ITECH High Speed High Performance Photovoltaic / Solar Simulator Power Supply

Power Supply

Applications

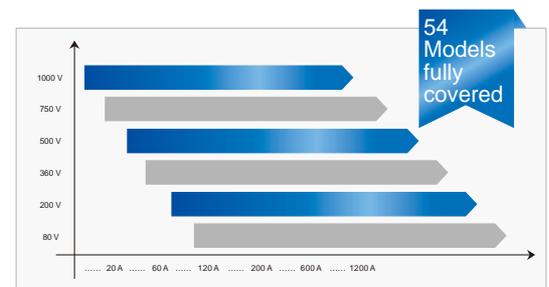Solar array simulation, Photovoltaic inverter, Micro inverters and solar chargers

Feature

- Automatic wide range output, the voltage up to 1000V
- Power up to 100KW
- Solar array simulate I-V function (Built-in I-V curve mathematical formula)
- Simulate the output characteristics of various solar cell (monocrystalline silicon cell, polysilicon cell, thin film cell) (Fill Factor)
- Simulate I-V curve under different temperature and irradiation
- Simulate I-V curve for solar panel under shadow
- Static & dynamic MPPT efficiency test
- Built-in EN50530 / Sandia / NB/T32004 / CGC/GF004 / CGC/GF035 test program, and generate reports
- Graphical software interface, real-time test and display MPPT state of PV inverter
- Auto program control 100 I-V curves via Voc, Isc, FF, Pm and other parameter points
- 100*128 points curves and 4096 points precise programming control
- Support output impedance setting function
- Support various mode edge independent set, adjustable rising and falling time
- Fast switching between quadrants, even seamless switching can be achieved under certain conditions,, suitable for fast cell charge and discharge
- Built-in DIN 40839 & ISO-16750-2
- Built-in USB/RS232/GPIB/LAN (LXI compliant) interface

ITECH newly-launched high speed high performance photovoltaic / solar simulator power supply series provide IT6500C series high power DC power supply equipped with SAS1000 solar array simulator software. It can accurately simulate the solar array I-V curve max. voltage up to 1000V and extended power up to 100kW. The solar array simulator series have the precise measurement and fast transient response design and is with high stability. With the built-in EN50530 / Sandia / NB/T32004 / CGC/GF004 / CGC/GF035 SAS module, the solar array simulator enables easy programming on test regulations, materials, Vmp, Pmp parameters, so as to simulate I-V curve characteristic output and generate reports. These benefit much in test of the static & dynamic maximum power tracking performance of photovoltaic inverters.
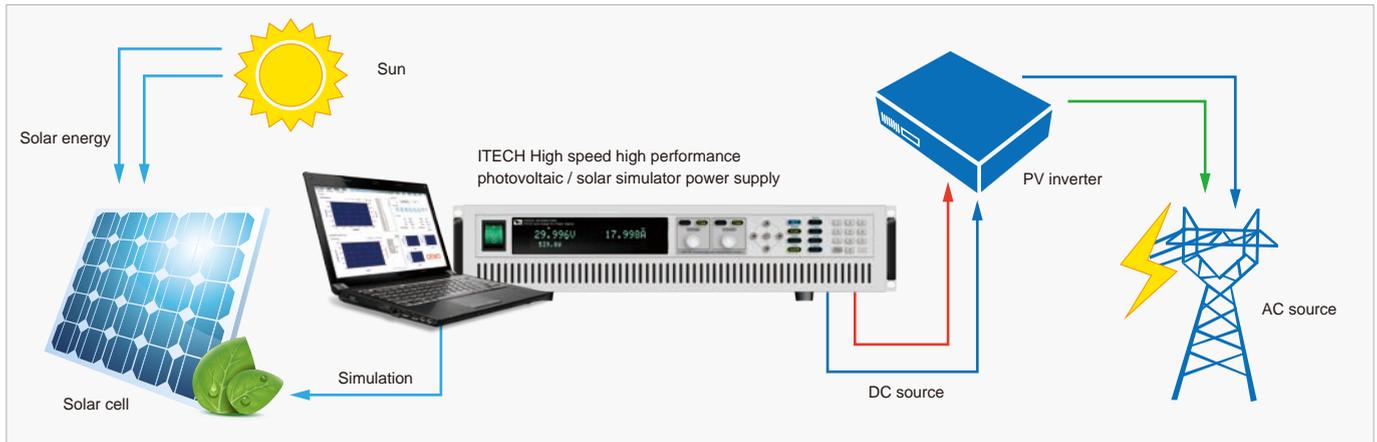
ITECH newly-launched high speed high performance photovoltaic / solar simulator power supply series also provide Shadow and Table mode. The shadow mode is provided to allow users to edit any shielded I-V curves for dynamic shadow. Under Table mode, the user can select 4096 points matrix, or store 100 I-V curves of different temperature and irradiation in the memory, and can set the implementation sequence and time of each curve, to test the long-term MPPT performance evaluation under different climates.

The solar panel output simulation under the 24-hour real environmental parameters is also available. As a solar simulator, our power supply also provides supports for micro-grid, distributed photovoltaic etc power system simulation and core equipments testing.

54 Models fully covered

Applications

- Design & verify the MPPT circuit and algorithm of the PV inverter
- Verify the MPP voltage range and the full load MPP voltage range of the inverter
- Verify static maximum power tracking efficiency of the PV inverter
- Verify the MPPT performance of the inverter for dynamic curves (Built-in EN50530,Sandia,NB/T32004,CGC/GF004, CGC/GF035)
- Verify the inverter starting voltage and the maximum input voltage, the maximum input current and other electrical parameters
- Verify the MPPT mechanism of the inverter for the I-V curve when the solar cell is shaded by clouds or trees.
- Test inverter DC terminal OVP, OPP

- Verify micro-grid control center and control function of photovoltaic energy storage system
- Verify the MPPT performance of the inverter from early morning to nightfall
- Verify the total efficiency and conversion efficiency of the inverter with IT9100 power analyzer

Power Supply

1800W	IT6512C 80V/120A/1800W	IT6513C 200V/60A/1800W	IT6514C 360V/30A/1800W	IT6515C 500V/20A/1800W	IT6516C 750V/15A/1800W	IT6517C 1000V/10A/1800W
3kW	IT6522C 80V/120A/3kW	IT6523C 200V/60A/3kW	IT6524C 360V/30A/3kW	IT6525C 500V/20A/3kW	IT6526C 750V/15A/3kW	IT6527C 1000V/10A/3kW
6kW	IT6532C 80V/240A/6kW	IT6533C 200V/120A/6kW	IT6534C 360V/60A/6kW	IT6535C 500V/40A/6kW	IT6536C 750V/30A/6kW	IT6537C 1000V/20A/6kW
9kW	IT6542C 80V/360A/9kW	IT6543C 200V/180A/9kW	IT6544C 360V/90A/9kW	IT6545C 500V/60A/9kW	IT6546C 750V/45A/9kW	IT6547C 1000V/30A/9kW
12kW	IT6552C 80V/480A/12kW	IT6553C 200V/240A/12kW	IT6554C 360V/120A/12kW	IT6555C 500V/80A/12kW	IT6556C 750V/60A/12kW	IT6557C 1000V/40A/12kW
15kW	IT6562C 80V/600A/15kW	IT6563C 200V/300A/15kW	IT6564C 360V/150A/15kW	IT6565C 500V/100A/15kW	IT6566C 750V/75A/15kW	IT6567C 1000V/50A/15kW
21kW	IT6572C 80V/840A/21kW	IT6573C 200V/420A/21kW	IT6574C 360V/210A/21kW	IT6575C 500V/140A/21kW	IT6576C 750V/105A/21kW	IT6577C 1000V/70A/21kW
24kW	IT6582C 80V/960A/24kW	IT6583C 200V/480A/24kW	IT6584C 360V/240A/24kW	IT6585C 500V/160A/24kW	IT6586C 750V/120A/24kW	IT6587C 1000V/80A/24kW
30kW	IT6592C 80V/1200A/30kW	IT6593C 200V/600A/30kW	IT6594C 360V/300A/30kW	IT6595C 500V/200A/30kW	IT6596C 750V/150A/30kW	IT6597C 1000V/100A/30kW

* For higher power test, please contact ITECH.
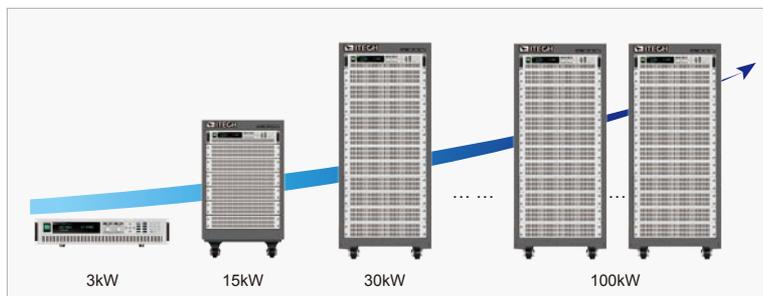
Power Supply

High speed high performance photovoltaic / solar simulator power supply

ITECH high speed high performance photovoltaic / solar simulator power supply, adopting IT6500C high-speed high-performance high-power DC power supply equipped with SAS1000 solar array simulator software, all series have 54 models with wide range of voltage and current, with the output up to 1000V, 1200A. One instrument can cover a wide range of application requirements, easy to choose the required models for users. Photovoltaic / solar simulator power supply supports edge time independent set for each mode, has fast switching between sourcing and sinking current, even can achieve seamless switching under certain conditions, and supports OVP, OCP, OPP, OTP, Vsense reverse and other protection functions.

Power up to 100KW

ITECH high speed high performance photovoltaic / solar simulator power supply built-in parallel connection function, power can be extended to 100KW by simple master-slave parallel mode. After paralleling, with master and slave dynamic synchronization, function is not restricted, users only need to operate on the host panel, the slave unit will automatically receive the distribution, greatly simplify the operation. The rising and falling times are adjustable and the CC / CV priority selection mode can achieve curve changes without overshoot, so that solar simulator power supply can simulate high power solar array and meet the test requirements for commercial and power station by using PV inverters.
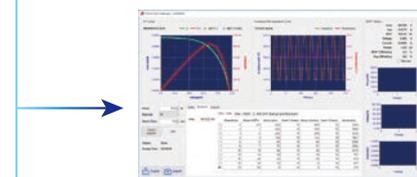
3kW   15kW   30kW   100kW

Graphical software interface

ITECH high speed high performance photovoltaic / solar simulator power supply has graphical software interface, users can easily use the software to output, measure, display the maximum power tracking status of photovoltaic inverter in real time and record value.

Built-in EN50530 / Sandia and other five kinds of regulatory testing procedures, it is convenient for users to test the static and dynamic MPPT performance of PV inverters and generate reports, so as to compare with competitors' results.

Solar simulator power supply also provides the shadow and table mode, the user can enter the 128 ~ 4096 points array to edit any shielded I-V curve to achieve dynamic shadow effect and also can store 100 I-V curves under different irradiation and temperature to test the long-term maximum power tracking performance of photovoltaic inverters under different climatic conditions.
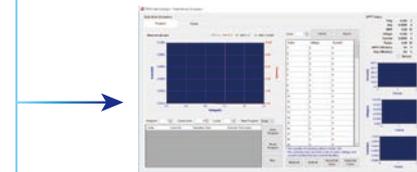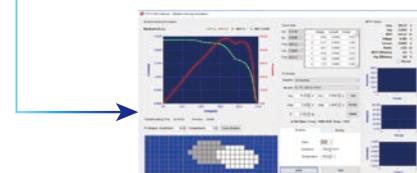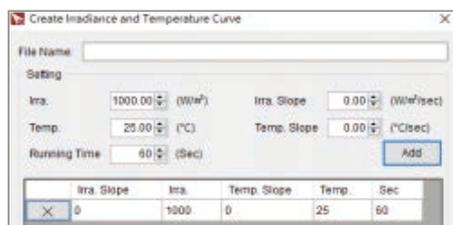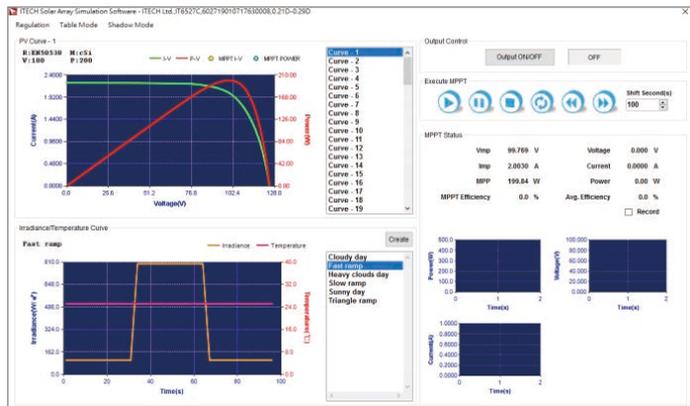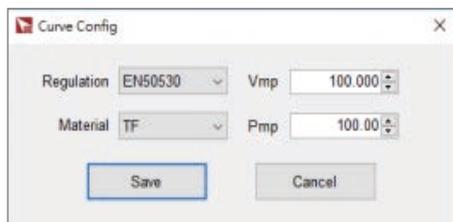
SAS Mode

Table Mode

Shadow Mode

Simulate the output characteristics of various solar cell (FILL FACTOR)

Since solar cell utilization is not only related to its internal characteristics, but also related to weather, season, temperature, irradiation, cloud cover, rain and snow and other factors, solar cell has different I-V characteristics in different periods. Therefore, PV inverter must have a strategy to adjust real-time working point of the solar cell to make it always work in the vicinity of the maximum power point, this process is called MPPT. ITECH high speed high performance photovoltaic / solar simulator power supply can be used to directly simulate various real-life solar cell arrays in a laboratory test environment to test the static & dynamic MPPT performance of photovoltaic inverters.
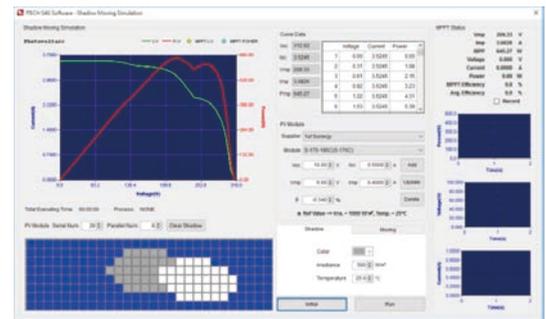

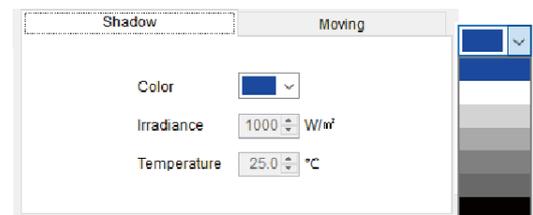Set dwell time for each I-V curve to track MPPT and efficiency.

Easy to edit, save 1 - 100 I-V curves

Shield I-V curve simulation （Shadow Mode）

ITECH high speed high performance photovoltaic / solar simulator power supply can help users to complete the solar array output simulation under different shadow modes, test and track real-time maximum power and performance test of the PV array. Providing various Module for the user to choose according to different supplier, users can also build their own PV module. User can define irradiation and temperature parameters of shadow, cell string set, parallel quantity and dynamic shielding the moving direction of the cloud, initialization time, running time and the time interval of cloud moving.

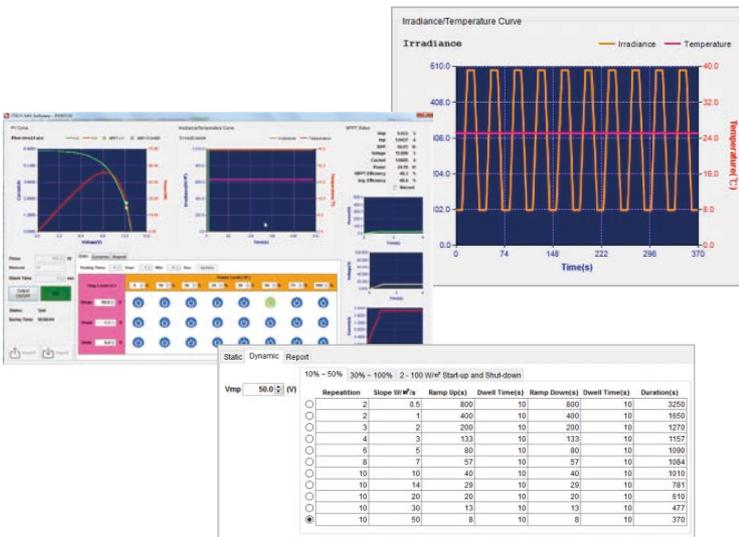Select the moving direction of the cloud, initialization time, running time and the time interval of cloud moving
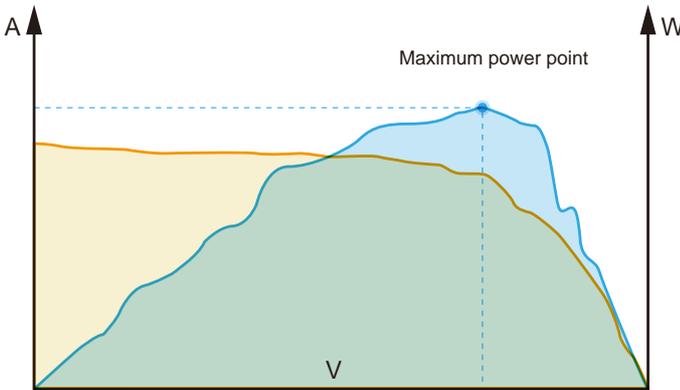

Set the irradiation and temperature parameters of clouds
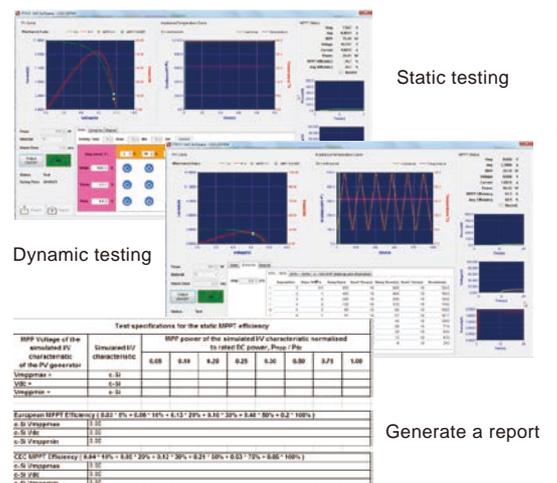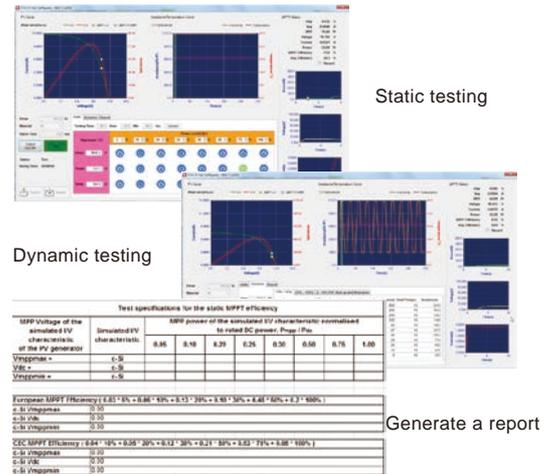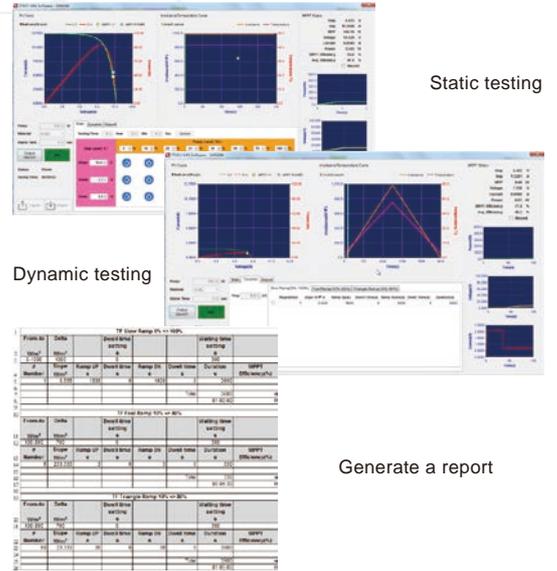
Power Supply

Static & Dynamic MPPT performance test

MPPT tracking performance is a very important specification of PV inverter, PV inverter needs a built-in MPPT mechanism to track real-time maximum output power of solar cell. Therefore, some of the industry's organizations have defined some "standard" test patterns to match all kinds of inverters, which allows inverter manufacturers to test and improve MPPT performance. Build-in MPPT test program of EN50530、SANDIA、NB/T32004、NB/T32004、CGC/GF004, users can set their own Vmp, Pmp, materials and other parameters, test run time and maximum run power percentage, the I-V curve and the real-time trace process are displayed on the screen to verify MPPT performance of the PV inverter, record the data during the whole test and generate report.

Test the MPPT performance of PV inverter by easy programming illumination intensity with time

● Test example

Static testing

Dynamic testing

Generate a report

Maximum power point

Static testing

Dynamic testing

Generate a report

Static testing

Dynamic testing

Generate a report

Power Supply

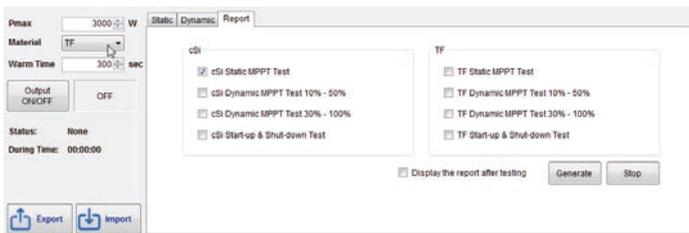## Inverter conversion efficiency test

ITECH high speed high performance photovoltaic / solar simulator power supply is with built-in regulations EN50530, SANDIA, NB / T32004, NB / T32004, CGC / GF004 PV IV curve model, users can equip with IT9121 power meter to test conversion efficiency of photovoltaic inverter according to the maximum power percentage value.
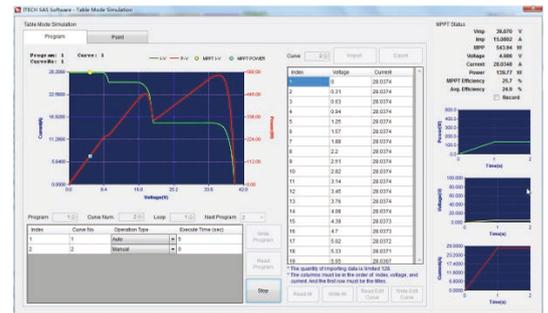

IT9121 Power Meter

Report generation

ITECH high speed high performance photovoltaic / solar simulator power supply allows users to record the measured parameters, such as voltage, current, power, watts, MPPT efficiency , sampling time interval and total length of time, etc., which facilitates the analysis of PV inverter.

Automatic program （Table Mode）

Table Mode of ITECH high speed high performance photovoltaic / solar simulator power supply can facilitate users to quickly verify the MPPT performance of photovoltaic inverter in the R & D and quality testing. Users can define 100 curves which has 128 points on each curve, after selecting the Curve, Loop, Next program and other necessary information, the software can be test by the setting steps, report will be automatically generated after finished.
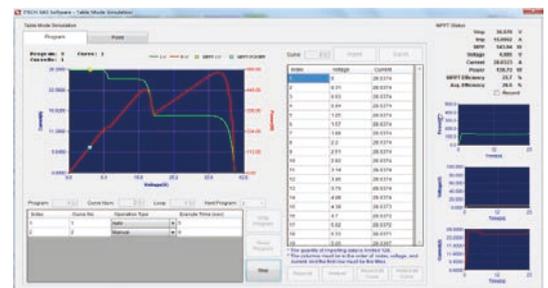
■ Table Program Test example

1.Run the first curve of the first program

2.Run the second curve of the first program after 5s

3.Clicking next, run the first curve of next program

Power Supply