COSEL

TEST DATA OF WBA75B-12

Regulated DC Power Supply
May 25, 2021

Approved by : _____
Design Manager

Prepared by : _____
Design Engineer

COSEL CO.,LTD.

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Model	WBA75B-12

Item	Input Current (by Load Current)

Object	————

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

———△——— Input Volt. 170V
- - -□- - - Input Volt. 277V
— —⊖— — Input Volt. 305V

Input Current [A] vs Load Current [A]

2.Values

Load	Input Current [A]		
Current	Input Volt.	Input Volt.	Input Volt.
[A]	170[V]	277[V]	305[V]
0.0	0.043	0.069	0.063
1.2	0.243	0.194	0.169
2.4	0.422	0.314	0.278
3.6	0.596	0.434	0.390
4.8	0.767	0.555	0.505
6.0	0.936	0.676	0.617
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	WBA75B-12
Item	Efficiency (by Load Current)
Object	————

Temperature 25°C
Testing Circuitry Figure A

1.Graph
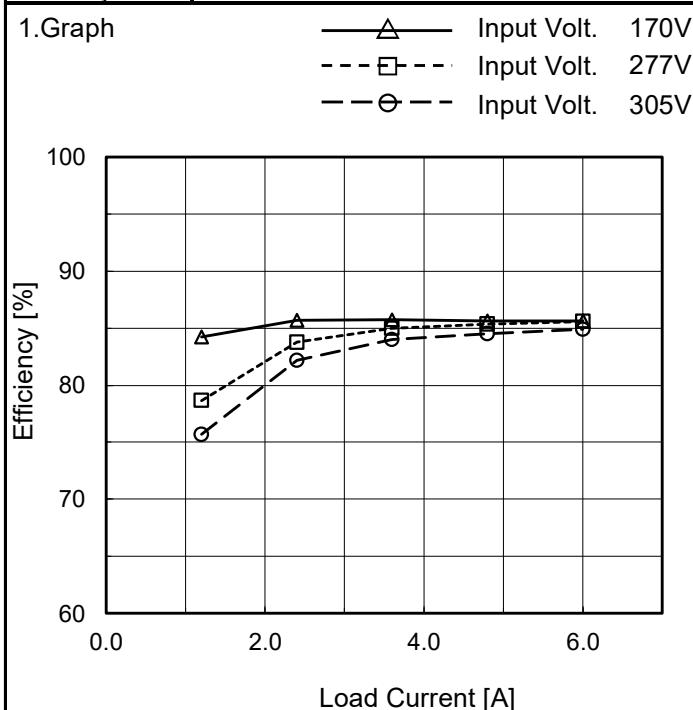
————△———— Input Volt. 170V
----□---- Input Volt. 277V
——○—— Input Volt. 305V

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 170[V]	Input Volt. 277[V]	Input Volt. 305[V]
0.0	-	-	-
1.2	84.2	78.6	75.7
2.4	85.7	83.8	82.2
3.6	85.7	85.0	84.0
4.8	85.6	85.4	84.5
6.0	85.6	85.6	84.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	WBA75B-12
Item	Power Factor (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△— Input Volt.   170V
---◻--- Input Volt.   277V
—◯— Input Volt.   305V
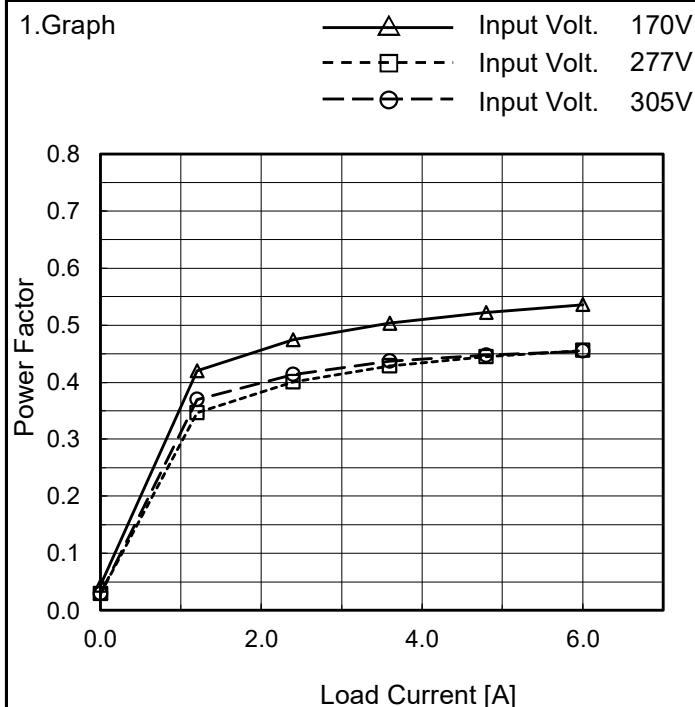
Power Factor vs Load Current [A]

2.Values

Load Current [A]	Power Factor		
	Input Volt. 170[V]	Input Volt. 277[V]	Input Volt. 305[V]
0.0	0.044	0.029	0.029
1.2	0.420	0.346	0.370
2.4	0.475	0.401	0.414
3.6	0.504	0.429	0.437
4.8	0.522	0.445	0.448
6.0	0.536	0.455	0.454
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	WBA75B-12
Item	Inrush Current
Object	————————

Temperature	25°C
Testing Circuitry	Figure A

Input
Current
[20A/div]

Input
Voltage
[200V/div]

Time   [50ms/div]

Input Voltage	277 V
Frequency	60 Hz
Load	100 %
Primary inrush current	47.3 A
Secondary inrush current	3.7 A

Primary inrush current   Secondary inrush current

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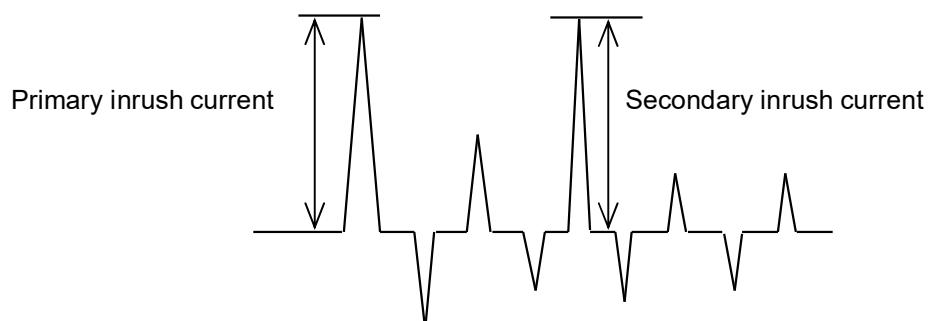
Model	WBA75B-12		
Item	Leakage Current	Temperature	25°C
		Testing Circuitry	Figure C
Object			

1.Results

[mA]

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			170 [V]	277 [V]	305 [V]	
DEN-AN	Figure C-1	Both phases	0.24	0.41	0.46	Operation
		One of phases	0.37	0.65	0.73	Stand by
IEC62368-1	Figure C-2	Both phases	0.24	0.40	0.44	Operation
		One of phases	0.37	0.64	0.71	Stand by
	Figure C-3	Both phases	0.23	0.39	0.43	Operation
		One of phases	0.37	0.62	0.69	Stand by

The value for "One of phases" 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	WBA75B-12
Item	Line Regulation
Object	+12V6A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph
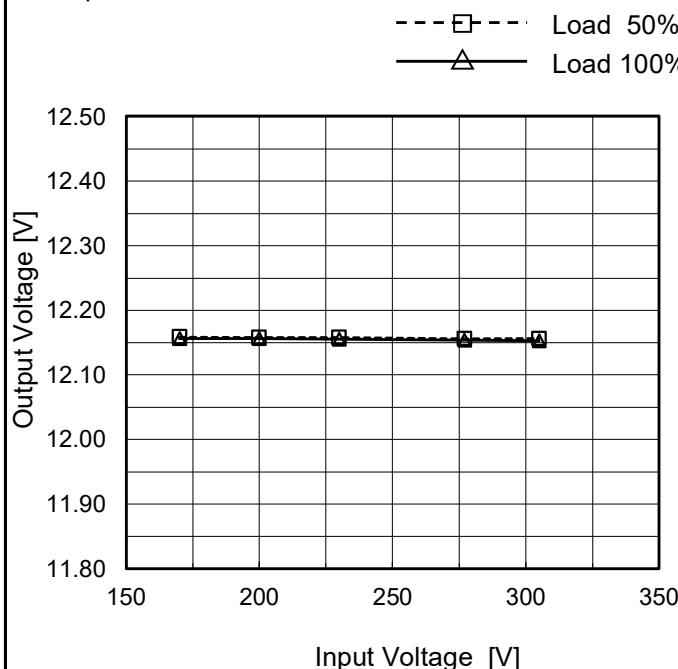
- - - ◻ - - - Load 50%
———△——— Load 100%

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
170	12.159	12.156
200	12.158	12.156
230	12.158	12.156
277	12.156	12.154
305	12.156	12.153
--	-	-
--	-	-
--	-	-
--	-	-

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Model	WBA75B-12
Item	Load Regulation
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

△ Input Volt. 170V
⊟ Input Volt. 277V
⊝ Input Volt. 305V

2.Values

Load	Output Voltage [V]		
Current	Input Volt.	Input Volt.	Input Volt.
[A]	170[V]	277[V]	305[V]
0.0	12.174	12.174	12.159
1.2	12.164	12.163	12.163
2.4	12.162	12.160	12.160
3.6	12.161	12.158	12.158
4.8	12.159	12.156	12.156
6.0	12.158	12.154	12.154
--	--	--	--
--	--	--	--
--	--	--	--
--	--	--	--
--	--	--	--

Item	Ripple-Noise
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 277V
Load 100%

20[mV/div]

20[ms/div]

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Model	WBA75B-12
Item	Dynamic Load Response
Object	+12V6A

Temperature	25°C
Testing Circuitry	Figure A

Input Volt.   277 V   Response. t1=t2=50μs. Typ
Cycle   1000 ms

Load Current

t1   t2
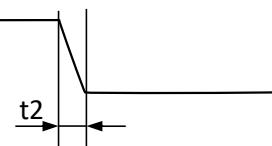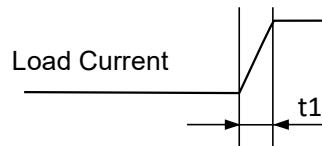
Load 0%(0A) ←→
Load 100%(6A)

200[mV/div]

20[ms/div]   20[ms/div]

Load 50%(3A) ←→
Load 100%(6A)

200[mV/div]

20[ms/div]   20[ms/div]

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Model	WBA75B-12
Item	Rise and Fall Time
Object	+12V6A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

Input Volt. 277 V

Load 50%

Output Volt.
[2V/div]

0

Load 100%

Output Volt.
[2V/div]

0

Input Volt.

0

[200V/div]   Time   [50ms/div]   Time   [20ms/div]
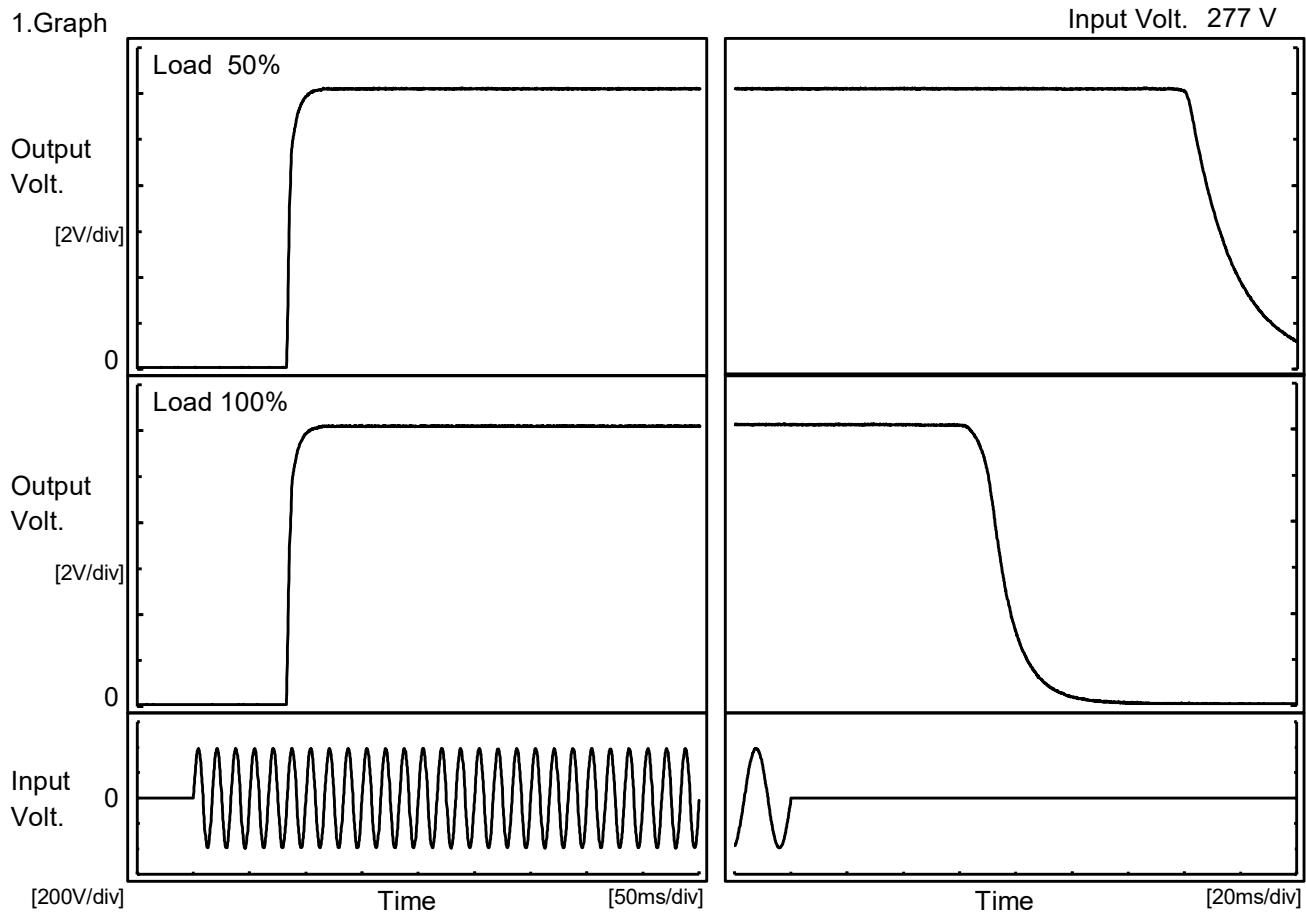
2.Values   [ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	83.3	8.3	91.6	142.7	36.0
100 %	83.3	8.0	91.3	68.4	19.5

Output Volt.
90%
10%
0V

Input Volt.
0V

Td   Tr
Ts
Th   Tf

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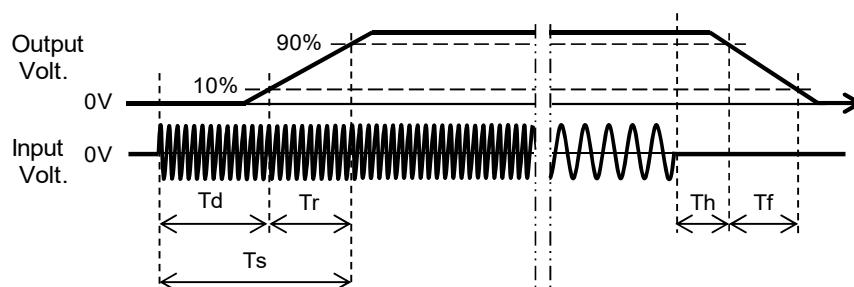
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Model	WBA75B-12
Item	Hold-Up Time
Object	+12V6A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

- - -⊟- - - Load 50%
——△—— Load 100%

Hold-Up Time [ms] vs Input Voltage [V]
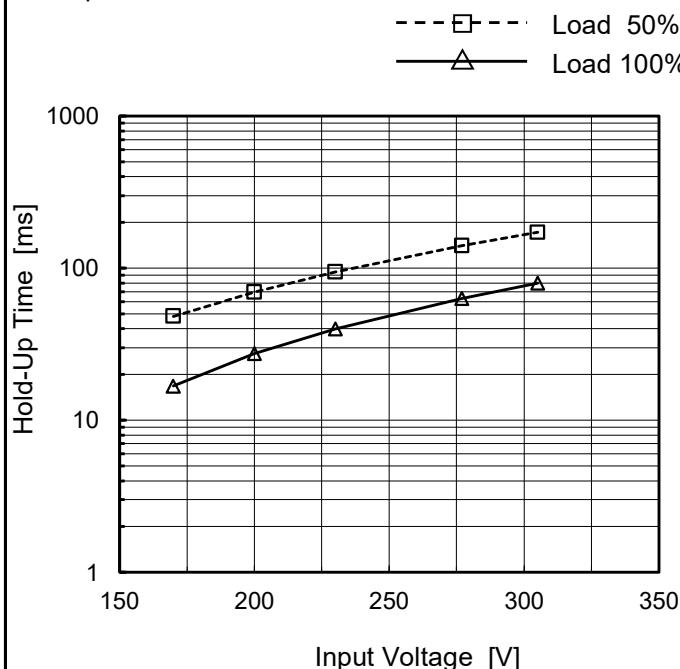
2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
170	48	17
200	69	28
230	94	40
277	141	63
305	172	80
--	-	-
--	-	-
--	-	-
--	-	-

This duration covers from Shut-off of input
voltage to the moment when output voltage
descends to the rated range of voltage accuracy.

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Model	WBA75B-12
Item	Instantaneous Interruption Compensation
Object	+12V6A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△— Input Volt. 170V
---□--- Input Volt. 277V
—○— Input Volt. 305V

Instantaneous Compensation Time [ms] vs Load Current [A]
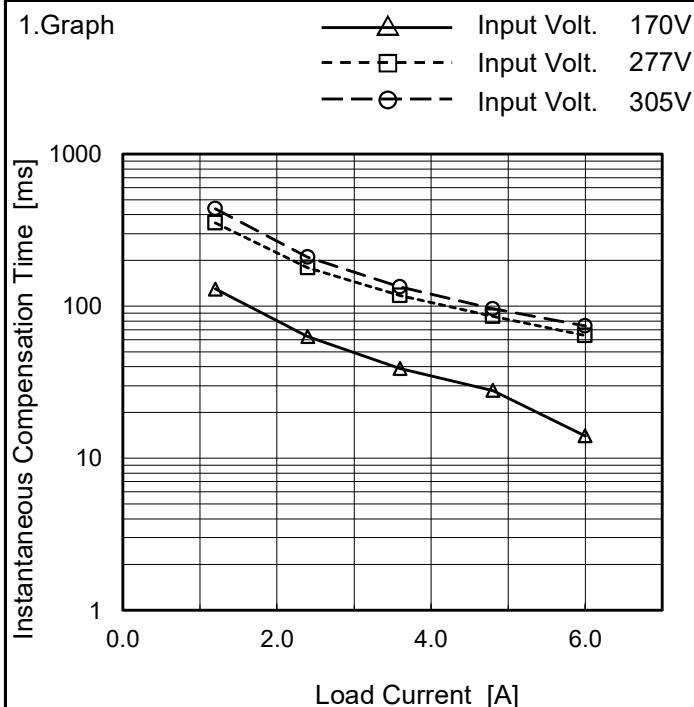
2.Values

Load Current [A]	Time [ms]		
	Input Volt. 170[V]	Input Volt. 277[V]	Input Volt. 305[V]
0.0	-	-	-
1.2	130	353	437
2.4	63	179	211
3.6	39	118	134
4.8	28	86	96
6.0	14	64	74
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	WBA75B-12
Item	Overcurrent Protection
Object	+12V6A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

———	Input Volt.	170V
———	Input Volt.	277V
———	Input Volt.	305V

Load Current [A]

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. 277[V]	Input Volt. 305[V]
12	7.08	7.20	7.39
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	WBA75B-12

Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	+12V6A	

1.Values

Load 100%

Ambient Temperature[°C]	Output Voltage [V]		
	Input Volt. 170V	Input Volt. 277V	Input Volt. 305V
-20	12.115	12.112	12.112
25	12.155	12.152	12.152
40	12.161	12.158	12.158

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+12V6A	

1.Values

Ambient Temperature[°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	51	113
25	50	109
40	50	107

Item	Overvoltage Protection	Testing Circuitry Figure A
Object	+12V6A	

1.Values

Load 0%

Ambient Temperature[°C]	Operating Point [V]	
	Input Volt. 170V	Input Volt. 305V
-20	15.38	15.37
25	15.67	15.65
40	15.74	15.80

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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

C2

Electronic
DC Load

Oscilloscope
BW:20MHz

150mm
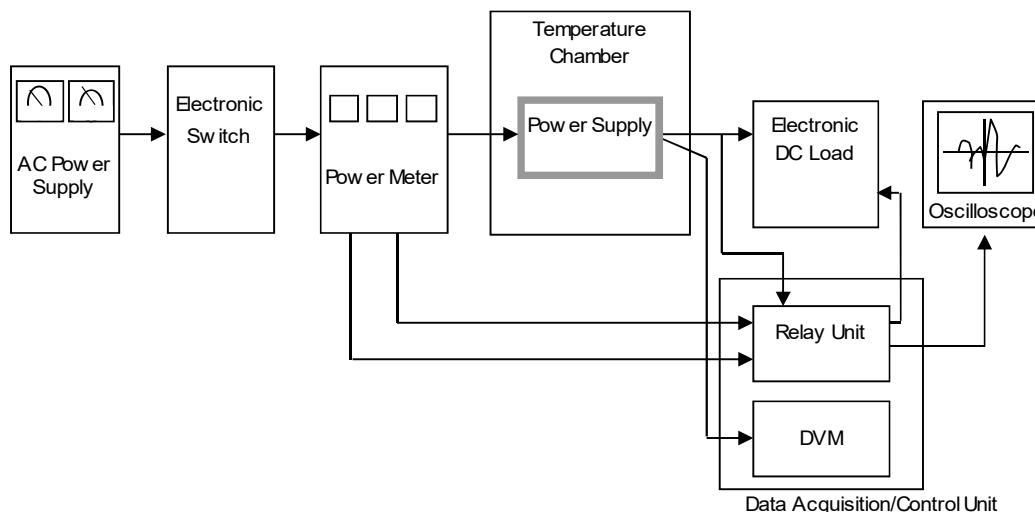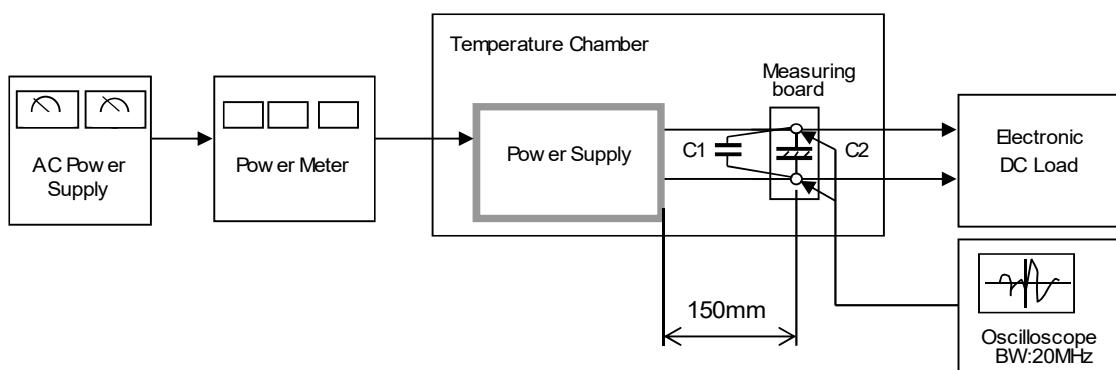
C1=   0.1 μF
(Ceramic capacitor)

C2=   47 μF
(Electrolytic capacitor)

Figure B

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AC Input Line → AC Voltmeter → Power Supply → DC Ammeter → Adjustable Load

FG

1kΩ

Effective value Voltmeter

$$\text{Leakage Current Value [A]} = \frac{\text{Effective Value of Voltmeter[V]}}{1k\ [\Omega]}$$

Figure C-1 (DEN-AN)

AC Input Line → AC Voltmeter → Power Supply → DC Ammeter → Adjustable Load

FG

500Ω±0.1%

1.5kΩ±0.1%

0.22μF±1.0%

10kΩ±0.1%

0.022μF±1.0%

Effective value Voltmeter

$$\text{Leakage Current Value [A]} = \frac{\text{Effective Value of Voltmeter[V]}}{500\ [\Omega]}$$
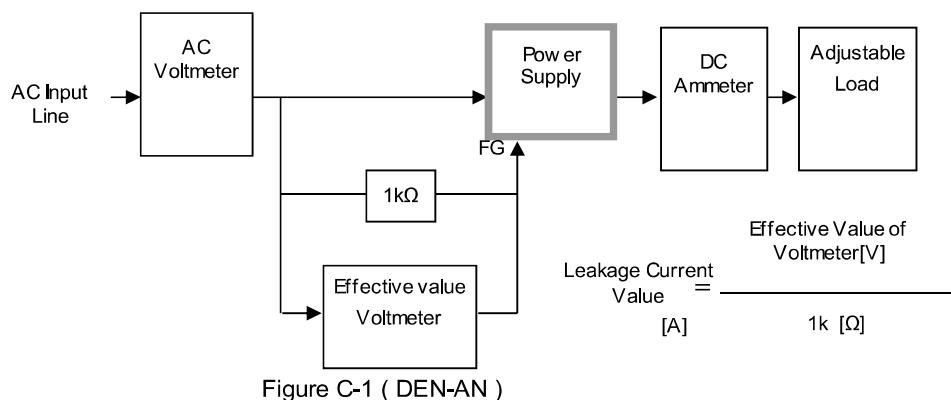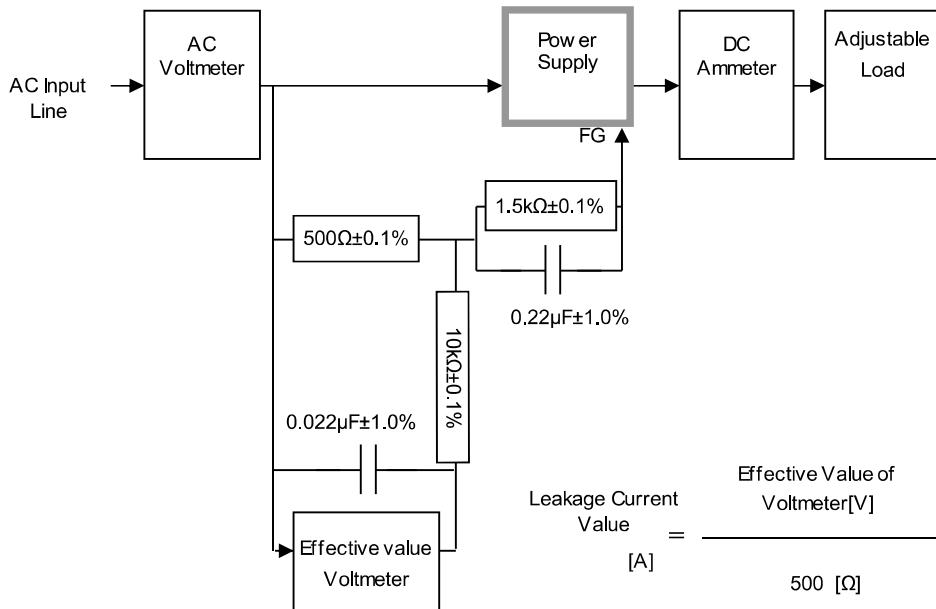
Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

AC Input Line → AC Voltmeter → Power Supply → DC Ammeter → Adjustable Load

FG

500Ω±0.1%

1.5kΩ±0.1%

0.22μF±1.0%

10kΩ±0.1%

9100pF±1.0%

20kΩ±0.1%   6200pF±1.0%

Effective value Voltmeter

$$\text{Leakage Current Value [A]} = \frac{\text{Effective Value of Voltmeter[V]}}{500\ [\Omega]}$$
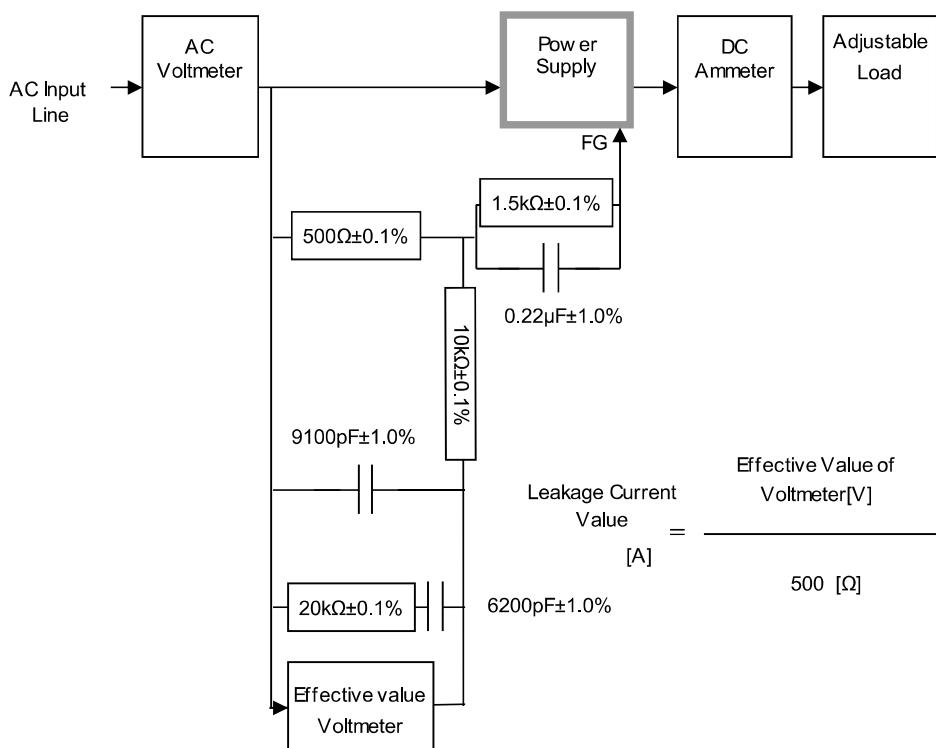
Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)

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