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参考資料

TEST DATA OF GHA300F-24-SNF

Regulated DC Power Supply
June 9, 2016

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COSEL CO.,LTD.

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Item	Input Current (by Load Current)
Object	———————

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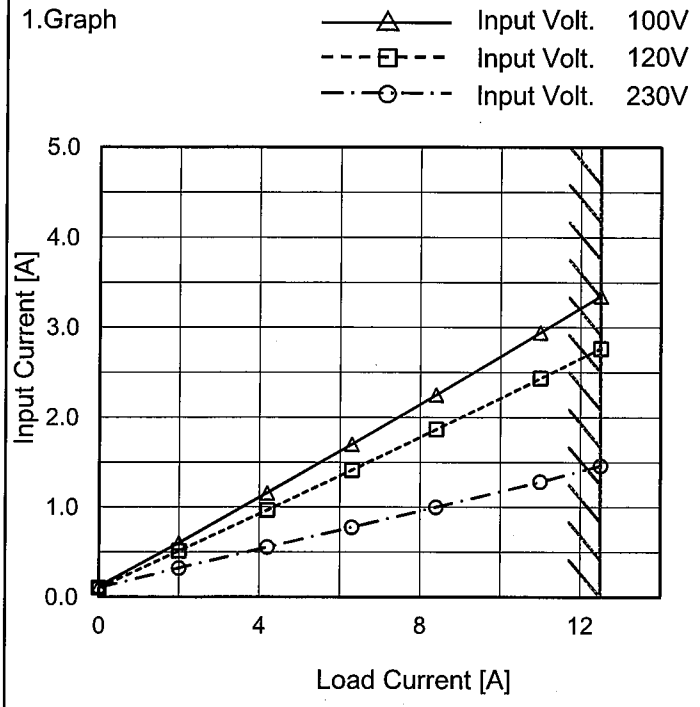
Testing Circuitry Figure A

1.Graph



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. 120[V]	Input Volt. 230[V]
0.0	0.117	0.101	0.103
2.0	0.600	0.512	0.323
4.2	1.156	0.967	0.554
6.3	1.700	1.413	0.776
8.4	2.250	1.866	1.000
11.0	2.944	2.434	1.282
12.5	3.348	2.766	1.463
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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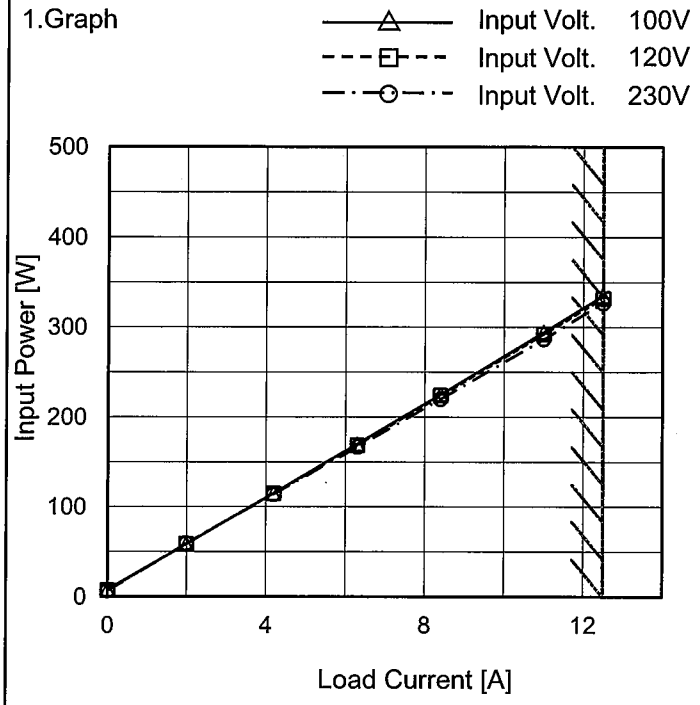
Model	GHA300F-24-SNF
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	7.9	6.9	6.5
2.0	58.7	58.8	59.4
4.2	115.1	114.7	113.9
6.3	170.1	168.6	166.6
8.4	225.3	223.8	220.1
11.0	294.6	292.2	286.8
12.5	335.1	332.1	327.1
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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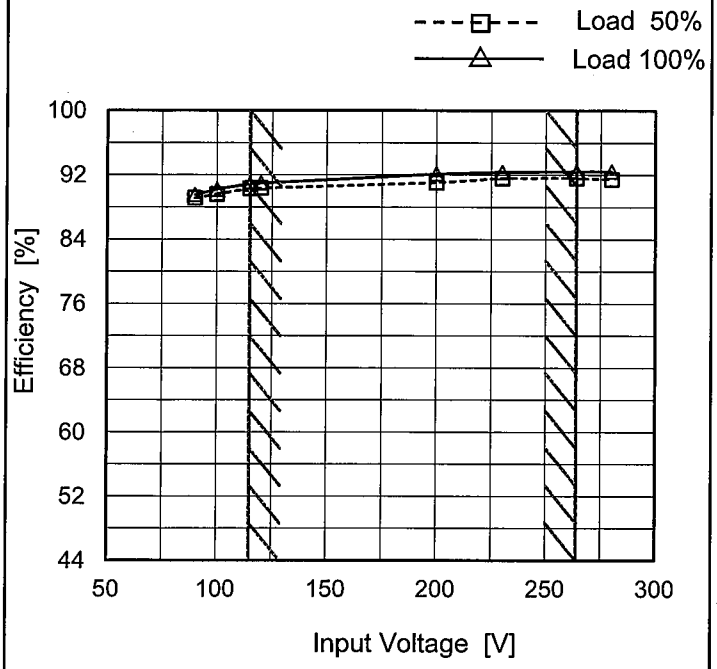
Model	GHA300F-24-SNF
Item	Efficiency (by Input Voltage)
Object	———————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
90	89.1	89.5 ※1
100	89.6	90.2 ※2
115	90.3	90.9
120	90.4	91.0
200	91.1	92.1
230	91.6	92.4
264	91.7	92.4
280	91.5	92.5
--	-	-

※1 : Load 80%
※2 : Load 88%

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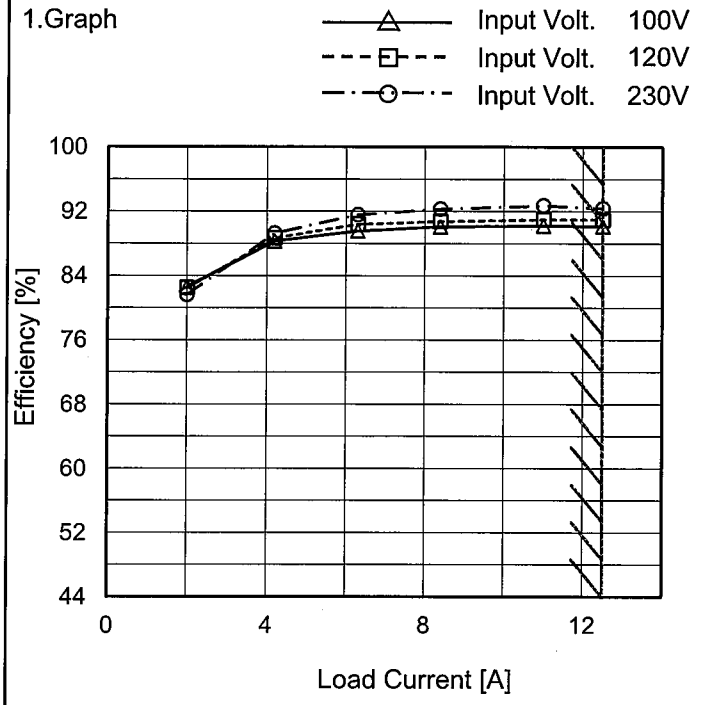
Model	GHA300F-24-SNF
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	-	-	-
2.0	82.6	82.5	81.6
4.2	88.3	88.7	89.3
6.3	89.6	90.4	91.6
8.4	90.1	90.7	92.3
11.0	90.2	91.0	92.7
12.5	90.2	91.0	92.4
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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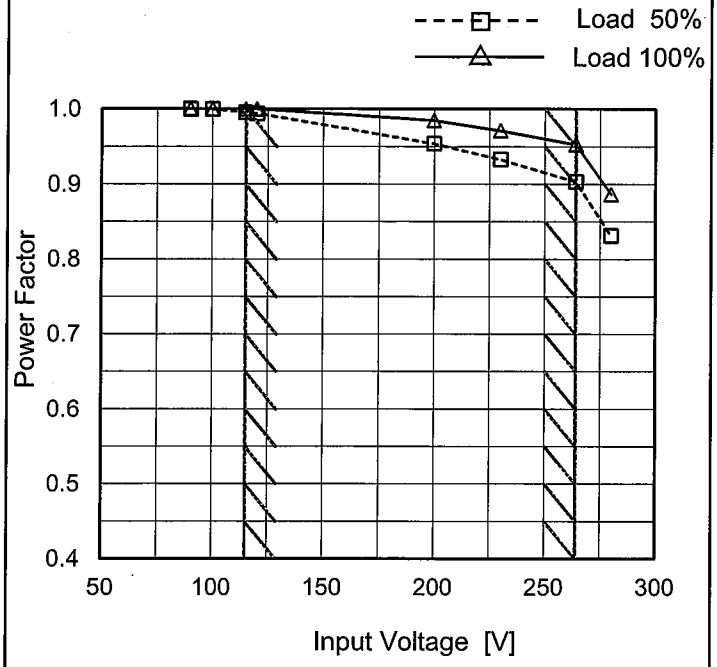
Model	GHA300F-24-SNF
Item	Power Factor (by Input Voltage)
Object	――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
90	0.999	0.999 ※1
100	0.999	0.999 ※2
115	0.995	0.999
120	0.994	0.999
200	0.954	0.985
230	0.933	0.971
264	0.904	0.953
280	0.831	0.887
--	-	-

※1 : Load 80%
※2 : Load 88%

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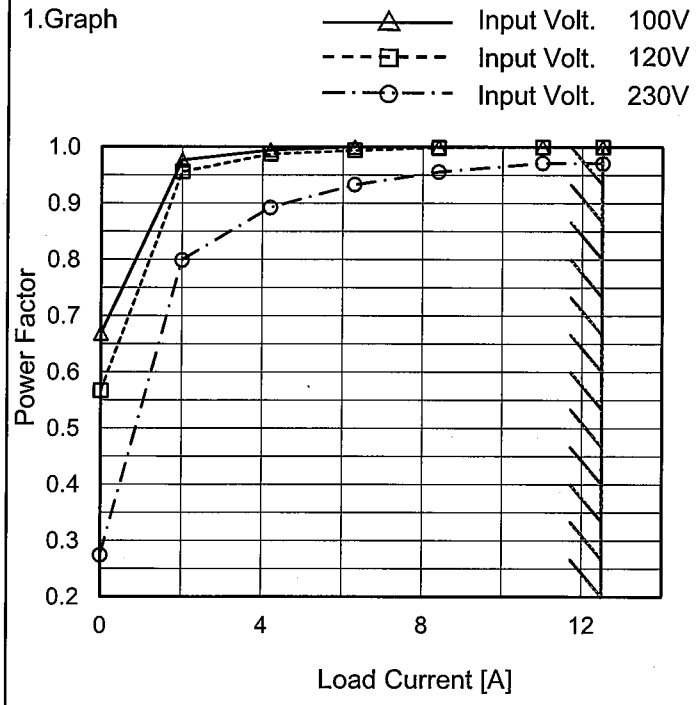
Model	GHA300F-24-SNF
Item	Power Factor (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	0.668	0.567	0.274
2.0	0.977	0.956	0.799
4.2	0.995	0.988	0.893
6.3	0.999	0.994	0.933
8.4	0.999	0.999	0.956
11.0	0.999	0.999	0.972
12.5	0.999	0.999	0.971
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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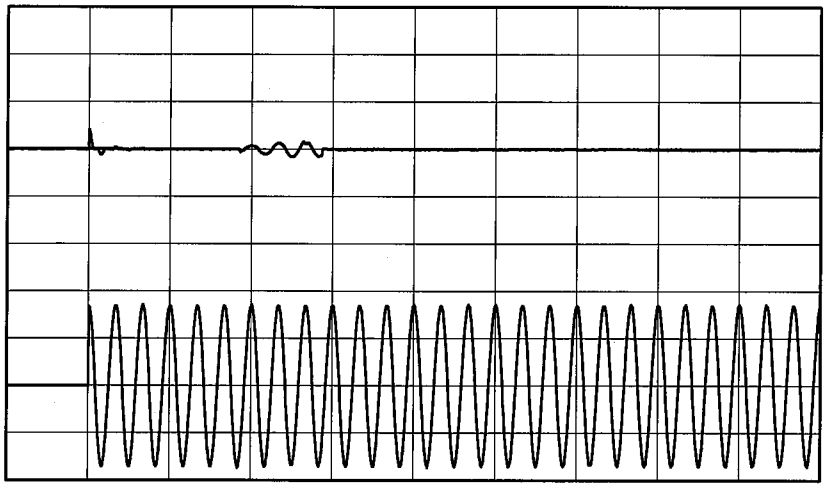
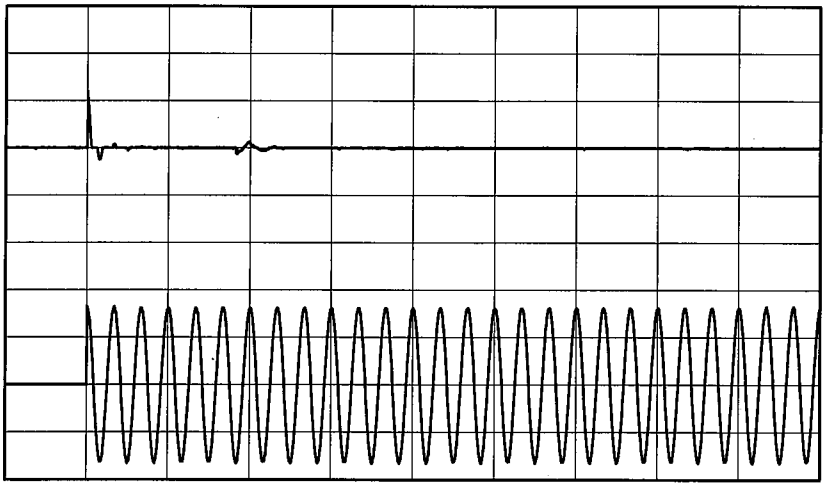
Model	GHA300F-24-SNF
Item	Inrush Current
Object	————

Temperature 25°C
Testing Circuitry Figure A



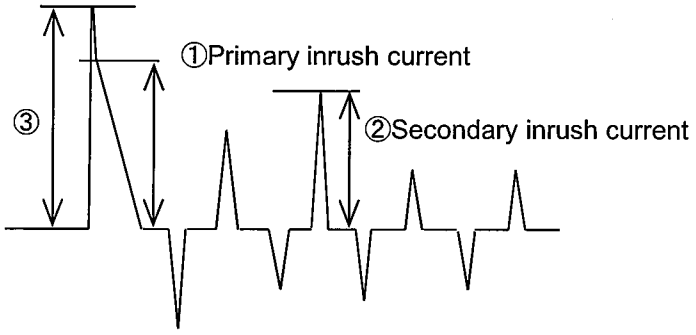
Input Voltage 120 V
Frequency 60 Hz
Load 100 %

①Primary inrush current :
18.4 A
②Secondary inrush current :
8.4 A
③Surge current ※1:
20.8 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

①Primary inrush current :
40.8 A
②Secondary inrush current :
6.4 A
③Surge current ※1:
60.0 A



※1 The specification of the primary inrush current means that the surge current to a built-in noise filter (0.4msec or less : waveform ③) is excluded.

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Model	GHA300F-24-SNF	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	————————	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	120 [V]	240 [V]	
IEC60601	Both phases	0.05	0.06	0.13	Operation
	One of phases	0.10	0.11	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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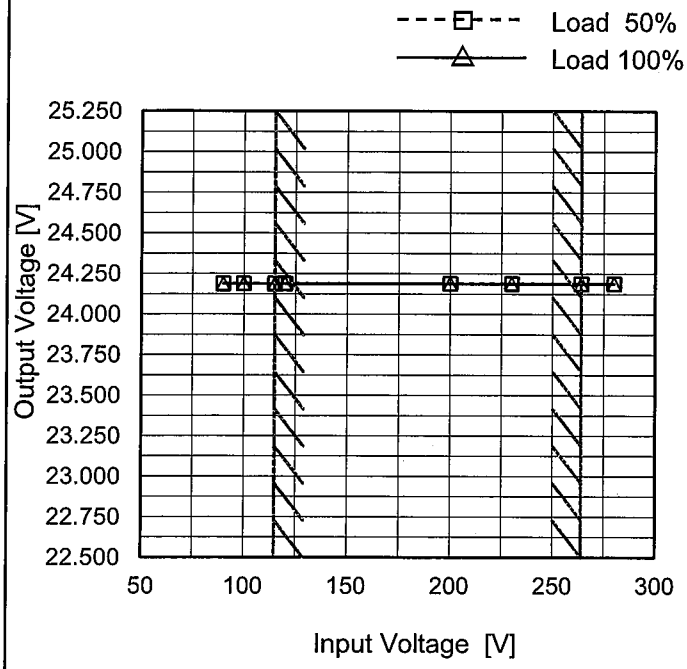
Model	GHA300F-24-SNF
Item	Line Regulation
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
90	24.189	24.187 ※1
100	24.189	24.188 ※2
115	24.188	24.187
120	24.189	24.188
200	24.189	24.188
230	24.189	24.188
264	24.189	24.188
280	24.189	24.188
--	-	-

※1 : Load 80%
※2 : Load 88%

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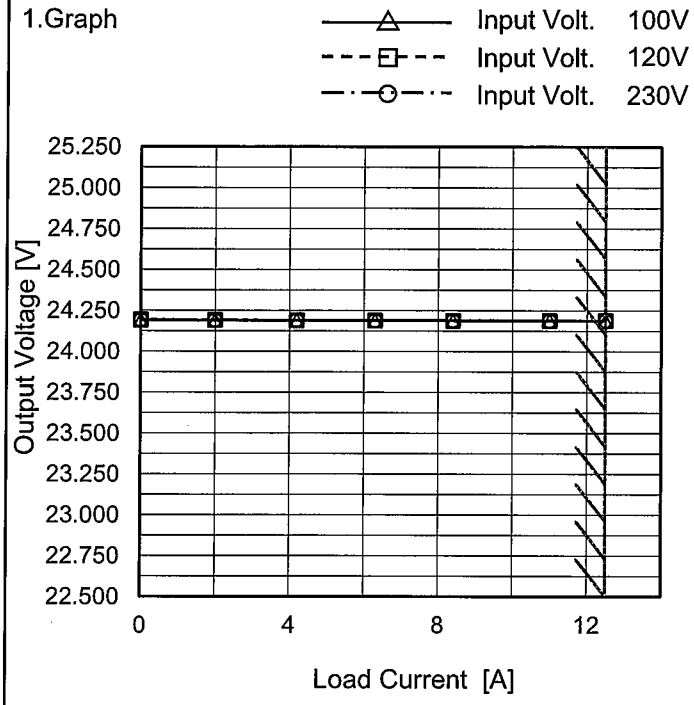
Model	GHA300F-24-SNF
Item	Load Regulation
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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. 120[V]	Input Volt. 230[V]
0.0	24.193	24.194	24.193
2.0	24.191	24.191	24.191
4.2	24.190	24.191	24.190
6.3	24.189	24.189	24.189
8.4	24.189	24.189	24.189
11.0	24.188	24.189	24.189
12.5	24.188	24.188	24.188
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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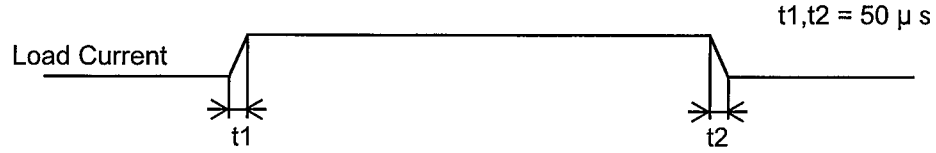
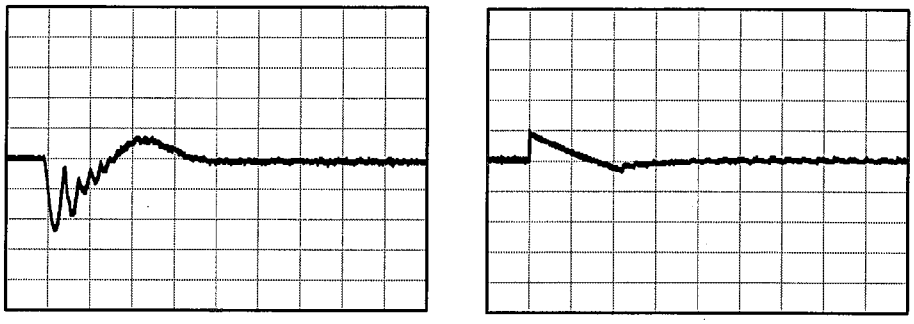
Model	GHA300F-24-SNF
Item	Dynamic Load Response
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 120 V
Cycle 1000 ms



Min.Load (0A)⟷
Load 100% (12.5A)

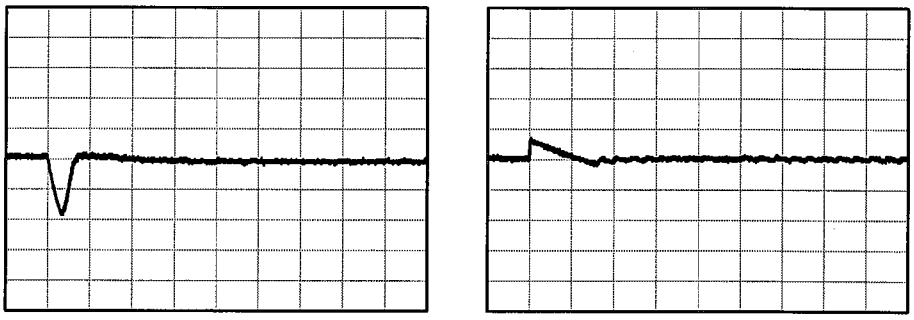


500 mV/div

400 us/div

10 ms/div

Min.Load (0A)⟷
Load 50% (6.25A)

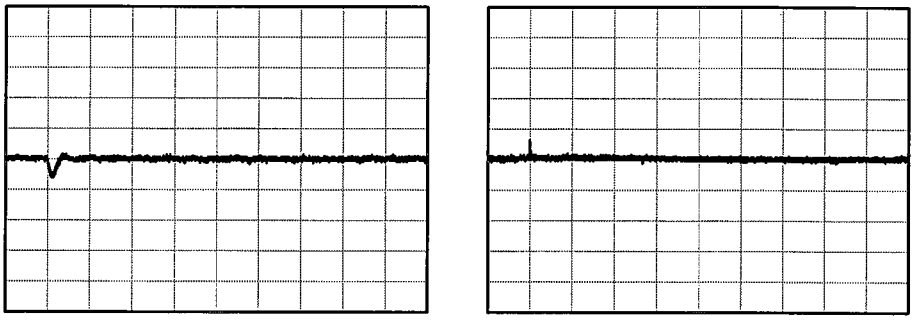


500 mV/div

400 us/div

10 ms/div

Load 50% (6.25A)⟷
Load 100% (12.5A)



500 mV/div

400 us/div

10 ms/div

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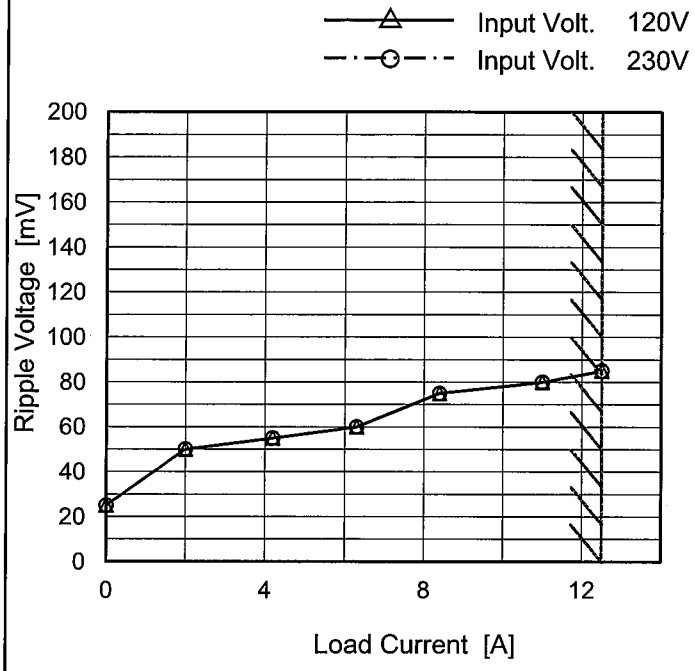
Model	GHA300F-24-SNF
Item	Ripple Voltage (by Load Current)
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

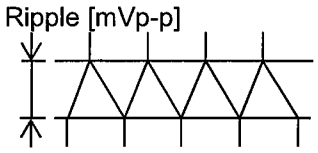


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
0.0	25	25
2.0	50	50
4.2	55	55
6.3	60	60
8.4	75	75
11.0	80	80
12.5	85	85
--	-	-
--	-	-
--	-	-
--	-	-

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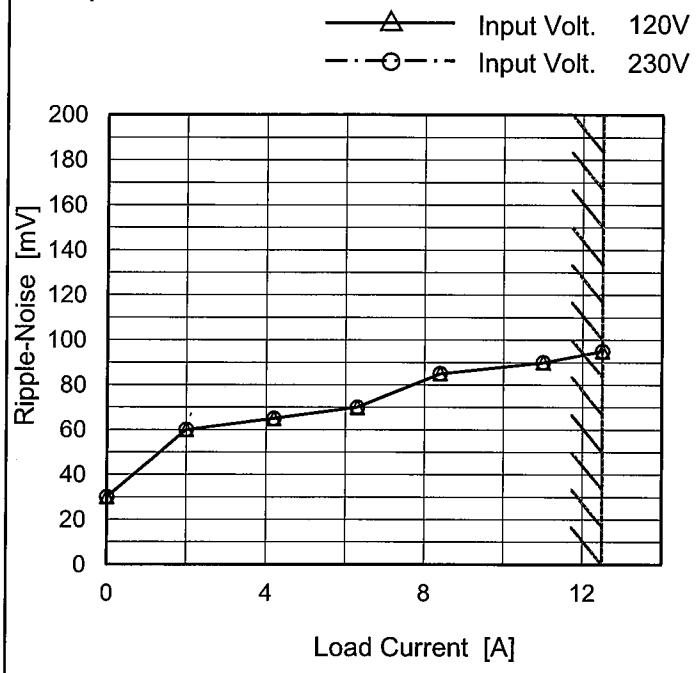
Model	GHA300F-24-SNF
Item	Ripple-Noise
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

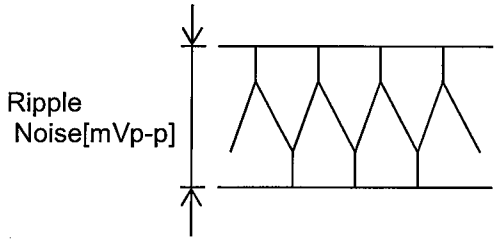


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
0.0	30	30
2.0	60	60
4.2	65	65
6.3	70	70
8.4	85	85
11.0	90	90
12.5	95	95
--	-	-
--	-	-
--	-	-
--	-	-

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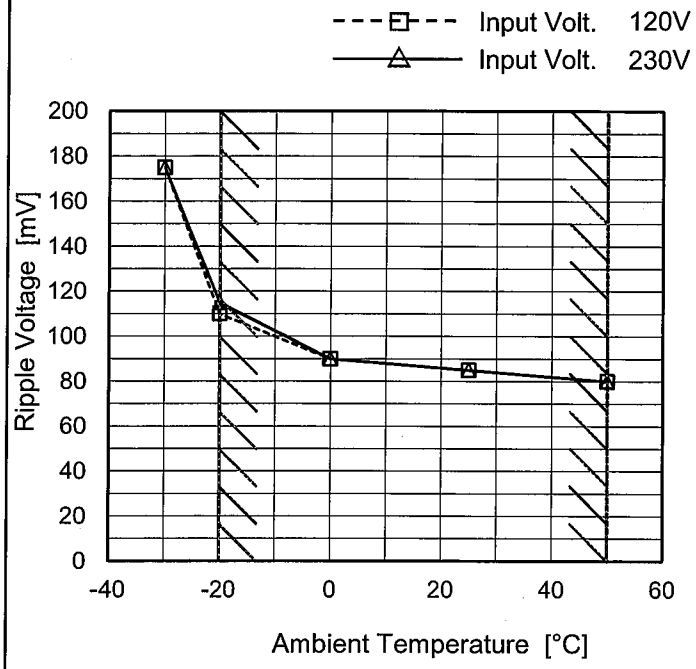
Model	GHA300F-24-SNF
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V12.5A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.

Ripple [mVp-p]

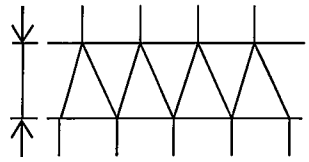


Fig.Complex Ripple Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
-30	175	175
-20	110	115
0	90	90
25	85	85
50	80	80
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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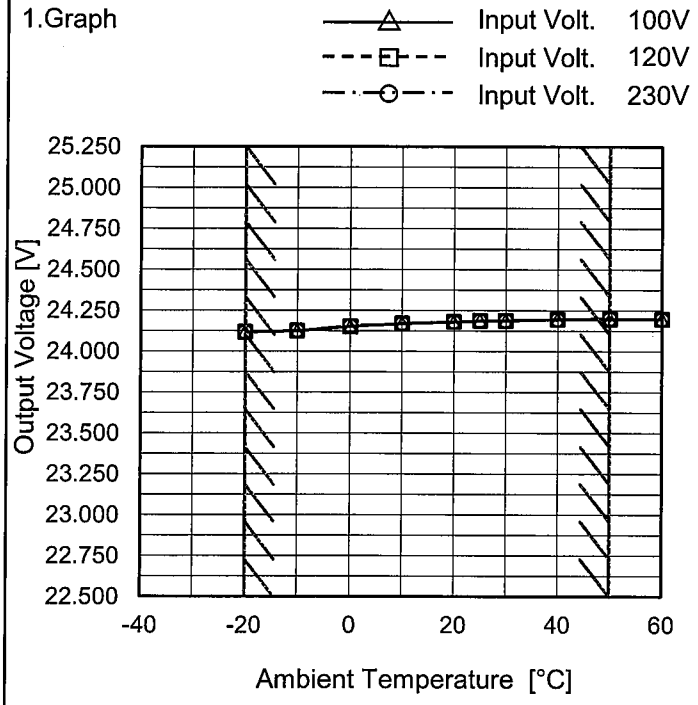
Model	GHA300F-24-SNF
Item	Ambient Temperature Drift
Object	+24V12.5A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
-20	24.118	24.118	24.119
-10	24.126	24.126	24.128
0	24.152	24.153	24.156
10	24.171	24.171	24.172
20	24.181	24.181	24.182
25	24.188	24.188	24.188
30	24.189	24.189	24.190
40	24.197	24.197	24.197
50	24.199	24.199	24.200
60	24.198	24.198	24.199
--	-	-	-

Note: In case of input Volt. 100V, Load 88%, Other case Load 100%.

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Model	GHA300F-24-SNF
Item	Output Voltage Accuracy
Object	+24V12.5A

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 : 115 - 264V
Load Current : 0 - 12.5A

* 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	24.206	±44	±0.2
Minimum Voltage	-20	120	12.5	24.118		

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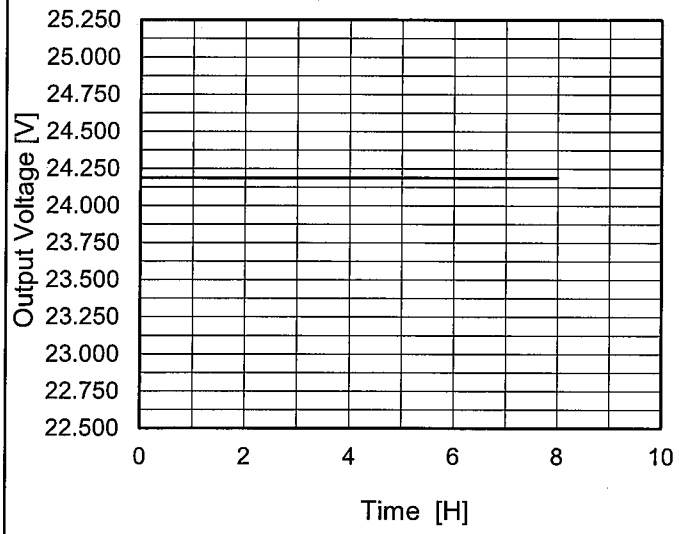
Model	GHA300F-24-SNF
Item	Time Lapse Drift
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC120V is equal.

2.Values

Time since start [H]	Output Voltage [V]
0.0	24.188
0.5	24.188
1.0	24.188
2.0	24.188
3.0	24.188
4.0	24.188
5.0	24.188
6.0	24.188
7.0	24.188
8.0	24.189

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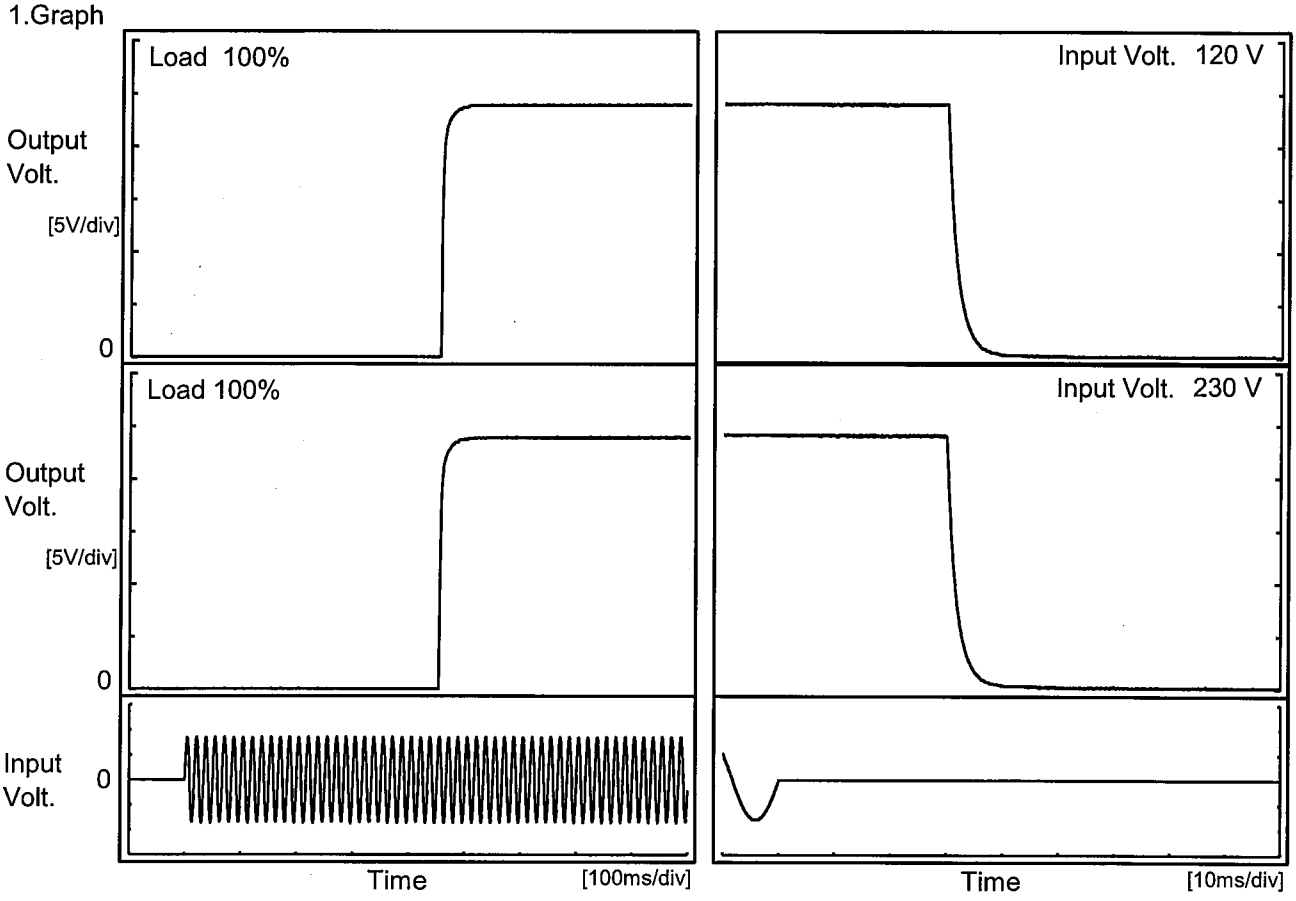
Model	GHA300F-24-SNF
Item	Rise and Fall Time
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

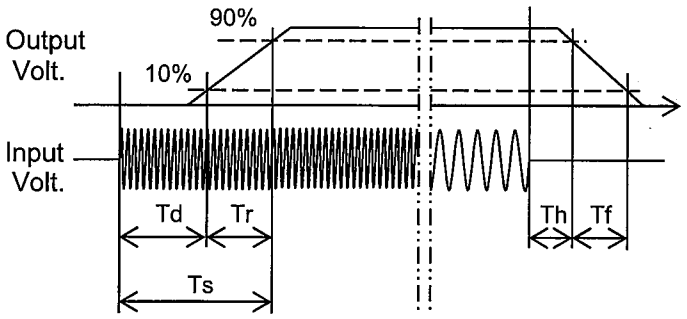
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
120V	455.5	9.0	464.5	30.2	4.0
230V	453.0	9.0	462.0	30.2	4.0



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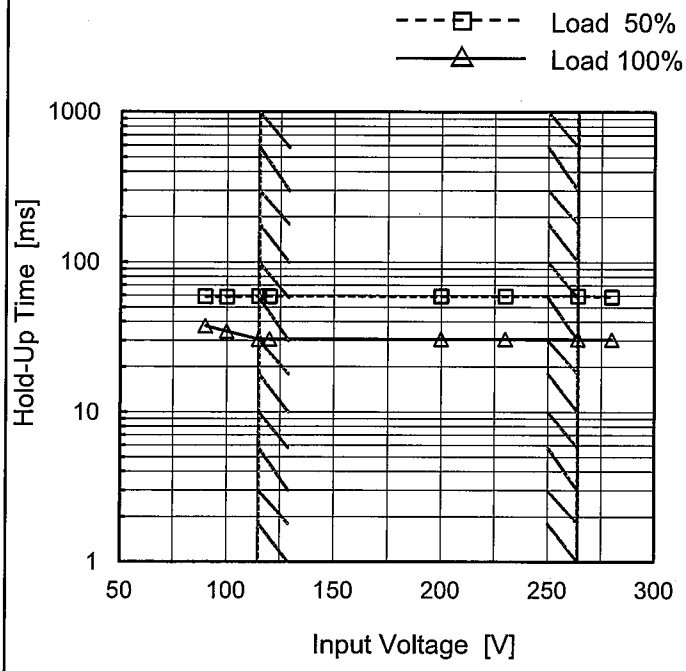
Model	GHA300F-24-SNF
Item	Hold-Up Time
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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.

2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
90	59	38 ※1
100	59	35 ※2
115	59	31
120	59	31
200	59	31
230	59	31
264	60	31
280	59	31
--	-	-

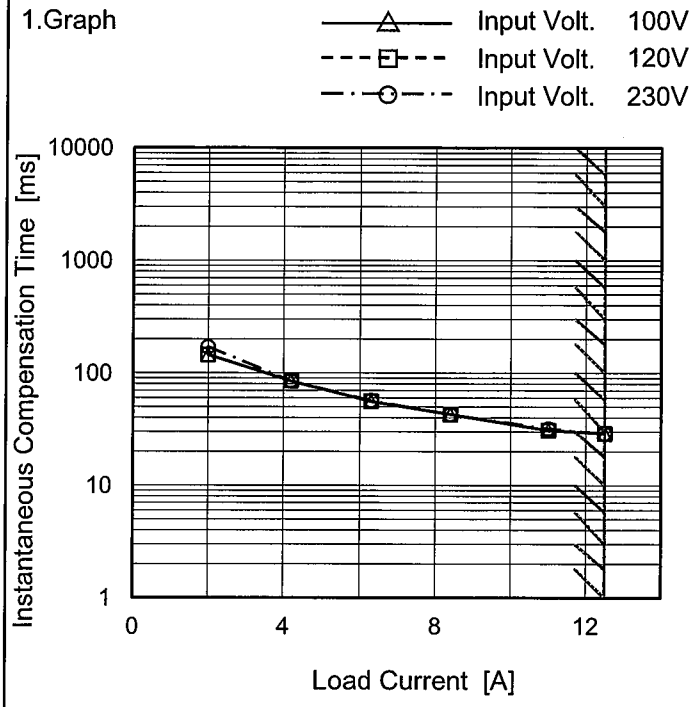
※1 : Load 80%
※2 : Load 88%

COSEL

Model	GHA300F-24-SNF
Item	Instantaneous Interruption Compensation
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

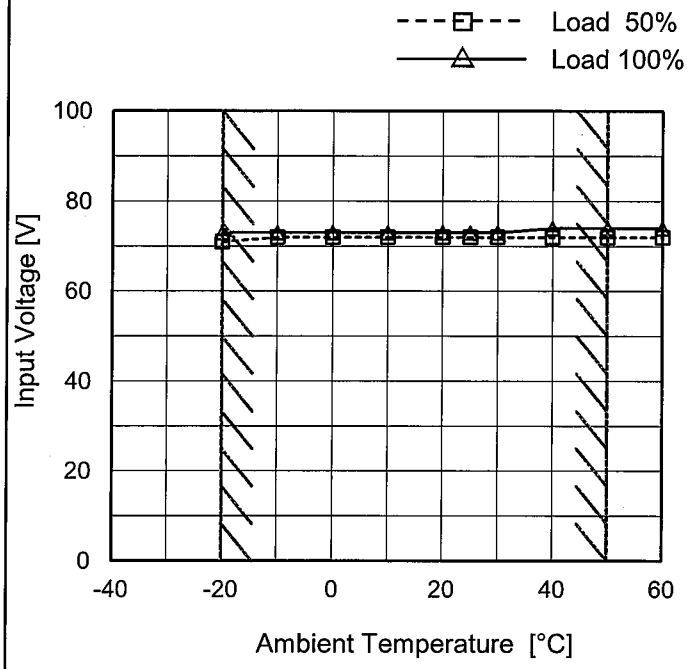
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	-	-	-
2.0	145	145	171
4.2	85	85	85
6.3	56	56	57
8.4	43	43	43
11.0	31	31	32
12.5	29	29	29
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GHA300F-24-SNF
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V12.5A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

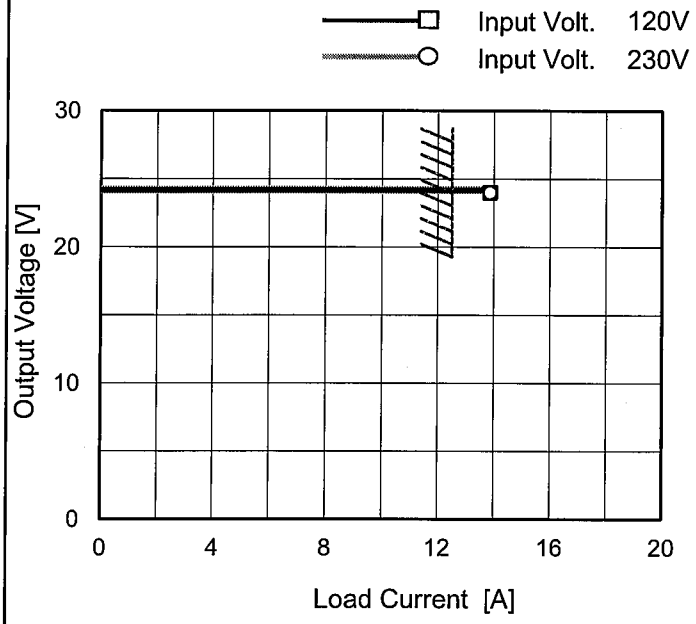
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	71	73
-10	72	73
0	72	73
10	72	73
20	72	73
25	72	73
30	72	73
40	72	74
50	72	74
60	72	74
--	-	-

COSEL

Model	GHA300F-24-SNF
Item	Overcurrent Protection
Object	+24V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent operation occurs when overcurrent protection is activated.

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 120[V]	Input Volt. 230[V]
24	13.86	13.85
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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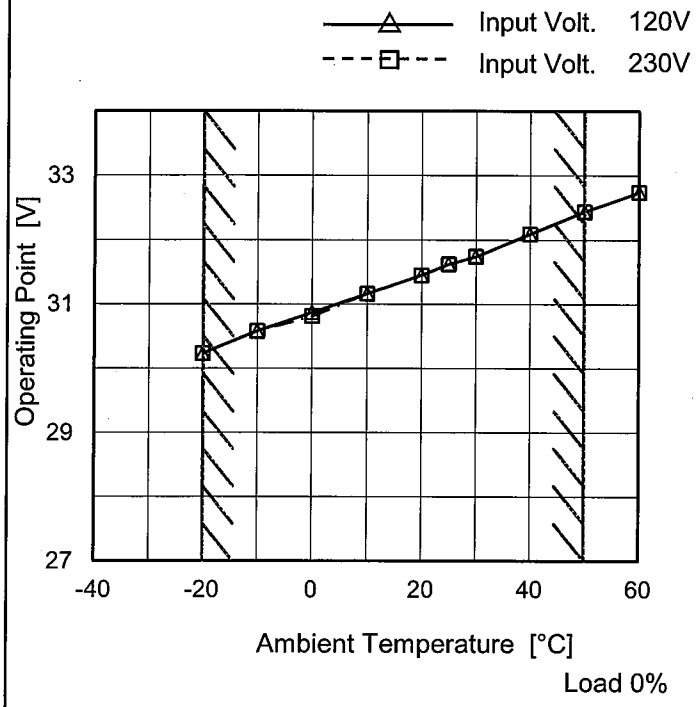
COSEL

Model	GHA300F-24-SNF
Item	Overvoltage Protection
Object	+24V12.5A

Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 120[V]	Input Volt. 230[V]
-20	30.23	30.23
-10	30.58	30.58
0	30.87	30.81
10	31.16	31.16
20	31.45	31.45
25	31.62	31.62
30	31.74	31.74
40	32.09	32.09
50	32.44	32.44
60	32.74	32.74
--	-	-

BC-11111

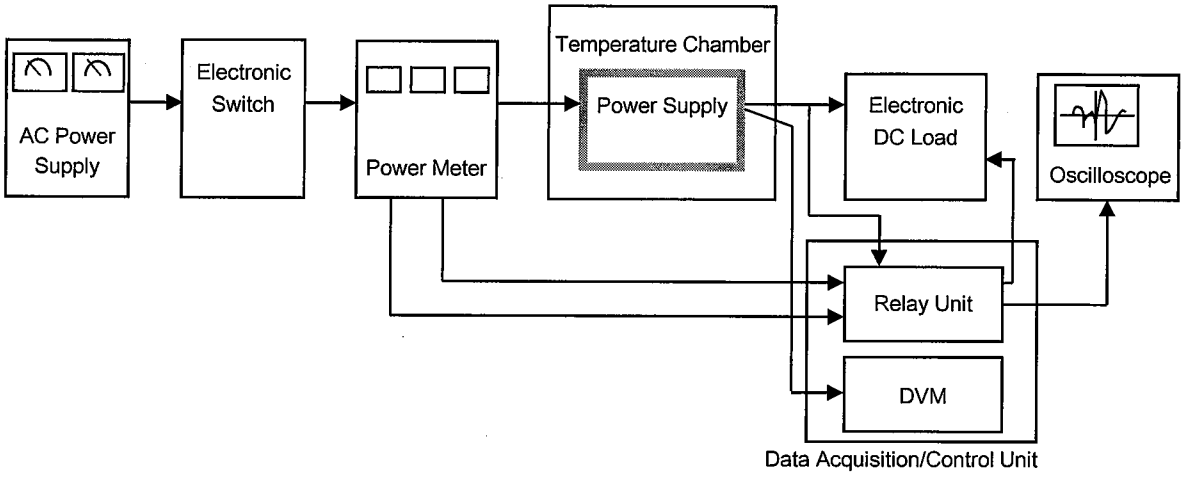


Figure A

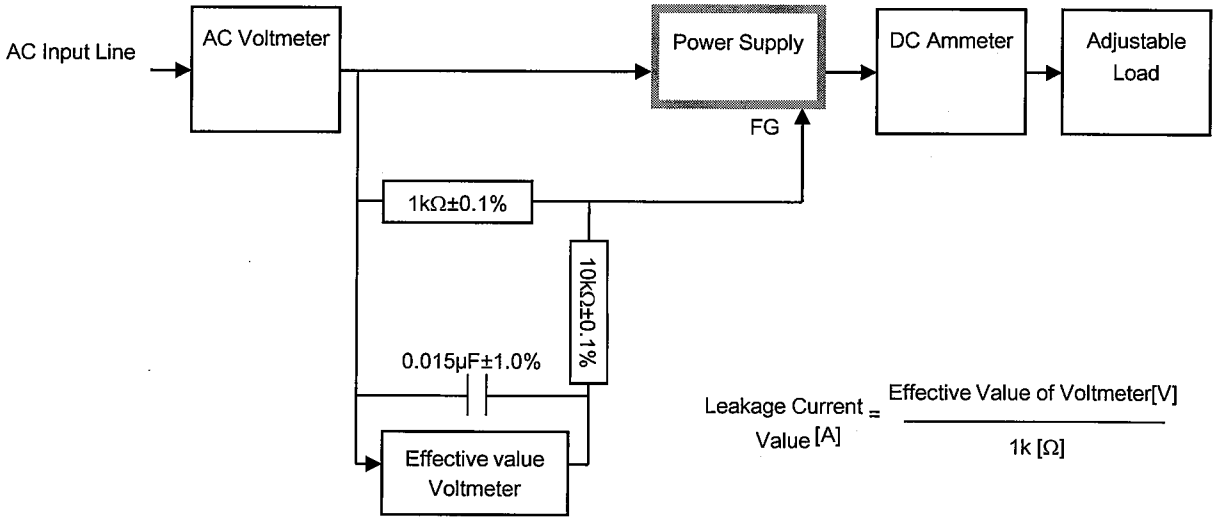


Figure B (IEC60601-1)