

6010 Charger/Adapter/LED Driver ATE



Features

- Cost effective and full - featured modular design
- Multi - function test capability for charger, adapter, LED driver power
- Multi-U.U.T test simultaneously capability › significantly enhance the production line throughput
- Operating environment of Windows 7 or higher (included)
- Open architecture software platform
- Support related hardware expansion
 - User editable test item
 - User editable test program
 - User editable report format & statistical report
 - On-line control function
 - User authority control
 - Support Bar Code Reader

Descriptions

- 6010 Charger / Quick Charger / Adapter / LED Driver Test System is able to meet multi-types power products test requirements › and its multi-U.U.T test simultaneously capability can significantly enhance the production line throughput. It also possess multi-modular combination that includes low noise analog AC source with Triac to simulate output, four sets precision power meter, two or four sets ripple noise / timing measurement module, four sets OVP DC power supply, 3310F series & 3332F/3336F Electronic Load module and unique design 3340G series for LED power driver output test.
- Test items are included with five categories Power Test Features :
 1. Output Performances -- the general performance of U.U.T
 2. Input Characteristics -- the input power parameters of U.U.T
 3. Regulation Tests -- the regulation of U.U.T when the change of the input power and load
 4. Timing & Transient -- measuring the timing and transient of Turn ON, Turn OFF
 5. Protection Tests -- trigger and test the protection circuit of U.U.T.

LED Driver Test Items

Output Performances

- DC Output Voltage
- DC Output Current
- Ripple Current (RMS & Peak-to-Peak)
- Dimming Current (PWM & Triac mode)
- Dimming Frequency
- Dimming Duty
- Efficiency
- Hold ON adjustment
- Overshoot Voltage

Input Characteristics

- Input Inrush Current
- Input RMS Current
- Input Peak Current
- Input Power
- Input Power Factor
- Input Voltage RAMP
- Input Frequency RAMP
- Input Voltage Interrupt (AC cycle drop out)
- Input Power Line Disturbance Simulation

Regulation Tests

- Load Regulation
- Line Regulation
- Combine Regulation

Timing & Transient

- Set-up Time (Turn ON Time)
- Hold-up Time (Turn OFF Time)
- Rise Time
- Fall Time

Protection Tests

- Short Circuit Test
- OV Protection
- OC Protection
- OP Protection

Special Features

- TTL Signal Control
- Relay Control

Charger / Adapter Test Items

Output Performances

- DC Output Voltage
- DC Output Current
- Efficiency
- Hold ON adjustment
- Overshoot Voltage
- Overshoot Current
- Noise (RMS & Peak-to-Peak)

Input Characteristics

- Input Inrush Current
- Input RMS Current
- Input Peak Current
- Input Power
- Input Power Factor
- Input Voltage RAMP
- Input Frequency RAMP
- Input Voltage Interrupt (AC cycle drop out)
- Input Power Line Disturbance Simulation

Regulation Tests

- Load Regulation
- Line Regulation
- Combine Regulation
- Dynamic Load Regulation
- Sync. dynamic Load Regulation

Timing & Transient

- Set-up Time (Turn ON Time)
- Hold-up Time (Turn OFF Time)
- Rise Time
- Fall Time

Protection Tests

- Short Circuit Test
- OV Protection
- OC Protection
- OP Protection
- Temperature Simulation

Special Test

- Average Efficiency Test

Special Features

- TTL Signal Control
- Relay Control

Specifications

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

Power Meter

MODEL	4013A	4015A
No. of input Channel	4	
Vrms range	30V / 305V	15V / 30V 50V / 150V 300V / 500V
Irms range	20mA / 200mA 2000mA / 20A 200A peak	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)	

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	

DC Source (OVP testing)

MODEL	PFR-100L	PFR-100M
No. of output Channel	4	
Power Rating	100W	100W
Voltage range	50V	250V
Current range	10A	2A

DC Source

MODEL	PSU-60-25	PSU-150-10
Power Rating	Voltage range	Current range
1500W	60V / 25A	150V / 10A

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

MODEL	4034-1	4034-2	4034
No. of Input Channel	1	2	4
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		

Specifications

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	APS-7050
Power rating	500VA
Voltage range	0~150Vrms / 0~310Vrms
Current range	4.2A / 2.1A
Integration measurement	Power / Time
Output measurement	Yes

MODEL APS-7100

Power rating	1KVA
Voltage range	150 / 200V
Current range	8.4A / 4.2A
Output measurement	yes

NTC (Negative Temperature Coefficient) Emulator

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

Note : F.S. Load Current range

Noise & Timing Analyzer Module

MODEL	4031	4032	
No. of Input Channel	1	2	
Timing Measurement		Ripple Measurement	
Set-up/Hold-up/Rise/Fall Time		Band Width	
Voltage range	0~80 / 600 Vdc	0~100 KHz	
Current range	*(1/4F.S.) / (F.S.) Adc	Voltage range	
Timing range	1 Sec/2 Sec/4 Sec/8 Sec/16 Sec	0~80 / 600 Vdc	
Resolution	1μS/2μS/4μS/8μS/16μS	Measurement range	
Vth1/Vth2		0~3.2 / 20 Vp-p	
Voltage range	5%~95% of reading	Resolution	
Resolution	0.1V / 1V , 0.001A/0.01A	0.001 / 0.01V	
Accuracy	±2% of (Reading + Range)	Current range	
Noise Measurement		*(1/4F.S.) / (F.S.) Adc	
Low Pass Filter	up to 20 MHz	Measurement range	
Voltage range	0.6 / 3Vp-p	*(1/8F.S.) / (1/2F.S.) Ap-p	
Resolution	1mV	Resolution	
Accuracy	±2% of Reading + 5mV	0.001 / 0.01A	
Over Shoot Measurement		Accuracy	
Band Width	0~100 KHz	±5% of (Reading + Range)	
Voltage range	0~80 / 600 Vdc	Sampling Rate	
Measurement range	0~80 / 600 Vdc	100KHz	
Resolution	0.1 / 1Vdc	Update Rate	
Current range	*(1/4F.S.) / (F.S.) Adc	50~1000 mS	
Measurement range	*(1/4F.S.) / (F.S.) Adc	Resolution	
Resolution	0.001 / 0.01A	1mS	
Accuracy	±5% OF (Reading + Range)	Dimming Measurement	
Sampling Rate	100KHz	Band Width	100KHz
Update Rate	50~1000 mS	Current range	*(1/8F.S.) / (1/2F.S.) Adc
Resolution	1mS	Resolution	0.001 / 0.01A
Frequency range		Accuracy	±5% of (Reading + Range)
0.1Hz		Sampling Rate	100KHz
Accuracy	±1% of (Reading + Range)	Update Rate	50~1000 mS
Duty(Ton) Range	3μS~90mS	Resolution	1mS
Resolution	1μS	Frequency range	10Hz~35KHz
Accuracy	±1% of (Reading + Range)	Resolution	0.1Hz
Resolution		Accuracy	±1% of (Reading + Range)
1mS		Duty(Ton) Range	3μS~90mS
		Resolution	1μS
		Accuracy	±1% of (Reading + Range)

Note : F.S. Load Current range

Noise & Timing Analyzer

MODEL	4034-1	4034-2	4034
No. of Input Channel	1	2	4
Timing Measurement		Ripple Measurement	
Set-up/Hold-up/Rise/Fall Time		Band Width	0~100 KHz
Voltage range	0~80 / 600 Vdc	Voltage range	0~80 / 600 Vdc
Current range	*(1/4F.S.) / (F.S.) Adc	Measurement range	0~3.2 / 20 Vp-p
Timing range	1 Sec/2 Sec/4 Sec/8 Sec/16 Sec	Resolution	0.001 / 0.01V
Resolution	1μS/2μS/4μS/8μS/16μS	Current range	*(1/4F.S.) / (F.S.) Adc
Vth1/Vth2		Measurement range	*(1/8F.S.) / (1/2F.S.) Ap-p
Voltage range	5%~95% of reading	Resolution	0.001 / 0.01A
Resolution	0.1V / 1V , 0.001A/0.01A	Accuracy	±5% of (Reading + Range)
Accuracy	±2% of (Reading + Range)	Sampling Rate	100KHz
Noise Measurement		Update Rate	
Low Pass Filter	up to 20 MHz	Resolution	50~1000 mS
Voltage range	0.6 / 3Vp-p	Resolution	1mS
Resolution	1mV	Dimming Measurement	
Accuracy	±2% of Reading + 5mV	Band Width	100KHz
Over Shoot Measurement		Current range	*(1/8F.S.) / (1/2F.S.) Adc
Band Width	0~100 KHz	Resolution	0.001 / 0.01A
Voltage range	0~80 / 600 Vdc	Accuracy	±5% of (Reading + Range)
Measurement range	0~80 / 600 Vdc	Sampling Rate	100KHz
Resolution	0.1 / 1Vdc	Update Rate	50~1000 mS
Current range	*(1/4F.S.) / (F.S.) Adc	Resolution	1mS
Measurement range	*(1/4F.S.) / (F.S.) Adc	Frequency range	10Hz~35KHz
Resolution	0.001 / 0.01A	Resolution	0.1Hz
Accuracy	±5% OF (Reading + Range)	Accuracy	±1% of (Reading + Range)
Sampling Rate	100KHz	Duty(Ton) Range	3μS~90mS
Update Rate	50~1000 mS	Resolution	1μS
Resolution	1mS	Accuracy	±1% of (Reading + Range)

Note : F.S. Load Current range

DC OVP Source

MODEL	PFR-100L	PFR-100M
No. of output Channel	4	
Power Rating	100W	100W
Voltage range	50V	250V
Resolution	2mV	10mV
Accuracy	±1% of setting	
Current range	10A	2A
Resolution	1mA	0.1mA
Accuracy	±1% of setting	

DC Source

MODEL	PSU 60-25 / PSU 150-10	
Output	Measurements	
Power Rating	1500W	DCV meter
Voltage range	60V / 150V	Resolution
Accuracy	±1% of (Setting + Range)	60V / 120V
Resolution	2mV / 5.2mV	0.01V(0~99) / 0.1V (100~120)
Load Regulation	±1%	Accuracy
Line Regulation	±1%	±1% of (Reading + Range)
Current ranges	25A / 10A	DCA meter
Accuracy	±1% of (Setting + Range)	Resolution
Resolution	0.8mA / 0.5mA	25A / 12.5A
Protection	OVP, OTP, OPP	Accuracy
		±2% of (Reading + Range)
		Interface
		RS-232

AC Source

MODEL : APS-7100 / APS-7200 / APS-7300

Output Specification			Meter Specification		
Power	Range	1KVA / 2KVA / 3KVA	Voltage	Range	500V
	Type	Linear Amp		Resolution	0.1V
Voltage	Range	0~155 Vrms / 0~310 Vrms	Accuracy	± 0.5% OF (Reading + Range)	
	Resolution	0.1V	Current	Range	7A
	Accuracy	0.2%±0.2%F.S.		Resolution	0.001A
Current	Range	8.4A / 4.2A	Accuracy	± 0.5% OF (Reading + Range)	
Distortion	THD ≤ 0.5% (R load)		Watt	Range	1000W
Load Regulation	±0.5% ± 0.5V			Resolution	0.001W
Frequency	Range	45 ~ 500Hz	Accuracy	± 0.5% OF (Reading + Range)	
	Resolution	0.1Hz : 0.1Hz	Frequency	Range	40~70Hz
	Response Time	100uS		Resolution	0.1Hz
		Accuracy		+/-0.4Hz	
Angle (ON/OFF)	Range	0~359°	PF	Range	+/-0.01~1.00
	Resolution	1°		Resolution	0.01
PQT <IEC61000-4-11>	Dip、Interrupt、Variation		Accuracy	Corresponds to V and A,1% of (Reading+Range)	
Protection	OCP, OTP, Short		AC input Specification		
			Voltage range	115Vac±10%	230 Vac ±10%
			Frequency range	47-63Hz	
			Circuit Breaker	125/250Vac 20A	

Test Fixture Adapter

MODEL : 99093			
No. of Test Channel		4	
Terminal for Input		Terminal for Output	
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
NTC Emulator (Optional)		NTC	Resister
NTC resister	10KΩ	State	Test/Pass/Fail
Resister Range	10~500KΩ	Load Short	Yes(Relay)
Beta Range	2000K~5000K	Terminal for Key	A/B/STOP
Temp. Range	-40~120°C	State	A/B
		Digital I/O	16 bits

Quick Charger Emulator

MODEL : 99094	
No. of Test Channel	4+4
Support Quick Charge	QC2.0, QC3.0, PE+, PE+2.0, USB PD
Terminal of Charger	D-sub 15Pin for ChxA, ChxB

Color & Fan flow sensor

MODEL : 99095		
	ITEM	SPECIFICATION
LED	Color distinguish	3 types
	Fading Detcet Time	100 ~ 65535 ms
	Wind distinguish	1000 ~ 65535 ms
FAN	Detcet Time	3 ranges(Range:±200 SCCM)
		100 ms (Minimum)

BMS Board Test Fixture

MODEL : 99096			
No. of Test Channel	1 ~ 4	Discharge (P+、P-)	20V/30A
Terminal of Input		Charge (CH+、CH-)	20V/30A
Source (PS+、PS-)	DC 20V/30A	Control I/O	Signal Output
MULTIMETER (M+、M-、I+)	DCV、DCI、R	STATE	Pass/Fail/Test LED & Stop Key
DC Load+、Load-	20V/30A	NTC Emulator	
DC Load Sense+、Sense-	Signal Input	NTC Resistor	10KΩ
5080 (VB0、VB1、VB2、VB3、VB4)	DCV	Resistor Range	10 ~ 500KΩ
Terminal of Output		Beta Range	2000K ~ 5000KΩ
BAT (B+、B-)	20V/30A	Temperature Range	-40 ~ 120°C

Order Information

- **6010** : Charger / Adapter / LED Driver Test System
- **60104** : Noise and Timing Analyzer Mainframe
- **4031 / 4032** : Noise and Timing Analyzer Module (1CH/2CH)
- **4034-1 / 4034-2 / 4034** : Noise and Timing Analyzer Module (1CH/2CH/4CH)
- **4013A / 4015A** : Power Meter
- **5080** : Voltage Regulator (Application to BMS Battery Simulator)
- **5303** : AVR (for Inrush Test)
- **PFR-100M/100L** : Fanless Multi-Range D.C. Power Supply
- **PSU-60-25 / PSU-150-10** : Programmable Switching D.C. Power Supply
- **APS-7000 Series** : Programmable Linear AC Power Source
- **NTC (Negative Temperature Coefficient) Emulator**
- **DC Electronic Load Module** : 3310F / 3340G Series / 3332F、3336F
- **99093** : ATE test fixture
- **99094** : Quick Charger Emulator
- **99095** : LED & FAN Testing Module
- **99096** : BMS Board Test Fixture
- **6010 System Software**
- **6010 System 19" (20U) Cabinet**
- **6010 System 19" (30U) Cabinet**
- **Personal Computer**