

Test Data

Model Number: mUZP-120-12-JBH

Model Name: DC POWER SUPPLY

INPUT: 85V – 264V AC, 50 / 60 Hz

OUTPUT: 12V 10A (16.7 A_{peak})

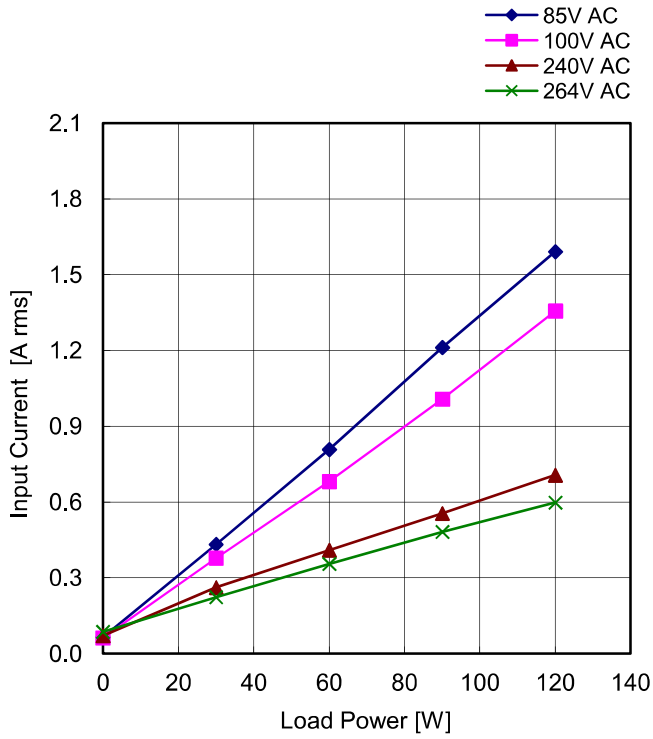
Minimum load : 0W
Rated load :120W
Peak output power: 200.4W

Approved by : *Tsujimoto* (QA manager)
Designed by : *Kazuhiko Yamada* (R&D engineer)
Tested by : *Hiroyuki Watababe* (Evaluation test engineer)

CONTENTS

1. Input Current (by Load Power)	1
入力電流(負荷特性)	
2. Efficiency	2
効率	
3. Power Factor	3
力率	
4. Line Regulation	4
静的入力変動	
5. Load Regulation	5
静的負荷変動	
6. Ambient Temperature Drift	6
周囲温度変動	
7. Output Rise Characteristics (at AC Power ON)	7
立ち上がり特性(AC 入力電圧投入時)	
8. Output Rise Characteristics (at Remote ON)	8
立ち上がり特性(リモートオン時)	
9. Output Fall Characteristics (at AC Power OFF)	9
立ち下がり特性(AC 入力電圧停止時)	
10. Output Fall Characteristics (at Remote OFF)	10
立ち下がり特性(リモートオフ時)	
11. Instantaneous Interruption Compensation (by Load Power)	11
瞬時停電保護	
12. Start-Up Voltage	12
起動電圧	
13. Input Voltage Sweep Up/Down	13
入力電圧緩動試験	
14. Dynamic Load Response	14
動的負荷変動	
15. Ripple / Noise Voltage	15-16
リップル電圧/ リップルノイズ	
16. Over-Current Protection	17
過電流保護	
17. Over-Voltage Protection	18
過電圧保護	
18. Inrush Current	19
突入電流	
19. Leakage Current	20
漏洩電流	

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Input Current (by Load Power)	



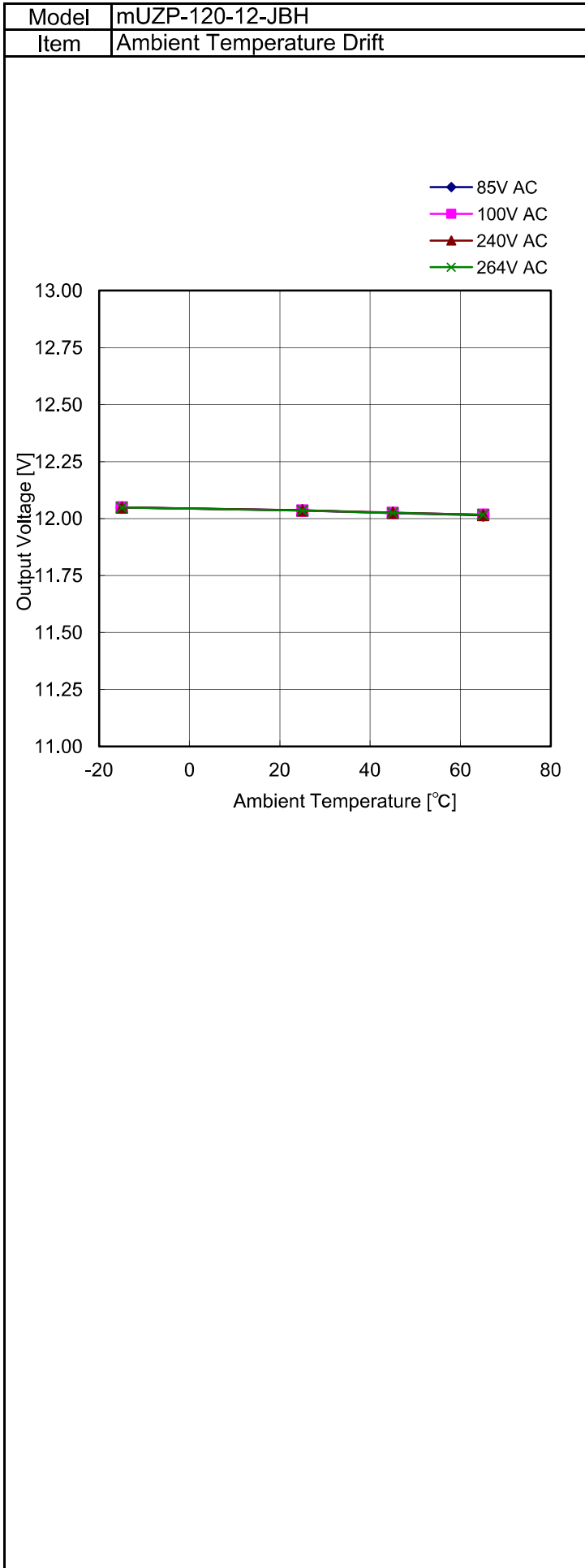
Load Power [W]	Input Current [A rms]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	0.07	0.06	0.07	0.09
30.0	0.43	0.38	0.26	0.22
60.0	0.81	0.68	0.41	0.36
90.0	1.21	1.01	0.56	0.48
120.0	1.59	1.36	0.71	0.60

Model	mUZP-120-12-JBH	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>88.40</td><td>89.20</td></tr> <tr><td>100</td><td>89.68</td><td>89.42</td></tr> <tr><td>132</td><td>89.93</td><td>91.15</td></tr> <tr><td>176</td><td>90.78</td><td>92.17</td></tr> <tr><td>200</td><td>90.81</td><td>92.56</td></tr> <tr><td>220</td><td>91.04</td><td>92.80</td></tr> <tr><td>240</td><td>91.65</td><td>93.01</td></tr> <tr><td>264</td><td>91.79</td><td>92.90</td></tr> </tbody> </table>	AC Input Voltage [V]	Efficiency [%]		50% Load	Rated Load	85	88.40	89.20	100	89.68	89.42	132	89.93	91.15	176	90.78	92.17	200	90.81	92.56	220	91.04	92.80	240	91.65	93.01	264	91.79	92.90
AC Input Voltage [V]	Efficiency [%]																														
	50% Load	Rated Load																													
85	88.40	89.20																													
100	89.68	89.42																													
132	89.93	91.15																													
176	90.78	92.17																													
200	90.81	92.56																													
220	91.04	92.80																													
240	91.65	93.01																													
264	91.79	92.90																													
<p>■ Efficiency(by Load Power)</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="4">Efficiency [%]</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>30.0</td><td>84.96</td><td>84.99</td><td>86.06</td><td>86.34</td></tr> <tr><td>60.0</td><td>88.40</td><td>89.68</td><td>91.65</td><td>91.79</td></tr> <tr><td>90.0</td><td>88.46</td><td>89.82</td><td>92.36</td><td>92.34</td></tr> <tr><td>120.0</td><td>89.20</td><td>89.42</td><td>93.01</td><td>92.90</td></tr> </tbody> </table>	Load Power [W]	Efficiency [%]				Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC	30.0	84.96	84.99	86.06	86.34	60.0	88.40	89.68	91.65	91.79	90.0	88.46	89.82	92.36	92.34	120.0	89.20	89.42	93.01	92.90
Load Power [W]	Efficiency [%]																														
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC																											
30.0	84.96	84.99	86.06	86.34																											
60.0	88.40	89.68	91.65	91.79																											
90.0	88.46	89.82	92.36	92.34																											
120.0	89.20	89.42	93.01	92.90																											

Model	mUZP-120-12-JBH	Temperature: 25°C																														
Item	Power Factor																															
<p>■ Power Factor (by Input Voltage)</p> <table border="1"> <thead> <tr> <th>AC Input Voltage [V]</th> <th>50% Load</th> <th>Rated Load</th> </tr> </thead> <tbody> <tr><td>85</td><td>98.7</td><td>98.9</td></tr> <tr><td>100</td><td>97.8</td><td>98.7</td></tr> <tr><td>132</td><td>93.8</td><td>97.6</td></tr> <tr><td>176</td><td>85.2</td><td>94.7</td></tr> <tr><td>200</td><td>80.6</td><td>91.4</td></tr> <tr><td>220</td><td>75.6</td><td>89.0</td></tr> <tr><td>240</td><td>72.1</td><td>85.6</td></tr> <tr><td>264</td><td>70.2</td><td>81.6</td></tr> </tbody> </table>				AC Input Voltage [V]	50% Load	Rated Load	85	98.7	98.9	100	97.8	98.7	132	93.8	97.6	176	85.2	94.7	200	80.6	91.4	220	75.6	89.0	240	72.1	85.6	264	70.2	81.6		
AC Input Voltage [V]	50% Load	Rated Load																														
85	98.7	98.9																														
100	97.8	98.7																														
132	93.8	97.6																														
176	85.2	94.7																														
200	80.6	91.4																														
220	75.6	89.0																														
240	72.1	85.6																														
264	70.2	81.6																														
<p>■ Power Factor (by Load Power)</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="4">Power Factor [%]</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>30.0</td><td>95.9</td><td>93.4</td><td>66.5</td><td>58.8</td></tr> <tr><td>60.0</td><td>98.7</td><td>97.8</td><td>80.6</td><td>70.2</td></tr> <tr><td>90.0</td><td>98.6</td><td>99.1</td><td>88.0</td><td>76.6</td></tr> <tr><td>120.0</td><td>98.9</td><td>98.7</td><td>91.4</td><td>81.6</td></tr> </tbody> </table>				Load Power [W]	Power Factor [%]				Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC	30.0	95.9	93.4	66.5	58.8	60.0	98.7	97.8	80.6	70.2	90.0	98.6	99.1	88.0	76.6	120.0	98.9	98.7	91.4	81.6
Load Power [W]	Power Factor [%]																															
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC																												
30.0	95.9	93.4	66.5	58.8																												
60.0	98.7	97.8	80.6	70.2																												
90.0	98.6	99.1	88.0	76.6																												
120.0	98.9	98.7	91.4	81.6																												

Model	mUZP-120-12-JBH	Temperature: 25°C																		
Item	Line Regulation																			
<p>The graph plots Output Voltage [V] on the y-axis (ranging from 11.00 to 13.00) 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 12.03V across the entire input range from 85V to 264V.</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>12.036</td> </tr> <tr> <td>100</td> <td>12.035</td> </tr> <tr> <td>132</td> <td>12.036</td> </tr> <tr> <td>176</td> <td>12.036</td> </tr> <tr> <td>200</td> <td>12.036</td> </tr> <tr> <td>220</td> <td>12.035</td> </tr> <tr> <td>240</td> <td>12.036</td> </tr> <tr> <td>264</td> <td>12.035</td> </tr> </tbody> </table>	AC Input Voltage [V]	Output Voltage [V]	85	12.036	100	12.035	132	12.036	176	12.036	200	12.036	220	12.035	240	12.036	264	12.035
AC Input Voltage [V]	Output Voltage [V]																			
85	12.036																			
100	12.035																			
132	12.036																			
176	12.036																			
200	12.036																			
220	12.035																			
240	12.036																			
264	12.035																			

Model	mUZP-120-12-JBH	Temperature: 25°C																																																								
Item	Load Regulation																																																									
<p>The graph plots Output Voltage [V] on the y-axis (ranging from 11.00 to 13.00) against Load Power [W] on the x-axis (ranging from 0 to 210). Four data series are shown: 85V AC (blue diamonds), 100V AC (magenta squares), 240V AC (red triangles), and 264V AC (green crosses). All series show a nearly horizontal line at approximately 12.03V, indicating excellent load regulation.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</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>0.0</td> <td>12.038</td> <td>12.039</td> <td>12.039</td> <td>12.037</td> </tr> <tr> <td>30.0</td> <td>12.036</td> <td>12.036</td> <td>12.037</td> <td>12.035</td> </tr> <tr> <td>60.0</td> <td>12.036</td> <td>12.036</td> <td>12.036</td> <td>12.035</td> </tr> <tr> <td>90.0</td> <td>12.036</td> <td>12.036</td> <td>12.036</td> <td>12.035</td> </tr> <tr> <td>120.0</td> <td>12.035</td> <td>12.036</td> <td>12.035</td> <td>12.036</td> </tr> <tr> <td>200.4</td> <td>12.035</td> <td>12.035</td> <td>12.034</td> <td>12.035</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Load Condition</th> </tr> <tr> <th rowspan="2">Load Power [W]</th> <th>Load Current [A]</th> </tr> <tr> <th>12V</th> </tr> </thead> <tbody> <tr> <td>0.0</td> <td>0.00</td> </tr> <tr> <td>30.0</td> <td>2.50</td> </tr> <tr> <td>60.0</td> <td>5.00</td> </tr> <tr> <td>90.0</td> <td>7.50</td> </tr> <tr> <td>120.0</td> <td>10.00</td> </tr> <tr> <td>200.4</td> <td>16.70</td> </tr> </tbody> </table>	Load Power [W]	Output Voltage [V]				Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC	0.0	12.038	12.039	12.039	12.037	30.0	12.036	12.036	12.037	12.035	60.0	12.036	12.036	12.036	12.035	90.0	12.036	12.036	12.036	12.035	120.0	12.035	12.036	12.035	12.036	200.4	12.035	12.035	12.034	12.035	Load Condition		Load Power [W]	Load Current [A]	12V	0.0	0.00	30.0	2.50	60.0	5.00	90.0	7.50	120.0	10.00	200.4	16.70
Load Power [W]	Output Voltage [V]																																																									
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC																																																						
0.0	12.038	12.039	12.039	12.037																																																						
30.0	12.036	12.036	12.037	12.035																																																						
60.0	12.036	12.036	12.036	12.035																																																						
90.0	12.036	12.036	12.036	12.035																																																						
120.0	12.035	12.036	12.035	12.036																																																						
200.4	12.035	12.035	12.034	12.035																																																						
Load Condition																																																										
Load Power [W]	Load Current [A]																																																									
	12V																																																									
0.0	0.00																																																									
30.0	2.50																																																									
60.0	5.00																																																									
90.0	7.50																																																									
120.0	10.00																																																									
200.4	16.70																																																									



Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	12.048	12.049	12.049	12.049
25	12.036	12.035	12.036	12.035
45	12.024	12.025	12.026	12.025
65	12.014	12.017	12.016	12.017

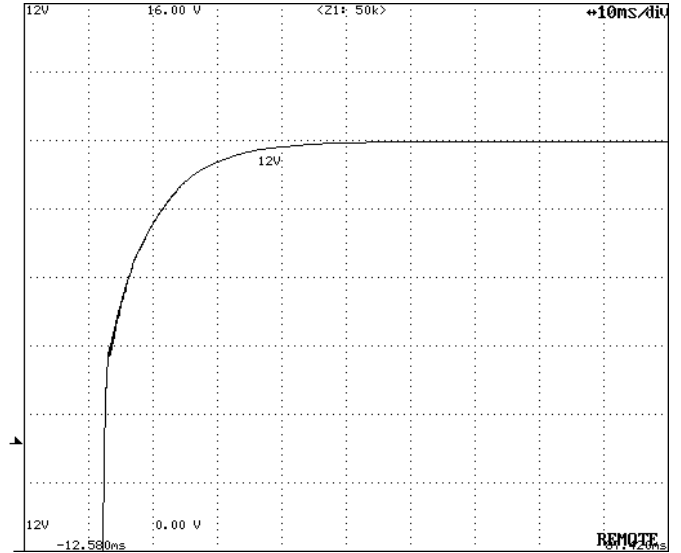
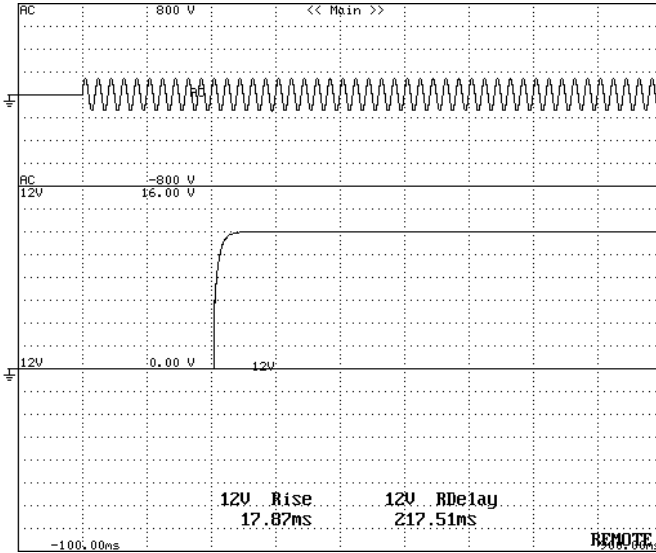
Load Condition	
Ambient Temp. (°C)	Load Current [A]
	12V
-15	10.00
25	10.00
45	10.00
65	6.67

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div

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



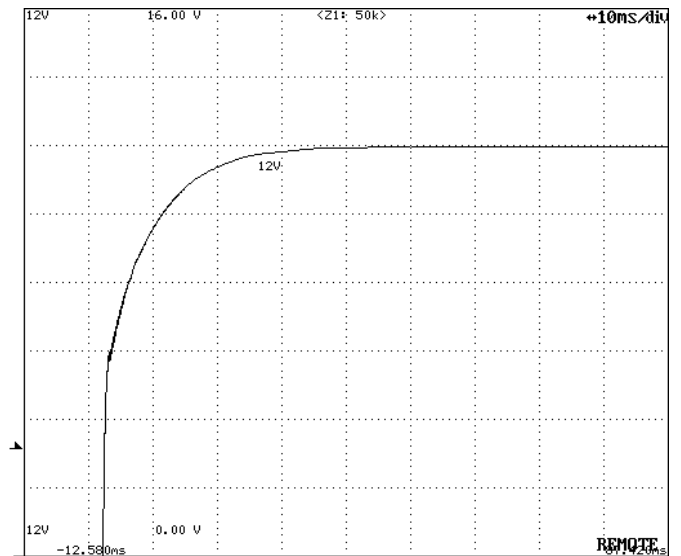
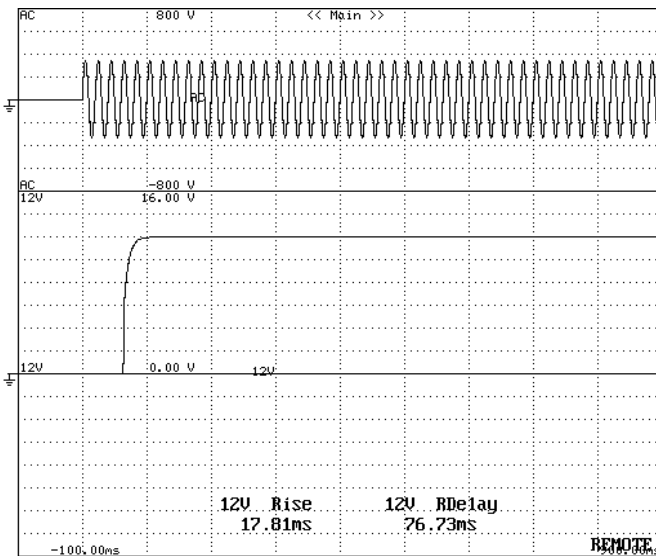
All Output Start-up Sequence

12V DC Output Rise Characteristics

Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence

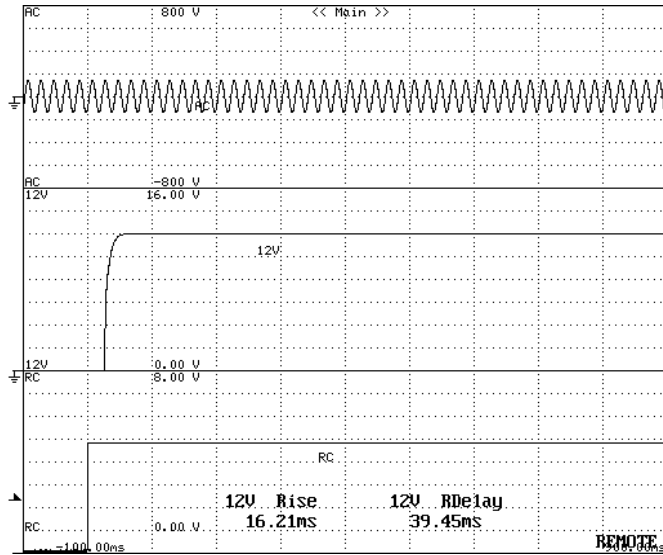
12V DC Output Rise Characteristics

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Output Rise Characteristics (at Remote ON)	

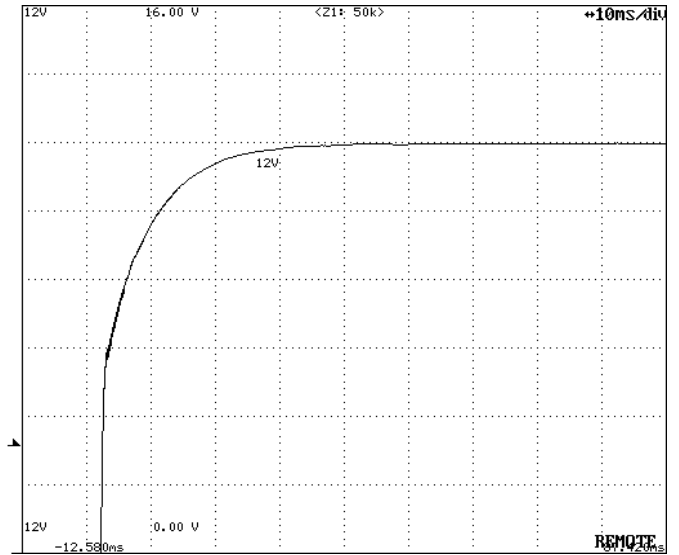
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence

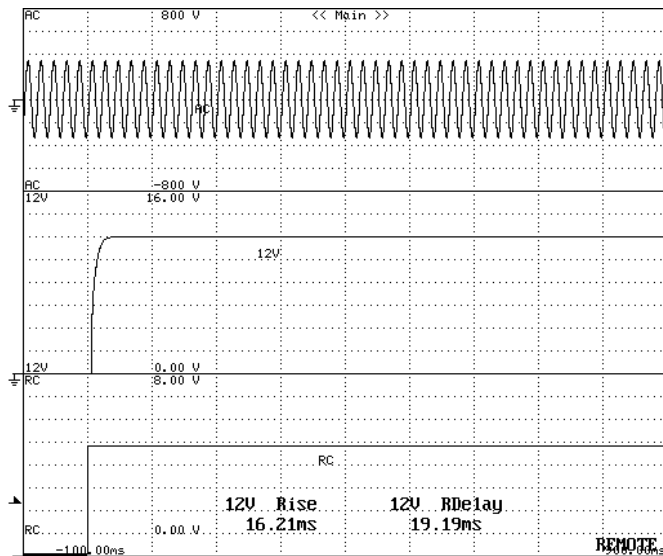


12V DC Output Rise Characteristics

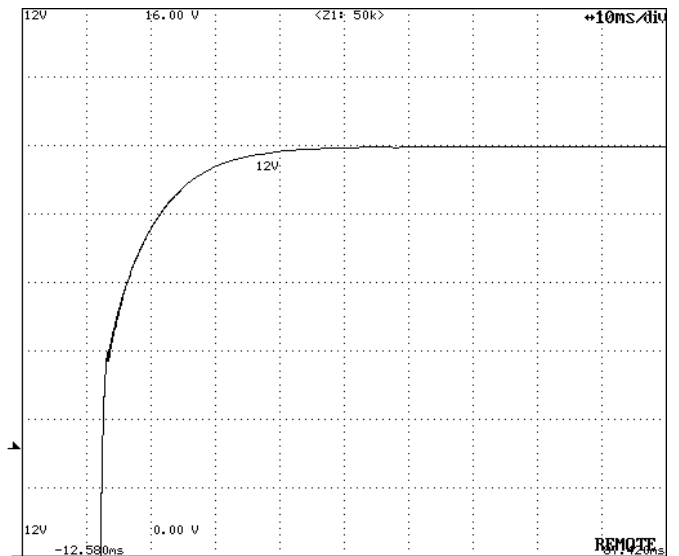
Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence

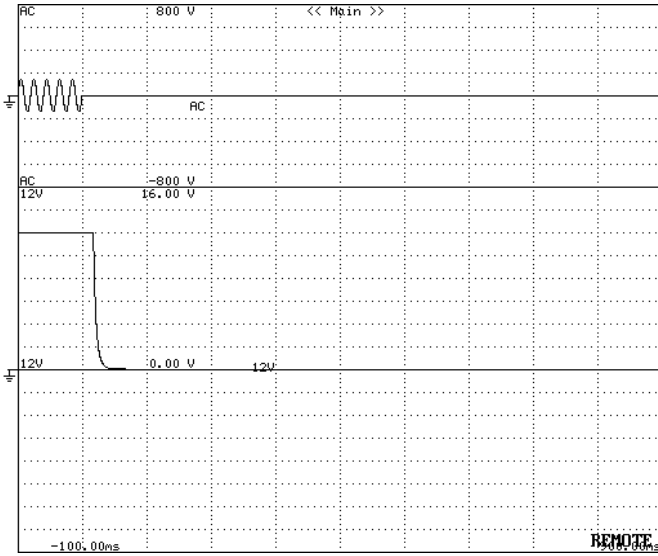


12V DC Output Rise Characteristics

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

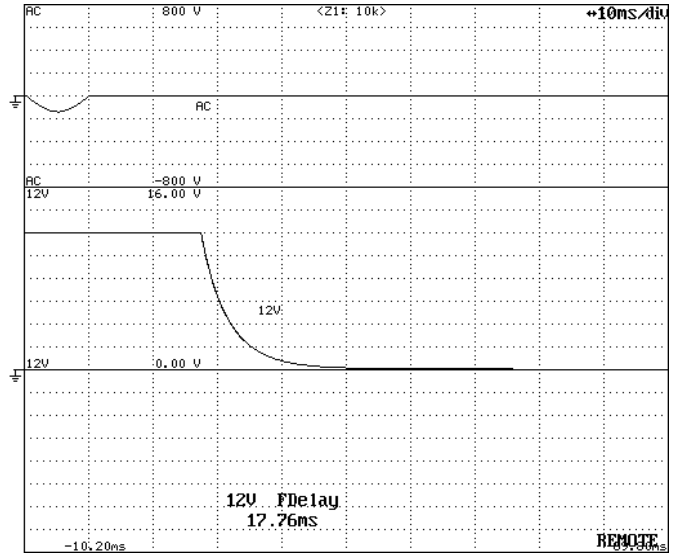
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div



Output Fall Characteristics

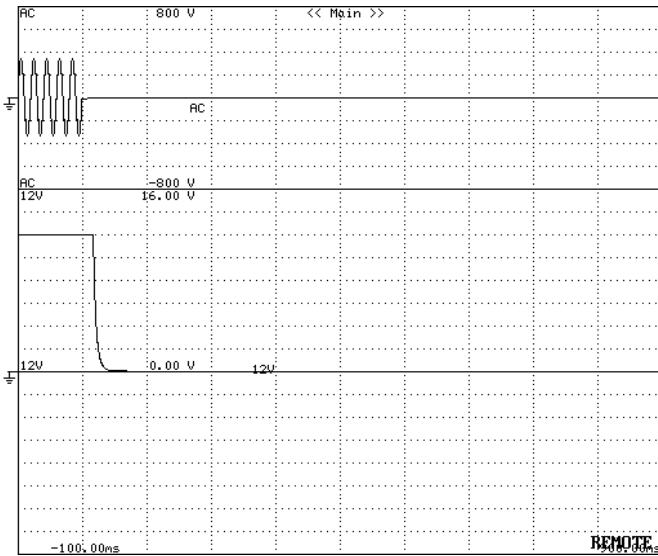
Timebase Range: 10ms/div



Output Fall Characteristics (magnification)

Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div



Output Fall Characteristics

Timebase Range: 10ms/div

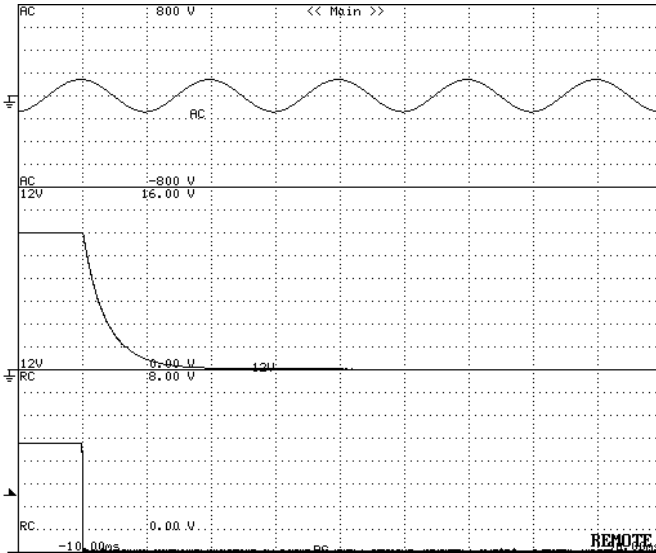


Output Fall Characteristics (magnification)

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Output Fall Characteristics (at Remote OFF)	

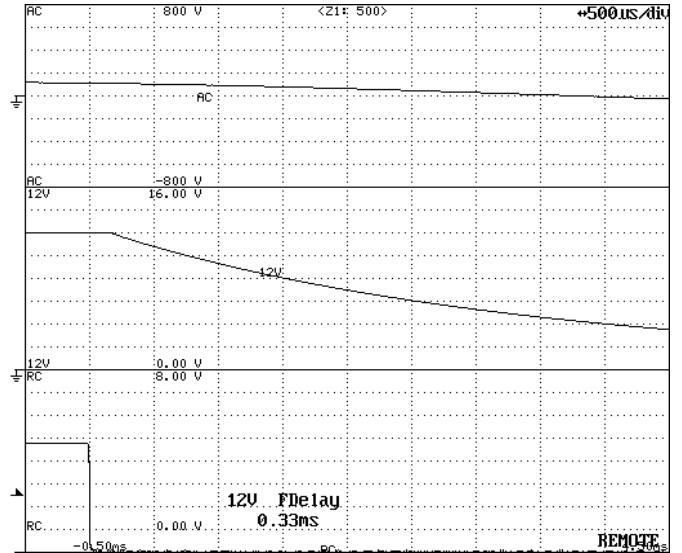
Input: 100V AC
Load: Rated Load

Timebase Range: 10ms/div



Output Fall Characteristics

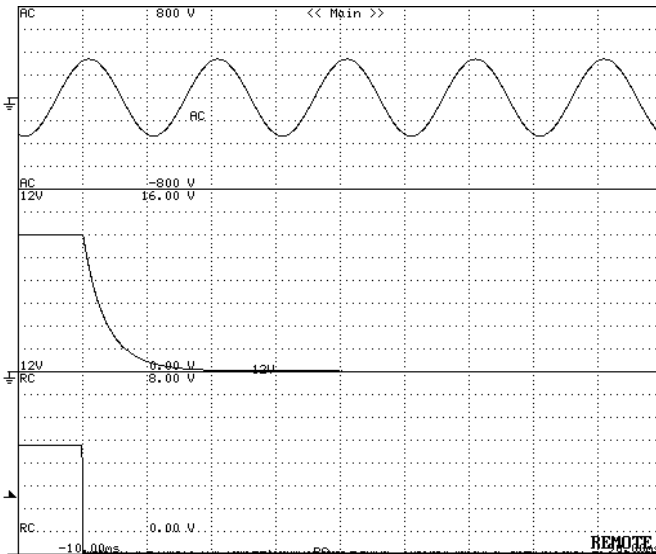
Timebase Range: 500 μs/div



Output Fall Characteristics (magnification)

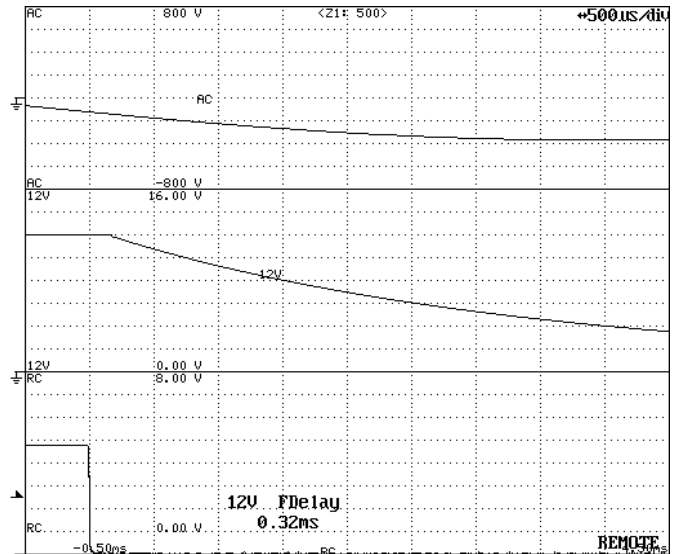
Input: 240V AC
Load: Rated Load

Timebase Range: 10ms/div



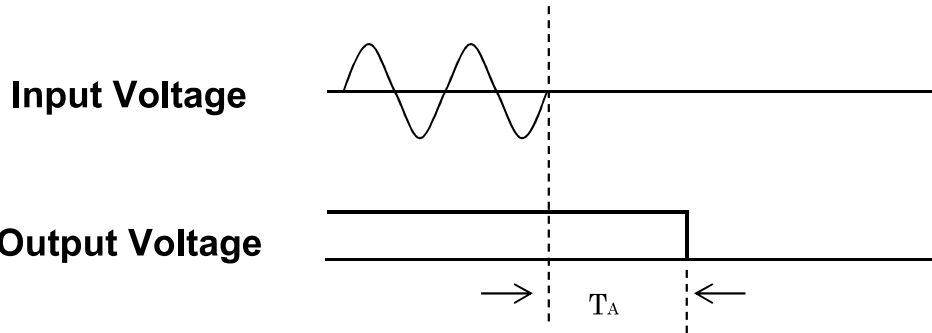
Output Fall Characteristics

Timebase Range: 500 μs/div

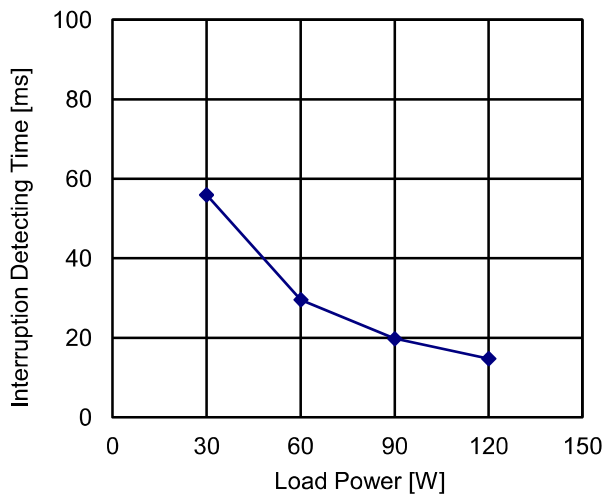


Output Fall Characteristics (magnification)

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

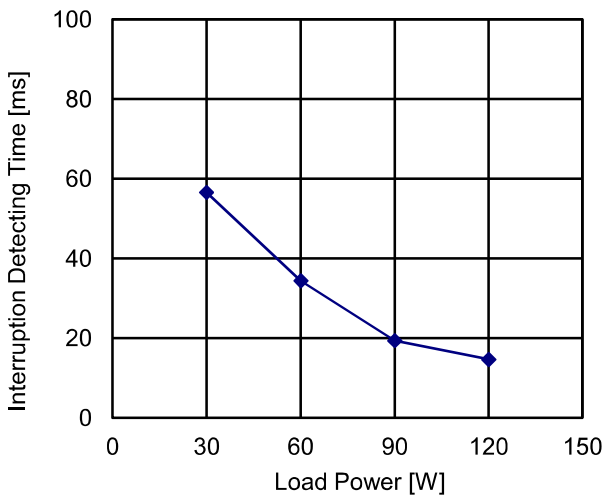


Input Voltage:100V AC



Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	T_A
30.00	56.0
60.0	29.6
90.00	19.8
120.0	14.8

Input Voltage:240V AC

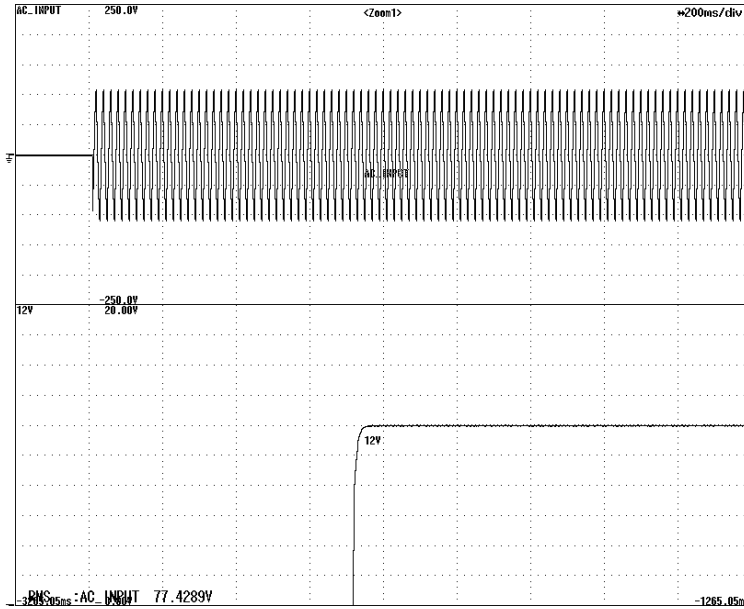


Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	T_A
30.00	56.6
60.0	34.4
90.00	19.4
120.0	14.6

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Start-Up Voltage	

Timebase Range: 200ms/div
Load: Rated Load

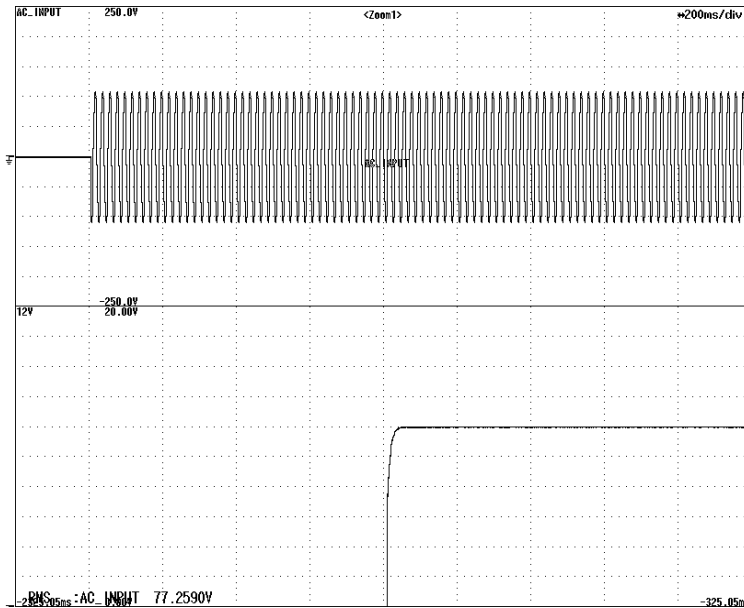
AC Input



Start-up Voltage: 77.4V AC

Timebase Range: 200ms/div
Load: Minimum Load

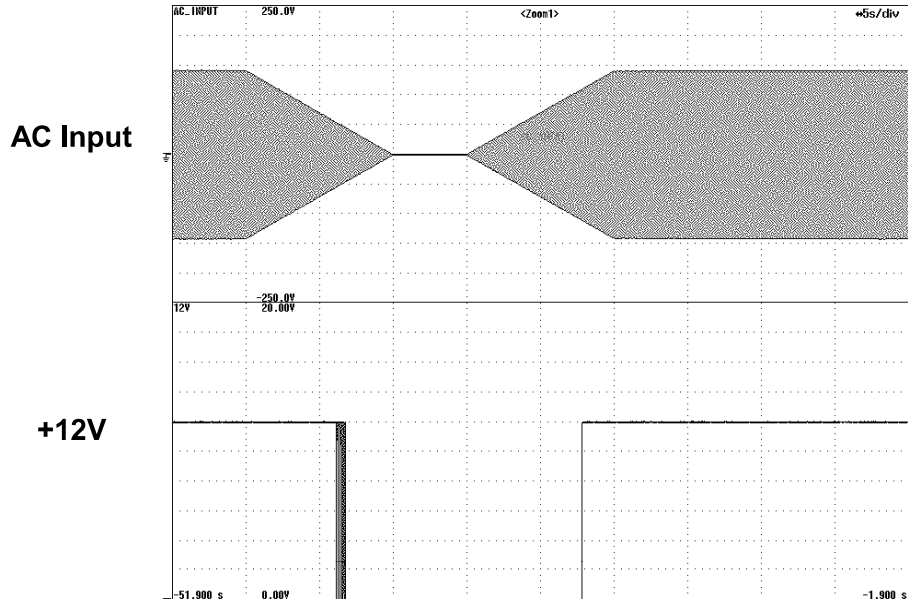
AC Input



Start-up Voltage: 77.3V AC

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

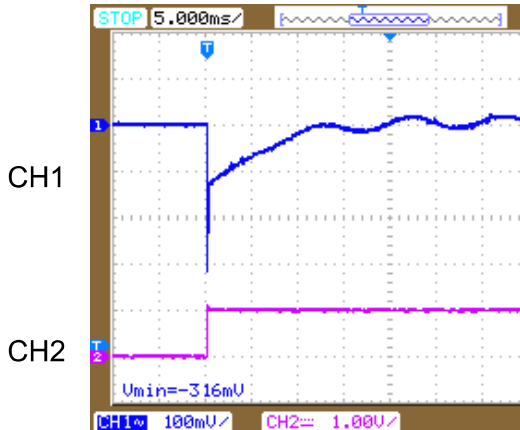
**Timebase Range: 5s/div
Load: Rated Load**



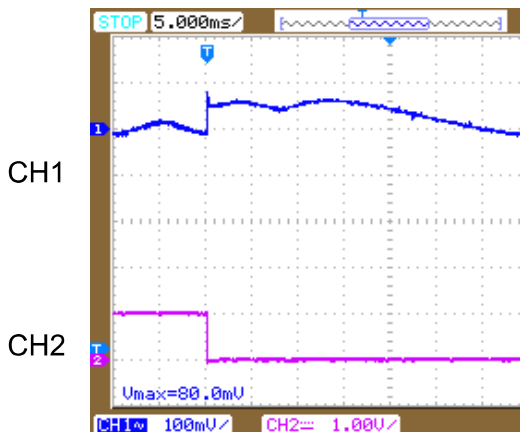
Sweep Rate: 10Vave/sec

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Dynamic Load Response	

+12V DC Output Transient Response Waveforms

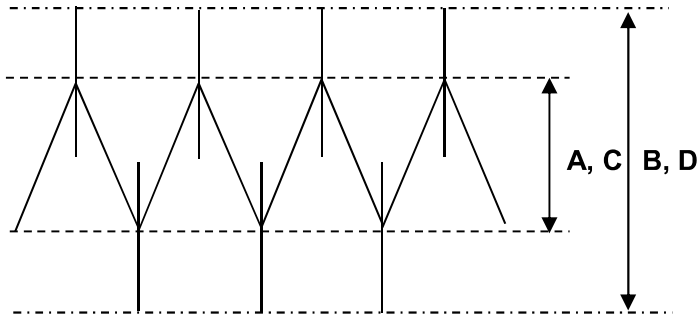


Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Minimum load(0A) → Rated Load(10A)	



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	mUZP-120-12-JBH	Load: Rated Load
Item	Ripple / Noise Voltage	

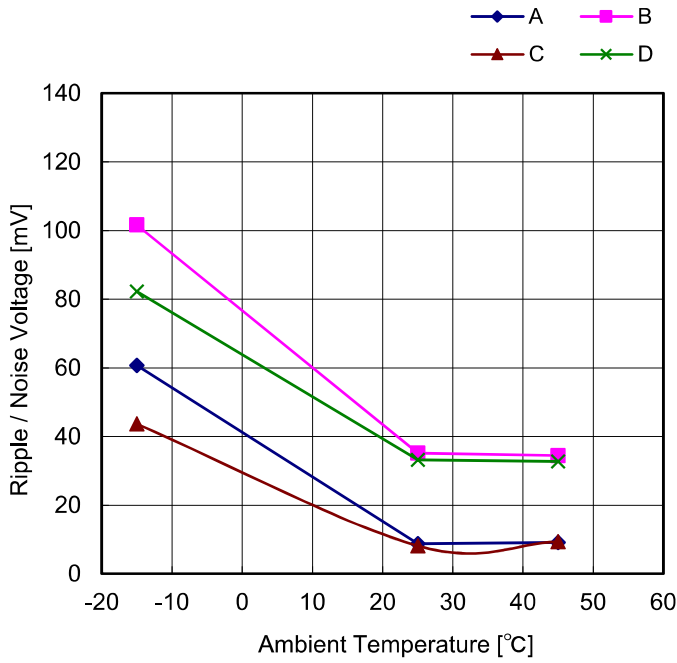


at 100V AC

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

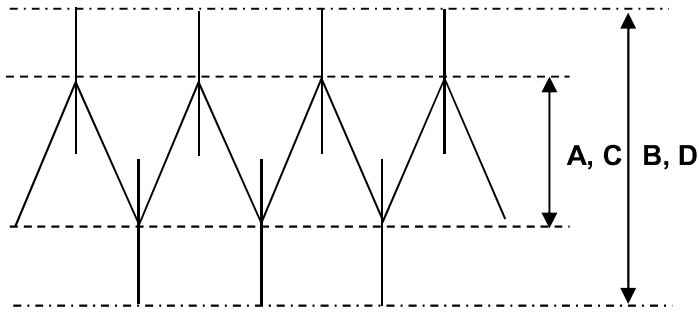
at 240V AC

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



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	60.7	101.6	43.6	82.2
25	8.7	35.1	8.1	33.2
45	9.1	34.4	9.3	32.7

Model	mUZP-120-12-JBH	Temperature : 25°C
Item	Ripple / Noise Voltage	

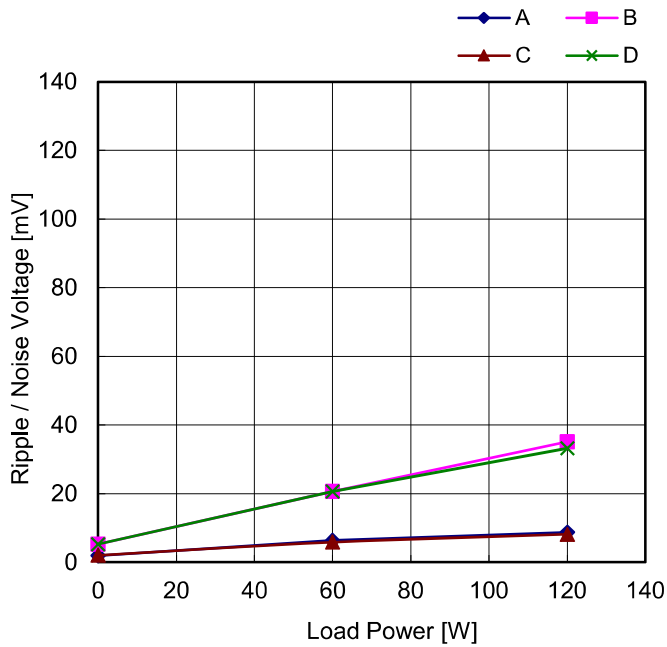


at 100V AC

A: Ripple Voltage (mVP-P)
B: Noise Voltage (mVP-P)

at 240V AC

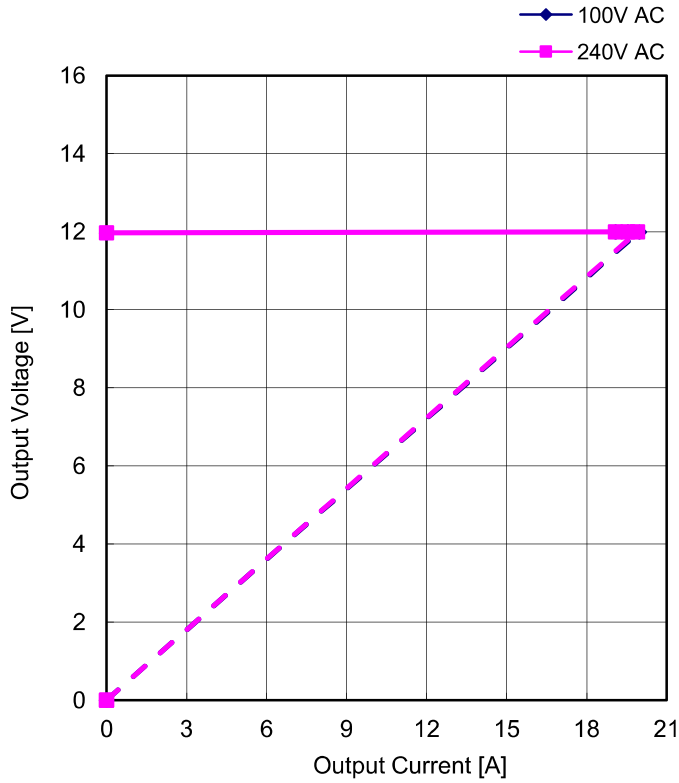
C: Ripple Voltage (mVP-P)
D: Noise Voltage (mVP-P)



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	1.9	5.2	2.0	5.2
60.0	6.3	20.6	5.8	20.6
120.0	8.7	35.1	8.1	33.2

Model	mUZP-120-12-JBH	Temperature: 25°C
Item	Over-Current Protection	

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	11.97	0.00	11.98
19.08	12.00	19.08	12.00
19.54	12.00	19.54	12.00
19.97	12.00	19.91	12.00

Model	mUZP-120-12-JBH	Load: Minimum Load
Item	Over-Voltage Protection	

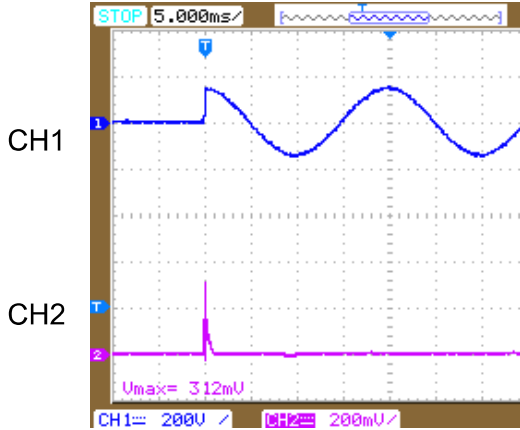
Legend:
◆ 100V AC
■ 240V AC

Ambient Temp. [°C]	100V AC Output [V]	240V AC Output [V]
-15	14.73	14.73
25	14.74	14.83
45	14.82	14.84
65	14.92	14.89

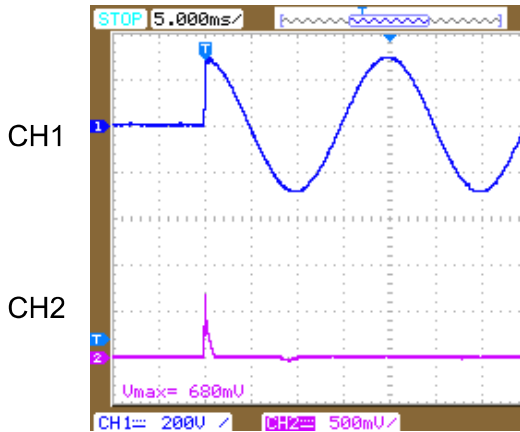
Ambient Temp. [°C]	Output Voltage [V]	
	100V AC	240V AC
-15	14.73	14.73
25	14.74	14.83
45	14.82	14.84
65	14.92	14.89

Model	mUZP-120-12-JBH	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: 10A/div
Timebase Range	5ms/div
Condition	Input: 100V AC Load: Rated Load
Note: Inrush Current: 15.6A	



Waveform 2	
CH1	Measuring Point: AC Input Voltage
	Range: 200V/div
CH2	Measuring Point: AC Input Current
	Range: 25A/div
Timebase Range	5ms/div
Condition	Input: 200V AC Load: Rated Load
Note: Inrush Current: 34.0A	

Model	mUZP-120-12-JBH	Load: Rated Load																																				
Item	Leakage Current																																					
<p>The graph plots Leakage Current [mA] on the y-axis (ranging from 0 to 1.0) against AC Input Voltage [V] on the x-axis (ranging from 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>0.02</td></tr> <tr><td>100</td><td>0.03</td></tr> <tr><td>132</td><td>0.04</td></tr> <tr><td>176</td><td>0.05</td></tr> <tr><td>200</td><td>0.06</td></tr> <tr><td>220</td><td>0.07</td></tr> <tr><td>240</td><td>0.08</td></tr> <tr><td>264</td><td>0.09</td></tr> </tbody> </table>		AC Input Voltage [V]	Leakage Current [mA]	85	0.02	100	0.03	132	0.04	176	0.05	200	0.06	220	0.07	240	0.08	264	0.09	<table border="1"> <thead> <tr> <th>AC Input Voltage [V]</th> <th>Leakage Current [mA]</th> </tr> </thead> <tbody> <tr><td>85</td><td>0.02</td></tr> <tr><td>100</td><td>0.03</td></tr> <tr><td>132</td><td>0.04</td></tr> <tr><td>176</td><td>0.05</td></tr> <tr><td>200</td><td>0.06</td></tr> <tr><td>220</td><td>0.07</td></tr> <tr><td>240</td><td>0.08</td></tr> <tr><td>264</td><td>0.09</td></tr> </tbody> </table>	AC Input Voltage [V]	Leakage Current [mA]	85	0.02	100	0.03	132	0.04	176	0.05	200	0.06	220	0.07	240	0.08	264	0.09
AC Input Voltage [V]	Leakage Current [mA]																																					
85	0.02																																					
100	0.03																																					
132	0.04																																					
176	0.05																																					
200	0.06																																					
220	0.07																																					
240	0.08																																					
264	0.09																																					
AC Input Voltage [V]	Leakage Current [mA]																																					
85	0.02																																					
100	0.03																																					
132	0.04																																					
176	0.05																																					
200	0.06																																					
220	0.07																																					
240	0.08																																					
264	0.09																																					