

# Programmable DC Electronic Load 63600 Series

Model No.



## Programmable DC Electronic Load Model 63600 Series

### KEY FEATURES

- Max. Power : 100W x 2(Dual), 300W & 400W
- Voltage Range : up to 80V
- 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

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.

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, 100Wx2/ 20A/ 80V
- 63630-80-60** : DC Load Module, 300W/ 60A/ 80V
- 63640-80-80** : DC Load Module, 400W/ 80A/ 80V
- A600009** : GPIB Cable (200cm)
- A600010** : GPIB Cable (60cm)
- A636000** : GPIB Interface
- A636001** : Ethernet Interface
- A636003** : External Signal Board (Test Pin)
- A636005** : External Signal Board (BNC)
- A632006** : NI USB-6211 BUS-Powered Multifunction DAQ

SPECIFICATIONS									
Model	63610-80-20			63630-80-60			63640-80-80		
Configuration	100Wx2			300Wx1			400Wx1		
Voltage *1 *8	0-80V			0-80V			0-80V		
Current	0-0.2A	0-2A	0-20A	0-0.6A	0-6A	0-60A	0-0.8A	0-8A	0-80A
Power *2	16W	30W	100W	30W	60W	300W	60W	60W	400W
Static Mode									
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	0.4V@0.8A	0.4V@8A	0.4V@80A
Constant Current Mode									
Range	0-0.2A	0-2A	0-20A	0-0.6A	0-6A	0-60A	0-0.8A	0-8A	0-80A
Resolution	0.01mA	0.1mA	1mA	0.01mA	0.1mA	1mA	0.01mA	0.1mA	1mA
Accuracy	0.1%+0.1%F.S.			0.1%+0.1%F.S.			0.1%+0.1%F.S.		
Constant Resistance Mode									
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)			CRL : 0.01-20 Ω (400W/6V) CRM: 0.36-720 Ω (400W/16V) CRH : 1.45-2.9k Ω (400W/80V)		
Resolution *9	0.3288m mho			0.9864m mho			1.322m mho		
Accuracy *3	0.1%+0.075 mho (6V) 0.1%+0.01 mho (16V) 0.1%+0.00375 mho (80V)			0.1%+0.2 mho (6V) 0.1%+0.03 mho (16V) 0.1%+0.01 mho (80V)			0.1%+0.275 mho (6V) 0.1%+0.036 mho (16V) 0.1%+0.01375 mho (80V)		
Constant Voltage Mode									
Range	6V/16V/80V			6V/16V/80V			6V/16V/80V		
Resolution	0.1mV/1mV/1mV			0.1mV/1mV/1mV			0.1mV/1mV/1mV		
Accuracy	0.05%+0.1%F.S.			0.05%+0.1%F.S.			0.05%+0.1%F.S.		
Constant Power Mode									
Range	2W	10W	100W	6W	30W	300W	8W	40W	400W
Resolution *9	1mW/10mW/100mW			3.2mW/32mW/320mW			4mW/40mW/400mW		
Accuracy *4	0.3%+0.3%F.S.			0.3%+0.3%F.S.			0.3%+0.3%F.S.		
Dynamic Mode - CC									
Frequency	100Hz-50kHz/0.01Hz-1kHz			100Hz-50kHz/0.01Hz-1kHz			100Hz-50kHz/0.01Hz-1kHz		
Duty	1-99% (Min. Rise Time Dominated)			1-99% (Min. Rise Time Dominated)			1-99% (Min. Rise Time Dominated)		
Accuracy	1μs/1ms+100ppm			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	0.16A/ms-0.08A/μs	1.6A/ms-0.8A/μs	16A/ms-8A/μs
Resolution	9 bits			9 bits			9 bits		
Min.rise time	10 μs			10 μs			10 μs		
Current									
Range	0-0.2A	0-2A	0-20A	0-0.6A	0-6A	0-60A	0-0.8A	0-8A	0-80A
Resolution	0.01mA	0.1mA	1mA	0.01mA	0.1mA	1mA	0.01mA	0.1mA	1mA
Ext Wave Mode(20kHz) : CC									
Range	0-0.2A	0-2A	0-20A	0-0.6A	0-6A	0-60A	0-0.8A	0-8A	0-80A
Level	0-10V			0-10V			0-10V		
Accuracy	0.5%F.S.			0.5%F.S.			0.5%F.S.		

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Program mode									
Sequence No.	100/Program			100/Program			100/Program		
Dwell / SEQ	0.1ms ~ 30s (Resolution : 0.1ms)			0.1ms ~ 30s (Resolution : 0.1ms)			0.1ms ~ 30s (Resolution : 0.1ms)		
Load Setting	Refer to Static mode specifications			Refer to Static mode specifications			Refer to Static mode specifications		
Spec Check	Voltage/Current/Power			Voltage/Current/Power			Voltage/Current/Power		
Measurement									
Voltage read back									
Range	6V/16V/80V			6V/16V/80V			6V/16V/80V		
Resolution	0.1069mV	0.2849mV	1.3537mV	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.	0.025%+0.01%F.S.		0.01%+0.025%F.S.
Current read back									
Range	0~0.2A	0~2A	0~20A	0~0.6A	0~6A	0~60A	0~0.8A	0~8A	0~80A
Resolution	0.003349mA	0.034628mA	0.329561mA	0.009942mA	0.101748mA	1.009878mA	0.013695mA	0.138766mA	1.31406mA
Accuracy *5	0.05%+0.05%F.S.			0.05%+0.05%F.S.			0.05%+0.05%F.S.		
Power read back									
Range	16W	30W	100W	30W	60W	300W	60W	60W	400W
Accuracy *5	0.1%+0.1%F.S.			0.1%+0.1%F.S.			0.1%+0.1%F.S.		
Voltage Monitor									
Bandwidth	20 kHz			20 kHz			20 kHz		
Range	6V/16V/80V			6V/16V/80V			6V/16V/80V		
Output	0~10V			0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.			0.5%F.S.		
Current Monitor									
Bandwidth	20 kHz			20 kHz			20 kHz		
Range	0~0.2A	0~2A	0~20A	0~0.1A	0~1A	0~10A	0~0.8A	0~8A	0~80A
Output	0~10V			0~10V			0~10V		
Accuracy	0.5%F.S.			0.5%F.S.			0.5%F.S.		
Protection									
Over Power	105~110% of Rated Power			105~110% of Rated Power			105~110% of Rated Power		
Over Current	105~110% of Rated Current			105~110% of Rated Current			105~110% of Rated Current		
Over Voltage Alarm*8	105~110% of Rated Voltage			105~110% of Rated Voltage			105~110% of Rated Voltage		
Over Temperature	Yes			Yes			Yes		
Reverse	Yes			Yes			Yes		
Interface									
USB	Standard			Standard			Standard		
Remote controller	Optional			Optional			Optional		
Ethernet	Optional			Optional			Optional		
GPIB	Optional			Optional			Optional		
System BUS	Master/Slave & Remote Controller			Master/Slave & Remote Controller			Master/Slave & Remote Controller		
Others									
Dout									
No. of bits	2 bits per mainframe			2 bits per mainframe			2 bits per mainframe		
Level - H	1.8V/3.3V/5V switchable			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			<0.6V@I <sub>sink</sub> =10mA		
Drive	Pull_up resistor = 4.7k Ω			Pull_up resistor = 4.7k Ω			Pull_up resistor = 4.7k Ω		
Din (TTL Compatible, Rising Edge)									
No. of bits	2 bits per mainframe			2 bits per mainframe			2 bits per mainframe		
External Trig. for Digitizing									
No. of bits	1 bit per mainframe			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			1 bit per mainframe		
Load ON - O/P									
Level	TTL Compatible, Level, Active High			TTL Compatible, Level, Active High			TTL Compatible, Level, Active High		
Short ON - O/P									
No. of channels	10 channels per mainframe			10 channels per mainframe			10 channels per mainframe		
Level	TTL Compatible, Level, Active High			TTL Compatible, Level, Active High			TTL Compatible, Level, Active High		
General									
Short circuit									
Current *6	Set to 105% of rated current (H range)			Set to 105% of rated current (H range)			Set to 105% of rated current (H range)		
Dimensions (HxWxD)	142x86x514mm / 5.6x3.4x20.2 inch			142x86x514mm / 5.6x3.4x20.2 inch			142x86x514mm / 5.6x3.4x20.2 inch		
Weight	5kg / 11 lbs			4kg / 8.8 lbs			4.5kg / 9.9 lbs		
Operating Temperature	0~40℃			0~40℃			0~40℃		
StorageTemperature	-20~80℃			-20~80℃			-20~80℃		
Power	Supply from mainframe			Supply from mainframe			Supply from mainframe		
EMC & Safety	CE			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 Vmax x Imax.

**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 ± 5°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.

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	90~127 / 175~253VAC Switchable / 47~63Hz	90~130 / 175~253VAC Switchable / 47~63Hz	90~130 / 175~253VAC 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