CHAUVIN® ARNOUX
CHAUVIN ARNOUX GROUP

GREENTEST
FTV 100

Energy efficiency on your installation

Solar Power Installation Analyser

Easy to read even in bright sunlight thanks to its anti-reflective treatment!

- **Electrical** power surveys
- **Solar-panel** efficiency calculations
- **DC/AC inverter** efficiency calculations

Specially designed for solar power installations!

With the spread of solar power installations, professionals in the sector, installers, maintenance technicians and auditing organizations need a simple and effective test and measurement instrument, as the users sell on the electricity produced.

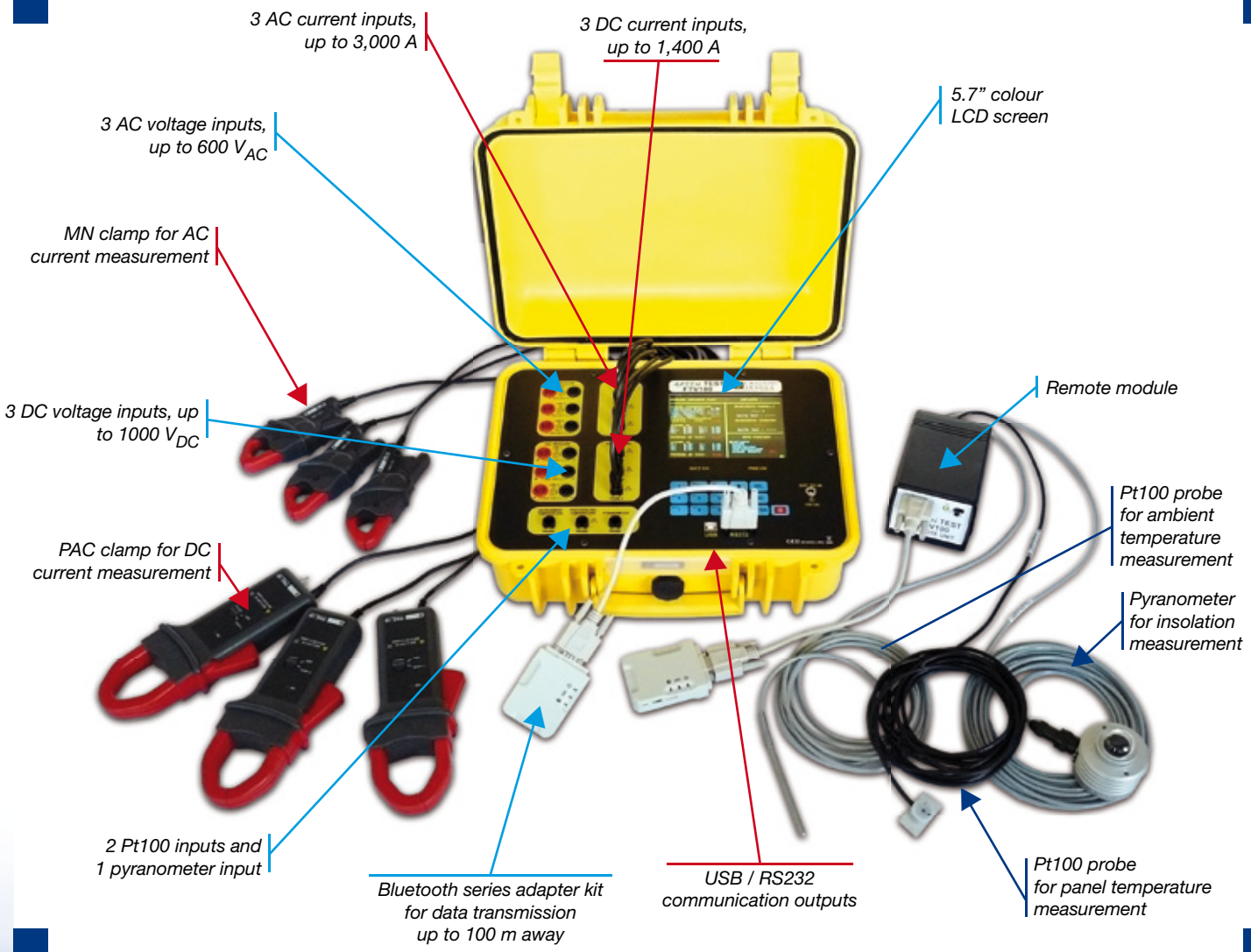
The payback time for the installation will vary according to the actual efficiency of the solar power installation. In an installation, each row of solar panels is designed to achieve a specific level of efficiency which is indicated on the datasheet concerning the panel.

When this reference value is reached, it means the installation is operating correctly. If not, it means there is a malfunction on the panel or on one of its components.

Major advantage: the FTV-100 can be used to perform these measurements simultaneously on 1, 2 or 3 rows of panels set up in parallel.

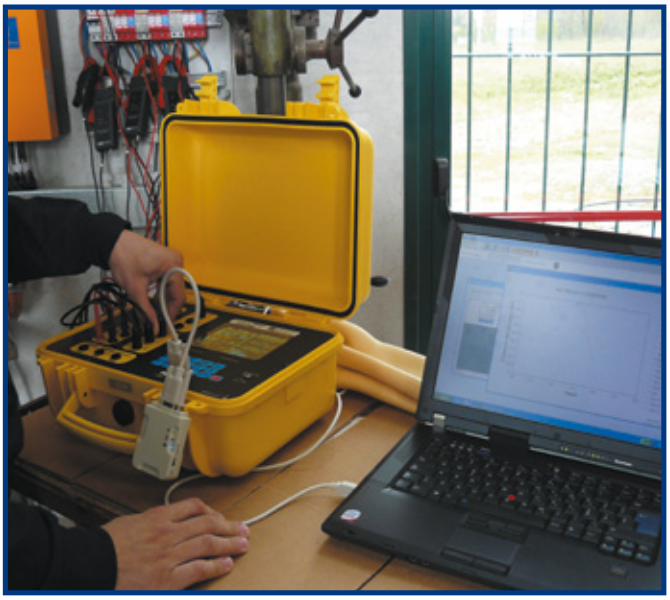
The solution : the GREENTEST- FTV 100

This instrument can simultaneously measure and display all the physical and electrical parameters of solar power installations. It also stores them at the same time.



Simple to use & set up

The *GREENTEST* is particularly simple to set up.
For obvious safety reasons, you must first disconnect the panel (fuses, lightning arrester, etc.). You can then check the specifications of the panel's inverter, as indicated on the panel.
You install your **physical measurement sensors** (ambient temperature, panel temperature and insolation) as close as possible to the panels and connect the **current clamp** with its leads for the voltage measurements: an AC clamp for the measurements on the distribution network and a DC clamp for the measurements on the solar-panel outputs.
You then configure the instrument and enter the parameters (panel manufacturer).
These values are subsequently used as a reference to check the panel's efficiency.



All the measurements are performed simultaneously: voltage, current, power, temperature, etc.
Depending on the type of installation, you will need one or more current clamps.
To meet this requirement, 2 preconfigured versions of the FTV-100 are available:
- with 1 current clamp
- with 3 current clamps

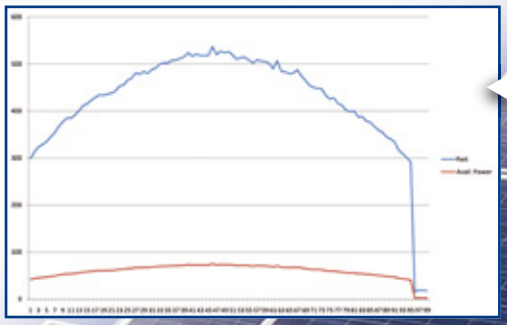
The *GREENTEST* comes with a set of communication accessories which are particularly useful for transmitting measurement results on large installations. A «REMOTE» module allows real-time data transmission up to 100 m away.
It operates either with a Bluetooth series adapter kit over distances of up to 100 m or with a 15 m serial cable with a 9-pin male/male RS232 connector.

Opposite: The remote module, the Pt100 probe and the pyranometer are positioned on the solar panels installed on the roof of a house. This photo is provided as an illustration only in order to show the physical measurement equipment. In a real-life context, these accessories will be set up to one side so that they do not overshadow the panels and thus reduce their efficiency.

Measurements, processing and analysis

The ***GREENTEST Report*** software can be used initially to calibrate the instrument. It acquires all the measurements in real time. The display of the measurement curves allows users to check at a glance whether the panel is operating correctly or not. A graphic analysis function is available, in particular on the insolation/power curves, and it is also possible to print out a measurement report.

Firmware updates are also applied via this software.



Example of a power-insolation curve

Technical Specifications

Display	Large 5.7” extra-bright digital colour LCD screen (320 x 240) with anti-reflective treatment		
Inputs			
	Functions	**Range**	**Accuracy**
Pyranometer	Solar irradiance measurement	0 to 2,000 W/m^2	± 2 %
Ambient temperature	Pt 100 probe for measuring the ambient temperature	-30 to +80 °C	± 1 % ± 1 °C
Temperature	Pt 100 probe for measuring the temperature of the solar panels	-30 to +120 °C	± 1 % ± 1 °C
DC voltage	1 to 3 inputs	1,000 V_{DC}	± 1 %
DC current	1 to 3 inputs	1,400 A_{DC}	± 1 %
AC voltage	1 to 3 inputs	600 V_{AC}	± 1 %
AC current	1 to 3 inputs	3,000 A_{AC}	± 1 %
Functions			
AC/DC power	20,000 W_{DC} / 1,200 W_{AC}		< 2 %
Calculation functions	Efficiency of solar panels with compensation of the modules’ temperature coefficient		
	Efficiency of DC / AC conversion by the inverter		
Data recorder	Up to 10 instrument configurations can be pre-recorded in the memory *(measurements and measurement results)*		
General Specifications			
Communication	RS232 *(to remote unit)* + USB *(to PC)*		
Internal power supply	Built-in Li-Ion rechargeable battery (4.5 Ah) / Battery life 8h		
External power supply	Via 220 V_{AC} – 50 Hz external power supply		
Protection	IP67 closed / IP54 open		
Electrical safety	IEC 61010-1 - 600 V CAT IV – 1,000 V CAT III		
Dimensions / Weight	360 x 304 x 194 mm / 3 kg *(with battery)*		


REMOTE unit


Panel temperature probe


Ambient temperature probe


Bluetooth kit


Type C current clamp


PAC current clamp


Type D current clamp


MN current clamp

To order

GREENTEST FTV100, version with 1 DC input
1 PAC10-FTV DC + 3 MN-FTV AC type clamps > P01160700
Delivered with IP67 site-proof case, 1 pyranometer for insolation measurement with 5 m cable, 1 Pt100 probe for ambient temperature with 3 m cable, 1 Pt100 probe for panel temperature with 3 m cable, 3 AC current clamps (MN-FTV) with 3 m cable, 1 DC current clamp (PAC10-FTV) with 3 m cable, 4 x 3 m leads with test probes, 1 rechargeable battery with mains adapter, data processing software, 1 carrying bag, 1 certificate of conformity, 1 SIT calibration certificate for the pyranometer.

GREENTEST FTV100, version with 3 DC inputs
3 PAC10-FTV DC current clamps + 3 MN-FTV AC clamps > P01160720
The same as the 1-DC-input version plus the kit for measurements on installations with 3 DC inputs.

Accessories

3-DC-input installation measurement kit > P01160710
Delivered with 2 PAC10-FTV current clamps and 3 m cable, 2 sets of leads with test probes (3 m)

GREENTEST FTV100 REMOTE Unit > P01160736
Delivered with 4 x 1.5 V batteries, 2 male/male RS232 connectors for soldering, 1 fastening strap

“Cable” communication kit > P01160737
15 m series cable, 9-pin male/male RS232 connectors

“Bluetooth” communication kit > P01160738
2 Bluetooth adapters (transmitter/receiver), 2 male/female RS232 series cables 20 cm long, adapter programming software

PAC10-FTV PAC DC clamp *(200 A_{DC})* > P01160734
PAC20-FTV PAC DC clamp *(1400 A_{DC})* > P01120092
MN13-FTV MN AC clamp *(200 A_{AC})* > P01160733
C107-FTV Type C AC clamp *(1000 A_{AC})* > P01120337
D43-FTV Type D AC clamp *(3000 A_{AC})* > P01120100
Set of crocodile clips ø 4 mm (R/N) > P01102052Z
FTV100 battery > P01160735

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