SUNNY TRIPOWER

The ultimate solution for decentralized PV plants

SMA’s new Sunny Tripower TL-US is raising the level of performance for decentralized commercial PV plants. This three-phase transformerless inverter is UL listed for up to 1000 V DC maximum system voltage and has peak efficiency above 98 percent, while OptiTrac Global Peak minimizes the effects of shade for maximum energy production. The Sunny Tripower delivers a future-proof solution with full grid management, and communications and monitoring features. The Sunny Tripower is also equipped with all-pole ground fault protection and integrated AFCI for a safe, reliable solution. It offers unmatched flexibility with a wide input voltage range and two independent MPP trackers. Suitable for both 600 V DC and 1,000 V DC applications, the Sunny Tripower allows for flexible design and a lower levelized cost of energy.
**THE TOTAL PACKAGE**

The Sunny Tripower TL-US is engineered to optimize design, production, and reliability—reducing a project’s levelized cost of energy and improving its financial returns.

**Unmatched flexibility**
Available in four power classes, the Sunny Tripower TL-US features a wide operating window, two MPP trackers, and 600 V DC or 1,000 V DC operation, making it ideal for any decentralized project. System engineering is made simple and repeatable, resulting in a shortened design cycle.

Easy to transport and install, the Sunny Tripower can be mounted in a variety of ways from vertical to nearly horizontal. Concrete pads usually required by central inverters are unnecessary, preserving site real estate.

**Enhanced power production**
Leading efficiency and SMA’s proprietary OptiTrac Global Peak MPP tracking means owners benefit from superior power production and improved economics. When operated at 1,000 V DC, balance of system costs can also be significantly reduced.

The Sunny Tripower TL-US also features advanced diagnostics, including a reverse polarity indicator via the Connection Unit 1000-US.

**Future proof**
The Sunny Tripower TL-US includes a number of technologies designed to meet tomorrow’s requirements. Full grid management functionality is available, as are cutting edge communication options like SMA’s Cluster Controller and Speedwire.

SMA Service can also simplify long-term planning with comprehensive packages covering inverters through plant-wide operations and maintenance (O&M). And, as a decentralized technology, inverter-level O&M is reduced from the beginning compared to centralized architecture.

**Optimized cost**
The Sunny Tripower TL-US allows integrators to optimally use real estate, shorten design and installation time, and produce more power. Inverter-level O&M is reduced through string technology and long-term support is made simple through SMA’s service organization, making the Sunny Tripower TL-US the ultimate solution for decentralized PV.
# Technical data

<table>
<thead>
<tr>
<th>Solar Inverter Model</th>
<th>Max. recommended PV power (@ module STC)</th>
<th>Max. DC power (@ cos ϕ = 1)</th>
<th>Max. DC voltage*</th>
<th>Rated MPPT voltage range</th>
<th>MPPT operating voltage range</th>
<th>Min. DC voltage / start voltage</th>
<th>Number of MPP tracker inputs</th>
<th>Max. input current / per MPP tracker input</th>
<th>AC nominal power</th>
<th>Max. AC apparent power</th>
<th>Output phases / line connections</th>
<th>Nominal AC voltage</th>
<th>AC voltage range</th>
<th>Rated AC grid frequency</th>
<th>Max. output current</th>
<th>Power factor at rated power / adjustable displacement</th>
<th>Harmonics</th>
<th>Efficiency</th>
<th>CEC efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunny Tripower 12000TL-US-10</td>
<td>15000 W</td>
<td>12250 W</td>
<td>1000 V</td>
<td>300 V...800 V</td>
<td>150 V...1000 V</td>
<td>150 V / 188 V</td>
<td>2</td>
<td>66 A / 33 A</td>
<td>12000 W</td>
<td>12000 VA</td>
<td>3 / 3-N-PE</td>
<td>480 / 277 V WYE</td>
<td>244 V...305 V</td>
<td>60 Hz</td>
<td>60 Hz / 6 Hz...+5 Hz</td>
<td>14.4 A</td>
<td>1 / 0.8 leading...0.8 lagging</td>
<td>&lt; 3 %</td>
<td>98.2%</td>
</tr>
<tr>
<td>Sunny Tripower 15000TL-US-10</td>
<td>18750 W</td>
<td>15300 W</td>
<td>1000 V</td>
<td>300 V...800 V</td>
<td>150 V...1000 V</td>
<td>150 V / 188 V</td>
<td>2</td>
<td>66 A / 33 A</td>
<td>15000 W</td>
<td>15000 VA</td>
<td>3 / 3-N-PE</td>
<td>480 / 277 V WYE</td>
<td>244 V...305 V</td>
<td>60 Hz</td>
<td>60 Hz / 6 Hz...+5 Hz</td>
<td>18 A</td>
<td>1 / 0.8 leading...0.8 lagging</td>
<td>&lt; 3 %</td>
<td>98.2%</td>
</tr>
<tr>
<td>Sunny Tripower 20000TL-US-10</td>
<td>25000 W</td>
<td>20400 W</td>
<td>1000 V</td>
<td>380 V...800 V</td>
<td>150 V...1000 V</td>
<td>150 V / 188 V</td>
<td>2</td>
<td>66 A / 33 A</td>
<td>20000 W</td>
<td>20000 VA</td>
<td>3 / 3-N-PE</td>
<td>480 / 277 V WYE</td>
<td>244 V...305 V</td>
<td>60 Hz</td>
<td>60 Hz / 6 Hz...+5 Hz</td>
<td>24 A</td>
<td>1 / 0.8 leading...0.8 lagging</td>
<td>&lt; 3 %</td>
<td>98.5%</td>
</tr>
<tr>
<td>Sunny Tripower 24000TL-US-10</td>
<td>30000 W</td>
<td>24500 W</td>
<td>1000 V</td>
<td>450 V...800 V</td>
<td>150 V...1000 V</td>
<td>150 V / 188 V</td>
<td>2</td>
<td>66 A / 33 A</td>
<td>24000 W</td>
<td>24000 VA</td>
<td>3 / 3-N-PE</td>
<td>480 / 277 V WYE</td>
<td>244 V...305 V</td>
<td>60 Hz</td>
<td>60 Hz / 6 Hz...+5 Hz</td>
<td>29 A</td>
<td>1 / 0.8 leading...0.8 lagging</td>
<td>&lt; 3 %</td>
<td>98.5%</td>
</tr>
</tbody>
</table>

## Protection devices

- **DC reverse polarity protection**
- **Ground fault monitoring / Grid monitoring**
- **All-pole sensitive residual current monitoring unit**
- **DC AFCI compliant to UL 1699B**
- **AC short circuit protection**
- **Protection class / overvoltage category**

## General data

<table>
<thead>
<tr>
<th>Dimensions (W / H / D) in mm (in)</th>
<th>655 / 690 / 265 (26.1 / 27.1 / 10.4)</th>
<th>665 / 720 / 380 (26.1 / 28.3 / 15.0)</th>
<th>61 kg (134.5 lbs)</th>
<th>51 dB(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing dimensions (W / H / D) in mm (in)</td>
<td>780 / 790 / 380 (30.7 / 31.1 / 15.0)</td>
<td>61 kg (134.5 lbs)</td>
<td>-25°C...+60°C</td>
<td>-</td>
</tr>
<tr>
<td>Weight</td>
<td>55 kg (121 lbs)</td>
<td>61 kg (134.5 lbs)</td>
<td>51 dB(A)</td>
<td>-</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-25°C...+60°C</td>
<td>-25°C...+60°C</td>
<td>-25°C...+60°C</td>
<td>-</td>
</tr>
<tr>
<td>Noise emission (typical)</td>
<td>51 dB(A)</td>
<td>51 dB(A)</td>
<td>51 dB(A)</td>
<td>-</td>
</tr>
<tr>
<td>Internal consumption at night</td>
<td>1 W</td>
<td>1 W</td>
<td>1 W</td>
<td>-</td>
</tr>
<tr>
<td>Topology</td>
<td>Transformerless</td>
<td>Transformerless</td>
<td>Transformerless</td>
<td>-</td>
</tr>
<tr>
<td>Cooling concept</td>
<td>OptiCool</td>
<td>OptiCool</td>
<td>OptiCool</td>
<td>-</td>
</tr>
<tr>
<td>Electronics protection rating</td>
<td>NEMA 3R</td>
<td>NEMA 3R</td>
<td>NEMA 3R</td>
<td>-</td>
</tr>
</tbody>
</table>

## Features

**Display / LED indicators (Status / Fault / Communication)**

- / ○

**Interfaces:**

- Speedwire / RS485

**Mounting angle range**

- 15°...90°

**Warranty:**

- 10 / 15 / 20 years

**Certifications and approvals**


**NOTE:**

- US inverters ship with gray lids

- Suitable for 600 V DC max. systems

**Type designation:**

- STP 12000TL-US-10
- STP 15000TL-US-10
- STP 20000TL-US-10
- STP 24000TL-US-10

## Accessories

- **RS485 interface DM-485CB-US-10**
- **SMA Cluster Controller CICON-10**
The Connection Unit is an optional system component of the Sunny Tripower TL-US series and includes combiner box and disconnect functionality in one convenient housing. Its integrated reverse polarity indicator supports safe installation.

<table>
<thead>
<tr>
<th>Technical data</th>
<th>Connection Unit 1000 V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input (DC)</strong></td>
<td></td>
</tr>
<tr>
<td>Max. DC voltage</td>
<td>1000 V</td>
</tr>
<tr>
<td>Number of input source circuits (strings)</td>
<td>8 (4 + 4)</td>
</tr>
<tr>
<td>Input conductor size</td>
<td>#12 to #6 AWG</td>
</tr>
<tr>
<td>Max. fuse size</td>
<td>20 A</td>
</tr>
<tr>
<td><strong>Output (DC)</strong></td>
<td></td>
</tr>
<tr>
<td>Output circuits</td>
<td>2</td>
</tr>
<tr>
<td>Output conductor size</td>
<td>#8 to #2 AWG</td>
</tr>
<tr>
<td>Max. rated continuous current / per output circuit</td>
<td>66 A / 33 A</td>
</tr>
<tr>
<td><strong>Protection devices</strong></td>
<td></td>
</tr>
<tr>
<td>Touchsafe fuse holders</td>
<td>●</td>
</tr>
<tr>
<td>Reverse polarity indicator</td>
<td>●</td>
</tr>
<tr>
<td>Load-break rated output disconnect</td>
<td>●</td>
</tr>
<tr>
<td><strong>General data</strong></td>
<td></td>
</tr>
<tr>
<td>Dimensions (W / H / D) in mm (in)</td>
<td>466 / 398 / 136 (18.4 / 15.7 / 5.4)</td>
</tr>
<tr>
<td>Packing dimensions (W / H / D) in mm (in)</td>
<td>563 / 543 / 240 (22.2 / 21.4 / 9.5)</td>
</tr>
<tr>
<td>Weight</td>
<td>10 kg (22 lbs)</td>
</tr>
<tr>
<td>Packing weight</td>
<td>11 kg (24 lbs)</td>
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<tr>
<td>Protection rating</td>
<td>NEMA 3R</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td></td>
</tr>
<tr>
<td>Certificates and permits</td>
<td>UL 1741, CAN/CSA C22.2 107.1-1</td>
</tr>
</tbody>
</table>

- Standard features  ○ Optional features  — Not available

Type designation

CU 1000-US-10