Test Data

PCTF-220P-X2S

(AC(85)90～264V)

DC POWER SUPPLY

Approved by : K. Imai

Prepared by : A. Tatsumi

INPUT : AC (85)90V ～ 264V

OUTPUT :

V1:	5V	6A	(Peak 15A)
V2:	3.3V	10A	(Peak 16.7A)
V3:	12V	10A	(Peak 12A)
V4:	-12V	0.3A	(Peak 0.5A)
V5:	5Vs	1.5A	(Peak 2.5A)

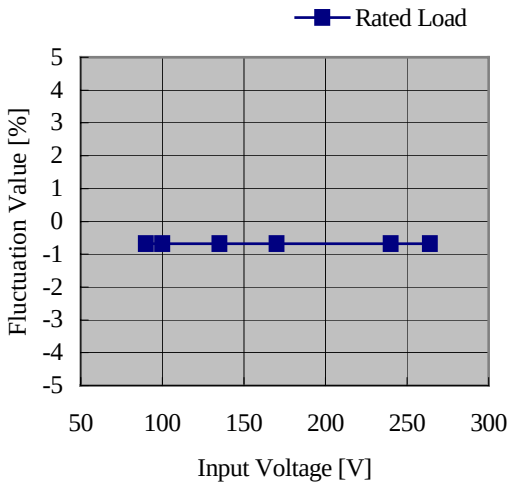
株式会社 ニプロン
Nipron.Co.,Ltd.

CONTENTS

Model	PCTF-220P-X2S
Item	Line Regulation

V1：5V 6A

at AC Input

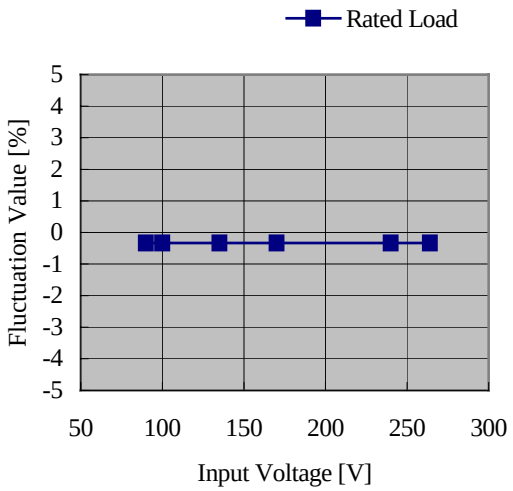


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 90	4.966	-0.68
100	4.966	-0.68
240	4.966	-0.68
264	4.966	-0.68

V2：3.3V 10A

at AC Input



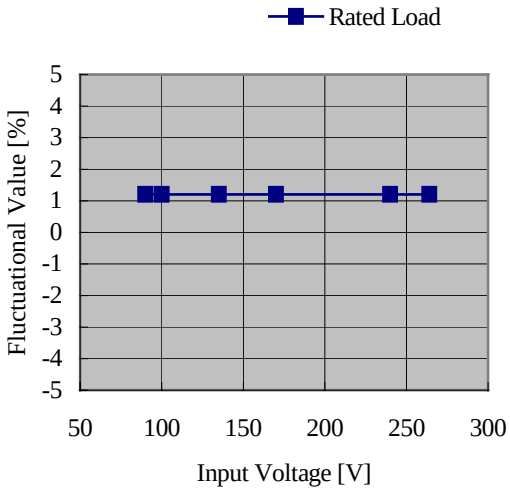
at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 90	3.289	-0.33
100	3.289	-0.33
240	3.289	-0.33
264	3.289	-0.33

Model	PCTF-220P-X2S
Item	Line Regulation

V3：12V 10A

at AC Input

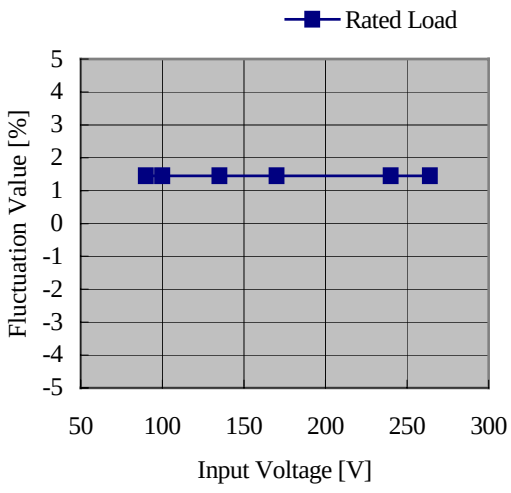


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 90	12.145	1.21
100	12.145	1.21
240	12.145	1.21
264	12.145	1.21

V4：-12V 0.3A

at AC Input



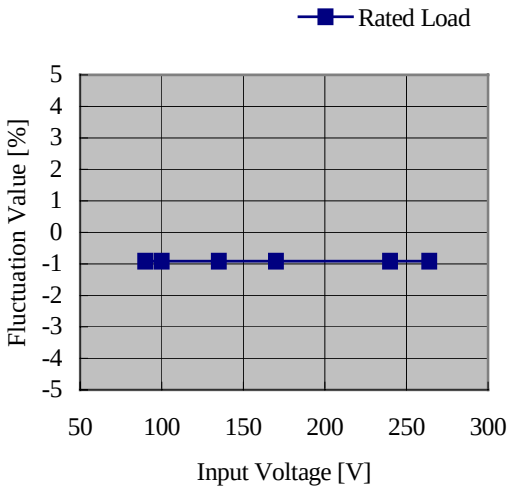
at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 90	-12.174	1.45
100	-12.174	1.45
240	-12.174	1.45
264	-12.174	1.45

Model	PCTF-220P-X2S
Item	Line Regulation

V5：5Vs 1.5A

at AC Input

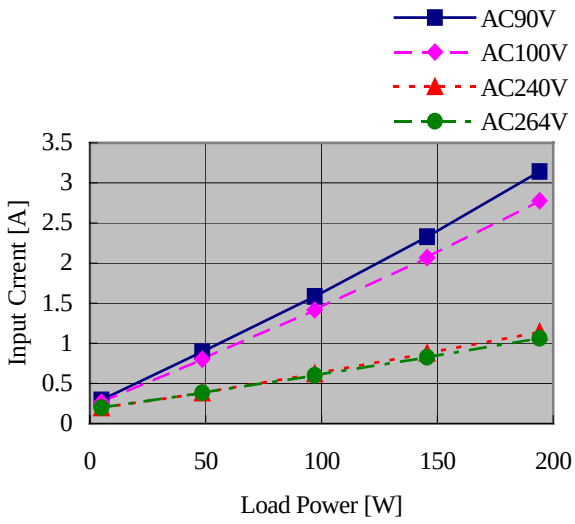


at AC Input

Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]
AC 90	4.954	-0.92
100	4.954	-0.92
240	4.954	-0.92
264	4.954	-0.92

Model	PCTF-220P-X2S
Item	Input Current (by Load Power)

at AC Input

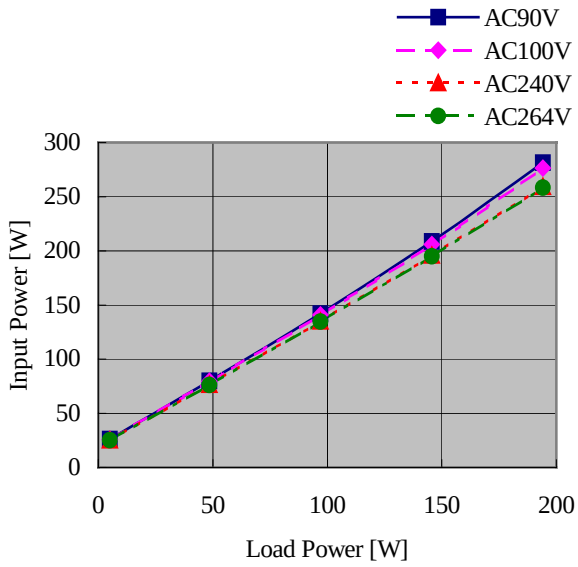


at AC Input

Load Power [W]	Input Current [A rms]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
5	0.29	0.27	0.20	0.20
48.53	0.90	0.80	0.38	0.38
97.05	1.58	1.42	0.62	0.60
145.58	2.33	2.07	0.88	0.83
194.1	3.14	2.78	1.14	1.07

Model	PCTF-220P-X2S
Item	Input Power (by Load Power)

at AC Input

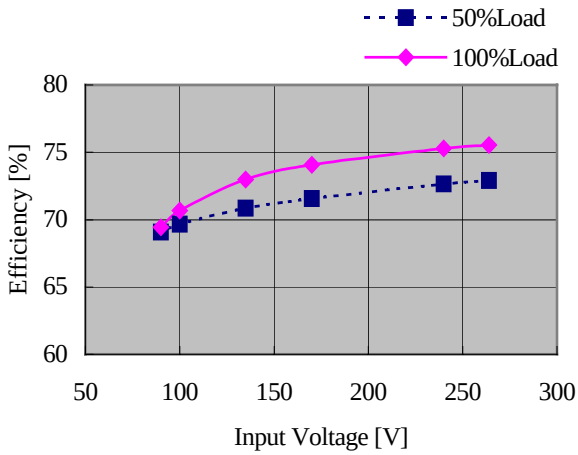


at AC Input

Load Power [W]	Input Power [W]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
5	25.98	25.78	25.14	25.06
48.53	79.96	79.47	76.44	76.15
97.05	141.98	140.82	135.03	134.53
145.58	208.54	205.90	195.84	195.01
194.1	281.20	276.22	259.34	258.44

Model	PCTF-220P-X2S
Item	Efficiency

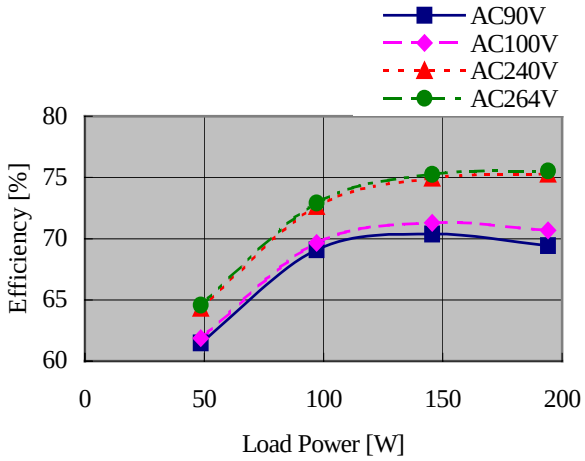
at AC Input



at AC Input

Input Voltage [V]	Efficiency [%]	
	50% Load	100% Load
90	69.09	69.42
100	69.66	70.68
240	72.64	75.28
264	72.91	75.54

at AC Input

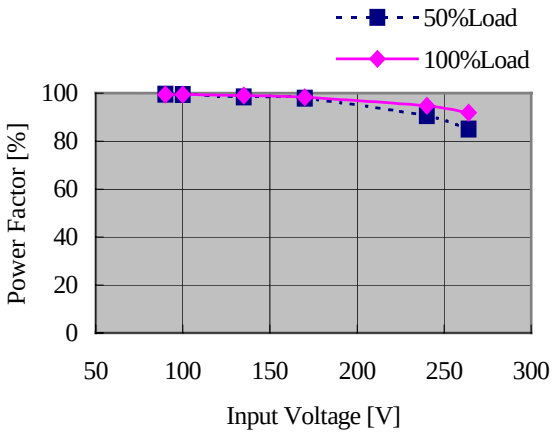


at AC Input

Load Power [W]	Efficiency [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
48.53	61.49	61.87	64.32	64.56
97.05	69.09	69.66	72.64	72.91
145.58	70.38	71.29	74.95	75.27
194.1	69.42	70.68	75.28	75.54

Model	PCTF-220P-X2S
Item	Power Factor

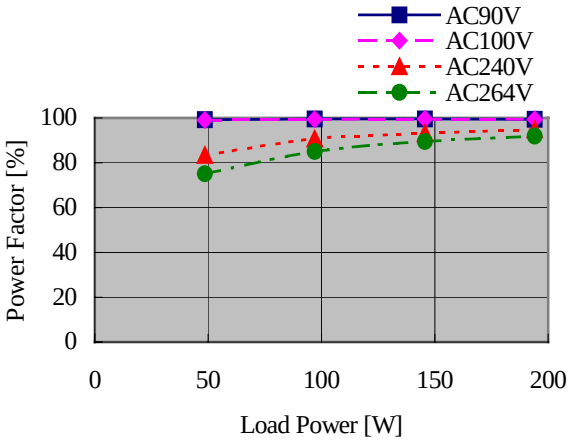
at AC Input



at AC Input

Input Voltage [V]	Power Factor [%]	
	50%Load	100% Load
90	99.57	99.43
100	99.38	99.43
240	90.63	94.75
264	84.99	91.91

at AC Input

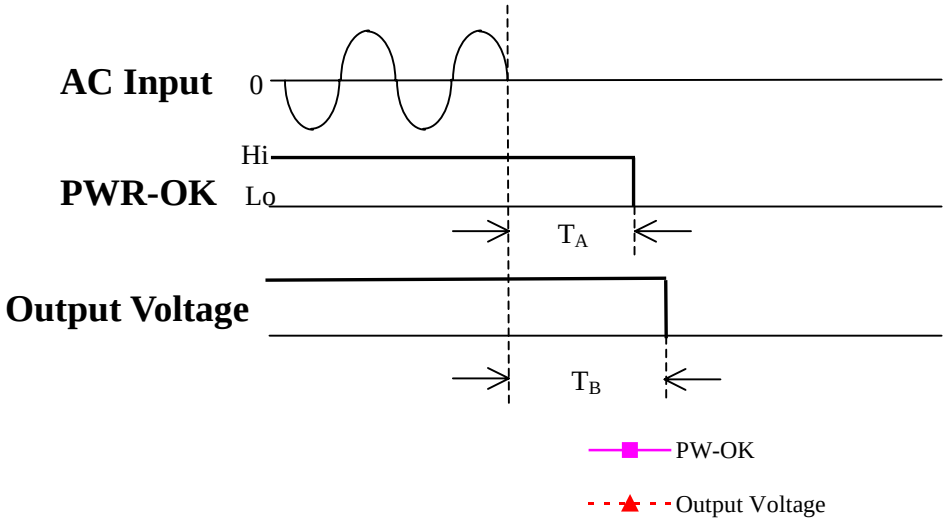


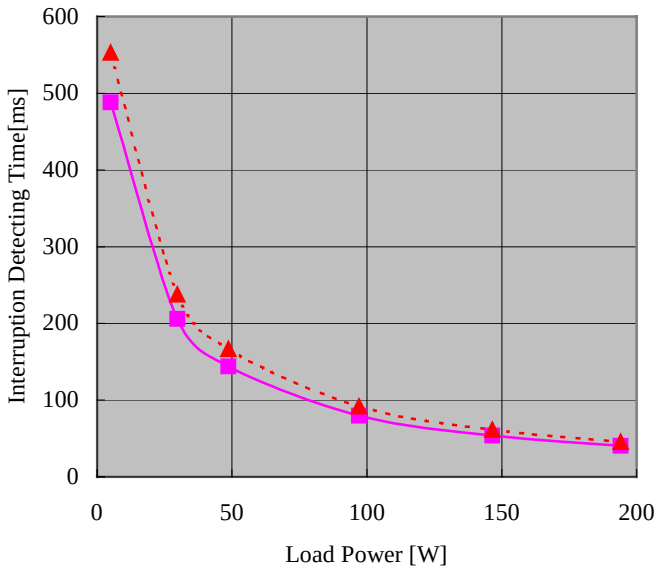
at AC Input

Load Power [W]	Power Factor [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
48.53	99.17	99.05	83.38	75.14
97.05	99.57	99.38	90.63	84.99
145.58	99.55	99.48	93.14	89.48
194.1	99.43	99.43	94.75	91.91

Model	PCTF-220P-X2S	
Item	Instantaneous Interruption Compensation (by Load Power)	

at AC Input (90V / 100V / 240V / 264V)



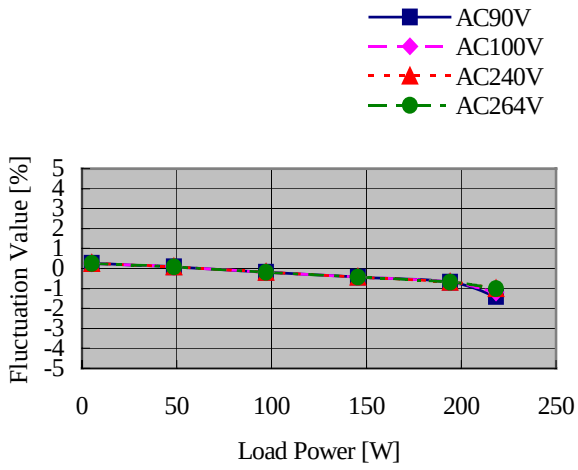


Load Power [W]	Interruption Detecting Time (ms)	
	PWR-OK T_A	DC Output T_B
5	488.20	552.80
29.7	205.84	237.50
48.61	143.92	166.36
97.05	79.74	91.62
146.51	53.77	61.44
194.1	40.48	45.42

Model	PCTF-220P-X2S
Item	Load Regulation

V1：5V 6A

at AC Input



at AC Input

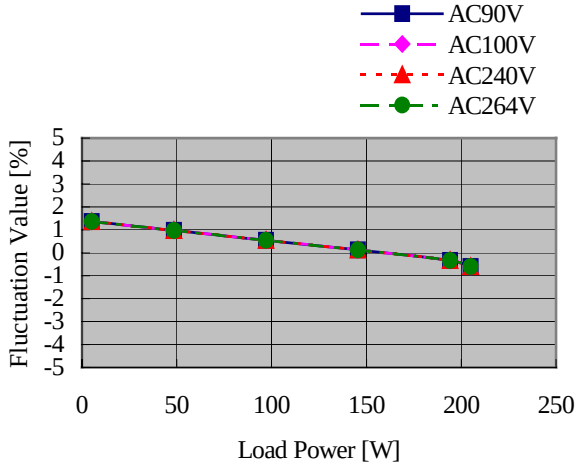
Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
5	0.26	0.26	0.26	0.26
48.53	0.08	0.08	0.08	0.08
97.05	-0.18	-0.18	-0.18	-0.18
145.58	-0.42	-0.42	-0.42	-0.42
194.1	-0.68	-0.68	-0.68	-0.68
218.3	-1.40	-1.20	-1.00	-1.00

Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
5	1	0	0	0	0
48.53	1.5	2.5	2.5	0.075	0.375
97.05	3	5	5	0.15	0.75
145.58	4.5	7.5	7.5	0.225	1.125
194.1	6	10	10	0.3	1.5
218.3	15	0	10.4	0.5	2.5

V2：3.3V 10A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
5	1.36	1.36	1.36	1.36
48.53	0.97	0.97	0.97	0.97
97.05	0.55	0.55	0.55	0.55
145.58	0.12	0.12	0.12	0.12
194.1	-0.33	-0.33	-0.33	-0.33
204.91	-0.61	-0.61	-0.61	-0.61

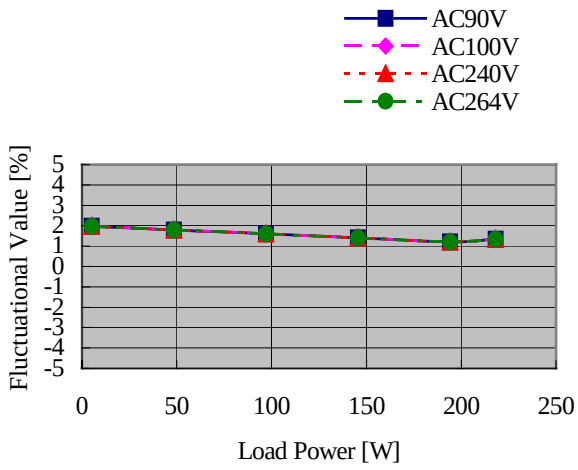
Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
5	1	0	0	0	0
48.53	1.5	2.5	2.5	0.075	0.375
97.05	3	5	5	0.15	0.75
145.58	4.5	7.5	7.5	0.225	1.125
194.1	6	10	10	0.3	1.5
204.91	1.3	16.7	10.4	0.5	2.5

Model	PCTF-220P-X2S
Item	Load Regulation

V3：12V 10A

at AC Input



at AC Input

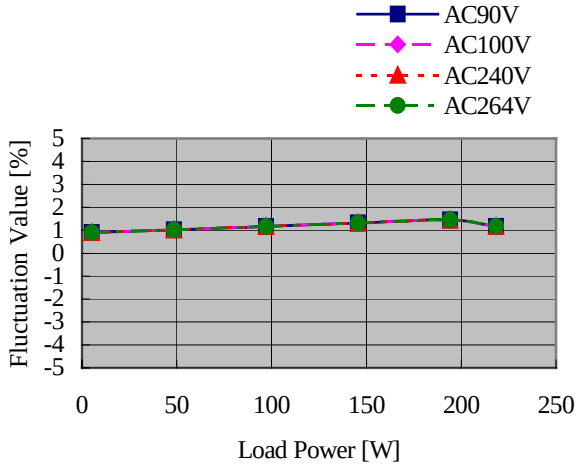
Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
5	1.97	1.97	1.97	1.97
48.53	1.79	1.79	1.79	1.79
97.05	1.60	1.60	1.60	1.60
145.58	1.40	1.40	1.40	1.40
194.1	1.21	1.21	1.21	1.21
218.24	1.33	1.33	1.33	1.33

Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
5	1	0	0	0	0
48.53	1.5	2.5	2.5	0.075	0.375
97.05	3	5	5	0.15	0.75
145.58	4.5	7.5	7.5	0.225	1.125
194.1	6	10	10	0.3	1.5
218.24	6	7.8	12	0.5	2.5

V4：-12V 0.3A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
5	0.90	0.90	0.90	0.90
48.53	1.02	1.02	1.02	1.02
97.05	1.17	1.17	1.17	1.17
145.58	1.31	1.31	1.31	1.31
194.1	1.45	1.45	1.45	1.45
218.3	1.17	1.17	1.17	1.17

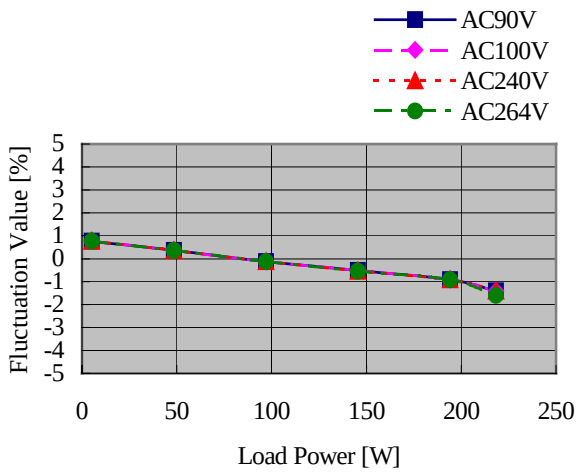
Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
5	1	0	0	0	0
48.53	1.5	2.5	2.5	0.075	0.375
97.05	3	5	5	0.15	0.75
145.58	4.5	7.5	7.5	0.225	1.125
194.1	6	10	10	0.3	1.5
218.3	15	0	10.4	0.5	2.5

Model	PCTF-220P-X2S
Item	Load Regulation

V5:-5V 0.3A

at AC Input



at AC Input

Load Power [W]	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
5	0.76	0.76	0.76	0.76
48.53	0.36	0.36	0.36	0.36
97.05	-0.12	-0.12	-0.12	-0.12
145.58	-0.52	-0.52	-0.52	-0.52
194.1	-0.92	-0.92	-0.92	-0.92
218.3	-1.40	-1.40	-1.40	-1.40

Load Condition

Load Power [W]	Load Current [A]				
	5V	3.3V	12V	-12V	5Vs
5	1	0	0	0	0
48.53	1.5	2.5	2.5	0.075	0.375
97.05	3	5	5	0.15	0.75
145.58	4.5	7.5	7.5	0.225	1.125
194.1	6	10	10	0.3	1.5
218.3	15	0	10.4	0.5	2.5

Model	PCTF-220P-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℃	AC 90 V	18	22	10	16	10	16
	100 V	18	22	10	16	10	16
	240 V	18	24	10	16	10	16
	264 V	18	24	10	16	10	16
25℃	AC 90 V	12	16	10	14	10	20
	100 V	12	16	10	14	10	20
	240 V	12	16	10	14	10	20
	264 V	12	16	10	14	10	20
45℃	AC 90 V	12	16	10	14	8	20
	100 V	12	16	10	14	8	18
	240 V	12	16	10	14	10	18
	264 V	12	16	10	14	10	20
55℃(1)	AC 90 V	10	12	10	12	8	16
	100 V	10	12	10	12	8	16
	240 V	10	12	10	12	8	16
	264 V	10	12	10	12	8	16
Specification		50	100	50	100	150	200
Judgment		Good		Good		Good	

		V4	-12V	V5	5Vs
Temperature	Input Voltage	Ripple (mV)	Noise (mV)	Ripple (mV)	Noise (mV)
-5℃	AC 90 V	22	30	12	22
	100 V	22	30	12	22
	240 V	24	30	12	22
	264 V	24	30	12	20
25℃	AC 90 V	20	28	12	20
	100 V	20	28	12	20
	240 V	20	28	12	20
	264 V	20	28	12	20
45℃	AC 90 V	20	28	12	20
	100 V	20	28	12	20
	240 V	20	28	12	20
	264 V	20	28	12	20
55℃(1)	AC 90 V	20	24	10	16
	100 V	20	24	10	14
	240 V	20	24	10	14
	264 V	20	24	10	12
Specification		150	200	50	100
Judgment		Good		Good	

(1) 80% of Rated Load

Model	PCTF-220P-X2S	
Item	Over-Current Protection	

Temperature	Input Voltage	V1 5V	V2 3.3V	V3 12V
-5℃	AC 90 V	23.2 A	24.5 A	18.5 A
	100 V	23.2 A	24.4 A	18.9 A
	240 V	23.2 A	24.4 A	18.9 A
	264 V	23.2 A	24.3 A	18.9 A
25℃	AC 90 V	23.0 A	25.0 A	16.0 A
	100 V	23.0 A	25.0 A	16.0 A
	240 V	22.8 A	25.0 A	16.0 A
	264 V	22.8 A	25.0 A	16.0 A
45℃	AC 90 V	21.9 A	19.5 A	17.5 A
	100 V	21.9 A	20.5 A	17.7 A
	240 V	21.9 A	20.6 A	18.0 A
	264 V	21.9 A	20.5 A	18.1 A
55℃	AC 90 V	21.4 A	21.5 A	17.3 A
	100 V	21.4 A	21.3 A	17.5 A
	240 V	21.5 A	22.0 A	18.0 A
	264 V	21.5 A	22.3 A	18.0 A
Specification		7A or More	13A or More	13A or More
Judgment		Good	Good	Good

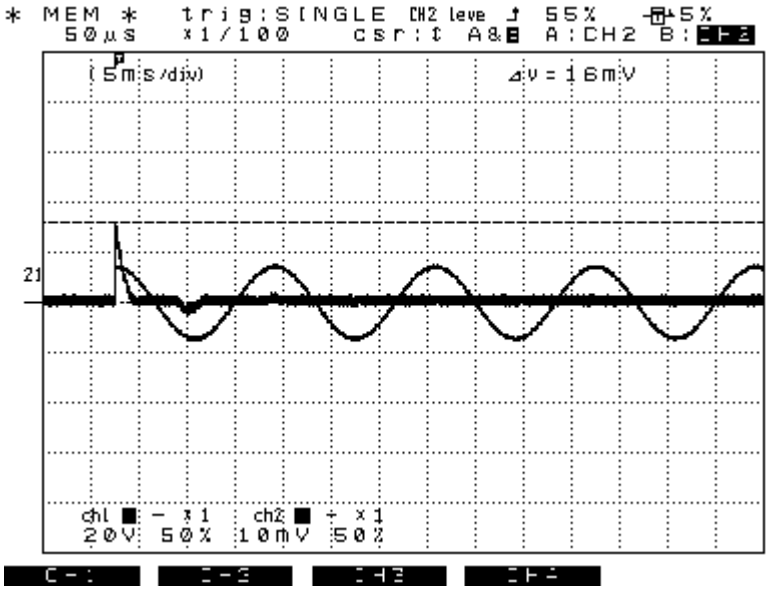
Temperature	Input Voltage	V4 -12V	V5 5Vs
-5℃	AC 90 V	0.87 A	3.60 A
	100 V	0.87 A	3.60 A
	240 V	0.87 A	3.60 A
	264 V	0.87 A	3.60 A
25℃	AC 90 V	0.79 A	3.40 A
	100 V	0.79 A	3.30 A
	240 V	0.79 A	3.30 A
	264 V	0.78 A	3.30 A
45℃	AC 90 V	0.76 A	3.20 A
	100 V	0.75 A	3.20 A
	240 V	0.75 A	3.20 A
	264 V	0.75 A	3.20 A
55℃	AC 90 V	0.74 A	3.10 A
	100 V	0.74 A	3.10 A
	240 V	0.74 A	3.10 A
	264 V	0.74 A	3.10 A
Specification		-	-
Judgment		-	-

Model	PCTF-220P-X2S	
Item	Over-Voltage Protection	

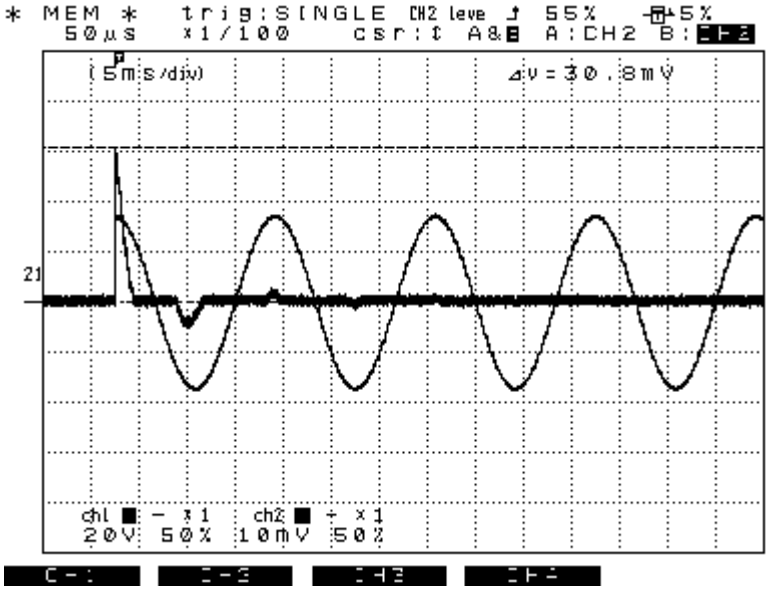
Temperature	Input Voltage	V1：5V	V2：3.3V	V3：12V
-5℃	AC100V	6.90V	4.18V	14.85V
	AC240V	6.90V	4.18V	14.80V
25℃	AC100V	6.75V	4.00V	14.80V
	AC240V	6.78V	4.01V	14.80V
45℃	AC100V	6.75V	3.95V	14.90V
	AC240V	6.73V	3.95V	14.90V
55℃	AC100V	6.75V	3.94V	14.94V
	AC240V	6.74V	3.94V	14.94V
Specification		5.76～7.0V	3.74～4.3V	13.4～15.6V
Judgment		Good	Good	Good

Model	PCTF-220P-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：32.0A	

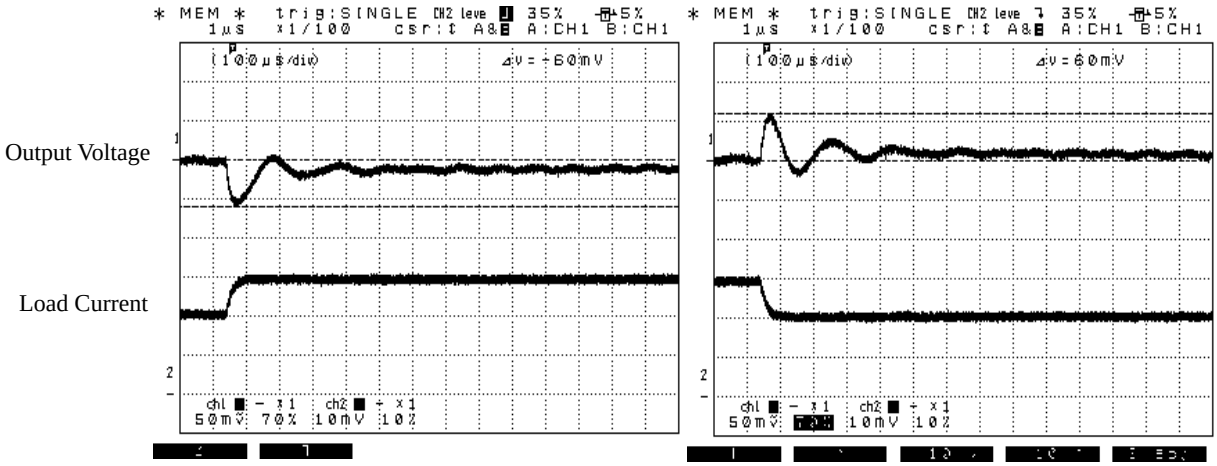


Wave No.2	
CH1	Measuring Point：Input Voltage
	Range 200V/DIV
CH2	Measuring Point：Input Current
	Range 20A/DIV
Time Line	5ms/DIV
Conditions	Input：AC240V 60Hz Load：Rated Load
Note： Inrush Current Value：61.6A	

Model	PCTF-220P-X2S	
Item	Dynamic Load Response	

V1：+5V 6A

70% Load⇔ 100% Load

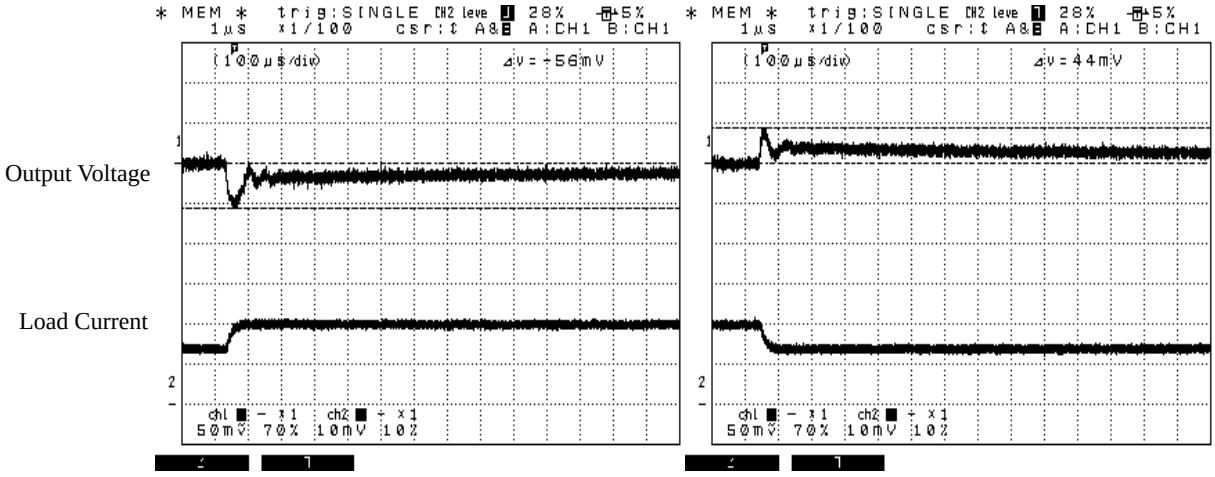


Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgment
70%Load→100% Load	− mV -60mV	±250mV	Good
100% Load→70% Load	60mV -20mV		Good

Model	PCTF-220P-X2S	
Item	Dynamic Load Response	

V2：+3.3V 10A

70% Load⇔ 100% Load

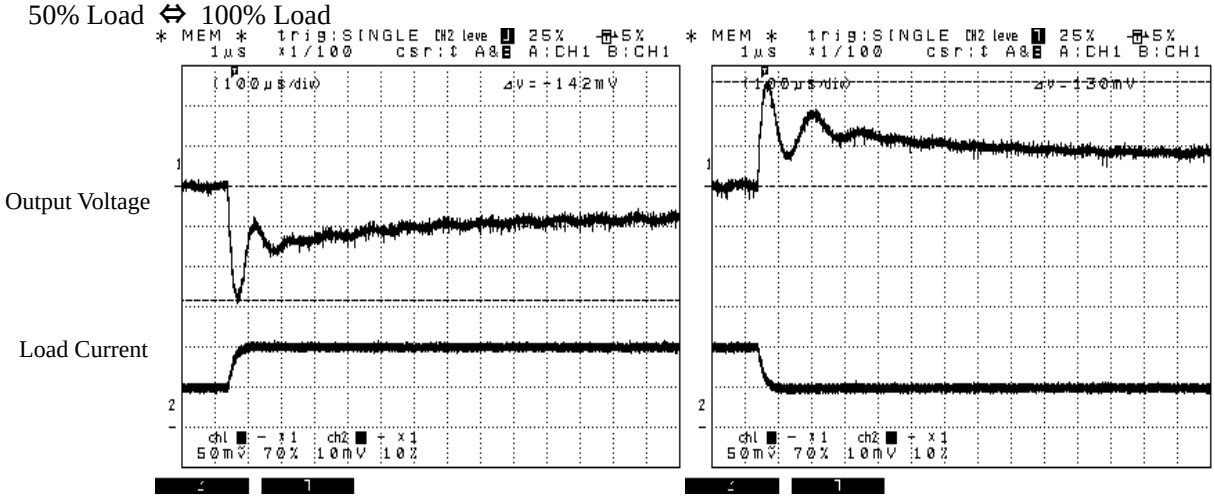


Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgment
70%Load→100% Load	－ mV -56mV	±165mV	Good
100% Load→70% Load	44mV － mV		Good

Model	PCTF-220P-X2S	
Item	Dynamic Load Response	

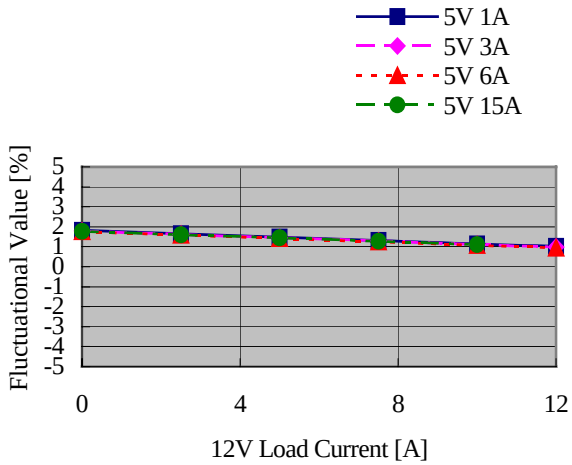
V3：+12V 10A

50% Load ⇔ 100% Load



Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgment
50%Load→100% Load	— mV -142mV	±600mV	Good
100% Load→50% Load	130mV — mV		Good

Model	PCTF-220P-X2S
Item	12V Cross Regulation

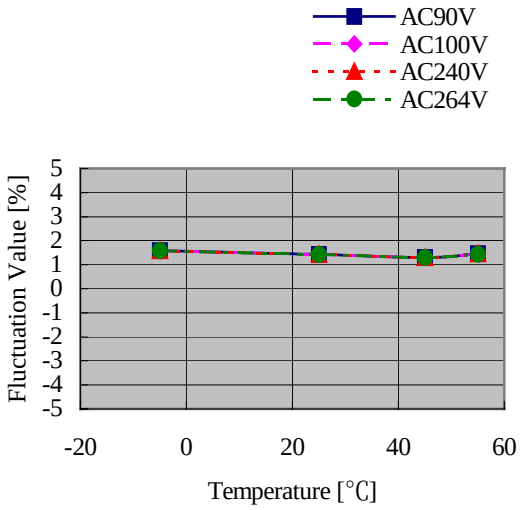


12V Load Current	12V Voltage Value [V]			
	5V 1.0A	5V 3A	5V 6A	5V 15A
0A	12.219	12.215	12.210	12.213
2.5A	12.198	12.195	12.190	12.193
5A	12.178	12.175	12.170	12.174
7.5A	12.158	12.155	12.150	12.154
10A	12.138	12.134	12.129	12.133
12A	12.122	12.118	12.113	–

12V Load Current	Fluctuation Value [%]			
	5V 1.5A	5V 3A	5V 6A	5V 15A
0A	1.82	1.79	1.75	1.77
2.5A	1.65	1.63	1.58	1.61
5A	1.48	1.46	1.42	1.45
7.5A	1.32	1.29	1.25	1.28
10A	1.15	1.12	1.08	1.11
12A	1.02	0.98	0.94	–

Model	PCTF-220P-X2S
Item	Ambient Temperature Drift

V1：5V 6A



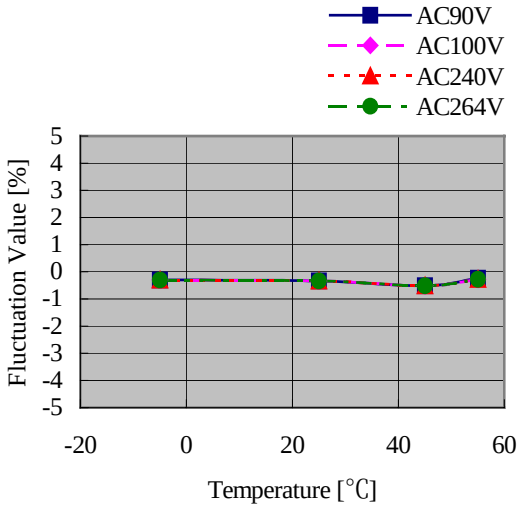
at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	5.079	5.079	5.079	5.079
25	5.071	5.071	5.071	5.071
45	5.065	5.065	5.065	5.065
55 (1)	5.073	5.073	5.073	5.072

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	1.58	1.58	1.58	1.58
25	1.42	1.42	1.42	1.42
45	1.30	1.30	1.30	1.30
55 (1)	1.46	1.46	1.46	1.44

(1) 80% of Rated Load

V2：3.3V 10A



at AC Input

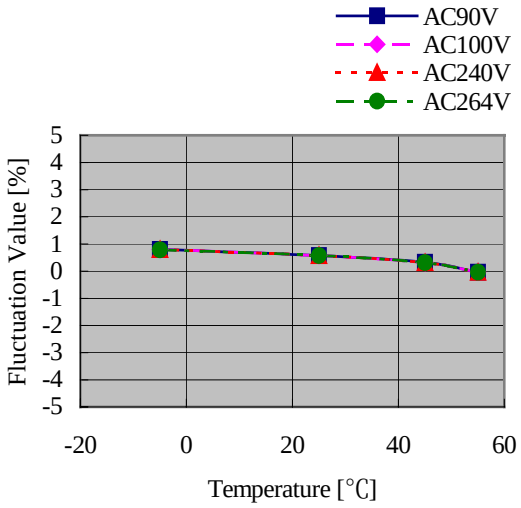
Temperature (℃)	Output Voltage [V]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	3.290	3.290	3.290	3.290
25	3.289	3.289	3.289	3.289
45	3.283	3.283	3.283	3.283
55 (1)	3.292	3.921	3.921	3.921

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	-0.30	-0.30	-0.30	-0.30
25	-0.33	-0.33	-0.33	-0.33
45	-0.52	-0.52	-0.52	-0.52
55 (1)	-0.24	-0.27	-0.27	-0.27

(1) 80% of Rated Load

Model	PCTF-220P-X2S
Item	Ambient Temperature Drift

V3：12V 10A



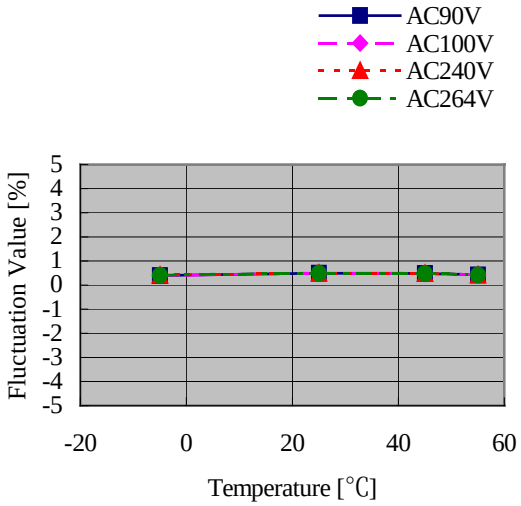
at AC Input

Temperature (℃)	Output Voltage [V]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	12.096	12.096	12.096	12.095
25	12.069	12.069	12.069	12.069
45	12.039	12.038	12.038	12.037
55 (1)	11.995	11.995	11.996	11.995

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	0.80	0.80	0.80	0.79
25	0.58	0.58	0.58	0.58
45	0.33	0.32	0.32	0.31
55 (1)	-0.04	-0.04	-0.03	-0.04

(1) 80% of Rated Load

V4：-12V 0.3A



at AC Input

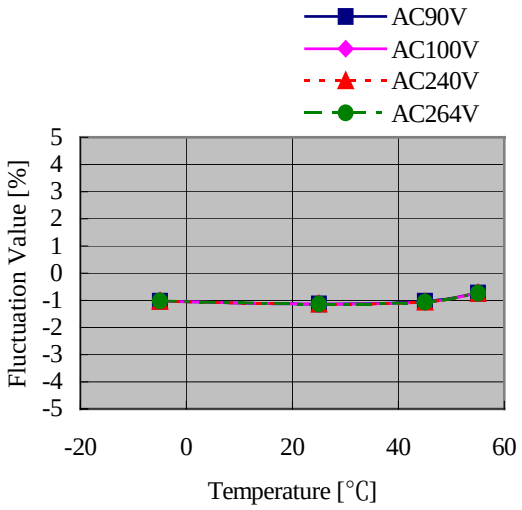
Temperature (℃)	Output Voltage [V]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	-12.048	-12.048	-12.049	-12.049
25	-12.059	-12.059	-12.059	-12.059
45	-12.058	-12.058	-12.058	-12.058
55 (1)	-12.050	-12.050	-12.050	-12.050

Temperature (℃)	Fluctuation Value [%]			
	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	0.40	0.40	0.41	0.41
25	0.49	0.49	0.49	0.49
45	0.48	0.48	0.48	0.48
55 (1)	0.42	0.42	0.42	0.42

(1) 80% of Rated Load

Model	PCTF-220P-X2S
Item	Ambient Temperature Drift

V5：5Vs 1.5A



at AC Input

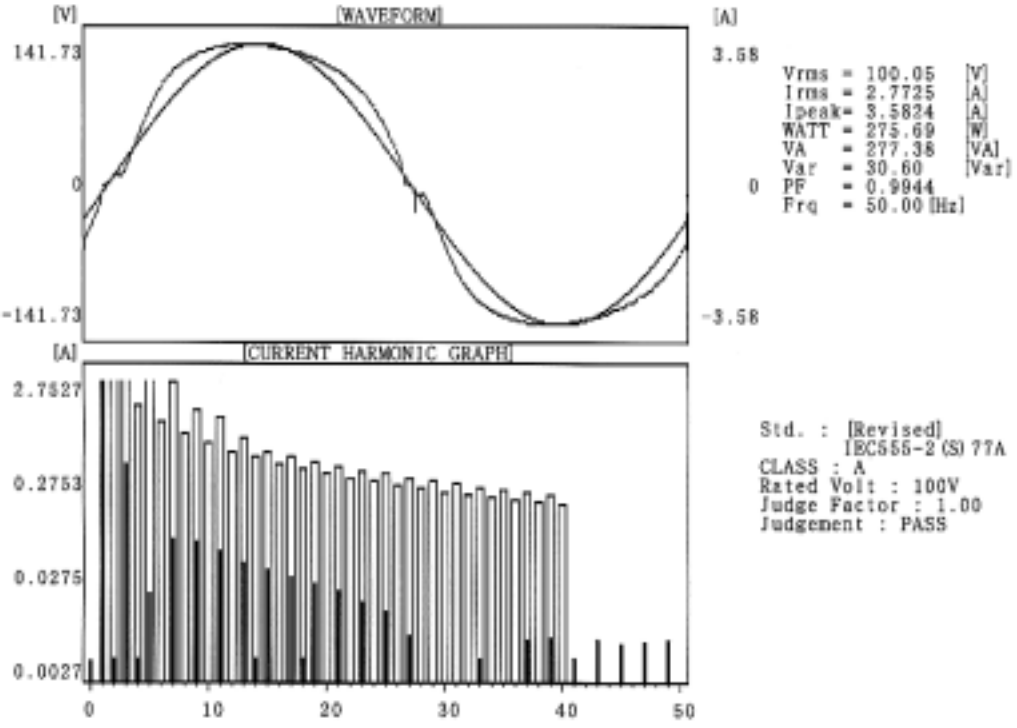
	Output Voltage [V]			
Temperature (℃)	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	4.948	4.948	4.948	4.949
25	4.943	4.943	4.943	4.943
45	4.948	4.947	4.947	4.947
55 (1)	4.963	4.963	4.963	4.963

	Fluctuation Value [%]			
Temperature (℃)	Input Voltage AC90V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
-5	-1.04	-1.04	-1.04	-1.02
25	-1.14	-1.14	-1.14	-1.14
45	-1.04	-1.06	-1.06	-1.06
55 (1)	-0.74	-0.74	-0.74	-0.74

(1) 80% of Rated Load

Model	PCTF-220P-X2S	
Item	Harmonic Current	

Measuring Instrument ： MP701(Keisoku Giken)

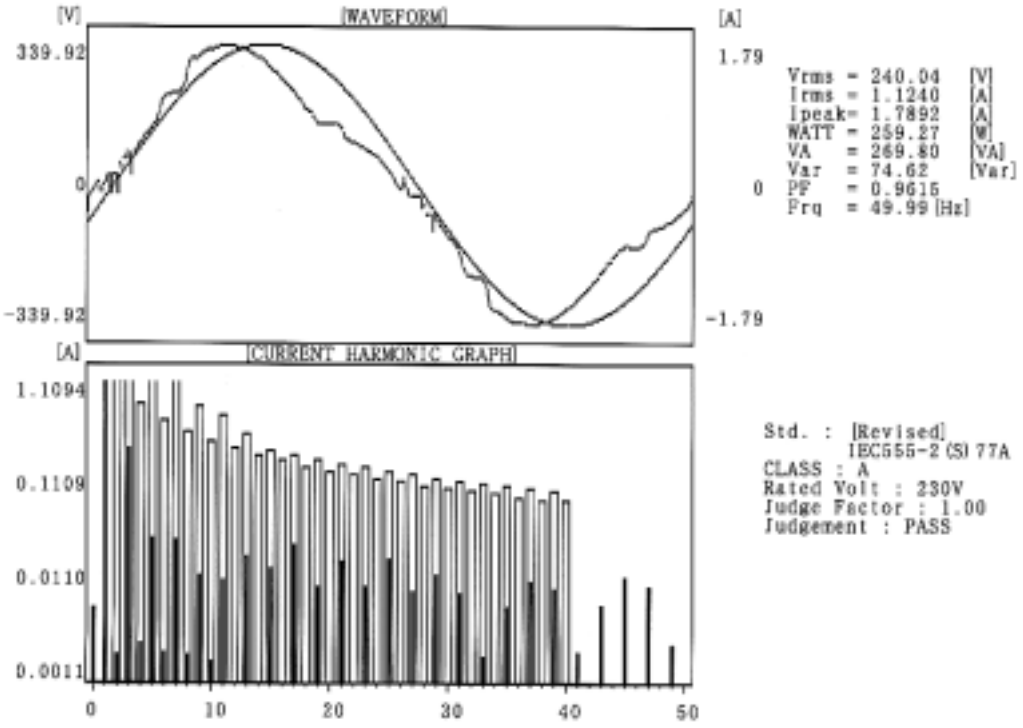


[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0030	13	0.0288	26	0.0018	39	0.0050
01	2.7527	14	0.0031	27	0.0052	40	0.0000
02	0.0031	15	0.0243	28	0.0018	41	0.0031
03	0.2817	16	0.0025	29	0.0022	42	0.0000
04	0.0031	17	0.0203	30	0.0025	43	0.0048
05	0.0144	18	0.0031	31	0.0025	44	0.0000
06	0.0028	19	0.0174	32	0.0010	45	0.0042
07	0.0501	20	0.0025	33	0.0031	46	0.0000
08	0.0025	21	0.0148	34	0.0000	47	0.0045
09	0.0479	22	0.0010	35	0.0022	48	0.0000
10	0.0028	23	0.0117	36	0.0000	49	0.0048
11	0.0382	24	0.0015	37	0.0048		
12	0.0028	25	0.0093	38	0.0000		

Model	PCTF-220P-X2S	
Item	Harmonic Current	

Measuring Instrument ： MP701(Keisoku Giken)



[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0042	13	0.0136	26	0.0007	39	0.0062
01	1.1094	14	0.0010	27	0.0061	40	0.0010
02	0.0014	15	0.0102	28	0.0005	41	0.0014
03	0.1655	16	0.0007	29	0.0088	42	0.0004
04	0.0018	17	0.0183	30	0.0010	43	0.0043
05	0.0205	18	0.0000	31	0.0056	44	0.0010
06	0.0014	19	0.0066	32	0.0008	45	0.0085
07	0.0198	20	0.0010	33	0.0013	46	0.0008
08	0.0013	21	0.0123	34	0.0009	47	0.0066
09	0.0086	22	0.0010	35	0.0040	48	0.0004
10	0.0011	23	0.0067	36	0.0002	49	0.0018
11	0.0080	24	0.0002	37	0.0074		
12	0.0010	25	0.0132	38	0.0009		

Model	PCTF-220P-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	0.25	0.24
240V	0.64	0.64

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

Model	PCTF-220P-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

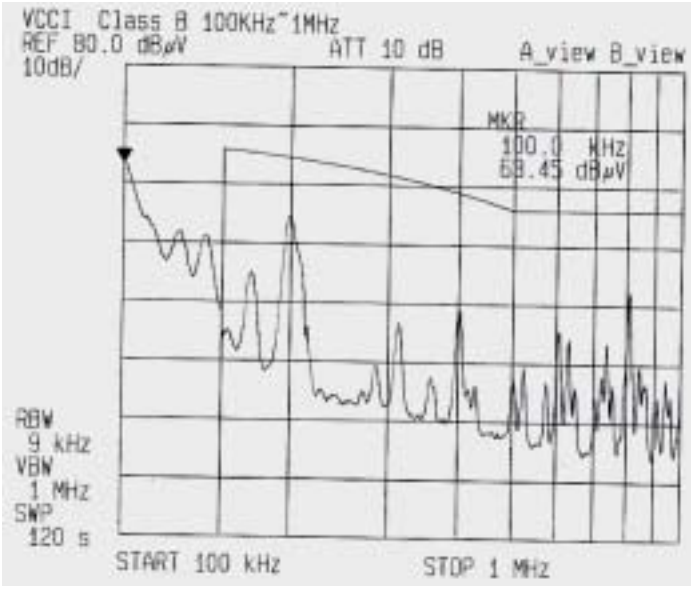
	Pulse Impressed Mode			
Normal	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	○	○	○	○
Common R Phase	Pulse Impressed Mode			
	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -
	○	○	○	○
Common S Phase	Pulse Impressed Mode			
	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity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

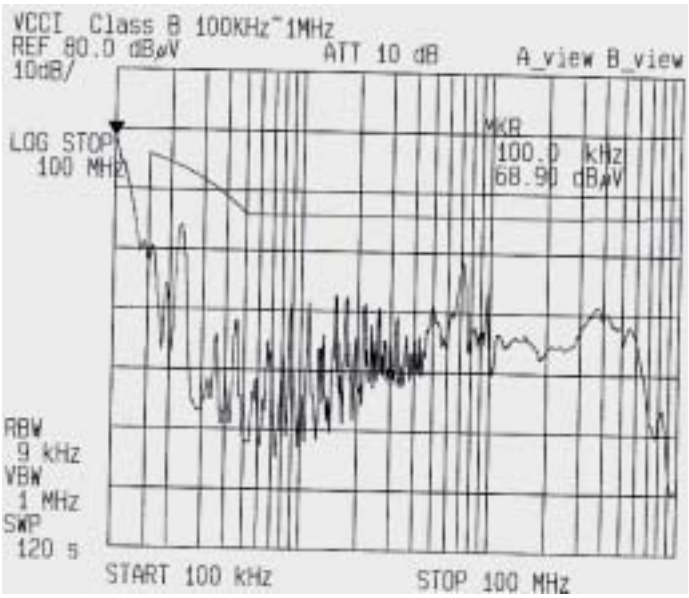
○→No Trouble
△→Faulty Operation of Over-Voltage and so on
×→Power Supply Breakdown

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

Model	PCTF-220P-X2S	
Item	Conduction Emission	

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





Model	PCTF-220P-X2S	
Item	Conduction Emission	

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