



TEST DATA OF MODULE 2C

(ACE series)

Regulated DC power supply
Oct.8.2003

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Prepared by : M. Hamaguchi M. Hamaguchi Design Engineer

COSEL CO., LTD.



CONTENTS

1. Line Regulation	1
2. Load Regulation	2
3. Dynamic Load Response	3
4. Ripple Voltage (by Load Current)	4
5. Ripple-Noise	5
6. Ripple Voltage (by Ambient Temperature)	6
7. Ambient Temperature Drift	7
8. Output Voltage Accuracy	8
9. Time Lapse Drift	9
10. Overcurrent Protection	10
11. Overvoltage Protection	11
12. Figure of Testing Circuitry	12

(Final Page 12)

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Model	MODULE 2C																																	
Item	Line Regulation	Temperature 25°C Testing Circuitry Figure A																																
Object	+5V60A																																	
1. Graph																																		
<p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Legend:</p> <ul style="list-style-type: none"> Load 50% (Dashed line with squares) Load 100% (Solid line with triangles) 																																		
<p>Note: Slanted line shows the range of the rated input voltage.</p>																																		
2 Values																																		
<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>85</td> <td>5.062</td> <td>5.053</td> </tr> <tr> <td>100</td> <td>5.062</td> <td>5.053</td> </tr> <tr> <td>120</td> <td>5.062</td> <td>5.053</td> </tr> <tr> <td>200</td> <td>5.062</td> <td>5.053</td> </tr> <tr> <td>230</td> <td>5.062</td> <td>5.053</td> </tr> <tr> <td>264</td> <td>5.062</td> <td>5.053</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>			Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	85	5.062	5.053	100	5.062	5.053	120	5.062	5.053	200	5.062	5.053	230	5.062	5.053	264	5.062	5.053	--	-	-	--	-	-	--	-	-
Input Voltage [V]	Output Voltage [V]																																	
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Model	MODULE 2C
Item	Load Regulation
Object	+5V60A

1. Graph

Load Current [A]	Input Volt. 100V [V]	Input Volt. 200V [V]	Input Volt. 230V [V]
0	5.051	5.051	5.051
10	5.051	5.051	5.051
20	5.051	5.051	5.051
30	5.051	5.050	5.050
40	5.050	5.050	5.050
50	5.050	5.050	5.050
60	5.050	5.050	5.050

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

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0	5.051	5.051	5.051
10	5.051	5.051	5.051
20	5.051	5.051	5.051
30	5.051	5.050	5.050
40	5.050	5.050	5.050
50	5.050	5.050	5.050
60	5.050	5.050	5.050
66	5.050	5.050	5.050
--	-	-	-
--	-	-	-
--	-	-	-

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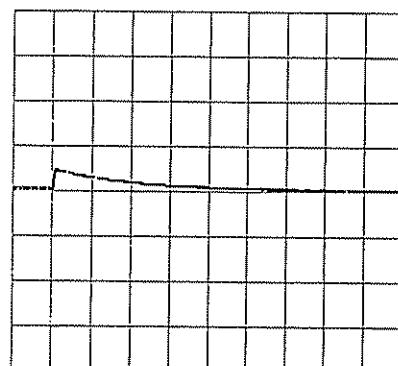
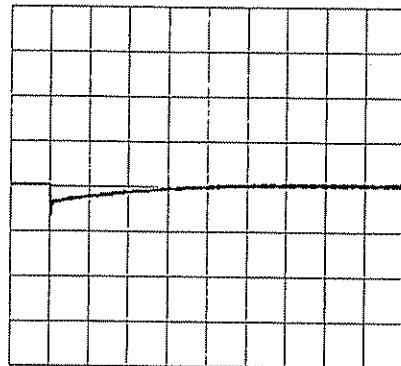
Model	MODULE 2C	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V60A		

Input Volt. 100 V
 Cycle 1000 mS

Load Current

Min. Load ↔

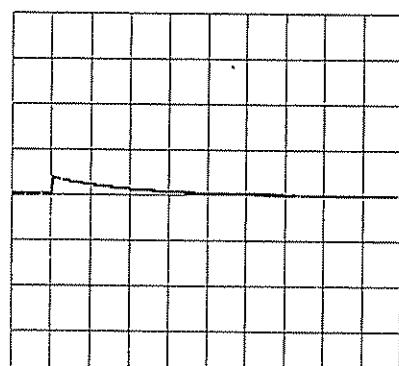
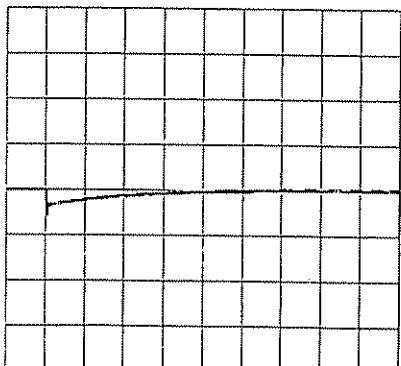
Load 100 %



Min. Load ↔

Load 50 %

100 mV/div



10 ms/div

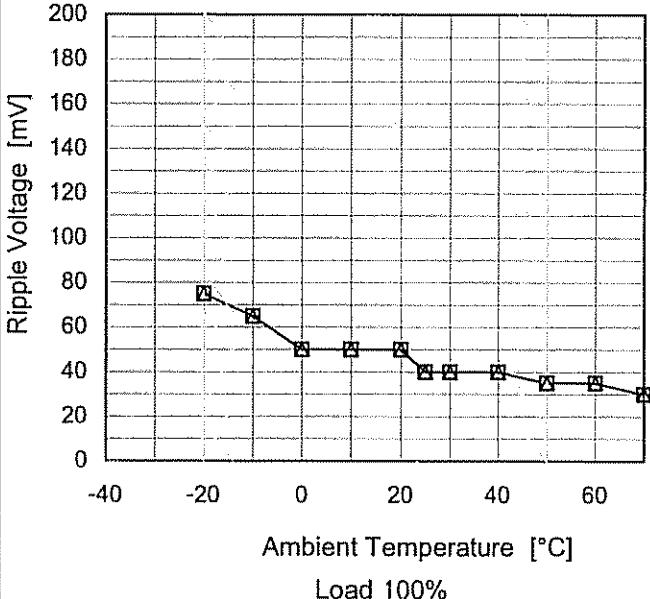
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Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure A																																						
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<p>—△— Input Volt. 100V ---○--- Input Volt. 200V</p> <table border="1"> <caption>Data points estimated from Figure 1</caption> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Voltage [mV] (Input 100V)</th> <th>Ripple Voltage [mV] (Input 200V)</th> </tr> </thead> <tbody> <tr><td>0</td><td>25</td><td>25</td></tr> <tr><td>10</td><td>35</td><td>35</td></tr> <tr><td>20</td><td>40</td><td>40</td></tr> <tr><td>30</td><td>40</td><td>40</td></tr> <tr><td>40</td><td>40</td><td>40</td></tr> <tr><td>50</td><td>40</td><td>40</td></tr> <tr><td>60</td><td>40</td><td>40</td></tr> <tr><td>66</td><td>45</td><td>45</td></tr> </tbody> </table>			Load Current [A]	Ripple Voltage [mV] (Input 100V)	Ripple Voltage [mV] (Input 200V)	0	25	25	10	35	35	20	40	40	30	40	40	40	40	40	50	40	40	60	40	40	66	45	45											
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Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure A																																						
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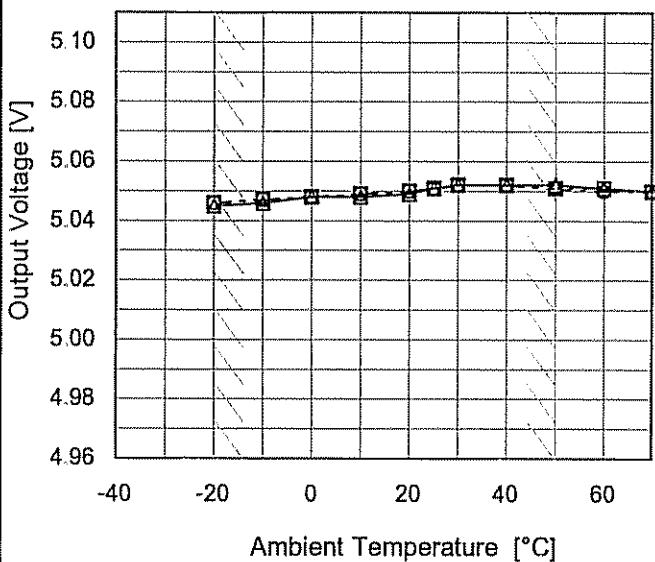
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Model	MODULE 2C																																							
Item	Ripple Voltage (by Ambient Temp.)																																							
Object	+5V60A																																							
1.Graph																																								
 <p>The graph plots Ripple Voltage [mV] on the Y-axis (0 to 200) against Ambient Temperature [°C] on the X-axis (-40 to 60). Two data series are shown: Load 50% (dashed line with open square markers) and Load 100% (solid line with open triangle markers). Both series show a slight decrease in ripple voltage as ambient temperature increases from -20°C to 60°C. A slanted line indicates the range of rated ambient temperature.</p> <table border="1"> <thead> <tr> <th>Ambient Temperature [°C]</th> <th>Ripple Voltage [mV] (Load 50%)</th> <th>Ripple Voltage [mV] (Load 100%)</th> </tr> </thead> <tbody> <tr><td>-20</td><td>75</td><td>75</td></tr> <tr><td>-10</td><td>65</td><td>65</td></tr> <tr><td>0</td><td>50</td><td>50</td></tr> <tr><td>10</td><td>50</td><td>50</td></tr> <tr><td>20</td><td>45</td><td>45</td></tr> <tr><td>30</td><td>40</td><td>40</td></tr> <tr><td>40</td><td>35</td><td>35</td></tr> <tr><td>50</td><td>35</td><td>35</td></tr> <tr><td>60</td><td>35</td><td>35</td></tr> <tr><td>70</td><td>30</td><td>30</td></tr> </tbody> </table>			Ambient Temperature [°C]	Ripple Voltage [mV] (Load 50%)	Ripple Voltage [mV] (Load 100%)	-20	75	75	-10	65	65	0	50	50	10	50	50	20	45	45	30	40	40	40	35	35	50	35	35	60	35	35	70	30	30					
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Measured by 20 MHz Oscilloscope.

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

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Model	MODULE 2C	Testing Circuitry Figure A		
Item	Ambient Temperature Drift			
Object	+5V60A			
1.Graph	<p style="text-align: center;">—△— Input Volt. 100V - - -□--- Input Volt. 200V - - ○--- Input Volt. 230V</p>  <p style="text-align: center;">Output Voltage [V]</p> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: center;">Load 100%</p>	2 Values		
		Ambient Temperature [°C]	Output Voltage [V]	
			Input Volt. 100[V]	Input Volt. 200[V]
		-20	5.045	5.046
		-10	5.046	5.047
		0	5.048	5.048
		10	5.048	5.049
		20	5.049	5.050
		25	5.051	5.051
		30	5.052	5.052
		40	5.052	5.052
		50	5.052	5.051
		60	5.051	5.051
		70	5.050	5.050
			Input Volt. 230[V]	

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



Model	MODULE 2C	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V60A	

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 : 85 - 264V

Load Current : 0 - 60A

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

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

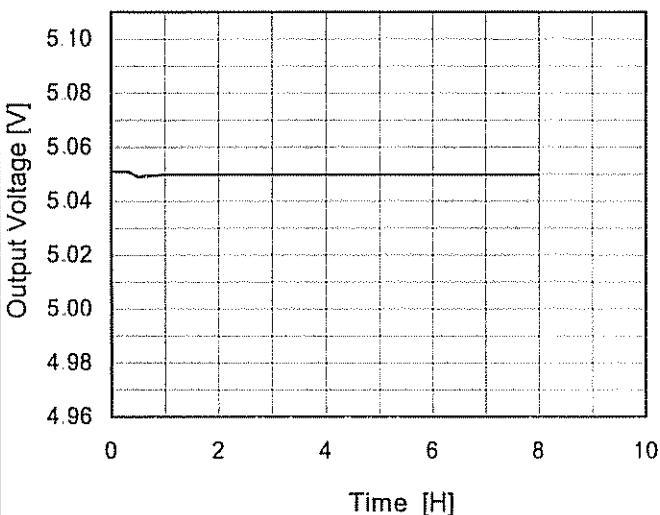
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	50	264	0	5.053		±4
Minimum Voltage	-20	85	60	5.046		±0.1

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Model	MODULE 2C
Item	Time Lapse Drift
Object	+5V60A

1. Graph



Input Volt. 100V
Load 100%

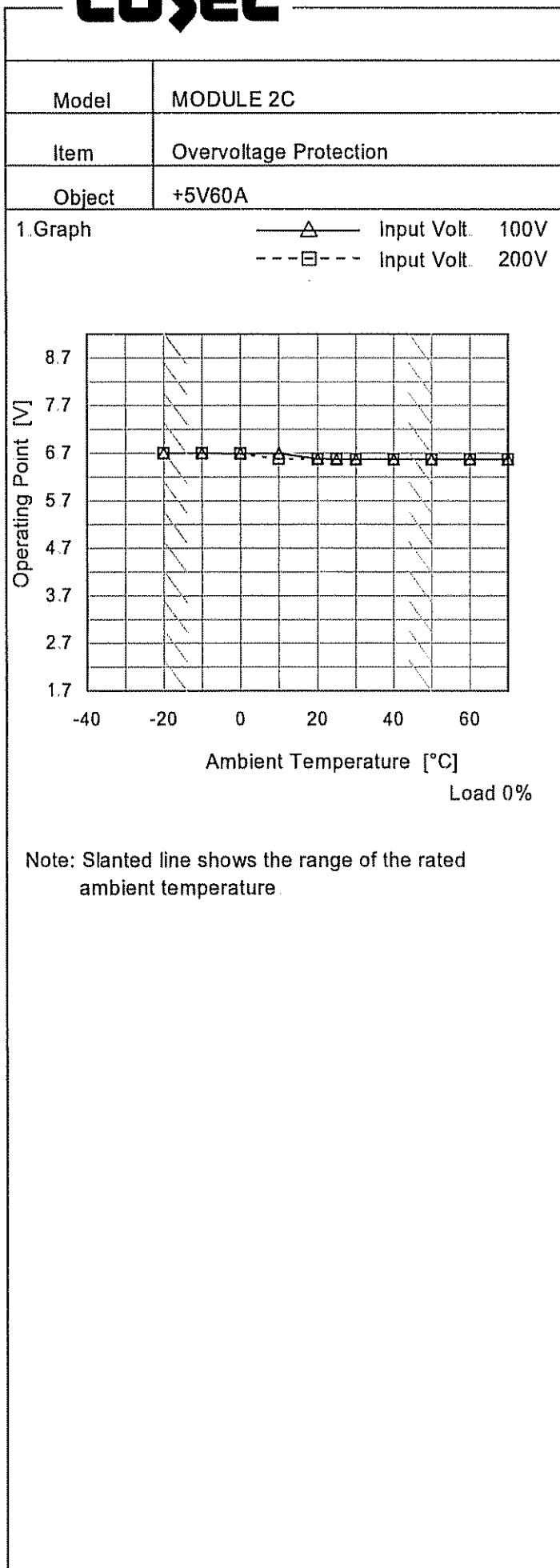
Temperature 25°C
Testing Circuitry Figure A

2. Values

Time since start [H]	Output Voltage [V]
0.0	5.051
0.5	5.049
1.0	5.050
2.0	5.050
3.0	5.050
4.0	5.050
5.0	5.050
6.0	5.050
7.0	5.050
8.0	5.050

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Model	MODULE 2C		
Item	Overcurrent Protection	Temperature	25°C
Object	+5V60A	Testing Circuitry	Figure A
1. Graph			
<p>Input Volt. 100V Input Volt. 200V Input Volt. 264V</p> <p>Output Voltage [V]</p> <p>Load Current [A]</p>			
<p>Note: Slanted line shows the range of the rated load current.</p>			
2. Values			
Output Voltage [V]	Load Current [A]		
Input Volt	100[V]	200[V]	-
5.00	61.41	67.65	-
4.75	67.67	67.96	-
4.50	67.64	68.28	-
4.00	68.66	68.91	-
3.50	69.38	69.56	-
3.00	70.13	70.34	-
2.50	71.25	71.62	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

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Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	—
-20	6.72	6.72	—
-10	6.72	6.72	—
0	6.71	6.71	—
10	6.71	6.60	—
20	6.60	6.60	—
25	6.59	6.60	—
30	6.59	6.59	—
40	6.59	6.59	—
50	6.59	6.59	—
60	6.59	6.59	—
70	6.59	6.59	—

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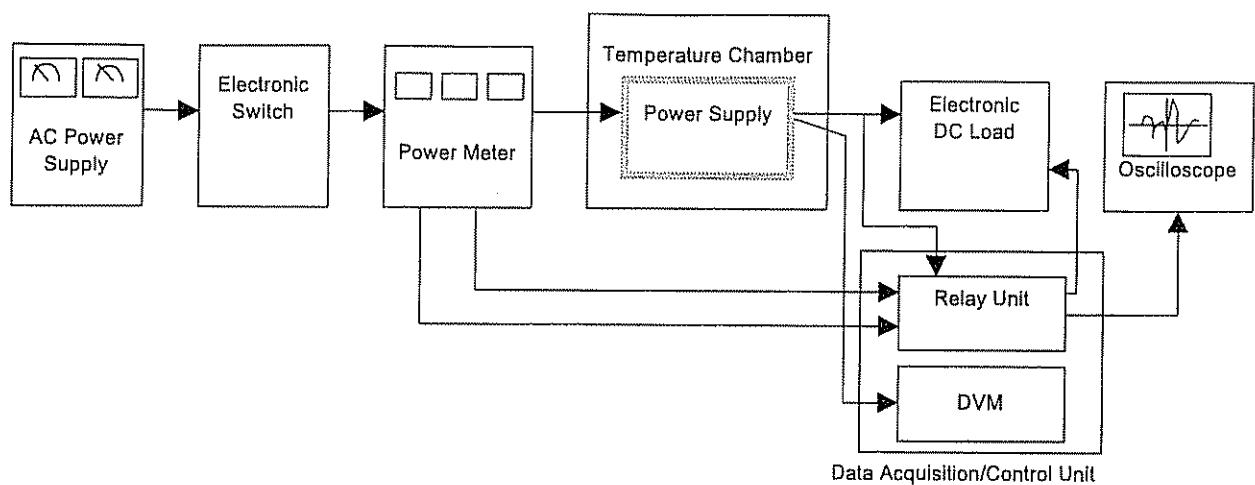


Figure A

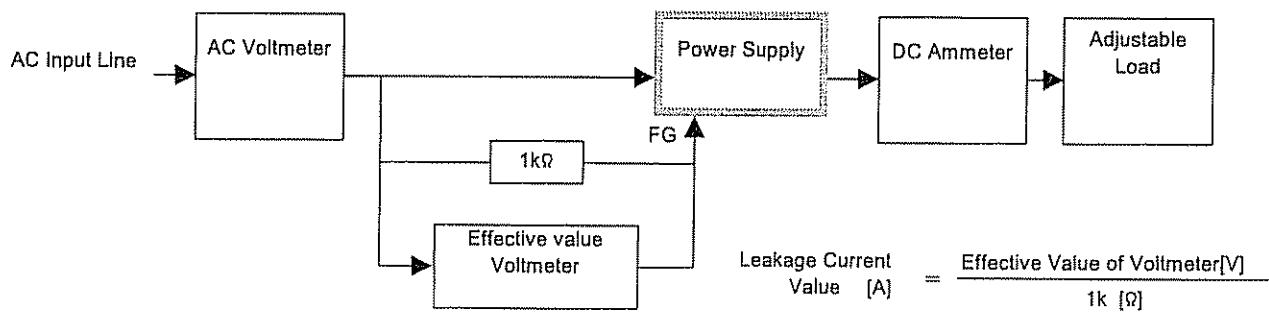


Figure B (DEN-AN)

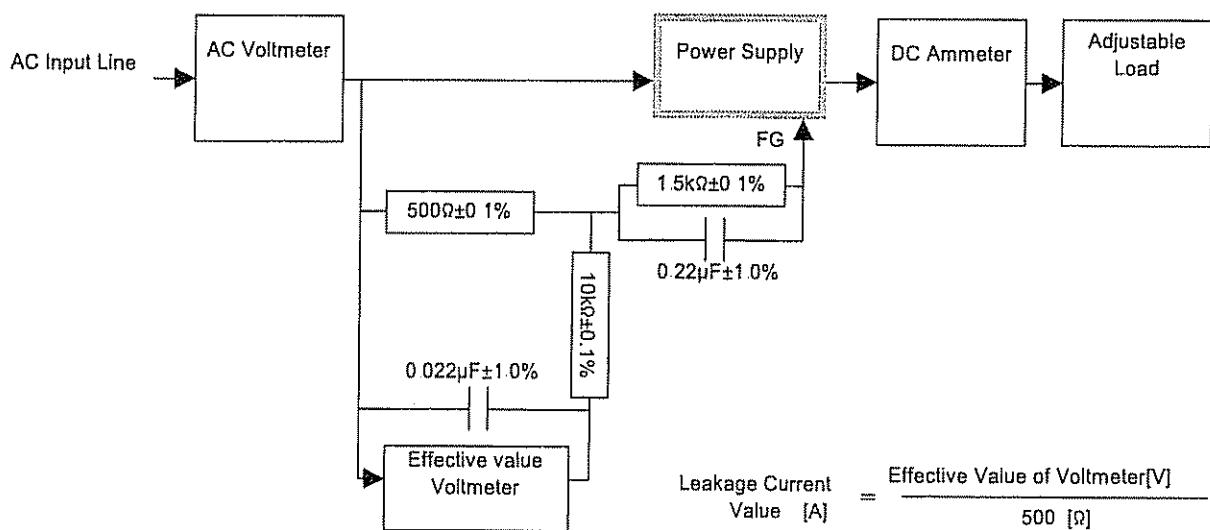


Figure B (IEC60950)