

# 33500F Series High Power DC Electronic Load



## Features

- 5 digit V/A/W Meter.
- High-speed measurement and communication transmission.
- Large LCD Display \ setting values can be adjusted by rotary knob or push button.
- Voltage \ Current and Watt value can be displayed simultaneously.
- OCP \ OPP test function automatically.
- Power ON status can be set.
- CC, CR, CV, CP, Dynamic and Short operation mode.
- SHORT time setting.
- Protections against V,I,W, and °C.
- Voltage meter display the polarity positive (" + ") or negative (" - ") is selectable.
- Optional Interface : GPIB \ RS232 \ USB \ LAN.

## Descriptions

- 33500F Series has its own control and display panel, CC/CR/CV/CP/ Dynamic modes, 150 sets Store/Recall memory which provides load set-up more efficiently, also can be remote controlled via GPIB \ RS232 \ USB and LAN 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 for a Arbitrary Waveform to simulate load current.
- Single key for OCP \ OPP test function 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, user can recall the storage memory real time in accordance with the auto sequence requirement.

## Applications

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

## Specifications

MODEL	33521F	33511F	33531F	33541F
Power	2400W	3600W	3600W	3600W
Current	0 ~ 480A	0 ~ 240A	0 ~ 480A	0 ~ 720A
Voltage	0 ~ 60V	0 ~ 60V	0 ~ 60V	0 ~ 60V
Min.Operation Voltage	0.7V @ 480A	0.6V @ 240A	0.7V @ 480A	0.7V @ 720A
<b>CC MODE</b>				
Range *1	0 ~ 48A / 480A	0 ~ 24A / 240A	0 ~ 48A / 480A	0 ~ 72A / 720A
Resolution	0.8mA / 8mA	0.4mA / 4mA	0.8mA / 8mA	1.2mA / 12mA
Accuracy	±0.1% OF (Setting+Range)			
<b>CR MODE</b>				
Range	0.002 ~ 0.125~7.5KΩ	0.0041 ~ 0.25 ~ 15KΩ	0.002 ~ 0.125 ~ 7.5KΩ	0.00138 ~ 0.0833 ~ 5KΩ
Resolution	0.002mΩ / 0.1333mS	0.0041mΩ / 0.066mS	0.002mΩ / 0.133mS	0.00138mΩ / 0.2mS
Accuracy	±0.2% OF (Setting + Range)			
<b>CV MODE</b>				
Range	6V / 60V			
Resolution	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV
Accuracy	± 0.05% OF ( Setting+Range )			
<b>CP MODE</b>				
Range	240W / 2400W	360W / 3600W	360W / 3600W	360W / 3600W
Resolution	4mW / 40mW	6mW / 60mW	6mW / 60mW	6mW / 60mW
Accuracy	± 0.5% OF ( Setting+Range )			
<b>DYNAMIC MODE - CC</b>				
<b>Timing</b>				
Thigh & Tlow	0.050~9.999 / 99.99 / 999.9 / 9999mS			
Resolution	0.001 / 0.01 / 0.1 / 1mS			
Accuracy	1μS / 10μS / 100μS / 1mS + 50ppm			
Slew rate	0.032A ~ 2A / μS 0.32A ~ 20A / μS	0.016A ~ 1A / μS 0.16A ~ 10A / μS	0.016A ~ 1A / μS 0.16A ~ 10A / μS	0.048A ~ 3A / μS 0.48A ~ 30A / μS
Resolution	0.008 / 0.08A / μS	0.004 / 0.04A / μS	0.004 / 0.04A / μS	0.012 / 0.12A / μS
Accuracy	( 5% of setting ) ± 10μS			
Min. Rise Time	24μS ( typical )			
<b>Current</b>				
Range	48A / 480A	24A / 240A	48A / 480A	72A / 720A
Resolution	0.8mA / 8mA	0.4mA / 4mA	0.8mA / 8mA	1.2mA / 12mA
<b>MEASUREMENT</b>				
<b>Voltage Read Back</b>				
Range (5 Digital)	0 ~ 6V / 60V	0 ~ 6V / 60V	0 ~ 6V / 60V	0 ~ 6V / 60V
Resolution	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV
Accuracy	± 0.025% OF (Reading+Range)			
<b>Current Read Back</b>				
Range (5 Digital)	0 ~ 48A / 480A	0 ~ 24A / 240A	0 ~ 48A / 480A	0 ~ 72A / 720A
Resolution	0.8mA / 8mA	0.4mA / 4mA	0.8mA / 8mA	1.2mA / 12mA
Accuracy	± 0.1% OF ( Reading+Range )			
<b>Power Read Back</b>				
Range (5 Digital)	0 ~ 2400W	0 ~ 2400W	0 ~ 3600W	0 ~ 3600W
Resolution	0.04W	0.04W	0.06W	0.06W
Accuracy	± 0.125% OF ( Reading + Range )			
<b>PROTECTIONS</b>				
Over Power	105% of Rated Power			
Over Current	105% of Rated Current			
Over Voltage	105% of Rated Voltage			
Over Temp.	Yes			
<b>OTHERS</b>				
<b>Load ON Voltage</b>				
Range	0.1 ~ 25.0V			
Resolution	0.1V			
Accuracy	1% of Setting + 0.25V			
<b>Load OFF Voltage</b>				
Range	0 ~ 25V			
Resolution	Same as Voltage Meter			
Accuracy	Same as Voltage Meter			
<b>GENERAL</b>				
<b>Short Circuit</b>				
Current	480A	240A	480A	720A
Temperature Coefficient	100ppm / °C ( typical )			
Power consumption	200Wmax	200Wmax	200Wmax	200Wmax
Operating Temperature *2	0 ~ 40°C			
Dimension (HxWxD)	839 x 600 x 600 mm	839 x 600 x 600 mm	839 x 600 x 600 mm	839 x 600 x 600 mm
Weight	72.8 kg	81.2 kg	81.2 kg	81.2 kg
Safety & EMC	CE			

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

Note\*1 : The range is automatically or forcing to range II only in CC Mode  
Note\*2 : Operating temperature range is 0~40°C · all specifications apply for 25°C±5°C

## Order Information

Optional interface :

- ① GPIB Card
- ② RS232 Card
- ③ USB Card
- ④ LAN Card



33521F 60V · 480A · 2400W



33511F 60V · 240A · 3600W



33531F 60V · 480A · 3600W



33541F 60V · 720A · 3600W

## Specifications

MODEL	33512F	33532F	33542F	33513F
Power	5400W	5400W	5400W	7200W
Current	0 ~ 360A	0 ~ 720A	0 ~ 1000A	0 ~ 480A
Voltage	0 ~ 60V	0 ~ 60V	0 ~ 60V	0 ~ 60V
Min.Operation Voltage	0.6V @ 360A	0.7V @ 720A	0.7V @ 1000A	0.6V @ 480A
<b>CC MODE</b>				
Range *1	0 ~ 36A / 360A	0 ~ 72A / 720A	0 ~ 100.2A / 1000.2A	0 ~ 48A / 480A
Resolution	0.6mA / 6mA	1.2mA / 12mA	1.67mA / 16.7mA	0.8mA / 8mA
Accuracy	± 0.1% OF ( Setting + Range )			
<b>CR MODE</b>				
Range	0.0027 ~ 0.167 ~ 10KΩ	0.00138 ~ 0.0833 ~ 5KΩ	0.001 ~ 0.06 ~ 3.6KΩ	0.002 ~ 0.125 ~ 7.5KΩ
Resolution	0.0028mΩ / 0.1mS	0.0028mΩ / 0.1mS	0.001mΩ / 0.277mS	0.002mΩ / 0.13mS
Accuracy	± 0.2% OF ( Setting + Range )			
<b>CV MODE</b>				
Range	6V / 60V			
Resolution	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV
Accuracy	± 0.05% OF ( Setting + Range )			
<b>CP MODE</b>				
Range	540W / 5400W	540W / 5400W	540W / 5400W	720W / 7200W
Resolution	9mW / 90mW	9mW / 90mW	9mW / 90mW	12mW / 120mW
Accuracy	± 0.5% OF ( Setting + Range )			
<b>DYNAMIC MODE - CC</b>				
<b>Timing</b>				
Thigh & Tlow	0.050 ~ 9.999 / 99.99 / 999.9 / 9999mS			
Resolution	0.001 / 0.01 / 0.1 / 1mS			
Accuracy	1μS / 10μS / 100μS / 1mS + 50ppm			
Slew rate	0.024A ~ 1.5A / μS 0.24A ~ 15A / μS	0.048A ~ 3A / μS 0.48A ~ 30A / μS	0.0664A ~ 4.15A / μS 0.644A ~ 41.5A / μS	0.032A ~ 2A / μS 0.32A ~ 20A / μS
Resolution	0.006 / 0.06A / μS	0.012 / 0.12A / μS	0.0166 / 0.166A / μS	0.008 / 0.08A / μS
Accuracy	( 5% of setting ) ± 10 μS			
Min. Rise Time	24μS ( typical )			
<b>Current</b>				
Range	36A / 360A	72A / 720A	100.2A / 1000.2A	48A / 480A
Resolution	0.6mA / 6mA	1.2mA / 12mA	1.67mA / 16.7mA	0.8mA / 8mA
<b>MEASUREMENT</b>				
<b>Voltage Read Back</b>				
Range (5 Digital)	0~6V / 60V	0~6V / 60V	0~6V / 60V	0~6V / 60V
Resolution	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV
Accuracy	± 0.025% OF ( Reading + Range )			
<b>Current Read Back</b>				
Range (5 Digital)	0~36A / 360A	0~72A / 720A	0~100.2A / 1000.2A	0~48A / 480A
Resolution	0.6mA / 6mA	1.2mA / 12mA	1.67mA / 16.7mA	0.8mA / 8mA
Accuracy	± 0.1% OF ( Reading + Range )			
<b>Power Read Back</b>				
Range (5 Digital)	0 ~ 5400W	0 ~ 5400W	0 ~ 5400W	0 ~ 7200W
Resolution	0.09W	0.09W	0.09W	0.12W
Accuracy	± 0.125% OF ( Reading + Range )			
<b>PROTECTIONS</b>				
Over Power	105% of Rated Power			
Over Current	105% of Rated Current			
Over Voltage	105% of Rated Voltage			
Over Temp.	Yes			
<b>OTHERS</b>				
<b>Load ON Voltage</b>				
Range	0.1 ~ 25.0V			
Resolution	0.1V			
Accuracy	1% of Setting + 0.25V			
<b>Load OFF Voltage</b>				
Range	0 ~ 25V			
Resolution	Same as Voltage Meter			
Accuracy	Same as Voltage Meter			
<b>GENERAL</b>				
<b>Short Circuit</b>				
Current	360A	720A	1000.2A	480A
Temperature Coefficient	100ppm / °C ( typical )			
Power consumption	300Wmax	300Wmax	300Wmax	400Wmax
Operating Temperature *2	0 ~ 40°C			
Dimension (HxWxD)	839 x 600 x 600 mm	839 x 600 x 600 mm	839 x 600 x 600 mm	1061 x 600 x 600 mm
Weight	104.8 kg	104.8 kg	104.8 kg	161.4 kg
Safety & EMC	CE			

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

Note\*1 : The range is automatically or forcing to range II only in CC Mode  
Note\*2 : Operating temperature range is 0~40°C · all specifications apply for 25°C±5°C

## Order Information

Optional interface :

- ① GPIB Card
- ② RS232 Card
- ③ USB Card
- ④ LAN Card



33512F 60V · 360A · 5400W



33532F 60V · 720A · 5400W



33542F 60V · 1000A · 5400W



33513F 60V · 480A · 7200W

## Specifications

MODEL	33514F	33515F	33516F	33517F
Power	9000W	10800W	12600W	14400W
Current	0 ~ 600A	0 ~ 720A	0 ~ 840A	0 ~ 960A
Voltage	0 ~ 60V	0 ~ 60V	0 ~ 60V	0 ~ 60V
Min.Operation Voltage	0.6V @ 600A	0.6V @ 720A	0.6V @ 840A	0.6V @ 960A
<b>CC MODE</b>				
Range *1	0 ~ 60A / 600A	0 ~ 72A / 720A	0 ~ 84A / 840A	0 ~ 96A / 960A
Resolution	1mA / 10mA	1.2mA / 12mA	1.4mA / 14mA	1.6mA / 16mA
Accuracy	± 0.1% OF ( Setting + Range )			
<b>CR MODE</b>				
Range	0.0017 ~ 0.1 ~ 6KΩ	0.00138 ~ 0.083 ~ 5KΩ	0.0012 ~ 0.0714 ~ 4284Ω	0.001 ~ 0.0625 ~ 3750Ω
Resolution	0.0016mΩ / 0.016mS	0.0014mΩ / 0.2mS	0.0003mΩ / 0.23mS	0.001mΩ / 0.267mS
Accuracy	± 0.2% OF ( Setting + Range )			
<b>CV MODE</b>				
Range	6V / 60V			
Resolution	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV
Accuracy	± 0.05% OF ( Setting + Range )			
<b>CP MODE</b>				
Range	900W / 9000W	1080W / 10800W	1260W / 12600W	1440W / 14400W
Resolution	15mW / 150mW	18mW / 180mW	21mW / 210mW	24mW / 240mW
Accuracy	± 0.5% OF ( Setting + Range )			
<b>DYNAMIC MODE - CC</b>				
<b>Timing</b>				
Thigh & Tlow	0.050 ~ 9.999 / 99.99 / 999.9 / 9999mS			
Resolution	0.001 / 0.01 / 0.1 / 1mS			
Accuracy	1μS / 10μS / 100μS / 1mS + 50ppm			
Slew rate	0.04A ~ 2.5A / μS 0.4A ~ 25A / μS	0.048A ~ 3A / μS 0.48A ~ 30A / μS	0.056A ~ 3.5A / μS 0.56A ~ 35A / μS	0.064A ~ 4A / μS 0.64A ~ 40A / μS
Resolution	0.01 / 0.1A / μS	0.012 / 0.12A / μS	0.014 / 0.14A / μS	0.016 / 0.16A / μS
Accuracy	( 5% of setting ) ± 10 μS			
Min. Rise Time	24μS ( typical )			
<b>Current</b>				
Range	60A / 600A	72A / 720A	84A / 840A	96A / 960A
Resolution	1mA / 10mA	1.2mA / 12mA	1.4mA / 14mA	1.6mA / 16mA
<b>MEASUREMENT</b>				
<b>Voltage Read Back</b>				
Range (5 Digital)	0 ~ 6V / 60V	0 ~ 6V / 60V	0 ~ 6V / 60V	0 ~ 6V / 60V
Resolution	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV	0.1mV / 1mV
Accuracy	± 0.025% OF ( Reading + Range )			
<b>Current Read Back</b>				
Range (5 Digital)	0 ~ 60A / 600A	0 ~ 72A / 720A	0 ~ 84A / 840A	0 ~ 96A / 960A
Resolution	1mA / 10mA	1.2mA / 12mA	1.4mA / 14mA	1.6mA / 16mA
Accuracy	± 0.1% OF ( Reading + Range )			
<b>Power Read Back</b>				
Range (5 Digital)	0 ~ 9000W	0 ~ 10800W	0 ~ 12600W	0 ~ 14400W
Resolution	0.15W	0.18W	0.21W	0.24W
Accuracy	± 0.125% OF ( Reading + Range )			
<b>PROTECTIONS</b>				
Over Power	105% of Rated Power			
Over Current	105% of Rated Current			
Over Voltage	105% of Rated Voltage			
Over Temp.	Yes			
<b>OTHERS</b>				
<b>Load ON Voltage</b>				
Range	0.1 ~ 25.0V			
Resolution	0.1V			
Accuracy	1% of Setting + 0.25V			
<b>Load OFF Voltage</b>				
Range	0 ~ 25V			
Resolution	Same as Voltage Meter			
Accuracy	Same as Voltage Meter			
<b>GENERAL</b>				
<b>Short Circuit</b>				
Current	600A	720A	840A	960A
Temperature Coefficient	100ppm / °C ( typical )			
Power consumption	500Wmax	600Wmax	700Wmax	800Wmax
Operating Temperature *2	0 ~ 40°C			
Dimension (HxWxD)	1556 x 596 x 600 mm	1556 x 596 x 600 mm	1556 x 596 x 600 mm	1778 x 596 x 600 mm
Weight	185 kg	208.6 kg	232.2 kg	268.8 kg
Safety & EMC	CE			

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

Note\*1 : The range is automatically or forcing to range II only in CC Mode  
Note\*2 : Operating temperature range is 0~40°C · all specifications apply for 25°C±5°C

## Order Information

Optional interface :

- ① GPIB Card
- ② RS232 Card
- ③ USB Card
- ④ LAN Card



33514F 60V · 600A · 9000W



33515F 60V · 720A · 10800W



33516F 60V · 840A · 12600W



33517F 60V · 960A · 14400W