

Product

IT-M7700 High Performance Programmable AC Power Supply

Innovative Technology

- High performance
- Full models
- Small size
- Extensible ability



IT-M7700 High Performance Programmable AC Power Supply

APPLICATIONS

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

Your Power Testing Solution

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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1 : 1
picture VS real size



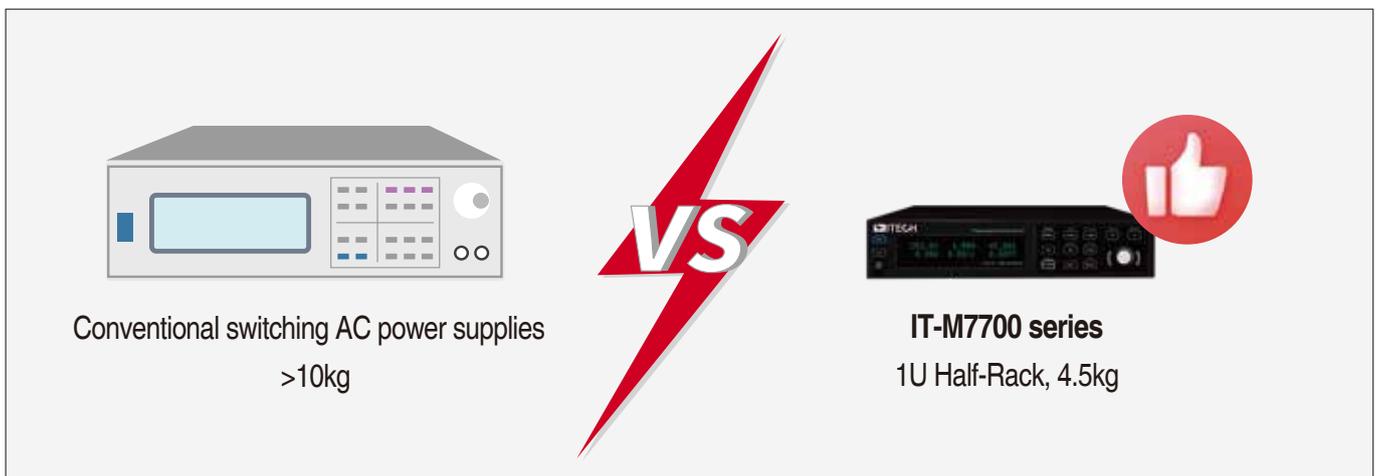
APPLICATIONS

- 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 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.

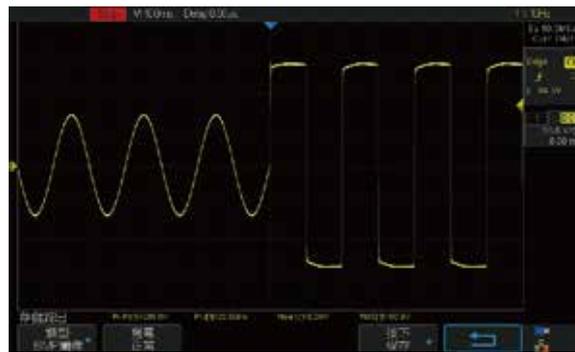
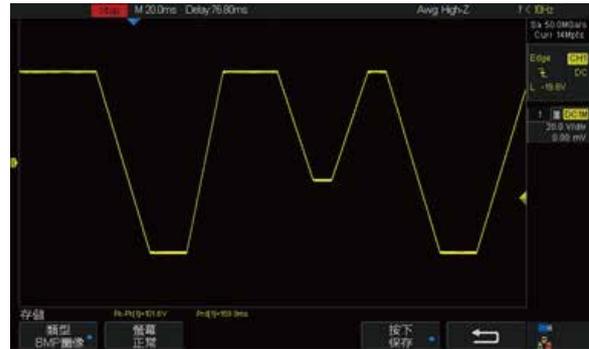
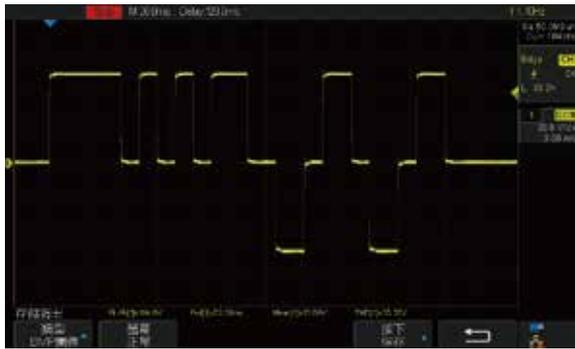


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Arbitrary waveforms output

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



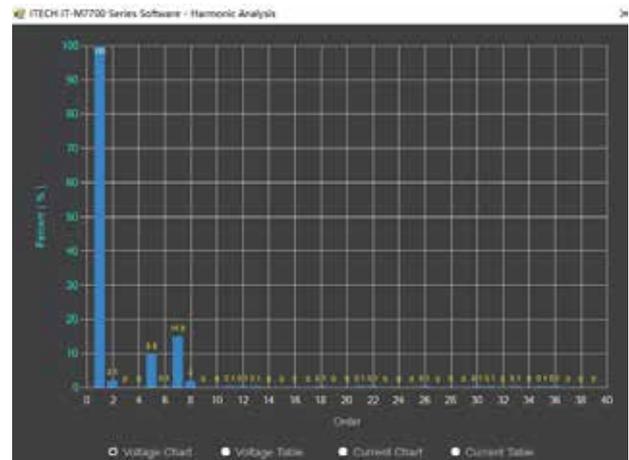
Harmonic analysis function

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.

A screenshot of the IT-M7700 software interface showing harmonic analysis results in a list format. The table has 40 columns and 10 rows. The columns are labeled 'Order 1' through 'Order 40'. The rows show the percentage of each harmonic order. The bottom of the window has four radio buttons: 'Voltage Chart', 'Voltage Table', 'Current Chart', and 'Current Table'. The 'Voltage Table' button is selected.

Order	Value	Order	Value	Order	Value	Order	Value	Order	Value
Order 1	100	Order 11	0	Order 21	0	Order 31	0		
Order 2	2.1	Order 12	0	Order 22	0	Order 32	0		
Order 3	0	Order 13	0	Order 23	0	Order 33	0		
Order 4	0	Order 14	0.1	Order 24	0	Order 34	0		
Order 5	0.5	Order 15	0.1	Order 25	0	Order 35	0		
Order 6	0	Order 16	0	Order 26	0	Order 36	0		
Order 7	1.5	Order 17	0	Order 27	0	Order 37	0.1		
Order 8	2	Order 18	0	Order 28	0	Order 38	0		
Order 9	0.1	Order 19	0	Order 29	0	Order 39	0		
Order 10	0.1	Order 20	0	Order 30	0	Order 40	0		

List



Column list

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List Mode

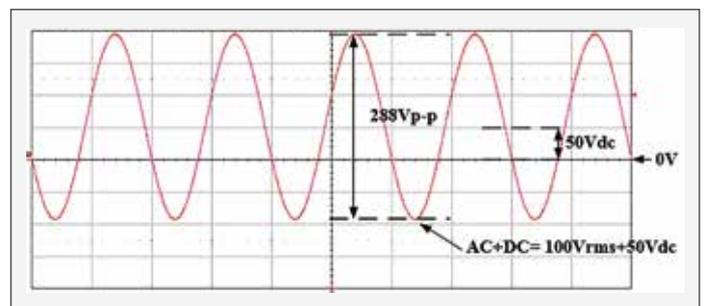
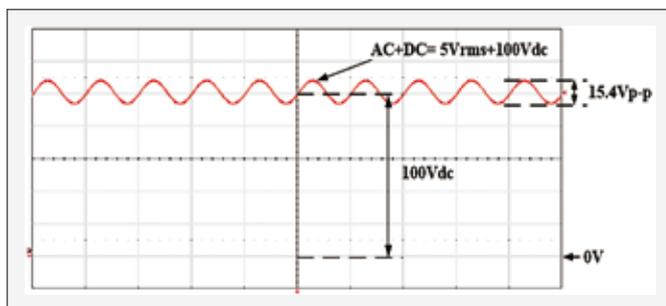
IT-M7700 LIST mode supports program complex waveform editing. The users can edit 5 list files, each file can be edited up to 50 steps. Each step settable parameters include: basic waveform (incl. THD and user defined waveform), AC/DC amplitude, slew rate, frequency, dwell time, start/stop phase angle, 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.



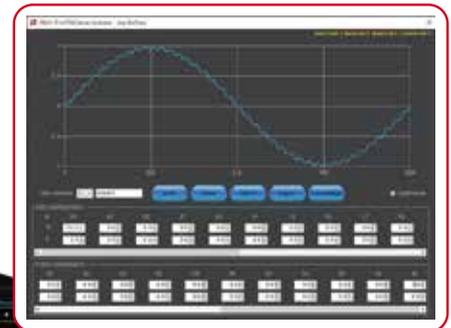
Surge



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

IT9100 power analyzer



IT-M7700 programmable AC power supply

DUT



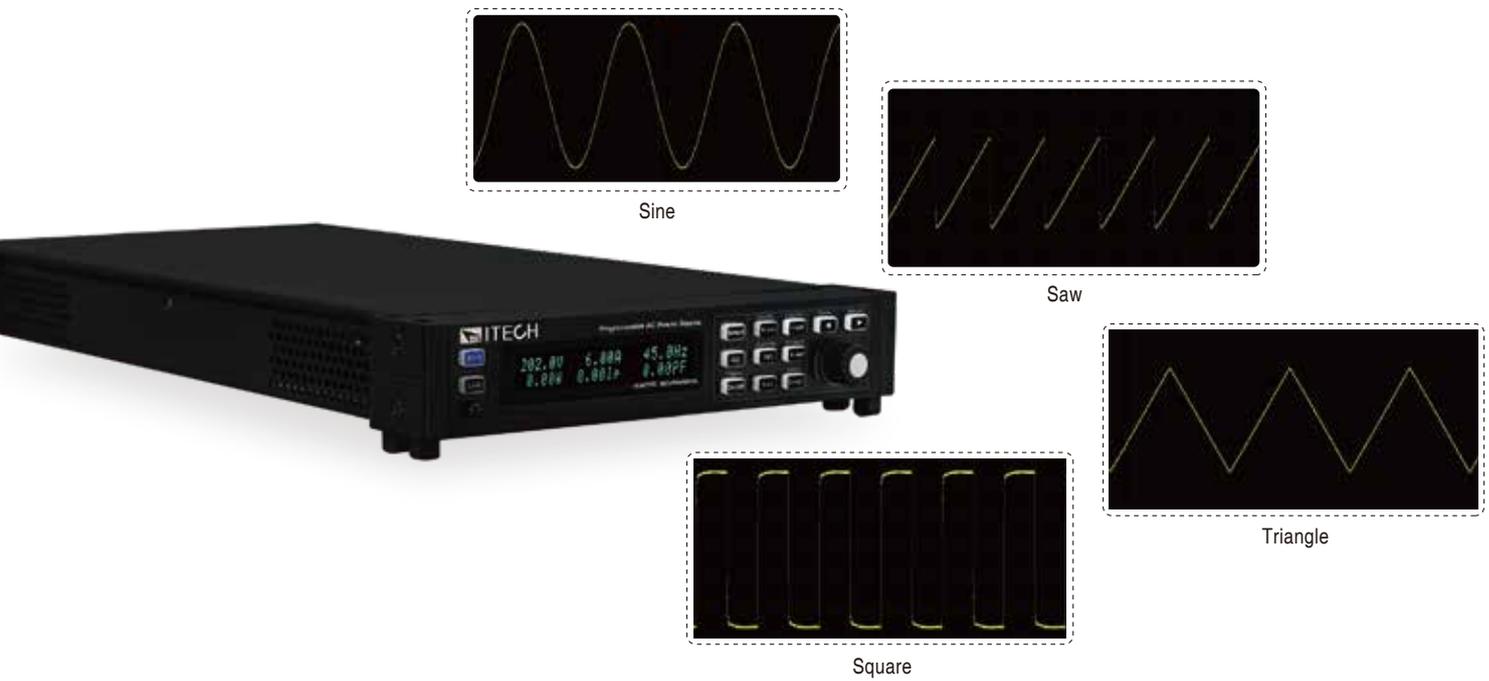
IT8600 programmable AC/DC load

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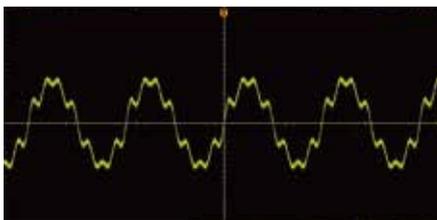
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Built-in abundant waveform database

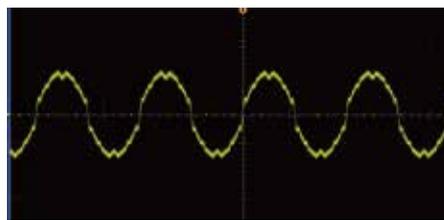
IT-M7700 series has a variety of user-defined waveforms such as square, saw and triangle. There are 30 built-in distortion waveforms for users to edit and recall, which can also be used as the basic waveform to be recalled during list programming.



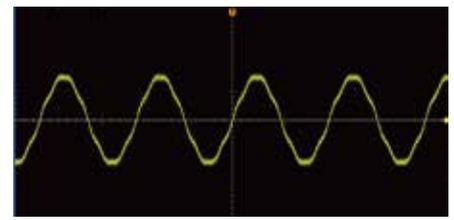
ITM7700 series has 30 built-in harmonic distortion waveforms



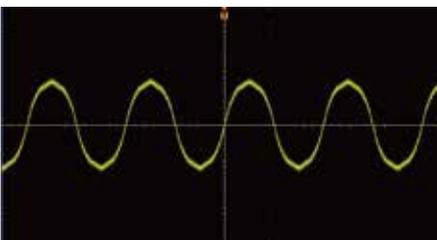
Non-linear



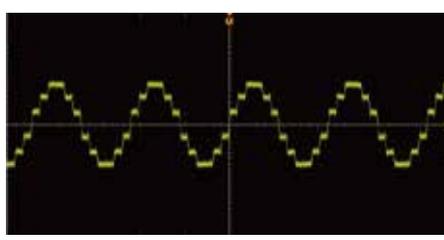
Linear distortion



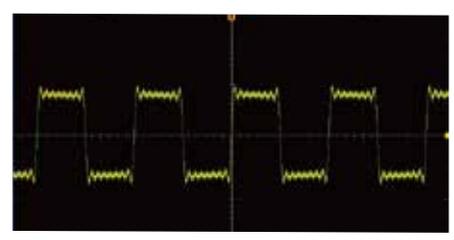
Coil transformer self-excitation



Peak spike



Stepper frequency converter



Square wave UPS

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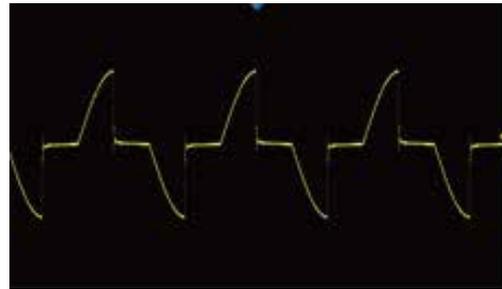
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Front and rear Dimmer phase dimming function

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.



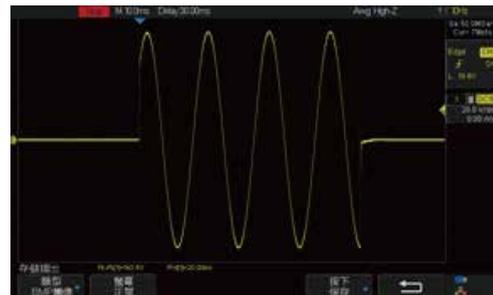
LeadingEdge phase dimming



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



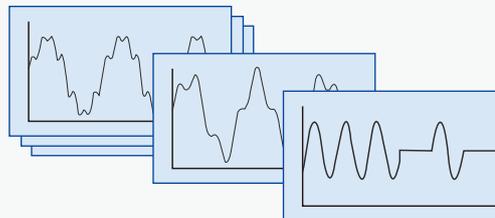
AC input

LED driver

DC output



IT8912E programmable DC e-load



IEC61000-4-11
IEC61000-4-13

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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.

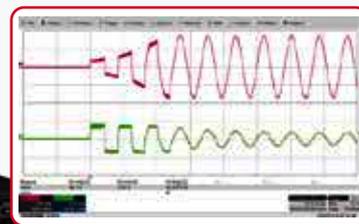
Comprehensive protection

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



Rear panel with optional interfaces

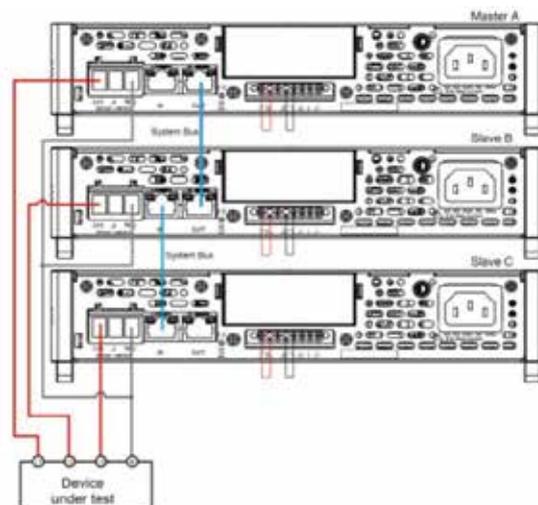
*IT-E251 is standard accessory for three phase installation and serial connection.

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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.

The screenshot displays the software interface for the IT-M7700 power supply. It features several panels:

- Compliance Standards:** A table listing standards for different test categories:

Category	Standards
IEC61000	4-11, 4-13, 4-14, 4-17, 4-28
Avionics	ABD0100.1.8, ABD A350, ABD AMD24, Boeing 787, DO160, MIL-STD-704
Shipboard	MIL-STD-1399-300B
Error Check	AC+DC
- Value Setting:** A panel for configuring test parameters such as Voltage (Vac, Vdc), Frequency (Freq), Start/Stop Phase, V-Rise Time, and I-Range.
- Protection Settings:** A panel for setting protection limits like Voltage Protect (rms/peak), Under Voltage Protect, Over Current Protect (rms/peak), Over Current Protect Delay, Over Power Protect, and Max Current Limit.
- Wave Setting:** A panel for selecting waveforms (SINE, SQUARE, TRIANGLE, SAW) and setting parameters like CLIP/SNE, THD, and USER DEFINED.
- Measurement:** A panel displaying real-time measurements for Vrms (V), Irms (A), Frequency (Hz), Vac Peak (V), and Peak (A). It includes a 'Record' checkbox and a 'Chart' area for data visualization.
- Output Status:** A panel with 'Output ON' and 'Harmonic Analysis' buttons.

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		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%+0.2%) at f=801~1000Hz	≤0.3% at 45~100Hz; ≤1% at 101~800Hz; ≤(0.15%+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.

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		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.

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		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%-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

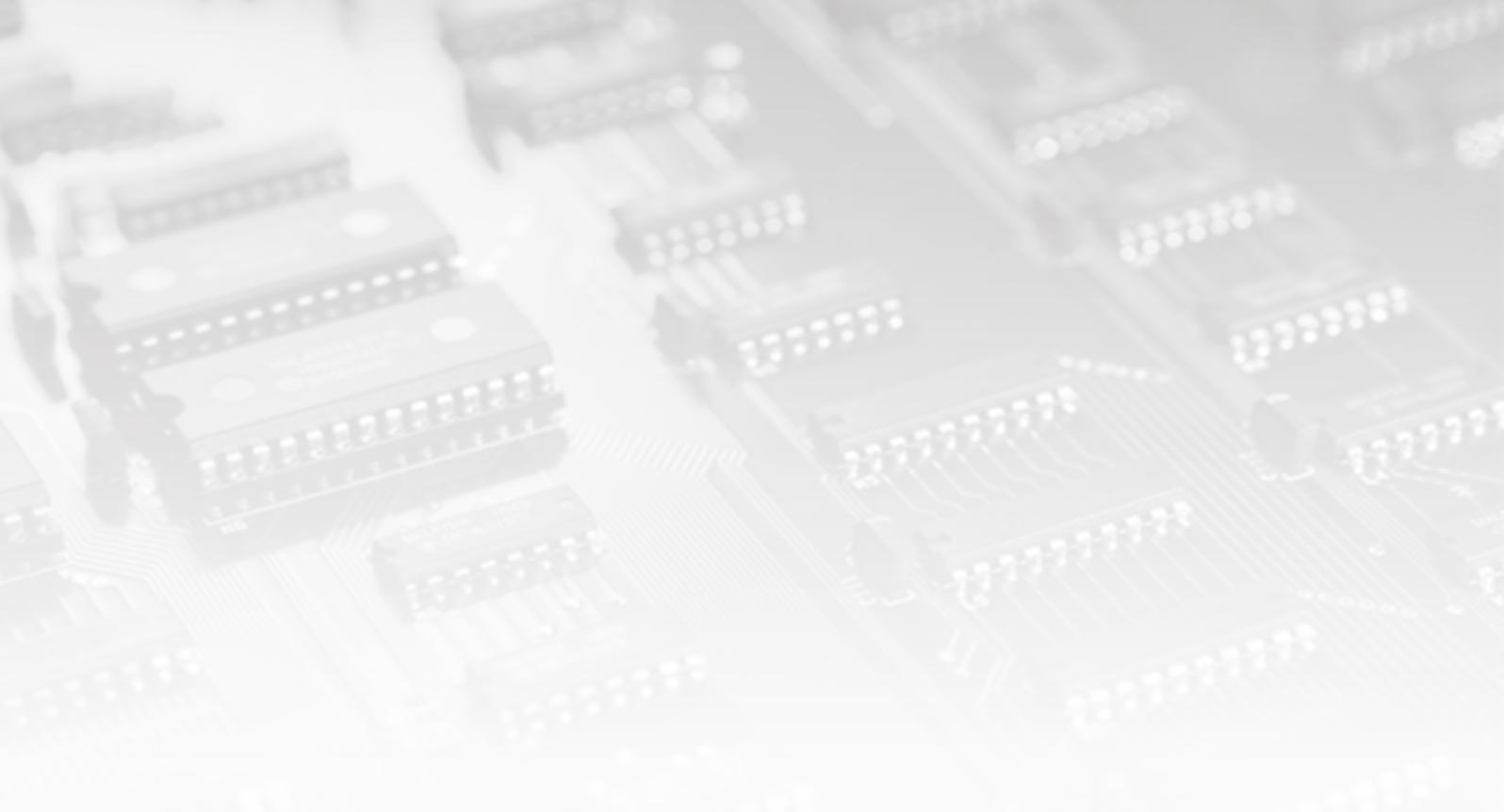
*1: Min voltage for THD test is 100Vac.

*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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