

SUNNY TRIPOWER

with an external galvanic isolation low-voltage transformer



Contents

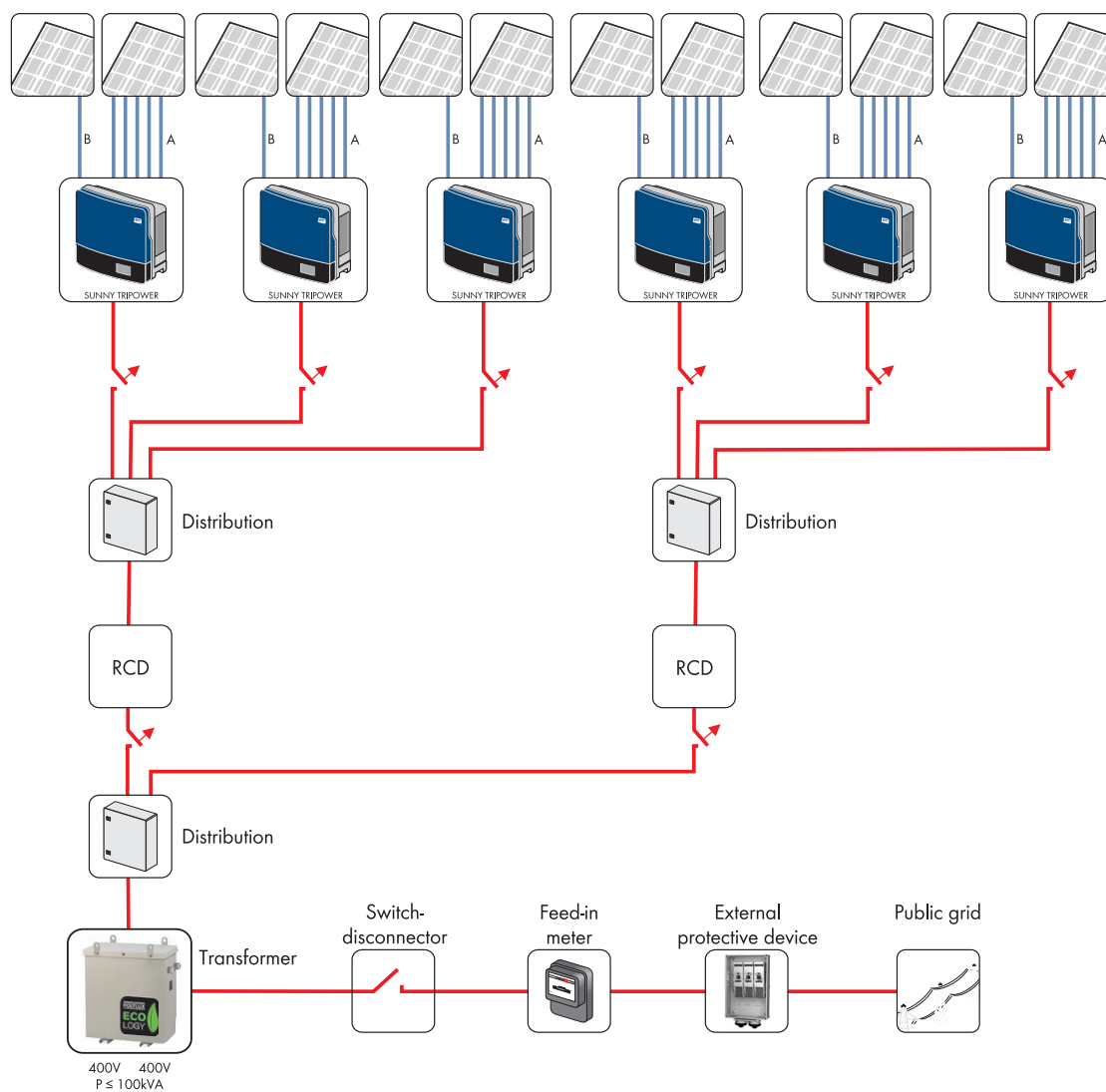
This technical information describes efficient solutions for using the Sunny Tripower in PV systems for connecting to the low-voltage grid in Spain.

The Spanish RD 1663/2000 standard of 29 September 2000 requires that PV systems need to have galvanic isolation in order to be connected to the low-voltage grid. Galvanic isolation needs to be performed using a isolation transformer or with the help of a similar device that has the same functions and is suited for this purpose.

Due to power outputs of 10 kW, 12 kW, 15 kW, and 17 kW, the Sunny Tripower devices offer the highest amount of flexibility for planning systems. A PV system of 100 kW, for example, can be realized using 10 Sunny Tripower STP 10000TL or 5 Sunny Tripower STP 17000TL and one Sunny Tripower STP 15000TL.

1 Connection to the Low-Voltage Grid

The following figure shows the connection of a Sunny Tripower to the low-voltage grid (Spain) with an isolation transformer.



The Sunny Tripower is equipped with an integrated, all-pole sensitive residual current monitoring unit and can therefore distinguish between residual currents and operating-related capacitive discharge currents. If an external RCD or residual current breaker is strictly required, you must use a switch that is triggered at a residual current of 100 mA or higher per inverter. Further details about this issue can be found in the following technical informations in the download section at www.SMA.de/en: "Criteria for Selecting an RCD" and "Line Circuit Breaker".

The figure below is only for orientation purposes. Your installer should design the connection scheme individually, under consideration of all requirements of the grid operator/power supplier.

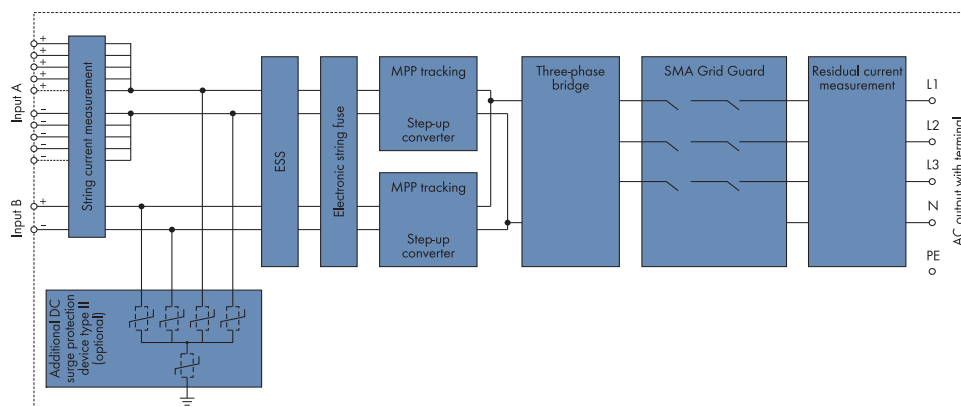
2 Description of Essential Components

2.1 Sunny Tripower

The Sunny Tripower is equipped with groundbreaking technology and therefore ensures easy installation, high yields, and secure grid support. Thanks to its multi-string technology and the greatest input voltage range, the three-phase inverter is suited for all module configurations imaginable. It therefore allows for highly flexible plant design - from 10 kW to megawatt levels. The Sunny Tripower meets the requirements of the Germany Medium Voltage Guidelines (BDEW), thereby contributing to grid safety management, even on an international level.

Properties:

- Efficiency**
 - Maximum efficiency of 98.1 %
 - High yields thanks to OptiTrac and OptiCool
- Reliability**
 - Capable of supplying reactive power
 - Integrated ESS DC load-disconnecting switch
 - Electronic string fuse
 - Self-learning string failure detection
- Flexibility**
 - DC surge voltage protector (Type II), can be integrated
 - DC input voltage of up to 1,000 V
 - Flexible module design using two separate step-up converters
- Easy to Use**
 - Three-phase feed-in
 - Cable connection without tools
 - Innovative DC plug system SUNCLIX
 - Convenient front wiring compartment
 - *Bluetooth*[®] Wireless Technology communication





2.2 Isolation Transformer

SMA Solar Technology AG recommends the Eco transformer by the Spanish company POLYLUX. The advantage of the Eco transformer over a standard transformer are the high efficiency levels and low losses. Thanks to the high efficiency levels, maximum energy yields can be generated, which amortizes the price difference after a usage of only a few years.



The output range of these transformers reaches from 10 kVA to 100 kVA, they are suited for both indoor and outdoor applications, and meet the requirements of the UNE-EN 60076 standard.

Technical Advantages:

- Lower heating, which reduces necessity for cooling at the installation site.
- Longer lifetime thanks to reduced thermal load on the isolation.
- Lower voltage drop, which prevents fluctuations in the output voltage.
- Suitable for higher ambient temperatures.
- Lower noise emission.

<p>Losses of standard 100 kVA transformer:</p>  <ul style="list-style-type: none"> • Efficiency: 97.3 % • No-load losses: 611 W • Operating losses: 2,187 W 	<p>Losses of Eco transformer 100 kVA:</p>  <ul style="list-style-type: none"> • Efficiency: 98.5 % • Open circuit losses: 468 W • Operating losses: 1,050 W
---	---

3 Contact

<p>Sunny Tripower SMA Ibérica Tecnología Solar, S.L.  Avda. de les Corts Catalanes, 9, Planta 3, Of.17-18 08173 Sant Cugat del Vallès (Barcelona) Tel. +34 902 14 24 24 info@SMA-Iberica.com www.SMA-Iberica.com</p>	<p>Isolation Transformer POLYLUX, S.L.  C/Boters, 3B - Parc Tecnologic del Vallès 08290 Cerdanyola del Vallès (Barcelona) Tel. +34 93 692 65 65 polylux@polylux.com www.polylux.com</p>
---	--