ITECH
YOUR POWER TESTING SOLUTION

Product

IT-M3400 Bidirectional DC Power Supply

IT-M3400 Bidirectional DC Power Supply

APPLICATIONS

- Civil / military low-power power module testing
- Intelligent industry equipment testing
- Power supply testing of automotive electronic equipment

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Your Power Testing Solution

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Bidirectional

High efficient power regeneration

Battery simulation/charge and discharge test

Independent control of multiple channels

IT-M3400 bidirectional DC power supply integrates the features of a bidirectional power supply and a regenerative load. It keeps the advantages of high power density and modular architecture design of M series.
It can meet the customer's test requirement of different current and power level. Thanks to the independent multi-channel design, users can configure each channel according to the quantity and specifications of the DUT. At the same time, it has high-precision output and measurement, and has made a number of safety designs for testing, suitable for multiple test fields, such as power modules, intelligent industrial equipment, automotive electronics, charging and discharging tests of various small-capacity batteries.

FEATURE

- 1U Half-rack, high power density
- Bidirectional energy flow
- High efficient power regeneration
- Battery test
- Battery simulation
- Independent control of multi-channels with functions of synchronization and proportional tracking
- High speed measurement, 10 times/S updating rate
- CC/CV priority
- Adjustable output impedance
- Programmable voltage and current rise and fall time
- Temperature measurement function, over temperature protection

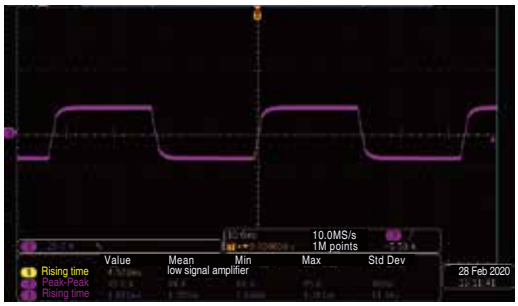
  * Only support sink current under CC mode after been parallelled
- List
- Various protection such as OCP / UCP / OVP / OTP / OPP / UVP over heat protection, grid fault protection and fault storage, foldback, Power-off protection, sense abnormal protection
- Automatic detection of power grid state to realize reliable grid connection
- Pre charge function to prevent overshoot of DC loading current
- Anti-reverse protection function through optional accessories
- Five optional cards, supporting RS232,CAN,LAN,GPIB, USB_TMC,USB_VCP, RS485, analog and IO

Model	Voltage	Current	Power	Model	Voltage	Current	Power
IT-M3412	60V	30A	200W	IT-M3414	300V	6A	200W
IT-M3422	60V	30A	400W	IT-M3424	300V	6A	400W
IT-M3432	60V	30A	800W	IT-M3434	300V	6A	800W
IT-M3413	150V	12A	200W	IT-M3415	600V	3A	200W
IT-M3423	150V	12A	400W	IT-M3425	600V	3A	400W
IT-M3433	150V	12A	800W	IT-M3435	600V	3A	800W

Seamless switching between source and sink

Different from the traditional power supply and load, when positive and negative current switch, there will be a short jump and Incoherence. IT-M3400 integrates source and sink function in one, which is capable of achieving high-speed and seamless switching between source and sink. In this way, a fast and seamless switch between source and sink effectively avoids voltage or current overshoot, which is widely used in batteries, battery packaging, battery protection boards and other energy storage equipment testing.

* Only available for single unit



CC priority charge and discharge seamless switching

1U Half-rack mini size

IT-M3400 is 1U Half-rack mini size and support output up to 800W, not only with high power density, but also with high resolution, high precision and high stability. The output voltage can reach 600V and the output current can reach 30A. There are 12 models in the whole series, with a wide range of output design, and one unit can cover a wide range of applications.

Applications

Low-power power module test

DC-DC power module test, micro-inverter
DC-AC test, bidirectional DC-DC module test

Intelligent industrial equipment testing

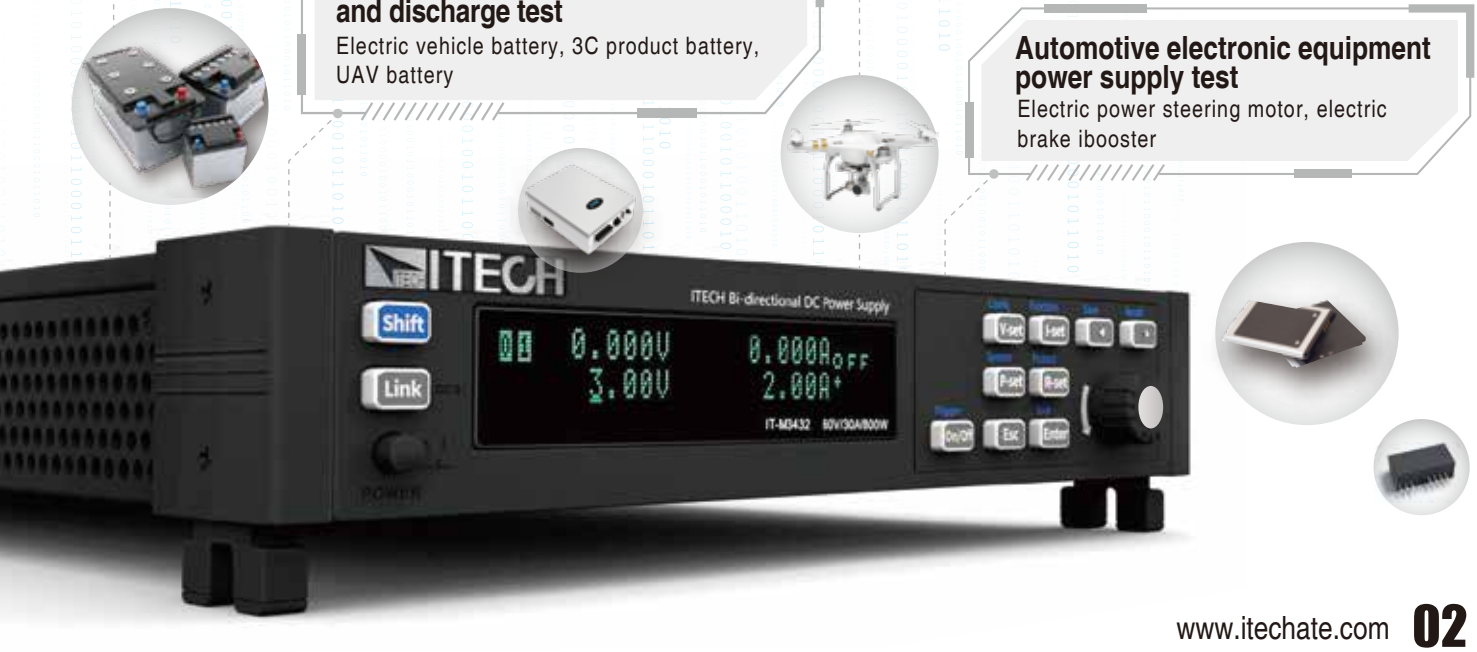
UAV ESC test, small robot servo motor test

Various small capacity battery charge and discharge test

Electric vehicle battery, 3C product battery, UAV battery

Automotive electronic equipment power supply test

Electric power steering motor, electric brake ibooster



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IT-M3400 bidirectional DC power supply

CC & CV priority function

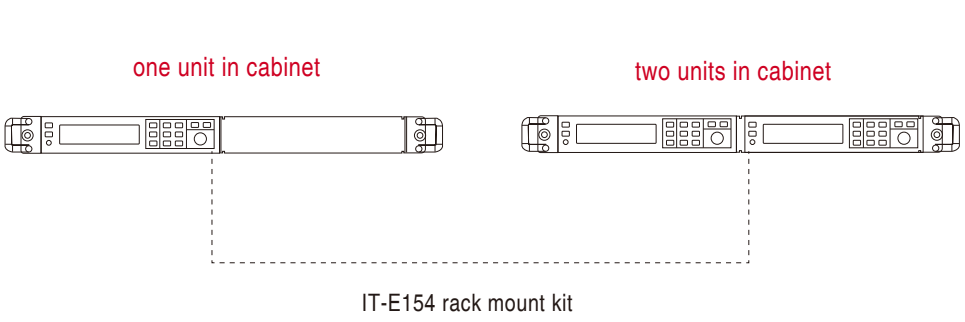
IT-M3400 continues to support CC / CV priority function, help customers solve a variety of severe problems in long-term testing. For test that require high-speed voltage, users can select the CV priority mode to obtain a faster voltage climb speed; or choose CC priority mode, output current without overshoot, used to test DUT with constant current operating characteristics. This function is widely used in power supply transient simulation and characterization test applications, such as lasers, integrated circuits, charge and discharge, automotive electronics.

CC priority

CV priority

Module architecture, any combination

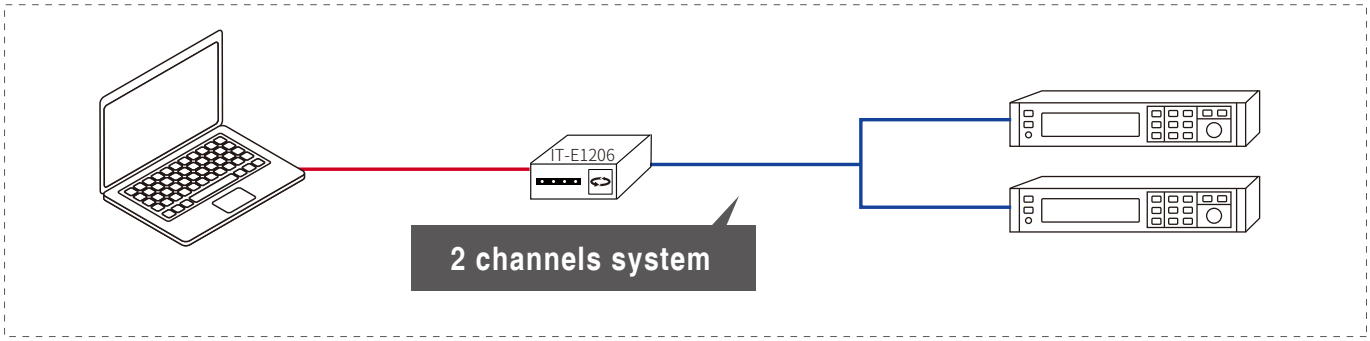
IT-M3400's modular plug-in architecture can easily stack instruments like building blocks without any additional accessories. Besides that, users can choose IT-E154 rack installation kit, easily install one or more instruments in a standard 19-inch cabinet.

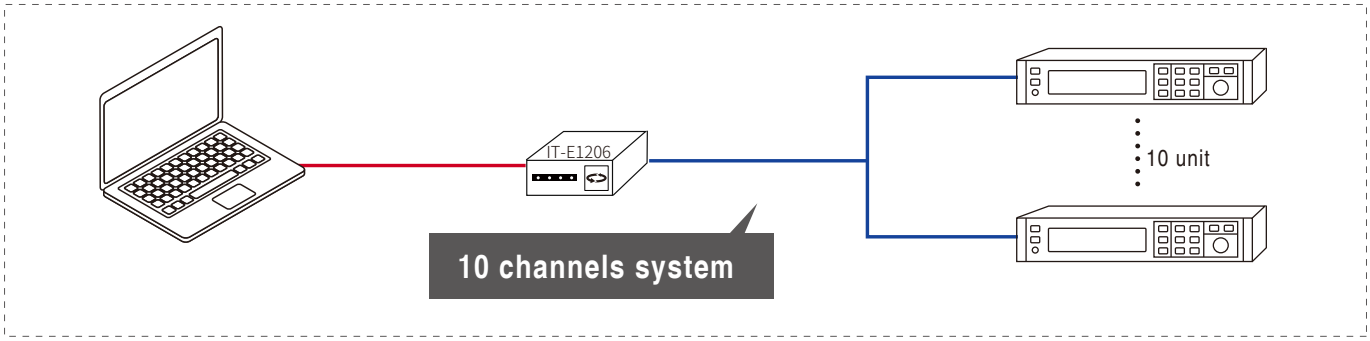


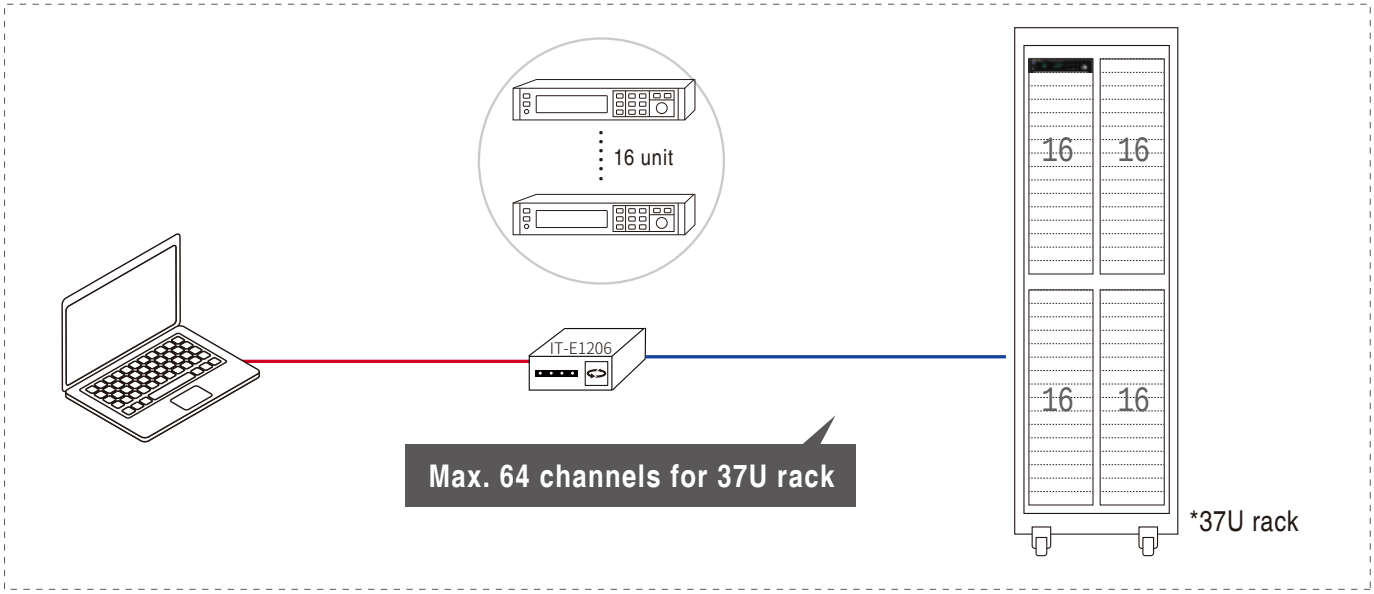
Multi-channel independent control, up to 256 channel

IT-M3400 provides flexible multi-channel function, the users can build-up multi-channel source-sink system, each unit will show the channel number on the front panel. PC only need to connect with one unit to control and program all the units independently by GUI software.

IT-M3400 support maximum 16*16 channels, each 37U rack can integrate 64 units which is 64 channels.







Your Power Testing Solution

IT-M3400 bidirectional DC power supply

Power regenerative and eco-friendly

With the power regeneration function, IT-M3400 can feed back up to 90% power instead of consuming it as heat. It not only save your cost of electricity, HVAC and cooling infrastructure, but also help to reduce carbon emission and impact on the environment.

Production facility : 24Hr/day x 7 work days x 52 weeks

Power	Electricity cost saved (appr. USD/year)	CO_2 emission reduced (appr. ton/year)
200 W	220.15	1567.76
400 W	440.29	3135.53
800 W	880.59	6271.05

R&D lab : 8Hr/day x 5 work days x 52 weeks

Power	Electricity cost saved (appr. USD/year)	CO_2 emission reduced (appr. ton/year)
200 W	52.42	373.28
400 W	104.83	746.55
800 W	209.66	1493.11

1. approximate electricity price 0.14USD/ kWh for industry facility in California
2. 1 kWh power consumption ≈ 0.997 CO_2 emission

* The extra cost of air conditioning is not included.

Battery simulation function

IT-M3400 can simulate up to 99 batteries in series and parallel. The user can set the battery voltage, capacity, internal resistance, and SOC to quickly define the battery matrix.

The user can set the battery by choosing ITECH optional professional BSS2000 battery simulation software, by setting common battery parameters to quickly establish the battery characteristic curve, they can also set the initial capacity of the battery, to verify the characteristics of the product in different states of the battery. At the same time, BSS2000 supports user to import matlab battery matrix or import the actual battery charge and discharge curve through .CSV file, to simulate real battery's charge and discharge characteristics.

*Please contact ITECH for further details.

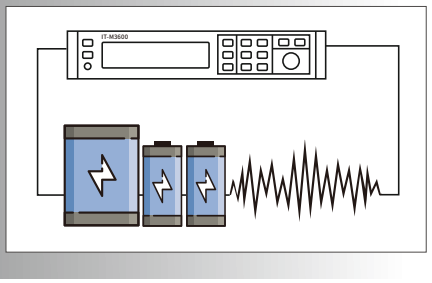
BSS2000 battery emulation software interface

Battery Test Function

IT-M3400 series Regenerative Power System, which integrates power supply and regenerative electronic load one unit, and adjustable output impedance design, can simulate the charging and discharging characteristics of the battery, and perform other testing, too. It can be used not only test the multiple single cells, but also comprehensive test the battery packages. It can also perform the battery setting and data processing in various test conditions and plot the test figure.

Optional ITS5300 professional battery test software can perform the following test items:

- working condition simulation
- Battery DC IR Test
- Battery endurance test
- Battery Temperture Test
- Reliabilty Test
- Charge and Discharge characteristic
- Battery cycle life test
- Battery capacity test
- Over charge and Over discharge endurance test
- Battery conformity test



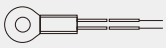
Multi-Protection Function

IT-M3400 have various protection functions such as OCP / UCP / OVP / OTP / OPP / UVP, power grid fault protection and fault storage functions, as well as power-off protection and Sense sensing abnormal protection.
The unique Foldback protection function is used to turn off the output when the power CV / CC is switched, so as to protect DUT that are sensitive to voltage overshoot and current overshoot.
The automatic detection function of power grid state will shut down the product in case of sudden disconnection of power grid connection, which can realize reliable grid connection function and islanding protection function.
Precharge function can prevent DC loaded current from overshoot. Users can choose anti reverse connection module to realize anti reverse connection protection function to effectively suppress battery surge.

Optional Accessories

IT-M3400 rear panel provides interface expansion slot for users to expand. Different interfaces can be selected to realize different functions, such as communication interface, external analog interface, temperature sensor, etc.

Pictures	Model	Interface
	IT-E1205	GPIB interface
	IT-E1206	USB/LAN interface
	IT-E1207	RS-232/CAN interface
	IT-E1208	External analog/RS485 interface

Pictures	Model	Interface
	IT-E1209	USB interface
	IT-E118	Anti-reverse connection module
	IT-E1203	Temperature sensor
	IT-E154A/B/C	Rack mount kit

Standard Rear Panel

Rear Panel with optional interface

Your Power Testing Solution

IT-M3400 bidirectional DC power supply

Specification

		IT-M3412	IT-M3413	IT-M3414
Rated Output Value (0 ℃-40 ℃)	Output Voltage	0~60V	0~150V	0~300V
	Output Current	-30A~30A	-12A~12A	-6A~6A
	Output Power	-200W~200W	-200W~200W	-200W~200W
CC Mode	Current Range	-30A~30A	-12A~12A	-6A~6A
	Resolution	10mA	1mA	1mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
CV Mode	Voltage Range	0~60V	0~150V	0~300V
	Resolution	1mV	10mV	10mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Resistance Programming (Sourcing)	Resistance Range	0~1000mΩ	0~1000mΩ	0~1000mΩ
	Resolution	0.1mΩ	0.1mΩ	0.1mΩ
	Accuracy	2% FS	2% FS	2% FS
CP Mode	Power Range	-200W~200W	-200W~200W	-200W~200W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1.0% FS	<1.0% FS	<1.0% FS
Output Current Readback	Range	-30A~30A	-12A~12A	-6A~6A
	Resolution	1mA	1mA	1mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
Output Voltage Readback	Range	0~60V	0~150V	0~300V
	Resolution	1mV	10mV	10mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Output Power Readback	Range	-200W~200W	-200W~200W	-200W~200W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1% FS	<1% FS	<1% FS
Load Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Line Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Ripple	Voltage	≤100mVp-p	≤300mVp-p	≤600mVp-p
	Current	≤30mArms	≤30mArms	≤30mArms
Rise Time	Voltage (No Load)	5ms	20ms	20ms
Rise Time	Voltage (Full Load)	10ms	50ms	50ms
Fall Time	Voltage (No Load)	5ms	20ms	20ms
Fall Time	Voltage (Full Load)	5ms	20ms	20ms
DUT temperature measure	Range	-20℃----120℃	-20℃----120℃	-20℃----120℃
	Accuracy	±1℃	±1℃	±1℃
	Resolution	0.1℃	0.1℃	0.1℃
Power Rating	Voltage Range	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)
	Ovp	264VAC	264VAC	264VAC
	Uvp	90VAC	90VAC	90VAC
	Frequency	47Hz~63Hz	47Hz~63Hz	47Hz~63Hz
	Max.input Current	1Aac（AC220V）	1Aac（AC220V）	1Aac(AC220V)
	Dc Component	-0.1A~+0.1A	-0.1A~+0.1A	-0.1A~+0.1A
Efficiency (Max.)		86%	88%	88%
Dimension（D*W*H）		450mm*214mm*43.5mm	450mm*214mm*43.5mm	450mm*214mm*43.5mm
Net Weight		5kg	5kg	5kg

*Load mode resistance accuracy range: lower limit 1/(1/R+(1/R)*0.05+0.004)；upper limit 1/(1/R-(1/R)*0.05-0.004)

*This information is subject to change without notice

Specification

		IT-M3415	IT- M3422	IT-M3423
Rated Output Value (0 ℃-40 ℃)	Output Voltage	0~600V	0~60V	0~150V
	Output Current	-3A~3A	-30A~30A	-12A~12A
	Output Power	-200W~200W	-400W~400W	-400W~400W
CC Mode	Current Range	-3A~3A	-30A~30A	-12A~12A
	Resolution	1mA	10mA	1mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
CV Mode	Voltage Range	0~600V	0~60V	0~150V
	Resolution	10mV	1mV	10mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Resistance Programming (Sourcing)	Resistance Range	0~1000mΩ	0~1000mΩ	0~1000mΩ
	Resolution	0.1mΩ	0.1mΩ	0.1mΩ
	Accuracy	2% FS	2% FS	2% FS
CP Mode	Power Range	-200W~200W	-400W~400W	-400W~400W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1.0% FS	<1.0% FS	<1.0% FS
Output Current Readback	Range	-3A~3A	-30A~30A	-12A~12A
	Resolution	1mA	1mA	1mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
Output Voltage Readback	Range	0~600V	0~60V	0~150V
	Resolution	10mV	1mV	10mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Output Power Readback	Range	-200W~200W	-400W~400W	-400W~400W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1% FS	<1% FS	<1% FS
Load Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Line Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Ripple	Voltage	≤1200mVp-p	≤100mVp-p	≤300mVp-p
	Current	≤30mArms	≤30mArms	≤30mArms
Rise Time	Voltage (No Load)	30ms	5ms	20ms
Rise Time	Voltage (Full Load)	60ms	10ms	50ms
Fall Time	Voltage (No Load)	30ms	5ms	20ms
Fall Time	Voltage (Full Load)	30ms	5ms	20ms
DUT temperature measure	Range	-20℃----120℃	-20℃----120℃	-20℃----120℃
	Accuracy	±1℃	±1℃	±1℃
	Resolution	0.1℃	0.1℃	0.1℃
Power Rating	Voltage Range	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)
	Ovp	264VAC	264VAC	264VAC
	Uvp	90VAC	90VAC	90VAC
	Frequency	47Hz~63Hz	47Hz~63Hz	47Hz~63Hz
	Max.input Current	1Aac(AC220V)	2Aac（AC220V）	2Aac（AC220V）
	Dc Component	-0.1A~+0.1A	-0.1A~+0.1A	-0.1A~+0.1A
Efficiency (Max.)		88%	86%	88%
Dimension（D*W*H）		450mm*214mm*43.5mm	450mm*214mm*43.5mm	450mm*214mm*43.5mm
Net Weight		5kg	5kg	5kg

*Load mode resistance accuracy range: lower limit 1/(1/R+(1/R)*0.05+0.004)；upper limit 1/(1/R-(1/R)*0.05-0.004)
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IT-M3400 bidirectional DC power supply

Specification

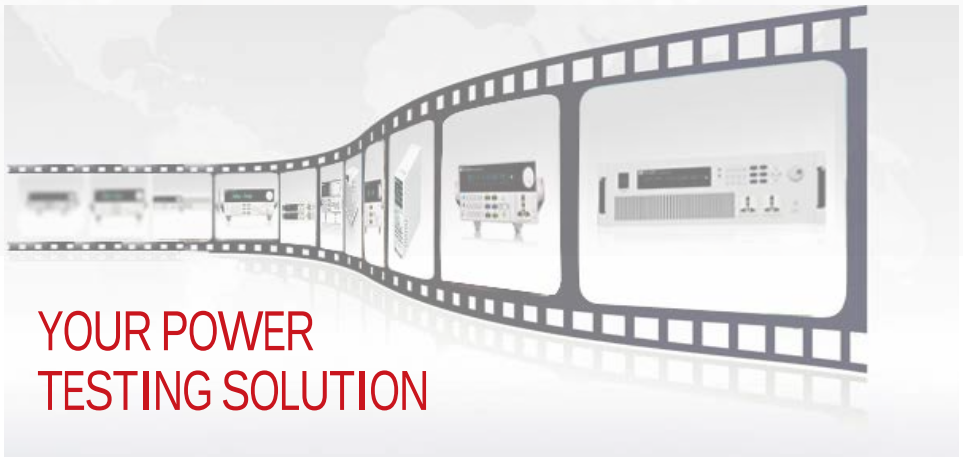
		IT-M3424	IT-M3425	IT-M3432
Rated Output Value (0 ℃-40 ℃)	Output Voltage	0~300V	0~600V	0~60V
	Output Current	-6A~6A	-3A~3A	-30A~30A
	Output Power	-400W~400W	-400W~400W	-800W~800W
CC Mode	Current Range	-6A~6A	-3A~3A	-30A~30A
	Resolution	1mA	1mA	10mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
CV Mode	Voltage Range	0~300V	0~600V	0~60V
	Resolution	10mV	10mV	1mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Resistance Programming (Sourcing)	Resistance Range	0~1000mΩ	0~1000mΩ	0~1000mΩ
	Resolution	0.1mΩ	0.1mΩ	0.1mΩ
	Accuracy	2% FS	2% FS	2% FS
CP Mode	Power Range	-400W~400W	-400W~400W	-800W~800W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1.0% FS	<1.0% FS	<1.0% FS
Output Current Readback	Range	-6A~6A	-3A~3A	-30A~30A
	Resolution	1mA	1mA	1mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
Output Voltage Readback	Range	0~300V	0~600V	0~60V
	Resolution	10mV	10mV	1mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Output Power Readback	Range	-400W~400W	-400W~400W	-800W~800W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1% FS	<1% FS	<1% FS
Load Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Line Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Ripple	Voltage	≤600mVp-p	≤1200mVp-p	≤100mVp-p
	Current	≤30mArms	≤30mArms	≤30mArms
Rise Time	Voltage (No Load)	20ms	30ms	5ms
Rise Time	Voltage (Full Load)	50ms	60ms	10ms
Fall Time	Voltage (No Load)	20ms	30ms	5ms
Fall Time	Voltage (Full Load)	20ms	30ms	5m
DUT temperature measure	Range	-20 C ----120 C	-20 C ----120 C	-20 C ----120 C
	Accuracy	±1 C	±1 C	±1 C
	Resolution	0.1 C	0.1 C	0.1 C
Power Rating	Voltage Range	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)
	Ovp	264VAC	264VAC	264VAC
	Uvp	90VAC	90VAC	90VAC
	Frequency	47Hz~63Hz	47Hz~63Hz	47Hz~63Hz
	Max.input Current	2Aac(AC220V)	2Aac(AC220V)	4Aac（AC220V）
	Dc Component	-0.1A~+0.1A	-0.1A~+0.1A	-0.1A~+0.1A
Efficiency (Max.)		88%	88%	86%
Dimension （D*W*H）		450mm*214mm*43.5mm	450mm*214mm*43.5mm	450mm*214mm*43.5mm
Net Weight		5kg	5kg	5kg

*Load mode resistance accuracy range: lower limit 1/(1/R+(1/R)*0.05+0.004)；upper limit 1/(1/R-(1/R)*0.05-0.004)
*This information is subject to change without notice

Specification

		IT-M3433	IT- M3434	IT-M3435
Rated Output Value (0 ℃-40 ℃)	Output Voltage	0~150V	0~300V	0~600V
	Output Current	-12A~12A	-6A~6A	-3A~3A
	Output Power	-800W~800W	-800W~800W	-800W~800W
CC Mode	Current Range	-12A~12A	-6A~6A	-3A~3A
	Resolution	1mA	1mA	1mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
CV Mode	Voltage Range	0~150V	0~300V	0~600V
	Resolution	10mV	10mV	10mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Resistance Programming (Sourcing)	Resistance Range	0~1000mΩ	0~1000mΩ	0~1000mΩ
	Resolution	0.1mΩ	0.1mΩ	0.1mΩ
	Accuracy	2% FS	2% FS	2% FS
CP Mode	Power Range	-800W~800W	-800W~800W	-800W~800W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1.0% FS	<1.0% FS	<1.0% FS
Output Current Readback	Range	-12A~12A	-6A~6A	-3A~3A
	Resolution	1mA	0.1mA	0.1mA
	Accuracy	<0.1% +0.1% FS	<0.1% +0.1% FS	<0.1% +0.1% FS
Output Voltage Readback	Range	0~150V	0~300V	0~600V
	Resolution	10mV	10mV	10mV
	Accuracy	<0.1% FS	<0.1% FS	<0.1% FS
Output Power Readback	Range	-800W~800W	-800W~800W	-800W~800W
	Resolution	0.1W	0.1W	0.1W
	Accuracy	<1% FS	<1% FS	<1% FS
Load Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Line Regulation	Voltage	≤0.05% FS	≤0.05% FS	≤0.05% FS
	Current	≤0.05% FS	≤0.05% FS	≤0.05% FS
Ripple	Voltage	≤300mVp-p	≤600mVp-p	≤1200mVp-p
	Current	≤30mArms	≤30mArms	≤30mArms
Rise Time	Voltage (No Load)	20ms	20ms	30ms
Rise Time	Voltage (Full Load)	50ms	50ms	60ms
Fall Time	Voltage (No Load)	20ms	20ms	30ms
Fall Time	Voltage (Full Load)	20ms	20ms	30ms
DUT temperature measure	Range	-20℃----120℃	-20℃----120℃	-20℃----120℃
	Accuracy	±1℃	±1℃	±1℃
	Resolution	0.1℃	0.1℃	0.1℃
Power Rating	Voltage Range	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)	100VAC~240VAC (±10%)
	Ovp	264VAC	264VAC	264VAC
	Uvp	90VAC	90VAC	90VAC
	Frequency	47Hz~63Hz	47Hz~63Hz	47Hz~63Hz
	Max.input Current	4Aac（AC220V）	4Aac(AC220V)	4Aac(AC220V)
	Dc Component	-0.1A~+0.1A	-0.1A~+0.1A	-0.1A~+0.1A
Efficiency (Max.)		88%	88%	88%
Dimension（D*W*H）		450mm*214mm*43.5mm	450mm*214mm*43.5mm	450mm*214mm*43.5mm
Net Weight		5kg	5kg	5kg

*Load mode resistance accuracy range: lower limit 1/(1/R+(1/R)*0.05+0.004)；upper limit 1/(1/R-(1/R)*0.05-0.004)
*This information is subject to change without notice



YOUR POWER TESTING SOLUTION

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

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