



■ High Efficiency

■ High Precision

■ High Stability

# High Power DC Load & System

➤➤ Application Guide

# High Power DC Load

## High Power DC Load



(2U)1200W~3000W



(3U)3400W~5600W



(4U)6600W



(7U)8800W~13200W



(10U)15400W~19800W



(13U)22000W~26400W

Voltage	Input		Model	Size	Resolution		Accuracy		Flippable Front Panel	Certificates
	Current	Power			Voltage	Current	Voltage	Current		
200V	130A	1150W	EL200VDC1150W	2U <sup>①</sup>	0.1mV	0.1mA	0.015%+0.015%F.S.	0.04%+0.04%F.S.	NO	
	190A	1750W	EL200VDC1750W			0.1mA				
	260A	2300W	EL200VDC2300W			0.5mA				
	320A	2900W	EL200VDC2900W			0.5mA				
	370A	3350W	EL200VDC3350W	3U <sup>②</sup>		0.5mA				
	480A	4400W	EL200VDC4400W			0.5mA				
	610A	5550W	EL200VDC5550W	4U <sup>③</sup>		0.5mA				
	720A	6600W	EL200VDC6600W			0.5mA				
	960A	8800W	EL200VDC8800W	7U <sup>④</sup>		1mA				
	1200A	11000W	EL200VDC11000W			1mA				
	1440A	13200W	EL200VDC13200W	10U <sup>⑤</sup>		1mA				
	1680A	15400W	EL200VDC15400W			2mA				
	1920A	17600W	EL200VDC17600W	13U <sup>⑥</sup>		2mA				
	2160A	19800W	EL200VDC19800W			2mA				
2400A	22000W	EL200VDC22000W		4mA						
2640A	24200W	EL200VDC24200W		4mA						
2880A	26400W	EL200VDC26400W		4mA						
600V	90A	1150W	EL600VDC1150W	2U <sup>①</sup>	0.5mV	0.1mA	0.015%+0.015%F.S.	0.04%+0.04%F.S.	NO	CE
	130A	1750W	EL600VDC1750W			0.1mA				
	180A	2300W	EL600VDC2300W			0.2mA				
	220A	2900W	EL600VDC2900W			0.2mA				
	250A	3350W	EL600VDC3350W	3U <sup>②</sup>		0.4mA				
	320A	4400W	EL600VDC4400W			0.4mA				
	410A	5550W	EL600VDC5550W	4U <sup>③</sup>		0.4mA				
	480A	6600W	EL600VDC6600W			0.5mA				
	640A	8800W	EL600VDC8800W	7U <sup>④</sup>		0.5mA				
	800A	11000W	EL600VDC11000W			1mA				
	960A	13200W	EL600VDC13200W	10U <sup>⑤</sup>		1mA				
	1120A	15400W	EL600VDC15400W			1mA				
	1280A	17600W	EL600VDC17600W	13U <sup>⑥</sup>		1mA				
	1440A	19800W	EL600VDC19800W			2mA				
1600A	22000W	EL600VDC22000W		2mA						
1760A	24200W	EL600VDC24200W		2mA						
1920A	26400W	EL600VDC26400W		2mA						
1200V	45A	1150W	EL1200VDC1150W	2U <sup>①</sup>	1mV	0.1mA	0.015%+0.015%F.S.	0.04%+0.06%F.S.	NO	
	90A	2300W	EL1200VDC2300W			0.1mA				
	125A	3350W	EL1200VDC3350W			0.2mA				
	160A	4400W	EL1200VDC4400W			0.2mA				
	210A	5550W	EL1200VDC5550W	3U <sup>②</sup>		0.2mA				
	240A	6600W	EL1200VDC6600W			0.2mA				
	320A	8800W	EL1200VDC8800W	4U <sup>③</sup>		0.4mA				
	400A	11000W	EL1200VDC11000W			0.4mA				
	480A	13200W	EL1200VDC13200W	7U <sup>④</sup>		0.4mA				
	560A	15400W	EL1200VDC15400W			0.5mA				
	640A	17600W	EL1200VDC17600W	10U <sup>⑤</sup>		0.5mA				
	720A	19800W	EL1200VDC19800W			0.5mA				
	800A	22000W	EL1200VDC22000W	13U <sup>⑥</sup>		1mA				
	880A	24200W	EL1200VDC24200W			1mA				
960A	26400W	EL1200VDC26400W		1mA						

## Dimensions & Weight



① 423.0x88.0x610.0mm & 20kg/22kg/24kg/26kg



② 423.0x133.0x610.0mm & 27kg/28.5kg/32.5kg



③ 423.0x177.0x610.0mm & 38kg



④ 423.0x311.0x670.0mm & 61.5kg/67kg/72.5kg



⑤ 423.0x444.0x670.0mm & 94.5kg/100kg/105.5kg



⑥ 423.0x577.0x670.0mm & 129kg/134.5kg/140kg

## Optional Information

(1) LAN & GPIB interface card & cables



## Features

- Flippable front panel and color touch screen allow convenient access and operation.
- Provides four kinds of basic working mode such as CV/CC/CR/CP, and CV+CC/CV+CR/CR+CC complex operating modes.
- Adjustable current slew rate, adjustable CV loop speed.
- Ultra high precision voltage & current measurement.
- OCP/OPP testing function.
- 50kHz high-speed CC/CR dynamic mode.
- 500kHz high-speed voltage and current sampling rate.
- Timing & discharging measurement for batteries.
- Short circuit test mode.
- Auto mode function provides an easy way to do complicated test.
- Dynamic frequency sweep function for determining worst case voltage peaks.\*
- Non linear load mode function makes the simulated loading current more realistic.\*
- Supports external analog control function\*
- V-monitor/I-monitor.
- LED load simulation function.
- Full protection: OCP, OPP, OTP, over voltage and reverse alarm.
- Up to 20 units master/slave parallel control.
- Front panel USB interface supports data import and export.
- SCPI language and standard rack size make it ideal for ATE System integration.
- Smart fan control with lower noise and better for environment.
- Multi versions to meet the cost performance and different applications.

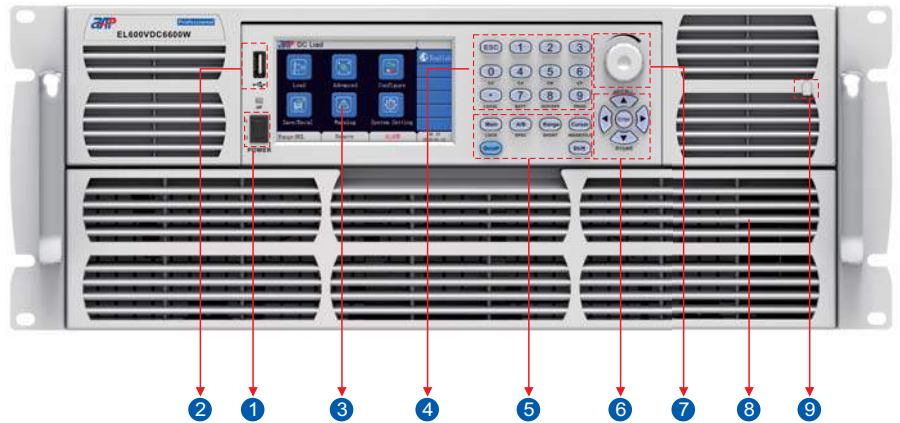
\* Only professional Electronic Load units support these functions.

# High Power DC Load

## Panel Introduction

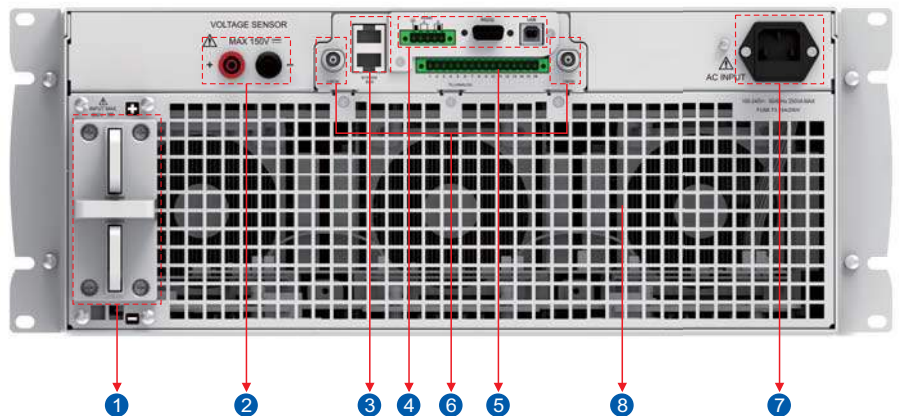
### Front Panel Description

- 1 Power switch
- 2 USB host, for data import and export
- 3 Color touch screen
- 4 Numeric keys and function keys
- 5 Function keys and multifunction keys
- 6 Enter key and arrow keys
- 7 Push-on knob, for editing parameter and moving the location of cursor
- 8 Ventilation holes
- 9 Stylus



### Rear Panel Description

- 1 Load positive/negative terminal
- 2 Remote sense connections
- 3 System Bus, for mater/slave system data transmission
- 4 RS485/RS232/USB communication Interface (standard), LAN&GPIB communication Interface (optional)\*
- 5 External TTL/Analog control Interface
- 6 V-monitor/I-monitor
- 7 AC input connector
- 8 Ventilation holes



\* When LAN&GPIB interface card selected it will be installed here instead of RS485/RS232/USB interface card.

## Function Introduction

### Flippable Front Panel and Color Touch Screen

This series High Power DC Load is equipped with flippable front panel for 4U, 7U, 10U and 13U height models. Together with a large color touch screen provides simple and fast operation for customer. Real-time update of display input data, status and graphical display makes it more intuitive.



### Multiple Operating Mode

#### Basic Operating Mode

This series High Power DC Load provides four kinds of basic operating mode including CV (constant voltage), CC (constant current), CR (constant resistance), CP (constant power), to satisfy a wide range of test requirements.

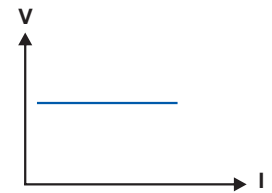
#### CC Mode

1. Load regulation test of DC power supply
2. Discharge time and life test for battery
3. Fuel cells test
4. Loading test for DC motor



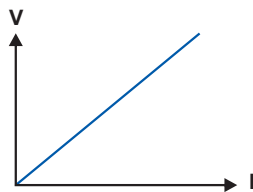
#### CV Mode

1. Charging station test
2. Current limit testing for Fold back type power supply
3. Fuel cells test
4. Current source test



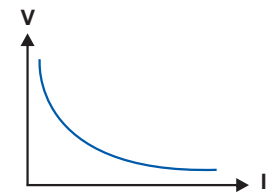
#### CR Mode

1. Slow start test for communication power supply
2. LED driver test
3. Loading test for automobile temperature controller



#### CP Mode

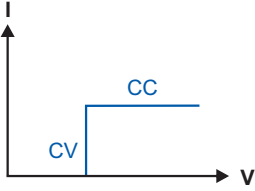
1. Testing for constant power type power supply
2. Capacity and life test for battery



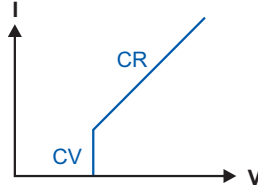
# High Power DC Load

## Complex Operating Mode

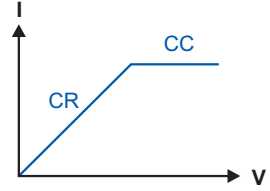
The CV+CC mode can be applied to the load simulation battery and test the charging station or the car charger.



The CV+CR mode can be used to simulate the dynamic characteristics of LED.

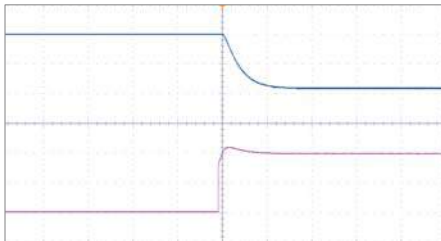


The CR+CC mode is suitable for power on testing.

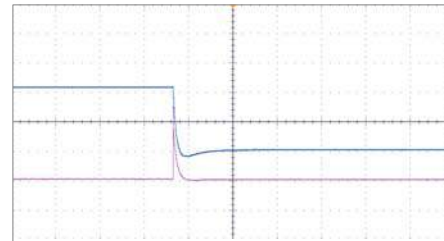


## Adjustable CV Loop Speed

This series electronic load supports CV loop response speed setting to FAST, NORMAL or SLOW to satisfy different test requirements. This function may avoid the inaccurate measurement or testing fail caused by the response speed mismatch between the load and the power supply, which is possible to improve test efficiency and reduce costs on the equipments, time and expenses.



Slow speed of CV loop

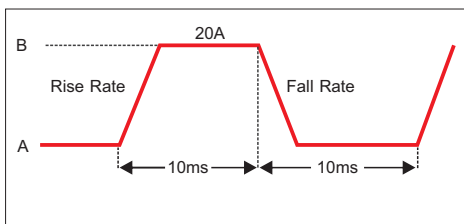


Normal speed of CV loop

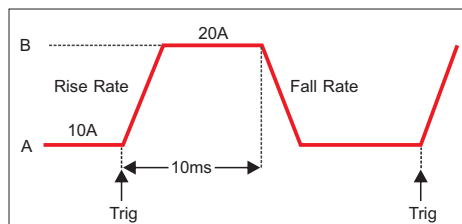
## Dynamic Load

This series electronic load can be switched quickly between different values in the same operating mode, including CC dynamic mode, CV dynamic mode, CR dynamic mode and CP dynamic mode, CC/CR high speed dynamic mode up to 50kHz.

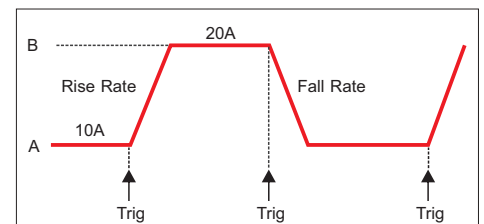
This function is suitable for transient test of power supply, test of battery protection characteristic and battery pulse charging etc. Dynamic mode test has continuous mode, pulse mode and toggle mode.



Continuous Mode



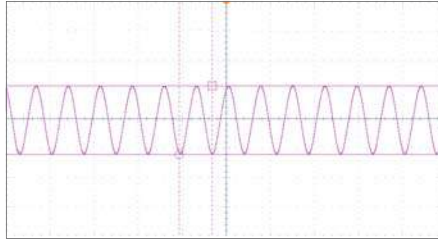
Pulse Mode



Toggle Mode

## Sine Wave Dynamic Load

This series electronic load supports sine wave loading function which allows to load sine wave, can be used for impedance analysis test of fuel cells.

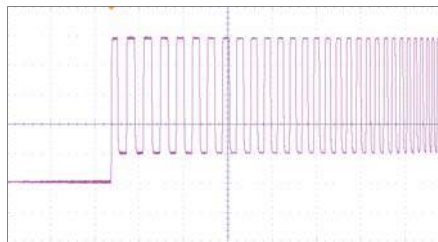


## Dynamic Frequency Sweep Function

This series electronic load provides a unique constant current dynamic sweep to use frequency conversion to find out the UUT voltage of worst case.

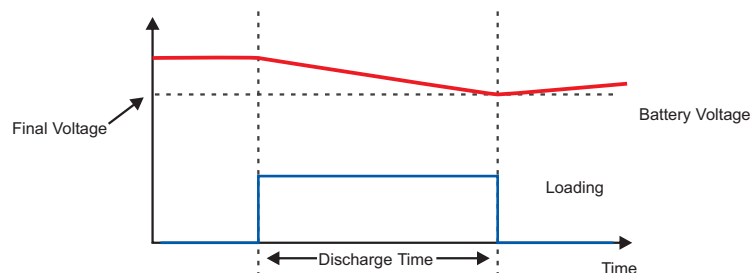
This CC dynamic sweep allows the user to edit two load levels, start frequency, end frequency, step frequency, dwell etc.

The sampling rate is up to 500kHz, which make it can simulate different loading conditions for most test requirements.



## Battery Discharge Test

This series electronic load has battery discharge function, and can perform discharge test under CC, CR or CP mode. The DC load can set end voltage or time to stop loading correctly and make sure the battery is not damaged due to over discharge. The user can set stop conditions, whenever met any condition, the load will stop loading and counting automatically. During the test, users can observe battery's voltage, discharging time and already-discharged-capacity.



# High Power DC Load

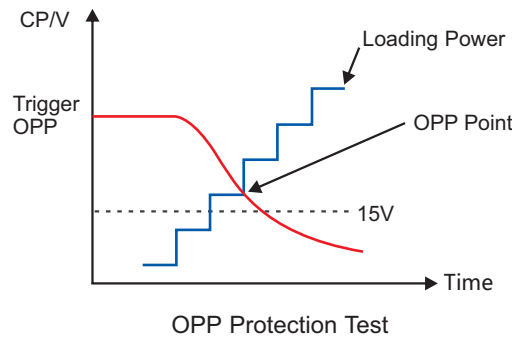
## Auto Mode

This mode allows automatically switches among CV, CR, CC and CP modes. It is suitable for lithium ion battery charger testing to get a complete V-I charging curve. This flexible auto mode also enormously improve test efficiency.



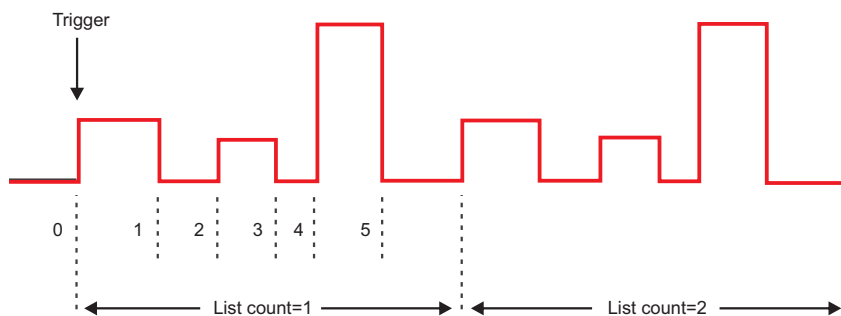
## OCP/OPP Tests

This series electronic load provides OCP and OPP modes are mainly applied in over-current and over-power points tests. After the testing the load can automatically judge the test result according to the set specifications. Take OPP testing as example, the OPP provides ramped up power for the load to test the UUT voltage whether has reached trigger voltage level and to judge if the protection is acting normally or not.



## List Mode

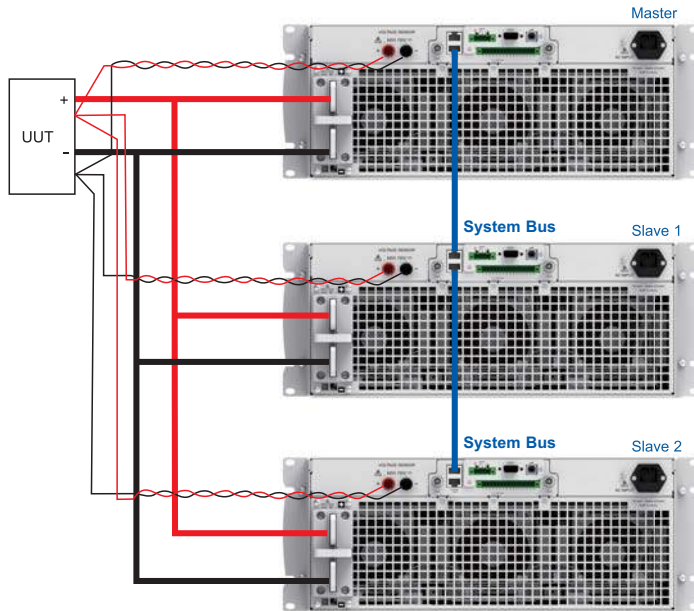
The list function allows user to create waveform files to automatically simulate various complicated loading conditions. The list mode has 10 files, by editing operating mode (including CC, CV, CR, CP, Short and ON/OFF), repeat times, total steps, setting value of each step and step time etc. This function can be applied to the testing of output characteristic and stability for power supply.





## Master/Slave Control

This series electronic load provides the user with Master/slave mode, supports parallel connection under different power and same voltage and dynamically synchronized. In Master/slave mode, the user only need to control the master one, the load current will be automatically calculated and downloaded to the slave loads. The Master/slave mode greatly simplifies the operation when increased power is needed.



## External Control and Current/Voltage Monitoring

This series electronic load has analog control interface to control the input voltage and current. The external signal 0 to 10V controls the sinking condition from 0 to full scale. Using the external control mode can simulate arbitrary waveform which is ideal for industrial control requirement.

The 0 to 10V analog output signal of V-MON/I-MON terminals represent input to which the terminals belong from 0 to full range. An external voltmeter or oscilloscope can be connected to display input voltage/current change.

## Applications



New energy



Automotive electronics



Electronic component



Power supply



Battery charge/discharge test



ATE systems



R/D design verification/quality assurance



Factory production online test

# High Power DC Load System

## High Power DC Load System

The standardized DC electronic load cabinet is formed with 7U height units. The maximum input current and power of a single cabinet is up to 3000A, 66kW. Support master-slave configuration to increase the input capacity to 264kW.

These cabinets use world famous circuit breaker to control the input of DC E-load module inside. After power on, the specified unit will be configured as a Master to control all of the slave units. In an emergency off situation the EMS will cut all units in the cabinet from AC supply, ensure safe operation.



27U



36U



42U

## System Configuration

	27U	36U	42U
Cabinet Height	27U	36U	42U
Capacity for Loads	21U	28U	35U
Capacity (7U height unit)	3	4	5
PDU Height	3U	3U	3U
EMS Panel Height	1U	1U	1U
Cabinet Frame	2U	2U	2U
Reserved	/	2U	1U

Rated Voltage	Input		Model	Size	Certificates
	Rated Power	Rated Current			
200V	39600W	3000A	ELS200VDC39600W	27U <sup>1</sup>	CE
	52800W	3000A	ELS200VDC52800W	36U <sup>2</sup>	
	66000W	3000A	ELS200VDC66000W	42U <sup>3</sup>	
600V	39600W	2880A	ELS600VDC39600W	27U <sup>1</sup>	CE
	52800W	3000A	ELS600VDC52800W	36U <sup>2</sup>	
	66000W	3000A	ELS600VDC66000W	42U <sup>3</sup>	
1200V	39600W	1440A	ELS1200VDC39600W	27U <sup>1</sup>	CE
	52800W	1920A	ELS1200VDC52800W	36U <sup>2</sup>	
	66000W	2400A	ELS1200VDC66000W	42U <sup>3</sup>	

## High Power DC Load System



① 560.0x1188.0x920.0 mm & 366kg



② 560.0x1584.0x920.0 mm & 475kg



③ 560.0x1848.0x920.0 mm & 589kg

## Optional Information

(1) LAN & GPIB interface card & cables



## Features

- Provides four kinds of basic working mode such as CV/CC/CR/CP, and CV+CC/CV+CR/CR+CC complex operating modes.
- Adjustable current slew rate, adjustable CV loop speed.
- Ultra high precision voltage & current measurement.
- Short circuit test mode.
- Auto mode function provides an easy way to do complicated test.
- V-monitor/I-monitor.
- Full protection: OCP, OPP, OTP, over voltage and reverse alarm.
- Equipped with Emergency Stop, physically off all managed DC eLoads at once.
- Back door with protect switch, safe to the operator.
- Front panel USB interface supports data import and export.
- Using standard SCPI communication protocol.

# High Power DC Load System

## Views

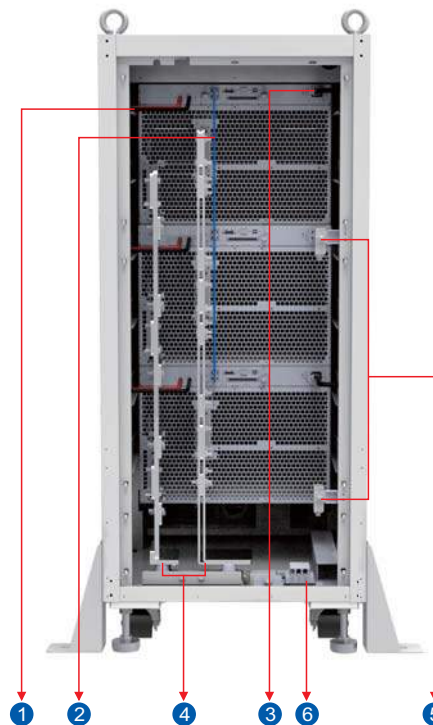
### Front side (example model in 27U)

- ① Emergency Stop, physically off AC input
- ② Master control panel
- ③ AC input circuit breaker switch
- ④ Caster( with caster lock)
- ⑤ Stopper bolt
- ⑥ Support frame



### Rear side (example model in 27U, remove the back door )

- ① Remote sense connections
- ② SYSTEM BUS, for master/slave system data transmission
- ③ AC input connection of the single unit
- ④ DC input (bus bars)
- ⑤ Protect switch
- ⑥ AC input



## Connecting the cabinet

- This series electronic load is capable of connecting up to 20 units in parallel in Master-slave mode.
- User-created electronic load system can reach at most 528kW (twenty 26.4kW units in parallel).
- The standardized electronic load system can reach up to 264kW (twenty 13.2kW units in parallel).
- Different electronic loads can be connected in parallel in Mater-slave mode. But in no case should the input DC voltage be higher than the rated voltage of electronic loads.
- Use parallel bars to simplify the connection between multiple rack cabinets.
- This series electronic load convert the consumed electrical energy into heat and dissipate it. In order to avoid overheating, decrease the room temperature or derate the actual input power based on the ambient temperature.

