



TEST DATA OF MODULE N

(ACE series)

Regulated DC power supply
Jun.14.2003

Approved by : 
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Prepared by : 
M. Hamaguchi Design Engineer

COSEL CO.,LTD.



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Model		MODULE N	Temperature 25°C Testing Circuitry Figure A																																
Item		Line Regulation																																	
Object		+12V5A																																	
1.Graph			2.Values																																
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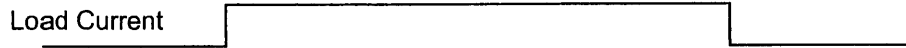


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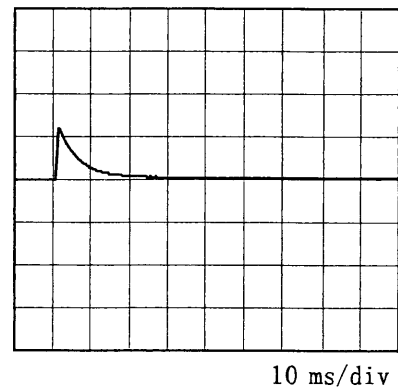
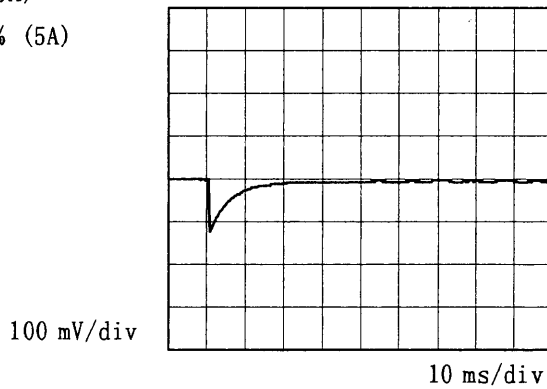


Model	MODULE N	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V5A		

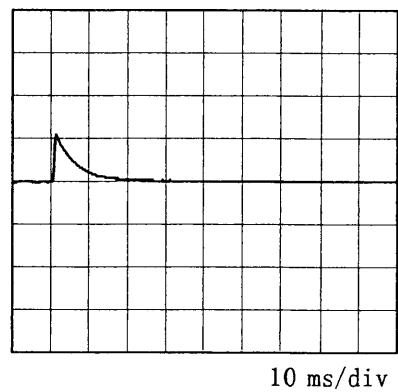
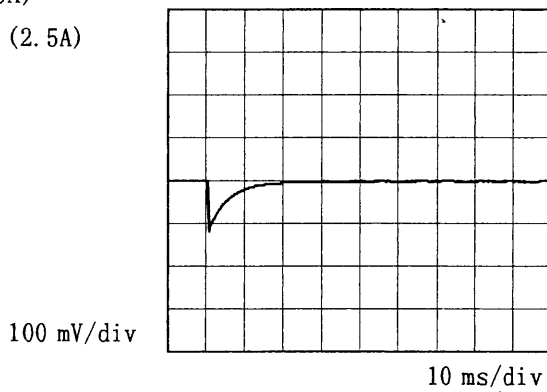
Input Volt. 100 V
 Cycle 1000 mS



Min. Load (0A) ←→
 Load 100% (5A)



Min. Load (0A) ←→
 Load 50% (2.5A)



* The characteristic of AC200V is equal.

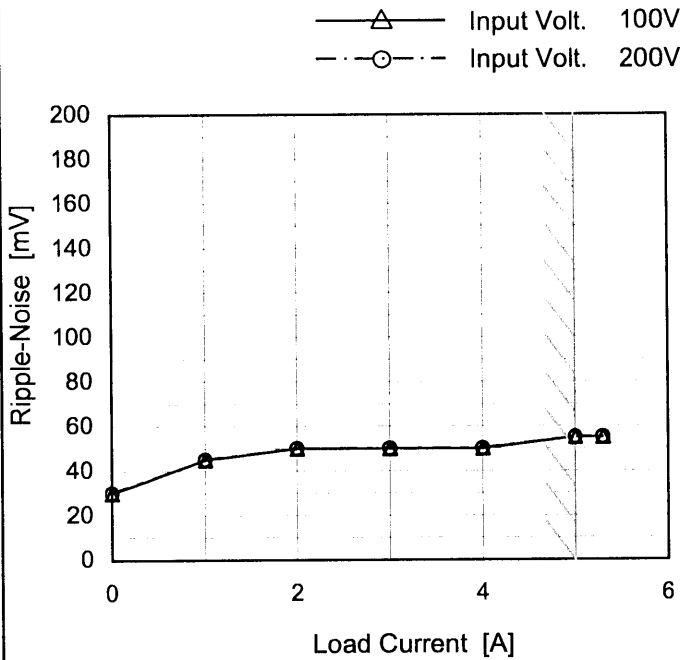


Model		MODULE N		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure A																																							
Object		+12V5A																																									
1. Graph				2. Values																																							
<p> —△— Input Volt. 100V - - ○ - - Input Volt. 200V </p> <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>				<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. 200 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>20</td><td>20</td></tr> <tr><td>1.0</td><td>40</td><td>40</td></tr> <tr><td>2.0</td><td>40</td><td>40</td></tr> <tr><td>3.0</td><td>40</td><td>40</td></tr> <tr><td>4.0</td><td>40</td><td>40</td></tr> <tr><td>5.0</td><td>45</td><td>45</td></tr> <tr><td>5.3</td><td>45</td><td>45</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. 200 [V]	0.0	20	20	1.0	40	40	2.0	40	40	3.0	40	40	4.0	40	40	5.0	45	45	5.3	45	45	--	-	-	--	-	-	--	-	-	--	-	-
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<p> T1: Due to AC Input Line T2: Due to Switching </p> <p>Fig. Complex Ripple Wave Form</p>																																											



Model	MODULE N	Temperature	25°C
Item	Ripple-Noise	Testing Circuitry	Figure A
Object	+12V5A		

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	30	30
1.0	45	45
2.0	50	50
3.0	50	50
4.0	50	50
5.0	55	55
5.3	55	55
--	-	-
--	-	-
--	-	-
--	-	-

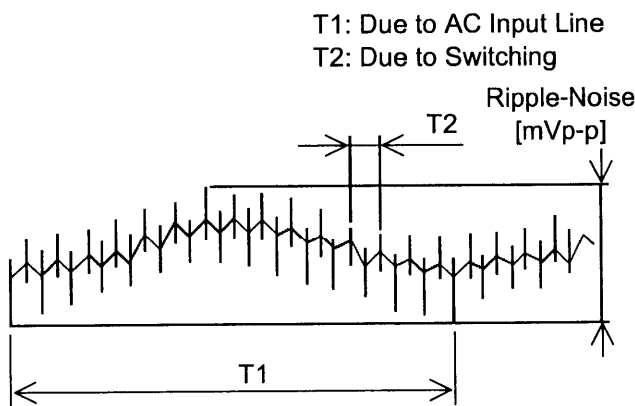


Fig. Complex Ripple Wave Form



Model		MODULE N	Testing Circuitry Figure A																																						
Item		Ripple Voltage (by Ambient Temp.)																																							
Object		+12V5A																																							
1.Graph		<p>--- □ --- Input Volt. 100V — △ — Input Volt. 200V</p> <p>Ripple Voltage [mV]</p> <p>Ambient Temperature [°C]</p> <p>Load 100 %</p>	2.Values																																						
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Model		MODULE N																																																					
Item		Ambient Temperature Drift	Testing Circuitry Figure A																																																				
Object		+12V5A																																																					
1.Graph		<p>—△— Input Volt. 100V</p> <p>---□--- Input Volt. 200V</p> <p>-·-○-·- Input Volt. 230V</p>	2.Values																																																				
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COSEL		
Model	MODULE N	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V5A	

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 - 5A

* 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	132	0	12.048	±31	±0.3
Minimum Voltage	50	264	5	11.987		



COSEL																								
Model	MODULE N	Temperature 25°C Testing Circuitry Figure A																						
Item	Time Lapse Drift																							
Object	+12V5A																							
1.Graph		2.Values																						
<p style="text-align: center;">Time [H]</p> <p style="text-align: center;">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>12.026</td></tr> <tr><td>0.5</td><td>12.014</td></tr> <tr><td>1.0</td><td>12.014</td></tr> <tr><td>2.0</td><td>12.014</td></tr> <tr><td>3.0</td><td>12.014</td></tr> <tr><td>4.0</td><td>12.014</td></tr> <tr><td>5.0</td><td>12.014</td></tr> <tr><td>6.0</td><td>12.014</td></tr> <tr><td>7.0</td><td>12.015</td></tr> <tr><td>8.0</td><td>12.015</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.026	0.5	12.014	1.0	12.014	2.0	12.014	3.0	12.014	4.0	12.014	5.0	12.014	6.0	12.014	7.0	12.015	8.0	12.015
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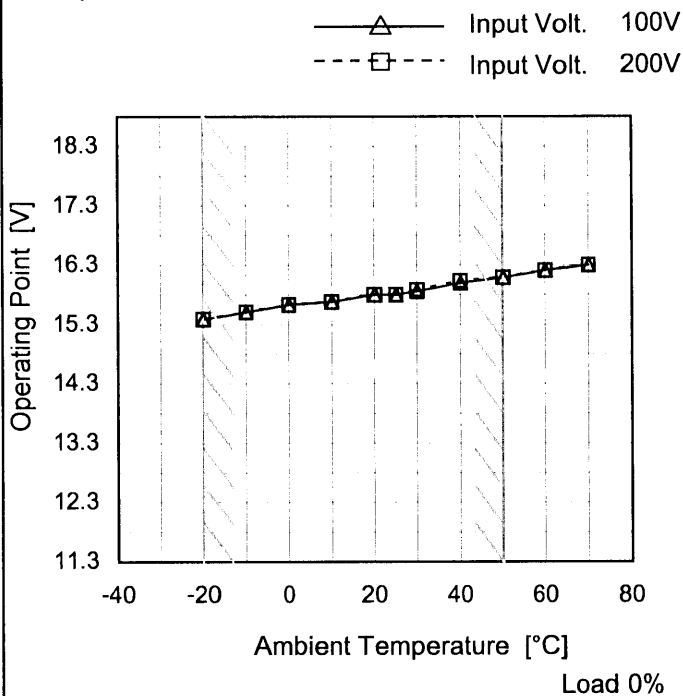
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Model	MODULE N
Item	Overvoltage Protection
Object	+12V5A

Testing Circuitry Figure A

1. Graph



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

2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 200[V]
-20	15.34	15.34
-10	15.46	15.46
0	15.58	15.58
10	15.63	15.63
20	15.75	15.75
25	15.75	15.75
30	15.81	15.83
40	15.95	15.98
50	16.04	16.04
60	16.16	16.16
70	16.25	16.25

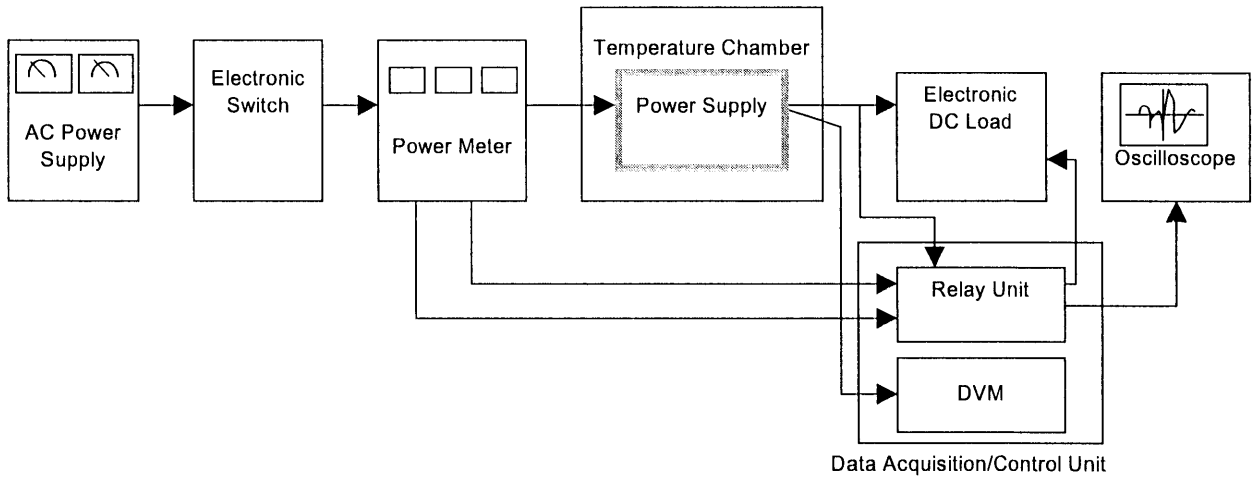


Figure A

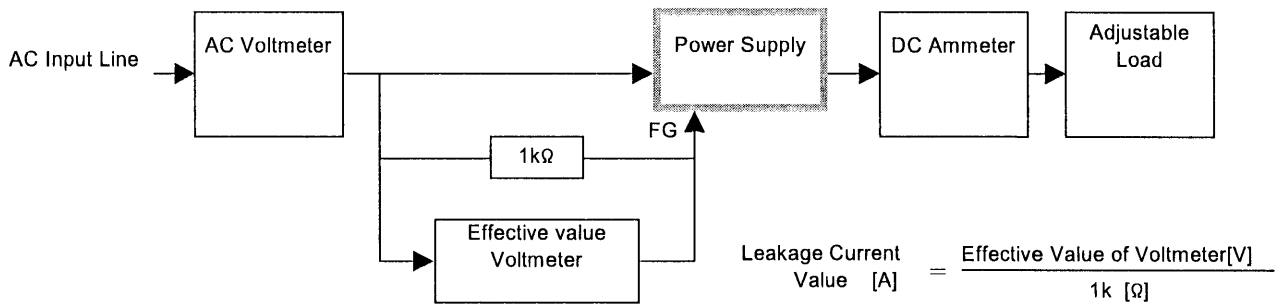


Figure B (DEN-AN)

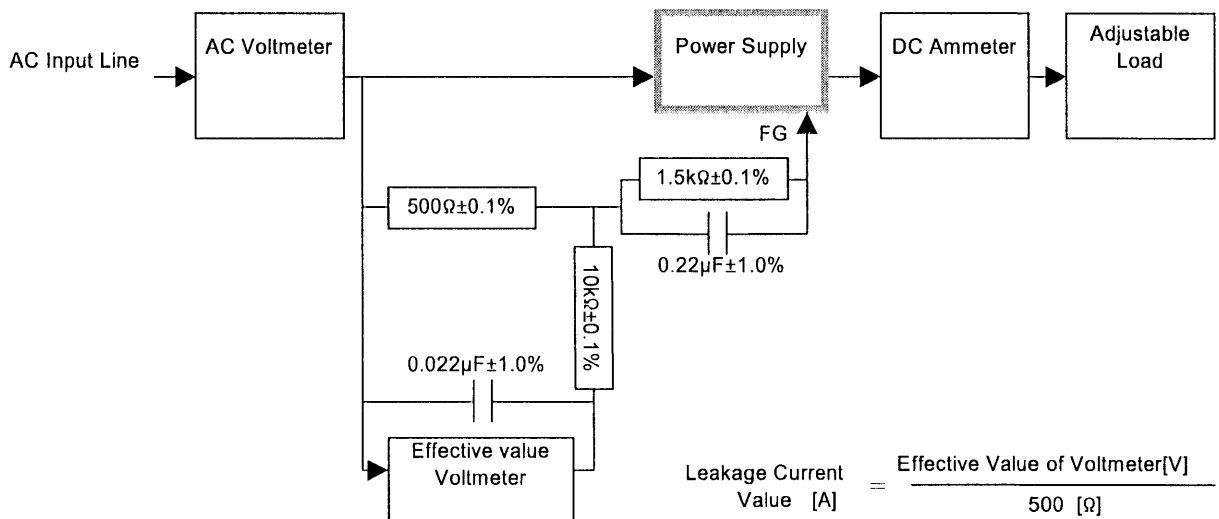


Figure B (IEC60950)