

Technical information



SUNNY BOY / SUNNY BOY STORAGE / SUNNY MINI CENTRAL / SUNNY TRIPOWER

**Overview of the compatibility between common grid
configurations and SMA inverters**

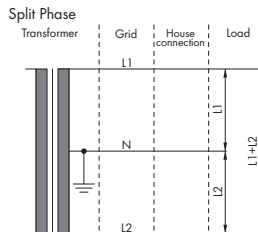
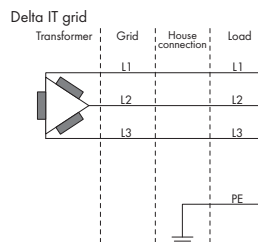
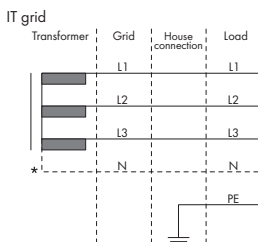
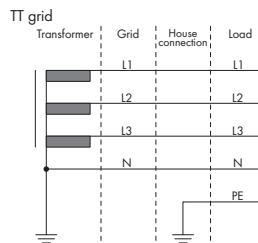
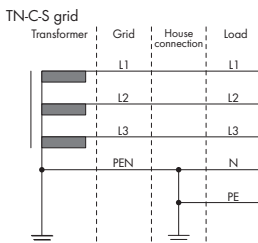
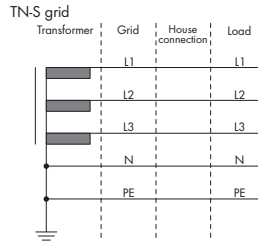
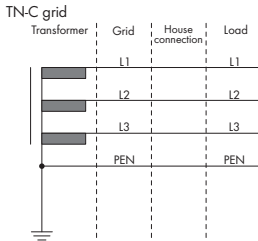


1 Common Grid Configurations

There are various possibilities, or grid configurations, for the setup of a utility grid. The respective grid configurations at the installation site can therefore differ. However, not all inverters can be connected to all grid configurations.

This document gives an overview of the common grid configurations and the compatible SMA inverters.

In the following you will find an overview of the most common grid configurations.



* There are IT utility grids both with and without a neutral conductor

2 Compatibility Table

The following table gives an overview of which SMA inverters are compatible with which grid configurations.

Inverters	IT	Delta IT	TN-C	TN-S	TN-C-S	TT	Split phase
Single-phase, with transformer							
Multigate-10	No	Yes	Yes	Yes	Yes	No	No
SB 1100	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SB 1200	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SB 1700	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SB 2000HF-30	Yes ^{1,2}	Yes ^{1,2}	Yes	Yes	Yes	Yes	Yes
SB 2500HF-30	Yes ^{1,2}	Yes ^{1,2}	Yes	Yes	Yes	Yes	Yes
SB 3000HF-30	Yes ^{1,2}	Yes ^{1,2}	Yes	Yes	Yes	Yes	Yes
SB 2500	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SB 3000	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SB 3300-11	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SB 3800-11	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SMC 4600A-11	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SMC 5000A-11	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SMC 6000A-11	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SMC 7000HV	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
SMC 7000HV-11	Yes ¹	Yes ¹	Yes	Yes	Yes	Yes	Yes
Single-phase, without transformer							
SBS2.5-1VL-10	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30 \text{ V}$	Yes ³
SBS3.7-10	Yes ^{3,6}	Yes ^{3,6}	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30 \text{ V}$	Yes ³
SBS5.0-10	Yes ^{3,6}	Yes ^{3,6}	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30 \text{ V}$	Yes ³
SBS6.0-10	Yes ^{3,6}	Yes ^{3,6}	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30 \text{ V}$	Yes ³
SB1.5-1VL-40	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30 \text{ V}$	Yes ³
SB 1300TL-10	Yes ^{3,4}	Yes ^{3,4}	Yes	Yes	Yes	Yes ⁵ , if $U_{N_PE} < 30 \text{ V}$	Yes ^{3,4}

Inverters	IT	Delta IT	TN-C	TN-S	TN-C-S	TT	Split phase
SB 1600TL-10	Yes ^{3,4}	Yes ^{3,4}	Yes	Yes	Yes	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	Yes ^{3,4}
SB2.0-1VL-40	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	Yes ³
SB 2100TL	Yes ^{3,4}	Yes ^{3,4}	Yes	Yes	Yes	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	Yes ^{3,4}
SB2.5-1VL-40	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	Yes ³
SB 2500TLST-21	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB 3000TLST-21	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB 3300TL HC	No	No	Yes	Yes	Yes	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	No
SB 3000TL-20	No	No	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	No
SB 3000TL-21	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB3.0-1AV-40	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB3.0-1AV-41	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB 3600TL-20	No	No	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	No
SB 3600TL-21	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB3.6-1AV-40	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB3.6-1AV-41	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB 3600SE-10	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³
SB 4000TL-20	No	No	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30\text{ V}$	No
SB 4000TL-21	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20\text{ V}$	Yes ³

Inverters	IT	Delta IT	TN-C	TN-S	TN-C-S	TT	Split phase
SB4.0-1AV-40	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20$ V	Yes ³
SB4.0-1AV-41	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20$ V	Yes ³
SB 5000TL-20	No	No	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 30$ V	No
SB 5000TL-21	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20$ V	Yes ³
SB5.0-1AV-40	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20$ V	Yes ³
SB5.0-1AV-41	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20$ V	Yes ³
SB6.0-1AV-41	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20$ V	Yes ³
SB 5000SE-10	Yes ³	Yes ³	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵ , if $U_{N_PE} < 20$ V	Yes ³
SMC 6000TL	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 7000TL	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 8000TL	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 9000TL-10	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 9000TLRP-10	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 10000TL-10	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 10000TLRP-10	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 11000TL-10	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
SMC 11000TLRP-10	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 30$ V	No
Three-phase, without transformer							

Inverters	IT	Delta IT	TN-C	TN-S	TN-C-S	TT	Split phase
STP3.0-3AV-40	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP4.0-3AV-40	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP5.0-3AV-40	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP6.0-3AV-40	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP8.0-3AV-40	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP10.0-3AV-40	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 50-40	No	No	Yes	Yes	Yes	Yes	No
STP 60-10 / MLX 60	No	No	Yes	Yes	Yes	Yes	No
SHP 75-10	No	No	Yes	Yes	Yes	Yes	No
STP 5000TL-20	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 6000TL-20	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 7000TL-20	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 8000TL-20	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 9000TL-20	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 10000TL-20	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 12000TL-20	No	No	Yes	Yes	Yes	Yes, if $U_{N_PE} < 20\text{ V}$	No
STP 8000TL-10	No	No	Yes	Yes	Yes	Yes	No
STP 10000TL-10	No	No	Yes	Yes	Yes	Yes	No
STP 12000TL-10	No	No	Yes	Yes	Yes	Yes	No
STP 15000TL-10	No	No	Yes	Yes	Yes	Yes	No
STP 17000TL-10	No	No	Yes	Yes	Yes	Yes	No

Inverters	IT	Delta IT	TN-C	TN-S	TN-C-S	TT	Split phase
STP 15000TLEE-10	No	No	Yes	Yes	Yes	Yes	No
STP 20000TLEE-10	No	No	Yes	Yes	Yes	Yes	No
STP 15000TLHE-10	No	No	Yes	Yes	Yes	Yes	No
STP 20000TLHE-10	No	No	Yes	Yes	Yes	Yes	No
STP 15000TL-30	No	No	Yes	Yes	Yes	Yes	No
STP 20000TL-30	No	No	Yes	Yes	Yes	Yes	No
STP 25000TL-30	No	No	Yes	Yes	Yes	Yes	No

¹ IT electricity grids are often set up in areas with special requirements, for example personnel or supply security. Through the normal operating behavior of the inverter (e.g. possible power-up and power-down procedures based on irradiation conditions) unwanted effects on other devices (e.g. medical devices) could occur.

² These inverters may only be operated in an IT electricity grid with a non-earthed PV array.

³ The protective conductor monitor must be deactivated when the inverter is connected to an IT grid. In this case, it may be necessary to connect a second protective conductor due to local installation regulations.

⁴ Only possible with devices valid from production date ab May 16, 2013.

⁵ Regardless of the grid type, the protective conductor monitor can be deactivated (after consultation with the local grid operator) to prevent faulty triggering, e.g., due to grid problems. In this case, it may be necessary to connect a second protective conductor due to local installation regulations.

⁶ These inverters have a relatively high leakage current to ground. The present leakage current may be detected as a residual current by an insulation monitoring unit usually installed in IT / delta IT grids. This might trigger an error message. An uninterrupted operation is thus not possible. Some battery-backup systems with automatic transfer switch create a TN grid when switching to battery-backup operation. Check whether the switch to the TN grid meets local installation and safety requirements (e.g. regarding the automatic transfer switch with article number 10012xxx_Vxx from the Company enwitec electronic GmbH & Co.KG).