

# TEST DATA OF TUHS25F24

Regulated DC Power Supply  
February 28, 2014

Approved by : Nobuyuki Shiraishi  
Nobuyuki Shiraishi Design Manager

Prepared by : Sakae Minamide  
Sakae Minamide Design Engineer

**COSEL CO.,LTD.**

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<p>Model TUHS25F24</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																																																			
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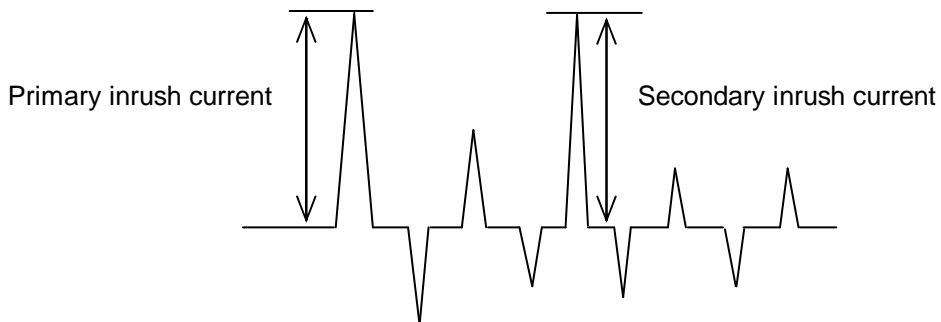
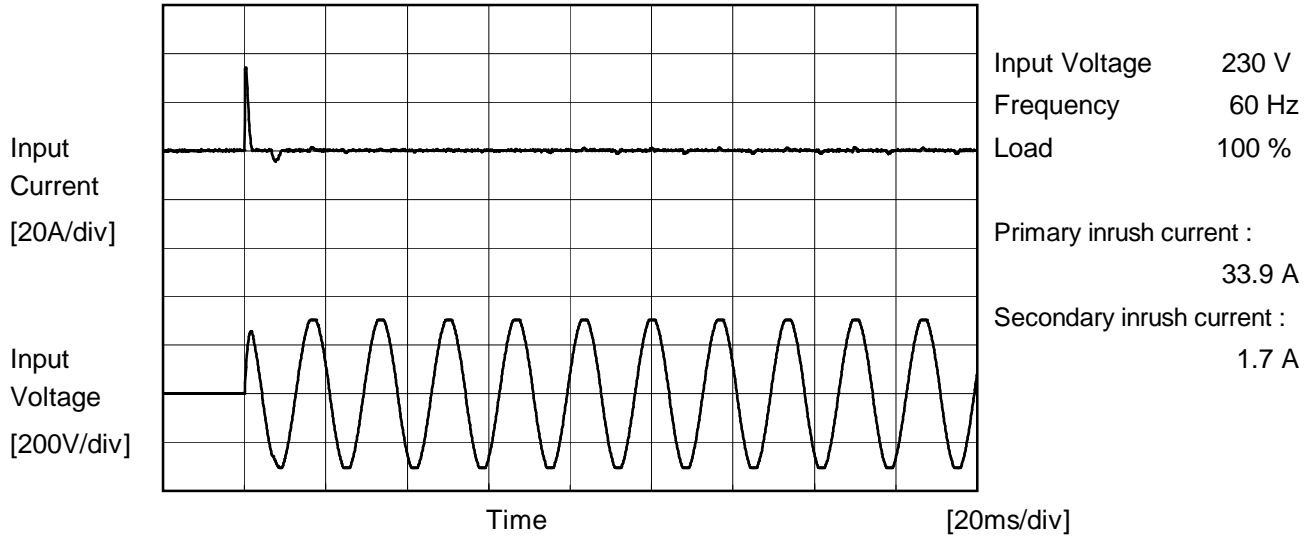
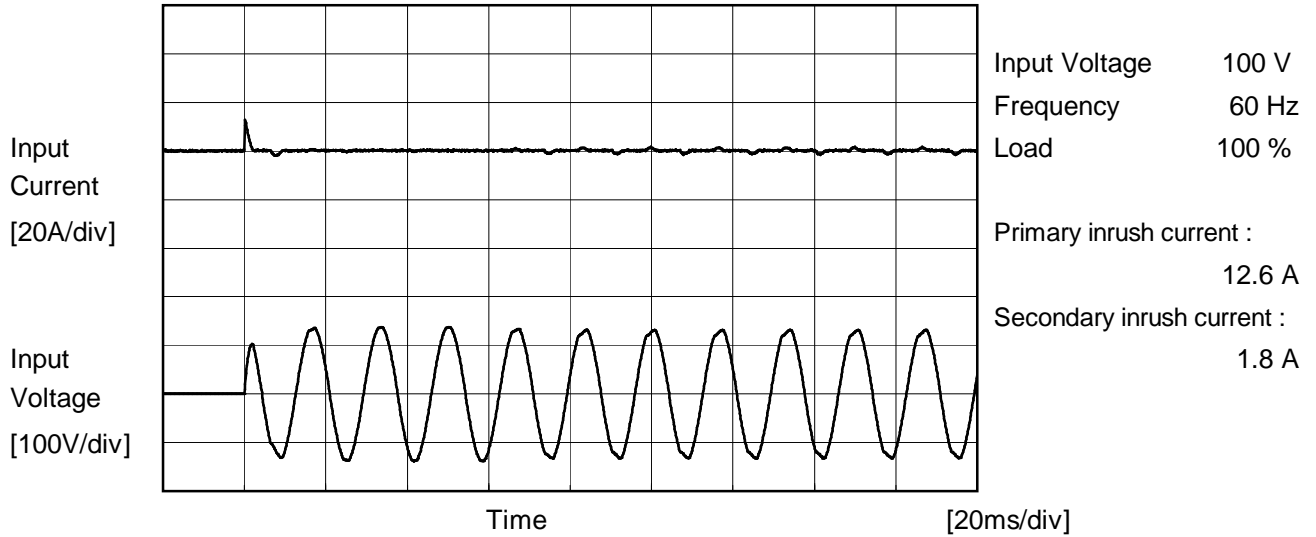


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<b>COSEL</b>			
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Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





<b>COSEL</b>		
Model	TUHS25F24	Temperature 25°C Testing Circuitry Figure B
Item	Leakage Current	
Object	_____	

1.Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	230 [V]	
DEN-AN	Both phases	0.008	0.009	0.010	Operation
	One of phases	0.008	0.017	0.020	Stand by
IEC60950-1	Both phases	0.006	0.011	0.014	Operation
	One of phases	0.008	0.016	0.020	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.

There is no FG in TUHS series and it is a reinforced insulation power supply of the class 2.



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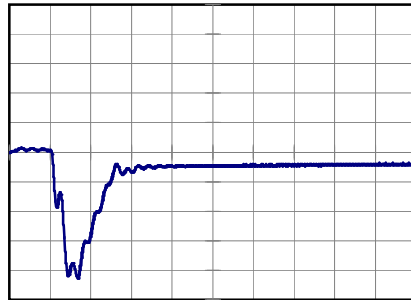
Model		TUHS25F24	
Item	Dynamic Load Response	Temperature	25°C
Object	+24V 1.1A	Testing Circuitry	Figure A

Input Volt. 230V  
Cycle 500ms

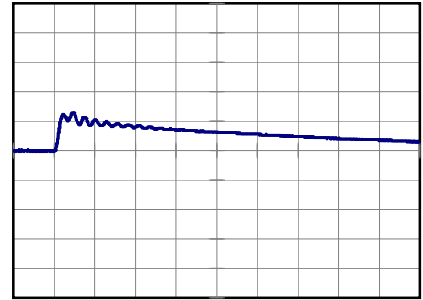
Load Current  1.1A / 100us

Min.Load (0A) ←→  
Load 100%(1.1A)

1 V/div



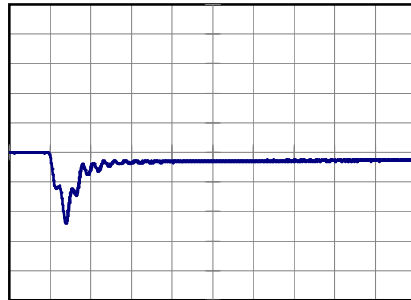
200 us/div



200 us/div

Load 20% (0.22A) ←→  
Load 100%(1.1A)

1 V/div



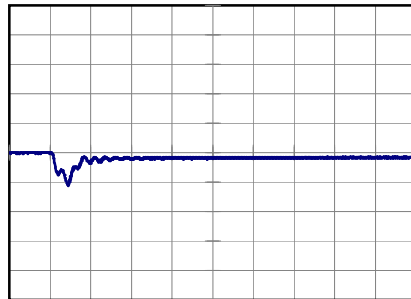
200 us/div



200 us/div

Load 50% (0.55A) ←→  
Load 100% (1.1A)

1 V/div



200 us/div



200 us/div



<p>Model TUHS25F24</p>		<p>Temperature 25°C Testing Circuitry Figure C</p>																																						
Item	Ripple Voltage (by Load Current)																																							
Object	+24V1.1A																																							
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<p>Model TUHS25F24</p>		<p>Temperature 25°C Testing Circuitry Figure C</p>																																						
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<b>COSEL</b>																																								
Model	TUHS25F24																																							
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Model	TUHS25F24																																																				
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																																					



<b>COSEL</b>		
Model	TUHS25F24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V1.1A	

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 : -40 - 50°C

Input Voltage : 85 - 264V

Load Current : 0 - 1.1A

\* 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	-20	264	0	24.116	±63	±0.3
Minimum Voltage	50	264	1.1	23.990		

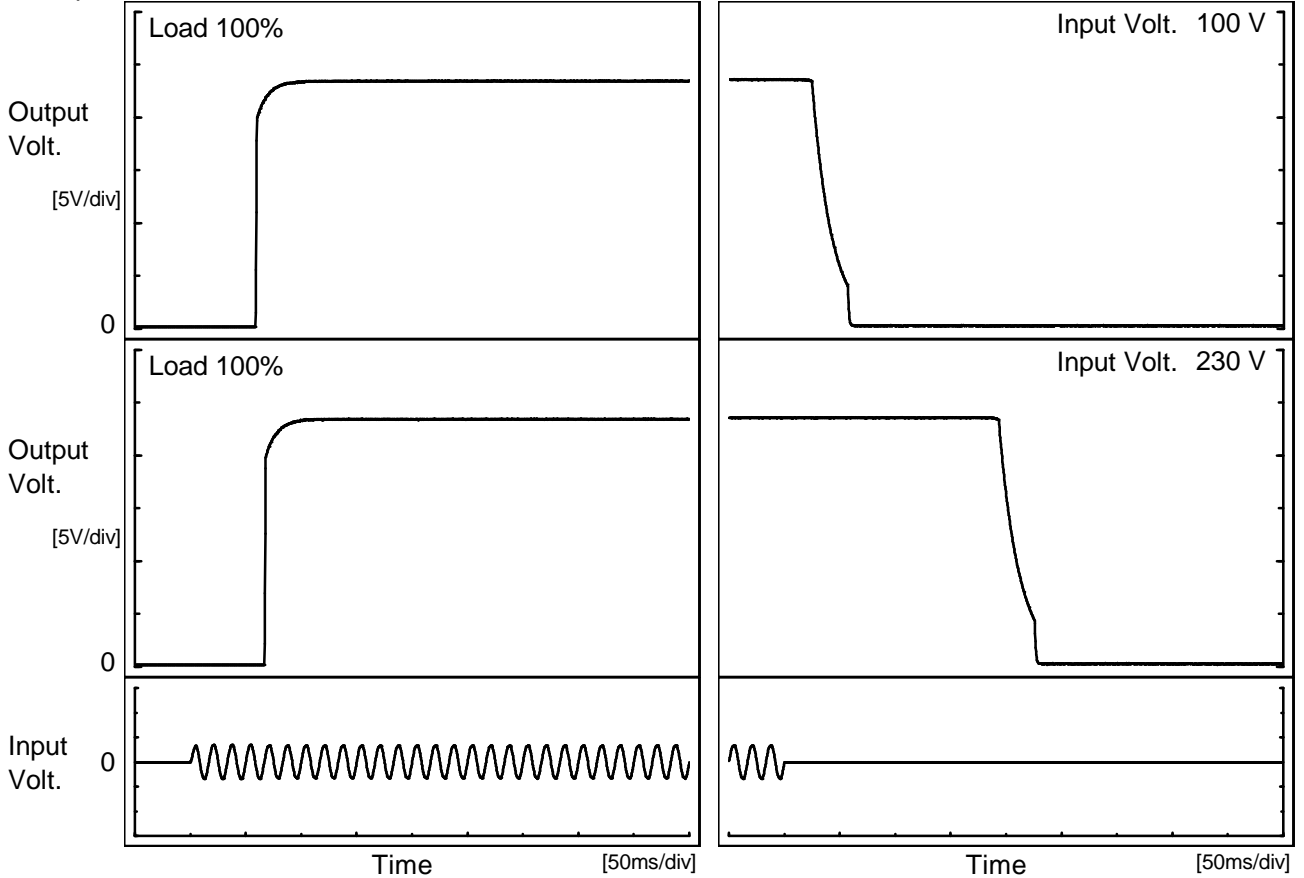


<b>COSEL</b>																								
Model	TUHS25F24																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+24V1.1A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 100V Load 100%</p>		<p>2.Values</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>24.056</td></tr> <tr><td>0.5</td><td>24.050</td></tr> <tr><td>1.0</td><td>24.050</td></tr> <tr><td>2.0</td><td>24.050</td></tr> <tr><td>3.0</td><td>24.050</td></tr> <tr><td>4.0</td><td>24.050</td></tr> <tr><td>5.0</td><td>24.050</td></tr> <tr><td>6.0</td><td>24.050</td></tr> <tr><td>7.0</td><td>24.050</td></tr> <tr><td>8.0</td><td>24.050</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	24.056	0.5	24.050	1.0	24.050	2.0	24.050	3.0	24.050	4.0	24.050	5.0	24.050	6.0	24.050	7.0	24.050	8.0	24.050
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<p>* The characteristic of AC230V is equal.</p>																								



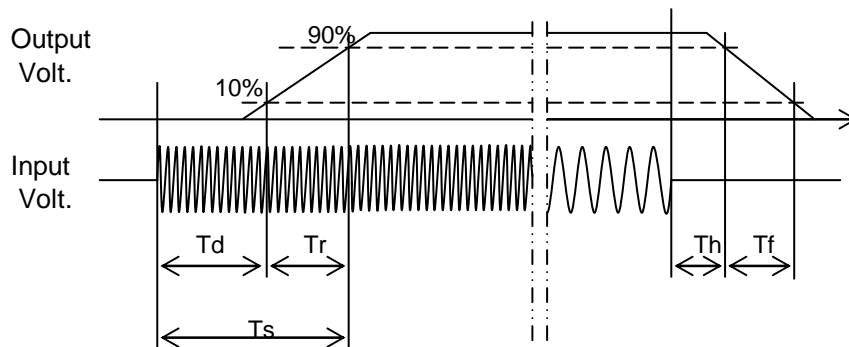
Model		TUHS25F24	Temperature	25°C
Item		Rise and Fall Time	Testing Circuitry	Figure A
Object		+24V1.1A		

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		59.3	8.3	67.6	23.5	31.5
230 V		67.3	8.3	75.6	191.5	31.8





<b>COSEL</b>																																			
Model	TUHS25F24	Temperature	25°C																																
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Object	+24V1.1A																																		
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Model	TUHS25F24	Temperature	25°C																																																			
Item	Instantaneous Interruption Compensation	Testing Circuitry	Figure A																																																			
Object	+24V1.1A																																																					
<p>1.Graph</p> <p>                     —△— Input Volt. 100V                      - - - □ - - Input Volt. 200V                      ···○··· Input Volt. 230V                 </p> <p>Instantaneous Compensation Time [ms]</p> <p>Load Current [A]</p>		<p>2.Values</p> <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. 200[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.20</td><td>81</td><td>383</td><td>515</td></tr> <tr><td>0.40</td><td>69</td><td>329</td><td>443</td></tr> <tr><td>0.60</td><td>56</td><td>275</td><td>371</td></tr> <tr><td>0.80</td><td>43</td><td>221</td><td>299</td></tr> <tr><td>1.00</td><td>30</td><td>167</td><td>227</td></tr> <tr><td>1.10</td><td>24</td><td>140</td><td>192</td></tr> <tr><td>1.21</td><td>17</td><td>110</td><td>152</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>		Load Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	-	-	-	0.20	81	383	515	0.40	69	329	443	0.60	56	275	371	0.80	43	221	299	1.00	30	167	227	1.10	24	140	192	1.21	17	110	152	--	-	-	-	--	-	-	-	--	-	-	-
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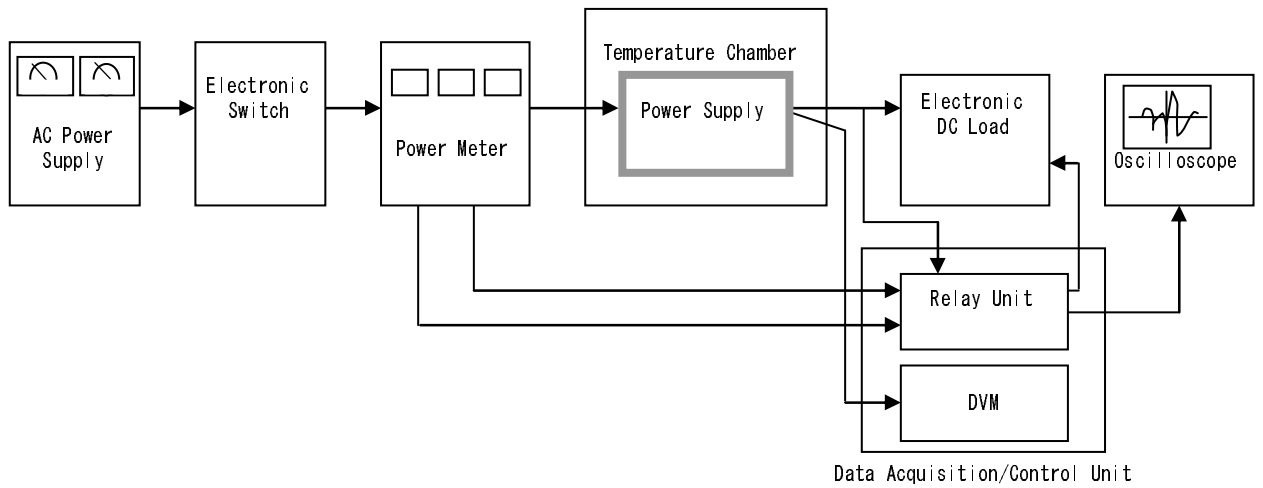


Figure A

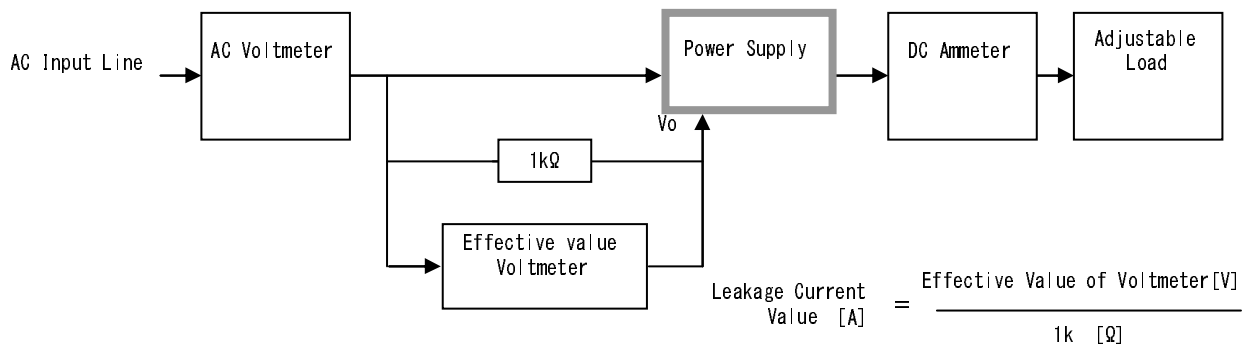


Figure B ( DEN-AN )

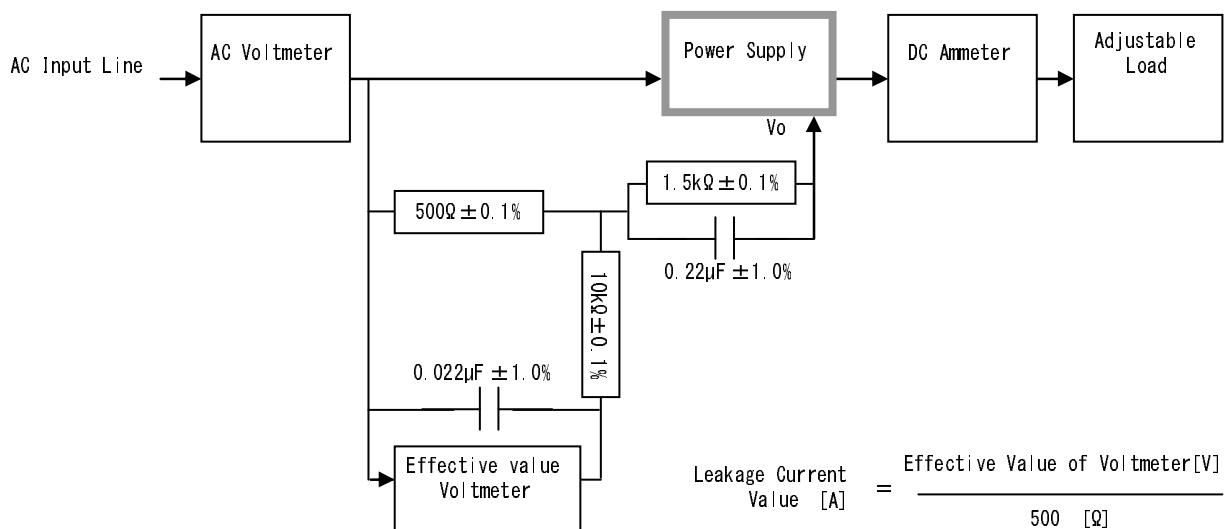


Figure B ( IEC60950-1 )

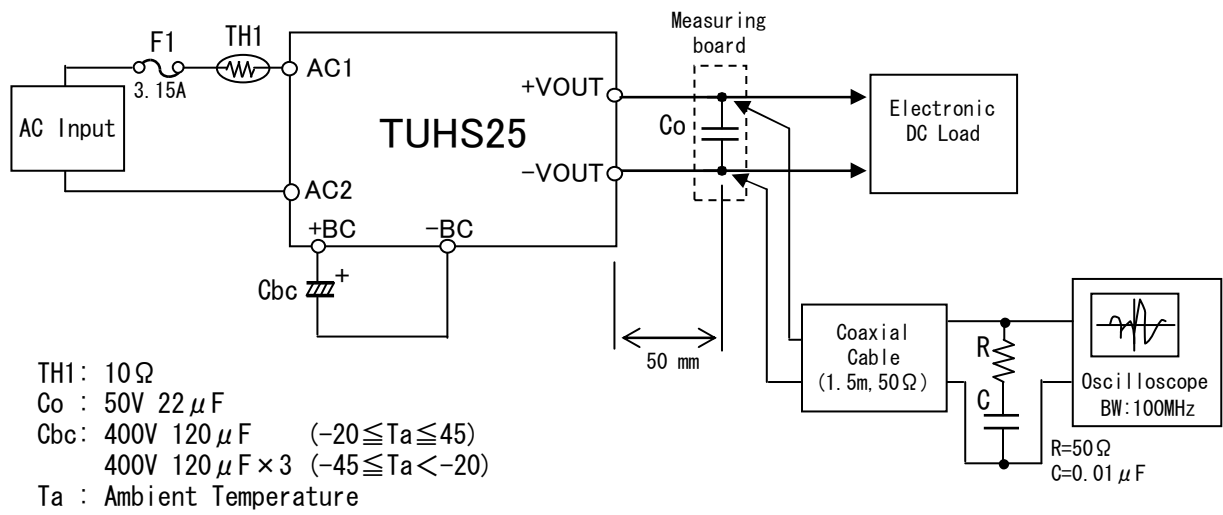


Figure C