

## Test Data

Model Number: UZP-220-48

Model Name: DC POWER SUPPLY

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INPUT: 85V – 264V AC, 50 / 60 Hz

OUTPUT: 48V 4.6A (8.35 A<sub>peak</sub>)

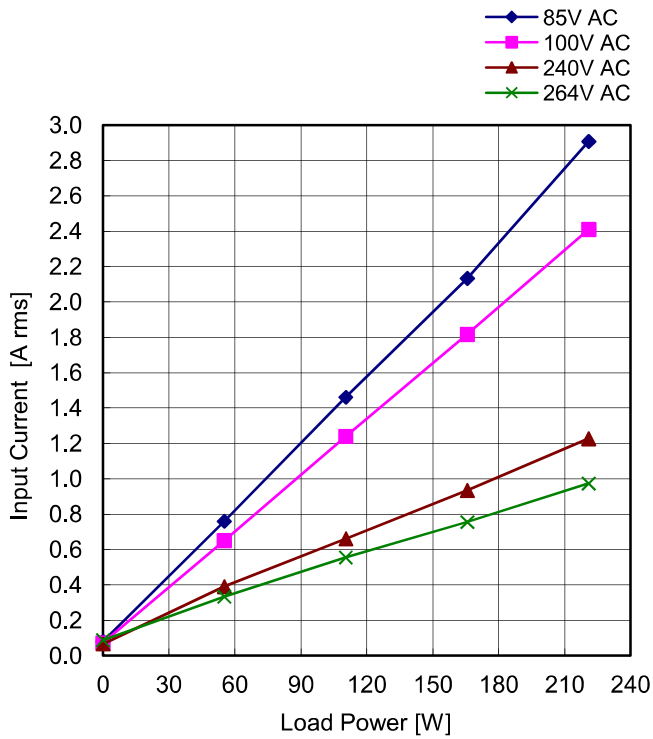
Minimum load : 0W  
Rated load :220.8W  
Peak output power: 400.8W

Approved by : *T. Kobayashi* (QA manager)  
Designed by : *Kazuhiko Yamada* (R&D engineer)  
Tested by : *Hiroaki Watanabe* (Evaluation test engineer)

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Model	UZP-220-48	Temperature: 25°C
Item	Input Current (by Load Power)	

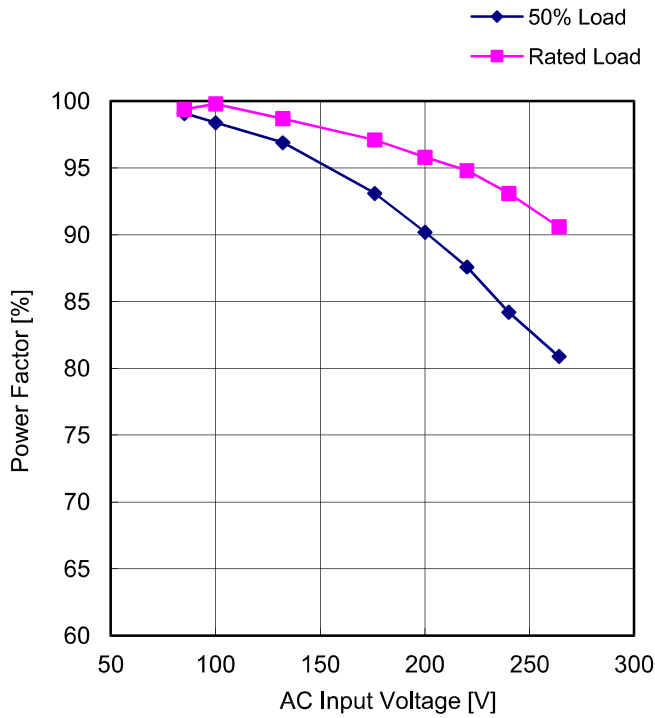


Load Power [W]	Input Current [A rms]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	0.08	0.07	0.07	0.09
55.2	0.76	0.65	0.39	0.33
110.4	1.46	1.24	0.66	0.56
165.6	2.13	1.82	0.94	0.76
220.8	2.91	2.41	1.23	0.97

Model	UZP-220-48	Temperature: 25°C																														
Item	Efficiency																															
<p>■ Efficiency(by Input Voltage)</p> <table border="1"> <thead> <tr> <th rowspan="2">AC Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>50% Load</th> <th>Rated Load</th> </tr> </thead> <tbody> <tr><td>85</td><td>89.91</td><td>89.56</td></tr> <tr><td>100</td><td>90.68</td><td>91.41</td></tr> <tr><td>132</td><td>91.60</td><td>92.23</td></tr> <tr><td>176</td><td>92.65</td><td>93.08</td></tr> <tr><td>200</td><td>92.89</td><td>93.58</td></tr> <tr><td>220</td><td>93.12</td><td>93.79</td></tr> <tr><td>240</td><td>93.17</td><td>94.13</td></tr> <tr><td>264</td><td>93.38</td><td>94.50</td></tr> </tbody> </table>				AC Input Voltage [V]	Efficiency [%]		50% Load	Rated Load	85	89.91	89.56	100	90.68	91.41	132	91.60	92.23	176	92.65	93.08	200	92.89	93.58	220	93.12	93.79	240	93.17	94.13	264	93.38	94.50
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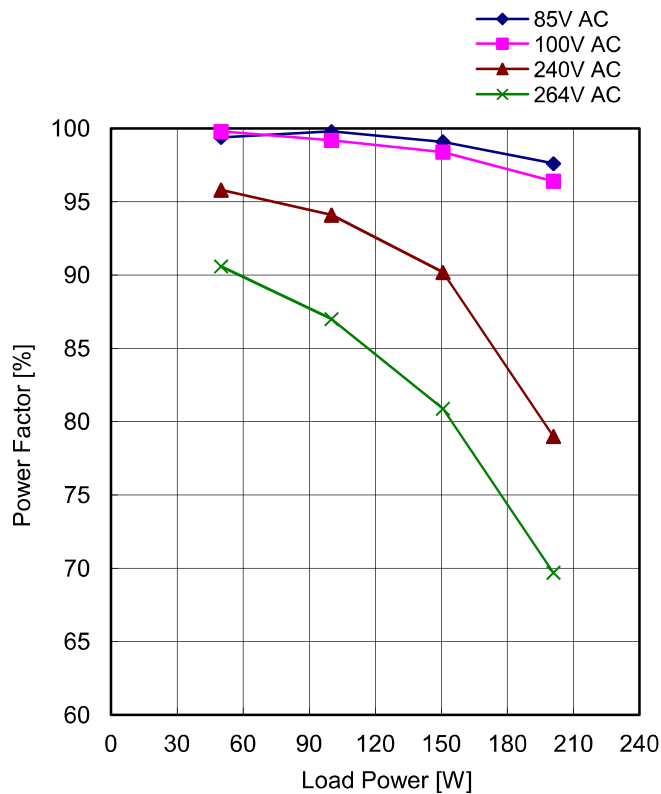
Model	UZP-220-48	Temperature: 25°C
Item	Power Factor	

■ Power Factor (by Input Voltage)



AC Input Voltage [V]	Power Factor [%]	
	50% Load	Rated Load
85	99.1	99.4
100	98.4	99.8
132	96.9	98.7
176	93.1	97.1
200	90.2	95.8
220	87.6	94.8
240	84.2	93.1
264	80.9	90.6

■ Power Factor (by Load Power)



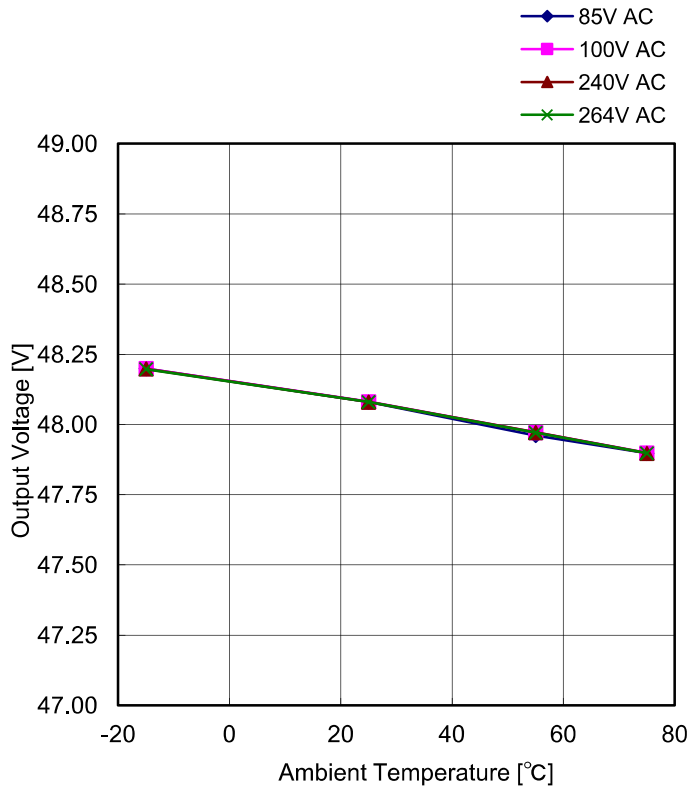
Load Power [W]	Power Factor [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
50.0	99.4	99.8	95.8	90.6
100.0	99.8	99.2	94.1	87.0
150.6	99.1	98.4	90.2	80.9
200.8	97.6	96.4	79.0	69.7

Model	UZP-220-48	Temperature: 25°C																		
Item	Line Regulation																			
<p>The graph plots Output Voltage [V] on the y-axis (ranging from 47.00 to 49.00) against AC Input Voltage [V] on the x-axis (ranging from 50 to 300). A single data series labeled 'Rated load' is shown as a horizontal line with diamond markers, indicating that the output voltage remains constant at approximately 48.08V regardless of the AC input voltage within the tested range.</p>		<table border="1"> <thead> <tr> <th>AC Input Voltage [V]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr> <td>85</td> <td>48.080</td> </tr> <tr> <td>100</td> <td>48.081</td> </tr> <tr> <td>132</td> <td>48.081</td> </tr> <tr> <td>176</td> <td>48.080</td> </tr> <tr> <td>200</td> <td>48.080</td> </tr> <tr> <td>220</td> <td>48.080</td> </tr> <tr> <td>240</td> <td>48.080</td> </tr> <tr> <td>264</td> <td>48.080</td> </tr> </tbody> </table>	AC Input Voltage [V]	Output Voltage [V]	85	48.080	100	48.081	132	48.081	176	48.080	200	48.080	220	48.080	240	48.080	264	48.080
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Model	UZP-220-48
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Item	Ambient Temperature Drift
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Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	48.200	48.200	48.199	48.198
25	48.080	48.081	48.080	48.080
55	47.961	47.972	47.972	47.971
75	47.898	47.899	47.898	47.898

### Load Condition

Ambient Temp. (°C)	Load Current [A]
	48V
-15	4.60
25	4.60
55	4.60
75	2.93

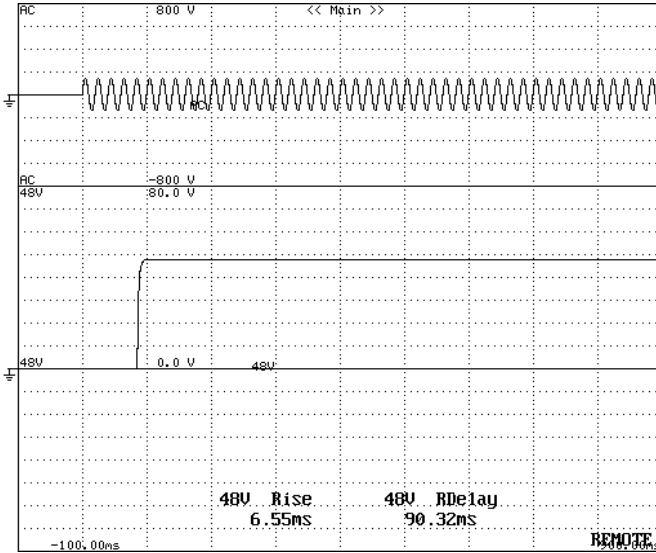


Model	UZF-220-48	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

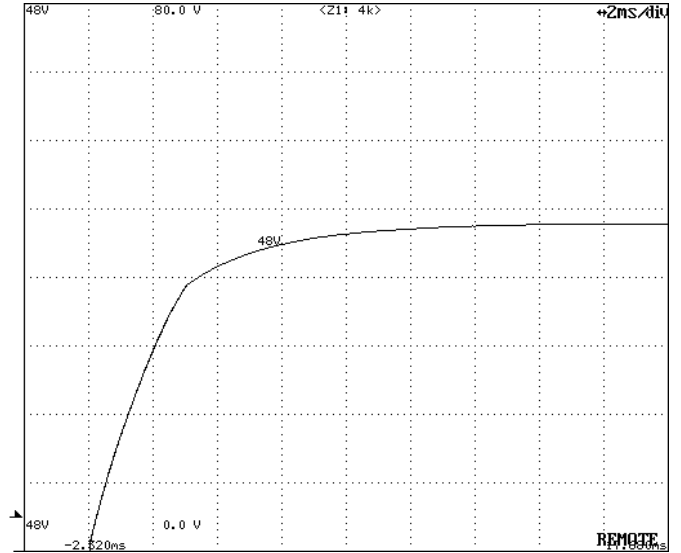
Input: 100V AC  
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence

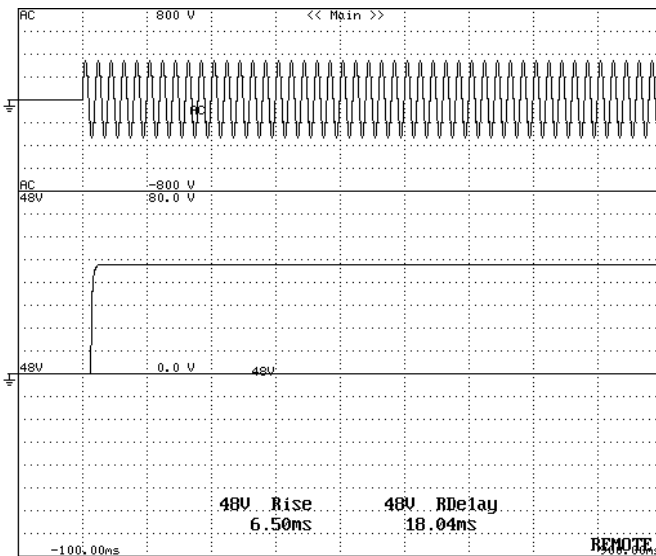


48V DC Output Rise Characteristics

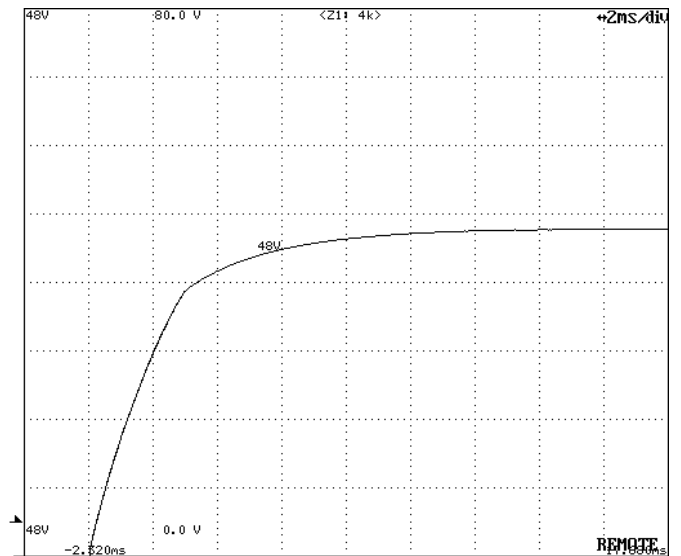
Input: 240V AC  
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence



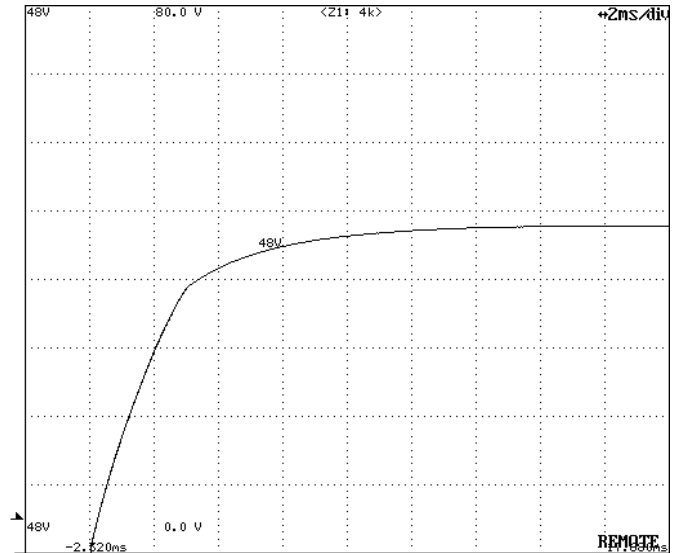
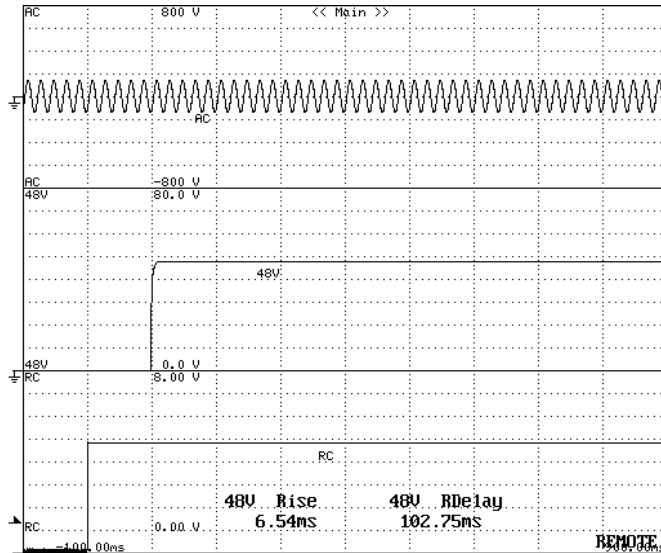
48V DC Output Rise Characteristics

Model	UZF-220-48	Temperature: 25°C
Item	Output Rise Characteristics (at Remote ON)	

Input: 100V AC  
Load: Rated Load

Timebase Range: 100ms/div

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



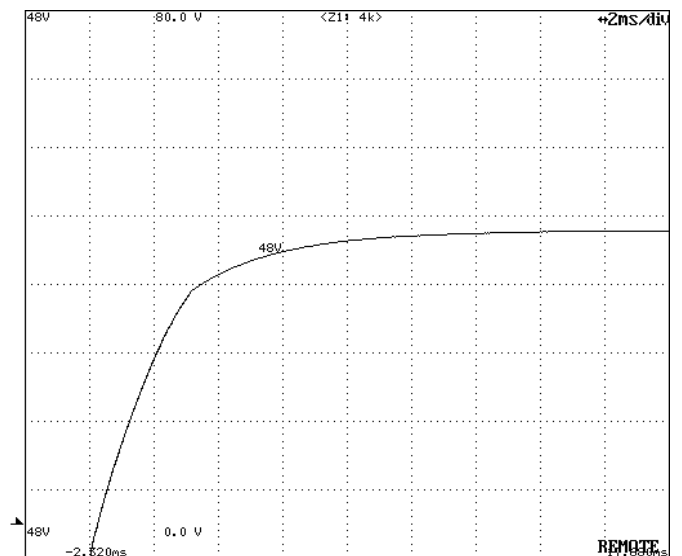
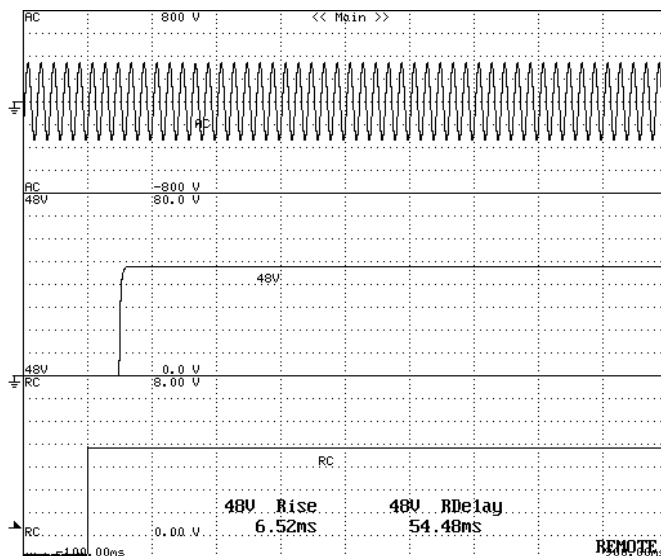
All Output Start-up Sequence

48V DC Output Rise Characteristics

Input: 240V AC  
Load: Rated Load

Timebase Range: 100ms/div

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



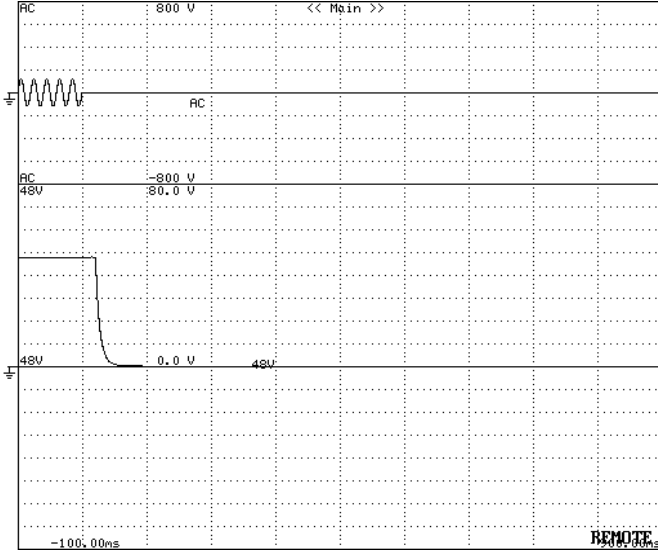
All Output Start-up Sequence

48V DC Output Rise Characteristics

Model	UZP-220-48	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

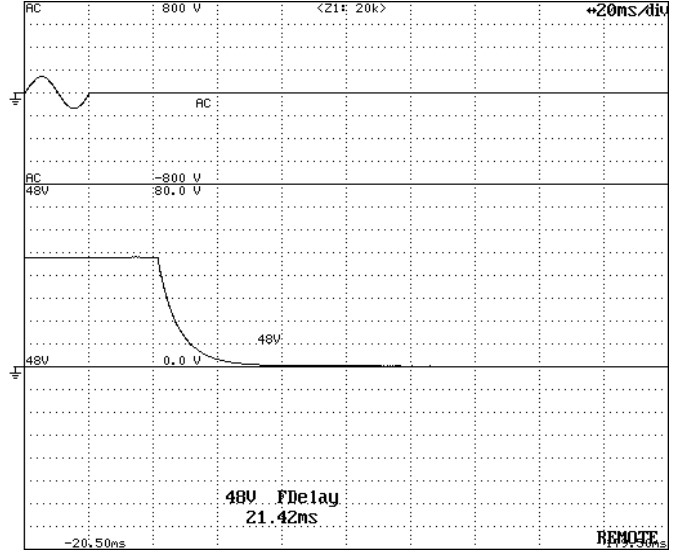
Input: 100V AC  
Load: Rated Load

Timebase Range: 100ms/div



Output Fall Characteristics

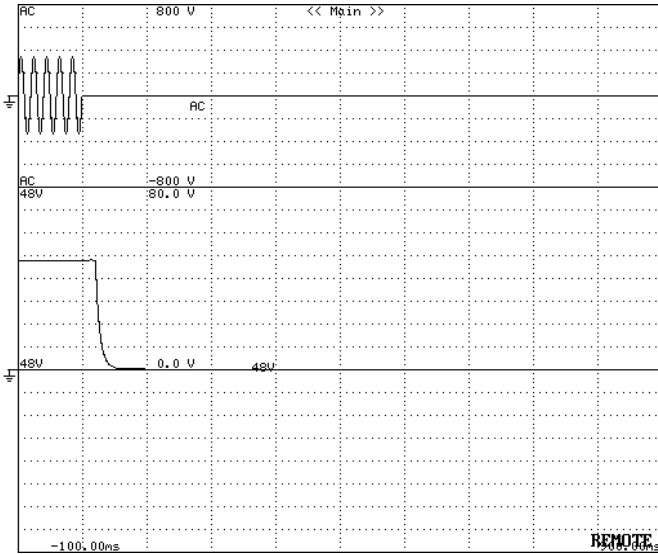
Timebase Range: 20ms/div



Output Fall Characteristics (magnification)

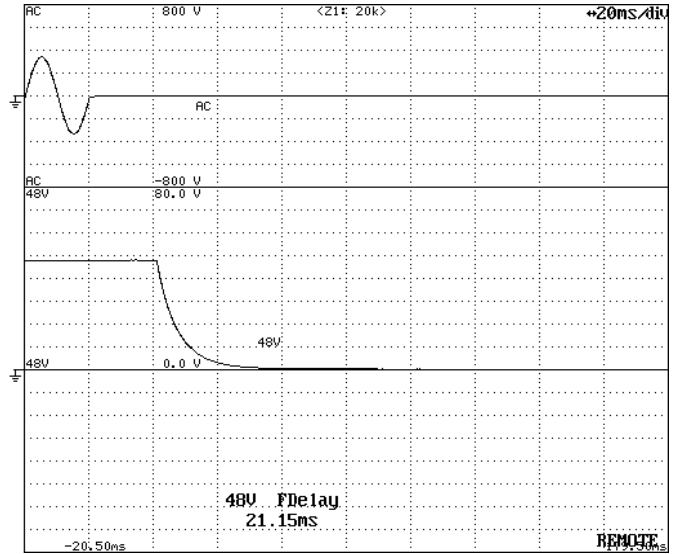
Input: 240V AC  
Load: Rated Load

Timebase Range: 100ms/div



Output Fall Characteristics

Timebase Range: 20ms/div

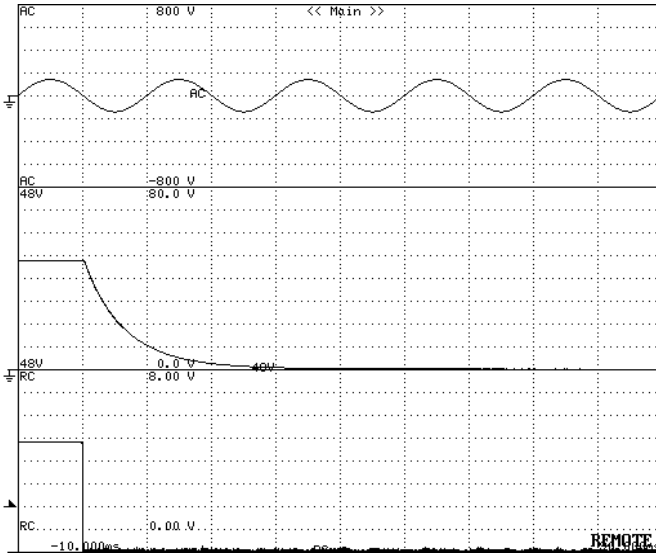


Output Fall Characteristics (magnification)

Model	UZP-220-48	Temperature: 25°C
Item	Output Fall Characteristics (at Remote OFF)	

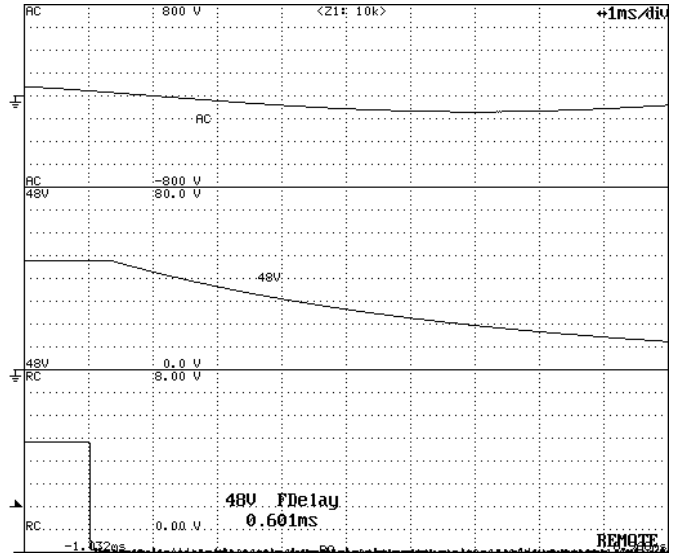
Input: 100V AC  
Load: Rated Load

Timebase Range: 10ms/div



Output Fall Characteristics

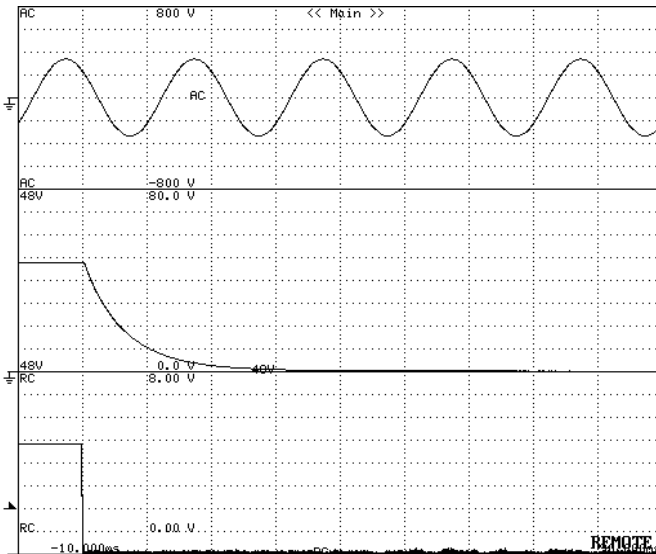
Timebase Range: 1ms/div



Output Fall Characteristics (magnification)

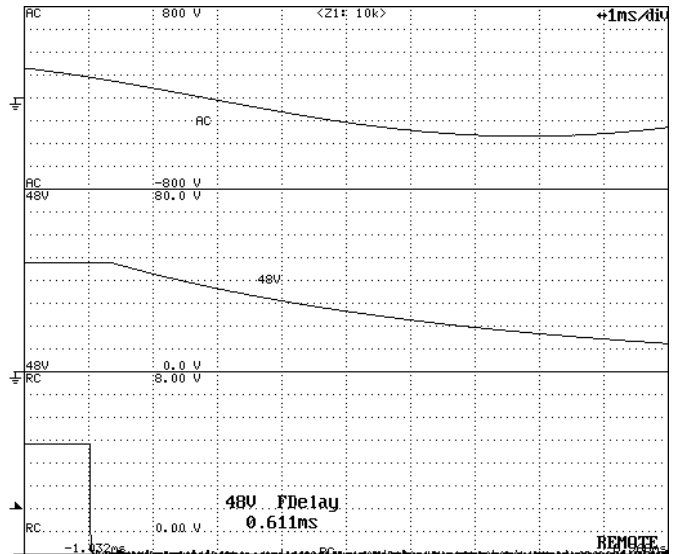
Input: 240V AC  
Load: Rated Load

Timebase Range: 10ms/div



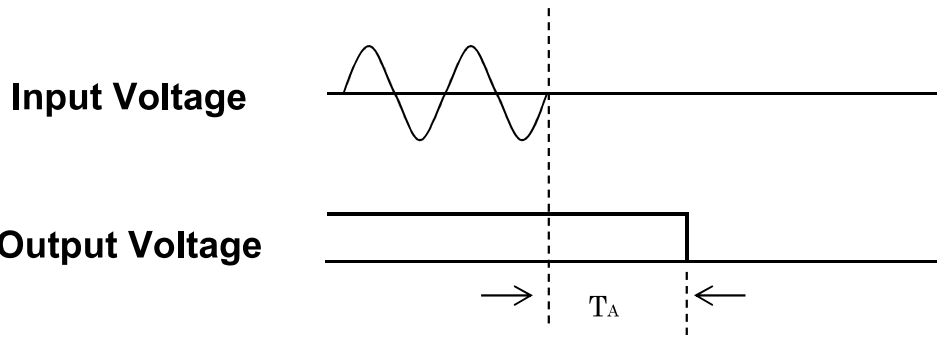
Output Fall Characteristics

Timebase Range: 1ms/div

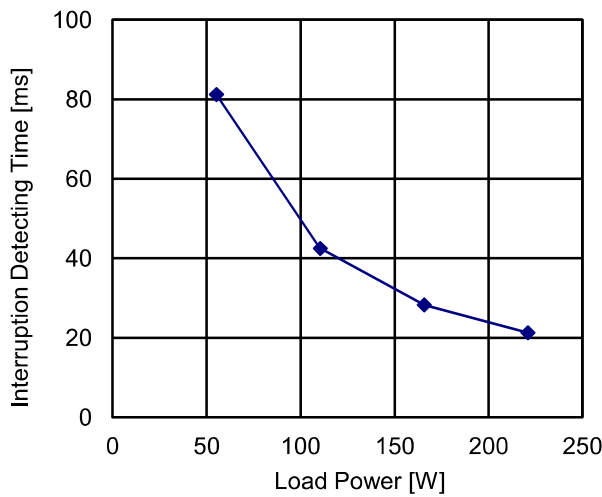


Output Fall Characteristics (magnification)

Model	UZP-220-48	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

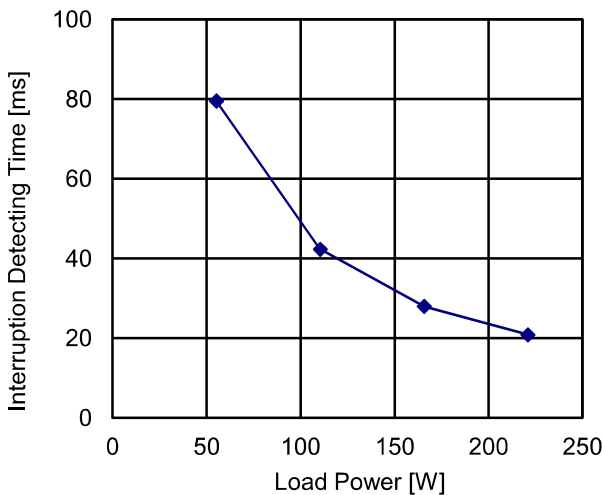


### Input Voltage:100V AC



Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	$T_A$
55.2	81.3
110.4	42.5
165.6	28.3
220.8	21.3

### Input Voltage:240V AC

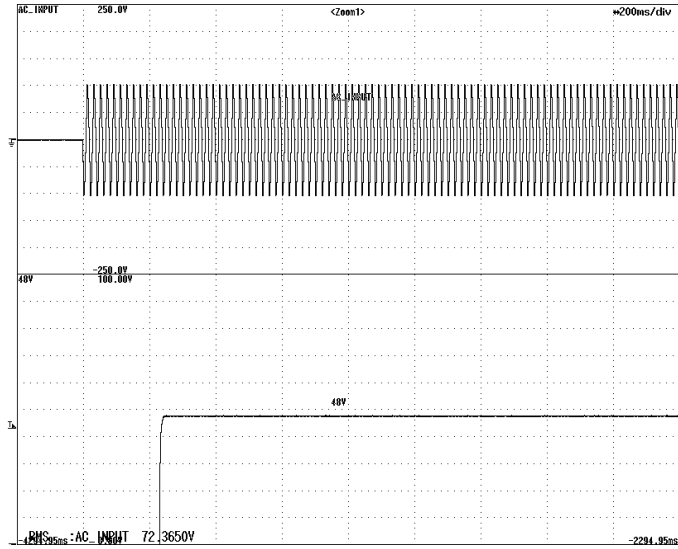


Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	$T_A$
55.2	79.5
110.4	42.3
165.6	28.0
220.8	20.9

Model	UZP-220-48	Temperature: 25°C
Item	Start-Up Voltage	

**Timebase Range: 200ms/div  
Load: Rated Load**

**AC Input**

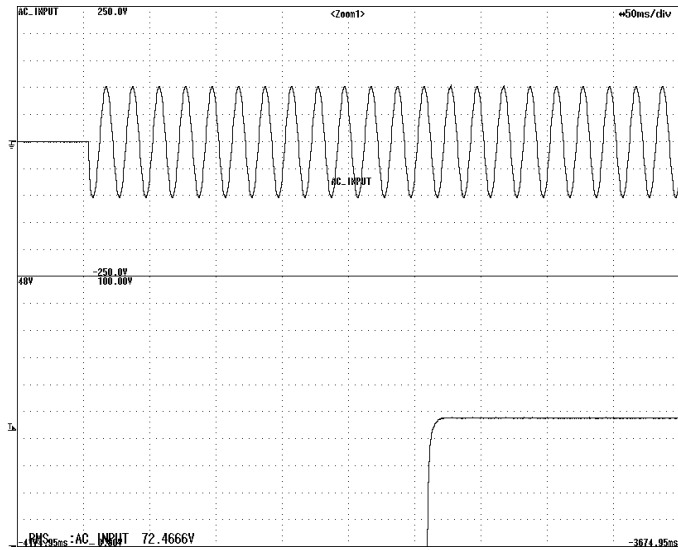


**+48V**

**Start-up Voltage: 72.4V AC**

**Timebase Range: 50ms/div  
Load: Minimum Load**

**AC Input**

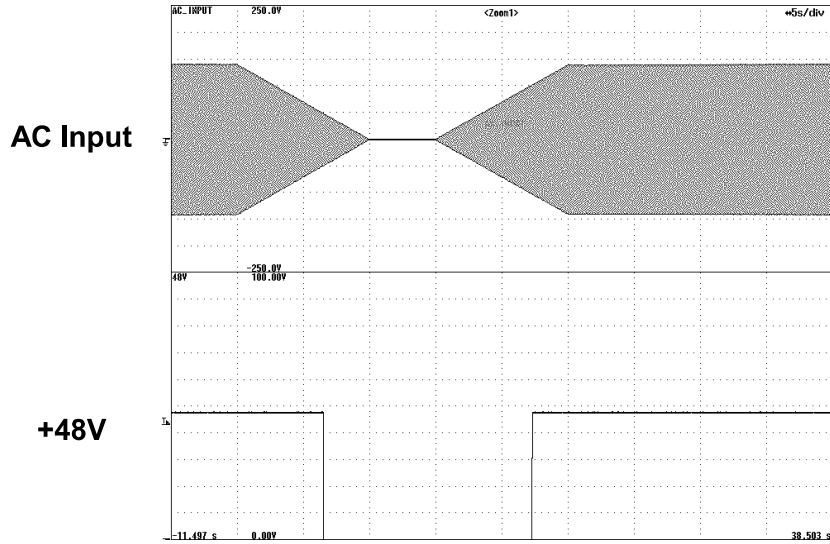


**+48V**

**Start-up Voltage: 72.5V AC**

Model	UZF-220-48	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

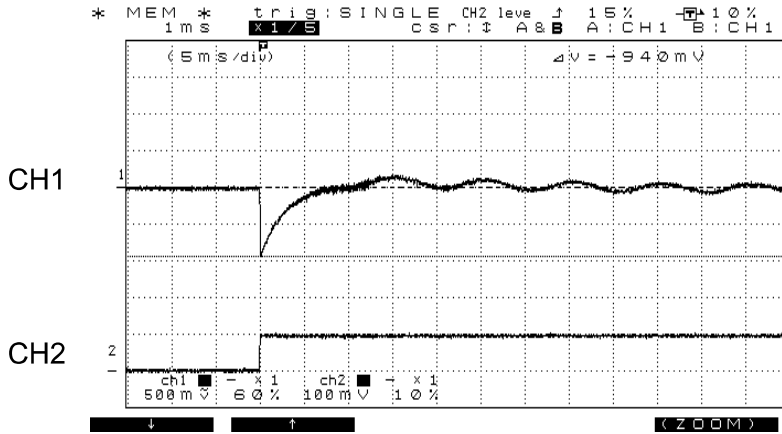
**Timebase Range: 5s/div  
Load: Rated Load**



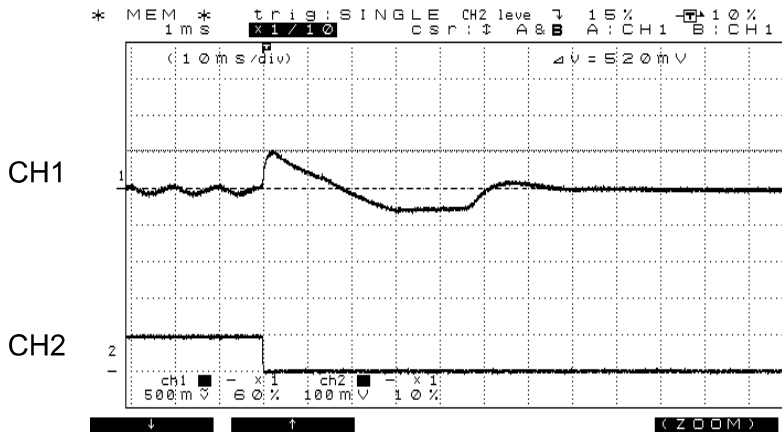
**Sweep Rate: 10Vave/sec**

Model	UZP-220-48	Temperature: 25°C
Item	Dynamic Load Response	

## +48V DC Output Transient Response Waveforms



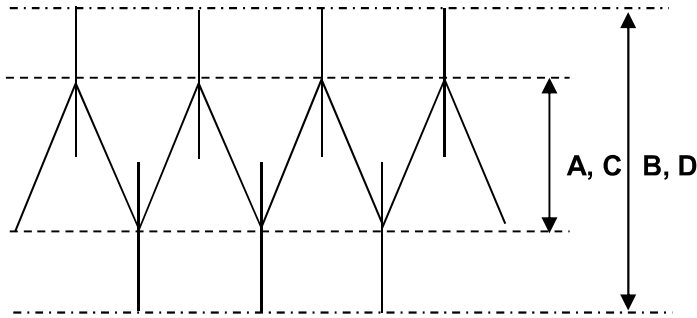
Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 500mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Minimum load(0A) → Rated Load(4.6A)	



Waveform 2	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 500mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 5A/div
Timebase Range	10ms/div
Condition	Input: 100V AC
Note: Rated Load(4.6A) → Minimum load(0A)	



Model	UZP-220-48	Load: Rated Load
Item	Ripple / Noise Voltage	

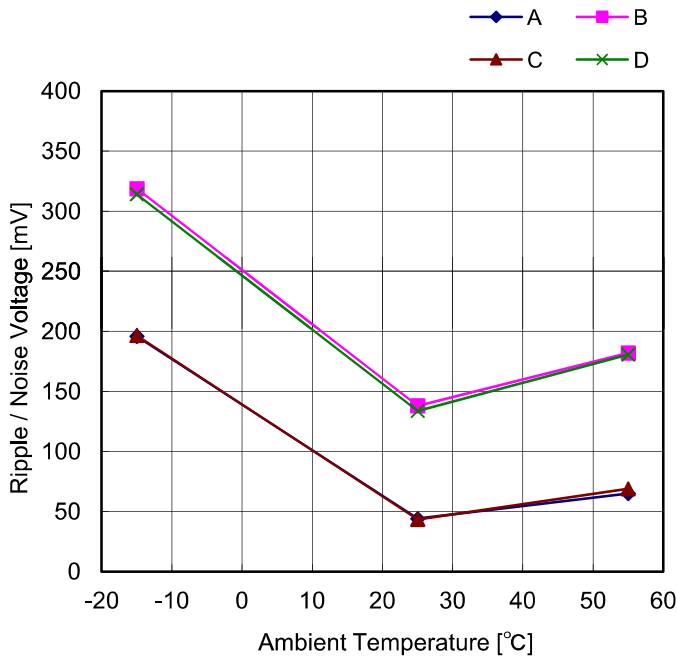


**at 100V AC**

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

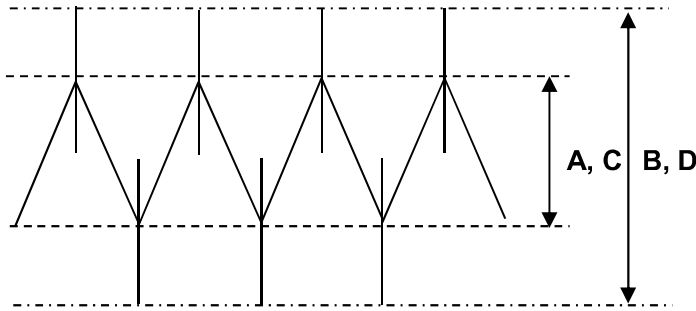
**at 240V AC**

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



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	195.9	318.7	196.6	314.1
25	44.2	137.9	43.4	133.7
55	65.1	182.0	69.0	180.7

Model	UZP-220-48	Temperature : 25°C
Item	Ripple / Noise Voltage	



**at 100V AC**

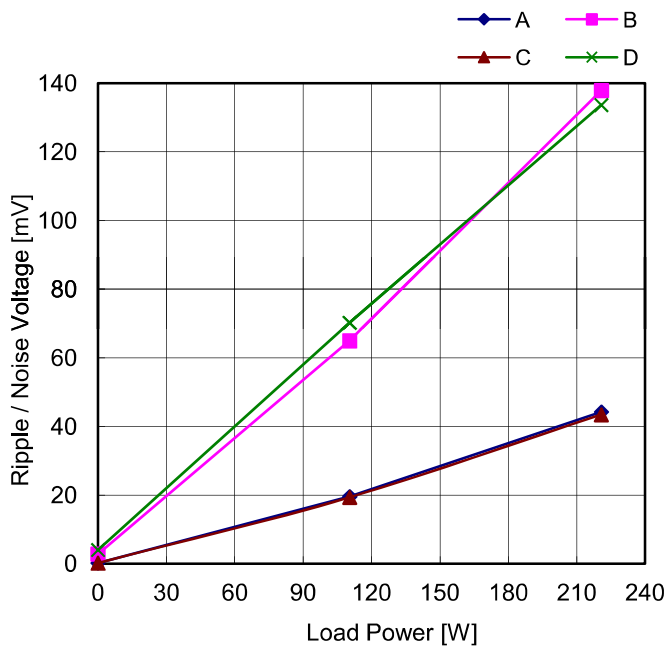
A: Ripple Voltage (mVP-P)

B: Noise Voltage (mVP-P)

**at 240V AC**

C: Ripple Voltage (mVP-P)

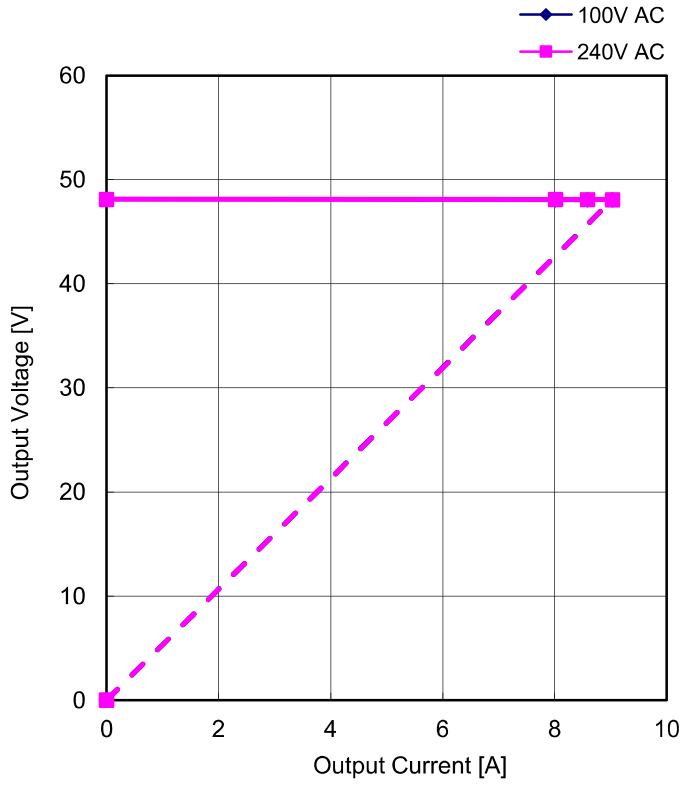
D: Noise Voltage (mVP-P)



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	0.2	2.8	0.2	4.0
110.4	19.6	65.0	19.4	70.2
220.8	44.2	137.9	43.4	133.7

Model	UZP-220-48	Temperature: 25°C
Item	Over-Current Protection	

## V-I Characteristics of 48V 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	48.10	0.00	48.10
8.01	48.09	8.01	48.09
8.58	48.08	8.58	48.09
9.03	48.08	9.03	48.08

Model	UZP-220-48	Load: Minimum Load
Item	Over-Voltage Protection	

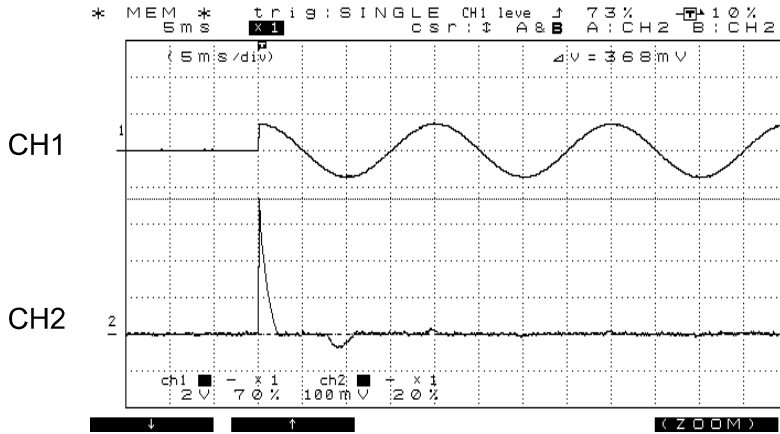
  

The graph plots Output Voltage [V] on the y-axis (0.0 to 70.0) against Ambient Temperature [°C] on the x-axis (-20 to 80). Two data series are shown: 100V AC (blue line with diamond markers) and 240V AC (magenta line with square markers). The 240V AC series shows a linear increase in output voltage as temperature rises, starting at approximately 56.33V at -15°C and reaching 60.56V at 75°C. The 100V AC series is not clearly distinguishable, suggesting it follows a similar trend or is overlaid.

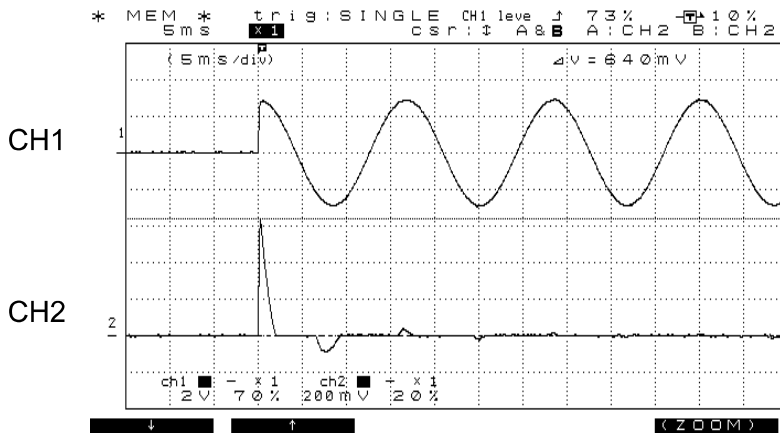
Ambient Temp. [°C]	Output Voltage [V]	
	100V AC	240V AC
-15	56.33	56.34
25	58.16	58.13
55	59.41	59.40
75	60.52	60.56

Model	UZP-220-48	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
Condition	Input: 100V AC Load: Rated Load
Note: Inrush Current: 18.4A	



Waveform 2	
CH1	Measuring Point: AC Input Voltage
	Range: 200V/div
CH2	Measuring Point: AC Input Current
	Range: 10A/div
Timebase Range	5ms/div
Condition	Input: 200V AC Load: Rated Load
Note: Inrush Current: 32.0A	

Model	UZP-220-48	Load: Rated Load																																				
Item	Leakage Current																																					
<p>The graph plots Leakage Current [mA] on the y-axis (0 to 1) against AC Input Voltage [V] on the x-axis (50 to 300). The data points are as follows:</p> <table border="1"> <thead> <tr> <th>AC Input Voltage [V]</th> <th>Leakage Current [mA]</th> </tr> </thead> <tbody> <tr><td>85</td><td>0.04</td></tr> <tr><td>100</td><td>0.05</td></tr> <tr><td>132</td><td>0.07</td></tr> <tr><td>176</td><td>0.10</td></tr> <tr><td>200</td><td>0.11</td></tr> <tr><td>220</td><td>0.12</td></tr> <tr><td>240</td><td>0.13</td></tr> <tr><td>264</td><td>0.15</td></tr> </tbody> </table>		AC Input Voltage [V]	Leakage Current [mA]	85	0.04	100	0.05	132	0.07	176	0.10	200	0.11	220	0.12	240	0.13	264	0.15	<table border="1"> <thead> <tr> <th>AC Input Voltage [V]</th> <th>Leakage Current [mA]</th> </tr> </thead> <tbody> <tr><td>85</td><td>0.04</td></tr> <tr><td>100</td><td>0.05</td></tr> <tr><td>132</td><td>0.07</td></tr> <tr><td>176</td><td>0.10</td></tr> <tr><td>200</td><td>0.11</td></tr> <tr><td>220</td><td>0.12</td></tr> <tr><td>240</td><td>0.13</td></tr> <tr><td>264</td><td>0.15</td></tr> </tbody> </table>	AC Input Voltage [V]	Leakage Current [mA]	85	0.04	100	0.05	132	0.07	176	0.10	200	0.11	220	0.12	240	0.13	264	0.15
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