

IT-M3900C

Bidirectional Programmable DC Power Supply



Your Power Testing Solution

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IT-M3900 series integrates the features of a DC power supply, a bi-directional power supply, a source and load system, and a regenerative electronic load in one. It keeps the advantages of high power density design of M series, power up to 6kw, current up to 510A, and voltage up to 1500V within one 1U unit, effectively reducing the equipment occupation space and cabinet time. wide-range models could meet different test requirements while matching with multi-functional, high energy-saving, high-safety, and high-stability product design, let the customer be confident to face a variety of complex testing, improving the products competition ability.

IT-M3900C is a regenerative bidirectional programmable DC power supply, it is not only a stand-alone bidirectional DC power supply but also can be used as a regenerative electronic load, to absorb the consumed energy and feedback cleanly to the grid. The high-efficiency energy feedback efficiency not only saves electricity consumption and heat dissipation costs but also does not interfere with the operation of the power grid. IT-M3900C provides high accuracy output measurement, high reliability, high safety, and abundant measurement functions. Which makes IT-M3900 meet customers' high accuracy automatic ATE testing requirements, while extensively used in aspects of automotive electronics, new energy vehicles, photovoltaic energy storage, intelligent industrial equipment, battery simulation, etc.

FEATURE

- Compact design, power up to 6kW in 1U space, power up to 12kW in 2U space
- Voltage range: 10-1500V
- Current range:-720A~1020A
- Power range: +/-12kW
- Wide range of output design, one unit can be used as multiple power supplies
- Bidirectional energy flow between the DUT and grid, seamless switching across quadrants
- With simple master/slave parallel connection, expand power while maintaining performance*1
- Efficient and environmentally friendly energy regenerative, effectively reducing the electricity and cooling costs
- CC/CV priority
- Adjustable output impedance
- Battery charging and discharging test
- Battery simulation, define the battery model
- Dynamic curve simulation function up to 10,000,000 points
- Built-in voltage curves comply with LV123, LV148, DIN40839, ISO-16750-2, SAEJ1113-11, LV124 and ISO21848 automotive standards*2
- Support photovoltaic I-V curves simulation function*3
- List function
- Support CC/CV/ CW/CR in sink mode
- Support CC/CV/CW in Source mode, and can simulate DC output internal resistance
- Multiple protection functions: OVP, \pm OCP, \pm OPP, OTP, power failure protection, anti-islanding protection
- Automatic detection of power grid status to realize reliable grid connection function
- Standard build-in USB/CAN/LAN/digital IO communication interface, optional GPIB/analog & RS232

*1 If 1U models>16, 2U models>8, pls. contact ITECH.Parallel connection is not recommended under PV simulation function

*2 Not available for 10V models

*3 Available for 85V and 150V models

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| | Model | Current | Power | Size |
|-----|-------------------|------------|-------------|------|
| 10V | IT-M3901C-10-170 | -120~170A | -1.2~1.7kW | 1U |
| | IT-M3903C-10-340 | -240~340A | -2.4~3.4kW | 1U |
| | IT-M3905C-10-510 | -360~510A | -3.6~5.1kW | 1U |
| | IT-M3910C-10-1020 | -720~1020A | -7.2~10.2kW | 2U |

| | Model | Current | Power | Size |
|-----|------------------|---------|-------|------|
| 80V | IT-M3902C-80-40 | ±40A | ±2kW | 1U |
| | IT-M3904C-80-80 | ±80A | ±4kW | 1U |
| | IT-M3906C-80-120 | ±120A | ±6kW | 1U |
| | IT-M3912C-80-240 | ±240A | ±12kW | 2U |

| | Model | Current | Power | Size |
|------|-------------------|---------|-------|------|
| 300V | IT-M3902C-300-20 | ±20A | ±2kW | 1U |
| | IT-M3904C-300-40 | ±40A | ±4kW | 1U |
| | IT-M3906C-300-60 | ±60A | ±6kW | 1U |
| | IT-M3912C-300-120 | ±120A | ±12kW | 2U |

| | Model | Current | Power | Size |
|------|------------------|---------|-------|------|
| 800V | IT-M3902C-800-8 | ±8A | ±2kW | 1U |
| | IT-M3904C-800-16 | ±16A | ±4kW | 1U |
| | IT-M3906C-800-24 | ±24A | ±6kW | 1U |
| | IT-M3912C-800-48 | ±48A | ±12kW | 2U |

| | Model | Current | Power | Size |
|-----|------------------|---------|-------|------|
| 32V | IT-M3902C-32-80 | ±80A | ±2kW | 1U |
| | IT-M3904C-32-160 | ±160A | ±4kW | 1U |
| | IT-M3906C-32-240 | ±240A | ±6kW | 1U |
| | IT-M3912C-32-480 | ±480A | ±12kW | 2U |

| | Model | Current | Power | Size |
|-------|---------------------|---------|-------|------|
| 85V*1 | IT-M3902C-85-40SAS | ±40A | ±2kW | 1U |
| | IT-M3904C-85-80SAS | ±80A | ±4kW | 1U |
| | IT-M3906C-85-120SAS | ±120A | ±6kW | 1U |

| | Model | Current | Power | Size |
|--------|--------------------|---------|--------|------|
| 150V*2 | IT-M3901C-150-25PV | ±25A | ±1.5kW | 1U |
| | IT-M3903C-150-50PV | ±50A | ±3kW | 1U |

| | Model | Current | Power | Size |
|------|------------------|---------|-------|------|
| 500V | IT-M3902C-500-12 | ±12A | ±2kW | 1U |
| | IT-M3904C-500-24 | ±24A | ±4kW | 1U |
| | IT-M3906C-500-36 | ±36A | ±6kW | 1U |
| | IT-M3912C-500-72 | ±72A | ±12kW | 2U |

| | Model | Current | Power | Size |
|-------|-------------------|---------|-------|------|
| 1500V | IT-M3906C-1500-12 | ±12A | ±6kW | 1U |
| | IT-M3912C-1500-24 | ±24A | ±12kW | 2U |

*1 SAS1000L/SAS1000M software is Optional to 85V SAS modes to support PV simulation function

*2 SAS1000M software is included as a standard accessory for 150V PV models

*All specifications are subject to change without notice.

APPLICATION

PV energy storage

Grid-tied inverters, Energy storage converter, Residential solar battery storage system

Super capacitor/Battery

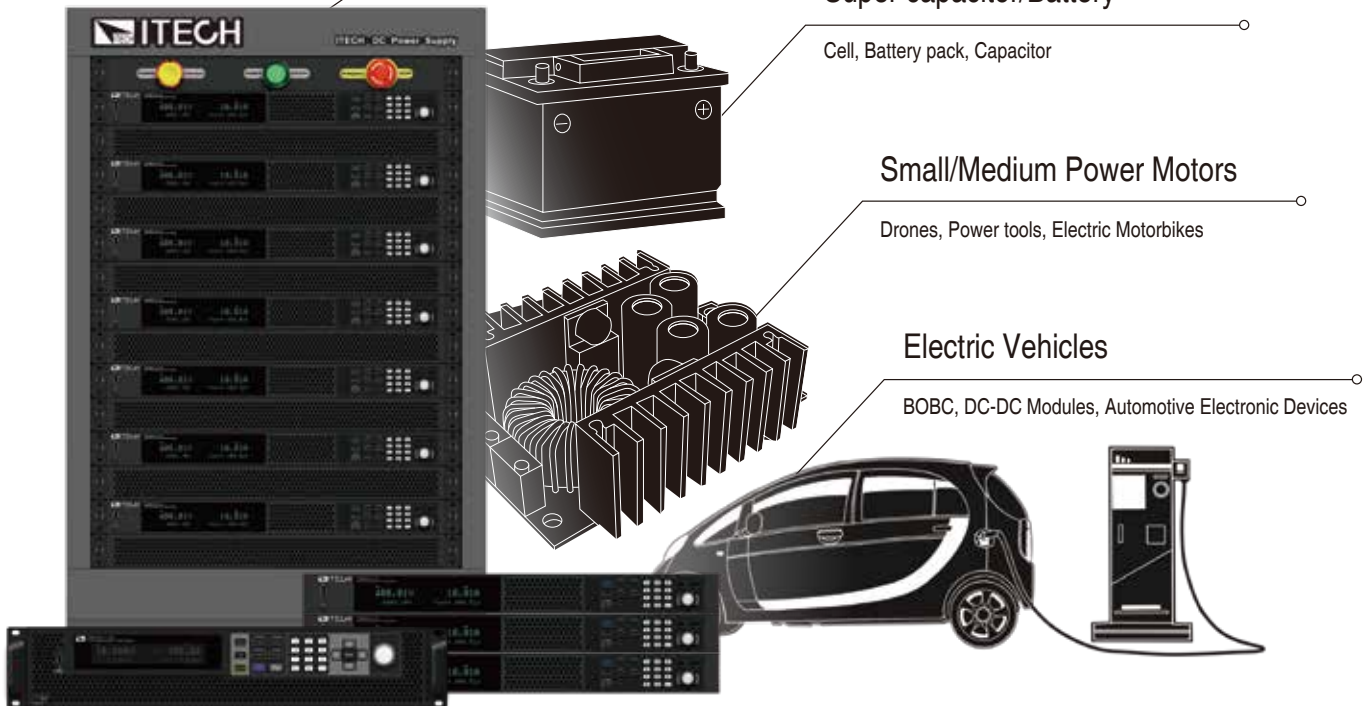
Cell, Battery pack, Capacitor

Small/Medium Power Motors

Drones, Power tools, Electric Motorbikes

Electric Vehicles

BOBC, DC-DC Modules, Automotive Electronic Devices

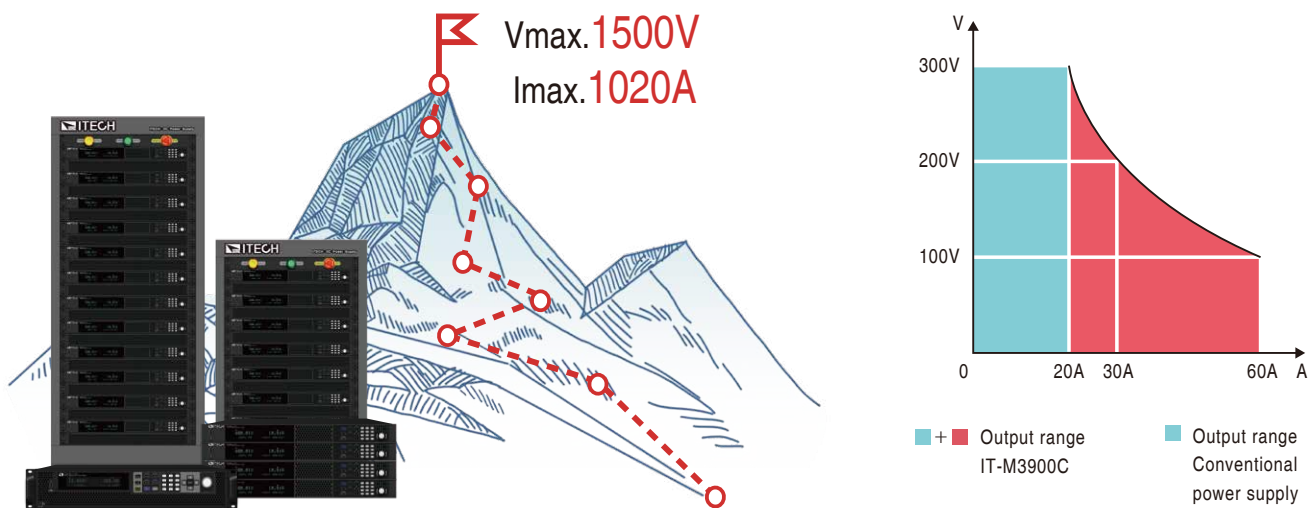


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Wide range output

There are 32 models included in IT-M3900C series. The output voltage ranges from 10V to 1500V and the maximum output current of a single unit can reach 1020A. The wide-range output design provides more voltage and current combinations than conventional fixed-range output DC power supplies, which is more flexible. Just a single unit can cover a wide range of applications which makes it easy to build power systems and largely save room for you at the same time.



Power regenerative and eco-friendly

With the power regeneration function, IT-M3900C can feed back up to 95% 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. In addition, IT-M3900C has the function of automatic grid detection, which can detect phase voltage and frequency in real time and synchronizes with the grid to make energy regeneration automatic and safe.

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

| Power | Electricity cost saved (appr. USD/year) | CO2 emission reduced (appr. ton/year) |
|-------|---|---------------------------------------|
| 6 kW | 6,971 | 50 |
| 12 kW | 13,943 | 99 |
| 36 kW | 41,828 | 298 |
| 96 kW | 111,541 | 794 |

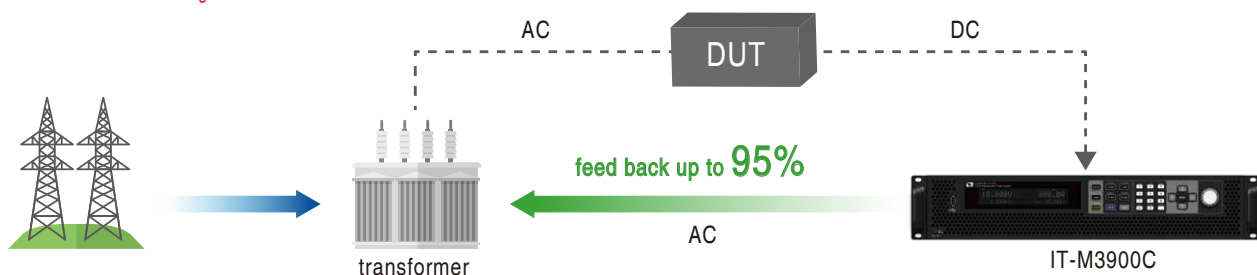
R&D lab : 8Hr/day x 5 work days x 52 weeks

| Power | Electricity cost saved (appr. USD/year) | CO2 emission reduced (appr. ton/year) |
|-------|---|---------------------------------------|
| 6kW | 1,747 | 12 |
| 12 kW | 3,494 | 24 |
| 36 kW | 10,483 | 71 |
| 96 kW | 27,955 | 189 |

* The data is based on :

1. approximate electricity price 0.14USD/kWh for industry facility
2. 1kWh power consumption \approx 0.997 CO emission

* The extra cost of air conditioning is not included.

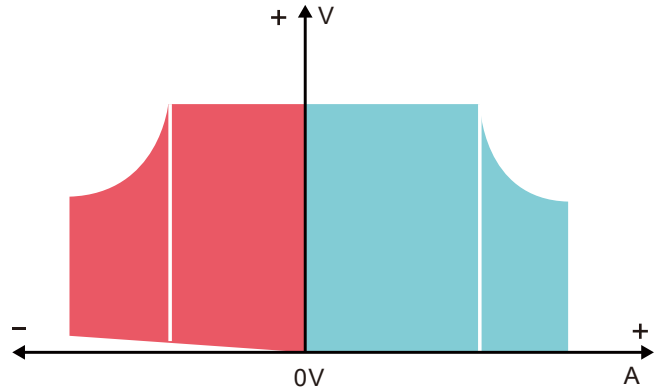


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IT-M3900C Bidirectional Programmable DC Power Supply

Bidirectional current, seamless switching

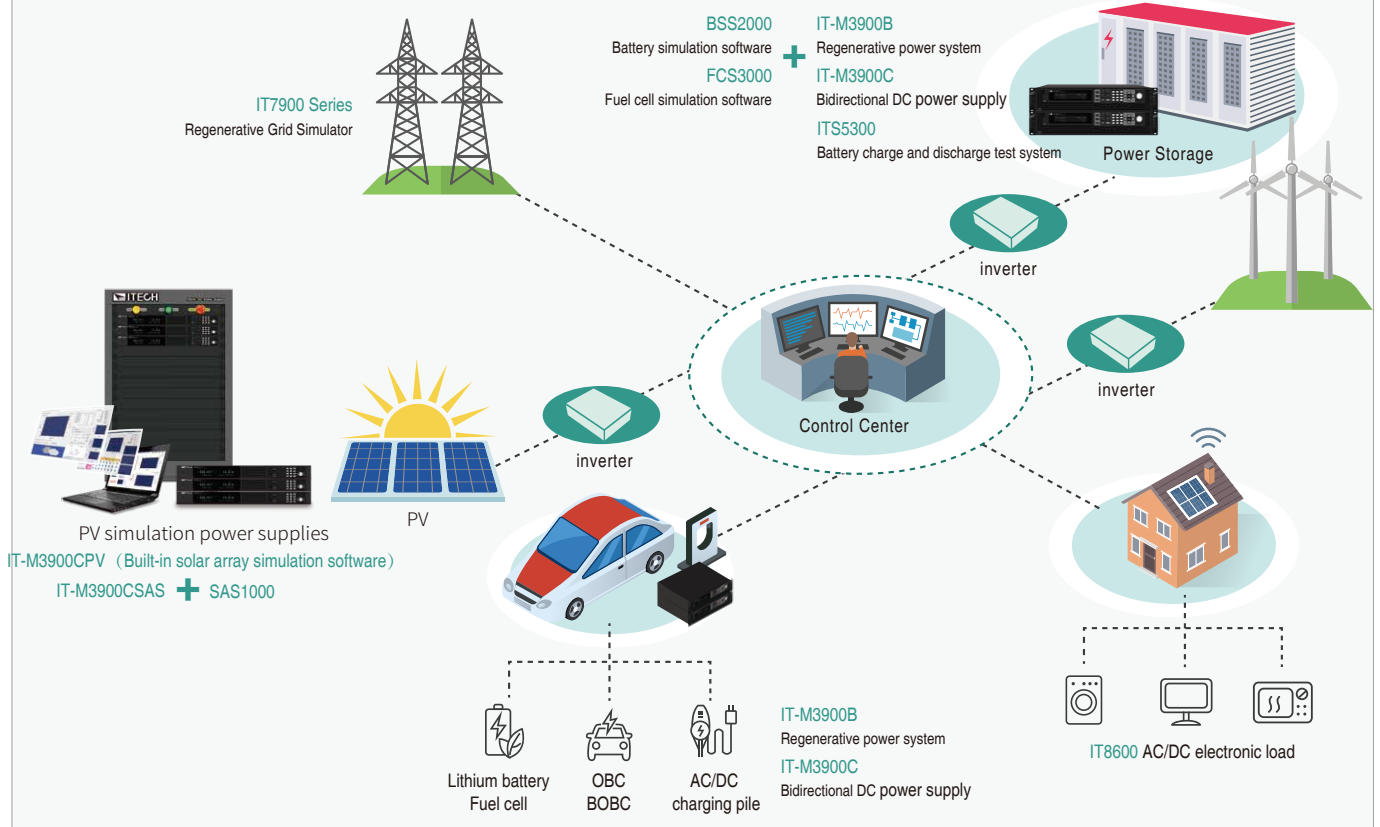
The IT-M3900C series integrates bidirectional power supply and regenerative load functional characteristics in one unit for continuous supply and absorption of current. It not only can realize the function of power source, but also capable of sink to load current, that realize the fast and continuous seamless switching between output and sink current , to effectively avoid voltage or current overshoot. Compared with the conventional power supply and load test solutions, it not only saves the purchase cost, but also saves space and greatly simplifies the connection operation of the devices.



Application: Microgrid Testing

Microgrid can be regarded as a tiny power system, and also a typical distributed power generation function system. Therefore, whether they are equipment manufacturers or professional power grid research laboratories, it is all necessary to establish simulation test requirements.

- As a photovoltaic simulation source, IT-M3900C PV/SAS can accurately simulate the I-V curve of the solar cell array and solar panels to supply power for the inverter to test the photovoltaic inverter.
- As a battery simulator, IT-M3900C not only can simulate the battery to power up the inverter, but also meets the testing requirements of energy storage converters (PCS), various energy storage devices, and OBC/BOBC.
- IT-M3900C also has a built-in voltage curve for standard automotive power grids, including LV123/LV148 and other new energy vehicle regulations testing, which can be applied to many automotive electrical characteristics testing without the additional purchase of software.



Your Power Testing Solution

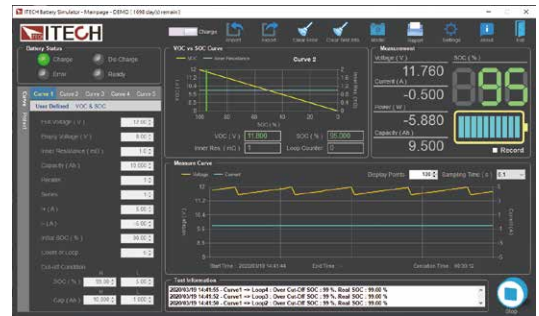
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CC&CV priority function

CC/CV priority can continue to help users solve various severe problems in long-term test applications to make applications that require high-speed power or non-overshoot more flexible. The CC&CV priority function of IT-M3900C allows the user to select the response speed and the loop working mode of the CC/CV loop to determine whether the output is high-speed voltage mode or non-overshoot current mode, which is suitable for high-power integrated circuit testing, charging and discharging testing, power transient simulation and characterization of automotive electronics, etc.

Battery simulation function

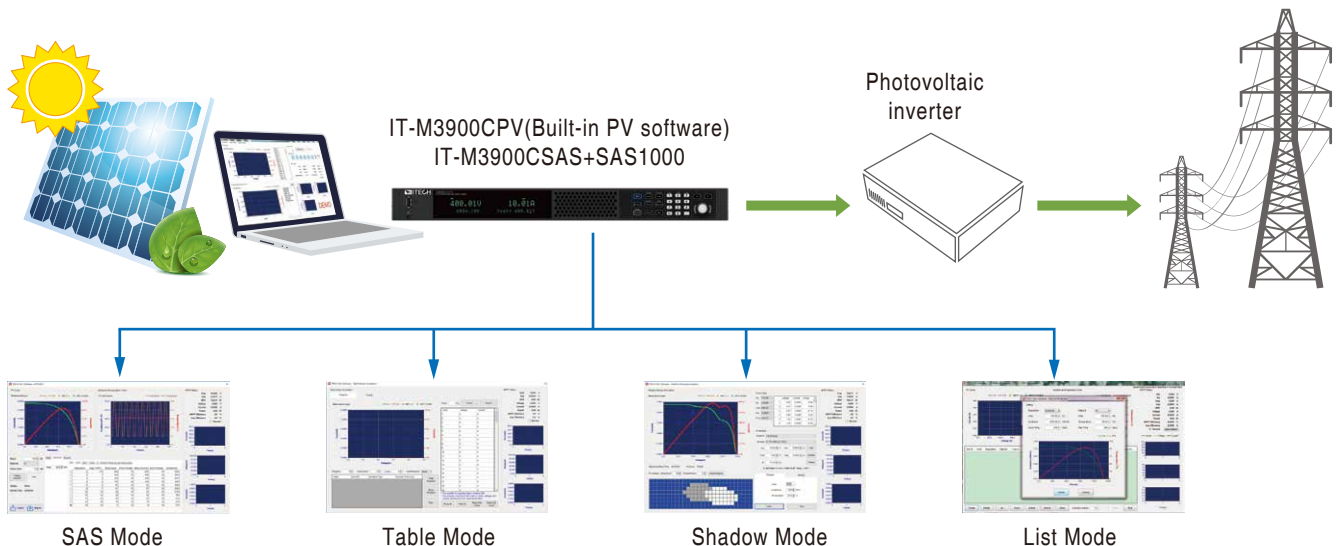
IT-M3900C series due to its unique bidirectional design and variable output impedance, the voltage, capacity, internal resistance and SOC of the battery can be set quickly through the panel to define the battery model to simulate the charging and discharging characteristics of the battery and assist in other various test. Meanwhile, users can also choose optional ITECH professional BSS2000 battery simulation software to set the common parameters of the battery pack to quickly establish the battery characteristic curve and the initial capacity of the battery, so as to verify the characteristics of the product in different battery states. The characteristics of the state. At the same time, BSS2000 supports users to import matlab battery modules or import the actual battery charge and discharge curve through csv file to make it more realistic



BSS2000 battery simulation software test UI

Solar array simulation

Both IT-M3900CPV and IT-M3900CSAS are PV simulation power supplies. They have a built-in MPPT function, which can simulate PV curves for MPPT testing of solar arrays/modules/batteries. The PV models are equipped with multi-channel solar array simulation software and the SAS models are equipped with SAS1000 solar array simulation software. They are used to accurately simulate the I-V curve of the solar array. Its built-in SAS models of EN50530, Sandia, NB/T32004, CGC/GF004, and CGC/GF035 can help users easily set parameters and simulate I-V curve output. Reports are then automatically generated. It is used to test the static and dynamic MPPT performance of PV inverters. Users can also edit I-V curves with up to 4096 points to achieve dynamic cloud shield effects, or store 100 I-V curves under different irradiation and temperature, and set the execution time and order of each curve to test long-term MPPT performance of the PV inverter under different climatic conditions.

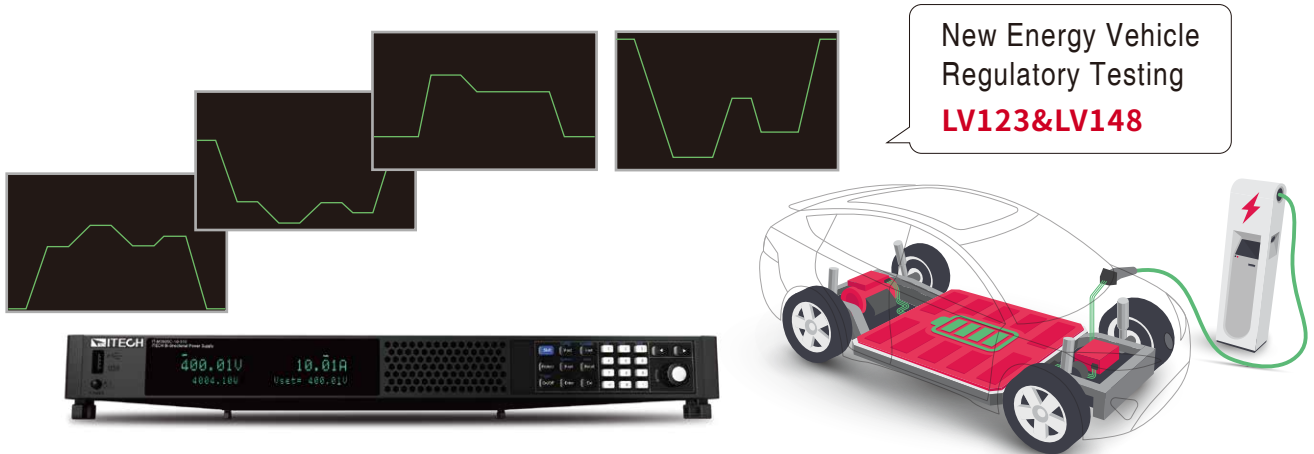


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Built-in a variety of standard automotive test curves

Automotive electronics may often encounter power transients during vehicle start-up and operation. To ensure that the device under test can withstand these actual transients, the tester must simulate worst-case power transient conditions during the test. According to the relevant standards of the industry, IT-M3900C had not only built-in standard automotive voltage curve DIN40839, ISO-16750-2, SAEJ1113-11 LV124 and ISO21848, but also built-in LV123, LV148 and other standards for new energy vehicles testing. Users can directly retrieve from the panel to test the performance of relevant automotive electronics, without reprogramming or purchasing additional test software, saving effort and money compared to other competitive products.



High efficiency parallel connection technology

Considering the user's convenience and versatility, IT-M3900C can use master/slave control mode to connect multiple power supplies in parallel to meet high-power testing requirements. Meanwhile ITECH fiber optic parallel technology fully solve the problems of slow speed and poor accuracy of traditional parallel methods. It is suitable for calibration and measurement, R&D lab, production line and ATE test.

* Parallel connection is not recommended under PV simulation function

The parameters will not change after parallel connection

Calibration is not requested after parallel connection

Optical fiber transfer between master and slave, guarantee perfect performance of anti-interference

Adopt Optical fiber isolation technology, effective protection of the device and DUT

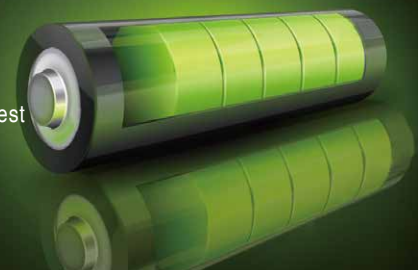
Charging/Discharging test

IT-M3900C series have unique bidirectional design, variable output impedance and CC / CV / CP / CR four operation modes under load mode, one unit IT-M3900C can simulate the charging and discharging characteristics of the battery and realize the setting of various test conditions and data processing of the battery. It is suitable for charging / discharging tests of various portable batteries.

ITS5300 Battery Test System

The following test items can be realized:

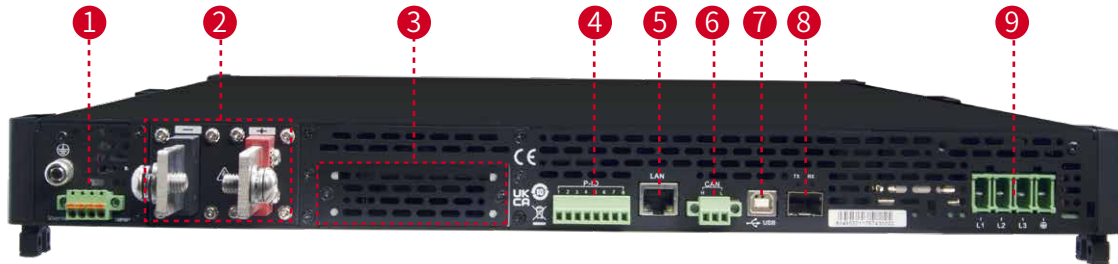
- Working conditions simulation
- Charge & discharge characteristic test
- Battery cycle life test
- Battery conformance test
- Battery DCIR test
- Battery temperature test
- Battery capacity test
- Battery pack endurance test
- Reliability test
- Battery overcharge/over discharge endurance test












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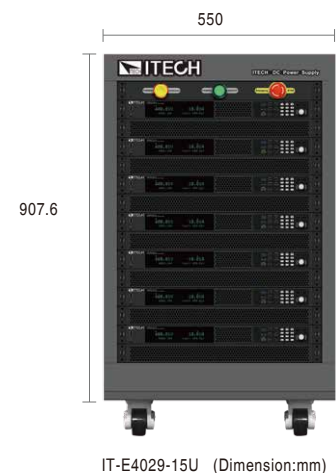
Multiple interfaces



| | | | | |
|---|---|---|--|---|
| <p>1 Sense terminals (Vs+, Vs-)</p>  | <p>2 DC output terminals of the power supply</p>  | <p>3 Interface for optional accessories</p>  | <p>4 Digital I/O interface: P-IO</p>  | <p>5 LAN Communication Interface</p>  |
| <p>6 CAN Communication Interface</p>  | <p>7 USB Communication Interface</p>  | <p>8 Communication interface of outer ring optical fiber (TX and RX)</p>  | <p>9 terminals (L1, L2, L3, and PE)</p>  | |

Optional Accessories

| Category | Model | Specification | Description |
|-------------------|-----------------|---|---|
| Parallel kit | IT-E4029-15U | IT15U cabinet | 800mm×550mm X907.6mm |
| | IT-E4029-27U | IT27U cabinet | 800mm×600mm×1362.75mm |
| | IT-E4029-37U | IT37U cabinet | 800mm×600mm×1764.35mm |
| | IT-E168 | Optical fiber cable kit | Used for parallel connection between the units in a cabinet |
| | IT-E155A/B/C | Cabinet rack mount Kit | Cabinet rack mount installation |
| Functional Module | IT-E165A-250 *1 | Anti-reverse protection unit 750V/250A | avoid reverse connection |
| | IT-E165A-400 *1 | Anti-reverse protection unit 750V/400A | avoid reverse connection |
| | IT-E165A-500 *1 | Anti-reverse protection unit 900V/400A | avoid reverse connection |
| | IT-E165B *2 | Anti-EMF unit1200V/200A | avoid current back flow |
| Other accessories | IT-E258E | 5m power cord for 1U/2U unit, EU standard | AC input power cord |
| | IT-E258E-15U | 5m power cord for 15U unit, EU standard | AC input power cord |
| | IT-E258E-27U | 5m power cord for 27U unit, EU standard | AC input power cord |
| | IT-E258E-37U | 5m power cord for 37U unit, EU standard | AC input power cord |
| | IT-E176 | GPIOB communication interface | |
| | IT-E177 | RS232&analog communication card | |



*1 The voltage/current of the DUT must be within the IT-E165A rated range

*2 The voltage/current of the DUT must be within the IT-E165B rated range

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Specification

| | | IT-M3905C-10-510 | IT-M3906C-32-240 | IT-M3906C-80-120 |
|-----------------------------------|-----------------------------------|--|--|--|
| Rated value | Voltage | 0 ~ 10V | 0 ~ 32V | 0 ~ 80V |
| | Current | -360A ~ 510A | -240A ~ 240A | -120A ~ 120A |
| | Power | -3600W ~ 5100W | -6000W ~ 6000W | -6000W ~ 6000W |
| | Series IR(CV priority) | 0 ~ 0.02Ω | 0 ~ 0.2Ω | 0 ~ 0.3Ω |
| | Load resistance(CC priority mode) | 0.003Ω ~ 1Ω | 0.005Ω ~ 400Ω | 0.01Ω ~ 800Ω |
| Setup Resolution | Voltage | 0.001V | 0.001V | 0.001V |
| | Current | 0.1A | 0.01A | 0.01A |
| | Power | 1W | 1W | 1W |
| | Series IR(CV priority) | 0.001Ω | 0.001Ω | 0.001Ω |
| | Load resistance(CC priority mode) | 0.001Ω | 0.001Ω | 0.01Ω |
| Readback Resolution | Voltage | 0.001V | 0.001V | 0.001V |
| | Current | 0.1A | 0.01A | 0.01A |
| | Power | 1W | 1W | 1W |
| Setup Accuracy | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| | Series IR(CV priority) | ≤ 1%FS | ≤ 1%FS | ≤ 1%FS |
| | Load resistance(CC priority mode) | Max.: $1/(1/R_{set}+(1/R_{set})^{0.1+0.008})$ Min.: $1/(1/R_{set}-(1/R_{set})^{0.1-0.008})$ | Max.: $1/(1/R_{set}+(1/R_{set})^{0.05+0.0005})$ Min.: $1/(1/R_{set}-(1/R_{set})^{0.05-0.0005})$ | Max.: $1/(1/R_{set}+(1/R_{set})^{0.05+0.0005})$ Min.: $1/(1/R_{set}-(1/R_{set})^{0.05-0.0005})$ |
| Readback Accuracy | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| Voltage Ripple ^{*1} | Peak value | ≤ 65mVpp | ≤ 80mVpp | ≤ 200mVpp |
| | RMS | ≤ 10mV | ≤ 30mV | ≤ 60mV |
| Rise Time (no load) | Voltage | ≤ 50ms | ≤ 30ms | ≤ 15ms |
| Rise Time (full load) | Voltage | ≤ 100ms | ≤ 60ms | ≤ 30ms |
| Fall Time (no load) | Voltage | ≤ 100ms | ≤ 60ms | ≤ 30ms |
| Fall Time (full load) | Voltage | ≤ 50ms | ≤ 30ms | ≤ 15ms |
| Dynamic Response Time | Voltage | ≤ 10ms | ≤ 1ms ^{*2} | ≤ 1ms ^{*2} |
| Power Regulation Rate | Voltage | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| Load Regulation Rate | Voltage | 0.0035%*1 + 0.05%FS | ≤ 0.02% + 0.02%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.05% + 0.05%FS | ≤ 0.05% + 0.05%FS | ≤ 0.05% + 0.05%FS |
| Input Protection Scope | OCP | -370A or 520A | -250A or 250A | -125A or 125A |
| | OVP | 10.5V | 33V | 82V |
| | OPP | -3672W or 5202W | -6120W or 6120W | -6120W or 6120W |
| Remote Sense Compensation Voltage | | ≤ 2V | ≤ 2V | ≤ 2V |
| AC Input ^{*3} | Voltage | 3φ 110V ~ 520V 1φ 85V ~ 300V | 3φ 110V ~ 520V 1φ 85V ~ 300V | 3φ 110V ~ 520V 1φ 85V ~ 300V |
| | Frequency | 50/60Hz | 50/60Hz | 50/60Hz |
| Max. AC Apparent Power | | 5.55kVA | 6.5kVA | 6.5kVA |
| Max. AC Current | | 12.5Aac | 12.5Aac | 12.5Aac |
| Max. Efficiency | | 92% | 91% | 92% |
| Power Factor | | 0.99 | 0.99 | 0.99 |
| DC Component | | ≤ 0.2A | ≤ 0.2A | ≤ 0.2A |
| Current Harmonic | | ≤ 3% | ≤ 3% | ≤ 3% |
| Program Response Time | | 0.1ms | 0.1ms | 0.1ms |
| Withstand Voltage (DC to ground) | | 300Vdc | 300Vdc | 300Vdc |
| Withstand Voltage (AC to ground) | | 3500Vdc | 3500Vdc | 3500Vdc |

*1 The ripple is got under three-phase AC input

*2 25% - 90% rated current

* This information is subject to change without notice.

*3 The AC will be limited to 12.5Aac. When the AC input is low, power will be limited. E.g:
Three-phase input, line voltage 200Vac, the power is: $P=200Vac \times 12.5Aac \times 1.732=4330VA$
Single-phase input, phase voltage 200Vac, the power is: $P=200Vac \times 12.5Aac=2500VA$

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Specification

| | | IT-M3906C-85-120SAS | IT-M3901C-150-25PV | IT-M3903C-150-50PV |
|-----------------------------------|------------------------------------|---------------------------------|--|--|
| Rated value | Voltage | 0 ~ 85V | 0 ~ 150V | 0 ~ 150V |
| | Current | -120A ~ 120A | -25A ~ 25A | -50A ~ 50A |
| | Power | -6000W ~ 6000W | -1500W ~ 1500W | -3000W ~ 3000W |
| | Series IR(CV priority) | 0 ~ 0.3Ω | 0 ~ 0.5Ω | 0 ~ 0.5Ω |
| | Load resistance(CC priority mode) | / | 0.04Ω ~ 1500Ω | 0.02Ω ~ 1500Ω |
| Setup Resolution | Voltage | 0.001V | 0.01V | 0.01V |
| | Current | 0.01A | 0.001A | 0.001A |
| | Power | 1W | 1W | 1W |
| | Series IR(CV priority) | 0.001Ω | 0.001Ω | 0.001Ω |
| | Load resistance(CC priority mode) | / | 0.01Ω | 0.01Ω |
| Readback Resolution | Voltage | 0.001V | 0.01V | 0.01V |
| | Current | 0.01A | 0.001A | 0.001A |
| | Power | 1W | 1W | 1W |
| Setup Accuracy | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| | Series IR(CV priority) | ≤ 1%FS | ≤ 1%FS | ≤ 1%FS |
| | Load resistance(CC priority mode) | / | Max.: 1/(1/Rset+(1/Rset)*0.05+0.0005) Min.: 1/(1/Rset-(1/Rset)*0.05-0.0005) | Max.: 1/(1/Rset+(1/Rset)*0.05+0.0005) Min.: 1/(1/Rset-(1/Rset)*0.05-0.0005) |
| Readback Accuracy | Resolution(V-I curve) | 1024 | 1024 | 1024 |
| | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| Voltage Ripple | Peak value | ≤ 200mVpp | ≤ 360mVpp | ≤ 360mVpp |
| | RMS | ≤ 60mV | ≤ 50mV | ≤ 50mV |
| Rise Time (no load) | Voltage | ≤ 15ms | ≤ 50ms | ≤ 50ms |
| Rise Time (full load) | Voltage | ≤ 30ms | ≤ 50ms | ≤ 50ms |
| Fall Time (no load) | Voltage | ≤ 30ms | ≤ 50ms | ≤ 50ms |
| Fall Time (full load) | Voltage | ≤ 15ms | ≤ 50ms | ≤ 50ms |
| Dynamic Response Time | Voltage | ≤ 1ms ^{*2} | ≤ 1ms ^{*2} | ≤ 1ms ^{*2} |
| Power Regulation Rate | Voltage | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| Load Regulation Rate | Voltage | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.03% + 0.03%FS | ≤ 0.05% + 0.05%FS | ≤ 0.05% + 0.05%FS |
| Input Protection Scope | OCP | -125A or 125A | -26A or 26A | -52A or 52A |
| | OVP | 86V | 160V | 160V |
| | OPP | -6120W or 6120W | -1530W or 1530W | -3060W or 3060W |
| Remote Sense Compensation Voltage | | ≤ 2V | ≤ 5V | ≤ 5V |
| AC Input ^{*3} | Voltage | 3φ 110V ~ 520V 1φ 85V ~ 300V | 3φ 200V ~ 480V 1φ 100V ~ 240V | 3φ 200V ~ 480V 1φ 100V ~ 240V |
| | Frequency | 50/60Hz | 50/60Hz | 50/60Hz |
| Max. AC Apparent Power | | 6.5kVA | 1.65kVA | 3.3kVA |
| Max. AC Current | | 12.5Aac | 12.5Aac | 12.5Aac |
| Max. Efficiency | | 92% | 92% | 92% |
| Power Factor | | 0.99 | 0.99 | 0.99 |
| DC Component | | ≤ 0.2A | ≤ 0.2A | ≤ 0.2A |
| Current Harmonic | | ≤ 3% | ≤ 3% | ≤ 3% |
| Program Response Time | | 0.1ms | 0.1ms | 0.1ms |
| Withstand Voltage (DC to ground) | | 300Vdc | 1500Vdc | 1500Vdc |
| Withstand Voltage (AC to ground) | | 3500Vdc | 3500Vdc | 3500Vdc |

*1 The ripple is got under three-phase AC input

*2 25% - 90% rated current

* This information is subject to change without notice.

*3 The AC will be limited to 12.5Aac. When the AC input is low, power will be limited. E.g:
Three-phase input, line voltage 200Vac, the power is: $P=200Vac*12.5Aac*1.732=4330VA$
Single-phase input, phase voltage 200Vac, the power is: $P=200Vac*12.5Aac=2500VA$

Your Power Testing Solution

IT-M3900C Bidirectional Programmable DC Power Supply

Specification

| | | IT-M3906C-300-60 | IT-M3906C-500-36 | IT-M3906C-800-24 |
|-----------------------------------|------------------------------------|--|--|--|
| Rated value | Voltage | 0 ~ 300V | 0 ~ 500V | 0 ~ 800V |
| | Current | -60A ~ 60A | -36A ~ 36A | -24A ~ 24A |
| | Power | -6000W ~ 6000W | -6000W ~ 6000W | -6000W ~ 6000W |
| | Series IR(CV priority) | 0 ~ 1Ω | 0 ~ 1Ω | 0 ~ 1Ω |
| | Load resistance(CC priority mode) | 0.05Ω ~ 3000Ω | 0.1Ω ~ 5000Ω | 0.15Ω ~ 7500Ω |
| Setup Resolution | Voltage | 0.01V | 0.01V | 0.01V |
| | Current | 0.001A | 0.001A | 0.001A |
| | Power | 1W | 1W | 1W |
| | Series IR(CV priority) | 0.001Ω | 0.01Ω | 0.01Ω |
| | Load resistance(CC priority mode) | 0.01Ω | 0.01Ω | 0.01Ω |
| Readback Resolution | Voltage | 0.01V | 0.01V | 0.01V |
| | Current | 0.001A | 0.001A | 0.001A |
| | Power | 1W | 1W | 1W |
| Setup Accuracy | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| | Series IR(CV priority) | ≤ 1%FS | ≤ 1%FS | ≤ 1%FS |
| | Load resistance(CC priority mode) | Max.: $1/(1/Rset+(1/Rset)*0.05+0.0001)$ Min.: $1/(1/Rset-(1/Rset)*0.05-0.0001)$ | Max.: $1/(1/Rset+(1/Rset)*0.05+0.0001)$ Min.: $1/(1/Rset-(1/Rset)*0.05-0.0001)$ | Max.: $1/(1/Rset+(1/Rset)*0.05+0.0001)$ Min.: $1/(1/Rset-(1/Rset)*0.05-0.0001)$ |
| Readback Accuracy | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| Voltage Ripple | Peak value | ≤ 300mVpp ^{*1} | ≤ 500mVpp ^{*1} | ≤ 1000mVpp ^{*1} |
| | RMS | ≤ 50mV ^{*1} | ≤ 80mV ^{*1} | ≤ 100mV ^{*1} |
| Rise Time (no load) | Voltage | ≤ 30ms | ≤ 30ms | ≤ 30ms |
| Rise Time (full load) | Voltage | ≤ 60ms | ≤ 60ms | ≤ 60ms |
| Fall Time (no load) | Voltage | ≤ 30ms | ≤ 30ms | ≤ 30ms |
| Fall Time (full load) | Voltage | ≤ 15ms | ≤ 15ms | ≤ 15ms |
| Dynamic Response Time | Voltage | ≤ 1ms ^{*2} | ≤ 1ms ^{*2} | ≤ 1ms ^{*2} |
| Power Regulation Rate | Voltage | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| Load Regulation Rate | Voltage | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.05% + 0.05%FS | ≤ 0.05% + 0.05%FS | ≤ 0.05% + 0.05%FS |
| Input Protection Scope | OCP | -63A or 63A | -37A or 37A | -25A or 25A |
| | OVP | 303V | 505V | 808V |
| | OPP | -6120W or 6120W | -6120W or 6120W | -6120W or 6120W |
| Remote Sense Compensation Voltage | | ≤ 3V | ≤ 5V | ≤ 8V |
| AC Input ^{*3} | Voltage | 3φ 110V ~ 520V 1φ 85V ~ 300V | 3φ 110V ~ 520V 1φ 85V ~ 300V | 3φ 110V ~ 520V 1φ 85V ~ 300V |
| | Frequency | 50/60Hz | 50/60Hz | 50/60Hz |
| Max. AC Apparent Power | | 6.5kVA | 6.5kVA | 6.5kVA |
| Max. AC Current | | 12.5Aac | 12.5Aac | 12.5Aac |
| Max. Efficiency | | 94.5% | 94.5% | 94.5% |
| Power Factor | | 0.99 | 0.99 | 0.99 |
| DC Component | | ≤ 0.2A | ≤ 0.2A | ≤ 0.2A |
| Current Harmonic | | ≤ 3% | ≤ 3% | ≤ 3% |
| Program Response Time | | 0.1ms | 0.1ms | 0.1ms |
| Withstand Voltage (DC to ground) | | 600Vdc | 800Vdc | 1000Vdc |
| Withstand Voltage (AC to ground) | | 3500Vdc | 3500Vdc | 3500Vdc |

*1 The ripple is got under three-phase AC input

*2 25% - 90% rated current

* This information is subject to change without notice.

*3 The AC will be limited to 12.5Aac. When the AC input is low, power will be limited. E.g:
Three-phase input, line voltage 200Vac, the power is: $P=200Vac*12.5Aac*1.732=4330VA$
Single-phase input, phase voltage 200Vac, the power is: $P=200Vac*12.5Aac=2500VA$

Specification

| | | IT-M3906C-1500-12 | IT-M3912C-1500-24 |
|-----------------------------------|------------------------------------|--|--|
| Rated value | Voltage | 0 ~ 1500V | 0 ~ 1500V |
| | Current | -12A ~ 12A | -24A ~ 24A |
| | Power | -6000W ~ 6000W | -12000W ~ 12000W |
| | Series IR(CV priority) | 0 ~ 1Ω | 0 ~ 1Ω |
| | Load resistance(CC priority mode) | 0.5Ω ~ 7500Ω | 0.25Ω ~ 3750Ω |
| Setup Resolution | Voltage | 0.01V | 0.01V |
| | Current | 0.001A | 0.001A |
| | Power | 1W | 1W |
| | Series IR(CV priority) | 0.01Ω | 0.01Ω |
| | Load resistance(CC priority mode) | 0.01Ω | 0.01Ω |
| Readback Resolution | Voltage | 0.01V | 0.01V |
| | Current | 0.001A | 0.001A |
| | Power | 1W | 1W |
| Setup Accuracy | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| | Series IR(CV priority) | ≤ 1%FS | ≤ 1%FS |
| | Load resistance(CC priority mode) | Max.: $1/(1/Rset+(1/Rset)*0.05+0.0001)$ Min.: $1/(1/Rset-(1/Rset)*0.05-0.0001)$ | Max.: $1/(1/Rset+(1/Rset)*0.05+0.0001)$ Min.: $1/(1/Rset-(1/Rset)*0.05-0.0001)$ |
| Readback Accuracy | Voltage | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| | Current | ≤ 0.1% + 0.1%FS | ≤ 0.1% + 0.1%FS |
| | Power | ≤ 0.5% + 0.5%FS | ≤ 0.5% + 0.5%FS |
| Voltage Ripple | Peak value | ≤ 1500mVpp ^{*1} | ≤ 1500mVpp ^{*1} |
| | RMS | ≤ 150mV ^{*1} | ≤ 150mV ^{*1} |
| Rise Time (no load) | Voltage | ≤ 30ms | ≤ 30ms |
| Rise Time (full load) | Voltage | ≤ 60ms | ≤ 60ms |
| Fall Time (no load) | Voltage | ≤ 30ms | ≤ 30ms |
| Fall Time (full load) | Voltage | ≤ 15ms | ≤ 15ms |
| Dynamic Response Time | Voltage | ≤ 1ms ^{*2} | ≤ 1ms ^{*2} |
| Power Regulation Rate | Voltage | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.03% + 0.03%FS | ≤ 0.03% + 0.03%FS |
| Load Regulation Rate | Voltage | ≤ 0.01% + 0.01%FS | ≤ 0.01% + 0.01%FS |
| | Current | ≤ 0.05% + 0.05%FS | ≤ 0.05% + 0.05%FS |
| Input Protection Scope | OCP | -12.5A or 12.5A | -25A or 25A |
| | OVP | 1515V | 1515V |
| | OPP | -6120W or 6120W | -12240W or 12240W |
| Remote Sense Compensation Voltage | | ≤ 15V | ≤ 15V |
| AC Input ^{*3} | Voltage | 3φ 110V ~ 520V 1φ 85V ~ 300V | 3φ 200V ~ 480V |
| | Frequency | 50/60Hz | 50/60Hz |
| Max. AC Apparent Power | | 6.5kVA | 13kVA |
| Max. AC Current | | 12.5Aac | 25Aac |
| Max. Efficiency | | 94.5% | 94.5% |
| Power Factor | | 0.99 | 0.99 |
| DC Component | | ≤ 0.2A | ≤ 0.2A |
| Current Harmonic | | ≤ 3% | ≤ 3% |
| Program Response Time | | 0.1ms | 0.1ms |
| Withstand Voltage (DC to ground) | | 1800Vdc | 1800Vdc |
| Withstand Voltage (AC to ground) | | 3500Vdc | 3500Vdc |

^{*1} The ripple is got under three-phase AC input

^{*2} 25% - 90% rated current

* This information is subject to change without notice.

^{*3} The AC will be limited to 12.5Aac. When the AC input is low, power will be limited. E.g: Three-phase input, line voltage 200Vac, the power is: $P=200Vac*12.5Aac*1.732=4330VA$
Single-phase input, phase voltage 200Vac, the power is: $P=200Vac*12.5Aac=2500VA$



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