3310G Series DC Electronic Load

	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 ℃.
- 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. *1		300W, 900W max. *1		300W, 900W max. *1		300W, 600W max. *1		75W, 300W max. *1	
Current		30A, 90A max. *1		60A, 180A max. *1		12A, 36A max. *1		12A / 24A max. *1		15A / 60A max. *1	
Voltage		60V		60V		250V		500V		60V	
PROTECTIONS											
Over Power Protection(OPP)		105%									
Over Current Protection(OCP)		105%									
Over Voltage Protection(OVP)		105%									
Over Temp Protection(OTP)		YES									
Constant Current Mode											
Range *2		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)									
Constant Resistance Mode											
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)									
Constant Voltage Mode											
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)									
Constant Power Mode											
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)									
Constant Current + Constant Voltage Mode											
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)									
Constant Power + Constant VoltageMode											
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	30A		60A		12A		12A		15A	
	Turbo ON*1	90A		180A		36A		24A		60A	
Meas. Accuracy		± 1.0% of (Reading + Range)									
Short/OCP/OPP Test Function											
Short Time	Turbo OFF	100ms~10 Sec. or Continue									
	Turbo ON*1	100~1000ms									
Meas. Accuracy		NA									
OCP Time (Tstep)	Turbo OFF	100mS									
	Turbo ON*1	20mS									
Meas. Accuracy		NA									
OPP Time (Tstep)	Turbo OFF	100mS									
	Turbo ON*1	20mS									
Meas. Accuracy		NA									
BMS Test Mode *3											
Short Time	Turbo OFF	0.05mS~10ms									
	Turbo ON*1	0.05mS~10ms									
Meas. Accuracy		±0.005mS									
OCP Time (Tstep)	Turbo OFF	0.05mS~10ms / 11~1000ms									
	Turbo ON*1	0.05mS~10ms / 11~1000ms									
Meas. Accuracy		±0.005mS / ±0.2mS									
Fuse Test Mode *4											
Trip & Non-Trip Time	Turbo OFF	r1 : 1~5999ms, r2 : 6~16383sec									
	Turbo ON*1	1~1000mS									
Meas. Accuracy		r1 : ±0.2mS(<200mS), ±20mS(>200mS), r2: ±0.5S									
Repeat Cycle		0~255									
MPPT Mode											
Algorithm		P & O									
Load mode		CV									
P&O interval		1000ms ~ 60000ms									
Dynamic Mode (50KHz)											
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	2.0~1250mA/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									
Measurement											
Voltage Read Back											
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)									
Current Read Back											
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)									
Power Read Back											
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)						± 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		0.1 ~ 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 *5		0 ~ 40℃									

*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 OCDP 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

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

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

Specifications

MODEL		3316G		3318G	
Power		400W, 800W max. *1		400W, 800W max. *1	
Current		80A /160A max. *1		20A / 40A max. *1	
Voltage		80V		500V	
PROTECTIONS					
Over Power Protection(OPP)		105%			
Over Current Protection(OCP)		105%			
Over Voltage Protection(OVP)		105%			
Over Temp Protection(OTP)		YES			
Constant Current Mode					
Range *2		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)			
Constant Resistance Mode					
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)			
Constant Voltage Mode					
Range		0 ~ 8.04V	0 ~ 80.4V	60V	500V
Resolution		0.000134V	0.00134V	0.001V	0.01V
Accuracy		± 0.05% of (Setting + Range)			
Constant Power Mode					
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)			
Constant Current + Constant Voltage Mode					
Range		80V	80A	500V	20A
Resolution		0.00134V	1.34mA	0.01V	0.34mA
Accuracy		± 1.0% of (Setting + Range)			
Constant Power + Constant VoltageMode					
Range		80V	400W	500V	400W
Resolution		0.00134V	6.67mW	0.01V	6.67mW
Accuracy		± 1.0% of (Setting + Range)			
Maximum Current	Turbo OFF	80A		20A	
	Turbo ON*1	160A		40A	
Meas. Accuracy		± 3.0% of (Reading + Range)			
Short/OCP/OPP Test Function					
Short Time	Turbo OFF	100ms~10 Sec. or Continue			
	Turbo ON*1	100~1000ms			
Meas. Accuracy		NA			
OCP Time (Tstep)	Turbo OFF	100mS			
	Turbo ON*1	20mS			
Meas. Accuracy		NA			
OPP Time (Tstep)	Turbo OFF	100mS			
	Turbo ON*1	20mS			
Meas. Accuracy		NA			
BMS Test Mode *3					
Short Time	Turbo OFF	0.05mS~10ms			
	Turbo ON*1	0.05mS~10ms			
Meas. Accuracy		±0.005mS			
OCP Time (Tstep)	Turbo OFF	0.05mS~10ms / 11~1000ms			
	Turbo ON*1	0.05mS~10ms / 11~1000ms			
Meas. Accuracy		±0.005mS / ±0.2mS			
Fuse Test Mode *4					
Trip & Non-Trip Time	Turbo OFF	r1 : 1~5999ms, r2 : 6~16383sec			
	Turbo ON*1	1~1000mS			
Meas. Accuracy		r1 : ±0.2mS(<200mS), ±20mS(>200mS), r2: ±0.5S			
Repeat Cycle		0~255			
MPPT Mode					
Algorithm		SCAN + P&O			
Load mode		CC/CR/CV			
P&O interval		1000ms ~ 60000ms			
Dynamic Mode (50KHz)					
Timing					
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			
Measurement					
Voltage Read Back					
Range (5 Digital)		8.04V	80.4V	60V	500V
Resolution		0.000134V	0.00134V	0.001V	0.01V
Accuracy		± 0.025% of (Reading + Range)			
Current Read Back					
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)			
Power Read Back					
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 *5		0 ~ 40℃			

*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 OCDP 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

3.7kg
W=108mm
H=143mm
D=412mm

DC Electronic Load Mainframe

Optional feature：BMS protection function test

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

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3300G (four channels mainframe)

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W=440mm
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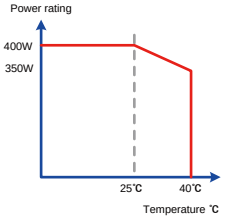

Power vs temperature curve