

# TEST DATA OF MODULE V4

(AME series)

Regulated DC Power Supply  
September 22, 2021

Approved by : Satoshi Uetani Design Manager

Prepared by : Ryoga Orita Design Engineer

**COSEL CO.,LTD.**



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<b>COSEL</b>																																		
Model	MODULE V4																																	
Item	Line Regulation	Temperature 25°C Testing Circuitry Figure A																																
Object	+65V3A																																	
<p>1. Graph</p> <p style="text-align: right;">             ---□--- Load 50%              —△— Load 100%         </p>		<p>2. Values</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>65.373</td><td>65.373</td></tr> <tr><td>90</td><td>65.371</td><td>65.371</td></tr> <tr><td>100</td><td>65.370</td><td>65.371</td></tr> <tr><td>115</td><td>65.369</td><td>65.369</td></tr> <tr><td>150</td><td>65.368</td><td>65.368</td></tr> <tr><td>200</td><td>65.367</td><td>65.366</td></tr> <tr><td>230</td><td>65.366</td><td>65.367</td></tr> <tr><td>264</td><td>65.365</td><td>65.365</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	85	65.373	65.373	90	65.371	65.371	100	65.370	65.371	115	65.369	65.369	150	65.368	65.368	200	65.367	65.366	230	65.366	65.367	264	65.365	65.365	--	-	-
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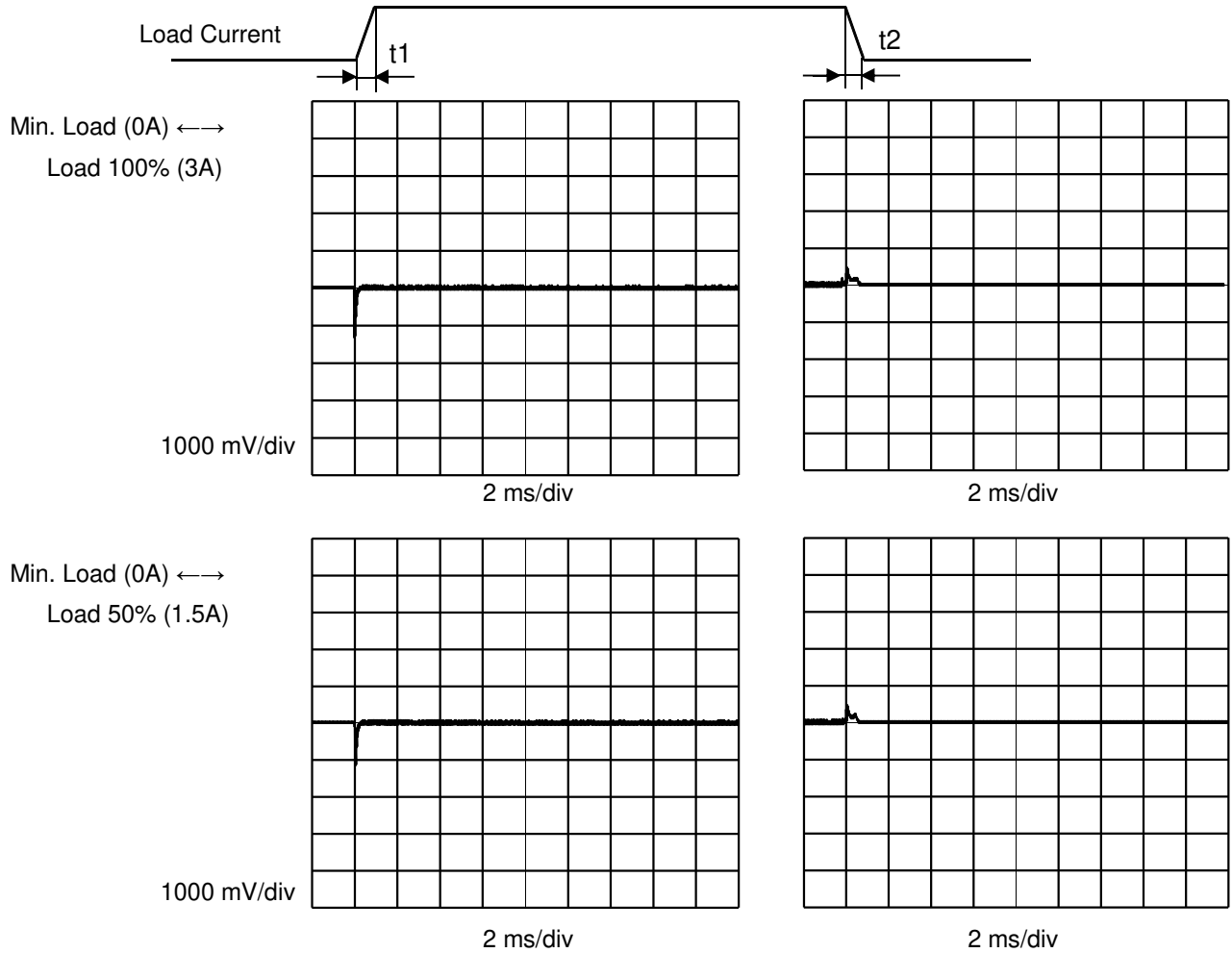


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<p>1. Graph</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>—△— Input Volt. 100V</p> <p>- - □ - - Input Volt. 200V</p> <p>- · - ○ - · - Input Volt. 230V</p> </div> </div> <p style="text-align: center;">Load Current [A]</p>		<p>2. Values</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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>0.0</td><td>65.354</td><td>65.376</td><td>65.382</td></tr> <tr><td>0.6</td><td>65.360</td><td>65.378</td><td>65.384</td></tr> <tr><td>1.2</td><td>65.364</td><td>65.382</td><td>65.389</td></tr> <tr><td>1.8</td><td>65.366</td><td>65.383</td><td>65.389</td></tr> <tr><td>2.4</td><td>65.370</td><td>65.384</td><td>65.391</td></tr> <tr><td>3.0</td><td>65.371</td><td>65.385</td><td>65.390</td></tr> <tr><td>3.3</td><td>65.373</td><td>65.385</td><td>65.389</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]	0.0	65.354	65.376	65.382	0.6	65.360	65.378	65.384	1.2	65.364	65.382	65.389	1.8	65.366	65.383	65.389	2.4	65.370	65.384	65.391	3.0	65.371	65.385	65.390	3.3	65.373	65.385	65.389	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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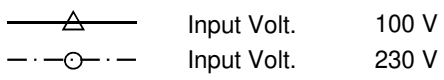
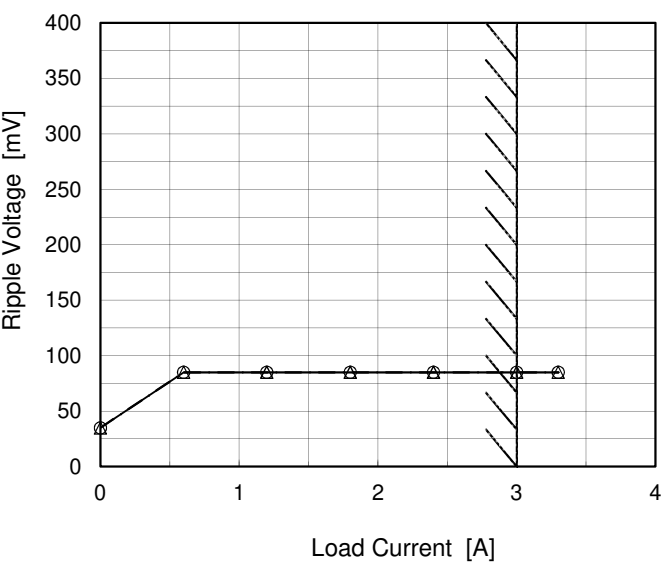
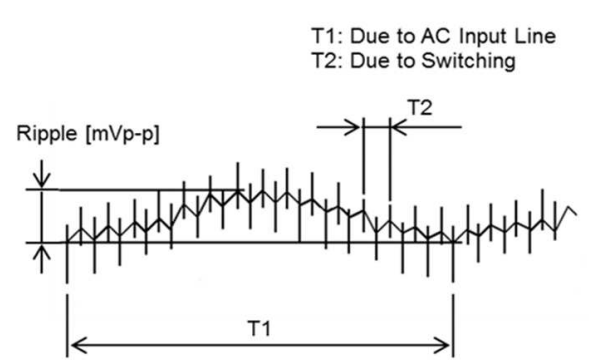


Model		MODULE V4	
Item		Temperature	25° C
Object		Testing Circuitry	Figure A
		+65V3A	

Input Volt. 65 V      Response t1=t2=50us. Typ  
 Cycle 1000 ms





Model		MODULE V4	Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)	Testing Circuitry Figure B																																							
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<p>Model      MODULE V4</p>		<p>Temperature      25°C Testing Circuitry      Figure B</p>																																						
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<p>1. Graph</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>—△— Input Volt.      100 V</p> <p>- - -○- - - Input Volt.      230 V</p> </div> </div>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Noise [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>40</td></tr> <tr><td>0.60</td><td>90</td><td>90</td></tr> <tr><td>1.20</td><td>90</td><td>90</td></tr> <tr><td>1.80</td><td>90</td><td>90</td></tr> <tr><td>2.40</td><td>90</td><td>90</td></tr> <tr><td>3.00</td><td>90</td><td>90</td></tr> <tr><td>3.30</td><td>90</td><td>90</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 Noise [mV]		Input Volt. 100[V]	Input Volt. 230[V]	0.00	40	40	0.60	90	90	1.20	90	90	1.80	90	90	2.40	90	90	3.00	90	90	3.30	90	90	--	--	--	--	--	--	--	--	--	--	--	--
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Item		Ambient Temperature Drift	Testing Circuitry Figure A																																																				
Object		+65V3A																																																					
1. Graph		<p> <span style="border-bottom: 1px solid black; margin-right: 5px;">—</span> <span style="font-size: 0.8em;">△</span> <span style="margin-left: 5px;">Input Volt. 100V</span>  <span style="border-bottom: 1px dashed black; margin-right: 5px;">---</span> <span style="font-size: 0.8em;">□</span> <span style="margin-left: 5px;">Input Volt. 200V</span>  <span style="border-bottom: 1px dash-dot black; margin-right: 5px;">- · -</span> <span style="font-size: 0.8em;">○</span> <span style="margin-left: 5px;">Input Volt. 230V</span> </p> <p style="text-align: center;">Ambient Temperature [°C] Load 100%</p>	2. Values																																																				
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<b>COSEL</b>		
Model	MODULE V4	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+65V3A	

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 - 3A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	200	3.0	65.515	±187	±0.3
Minimum Voltage	-20	85	0.0	65.141		



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Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
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<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>65.371</td></tr> <tr><td>0.5</td><td>65.413</td></tr> <tr><td>1.0</td><td>65.419</td></tr> <tr><td>2.0</td><td>65.426</td></tr> <tr><td>3.0</td><td>65.428</td></tr> <tr><td>4.0</td><td>65.430</td></tr> <tr><td>5.0</td><td>65.431</td></tr> <tr><td>6.0</td><td>65.432</td></tr> <tr><td>7.0</td><td>65.433</td></tr> <tr><td>8.0</td><td>65.433</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	65.371	0.5	65.413	1.0	65.419	2.0	65.426	3.0	65.428	4.0	65.430	5.0	65.431	6.0	65.432	7.0	65.433	8.0	65.433
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<p>1. Graph</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>— Input Volt. 100V</p> <p>— Input Volt. 200V</p> <p>— Input Volt. 230V</p> </div> </div>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</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>61.8</td><td>3.55</td><td>3.55</td><td>3.55</td></tr> <tr><td>58.5</td><td>3.60</td><td>3.59</td><td>3.59</td></tr> <tr><td>52.0</td><td>3.74</td><td>3.74</td><td>3.74</td></tr> <tr><td>45.5</td><td>3.88</td><td>3.88</td><td>3.88</td></tr> <tr><td>39.0</td><td>4.04</td><td>4.04</td><td>4.03</td></tr> <tr><td>32.5</td><td>4.17</td><td>4.17</td><td>4.17</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> <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>		Output Voltage [V]	Load Current [A]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	61.8	3.55	3.55	3.55	58.5	3.60	3.59	3.59	52.0	3.74	3.74	3.74	45.5	3.88	3.88	3.88	39.0	4.04	4.04	4.03	32.5	4.17	4.17	4.17	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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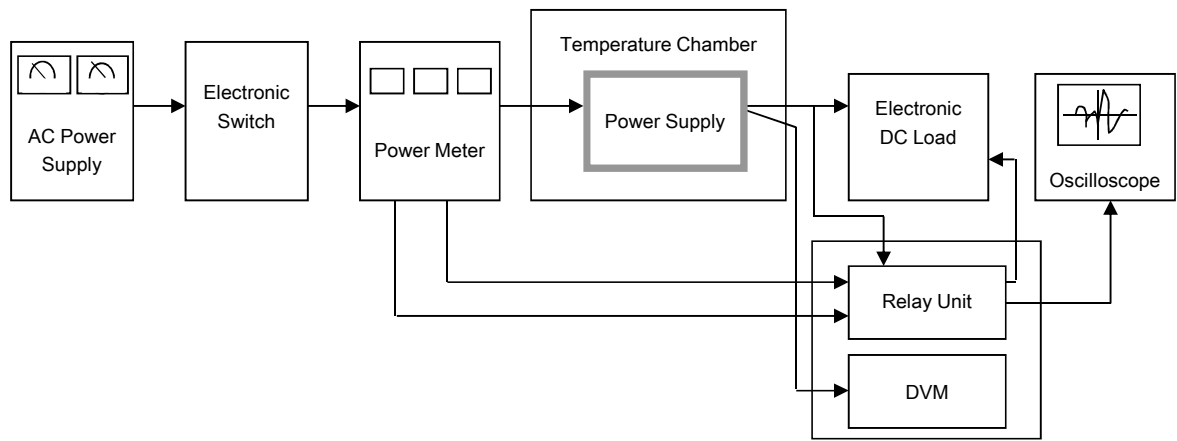


Figure A

Data Acquisition/Control Unit

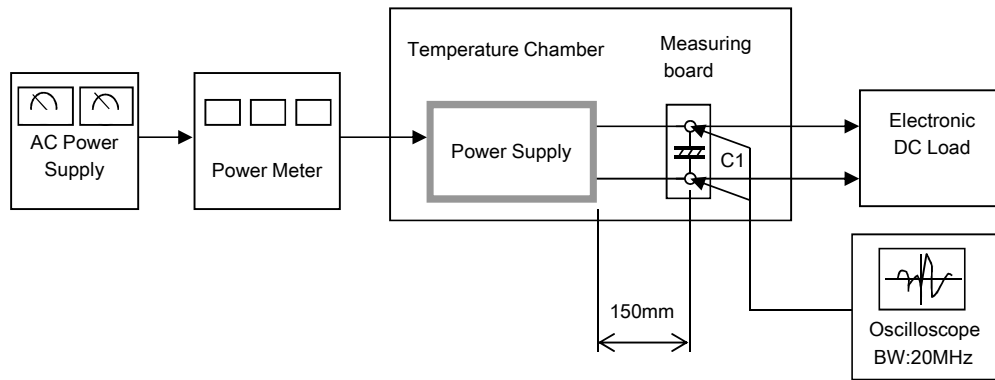


Figure B

C1= 22  $\mu$ F  
(Electrolytic capacitor)