APM Technologies

MOMENTUM

— S SERIES —

WIDE RANGE PROGRAMMABLE DC POWER SUPPLY

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Momentum S series is a single output programmable DC power supply with single phase or three phase input options, it supports universal input voltage. With high power density structure design to achieve 10kW output power in 2U model, it can meet higher power requirements through optical fiber parallel. Moreover, it adopts a wide-range output design, which expands the output range of current and voltage at full power output, making it more flexible to use.
High-end appearance with a simple UI touch interface and built-in unique test functions make them to meet the test applications such as system integration testing, battery charging and simulation, automotive electronic testing, solar panel simulation, etc..

Product Features

- Full touch flip panel design, simple UI interaction interface, easier and faster operation.
- Universal input voltage, single/three-phase input optional.
- High power density structure design, 2U/10kW.
- Wide range output design, full power provides a wider range of voltage and current combinations.
- Optical fiber parallel communication, strong anti-interference, extremely fast transmission, unchanged performance(Optional).
- Adjustable voltage/current slew rate.
- Constant voltage (CV), constant current (CC) and constant power (CP) operation mode, CC or CV working priority setting.
- List/ Step mode programming.
- DDS arbitrary function generator.*
- Solar panel I-V curve simulation function.*
- Smart 3-stage charging algorithm simulation.*
- Battery simulator function.*
- Built-in standard automotive power network voltage curves.*
- TTL/Analog control and monitoring(Optional).
- Supports SCPI commands, provides web GUI function.
- Full protection: OVP, OCP, OPP, OTP and SCP.
- Standard USB communication interface, optional GPIB/LAN& RS232/RS485/CAN.

*Only professional version units support these functions.

Quick Models Selection

Output Voltage	½ 2U	2U		
	3400W	3400W	6800W	10000W
80VDC	130A	130A	260A	390A
250VDC	55A	55A	110A	165A
500VDC	27A	27A	54A	80A
750VDC	*	*	*	55A
1000VDC	*	*	27A	*
1500VDC	*	*	*	27A

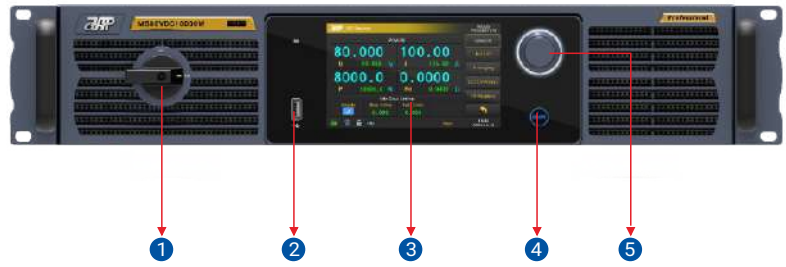
Supported Functions For Professional Version Only

No.	Description	Application
1	DDS arbitary function generator	Includes a true function generator, built-in typical functions, supports complex waveforms creation, used for testing purposes in development and production
2	Solar panel I-V curve simulation function	Users can set the parameters to simulate I-V curve characteristic output
3	Smart 3-stage charging algorithm simulation	Commonly used charging curve simulation
4	Battery simulator function	Truly simulate the changes of internal resistance of battery in charging and discharging test.
5	Built-in standard automotive power network voltage curves	Users can recall the built-in standard curve to do the DUT performance test directly.

Panel Introduction

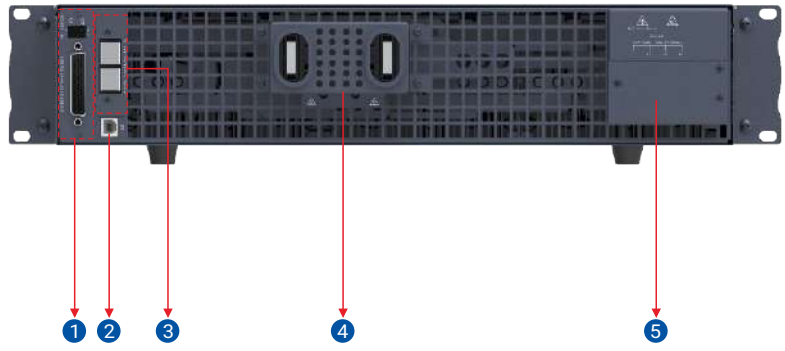
Front Panel Description

1. Power switch
2. USB port, for data transfers and firmware
3. Color touch screen
4. Output switch
5. Press knob



Rear Panel Description

1. GPIB communication interface (optional)/ CAN communication interface (optional)/ LAN&RS232 communication interface (optional)/ RS485 communication interface & External TTL/Analog control interface (optional)*
2. USB communication interface (standard)
3. SYSTEM BUS optical fiber interface (optional)
4. Output terminal
5. AC power input terminal



*The interface option occupies the same physical slot.

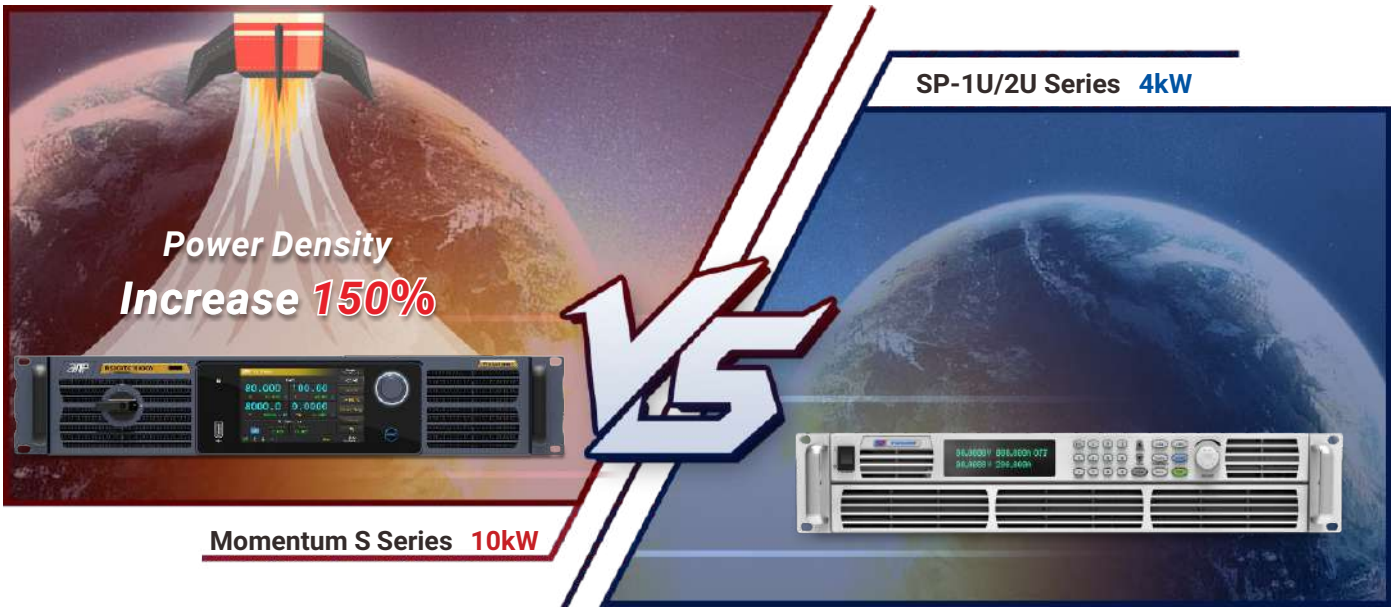
Features and Advantages

Clear, Intuitive, Convenient Touch Screen Design, More User-friendly

This series with full touch panel design, simple UI operation interface, easy to complete parameter settings and professional programming functions. The output parameters are displayed in capital letters, the remote reading is clearer and more intuitive. Supports front panel USB data loading and unloading, supports front panel flipping function, easy to operate and use.

Wide Output Range, High Power Density Design

Momentum S series single unit output voltage up to 1500V, output current up to 630A. The wide-range output design expands the output range of current and voltage at full power output to meet a wider range of testing needs without purchasing additional models. At the same time, it adopts high power density structure design, and achieves 10kW output power in 2U model, which is 150% higher than SP-1U/2U series power density.



Flexible Input Mode

This series supports global universal input voltage, and can choose single/three-phase AC input to meet more test application.

Rated Power / AC Input Voltage Selection	½ 2U	2U		
	3400W	3400W	6800W	10000W
1P208(187-305Vac)	√	√	√	
3P208(187-305Vac)	√	√	√	√
3P400(340-480Vac)	√	√	√	√

List/Program/Step Mode Programming

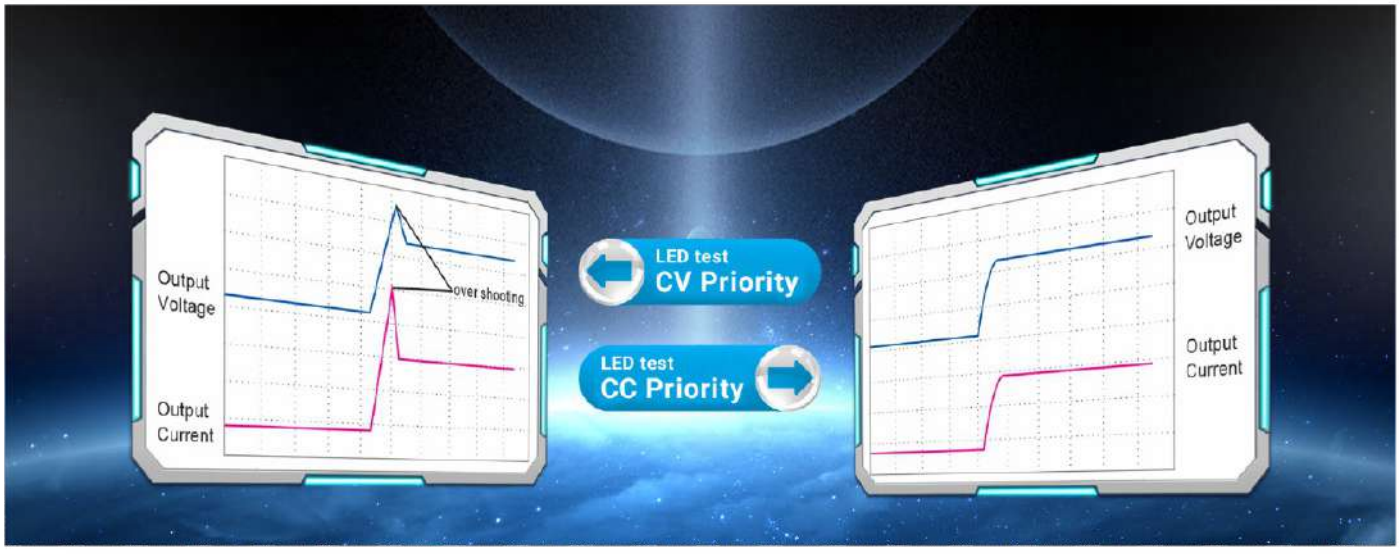
This series power supply provides List/Program/Step modes for output waveform programming. Users can edit the voltage/current value & the time of each step in advance and provide the power supply with a trigger signal. Then the preset sequences/waveform will be executed automatically according to the defined files. Sequence mode supports link between multiple files, the user can set the repeat times of each file and the total repeat times of the complete sequence file.

Optical Fiber Parallel, Perfect Performance

This series supports the master-slave function, and the parallel adopts high-speed optical fiber communication capability to achieve almost zero transmission delay. All functions can be synchronized without performance degradation, which fully solves the problems of slow speed and poor accuracy existing in the traditional parallel mode, and perfectly presents the operation experience such as stand-alone testing. Multiple sizes are provided for desktop use and system integration.

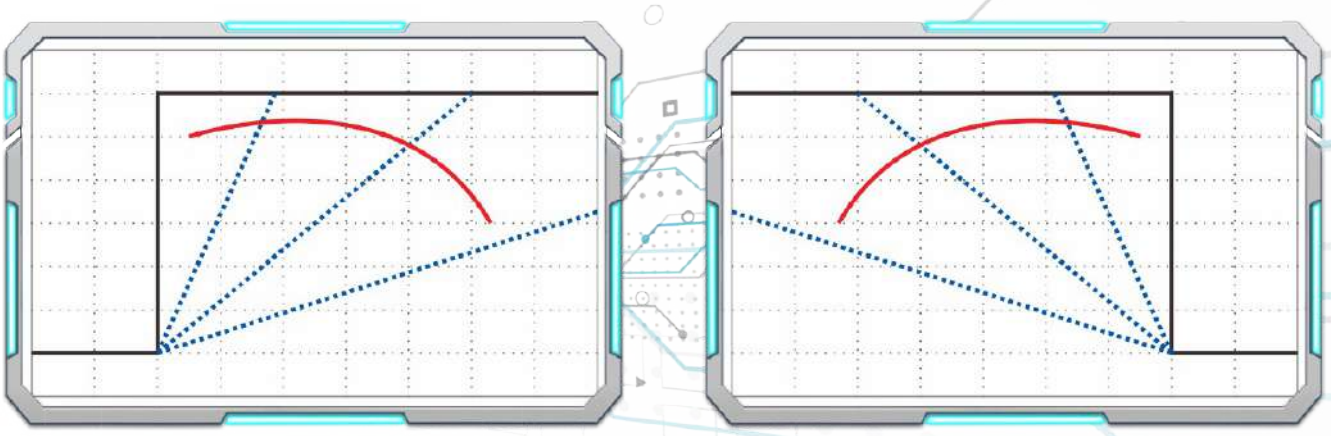
CC&CV Priority

This series power supply provides CC/CV priority function allows the user to select suitable mode correspond to test requirement, let the output be voltage high speed or current no overshoot mode. Below shows an application of CC priority to avoid current overshoot during LED test. Suitable for integrated circuit test, charge and discharge test, automotive electronics power transient simulation.



Adjustable Voltage/Current Slew Rate

This series power supply provides adjustable rise and fall time setting for voltage and current.



TTL/Analog Control and Monitoring(Optional)

Program the output voltage or current from zero to full range by connecting the external voltage (0-5 V / 0-10 V) or the external resistance (5-10 K), and through the analog monitoring function (0V-5V / 0-10V) to monitor the output voltage and current.

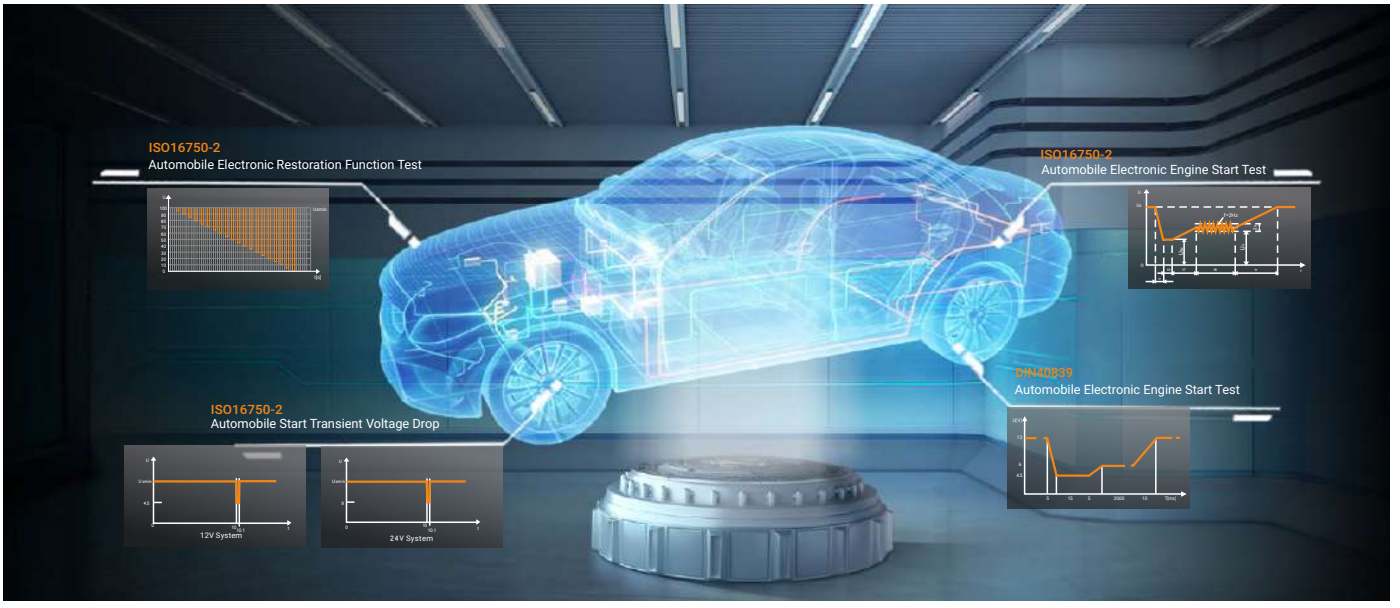
Professional Version Power Supply Function

DDS Arbitrary Function Generator

This series power supply includes a true function generator which can generate typical functions as displayed below, convenient for editing or directly recall. Additional to the standard functions, this arbitrary generator is accessible for the creation and execution of complex sets of functions, which is can be used for testing purposes in development and production.

Built-in Standard Automotive Power Network Voltage Curves

This series power supply has built-in German DIN40839 standard voltage curve for the automotive power network and the international standard ISO-16750-2 pulse waveform. The fast rise/fall response time together with arbitrary function generate ability make it can truly simulate the influence on the performance of automotive electronic equipment under different test conditions, is the preferred power testing instrument in the automotive electronics industry.

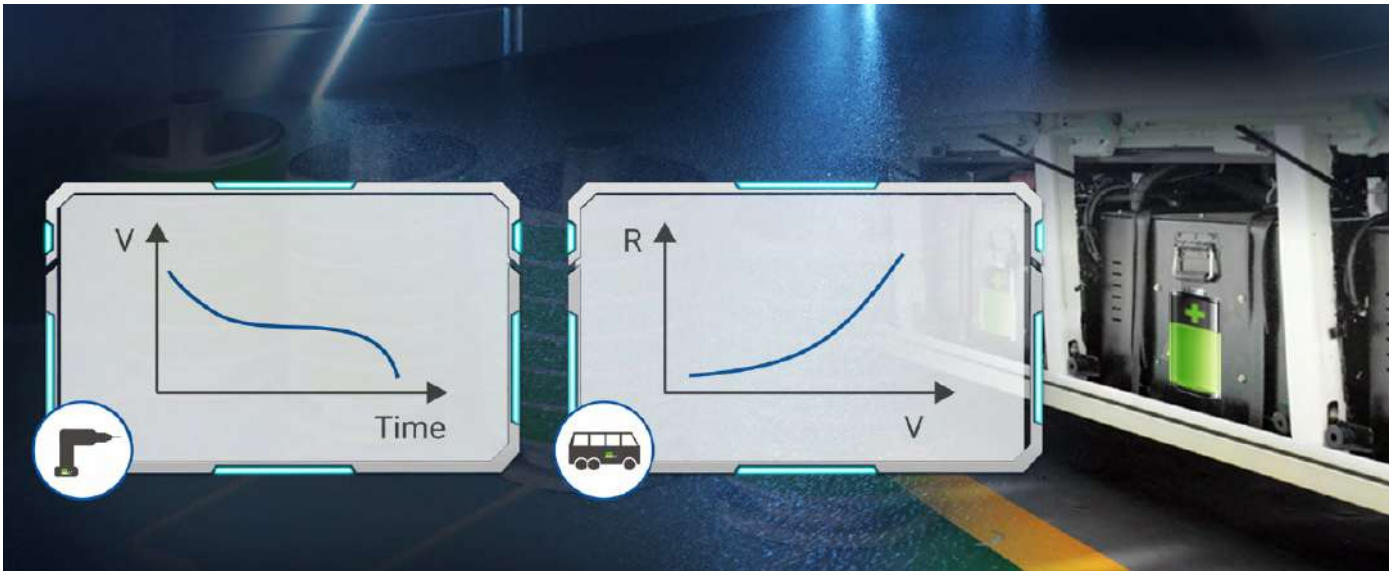


Solar Panel I-V Curve Simulation Function

The power supply provides an unique feature to simulate the output characteristics of a solar array includes Curve Mode, User-defined Mode and SAS Mode. With Curve mode, only need to set four parameters to simulate the solar array I-V curve. With User-defined mode,user can shape an I-V curve by entering up to 4096 points to simulate dynamic cloud cover effect which is useful for MPPT performance evaluation on PV inverter device. With built-in SAS mode, user can set the parameters to simulate I-V curve characteristic output and generate reports.

Battery Simulator Function

This series power supply built-in typical battery internal resistance curves and discharging curves can easily simulate battery behavior in real-case. It can be matched with battery simulation software, according to the change of external load current, the output voltage can be changed in real time according to the simulation curve. The software provides real-time data monitoring and data report query functions, providing real experimental data for engineers to study battery power systems.



Smart 3-stage Charging Algorithm Simulation

This series power supply adopts 3-stage charging algorithm, built-in charging curves which is suitable for the commonly known types of batteries on the market. Users can directly recall the default curves or change the switching conditions at different charging stage according to the test requirement. Through the internal design, it improved and optimized hardware improvements, the current passing from the battery to power supply will be less than 10mA at any battery voltage when turn off the power supply. Thus avoid battery capacity loss, even when there is no anti-reverse irrigation equipment.

MODEL		MS80VDC3400W	MS80VDC6800W	MS80VDC10000W
Input				
Voltage[1]		1P220 187~305Vac	1P220 187~305Vac	/
		2P208 187~305Vac	3P208 187~305Vac	3P208 187~305Vac
		2P400 340~480Vac	3P400 340~480Vac	3P400 340~480Vac
Current [1]		1P220 L,N-21A	1P220 L-21A,N-42A	/
		2P208 L3-0, L1,L2-21A	3P208 L1-37, L2,L3-21A	3P208 L1, L2,L3-37A
		2P400 L3-0, L1,L2-12A	3P400 L1-21, L2,L3-12A	3P400 L1, L2,L3-21A
Frequency		45-65Hz		
Connection		1ph+PE/2ph+PE	1ph+PE/3ph+PE	3ph+PE
Fuse (Internal) [1]		1P220 T30A*2PCS	1P220 T30A*2PCS	/
		2P208 T30A*2PCS	3P208 T30A*2PCS	3P208 T30A*2PCS
		2P400 T20A*2PCS	3P400 T20A*2PCS	3P400 T20A*2PCS
Power Factor		>0.99		
Input Power		1P220 3.9KVAmax	1P220 8KVAmax	/
		2P208 3.9KVAmax	3P208 8KVAmax	3P208 11.8KVAmax
		2P400 3.8KVAmax	3P400 7.85KVAmax	3P400 11.5KVAmax
Efficiency[1]		1P220 90.5%@80V , 1P220 86.5%@130A	1P220 90.5%@80V , 1P220 86.5%@130A	/
		2P208 90.5%@80V , 2P208 86.5%@130A	3P208 90.5%@80V , 3P208 86.5%@130A	3P208 90.5%@80V , 3P208 86.5%@130A
		2P400 92.5%@80V , 2P400 88%@130A	3P400 92.5%@80V , 3P400 88%@130A	3P400 92.5%@80V , 3P400 88%@130A
Output				
Voltage Range		0~80V		
Current Range [2]		0~130A	0~260A	0~390A
Power Range		0~3400W	0~6800W	0~10000W
Max. Setup Range	Voltage	0~80V		
	Current	0~130A	0~260A	0~390A
	Power	0~3400W	0~6800W	0~10000W
	Internal Resistance	0~19 Ω	0~9.2 Ω	0~6.2 Ω
Accuracy	Voltage	<0.1%Umax		
	Current	<0.2%Imax		
	Power	<0.5%+0.5%FS		
	Internal Resistance	R <2%Rmax, I< 0.3%Imax		
Line Regulation	Voltage	<0.02%Umax		
	Current	<0.05%Imax		
	Power	<0.05% Pmax		
Load Regulation [3]	Voltage	<0.05%Umax @Rated Voltage, <0.1%Umax @Rated Current		
	Current	<0.15%Imax		
	Power	<0.75% Pmax		
Rise Time	Voltage	<15ms(No Load) <50ms(Full Load)		
Drop Time	Voltage	<850ms(No Load) <15ms(Full Load)		
Transient Response Time[4]	Voltage	<1ms (Voltage will recover to ±0.5% when the load changes from 10% to 90%)		
Set Resolution	Voltage	0.006V		
	Current	0.01A	0.02A	0.03A
	Power	0.26W	0.52W	0.76W
	Internal Resistance	0.0015Ω	0.0007Ω	0.0005Ω
Display Resolution	Voltage	0.001V		
	Current	0.001A		
	Power	0.1W		
	Internal Resistance	0.0001Ω		
Measurement Accuracy	Voltage	<0.1%Umax		
	Current	<0.2%Imax		
	Power	<0.5%Pmax		
	Internal Resistance	<0.4% Rmax		

MODEL		MS80VDC3400W	MS80VDC6800W	MS80VDC10000W
Ripple [5]	Voltage	150mVpp/20mVrms		
	Current	65mArms	130mArms	195mArms
Remote Compensation		5%Umax		
General				
Graphic Display		5" Color touch LCD		
Operation Key Feature		Flippable touch screen, Rotary knod, USB port for transfer and upgrading firmware		
Rack Mount Handles		Yes		
FAN		Temperature control		
Protection		OVP, UVP, OCP, UCP, OPP, RMP protection parameters and other hardware protection such as OTP can be set.		
Interface		USB(Standard), RS232&LAN(Optional), GPIB(Optional), CAN(Optional)		
Command Response Time		<3ms		
Analog Interface / Industrial communication control (Optional)				
Industrial communication interface		RS485		
Set Value Inputs		Analog input 0~5V/0~10V or 0~5kΩ/0~10kΩ to set 0~105% voltage, current and power		
Actual Value Output		Analog output 0~5V/0~10V to monitor the voltage and current.		
Accuracy U/I/P/R		<0.2% F.S		
Actual Output U/I		<0.2%		
Control Signals		DC ON/OFF, External control Enable/Disable		
Status Signals		CV, OVP, OTP, OCP		
Sampling Rate of Input & Output		45Hz		
Galvanic Isolation to the Device		4242VDC		
Master/Slave Control				
Series Output		MAX 2 units		
Parallel Output		MAX 100 units		
Environmental				
Operating Temperature [2]		0~40°C		
Storage Temperature		-20~70°C		
Temperature coefficient of readback value		25ppm/°C (Voltage)		
		50ppm/°C (Current)		
Temperature coefficient of setting value		50ppm/°C (Voltage)		
		100ppm/°C (Current)		
Relative Humidity		<95%RH(non-condensing)@35°C, <80%RH(non-condensing)@40°C		
Altitude		<2000m@40°C		
Fan Noise		45dB Idle; 71dB Max;	45dB Idle; 73dB Max;	45dB Idle; 75dB Max;
Mechanical				
Dimensions(WxHxD)		423x88x615mm		
Package Dimensions(WxHxD)		635x280x905mm		
Unit Weight		18kg	24kg	30kg
Shipping Weight		25kg	31kg	37kg
Miscellaneous				
Over Voltage Category		II		
Protection Class		I		
Pollution Degree		2		
Insulation		AC input <->DC output, 4242VDC, AC input <-> PE, 2818VDC		

[1] For different input voltage standard option must be specified at the time of order as they are installed at the factory prior to shipment.

[2] It is recommended that the output current is derated by 10% when the operation environment is higher than 30°C.

[3] Load transient from 0% to 100% of rated output.

[4] Test value at 100% voltage and 100% power.

[5] Vrms @ 300kHz, Vpp @ 20MHz, Arms @ 300kHz.

MODEL		MS250VDC3400W	MS250VDC6800W	MS250VDC10000W
Input				
Voltage[1]		1P220 187~305Vac	1P220 187~305Vac	/
		2P208 187~305Vac	3P208 187~305Vac	3P208 187~305Vac
		2P400 340~480Vac	3P400 340~480Vac	3P400 340~480Vac
Current [1]		1P220 L,N-21A	1P220 L-21A,N-42A	/
		2P208 L3-0, L1,L2-21A	3P208 L1-37, L2,L3-21A	3P208 L1, L2,L3-37A
		2P400 L3-0, L1,L2-12A	3P400 L1-21, L2,L3-12A	3P400 L1, L2,L3-21A
Frequency		45-65Hz		
Connection		1ph+PE/2ph+PE	1ph+PE/3ph+PE	3ph+PE
Fuse (Internal) [1]		1P220 T30A*2PCS	1P220 T30A*2PCS	/
		2P208 T30A*2PCS	3P208 T30A*2PCS	3P208 T30A*2PCS
		2P400 T20A*2PCS	3P400 T20A*2PCS	3P400 T20A*2PCS
Power Factor		>0.99		
Input Power		1P220 3.9KVAmax	1P220 8KVAmax	/
		2P208 3.9KVAmax	3P208 8KVAmax	3P208 11.8KVAmax
		2P400 3.8KVAmax	3P400 7.85KVAmax	3P400 11.5KVAmax
Efficiency[1]		1P220 92%@250V ,1P220 90.5%@55A	1P220 92%@250V ,1P220 90.5%@55A	/
		2P208 92%@250V ,2P208 90.5%@55A	3P208 92%@250V ,3P208 90.5%@55A	3P208 92%@250V ,3P208 90.5%@55A
		2P400 92.5%@250V ,2P400 91%@55A	3P400 92.5%@250V ,3P400 91%@55A	3P400 92.5%@250V ,3P400 91%@55A
Output				
Voltage Range		0~250V		
Current Range [2]		0~55A	0~110A	0~165A
Power Range		0~3400W	0~6800W	0~10000W
Max. Setup Range	Voltage	0~250V		
	Current	0~55A	0~110A	0~165A
	Power	0~3400W	0~6800W	0~10000W
	Internal Resistance	0~136 Ω	0~68 Ω	0~45Ω
Accuracy	Voltage	<0.1%Umax		
	Current	<0.2%Imax		
	Power	<0.5%+0.5%FS		
	Internal Resistance	R <2%Rmax, I< 0.3%Imax		
Line Regulation	Voltage	<0.02%Umax		
	Current	<0.05%Imax		
	Power	<0.05% Pmax		
Load Regulation [3]	Voltage	<0.05%Umax @Rated Voltage, <0.1%Umax @Rated Current		
	Current	<0.15%Imax		
	Power	<0.75% Pmax		
Rise Time	Voltage	<15ms(No Load) <60ms(Full Load)		
Drop Time	Voltage	<600ms(No Load) <15ms(Full Load)		
Transient Response Time[4]	Voltage	<1ms (Voltage will recover to ±0.5% when the load changes from 10% to 90%)		
Set Resolution	Voltage	0.02V		
	Current	0.004A	0.008A	0.012A
	Power	0.26W	0.52W	0.76W
	Internal Resistance	0.01Ω	0.005Ω	0.003Ω
Display Resolution	Voltage	0.01V		
	Current	0.001A		
	Power	0.1W		
	Internal Resistance	0.001Ω		
Measurement Accuracy	Voltage	<0.1%Umax		
	Current	<0.2%Imax		
	Power	<0.5%Pmax		
	Internal Resistance	<0.4% Rmax		

MODEL		MS250VDC3400W	MS250VDC6800W	MS250VDC10000W
Ripple [5]	Voltage	250mVpp/60mVrms		
	Current	27mArms	55mArms	82mArms
Remote Compensation		5%Umax		
General				
Graphic Display		5" Color touch LCD		
Operation Key Feature		Flippable touch screen, Rotary knod, USB port for transfer and upgrading firmware		
Rack Mount Handles		Yes		
FAN		Temperature control		
Protection		OVP, UVP, OCP, UCP, OPP, RMP protection parameters and other hardware protection such as OTP can be set.		
Interface		USB(Standard), RS232&LAN(Optional), GPIB(Optional), CAN(Optional)		
Command Response Time		<3ms		
Analog Interface / Industrial communication control (Optional)				
Industrial communication interface		RS485		
Set Value Inputs		Analog input 0~5V/0~10V or 0~5kΩ/0~10kΩ to set 0~105% voltage, current and power		
Actual Value Output		Analog output 0~5V/0~10V to monitor the voltage and current.		
Accuracy U/I/P/R		<0.2% F.S		
Actual Output U/I		<0.2%		
Control Signals		DC ON/OFF, External control Enable/Disable		
Status Signals		CV, OVP, OTP, OCP		
Sampling Rate of Input & Output		45Hz		
Galvanic Isolation to the Device		4242VDC		
Master/Slave Control				
Series Output		MAX 2 units		
Parallel Output		MAX 100 units		
Environmental				
Operating Temperature [2]		0~40°C		
Storage Temperature		-20~70°C		
Temperature coefficient of readback value		25ppm/°C (Voltage)		
		50ppm/°C (Current)		
Temperature coefficient of setting value		50ppm/°C (Voltage)		
		100ppm/°C (Current)		
Relative Humidity		<95%RH(non-condensing)@35°C, <80%RH(non-condensing)@40°C		
Altitude		<2000m@40°C		
Fan Noise		45dB Idle; 71dB Max;	45dB Idle; 73dB Max;	45dB Idle; 75dB Max;
Mechanical				
Dimensions(WxHxD)		423x88x615mm		
Package Dimensions(WxHxD)		635x280x905mm		
Unit Weight		18kg	24kg	30kg
Shipping Weight		25kg	31kg	37kg
Miscellaneous				
Over Voltage Category		II		
Protection Class		I		
Pollution Degree		2		
Insulation		AC input <->DC output, 4242VDC, AC input <-> PE, 2818VDC		

[1] For different input voltage standard option must be specified at the time of order as they are installed at the factory prior to shipment.

[2] It is recommended that the output current is derated by 10% when the operation environment is higher than 30°C.

[3] Load transient from 0% to 100% of rated output.

[4] Test value at 100% voltage and 100% power.

[5] Vrms @ 300kHz, Vpp @ 20MHz, Arms @ 300kHz.

MODEL		MS500VDC3400W	MS500VDC6800W	MS500VDC10000W
Input				
Voltage[1]		1P220 187~305Vac	1P220 187~305Vac	/
		2P208 187~305Vac	3P208 187~305Vac	3P208 187~305Vac
		2P400 340~480Vac	3P400 340~480Vac	3P400 340~480Vac
Current [1]		1P220 L,N-21A	1P220 L-21A,N-42A	/
		2P208 L3-0, L1,L2-21A	3P208 L1-37, L2,L3-21A	3P208 L1, L2,L3-37A
		2P400 L3-0, L1,L2-12A	3P400 L1-21, L2,L3-12A	3P400 L1, L2,L3-21A
Frequency		45-65Hz		
Connection		1ph+PE/2ph+PE	1ph+PE/3ph+PE	3ph+PE
Fuse (Internal) [1]		1P220 T30A*2PCS	1P220 T30A*2PCS	/
		2P208 T30A*2PCS	3P208 T30A*2PCS	3P208 T30A*2PCS
		2P400 T20A*2PCS	3P400 T20A*2PCS	3P400 T20A*2PCS
Power Factor		>0.99		
Input Power		1P220 3.9KVAmax	1P220 8KVAmax	/
		2P208 3.9KVAmax	3P208 8KVAmax	3P208 11.8KVAmax
		2P400 3.8KVAmax	3P400 7.85KVAmax	3P400 11.5KVAmax
Efficiency[1]		1P220 92.5%@500V ,1P220 91%@27A	1P220 92.5%@500V ,1P220 91%@27A	/
		2P208 92.5%@500V ,2P208 91%@27A	3P208 92.5%@500V ,3P208 91%@27A	3P208 92.5%@500V ,3P208 91%@27A
		2P400 94%@500V ,2P400 92.5%@27A	3P400 94%@500V ,3P400 92.5%@27A	3P400 94%@500V ,3P400 92.5%@27A
Output				
Voltage Range		0~500V		
Current Range [2]		0~27A	0~54A	0~80A
Power Range		0~3400W	0~6800W	0~10000W
Max. Setup Range	Voltage	0~500V		
	Current	0~27A	0~54A	0~80A
	Power	0~3400W	0~6800W	0~10000W
	Internal Resistance	0~556 Ω	0~278 Ω	0~188 Ω
Accuracy	Voltage	<0.1%Umax		
	Current	<0.2%Imax		
	Power	<0.5%+0.5%FS		
	Internal Resistance	R <2%Rmax, I< 0.3%Imax		
Line Regulation	Voltage	<0.02%Umax		
	Current	<0.05%Imax		
	Power	<0.05% Pmax		
Load Regulation [3]	Voltage	<0.05%Umax @Rated Voltage, <0.1%Umax @Rated Current		
	Current	<0.15%Imax		
	Power	<0.75% Pmax		
Rise Time	Voltage	<15ms(No Load) <80ms(Full Load)		
Drop Time	Voltage	<1500ms(No Load) <15ms(Full Load)		
Transient Response Time[4]	Voltage	<1ms (Voltage will recover to ±0.5% when the load changes from 10% to 90%)		
Set Resolution	Voltage	0.04V		
	Current	0.002A	0.004A	0.006A
	Power	0.26W	0.52W	0.76W
	Internal Resistance	0.04Ω	0.02Ω	0.015Ω
Display Resolution	Voltage	0.01V		
	Current	0.001A		
	Power	0.1W		
	Internal Resistance	0.001Ω		
Measurement Accuracy	Voltage	<0.1%Umax		
	Current	<0.2%Imax		
	Power	<0.5%Pmax		
	Internal Resistance	<0.4% Rmax		

MODEL		MS500VDC3400W	MS500VDC6800W	MS500VDC10000W
Ripple [5]	Voltage	500mVpp/150mVrms		
	Current	13mArms	27mArms	40mArms
Remote Compensation		5%Umax		
General				
Graphic Display		5" Color touch LCD		
Operation Key Feature		Flippable touch screen, Rotary knod, USB port for transfer and upgrading firmware		
Rack Mount Handles		Yes		
FAN		Temperature control		
Protection		OVP, UVP, OCP, UCP, OPP, RMP protection parameters and other hardware protection such as OTP can be set.		
Interface		USB(Standard), RS232&LAN(Optional), GPIB(Optional), CAN(Optional)		
Command Response Time		<3ms		
Analog Interface / Industrial communication control (Optional)				
Industrial communication interface		RS485		
Set Value Inputs		Analog input 0~5V/0~10V or 0~5kΩ/0~10kΩ to set 0~105% voltage, current and power		
Actual Value Output		Analog output 0~5V/0~10V to monitor the voltage and current.		
Accuracy U/I/P/R		<0.2% F.S		
Actual Output U/I		<0.2%		
Control Signals		DC ON/OFF, External control Enable/Disable		
Status Signals		CV, OVP, OTP, OCP		
Sampling Rate of Input & Output		45Hz		
Galvanic Isolation to the Device		4242VDC		
Master/Slave Control				
Series Output		MAX 2 units		
Parallel Output		MAX 100 units		
Environmental				
Operating Temperature [2]		0~40°C		
Storage Temperature		-20~70°C		
Temperature coefficient of readback value		25ppm/°C (Voltage)		
		50ppm/°C (Current)		
Temperature coefficient of setting value		50ppm/°C (Voltage)		
		100ppm/°C (Current)		
Relative Humidity		<95%RH(non-condensing)@35°C, <80%RH(non-condensing)@40°C		
Altitude		<2000m@40°C		
Fan Noise		45dB Idle; 71dB Max;	45dB Idle; 73dB Max;	45dB Idle; 75dB Max;
Mechanical				
Dimensions(WxHxD)		423x88x615mm		
Package Dimensions(WxHxD)		635x280x905mm		
Unit Weight		18kg	24kg	30kg
Shipping Weight		25kg	31kg	37kg
Miscellaneous				
Over Voltage Category		II		
Protection Class		I		
Pollution Degree		2		
Insulation		AC input <->DC output, 4242VDC, AC input <-> PE, 2818VDC		

[1] For different input voltage standard option must be specified at the time of order as they are installed at the factory prior to shipment.

[2] It is recommended that the output current is derated by 10% when the operation environment is higher than 30°C.

[3] Load transient from 0% to 100% of rated output.

[4] Test value at 100% voltage and 100% power.

[5] Vrms @ 300kHz, Vpp @ 20MHz, Arms @ 300kHz.

MODEL		MS750VDC10000W
Input		
Voltage[1]		3P208 187~305Vac
		3P400 340~480Vac
Current[1]		3P208 L1, L2,L3-37A
		3P400 L1, L2,L3-21A
Frequency		45-65Hz
Connection		3ph+PE
Fuse (Internal)[1]		3P208 T30A*2PCS
		3P400 T20A*2PCS
Power Factor		>0.99
Input Power		3P208 11.8KVAmax
		3P400 11.5KVAmax
Efficiency[1]		3P208 92%@750V ,3P208 90.5%@55A
		3P400 92.5%@750V ,3P400 91%@55A
Output		
Voltage Range		0~750V
Current Range[2]		0~55A
Power Range		0~10000W
Max. Setup Range	Voltage	0~750V
	Current	0~55A
	Power	0~10000W
	Internal Resistance	0~409 Ω
Accuracy	Voltage	<0.1%Umax
	Current	<0.2%Imax
	Power	<0.5%+0.5%FS
	Internal Resistance	R <2%Rmax, I< 0.3%Imax
Line Regulation	Voltage	<0.02%Umax
	Current	<0.05%Imax
	Power	<0.05% Pmax
Load Regulation[3]	Voltage	<0.05%Umax @Rated Voltage, <0.1%Umax @Rated Current
	Current	<0.15%Imax
	Power	<0.75% Pmax
Rise Time	Voltage	<15ms(No Load) <80ms(Full Load)
Drop Time	Voltage	<800ms(No Load) <15ms(Full Load)
Transient Response Time[4]	Voltage	<1ms (Voltage will recover to ±0.5% when the load changes from 10% to 90%)
Set Resolution	Voltage	0.02V
	Current	0.004A
	Power	0.76W
	Internal Resistance	0.03Ω
Display Resolution	Voltage	0.01V
	Current	0.001A
	Power	0.1W
	Internal Resistance	0.001Ω
Measurement Accuracy	Voltage	<0.1%Umax
	Current	<0.2%Imax
	Power	<0.5%Pmax
	Internal Resistance	<0.4% Rmax
Ripple[5]	Voltage	800mVpp/180mVrms
	Current	27mArms
Remote Compensation		5%Umax

MODEL	MS750VDC10000W
General	
Graphic Display	5'' Color touch LCD
Operation Key Feature	Flippable touch screen, Rotary knod, USB port for transfer and upgrading firmware
Rack Mount Handles	Yes
FAN	Temperature control
Protection	OVP, UVP, OCP, UCP, OPP, RMP protection parameters and other hardware protection such as OTP can be set.
Interface	USB(Standard), RS232&LAN(Optional), GPIB(Optional), CAN(Optional)
Command Response Time	<3ms
Analog Interface / Industrial Communication Control (Optional)	
Industrial communication interface	RS485
Set Value Inputs	Analog input 0~5V/0~10V or 0~5kΩ/0~10kΩ to set 0~105% voltage, current and power
Actual Value Output	Analog output 0~5V/0~10V to monitor the voltage and current.
Accuracy U/I/P/R	<0.2% F.S
Actual Output U/I	<0.2%
Control Signals	DC ON/OFF, External control Enable/Disable
Status Signals	CV, OVP, OTP, OCP
Sampling Rate of Input & Output	45Hz
Galvanic Isolation to the Device	4242VDC
Master/Slave Control	
Series Output	MAX 2 units
Parallel Output	MAX 100 units
Environmental	
Operating Temperature [2]	0~40°C
Storage Temperature	-20~70°C
Temperature coefficient of readback value	25ppm/°C (Voltage)
	50ppm/°C (Current)
Temperature coefficient of setting value	50ppm/°C (Voltage)
	100ppm/°C (Current)
Relative Humidity	<95%RH(non-condensing)@35°C, <80%RH(non-condensing)@40°C
Altitude	<2000m@40°C
Fan Noise	45dB Idle; 75dB Max;
Mechanical	
Dimensions(WxHxD)	423x88x615mm
Package Dimensions(WxHxD)	635x280x905mm
Unit Weight	30kg
Shipping Weight	37kg
Miscellaneous	
Over Voltage Category	II
Protection Class	I
Pollution Degree	2
Insulation	AC input <->DC output, 4242VDC, AC input <-> PE, 2818VDC

[1] For different input voltage standard option must be specified at the time of order as they are installed at the factory prior to shipment.
[2] It is recommended that the output current is derated by 10% when the operation environment is higher than 30°C.
[3] Load transient from 0% to 100% of rated output.
[4] Test value at 100% voltage and 100% power.
[5] Vrms @ 300kHz, Vpp @ 20MHz, Arms @ 300kHz.

MODEL		MS1000VDC6800W
Input		
Voltage[1]		1P220 187~305Vac
		3P208 187~305Vac
		3P400 340~480Vac
Current [1]		1P220 L-21A,N-42A
		3P208 L1-37, L2,L3-21A
		3P400 L1-21, L2,L3-12A
Frequency		45-65Hz
Connection		1ph+PE/3ph+PE
Fuse (Internal) [1]		1P220 T30A*2PCS
		3P208 T30A*2PCS
		3P400 T20A*2PCS
Power Factor		>0.99
Input Power		1P220 8KVAmax
		3P208 8KVAmax
		3P400 7.85KVAmax
Efficiency[1]		1P220 92.5%@1000V ,1P220 91%@27A
		3P208 92.5%@1000V ,3P208 91%@27A
		3P400 94%@1000V ,3P400 92.5%@27A
Output		
Voltage Range		0~1000V
Current Range [2]		0~27A
Power Range		0~6800W
Max. Setup Range	Voltage	0~1000V
	Current	0~27A
	Power	0~6800W
	Internal Resistance	0~1111 Ω
Accuracy	Voltage	<0.1%Umax
	Current	<0.2%Imax
	Power	<0.5%+0.5%FS
	Internal Resistance	R <2%Rmax, I< 0.3%Imax
Line Regulation	Voltage	<0.02%Umax
	Current	<0.05%Imax
	Power	<0.05% Pmax
Load Regulation [3]	Voltage	<0.05%Umax @Rated Voltage, <0.1%Umax @Rated Current
	Current	<0.15%Imax
	Power	<0.75% Pmax
Rise Time	Voltage	<15ms(No Load) <85ms(Full Load)
Drop Time	Voltage	<1700ms(No Load) <15ms(Full Load)
Transient Response Time[4]	Voltage	<1ms (Voltage will recover to ±0.5% when the load changes from 10% to 90%)
Set Resolution	Voltage	0.04V
	Current	0.002A
	Power	0.52W
	Internal Resistance	0.085Ω
Display Resolution	Voltage	0.01V
	Current	0.001A
	Power	0.1W
	Internal Resistance	0.001Ω
Measurement Accuracy	Voltage	<0.1%Umax
	Current	<0.2%Imax
	Power	<0.5%Pmax
	Internal Resistance	<0.4% Rmax

MODEL		MS1000VDC6800W
Ripple [5]	Voltage	1000mVpp/300mVrms
	Current	27mArms
Remote Compensation		5%Umax
General		
Graphic Display		5" Color touch LCD
Operation Key Feature		Flippable touch screen, Rotary knod, USB port for transfer and upgrading firmware
Rack Mount Handles		Yes
FAN		Temperature control
Protection		OVP, UVP, OCP, UCP, OPP, RMP protection parameters and other hardware protection such as OTP can be set.
Interface		USB(Standard), RS232&LAN(Optional), GPIB(Optional), CAN(Optional)
Command Response Time		<3ms
Analog Interface / Industrial communication control (Optional)		
Industrial communication interface		RS485
Set Value Inputs		Analog input 0~5V/0~10V or 0~5kΩ/0~10kΩ to set 0~105% voltage, current and power
Actual Value Output		Analog output 0~5V/0~10V to monitor the voltage and current.
Accuracy U/I/P/R		<0.2% F.S
Actual Output U/I		<0.2%
Control Signals		DC ON/OFF, External control Enable/Disable
Status Signals		CV, OVP, OTP, OCP
Sampling Rate of Input & Output		45Hz
Galvanic Isolation to the Device		4242VDC
Master/Slave Control		
Series Output		Not supported
Parallel Output		MAX 100 units
Environmental		
Operating Temperature [2]		0~40°C
Storage Temperature		-20~70°C
Temperature coefficient of readback value		25ppm/°C (Voltage)
		50ppm/°C (Current)
Temperature coefficient of setting value		50ppm/°C (Voltage)
		100ppm/°C (Current)
Relative Humidity		<95%RH(non-condensing)@35°C, <80%RH(non-condensing)@40°C
Altitude		<2000m@40°C
Fan Noise		45dB Idle; 73dB Max;
Mechanical		
Dimensions(WxHxD)		423x88x615mm
Package Dimensions(WxHxD)		635x280x905mm
Unit Weight		24kg
Shipping Weight		31kg
Miscellaneous		
Over Voltage Category		II
Protection Class		I
Pollution Degree		2
Insulation		AC input <->DC output, 4242VDC, AC input <-> PE, 2818VDC

[1] For different input voltage standard option must be specified at the time of order as they are installed at the factory prior to shipment.

[2] It is recommended that the output current is derated by 10% when the operation environment is higher than 30°C.

[3] Load transient from 0% to 100% of rated output.

[4] Test value at 100% voltage and 100% power.

[5] Vrms @ 300kHz, Vpp @ 20MHz, Arms @ 300kHz.

MODEL		MS1500VDC10000W
Input		
Voltage[1]		3P208 187~305Vac
		3P400 340~480Vac
Current[1]		3P208 L1, L2,L3-37A
		3P400 L1, L2,L3-21A
Frequency		45-65Hz
Connection		3ph+PE
Fuse (Internal)[1]		3P208 T30A*2PCS
		3P400 T20A*2PCS
Power Factor		>0.99
Input Power		3P208 11.8KVAmax
		3P400 11.5KVAmax
Efficiency[1]		3P208 92.5%@1500V ,3P208 91%@27A
		3P400 94%@1500V ,3P400 92.5%@27A
Output		
Voltage Range		0~1500V
Current Range[2]		0~27A
Power Range		0~10000W
Max. Setup Range	Voltage	0~1500V
	Current	0~27A
	Power	0~10000W
	Internal Resistance	0~1666 Ω
Accuracy	Voltage	<0.1%Umax
	Current	<0.2%Imax
	Power	<0.5%+0.5%FS
	Internal Resistance	R <2%Rmax, I< 0.3%Imax
Line Regulation	Voltage	<0.02%Umax
	Current	<0.05%Imax
	Power	<0.05% Pmax
Load Regulation[3]	Voltage	<0.05%Umax @Rated Voltage, <0.1%Umax @Rated Current
	Current	<0.15%Imax
	Power	<0.75% Pmax
Rise Time	Voltage	<15ms(No Load) <90ms(Full Load)
Drop Time	Voltage	<1800ms(No Load) <15ms(Full Load)
Transient Response Time[4]	Voltage	<1ms (Voltage will recover to ±0.5% when the load changes from 10% to 90%)
Set Resolution	Voltage	0.04V
	Current	0.002A
	Power	0.76W
	Internal Resistance	0.15Ω
Display Resolution	Voltage	0.01V
	Current	0.001A
	Power	0.1W
	Internal Resistance	0.001Ω
Measurement Accuracy	Voltage	<0.1%Umax
	Current	<0.2%Imax
	Power	<0.5%Pmax
	Internal Resistance	<0.4% Rmax
Ripple[5]	Voltage	1500mVpp/450mVrms
	Current	40mArms
Remote Compensation		5%Umax

MODEL	MS1500VDC10000W
General	
Graphic Display	5'' Color touch LCD
Operation Key Feature	Flippable touch screen, Rotary knod, USB port for transfer and upgrading firmware
Rack Mount Handles	Yes
FAN	Temperature control
Protection	OVP, UVP, OCP, UCP, OPP, RMP protection parameters and other hardware protection such as OTP can be set.
Interface	USB(Standard), RS232&LAN(Optional), GPIB(Optional), CAN(Optional)
Command Response Time	<3ms
Analog Interface / Industrial Communication Control (Optional)	
Industrial communication interface	RS485
Set Value Inputs	Analog input 0~5V/0~10V or 0~5kΩ/0~10kΩ to set 0~105% voltage, current and power
Actual Value Output	Analog output 0~5V/0~10V to monitor the voltage and current.
Accuracy U/I/P/R	<0.2% F.S
Actual Output U/I	<0.2%
Control Signals	DC ON/OFF, External control Enable/Disable
Status Signals	CV, OVP, OTP, OCP
Sampling Rate of Input & Output	45Hz
Galvanic Isolation to the Device	5250VDC
Master/Slave Control	
Series Output	Not supported
Parallel Output	MAX 100 units
Environmental	
Operating Temperature [2]	0~40°C
Storage Temperature	-20~70°C
Temperature coefficient of readback value	25ppm/°C (Voltage)
	50ppm/°C (Current)
Temperature coefficient of setting value	50ppm/°C (Voltage)
	100ppm/°C (Current)
Relative Humidity	<95%RH(non-condensing)@35°C, <80%RH(non-condensing)@40°C
Altitude	<2000m@40°C
Fan Noise	45dB Idle; 75dB Max;
Mechanical	
Dimensions(WxHxD)	423x88x615mm
Package Dimensions(WxHxD)	635x280x905mm
Unit Weight	30kg
Shipping Weight	37kg
Miscellaneous	
Over Voltage Category	II
Protection Class	I
Pollution Degree	2
Insulation	AC input <->DC output, 5040VDC, AC input <-> PE, 2818VDC

[1] For different input voltage standard option must be specified at the time of order as they are installed at the factory prior to shipment.
[2] It is recommended that the output current is derated by 10% when the operation environment is higher than 30°C.
[3] Load transient from 0% to 100% of rated output.
[4] Test value at 100% voltage and 100% power.
[5] Vrms @ 300kHz, Vpp @ 20MHz, Arms @ 300kHz.

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