

TEST DATA OF KHEA480F-24

Regulated DC Power Supply
February 2, 2016

Approved by : Yukihiro Takehashi
Yukihiro Takehashi Design Manager

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COSEL CO.,LTD.

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Model		KHEA480F-24																																																				
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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>0.0</td><td>0.117</td><td>0.123</td><td>0.165</td></tr><tr><td>4.0</td><td>1.125</td><td>0.983</td><td>0.572</td></tr><tr><td>8.0</td><td>2.147</td><td>1.890</td><td>1.001</td></tr><tr><td>12.0</td><td>3.206</td><td>2.755</td><td>1.449</td></tr><tr><td>16.0</td><td>4.235</td><td>3.695</td><td>1.924</td></tr><tr><td>20.0</td><td>5.281</td><td>4.604</td><td>2.383</td></tr><tr><td>22.0</td><td>5.812</td><td>5.051</td><td>2.561</td></tr><tr><td>26.0</td><td>6.920</td><td>5.969</td><td>3.056</td></tr><tr><td>30.0</td><td>8.050</td><td>6.923</td><td>3.509</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	0.117	0.123	0.165	4.0	1.125	0.983	0.572	8.0	2.147	1.890	1.001	12.0	3.206	2.755	1.449	16.0	4.235	3.695	1.924	20.0	5.281	4.604	2.383	22.0	5.812	5.051	2.561	26.0	6.920	5.969	3.056	30.0	8.050	6.923	3.509	--	-	-	-	--	-	-	-
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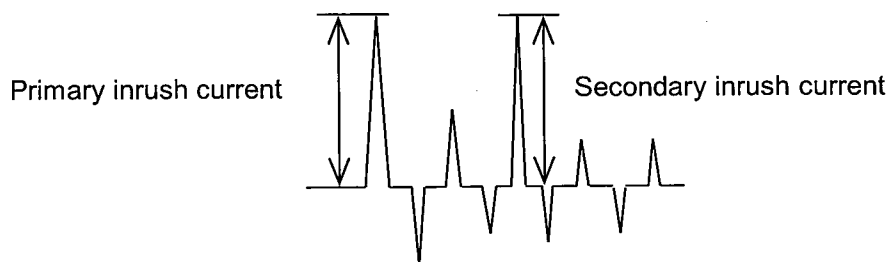
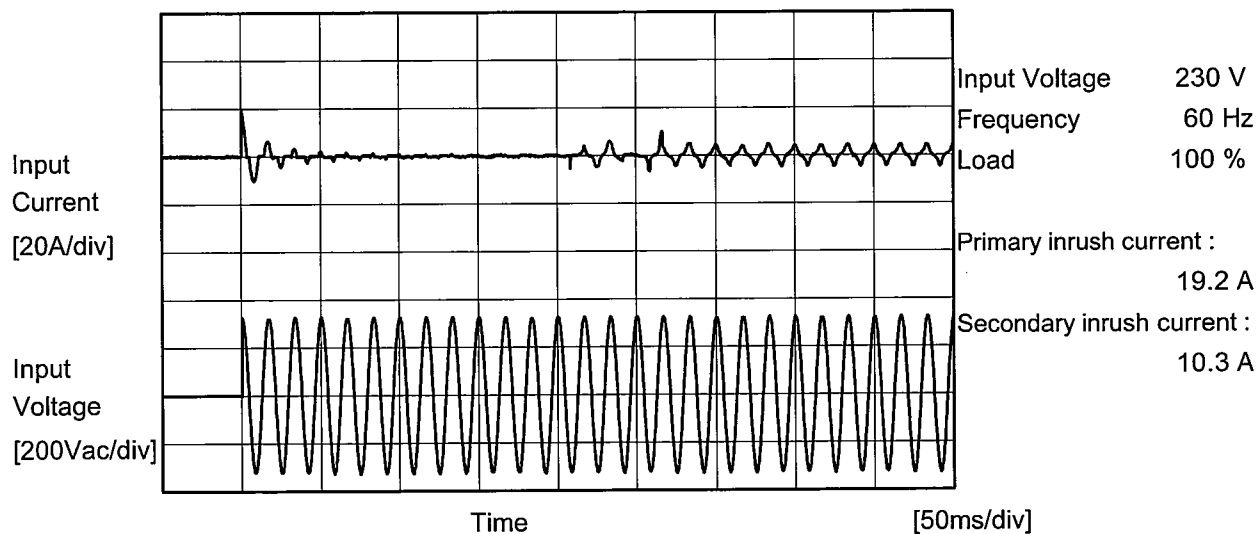
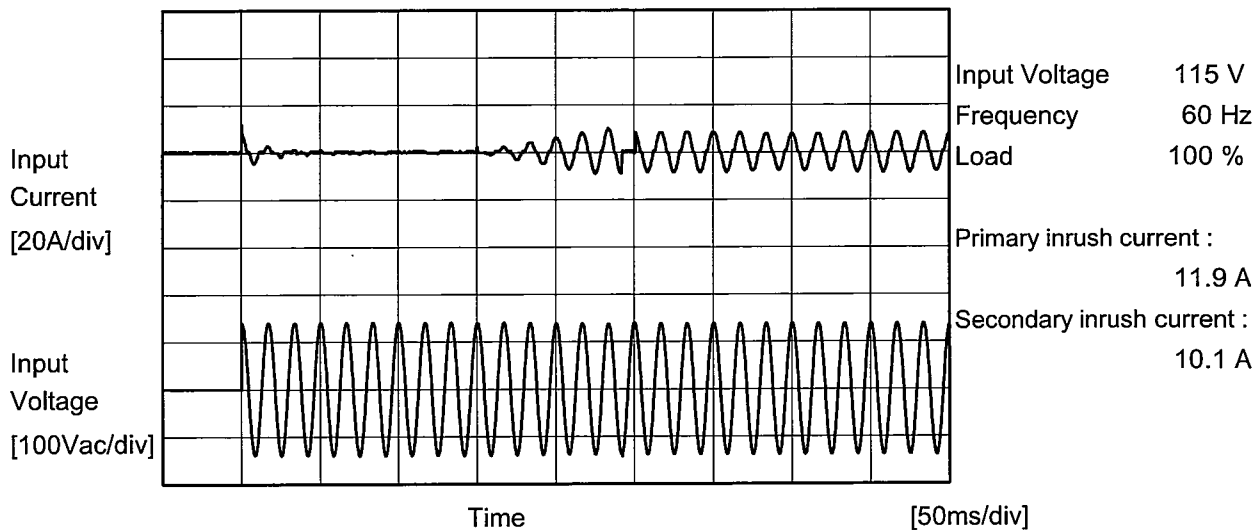
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Model	KHEA480F-24	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





		Temperature 25°C Testing Circuitry Figure B
Model	KHEA480F-24	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	115 [V]	240 [V]	
DEN-AN	Both phases	0.31	0.35	0.76	Operation
	One of phases	0.45	0.52	1.20	Stand by
IEC60950-1	Both phases	0.30	0.34	0.72	Operation
	One of phases	0.43	0.50	1.09	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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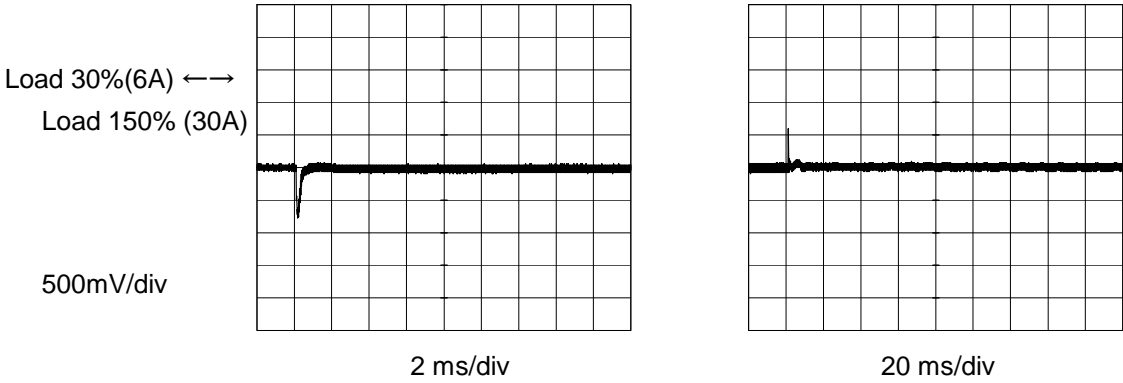
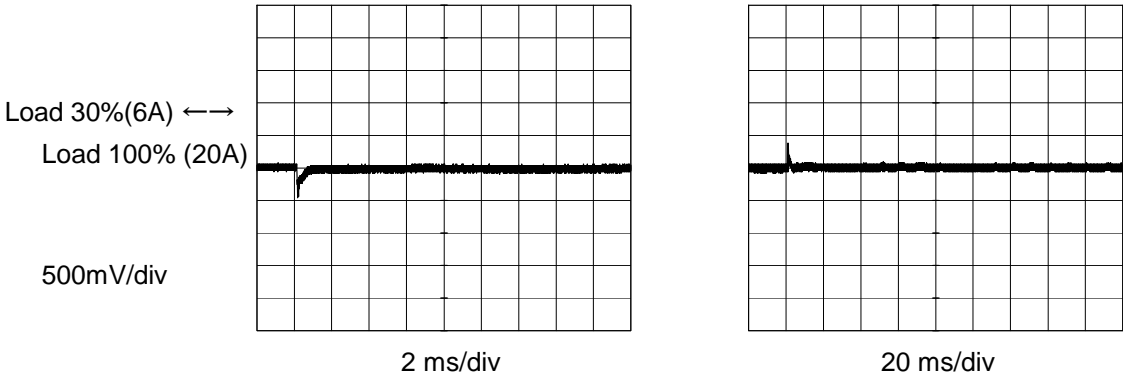
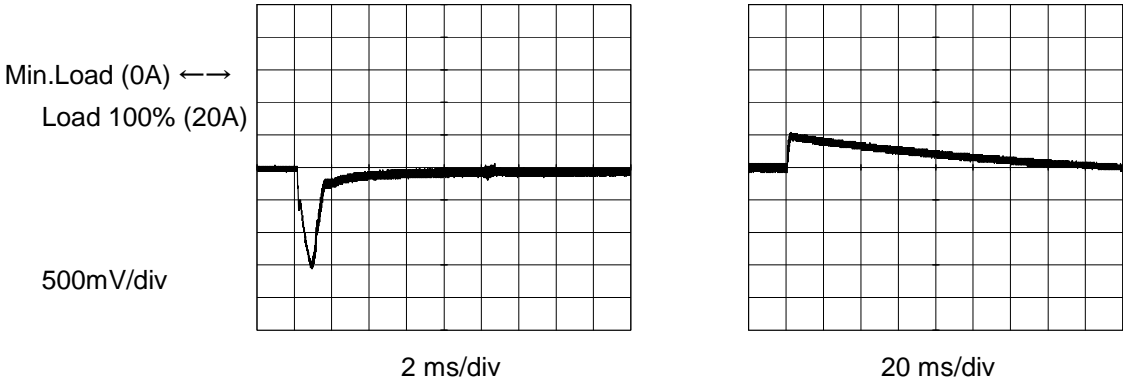


Model	KHEA480F-24																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+24V20A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><div><div><div><div></div><div>△</div></div><div>Input Volt. 100V</div></div><div><div><div></div><div>□</div></div><div>Input Volt. 115V</div></div><div><div><div></div><div>○</div></div><div>Input Volt. 230V</div></div></div><div><p>Output Voltage [V]</p><p>Load Current [A]</p></div><p>Note: Slanted line shows the range of the rated load current.</p><p>Burst operation at 30% load or less.</p></div>		<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. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>24.069</td><td>24.099</td><td>24.107</td></tr><tr><td>4.0</td><td>24.025</td><td>24.024</td><td>24.024</td></tr><tr><td>8.0</td><td>24.019</td><td>24.018</td><td>24.018</td></tr><tr><td>12.0</td><td>24.016</td><td>24.016</td><td>24.016</td></tr><tr><td>16.0</td><td>24.015</td><td>24.014</td><td>24.014</td></tr><tr><td>20.0</td><td>24.013</td><td>24.012</td><td>24.012</td></tr><tr><td>22.0</td><td>24.012</td><td>24.011</td><td>24.011</td></tr><tr><td>26.0</td><td>24.010</td><td>24.009</td><td>24.008</td></tr><tr><td>30.0</td><td>24.007</td><td>24.007</td><td>24.007</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. 115[V]	Input Volt. 230[V]	0.0	24.069	24.099	24.107	4.0	24.025	24.024	24.024	8.0	24.019	24.018	24.018	12.0	24.016	24.016	24.016	16.0	24.015	24.014	24.014	20.0	24.013	24.012	24.012	22.0	24.012	24.011	24.011	26.0	24.010	24.009	24.008	30.0	24.007	24.007	24.007	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																					
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Model	KHEA480F-24	Temperature Testing Circuitry	25° C Figure A
Item	Dynamic Load Response		
Object	+24V20A		

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



* The characteristic of AC115V is equal.

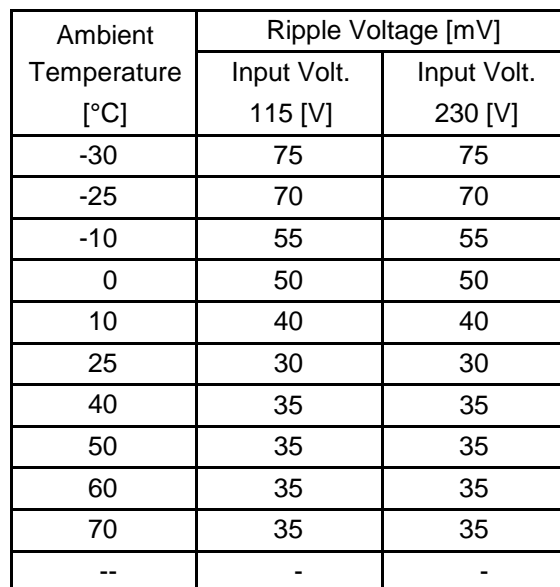


Model		KHEA480F-24	Temperature Testing Circuitry	25°C Figure C																																						
Item		Ripple Voltage (by Load Current)																																								
Object		+24V20A																																								
1.Graph			2.Values																																							
<div><div><div><div><div></div><div></div></div><div>—△—</div><div>Input Volt. 115V</div></div><div><div><div></div><div></div></div><div>-·-○-·-</div><div>Input Volt. 230V</div></div></div><div><p>Ripple Voltage [mV]</p><p>Load Current [A]</p></div></div>			<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 115 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0.0</td><td>140</td><td>140</td></tr><tr><td>4.0</td><td>45</td><td>45</td></tr><tr><td>8.0</td><td>30</td><td>30</td></tr><tr><td>12.0</td><td>30</td><td>30</td></tr><tr><td>16.0</td><td>30</td><td>30</td></tr><tr><td>20.0</td><td>30</td><td>30</td></tr><tr><td>22.0</td><td>30</td><td>30</td></tr><tr><td>26.0</td><td>40</td><td>40</td></tr><tr><td>30.0</td><td>45</td><td>45</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. 115 [V]	Input Volt. 230 [V]	0.0	140	140	4.0	45	45	8.0	30	30	12.0	30	30	16.0	30	30	20.0	30	30	22.0	30	30	26.0	40	40	30.0	45	45	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																									
	Input Volt. 115 [V]	Input Volt. 230 [V]																																								
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30.0	45	45																																								
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<p>Measured by 20 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>																																										
<div><div><div><div></div><div></div></div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div><div><p>Ripple [mVp-p]</p><p>T1</p><p>T2</p></div><p>Fig. Complex Ripple Wave Form</p></div>																																										

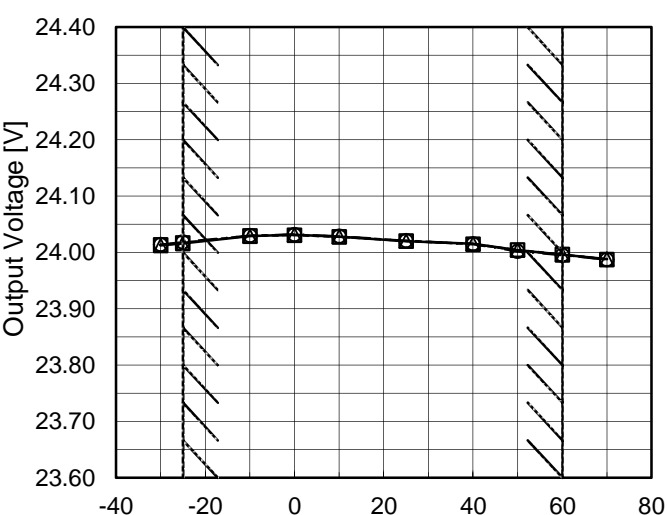
Model		KHEA480F-24	Temperature Testing Circuitry	25°C Figure C
Item		Ripple-Noise		
Object		+24V20A		
1.Graph			2.Values	
<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> 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Testing Circuitry Figure C

2.Values



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

Model		KHEA480F-24																																																				
Item		Ambient Temperature Drift																																																				
Object		+24V20A																																																				
1.Graph		2.Values																																																				
<div><div><div><div><div></div><div></div></div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div><div></div><div></div></div><div>---□---</div><div>Input Volt.</div><div>115V</div></div><div><div><div></div><div></div></div><div>---○---</div><div>Input Volt.</div><div>230V</div></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></div>		<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. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-30</td><td>24.012</td><td>24.013</td><td>24.014</td></tr><tr><td>-25</td><td>24.016</td><td>24.017</td><td>24.018</td></tr><tr><td>-10</td><td>24.029</td><td>24.030</td><td>24.030</td></tr><tr><td>0</td><td>24.031</td><td>24.031</td><td>24.032</td></tr><tr><td>10</td><td>24.028</td><td>24.028</td><td>24.029</td></tr><tr><td>25</td><td>24.020</td><td>24.020</td><td>24.021</td></tr><tr><td>40</td><td>24.016</td><td>24.015</td><td>24.015</td></tr><tr><td>50</td><td>24.004</td><td>24.004</td><td>24.002</td></tr><tr><td>60</td><td>23.996</td><td>23.996</td><td>23.995</td></tr><tr><td>70</td><td>23.988</td><td>23.987</td><td>23.987</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. 115[V]	Input Volt. 230[V]	-30	24.012	24.013	24.014	-25	24.016	24.017	24.018	-10	24.029	24.030	24.030	0	24.031	24.031	24.032	10	24.028	24.028	24.029	25	24.020	24.020	24.021	40	24.016	24.015	24.015	50	24.004	24.004	24.002	60	23.996	23.996	23.995	70	23.988	23.987	23.987	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
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-25	24.016	24.017	24.018																																																			
-10	24.029	24.030	24.030																																																			
0	24.031	24.031	24.032																																																			
10	24.028	24.028	24.029																																																			
25	24.020	24.020	24.021																																																			
40	24.016	24.015	24.015																																																			
50	24.004	24.004	24.002																																																			
60	23.996	23.996	23.995																																																			
70	23.988	23.987	23.987																																																			
--	-	-	-																																																			



		Testing Circuitry Figure A
Model	KHEA480F-24	
Item	Output Voltage Accuracy	
Object	+24V20A	

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 : -25 - 60°C

Input Voltage : 85 - 264V

Load Current : 0 - 20A

* 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

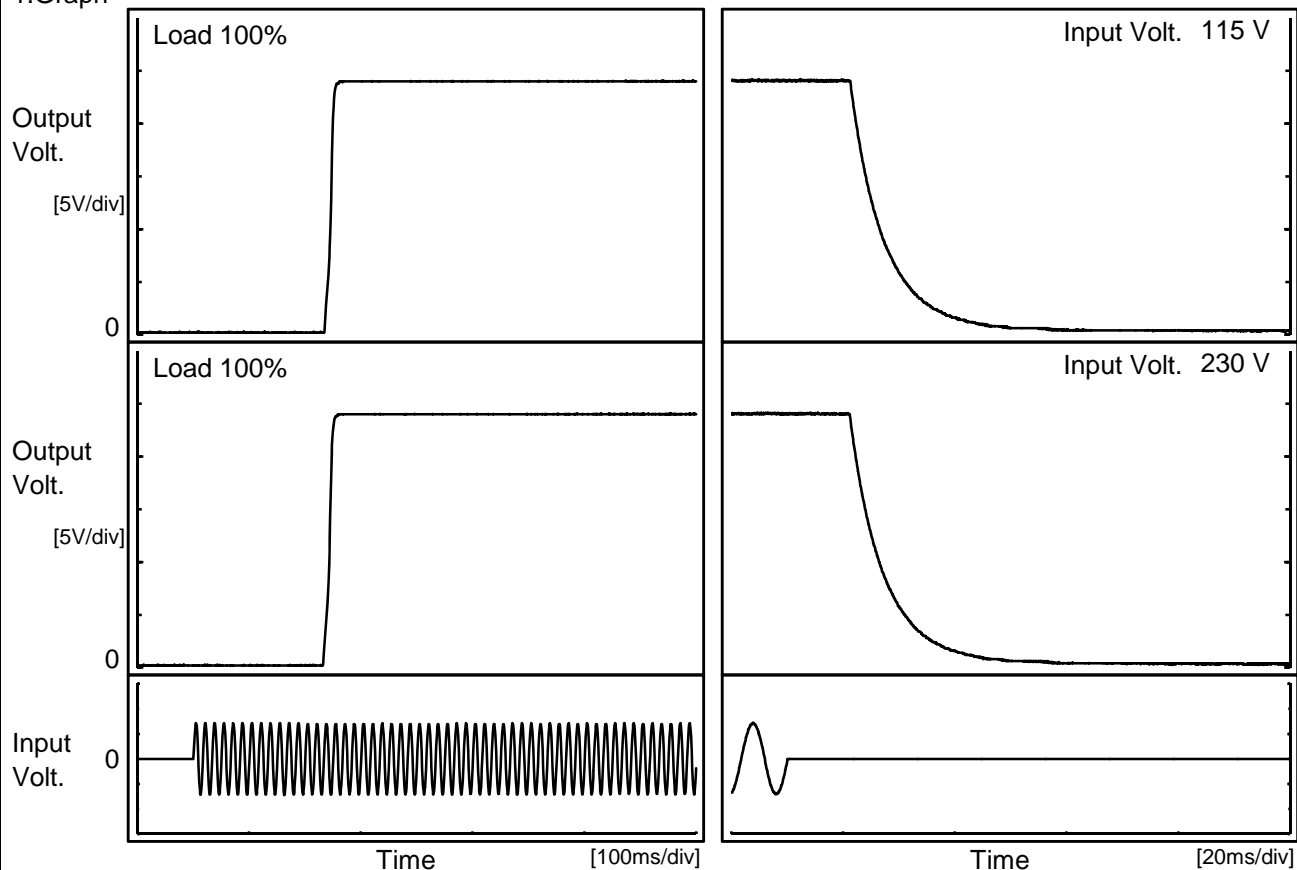
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	264	0	24.139	±78	±0.3
Minimum Voltage	-25	85	20	23.983		



Model	KHEA480F-24	Temperature25°C Testing CircuitryFigure A	
Item	Time Lapse Drift		
Object	+24V20A		
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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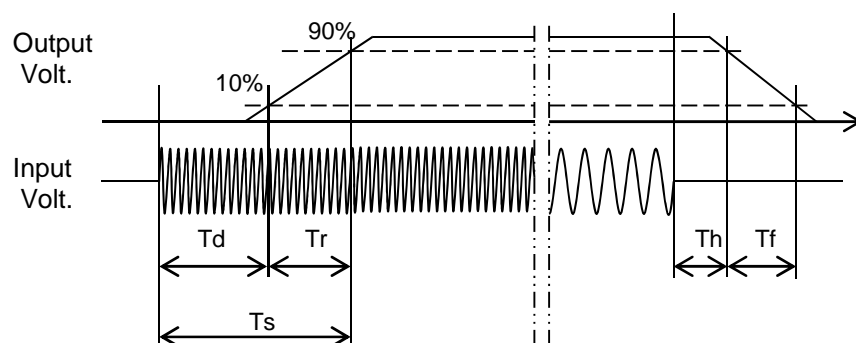
Model	KHEA480F-24	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+24V20A		

1.Graph



2.Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
115 V		238.0	13.5	251.5	23.6	28.2
230 V		235.5	14.0	249.5	23.4	28.0



Model		KHEA480F-24	Temperature		25°C																																
Item		Hold-Up Time	Testing Circuitry		Figure A																																
Object		+24V20A																																			
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></div></div></div><div>Load 50%</div><div>Load 100%</div></div> <div><div><div>1000</div><div>100</div><div>10</div><div>1</div></div><div><div>50</div><div>100</div><div>150</div><div>200</div><div>250</div><div>300</div></div><div><div>Hold-Up Time [ms]</div><div>Input Voltage [V]</div></div></div> <div><div><div>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</div><div>Note: Slanted line shows the range of the rated input voltage.</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>83</td><td>45</td><td>23</td></tr><tr><td>85</td><td>45</td><td>23</td></tr><tr><td>100</td><td>45</td><td>23</td></tr><tr><td>115</td><td>45</td><td>23</td></tr><tr><td>200</td><td>45</td><td>23</td></tr><tr><td>230</td><td>45</td><td>22</td></tr><tr><td>264</td><td>50</td><td>25</td></tr><tr><td>280</td><td>50</td><td>26</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>			Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	83	45	23	85	45	23	100	45	23	115	45	23	200	45	23	230	45	22	264	50	25	280	50	26	--	-	-
Input Voltage [V]	Hold-Up Time [ms]																																				
	Load 50%	Load 100%																																			
83	45	23																																			
85	45	23																																			
100	45	23																																			
115	45	23																																			
200	45	23																																			
230	45	22																																			
264	50	25																																			
280	50	26																																			
--	-	-																																			

Model	KHEA480F-24																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
Object	+24V20A	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>115V</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">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>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>4.0</td><td>105</td><td>107</td><td>108</td></tr><tr><td>8.0</td><td>54</td><td>55</td><td>55</td></tr><tr><td>12.0</td><td>37</td><td>37</td><td>36</td></tr><tr><td>16.0</td><td>27</td><td>27</td><td>27</td></tr><tr><td>20.0</td><td>21</td><td>22</td><td>21</td></tr><tr><td>22.0</td><td>20</td><td>19</td><td>20</td></tr><tr><td>26.0</td><td>15</td><td>15</td><td>16</td></tr><tr><td>30.0</td><td>14</td><td>14</td><td>14</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]	0.0	-	-	-	4.0	105	107	108	8.0	54	55	55	12.0	37	37	36	16.0	27	27	27	20.0	21	22	21	22.0	20	19	20	26.0	15	15	16	30.0	14	14	14	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]																																																			
0.0	-	-	-																																																			
4.0	105	107	108																																																			
8.0	54	55	55																																																			
12.0	37	37	36																																																			
16.0	27	27	27																																																			
20.0	21	22	21																																																			
22.0	20	19	20																																																			
26.0	15	15	16																																																			
30.0	14	14	14																																																			
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--	-	-	-																																																			

Model		KHEA480F-24	Testing Circuitry Figure A																																							
Item		Minimum Input Voltage for Regulated Output Voltage																																								
Object		+24V20A																																								
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></div></div></div><div>Load 50%</div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div>Load 100%</div> <table><thead><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>-30</td><td>71</td><td>71</td></tr><tr><td>-25</td><td>71</td><td>71</td></tr><tr><td>-10</td><td>71</td><td>71</td></tr><tr><td>0</td><td>71</td><td>71</td></tr><tr><td>10</td><td>71</td><td>71</td></tr><tr><td>25</td><td>71</td><td>71</td></tr><tr><td>40</td><td>71</td><td>71</td></tr><tr><td>50</td><td>71</td><td>71</td></tr><tr><td>60</td><td>71</td><td>71</td></tr><tr><td>70</td><td>71</td><td>72</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>			Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-30	71	71	-25	71	71	-10	71	71	0	71	71	10	71	71	25	71	71	40	71	71	50	71	71	60	71	71	70	71	72	--	-	-		
Ambient Temperature [°C]	Input Voltage [V]																																									
	Load 50%	Load 100%																																								
-30	71	71																																								
-25	71	71																																								
-10	71	71																																								
0	71	71																																								
10	71	71																																								
25	71	71																																								
40	71	71																																								
50	71	71																																								
60	71	71																																								
70	71	72																																								
--	-	-																																								

Model	KHEA480F-24																																											
Item	Overcurrent Protection	Temperature	25°C																																									
Object	+24V20A	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 11.2V 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>22.8</td><td>34.78</td><td>34.80</td></tr><tr><td>21.6</td><td>34.92</td><td>27.61</td></tr><tr><td>19.2</td><td>35.10</td><td>35.11</td></tr><tr><td>16.8</td><td>35.59</td><td>35.53</td></tr><tr><td>14.4</td><td>36.16</td><td>36.11</td></tr><tr><td>12.0</td><td>36.72</td><td>36.66</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]	22.8	34.78	34.80	21.6	34.92	27.61	19.2	35.10	35.11	16.8	35.59	35.53	14.4	36.16	36.11	12.0	36.72	36.66	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Output Voltage [V]	Load Current [A]																																											
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Model	KHEA480F-24																																								
Item	Overvoltage Protection	Testing Circuitry Figure A																																							
Object	+24V20A																																								
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>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</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="2">Operating Point [V]</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>-30</td><td>33.18</td><td>33.18</td></tr><tr><td>-25</td><td>33.18</td><td>33.18</td></tr><tr><td>-10</td><td>33.18</td><td>33.18</td></tr><tr><td>0</td><td>33.18</td><td>33.18</td></tr><tr><td>10</td><td>33.18</td><td>33.18</td></tr><tr><td>25</td><td>33.18</td><td>33.18</td></tr><tr><td>40</td><td>33.18</td><td>33.18</td></tr><tr><td>50</td><td>33.18</td><td>33.18</td></tr><tr><td>60</td><td>33.18</td><td>33.18</td></tr><tr><td>70</td><td>33.18</td><td>33.18</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Operating Point [V]		Input Volt. 115[V]	Input Volt. 230[V]	-30	33.18	33.18	-25	33.18	33.18	-10	33.18	33.18	0	33.18	33.18	10	33.18	33.18	25	33.18	33.18	40	33.18	33.18	50	33.18	33.18	60	33.18	33.18	70	33.18	33.18	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																								
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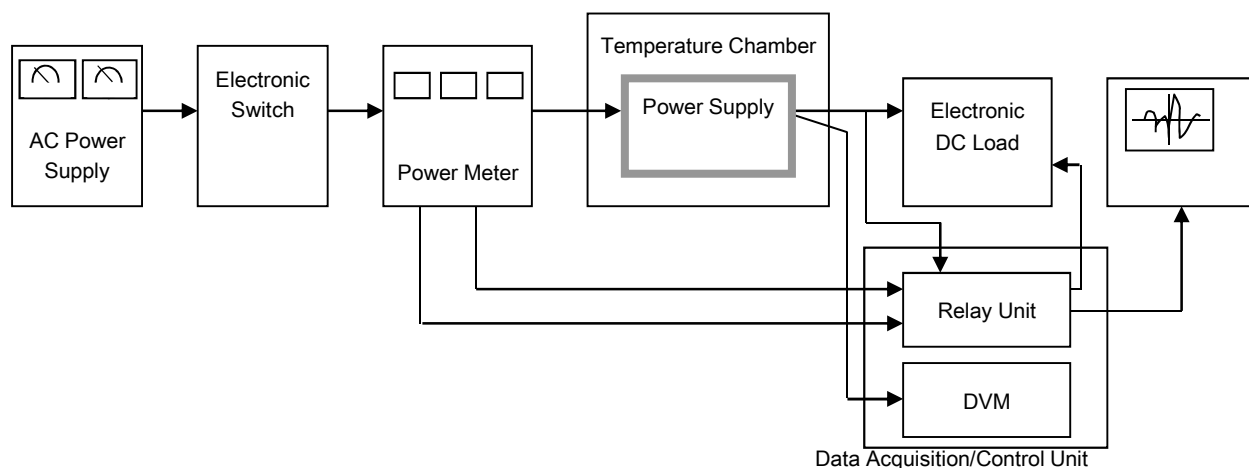


Figure A

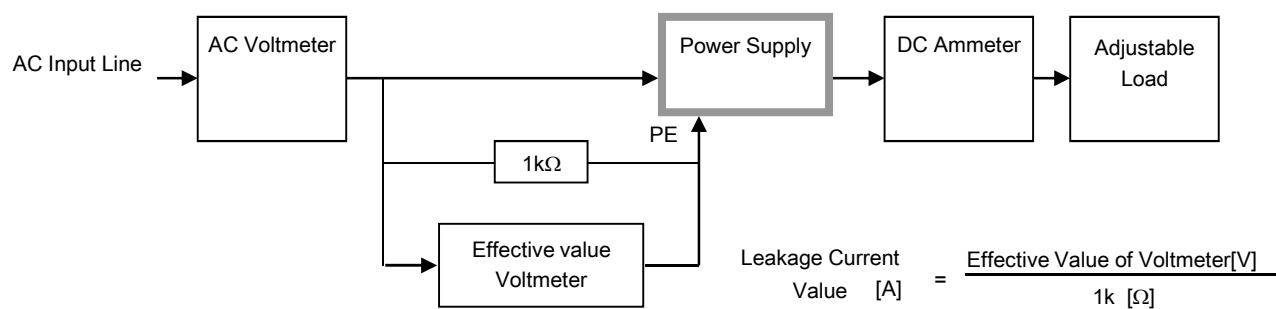


Figure B (DEN-AN)

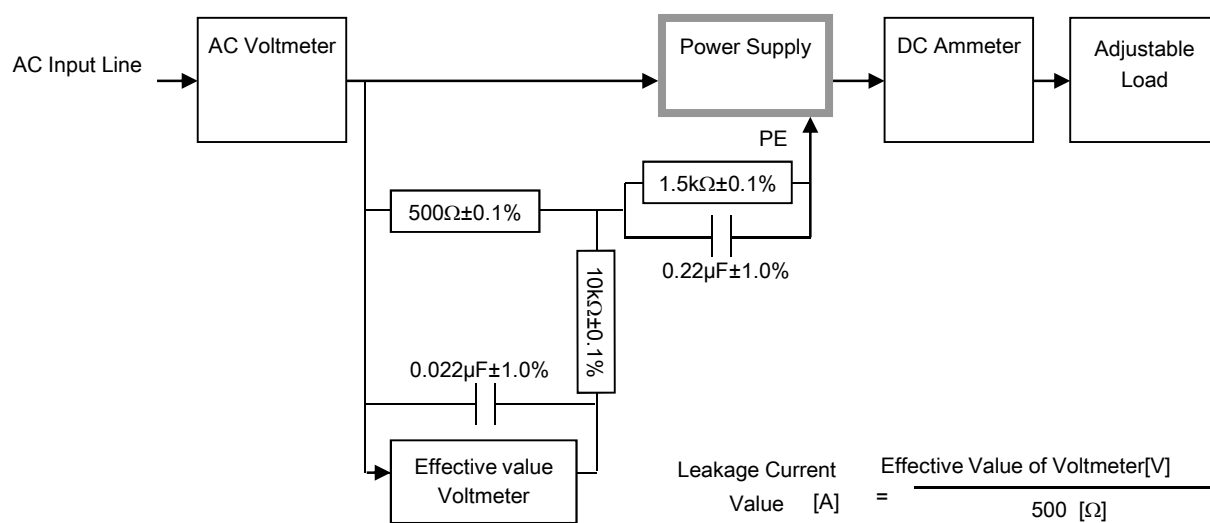


Figure B (IEC60950-1)

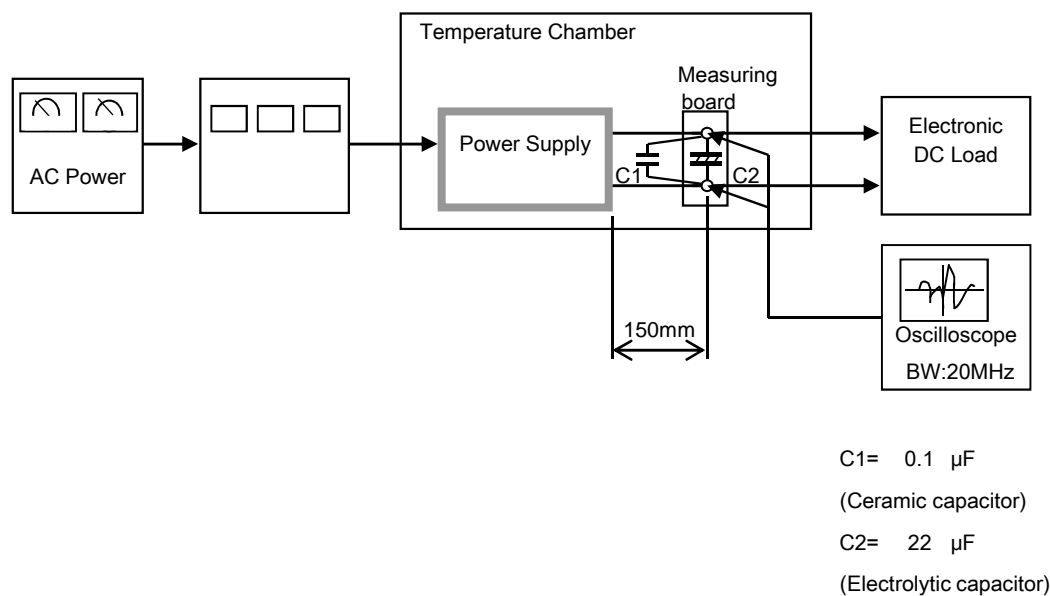


Figure C