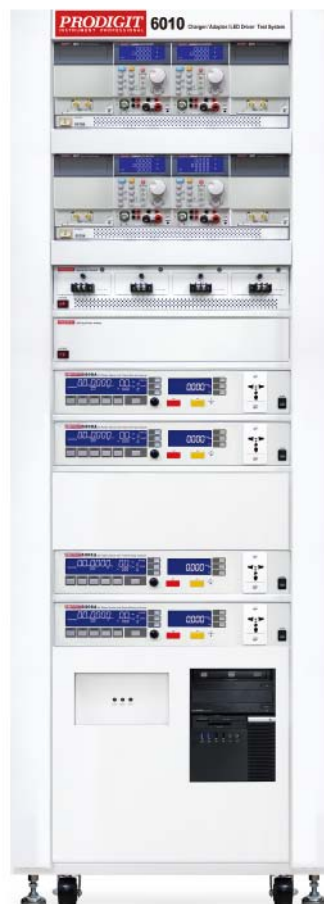


# 6010 Charger / Adapter / LED Driver Test System



## 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
- Support Windows 7/XP operation system
- 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 / Adapter / LED Driver Automatic 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 3340F 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
SRAM	256KB
DRAM	4GB or higher
Hard driver	500GB or higher
CD-ROM	40X or faster
Monitor	22"
Keyboard	101 keys
I/O	Mouse / Print port
System interface	RS-232
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.	

### Electronic Load Module

MODEL	3310F,3340F 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/ $\mu$ S
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

### AVR ( Auto Voltage Regulator )

MODEL	5303
Power Rating	3KVA
Input Voltage Rating	230Vrms +/- 10%
Output Voltage Rating	230,264,277Vrms Selectable
Accuracy	$\pm$ 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	3 $\mu$ S~90mS
Sampling rate	100KHz
Update rate	50~1000mS

### Power Meter

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

### NTC ( Negative Temperature Coefficient ) Emulator

NTC resister	10K $\Omega$
Beta Range	2000K~5000K
Temp. Range	-40~120 $^{\circ}$ C

Note\* : F.S. : Load Current range

Power Meter				
MODEL	4013		4015	
No. of Input Channel	4			
ACV meter(Vrms)	150V / 300V			
Resolution	0.1V / 0.1V			
Accuracy	±0.25% of (Reading + Range)		±0.1% of (Reading + Range)	
ACA meter(Arms)	20mA / 200mA / 2000mA / 20A / 200A (for Inrush)			
Resolution	0.001mA / 0.01mA / 0.1mA / 1mA / 0.01A (for Inrush)			
Accuracy	±0.25%(4013) / ±0.1%(4015) of (Reading + Range) / ± 2% of (Reading + Range)(for Inrush)			
ACW meter	3W / 6W	30W / 60W	300W / 600W	3000W / 6000W
Resolution	0.0001W	0.001W	0.01W	0.1W
Accuracy	±0.25% of (Reading + Range)		±0.1% of (Reading + Range)	
PF meter	±0.01~1.00			
Resolution	0.01			
Accuracy	1% of (Reading + Range)			
Frequency meter	40~70 Hz			
Resolution	0.1 Hz			
Accuracy	± 0.1 Hz			
Voltage/Current Harmonic meter (only 4015)	Number	1~50th		
	Resolution	Same as ACV, ACA meter		
	Accuracy	±0.5% of (Reading + Range)		
Voltage/Current THD (only 4015)	Range	0%~255%		
	Resolution	0.001%		
	Accuracy	±0.5% of (Reading + Range)		
Inrush Delay/Period	0~99.9mS / 0.1~99.9S			
Meter Meas. Rate Interval time	100mS / 200mS / 500mS / 1S / 5S / 10S			
Low Pass Filter(V & A)	50KHz			
Interface	RS-232			

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		0~100 KHz	
Current range		Voltage range	
Timing range		Measurement range	
Resolution		Resolution	
Vth1/Vth2		Current range	
Voltage range		Measurement range	
Resolution		Resolution	
Accuracy		Accuracy	
Noise Measurement		Sampling Rate	
Low Pass Filter		Update Rate	
Voltage range		Resolution	
Resolution		Dimming Measurement	
Accuracy		Band Width	
Over Shoot Measurement		Current range	
Band Width		Resolution	
Voltage range		Accuracy	
Measurement range		Sampling Rate	
Resolution		Update Rate	
Current range		Resolution	
Measurement range		Frequency range	
Resolution		Resolution	
Accuracy		Accuracy	
Sampling Rate		Duty(Ton) Range	
Update Rate		Resolution	
Resolution		Accuracy	

Note\* : F.S. : Load 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	

### AC Power Source with Power/Energy Analyzer

MODEL	5302A
Power Rating	270VAmx
Type	Linear
Voltage Rating	10~150Vrms / 160~305Vrms
Accuracy	0.2% ± 0.2% F.S.
Resolution	0.1V / 0.2V
Distortion	THD ≤ 0.5% (R load)
Load Regulation	±0.5%±0.5V
Line Regulation	±0.5%±0.5V
Current Rating	2.0Arms / 1.0Arms
Frequency	40~70Hz
Resolution	0.1Hz
Triac Mode	Leading / Trailing Edge
Range	0~180°
Resolution	1°
Angle(ON/OFF)	0~360°
Resolution	1°
Protection	OCP,OTP,OPP,Short
<b>Measurements</b>	
ACV meter(Vrms)	150V / 305V
Resolution	0.1V
Accuracy	±0.5% of (Reading + Range)
ACA meter(Arms)	10mA / 20mA / 200mA / 2000mA / 200A (for Inrush)
Resolution	0.01mA / 0.01mA / 0.1mA / 1mA / 0.1A (for Inrush)
Accuracy	±0.5% of (Reading + Range) / ±2% of (Reading + Range) (for Inrush)
ACW meter	1.5W / 3W / 6W / 30W / 60W / 300W / 600W
Resolution	0.001W / 0.001W / 0.001W / 0.01W / 0.01W / 0.1W / 0.1W
Accuracy	±0.5% of (Reading + Range)
DCW meter	Same as 3310F series
PF meter	±0.01~1.00
Resolution	0.01
Accuracy	1% of (Reading + Range)
Frequency meter	40~70 Hz
Resolution	0.1 Hz
Accuracy	± 0.1 Hz
Efficiency meter	Corresponds to ACW and DCW, ±1% of (Reading + Range)
Integration Meas. Power	From 0.000mWH~999.9KWH
Integration Meas. Time	1 Sec.~99H59M59S
Inrush Delay/Period	0~99.9mS / 0.1~99.9S
Meter Meas. Rate Interval time	100mS / 200mS / 500mS / 1S / 5S / 10S
Interface	RS-232
External AC Source	300Vrms / 2A / 600VA

## Order Information

- ▶ **6010** : Charger / Adapter / LED Driver Test System
- ▶ **60104** : Mainframe of Noise and Timing Analyzer and DC Electronic Load Module
- ▶ **4031 / 4032** : Noise and Timing Analyzer Module (1CH/2CH)
- ▶ **4013 / 4015** : Power Meter
- ▶ **5060 / 5061** : DC Source (OVP testing)
- ▶ **5302A** : AC Source
- ▶ **5303** : AVR ( for Inrush Test )
- ▶ **NTC Simulator** ( used in temperature simulation )
- ▶ **DC Electronic Load Module** : 3310F / 3340G Series / 3332F 、 3336F
- ▶ **9909** : 6010 test fixture
- ▶ **6010 System software**
- ▶ **6010 System 19" ( 20U ) Standard Rack**
- ▶ **6010 System 19" ( 30U ) Standard Rack**
- ▶ **Personal Computer**