

TECHNICAL NOTE

Topic: DC Input Current Ratings for Sunny Boy Inverters

SUMMARY

The technical data in the SMA product data sheets is specified for nominal operating conditions. The specified DC maximum input current refers to the actual continuous input current recommended for an optimum energy yield of the system.

DC INPUT CURRENT RATINGS FOR SUNNY BOY SYSTEMS

The DC maximum input current specified in the Sunny Boy product data sheets refers to the actual continuous input current recommended for an optimum energy yield of the system.

Due to the common Maximum Power Point (MPP) characteristics of the inverter input, the inverter will not be able to find the optimal power point if the current is outside of the specified range. In that case, losses in energy yield can occur. However, the inverter will not be affected if the short circuit current of the connected PV modules exceeds the specified value. The following table shows the DC input current specifications of the Sunny Boy US-type inverters as well as the respective short circuit current of the connected PV strings (considering 125% NEC factor). These values are recommended for an optimum energy yield of the system:

Inverter model	Rated DC maximum input current I_{MP} (continuous)	Maximum short circuit current of connected PV strings I_{SC} (considering 125% NEC factor)
SB 3000US	17 Amp	22 Amp
SB 4000US	18 Amp	23 Amp
SB 5000US	21 Amp	27 Amp
SB 6000US	25 Amp	32 Amp
SB 7000US	30 Amp	36 Amp

In addition, the current limitations for any system with SMA Sunny Boy inverters SB 3000US, SB 4000US, SB 5000US, SB 6000US and SB 7000US with respective SMA DC Disconnect model are defined by the physical current limitations of the DC disconnect and the integrated string fuses:

- » The maximum string fuse rating of the SMA DC disconnect unit is 20 Amp. The NEC requires that all fuses and wiring be sized for a minimum of 1.56 times the I_{SC} of the PV module used in the system. Consequently, the maximum short circuit current per string can be up to 12.8 Amp.
- » The maximum operating current of the DC disconnect unit (all parallel strings combined) is 34 Amp.

If there are additional questions or if further clarification is needed, please refer to the inverter manual or contact technical support at SMA America, LLC.

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