



Manufacturer's Declaration

Short-circuit behavior of Sunny Central CP XT and Sunny Central Storage

For both, the plant layout and the integration into the protection system of distribution and transmission grids, information on the short-circuit behavior of the PV inverters are required.

The contribution to the short-circuit current depends on the operation mode of the inverter. Regarding the SMA Sunny Central CP XT and Sunny Central Storage inverters the following operation modes can occur:

1. Full dynamic grid support (fault ride through) with feeding reactive current during the dip
2. Limited dynamic grid support (fault ride through) without feeding current during the dip

Full dynamic grid support (fault ride through) with feeding reactive current during the dip

In case of the full dynamic grid support you find the values for the initial symmetrical short-circuit current I_k'' , the surge current i_p and the uninterrupted short-circuit current I_k from the following tables.

| I_k'' | i_p | I_k |
|-----------|-----------|-----------|
| $2,2 I_N$ | $3,1 I_N$ | $1,0 I_N$ |

Table 1: Values for initial symmetrical short-circuit current I_k'' , surge current i_p and uninterrupted short-circuit current I_k

Please use the following current ratings for conversion to absolute values.

| Sunny Central CP XT | |
|---------------------|-----------------------|
| Inverter type | Nominal current I_N |
| SC 500CP-10 | 1176 A |
| SC 630CP-10 | 1283 A |
| SC 720CP-10 | 1411 A |
| SC 760CP-10 | 1411 A |
| SC 800CP-10 | 1411 A |
| SC 850CP-10 | 1411 A |
| SC 900CP-10 | 1411 A |
| SC 1000CP-10 | 1568 A |

Table 2: Nominal currents of the Sunny Central CP XT series

| Sunny Central Storage | |
|-----------------------|-----------------------|
| Inverter type | Nominal current I_N |
| SCS 500 | 1176 A |
| SCS 630 | 1283 A |
| SCS 720 | 1411 A |
| SCS 760 | 1411 A |
| SCS 800 | 1411 A |
| SCS 850 | 1411 A |
| SCS 900 | 1411 A |
| SCS 1000 | 1568 A |

Table 3: Nominal currents of the Sunny Central Storage series

The value for the uninterrupted short circuit current I_k will be reached in about 50 ms. The values for I_k'' and i_p were measured by an accredited test institute and comply with DIN/EN 60909. These values represent the maximum values of all tests.

Please note that the rated current is related to the inverter's low voltage terminals. The presented values are measured at the Delta-side of a Delta/wye transformer (Vektor group is already considered). Only the transformer ratio has to be considered.

Limited dynamic grid support (fault ride through) without feeding current during the dip

During limited dynamic grid support two cases have to be distinguished. "Shallow" dips rides the inverter through without interrupting the power feed-in. "Deep" dips will be answered with an interruption of power feed-in. But the inverter stays online and continues feed-in immediately after fault clearance. In the latter case it is not possible to calculate values according to EN 60909.

The transient values were not above the values presented in the above-mentioned tables so that it is possible to use these values instead as a worst case scenario.

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