TEST DATA OF GHA700F-24-J1

Regulated DC Power Supply
February 1, 2023

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COSEL CO.,LTD.

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Model	GHA700F-24-J1
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph

—△—	Input Volt.	100V
---□---	Input Volt.	115V
—·—○—·—	Input Volt.	230V

Input Current [A] vs Load Current [A]

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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.102	0.097	0.136
5.00	1.327	1.160	0.694
10.00	2.604	2.242	1.213
15.00	3.910	3.386	1.741
20.00	5.230	4.530	2.283
25.00	6.580	5.690	2.837
29.20	-	6.670	3.312
32.12	-	7.370	3.650
--	-	-	-
--	-	-	-
--	-	-	-

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Model	GHA700F-24-J1
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph

———△——— Input Volt. 100V
---⊟--- Input Volt. 115V
—·—○—·— Input Volt. 230V

Efficiency [%] vs Load Current [A]

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
5.00	92.6	93.0	94.3
10.00	93.8	94.4	95.7
15.00	93.6	94.2	95.8
20.00	93.1	93.8	95.7
25.00	92.5	93.3	95.4
29.20	-	92.8	95.2
32.12	-	92.4	94.9
--	-	-	-
--	-	-	-
--	-	-	-

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

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Model	GHA700F-24-J1
Item	Power Factor (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph
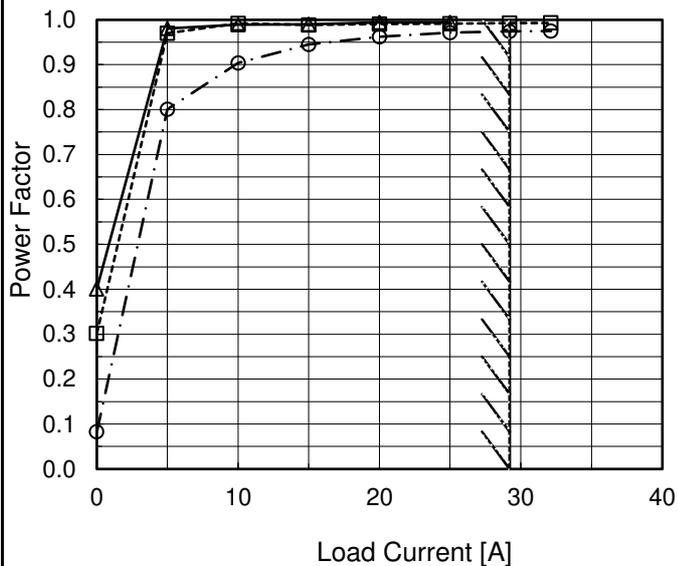
— △ — Input Volt. 100V
- - - ⊟ - - - Input Volt. 115V
— · — ○ — · — Input Volt. 230V

Power Factor vs Load Current [A]

2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.401	0.302	0.083
5.00	0.980	0.970	0.801
10.00	0.989	0.991	0.904
15.00	0.990	0.988	0.945
20.00	0.994	0.990	0.962
25.00	0.994	0.991	0.971
29.20	-	0.992	0.974
32.12	-	0.993	0.975
--	-	-	-
--	-	-	-
--	-	-	-

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

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Model	GHA700F-24-J1
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A

Input Current [20A/div]

Input Voltage [100V/div]

Time [100ms/div]

Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
18.8 A
Secondary inrush current :
14.6 A

Input Current [20A/div]

Input Voltage [200V/div]

Time [100ms/div]

Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
29.7 A
Secondary inrush current :
6.8 A

Primary inrush current   Secondary inrush current

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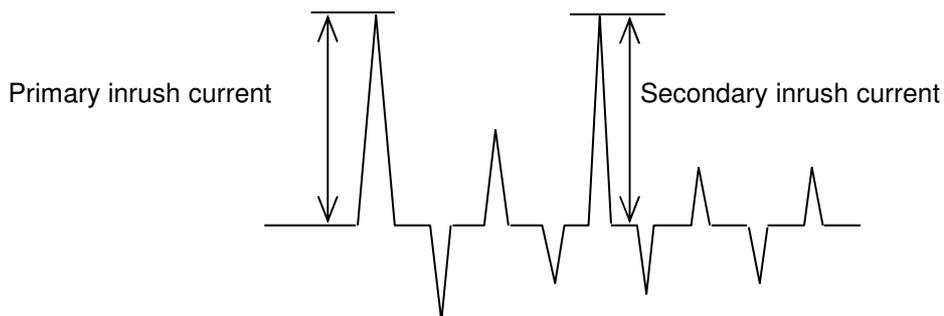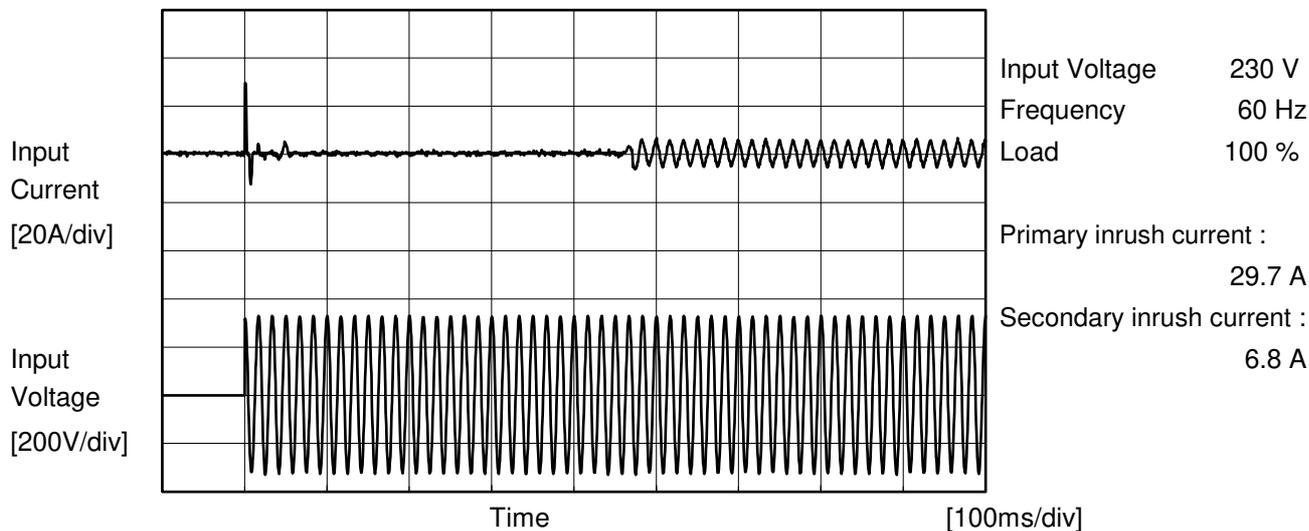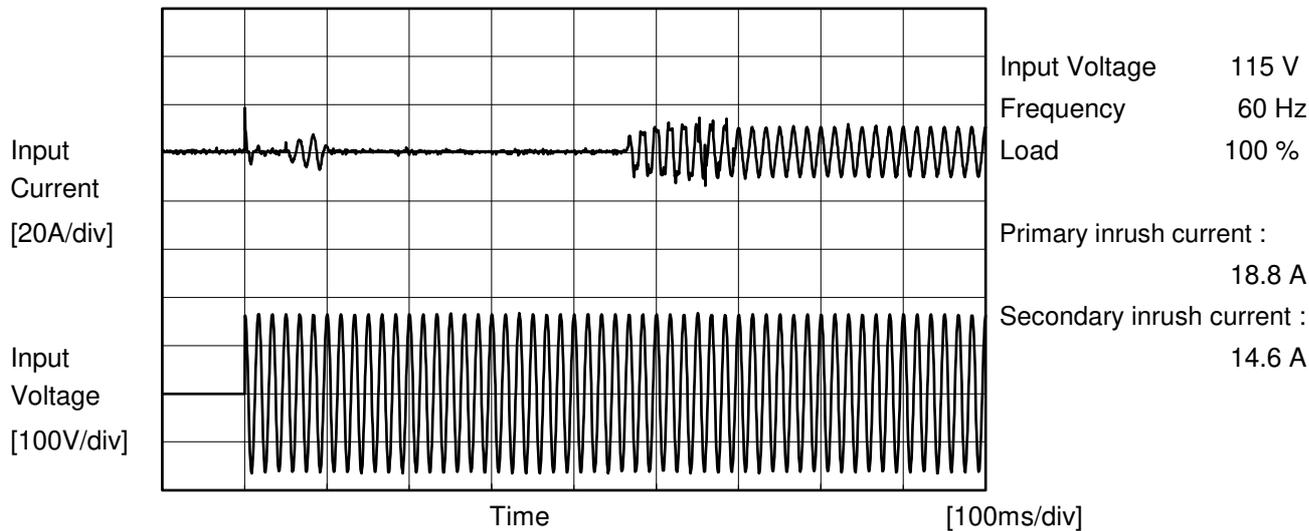
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Model	GHA700F-24-J1
Item	Leakage Current
Object	————————

Temperature 25°C
Testing Circuitry Figure C

1.Results

[mA]

| Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			100 [V]	240 [V]	264 [V]	
DEN-AN	Figure C-1	Both phases	0.06	0.15	0.17	Operation
		One of phases	0.09	0.24	0.26	Stand by
IEC62368-1	Figure C-2	Both phases	0.06	0.15	0.17	Operation
		One of phases	0.09	0.24	0.25	Stand by
	Figure C-3	Both phases	0.06	0.15	0.17	Operation
		One of phases	0.09	0.23	0.26	Stand by
IEC60601-1	Figure C-4	Both phases	0.06	0.15	0.17	Operation
		One of phases	0.09	0.24	0.26	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	GHA700F-24-J1
Item	Line Regulation
Object	+24V29.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

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

Output Voltage [V] vs Input Voltage [V]

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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	24.259	24.258 ※1
100	24.259	24.258 ※2
115	24.260	24.259
200	24.261	24.258
230	24.261	24.258
264	24.261	24.258
280	24.262	24.258
--	-	-
--	-	-

※1：Load 75%
※2：Load 87.5%

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Model	GHA700F-24-J1
Item	Load Regulation
Object	+24V29.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

———△——— Input Volt. 100V
– – –⊟– – – Input Volt. 115V
—·—◯—·— Input Volt. 230V

Output Voltage [V] vs Load Current [A]

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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	24.266	24.265	24.266
5.00	24.264	24.263	24.264
10.00	24.262	24.262	24.263
15.00	24.262	24.261	24.262
20.00	24.260	24.260	24.260
25.00	24.259	24.259	24.259
29.20	-	24.258	24.258
32.12	-	24.257	24.257
--	--	--	--
--	--	--	--
--	--	--	--

Item	Ripple-Noise
Object	+24V29.2A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 230V
Load 100%

100[mV/div]

20[μs/div]

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Model	GHA700F-24-J1	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+24V29.2A	

Input Volt.   115 V   Response. t1=t2=50μs. Typ
Cycle   1000 ms

Load Current

t1   t2

Load 0%(0A) ←→
  Load 100%(29.2A)

500[mV/div]

10[ms/div]   10[ms/div]
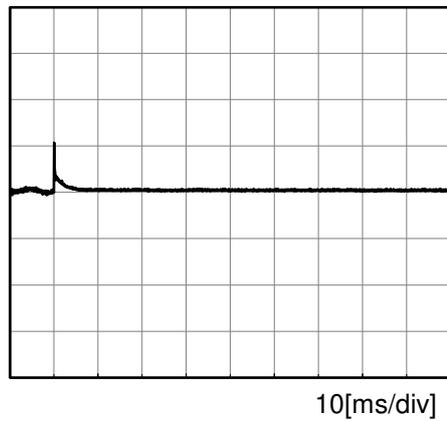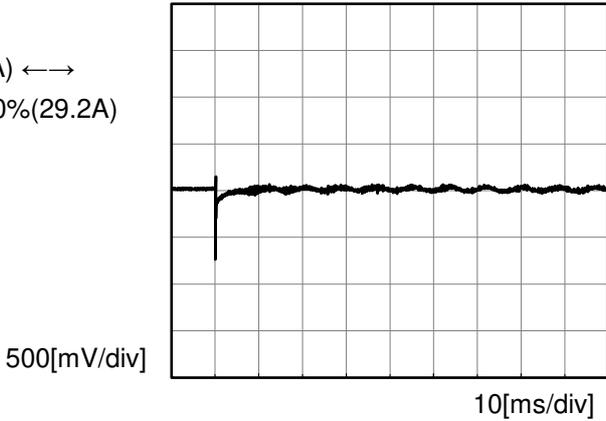
Load 50%(14.6A) ←→
  Load 100%(29.2A)

500[mV/div]

10[ms/div]   10[ms/div]

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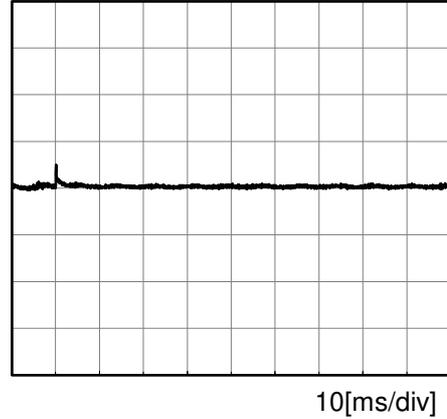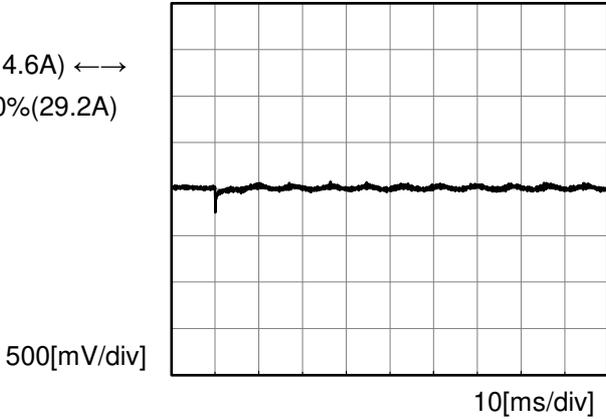
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Model	GHA700F-24-J1	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+24V29.2A	

1.Graph

Load 100%   Input Volt. 115 V

Output Volt. [5V/div]

Load 100%   Input Volt. 230 V

Output Volt. [5V/div]

Input Volt.

Time [100ms/div]   Time [10ms/div]
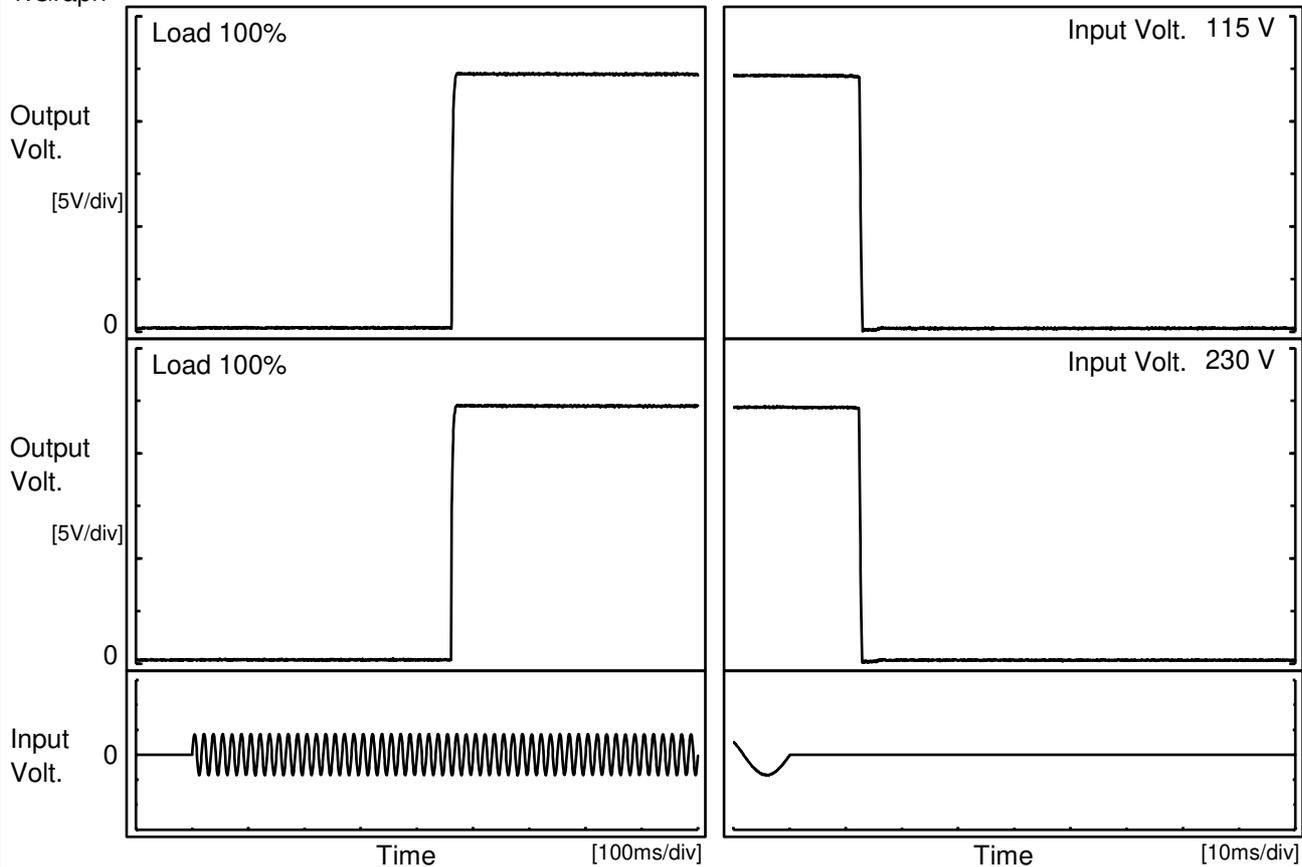
2.Values   [ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	462.5	3.0	465.5	12.5	0.4
230 V	461.5	3.5	465.0	12.4	0.4

Output Volt. 90% 10% 0V

Input Volt. 0V

Td Tr Th Tf

Ts

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Model	GHA700F-24-J1
Item	Hold-Up Time
Object	+24V29.2A

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%
85	25	12 ※1
100	24	13 ※2
115	24	13
200	25	12
230	25	12
264	24	12
280	26	11
--	-	-
--	-	-

※1：Load 75%
※2：Load 87.5%

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.

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Model	GHA700F-24-J1
Item	Instantaneous Interruption Compensation
Object	+24V29.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 100V
- - - ▭ - - - Input Volt. 115V
— · — ○ — · — Input Volt. 230V

Instantaneous Compensation Time [ms] vs Load Current [A]
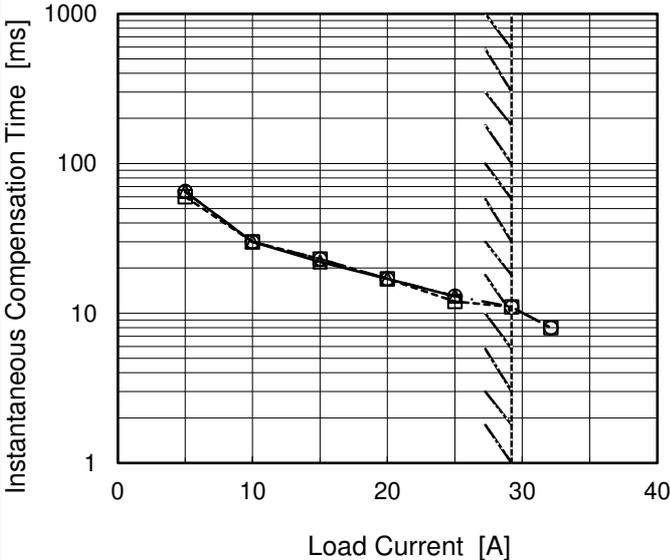
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
5.00	65	60	65
10.00	30	30	30
15.00	22	23	23
20.00	17	17	17
25.00	13	12	13
29.20	-	11	11
32.12	-	8	8
--	-	-	-
--	-	-	-
--	-	-	-

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Model	GHA700F-24-J1
Item	Overcurrent Protection
Object	+24V29.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

—△— Input Volt. 100V
----□---- Input Volt. 115V
—·—○—·— Input Volt. 230V

Output Voltage [V] vs Load Current [A]

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

Overcurrent protection is Hiccup mode.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
24	35.30	35.31	35.31
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	GHA700F-24-J1		
Item	Ambient Temperature Drift	Testing Circuitry	Figure A
Object	+24V29.2A		

1.Values   Load 100%

Ambient Temperature[℃]	Output Voltage [V]		
	Input Volt.　100V	Input Volt.　115V	Input Volt.　230V
-20	24.362	24.365	24.369
25	24.408	24.411	24.413
50	24.245	24.243	24.242

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry	Figure A
Object	+24V29.2A		

1.Values

Ambient Temperature[℃]	Input　Voltage　　[V]	
	Load　50%	Load　100%
-20	75	76
25	76	76
50	76	77

Item	Overvoltage Protection	Testing Circuitry	Figure A
Object	+24V29.2A		

1.Values   Load 0%

Ambient Temperature[℃]	Operating Point [V]	
	Input Volt.　115V	Input Volt.　230V
-20	30.51	30.51
25	30.48	30.48
50	30.66	30.66

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Figure A

C1= 0.1 µF
(Ceramic capacitor)

C2= 22 µF
(Electrolytic capacitor)

Figure B

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

Figure C-1 (DEN-AN)

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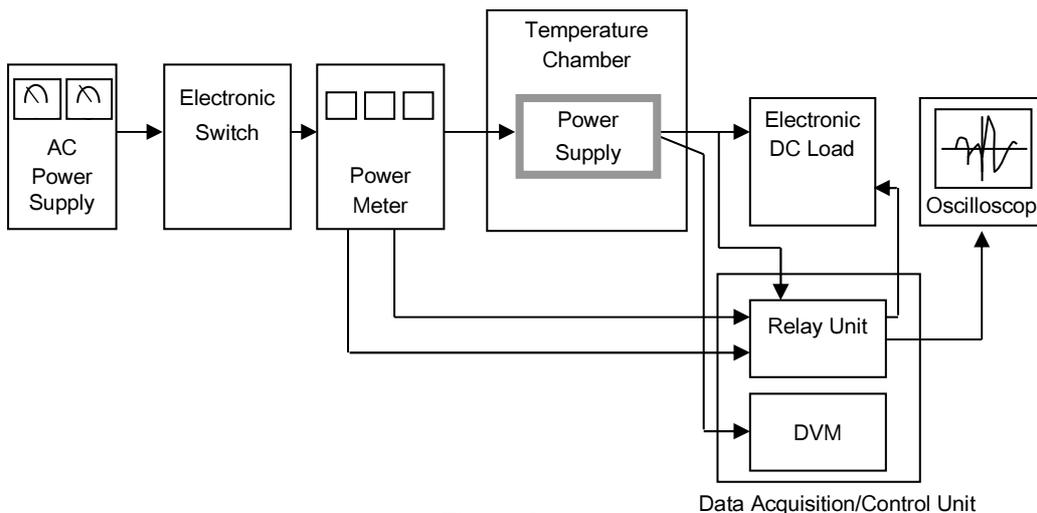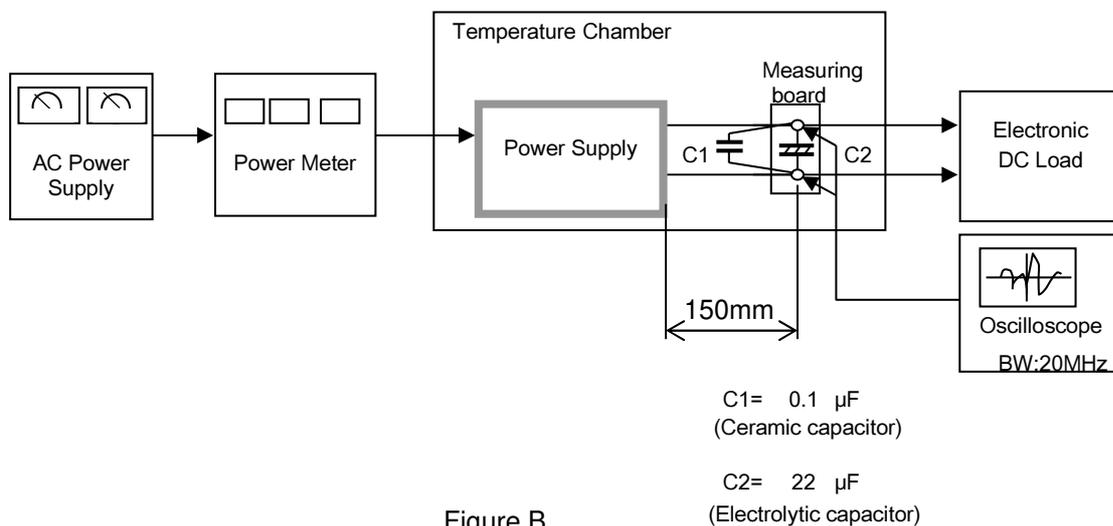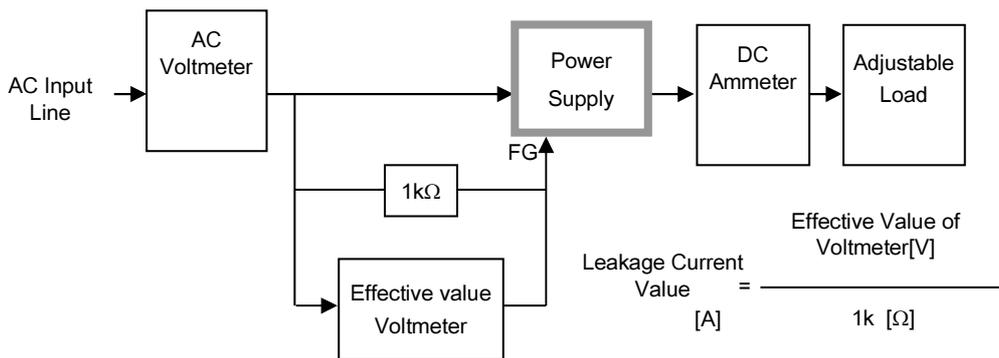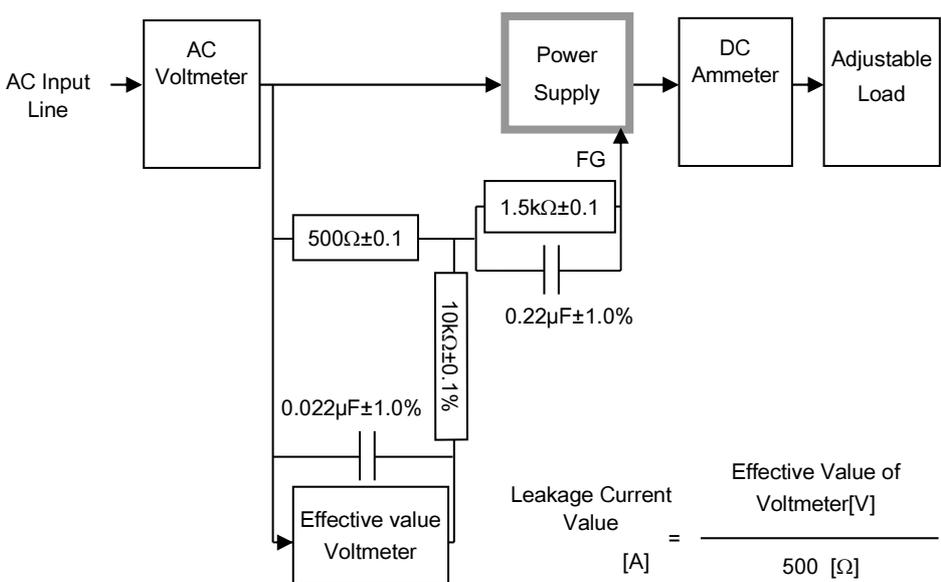
Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

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%

0.022µF±1.0%

Effective value Voltmeter

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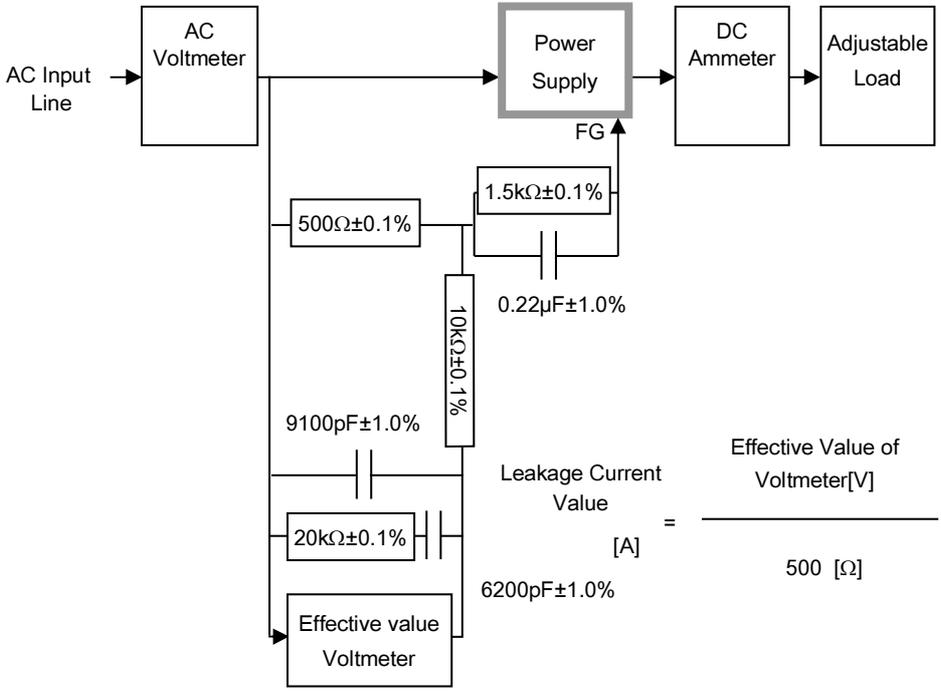
Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)

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-4 (IEC60601-1)

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

FG

1kΩ±1.0

10kΩ±0.1%

0.015µF±1.0%

Effective value Voltmeter

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

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