ITECH
YOUR POWER TESTING SOLUTION

**Product**

IT-M7700 High Performance Programmable AC Power Supply


# IT-M7700 High Performance Programmable AC Power Supply

## APPLICATIONS

- Energy
- Commercial Aerospace
- Industrial Electronics
- Home Appliance
- IEC Conformity Test
- ATS

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# IT-M7700 High Performance Programmable AC Power Supply

ITECH newly-launched IT-M7700 High Performance Programmable AC Power Supply combines intelligence and flexibility, breaks through the huge defects of the traditional AC power source, reduces the size to only 1U Half-Rack, maximizes space utilization. Built-in power meter and arbitrary waveform generator make it convenient to simulate various arbitrary waveform outputs. IT-M7700 is designed with advanced technologies of programmable AC and DC power supplies, and can be widely used in multiple fields such as power energy products, home appliances, industrial electronics, commercial avionics and IEC standards testing.


## Features

- 1U Half-Rack compact design, increased space utilization
- AC, DC, AC + DC output modes, DC voltage offset simulation in AC + DC mode
- Built-in AC power meter with powerful functions
- Built-in abundant waveform database, including 30 harmonic distortion waveforms
- List mode, simulate civil AC working condition, realize instantaneous power interruption simulation function *1
- Arbitrary waveform output function, user can customize waveforms
- Harmonic analysis and simulation function
- CF=6,good for the inrush current test at the start moment*2
- Surge/Trap function
- Front and rear edge Dimmer phase dimming function
- Settable output waveform start/stop phase angle
- Higher voltage available by two units in series connection*3
- Three phase output available by three units Y-type external connections*3
- Optional interfaces include RS232, CAN, LAN, GPIB, USB_TMC,USB_VCP, external analog, IO. Flexible and cost effective
- With professional software, set up programs comply with multinational security regulations and test conditions, to complete civil aviation electronics related standards testing*4

*1 Realize by PC software *2 Only available for the model IT-M7722D,IT-M7723D *3 Available on IT-M7721/7722/7722E/7722D/7723D/7723E *4 Coming soon

| Model | Power(AC/DC) | Voltage | Current | Frequency | Volume |
|---|---|---|---|---|---|
| IT-M7721 | 300 VA/300 W | 300 V | 3 A | 45~1000 Hz | 1U Half-Rack |
| IT-M7722D | 300 VA/300 W | 300 V | 3 A | 45~1000 Hz | 2U Half-Rack |
| IT-M7722 | 600 VA/600 W | 300 V | 6 A | 45~1000 Hz | 1U Half-Rack |
| IT-M7723D | 750 VA/750 W | 300 V | 7.5 A | 45~1000 Hz | 2U Half-Rack |
| IT-M7722E | 1000 VA/1000 W | 300 V | 10 A | 45~1000 Hz | 2U Half-Rack |
| IT-M7723 | 1200 VA/1200 W | 300 V/600 V | 12 A /6 A | 45~1000 Hz | 1U |
| IT-M7723E | 1500 VA/1500 W | 300 V | 15 A | 45~1000 Hz | 2U Half-Rack |

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## IT-M7700 High Performance Programmable AC Power Supply

1 : 1
picture VS real size

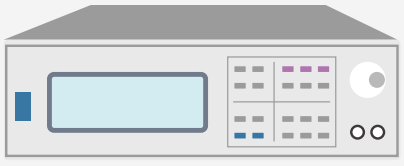

## APPLICATIONS

- Testing of commercial avionics
- RD, verification and testing of the small-size power supply production
- Communications/Telecommunications
- AC power simulation
- Manufacturing and process control
- Battery or LCD applications
- ATE testing

1U Half-Rack 4.5kg | AC/DC AC+DC | Built-in Power meter | Arbitrary waveforms | Harmonic testing | Commercial Avionics testing

### 1U Half-Rack Mini size

The conventional AC power supplies are much bigger and heavier, difficult to move. The size of IT-M7700 is only 1U Half-Rack, but its max. power is up to 600VA. Its weight is 4.5kg only. With such high-power density design, the space is better utilized. So it can be portable, convenient for bench testing and good for system building.



Conventional switching AC power supplies
>10kg

VS

**IT-M7700 series**
1U Half-Rack, 4.5kg

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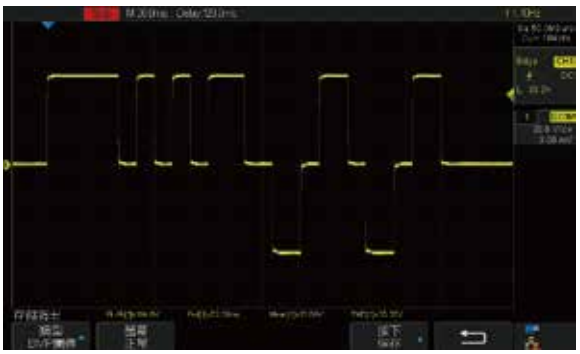
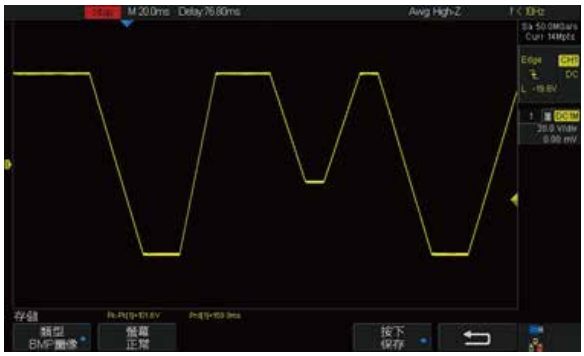
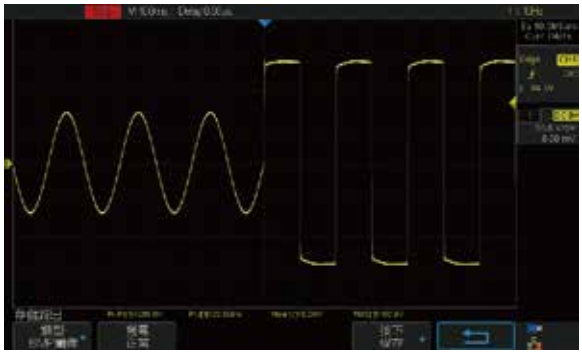
IT-M7700 High Performance Programmable AC Power Supply

## Arbitrary waveforms output

Users can self define arbitrary waveforms through IT-M7700 software and download to power supply so as to simulate or duplicate the real waveforms.

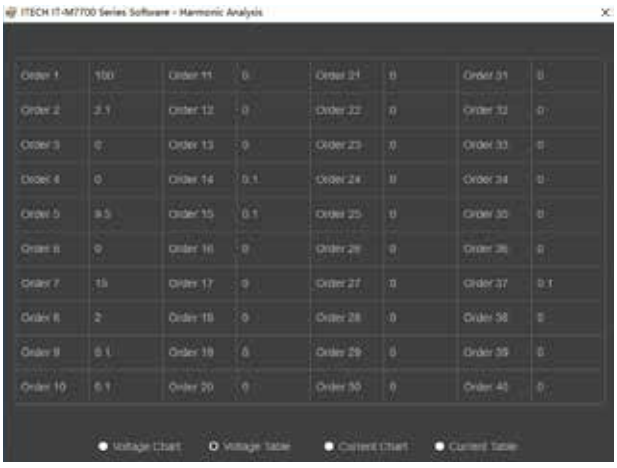




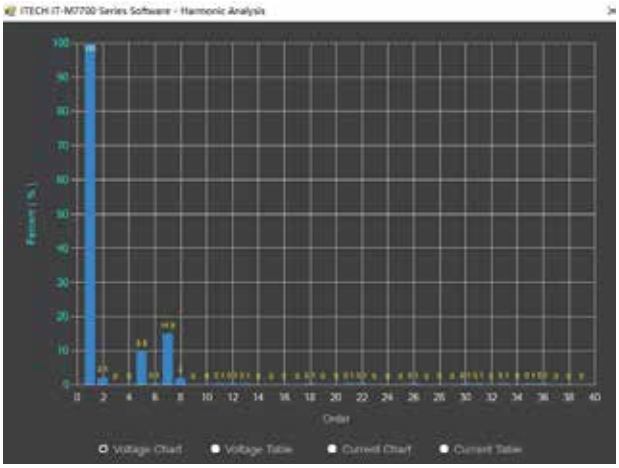


## Harmonic analysis function

IT-M7700 series support 50th voltage/current harmonic measurements with the frequency ranging from 45Hz to 50Hz. The analysis results are clearly displayed in list or columnar as showed in following pictures.



List



Column list

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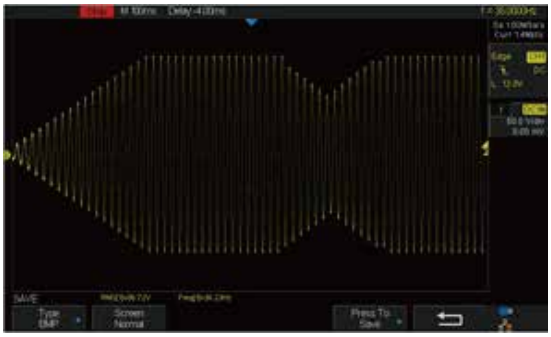
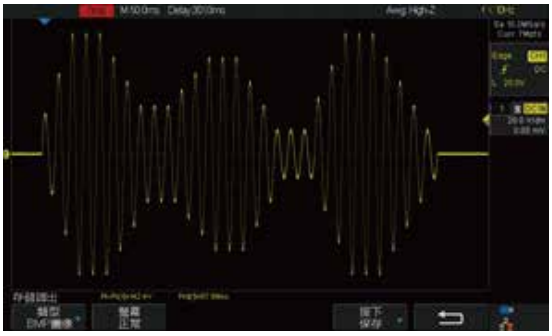
## List Mode

IT-M7700 LIST mode supports program complex waveform editing. The users can edite 5 list files, each file can be edited up to 50 steps. Each step settable parameters include: basic waveform (incl. THD and user defined waveform), AC/DC amplitude, slew rate, frequency,dwell time, start/stop phase angle, times of repetition etc. This function with complex waveforms can help users to simulate grid disturbance, periodic power off and so on.

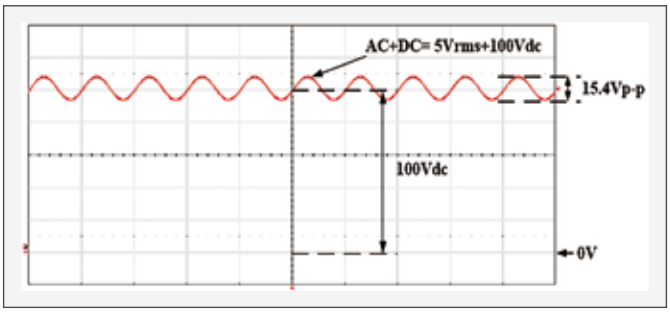
* Available with ITECH PC software.

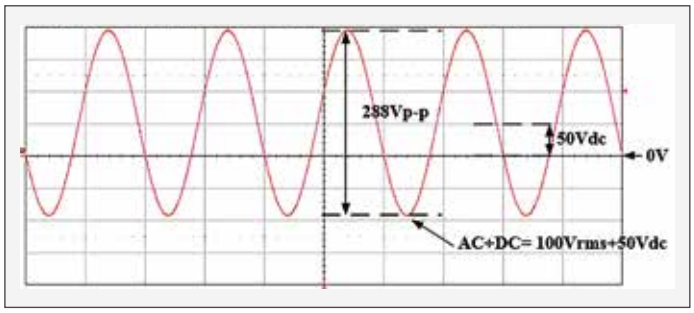





## Multiple output modes: AC, DC, AC+DC

The output modes of IT-M7700 series include AC, DC, AC+DC. It can not only provide pure AC or DC output but also AC+DC output mode which can expand application fields and test DC offset element.



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## Surge / Trap Wave Function

IT-M7700 series provide surge and trap wave simulation function. User can add surge/trap wave to the output sine wave accordingly, to simulate voltage frequent fluctuation. Thus to simulate the real testing environment.

Surge

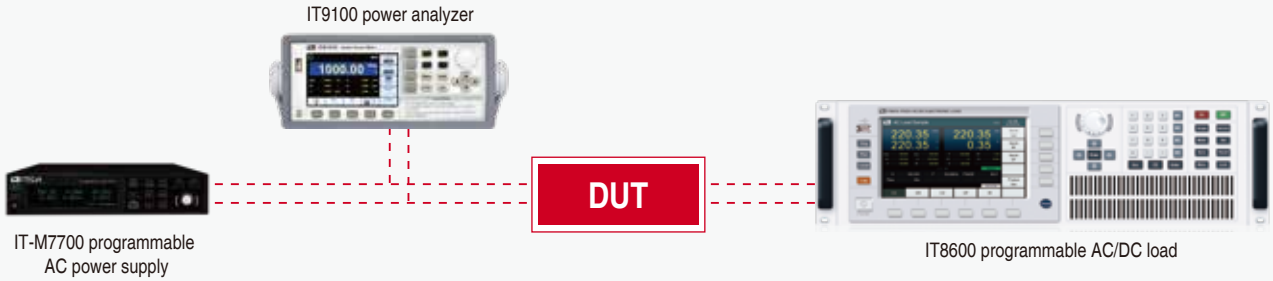
Trap

## Harmonic simulation function

Within the frequency range 45~50Hz, it can measure up to 50 times, which perfectly simulate the distorted waveform and help to find fast solution.


Loading 50 order harmonic components

**Application: Simulate high-order harmonic and verify deviation of smart meter/power quality detector**



# Your Power Testing Solution

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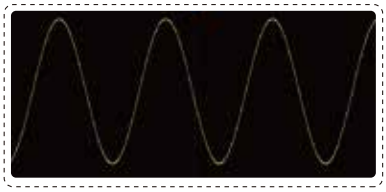
## Built-in abundant waveform database

IT-M7700 series has a variety of user-defined waveforms such as square, saw and triangle. There are 30 built-in distortion waveforms for users to edit and recall, which can also be used as the basic waveform to be recalled during list programming.

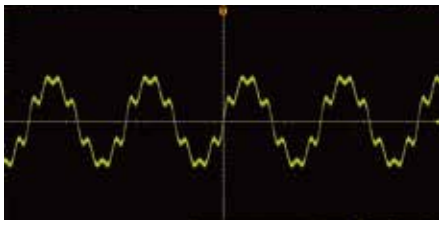
Sine

Saw

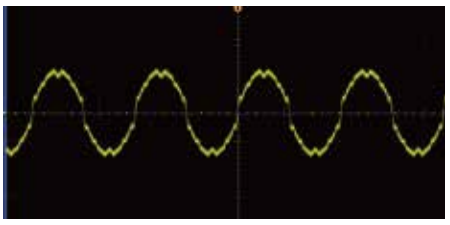
Triangle

Square

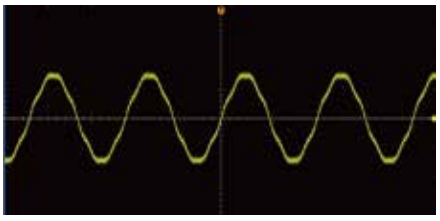
ITM7700 series has 30 built-in harmonic distortion waveforms



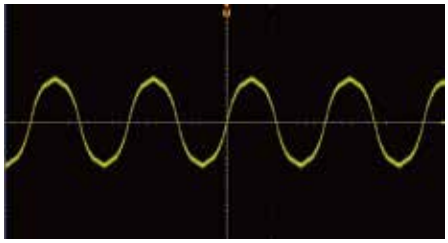
Non-linear



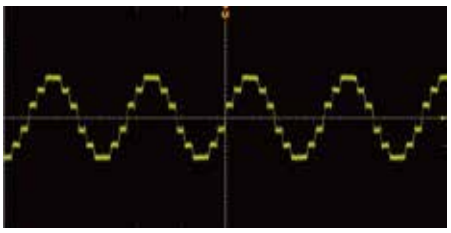
Linear distortion



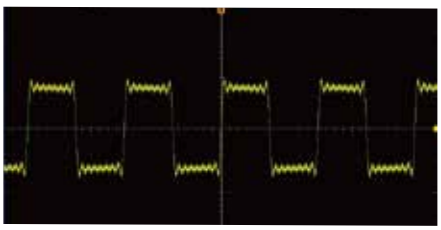
Coil transformer self-excitation



Peak spike



Stepper frequency converter



Square wave UPS

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## Front and rear Dimmer phase dimming function

The IT-M7700 series supports front and rear phase angle dimming or speed control tests. The user can adjust the active power by setting the phase angle and performing the leading or trailing edge waveform concealment to achieve the purpose of adjusting the light intensity of the lamp. It is used to verify whether there is a quality hazard when the end user uses the dimming or speed controller.

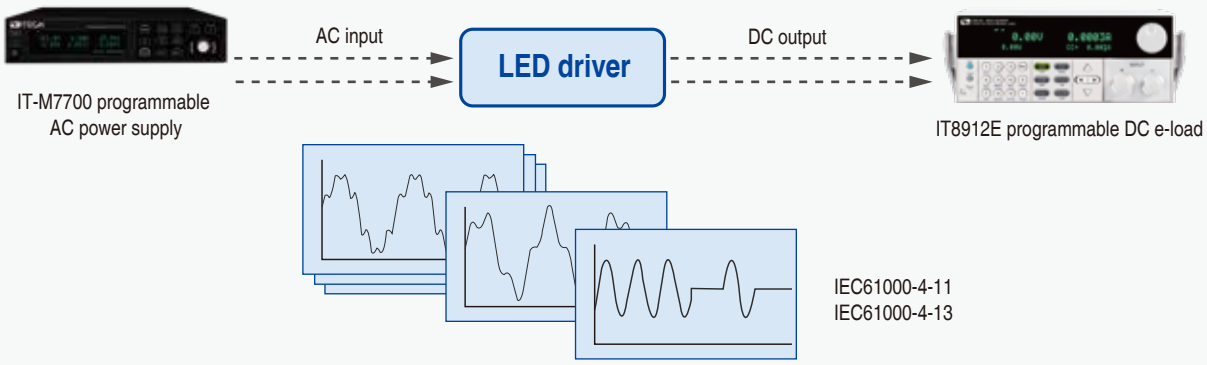
LeadingEdge phase dimming

TrailingEdge phase dimming

## Output waveform start/stop phase angle is settable

IT-M7700 series supports the initial phase and stop phase of the output waveform settable to meet different test requirements. The initial phase and stop phase are set in the range of 0-360°. By adjusting the phase angle, the user can test the rush current of the product at different positions which is widely applied to various switch current impulse tests and various rectifiers test.

## Application: LED driver, household appliances and other products input surge current and power supply disturbance performance verification



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## Built-in AC power meter

IT-M7700 provides built-in AC power meter which can accurately measure and display 12 parameters on the screen, including rms voltage, rms current , output frequency, active power, power factor, etc. No need for additional power meter. So it can not only reduce test cost but also get rid of the complex connection operation.

## Comprehensive protection

IT-M7700 series provides comprehensive protection , including OVP rms, OVP peak, UVP rms, OCP rms, OCP peak, OCP delay, OPP, OTP and smart fan dysfunctional protection.

### Application case

When testing a capacitive load with an AC power supply, the voltage will suddenly drop due to high current impulse, which will lead to failure load. At the same time, excessive surge current will easily cause damage to the AC power supply. Therefore, comprehensive protection is essential for the AC power supply. The picture on the right shows the voltage and current curves of the incandescent bulb tested by the IT-M7722.

## Panel operation and remote control

The users can operate easily on the IT-M7700 front panel ; IT-M7700 also comes with optional USB,GPIB,LAN and RS-232 interfaces, and an analog interface is also available to support remote control and ATE system quick integration. Supporting LXI and SCPI protocol, the user can remotely control the unit via web-server for convenient control and monitoring.

| Pictures | Model | Interface |
|---|---|---|
|  | IT-E1205 (optional) | GPIB |
|  | IT-E1206(optional) | USB/LAN |
|  | IT-E1207(optional) | RS-232/CAN |
|  | IT-E1208(optional) | Analog |
|  | IT-E1209(optional) | USB |
|  | IT-E251(standard) | Connection Cable |

*IT-E251 is standard accessary for three phase installation and serial connection.

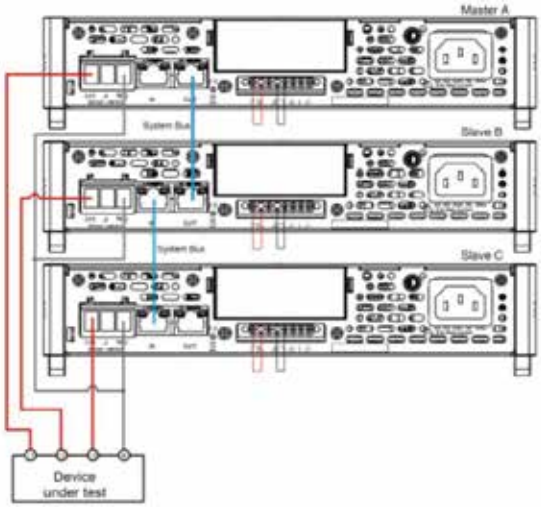
Rear panel with optional interfaces

# Your Power Testing Solution

IT-M7700 High Performance Programmable AC Power Supply

## 3 phase output

Three units single-phase AC power supply can be combined into one unit three-phase AC power supply. Connect 3 units IT-M7721/IT-M7722/ IT-M7722D/IT-M7723D/IT-M7723E of the same model through the System Bus to realize the output of three-phase AC power.




## Compliance Test of Commercial Aviation and Ship Electronic Equipment

coming soon

With the strong programming ability, the IT-M7700 series AC power supply can be used to test the immunity of aircraft electrical equipment against AC input changes. With professional software, users can carry out RTCA DO-160D, MIL-STD-704F, ABD0100, Boeing 787B3-0147 and MIL-STD-1399-300B standards test quickly and conveniently. It fully covers the compliance testing of commercial aviation, ship and submarine electronic equipment.

# Your Power Testing Solution

## IT-M7700 High Performance Programmable AC Power Supply

| | | IT-M7721 | IT-M7722 |
|---|---|---|---|
| **AC Input** | | | |
| Voltage | | 100～240Vac | 100～240Vac |
| Phase | | Single-phase | Single-phase |
| Frequency | | 47～63Hz | 47～63Hz |
| Max.Current | | 4.3A | 8.5A |
| Power Factor | | 0.99(Typical) | 0.99(Typical) |
| **AC Output** | | | |
| Max. Output Power | | 300VA | 600VA |
| Max. Output Voltage | | 300V | 300V |
| Output Phase | | Single-phase | Single-phase |
| Current Range(Rms) | | 3A | 6A |
| Current Range(Peak) | | 9A | 18A |
| Output Frequency Range | | 45～1000Hz | 45～1000Hz |
| Phase Angle Degree Range | | 0～359.9° | 0～359.9° |
| THD*1*3 | | ≤0.3% at f=45～100Hz; ≤1% at f=101～800Hz; ≤ (0.15%f-0.2)% at f=801～1000Hz | ≤0.3% at 45～100Hz; ≤1% at 101～800Hz; ≤ (0.15%f-0.2)% at 801～1000Hz |
| Crest Factor | | 3 | 3 |
| Line Regulation*3 | | ≤0.06% | ≤0.06% |
| Load Regulation*3 | | ≤0.15% | ≤0.15% |
| Output Voltage($V_{AC}$) | Resolution | 0.1V | 0.1V |
| | Accuracy | ±(0.2%+0.2% F.S.) | ±(0.2%+0.2% F.S.) |
| Frequency | Resolution | 0.1Hz | 0.1Hz |
| | Accuracy | ±0.1% | ±0.1% |
| Phase Angle Degree Range | Resolution | 0.1° | 0.1° |
| | Accuracy | 0.5° | 0.5° |
| DC Offset Value | | 20mVdc | 20mVdc |
| Efficiency | | 75% (Typical) | 80% (Typical) |
| **DC Output** | | | |
| Max. Output Power | | 300W | 600W |
| Max. Output Voltage | | ±400Vdc | ±400Vdc |
| Maximum Output Current (Rms) | | ±3A | ±6A |
| DC Voltage($V_{DC}$) | Accuracy | ±(0.2%+0.2% F.S.) | ±(0.2%+0.2% F.S.) |
| Dynamic Response Time | | ≤0.5ms(Full load of 10~90%) | ≤0.5ms |
| **Meter** | | | |
| AC Voltage($V_{AC}$) | Range | 0～300V | 0～300V |
| | Resolution | 0.1V | 0.1V |
| | Accuracy | ±(0.25%+0.25% F.S.) | ±(0.25%+0.25% F.S.) |
| AC Current (Rms, High range) | Range | 0.1～3A | 0.1～6A |
| | Resolution | 10mA | 10mA |
| | Accuracy | ±(0.5%+0.5% F.S.) | ±(0.25%+0.25% F.S.) |
| AC Current (Rms, Low range at 100Hz) | Range | 0.1～1250 mA | 0.1～1250 mA |
| | Resolution | 0.1mA | 0.1mA |
| | Accuracy | ±(0.25%+0.25% F.S.) | ±(0.25%+0.25% F.S.) |
| AC Current (Peak) | Range | 0～4.25A | 0-8.5A |
| | Resolution | 10mA | 10mA |
| | Accuracy | ±(0.4%+0.8% F.S.) | ±(0.4%+0.8% F.S.) |
| DC Voltage | Accuracy | ±(0.25%+0.25% F.S.) | ±(0.25%+0.25% F.S.) |
| DC Current (High range) | Accuracy | ±(0.25%+0.355% F.S.) | ±(0.25%+0.355% F.S.) |
| DC Current (Low range) | Accuracy | ±(0.25%+0.355% F.S.) | ±(0.25%+0.355% F.S.) |
| Frequency | Range | 45～1000Hz | 45～1000Hz |
| | Resolution*5 | 0.1Hz | 0.1Hz |
| | Accuracy*2 | ±0.1% | ±0.1% |
| Power *4 (S) | Resolution | 100mVA | 100mVA |
| | Accuracy | ±(0.5%+0.5% F.S.) | ±(0.5%+0.5% F.S.) |
| **Other** | | | |
| Dimension(WxHxD) | | 215 x 44.45(1U) x 450 mm | 215 x 44.45(1U) x 450 mm |
| Weight | | 5 KG | 5 KG |

*1 : Min voltage for THD test is 100Vac.

*2 : Min voltage for frequency display accuracy is 100Vac.

*3 : Tested with pure resistive load.

*4 : This specification is applicable below ≤800Hz.

*5 : The applicable range of frequency resolution is 45~99.9Hz.

# Your Power Testing Solution

## IT-M7700 High Performance Programmable AC Power Supply

| | | IT-M7723 |
|---|---|---|
| **AC Input** | | |
| Voltage | | 100–240Vac |
| Phase | | Single-phase |
| Frequency | | 47-63Hz |
| Max.Current | | 18A |
| Power Factor | | 0.99(Typical) |
| **AC Output** | | |
| Max. Output Power | | 1200VA |
| Max. Output Voltage | | 600Vac |
| Output Phase | | Single-phase |
| Current Range(Rms) | | 12A |
| Current Range(Peak) | | 36A |
| Output Frequency Range | | 45 - 1000Hz |
| Phase Angle Degree Range | | 0 – 359.9° |
| THD*1*3*6 | | ≤0.5% at f=45~100Hz； ≤1.5% at f=101~1000Hz |
| Crest Factor | | 3 |
| Line Regulation*3 | | ≤0.06% |
| Load Regulation*3 | | ≤0.15% |
| Output Voltage *4($V_{AC}$) | Resolution | 0.1V |
| | Accuracy*6 | ±(0.2%+ 0.2% F.S.) |
| Frequency | Resolution | 0.1Hz |
| | Accuracy | ±0.1% |
| Phase Angle Degree Range | Resolution | 0.1° |
| | Accuracy | 0.5° |
| DC Offset Value | | 50mVdc |
| Efficiency | | 78%(Typical) |
| **DC Output** | | |
| Max. Output Power | | 1200W |
| Max. Output Voltage | | ±800Vdc |
| Maximum Output Current (Rms) | | ±12A |
| DC Voltage*4 | Accuracy | ±(0.2% + 0.2% F.S.) |
| Dynamic Response Time*5 | | ≤0.5ms |
| **Meter** | | |
| AC Voltage*4($V_{AC}$) | Range | 0-600V |
| | Resolution | 0.1V |
| | Accuracy*6 | ±(0.25% + 0.25% F.S.) |
| AC Current (Rms) *4 ($I_{AC}$ ) | Range | 0.1 -12A |
| | Resolution | 10mA |
| | Accuracy*6 | ±(0.25% + 0.25% F.S.) |
| AC Current (Peak)*4 (IP) | Range | 0-17A |
| | Resolution | 10mA |
| | Accuracy*6 | ±(0.4% + 0.8% F.S.) |
| DC Voltage *4($V_{DC}$) | Accuracy | ±(0.25% + 0.25% F.S.) |
| DC Current *4($I_{DC}$ ) | Accuracy | ±(0.25% + 0.355% F.S.) |
| Frequency | Range | 45-1000Hz |
| | Resolution*7 | 0.1Hz |
| | Accuracy*2 | ±0.1% |
| Power*4 | Resolution | 100mVA |
| | Accuracy | ±(0.5% + 0.5% F.S.) |
| **Other** | | |
| Dimension(WxHxD) | | 680 × 436 × 44 mm |
| Weight | | 12KG |

*1：Min voltage for THD test is 100Vac.
*2：Min voltage for frequency display accuracy is 100Vac.
*3：Tested with pure resistive load.
*4：F.S. value is full range.
*5：From 10% to 90% full load.
*6：For specifications above 800Hz, multiply by 1.2.
*7：The applicable range of frequency resolution is 45~99.9Hz.

| | | IT-M7723E |
|---|---|---|
| | | AC Input |
| Voltage | | 100～240Vac |
| Phase | | Single-phase |
| Frequency | | 47～63Hz |
| Max.Current | | 20A |
| Power Factor | | 0.99(Typical) |
| | | AC Output |
| Max. Output Power | | 1500VA |
| Max. Output Voltage | | 300V |
| Output Phase | | Single-phase |
| Current Range(Rms) | | 15A |
| Current Range(Peak) | | 45A |
| Output Frequency Range | | 45～1000Hz |
| Phase Angle Degree Range | | 0～359.9° |
| THD*1*3 | | ≤0.3% at 45～100Hz； ≤1% at 101～800Hz； ≤ (0.15%f-0.2)% at 801～1000Hz |
| Crest Factor | | 3 |
| Line Regulation*3 | | ≤0.06% |
| Load Regulation*3 | | ≤0.15% |
| Output Voltage($V_{AC}$) | Resolution | 0.1V |
| | Accuracy | ±(0.2%+0.2% F.S.) |
| Frequency | Resolution | 0.1Hz |
| | Accuracy | ±0.1% |
| Phase Angle Degree Range | Resolution | 0.1° |
| | Accuracy | 0.5° |
| DC Offset Value | | 20mVdc |
| Efficiency | | 83% (Typical) |
| | | DC Output |
| Max. Output Power | | 1500W |
| Max. Output Voltage | | ±400Vdc |
| Maximum Output Current (Rms) | | ±15A |
| DC Voltage(VDC) | Accuracy | ±(0.2%+0.2% F.S.) |
| Dynamic Response Time | | ≤0.5ms(Full load of 10~90%) |
| | | Meter |
| AC Voltage($V_{AC}$) | Range | 0～300V |
| | Resolution | 0.1V |
| | Accuracy | ±(0.25%+0.25% F.S.) |
| AC Current (Rms, High range) | Range | 0.1～15A |
| | Resolution | 10mA |
| | Accuracy | ±(0.25%+0.25% F.S.) |
| AC Current (Rms, Low range at 100Hz) | Range | 0.1～1250 mA |
| | Resolution | 0.1mA |
| | Accuracy | ±(0.25%+0.25% F.S.) |
| AC Current (Peak) | Range | 0～50A |
| | Resolution | 10mA |
| | Accuracy | ±(0.4%+0.8% F.S.) |
| DC Voltage | Accuracy | ±(0.25%+0.25% F.S.) |
| DC Current (High range) | Accuracy | ±(0.25%+0.355% F.S.) |
| DC Current (Low range) | Accuracy | ±(0.25%+0.355% F.S.) |
| Frequency | Range | 45～1000Hz |
| | Resolution*5 | 0.1Hz |
| | Accuracy*2 | ±0.1% |
| Power *4 (S) | Resolution | 100mVA |
| | Accuracy | ±(0.5%+0.5% F.S.) |
| | | Other |
| Dimension(WxHxD) | | 215 × 88.2 × 450 mm |
| Weight | | 9 KG |

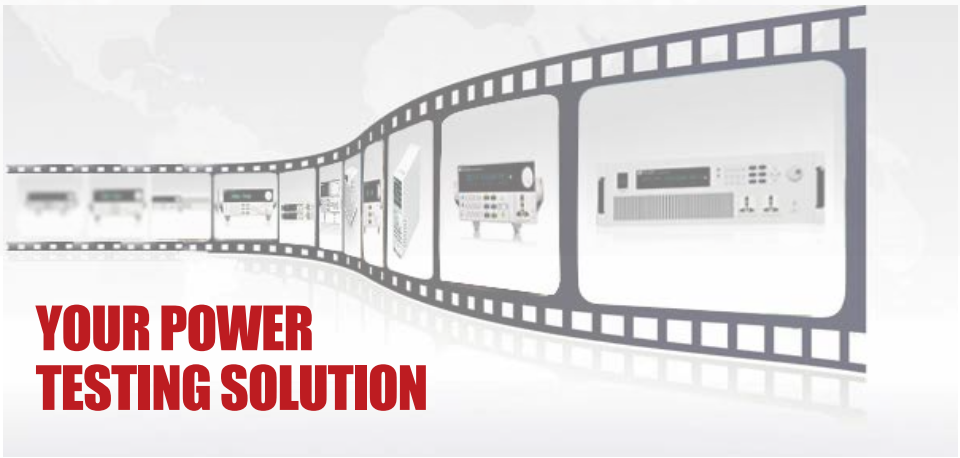
*1：Min voltage for THD test is 100Vac.

*2：Min voltage for frequency display accuracy is 100Vac.

*3：Tested with pure resistive load.

*4：This specification is applicable below ≤800Hz.

*5：The applicable range of frequency resolution is 45~99.9Hz.




This information is subject to change without notice.For more information, please contact ITECH.

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