

# 3310F Series

DC Electronic Load



DC ELECTRONIC LOAD



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**3310F** 60V, 30A, 150W

**3311F** 60V, 60A, 300W

**3312F** 250V, 12A, 300W

**3314F** 500V, 12A, 300W

**3315F** 60V, 15A, 75W



### 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 channel mainframe ] \ 3305F [ two channels mainframe ] or 3300F [ four channels 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		3314F		3315F	
Max Power	150 W		300 W		300 W		300 W		75 W	
Max Current	30 A		60 A		12 A		12 A		15 A	
Operation Voltage	60 V		60 V		250 V		500 V		60 V	
Min. Operating Voltage	0.6V @ 30A		0.6V @ 60A		1V @ 12A		6V @ 12A		0.3V @ 5A	
PROTECTIONS										
Over Power Protection	≒157.5 W		≒ 315 W		≒ 315 W		≒ 315 W		≒ 78.75 W	
Over Current Protection	≒ 31.5 A		≒ 63 A		≒ 12.6 A		≒ 12.6 A		≒ 15.75 A	
Over Voltage Protection	≒ 63 V		≒ 63 V		≒ 262.5 V		≒ 525 V		≒ 63 V	
Over Temp. Protection	≒ 85 °C		≒ 85 °C		≒ 85 °C		≒ 85 °C		≒ 85 °C	
CC MODE										
Range	0~3 A	0~30 A	0~6 A	0~60 A	0~1.2A	0~12A	0~1.2 A	0~12 A	0~1.5 A	0~15A
Resolution	0.05 mA	0.5 mA	0.1 mA	1mA	0.02 mA	0.2mA	0.02 mA	0.2 mA	0.0254 mA	0.25 mA
Accuracy	± 0.1% OF ( SETTING+RANGE )									
CR MODE										
Range	2~120KΩ	0.02~2Ω	1~60KΩ	0.00833~1Ω	25~1500KΩ	0.08~25Ω	50~3000KΩ	0.5~50Ω	4~240KΩ	0.02~4Ω
Resolution	0.00833mS	33.334μΩ	0.01666mS	16.667μΩ	0.000666mS	416.667μΩ	0.000333mS	833.334μΩ	0.04166mS	66.667μΩ
Accuracy	± 0.2% OF ( SETTING + RANGE )									
CV MODE										
Range	0~6 V	0~60 V	0~6V	0~60V	0~30V	0~250 V	0~60 V	0~500 V	0~6 V	0~60 V
Resolution	0.1 mV	1 mV	0.1 mV	1 mV	1 mV	10 mV	0.001 V	0.01 V	0.0001V	0.001V
Accuracy	± 0.05% OF ( SETTING + RANGE )									
CP MODE										
Range	0~15 W	0~150 W	0~30 W	0~300 W	0~30 W	0~300 W	0~30 W	0~300 W	0~7.5 W	0~75 W
Resolution	0.25 mW	2.5 mW	1 mW	10 mW	1 mW	10 mW	0.001 W	0.01 W	0.000125 W	0.00125 W
Accuracy	± 0.5% OF ( SETTING + RANGE )									
Short / OCP / OPP Test Function										
Short Time	100ms~10 Sec. or Continue									
Meas. Accuracy	NA									
OCP Time (Tstep)	100mS									
Meas. Accuracy	NA									
OPP Time (Tstep)	100mS									
Meas. Accuracy	NA									
BMS Test Mode* ( Option )										
Short Time	0.05mS~10ms									
Meas. Accuracy	±0.005mS									
OCP Time (Tstep)	0.05mS~10ms / 11~1000ms									
Meas. Accuracy	±0.005mS / ±0.2mS									
MPPT Mode										
Algorithm	P & O									
Load mode	CV									
P&O interval	1000ms ~ 60000ms									
DYNAMIC OPERATION										
Thigh & Tlow	50 μSec TO 9.999 Sec									
Slew Rate	2.0~125 mA/μSec	20~1250 mA/μSec	4~250 mA/μSec	40~2500 mA/μSec	0.8~50 mA/μSec	8~500 mA/μSec	0.8~50 mA/μSec	8.0~500 mA/μSec	1.0~62.5 mA/μSec	10.0~625 mA/μSec
Accuracy	± ( 5% OF SETTING ) ±10μS									
Voltage Read Back ( V METER )										
Range	6.0 V	60.0 V	6.0 V	60.0 V	30.0 V	250.0 V	60.0 V	500.0 V	6.0 V	60.0 V
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 ( A METER )										
Range	3.0 A	30.0 A	6.0 A	60.0 A	1.2 A	12.0 A	1.2 A	12.0 A	1.5 A	15.0 A
Resolution	0.0001 A	0.001 A	0.0001 A	0.001 A	0.00002 A	0.0002 A	0.00002 A	0.0002 A	0.000025 A	0.00025 A
Accuracy	± 0.1% OF ( READING + RANGE )									
Power Read Back ( W METER )										
Range	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	0.01W	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 Program Input	FULL SCALE 10V									
Programmable Short	BUILT – IN									
Load On Voltage	0.1 ~ 25 V		0.1 ~ 25 V		0.2 ~ 50 V		0.4 ~ 100V		0.1 ~ 25 V	
Accuracy	1% of ( Setting + Range )									
Load Off Voltage	0 ~ 25 V		0 ~ 25 V		0 ~ 50 V		0 ~ 100V		0 ~ 25 V	
Accuracy	0.025% of ( Setting + Range )									
Typical Short Resistance	0.02 Ω		0.0083 Ω		0.08 Ω		0.5 Ω		0.02 Ω	
Max.short Current	30 A		60 A		12 A		12 A		15 A	

Input AC Power : 115/230 Vac ±10% , 50/60Hz  
Cooling : Advanced Fan Cooled

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

## Order Information

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

### DC Electronic Load Mainframe

Optional interface : ① GPIB Card ② RS232 Card ③ USB Card ④ LAN Card  
Optional feature : BMS protection function test  
Optional feature : NTC Simulator ① 10KΩ NTC(100~500KΩ) ② 100KΩ NTC(1000~5MΩ)

#### 3302F (single channel mainframe)



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

#### 3305F (two channels mainframe)



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

#### 3300F (four channels mainframe)



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