

PRODUCT INTRODUCTION

TEST EQUIPMENT & MEASURING INSTRUMENTS



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COMPANY PROFILE

Beijing GFUVE Electronics Co., Ltd. was established in 2005. It combined science, industry and trade together as one high-tech enterprise. GFUVE mainly produces high voltage ammeter recorder, IEC61850 test suite software, meter test equipment, reference standard meter, phantom load power source, electrical measurement instrument, relay test set, transformer test, and power analyzer, intelligent digital meter, transducer and current transformer models etc.

GFUVE is a leader manufacturer of energy meter test products and high voltage ammeter recorder in China. It is professional in energy meter test system, energy meter portable tester and related accessory. The product of high voltage ammeter recorder develops very quickly in the market. Our company has achieved certification to ISO9001. The products are sold to over 30 provinces in China and exported to overseas including South America, Middle East, Southeast Asia and Africa.

We have been contributing ourselves to developing the durable and stable products for the usage of the power system. Contact us now for further business relationship. We are here to provide you the best service.



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GF2018

High Voltage Wireless Primary Current Sensor

- 1. Collect and analyze load profiles*
- 2. Easily clamps to the line in a few seconds*
- 3. Check for load balance*
- 4. Patented open CT sensor with $\pm 1\%$ accuracy*
- 5. 433M communication with no annoying cables to connect*
- 6. Recorded data quickly downloads into the user's PC*
- 7. PC-Link Software interface downloads directly into Microsoft Excel*
- 8. Generate reports and create graphs for profile analysis*



Features

1. The Primary current sensor uses the same sensor technology as the original Rogowski coil. The True RMS inductive sensor does not use magnetic materials. The opening of the sensor is electronically closed and external currents are electronically rejected.
2. The accuracy, external current reject, and range of currents measured by the patented amp sensor substantially exceed the performance of the best clamp-on sensors. The key feature of the unit is the ability to leave it deployed on the line to record readings every 15 minutes for 90+ days. It easily attaches to the line with a standard insulating bar. Once on the line, it immediately begins to collect and record the primary current on the line.
3. The Primary current sensor is equipped with a 433M wireless port for communicating the recorded data into the user's PC. The data is downloaded through GF2018S PC-Link Software, which allows the user to download, view and query the data stored on the Primary current recorder.
4. The housing of the Primary current sensor is made of ABS+PC and is built to operate safely, even in severe utility environments. It is resistant to shock, waterproof and resistant to flame. It also operates within a wide temperature range. The Primary current recorder has a screw insulation bar of installation, which allows it to hang on the line securely in all weather conditions.
5. PC-Link Software is a user-friendly software interface that allows the user to download, view, graph and export data from the Primary current recorder into Microsoft Excel. The data directly transfers from the Primary current recorder into Excel through an 433M Port.

Parameters

Basic parameters

Recording ammeter kit	3 wireless current sensors (GF2018A, GF2018B, GF2018C) 433 HHT(handheld terminal) or 433M wireless data reader(GF2018R) PC-LinkSoftware software(GF2018S) Carrying case
Data recording interval	5min, 10min,15min, 30min; Time can be set from 1 minute to 60 minutes
Communication distance(wireless)	Max 100m
Communication	433M, 868M or 915M (option)
Installation	Installation with electricity; Disassemble with electricity
Battery	3.6 volt lithium battery,9000mAh; Battery can be replaced
Software requirements	PC-Linksoftware & microsoft Excel
Processor	100 MHz or higher (200 MHz or higher recommended)
RAM	32 MB, 64M recommended
Drive space	15 MB to load software, 10 MB of operating Space
Use of position	Outdoor or indoor

Electrical parameters

Range of operation

Voltage	69kV,35kV,20KV, 10kV, 6kV
Current	1 to 300A; 1 to 600A; 1 to 1000A; 1 to 2000A
Sensor opening	Up to 3.3 cm

Resolution

Amps 1 to 99.9A	0.1A
100 to 300A	1A
Amps accuracy	±1% of reading plus 2 counts
Frequency	60Hz (57-63 Hz) or 50Hz (47-53 Hz) models available

Mechanical parameters

Weight (kg)	0.48
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Environmental conditions

Operating temperature	-40°C to 60°C
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GF2015

Primary Current Recorder

1. *Collect and analyze load profiles*
2. *Easily clamps to the line in seconds*
3. *Check for load balance*
4. *Patented open CT sensor with $\pm 1\%$ accuracy*
5. *433M communication with no annoying cables to connect*
6. *Recorded data quickly downloads into the user's PC*
7. *PC-LinkSoftware interface downloads directly into Microsoft Excel*
8. *Generate reports and create graphs for profile analysis*



Features

1. The Primary current recorder uses the same sensor technology as the original Rogowski Coil. The True RMS inductive sensor does not use magnetic materials. The opening of the sensor is electronically closed and external currents are electronically rejected.
2. The accuracy, external current reject, and range of currents measured by the patented amp sensor substantially exceed the performance of the best clamp-on sensors. The key feature of the unit is the ability to leave it deployed on the line to record readings every 15 minutes for 90+ days. It easily attaches to the line with a standard insulating bar. Once on the line, it immediately begins to collect and record the primary current on the line.
3. The Primary current recorder is equipped with a 433M wireless port for communicating the recorded data into the user's PC. The data is downloaded through GF2015S PC-LinkSoftware software, which allows the user to download, view and query the data stored on the Primary current recorder.
4. The housing of the Primary current recorder is made of ABS+PC and is built to operate safely, even in severe utility environments. It is resistant to shock, repels water and is unsusceptible to flame. It also operates within a wide temperature range. The Primary current recorder has the screw insulation bar of installation, which allows it to hang on the line securely in all weather conditions.
5. PC-LinkSoftware is a user-friendly software interface that allows the user to download, view, graph and export data from the Primary current recorder into Microsoft Excel. The data directly transfers from the Primary current recorder into Excel through an 433M Port.



Parameters

Basic parameters

Recording ammeter kit	3 wireless current sensors (GF2015A, GF2015B, GF2015C) 433 HHT(handheld terminal) or 433M wireless data reader(GF2015R) PC-LinkSoftware software(GF2015S) Carrying case
Data recording interval	5min, 10min,15min, 30min; Interval user settable from 1-60min
Communication distance(wireless)	100m
Communication	433M, 868M or 915M (option)
Installation	Installation with electricity; Disassemble with electricity
Battery	3.6 volt lithium battery,19000mAh; Battery can be replaced
Software requirements	PC-Linksoftware & microsoft Excel
Processor	100 MHz or higher (200 MHz or higher recommended)
RAM	32 MB, 64M recommended
Drive space	15 MB to load software, 10 MB of operating Space
Use of position	Outdoor or indoor

Electrical parameters

Range of operation

Voltage	69kV,35kV,20KV, 10kV, 6kV
Current	1 to 100A, 1 to 300A, 1 to 600A, 1 to 1000A, 1 to 2000A
Sensor opening	Up to 2.5 cm

Resolution

1 to 99.9A	0.1A
100 to 2000A	1A
Amps accuracy	±1% of reading plus 2 counts
Frequency	60Hz (57-63 Hz) or 50Hz (47-53 Hz) models available

Mechanical parameters

Dimensions (W×D×H) (cm)	18x9.5x4.62
Weight (kg)	0.58

Environmental conditions

Operating temp.	-40°C to 60°C
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GF2013

Medium Voltage Clamp Current Meter With Wireless

Wireless medium voltage clamp current meter is installed on 6KV-35KV power line, this phase load current measuring calculation, and the measured value through the 433M wireless communication transmission to intelligent terminal to analyzer and use.

GF2013 adopts Rogowski Coil measurement technology with low power consumption and power on installation to make it use at ease.



Features

1. Measurement Accuracy: class 1
2. Transmission distance: 100 m
3. Simple structure, operation convenient
4. Install or remove with power on
5. Battery power supply, low power consumption, long life
6. Small volume, light weight, easy to overhead installation, safe environmental protection

Parameters

Basic parameters	
Type	Recording ammeter kit 3 wireless current sensors (GF2013A, GF2013B, GF2013C) 433M wireless data reader(GF2013R) PC-Linksoftware software(GF2013S) Carrying case
Data recording interval	5min, 10min,15min, 30min
Communication distance(wireless)	100m
Communication	433M, 868M or 915M (option)
Installation	Installation with electricity; remove with electricity
Battery	3.6 volt lithium battery,9000mAh
Software requirements	PC-LinkSoftware & Microsoft Excel
Processor	100 MHz or Higher (200 MHz or higher recommended)
RAM	32 MB, 64M Recommended
Drive Space	15 MB to load software, 10 MB of operating space

Electrical parameters

Amps accuracy	±1% of reading plus 2 counts
Frequency	50/60 Hz

Range of operation

Voltage	69kV, 35kV, 20KV, 10kV, 6kV
Current	1-100A, 1-300A
Sensor opening	up to 3.3 cm

Resolution

1-99.9A	0.1A
100-300A	100 to 300A 1A

Mechanical parameters

Dimensions (W×D×H) (mm)	500x600x175
Weight (kg)	0.42

Environmental conditions

Operating temp	-40°C to 60°C
Use of position	Outdoor or indoor



GF2011

WIRELESS HIGH VOLTAGE AMMETER

GF2011 High Voltage Ammeter specially designed and manufactured for High voltage AC current measurement, low voltage AC current, current leakage measurement, online AC current measurement. It consists of special high voltage detector, wireless receiver and high voltage insulation rod.

Apply to power plant, substation, industrial and mining enterprise, inspection station, electrician maintenance department for current sensing and field working.



Features

1. Adopt latest CT technology and integrated mask digital technology
2. Wireless transmission distance 30m, can transmit through building barriers
3. Integrated design ensures uninterrupted year-round high precision, high reliability and high stability test
4. Have peak value maintaining, data maintaining, data memory function
5. Easy to install and remove with power on
6. Insulation rod has the characteristics of moisture resistance, high temperature resistance, impact resistance, bending resistance, high insulation and scalability
7. Can accurately measure 0.00mA-1200A current or leakage current
8. Can test high and low voltage changing ratio, respectively test the first loop and secondary loop high and low voltage current, and then obtain the voltage change through manually calculation

Parameters

Electrical parameters

Power supply	Ammeter: DC6V Alkaline Dry Battery (1.5V AAA X 4), Receiver: DC7.5V Alkaline Dry Battery (1.5V AA X 5), working 10 hours
Test mode	Clamp CT, integral approach
Transmission mode	Wireless transmission, the maximum distance of straight line transmission is about 30m
Display mode	4 bit LCD display, with backlight function
Sampling rate	2 times/second
Measurement scope	0.00mA-1200A (50/60Hz automatic)

Electrical parameters-continued

Resolution	0.01mA
Shift	0.00mA-1200A automatic shift
Accuracy (23°C±5°C, below 70%RH)	0.000mA-120.00A: ±1%±3dgt 120.00A-1200.0A: ±1%±5dgt
Line voltage	Below 69KV line test (with 5 insulation rods operation)
Data memory	99 sets
Automatic shutdown	15 minutes after boot
Battery voltage	<4.8V alarm active
Insulation strength	AC 100kV/rms (between the 5 th insulation rod and high voltage Ammeter core)
Structure	Anti-drip type II
Safety provisions	IEC1010-1, IEC1010-2-032, Pollution Class 2, CAT III (600V), IEC61326(EMC standard)

Mechanical parameters

LCD dimensions (mm)	47×28.5
Meter dimension (LxWxH) (mm)	87×262×37
Meter weight	2.5kg (including insulation rod and battery, tester 335g)
Clamp dimension (mm)	Φ50
Insulation rod dimension	Φ50mm, 1m/piece (5m)

Environmental conditions

Working temperature	-25°C to 40°C
Working humidity	Below 80%Rh
Storage temperature	-10°C to 60°C
Storage humidity	Below 70%Rh

Accessories

Ammeter	1 pc
Receiver	1 pc
Ammeter box	1 pc
Telescopic insulation rod (5m)	1 pc
Battery	Rechargeable Alkaline Dry Battery(AA X 5+AAA X 4)

Model	Description
GF2011	Wireless
GF2011B	Base Display

GF303D

Portable Three Phase Standard Source-120A

GF303D Portable Three Phase Standard Source is suitable for power department, measuring department, quality control department, research units, institutions of higher learning, electric energy meter, power distribution terminals, power supply management, load control, power quality, reactive power compensation device and the production of enterprise etc.



Features

1. To set up and take the load regulation of voltage, current, phase angle, frequency and power factor etc, can be used as a large current source, voltage source and power source.
2. Setting 2-31 times of the amplitude and phase harmonics, and it can be added to the base wave in every harmonic output.
3. Voltage, current output a wide range, big power, high stability, waveform distortion degree is small.
4. Strong with load ability, but it can take capacitive, sensibility, resistance of composite type load or load and load regulation is higher than 0.01%.
5. Apply the 32 bit MPU + DSP + CPLD, powerful flexible.
6. Using hardware PID, fast response, the change of load will not cause output volatility.
7. Industrial frequency waves as high as 5000 points a week of the wave kneading, signal output without filter, precise output waveform, the harmonic output precision, harmonic distortion degree is small.
8. Range switching automatically.
9. Using software calibration, simple operation, stable and reliable.
10. Vector diagram display, adjustable to IEC387 OR DIN410.
11. Big touch screen, 7-inch TFT color LCD display, English interface, operating simply.
12. Perfect over-current, over-voltage, heat, a shorts-and-opens, overload protection, failure detection automatically.
13. With RS232 interface, and PC connection.
14. Take place of the machine software and can output via the PC software program.

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	Single phase AC 85-265 V, frequency 50/60 Hz
AC Voltage output	
Range (U1, U2, U3 phase)	57.7V/100V/220V/380V; range switch automatically(Max 500V)

Electrical parameters-continued

Adjust fineness	0.01% RG
Accuracy	0.05% RG
Stability	<0.01% RG/120s
Distortion degree	<0.3% (not capacitive load)
Output power	25VA
Full load regulation rate	0.01% RG
Full load regulation time	Less than 1mS
Long-term stability	± 60 PPM/year
AC Current output	
Range (I1, I2, I3 phase)	0.2A, 1A, 5A, 20A, 100A; range switch automatically
Adjustment range	(0-120)%RG
Adjust fineness	0.01% RG
Accuracy	0.05% RG
Stability	<0.01% RG/120s
Distortion degree	<0.3% (not capacitive load)
Output power	45VA
Full load regulation rate	0.01% RG
Full load regulation time	Less than 1mS
Long-term stability	± 60 PPM/year
Power output	
Accuracy	0.05% RG
Stability	0.01% RG/120s
Phase angle	
Adjusting range	0°-359.99°
Resolution	0.001°
Accuracy	0.05°
Power factor	
Adjusting range	-1 ~ 0 ~ +1
Resolution	0.0001
Accuracy	0.0005
Frequency	
Adjusting range	40-70 Hz
Resolution	0.001 Hz
Accuracy	0.005 Hz
Temperature drift	± 0.5 PPM/°C
Long-term stability	± 4 PPM/year

Electrical parameters-continued
Harmonic accuracy

Harmonic phase	0°-359.99°
Harmonic phase accuracy	< 0.01°
Harmonic set accuracy	0.1% (relative to the base wave ratings)

Mechanical parameters

Dimensions (W×D×H) (mm)	500x600x175
Weight (kg)	27

Environmental conditions

Working temperature	0°C to 40°C
Storage condition	-30°C to -60°C
Relative humidity	≤ 85%

Selection guide

NO.	Accuracy	Voltage range	Current Range	Weight
303D12001	0.1%	0-500V	0-120A	27KG
303D12005	0.05%	0-500V	0-120A	27KG
303D2401	0.1%	0-500V	0-24A	20KG
303D2405	0.05%	0-500V	0-24A	20KG
303D1201	0.1%	0-380V	0-12A	18KG
303D1205	0.05%	0-380V	0-12A	18KG



GF3031

Three Phase Portable Power Source - 500 V - 120 A

The GF3031 is a powerful and portable three phase current and voltage source. All test values are generated absolutely synthetically with a high degree of accuracy and stability. The source is available in 12 A, 24A or 120 A.

The GF3031 three phase portable power source is a lightweight and portable current and voltage source based on newest technology and serves for solving this problem by simulating the required load conditions. Operation is performed by integrated 7" touch screen or via keyboards.



Functions

1. Individual load point settings
2. Programmable phase shift control from 0-360°
3. Programmable wave form generation for voltage and current
4. Generation of up to the 51th harmonic in voltage and current
5. Programmable power factors
6. Programmable frequency 40-70Hz
7. Configuration of balanced and unbalanced load points
8. Color display with graphical interface
9. Indication of load values, vector diagram and waveform
10. Current, voltage and phase shift are adjustable to high accuracy individual per phase
11. User friendly menu guided operation
12. Operation without need of an external PC

Features

1. Accuracy class 0.05 or 0.1
2. Three phase current generation up to 120 A (AC)
3. Three phase voltage generation up to 500 V
4. All test values are generated synthetically
5. 7 inch TFT touch LCD
6. With USB or RS232
7. Weight light 15Kg
8. Overload, short circuit, open circuit protection

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	Single phase AC 100-265 V, frequency 50/60 Hz
AC Voltage output	
Range (U1, U2, U3 phase)	57.7V, 100V, 220V, 380V(Max 500V); range switch
Adjust fineness	0.01% RG
Accuracy	0.05% RG
Stability	<0.01% RG/120s
Distortion degree	<0.3% (not capacitive load)
Output power	30VA
Full load regulation rate	0.01% RG
Full load regulation time	Less than 1mS
Long-term stability	± 60 PPM/year
AC Current output	
Range (I1, I2, I3 phase)	0.2A, 1A, 5A, 20A, 100A(Max 120A); range switch
Adjustment range	(0-120)%RG
Adjust fineness	0.01% RG
Accuracy	0.05% RG
Stability	<0.01% RG/120s
Distortion degree	<0.3% (not capacitive load)
Output power	20VA(20A), 50VA(100A)
Full load regulation rate	0.01% RG
Full load regulation time	Less than 1mS
Long-term stability	± 60 PPM/year
Power output	
Accuracy	0.05% RG
Stability	0.01% RG/120s
Phase angle	
Adjusting range	0°-359.99°
Resolution	0.001°
Accuracy	0.03°
Power factor	
Adjusting range	-1 ~ 0 ~ +1
Resolution	0.0001
Accuracy	0.0005

Electrical parameters-continued

Frequency

Adjusting range	40-70 Hz
Resolution	0.001 Hz
Accuracy	0.005 Hz
Temperature drift	± 0.5 PPM/°C
Long-term stability	± 4 PPM/year

Voltage /Current/Harmonic Setting

Harmonic number	2-51times
Harmonic content	0-40%
Harmonic phase	0-359.99
Harmonic setting accuracy	(10%±0.1%)RD ⁽¹⁾

Mechanical parameters

Dimensions (W×D×H) (mm)	495x390x195
Weight (kg)	15

Environmental conditions

Working temperature	0°C to 50°C
Storage condition	-30°C to -60°C
Relative humidity	≤ 85%

(1) RD means the settled harmonic content, harmonic can be a single output, also multiple output.

Selection guide

NO.	Accuracy	Voltage range	Current Range	Weight
30311201	0.1%	0-500V	0-12A	15KG
30311205	0.05%	0-500V	0-12A	15KG
30312401	0.1%	0-500V	0-24A	16KG
30312405	0.05%	0-500V	0-24A	16KG
303112001	0.1%	0-500V	0-120A	22KG
303112005	0.05%	0-500V	0-120A	22KG

GF303

Program-controlled Three-phase Standard Power Source

GF303 Program-controlled Three-phase Standard Power Source is suitable for power department, measuring department, quality control department, research units, institutions of higher learning, electric energy meter, power distribution terminals, power supply management, load control, power quality, reactive power compensation device and the production of enterprise etc.



Features

1. To set up and take the load regulation of voltage, current, phase angle, frequency and power factor, also can be used as AC current source, AC voltage source or power source
2. To set 2-128 times of the amplitude and phase harmonics, and it can be added to the base wave in every harmonic output
3. Frequency value is adjustable (AB and phase C)
4. Voltage, current output a wide range, big power, high stability, waveform distortion degree is small
5. Strong with load ability, but it can take capacitive, sensibility, resistance of composite type load or load and load regulation is higher than 0.01%
6. To apply the 32 bit MPU + DSP + FPGA, powerful flexible
7. To use hardware PID, fast response, the change of load will not cause output volatility
8. Industrial frequency waves as high as 50000 points a week of the wave kneading, signal output without filter, precise output waveform, the harmonic output precision, harmonic distortion degree is small
9. Range switching automatically
10. To use software calibration, simple operation, stable and reliable
11. To have big screen, 320 x 240 LCD display, Chinese or English interface, operating simply
12. To have perfect over-current, over-voltage, heat, a shorts-and-opens, overload protection, failure detection automatically.
13. With RS232 interface, and PC connection
14. To take place machine software, it can be output through the PC software program

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	Single phase AC 85V-265V, 50/60 Hz
AC Voltage output	
Range (U1, U2,U3 phase)	57.7V / 100V / 220V / 380V, switch automatically (max 420V)
Adjustment resolution	0.01%, 0.1%, 1%, 10%,

Electrical parameters-continued

Accuracy	0.05% RG
Stability	0.005% RG/1min
Distortion degree	better than 0.1% (not capacitive load)
Load Capacity	25VA
Full load regulation rate	Less than 0.01% RG
Full load regulation time	Less than 1mS
Temperature drift	8 PPM / °C
Long-term stability	60 PPM/year
AC Current output	
Range (I1, I2, I3 phase)	0.1/0.25A/0.5A/1A/5A/10A/20A, switch automatically
Adjustment resolution	0.01%, 0.1%, 1%, 10%,
Accuracy	0.05% RG
Stability	0.005% RG/1min
Distortion degree	better than 0.1% (not capacitive load)
Load capacity	25VA
Full load regulation rate	Less than 0.01% RG
Full load regulation time	Less than 1mS
Temperature drift	8 PPM/°C
Long-term stability	60 PPM/year
Power output	
Active power accuracy	0.05%
Reactive power accuracy	0.1%
Stability	0.005% RG/1min
Phase	
Range	0°-359.99°
Adjustment resolution	0.01°, 0.1°, 1°, 10°
Accuracy	0.03°
Power factor	
Adjusting range	-1 to 0 to +1
Resolution	0.0001
Accuracy	0.0005
Frequency	
Range	40-65Hz or 40-400Hz (option)
Adjustment resolution	0.001Hz, 0.01Hz, 0.1Hz, 1Hz
Accuracy	0.002Hz
Temperature drift	0.5PPM/°C
Long-term stability	4 PPM/year

Electrical parameters-continued
Harmonic

Harmonic times	2-128
Adjustment resolution	0.1% (compared with fundamental wave)

Harmonic content (compared with fundamental wave)

Voltage	≤40%
Current	≤40%
Phase	0°-360°

Capacitive load capacity

0 - 280 V	1uF
280 - 420 V	0.6uF

Mechanical parameters

Dimensions (W×D×H) (mm)	450x380x160
Weight (kg)	18

Environmental conditions

Working temperature	0°C to 40°C
Storage conditions	-30°C to 60°C
Relative humidity	≤85%

Selection guide

No.	Accuracy	Voltage range	Current range	Weight	Remark
3030601	0.1%	0-264V	0-6A	12KG	
3030605	0.05%	0-264V	0-6A	12KG	
3031201	0.1%	0-420V	0-12A	13.5KG	
3031205	0.05%	0-420V	0-12A	13.5KG	
3032001	0.1%	0-420V	0-20A	18KG	
3032005	0.05%	0-420V	0-20A	18KG	
303H0601	0.1%	0-300V	0-6A	15KG	XP system
303H0605	0.05%	0-300V	0-6A	15KG	XP system
303H1201	0.1%	0-420V	0-12A	18KG	XP system
303H1205	0.05%	0-420V	0-12A	18KG	XP system
303H2001	0.1%	0-420V	0-20A	20KG	XP system
303H2005	0.05%	0-420V	0-20A	20KG	XP system

GF303B

Portable Power Source

It is suitable for all the power supply company, electric power company distribution network automation departments, is also suitable for petrochemical, coal mine, railway and steel industry etc, to power automation departments use.



Features

1. Lightweight portable: the integrated module, weighing 6.8 kg
2. The fastest output (10 ms): by high performance 32 bit CPU, the frequency of 1.2 G
3. Stable fastest (1s): hardware PID, the output of the standard resource without delay, fast response
4. With the strongest load, load regulation rate fast, single phase with resistance sex load 15 VA; with pure capacitive load (0.33 uf)
5. Harmonic supreme: standard device can output 2-63 times higher harmonic
6. Stability, and the best, stability for 0.01% / min; English or Chinese display
7. Two kinds of frequency output: but at the same time points in different frequency voltage output; And amplitude can adjust arbitrarily output
8. Powerful Software, the operation is simple, convenient, three steps can complete verification
9. Debugging far move communication protocols, as many as 20 types, covering domestic all factories statute
10. The fastest verification

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	Single phase AC 85V-265V, 50/60 Hz
Communication port	RS232, USB
AC Voltage output	
Range (U1, U2, U3 phase)	0-140V; (0-264V option)
Adjustment resolution	0.01%, 0.1%, 1%, 10%,
Accuracy	0.05% RG
Stability	0.01% RG/1 min
Distortion degree	Better than 0.1% (not capacitive load)
Load capacity	15VA
Full load regulation rate	0.02% RG

Electrical parameters - continued
AC Voltage output - continued

Full load regulation time	Less than 1mS
Temperature drift	16 PPM/°C
Long-term stability	60 PPM/year

AC Current output

Range (I1, I2, I3 phase)	0-6A
Adjustment resolution	0.01%, 0.1%, 1%, 10%,
Accuracy	0.05% RG
Stability	0.01% RG/1min
Distortion degree	Better than 0.1% (not capacitive load)
Load capacity	15VA
Full load regulation rate	0.02% RG
Full load regulation time	Less than 1mS
Temperature drift	16 PPM/°C
Long-term stability	60 PPM/year

Power output

Active power accuracy	0.05%
Reactive power accuracy	0.1%
Stability	0.01% RG/1min

Phase

Range	0°-359.99°
Adjustment resolution	0.01°, 0.1°, 1°, 10°
Accuracy	0.05°

Power factor

Adjusting range	-1 ~ 0 ~ +1
Resolution	0.0001
Accuracy	0.0005

Frequency

Range	40-65 Hz
Adjustment resolution	0.001 Hz, 0.01 Hz, 0.1 Hz, 1Hz
Accuracy	0.002 Hz
Temperature drift	0.5 PPM/°C
Long-term stability	4 PPM/year

Harmonic content (compared with fundamental wave)

Voltage	≤40%
Current	≤40%
Phase	0°-360°

Electrical parameters - continued

Harmonic

Harmonic times	2-63
Adjustment resolution	0.1% (compared with fundamental wave)

Mechanical parameters

Dimensions (W×D×H) (mm)	300x400x120
Weight (kg)	6.8

Environmental conditions

Working temperature	0°C to 40°C
Storage conditions	-30°C to 60°C
Relative humidity	≤85%



GF101

Program-controlled Single-phase Standard Power Source

It is suitable for power department, measuring department, quality control department, research units, institution of higher learning, electric energy meter, power distribution terminals, power supply management, load control, power quality, reactive power compensation device and production of the enterprise and so on. It can be as single phase voltage source, current source and power source.



Features

1. Setting up and taking the load regulation of voltage, current, phase and frequency of the power factor
2. Amplitude 2nd-128th phase harmonics, and it can be added to the fundamental wave in every harmonic output
3. A wide range output of voltage and current, big power, high stability, small waveform distortion degree
4. Strong load ability, taking capacitive load, sensibility load, resistive load or composite load, load regulation is higher than 0.01%
5. Applying the 32-bit MPU + DSP + FPGA, powerful flexible
6. Using hardware PID, fast response, the change of load will not cause volatility output
7. Power frequency waves reach up to 50000 points a week of the wave kneading, signal output without filter, precise waveform output, precise harmonic output, small harmonic distortion degree
8. Switching range automatically
9. Using software calibration, easy to operate, stable and reliable
10. Big screen, 320 x 240mm LCD display, Chinese or English interface, easy to operate
11. Perfect over-current, over-voltage, heat, shorts-and-opens, overload protection, automatic failure detection;
12. With RS232 interface and PC connection
13. Taking place the machine software, it can be output through PC software of the program

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	Single phase AC 85-265V, 50/60 Hz
AC Voltage output	
Range	57.7V / 100 V / 220V / 380V, Switch automatically (max 500V)
Adjustment resolution	0.01%, 0.1%, 1%, 10%,

Electrical parameters - continued

AC Voltage output

Range	57.7V / 100 V / 220V / 380V, Switch automatically (max
Adjustment resolution	0.01%, 0.1%, 1%, 10%,
Accuracy	0.05% RG
Stability	Better than 0.01% RG/1min
Distortion degree	Better than 0.1% (not capacitive load)
Load capacity	40VA
Full load regulation rate	Less than 0.01% RG
Full load regulation time	Less than 1ms
Temperature drift	8 PPM/°C
Long-term stability	60 PPM/year

AC Current output

Range	0.1A / 0.25A / 0.5A / 1A / 5A / 10A / 20A / 50A / 100A, Switch automatically
Adjustment resolution	0.01%, 0.1%, 1%, 10%,
Accuracy	0.05% RG
Stability	Better than 0.01% RG/1min
Distortion degree	Better than 0.1% (not capacitive load)
Load capacity	40VA
Full load regulation rate	Less than 0.01% RG
Full load regulation time	Less than 1mS
Temperature drift	8 PPM/°C
Long-term stability	60 PPM/year

Power output

Active power accuracy	0.05% or 0.1%
Reactive power accuracy	0.1% or 0.2%
Stability	Better than 0.01% RG/1min

Phase

Range	0°-359.99°
Adjustment resolution	0.01°, 0.1°, 1°, 10°
Accuracy	0.03°

Frequency

Range	40-65 Hz
Adjustment resolution	0.001 Hz, 0.01 Hz, 0.1 Hz, 1Hz
Accuracy	0.002 Hz
Temperature drift	0.5 PPM/°C
Long-term stability	4 PPM/year

Electrical parameters - continued
Harmonic

Harmonic times	2 nd -63 th
Adjustment resolution	0.1% (Compared with fundamental wave)

Harmonic content (Compared with fundamental wave)

Voltage	≤40%
Current	≤40%
Phase	0°-360°

Mechanical parameters

Dimensions (W×D×H) (mm)	420x320x155
Weight (kg)	12

Environmental conditions

Operating temperature	0°C to 40°C
Storage conditions	-30°C to 60°C
Relative humidity	≤85%

Selection guide

NO.	Accuracy	Voltage range	Current Range	Weight
10112001	0.1%	0-500V	0-120A	12KG
101120005	0.05%	0-500V	0-120A	12KG
1011201	0.1%	0-300V	0-12A	8KG
10112005	0.05%	0-300V	0-12A	8KG
101220001	0.1%	0-600V	0-200A	15KG
1012200005	0.05%	0-600V	0-200A	15KG
101D12001	0.1%	0-1000V	0-120A	13KG
101D120005	0.05%	0-1000V	0-120A	13KG



GF6019

DC Standard Power Source/DC Calibrator

It is suitable for electric power corporation measuring and testing center, power company and power plants measuring department, national levels measuring and testing institutions, also suitable for railway, petroleum, chemical industry and large industrial and mining enterprises, etc.



Features

1. Calibrating DC voltmeter, ammeter, power meter and DC transducer
2. Automatic range, used for testing the digital meter; Manual range, used for testing the DC indicator
3. As DC current source, voltage source, DC power source; it can output the standard DC voltage, DC current, DC power
4. 5.6 inch TFT color LCD screen, English display, easy to operate
5. It is built-in indicating meter and DC standard resource verification procedures
6. A wide range, covering for instrument often dosage limit
7. Use software calibration, stable and reliable
8. With RS232 interface, and computer software component semi-automatic verification system, data management, inquiry and print the inspection certificate and the inspection records

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.02%
Power supply	Single phase AC 220V±10% or 110 V±10%, 50/60 Hz
DC Voltage output	
Range	100mV, 300mV, 1V, 3V, 10V, 100V, 300V, 600V, 1000V, (max 1000V)
Adjustment range	(0-120)% RG
Adjustment resolution	0.01% RG, 0.1% RG, 1% RG, 10% RG
Accuracy	0.012% RD + 0.008% RG(≥1V); 0.03% RD + 0.02% RG(< 1V)
Stability	0.005% RG / 1 min(≥1V); 0.01% RG / 1 min(< 1V)
Distortion degree	Better than 0.1% (not capacitive load)
Load Capacity	Max 25VA
Ripple contents	≤1%
Full load regulation rate	Less than 0.01% RG

Electrical parameters - continued
DC Voltage output - continued

Full load regulation time	Less than 10mS
Temperature drift	8 PPM/°C
Long-term stability	60 PPM/year

DC Current output

Range	10uA, 30uA, 100uA, 300uA, 1mA, 3mA, 10 mA, 30mA, 100mA, 300mA, 1A, 3A, 10A, 30A (max 36A)
Adjustment range	(0-120)% RG
Adjustment resolution	0.01% RG, 0.1% RG, 1% RG, 10% RG
Accuracy	0.03% RD+0.02% RG
Stability	0.01% RG/1min
Distortion degree	Better than 0.1% (not capacitive load)
Load Capacity	48VA
Ripple contents	≤1%
Full load regulation rate	Less than 0.01% RG
Full load regulation time	Less than 10mS
Temperature drift	8 PPM/°C
Long-term stability	60 PPM/year

DC Power output

Accuracy	0.05%
Stability	0.01% RG / 1 min

Mechanical parameters

Dimensions (W×D×H) (mm)	440x360x160
Weight (kg)	12

Environmental conditions

Operating temperature	0°C to 40°C
Storage conditions	-30°C to 60°C
Relative humidity	≤85%

GF333B

Three Phase Reference Standard Meter

GF333B is a portable reference standard meter used to test three phase meters and single phase meters, it designed to work both in the field and in the laboratory.



Features

1. High accuracy up to 0.05%
2. Wide testing range: voltage 5V-480V, current 1mA-120A
3. Testing type: 3 phase 4 wire, 3 phase 3 wire
4. Testing mode: active power, reactive power, apparent power
5. Harmonic analysis function
6. Waveform display function
7. Vector diagram function
8. Energy accumulating function
9. Internal pulse input port, testing meter's error directly



Parameters

Electrical parameters	
Accuracy	0.05%
Voltage supply	220V±10% or 110V±10%, 50/60Hz
Voltage measurement	
Range	5V-480V
Error	±0.02% (50V-480V), ±0.05% (5V-50V)
Display range	5.000000V-480.0000V
Harmonic	2 nd -63 st
Current measurement	
Range	1mA-120A
Error	±0.02% (0.2A-120A), ±0.05% (1mA-0.2A)
Display range	1.000000mA-120.0000A
Power measurement	
Active power	±0.02% (0.2A-120A) ±0.05% (0.01A-0.2A) ±0.1% (0.001A-0.01A)
Reactive power	±0.05% (0.2A-120A), ±0.1% (0.001A-0.2A)
Apparent power	±0.05% (0.2A-120A), ±0.1% (0.001A-0.2A)

Electrical parameters - continued
Energy error

Active energy	±0.02% (0.2A-120A) ±0.05% (0.01A-0.2A) ±0.1% (0.001A-0.01A)
Reactive energy	±0.05% (0.2A-120A), ±0.1% (0.001A-0.2A)
Apparent energy	±0.05% (0.2A-120A), ±0.1% (0.001A-0.2A)

Phase measurement

Range	0°-360°
Error	±0.005°
Display range	0.0001°-359.99°

Frequency measurement

Range	45-65Hz
Display range	45.0000-65.0000
Accuracy	0.002Hz

Power Factor measurement

Range	-1.0 ~ 0 ~ +1.0
Resolution	0.0001
Accuracy	0.0005

Energy pulse

High frequency output(CH)	12000Hz
Low frequency output(CL)	5000Hz
Pulse ratio	1:1
Output level	5V
Input level	5V
Input frequency	Max. 1MHz

Mechanical parameters

Dimensions (W×H×D) (mm)	480×138×486
Weight (kg)	10

Environmental conditions

Ambient temperature	-10°C to 45°C
Influence of external fields	≤0.05 %/mT
Relative humidity	10%-80%

GF312B2

Portable Three Phase Standard Meter

GF312B2 portable three phase standard reference meter high accuracy 0.02%. It can be applied in following area:

Electric power department

Measuring and quality examining department

Electrical lab



Features

1. High accuracy up to 0.02%
2. Metal body, strong and reliable
3. DSP+32 bit ARM technology
4. Measurement 2~51 times harmonics
5. Waveform display function
6. Vector diagram function
7. Energy accumulating function
8. 7 inch TFT color LCD
9. Suit for testing in the field or in the lab

Parameters

Electrical parameters	
Accuracy class	0.02% , 0.05%
Power supply	85-450V, 50/60Hz±2Hz
Power consumption	13VA
Communication port	RS232, USB
Voltage measurement	
Range	30-560V
Resolution	0.001V
Error	±0.02% (30V-560V) ±0.05% (5V-30V)
Harmonic	2 nd -51 st
Current measurement	
Range (direct connection)	20mA-120A
Resolution	0.1mA
Error (direct connection)	±0.02% (100mA-120A) ±0.05% (20mA-100mA)

Electrical parameters - continued
Current measurement - continued

Harmonic	2 nd -51 st
Clamp on CT(option)	5A,20A, 100A
Accuracy	0.20%

Power measure error

Active power (direct connection)	±0.02% (0.1A-120A)
Reactive power (direct connection)	±0.05% (0.1A-120A)

Energy measure error

Active energy (direct connection)	±0.02% (0.1A-120A) ±0.05% (0.02A-0.1A)
Reactive energy (direct connection)	±0.05% (0.1A-120A)

Phase angle

Range	0°-360°
Resolution	0.005°
Error	±0.02°

Frequency

Range	45-65Hz
Resolution	0.001Hz
Error	0.002Hz

Power factor

Range	-1.0 ~ 0 ~ +1.0
Resolution	0.0001
Error	0.0005

Pulse output

Energy constant	1-250000
Pulse ratio	1:1
Output level	5V

Pulse input

Input channel	1
Input level	5-24V
Input frequency	Max. 2MHz

Display

Color LCD	7"STN (800×480)
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Mechanical parameters

Dimensions (W×H×D) (mm)	365×269×151
Weight (kg)	4

Environmental conditions

Ambient temperature	-10°C to 40°C
Relative humidity	30%-80%

GF333V2

Three Phase Multifunction Reference Standard Meter

GF333V2 meter is a reference standard with the characteristics of wide-range, multifunction and high-precision. It has accuracy class of 0.02. By adopting techniques of DSP, embedded system and automatic temperature balancing and other compensation, it has not only advantages of light weight, small size, high precision, high performance, powerful function, original interface, ease-to-use, but also work stability.

The product can be widely used in fields of electric energy measuring, electric energy laboratories and other relevant industry, not only in laboratories but also at the industrial field.



Features

1. High accuracy class up to 0.02%
2. High stability, high reliability
3. Measuring 2nd~51st harmonics
4. Metal structure, strong and reliable
5. Waveform display function
6. Vector diagram function
7. Energy accumulating function
8. Suit for testing in the lab
9. As a three phase reference standard

Parameters

Electrical parameters	
Accuracy class	0.02%, 0.05%
Power supply	220V±10% or 110V±10%, 50/60Hz
Power consumption	30VA
Test Voltage	
Range	40-560V
Error	±0.02% (40V-560V) ±0.05% (5V-40V)
Harmonic	2 nd -51 st

Electrical parameters - continued
Current measurement

Range (direct connection)	10mA-120A
Error (direct connection)	±0.02% (100mA-120A) ±0.05% (10mA-100mA)
Harmonic	2 nd -51 st

Power measurement error

Active power	±0.02% (0.1A-120A) ±0.05% (0.02A-0.1A)
Reactive power	±0.05% (0.1A-120A)

Energy measurement error

Active energy	±0.02% (0.1A-120A) ±0.05% (0.02A-0.1A)
Reactive energy	±0.05% (0.1A-120A)

Phase angle

Range	0°-360°
Resolution	0.005°
Error	±0.02°

Frequency

Range	40-70Hz
Resolution	0.001
Error	±0.002

Pulse output

Energy constant	1-9999999
Pulse ratio	1:1
Output level	5V

Pulse input

Input channel	1
Input level	5-24V
Input frequency	Max. 2MHz

Display

Resolution	6.4" inch 640x480 pixel TFT
Communication port	RS232, USB

Mechanical parameters

Dimensions (W×H×D) (mm)	355×185×145
Weight (kg)	7.5

Environmental conditions

Ambient temperature	10°C to 40°C
Relative humidity	20%-85%

GF333

Multi-function Standard Meter

GF333 can be used as a calibration device standard meter, also as a testing calibrator in measurement test center of grid corporation, power company and measurement department in power plant, national levels of measurement mechanism, quality inspection departments, research institutes, tertiary institutions, industrial and mining enterprises, electric energy meter and electrical instrument production enterprises etc.



Features

1. Measure the AC voltage, current, active power, reactive power, frequency, phase angle and power factor etc
2. Measure the AC voltage, current 2~31 harmonic content and waveform distortion degree
3. Measure active power energy error, reactive power energy error, the maximum output pulse frequency is to 2 MHz
4. Measure calibration device of voltage, current, power stability
5. Measure calibration device the standard deviation of estimate
6. Measure the voltage of the calibration device three-phase symmetric degrees, the current of three three-phase symmetric degree
7. Measure calibration device of the magnetic induction
8. Measure DC voltage and DC current
9. Transducer measurement
10. With RS232 interface, it can be controlled by PC operation
11. Core part uses the 32 bit DSP and 16 bit low power and high speed DAC consists of high accuracy AC collector
12. Using 6.5 inch TFT color LCD screen, character display clear chart. Have the advantages of wide measuring range, high precision, stable and reliable operation, simple operation etc

Parameters

Electrical parameters	
Accuracy class	0.02%, 0.05%
Power supply	AC 220 V±10% or 110 V±10%, 50/60Hz
Power consumption	< 30VA
Warming-up time	< 30min

Electrical parameters - continued
Voltage measurement

U1, U2, U3	6.25V, 12.5V, 25V, 50V, 100V, 200V, 400V, 800V (switch automatically), max 1000V
Range	(0-120%)RG
Resolution	0.01%RG
Accuracy	0.02%RD or 0.05%RD

Current measurement

I1, I2, I3	0.25, 0.5, 1, 2.5, 5, 10, 25, 50, 100A(switch automatically)
Range	(0-120%)RG
Resolution	0.01%RG
Accuracy	0.02%RD or 0.05%RD

Power measurement

Active accuracy	0.02%RD or 0.05%RD
Reactive accuracy	0.05%RD or 0.1%RD
Apparent accuracy	0.02%RD or 0.05%RD

Energy measurement

Active accuracy	0.02%RD or 0.05%RD
Reactive accuracy	0.05%RD or 0.1%RD

Phase measurement

Range	0.00°-359.99°
Resolution	0.001°
Accuracy	0.02° (voltage ≥50V and current ≥250mA)

Frequency measurement

Range	45-65Hz
Resolution	0.001Hz
Accuracy	0.002Hz

Power Factor measurement

Range	-1.0 ~ 0 ~ +1.0
Resolution	0.0001
Accuracy	0.0005

Electric energy pulse output

Pulse constant range	1-2880000000
Output frequency of max. pulse	600 kHz
Load capacity	>2mA
Default pulse output frequency	10kHz-600kHz

Energy pulse Input

Input range of pulse constant	600-700000
Setting range of test pulse	1-999999999

Electrical parameters - continued

Energy pulse Input - continued

Max. pulse receiving frequency	2MHz
Pulse input level	5V

Voltage/current harmonics measurement

Times	2-31
Error	0.05%
Distortion degree error	0.05%

Transducer measurement

DC voltage range	±1, ±5, ±10, ±20 V
Accuracy	0.01%
DC current range	±1, ±2.5, ±5, ±10, ±20mA
Accuracy	0.01%
Ripple error	1%

DC measurements (option)

DC voltage	50V, 100V, 200V, 400V, 800V (switch automatically), max 1000V
Range	(0 -120%) RG
Resolution	0.01% RG
Accuracy	0.02% RD
DC current	0.1A, 0.3A, 1A, 3A, 10A, 30 A (switch automatically)
Range	(0-120%) RG
Resolution	0.01% RG
Accuracy	0.02% RD

Mechanical parameters

Dimensions (W×H×D) (mm)	440×360×160
Weight (kg)	10

Environmental conditions

Operating temperature	10°C to 30°C
Relative humidity	≤85%

GF302D

Portable Three Phase kWh Meter Test Equipment

The test equipment is used for grid corporation of measurement and energy test center, management department of power supply bureau, national energy measurement of testing authorities, and also used to test each kind of single/three phase kWh meter of industries and mining enterprises as well as electric meter manufacturers. Meanwhile, the calibrator also can be used as one high precision standard power source.



Features

1. Able to test basic error, shunt running, start, standard error automatically and manually in single-step of single/three phase, according to relative regulation of kWh meter.
2. Able to do change test caused by voltage influence, frequency influence and harmonic influence.
3. Output of power source is speedy and stable, AC maximum output of each phase can reach 120A in maximum.
4. Voltage, current and phase position of each phase can be adjusted in split-phase, improving the flexibility of power source.
5. Frequency of each impulse input port can reach 40Hz.
6. 7-inch TFT color display touch screen, English menu, simple and convenient operation, commonly used functions and current basic load point can be controlled in one button.
7. Each meter position can provide one standard, dependent RS485 port, and able to do multi-function test such as communication test.
8. Impulse port of each meter position, external polarity can be set randomly, able to adapt kWh meter of impulse cascade and common-anode.

Parameters

Electrical parameters	
Accuracy	0.05%, 0.1%
Power Supply	One Phase AC 180-265V, frequency 50/60Hz.
AC Voltage Output	
Range(U1,U2,U3)	57.7V, 100V, 220V, 380V or 69.3V, 120V, 240V, 480V(optional)
Adjustment range	(0-120)%RG ⁽¹⁾
Adjustment fineness	0.01%RG, 0.1%RG, 1%RG, 10%RG as optional.

(1) RG means range, the same as below

Electrical parameters - continued

AC Voltage Output - continued

Stability	0.01%/120s
Distortion	0.3% (Non-capacitive load)
Output load	each phase 25VA
Measuring accuracy	0.05%RG

AC Current Output

Range(I1,I2,I3)	200mA, 1A, 5A, 20A, 100A
Adjustment range	(0-120)%RG
Adjustment fineness	0.01%RG, 0.1%RG, 1%RG, 10%RG as optional.
Stability	<0.01%/120s
Distortion	≤0.3% (Non-capacitive load)
Output load	45VA
Accuracy	0.05%RG

Power Output

Active power output stability	<0.01%RG/120s
Reactive power output stability	<0.02%RG/120s
Active power measuring accuracy	0.05%RG
Reactive power measuring accuracy	0.1%RG

Phase Output

Output adjustment range	0°-359.999°
Output adjustment fineness	10, 1, 0.1, 0.01 as optional.
Resolution	0.01°
Accuracy	0.05°

Power Factor

Adjustment range	-1 ~ 0 ~ 1
Resolution	0.0001
Measurement accuracy	0.0005

Frequency Output

Adjustment range	45Hz-65Hz
Output adjustment fineness	5Hz, 1Hz, 0.1Hz, 0.01Hz as optional.
Resolution	0.001Hz
Accuracy	0.005Hz

Voltage /Current/Harmonic Setting

Harmonic number	2-51times
Harmonic content	0-40%
Harmonic phase	0-359.99
Harmonic setting accuracy	(10%±0.1%)RD ⁽²⁾

(2) RD means the settled harmonic content, harmonic can be a single output, also multiple output.

Electrical parameters - continued

Power Energy Measurement Error

Active power energy	0.05%RG
Reactive power energy	0.1%RG

Power Pulse Output

Power pulse type	Active pulse, reactive pulse
Active power pulse output	5V, 10mA

Power Pulse Input

Energy pulse type	Support active and reactive pulse, the highest frequency power pulse input is 180K.
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Mechanical parameters

Dimensions (W×D×H) (mm)	500x600x175
Weight (kg)	About 27

Selection guide

NO.	Accuracy	Voltage range	Current Range	Weight
302D12001	0.1%	0-500V	0-120A	22KG
302D12005	0.05%	0-500V	0-120A	22KG
302D2401	0.1%	0-500V	0-24A	16KG
302D2405	0.05%	0-500V	0-24A	16KG
302D1201	0.1%	0-500V	0-12A	15KG
302D1205	0.05%	0-500V	0-12A	15KG



GF302D1

Three Phase Portable Energy Meter Test System

The GF302D1 three phase portable energy meter test system consists of an integrated three phase current and voltage source (up to 500V/120A or 500V/20A) and built-in three-phase electronic reference standard of accuracy class 0.05%. Characteristic features of the GF302D1 are its wide measuring range, high accuracy and high tolerance to unwanted external influences. The equipment offers high functionality combined with an excellent menu guided operation via built-in keyboards and colored 7" touch LCD-display.



Features

1. Accuracy class 0.05
2. 0-20A/0-500V, 0-120A/0-500V
3. Start testing and creep testing
4. Reference standard and power source integrated
5. Test by automatic or manual
6. 7 inch TFT touch screen
7. Weight light 15Kg
8. Recorder 500 sets energy meter data
9. Overload, short circuit, open circuit protection

Functions

1. Testing all kinds of energy meter in 1P2W, 1P3W, 3P3W, 3P4W
2. Measuring mechanical meter and electric meter
3. Power and energy measurements for active, reactive and apparent power
4. Measuring frequency, phase shift and power factor
5. Harmonic spectrum analysis for voltage and current up to the 51th order
6. Measuring the distortion factor
7. Vector diagram display and phase sequence indication on integrated colored screen
8. Energy dosing with built-in current source and voltage source
9. User friendly menu guided operation
10. Especially configured USB stick for storage of customer data
11. Easy verification and analysis of meter installations
12. Automatic operation without need of an external PC

Parameters

Electrical parameters	
Accuracy	0.05%, 0.1%
Power Supply	One Phase AC 100-265V, frequency 50/60Hz.
AC Voltage Output	
Range(U1,U2,U3)	57.7V, 100V, 220V, 380V or 69.3V, 120V, 240V, 480V(optional)
Adjustment range	(0-120)%RG ⁽¹⁾
Adjustment fineness	0.01%RG, 0.1%RG, 1%RG, 10%RG as optional.
Stability	0.01%/120s
Distortion	0.3% (Non-capacitive load)
Output load	each phase 30VA
Measuring accuracy	0.05%RG
AC Current Output	
Range(I1,I2,I3)	200mA, 1A, 5A, 20A, 100A(optional)
Adjustment range	(0-120)%RG
Adjustment fineness	0.01%RG, 0.1%RG, 1%RG, 10%RG as optional.
Stability	<0.01%/120s
Distortion	≤0.3% (Non-capacitive load)
Output load	30VA
Accuracy	0.05%RG
Power Output	
Active power output stability	<0.01%RG/120s
Reactive power output stability	<0.02%RG/120s
Active power measuring accuracy	0.05%RG
Reactive power measuring accuracy	0.1%RG
Phase Output	
Output adjustment range	0°-359.999°
Output adjustment fineness	10, 1, 0.1, 0.01 as optional.
Resolution	0.01°
Accuracy	0.03°
Power Factor	
Adjustment range	-1 ~ 0 ~ 1
Resolution	0.0001
Measurement accuracy	0.0005

Electrical parameters-continued	
Frequency Output	
Adjustment range	40Hz-70Hz
Output adjustment fineness	5Hz, 1Hz, 0.1Hz, 0.01Hz as optional.
Resolution	0.001Hz
Accuracy	0.005Hz
Voltage /Current/Harmonic Setting	
Harmonic number	2-51times
Harmonic content	0-40%
Harmonic phase	0-359.99
Harmonic setting accuracy	(10%±0.1%)RD ⁽²⁾
Power Energy Measurement Error	
Active power energy	0.05%RG
Reactive power energy	0.1%RG
Power Pulse Output	
Power pulse type	active pulse, reactive pulse
Active power pulse output	5V, 10mA
Power Pulse Input	
Energy pulse type	support active and reactive pulse, the highest frequency power pulse input is 180K.
Mechanical parameters	
Dimensions (W×D×H) (mm)	495x390x195
Weight (kg)	15
Environmental conditions	
Ambient temperature	-10°C to +50°C
Relative humidity	35%-85%
(1) RG means range, the same as below;	
(2) RD means the setted harmonic content, harmonic can be a single output, also multiple output.	

Selection guide

NO.	Accuracy	Voltage range	Current Range	Weight
302D112001	0.1%	0-500V	0-120A	22KG
302D112005	0.05%	0-500V	0-120A	22KG
302D12401	0.1%	0-500V	0-24A	16KG
302D12405	0.05%	0-500V	0-24A	16KG
302D11201	0.1%	0-500V	0-12A	15KG
302D11205	0.05%	0-500V	0-12A	15KG

GF312V2

Portable Multifunction Energy Meter Calibrator

GF312V2 portable three phase multifunction energy meter calibrator is with comfort design, small size, and light weight. It is suit for electric power departments, measuring and quality examining departments and electric lab to field use.



Features

1. High accuracy 0.05%
2. Screen capture function
3. Input two pulse signal for master and slave meter synchronously calibration
4. Large size display screen, direct viewing and convenient
5. Internal communication port for PC control
6. Multiple power supply for different testing occasion
7. Large capacity storage device for mass memory

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power Supply	External power, 220V/110V, 50/60Hz Phase voltage supply 45-450V, 50/60Hz Li-Battery supply
Test Voltage	
Range	30-560V
Error	±0.05%
Harmonic	2 nd -51 st
Test Current	
Range (direct connection)	0.01-10A
Range (clamp CT)	5A,100A,500A,1000A,2000A (option)
Error (direct connection)	±0.05%
Error (clamp CT)	±0.2% (5A, 100A) ±0.5% (other)
Harmonic	2 nd -51 st

Electrical parameters-continued

Power measure error

Active power (direct connection)	±0.05%
Active power (clamp CT)	±0.2% (5A, 100A) ±0.5% (other)
Reactive power (direct connection)	±0.1%
Reactive power (clamp CT)	±0.2% (5A, 100A) ±0.5% (other)

Energy measure error

Active energy (direct connection)	±0.05%
Active energy (clamp CT)	±0.2% (5A, 100A) ±0.5% (other)
Reactive energy (direct connection)	±0.1%
Reactive energy (clamp CT)	±0.2% (5A, 100A) ±0.5% (other)

Phase angle

Range	0°-360°
Resolution	0.01°
Error	±0.05°

Frequency

Range	45Hz-65Hz
Resolution	0.001Hz
Error	0.002Hz

Pulse output

Energy constant	25000
Pulse ratio	1:1
Output level	5V

Pulse input

Input channel	2
Input level	5-10V
Input frequency	Max. 100Hz

Display

Resolution	7" TFT color (480×234)
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Function

Vector diagram	Yes
Waveform	Yes
Energy accumulation	Yes
CT ratio test	Yes
Local parameter input	Yes

Electrical parameters-continued

Function-continued

Wiring emulation	Yes
Self-calibration	Yes
Recorder check	Yes
Data storage	Yes
Data storage qty	5000
External extend memory	Yes
Screen printing	Yes
Communication port	USB/RS232
Communication with PC	Yes
Upload data	Yes
External mini printer	Yes
External keyboard	Yes

Mechanical parameters

Dimensions (W×H×D) (mm)	245×168×70
Weight (kg)	1.8

Environmental conditions

Ambient temperature	-25°C to +45°C
Relative humidity	30%-95%



GF312D1

ENERGY METER CALIBRATION



GF312D1

Three Phase Energy Meter Calibrator

The instrument is a precision AC energy meter testing instrument, mainly used to test three phase energy meter error on site and measure all various of AC parameters.

Features

1. Three phase active or reactive electricity energy meter
2. Calibrate three phase, single phase, and active or reactive meter error
3. Measure U(voltage) of three phase or single phase
4. Measure I(current) of three phase or single phase
5. Measure active power of three phase or single phase
6. Measure reactive power of three phase or single phase
7. Measure apparent power of three phase or single phase
8. Measure power factor of three phase or single phase
9. Measure phase angle between voltage and current
10. Measure frequency of power line
11. Display vector diagram
12. Display waveform of U and I
13. Analyze and display content of harmonic of U and I
14. Measure 2-64 harmonic of U, I
15. Store and display measured data
16. Optional 5A, 20A, 100A, 500A, 1000A, 2000A, 3000A current clamp
17. Measure CT variable ratio
18. Measure the ratio or lag-angle of low-voltage transformer
19. Adopt 32 bit ARM processor, multi-channel 16 bit precision A/D convertor, high resolution TFT color LCD
20. Inner equipped with 0.01% wide-range current transformer and can be equipped with various type current clamps, wide range of measurement and high veracity
21. Low consumption circuit design, high energy Li batter supply, intellectual power management software, which make the instrument can continuously work up to 10 hours



Parameters

Electrical parameters

Accuracy class	0.05%, 0.1%
Resolution	6" TFT (640×480)

Electrical parameters - continued

Power supply	220V±10%, 50/60Hz Li-polymer battery (size (mm): 110x51x16, nominal output voltage: 7.2V, capacity: 5000mAh) Power line supply (U1, UN), 85V-265V 50/60Hz
Communication port	RS232
Test voltage	
Range	0-480V
Error	±0.05% (30V-480V) ±0.1% (5V-30V)
Harmonic	2 nd -64 st
Test current	
Range (direct connection)	5mA-20A
Error (direct connection)	±0.05% (100mA-20A) ±0.1% (10mA-100mA)
Range (clamp CT)	10mA-3000A
Error (camp CT)	±0.2% (100mA-100A) ±0.5% (100A-3000A)
Harmonic	2 nd -64 st
Power measure error	
Active power (direct connection)	±0.05% (0.1A-20A) ±0.1% (0.01A-0.1A)
Reactive power (direct connection)	±0.1% (0.1A-20A)
Energy measure error	
Active energy (direct connection)	±0.05% (0.1A-20A) ±0.1% (0.01A-0.1A)
Reactive energy (direct connection)	±0.1% (0.1A-20A)
Phase angle	
Range	0°-360°
Resolution	0.01°
Error	±0.05°
Frequency	
Range	45-65Hz
Resolution	0.001Hz
Error	0.002Hz
Pulse input	
Input channel	2
Input level	5-24V
Input frequency	Max. 2MHz

GF312D1

ENERGY METER CALIBRATION



Electrical parameters - continued

Pulse output

Energy constant	180000imp/kWh, 1800imp/kWh, 180imp/kWh
Pulse ratio	1:1
Output level	5V

Function

Vector diagram	Yes
Waveform	Yes
Energy accumulation	Yes
Communication with PC	Yes

Mechanical parameters

Instrument dimensions (W×H×D) (mm)	245×162×60
Instrument Weight (kg)	1.8
Carry case dimensions (W×H×D) (mm)	450×320×185
Carry case (kg)	10.6

Environmental conditions

Ambient temperature	-10°C to 55°C
Relative humidity	15%-85%



GF312B

Portable Three Phase Energy Meter Calibrator with Printer

GF312B portable three phase energy meter calibrator with printer is used to calibrate three phase, single phase, active and reactive energy meters. And it also can be used as voltage, current and power meter to measure AC parameters of three phase power line. It can measure wave distortion factor and 2nd to 63th harmonic wave.



Features

1. Three phase active or reactive electricity energy meter;
2. Calibrate three phase, single phase, active or reactive meter error;
3. Measure U(voltage) of three phase or single phase;
4. Measure I(current) of three phase or single phase;
5. Measure active power of three phase or single phase;
6. Measure reactive power of three phase or single phase;
7. Measure apparent power of three phase or single phase;
8. Measure power factor of three phase or single phase;
9. Measure phase angle between voltage and current;
10. Measure frequency of power line;
11. Display vector diagram;
12. Display waveform of U and I;
13. Analyze and display content of harmonic of U and I;
14. Store and look measured data;
15. Optional 5A, 20A, 100A, 500A, 1000A, 2000A , 3000A current clamp;
16. Measure CT variable ratio;
17. Print the data of measurement on site.



Parameters

Electrical parameters	
Accuracy class	0.05, 0.1%, 0.2%
Power supply	220V ± 10% or 110V ± 10%, 50/60Hz ± 2Hz
Test Voltage	
Range	0V-600V

Electrical parameters - continued

Test Voltage - continued

Error	±0.05% (30V-600V) ±0.1% (5V-30V)
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Harmonic	2 nd -63 st
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Test Current

Range (direct connection)	20mA-20A
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Error (direct connection)	±0.05% (100mA-20A) ±0.1% (20mA-100mA)
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Range (Clamp CT)	10mA-3000A
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Error (Clamp CT)	±0.2% (100mA-3000A) ±0.5% (10mA-100mA)
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Harmonic	2 nd -63 st
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Power measure error

Active power (direct connection)	±0.05% (0.1A-20A) ±0.1% (0.02A-0.1A)
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Reactive power (direct connection)	±0.1% (0.1A-20A)
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Energy measure error

Active energy (direct connection)	±0.05% (0.1A-20A) ±0.1% (0.02A-0.1A)
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Reactive energy (direct connection)	±0.1% (0.1A-20A)
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Phase angle

Range	0° ~ 360°
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Resolution	0.01°
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Error	±0.05°
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Frequency

Range	45Hz-65Hz
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Resolution	0.001Hz
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Accuracy	0.005Hz
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Power factor

Range	-1 ~ 0 ~ 1
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Resolution	0.0001
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Error	0.0005
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Pulse output

Energy constant	180000imp/kWh, 1800imp/kWh, 18imp/kWh
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Pulse ratio	1:1
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Output level	5V
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Electrical parameters - continued
Pulse input

Input channel	1
Input level	5-24V
Input frequency	Max. 2MHz

Display

Resolution	6" TFT (640×480)
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Function

Vector diagram	Yes
Waveform	Yes
Energy accumulation	Yes
Communication port	RS232
Communication with PC	Yes

Mechanical parameters

Dimensions (W×H×D) (mm)	390×200×160
Host Weight (mm)	3
Weight (including Accessories 3pcs 100A clamp CT) (kg)	12

Environmental conditions

Ambient temperature	-10°C to 40°C
Relative humidity	30%-85%

GF102

Portable Single Phase Energy Meter Testing Bench

GF102 portable single phase energy meter testing bench used to test single phase energy meter. Adopt mature signal synthetic and power amplifier technology, high precision voltage and current output. Widely used in lab and field, and then as single phase standard source.



Features

1. Meter under testing: 1P2W.
2. Testing mode: active power, reactive power.
3. Test 3pcs or 2pcs meter synchronously.
4. Start testing and creep testing.
5. Reference standard and power source integrated, easy to carry.
6. Measuring mechanical meter and electric meter.
7. Operating by manual keyboard or PC software.
8. With keyboard shortcuts.
9. Internal large capacity storage device for mass memory.
10. Local checking the testing result.
11. Overload, short circuit, open circuit protection.
12. With self-checking function.

Parameters

Electrical parameters	
Accuracy class	0.1%, 0.2%
Power supply	220V±10% 50/60Hz±2Hz
Voltage	
Voltage output	0-300V
Power of the voltage output	Max. 30VA, 15VA
Resolution	0.01%
Accuracy	0.1%, 0.2%
Stability	0.02%/120s, 0.05%/120s
Distortion factor	<0.3% for linear resistance load

Electrical parameters - continued

Current

Current output	1mA-100A, 1mA-60A
Power of the current output	Max. 100VA, 30VA
Resolution	0.01%
Accuracy	0.1%, 0.2%
Stability	0.02%/120s
Distortion factor	<0.3% for linear resistance load

Phase angle

Range	0°-360°
Resolution	0.1°
Accuracy	0.2°

Frequency

Range	45-70Hz
Resolution	0.005Hz
Accuracy	0.01Hz

Pulse output

High frequency output(C _H)	36000
Low frequency output(C _L)	360

Pulse input

Input channel	3 or 2
Input frequency	Max. 100KHz

Mechanical parameters

Dimensions (W×D×H) (mm)	445X440X180 (three meter positions) 410X220X150 (two meter positions)
Weight (kg)	18 (three meter positions) 15 (two meter positions)

Environmental conditions

Ambient temperature	-10°C to +40°C
Relative humidity	35%-85%



GF1021

Portable Single Phase Energy Meter Test System

GF1021 portable single phase energy meter test system used to test single phase energy meter. Adopt mature signal synthetic and power amplifier technology, high precision voltage source and current source output. Widely used in lab and field, and then as single phase standard source.

Features

1. Accuracy class 0.05
2. 0-120A, 0-500V
3. Test 3pcs or 2pcs meter synchronously
4. Start testing and creep testing
5. Reference standard and power source integrated
6. Test by automatic or manual
7. 7 inch TFT touch screen
8. Weight light 8Kg
9. Recorder 500 sets energy meter data
10. Overload, short circuit, open circuit protection



Functions

1. Testing meter installations in 1P2W
2. Measuring mechanical meter and electric meter
3. Power and energy measurements for active, reactive and apparent power
4. Measuring frequency, phase shift and power factor
5. Harmonic spectrum analysis for voltage and current up to 7. the 51th order
6. Measuring the distortion factor
7. Vector representation of the measuring values
8. Energy dosing with built-in current source and voltage source

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power Supply	One Phase AC 85-265V, frequency 50/60Hz.
AC Voltage Output	
Range	57.7V, 100V, 220V, 380V; max 500V
Adjustment range	(0-120)%RG ⁽¹⁾
Adjustment fineness	0.01%RG, 0.1%RG, 1%RG, 10%RG as optional.
Stability	0.01%/120s
Distortion	0.1% (Non-capacitive load)
Output load	max 30VA
Measuring accuracy	0.05%RG
AC Current Output	
Range	200mA, 1A, 5A, 20A, 100A; max 120A
Adjustment range	(0-120)%RG
Adjustment fineness	0.01%RG, 0.1%RG, 1%RG, 10%RG as optional.
Stability	<0.01%/120s
Distortion	≤0.1% (Non-capacitive load)
Output load	max 50VA
Accuracy	0.05%RG
Power Output	
Active power output stability	<0.01%RG/120s
Reactive power output stability	<0.02%RG/120s
Active power measuring accuracy	0.05%RG
Reactive power measuring accuracy	0.1%RG
Phase Output	
Output adjustment range	0°-359.999°
Output adjustment fineness	10, 1, 0.1, 0.01 as optional.
Resolution	0.01°
Accuracy	0.03°
Power Factor	
Adjustment range	-1 ~ 0 ~ 1
Resolution	0.0001
Measurement accuracy	0.0005
Frequency Output	
Adjustment range	40Hz-70Hz
Output adjustment fineness	5Hz, 1Hz, 0.1Hz, 0.01Hz as optional.
Resolution	0.001Hz
Accuracy	0.005Hz

Electrical parameters-continued

Voltage /Current/Harmonic Setting

Harmonic number	2-51times
Harmonic content	0-40%
Harmonic phase	0-359.99
Harmonic setting accuracy	(10%±0.1%)RD ⁽²⁾

Power Energy Measurement Error

Active power energy	0.05%RG
Reactive power energy	0.1%RG

Power Pulse Output

Power pulse type	active pulse, reactive pulse
Active power pulse output	5V, 10mA

Power Pulse Input

Energy pulse type	support active and reactive pulse, the highest frequency power pulse input is 180K.
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Mechanical parameters

Dimensions (W×D×H) (mm)	325×275×135
Weight (kg)	8

Environmental conditions

Ambient temperature	-10°C to +50°C
Relative humidity	35%-85%

(1) RG means range, the same as below;

(2) RD means the setted harmonic content, harmonic can be a single output, also multiple output.

Selection guide

NO.	Accuracy	Voltage range	Current Range	Weight
102112001	0.10%	0-500V	0-120A	12KG
1021120005	0.05%	0-500V	0-120A	12KG
10216001	0.10%	0-500V	0-60A	10KG
102160005	0.05%	0-500V	0-60A	10KG
10212401	0.10%	0-300V	0-24A	8KG
102124005	0.05%	0-300V	0-24A	8KG
10211201	0.10%	0-300V	0-12A	6.5KG
102112005	0.05%	0-300V	0-12A	6.5KG

GF112B

Single-Phase kWh Meter Calibrator

GF112B Single-Phase kWh Meter Calibrator is suitable to test various types single phase meters on site and also can be used to test alternating current parameters.



Features

1. It combine the current clamp and the meter together, displayed by colorful and touch-screen
2. The AAA Li-battery can work 4 hours continuously
3. It can display all the measuring parameters in one screen
4. With wide voltage measuring range 15-300V and current measuring range 0.005-120A
5. The current clamp has automatic compensation and calibration function with accuracy class 0.2%
6. The meter and clamp have Integration design
7. 16 bit high accuracy AD switch 32 bit ARM processor core
8. Automatically record and save 999 groups calibrate data
9. Micro-multifunction optic sample
10. Manually/automatically test inductive single phase meters
11. Manually/automatically test electric single phase meters
12. It can measure virtual value of alternating voltage
13. It can measure virtual value of alternating current
14. Testing parameters: active power, phase angle of voltage/current and frequency etc
15. Automatically store testing data, it can save 999 group test results

Parameters

Electrical parameters	
Accuracy class	0.2%
Active power measurement accuracy	0.2%, 0.5%
Energy measurement accuracy	0.2%, 0.5%
Power supply	AAA type, Li rechargeable battery, 750mAh, 3.6V It can work 8 hours continuously
Warming-up time	< 5 min
Voltage measurement	
U Range	15-300V
Accuracy	0.20%

Electrical parameters - continued

Current measurement

I Range	5mA-120A
Accuracy	0.2%

Phase measurement

Range	0.00°-359.99°
Resolution	0.01°
Accuracy	0.05°

Frequency measurement

Range	45-65Hz
Resolution	0.001Hz
Accuracy	0.005Hz

Power Factor Measurement

Range	-1 ~ 0 ~ 1
Resolution	0.001
Accuracy	0.005

Energy pulse output

Pulse constant	25000
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Energy Pulse Input

Input range of pulse constant	1-25000
Pulse input level	5V

Mechanical parameters

Dimensions (W×D×H) (mm)	215×60×30 Aperture of current clamp: 20mm
Weight (kg)	0.25 (mains) 0.8 (accessory and box)

Environmental conditions

Working temperature	-10°C to 55°C
Working humidity	5%-85%RHD
Storage temperature	-25°C to 70°C
Storage humidity	5%-95%RHD



GF112

Handheld Single Phase Standard Meter

GF112 portable single phase standard meter is with human oriented design, hand-held and lightweight. It is suit for electric power departments, measuring and quality examining departments and electric lab to field use. It is capable of testing various types single phase meters on site and can also be used for testing alternating current parameters.



Features

1. Field test kinds of inductive, electronic single phase meter
2. Measurement error, voltage, current, power, power factor and frequency at site
3. LCD color display, English menu, direct viewing and convenient
4. Equip with RS232 to connect with PC
5. With built-in 5A load
6. Energy accumulation function
7. Large capacity storage device for mass memory
8. With 2pcs clamp CT to test ratio of current transformer (option)

Parameters

Electrical parameters	
Active power measurement accuracy	0.3%, 0.5%
Energy measurement accuracy	0.3%, 0.5%
Power supply	AC 110-264V 50/60Hz
Warming-up time	< 5min
Power consumption	≤5VA
Voltage measurement	
Range	0-264V
Accuracy	0.30%
Current measurement	
Range	10mA-40A or 10mA-120A
Accuracy	0.3%

Electrical parameters - continued

Phase measurement

Range	0°-359.9°
Resolution	0.1°
Accuracy	0.5°

Frequency measurement

Range	45-65Hz
Resolution	0.01Hz
Accuracy	0.05Hz

Power factor measurement

Range	0.4000 ~ +1.0000
Resolution	0.001
Accuracy	0.01

Electric energy pulse output

Pulse constant	900
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Energy pulseinput

Input range of pulse constant	1-25000
Pulse input level	5V

Mechanical parameters

Dimensions (W×D×H) (mm)	185×67×30
Weight (kg)	1 (mains) 2 (appendix and bag)

Environmental conditions

Working temperature	-10°C to 50°C
Working humidity	5%- 85%RHD
Storage temperature	-25°C to 70°C
Storage humidity	5% -95%RHD

GF1061

Portable CT PT Analyzer

GF1061 portable CT PT analyzer is mainly used for field or lab testing, it can finish the measurements (M) and protection (P) class CT, PT and TYP class CT. Adopt 7 inch touch TFT LCD, self-equipped mini type printer supporting field printing; supporting to use USB flash disk to dump data. The CT PT Analyzer is the most complete and easy-to-use testing system for protection and metering CTs according to IEEE and IEC standards.

Features

1. Steady and transient state characteristic tests of various types of CT/PT
2. The use of advanced power technology, the test knee point reaches up to 30kV
3. No external other auxiliary equipment, stand-alone to complete all test items
4. CT test, easy to test, all the tests are using the same wire connection except the load test
5. It carries with thermal printer, so it can print test results on site
6. Parameters such as knee point current and voltage
7. Parameters such as 10% error curve, 5% error curve
8. With battery, working 48hours.
9. The device can store 10000 groups of test data which would not be lost if the device is power off.
10. The data can be displayed and analyzed after the test, or transferred to PC through USB disk and produce a Word file report
11. Portability: weight <4kg, the best light ct analyzer



Reference Standard

IEC 60044, ANSI/ IEEE C57.13, IEC61869, GB 1207-2006, GB 1208-2006

Parameters

Electrical parameters

Accuracy		0.05%
Power supply		AC 220V±10% or AC 120V±10%, 50/60Hz or Battery
Output voltage		0-100Vrms
Output current		0-5Arms (20A peak-value)
Output power		0-400 VA (1500 VApeak)
Automatic frequency variation range		0.1-60Hz
Equivalent excitation voltage		≤5000V
Accuracy		≤0.5%
Secondary winding DC resistance measurement	Range	0.1-1000Ω
	Accuracy	≤0.05%
Secondary actual load measurement	Range	5VA-1000VA
	Accuracy	≤0.5%±0.1VA
CT/PT phase error measurement	Accuracy	±1min (typical) / 3 min (guaranteed)
	Resolution	0.1min
CT ratio error measurement	Range	1-50000
	Accuracy	≤0.05%
PT ratio error measurement	Range	1-10000
	Accuracy	≤0.05%

Standards

Reference standards	GB1207-2006, GB1208-2006, GB16847-1997 IEC60044-1, IEC60044-6, IEC61869-2, ANSI/IEEE C57.13
Safety standards	GB 4793.1-2007
EMC	EMC standard 89/336/EEC
	FCC Subpart B of Part 15 Class A
	IEC 1000-4-2/3/4/6

Mechanical parameters

Overall dimension (L x W x H) (mm)	280 x 250 x 160
Weight (kg)	≤4

Environmental conditions

Relative humidity	Relative humidity 5%-95% not condensing
Operating temperature	-10°C to +50°C
Storage temperature	-20°C to +70°C
Altitude	≤1000m

Function

I. Current Transformer (CT)	II. Voltage Transformer (PT)
1. Magnetization curve	1. Excitation characteristic test
2. Transformation ratio test	2. Transformation ratio test
3. Polarity	3. Polarity
4. 5% and 10% error curve	4. Ratio error, phase error
5. Accuracy limiting factor (ALF)	5. Degauss
6. Degauss	6. Calculation of knee point value
7. Ratio error, phase error	7. Actual secondary load test (burden test)
8. Automatic calculation of excitation knee point value	8. Resistance test
9. Actual secondary load test (burden test)	
10. Resistance test	
11. Secondary time constant (Ts)	
12. Remanence coefficient (Kr)	
13. Transient dimensioning factor (Ktd)	
14. Peak instantaneous error (Er)	
15. Magnetizing inductance (LU)	
16. Instruments security factor(FS)	
17. Composite error	

GF106T

CT/PT Analyzer

It is mainly used for field testing of P class CT and PT. The test items mainly include excitation characteristic, transformation ratio, polarity, degauss, 5% and 10% error curves, secondary circuit check, withstand test of power frequency alternating current and secondary load. Adopting LCD, self-equipped mini type printer supporting field printing; supporting to use USB flash disk to dump data, with simple and convenient operation.



Function

I. Current Transformer (CT)	II. Voltage Transformer (PT)
1. Magnetization curve	1. Excitation characteristic test
2. Transformation ratio test	2. Transformation ratio test
3. Polarity	3. Polarity
4. 5% and 10% error curve	4. Withstand test of power frequency alternating current
5. Current Injecting	5. Degauss
6. Degauss	6. Calculation of knee point value
7. Withstand test of power frequency alternating current	7. Actual secondary load test
8. Automatic calculation of excitation knee point value	8. Resistance test
9. Actual secondary load test	
10. Resistance test	

Parameters

Electrical parameters	
Accuracy	0.2%, 0.5%
Power supply	AC 220V±10% or AC 110V±10%, 50/60Hz
Excitation voltage output	0-2500Vrms,
Excitation current output	0-5Arms (20A peak-value)
Large current output	0-1000A

Electrical parameters - continued

Accuracy		$\leq 0.5\% (0.2\%RD + 0.3\%RG)$
Secondary winding DC resistance measurement	Range	0.1-300 Ω
	Accuracy	$\leq 0.5\% (0.2\%RD + 0.3\%RG)$
Secondary actual load measurement	Range	5VA-1000VA
	Accuracy	$\leq 0.5\% (0.2\%RD + 0.3\%RG) \pm 0.1VA$
CT/PT phase error measurement	Accuracy	$\pm 4min$
	Resolution	0.01min
CT ratio error measurement	Range	$\leq 25000A/5A(5000A/1A)$
	Accuracy	$\leq 0.5\%$
PT ratio error measurement	Range	1-500KV
	Accuracy	$\leq 0.5\%$

Standards

Reference standards	GB1207-2006, GB1208-2006, GB16847-1997 IEC60044-1, IEC60044-6, IEC61869-2-2012
Safety standards	GB 4793.1-2007
EMC	EMC standard 89/336/EEC
	FCC Subpart B of Part 15 Class A
	IEC 1000-4-2 /3 /4 /6

Mechanical parameters

Overall dimension (L x W x H) (mm)	400 x 250 x 250
Weight (kg)	≤ 22

Environmental conditions

Relative humidity	90RH%
Operating temperature	-10°C to +40°C
Altitude	$\leq 1000m$

GF106

CT/PT Analyzer

GF106 CT/PT analyzer is mainly used for field testing, it can finish the measurements (M) and protection (P) class CT, PT and TYP class CT. Adopt LCD, self-equipped mini type printer supporting field printing; supporting to use USB flash disk to dump data, with simple and convenient operation.



The test items mainly include	
Steady	Transient
excitation characteristic	secondary winding time constant (Ts)
transformation ratio	remance coefficient (Kr)
polarity	transient dimensioning factor (Ktd)
ratio error	peak instantaneous error (Er)
phases	magnetizing inductance (LU)
5% and 10% error curves	other parameters
resistance	
secondary load	

Standard

GB 1207-2006, GB 1208-2006 (IEC 60044-1), GB16847-1997 (IEC 60044-6), IEEE C57.13-1993

Functions

1. Steady and transient state characteristic tests of various types of CT/PT.
2. The use of advanced power technology, the test knee point reaches up to 10kV.
3. No external other auxiliary equipment, stand-alone to complete all test items.
4. CT test, easy to test, all the tests are using the same wire connection except the load test.
5. It carries with it thermal printer, so it can print test results on site.
6. Parameters such as knee point current and voltage.
7. Parameters such as 10% error curve, 5% error curve.
8. The device can store 3000 groups of test data which would not be lost if the device loses its power.
9. The data can be displayed and analyzed after the test, or transferred to PC through USB disk and produce a Word file report.
10. Portability: weight <12Kg.

I. Current Transformer (CT)	II. Voltage Transformer (PT)
1. Magnetization Curve	1. Excitation Characteristic Test
2. Transformation Ratio Test	2. Transformation Ratio Test
3. Polarity	3. Polarity
4. 5% and 10% error curve	4. Ratio error, phases
5. Current Injecting	5. Degauss
6. Degauss	6. Calculation of Knee Point Value
7. Ratio error, phases	7. Actual Secondary Load (Burden), Test (Burden)
8. Automatic Calculation of Excitation Knee Point Value	8. Resistance Test
9. Actual Secondary Load Test (Burden) (Load Test)	
10. Resistance Test	
11. Secondary winding time constant (Ts)	
12. Remanence coefficient (Kr)	
13. Transient dimensioning factor (Ktd)	
14. Peak instantaneous error (Er)	
15. Magnetizing inductance (LU)	

Parameters

Electrical parameters		
Accuracy		0.05%, 0.1%
Power supply		AC 220V±10% or AC 110V±10%, 50/60Hz
Excitation output voltage		0-220Vrms
Excitation output current		0-5Arms (20A peak-value)
Automatic frequency variation range		0.1-60Hz
Equivalent excitation voltage		≤5000V
Accuracy		≤0.5% (0.2%RD+0.3%RG)
Secondary winding DC resistance measurement	Range	0.1-300Ω
	Accuracy	≤0.5% (0.2%RD+0.3%RG)
Secondary actual load measurement	Range	5VA-1000VA
	Accuracy	≤0.5% (0.2%RD+0.3%RG)±0.1VA
CT/PT phase error measurement	Accuracy	±4min
	Resolution	0.01min
CT ratio error measurement	Range	1-30000
	Accuracy	≤0.5%
PT ratio error measurement	Range	1-10000
	Accuracy	≤0.5%

GF106

TRANSFORMER TEST



Standards

Reference standards	GB1207-2006, GB1208-2006, GB16847-1997 IEC60044-1, IEC60044-6, IEC61869-2-2012
Safety standards	GB 4793.1-2007
EMC	EMC standard 89/336/EEC
	FCC Subpart B of Part 15 Class A
	IEC 1000-4-2/3/4/6

Mechanical parameters

Overall dimension (L x W x H) (mm)	410 x 250 x 300
Weight (kg)	≤10

Environmental conditions

Relative humidity	90RH%
Operating temperature	-10°C to +40°C
Altitude	≤2000m

TEST-901

Primary Current Injection Test Set

TEST-901 primary current injection test set adopts ARM Chip to control its output process and large capacity of toroidal transformers. It is equipped with LCD display and current meter; it can show primary current value, second current value, turn ratio and the action time. Packing is used as aluminum alloy body with PC panel. TEST-901 is mainly applied to CT turn ratio testing in the power system and contact resistance test which need large current.



Applications

1. Primary injection tests
2. Protective Relay Testing
3. Circuit Breaker Testing
4. Current Transformer Testing
5. Recloser and Sectionalizers
6. Switchgear Testing
7. Ground Grid Testing

Features

1. Permanent current up to 1000 A, 5KVA
2. Max current output up to 1100A
3. Built-in digital ammeter 0.5% accuracy
4. Built-in digital timer resolution 1ms
5. Small size, light weight, easy to test on-site
6. Thermal and short-circuit protection

Parameters

Electrical parameters	
Accuracy	±0.5%
Accuracy	220V±10%·25A, 50Hz/60Hz or 110V±10%·50A, 50Hz/60Hz
Current Output (AC)	1000A·5V or 500A·10V
Capacity	5KVA
The current output waveform distortion	≤5%
Dual protection	overload electronic protection and software protection
Primary current	
Range	0-1100A
Resolution	0.1A
Accuracy	<0.5%

TEST-901

PRIMARY CURRENT INJECTION TESTER



Electrical parameters - continued	
Secondary measurement	
Range	0-6A
Resolution	0.001A
Accuracy	<0.5%
Current duration	
1000A range	1000A 2-3minutes 500A 3-6minutes
500A range	500A 2-3minutes
With timer	
Range	0.0001~999.99S
Resolution	0.001S
Accuracy	<0.5% ±5 words
Mechanical parameters	
Dimensions (W×D×H) (mm)	430×260×260
Weight(kg)	25
Environmental conditions	
Temperature	-10°C to 40°C
Relative humidity	≤80%

Selection Guide

Model	Accuracy	Primary Current	Ammeter (0-6A)	Timer	Power	Injection Current time	Dimension (W×D×H) (mm)	WT	Remark
TEST-901	0.50%	0-1100A	YES	YES	5KVA	1000A: 2-3min; 500A:3-6min	430×260×260	25KG	Integrated structure
TEST-902	0.50%	0-2200A	YES	OPTIONAL	12KVA	2000A:2-3min; 1000A:3-6min	360×300×295 and 320×300×300	35KG+15KG	Fission structure
TEST-903	0.50%	0-3300A	YES	OPTIONAL	15KVA	3000A: 2-3min; 1500A:3-6min	380×350×360 and 340×290×420	48KG+42KG	Fission structure
TEST-905	0.50%	0-5500A	YES	OPTIONAL	25KVA	5000A:2-3min; 2500A:3-6min	430×430×445 and 550×450×600	68KG+55KG	Fission structure

TEST-902

Primary Current Injection Test Set

TEST-902 primary current injection test set adopts ARM chip to control the output process and large capacity of toroidal transformer. It is equipped with LCD screen display current meter, also showed primary current value, secondary current value, turn ratio and the action time. Aluminum alloy body with PC panel component the shell.

TEST-902 is mainly applied to test CT turn ratio in the power system and the contact resistance etc, which need large current.



Applications

1. Primary injection tests
2. Protective Relay Testing
3. Circuit Breaker Testing
4. Current Transformer Testing
5. Recloser and Sectionalizers
6. Switchgear Testing
7. Ground Grid Testing

Features

1. Permanent current up to 2000 A, 12KVA
2. Max current output up to 2200A
3. Built-in digital ammeter 0.5% accuracy
4. Built-in digital timer resolution 1 ms (Optional)
5. Made up of two units, control and power unit
6. Thermal and short-circuit protection

Parameters

Electrical parameters	
Accuracy	±0.5%
Power Supply (AC)	220V±10%·50A, 50Hz/60Hz or 110V±10%·100A, 50Hz/60Hz
Current Output (AC)	2000A·6V or 1000A·12V
Capacity	12KVA
The current output waveform distortion	≤5%
Primary current	
Range	0-2200A
Resolution	0.1A
Accuracy	<0.5%

TEST-902

PRIMARY CURRENT INJECTION TESTER



Electrical parameters-continued

Secondary measurement

Range	0-6A
Resolution	0.001A
Accuracy	<0.5%

Current duration

2000A range	2000A 2-3minutes 1000A 3-6minutes
1000A range	1000A 2-3minutes

With timer(Optional)

Range	0.0001~999.99S
Resolution	0.001S
Accuracy	<0.5% ±5 words

Mechanical parameters

Dimensions (W×D×H) (mm)	360×300×295 and 320×300×300
Weight (kg)	Control Host 35kg, External voltage regulator weight 15kg

Environmental conditions

Temperature	-10°C to 40°C
Relative humidity	≤80%

Selection Guide

Model	Accuracy	Primary Current	Ammeter (0-6A)	Timer	Power	Injection Current time	Dimension (W×D×H) (mm)	WT	Remark
TEST-901	0.50%	0-1100A	YES	YES	5KVA	1000A: 2-3min; 500A:3-6min	430×260×260	25KG	Integrated structure
TEST-902	0.50%	0-2200A	YES	OPTIONAL	12KVA	2000A:2-3min; 1000A:3-6min	360×300×295 and 320×300×300	35KG+15KG	Fission structure
TEST-903	0.50%	0-3300A	YES	OPTIONAL	15KVA	3000A: 2-3min; 1500A:3-6min	380×350×360 and 340×290×420	48KG+42KG	Fission structure
TEST-905	0.50%	0-5500A	YES	OPTIONAL	25KVA	5000A:2-3min; 2500A:3-6min	430×430×445 and 550×450×600	68KG+55KG	Fission structure

TEST-903

Primary Current Injection Test Kit

TEST-903 primary current injection test kit adopts ARM chip to control the output process and large capacity of toroidal transformer. It is equipped with LCD screen display current meter, also showed primary current value, secondary current value, turn ratio and the phase shift. Aluminum alloy body with PC panel component the shell.

TEST-903 is mainly applied to test CT turn ratio and polarity in the power system, the contact resistance, high voltage circuit breaker protection test and high voltage generator test etc, which need large current on-site or in the lab.



Applications

1. Primary injection tests.
2. Protective Relay Testing
3. Circuit Breaker Testing
4. Current Transformer Testing
5. Recloser and Sectionalizers
6. Switchgear Testing
7. Ground Grid Testing

Features

1. Permanent current up to 3000 A, 15KVA
2. Max current output up to 3300A.
3. Built-in digital ammeter 0.5% accuracy.
4. Built-in digital timer resolution 1 ms (Optional).
5. Made up of two units, control and power unit
6. Thermal and short-circuit protection.

Parameters

Electrical parameters	
Accuracy	±0.5%
Power Supply (AC)	380V·50A, 50Hz/60Hz
Current Output (AC)	3000A·5V or 1500A·10V
Capacity	15KVA
The current output waveform distortion	≤5%
Primary current	
Range	0-3300A
Resolution	0.1A
Accuracy	<0.5%

TEST-903

PRIMARY CURRENT INJECTION TESTER



Electrical parameters-continued

Secondary measurement

Range	0-6A
Resolution	0.001A
Accuracy	<0.5%

Current duration

3000A range	3000A 2-3minutes 1500A 3-6minutes
1500A range	1500A 2-3minutes

With timer(Optional)

Range	0.0001~999.99S
Resolution	0.001S
Accuracy	<0.5% ±5 words

Mechanical parameters

Dimensions (W×D×H) (mm)	380×350×360 and 340×290×420
Weight (kg)	Control Host 48kg, External voltage regulator weight 42kg

Environmental conditions

Temperature	-10°C to 40°C
Relative humidity	≤80%

Selection Guide

Model	Accuracy	Primary Current	Ammeter (0-6A)	Timer	Power	Injection Current time	Dimension (W×D×H) (mm)	WT	Remark
TEST-901	0.50%	0-1100A	YES	YES	5KVA	1000A: 2-3min; 500A:3-6min	430×260×260	25KG	Integrated structure
TEST-902	0.50%	0-2200A	YES	OPTIONAL	12KVA	2000A:2-3min; 1000A:3-6min	360×300×295 and 320×300×300	35KG+15KG	Fission structure
TEST-903	0.50%	0-3300A	YES	OPTIONAL	15KVA	3000A: 2-3min; 1500A:3-6min	380×350×360 and 340×290×420	48KG+42KG	Fission structure
TEST-905	0.50%	0-5500A	YES	OPTIONAL	25KVA	5000A:2-3min; 2500A:3-6min	430×430×445 and 550×450×600	68KG+55KG	Fission structure

TEST-905

Primary Current Injection Test Kit

TEST-905 primary current injection test system adopts ARM chip to control the output process and large capacity of toroidal transformer. It is equipped with LCD screen display current meter, also showed primary current value, secondary current value, turn ratio and the phase shift. Aluminum alloy body with PC panel component the shell. TEST-905 is mainly applied to test CT turn ratio and polarity in the power system, the contact resistance, high voltage circuit breaker protection test and high voltage generator test etc, which need large current on-site or in the lab.



Applications

1. Primary injection tests.
2. Protective Relay Testing
3. Circuit Breaker Testing
4. Current Transformer Testing
5. Recloser and Sectionalizers
6. Switchgear Testing
7. Ground Grid Testing

Features

1. Permanent current up to 5000 A, 25KVA
2. Max current output up to 5500A.
3. Built-in digital ammeter 0.5% accuracy.
4. Built-in digital timer resolution 1 ms (Optional).
5. Made up of two units, control and power unit
6. Thermal and short-circuit protection.

Parameters

Electrical parameters	
Accuracy	±0.5%
Power Supply (AC)	380V·70A, 50Hz/60Hz
Current Output (AC)	5000A·5V or 2500A·10V
Capacity	25KVA
The current output waveform distortion	≤5%
Primary current	
Range	0-5500A
Resolution	0.1A
Accuracy	<0.5%

TEST-905

PRIMARY CURRENT INJECTION TESTER



Electrical parameters-continued

Secondary measurement

Range	0-6A
Resolution	0.001A
Accuracy	<0.5%

Current duration

5000A range	5000A 2-3minutes 2500A 3-6minutes
2500A range	2500A 2-3minutes

With timer(Optional)

Range	0.0001~999.99S
Resolution	0.001S
Accuracy	<0.5% ±5 words

Mechanical parameters

Dimensions (W×D×H) (mm)	430×430×445 and 550×450×600
Weight (kg)	Control Host 68kg, External voltage regulator weight 55kg

Environmental conditions

Temperature	-10°C to 40°C
Relative humidity	≤80%

Selection Guide

Model	Accuracy	Primary Current	Ammeter (0-6A)	Timer	Power	Injection Current time	Dimension (W×D×H) (mm)	WT	Remark
TEST-901	0.50%	0-1100A	YES	YES	5KVA	1000A: 2-3min; 500A:3-6min	430×260×260	25KG	Integrated structure
TEST-902	0.50%	0-2200A	YES	OPTIONAL	12KVA	2000A:2-3min; 1000A:3-6min	360×300×295 and 320×300×300	35KG+15KG	Fission structure
TEST-903	0.50%	0-3300A	YES	OPTIONAL	15KVA	3000A: 2-3min; 1500A:3-6min	380×350×360 and 340×290×420	48KG+42KG	Fission structure
TEST-905	0.50%	0-5500A	YES	OPTIONAL	25KVA	5000A:2-3min; 2500A:3-6min	430×430×445 and 550×450×600	68KG+55KG	Fission structure

TEST-630

Relay & Protection Microcomputer Test System

1. *Six-channel current output*
2. *Six-channel voltage output*
3. *Eight pairs of binary input*
4. *Four pairs of binary output.*

Features

1. Integration in the host crystal 8.4 inches true color, light weight and easy to carry.
2. Built-in high-speed and high-performance industrial computer embedded operating system, running stable and reliable, also can test by connecting PC.
3. Panel embedded user-friendly buttons, and the panel can also be an external keyboard and mouse.
4. High-precision DAC to 12 Road, simultaneously output to ensure the high precision and good linearity of the waveform.
5. Matching electromagnetic compatibility components, can improve on-site anti-electromagnetic interference, protection devices can connect the electromagnetic compatibility to test.
6. Analog output of the front panel, switch the amount of terminal design in the upper cover, all the wiring does not affect the operation of the panels and the test parameters of the surveillance.
7. The latest thermal structure design to ensure the best ventilation. Automatically determine over current, over voltage, overload and short circuit, if the temperature is too high, the anomalies and misuse warning of the data will show up promptly.
8. Using voltage, current amplifier AC / DC sharing, output stage uses a unique ultra-linear amplifier technology, high precision and reliability. six-phase AC output voltage and six-phase AC current.
9. 12 analog ports and other optional auxiliary DC source output (220V/110V).
10. Interface: RJ45 (Ethernet interface), USB interface (software upgrades, reporting transmission), industrial serial interface (GPS or other serial device use).



Functions

1. Host real-time operating system, fast response, when faced with an emergency situation, can better protect the instruments and equipment under test. Safe and reliable, not easy to be violated by a computer virus.
2. The newly designed software interface style, the host machine operation is fully consistent with the background and easy to use.
3. Extensive testing capabilities: the state sequence will be determined to meet the needs of various types of user for testing microprocessor-based protection relay in the trial, IT features analog oscillation, the entire group of tests, differential protection, harmonic superposition, low cycle load shedding, same equipment, measuring instruments, GPS synchronized debugging, fault playback, and custom test (special tests), etc. It can easily complete the protective device test of ABB, Siemens, AREVA and other foreign manufacturers.
4. The test report can be easily derived from the USB port to print.

Test item

I. U/I test	VIII. Harmonic test	XIV. Synchronization test
II. DC test	IX. Differential protection	XV. Special test
III. Impedance characteristics	X. Distance protection	XVI. Oscillation test
IV. Power direction test	XI. Zero sequence protection	XVII. Metering instrument
V. I-T test	XII. Setting group test	XVIII. Hardware checkout
VII. Differential relay	XIII. State sequence	XIX. Low Voltage protection

Parameters

Electrical parameters	
Allowable range	AC220V±10% or AC110V±10%, 50/60Hz±10%
Time measurement	0.1ms-999999.999s
AC current output	
Phase current output (effective value)	6×0-30A or 3 × 0-60A
Maximum output power	520VA/phase
Maximum parallel current output (effective value)	0-180A
Long-term allowable working value of phase current (effective value)	>10A
Allowable working time of maximum current	>11s
Accuracy	<±0.2%
AC voltage output	
Phase voltage output (effective value)	6×0-130V
Line voltage output (effective value)	0-260V
Maximum output power	70VA/phase
Accuracy	<±0.2%
DC voltage output	
Output range	0-300V or 6×0-±130V
Maximum output power	130VA
Accuracy	<±0.2%
DC current output	
Output range	-10-10A or 6×0-±10A
Maximum output power	150VA
Accuracy	<±0.2%
Binary input	
Idle contact	1-20mA, 24V (DC)
Electric potential contact	0-250V (DC)
Binary output	
Idle contact	250V/0.5A (DC)

Electrical parameters - continued
Rated output

Frequency error	<±0.01HzHz
Phase error	<±0.2°
Waveform distortion	<±0.3% (fundamental wave)
Time error	<40μs
Output frequency	0-1050Hz
Superposed harmonic wave	0-21times

Time measurement

Test range	0.1ms-999999.999s
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Mechanical parameters

Dimensions (L×W×H) (mm)	360×195×365
Weight (kg)	16.6

Environmental conditions

Use range	0°C to 45°C
Storage range	-25°C to 70°C

TEST-330

RELAY TESTER



TEST-330

Relay & Protection Microcomputer Test System

It is an integrated system for testing and calibration of protection and control relays. It is five phase voltage output, three phase current output. Has DC and AC output. Max current output is 90A.



Features

1. Embedded host machine equipped with Complex Programmable Logic Device (CPLD)
2. Eight-path synchronous D/A output in a single machine
3. High-accuracy linear power amplifier
4. Host machine integrated single cabinet structure with big LCD screen and complete interface has obtained appearance patent
5. Intelligent self-protection function
6. Plentiful Binary and powerful software function
7. Easily complete the ABB, Siemens, AREVA, Schneider, GE, SEL, VAMP, Toshiba, NR, Sifang and other foreign manufacturers of protective device test
8. Synchronous output of five-phase voltage and three-phase current, Max AC current output is 90A, Max AC voltage output is 260V

Test item

- | | | |
|--------------------------------|------------------------------|-----------------------------|
| I. U/I test | VIII. Harmonic test | XIV. Synchronization test |
| II. DC test | IX. Differential protection | XV. Special test |
| III. Impedance characteristics | X. Distance protection | XVI. Oscillation test |
| IV. Power direction test | XI. Zero sequence protection | XVII. Metering instrument |
| V. I-T test | XII. Setting group test | XVIII. Hardware checkout |
| VII. Differential relay | XIII. State sequence | XIX. Low Voltage protection |

Parameters

Electrical parameters	
Power voltage	AC220V±10% or AC110V±10%, 50/60Hz±10%
Time measurement	0.1ms-999999.999s
AC current output	
Phase current output (effective value)	3 x 0-30A

Electrical parameters - continued
AC current output

Phase current output (effective value)	3 x 0-30A
Maximum power output	260VA/phase
Maximum parallel current output (effective value)	0-90A
Long-term allowable working value of phase current (effective value)	>10A
Allowable working time of maximum current	>11s
Accuracy class	<±0.2%

AC voltage output

Phase voltage output (effective value)	5 x 0-130V
Line voltage output (effective value)	0-260V
Maximum power output	70VA/phase
Accuracy class	<±0.2%

DC current output

Output range	-10 to 10A or 3 x 0 to ±10A
Maximum power output	200VA
Accuracy class	<±0.2%

DC voltage output

Output range	0-300V or 5 x 0 to ±130V
Maximum output power	130VA
Accuracy class	<±0.2%

Binary input

Idle contact	1-20mA, 24V (DC)
Electric potential contact	250V/0.5A (DC)

Binary output

Idle contact	250V/0.5A (DC)
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Rated output

Frequency error	<±0.01Hz
Phase error	<±0.2°
Waveform distortion	<±0.3% (fundamental wave)
Time error	<40μs
Output frequency	0-1050Hz
Superposed harmonic wave	0-21times

Mechanical parameters

Dimensions (L×W×H) (mm)	360x195x375
Weight (kg)	16.6

Environmental conditions

Use range	0°C to 45°C
Storage range	-25°C to 70°C

TEST-750

RELAY TESTER



TEST-750

Single Phase Relay Test Set

TEST-750 single-phase relay test set high performance, portable to test in the field; it adopts aluminum alloy body with PC panel, robust shape; with the ARM chip control, LCD screen display single-phase protective relay test device of voltage and current output stopwatch; a full isolation, adjustable AC and DC voltage, AC direct current; an adjustable DC voltage and an adjustable AC voltage; output circuit with double overload protection, high output capacity, small size, light weight, high reliability. The equipment is suitable for a variety of relay field calibration and performance test.



Features

1. U/I Test and DC Test, All the isolation adjustable DC voltage output, short circuit, overload and over range protection automatically
2. The maximum output current: 0-150A
3. Equipped with LCD digital AC/DC ampere meter, it can show AC/DC voltage, current, stopwatch potential and contact
4. Internal electronic stopwatch, available electric contact work, potential of up to 250V, dual measurement
5. Integrated kit design with multiple functions, and easy to carry

Parameters

Electrical parameters

Rated input power

AC	220V±10% 1000VA·50/60Hz or 110V±10% 1000VA·50/60Hz
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Turn on/turn off auxiliary contacts

Max current	1A
Max voltage	AC250V or DC120V

AC output

Range	0-10A	0-40A	0-100A	0-100A
No-load Voltage(Min)	90V	25V	10V	10V
Full-load Voltage (Min)	80V	22V	8V	
Full-load Current (Max)	10A	40A	100A	150A

Electrical parameters - continued
AC/DC voltage output

Range	0-250V(AC)	0-300V(DC)
No-load Voltage(Min)	250V	320V
Full-load Voltage (Min)	240V	250V
Full-load Current (Max)	3A	3A

Auxiliary DC voltage output

Range	5-120V	110-220V
Max Voltage	120V	220V
Max Current	0.5A	0.5A

Auxiliary AC voltage output

Range	0-120V
Max voltage	120V
Max current	0.5A

Stopwatch

Range	0.0000-999999S
Resolution	0.1mS
Accuracy	±5 words
Max input voltage (With contact and potential input)	DC 250V

Ammeter

Range	Inside 0.000-150.0A Outside 0.000-6.000A(AC or DC)
Accuracy	0.50%

Voltmeter

Range	0.0-600.0V(AC or DC)
Accuracy	0.50%
Measuring mode	AC True RMS DC Average value

Resistor

Resistance	0.5Ω-2.5kΩ
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Mechanical characteristics

Dimensions (W×D×H) (mm)	340×270×260
Weight	18kg

Mechanical parameters

Temperature	-10°C to 40°C
Relative humidity	<80%

GF6018A

Clamp Type Multimeter Calibrator

The equipment is compliance with national verification regulation: JJG124—2005 “Ammeter, voltmeter, power meter and resistance meter verification rules” and related national standards. 0.05 single-phase AC/DC standard source, can verify magnitude 0.2 and the following AC/DC voltmeter, ammeter, frequency meter, resistance meter. The source signals by using DSP and 16-bit high-speed analog-to-digital converters of controllable sine wave, the distorted wave signal source.

The equipment comes with RS-232 interface, can be connected with PC to a semi-automatic verification system. It has precise interface and multi-functions including verification, storage and query.

The equipment adopts color LCD screen, chart character display is clear, with high precision, stable and reliable, convenient operation and flexible characteristics.



Features

1. It can be semi-automatic or manual inspection of analog multi meter, clamp type current meter, all kinds of electric meter, (voltmeter, ammeter, frequency meters, resistance meter) basic error.
2. The equipment can be generated with 2-31 harmonic wave, harmonic number, order, amplitude and harmonic phase of fundamental wave can be programmed.
3. Power amplifier working frequency range is 40Hz-1KHZ, has a good linear. Current amplifier is constant current source; voltage amplifier is constant voltage source. Because of light weight, this device is more suitable for field use.
4. With RS-232 interface, this device is controlled by PC through the PC software (optional), can be automatic or manual inspection, and the results are processing and management
5. Has a non-volatile memory, it can store 500 pieces of the raw data of tested meter, for access and upload.

Parameters

Electrical parameters	
Power supply	Single phase AC 220V±10% or 110V±10%, 50/60HzAC
AC Voltage output	
Range	200mV, 400mV, 2000mV, 4000mV, 20V, 100V, 200V, 500V, 1000V

Electrical parameters - continued
AC Voltage output - continued

Range 20V-1000V	Accuracy	$\pm(0.03\%RD+0.02\%FS)$
	Stability	$\leq 0.01\% FS / 60s$
Range 200mV-4000mV	Accuracy	$\pm(0.3\%RD+0.2\%FS)$
	Stability	$\leq 0.04\% FS / 60s$
Load capacity		20VA
Waveform distortion		$\leq 0.3\%$
Adjustable Range		0-120% FS (1000V not included)
Fineness		5×10^{-5}

AC Current Output

Range		2mA, 4mA, 20mA, 40mA, 0.2A, 0.5A, 2A, 5A, 10A, 20A
Range 0.2A-20A	Accuracy	$\pm(0.03\%RD+0.02\%FS)$
	Stability	$\leq 0.01\% FS / 60s$
Range 2mA-40mA	Accuracy	$\pm(0.3\%RD+0.2\%FS)$
	Stability	$\leq 0.04\% FS / 60s$
Load capacity		20VA
Waveform distortion		$\leq 0.3\%$
Adjustable Range		0-120% FS
Fineness		5×10^{-5}

Frequency Output

Range		45-65Hz
Fineness		0.001Hz
Accuracy		0.01Hz

Harmonic Wave

Times		2-31
Extent		0-20%
Each harmonic phase fineness		$0.01 \cdot N$ (N is harmonic order)

DC voltage output

Range		200mV, 400mV, 2000mV, 4000mV, 20V, 40V, 100V, 200V, 400V, 1000V
Load capacity		20W
Adjustable range		0-110% FS (1000V not included)
Adjustable fineness		5×10^{-5}
Stability		$\leq 0.01\% FS / 60s$ (peak-peak value)
Accuracy		$\pm(0.03\%RD+0.02\%FS)$
Ripple wave		$\leq 1\% FS$

Electrical parameters - continued

DC current output

Range	20uA, 40uA, 200uA, 400uA, 2mA, 4mA, 20mA, 40mA, 0.2A, 1A, 2.5A, 5A, 10A, 20A
Load capacity	20W
Adjustable Range	0-110% FS (1000V not included)
Adjustable Fineness	5×10^{-5}
Stability	$\leq 0.01\%$ FS /60s (peak-peak value)
Accuracy	$\pm(0.06\%RD+0.04\%FS)$
Ripple wave	$\leq 1\%$ FS

Resistance box

Range	0-200 Ω , 200-400 Ω , 0-2k Ω , 2k Ω -4k Ω , 0-20k Ω , 20k Ω -40k Ω , 0-200k Ω , 200k Ω -400k Ω , 0-2M Ω , 2M Ω -4M Ω	
Fineness	0.02%	
Range 0-2k Ω , 0-20k Ω , 0-200k Ω		
Range 0-2k Ω	Adjustable Range	0-100%FS
	Accuracy	$\pm(0.12\%RD+0.08\%FS)$
Range 0-200 Ω ,0-2M Ω	Adjustable Range	0-100% FS
	Accuracy	$\pm(0.3\%RD+0.2\%FS)$
Range 2k Ω -4k Ω , 20k Ω -40k Ω , 200k Ω -400k Ω		
Range 2k Ω -4k Ω	Adjustable Range	5%-100%FS
	Accuracy	$\pm(0.12\%RD+0.08\%FS)$
Range 200-400 Ω , 2M Ω -4M Ω	Adjustable Range	5%-100% FS
	Accuracy	$\pm(0.3\%RD+0.2\%FS)$

Clamp meter range

200A	Accuracy	$\pm 0.2\%$
600A	Accuracy	$\pm 0.5\%$
1000A	Accuracy	$\pm 1\%$

Dot frequency square wave output

Range	1kHz, 5kHz, 10kHz, 50kHz, 100kHz, 200kHz, 1000kHz
Square wave amplitude	4.5V
Setting accuracy	5×10^{-5}

Mechanical parameters

Dimension (LxWxH) (mm)	440x360x160
Weight (kg)	12

Environmental conditions

Operating temperature	20°C \pm 10°C
Relative humidity	$\leq 85\%$ RH

GF3021

Portable Multifunction Instrument Calibrator

GF3021 Portable Multifunction Instrument Calibrator is suitable for power plant and power grid companies for the following function: measuring and testing department and instrumentation classes, national levels measuring and testing institutions, railway, petroleum, chemical industry and other large industrial and mining enterprises, scientific research units, etc. The core technology function with digital signal processor (DSP) and 16 high-speed digital converters composed of high precision work frequency communication terminal. The signal source is DSP and 16 high-speed digital-to-analog converters, it can control the sine wave and distortion wave signal source.



Features

1. All kinds of electric measurement transducer can be checked, including AC/DC voltage transducer, AC/DC current transducer, frequency transducer, phase transducer, single/ three-phase AC active power transducer, and 3-phase reactive power transducers.
2. Check all kinds of electric measurement indicating meter, including AC/DC voltmeter, AC/DC ammeter, frequency meter, phase meter, single three-phase ac active power meter, three-phase ac reactive power meter, synchronous meter, etc.
3. Test single-phase, three-phase electronic, mechanical watt-hour meter or energy meter/ kWh meter error.
4. Calibrate AC sample device, RTU, measurement device error.
5. The built-in electric measurement transducer, electric measurement instrument and meter instructions of verification procedures, can fully automatic or semi-automatic for verification, and save 1000 group check data.
6. It can be used as voltage source, current source and power source with high precision, and it is a high stability standard resource.
7. 8-inch big screen color display and English interface.
8. For the software calibration, you don't need to open the case, it's stable and reliable.
9. Voltage output terminal with short circuit, current output terminal open protection and power amplifier overheating protection function.
10. With automatic failure detection function, shows fault part, the convenience users check line.
11. With USB port, it can connect computer for data management or controlled by PC.

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	Single phase AC 220V±10% or 110V±10%, 50/60Hz
Communication port	USB, RS232, RS485, LAN
AC Voltage output	
Range(U1,U2,U3)	50V, 100V, 200V, 400V, 600V
Adjustment range	(0 - 120)% RG
Adjustment resolution	0.01% RG, 0.1% RG, 1% RG, 10% RG
Stability	0.01% /1min
Distortion	≤0.2% (non-capacitive load)
Max. output load	25VA for each phase
Accuracy	0.05% RG
AC Current output	
Range(I1,I2,I3)	0.5A, 1A, 2.5A, 5A, 10A, 20A
Adjustment range	(0 - 120)% RG
Adjustment resolution	0.01% RG, 0.1% RG, 1% RG, 10% RG
Stability	0.01% /1min
Distortion	≤0.2% (non-capacitive load)
Max. output load	25VA for each phase
Accuracy	0.05% RG
AC Power output	
Active output stability	0.01%RG/1min
Reactive output stability	0.02%RG/1min
Active accuracy	0.05% RG
Reactive accuracy	0.1% RG
Frequency output	
Adjustment range	45-65Hz
Adjustment resolution	1Hz, 0.1Hz, 0.01Hz and 0.001Hz
Resolution	0.001Hz
Accuracy	0.002Hz
Power factor output	
Adjustment range	-1 to 0 to +1
Adjustment resolution	0.0001
Resolution	0.0005
Phase output	
Adjustment range	0°-359.999°
Adjustment resolution	10°, 1°, 0.1°, 0.01°
Resolution	0.001°

Electrical parameters - continued
Phase output

Accuracy	0.05°
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Harmonic configuration

Times	2 to 31
Content	0-40%
Phase	0°-359.999°
Configuration error	(10% RD + 0.1%), RD refers to the configuration value of harmonic contents

DC Voltage output

Range	75mV, 75 V, 150 V, 300 V, 500V, 1000 V
Adjustment range	(0-120)% RG
Adjustment resolution	0.01% RG, 0.1% RG, 1% RG, 10% RG
Stability	0.01% RG / 1 min
Distorting	≤0.2% (non-capacitive load)
Output load	25VA
Accuracy	0.05% RG
Ripple contents	≤1%

DC Current output

Range	0.5 A, 1A, 2.5 A, 5 A, 10A, 20 A
Adjustment range	(0-120)% RG
Adjustment resolution	0.01% RG, 0.1% RG, 1% RG, 10% RG
Stability	0.01% RG / 1min
Distortion	≤0.2% (non-capacitive load)
Output load	25VA
Accuracy	0.05% RG
Ripple contents	≤1%

Energy Error

Active error	0.05% RG
Reactive error	0.1% RG

DC Input Voltage Measurement

Range	0 to ±20V
Measurement range	(0-120)% RG
Accuracy	0.01% RG
Resolution	0.001% RG

DC Input Current Measurement

Range	0-20mA
Measurement range	(0-120)% RG
Accuracy	0.01% RG

Electrical parameters - continued

DC Input Current Measurement - continued

Resolution	0.001% RG
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Mechanical parameters

Dimensions (W×H×D) (mm)	460x430x185
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Weight (kg)	20
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Environmental conditions

Working temperature	0°C to 40°C
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Relative humidity	≤85%
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GF302C

Portable Panel Meter Calibrator

It is suitable for power plant and substation work area of grid companies, test division and the instrument, and national levels measuring and testing institutions, such as railway, petroleum, chemical industry and other large industrial and mining enterprises, scientific research units, etc.



Introduction

This device is according to nation verification regulation JJG124-2005 "ammeter, voltmeter, power meter and resistance meter calibration regulations and the relevant countries standard requirements and design three-phase 0.05 magnitude meter source integration calibration device". The core technology of this device is with digital signal processor (DSP) and 16 high-speed digital converter, which is composed of high precision work frequency communication terminal; The signal source use the DSP and 16 high-speed digital-to-analog converters, which can control the sine wave, distortion wave signal source; Equipment has high precision, stable and reliable, and easy to operate flexible, and other characteristics; Electric power system is used for electrical measurement is the ideal calibration equipment.

Features

1. It can check all kinds of electric measurement of instrument including: AC/DC voltmeter, AC/DC ammeter, frequency meter, phase angle meter, single/three-phase AC active power meter, single/three-phase AC reactive power meter, synchronous meter, etc.;
2. Built-in electric measurement of verification procedure indicating meter, automatic or semi-automatic for verification, saving 1000 groups data;
3. It can as a voltage source, a current source and power source for high precision and high stability standard resource;
4. 6.4 inch big screen color display;
5. It is calibrated in the software and don't need to open the case, stable and reliable;
6. Having short circuit, current output terminal, output voltage open protection and power amplifier overheating protection function;
7. Having automatically failure detection function, shows fault part, it is convenience for users to check line;
8. With USB port and PC connection for data management.

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	Single phase AC 220V±10% or 110V±10%, 50/60 Hz
Communication Port	or AC 110 V±10%, 50/60 Hz
AC voltage output	
Range(U1,U2,U3)	50 V, 100 V, 200 V, 400 V, 600 V
Adjusting range	(0-120) % RG
Adjust fineness	0.005% RG
Accuracy	0.05% RG
Stability	0.01%/1min
Load capacity	25 VA
Output distortion degree	≤0.3% (linear load)
AC current output	
Range(I1,I2,I3)	0.5A, 1A, 2.5A, 5A, 10A, 20A
Adjusting range	(0-120) % RG
Adjust fineness	0.005% RG
Accuracy	0.05% RG
Stability	0.01%/1min
Load capacity	25 VA
Output distortion degree	≤0.3% (linear load)
DC voltage output	
Range	75 V, 150 V, 300 V, 500 V, 1000 V
Adjusting range	(0-120) % RG
Adjust fineness	0.005% RG
Accuracy	0.05% RG
Stability	0.01%/1min
Load capacity	25 VA
DC current output	
Range	0.5A, 1A, 2.5A, 5A, 10A, 20A
Adjusting range	(0-120)% RG
Adjust fineness	0.005% RG
Accuracy	0.05% RG
Stability	0.01%/1min
Load capacity	25 VA
AC power output	
Accuracy	0.05% RG
Stability	0.01%/1min

Electrical parameters - continued
Frequency

Frequency range	45-65 Hz
Resolution	0.001 Hz
Accuracy	0.002 Hz

Power factor output

Adjusting range	-1 to 0 to +1
Adjust fineness	0.0001
Accuracy	0.0005

Phase angle

Scope	0°-359.99°
Resolution	0.01°
Accuracy	0.05°

Voltage/Current harmonic output

Times	2 nd -31 th
Content	0-40%
Phase	0°-359.999°
Configuration error	(10% RD + 0.1%), RD refers to the configuration value of harmonic contents

Mechanical parameters

Dimensions (W×D×H) (mm)	460x430x185
Weight (kg)	18

Environmental conditions

Working temperature	0°C to 40°C
Storage conditions	-30°C to 60°C
Relative humidity	≤85%

GF334

Three Phase Power Analyzer

It is suitable for power companies and technical supervision departments. Industrial, mining, petroleum and chemicals, home appliances and manufacturing enterprises are in the suitable fields.

Functions

1. Measuring energy consumption values - the precise timing measurements of electrical equipment for short-term energy consumption; energy resolution: milli-watts; time resolution: milli-second; they are difficult to available for common instrument of power. The functions are used by pumping, cranes, air conditioning and other equipment in a work cycle connected power consumption.
2. The value of the measurement process- it can be recorded and tested continuously voltage, current, active power, reactive power and other electrical parameter values and curves in a dynamic process and graphically display.
3. To measure the instantaneous values - including the exchange parameters: U, I, P, Q, PF, phase angle, frequency, harmonics, etc.
4. Measurement of harmonics - measurement / display voltage and current waveforms and harmonic bar graph.
5. Check Meter - real live load calibration of various single-phase, three-phase energy meters.
6. Vector analysis - based on the voltage, current, phase error of judgment wiring, display vector graphics.



Features

1. Ultra-compact design, handheld, small size, light weight
2. The usage of multi-channel power supply, AC power supply can also be rechargeable battery-powered machine
3. High accuracy instrument, good stability, and wide range of voltage monitoring 0-1200V, current 1mA - 20A
4. It can be divided into direct current clamp measurements and precision measurements
5. It can measure three-phase voltage, current, active power, reactive power, power factor, frequency, phase, etc
6. Showing the AC waveform, vector diagram and determining the three-phase three-wire connection errors
7. It can measure harmonic content from 2 to 64 and the harmonic analysis
8. The measured data can record, query and upload print
9. Instrument calibration by using software to facilitate the correction instrument variation

Parameters

Items	Range	Effective resolution	Accuracy1	Accuracy2	Remarks
Voltage	0-1200V	0.001V	0.1%	0.05%	2 ranges
Current	0-20A	0.001A	0.1%	0.05%	3 ranges
Clamp-on	0.01-100A	0.01A	0.15%	0.15%	Option ⁽¹⁾
Frequency	45-65Hz	0.001Hz	0.01Hz	0.002Hz	5 bit display
Active power	0 to $\pm U_{max} \times I_{max}$	0.01W	0.5%	0.2%	5 bit display
Reactive power	0 to $\pm U_{max} \times I_{max}$	0.01Var	1%	0.5%	5 bit display
Apparent power	0 to $\pm U_{max} \times I_{max}$	0.01VA	1%	0.5%	5 bit display
Active energy			0.5%	0.2%	
Reactive energy			1%	0.5%	
Harmonic	2nd-64th		0.5%	0.2%	
Power factor	0 to ± 0.9999	0.0001	± 0.001	± 0.0005	5 bit display
Phase	0-359.999°	0.005°	$\pm 0.05^\circ$	$\pm 0.02^\circ$	6 bit display

(1) Clamp-on 500A,3000A,5000A is optional.

Electrical parameters

Power supply	One-phase power supply(85-265VAC/45-70Hz) Lithium battery, 5000mAh
Communication port	RS232
Energy constant	3600imp/kWh, 360000imp/kWhx4
Frequency Influence	$\leq 20\text{ppm/Hz}$
Pulse Interface	TTL energyx6

Mechanical parameters

Main machine (L×W×H) (mm)	240×157×60
Weight (kg)	1.5
Carrier dimension (L×W×H) (mm)	470×380×220
Carrier weight (kg)	10.6 (Including three clamp-on (100A), wires and software)

Environmental conditions

Environment	-10 to +55°C, 15-85%RHD
Altitude (m)	-10 to 3500
Temperature	-20°C to 65°C
Temperature	$\leq 25\text{ppm/}^\circ\text{C}$ (U/I), $\leq 50\text{ppm/}^\circ\text{C}$ (others)

GF438II

Three Phase Power Quality Analyzer

GF438II handheld three phase power quality analyzer offer the best ability in power quality analysis, GF438II handheld power quality analyzer help locate, predict, prevent and troubleshoot power quality problems in three phase and single phase power distribution systems. Additionally, GFUVE patented energy loss algorithm, unified power measurement, measuring and counting energy losses due to harmonics and unbalance issues, allowing the user to pinpoint the origin of energy losses in the system.



Features

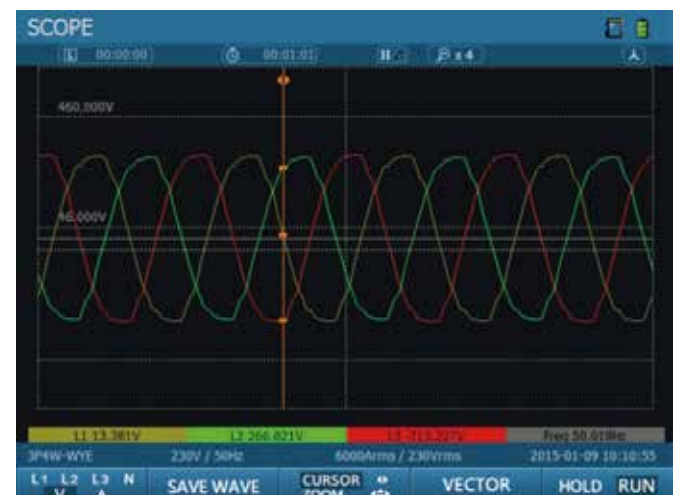
1. 3s statistical interval, continuously record 168h
2. Support multi-brand current transformer
3. Up to 32G data storage space
4. Record up to 461 power energy parameters simultaneously
5. Up to 10000 screenshots saved
6. Support periodic recording function
7. Up to 3.9M/s USB high-speed transfer
8. Recording wave

Functions

1. Energy loss calculator: classic active and reactive power measurements, unbalance and harmonic power, are quantified to pinpoint true system energy losses in dollars (other local currencies available).
2. Power inverter efficiency: simultaneously measure AC output power for power electronics systems.
3. Power wave data capture: GF438II analyzers capture fast RMS data, show half-cycle and waveforms to characterize electrical system dynamics (generator start-ups, UPS switching etc.).
4. Waveform capture: GF438II capture 50/60 cycles (50/60Hz) of each event that is detected in all modes, without set-up.
5. Automatic transient GF438II analyzers capture 200 kHz waveform data on all phases simultaneously up to 1000V.
6. Fully class-A compliant: GF438II analyzers conduct tests according to the stringent international IEC 61000-4-30 class-A standard.
7. Mains signaling: GF438II analyzer measure interference from ripple control signals at specific frequencies.
8. Troubleshoot: analyze the trends using the cursors and zoom tools.
9. Highest safety rating in the industry: 600 V CAT IV/1000 V CAT III rated for use at the service entrance.

10. Measure all three phases and neutral: with included four flexible current probes with enhanced thin flex designed to fit into the tightest places.
11. Automatic trending: every measurement is always automatically recorded, without any set-up.
12. System-monitor: ten power quality parameters on one screen according to EN50160 power quality standard.
13. Logger function: configure for any test condition with memory for up to 600 parameters at user defined intervals.
14. View graphs and generate reports: with included analysis software.
15. Battery life: up to 5 hours operating time per charge on Li-ion battery pack.

Display



Parameters

Name	Measurement type
Voltage	rms, ava, pk+, pk-, rms-1/2, CF
Frequency	Freq
Current	rms, ava, pk+, pk-, rms-1/2, CF
Power & energy	P, S, Q, PF, DPF, W
Computation	THD, DC, 1-63 Harm, 1-62 InHarm, 1-35 HiHarm, 1-62
Voltage harmonic	THD,DC,1-63 Harm,0-62 InHarm,1-35 HiHarm, 1-62SubHarm,KF
Current harmonic	THD, DC, 1-62 Harm
Harmonic power	Ia, Ib, Ic, ΣP_{total} , ΣQ_{total} , ΣS_{total} , 15 minutes
Fluctuation and flickering	PST, PLT, Fluct, Fluct Max
Unbal	V Pos, A pos, V neg, A neg, V zero, A zero, Unbal
Event log	Voltage swell, voltage sags, DIP, surge current, voltage and current distortion out of limit, odd harmonics containing rate out of limited, unbalanced voltage current out of limit, frequency out of limit, PST out of limit, PLT out of limit, long-term voltage interruption, voltage fluctuation deviation, voltage harmonics out of limit, 2-25st harmonics out of limit
P, Q, S name	Measurement type
Measurement types	P: Calculate by every 10 cycles S: Calculated by the effective value of voltage and current Q: Calculated by the apparent power, active power
Display	Table charts, trend chart
Measuring range	According to the range of the voltage and current
Resolution	0.001W
Accuracy	±0.5%
Urms	Measurement type
Mode	Calculated by the square root value of 10/12 cycle
Measuring circuit	1P2W/ 2P3W /3P3W/ 3P4W
Basic frequency of the measuring circuit	50Hz, 60Hz
Input channels	4 phase voltage, 4 phase current
Display mode	Effective current value of each channel
Range	120V, 230V, 400V, 1000V, Max 1000V instantaneous voltage
Resolution	0.001V
Accuracy	0.1% RG

Arms	
Mode	Calculated by the square root value of 10/12 cycle
Display mode	Effective current value of each channel
Range	Current: according to the current clamps Option Current clamps:5A/50A/100A/500A/1000A Flexible Current probe: 1000A/3000A/6000A
Resolution	0.001A
Accuracy	0.1% + accuracy of the current clamps
Frequency	
Measurement mode	Calculate by 10 cycles (50Hz) or (60Hz)
Display mode	Measurement by 10 cycles
Nominal frequency/resolution	50.000Hz/0.001Hz or 60.000Hz/0.001Hz
Bandwidth measurement	42.5-57.5Hz or 52.5-67.5Hz
Accuracy	±0.001Hz
Half-wave RMS current/voltage	
Measurement mode	Calculate by every 2 cycles. Each cycle ,1/2 cycle made up of a waveform calculation
Measuring range/resolution	Voltage: 120V/0.01V, 230V/0.01V, 400V/0.01V, 1000V/0.01V,Current: According to the current clamps
measurement accuracy	±0.1%
Power factor	
Measurement mode	The ratio of average power to apparent power
Display mode	Real-time data showed
Measurement range/resolution	-1.000-1.000/0.001
Accuracy	±0.1%
Vfund, Afund, Harmonic power	
Measurement mode	Meet IEC61000-4-7,Analysis time window is ten cycles
Window points	5120 points
Display mode	Form figure, trend charts, histograms
Number of measurement	1-50 Times
Measurement accuracy	Vfund >1%: Error<1% Vfund <1%: Error<0.05% Rated Voltage Afund >3%: Error<1% Afund <3%: Error<0.05% Current range
InHarm Voltage, InHarm current	
Measurement mode	Meet IEC61000-4-7, Analysis time window is ten cycles
Window points	5120 points
Display mode	Form figure, trend charts, histograms
Numbers of measurement	1-16 groups

InHarm Voltage, InHarm current	Measurement type
Measurement accuracy	Vfund >1%: Error<1% Vfund <1%: Error<0.05% Rated Voltage Afund >3%: Error<1%
Voltage/current Unbal (pos, neg)	Measurement type
Measurement mode	3P3W or 3P4W, using three phase of fundamental wave components to calculate
Display mode	Form figure, trend charts, histograms
Measurement accuracy	Voltage unbal: $\pm 0.2\%$ Current unbal: $\pm 0.5\%$
Voltage fluctuation	Measurement type
Measurement mode	Calculate by the quadratic mean of half wave.
Display mode	Form figure, trend charts
Measurement accuracy	$\pm 1\%$
IEC Flickering	Measurement type
Measurement	P short term (Pst), P long term (Plt)
Measurement mode	According to IEC61000-4-15 Standard to calculate Pst (10 mins) Plt (2 hours)
Display mode	Form figure, trend charts
Measurement range	0-20
Measurement accuracy	$\pm 5\%$
Surge current	Measurement type
Measurement mode	Half-wave RMS of current is higher than set value and sustain time is 10ms-1min
Display mode	Maximum of the surge current and surge current wave
Measurement accuracy	0.10%
Voltage swell, Voltage sags, DIP	Measurement type
Measurement mode	Swell: When half-wave RMS of voltage is higher than set value and sustain time is 10ms-1min, judged as swell. Sags: When half-wave RMS of voltage is lower than set value and sustain time is 10ms-1min, judged as sags. DIP: half-wave RMS of voltage is higher than set value and sustain time is 10ms-1min, judged as DIP
Display mode	Swell, sags, DIP wave sustain time, extent and so on.
Measurement accuracy	0.10%
Machinery	
Size	263mm x 168mm x 65mm
Key	21PCS
Binary	binary input:1 ; binary output:1
Comunication Port	USB, 10/100M port

Machinery - continued	
Weight	2KG
Power supply	
Voltage input	110V-240V
Adapter output	15V, 3A
Battery	Rechargeable nickel metal hydride, 5500mAh
Battery working time	≥ 6h
Battery recharging time	5h (Environment temperature 25°C)
Power saving facility	LCD backlight brightness is adjustable, standby time is adjustable
Display	
Size	112.8 x 84.6mm
Color	260000 color
Resolutions	640 x 480
Brightness	Max 350 cd/m ² (Typ), brightness is adjustable
Contrast	500:1 (Typ)
Visual angle	70/70/50/70 (Typ.)(CR ≥ 10) (Left/ Right/ UP/Down)
Environment	
Working environment	0°C to +45°C, humidity below 90rh%
Storing environment	-20°C to +50°C, humidity below 95rh% (non-condensing)
Store	
Type	TF card (inbuilt)
Size	32G
Standards	
Measurement method	IEC 61000-4-30
Measurement performance	IEC 61000-4-30 ALVL
Flickering	IEC 61000-4-15
Harmonic	IEC 61000-4-7
Safety	
Standard	GB 4793.1-2007/IEC 61010-1:2001: "Measurement, control and laboratory electrical equipment safety requirements", first part: general requirements.
MAX voltage of phase angle input	CAT III 1000 V/ CAT IV 600 V.

Current clamp(option)

MODEL	CTS5	CTS100	CTS500	CTS3000	CTS6000
Appearance					
Range	5A	100A	500A	3000A	6000A
Measurement Range	0.5A-50A	50A-100A	100A-500A	500A-3000A	6A-6000A
Output Voltage(AC)	100mV/A	1mV/A	1mV/A	100mV/kA	100mV/kA
Accuracy	±0.3%rdg	±0.3%rdg	±0.3%rdg	±1%rdg	±1%rdg

GF311

Three Phase Multi-function Phase Meter

It can be applied to electric power dispatching center, relay protection department or relay protection in power plant. Its metric division class makes it suitable for petroleum, railways and the iron and steel industries also.

Features

1. Simultaneously measuring three-phase voltages, current, power, frequency, power factor, phase, etc
2. Display vector map for the use of user directly
3. The smallest current it can measure is 1 mA, 2 mA above can display vector diagram
4. Range switches automatically, software for be calibrated
5. Small volume, light weight and the operation is simple, convenient
6. Horizontal liquid crystal big screen TFT displays all electric parameters
7. DSP digital signal processing chip, wide measuring range, high accuracy, good stability
8. It can store data; data can be using computer software to upload for management



Parameters

Electrical parameters	
Accuracy class	0.5%
Power supply	AC 85-265V 50/60Hz or Li-battery 5000mAh
Communication Port	RS232
Warming-up time	< 5min
Power consumption	≤5VA
Voltage measurement	
U1, U2, U3 Range	0-480V
Resolution	0.001V
Accuracy	0.2%
Current measurement	
I1, I2, I3 Range	1mA-10A or 50mA-200A or 50mA-500A
Resolution	0.5mA
Accuracy	0.5%

Electrical parameters - continued

Active power measurement

Active accuracy	0.5%
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Reactive power measurement

Accuracy	1%
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Phase measurement

Range	0°-359.9°
Resolution	0.001°
Accuracy	0.1°

Frequency measurement

Range	45-65Hz
Resolution	0.001Hz
Accuracy	0.01Hz

Power factor measurement

Range	-1 to 0 to +1
Resolution	0.0001
Accuracy	0.01

Mechanical parameters

Dimensions (W×D×H) (mm)	245×162×60
Weight (kg)	1 (mains) 6.5 (appendix and box)

Environmental conditions

Working temperature	-10°C to 55°C
Working humidity	15%-85%RHD
Storage temperature	-25°C to 70°C
Storage humidity	5%-95%RHD

GF211B

Multi-function Double Clamp Digital Phase Angle Meter

GF211B multi-function double clamp digital phase angle meter is a multi-functional portable instrument. It is an ideal choice for electric power bureau, factories, mine, petroleum-chemistry enterprises, metallurgy factories and so on.



Features

1. Can check connection of transformer
2. Measure two way voltage phase sequence
3. Discern inductive circuit and capacitive circuit
4. Can check whether the meter connection is right or not
5. Can evaluate the running speed of electric kWh meter
6. Directly read differential protection phase among every unit of CT
7. High resolution of current, so can be used as a leakage current meter
8. Current signal is obtained by the clamp current transformer on line directly
9. Measure phase angle between two voltages, between two current or between voltage and current
10. Measure alternating voltage (U), alternating current (I), frequency (F), active power (P), reactive power (Q), power factor (PF) and so on

Parameters

Electrical parameters	
Accuracy class	1%
Power supply	3.7V batteries
Scale	
Phase	0-360°
AC Voltage	0-500V
AC Current	200mA / 2A / 10A
Frequency	45-65Hz
Active power accuracy	0.5%, resolution 0.01W
Power factor	-1 ~ 0 ~ 1, resolution 0.001
Fundamental error (under standard operating environment)	
Temperature	23°C±5°C
Moisture	< 65%

Electrical parameters - continued

Fundamental error (under standard operating environment) - continued

Wave form	Sine wave Distortion $\leq 1\%$
Frequency	50 \pm 2Hz, 60 \pm 2Hz
Wire position	Center of clamp
Phase measurement	Voltage: 100V \pm 25V Current: 1A \pm 0.2A
Phase accuracy	1.0% FS

Voltage accuracy

200V	1.0FS, Resolution 0.1V
500V	1.0FS, Resolution 1V

Current accuracy

10A	1.0FS, Resolution 10mA
2A	1.0FS, Resolution 1mA
200mA	1.0FS, Resolution 0.1mA

Input impedance

When measure voltage	1M Ω
Input voltage impedance	> 120K Ω when measure phase

Phase measurement

Voltage range	2-500V
Current range	0.005-10A

Additional error

Measure phase angle, the voltage and the current	Less than the fundamental error
Measure current	The error led by wires away from center of clamps is less than the fundamental error

Safety specification

Resistance to voltage	The meter can resist 1000V (AC sine wave, 50Hz or 60 Hz) for 1 minute between the meter circuit and the meter case; Between input joint U1 and U2 can resist 500V (AC sine wave, 50Hz or 60 Hz) for 1 minute.
Insulation resistance	The resistance both between the meter circuit and the meter surface and between the terminals U1 and U2 is greater than 100M Ω .

Mechanical parameters

Dimensions (WxDxH) (mm)	185x85x41
Weight (kg)	0.26

Environmental conditions

Working temperature	0 $^{\circ}$ C \pm 40 $^{\circ}$ C
Humidity	$\leq 80\%$

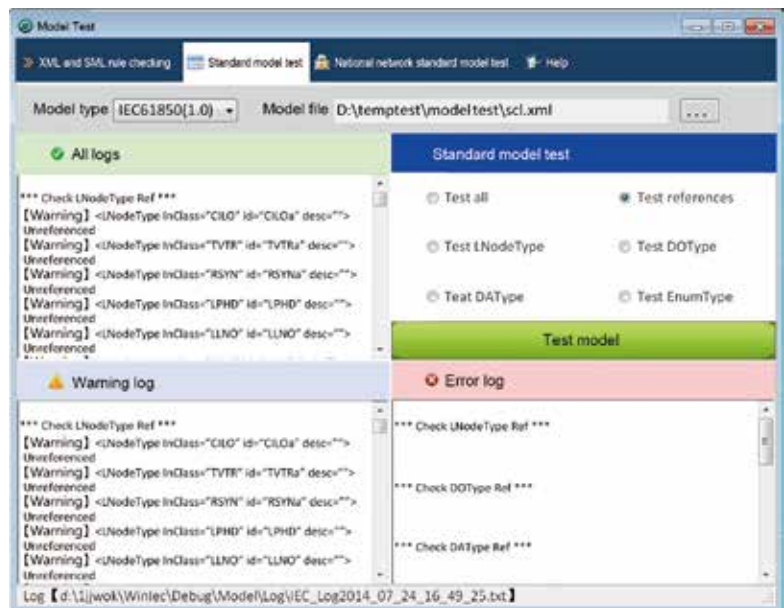
GF4600

IEC61850 Test Software

MODULE 1 - TEST SOFTWARE MODEL

Intelligent substation has widely adopted IEC 61850 standard communication, the standardization of information model is the basis for intelligent substation equipment (or system) to achieve IEC 61850 communication. This module can test if the information model meet the requirements of DL/T860 standard, national network and related model specifications.

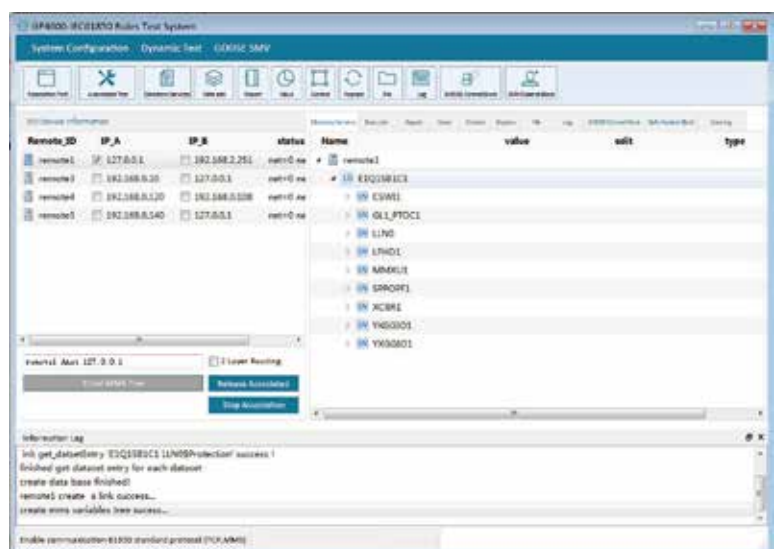
It can test and control unit model, protection unit model, econometric model, condition monitoring model. It is selectable to test according to IEC61850-6 SCL grammatical rules, IEC61850-7 logic nodes and common data, the national network model standards and custom models. According to 61850-10 rules, this software is to confirm whether the tested product meet the standards on consistency requirements.



MODULE 2 - IEC61850MMS CLIENT SIMULATION

Simulated client IEC61850, testing intelligent electronic devices IED (the control unit, the protection unit etc.).

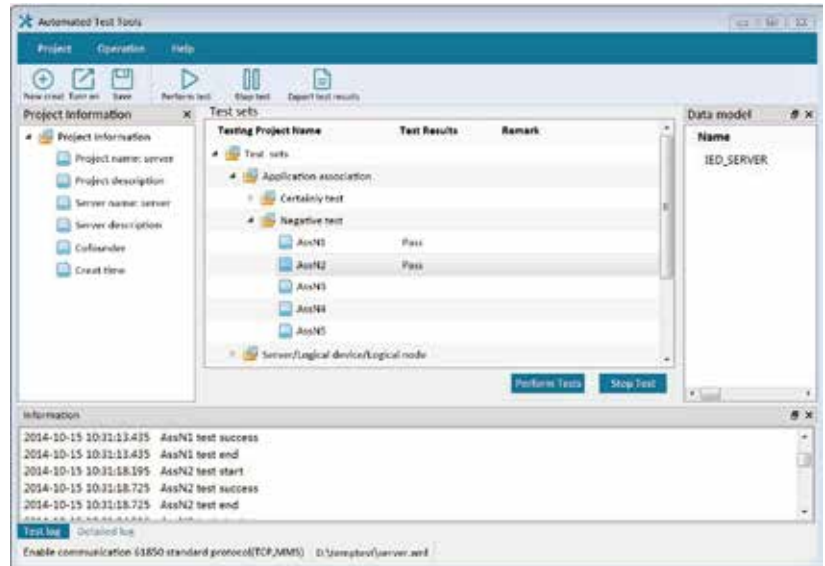
Testing the IED directory tree, IED associated equipment, servers, logical devices, logical nodes and data, data sets, replacing, reporting, setting the group control, recording, controlling and other functions.



MODULE 3 - IEC61850MMS AUTOMATED TESTING

Simulated client IEC61850, automatic testing intelligent electronic devices IED (the control unit, the protection unit etc.), according to predetermined test (IEC61850-10), exporting the test results to a variety of file formats (word, pdf, html, xml).

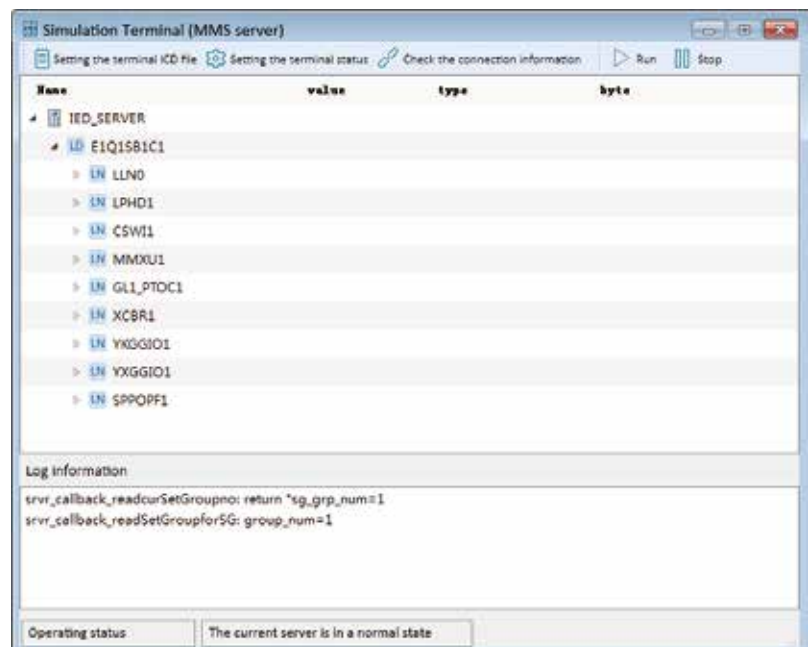
Can automated test based on ICD / CID files.



MODULE 4 - SIMULATION TERMINAL (MMS SERVER) EMULATION SOFTWARE

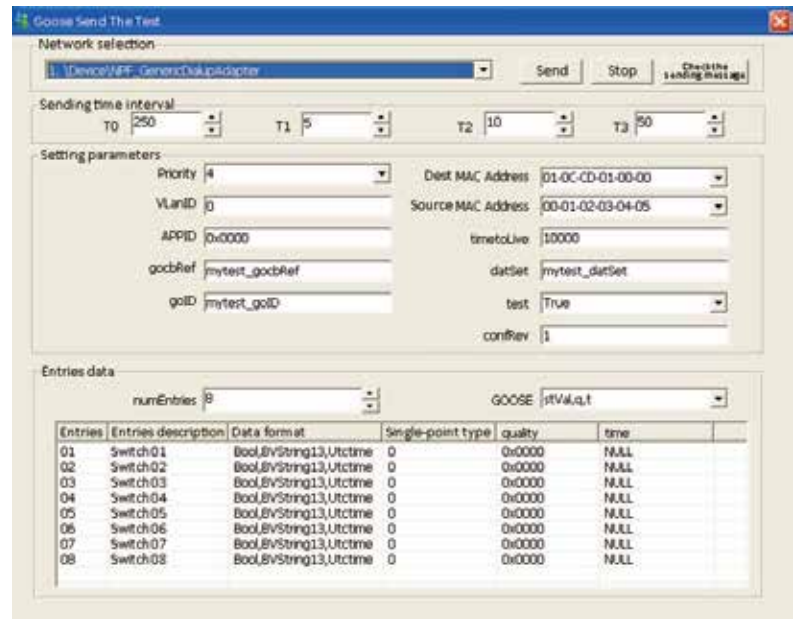
Simulated server IEC61850, testing back-office systems and far motivation systems of intelligent substation.

According IED and ICD files, simulating MMS server to achieve the directory tree, logical devices, logical nodes, data reading and writing, data sets, valuation, reporting, replacing and other functions.



MODULE 5 - GOOSE PUBLISH SIMULATION

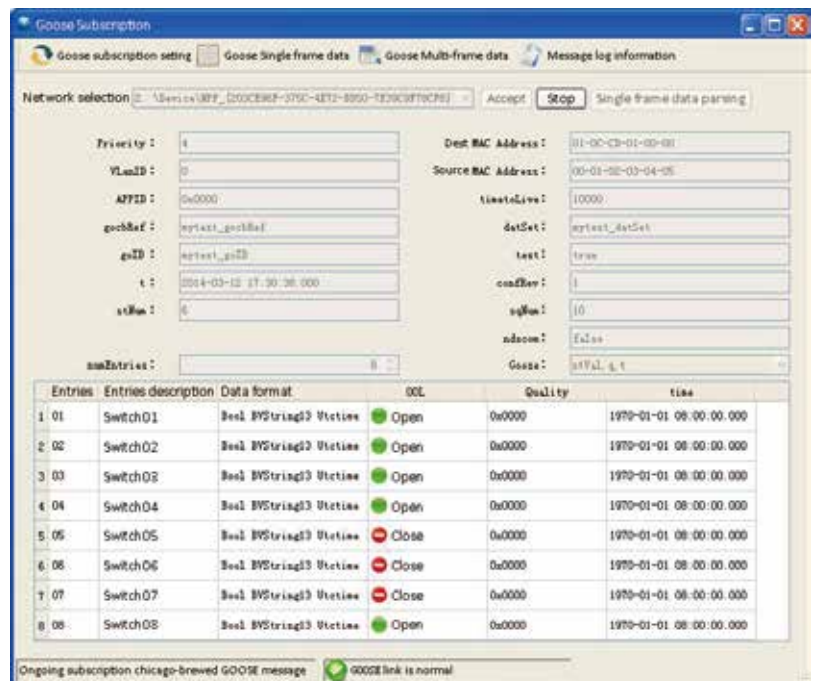
Simulation issue event message IEC61850-GOOSE, testing if the operation of the IED is correct. You can configure Priority, Dest MAC Address, VLANID, Source MAC Address, APPID, timetoLive, gocbRef, datSet, goID, test, confRev, numEntries, GOOSE data formats and other parameters.



MODULE 6 - GOOSE SUBSCRIPTION SIMULATION

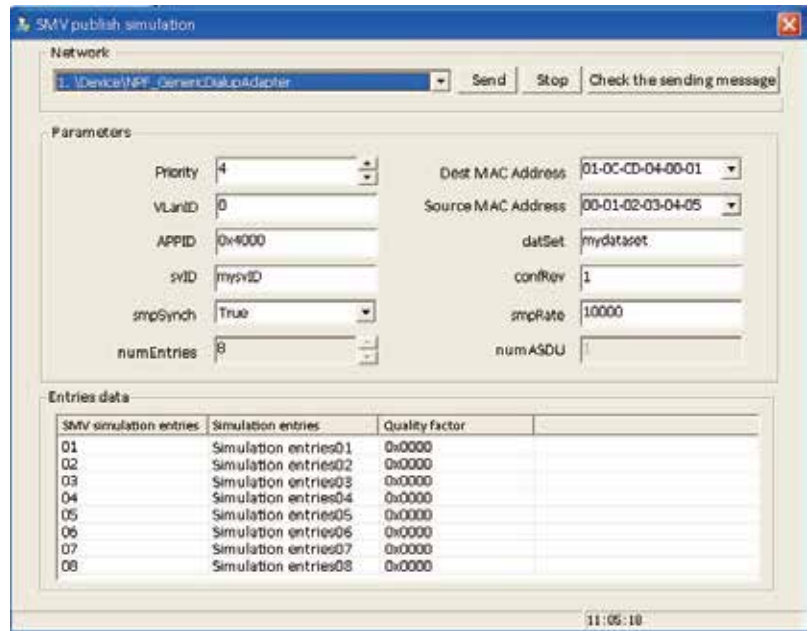
Simulation receive event message IEC61850-GOOSE, testing if the issued GOOSE of the digital device IED is correct.

Recognition IEC61850-GOOSE message, setting the message format, displaying Goose in graphical data.



MODULE 7 - SMV PUBLISH SIMULATION

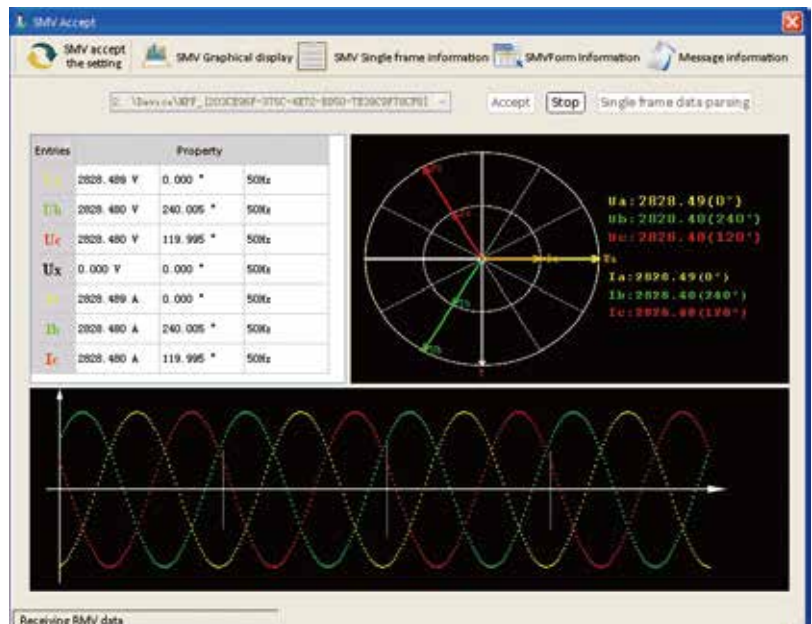
Simulation issue sampled value message IEC61850-9-1 or IEC61850-9-2 (LE), testing the digital device IED. You can configure Priority, Dest MAC Address, VlanID, Source MAC Address, APPID, datSet, svID, confRev, SMV data formats and other parameters.



MODULE 8 - SMV SUBSCRIPTION SIMULATION

Simulation receive sampled value message IEC61850-9-1 or IEC61850-9-2 (LE), testing if the issued message of digital merger unit is correct.

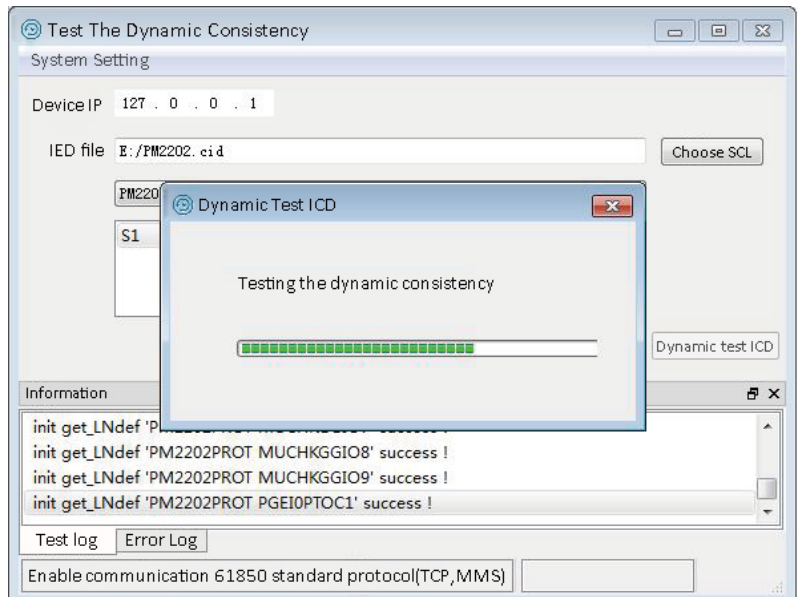
Recognition IEC61850-9-2 (LE) message, setting the message format, displaying SMV in graphical data.



MODULE 9 - MOTION TESTING SOFTWARE MODEL

Software test if the CID / ICD files and intelligent substation IED device implementation model is consistent, simple and flexible, the features are following:

- 1) Use the XML parser reads and parses the CID / ICD files and extract model information;
- 2) Import the IP address of MMS server at the interface, use the MMS client mode to communicate with the tested IED device, read layers of the model information of the tested IED device online by ACSI model service
- 3) Compared the information from 1) and 2), you can check if the CID / ICD files and intelligent substation IED device implementation model is consistent.



MODULE 10 - NETWORK COMMUNICATION MESSAGE ANALYSIS SOFTWARE

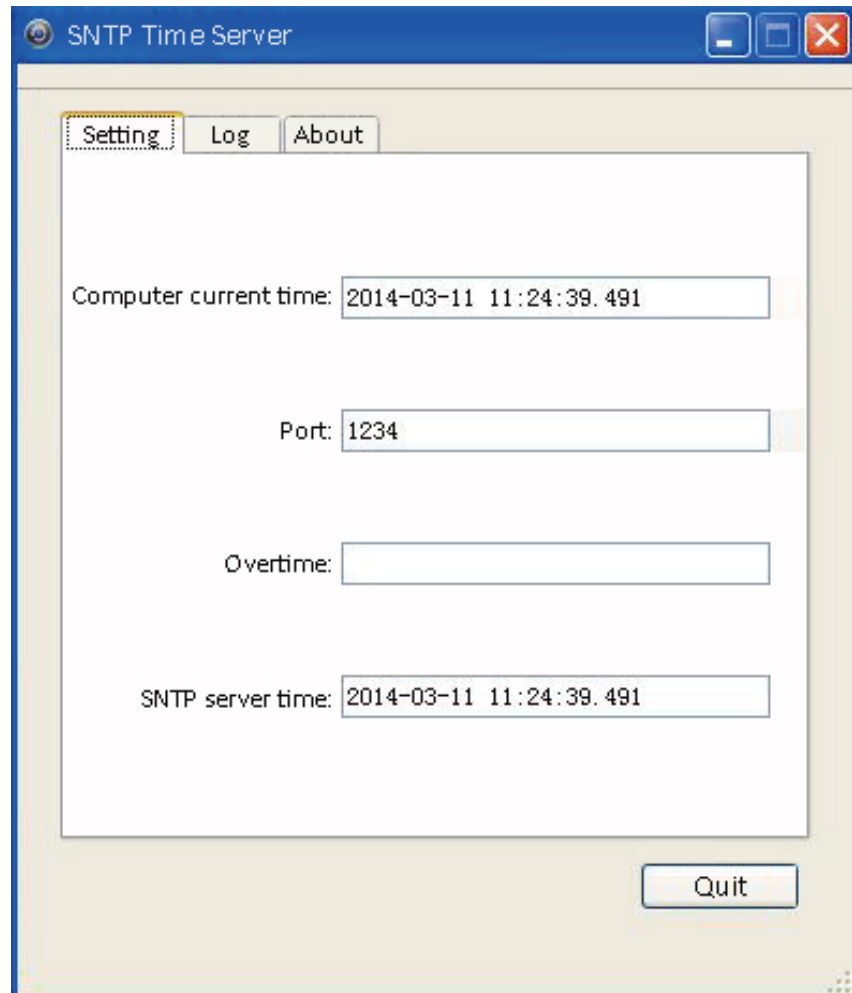
Monitoring network interfaces, in-depth analysis of network protocol message such as MMS, goose, SMV etc., showing the real MMS interaction.

Monitoring substation network, capturing and analyzing IEC 61850 information, and can be used for acceptance testing, interoperability testing, conformance testing, error logs and network performance monitoring, support IEC 61850 products development.



MODULE 11 - Time synchronization SNTP simulation

Testing 61850 time synchronous with SNTP service.



FU2200A

Multifunction Power Meter with Data Logger

FU2200A is a three-phase multifunction power and energy meter manufactured by GFUVE. The meter provide excellent value for monitoring power and energy management systems. It may be used as data gathering devices for intelligent power distribution or plant automation systems. All monitored data is available via a standard digital RS485 communication port running the Modbus RTU protocol. It has the PC software and the data logger function, which can set by end users from 1min to 60min intervals to record. You can read the data through a PC. Also, you can share the data in the Internet LAN. By the way, it can measure the harmonics. With a wide range of models to choose from, the FU2200A power meter offers unparalleled value and functionality.



Features

1. True-RMS measuring parameters
2. ANSI and IEC 0.2 accuracy class
3. Power quality analysis
4. 4 quadrant energy
5. 2MB onboard memory, can be extended to 16M
6. Data logging
7. High-speed RS485, Ethernet port (option)
8. Measure individual harmonics from 2nd to 49th (option)
9. TOU, 4 Tariffs, 6 Seasons, 6 Schedules
10. Class leading warranty
11. With PC management software; web browse data

Applications

1. Metering of distribution feeders, transformers, generators, capacitor banks and motors
3. Medium and low voltage systems
4. Commercial, industrial, utility
5. Power quality analysis
6. Data logging
7. Monitoring system



Parameters

Electrical parameters	
Power Supply (AC/DC)	AC85-400V / DC85-330V Power consumption: <4VA
Measurement Parameters	Voltage (Ph-N); Voltage (Ph-Ph); Current; Frequency; PF; Active Power(W); Reactive Power(Q); Apparent Power(S), 2nd to 49th harmonics(option)
Harmonics	Total harmonics ratio of phase-voltage Total harmonics ratio of current 2nd to 49th harmonics ratio of phase-voltage 2nd to 49th harmonics ratio of current
Maximum Value & Minimum Value	Voltage, current, frequency, active power, reactive power, apparent power,demandP,demandQ, demandS.
Computation	Forward active power energy Reverse active power energy Forward active power energy Reverse reactive power energy
Measuring Range	0-400V (0-800V is optional), 0-6A, 45-65Hz, -1 ~ 0 ~ 1
Measuring Accuracy	Voltage: 0.5%RD±0.05%FS Current: 0.5%RD±0.05%FS Active Power: 0.5%RD±0.05%FS Reactive Power: 1.5%RD +0.05%FS Apparent power: 0.5%RD +0.1%FS Power Factor: 0.5%RD Frequency: 0.05%RD Active Energy: 0.5%
Maximum Demand	Ia, Ib, Ic, ΣPtotal, ΣQtotal, ΣStotal, 15 minutes
Display	Blue back-lit LCD Display 5 display figures 4 operation keys
Communication	Support RS-485 interface port, 32 (128) Networking ModBus-TCP/IP, SNMP communication protocol Ethernet 10/100M port (RJ45)
Memory	2M onboard memory,can be extended to 16M. Data looger interval can set by end users from 1min to 60min.The default is 15min. You can read the data through a PC, also you can select the data to diaplay and store from software.
Programmable	Measuring system: 3P4W/3P3W etc Transformation Ratio: PT 1-10000; CT 1-10000

Electrical parameters - continued

Energy pulse	Provides active & reactive energy pulse output Pulse parameters can be chosen Range: 0.1-10000kWh/kvarh Dry contact output (1Ax100V)
Connection mode	3P4W, 3P4W BAL, 3P3W, 3P3W BAL, 1P3W, 1P2W
Baud	1200-57600, Standard 38400

Mechanical parameters

Dimensions (L x W x H) (mm)	96 x 96 x 12.8
Mounting	Panel mounting Trepanning: 92x92mm The thickness of installation: 51mm

Environmental conditions

Temperature	-5 to +55 °C
Humidity	20%-95%RH, without condensation
Warranty	Three years warranty

Index

Parameters	Accuracy	Resolution	Measuring range	Show on the display
Voltage	0.20%	0.01V	0-400V	0.5-500kV
Current	0.20%	0.01mA	0-6.5A	5mA-50000A
Active power	0.50%	0.2W	0-2400W/phase	-9999MW to +9999MW
Reactive power	2%	0.2var	0-2400var/phase	-9999Mvar to +9999Mvar
Apparent power	0.50%	0.2VA	0-2400VA/phase	0-9999MVA
Active demand	0.50%	0.2W	0-2400W/phase	-9999MW to +9999MW
Reactive demand	2%	0.2var	0-2400var/phase	-9999Mvar to +9999Mvar
Apparent demand	0.50%	0.2VA	0-2400VA/phase	0 to 9999MVA
Power factor	0.005	0.0001	-2	-2
Frequency	0.01Hz	0.01Hz	45.000-65.000Hz	45.000-65.000Hz
Active energy	0.5%,0.2% (Option)	0.001kWh	0-999999.999kWh	0-99999999.9kWh
Reactive energy	2%	0.001kvarh	0-999999.999kvarh	0-99999999.9kvarh
Apparent energy	0.50%	0.001VAh	0-999999.999kVAh	0-99999999.9kVAh
Phase angle	0.1°	0.01°	0-359.99°	0-359.99°
Unbalance	2%	0.01%	0-300.00%	0-300.00%
PT ratio		1		1-10000
CT ratio		1		1-10000
Address code		1		1-253

Software Interface From FU2200A

Max & Min data

Parameter	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5
Max & Min Data	max01	max02	max03	max04	max05
Energy	en01	en02	en03	en04	en05
Harmonic	h01	h02	h03	h04	h05
Wave & Vector	w01	w02	w03	w04	w05
Max & Min	m01	m02	m03	m04	m05

Energy include TOU

Parameter	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5
Energy Include TOU	et01	et02	et03	et04	et05
Energy	e01	e02	e03	e04	e05
Harmonic	h01	h02	h03	h04	h05
Wave & Vector	w01	w02	w03	w04	w05
Max & Min	m01	m02	m03	m04	m05

Real time metering

Parameter	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5
Real Time Metering	rt01	rt02	rt03	rt04	rt05
Energy	e01	e02	e03	e04	e05
Harmonic	h01	h02	h03	h04	h05
Wave & Vector	w01	w02	w03	w04	w05
Max & Min	m01	m02	m03	m04	m05

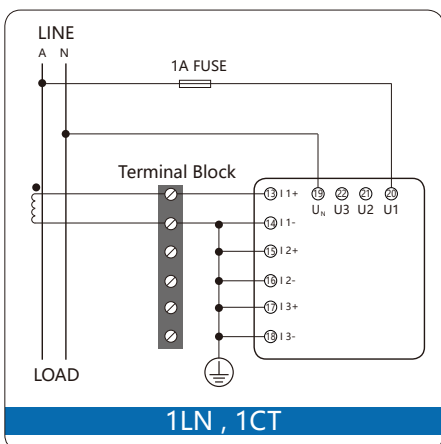
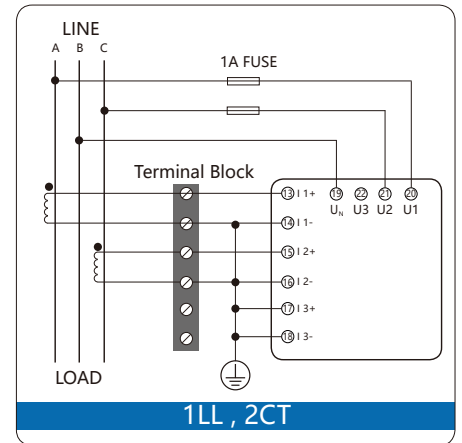
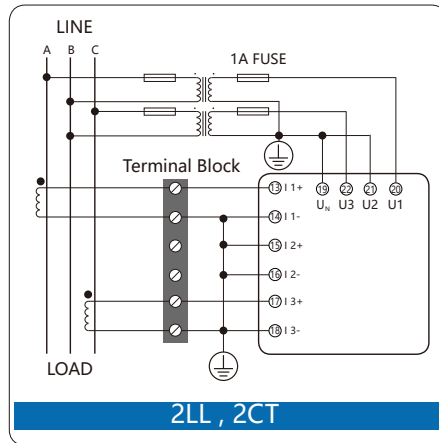
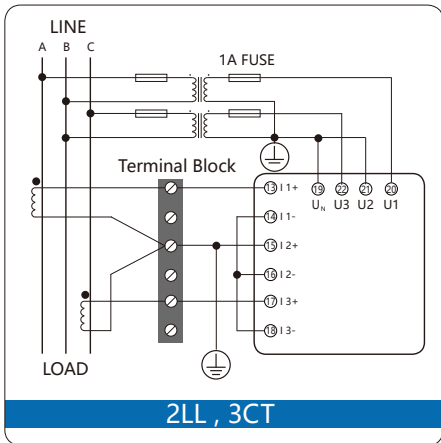
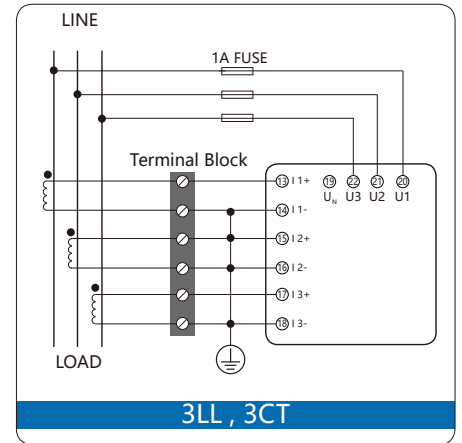
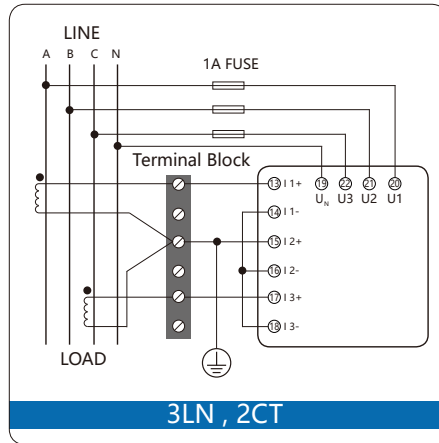
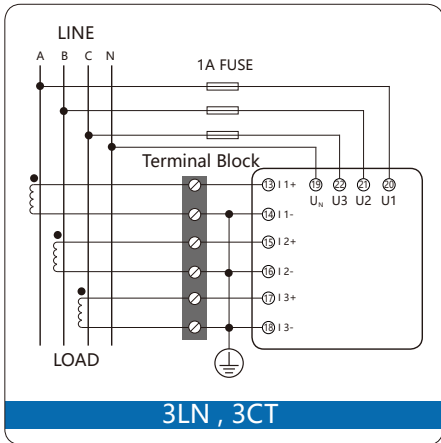
General parameter

Parameter	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5
General Parameter	gp01	gp02	gp03	gp04	gp05
Setting Parameter	sp01	sp02	sp03	sp04	sp05
Device Info	di01	di02	di03	di04	di05

Data Logging From FU2200A

No	YYYY-MM-DD hh:mm:ss	U1(V)	U2(V)	U3(V)	U1avg(V)	U2(V)	U23(V)	U31(V)	U1avg(V)	I1(A)	I2(A)	I3(A)	Iavg(A)	In(A)	P1(kW)	P2(kW)	P3(kW)	Pst
1	2015-02-03 13:59:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	0.999	1.000	0.999	0.000	0.050	0.050	0.050	0
2	2015-02-03 14:00:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	1.000	0.000	0.050	0.050	0.050	0
3	2015-02-03 14:01:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	1.000	0.000	0.050	0.050	0.050	0
4	2015-02-03 14:02:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	1.000	0.000	0.050	0.050	0.050	0
5	2015-02-03 14:03:00	99.97	99.95	99.96	99.96	173.15	173.10	173.15	173.13	1.000	1.000	1.000	1.000	0.000	0.050	0.050	0.050	0
6	2015-02-03 14:04:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	1.000	0.000	0.050	0.050	0.050	0
7	2015-02-03 14:05:00	99.96	99.95	99.97	99.96	173.14	173.11	173.15	173.13	4.998	4.998	4.998	4.998	0.000	0.250	0.250	0.250	0
8	2015-02-03 14:06:00	99.96	99.95	99.97	99.96	173.14	173.11	173.15	173.13	4.999	4.998	4.998	4.998	0.000	0.250	0.250	0.250	0
9	2015-02-03 14:07:00	99.96	99.95	99.97	99.96	173.14	173.11	173.15	173.13	4.998	4.998	4.998	4.998	0.000	0.250	0.250	0.250	0

Wiring Diagram



Related Current Transformer (C.T)

Model	Primary rated current	Rated load	Aperture (mm)	Description (mm)	Weight (kg)	Material	Water-proof
LZCK-55	300-1200A	≤10VA	φ55	180×138×52	2	PC	IP65
LMCK185-10	300-3000A	≤25VA	φ185	350×283×55	4.5	PC	IP65
LZCK310-10	300-600A	≤10VA	φ50	φ50 x φ110 x 32	1	Resin	silicon case (option)
LZCK322-10	30-600A	≤10VA	φ50	φ50 x φ110 x 52	1.6	Resin	silicon case (option)
LZCK350-10	20-600A	≤25VA	φ50	φ50 x φ110 x 105	3.1	Resin	silicon case (option)
LZCG530-10	30-600A	≤20VA	φ45	φ45 x φ120 x 65	5	Resin	silicon case (option)



FU2200B

0-800V Ethernet Power Meter with Data Logger

FU2200B is a three-phase multifunction power and energy meter manufactured by GFUVE. The meter provide excellent value for monitoring power and energy management systems. It may be used as data gathering devices for intelligent power distribution or plant automation systems. All monitored data is available via a standard digital RS485 communication port running the Modbus RTU protocol. It has the PC software and the data logger function, which can set by end users from 1min to 60min intervals to record. You can read the data through a PC. Also, you can share the data in the Internet LAN. By the way, it can measure the harmonics. With a wide range of models to choose from, the FU2200B power meter offers unparalleled value and functionality.



Features

1. True-RMS measuring parameters
2. ANSI and IEC 0.2 accuracy class
3. Power quality analysis
4. 4 quadrant energy
5. 2MB onboard memory, can be extended to 16M
6. Data logging
7. High-speed RS485, Ethernet port (option)
8. Measure individual harmonics from 2nd to 49th (option)
9. TOU, 4 Tariffs, 6 Seasons, 6 Schedules
10. Class leading warranty
11. With PC management software; web browse data

Applications

1. Metering of distribution feeders, transformers, generators, capacitor banks and motors
3. Medium and low voltage systems
4. Commercial, industrial, utility
5. Power quality analysis
6. Data logging
7. Monitoring system



Parameters

Electrical parameters	
Power Supply (AC/DC)	AC85-400V / DC85-330V Power consumption: <4VA
Measurement Parameters	Voltage (Ph-N); Voltage (Ph-Ph); Current; Frequency; PF; Active Power(W); Reactive Power(Q); Apparent Power(S), 2nd to 49th harmonics(option)
Harmonics	Total harmonics ratio of phase-voltage Total harmonics ratio of current 2nd to 49th harmonics ratio of phase-voltage 2nd to 49th harmonics ratio of current
Maximum Value & Minimum Value	Voltage, current, frequency, active power, reactive power, apparent power,demandP,demandQ, demandS.
Computation	Forward active power energy Reverse active power energy Forward active power energy Reverse reactive power energy
Measuring Range	0-800V, 0-10A, 45-65Hz, -1 ~ 0 ~ 1
Measuring Accuracy	Voltage: 0.5%RD±0.05%FS Current: 0.5%RD±0.05%FS Active Power: 0.5%RD±0.05%FS Reactive Power: 1.5%RD +0.05%FS Apparent power: 0.5%RD +0.1%FS Power Factor: 0.5%RD Frequency: 0.05%RD Active Energy: 0.5%
Maximum Demand	Ia, Ib, Ic, ΣPtotal, ΣQtotal, ΣStotal, 15 minutes
Display	Blue back-lit LCD Display 5 display figures 4 operation keys
Communication	Support RS-485 interface port, 32 (128) Networking ModBus-TCP/IP, SNMP communication protocol Ethernet 10/100M port (RJ45)
Memory	2M onboard memory,can be extended to 16M. Data looger interval can set by end users from 1min to 60min.The default is 15min. You can read the data through a PC, also you can select the data to diaplay and store from software.
Programmable	Measuring system: 3P4W/3P3W etc Transformation Ratio: PT 1-10000; CT 1-10000

Electrical parameters - continued

Energy pulse	Provides active & reactive energy pulse output Pulse parameters can be choosed Range: 0.1-10000kWh/kvarh Dry contact output (1Ax100V)
Connection mode	3P4W, 3P4W BAL, 3P3W, 3P3W BAL, 1P3W, 1P2W
Baud	1200-57600, Standard 38400

Mechanical parameters

Dimensions (L x W x H) (mm)	96x96x12.8
Mounting	Panel mounting Trepanning: 92x92mm The thickness of installation: 51mm

Environmental conditions

Temperature	-5 to +50 °C
Humidity	20%-95%RH, without condensation
Warranty	Three years warranty

Index

Parameters	Accuracy	Resolution	Measuring range	Show on the display
Voltage	0.20%	0.01V	0-800V	0.5-500kV
Current	0.20%	0.01mA	0-10A	5mA-50000A
Active power	0.50%	0.2W	0-2400W/phase	-9999MW to +9999MW
Reactive power	2%	0.2var	0-2400var/phase	-9999Mvar to +9999Mvar
Apparent power	0.50%	0.2VA	0-2400VA/phase	0-9999MVA
Active demand	0.50%	0.2W	0-2400W/phase	-9999MW to +9999MW
Reactive demand	2%	0.2var	0-2400var/phase	-9999Mvar to +9999Mvar
Apparent demand	0.50%	0.2VA	0-2400VA/phase	0 to 9999MVA
Power factor	0.005	0.0001	-2	-2
Frequency	0.01Hz	0.01Hz	45.000-65.000Hz	45.000-65.000Hz
Active energy	0.5%,0.2% (Option)	0.001kWh	0-999999.999kWh	0-9999999.9kWh
Reactive energy	2%	0.001kvarh	0-999999.999kvarh	0-9999999.9kvarh
Apparent energy	0.50%	0.001VAh	0-999999.999kVAh	0-9999999.9kVAh
Phase angle	0.1°	0.01°	0-359.99°	0-359.99°
Unbalance	2%	0.01%	0-300.00%	0-300.00%
PT ratio		1		1-10000
CT ratio		1		1-10000
Address code		1		1-253

Software Interface From FU2200B

Max & Min data

Energy include TOU

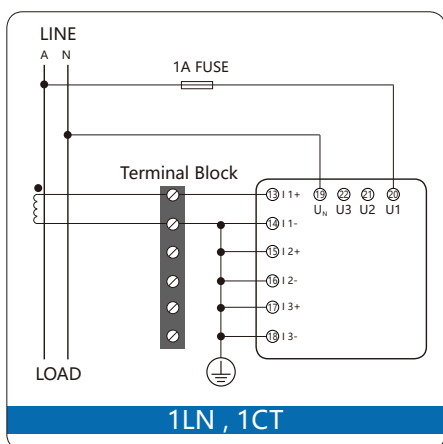
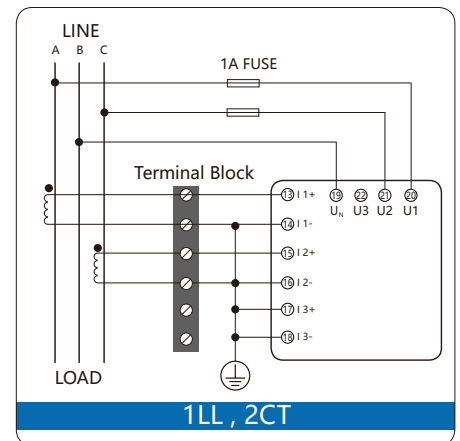
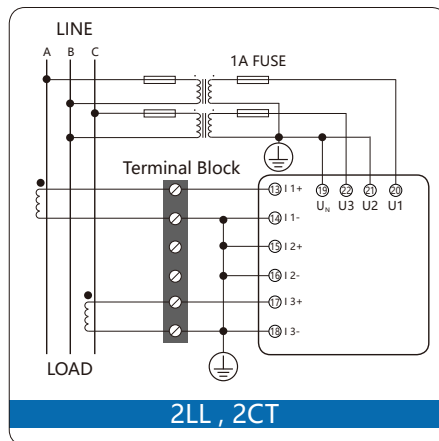
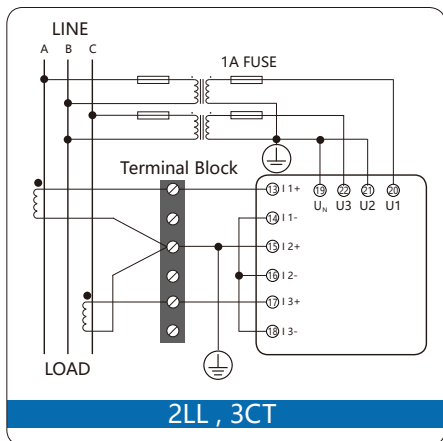
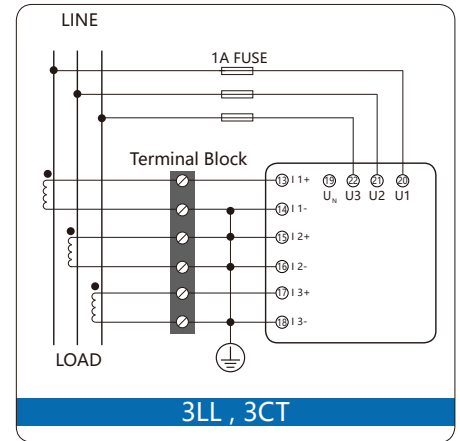
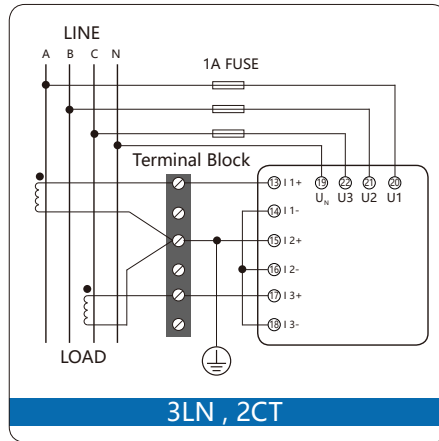
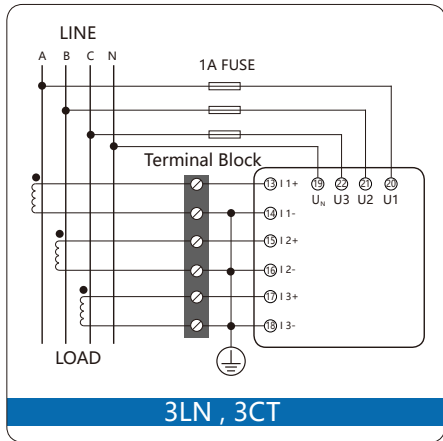
Real time metering

General parameter

Data Logging From FU2200B

No	YYYY-MM-DD hh:mm:ss	U1(V)	U2(V)	U3(V)	Uavg(V)	I1(A)	I2(A)	I3(A)	Iavg(A)	In(A)	P1(kW)	P2(kW)	P3(kW)	Pst	
1	2015-02-03 13:59:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	0.999	1.000	0.050	0.050	0.050
2	2015-02-03 14:00:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	0.050	0.050	0.050
3	2015-02-03 14:01:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	0.050	0.050	0.050
4	2015-02-03 14:02:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	0.050	0.050	0.050
5	2015-02-03 14:03:00	99.97	99.95	99.96	99.96	173.15	173.10	173.15	173.13	1.000	1.000	1.000	0.050	0.050	0.050
6	2015-02-03 14:04:00	99.96	99.95	99.96	99.95	173.14	173.10	173.14	173.12	1.000	1.000	1.000	0.050	0.050	0.050
7	2015-02-03 14:05:00	99.96	99.95	99.97	99.96	173.14	173.11	173.15	173.13	4.998	4.998	4.998	0.250	0.250	0.250
8	2015-02-03 14:06:00	99.96	99.95	99.97	99.96	173.14	173.11	173.15	173.13	4.999	4.998	4.998	0.250	0.250	0.250
9	2015-02-03 14:07:00	99.96	99.95	99.97	99.96	173.14	173.11	173.15	173.13	4.998	4.998	4.998	0.250	0.250	0.250

Wiring Diagram



T-203

Automatic Transformer Turns Ratio Tester

In power transformer Finished product production process, before the new installation of the transformer in operation, according to the national ministry of preventive test procedures, require the operation of transformer turn ratio or voltage ratio test, to check the correctness of the transformer turn ratio tap-changer of transformer whether inter turn short circuit transformer whether can run parallel.

T-203 automatic transformer turns ratio tester adopts three-phase power supply output voltage, the test speed Instrument to adopt advanced technology for A/D, wide range range; High speed single chip micro-computer as the core digital processor, the test fast; Chinese menu display, comprehensively improve the humanization and intelligent, instrument optional RS232C serial and USB come with computer on line, to realize the remote control of the instrument and intelligent analysis of the data A three phase transformation ratio test, the test speed High accuracy Perfect protection function.



Features

1. Can be a variety of single-phase three-phase transformer and Z type and so on commonly used than wide test range and error calculation.
2. Three-phase power supply test instrument. Can be set up AC160V / 10 v test voltage. Have a larger output current, load ability. Test speed.
3. High low pressure reverse connect protection function, the short circuit of transformer Inter turn short circuit protection function.
4. automatic conversion, without artificial calculation, to avoid the problems of variable than non integer input, a higher precision.
5. Large screen LCD menu, not to drop the electric clock and date display, memory 100 test data, in order to you at any time to view and print
6. Instrument with communication interface, data management software is optional USB storage.

Parameters

Electrical parameters		
Power supply		Single phase AC 220V±10% or 110V±10%, 50/60HzAC
Test power		AC160V/10V
Data storage		100 group
Display precision		5 Bits, resolution ratio: 0.0001
160V testing voltage	Range1	0.9-500: 0.1%±2words;
	Range2	500-3000: 0.2%±2words;
	Range3	3000-10000: 0.5%±2words;
10V testing voltage	Ratio	0.9-200
	Accuracy	0.3%±2words;
LCD		5.7"black and white LCD display
Communication		RS232 and USB communication interface
Printer		internal installed 58mm wide thermal printer.
Standard		IEC61010-1, IEC61326-1
Mechanical parameters		
Dimension (L×W×H) (mm)		415x320x168
Weight (kg)		7
Environmental conditions		
Operating temperature		-10°C to 50°C
Storage temperature		-20°C to 70°C
Relative humidity		≤85%RH

T-203H

Automatic Transformer Turns Ratio Tester

T-203H automatic transformer turns ratio tester adopts three-phase power supply output voltage, the test speed Instrument to adopt advanced technology for A/D, wide range range; High speed ARM as the core digital processor, test quickly; English menu display, Elaborate and handheld design, makes the T-203H TTR tester superior and powerful with small size and light weight. The TTR tester uses a programmable signal source technology. It is especially suitable for special transformers such as Z-type transformers, rectifier transformers, Scott or anti-Scott transformers, etc.

The T-203H TTR tester adopts the new algorithm developed by our company to measure the ratio of three-phase transformer and ensure the measurement accuracy without adjusting the balance of the three-phase power supply. Therefore, the transformer turns ratio and wiring method can be measured in one minute.



Features

1. Input single power, internal digital combination standard sine wave test source output
2. Phase angle measurement function: measure the phase angle between high voltage side and low voltage side. Measure the turns ratio and phase angle of "Non integral point" transformer
3. It can conduct single-phase measurement and three-phase winding automatic test. Three phase turns ratio value, phase angle value, error, tapping position, tapping value can be measured for once. It also can identify connecting group number automatically
4. Testing results can be displayed in the form of digit and hexagon vector diagram, which makes transformer connecting group can be made out obviously
5. With blind test function: There is no need to choose connecting method and group. When measuring Y/Δ , Δ/Y transformer, no external short-circuit is needed, connecting method can be shifted automatically according to the chosen testing contents
6. With tapping test function: TTR and TTR error in the position of each tapping switch can be gauged quickly. Just input rated TTR once, instead of inputting over and over again, TTR error in tapping position can be calculated
7. With functions of turns ratio measurement and voltage TTR measurement
8. With 5.6 inch color LCD, the effect of data & figure display is visualized and fine
9. With small size and light weight, it is easy to carry
10. With built-in high capacity chargeable lithium battery. Test can be conducted without any power supply on site, and once the battery is charged fully, it can make measurement for more than 500 times continuously

Parameters

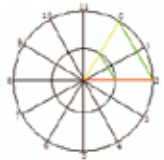
Electrical parameters					
Power supply	7.2V Lithium-ion rechargeable battery				
Test power	AC 24V				
Data storage	500 group				
TTR measurement accuracy	<table border="1"> <tr> <td>Range1</td> <td>0.8-3000: 0.1%±2words;</td> </tr> <tr> <td>Range2</td> <td>3000-10000: 0.2%±2words;</td> </tr> </table>	Range1	0.8-3000: 0.1%±2words;	Range2	3000-10000: 0.2%±2words;
Range1	0.8-3000: 0.1%±2words;				
Range2	3000-10000: 0.2%±2words;				
Display precision	5 Bits, resolution ratio: 0.0001				
Phase angle accuracy	0.1°				
Voltage accuracy on HV side	0.05%				
Voltage accuracy on LV side	0.10%				
LCD	5.6" color LCD display				
Key	30 pcs				
Communication port	RS232 , USB				
Standard	IEC61010-1, IEC61326-1				
Mechanical parameters					
Dimension (L×W×H) (mm)	260x160x60				
Weight (kg)	3				
Environmental conditions					
Operating temperature	-10°C to 50°C				
Storage temperature	-20°C to 70°C				
Relative humidity	≤85%RH				

Voltage ratio tester		NO:141257	14-12-04
		Ver5.0000	10:08:13
Sum:007	No:001	2017-03-04 16:22:55	
Serial Num:123456	Number of tapping:03		
Equal tapping level: 5.0% Rated turn ratio:23.753			
Result :	AB	BC	CA
Tapping	23.753	23.753	23.753
Ratio	23.6209	23.6526	23.8092
Error	-0.554%	-0.421%	+0.239%
Angle	-0.07°	-0.07°	-0.07°
Group	0	0	0
Press [F2] to USB, [F3] to Delete			

Voltage ratio tester		NO:141257	14-12-04
		Ver5.0000	10:08:13
	Uab	Ubc	Uca
High	0.000V	0.000V	0.000V
Low	0.000V	0.000V	0.000V
Phase	0.00°	0.00°	0.00°
Tx ratio:	AB	BC	CA
Tapping	25.000	25.000	25.000
Ratio	25.000	25.000	25.000
Error	00.00%	00.00%	00.00%
Group:	AB	BC	CA
Phase	0.00°	0.00°	0.00°
Group	0	0	0
Test count:	57		
Test status:	Test is over		
Press [Save] [Return]			

Current tapping: 02

vectorgraph:



T-206

Anti-interference Dielectric Loss Tester

Dielectric loss tester can effectively find the overall damp, deterioration and partly defects of electrical equipment insulation, which are widely used in electrical manufacturing, electrical equipment installation, handover and preventive testing.

The anti-interference precision dielectric loss tester is used for on-site anti-interference, dielectric loss measurement or laboratory dielectric loss measurement.



The instrument is an integrated structure with built-in dielectric loss bridge, variable variable frequency power supply, test transformer and standard capacitor, etc.. The instrument adopts frequency conversion anti-interference and Fourier transform digital filtering technology, fully automatic and intelligent measurement, and the measurement data is very stable under strong interference. The result of measurement is displayed by large screen display, and the instrument comes with micro printer to print and print test results.

Features

1. With positive / reverse wiring, internal / external standard capacitor, internal / external high voltage, reverse connection, low voltage shielding, CVT and variable ratio, and other modes of operation. Can automatically distinguish capacitance, inductance, resistance type test sample. Integrated structure, fully automatic, intelligent measurement, easy to use and carry.
2. With ordinary measurement and accurate measurement mode. Testing speed under accurate measurement mode is slower than the ordinary measurement mode, and is suitable for big interference in scene occasions. For common scene occasions, ordinary measurement mode can be used..
3. The frequency conversion anti-interference can be measured accurately under 200% interference, and the test data is stable. It is suitable to do the anti-interference dielectric loss test on the spot.
4. By using digital waveform analysis and Bridge self calibration technology, the accuracy and stability of the positive / reverse connection are consistent. With high-precision three terminal standard capacitor, high precision dielectric loss measurement is realized.
5. Built in series and parallel dielectric loss measurement model, and can simulate voltage capacitor bridge and current comparator for convenient instrument verification.
6. During CVT self excitation magnetic measurement, the measuring line can be connected with the floor, C1/C2 can be measured at the same time to automatically compensate the voltage sharing effect of ground busbar and standard capacitor, without changing line and external parts.

7. The utility model has the function of reverse connection and low voltage shielding. Under the condition of 220kV CVT ground busbar, the C11 can be carried out the measuring of the dielectric loss of the lower shield without disconnecting the 10kV , and simultaneously measuring the capacitance and the dielectric loss of the lower shielding part.

8. With CVT ratio measurement function, it can measure the CVT ratio, polarity and phase error.

9. Safety measures

High voltage protection: Under condition of short circuit, breakdown or high voltage current fluctuation, it can cut off output at a high speed by short circuit mode.

Power supply protection: incorrect connection of 380V, power supply fluctuation or sudden power failure, it will start protection and avoid to cause over-voltage.

Ground protection: it has the function of ground wiring detection and can not step up when it is not grounded. If the instrument is not grounded properly, the ground protection is started.

CVT protection: four protection limits of voltage and current in high voltage, voltage and voltage and current in low voltage side to protect the equipment; the wrong menu will not output the exciting voltage. In CVT measurement without 10kV high voltage output.

Anti misoperation: two level power switch; real-time monitoring of voltage and current; repeated key confirmation; distinctive terminal of high / low voltage; slow step-up; quick decompression; sound and light alarm.

Anti - "Capacitance rise": when measuring large capacitance sample, the "rise" effect of voltage can occur. The instrument can automatically track the output voltage and keep the test voltage constant.

High voltage cable: high voltage insulated wire can be used even connecting the floor.

Anti-seismic performance: the instrument adopts unique anti-seismic design, and can withstand strong long-distance transportation, vibration and jolt without damage.

10. Print storage: instrument with a micro printer, and you can print and output the measurement results. The measurement results will be stored into the device (which can store 100 sets of measurements) or U disk for checking in the future..

11. Real time clock: instrument with real-time clock, real-time display, and can record the date and time of measurement.

Parameters

Electrical parameters	
Power supply	Single phase AC 220V±10% or 110V±10%, 50/60HzAC
Accuracy	Cx: + (reading * 1%+1pF)TG Delta: + (reading * 1%+0.00040)
Anti-interference index	frequency conversion anti-interference, can achieve the accuracy under 200% interference
Capacitance range	Internal applied high voltage: 3pF ~ 60000pF/10kV 60pF to 1 mu F/0.5 External applied high voltage: 3pF to 1.5 F/10kV 60pF to 30 mu F/0.5kV
Resolution	maximum 0.001pF, 4 bit significant digits
TG delta range	no limit, resolution 0.001%, capacitance, inductance, resistance, three kinds of test products, automatic identification.

Electrical parameters - continued

Test current range	10 A to 5A
Internal Applied high voltage	set voltage range: 0.5 ~ 10kV
Maximum output current	200mA
Lifting mode	continuous smooth adjustment
Voltage accuracy	+ (1%× readings +10V)
Voltage resolution	0.1V
Test frequency	45, 50, 55, 60, 65Hz single frequency 45/55Hz, 55/65Hz, 47.5/52.5Hz automatic dual frequency conversion
Frequency accuracy	0.01Hz
External applied high voltage	positive and reverse wiring, the maximum test current 5A
CVT self excitation measurement	output voltage 3 ~ 50V, output current 3 ~ 30A C1/C2 simultaneous measurements, high-voltage wiring can be mopp
CVT ratio measurement	change ratio measurement accuracy: + reading×1% ratio, measuring range: 10~99999 Phase measurement accuracy: +0.02° phase measurement range: 0~ 359.99 °
High voltage dielectric loss	support frequency conversion and vibration supply, high voltage dielectric loss
Real time clock	time and date display in real time
Internal storage	100 sets of measurement data can be stored inside the instrument
U disk	supports U disk storage
LCD	5.7"black and white LCD display
Communication	RS232 and USB communication interface
Printer	internal installed 58mm wide thermal printer.
Standard	IEC61010-1, IEC61326-1

Mechanical parameters

Dimension (L×W×H) (mm)	368x288x280
Weight (kg)	22

Environmental conditions

Operating temperature	-10°C to 50°C
Storage temperature	-20°C to 70°C
Relative humidity	≤85%RH

T-209

Circuit Breaker Tester/Circuit Breaker Analyzer

T-209 Circuit Breaker Tester can test the vacuum circuit breaker ,sf6, oil circuit breaker, GIS and etc. the test parameters include, close or open time ,delta time ,bounce time ,bounce cycles, multi-operation, stroke , gap ,over-travel ,overshoot ,rebound and the speed, with the ability of test results and graph display.



Features

1. Immunity : withstand the 550KV electrostatic environment
2. Transducer: with one analog transducer test ability .
3. Standard : with the standard of DL/T846.3—2004 (P.R.C.)
4. Power: with internal dc power ,the voltage ranges from 15v to 250v.
5. Trigger: with four triggers to start the recording ,channels state, voltage, current and transducer.
6. HMI: via keypad and a large transfective LCD display (320 x 240 pixels).
7. Speed: supply series of speed definition with editable and un-editable selection.
8. Recording: with twelve channels ,coil current and transducer .
9. Print: with internal installed 58mm wide thermal printer.
10. Communication: with RS232 and USB communication interface.
11. Memory: with a SD card of 2GB,the maximum storage ability is 100 test results.
12. USB FLASH: USB and RS232 interface for data communication with the PC.
13. Help : the instrument has internal help topic .

Parameters

Electrical parameters		
Power supply		Single phase AC 220V±10% or 110V±10%, 50/60HzAC
Immunity		withstand the 550KV electrostatic environment
Test channels		12 channels with 25V, the current is 50mA
Transducer		one analog transducer
TIME	Recording time length	0~9.9s
	Time accuracy	±0.1%reading ± 2 LSB
	Resolution	0.1ms

Electrical parameters - continued

Motion	Ranges	0~1000mm
	Accuracy	±1% reading ±1LSB
	Resolution	0.1mm
Velocity	Ranges	0~20.00m/s
	Accuracy	±1%reading ±1LSB
	Resolution	0.01m/s
DC POWER	Ranges	15~260V
	Max current	20A
	Accuracy	±1%reading ±1LSB
	Load change	≤1%
TRIGGER	Voltage	15~260V
	Current	0.1-20A
	Transducer	the transducer states changes
	Channels	channels states changed
Memory	SD card of 2GB,the maximum storage ability is 100 test res.	
LCD	5.7"black and white LCD display (320 x 240 pixels)	
Communication	RS232 and USB communication interface	
Printer	internal installed 58mm wide thermal printer.	
Standard	DL/T846.3-2004, IEC61010-1, IEC61326-1	

Mechanical parameters

Dimension (L×W×H) (mm)	380x262x120
Weight (kg)	6

Environmental conditions

Operating temperature	-10°C to 50°C
Storage temperature	-20°C to 70°C
Relative humidity	≤95%RH

T-212

MicroOhm Meter Tester/Contact Resistance Test Set

*T-212 MicroOhm Meter tester adopts the top open structure or vehicle mounted horizontal chassis. It has that vantage: more small volume, more light weight, more strong functions, and the simple operation. It designed for field tester design. The high output voltage is 10V. Display is 160*128 large LCD screen. Test current optionally, test time can be set, test process dynamic tips, suitable for different working environment. It can save 200 test record, the records can be printed and uploaded to the computer.*



Features

1. Measures contact resistance in circuit breakers, disconnecting switches, busbar connections, safety devices, etc.
2. Easy to operate
3. Designed for rugged field use
4. Highly flexible cable connections
5. Portable and lightweight, weighs only 7.5 kg
6. Print :with internal installed 58mm wide thermal printer.
7. Communication:with RS232 and USB communication interface.
8. Help : the instrument has internal help topic .

Parameters

Electrical parameters

Power supply	Single phase AC 220V±10% or 110V±10%, 50/60HzAC
Cooling way	intermittent air cooled
Current output	constant current: 100Amp, 200Amp.
Test time	100Amp: 5-60Sec, 200Amp: 5-30Sec
Test range	0-20000.0μΩ (100Amp) 0-10000.0μΩ (200Amp)
Accuracy	0.5%±2bit
Resolution	0.1μΩ
Max storage volume	200

Electrical parameters - continued

LCD	5.7"black and white LCD display
Communication	RS232 and USB communication interface
Printer	internal installed 58mm wide thermal printer.
Standard	DL/T 596-2005, IEC61010-1, IEC61326-1

Mechanical parameters

Dimension (L×W×H) (mm)	415x319x168
Weight (kg)	7.5

Environmental conditions

Operating temperature	-10°C to 50°C
Storage temperature	-20°C to 70°C
Relative humidity	≤85%RH

T-213

Transformer Winding DC Resistance Tester

T-213 test instrument can test transformer, mutual inductor, reactor, dc resistance of motor and perceptual load. Instrument is small in size, light weight, strong function, easy operation, Designed for production test and field measurement field staff. Large screen LCD in English and Chinese, Especially suitable for continuous the points contact load switch does not block the test, Dynamic measurement process, give an Automatic arc suppression instructions alarm, Can edit the user information, test records can save and print. It can be configured PC online communication and testing capabilities.



Features

1. Measures transformer, mutual inductor, reactor, dc resistance of motor and perceptual load etc.
2. Easy to operate
3. Designed for rugged field use
4. Wide measuring range 1mΩ-20kΩ
5. Portable and lightweight, weighs only 7 kg
6. Print :with internal installed 58mm wide thermal printer.
7. With 5.7 inch LCD display.
8. Communication:with RS232 and USB communication interface

Parameters

Electrical parameters

Power supply	Single phase AC 220V±10% or 110V±10%, 50/60HzAC
Cooling way	intermittent air cooled
Current output	10mA, 100mA, 1A, 5A, 10A, 20A.
Test voltage	DC 28V

Electrical parameters

Test range	1mΩ-1Ω (20A)
	1mΩ-2Ω (10A)
	1mΩ-4Ω (5A)
	100mΩ-20Ω (1A)
	10Ω-200Ω (100mA)
	100Ω-20kΩ (10mA)
Accuracy	0.2%±2bit
Resolution	0.1μΩ
Max storage volume	200 SETS
LCD	5.7"black and white LCD display
Communication	RS232 and USB communication interface
Printer	internal installed 58mm wide thermal printer.
Standard	DL/T 596-1996, IEC61010-1, IEC61326-1, GB6587.1-86

Mechanical parameters

Dimension (L×W×H) (mm)	415x319x168
Weight (kg)	7

Environmental conditions

Operating temperature	-20°C to 50°C
Storage temperature	-40°C to 70°C
Relative humidity	≤85%RH

T-216

600A Contact Resistance Test Set

The risk of overheating is becoming more serious due to the fact that today's distribution networks have to carry heavier loads. Checking contact resistances at regular intervals detects faults before they cause overheating.

T-216 600A Contact Resistance Test Set are used to measure contact resistances in highvoltage breakers, disconnecting switches (isolators), knife-contact fuses, bus joints, line joints etc. It adopts the top open structure or vehicle mounted horizontal chassis. It has that vantage: more small volume, more light weight, more strong functions, and the simple operation. It designed for field tester design. The high output voltage is 10V. Display is 160*128 large LCD screen. Test current optionally, test time can be set, test process dynamic tips, suitable for different working environment.



Features

1. Measures contact resistance in circuit breakers, disconnecting switches, busbar connections, safety devices, etc.
2. 600A large current output
3. Easy to operate
4. Compact designed for field use
5. Highly flexible cable connections
6. Portable and lightweight
7. Print :with internal installed 58mm wide thermal printer.
8. Communication:with RS232 and USB communication interface.

Parameters

Electrical parameters	
Power supply	Single phase AC 220V±10% or 110V±10%, 50/60HzAC
Cooling way	intermittent air cooled
Current output	constant current: 100A, 200A, 300A, 400A, 500A, 600A.
Test time	100A: 5-60Sec, 200A: 5-30Sec, 300A-600A: 5-10Sec

Electrical parameters - continued

Test range	0-20000.0μΩ (100A)
	0-10000.0μΩ (200A)
	0-6000.0μΩ (300A)
	0-5000.0μΩ (400A)
	0-4000.0μΩ (500A)
	0-3000.0μΩ (600A)
Accuracy	0.5%±2bit
Resolution	0.1μΩ
Max storage volume	200
LCD	5.7"black and white LCD display
Communication	RS232 and USB communication interface
Printer	internal installed 58mm wide thermal printer.
Standard	DL/T 596-2005, IEC61010-1, IEC61326-1

Mechanical parameters

Dimension (L×W×H) (mm)	490x345x185
Weight (kg)	14

Environmental conditions

Operating temperature	-10°C to 50°C
Storage temperature	-20°C to 70°C
Relative humidity	≤85%RH



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