

# 4016 AC/DC Digital Power Analyzer (800Vp, 20Arms/200Ap)



## Features

- **6 Selectable Voltage Ranges :**  
20Vpeak/0.001V , 40Vpeak/0.001V , 80Vpeak/0.01V  
200Vpeak/0.01V , 400Vpeak/0.01V , 800Vpeak/0.1V
- **18 Selectable Current Ranges :**

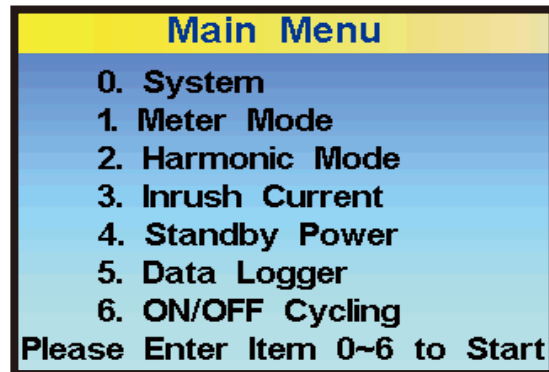
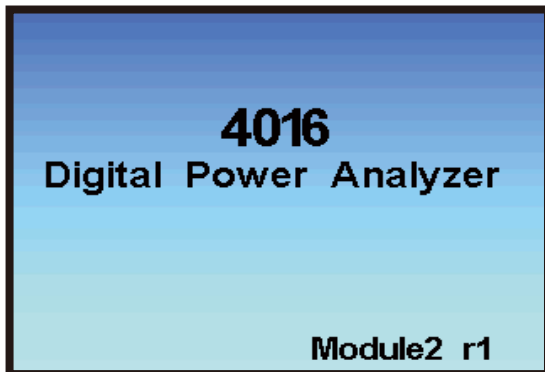
0.002Apeak / 0.1uA	2Apeak / 0.1mA
0.004Apeak / 0.1uA	4Apeak / 0.1mA
0.008Apeak / 0.001mA	8Apeak / 0.001A
0.02Apeak / 0.001mA	10Apeak / 0.001A
0.04Apeak / 0.001mA	20Apeak / 0.001A
0.08Apeak / 0.01mA	40Apeak / 0.001A
0.2Apeak / 0.01mA	50Apeak / 0.001A
0.4Apeak / 0.01mA	100Apeak / 0.01A
0.8Apeak / 0.1mA	200Apeak / 0.01A
- Voltage/Current Frequency Range : DC, 20~1000HZ
- **Embedded high-speed DSP, 16 bits Analog/Digital converters to provide continuous gabbless measurement with max sampling rate up to 409.6kHz**
- Input Range up to 800Vpeak / 200Apeak
- 2mA minimum current range & 0.1uA Current resolution
- **0.0001uW minimum power resolution and 0.03W standby power integration mode are meet ENERGY STAR / IEC62301 requirement**
- 3.5-inch color LCD digital numeral and graphic (TFT) display
- Display voltage, current and 50th Harmonics resolution by digital and graphics
- Data Logger mode :
  - Up to 256 records for Vrms / Arms / Watt / PF / VTHD measurements
  - External PC for no-limit records q'ty for long-term quality monitoring
- Built-in power switch to control
  - The input signal ON / OFF angle (0~359) / 1°
  - Test period and repetition times up to 9999 times
  - Repeat test period can up to more than 138days.
- Inrush Current and Voltage measurement.
- Support external CT and PT measurement functions to expand the measurement range of current and voltage
- Support external shunt measurement function : Can be used with Prodigit 7550A and 1000A to expand the higher measurement current and power integration Whr, Ahr measurement function demand
- Optional Interface : GPIB 、 RS232 、 USB 、 LAN
- Optional : 9942 Measuring Fixture BOX

## Description

- The 4016 is a new generation digital power analyzer designed specifically for single channel AC/DC power measurement. The 3.5" TFT LCD display screen provides graphics display and digital display. Oscilloscope function of 4016 digital power analyzer for using some measurements such as harmonic distortion, It can directly capture the waveforms, values and can provide the harmonic values, the graphics amplitude of each harmonic, providing highly accurate and convenient power measurement.
- The Energy Star's standby power measurement has to meet IEC62301 equipment requirements. The 4016 digital power analyzer is designed to comply with IEC62301. It offers complete measurement requirements, including Power Integration minimum current range to 2mA (resolution 0.1uA) and the minimum measurement power of 0.0001uW, meet the specification requirements of 0.03W standby power measurement.
- The 4016 digital power analyzer current measurement range is rich wide. it can provide 18 selectable current ranges from 2mA to 200Apek and provide 6 selectable voltage ranges up to 800Vpeak. For the larger range of current and voltage measurement, it can also be combined with external CT (Current Transformer) or shunt, such as Prodigit 7550A, 1000A and use with the PT(Potential Transformer) together to meet the measurement requirements.
- In order to understand the stability of the UUT(unit under test), the 4016 provides the Data Logger function, which is 256 states store for Vrms, Arms, Watt, PF, VTHD, and ITHD. If PC is available, there will be no limit states stores quantity. It provid convenient and accurate power measurement of UUT stability.
- In addition, to understand the effect of the UUT (unit under test) on long-term repeated ON/OFF. The 4016 built-in a power switch can control the ON/OFF angle of the input signal, test period and repetition times to 9999 times, such as turn ON and turn OFF every 10 minutes continuously, the longest repeat test period can be longer than 138 days
- 9942 measuring fixture box is an optional accessory to adapted plug/socket of UUT easily connect 9942 with 4016 digital power analyzer to test many different kinds of plug/socket UUT
- For remote operation, the 4016 digital power analyzer provides 4 optional interfaces GPIB / RS232 / USB / LAN data capture and storage.

## Key Functions

- Power ON display and main menu



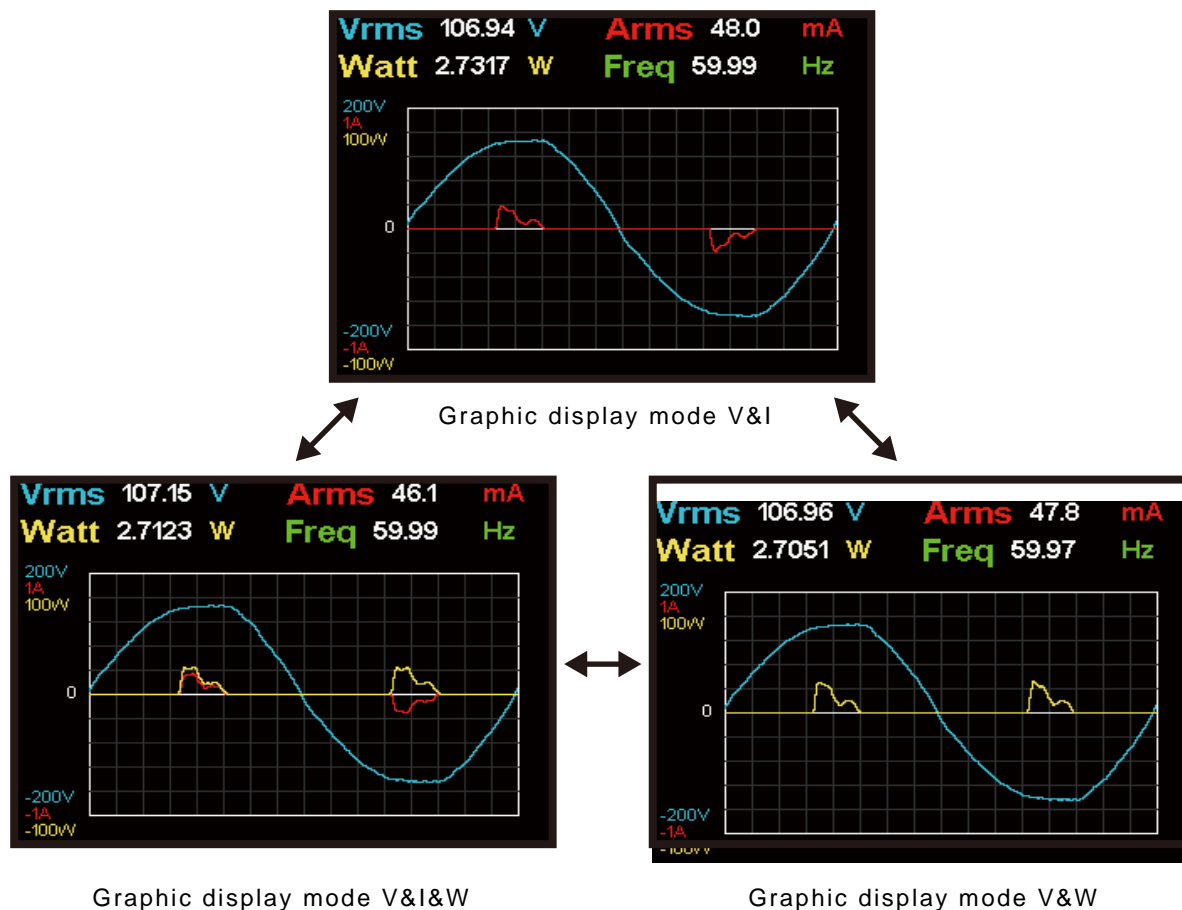
## System

- Mode : AC/DC
- Average : 1~64
- 50KHz Filter : ON/OFF
- ON Degree : 0~359°
- OFF Degree : 0~359°
- Shunt : INT/EXT can use internal Shunt or external current transformer (CT).
- Scale : Current-to-Voltage ratio when using an external current transformer (EXT)

System Set	
Mode	AC,DC
Average(1~64)	04 Cycles
Filter 50kHz	On,Off
On Degree(0~359)	000°
Off Degree(0~359)	000°
Shunt	Int,Ext
Scale(1~100)	010.00 A/V
Display r1.00 Module r1,r1	

## Meter Mode

- There are Digital numeral mode and Graphic mode display, the standard is Digital numeral mode.
- Press Graph key to switch to graph display mode and press again to switch back to digital numeral mode
- Press Edit key to select the display parameters, Vrms, Arms, Watt, PF, VTHD, ITHD, VA, Freq
- Graphic display mode Press the left and right button to cyclically switch V&I→V&W→V&I&W

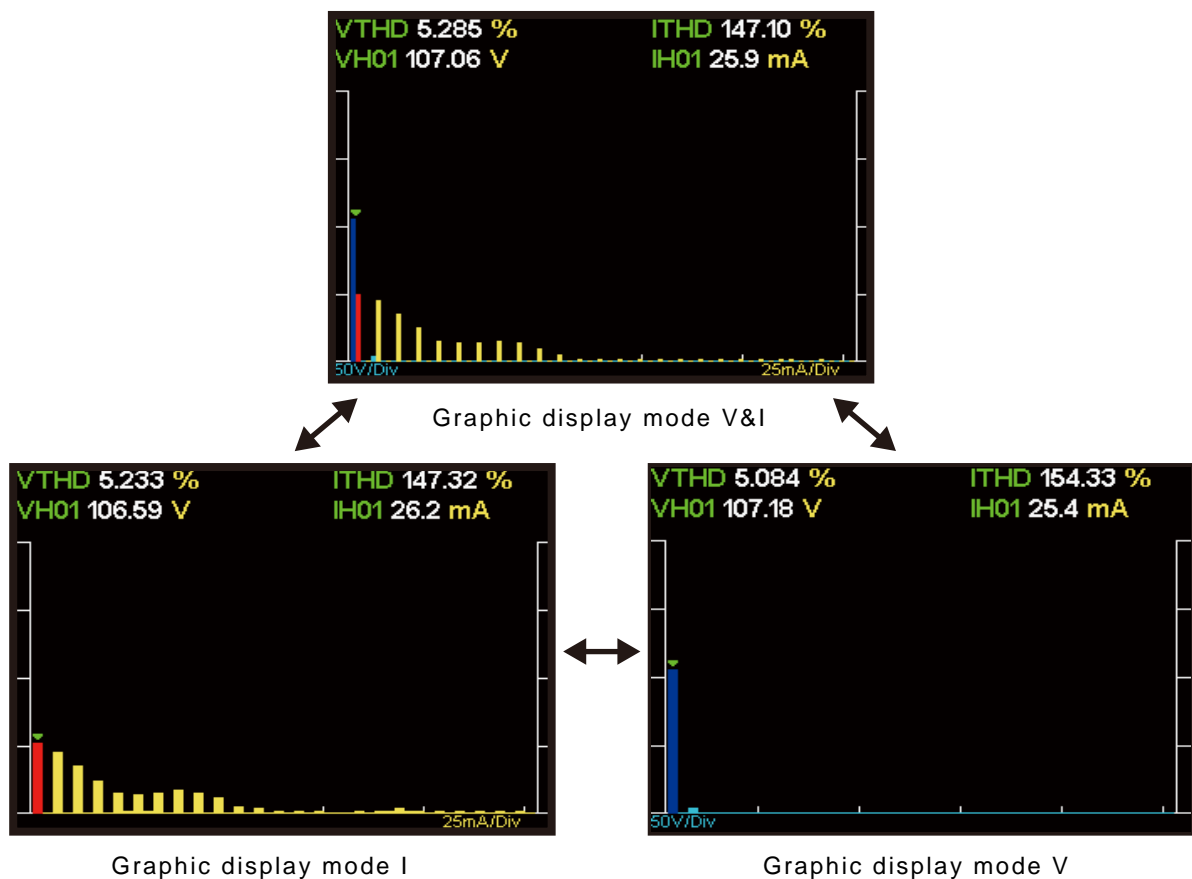


### Harmonic Mode

- There are Digital numeral mode and Graphic mode display, the standard is Digital numeral mode.
- Press Graph key to switch to graph display mode and press again to switch back to digital numeral mode
- Graphic mode Up and down buttons can be cyclically switched V&I→V→I

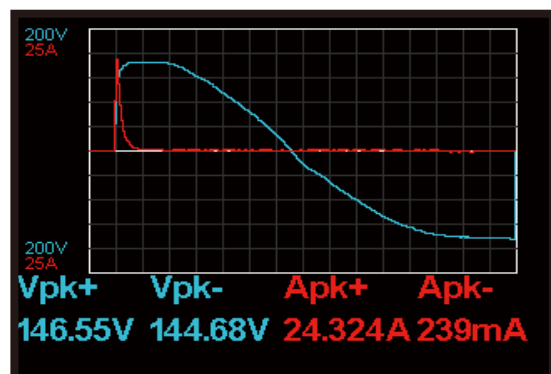
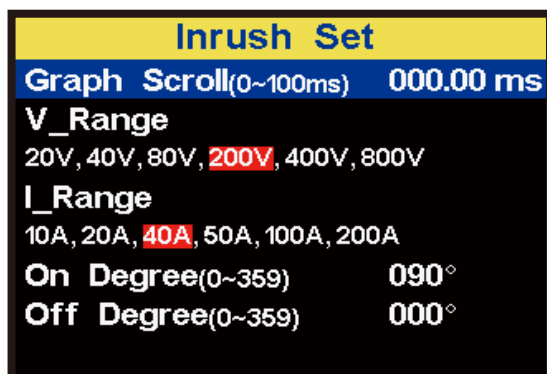
VH01	107.23 V	VH02	0.04 V
VH03	5.22 V	VH04	0.01 V
VH05	1.10 V	VH06	0.02 V
VH07	1.33 V	VH08	0.00 V
VH09	0.74 V	VH10	0.00 V
VH11	0.15 V	VH12	0.02 V
VH13	0.24 V	VH14	0.03 V
VH15	0.19 V	VH16	0.03 V

Press Up and Down keys to change the page, press left and right to switch V or I



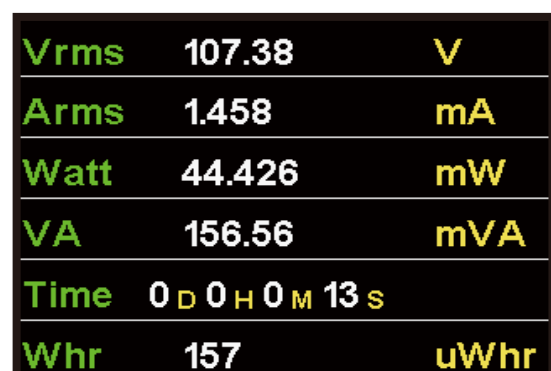
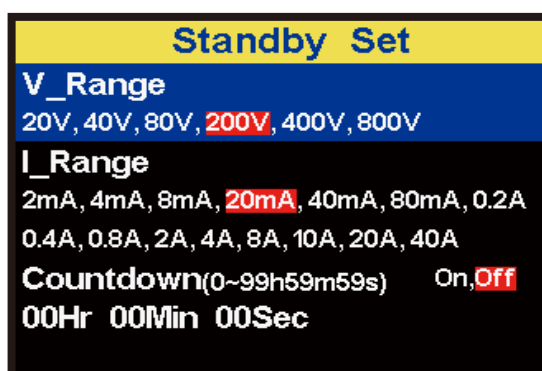
### Inrush Current

- Press Edit Key to edit Voltage and Current range and built-in Power Switch's turn ON / OFF degree angle 0~359°



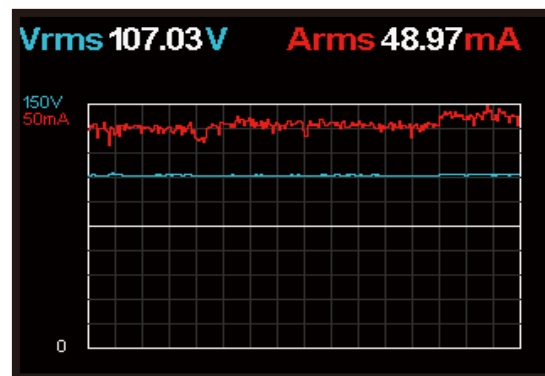
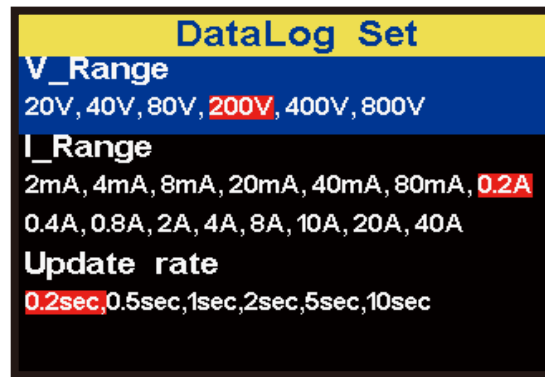
### Standby Power

- Press Edit key to edit voltage and current range and test countdown time suitable for the EnergyStar test method.
- See the standby power test method for details.

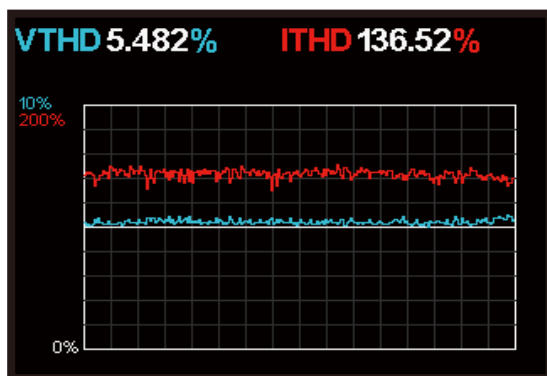


## Data Log

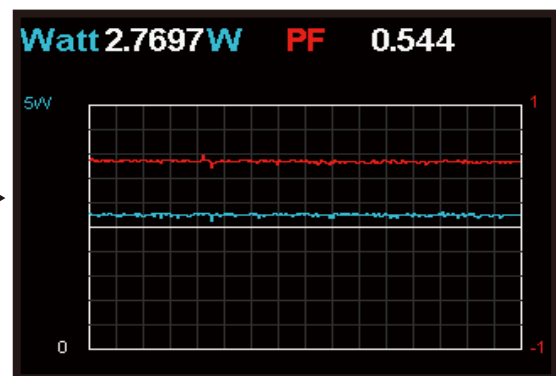
- Press Edit to edit the item.
- Page1 display Vrms,Irms
- Page2 display Watt,PF
- Page3 display VTHD,ITHD



Vrms,Irms



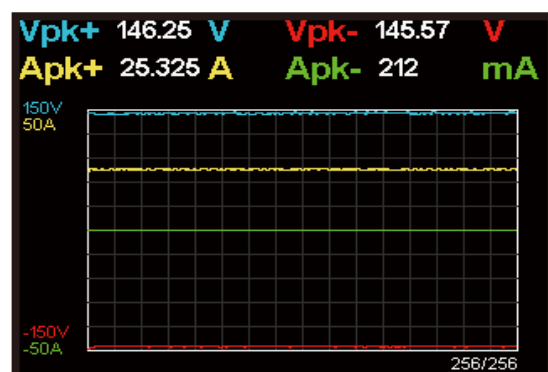
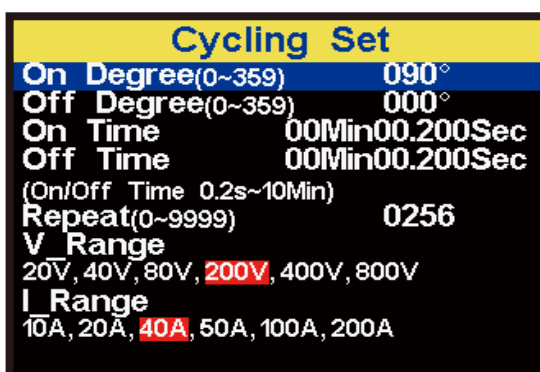
VTHD,ITHD



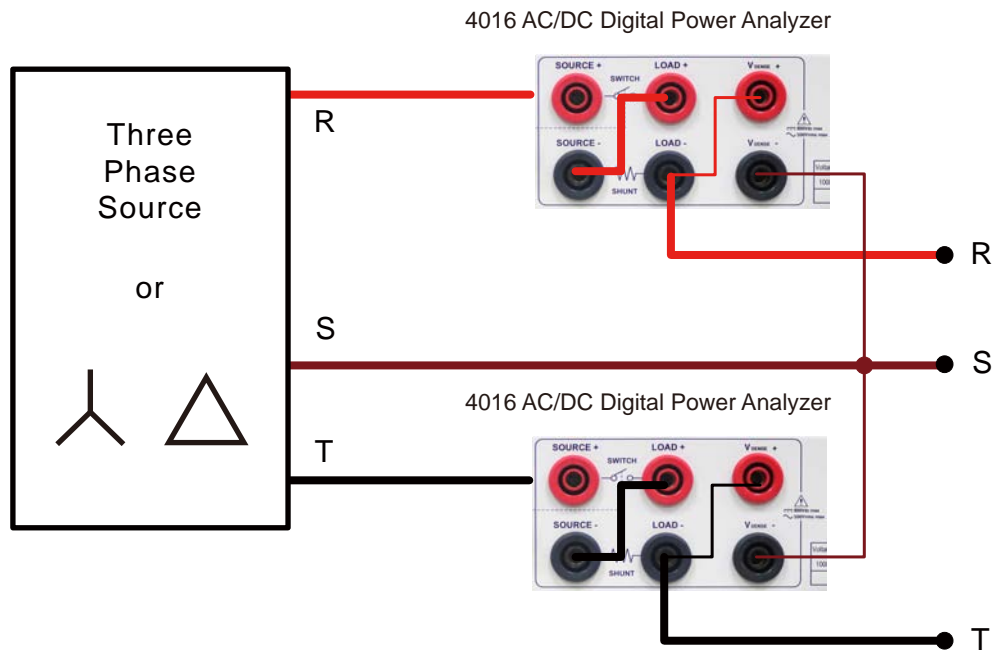
Watt,PF

## ON/OFF Cycling

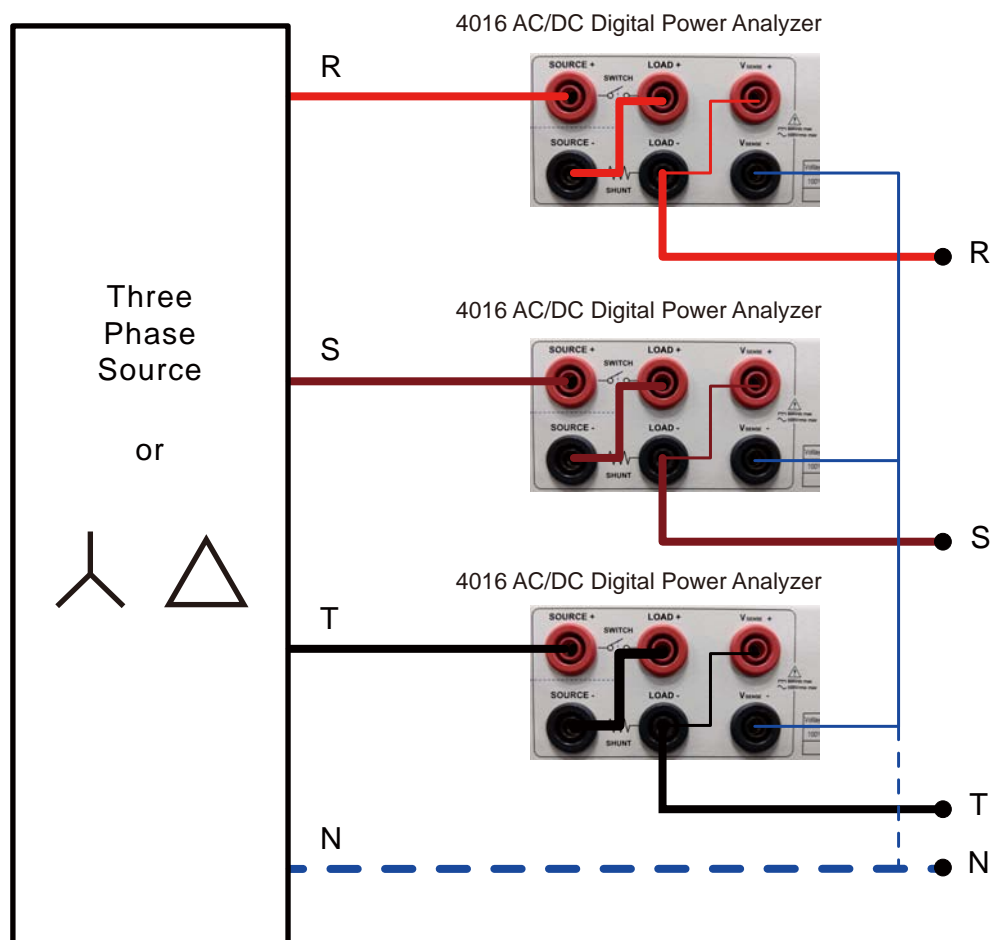
- Press Edit button to enter the edit switch angle, time, and numbers of ON/OFF switch



### 3-phase 3-wire 2-meter connection

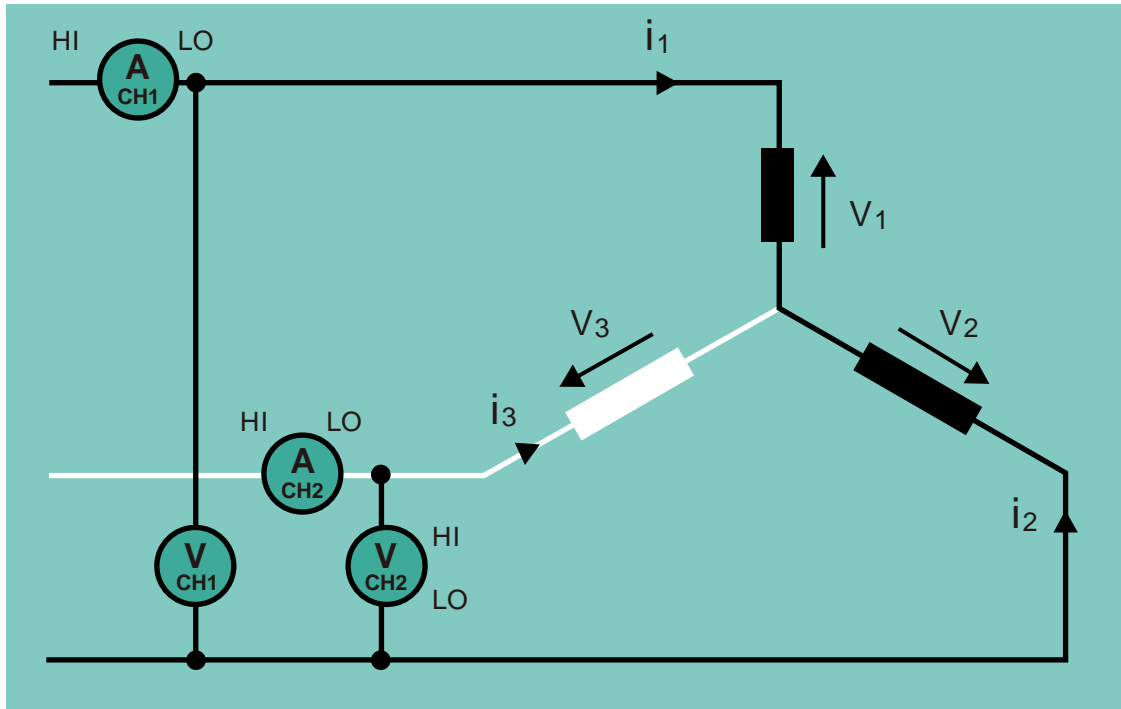


### 3-phase 3-wire or 3-phase 4-wire 3-meter connection



### 3-phase 3-wire 2-meter connection

1-phase 2-wire power measurement, a power analyzer is enough, but for 3-phase 3-wire and 3-phase 4-wire power measurement, how to measure instantaneous total power? In general, the number of power analyzers is required = the number of wires-1, 3-phase 3-wire type with two power analyzers, 3-phase 4-wire type requires three power analyzers as shown below



The power analyzer 1 reading  $W1 = i1 (v1 - v2)$

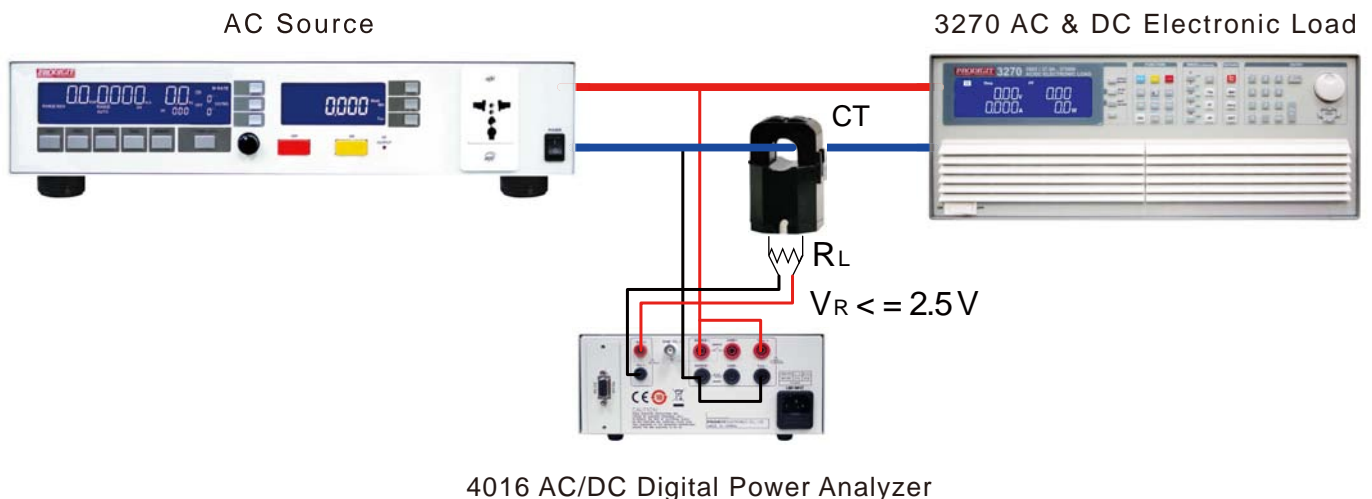
The power analyzer 2 reading  $W2 = i3 (v3 - v2)$

$$\begin{aligned} W1 + W2 &= i1v1 - i1v2 + i3v3 - i3v2 \\ &= i1v1 + i3v3 - (i1 + i3) v2 \end{aligned}$$

$$i1 + i2 + i3 = 0 \text{ so } i1 + i3 = -i2$$

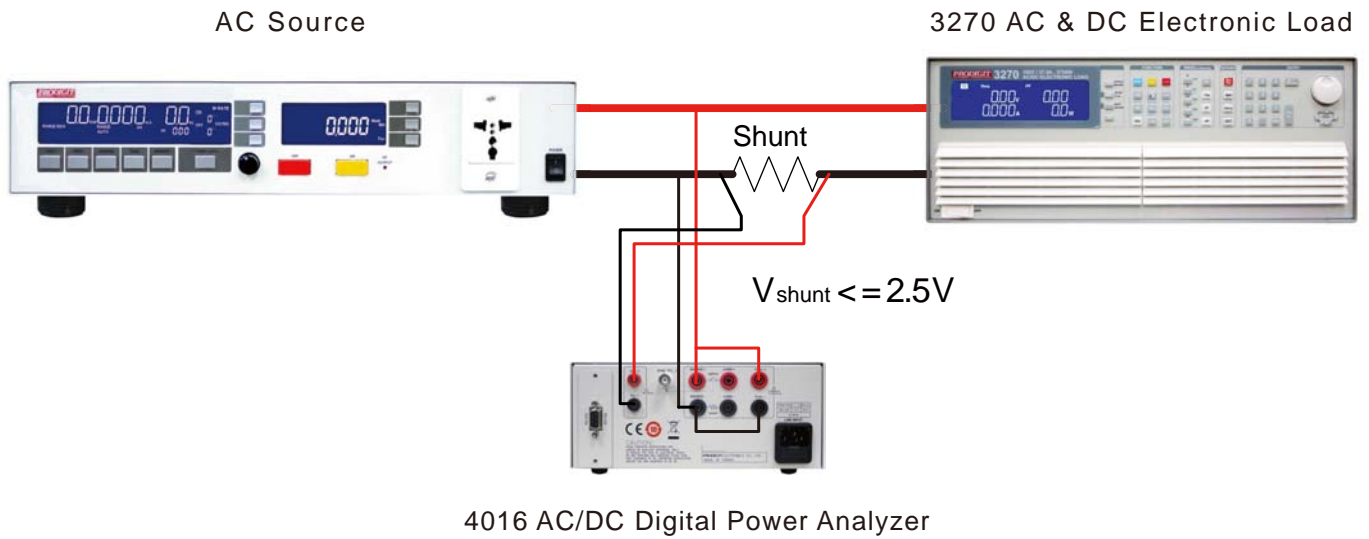
$$\begin{aligned} W1 + W2 &= i1v1 + i3v3 + i2v2 \\ &= \text{instantaneous total power} \end{aligned}$$

### External CT connection

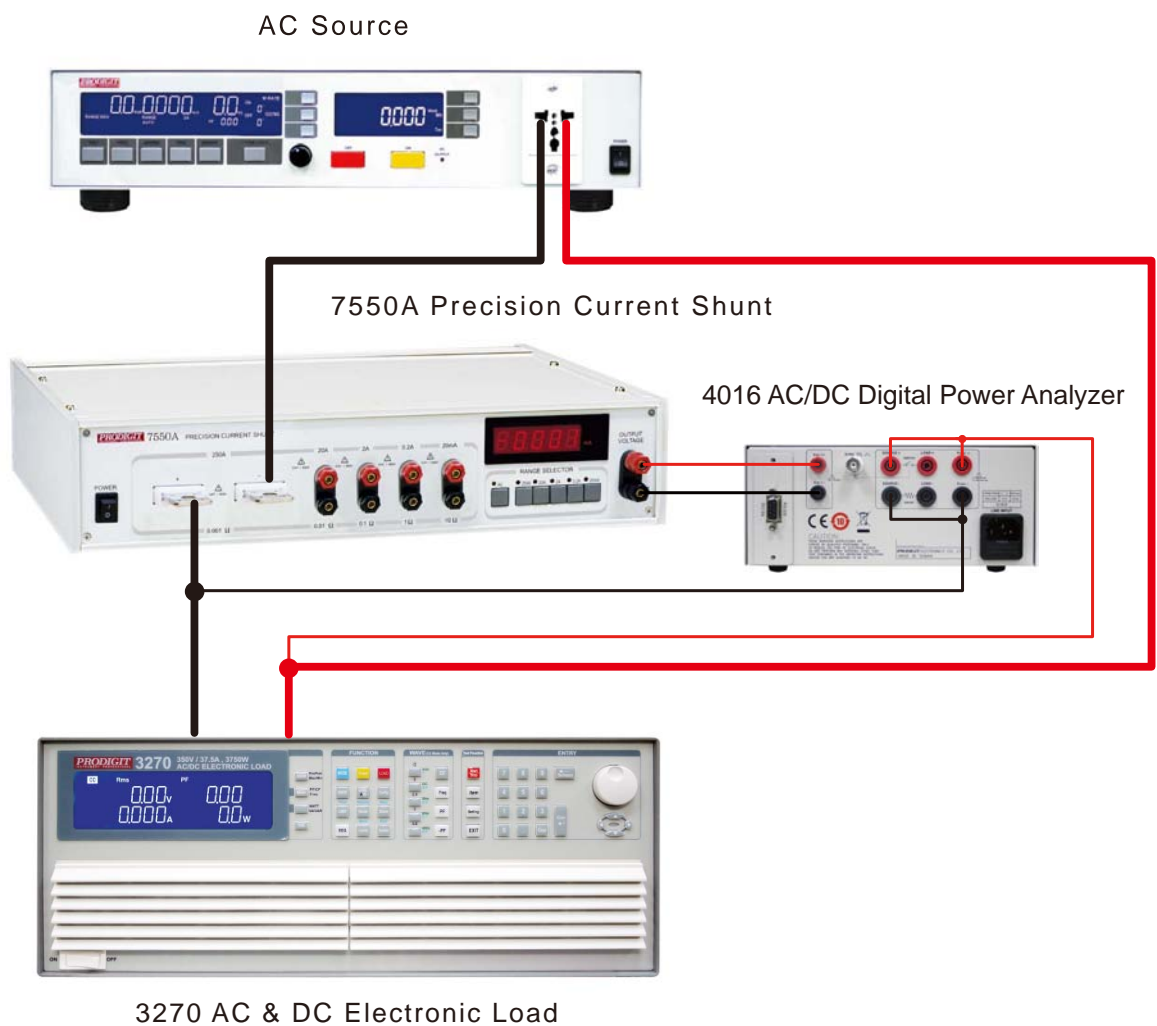




## External Shunt Connection

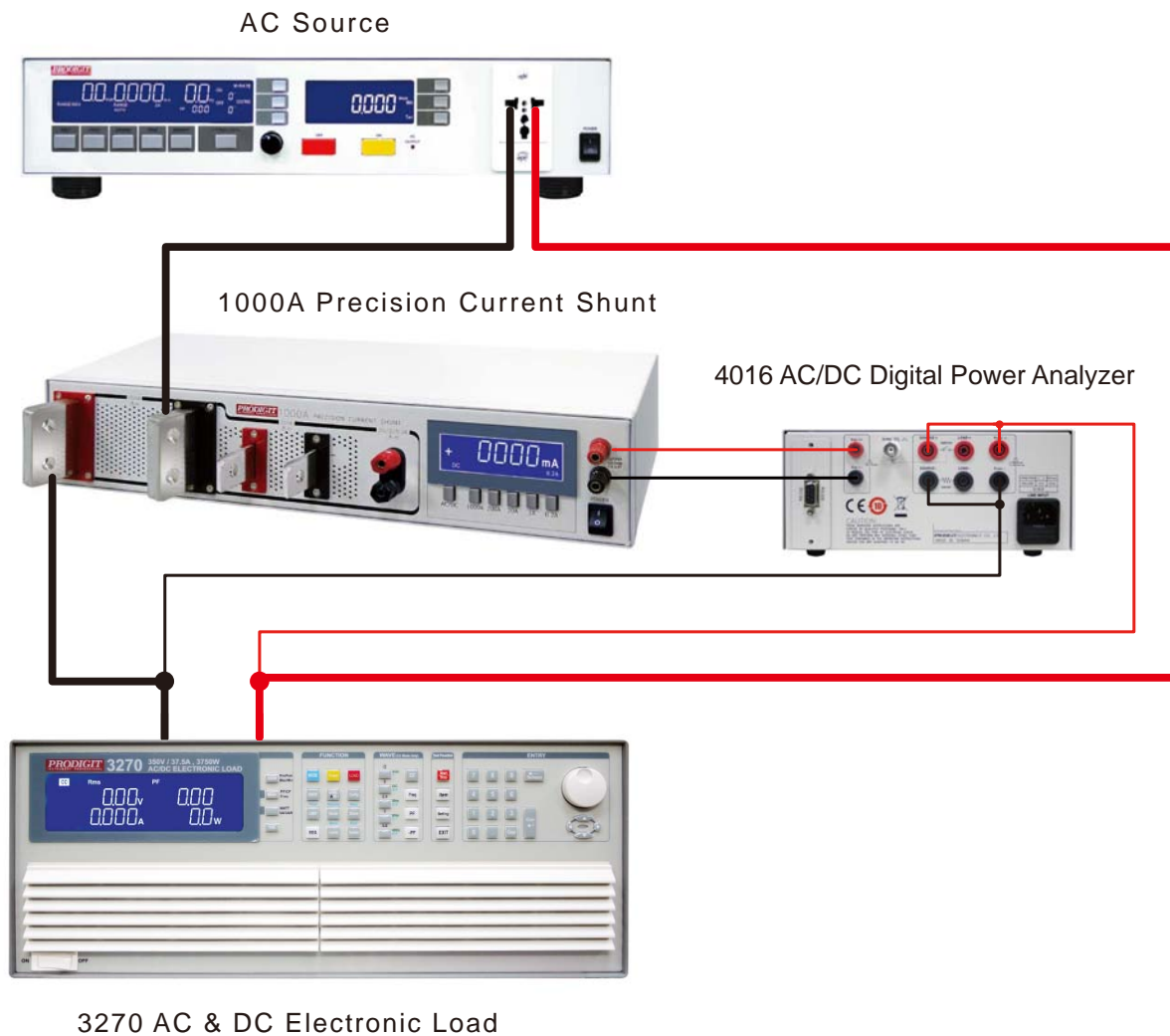


## External 7550A Shunt Connection

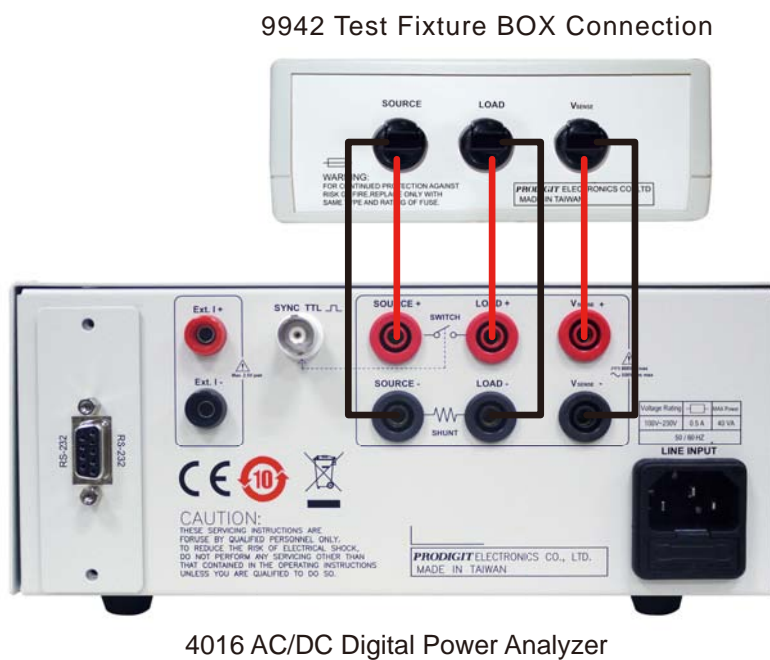




## External 1000A Shunt Connection



## 9942 Test Fixture BOX Connection



## 9942 Measuring Fixture BOX



## 9942 Measuring Fixture BOX rear panel