3282

功率因素RLC負載

POWER FACTOR RLC LOAD

PRODIGIT
INSTRUMENT PROFESSIONAL

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3282 功率因素RLC負載

特　性

- 四個電錶可同時顯示電壓值（Vrms, Vpeak, Vmax., Vmin）、電流值（Irms, Ipeak, Imax., Imin.）、瓦特值、伏安值（VA）、頻率值、峰值因素、功率因素、電壓失真度（VTHD, VH）、電流失真度（ITHD, IH）等。
- 交/直流負載具有定電流、線性定電流、定電阻、定電壓、定功率等工作模式，皆可以再加上電感性或電容性負載。
- 內建測試模式包括UPS Efficiency、PV Inverter Efficiency、UPS Back-up time、Battery Discharge time、UPS transfer time、Fuse/Breaker Trip/Non-Trip、短路模擬、OCP、 OPP、PF、INRUS(Inrush)、SURGE 等測試模式。
- 在測試模式下具備Turbo mode（倍增模式）能力，可以在1秒內承受多達2倍電流（37.5A）與功率（37.5KW）的電子負載，最適合Fuse/Breaker及交流電源的短路、OCP、OPP測試，還具備時間量測功能，可顯示電池、UPS、保險絲和斷路器等測試的動作反應時間。
- 內建Master/Slave同步控制能力，高達八台的並聯最高可達 15KW / 15KVAR及三相△或Y的負載，除了Master/Slave外也可以個別單機並聯連接來擴充功率規格，功率規格可以依需要再增加。
- 支援帶載開機；先設定Load ON 便可支持帶載開機，逆變器或不斷電電源等UUT開機時便直接帶著所設定負載電流開機，用來驗證Inverter連接電器時啟動是否穩定。
- 支援抽載與卸載角度控制；吃載卸載角度控制，0-359度全範圍都可設定，用來驗證實際電器插拔時，Inverter輸出電壓暫態反應是否穩定，Overshoot/Undershoot 是否在容許範圍內。
- 支援正半週或負半週抽載；用來驗證實際電器只有正半周或負半周負載電流時，Inverter輸出電壓是否維持穩定。
- 支援SCR/TRIAC的電流調變波形，90度Trailing edge及Leading Edge。
- 支援電源供應器於開機時之電容性負載（Inrush Current）與運行中負載突然接入（Hot Plug-in）時的瞬間電流（Surge Current）測試。
- 頻率範圍：DC, 40~70Hz
- 過電壓警示、過電流、過功率、過溫度保護。
- GPIB、RS-232、USB、LAN 控制介面。
- 最齊全的量測功能

  3282 功率因素 RLC 負載內建16位元 A/D 及 DSP 等精準的量測電路，提供了精確的量測值，量測項目共有電壓均方根值（Vrms）、電流均方根值（Arms）、瓦特值（Watt）、伏安（VA）、波峰因素（CF）、功率因素（PF）、總諧波失真率（THD）、電壓總諧波失真率（VTHD）、電流總諧波失真率（ITHD）、峰值電流（Ipeak）、電流最大值（Amax）、電流最小值（Amin）、電壓最大值（Vmax）、電壓最小值（Vmin）。

  除了這些量測功能外，亦提供了時間量測，產品如 UPS、保險絲及斷路器等的跳脫或熔斷時間及 Off-line UPS 的轉換時間（Transfer time）。

Applications for 3282 Power Factor Load

Power Factor Load for Sine-Wave Source

Linear R.L.C. Load

CC, CR, CV, CP, Linear CC

CC Setting 10.000A

CR Setting 6400.0ohm

CV Setting 100.00V

CP Setting 1000.0W

LIN CC Setting 10.000A

R + L

Loading + Inductor OFF

Loading + Inductor 32.000H

R + C

Loading + Capacitor OFF

Loading + Capacitor 104.00uF

Non-Linear Rectifier Load

CC mode Crest Factor

Crest Factor Setting 1.4=1.414

Crest Factor Setting 5.0

CC mode Power Factor

Power Factor Setting 0.1

Power Factor Setting 1.0

Inverter CC + CR

Test Item, Press Item to Non-Linear + CR test
Press Start to test

Press Setting To setting CC current loading

Press Setting To setting CR resistance loading, and than press setting again to finished setting

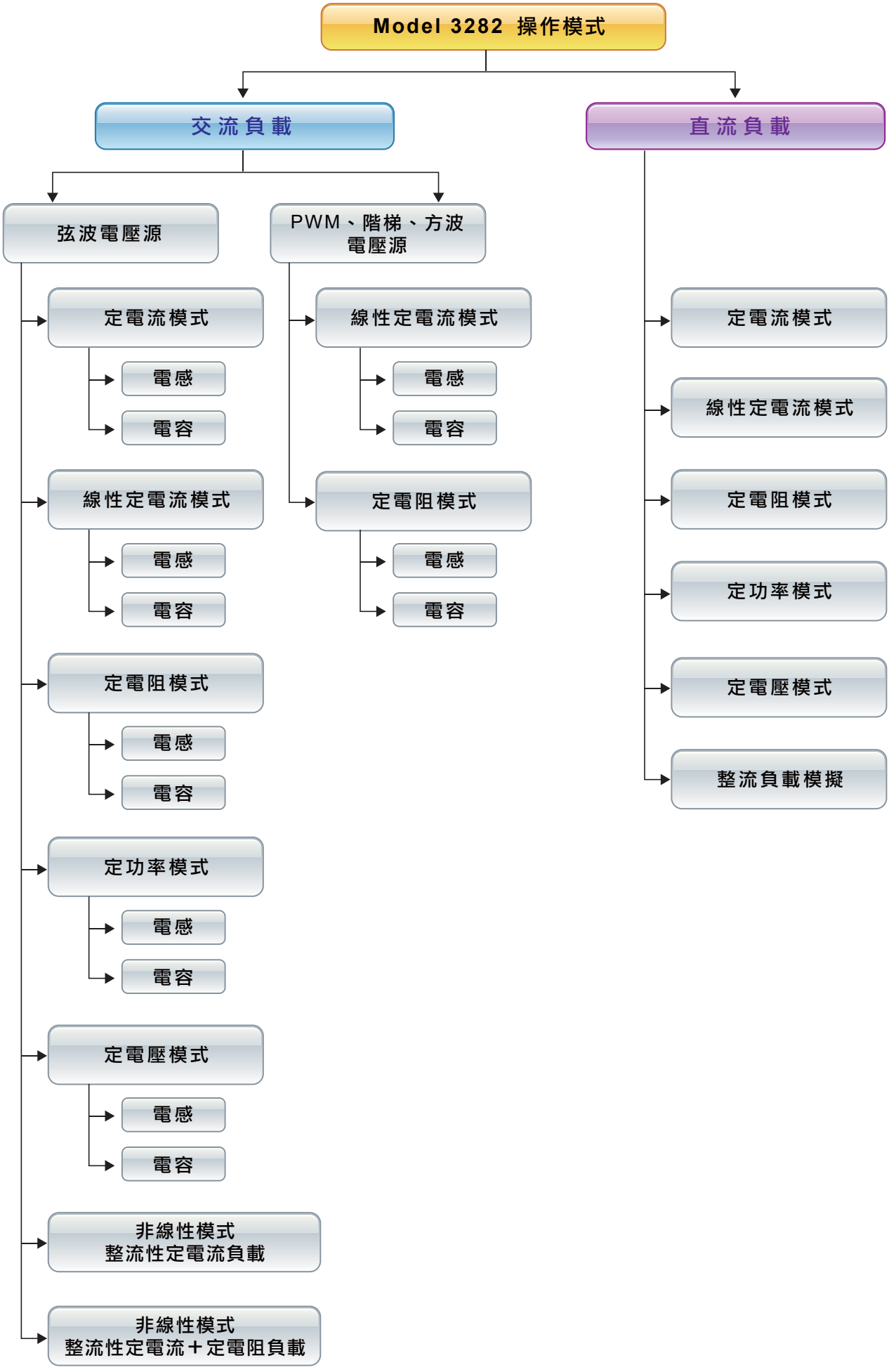
UPS

Test Item, Press Item to Non-Linear test
Press Start to test

Press Setting To setting CC current loading

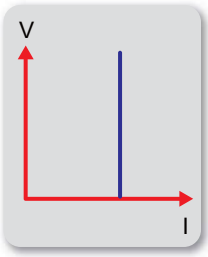
Press Setting To setting Power Factor than press setting again to finished setting

完整的交流及直流負載模式

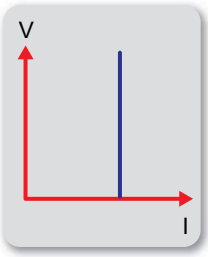


• 交流負載模式

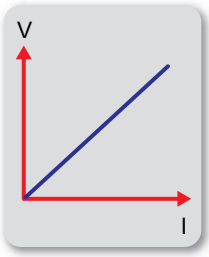
定電流模式



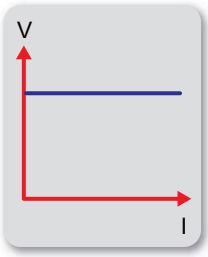
線性定電流模式



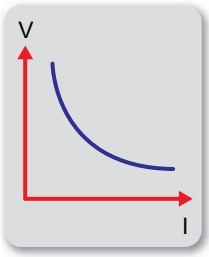
定電阻模式



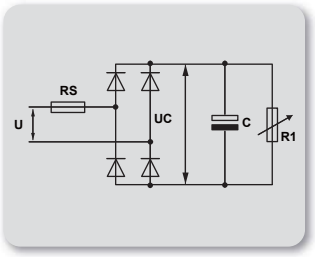
定電壓模式



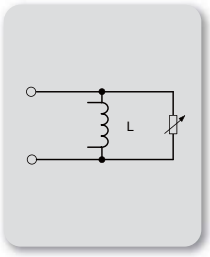
定功率模式



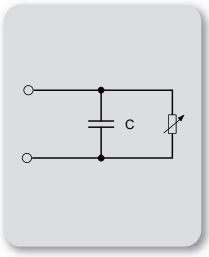
非線性整流模式



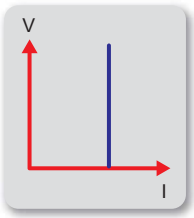
電感性負載模式



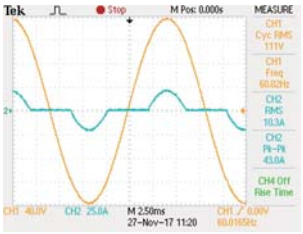
電容性負載模式



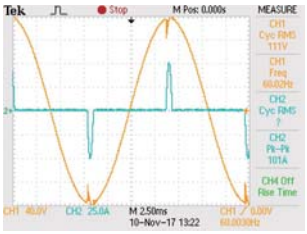
• 定電流模式：在交流負載的定電流模式，僅適用於弦波電壓源，提供線性負載的CF，PF（模擬）測試。



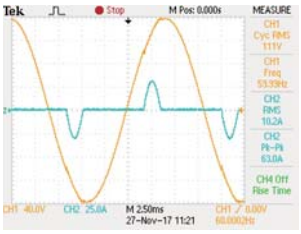
CC mode



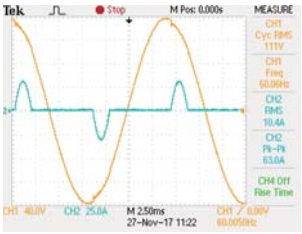
CC mode, CF=2



CC mode, CF=5

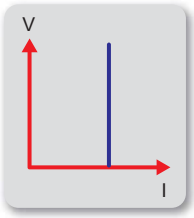


CC mode, PF= +0.5

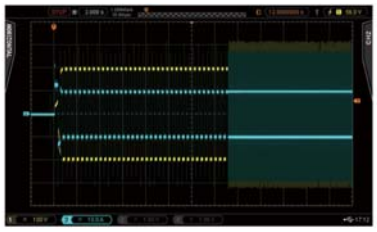


CC mode, PF= -0.5

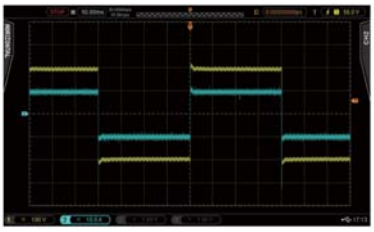
• 線性定電流模式：可以適用於弦波與非弦波電壓源，如下圖所示的 PWM 變頻驅動器，階梯(Step)電壓源，及 UPS 弦波變方波，方波變弦波。



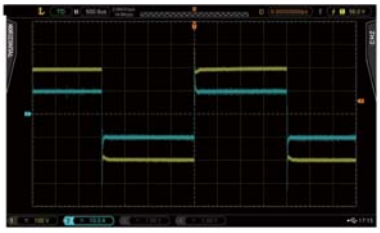
Linear CC mode



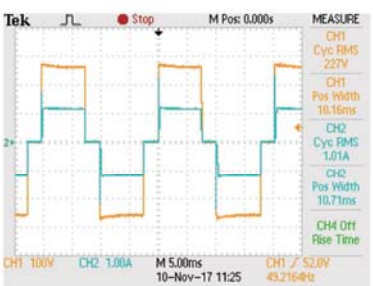
Linear CC mode, PWM 10A 2.5Hz to 250Hz



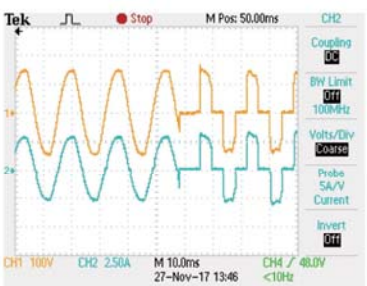
Linear CC mode, PWM 10A 2.5Hz



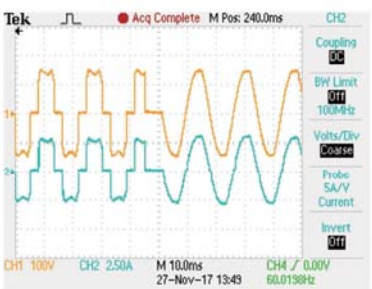
Linear CC mode, PWM 10A 250Hz



Linear CC mode, Step 10A



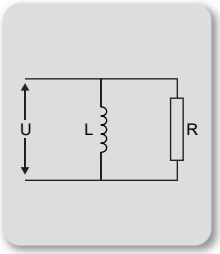
Linear CC mode, UPS Sine to Square waveform



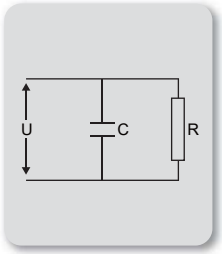
Linear CC mode, UPS Square to Sine waveform

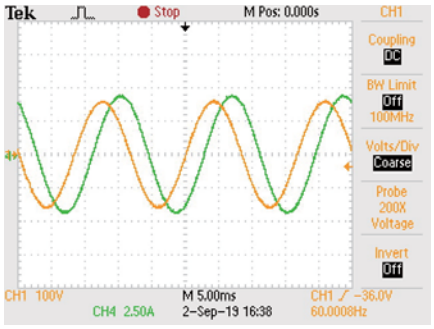
- **定電流 + 電感性，電容性負載**

加電感模式

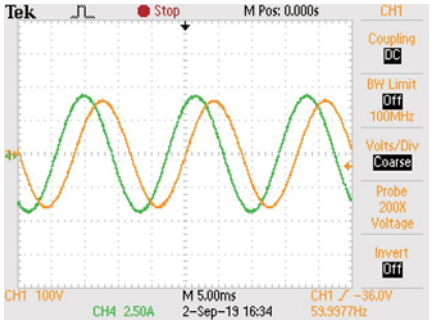


加電容模式



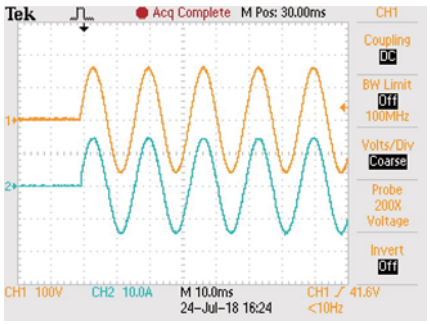


電感性負載 **PF -0.5**

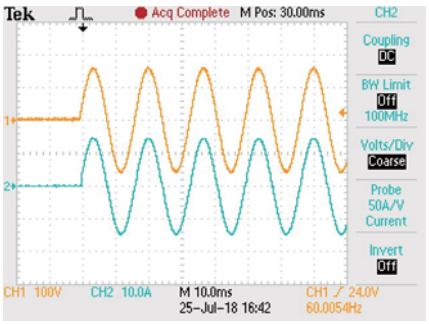


電容性負載 **PF +0.5**

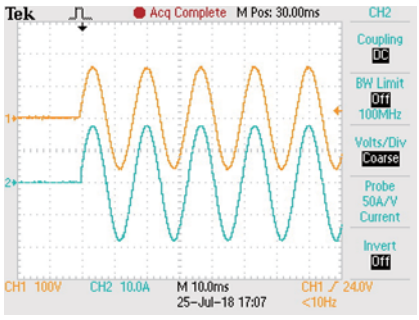
- **支援帶載開機：模擬待測物直接插入(Plug-in) 抽載；先設定Load ON 便可支持帶載開機，逆變器或不斷電電源開機時便直接帶著所設定負載電流開機，用來驗證Inverter連接電器時啟動是否穩定。**



CC 10A 帶載開機

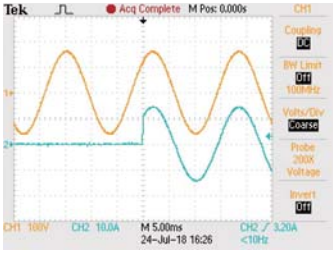


CR 10A 帶載開機

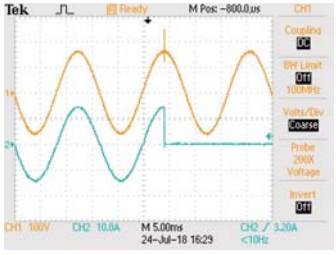


CV 10A 帶載開機

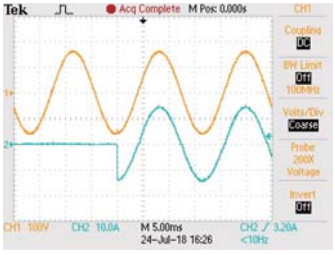
- **支援抽載與卸載角度控制：吃載卸載角度控制，0-359度全範圍都可設定，用來驗證實際電器插拔時，Inverter輸出電壓暫態反應是否穩定，Overshoot / Undershoot 是否在容許範圍內。**



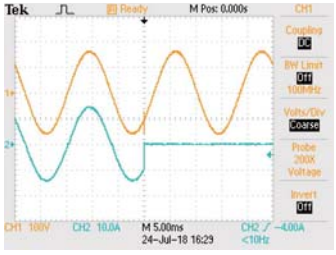
45 度抽載



90 度卸載

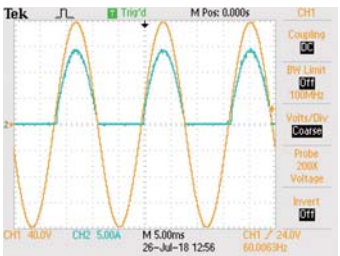


270 度抽載

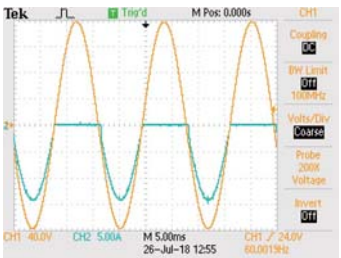


315 度卸載

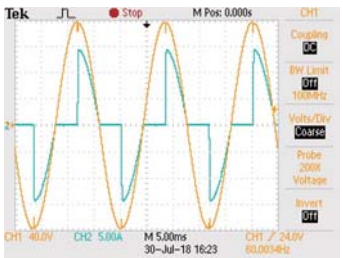
- **支援正半週與負半週抽載及SCR/TRIAC的電流調變波形，90度Trailing edge及Leading Edge；用來驗證實際電器只有正半周或負半周及 SCR/TRIAC負載電流時，Inverter輸出電壓是否維持穩定。**



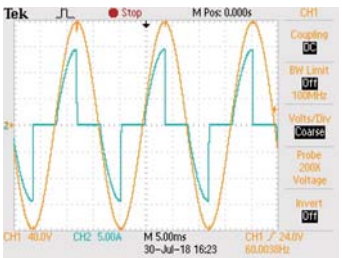
正半週抽載



負半週抽載



90度TRIAC/SCR電流波形Leading edge

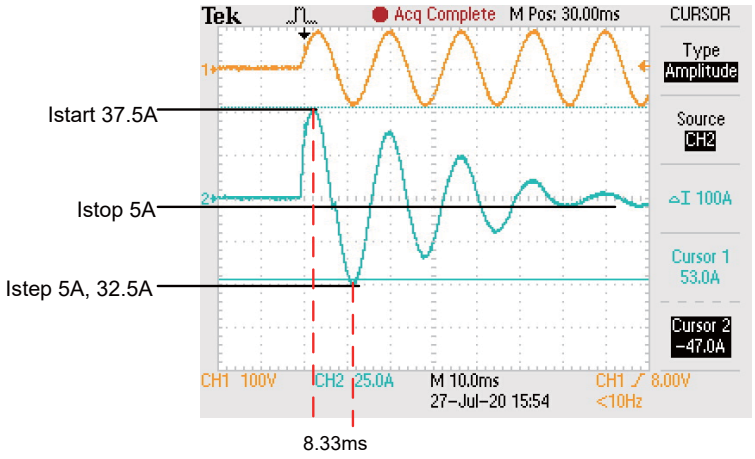


90度電流波形Trailing edge

• 支援電源供應器於開機時之電容性負載(Inrush Current) 與運行中負載突然接入(Hot Plug-in)測試用來驗證電器在開機時的瞬間啟動電流(Inrush Current) 及電器突然接上(Surge Current)時，Inverter 輸出電壓暫態反應是否穩定，如下圖所示。

MODEL	3282
Programmable Inrush current simulation: Istart - Istop / Tsep	
Istart, Inrush Start Current	0~37.5A
Inrush Step time	0.1mS~100mS
Istop, Inrush stop current	0~18.75A
Programmable Surge current simulation: S1/T1 - S2/T2 - S3/T3	
S1 and S2 Current	0~37.5A
T1 and T2 Time	0.01S~0.5Sec.
S3 Current	0~18.75A
T3 Time	0.01S ~ 9.99Sec. Or Cont.

Vinput 60V 60Hz
ISTAR (Inrush Start Current) 37.5A
ISTEP (Inrush Step Current) 5A
TIME (Inrush Step Time) 8.33ms
ISTOP (Inrush Stop Current) 5A



Press “Item”
to INRUS (Inrush Test)
Press START to start testing

Press “Setting”
to setting frequency 60Hz

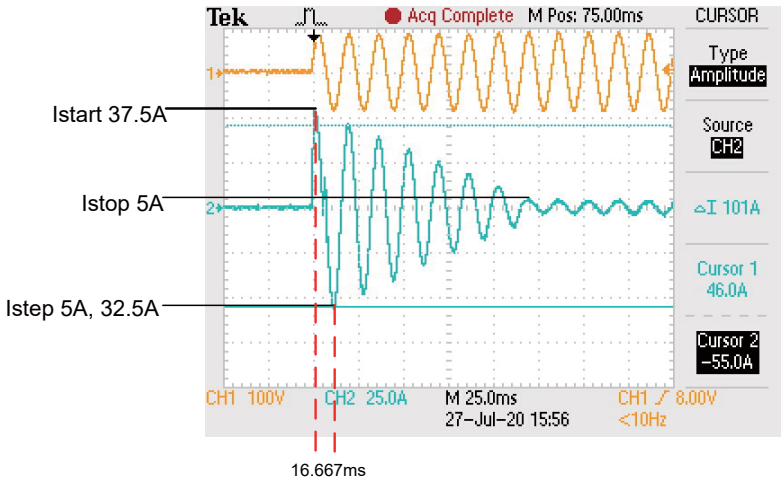
Press “Setting”
to setting Istart 37.5A

Press “Setting”
to setting Istep 5 A

Press “Setting”
to setting step time 8.33ms

Press “Setting” to setting Istop 5A
Press “Setting” again to finish the parameter setting

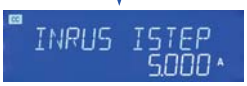
Vinput 60V 60Hz
ISTAR (Inrush Start Current) 37.5A
ISTEP (Inrush Step Current) 5A
TIME (Inrush Step Time) 16.667ms
ISTOP (Inrush Stop Current) 5A



Press “Item”
to INRUS (Inrush Test)
Press START to start testing

Press “Setting”
to setting frequency 60Hz

Press “Setting”
to setting Istart 37.5A



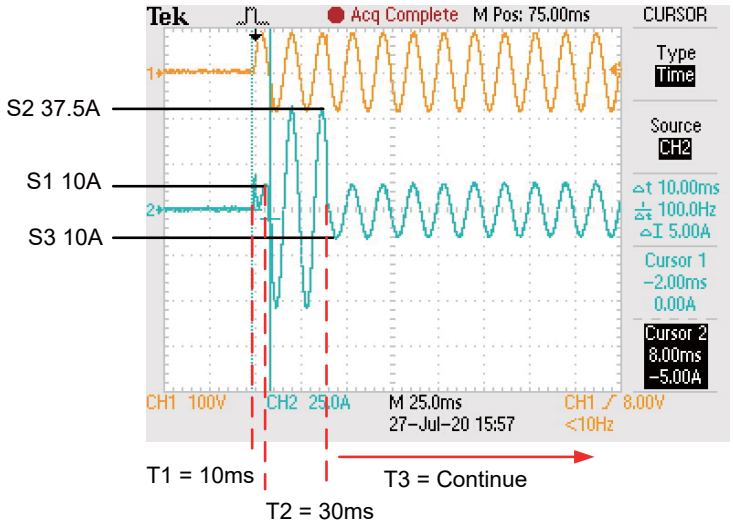
Press “Setting”
to setting Istep 5A

Press “Setting”
to setting step time 16.667ms

Press “Setting” to setting Istop 5A
Press “Setting” again to finish the parameter setting

開機時的瞬間啟動電流 (Inrush Current) 測試

Vinput 60V 60Hz
S1 (Surge Current 1) 10A, T1(Tstep 1) 0.01 Sec.
S2 (Surge Current 2) 37.5A, T2(Tstep 2) 0.03 Sec.
S3 (Surge Current 3) 10A, T3(Tstep 3) Continue



Press "Item"
to SURGE (Surge Test)
Press START to start testing

Press "Setting"
to setting frequency 60Hz

Press "Setting"
to setting S1 current 10A

Press "Setting"
to setting Tstep 1 0.01 sec.

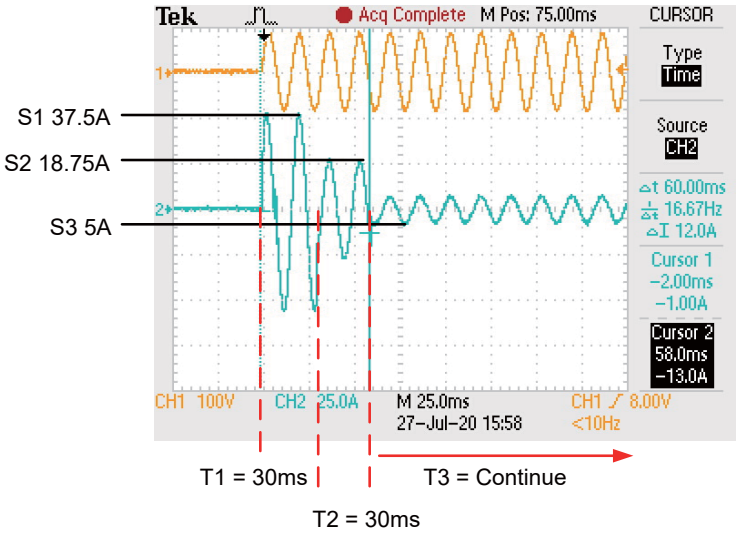
Press "Setting"
to setting S2 current 37.5A

Press "Setting"
to setting Tstep 2 0.03 sec.

Press "Setting"
to setting S3 current 10A

Press "Setting" to setting Tstep 3
Press "Setting" again to finish
the parameter setting

Vinput 60V 60Hz
S1 (Surge Current 1) 37.5A, T1(Tstep 1) 0.03 Sec.
S2 (Surge Current 2) 18.75A, T2(Tstep 2) 0.03 Sec.
S3 (Surge Current 3) 5A, T3(Tstep 3) Continue



Press "Item"
to SURGE (Surge Test)
Press START to start testing

Press "Setting"
to setting frequency 60Hz

Press "Setting"
to setting S1 current 37.5A

Press "Setting"
to setting Tstep 1 0.03 sec.

Press "Setting"
to setting S2 current 18.75A

Press "Setting"
to setting Tstep 2 0.03 sec.

Press "Setting"
to setting S3 current 5A

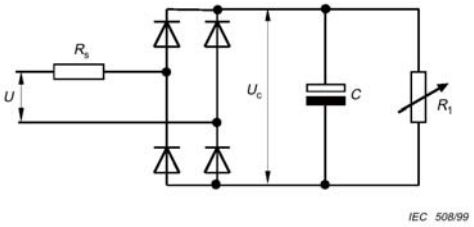
Press "Setting" to setting Tstep 3
Press "Setting" again to finish
the parameter setting

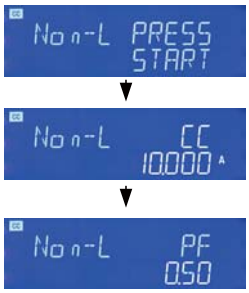
電器突然接上時的瞬間突波電流(Surge Current)測試

交流整流負載模擬符合 IEC62040-3 and IEC61683 測試規範

3280系列 AC/DC 電子負載的交流整流模式，完全符合 IEC 對 UPS及 PV Inverter 的測試規範要求，分別是 IEC62040-3 UPS Efficiency Measurement non-Linear and IEC61683 Resistive Plus Non-Linear。
3280系列的交流整流性負載模式，是使用CC+CR負載模式並維持電流的THD 在80%，來模擬實際PV Inverter 所連接的電子設備。

Rectified loads mode

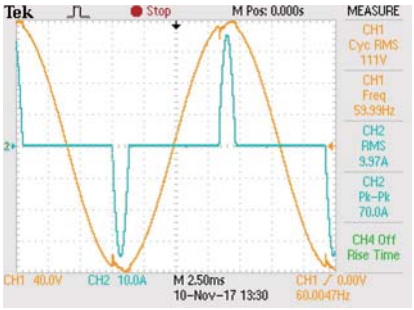




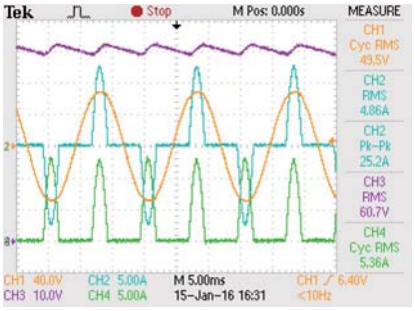
Press Test Item to Non-L mode, Prees START to Start test

Press Setting to setting CC current value

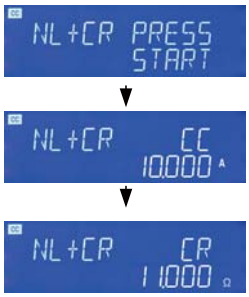
Press Setting to setting PF, Press Setting to finish the parameter setting.



UPS Non-Linear CC mode Test waveform



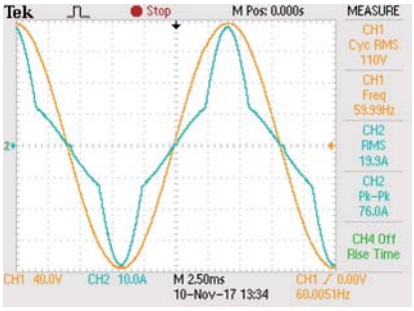
Actual Voltage/Current Waveform



Press Test Item to NL+CR mode, Prees START to Start test

Press Setting to setting CC current value

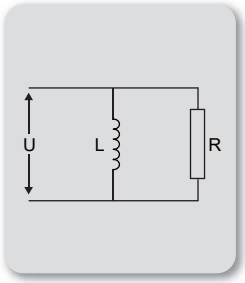
Press Setting to setting CR value, Press Setting to finish the parameter setting.

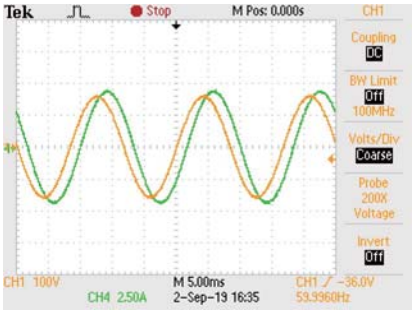


110V, 10A + 11ohm Test Waveform

PV Inverter Non-Linear CC + Resistive mode(CC+CR) Testing Waveform

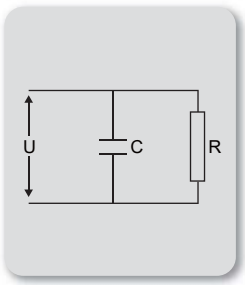
Load 2A, PF -0.8

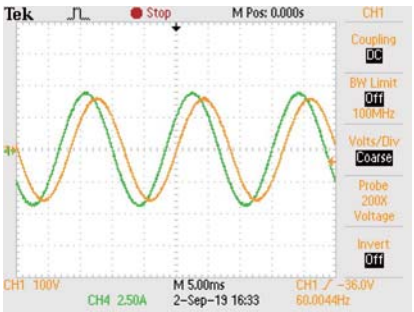




電感性負載 **PF -0.8**

Load 2A, PF +0.8

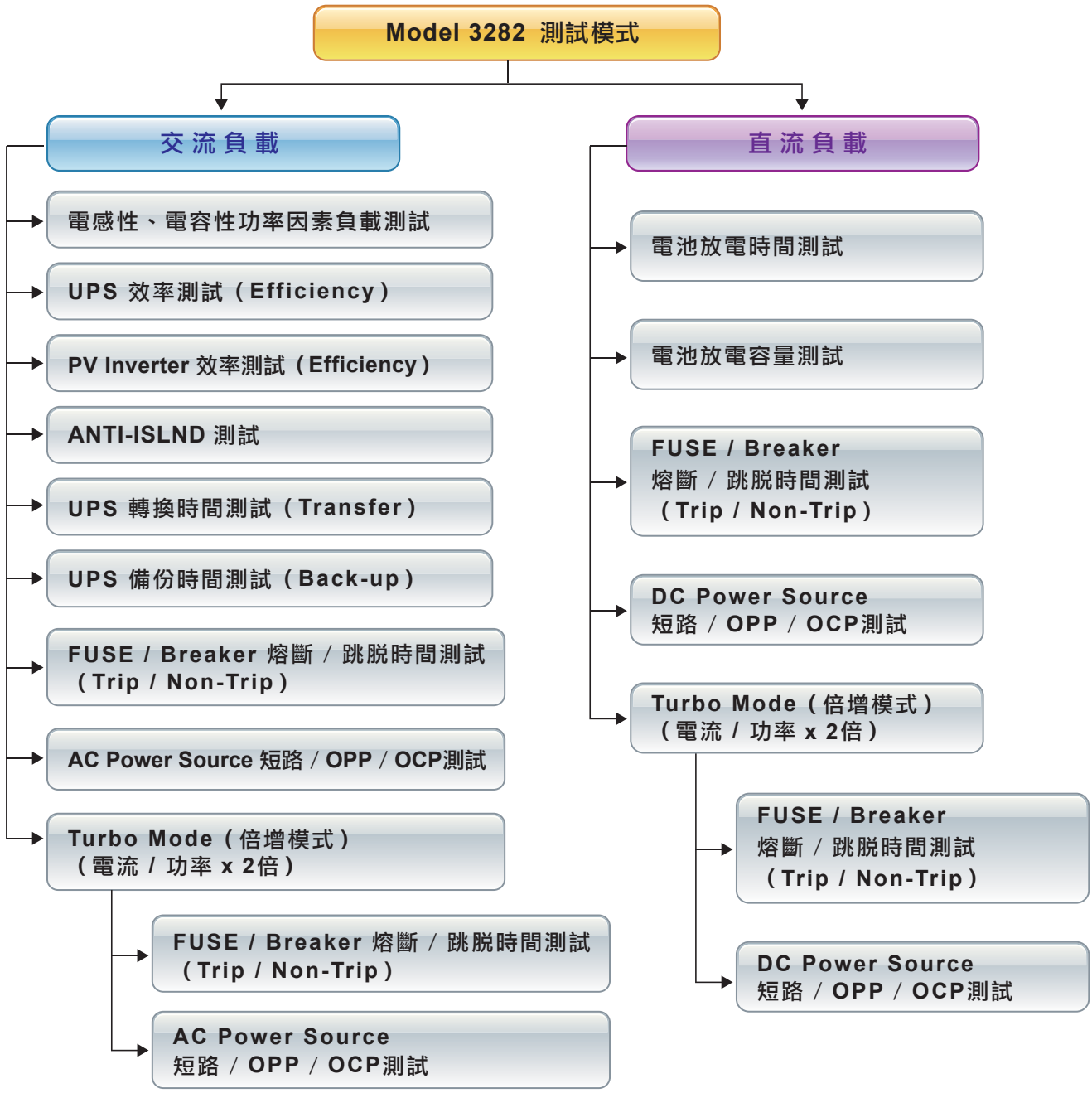




電容性負載 **PF +0.8**

3282 負載的各種測試模式

3282 AC/DC 電子負載特別內建各種產品所需的測試模式，包括交流部分的UPS, Inverter, Fuse/Breaker, AC Power Source，及直流部份的 Battery, Fuse/Breaker, DC Power Source等，如下圖所示。



電流保護元件測試

電流保護元件包括Fuse 保險絲， Breaker斷路器及新型的PTC Resettable fuse自恢復保險絲等，其作用是當電路電流超過設計的額定值時，也就是負荷超過設計的電流容量時便將電路斷開。以避免發生過熱、甚至著火，起火等危險。上述保護元件中Fuse是一次性使用，Breaker與PTC就可以重覆使用。

電流保護元件的保護電流值與保護反應時間通常是具有乘積的關係，也就是通過電流保護元件的電流愈大，則其保護斷路的反應時間就愈短，這就類似是能量保護元件。

針對這樣的特性，3282系列交直流電子負載特別針對電流保護元件的測試驗證開發出Fuse Test功能，就能夠用一額定電流與功率的電子負載來測試驗證此類保護元件(如圖b)。當 Turbo mode(倍增模式) 設置為 ON 時，在1秒的測試時間內，測試電流可以倍增到最大電流的2倍，以3282為例，最大測試電流可倍增為37.5A(如圖d)，也就是使用3282系列的Turbo mode為ON時，於1秒測試時間內就可以達到2台3282系列的測試電流值。

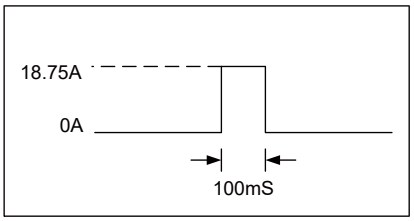

Fuse


Breaker

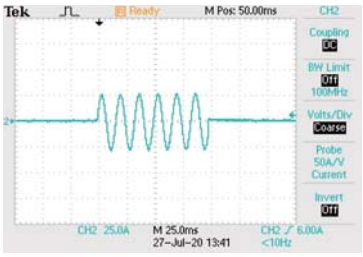

PTC

MODEL		3282
Fuse Test mode		
Max. Current	Turbo OFF	18.75Arms
	Turbo ON	37.5Arms (x2)
Trip & Non-Trip Time	Turbo OFF	0.1~9999.9sec.
	Turbo ON	0.1~1.0sec.
Meas. Accuracy		±0.003 Sec.
Repeat Cycle		0~255
Short / OPP / OCP Test Function		
Short Time	Turbo OFF	0.1S ~ 10Sec. Or Cont.
	Turbo ON	0.1S ~ 1Sec
OPP / OCP Step Time	Turbo OFF	100ms
	Turbo ON	100ms, up to 10 Steps
OCP Istop	Turbo OFF	18.75Arms
	Turbo ON	37.5Arms
OPP Pstop	Turbo OFF	1875W
	Turbo ON	3750W

Turbo OFF, Short 100mS 18.75A
Test result

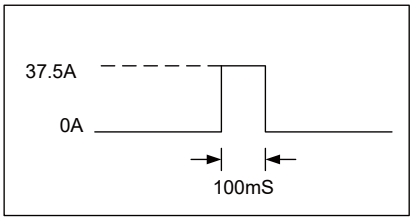


Turbo OFF, Short 100mS 18.75A Setting

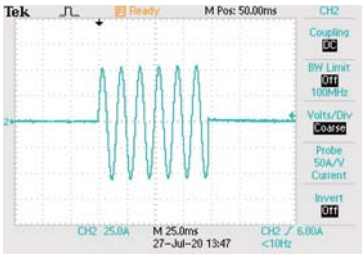


Turbo OFF, Short 100mS 18.75A
Test waveform

Turbo ON, Short 100mS 37.5A
Test result

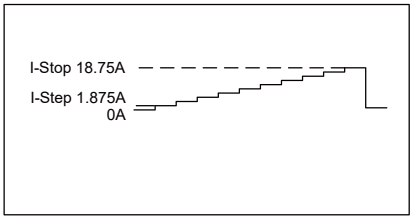


Turbo ON, Short 100mS 37.5A Setting

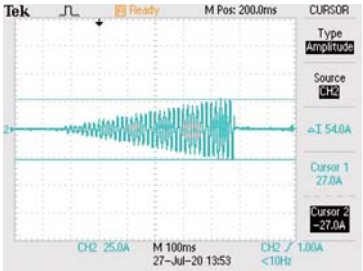


Turbo ON, Short 100mS 37.5 A
Test waveform

Turbo OFF, OCP Istep 1.875A Istop 18.75A
Test result

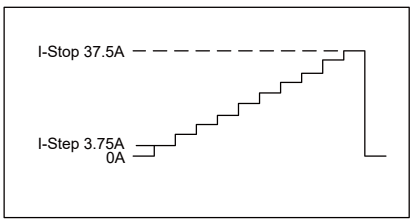


Turbo OFF, OCP Istep 1.875A Istop 18.75A Setting

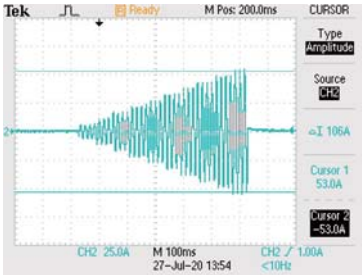


Turbo OFF, OCP Istep 1.875A Istop 18.75A
Test waveform

Turbo ON, OCP Istep 3.75 A Istop 37.5A
Test result



Turbo ON, OCP Istep 3.75 A Istop 37.5A Setting



Turbo ON, OCP Istep 3.75 A Istop 37.5 A
Test waveform

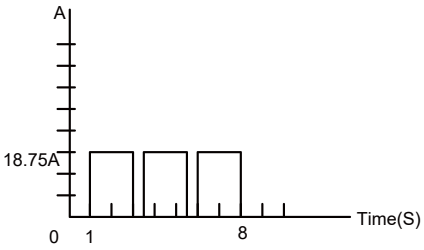
Fuse Test基本上分為Trip（熔斷）與Non-Trip（沒有熔斷）2種。

Fuse Test設定參來包括測試電流（Istart），測試時間（Time），測試重覆次數REPEAT TIME等。

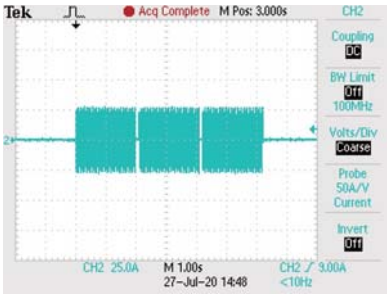
在Trip熔斷測試下，是用來測試電流過大異常發生時必須能夠提供斷路的保護能力，表示電流保護元件需熔斷的動作，因此測試電流需要大於熔斷的電流規格，當3282系列電子負載偵測到電壓低於1.0V，LCD就顯示Repeat次數及電流保護元件的熔斷時間 XXXX.X sec.。

在Non-Trip測試下，表示電流保護元件需達到不熔斷的動作，因此測試電流需要低於熔斷的電流規格，用來驗證在正常電流範圍內就必須不熔斷，當3282系列電子負載在測試時間（Pulse Time）與重覆Repeat次數結束後都沒熔斷，LCD顯示Repeat次數的資訊。

Turbo : OFF, Fuse mode Test result

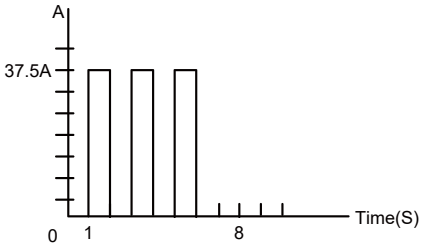


Setting : Turbo : OFF, Fuse ON,
CC pulse 18.75A, 2S, test 3 times

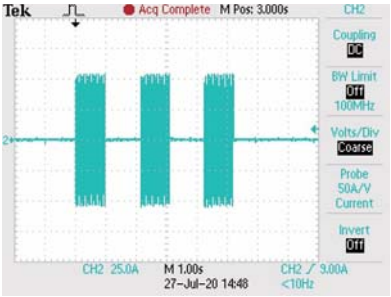


Turbo : OFF, Fuse ON,
CC pulse 18.75A, 2S, test 3 times waveform

Turbo : ON, Fuse mode Test result



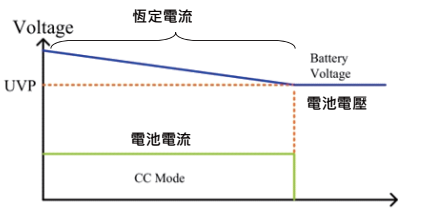
Setting : Turbo : ON, Fuse ON,
CC pulse 37.5A, 1S, test 3 times



Turbo : ON, Fuse ON,
CC pulse 37.5A, 1S, test 3 times waveform

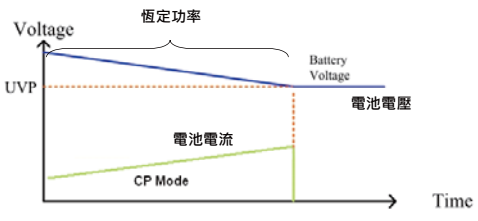
電池測試功能

3282系列負載新增TYPE1~TYPE3共二種電池放電測試，可以依需要選擇適當的電池測試模式，測試結果可以直接在LCD顯示器上顯示電池的AH容量、放電後的電壓值、放電的累計時間等數據。



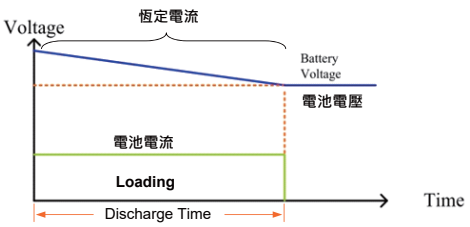
CC + UVP 電池放電模式

Type 1



CP + UVP 電池放電模式

Type 2

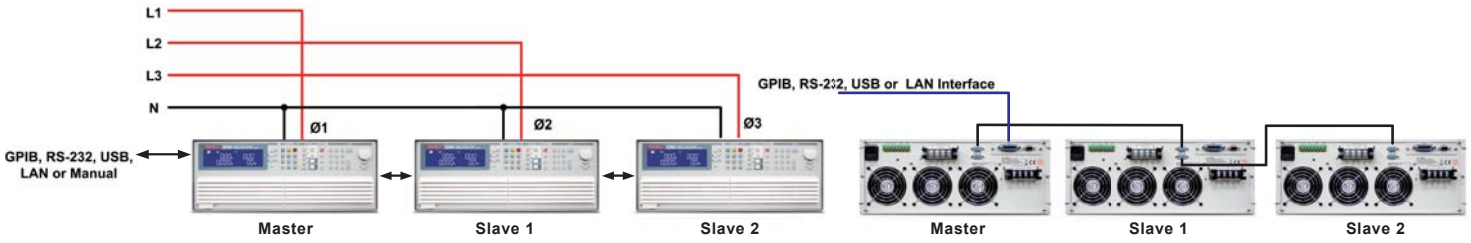


電池放電時間測試

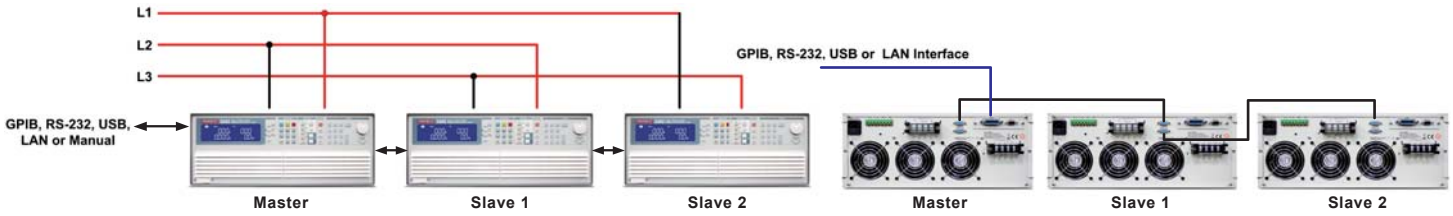
Type 3

並聯及三相控制

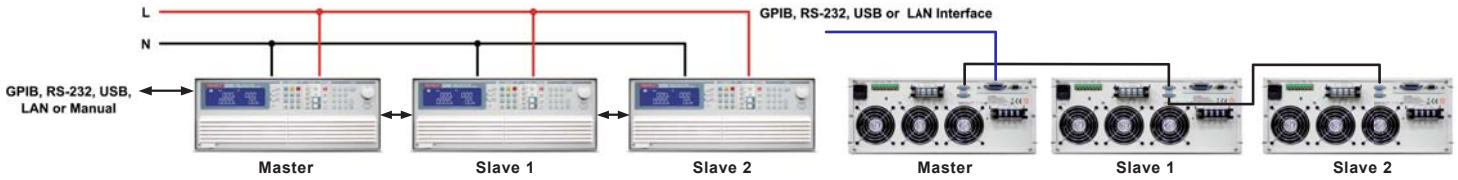
3282 系列負載提供多台並聯、三相應用功能，讓使用者能夠進行更大功率或三相交流電源的測試應用，這樣可以更靈活、更彈性的使用3282系列交流電子負載，以節省成本。在並聯/三相的操作上，使用者如同操作單機一樣，只要對 Master進行操作即可，Slave1 及 Slave2 會自動進行該相的吃載及量測。
並聯及三相的連接如下圖所示。

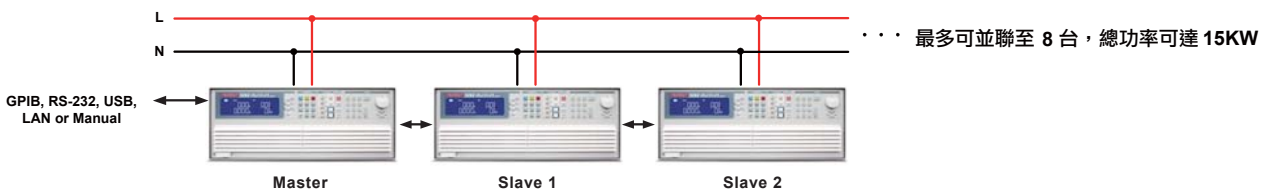


最大單相功率可達15KW，3相總功率達 45KW 之 3 相 Y 連接



最大單相功率可達15KW，3相總功率達 45KW 之3 相 Δ 連接





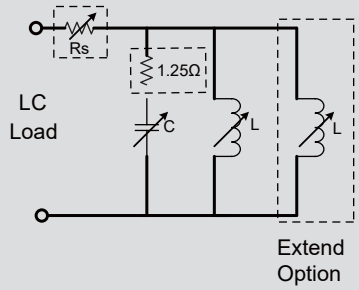
並聯連接

面板說明

1	**LCD 多功能顯示器** 四個電錶可同時顯示電壓值(Vrms, Vpeak, Vmax., Vmin)、電流值(Irms, Ipeak, Imax.,Imin.)、瓦特值、伏安值(VA)、頻率值、峰值因素、功率因素、電壓失真度(VTHD, VH)、電流失真度(ITHD, IH)等。	4	**波形庫按鍵** 可快速設定 CF √2 / 2 / 2.5 / 3 / 3.5，+/- PF 0.6 / 0.7 / 0.8 / 0.9 / 1.0，FREQ Auto / DC / 50Hz / 60Hz，L (Inductance)、C(Capacitance) 設定及快速數值設定 L/C(8H / 3.3F, 4H / 6.6uF, 2H / 12.8uF, 1H / 25.6uH, 0.5H / 52uF)。
2	**電錶切換鍵HD** V / A / W 鍵可設定顯示 Rms / Peak / Max / Min，Meter 鍵可選擇 PF/CF/FREQ，可切換顯示 WATT / VA / VAR 鍵，THD 鍵選擇顯示 THD	5	**測試功能鍵** 可選擇PF / Short / OPP / OCP / Non-L / NL-CR / Fuse / Batt (Battery Discharge) / Trans (UPS transfer time) / INRUS(Inrush) , SURGE 等測試功能。
3	**操作功能鍵** Mode，Preset ON/OFF，Load ON/OFF，Sense ON/OFF，Level A / B，Config，Limit，Recall，Store，SEQ，Local，System 等操作功能鍵。	6	**數字按鍵區**
		7	**設定旋鈕**
		8	**電源開關**
		9	**游標與設定按鍵**

10	交流電源輸入連接器	13	**主從控制連接器** Master：上端或下端連接至下一台 Slave：上端連接至前一台，下端連接至下一台
11	Vmonitor、Imonitor、Analog input、SYNC input 輸入端子		
12	Vload, Vsense 輸入端子	14	通訊界面 (GPIB、RS-232、USB、LAN)
15	PF Extended Device Connector (for Option PF extended)		

規　格			
MODEL		**3282**	**3282 + Option : Extend PF**
Power		1875 W / 3700VA	
Reactive Power	Capacitance	C：650 VARmax @ 100V/50Hz C：900 VARmax @ 110V/60Hz C：3150 VARmax @ 220V/50Hz C：3785 VARmax @ 220V/60Hz	C：650 VARmax @ 100V/50Hz C：900 VARmax @ 110V/60Hz C：3150 VARmax @ 220V/50Hz C：3785 VARmax @ 220V/60Hz
	Inductance	L：400 VARmax @ 100V/50Hz L：400 VARmax @ 110V/60Hz L：880 VARmax @ 220V/50Hz L：800 VARmax @ 220V/60Hz	L：1200 VARmax @ 100V/50Hz L：1200 VARmax @ 110V/60Hz L： 3520 VARmax @ 220V/50Hz L： 3200 VARmax @ 220V/60Hz
Resistive Current (Ampere)		18.75 Arms / 46.875 Apeak	
Reactive Current	Capacitance	C：6.5 Amax @ 100V/50Hz C：8.6 Amax @ 110V/60Hz C：14.3 Amax @ 220V/50Hz C：17.2 Amax @ 220V/60Hz	C：6.5 Amax @ 100V/50Hz C：8.6 Amax @ 110V/60Hz C：14.3 Amax @ 220V/50Hz C：17.2 Amax @ 220V/60Hz
	Inductance	L：4 Amax @ 100V/50Hz L：3.6 Amax @ 110V/60Hz L：4 Amax @ 220V/50Hz L：3.6 Amax @ 220V/60Hz	L：12 Amax @ 100V/50Hz L：10.8 Amax @ 110V/60Hz L：16 Amax @ 220V/50Hz L：14.4 Amax @ 220V/60Hz
Voltage (Volt)		50~280Vrms / 400Vdcmax	
FREQUENCY Range		DC, 40~70Hz (CC, CP Mode) DC~70Hz (LIN, CR, CV Mode)	
PROTECTIONS			
Over Power Protection		≒ 1968.75 Wrms or Programmable	
Over Current Protection		≒ 19.687 Arms or Programmable	
Over Voltage Protection		≒ 294 Vrms / 420Vdc	
Over Temp. Protection		Yes	
OPERATION MODE			
Constant Current Mode for Sine-Wave			
Range		0 ~ 18.75A	
Resolution		0.3125mA / 16bits	
Accuracy		± (0.1% of setting + 0.2% of range)	
Linear Constant Current Mode for Sine-Wave, Square-Wave or Quasi-Square Wave, PWM Wave			
Range		0 ~ 18.75A	
Resolution		0.3125mA / 16bits	
Accuracy		± (0.1% of setting + 0.2% of range)	
Constant Resistance Mode			
Range		3.2 ohm ~ 64K ohm	
Resolution*1		0.0052083mS / 16bits	
Accuracy		±0.2% of (setting + range)	
Constant Voltage Mode			
Range		50 ~ 280Vrms / 400Vdc	
Resolution		0.1V	
Accuracy		± (0.1% of setting + 0.1% of range)	
Constant Power Mode			
Range		0 ~ 1875W	
Resolution		0.1W	
Accuracy		± (0.1% of setting + 0.1% of range)	
RECTIFIER LOAD CREST FACTOR (CC & CP MODE ONLY)			
Range		√2 ~ 5	
Resolution		0.1	
Accuracy		(0.5% / Irms) + 1%F.S.	
RECTIFIER LOAD POWER FACTOR (CC & CP MODE ONLY)			
Range*4		0 ~ 1 Lag or Lead	
Resolution		0.01	
Accuracy		1% F.S.	

Plus LC Mode			
	**RS**	0Ω / 4.5Ω / 9Ω	
	Accuracy	±5% of setting	
	Capacitor	0，0.1uF ~ 207.55uF (0.1uF / 0.22uF / 0.47uF / 0.82uF / 1.64uF / 3.3uF / 6.6uF / 12.8uF / 25.6uF / 52uF / 104uF)	
	Accuracy	(±20% of setting) ±20mA	
	Inductance	0，40H ~ 0.156H (40H / 20H / 10H / 5H / 2.5H / 1.25H / 0.625H / 0.312H)	0，40H ~ 0.039H (40H / 20H / 10H / 5H / 2.5H / 1.25H / 0.625H / 0.312H / 156mH / 78mH / 156mH / 78mH)
	Accuracy	(±20% of setting) ±20mA	

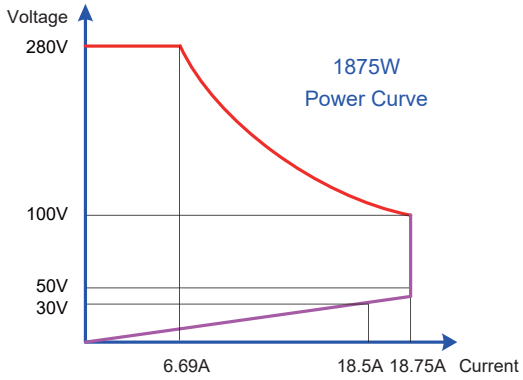
TEST MODE		
RLC LOAD SINE-WAVE POWER FACTOR(CF=√2)		
Current Range		0 ~ 18.75A
Resolution		0.3125mA / 16bits
PF Range		+/- 0.000 ~ 1.000
UPS Efficient Measurement		Non-Linear Mode
Operating Frequency		Auto ; 40 ~ 70Hz
Current Range		0 ~ 18.75A
PF Range		0~1
MEASURING EFFICIENCY FOR PV SYSTEMS, POWER CONDITIONERS for THD 80%		Resistive + Non-Linear Mode
Operating Frequency		Auto ; 40 ~ 70Hz
Current Range		0 ~ 18.75A
Resistive Range		3.2 ohm ~ 64K ohm
UPS Back-Up function(CC, LIN, CR, CP)		
UVP (V_{TH})		50 ~ 280Vrms / 400Vdc
UPS Back-Up Time		1 ~ 99999 Sec. (>27H)
Battery Discharge function(CC, LIN, CR, CP)		
UVP (V_{TH})		50 ~ 280Vrms / 400Vdc
Battery Discharge Time		1 ~ 99999 Sec. (>27H)
UPS Transfer Time		
Current Range		0 ~ 18.75A
UVP (V_{TH})		2.5V
Time range		0.15mS ~ 999.99mS
Fuse Test mode		
Max. Current	**Turbo OFF**	18.75Arms
	Turbo ON	37.5Arms (x2) *3
Trip & Non-Trip Time	**Turbo OFF**	0.1~9999.9sec.
	Turbo ON	0.1 ~ 1.0sec.
Meas. Accuracy		±0.003 Sec.
Repeat Cycle		0~255
Short / OPP / OCP Test Function		
Short Time	**Turbo OFF**	0.1S ~ 10Sec. Or Cont.
	Turbo ON	0.1S ~ 1Sec
OPP/OCP Step Time	**Turbo OFF**	100ms
	Turbo ON	100ms, up to 10 Steps
OCP Istop	**Turbo OFF**	18.75Arms
	Turbo ON	37.5Arms
OPP Pstop	**Turbo OFF**	1875W
	Turbo ON	3750W
Programmable Inrush current simulation: Istart - Istop / Tsep		
Istart, Inrush Start Current		0 ~ 37.5A
Inrush Step time		0.1mS ~ 100mS
Istop, Inrush stop current		0 ~ 18.75A

Programmable Surge current simulation: S1/T1 - S2/T2 - S3/T3		
S1 and S2 Current	0 ~ 37.5A	
T1 and T2 Time	0.01S ~ 0.5Sec.	
S3 Current	0 ~ 18.75A	
T3 Time	0.01S ~ 9.99Sec. Or Cont.	
Anti-Islanding		
Type	PQ / RLC	
Q	1875 Var	
Accuracy	±5% of setting	
Capacitor	0，0.1uF ~ 207.55uF (0.1uF / 0.22uF / 0.47uF / 0.82uF / 1.64uF / 3.3uF / 6.6uF / 12.8uF / 25.6uF / 52uF / 104uF)	
Accuracy	(±20% of setting) ± 20mA	
Inductance	0，40H ~ 0.156H (40H / 20H / 10H / 5H / 2.5H / 1.25H / 0.625H / 0.312H)	0，40H ~ 0.039H (40H / 20H / 10H / 5H / 2.5H / 1.25H / 0.625H / 0.312H / 156mH / 78mH)
Accuracy	(±20% of setting) ± 20mA	
MEASUREMENTS		
VOLTAGE READBACK V METER		
Range	400V	
Resolution	0.01V	
Accuracy	± 0.05% of (reading + range)	
Parameter	Vrms, V Max / Min, +/-Vpk	
CURRENT READBACK A METER		
Range	18.75Arms	
Resolution	1mA	
Accuracy	± 0.5% of (reading + range)	
Parameter	Irms, I Max / Min, +/-Ipk	
WATT READBACK W METER		
Range	1875W	
Resolution	0.03125W	
Accuracy	± 0.1% of (reading + range)	
VA METER	Vrms×Arms Correspond To Vrms and Arms	
Power Factor METER		
Range	+/- 0.000 ~ 1.000	
Accuracy	± (0.002 ± (0.001 / PF) * F)	
Frequency METER (Hz)		
Range	DC,40 ~ 70Hz	
Accuracy	0.1%	
Other Parameter METER		
VA, VAR, CF_I, Ipeak, Imax., Imin. Vmax., Vmin., I_{HD} , V_{HD} , I_{THD} , V_{THD}		
OTHERS		
Start up loading	Yes , Power on loading during Inverter / UPS start up	
Load ON / OFF Angle	0 ~ 359 degree can be programmed for the angle of load ON and load OFF loading	
Half cycle and SCR / TRIAC loading	Postive or Negative half cycle, 90° Trailing edge or Leading edge current waveform can be programmed	
Master / Slave (3 phase or Parallel application)	Yes, 1 master and upto 7 slave units	
External programming input (OPTION)	F.S / 10Vdc, Resulotion 0.1V	
External SYNC input	TTL	
Vmonitor (Isolated)	± 500V / ±10V	
Imonitor (Isolated)	± 56.25Apk / ±10Vpk	
Interface (OPTION)	GPIB；RS-232；LAN；USB	
MAX. Power consumption	150VA	
Operation Temperature *2	0 ~ 40℃	

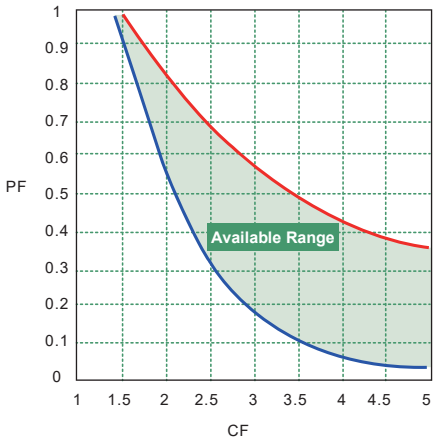
Current of input impedance(mA)	~V x 0.3	
Dimension(H x W x D)	177 x 440 x 558 mm	
Weight	42Kg	
OPTION		
Extend PF inductance to 3700VA	NA	52mH
Dimension(H x W x D)	NA	141 x 440 x 250 mm
Weight	NA	34Kg

*1 ms (millisiemens) is the unit of conductance(G), one siemens equal to 1/Ω
*2 Operating temperature range is 0~40℃, all specification apply for 25℃±5℃, Except as noted
*3 Turbo mode for up to 2X Current rating & Power rating support Fuse, Short/OCP/OPP test function
*4 The power factor range is limited on programmed current
*5 Extend PF Range Option (Inductance：52mH)

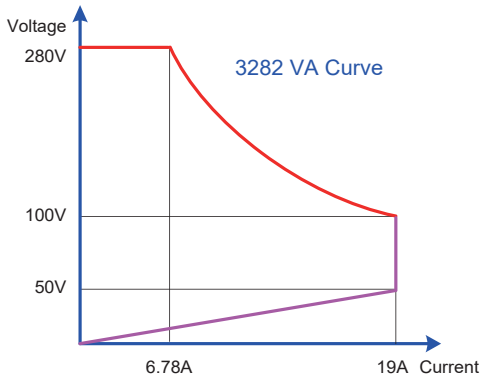
* All specifications apply for 50/60Hz.
* All specifications subject to change without notice.



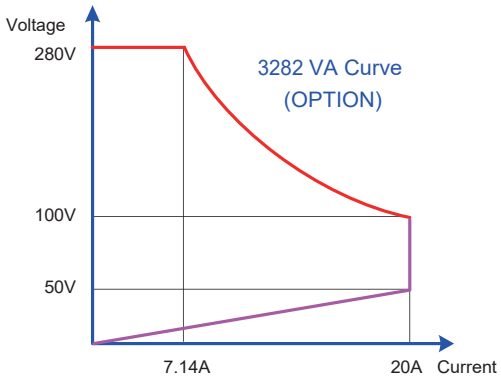
3282 Power Curve



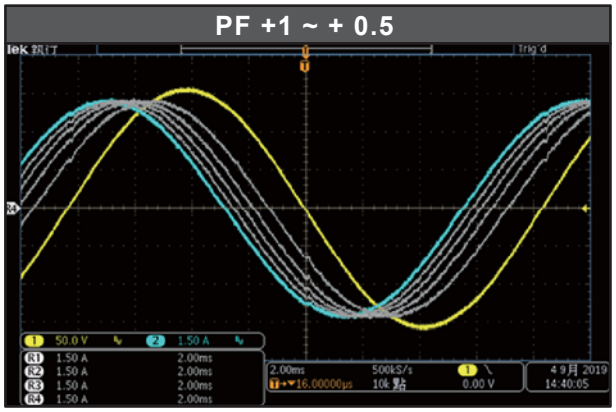
Rectified Load CF VS. PF Range

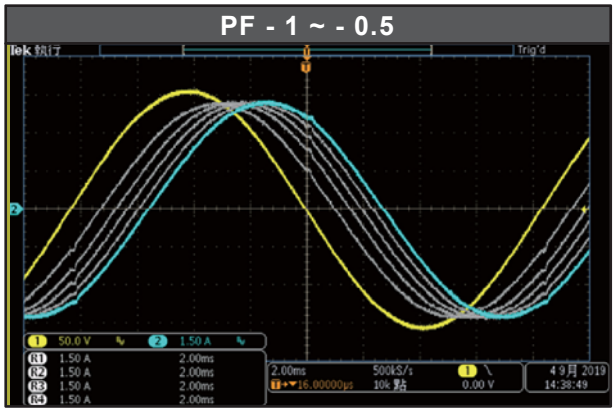


3282 VA Curve



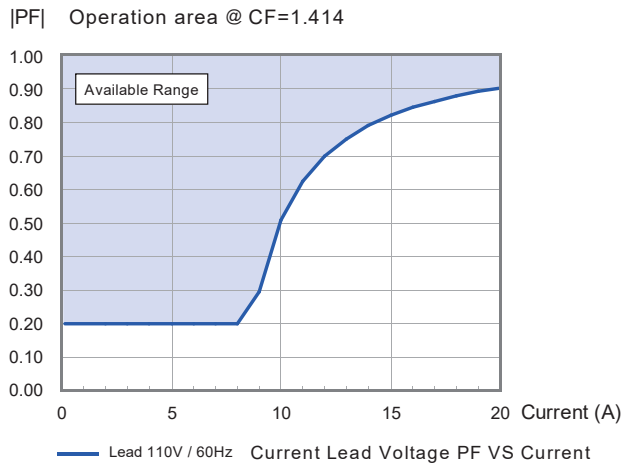
3282 VA Curve (OPTION)

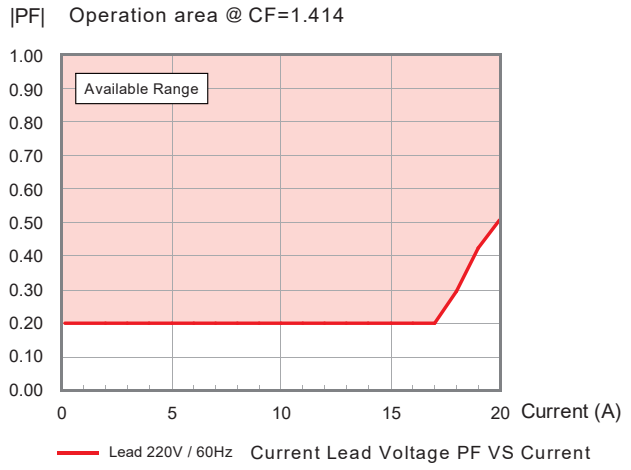


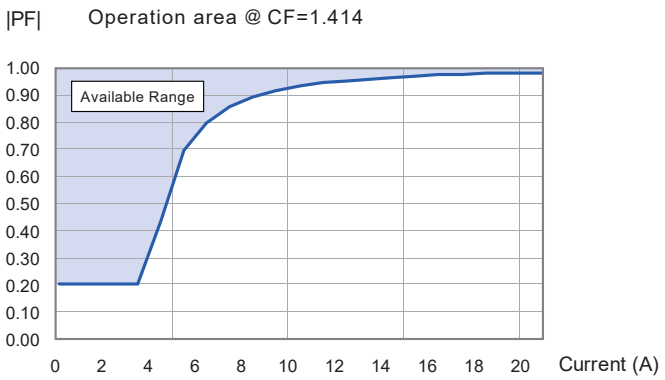


Yellow : Voltage waveform
Gray, Blue : Current waveform

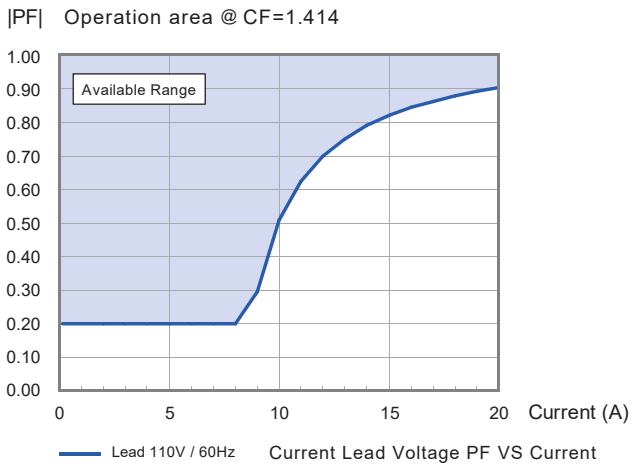
3282

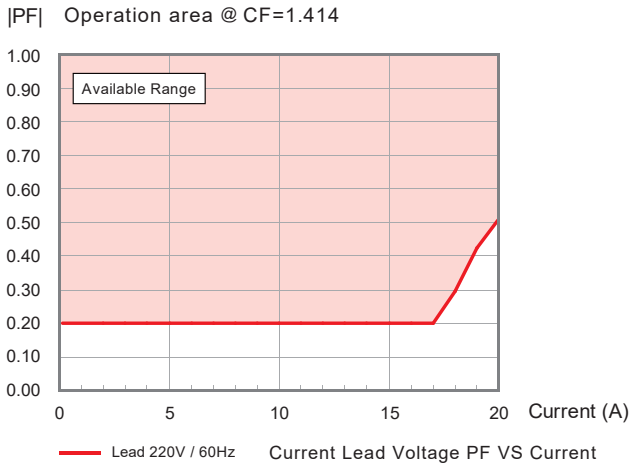


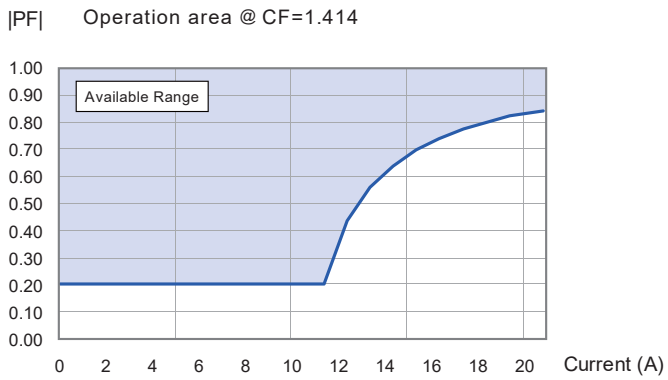


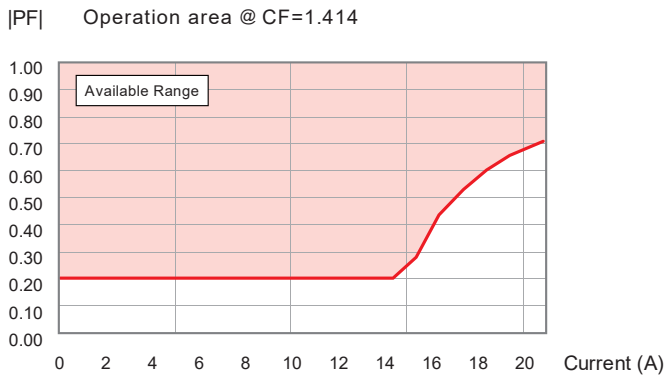


3282 + Option : Extend PF



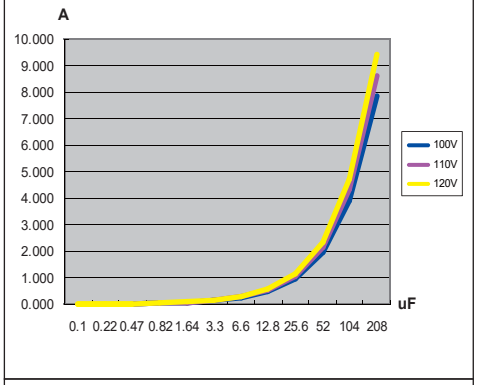


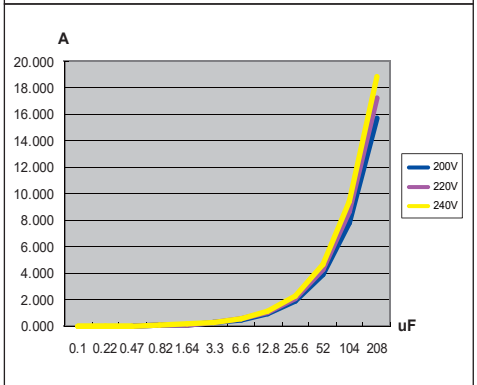




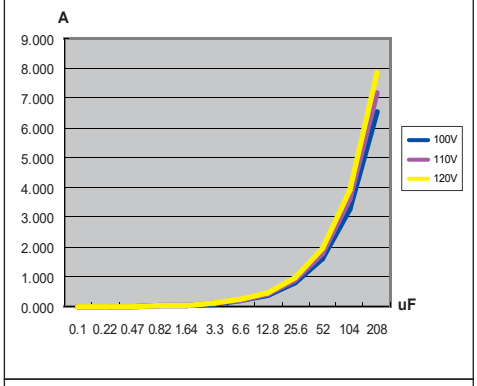
CAPACITOR

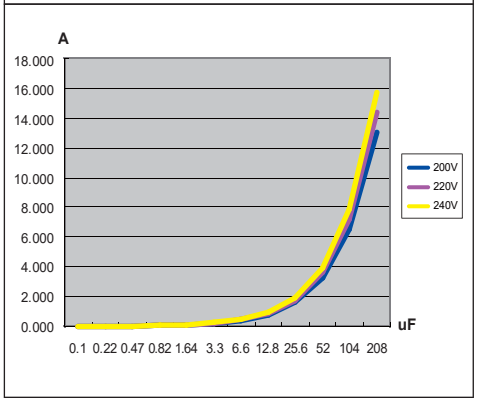
60Hz Current (A) VS. Capacitor (uF)





50Hz Current(A) VS. Capacitor(uF)

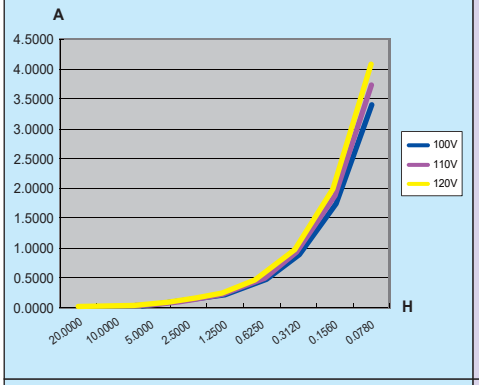


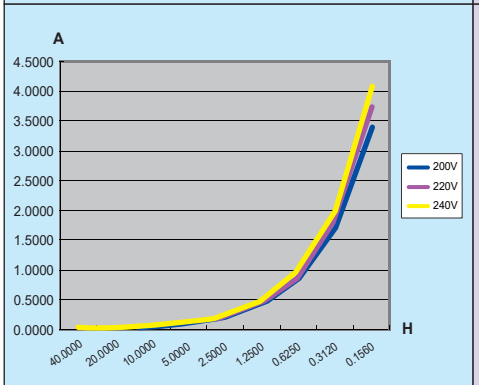


INDUCTANCE

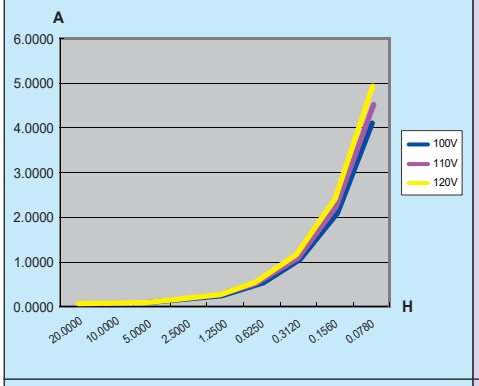
3282

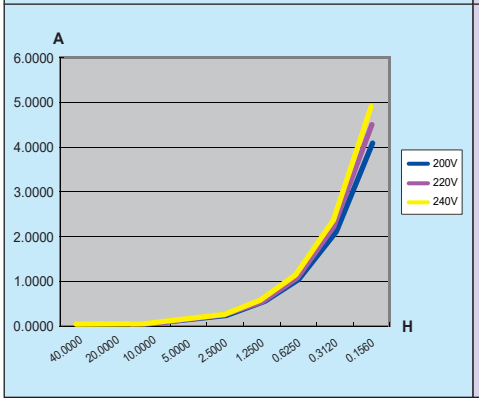
60Hz Current (A) VS. Inductance (H)





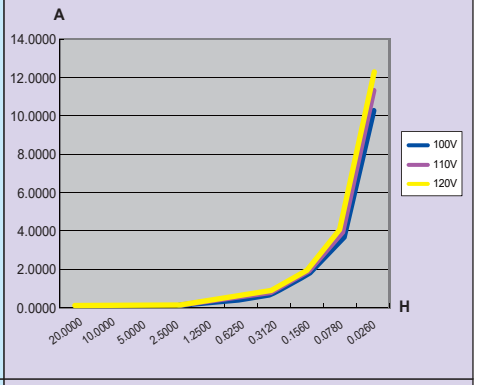
50Hz Current (A) VS. Inductance (H)

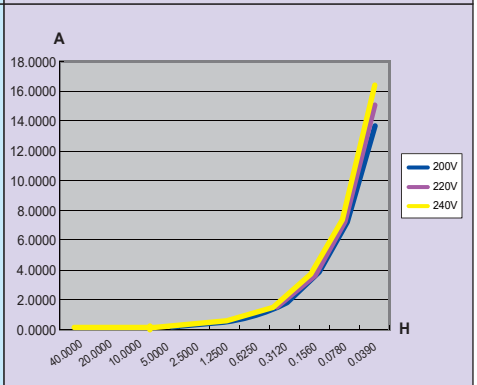




3282 + Option : Extend PF

60Hz Current (A) VS. Inductance (H) EXTEND OPTION





50Hz Current (A) VS. Inductance (H) EXTEND OPTION