ITECH
YOUR POWER TESTING SOLUTION

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Product

IT7800 high power programmable AC/DC power supply

IT7800 high power programmable AC/DC power supply

APPLICATIONS

- New Energy
- Research Institutes
- Power Electronics
- Household Products etc.
- Medical Equipment

Your Power Testing Solution

IT7800

high power programmable AC/DC power supply

3U/15kVA Touch Panel Multi-channel 960kVA

Adopting advanced SiC technology， ITECH IT7800 1U high series of programmable AC/DC power supply, with power up to 6kVA, and 3U up to 15KVA. Users are able to increase output power up to 960kVA by configuring master-slave parallel. With intuitive LCD touch panel interface, users can be quickly familiar with the unit operation.

IT7800 series is built-in power meter and arbitrary waveform generator, which is able to simulate harmonics and other arbitrary waveform output. Users can choose single phase, three-phase, reverse phase (split phase) , and multi-channel totally 4 output modes, with programmable output, and complete measurements, ITECH IT7800 series is designed for new energy, power electronics, research institutes etc.

FEATURE

- Adopt advanced SiC technology
- High power density, 3U up to 15kVA, 1U/2U up to 6KVA
- Master-slave parallel with current sharing technology, up to 960kVA, multiple units in parallel work as one
- Voltage specification: 350/700/1050 VL-N *6
- Comprehensive harmonics measurement and analysis, up to 50th.Built-in IEC61000-3-2/3-12 and other test regulations *4
- Multi-channel function, single unit can connect/test up to 3 DUTs *2
- Output frequency: 16-2400Hz, programmable slew rate setting for changing voltage and frequency
- Built-in single/3-phase AC power meter
- 4 output modes: AC/DC/AC+DC/DC+AC
- Choose single phase, three-phase, reversed phase (split phase) output mode, to simulate 3-phase imbalance, 3-phase harmonics imbalance, 3-phase split phase test, reverse phase (split phase) sequence tests for 3-phase models and etc.*3
- Harmonics, inter-harmonics waveform synthesizer
- Programmable output impedance
- Intuitive touch screen interface
- Simulate arbitrary waveform output, support csv. file import
- High current crest factor, suitable for inrush current testing *5
- Built-in various waveforms
- List mode simulates the power supply reproduction function to realize the simulation function of instantaneous power interruption
- Provide rich trigger configuration, synchronously capture the voltage waveform of DUT, collect and simulate data
- Current source mode
- Output 0-360 ° start/stop phase angle can be set
- Surge/Sag function
- Relay CTRL function, to cut off the connection between instrument and DUT
- 6-phase, 12-phase power output
- Built-in waveforms compliance with the IEC61000-4-11/4-13/4-14/4-17 /4-28/4-29
- Built-in USB/CAN/LAN/Digital IO interface, optional GPIB/Analog&RS232
- Support CANopen *1、Modbus、LXI、SCPI communication

*1 Call for availability *2 Not available for 3k/5kVA model
*3 3k/5kVA model only support single phase
*4 Voltage and current harmonic analysis / Voltage harmonic simulation
*5 Maximum CF is up to 6 within peak currnt range

Your Power Testing Solution

IT7800 high power programmable AC power supply

Applications

New Energy

OBC, AC/DC charging pile

Power electronics

frequency converter, UPS, AC motor

Appliance

air conditioner, microwave oven, refrigerator, washing machine

Airborne Equipment

airborne equipment, airport ground facilities

Research institute, lab, testing organizations

AC-DC power adapter, EMC test

Medical equipments

CT, MRI, life detector etc

Model	Output voltage Vac		Output Amps/Phs		Output power	Phase	Height	Front panel
	V L-N	V L-L	Arms(1Φ)	Arms(3Φ)	Pac			
IT7802-350-10U-ATE	350V	–	10A	–	2kVA	1Φ	1U	–
IT7802-350-10U	350V	–	10A	–	2kVA	1Φ	2U	touch screen
IT7802-350-30-ATE New!	350V	606V	30A	10A	2.1kVA	1Φ,3Φ, reversed phase	1U	–
IT7802-350-30 New!	350V	606V	30A	10A	2.1kVA	1Φ,3Φ, reversed phase	2U	touch screen
IT7803-350-30U	350V	–	30A	–	3kVA	1Φ	3U	touch screen
IT7803J-350-30U*1	350V	–	30A	–	3kVA	1Φ	3U	touch screen
IT7803-350-30-ATE New!	350V	606V	30A	10A	3kVA	1Φ,3Φ, reversed phase	1U	–
IT7803-350-30 New!	350V	606V	30A	10A	3kVA	1Φ,3Φ, reversed phase	2U	touch screen
IT7804-350-20U-ATE	350V	–	20A	–	4kVA	1Φ,reversed phase	1U	–
IT7804-350-20U	350V	–	20A	–	4kVA	1Φ,reversed phase	2U	touch screen
IT7805-350-30U	350V	–	30A	–	5kVA	1Φ	3U	touch screen
IT7806-350-30-ATE	350V	606V	30A	10A	6kVA	1Φ,3Φ, reversed phase	1U	–
IT7806-350-30	350V	606V	30A	10A	6kVA	1Φ,3Φ, reversed phase	2U	touch screen
IT7806-350-90	350V	606V	90A	30A	6kVA	1Φ,3Φ, reversed phase	3U	touch screen
IT7809-350-90	350V	606V	90A	30A	9kVA	1Φ,3Φ, reversed phase	3U	touch screen
IT7812-350-90	350V	606V	90A	30A	12kVA	1Φ,3Φ, reversed phase	3U	touch screen
IT7815-350-90	350V	606V	90A	30A	15kVA	1Φ,3Φ, reversed phase	3U	touch screen
IT7830-350-180	350V	606V	180A	60A	30kVA	1Φ,3Φ, reversed phase	6U	touch screen
IT7845-350-270	350V	606V	270A	90A	45kVA	1Φ,3Φ, reversed phase	15U	touch screen
IT7860-350-360	350V	606V	360A	120A	60kVA	1Φ,3Φ, reversed phase	27U	touch screen
IT7875-350-450	350V	606V	450A	150A	75kVA	1Φ,3Φ, reversed phase	27U	touch screen
IT7890-350-540	350V	606V	540A	180A	90kVA	1Φ,3Φ, reversed phase	27U	touch screen
IT78105-350-630	350V	606V	630A	210A	105kVA	1Φ,3Φ, reversed phase	27U	touch screen
IT78120-350-720	350V	606V	720A	240A	120kVA	1Φ,3Φ, reversed phase	37U	touch screen
IT78135-350-810	350V	606V	810A	270A	135kVA	1Φ,3Φ, reversed phase	37U	touch screen
IT78150-350-900	350V	606V	900A	300A	150kVA	1Φ,3Φ, reversed phase	37U	touch screen
IT78165-350-990	350V	606V	990A	330A	165kVA	1Φ,3Φ, reversed phase	37U	touch screen

*1 Single-phase AC input terminal

*For higher power, please call for availability

* The above specifications are subject to change without prior notice.

Your Power Testing Solution

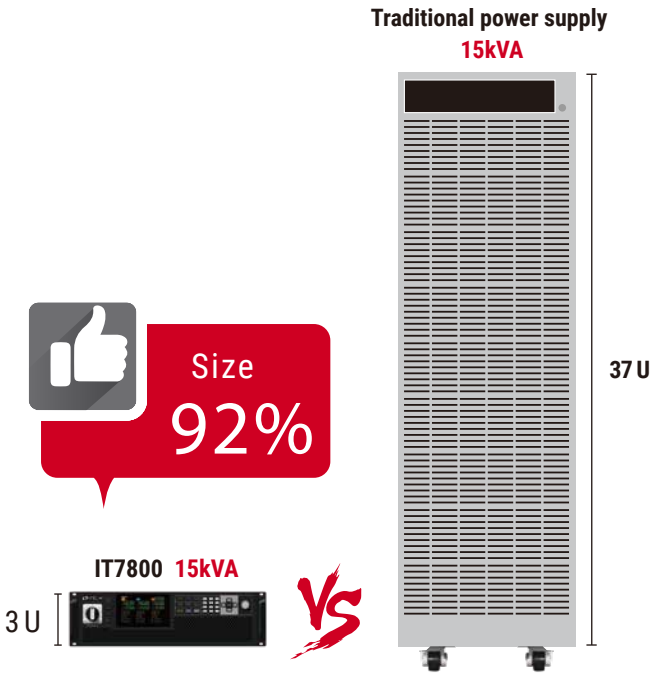
IT7800 high power programmable AC power supply

High power density design

The IT7800 series provides multiple compact configurations from a 1U/2U/3U single unit to a 15U/27U/37U cabinet to suit a range of test requirements from 2k to 165kVA.The 3U/15kVA model, the volume is only 1/12 of the conventional AC power supply, greatly saving test space and there is no need to deploy more cabinets or even expand the laboratory, saving test costs for companies.

* Rack-mounting kit IT-E155A is standard equipped for 1U ATE models.

3U 15kVA	1U/2U 6kVA	ATE set up	bench test

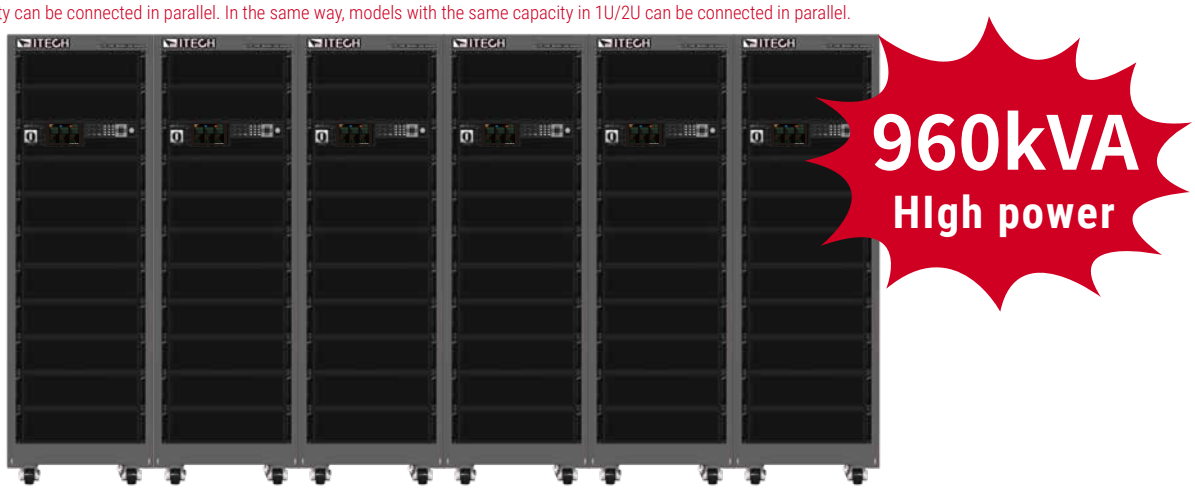


Master/Slave parallel

ITECH IT7800 series can provide more power by using the master/slave parallel output function, with 64 units in paralleled, to achieve total output power max. 960kVA.

IT7800 comes with synchronous On/Off input and output signals, which ensures the synchronization of paralleling and ensures synchronous current sharing of multiple modules. After paralleling, not only all functions are retained, but there is no loss of accuracy.Make the construction of the power system faster, more flexible, and more economical, whether it is a stand-alone test or ATE system,it can be easily reached.

* 3U high units of the same capacity can be connected in parallel. In the same way, models with the same capacity in 1U/2U can be connected in parallel.



Application: Electrical performance test of industrial frequency converter

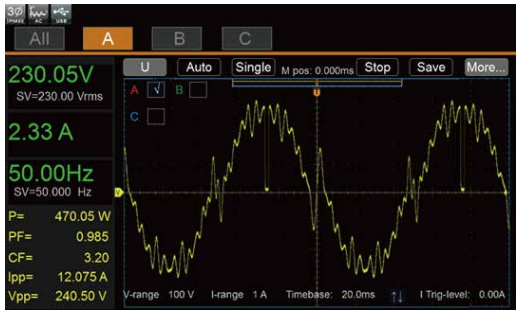
·Background description: Inverter is a converter that converts fixed voltage and fixed frequency AC current into adjustable voltage and frequency alternating current, to achieve the purpose of speed regulation. It is widely used in fans, water pumps, AC motors and large-scale driving equipment. The range is from several hundred watts to several hundred kilowatts. The inverter test includes input electrical parameters, output electrical parameters, protection functions and conversion efficiency.

·Solution: IT7800 can meet the test of high-power inverters up to 960kVA, and can simulate input three-phase imbalance, input voltage sag and other disturbance waveforms to verify the input stability of the inverter.

Intuitive touch panel design

The IT7800 series is equipped with a brand-new touch screen design, a simple and intuitive GUI interface, and the keyboard knob design allows users to perform tests directly and quickly. Users can choose different interface display styles, customize the parameter types and display positions of the page, and the user-friendly settings can meet various measurement needs in the test.

The screen can display real-time voltage and current curves, up to 6 waveforms, users can perform instantaneous analysis without an oscilloscope, and save them.



Application: testing inductive, capacitive or resistive products

·When testing inductive, capacitive or resistive products, there are certain leading or lagging characteristics of voltage and current.

· Using IT7800 series can not only display real-time data, but also select the desired waveform on the screen for visual observation. And through shortcut keys, save the picture to the storage disk of the peripheral device. It is convenient to perform secondary analysis on data and waveforms, making it easier and more effective to use.

Application: UPS test

· Test standard: YD-T 1095-2018

· Test equipment: IT7800 series high-power programmable AC/DC power supply, IT8600 series AC and DC electronic load

·Test content: Adjust the AC input voltage and change it within the range specified by the standard to see if the UPS meets the indicators related to the input voltage change.

IT7800 series high-power programmable AC/DC power supply

UPS

IT8600 series AC and DC electronic load

Multi-channel function

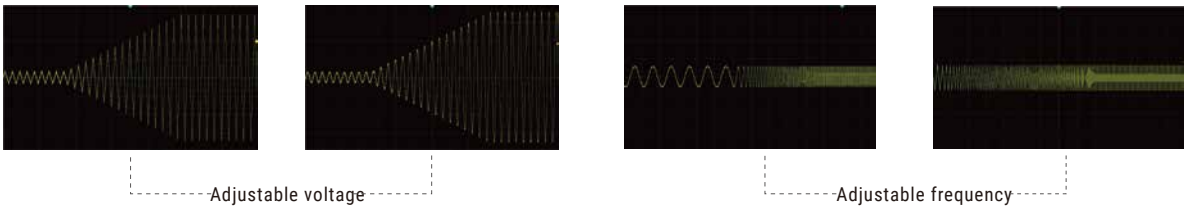
The multi-channel function of the IT7800 series allows users to test 3 independent DUT at the same time

without adding additional hardware configuration. In the traditional solution, 3 tests for the DUT, the user needs to configure 3 AC power supplies; and one IT7800 device can meet multi-channel testing requirements. For example, IT7815-350-90 rated power is 15kVA, can provide single-phase/three-phase 15kVA DUT test, can also meet up to 3* single-phase DUT test, one machine with multiple functions, fully improves the equipment utilization.

multi-channel

The output frequency can reach 2.4kHZ, the voltage or frequency output variation rate is adjustable

The output frequency of IT7800 series is adjustable between 16-2400Hz, allowing users to set the voltage or frequency output variation rate by themselves, so that the voltage or frequency gradually reaches the set value in a regular manner. Therefore, it can verify the operating range of the product more accurately, and can also reduce the surge current when the DUT is turned on.



Application- Surge current test

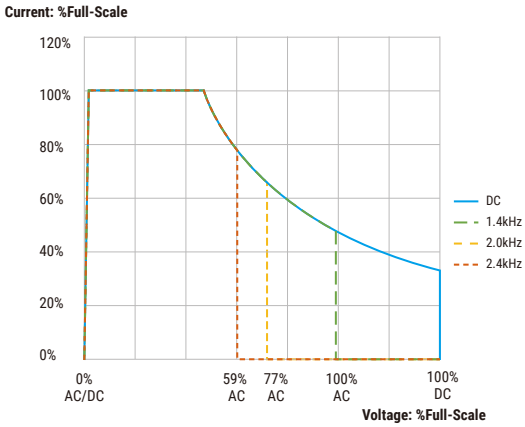
Measuring the surge current can evaluate whether the AC switch, rectifier bridge, fuse, EMI filter components exceed the allowable current value. Switch the loop repeatedly, and the AC input voltage should not damage the power supply or cause the fuse to blow.

Previous test solution

Oscilloscope + sampling resistor (power and withstand voltage are large enough)
Disadvantages: high cost, complicated wiring connection, secondary analysis is needed

ITECH test solution

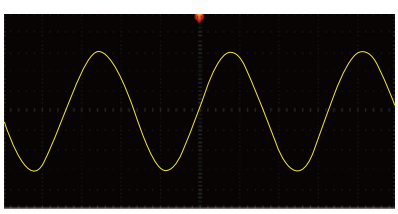
Only with 1 unit IT7800 high power AC/DC power supply
Advantages: · The surge current value Ipeak can be directly obtained
· The voltage or frequency can reach the set value step by step on a regular basis, which can effectively reduce the surge current when the DUT is turned on and improve the test accuracy



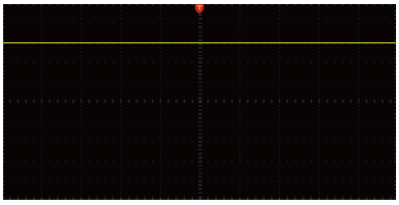
Output characteristics for DC and 16Hz to 2.4kHz

AC、DC、AC+DC、DC+AC

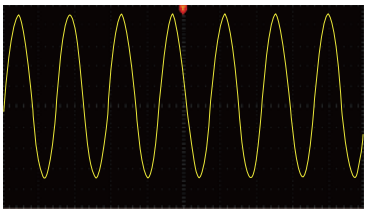
The IT7800 series has four output modes: AC, DC, AC+DC, DC+AC. It not only provides pure AC/DC output, but also can use AC+DC and DC+AC output modes to realize "AC output plus DC bias" And "DC output waveform with ripple", which cover a wider range of applications.



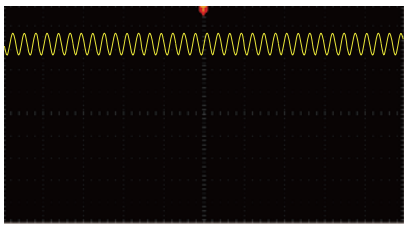
AC



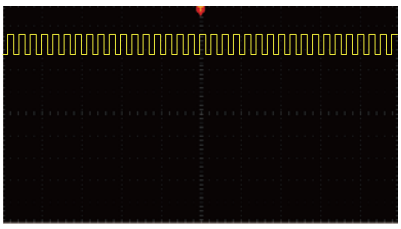
DC



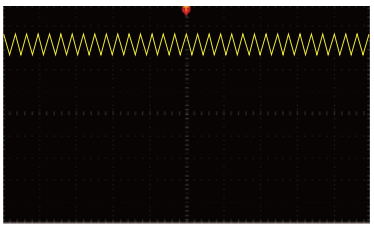
AC+DC
Vac=45V , dc bias=10V



DC+AC
Vdc=50V, sine ripple Vac=5V,freqency 1000Hz



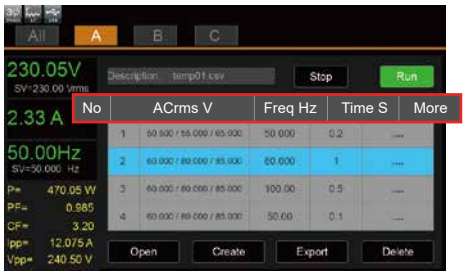
DC+AC
Vdc=50V, square ripple Vac=5V,freqency 1000Hz



DC+AC
Vdc=50V, triangle ripple Vac=5V,freqency 1000Hz

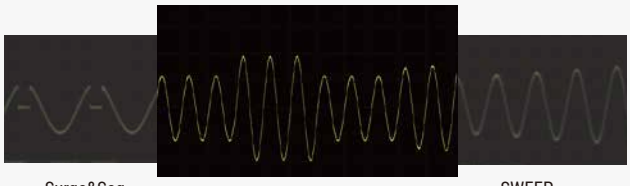
List

Through LIST, SWEEP and Surge&Sag mode, IT7800 series can easily realize the stepwise or continuous change of output parameters. Its output voltage amplitude, frequency, phase, waveform and other parameters can also be output by controlling the internal trigger or external trigger of the instrument. Therefore, it can simulate the characteristics of instantaneous power failure, surge, and slow rise of various power supplies.



Application- Mains reproduction simulation

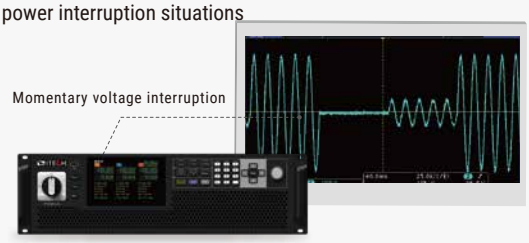
· Users can use the panel or program control of IT7800 series to edit and simulate various power interference conditions



Surge&Sag LIST SWEEP

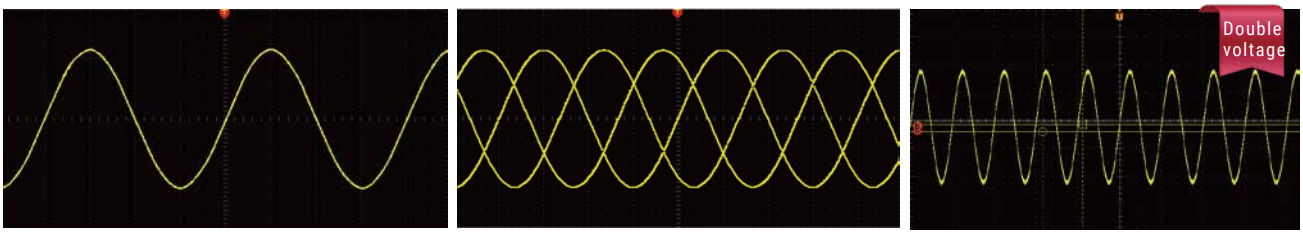
Application- Momentary power interruption simulation

· IT7800 series can also effectively simulate various power interruption situations



Single phase, three phase, reversed phase (split phase)

The IT7800 series provides multiple output modes such as single-phase, three-phase and reversed phase (split phase) , which can be selected by the user through the panel menu. By programming ,it can simulate three-phase unbalance, three-phase harmonic unbalance, lack of phase test, phase sequence reverse connection and other tests, which are flexible and cover more applications. At the same time, IT7800's reverse mode can also provide a high-voltage test solution. Its voltage can be increased to twice and the power remains 2/3. For example, if it is set to 350V, the actual output voltage can reach 700V after the reverse mode is selected.



Single phase Three phase reversed phase (split phase)

Application-Avionic power supply simulation test, power supply characteristic parameter test

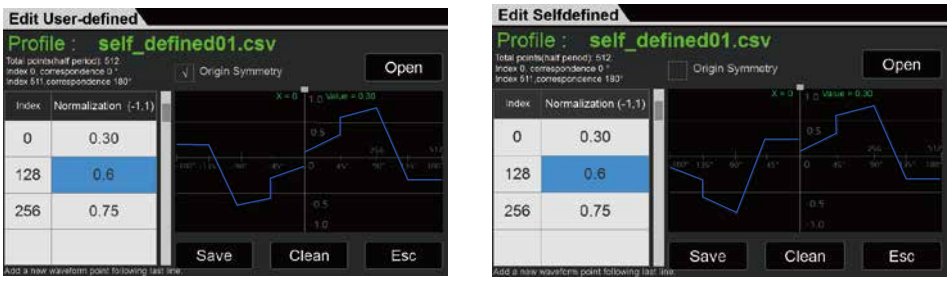
When testing inductive, capacitive or resistive products, the aircraft power supply system is an important guarantee for safe flight. The steady-state characteristics of the power supply determine whether the power supply can provide the required electrical energy under normal, abnormal and emergency steady-state conditions.

- ISO1540：2006
  IT7800 series can simulate three-phase voltage unbalanced output, harmonic synthesis output, voltage sudden change waveform output, frequency sudden change waveform output, and meet the test requirements of ISO1540: 2006.
- MIL-STD-704/GJB181B
  The IT7800 series can simulate the AC/DC power supply system of the aircraft to verify the steady-state characteristics, power supply transient characteristics and compatibility of electrical equipment. The flexible master-slave parallel connection can meet the increasing power test requirements of large aircraft and still keep the accuracy and performance after parallel connection.

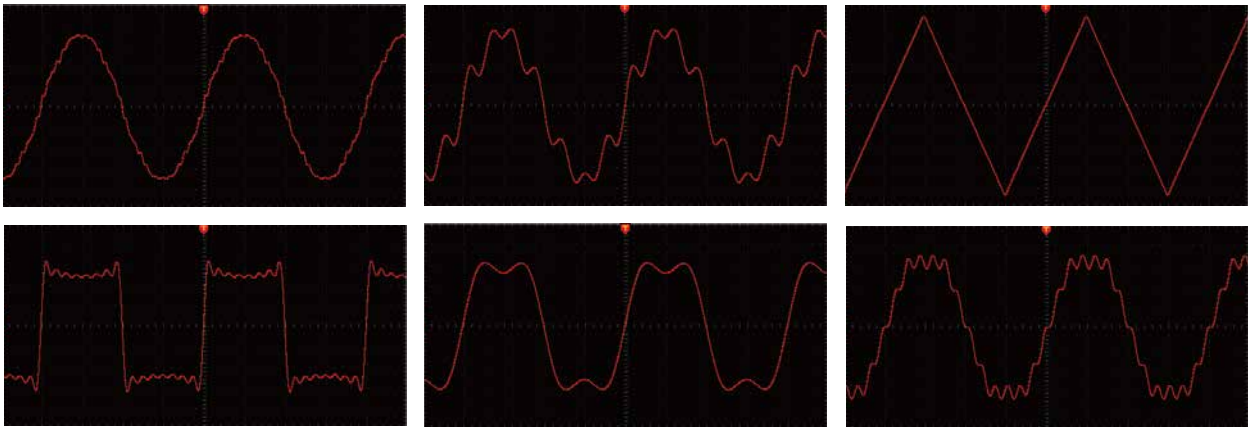
Build-in multiple waveforms

There are many different types of waveforms built in IT7800 series, such as triangle wave, sine wave, square wave, sawtooth wave, etc. Users can recall them through the menu and display the selected waveform on the LCD screen.

Users can also edit the waveform through the custom mode of the interface to simulate and reproduce the real power waveform at the moment that the problem occurs.

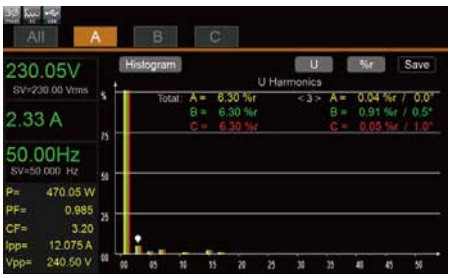


30 built-in harmonic waveforms

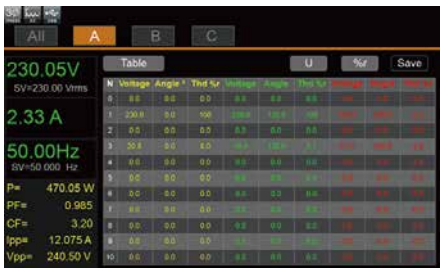


Harmonic analysis and simulation

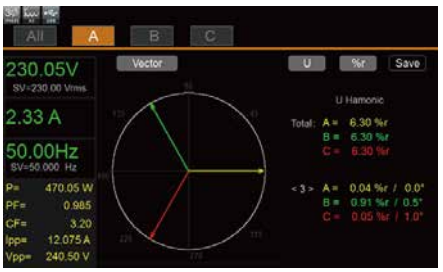
The harmonic analysis function of IT7800 series includes voltage harmonic measurement and current harmonic measurement. In the harmonic mode, the voltage and current harmonic distortion factor (THD) and the phase difference of the harmonic to the fundamental wave can be tested. In addition, it can measure multiple harmonics, and the results are displayed in a list,histogram or vector diagram, making the test results easy to be seen.



histogram



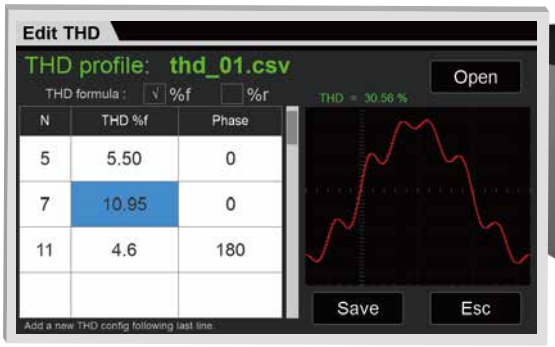
list



vector diagram

The harmonic simulation function of IT7800 series (single-phase harmonic/three-phase harmonic/three-phase harmonic unbalance) can simulate up to the 50th voltage harmonic.

50th harmonic simulation



Data record

IT7800 has the function of data recording. Users can observe the trend over a period of time in detail, or observe the data at a certain moment in the current trend graph by sliding the vernier caliper. Up to 6 curves can be observed. The graphic display interface is colorful, allowing users to have an oscillo-scope-like experience at the same time.

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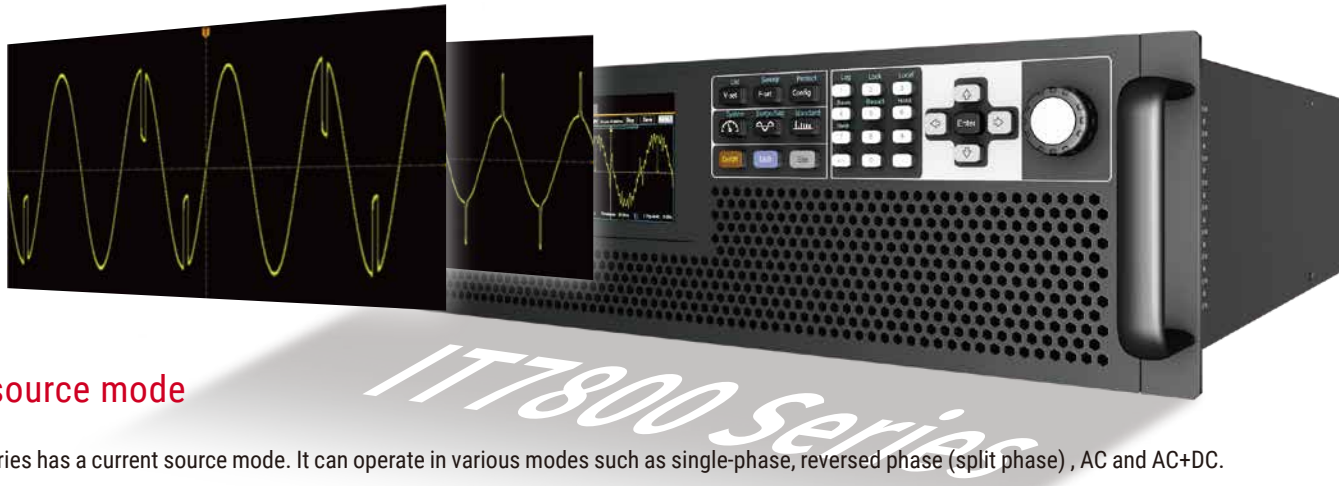
IT7800 high power programmable AC power supply

Surge & Sag

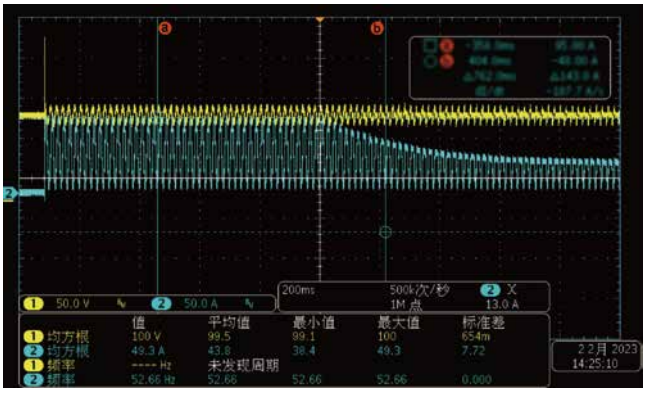
The IT7800 series provides a surge/trap simulation function. Users can add a surge/sag to the output sine wave and simulate abnormal voltage fluctuations accordingly, so as to test the performance of the DUT under the situation.



Current source mode

The IT7800 series has a current source mode. It can operate in various modes such as single-phase, reversed phase (split phase) , AC and AC+DC. Its maximum voltage can reach 700V, which can meet various high voltage and high current applications. Meanwhile, the Normal and LIST functions can cope with various types of conventional and dynamic testing requirements. The rich waveform editing and customization functions can also help you simulate complex current waveforms.

Current source mode can provide stable current output so that you can simulate various loads, such as laser drivers, LEDs, motors, etc. With a maximum frequency of 2400Hz, it can quickly do frequency sweep, charge/discharge, AC impedance and other related tests on various types of batteries. While improving test efficiency and accuracy, the IT7900P also optimizes the system design while ensuring safety.



AC+DC, AC20A+ DC30A, 50Hz；limit current 10A, enter current loop

Sweep

The Sweep function can be used to test the efficiency of the switching power supply and capture the voltage and frequency of the maximum power point. Users can set the start voltage, end voltage, step voltage, start frequency, stop frequency, step frequency and single step time, so that the power supply voltage and frequency can be changed in a step-by-step manner. After the test, the voltage and frequency of the maximum power point can be displayed.

IT7815-350-90			
Input parameter			
AC input	Wiring connection	3 phase 3wire + ground (PE)	
	Line voltage	RMS	(200～220) ±10%V *1/ (380～480) ±10%V
	Line current	RMS	< 34A
	PF	typ	0.98
Output parameter			
AC output	Output voltage	VLN *2	0～350V
		VLL	0～606V (3phase) / 0～700V (reverse)
	Output current	Crest Factor *3	6
		RMS	90A (1phase) / 30A (3phase/multichannel/reverse)
		Peak	270A (1phase) / 90A (3phase/multichannel/reverse)
	Output power	Per Phase	5kVA
		Max. Power	10kVA (reverse phase) / 15kVA (1phase/3phase/multichannel)
	Voltage setting		
	Range	0～350V (1phase/3phase/multichannel) / 0～700V (reverse)	
	Resolution	0.01V	
	Accuracy	＜0.1%+0.1% F.S. (16Hz～500Hz) /＜0.1%+(0.2%*kHz)F.S(500.01Hz～2.4kHz)	
	Current setting		
	Range	RMS	90A (1phase)/ 30A (3phase/multichannel/reverse)
	Resolution	0.01A	
	Accuracy	＜0.1% + 0.2% F.S.(16Hz～150Hz) / ＜0.2% + 0.3% F.S.(150.01Hz～500Hz) / ＜0.3%+(0.6%*kHz) F.S(500.01Hz～2.4kHz)	
	Frequency		
	Set range	16～500Hz (Low*4) / 16～2.4kHz (High*4)	
	Set resolution	0.01Hz	
	Set accuracy	0.01% (16Hz～500Hz) / 0.1% (500.01Hz～2.4kHz)	
	harmonic waveform	50/60Hz	up to 50 orders
	Phase		
	Set range	0～360°	
	Set resolution	0.01°	
DC output	Voltage setting		
	Range	-499～499Vdc (1phase/multichannel) / -998～998Vdc (reverse)	
	Resolution	0.01V	
	Accuracy	＜0.1%+0.1% F.S.	
	Current setting		
	Range	-30～30Adc (multichannel/reverse) / -90～90Adc (1phase)	
	Resolution	0.01A	
	Accuracy	＜0.1% + 0.2% F.S.	
	Power(max.)		
	Phase power	Per Phase	5kW
	Output power	Max. Power	10kW (reverse phase) / 15kW (1phase/multichannel)
Voltage stability	Line regulation	＜0.05% F.S.	
	Load regulation*5	＜0.05% + 0.05% F.S. (DC,16Hz～500Hz) / ＜0.05% + (0.1%*kHz) F.S(500.01Hz～2.4kHz)	
	THD*6	＜0.5%(16Hz～100Hz) / ＜1%(100Hz～500Hz) / ＜1%+(1%*kHz) (500.01Hz～2.4kHz)	
	Voltage ripple	RMS	< 0.4V
	Dynamic response*7	typ	200us
Measurement parameter			
Voltage RMS	Accuracy	＜0.1%+0.1% F.S. (DC,16Hz～500Hz) / ＜0.1%+(0.2%*kHz) F.S(500.01Hz～2.4kHz)	
Current RMS	Accuracy	＜0.1% + 0.2% F.S.(DC,16Hz～150Hz)/＜0.2% + 0.3% F.S.(150.01Hz～500Hz)/＜0.3% + (0.6%*kHz) F.S(500.01Hz～2.4kHz)	
Peak current	Accuracy	＜0.4% + 0.6% F.S.(16Hz～500Hz) / ＜0.4% + (1.2%*kHz) F.S(500.01Hz～2.4kHz)	
Output power	Accuracy	＜0.4% +0.4% F.S. (DC,16Hz～500Hz) / ＜0.4% +＜(0.8%*kHz) F.S(500.01Hz～2.4kHz)	
Harmonic measurement	Max.	50/60Hz	up to 50 orders
Efficiency	typ*8	91%	

*1 (200～220) ±10%, the power of 12kw and above is 60% of the rated.

*2 The output voltage will decrease along with the output frequency. The rated voltage can be output under 1.4kHz, the maximum output voltage is 250.76Vrms at 2kHz, and the maximum output voltage is 208.97Vrms at 2.4kHz.

*3 When the output frequency is 50Hz/60Hz, the maximum CF is up to 6 without exceeding the peak current; under the condition of full current and full power, the maximum CF is up to 3

*4 When loopSpeed Low is low, it can better complied DUT's characteristics; When LoopSpeed is High, the dynamic response time is faster.

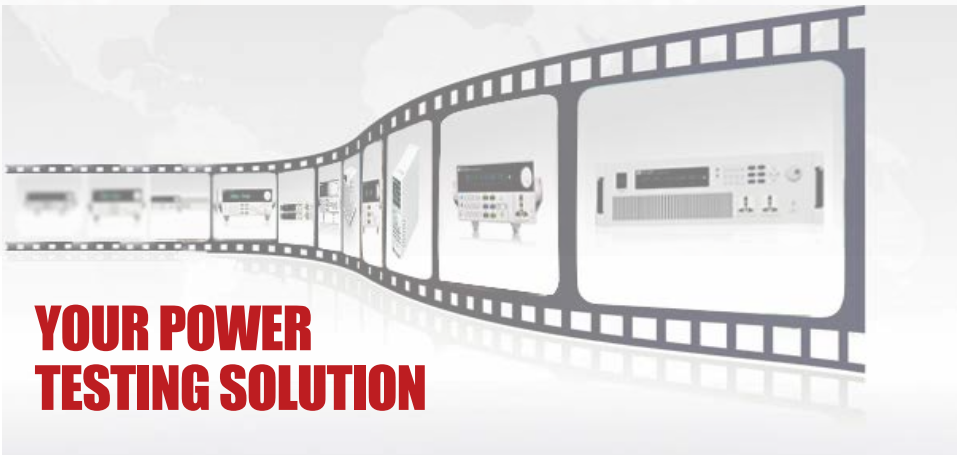
*5 For models of 30kW and above, it needs the sense remote measurement mode for testing

*6 Test condition: pure resistive load, under full power condition

*7 Test under DC mode, high speed level, DUT capacity is less than 10uf

*8 Test conditions: input 380VLL/50Hz, output three phases, each phase 350Vrms/50Hz/5kW.

* This information is subject to change without notice



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