# SUNNY BOY 3000TL-US / 3800TL-US /4000TL-US / 5000TL-US / 6000TL-US / 7000TL-US / 7700TL-US

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 01/02/15

SB 3000TL-US-22 / 3800TL-US-22 / 4000TL-US-22 / 5000TL-US-22 / 6000TL-US-22 / 7000TL-US-22 / 7700TL-US-22

### Certified

- UL 1741 and 1699B compliant
- Integrated AFCI meets the requirements of NEC 2011 690.11

### Innovative

- Secure Power Supply provides daytime power during grid outages

### Powerful

- 97.6% maximum efficiency
- Wide input voltage range
- Shade management with OptiTrac Global Peak MPP tracking

### Flexible

- Two MPP trackers provide numerous design options
- Extended operating temperature range

## SUNNY BOY 3000TL-US / 3800TL-US /4000TL-US / 5000TL-US / 6000TL-US / 7000TL-US / 7700TL-US

Setting new heights in residential inverter performance

The Sunny Boy 3000TL-US/3800TL-US/4000TL-US/5000TL-US/6000TL-US/7000TL-US/7700TL-US represents the next step in performance for UL certified inverters. Its transformerless design means high efficiency and reduced weight. Maximum power production is derived from wide input voltage and operating temperature ranges. Multiple MPP trackers and OptiTrac™ Global Peak mitigate the effect of shade and allow for installation at challenging sites. The unique Secure Power Supply feature provides daytime power in the event of a grid outage. High performance, flexible design and innovative features make the Sunny Boy TL-US series the first choice among solar professionals.

MADE IN THE USA OF U.S. AND IMPORTED PARTS

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| Technical data | Sunny Boy 3000TL-US | | Sunny Boy 3800TL-US | | Sunny Boy 4000TL-US | |
|---|---|---|---|---|---|---|
| | 208 V AC | 240 V AC | 208 V AC | 240 V AC | 208 V AC | 240 V AC |
| **Input (DC)** | | | | | | |
| Max. usable DC power (@ cos φ = 1) | 3200 W | | 4200 W | | 4200 W | |
| Max. DC voltage | 600 V | | 600 V | | 600 V | |
| Rated MPPT voltage range | 175 – 480 V | | 175 – 480 V | | 175 – 480 V | |
| MPPT operating voltage range | 125 – 500 V | | 125 – 500 V | | 125 – 500 V | |
| Min. DC voltage / start voltage | 125 V / 150 V | | 125 V / 150 V | | 125 V / 150 V | |
| Max. operating input current / per MPP tracker | 18 A / 15 A | | 24 A / 15 A | | 24 A / 15 A | |
| Number of MPP trackers / strings per MPP tracker | 2 / 2 | | | | | |
| **Output (AC)** | | | | | | |
| AC nominal power | 3000 W | | 3330 W | 3840 W | 4000 W | |
| Max. AC apparent power | 3000 VA | | 3330 VA | 3840 VA | 4000 VA | |
| Nominal AC voltage / adjustable | 208 V / ● | 240 V / ● | 208 V / ● | 240 V / ● | 208 V / ● | 240 V / ● |
| AC voltage range | 183 – 229 V | 211 – 264 V | 183 – 229 V | 211 – 264 V | 183 – 229 V | 211 – 264 V |
| AC grid frequency; range | 60 Hz / 59.3 – 60.5 Hz | | 60 Hz / 59.3 – 60.5 Hz | | 60 Hz / 59.3 – 60.5 Hz | |
| Max. output current | 15 A | | 16 A | | 20 A | |
| Power factor (cos φ) | 1 | | 1 | | 1 | |
| Output phases / line connections | 1 / 2 | | 1 / 2 | | 1 / 2 | |
| Harmonics | < 4% | | < 4% | | < 4% | |
| **Efficiency** | | | | | | |
| Max. efficiency | 97.2% | 97.6% | 97.2% | 97.5% | 97.2% | 97.5% |
| CEC efficiency | 96.5% | 96.5% | 96.5% | 97.0% | 96.5% | 97.0% |
| **Protection devices** | | | | | | |
| DC disconnection device | ● | | | | | |
| DC reverse-polarity protection | ● | | | | | |
| Ground fault monitoring / Grid monitoring | ● / ● | | | | | |
| AC short circuit protection | ● | | | | | |
| All-pole sensitive residual current monitoring unit | ● | | | | | |
| Arc fault circuit interrupter (AFCI) compliant to UL 1699B | ● | | | | | |
| Protection class / overvoltage category | I / IV | | | | | |
| **General data** | | | | | | |
| Dimensions (W / H / D) in mm (in) | 490 / 519 / 185 (19.3 / 20.5 / 7.3) | | | | | |
| DC Disconnect dimensions (W / H / D) in mm (in) | 187 / 297 / 190 (7.4 / 11.7 / 7.5) | | | | | |
| Packing dimensions (W / H / D) in mm (in) | 617 / 597 / 266 (24.3 / 23.5 / 10.5) | | | | | |
| DC Disconnect packing dimensions (W / H / D) in mm (in) | 370 / 240 / 280 (14.6 / 9.4 / 11.0) | | | | | |
| Weight / DC Disconnect weight | 24 kg (53 lb) / 3.5 kg (8 lb) | | | | | |
| Packing weight / DC Disconnect packing weight | 27 kg (60 lb) / 3.5 kg (8 lb) | | | | | |
| Operating temperature range | –40 °C ... +60 °C (–40 °F ... +140 °F) | | | | | |
| Noise emission (typical) | ≤ 25 dB(A) | | < 25 dB(A) | | < 25 dB(A) | |
| Internal consumption at night | < 1 W | | < 1 W | | < 1 W | |
| Topology | Transformerless | | Transformerless | | Transformerless | |
| Cooling | Convection | | Convection | | Convection | |
| Electronics protection rating | NEMA 3R | | NEMA 3R | | NEMA 3R | |
| **Features** | | | | | | |
| Secure Power Supply | ● | | ● | | ● | |
| Display: graphic | ● | | ● | | ● | |
| Interfaces: RS485 / Speedwire/Webconnect | ○/○ | | ○/○ | | ○/○ | |
| Warranty: 10 / 15 / 20 years | ●/○/○ | | ●/○/○ | | ●/○/○ | |
| Certificates and permits (more available on request) | UL 1741, UL 1998, UL 1699B, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA C22.2 107.1-1 | | | | | |
| | | | | | | |
| NOTE: US inverters ship with gray lids | | | | | | |
| Type designation | SB 3000TL-US-22 | | SB 3800TL-US-22 | | SB 4000TL-US-22 | |

## Accessories

Speedwire/Webconnect interface
SWDM-US-10

Fan kit for SB 3000/3800/ 4000/5000TL-US-22
FANKIT02-10

● Standard feature ○ Optional feature – Not available
Data at nominal conditions


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| Sunny Boy 5000TL-US | | Sunny Boy 6000TL-US | | Sunny Boy 7000TL-US | | Sunny Boy 7700TL-US | |
|---|---|---|---|---|---|---|---|
| **208 V AC** | **240 V AC** | **208 V AC** | **240 V AC** | **208 V AC** | **240 V AC** | **208 V AC** | **240 V AC** |
| 5300 W | | 6300 W | | 7300 W | | 8000 W | |
| 600 V | | 600 V | | 600 V | | 600 V | |
| 175 – 480 V | | 210 – 480 V | | 245 – 480 V | | 270 – 480 V | |
| 125 – 500 V | | 125 – 500 V | | 125 – 500 V | | 125 – 500 V | |
| 125 V / 150 V | | 125 V / 150 V | | 125 V / 150 V | | 125 V / 150 V | |
| 30 A / 15 A | | 30 A / 15 A | | 30 A / 18 A | | 30 A / 18 A | |
| 2 / 2 | | | | | | | |
| 4550 W | 5000 W | 5200 W | 6000 W | 6000 W | 7000 W | 6650 W | 7680 W |
| 4550 VA | 5000 VA | 5200 VA | 6000 VA | 6000 VA | 7000 VA | 6650 VA | 7680 VA |
| 208 V / ● | 240 V / ● | 208 V / ● | 240 V / ● | 208 V / ● | 240 V / ● | 208 V / ● | 240 V / ● |
| 183 – 229 V | 211 – 264 V | 183 – 229 V | 211 – 264 V | 183 – 229 V | 211 – 264 V | 183 – 229 V | 211 – 264 V |
| 60 Hz / 59.3 – 60.5 Hz | | 60 Hz / 59.3 – 60.5 Hz | | 60 Hz / 59.3 – 60.5 Hz | | 60 Hz / 59.3 – 60.5 Hz | |
| 22 A | | 25 A | | 29.2 A | | 32 A | |
| 1 | | 1 | | 1 | | 1 | |
| 1 / 2 | | 1 / 2 | | 1 / 2 | | 1 / 2 | |
| < 4% | | < 4% | | < 4% | | < 4% | |
| 97.2% | 97.6% | 97.0% | 97.4% | 96.8% | 96.8% | 96.8% | 97.3% |
| 96.5% | 97.0% | 96.5% | 97.0% | 96.5% | 96.5% | 96.5% | 96.5% |
| | | | | | | | |
| ● | | | | | | | |
| ● | | | | | | | |
| ● / ● | | | | | | | |
| ● | | | | | | | |
| ● | | | | | | | |
| ● | | | | | | | |
| I / IV | | | | | | | |
| 490 / 519 / 185 (19.3 / 20.5 / 7.3) | | | | | | | |
| 187 / 297 / 190 (7.4 / 11.7 / 7.5) | | | | | | | |
| 617 / 597 / 266 (24.3 / 23.5 / 10.5) | | | | | | | |
| 370 / 240 / 280 (14.6 / 9.4 / 11.0) | | | | | | | |
| 24 kg (53 lb) / 3.5 kg (8 lb) | | | | | | | |
| 27 kg (60 lb) / 3.5 kg (8 lb) | | | | | | | |
| -40 °C ... +60 °C (-40 °F ... +140 °F) | | | | | | | |
| < 29 dB(A) | | < 29 dB(A) | | < 29 dB(A) | | < 29 dB(A) | |
| < 1 W | | < 1 W | | < 1 W | | < 1 W | |
| Transformerless | | Transformerless | | Transformerless | | Transformerless | |
| Convection | | Fan | | Fan | | Fan | |
| NEMA 3R | | NEMA 3R | | NEMA 3R | | NEMA 3R | |
| ● | | ● | | ● | | ● | |
| ● | | ● | | ● | | ● | |
| ○/○ | | ○/○ | | ○/○ | | ○/○ | |
| ●/○/○ | | ●/○/○ | | ●/○/○ | | ●/○/○ | |
| UL 1741, UL 1998, UL 1699B, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA C22.2 107.1-1 | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| SB 5000TL-US-22 | | SB 6000TL-US-22 | | SB 7000TL-US-22 | | SB 7700TL-US-22 | |

More efficient

Shade manag

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Secure Power Supply

Broad temperature range

Flexible communications

# A NEW GENERATION OF INNOVATION

THE SUNNY BOY TL-US RESIDENTIAL SERIES HAS YET AGAIN REDEFINED THE CATEGORY.

**Transformerless design**

The Sunny Boy 3000TL-US / 3800TL-US / 4000TL-US / 5000TL-US / 6000TL-US / 7000TL-US / 7700TL-US are transformerless inverters, which means owners and installers benefit from high efficiency and lower weight. A wide input voltage range also means the inverters will produce high amounts of power under a number of conditions.

Additionally, transformerless inverters have been shown to be among the safest string inverters on the market. An industry first, the TL-US series has been tested to UL 1741 and UL 1699B and is in compliance with the arc fault requirements of NEC 2011.

**Increased energy production**

OptiTrac™ Global Peak, SMA's shade-tolerant MPP tracking algorithm, quickly adjusts to changes in solar irradiation, which mitigates the effects of shade and results in higher total power output. And, with two MPP trackers, the TL-US series can ably handle complex roofs with multiple orientations or string lengths.

An extended operating temperature range of -40 °F to +140 °F ensures power is produced in all types of climates and for longer periods of time than with most traditional string inverters.

**Secure Power Supply**

One of many unique features of the TL-US residential series is its innovative Secure Power Supply. With most grid-tied inverters, when the grid goes down, so does the solar-powered home. SMA's solution provides daytime energy to a dedicated power outlet during prolonged grid outages, providing homeowners with access to power as long as the sun shines.

**Simple installation**

As a transformerless inverter, the TL-US residential series is lighter in weight than its transformer-based counterparts, making it easier to lift and transport. A new wall mounting plate features anti-theft security and makes hanging the inverter quick and easy. A simplified DC wiring concept allows the DC disconnect to be used as a wire raceway, saving labor and materials.

The 3800TL-US and 7700TL-US models allow installers to maximize system size and energy production for customers with 100 A and 200 A service panels.

**Leading monitoring and control solutions**

The new TL-US residential line features more than high performance and a large graphic display. The monitoring and control options provide users with an outstanding degree of flexibility. Multiple communication options allow for a highly controllable inverter and one that can be monitored on Sunny Portal from anywhere on the planet via an Internet connection. Whether communicating through RS485, or SMA's new plug-and-play WebConnect, installers can find an optimal solution to their monitoring needs.

**Wide Power Class Range**

Whether you're looking for a model to maximize a 100 A service panel or trying to meet the needs of a larger residential PV system, the Sunny Boy TL-US with Secure Power Supply has you covered. Its wide range of power classes—from 3 to 7.7 kW—offers customers the right size for virtually any residential application. The TL-US series is not only the smartest inverter on the planet, it's also the most flexible.

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