Testing Circuitry   Figure A

1. Graph

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

Ambient Temperature [°C]

Load 0%

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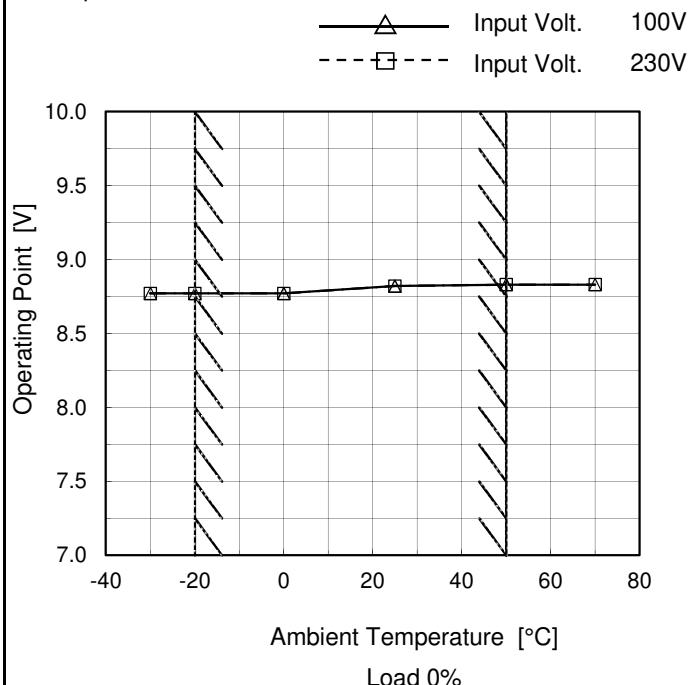
2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 230[V]
-30	8.77	8.77
-20	8.77	8.77
0	8.77	8.77
25	8.82	8.82
50	8.83	8.83
70	8.83	8.83
--	-	-
--	-	-
--	-	-
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Temperature Chamber

AC Power Supply | Electronic Switch | Power Meter | Power Supply | Electronic DC Load | Oscilloscope

Relay Unit

DVM
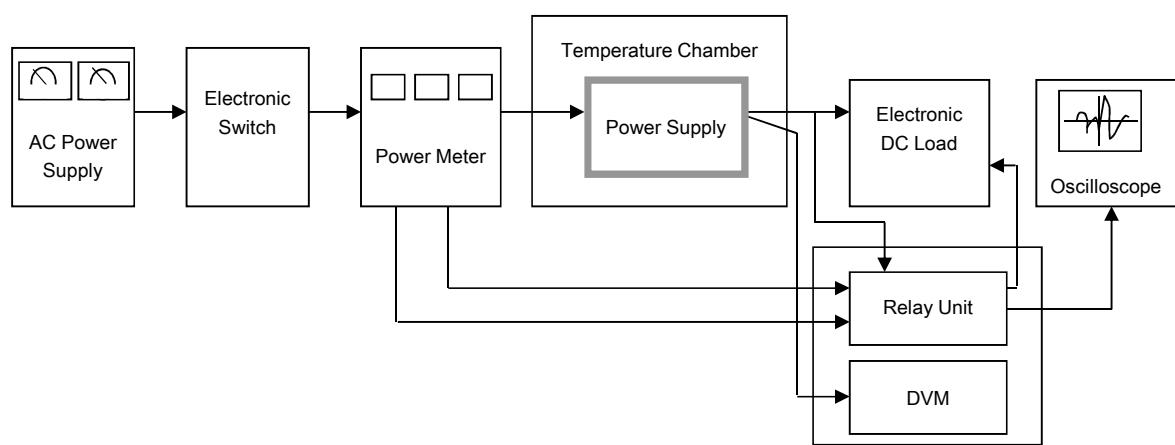
Data Acquisition/Control Unit

Figure A

Temperature Chamber | Measuring board

AC Power Supply | Power Meter | Power Supply | C1 | Electronic DC Load

Oscilloscope BW:20MHz

150mm
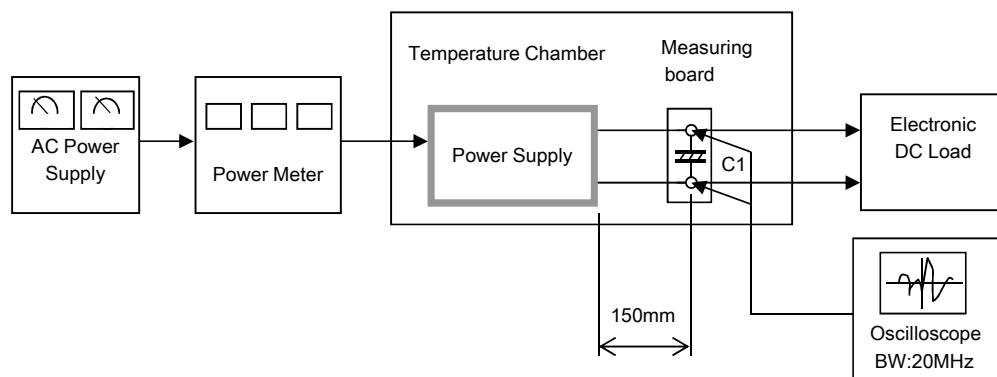
Figure B

C1=　22　μF
(Electrolytic capacitor)

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