ITECH

YOUR POWER TESTING SOLUTION

IT-M3800

Regenerative DC Electronic Load

Your Power Testing Solution

IT-M3800
Regenerative DC electronic load

The IT-M3900 product family includes four series : DC power supply, bidirectional power supply, regenerative power system and regenerative DC electronic load. It keeps the consistent high power density design of the M series.
In a 1U unit, the power can reach up to 6kW, the current can reach 510A, and the voltage is up to 1500V, which greatly saves your room. Rich models and powerful functions allow you to complete various complex tests with confidence.

IT-M3800 series regenerative DC electronic load can not only perform as a DC load, but also feed back power to the grid, which saves electricity and cooling costs for you. It can complete high-precision output and measurement, and supports multiple protection functions. It is well applied to the test of 5G communication and data center, industrial components test, aging test, PV and energy storage test, power optimizer and other fields.

FEATURE

- Compact design, 1U@6kW, 2U@12kW
- Voltage range: 10~1500V
- Current range: 8A~720A
- Power range: 12kW
- Master/slave parallel connection, keep good performance while power extension*1
- Efficient power regeneration - reduce cost of electricity and cooling
  Slope of voltage, current and power is settable
- Battery discharge test
- Short-circuit simulation
- List function, max.200 steps
- 8 operation modes under Source mode : CC/CV/CW/CR/
- CC+CV/CV+CR/CR+CC/CC+CV+CW+CR
  Von function - On/Off control
- Multiple protection: OVP / ±OCP / ±OPP / OTP /voltage transient
- drop protection/anti-islanding
  Power grid automatic detection
- Built-in USB/CAN/LAN/digital IO interfaces, Optional GPIB/
- Analog&RS232

*This series 10V of 2U models can support up to 8 units in parallel, other models can support up to 16 units in parallel.

	Model	Current	Power	Size
10V	IT-M3801-10-120	3~120A	12~1200W	1U
	IT-M3802-10-240	4~240A	40~2400W	1U
	IT-M3803-10-360	6~360A	60~3600W	1U
	IT-M3807-10-720	12~720A	120~7200W	2U

	Model	Current	Power	Size
32V	IT-M3802-32-80	80A	2kW	1U
	IT-M3804-32-160	160A	4kW	1U
	IT-M3806-32-240	240A	6kW	1U
	IT-M3812-32-480	480A	12kW	2U

	Model	Current	Power	Size
80V	IT-M3802-80-40	40A	2kW	1U
	IT-M3804-80-80	80A	4kW	1U
	IT-M3806-80-120	120A	6kW	1U
	IT-M3812-80-240	240A	12kW	2U

	Model	Current	Power	Size
300V	IT-M3802-300-20	20A	2kW	1U
	IT-M3804-300-40	40A	4kW	1U
	IT-M3806-300-60	60A	6kW	1U
	IT-M3812-300-120	120A	12kW	2U

	Model	Current	Power	Size
500V	IT-M3802-500-12	12A	2kW	1U
	IT-M3804-500-24	24A	4kW	1U
	IT-M3806-500-36	36A	6kW	1U
	IT-M3812-500-72	72A	12kW	2U

	Model	Current	Power	Size
800V	IT-M3802-800-8	8A	2kW	1U
	IT-M3804-800-16	16A	4kW	1U
	IT-M3806-800-24	24A	6kW	1U
	IT-M3812-800-48	48A	12kW	2U

	Model	Current	Power	Size
1500V	IT-M3806-1500-12	12A	6kW	1U
	IT-M3812-1500-24	24A	12kW	2U

*This information is subject to change without notice.

APPLICATION

5G Communications & Data Centre

Server power supply, HVDC power supply
48V rack power supply

Industrial component

Fuse, automotive connector, current sensor

Photovoltaic Energy Storage

MPPT DC-DC power supply, power optimizer

Aging

Power module, wiring harness

Your Power Testing Solution

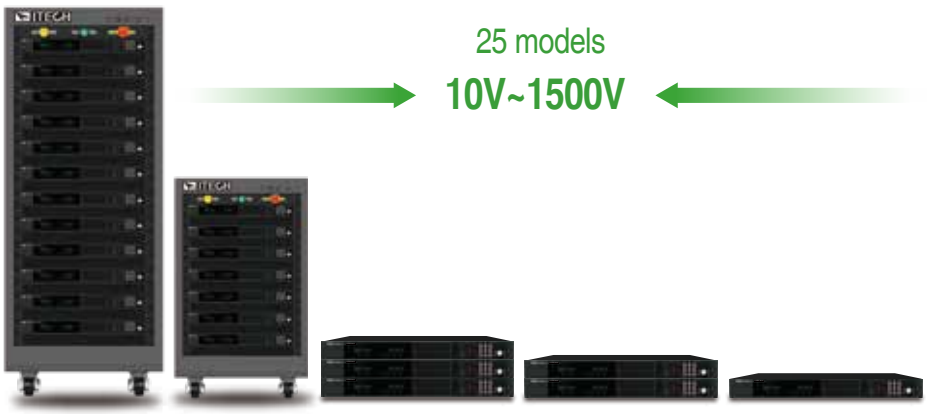
IT-M3800 Regenerative DC electronic load

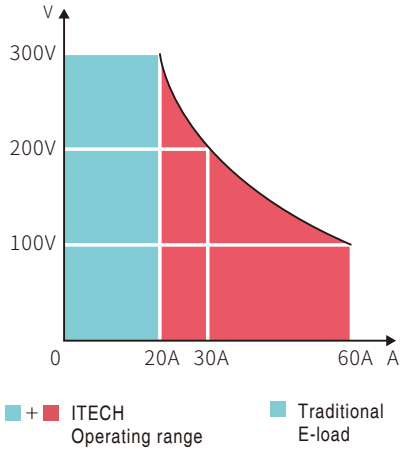
High power density, compact size design

ITECH has been adhering to the high power density design to help customers optimize test solutions. IT-M3800 series provide up to 6kW power in 1U chassis, and up to 12kW power in 2U chassis. ITECH entire high power density product line is more complete and comprehensive.

Wide range design， save your purchasing cost

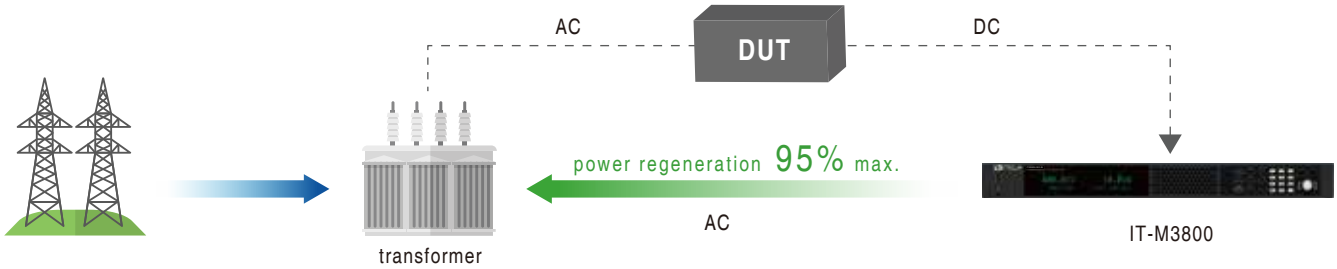
The IT-M3800 series has 25 models, with voltage from 10V~1500V and current up to 720 A. The wide range design provides users with more voltage and current combinations than the traditional fixed range DC loads, making it more flexible. A single unit can cover a wide range of applications, significantly reducing the complexity of system building and saving room.





Power regenerative and eco-friendly

With the power regeneration function, IT-M3800 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-M3800 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)	CO_2 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

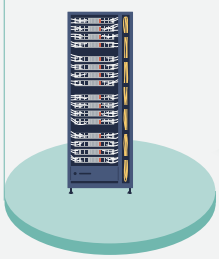
Power	Electricity cost saved (appr. USD/year)	CO_2 emission reduced (appr. ton/year)
6kW	1,747	12
12 kW	3,494	24
36 kW	10,483	71
96 kW	27,955	189

* The data is based on :
1. approximate electricity price 0.14USD/kWh for industry facility
2. 1kWh power consumption ≈ 0.997 CO emission
* The extra cost of air conditioning is not included.

Application - Burn-in test of power supply for 5G communication

- Server power supply(12V/1000W~2000W)
- 48V power supply(48V/4000~5000W)
- HVDC power supply（240V/280V/336V）
- UPS

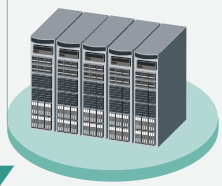
power supply for 5G communication



1st generation solution Resistive load box

Low precision, not programmable, heavy heat

2nd generation solution Energy-consuming electronic load



Programmable but high electric cost

New solution Regenerative electronic load

IT-M3800 advantage

The increasing channels for burn-in test requires higher power density solutions. IT-M3800 stand-alone 1U unit is well applied to the burn-in test of communication power supplies at different voltage levels under 6kW. Compared with the common 3U units with similar functions in the market, the efficiency of IT-M3800 has increased by nearly 40%.

Your Power Testing Solution

IT-M3800 Regenerative DC electronic load

Electricity accumulation, high energy saving effect

IT-M3800 uses power electronic conversion technology to recycle the output energy of the power supply under test under the premise of completing the test power experiment. Through the internal high-speed voltage and current sampling, the user can directly view the current total amount of feedback on the instrument panel, including voltage/frequency/power of each phase. The total power, real time and historical total recovered electricity. The IT-M3800 series can continue to accumulate electricity on the basis of the value before the last shutdown.

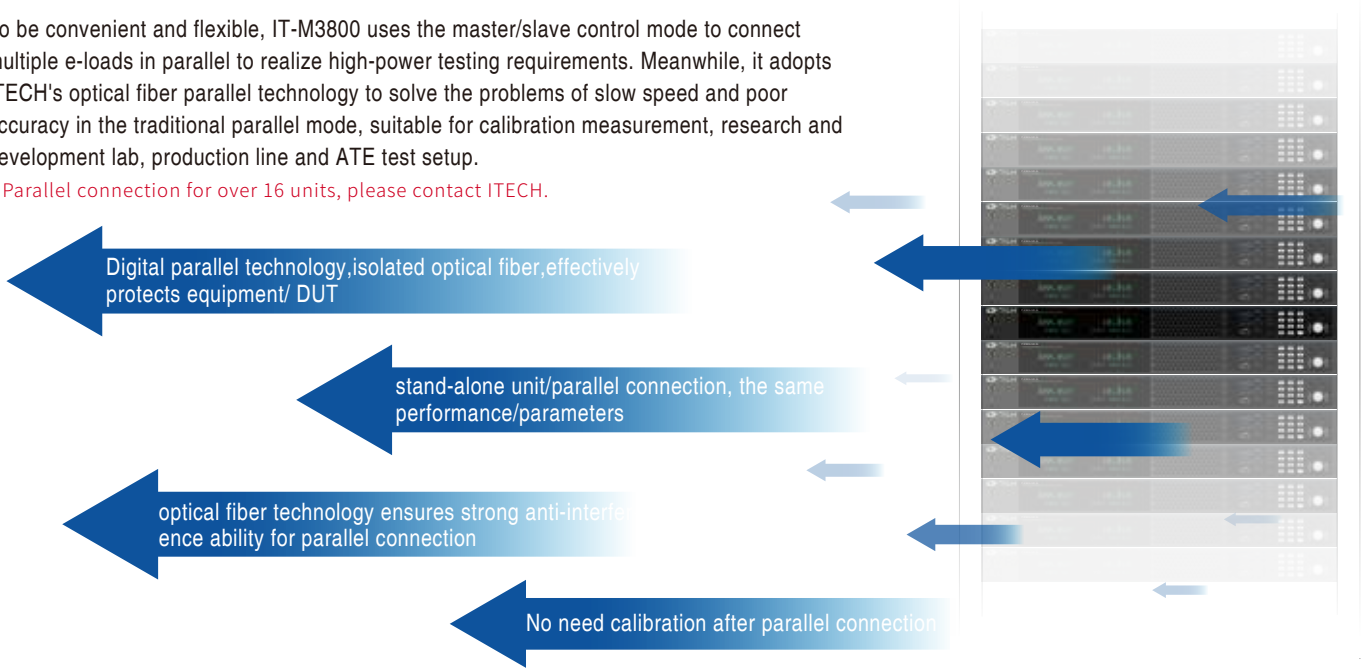
Battery discharge test

The IT-M3800 series have discharge test function, which is suitable for discharging tests on various portable batteries. Three test cut-off conditions of the battery can be set by yourself: cut-off voltage, cut-off capacity and discharge time. When any one of the three conditions is met, the test will be automatically interrupted. During the test, the battery voltage, discharge time and discharged capacity can be observed.

Parallel function

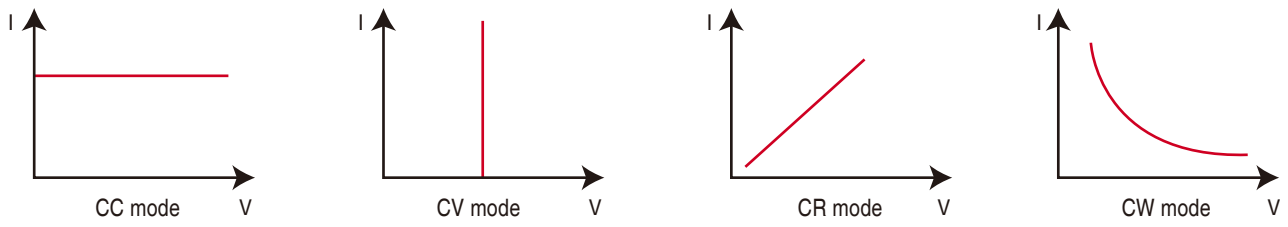
To be convenient and flexible, IT-M3800 uses the master/slave control mode to connect multiple e-loads in parallel to realize high-power testing requirements. Meanwhile, it adopts ITECH's optical fiber parallel technology to solve the problems of slow speed and poor accuracy in the traditional parallel mode, suitable for calibration measurement, research and development lab, production line and ATE test setup.

* Parallel connection for over 16 units, please contact ITECH.

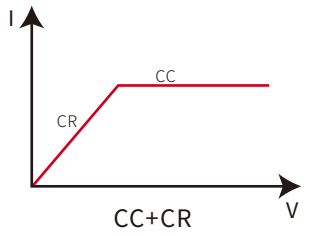


Multi operation modes

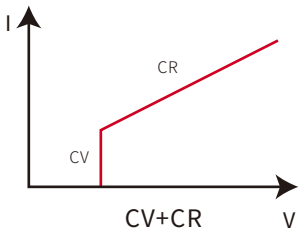
IT-M3800 provides four basic operating modes of CC/CV/CR/CW.



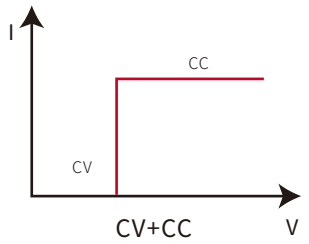
IT-M3800 supports 4 operation modes below :



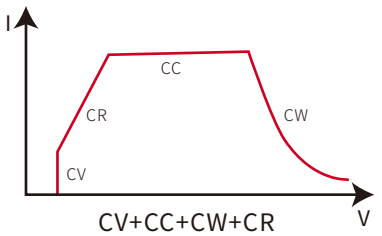
CC+CR mode is normally applied in the testings of OBC voltage limit, current limit characteristics, constant voltage and current accuracy testing, so as to prevent OBC over current protection.



CV+CR mode can be applied to simulate LED light, test LED power, LED current ripple parameters.

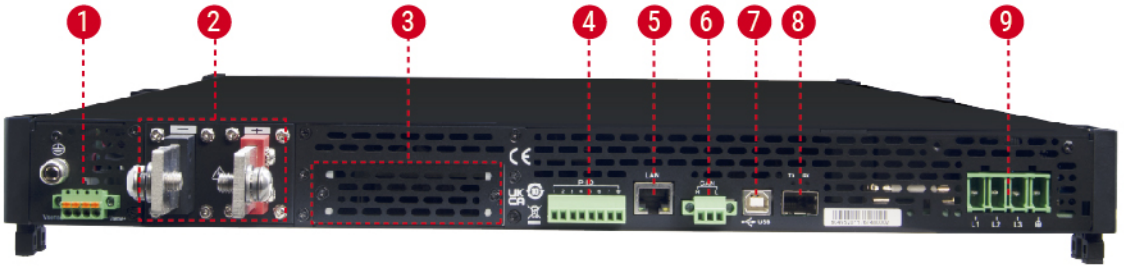


CV+CC mode can be applied to load simulate battery, test charging station or car charger, the maximum loading current is limited,when the CV is working.

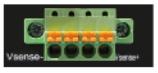


CV+CC+CW+CR mode can be applied to test lithium-ion battery charger, to gain complete V-I charging curve.In addition, when protection circuit of DUT is damaged, it can auto switch to aviod damage.

Rear panel interface



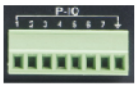
1 Rear panel interface



2 DC input terminals

3 Optional expansion slot

4 Digital I/O interface P-IO



5 LAN interface

6 CAN interface

7 USB interface

8 External optical fiber interface (TX and RX)

9 AC input terminals (L1、L2、L3、PE)

Optional accessories

Catergory	Model	Specifications	Description
Parallel kit	IT-E510-15U	15U unit，grey	800mm X 550mm X907.64mm
	IT-E511-15U	15U unit，black	800mm X 550mm X907.64mm
	IT-E510-27U	27U unit，grey	800mm X 600mmX 1441.41mm
	IT-E511-27U	27U unit，black	800mm X 600mmX 1441.41mm
	IT-E510-37U	37U unit，grey	800mm X 600mm X 1885.91mm
	IT-E511-37U	37U unit，black	800mm X 600mm X 1885.91mm
	IT-E168	Parallel optical fiber	For parallel use
	IT-E155A/B/C	Rack mount kits	Rack mounting installation
Function module	IT-E165A-250 *1	Anti-reverse module 750V/250A	Anti-reverse protection
	IT-E165A-400 *1	Anti-reverse module 750V/400A	Anti-reverse protection
	IT-E165A-500 *1	Anti-reverse module 900V/400A	Anti-reverse protection
Other accessories	IT-E258	3U module power cord, 5m, China standards	AC input power cord
	IT-E258-15U	15U cabinet power cord, 5m, China standards	AC input power cord
	IT-E258-27U	27U cabinet power cord, 5m, China standard	AC input power cord
	IT-E258-37U	37U cabinet power cord, 5m, China standard	AC input power cord
	IT-E176	GPIB communication card	
	IT-E177	RS232&Analog communication card	

*1 The DUT's voltage and current should be within the rated range of IT-E165A.

IT-E511-15U

Specification

		IT-M3803-10-360	IT-M3806-32-240	IT-M3806-80-120
Input Rating	Voltage	0～10V	0～32V	0～80V
	Current	6A～360A	0～240A	0～120A
	Power	60W～3600W	0～6000W	0～6000W
	Resistance	0.003Ω～1Ω	0.005Ω～400Ω	0.01Ω～800Ω
	Min. operation xoltage	0.6V at 360A	0.5V at 240A	0.8V at 120A
	Input leak current	0.03A	0.01A	0.01A
Input Resolution	Voltage	0.001V	0.001V	0.001V
	Current	0.1A	0.01A	0.01A
	Power	0.1W	0.1W	0.1W
	Resistance	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	≤0.05% + 0.05%FS	≤0.05% + 0.05%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
	Resistance*1	min.: 1/(1/Rset+(1/Rset)*0.1+0.008) max.: 1/(1/Rset-(1/Rset)*0.1-0.008)	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) max.: 1/(1/Rset-(1/Rset)*0.05-0.0005)
Readback Accuracy	Voltage	≤0.05% + 0.05%FS	≤0.05% + 0.05%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
Input Drift Temperature Coefficient	Voltage	≤30ppm/℃	≤30ppm/℃	≤30ppm/℃
	Current	≤50ppm/℃	≤50ppm/℃	≤50ppm/℃
Readback Drift Temperature Coefficient	Voltage	≤30ppm/℃	≤30ppm/℃	≤30ppm/℃
	Current	≤50ppm/℃	≤50ppm/℃	≤50ppm/℃
Dynamic Response Time	Rise speed rate	120A/ms	240A/ms	120A/ms
	Fall speed rate	120A/ms	240A/ms	120A/ms
	Dynamic frequence	100Hz	500Hz	500Hz
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	≤0.002%*I + 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
Short Circuit	Current	366A	244.8A	122.4A
Input Protection Scope	Ocp	375A	250A	125A
	Opp	3672W	6120W	6120W
Remote Aense Compensation Voltage		≤2V	≤5V	≤5V
AC Input *2	Voltage	3phase 200V～480V singel phase 100V～240V	3phase 200V～480V singel phase 100V～240V	3phase 200V～480V singel phase 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		90.5%	91%	92%
Power Factor		0.99	0.99	0.99
Dc Component		≤0.2A	≤0.2A	≤0.2A
Current Harmonic		≤3%	≤3%	≤3%
Working Temperature		0～40℃	0～40℃	0～40℃
Storage Temperature		-10℃～70℃	-10℃～70℃	-10℃～70℃
Programming Response Time		0.1ms	0.1ms	0.1ms
Withstand Voltage (DC to ground)		300Vdc	300Vdc	300Vdc
Withstand Voltage (AC to ground)		3500Vdc	3500Vdc	3500Vdc
Type Of Cooling		air	air	air

*1 Resistance accuracy -- current / voltage not less than 10%FS
*2 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
* This information is subject to change without notice.

Your Power Testing Solution

IT-M3800 Regenerative DC electronic load

Specification

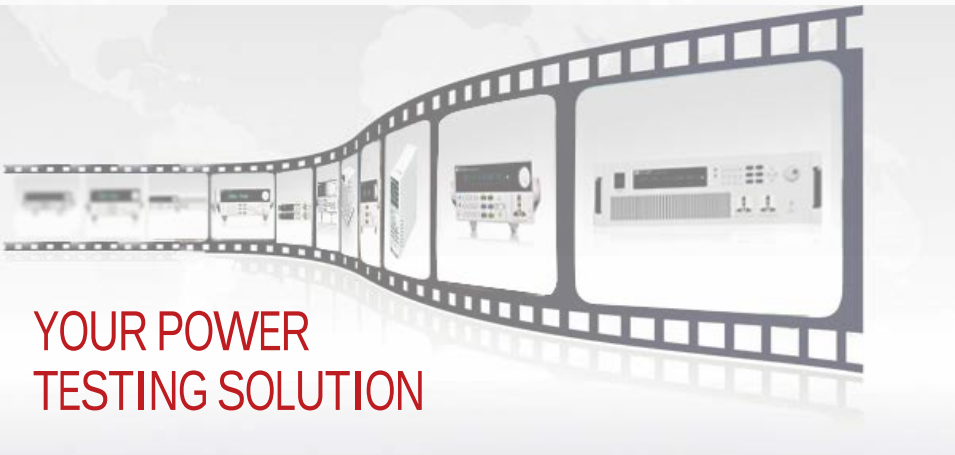
		IT-M3806-300-60	IT-M3806-500-36
Input Rating	Voltage	0～300V	0～500V
	Current	0～60A	0～36A
	Power	0～6000W	0～6000W
	Resistance	0.05Ω～3000Ω	0.1Ω～5000Ω
	Min. operation xoltage	3V at 60A	2.5V at 36A
	Input leak current	0.01A	0.003A
Input Resolution	Voltage	0.001V	0.01V
	Current	0.01A	0.001A
	Power	0.1W	1W
	Resistance	0.01Ω	0.01Ω
Readback Resolution	Voltage	0.001V	0.01V
	Current	0.01A	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
	Resistance*1	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)
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
Input Drift Temperature Coefficient	Voltage	≤30ppm/℃	≤30ppm/℃
	Current	≤50ppm/℃	≤50ppm/℃
Readback Drift Temperature Coefficient	Voltage	≤30ppm/℃	≤30ppm/℃
	Current	≤50ppm/℃	≤50ppm/℃
Dynamic Response Time	Rise speed rate	60A/ms	36A/ms
	Fall speed rate	60A/ms	36A/ms
	Dynamic frequence	500Hz	500Hz
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
Short Circuit	Current	62A	36.72A
Input Protection Scope	Ocp	63A	37A
	Opp	6120W	6120W
Remote Aense Compensation Voltage		≤5V	≤5V
AC Input *2	Voltage	3phase 200V～480V singel phase 100V～240V	3phase 110V～520V singel phase 85V～300V
	Frequency	50/60Hz	50/60Hz
Max. AC Apparent Power		6.5kVA	6.5kVA
Max. AC Current		12.5Aac	12.5Aac
Max. Efficiency		94.5%	94.5%
Power Factor		0.99	0.99
Dc Component		≤0.2A	≤0.2A
Current Harmonic		≤3%	≤3%
Working Temperature		0～40℃	0～40℃
Storage Temperature		-10℃～70℃	-10℃～70℃
Programming Response Time		0.1ms	0.1ms
Withstand Voltage (DC to ground)		800Vdc	800Vdc
Withstand Voltage (AC to ground)		3500Vdc	3500Vdc
Type Of Cooling		air	air

*1 Resistance accuracy -- current / voltage not less than 10%FS
*2 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
* This information is subject to change without notice.

Specification

		IT-M3806-800-24	IT-M3806-1500-12
Input Rating	Voltage	0～800V	0～1500V
	Current	0～24A	0～12A
	Power	0～6000W	0～6000W
	Resistance	0.15Ω～7500Ω	0.5Ω～7500Ω
	Min. operation xoltage	4V at 24A	7.5V at 12A
	Input leak current	0.003A	0.003A
Input Resolution	Voltage	0.01V	0.01V
	Current	0.001A	0.001A
	Power	1W	1W
	Resistance	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
	Resistance *1	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)
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
Input Drift Temperature Coefficient	Voltage	≤30ppm/℃	≤30ppm/℃
	Current	≤50ppm/℃	≤50ppm/℃
Readback Drift Temperature Coefficient	Voltage	≤30ppm/℃	≤30ppm/℃
	Current	≤50ppm/℃	≤50ppm/℃
Dynamic Response Time	Rise speed rate	24A/ms	12A/ms
	Fall speed rate	24A/ms	12A/ms
	Dynamic frequence	500Hz	500Hz
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
Short Circuit	Current	24.48A	12.24A
Input Protection Scope	Ocp	25A	12.7A
	Opp	6120W	6120W
Remote Aense Compensation Voltage		≤8V	≤15V
AC Input *2	Voltage	3phase 200V～480V singel phase 100V～240V	3phase 200V～480V singel phase 100V～240V
	Frequency	50/60Hz	50/60Hz
Max. AC Apparent Power		6.5kVA	6.5kVA
Max. AC Current		12.5Aac	12.5Aac
Max. Efficiency		94.5%	94.5%
Power Factor		0.99	0.99
Dc Component		≤0.2A	≤0.2A
Current Harmonic		≤3%	≤3%
Working Temperature		0～40℃	0～40℃
Storage Temperature		-10℃～70℃	-10℃～70℃
Programming Response Time		0.1ms	0.1ms
Withstand Voltage (DC to ground)		1600Vdc	1800Vdc
Withstand Voltage (AC to ground)		3500Vdc	3500Vdc
Type Of Cooling		air	air

*1 Resistance accuracy -- current / voltage not less than 10%FS
*2 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
* This information is subject to change without notice.



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