

TEST DATA OF TUHS10F05

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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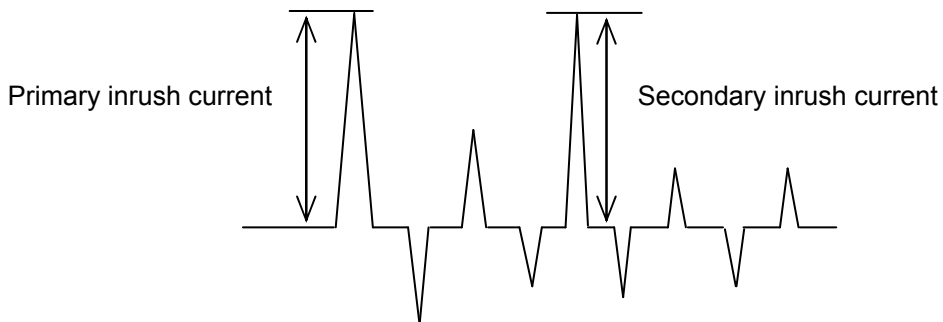
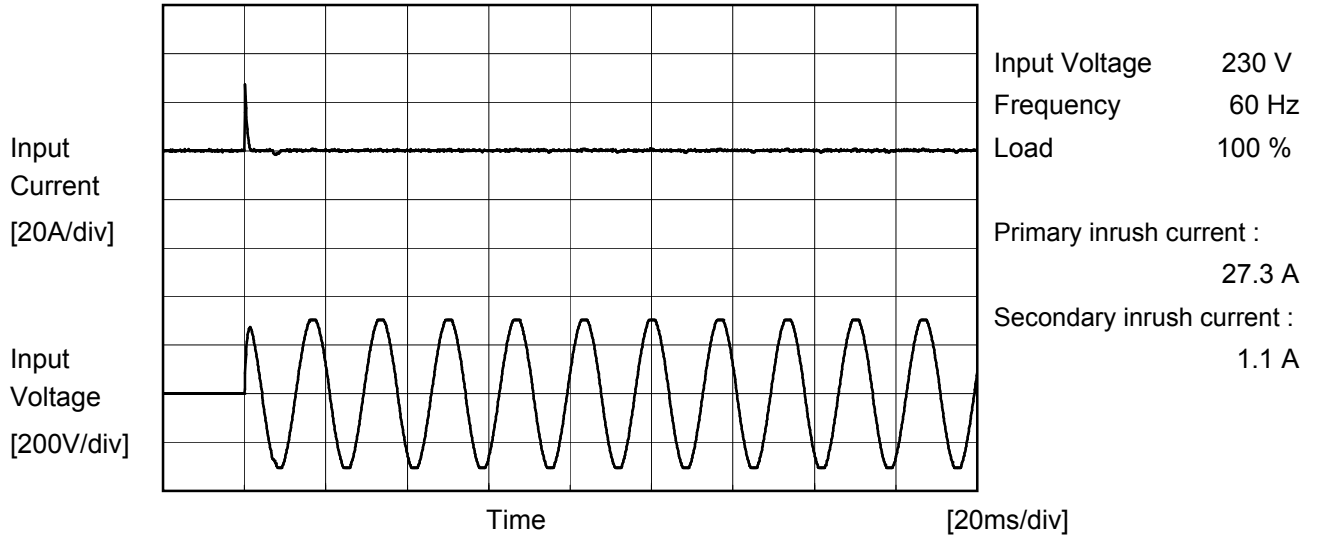
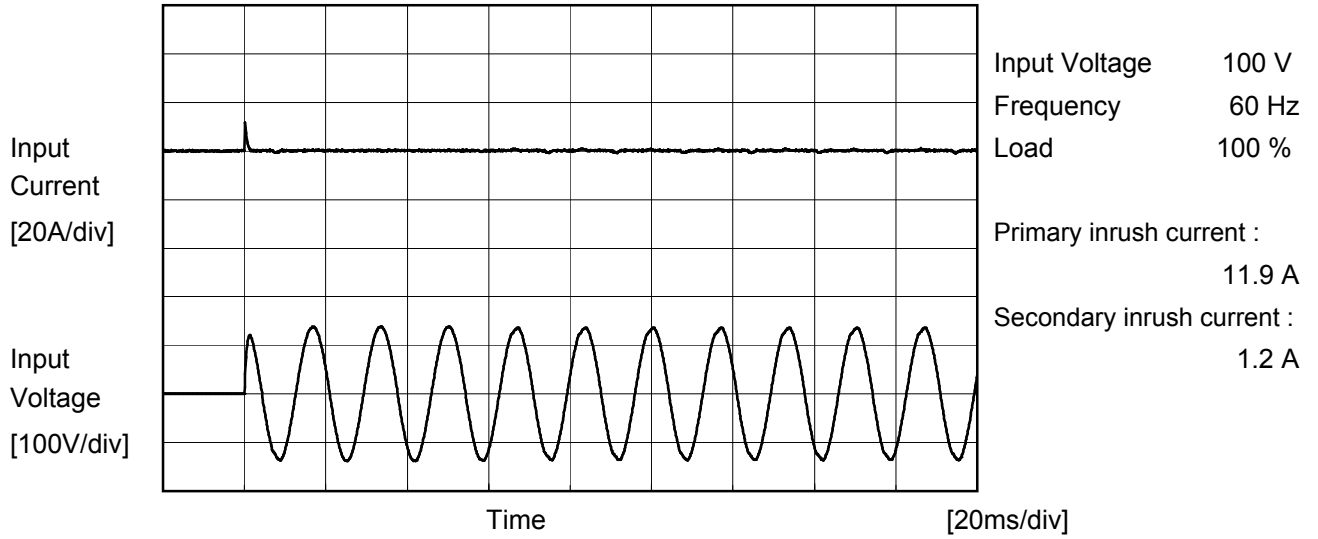
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COSEL			
Model	TUHS10F05	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





COSEL		
Model	TUHS10F05	Temperature 25°C Testing Circuitry Figure B
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	230 [V]	
DEN-AN	Both phases	0.005	0.008	0.008	Operation
	One of phases	0.004	0.010	0.011	Stand by
IEC60950-1	Both phases	0.003	0.006	0.007	Operation
	One of phases	0.004	0.009	0.010	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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Item	Line Regulation	Testing Circuitry	Figure A																																
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<p>1.Graph</p> <p> —△— Input Volt. 100V - - - □ - - Input Volt. 200V - · - ○ - · - Input Volt. 230V </p> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		<p>2.Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.00</td><td>5.065</td><td>5.066</td><td>5.065</td></tr> <tr><td>0.40</td><td>5.065</td><td>5.066</td><td>5.065</td></tr> <tr><td>0.80</td><td>5.065</td><td>5.066</td><td>5.065</td></tr> <tr><td>1.20</td><td>5.065</td><td>5.065</td><td>5.065</td></tr> <tr><td>1.60</td><td>5.064</td><td>5.065</td><td>5.064</td></tr> <tr><td>2.00</td><td>5.064</td><td>5.064</td><td>5.064</td></tr> <tr><td>2.20</td><td>5.063</td><td>5.064</td><td>5.063</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>		Load Current [A]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	5.065	5.066	5.065	0.40	5.065	5.066	5.065	0.80	5.065	5.066	5.065	1.20	5.065	5.065	5.065	1.60	5.064	5.065	5.064	2.00	5.064	5.064	5.064	2.20	5.063	5.064	5.063	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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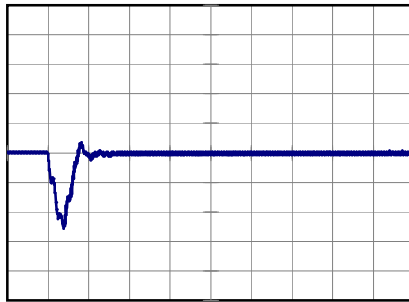
Model		TUHS10F05	
Item		Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object		+5V 2A	

Input Volt. 230V
Cycle 500ms

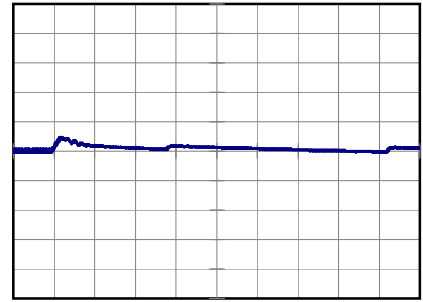
Load Current  2A / 100us

Min.Load (0A) ←→
Load 100%(2A)

500 mV/div



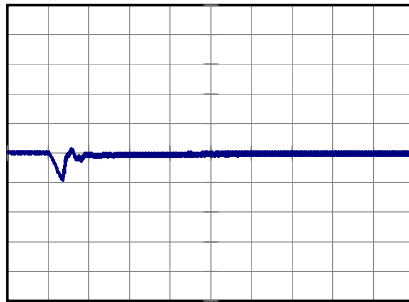
200 us/div



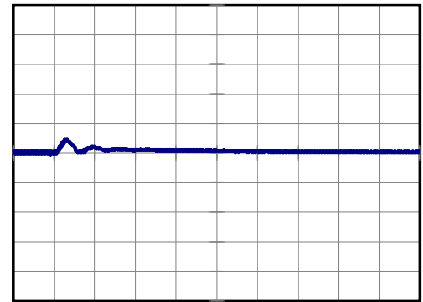
200 us/div

Load 20% (0.4A) ←→
Load 100%(2A)

500 mV/div



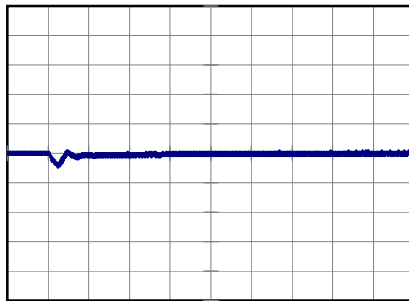
200 us/div



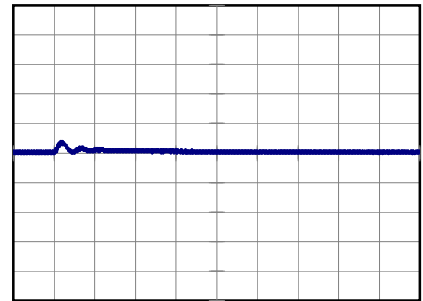
200 us/div

Load 50% (1A) ←→
Load 100% (2A)

500 mV/div



200 us/div



200 us/div



<p>Model TUHS10F05</p>		<p>Temperature 25°C Testing Circuitry Figure C</p>																																						
Item	Ripple Voltage (by Load Current)																																							
Object	+5V2A																																							
<p>1. Graph</p> <p> —△— Input Volt. 100V - -○- - Input Volt. 230V </p>		<p>2. Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.00</td><td>40</td><td>100</td></tr> <tr><td>0.40</td><td>10</td><td>10</td></tr> <tr><td>0.80</td><td>10</td><td>10</td></tr> <tr><td>1.20</td><td>10</td><td>15</td></tr> <tr><td>1.60</td><td>15</td><td>15</td></tr> <tr><td>2.00</td><td>25</td><td>15</td></tr> <tr><td>2.20</td><td>35</td><td>15</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>	Load Current [A]	Ripple Voltage [mV]		Input Volt. 100 [V]	Input Volt. 230 [V]	0.00	40	100	0.40	10	10	0.80	10	10	1.20	10	15	1.60	15	15	2.00	25	15	2.20	35	15	--	-	-	--	-	-	--	-	-	--	-	-
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Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure C																																							
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COSEL																																																					
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Object	+5V2A																																																				
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																																					



COSEL		
Model	TUHS10F05	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V2A	

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 - 55°C

Input Voltage : 85 - 264V

Load Current : 0 - 2A

* 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	0	264	0	5.076	±11	±0.2
Minimum Voltage	55	264	2	5.054		

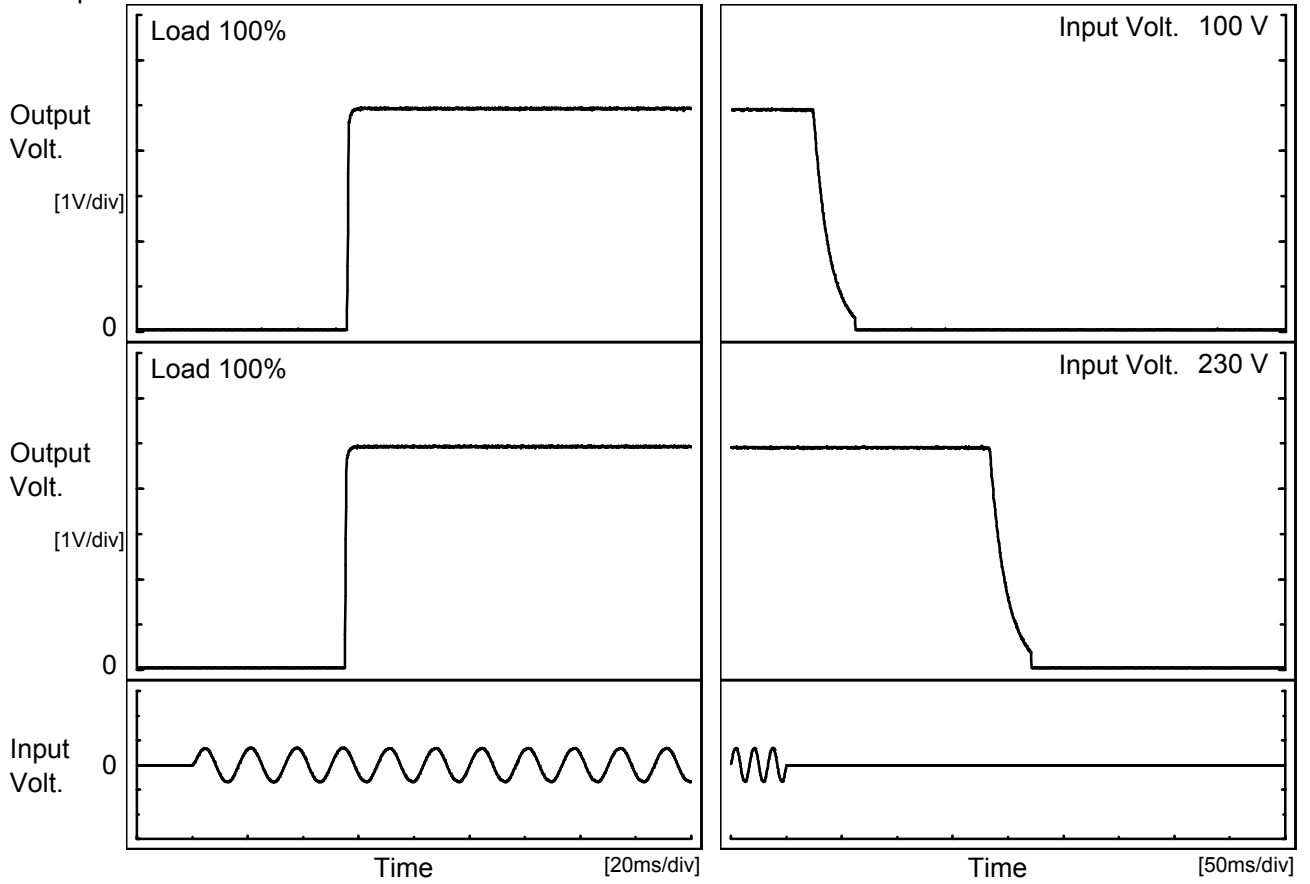


COSEL																								
Model	TUHS10F05																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+5V2A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 100V Load 100%</p>		<p>2.Values</p> <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>5.064</td></tr> <tr><td>0.5</td><td>5.059</td></tr> <tr><td>1.0</td><td>5.059</td></tr> <tr><td>2.0</td><td>5.059</td></tr> <tr><td>3.0</td><td>5.059</td></tr> <tr><td>4.0</td><td>5.059</td></tr> <tr><td>5.0</td><td>5.059</td></tr> <tr><td>6.0</td><td>5.059</td></tr> <tr><td>7.0</td><td>5.059</td></tr> <tr><td>8.0</td><td>5.059</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	5.064	0.5	5.059	1.0	5.059	2.0	5.059	3.0	5.059	4.0	5.059	5.0	5.059	6.0	5.059	7.0	5.059	8.0	5.059
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<p>* The characteristic of AC230V is equal.</p>																								



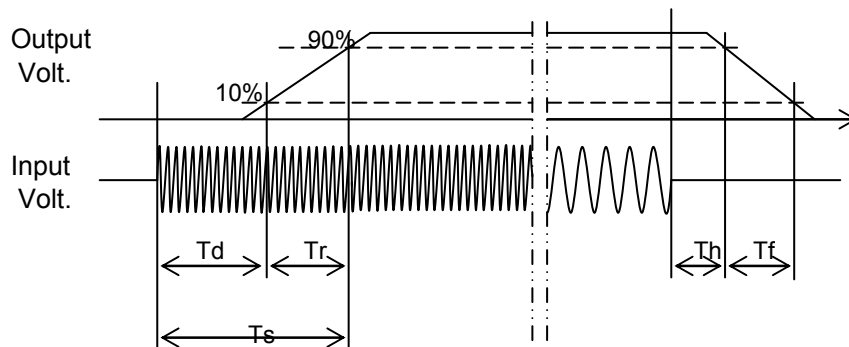
COSEL		
Model	TUHS10F05	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+5V2A	

1. Graph



2. Values

		[ms]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		55.9	0.6	56.5	24.3	29.3
230 V		55.1	0.6	55.7	184.3	31.3





COSEL																																		
Model	TUHS10F05	Temperature 25°C Testing Circuitry Figure A																																
Item	Hold-Up Time																																	
Object	+5V2A																																	
1.Graph		2.Values																																
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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. Note: Slanted line shows the range of the rated input voltage.</p>																																		



<p>Model TUHS10F05</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																																																			
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Object	+5V2A																																																				
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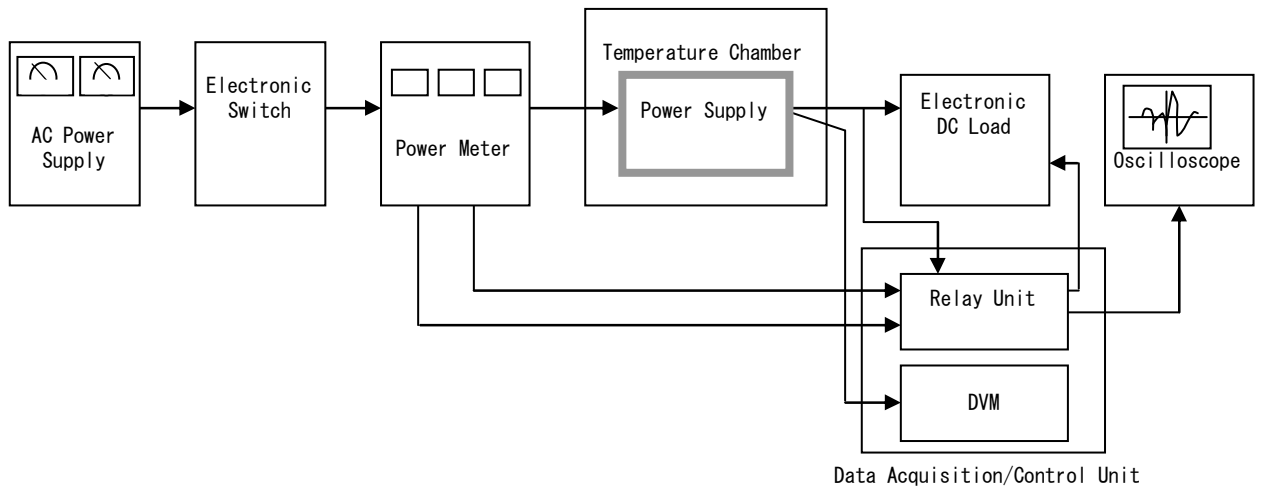


Figure A

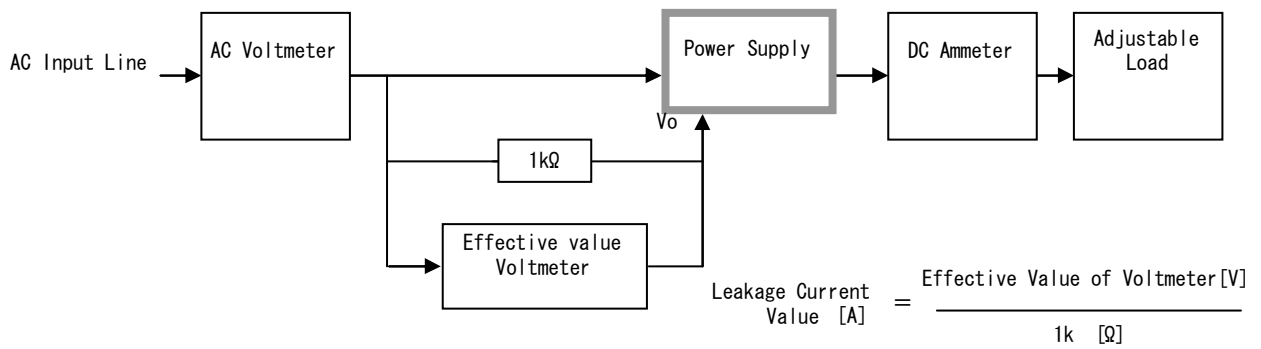


Figure B (DEN-AN)

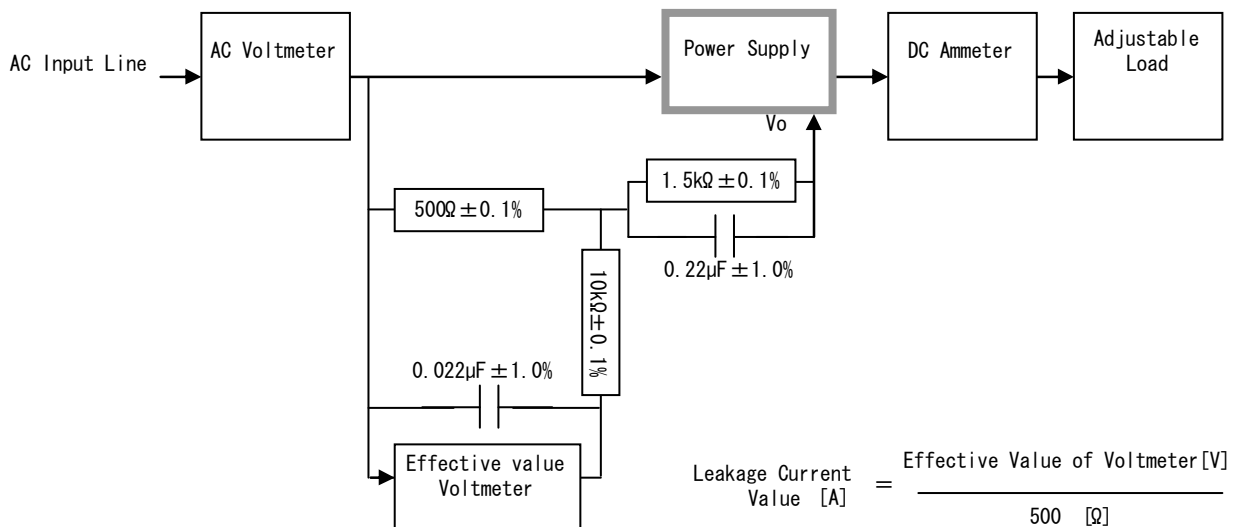


Figure B (IEC60950-1)

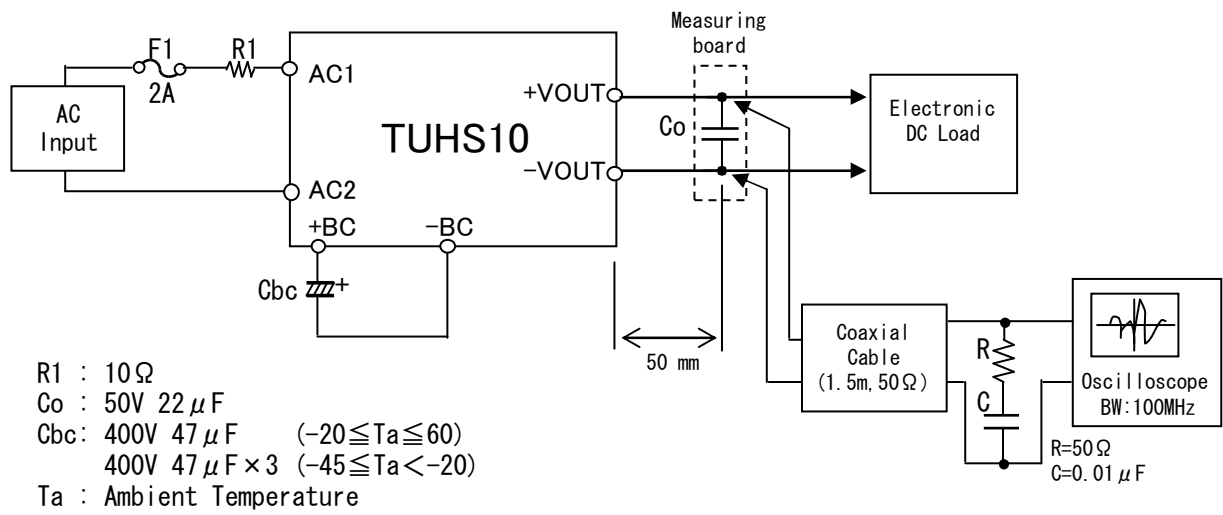


Figure C