

# 33500F 系列

高功率直流電子負載



HIGH POWER DC ELECTRONIC LOAD



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## 特 性

- 5位數之數位電壓、電流以及功率錶
- 高速量測及通訊傳輸速率
- 大型 LCD Display、可用飛梭旋鈕或按鍵調整設定值
- 可同時顯示電壓值、電流值、瓦特值
- 可自動執行OCP、OPP測試
- 具有150組 儲存/呼叫 記憶
- 可設定開機狀態值
- 定電流、定電阻、定電壓、定功率、動態及短路模式
- 於短路測試時可設定短路時間
- 過電壓、電流、功率及溫度保護
- 電壓極性顯示可設成正值（“+”）或負值（“-”）
- 可選用介面： GPIB、RS232、USB、LAN

## 說 明

- 33500F系列具有獨立的控制及顯示面板、定電流/定電阻/定電壓/定功率/動態模式，配合面板上的150組 儲存/呼叫 記憶，能有效地控制所有負載的設定，更可透過RS232、Ethernet、USB和GPIB等介面進行遠端控制。
- 具備短路測試功能及設定短路時間，並可量測短路電壓及電流。
- 在定電流及定功率模式下，可做動態負載之模擬，其電流上升、下降斜率均為獨立可調，另具有一外部輸入任意波形之動態負載功能。
- 具有OCP、OPP單鍵測試功能，使得OCP、OPP之測試更有效率及準確。
- 可設定的吃載/停止吃載（LOAD ON/OFF）電壓點及良/不良（GO/NG）的比較判斷功能、電壓極性顯示可正可負及150組 儲存/呼叫 記憶，使得負載更適用於各種不同的應用。
- 多達150組測試參數及狀態的儲存功能，讓其可根據自動測試（auto sequence）需求，隨時將儲存記憶調出來任意使用。

## 應 用

- 電壓/電流源測試
- 交換式電源供應器暫態響應
- 定電壓模式供限流測試及模擬電池
- 電池放電
- 電池充電
- 研發、品管
- ATE系統
- 生產測試

## 規 格

MODEL	33501F	33521F	33511F	33531F	33541F
Power	2400W	2400W	3600W	3600W	3600W
Current	0 ~ 240A	0 ~ 480A	0 ~ 240A	0 ~ 480A	0 ~ 720A
Voltage	0 ~ 60V	0 ~ 60V	0 ~ 60V	0 ~ 60V	0 ~ 60V
Min. Operation Voltage	0.7V @ 240A	0.7V @ 480A	0.6V @ 240A	0.7V @ 480A	0.7V @ 720A
<b>CC MODE</b>					
Range *1	0 ~ 24A / 240A	0 ~ 48A / 480A	0 ~ 24A / 240A	0 ~ 48A / 480A	0 ~ 72A / 720A
Resolution	0.4mA / 4mA	0.8mA / 8mA	0.4mA / 4mA	0.8mA / 8mA	1.2mA / 12mA
Accuracy	±0.1% OF (Setting+Range)				
<b>CR MODE</b>					
Range	0.0041 ~ 0.25~15KΩ	0.002 ~ 0.125~7.5KΩ	0.0041~0.25 ~15KΩ	0.002~0.125~7.5KΩ	0.00138~0.0833~5KΩ
Resolution	0.0041mΩ / 0.066mS	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	0.1mV / 1mV
Accuracy	± 0.05% OF ( Setting+Range )				
<b>CP MODE</b>					
Range	240W / 2400W	240W / 2400W	360W / 3600W	360W / 3600W	360W / 3600W
Resolution	4mW / 40mW	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	0.016A ~ 1A / μS 0.16A ~ 10A / μS	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	0.004 / 0.04A / μS	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	24A / 240A	48A / 480A	24A / 240A	48A / 480A	72A / 720A
Resolution	0.4mA / 4mA	0.8mA / 8mA	0.4mA / 4mA	0.8mA / 8mA	1.2mA / 12mA
Accuracy	± 0.1% OF ( Setting+Range )				
<b>MEASUREMENT</b>					
<b>Voltage Read Back</b>					
Range (5 Digital)	0 ~ 6V / 60V	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	0.1mV / 1mV
Accuracy	± 0.025% OF (Reading+Range)				
<b>Current Read Back</b>					
Range (5 Digital)	0 ~ 24A / 240A	0 ~ 48A / 480A	0 ~ 24A / 240A	0 ~ 48A / 480A	0 ~ 72A / 720A
Resolution	0.4mA / 4mA	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 ~ 2400W	0 ~ 3600W	0 ~ 3600W
Resolution	0.04W	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	240A	480A	240A	480A	720A
Temperature Coefficient	100ppm / °C ( typical )				
Power consumption	200Wmax	200Wmax	200Wmax	200Wmax	200Wmax
Operating Temperature *2	0 ~ 40°C				
Dimension (HxWxD)	459 x 480 x 577mm	459 x 480 x 577mm	459 x 480 x 577mm	459 x 480 x 577mm	459 x 480 x 577mm
Weight	36 kg	36 kg	44 kg	44 kg	44 kg
Safety & EMC	CE				

輸入電源：115/230 Vac ±10%・50/60Hz

冷卻方式：智慧型風扇冷卻

註 \*1：CC Mode 可強制於 range II

註 \*2：操作溫度範圍為 0~40°C，此規格表內之精確度僅適用於 25°C±5°C

## 訂 購 方 式

選購介面：

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



33501F 60V・240A・2400W



33521F 60V・480A・2400W



33511F 60V・240A・3600W



33531F 60V・480A・3600W



33541F 60V・720A・3600W

## 規 格

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
Accuracy	± 0.1% OF ( Setting+Range )			
<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)	637 x 480 x 577mm	637 x 480 x 577mm	637 x 480 x 577mm	815 x 480 x 577mm
Weight	66 kg	66 kg	66 kg	88 kg
Safety & EMC	CE			

輸入電源：115/230 Vac ±10% · 50/60Hz  
冷卻方式：智慧型風扇冷卻

註 \*1：CC Mode 可強制於 range II

註 \*2：操作溫度範圍為 0~40°C，此規格表內之精確度僅適用於 25°C±5°C

## 訂 購 方 式

選購介面：

- 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

## 規 格

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 uS			
Min. Rise Time	24uS ( 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
Accuracy	± 0.1% OF ( Setting + Range )			
<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)	1283 x 600 x 600 mm	1283x 600 x 600 mm	1506 x 600 x 600 mm	1728 x 600 x 600 mm
Weight	185 kg	208.6 kg	232.2 kg	268.8 kg
Safety & EMC	CE			

輸入電源：115/230 Vac ±10% · 50/60Hz  
冷卻方式：智慧型風扇冷卻

註 \*1：CC Mode 可強制於 range II

註 \*2：操作溫度範圍為 0~40°C，此規格表內之精確度僅適用於 25°C±5°C

## 訂 購 方 式

選購介面：

- 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