

TEST DATA OF PLA300F-15

Regulated DC Power Supply
August 28, 2017

Approved by : Yukihiro Takehashi
Yukihiro Takehashi Design Manager

Prepared by : Atsushi Nishikawa
Atsushi Nishikawa Design Engineer

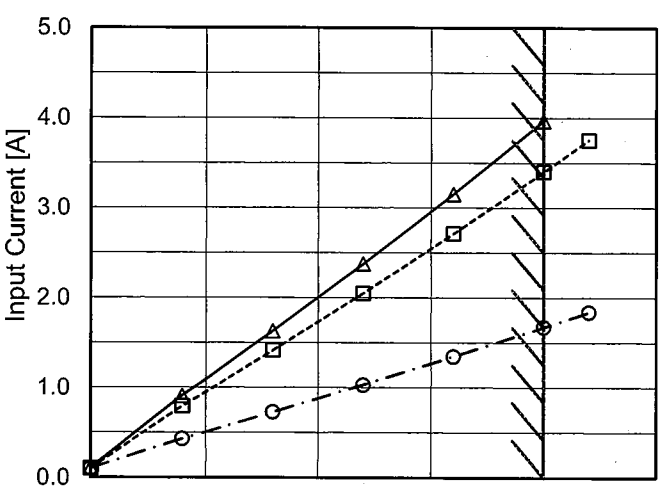
COSEL CO.,LTD.

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Model		PLA300F-15		Temperature 25°C																																																				
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>- - □ - -</div><div>Input Volt.</div><div>115V</div></div><div><div>- - ○ - -</div><div>Input Volt.</div><div>230V</div></div></div> 		2.Values																																																				
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0</td><td>0.107</td><td>0.101</td><td>0.101</td></tr><tr><td>4</td><td>0.908</td><td>0.792</td><td>0.430</td></tr><tr><td>8</td><td>1.630</td><td>1.414</td><td>0.728</td></tr><tr><td>12</td><td>2.376</td><td>2.049</td><td>1.032</td></tr><tr><td>16</td><td>3.153</td><td>2.715</td><td>1.348</td></tr><tr><td>20</td><td>3.966</td><td>3.400</td><td>1.674</td></tr><tr><td>22</td><td>-</td><td>3.754</td><td>1.841</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>				Load Current [A]	Input Current [A]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0	0.107	0.101	0.101	4	0.908	0.792	0.430	8	1.630	1.414	0.728	12	2.376	2.049	1.032	16	3.153	2.715	1.348	20	3.966	3.400	1.674	22	-	3.754	1.841	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.																																																								

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Model

PLA300F-15

Item

Input Power (by Load Current)

Object

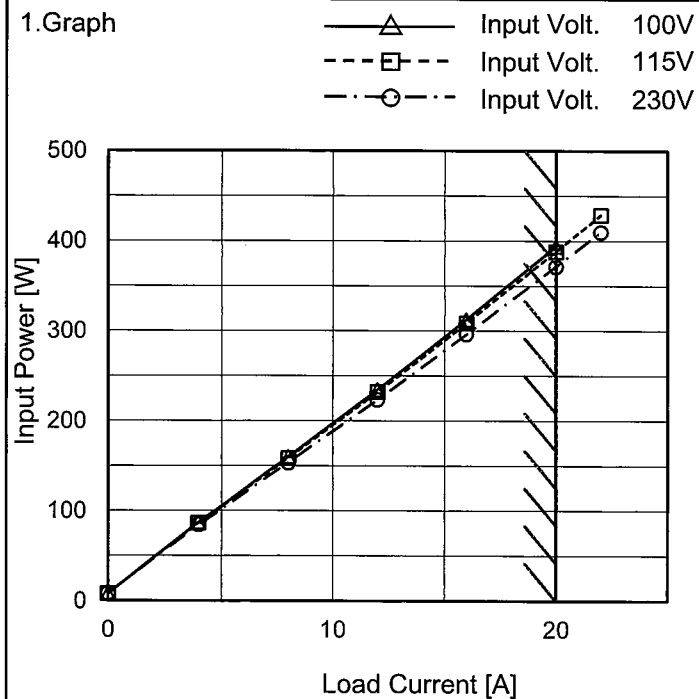
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



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

2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0	7.9	7.9	8.4
4	87.1	86.3	84.5
8	159.8	158.4	153.3
12	234.7	232.0	223.5
16	312.8	308.5	296.2
20	394.1	388.2	371.5
22	-	428.7	409.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

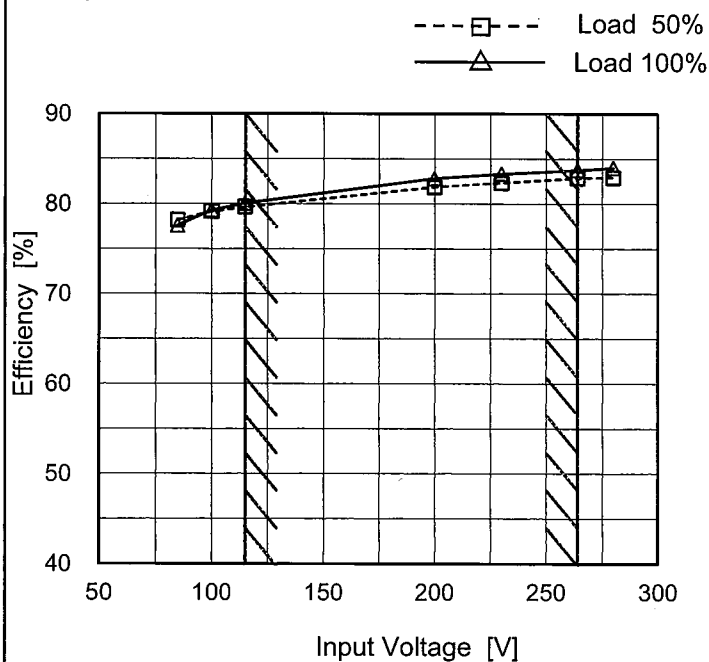
Model PLA300F-15

Item Efficiency (by Input Voltage)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph



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

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	78.2	77.6 ※1
100	79.2	79.3 ※2
115	79.7	80.1
200	81.9	82.8
230	82.3	83.4
264	82.9	83.8
280	82.9	84.0
--	-	-
--	-	-

※1: Load 80%

※2: Load 90%



Model		PLA300F-15	Temperature25°C Testing CircuitryFigure A
Item		Efficiency (by Load Current)	
Object			
1.Graph		<div><div>—△—</div>Input Volt.100V</div> <div><div>---□---</div>Input Volt.115V</div> <div><div>---○---</div>Input Volt.230V</div> <div><p>Efficiency [%]</p><p>Load Current [A]</p></div>	2.Values

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Model

PLA300F-15

Item

Power Factor (by Input Voltage)

Object

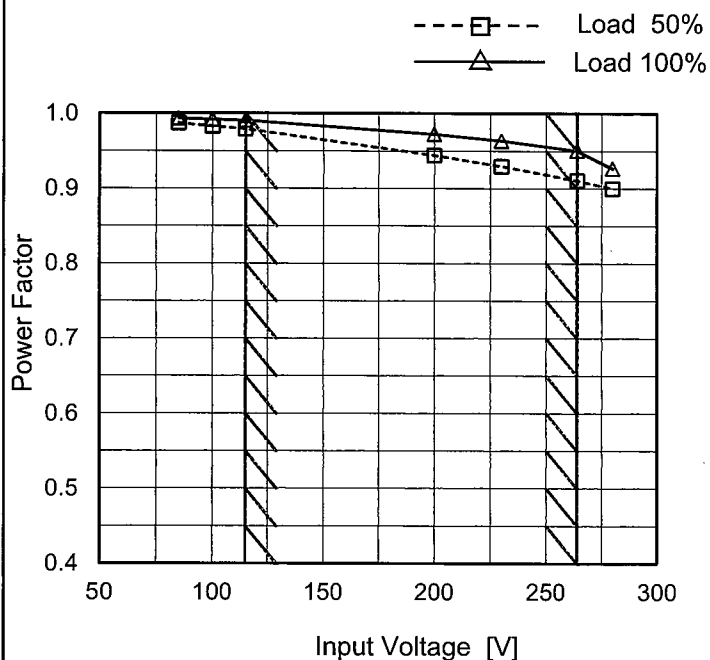
Temperature

25°C

Testing Circuitry

Figure A

1.Graph

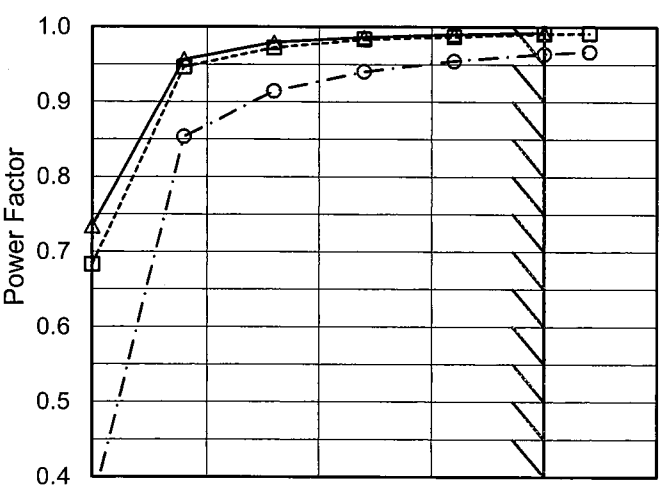


2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
85	0.987	0.994 ※1
100	0.983	0.992 ※2
115	0.979	0.991
200	0.944	0.973
230	0.930	0.964
264	0.911	0.951
280	0.900	0.927
--	-	-
--	-	-

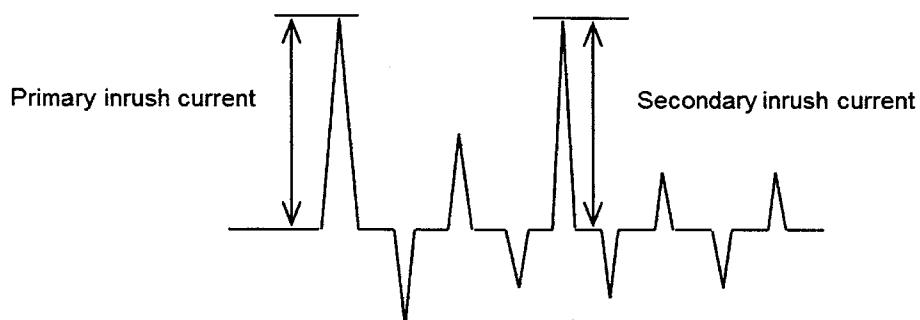
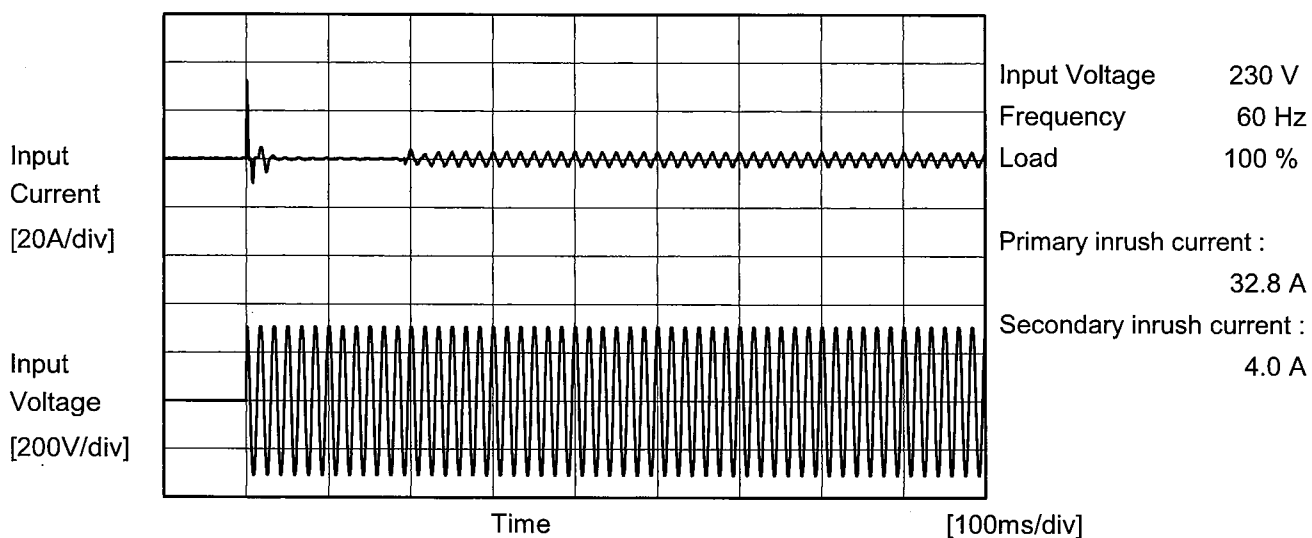
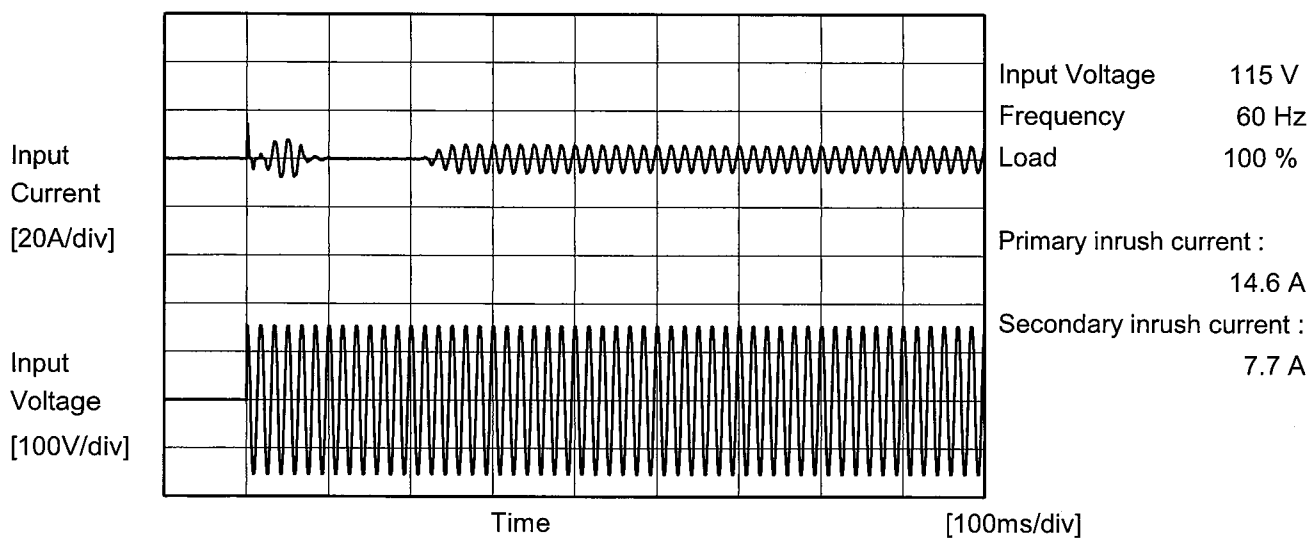
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Model		PLA300F-15		Temperature 25°C																																																				
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Note: Slanted line shows the range of the rated load current.																																																								

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Model	PLA300F-15	Temperature 25°C Testing Circuitry Figure A	
Item	Inrush Current		
Object	_____		



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		Temperature 25°C Testing Circuitry Figure B
Model	PLA300F-15	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	115 [V]	240 [V]	
DEN-AN	Both phases	0.24	0.28	0.44	Operation
	One of phases	0.30	0.30	0.60	Stand by
IEC60950-1	Both phases	0.17	0.18	0.40	Operation
	One of phases	0.24	0.28	0.60	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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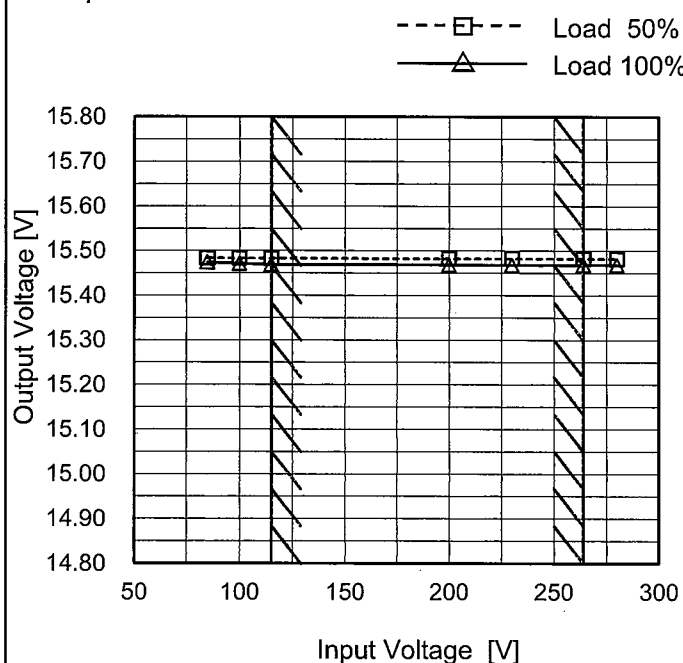
Model PLA300F-15

Item Line Regulation

Object +15V20A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	15.484	15.475 ※1
100	15.483	15.472 ※2
115	15.483	15.469
200	15.483	15.468
230	15.483	15.468
264	15.482	15.469
280	15.482	15.469
--	-	-
--	-	-

※1: Load 80%

※2: Load 90%

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Model		PLA300F-15	
Item		Load Regulation	
Object		+15V20A	

1.Graph

—△—

Input Volt.

100V

---□---

Input Volt.

115V

---○---

Input Volt.

230V

Load Current [A]	100V [V]	115V [V]	230V [V]
0	15.493	15.493	15.494
4	15.486	15.486	15.486
8	15.481	15.482	15.482
12	15.477	15.477	15.477
16	15.471	15.472	15.472
20	15.465	15.466	15.466
22	-	15.462	15.463
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

2.Values

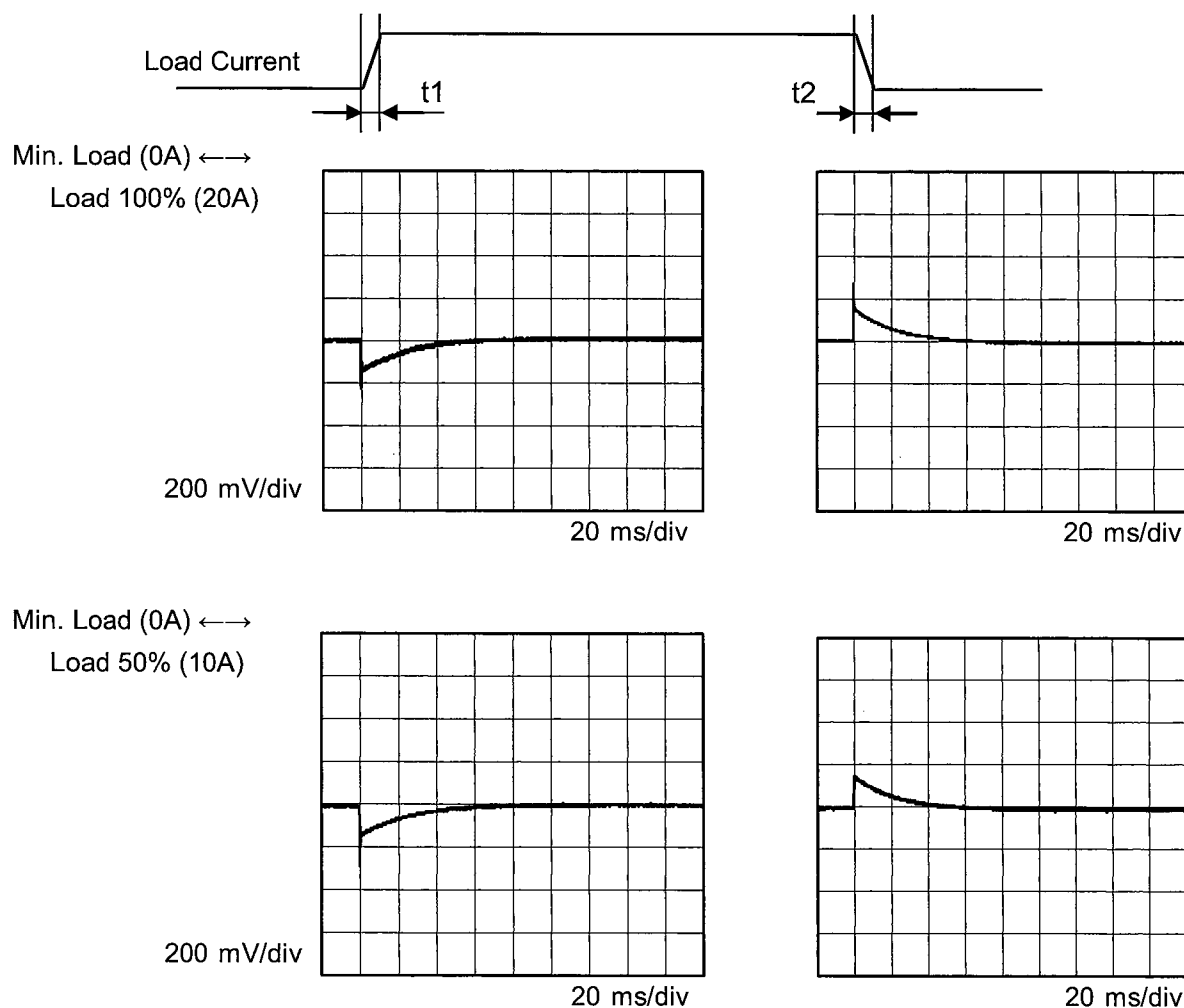
Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0	15.493	15.493	15.494
4	15.486	15.486	15.486
8	15.481	15.482	15.482
12	15.477	15.477	15.477
16	15.471	15.472	15.472
20	15.465	15.466	15.466
22	-	15.462	15.463
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	PLA300F-15	Temperature	25° C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+15V20A		

Input Volt. 115 V
Cycle 1000 ms

Response. $t_1=t_2=50\mu\text{s}$. Typ



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Model		PLA300F-15	
Item		Ripple Voltage (by Load Current)	
Object		+15V20A	
1.Graph		2.Values	

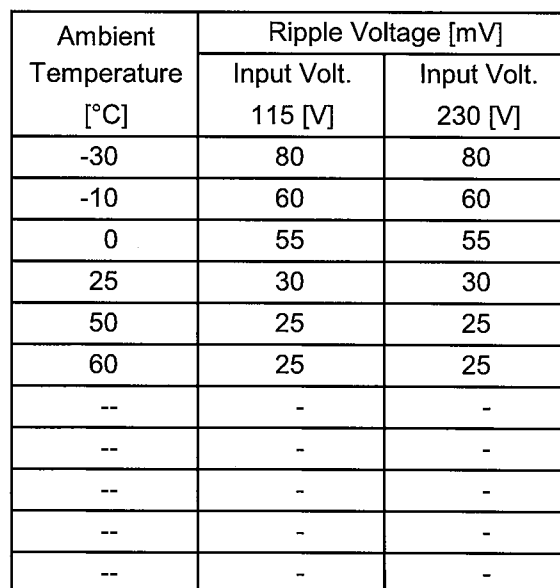
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Model		PLA300F-15																																							
Item		Ripple-Noise																																							
Object		+15V20A																																							
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt. 115V</div></div><div><div>---○---</div><div>Input Volt. 230V</div></div></div> <p>Measured by 20 MHz Oscilloscope. Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 115 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0</td><td>35</td><td>35</td></tr><tr><td>4</td><td>40</td><td>40</td></tr><tr><td>8</td><td>40</td><td>40</td></tr><tr><td>12</td><td>45</td><td>45</td></tr><tr><td>16</td><td>45</td><td>45</td></tr><tr><td>20</td><td>50</td><td>50</td></tr><tr><td>22</td><td>55</td><td>55</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 115 [V]	Input Volt. 230 [V]	0	35	35	4	40	40	8	40	40	12	45	45	16	45	45	20	50	50	22	55	55	--	-	-	--	-	-	--	-	-	--	-	-
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<div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div> <p>Fig. Complex Ripple Wave Form</p>																																									

Testing Circuitry Figure C

2.Values



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated
load current.

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Model		PLA300F-15	
Item		Ambient Temperature Drift	
Object		+15V20A	
1.Graph		2.Values	

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		Testing Circuitry Figure A
Model	PLA300F-15	
Item	Output Voltage Accuracy	
Object	+15V20A	

1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -10 - 50°C

Input Voltage : 115 - 264V

Load Current : 0 - 20A

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	25	230	0	15.494	±28	±0.2
Minimum Voltage	-10	230	20	15.439		

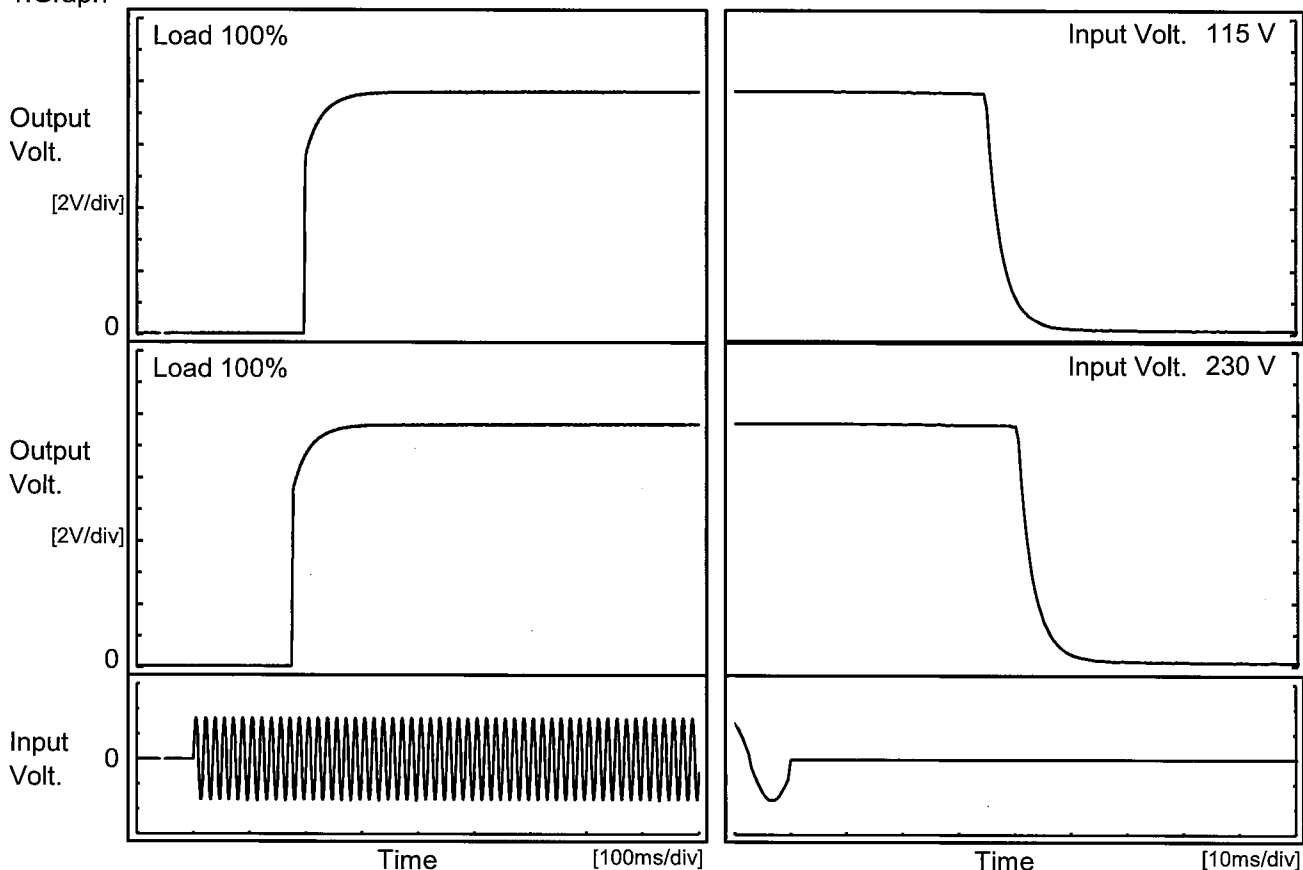


Model		PLA300F-15		Temperature Testing Circuitry	25°C Figure A
Item		Time Lapse Drift			
Object		+15V20A			
1.Graph				2.Values	
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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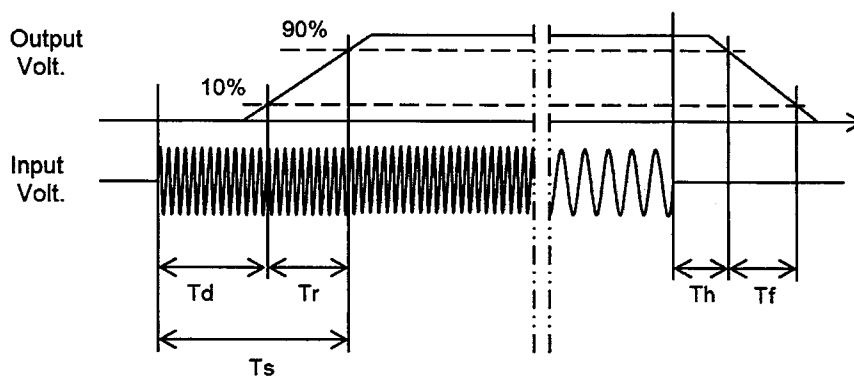
Model	PLA300F-15	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+15V20A		

1. Graph

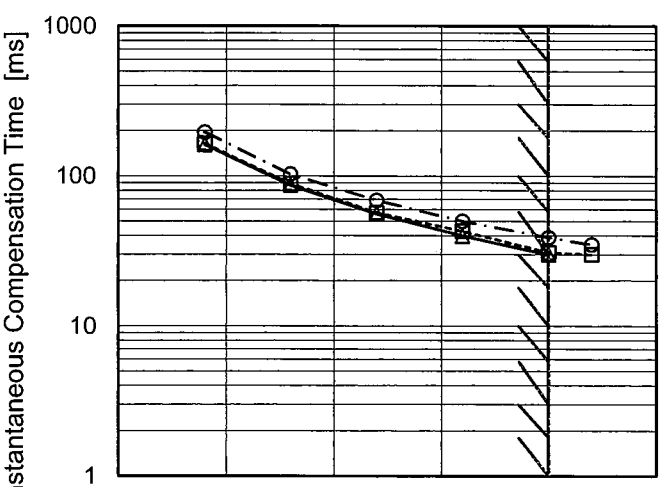


2. Values

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	197.0	26.0	223.0	35.0	6.0
230 V	175.5	26.5	202.0	40.5	6.0



Model		PLA300F-15																																	
Item		Hold-Up Time																																	
Object		+15V20A																																	
1.Graph		2.Values																																	
<div><div><div>Hold-Up Time [ms]</div><div><div>1000</div><div>100</div><div>10</div><div>1</div></div></div><div><div>50</div><div>100</div><div>150</div><div>200</div><div>250</div><div>300</div></div><div><div>Input Voltage [V]</div></div></div> <div><div><div>---</div><div>□</div><div>---</div><div>Load 50%</div></div><div><div>---</div><div>△</div><div>---</div><div>Load 100%</div></div></div>		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Hold-Up Time [ms]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>85</td><td>68</td><td>42 ※1</td></tr><tr><td>100</td><td>69</td><td>38 ※2</td></tr><tr><td>115</td><td>71</td><td>34</td></tr><tr><td>200</td><td>80</td><td>38</td></tr><tr><td>230</td><td>82</td><td>40</td></tr><tr><td>264</td><td>84</td><td>41</td></tr><tr><td>280</td><td>85</td><td>42</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	85	68	42 ※1	100	69	38 ※2	115	71	34	200	80	38	230	82	40	264	84	41	280	85	42	--	-	-	--	-	-
Input Voltage [V]	Hold-Up Time [ms]																																		
	Load 50%	Load 100%																																	
85	68	42 ※1																																	
100	69	38 ※2																																	
115	71	34																																	
200	80	38																																	
230	82	40																																	
264	84	41																																	
280	85	42																																	
--	-	-																																	
--	-	-																																	
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.		※1:Load 80% ※2:Load 90%																																	

Model		PLA300F-15		Temperature 25°C																																																				
Item		Instantaneous Interruption Compensation		Testing Circuitry Figure A																																																				
Object		+15V20A																																																						
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>115V</div></div><div><div>-○-</div><div>Input Volt.</div><div>230V</div></div></div>  <p>Instantaneous Compensation Time [ms]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		2.Values																																																				
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>4</td><td>162</td><td>165</td><td>196</td></tr><tr><td>8</td><td>87</td><td>89</td><td>103</td></tr><tr><td>12</td><td>56</td><td>57</td><td>69</td></tr><tr><td>16</td><td>40</td><td>43</td><td>50</td></tr><tr><td>20</td><td>30</td><td>31</td><td>39</td></tr><tr><td>22</td><td>-</td><td>30</td><td>35</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>				Load Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0	-	-	-	4	162	165	196	8	87	89	103	12	56	57	69	16	40	43	50	20	30	31	39	22	-	30	35	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																							
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]																																																					
0	-	-	-																																																					
4	162	165	196																																																					
8	87	89	103																																																					
12	56	57	69																																																					
16	40	43	50																																																					
20	30	31	39																																																					
22	-	30	35																																																					
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--	-	-	-																																																					
--	-	-	-																																																					
--	-	-	-																																																					

Model		PLA300F-15	
Item		Minimum Input Voltage for Regulated Output Voltage	
Object		+15V20A	

1.Graph

<

Model		PLA300F-15	
Item		Overcurrent Protection	
Object		+15V20A	

1.Graph

Input Volt. 115V

Input Volt. 230V

Output Voltage [V]

Model		PLA300F-15
Item		Overvoltage Protection
Object		+15V20A

1.Graph

—△—

Input Volt. 115V

---□---

Input Volt. 230V

Operating Point [V]

21.0

20.0

19.0

18.0

17.0

-40

-20

0

20

40

60

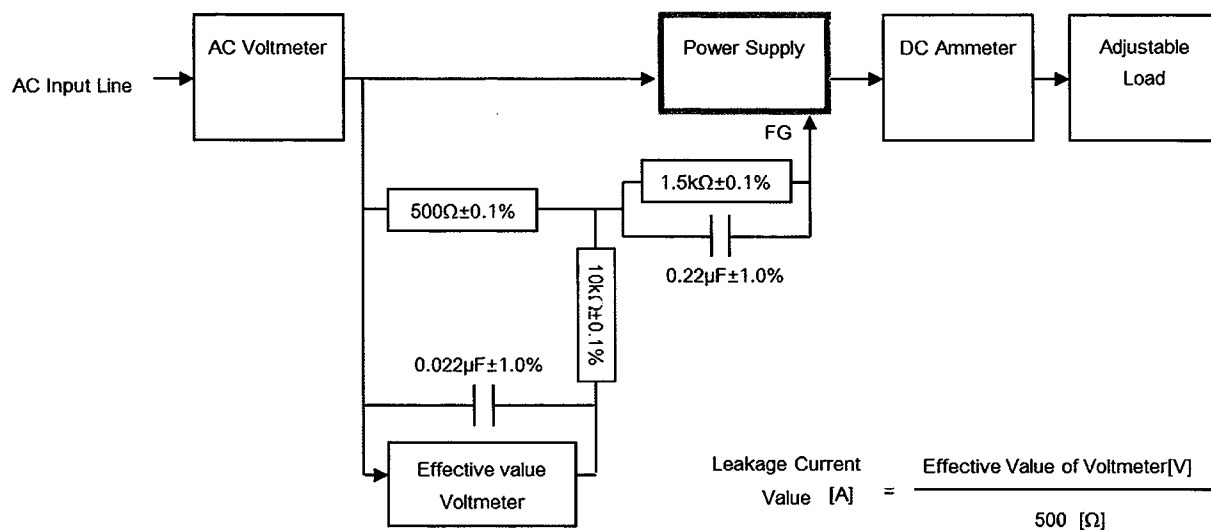
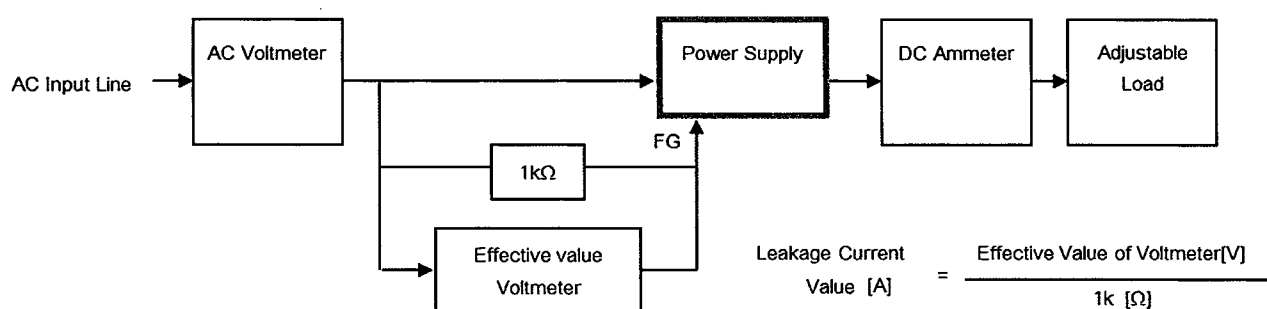
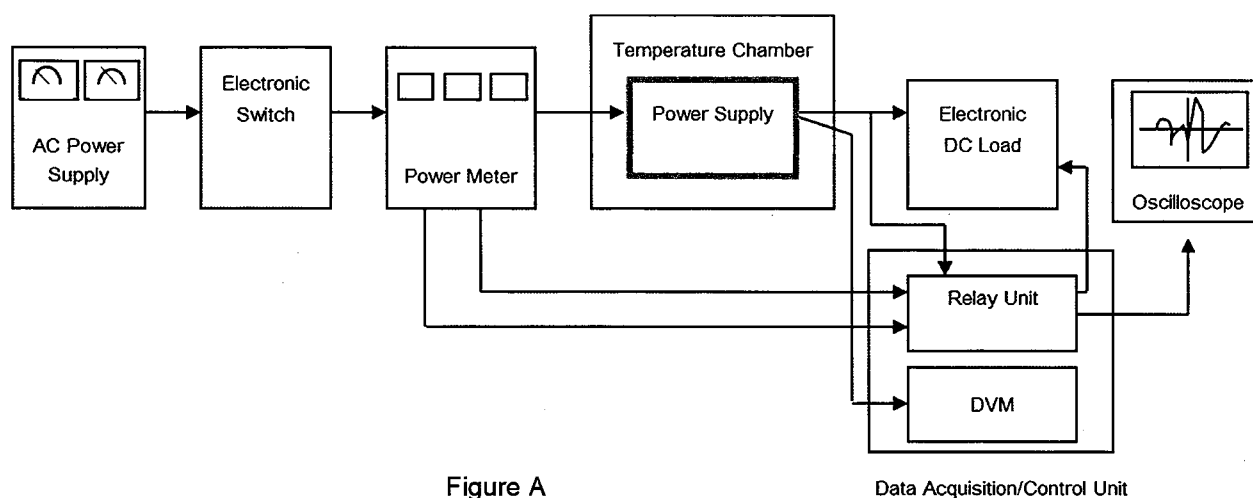
Ambient Temperature [°C]

Load 0%

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 115[V]	Input Volt. 230[V]
-20	18.74	18.27
-10	18.74	18.26
0	18.74	18.27
10	18.73	18.26
25	18.67	18.26
50	18.67	18.26
60	18.67	18.26
--	-	-
--	-	-
--	-	-
--	-	-

Note: Slanted line shows the range of the rated ambient temperature.



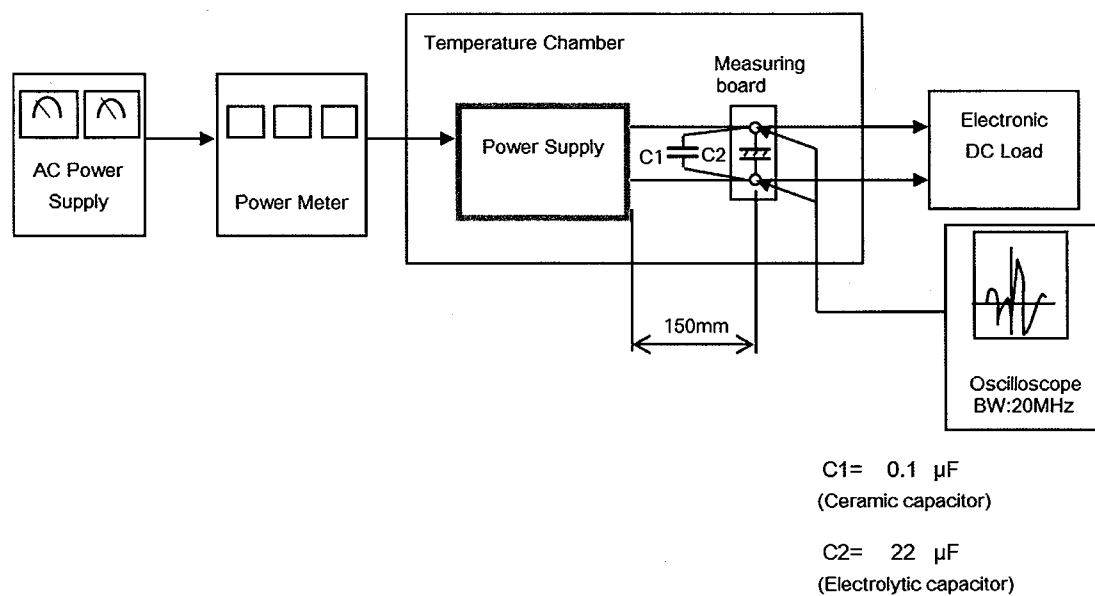


Figure C