ITECH
YOUR POWER TESTING SOLUTION

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**Product**

IT7600 High performance programmable AC power supply

# IT7600 High performance programmable AC power supply

## APPLICATIONS

- New energy
- Power electronics
- Testing organizations
- Scientific research & Institutions
- Home appliances

*Your Power Testing Solution*

# IT7600
# High Power Programmable AC power supply

IT7600 high performance programmable AC power supply adopts digital signal processing technology, the power ranges from 750VA to 3000VA, and the frequency is up to 5kHz. It has built-in power meter and large-screen oscilloscope function, supports master-slave parallel connection to achieve higher power AC/DC output. IT7600 has a built-in arbitrary waveform generator, which can simulate harmonics and various arbitrary waveform outputs. It also has AC measurement and analysis functions, and can be widely used in renewable energy, home appliances, power electronics, civil avionics, IEC standard testing, coal mine, iron and steel, chemical equipment testing and so on.

## Features

- 7” DSO function, which can display real-time waveforms of voltage and current under the single unit or parallel mode
- Built-in AC power meter
- Output frequency up to 10-5000 Hz, output variable rate of voltage or frequency is adjustable
- Maximum power up to 3kVA
- Voltage up to 300 V
- Realize AC, DC, AC+DC output modes, AC+DC can realize simulating distortion of DC Voltage
- Simulate arbitrary waveform output, support CSV format to import waveform
- Built-in various waveform database
- Strong master-slave paralleling makes multi-module output equalized current synchronously
- Three single units can complete the three-phase output, and can simulate three-phase unbalanced output
- Strong harmonic simulation capability, up to 50th harmonic simulation*1
- Strong harmonic analysis function, which can measure up to 50th voltage and current harmonic*1
- List mode can simulate civil use AC network, achieve simulation of instantaneous power interruption
- The output waveform start / stop phase angle can be set
- Support remote sense compensation function, which can improve measurement accuracy
- Relay Ctrl output function, which can achieve electrical isolation between DUT and the source
- Sweep function, which can test the efficiency of switching power supply andcatch the voltage and frequency when reaching maximum power point
- OTP, OCP (Including peak and rms values), OPP
- Built-in USB / RS232 / LAN / CAN*2 communication Interface*
- USB on the front panel can achieve importing and exporting file functions and data storage function

*1 10 Hz-500 Hz.
*2 Coming soon
*For any GPIB interface option request , check with ITECH for availability.

## Applications

### New energy

Car charger, AC charging station

### Civil aviation

Electronic instrument, GPS, airport ground facilities, communications equipment, IF power applications

### Power electronics

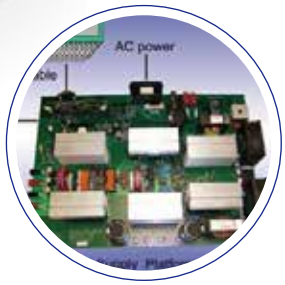
transformers, AC fans, UPS, AC motors

### Scientific research, institutions, laboratories, testing organizations

AC-DC power adapter testing, electromagnetic compatibility testing

### Home appliances

air conditioners, microwave ovens, refrigerators, coffee machines




### Office and computer equipment

fax machines, shredders, printers and so on

| Model | Voltage (V) | Current (A) | Power (VA) | Phase |
|---|---|---|---|---|
| IT7622 | 300 | 6 | 750 | 1φ |
| IT7624 | 300 | 12 | 1.5k | 1φ |
| IT7626 | 300 | 24 | 3k | 1φ |

* IT7625/27/28/28L/30/32/34/36 has been discontinued, please choose IT7800 series for replacement

# Your Power Testing Solution

IT7600 Series High performance programmable AC Power Supplies

## 7” DSO function

### Display real-time waveforms of voltage and current under the stand-alone or parallel mode

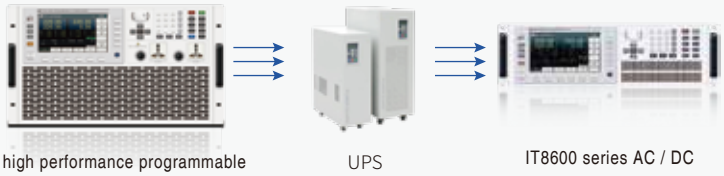
IT7600 series high-power AC / DC power supply provide a powerful oscilloscope function by the 7” large screen. Built-in high-speed sampling measurement design realizes the display of real-time voltage and current curves. When multi-units are paralleled, IT7600 can display the status of all paralleled units, instantaneous analysis is available without an oscilloscope.

### Application: testing the inductive, capacitive or resistive products

- When testing the inductive, capacitive or resistive products, the voltage and current will have phase difference.
- The IT7600 series can not only display real-time data, but also select the desired waveform on the screen for observation. And through the shortcut keys to save the picture to the peripheral storage disk, it is convenient for data and waveform analysis, simpler and more efficient.

### Application: UPS test

- Standard test: YD-T 1095-2000
- Test equipment: IT7600 series high power AC power supply, IT8600 series AC / DC electronic load.
- Test content: adjust the AC input voltage and change within the scope of the standard to see if the UPS can meet the indicators related to input voltage changes.



high performance programmable AC power supplies

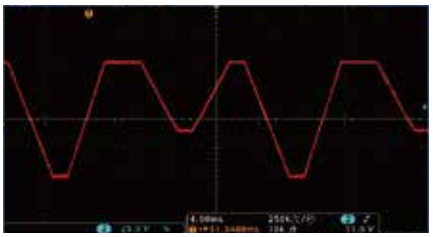
UPS

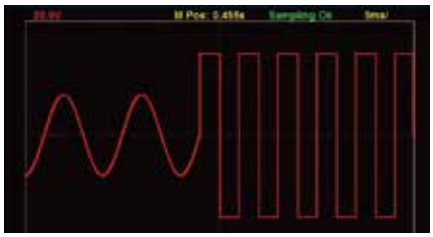
IT8600 series AC / DC electronic load

## Simulate arbitrary waveform output

### AC voltage and DC voltage deviation simulation

IT7600 series high power AC / DC power supply provide AC voltage and DC voltage deviation simulation functions, and can simulate arbitrary waveform output.





### Application: IEC 61000-4-11 test

- IT7600 series also can simulate IEC 61000-4-11 to do test for voltage transient drop, short circuit interruptions and voltage variations items.

## Output frequency up to10-5000 Hz

### Output variable rate of voltage or frequency is adjustable

IT7600 series high-power AC / DC power supply output frequency is adjustable during 10-5000 Hz. IT7600 series have a wide range of applications, which not only to meet the low-frequency demand for general commercial industry, but also can be used for high frequency civil aviation application.

IT7600 series allows users to set their own output fluctuation rate of voltage or frequency, so that the voltage or frequency regularly reach the set value step by step. It is more accurate to verify the product operation scope and also can reduce surge current of DUT when starting up.

Output frequency is incremented

Output voltage is incremented

Application: Surge current test
Measure surge current can check whether AC switch, rectifier bridge, fuse and EMI filter exceed the allowable current value. Repeated switch loop, AC input voltage should not damage the power supply or cause the fuse blown.

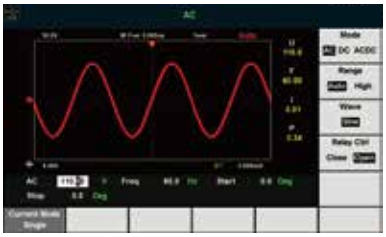
Traditional measure method:
Oscilloscope + sampling resistor (power and pressure is enough large)
Disadvantages: high cost, complex wiring, need further analysis.

ITECH measuremethods:
Only need one IT7600 series AC / DC power supply
Advantages:
- Users can get Ipeak value directly, and the maximum Ipeak value is the surge current.
- IT7600 can be set output slew rate of voltage or frequency, so that the voltage or frequency can reach the set value step by step, reducing the surge current when starting up.

## Achieve AC, DC, AC+DC output modes

### AC+DC can achieve offset simulation of DC Voltage

IT7600 series high-power AC / DC power supply can achieve AC, DC, AC + DC output modes, not only provide pure AC / DC output, but also can provide AC + DC output mode to expand application and test DC bias components.
* (IT7628L, IT7630, IT7632, IT7634, IT7636) only support AC mode



AC

DC

AC+DC

## Support CSV file to import waveforms

### Import a CSV file via the USB interface to generate a waveforms output

The user can edit the waveform output by the panel LIST function or can import a CSV file via the USB interface to generate waveform output. At the same time, IT7600 series provides external ± 10 V analog interface, users can choose separate AM and FM amplitude modulation to receive external signal source.

## List mode

### List mode can simulate civil use AC network, achieve simulation of instantaneous power interruption

IT7600 series high-power AC / DC power supply provide users a simple way to achieve the output parameters changing gradually or continuously through STEP mode and LIST mode. The amplitude of output voltage, frequency, phase, waveform and other parameters can also be output by controlling the internal trigger or external trigger of the instrument. Thus you can simulate a variety of power instantaneous power interruption, surge, ramp and other characteristics.

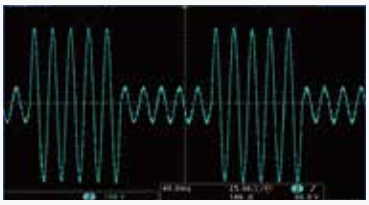
Surge wave

Trap wave

### Application: List mode can simulate civil use AC network

Users can edit and simulate the situation of various power interference by IT7600 series high-power AC / DC power supply panel or program-controlled software.

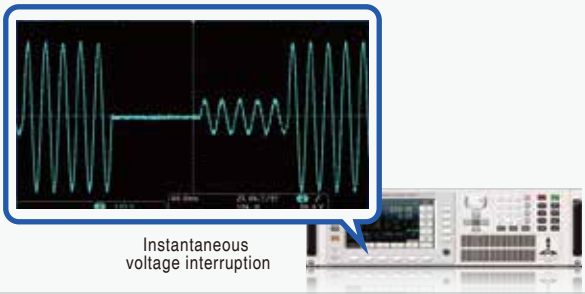
STEP



LIST

### Application: Simulation of instantaneous power interruption

- IT7600 series high-power AC / DC power supply can also effectively simulate a variety of power off.



Instantaneous voltage interruption

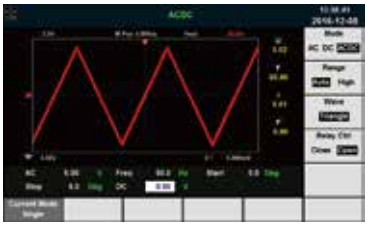
## Built-in abundant waveform database

### Recall by menu and display the selected waveform on the LCD screen

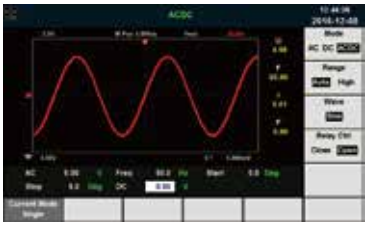
IT7600 series high power AC / DC power supply provide built-in a variety of different types of waveforms, such as triangle wave, sine wave, surge at peak, trap wave, and other waveforms, the user can recall by menu and display the selected waveform on the LCD screen.

Square wave

Sawtooth wave



Triangle wave



Sine waveform

## Strong harmonic analysis function

### Voltage / current harmonic measurement

IT7600 high-power AC power supply is with powerful function in harmonic analysis, including harmonic measurements for voltage and current. For harmonic measurements, when frequency is 10-500 Hz, IT7600 can test 50th; when it's above 500 Hz, then 20th. In harmonic mode, it can do tests for U / I THD (Voltage / Current Total Harmonic Distortion) factors, as well as Phase tests. Besides, IT7600 can do multiple harmonic measurements, the results are displayed in list or histogram, so that the test results are more clear.

### Application:Car charger power supply equipment parameters testing

- ITECH takes QC / T 895-2011as standard, adopting IT7600 high power AC source to verify that the input voltage and current to see whether the car charger power supply unit is suitable for the standard test requirements.

### Take IT7627 as a sample:

Maximum current output can reach 36A at 220 V / 50 Hz output, which is higher than the standard requirement 32 A; When testing input voltage and frequency range, the output range is up to 300 V / 5 kHz / 9 kVA / 36 A, also far exceeded the QC / T895-2011 test requirements.

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## Built-in powerful AC power meter

### Built-in powerful single-phase or three-phase AC power meter

IT7600 series high power AC / DC power supply is equipped with 16-bit high-precision measuring design, with the built-in powerful single-phase or three-phase AC power meter, it can accurately measure a variety of parameters, including rms voltage, rms current, output frequency, active power, and power factor. Users need no more a power meter, save the test cost, and shorten the complex connection operation time.

## Support single / three-phase output

### Simulate unbalanced three phase output

The IT7600 high performance programmable AC power supply can be connected in parallel with multiple single units to test three-phase AC power supplies. Both Y-type and Δ-type connections are available in terms of your needs. The IT7600 series can simulate three-phase unbalance when achieving three-phase output, which helps to cover more applications fields.

When IT7600 series realize three-phase output, IT7600 can simulate unbalanced three-phase output, expanding the scope of application.

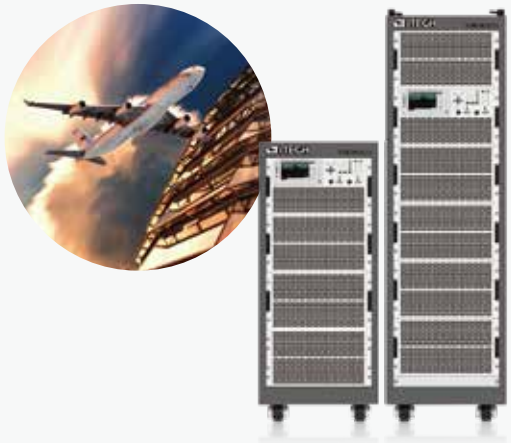
### Application:aircraft power supply environment simulation test, power supply parameter test

- When testing inductive, capacitive or resistive products, the aircraft power supply system is an important guarantee for safe flight. The steady-state behavior of the power supply determines whether the power supply can provide the required power in the normal, abnormal, and emergency steady-state conditions.
- ISO 1540: 2006

IT7600 series can simulate unbalanced three-phase voltage output, harmonic synthesized output, voltage mutation waveform output, frequency mutation waveform output, meet ISO1540: 2006 test requirement.

- GJB 5189-2003

IT7600 series can test the real-time actual parameters of power supply under a variety of situations, meet GJB 5189-2003 aircraft power supply parameter test requirement.



## Strong harmonic simulation capability

### Up to 50th harmonics

IT7600 series high-power AC / DC power supply has strong harmonic simulation capability, up to 50th harmonics. Within 10-500 Hz, IT7600 can measure 50th voltage and current harmonic. Exceed 500 Hz, IT7600 can test 20th voltage and current harmonic.

## Strong master-slave paralleling function

### Using power in more flexible way

The IT7600 AC / DC power supply models provide the strong (Master-Slave) parallel operation function, which enable users to extend the current / power output ability to save cost. During parallel connection operation, it only requires the setting on Master unit, and the slave unit will be controlled by the master unit automatically. This function greatly simplifies the paralleling operation.
IT7600 series have built-in synchronous On / Off input and output signals, which ensures the synchronization and equalized current output on multi modules synchronously.

IT7600 after paralleling of 3 sets, each unit will share the test current averagely

## Settable start / stop phase angle of output waveform

### Angle range: 0~360°

IT7600 series high-power AC / DC power supply can set the start phase and stop phase of the sinusoidal output waveform to meet the test requirements under different test conditions. The start phase and the stop phase are set from 0 to 360°. Inrush current of products can be tested by adjusting the phase angle, which can be applied to test switching impact current and debug rectifiers.

90° starting phase angle

90° stop phase angle

**Application: inrush current test**
Inrush current, also called as instantaneous high current, is generally caused by the inductive or capacitive electronics of the load.
Inrush current of products can be tested by adjusting the phase angle, which can be applied to test switching impact current and debug rectifiers.

## Vector function

### Display each phase harmonic parameter and single harmonic

IT7600 series high power AC power source realize vector function under three-phase mode. Users only need to press the [Vector] key on the front panel, so that can enter the vector measurement interface. Users can observe the vector diagram of the harmonic function parameter values in each phase, and select the single harmonic to be displayed by rotating the knob.

Current measured parameters

The maximum coordinate display

Single harmonic phase vector value

# Your Power Testing Solution

## IT7600 Series High performance programmable AC Power Supplies

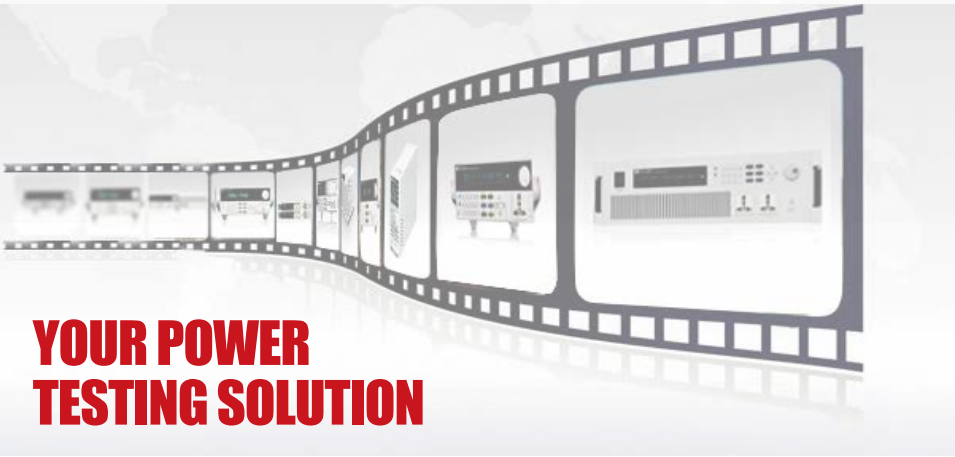
### Specification

| Model | | IT7622 | IT7624 | IT7626 |
|---|---|---|---|---|
| AC Input | | | | |
| Voltage | | 220 Vac±10% or 110 Vac±10% | 220 Vac±10% or 110 Vac±10% | 220 Vac±10% |
| Phase | | 1φ | | |
| Frequency | | 47-63 Hz | | |
| Max current | | 20 A / 40 A | 30 A / 60 A | 60 A |
| Power factor | | 0.7 (typical) | | |
| AC Output | | | | |
| Max output power | | 750 VA | 1.5 kVA | 3 kVA |
| Voltage | Range | High: 2-300 V; LOW: 1-150 V; Auto: 1-150 V / 2-300 V; | | |
| | Resolution | 10 mV | | |
| | Accuracy*1 | ± 0.2%+ (0.2%+0.2%×Kfreq)×FS*2 | | |
| current | (rms) | 0-6 Arms (1-150 Vac) | 0-12 Arms (1-150 Vac) | 0-24 Arms (1-150 Vac) |
| | | 0-3 Arms (2-300 Vac) | 0-6 Arms (2-300 Vac) | 0-12 Arms (2-300 Vac) |
| | (peak) | 0-18 Apeak (1-150 Vac) | 0-36 Apeak (1-150 Vac) | 0-72 Apeak (1-150 Vac) |
| | | 0-9 Apeak (2-300 Vac) | 0-18 Apeak (2-300 Vac) | 0-36 Apeak (2-300 Vac) |
| Output frequency | | 10-5000 Hz | | |
| Output phase | | 1φ | | |
| Total harmonic distortion*3 | | ≤0.5% at 10-500 Hz (Resistive Load) | | |
| | | ≤2% at 501-5000 Hz (Resistive Load) | | |
| Crest factor | | 3*2 | | |
| Line regulation | | ≤0.1% FS (Resistive Load) | | |
| Load regulation | | ≤0.5% FS (Resistive Load) | | |
| Dynamic response time | | ≤100 μs (typical) | | |
| | | DC Output | | |
| Max output power | | 375 W | 750 W | 1.5 kW |
| Voltage output | | ± 212 V / ±424 V*6 | ± 212 V / ±424 V*6 | ± 212 V / ±424 V*6 |
| Voltage resolution | | 10 mV | | |
| Voltage output and readback accuracy | | ± (0.2%+0.2% FS)*7 | | |
| Current range | | 3 A / 1.5 A | 6 A / 3 A | 12 A / 6 A |
| Current resolution | | 10 mA | | |
| Current readback accuracy | | ± (0.3%+0.3% FS)*7 | | |
| Power meter accuracy | | ± (0.4%+0.4% FS)*7 | | |
| Voltage ripple | (peak) | 300 mVp-p | | |
| | (rms) | 150 mVrms | | |
| Meter | | | | |
| AC Voltage | Range | 0-300 Vac | | |
| | Resolution | 10 mV | | |
| | Accuracy | ± (0.2%+0.2% FS) | | |
| AC Current (rms) | Range | 0-6 Arms | 0-12 Arms | 0-24 Arms |
| | Resolution | 10 mA | | |
| | Accuracy | ± 0.3%+(0.3%+0.2%×Kfreq)×FS*2 | | |
| AC current (peak) | Range | 0-18 Apeak | 0-36 Apeak | 0-72 Apeak |
| | Resolution | 10 mA | | |
| | Accuracy | ± 0.3%+(0.3%+0.2%×Kfreq)×FS*2 | | |
| Power | Resolution | 10 mW | | |
| | Accuracy | ± 0.4%+(0.4%+0.2%×Kfreq)×FS*2 | | |
| Phase degree | Range | 0-360° | | |
| | Resolution | 1° | | |
| | Accuracy | ± 1°(45-65 Hz)*5 | | |
| Frequency | Range | 10-5000 Hz | | |
| | Resolution | 0.1 Hz | | |
| | Accuracy | ± 0.1%+0.1 Hz (10 Hz-999.9 Hz) / ± 0.1%+1 Hz (1 kHz-5 kHz)*4 | | |
| Others | | | | |
| Interface | | USB / LAN / RS232 / CAN*9 | | |
| Dimension (W*H*D) | | 3 U | 3 U | 6 U |

*1 Prerequisite for voltage accuracy: Slow loop speed: 10-100 Hz, Fast loop speed: 10-5000 Hz;
*2 FS rms and Ipk and P are different according to different models;
*3 The minimum voltage for THD test is Auto: 10Vac, High: 20 Vac;
Maximum distortion test at output 125 Vac (Auto) and 250Vac (300V) with maximum current to linear load;
*4 Test frequency display accuracy requires a minimum voltage of 30Vac;
*5 Need to be in 'Fast' range;

* This information is subject to change without notice

*6 The minimum set voltage can not be lower than 50Vdc/35Vac;
*7 The same Idc, P of different models are different, Vdc are changed to 424Vdc;
*8 The maximum current range after parallel connection is 90%;
*9 (G) means with GPIB optional interface, please contact ITECH for details.
*10 When CF=3, the low voltage is 90-125Vac; the high voltage is 180-250Vac.

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For more information, please contact ITECH.

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