



TEST DATA OF LFP300F-24-TY

Regulated DC Power Supply
November 8, 2011

Approved by : *Yoshiaki Shimizu*
Yoshiaki Shimizu Design Manager

Prepared by : *Tomoyuki Mukaiyama*
Tomoyuki Mukaiyama Design Engineer

COSEL CO.,LTD.

CONTENTS

1.Input Current (by Load Current)	1
2.Input Power (by Load Current)	2
3.Efficiency (by Input Voltage)	3
4.Efficiency (by Load Current)	4
5.Power Factor (by Input Voltage)	5
6.Power Factor (by Load Current)	6
7.Inrush Current	7
8.Leakage Current	8
9.Line Regulation	9
10.Load Regulation	10
11.Dynamic Load Response	11
12.Ripple Voltage (by Load Current)	12
13.Ripple-Noise	13
14.Ripple Voltage (by Ambient Temperature)	14
15.Ambient Temperature Drift	15
16.Output Voltage Accuracy	16
17.Time Lapse Drift	17
18.Rise and Fall Time	18
19.Hold-Up Time	19
20.Instantaneous Interruption Compensation	20
21.Minimum Input Voltage for Regulated Output Voltage	21
22.Overcurrent Protection	22
23.Overvoltage Protection	23
24.Figure of Testing Circuitry	24

(Final Page 25)

COSEL

Model		LFP300F-24-TY		Temperature Testing Circuitry	25°C Figure A																																																			
Item		Input Current (by Load Current)																																																						
Object																																																								
1.Graph				2.Values																																																				
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div>Input Volt. 100V</div><div>Input Volt. 200V</div><div>Input Volt. 230V</div></div></div><div><p>Note: Slanted line shows the range of the rated load current.</p></div></div>				<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. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>0.158</td><td>0.200</td><td>0.224</td></tr><tr><td>2.0</td><td>0.707</td><td>0.470</td><td>0.436</td></tr><tr><td>4.0</td><td>1.228</td><td>0.717</td><td>0.648</td></tr><tr><td>6.0</td><td>1.748</td><td>0.958</td><td>0.870</td></tr><tr><td>8.0</td><td>2.280</td><td>1.174</td><td>1.088</td></tr><tr><td>10.0</td><td>2.824</td><td>1.420</td><td>1.284</td></tr><tr><td>12.0</td><td>3.370</td><td>1.678</td><td>1.492</td></tr><tr><td>15.0</td><td>4.200</td><td>2.071</td><td>1.824</td></tr><tr><td>16.5</td><td>4.620</td><td>2.274</td><td>1.997</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. 200[V]	Input Volt. 230[V]	0.0	0.158	0.200	0.224	2.0	0.707	0.470	0.436	4.0	1.228	0.717	0.648	6.0	1.748	0.958	0.870	8.0	2.280	1.174	1.088	10.0	2.824	1.420	1.284	12.0	3.370	1.678	1.492	15.0	4.200	2.071	1.824	16.5	4.620	2.274	1.997	--	-	-	-	---	-	-	-
Load Current [A]	Input Current [A]																																																							
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																					
0.0	0.158	0.200	0.224																																																					
2.0	0.707	0.470	0.436																																																					
4.0	1.228	0.717	0.648																																																					
6.0	1.748	0.958	0.870																																																					
8.0	2.280	1.174	1.088																																																					
10.0	2.824	1.420	1.284																																																					
12.0	3.370	1.678	1.492																																																					
15.0	4.200	2.071	1.824																																																					
16.5	4.620	2.274	1.997																																																					
--	-	-	-																																																					
---	-	-	-																																																					

Model		LFP300F-24-TY																																	
Item		Efficiency (by Input Voltage)																																	
Object																																			
1.Graph		2.Values																																	
<div><div><div><div>---</div><div>□</div><div>---</div></div><div>Load 50%</div></div><div><div>---</div><div>△</div><div>---</div></div><div>Load 100%</div></div> <div><div><div>Efficiency [%]</div><div>90</div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</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>Note: Slanted line shows the range of the rated input voltage.</div></div>		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>75</td><td>82.4</td><td>82.4</td></tr><tr><td>85</td><td>83.5</td><td>83.9</td></tr><tr><td>100</td><td>84.1</td><td>85.7</td></tr><tr><td>120</td><td>84.9</td><td>86.7</td></tr><tr><td>200</td><td>85.9</td><td>88.5</td></tr><tr><td>230</td><td>86.8</td><td>88.9</td></tr><tr><td>264</td><td>86.3</td><td>89.3</td></tr><tr><td>280</td><td>86.3</td><td>89.3</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	75	82.4	82.4	85	83.5	83.9	100	84.1	85.7	120	84.9	86.7	200	85.9	88.5	230	86.8	88.9	264	86.3	89.3	280	86.3	89.3	--	-	-
Input Voltage [V]	Efficiency [%]																																		
	Load 50%	Load 100%																																	
75	82.4	82.4																																	
85	83.5	83.9																																	
100	84.1	85.7																																	
120	84.9	86.7																																	
200	85.9	88.5																																	
230	86.8	88.9																																	
264	86.3	89.3																																	
280	86.3	89.3																																	
--	-	-																																	

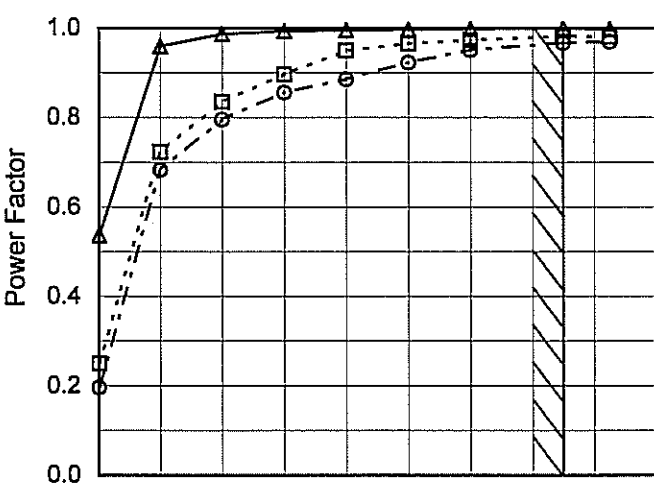


Model		LFP300F-24-TY		Temperature 25°C																																																				
Item		Efficiency (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div><div>Input Volt. 100V</div><div>Input Volt. 200V</div><div>Input Volt. 230V</div></div></div> <table><thead><tr><th>Load Current [A]</th><th>100V [%]</th><th>200V [%]</th><th>230V [%]</th></tr></thead><tbody><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2.0</td><td>70.6</td><td>71.5</td><td>71.5</td></tr><tr><td>4.0</td><td>79.2</td><td>80.5</td><td>81.2</td></tr><tr><td>6.0</td><td>82.9</td><td>84.0</td><td>84.5</td></tr><tr><td>8.0</td><td>84.7</td><td>86.3</td><td>86.7</td></tr><tr><td>10.0</td><td>85.2</td><td>87.4</td><td>88.0</td></tr><tr><td>12.0</td><td>85.7</td><td>88.1</td><td>88.4</td></tr><tr><td>15.0</td><td>85.7</td><td>88.5</td><td>88.9</td></tr><tr><td>16.5</td><td>85.5</td><td>88.6</td><td>89.0</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></tbody></table> <div>Efficiency [%]</div> <div>Load Current [A]</div>		Load Current [A]	100V [%]	200V [%]	230V [%]	0.0	-	-	-	2.0	70.6	71.5	71.5	4.0	79.2	80.5	81.2	6.0	82.9	84.0	84.5	8.0	84.7	86.3	86.7	10.0	85.2	87.4	88.0	12.0	85.7	88.1	88.4	15.0	85.7	88.5	88.9	16.5	85.5	88.6	89.0	--	-	-	-	--	-	-	-	2.Values				
Load Current [A]	100V [%]	200V [%]	230V [%]																																																					
0.0	-	-	-																																																					
2.0	70.6	71.5	71.5																																																					
4.0	79.2	80.5	81.2																																																					
6.0	82.9	84.0	84.5																																																					
8.0	84.7	86.3	86.7																																																					
10.0	85.2	87.4	88.0																																																					
12.0	85.7	88.1	88.4																																																					
15.0	85.7	88.5	88.9																																																					
16.5	85.5	88.6	89.0																																																					
--	-	-	-																																																					
--	-	-	-																																																					
		<table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr></thead><tbody><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2.0</td><td>70.6</td><td>71.5</td><td>71.5</td></tr><tr><td>4.0</td><td>79.2</td><td>80.5</td><td>81.2</td></tr><tr><td>6.0</td><td>82.9</td><td>84.0</td><td>84.5</td></tr><tr><td>8.0</td><td>84.7</td><td>86.3</td><td>86.7</td></tr><tr><td>10.0</td><td>85.2</td><td>87.4</td><td>88.0</td></tr><tr><td>12.0</td><td>85.7</td><td>88.1</td><td>88.4</td></tr><tr><td>15.0</td><td>85.7</td><td>88.5</td><td>88.9</td></tr><tr><td>16.5</td><td>85.5</td><td>88.6</td><td>89.0</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></tbody></table>				Load Current [A]	Efficiency [%]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	-	-	-	2.0	70.6	71.5	71.5	4.0	79.2	80.5	81.2	6.0	82.9	84.0	84.5	8.0	84.7	86.3	86.7	10.0	85.2	87.4	88.0	12.0	85.7	88.1	88.4	15.0	85.7	88.5	88.9	16.5	85.5	88.6	89.0	--	-	-	-	--	-	-	-
Load Current [A]	Efficiency [%]																																																							
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																					
0.0	-	-	-																																																					
2.0	70.6	71.5	71.5																																																					
4.0	79.2	80.5	81.2																																																					
6.0	82.9	84.0	84.5																																																					
8.0	84.7	86.3	86.7																																																					
10.0	85.2	87.4	88.0																																																					
12.0	85.7	88.1	88.4																																																					
15.0	85.7	88.5	88.9																																																					
16.5	85.5	88.6	89.0																																																					
--	-	-	-																																																					
--	-	-	-																																																					
Note: Slanted line shows the range of the rated load current.																																																								



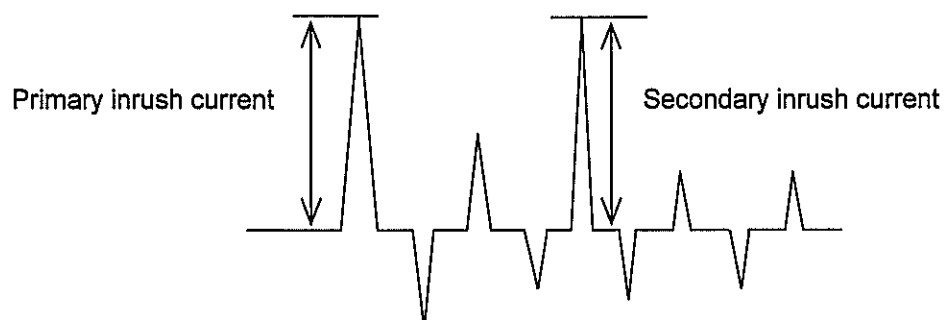
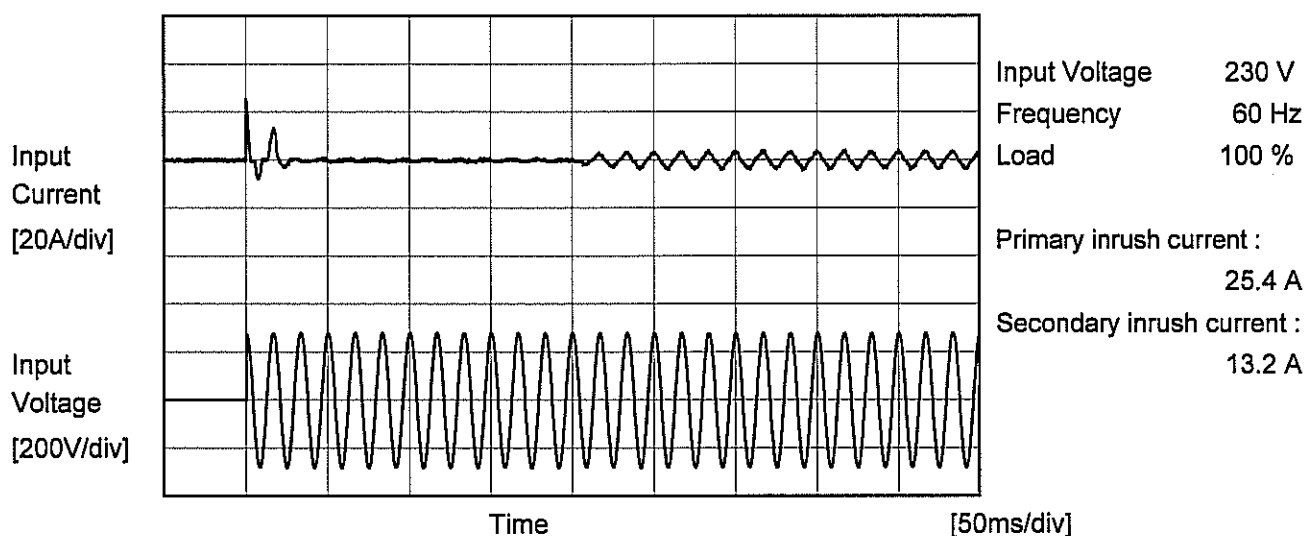
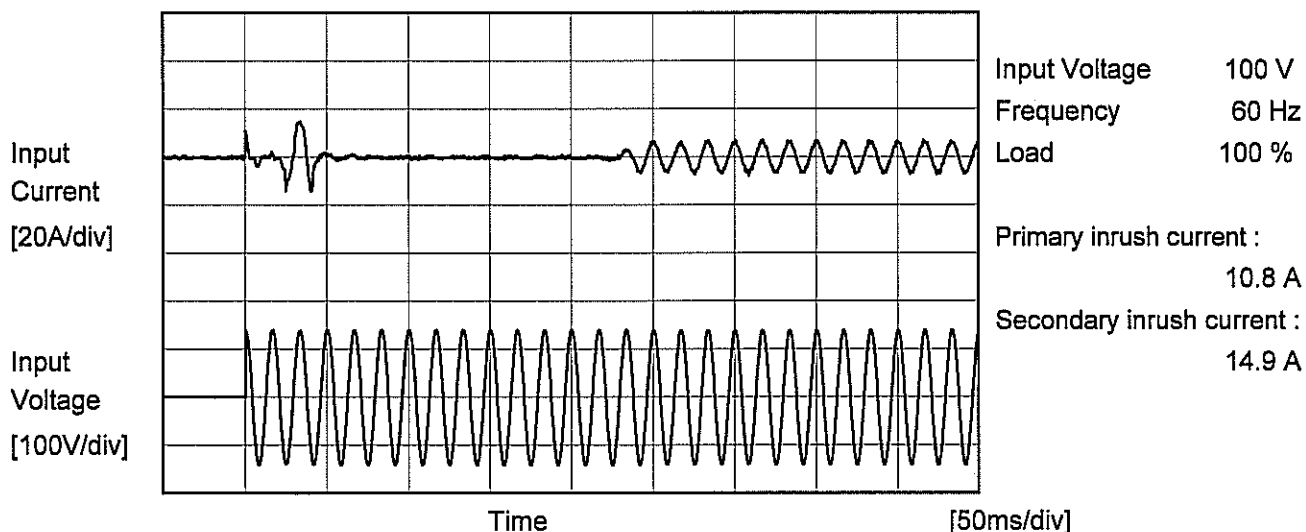
Model		LFP300F-24-TY		Temperature 25°C																																	
Item		Power Factor (by Input Voltage)		Testing Circuitry Figure A																																	
Object																																					
1.Graph				2.Values																																	
<div><div><div><div></div><div></div><div></div></div><div>Load 50%</div></div><div><div><div></div><div></div><div></div></div><div>Load 100%</div></div></div> <table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Power Factor</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>75</td><td>0.999</td><td>0.999</td></tr><tr><td>85</td><td>0.997</td><td>0.999</td></tr><tr><td>100</td><td>0.994</td><td>0.999</td></tr><tr><td>120</td><td>0.990</td><td>0.996</td></tr><tr><td>200</td><td>0.938</td><td>0.981</td></tr><tr><td>230</td><td>0.884</td><td>0.967</td></tr><tr><td>264</td><td>0.841</td><td>0.925</td></tr><tr><td>280</td><td>0.785</td><td>0.877</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>				Input Voltage [V]	Power Factor		Load 50%	Load 100%	75	0.999	0.999	85	0.997	0.999	100	0.994	0.999	120	0.990	0.996	200	0.938	0.981	230	0.884	0.967	264	0.841	0.925	280	0.785	0.877	--	-	-		
Input Voltage [V]	Power Factor																																				
	Load 50%	Load 100%																																			
75	0.999	0.999																																			
85	0.997	0.999																																			
100	0.994	0.999																																			
120	0.990	0.996																																			
200	0.938	0.981																																			
230	0.884	0.967																																			
264	0.841	0.925																																			
280	0.785	0.877																																			
--	-	-																																			
Note: Slanted line shows the range of the rated input voltage.																																					



Model		LFP300F-24-TY		Temperature 25°C	
Item		Power Factor (by Load Current)		Testing Circuitry Figure A	
Object					
1.Graph					
		—△— Input Volt. 100V		2.Values	
		---□--- Input Volt. 200V			
		---○--- Input Volt. 230V			
					
Power Factor		Load Current [A]			

COSEL

Model	LFP300F-24-TY	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





		Temperature 25°C Testing Circuitry Figure B
Model	LFP300F-24-TY	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.33	0.53	0.60	Operation
	One of phases	0.34	0.70	0.83	Stand by
IEC60950-1	Both phases	0.24	0.50	0.57	Operation
	One of phases	0.32	0.68	0.74	Stand by

The value for "One of phases" is the reference value only.

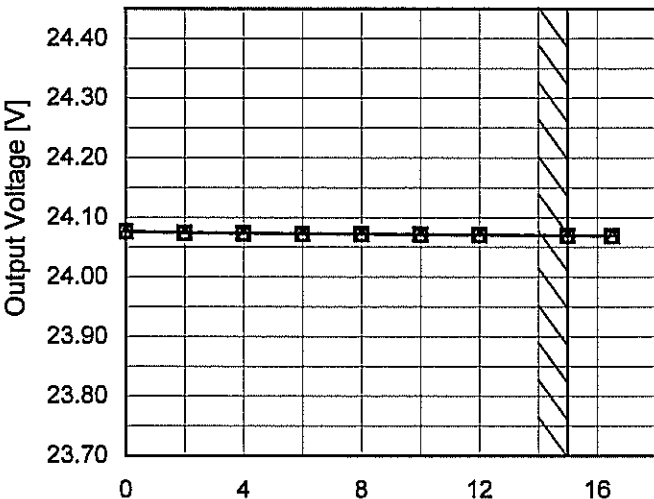
2.Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.



Model	LFP300F-24-TY																																
Item	Line Regulation	Temperature	25°C																														
Object	+24V15A	Testing Circuitry	Figure A																														
1.Graph		2.Values																															
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>75</td><td>24.072</td><td>24.069</td></tr><tr><td>85</td><td>24.072</td><td>24.069</td></tr><tr><td>100</td><td>24.072</td><td>24.069</td></tr><tr><td>120</td><td>24.072</td><td>24.069</td></tr><tr><td>200</td><td>24.072</td><td>24.069</td></tr><tr><td>230</td><td>24.072</td><td>24.069</td></tr><tr><td>264</td><td>24.072</td><td>24.069</td></tr><tr><td>280</td><td>24.072</td><td>24.069</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	75	24.072	24.069	85	24.072	24.069	100	24.072	24.069	120	24.072	24.069	200	24.072	24.069	230	24.072	24.069	264	24.072	24.069	280	24.072	24.069	--	-	-		
Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%																															
75	24.072	24.069																															
85	24.072	24.069																															
100	24.072	24.069																															
120	24.072	24.069																															
200	24.072	24.069																															
230	24.072	24.069																															
264	24.072	24.069																															
280	24.072	24.069																															
--	-	-																															



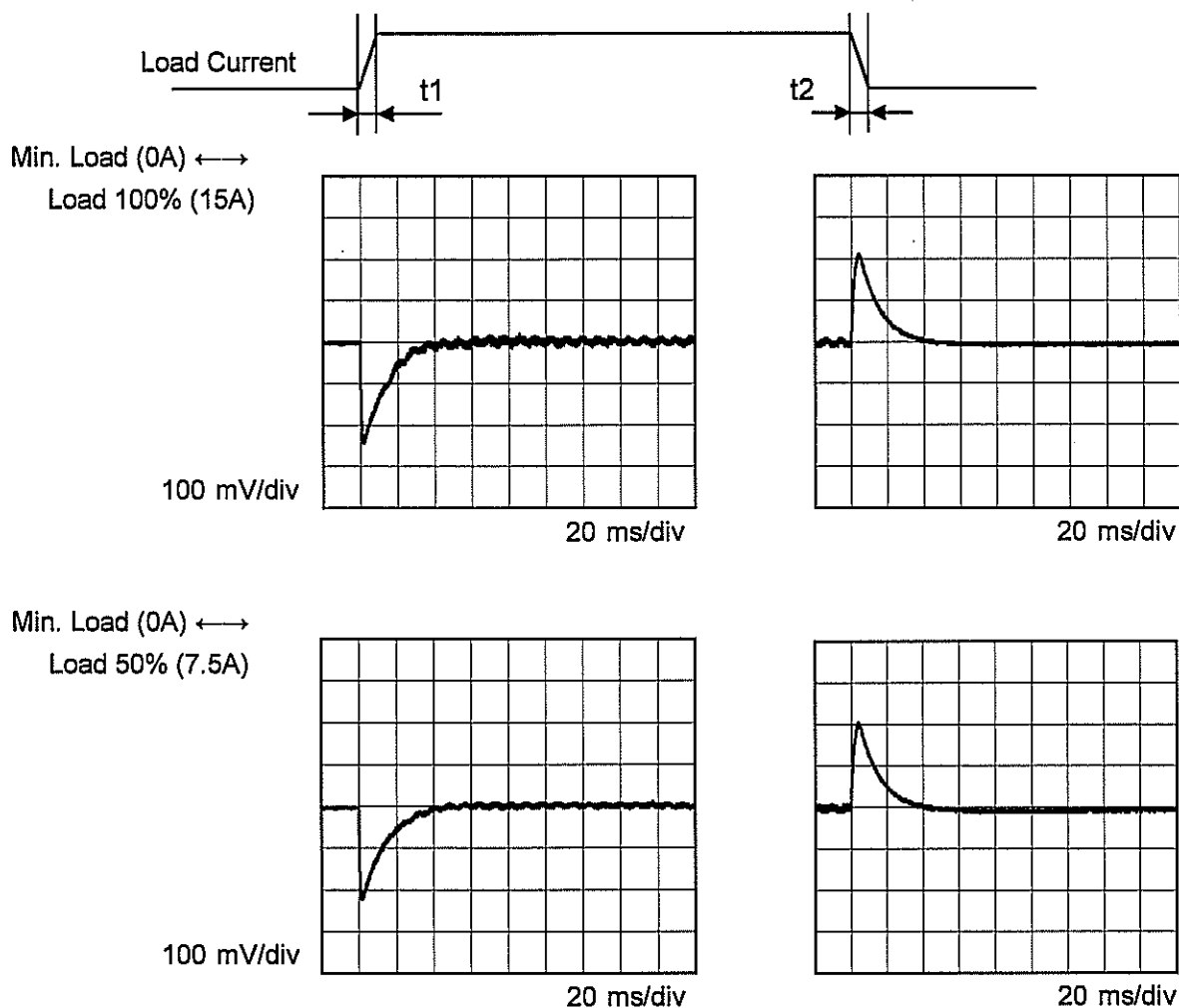
Model	LFP300F-24-TY																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+24V15A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>200V</div></div><div><div>---○---</div><div>Input Volt.</div><div>230V</div></div></div>  <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>24.077</td><td>24.077</td><td>24.077</td></tr><tr><td>2.0</td><td>24.074</td><td>24.075</td><td>24.074</td></tr><tr><td>4.0</td><td>24.073</td><td>24.074</td><td>24.074</td></tr><tr><td>6.0</td><td>24.073</td><td>24.073</td><td>24.073</td></tr><tr><td>8.0</td><td>24.072</td><td>24.072</td><td>24.072</td></tr><tr><td>10.0</td><td>24.071</td><td>24.072</td><td>24.071</td></tr><tr><td>12.0</td><td>24.071</td><td>24.071</td><td>24.071</td></tr><tr><td>15.0</td><td>24.069</td><td>24.069</td><td>24.069</td></tr><tr><td>16.5</td><td>24.069</td><td>24.069</td><td>24.069</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]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	24.077	24.077	24.077	2.0	24.074	24.075	24.074	4.0	24.073	24.074	24.074	6.0	24.073	24.073	24.073	8.0	24.072	24.072	24.072	10.0	24.071	24.072	24.071	12.0	24.071	24.071	24.071	15.0	24.069	24.069	24.069	16.5	24.069	24.069	24.069	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0.0	24.077	24.077	24.077																																																			
2.0	24.074	24.075	24.074																																																			
4.0	24.073	24.074	24.074																																																			
6.0	24.073	24.073	24.073																																																			
8.0	24.072	24.072	24.072																																																			
10.0	24.071	24.072	24.071																																																			
12.0	24.071	24.071	24.071																																																			
15.0	24.069	24.069	24.069																																																			
16.5	24.069	24.069	24.069																																																			
--	-	-	-																																																			
--	-	-	-																																																			



Model	LFP300F-24-TY	Temperature Testing Circuitry	25° C Figure A
Item	Dynamic Load Response		
Object	+24V15A		

Input Volt. 100 V
Cycle 1000 ms

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



Model	LFP300F-24-TY																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
Object	+24V15A	Testing Circuitry	Figure C																																						
1.Graph		2.Values																																							
<div><div><div><div><div></div><div>—△—</div><div>Input Volt. 100V</div></div><div><div></div><div>---○---</div><div>Input Volt. 230V</div></div></div><div></div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0</td><td>15</td><td>15</td></tr><tr><td>2</td><td>20</td><td>20</td></tr><tr><td>4.0</td><td>20</td><td>20</td></tr><tr><td>6.0</td><td>25</td><td>25</td></tr><tr><td>8.0</td><td>30</td><td>30</td></tr><tr><td>10.0</td><td>35</td><td>30</td></tr><tr><td>12.0</td><td>35</td><td>30</td></tr><tr><td>15.0</td><td>35</td><td>35</td></tr><tr><td>16.5</td><td>35</td><td>35</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 100 [V]	Input Volt. 230 [V]	0	15	15	2	20	20	4.0	20	20	6.0	25	25	8.0	30	30	10.0	35	30	12.0	35	30	15.0	35	35	16.5	35	35	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 100 [V]	Input Volt. 230 [V]																																							
0	15	15																																							
2	20	20																																							
4.0	20	20																																							
6.0	25	25																																							
8.0	30	30																																							
10.0	35	30																																							
12.0	35	30																																							
15.0	35	35																																							
16.5	35	35																																							
--	-	-																																							
--	-	-																																							
<p>Measured by 20 MHz Oscilloscope.</p> <p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p>																																									
<div><div><div><div></div><div>T1: Due to AC Input Line</div></div><div><div></div><div>T2: Due to Switching</div></div></div><div></div></div>																																									
Fig. Complex Ripple Wave Form																																									

Model	LFP300F-24-TY																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+24V15A	Testing Circuitry	Figure C																																						
1.Graph		2.Values																																							
<div><div><div><div></div><div>—△—</div><div>Input Volt. 100V</div></div><div><div></div><div>-·-○-·-</div><div>Input Volt. 230V</div></div></div><div><div><div><div>200</div><div>180</div><div>160</div><div>140</div><div>120</div><div>100</div><div>80</div><div>60</div><div>40</div><div>20</div><div>0</div></div><div><div>0</div><div>4</div><div>8</div><div>12</div><div>16</div></div></div><div><div><div>Ripple-Noise [mV]</div><div></div></div><div><div></div><div>Load Current [A]</div></div></div></div><div>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.</div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0.0</td><td>35</td><td>35</td></tr><tr><td>2.0</td><td>45</td><td>40</td></tr><tr><td>4.0</td><td>50</td><td>45</td></tr><tr><td>6.0</td><td>60</td><td>50</td></tr><tr><td>8.0</td><td>65</td><td>60</td></tr><tr><td>10.0</td><td>65</td><td>65</td></tr><tr><td>12.0</td><td>70</td><td>70</td></tr><tr><td>15.0</td><td>75</td><td>75</td></tr><tr><td>16.5</td><td>85</td><td>85</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. 100 [V]	Input Volt. 230 [V]	0.0	35	35	2.0	45	40	4.0	50	45	6.0	60	50	8.0	65	60	10.0	65	65	12.0	70	70	15.0	75	75	16.5	85	85	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
	Input Volt. 100 [V]	Input Volt. 230 [V]																																							
0.0	35	35																																							
2.0	45	40																																							
4.0	50	45																																							
6.0	60	50																																							
8.0	65	60																																							
10.0	65	65																																							
12.0	70	70																																							
15.0	75	75																																							
16.5	85	85																																							
--	-	-																																							
--	-	-																																							
<div><div><div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div><div><div><div><div></div><div>Ripple-Noise [mVp-p]</div></div><div><div></div><div>T2</div></div></div><div><div></div><div>T1</div></div></div></div><div>Fig. Complex Ripple Wave Form</div></div>																																									

Model	LFP300F-24-TY																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure C																																						
Object	+24V15A																																							
<p>1.Graph</p> <div style="text-align: right;"> ---□--- Input Volt. 100V —△— Input Volt. 230V </div> <p style="text-align: center;">Ambient Temperature [°C] Load 100 %</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 100 [V]</th> <th>Input Volt. 230 [V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>70</td><td>70</td></tr> <tr><td>-10</td><td>50</td><td>50</td></tr> <tr><td>0</td><td>40</td><td>40</td></tr> <tr><td>25</td><td>35</td><td>35</td></tr> <tr><td>50</td><td>35</td><td>35</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> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Ambient Temperature [°C]	Ripple Voltage [mV]		Input Volt. 100 [V]	Input Volt. 230 [V]	-30	70	70	-10	50	50	0	40	40	25	35	35	50	35	35	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																							
	Input Volt. 100 [V]	Input Volt. 230 [V]																																						
-30	70	70																																						
-10	50	50																																						
0	40	40																																						
25	35	35																																						
50	35	35																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>Measured by 20 MHz Oscilloscope.</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



Model	LFP300F-24-TY																																																					
Item	Ambient Temperature Drift	Testing Circuitry Figure A																																																				
Object	+24V15A																																																					
1.Graph		2.Values																																																				
<div><div>—△—</div><div>Input Volt. 100V</div></div> <div><div>---□---</div><div>Input Volt. 200V</div></div> <div><div>---○---</div><div>Input Volt. 230V</div></div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-20</td><td>24.094</td><td>24.094</td><td>24.096</td></tr><tr><td>-10</td><td>24.090</td><td>24.090</td><td>24.090</td></tr><tr><td>0</td><td>24.083</td><td>24.083</td><td>24.083</td></tr><tr><td>10</td><td>24.076</td><td>24.077</td><td>24.076</td></tr><tr><td>20</td><td>24.072</td><td>24.072</td><td>24.072</td></tr><tr><td>25</td><td>24.069</td><td>24.069</td><td>24.069</td></tr><tr><td>30</td><td>24.065</td><td>24.066</td><td>24.065</td></tr><tr><td>40</td><td>24.056</td><td>24.056</td><td>24.056</td></tr><tr><td>50</td><td>24.042</td><td>24.042</td><td>24.042</td></tr><tr><td>60</td><td>24.026</td><td>24.026</td><td>24.026</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	-20	24.094	24.094	24.096	-10	24.090	24.090	24.090	0	24.083	24.083	24.083	10	24.076	24.077	24.076	20	24.072	24.072	24.072	25	24.069	24.069	24.069	30	24.065	24.066	24.065	40	24.056	24.056	24.056	50	24.042	24.042	24.042	60	24.026	24.026	24.026	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
-20	24.094	24.094	24.096																																																			
-10	24.090	24.090	24.090																																																			
0	24.083	24.083	24.083																																																			
10	24.076	24.077	24.076																																																			
20	24.072	24.072	24.072																																																			
25	24.069	24.069	24.069																																																			
30	24.065	24.066	24.065																																																			
40	24.056	24.056	24.056																																																			
50	24.042	24.042	24.042																																																			
60	24.026	24.026	24.026																																																			
--	-	-	-																																																			



		Testing Circuitry Figure A
Model	LFP300F-24-TY	
Item	Output Voltage Accuracy	
Object	+24V15A	

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 : 85 - 264V

Load Current : 0 - 15A

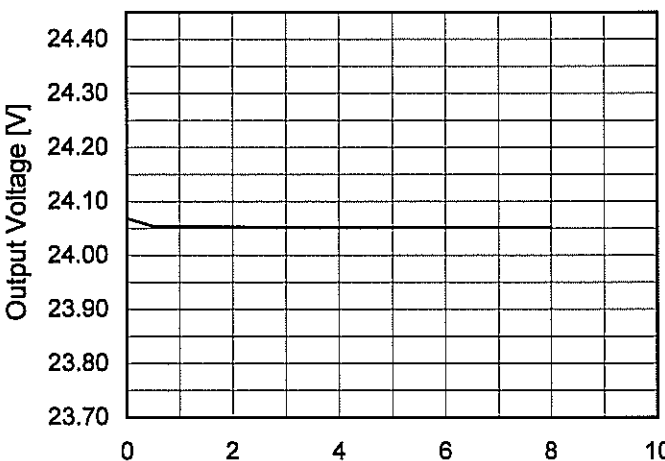
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	85	0	24.098	±28	±0.1
Minimum Voltage	50	85	15	24.042		

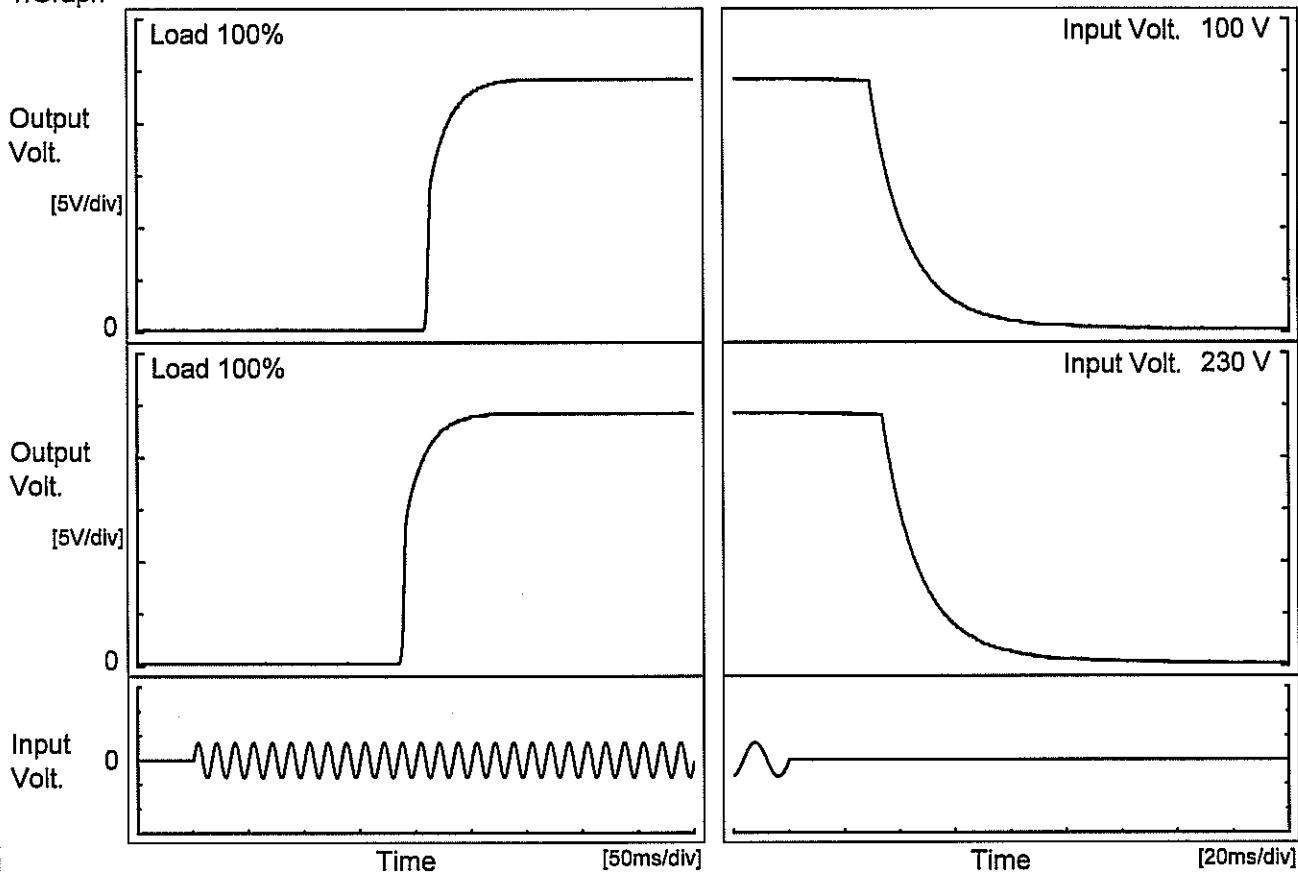
COSEL

Model	LFP300F-24-TY																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+24V15A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 100V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>24.069</td></tr><tr><td>0.5</td><td>24.054</td></tr><tr><td>1.0</td><td>24.054</td></tr><tr><td>2.0</td><td>24.053</td></tr><tr><td>3.0</td><td>24.052</td></tr><tr><td>4.0</td><td>24.052</td></tr><tr><td>5.0</td><td>24.052</td></tr><tr><td>6.0</td><td>24.052</td></tr><tr><td>7.0</td><td>24.052</td></tr><tr><td>8.0</td><td>24.052</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	24.069	0.5	24.054	1.0	24.054	2.0	24.053	3.0	24.052	4.0	24.052	5.0	24.052	6.0	24.052	7.0	24.052	8.0	24.052
Time since start [H]	Output Voltage [V]																								
0.0	24.069																								
0.5	24.054																								
1.0	24.054																								
2.0	24.053																								
3.0	24.052																								
4.0	24.052																								
5.0	24.052																								
6.0	24.052																								
7.0	24.052																								
8.0	24.052																								
* The characteristic of AC230V is equal.																									

COSEL

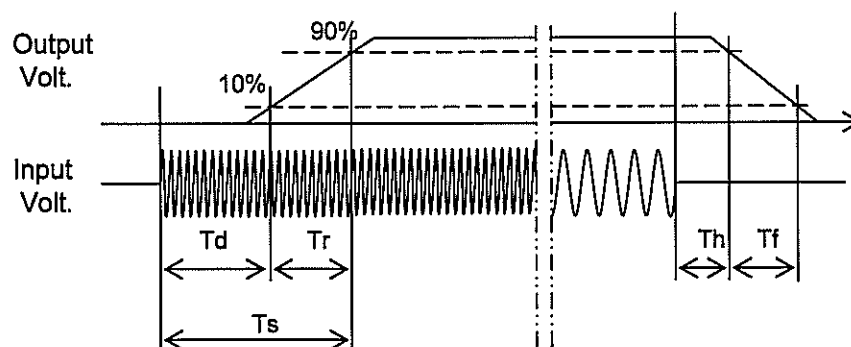
Model	LFP300F-24-TY	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+24V15A		

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		210.5	29.5	240.0	30.4	32.9
230 V		188.3	29.3	217.6	35.0	33.2



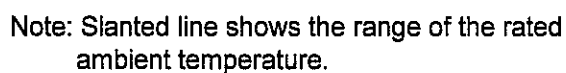
BC-10632

Model		LFP300F-24-TY	
Item		Instantaneous Interruption Compensation	
Object		+24V15A	
1.Graph		2.Values	

<

Testing Circuitry Figure A

2.Values



Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	35	48
-10	35	48
0	35	48
10	35	48
20	35	49
25	35	49
30	35	49
40	35	49
50	35	50
60	36	50
--	-	-

Model	LFP300F-24-TY																																											
Item	Overcurrent Protection	Temperature	25°C																																									
Object	+24V15A	Testing Circuitry	Figure A																																									
1.Graph		2.Values																																										
<div><div><div></div>Input Volt. 100V</div><div><div></div>Input Volt. 230V</div></div> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when the output voltage is from 14V to 0V.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="2">Load Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>24.0</td><td>29.35</td><td>29.40</td></tr><tr><td>22.8</td><td>29.48</td><td>29.53</td></tr><tr><td>21.6</td><td>29.61</td><td>29.68</td></tr><tr><td>19.2</td><td>29.86</td><td>29.94</td></tr><tr><td>16.8</td><td>30.22</td><td>30.33</td></tr><tr><td>14.4</td><td>30.64</td><td>30.73</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><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]		Input Volt. 100[V]	Input Volt. 230[V]	24.0	29.35	29.40	22.8	29.48	29.53	21.6	29.61	29.68	19.2	29.86	29.94	16.8	30.22	30.33	14.4	30.64	30.73	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Output Voltage [V]	Load Current [A]																																											
	Input Volt. 100[V]	Input Volt. 230[V]																																										
24.0	29.35	29.40																																										
22.8	29.48	29.53																																										
21.6	29.61	29.68																																										
19.2	29.86	29.94																																										
16.8	30.22	30.33																																										
14.4	30.64	30.73																																										
--	-	-																																										
--	-	-																																										
--	-	-																																										
--	-	-																																										
--	-	-																																										
--	-	-																																										

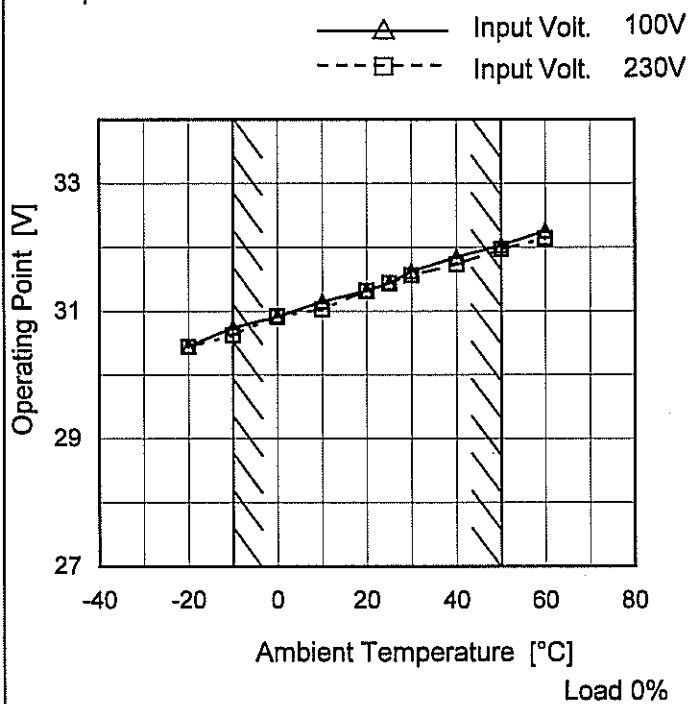
Model LFP300F-24-TY

Item Overvoltage Protection

Object +24V15A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 230[V]
-20	30.45	30.44
-10	30.74	30.62
0	30.91	30.92
10	31.15	31.03
20	31.32	31.32
25	31.44	31.44
30	31.62	31.56
40	31.85	31.73
50	32.03	31.97
60	32.26	32.14
--	-	-

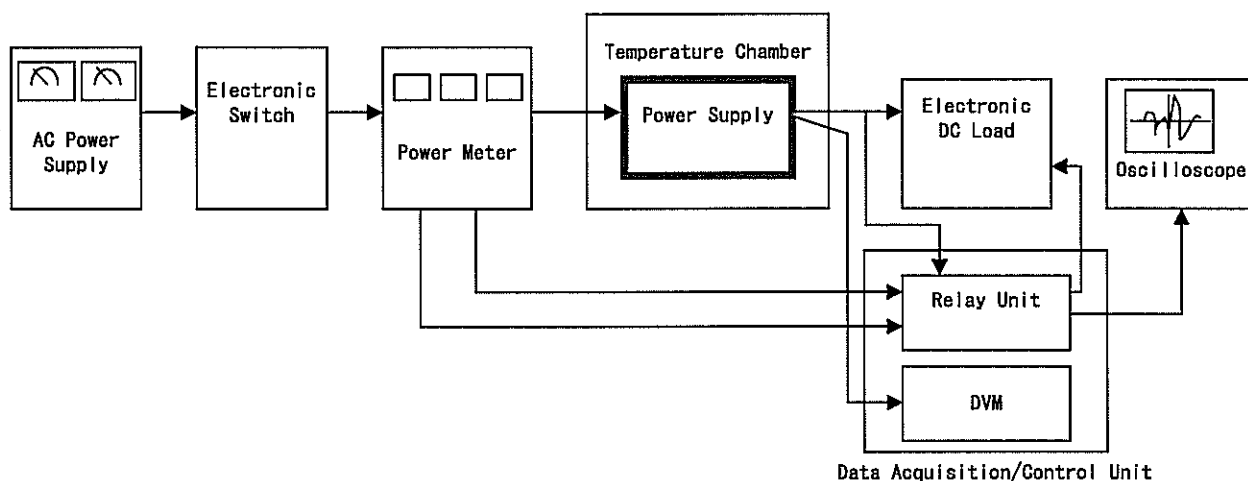


Figure A

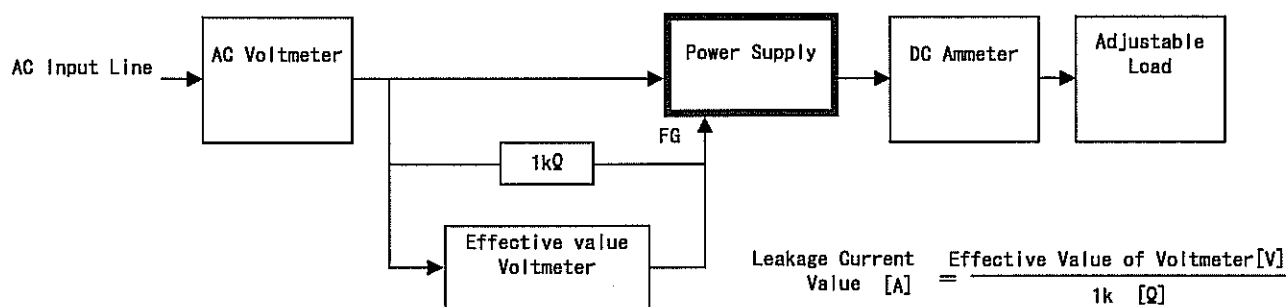


Figure B (DEN-AN)

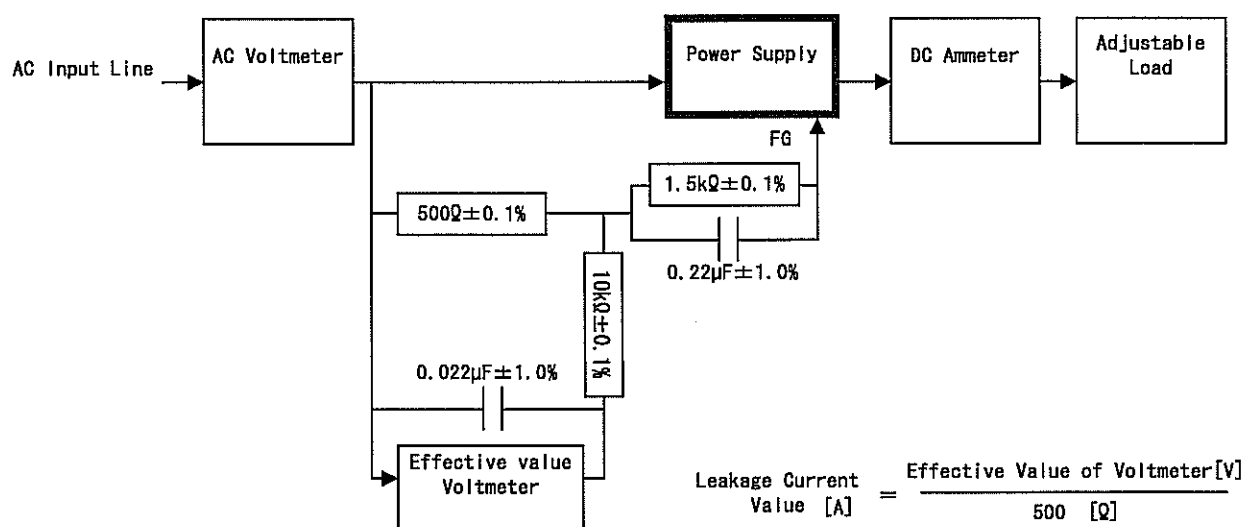


Figure B (IEC60950-1)

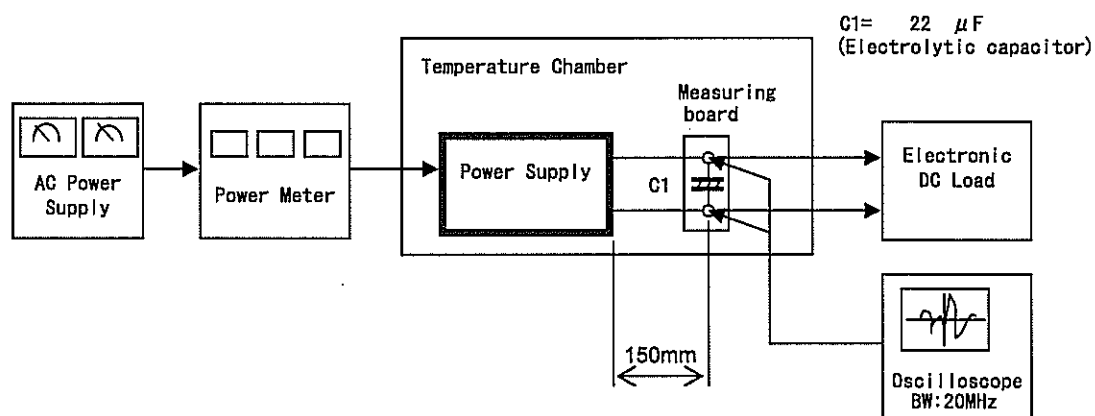


Figure C