

POLY-CRYSTALLINE SOLAR MODULE - 60 CELLS

- **OS-15660 PA225**
- **OS-15660 PA230**
- **OS-15660 PA235**
- **OS-15660 PA240**

FEATURES

- High reliability with guaranteed 0 to +5% power output tolerance
- Passing mechanical load test of 5400 Pa to withstand heavier snow load and 2400 Pa to withstand wind pressure. Strong frame, easy to install
- High transparency tempered glass: 3.2 mm, with durable glass surface
- Excellent performance under low light environment
- Power series ranging from 210 to 250 watts meet different customers demands
- International quality and safety certifications

WARRANTIES

- 10 years for product materials and workmanship
- 12 years at 90% of the minimal rated power output
- 25 years at 80% of the minimal rated power output



POLY-CRYSTALLINE SOLAR MODULE

60 CELLS - 156 mm



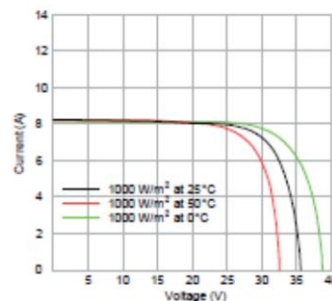
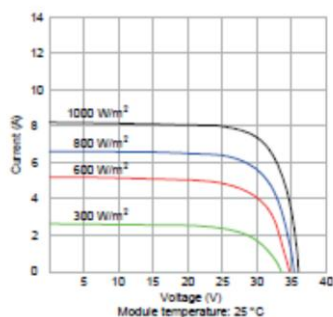
ELECTRICAL CHARACTERISTICS*	PA225	PA230	PA235	PA240
Nominal Output (Pmax) [W]	225	230	235	240
Flash Test Power Classification [%]	0 / +5	0 / +5	0 / +5	0 / +5
Voltage at Pmax (Vmp) [V]	29.5	29.5	30	30
Current at Pmax (Imp) [A]	7.63	7.8	7.83	8.0
Open Circuit Voltage (Voc) [V]	36.6	36.6	37.2	37.2
Short Circuit Current (Isc) [A]	8.24	8.42	8.46	8.65
Maximum System Voltage [V]	IEC: 1000 / UL: 600			
Maximum Series Fuse Rating [A]	12			
Cell Efficiency [%]	15.41	15.75	16.09	16.44
Module Efficiency [%]	13.75	14.05	14.36	14.66

STC* (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25°C, Air Mass 1.5

TEMPERATURE CHARACTERISTICS		DIMENSIONS	
NOCT**	45±2 °C	Front View Back View	

NOCT**: Nominal Operation Cell Temperature Sun 800W/m², Air 20°C, Wind speed 1m/s

CURRENT / VOLTAGE CHARACTERISTICS



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SUNNY TRIPOWER

10000TL / 12000TL / 15000TL / 17000TL



STP 10000TL-10 / STP 12000TL-10 / STP 15000TL-10 / STP 17000TL-10



Efficient

- Maximum efficiency of 98.1 %
- OptiTrac-Global Peak for best tracking efficiency*
- Bluetooth Communication

Safe

- Electronic string fuse and failure detection
- Integrable DC overvoltage protector (Type II)
- String current monitoring

Flexible

- DC input voltage up to 1,000 V
- Integrated grid management functions
- Tailor made plant design with Optiflex

Simple

- Three-phase feed-in
- Cable connection without tools
- DC plug system SUNCLIX
- Easily accessible connection area

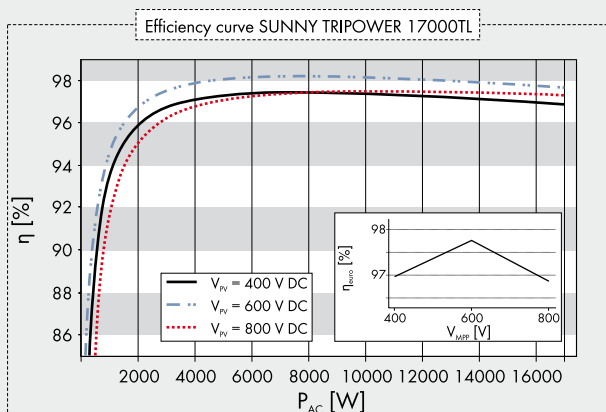
SUNNY TRIPOWER

10000TL / 12000TL / 15000TL / 17000TL

The three-phase inverter for easy system design

Packed full of pioneering technology: thanks to the new Optiflex technology with two MPP inputs and its very broad input voltage range, the three-phase Sunny Tripower is suited to almost any module configuration. In addition, it is highly flexible in terms of the plant design – right up to the megawatt range. The Sunny Tripower meets all the requirements for reactive power supply, utility interaction management and grid support, thus making a reliable contribution to grid management. The extensive Optiprotect safety concept, with its self-learning string failure detection, electronic string fuse and integrable DC overvoltage protector Type II, ensures maximum availability.

Technical data	Sunny Tripower 10000TL	Sunny Tripower 12000TL	Sunny Tripower 15000TL	Sunny Tripower 17000TL
Input (DC)				
Max. DC power (@ cos φ = 1)	10200 W	12250 W	15340 W	17410 W
Max. DC voltage	1000 V	1000 V	1000 V	1000 V
MPP voltage range	320 V – 800 V	380 V – 800 V	360 V – 800 V	400 V – 800 V
DC nominal voltage	600 V	600 V	600 V	600V
Min. DC voltage / start voltage	150 V / 188 V	150 V / 188 V	150 V / 188 V	150 V / 188 V
Max. input current / per string	A: 22 A, B: 11 A / 33 A	A: 22 A, B: 11 A / 33 A	A: 33 A, B: 11 A / 33 A	A: 33 A, B: 11 A / 33 A
Number of MPP trackers / strings per MPP tracker	2 / A: 4, B: 1	2 / A: 4, B: 1	2 / A: 5, B: 1	2 / A: 5, B: 1
Output (AC)				
AC nominal power (@ 230 V, 50 Hz)	10000 W	12000 W	15000 W	17000 W
Max. AC apparent power	10000 VA	12000 VA	15000 VA	17000 VA
Nominal AC voltage; range	3 / N / PE, 230 V / 400 V; 160 V – 280 V			
AC grid frequency; range	50, 60 Hz; –6 Hz, +5 Hz	50, 60 Hz; –6 Hz, +5 Hz	50, 60 Hz; –6 Hz, +5 Hz	50, 60 Hz; –6 Hz, +5 Hz
Max. output current	16 A	19.2 A	24 A	24.6 A
Power factor (cos φ)	0.8 leading ... 0.8 lagging			
Phase conductors / connection phases / power balancing	3 / 3 /–	3 / 3 /–	3 / 3 /–	3 / 3 /–
Efficiency				
Max. efficiency / Euro-eta	98.1 % / 97.7 %	98.1 % / 97.7 %	98.1 % / 97.7 %	98.1 % / 97.7 %
Protection devices				
DC reverse-polarity protection / reverse current protection	●/electronic	●/electronic	●/electronic	●/electronic
ESS switch-disconnector	●	●	●	●
AC short circuit protection	●	●	●	●
Ground fault monitoring	●	●	●	●
Grid monitoring (SMA Grid Guard)	●	●	●	●
Galvanically isolated / all-pole sensitive fault current monitoring unit	–/●	–/●	–/●	–/●
DC overvoltage protector type II	○	○	○	○
String failure detection	●	●	●	●
Protection class / overvoltage category	I / III	I / III	I / III	I / III
General data				
Dimensions (W / H / D) in mm	665 / 690 / 265	665 / 690 / 265	665 / 690 / 265	665 / 690 / 265
Weight	65 kg	65 kg	65 kg	65 kg
Operating temperature range	–25 °C ... +60 °C	–25 °C ... +60 °C	–25 °C ... +60 °C	–25 °C ... +60 °C
Noise emission (typical)	www.SMA-Solar.com	www.SMA-Solar.com	www.SMA-Solar.com	www.SMA-Solar.com
Internal consumption: (night)	1 W	1 W	1 W	1 W
Topology	transformerless	transformerless	transformerless	transformerless
Cooling concept	OptiCool	OptiCool	OptiCool	OptiCool
Electronics protection rating / connection area (as per IEC 60529)	IP65 / IP54	IP65 / IP54	IP65 / IP54	IP65 / IP54
Climatic category (per IEC 60721-3-4)	4K4H	4K4H	4K4H	4K4H
Features				
DC connection: SUNCLIX	●	●	●	●
AC connection: screw terminal / spring-type terminal	–/●	–/●	–/●	–/●
Display: text line / graphic	–/●	–/●	–/●	–/●
Interfaces: RS485 / Bluetooth	○/●	○/●	○/●	○/●
Warranty: 5 / 10 / 15 / 20 / 25 years	●/○/○/○/○	●/○/○/○/○	●/○/○/○/○	●/○/○/○/○
Certificates and permits (more available on request)	CE, VDE 0126-1-1, Enel-GUIDA, G83/1-1*, PPC, AS4777, EN 50438**, C10/C11, IEC 61727			
* In planning, ** Does not apply to all national deviations of EN 50438				
● Standard features ○ Optional features – Not available				
Provisional data, as of March 2010 – data at nominal conditions				
Type designation	STP 10000TL-10	STP 12000TL-10	STP 15000TL-10	STP 17000TL-10



Accessories



RS485 interface
DM-485CB-10



DC overvoltage protector
(type II), input A
DCSPD KIT1-10



DC overvoltage protector
(type II), inputs A and B
DCSPD KIT2-10