

# TEST DATA OF MODULE H

(AME series)

Regulated DC Power Supply  
August 21, 2019

Approved by : *Yoshimichi Hirokawa*  
Yoshimichi Hirokawa Design Manager

Prepared by : *Takashi Yamamine*  
Takashi Yamamine Design Engineer

**COSEL CO.,LTD.**



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<b>COSEL</b>																																		
Model	MODULE H																																	
Item	Line Regulation	Temperature 25°C Testing Circuitry Figure A																																
Object	+48V5A																																	
<p>1. Graph</p> <p style="text-align: right;">             ---□--- Load 50%              ---△--- Load 100%         </p>		<p>2. Value</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>48.234</td><td>48.230</td></tr> <tr><td>90</td><td>48.234</td><td>48.234</td></tr> <tr><td>100</td><td>48.233</td><td>48.241</td></tr> <tr><td>115</td><td>48.229</td><td>48.243</td></tr> <tr><td>150</td><td>48.229</td><td>48.243</td></tr> <tr><td>200</td><td>48.226</td><td>48.242</td></tr> <tr><td>230</td><td>48.226</td><td>48.243</td></tr> <tr><td>264</td><td>48.226</td><td>48.243</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	85	48.234	48.230	90	48.234	48.234	100	48.233	48.241	115	48.229	48.243	150	48.229	48.243	200	48.226	48.242	230	48.226	48.243	264	48.226	48.243	--	-	-
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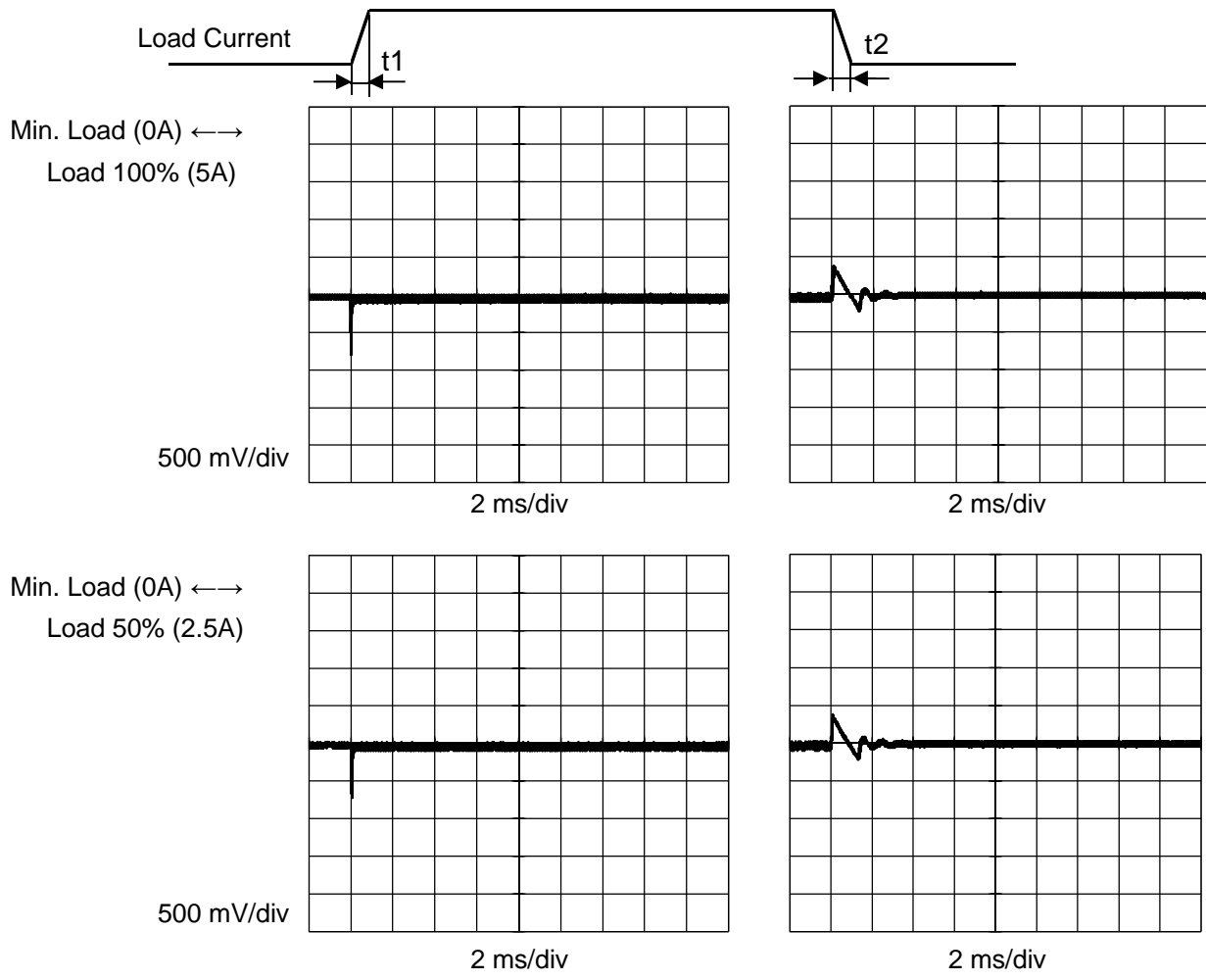


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Model		MODULE H	
Item		Temperature	25° C
Object		Testing Circuitry	Figure A
		+48V5A	

Input Volt. 100 V      Response t1=t2=50us. Typ  
 Cycle 1000 ms





<p>Model      MODULE H</p>		<p>Temperature      25°C Testing Circuitry      Figure B</p>																																						
<p>Item      Ripple Voltage (by Load Current)</p>																																								
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<p>1. Graph</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>—△—      Input Volt.      100 V</p> <p>- -○- -      Input Volt.      230 V</p> </div> </div>		<p>2. Value</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>0.0</td><td>40</td><td>45</td></tr> <tr><td>1.0</td><td>75</td><td>80</td></tr> <tr><td>2.0</td><td>90</td><td>95</td></tr> <tr><td>3.0</td><td>90</td><td>95</td></tr> <tr><td>4.0</td><td>90</td><td>95</td></tr> <tr><td>5.0</td><td>90</td><td>95</td></tr> <tr><td>5.5</td><td>90</td><td>95</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]	0.0	40	45	1.0	75	80	2.0	90	95	3.0	90	95	4.0	90	95	5.0	90	95	5.5	90	95	--	-	-	--	-	-	--	-	-	--	-	-
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Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V5A	

1. Output Voltage Accuracy

This means the output voltage fluctuation of the time the ambient temperature, the input voltage and/or the load current are varied arbitrarily in the range 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 (Ratio) = 
$$\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Value

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	264	0.0	48.378	±168	±0.4
Minimum Voltage	-20	90	5.0	48.043		



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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 Voltage 100V Load 100%</p>		<p>2. Value</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>48.123</td></tr> <tr><td>0.5</td><td>48.233</td></tr> <tr><td>1.0</td><td>48.233</td></tr> <tr><td>2.0</td><td>48.233</td></tr> <tr><td>3.0</td><td>48.233</td></tr> <tr><td>4.0</td><td>48.233</td></tr> <tr><td>5.0</td><td>48.233</td></tr> <tr><td>6.0</td><td>48.229</td></tr> <tr><td>7.0</td><td>48.229</td></tr> <tr><td>8.0</td><td>48.229</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	48.123	0.5	48.233	1.0	48.233	2.0	48.233	3.0	48.233	4.0	48.233	5.0	48.233	6.0	48.229	7.0	48.229	8.0	48.229
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<p>1. Graph</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>— Input Volt. 100V</p> <p>— Input Volt. 200V</p> <p>— Input Volt. 230V</p> </div> <div style="width: 65%;"> </div> </div> <p>Note: Hatched line shows the range of the rated load current.</p> <p>Hiccup mode activates when the output voltage is below 24.0V.</p>		<p>2. Value</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>45.6</td><td>8.26</td><td>8.26</td><td>8.26</td></tr> <tr><td>40.0</td><td>8.46</td><td>8.49</td><td>8.49</td></tr> <tr><td>35.0</td><td>8.72</td><td>8.72</td><td>8.73</td></tr> <tr><td>30.0</td><td>8.96</td><td>8.97</td><td>8.98</td></tr> <tr><td>24.0</td><td>9.50</td><td>9.52</td><td>9.51</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> <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]	45.6	8.26	8.26	8.26	40.0	8.46	8.49	8.49	35.0	8.72	8.72	8.73	30.0	8.96	8.97	8.98	24.0	9.50	9.52	9.51	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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45.6	8.26	8.26	8.26																																																											
40.0	8.46	8.49	8.49																																																											
35.0	8.72	8.72	8.73																																																											
30.0	8.96	8.97	8.98																																																											
24.0	9.50	9.52	9.51																																																											
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<b>COSEL</b>																																								
Model	MODULE H																																							
Item	Overvoltage Protection	Testing Circuitry Figure A																																						
Object	+48V5A																																							
<p>1. Graph</p> <p style="text-align: center;">Load 0%</p>		<p>2. Value</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. 230[V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>53.80</td><td>53.80</td></tr> <tr><td>-20</td><td>53.86</td><td>53.86</td></tr> <tr><td>0</td><td>53.97</td><td>53.97</td></tr> <tr><td>25</td><td>54.14</td><td>54.14</td></tr> <tr><td>50</td><td>54.26</td><td>54.26</td></tr> <tr><td>70</td><td>54.32</td><td>54.32</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> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Ambient Temperature [°C]	Operating Point [V]		Input Volt. 100[V]	Input Volt. 230[V]	-30	53.80	53.80	-20	53.86	53.86	0	53.97	53.97	25	54.14	54.14	50	54.26	54.26	70	54.32	54.32	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Note:</p> <p>Hatched line shows the range of the rated operating temperature.</p>																																								

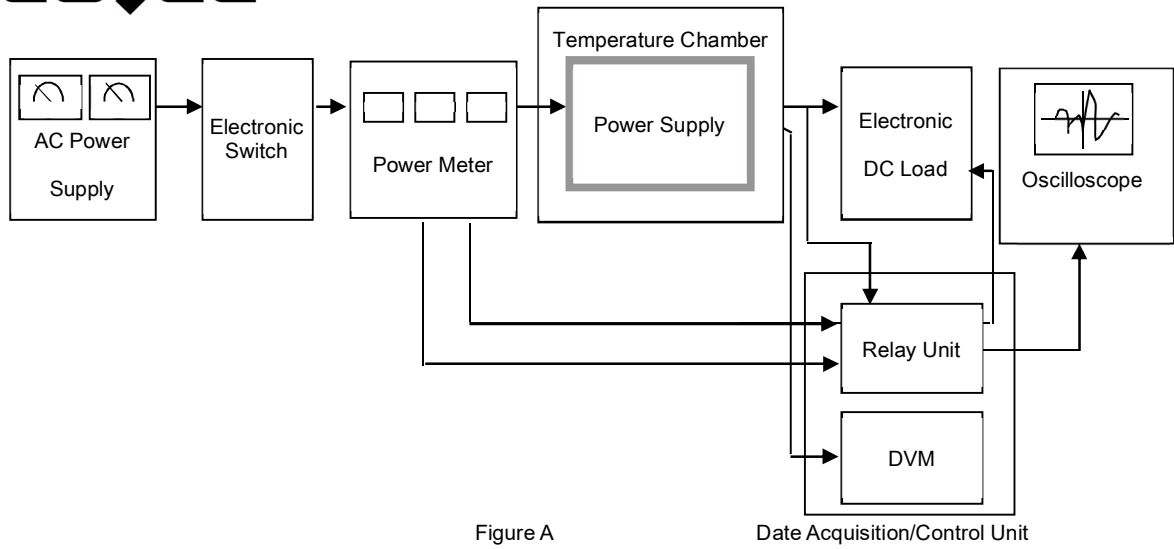


Figure A

Date Acquisition/Control Unit

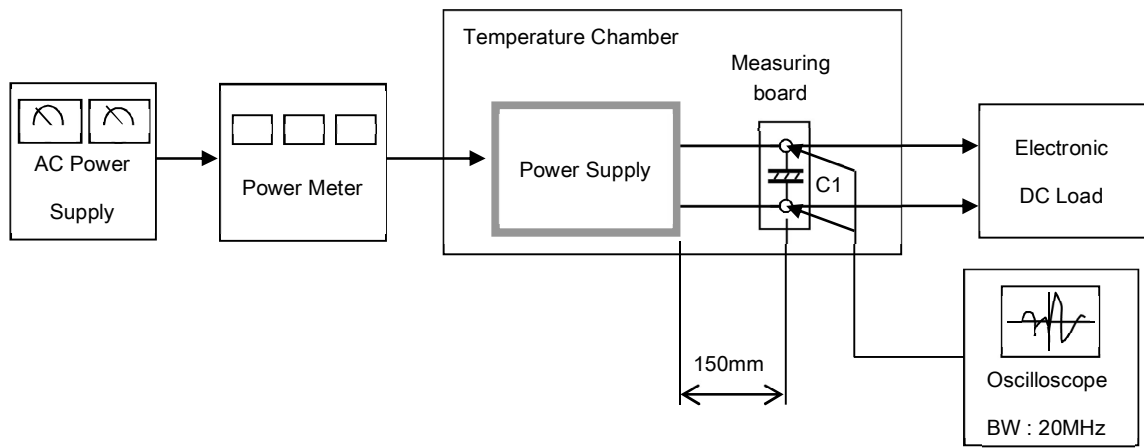


Figure B

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