




TEST DATA OF MODULE 2H

(ACE series)

Regulated DC power supply
Sep.24.2003

Approved by : 
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Prepared by : 
M. Hamaguchi Design Engineer

COSEL CO.,LTD.



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| COSEL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|---|-------------------|--------------------|--|----------|-----------|----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|----|---|---|----|---|---|----|---|---|
| Model | MODULE 2H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item | Line Regulation | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +24V14A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1.Graph</p> <div style="text-align: right;"> <p>---□--- Load 50%</p> <p>—△— Load 100%</p> </div> <p style="text-align: center;">Input Voltage [V]</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>24.060</td><td>24.060</td></tr> <tr><td>100</td><td>24.061</td><td>24.061</td></tr> <tr><td>120</td><td>24.061</td><td>24.061</td></tr> <tr><td>200</td><td>24.063</td><td>24.063</td></tr> <tr><td>230</td><td>24.064</td><td>24.064</td></tr> <tr><td>264</td><td>24.065</td><td>24.064</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 | 24.060 | 24.060 | 100 | 24.061 | 24.061 | 120 | 24.061 | 24.061 | 200 | 24.063 | 24.063 | 230 | 24.064 | 24.064 | 264 | 24.065 | 24.064 | -- | - | - | -- | - | - | -- | - | - |
| Input Voltage [V] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 24.060 | 24.060 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 24.061 | 24.061 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 24.061 | 24.061 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 24.063 | 24.063 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 230 | 24.064 | 24.064 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264 | 24.065 | 24.064 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Note: Slanted line shows the range of the rated input voltage.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| Model | | MODULE 2H | | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|--|--------------------|--|--------------------|--|--|--------------------|--------------------|--------------------|-----|--------|--------|--------|-----|--------|--------|--------|-----|--------|--------|--------|-----|--------|--------|--------|-----|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|----|---|---|---|----|---|---|---|
| Item | | Load Regulation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +24V14A | | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | <p>—△— Input Volt. 100V</p> <p>---□--- Input Volt. 200V</p> <p>---○--- Input Volt. 230V</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Output Voltage [V]</p> <p>Load Current [A]</p> | | <table border="1"> <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>24.065</td><td>24.065</td><td>24.065</td></tr> <tr><td>2.0</td><td>24.062</td><td>24.062</td><td>24.062</td></tr> <tr><td>4.0</td><td>24.062</td><td>24.062</td><td>24.062</td></tr> <tr><td>6.0</td><td>24.062</td><td>24.062</td><td>24.062</td></tr> <tr><td>8.0</td><td>24.062</td><td>24.062</td><td>24.062</td></tr> <tr><td>10.0</td><td>24.062</td><td>24.062</td><td>24.062</td></tr> <tr><td>12.0</td><td>24.062</td><td>24.062</td><td>24.062</td></tr> <tr><td>14.0</td><td>24.062</td><td>24.062</td><td>24.062</td></tr> <tr><td>15.4</td><td>24.062</td><td>24.062</td><td>24.062</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 | 24.065 | 24.065 | 24.065 | 2.0 | 24.062 | 24.062 | 24.062 | 4.0 | 24.062 | 24.062 | 24.062 | 6.0 | 24.062 | 24.062 | 24.062 | 8.0 | 24.062 | 24.062 | 24.062 | 10.0 | 24.062 | 24.062 | 24.062 | 12.0 | 24.062 | 24.062 | 24.062 | 14.0 | 24.062 | 24.062 | 24.062 | 15.4 | 24.062 | 24.062 | 24.062 | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 24.065 | 24.065 | 24.065 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.0 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15.4 | 24.062 | 24.062 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Note: Slanted line shows the range of the rated load current.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

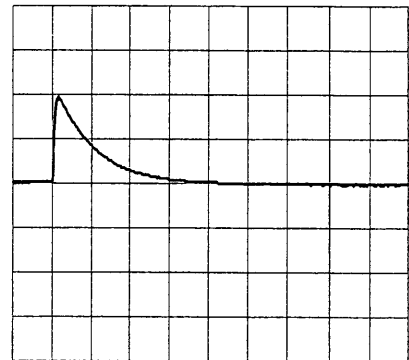
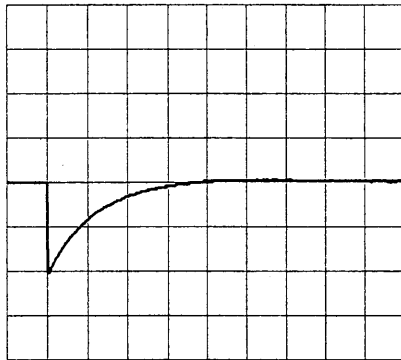


| | | | |
|--------|--|-----------------------|--|
| Model | | MODULE 2H | Temperature 25°C Testing Circuitry Figure A |
| Item | | Dynamic Load Response | |
| Object | | +24V14A | |

Input Volt. 100 V
Cycle 1000 mS

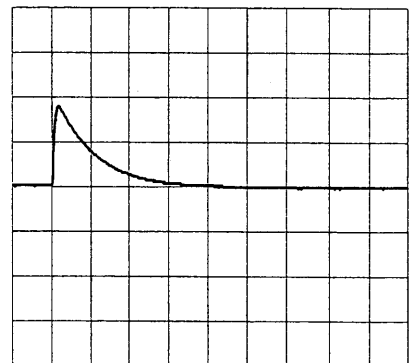
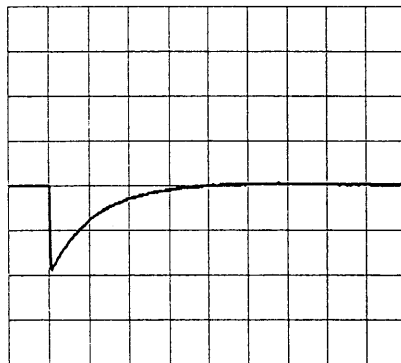


Min. Load ←→
Load 100 %



Min. Load ←→
Load 50 %

100 mV/div



10 ms/div

* The characteristic of AC200V is equal.



| <p>Model MODULE 2H</p> <p>Item Ripple Voltage (by Load Current)</p> <p>Object +24V14A</p> | | <p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------|---|------------------|---------------------|--|---------------------|---------------------|-----|----|----|-----|----|----|-----|----|----|-----|----|----|------|----|----|------|----|----|------|----|----|------|----|----|----|---|---|----|---|---|----|---|---|
| <p>1.Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 100V</p> <p>-○- Input Volt. 200V</p> </div> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</p> | | <p>2.Values</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>15</td><td>15</td></tr> <tr><td>2.8</td><td>25</td><td>25</td></tr> <tr><td>5.6</td><td>25</td><td>25</td></tr> <tr><td>8.4</td><td>25</td><td>25</td></tr> <tr><td>11.2</td><td>25</td><td>25</td></tr> <tr><td>14.0</td><td>25</td><td>25</td></tr> <tr><td>20.0</td><td>30</td><td>30</td></tr> <tr><td>22.0</td><td>30</td><td>30</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 | 15 | 15 | 2.8 | 25 | 25 | 5.6 | 25 | 25 | 8.4 | 25 | 25 | 11.2 | 25 | 25 | 14.0 | 25 | 25 | 20.0 | 30 | 30 | 22.0 | 30 | 30 | -- | - | - | -- | - | - | -- | - | - |
| Load Current [A] | Ripple Voltage [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100 [V] | Input Volt. 200 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 15 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.8 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.6 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.4 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11.2 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.0 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.0 | 30 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22.0 | 30 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <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> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div style="text-align: center;"> <p>T1: Due to AC Input Line</p> <p>T2: Due to Switching</p> </div> <p>Fig. Complex Ripple Wave Form</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| COSEL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------|--|------------------|-------------------|--|---------------------|---------------------|-----|----|----|-----|----|----|-----|----|----|-----|----|----|------|----|----|------|----|----|------|----|----|------|----|----|----|---|---|----|---|---|----|---|---|
| Model | MODULE 2H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item | Ripple-Noise | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +24V14A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1. Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 100V</p> <p>-○- Input Volt. 200V</p> </div> <p>Ripple-Noise [mV]</p> <p>Load Current [A]</p> | | <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. 200 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>35</td><td>35</td></tr> <tr><td>2.8</td><td>35</td><td>35</td></tr> <tr><td>5.6</td><td>35</td><td>35</td></tr> <tr><td>8.4</td><td>35</td><td>35</td></tr> <tr><td>11.2</td><td>40</td><td>40</td></tr> <tr><td>14.0</td><td>45</td><td>45</td></tr> <tr><td>20.0</td><td>45</td><td>45</td></tr> <tr><td>22.0</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> </tbody> </table> | Load Current [A] | Ripple-Noise [mV] | | Input Volt. 100 [V] | Input Volt. 200 [V] | 0.0 | 35 | 35 | 2.8 | 35 | 35 | 5.6 | 35 | 35 | 8.4 | 35 | 35 | 11.2 | 40 | 40 | 14.0 | 45 | 45 | 20.0 | 45 | 45 | 22.0 | 45 | 45 | -- | - | - | -- | - | - | -- | - | - |
| Load Current [A] | Ripple-Noise [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100 [V] | Input Volt. 200 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 35 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.8 | 35 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.6 | 35 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.4 | 35 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11.2 | 40 | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.0 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.0 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22.0 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>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.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>T1: Due to AC Input Line T2: Due to Switching</p> <p>Ripple-Noise [mVp-p]</p> <p>Fig. Complex Ripple Wave Form</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| Model | | MODULE 2H | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------|--|----------------------------|---------------------|--|---------------------|---------------------|-----|----|----|-----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| Item | | Ripple Voltage (by Ambient Temp.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +24V14A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</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>-20</td><td>45</td><td>45</td></tr> <tr><td>-10</td><td>40</td><td>40</td></tr> <tr><td>0</td><td>30</td><td>30</td></tr> <tr><td>10</td><td>30</td><td>30</td></tr> <tr><td>20</td><td>30</td><td>30</td></tr> <tr><td>25</td><td>25</td><td>25</td></tr> <tr><td>30</td><td>25</td><td>25</td></tr> <tr><td>40</td><td>25</td><td>25</td></tr> <tr><td>50</td><td>20</td><td>20</td></tr> <tr><td>60</td><td>20</td><td>20</td></tr> <tr><td>70</td><td>15</td><td>15</td></tr> </tbody> </table> | Ambient Temperature [°C] | Ripple Voltage [mV] | | Input Volt. 100 [V] | Input Volt. 200 [V] | -20 | 45 | 45 | -10 | 40 | 40 | 0 | 30 | 30 | 10 | 30 | 30 | 20 | 30 | 30 | 25 | 25 | 25 | 30 | 25 | 25 | 40 | 25 | 25 | 50 | 20 | 20 | 60 | 20 | 20 | 70 | 15 | 15 | |
| Ambient Temperature [°C] | Ripple Voltage [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100 [V] | Input Volt. 200 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 40 | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 30 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 30 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 30 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 20 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 20 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 15 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Measured by 20 MHz Oscilloscope.</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| Model | | MODULE 2H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|--|----------------------------|--|--------------------------|--------------------|--|--|--------------------|--------------------|--------------------|-----|--------|--------|--------|-----|--------|--------|--------|---|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|
| Item | | Ambient Temperature Drift | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +24V14A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | | <p>—△— Input Volt. 100V</p> <p>---□--- Input Volt. 200V</p> <p>-○- Input Volt. 230V</p> | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> | | <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</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>-20</td><td>24.057</td><td>24.058</td><td>24.058</td></tr> <tr><td>-10</td><td>24.057</td><td>24.058</td><td>24.058</td></tr> <tr><td>0</td><td>24.059</td><td>24.060</td><td>24.060</td></tr> <tr><td>10</td><td>24.063</td><td>24.065</td><td>24.065</td></tr> <tr><td>20</td><td>24.067</td><td>24.070</td><td>24.070</td></tr> <tr><td>25</td><td>24.071</td><td>24.073</td><td>24.073</td></tr> <tr><td>30</td><td>24.073</td><td>24.076</td><td>24.076</td></tr> <tr><td>40</td><td>24.072</td><td>24.072</td><td>24.072</td></tr> <tr><td>50</td><td>24.064</td><td>24.063</td><td>24.063</td></tr> <tr><td>60</td><td>24.049</td><td>24.048</td><td>24.047</td></tr> <tr><td>70</td><td>24.040</td><td>24.040</td><td>24.040</td></tr> </tbody> </table> | | | Ambient Temperature [°C] | Output Voltage [V] | | | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] | -20 | 24.057 | 24.058 | 24.058 | -10 | 24.057 | 24.058 | 24.058 | 0 | 24.059 | 24.060 | 24.060 | 10 | 24.063 | 24.065 | 24.065 | 20 | 24.067 | 24.070 | 24.070 | 25 | 24.071 | 24.073 | 24.073 | 30 | 24.073 | 24.076 | 24.076 | 40 | 24.072 | 24.072 | 24.072 | 50 | 24.064 | 24.063 | 24.063 | 60 | 24.049 | 24.048 | 24.047 | 70 | 24.040 | 24.040 | 24.040 |
| Ambient Temperature [°C] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 24.057 | 24.058 | 24.058 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 24.057 | 24.058 | 24.058 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 24.059 | 24.060 | 24.060 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 24.063 | 24.065 | 24.065 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 24.067 | 24.070 | 24.070 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 24.071 | 24.073 | 24.073 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 24.073 | 24.076 | 24.076 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 24.072 | 24.072 | 24.072 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 24.064 | 24.063 | 24.063 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 24.049 | 24.048 | 24.047 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 24.040 | 24.040 | 24.040 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated ambient temperature. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| | | |
|--------------|-------------------------|----------------------------|
| COSEL | | |
| Model | MODULE 2H | |
| Item | Output Voltage Accuracy | Testing Circuitry Figure A |
| Object | +24V14A | |

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 - 14A

* 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 | 25 | 264 | 0 | 24.081 | ±12 | ±0.1 |
| Minimum Voltage | -20 | 85 | 14 | 24.057 | | |



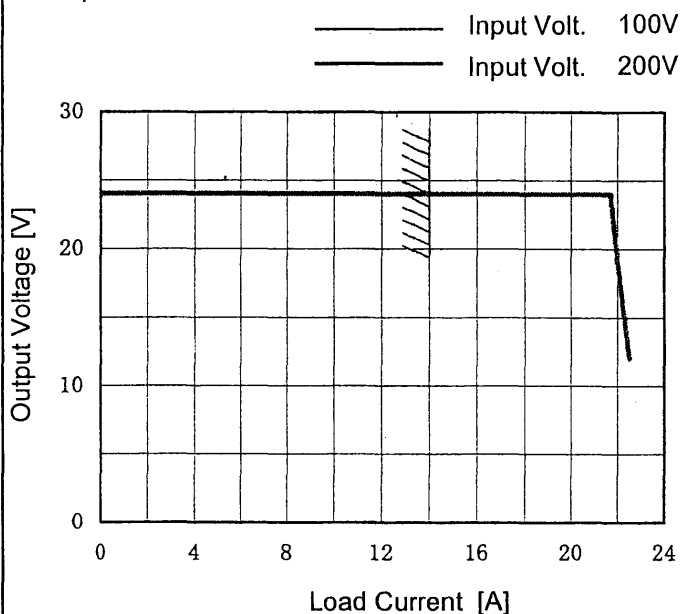
| COSEL | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|---|----------------------|--------------------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| Model | MODULE 2H | | | | | | | | | | | | | | | | | | | | | | | |
| Item | Time Lapse Drift | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | |
| Object | +24V14A | | | | | | | | | | | | | | | | | | | | | | | |
| <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>24.071</td></tr> <tr><td>0.5</td><td>24.061</td></tr> <tr><td>1.0</td><td>24.062</td></tr> <tr><td>2.0</td><td>24.062</td></tr> <tr><td>3.0</td><td>24.063</td></tr> <tr><td>4.0</td><td>24.064</td></tr> <tr><td>5.0</td><td>24.064</td></tr> <tr><td>6.0</td><td>24.064</td></tr> <tr><td>7.0</td><td>24.064</td></tr> <tr><td>8.0</td><td>24.064</td></tr> </tbody> </table> | Time since start [H] | Output Voltage [V] | 0.0 | 24.071 | 0.5 | 24.061 | 1.0 | 24.062 | 2.0 | 24.062 | 3.0 | 24.063 | 4.0 | 24.064 | 5.0 | 24.064 | 6.0 | 24.064 | 7.0 | 24.064 | 8.0 | 24.064 |
| Time since start [H] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 24.071 | | | | | | | | | | | | | | | | | | | | | | | |
| 0.5 | 24.061 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.0 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 24.062 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | 24.063 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 24.064 | | | | | | | | | | | | | | | | | | | | | | | |
| 5.0 | 24.064 | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 24.064 | | | | | | | | | | | | | | | | | | | | | | | |
| 7.0 | 24.064 | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 24.064 | | | | | | | | | | | | | | | | | | | | | | | |
| <p>* The characteristic of AC200V is equal.</p> | | | | | | | | | | | | | | | | | | | | | | | | |



| | |
|--------|------------------------|
| Model | MODULE 2H |
| Item | Overcurrent Protection |
| Object | +24V14A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent operation occurs when the output voltage is from 12V to 0V.

2.Values

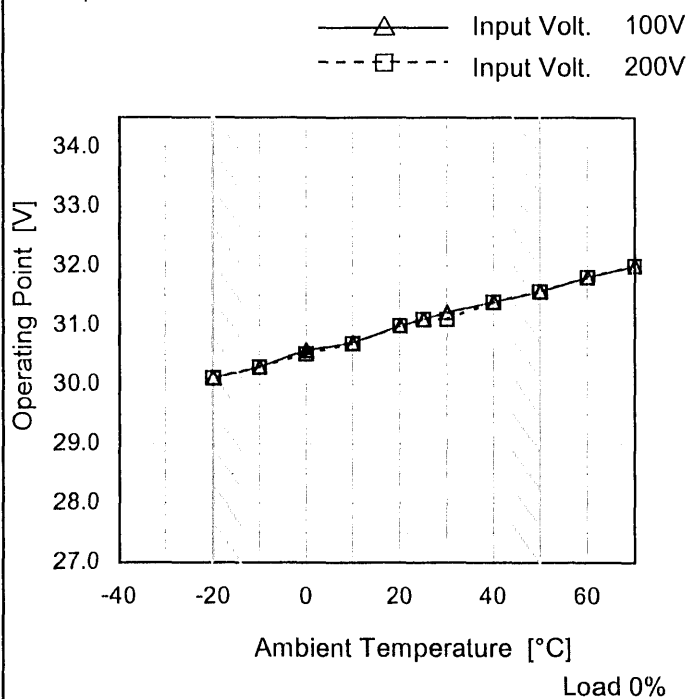
| Output Voltage [V] | Load Current [A] | |
|--------------------|--------------------|--------------------|
| | Input Volt. 100[V] | Input Volt. 200[V] |
| 24.0 | 21.71 | 21.78 |
| 22.8 | 21.75 | 21.84 |
| 21.6 | 21.81 | 21.91 |
| 19.2 | 21.96 | 22.08 |
| 16.8 | 22.15 | 22.24 |
| 14.4 | 22.30 | 22.39 |
| 12.0 | 22.47 | 22.61 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |



| | |
|--------|------------------------|
| Model | MODULE 2H |
| Item | Overvoltage Protection |
| Object | +24V14A |

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 | 30.16 | 30.16 |
| -10 | 30.34 | 30.34 |
| 0 | 30.63 | 30.57 |
| 10 | 30.75 | 30.74 |
| 20 | 31.04 | 31.04 |
| 25 | 31.15 | 31.15 |
| 30 | 31.27 | 31.15 |
| 40 | 31.44 | 31.44 |
| 50 | 31.62 | 31.62 |
| 60 | 31.86 | 31.86 |
| 70 | 32.05 | 32.05 |

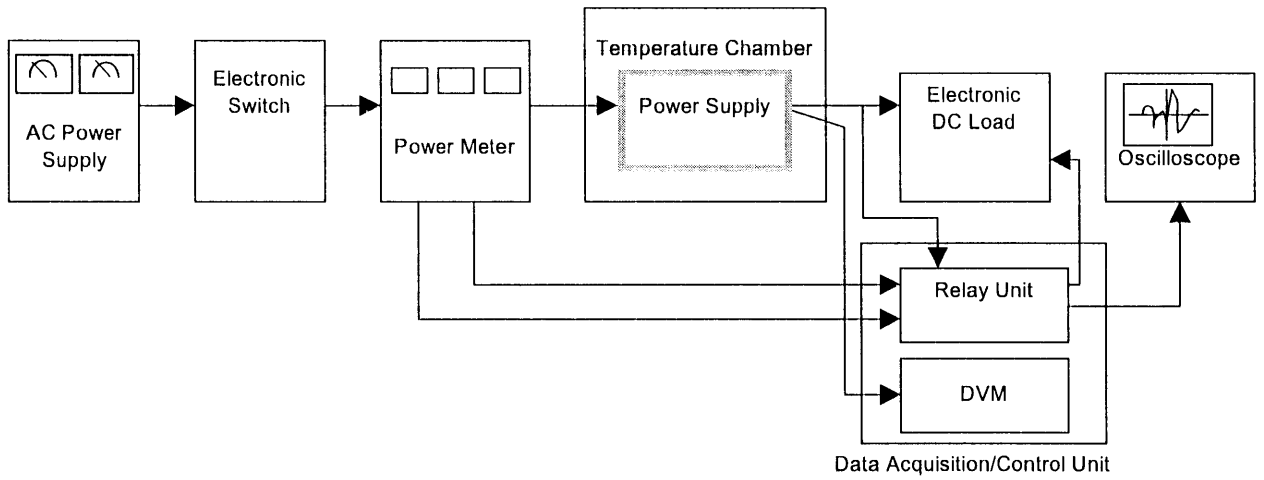


Figure A

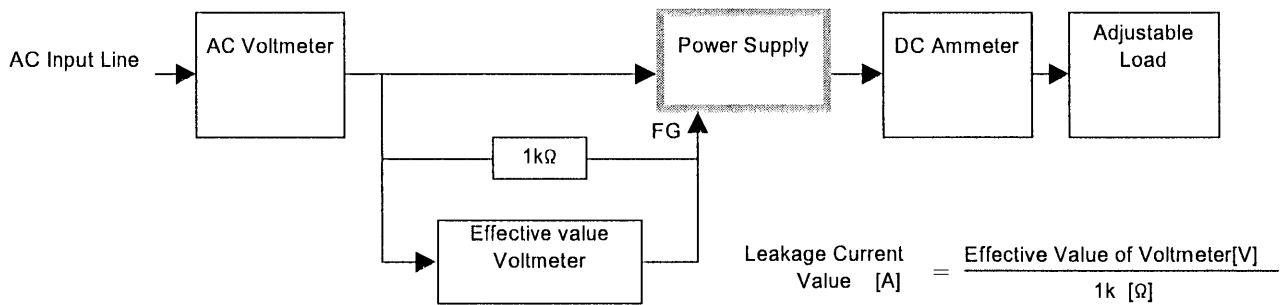


Figure B (DEN-AN)

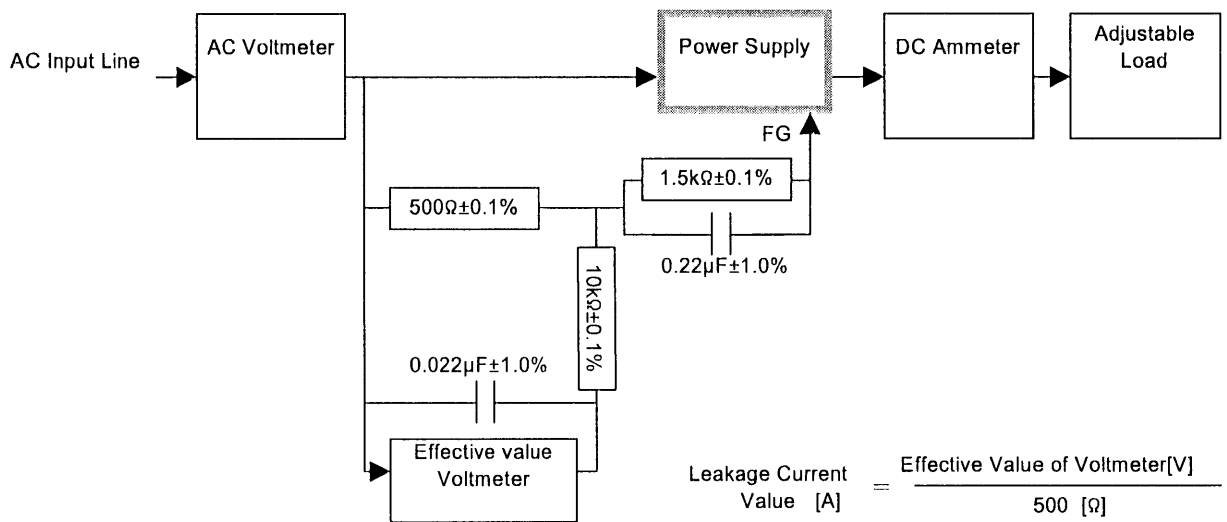


Figure B (IEC60950)