



Chroma's 63600 Series DC Electronic Loads are designed for testing multi-output AC/DC power supplies, DC/DC converters, chargers, batteries, adapters, and power electronic components. They are excellent for research, development, production, and incoming inspection applications.

### KEY FEATURES

- Max. Power : 100W x 2(Dual), 300W & 400W
- Voltage Range : up to 600V
- 5 module mainframe Max. 2000W, load modules up to 400W/ea
- Up to 10 channels in one mainframe, fit for testing multiple output SMPS
- 0.4V @ 80A (Typical) low voltage operating characteristics
- Flexible CC, CR, CV and CP operation modes
- CZ mode for turn on capacitive load simulation
- Parallel mode for high current and power application up to 2kW
- Multi Channel synchronous control
- Auto frequency sweep up to 50kHz
- Real time power supply load transient response simulation and Vpk+/- measurement
- User programmable 100 sequential front panel input status for user-friendly operating
- Precision voltage and current measurement
- Precision high speed digitizing measurement/ data capture
- Voltage, Current and Pmax measurement for OCP/OLP testing
- Timing measurement for batteries
- Short circuit simulation
- Self-test at power-on
- Full Protection : OC, OP, OT protection and OV alarm
- Ethernet, USB and GPIB interfaces

The 63600's state of the art design uses DSP technology to simulate non-linear loads using an unique CZ operation mode allowing realistic loading behavior.

The 63600 series can draw its rated current under very low voltage (0.4V typical). This unique feature guarantees the best loading performance for modern Point-of-Load conditions and fuel cells.

The 63600 series can simulate a wide range of dynamic loading applications, with programmable load levels, slew rates, duration, and conducting voltage. The 63600 also has a dynamic sweep function to meet the test requirements of ATX power supplies. The instrument allows up to 100 sets of system operating status which can be stored in the EEPROM and recalled instantly for automated testing application.

Real time measurement of voltage and current are integrated into each 63600 load module using a 16-bit measurement circuit with three current ranges. The user can perform online voltage measurements and adjustments or simulate short circuit test using the simple keypad on the front panel.

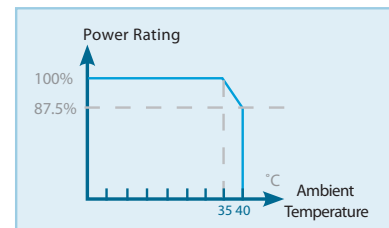
With the VFD display and rotary knob, the 63600 loads offer versatile front panel operation. Users are able to control the 63600 family remotely via Ethernet, USB, or GPIB interface.

Also included in the 63600 are self-diagnostic routines and full protections against OP, OC, OT and alarm indicating OV, reverse polarity. This ensures the quality and reliability of the 63600 and provides protection of units under test.



### ORDERING INFORMATION

- 63600-1** : 63600 Mainframe for Single Module
- 63600-2** : 63600 Mainframe for 2 Modules
- 63600-5** : 63600 Mainframe for 5 Modules
- 63610-80-20** : DC Load Module 80V/ 20A/ 100Wx2
- 63630-80-60** : DC Load Module 80V/ 60A/ 300W
- 63630-600-15** : DC Load Module 600V/ 15A/ 300W
- 63640-80-80** : DC Load Module 80V/ 80A/ 400W
- A636000** : GPIB Interface for 63600-2/63600-5 Mainframe
- A636001** : Ethernet Interface for 63600-2/63600-5 Mainframe
- A636003** : External Signal Board (Test Pin) for 63600-2/63600-5 Mainframe
- A636005** : External Signal Board (BNC) for 63600-2/63600-5 Mainframe
- A636007** : Rack Mounting Kit for 63600-2 mainframe
- A636008** : Rack Mounting Kit for 63600-5 mainframe (for Europe only)
- A632006** : NI USB-6211 BUS-Powered Multifunction DAQ



Model	63600-1*	63600-2	63600-5
Number of slots	1 slot	2 slots	5 slots
Operating temperature	0~40°C	0~40°C	0~40°C
Input Rating	1Ø 100~115V ± 10% V <sub>LN</sub> , 1Ø 190~230V ± 10% V <sub>LN</sub> , Switchable, 47~63Hz	1Ø 100~115V ± 10% V <sub>LN</sub> , 1Ø 190~230V ± 10% V <sub>LN</sub> , Switchable, 47~63Hz	1Ø 100~115V ± 10% V <sub>LN</sub> , 1Ø 190~230V ± 10% V <sub>LN</sub> , Auto Range, 47~63Hz
Mainframe dimension (HxWxD)	177x70.22x554.9mm / 7x2.76x21.8 inch	177x210x554mm / 7.0x8.27x21.8 inch	177x447x554mm / 7.0x17.6x21.8 inch (Full Rack)
Weight	7.5kg / 16.53lbs	11.5kg / 23.35lbs	15.6kg / 34.39lbs

\* None digital interface option

SPECIFICATIONS-1						
Model	63610-80-20			63630-80-60		
Configuration	100Wx2			300W		
Voltage *1 *8	0~80V			0~80V		
Current	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A
Power *2	0~16W	0~30W	0~100W	0~30W	0~60W	0~300W
<b>Static Mode</b>						
Typical Min. Operating Voltage (DC)	0.5V@0.2A	0.5V@2A	0.5V@20A	0.5V@0.6A	0.5V@6A	0.5V@60A
<b>Constant Current Mode</b>						
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A
Resolution	0.01mA	0.1mA	1mA	0.01mA	0.1mA	1mA
Accuracy	0.1%+0.1%F.S.			0.1%+0.1%F.S.		
<b>Constant Resistance Mode</b>						
Range	CRL : 0.04~80 Ω (100W/6V) CRM: 1.44~2.9k Ω (100W/16V) CRH : 5.76~12k Ω (100W/80V)			CRL : 0.015~30 Ω (300W/6V) CRM: 0.3~600 Ω (300W/16V) CRH : 1.5~3k Ω (300W/80V)		
Resolution *9	0.3288mS			0.9864mS		
Accuracy *3	0.1%+0.075S (6V) 0.1%+0.01S (16V) 0.1%+0.00375S (80V)			0.1%+0.2S (6V) 0.1%+0.03S (16V) 0.1%+0.01S (80V)		
<b>Constant Voltage Mode</b>						
Range	0~6V	0~16V	0~80V	0~6V	0~16V	0~80V
Resolution	0.1mV	1mV	1mV	0.1mV	1mV	1mV
Accuracy	0.05%+0.1%F.S.			0.05%+0.1%F.S.		
<b>Constant Power Mode</b>						
Range	0~2W	0~10W	0~100W	0~6W	0~30W	0~300W
Resolution *9	1mW	10mW	100mW	3.2mW	32mW	320mW
Accuracy *4	0.3%+0.3%F.S.			0.3%+0.3%F.S.		
<b>Dynamic Mode - CC</b>						
Min. Operating Voltage	1.5V			1.5V		
Frequency	100Hz~50kHz/0.01Hz~1kHz			100Hz~50kHz/0.01Hz~1kHz		
Duty	1~99% (Min. Rise Time Dominated)			1~99% (Min. Rise Time Dominated)		
Accuracy	1μs/1ms+100ppm			1μs/1ms+100ppm		
Slew Rate	0.04A/ms~0.02A/μs	0.4A/ms~0.2A/μs	4A/ms~2A/μs	0.12A/ms~0.06A/μs	1.2A/ms~0.6A/μs	12A/ms~6A/μs
Resolution	0.01mA/μs	0.1mA/μs	1mA/μs	0.01mA/μs	0.1mA/μs	1mA/μs
Accuracy	10% ± 20μs			10% ± 20μs		
Min. Rise Time	10 μs			10 μs		
<b>Current</b>						
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A
Resolution	0.01mA	0.1mA	1mA	0.01mA	0.1mA	1mA
<b>Ext Wave Mode(20kHz) : CC</b>						
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A
Level	0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.		
<b>Program mode</b>						
Sequence No.	100/Program			100/Program		
Dwell / SEQ	0.1ms ~ 30s (Resolution : 0.1ms)			0.1ms ~ 30s (Resolution : 0.1ms)		
Load Setting	Refer to Static mode specifications			Refer to Static mode specifications		
Spec Check	Voltage/Current/Power			Voltage/Current/Power		
<b>Measurement</b>						
<b>Voltage Read Back</b>						
Range	0~6V	0~16V	0~80V	0~6V	0~16V	0~80V
Resolution	0.1069mV	0.2849mV	1.3537mV	0.1069mV	0.2849mV	1.3537mV
Accuracy *5	0.025%+0.01%F.S.		0.01%+ 0.025%F.S.	0.025%+0.01%F.S.		0.01%+ 0.025%F.S.
<b>Current Read Back</b>						
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A
Resolution	0.003349mA	0.034628mA	0.329561mA	0.009942mA	0.101748mA	1.009878mA
Accuracy *5	0.05%+0.05%F.S.			0.05%+0.05%F.S.		

Battery Test & Automation Solution  
 Photovoltaic Test & Automation Solution  
 Semiconductor/IC Test Solution  
 Laser Diode Test Solution  
 LED/Lighting Test Solution  
 FPD Test Solution  
 Video & Color Test Solution  
 Automated Optical Inspection Solution  
 Power Electronics Test Solution  
 Passive Component Test Solution  
 Electrical Safety Test Solution  
 General Purpose Test Solution  
 Thermoelectric Test & Control Solution  
 PXI Test & Measurement Solution  
 Manufacturing Execution Systems Solution

Power Read Back						
Range	0~16W	0~30W	0~100W	0~30W	0~60W	0~300W
Accuracy *5	0.1%+0.1%F.S.			0.1%+0.1%F.S.		
Voltage Monitor						
Bandwidth	20 kHz			20 kHz		
Range	0~6V	0~16V	0~80V	0~6V	0~16V	0~80V
Output	0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.		
Current Monitor						
Bandwidth	20 kHz			20 kHz		
Range	0~0.2A	0~2A	0~20A	0~0.1A	0~1A	0~10A
Output	0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.		
Protection						
Over Power	Yes			Yes		
Over Current	Yes			Yes		
Over Voltage Alarm*8	Yes			Yes		
Over Temperature	Yes			Yes		
Reverse	Yes			Yes		
Interface						
USB	Standard			Standard		
Ethernet	Optional			Optional		
GPIB	Optional			Optional		
System BUS	Master/Slave			Master/Slave		
Others						
Dout						
No. of bits	2 bits per mainframe			2 bits per mainframe		
Level - H	1.8V/3.3V/5V switchable			1.8V/3.3V/5V switchable		
Level - L	<0.6V@I <sub>sink</sub> =10mA			<0.6V@I <sub>sink</sub> =10mA		
Drive	Pull_up resistor = 4.7kΩ			Pull_up resistor = 4.7kΩ		
Din (TTL Compatible, Rising Edge)						
No. of bits	2 bits per mainframe			2 bits per mainframe		
External Trig. for Digitizing						
No. of bits	1 bit per mainframe			1 bit per mainframe		
External Trig. for Auto Sequences (TTL Compatible, Rising Edge)						
No. of bits	1 bit per mainframe			1 bit per mainframe		
Load ON - O/P						
Level	TTL Compatible, Level, Active High			TTL Compatible, Level, Active High		
Short ON - O/P						
No. of channels	2 channels per 63600-1 mainframe 4 channels per 63600-2 mainframe 10 channels per 63600-5 mainframe			2 channels per 63600-1 mainframe 4 channels per 63600-2 mainframe 10 channels per 63600-5 mainframe		
Level	TTL Compatible, Level, Active High			TTL Compatible, Level, Active High		
General						
Short circuit						
Current *6	Set to 100% of rated current			Set to 100% of rated current		
Input Resistance (Load Off)	700kΩ (Typical)			700kΩ (Typical)		
Dimensions (HxWxD)	142x86x514mm / 5.6x3.4x20.2 inch			142x86x514mm / 5.6x3.4x20.2 inch		
Weight	5kg / 11 lbs			4kg / 8.8 lbs		
Operating Temperature	0~40°C			0~40°C		
Storage Temperature	-20~80°C			-20~80°C		
Power	Supply from mainframe			Supply from mainframe		
EMC & Safety	CE			CE		

SPECIFICATIONS-2						
Model	63630-600-15			63640-80-80		
Configuration	300W			400W		
Voltage *1 *8	0~600V			0~80V		
Current	0~0.15A	0~1.5A	0~15A	0~0.8A	0~8A	0~80A
Power *2	0~90W	0~300W	0~300W	0~60W	0~60W	0~400W
<b>Static Mode</b>						
Typical Min. Operating Voltage (DC)	2V@0.15A	2V@1.5A	2V@15A	0.4V@0.8A	0.4V@8A	0.4V@80A
<b>Constant Current Mode</b>						
Range	0~0.15A	0~1.5A	0~15A	0~0.8A	0~8A	0~80A
Resolution	0.005mA	0.05mA	0.5mA	0.01mA	0.1mA	1mA
Accuracy	0.1%+0.1%F.S.			0.1%+0.1%F.S.		
<b>Constant Resistance Mode</b>						
Range	CRL : 0.133~270Ω (300W/80V) CRM: 1.92~4kΩ (300W/150V) CRH: 208~200kΩ (300W/600V)			CRL : 0.01~20Ω (400W/6V) CRM: 0.36~720Ω (400W/16V) CRH : 1.45~2.9kΩ (400W/80V)		
Resolution *9	0.2435mS			1.322mS		
Accuracy *3	0.1%+0.02S (80V) 0.1%+0.0005S (150V) 0.1%+0.0003S (600V)			0.1%+0.275S (6V) 0.1%+0.036S (16V) 0.1%+0.01375S (80V)		
<b>Constant Voltage Mode</b>						
Range	0~80V	0~150V	0~600V	0~6V	0~16V	0~80V
Resolution	1mV	10mV	10mV	0.1mV	1mV	1mV
Accuracy	0.05%+0.1%F.S.			0.05%+0.1%F.S.		
<b>Constant Power Mode</b>						
Range	0~6W	0~30W	0~300W	0~8W	0~40W	0~400W
Resolution *9	5.625mW	56.25mW	562.5mW	4mW	40mW	400mW
Accuracy *4	0.3%+0.3%F.S.			0.3%+0.3%F.S.		
<b>Dynamic Mode - CC</b>						
Min. Operating Voltage	3V			1.5V		
Frequency	100Hz~50kHz/0.01Hz~1kHz			100Hz~50kHz/0.01Hz~1kHz		
Duty	1~99% (Min. Rise Time Dominated)			1~99% (Min. Rise Time Dominated)		
Accuracy	1μs/1ms+100ppm			1μs/1ms+100ppm		
Slew rate	0.03A/ms~0.015A/μs	0.3A/ms~0.15A/μs	3A/ms~1.5A/μs	0.16A/ms~0.08A/μs	1.6A/ms~0.8A/μs	16A/ms~8A/μs
Resolution	0.005mA/μs	0.05mA/μs	0.5mA/μs	0.01mA/μs	0.1mA/μs	1mA/μs
Accuracy	10% ± 20μs			10% ± 20μs		
Min. Rise Time	10 μs			10 μs		
<b>Current</b>						
Range	0~0.15A	0~1.5A	0~15A	0~0.8A	0~8A	0~80A
Resolution	0.005mA	0.05mA	0.5mA	0.01mA	0.1mA	1mA
<b>Ext Wave Mode(20kHz) : CC</b>						
Range	0~0.15A	0~1.5A	0~15A	0~0.8A	0~8A	0~80A
Level	0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.		
<b>Program mode</b>						
Sequence No.	100/Program			100/Program		
Dwell / SEQ	0.1ms ~ 30s (Resolution : 0.1ms)			0.1ms ~ 30s (Resolution : 0.1ms)		
Load Setting	Refer to Static mode specifications			Refer to Static mode specifications		
Spec Check	Voltage/Current/Power			Voltage/Current/Power		
<b>Measurement</b>						
<b>Voltage Read Back</b>						
Range	0~80V	0~150V	0~600V	0~6V	0~16V	0~80V
Resolution	1.4194mV	2.661mV	10.645mV	0.1069mV	0.2849mV	1.3537mV
Accuracy *5	0.025%+0.01%F.S.		0.01%+ 0.025%F.S.	0.025%+0.01%F.S.		0.01%+ 0.025%F.S.
<b>Current Read Back</b>						
Range	0~0.15A	0~1.5A	0~15A	0~0.8A	0~8A	0~80A
Resolution	0.00275mA	0.0266mA	0.255mA	0.013695mA	0.138766mA	1.31406mA
Accuracy *5	0.05%+0.05%F.S.			0.05%+0.05%F.S.		

Battery Test & Automation Solution  
 Photovoltaic Test & Automation Solution  
 Semiconductor/IC Test Solution  
 Laser Diode Test Solution  
 LED/Lighting Test Solution  
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 Automated Optical Inspection Solution  
 Power Electronics Test Solution  
 Passive Component Test Solution  
 Electrical Safety Test Solution  
 General Purpose Test Solution  
 Thermoelectric Test & Control Solution  
 PXI Test & Measurement Solution  
 Manufacturing Execution Systems Solution

Power Read Back						
Range	0~90W	0~300W	0~300W	0~60W	0~60W	0~400W
Accuracy *5	0.1%+0.1%F.S.			0.1%+0.1%F.S.		
Voltage Monitor						
Bandwidth	20 kHz			20 kHz		
Range	0~80V	0~150V	0~600V	0~6V	0~16V	0~80V
Output	0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.		
Current Monitor						
Bandwidth	20 kHz			20 kHz		
Range	0~0.15A	0~1.5A	0~15A	0~0.8A	0~8A	0~80A
Output	0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.		
Protection						
Over Power	Yes			Yes		
Over Current	Yes			Yes		
Over Voltage Alarm*8	Yes			Yes		
Over Temperature	Yes			Yes		
Reverse	Yes			Yes		
Interface						
USB	Standard			Standard		
Ethernet	Optional			Optional		
GPIB	Optional			Optional		
System BUS	Master/Slave			Master/Slave		
Others						
Dout						
No. of bits	2 bits per mainframe			2 bits per mainframe		
Level - H	1.8V/3.3V/5V switchable			1.8V/3.3V/5V switchable		
Level - L	<0.6V@I <sub>sink</sub> =10mA			<0.6V@I <sub>sink</sub> =10mA		
Drive	Pull_up resistor = 4.7k $\Omega$			Pull_up resistor = 4.7k $\Omega$		
Din (TTL Compatible, Rising Edge)						
No. of bits	2 bits per mainframe			2 bits per mainframe		
External Trig. for Digitizing						
No. of bits	1 bit per mainframe			1 bit per mainframe		
External Trig. for Auto Sequences (TTL Compatible, Rising Edge)						
No. of bits	1 bit per mainframe			1 bit per mainframe		
Load ON - O/P						
Level	TTL Compatible, Level, Active High			TTL Compatible, Level, Active High		
Short ON - O/P						
No. of channels	2 channels per 63600-1 mainframe 4 channels per 63600-2 mainframe 10 channels per 63600-5 mainframe			2 channels per 63600-1 mainframe 4 channels per 63600-2 mainframe 10 channels per 63600-5 mainframe		
Level	TTL Compatible, Level, Active High			TTL Compatible, Level, Active High		
General						
Short circuit						
Current *6	Set to 100% of rated current			Set to 100% of rated current		
Input Resistance (Load Off)	2M $\Omega$ (Typical)			700k $\Omega$ (Typical)		
Dimensions (HxWxD)	142x86x514mm / 5.6x3.4x20.2 inch			142x86x514mm / 5.6x3.4x20.2 inch		
Weight	5kg / 11 lbs			4.5kg / 9.9 lbs		
Operating Temperature	0~40°C			0~40°C		
Storage Temperature	-20~80°C			-20~80°C		
Power	Supply from mainframe			Supply from mainframe		
EMC & Safety	CE			CE		

**NOTE\*1** : The maximum current loading below the minimum operating voltage (0.5V) will follow a derating curve.

**NOTE\*2** : The 400W power rating of the 63640-80-80 specified at an ambient temperature of 35°C, please refer to the power rating curve on the right.

**NOTE\*3** : Does not apply to setting current < 0.25% full scale current in high range. Does not apply to setting current < 0.05% full scale current in low and middle range.

**NOTE\*4** : The full scale is  $V_{max} \times I_{max}$ .

**NOTE\*5** : The DC level measurements are made over a period of 20ms, and does not measure any transient signals in the DC measurements.

**NOTE\*6** : Its limits are the maximum power and maximum current of the current range.

**NOTE\*7** : The 63600 is guaranteed to meet specified performance at temperature range of  $25 \pm 5^\circ\text{C}$ .

**NOTE\*8** : If the operating voltage exceeds the rated voltage for 1.1 times, it would cause permanent damage to the device.

**NOTE\*9** : Please refer to user's manual for detail specifications, and S (siemens) is the SI unit of conductance, equal to one reciprocal ohm.