

## Programmable DC Electronic Load

### MODEL 63200 SERIES

#### Key Features:

- Power Rating:  
2600W, 5200W, 6500W, 10400W,  
14500W, 15600W
- Voltage range: 1-80V/ 2.5-500V
- Current range: Up to 1000A
- CC, CR, CV, CP load modes
- Master/Slave paralleling control mode,  
allow synchronous load control under  
static and dynamic loading mode
- Dynamic loading: Up to 20KHz
- Only need 1V to draw rated current
- Programmable slew rate, up to 41A/uS
- Measurement: Voltage / Current  
Power/ Resistance
- Large LED/LCD display
- External loading waveform simulation
- Short circuit simulation and short  
circuit current measurement
- Full protection: OP, OC, OV, OT and  
reverse protection
- Versatile remote controller
- GPIB & RS-232C; RS-485 interface
- Surge load capability
- Battery discharge timer



## PROGRAMMABLE DC ELECTRONIC LOAD MODEL 63200 SERIES

The Chroma Electronic Loads 63200 series are designed for DC power source, power electronic devices and components testing. The high power rating, parallel and synchronization capabilities make them the ideal tool for testing the high power UUT such as SMR, UPS, battery, and fuel cell.

The 63200 series offers 10 different models with power range from 2600 watts to 15600 watts, current from 50A to 1000A and up to 500V input voltage. The 4 load modes setup provide different load simulations for various application occasions. The CC/CR modes are designed to test constant voltage type of power supply. CV mode is used to test battery charger and current source, while CP mode is ideal for battery testing by simulating the real discharge curve.

The 63200 series can draw its rated current under very low voltage (1V typical) even under the highest specified slew rate. This unique feature guarantees the best loading performance to a low voltage power supply.

With the unique external waveform simulation and Master /Slave control capability, the 63200 series electronic loads allow users to parallel and synchronize more than one load together from an internal or external loading control signal. This feature provides unlimited load simulation and the possibility of power expansion.

The 63200 series also supply necessary measurement functions and short circuit simulation that extend the test capability for even the most demanding engineering tests and ATE applications.

With the LCD display and rotary knob, the 63200 electronic loads offer versatile front panel operations. Users are able to control the 63200 family remotely via GPIB, RS-232C, RS-485 or APG (Analog Programming) interface.

Chroma 63200 series loads are built in fan speed control to minimize the audio noise. The self-diagnosis routine and the full protections against OPP, OCP, OVP, OTP and reverse polarity ensure the best quality and reliability.



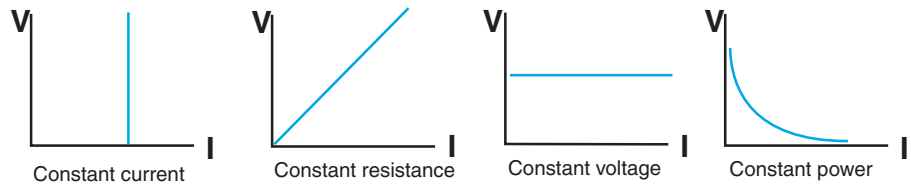
# Chroma



## 1. APPLICATION SPECIFIC LOAD SIMULATION

Chroma electronic loads 63200 series provide constant current, constant resistance, constant voltage and constant power modes for various application requirements.

The CC and CR mode loading simulation is helpful to test whether the output voltage of the UUT remains stable or regulated under different loading current or resistance conditions. For battery chargers, CV mode may help to

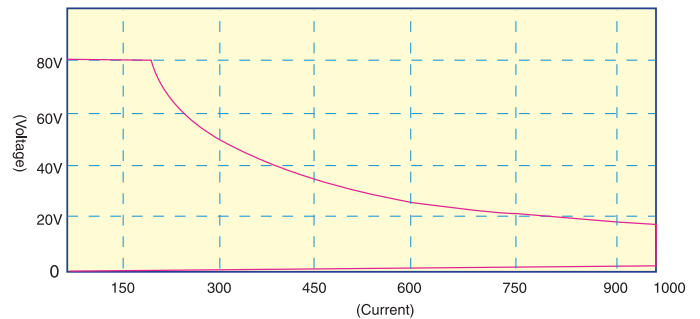


change the output voltage of a charger and therefore can test if the battery charger has correct charging current corresponding to its own output, or more precisely, the battery voltage. If the UUT is battery, the electronic load is able to simulate the behavior of the device that uses the battery. For most of the electronic and electrical devices, their power consumption patterns are more likely constant power devices. Consequently, CP mode simulation will be essential for a battery discharge load.

## 2. LOW VOLTAGE OPERATING CHARACTERISTICS

For high power load, its high loading current may cause dramatic line drop between UUT and load terminal due to the line impedance of cabling. So, the lower operating voltage allows the 63200 series loads to draw sufficient current from a low volt output power supply directly.

Meanwhile, 63200 series loads use current close loop design, and connect all power MOSFET devices in parallel to insure high accuracy load control with minimum drift less than 0.15% of the current setting. The MOSFET technology accomplishes the input impedance to a minimum that enables the load to draw very high current even at very low voltage. For example, model 63209 is capable of drawing 1000A at only 1V input.



Model 63209(15600W) input characteristics

## 3. MEASUREMENTS

Chroma 63200 series are built in the 15-bit precision A/D converter, thus can achieve 0.05%F.S., 0.1%F.S. and 0.3%F.S. accuracy for voltage, current and power measurement respectively. And they can be shown simultaneously on three big LED displays for user's convenience. In addition to standard measurements, they also provide voltage and current monitor outputs, which are useful when user needs to monitor the voltage and current waveform via scope.

## 4. DYNAMIC LOADING AND CONTROL

Modern electronic devices operate at very high speed, thus, it is important for an electronic load to perform well in the transient and dynamic response of power devices. To satisfy these testing applications, the 63200 loads offer high speed, programmable dynamic load simulation and control capability ever achieved before. The figure below shows the programmable parameters of the 63200 load modules. The programmable slew rate makes the simulation of transient load change demanded by the requirement of real life application possible. The internal waveform generator of 63200 is capable of producing maximum slew rate at 25A/uS (63208), and dynamic cycling up to 20KHz. Its dedicated remote load senses and controls circuit guarantee the minimum waveform distortion during continuous load changes.



## 5. MASTER / SLAVE PARALLEL CONTROL

When higher power is required, it is common to parallel two electronic loads together to draw higher current. 63200 series high power loads have smart Master / Slave control mode. When the loads are set to Master / Slave mode, users can program the loading (CC mode only) on master unit. The loading current values of the slave units will be calculated and downloaded by master unit automatically. In short, unlike the traditional design, users may consider several load units that work under Master / Slave mode as a single load unit. It simplifies the user operation dramatically.



## 6. EXTERNAL LOADING WAVEFORM SIMULATION

The 63200 series electronic loads can be controlled by external analog control signal, which is generated by any kind of signals or arbitrary waveform generator. Thus, it is capable of simulating any loading waveforms observed in the field.



## 7. SHORT CIRCUIT SIMULATION

63200 series electronic loads can also simulate short circuit condition. Owing to this capability, it can short DC power source or any power supplies that have built in current limit function, and measure their short circuit currents. So that users can verify if the UUT current limit is functional.

## 8. SURGE LOAD CAPABILITY

Chroma's 63200 Series DC Loads provide a unique surge load simulation capability which allows users to overdrive the loads up to 2.7 times their rated power for short periods. This feature is ideal when the average power require by the UUT is low compared to short-term peak power demands. Plasma Display Panel (PDPs) testing is one typical application, others include battery 3C discharge, breaker & fuse over rating (300% to 1000%) tests, car engine startup simulation and DC motor startup simulation.

The amount of surge loading available using the 63200 loads is related to the initial loading conditions. Figures 1 and 2 show the relationship of initial state (Load\_Low under Dynamic mode) and the maximum acceptable overdrive power. Under this operation, the load will display an Over Power Protection Alarm (OPP) and will disable the load current if the user violates the maximum surge load capability showed in the figures.

### Note 1 :

The Initial state under Static Mode should last at least 1 second.

### Note 2 :

This surge load capability will be regulated by the temperature de-rating characteristics. (Refer to Note 1 in Specifications)

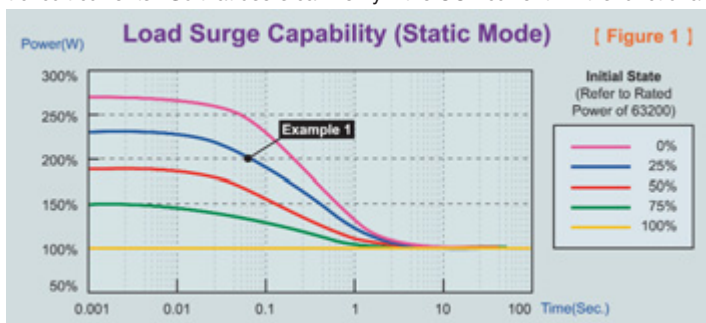
### Note 3 :

Examples below assume the use of the Model 63201 load with a continuous rating of 2600W/300A/1-80VDC

## 9. TIMER FUNCTION FOR BATTERY DISCHARGE TESTING

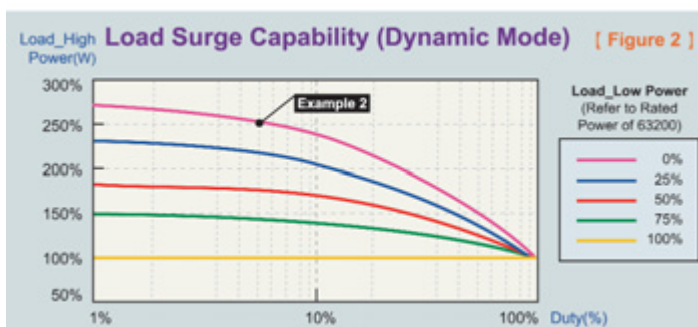
The 63200 Loads include unique timing & measurement function allowing for precision time settings and measurements in the range of 1s to 99999s. This feature allows users to set a final voltage & timeout value for battery discharge testing and similar applications.

For Example, Figure 3 below shows that the 63200's internal timer can be initiated automatically when the battery voltage falls below a preset value. The timer will continue counting until the second preset voltage value is reached.



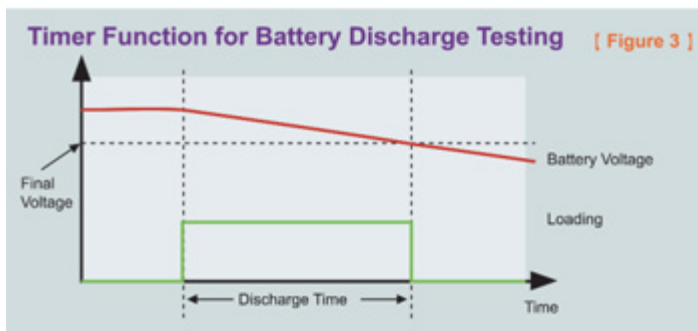
### Example 1: STATIC LOADING

The Model 63201 can be overdriven to approximately 5200W (200% of its rated continuous power rating) for 6.0 ms seconds when the starting power is 650W (25% of its rated power). This is represented by DOT on the blue curve in Figure 1.



### Example 2: DYNAMIC LOADING

The Model 63201 is capable of a zero – to- 6500W (250%) pulse at a duty cycle of 5%. This is represented by the purple curve in Figure 2.



## APPLICATIONS

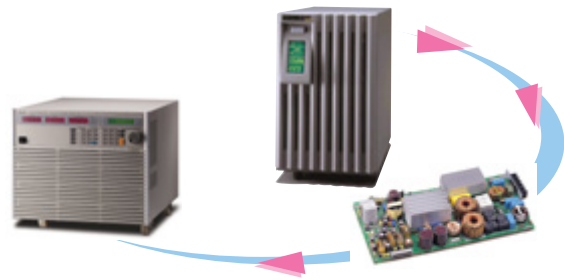
### 1. POWER SUPPLY TESTING

Power supplies have played a critical role on electrical and electronic devices. They are diversified into several different configurations for different applications. For example, AC/AC power supplies are for UPS and AVR, AC/DC power supplies are for PC power supplies, and DC/AC power supplies are for inverters that transfer battery power to AC for home appliances. As to DC/DC converters, they are widely used in battery powered devices such as cellular phones and laptop computers. With four different load modes, Chroma 63200 series electronic loads are capable of testing all sorts of DC output power supplies directly or via rectifier, they can also be used to test the AC output power supplies.



## 2. ELECTRONIC & ELECTRICAL DEVICES TESTING

Almost all modern electronic and electrical devices are built in with power supply. Therefore, DC electronic load is an important instrument for these devices during R/D and Q/A phases. For example, A/D, D/D and D/A stages are normally integrated in a UPS. Consequently, Chroma 63200 electronic loads are helpful to test the internal A/D and D/D boards of the UPS.



## 3. BATTERY TESTING

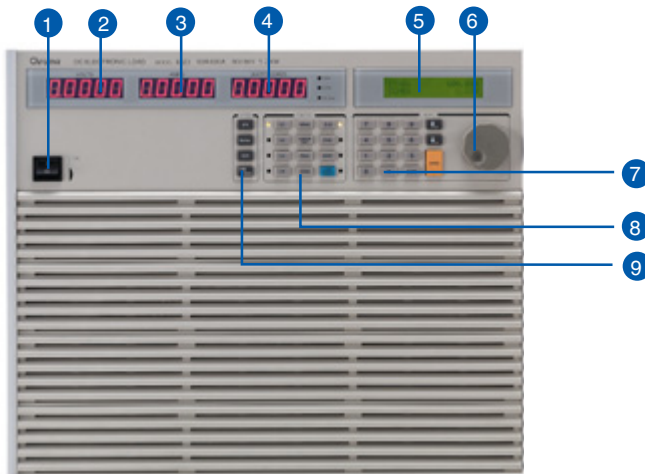
For most of the electronic and electrical devices, their power consumption patterns are constant power. Therefore, the CP mode in 63200 series electronic loads is ideal to use as a discharge load for battery testing.



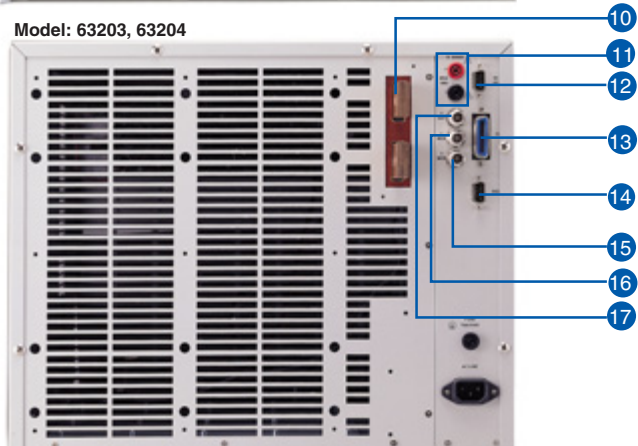
## 4. SYSTEM INTEGRATION

Chroma 63200 series electronic loads provide GPIB, RS-232C and RS-485 PC controllable interfaces. The external waveform simulation and voltage / current monitoring capability make Chroma 63200 family ideal for automatic system integration.

### PANEL DESCRIPTION



Model: 63203, 63204



1. Power Switch
2. LED Display:  
Voltage read back.
3. LED Display:  
Current/ ohm read back.
4. LED Display:  
Power read back.
5. LCD Display:  
For setting and editing.
6. Rotary knob:  
To adjust the loading and parameter setting.
7. Numeric key:  
For data setting.
8. Function key:  
To select load mode, control mode, and define the reading specification.
9. System key:  
For system config and data store, recall.
10. Load terminal
11. Voltage sense terminal
12. RS-485 connector
13. GPIB connector
14. RS-232C connector
15. Voltage monitor output:  
Analog output which indicates the voltage waveform.
16. Current monitor output:  
Analog output which indicates the current waveform.
17. External V reference:  
External programming voltage input.

## SPECIFICATIONS

| Model                           | 63201                  |                | 63202                  |                  | 63203                  |                |
|---------------------------------|------------------------|----------------|------------------------|------------------|------------------------|----------------|
| <b>Power*1</b>                  | 260W                   | 2600W          | 260W                   | 2600W            | 520W                   | 5200W          |
| <b>Current</b>                  | 0-30A                  | 0-300A         | 0-5A                   | 0-50A            | 0-60A                  | 0-600A         |
| <b>Voltage</b>                  | 1-80V                  |                | 2.5-500V               |                  | 1-80V                  |                |
| <b>Min. Operating Voltage</b>   | 1V@30A                 | 1V@300A        | 2.5V@5A                | 2.5V@50A         | 1V@60A                 | 1V@600A        |
| <b>Constant Current Mode</b>    |                        |                |                        |                  |                        |                |
| Range                           | 0-30A                  | 0-300A         | 0-5A                   | 0-50A            | 0-60A                  | 0-600A         |
| Resolution                      | 7.5mA                  | 75mA           | 1.25mA                 | 12.5mA           | 15mA                   | 150mA          |
| Accuracy                        | 0.1%+0.1%F.S.          | 0.2%+0.1%F.S.  | 0.1%+0.1%F.S.          | 0.2%+0.1%F.S.    | 0.1%+0.1%F.S.          | 0.2%+0.1%F.S.  |
| <b>Constant Resistance Mode</b> |                        |                |                        |                  |                        |                |
| Range                           | 0.005-20ohm            | 0.25-1000ohm   | 0.25-1000ohm           | 10-40000ohm      | 0.0025-10ohm           | 0.125-500ohm   |
| Resolution                      | 12bits                 | 12bits         | 12bits                 | 12bits           | 12bits                 | 12bits         |
| Accuracy*2                      | 0.6mho+0.35%           | 0.9mho+0.1%    | 0.012mho+0.35%         | 0.04mho+0.1%     | 1.2mho+0.35%*4         | 1.2mho+0.1%    |
| Accuracy*3 (Vin>7V)             | 0.6mho+0.35%           | 0.012mho+0.35% | 0.012mho+0.35%         | 112.5u mho+0.35% | 1.2mho+0.35%           | 0.024mho+0.35% |
| <b>Constant Voltage Mode</b>    |                        |                |                        |                  |                        |                |
| Range                           | 1-16V                  | 1-80V          | 2.5-125V               | 2.5-500V         | 1-16V                  | 1-80V          |
| Resolution                      | 4mV                    | 20mV           | 31mV                   | 125mV            | 4mV                    | 20mV           |
| Accuracy                        | 0.05%+0.1%F.S.         | 0.05%+0.1%F.S. | 0.05%+0.1%F.S.         | 0.05%+0.1%F.S.   | 0.05%+0.1%F.S.         | 0.05%+0.1%F.S. |
| <b>Constant Power Mode</b>      |                        |                |                        |                  |                        |                |
| Range                           | 0.6-260W               | 6-2600W        | 0.625-260W             | 6.25-2600W       | 1.2-520W               | 12-5200W       |
| Resolution                      | 7.5mW                  | 75mW           | 3.125mW                | 31.25mW          | 22.5mW                 | 225mW          |
| Accuracy                        | 0.5%+0.5%F.S.          | 0.5%+0.5%F.S.  | 0.5%+0.5%F.S.          | 0.5%+0.5%F.S.    | 0.5%+0.5%F.S.          | 0.5%+0.5%F.S.  |
| <b>Dynamic Mode</b>             |                        |                |                        |                  |                        |                |
| <b>Timing</b>                   |                        |                |                        |                  |                        |                |
| T1&T2                           | 0.025-10mS             | 1mS-30S        | 0.025-10mS             | 1mS-30S          | 0.025-10mS             | 1mS-30S        |
| Resolution                      | 1μS                    | 1mS            | 1μS                    | 1mS              | 1μS                    | 1mS            |
| Accuracy                        | 1μS+100ppm             | 1mS+100ppm     | 1μS+100ppm             | 1mS+100ppm       | 1μS+100ppm             | 1mS+100ppm     |
| Slew Rate                       | 5mA-1.25A/μS           | 50mA-12.5A/μS  | 0.8mA-0.2A/μS          | 8mA-2A/μS        | 10mA-2.5A/μS           | 100mA-25A/μS   |
| Resolution                      | 5mA/μS                 | 50mA/μS        | 0.8mA/μS               | 8mA/μS           | 10mA/μS                | 100mA/μS       |
| Min. Rise Time                  | 20 μS (typical)        |                | 24 μS (typical)        |                  | 20 μS (typical)        |                |
| <b>Current</b>                  |                        |                |                        |                  |                        |                |
| Range                           | 0-30A                  | 0-300A         | 0-5A                   | 0-50A            | 0-60A                  | 0-600A         |
| Resolution                      | 7.5mA                  | 75mA           | 1.25mA                 | 12.5mA           | 15mA                   | 150mA          |
| Accuracy                        | 0.4%F.S.               |                | 0.4%F.S.               |                  | 0.4%F.S.               |                |
| <b>Measurement</b>              |                        |                |                        |                  |                        |                |
| <b>Voltage Read Back</b>        |                        |                |                        |                  |                        |                |
| Range                           | 0-16V                  | 0-80V          | 0-125V                 | 0-500V           | 0-16V                  | 0-80V          |
| Resolution                      | 15bits                 | 15bits         | 15bits                 | 15bits           | 15bits                 | 15bits         |
| Accuracy                        | 0.05%+0.05%F.S.        |                | 0.05%+0.05%F.S.        |                  | 0.05%+0.05%F.S.        |                |
| <b>Current Read Back</b>        |                        |                |                        |                  |                        |                |
| Range                           | 0-30A                  | 0-300A         | 0-5A                   | 0-50A            | 0-60A                  | 0-600A         |
| Resolution                      | 15bits                 | 15bits         | 15bits                 | 15bits           | 15bits                 | 15bits         |
| Accuracy                        | 0.1%+0.1%F.S.          |                | 0.1%+0.1%F.S.          |                  | 0.1%+0.1%F.S.          |                |
| <b>Power Read Back</b>          |                        |                |                        |                  |                        |                |
| Range                           | 0-260W                 | 0-2600W        | 0-260W                 | 0-2600W          | 0-520W                 | 0-5200W        |
| Resolution                      | 15bits                 | 15bits         | 15bits                 | 15bits           | 15bits                 | 15bits         |
| Accuracy                        | 0.3%+0.3%F.S.          |                | 0.3%+0.3%F.S.          |                  | 0.3%+0.3%F.S.          |                |
| <b>General</b>                  |                        |                |                        |                  |                        |                |
| <b>Short Circuit</b>            |                        |                |                        |                  |                        |                |
| Current                         | 30A                    | 300A           | 5A                     | 50A              | 60A                    | 600A           |
| <b>Size(mm)</b>                 | 440(W)x 177(H)x 644(D) |                | 440(W)x 177(H)x 644(D) |                  | 440(W)x 353(H)x 644(D) |                |
| <b>Weight</b>                   | 35kg                   |                | 35kg                   |                  | 58kg                   |                |
| <b>Safety &amp; EMC</b>         | CE                     |                | CE                     |                  | CE                     |                |

### Selection Guide :

| Model \ Power  | 2600W | 5200W | 6500W | 10400W      | 14500W | 15600W      |
|----------------|-------|-------|-------|-------------|--------|-------------|
| <b>Voltage</b> |       |       |       |             |        |             |
| 80V            | 63201 | 63203 | 63205 | 63206/63207 | --     | 63208/63209 |
| 500V           | 63202 | 63204 | --    | --          | 63210  | --          |



## SPECIFICATIONS

| Model                           | 63204                  |                | 63205                  |                | 63206                    |                |
|---------------------------------|------------------------|----------------|------------------------|----------------|--------------------------|----------------|
| <b>Power*1</b>                  | 520W                   | 5200W          | 650W                   | 6500W          | 1040W                    | 10400W         |
| <b>Current</b>                  | 0-10A                  | 0-100A         | 0-18A                  | 0-180A         | 0-60A                    | 0-600A         |
| <b>Voltage</b>                  | 2.5-500V               |                | 1-80V                  |                | 1-80V                    |                |
| <b>Min. Operating Voltage</b>   | 2.5V@10A               | 2.5V@100A      | 1V@18A                 | 1V@180A        | 1V@60A                   | 1V@600A        |
| <b>Constant Current Mode</b>    |                        |                |                        |                |                          |                |
| Range                           | 0-10A                  | 0-100A         | 0-18A                  | 0-180A         | 0-60A                    | 0-600A         |
| Resolution                      | 2.5mA                  | 25mA           | 4.5mA                  | 45mA           | 15mA                     | 150mA          |
| Accuracy                        | 0.1%+0.1%F.S.          | 0.2%+0.1%F.S.  | 0.1%+0.2%F.S.          | 0.1%+0.2%F.S.  | 0.1%+0.2%F.S.            | 0.1%+0.2%F.S.  |
| <b>Constant Resistance Mode</b> |                        |                |                        |                |                          |                |
| Range                           | 0.125-500ohm           | 5-20000ohm     | 0.008-32ohm            | 0.4-1600ohm    | 0.0025-10ohm             | 0.125-500ohm   |
| Resolution                      | 12bits                 | 12bits         | 12bits                 | 12bits         | 12bits                   | 12bits         |
| Accuracy*2                      | 0.024mho+0.35%         | 0.08mho+0.1%   | 0.375mho+0.35%         | 0.75mho+0.1%   | 1.2mho+0.35%*4           | 1.2mho+0.1%    |
| Accuracy*3 (Vin>7V)             | 0.024mho+0.35%         | 225u mho+0.35% | 0.375mho+0.35%         | 0.075mho+0.35% | 1.2mho+0.35%             | 0.024mho+0.35% |
| <b>Constant Voltage Mode</b>    |                        |                |                        |                |                          |                |
| Range                           | 2.5-125V               | 2.5-500V       | 1-16V                  | 1-80V          | 1-16V                    | 1-80V          |
| Resolution                      | 31mV                   | 125mV          | 4mV                    | 20mV           | 4mV                      | 20mV           |
| Accuracy                        | 0.05%+0.1%F.S.         | 0.05%+0.1%F.S. | 0.05%+0.1%F.S.         | 0.05%+0.1%F.S. | 0.05%+0.1%F.S.           | 0.05%+0.1%F.S. |
| <b>Constant Power Mode</b>      |                        |                |                        |                |                          |                |
| Range                           | 1.25-520W              | 12.5-5200W     | 0.36-650W              | 3.6-6500W      | 1.2-1040W                | 12-10400W      |
| Resolution                      | 6.25mW                 | 62.5mW         | 4.6mW                  | 46mW           | 22.5mW                   | 225mW          |
| Accuracy                        | 0.5%+0.5%F.S.          | 0.5%+0.5%F.S.  | 0.5%+0.5%F.S.          | 0.5%+0.5%F.S.  | 0.5%+0.5%F.S.            | 0.5%+0.5%F.S.  |
| <b>Dynamic mode</b>             |                        |                |                        |                |                          |                |
| <b>Timing</b>                   |                        |                |                        |                |                          |                |
| T1&T2                           | 0.025-10mS             | 1mS-30S        | 0.025-10mS             | 1mS-30S        | 0.025-10mS               | 1mS-30S        |
| Resolution                      | 1μS                    | 1mS            | 1μS                    | 1mS            | 1μS                      | 1mS            |
| Accuracy                        | 1μS+100ppm             | 1mS+100ppm     | 1μS+100ppm             | 1mS+100ppm     | 1μS+100ppm               | 1mS+100ppm     |
| Slew Arte                       | 1.6mA-0.4A/μS          | 16mA-4A/μS     | 3mA-0.75A/μS           | 30mA-7.5A/μS   | 10mA-3A/μS               | 100mA-25A/μS   |
| Resolution                      | 1.6mA/μS               | 16mA/μS        | 3mA/μS                 | 30mA/μS        | 10mA/μS                  | 100mA/μS       |
| Min. Rise Time                  | 24 μS (typical)        |                | 15 μS (typical)        |                | 15 μS (typical)          |                |
| <b>Current</b>                  |                        |                |                        |                |                          |                |
| Range                           | 0-10A                  | 0-100A         | 0-18A                  | 0-180A         | 0-60A                    | 0-600A         |
| Resolution                      | 2.5mA                  | 25mA           | 4.68mA                 | 46.8mA         | 15mA                     | 150mA          |
| Accuracy                        | 0.4%FS                 |                | 0.4%FS                 |                | 0.4%FS                   |                |
| <b>Measurement</b>              |                        |                |                        |                |                          |                |
| <b>Voltage Read Back</b>        |                        |                |                        |                |                          |                |
| Range                           | 0-125V                 | 0-500V         | 0-16V                  | 0-80V          | 0-16V                    | 0-80V          |
| Resolution                      | 15bits                 | 15bits         | 15bits                 | 15bits         | 15bits                   | 15bits         |
| Accuracy                        | 0.05%+0.05%F.S.        |                | 0.05%+0.05%F.S.        |                | 0.05%+0.05%F.S.          |                |
| <b>Current Read Back</b>        |                        |                |                        |                |                          |                |
| Range                           | 0-10A                  | 0-100A         | 0-18A                  | 0-180A         | 0-60A                    | 0-600A         |
| Resolution                      | 15bits                 | 15bits         | 15bits                 | 15bits         | 15bits                   | 15bits         |
| Accuracy                        | 0.1%+0.1%F.S.          |                | 0.1%+0.1%F.S.          |                | 0.1%+0.1%F.S.            |                |
| <b>Power Read Back</b>          |                        |                |                        |                |                          |                |
| Range                           | 0-520W                 | 0-5200W        | 0-650W                 | 0-6500W        | 0-1040W                  | 0-10400W       |
| Resolution                      | 15bits                 | 15bits         | 15bits                 | 15bits         | 15bits                   | 15bits         |
| Accuracy                        | 0.3%+0.3%F.S.          |                | 0.3%+0.3%F.S.          |                | 0.3%+0.3%F.S.            |                |
| <b>General</b>                  |                        |                |                        |                |                          |                |
| <b>Short Circuit</b>            |                        |                |                        |                |                          |                |
| Current                         | 10A                    | 100A           | 18A                    | 180A           | 60A                      | 600A           |
| <b>Size (mm)</b>                | 440(W)x 353(H)x 644(D) |                | 440(W)x 310(H)x 644(D) |                | 440(W)x 443.7(H)x 644(D) |                |
| <b>Weight</b>                   | 58kg                   |                |                        | 64kg           |                          | 90kg           |
| <b>Safety &amp; EMC</b>         | CE                     |                |                        | CE             |                          | CE             |

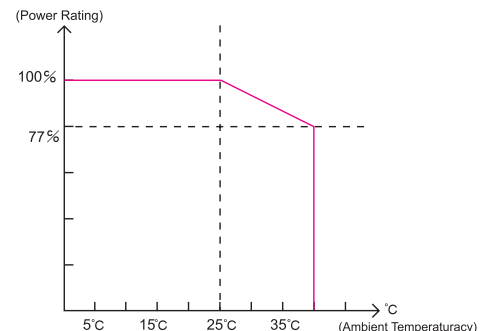
63200 Series

# SPECIFICATIONS

| Model                           | 63207                    |                 | 63208                              |                | 63209                              |                | 63210                      |                  |
|---------------------------------|--------------------------|-----------------|------------------------------------|----------------|------------------------------------|----------------|----------------------------|------------------|
| Power*1                         | 1040W                    | 10400W          | 1560W                              | 15600W         | 1560W                              | 15600W         | 1450W                      | 14500W           |
| Current                         | 0-30A                    | 0-300A          | 0-60A                              | 0-600A         | 0-100A                             | 0-1000A        | 0-15A                      | 0-150A           |
| Voltage                         | 1-80V                    |                 | 1-80V                              |                | 1-80V                              |                | 2.5-500V                   |                  |
| Min. Operating Voltage          | 1V@30A                   | 1V@300A         | 1V@60A                             | 1V@600A        | 1V@100A                            | 1V@1000A       | 2.5V@15A                   | 2.5V@150A        |
| <b>Constant Current Mode</b>    |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 0-30A                    | 0-300A          | 0-60A                              | 0-600A         | 0-100A                             | 0-1000A        | 0-15A                      | 0-150A           |
| Resolution                      | 9.3mA                    | 75mA            | 15mA                               | 150mA          | 31.25mA                            | 250mA          | 3.75mA                     | 37.5mA           |
| Accuracy                        | 0.1%+0.2%FS.             | 0.1%+0.2%FS.    | 0.1%+0.2%FS.                       | 0.1%+0.2%FS.   | 0.1%+0.2%FS.                       | 0.1%+0.2%FS.   | 0.1%+0.1%FS                | 0.2%+0.1%FS      |
| <b>Constant Resistance Mode</b> |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 0.005-20ohm              | 0.25-1000ohm    | 0.0025-10ohm                       | 0.125-500ohm   | 0.0015-6ohm                        | 0.075-300ohm   | 0.083-333ohm               | 3.3-1320ohm      |
| Resolution                      | 12bits                   | 12bits          | 12bits                             | 12bits         | 12bits                             | 12bits         | 12bits                     | 12bits           |
| Accuracy*2                      | 0.6mho+0.35%             | 0.9mho+0.1%     | 1.2mho+0.35%*4                     | 1.2mho+0.1%    | 1.2mho+0.35%*4                     | 1.2mho+0.1%    | 0.036mho+0.35%             | 0.092mho+0.1%    |
| Accuracy*3(Vin>7V)              | 0.6mho+0.35%             | 0.012 mho+0.35% | 1.2mho+0.35%                       | 0.024mho+0.35% | 1.2mho+0.35%                       | 0.024mho+0.35% | 0.036mho+0.35%             | 337.5u mho+0.35% |
| <b>Constant Voltage Mode</b>    |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 1-16V                    | 1-80V           | 1-16V                              | 1-80V          | 1-16V                              | 1-80V          | 2.5-125V                   | 2.5-500V         |
| Resolution                      | 4mV                      | 20mV            | 4mV                                | 20mV           | 4mV                                | 20mV           | 31mV                       | 125mV            |
| Accuracy                        | 0.05%+0.1%FS.            | 0.05%+0.1%FS.   | 0.05%+0.1%FS.                      | 0.05%+0.1%FS.  | 0.05%+0.1%FS.                      | 0.05%+0.1%FS.  | 0.05%+0.1%FS               | 0.05%+0.1%FS     |
| <b>Constant Power Mode</b>      |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 0.744-1040W              | 6-10400W        | 1.2-1560W                          | 12-15600W      | 2.5-1560W                          | 20-15600W      | 5-1450W                    | 50-14500W        |
| Resolution                      | 9.3mW                    | 75mW            | 22.5mW                             | 225mW          | 31.25mW                            | 250mW          | 25mW                       | 250mW            |
| Accuracy                        | 0.5%+0.5%FS.             | 0.5%+0.5%FS.    | 0.5%+0.5%FS.                       | 0.5%+0.5%FS.   | 0.5%+0.5%FS.                       | 0.5%+0.5%FS.   | 0.5%+0.5%FS                | 0.5%+0.5%FS      |
| <b>Dynamic Mode</b>             |                          |                 |                                    |                |                                    |                |                            |                  |
| <b>Timing</b>                   |                          |                 |                                    |                |                                    |                |                            |                  |
| T1&T2                           | 0.025-10mS               | 1mS-30S         | 0.025-10mS                         | 1mS-30S        | 0.025-10mS                         | 1mS-30S        | 0.025-10mS                 | 1mS-30S          |
| Resolution                      | 1μS                      | 1mS             | 1μS                                | 1mS            | 1μS                                | 1mS            | 1uS                        | 1mS              |
| Accuracy                        | 1μS+100ppm               | 1mS+100ppm      | 1μS+100ppm                         | 1mS+100ppm     | 1μS+100ppm                         | 1mS+100ppm     | 1uS+100ppm                 | 1mS+100ppm       |
| Slew arte                       | 6mA-1.5A/μS              | 50mA-12.5A/μS   | 12mA-3A/μS                         | 100mA-25A/μS   | 20mA-5A/μS                         | 166mA-41.6A/μS | 3mA-0.75A/μS               | 25mA-6A/μS       |
| Resolution                      | 6mA/μS                   | 50mA/μS         | 12mA/μS                            | 100mA/μS       | 20mA/μS                            | 166mA/μS       | 3mA/uS                     | 25mA/uS          |
| Min. Rise Time                  | 15 μS (typical)          |                 | 15 μS (typical)                    |                | 15 μS (typical)                    |                | 24 μS (typical)            |                  |
| <b>Current</b>                  |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 0-30A                    | 0-300A          | 0-60A                              | 0-600A         | 0-100A                             | 0-1000A        | 0-15A                      | 0-150A           |
| Resolution                      | 9.37mA                   | 75mA            | 15mA                               | 150mA          | 31.25mA                            | 250mA          | 3.75mA                     | 37.5mA           |
| Accuracy                        | 0.4%FS                   |                 | 0.4%FS                             |                | 0.4%FS                             |                | 0.4%FS                     |                  |
| <b>Measurement</b>              |                          |                 |                                    |                |                                    |                |                            |                  |
| <b>Voltage Read Back</b>        |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 0-16V                    | 0-80V           | 0-16V                              | 0-80V          | 0-16V                              | 0-80V          | 0-125V                     | 0-500V           |
| Resolution                      | 15bits                   | 15bits          | 15bits                             | 15bits         | 15bits                             | 15bits         | 15 bits                    | 15 bits          |
| Accuracy                        | 0.05%+0.05%FS.           |                 | 0.05%+0.05%FS.                     |                | 0.05%+0.05%FS.                     |                | 0.05%+0.05%FS.             |                  |
| <b>Current Read Back</b>        |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 0-30A                    | 0-300A          | 0-60A                              | 0-600A         | 0-100A                             | 0-1000A        | 0-15A                      | 0-150A           |
| Resolution                      | 15bits                   | 15bits          | 15bits                             | 15bits         | 15bits                             | 15bits         | 15bits                     | 15bits           |
| Accuracy                        | 0.1%+0.1%FS.             |                 | 0.1%+0.1%FS.                       |                | 0.1%+0.1%FS.                       |                | 0.1%+0.1%FS.               |                  |
| <b>Power Read Back</b>          |                          |                 |                                    |                |                                    |                |                            |                  |
| Range                           | 0-1040W                  | 0-10400W        | 0-1560W                            | 0-15600W       | 0-1560W                            | 0-15600W       | 0-1450W                    | 0-14500W         |
| Resolution                      | 15bits                   | 15bits          | 15bits                             | 15bits         | 15bits                             | 15bits         | 15bits                     | 15bits           |
| Accuracy                        | 0.3%+0.3%FS.             |                 | 0.3%+0.3%FS.                       |                | 0.3%+0.3%FS.                       |                | 0.3%+0.3%FS.               |                  |
| <b>General</b>                  |                          |                 |                                    |                |                                    |                |                            |                  |
| <b>Short Circuit</b>            |                          |                 |                                    |                |                                    |                |                            |                  |
| Current                         | 30A                      | 300A            | 60A                                | 600A           | 100A                               | 1000A          | 15A                        | 150A             |
| Size (mm)                       | 440(W)x 443.7(H)x 644(D) |                 | 546(W)x 843.7(H)x 700(D) (Cabinet) |                | 546(W)x 843.7(H)x 700(D) (Cabinet) |                | 546x843.7x700 mm (Cabinet) |                  |
| Weight                          | 90kg                     |                 | 160kg                              |                | 160kg                              |                | 160Kg                      |                  |
| Safety & EMC                    | CE                       |                 | CE                                 |                | CE                                 |                | CE                         |                  |

All specifications are subject to change without notice.

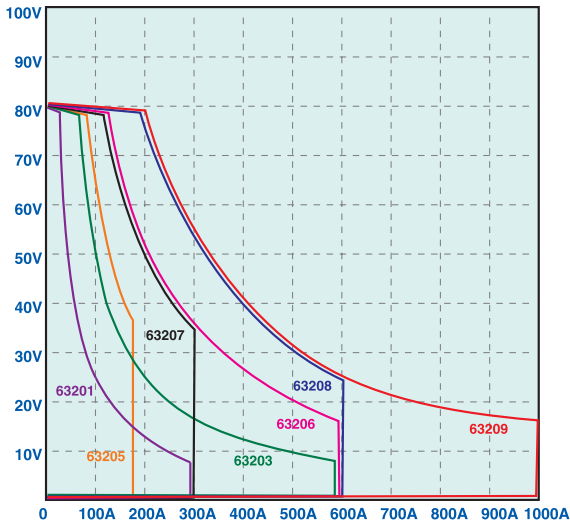
- Note\*1: The power rating specifications at ambient temperature=25°C.  
 And see the diagram below for power derating. (Derate power by 1.53% per°C from 25°C to 40°C)  
 Note\*2: The Vin is greater than min. operating voltage of each model.  
 Note\*3: The Vin is greater than 7V of each model.  
 Note\*4: Setting error will be 1% for R<0.005Ω at CRL range.



## Low Voltage & V-I Curve Operating Characteristics (Typical) of 63200 Series

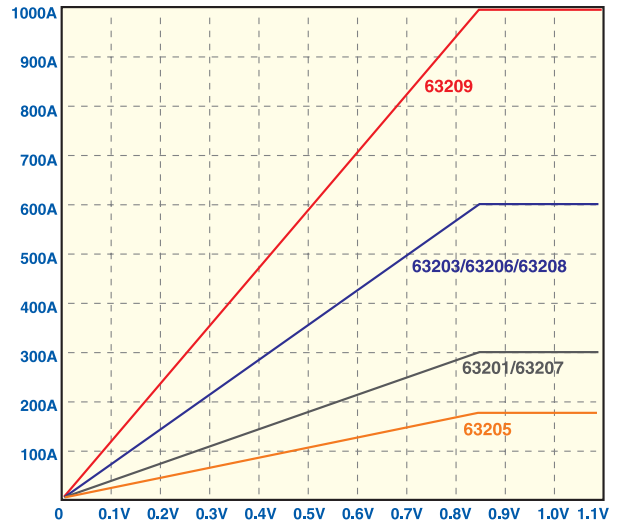
### V-I Curve:

Model 63201/ 63203/ 63205/ 63206/ 63207/ 63208/ 63209

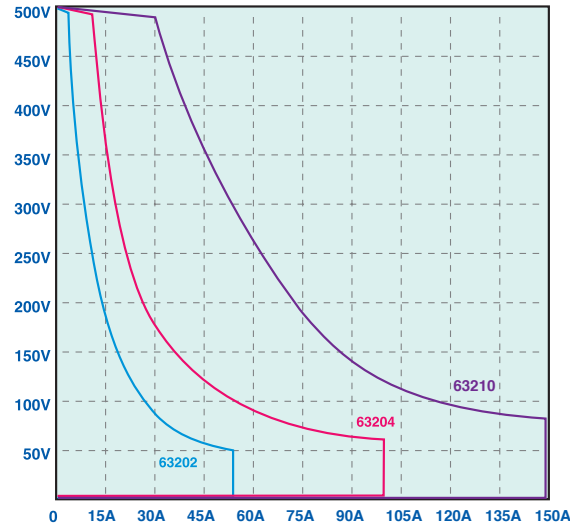


### Low Voltage Operating:

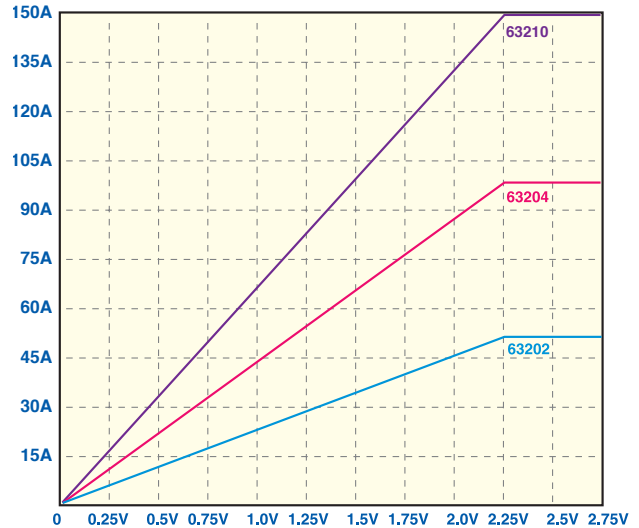
Model 63201/ 63203/ 63205/ 63206/ 63207/ 63208/ 63209



### V-I Curve: Model 63202/63204/63210



### Low Voltage Operating: Model 63202/63204/63210



Note: All specifications are measured at load input terminals. (Ambient temperature of +25 °C)

## ORDERING INFORMATION

**63201** : DC Electronic Load 2.6KW/ 300A/ 80V

**63202** : DC Electronic Load 2.6KW/ 50A/ 500V

**63203** : DC Electronic Load 5.2KW/ 600A/ 80V

**63204** : DC Electronic Load 5.2KW/ 100A/ 500V

**63205** : DC Electronic Load 6.5KW/ 180A/ 80V

**63206** : DC Electronic Load 10.4KW/ 600A/ 80V

**63207** : DC Electronic Load 10.4KW/ 300A/ 80V

**63208** : DC Electronic Load 15.6KW/ 600A/ 80V

**63209** : DC Electronic Load 15.6KW/ 1000A/ 80V

**63210** : DC Electronic Load 14.5KW/ 150A/ 500V

**A600009** : GPIB Cable (200 cm)

**A600010** : GPIB Cable (60 cm)

**A632001** : Remote Controller



Developed and Manufactured by :

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