Nipron

Date of issue: Dec. 24, 2005

Test Data

Model Number: ePCSA-500P-X2S

Model Name: DC Power Supply

Option: None

INPUT: 85V – 264V AC, 50 / 60 Hz

OUTPUT:

3.3 V	11.5 A	(20 A max, 30 A peak)
5 V	16.0 A	(22 A max, 33 A peak)
12 V	18.0 A	(22 A max, 30 A peak)
-12 V	0.5 A	
5 V_{Sb}	2.0 A	(2.5 A peak)

Maximum continuous output power: 350W
Peak output power: 500.5W

Approved by : Kazuo Imai (QA manager)

Designed by : Naoki Yamamoto (R&D engineer)

Tested by : Masao Nagatani (Evaluation test engineer)

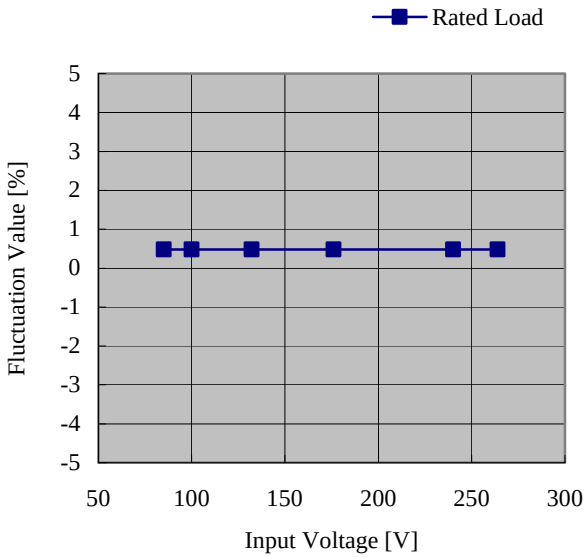
Nipron Co., Ltd.

CONTENTS

Model	ePCSA-500P-X2S
Item	Line Regulation

V1：3.3V 11.5A

at AC Input

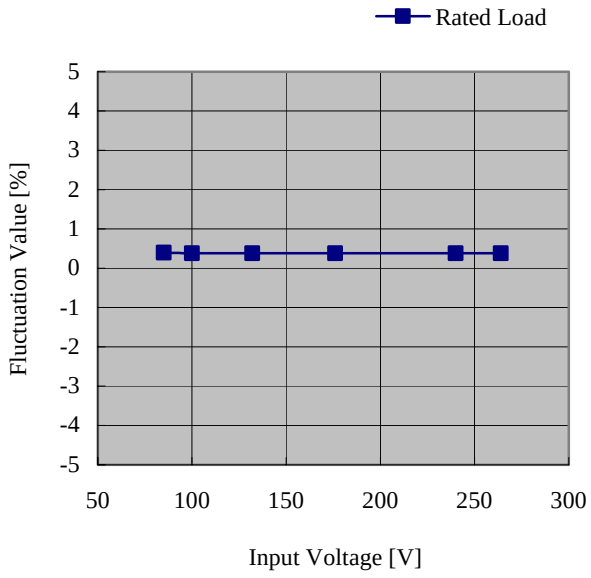


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
85V AC	3.316	0.48
100V AC	3.316	0.48
132V AC	3.316	0.48
176V AC	3.316	0.48
240V AC	3.316	0.48
264V AC	3.316	0.48

V2：5V 16A

at AC Input



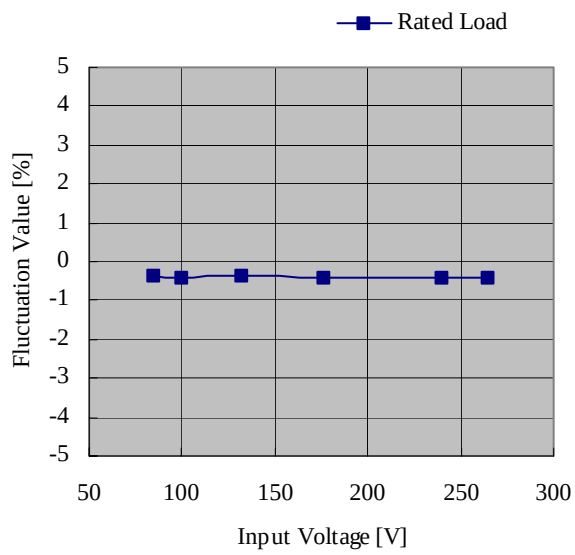
at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
85V AC	5.020	0.40
100V AC	5.019	0.38
132V AC	5.019	0.38
176V AC	5.019	0.38
240V AC	5.019	0.38
264V AC	5.019	0.38

Model	ePCSA-500P-X2S
Item	Line Regulation

V3：12V 18A

at AC Input

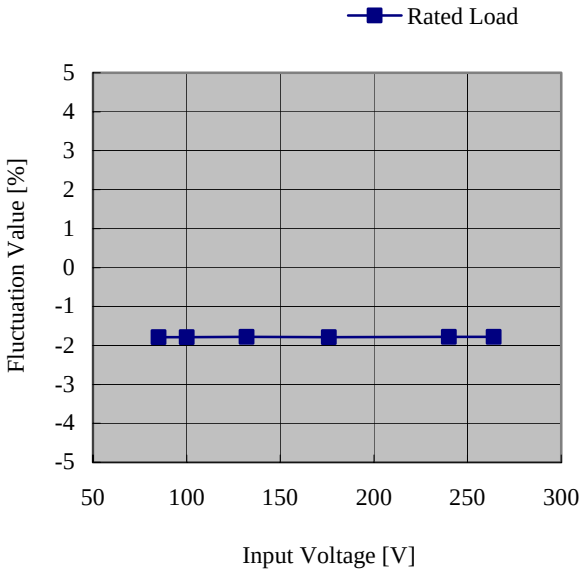


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
85V AC	11.954	-0.38
100V AC	11.953	-0.39
132V AC	11.954	-0.38
176V AC	11.953	-0.39
240V AC	11.952	-0.40
264V AC	11.953	-0.39

V4：-12V 0.5A

at AC Input



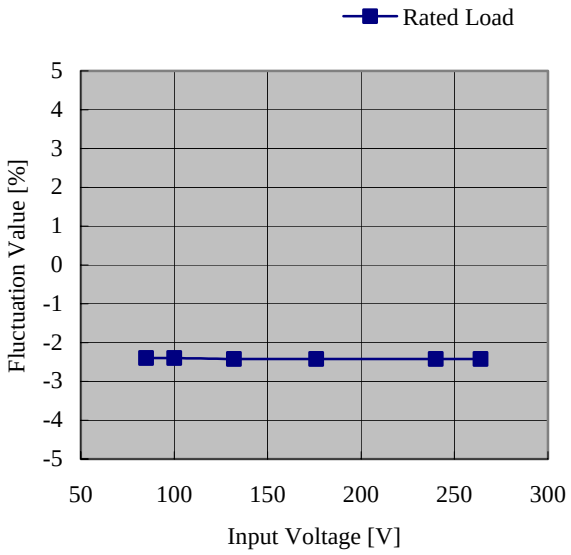
at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
85V AC	-11.786	-1.78
100V AC	-11.786	-1.78
132V AC	-11.787	-1.77
176V AC	-11.786	-1.78
240V AC	-11.787	-1.77
264V AC	-11.787	-1.77

Model	ePCSA-500P-X2S
Item	Line Regulation

V5：5Vs 2A

at AC Input

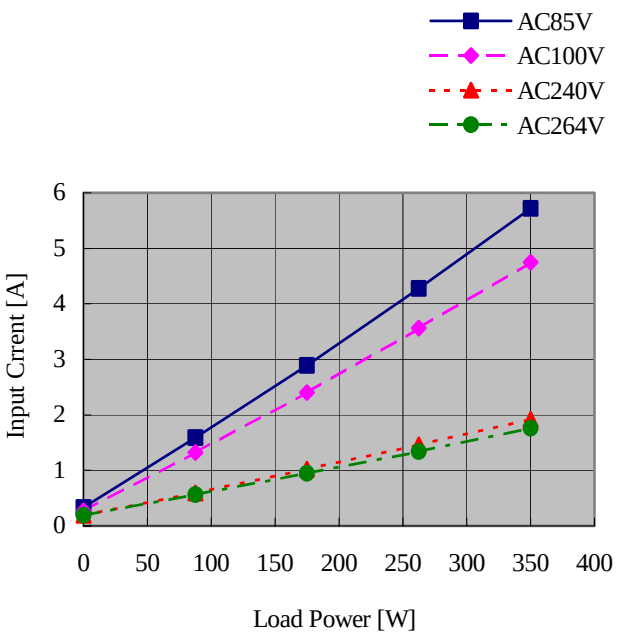


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
85V AC	4.880	-2.40
100V AC	4.880	-2.40
132V AC	4.879	-2.42
176V AC	4.879	-2.42
240V AC	4.879	-2.42
264V AC	4.879	-2.42

Model	ePCSA-500P-X2S
Item	Input Current (by Load Power)

at AC Input

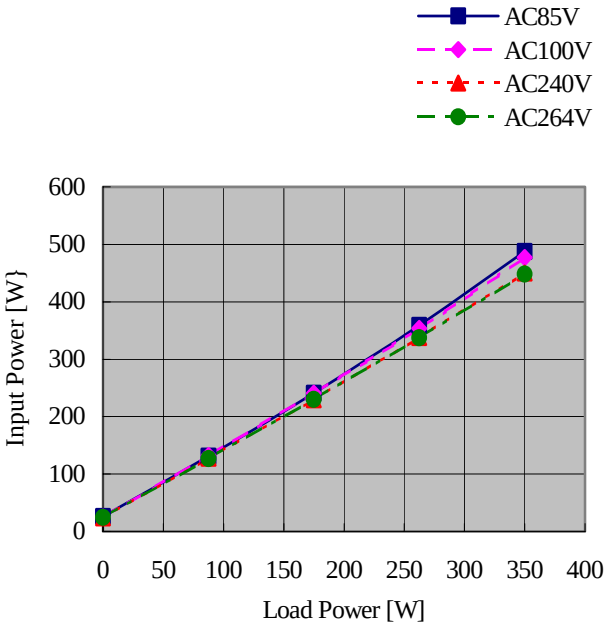


at AC Input

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	0.33	0.27	0.19	0.19
87.5	1.59	1.32	0.59	0.56
175.0	2.89	2.40	1.02	0.95
262.5	4.28	3.56	1.46	1.34
350.0	5.72	4.75	1.92	1.76

Model	ePCSA-500P-X2S
Item	Input Power (by Load Power)

at AC Input

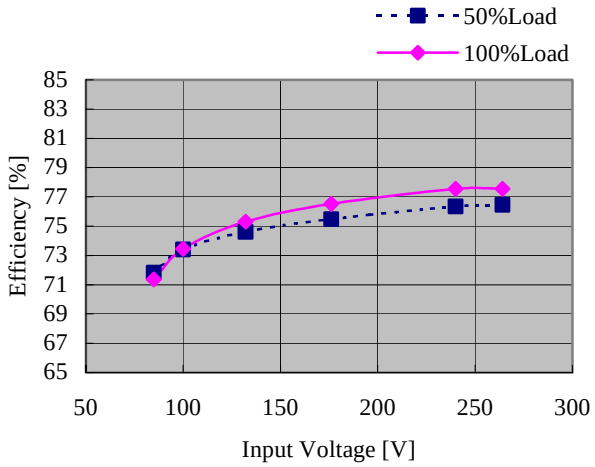


at AC Input

Load Power [W]	Input Power [W]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	26.10	25.30	23.99	24.45
87.5	131.33	132.34	127.64	127.10
175.0	240.93	240.85	229.75	230.16
262.5	359.26	353.59	338.28	337.52
350.0	488.15	476.94	450.01	448.61

Model	ePCSA-500P-X2S
Item	Efficiency

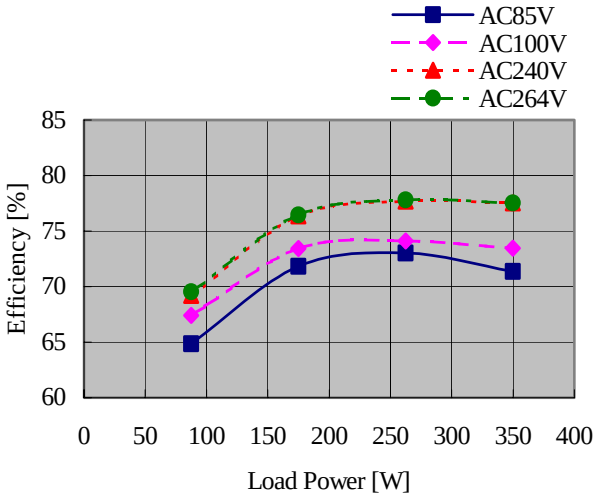
at AC Input



at AC Input

Input Voltage [V]	Efficiency [%]	
	50% Load	100% Load
85V AC	71.83	71.35
100V AC	73.42	73.46
132V AC	74.61	75.30
176V AC	75.47	76.53
240V AC	76.35	77.54
264V AC	76.47	77.55

at AC Input

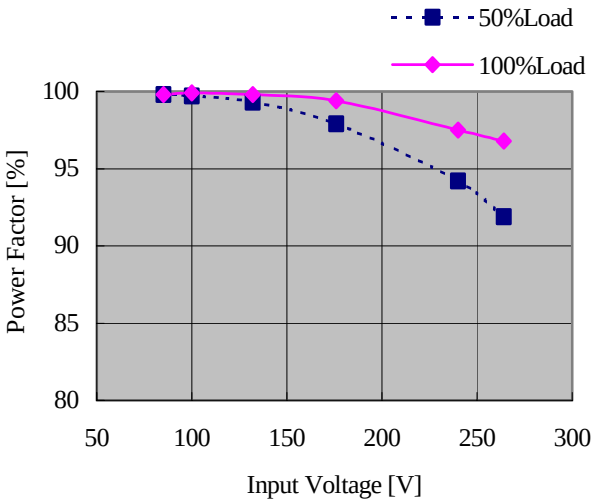


at AC Input

Load Power [W]	Efficiency [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
87.5	64.86	67.39	69.21	69.55
175.0	71.83	73.42	76.35	76.47
262.5	73.04	74.11	77.69	77.80
350.0	71.35	73.46	77.54	77.55

Model	ePCSA-500P-X2S
Item	Power Factor

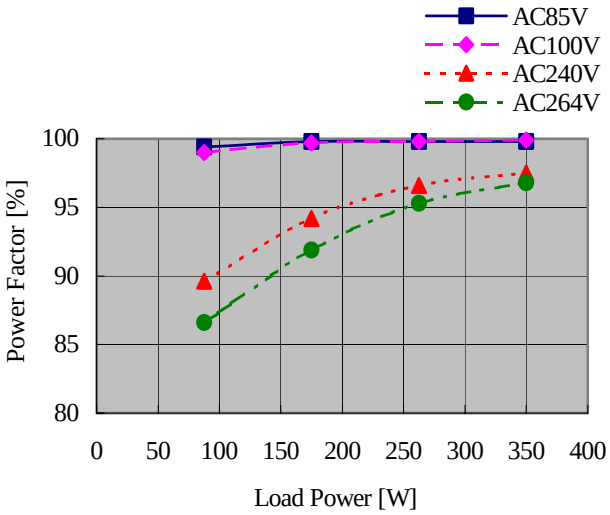
at AC Input



at AC Input

Input Voltage [V]	Power Factor [%]	
	50%Load	100% Load
85V AC	99.8	99.8
100V AC	99.7	99.9
132V AC	99.3	99.8
176V AC	97.9	99.4
240V AC	94.2	97.5
264V AC	91.9	96.8

at AC Input

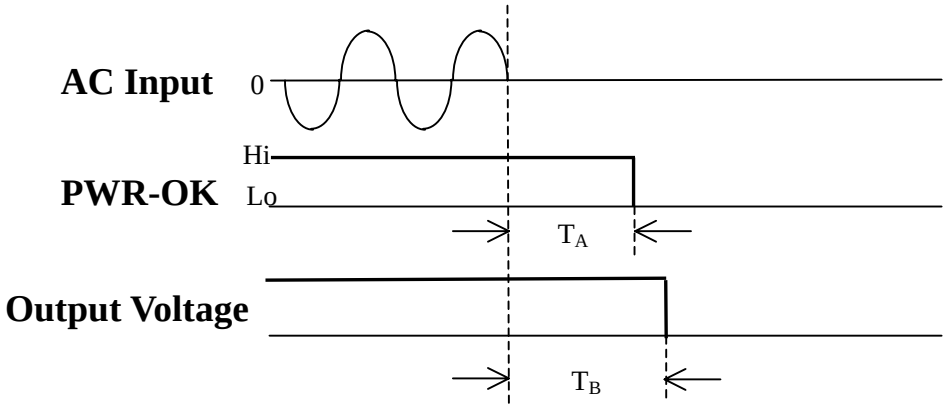


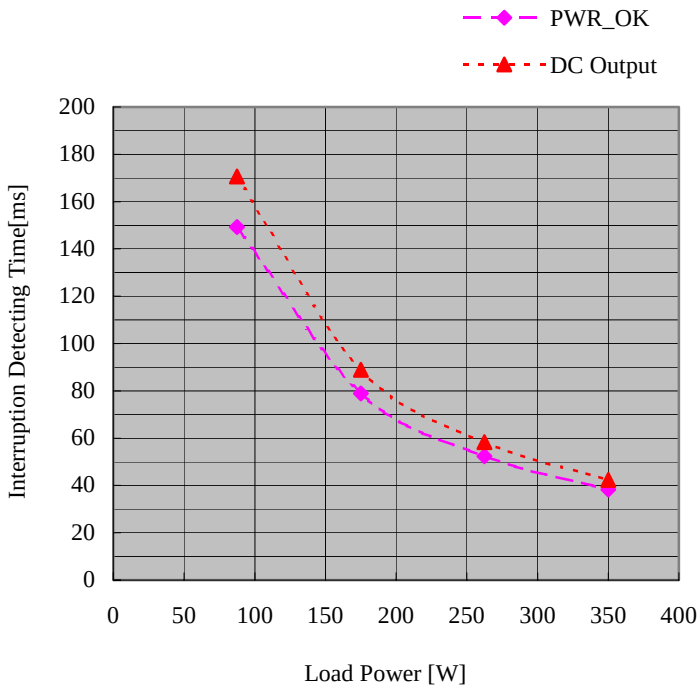
at AC Input

Load Power [W]	Power Factor [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
87.5	99.4	99.0	89.6	86.6
175.0	99.8	99.7	94.2	91.9
262.5	99.8	99.8	96.6	95.3
350.0	99.8	99.9	97.5	96.8

Model	ePCSA-500P-X2S	
Item	Instantaneous Interruption Compensation (by Load Power)	

at AC Input: 100V AC



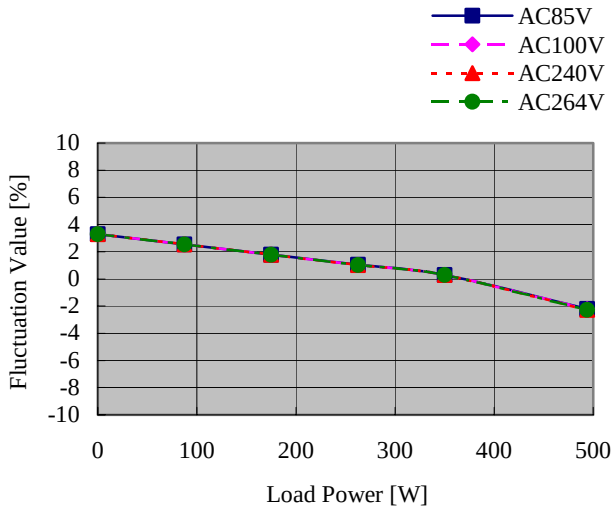


Load Power [W]	Interruption Detecting Time (ms)	
	PWR-OK T_A	DC Output T_B
87.5	149.20	170.70
175.0	78.90	88.90
262.5	52.40	58.30
350.0	38.30	42.40

Model	ePCSA-500P-X2S
Item	Load Regulation

V1：3.3V 11.5A

at AC Input



at AC Input

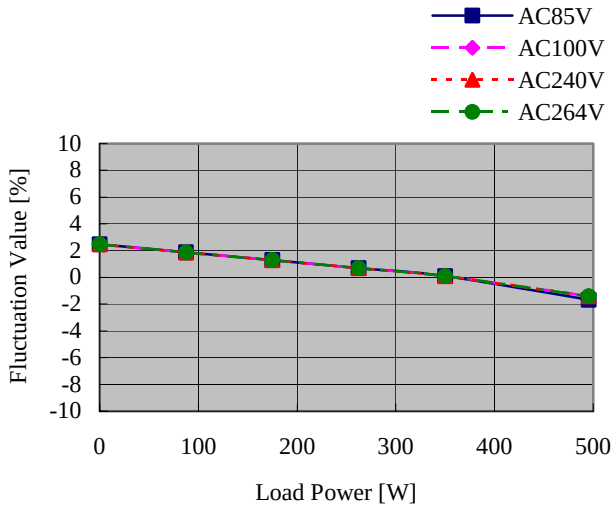
Load Power [W]	Fluctuation Value [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	3.30	3.30	3.30	3.30
87.5	2.55	2.55	2.55	2.55
175.0	1.79	1.79	1.79	1.79
262.5	1.06	1.03	1.03	1.03
350.0	0.30	0.30	0.30	0.30
499.9	-2.21	-2.24	-2.27	-2.27

Load Condition

Load Power [W]	Load Current [A]				
	3.3V	5V	12V	-12V	5Vs
0.0	0	0	0	0	0
87.5	2.88	4.0	4.5	0.13	0.5
175.0	5.75	8.0	9.0	0.25	1.0
262.5	8.63	12.0	13.5	0.38	1.5
350.0	11.5	16.0	18.0	0.5	2.0
499.9	30.0	20.2	23.5	0.5	2.5

V2：5V 16A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	2.48	2.48	2.48	2.48
87.5	1.88	1.88	1.88	1.88
175.0	1.30	1.30	1.30	1.30
262.5	0.70	0.70	0.70	0.70
350.0	0.10	0.10	0.10	0.10
499.9	-1.68	-1.40	-1.42	-1.42

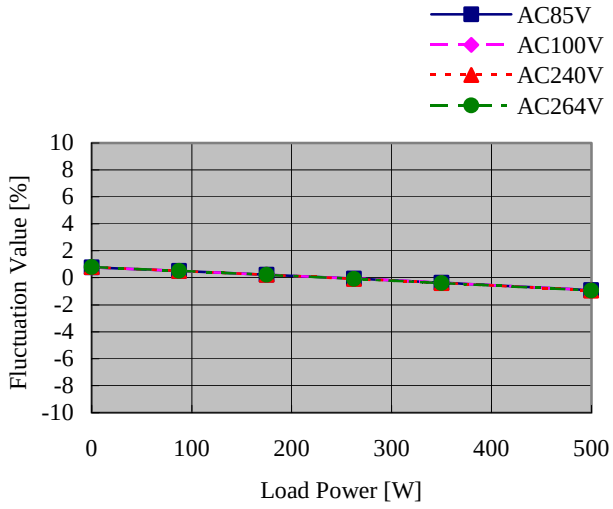
Load Condition

Load Power [W]	Load Current [A]				
	3.3V	5V	12V	-12V	5Vs
0.0	0	0	0	0	0
87.5	2.88	4.0	4.5	0.13	0.5
175.0	5.75	8.0	9.0	0.25	1.0
262.5	8.63	12.0	13.5	0.38	1.5
350.0	11.5	16.0	18.0	0.5	2.0
499.9	10.6	33.0	23.5	0.5	2.5

Model	ePCSA-500P-X2S
Item	Load Regulation

V3：12V 18A

at AC Input



at AC Input

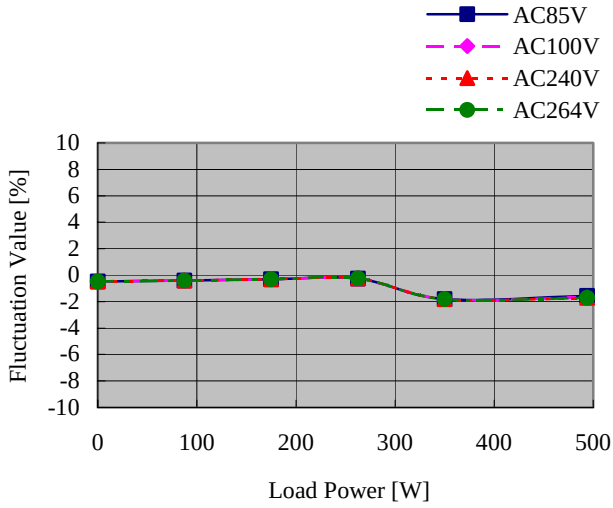
Load Power [W]	Fluctuation Value [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	0.79	0.78	0.80	0.80
87.5	0.51	0.51	0.51	0.51
175.0	0.22	0.22	0.22	0.22
262.5	-0.07	-0.07	-0.08	-0.08
350.0	-0.37	-0.38	-0.38	-0.38
500.0	-0.92	-0.93	-0.94	-0.93

Load Condition

Load Power [W]	Load Current [A]				
	3.3V	5V	12V	-12V	5Vs
0.0	0	0	0	0	0
87.5	2.88	4.0	4.5	0.13	0.5
175.0	5.75	8.0	9.0	0.25	1.0
262.5	8.63	12.0	13.5	0.38	1.5
350.0	11.5	16.0	18.0	0.5	2.0
500.0	11.9	16.5	30	0.5	2.5

V4：-12V 0.5A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	-0.48	-0.48	-0.47	-0.48
87.5	-0.40	-0.40	-0.40	-0.40
175.0	-0.33	-0.33	-0.32	-0.32
262.5	-0.26	-0.27	-0.25	-0.25
350.0	-1.81	-1.80	-1.81	-1.80
499.4	-1.58	-1.0	-1.72	-1.72

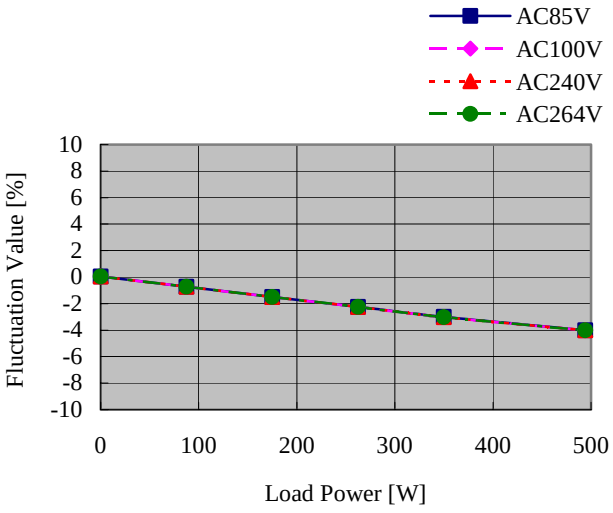
Load Condition

Load Power [W]	Load Current [A]				
	3.3V	5V	12V	-12V	5Vs
0.0	0	0	0	0	0
87.5	2.88	4.0	4.5	0.13	0.5
175.0	5.75	8.0	9.0	0.25	1.0
262.5	8.63	12.0	13.5	0.38	1.5
350.0	11.5	16.0	18.0	0.5	2.0
499.4	16.6	23.0	25.9	0.5	2.5

Model	ePCSA-500P-X2S
Item	Load Regulation

V5：5Vs 2A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	0.04	0.04	0.04	0.04
87.5	-0.72	-0.72	-0.72	-0.72
175.0	-1.50	-1.50	-1.50	-1.50
262.5	-2.24	-2.24	-2.24	-2.24
350.0	-3.00	-3.02	-3.02	-3.02
499.4	-4.00	-4.02	-4.02	-4.02

Load Condition

Load Power [W]	Load Current [A]				
	3.3V	5V	12V	-12V	5Vs
0.0	0	0	0	0	0
87.5	2.88	4.0	4.5	0.13	0.5
175.0	5.75	8.0	9.0	0.25	1.0
262.5	8.63	12.0	13.5	0.38	1.5
350.0	11.5	16.0	18.0	0.5	2.0
499.4	16.6	23.0	25.9	0.5	2.5

Model	ePCSA-500P-X2S	
Item	Ripple / Noise Voltage Test	

[Test conditions] Ambient temperature: -5℃, 25℃, 45℃, 65℃
Input voltage: 90V, 100V, 240V, 264V AC
Load: Rated load

		V1		3.3V	V2		5V	V3		12V
Temperature	Input Voltage	Ripple (mV)	/	Noise (mV)	Ripple (mV)	/	Noise (mV)	Ripple (mV)	/	Noise (mV)
-5℃	90 V	7.6	/	9.8	5.8	/	10.1	35.1	/	39.2
	100 V	7.5	/	9.2	5.2	/	8.1	35.1	/	38.8
	240 V	7.3	/	8.5	3.7	/	5.2	34.8	/	37.9
	264 V	7.2	/	8.5	4.0	/	5.3	34.7	/	37.9
25℃	90 V	4.9	/	6.9	5.8	/	11.3	21.5	/	24.4
	100 V	4.8	/	6.1	5.5	/	8.0	21.6	/	24.5
	240 V	4.9	/	6.0	5.2	/	6.6	21.5	/	25.2
	264 V	5.0	/	6.3	5.4	/	7.1	22.0	/	25.0
45℃	90 V	4.8	/	6.9	6.5	/	11.9	19.1	/	22.3
	100 V	4.7	/	6.3	6.1	/	8.3	19.1	/	22.7
	240 V	4.6	/	6.0	5.7	/	7.1	18.9	/	22.5
	264 V	4.6	/	5.8	5.8	/	7.3	19.0	/	22.1
65℃	90 V	4.1	/	5.6	5.7	/	7.6	13.9	/	16.9
	100 V	4.4	/	5.6	5.9	/	8.0	14.2	/	16.8
	240 V	4.5	/	5.7	5.7	/	7.2	14.1	/	16.7
	264 V	4.3	/	5.5	5.8	/	7.5	13.8	/	16.7
Specification		≤ 50	/	≤ 100	≤ 50	/	≤ 100	≤ 120	/	≤ 170
Judgment		Good			Good			Good		

		V4		-12V	V5		5Vs
Temperature	Input Voltage	Ripple (mV)	/	Noise (mV)	Ripple (mV)	/	Noise (mV)
-5℃	90 V	16.2	/	33.5	5.2	/	6.4
	100 V	16.0	/	33.2	5.1	/	6.2
	240 V	15.4	/	31.1	5.1	/	6.1
	264 V	15.1	/	31.6	5.0	/	5.8
25℃	90 V	5.5	/	20.5	3.5	/	4.5
	100 V	5.3	/	19.5	3.5	/	4.7
	240 V	5.4	/	19.0	3.6	/	4.8
	264 V	6.1	/	20.2	3.8	/	4.8
45℃	90 V	4.3	/	15.2	3.4	/	4.6
	100 V	4.4	/	15.6	3.4	/	4.6
	240 V	4.4	/	15.9	3.3	/	4.5
	264 V	4.4	/	16.9	3.7	/	4.7
65℃	90 V	3.8	/	5.4	3.5	/	4.8
	100 V	3.9	/	5.3	3.6	/	5.0
	240 V	3.9	/	5.2	3.6	/	4.8
	264 V	3.8	/	4.9	3.8	/	5.0
Specification		≤ 120	/	≤ 170	≤ 50	/	≤ 100
Judgment		Good			Good		

Model	ePCSA-500P-X2S	
Item	Over-Current Protection	

● Test conditions

Ambient temperature: -5℃, 25℃, 45℃, 65℃
Input voltage: 90V, 100V, 240V, 264V AC
Load: All loads other than measurement channel are set to the ratings.
At 65℃, the derating factor (70%) specified for 60℃ is applied to this test.

Temperature	Input voltage	CH1 3.3V	CH2 5V	CH3 12V
-5℃	90 V AC	**37.78** A	**41.49** A	**39.35** A
	100 V AC	**36.75** A	**41.01** A	**39.35** A
	240 V AC	**37.78** A	**41.46** A	**39.35** A
	264 V AC	**37.78** A	**41.46** A	**39.35** A
25℃	90 V AC	**37.08** A	**40.77** A	**38.69** A
	100 V AC	**37.08** A	**40.77** A	**38.69** A
	240 V AC	**36.93** A	**40.77** A	**38.69** A
	264 V AC	**37.09** A	**40.77** A	**38.69** A
45℃	90 V AC	**36.38** A	**40.77** A	**38.03** A
	100 V AC	**36.38** A	**40.07** A	**38.03** A
	240 V AC	**36.38** A	**40.07** A	**38.03** A
	264 V AC	**36.39** A	**40.07** A	**38.03** A
65℃	90 V AC	**40.13** A	**42.31** A	**38.03** A
	100 V AC	**40.13** A	**42.09** A	**37.37** A
	240 V AC	**40.13** A	**42.06** A	**37.37** A
	264 V AC	**40.13** A	**42.06** A	**37.37** A
Specification		≥ 31A	≥ 34A	≥ 31A
Judgment		PASS	PASS	PASS

Temperature	AC Input voltage	CH4 -12V	CH5 5Vs
-5℃	90 V AC	1.05 A	3.31 A
	100 V AC	1.05 A	3.31 A
	240 V AC	1.04 A	3.30 A
	264 V AC	1.05 A	3.29 A
25℃	90 V AC	0.90 A	3.22 A
	100 V AC	0.90 A	3.22 A
	240 V AC	0.90 A	3.22 A
	264 V AC	0.90 A	3.22 A
45℃	90 V AC	0.90 A	3.18 A
	100 V AC	0.90 A	3.17 A
	240 V AC	0.90 A	3.17 A
	264 V AC	0.90 A	3.17 A
65℃	90 V AC	0.83 A	3.09 A
	100 V AC	0.83 A	3.07 A
	240 V AC	0.83 A	3.09 A
	264 V AC	0.83 A	3.10 A
Test limit		≥ 0.525A	≥ 2.625A
Judgment		PASS	PASS

Model	ePCSA-500P-X2S	
Item	Over-Voltage Protection	

● Test conditions

Ambient temperature: -5℃, 25℃, 45℃, 65℃

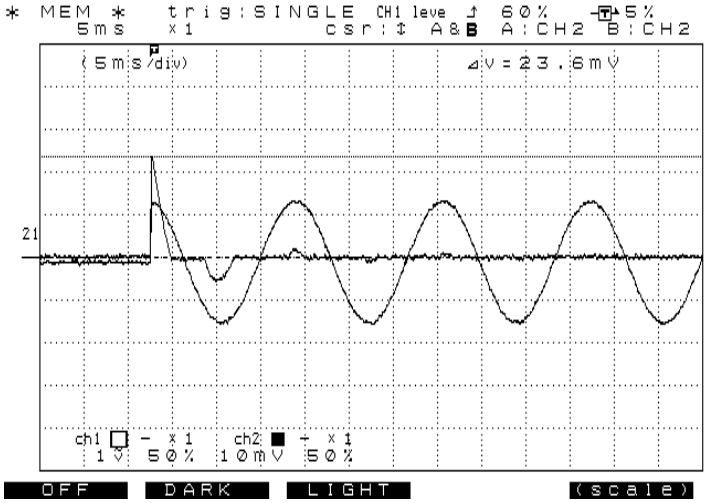
Input voltage: 100V, 240V AC

Load: Minimum load

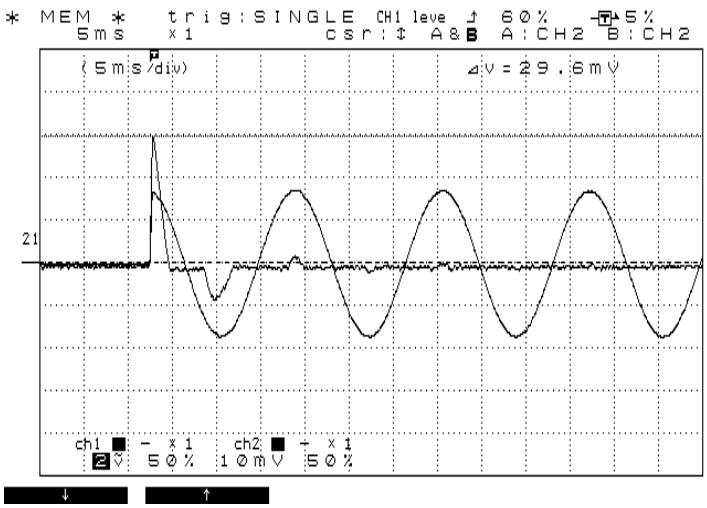
Temperature	Input voltage	CH1 3.3 V	CH2 5 V	CH3 12 V
-5 ℃	100V AC	4.07 V	6.39 V	14.71 V
	240V AC	4.08 V	6.40 V	14.71 V
25 ℃	100V AC	3.96 V	6.24 V	14.77 V
	240V AC	3.96 V	6.25 V	14.77 V
45 ℃	100V AC	3.88 V	6.12 V	14.81 V
	240V AC	3.88 V	6.13 V	14.80 V
65 ℃	100V AC	3.82 V	6.01 V	14.81 V
	240V AC	3.82 V	6.01 V	14.80 V
Specification		3.76 - 4.3V	5.74 - 7.0V	13.4 - 15.6V
Judgment		PASS	PASS	PASS

Model	ePCSA-500P-X2S	
Item	Inrush Current	

Inrush Current Waveforms



DATA 1	
CH1	Measuring Point: AC Input Voltage
	Range: 100V/DIV
CH2	Measuring Point: AC Input Current
	Range: 10A/DIV
Sweep time	5ms/DIV
Conditions	Input: 100V AC, 60Hz Load: Rated Load
Note: Inrush Current: 23.6A	



DATA 2	
CH1	Measuring Point: AC Input Voltage
	Range: 200V/DIV
CH2	Measuring Point: AC Input Current
	Range: 20A/DIV
Sweep time	5ms/DIV
Conditions	Input: 240V AC, 60Hz Load: Rated Load
Note: Inrush Current: 59.2A	

Model	ePCSA-500P-X2S	
Item	Dynamic Load Response	

■ Test Conditions

Ambient Temperature 25±5℃ (Room Temperature)
Input Voltage 100V AC
Load-change repetition rate 50 Hz – 10 kHz (No capacitive load)
Note 1: Test limits are derived from the specified DC output voltage accuracy.
Note 2: Vm is measured voltage

Table 1. +5 V DC Output transient response result

Test Item	Rated Load ⇌ 11.2 A	Test limits	Judgment
Voltage variance	High: 128 mV Low: - 128mV	+200 mV ≥ Vm ≥ -200 mV	PASS
Load-change repetition rate from 50Hz to 10kHz.	Normal	No failure and damages.	PASS

Table 2. +3.3 V DC Output transient response result

Test Item	Rated Load ⇌ 8.05 A	Test limits	Judgment
Voltage variance	High: 108 mV Low: -96 mV	+132 mV ≥ Vm ≥ -132 mV	PASS
Load-change repetition rate from 50Hz to 10kHz.	Normal	No failure and damages.	PASS

Table 3. +12 V DC Output transient response result

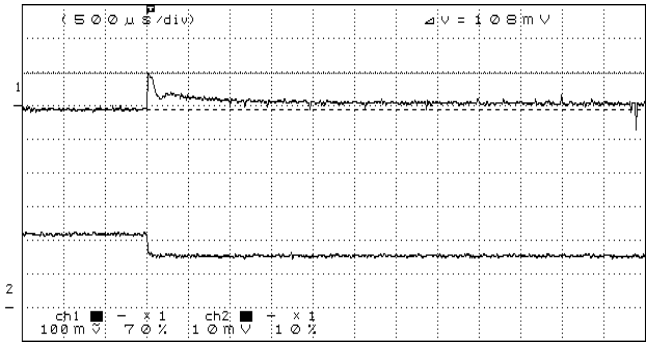
Test Item	Rated Load ⇌ 9 A	Test limits	Judgment
Voltage variance	High: 184 mV Low: -180 mV	+600 mV ≥ Vm ≥ -600 mV	PASS
Load-change repetition rate from 50Hz to 10kHz.	Normal	No failure and damages.	PASS

Model	ePCSA-500P-X2S	
Item	Dynamic Load Response	

（CH1）+3.3V DC output response waveforms

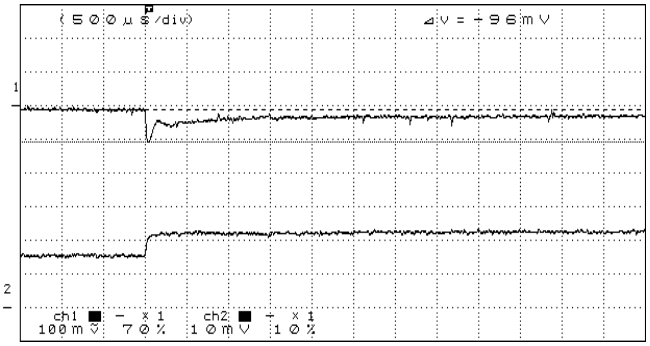
DC Output Voltage

Load Current



DC Output Voltage

Load Current

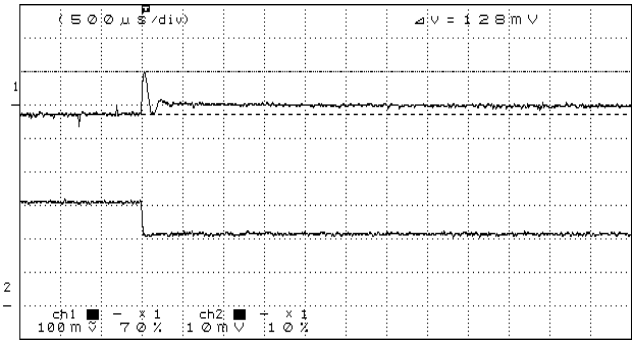


Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Range: 100mV/DIV
CH2	Measuring Point: DC Output Current
	Range: 5A/DIV
Sweep time	500μs/DIV
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Rated Load ≒ 8.05 A	

（CH2）+5V DC output response waveforms

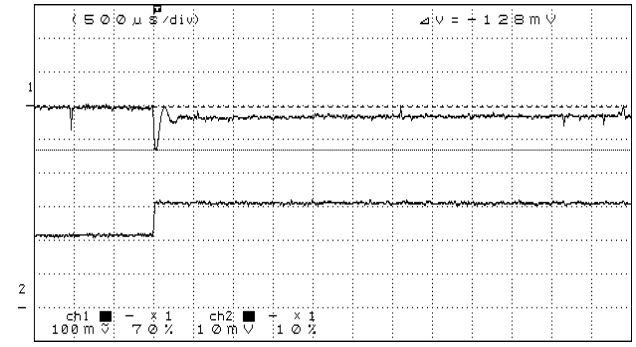
DC Output Voltage

Load Current



DC Output Voltage

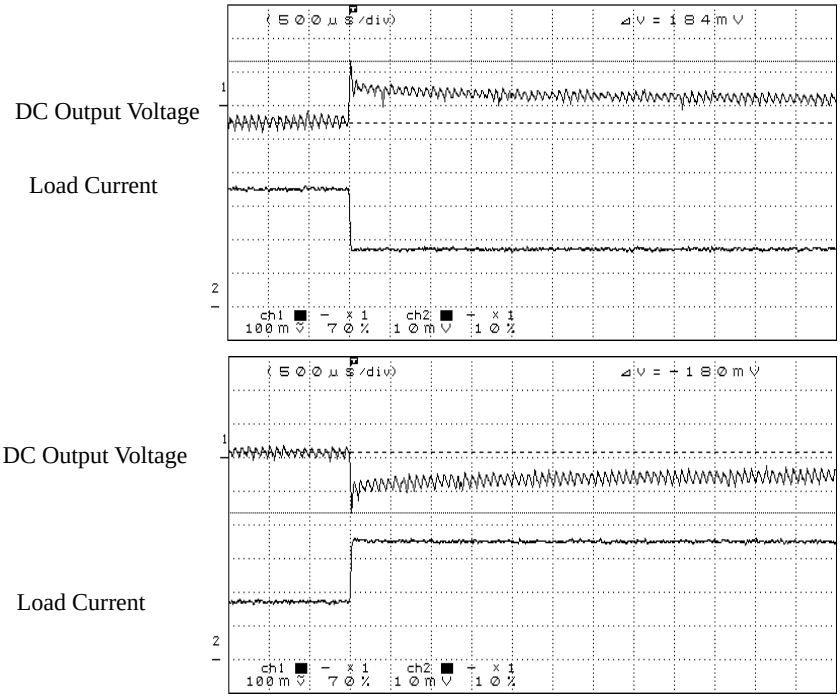
Load Current



Waveform 2	
CH1	Measuring Point: DC Output Voltage
	Range: 100mV/DIV
CH2	Measuring Point: DC Output Current
	Range: 5A/DIV
Sweep time	500μs/DIV
Condition	Input: 100 V AC Load: Rated Load (Other output)
Note: Rated Load ≒ 11.2 A	

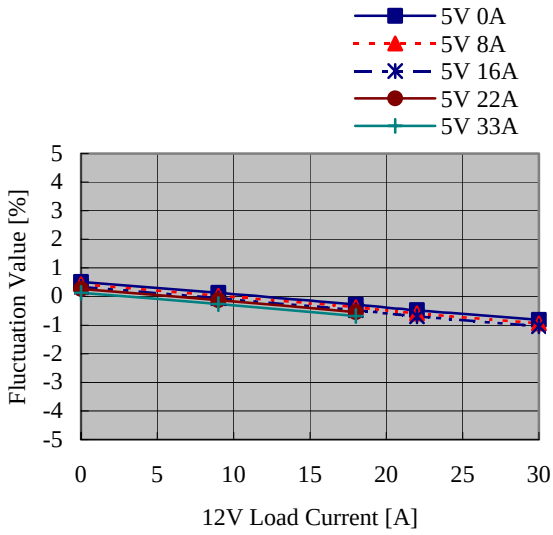
Model	ePCSA-500P-X2S	
Item	Dynamic Load Response	

(CH3) +12V DC output response waveforms



Waveform 3	
CH1	Measuring Point: DC Output Voltage
	Range: 100mV/DIV
CH2	Measuring Point: DC Output Current
	Range: 5A/DIV
Sweep time	500 μs/DIV
Condition	Input: 100 V AC Load: Rated Load (other output)
Note: Rated Load ≒ 9 A	

Model	ePCSA-500P-X2S
Item	12V Cross Regulation

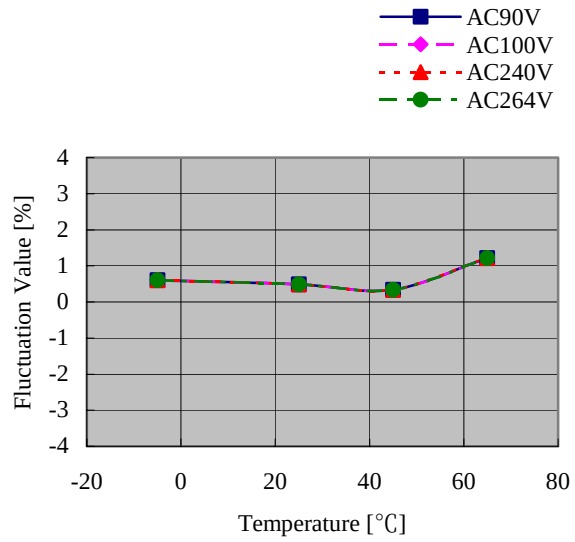


12V Load Current	12V Voltage Value [V]				
	5V 0A	5V 8A	5V 16A	5V 22A	5V 33A
0A	12.061	12.052	12.041	12.032	12.016
9A	12.015	12.004	11.993	11.984	11.969
18A	11.966	11.955	11.943	11.935	11.918
22A	11.943	11.929	11.917	-	-
30A	11.903	11.888	11.875	-	-

12V Load Current	Fluctuation Value [%]				
	5V 0A	5V 8A	5V 16A	5V 22A	5V 33A
0A	0.51	0.43	0.34	0.27	0.13
9A	0.13	0.03	-0.06	-0.13	-0.26
18A	-0.28	-0.38	-0.48	-0.54	-0.68
22A	-0.48	-0.59	-0.69	-	-
30A	-0.81	-0.93	-1.04	-	-

Model	ePCSA-500P-X2S
Item	Ambient Temperature Drift

V1：3.3V 11.5A



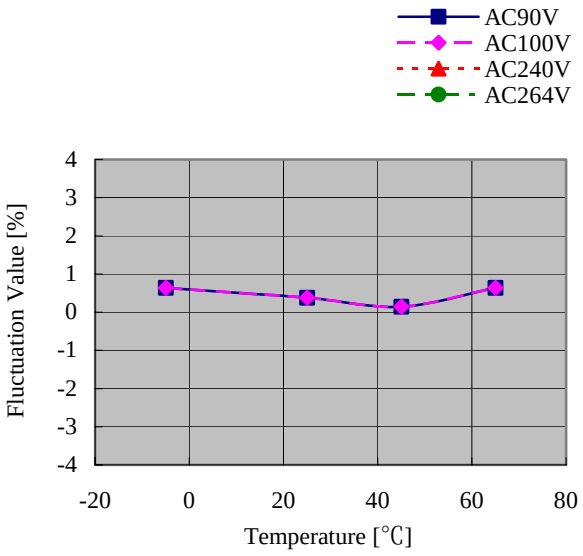
at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	3.320	3.320	3.320	3.320
25	3.316	3.316	3.316	3.316
45	3.311	3.311	3.311	3.311
65(1)	3.340	3.340	3.340	3.340

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	0.61	0.61	0.61	0.61
25	0.48	0.48	0.48	0.48
45	0.33	0.33	0.33	0.33
65(1)	1.21	1.21	1.21	1.21

(1) 70% of Rated Load

V2：5V 16A



at AC Input

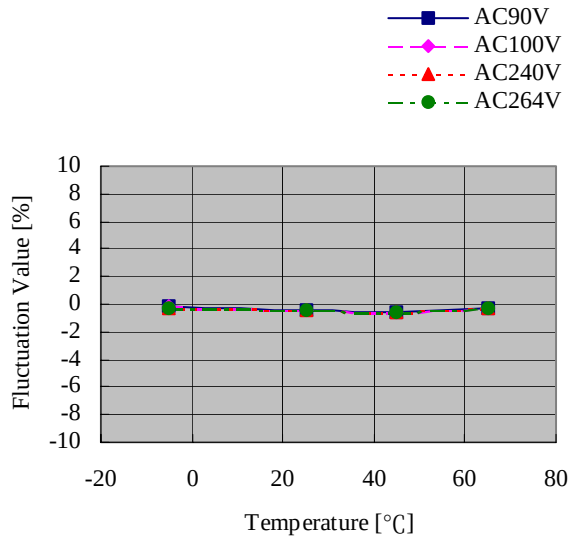
Temperature (℃)	Output Voltage [V]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	5.032	5.032	5.032	5.031
25	5.019	5.019	5.019	5.019
45	5.007	5.007	5.006	5.006
65(1)	5.032	5.032	5.032	5.032

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	0.64	0.64	0.64	0.62
25	0.38	0.38	0.38	0.38
45	0.14	0.14	0.12	0.12
65(1)	0.64	0.64	0.64	0.64

(1) 70% of Rated Load

Model	ePCSA-500P-X2S
Item	Ambient Temperature Drift

V3：12V 18A



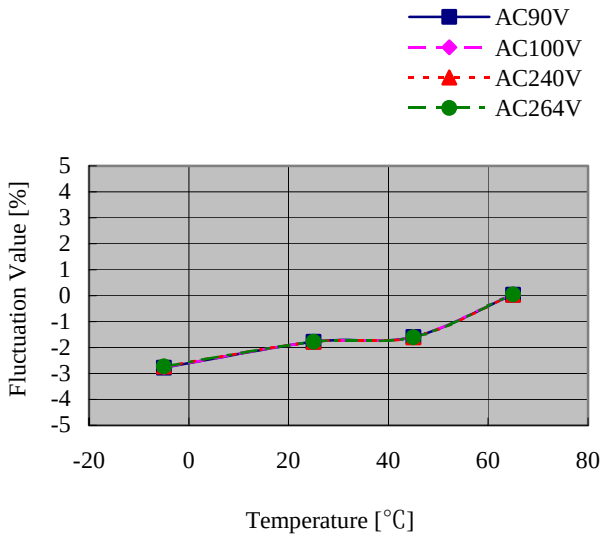
at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	11.974	11.974	11.973	11.972
25	11.954	11.953	11.952	11.953
45	11.934	11.933	11.932	11.931
65(1)	11.959	11.959	11.959	11.958

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	-0.22	-0.22	-0.22	-0.23
25	-0.38	-0.39	-0.40	-0.39
45	-0.55	-0.56	-0.57	-0.58
65(1)	-0.34	-0.34	-0.34	-0.35

(1) 70% of Rated Load

V4：-12V 0.5A



at AC Input

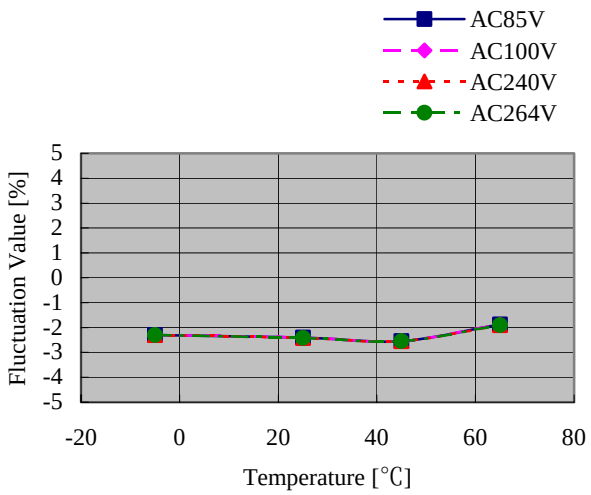
Temperature (℃)	Output Voltage [V]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	-11.667	-11.669	-11.672	-11.672
25	-11.787	-11.786	-11.787	-11.787
45	-11.809	-11.809	-11.808	-11.807
65(1)	-12.005	-12.006	-12.005	-12.006

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	-2.78	-2.76	-2.73	-2.73
25	-1.77	-1.78	1.77	-1.77
45	-1.59	-1.59	-1.60	-1.61
65(1)	0.04	0.05	0.04	0.05

(1) 70% of Rated Load

Model	ePCSA-500P-X2S
Item	Ambient Temperature Drift

V5：5Vs 2A



at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	4.885	4.885	4.885	4.885
25	4.880	4.880	4.879	4.879
45	4.873	4.873	4.873	4.873
65(1)	4.906	4.906	4.905	4.905

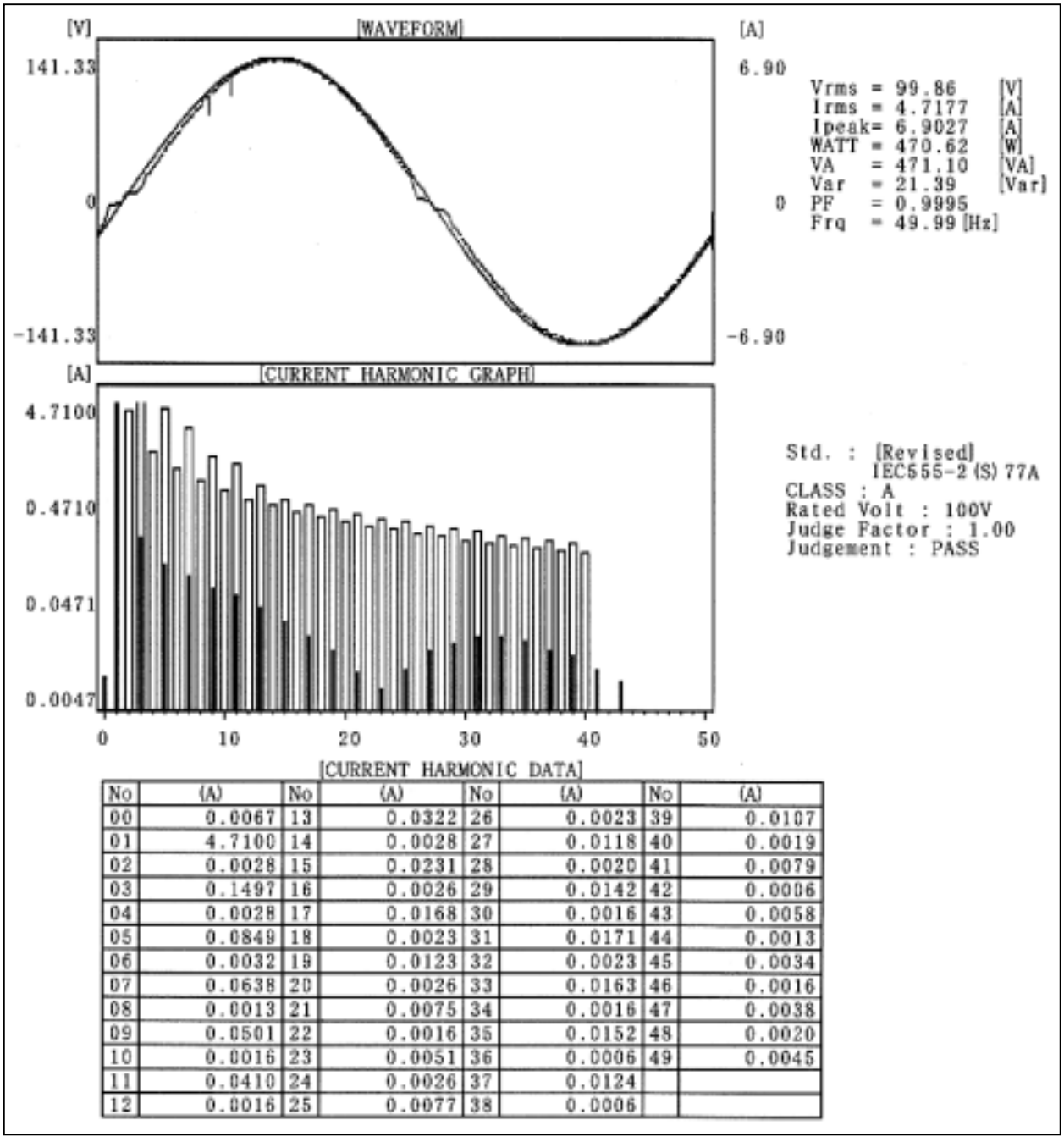
Temperature (℃)	Fluctuation Value [%]			
	Input Voltage 90V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-5	-2.30	-2.30	-2.30	-2.30
25	-2.40	-2.40	-2.42	-2.42
45	-2.54	-2.54	-2.54	-2.54
65(1)	-1.88	-1.88	-1.90	-1.90

(1) 70% of Rated Load

Model	ePSCA-500P-X2S	
Item	AC Harmonic Current	

[Test Conditions]

Ambient temperature: 25˚ ±5℃ (Room Temperature)
Input voltage: 100V AC, 50 Hz
Load: Rated load
Measuring Instrument: MP701 (Keisoku Giken)



[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0067	13	0.0322	26	0.0023	39	0.0107
01	4.7100	14	0.0028	27	0.0118	40	0.0019
02	0.0028	15	0.0231	28	0.0020	41	0.0079
03	0.1497	16	0.0026	29	0.0142	42	0.0006
04	0.0028	17	0.0168	30	0.0016	43	0.0058
05	0.0849	18	0.0023	31	0.0171	44	0.0013
06	0.0032	19	0.0123	32	0.0023	45	0.0034
07	0.0638	20	0.0026	33	0.0163	46	0.0016
08	0.0013	21	0.0075	34	0.0016	47	0.0038
09	0.0501	22	0.0016	35	0.0152	48	0.0020
10	0.0016	23	0.0051	36	0.0006	49	0.0045
11	0.0410	24	0.0026	37	0.0124		
12	0.0016	25	0.0077	38	0.0006		

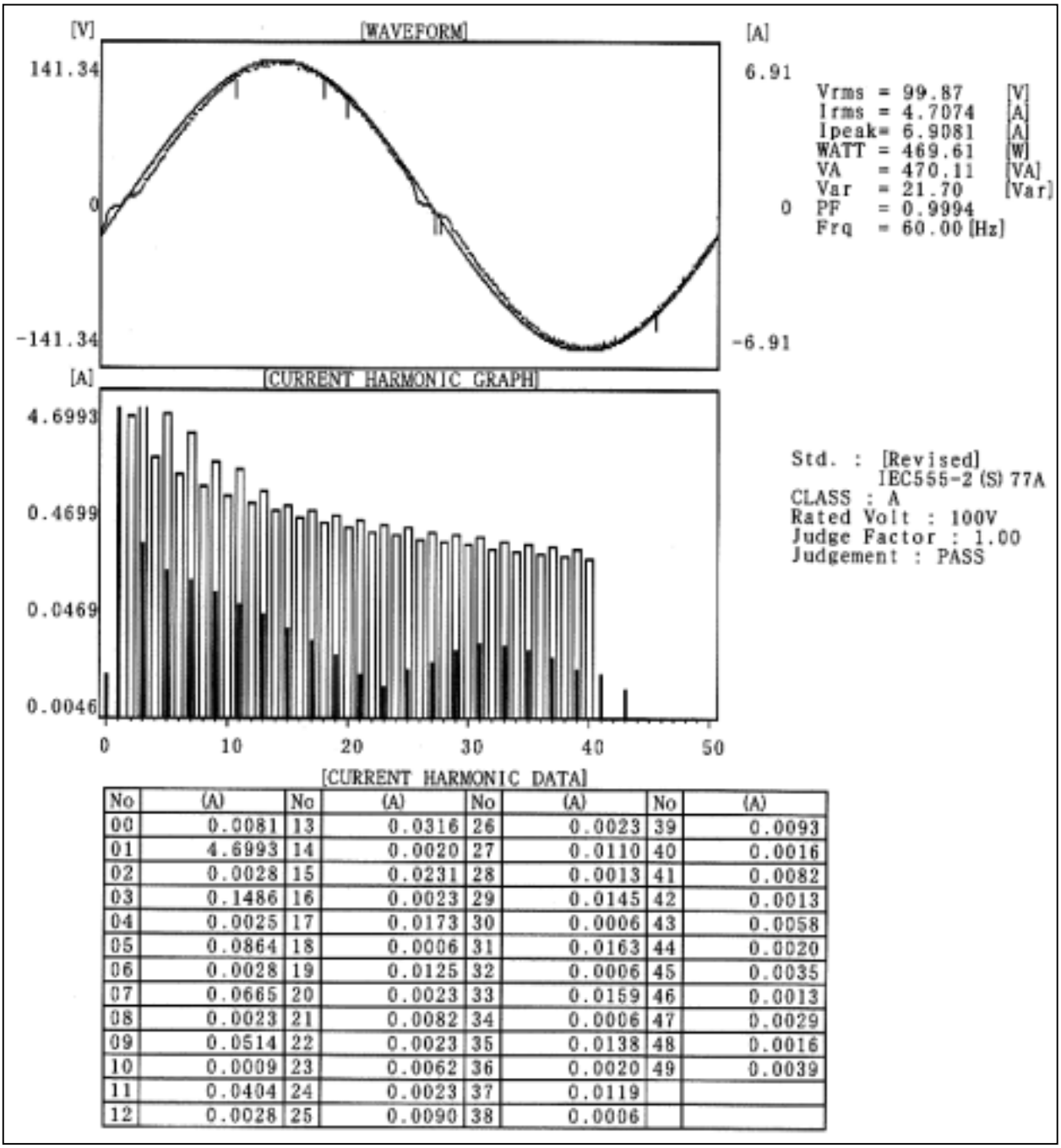
Fig.1 AC Harmonic Current test data

Judgment: PASS

Model	ePCSA-500P-X2S	
Item	AC Harmonic Current	

[Test Conditions]

Ambient temperature: 25˚ ±5℃ (Room Temperature)
Input voltage: 100V AC, 60Hz
Load: Rated load
Measuring Instrument: MP701 (Keisoku Giken)



[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0081	13	0.0316	26	0.0023	39	0.0093
01	4.6993	14	0.0020	27	0.0110	40	0.0016
02	0.0028	15	0.0231	28	0.0013	41	0.0082
03	0.1486	16	0.0023	29	0.0145	42	0.0013
04	0.0025	17	0.0173	30	0.0006	43	0.0058
05	0.0864	18	0.0006	31	0.0163	44	0.0020
06	0.0028	19	0.0125	32	0.0006	45	0.0035
07	0.0665	20	0.0023	33	0.0159	46	0.0013
08	0.0023	21	0.0082	34	0.0006	47	0.0029
09	0.0514	22	0.0023	35	0.0138	48	0.0016
10	0.0009	23	0.0062	36	0.0020	49	0.0039
11	0.0404	24	0.0023	37	0.0119		
12	0.0028	25	0.0090	38	0.0006		

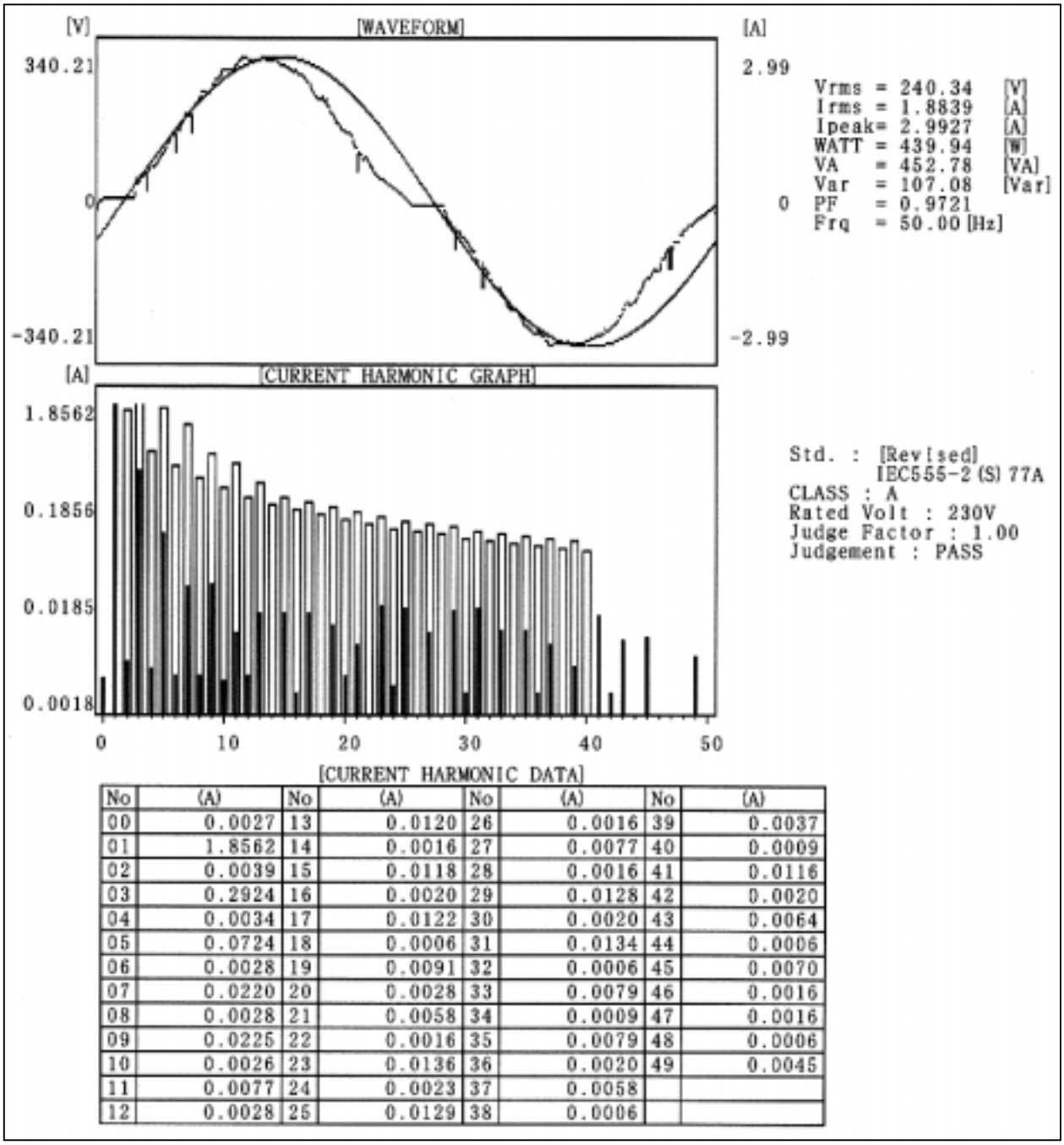
Fig.2 AC Harmonic Current test data

Judgment: PASS

Model	ePSCA-500P-X2S	
Item	AC Harmonic Current	

[Test Conditions]

Ambient temperature: 25˚ ±5℃ (Room Temperature)
Input voltage: 240V AC, 50Hz
Load: Rated load
Measuring Instrument: MP701 (Keisoku Giken)



[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0027	13	0.0120	26	0.0016	39	0.0037
01	1.8562	14	0.0016	27	0.0077	40	0.0009
02	0.0039	15	0.0118	28	0.0016	41	0.0116
03	0.2924	16	0.0020	29	0.0128	42	0.0020
04	0.0034	17	0.0122	30	0.0020	43	0.0064
05	0.0724	18	0.0006	31	0.0134	44	0.0006
06	0.0028	19	0.0091	32	0.0006	45	0.0070
07	0.0220	20	0.0028	33	0.0079	46	0.0016
08	0.0028	21	0.0058	34	0.0009	47	0.0016
09	0.0225	22	0.0016	35	0.0079	48	0.0006
10	0.0026	23	0.0136	36	0.0020	49	0.0045
11	0.0077	24	0.0023	37	0.0058		
12	0.0028	25	0.0129	38	0.0006		

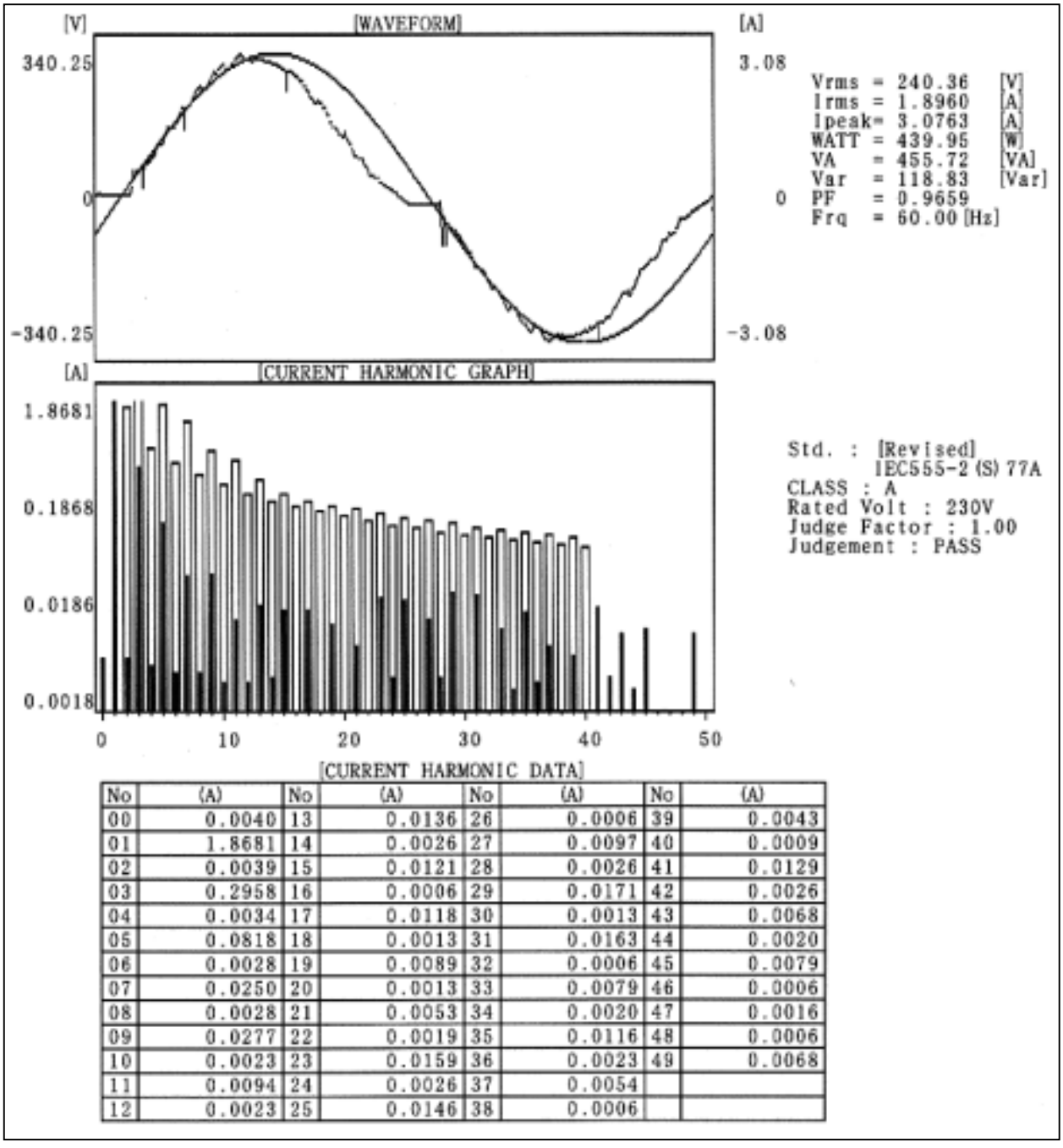
Fig.3 AC Harmonic Current test data

Judgment: PASS

Model	ePCSA-500P-X2S	
Item	AC Harmonic Current	

[Test Conditions]

Ambient temperature: 25˚ ±5℃ (Room Temperature)
Input voltage: 240V AC, 60Hz
Load: Rated load
Measuring Instrument: MP701 (Keisoku Giken)



[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0040	13	0.0136	26	0.0006	39	0.0043
01	1.8681	14	0.0026	27	0.0097	40	0.0009
02	0.0039	15	0.0121	28	0.0026	41	0.0129
03	0.2958	16	0.0006	29	0.0171	42	0.0026
04	0.0034	17	0.0118	30	0.0013	43	0.0068
05	0.0818	18	0.0013	31	0.0163	44	0.0020
06	0.0028	19	0.0089	32	0.0006	45	0.0079
07	0.0250	20	0.0013	33	0.0079	46	0.0006
08	0.0028	21	0.0053	34	0.0020	47	0.0016
09	0.0277	22	0.0019	35	0.0116	48	0.0006
10	0.0023	23	0.0159	36	0.0023	49	0.0068
11	0.0094	24	0.0026	37	0.0054		
12	0.0023	25	0.0146	38	0.0006		

Fig.4 AC Harmonic Current test data

Judgment: PASS

Model	ePCSA-500P-X2S	
Item	Leakage Current	

[Test Conditions]

Ambient temperature	25℃ ±5℃ (Room Temperature)
Input voltage	100V and 200V AC, 60Hz
Load	Rated load, Minimum load
Measuring Instrument	YEW.TYPE 3226 or equivalent (Input resistance: 1kΩ)

[Test results]

Input voltage	Rated load	Minimum load
100V AC	0.34mA	0.29mA
200V AC	0.56mA	0.54mA

Specification: ≤ 0.5mA (AC100V), ≤ 1.0mA (AC200V)

Judgment : PASS

Model	ePCSA-500P-X2S	
Item	Line Noise Tolerance	

[Test Conditions]

Ambient temperature	25° ±5℃ (Room Temperature)
Input Voltage	100V AC
Load	Rated load
Applied Noise Voltage	±2000V
Repetitive Cycle	30 - 100Hz
Pulse Width	100, 1000ns

Measuring Instrument: INS420 (Noise Laboratory Co.,Ltd.)

[Test results]

Normal mode	Pulse width and polarity			
	100ns		1000ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	✓	✓	✓	✓
Common mode R Phase	Pulse width and polarity			
	100ns		1000ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	✓	✓	✓	✓
Common mode S Phase	Pulse width and polarity			
	100ns		1000ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	✓	✓	✓	✓

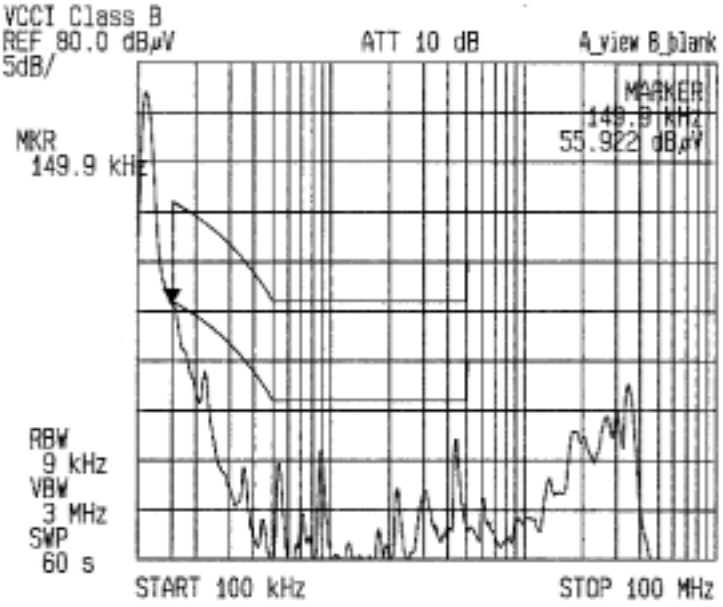
Symbol notes ✓→Normal
×→Power Supply Breakdown

Judgment: PASS

Model	ePCSA-500P-X2S	
Item	Conducted Emission	

● Test conditions

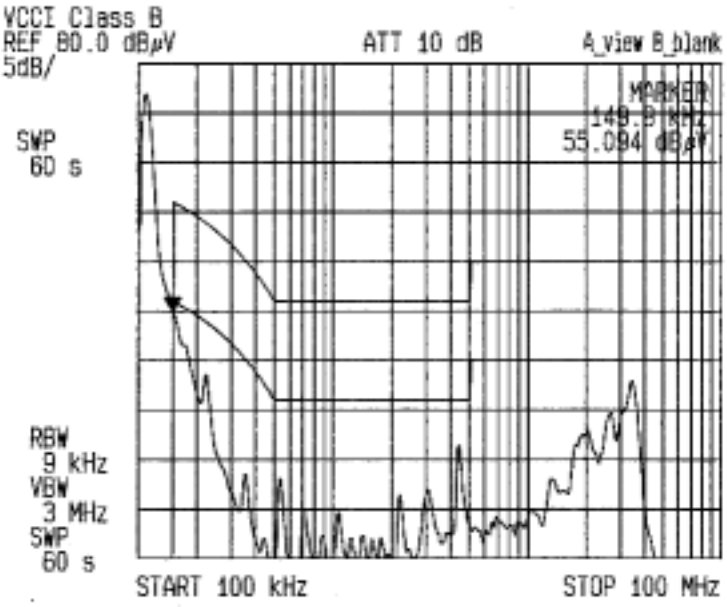
Temperature	25 ° ±5℃Room Temperature
Input	100V AC
Load	Rated Load
Measuring Point	L-FG, N-FG
Measuring Instrument	R3261A (Advantest)



QP Spec

AV Spec

Temp: 25 ° ±5℃
Input: 100V AC, 60Hz
Load: Rated load
Phase: L
Measured mode: QP
Spec: VCCI Class B
Test result: **55.922 dBuV (at 149.9kHz)**
Judgment: PASS



QP Spec

AV Spec

Temp: 25 ° ±5℃
Input: 100V AC, 60Hz
Load: Rated load
Phase: N
Measured mode: QP
Spec: VCCI Class B
Test result: **55.922 dBuV (at 149.9kHz)**
Judgment: PASS