TEST DATA OF PDA50F-12

Regulated DC Power Supply
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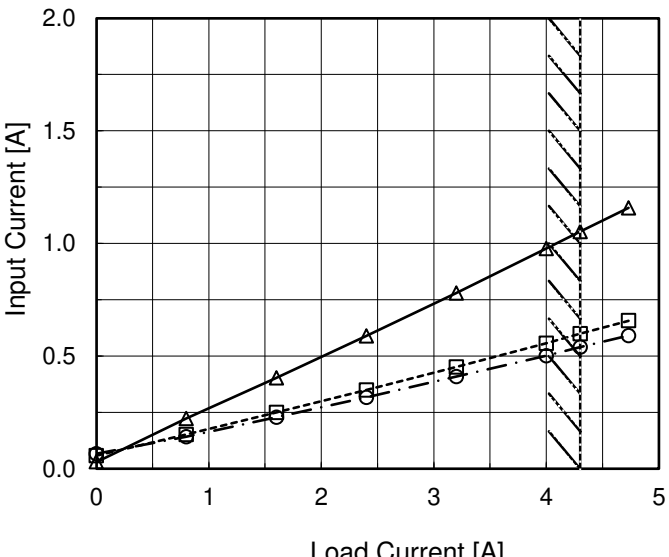
Design Engineer

COSEL CO.,LTD.

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Model	PDA50F-12
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 100V
- - - ⊟ - - - Input Volt. 200V
— · — ○ — · — Input Volt. 230V

Input Current [A] (y-axis)
Load Current [A] (x-axis)

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.031	0.058	0.067
0.80	0.223	0.152	0.142
1.60	0.403	0.250	0.229
2.40	0.589	0.349	0.317
3.20	0.781	0.451	0.409
4.00	0.977	0.556	0.502
4.30	1.053	0.599	0.539
4.73	1.158	0.657	0.591
--	-	-	-
--	-	-	-
--	-	-	-

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Model	PDA50F-12
Item	Efficiency (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 100V
- - - ⊟ - - - Input Volt. 200V
— · — ○ — · — Input Volt. 230V

Load Current [A]

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.80	83.0	80.4	79.3
1.60	84.5	84.1	83.6
2.40	84.2	84.9	84.7
3.20	83.5	85.1	85.1
4.00	82.6	85.1	85.1
4.30	82.5	85.0	85.0
4.73	81.8	84.7	84.8
--	-	-	-
--	-	-	-
--	-	-	-

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Model	PDA50F-12
Item	Power Factor (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 100V
---- ⊟ ---- Input Volt. 200V
—·— ○ —·— Input Volt. 230V

Power Factor vs Load Current [A]

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.104	0.040	0.036
0.80	0.530	0.387	0.365
1.60	0.580	0.461	0.441
2.40	0.598	0.492	0.473
3.20	0.603	0.506	0.486
4.00	0.605	0.514	0.495
4.30	0.605	0.513	0.495
4.73	0.607	0.515	0.497
--	-	-	-
--	-	-	-
--	-	-	-

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Model	PDA50F-12
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A

Input
Current
[20A/div]

Input
Voltage
[100V/div]

Time [50ms/div]

Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
11.8 A
Secondary inrush current :
3.8 A

Input
Current
[20A/div]

Input
Voltage
[200V/div]

Time [50ms/div]

Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
28.8 A
Secondary inrush current :
2.8 A

Primary inrush current   Secondary inrush current

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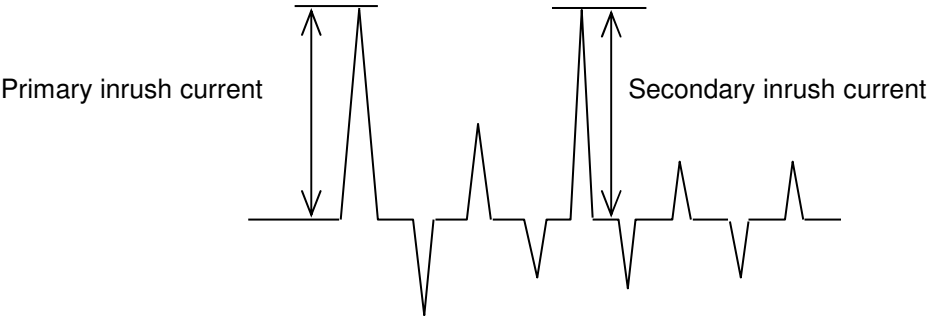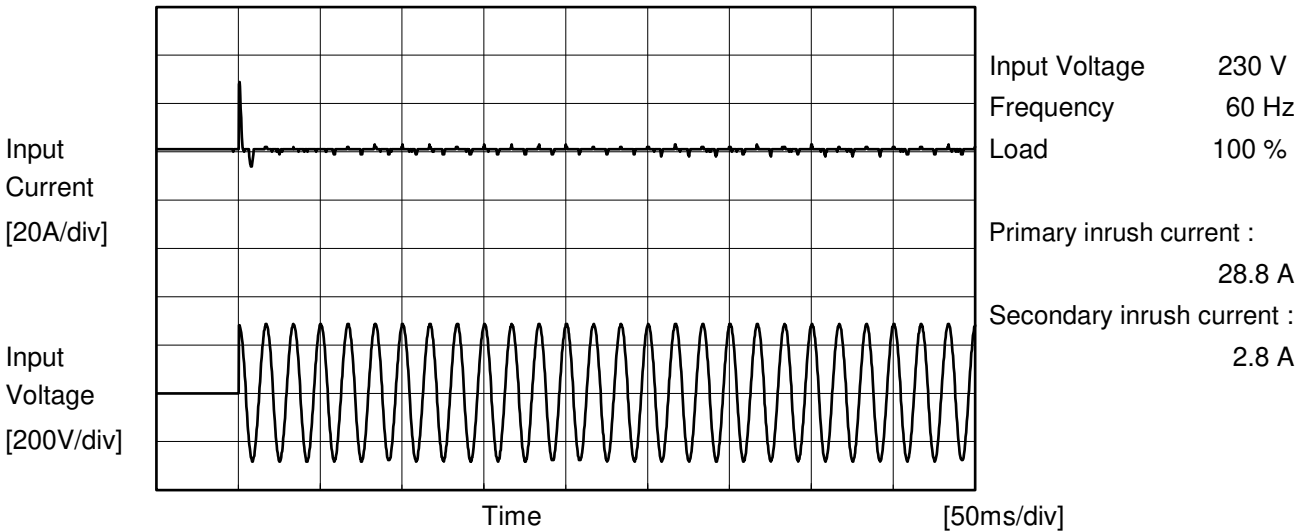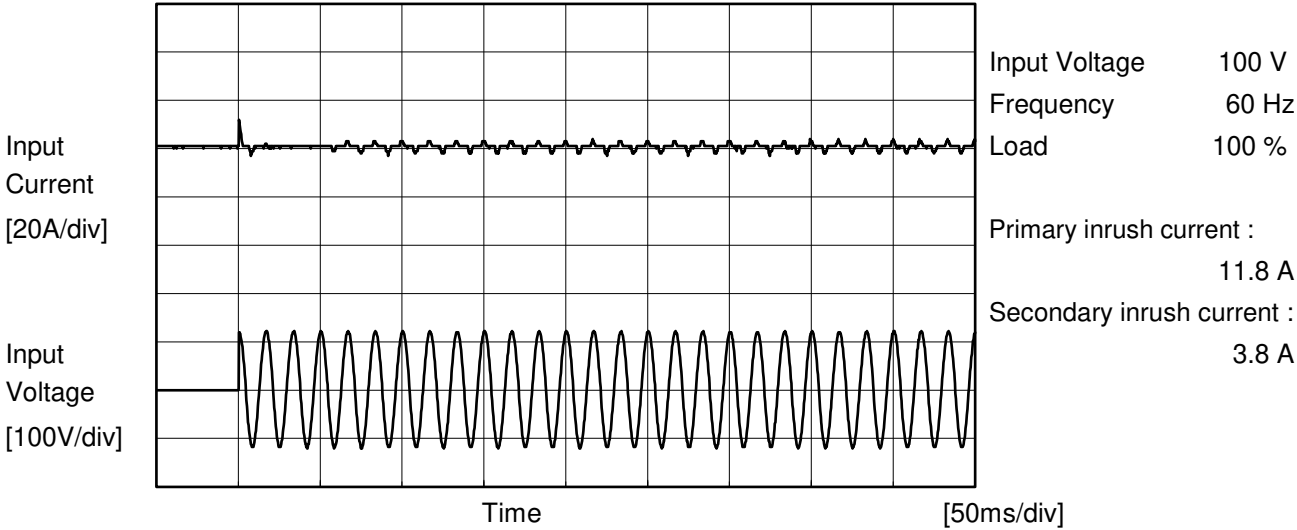
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Model	PDA50F-12		
Item	Leakage Current	Temperature	25°C
		Testing Circuitry	Figure C
Object	———————————		

1.Results

[mA]

Standards	Testing Circuitry	Measuring Method	Input Volt.			Note
			100 [V]	230 [V]	240 [V]	
DEN-AN	Figure C-1	Both phases	0.18	0.47	0.49	Operation
		One of phases	0.26	0.68	0.72	Stand by
IEC62368-1	Figure C-2	Both phases	0.18	0.46	0.48	Operation
		One of phases	0.26	0.67	0.71	Stand by
	Figure C-3	Both phases	0.18	0.46	0.48	Operation
		One of phases	0.26	0.67	0.71	Stand by

The value for "One of phases" is the reference value only.
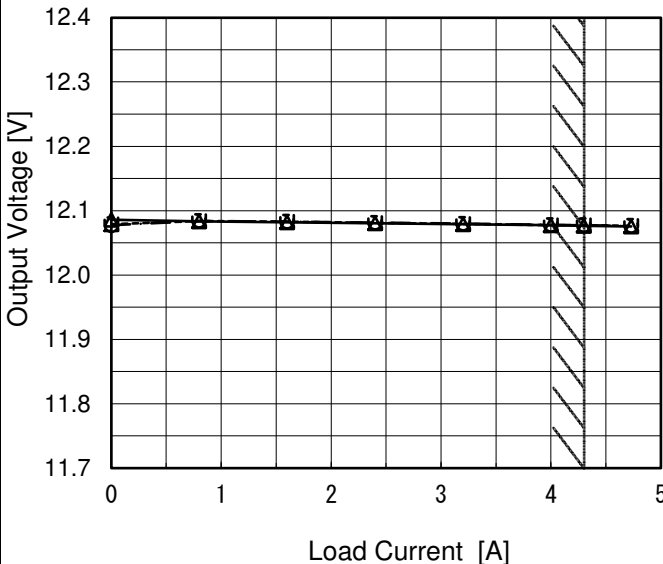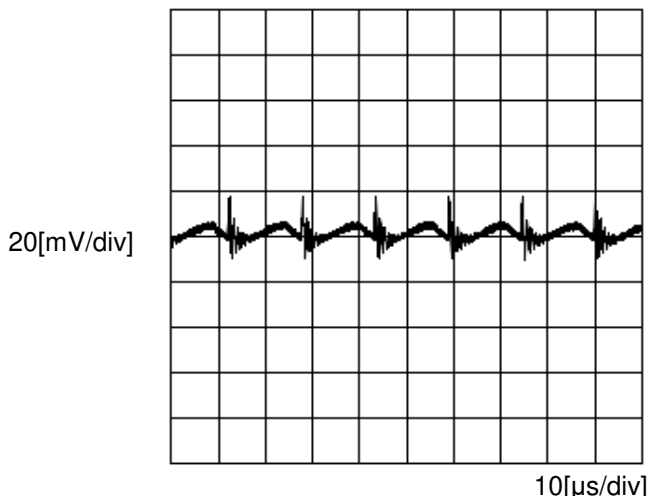
2.Condition
Leakage current value is concluded after measuring both phases of
AC input and by choosing the larger one.

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Model	PDA50F-12
Item	Line Regulation
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

--- ⊟ --- Load 50%
—△— Load 100%

Output Voltage [V] vs Input Voltage [V]

Note: Slanted line shows the range of the rated
input voltage.

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	12.080	12.076
90	12.080	12.076
100	12.080	12.076
120	12.080	12.076
200	12.081	12.077
230	12.081	12.077
264	12.081	12.078
280	12.081	12.078
--	-	-

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Model	PDA50F-12
Item	Load Regulation
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 100V
--- ☐ --- Input Volt. 200V
— · ○ — · · Input Volt. 230V

Output Voltage [V] vs Load Current [A]

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	12.086	12.079	12.077
0.80	12.083	12.084	12.084
1.60	12.082	12.083	12.083
2.40	12.080	12.081	12.082
3.20	12.079	12.080	12.080
4.00	12.077	12.078	12.078
4.30	12.076	12.077	12.077
4.73	12.076	12.077	12.076
--	--	--	--
--	--	--	--
--	--	--	--

Item	Ripple-Noise
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 230V
Load 100%

20[mV/div]

10[μs/div]

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Model	PDA50F-12
Item	Dynamic Load Response
Object	+12V4.3A

Temperature   25°C
Testing Circuitry   Figure A

Input Volt.   230 V   Response.   t1=t2=50µs. Typ
Cycle   1000 ms

Load Current

t1   t2

Load 0%(0A) ←→
   Load 100%(4.3A)

200[mV/div]

2[ms/div]   10[ms/div]

Load 50%(2.15A) ←→
   Load 100%(4.3A)

200[mV/div]

2[ms/div]   10[ms/div]

Load 0%(0A) ←→
   Load 50%(2.15A)

200[mV/div]

2[ms/div]   10[ms/div]

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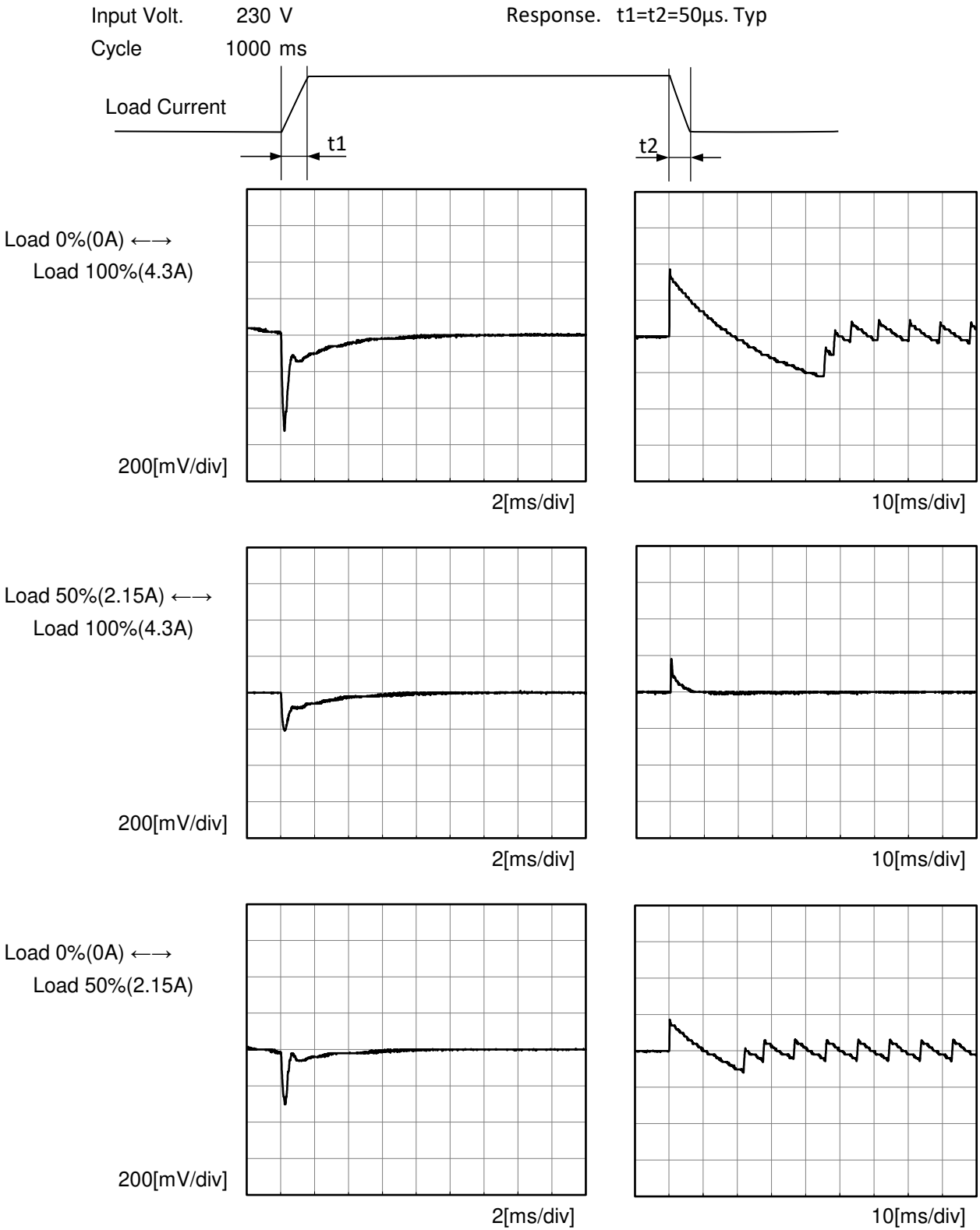
Model	PDA50F-12
Item	Rise and Fall Time
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Load 100%

Output Volt.

[2V/div]

0

Input Volt. 100 V

Load 100%

Output Volt.

[2V/div]

0

Input Volt. 230 V

Input Volt.

0

Time [20ms/div]

Time [50ms/div]
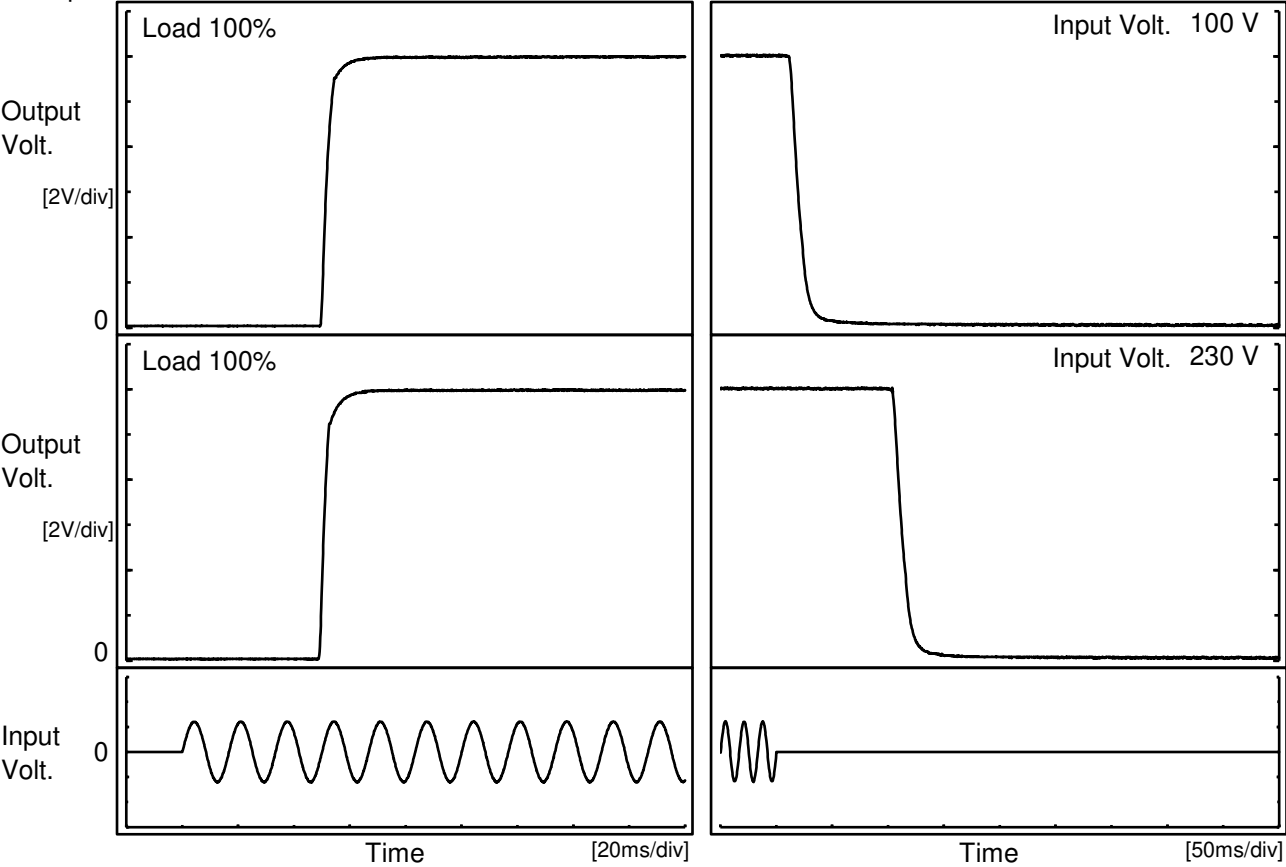
2.Values [ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	50.1	4.2	54.3	21.0	15.8
230 V	49.6	4.6	54.2	142.0	16.3

Output Volt.

90%

0V 10%

Input Volt. 0V

Td Tr

Ts

Th Tf

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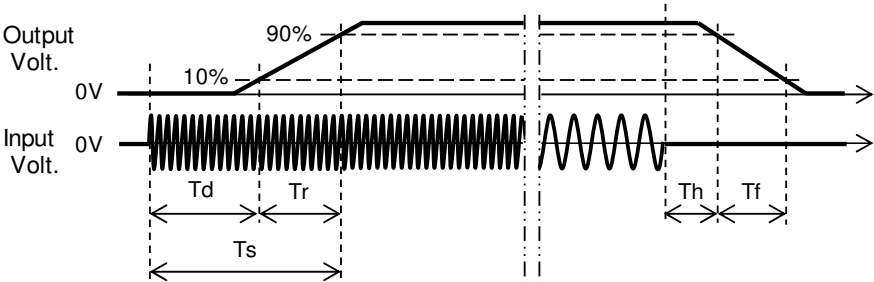
Model	PDA50F-12
Item	Hold-Up Time
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Load 50%
Load 100%

2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	31	11
90	35	13
100	46	21
120	70	31
200	217	104
230	295	142
264	397	193
280	451	220
--	-	-

This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.
Note: Slanted line shows the range of the rated input voltage.

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Model	PDA50F-12
Item	Instantaneous Interruption Compensation
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 100V
--- ☐ --- Input Volt. 200V
—·— ○ —·— Input Volt. 230V

Load Current [A]

Note: Slanted line shows the range of the rated
load current.

2.Values

Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.80	137	586	784
1.60	65	301	405
2.40	40	198	269
3.20	29	146	198
4.00	21	115	156
4.30	18	106	145
4.73	15	94	130
--	-	-	-
--	-	-	-
--	-	-	-

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Model	PDA50F-12
Item	Overcurrent Protection
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

——— Input Volt. 100V
——— Input Volt. 230V

Note: Slanted line shows the range of the rated load current.

Overcurrent protection is Hiccup mode.

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 230[V]
12.0	5.51	6.08
11.4	-	-
10.8	-	-
9.6	-	-
8.4	-	-
7.2	-	-
6.0	-	-
4.8	-	-
3.6	-	-
2.4	-	-
1.2	-	-
0.0	-	-

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Model	PDA50F-12	
Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	+12V4.3A	

1.Values   Load 100%

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100V	Input Volt. 200V	Input Volt. 230V
-10	12.042	12.043	12.043
25	12.076	12.077	12.077
50	12.086	12.088	12.088

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+12V4.3A	

1.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-10	35	57
25	35	57
50	35	57

Item	Overvoltage Protection	Testing Circuitry Figure A
Object	+12V4.3A	

1.Values   Load 0%

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100V	Input Volt. 230V
-20	16.04	16.04
25	16.47	16.47
50	16.76	16.76

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Figure A

Figure B

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Figure C-1 (DEN-AN)

$$\text{Leakage Current Value [A]} = \frac{\text{Effective Value of Voltmeter [V]}}{1k\ [\Omega]}$$

Figure C-2 (IEC62368-1 refer to IEC60990 Fig.4)

$$\text{Leakage Current Value [A]} = \frac{\text{Effective Value of Voltmeter [V]}}{500\ [\Omega]}$$

Figure C-3 (IEC62368-1 refer to IEC60990 Fig.5)

$$\text{Leakage Current Value [A]} = \frac{\text{Effective Value of Voltmeter [V]}}{500\ [\Omega]}$$

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