



# 3310G Series

## DC Electronic Load

### 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.
- Not only CC, CR, and CP mode have parallel operation functions, but CV mode also has parallel operation functions.
- Turbo mode can withstand up to 2 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.
- Synchronous parallel execution function (SYNC. Load on).

**GW INSTEK**  
Simply Reliable

# 3310G Series DC Electronic Load

	Normal mode		Turbo mode
3310G	60V / 30A / 150W	➔	60V / 60A / 300W
3311G	60V / 60A / 300W	➔	60V / 120A / 600W
3312G	250V / 12A / 300W	➔	250V / 24A / 600W
3314G	500V / 12A / 300W	➔	500V / 24A / 600W
3315G	60V / 15A / 75W	➔	60V / 30A / 150W
3316G	80V / 80A / 400W	➔	80V / 160A / 800W
3318G	500V / 20A / 400W	➔	500V / 40A / 800W
3317G / 3317G-M	80V / 160A / 800W	➔	80V / 320A / 1600W
3319G / 3319G-M	500V / 40A / 800W	➔	500V / 80A / 1600W



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- Not only CC, CR, and CP mode have parallel operation functions, but CV mode also has parallel operation functions.
- Turbo mode can withstand up to 2 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 Slot Mainframe], 3305G [Two Slot Mainframe] or 3300G [Four Slot Mainframe], each mainframe has up to 150 sets Store / Recall memory.
- Optional programmable NTC Resistor (installed in 3302G/3305G 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 OCPD 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

	3310G		3311G		3312G	
Power	150W, 300W max. *1		300W, 600W max. *1		300W, 600W max. *1	
Current	30A, 60A max. *1		60A, 120A max. *1		12A, 24A max. *1	
Voltage	60V		60V		250V	
Min. Operating Voltage	0.3V @ 30A		0.3V @ 60A		1V @ 12A	
<b>Protections</b>						
Over Power Protection(OPP)	105%		105%		105%	
Over Current Protection(OCP)	105%		105%		105%	
Over Voltage Protection(OVP)	105%		105%		105%	
Over Temp Protection(OTP)	YES		YES		YES	
<b>Constant Current Mode</b>						
Range *2	0 ~ 3A	0 ~ 30A	0 ~ 6A	0 ~ 60A	0 ~ 1.2A	0 ~ 12A
Resolution	0.05mA	0.5mA	0.1mA	1mA	0.02mA	0.2mA
Accuracy *3	± 0.05% 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
Resolution	0.00833mS	0.033mΩ	0.0166mS	0.0166mΩ	0.00066mS	0.4166mΩ
Accuracy	± 0.2% of (Setting + Range)					
<b>Constant Voltage Mode</b>						
Range	0 ~ 6V	0 ~ 60V	0 ~ 6V	0 ~ 60V	0 ~ 30V	0 ~ 250V
Resolution	0.0001V	0.001V	0.0001V	0.001V	0.001V	0.01V
Accuracy	± 0.025% of (Setting + Range)					
<b>Constant Power Mode</b>						
Range	0 ~ 15W	0 ~ 150W	0 ~ 30W	0 ~ 300W	0 ~ 30W	0 ~ 300W
Resolution	0.00025W	0.0025W	0.0005W	0.005W	0.0005W	0.005W
Accuracy *4	± 0.1% of (Setting + Range)					
<b>Constant Voltage + Current Limit Mode</b>						
Range	60V	30A	60V	60A	250V	12A
Resolution	0.001V	0.5mA	0.001V	1mA	0.01V	0.2mA
Accuracy	± 0.05% of (Setting + Range) ± 1.0% of (Setting + Range) ± 0.05% of (Setting + Range) ± 1.0% of (Setting + Range) ± 0.05% of (Setting + Range) ± 1.0% of (Setting + Range)					
<b>Constant Voltage + Power Limit Mode</b>						
Range	60V	150W	60V	300W	250V	300W
Resolution	0.001V	0.0025W	0.001V	0.005W	0.01V	0.005W
Accuracy	± 0.05% of (Setting + Range) ± 1.0% of (Setting + Range) ± 0.05% of (Setting + Range) ± 1.0% of (Setting + Range) ± 0.05% of (Setting + Range) ± 1.0% of (Setting + Range)					
<b>Turbo mode*1</b>						
	OFF	ON	OFF	ON	OFF	ON
<b>Short/OCP/OPP Test Function</b>						
Maximum Current	30A	60A	60A	120A	12A	24A
Meas. Accuracy	± 1.0% of (Reading + Range)					
Short time	100ms~10 Sec. or Continue	100~2000mS	100ms~10 Sec. or Continue	100~2000mS	100ms~10 Sec. or Continue	100~2000mS
Meas. Accuracy	NA	NA	NA	NA	NA	NA
OCP Time (Tstep)	100mS	20mS	100mS	20mS	100mS	20mS
Meas. Accuracy	NA	NA	NA	NA	NA	NA
OPP Time (Tstep)	100mS	20mS	100mS	20mS	100mS	20mS
Meas. Accuracy	NA	NA	NA	NA	NA	NA
<b>BMS Test Mode *5</b>						
	OFF	ON	OFF	ON	OFF	ON
Short time	100ms~10 Sec. or Continue	0.05mS~10ms	100~1000ms	0.05mS~10ms	100ms~10 Sec. or Continue	0.05mS~10ms
Meas. Accuracy	NA	±0.020mS	NA	±0.020mS	NA	±0.020mS
OCP Time (Tstep)	100mS	0.05mS~10mS / 11~1000mS	20mS	0.05mS~10mS / 11~1000mS	100mS	0.05mS~10mS / 11~1000mS
Meas. Accuracy	NA	±0.005mS / ±0.2mS	NA	±0.005mS / ±0.2mS	NA	±0.005mS / ±0.2mS
<b>Fuse Test Mode *6</b>						
Trip & Non-Trip Time	1~5999ms, 6~16383sec		1~2000mS		1~5999ms, 6~16383sec	
Meas. Accuracy	±0.04mS(<200mS), ±20mS(>200mS)					
Repeat Time	0~255					
<b>Surge Test Mode</b>						
Surge current	0~60A		0~120A		0~24A	
Normal current	0~30A		0~60A		0~12A	
Surge Time	10~2000ms					
Surge Step	1~5					
<b>MPPT Mode</b>						
Algorithm	P & O					
Load mode	CV					
P&O interval	1000ms ~ 60000ms					
Resolution	1000mS					
<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	0.008 ~ 0.5A/uS	0.08 ~ 5A/uS	0.016 ~ 1A/uS	0.16 ~ 10A/uS	0.0008 ~ 0.05A/uS	0.008 ~ 0.5A/uS
Accuracy	± (5% of Setting) ±10uS					
<b>Measurement</b>						
<b>Voltage Read Back</b>						
Range (5 Digital)	6V	60V	6V	60V	30V	250V
Resolution	0.0001V	0.001V	0.0001V	0.001V	0.001V	0.01V
Accuracy	± 0.025% of (Reading + Range)					
<b>Current Read Back</b>						
Range (5 Digital)	3A	30A	6A	60A	1.2A	12A
Resolution	0.0001A	0.001A	0.0001A	0.001A	0.00002A	0.0002A
Accuracy	± 0.05% of (Reading + Range)					
<b>Power Read Back</b>						
Range (5 Digital)	15W	150W	30W	300W	30W	300W
Resolution	0.0001W	0.001W	0.001W	0.01W	0.001W	0.01W
Accuracy *7	± 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	
Accuracy	1% of (Setting + Range)					
Load OFF Voltage	0 ~ 25V		0 ~ 25V		0 ~ 50V	
Accuracy	0.025% of (Setting + Range)					
Typical Short Resistance (Cont.)	0.0166 Ω		0.0083 Ω		0.08 Ω	
Max. Short Current (Cont.)	30 A		60A		12A	
Dimension (HxWxD)	143 x 108 x 412 mm		143 x 108 x 412 mm		143 x 108 x 412 mm	

\*1 Turbo mode for up to 2X Current rating & Power rating support Fuse, BMS, Short/OCP/OPP test function

\*2 The range is automatically or forcing to range II only in CC mode

\*3 If the operating current is below range 0.1%, the accuracy specification is 0.1% F.S.

\*4 If the operating power below range 2%, the accuracy specification is 0.2% of setting + range.

\*5 BMS Test function for Battery Management System Board SHORT, OCCP and OCPD Test

\*6 Fuse Test function for Fuse and Breaker test

\*7 Power range = Vrange F.S. x Irange F.S.

\*8 Operating temperature range is 0~40°C, all specification apply for 25°C±5°C, Except as noted

\*9 CC, CV, CP, and DAM have increased accuracy. In the program R2.00 (3310G), R2.00 (3311G), R1.11 (3312G), R1.11 (3314G), R2.00 (3315G) Effective from now on

## SPECIFICATIONS

Model	3314G				3315G			
Power	300W, 600W max. *1				75W, 150W max. *1			
Current	12A / 24A max. *1				15A / 30A max. *1			
Voltage	500V				60V			
Min. Operating Voltage	6V @ 12A				0.25V @ 15A			
<b>Protections</b>								
Over Power Protection(OPP)	105%				105%			
Over Current Protection(OCP)	105%				105%			
Over Voltage Protection(OVP)	105%				105%			
Over Temp Protection(OTP)	YES				YES			
<b>Constant Current Mode</b>								
Range *2	0 ~ 1.2A		0 ~ 12A		0 ~ 1.5A		0 ~ 15A	
Resolution	0.02mA		0.2mA		0.0254mA		0.25mA	
Accuracy *3	± 0.05% of ( setting + Range)							
<b>Constant Resistance Mode</b>								
Range	50 ~ 3000KΩ		0.5Ω ~ 50Ω		4Ω ~ 240 KΩ		0.02Ω ~ 4Ω	
Resolution	0.000333mS		0.8333mΩ		0.04166mS		0.0666mΩ	
Accuracy	± 0.2% of (Setting + Range)							
<b>Constant Voltage Mode</b>								
Range	0 ~ 60V		0 ~ 500V		0 ~ 6V		0 ~ 60V	
Resolution	0.001V		0.01V		0.0001V		0.001V	
Accuracy	± 0.025% of (Setting + Range)							
<b>Constant Power Mode</b>								
Range	0 ~ 30W		0 ~ 300W		0 ~ 7.5W		0 ~ 75W	
Resolution	0.001W		0.01W		0.000125W		0.00125W	
Accuracy *4	± 0.1% of (Setting + Range)							
<b>Constant Voltage + Current Limit Mode</b>								
Range	500V		12A		60V		15A	
Resolution	0.01V		0.2mA		0.001V		0.25mA	
Accuracy	± 0.05% of (Setting + Range)		± 1.0% of (Setting + Range)		± 0.05% of (Setting + Range)		± 1.0% of (Setting + Range)	
<b>Constant Voltage + Power Limit Mode</b>								
Range	500V		300W		60V		75W	
Resolution	0.01V		0.01W		0.001V		0.00125W	
Accuracy	± 0.05% of (Setting + Range)		± 1.0% of (Setting + Range)		± 0.05% of (Setting + Range)		± 1.0% of (Setting + Range)	
<b>Turbo mode *1</b>								
	OFF		ON		OFF		ON	
<b>Short/OCP/OPP Test Function</b>								
Maximum Current	12A		24A		15A		30A	
Meas. Accuracy	± 1.0% of (Reading + Range)							
Short Time	100ms~10 Sec.		100~2000mS		100ms~10 Sec.		100~2000mS	
Meas. Accuracy	NA		NA		NA		NA	
OCP Time(Tstep)	100mS		20mS		100mS		20mS	
Meas. Accuracy	NA		NA		NA		NA	
OCP Time(Tstep)	100mS		20mS		100mS		20mS	
Meas. Accuracy	NA		NA		NA		NA	
<b>BMS Test Mode *5</b>								
	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Short Time	100ms~10 Sec. or Continue	0.05mS ~ 10mS	100~1000ms	0.05mS ~ 10mS	100ms~10 Sec. or Continue	0.05mS ~ 10mS	100~1000ms	0.05mS ~ 10mS
Meas. Accuracy	NA	±0.020mS	NA	±0.020mS	NA	±0.020mS	NA	±0.020mS
OCP Time(Tstep)	100mS	0.05mS~10mS / 11~1000mS	20mS	0.05mS~10mS / 11~1000mS	100mS	0.05mS~10mS / 11~1000mS	20mS	0.05mS~10mS / 11~1000mS
Meas. Accuracy	NA	±0.005mS / ±0.2mS	NA	±0.005mS / ±0.2mS	NA	±0.005mS / ±0.2mS	NA	±0.005mS / ±0.2mS
<b>Fuse Test Mode *6</b>								
Trip & Non-Trip Time	1~5999ms, 6~16383sec		1~2000mS		1~5999ms, 6~16383sec		1~2000mS	
Meas. Accuracy	±0.04mS(<200mS), ±20mS(>200mS)							
Repeat Time	0~255							
<b>Surge Test Mode</b>								
Surge current	0~24A				0~30A			
Normal current	0~12A				0~15A			
Surge Time	10~2000ms							
Surge Step	1~5							
<b>MPPT Mode</b>								
Algorithm	P & O							
Load mode	CV							
P&O interval	1000ms ~ 60000ms							
Resolution	1000mS							
<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	0.0008 ~ 0.05A/uS		0.008 ~ 0.5A/uS		0.004 ~ 0.25A/uS		0.04 ~ 2.5A/uS	
Accuracy	± (5% of Setting) ±10uS							
<b>Measurement</b>								
<b>Voltage Read Back</b>								
Range (5 Digital)	60V		600V		6V		60V	
Resolution	0.001V		0.01V		0.0001V		0.001V	
Accuracy	± 0.025% of (Reading + Range)							
<b>Current Read Back</b>								
Range (5 Digital)	1.2A		30A		1.5A		15A	
Resolution	0.0001A		0.001A		0.00001A		0.001A	
Accuracy	± 0.05% of (Reading + Range)							
<b>Power Read Back</b>								
Range (5 Digital)	30W		300W		7.5W		75W	
Resolution	0.0001A		0.001A		0.0001W		0.001W	
Accuracy *7	± 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	0.4 ~ 100V				0.1 ~ 25V			
Accuracy	1% of (Setting + Range)							
Load OFF Voltage	0 ~ 100V				0 ~ 25V			
Accuracy	0.025% of (Setting + Range)							
Typical Short Resistance	0.5 Ω				0.02 Ω			
Maximum Short Current	12A				15A			
Dimension(HxWxD)	143 x 108 x 412 mm				143 x 108 x 412 mm			

\*1 Turbo mode for up to 2X Current rating & Power rating support Fuse, BMS, Short/OCP/OPP test function

\*2 The range is automatically or forcing to range II only in CC mode

\*3 If the operating current is below range 0.1%, the accuracy specification is 0.1% F.S.

\*4 If the operating power below range 2%, the accuracy specification is 0.2% of setting + range.

\*5 BMS Test function for Battery Management System Board SHORT, OCCP and OCPD Test

\*6 Fuse Test function for Fuse and Breaker test

\*7 Power range = Vrange F.S. x Irange F.S.

\*8 Operating temperature range is 0~40°C, all specification apply for 25°C±5°C, Except as noted

\*9 CC, CV, CP, and DAM have increased accuracy. In the program R2.00 (3310G), R2.00 (3311G), R1.11 (3312G), R1.11 (3314G), R2.00 (3315G) Effective from now on

## 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	
Min. Operating Voltage	0.8V @ 80A		4V 20A	
<b>Protections</b>				
Over Power Protection(OPP)	105%		105%	
Over Current Protection(OCP)	105%		105%	
Over Voltage Protection(OVP)	105%		105%	
Over Temp Protection(OTP)	YES		YES	
<b>Constant Current Mode</b>				
Range *2	0 ~ 8.04A	0 ~ 80A	0 ~ 2.04A	0 ~20A
Resolution	0.134mA	1.34mA	0.034mA	0.34mA
Accuracy *3	± 0.05% 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 ~ 80V	60V	500V
Resolution	0.000134V	0.00134V	0.001V	0.01V
Accuracy	± 0.025% of (Setting + Range)			
<b>Constant Power Mode</b>				
Range	0 ~ 40.02W	0 ~ 400W	0 ~ 40.02W	0 ~ 400W
Resolution	0.667mW	6.67mW	0.667mW	6.67mW
Accuracy *4	± 0.1% of (Setting + Range)			
<b>Constant Voltage + Current Limit Mode</b>				
Range	80V	80A	500V	20A
Resolution	0.00134V	1.34mA	0.01V	0.34mA
Accuracy	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)
<b>Constant Voltage + Power Limit Mode</b>				
Range	80V	400W	500V	400W
Resolution	0.00134V	6.67mW	0.01V	6.67mW
Accuracy	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)
Maximum Current	Turbo OFF	80A	20A	
	Turbo ON *1	160A	40A	
Meas. Accuracy	± 3.0% of (Reading + Range)			
<b>Short/OCP/OPP Test Function</b>				
Short Time	Turbo OFF	100ms~10 Sec. or Continue		
	Turbo ON *1	100~2000mS		
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			
<b>BMS Test Mode *5</b>				
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			
<b>Fuse Test Mode *6</b>				
Trip & Non-Trip Time	Turbo OFF	r1 : 1~5999ms, r2 : 6~16383sec		
	Turbo ON *1	1~2000mS		
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	10~2000ms			
Surge Step	1~5			
<b>MPPT Mode</b>				
Algorithm	P&O			
Load mode	CV			
P&O interval	1000ms ~ 60000ms			
Resolution	1000ms			
<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			

Measurement				
<b>Voltage Read Back</b>				
Range (5 Digital)	8.04V	80V	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	80A	2.1A	20A
Resolution	0.000134A	0.00134A	0.000034A	0.00034A
Accuracy	± 0.05% of (Reading + Range)			
<b>Power Read Back</b>				
Range (5 Digital)	400W		400W	
Resolution	0.01W		0.01W	
Accuracy *7	± 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 ~ 24.866V		0 ~ 99V	
Accuracy	0.025% of (Setting + Range)			
Typical Short Resistance	0.009Ω		0.15Ω	
Maximum Short Current	80A		20A	
Dimension(HxWxD)	143 x 108 x 412 mm		143 x 108 x 412 mm	
Operating Temperature * 8	0 ~ 40 °C			

\*1 Turbo mode for up to 2X Current rating & Power rating support Fuse, BMS, Short/OCP/OPP test function

\*2 The range is automatically or forcing to range II only in CC mode

\*3 If the operating current is below range 0.1%, the accuracy specification is 0.1% F.S.

\*4 If the operating power below range 2%, the accuracy specification is 0.2% of setting + range.

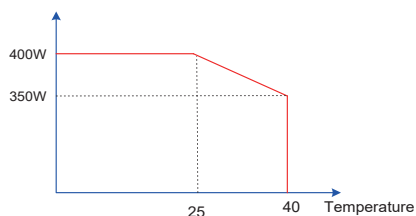
\*5 BMS Test for Battery Management System Board SHORT and OCCP, OCDP Test

\*6 Fuse Test function for Fuse, Breaker test

\*7 Power range = Vrange F.S. x Irange F.S.

\*8 Operating temperature range is 0~40°C, all specification apply for 25°C±5°C, Except as noted

\*9 CC, CV, CP, and DAM have increased accuracy. In the program R1.07 (3316G), R1.09 (3317G), R1.06 (3318G), R1.07 (3319G) Effective from now on



## SPECIFICATIONS

Model	3317G		3319G	
Power	800W,1600W max. *1		800W, 1600W max. *1	
Current	160A /320A max. *1		40A / 80A max. *1	
Voltage	80V		500V	
Min. Operating Voltage	1.0V @ 160A		4V 40A	
<b>Protections</b>				
Over Power Protection(OPP)	105%		105%	
Over Current Protection(OCP)	105%		105%	
Over Voltage Protection(OVP)	105%		105%	
Over Temp Protection(OTP)	YES		YES	
<b>Constant Current Mode</b>				
Range *2	0 ~ 16.02A	0 ~ 160A	0 ~ 4.02A	0 ~ 40A
Resolution	0.267mA	26.7mA	0.067mA	0.67mA
Accuracy *3	± 0.05% of ( setting + Range)			
<b>Constant Resistance Mode</b>				
Range	0.5Ω~ 30KΩ	0.00416Ω ~ 0.5Ω	15Ω~ 900KΩ	0.15Ω ~ 15Ω
Resolution	0.0166mS	0.0083mΩ	0.00111mS	0.25mΩ
Accuracy	± 0.2% of (Setting + Range)			
<b>Constant Voltage Mode</b>				
Range	0 ~ 8.04V	0 ~ 80V	0 ~ 60V	0 ~ 500V
Resolution	0.000134V	0.00134V	0.001V	0.01V
Accuracy	± 0.025% of (Setting + Range)			
<b>Constant Power Mode</b>				
Range	0 ~ 80.04W	0 ~ 800W	0 ~ 80.04W	0 ~ 800W
Resolution	1.334mW	13.34mW	1.334mW	13.34mW
Accuracy *4	± 0.1% of (Setting + Range)			
<b>Constant Voltage + Current Limit Mode</b>				
Range	80V	160A	500V	40A
Resolution	0.00134V	2.67mA	0.01V	0.67mA
Accuracy	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)
<b>Constant Voltage + Power Limit Mode</b>				
Range	80V	800W	500V	800W
Resolution	0.00134V	13.34mW	0.01V	13.34mW
Accuracy	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)	± 0.05% of (Setting + Range)	± 1.0% of (Setting + Range)
Maximum Current	Turbo OFF	160A	40A	
	Turbo ON *1	320A	80A	
Meas. Accuracy	± 3.0% of (Reading + Range)			
<b>Short/OCP/OPP Test Function</b>				
Short Time	Turbo OFF	100ms~10 Sec. or Continue		
	Turbo ON *1	100~2000ms		
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			
<b>BMS Test Mode *5</b>				
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			
<b>Fuse Test Mode *6</b>				
Trip & Non-Trip Time	Turbo OFF	r1 : 1~5999ms, r2 : 6~16383sec		
	Turbo ON *1	1~2000mS		
Meas. Accuracy	r1 : ±0.2mS(<200mS), ±20mS(>200mS), r2 : ±0.5S			
Repeat Cycle	0~255			
<b>Surge Test Mode</b>				
Surge current	0~320A		0~80A	
Normal current	0~160A		0~40A	
Surge Time	10~2000ms			
Surge Step	1~5			
<b>MPPT Mode</b>				
Algorithm	P&O			
Load mode	CV			
P&O interval	1000ms ~ 60000ms			
Resolution	1000ms			
<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	10.8 ~ 675mA/us	10.8 ~ 6750mA/us	2.56 ~ 160mA/us	25.6 ~ 1600mA/us
Accuracy	± (5% of Setting) ±10uS			

Measurement				
<b>Voltage Read Back</b>				
Range (5 Digital)	8.04V	80V	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)	16.02A	160A	4.02A	40A
Resolution	0.000267A	0.00267A	0.000067A	0.00067A
Accuracy	± 0.05% of (Reading + Range)			
<b>Power Read Back</b>				
Range (5 Digital)	800W		800W	
Resolution	0.01W		0.01W	
Accuracy *7	± 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 ~ 24.866V		0 ~ 99V	
Accuracy	0.025% of (Setting + Range)			
Typical Short Resistance	0.006Ω		0.15Ω	
Maximum Short Current	160A		40A	
Dimension(HxWxD)	143 x 216 x 412 mm		143 x 216 x 412 mm	
Operating Temperature * 8	0 ~ 40 °C			

\*1 Turbo mode for up to 2X Current rating & Power rating support Fuse, BMS, Short/OCP/OPP test function

\*2 The range is automatically or forcing to range II only in CC mode

\*3 If the operating current is below range 0.1%, the accuracy specification is 0.1% F.S.

\*4 If the operating power below range 2%, the accuracy specification is 0.2% of setting + range.

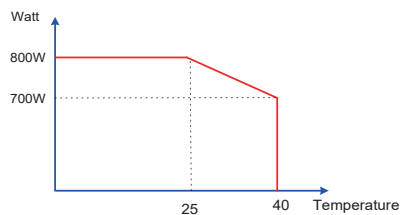
\*5 BMS Test for Battery Management System Board SHORT and OCCP, OCPD Test

\*6 Fuse Test function for Fuse, Breaker test

\*7 Power range = Vrange F.S. x Irange F.S.

\*8 Operating temperature range is 0~40°C, all specification apply for 25°C±5°C, Except as noted

\*9 CC, CV, CP, and DAM have increased accuracy. In the program R1.07 (3316G), R1.09 (3317G), R1.06 (3318G), R1.07 (3319G)  
Effective from now on



## Order Information

		Normal mode*	Turbo mode*
<b>3310G</b>	DC Electronic Load Module	60 V / 30 A / 150 W	60 V / 30 A / 300 W
<b>3311G</b>	DC Electronic Load Module	60 V / 60 A / 300 W	60 V / 120 A / 600 W
<b>3312G</b>	DC Electronic Load Module	250 V / 12 A / 300 W	250 V / 24 A / 600 W
<b>3314G</b>	DC Electronic Load Module	500 V / 12 A / 300 W	500 V / 24 A / 600 W
<b>3315G</b>	DC Electronic Load Module	60 V / 15 A / 75 W	60 V / 30 A / 150 W
<b>3316G</b>	DC Electronic Load Module	80 V / 80 A / 400 W	80 V / 160 A / 800 W
<b>3318G</b>	DC Electronic Load Module	500 V / 20 A / 400 W	500 V / 40 A / 800 W



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

		Normal mode*	Turbo mode*
<b>3317G</b>	DC Electronic Load Module	80 V / 160 A / 800 W	80 V / 320 A / 1600 W
<b>3317G-M</b>	DC Electronic Load Module	80 V / 160 A / 800 W	80 V / 320 A / 1600 W
<b>3319G</b>	DC Electronic Load Module	500 V / 40 A / 800 W	500 V / 80 A / 1600 W
<b>3319G-M</b>	DC Electronic Load Module	500 V / 40 A / 800 W	500 V / 80 A / 1600 W



**3317G**



**3319G**



**3317G-M**



**3319G-M**

**3317G-M / 3319G-M**  
DC Electronic Load Mainframe (Option)  
**3305G** (Two Slot Mainframe)  
Accommodates 1 unit  
**3300G** (Four Slot Mainframe)  
Accommodates 2 units

**3302G (Single Slot Mainframe)**



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

**3305G (Two Slot Mainframe)**



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

**3300G (Four Slot Mainframe)**



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

**GPIB+RS232 interface**



**RS232 interface**



**GPIB interface**



**USB interface**



**LAN interface**



**OPTIONAL ACCESSORIES**

GPIB+RS232 interface  
RS232 interface  
GPIB interface  
USB interface  
LAN interface

NTC Optional function : 10 KΩ Simulator resistance  
( 100 Ω to 500 KΩ )  
NTC Optional function : 100 KΩ Simulator resistance  
( 1 KΩ to 5 MΩ )

FPIB cable length 1 m  
FPIB cable length 2 m  
USB TYPE A to TYPE B cable length 1.8 m

Note: \* Regarding the product delivery date, please contact your regional sales representative.

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