TEST DATA OF GHA700F-12-J1

Regulated DC Power Supply
March 26, 2024

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Design Manager

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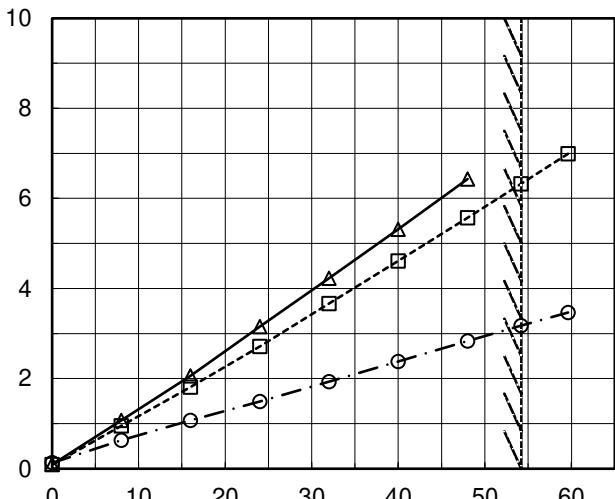Design Engineer

COSEL CO.,LTD.

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CONTENTS

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Model	GHA700F-12-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

Load Current [A]
Input 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	0.096	0.090	0.130
8.00	1.073	0.952	0.632
16.00	2.059	1.811	1.071
24.00	3.153	2.710	1.493
32.00	4.225	3.668	1.928
40.00	5.310	4.607	2.379
48.00	6.429	5.569	2.835
54.20	-	6.324	3.175
59.62	-	6.992	3.469
--	-	-	-
--	-	-	-

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Model	GHA700F-12-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 [%]

Load Current [A]

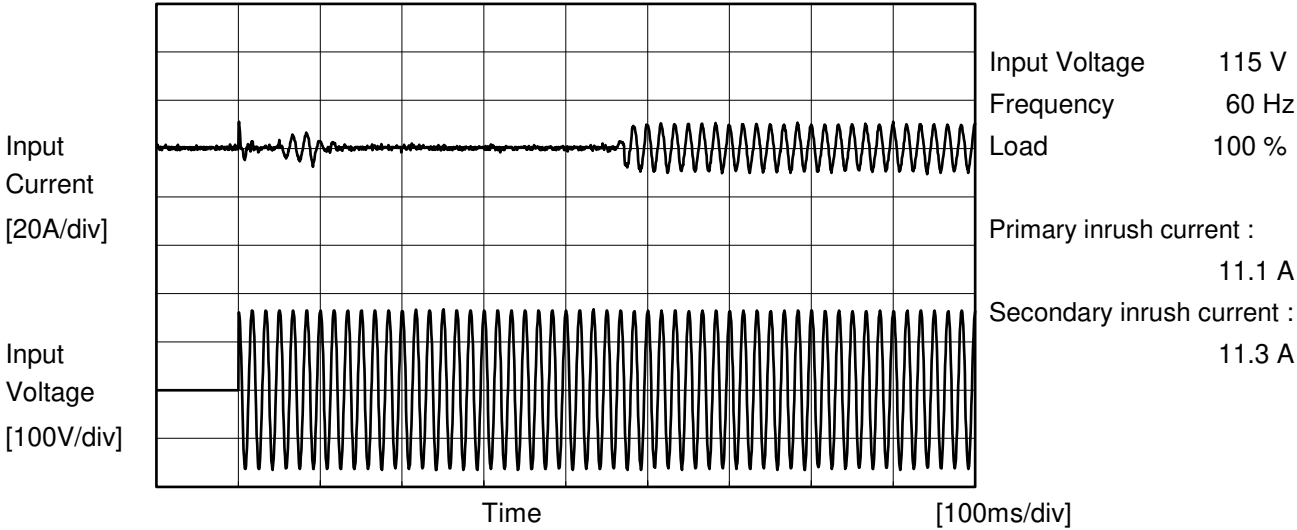Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
8.00	92.7	93.2	95.2
16.00	94.3	94.4	96.3
24.00	93.7	94.3	96.1
32.00	93.2	93.8	95.5
40.00	92.7	93.4	95.2
48.00	92.1	92.8	94.7
54.20	-	92.4	94.4
59.62	-	91.9	94.1
--	-	-	-
--	-	-	-

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Model	GHA700F-12-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

Load Current [A]

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

2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.387	0.257	0.073
8.00	0.962	0.943	0.717
16.00	0.991	0.977	0.830
24.00	0.983	0.986	0.891
32.00	0.986	0.981	0.920
40.00	0.989	0.983	0.939
48.00	0.989	0.986	0.949
54.20	-	0.986	0.957
59.62	-	0.986	0.961
--	-	-	-
--	-	-	-

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Model	GHA700F-12-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 :
11.1 A
Secondary inrush current :
11.3 A

Input Current [20A/div]

Input Voltage [200V/div]

Time [100ms/div]

Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
32.3 A
Secondary inrush current :
7.1 A

Primary inrush current   Secondary inrush current

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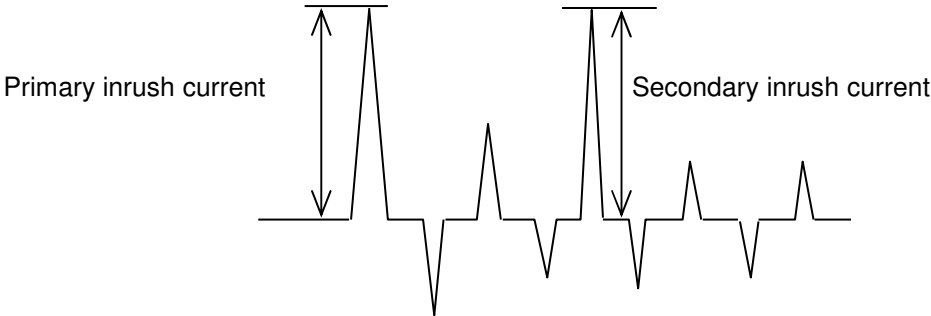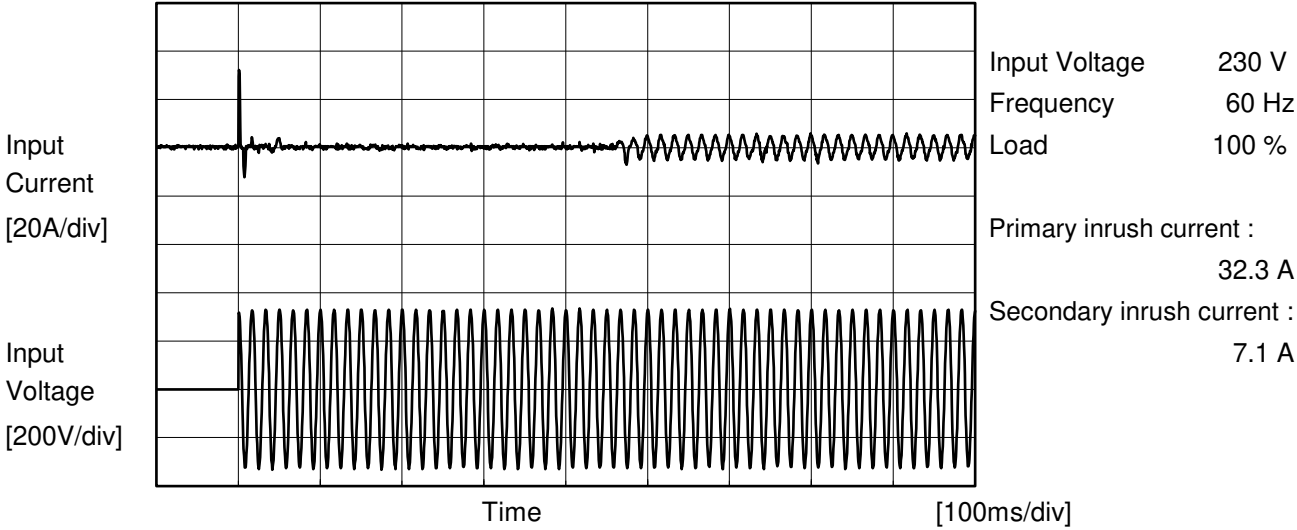
Model	GHA700F-12-J1
Item	Leakage Current
Object	————————

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.

- 5 -

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Model	GHA700F-12-J1
Item	Line Regulation
Object	+12V54.2A

Temperature　　　25°C
Testing Circuitry　Figure A

1.Graph

--- ⊟ --- Load 50%
—— △ —— Load 100%

Output Voltage [V] vs Input Voltage [V]

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	12.104	12.096 ※1
100	12.104	12.096 ※2
115	12.104	12.096
200	12.103	12.096
230	12.103	12.096
264	12.103	12.097
280	12.103	12.096
--	-	-
--	-	-

※1：Load 75%
※2：Load 87.5%

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

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Model	GHA700F-12-J1
Item	Load Regulation
Object	+12V54.2A

Temperature 25℃
Testing Circuitry Figure A

1.Graph

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

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	12.118	12.117	12.118
8.00	12.115	12.114	12.114
16.00	12.112	12.112	12.112
24.00	12.109	12.109	12.109
32.00	12.106	12.107	12.107
40.00	12.104	12.104	12.104
48.00	12.101	12.101	12.102
54.20	-	12.099	12.099
59.62	-	12.097	12.097
--	--	--	--
--	--	--	--

Item	Ripple-Noise
Object	+12V54.2A

Temperature 25℃
Testing Circuitry Figure B

1.Graph

Input Voltage 230V
Load 100%

100[mV/div]

20[μs/div]

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Model	GHA700F-12-J1
Item	Dynamic Load Response
Object	+12V54.2A

Temperature 25°C
Testing Circuitry Figure A

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

Load Current

t1   t2

Load 0%(0A) ←→
  Load 100%(54.2A)

500[mV/div]

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

Load 50%(27.1A) ←→
  Load 100%(54.2A)

500[mV/div]

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

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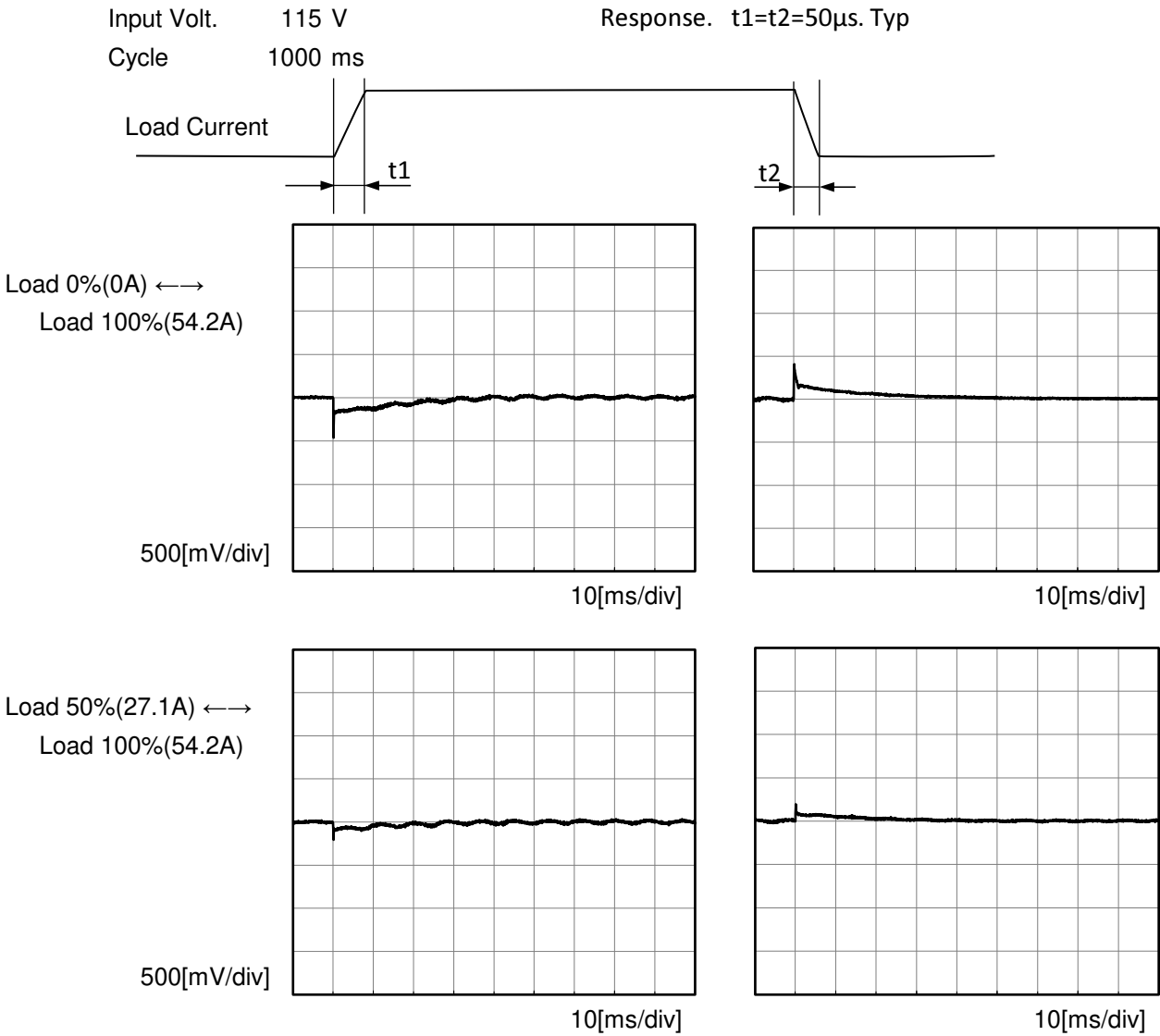
Model	GHA700F-12-J1
Item	Rise and Fall Time
Object	+12V54.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Load 100%

Output
Volt.

[2V/div]

0

Input Volt. 115 V

Load 100%

Output
Volt.

[2V/div]

0

Input Volt. 230 V

Input
Volt.

0

Time [100ms/div]

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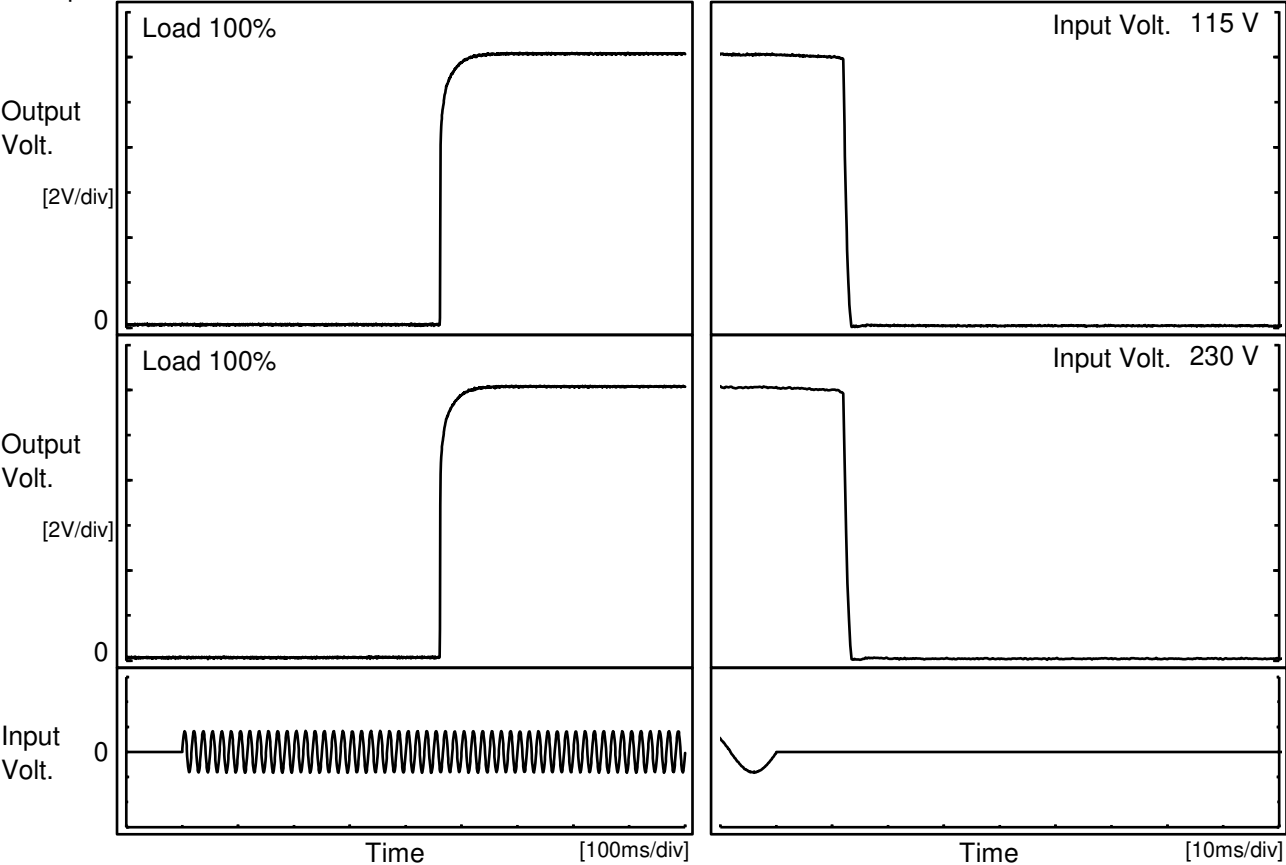
2.Values [ms]

Input Volt. Time	Td	Tr	Ts	Th	Tf
115 V	462.0	13.5	475.5	12.0	1.0
230 V	461.5	13.5	475.0	12.0	1.0

Output
Volt.
90%
0V
10%

Input 0V
Volt.

Td Tr
Ts
Th Tf

- 9 -

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Model	GHA700F-12-J1
Item	Hold-Up Time
Object	+12V54.2A

Temperature　　　25°C
Testing Circuitry　Figure A

1.Graph

2.Values

- - - ⊟ - - 　Load 50%
──△──　Load 100%

Hold-Up Time [ms] vs Input Voltage [V]

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	24	12 ※1
100	24	12 ※2
115	24	12
200	24	12
230	24	12
264	24	12
280	24	12
--	-	-
--	-	-

※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-12-J1
Item	Instantaneous Interruption Compensation
Object	+12V54.2A

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	-	-	-
8.00	84	83	83
16.00	44	44	44
24.00	29	29	28
32.00	21	21	21
40.00	15	15	16
48.00	13	14	14
54.20	-	11	11
59.62	-	8	7
--	-	-	-
--	-	-	-

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Model	GHA700F-12-J1
Item	Overcurrent Protection
Object	+12V54.2A

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]
12	61.73	61.83	61.83
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	GHA700F-12-J1	
Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	+12V54.2A	

1.Values   Load 100%

Ambient Temperature[°C]	Output Voltage [V]		
	Input Volt. 100V	Input Volt. 115V	Input Volt. 230V
-20	12.083	12.086	12.086
25	12.104	12.102	12.101
50	12.099	12.099	12.101

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+12V54.2A	

1.Values

Ambient Temperature[°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	77	77
25	76	78
50	76	77

Item	Overvoltage Protection	Testing Circuitry Figure A
Object	+12V54.2A	

1.Values   Load 0%

Ambient Temperature[°C]	Operating Point [V]	
	Input Volt. 115V	Input Volt. 230V
-20	15.47	15.47
25	15.58	15.58
50	15.64	15.64

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

FG

1.5kΩ±0.1

500Ω±0.1

10kΩ±0.1%

0.022µF±1.0%

0.22µF±1.0%

Effective value Voltmeter

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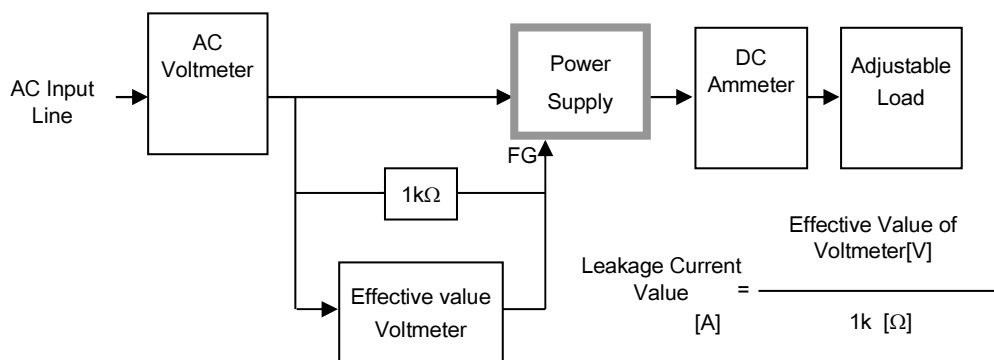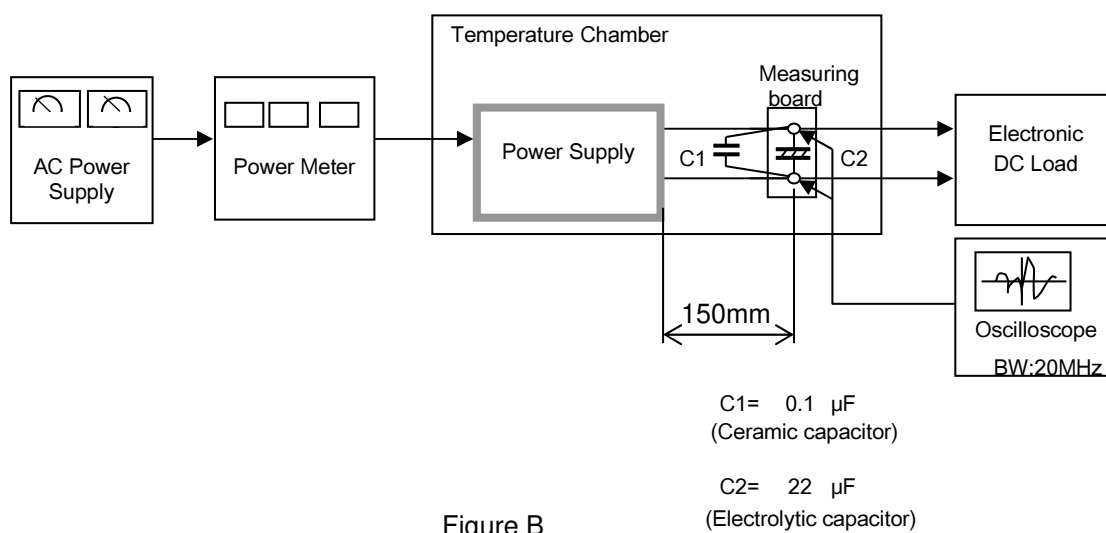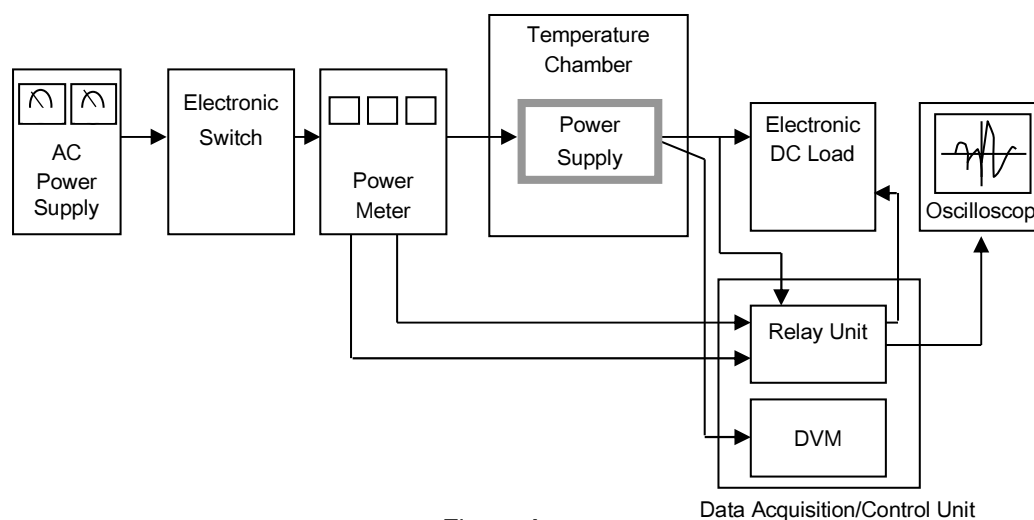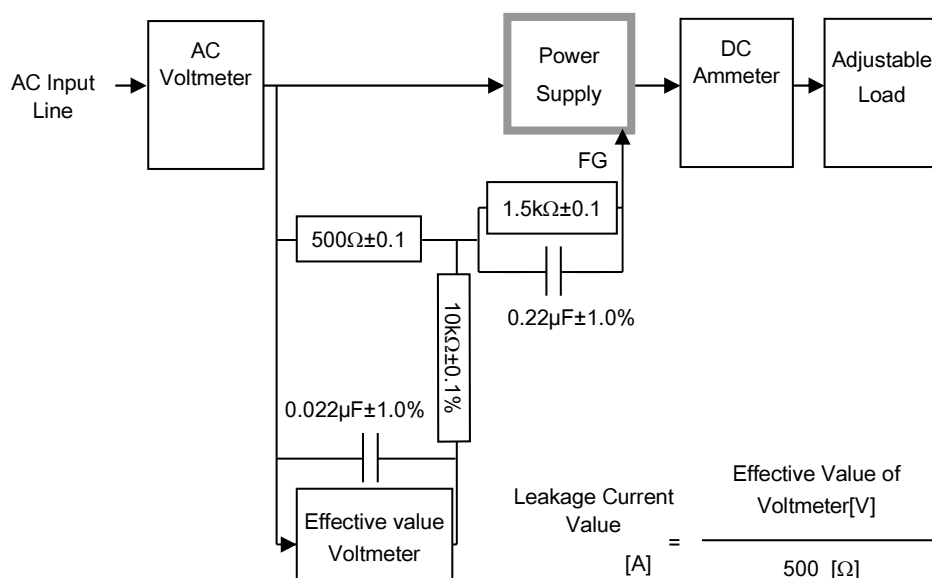
Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

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

FG

1.5kΩ±0.1%

500Ω±0.1%

10kΩ±0.1%

9100pF±1.0%

20kΩ±0.1%

6200pF±1.0%

0.22µF±1.0%

Effective value Voltmeter

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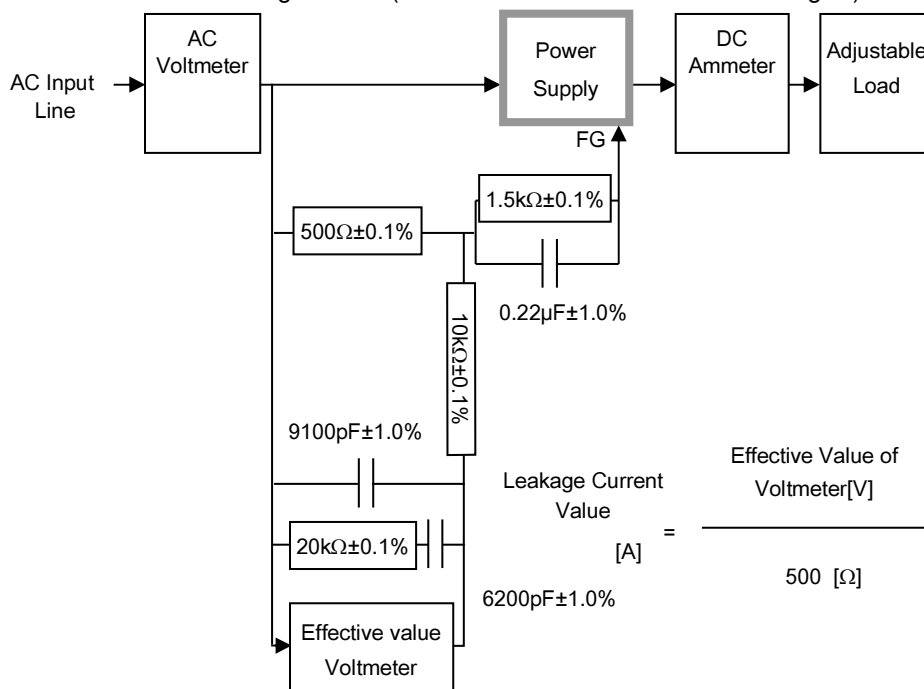
Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)

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

FG

1kΩ±1.0

10kΩ±0.1%

0.015µF±1.0%

Effective value Voltmeter

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

Figure C-4 (IEC60601-1)

BC-11962