Technical Information

# Cable Set

Requirements for and Laying of Cables between
**SUNNY CENTRAL CP XT, SUNNY CENTRAL STORAGE and TRANSFORMER COMPACT STATION**


This document describes the requirements for cables connecting a Sunny Central CP XP or a Sunny Central Storage* with a Transformer Compact Station. In addition, this document contains information on laying the cables.

**Limited statutory warranty**

SMA Solar Technology AG only provides a warranty for cables that have been purchased from SMA Solar Technology AG.

* In this document, the Sunny Central CP XT and the Sunny Central Storage are referred to as "Sunny Central" or "inverter."

# 1 Requirements

The cables provided by SMA Solar Technology AG meet the following requirements:

- The cables are delivered as a cable set. Cable sets with 3 x 3 cables and with 4 x 3 cables are available.

  The SMA standard cable set for inverters up to 900 kVA contains 3 x 3 cables.

  The SMA standard cable set for inverters up to 1,000 kVA contains 4 x 3 cables.
- All cables in a cable set have the same length.
- The cable set is available in four standard lengths of 5 m/7.5 m/10 m/15 m.

**Maximum cable length between Sunny Central and Transformer Compact Station**

The maximum cable length between the connection points of the Sunny Central and the Transformer Compact Station must not exceed 15 m.

By observing the maximum cable length, the following problems are avoided:

- Component overload in the inverter
- Current imbalance
- Impermissible EMC stress

- All cables in a cable set are preassembled on both sides with tube terminal lugs for connection to an M12 bolted connection.
- All cables in a cable set are labeled on both sides with L1, L2 or L3 (see following figure).


Figure 1: Labeling of SMA standard cable sets

- The cable set is designed for the voltages that arise during pulsed mode of the inverter:
  - In inverter types SC 500CP XT/630CP XT/720CP XT/760CP XT/800CP XT and SCS 500/630/720/760/800, voltages can reach a maximum of ±1,450 V to ground.
  - In inverter types SC 850CP XT/900CP XT/1000CP XT and SCS 850/900/1000, voltages can reach a maximum of ±1,600 V to ground.
  - The maximum root-mean-square value of the voltages to ground is 800 V.

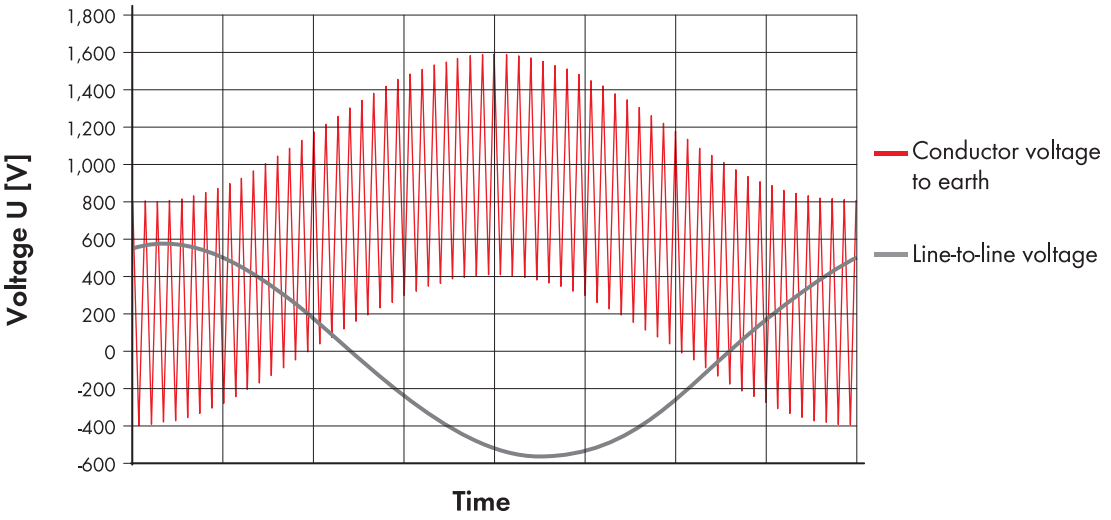


Figure 2: Voltage level to ground in SC 850CP XT/SC 900CP XT/SC1000CP XT/SCS 850/SCS 900/SCS 1000

- The cable set is designed for voltages that can exhibit a voltage gradient dV/dt of up to 500 V/µs to earth. The line-to-line voltages are sinusoidal.
- The 3 x 3 x 240 $mm^2$ SMA standard cable set is designed for the following products from SMA Solar Technology AG:
  - SC 500CP XT/SCS 500
  - SC 630CP XT/SCS 630
  - SC 720CP XT/SCS 720
  - SC 760CP XT/SCS 760
  - SC 800CP XT/SCS 800
  - SC 850CP XT/SCS 850
  - SC 900CP XT/SCS 900
- The 4 x 3 x 240 $mm^2$ SMA standard cable set is designed for the following products from SMA Solar Technology AG:
  - SC 1000CP XT/SCS 1000
- All cables are designed for a maximum of eight full-load hours per day.
- For Sunny Central Storage, the daily degree of stress must not exceed 0.6 during the 24-hour cycle.
- For Sunny Central CP XT and when using the "Q at Night" option, the daily degree of stress must not exceed 0.6 during the 24-hour cycle.
- All cables are suitable for direct burial installation.

**Observe the product documentation**

Information from the installation requirements and installation manuals of the Sunny Central and the Transformer Compact Station are to be observed.

# 2 Laying the Cables

## 2.1 Distances between the Cables

☐ The cables must be bundled in a three-phase system.

☐ An L1, L2 and L3 line conductor is laid in each cable route. Here, the distance between the cable bundles must be at least twice the diameter of an individual cable. This prevents current imbalances and inadmissibly excessive heating of the cables.

☐ The minimum bending radius must be at least five times the cable diameter.

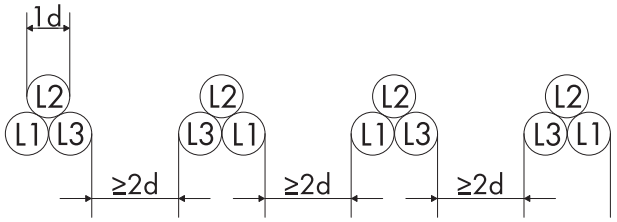


Figure 3: Minimum distances between cables to be observed

## 2.2 Laying the Cables Underground

☐ The ground of the cable trenches must be firm, flat and free of stones.

☐ The cables must be embedded in sand.

☐ The cable trenches are filled with soil. The soil must not contain any materials with sharp points or edges.

☐ The soil temperature must be at maximum +20°C.

☐ The specific thermal resistance of the soil can be at maximum 1.0 K·m/W.

☐ SMA Solar Technology AG recommends using warning ribbons.

☐ If additional mechanical protection is required or the cable is laid in conduits, cable dimensioning must be checked. In this case, please contact your contact person at SMA Solar Technology AG.

**Observe regional regulations and documentation of SMA products**

Local regulations on cable laying and laying depths are to be observed.

Information contained in the installation manuals of the Sunny Central and the Transformer Compact Station are to be observed.

## 2.3 Laying the Cables in the Air

☐ The ambient temperature must not exceed the temperature range of − 40°C to +50°C.

☐ When laying cables outside, protect them from direct sunlight.