

## 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	
<b>V-Ripple / I-Ripple measurement</b>		
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	
<b>V-Over / I-Over shoot</b>		
Band width	100KHz	
Voltage range	0~80V / 600V	
Current range	*(1/4F.S.) / (F.S.) A	
Sampling rate	100KHz	
Update rate	50~1000mS	
<b>Dimming Current measurement</b>		
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		
<b>V-Ripple / I-Ripple measurement</b>			
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		
<b>V-Over / I-Over shoot</b>			
Band width	100KHz		
Voltage range	0~80V / 600V		
Current range	*(1/4F.S.) / (F.S.) A		
Sampling rate	100KHz		
Update rate	50~1000mS		
<b>Dimming Current measurement</b>			
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	
<b>Timing Measurement</b>		<b>Ripple Measurement</b>	
<b>Set-up/Hold-up/Rise/Fall Time</b>		<b>Band Width</b>	
Voltage range	0~80 / 600 Vdc	0~100 KHz	
Current range	*(1/4F.S.) / (F.S.) Adc	<b>Voltage range</b>	
Timing range	1 Sec/2 Sec/4 Sec/8 Sec/16 Sec	0~80 / 600 Vdc	
Resolution	1μS/2μS/4μS/8μS/16μS	<b>Measurement range</b>	
<b>Vth1/Vth2</b>		0~3.2 / 20 Vp-p	
<b>Voltage range</b>	5%~95% of reading	Resolution	
Resolution	0.1V / 1V , 0.001A/0.01A	0.001 / 0.01V	
Accuracy	±2% of (Reading + Range)	<b>Current range</b>	
<b>Noise Measurement</b>		*(1/4F.S.) / (F.S.) Adc	
<b>Low Pass Filter</b>	up to 20 MHz	<b>Measurement range</b>	
<b>Voltage range</b>	0.6 / 3Vp-p	*(1/8F.S.) / (1/2F.S.) Ap-p	
Resolution	1mV	Resolution	
Accuracy	±2% of Reading + 5mV	0.001 / 0.01A	
<b>Over Shoot Measurement</b>		Accuracy	
<b>Band Width</b>	0~100 KHz	±5% of (Reading + Range)	
<b>Voltage range</b>	0~80 / 600 Vdc	<b>Sampling Rate</b>	
<b>Measurement range</b>	0~80 / 600 Vdc	100KHz	
Resolution	0.1 / 1Vdc	<b>Update Rate</b>	
<b>Current range</b>	*(1/4F.S.) / (F.S.) Adc	50~1000 mS	
<b>Measurement range</b>	*(1/4F.S.) / (F.S.) Adc	Resolution	
Resolution	0.001 / 0.01A	1mS	
Accuracy	±5% OF (Reading + Range)	<b>Dimming Measurement</b>	
<b>Sampling Rate</b>	100KHz	<b>Band Width</b>	100KHz
<b>Update Rate</b>	50~1000 mS	<b>Current range</b>	*(1/8F.S.) / (1/2F.S.) Adc
Resolution	1mS	Resolution	0.001 / 0.01A
		Accuracy	±5% of (Reading + Range)
		<b>Sampling Rate</b>	100KHz
		<b>Update Rate</b>	50~1000 mS
		Resolution	1mS
		<b>Frequency range</b>	10Hz~35KHz
		Resolution	0.1Hz
		Accuracy	±1% of (Reading + Range)
		<b>Duty(Ton) Range</b>	3μS~90mS
		Resolution	1μS
		Accuracy	±1% of (Reading + Range)

Note : F.S. Load Current range

## Noise & Timing Analyzer

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

Note : F.S. Load Current range

## DC OVP Source

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

## DC Source

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

## Power Meter

MODEL : 4013A			
<b>No. of Input Channel</b>	4	<b>DCW meter</b>	800mW / 8W / 80W / 800W / 8000W
<b>ACV meter(Vrms)</b>	30V / 305V	Resolution	32-bit
Resolution	16-bit	Accuracy	±0.5% of ( Reading + Range )
Accuracy	±0.5% of ( Reading + Range )	<b>PF meter</b>	±0.01~1.00
<b>ACA meter(Arms)</b>	20mA / 200mA / 2A / 20A / 200A (for Inrush)	Resolution	0.01
Resolution	16-bit	Accuracy	Corresponds to V and A, 1% of ( Reading + Range )
Accuracy	±0.5% of ( Reading + Range ) / ±2% of ( Reading + Range ) (for Inrush)	<b>Frequency meter</b>	40~70 Hz
<b>ACW meter</b>	0.6W / 6W / 60W / 600W / 6000W	Resolution	0.1 Hz
Resolution	32-bit	Accuracy	± 0.1 Hz
Accuracy	±0.5% of ( Reading + Range )	<b>Inrush Delay/Period</b>	0~99.9mS / 0.1~99.9S
<b>DCV meter</b>	40V / 400V	<b>Meter Meas. Rate</b>	100mS / 200mS / 500mS / 1S / 5S / 10S
Resolution	0.001V / 0.01V	<b>Interval time</b>	
Accuracy	±0.5% of ( Reading + Range )	<b>Low Pass Filter(V &amp; A)</b>	50KHz
<b>DCA meter</b>	20mA / 200mA / 2A / 20A / 200A ( for Inrush )	<b>Interface</b>	RS-232
Resolution	0.001mA/0.01mA/0.1mA/1mA/10mA(for Inrush)		
Accuracy	±0.5% of ( Reading + Range ) / ±2% of ( Reading + Range ) (for Inrush)		

MODEL : 4015A					
<b>No. of Input Channel</b>		4			
<b>ACV meter (Vrms)</b>	Range	15V/0.001V    30V/0.001V    50V/0.01V 150V/0.01V    300V/0.01V    500V/0.1V	<b>DCV</b>		
	Accuracy	±0.1% of ( Reading + Range )			
<b>ACA meter (Arms)</b>	Range	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>		
	Accuracy	±0.1% of ( Reading + Range )			
<b>ACW meter</b>	Range	±2% of ( Reading + Range, for Inrush )	<b>DCW</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			
		3W / 0.1mW    6W / 0.1mW    10W / 1mW 7.5W / 1mW    15W / 1mW    25W / 1mW 30W / 1mW    60W / 1mW    100W / 10mW 75W / 10mW    150W / 10mW    250W / 10mW 300W / 10mW    600W / 10mW    1000W / 0.1W 750W / 10mW    1500W / 0.1W    2500W / 0.1W 1500W / 0.1W    3000W / 0.1W    5000W / 0.1W 3000W / 0.1W    6000W / 0.1W    10000W / 1W	<b>PF meter</b>		
		Accuracy		±0.1% of ( Reading + Range )	
				Accuracy	1% of ( Reading + Range, Corresponds to V and A )
				Range	40~70 / 0.1Hz
				Accuracy	± 0.1 Hz
				<b>V/A</b>	Number    1~50 th / Same as ACV, ACA meter
				<b>Harmonic</b>	Accuracy    ±0.5% of ( Reading + Range )
				<b>V/A THD</b>	Range    0%~255% / 0.001%
		Accuracy	±0.5% of ( Reading + Range )		
		<b>Inrush Delay/Period</b>	0~100ms		
		<b>Low Pass Filter(V&amp;A)</b>	50KHz		
		<b>Interface</b>	RS-232		

## AC Power Source with Power/Energy Analyzer

MODEL	APS-7050		
<b>Power Rating</b>	500VA	<b>ACA meter(Arms)</b>	2~70mA / 60~350mA / 0.3~3.5A / 3~17.5A
<b>Type</b>	Linear	Resolution	0.01mA / 0.1mA / 0.001A / 0.01A
<b>Voltage Rating</b>	0~155Vrms / 0~310Vrms	Accuracy	± (0.6% of reading+5 counts) ± (0.5% of reading +5 counts) ± (0.5% of reading+3 counts)
Accuracy	± 0.5% of setting + 2 counts	<b>ACW meter</b>	1.5W / 3W / 6W / 30W / 60W / 300W / 600W
Resolution	0.01V / 0.1V	Resolution	0.01W / 0.1W / 1W
<b>Distortion</b>	THD ≤ 0.5% (R load)	Accuracy	± ( 0.6% of reading+5 counts ) ± ( 0.6% of reading +5 counts ) ± ( 0.6% of reading+2 counts )
<b>Load Regulation</b>	±0.5%±0.5V	<b>PF meter</b>	0.000~1.000
<b>Line Regulation</b>	0.1%	Resolution	0.001
<b>Current Rating</b>	4.2A / 2.1A	Accuracy	± (2% of reading + 2 counts)
<b>Frequency</b>	45~500Hz	<b>Frequency meter</b>	45 ~ 500Hz
Resolution	0.01Hz / 0.1Hz	Resolution	0.01Hz / 0.1Hz
<b>Protection</b>	OCP, OTP, OPP	Accuracy	±0.1Hz
<b>Measurements</b>		<b>Interface</b>	Standard    USB / LAN
<b>ACV meter (Vrms)</b>	0 ~ 99Vrms / 100~310Vrms	Optional    GPIB / RS232	
Resolution	0.01 / 0.1V		
Accuracy	±0.5% of ( Reading + 2 counts )		

## AC Source

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

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

## Test Fixture Adapter

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

## Quick Charger Emulator

MODEL : 99094	
<b>No. of Test Channel</b>	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
<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

## 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**