Test Data

PC1U-160P-X2S

(AC85～264V)

DC POWER SUPPLY

Approved by : K. Omai

Prepared by : A. Tatumi

INPUT : AC 85V ～ 264V

OUTPUT :

V1:	5V	10A	(Peak 20A)
V2:	3.3V	7A	(Peak 14A)
V3:	12V	6A	(Peak 7A)
V5:	-12V	0.8A	
V6:	5Vs	1.5A	(Peak 2.5A)

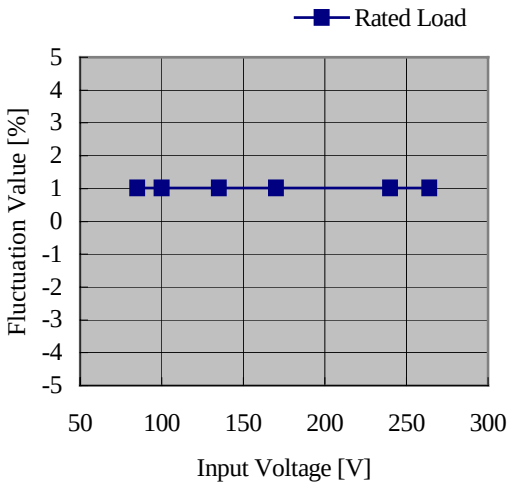
株式会社 ニプロン
Nipron.Co.,Ltd.

CONTENTS

Model	PC1U-160P-X2S
Item	Line Regulation

V1：5V 10A

at AC Input

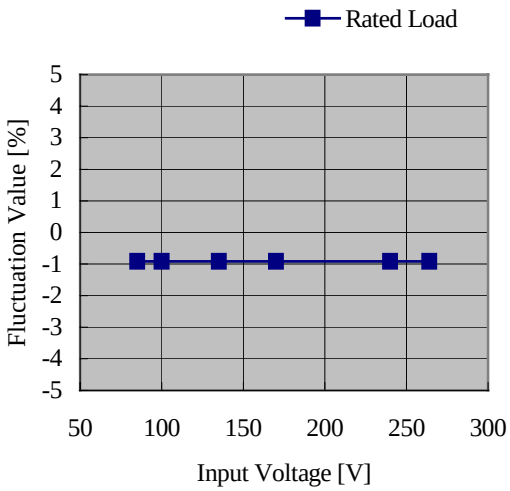


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 85	5.051	1.02
100	5.051	1.02
240	5.051	1.02
264	5.051	1.02

V2：3.3V 7A

at AC Input



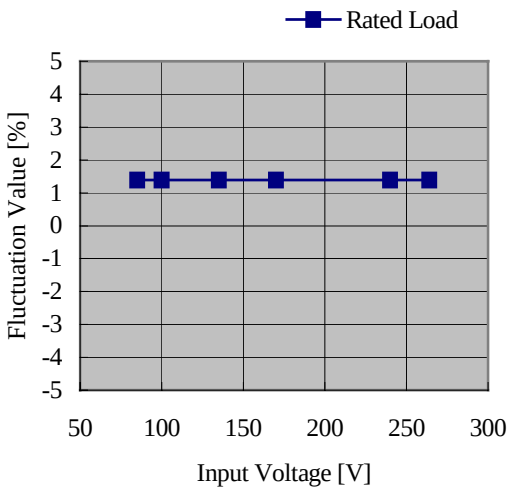
at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 85	3.270	-0.91
100	3.270	-0.91
240	3.270	-0.91
264	3.270	-0.91

Model	PC1U-160P-X2S
Item	Line Regulation

V3：12V 6A

at AC Input

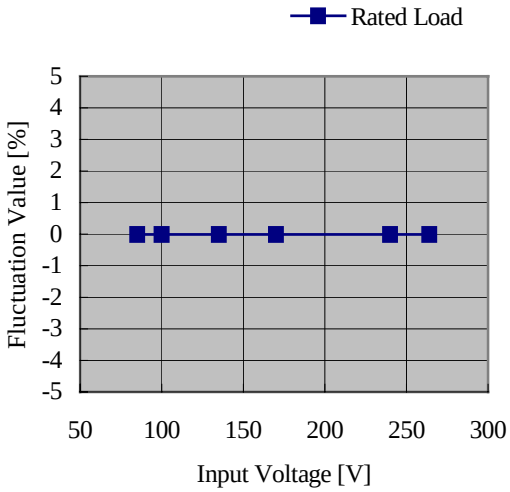


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 85	12.167	1.39
100	12.167	1.39
240	12.167	1.39
264	12.167	1.39

V4：-12V 0.8A

at AC Input



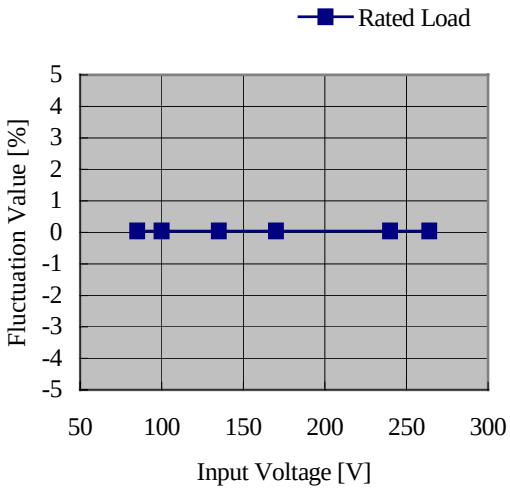
at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 85	-11.999	-0.01
100	-11.999	-0.01
240	-11.999	-0.01
264	-11.999	-0.01

Model	PC1U-160P-X2S
Item	Line Regulation

V5：5Vs 1.5A

at AC Input

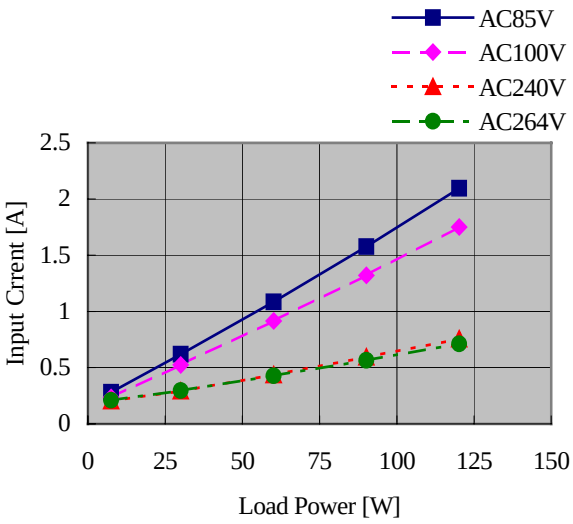


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 85	5.002	0.04
100	5.002	0.04
240	5.002	0.04
264	5.002	0.04

Model	PC1U-160P-X2S
Item	Input Current (by Load Power)

at AC Input

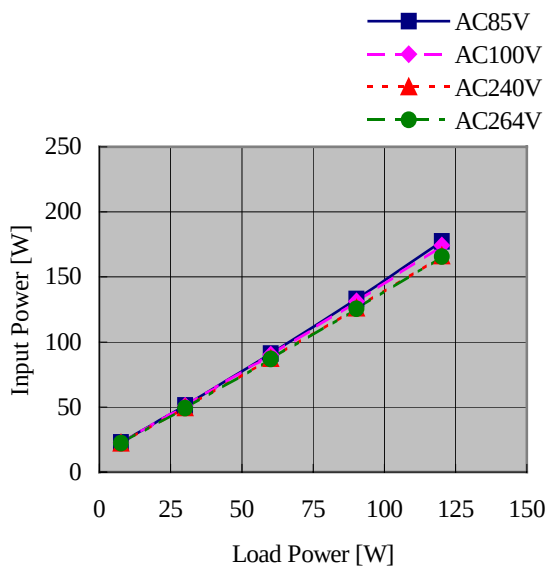


at AC Input

Load Power [W]	Input Current [A rms]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
7.5	0.28	0.24	0.20	0.21
30.05	0.62	0.53	0.29	0.30
60.1	1.09	0.92	0.44	0.43
90.15	1.58	1.32	0.59	0.57
120.2	2.10	1.75	0.75	0.71

Model	PC1U-160P-X2S
Item	Input Power (by Load Power)

at AC Input

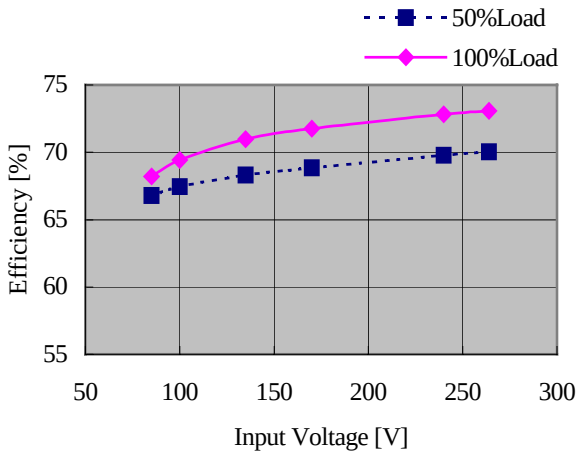


at AC Input

Load Power [W]	Input Power [W]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
7.5	22.73	22.48	22.27	22.24
30.05	51.21	50.88	49.35	49.12
60.1	91.22	90.31	87.28	86.97
90.15	133.04	131.16	126.01	125.63
120.2	177.32	174.21	166.10	165.51

Model	PC1U-160P-X2S
Item	Efficiency

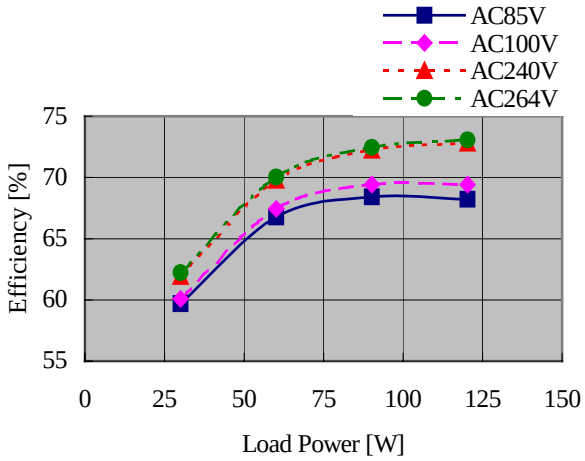
at AC Input



at AC Input

Input Voltage [V]	Efficiency [%]	
	50% Load	100% Load
85	66.78	68.22
100	67.45	69.43
240	69.79	72.82
264	70.04	73.08

at AC Input

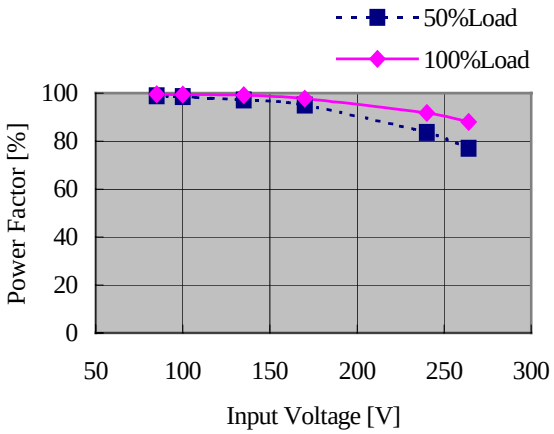


at AC Input

Load Power [W]	Efficiency [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
30.05	59.68	60.07	61.93	62.22
60.1	66.78	67.45	69.79	70.04
90.15	68.43	69.41	72.25	72.47
120.2	68.22	69.43	72.82	73.08

Model	PC1U-160P-X2S
Item	Power Factor

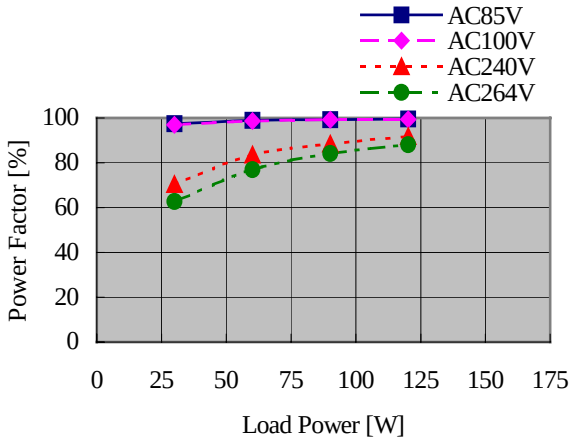
at AC Input



at AC Input

Input Voltage [V]	Power Factor [%]	
	50%Load	100% Load
85	98.86	99.53
100	98.63	99.45
240	83.51	91.69
264	76.97	88.06

at AC Input

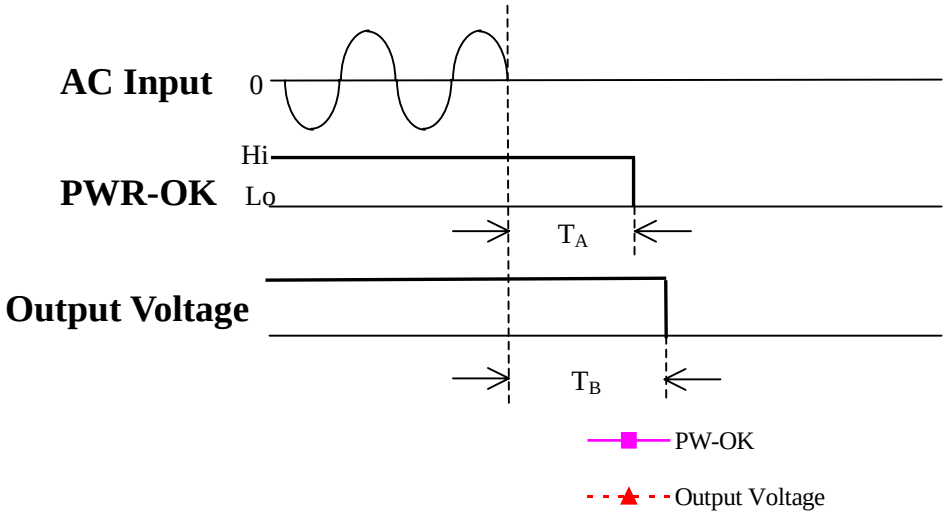


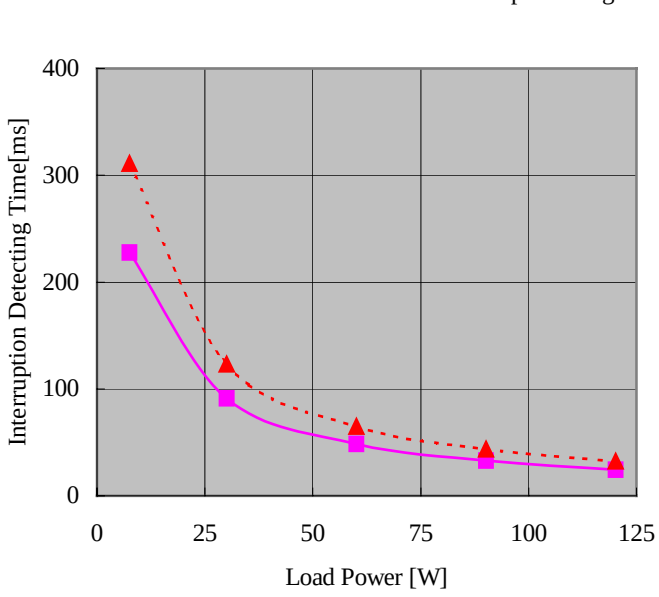
at AC Input

Load Power [W]	Power Factor [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
30.05	97.38	96.91	70.44	62.71
60.1	98.86	98.63	83.51	76.97
90.15	99.28	99.24	88.47	84.12
120.2	99.53	99.45	91.69	88.06

Model	PC1U-160P-X2S	
Item	Instantaneous Interruption Compensation (by Load Power)	

at AC Input (85V / 100V / 240V / 264V)



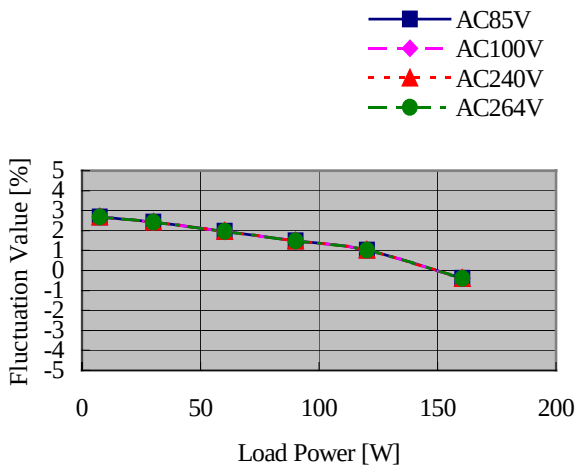


Load Power [W]	Interruption Detecting Time (ms)	
	PWR-OK T_A	DC Output T_B
7.5	227.8	311.10
30.05	91.24	123.08
60.10	48.50	64.74
90.15	32.78	43.46
120.20	24.30	32.12

Model	PC1U-160P-X2S
Item	Load Regulation

V1：5V 10A

at AC Input



at AC Input

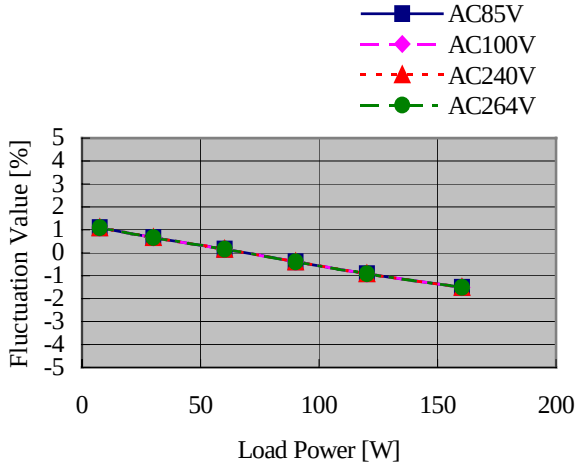
Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
7.5	2.68	2.68	2.68	2.68
30.05	2.42	2.42	2.42	2.42
60.1	1.96	1.96	1.96	1.96
90.15	1.48	1.48	1.48	1.48
120.2	1.02	1.02	1.02	1.02
160.5	-0.40	-0.40	-0.40	-0.40

Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
7.5	1.5	0	0	0	0
30.05	2.5	1.75	0.63	0.2	0.38
60.1	5	3.5	1.25	0.4	0.75
90.15	7.5	5.25	1.88	0.6	1.13
120.2	10	7	2.5	0.8	1.5
160.5	20	0	3.2	0.8	2.5

V2：3.3V 7A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
7.5	1.09	1.09	1.09	1.09
30.05	0.67	0.67	0.67	0.67
60.1	0.15	0.15	0.15	0.15
90.15	-0.39	-0.39	-0.39	-0.39
120.2	-0.91	-0.91	-0.91	-0.91
160.3	-1.52	-1.52	-1.52	-1.52

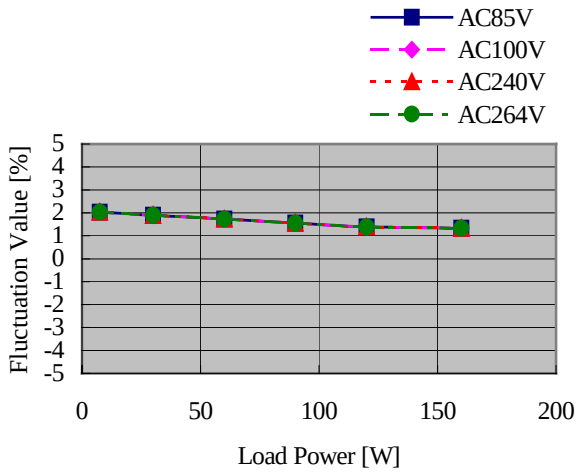
Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
7.5	1.5	0	0	0	0
30.05	2.5	1.75	0.63	0.2	0.38
60.1	5	3.5	1.25	0.4	0.75
90.15	7.5	5.25	1.88	0.6	1.13
120.2	10	7	2.5	0.8	1.5
160.3	10	10	4.6	0.8	2.5

Model	PC1U-160P-X2S
Item	Load Regulation

V3：12V 6A

at AC Input



at AC Input

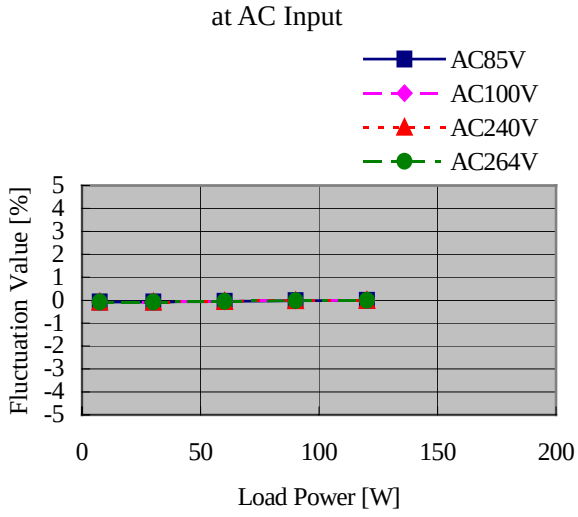
Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
7.5	2.03	2.03	2.03	2.03
30	1.89	1.89	1.89	1.89
60	1.72	1.72	1.72	1.72
90	1.56	1.56	1.56	1.56
120	1.39	1.39	1.39	1.39
160.05	1.33	1.33	1.33	1.33

Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
7.5	1.5	0	0	0	0
30	1.05	0.75	1.5	0.2	0.38
60	2.1	1.5	3	0.4	0.75
90	3.15	2.25	4.5	0.6	1.13
120	4.2	3	6	0.8	1.5
160.05	6.5	6.5	7	0.8	2.5

V4：-12V 0.8A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
7.5	-0.08	-0.08	-0.08	-0.08
30.05	-0.08	-0.08	-0.08	-0.08
60.1	-0.05	-0.05	-0.05	-0.05
90.15	-0.02	-0.02	-0.02	-0.02
120.2	-0.01	-0.01	-0.01	-0.01

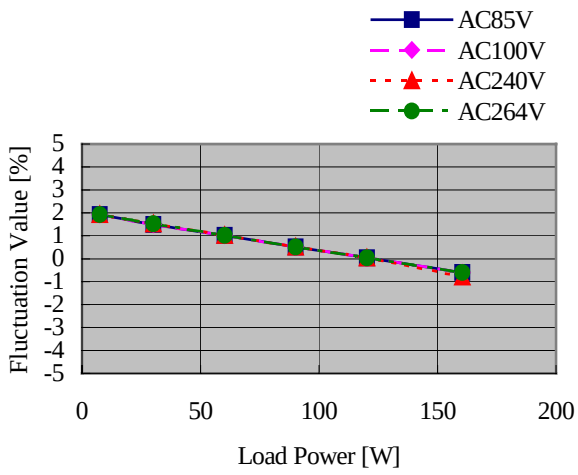
Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
7.5	1.5	0	0	0	0
30.05	2.5	1.75	0.63	0.2	0.38
60.1	5	3.5	1.25	0.4	0.75
90.15	7.5	5.25	1.88	0.6	1.13
120.2	10	7	2.5	0.8	1.5

Model	PC1U-160P-X2S
Item	Load Regulation

V5：5Vs 1.5A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
7.5	1.92	1.92	1.92	1.92
30.05	1.50	1.50	1.50	1.50
60.1	1.02	1.02	1.02	1.02
90.15	0.52	0.52	0.52	0.52
120.2	0.04	0.04	0.04	0.04
160.5	-0.60	-0.60	-0.60	-0.60

Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
7.5	1.5	0	0	0	0
30.05	2.5	1.75	0.63	0.2	0.38
60.1	5	3.5	1.25	0.4	0.75
90.15	7.5	5.25	1.88	0.6	1.13
120.2	10	7	2.5	0.8	1.5
160.5	20	0	3.2	0.8	2.5

Model	PC1U-160P-X2S	
Item	Ripple / Noise Voltage Test	

		V1		5V	V2		3.3V	V3		12V
Temperature	Input Voltage	Ripple (mV)	/	Noise (mV)	Ripple (mV)	/	Noise (mV)	Ripple (mV)	/	Noise (mV)
-5℃	85 V	30	/	34	40	/	42	100	/	110
	100 V	30	/	34	40	/	42	100	/	110
	240 V	30	/	34	40	/	42	100	/	110
	264 V	30	/	34	40	/	42	100	/	110
25℃	85 V	12	/	30	34	/	36	62	/	70
	100 V	12	/	30	34	/	36	62	/	70
	240 V	12	/	30	34	/	36	62	/	70
	264 V	12	/	30	34	/	36	62	/	70
55℃	85 V	10	/	32	30	/	32	60	/	66
	100 V	10	/	32	30	/	32	60	/	66
	240 V	10	/	32	30	/	32	60	/	68
	264 V	10	/	32	30	/	32	60	/	68
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℃	85 V	8	/	26	10	/	28
	100 V	8	/	26	10	/	28
	240 V	8	/	24	10	/	28
	264 V	8	/	24	10	/	28
25℃	85 V	8	/	10	10	/	18
	100 V	8	/	10	10	/	18
	240 V	8	/	10	10	/	18
	264 V	8	/	10	10	/	18
55℃	85 V	5	/	8	8	/	14
	100 V	5	/	8	8	/	15
	240 V	5	/	8	8	/	15
	264 V	5	/	8	8	/	14
Specification		150	/	200	50	/	100
Judgment		Good			Good		

Model	PC1U-160P-X2S	
Item	Over-Current Protection	

Temperature	Input Voltage	V1 5V	V2 3.3V	V3 12V
-5℃	85 V	27.8 A	18.8 A	9.5 A
	100 V	27.9 A	18.9 A	9.5 A
	240 V	28.1 A	19.4 A	9.8 A
	264 V	28.2 A	19.4 A	9.8 A
25℃	85 V	26.8 A	20.8 A	9.4 A
	100 V	26.9 A	20.8 A	9.4 A
	240 V	27.2 A	19.0 A	9.8 A
	264 V	27.2 A	19.0 A	9.8 A
55℃	85 V	26.2 A	19.8 A	9.0 A
	100 V	26.1 A	19.8 A	9.0 A
	240 V	26.4 A	20.0 A	9.3 A
	264 V	26.4 A	20.0 A	9.3 A
Specification		22A or More	12A or More	7.7A or More
Judgment		Good	Good	Good

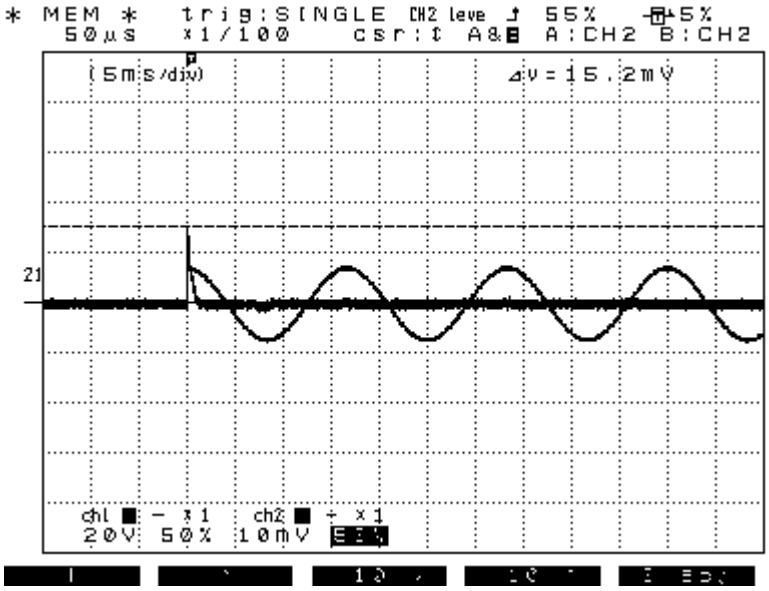
Temperature	Input Voltage	V4 -12V	V5 5VS
-5℃	85 V	1.70 A	4.00 A
	100 V	1.70 A	4.00 A
	240 V	1.70 A	4.00 A
	264 V	1.65 A	4.00 A
25℃	85 V	1.50 A	3.90 A
	100 V	1.50 A	3.90 A
	240 V	1.50 A	3.90 A
	264 V	1.50 A	3.90 A
55℃	85 V	1.40 A	3.60 A
	100 V	1.38 A	3.60 A
	240 V	1.38 A	3.60 A
	264 V	1.40 A	3.60 A
Specification		ー	ー
Judgment		ー	ー

Model	PC1U-160P-X2S	
Item	Over-Voltage Protection	

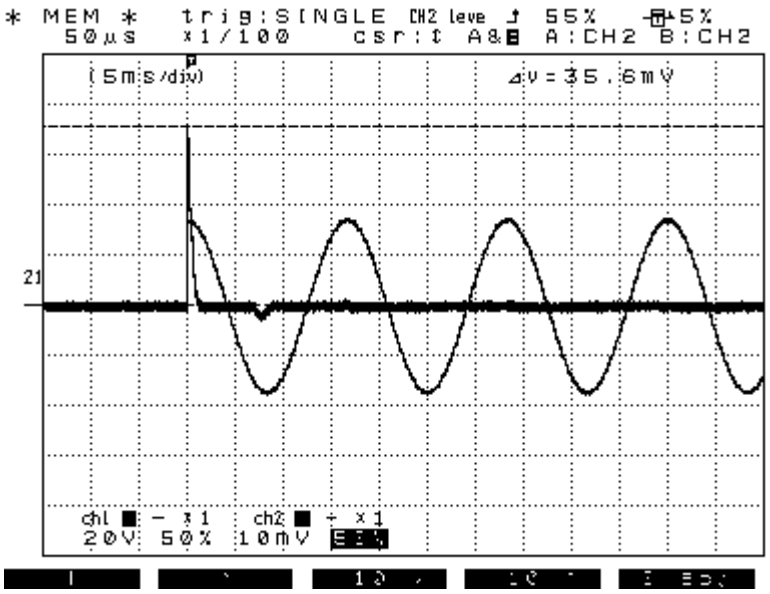
Temperature	Input Voltage	V1：5V	V2：3.3V	V3：12V
-5℃	AC100V	6.8V	4.27V	15.2V
	AC240V	6.8V	4.28V	15.2V
25℃	AC100V	6.7V	4.05V	15.2V
	AC240V	6.7V	4.05V	15.2V
55℃	AC100V	6.6V	3.84V	15.2V
	AC240V	6.6V	3.85V	15.2V
Specification		6.0～7.0V	3.8～4.3V	14.0～15.6V
Judgment		Good	Good	Good

Model	PC1U-160P-X2S	
Item	Inrush Current	

Inrush Current Wave



Wave No.1	
CH1	Measuring Point: Input Voltage
	Range 200V/DIV
CH2	Measuring Point: Input Current
	Range 20A/DIV
Time Line	5ms/DIV
Conditions	Input: AC100V 60Hz Load: Rated Load
Note: Inrush Current Value: 30.4A	

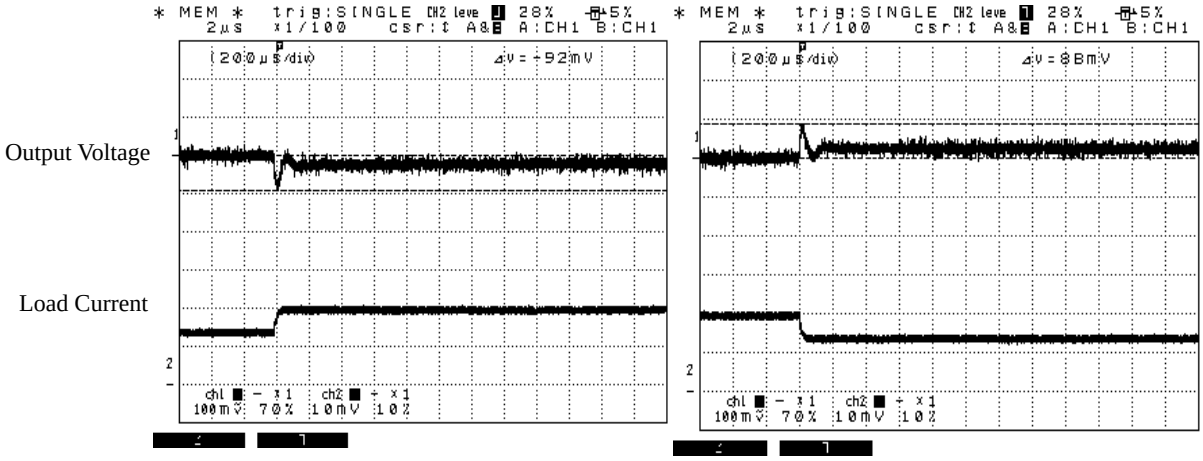


Wave No.2	
CH1	Measuring Point: Input Voltage
	Range 200V/DIV
CH2	Measuring Point: Input Current
	Range 20A/DIV
Time Line	5ms/DIV
Conditions	Input: AC240V 60Hz Load: Rated Load
Note: Inrush Current Value: 71.2A	

Model	PC1U-160P-X2S	
Item	Dynamic Load Response	

V1：+5V 10A

70% Load⇔ 100% Load

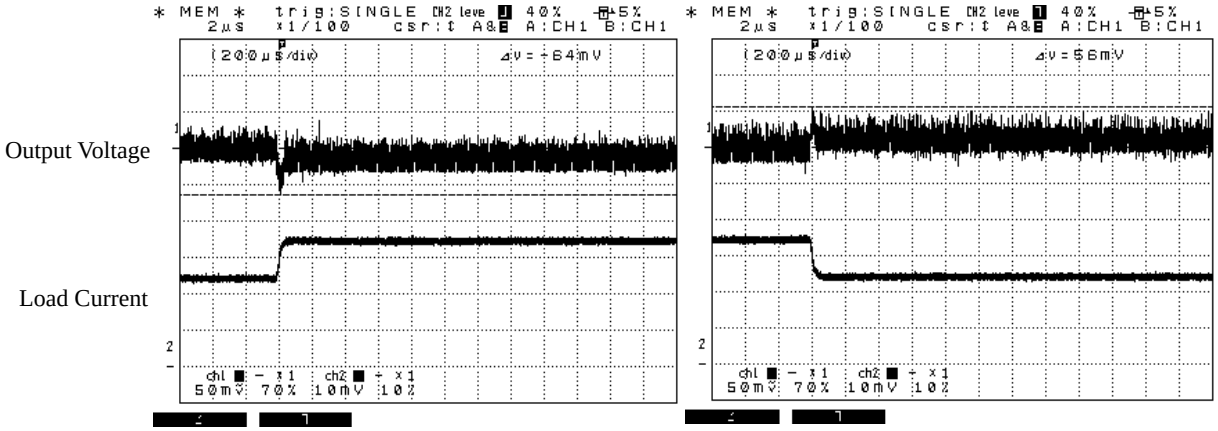


Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgment
70%Load→100% Load	－ mV -92mV	±250mV	Good
100% Load→70% Load	88mV － mV		Good

Model	PC1U-160P-X2S	
Item	Dynamic Load Response	

V2：+3.3V 7A

70% Load⇔ 100% Load



Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgment
70%Load→100% Load	− mV -64mV	±165mV	Good
100% Load→70% Load	56mV mV		Good

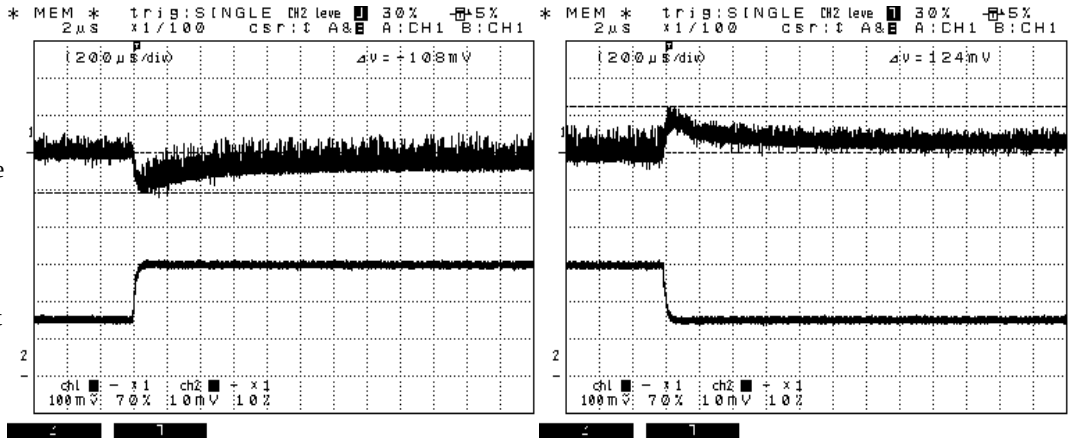
Model	PC1U-160P-X2S	
Item	Dynamic Load Response	

V3：+12V 6A

50% Load ⇔ 100% Load

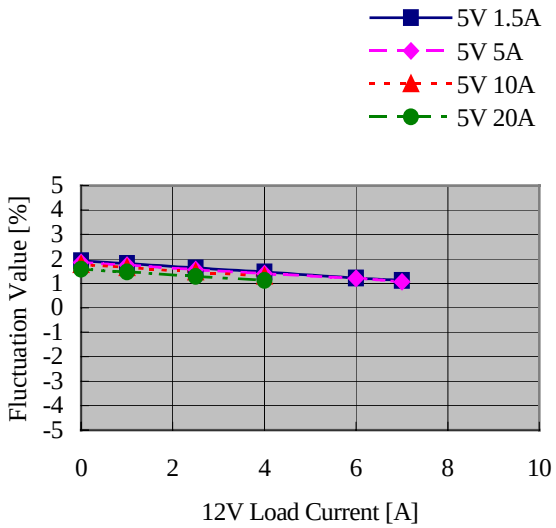
Output Voltage

Load Current



Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgment
50%Load→100% Load	– mV -108mV	±600mV	Good
100% Load→50% Load	124mV – mV		Good

Model	PC1U-160P-X2S
Item	12V Cross Regulation

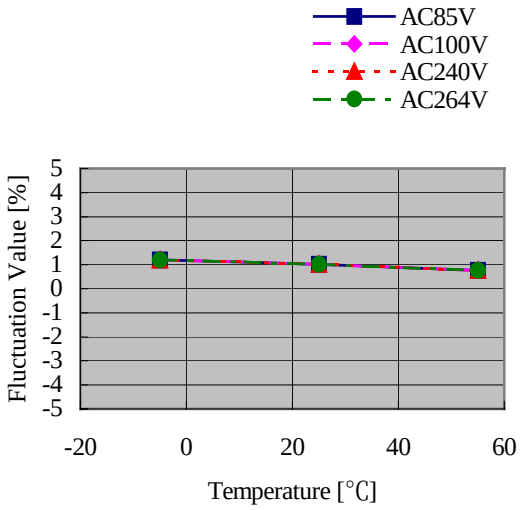


12V Load Current	12V Voltage Value [V]			
	5V 1.5A	5V 5A	5V 10A	5V 20A
0A	12.231	12.223	12.212	12.190
1A	12.217	12.209	12.198	12.176
2.5A	12.196	12.188	12.177	12.155
4A	12.176	12.168	12.157	12.135
6A	12.147	12.141	-	-
7A	12.134	12.128	-	-

12V Load Current	Fluctuation Value [%]			
	5V 1.5A	5V 5A	5V 10A	5V 20A
0A	1.93	1.86	1.77	1.58
1A	1.81	1.74	1.65	1.47
2.5A	1.63	1.57	1.48	1.29
4A	1.47	1.40	1.31	1.13
6A	1.23	1.20	-	-
7A	1.12	1.07	-	-

Model	PC1U-160P-X2S
Item	Ambient Temperature Drift

V1：5V 10A

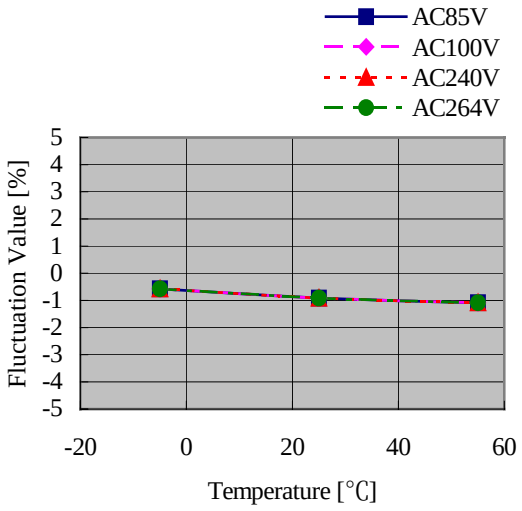


at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	5.060	5.060	5.060	5.060
25	5.051	5.051	5.051	5.051
55	5.038	5.038	5.038	5.038

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	1.20	1.20	1.20	1.20
25	1.02	1.02	1.02	1.02
55	0.76	0.76	0.76	0.76

V2：3.3V 7A



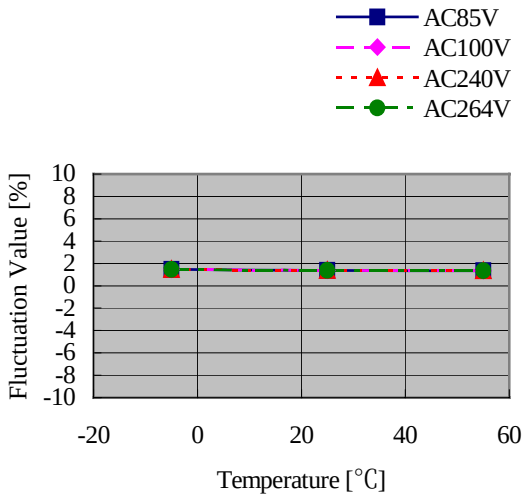
at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	3.281	3.281	3.281	3.281
25	3.270	3.270	3.270	3.270
55	3.264	3.264	3.264	3.264

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	-0.58	-0.58	-0.58	-0.58
25	-0.91	-0.91	-0.91	-0.91
55	-1.09	-1.09	-1.09	-1.09

Model	PC1U-160P-X2S
Item	Ambient Temperature Drift

V3：12V 6A

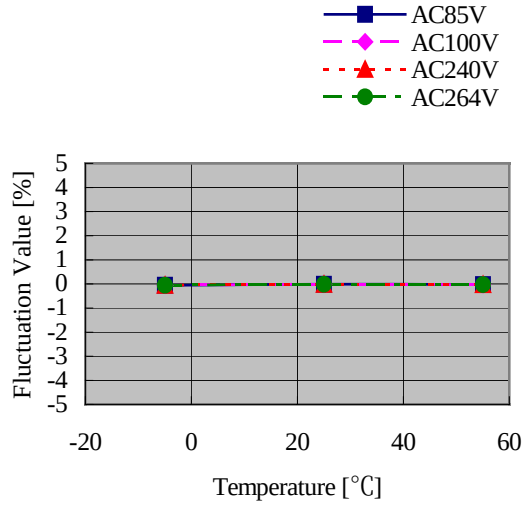


at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	12.176	12.176	12.176	12.176
25	12.167	12.167	12.167	12.167
55	12.162	12.162	12.162	12.162

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	1.47	1.47	1.47	1.47
25	1.39	1.39	1.39	1.39
55	1.35	1.35	1.35	1.35

V4：-12V 0.8A



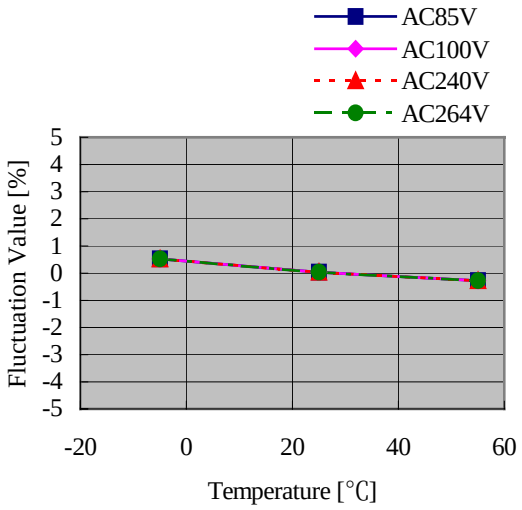
at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	-11.993	-11.993	-11.993	-11.993
25	-11.999	-11.999	-11.999	-11.999
55	-11.997	-11.997	-11.997	-11.997

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	-0.06	-0.06	-0.06	-0.06
25	-0.01	-0.01	-0.01	-0.01
55	-0.02	-0.02	-0.02	-0.02

Model	PC1U-160P-X2S
Item	Ambient Temperature Drift

V5：5Vs 1.5A



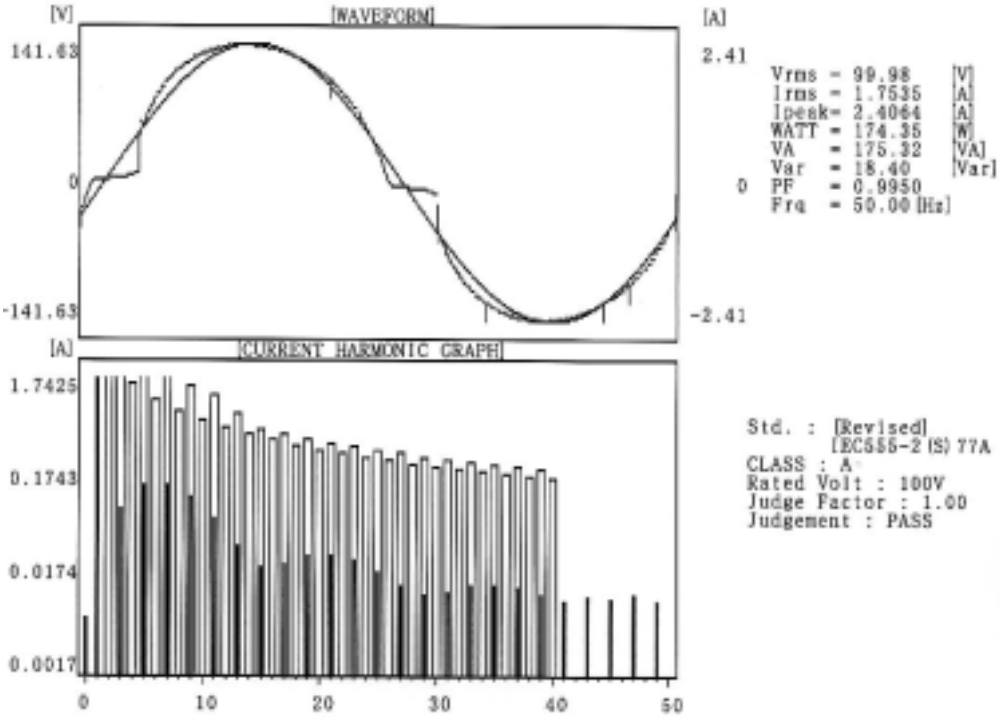
at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	5.026	5.026	5.026	5.026
25	5.002	5.002	5.002	5.002
55	4.986	4.986	4.986	4.986

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	0.52	0.52	0.52	0.52
25	0.04	0.04	0.04	0.04
55	-0.28	-0.28	-0.28	-0.28

Model	PC1U-160P-X2S	
Item	Harmonic Current	

Measuring Instrument ： MP701(Keisoku Giken)

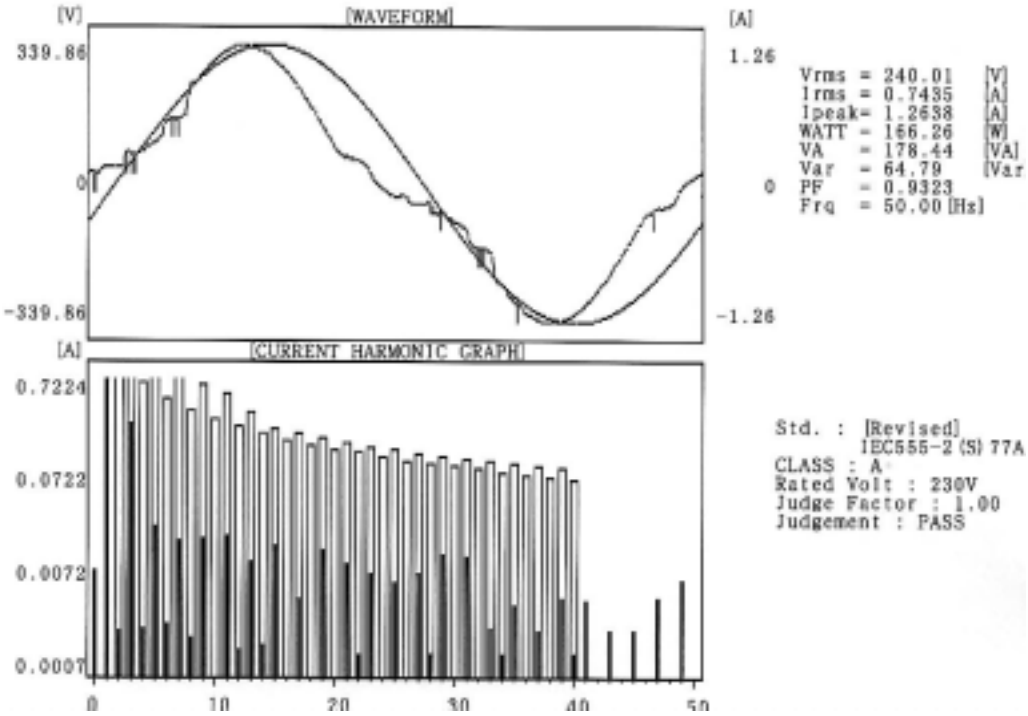


[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0044	13	0.0241	26	0.0009	39	0.0077
01	1.7425	14	0.0010	27	0.0095	40	0.0002
02	0.0011	15	0.0144	28	0.0007	41	0.0065
03	0.0554	16	0.0008	29	0.0077	42	0.0002
04	0.0010	17	0.0158	30	0.0000	43	0.0071
05	0.0966	18	0.0000	31	0.0082	44	0.0009
06	0.0007	19	0.0188	32	0.0007	45	0.0070
07	0.0979	20	0.0007	33	0.0093	46	0.0007
08	0.0000	21	0.0188	34	0.0003	47	0.0077
09	0.0734	22	0.0007	35	0.0096	48	0.0002
10	0.0007	23	0.0168	36	0.0007	49	0.0066
11	0.0458	24	0.0010	37	0.0090		
12	0.0009	25	0.0130	38	0.0002		

Model	PC1U-160P-X2S	
Item	Harmonic Current	

Measuring Instrument ： MP701(Keisoku Giken)



[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0056	13	0.0072	26	0.0007	39	0.0030
01	0.7224	14	0.0010	27	0.0053	40	0.0008
02	0.0013	15	0.0106	28	0.0008	41	0.0028
03	0.1687	16	0.0007	29	0.0083	42	0.0004
04	0.0014	17	0.0030	30	0.0004	43	0.0014
05	0.0158	18	0.0004	31	0.0078	44	0.0002
06	0.0016	19	0.0095	32	0.0000	45	0.0014
07	0.0115	20	0.0007	33	0.0015	46	0.0002
08	0.0011	21	0.0068	34	0.0008	47	0.0029
09	0.0121	22	0.0008	35	0.0025	48	0.0004
10	0.0007	23	0.0055	36	0.0004	49	0.0046
11	0.0127	24	0.0000	37	0.0013		
12	0.0009	25	0.0043	38	0.0000		

Model	PC1U-160P-X2S	
Item	Leakage Current Test	

Temperature Room Temperature
Input AC100V、240V
Load Rated Load 、Minimum Load

Input Voltage (V)	at Rated Load (mA)	at Minimum Load (mA)
100V	0.32	0.29
240V	0.70	0.65

Measuring Instrument：YEW.TYPE3226 Applicable Products（ Range：1KΩ）

Model	PC1U-160P-X2S	
Item	Line Noise Tolerance	

Temperature	Room Temperature
Input	AC100V,60Hz
Load	Rated Load
Noise Impressed Voltage	±2000V
Repeat Cycle	10～35ms
Pulse Width	100,800ns

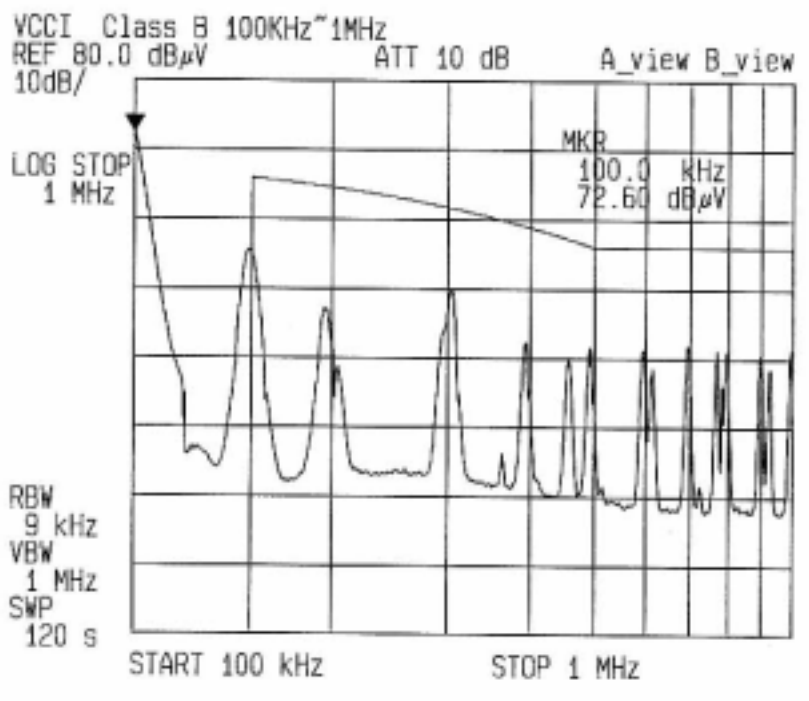
	Pulse Impressed Mode			
Normal	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	○	○	○	○
Common R Phase	Pulse Impressed Mode			
	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	○	○	○	○
Common S Phase	Pulse Impressed Mode			
	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	○	○	○	○

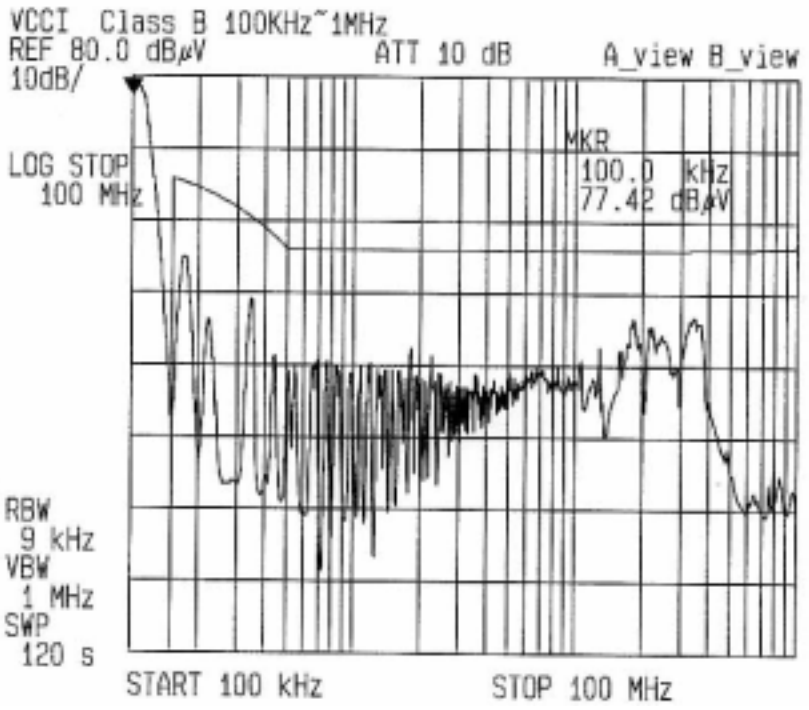
○→No Trouble
△→Faulty Operation of Over-Voltage and so on
×→Power Supply Breakdown

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

Model	PC1U-160P-X2S	
Item	Conduction Emission	

Temperature	Room Temperature
Input	AC100V
Load	Actual Load
Measuring Point	L-FG
Measuring Instrument	R3261A (Advantest)





Model	PC1U-160P-X2S	
Item	Conduction Emission	

Temperature	Room Temperature
Input	AC240V
Load	Actual Load
Measuring Point	L-FG
Measuring Instrument	R3261A (Advantest)