ITECH

YOUR POWER TESTING SOLUTION

ITECH Test Solution

Your Power Testing Solution

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About ITECH

As a professional global electronic instrument manufacturer, “Customer oriented” is the principle of all ITECH’s activities. We do our best to acquire potential power test requirements of various industries. With continuously improvement and innovation, ITECH has the widest product line and best automatic electronic test solutions, promoting worldwide users’ test experience to a new height.

Main products and solutions

More than 200 models of products: Programmable single and multi-channel electronic loads, high stability AC power supplies, programmable single and multi-channel power supplies, power meters and battery internal resistance testers etc.
Automatic testing system: Power Supply Automatic Test System, Battery Test System, Junction Box Auto Test Systems and Aging test systems etc.

Test Solutions

- Power Supply Test Solution
- Automotive Electronics Test Solution
- New Energy Test Solution

Test System

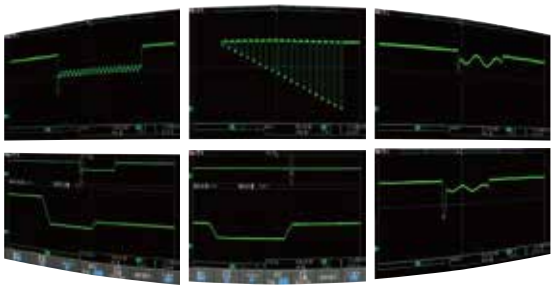
- Power Supply Test System
- Battery Test System
- Solar Cell Test System
- Automotive Junction Box Test System
- Charging Station/ On-board Charger Test Solution

Test Instrument

- AC/DC Power Supply
- AC/DC Electronic Load
- Bipolar DC Power Supply
- Power Meter
- Battery Internal Resistance Tester

Automotive electronic devices test

ITECH provides professional solutions to automotive electronic devices,e.g car audio and GPS.
Our IT6500 series power supply built-in DIN40839 and ISO16750-2 waveforms, which simulate various disturbance situation of car.



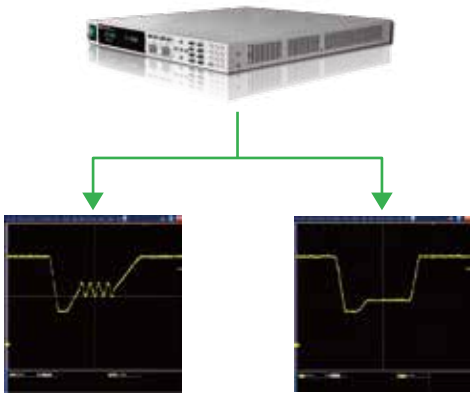
IT6500C Series
Wide Range High
Power DC Power
Supplies

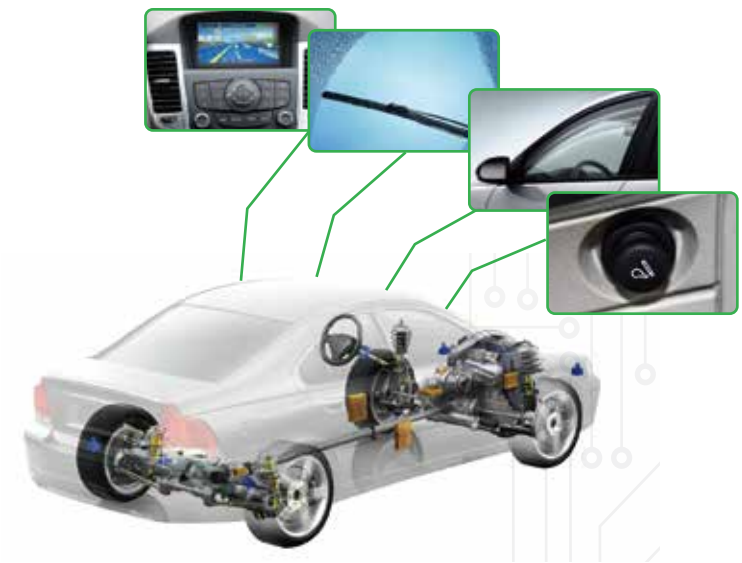
Products Recommended

IT6500 DC Power Supply, IT6900 DC Power Supply, IT6400 Bipolar DC Power Supply, Junction Box Test System.

Power turn–on /turn–off transient simulation

IT6500 series can simulate the disturbance during and after cranking. User can recall the standard waveforms(DIN40839 and ISO16750-2) directly from menu.





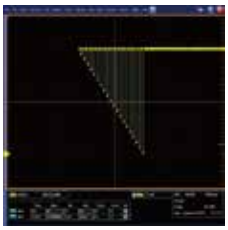
Your Power Testing Solution

Automotive electronic devices test

Reset performance (reboot) test

Many on-board devices have reset capability, such as the built-in micro-controller is used to ensure electrical reset function. The reset function performance test requires the voltage each time dropped 5% and keeps for a whille, then dropped 5%... Cycle repeats. Standard specifies the DUT function status should reach ISO16750-1 defined C grade. IT6500 DC power supply provides the test curve, and can be recalled directly. Very convenient design.

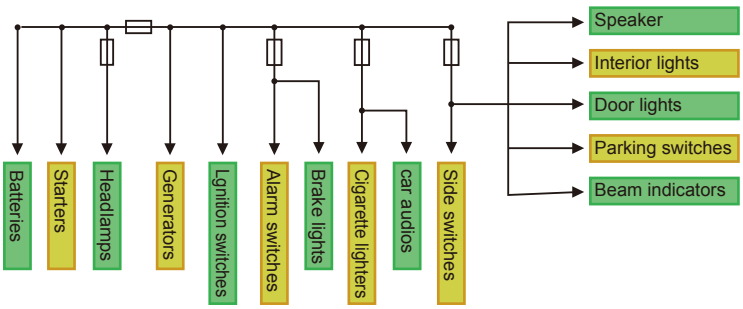
IT6522C DC Power Supply

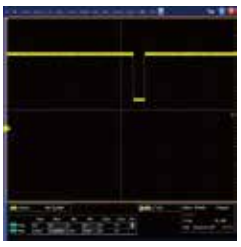


Automotive Microcontroller

Voltage transients (Fuse blown) test

To prevent short circuit happening, each automobile electronic device has a fuse. Fuse test requires ISO16750-2 short circuit voltage drop curve and high speed programmable power supply. IT6500 DC power supply has fast voltage rising/falling rate (the fastest up to 1ms), that fully can meet the test requirements.





Junction box test

ITECH provides professional and reliable test system for auto junction box test.

- Accessories test
- Stability of long term working
- Relay life test
- Fuse test
- Temperature monitor and fault alarm
- Others

Products Recommended

Junction box test system

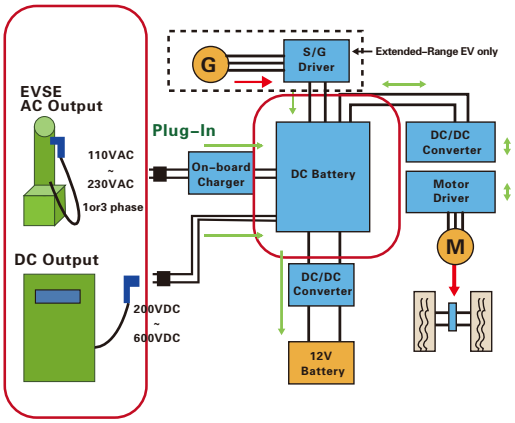
New Energy Test Solutions

Charging Station Test

Today, the clean-energy automobile technology is developing in full swing, therefore, to guarantee the quality of the battery charging or discharging products used in this field, an excellent testing solution must be introduced. ITECH offers all kinds of different testing solutions like AC power supply, DC power supply, electronic load rating from hundreds watts to hundreds Kilo-Watts and they all perfectly satisfy various electrical automobile testing requirements. On top of that, ITECH also provides built-in testing plan based on ISO16750 and DIN40839 standards in order to make ITECH testing solutions specializing in automotive electronics be more reliable and multi-functional.

ITECH Test Solution Advantages

- Module design, customized auto test system
- High power electronic load can reach up to 600 kW, meet test requirement of high power DC charging pile
- Built in standard test items
- Compatible with multiple protocols for charging piles, ideal for testing various charging piles
- Fill-in-blank user interface, no need of programming ability
- Customized test report



Products Recommended

AC Power Supply

IT7600 Series NEW

IT7300 Series

- Output range:
  0~500 V/0~72 A/0~18 kVA
- Adjustable phase angle: 0~360°
- Input power interference simulation

DC Power Supply

IT6700H Series

- Input range (standalone):
  0~1200 V/0~110 A/0~3000 W

IT6500

- Input range (standalone):
  0~30kW
- 2-quadrant current seamless switching

AC Electronic Load

IT8615

- Input range (standalone):
  0~420 V/0~20 A/0~1800 W
- Measurement:
  V,I,PF,CF,P,Q,S,F,R,Ip+/-,THDv
- Parallel/ 3-phase control

DC Electronic Load

IT8800 Series

- Input range: 0~600 kW
- 4 operation modes: CC/CV/CR/CP

IT8700 Series

- Removable modules for easy system configurability
- Support 16 channels simultaneously test with mainframe extension

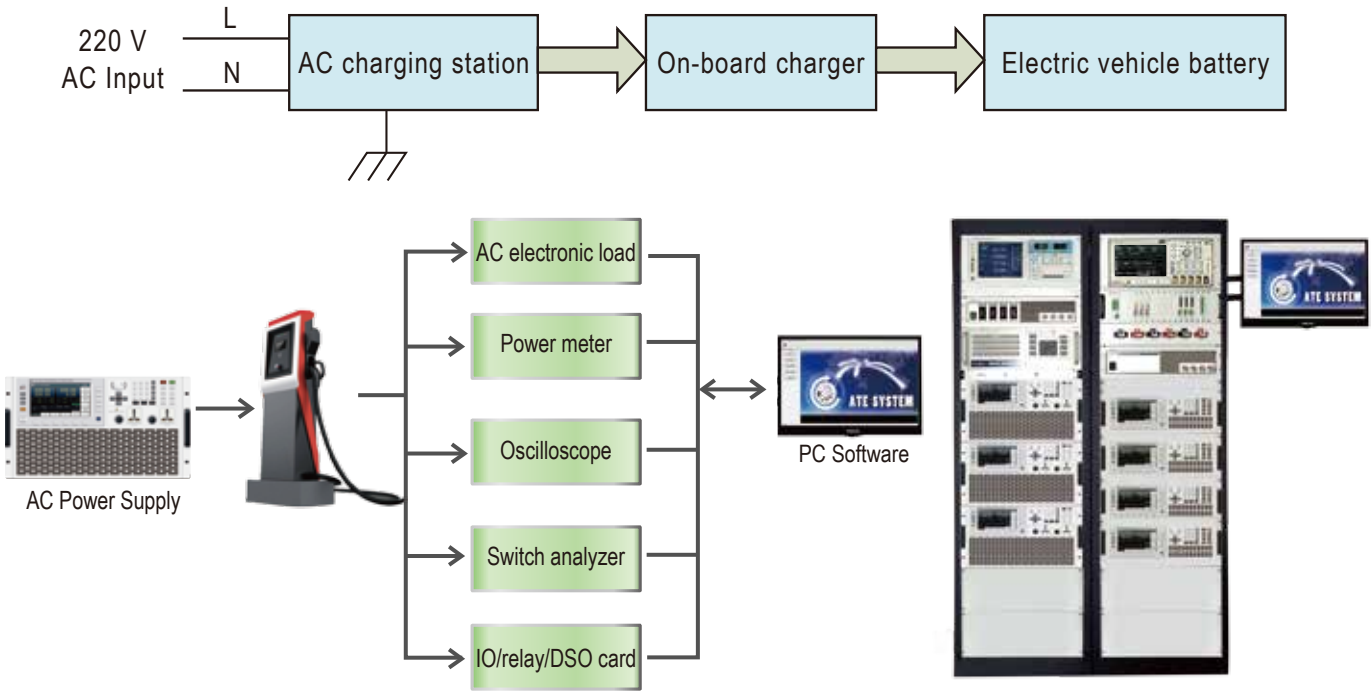
Your Power Testing Solution

New Energy Test Solution

AC Charging Station Test

System Structure

AC charging pile outputs AC and is converted to DC by on-board charger to charge the electric vehicle battery.



Testing Items

	No.	Testing Items	No.	Testing Items
AC Charging Station	1	Test before power-on	8	Communications test
	2	Power-on test	9	Over current protection test
	3	Electric vehicle (EV) conductive test	10	Leakage current protection test
	4	Connection status test with load	11	Input over voltage protection test
	5	Input/Output performance test	12	Input under voltage protection test
	6	Measured data compliance test	13	Unnormal connection test
	7	Display function test	14	Emergent stop function test

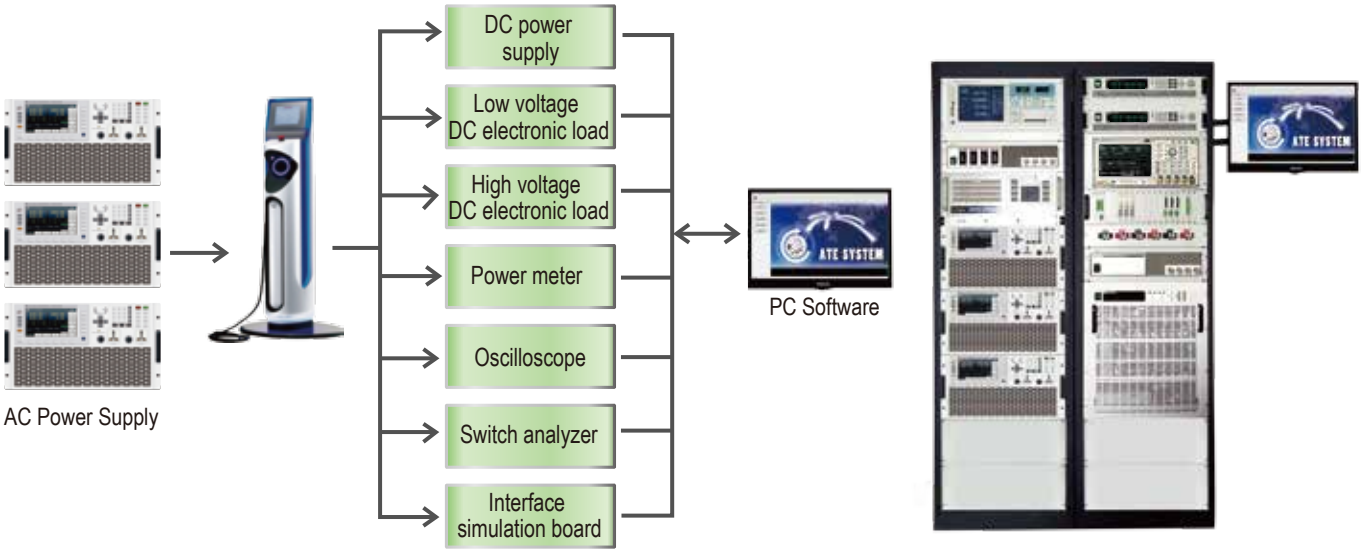
Products Recommended

Instrument	Function Required	Specification	Model
AC Power Supply	City electricity simulation capabilities	500 V/36 A/9 kVA	IT7600 Series
AC Electronic Load	1. High power 2. 47-63 Hz	50-420 V/0-20 A/1800 W Parallable for power extension	IT8615

DC Charging Station Test

System Structure

As a fast charging product, DC Charging station has higher output power and voltage thus only high power and high voltage DC electronic load can satisfy its testing demand.



Testing Items

	No.	Testing items	No.	Testing items
DC Charging Station	1	Output voltage deviation test	12	Input over voltage protection test
	2	Output current deviation test	13	Input under voltage protection test
	3	Voltage & current regulated accuracy test	14	Output over voltage protection test
	4	Ripple and noise test	15	Output short circuit protection test
	5	Efficiency test	16	Inrush current test
	6	Power factor test	17	Battery reverse connection test
	7	Current unequally assigning ratio test	18	Unnormal connection test
	8	Voltage & current limit test	19	Emergency stop function test
	9	Display function test	20	Soft-start test
	10	Input function test	21	Discharge test
	11	Communications test		

Products Recommended

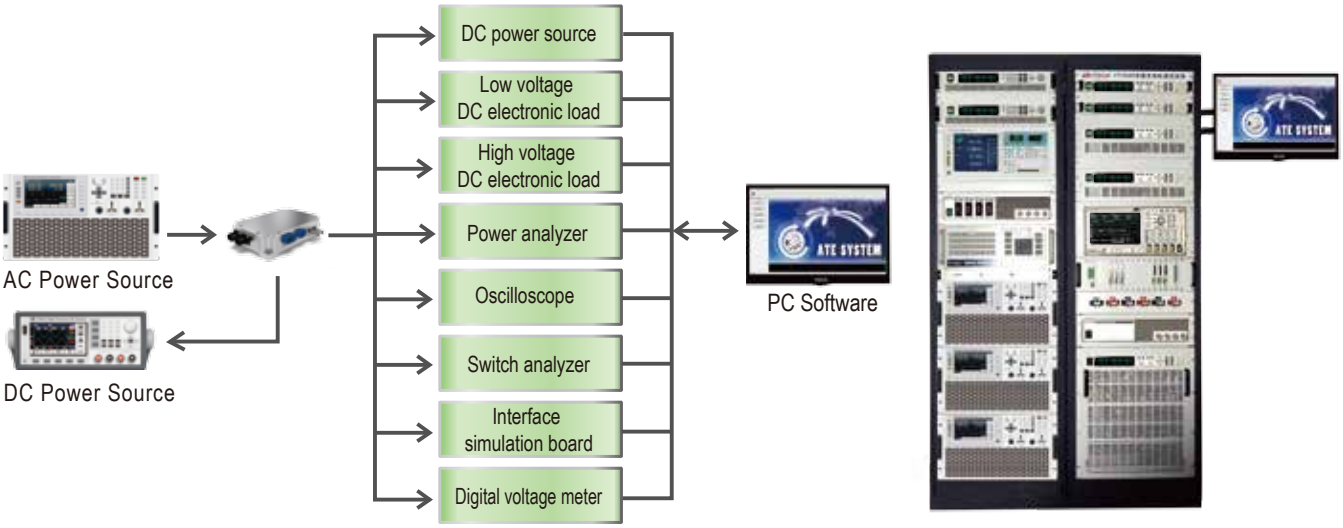
Instrument	Function Required	Specification	Model
AC Power Supply	1. 3-phase parallable control 2. Electricity supply simulation capability	≥80 kW	IT7600 Series/Customized
DC Electronic Load	1. High accuracy 2. Fast response	120 V/240 A/3000 W	IT8816
	DC charging station's power: 80 kW/100 kW/120 kW	80 kW/100 kW/120 kW	IT8800/IT8900 Series

Your Power Testing Solution

New Energy Test Solution

On–board Charger/ Charging Interface Test

EV battery Charger can be classified into on-board charger and external charger. ITECH on-board charger test system includes electronic load for discharging battery, AC source for simulating grid supply, oscilloscope, power meter and professional software to guarantee the complete test for charger.



Test Items		
Input	Input & Output Test	Efficiency Test Power Factor Test Power Test Voltage& Current Test
	StaticTest	Ripple and Noise Test Output Voltage & Current Test
	Line Regulation Test	Input Voltage Deviation Test Input Current Deviation Test
	AC Cycle Dropout Test	AC Cycle Dropout Test
	Power Line Disturbance Test	Power Line Disturbance Test
	Input Voltage Frequency Range Test	Input Voltage Frequency Range Test
Output	Load Regulation Test	Output Voltage Deviation Test Output Current Deviation Test
	Output Voltage Range Test	Output Voltage Range Test
	Voltage Limit Test	Voltage Limit Test
	Current Limit Test	Current Limit Test
	Output Regulated Accuracy Test	Voltage Regulated Accuracy Test Current Regulated Accuracy Test
Protection	Input Voltage ProtectionTest	Input UVP Test Input OVP Test
	Output Voltage ProtectionTest	Output UVP Test Output OVP Test
	Short Circuit Protection Test	Short Circuit Protection Test
	Communication Interrupt Test	Communication Interrupt Test
	Reversed Connection Protection Test	Reversed Connection Protection Test
	Parameter Configuration Error Protection Test	Parameter Configuration Error Protection Test
Time Series Tests	Turn On Test	Inrush Current Test Voltage Overshoot Test Steady State Current Test Turn On Time Test, Rise Time Test
	Turn Off Test	Turn Off Time Test, Fall Time Test
Special Tests	Reliability Test (Life Cycle Test)	Reliability Test (Life Cycle Test)

Test items: CC test, CP test, PWM simulation test, normal power off test, abnormal power off test.

On–board Charger & Coupler Connection Test

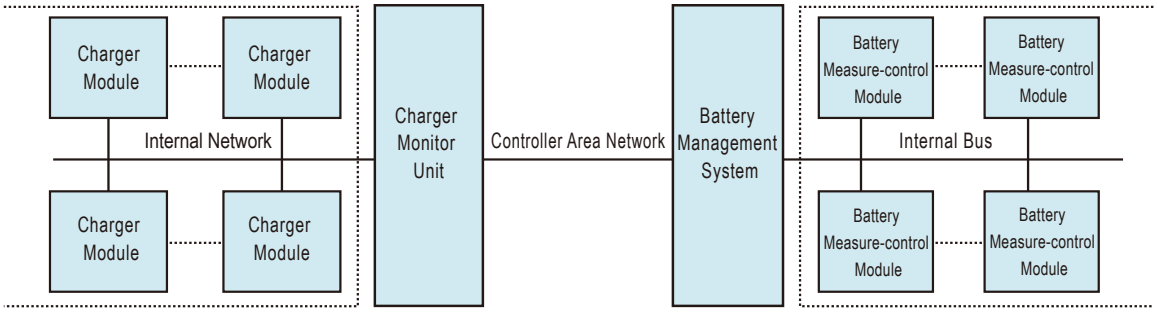
Test System Advantages

Self control charger, easy operation

Vehicle Control Unit (VCU), Motor Control Unit (MCU) Battery Management System (BMS) are the most important technology that will affect Vehicle's dynamic performance, cost, reliablity and safety. Test System can communicate with BMS and limit charger's charging voltage, current and power. It has complete test items that can test EV charger automatically and intelligently.

Compatible with protocols of all kinds of car charger, Applicable to test all types of car charger

Car Charger and BMS use CAN bus communication, DBC file is the protocol file of CAN to collect data and analyse. It includes sending and receiving data packets and packet ID. ITS9500 test system software support importing and translating. DBC file, which is suitable for all kinds of EV charger.

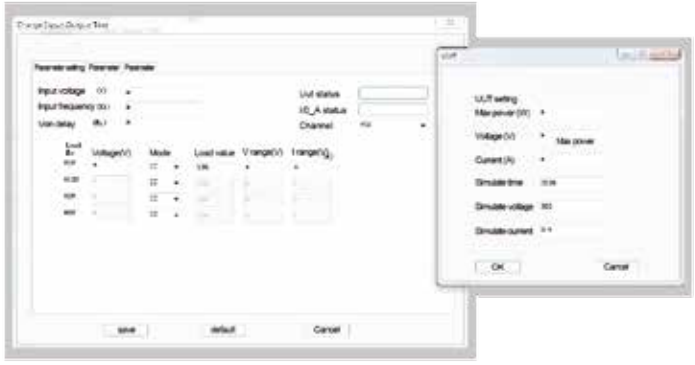


Charger Monitor Unit And BMS Network Topology

Testing Software

ITECH testing software has friendly user interface, only need user to check and fill in the blanks of test items, without requesting for programming ability, making operation more simple and easy.

ITECH testing software provides customized report which can be edited and export as factory test report.



Your Power Testing Solution

New Energy Test Solution

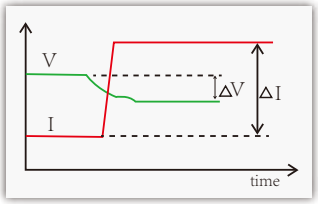
Electric Vehicle Battery Test

Battery Internal Resistance Test

Generally, battery pack is composed of several battery cell connected in series. ITECH integrated power battery test solution including battery internal resistance test, battery pack reliable test and discharge performance test, battery module performance and function test, vehicle simulation test.

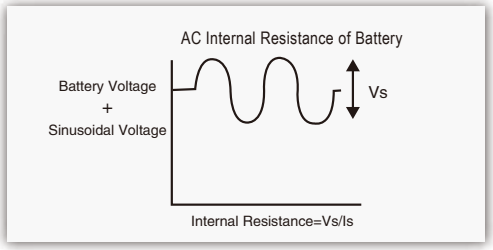
Measurement of DC Internal Resistance

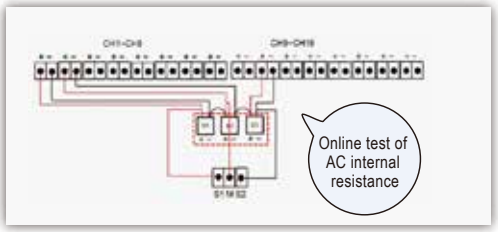
For high-capacity batteries applications, such as power batteries, it is inconvenient or impossible to test the ACIR. So generally battery pack is assessed by its DCIR. DCIR testing includes resistances of electrolyte, battery lead plate, and polarization reaction.



Measurement of AC Internal Resistance

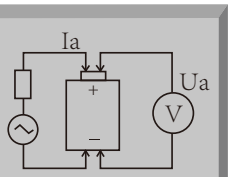
A battery pack is typically multiple battery cells in serial connection. A sharp difference between the cells may greatly damage the battery pack's capacity and discharge performance. Therefore, measurement and systematic analyse of cell IR is an important part of battery performance test and it is a must test item for power battery. The battery IR is not a constant value and it keeps changing while charging and discharging. The dynamic IR and voltage of each cell can be tested simultaneously by on-line IR tester IT5102, so as to monitor whether any battery has failed.





Tips

AC IR internal resistance conforms to IEC standards:



- The frequency of test signal is 1 KHz±0.1 KHz, sine wave.
- The voltage drop of battery's two terminals caused by AC signal should be within 20 mV
- Ambient temperature: 20℃ ± 5℃

Products Recommended

Instrument	Function Required	Specification	Model
Battery Internal Resistance Tester	1. Battery AC/DC internal resistance test 2. Multiple test range for option, high precision and high resolution 3. Built-in multiple communication interfaces	-300-+300 V 3 mΩ-3 Ω	IT5101 IT5101E

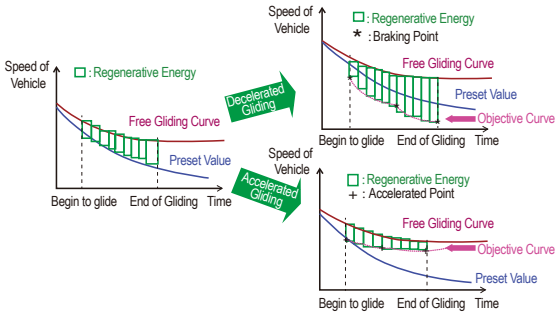
Dynamic Simulation Test

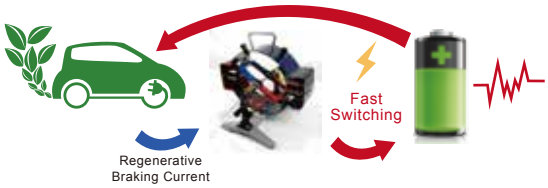
Electric Vehicle Battery Test – Braking Current Regenerative Simulation

When electric vehicle brakes, to reach the same effect of petrol cars braking, the output I/V curve of EV battery should follow a deceleration curve standard. For practical EV battery test, the simulation of bidirectional braking current is necessary, and the test time should be within 10ms. So the reliablity of the test depends on the response speed of test instrument.

1- Traditional solution: Adopt two separate units, such as a DC Power Supply with an Electronic Load, which has a lot of drawbacks, such as complicated system construction, incontinuous voltage waveform and often cannot reach the testing requirement for speed;

2- ITECH solution: IT6500C provides fast and seamless switching between sourcing current and sinking current, with support of power dissipater unit, IT6500C can extend sinking current and power. It is an ideal solution for bidirectional and regenerative energy system test, such as braking current, battery system, etc.



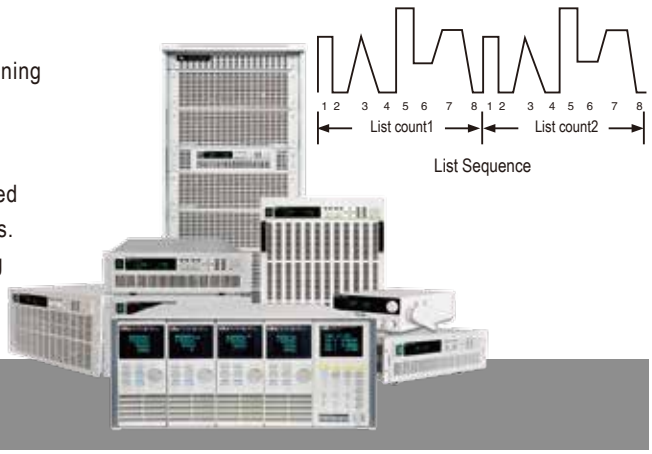


>> IT6500C Series Wide Range High Power DC Power Supplies

Dynamic Discharging Test

When an electric vehicle is moving, its battery discharging waveform is dynamic changing, the dynamic discharging test can simulate the discharging status of the electric vehicle battery and calculate the remaining mileage.

IT8700 and IT8800 series electronic load have 25 kHz dynamic mode. Adjustable current rising/ falling speed in List mode supports user defined current changing, which is suitable to simulate EV battery working status. Moreover, IT8800 series can control the load current via external analog interface with fast response time, which complement the List function.



>> IT8700 / IT8800/ IT8900 Series Electronic Loads

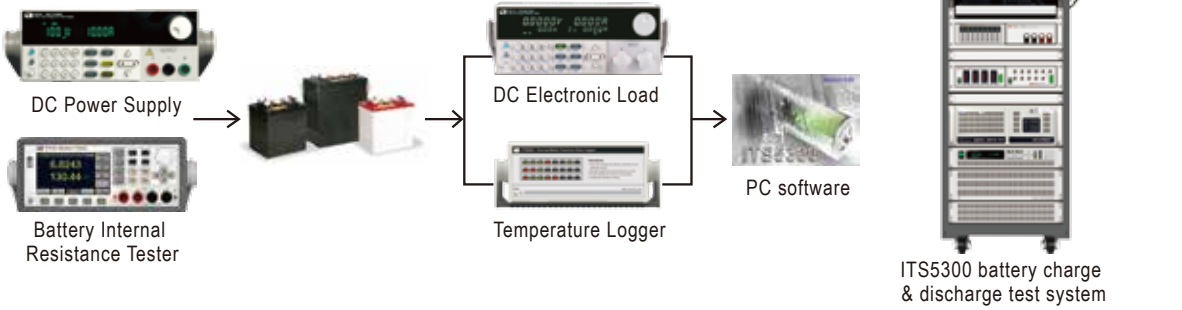
Products Recommended

Instrument	Function Required	Specification	Model
DC Power Supply	1. Current source/ sink 2. Seamless switching between sourcing and sinking current 3. Fast voltage and current changing	800 W-30 kW	IT6500C Series
DC Electronic Load	1. Programmble current changing waveform 2. High speed voltage and current measurement, high speed dynamic mode.	Multi-channel test	IT8700 Series
		Single channel test	IT8800 Series (Available for analog control)

Your Power Testing Solution

New Energy Test Solution

Reliable and discharging performance test of battery pack

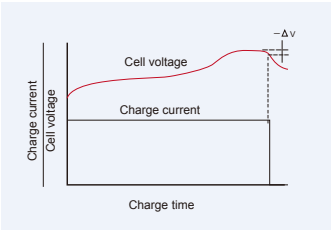


Test Items–Battery cell and battery pack

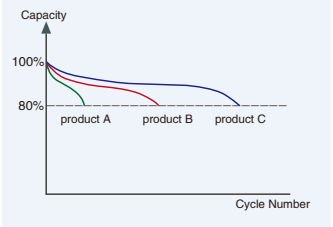
- Internal resistance test: online/offline AC/DC IR test.
- Charge and discharge performance test, curve depicted automatically.
- Temperature test
- Life cycle test
- Capacity test

ITS5300 Test Software

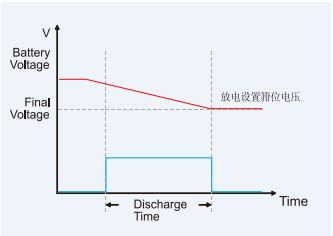
ITECH test software has ultrafast response and 50 kHz I/V sampling rate. One set of software can test hundreds of battery pack simultaneously. ITS5300 software has a lot of functions, e.g. power-off memory protection, complete charge& discharge protection, data backup, configuration of user access rights, various step editing, optimized report and analysis functions, data Excel export, easy programming etc.



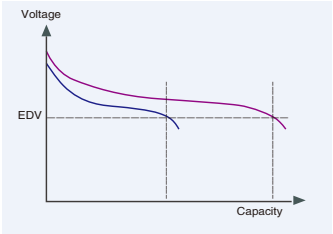
Temperature test



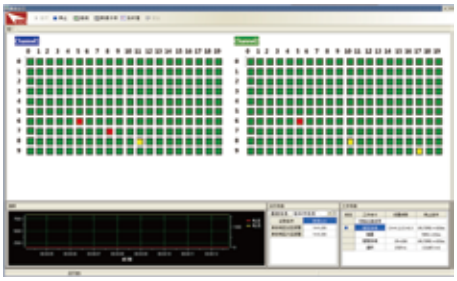
Life cycle test

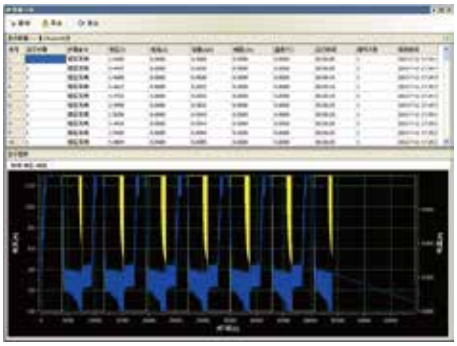


Charge and discharge performance test



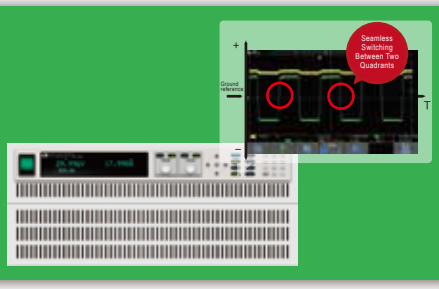
Capacity test





Seamless switching between 2-quadrants/ Charge & Discharge test

Work with IT-E500 power dissipater unit, IT6500C greatly expands the sinking current and power, which can be widely applied in bidirectional current test or battery system charging/ discharging test. Each IT-E500 series power dissipater unit can sink up to 3 kW. By paralleling multiple power dissipater units, the sinking power can reach up to 300% (Max.90 kW) of source power, which can meet the requirement of high power test.



Portable Lithium Battery Test

Charge–Discharge Cycle Test

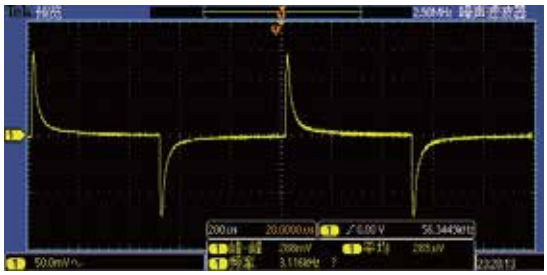
Lithium battery will be charged with constant current initially. After detecting battery has reached 80% state of charge, power supply will change to CV mode to charge. Make sure the accuracy of stop voltage is within 1%. The discharge test is executed under different temperature, and the battery capacity will be recorded.

ITECH IT6412 dual channel bipolar DC power supply can excute charge and discharge at the same time. The voltage, current and charged/ discharged capacity of battery can be observed and the charge/ discharge curve will be displayed on screen.

Lithium Battery Protection Test

The changes and response time under over-charge, over-discharge and short conditions will be measured. The instant time of over protection and short response time normally are hundredth μs level. The request to DC supply response speed is very strict.

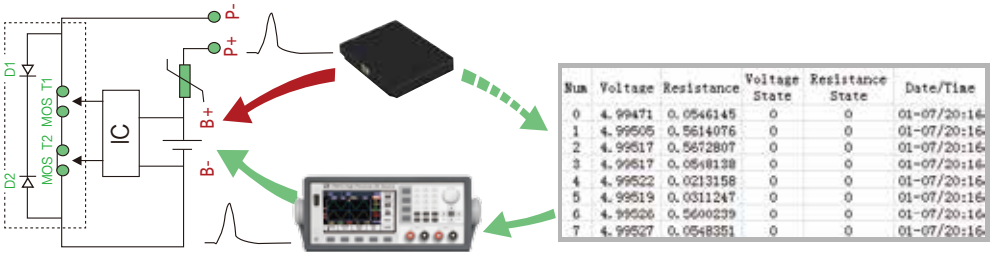
ITECH IT6412 dual channel bipolar DC power supply is with ultrafast dynamic response. The response time is less than 50 μs when 50%~100% load recover to 50 mV.



IT6412 transient response curve

Lithium Protection Panel Test

The protection panel is to guarantee the steady charge/ discharge of lithium battery pack in serial connection, prolong the lifespan of battery. ITECH IT6412 dual channel bipolar DC power supply has the function of battery simulation that the output resistance can be set from 0-1 Ω, and .csv file can be imported to simulate a user-defined battery. Ultrafast dynamic response time with fast A/D sampling rate, ensures accurate test of protection time. The readback current resolution is up to 100 nA, capable of measuring micro current.



Num	Voltage	Resistance	Voltage State	Resistance State	Date/Time
0	4.99471	0.0546145	0	0	01-07/20:16
1	4.99505	0.5614076	0	0	01-07/20:16
2	4.99517	0.5672807	0	0	01-07/20:16
3	4.99517	0.0548138	0	0	01-07/20:16
4	4.99522	0.0213158	0	0	01-07/20:16
5	4.99519	0.0311247	0	0	01-07/20:16
6	4.99526	0.5600239	0	0	01-07/20:16
7	4.99527	0.0548351	0	0	01-07/20:16

Products Recommended

Instrument	Function Required	Specification	Model
Bipolar DC Power Supply /Battery Simulator	1. Output positive & negative voltage and current 2. Fast dynamic response 3. Editable output resistance	±15 V/±3 A/45 W	IT6412
		other specifications	IT6400 Series

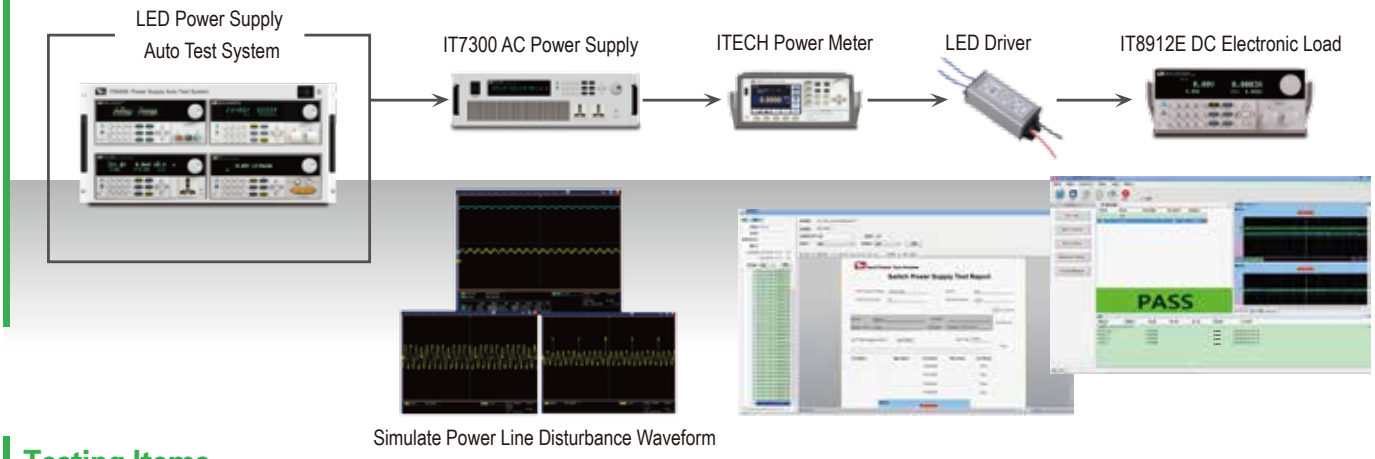
Your Power Testing Solution

New Energy Test Solution

LED Test

LED Power Driver Test

System Structure



Simulate Power Line Disturbance Waveform

Testing Items

Input Test	Output Test	Protection Test	Time Series/Dynamic Test	Stability Test	Special Test
1. Input Disturbance Test 2. Input Power-off Test 3. Input Inrush Current test 4. Input RMS Current Test 5. Input Peak Current Test 6. Input Power Factor test 7. Input Voltage Rising/Falling Test 8. Input Frequency Rising/Falling Test	9. DC Output Voltage Test 10. DC Output Current Test 11. Peak To Peak Noise Test 12. RMS Noise Test 13. Current Ripple Test 14. Efficiency test 15. In-test Adjustment Test 16. Power Good Signal 17. Power Fail Signal 18. Power Supply On signal 19. Voltage Overshoot Test	20. Over voltage Protection Test 21. Over Load Protection Test 22. Over Power Protection Test 23. Short-circuit Protection Test 24. Under Voltage Protection	25. Turn On Time Test 26. Turn Off Time Test 27. Rising speed 28. Falling speed 29. Transient Spike Test 30. Attachment Point Timing Test 31. Output Voltage Sequence	32. Power Effect Test 33. Load Effect Test 34. Mixed Effect Test	35. Extended Measurement point Test 36. Analog Output Control 37. PWM Output Control 38. CAN Bus Read/Write 39. GPIB Read/Write 40. RS232 Read/Write 41. RS485 Read/Write 42. I2C Read/Write 43. TTL Signal Control 44. Relay Control 45. Bar Codes Scan 46. Quick Charger 2.0 Test

Products Recommended

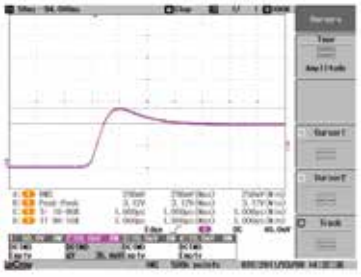
Instrument	Function Required	Specification	Model
AC Power Supply	1. Simulate electric grid disturbance 2. Surge/trapped wave simulation 3. AC source distortion simulation 4. Adjustable phase angle	300 VA	IT7321
		1500 VA	IT7624
Power Meter	1. Measure Vrms/Vpk/Irms/W/Va/Var/PF/CF/Frequency/THD/Energy 2. Harmonic spectrum of voltage and current waveform analysis	600 Vrms/20 Arms 100 KHz 0.1%Voltage & Current accuracy	IT9121
DC Electronic Load	1. CR-LED mode,LED V-I characteristic simulation 2. Adjustable frequency and PWM output 3. Pulsating current and inrush current test	500 V 300 W	IT8912E

LED Lighting Test

Limit inrush current and protect LED

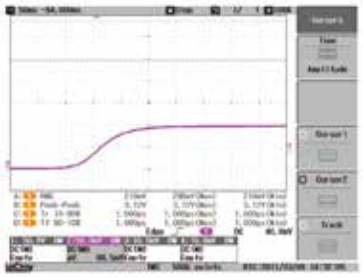
When power on general power supply, it will generate inrush current. With test current increase, inrush current will also increase which may reduce LED lifespan. ITECH DC power supply can effectively limit inrush current, protect LED.

Startup of general power supply



With obvious inrush current

startup of IT6874A



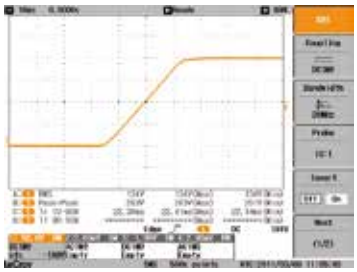
No inrush current

With starting micro–current, voltage rise more rapidly, improving LED test efficiency

When output micro-current, general power supply may easily enter limiting current mode which will lead to slow voltage rise and take more time to light LED. With higher voltage and smaller current, the rising time will be prolonged.

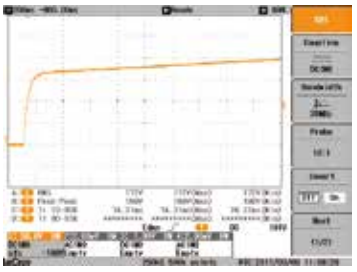
ITECH IT6200 dual-range DC power supply has low current mode, which can light LED very fast.

Startup of general power supply



Voltage rise slowly

Startup of IT6235



Voltage rise rapidly

Forward and reverse leakage current test

LED leakage is extremely small, it reached the level μA. Normally the current can not be captured. Readback resolution of IT6412 Bipolar DC Power Supply can reach μA level and meet test leakage current test requirements.

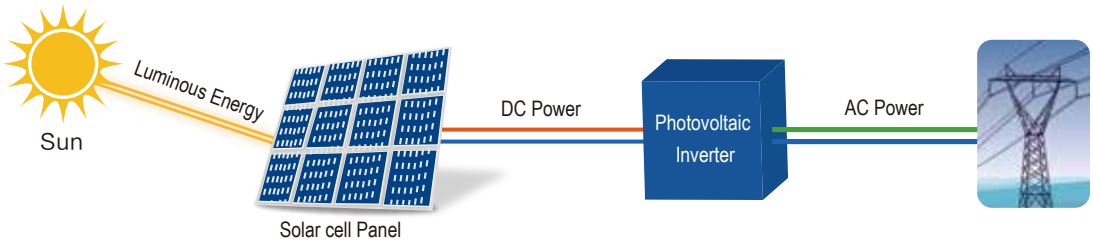
Products Recommended

DC Power Supply	1. Power-on without overshoot 2. Micro current power-on, voltage rising fast 3. Positive and negative μA level current leaking test	±15 V/±3 A	IT6412
	1. Power-on without overshoot 2. Dual range output	150 V/2 A	IT6874A
	Turn-on without overshoot	150 V/10 A	IT6953A

Your Power Testing Solution

New Energy Test Solution

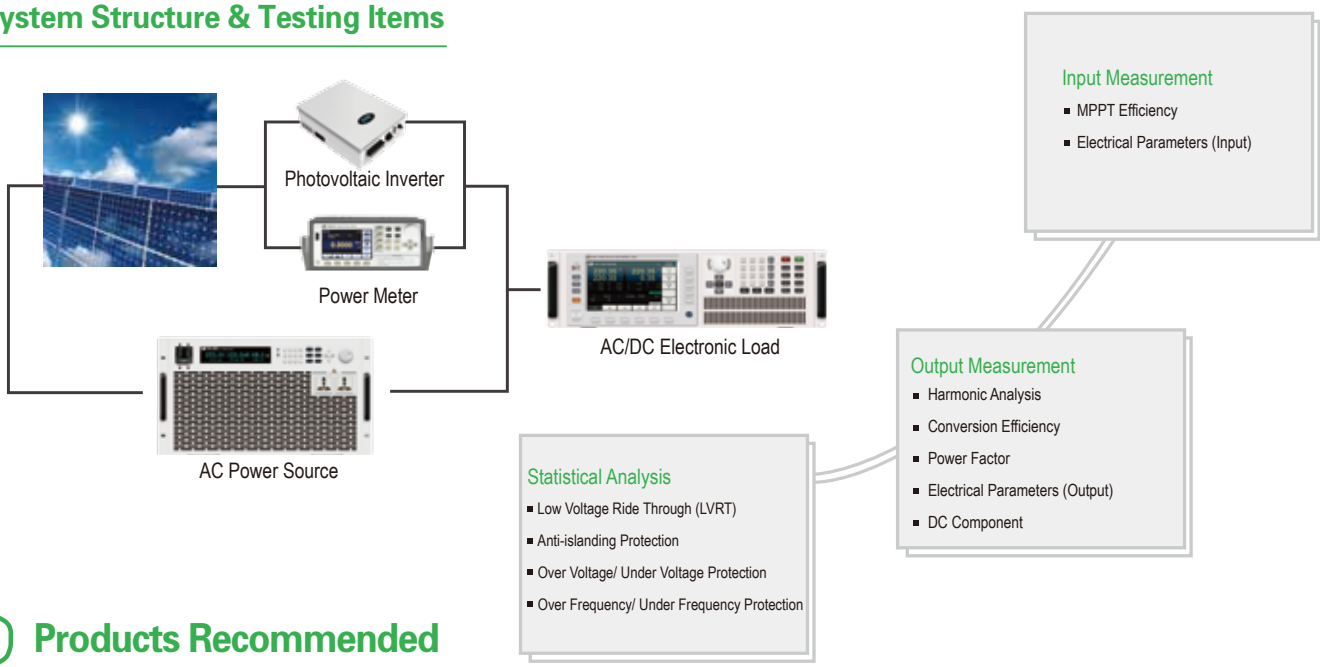
Solar Photovoltaic Test



Photovoltaic (PV) Grid–Connected Inverter Test

DC power generated by solar panels convert to AC power by photovoltaic inverter, and connect to grid in parallel. In order to reduce the impact on the power network quality caused by photovoltaic inverter, relevant standards, such as IEEE1547, IEC61000-3-15, IEC62116 are established.

System Structure & Testing Items



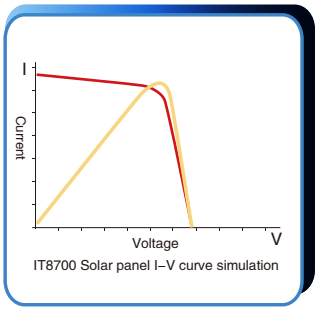
Products Recommended

Instrument	Function Required	Specification	Model
AC power supply	1. Simulate power grid voltage and frequency abnormity 2. Simulate power grid voltage fall to recovery procedure and operates the changes automatically. 3. Simulate the transient of power grid voltage loss to test anti-islanding time(< 2 s). 4. Isolating protection to protect inverter.	750 VA-3000 VA	IT7300 Series IT7626
Power Meter	Wider measurement bandwidth	100 KHz Measuring Bandwidth	IT9121
AC electronic load	1. Simulate different frequency of power grid to test normal running of inverters. 2. Parameters test, such as Active power (P), reactive power (Q), power factor(PF) etc.	420 V/20 A/1800 W 45 Hz-450 Hz	IT8615
DC power supply	Solar cell I-V characteristic curve simulation	User programmed 16 I-V curves composed of 1024 points	IT6500C Series

Solar Cell Test

The change of ambient temperature, illumination intensity will affect the IV characteristics and conversion efficiency. With higher temperature, the I-V curve will change and filling factor will decrease, as well as conversion efficiency. With higher illumination intensity, the output power and conversion efficiency will increase. Therefore I-V curve of solar cell composed of multiple points should be depicted in a very short time to guarantee the reliablity of the test result.

System Structure & Testing Items



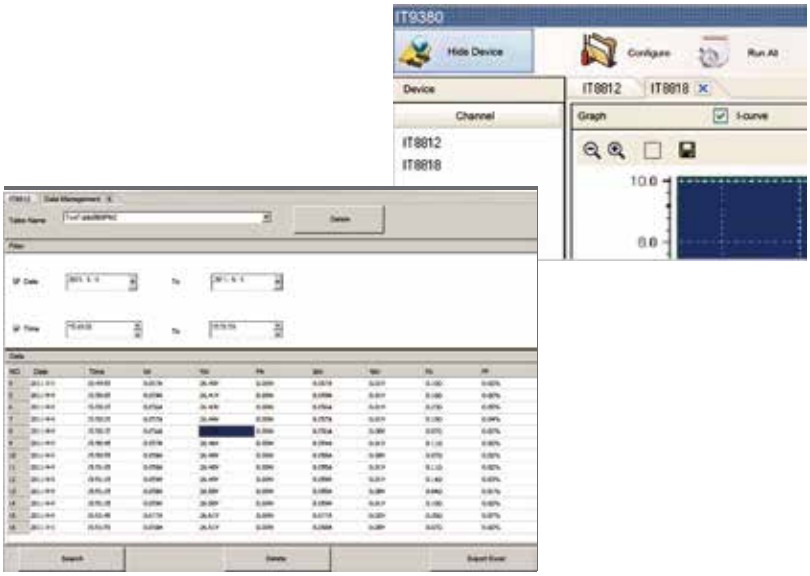
IT8700 Solar panel I–V curve simulation

Test parameters

- Short circuit current
- Open circuit voltage
- Maximum power
- Voltage of maximum power
- Current of maximum power
- Resistance of maximum power
- Filling factor

IT9380 Test Software

ITECH IT9380 solar cell test software can depict I-V curve automatically, support single/multiple tests, which support setting the test time interval and time period. The software automatically scans the voltage and current with the time interval within the preset time. IT9380 software supports multi-channel testing, and the controlling interface of each channel can be switched freely. The test data can be exported and saved as Excel format.



Products Recommended

Instrument	Function Required	Specification	Model
DC Electronic Load	1.High Speed Voltage/Current Measurement 2. High Accuracy and High Resolution	Single channel test	IT8800/IT8900 Series
		Multi-channel test	IT8700

Your Power Testing Solution

Power Supply Test Solution

Power Supply Test Solution

As an essential component of various electronic products, power supply plays an important role. It is not a simple box but an heart which supplies energy for electronic products. The performance and life cycle of any power supply will directly affect other elements working performance in the product. It is necessary to test the power supplies in many occasions, e.g. power supply design, production and quality inspection etc.

For different applications, currently there are many types of power supplies in the market, e.g. switching power supply, DC-DC power supply, AC-DC power supply, portable power supply, communication power supply, power supply (UPS) etc. A good power supply must comply with all functional specifications, protection characteristics, safety regulations, electromagnetic compatibility, reliability, and other specific needs.

Switching Power Supply Test

For the testing instruments with AC/DC power supplies at input terminal, besides the basic parameters should meet the test requirements e.g. power, voltage and current etc. voltage transients rate and ripple factor also impact a lot on testing result.

Testing Items

- Function test
- Protection test
- Safety test
- Reliability test
- Aging test

Advantages of ITECH solution

- Over 200 models of single units
- High power electronic load up to 600 kW
- Built-in various test functions
- High test efficiency
- System customization
- User-friendly front panel design and operation interface

Test Items	ITECH test solution can meet the requirements	Test Items	ITECH test solution can meet the requirements
Power factor and efficiency	YES	Input voltage regulation	YES
Rating voltage	YES	Load regulation	YES
Output current	YES	Ripple & noise	YES
Rising/falling time	YES	OCP,OVP	YES
Input current	YES	Short-circuit protection	YES
Inrush	YES	Dynamic load characteristic	YES

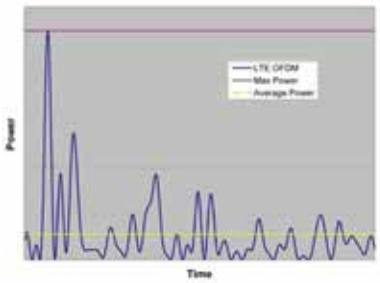
Products Recommended

- ITS9500 power test system
- IT7300series AC power supplies
- IT6500 series DC power supplies
- IT8800 series electronic loads
- IT9121 Power meters

Power Efficiency Test

The maximum energy loss in power system usually occurs during the power conversion between AC to DC or DC to DC. Basically, every design should give priority to consider energy conservation. Generally speaking, for the switching power supplies, the power conversion rate is mainly at 80%~ 90%. However, there are various problems exist in actual operations. Such as fluctuating load, line power distortions and frequently changing environment. In order to ensure optimum efficiency, we need to do efficiency test during switching power supplies design.

Efficiency = Output power (electronic load) / Input power (power meter)

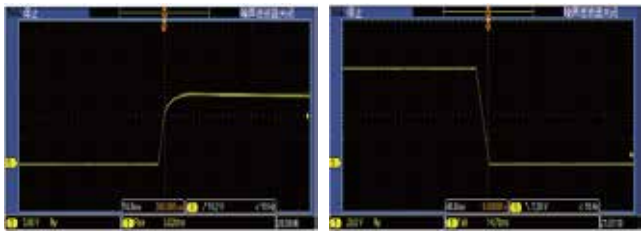


Products Recommended

Traditional efficiency test method is to calculate after get the input power and output power. The values reading order will lead to asynchronous efficiency calculation and a deviation on calculation result. IT9121 provides synchronization crawl function, through input and output power synchronously crawl, IT9121 ensures the measurement with high precision.

Under/over voltage test – Adjustable rising/falling slope

Power modules must tolerate unstable or abnormal power supply in actual working circumstances. It is necessary to simulate the worst-case and do the over voltage and under voltage test. For some special applications, such as military, aerospace and communications fields, the DC- DC modules are adopted for control-center power supply in military and aerospace applications. The input voltage transient will cause great impact on the output stability of the power supplies. The speed of transient changing is up to ms level. That requires a laboratory power supply with fast rising slope to do the test.



Products Recommended

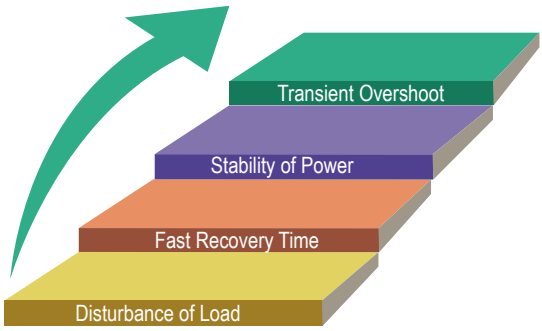
IT6500 series wide range DC power supplies provide settable rising time with 1ms-24h range. Within 1ms, the voltage can change from 0 V to 10 V. Moreover, IT6500 series power supplies have compact size and they are programmable, that makes it to be an ideal test solution for power supply R&D.

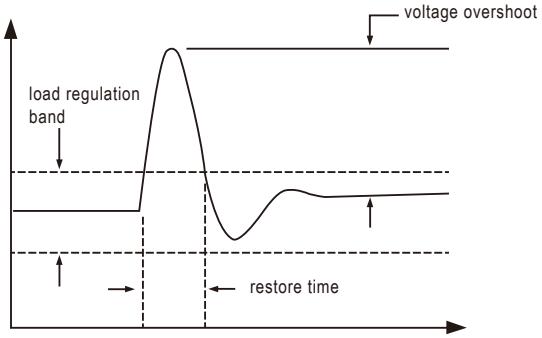
Your Power Testing Solution

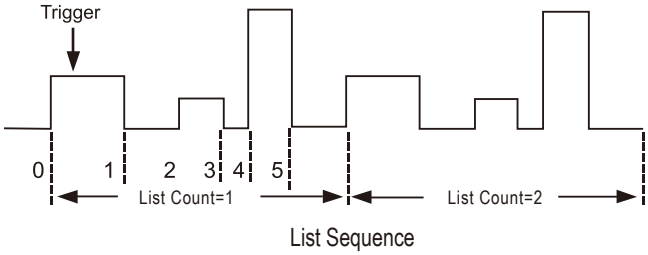
Power Supply Test Solution

Dynamic Load Test

Load dynamic recovery characteristic test is necessary in switch-mode power supply test. Its aim is to test the stability of the power supply voltage output on pre-set value in dynamic load condition. The overshoot amplitude and recovering time are the most significant standards that we should concern.







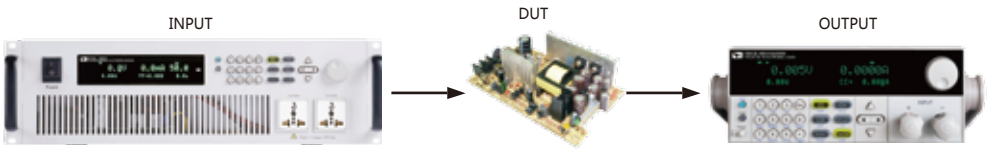
Products Recommended

The dynamic test or LIST function of ITECH electronic loads can simulate the power supply with empty load and full load or in other complex load work condition. The dynamic frequency of ITECH IT8800 series electronic load reaches 25 kHZ can meet this requirement.

Power Supply Stability Test

From power supply effect, load effect and mixing effect, engineers can determine that when the power input or load conditions changed, the follow output voltage changing is whether within the allowable design range.

- Power Effect: Input voltage of power supply varies within ±10%
- Load Regulation Effect: effect of no load or full load
- Power-load Effect: power voltage and load vary simultaneously

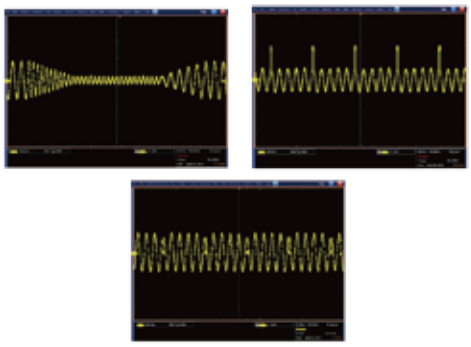


Products Recommended

IT7300 series AC power supply has built-in high accuracy power meter, that not only saves cost, but also convenient for operation. It has list function which allows for editing voltage and frequency preset sequences. Whereas electronic load is important to test power supply as it can simulate real loads and acquire accurate results.

Anti – interference test

In actual working environment, the power supplies must tolerate the complex grid changing and various interference. It is necessary to simulate the worst-case which the power supplies might meet. Such as the surge or notch from thunder, lightning, circuit switching, grid short-circuit, GND fault, etc.



Products Recommended

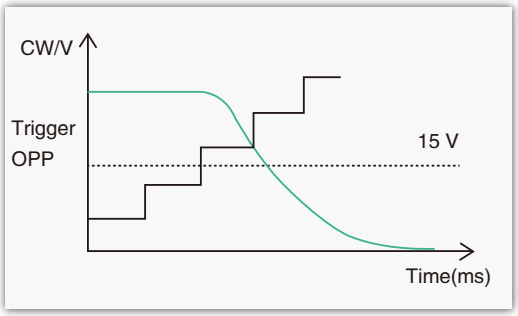
Besides the standard AC waveforms, IT7300 AC power supply is available to simulate the surge, notch and unstable frequency disturbances of the grid.

OCP/OPP Test

OCP test and OPP test are very important for power supplies research and production. ITECH provides complete testing solution to do OCP/OPP test. IT8800/IT8700 series programmable DC electronic loads are the star products in OCP/OPP test.

IT8800&IT8700 Programmable DC electronic loads

Mainly be applied on lithium battery protection boards and power supply modules'OCP/OPP points testing.



By using programming function on panel, it can automatically detect and collect the OCP and OPP threshold value.

The electronic load not only allows users to edit the step value of power and current but also let customers adjust the protection voltage. If the voltage is below the protection value, the load can make judgments on whether the protection point is within the presetting range and give a notice of PASS/Fail showing protection point on VFD at the same time.

IT8702 and IT8703 combination

Features

- Removable modules for easy system cofigurability
- Dynamic power distribution function for dual channels, save your cost
- Dual-channel module displays every channel information simultaneously
- Measure short-circuit peak current value
- Up to 25 kHz transient mode and 100 kHz list mode
- Measurement resolution: 0.1 mV, 0.01 mA(10 μA)
- Measurement speed: up to 50 kHz
- Auto-test function
- Support up to 16 channels with mainframe extension

IT8800

Features

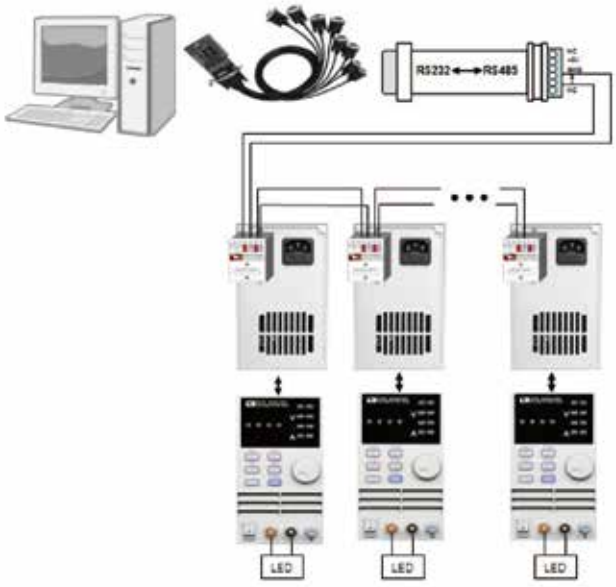
- Widely power range: 150 W~600 kW
- Dynamic mode: up to 25 kHz
- Measurement resolution: 0.1 mV, 0.01 mA
- Measurement speed: up to 50 kHz ·Adjustable current rising slope: 0.001 A/μs~2.5 A/μs
- Dynamic test, auto-test, short-circuit test function
- Rotary knob, making the operation more easier
- Power off memory function
- CR-LED test, OCP/OPP test, Voltage rising speed test, Battery test function
- External analog control
- Support VISA/USBTMC/SCPI communication protocol
- uilt-in RS232/USB/GPIB communication interface
- Four operation mode: CC/CV/CW/CR
- Remote sensing

Your Power Testing Solution

Power Supply Test Solution

Aging test

Aging test uses aggravated circumstances to find lifespan of a product. The survived products are good enough to do their future job. Aging test is an important process for production enterprises to improve product quality and competity, this test is widely used in power electronics, computer, communications, bio-pharmaceutical and other fields.

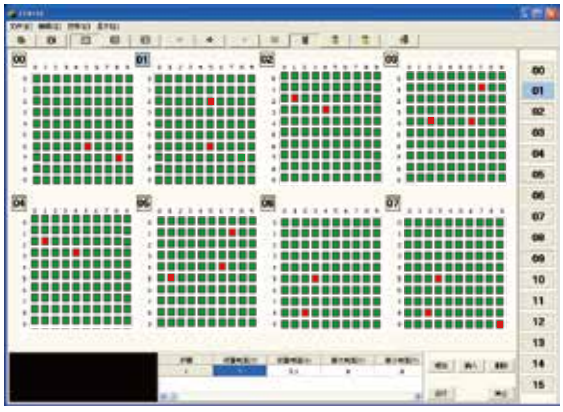


Products Recommended

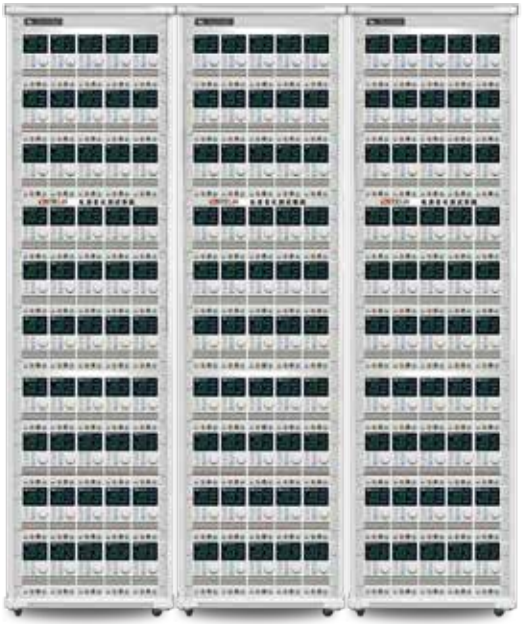
IT9100 testing system can provides complete aging test solution. The communication between each module in IT9100 is based on RS485. That is easy for realizing remote control and monitoring. IT9100 supports synchronous testing hundreds of battery units, smart alarm, real time monitor and analysis. The whole system has very fast current rising speed, that can effectively avoid overshoot current. Accuracy up to 0.025%+0.025FS.

ITECH Test Solution Advantages

- Multiple groups of power supplies simultaneously test
- Single power supply working status real-time monitor
- Standard 19 inch rack, easier to install
- 72 hours aging test, no need to have engineers keep watching
- Automatically record test data for analysis
- Good stability and reasonable price
- Support secondary development



LED aging test monitor interface by IT9100 software

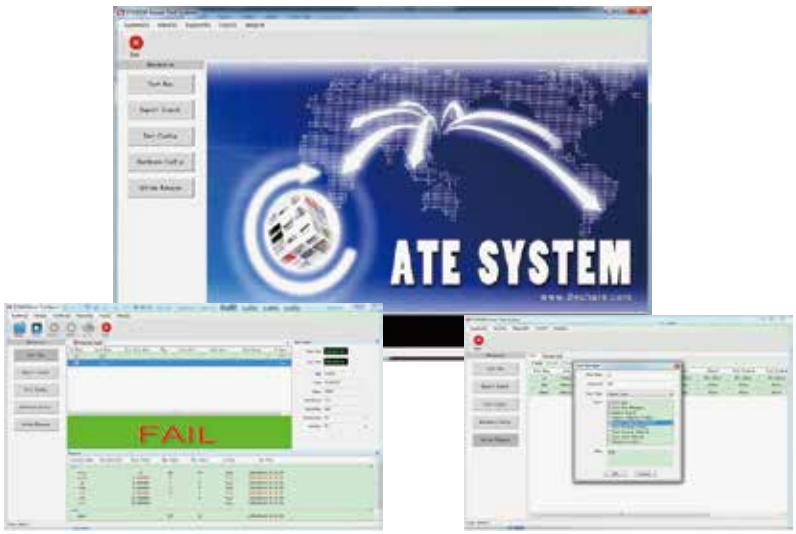


Power Supply Test System

Test systems are widely applied in production and factory inspection. From 300 W to hundreds of kilowatts, ITS9500 power supply test system provides diversify testing solutions for different application requirements.

ITS9500 Power Supply Test System

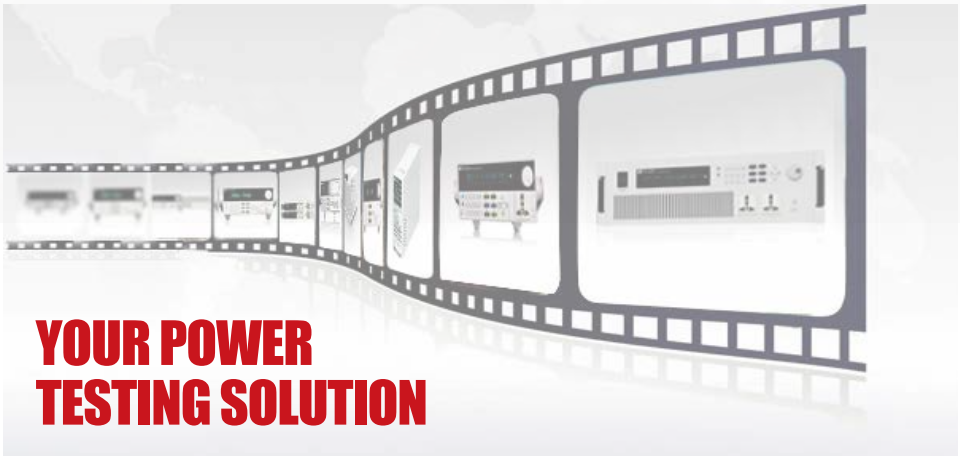
ITS9500 power supply test system adopts modular design and integrates various precision instrument functions in standard 5 U size. Included electronic load, programmable AC power supply, programmable DC power supply, noise analysis, time series analysis, digital meters, oscilloscopes, I / O card etc. ITS9500 sets up a convenient and full-featured power test platform. That is more conducive to the future repair and maintenance, greatly reduced the impact on the production line. After cables connection, its software interface is the operating platform, all of the hardware configuration, test procedures, and parameters setting can be completed through the software.



- Compact size
- Modular design and easy maintenance
- Combined with the software, user-friendly interface and easier to operate
- Complete test items
- Comply with the ENERGY STAR standard
- Best cost-performance unit
- Wide range of applications

Testing Items

Input Tests	Output Test	Protection Tests	Time Series/Dynamic Tests	Stability Tests	Special Tests
1. Input power disturbance test	9. DC output voltage test	20. OVP test	25. Turn on time	32. Power Effect Test	35. Extended measurement test
2. AC cycle drop out test	10. DC output current test	21. OL protection test	26. Turn off time	33. Load Effect Test	36. Analog output control
3. Input surge current test	11. Peak-peak noise test	22. OPP test	27. Rising time	34. Mixed Effect Test	37. PWM output control
4. Input RMS current test	12. RMS noise test	23. Short circuit protection test	28. Falling time		38. Can bus read/write
5. Input peak current test	13. Current ripple test	24. UV protection test	29. Transient spike test		39. GPIB read/write
6. Input power factor test	14. Efficiency test		30. Attachment point timing test		40. RS232 read/write
7. Input voltage ramp test	15. In-test adjustment test		31. Output voltage sequence (Tracking)		41. RS485 read/write
8. Input frequency ramp test	16. Power good signal(Power good)				42. I2C read/write
	17. Power fail signal(Power fail)				43. TTL signal control
	18. P/S ON signal				44. Relay control
	19. Overshoot voltage test				45. Bar code scan
					46. Quick charge 2.0 test



YOUR POWER TESTING SOLUTION

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