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Chairman of the Supervisory Board: Günther Cramer
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Self-Declaration

Self-declarationon the usage of residual-current devices of type A with SUNNY BOY and

SUNNY MINI CENTRAL

All inverters with transformer from SMA Solar Technology AG and all transformerless inverters listed in the following including SB 2000HF-30, SB 2500HF-30, SB 3000HF-30 can not feed-in DC failure currents due to its design. They fulfil this requirement in accordance with DIN VDE 0100-712 as well as IEC 60364-7-712:2002.

SUNNY BOY:
SB 1600TL-10, SB 2100TL,
SB 3000TL-20, SB 4000TL-20, SB 5000TL-20
SUNNY MINI CENTRAL:
SMC 6000TL, SMC 7000TL, SMC 8000TL,
SMC 9000TL(RP)-10, SMC 10000TL(RP)-10, SMC 11000TL(RP)-10

Possible errors were examined without taking the integrated RCMU into account. When examining these errors in terms of the valid installation standards, a danger in combination with an additional Residual Current Device (RCD) type A can not occur. Accordingly, errors can be excluded that would otherwise require the usage of an RCD type B due to the inverter type. Furthermore, the integrated all-pole sensitive residual-current monitoring unit (RCMU) provides an additional dimension of safety. For inverters with earthing conductor monitoring, this must not be deactivated.

Due to the circuit topology, differential currents occur in transformerless inverters that are the result of the insulation resistance of the PV array and its capacity against earth potential. Therefore residual-current devices are to be installed with a rated differential current of at least 100 mA.
The DC differential currents resulting from operation were tested as to whether they could affect the protective function of the RCD type A for the above mentioned inverters.
For every connected inverter, a rated differential current of 100 mA has to be provided. The rated differential current of the RCD must be at least the sum of the rated differential currents of the connected inverters. Thus, for example, in the case of three connected transformerless inverters, the rated differential current of the RCD has to be at least 300 mA. For SB 1600TL-10, SB 2100TL as well as for SMC 6000TL, SMC 7000TL and SMC 8000TL only the following residual-current devices can be used:

- RCD type A ABB type F202A-xx/0.x or F204A-xx/0.x
- RCD Type A Siemens from Type 5SM1.... or 5SM3....

In this case it must be taken into account that the tripping currents resulting from the differential DC currents from the operation can be slightly higher than the rated differential current of the used RCD (0 - 30%).

Differential-current devices from other manufacturers are still being tested. Should the use of the suggested RCDs not be possible, we recommend using other approved inverters.

These statements also apply to inverter versions with output powers deviating to those of the listed devices.
For further inverter types not listed in this document and that conform to EN 62109-1 according to the certification for CE conformity, it applies that the compatibility with external RCMs and RCDs have been tested (EN 62109-1, point 7.3.8). In this case the device documentation will state whether a Type B RCD must be used. If there is no specification or limitation on the use of external RCDs given in accordance with EN 62109-1 in the documentation of an inverter then RCDs of Type A or AC can also be used.
Whether an RCD is necessary and which types may be used in general depends on the respective installation regulations in each case.

Niestetal, 2012-08-07
SMA Solar Technology AG

ppa. Frank Greizer
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