

	Normal mode		Turbo mode
3310G	60V / 30A / 150W	➔	60V / 90A / 450W
3311G	60V / 60A / 300W	➔	60V / 180A / 900W
3312G	250V / 12A / 300W	➔	250V / 36A / 900W
3314G	500V / 12A / 300W	➔	500V / 24A / 600W
3315G	60V / 15A / 75W	➔	60V / 60A / 300W
3316G	80V / 80A / 400W	➔	80V / 160A / 800W
3318G	500V / 20A / 400W	➔	500V / 40A / 800W



### Features

- 5 digital V / A / W Meter can be displayed on Large LCD display simultaneously.
- Flexible CC, CR, CV, CP, CC + CV, CP + CV, Dynamic and short circuit operation modes.
- Built-in test modes include Battery Discharge, BMS, Fuse/Breaker Trip/Non-Trip, Short circuit, OCP, OPP test modes.
- Turbo mode can withstand up to 4 times the current and power electronic load within 1 sec. period, most fit Fuse/Breaker and BMS, Short circuit, OCP, OPP test.
- Provide battery BMS protection test function.
- Support MPPT CC, CR, CV test function for solar panel.
- Short circuit duration can be set within short circuit test.
- Can set the power-on status value.
- Voltage meter display can be configured as polarity positive ("+") or negative ("-").
- Synchronous parallel execution function (SYNC. Load on)
- Can be configured in the Mainframe of 3302G (single channel), 3305G (dual channels) or 3300G (Quad channels), each mainframe has up to 150 sets Store/Recall memory.
- Optional programmable NTC Resistor (installed in mainframe)
- Optional Interface: GPIB, RS232, USB, LAN.
- Protection against V, I, W, and °C.
- Optional 9923 load current waveform generator to provide the battery actual discharge current waveform simulation.

### Descriptions

- Each 3310G Series module has its own control and display panel, CC/CR/CV/CP/Dynamic modes, plug in 3302G/3305G/3300G mainframe with 150 sets Store/Recall memory which provides load set-up more efficiently, also can be controlled via RS232, Ethernet, USB and GPIB interface.
- The new Turbo mode is designed for overload or protection testing, which includes OCP, OPP, Short for AC/DC or DC/DC power source; Over Charge/Discharge and Short for Battery BMS protection; and Blow/Not Blow testing for Fuse, Breaker or PTC Current Protection Components.
- Support Short, OCCP and OCDP protection tests for battery BMS protection testing, the peak current before protection and protection response time are measured.
- BMS, Fuse, OCP and OPP single-key test functions on the module make test more efficient.
- Dynamic can be simulated under CC, CP mode. The current Rise / Fall slew rate can be adjusted individually and there is an external signal input so that load can have a simulated Specific Load Current Waveform, optional 9923 Load Current Waveform Generator is able to support real current waveform testing.
- SHORT duration setting and SHORT\_VH, SHORT\_VL setting function, also can measure Short Voltage and Current.
- Programmable LOAD ON/OFF voltage, GO/NG meter check, Voltage meter display "+" or "-" is selectable and 150 sets Store / Recall larger memory is much advance feature for each different application.
- 150 sets test parameter and status storage function can call the storage memory real time in accordance with the auto sequence requirement, at any time to tune out the stored memory for use.

### Applications

- Voltage / Current source SMPS transient response
- Voltage Source Current limit testing and battery emulation for Charger testing
- Battery discharge capacity
- Lithium battery BMS charge and discharge protection
- Fuse, Breaker, PTC specification test
- MPPT test function for solar panels
- R&D, Quality Control
- ATE system
- Production testing

## Specifications

MODEL	3310G		3311G		3312G		3314G		3315G	
Power	150W, 450W max. <sup>*1</sup>		300W, 900W max. <sup>*1</sup>		300W, 900W max. <sup>*1</sup>		300W, 600W max. <sup>*1</sup>		75W, 300W max. <sup>*1</sup>	
Current	30A, 90A max. <sup>*1</sup>		60A, 180A max. <sup>*1</sup>		12A, 36A max. <sup>*1</sup>		12A / 24A max. <sup>*1</sup>		15A / 60A max. <sup>*1</sup>	
Voltage	60V		60V		250V		500V		60V	
<b>PROTECTIONS</b>										
Over Power Protection(OPP)	105%									
Over Current Protection(OCP)	105%									
Over Voltage Protection(OVP)	105%									
Over Temp Protection(OTP)	YES									
<b>Constant Current Mode</b>										
Range <sup>*2</sup>	0 ~ 3A	0 ~ 30A	0 ~ 6A	0 ~ 60A	0 ~ 1.2A	0 ~ 12A	0 ~ 1.2A	0 ~ 12A	0 ~ 1.5A	0 ~ 15A
Resolution	0.05mA	0.5mA	0.1mA	1mA	0.02mA	0.2mA	0.02mA	0.2mA	0.0254mA	0.25mA
Accuracy	± 0.1% of ( setting + Range)									
<b>Constant Resistance Mode</b>										
Range	2~120KΩ	0.02Ω~2Ω	1Ω~60 KΩ	0.0083Ω~1Ω	25Ω~1500KΩ	0.08Ω~25Ω	50 ~ 3000KΩ	0.5Ω ~ 50Ω	4Ω ~ 240 KΩ	0.02Ω ~ 4Ω
Resolution	0.00833mS	0.033mΩ	0.0166mS	0.0166mΩ	0.00066mS	0.4166mΩ	0.000333mS	0.8333mΩ	0.04166mS	0.0666mΩ
Accuracy	± 0.2% of (Setting + Range)									
<b>Constant Voltage Mode</b>										
Range	0 ~ 6V	0 ~ 60V	0 ~ 6V	0 ~ 60V	0 ~ 30V	0 ~ 250V	0 ~ 60V	0 ~ 500V	0 ~ 6V	0 ~ 60V
Resolution	0.0001V	0.001V	0.0001V	0.001V	0.001V	0.01V	0.001V	0.01V	0.0001V	0.001V
Accuracy	± 0.05% of (Setting + Range)									
<b>Constant Power Mode</b>										
Range	0 ~ 15W	0 ~ 150W	0 ~ 30W	0 ~ 300W	0 ~ 30W	0 ~ 300W	0 ~ 30W	0 ~ 300W	0 ~ 7.5W	0 ~ 75W
Resolution	0.00025W	0.0025W	0.0005W	0.005W	0.0005W	0.005W	0.001W	0.01W	0.000125W	0.00125W
Accuracy	± 0.5% of (Setting + Range)									
<b>Constant Current + Constant Voltage Mode</b>										
Range	60V	30A	60V	60A	250V	12A	500V	12A	60V	15A
Resolution	0.001V	0.5mA	0.001V	1mA	0.01V	0.2mA	0.01V	0.2mA	0.001V	0.25mA
Accuracy	± 1.0% of (Setting + Range)									
<b>Constant Power + Constant Voltage Mode</b>										
Range	60V	150W	60V	300W	250V	300W	500V	300W	60V	75W
Resolution	0.001V	0.0025W	0.001V	0.005W	0.01V	0.005W	0.01V	0.01W	0.001V	0.00125W
Accuracy	± 1.0% of (Setting + Range)									
Maximum Current	Turbo OFF Turbo ON <sup>*1</sup>	30A 90A	60A 180A	60A 180A	12A 36A	12A 36A	12A 24A	12A 24A	15A 60A	15A 60A
Meas. Accuracy	± 1.0% of (Reading + Range)									
<b>Short/OCP/OPP Test Function</b>										
Short Time	Turbo OFF Turbo ON <sup>*1</sup>	100ms~10 Sec. or Continue 100~1000ms								
Meas. Accuracy	NA									
OCP Time (Tstep)	Turbo OFF Turbo ON <sup>*1</sup>	100mS 20mS								
Meas. Accuracy	NA									
OPP Time (Tstep)	Turbo OFF Turbo ON <sup>*1</sup>	100mS 20mS								
Meas. Accuracy	NA									
<b>BMS Test Mode<sup>*3</sup></b>										
Short Time	Turbo OFF Turbo ON <sup>*1</sup>	0.05mS~10ms 0.05mS~10ms								
Meas. Accuracy	±0.005mS									
OCP Time (Tstep)	Turbo OFF Turbo ON <sup>*1</sup>	0.05mS~10ms / 11~1000ms 0.05mS~10ms / 11~1000ms								
Meas. Accuracy	±0.005mS / ±0.2mS									
<b>Fuse Test Mode<sup>*4</sup></b>										
Trip & Non-Trip Time	Turbo OFF Turbo ON <sup>*1</sup>	r1 : 1~5999ms, r2 : 6~16383sec 1~1000mS								
Meas. Accuracy	r1 : ±0.2mS(<200mS), ±20mS(>200mS), r2: ±0.5S									
Repeat Cycle	0~255									
<b>MPPT Mode</b>										
Algorithm	P & O									
Load mode	CV									
P&O interval	1000ms ~ 60000ms									
<b>Dynamic Mode (50KHz)</b>										
Timing										
Thigh & Tlow	0.010~9.999 / 99.99 / 999.9 / 9999mS									
Resolution	0.001 / 0.01 / 0.1 / 1mS									
Slew rate	2.0~125mA/uS	2.0~125mA/uS	4.0~250mA/uS	40~2500mA/uS	0.8~50mA/uS	8~500mA/uS	0.8~50mA/uS	8.0~500mA/uS	1~62.5mA/uS	10~625mA/uS
Accuracy	± (5% of Setting) ±10uS									
<b>Measurement</b>										
<b>Voltage Read Back</b>										
Range (5 Digital)	6V	60V	6V	60V	30V	250V	60V	600V	6V	60V
Resolution	0.0001V	0.001V	0.0001V	0.001V	0.001V	0.01V	0.001V	0.01V	0.0001V	0.001V
Accuracy	± 0.025% of (Reading + Range)									
<b>Current Read Back</b>										
Range (5 Digital)	3A	30A	6A	60A	1.2A	12A	1.2A	30A	1.5A	15A
Resolution	0.0001A	0.001A	0.0001A	0.001A	0.00002A	0.0002A	0.0001A	0.01A	0.00001A	0.001A
Accuracy	± 0.1% of (Reading + Range)									
<b>Power Read Back</b>										
Range (5 Digital)	100W	150W	100W	300W	100W	300W	100W	300W	10W	75W
Resolution	0.001W	0.001W	0.001W	0.01W	0.001W	0.01W	0.001W	0.001W	0.0001W	0.001W
Accuracy	± 0.125% of (Reading + Range)									
Current Monitor	FULL SCALE 10V									
Accuracy	0.5% of (Setting + Range)									
Current Programming Input	FULL SCALE 10V									
Programmable Short	BUILT-IN									
Load ON Voltage	0.1 ~ 25V	0.1 ~ 25V		0.2 ~ 50V			0.4 ~ 100V	0.1 ~ 25V		
Accuracy	1% of (Setting + Range)									
Load OFF Voltage	0 ~ 25V	0 ~ 25V		0 ~ 50V			0 ~ 100V	0 ~ 25V		
Accuracy	0.025% of (Setting + Range)									
Typical Short Resistance	0.02 Ω	0.0083 Ω		0.08 Ω			0.5 Ω	0.02 Ω		
Maximum Short Current	30 A	60A		120A			12A	15A		
Dimension(HxWxD)	143 x 108 x 412 mm									
Operating Temperature <sup>*5</sup>	0 ~ 40°C									

\*1 : Up to 4 times rated current and power Turbo mode operation for Fuse, BMS, Short / OCP / OPP testing

\*2 : CC Mode can be forced on Range II

\*3 : The BMS test function is mainly applied to the Short / OCP / OPP and OCPD tests of the battery BMS protection board.

\*4 : Fuse test function is mainly used for fuse and breaker testing

\*5 : The operating temperature range is 0~40°C, the accuracy of this specification is only applicable to 25°C±5°C

## Order Information

### DC Electronic Load

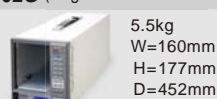
- ▶ 3310G 60V, 30A, 150W
  - ▶ 3311G 60V, 60A, 300W
  - ▶ 3312G 250V, 12A, 300W
  - ▶ 3314G 500V, 12A, 300W
  - ▶ 3315G 60V, 15A, 75W
- 3.7kg  
W=108mm / H=143mm / D=412mm



### DC Electronic Load Mainframe

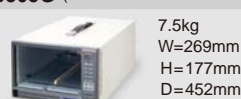
Optional feature : BMS protection function test

#### 3302G (single channel mainframe)



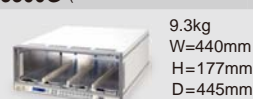
5.5kg  
W=160mm  
H=177mm  
D=452mm

#### 3305G (two channels mainframe)



7.5kg  
W=269mm  
H=177mm  
D=452mm

#### 3300G (four channels mainframe)



9.3kg  
W=440mm  
H=177mm  
D=445mm

Optional interface : ① GPIB Card ② RS232 Card

③ USB Card ④ LAN Card

# Specifications

MODEL	3316G		3318G	
Power	400W, 800W max. <sup>*1</sup>		400W, 800W max. <sup>*1</sup>	
Current	80A / 160A max. <sup>*1</sup>		20A / 40A max. <sup>*1</sup>	
Voltage	80V		500V	
<b>PROTECTIONS</b>				
Over Power Protection(OPP)			105%	
Over Current Protection(OCP)			105%	
Over Voltage Protection(OVP)			105%	
Over Temp Protection(OTP)			YES	
<b>Constant Current Mode</b>				
Range <sup>*2</sup>	0 ~ 8.04A	0 ~ 80.4A	0 ~ 2.04A	0 ~ 20.4A
Resolution	0.134mA	1.34mA	0.034mA	0.34mA
Accuracy	± 0.1% of ( setting + Range)			
<b>Constant Resistance Mode</b>				
Range	1Ω~ 60KΩ	0.0083Ω ~ 1Ω	30Ω~ 1800KΩ	0.3Ω ~ 30Ω
Resolution	0.0166mS	0.0166mΩ	0.000555mS	0.5mΩ
Accuracy	± 0.2% of (Setting + Range)			
<b>Constant Voltage Mode</b>				
Range	0 ~ 8.04V	0 ~ 80.4V	60V	500V
Resolution	0.000134V	0.00134V	0.001V	0.01V
Accuracy	± 0.05% of (Setting + Range)			
<b>Constant Power Mode</b>				
Range	0 ~ 40.02W	0 ~ 400.2W	0 ~ 40.02W	0 ~ 400.2W
Resolution	0.667mW	6.67mW	0.667mW	6.67mW
Accuracy	± 0.5% of (Setting + Range)			
<b>Constant Current + Constant Voltage Mode</b>				
Range	80V	80A	500V	20A
Resolution	0.00134V	1.34mA	0.01V	0.34mA
Accuracy	± 1.0% of (Setting + Range)			
<b>Constant Power + Constant Voltage Mode</b>				
Range	80V	400W	500V	400W
Resolution	0.00134V	6.67mW	0.01V	6.67mW
Accuracy	± 1.0% of (Setting + Range)			
Maximum Current	80A		20A	
Meas. Accuracy	160A		40A	
± 3.0% of (Reading + Range)				
<b>Short/OCP/OPP Test Function</b>				
Short Time	Turbo OFF		100ms~10 Sec. or Continue	
	Turbo ON <sup>*1</sup>		100~1000ms	
Meas. Accuracy			NA	
OCP Time (Tstep)	Turbo OFF		100mS	
	Turbo ON <sup>*1</sup>		20mS	
Meas. Accuracy			NA	
OPP Time (Tstep)	Turbo OFF		100mS	
	Turbo ON <sup>*1</sup>		20mS	
Meas. Accuracy			NA	
<b>BMS Test Mode <sup>*3</sup></b>				
Short Time	Turbo OFF		0.05mS~10ms	
	Turbo ON <sup>*1</sup>		0.05mS~10ms	
Meas. Accuracy			±0.005mS	
OCP Time (Tstep)	Turbo OFF		0.05mS~10ms / 11~1000ms	
	Turbo ON <sup>*1</sup>		0.05mS~10ms / 11~1000ms	
Meas. Accuracy			±0.005mS / ±0.2mS	
<b>Fuse Test Mode <sup>*4</sup></b>				
Trip & Non-Trip Time	Turbo OFF		r1 : 1~5999ms, r2 : 6~16383sec	
	Turbo ON <sup>*1</sup>		1~1000mS	
Meas. Accuracy			r1 : ±0.2mS(<200mS), ±20mS(>200mS), r2: ±0.5S	
Repeat Cycle			0~255	
<b>Surge Test Mode</b>				
Surge current	0~160A		0~40A	
Normal current	0~80A		0~20A	
Surge Time			10~1000ms	
Surge Step			1~5	
<b>MPPT Mode</b>				
Algorithm			P&O	
Load mode			CV	
<b>Dynamic Mode (50KHz)</b>				
<b>Timing</b>				
Thigh & Tlow	0.010~9.999 / 99.99 / 999.9 / 9999mS			
Resolution	0.001 / 0.01 / 0.1 / 1mS			
Slew rate	5.4 ~ 337.5mA/us	54~ 3375mA/us	1.28 ~ 80mA/us	12.8 ~ 800mA/us
Accuracy	± (5% of Setting) ±10uS			
<b>Measurement</b>				
<b>Voltage Read Back</b>				
Range (5 Digital)	8.04V	80.4V	60V	500V
Resolution	0.000134V	0.00134V	0.001V	0.01V
Accuracy	± 0.025% of (Reading + Range)			
<b>Current Read Back</b>				
Range (5 Digital)	8.04A	80.4A	2.04A	20.4A
Resolution	0.000134A	0.00134A	0.000034A	0.00034A
Accuracy	± 0.1% of (Reading + Range)			
<b>Power Read Back</b>				
Range (5 Digital)	100W	400W	100W	400W
Resolution	0.001W	0.01W	0.001W	0.01W
Accuracy	± 0.1% of (Reading + Range)			
Current Monitor	FULL SCALE 10V			
Accuracy	0.5% of (Setting + Range)			
Current Programming Input	FULL SCALE 10V			
Programmable Short	BUILT-IN			
Load ON Voltage	0.1 ~ 25V			0.4~100V
Accuracy	1% of (Setting + Range)			
Load OFF Voltage	0 ~ 25V			0~100V
Accuracy	0.025% of (Setting + Range)			
Typical Short Resistance	0.02857Ω			0.3Ω
Maximum Short Current	80A			20A
Dimension(HxWxD)	143 x 108 x 412 mm			
Operating Temperature <sup>*5</sup>	0 ~ 40°C			

\*1 : Up to 4 times rated current and power Turbo mode operation for Fuse, BMS, Short / OCP / OPP testing

\*2 : CC Mode can be forced on Range II

\*3 : The BMS test function is mainly applied to the Short / OCP / OPP and OCPD tests of the battery BMS protection board.

\*4 : Fuse test function is mainly used for fuse and breaker testing

\*5 : The operating temperature range is 0~40°C, the accuracy of this specification is only applicable to 25°C±5°C

## Order Information

### DC Electronic Load

- ▶ 3316G  
80V · 80A · 400W
- ▶ 3318G  
500V · 20A · 400W



### DC Electronic Load Mainframe

- ▶ 3302G  
(single channel mainframe)  
5.5kg / W160mm / H177mm / D452mm

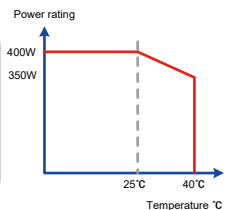


Optional interface : ① GPIB Card ② RS232 Card ③ USB Card ④ LAN Card

- ▶ 3305G  
(two channels mainframe)  
7.5kg / W269mm / H177mm / D452mm



- ▶ 3300G  
(four channels mainframe)  
9.3kg / W440mm / H177mm / D445mm



Power vs temperature curve