



TEST DATA OF MODULE C

(ACE series)

Regulated DC power supply
Jun.7.2003

Approved by :

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COSEL CO.,LTD.



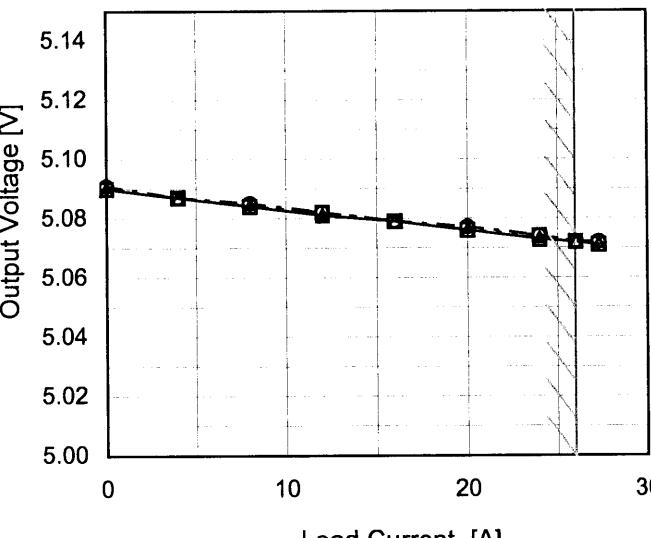
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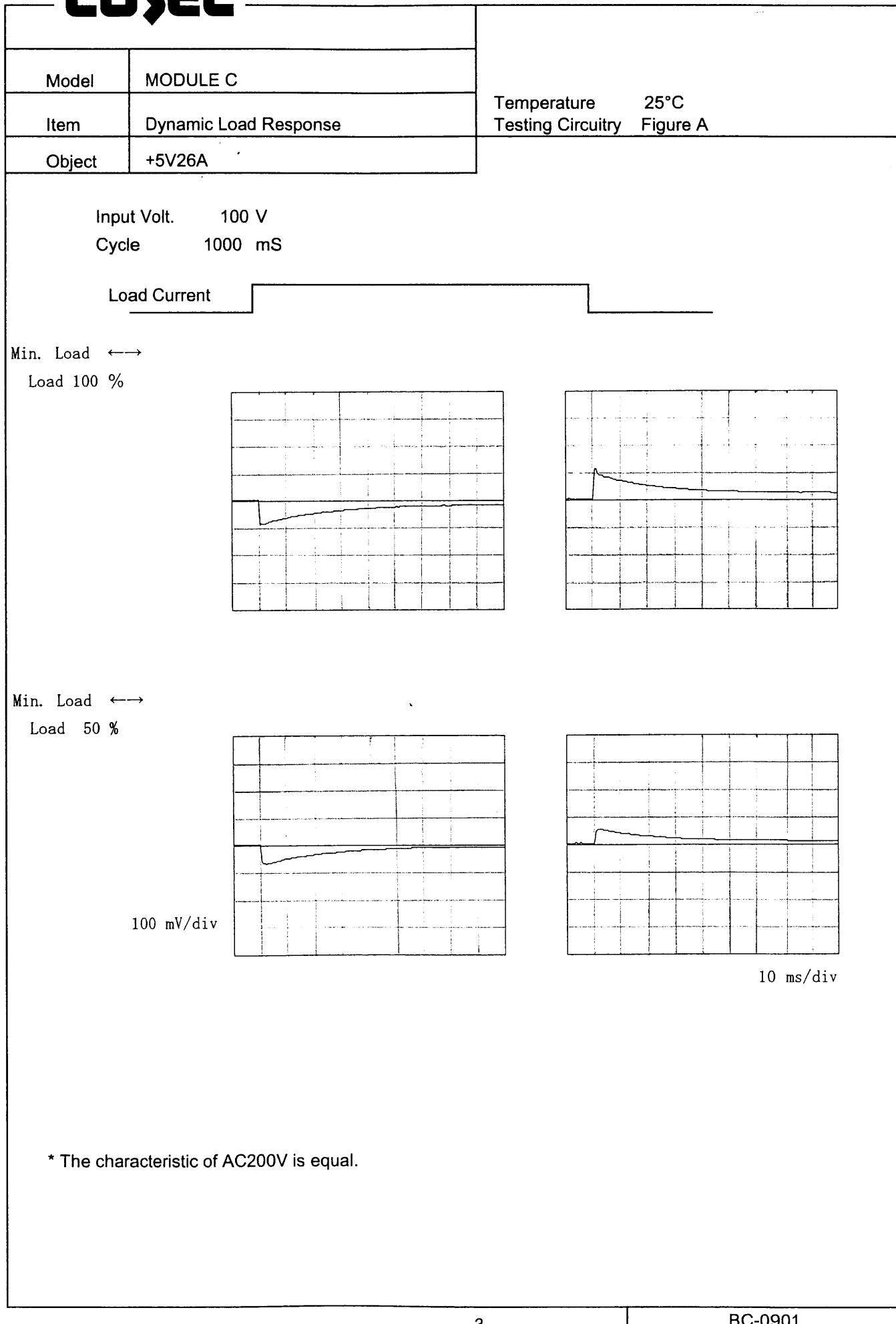
(Final Page 12)

Model	MODULE C	Temperature Testing Circuitry	25°C Figure A																																
Item	Line Regulation																																		
Object	+5V26A																																		
1.Graph		2.Values																																	
<p>The graph plots Output Voltage [V] on the Y-axis (5.00 to 5.14) against Input Voltage [V] on the X-axis (50 to 300). Two horizontal lines represent the output voltage at different loads: a dashed line for Load 50% at approximately 5.082V and a solid line for Load 100% at approximately 5.073V. A slanted line indicates the rated input voltage range from 85V to 264V.</p>		<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>5.082</td> <td>5.073</td> </tr> <tr> <td>100</td> <td>5.082</td> <td>5.073</td> </tr> <tr> <td>120</td> <td>5.082</td> <td>5.073</td> </tr> <tr> <td>200</td> <td>5.082</td> <td>5.073</td> </tr> <tr> <td>230</td> <td>5.082</td> <td>5.073</td> </tr> <tr> <td>264</td> <td>5.082</td> <td>5.073</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	5.082	5.073	100	5.082	5.073	120	5.082	5.073	200	5.082	5.073	230	5.082	5.073	264	5.082	5.073	--	-	-	--	-	-	--	-	-
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Note: Slanted line shows the range of the rated input voltage.

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

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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>																																									
<p>Fig. Complex Ripple Wave Form</p>																																									

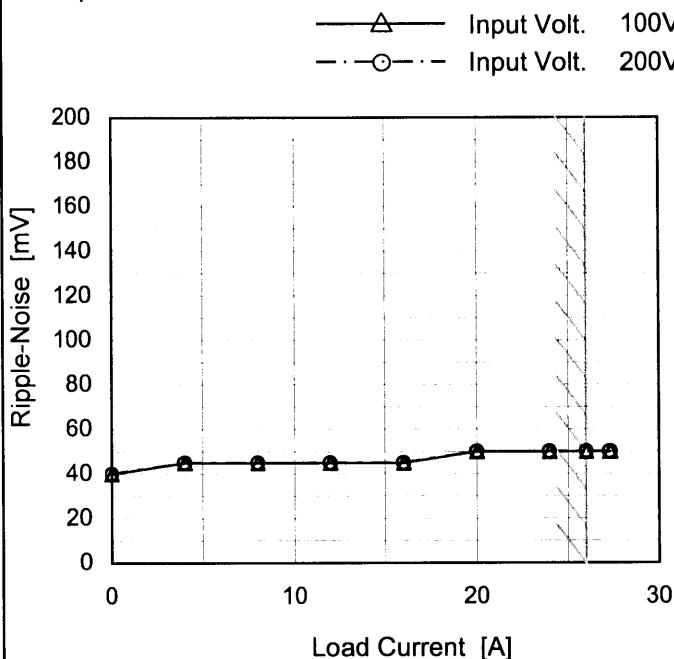
Model MODULE C

Item Ripple-Noise

Object +5V26A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



Measured by 20 MHz Oscilloscope.

Ripple-Noise is shown as p-p in the figure below.

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

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	40	40
4.0	45	45
8.0	45	45
12.0	45	45
16.0	45	45
20.0	50	50
24.0	50	50
26.0	50	50
27.3	50	50
--	-	-
--	-	-

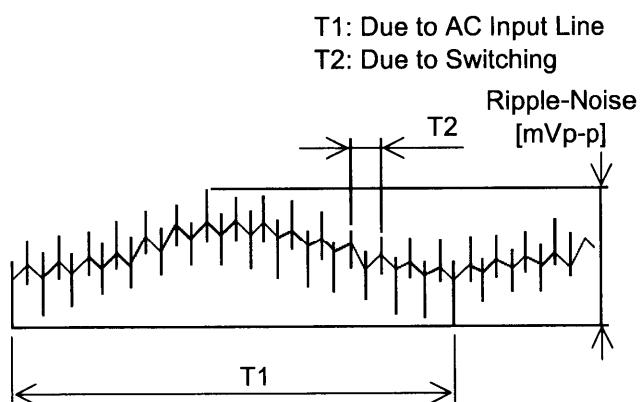


Fig. Complex Ripple Wave Form

Model	MODULE C																																							
Item	Ripple Voltage (by Ambient Temp.)																																							
Object	+5V26A																																							
1. Graph																																								
<p>Graph showing Ripple Voltage [mV] vs Ambient Temperature [°C]. The Y-axis ranges from 0 to 200 mV, and the X-axis ranges from -40 to 80 °C. Two data series are plotted: Input Volt. 100V (dashed line with open squares) and Input Volt. 200V (solid line with solid squares). Both series show a decreasing trend of Ripple Voltage as Ambient Temperature increases. A shaded vertical band highlights the rated ambient temperature range between approximately -10°C and 50°C.</p> <table border="1"> <thead> <tr> <th>Ambient Temperature [°C]</th> <th>Ripple Voltage [mV] (Input Volt. 100V)</th> <th>Ripple Voltage [mV] (Input Volt. 200V)</th> </tr> </thead> <tbody> <tr><td>-20</td><td>90</td><td>90</td></tr> <tr><td>-10</td><td>75</td><td>75</td></tr> <tr><td>0</td><td>55</td><td>55</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>25</td><td>40</td><td>40</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>30</td><td>30</td></tr> <tr><td>70</td><td>25</td><td>25</td></tr> </tbody> </table>			Ambient Temperature [°C]	Ripple Voltage [mV] (Input Volt. 100V)	Ripple Voltage [mV] (Input Volt. 200V)	-20	90	90	-10	75	75	0	55	55	10	50	50	20	45	45	25	40	40	30	40	40	40	35	35	50	35	35	60	30	30	70	25	25		
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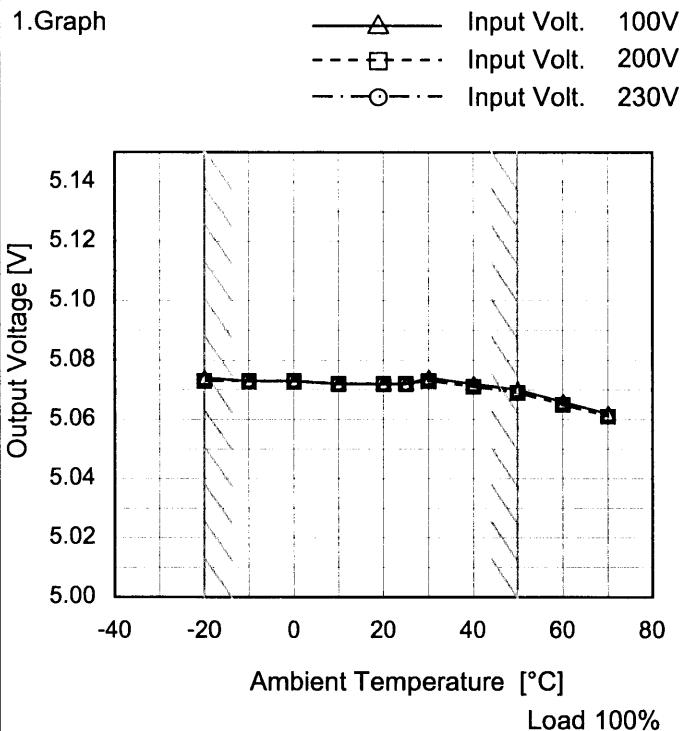
Measured by 20 MHz Oscilloscope.

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

Model MODULE C

Item Ambient Temperature Drift

Object +5V26A



Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt.	Input Volt.	Input Volt.
100[V]	200[V]	230[V]	
-20	5.074	5.073	5.073
-10	5.073	5.073	5.073
0	5.073	5.073	5.073
10	5.072	5.072	5.072
20	5.072	5.072	5.072
25	5.072	5.072	5.072
30	5.074	5.073	5.073
40	5.072	5.071	5.071
50	5.070	5.069	5.069
60	5.066	5.065	5.065
70	5.062	5.061	5.061

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



Model	MODULE C	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+5V26A	

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 - 26A

* 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	0	5.091	±12	±0.2
Minimum Voltage	50	132	26	5.067		

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Model	MODULE C	Temperature Testing Circuitry	25°C Figure A																						
Item	Time Lapse Drift																								
Object	+5V26A																								
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<p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V 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>5.081</td></tr> <tr><td>0.5</td><td>5.078</td></tr> <tr><td>1.0</td><td>5.078</td></tr> <tr><td>2.0</td><td>5.078</td></tr> <tr><td>3.0</td><td>5.078</td></tr> <tr><td>4.0</td><td>5.078</td></tr> <tr><td>5.0</td><td>5.078</td></tr> <tr><td>6.0</td><td>5.078</td></tr> <tr><td>7.0</td><td>5.078</td></tr> <tr><td>8.0</td><td>5.078</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	5.081	0.5	5.078	1.0	5.078	2.0	5.078	3.0	5.078	4.0	5.078	5.0	5.078	6.0	5.078	7.0	5.078	8.0	5.078
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* The characteristic of AC200V is equal.

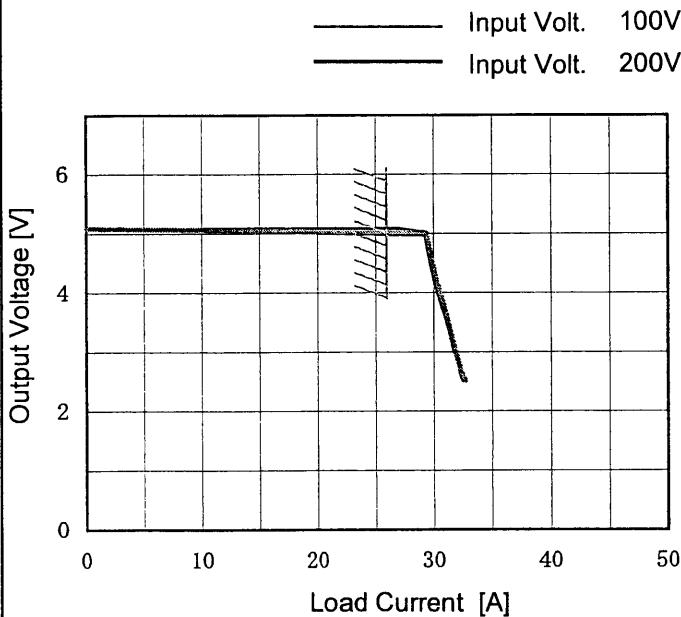
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Model MODULE C

Item Overcurrent Protection

Object +5V26A

1. Graph



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

Intermittent operation occurs when the output voltage is from 2.5V to 0V.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
5.00	26.00	26.00
4.75	29.10	29.57
4.50	29.27	29.77
4.00	29.81	30.46
3.50	30.53	31.16
3.00	31.38	31.82
2.50	32.14	32.61
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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<p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</p> <p>Input Volt. 100V</p> <p>Input Volt. 200V</p>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Operating Point [V]</th> </tr> <tr> <th>Input Volt. 100[V]</th> <th>Input Volt. 200[V]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>6.57</td><td>6.57</td></tr> <tr><td>-10</td><td>6.56</td><td>6.56</td></tr> <tr><td>0</td><td>6.56</td><td>6.56</td></tr> <tr><td>10</td><td>6.56</td><td>6.56</td></tr> <tr><td>20</td><td>6.56</td><td>6.56</td></tr> <tr><td>25</td><td>6.56</td><td>6.56</td></tr> <tr><td>30</td><td>6.56</td><td>6.56</td></tr> <tr><td>40</td><td>6.56</td><td>6.56</td></tr> <tr><td>50</td><td>6.56</td><td>6.56</td></tr> <tr><td>60</td><td>6.56</td><td>6.56</td></tr> <tr><td>70</td><td>6.55</td><td>6.55</td></tr> </tbody> </table>	Ambient Temperature [°C]	Operating Point [V]		Input Volt. 100[V]	Input Volt. 200[V]	-20	6.57	6.57	-10	6.56	6.56	0	6.56	6.56	10	6.56	6.56	20	6.56	6.56	25	6.56	6.56	30	6.56	6.56	40	6.56	6.56	50	6.56	6.56	60	6.56	6.56	70	6.55	6.55
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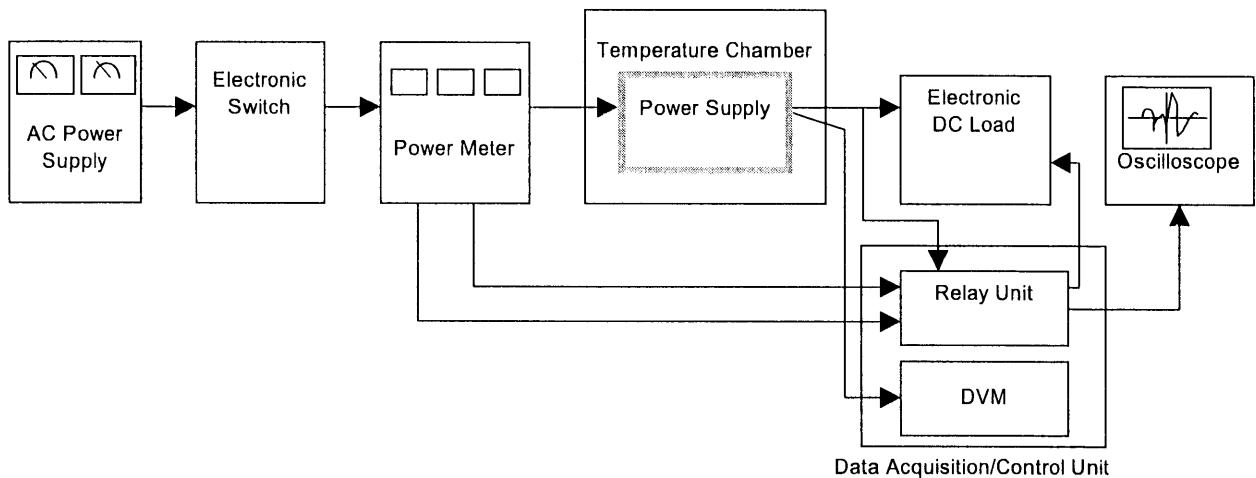


Figure A

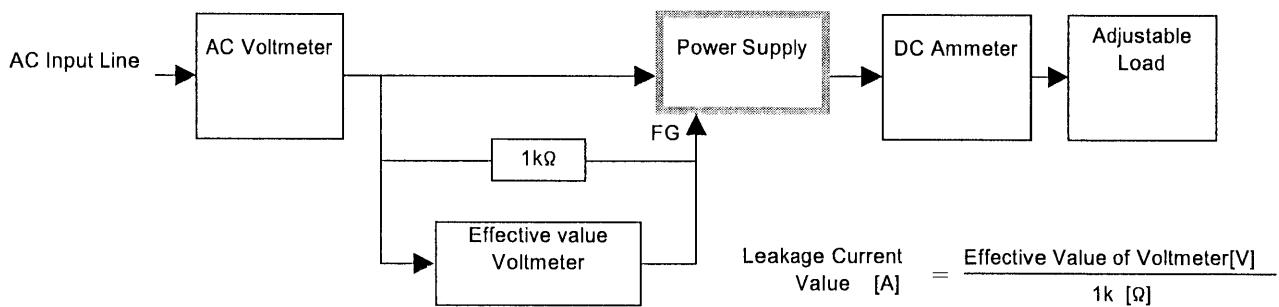


Figure B (DEN-AN)

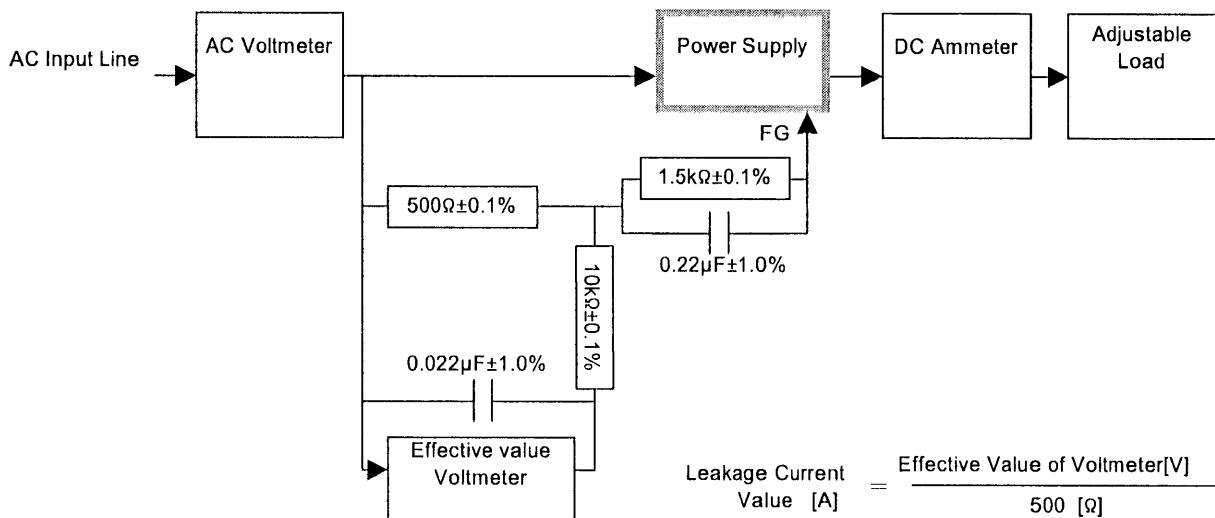


Figure B (IEC60950)