

Test Data

Model Number: GPSA-600-24P

Model Name: DC POWER SUPPLY

INPUT: 85V – 264V AC, 50 / 60 Hz

OUTPUT: 24 V 25.0A (50 A_{peak} at 100V AC)
(60 A_{peak} at 200V AC)
12VSB 0.5A

Minimum load : 0W

Rated load :606W

Peak output power: 1206W(at 100V AC)
1446W(at 200V AC)Approved by : Makoto Urusei (QA manager)Designed by : Akira Takami (R&D engineer)Tested by : Kohei Sawada (Evaluation test engineer)

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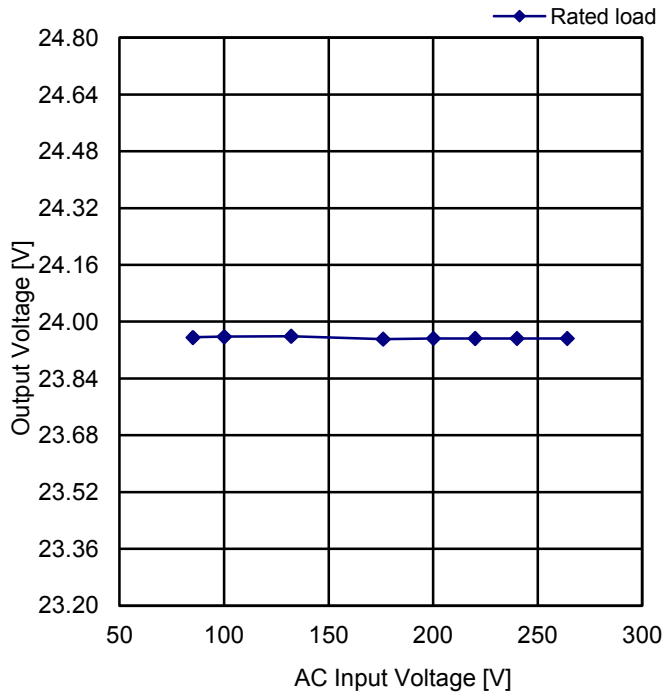
Model	GPSA-600-24P	Temperature: 25°C																																					
Item	Input Current (by Load Power)																																						
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Load Power [W]	Input Current [A rms]																																						
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151.5	2.32	1.99	0.89	0.83																																			
303.0	4.38	3.67	1.61	1.49																																			
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Load Power [W]	Power Factor [%]																															
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303.0	96.3	95.6	89.0	86.8																												
454.5	97.9	97.3	92.0	90.1																												
606.0	98.7	98.3	94.1	92.4																												

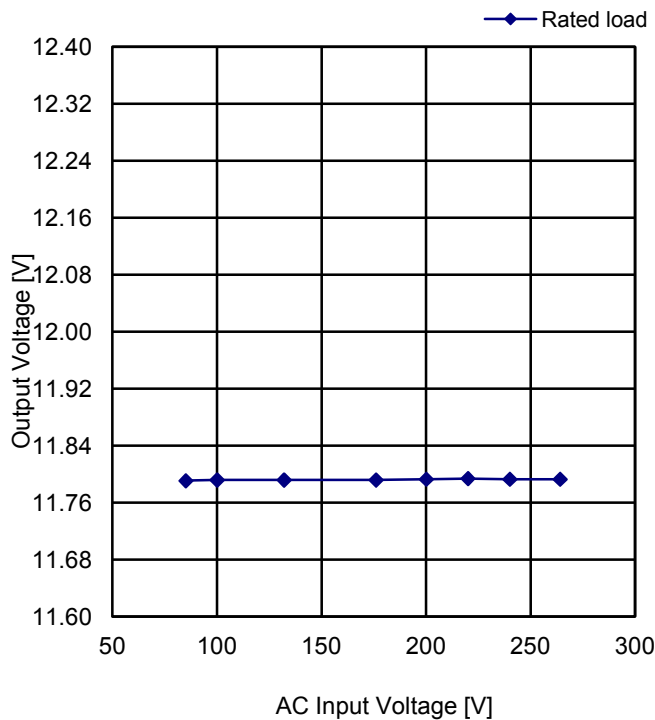
Model	GPSA-600-24P	Temperature: 25°C
Item	Line Regulation	

24V/25A



AC Input Voltage [V]	Output Voltage [V]
85	23.956
100	23.958
132	23.959
176	23.951
200	23.953
220	23.953
240	23.953
264	23.953

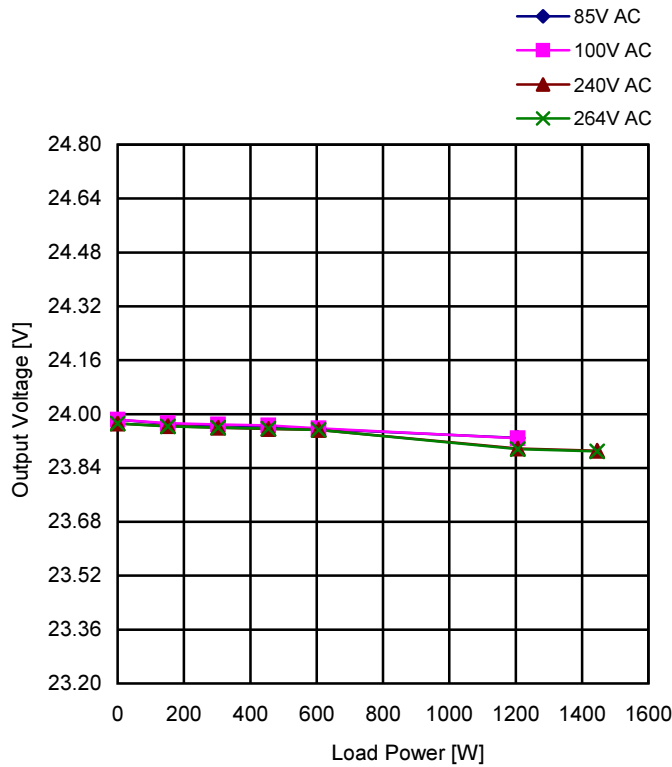
12VSB/0.5A



AC Input Voltage [V]	Output Voltage [V]
85	11.791
100	11.792
132	11.792
176	11.792
200	11.793
220	11.794
240	11.793
264	11.793

Model	GPSA-600-24P	Temperature: 25°C
Item	Load Regulation	

24V

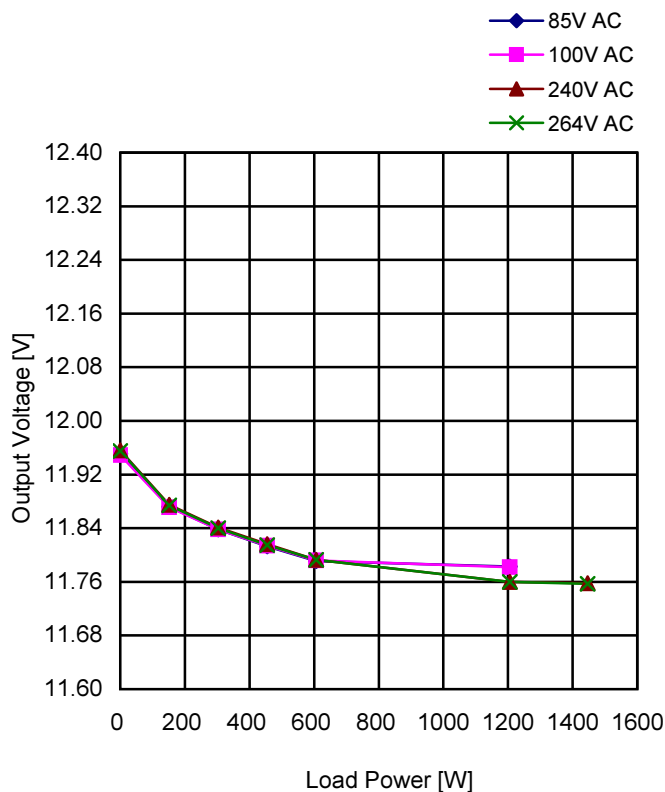


Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	23.983	23.983	23.972	23.972
151.5	23.971	23.973	23.964	23.963
303.0	23.967	23.969	23.960	23.960
454.5	23.963	23.966	23.956	23.957
606.0	23.956	23.958	23.953	23.953
1206.0	23.929	23.928	23.898	23.896
1446.0	-	-	23.891	23.889

Load Condition

Load Power [W]	Load Current [A]
	24V
0.0	0.00
151.5	6.25
303.0	12.50
454.5	18.75
606.0	25.00
1206.0	50.00
1446.0	60.00

12VSB



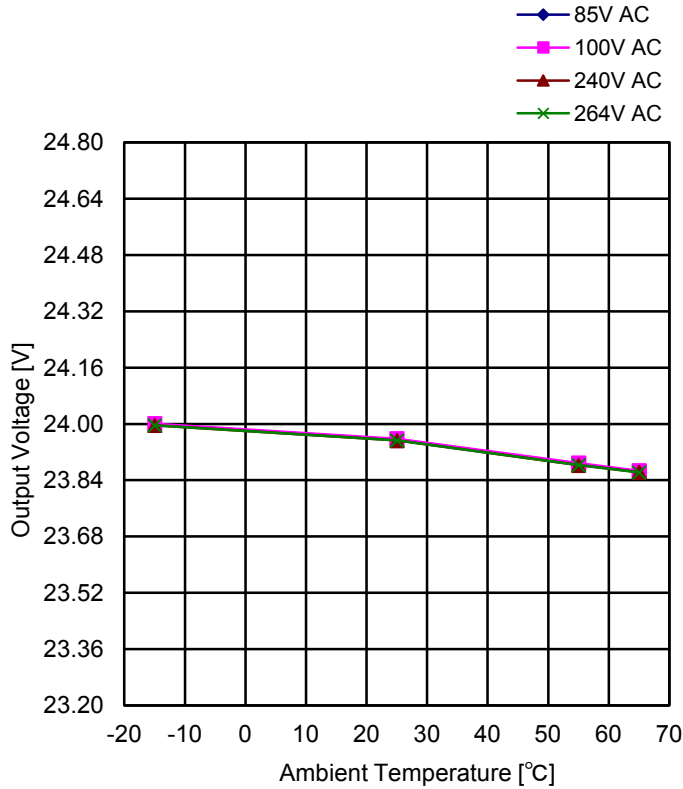
Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	11.951	11.949	11.956	11.955
151.5	11.872	11.871	11.875	11.874
303.0	11.838	11.838	11.841	11.840
454.5	11.813	11.814	11.816	11.815
606.0	11.791	11.792	11.793	11.793
1206.0	11.783	11.782	11.760	11.760
1446.0	-	-	11.758	11.757

Load Condition

Load Power [W]	Load Current [A]
	12VSB
0.0	0.00
151.5	0.125
303.0	0.25
454.5	0.375
606.0	0.50
1206.0	0.50
1446.0	0.50

Model	GPSA-600-24P
Item	Ambient Temperature Drift

24V

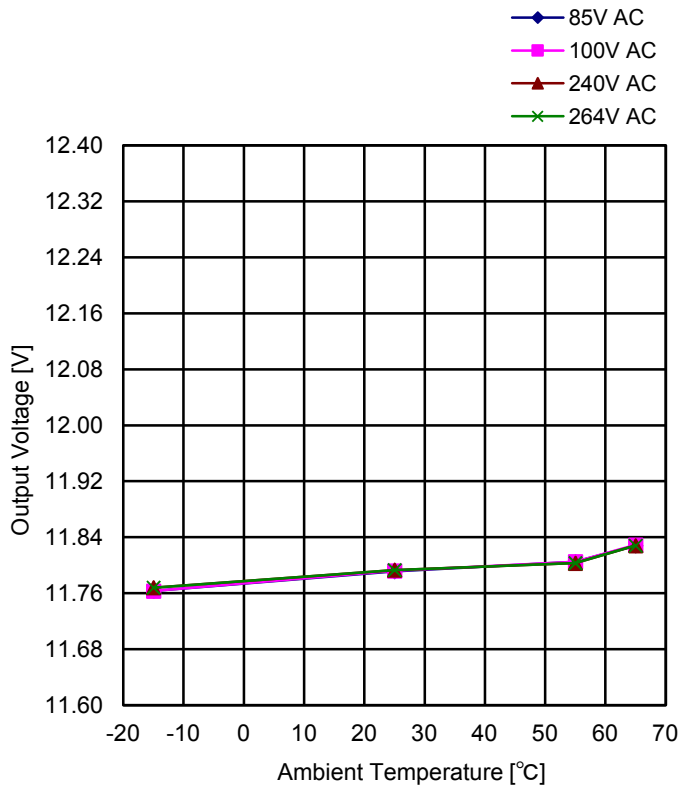


Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	23.999	24.001	23.996	23.996
25	23.956	23.958	23.953	23.953
55	23.887	23.889	23.883	23.883
65	23.863	23.867	23.863	23.862

Load Condition

Ambient Temp. (°C)	Load Current [A]
	24V
-15	25.00
25	25.00
55	25.00
65	20.00

12VSB



Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	11.763	11.763	11.768	11.768
25	11.791	11.792	11.793	11.793
55	11.805	11.805	11.803	11.803
65	11.828	11.829	11.828	11.828

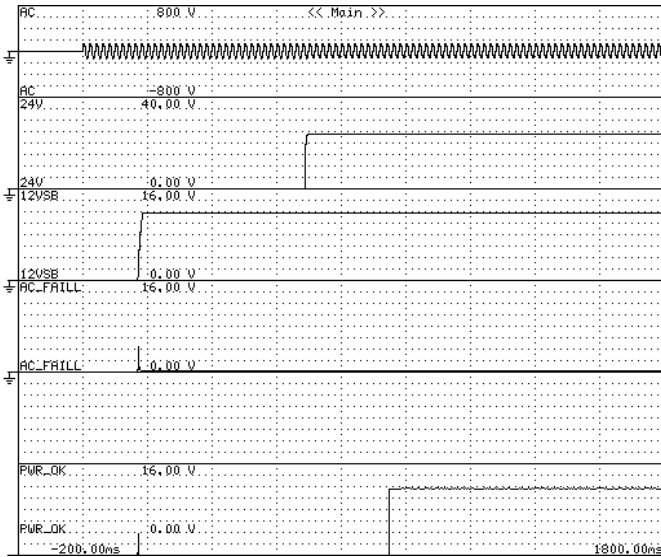
Load Condition

Ambient Temp. (°C)	Load Current [A]
	12VSB
-15	0.50
25	0.50
55	0.50
65	0.40

Model	GPSA-600-24P	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

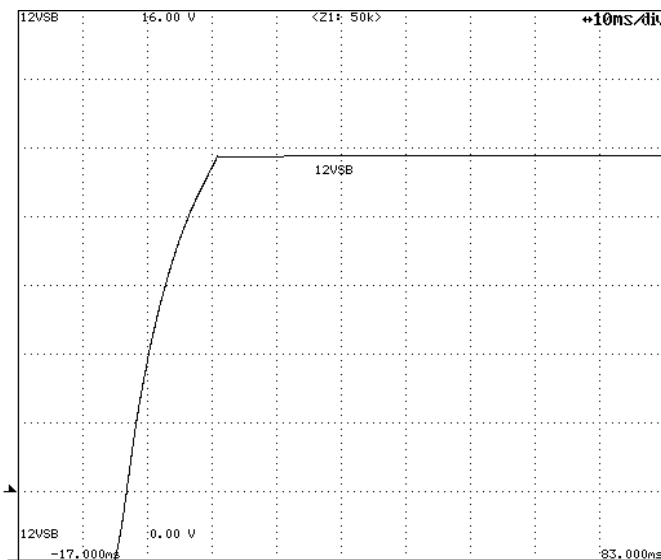
Input: 100V AC
Load: Rated Load

Timebase Range: 200ms/div



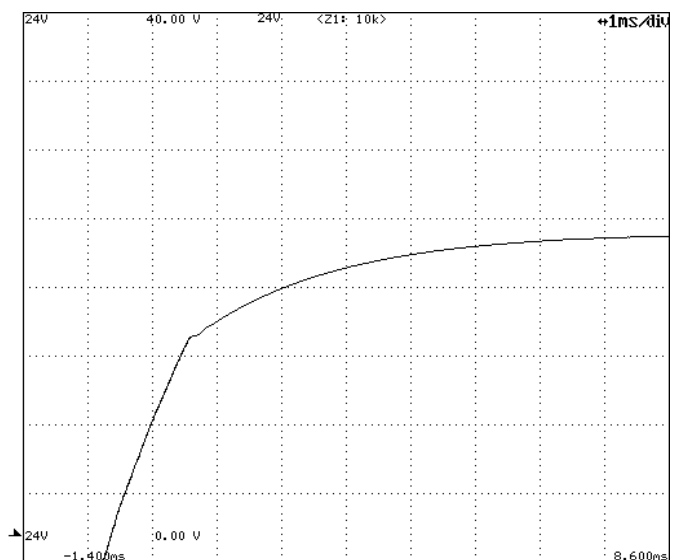
All Output Start-up Sequence

**Vertical Sensitivity: 2V/div
Timebase Range: 10ms/div**



12VSB DC Output Rise Characteristics

**Vertical Sensitivity: 5V/div
Timebase Range: 1ms/div**

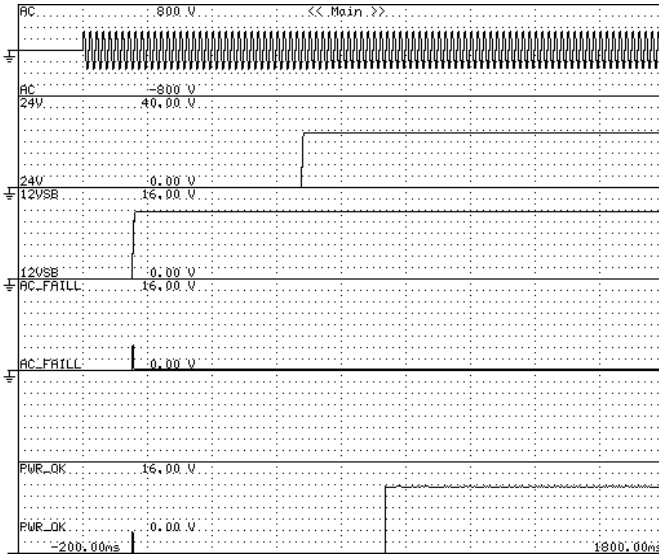


24V DC Output Rise Characteristics

Model	GPSA-600-24P	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

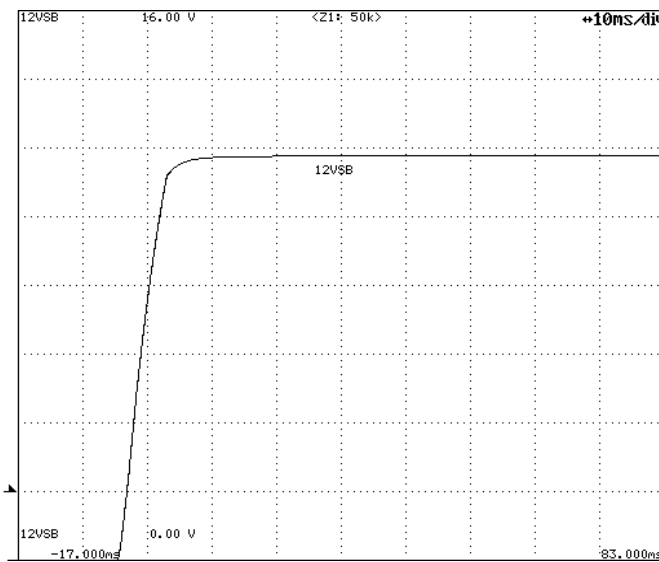
Input: 240V AC
Load: Rated Load

Timebase Range: 200ms/div



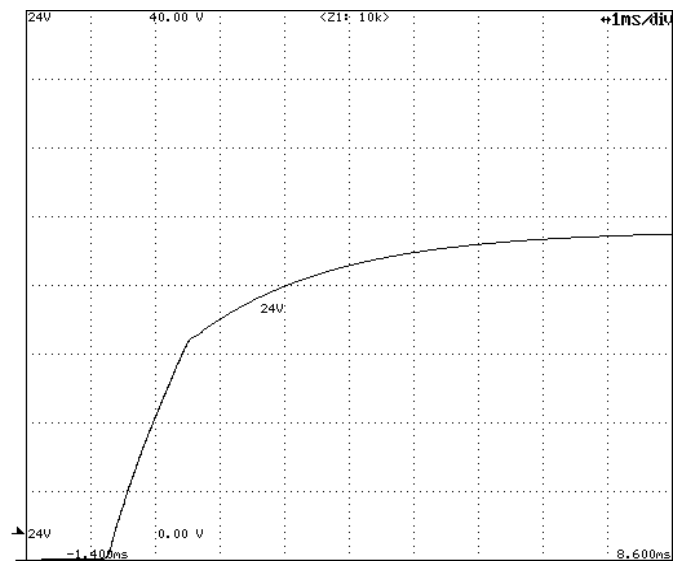
All Output Start-up Sequence

**Vertical Sensitivity: 2V/div
Timebase Range: 10ms/div**



12VSB DC Output Rise Characteristics

**Vertical Sensitivity: 5V/div
Timebase Range: 1ms/div**



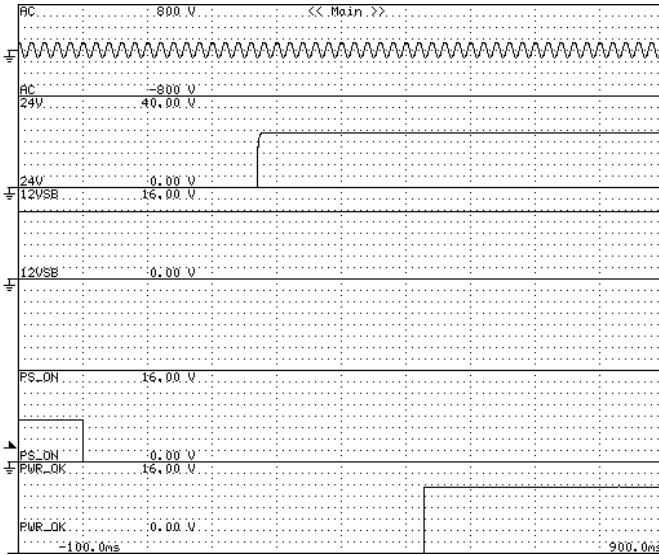
24V DC Output Rise Characteristics

Model	GPSA-600-24P	Temperature: 25°C
Item	Output Rise Characteristics (at Remote ON)	

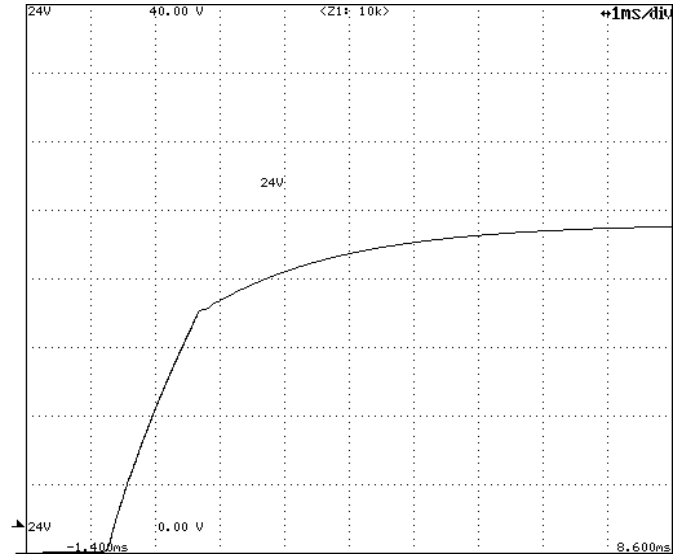
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div

Vertical Sensitivity: 5V/div
Timebase Range: 1ms/div



All Output Start-up Sequence

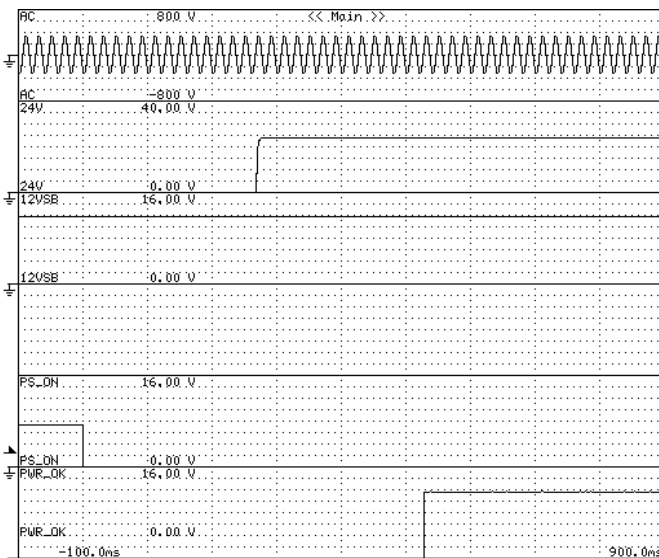


24V DC Output Rise Characteristics

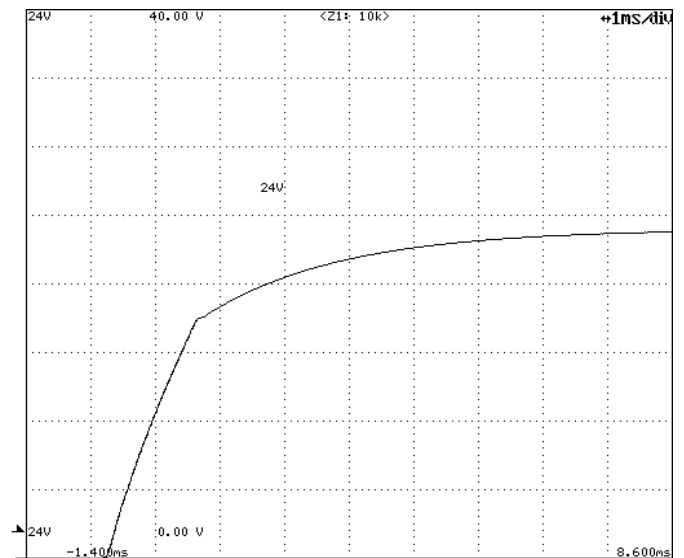
Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div

Vertical Sensitivity: 5V/div
Timebase Range: 1ms/div



All Output Start-up Sequence



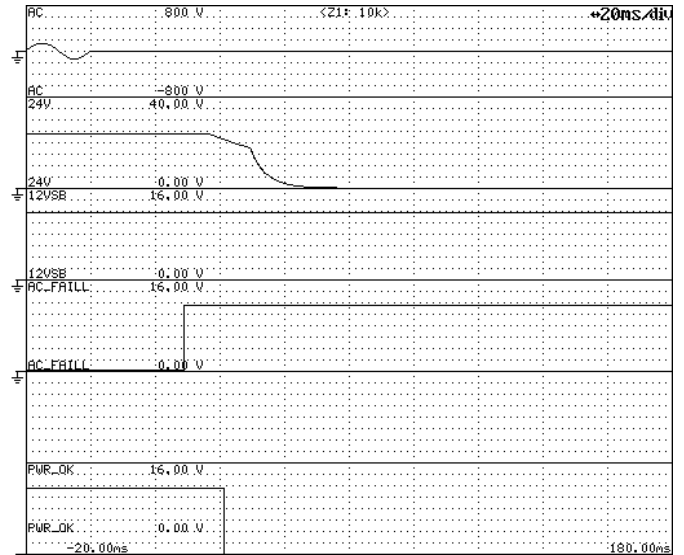
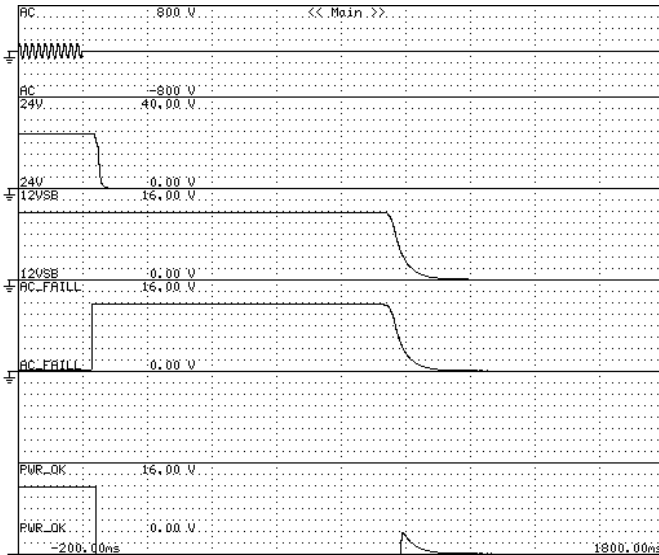
24V DC Output Rise Characteristics

Model	GPSA-600-24P	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

Input: 100V AC
Load: Rated Load

Timebase Range: 200ms/div

Timebase Range: 20ms/div



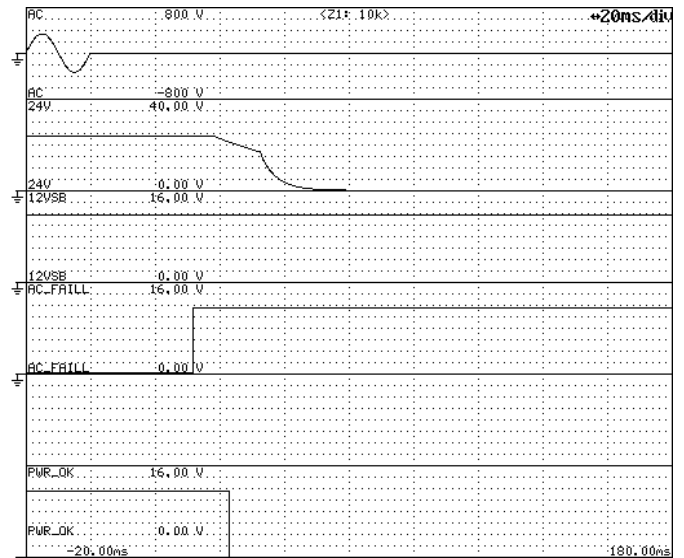
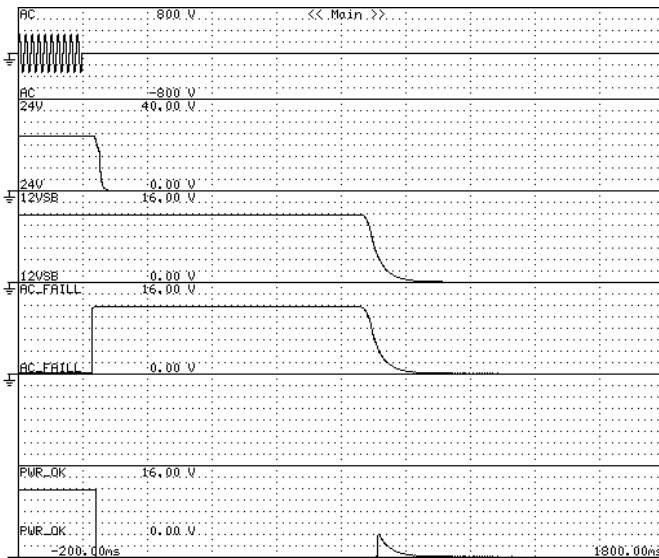
Output Fall Characteristics

Output Fall Characteristics (magnification)

Input: 240V AC
Load: Rated Load

Timebase Range: 200ms/div

Timebase Range: 20ms/div



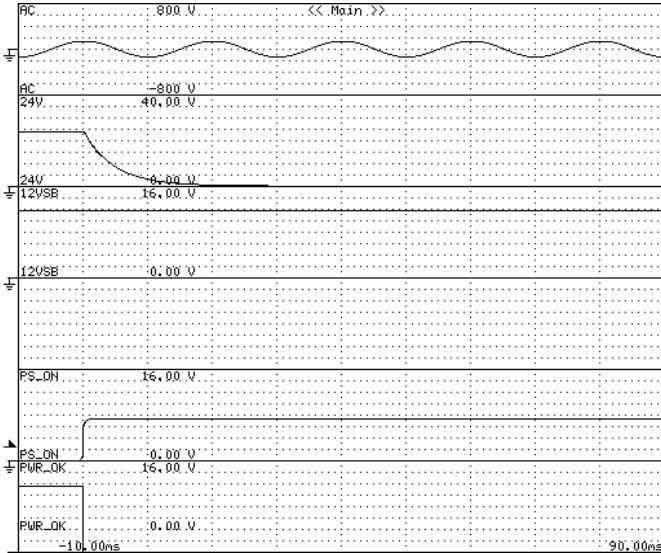
Output Fall Characteristics

Output Fall Characteristics (magnification)

Model	GPSA-600-24P	Temperature: 25°C
Item	Output Fall Characteristics (at Remote OFF)	

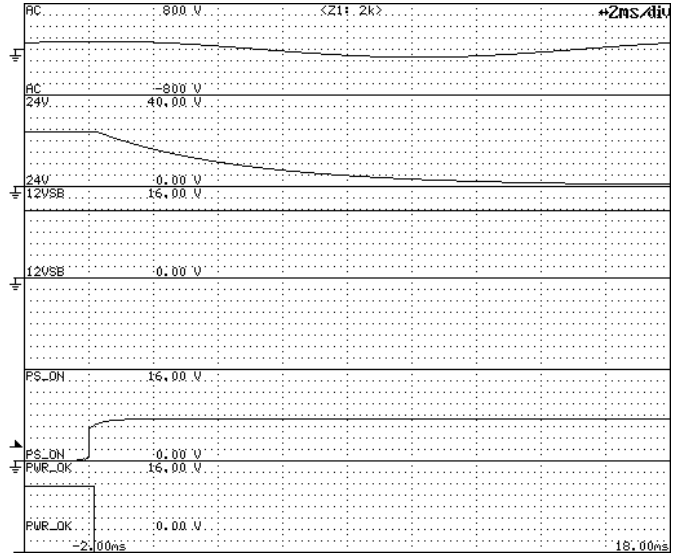
Input: 100V AC
Load: Rated Load

Timebase Range: 10ms/div



Output Fall Characteristics

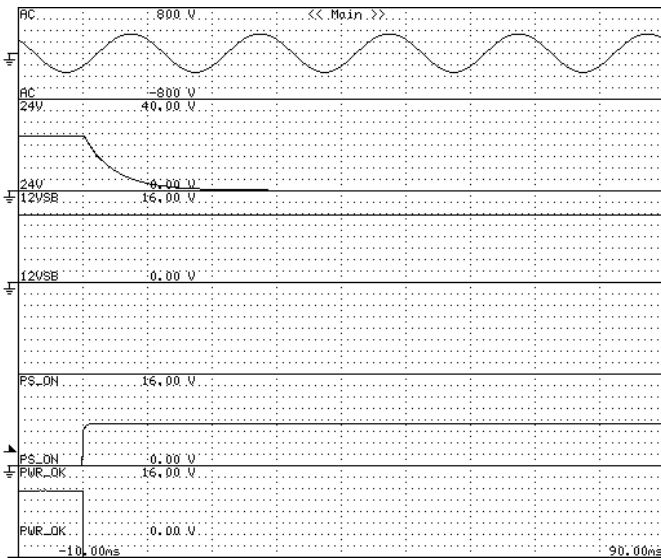
Timebase Range: 2ms/div



Output Fall Characteristics (magnification)

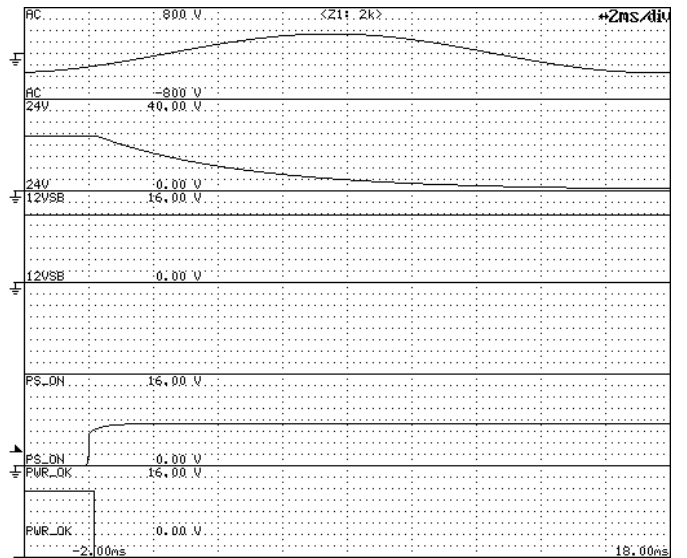
Input: 240V AC
Load: Rated Load

Timebase Range: 10ms/div



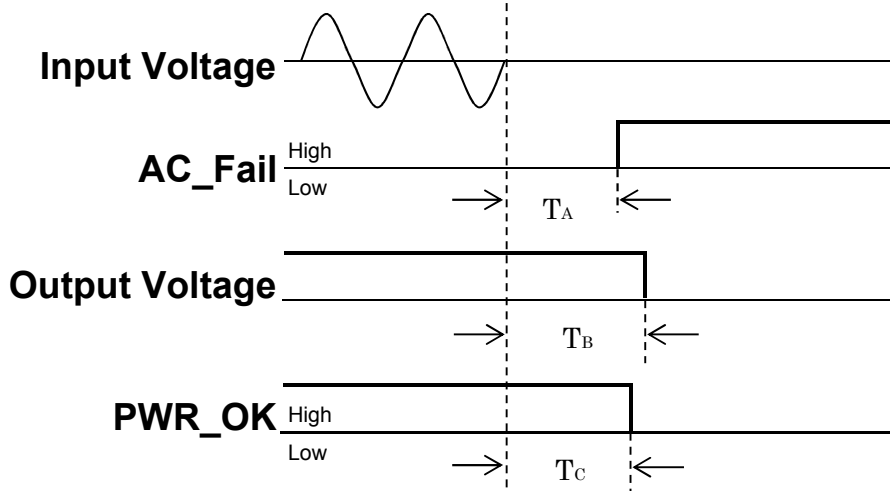
Output Fall Characteristics

Timebase Range: 2ms/div

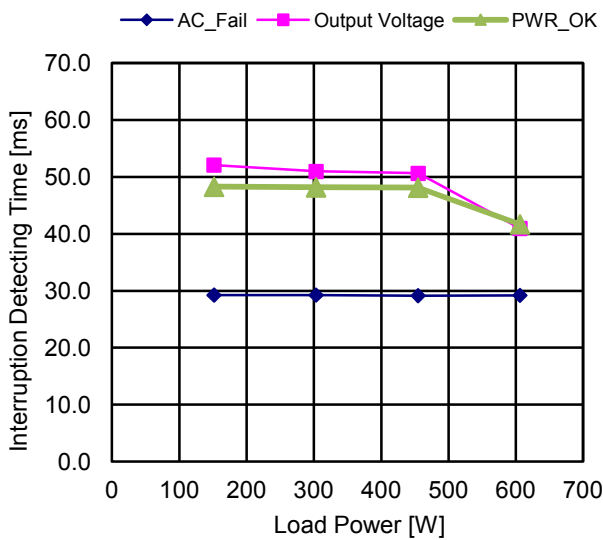


Output Fall Characteristics (magnification)

Model	GPSA-600-24P	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

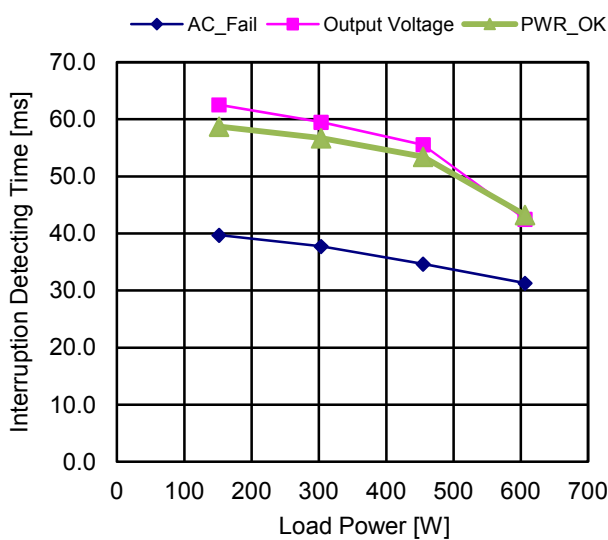


Input Voltage: 100V AC



Load Power [W]	Interruption Detecting Time [ms]		
	AC_Fail	Output Voltage	PWR_OK
	T _A	T _B	T _C
151.5	29.3	52.1	48.3
303.0	29.3	51.0	48.2
454.5	29.2	50.7	48.2
606.0	29.2	41.0	41.7

Input Voltage: 240V AC



Load Power [W]	Interruption Detecting Time [ms]		
	AC_Fail	Output Voltage	PWR_OK
	T _A	T _B	T _C
151.5	39.7	62.6	58.8
303.0	37.8	59.5	56.7
454.5	34.7	55.6	53.5
606.0	31.3	42.5	43.3

Model	GPSA-600-24P	Temperature: 25°C
Item	Start-Up Voltage	

Timebase Range: 200ms/div
Load: Rated Load

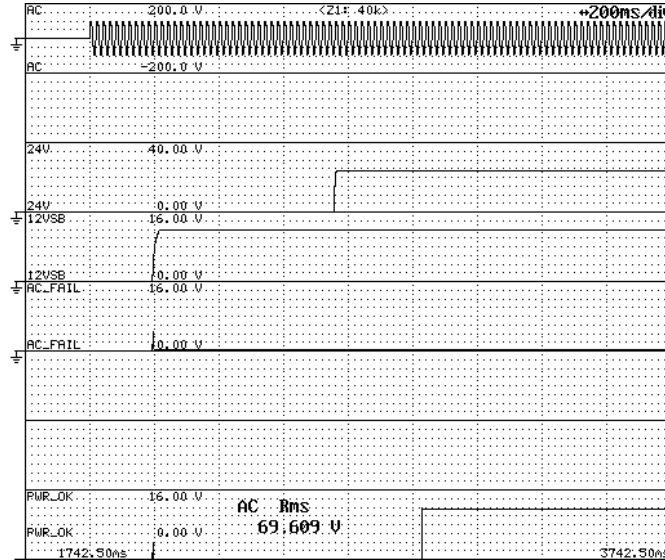
AC Input

+24V

+12VSB

AC_FAIL

PWR_OK



Start-up Voltage: 69.6V AC

Timebase Range: 200ms/div
Load: Minimum Load

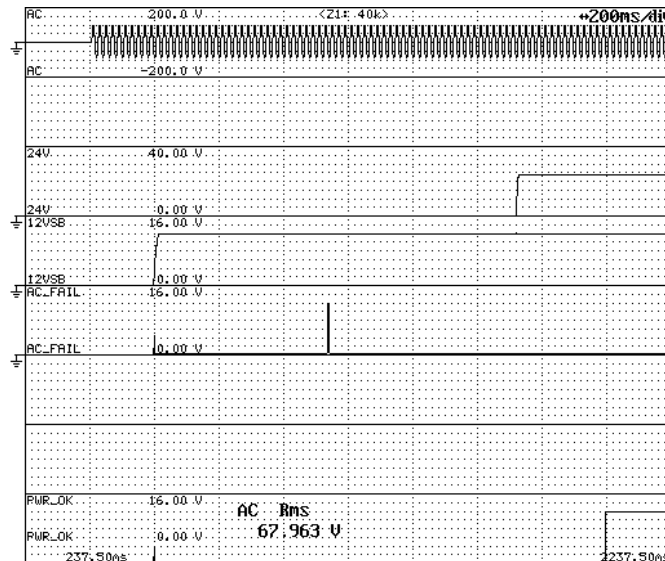
AC Input

+24V

+12VSB

AC_FAIL

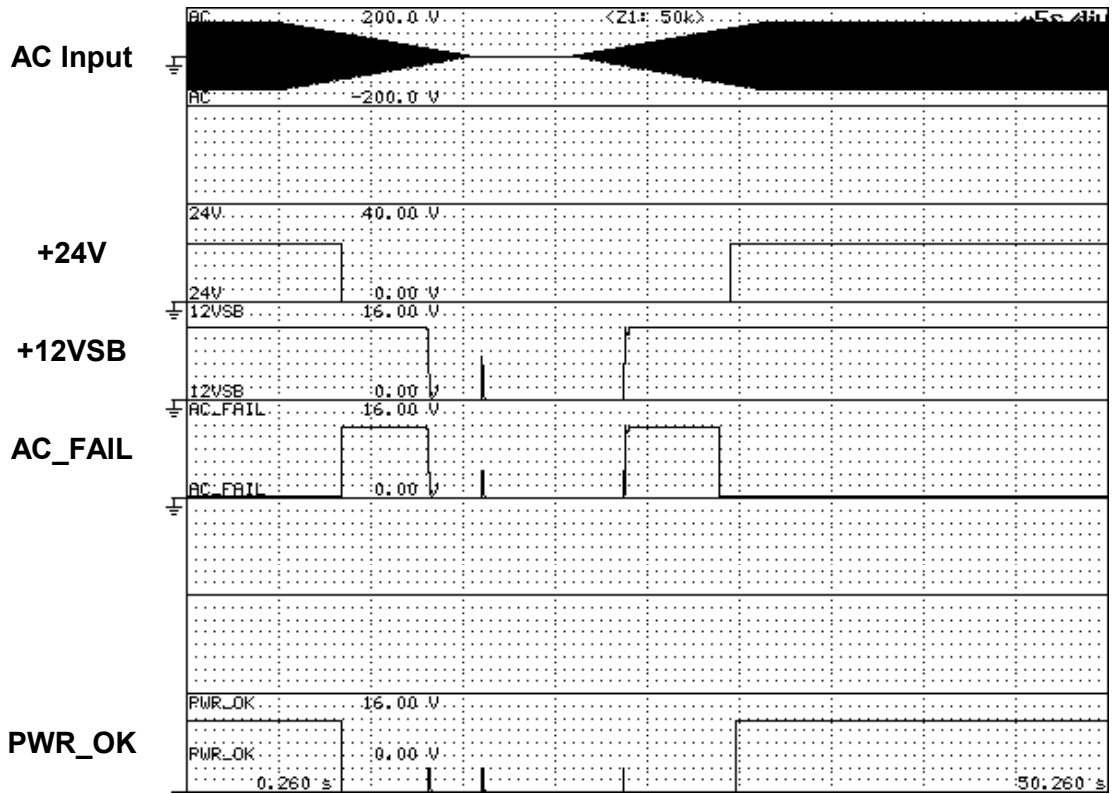
PWR_OK



Start-up Voltage: 68.0V AC

Model	GPSA-600-24P	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

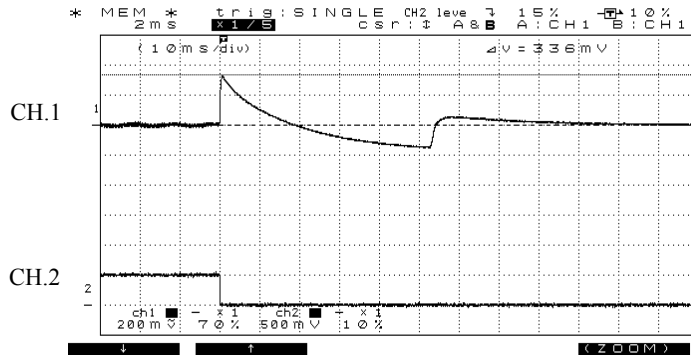
Timebase Range: 5s/div
Load: Rated Load



Sweep Rate: 10Vave/sec

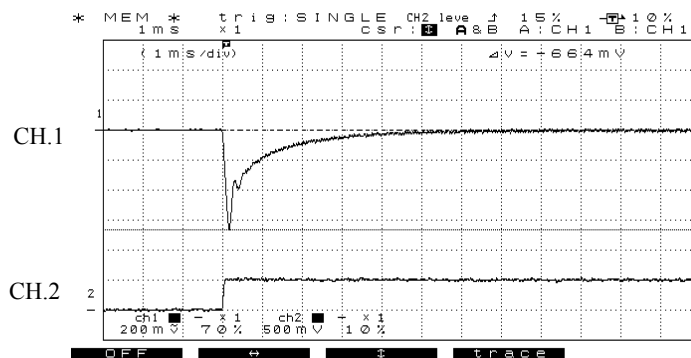
Model	GPSA-600-24P	Temperature: 25°C
Item	Dynamic Load Response	

+24V DC Output Transient Response Waveforms



Waveform 1

CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 200mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 25A/div
Timebase Range	10ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Rated Load(25A) → Minimum load(0A)	

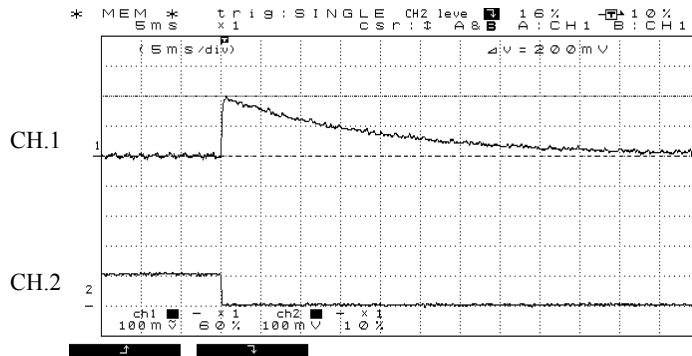


Waveform 2

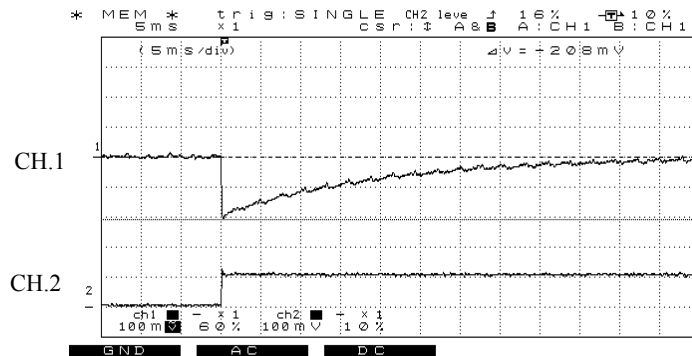
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 200mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 25A/div
Timebase Range	1ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Minimum load(0A) → Rated Load(25A)	

Model	GPSA-600-24P	Temperature: 25°C
Item	Dynamic Load Response	

12VSB Output Transient Response Waveforms

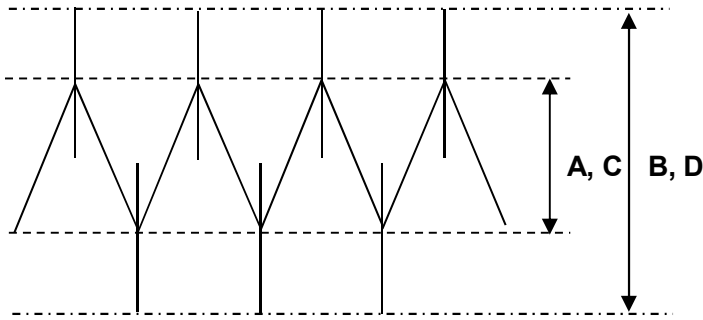


Waveform 3	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 0.5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Rated Load(0.5A) → Minimum load(0A)	



Waveform 4	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 0.5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Minimum load(0A) → Rated Load(0.5A)	

Model	GPSA-600-24P	Load: Rated Load
Item	Ripple / Noise Voltage	



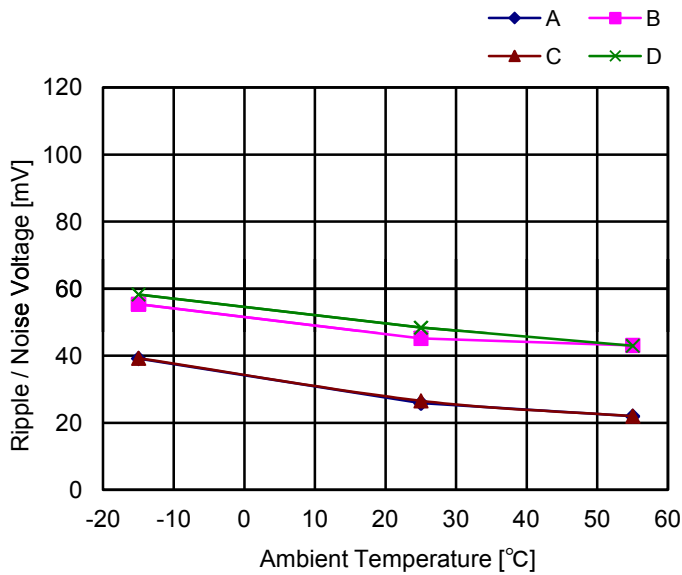
at 100V AC

A: Ripple Voltage (mV_{P-P})
B: Noise Voltage (mV_{P-P})

at 240V AC

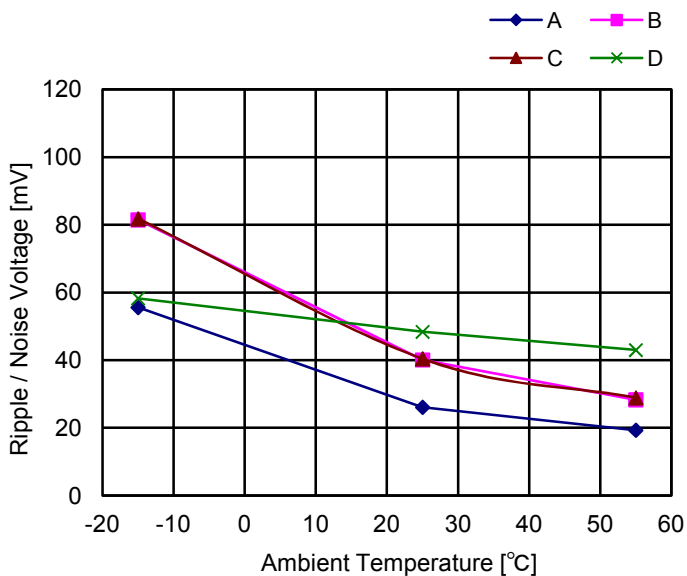
C: Ripple Voltage (mV_{P-P})
D: Noise Voltage (mV_{P-P})

24V



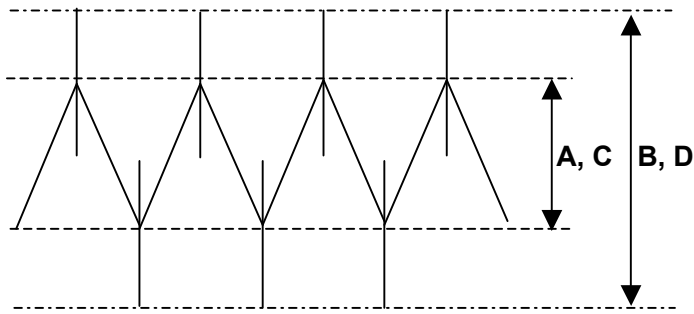
Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	39.2	55.4	39.3	58.3
25	25.9	45.2	26.6	48.4
55	22.0	43.1	22.0	43.0

12VSB



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	55.6	81.5	54.7	81.8
25	26.1	40.1	26.3	40.4
55	19.3	28.3	19.4	28.9

Model	GPSA-600-24P	Temperature: 25°C
Item	Ripple / Noise Voltage	



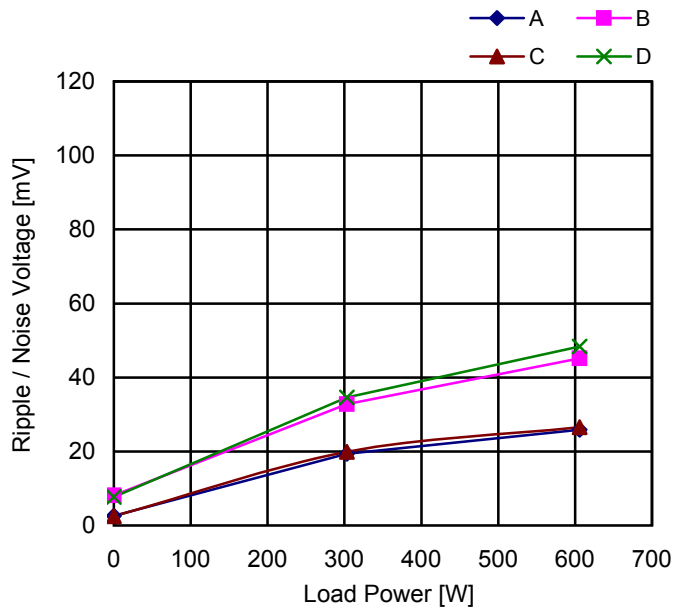
at 100V AC

A: Ripple Voltage (mV_{P-P})
B: Noise Voltage (mV_{P-P})

at 240V AC

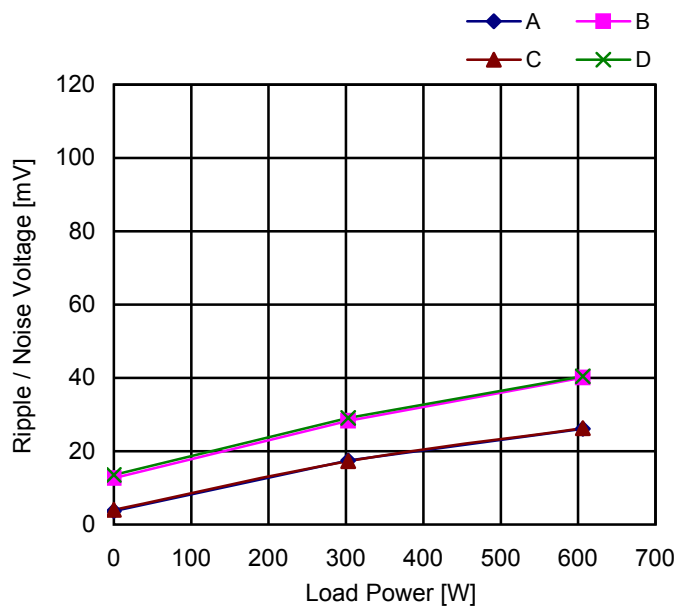
C: Ripple Voltage (mV_{P-P})
D: Noise Voltage (mV_{P-P})

24V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	2.6	8.1	2.5	7.7
303.0	19.4	32.8	19.9	34.6
606.0	25.9	45.2	26.6	48.4

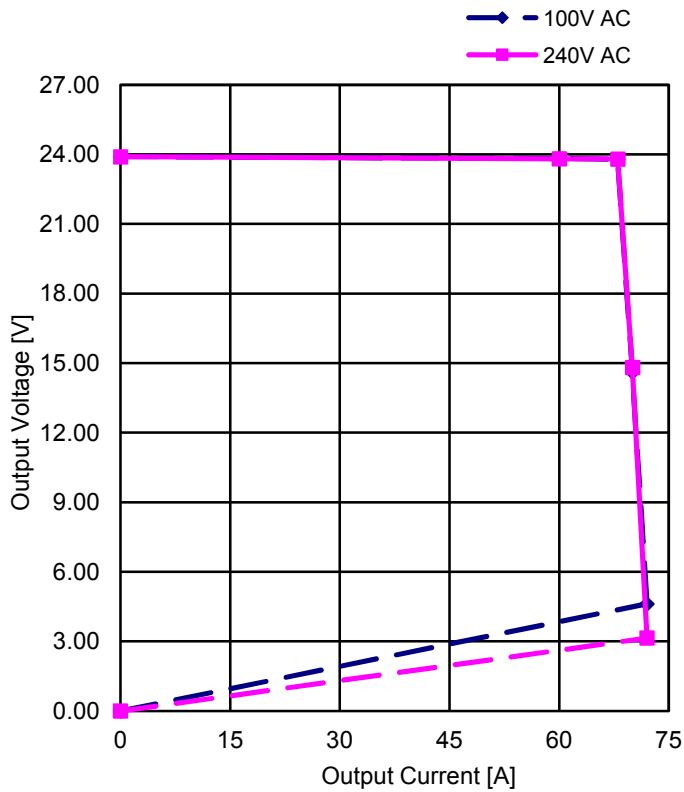
12VSB



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	3.7	12.7	4.0	13.5
303.0	17.5	28.3	17.3	29.1
606.0	26.1	40.1	26.3	40.4

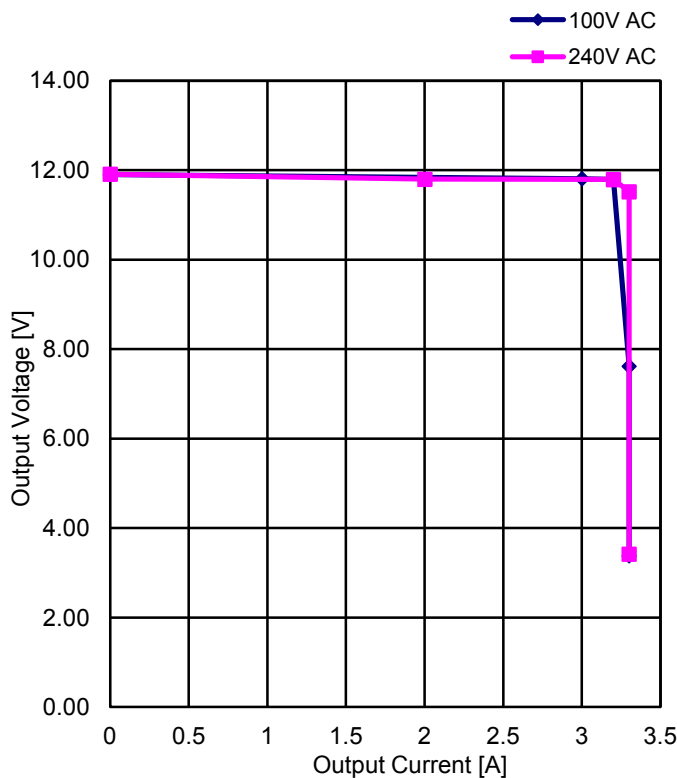
Model	GPSA-600-24P	Temperature: 25°C
Item	Over-Current Protection	

V-I Characteristics of 24V O.C.P



Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	23.90	0.00	23.90
60.00	23.82	60.00	23.81
68.00	23.79	68.00	23.80
70.00	14.62	70.00	14.81
72.00	4.62	72.00	3.15

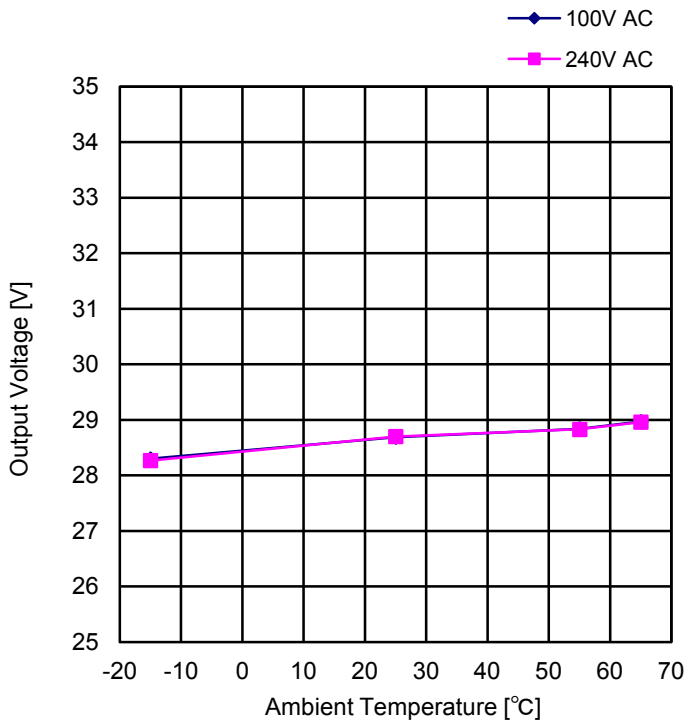
V-I Characteristics of 12VSB O.C.P



Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	11.90	0.00	11.91
3.00	11.81	2.00	11.80
3.20	11.79	3.20	11.79
3.30	7.62	3.30	11.52
3.30	3.38	3.30	3.42

Model	GPSA-600-24P	Load: Minimum Load
Item	Over-Voltage Protection	

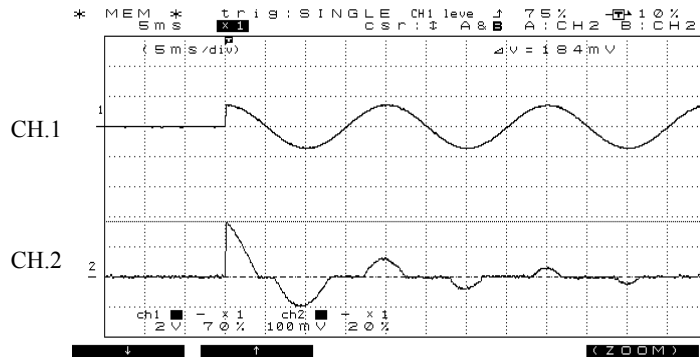
24V



Ambient Temp. [°C]	Output Voltage[V]	
	Input Voltage 100V AC	Input Voltage 240V AC
-15	28.30	28.27
25	28.69	28.70
55	28.84	28.83
65	28.97	28.96

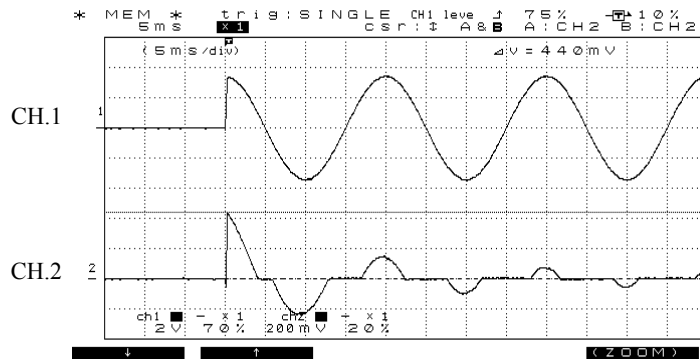
Model	GPSA-600-24P	Temperature: 25°C
Item	Inrush Current	Load: Rated Load

Inrush Current Waveforms



Waveform 1

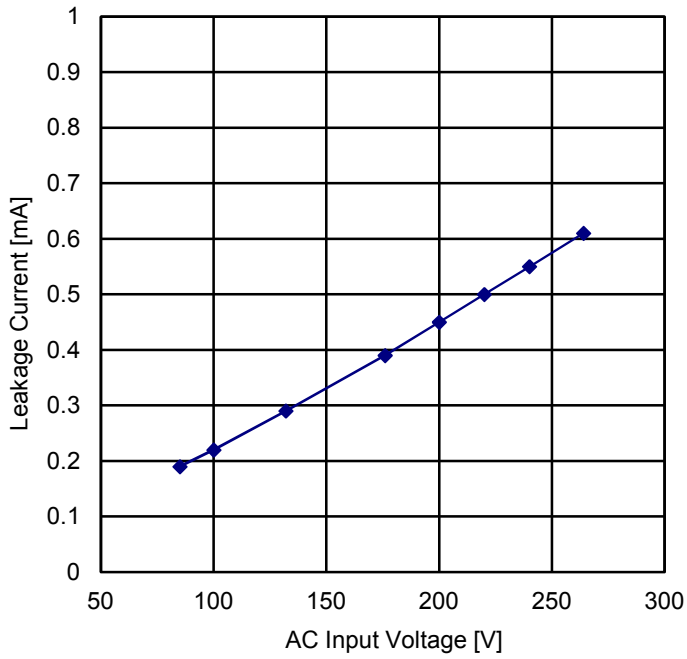
CH1	Measuring Point:	AC Input Voltage
	Range:	200V/div
CH2	Measuring Point:	AC Input Current
	Range:	5A/div
Timebase Range	5ms/div	
Conditions	Input: 100V AC Load: Rated Load	
Note: Inrush Current: 9.2A		



Waveform 2

CH1	Measuring Point:	AC Input Voltage
	Range:	200V/div
CH2	Measuring Point:	AC Input Current
	Range:	10A/div
Timebase Range	5ms/div	
Conditions	Input: 240V AC Load: Rated Load	
Note: Inrush Current: 22.0A		

Model	GPSA-600-24P	Load: Rated Load
Item	Leakage Current	Temperature: 25°C



AC Input Voltage [V]	Leakage Current [mA]
85	0.19
100	0.22
132	0.29
176	0.39
200	0.45
220	0.50
240	0.55
264	0.61