

Programmable DC Electronic Load

Model No.

6310A Series



LED Load Simulator Model 63110A

KEY FEATURES

- Unique LED mode for LED power driver test
- Programmable LED operating resistance (R_d)
- Programmable internal resistance (R_r) for simulating LED ripple current
- Fast response for PWM dimming test
- Up to eight channels in one mainframe
- 16-bit precision voltage and current measurement with dual-range
- Full Protection: OC, OP, OT protection and OV alarm

As a constant current source, the LED power driver has an output voltage range with a constant output current. LED power drivers are usually tested in one of the following ways :

1. With LEDs
2. Using resistors for loading
3. Using Electronic Loads in Constant Resistance (CR) mode, or Constant Voltage (CV) mode

However, all these testing methods, each of them has their own disadvantages.

As shown on the V-I curve in Figure 1, the LED has a forward voltage V_f and a operating resistance (R_d). When using a resistor as loading, the V-I curve of the resistor is not able to simulate the V-I curve of the LED as shown in blue on Figure 1. This may cause the LED power driver to not start up due to the difference in V-I characteristic between the resistors and the LEDs. When using Electronic Loads, the CR and CV mode settings are set for when the LED is under stable operation and therefore, is unable to simulate turn on or PWM brightness control characteristics. This may cause the LED power driver to function improperly or trigger it's protection circuits. These testing requirements can be achieved when using a LEDs as a load; however, issues regarding the LED aging as well as different LED power drivers may require different types of LEDs or a number of LEDs. This makes it inconvenient for mass production testing.

Chroma has created the industries first LED Load Simulator for simulating LED loading with our 63110A load model from our 6310A series Electronic Loads. By setting the LED power driver's output voltage, and current, the Electronic Load can simulate the LED's loading characteristics. The LED's forward voltage and operating resistance can also be set to further adjust the loading current and ripple current to better simulate LED characteristics. The 63110A design also has increased bandwidth to allow for PWM dimming testing.

Figure 2 shows the dimming current waveform of the LED. Figure 3 shows the dimming current waveform when using 63110A as a load.

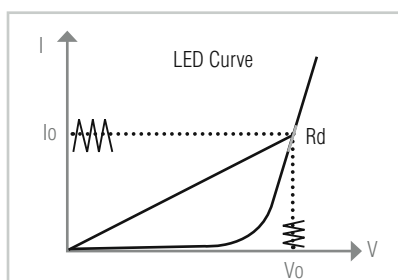


Figure 1 LED V-I Characteristics

SPECIFICATIONS		
Model	63110A (100Wx2)	
Power	100W	
Current	0-0.6A	0-2A
Voltage*1	0-500V	
Min. Operating Voltage	6V@2A	
LED MODE		
Range	Operation Voltage: 0-100V/0-500V Rd Coefficient : 0.001-1	
Resolution	VL: 4mV VH: 20mV	
CONSTANT RESISTANCE MODE		
Range	CRL: 3Ω-1kΩ (100W/100V) CRH: 10Ω-10kΩ (100W/500V)	
Resolution	CRL: 20μ mho CRH: 2μ mho	
Accuracy	1kΩ : 0.001mho±0.2% 10kΩ : 0.0001mho±0.1%	
CONSTANT VOLTAGE MODE		
Range	0-500V	
Resolution	20mV	
Accuracy	0.05% ± 0.1% F.S.	
CONSTANT CURRENT MODE		
Range	0-0.6A	0-2A
Resolution	12μA	40μA
Accuracy	0.1%±0.2% F.S.	0.1%±0.2% F.S.
MEASUREMENT SECTION		
VOLTAGE READ BACK		
Range	0-100V	0-500V
Resolution	2mV	10mV
Accuracy	0.025%±0.025% F.S.	
CURRENT READ BACK		
Range	0-0.6A	0-2A
Resolution	12μA	40μA
Accuracy	0.05%±0.05% F.S.	

NOTE*1 : If the operating voltage exceeds 1.1 times of the rated voltage, it would cause permanent damage to the device.

The 6314A holds up to four 63110A load modules, which will result in an 8-channel 100W/channel load with standard front-panel inputs. This makes it ideal for testing single output and multiple output LED driver. Additionally, the GO/NG output port is useful for UUT's pass/fail testing on an automated production line. All modules on the 6314A/6312A mainframe share a common GPIB address to synchronize and speed up the control of the load modules and the read-back of data.



6312A : 2 in 1 Mainframe

6314A : 4 in 1 Mainframe

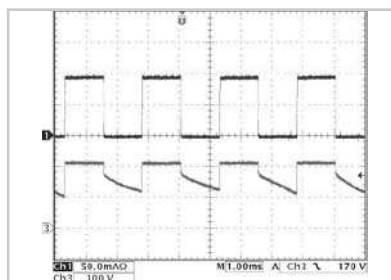


Figure 2 - LED dimming test

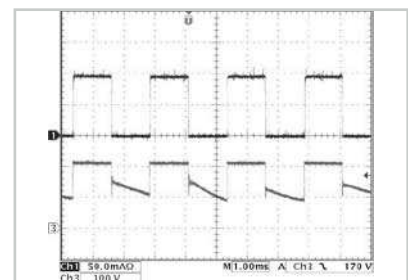


Figure 3 - 63110A dimming test

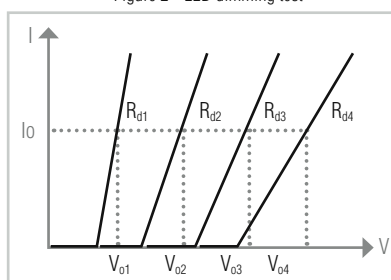


Figure 4 - Simulate different number of LEDs

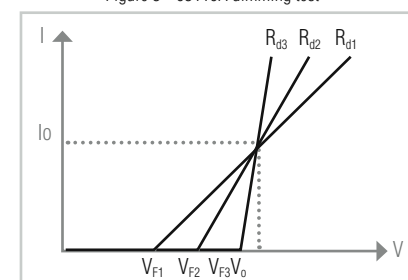


Figure 5 - Simulate different characteristic of LEDs