

# Simplifying Solar Panel Maintenance



## SOLAR PANEL TESTERS



**600 V CAT III**

- ▲ Specifications of thousands of panels referenced in an integrated library **Exceptional!**
- ▲ Excellent display resolution with 500 measurement points per curve
- ▲ Temperature and solar radiation measurements
- ▲ All types of solar panels
- ▲ Complies with the IEC /EN 60891 standard



# FTV200 I-V Tracer

Solar power systems use the most widely available energy source in the world: sunlight. The installations already up and running have demonstrated the advantages of solar electricity generation: its reliability, its autonomy and its limited effects on the environment.

Solar power has a crucial role to play in achieving sustainable development. A building's roof or frontage can help to cover a substantial proportion of the building's energy consumption.

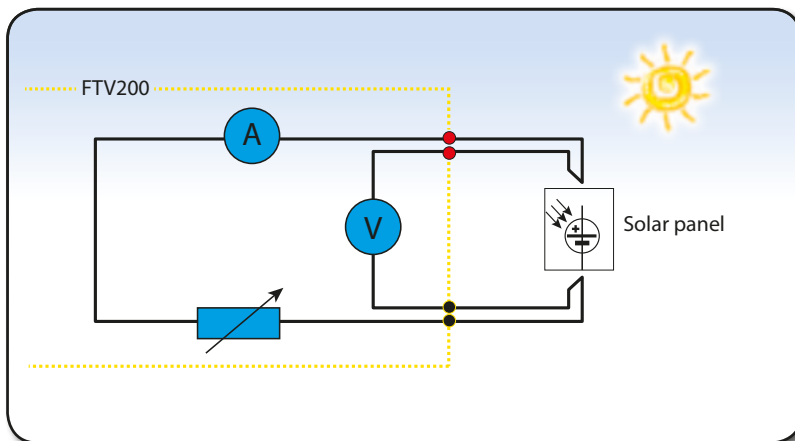
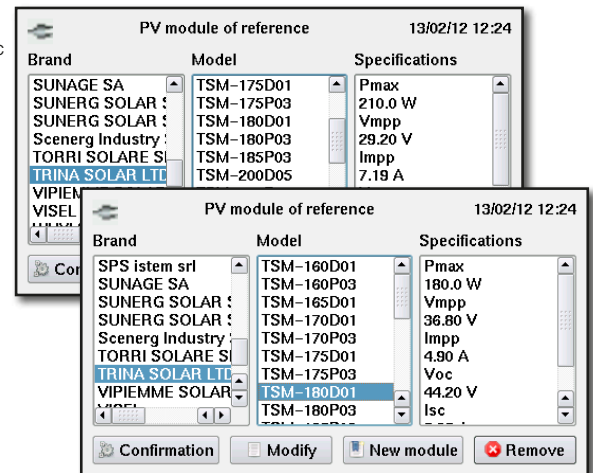
That's how solar energy is: non-polluting, economical, easily available, renewable and simple to transform. Thanks to rugged, reliable equipment (photovoltaic modules), it allows you to produce electricity which you can then use for your own needs or sell on to a power distributor. For personal or larger-scale production, in an area connected to the electrical grid or on an isolated site, solar electricity generation can prove an interesting option. It is decentralized, widely accessible and can be modulated. It can reduce your conventional electricity consumption or earn you additional revenue.

The FTV200 can be used to test either a single panel or a whole string of panels according to the IEC/EN 60891 standard. This standard requires the use of an inclinometer.

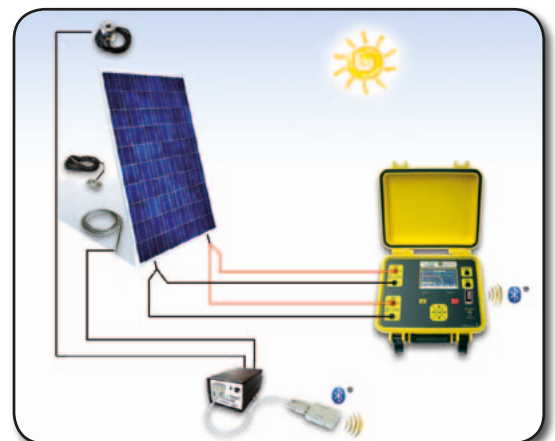


## FUNCTIONS

- ▲ Measurement of the solar module's or string's output voltage up to 1,000 V<sub>DC</sub>
- ▲ Measurement of the solar module's or string's present production up to 10 A<sub>DC</sub>
- ▲ Measurement of solar radiation [W/m<sup>2</sup>] with the reference cell
- ▲ Automatic temperature measurement
- ▲ Result evaluation test: OK / not OK
- ▲ Panel types: monocrystalline, polycrystalline, thin-film, amorphous and micromorphous panels
- ▲ Colour digital and graphic display of IV specifications
- ▲ 4-wire measurement method for greater accuracy
- ▲ Comparison with the standard conditions
- ▲ Internal memory for data storage
- ▲ Up to 10,000 solar-power modules in the internal database
- ▲ Possibility of connecting external storage device to USB port
- ▲ Display of the results on screen
- ▲ MC4 connection technology for voltage and current measurements
- ▲ 500-point curves for better resolution with zoom function
- ▲ Automatic real-time calculation of the "Fill Factor" (FF)
- ▲ USB key for data transfers



Once the voltmeter and ammeter have been set up on the installation, users can vary the resistance RL, which is the instrument's internal resistance. The voltage and current values from the cells at various points on the solar panels are known, so they can be compared immediately.



Because the 4-wire method is used to measure the output current and voltage of the solar panels, the results are highly accurate even over considerable cable lengths.



# IMPLEMENTATION

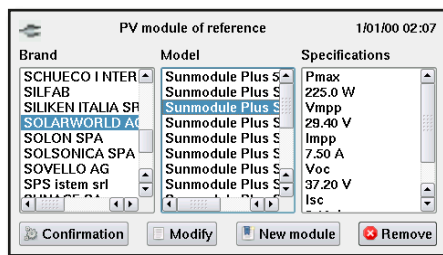
## THE FTV200 I-V TRACER IS AN INSTRUMENT FOR CHECKING THE SPECIFICATIONS OF SOLAR PANELS

The FTV200 is an instrument for professionals involved in testing, maintaining and repairing solar panels and checking their efficiency. The analyser can be used on a solar-panel installation to determine whether its efficiency is satisfactory and detect any faulty cells.

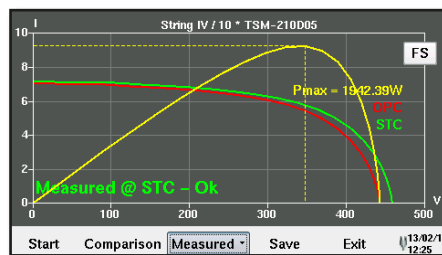
In the range of instruments dedicated to the solar power industry, the new **FTV200 I-V TRACER** model can be used for thorough verification of all the voltage-current (I-V) specifications of a solar module or panel. It is capable of checking module strings on installations up to 1,000 V and 10 A. The data acquired are then processed and compared with reference curves (STCs) provided by the panel manufacturers. This comparison enables the panel(s) to be tested and declared either operational or needing replacement.

This highly-effective instrument is the ideal solution for routine maintenance and for detecting any faults on the solar power installation.

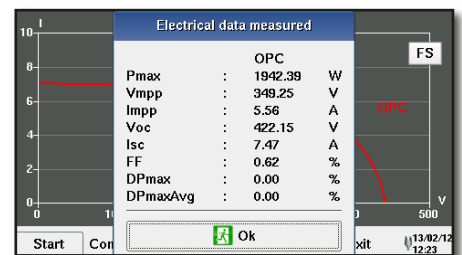
Functional verification of solar panels is essential to ensure the quality and safety of solar power installations (production system and solar panels).



Selection of more than 10,000 manufacturer references stored in the database inside the instrument. It is a simple task to update this list, either directly on the instrument by means of its touch screen, or in your office with the management software delivered with the FTV200.



Immediate display of the characteristic I-V curves of a single solar power module or string of modules, with a visual comparison between the curve of the standard values provided by the manufacturer (STC) and the measurements taken in real time (OPC). A factual test result is displayed. The MPP (max. power) curve is also available.



Summary of the electrical data measured (OPC) and the data provided by the manufacturer (STC). The voltage, current and maximum power (MPP) of the installation are also indicated, as are the efficiency (FF), the no-load voltage and the short-circuit current.

## SOLAR POWER MODULES

The FTV200 can be used to test a large number of solar panel types, whatever the technology involved.

### Crystalline technologies

Made up of interconnected cells which are flat and extremely thin, crystalline technologies always use silicon as their basic raw material.

- Monocrystalline --> Accounts for about 45% of the world market / Approximately 15 % efficiency
- Polycrystalline --> About 40% of the market / Approximately 18% efficiency / high manufacturing costs
- Amorphous --> About 2% of the market / easy to set up on any type of support / Approximately 18% efficiency
- Micromorphous --> Composed of an upper layer of amorphous silicon and a monocrystalline underlayer

Higher efficiency than the other crystalline technologies

### "Thin-layer" technology

A thin, uniform layer of materials in powdered form is deposited on a substrate (glass, metal, etc.) in a vacuum.

The modules produced with this technology offer a larger area and are better at capturing diffuse radiation.

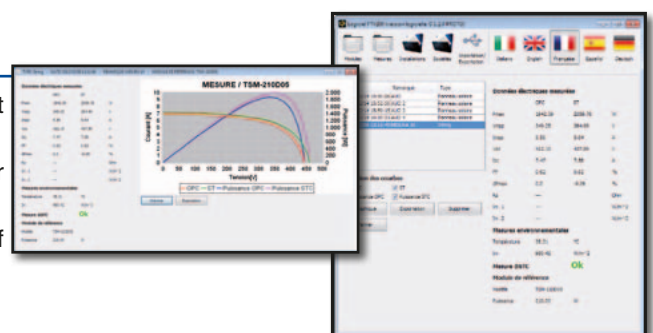
Unlike crystalline modules, there is no risk of overheating around 60 °C which could reduce panel efficiency.

# SOFTWARE

The FTV200 solar panel tester is delivered with its own management software.

On the one hand, this can be used to retrieve measurement results or customer data and to print reports.

On the other hand, this software allows users to complete the library of solar panel references by manufacturer (power, voltage, etc.).



## Technical Specifications

Display	4.3" colour graphic LCD touch screen
Casing	Site-proof case
Library	10,000 curves (with reference values of panels / manufacturer)

## Functions

DC voltage	10 to 1,000 V
DC current	0.1 to 10 A
Power	10 W to 10 kW
Radiation	By pyranometer / 0 to 2,000 W/m <sup>2</sup>
Temperature	By Pt 100 probe, -20 °C to +100 °C
I-V graph	Display of voltage/current measurement graph per panel or string
MPP graph	Display of Maximum Power Point (MPP) graph

## General Specifications

Communication	USB 2.0
Power supply / battery life	Mains or Li-ion rechargeable battery pack / 2-hour battery life
Safety	IEC 61010, CAT III 600 V
Operating temperature	-5 °C to +40 °C
Dimensions / weight	270 x 250 x 130 mm / 2.5 kg

## Optional Accessories

## References

Pyranometre .....	P01160730
Pt100 ambient temperature probe.....	P01160731
Pt100 contact temperature probe.....	P01160732
FTV remote unit .....	P01160736
FTV200 Bluetooth communication kit.....	P01160739
Carrying bag .....	P01298066
USB/RS232 adapter .....	HX0055
Inclinometer .....	P01102115
Flexible test probes .....	P01102116
Stylus for touch screen.....	Please contact us

## State at Delivery

### FTV200 I-V TRACER

#### With pyranometer and Pt100

Carrying bag, set of 3 m cables, set of MC4 adapters (red/black), MC4/ Ø 4 mm banana adapter, magnetic stylus for touch screen, USB key, professional pyranometer, Pt100 probe for ambient temperature, 1 mains adapter, set of flexible test probes, operating manual, PC software and certificate of conformity.

**References : ..P01160740**

### FTV200 I-V TRACER

Carrying bag, set of 3 m cables, set of MC4 adapters (red/black), cable with MC4/4 mm plug, magnetic stylus for touch screen, USB key, 1 mains adapter, set of flexible test probes, operating manual, PC software and certificate of conformity.

**References : ..P01160745**



\* already supplied with the FTV100

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