



# TEST DATA OF PJMA1500F-24

Regulated DC Power Supply  
September 22, 2022

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Design Manager

Prepared by : Akihisa Mukai  
Design Engineer

**COSEL CO.,LTD.**



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Model	PJMA1500F-24	Temperature	25°C																																																	
Item	Input Current (by Load Current)	Testing Circuitry	Figure A																																																	
Object	_____																																																			
1.Graph		2.Values																																																		
<p>Graph showing Input Current [A] vs Load Current [A] for three input voltages: 100V, 115V, and 230V.</p> <p>Legend:</p> <ul style="list-style-type: none"> <li>Input Volt. 100V (Solid line with open triangles)</li> <li>Input Volt. 115V (Dashed line with open squares)</li> <li>Input Volt. 230V (Dash-dot line with open circles)</li> </ul> <p>Approximate data points from graph:</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 100V [A]</th> <th>Input Volt. 115V [A]</th> <th>Input Volt. 230V [A]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0.130</td><td>0.133</td><td>0.192</td></tr> <tr><td>20</td><td>5.857</td><td>3.370</td><td>1.763</td></tr> <tr><td>40</td><td>10.472</td><td>6.190</td><td>3.190</td></tr> <tr><td>60</td><td>15.097</td><td>12.010</td><td>6.030</td></tr> <tr><td>80</td><td>20.722</td><td>17.718</td><td>8.798</td></tr> </tbody> </table>		Load Current [A]	Input Volt. 100V [A]	Input Volt. 115V [A]	Input Volt. 230V [A]	0	0.130	0.133	0.192	20	5.857	3.370	1.763	40	10.472	6.190	3.190	60	15.097	12.010	6.030	80	20.722	17.718	8.798																											
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Item	Input Power (by Load Current)	Testing Circuitry	Figure A																																														
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<p>The graph plots Input Power [W] on the Y-axis (0 to 3000) against Load Current [A] on the X-axis (0 to 80). Three curves are shown for different input voltages: 100V (solid line with open triangle markers), 115V (dashed line with open square markers), and 230V (dash-dot line with open circle markers). A slanted line is drawn through the origin, representing the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 100V [W]</th> <th>Input Volt. 115V [W]</th> <th>Input Volt. 230V [W]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>5</td><td>5</td><td>6</td></tr> <tr><td>12.0</td><td>358</td><td>356</td><td>349</td></tr> <tr><td>19.2</td><td>556</td><td>552</td><td>540</td></tr> <tr><td>24.0</td><td>689</td><td>684</td><td>668</td></tr> <tr><td>36.0</td><td>1025</td><td>1019</td><td>992</td></tr> <tr><td>48.0</td><td>1370</td><td>1358</td><td>1319</td></tr> <tr><td>57.6</td><td>1654</td><td>1637</td><td>1586</td></tr> <tr><td>64.0</td><td>1848</td><td>1827</td><td>1767</td></tr> <tr><td>70.4</td><td>-</td><td>2021</td><td>1950</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]	Input Volt. 100V [W]	Input Volt. 115V [W]	Input Volt. 230V [W]	0.0	5	5	6	12.0	358	356	349	19.2	556	552	540	24.0	689	684	668	36.0	1025	1019	992	48.0	1370	1358	1319	57.6	1654	1637	1586	64.0	1848	1827	1767	70.4	-	2021	1950	--	-	-	-	--	-	-	-
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Model	PJMA1500F-24	Temperature Testing Circuitry	25°C Figure A																														
Item	Efficiency (by Input Voltage)																																
Object	_____																																
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<p>The graph plots Efficiency [%] on the y-axis (50 to 100) against Input Voltage [V] on the x-axis (50 to 300). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show an upward trend. A slanted line on the graph indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr><td>85</td><td>84.4</td><td>82.5</td></tr> <tr><td>100</td><td>85.2</td><td>84.2</td></tr> <tr><td>115</td><td>85.8</td><td>85.2</td></tr> <tr><td>200</td><td>87.6</td><td>87.6</td></tr> <tr><td>230</td><td>88.0</td><td>88.0</td></tr> <tr><td>264</td><td>88.5</td><td>88.5</td></tr> <tr><td>280</td><td>88.7</td><td>88.7</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>				Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	85	84.4	82.5	100	85.2	84.2	115	85.8	85.2	200	87.6	87.6	230	88.0	88.0	264	88.5	88.5	280	88.7	88.7	--	-	-	--	-	-
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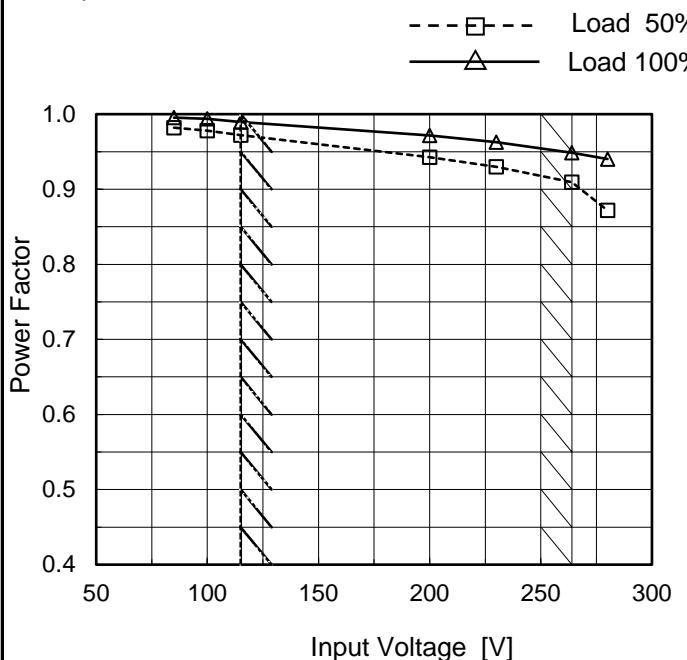
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Model	PJMA1500F-24
Item	Power Factor (by Input Voltage)
Object	_____

 Temperature 25°C  
 Testing Circuitry Figure A

## 1.Graph



## 2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
85	0.982	0.995 $\times 1$
100	0.978	0.994 $\times 2$
115	0.972	0.990
200	0.943	0.971
230	0.930	0.963
264	0.909	0.949
280	0.872	0.940
--	-	-
--	-	-

 $\times 1$ : Load 80% $\times 2$ : Load 90%

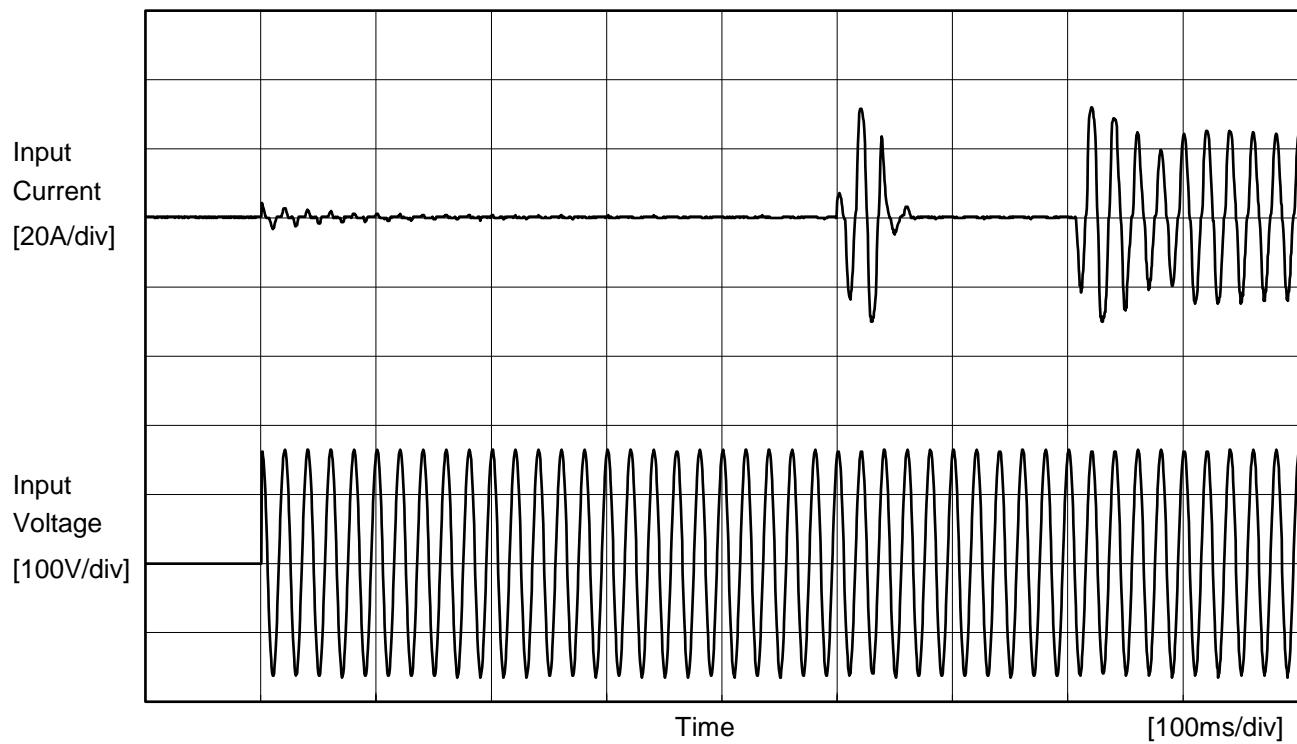
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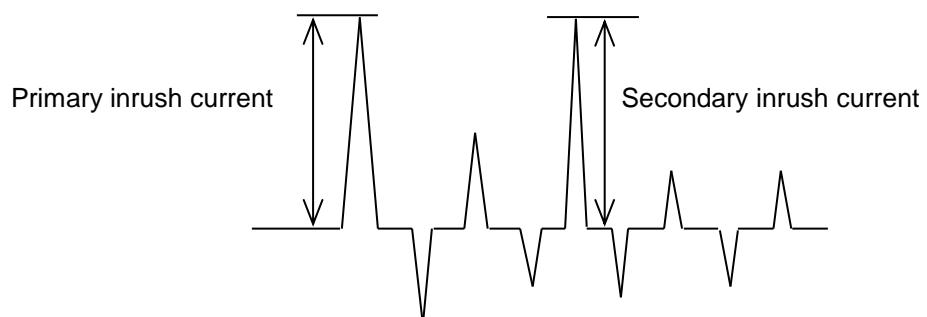
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Model	PJMA1500F-24	Temperature Testing Circuitry Figure A	25°C
Item	Inrush Current		
Object	_____		



Input Voltage      115 V  
 Frequency            50 Hz  
 Load                100 %

Primary inrush current    4.3 A  
 Secondary inrush current 31.9 A





Model	PJMA1500F-24	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure C
Object	_____		

### 1. Results

Standards		Input Volt.			Note
		230 [V]	240 [V]	264 [V]	
IEC60601-1	Both phases	0.21	0.24	0.27	Operation
	One of phases	0.39	0.40	0.45	Stand by

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

### 2. Condition

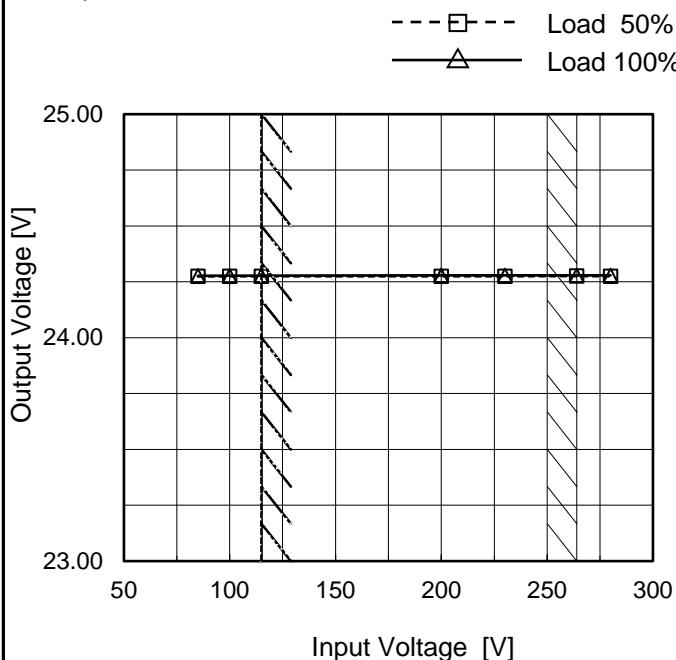
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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Model	PJMA1500F-24
Item	Line Regulation
Object	+24V64A

 Temperature 25°C  
 Testing Circuitry Figure A

## 1.Graph



## 2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	24.274	24.277 ※1
100	24.274	24.277 ※2
115	24.275	24.277
200	24.274	24.279
230	24.275	24.279
264	24.275	24.278
280	24.275	24.279
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--	-	-

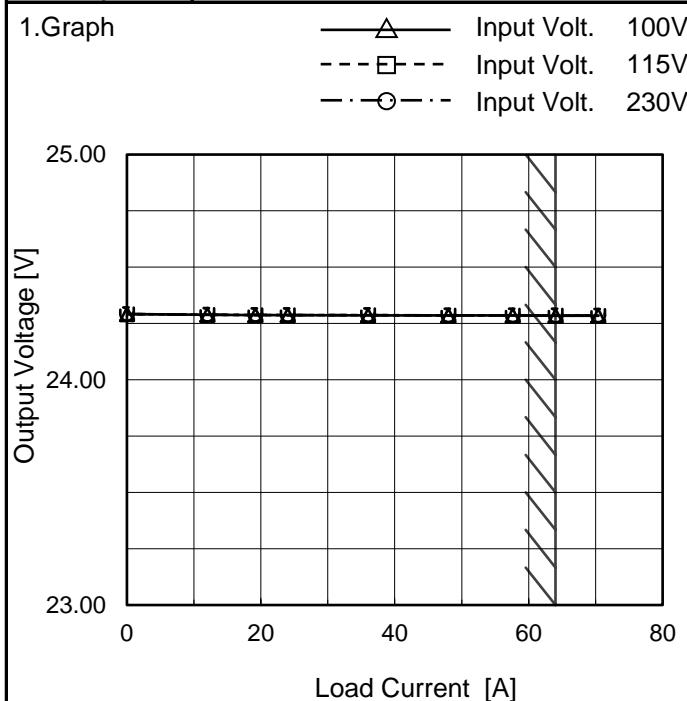
※1 : Load 80%

※2 : Load 90%

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

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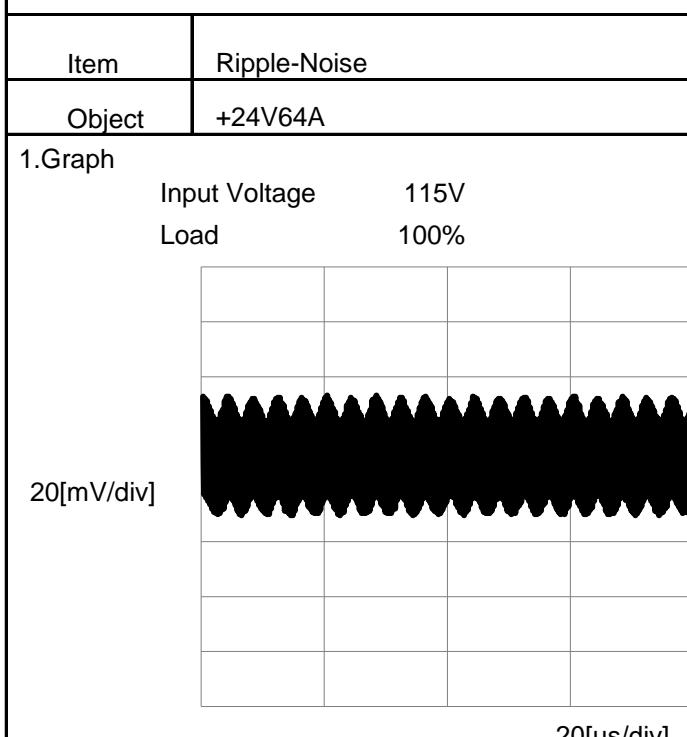
Model	PJMA1500F-24
Item	Load Regulation
Object	+24V64A

 Temperature 25°C  
 Testing Circuitry Figure A


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.0	24.292	24.292	24.292
12.0	24.288	24.288	24.289
19.2	24.287	24.288	24.288
24.0	24.287	24.287	24.288
36.0	24.286	24.287	24.287
48.0	24.286	24.285	24.286
57.6	24.286	24.286	24.286
64.0	24.284	24.286	24.285
70.4	24.285	24.285	24.286
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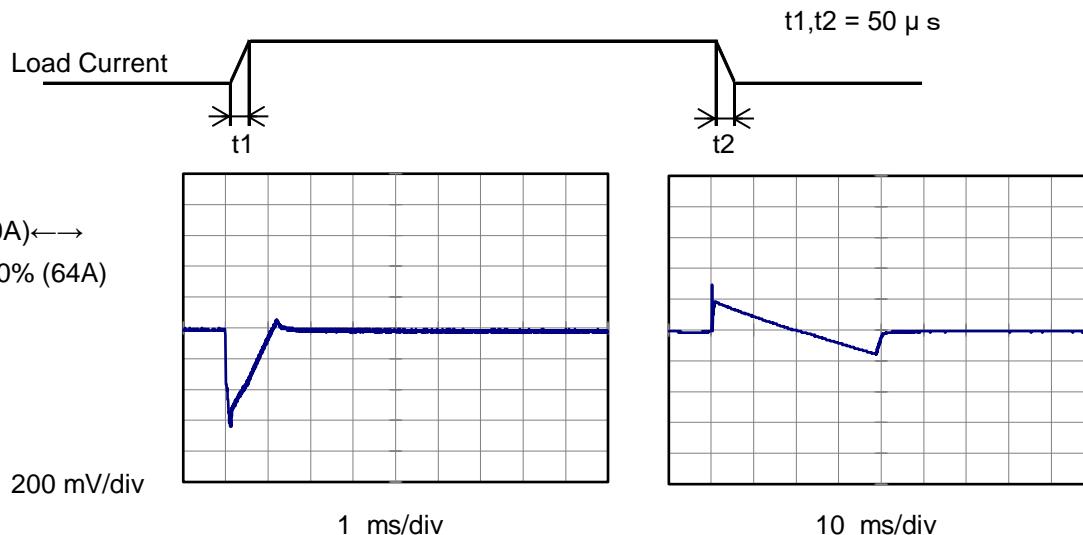
Note: Slanted line shows the range of the rated load current.


 Temperature 25°C  
 Testing Circuitry Figure B

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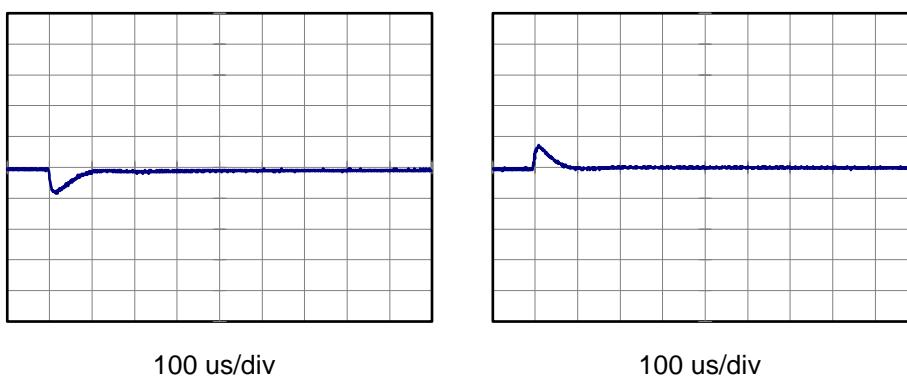
Model	PJMA1500F-24	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+24V64A		

Input Volt. 115 V  
 Cycle 1000 ms

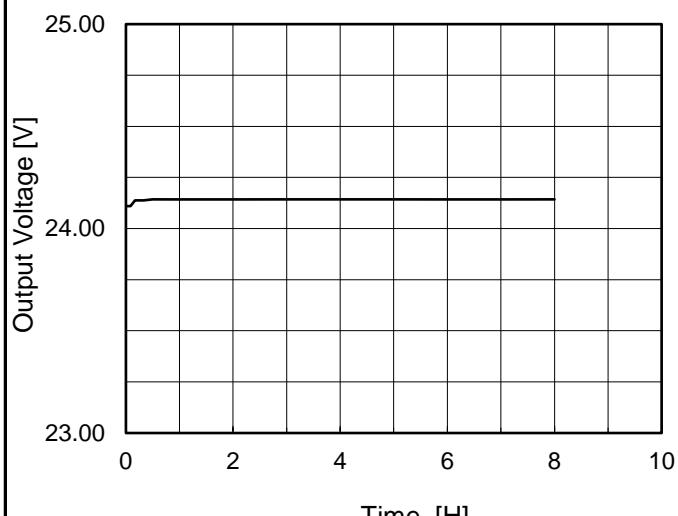


Load 50% (32A)  $\leftrightarrow$   
 Load 100% (64A)

200 mV/div



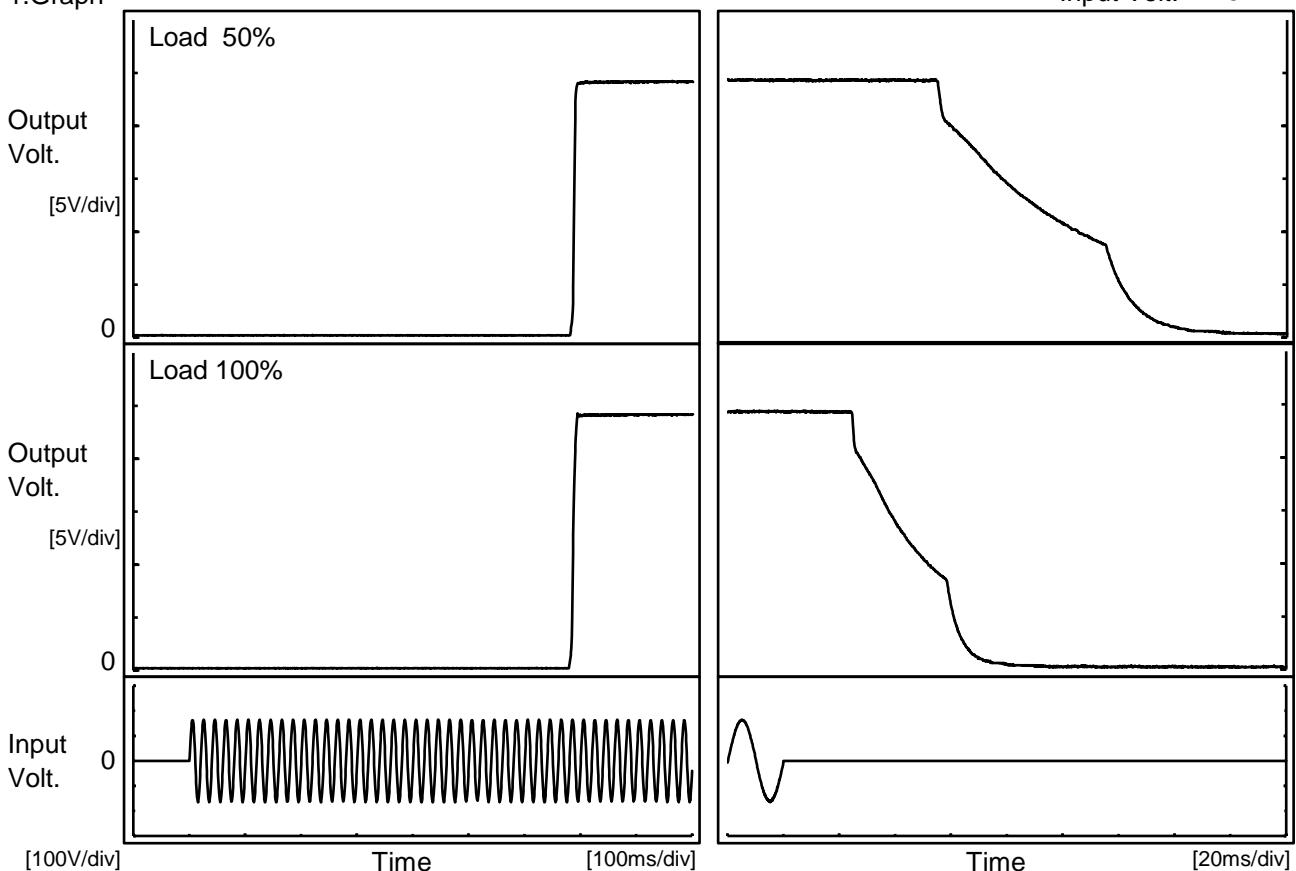
**COSEL**

Model	PJMA1500F-24	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+24V64A																								
1.Graph			2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 115V Load 100%</p>			<table border="1"> <thead> <tr> <th>Time since start [H]</th><th>Output Voltage [V]</th></tr> </thead> <tbody> <tr><td>0.0</td><td>24.110</td></tr> <tr><td>0.5</td><td>24.143</td></tr> <tr><td>1.0</td><td>24.142</td></tr> <tr><td>2.0</td><td>24.142</td></tr> <tr><td>3.0</td><td>24.143</td></tr> <tr><td>4.0</td><td>24.143</td></tr> <tr><td>5.0</td><td>24.143</td></tr> <tr><td>6.0</td><td>24.142</td></tr> <tr><td>7.0</td><td>24.142</td></tr> <tr><td>8.0</td><td>24.143</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	24.110	0.5	24.143	1.0	24.142	2.0	24.142	3.0	24.143	4.0	24.143	5.0	24.143	6.0	24.142	7.0	24.142	8.0	24.143
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**COSEL**

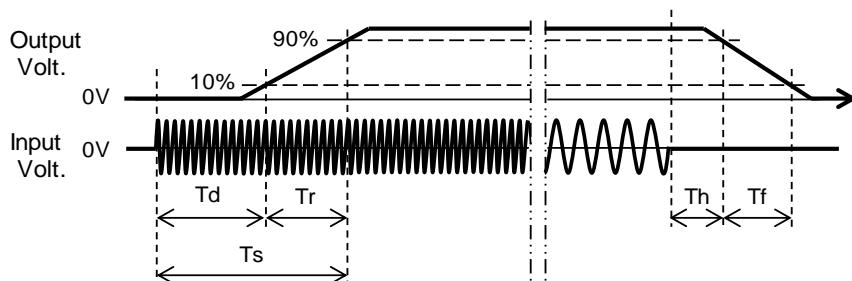
Model	PJMA1500F-24	Temperature Testing Circuitry Figure A
Item	Rise and Fall Time	
Object	+24V64A	

## 1.Graph



## 2.Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		685.5	4.5	690.0	56.3	71.2	
100 %		683.5	7.0	690.5	25.2	39.3	



**COSEL**

Model	PJMA1500F-24	Temperature	25°C																																
Item	Hold-Up Time	Testing Circuitry	Figure A																																
Object	+24V64A																																		
1. Graph			2. Values																																
<p>Graph showing Hold-Up Time [ms] vs Input Voltage [V]. The Y-axis is logarithmic from 1 to 1000 ms. The X-axis ranges from 50 to 300 V. Two curves are shown: Load 50% (dashed line with squares) and Load 100% (solid line with triangles). Both curves show a sharp increase in hold-up time as input voltage drops below the rated range (around 115-120V).</p>			<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>85</td> <td>52</td> <td>27 ※1</td> </tr> <tr> <td>100</td> <td>54</td> <td>28 ※2</td> </tr> <tr> <td>115</td> <td>55</td> <td>28</td> </tr> <tr> <td>200</td> <td>59</td> <td>31</td> </tr> <tr> <td>230</td> <td>60</td> <td>32</td> </tr> <tr> <td>264</td> <td>59</td> <td>32</td> </tr> <tr> <td>280</td> <td>59</td> <td>32</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <p>※1 : Load 80% ※2 : Load 90%</p>	Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	85	52	27 ※1	100	54	28 ※2	115	55	28	200	59	31	230	60	32	264	59	32	280	59	32	--	-	-	--	-	-
Input Voltage [V]	Hold-Up Time [ms]																																		
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264	59	32																																	
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<p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>																																			

**COSEL**

Model	PJMA1500F-24	Temperature	25°C																																																			
Item	Instantaneous Interruption Compensation	Testing Circuitry	Figure A																																																			
Object	+24V64A																																																					
1.Graph	<p>Legend:</p> <ul style="list-style-type: none"> <li>Input Volt. 100V</li> <li>Input Volt. 115V</li> <li>Input Volt. 230V</li> </ul> <p>Y-axis: Instantaneous Compensation Time [ms]</p> <p>X-axis: Load Current [A]</p>																																																					
2.Values	<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>0.0</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>12.0</td><td>24</td><td>34</td><td>155</td></tr> <tr> <td>19.2</td><td>22</td><td>28</td><td>95</td></tr> <tr> <td>24.0</td><td>22</td><td>28</td><td>76</td></tr> <tr> <td>36.0</td><td>21</td><td>26</td><td>54</td></tr> <tr> <td>48.0</td><td>21</td><td>26</td><td>40</td></tr> <tr> <td>57.6</td><td>21</td><td>26</td><td>32</td></tr> <tr> <td>64.0</td><td>21</td><td>24</td><td>28</td></tr> <tr> <td>70.4</td><td>-</td><td>24</td><td>28</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]	Time [ms]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0.0	-	-	-	12.0	24	34	155	19.2	22	28	95	24.0	22	28	76	36.0	21	26	54	48.0	21	26	40	57.6	21	26	32	64.0	21	24	28	70.4	-	24	28	--	-	-	-	--	-	-	-
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Note:	Slanted line shows the range of the rated load current.																																																					

**COSEL**

Model	PJMA1500F-24	Temperature	25°C																																																												
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																												
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<p>Note: Slanted line shows the range of the rated load current.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 100[V]</th> <th>Input Volt. 115[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr><td>24.0</td><td>72.02</td><td>72.08</td><td>72.15</td></tr> <tr><td>22.8</td><td>72.33</td><td>72.33</td><td>72.41</td></tr> <tr><td>21.6</td><td>72.02</td><td>72.08</td><td>72.15</td></tr> <tr><td>19.2</td><td>73.03</td><td>73.02</td><td>73.09</td></tr> <tr><td>16.8</td><td>73.28</td><td>73.44</td><td>73.40</td></tr> <tr><td>14.4</td><td>73.77</td><td>73.79</td><td>73.93</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> <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> </tbody> </table>			Output Voltage [V]	Load Current [A]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	24.0	72.02	72.08	72.15	22.8	72.33	72.33	72.41	21.6	72.02	72.08	72.15	19.2	73.03	73.02	73.09	16.8	73.28	73.44	73.40	14.4	73.77	73.79	73.93	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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<p>Intermittent operation occurs when the output voltage is from 14.4V to 0V.</p>																																																															



Model	PJMA1500F-24	Testing Circuitry Figure A
Item	Ambient Temperature Drift	
Object	+24V64A	

## 1.Values

Load 100%

Ambient Temperature[°C]	Output Voltage [V]		
	Input Volt. 100V	Input Volt. 115V	Input Volt. 230V
-20	24.181	24.183	24.184
25	24.245	24.247	24.248
50	24.299	24.300	24.301

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A	
Object	+24V64A		

## 1.Values

Ambient Temperature[°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	67	68
25	66	67
50	65	66

Item	Overvoltage Protection	Testing Circuitry Figure A	
Object	+24V64A		

## 1.Values

Load 0%

Ambient Temperature[°C]	Operating Point [V]	
	Input Volt. 100V	Input Volt. 230V
-20	31.08	31.08
25	32.13	32.07
50	32.59	32.65

**COSEL**

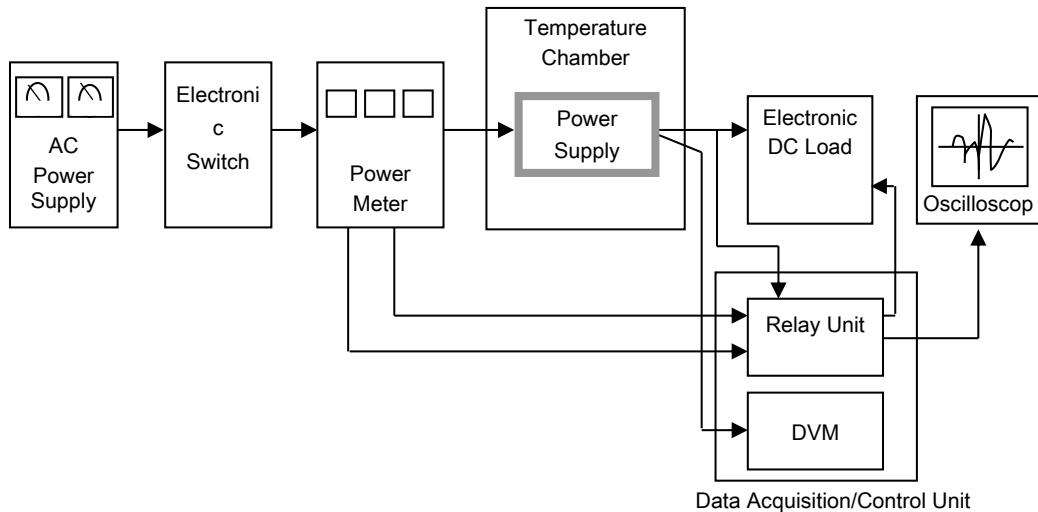


Figure A

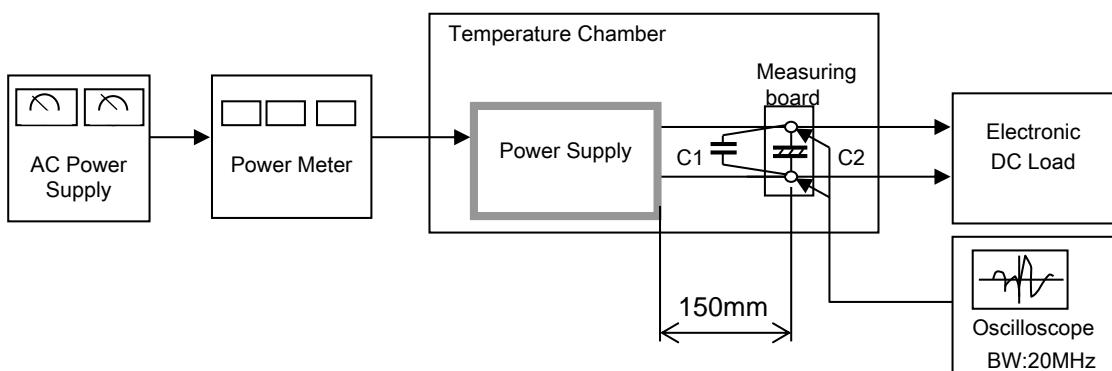


Figure B

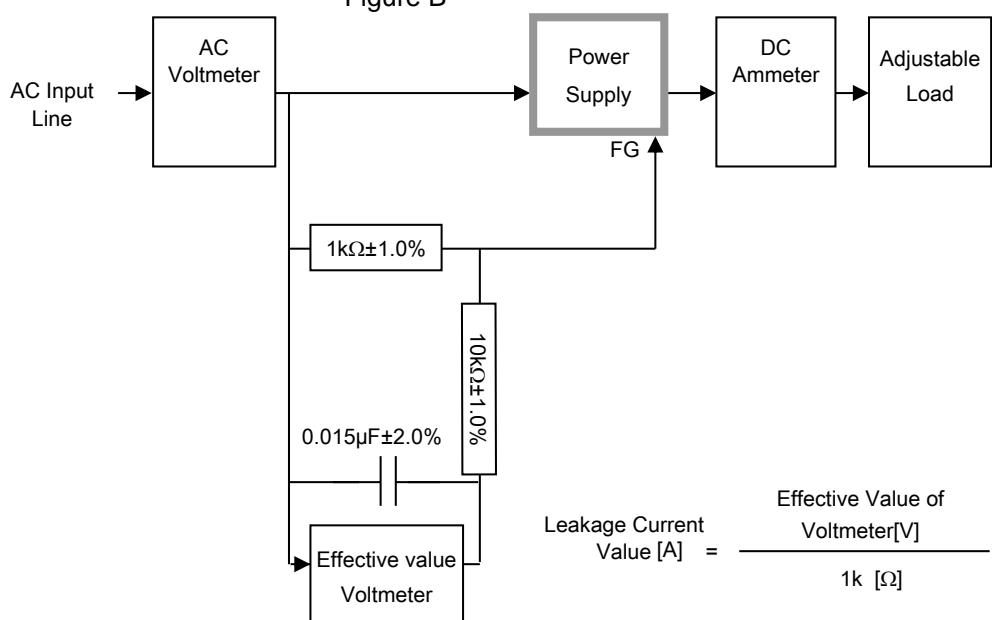


Figure C ( IEC60601-1 )