



3310F Series

DC Electronic Load

FEATURES

- 5 digital V / A / W Meter.
- High-speed measurement and communication transmission.
- V.A.W. values can be displayed simultaneously.
- OCP \ OPP test function.
- Supply MPPT CC, CR, CV test function for solar panel.
- Function test for BMS protection board is provided (option).
- Power ON status value can be set.
- SHORT time setting and SHORT_VH, SHORT_VL setting function.
- Voltage meter display the polarity positive (" + ") or negative (" - ") is selectable.
- SYNC. Load ON function.
- Flexible CC, CR, CV, CP, Dynamic and Short operation modes.

GW INSTEK
Simply Reliable

3310F Series DC Electronic Load

3310F	60 V / 30 A / 150 W
3311F	60 V / 60 A / 300 W
3312F	250 V / 12 A / 300 W
3314F	500 V / 12 A / 300 W
3315F	60 V / 15 A / 75 W
3311F-05	120 V / 60 A / 300 W
3311F-16	80 V / 70 A / 350 W
3311F-20 (3311F PCP)	60 V / 60 A / 300 W



Features

- 5 digital V/A/W Meter.
- High-speed measurement and communication transmission.
- V.A.W. values can be displayed simultaneously.
- Large LCD Display \ setting values can be adjusted by rotary knob or push button.
- OCP \ OPP test function.
- Can be configured in 3302F [Single Solt Mainframe] \ 3305F [Two Solt Mainframe] or 3300F [Four Solt Mainframe] and the mainframe with 150 sets Store / Recall memory.
- Supply MPPT CC, CR, CV test function for solar panel.
- Function test for BMS protection board is provided (option).
- Power ON status value can be set.
- Flexible CC, CR, CV, CP, Dynamic and Short operation modes.
- SHORT time setting and SHORT_VH, SHORT_VL setting function.
- Protections against V, I, W, and °C.
- Voltage meter display the polarity positive (" + ") or negative (" - ") is selectable.
- SYNC. Load ON function.
- Optional Interface : GPIB \ RS232 \ USB \ LAN.

Descriptions

- Each 3310F Series module has its own control and display panel, CC/CR/CV/CP/ Dynamic modes, plug in 3300F with 150 sets Store/Recall memory which provides load set-up more efficiently \ also can be controlled intranet via RS232 \ Ethernet \ USB and GPIB interface.
- SHORT time setting and SHORT_VH, SHORT_VL setting function \ also can measure Short Voltage and Current.
- 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 Arbitrary Waveform.
- The additional OCP \ OPP test function operated by both mainframe and module that will be more efficiency and accuracy on OCP, OPP testing.
- 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.
- Short, OCCP and OCDP function test for BMS protection board is provided (option)

Applications

- Voltage / Current source
- SMPS transient response
- Current limit testing and battery emulation
- Battery charger
- Battery discharge
- R&D, Quality Control
- ATE system
- Production testing

SPECIFICATIONS

Model	3310F		3311F		3312F	
Power	150W		300W		300W	
Current	30A		60A		12A	
Voltage	60V		60V		250V	
Min. Operating Voltage	0.6V @ 30A		0.6V @60A		1V @ 12A	
Protections						
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	
Constant Current Mode						
Range	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	± 0.05% of (setting + Range)					
Constant Resistance Mode						
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)					
Constant Voltage Mode						
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)					
Constant Power Mode						
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	± 0.1% of (Setting + Range)					
MPPT Mode						
Algorithm	P & O					
Load mode	CV					
P&O interval	1000ms ~ 60000ms					
Dynamic Mode						
Timing						
Thigh & Tlow	0.050~9.999 / 99.99 / 999.9 / 9999mS					
Resolution	0.001 / 0.01 / 0.1 / 1mS					
Slew rate	2.0 ~ 125mA/uS	20 ~ 1250mA/uS	4 ~ 250mA/uS	40 ~ 2500mA/uS	0.8 ~ 50mA/uS	8 ~ 500mA/uS
Accuracy	± (5% of Setting) ±10uS					
Measurement						
Voltage Read Back						
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)					
Current Read Back						
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)					
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	0.02 Ω		0.0083 Ω		0.08 Ω	
Maximum Short Current	30 A		60 A		12 A	

Note: CC, CV, CP, and DAM accuracy improvements apply to firmware version R2.12 and later.

SPECIFICATIONS

Model	3314F		3315F	
Power	300W		75W	
Current	12A		15A	
Voltage	500V		60V	
Min. Operating Voltage	6V @ 12A		0.3V @ 15A	
Protections				
Over Power Protection(OPP)	105%		105%	
Over Current Protection(OCP)	105%		105%	
Over Voltage Protection(OVP)	105%		105%	
Over Temp Protection(OTP)	YES		YES	
Constant Current Mode				
Range	0 ~ 1.2A	0 ~ 12A	0 ~ 1.5A	0 ~ 15A
Resolution	0.02mA	0.2mA	0.0254mA	0.25mA
Accuracy	$\pm 0.05\%$ of (setting + Range)			
Constant Resistance Mode				
Range	50 ~ 3000K Ω	0.5 Ω ~ 50 Ω	4 Ω ~ 240 K Ω	0.02 Ω ~ 4 Ω
Resolution	0.000333mS	0.8333m Ω	0.04166mS	0.0666m Ω
Accuracy	$\pm 0.2\%$ of (Setting + Range)			
Constant Voltage Mode				
Range	0 ~ 60V	0 ~ 500V	0 ~ 6V	0 ~ 60V
Resolution	0.001V	0.01V	0.0001V	0.001V
Accuracy	$\pm 0.025\%$ of (Setting + Range)			
Constant Power Mode				
Range	0 ~ 30W	0 ~ 300W	0 ~ 7.5W	0 ~ 75W
Resolution	0.001W	0.01W	0.000125W	0.00125W
Accuracy	$\pm 0.1\%$ of (Setting + Range)			
MPPT Mode				
Algorithm	P & O			
Load mode	CV			
P&O interval	1000ms ~ 60000ms			
Dynamic Mode				
Timing				
Thigh & Tlow	0.050~9.999 / 99.99 / 999.9 / 9999mS			
Resolution	0.001 / 0.01 / 0.1 / 1mS			
Slew rate	0.8 ~ 50mA/uS	8.0 ~ 500mA/uS	1 ~ 62.5mA/uS	10 ~ 625mA/uS
Accuracy	$\pm (5\%$ of Setting) $\pm 10\mu$ S			
Measurement				
Voltage Read Back				
Range (5 Digital)	60V	600V	6V	60V
Resolution	0.001V	0.01V	0.0001V	0.001V
Accuracy	$\pm 0.025\%$ of (Reading + Range)			
Current Read Back				
Range (5 Digital)	1.2A	30A	1.5A	15A
Resolution	0.0001A	0.001A	0.00001A	0.001A
Accuracy	$\pm 0.1\%$ of (Reading + Range)			
Current Monitor	FULL SCALE 10V			
Accuracy	0.05% 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	

Note: CC, CV, CP, and DAM accuracy improvements apply to firmware version R2.12 and later.

SPECIFICATIONS

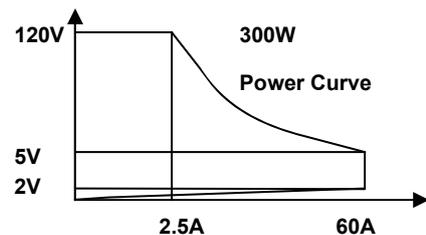
Model		3311F-05	
INPUT RATINGS			
Power(Watt)		300 W	
Current(Ampere)		60 A	
Voltage(Volt)		120 V	
PROTECTIONS			
Over Power Protection(OPP)		≒ 315 W	
Over Current Protection(OCP)		≒ 63 A	
Over Voltage Protection(OVP)		≒ 126 V	
Over Temp. Protection(OTP)		Yes	
CC MODE	RANGE	0 ~ 6A/ 60A	
	RESOLUTION ACCURACY	0.1mA / 1mA ±0.1% OF (SETTING + RANGE)	
CR MODE	RANGE	0.03333Ω ~ 2Ω ~ 120KΩ	
	RESOLUTION ACCURACY	0.03333mΩ / 0.0083mS ±0.2% OF (SETTING + RANGE)	
CV MODE	RANGE	0 ~ 12V / 120V	
	RESOLUTION ACCURACY	0.2mV / 2mV ±0.05% OF (SETTING + RANGE)	
CP MODE	RANGE	0 ~ 30W / 300W	
	RESOLUTION ACCURACY	0.5mW / 5mW ±0.5% OF (SETTING + RANGE)	
5 Digital DVM	RANGE	0 ~ 12V / 120V	
	RESOLUTION ACCURACY	0.2mV / 2mV ±0.025% OF(READING RANGE)	
5 Digital DAM	RANGE	0 ~ 6A / 60A	
	RESOLUTION ACCURACY	0.1mA/ 1mA ±0.1% OF (READING + RANGE)	
Dynamic Operation	THIGH/TLOW	50uS to 9.999 Sec	
	SLEW-RATE	4 ~ 250mA/uS	40 ~ 2500mA/uS
	ACCURACY	±(5% OF SETTING) ±10us	
Load ON Voltage		0-50V, ±1% of (Setting + Range)	
Load OFF Voltage		0-49.8V, ±0.025% of (Setting +Range)	
Imonitor		6A/V	
Maximum Short Resistance		0.03333Ω	

General :

- ⊙ Weight : 3.5kgs
- ⊙ Dimension : 108Wx143Hx405Dmm

Accessories :

- ⊙ Operation Manual



***Data subject to change without notice**

SPECIFICATIONS

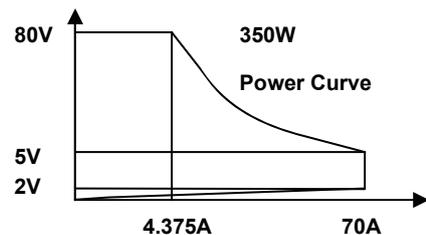
Model		3311F-16	
INPUT RATINGS			
Power(Watt)		350 W	
Current(Ampere)		70 A	
Voltage(Volt)		80 V	
PROTECTIONS			
Over Power Protection(OPP)		≒ 367.5W	
Over Current Protection(OCP)		≒ 73.5A	
Over Voltage Protection(OVP)		≒ 84V	
Over Temp. Protection(OTP)		Yes	
CC MODE	RANGE	0 ~ 7A / 70A	
	RESOLUTION ACCURACY	0.12mA / 1.2mA ±0.1% OF (SETTING + RANGE)	
CR MODE	RANGE	0.02801Ω ~ 1.125Ω ~ 67.5KΩ	
	RESOLUTION ACCURACY	0.01875mΩ / 0.0148mS ±0.2% OF (SETTING + RANGE)	
CV MODE	RANGE	0 ~ 8V / 80V	
	RESOLUTION ACCURACY	0.135mV / 1.35mV ±0.05% OF (SETTING + RANGE)	
CP MODE	RANGE	0 ~ 35W / 350W	
	RESOLUTION ACCURACY	0.6mW / 6mW ±0.5% OF (SETTING + RANGE)	
5 Digits DVM	RANGE	0 ~ 8V / 80V	
	RESOLUTION ACCURACY	0.135mV / 1.35mV ±0.025% OF (READING RANGE)	
5 Digits DAM	RANGE	0 ~ 7A / 70A	
	RESOLUTION ACCURACY	0.12mA / 1.2mA ±0.1% OF (READING + RANGE)	
Dynamic Operation	THIGH/TLOW	50uS to 9.999 Sec	
	SLEW-RATE	4.8 ~ 300mA/uS	48 ~ 3000mA/uS
	ACCURACY	±(5% OF SETTING) ±10us	
Load ON Voltage		0.1-25V, ±1% of (Setting + Range)	
Load OFF Voltage		0-24.865V, ±0.025% of (Setting + Range)	
Imonitor		7A/V	
Maximum Short Resistance		0.02801Ω	

General :

- ⊙ Weight : 3.5kgs
- ⊙ Dimension : 108Wx143Hx405Dmm
- ⊙ Work temperature : 0 ~ 40℃

Accessories :

- ⊙ Operation Manual



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Order Information

3310F	DC Electronic Load	60 V / 30 A / 150 W
3311F	DC Electronic Load	60 V / 60 A / 300 W
3312F	DC Electronic Load	250 V / 12 A / 300 W
3314F	DC Electronic Load	500 V / 12 A / 300 W
3315F	DC Electronic Load	60 V / 15 A / 75 W
3311F-05	DC Electronic Load	120 V / 60 A / 300 W
3311F-16	DC Electronic Load	80 V / 70 A / 350 W
3311F-20 (3311F PCP)	DC Electronic Load	60 V / 60 A / 300 W



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

3302F (Single Slot Mainframe)



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

3302F -14 Single Slot Mainframe
FOR 3311F-16

3305F (Two Slot Mainframe)



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

3300F (Four Slot Mainframe)



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

3300F-29 (3300F PCP)(GPIB)
Four Slot Mainframe FOR 3311F-11/3332F-05

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 K Ω Simulator resistance
(100 Ω to 500 K Ω)
NTC Optional function : 100 K Ω Simulator resistance
(1 K Ω to 5 M Ω)

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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