

# Test Data

Model Number: OZP-120-12/15

Model Name: DC POWER SUPPLY

Setting: 12V Output settings

INPUT: 85V - 264V AC, 50 / 60 Hz

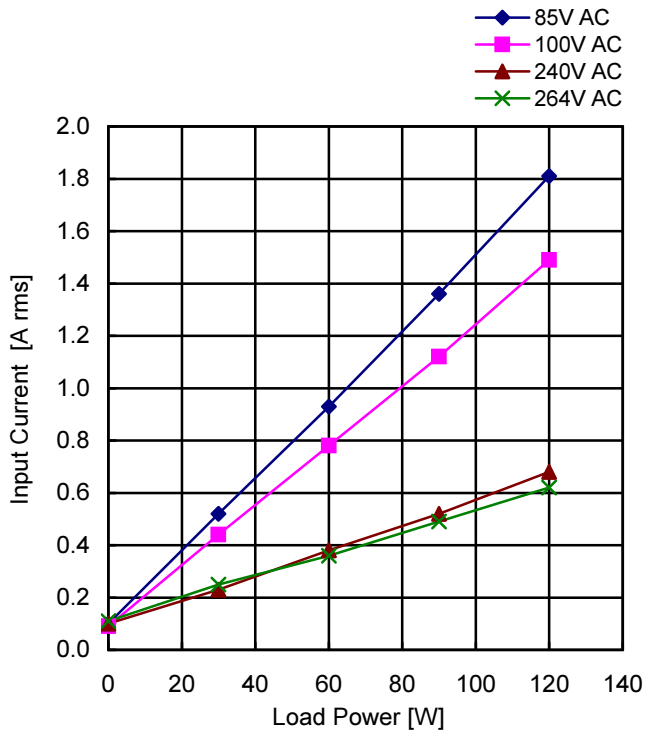
OUTPUT: 12 V 10.0A (15.0 A<sub>peak</sub>)Minimum load : 0W  
Rated load :120W  
Peak output power: 180W

Approved by : Makoto Urasue (QA manager)  
Designed by : Naoki Yamamoto (R&D engineer)  
Tested by : Kohei Sawada (Evaluation test engineer)

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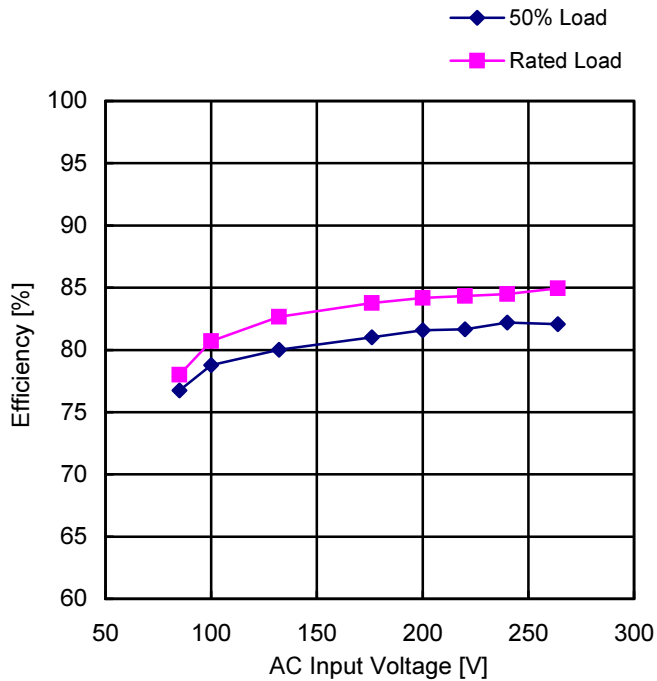
Model	OZP-120-12/15	Temperature: 25°C
Item	Input Current (by Load Power)	Setting: 12V Output Settings



Load Power [W]	Input Current [A rms]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	0.10	0.09	0.10	0.11
30.0	0.52	0.44	0.23	0.25
60.0	0.93	0.78	0.38	0.36
90.0	1.36	1.12	0.52	0.49
120.0	1.81	1.49	0.68	0.62

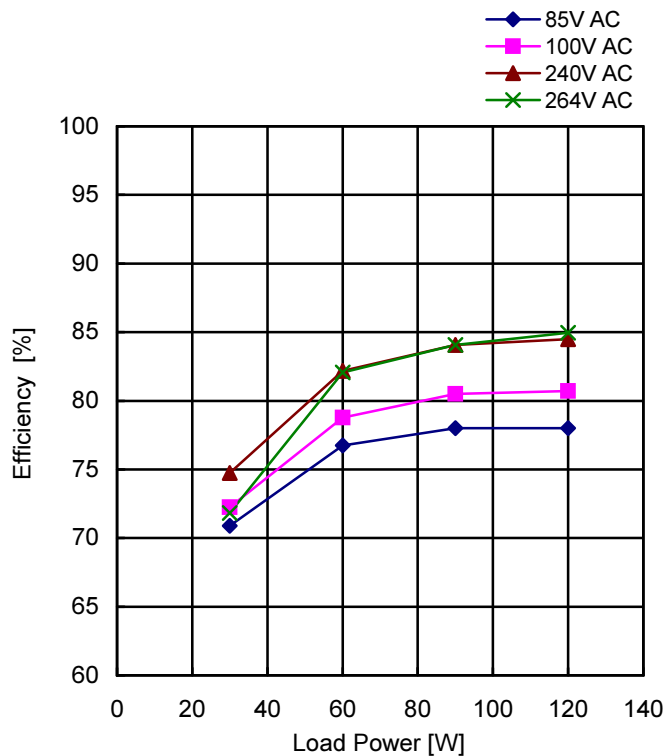
Model	OZP-120-12/15	Temperature: 25°C
Item	Efficiency	Setting: 12V Output Settings

■ Efficiency (by Input Voltage)



AC Input Voltage [V]	Efficiency [%]	
	50% Load	Rated Load
85	76.74	77.99
100	78.77	80.71
132	80.00	82.65
176	81.01	83.77
200	81.59	84.17
220	81.66	84.32
240	82.19	84.48
264	82.06	84.96

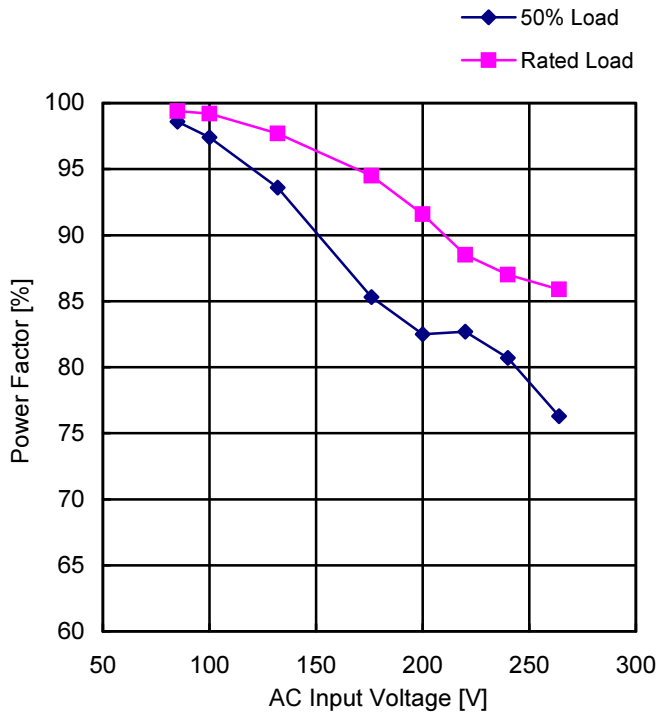
■ Efficiency (by Load Power)



Load Power [W]	Efficiency [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
30.0	70.88	72.24	74.74	71.82
60.0	76.74	78.77	82.19	82.06
90.0	78.00	80.50	84.08	84.08
120.0	77.99	80.71	84.48	84.96

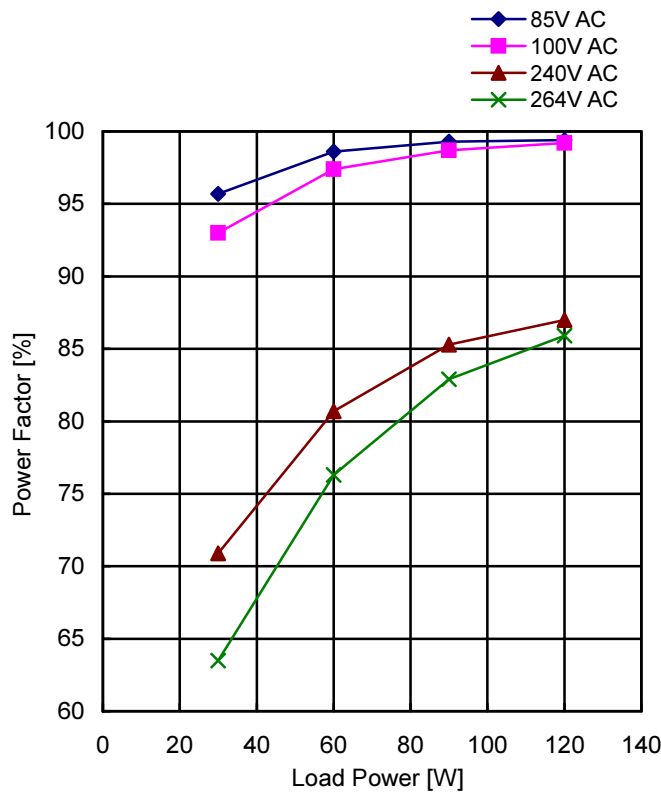
Model	OZP-120-12/15	Temperature: 25°C
Item	Power Factor	Setting: 12V Output Settings

■ Power Factor (by Input Voltage)



AC Input Voltage [V]	Power Factor [%]	
	50% Load	Rated Load
85	98.6	99.4
100	97.4	99.2
132	93.6	97.7
176	85.3	94.5
200	82.5	91.6
220	82.7	88.5
240	80.7	87.0
264	76.3	85.9

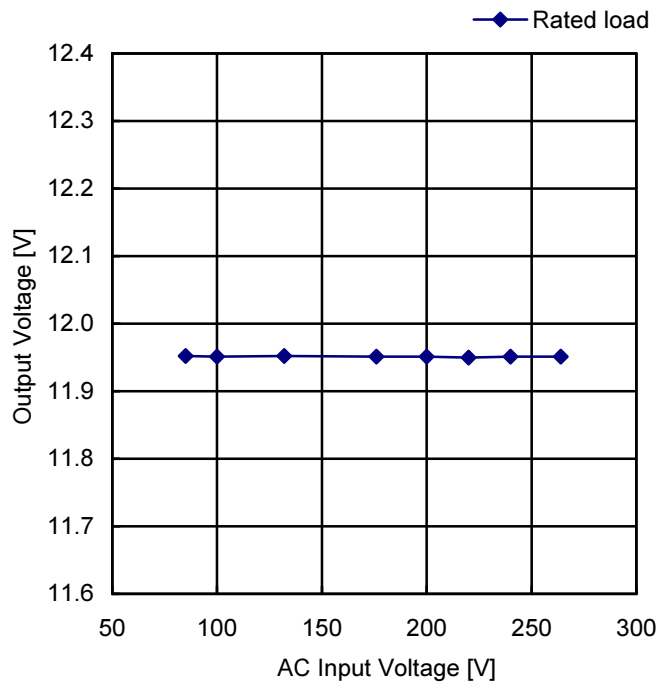
■ Power Factor (by Load Power)



Load Power [W]	Power Factor [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
30.0	95.7	93.0	70.9	63.5
60.0	98.6	97.4	80.7	76.3
90.0	99.3	98.7	85.3	82.9
120.0	99.4	99.2	87.0	85.9

Model	OZP-120-12/15	Temperature: 25°C
Item	Line Regulation	Setting: 12V Output Settings

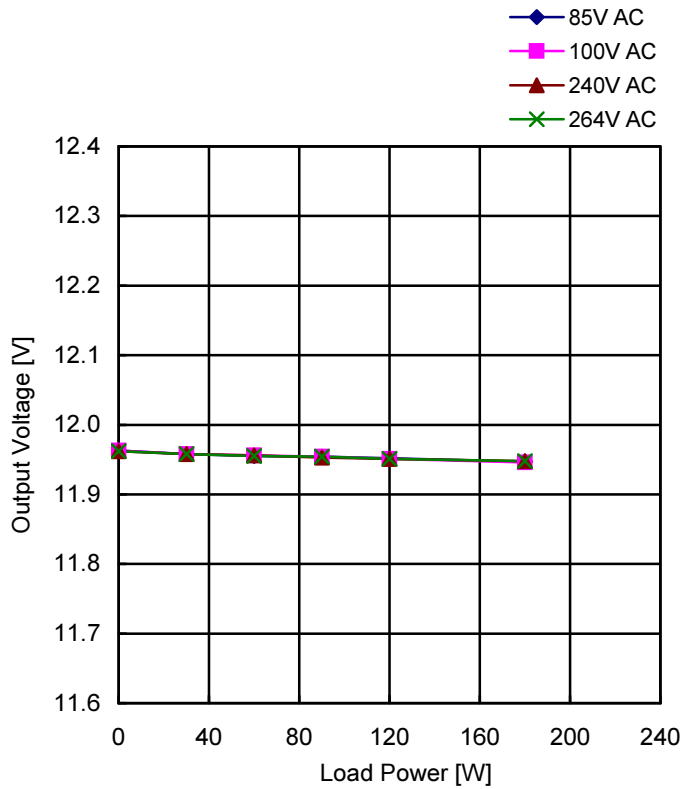
## 12V/10A



AC Input Voltage [V]	Output Voltage [V]
85	11.952
100	11.951
132	11.952
176	11.951
200	11.951
220	11.95
240	11.951
264	11.951

Model	OZP-120-12/15	Temperature: 25°C
Item	Load Regulation	Setting: 12V Output Settings

## 12V



Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	11.963	11.963	11.962	11.962
30.0	11.958	11.958	11.958	11.958
60.0	11.955	11.956	11.956	11.955
90.0	11.954	11.954	11.953	11.954
120.0	11.952	11.951	11.951	11.951
180.0	11.947	11.946	11.948	11.948

Load Power [W]	Load Condition	
	Load Current [A]	
0.0	12V	
30.0	0.00	
60.0	2.50	
90.0	5.00	
120.0	7.50	
180.0	10.00	

Model	OZP-120-12/15	Setting: 12V Output Settings																																													
Item	Ambient Temperature Drift																																														
<h2>12V</h2> <p>Legend:</p> <ul style="list-style-type: none"> <li>85V AC (Blue Diamond)</li> <li>100V AC (Magenta Square)</li> <li>240V AC (Red Triangle)</li> <li>264V AC (Green Cross)</li> </ul>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. (°C)</th> <th colspan="4">Output Voltage [V]</th> </tr> <tr> <th>Input Voltage 85V AC</th> <th>Input Voltage 100V AC</th> <th>Input Voltage 240V AC</th> <th>Input Voltage 264V AC</th> </tr> </thead> <tbody> <tr> <td>-15</td> <td>12.009</td> <td>12.008</td> <td>12.007</td> <td>12.007</td> </tr> <tr> <td>25</td> <td>11.952</td> <td>11.951</td> <td>11.951</td> <td>11.951</td> </tr> <tr> <td>50</td> <td>11.910</td> <td>11.910</td> <td>11.909</td> <td>11.909</td> </tr> <tr> <td>65</td> <td>11.886</td> <td>11.885</td> <td>11.885</td> <td>11.885</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Load Condition</th> </tr> <tr> <th rowspan="2">Ambient Temp. (°C)</th> <th>Load Current [A]</th> </tr> <tr> <th>12V</th> </tr> </thead> <tbody> <tr> <td>-15</td> <td>10.00</td> </tr> <tr> <td>25</td> <td>10.00</td> </tr> <tr> <td>50</td> <td>10.00</td> </tr> <tr> <td>65</td> <td>5.83</td> </tr> </tbody> </table>				Ambient Temp. (°C)	Output Voltage [V]				Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC	-15	12.009	12.008	12.007	12.007	25	11.952	11.951	11.951	11.951	50	11.910	11.910	11.909	11.909	65	11.886	11.885	11.885	11.885	Load Condition		Ambient Temp. (°C)	Load Current [A]	12V	-15	10.00	25	10.00	50	10.00	65	5.83
Ambient Temp. (°C)	Output Voltage [V]																																														
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65	11.886	11.885	11.885	11.885																																											
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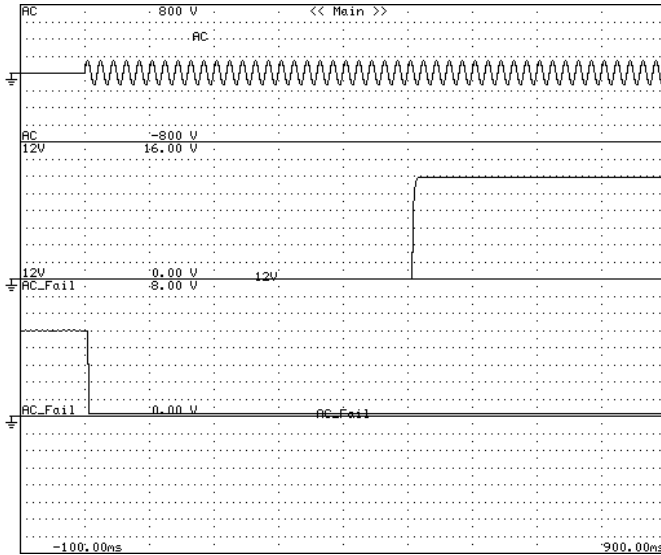


Model	OZP-120-12/15	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	Setting: 12V Output Settings

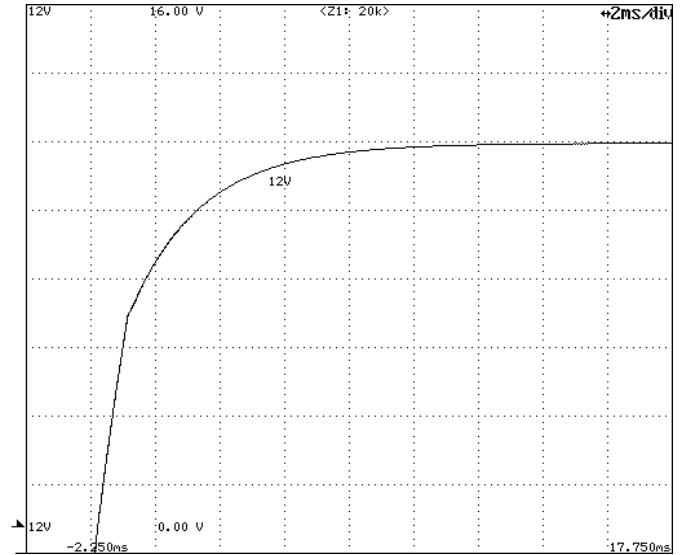
Input: 100V AC  
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence

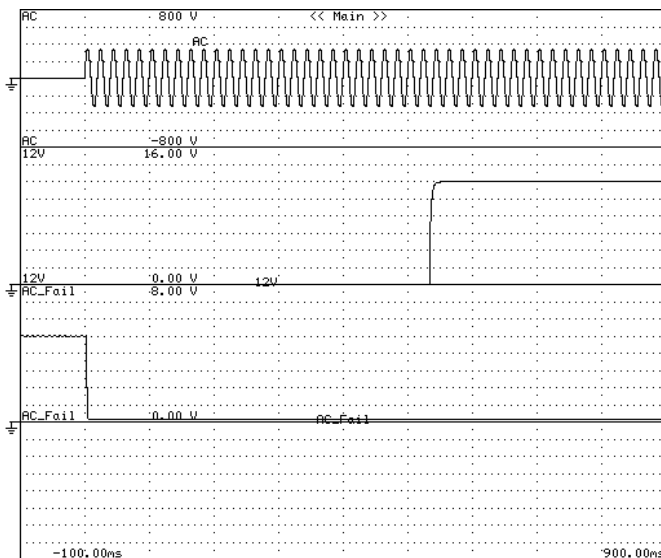


12V DC Output Rise Characteristics

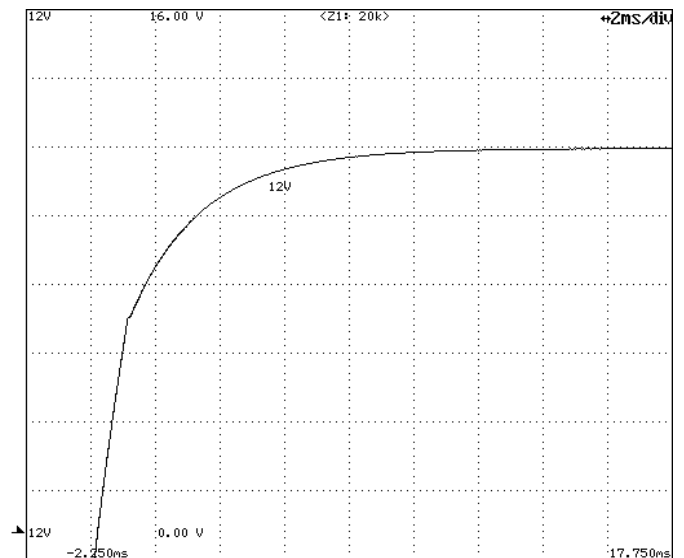
Input: 240V AC  
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence

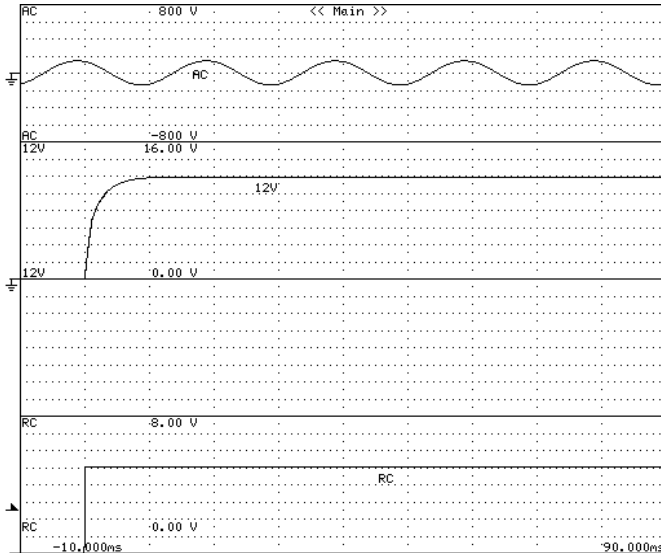


12V DC Output Rise Characteristics

Model	OZP-120-12/15	Temperature: 25°C
Item	Output Rise Characteristics (at Remote ON)	Setting: 12V Output Settings

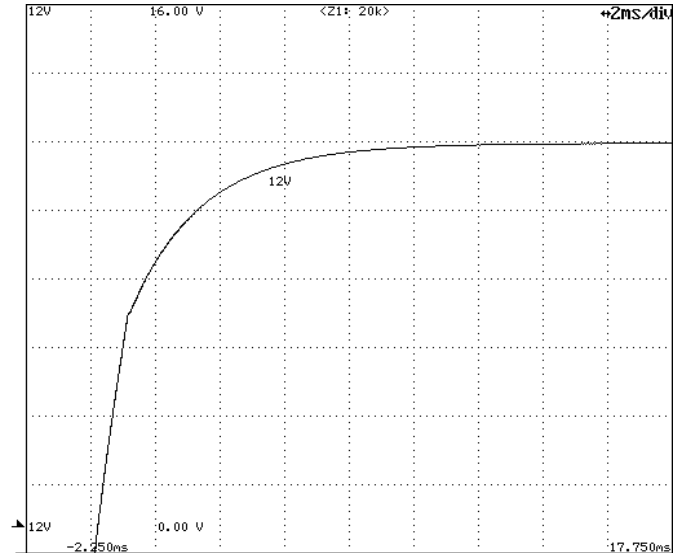
Input: 100V AC  
Load: Rated Load

Timebase Range: 10ms/div



All Output Start-up Sequence

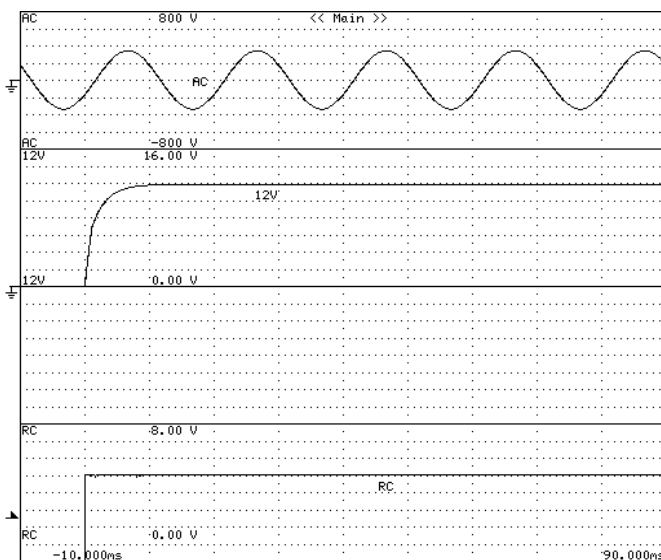
Vertical Sensitivity: 2V/div  
Timebase Range: 2ms/div



12V DC Output Rise Characteristics

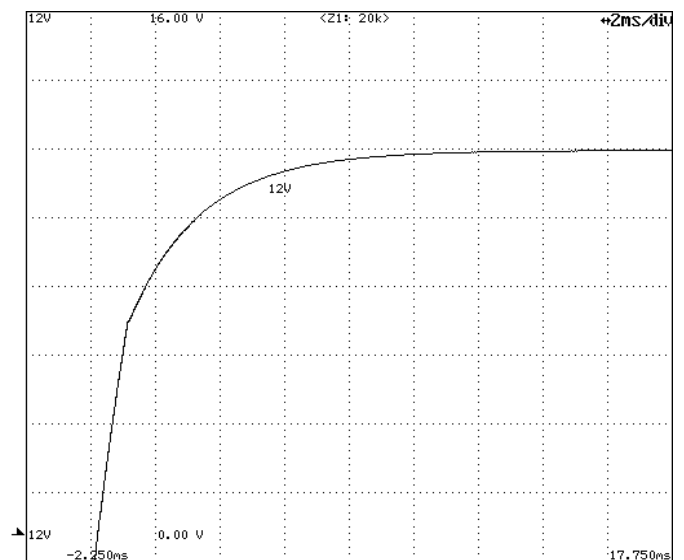
Input: 240V AC  
Load: Rated Load

Timebase Range: 10ms/div



All Output Start-up Sequence

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

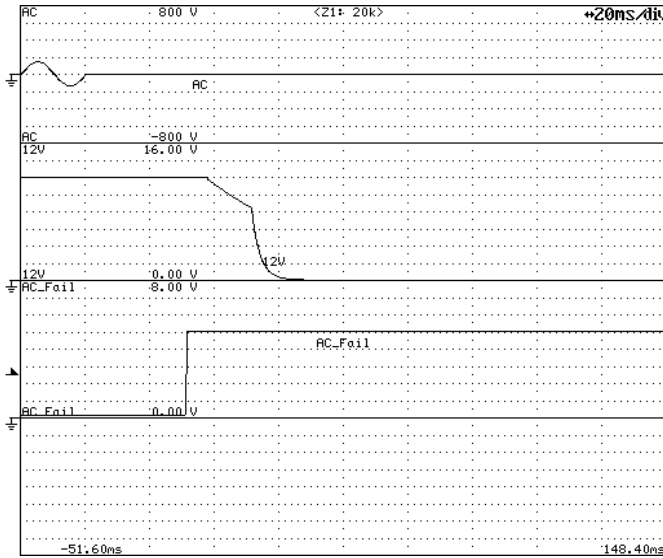


12V DC Output Rise Characteristics

Model	OZP-120-12/15	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	Setting: 12V Output Settings

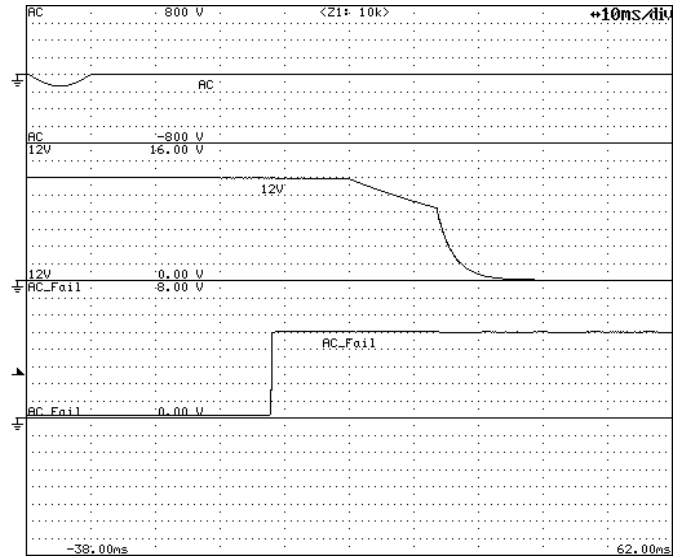
Input: 100V AC  
Load: Rated Load

Timebase Range: 20ms/div



Output Fall Characteristics

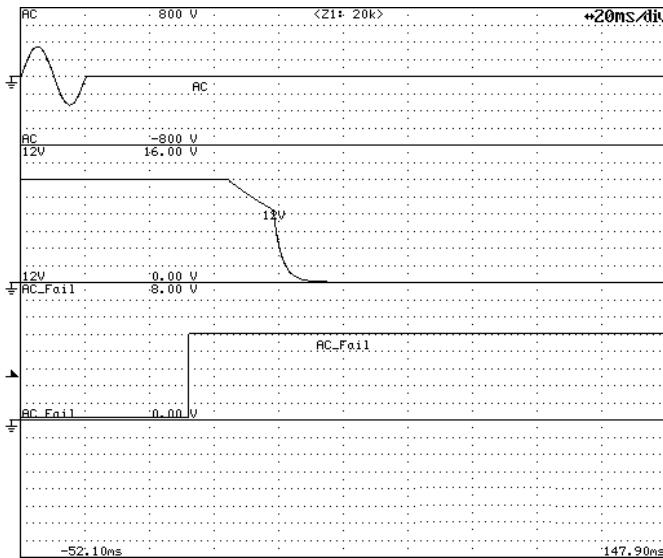
Timebase Range: 10ms/div



Output Fall Characteristics (magnification)

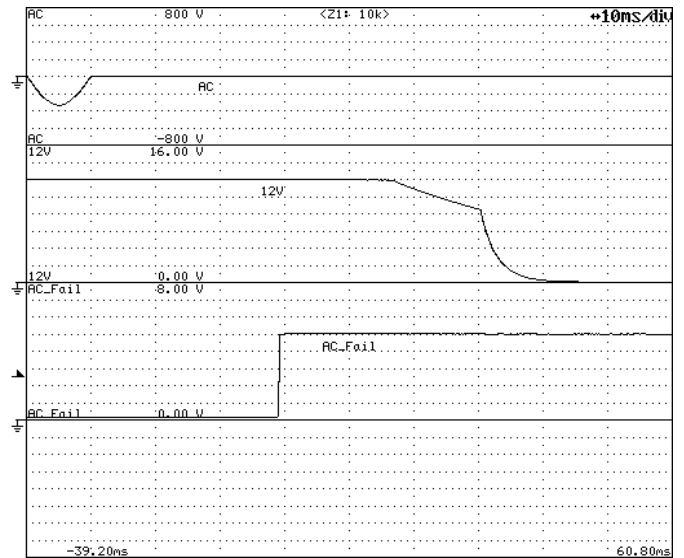
Input: 240V AC  
Load: Rated Load

Timebase Range: 20ms/div



Output Fall Characteristics

Timebase Range: 10ms/div

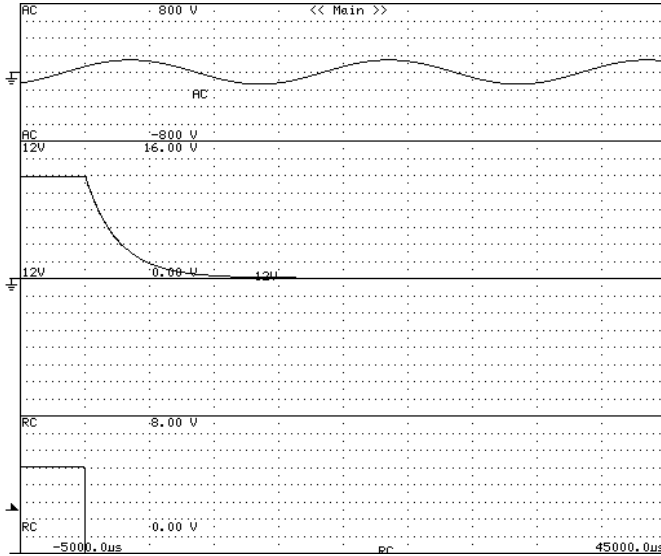


Output Fall Characteristics (magnification)

Model	OZP-120-12/15	Temperature: 25°C
Item	Output Fall Characteristics (at Remote OFF)	Setting: 12V Output Settings

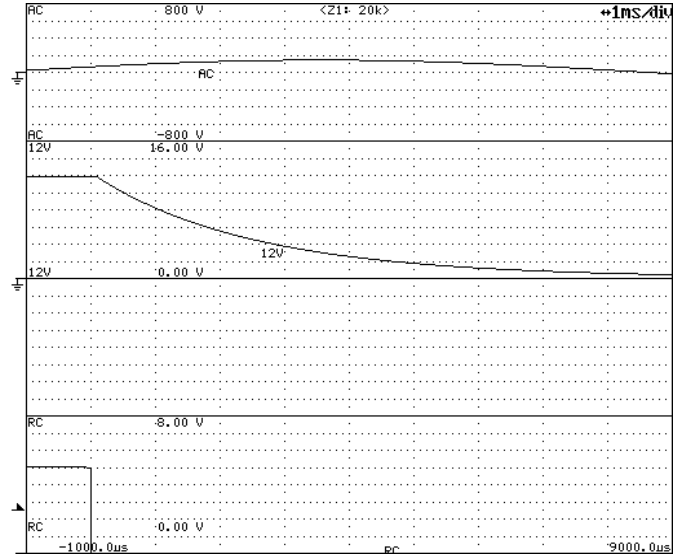
Input: 100V AC  
Load: Rated Load

Timebase Range: 5ms/div



Output Fall Characteristics

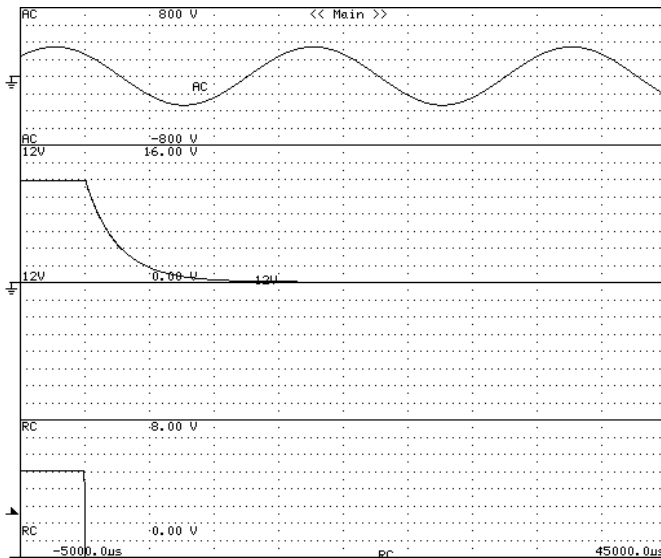
Timebase Range: 1ms/div



Output Fall Characteristics (magnification)

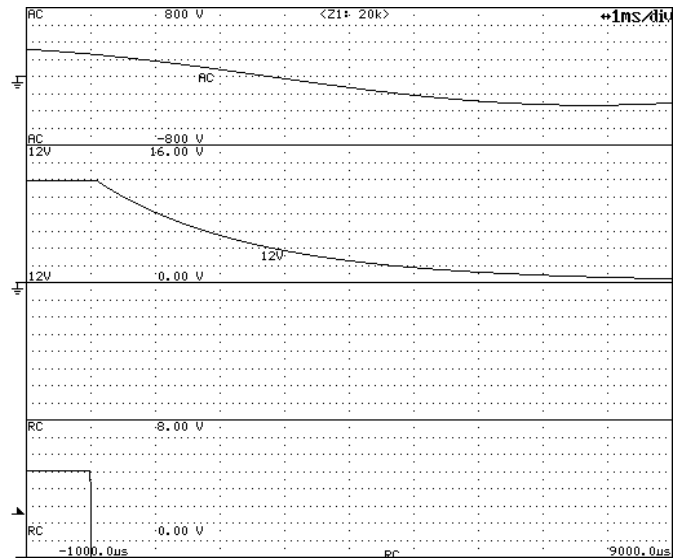
Input: 240V AC  
Load: Rated Load

Timebase Range: 5ms/div



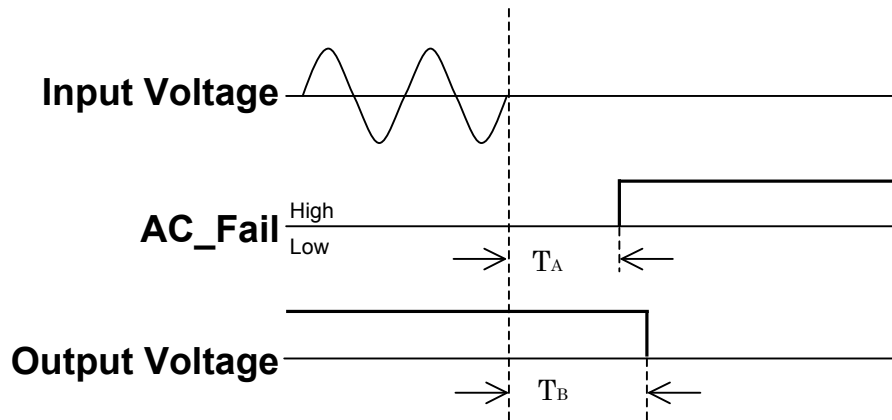
Output Fall Characteristics

Timebase Range: 1ms/div

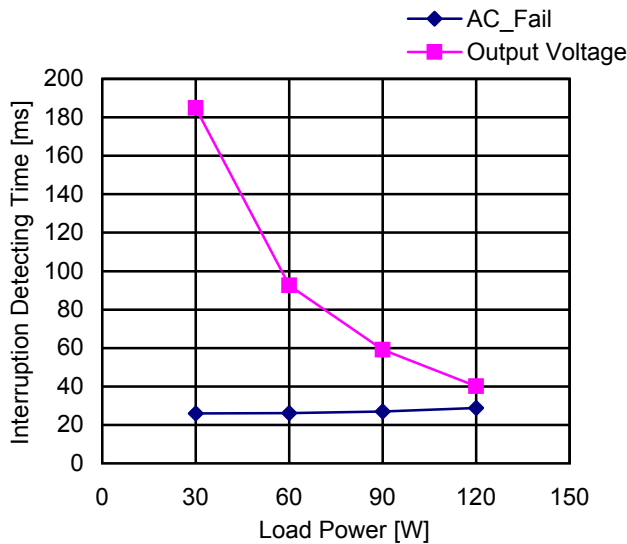


Output Fall Characteristics (magnification)

Model	OZP-120-12/15	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	Setting: 12V Output Settings

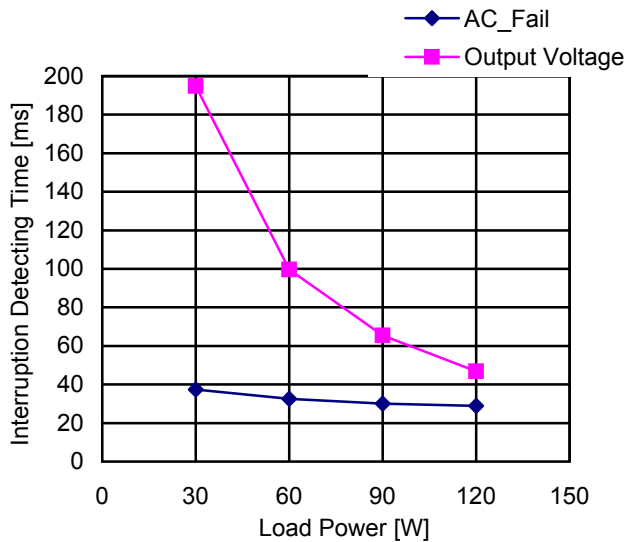


## Input Voltage: 100V AC



Load Power [W]	Interruption Detecting Time [ms]	
	AC_Fail	Output Voltage
	T <sub>A</sub>	T <sub>B</sub>
30.0	26.0	184.9
60.0	26.2	92.6
90.0	27.0	59.2
120.0	28.8	40.2

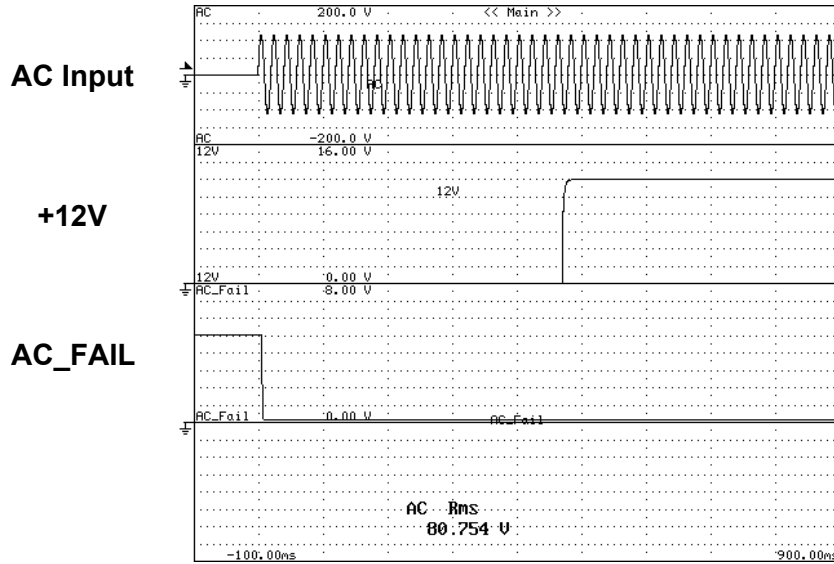
## Input Voltage: 240V AC



Load Power [W]	Interruption Detecting Time [ms]	
	AC_Fail	Output Voltage
	T <sub>A</sub>	T <sub>B</sub>
30.0	37.3	194.8
60.0	32.6	99.6
90.0	30.1	65.4
120.0	28.9	46.8

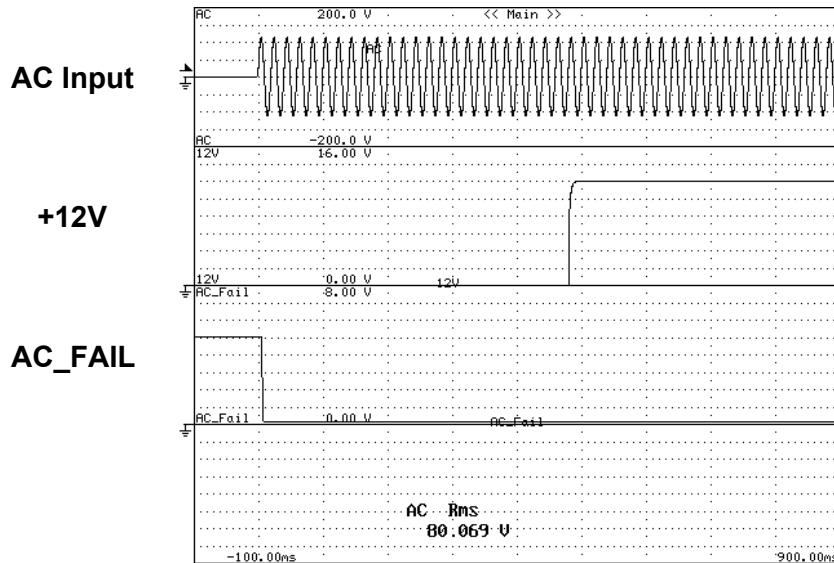
Model	OZP-120-12/15	Temperature: 25°C
Item	Start-Up Voltage	Setting: 12V Output Settings

**Timebase Range: 100ms/div**  
**Load: Rated Load**



**Start-up Voltage: 80.8V AC**

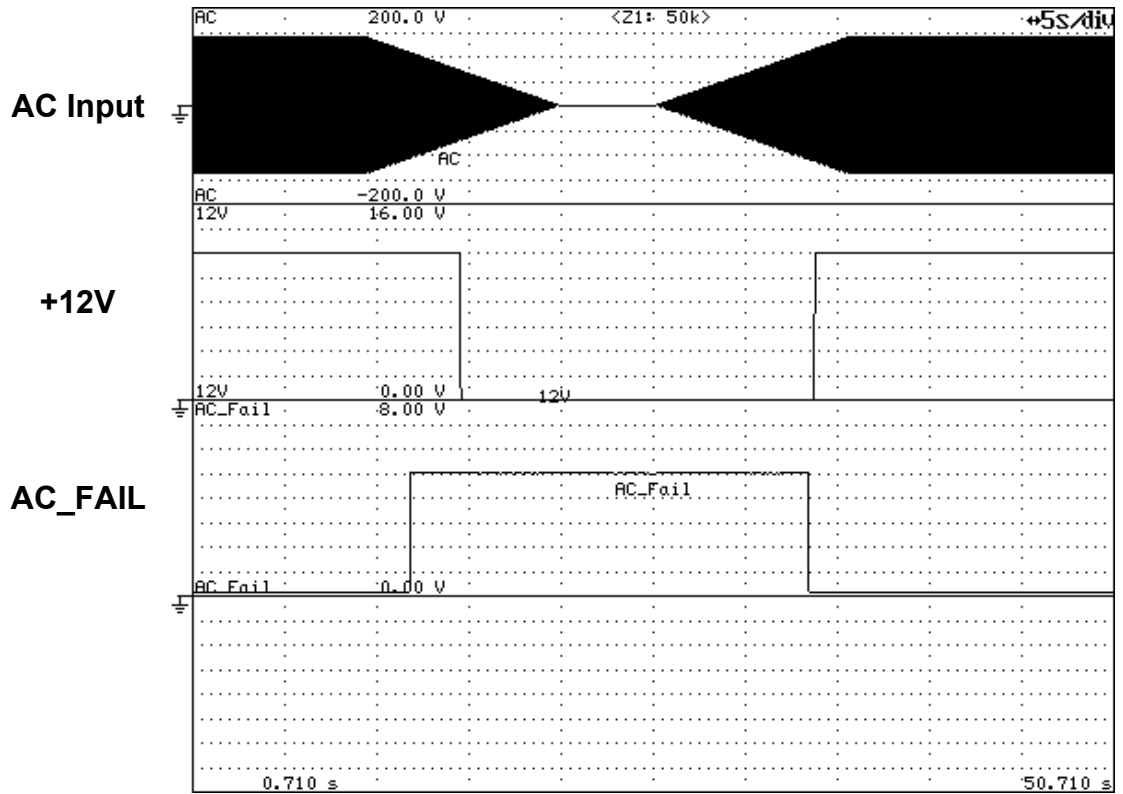
**Timebase Range: 100ms/div**  
**Load: Minimum Load**



**Start-up Voltage: 80.1V AC**

Model	OZP-120-12/15	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	Setting: 12V Output Settings

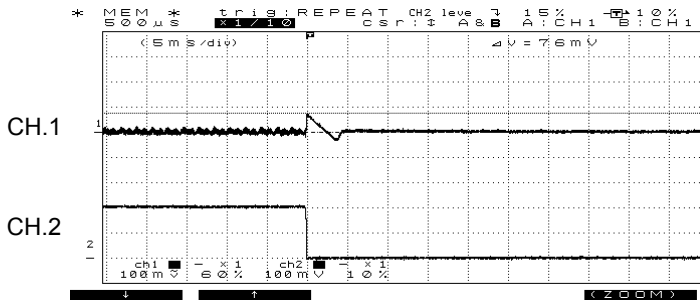
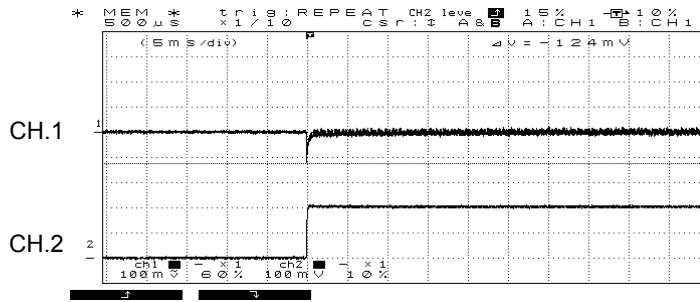
Timebase Range: 5s/div  
Load: Rated Load



Sweep Rate: 10Vave/sec

Model	OZP-120-12/15	Temperature: 25°C
Item	Dynamic Load Response	Setting: 12V Output Settings

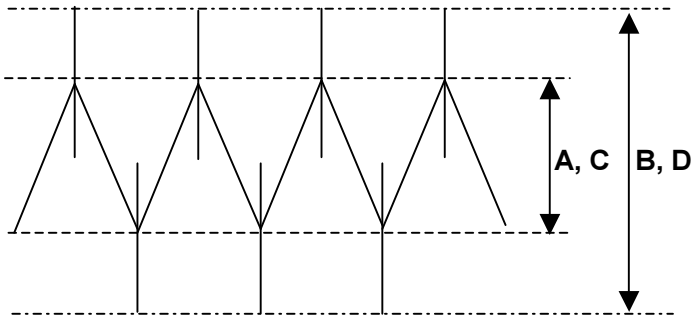
## +12V DC Output Transient Response Waveforms



Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Rated Load(10A) ⇔ Minimum load(0A)	



Model	OZP-120-12/15	Load: Rated Load
Item	Ambient Temperature Drift	Setting: 12V Output Settings



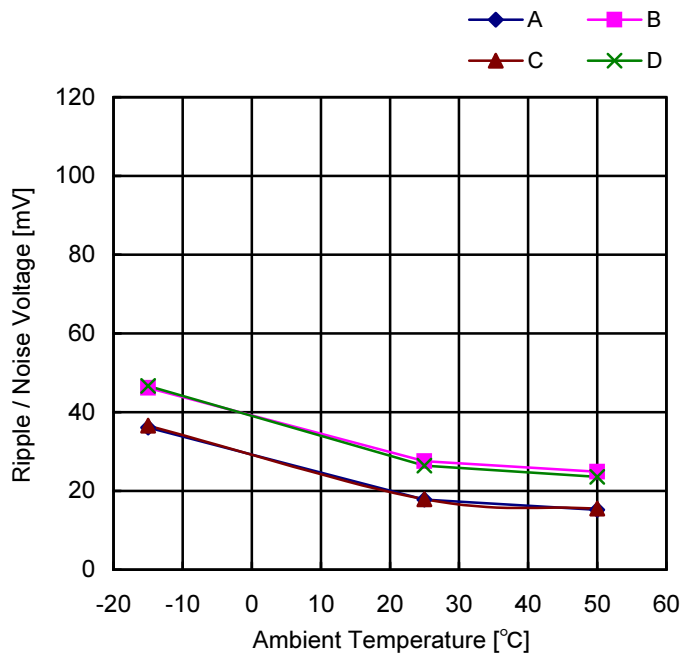
**at 100V AC**

A: Ripple Voltage (mV<sub>P-P</sub>)  
B: Noise Voltage (mV<sub>P-P</sub>)

**at 240V AC**

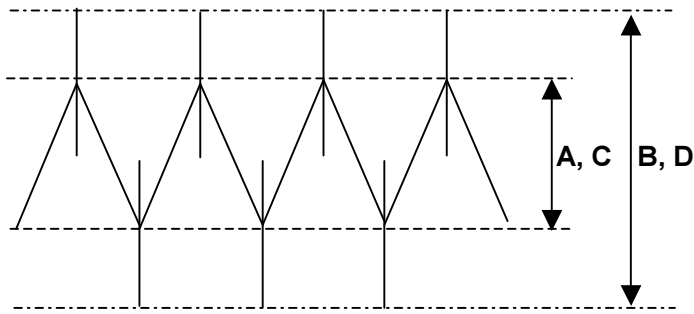
C: Ripple Voltage (mV<sub>P-P</sub>)  
D: Noise Voltage (mV<sub>P-P</sub>)

## 12V



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	36.1	46.2	36.6	46.7
25	17.8	27.6	17.9	26.4
50	15.2	24.9	15.5	23.6

Model	OZP-120-12/15	Temperature: 25°C
Item	Ambient Temperature Drift	Setting: 12V Output Settings



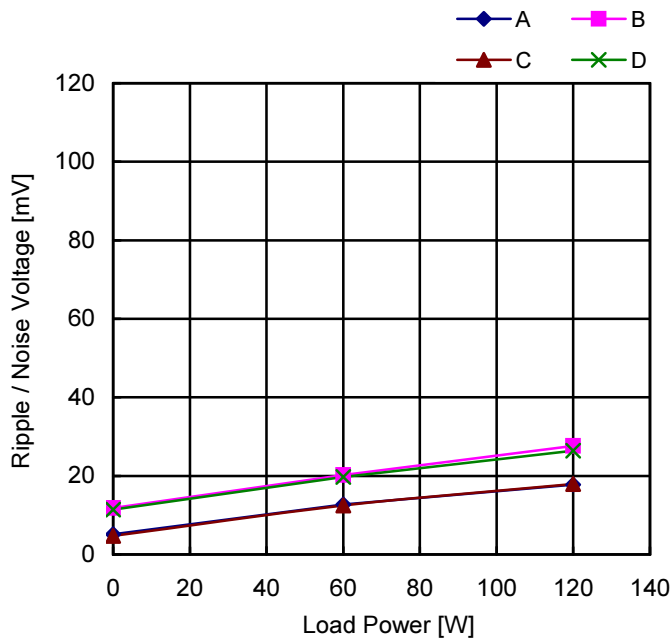
**at 100V AC**

A: Ripple Voltage (mV<sub>P-P</sub>)  
B: Noise Voltage (mV<sub>P-P</sub>)

**at 240V AC**

C: Ripple Voltage (mV<sub>P-P</sub>)  
D: Noise Voltage (mV<sub>P-P</sub>)

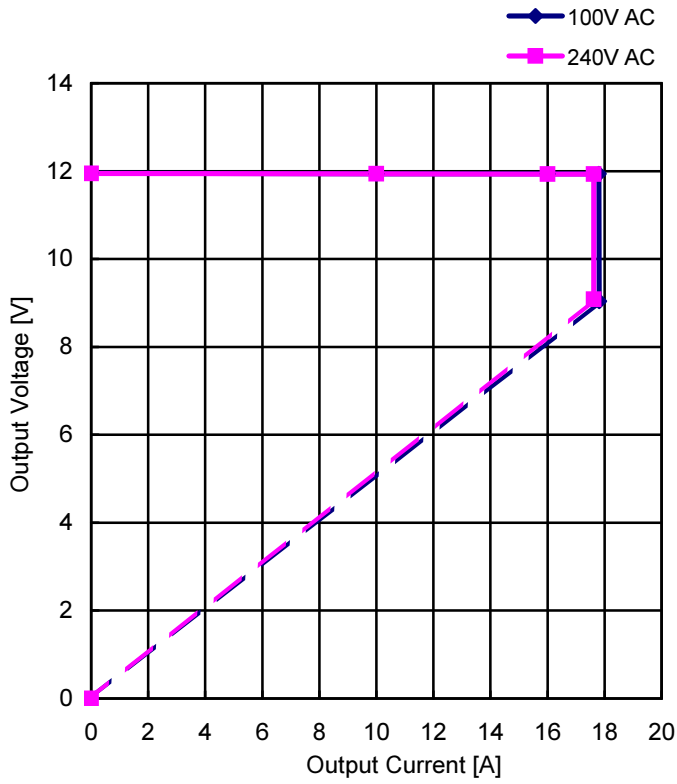
## 12V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	5.1	11.8	4.7	11.4
60	12.7	20.2	12.5	19.7
120	17.8	27.6	17.9	26.4

Model	OZP-120-12/15	Temperature: 25°C
Item	Over-Current Protection	Setting: 12V Output Settings

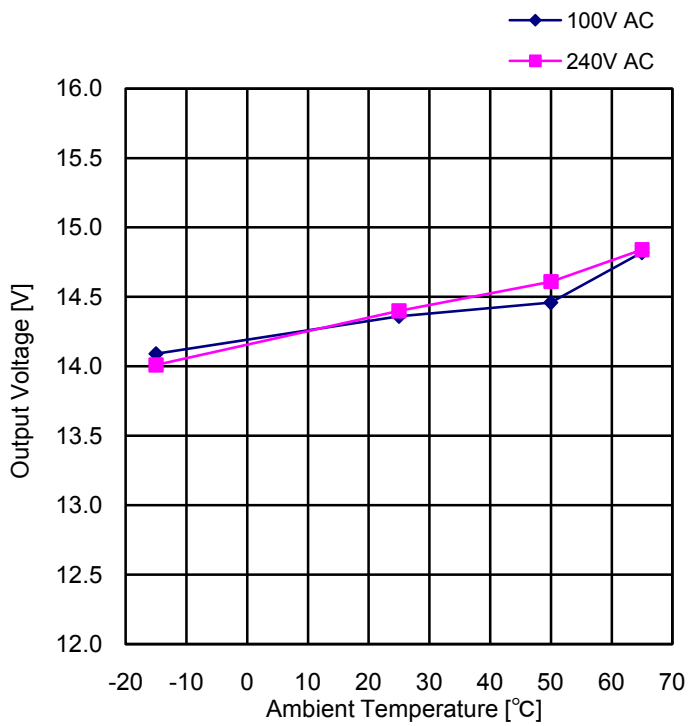
## V-I Characteristics of 12V O.C.P



Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	11.95	0.00	11.95
10.00	11.94	10.00	11.94
16.00	11.94	16.00	11.93
17.80	11.94	17.62	11.93

Model	OZP-120-12/15	Load: Minimum Load
Item	Over-Voltage Protection	Setting: 12V Output Settings

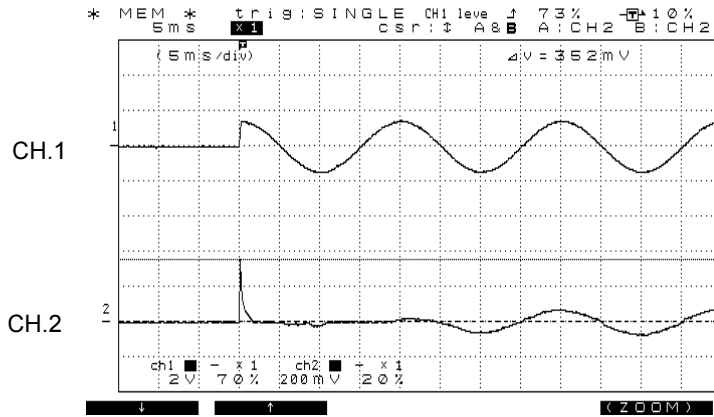
## 12V



Ambient Temp. [°C]	Output Voltage [V]	
	100V AC	240V AC
-15	14.09	14.01
25	14.36	14.40
50	14.46	14.61
65	14.82	14.84

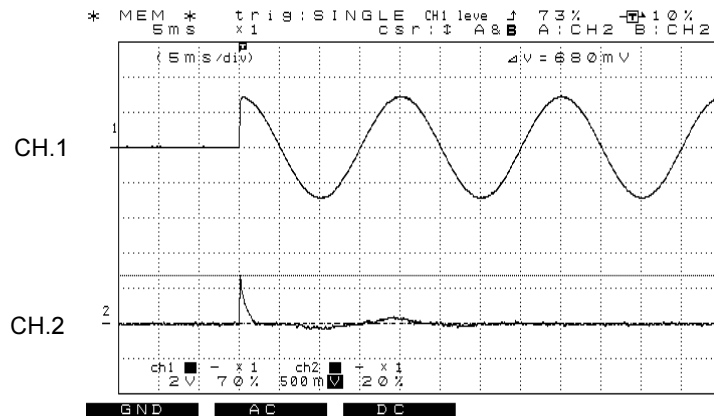
Model	OZP-120-12/15	Temperature: 25°C	Load: Rated Load
Item	Inrush Current	Setting: 12V Output Settings	

## Inrush Current Waveforms



### Waveform 1

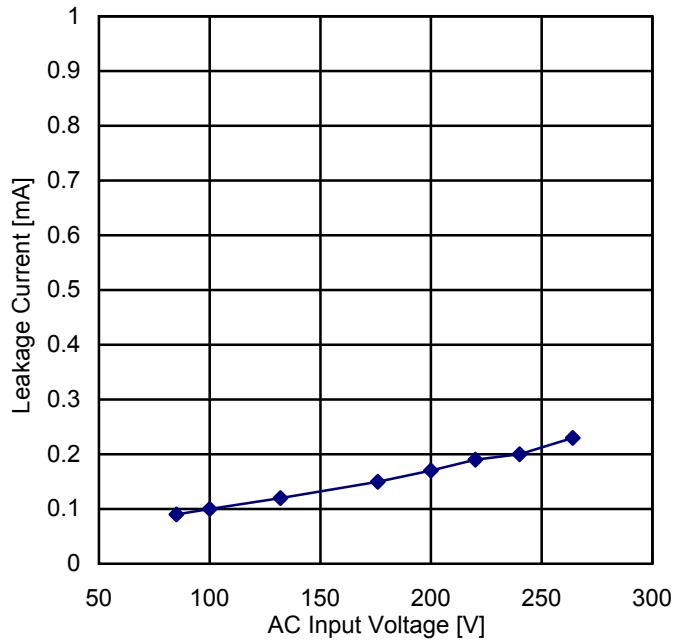
CH1	Measuring Point: AC Input Voltage
	Range: 200V/div
CH2	Measuring Point: AC Input Current
	Range: 10A/div
Timebase Range	5ms/div
Conditions	Input: 100V AC Load: Rated Load
Note: Inrush Current: 17.6A	



### Waveform 2

CH1	Measuring Point: AC Input Voltage
	Range: 200V/div
CH2	Measuring Point: AC Input Current
	Range: 25A/div
Timebase Range	5ms/div
Conditions	Input: 200V AC Load: Rated Load
Note: Inrush Current: 34.0A	

Model	OZP-120-12/15	Load: Rated Load
Item	Leakage Current	Setting: 12V Output Settings



AC Input Voltage [V]	Leakage Current [mA]
85	0.09
100	0.10
132	0.12
176	0.15
200	0.17
220	0.19
240	0.20
264	0.23