

# TEST DATA OF MODULE U

(AME series)

Regulated DC Power Supply  
September 22, 2021

Approved by : Satoshi Uetani Design Manager

Prepared by : Enkyo Kaku Design Engineer

**COSEL CO.,LTD.**



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| <b>COSEL</b>   |                    |   |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
|--|--------------------|---|-------------------|--------------------|--|----------|-----------|----|--------|--------|----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|----|---|---|
| Model  | MODULE U           |   |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| Item   | Line Regulation    | Temperature 25°C<br>Testing Circuitry Figure A  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| Object   | +36V6.7A           |   |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| <p>1. Graph</p> <p style="text-align: right;">             --- □ --- Load 50%<br/>             ——— △ ——— Load 100%         </p> <p>Note:<br/>Hatched line shows the input voltage range.</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>36.291</td><td>36.285</td></tr> <tr><td>90</td><td>36.292</td><td>36.285</td></tr> <tr><td>100</td><td>36.291</td><td>36.285</td></tr> <tr><td>115</td><td>36.290</td><td>36.286</td></tr> <tr><td>150</td><td>36.290</td><td>36.285</td></tr> <tr><td>200</td><td>36.290</td><td>36.286</td></tr> <tr><td>230</td><td>36.289</td><td>36.286</td></tr> <tr><td>264</td><td>36.290</td><td>36.287</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table> | Input Voltage [V] | Output Voltage [V] |  | Load 50% | Load 100% | 85 | 36.291 | 36.285 | 90 | 36.292 | 36.285 | 100 | 36.291 | 36.285 | 115 | 36.290 | 36.286 | 150 | 36.290 | 36.285 | 200 | 36.290 | 36.286 | 230 | 36.289 | 36.286 | 264 | 36.290 | 36.287 | -- | - | - |
| Input Voltage [V]  | Output Voltage [V] |   |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
|  | Load 50%           | Load 100%   |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 85   | 36.291             | 36.285  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 90   | 36.292             | 36.285  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 100  | 36.291             | 36.285  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 115  | 36.290             | 36.286  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 150  | 36.290             | 36.285  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 200  | 36.290             | 36.286  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 230  | 36.289             | 36.286  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| 264  | 36.290             | 36.287  |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |
| --   | -                  | -   |                   |                    |  |          |           |    |        |        |    |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |     |        |        |    |   |   |



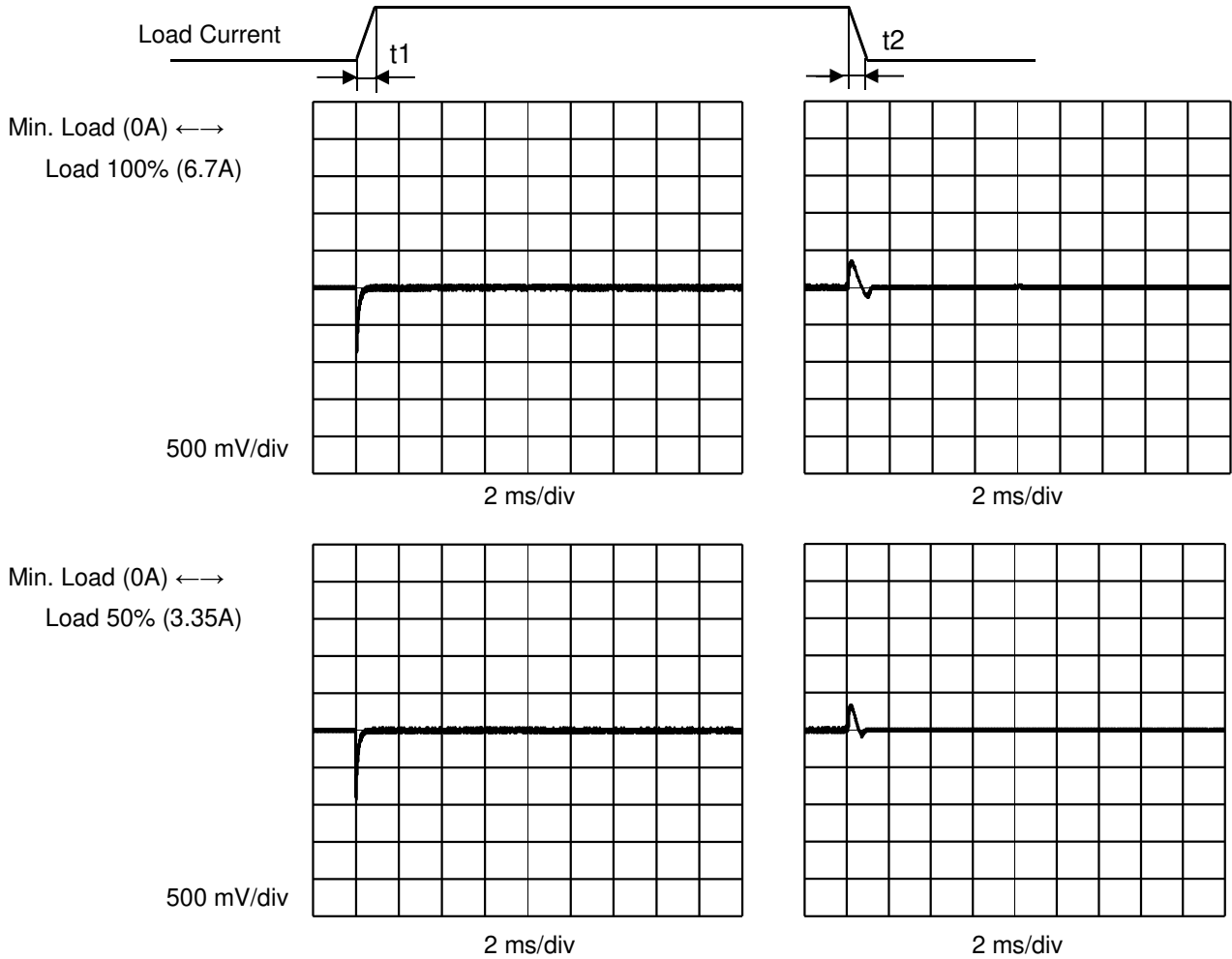
| <p>Model      MODULE U</p>   |                    | <p>Temperature      25°C<br/>Testing Circuitry      Figure A</p>  |                    |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
|--|--------------------|---|--------------------|--------------------|--|--|--------------------|--------------------|--------------------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|----|---|---|---|----|---|---|---|----|---|---|---|
| <p>Item      Load Regulation</p>   |                    |   |                    |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| <p>Object      +36V6.7A</p>  |                    |   |                    |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| <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>2. Values</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>0.00</td><td>36.286</td><td>36.284</td><td>36.281</td></tr> <tr><td>1.34</td><td>36.282</td><td>36.283</td><td>36.280</td></tr> <tr><td>2.68</td><td>36.284</td><td>36.283</td><td>36.280</td></tr> <tr><td>3.35</td><td>36.285</td><td>36.284</td><td>36.280</td></tr> <tr><td>4.02</td><td>36.285</td><td>36.284</td><td>36.280</td></tr> <tr><td>5.36</td><td>36.285</td><td>36.284</td><td>36.279</td></tr> <tr><td>6.70</td><td>36.285</td><td>36.283</td><td>36.278</td></tr> <tr><td>7.37</td><td>36.285</td><td>36.282</td><td>36.277</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] | 0.00 | 36.286 | 36.284 | 36.281 | 1.34 | 36.282 | 36.283 | 36.280 | 2.68 | 36.284 | 36.283 | 36.280 | 3.35 | 36.285 | 36.284 | 36.280 | 4.02 | 36.285 | 36.284 | 36.280 | 5.36 | 36.285 | 36.284 | 36.279 | 6.70 | 36.285 | 36.283 | 36.278 | 7.37 | 36.285 | 36.282 | 36.277 | -- | - | - | - | -- | - | - | - | -- | - | - | - |
| Load Current [A]   | Output Voltage [V] |   |                    |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
|  | Input Volt. 100[V] | Input Volt. 200[V]  | Input Volt. 230[V] |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 0.00   | 36.286             | 36.284  | 36.281             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 1.34   | 36.282             | 36.283  | 36.280             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 2.68   | 36.284             | 36.283  | 36.280             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 3.35   | 36.285             | 36.284  | 36.280             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 4.02   | 36.285             | 36.284  | 36.280             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 5.36   | 36.285             | 36.284  | 36.279             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 6.70   | 36.285             | 36.283  | 36.278             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| 7.37   | 36.285             | 36.282  | 36.277             |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| --   | -                  | -   | -                  |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| --   | -                  | -   | -                  |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| --   | -                  | -   | -                  |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |
| <p>Note: Hatched line shows the range of the rated load current.</p>   |                    |   |                    |                    |  |  |                    |                    |                    |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |      |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |



|        |  |                       |          |
|--------|--|-----------------------|----------|
| Model  |  | MODULE U              |          |
| Item   |  | Dynamic Load Response |          |
| Object |  | +36V6.7A              |          |
|        |  | Temperature           | 25° C    |
|        |  | Testing Circuitry     | Figure A |

Input Volt. 100 V  
Cycle 1000 ms

Response t1=t2=50us. Typ



| <p>Model      MODULE U</p>   |                     | <p>Temperature      25°C<br/>Testing Circuitry      Figure B</p>   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--|---------------------|--|------------------|---------------------|--|--------------------|--------------------|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| <p>Item      Ripple Voltage (by Load Current)</p>  |                     |  |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <p>Object      +36V6.7A</p>  |                     |  |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <p>1. Graph</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> </div> <div style="margin-left: 20px;"> <p>—△—      Input Volt.      100 V</p> <p>- -○- -      Input Volt.      230 V</p> </div> </div> |                     | <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="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 100[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>30</td><td>30</td></tr> <tr><td>1.34</td><td>70</td><td>70</td></tr> <tr><td>2.68</td><td>70</td><td>70</td></tr> <tr><td>4.02</td><td>70</td><td>70</td></tr> <tr><td>5.36</td><td>70</td><td>70</td></tr> <tr><td>6.70</td><td>70</td><td>70</td></tr> <tr><td>7.37</td><td>70</td><td>70</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] | 0.00 | 30 | 30 | 1.34 | 70 | 70 | 2.68 | 70 | 70 | 4.02 | 70 | 70 | 5.36 | 70 | 70 | 6.70 | 70 | 70 | 7.37 | 70 | 70 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Load Current [A]   | Ripple Voltage [mV] |  |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|  | Input Volt. 100[V]  | Input Volt. 230[V]   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0.00   | 30                  | 30   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1.34   | 70                  | 70   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2.68   | 70                  | 70   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4.02   | 70                  | 70   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5.36   | 70                  | 70   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6.70   | 70                  | 70   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7.37   | 70                  | 70   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --   | --                  | --   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --   | --                  | --   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --   | --                  | --   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --   | --                  | --   |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <p>Note:</p> <p>Measured by 20MHz Oscilloscope.</p> <p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Hatched line shows the range of the rated load current.</p>  |                     |  |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <div style="display: flex; justify-content: center; align-items: center;"> <div style="margin-right: 20px;"> <p>T1: Due to AC Input Line</p> <p>T2: Due to Switching</p> </div> </div> <p>Ripple [mVp-p]</p> <p>Fig. Complex Ripple Wave Form</p>                              |                     |  |                  |                     |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |



| <p>Model      MODULE U</p>  |                    | <p>Temperature      25°C<br/>Testing Circuitry      Figure B</p>   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|--------------------|--|------------------|-------------------|--|--------------------|--------------------|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| <p>Item      Ripple Noise</p>   |                    |  |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <p>Object      +36V6.7A</p>   |                    |  |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <p>1. Graph</p> <div style="display: flex; align-items: center;"> <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>35</td><td>35</td></tr> <tr><td>1.34</td><td>75</td><td>75</td></tr> <tr><td>2.68</td><td>75</td><td>75</td></tr> <tr><td>4.02</td><td>75</td><td>75</td></tr> <tr><td>5.36</td><td>75</td><td>75</td></tr> <tr><td>6.70</td><td>75</td><td>75</td></tr> <tr><td>7.37</td><td>75</td><td>75</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 | 35 | 35 | 1.34 | 75 | 75 | 2.68 | 75 | 75 | 4.02 | 75 | 75 | 5.36 | 75 | 75 | 6.70 | 75 | 75 | 7.37 | 75 | 75 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Load Current [A]  | Ripple Noise [mV]  |  |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|   | Input Volt. 100[V] | Input Volt. 230[V]   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0.00  | 35                 | 35   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1.34  | 75                 | 75   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2.68  | 75                 | 75   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4.02  | 75                 | 75   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5.36  | 75                 | 75   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6.70  | 75                 | 75   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7.37  | 75                 | 75   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --  | --                 | --   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --  | --                 | --   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --  | --                 | --   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| --  | --                 | --   |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <p>Note:</p> <p>Measured by 20MHz Oscilloscope.</p> <p>Ripple Noise is shown as p-p in the figure below.</p> <p>Hatched line shows the range of the rated load current.</p>                   |                    |  |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <div style="text-align: center;"> <p>T1: Due to AC Input Line<br/>T2: Due to Switching</p> </div> <p>Fig. Complex Ripple Wave Form</p>  |                    |  |                  |                   |  |                    |                    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |



| <b>COSEL</b>   |                                   |   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
|--|-----------------------------------|---|--------------------------|---------------------|--|---------------------|---------------------|-----|----|----|-----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|---|---|----|---|---|----|---|---|----|---|---|----|---|---|
| Model  | MODULE U                          |   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| Item   | Ripple Voltage (by Ambient Temp.) | Testing Circuitry Figure B  |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| Object   | +36V6.7A                          |   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| <p>1. Graph</p> <div style="text-align: right;"> <p>--- □ --- Input Volt. 100V</p> <p>— △ — Input Volt. 230V</p> </div> <p style="text-align: center;">Ambient Temperature [°C]<br/>Load 100 %</p> |                                   | <p>2. Values</p> <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. 230 [V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>85</td><td>85</td></tr> <tr><td>-20</td><td>80</td><td>80</td></tr> <tr><td>0</td><td>75</td><td>75</td></tr> <tr><td>25</td><td>70</td><td>70</td></tr> <tr><td>50</td><td>65</td><td>65</td></tr> <tr><td>70</td><td>65</td><td>65</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] | Ripple Voltage [mV] |  | Input Volt. 100 [V] | Input Volt. 230 [V] | -30 | 85 | 85 | -20 | 80 | 80 | 0 | 75 | 75 | 25 | 70 | 70 | 50 | 65 | 65 | 70 | 65 | 65 | -- | - | - | -- | - | - | -- | - | - | -- | - | - | -- | - | - |
| Ambient Temperature [°C]   | Ripple Voltage [mV]               |   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
|  | Input Volt. 100 [V]               | Input Volt. 230 [V]   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| -30  | 85                                | 85  |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| -20  | 80                                | 80  |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 0  | 75                                | 75  |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 25   | 70                                | 70  |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 50   | 65                                | 65  |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 70   | 65                                | 65  |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --   | -                                 | -   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --   | -                                 | -   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --   | -                                 | -   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --   | -                                 | -   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --   | -                                 | -   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| <p>Note:</p> <p>Measured by 20MHz Oscilloscope.</p> <p>Hatched line shows the range of the rated operating temperature.</p>  |                                   |   |                          |                     |  |                     |                     |     |    |    |     |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |





| Model                    |                    | MODULE U   | Testing Circuitry Figure A   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
|--------------------------|--------------------|--|--|--|--|--------------------------|--------------------|--|--|--------------------|--------------------|--------------------|-----|--------|--------|--------|-----|--------|--------|--------|---|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|
| Item                     |                    | Ambient Temperature Drift  |  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| Object                   |                    | +36V6.7A   |  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 1. Graph                 |                    | <p> <span style="border-bottom: 1px solid black; display: inline-block; width: 1em; margin-right: 0.5em;"></span> <span style="border-bottom: 1px dashed black; display: inline-block; width: 1em; margin-right: 0.5em;"></span> <span style="border-bottom: 1px dash-dot black; display: inline-block; width: 1em; margin-right: 0.5em;"></span> </p> <p> <span style="margin-right: 0.5em;">△</span> Input Volt. 100V<br/> <span style="margin-right: 0.5em;">□</span> Input Volt. 200V<br/> <span style="margin-right: 0.5em;">○</span> Input Volt. 230V                 </p> <p style="text-align: center;">Ambient Temperature [°C]<br/>Load 100%</p> | 2. Values  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
|                          |                    |  | <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>-30</td><td>36.131</td><td>36.132</td><td>36.133</td></tr> <tr><td>-20</td><td>36.163</td><td>36.163</td><td>36.158</td></tr> <tr><td>0</td><td>36.223</td><td>36.224</td><td>36.223</td></tr> <tr><td>25</td><td>36.285</td><td>36.289</td><td>36.288</td></tr> <tr><td>50</td><td>36.351</td><td>36.353</td><td>36.354</td></tr> <tr><td>70</td><td>36.383</td><td>36.383</td><td>36.382</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> |  |  | Ambient Temperature [°C] | Output Voltage [V] |  |  | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] | -30 | 36.131 | 36.132 | 36.133 | -20 | 36.163 | 36.163 | 36.158 | 0 | 36.223 | 36.224 | 36.223 | 25 | 36.285 | 36.289 | 36.288 | 50 | 36.351 | 36.353 | 36.354 | 70 | 36.383 | 36.383 | 36.382 | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - |
| Ambient Temperature [°C] | Output Voltage [V] |  |  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
|                          | Input Volt. 100[V] | Input Volt. 200[V]   | Input Volt. 230[V]   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| -30                      | 36.131             | 36.132   | 36.133   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| -20                      | 36.163             | 36.163   | 36.158   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 0                        | 36.223             | 36.224   | 36.223   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 25                       | 36.285             | 36.289   | 36.288   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 50                       | 36.351             | 36.353   | 36.354   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 70                       | 36.383             | 36.383   | 36.382   |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --                       | -                  | -  | -  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --                       | -                  | -  | -  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --                       | -                  | -  | -  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --                       | -                  | -  | -  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --                       | -                  | -  | -  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --                       | -                  | -  | -  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| Note:                    |                    | Hatched line shows the range of the rated operating temperature.   |  |  |  |                          |                    |  |  |                    |                    |                    |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |



|              |                         |                            |
|--------------|-------------------------|----------------------------|
| <b>COSEL</b> |                         |                            |
| Model        | MODULE U                |                            |
| Item         | Output Voltage Accuracy | Testing Circuitry Figure A |
| Object       | +36V6.7A                |                            |

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 - 6.7A

\* 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               | 264              | 6.7        | 36.347     | ±110                    | ±0.3      |
| Minimum Voltage | -20              | 85               | 0.0        | 36.127     |                         |           |



| <b>COSEL</b>  |                    |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
|---|--------------------|---|----------------------|--------------------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| Model   | MODULE U           |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| Item  | Time Lapse Drift   | Temperature 25°C<br>Testing Circuitry Figure A  |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| Object  | +36V6.7A           |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| <p>1. Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 100V<br/>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>36.289</td></tr> <tr><td>0.5</td><td>36.291</td></tr> <tr><td>1.0</td><td>36.291</td></tr> <tr><td>2.0</td><td>36.291</td></tr> <tr><td>3.0</td><td>36.291</td></tr> <tr><td>4.0</td><td>36.291</td></tr> <tr><td>5.0</td><td>36.292</td></tr> <tr><td>6.0</td><td>36.292</td></tr> <tr><td>7.0</td><td>36.293</td></tr> <tr><td>8.0</td><td>36.293</td></tr> </tbody> </table> | Time since start [H] | Output Voltage [V] | 0.0 | 36.289 | 0.5 | 36.291 | 1.0 | 36.291 | 2.0 | 36.291 | 3.0 | 36.291 | 4.0 | 36.291 | 5.0 | 36.292 | 6.0 | 36.292 | 7.0 | 36.293 | 8.0 | 36.293 |
| Time since start [H]  | Output Voltage [V] |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 0.0   | 36.289             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 0.5   | 36.291             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 1.0   | 36.291             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 2.0   | 36.291             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 3.0   | 36.291             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 4.0   | 36.291             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 5.0   | 36.292             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 6.0   | 36.292             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 7.0   | 36.293             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |
| 8.0   | 36.293             |   |                      |                    |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |



| Model   |                    | MODULE U               | Temperature 25°C  |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
|---|--------------------|------------------------|---|--|--------------------|------------------|--|--|--------------------|--------------------|--------------------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|
| Item  |                    | Overcurrent Protection | Testing Circuitry Figure A  |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| Object  |                    | +36V6.7A               |   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| <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: 60%;"> </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>34.2</td><td>11.08</td><td>11.08</td><td>11.08</td></tr> <tr><td>32.4</td><td>11.24</td><td>11.23</td><td>11.23</td></tr> <tr><td>28.8</td><td>11.61</td><td>11.60</td><td>11.60</td></tr> <tr><td>25.2</td><td>12.12</td><td>12.11</td><td>12.11</td></tr> <tr><td>21.6</td><td>12.61</td><td>12.61</td><td>12.61</td></tr> <tr><td>18.0</td><td>13.19</td><td>13.19</td><td>13.19</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] | 34.2 | 11.08 | 11.08 | 11.08 | 32.4 | 11.24 | 11.23 | 11.23 | 28.8 | 11.61 | 11.60 | 11.60 | 25.2 | 12.12 | 12.11 | 12.11 | 21.6 | 12.61 | 12.61 | 12.61 | 18.0 | 13.19 | 13.19 | 13.19 | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - |
| Output Voltage [V]  | Load Current [A]   |                        |   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
|   | Input Volt. 100[V] | Input Volt. 200[V]     | Input Volt. 230[V]  |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 34.2  | 11.08              | 11.08                  | 11.08   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 32.4  | 11.24              | 11.23                  | 11.23   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 28.8  | 11.61              | 11.60                  | 11.60   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 25.2  | 12.12              | 12.11                  | 12.11   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 21.6  | 12.61              | 12.61                  | 12.61   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| 18.0  | 13.19              | 13.19                  | 13.19   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --  | -                  | -                      | -   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --  | -                  | -                      | -   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --  | -                  | -                      | -   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --  | -                  | -                      | -   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --  | -                  | -                      | -   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --  | -                  | -                      | -   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| --  | -                  | -                      | -   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |
| <p>Note:</p> <p>Hatched line shows the range of the rated load current.</p> <p>Hiccup mode activates when the output voltage is below 18V.</p>  |                    |                        |   |  |                    |                  |  |  |                    |                    |                    |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |



| <b>COSEL</b>  |                        |   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
|---|------------------------|---|--------------------------|---------------------|--|--------------------|--------------------|-----|-------|-------|-----|-------|-------|---|-------|-------|----|-------|-------|----|-------|-------|----|-------|-------|----|---|---|----|---|---|----|---|---|----|---|---|----|---|---|
| Model   | MODULE U               |   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| Item  | Overvoltage Protection | Testing Circuitry Figure A  |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| Object  | +36V6.7A               |   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| <p>1. Graph</p> <p style="text-align: center;">Ambient Temperature [°C]<br/>Load 0%</p> |                        | <p>2. Values</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>41.29</td><td>41.29</td></tr> <tr><td>-20</td><td>41.34</td><td>41.34</td></tr> <tr><td>0</td><td>41.34</td><td>41.34</td></tr> <tr><td>25</td><td>41.40</td><td>41.40</td></tr> <tr><td>50</td><td>41.34</td><td>41.34</td></tr> <tr><td>70</td><td>41.40</td><td>41.40</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 | 41.29 | 41.29 | -20 | 41.34 | 41.34 | 0 | 41.34 | 41.34 | 25 | 41.40 | 41.40 | 50 | 41.34 | 41.34 | 70 | 41.40 | 41.40 | -- | - | - | -- | - | - | -- | - | - | -- | - | - | -- | - | - |
| Ambient Temperature [°C]  | Operating Point [V]    |   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
|   | Input Volt. 100[V]     | Input Volt. 230[V]  |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| -30   | 41.29                  | 41.29   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| -20   | 41.34                  | 41.34   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 0   | 41.34                  | 41.34   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 25  | 41.40                  | 41.40   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 50  | 41.34                  | 41.34   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| 70  | 41.40                  | 41.40   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --  | -                      | -   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --  | -                      | -   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --  | -                      | -   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --  | -                      | -   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| --  | -                      | -   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |
| <p>Note:<br/>Hatched line shows the range of the rated operating temperature.</p>       |                        |   |                          |                     |  |                    |                    |     |       |       |     |       |       |   |       |       |    |       |       |    |       |       |    |       |       |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |

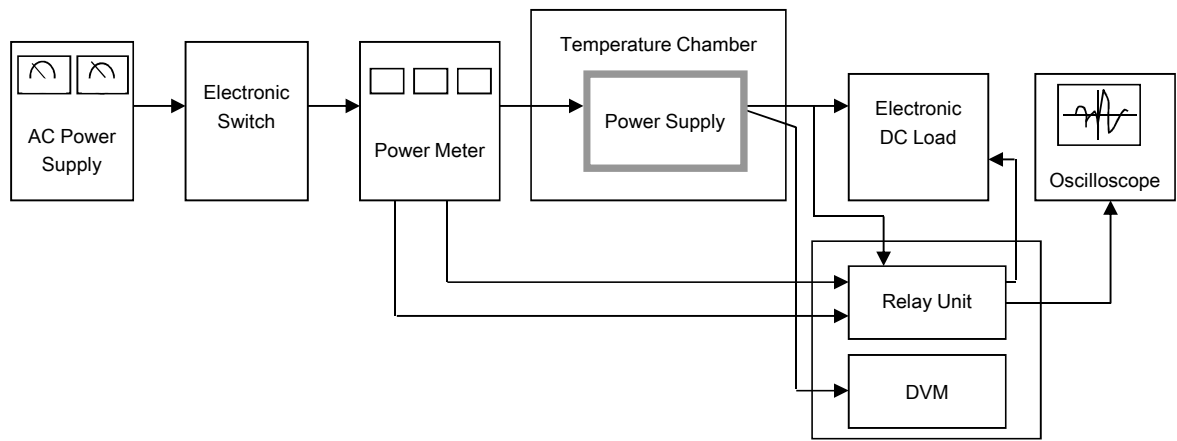


Figure A

Data Acquisition/Control Unit

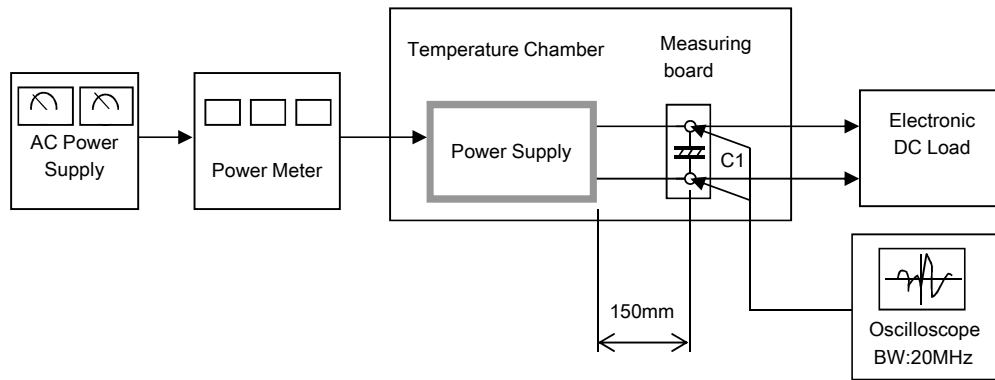


Figure B

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