COSEL

参考資料

TEST DATA OF GHA300F-24

Regulated DC Power Supply
April 19, 2013

Approved by : Yoshiaki Shimizu
Yoshiaki Shimizu — Design Manager

Prepared by : Soshi Nakamura
Soshi Nakamura — Design Engineer

COSEL CO.,LTD.

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(Final Page 24)

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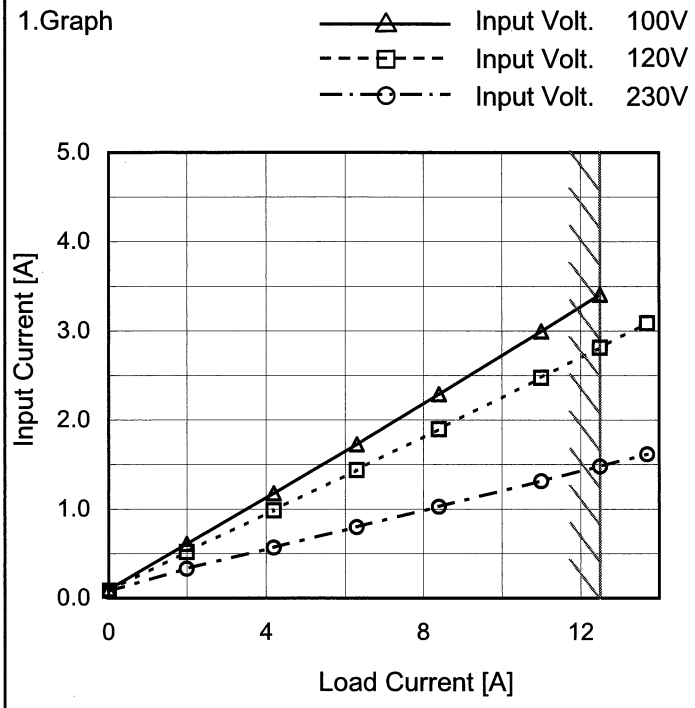
Model	GHA300F-24
Item	Input Current (by Load Current)
Object	————————

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 Current [A]		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	0.102	0.084	0.076
2.0	0.610	0.517	0.331
4.2	1.179	0.984	0.568
6.3	1.729	1.437	0.798
8.4	2.290	1.896	1.026
11.0	2.996	2.476	1.314
12.5	3.409	2.813	1.481
13.7	-	3.087	1.617
--	-	-	-
--	-	-	-
--	-	-	-

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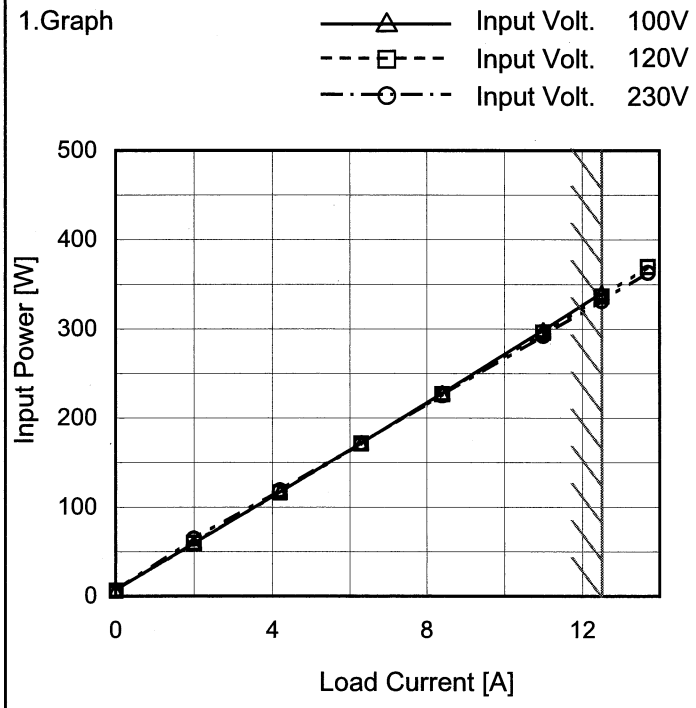
Model	GHA300F-24
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

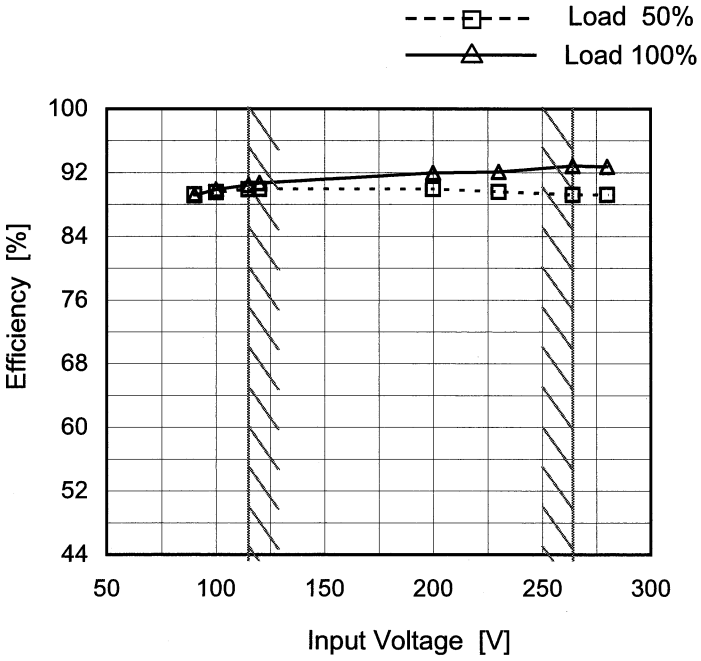
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	7.2	6.2	6.1
2.0	59.7	59.7	64.5
4.2	117.0	116.5	119.0
6.3	172.2	171.2	171.7
8.4	228.2	226.5	225.4
11.0	298.9	296.1	292.4
12.5	340.4	336.6	331.5
13.7	-	369.5	363.0
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GHA300F-24
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	89.3	89.2 ※1
100	89.5	89.9 ※2
115	89.9	90.5
120	90.0	90.7
200	89.9	92.0
230	89.6	92.1
264	89.2	92.9
280	89.2	92.8
--	-	-

※1:Load 80%
※2:Load 88%

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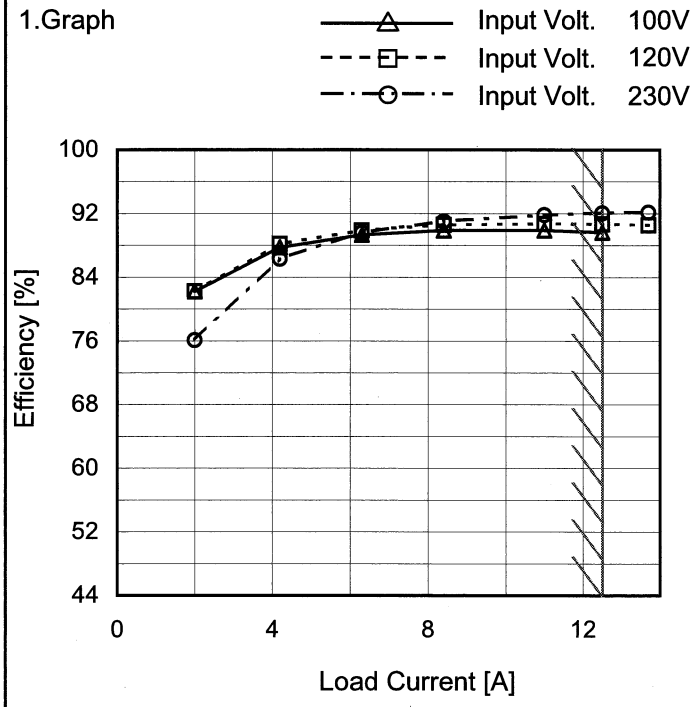
Model	GHA300F-24
Item	Efficiency (by Load Current)
Object	———————

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	82.2	82.2	76.1
4.2	87.8	88.2	86.3
6.3	89.3	89.9	89.6
8.4	89.9	90.6	91.0
11.0	89.9	90.7	91.8
12.5	89.7	90.7	92.1
13.7	-	90.5	92.2
--	-	-	-
--	-	-	-
--	-	-	-

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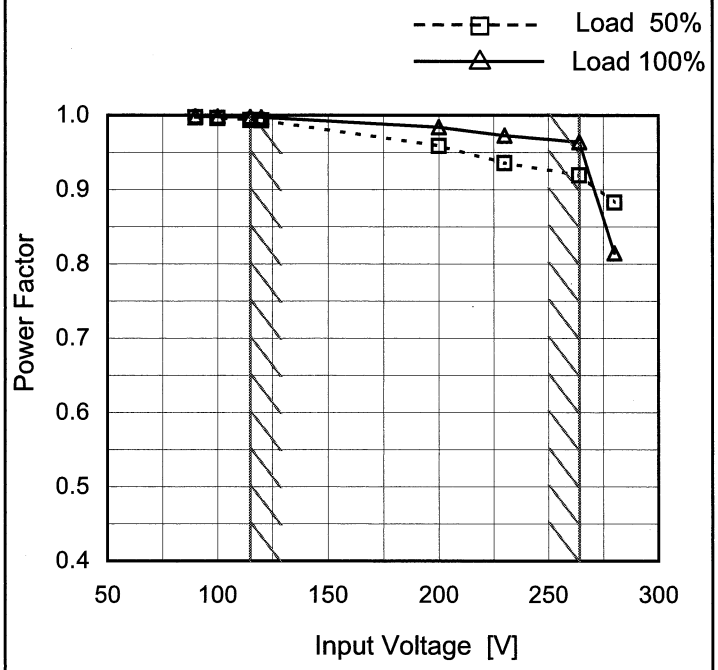
Model	GHA300F-24
Item	Power Factor (by Input Voltage)
Object	――――――――――

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	0.997	0.999 ※1
100	0.996	0.998 ※2
115	0.994	0.998
120	0.993	0.998
200	0.959	0.984
230	0.936	0.973
264	0.919	0.964
280	0.883	0.815
--	-	-

※1:Load 80%
※2:Load 88%

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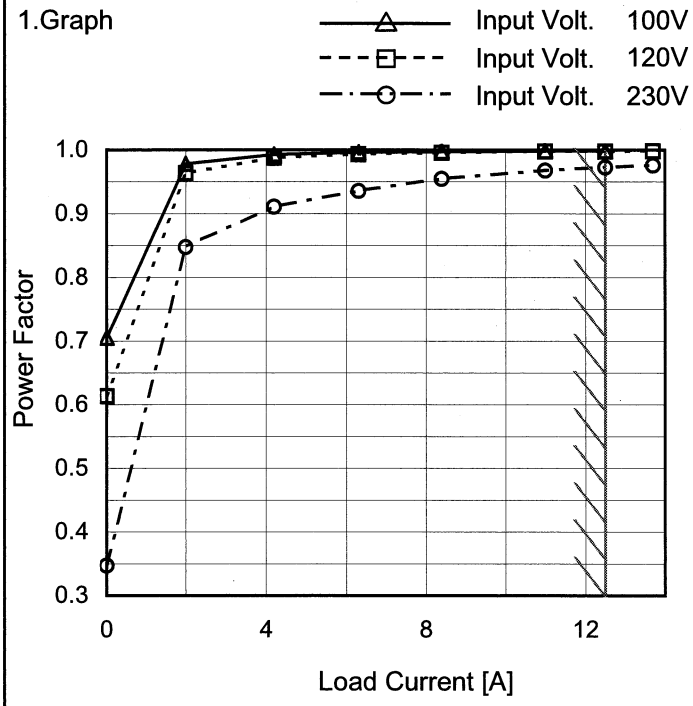
Model	GHA300F-24
Item	Power Factor (by Load Current)
Object	————————

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	0.705	0.613	0.347
2.0	0.978	0.963	0.848
4.2	0.993	0.987	0.911
6.3	0.997	0.993	0.936
8.4	0.997	0.996	0.955
11.0	0.998	0.997	0.968
12.5	0.999	0.998	0.973
13.7	-	0.998	0.976
--	-	-	-
--	-	-	-
--	-	-	-

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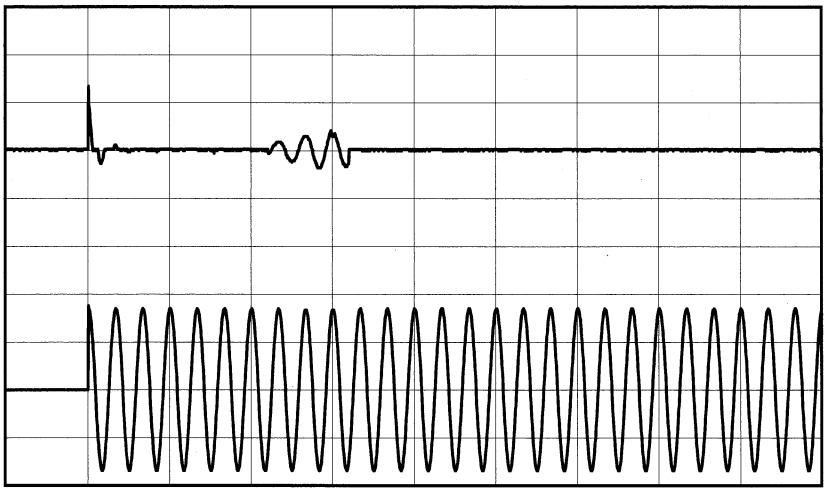
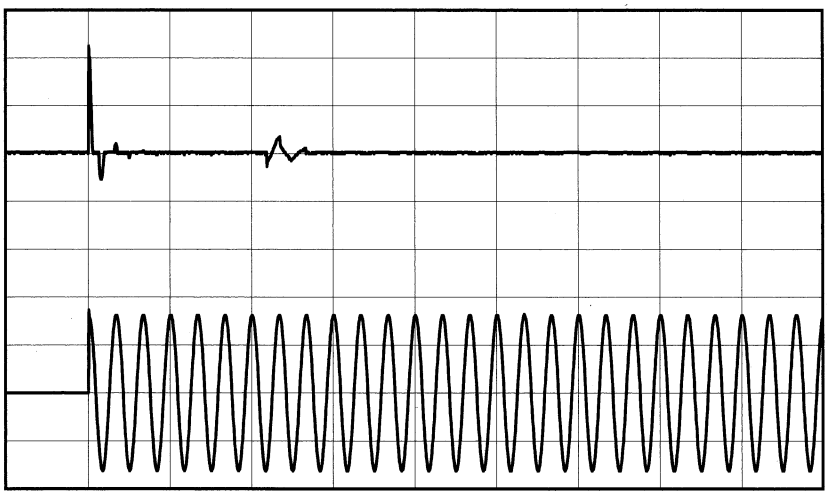
Model	GHA300F-24		
Item	Inrush Current	Temperature	25°C
		Testing Circuitry	Figure A
Object	―――――――		



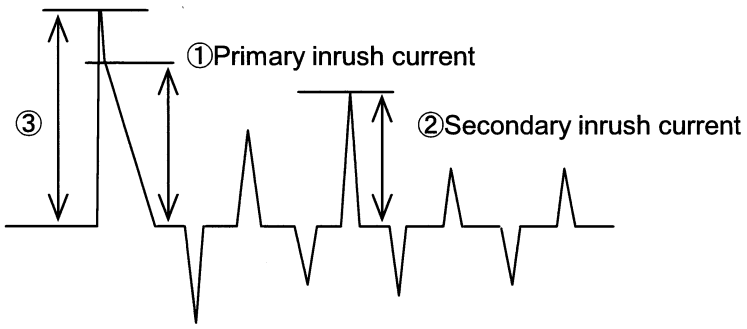
Input Voltage 120 V
Frequency 60 Hz
Load 100 %

①Primary inrush current :
18.6 A
②Secondary inrush current :
8.2 A
③Surge current ※1:
27 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

①Primary inrush current :
38.9 A
②Secondary inrush current :
6.9 A
③Surge current ※1:
40.2 A



※1 The specification of the primary inrush current means that the surge current to a built-in noise filter (0.2msec or less : waveform ③) is excluded.

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Model	GHA300F-24	
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	0.08	0.09	0.17	Operation
	One of phases	0.14	0.15	0.31	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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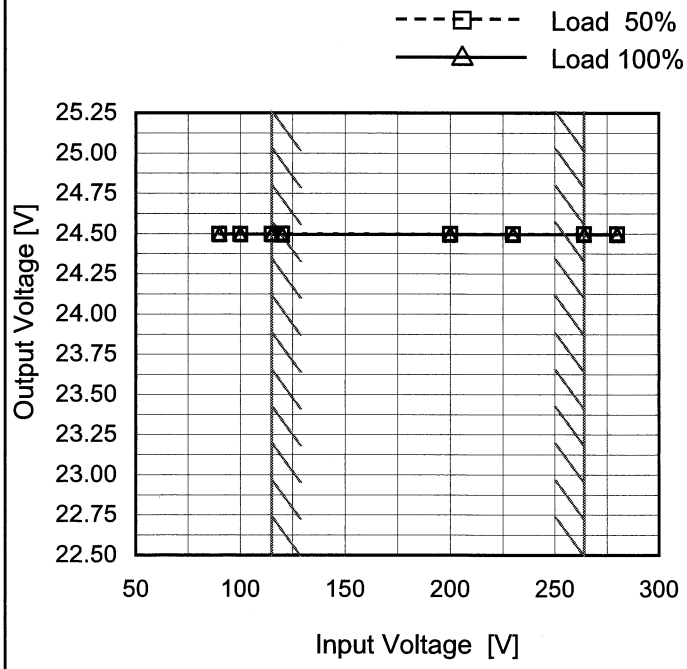
Model	GHA300F-24
Item	Line Regulation
Object	+24V12.5A

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	24.498	24.497 ※1
100	24.498	24.496 ※2
115	24.498	24.496
120	24.498	24.496
200	24.498	24.496
230	24.498	24.496
264	24.497	24.496
280	24.498	24.496
--	-	-

※1:Load 80%
※2:Load 88%

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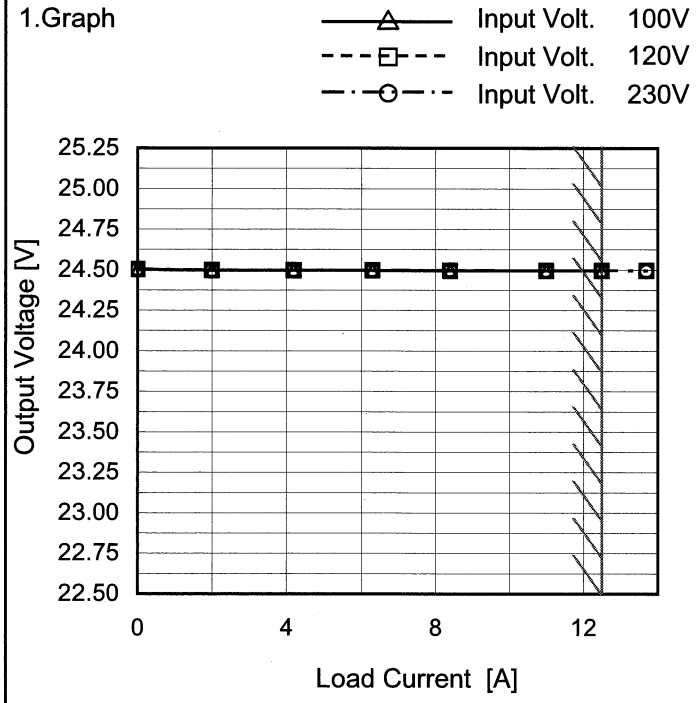
Model	GHA300F-24
Item	Load Regulation
Object	+24V12.5A

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	24.502	24.503	24.503
2.0	24.498	24.498	24.498
4.2	24.497	24.497	24.498
6.3	24.497	24.497	24.497
8.4	24.496	24.496	24.496
11.0	24.495	24.496	24.495
12.5	24.495	24.495	24.495
13.7	-	24.494	24.494
--	-	-	-
--	-	-	-
--	-	-	-

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Model	GHA300F-24		
Item	Dynamic Load Response	Temperature	25℃
		Testing Circuitry	Figure A
Object	+24V 12.5A		

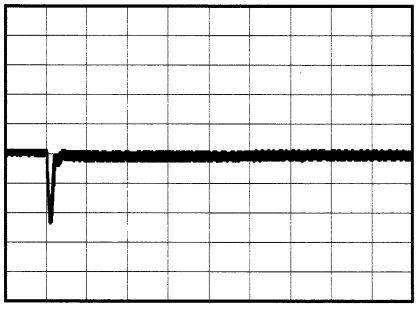
Input Volt. 120V
Cycle 1000ms

Load Current

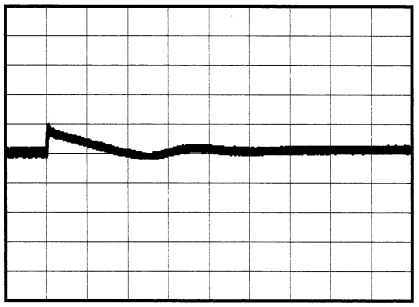
12.5A / 50us

Min.Load (0A)←→
Load 100%(12.5A)

500 mV/div



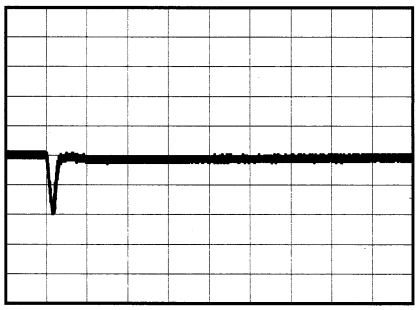
1 ms/div



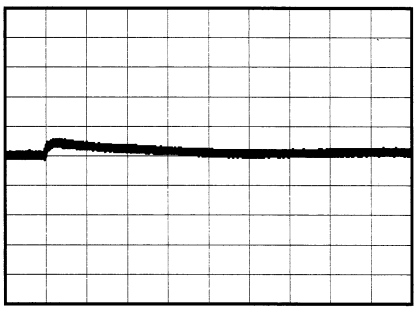
1 ms/div

Min.Load (0A)←→
Load 50%(6.25A)

500 mV/div



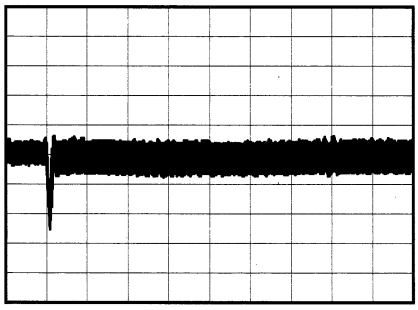
1 ms/div



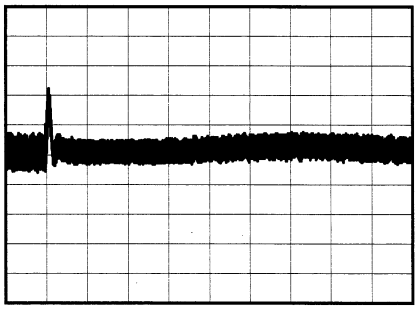
1 ms/div

Load 50% (6.25A)←→
Load 100% (12.5A)

100 mV/div



1 ms/div



1 ms/div

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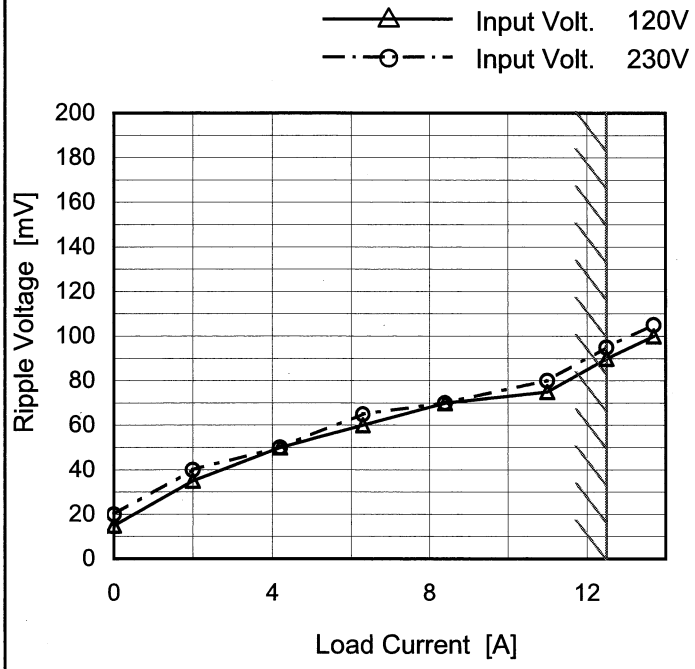
Model	GHA300F-24
Item	Ripple Voltage (by Load Current)
Object	+24V12.5A

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.

Ripple [mVp-p]

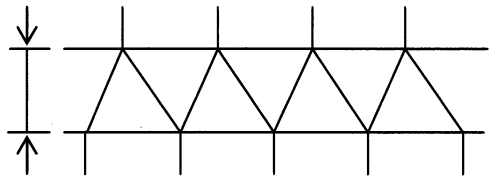


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
0.0	15	20
2.0	35	40
4.2	50	50
6.3	60	65
8.4	70	70
11.0	75	80
12.5	90	95
13.7	100	105
--	-	-
--	-	-
--	-	-

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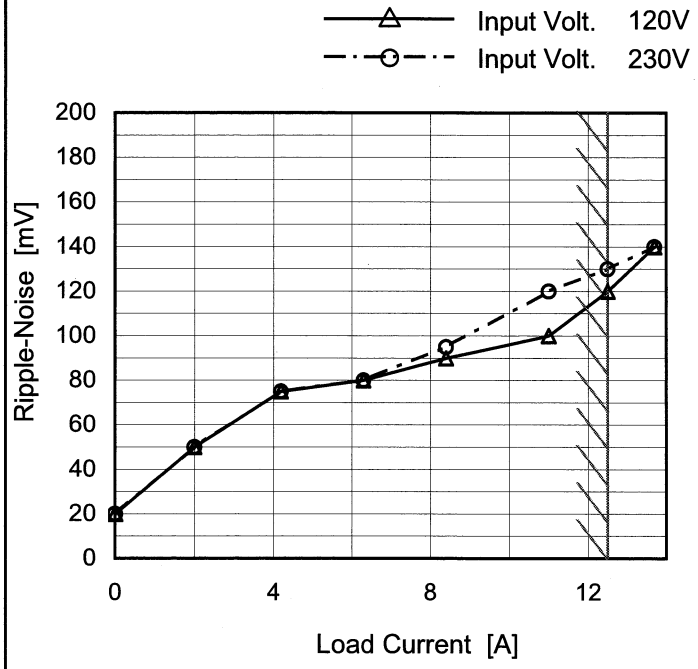
Model	GHA300F-24
Item	Ripple-Noise
Object	+24V12.5A

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.

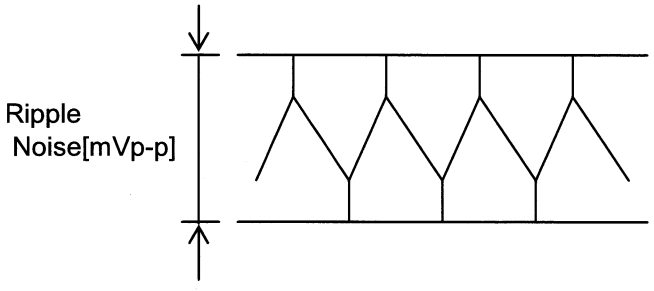


Fig.Complex Ripple Noise Wave Form

2.Values

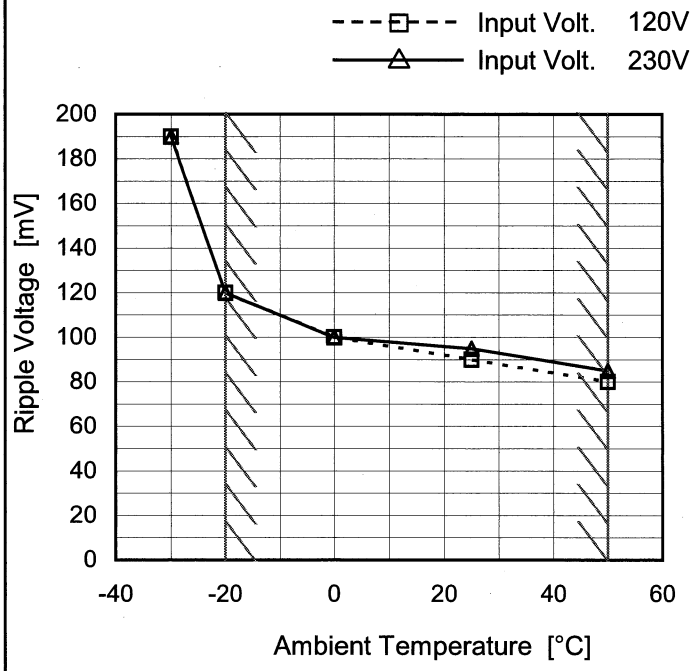
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
0.0	20	20
2.0	50	50
4.2	75	75
6.3	80	80
8.4	90	95
11.0	100	120
12.5	120	130
13.7	140	140
--	-	-
--	-	-
--	-	-

COSEL

Model	GHA300F-24
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.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
-30	190	190
-20	120	120
0	100	100
25	90	95
50	80	85
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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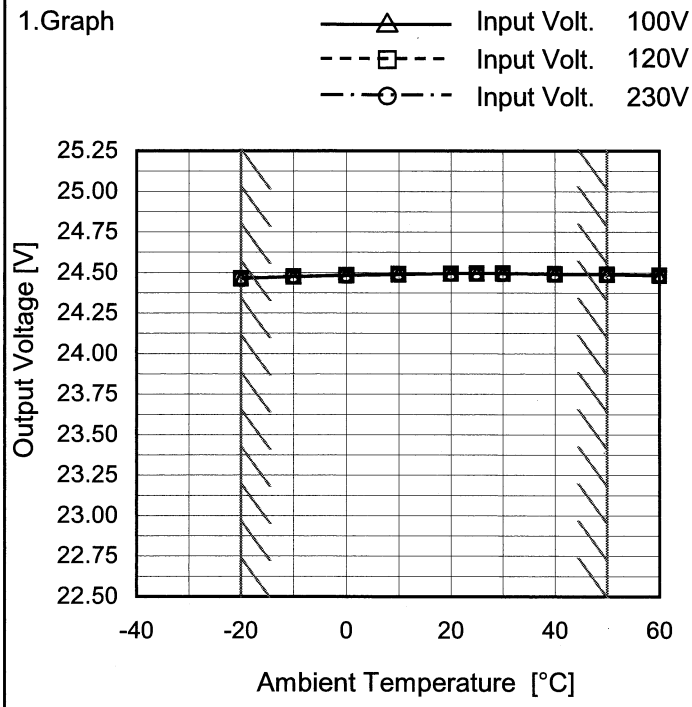
Model	GHA300F-24
Item	Ambient Temperature Drift
Object	+24V12.5A

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	24.464	24.465	24.465
-10	24.475	24.475	24.475
0	24.483	24.483	24.483
10	24.490	24.491	24.490
20	24.495	24.494	24.494
25	24.495	24.495	24.495
30	24.495	24.495	24.495
40	24.491	24.491	24.491
50	24.489	24.489	24.489
60	24.483	24.483	24.484
--	-	-	-

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

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COSEL

Model	GHA300F-24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V12.5A	

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

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2.Values

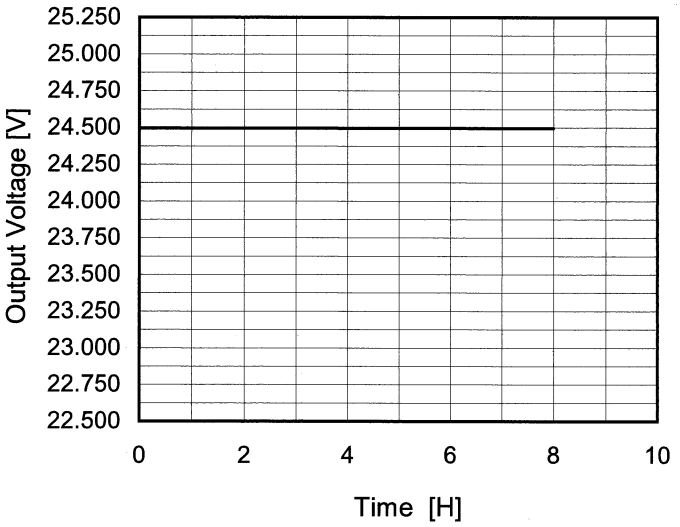
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	230	0	24.503	±20	±0.1
Minimum Voltage	-20	115	12.5	24.464		

COSEL

Model	GHA300F-24
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.

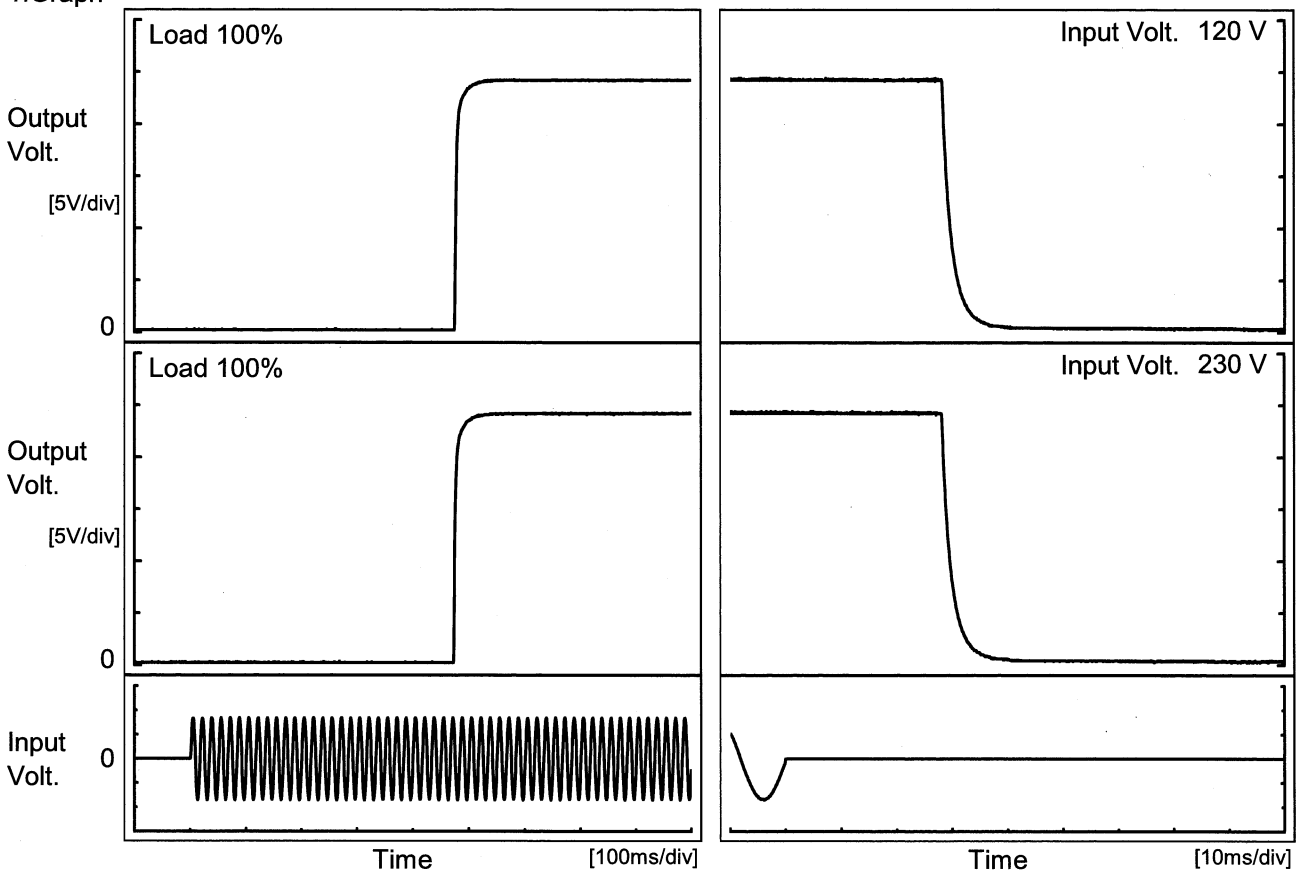
2.Values

Time since start [H]	Output Voltage [V]
0.0	24.495
0.5	24.496
1.0	24.496
2.0	24.496
3.0	24.496
4.0	24.496
5.0	24.496
6.0	24.496
7.0	24.496
8.0	24.498

COSEL

Model	GHA300F-24	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+24V12.5A	

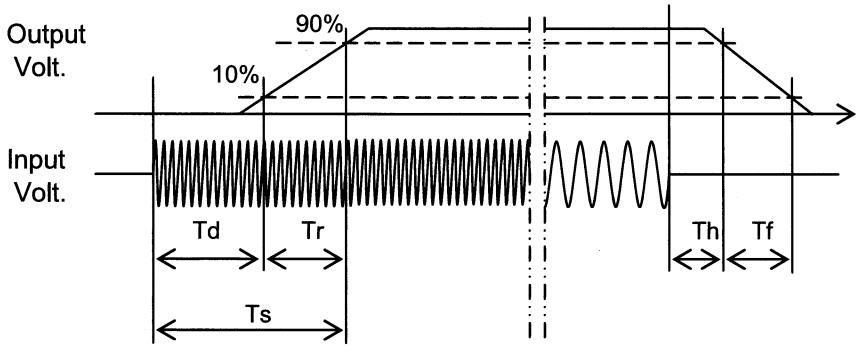
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
120 V	476.0	9.5	485.5	28.3	4.2
230 V	474.0	9.0	483.0	28.3	4.2

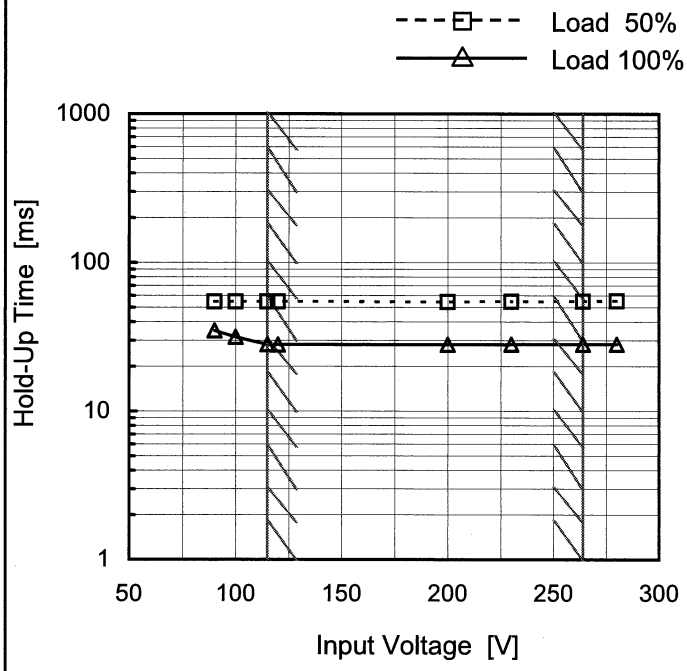


COSEL

Model	GHA300F-24
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	55	35 ※1
100	55	32 ※2
115	55	28
120	55	28
200	54	28
230	55	28
264	55	28
280	55	28
--	-	-

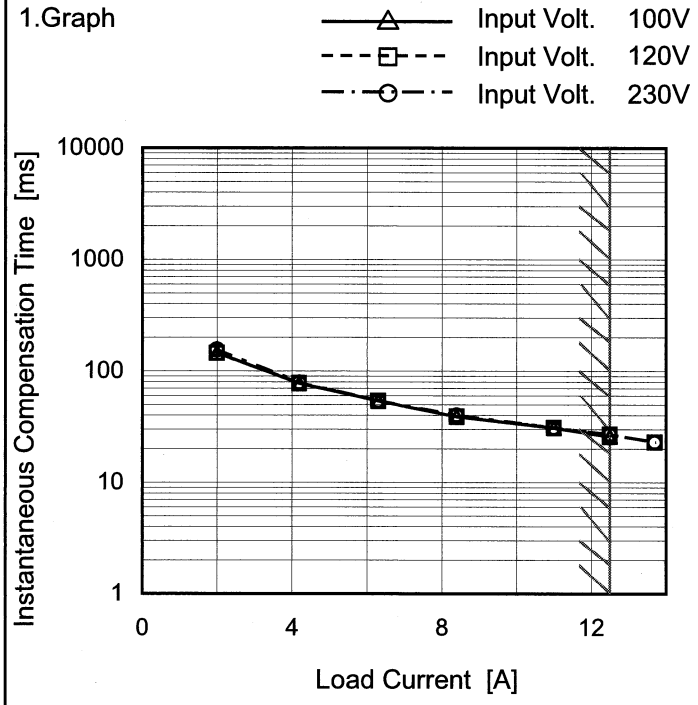
※1:Load 80%
※2:Load 88%

COSEL

Model	GHA300F-24
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	146	145	156
4.2	78	78	79
6.3	54	54	54
8.4	39	39	40
11.0	31	31	31
12.5	26	27	27
13.7	-	23	23
--	-	-	-
--	-	-	-
--	-	-	-

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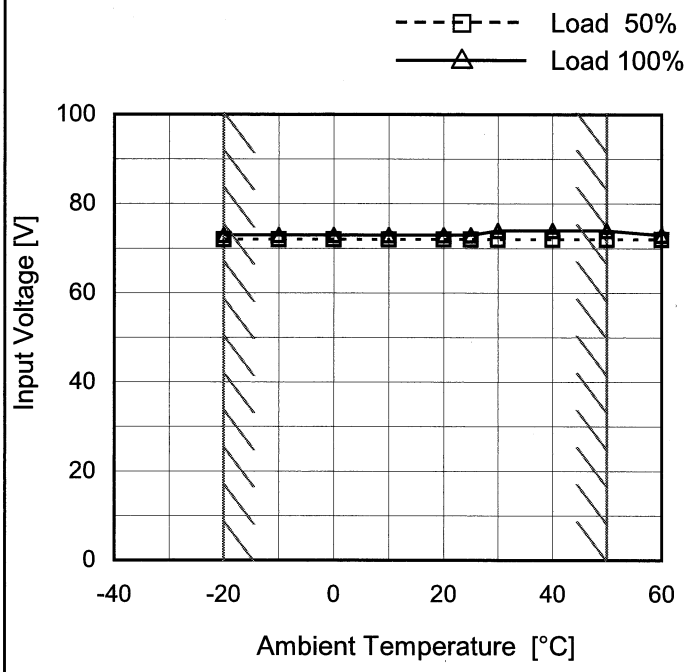
COSEL

Model	GHA300F-24
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

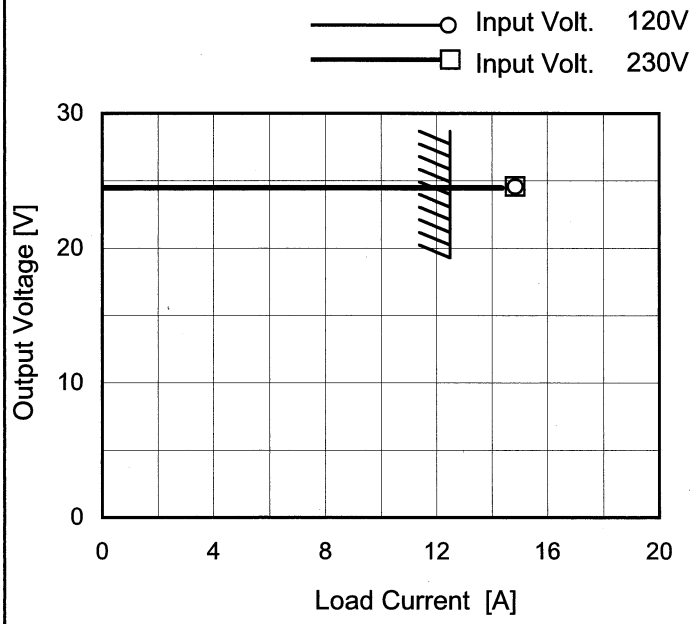
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	72	73
-10	72	73
0	72	73
10	72	73
20	72	73
25	72	73
30	72	74
40	72	74
50	72	74
60	72	73
--	-	-

COSEL

Model	GHA300F-24
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

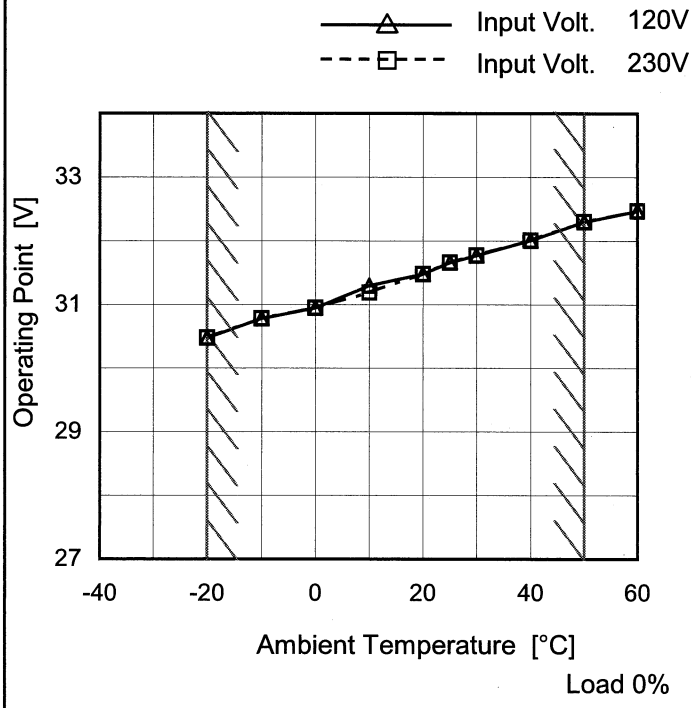
Output Voltage [V]	Load Current [A]	
	Input Volt. 120[V]	Input Volt. 230[V]
24	14.38	14.39
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GHA300F-24
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	30.48	30.48
-10	30.78	30.78
0	30.95	30.95
10	31.30	31.19
20	31.48	31.48
25	31.66	31.66
30	31.77	31.77
40	32.01	32.01
50	32.30	32.30
60	32.47	32.47
--	-	-

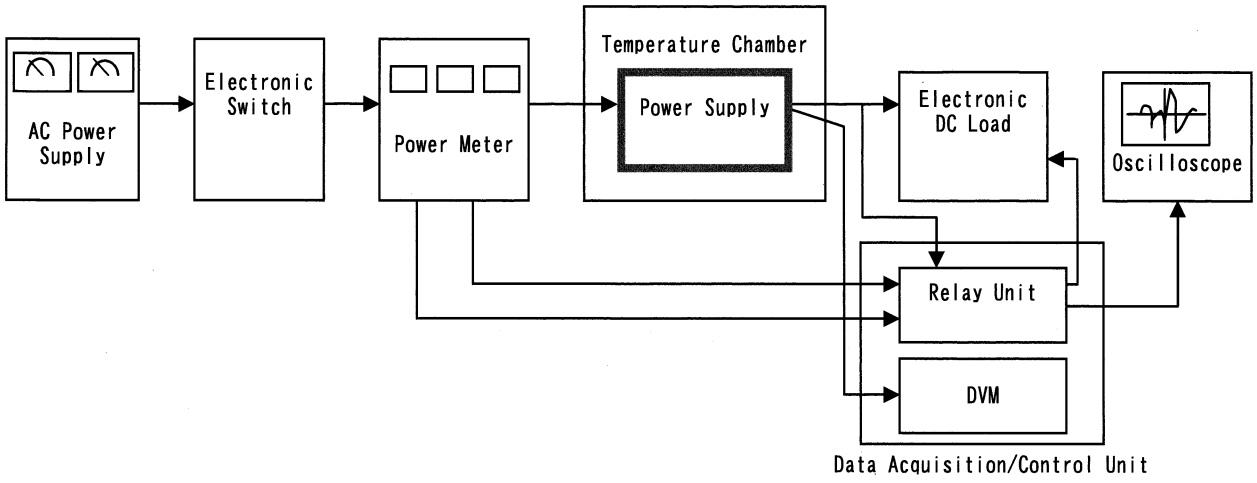


Figure A

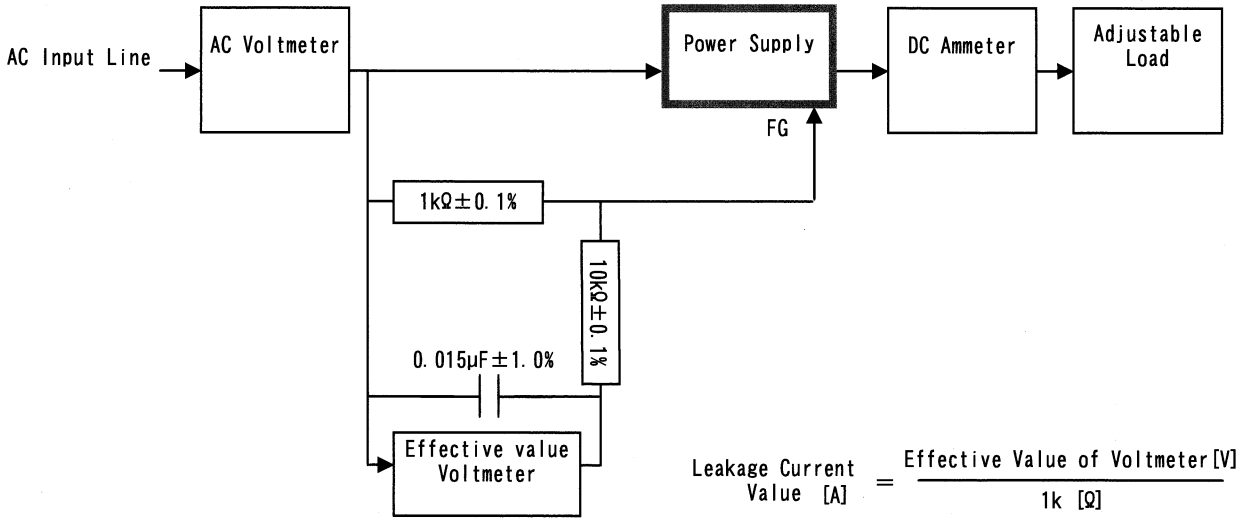


Figure B (IEC60601-1)