



## 特 性

- 高性價比，全功能模組化設計之測試系統
- 適用於充電器，適配器(adapter)及LED電源之多功能測試系統
- 可同時一次測試多個待測物，大幅提升生產線產能
- Windows 7 的作業環境
- 接受客製化訂製
- 開放性架構軟體平台
  - 支援相關硬體擴充
  - 測試項目編輯功能
  - 測試程式編輯功能
  - 統計分析報表編輯功能
  - 線上儀控功能
  - 使用者權限設定
  - 支援 Bar Code Reader

## 功 能 說 明

- 6010 Charger / Adapter / LED Driver 自動測試系統可滿足多種類型之電源產品測試需求，可以同時一次測試多個待測物，大幅提升生產線產能。其具有多個模組組合，包含獨創的內含Triac模擬輸出功能的低雜訊類比式交流電源供應器、4組精準的功率電表、2或4組濾波雜訊/時序測量模組、4組 OVP 直流電源、3310F系列&3332F/3336F電子負載模組及獨創專為LED 電源輸出測試所設計的專用電子負載3340G系列。
- 測試項目涵蓋了5大類電源測試特性：
  1. 輸出特性 (Output Performance) -- 檢測待測物的一般性能
  2. 輸入特性 (Input Characteristic) -- 檢測待測物的輸入電源參數
  3. 穩定度測試 (Regulation Tests) -- 檢測待測物在輸入電源和負載變化時的穩定性
  4. 時序和瞬態 (Timing & Transient) -- 測量開機、關機時的暫態狀態及時序
  5. 保護測試 (Protection Tests) -- 觸發及測試待測物的保護電路

LED Driver 測試項目

輸出特性 Output Performances

- 直流輸出電壓
- 直流輸出電流
- 漣波電流(RMS & Peak-to-Peak)
- 調光電流(PWM & Triac mode)
- 調光頻率
- 調光週期
- 效率
- 測試中調整
- 過衝電壓

輸入特性 Input Characteristics

- 輸入湧浪電流測試
- 輸入有效值電流
- 輸入峰值電流
- 輸入功率
- 輸入功率因素
- 輸入電壓緩升/降測試
- 輸入頻率緩升/降測試
- 輸入斷電測試
- 輸入電源失真模擬

穩定度測試 Regulation Tests

- 負載穩定度
- 電壓穩定度
- 綜合穩定度

時序和瞬態 Timing & Transient

- 開機時序
- 關機時序
- 上升時間
- 下降時間

保護測試 Protection Tests

- 短路測試
- 過電壓保護
- 過電流保護
- 過功率保護

特殊功能 Special Features

- TTL信號控制
- 繼電器控制

Charger / Adapter 測試項目

輸出特性 Output Performances

- 直流輸出電壓
- 直流輸出電流
- 效率
- 測試中調整
- 過衝電壓
- 過衝電流
- 雜訊(RMS & Peak-to-Peak)

輸入特性 Input Characteristics

- 輸入湧浪電流測試
- 輸入有效值電流
- 輸入峰值電流
- 輸入功率
- 輸入功率因素
- 輸入電壓緩升/降測試
- 輸入頻率緩升/降測試
- 輸入斷電測試
- 輸入電源失真模擬

穩定度測試 Regulation Tests

- 負載穩定度
- 電壓穩定度
- 綜合穩定度
- 動態負載穩定度
- 同步動態負載穩定度

時序和瞬態 Timing & Transient

- 開機時序
- 關機時序
- 上升時間
- 下降時間

保護測試 Protection Tests

- 短路測試
- 過電壓保護
- 過電流保護
- 過功率保護
- 溫度模擬

特殊測試

- 平均效率測試

特殊功能

- TTL信號控制
- 繼電器控制

## 規 格

### System Controller

#### MODEL : PC

CPU	i5-3470(3.2GHz) or faster	Monitor	22"
SRAM	256KB	Keyboard	101 keys
DRAM	4GB or higher	I/O	Mouse / Print port
Hard driver	500GB or higher	System interface	RS-232
CD-ROM	40X or faster	System I/O	1:8 RS-232 Card

### DC Source ( OVP testing )

MODEL	5060	5061
No. of output Channel	4	
Power Rating	80W	84W
Voltage range	0~20V / 40V	0~60V / 120V
Current range	0~4A / 2A	0~0.7A
Ton Step Time	0~6.5 Sec.	

### DC Source

#### MODEL : 5070

Power Rating	Voltage range	Current range
1200W	0~60V / 120V	0~20A/10A

### Voltage Regulator

#### MODEL : 5080

No. of Channel/Cell	4 x 4
Voltage range	0 ~ 5V
Accuracy	±0.2% of (Setting + Range)
Resolution	0.001V
Max Current	12mA ( AC Input 90V )
Slew rate	0.166V/us
Interface	RS-232

### Electronic Load Module

#### MODEL : 3310F,3340G Series/3332F, 3336F

Mainframe	60104
Load Mode	CC / CR / CV / CP / LED
Power rating	40-300W
Voltage range	0~500V
Current range	up to 60A
Slew rate	up to 2.5A/μS
Measurements	Power / Voltage / Current
Monitoring output	Current
Voltage Sense input	Yes

### AC Source

#### MODEL : 5302A

Power rating	270VA
Voltage range	10~150Vrms / 160~305Vrms
Current range	2Arms / 1Arms
Triac mode simulation	Leading / Trailing Edge
Integration measurement	Power / Time
Output measurement	Yes

### AC Source

#### MODEL : 5310

Power rating	1KVA	Output measurement	yes
Voltage range	150/200V	300/350V	450/500V
Current range	7A/5A	3.5A/3A	2.3A/2A

### AVR ( Auto Voltage Regulator )

#### MODEL : 5303

Power Rating	3KVA
Input Voltage Rating	230Vrms +/- 10%
Output Voltage Rating	230,264,277Vrms Selectable
Accuracy	±2.5Vrms
Interface	RS-232 remote control only

### Noise and Timing Analyzer Module

MODEL	4031	4032
Mainframe	60104	
No. of Input Channel	1	2
Noise measurement range	0~0.6V / 3Vp-p	
Low Pass Filter	up to 20MHZ	
Input Circuit	Differential input	
Timing range	1 Sec/2 Sec/4 Sec/8 Sec/16 Sec	
Voltage range	0~80V / 600V	
Current range	*(1/4F.S.) / (F.S.) A	

### V-Ripple / I-Ripple measurement

Band width	100KHz
Voltage range	0~80V / 600V
Measurement range	0~3.2V / 20Vp-p
Current range	*(1/4F.S.) / (F.S.) A
Measurement range	*(1/8F.S.) / (1/2F.S.) Ap-p
Sampling rate	100KHz
Update rate	50~1000mS

### V-Over / I-Over shoot

Band width	100KHz
Voltage range	0~80V / 600V
Current range	*(1/4F.S.) / (F.S.) A
Sampling rate	100KHz
Update rate	50~1000mS

### Dimming Current measurement

Band width	100KHz
Current range	*(1/8F.S.) / (1/2F.S.) A
Frequency range	10Hz~35KHz
Duty range	3μS~90mS
Sampling rate	100KHz
Update rate	50~1000mS

### Power Meter

MODEL	4013A	4015A
No. of input Channel	4	
Vrms range	150V / 300V	15V / 30V 50V / 150V 300V / 500V
Irms range	20mA / 200mA 2000mA / 20A	20mA / 50mA 200mA / 500mA 2A / 5A / 10A 20A / 200A peak
Low Pass Filter ( V & A )	50KHz	
V/I harmonic number	1~50th ( only 4015A )	
V/I THD range	0%~255% ( only 4015A )	

### NTC ( Negative Temperature Coefficient ) Emulator

NTC resister	10KΩ
Beta Range	2000K~5000K
Temp. Range	-40~120°C

## Power Meter

### MODEL : 4013A

<b>No. of Input Channel</b>	4				<b>PF meter</b>	±0.01~1.00
<b>ACV meter(Vrms)</b>	150V / 300V				<b>Resolution</b>	0.01
<b>Resolution</b>	0.1V / 0.1V				<b>Accuracy</b>	1% of ( Reading + Range )
<b>Accuracy</b>	±0.25% of ( Reading + Range )				<b>Frequency meter</b>	40~70 Hz
<b>ACA meter (Arms)</b>	20mA / 200mA / 2000mA / 20A / 200A ( for Inrush )				<b>Resolution</b>	0.1 Hz
					<b>Accuracy</b>	± 0.1 Hz
<b>Resolution</b>	0.001mA / 0.01mA / 0.1mA / 1mA / 0.01A ( for Inrush )				<b>Inrush Delay / Period</b>	0~99.9mS / 0.1~99.9S
<b>Accuracy</b>	±0.25% of ( Reading+Range ) / ±2% of ( Reading+Range ) ( for Inrush )				<b>Meter Meas. Rate Interval time</b>	100mS / 200mS / 500mS / 1S / 5S / 10S
					<b>Low Pass Filter (V&amp;A)</b>	50KHz
<b>ACW meter</b>	3W/6W	30W/60W	300W/600W	3000W/6000W	<b>Interface</b>	RS-232
<b>Resolution</b>	0.0001W	0.001W	0.01W	0.1W		
<b>Accuracy</b>	±0.25% of ( Reading + Range )					

### MODEL : 4015A

<b>No. of Input Channel</b>		4					
<b>ACV meter (Vrms)</b>	<b>Range</b>	15V/0.001V 30V/0.001V 50V/0.01V 150V/0.01V 300V/0.01V 500V/0.1V			<b>DCV</b>	<b>Range</b>	Same as ACV
	<b>Accuracy</b>	±0.1% of ( Reading + Range )				<b>Accuracy</b>	Same as ACV
<b>ACA meter (Arms)</b>	<b>Range</b>	20mA/0.001mA 500mA/0.01mA 10A/1mA 50mA/0.001mA 2A/0.1mA 20A/1mA 200mA/0.01mA 5A/0.1mA 200A peak/0.01A			<b>DCA</b>	<b>Range</b>	Same as ACA
	<b>Accuracy</b>	±0.1% of ( Reading + Range ) ±2% of ( Reading + Range, for Inrush )				<b>Accuracy</b>	Same as ACA
<b>ACW meter</b>	<b>Range</b>	0.3W / 0.01mW 0.6W / 0.01mW 1W / 0.1mW 0.75W / 0.1mW 1.5W / 0.1mW 2.5W / 0.1mW 3W / 0.1mW 6W / 0.1mW 10W / 1mW 7.5W / 1mW 15W / 1mW 25W / 1mW 30W / 1mW 60W / 1mW 100W / 10mW 75W / 1mW 150W / 10mW 250W / 10mW 150W / 10mW 300W / 10mW 500W / 10mW 300W / 10mW 600W / 10mW 1000W / 0.1W			<b>DCW</b>	<b>Range</b>	±0.001~1.000 / 0.001
		<b>Accuracy</b>	1% of ( Reading + Range, Corresponds to V and A )				
		<b>PF meter</b>	<b>Range</b>	40~70 / 0.1Hz			
			<b>Accuracy</b>	± 0.1 Hz			
		<b>V/A</b>	<b>Number</b>	1~50 th / Same as ACV, ACA meter			
			<b>Accuracy</b>	±0.5% of ( Reading + Range )			
		<b>Harmonic</b>	<b>Range</b>	0%~255% / 0.001%			
			<b>Accuracy</b>	±0.5% of ( Reading + Range )			
		<b>V/A THD</b>	<b>Range</b>	0%~255% / 0.001%			
			<b>Accuracy</b>	±0.5% of ( Reading + Range )			
<b>Inrush Delay/Period</b>	<b>Range</b>	0~100ms					
	<b>Low Pass Filter(V&amp;A)</b>	50KHz					
<b>Accuracy</b>	±0.1% of ( Reading + Range )			<b>Interface</b>	RS-232		

## AC Power Source with Power/Energy Analyzer

### MODEL : 5302A

<b>Power Rating</b>	270VAmax	<b>ACA meter(Arms)</b>	10mA / 20mA / 200mA / 2000mA / 200A (for Inrush)
<b>Type</b>	Linear	<b>Resolution</b>	0.01mA / 0.01mA / 0.1mA / 1mA / 0.1A (for Inrush)
<b>Voltage Rating</b>	10~150Vrms / 160~305Vrms	<b>Accuracy</b>	±0.5% of ( Reading+Range ) / ±2% of ( Reading+Range ) ( for Inrush )
<b>Accuracy</b>	0.2% ± 0.2% F.S.		
<b>Resolution</b>	0.1V / 0.2V	<b>ACW meter</b>	1.5W / 3W / 6W / 30W / 60W / 300W / 600W
<b>Distortion</b>	THD ≤ 0.5% ( R load )	<b>Resolution</b>	0.001W / 0.001W / 0.001W / 0.01W / 0.01W / 0.1W / 0.1W
<b>Load Regulation</b>	±0.5%±0.5V	<b>Accuracy</b>	±0.5% of ( Reading + Range )
<b>Line Regulation</b>	±0.5%±0.5V	<b>DCW meter</b>	Same as 3310F series
<b>Current Rating</b>	2.0Arms / 1.0Arms	<b>PF meter</b>	±0.01~1.00
<b>Frequency</b>	40~70Hz	<b>Resolution</b>	0.01
<b>Resolution</b>	0.1Hz	<b>Accuracy</b>	1% of ( Reading + Range )
<b>Triac Mode</b>	Leading / Trailing Edge	<b>Frequency meter</b>	40~70 Hz
<b>Range</b>	0~180°	<b>Resolution</b>	0.1 Hz
<b>Resolution</b>	1°	<b>Accuracy</b>	± 0.1 Hz
<b>Angle(ON/OFF)</b>	0~360°	<b>Efficiency meter</b>	Corresponds to ACW and DCW, ±1% of ( Reading+Range )
<b>Resolution</b>	1°	<b>Integration Meas. Power</b>	From 0.000mWH~999.9KWH
<b>Protection</b>	OCP,OTP,OPP,Short	<b>Integration Meas. Time</b>	1 Sec.~99H59M59S
<b>Measurements</b>		<b>Inrush Delay / Period</b>	0~99.9mS / 0.1~99.9S
<b>ACV meter(Vrms)</b>	150V / 305V	<b>Meter Meas. Rate Interval time</b>	100mS / 200mS / 500mS / 1S / 5S / 10S
<b>Resolution</b>	0.1V	<b>Interface</b>	RS-232
<b>Accuracy</b>	±0.5% of ( Reading + Range )	<b>External AC Source</b>	300Vrms / 2A / 600VA

## Noise & Timing Analyzer Module

MODEL	4031	4032	
No. of Input Channel	1	2	
<b>Timing Measurement</b>		<b>Ripple Measurement</b>	
Set-up/Hold-up/Rise/Fall Time		Band Width	
Voltage range	0~80 / 600 Vdc		
Current range	*(1/4F.S.) / (F.S.) Adc	Voltage range	
Timing range	1 Sec/2 Sec/4 Sec/8 Sec/16 Sec		
Resolution	1μS/2μS/4μS/8μS/16μS	Measurement range	
Vth1/Vth2			
Voltage range	5%~95% of reading	Current range	
Resolution	0.1V / 1V , 0.001A/0.01A		
Accuracy	±2% of (Reading + Range)	Measurement range	
<b>Noise Measurement</b>		Update Rate	
Low Pass Filter	up to 20 MHz		
Voltage range	0.6 / 3Vp-p	Resolution	
Resolution	1mV		
Accuracy	±2% of Reading + 5mV	<b>Dimming Measurement</b>	
<b>Over Shoot Measurement</b>		Band Width	
Band Width	0~100 KHz		
Voltage range	0~80 / 600 Vdc	Current range	
Measurement range	0~80 / 600 Vdc		
Resolution	0.1 / 1Vdc	Resolution	
Current range	*(1/4F.S.) / (F.S.) Adc	Accuracy	
Measurement range	*(1/4F.S.) / (F.S.) Adc		
Resolution	0.001 / 0.01A	Sampling Rate	
Accuracy	±5% OF (Reading + Range)		
Sampling Rate	100KHz	Update Rate	
Update Rate	50~1000 mS		
Resolution	1mS	Resolution	
		Frequency range	
		Resolution	
		Accuracy	
		Duty(Ton) Range	
		Resolution	
		Accuracy	

註\* : F.S. 為所選用電子負載的Current range

## DC OVP Source

MODEL	5060	5061
No. of output Channel	4	
Power Rating	80W	84W
Voltage range	0~20V/40V	0~60V / 120V
Resolution	1mV	2mV
Accuracy	±0.5% of setting	
Current range	0~4A/2A	0~0.7A
Resolution	0.1mA	
Accuracy	±0.5% of setting	
Ton Step time	0~6.5 Sec.	
Resolution	0.1 mSec.	
Slew rate	0.02V/uS	
Protection	OCP, OTP	

## DC Source

MODEL : 5070			
Output		Measurements	
Power Rating	1500W	DCV meter	60V / 120V
Voltage range	0.2~60V / 0.4~120V	Resolution	0.01V(0~99) / 0.1V (100~120)
Accuracy	±1% of (Setting + Range)	Accuracy	±1% of (Reading + Range)
Resolution	0.01V	DCA meter	25A / 12.5A
Load Regulation	±1%	Resolution	0.01A
Line Regulation	±1%	Accuracy	±2% of (Reading + Range)
Current ranges	0~25A / 12.5A	Interface	RS-232
Accuracy	±1% of (Setting + Range)		
Resolution	0.01A		
Protection	OVP,OTP,OPP		

## AC Source

**MODEL : 5310**

<b>Power</b>	Range	1KVAmx			<b>Voltage</b>	Range	500V	
	Type	Linear Amp				Resolution	0.1V	
<b>Voltage</b>	Range	150 / 200V	300 / 350V	450 / 500V	Accuracy	± 0.5% OF (Reading + Range)		
	Resolution	0.1V			Range	7A		
	Accuracy	0.2% ± 0.2% F.S.			Resolution	0.001A		
<b>Current</b>	Range	7A / 5A	3.5A / 3A	2.3A / 2A	Accuracy	± 0.5% OF (Reading + Range)		
<b>Distortion</b>	THD ≤ 0.5% (R load)							
<b>Load Regulation</b>	±0.5% ± 0.5V							
<b>Frequency</b>	Range	40~70Hz			<b>Watt</b>	Range	1000W	
	Resolution	0.1Hz				Resolution	0.001W	
	Response Time	100uS				Accuracy	± 0.5% OF (Reading + Range)	
<b>Angle (ON/OFF)</b>	Range	0~360°			<b>Frequency</b>	Range	40~70Hz	
	Resolution	1°				Resolution	0.1Hz	
<b>Protection</b>	OTP, OCP, Short			Accuracy		+/-0.4Hz		
<b>Measurements</b>				<b>PF</b>	Range	+/-0.01~1.00		
					Resolution	0.01		
						Accuracy	1% of (Reading + Range)	

## Dual Fixture

**MODEL : 99093**

<b>No. of Test Channel</b>	4		
<b>Terminal for Input</b>	<b>Terminal for Output</b>		
Source	AC / DC	Source	AC / DC
Source Sense	AC / DC	Source Sense	AC / DC
Load	DC	Load	DC
Load Sense	DC	Load Sense	DC
DIM	DC	DIM	DC
<b>NTC Emulator (Optional)</b>	NTC	Resister	
NTC resister	10KΩ	State	Test/Pass/Fail
Resister Range	10~500KΩ	<b>Load Short</b>	Yes(Relay)
Beta Range	2000K~5000K	<b>Terminal for Key</b>	A/B/STOP
Temp. Range	-40~120°C	State	A/B
		<b>Digital I/O</b>	16 bits

## Precision DVM & Voltage Regulator

**MODEL : 99094**

<b>No. of Test Channel</b>	4
DVM	0~6V
Resolution	0.1mV
Accuracy	±0.05% of (Setting + Range)
Voltage Regulator	0~6V
Resolution	0.1mV
Accuracy	±0.05% of (Reading + Range)

## Color & Fan flow sensor

**MODEL : 99095**

	ITEM	SPECIFICATION
<b>LED</b>	Color distinguish	3 types
	Fading Detcet Time	100 ~ 65535 ms
	Wind distinguish	1000 ~ 65535 ms
<b>FAN</b>	Detcet Time	3 ranges(Range:±200 SCCM)
		100 ms (Minimum)

## BMS Board Test Fixture

**MODEL : 99096**

<b>No. of Test Channel</b>	1 ~ 4	Discharge ( P+ 、 P- )	20V/30A
<b>Terminal of Input</b>		Charge ( CH+ 、 CH- )	20V/30A
Source ( PS+ 、 PS- )	DC 20V/30A	<b>Control I/O</b>	Signal Output
MULTIMETER ( M+ 、 M- 、 I+ )	DCV 、 DCI 、 R	<b>STATE</b>	Pass/Fail/Test LED & Stop Key
DC Load+ 、 Load-	20V/30A	<b>NTC Emulator</b>	
DC Load Sense+ 、 Sense-	Signal Input	NTC Resistor	10KΩ
5080 ( VB0 、 VB1 、 VB2 、 VB3 、 VB4 )	DCV	Resistor Range	10 ~ 500KΩ
<b>Terminal of Output</b>		Beta Range	2000K ~ 5000KΩ
BAT ( B+ 、 B- )	20V/30A	Temperature Range	-40 ~ 120°C

## 訂 購 方 式

- ▶ **6010** : Charger / Adapter / LED Driver 自動測試系統
- ▶ **60104** : 雜訊/時序分析儀
- ▶ **4031 / 4032** : 雜訊/時序分析模組 ( 1CH/2CH )
- ▶ **4013A / 4015A** : 數位功率表
- ▶ **5060 / 5061** : 直流電源供應器 ( OVP Source )
- ▶ **5070** : 直流電源供應器
- ▶ **5080** : 電壓調整器 ( 應用於BMS板電池模擬 )
- ▶ **5302A** : 交流電源供應器 ( 270VA )
- ▶ **5310** : 交流電源供應器 ( 1KVA )
- ▶ **5303** : 穩壓器 ( for Inrush Test )
- ▶ **NTC** 模擬器 ( 應用於溫度模擬 )
- ▶ 直流電子負載模組 : 3310F / 3340G 系列 / 3332F 、 3336F
- ▶ **99093** : 6010 專用測試治具
- ▶ **99094** : 精密電壓錶&電壓調整器
- ▶ **99095** : LED 燈號顏色及風扇風量偵測模組
- ▶ **99096** : BMS 板測試治具
- ▶ **6010** 系統軟體
- ▶ **6010** 系統19吋 ( 20U ) 標準系統機箱
- ▶ **6010** 系統19吋 ( 30U ) 標準系統機箱
- ▶ 商用電腦