Nipron

Date of issue: Jul. 22, 2016

Test Data

Model Number: mUZP-120-24-JB0

Model Name: DC POWER SUPPLY

INPUT: 85V – 264V AC, 50 / 60 Hz

OUTPUT: 24 V 5A (8.4 A_{peak})

Minimum load : 0W
Rated load :120W
Peak output power: 201.6W

Approved by : T.Isobe (QA manager)

Designed by : Kazuhiro Gamada (R&D engineer)

Tested by : Hiroyuki Watanabe (Evaluation test engineer)

Nipron Co., Ltd.

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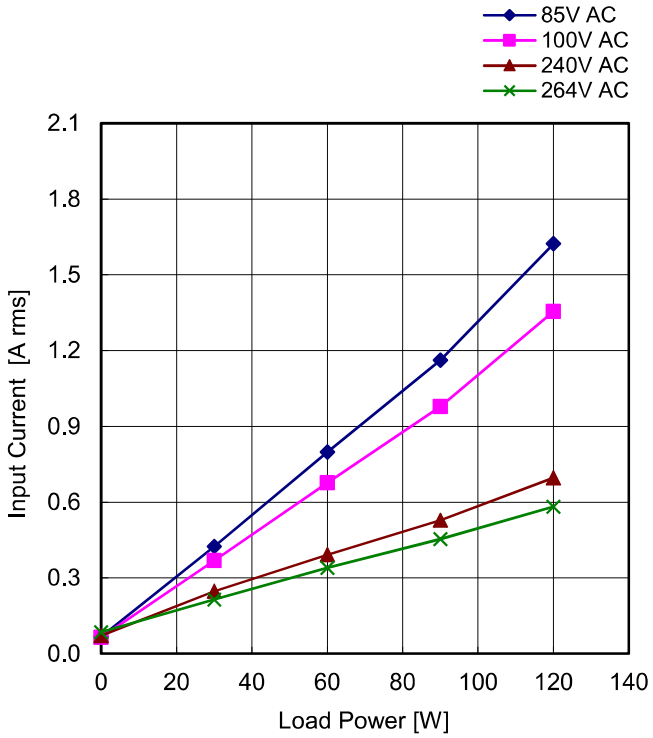
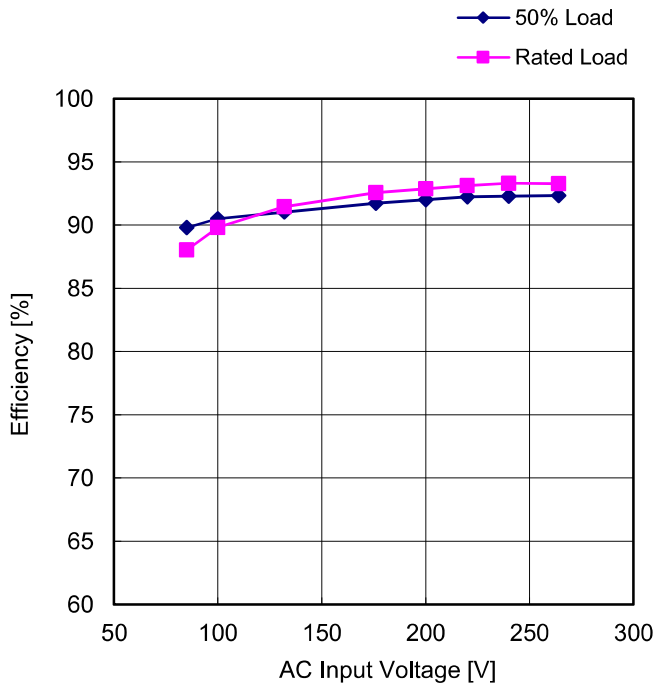
Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Input Current（by Load Power）	



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	0.07	0.07	0.09
30.0	0.42	0.37	0.25	0.22
60.0	0.80	0.68	0.39	0.34
90.0	1.16	0.98	0.53	0.45
120.0	1.62	1.35	0.70	0.58

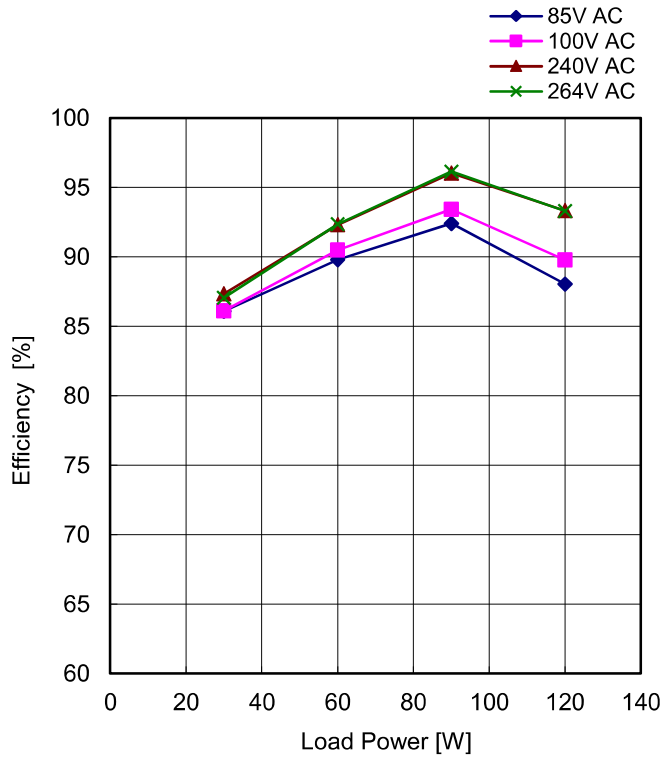
Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Efficiency	

■Efficiency(by Input Voltage)



AC Input Voltage [V]	Efficiency [%]	
	50% Load	Rated Load
85	89.80	88.04
100	90.50	89.79
132	91.04	91.48
176	91.75	92.58
200	92.02	92.88
220	92.24	93.14
240	92.30	93.32
264	92.36	93.29

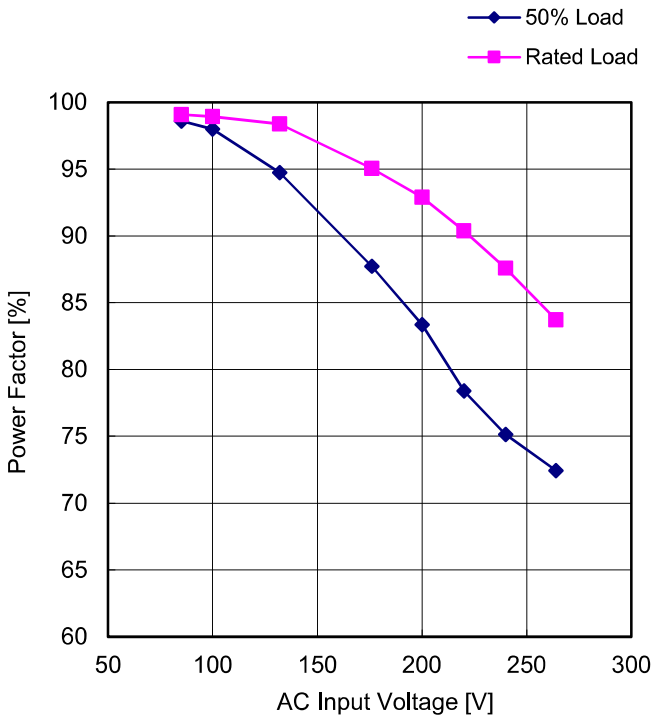
■Efficiency(by Load Power)



Load Power [W]	Efficiency [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
30.0	86.08	86.10	87.33	87.05
60.0	89.80	90.50	92.30	92.36
90.0	92.41	93.41	96.01	96.13
120.0	88.04	89.79	93.32	93.29

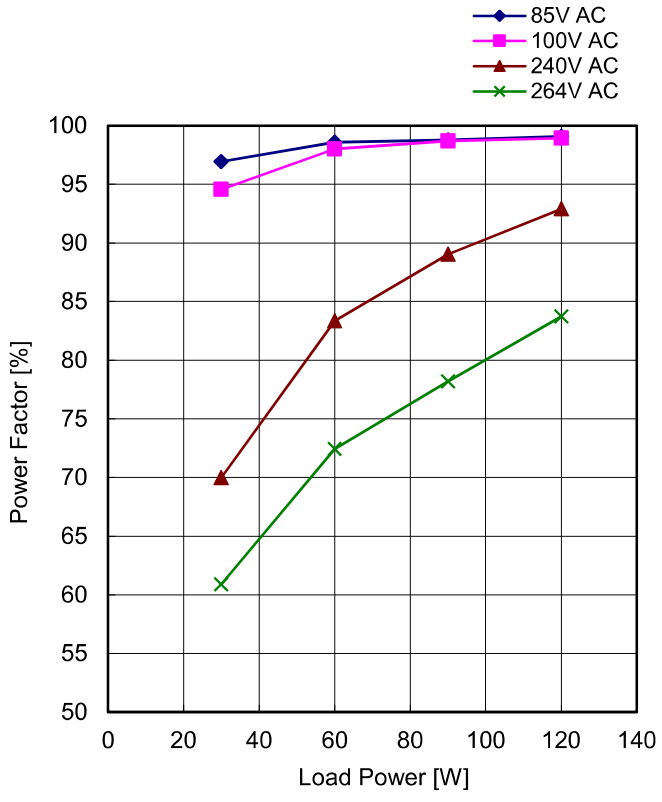
Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Power Factor	

■Power Factor(by Input Voltage)



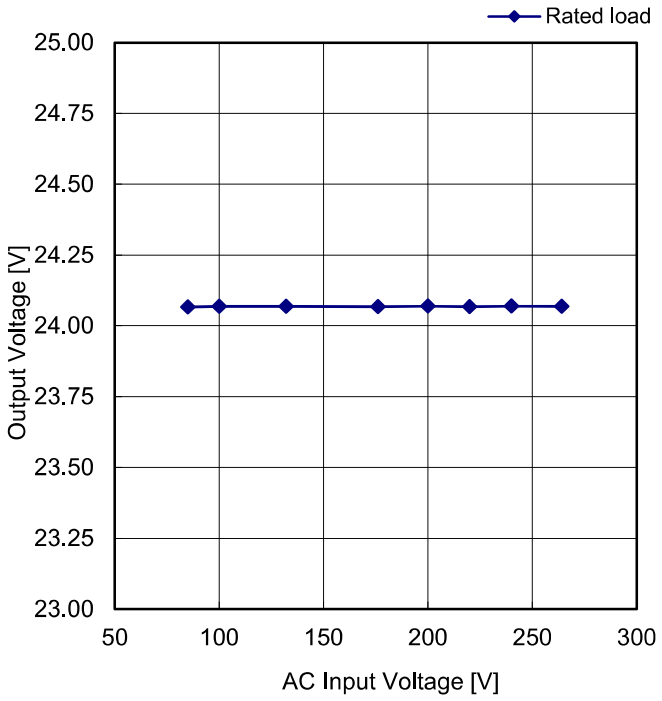
AC Input Voltage [V]	Power Factor [%]	
	50% Load	Rated Load
85	98.6	99.1
100	98.0	98.9
132	94.7	98.4
176	87.7	95.0
200	83.4	92.9
220	78.4	90.4
240	75.1	87.6
264	72.4	83.7

■Power Factor (by Load Power)



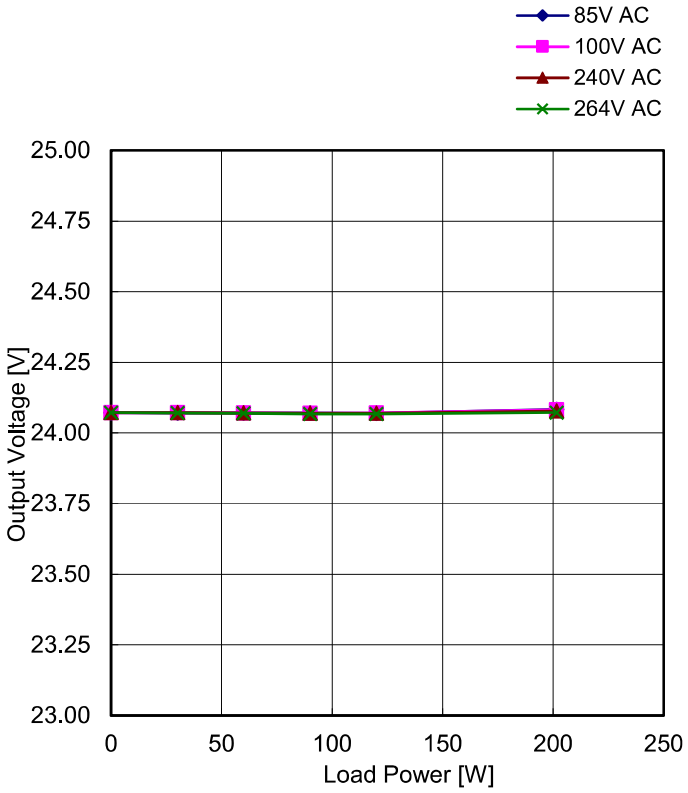
Load Power [W]	Power Factor [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
30.0	96.9	94.6	70.0	60.9
60.0	98.6	98.0	83.4	72.4
90.0	98.8	98.7	89.0	78.2
120.0	99.1	98.9	92.9	83.7

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Line Regulation	



AC Input Voltage [V]	Output Voltage [V]
85	24.067
100	24.069
132	24.069
176	24.068
200	24.070
220	24.068
240	24.070
264	24.069

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Load Regulation	

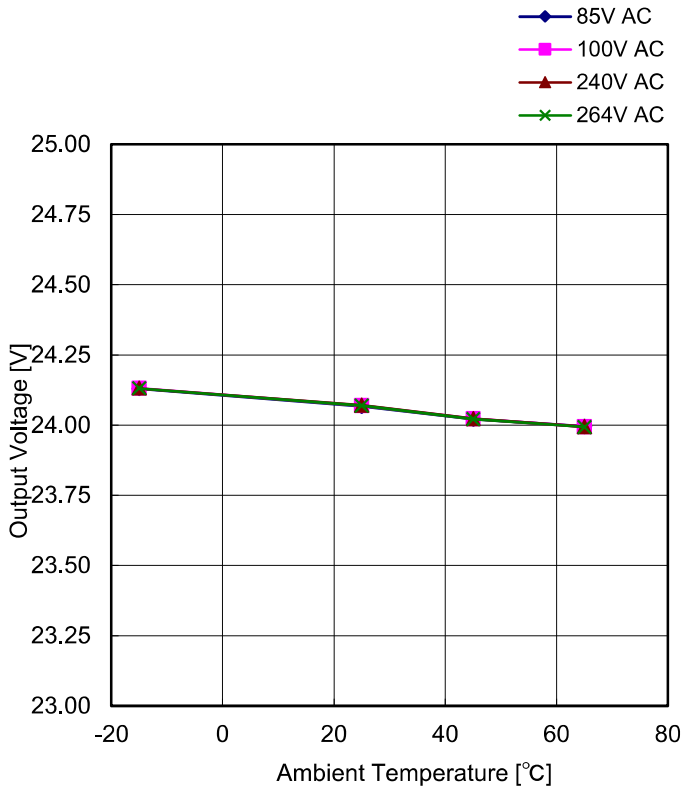


Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	24.072	24.072	24.072	24.072
30.0	24.070	24.071	24.071	24.070
60.0	24.070	24.070	24.070	24.069
90.0	24.070	24.069	24.069	24.067
120.0	24.069	24.070	24.069	24.067
201.6	24.083	24.082	24.077	24.072

Load Condition

Load Power [W]	Load Current [A]
	24V
0.0	0.00
30.0	1.25
60.0	2.50
90.0	3.75
120.0	5.00
201.6	8.40

Model	mUZP-120-24-JB0
Item	Ambient Temperature Drift



Ambient Temp. (℃)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	24.130	24.132	24.131	24.131
25	24.067	24.069	24.070	24.069
45	24.021	24.022	24.022	24.021
65	23.995	23.994	23.994	23.993

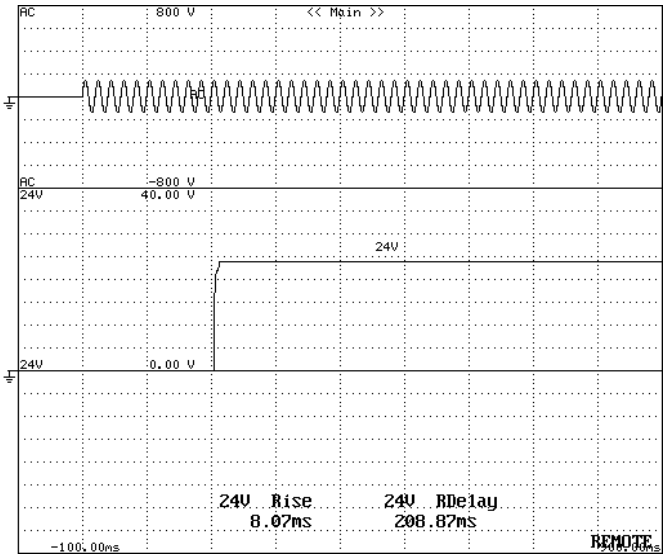
Load Condition

Ambient Temp. (℃)	Load Current [A]
	24V
-15	5.00
25	5.00
45	5.00
65	3.75

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Output Rise Characteristics (at AC Power ON)	

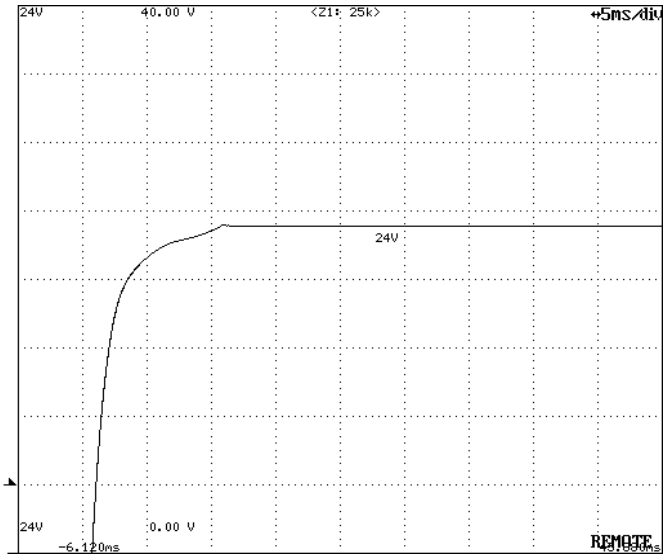
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div



All Output Start-up Sequence

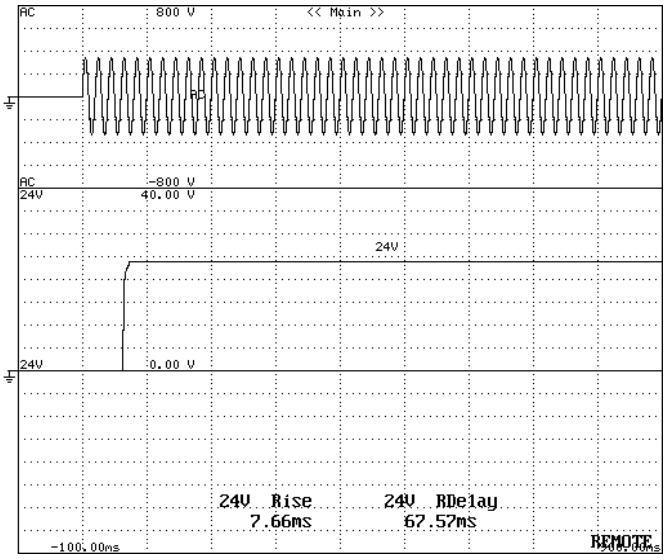
Vertical Sensitivity: 5V/div
Timebase Range: 5ms/div



24V DC Output Rise Characteristics

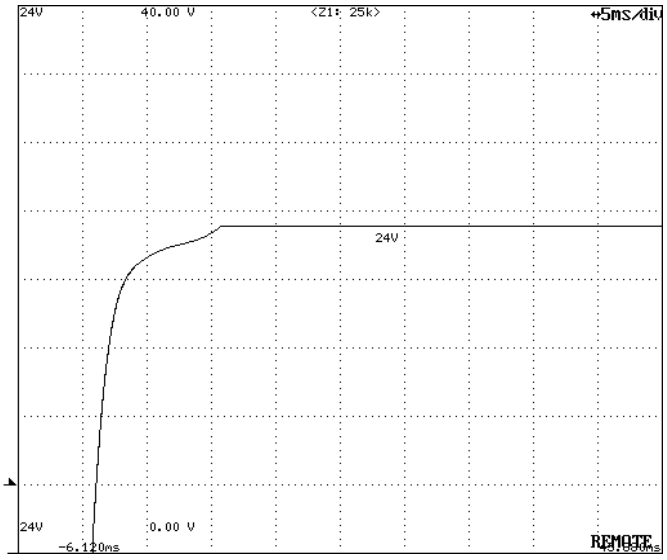
Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div



All Output Start-up Sequence

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

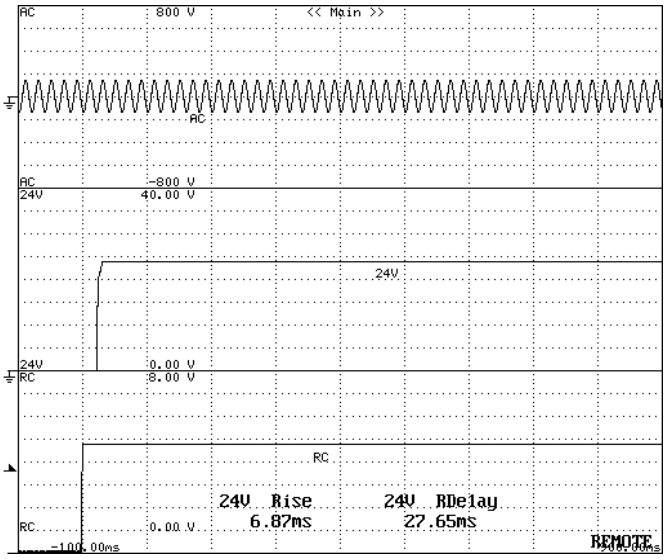


24V DC Output Rise Characteristics

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Output Rise Characteristics (at Remote ON)	

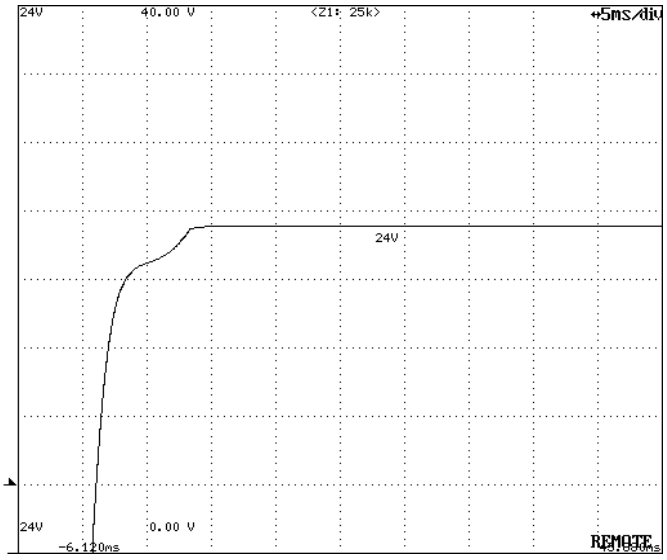
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div



All Output Start-up Sequence

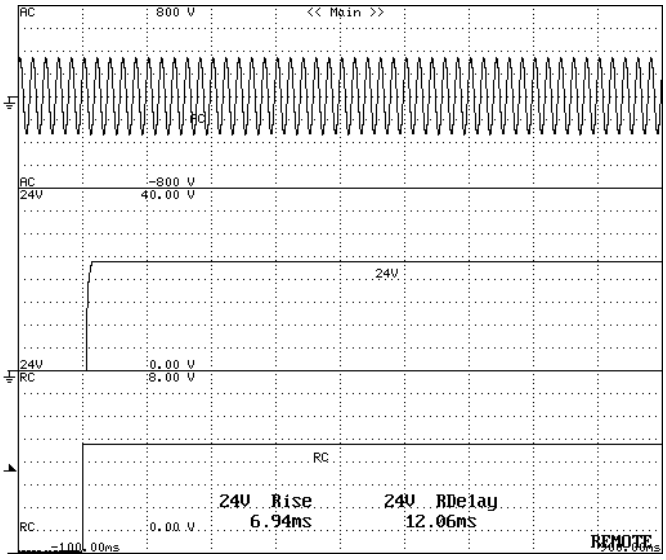
Vertical Sensitivity: 5V/div
Timebase Range: 5ms/div



24V DC Output Rise Characteristics

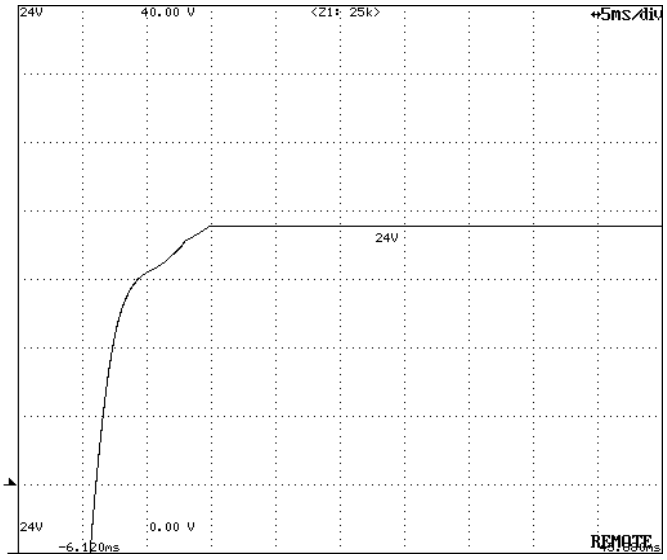
Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div



All Output Start-up Sequence

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

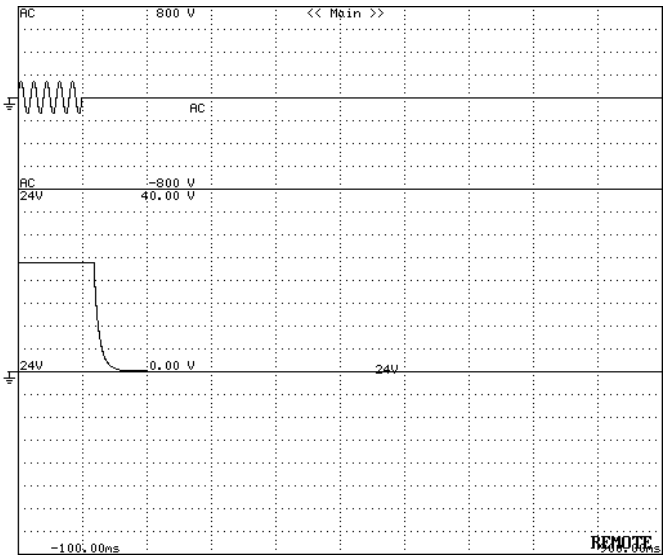


24V DC Output Rise Characteristics

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Output Fall Characteristics (at AC Power OFF)	

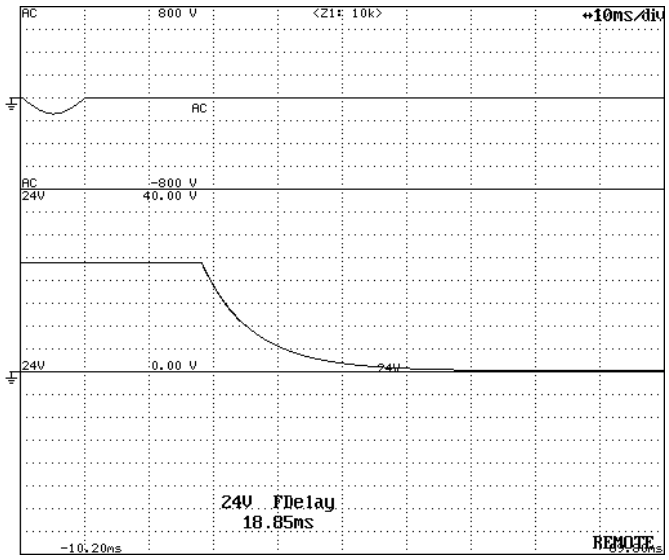
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div



Output Fall Characteristics

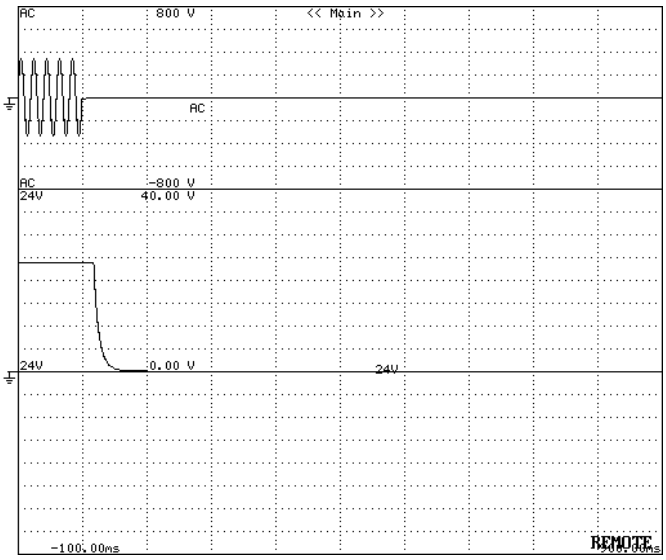
Timebase Range: 10ms/div



Output Fall Characteristics (magnification)

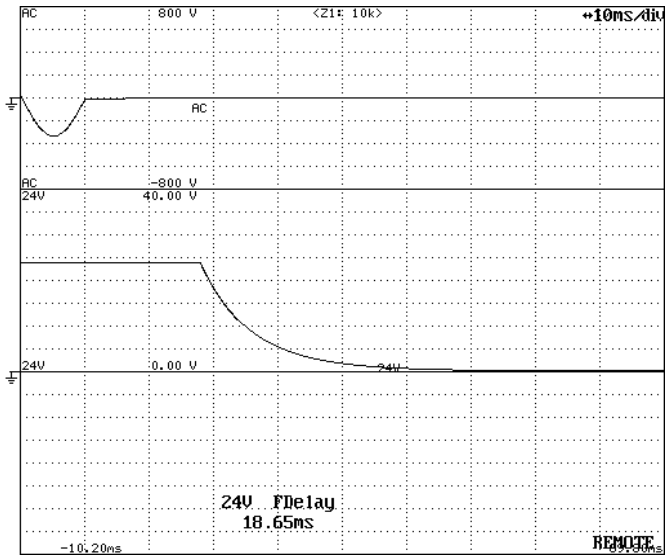
Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div



Output Fall Characteristics

Timebase Range: 10ms/div

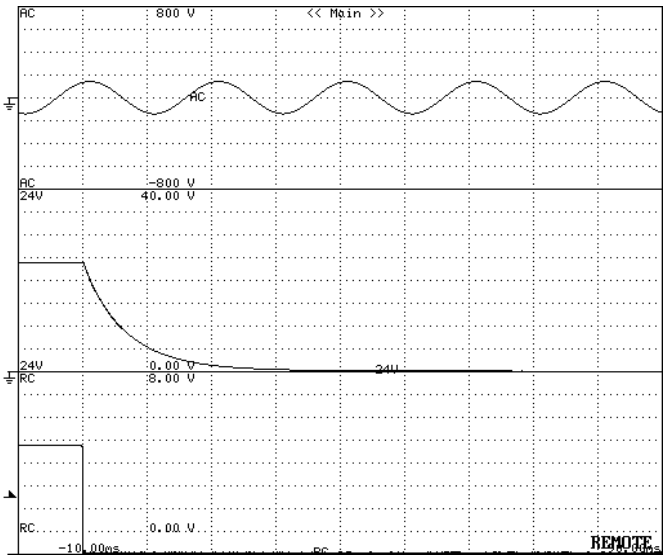


Output Fall Characteristics (magnification)

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Output Fall Characteristics (at Remote OFF)	

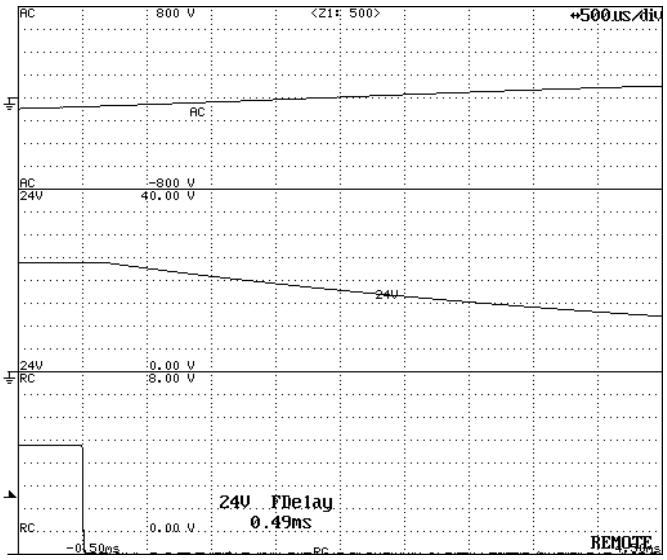
Input: 100V AC
Load: Rated Load

Timebase Range: 10ms/div



Output Fall Characteristics

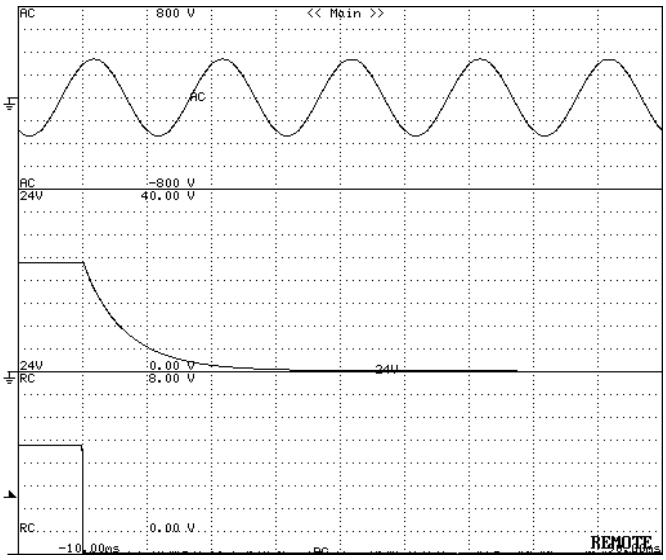
Timebase Range: 500 μ s/div



Output Fall Characteristics (magnification)

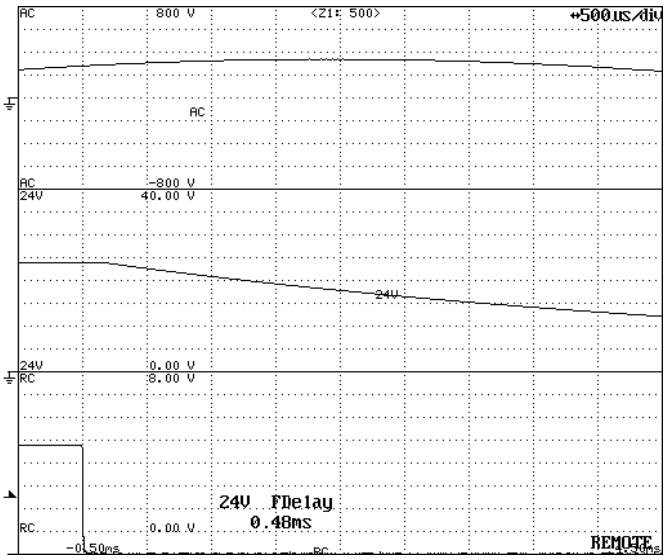
Input: 240V AC
Load: Rated Load

Timebase Range: 10ms/div



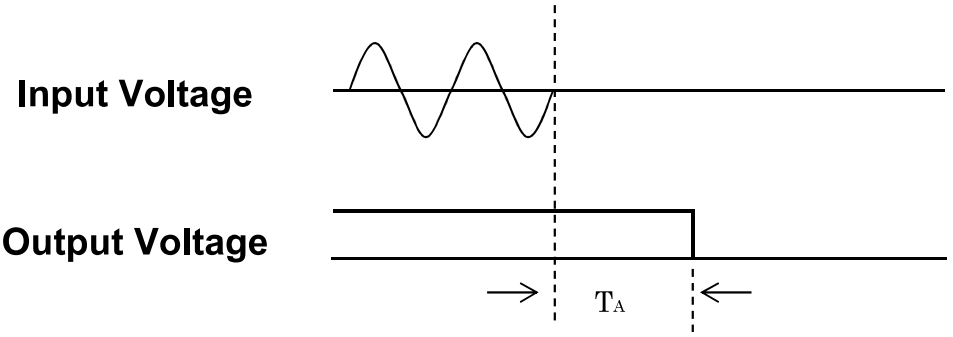
Output Fall Characteristics

Timebase Range: 500 μ s/div

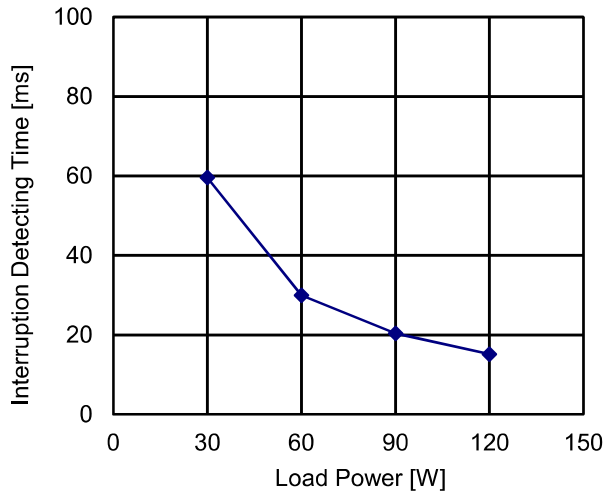


Output Fall Characteristics (magnification)

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Instantaneous Interruption Compensation (by Load Power)	

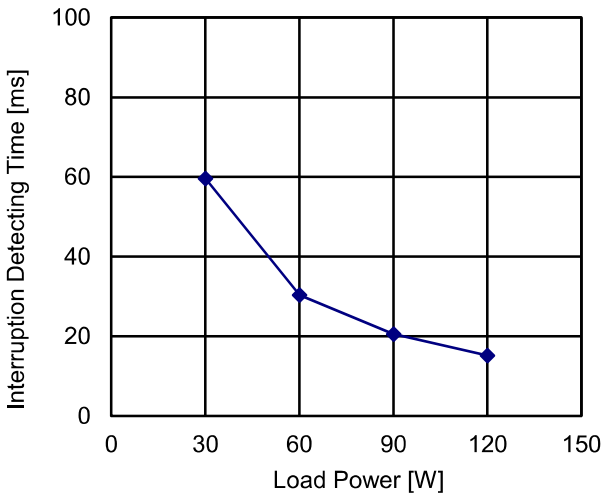


Input Voltage:100V AC



Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	TA
30.0	59.6
60.0	30.0
90.0	20.4
120.0	15.2

Input Voltage:240V AC



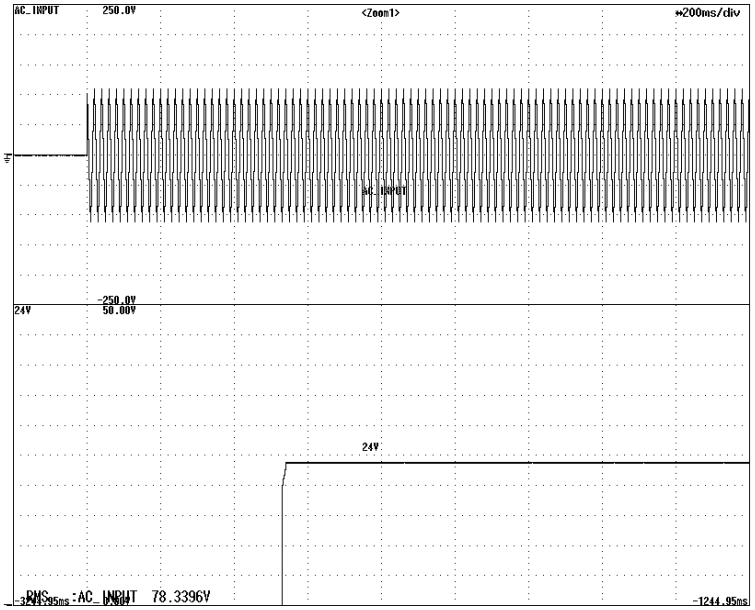
Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	TA
30.0	59.6
60.0	30.4
90.0	20.6
120.0	15.2

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Start-Up Voltage	

Timebase Range: 200ms/div
Load: Rated Load

AC Input

+24V

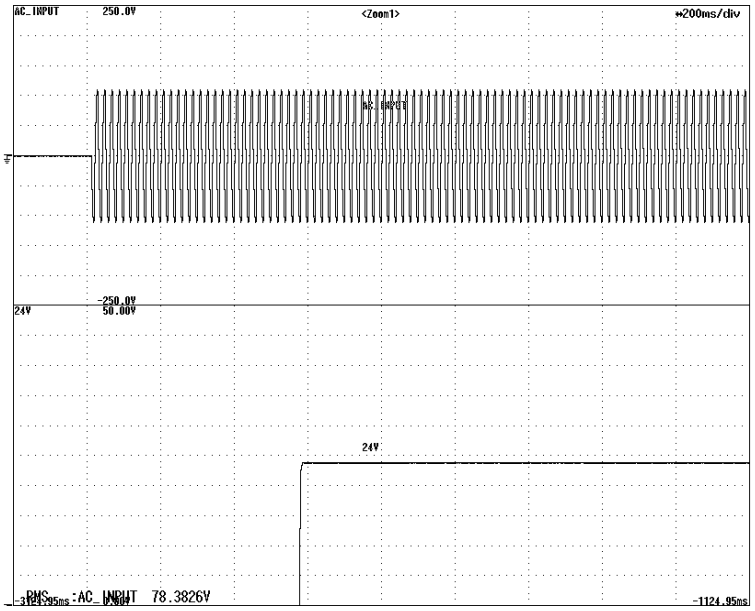


Start-up Voltage: 78.3V AC

Timebase Range: 200ms/div
Load: Minimum Load

AC Input

+24V



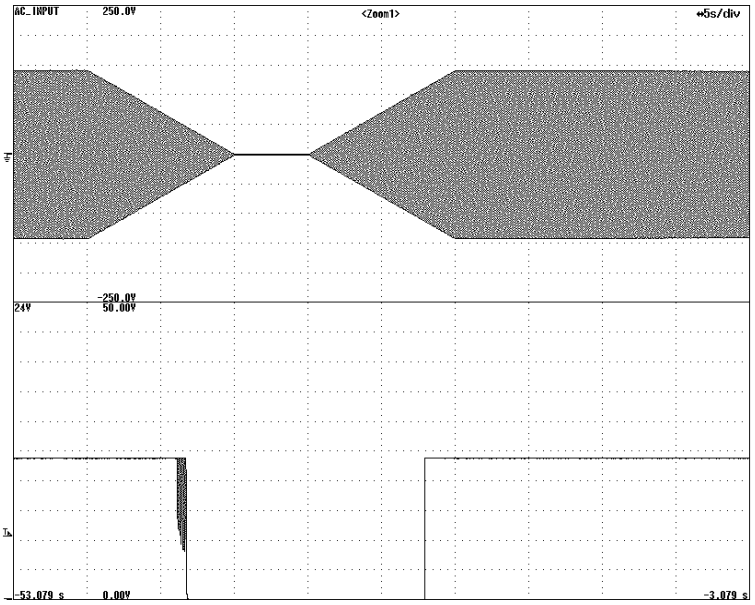
Start-up Voltage: 78.4V AC

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Input Voltage Sweep Up/Down	

Timebase Range: 5s/div
Load: Rated Load

AC Input

+24V



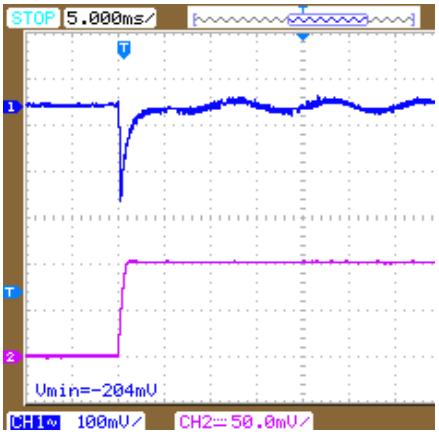
Sweep Rate: 10Vave/sec

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Dynamic Load Response	

+24V DC Output Transient Response Waveforms

CH1

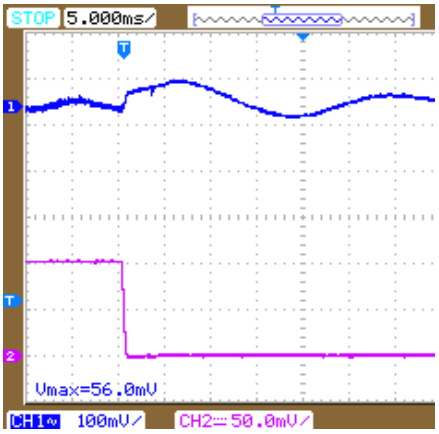
CH2



Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 2.5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Minimum load(0A) → Rated Load(5A)	

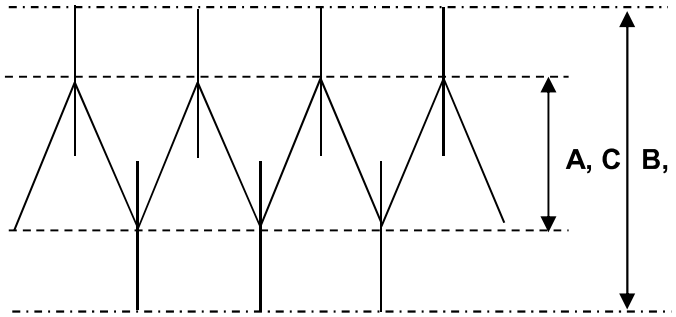
CH1

CH2



Waveform 2	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 2.5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Rated Load(5A) → Minimum load(0A)	

Model	mUZP-120-24-JB0	Load: Rated Load
Item	Ripple / Noise Voltage	

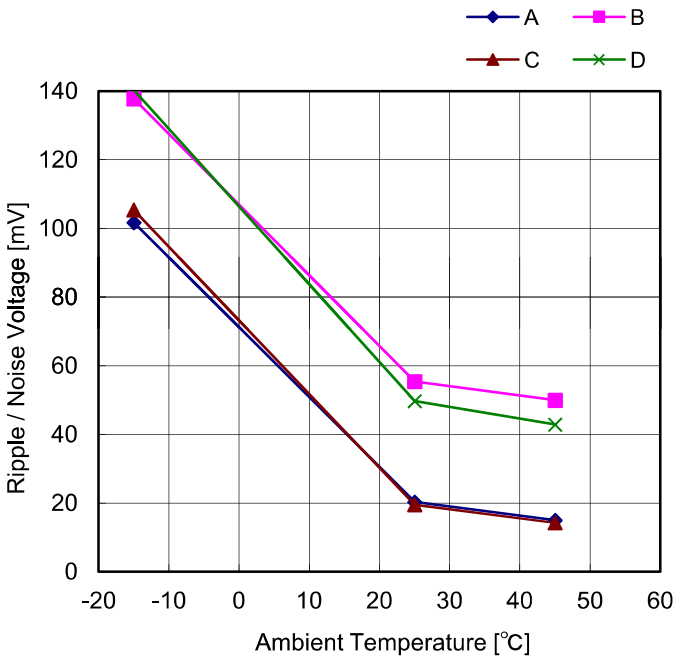


at 100V AC

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

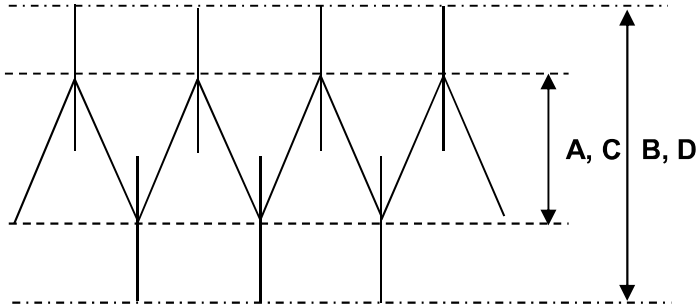
at 240V AC

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



Ambient Temp. [℃]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	101.7	137.8	105.4	140.3
25	20.3	55.4	19.5	49.6
45	15.0	49.9	14.2	42.8

Model	mUZP-120-24-JB0	Temperature : 25℃
Item	Ripple / Noise Voltage	

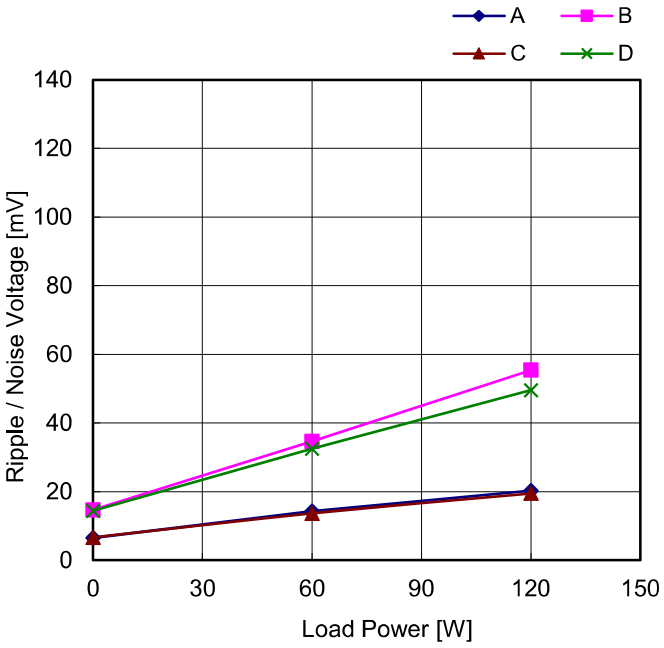


at 100V AC

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

at 240V AC

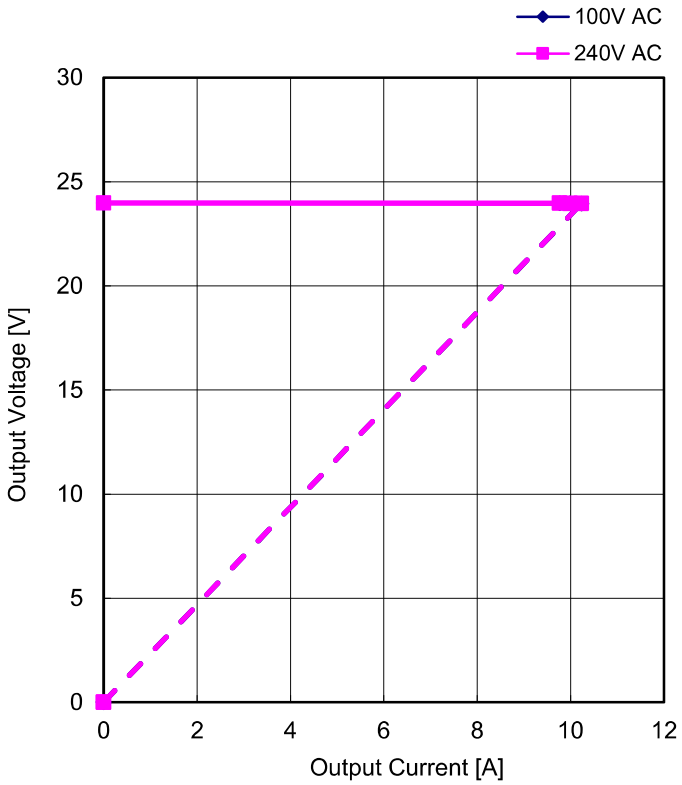
C: Ripple Voltage (mVP-P)
D: Noise Voltage (mVP-P)



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	6.5	14.7	6.6	14.4
60.0	14.3	34.6	13.7	32.5
120.0	20.3	55.4	19.5	49.6

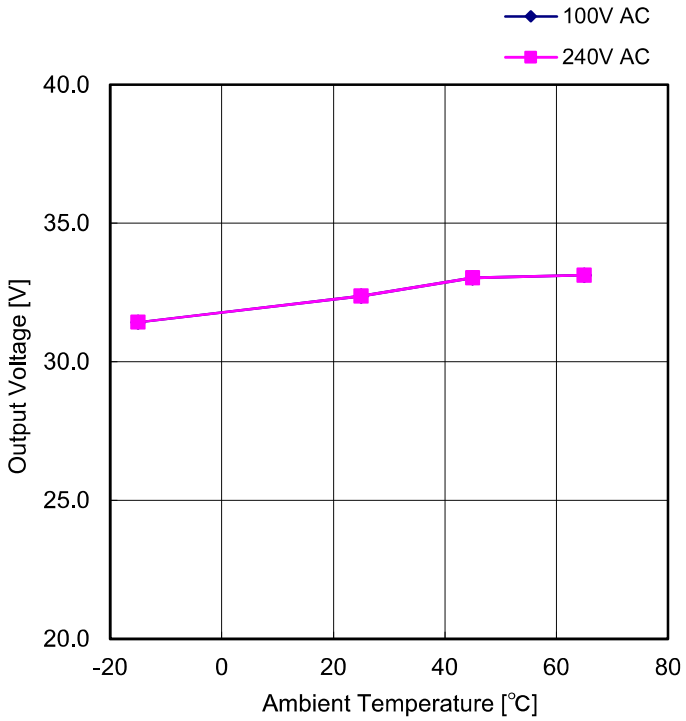
Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Over-Current Protection	

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	23.98	0.00	23.98
9.77	23.97	9.77	23.97
9.99	23.97	9.99	23.97
10.23	23.95	10.23	23.96

Model	mUZP-120-24-JB0	Load: Minimum Load
Item	Over-Voltage Protection	



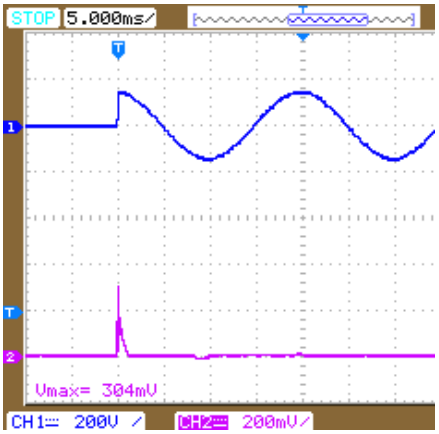
Ambient Temp. [°C]	Output Voltage [V]	
	100V AC	240V AC
-15	31.43	31.43
25	32.38	32.38
45	33.04	33.03
65	33.13	33.13

Model	mUZP-120-24-JB0	Temperature: 25℃
Item	Inrush Current	Load: Rated Load

Inrush Current Waveforms

CH1

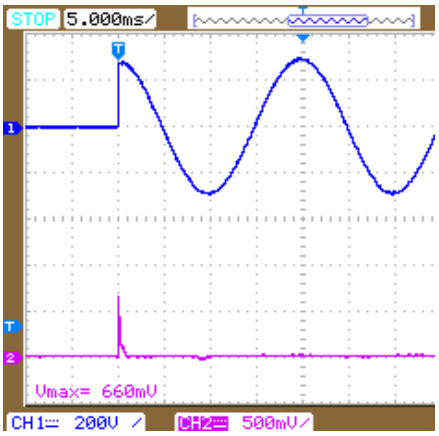
CH2



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: 15.2A	

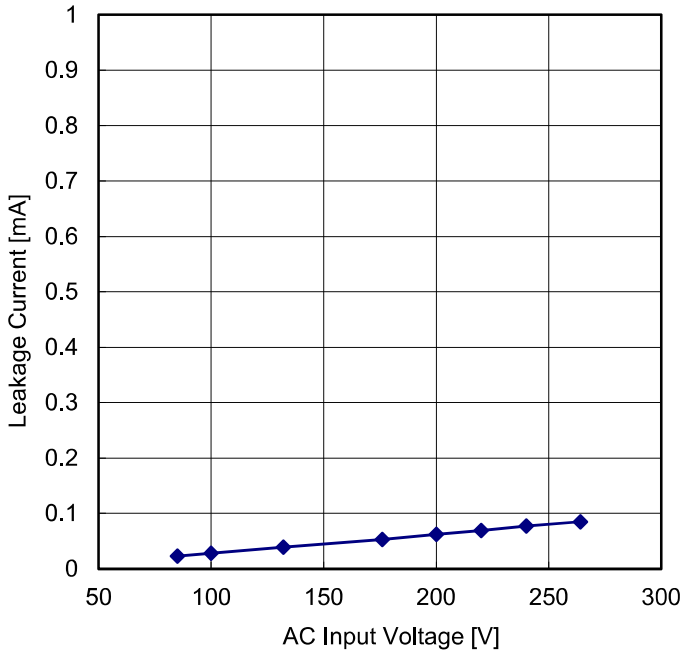
CH1

CH2



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: 33.0A	

Model	mUZP-120-24-JB0	Load: Rated Load
Item	Leakage Current	



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