



# TEST DATA OF PBA1500T-48

Regulated DC Power Supply  
Mar. 27. 2007

Approved by : Yoshiaki Shimizu Design Manager  
Yoshiaki Shimizu

Prepared by : Yousuke Murata Design Engineer  
Yousuke Murata

COSEL CO.,LTD.



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Item	Input Current (by Load Current)	Input Temperature Testing Circuitry	AC 3-phase 25°C Figure A																																																				
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1.Graph	<p>—△— Input Volt. 170 V</p> <p>- -□-- Input Volt. 200 V</p> <p>- -○-- Input Volt. 264 V</p> <table border="1"> <caption>Data points estimated from Graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 170[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 264[V]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0.213</td><td>0.232</td><td>0.284</td></tr> <tr><td>6.0</td><td>1.283</td><td>1.101</td><td>0.878</td></tr> <tr><td>12.0</td><td>2.413</td><td>2.051</td><td>1.574</td></tr> <tr><td>18.0</td><td>3.559</td><td>3.022</td><td>2.294</td></tr> <tr><td>24.0</td><td>4.736</td><td>4.005</td><td>3.027</td></tr> <tr><td>30.0</td><td>5.899</td><td>4.988</td><td>3.767</td></tr> <tr><td>32.0</td><td>6.302</td><td>5.327</td><td>4.020</td></tr> <tr><td>35.0</td><td>6.909</td><td>5.839</td><td>4.400</td></tr> <tr><td>36.0</td><td>7.106</td><td>5.998</td><td>4.525</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. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0	0.213	0.232	0.284	6.0	1.283	1.101	0.878	12.0	2.413	2.051	1.574	18.0	3.559	3.022	2.294	24.0	4.736	4.005	3.027	30.0	5.899	4.988	3.767	32.0	6.302	5.327	4.020	35.0	6.909	5.839	4.400	36.0	7.106	5.998	4.525	—	—	—	—	—	—	—	—						
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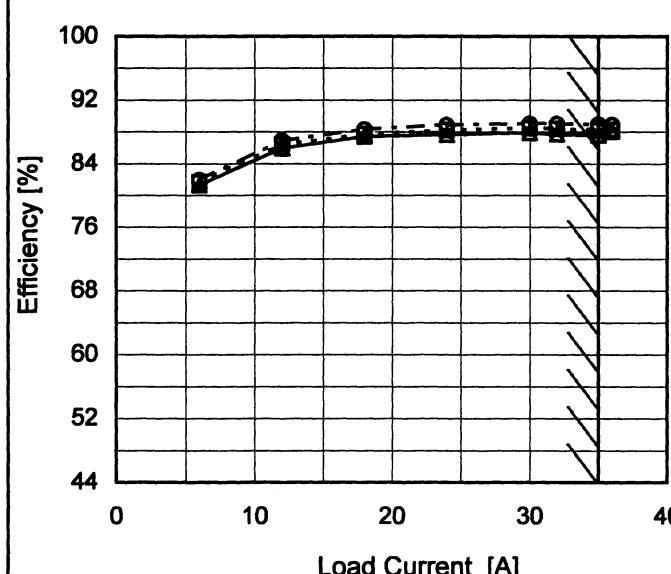
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1.Graph	<p>—△— Input Volt. 170 V        - - -□- - Input Volt. 200 V        - - ○- - Input Volt. 264 V</p>  <p>The graph plots Efficiency [%] on the y-axis (44 to 100) against Load Current [A] on the x-axis (0 to 40). Three data series are shown for input voltages of 170V, 200V, and 264V. The 264V curve is the highest, followed by 200V, and then 170V. A slanted line on the right side of the graph indicates the rated load current range.</p>																																																					
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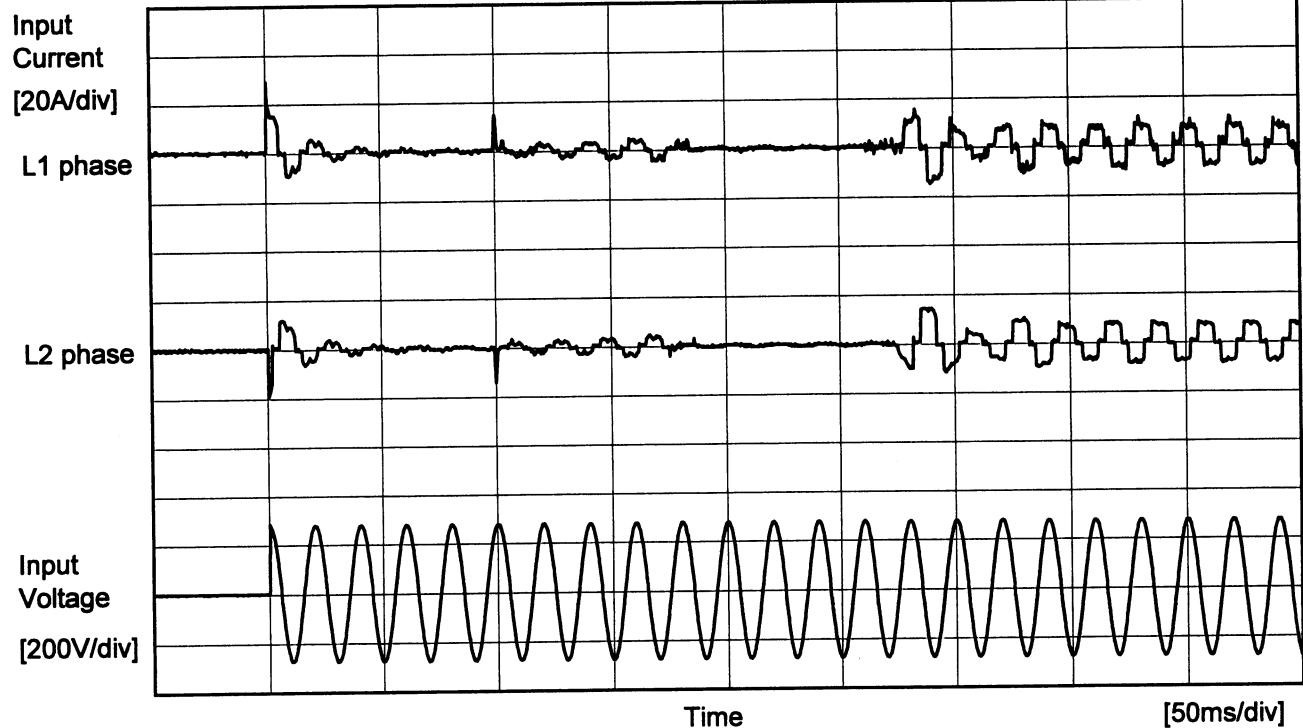
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COSEL

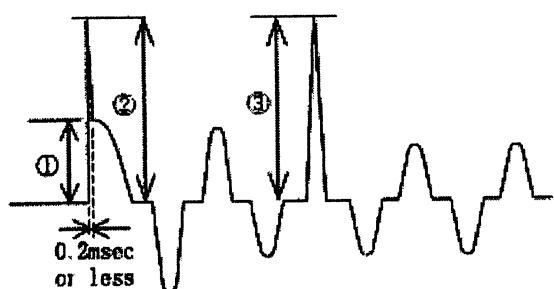
Model PBA1500T-48

Item Inrush Current

Object

Input AC 3-phase  
Temperature 25°C  
Testing Circuitry Figure A

Input Voltage	200 V
Frequency	60 Hz
Load	100 %
Inrush Current	
①	18.3 A
②	29.2 A (0.2ms or less)*1
③	15.6 A



\*1 The specification of the inrush current (primary surge) means that the surge current to a built-in noise filter (0.2ms or less :waveform②) is excluded



Model	PBA1500T-48	Input	AC 3-phase
Item	Leakage Current	Temperature	25°C
Object	_____	Testing Circuitry	Figure B

### 1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A)DEN-AN	--	--	--
(B)IEC60950	--	--	--

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 240 [V]	Input Volt. 264 [V]
(B)IEC60950	0.77	1.12	1.25

### 2. Condition

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

**COSEL**

Model	PBA1500T-48	Input Temperature Testing Circuitry	AC 3-phase 25°C Figure A																																
Item	Line Regulation																																		
Object	+48V35A																																		
1. Graph																																			
<p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Legend: Load 50% (dashed line), Load 100% (solid line)</p>																																			
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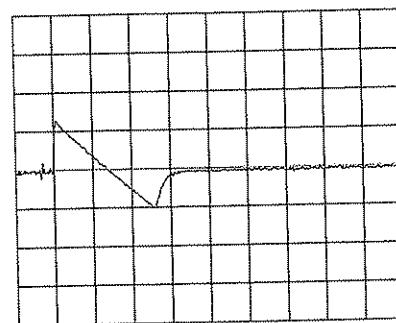
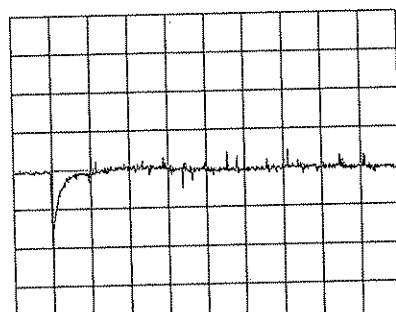
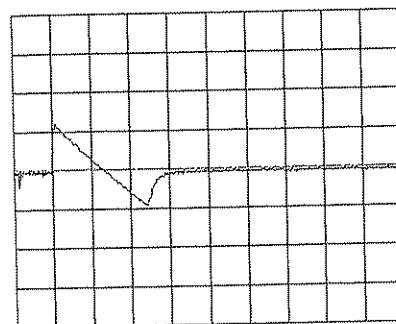
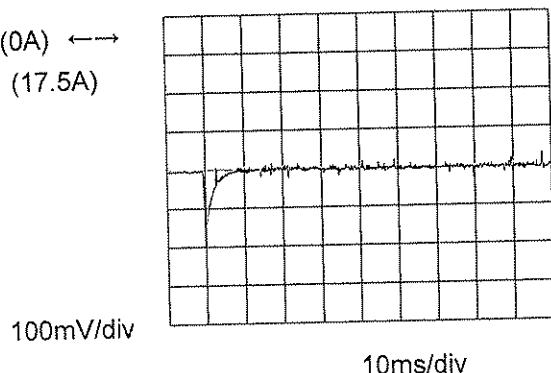
**COSEL**

Model PBA1500T-48

Input AC 3-phase  
Temperature 25°C  
Testing Circuitry Figure A

Item Dynamic Load Response

Object +48V35A

Input Volt. 200 V  
Cycle 1000 msLoad Current  
 $t_1=t_2=100 \mu s$  $t_2$ Min.Load (0A)  $\longleftrightarrow$   
Load 100% (35A)Min.Load (0A)  $\longleftrightarrow$   
Load 50% (17.5A)

**COSEL**

Model	PBA1500T-48	Input Temperature Testing Circuitry	AC 3-phase 25°C Figure A																																						
Item	Ripple Voltage (by Load Current)																																								
Object	+48V35A																																								
<b>1. Graph</b>																																									
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 200 mV, and the X-axis ranges from 0 to 40 A. Two curves are plotted: one for Input Volt. 200 V (solid line with open circles) and one for Input Volt. 240 V (dashed line with open circles). Both curves show a slight increase in ripple voltage as load current increases. A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Output Voltage [mV] (Input Volt. 200[V])</th> <th>Ripple Output Voltage [mV] (Input Volt. 240[V])</th> </tr> </thead> <tbody> <tr><td>0</td><td>10</td><td>10</td></tr> <tr><td>6.0</td><td>10</td><td>10</td></tr> <tr><td>12.0</td><td>20</td><td>20</td></tr> <tr><td>18.0</td><td>20</td><td>20</td></tr> <tr><td>24.0</td><td>25</td><td>25</td></tr> <tr><td>30.0</td><td>30</td><td>30</td></tr> <tr><td>32.0</td><td>30</td><td>30</td></tr> <tr><td>35.0</td><td>35</td><td>35</td></tr> <tr><td>36.0</td><td>35</td><td>35</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> </tbody> </table>				Load Current [A]	Ripple Output Voltage [mV] (Input Volt. 200[V])	Ripple Output Voltage [mV] (Input Volt. 240[V])	0	10	10	6.0	10	10	12.0	20	20	18.0	20	20	24.0	25	25	30.0	30	30	32.0	30	30	35.0	35	35	36.0	35	35	--	--	--	--	--	--		
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**COSEL**

Model	PBA1500T-48	Input Temperature Testing Circuitry	AC 3-phase 25°C Figure A																																							
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Object	+48V35A																																									
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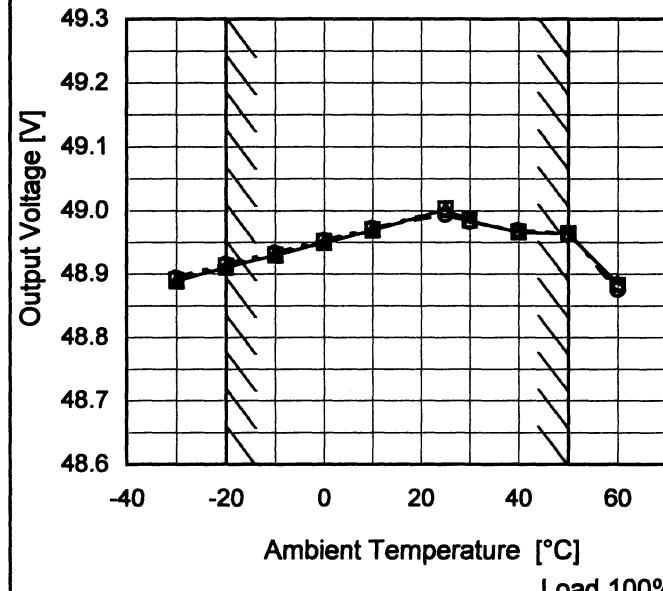


<p><b>Model</b> PBA1500T-48</p> <p><b>Item</b> Ripple Voltage (by Ambient Temp.)</p> <p><b>Object</b> +48V35A</p>	<b>Input Testing Circuitry</b> AC 3-phase <b>Figure A</b>																																						
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Measured by 20MHz Oscilloscope.

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

**COSEL**

Model	PBA1500T-48	Input AC 3-phase Testing Circuitry Figure A																																																					
Item	Ambient Temperature Drift																																																						
Object	+48V35A																																																						
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Note: Slanted line shows the range of the rated ambient temperature.



Model	PBA1500T-48	Input Testing Circuitry AC 3-phase Figure A
Item	Output Voltage Accuracy	
Object	+48V35A	

### 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 : -20 -- 50°C

Input Voltage : 170 -- 264V

Load Current : 0 -- 35A

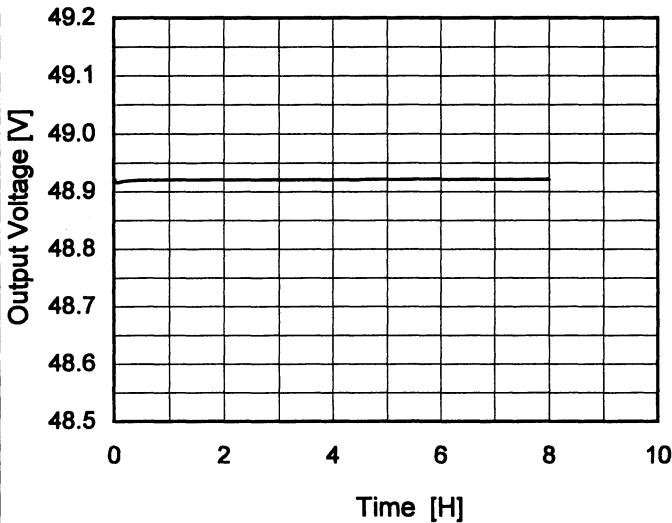
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

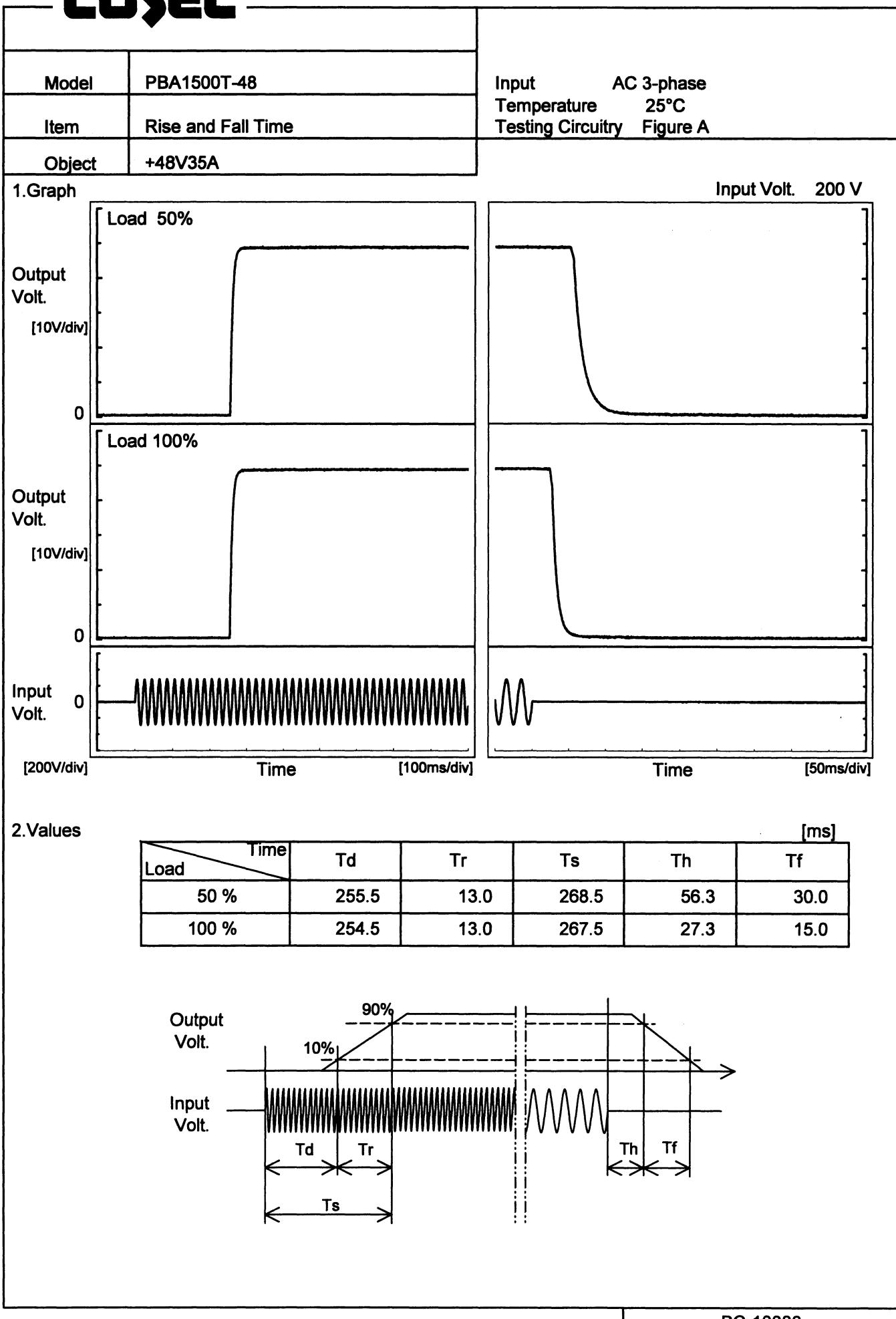
### 2. Values

Item	Temperature [°C]	Input Voltage [V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	264	35	48.994	$\pm 44$	$\pm 0.1$
Minimum Voltage	50	170	0	48.907		

**COSEL**

Model	PBA1500T-48	Input Temperature Testing Circuitry	AC 3-phase 25°C Figure A																						
Item	Time Lapse Drift																								
Object	+48V35A																								
1. Graph			2. Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 200V 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>48.920</td></tr> <tr><td>0.5</td><td>48.920</td></tr> <tr><td>1.0</td><td>48.920</td></tr> <tr><td>2.0</td><td>48.920</td></tr> <tr><td>3.0</td><td>48.921</td></tr> <tr><td>4.0</td><td>48.921</td></tr> <tr><td>5.0</td><td>48.921</td></tr> <tr><td>6.0</td><td>48.922</td></tr> <tr><td>7.0</td><td>48.921</td></tr> <tr><td>8.0</td><td>48.921</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	48.920	0.5	48.920	1.0	48.920	2.0	48.920	3.0	48.921	4.0	48.921	5.0	48.921	6.0	48.922	7.0	48.921	8.0	48.921
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COSEL



**COSEL**

Model	PBA1500T-48	Input Temperature Testing Circuitry	AC 3-phase 25°C Figure A																																
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Object	+48V35A																																		
1. Graph			2. Values																																
<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>			<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>150</td> <td>50</td> <td>22</td> </tr> <tr> <td>160</td> <td>50</td> <td>23</td> </tr> <tr> <td>170</td> <td>51</td> <td>23</td> </tr> <tr> <td>180</td> <td>51</td> <td>23</td> </tr> <tr> <td>200</td> <td>52</td> <td>24</td> </tr> <tr> <td>220</td> <td>52</td> <td>24</td> </tr> <tr> <td>240</td> <td>52</td> <td>25</td> </tr> <tr> <td>264</td> <td>53</td> <td>25</td> </tr> <tr> <td>--</td> <td>--</td> <td>--</td> </tr> </tbody> </table>	Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	150	50	22	160	50	23	170	51	23	180	51	23	200	52	24	220	52	24	240	52	25	264	53	25	--	--	--
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**COSEL**

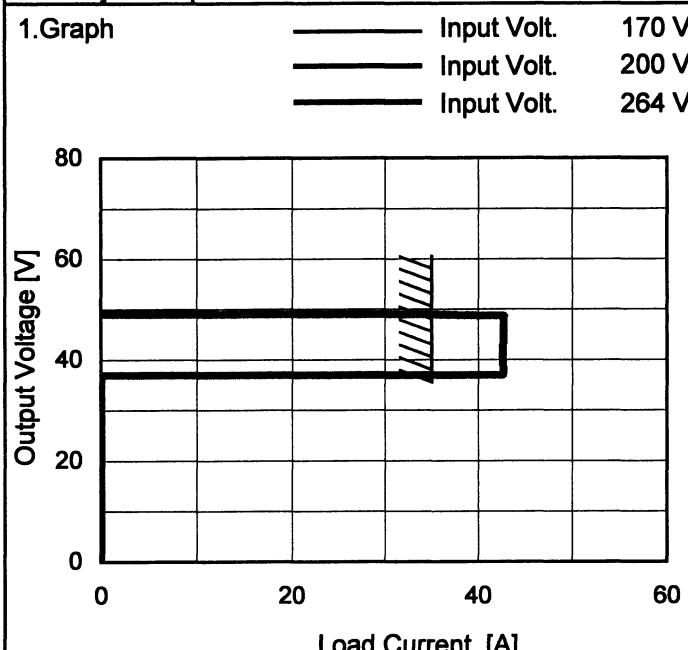
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**COSEL**

Model	PBA1500T-48
Item	Overcurrent Protection
Object	+48V35A



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

Input AC 3-phase  
Temperature 25°C  
Testing Circuitry Figure A

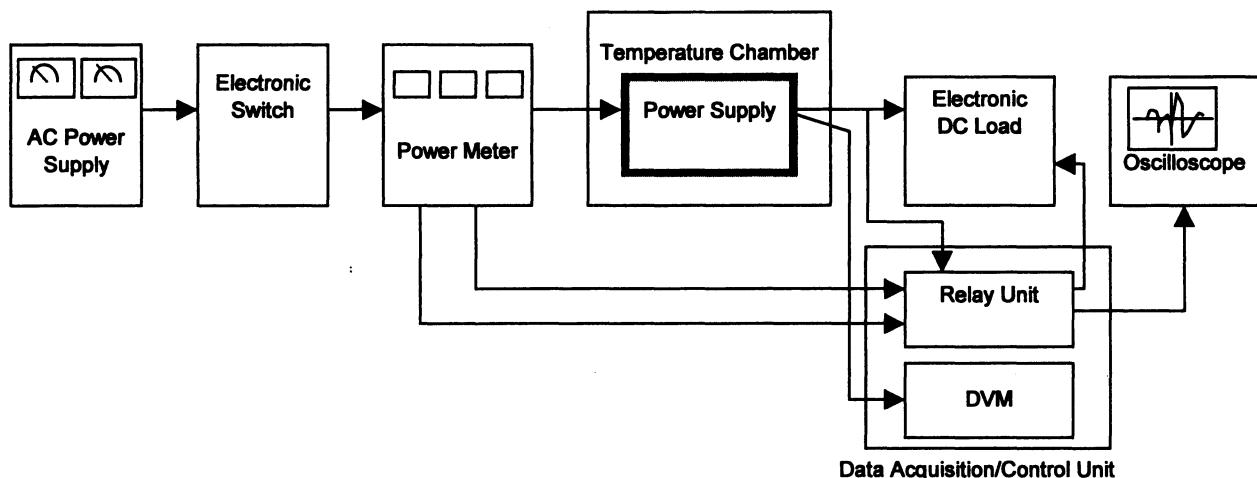
2. Values

Output Voltage [V]	Load Current [A]		
	170[V]	200[V]	264[V]
48.0	42.70	42.71	42.73
45.6	42.74	42.71	42.67
43.2	42.69	42.67	42.63
38.4	42.60	42.63	42.65
33.6	0.00	0.00	0.00
28.8	0.00	0.00	0.00
24.0	0.00	0.00	0.00
19.2	0.00	0.00	0.00
14.4	0.00	0.00	0.00
9.6	0.00	0.00	0.00
4.8	0.00	0.00	0.00
0.0	0.00	0.00	0.00

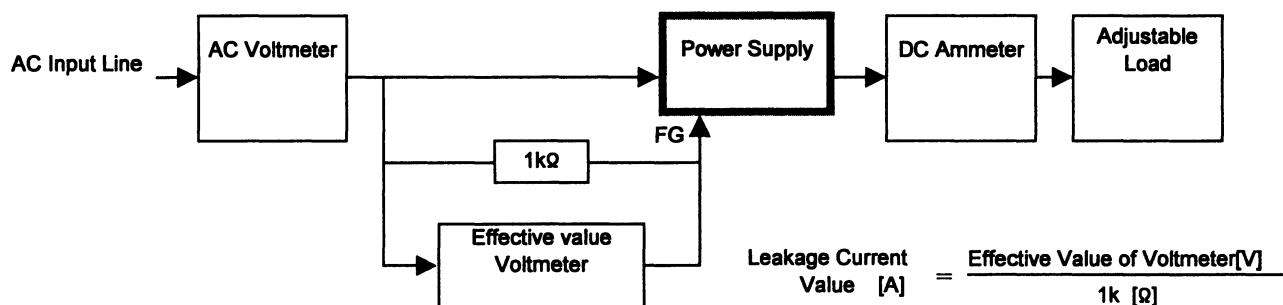


<p><b>Model</b></p> <p><b>Item</b></p> <p><b>Object</b></p>	PBA1500T-48	<p><b>Input Testing Circuitry</b></p> <p><b>AC 3-phase Figure A</b></p>																																																			
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Note: Slanted line shows the range of the rated ambient temperature.



**Figure A**



**Figure B ( DEN-AN )**

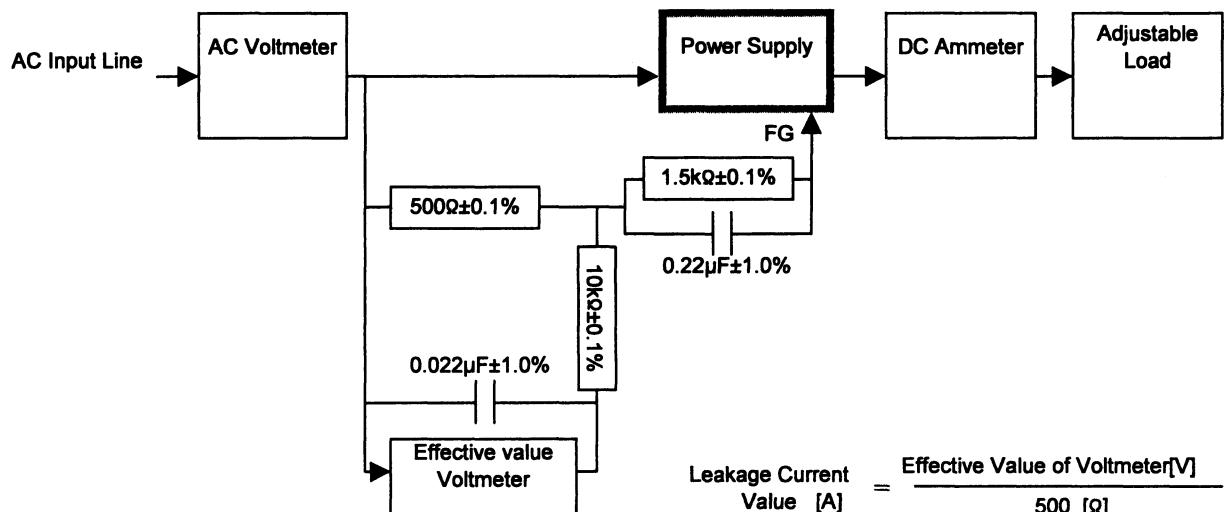


Figure B ( IEC60950 )