

Huawei SUN2000-40KTL-US  
Short Circuit Data



**Huawei Technologies Co., Ltd.**

| Version | Created by | Date       | Remarks |
|---------|------------|------------|---------|
| 01      | Zeyu Yi    | 03/25/2017 |         |
|         |            |            |         |
|         |            |            |         |
|         |            |            |         |



## SUN2000-40KTL-US Short Circuit Data

### 1.1 Resistance and Reactance

|  |          |
|--|----------|
| Max design fault contribution current  | 50A, RMS |
| Harmonics  | <3%      |
| Short-Circuit Equivalent Pos. Seq. Resistance (R1),<br>valid for initial 2 to 6 cycles (p.u.)  | 0.14     |
| Short-Circuit Equivalent Pos. Seq. Reactance (XL1),<br>valid for initial 2 to 6 cycles (p.u.)  | 0.96     |
| Short-Circuit Equivalent Neg. Seq. Resistance (R2),<br>valid for initial 2 to 6 cycles (p.u.)  | 2.97     |
| Short-Circuit Equivalent Neg. Seq. Reactance (XL2),<br>valid for initial 2 to 6 cycles (p.u.)  | 19.80    |
| Short-Circuit Equivalent Zero. Seq. Resistance (R0),<br>valid for initial 2 to 6 cycles (p.u.) | 15.00    |
| Short-Circuit Equivalent Zero. Seq. Reactance (XL0),<br>valid for initial 2 to 6 cycles (p.u.) | 100.00   |

**Output Overload Test, UL1741 Sec. 47.2, Cl. 6.6**

The ac voltage is to be adjusted to provide for the maximum output current. The utility is not to be adjusted less than the utility trip voltage rating. The inverter is to remain in the loaded condition until it shuts down, reaches thermal stabilization, or has operated for seven hours, whichever occurs first.

Firmware or software controlling the temperature limits had been disabled.

Test Performed on Model: SUN2000-40KTL-US  
 Ambient temperature: 50C

The unit operated continuously for 7 hours with 44kW output.

As a result of the tests, the unit did not emit flame or molten metal or become a risk of fire, electric shock, or injury to persons. 3 A fuse did not open.

|            |                        |               |           |             |            |
|------------|------------------------|---------------|-----------|-------------|------------|
| Tested By: | Weishigui              | Witnessed by: | Kyle Song | Compliance: | Yes        |
| Equipment: | ACDEFGHIJKVWXZ(AA)(AD) |               |           | Date:       | 2016-10-21 |

**Output Short Circuit Test, UL 1741 Sec. 47.3, Cl. 6.6**

Test performed under islanding condition by disable the anti-islanding protection, just generating the nominal voltage, afterwards we performed a short circuit between Lines to Lines and line to Ground.

Test setup: 200KVA Transformer connected between inverter and AC source

Performed on model: SUN2000-40KTL-US, 750Vdc Input, 480Vac Output, 60Hz, 40 kW

| Phases   | # | Peak Current (A) | Duration (ms) | RMS Current over 1 cycle (A) | RMS Current over 3 cycles (A) | RMS Current over 5 cycles (A) | RMS A overall event(A) |
|----------|---|------------------|---------------|------------------------------|-------------------------------|-------------------------------|------------------------|
| L1 to L2 | 1 | -107.2           | 70.713        | 60.59                        | 53.69                         | 45.86                         | 49.77                  |
|          | 2 | -104.0           | 78.844        | 60.06                        | 52.54                         | 46.81                         | 48.12                  |
|          | 3 | 104.0            | 82.453        | 58.07                        | 52.55                         | 48.1                          | 48.88                  |
|          | 4 | 110.4            | 76.453        | 56.99                        | 56.99                         | 47.25                         | 49.29                  |
| L1 to L3 | 1 | 107.2            | 70.439        | 57.7                         | 52.5                          | 45.04                         | 48.93                  |
|          | 2 | -190.4           | 79.063        | 55.76                        | 50.07                         | 45.08                         | 46.36                  |
|          | 3 | -107.2           | 79.877        | 64.83                        | 57.63                         | 52.99                         | 54.12                  |
|          | 4 | 110.4            | 81.367        | 62.23                        | 54.34                         | 48.24                         | 50.84                  |
| L2 to L3 | 1 | 113.6            | 76.713        | 66.77                        | 58.88                         | 50.25                         | 55.2                   |
|          | 2 | -107.2           | 81.627        | 60.11                        | 52.69                         | 47.09                         | 47.58                  |
|          | 3 | -158.4           | 67.93         | 59.3                         | 59.3                          | 44.42                         | 49.19                  |
|          | 4 | -190.4           | 79.672        | 58.23                        | 51.11                         | 45.54                         | 46.57                  |
| L1 to N  | 1 | 177.6            | 90.891        | 104.3                        | 96.66                         | 92.07                         | 90.81                  |

|          |   |        |        |       |       |       |       |
|----------|---|--------|--------|-------|-------|-------|-------|
|          | 2 | 174.4  | 76.453 | 104.5 | 97.28 | 86.23 | 90.0  |
|          | 3 | 113.6  | 86.107 | 67.08 | 59.24 | 54.15 | 56.03 |
|          | 4 | 177.6  | 90.717 | 107.5 | 97.76 | 90.06 | 89.77 |
|          |   |        |        |       |       |       |       |
| L2 to N  | 1 | -174.4 | 84.063 | 105.6 | 97.05 | 89.42 | 89.19 |
|          | 2 | -177.6 | 83.672 | 88.57 | 91.93 | 87.92 | 87.74 |
|          | 3 | -174.4 | 73.93  | 104.4 | 96.75 | 84.77 | 90.18 |
|          | 4 | 180.8  | 90.412 | 111.5 | 98.07 | 92.39 | 92.0  |
|          |   |        |        |       |       |       |       |
| L3 to N  | 1 | 129.6  | 80.322 | 65.59 | 56.91 | 50.31 | 51.22 |
|          | 2 | -171.2 | 81.268 | 102.8 | 96.72 | 89.31 | 90.43 |
|          | 3 | -171.2 | 91.586 | 103.2 | 96.93 | 92.56 | 90.7  |
|          | 4 | 113.6  | 85.977 | 67.65 | 59.24 | 53.51 | 55.1  |
|          |   |        |        |       |       |       |       |
| L1 to PE | 1 | 48.0   | 1183   | 3.577 | 3.511 | 3.493 | 3.388 |
|          | 2 | -16.0  | 1193   | 3.609 | 3.579 | 3.553 | 3.475 |
|          | 3 | 12.0   | 1199   | 3.68  | 3.647 | 3.647 | 3.615 |
|          | 4 | -44.0  | 1177   | 3.575 | 3.502 | 3.49  | 3.402 |
|          |   |        |        |       |       |       |       |
| L2 to PE | 1 | -44.0  | 1170   | 3.603 | 3.554 | 3.562 | 3.515 |
|          | 2 | 12.0   | 1142   | 3.521 | 3.514 | 3.519 | 3.449 |
|          | 3 | 12.0   | 1226   | 3.552 | 3.537 | 3.532 | 3.452 |
|          | 4 | 12.0   | 1154   | 3.453 | 3.409 | 3.39  | 3.329 |
|          |   |        |        |       |       |       |       |
| L3 to PE | 1 | 12.0   | 1198   | 3.418 | 3.452 | 3.417 | 3.365 |
|          | 2 | 56.0   | 1241   | 3.659 | 3.565 | 3.547 | 3.439 |
|          | 3 | -16.0  | 1249   | 3.472 | 3.401 | 3.392 | 3.354 |
|          | 4 | -44.0  | 1166   | 3.385 | 3.304 | 3.281 | 3.181 |

After fault removed the unit continued to operate normally.  
 3 Amps fuse remained intact.  
 No hazards observed.

|            |                     |               |           |             |            |
|------------|---------------------|---------------|-----------|-------------|------------|
| Tested By: | Weishigui           | Witnessed by: | Kyle Song | Compliance: | Yes        |
| Equipment: | ACDEFGHIJKLMVWX(AD) |               |           | Date:       | 2016-12-08 |