GFUVE

PRODUCT INTRODUCTION

ELECTRICAL TEST EQUIPMENT

www.siamenergysaving.com

CONTENTS

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

GFUVE

GF2013

AMMETER RECORDER

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	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

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 ±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 immediate 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

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 ±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
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
Environmental conditions	
Operating temperature	-40°C to 60°C

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-600A 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	DC 7.4V Lithium battery, 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-600A (50/60Hz automatic)
Resolution	0.01mA
Shift	0.00mA-600A automatic shift

GFUVE

GF2011

AMMETER RECORDER

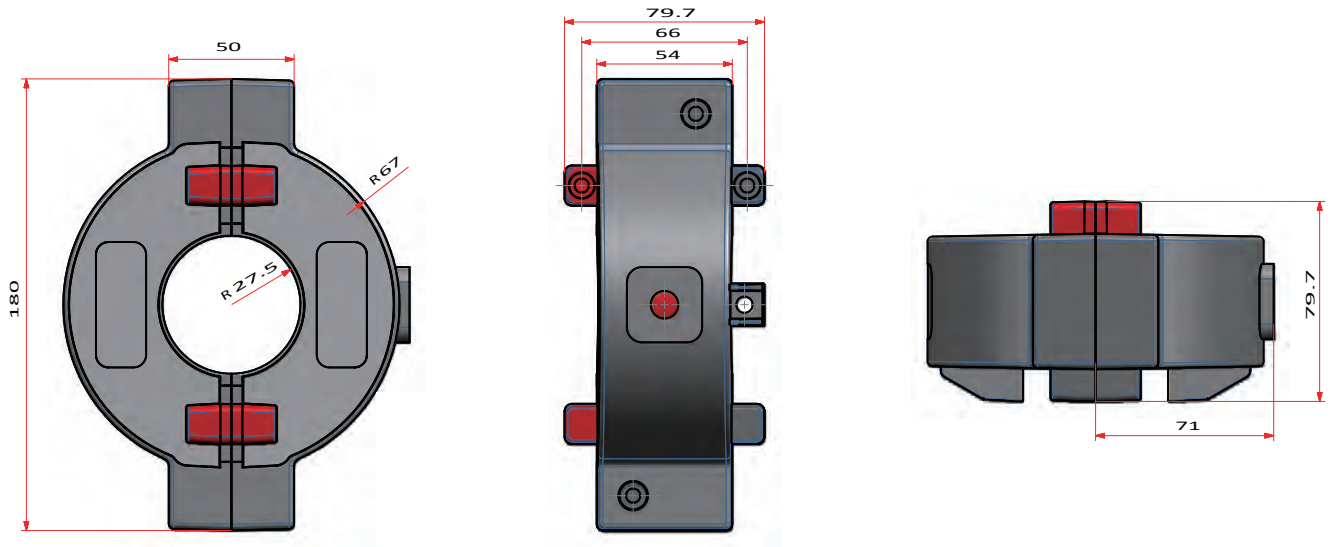
Electrical parameters - continued	
Accuracy (23°C±5°C, below 70%RH)	0.000mA-60.00A: ±1%±3dgt 60.00A-600.0A: ±1%±5dgt
Line voltage	Below 69KV line test (with 5 insulation rods operation)
Data memory	99 sets
Automatic shutdown	15 minutes after boot
Battery voltage	<5.92V alarm active
Insulation strength	AC 100kV/rms (between the 5th insulation rod and high voltage current clamp 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)	68×245×40
Meter weight	2.5kg (including insulation rod and battery, detector 150g)
Clamp dimension (mm)	Φ35
Insulation rod dimension	ϕ32mm, 1m/piece (5pieces)
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	
Clamp meter	1 pc
Receiver	1 pc
Meter box	1 pc
Insulation rod (1m)	5 pc
Battery	Rechargeable lithium battery

LMCK055-10

Outdoors Split Core Current Transformer

LMCK series current transformers are applicable for AC power system 35kV and measurement of current of power supply equipment below 10KV also can be used for microcomputer protection. This type of current transformer employs imported silicon steel which with high permeability as magnetic material, has the characteristics of Small magnetic circuit loss and can be split, its semicircular core and secondary windings employ high quality epoxy resin vacuum, casting in plastic-case which is flame retardance anti-moisture, stable performance, no maintenance.

Outline drawing



Parameters

Technical parameters	
Standards	IEC60044-1; IEC 61869-2; NTC 2205; GB1208-2006
Accuracy Class	0.5%, 1%
Range of primary rated current	300-1200A
Range of Rated load	≤10VA

Technical parameters - continued	
Rated frequency	50/ 60Hz
Rated secondary current	5A or 1A
Secondary winding power frequency withstand voltage	3kV, 1min
Safety Factor Rating	(FS) < 5
Flame retardant ABS plastic shell inside, jaw waterproof apron.	
Mechanical parameters	
Aperture (mm)	Φ55
Dimensions (W×D×H) (mm)	180×138×52
Weight (kg)	2
Working conditions	
Operating temperature	-35°C to +55°C , not exceeding +40°C
Environment	outdoors or indoors
The Height of above sea level	0- 3000m
Conditions	No existence of severely begrimed, erosive and radioactive gas in the air. Continuous working under the rated current is allowed.

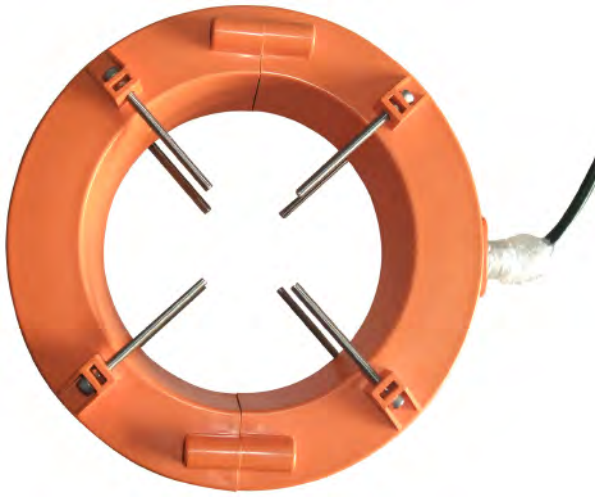
Selection guide

Model	Primary rated current	Rated load	Aperture (mm)	Description (mm)	Weight (kg)	Material	Water-proof
LMCK055-10	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)

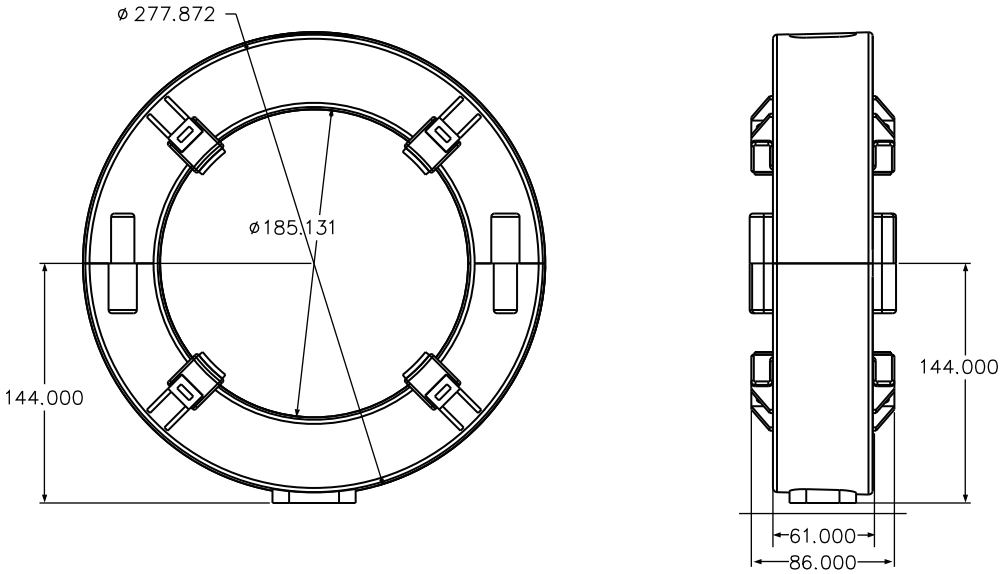
LMCK185-10

Outdoors Split Core Current Transformer

LMCK series current transformers are applicable for AC power system 35kV and measurement of current of power supply equipment below 10KV also can be used for microcomputer protection. This type of current transformer employs imported silicon steel which with high permeability as magnetic material, has the characteristics of Small magnetic circuit loss and can be split, its semicircular core and secondary windings employ high quality epoxy resin vacuum, casting in plastic-case which is flame retardance anti-moisture, stable performance, no maintenance.



Outline drawing



Parameters

Technical parameters	
Standards	IEC60044-1; IEC 61869-2; NTC 2205; GB1208-2006
Accuracy Class	0.5%, 1%
Range of primary rated current	300-3000A
Range of Rated load	≤25VA

Technical parameters - continued	
Rated frequency	50/ 60Hz
Rated secondary current	5A or 1A
Secondary winding power frequency withstand voltage	3kV, 1min
Safety Factor Rating	(FS) < 5
Flame retardant ABS plastic shell inside, jaw waterproof apron.	
Mechanical parameters	
Aperture (mm)	Φ185
Dimensions (W×D×H) (mm)	350×283×55
Weight (kg)	4.5
Working conditions	
Operating temperature	-35°C to +55°C , not exceeding +40°C
Environment	outdoors or indoors
The height of above sea level	0- 3000m
Conditions	No existence of severely begrimed, erosive and radioactive gas in the air. Continuous working under the rated current is allowed.

Selection guide

Model	Primary rated current	Rated load	Aperture (mm)	Description (mm)	Weight (kg)	Material	Water-proof
LMCK055-10	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)

LZCG530-10

High-precision Current Transformer

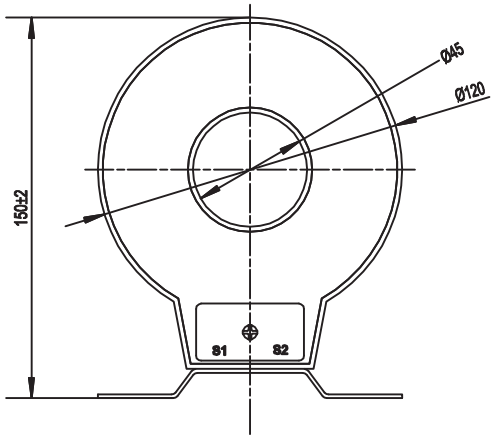
LZCG series high precision current transformer is suitable for current measurement and microcomputer protection of electrical equipment in 10KV and 35KV AC power system. It is widely used in not only compact fully insulated ring network switchgears such as ABB-SafeRing/SafePlus, Uniswitch, Schneider RM6, SM6, Siemens 8DJ10/8DH10, Simosec, FBX, Fluokit, Omar Garbo GA, GAE; SEL TPS(Q); VEI Unifluorc; Eaton SVS/12 ring network, but also cable distribution boxes because of its small size, light weight, openable and convenient installation. It is very convenient that the transformer can be directly installed at the inlet and outlet cables.

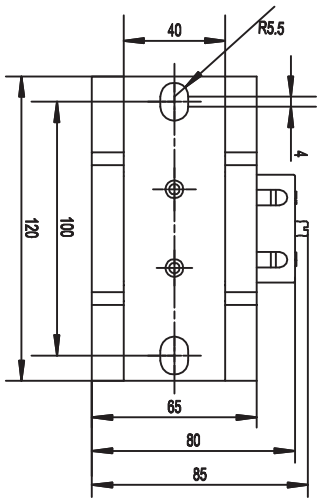
New magnetic material is taken to be the core of the current transformer, which has high magnetic permeability, low saturation magnetization and good stability. Therefore, the measuring accuracy is higher and the instrument security factor is lower. Since the high quality silicon processed by advanced technology is taken to be the core of the protection windings, which assured the accuracy limit factor is higher.

The semicircular ring core and secondary windings are vacuum poured by high quality epoxide resin in the fire retardant plastic casing, which has the characteristic of moisture proof, stable performance and dispensing with maintenance. Small size, light weight, small footprint, fixed in the ring network switchgear cable. The cable can cross the current transformer through its internal poles quickly and uniformly.

The current transformers can be divided several kinds according to the various current ratio, accuracy and rated loads. The specific parameters are showed in the corresponding to each model parameter tables.

Outline drawing

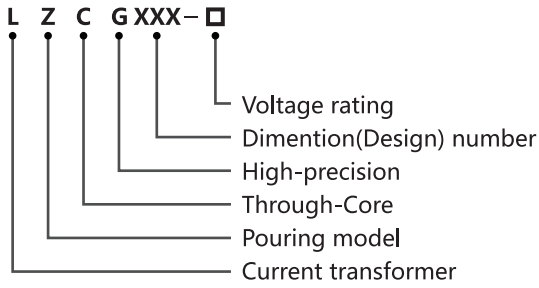




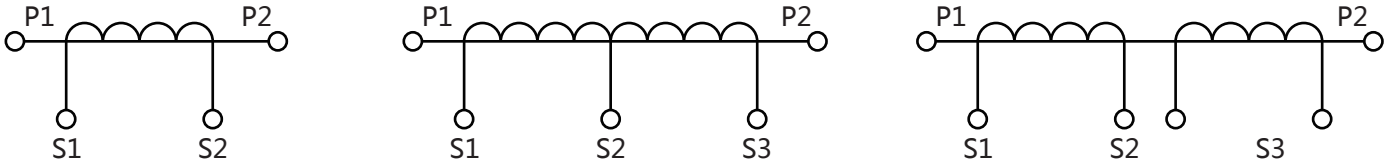
LZCG530-10

SPLIT CORE CURRENT TRANSFORMER

Model meaning



Wiring diagrams



Single winding　　Secondary winding with tap　　Double winding

P1, P2 is primary polarity terminal, S1, S2 is secondary polarity terminal.
P2, S2 is homonymous terminals (subtractive polarity).

Parameters

Technical parameters	
Standards	IEC60044-1; IEC 61869-2; NTC 2205; GB1208-2006
Rated primary current	30-600A
Rated load	≤20VA
Rated frequency	50Hz or 60Hz
Rated secondary current	5A or 1A
Rated short-time thermal current	40kA, 1S
Rated continuous thermal current	$120\%I_{1n}$
Secondary winding power-frequency voltage	3kV, 1min
Instrument security factor	FS≤10
Mechanical parameters	
Dimensions (W×D×H) (mm)	ϕ45xϕ120x65
Weight (kg)	5
Operating conditions	
Operating temperature	-35°C to +55°C
Daily average temp	<+40°C
Altitude	<3500 meters

Operating conditions - continued	
Condition	No existence of severely begrimed, erosive and radioactive gas in the air. Permission of long-term operation under rated current.

Technical data

Type	LZCG530-10			LZCG530-10			LZCG530-10			
Purpose	Measuring current transformer			Protection current transformer			Double winding current transformer			
Rated primary current (AMP)	Accuracy class and rated load(VA)			Accuracy class and rated load(VA)			Composite accuracy class and rated load(VA)			
	0.2S	0.2	0.5	10P20	10P15	10P10	0.2S	0.5	10P15	10P10
30			2							
40			2.5							
50			3.75			2				
75		3.75	5		2	3.75				
100	2.5	5	7.5		2.5	3.75				
150	5	7.5	10	2.5	3.75	6.25	2.5	3.75		2.5
200	7.5	10	15	3.75	5	7.5	5	7.5		3.75
300	10	15	20	5	7.5	10	7.5	10	2.5	5
400	15	20	25	6.25	7.5	15	10	12.5	3.75	5
500	20	25	25	6.25	7.5	15	15	15	3.75	5
600	20	30	30	7.5	10	20	15	20	3.75	7.5

Selection guide

Model	Primary rated current	Rated load	Aperture (mm)	Description (mm)	Weight (kg)	Material	Water-proof
LMCK055-10	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)

Ordering information

All kinds of different specifications and parameters current transformers can be made according to your needs.

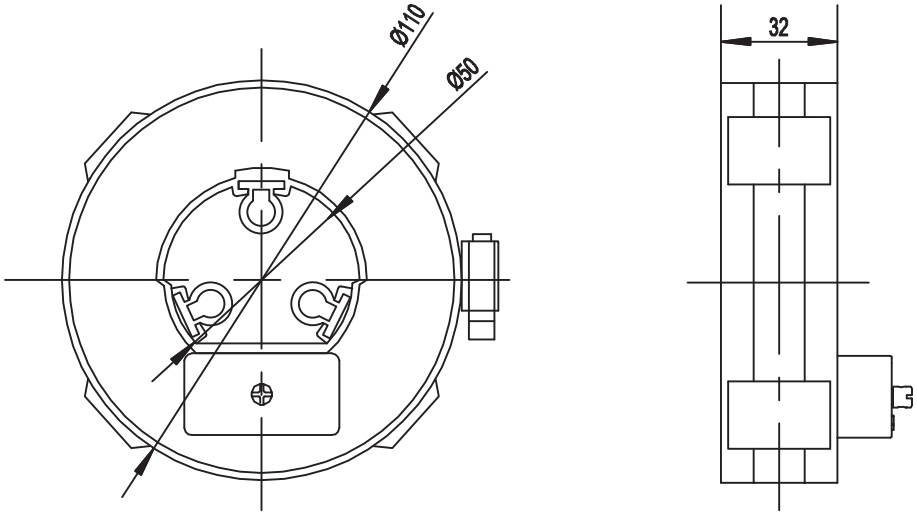
LZCK310-10

Split Core Current Transformer

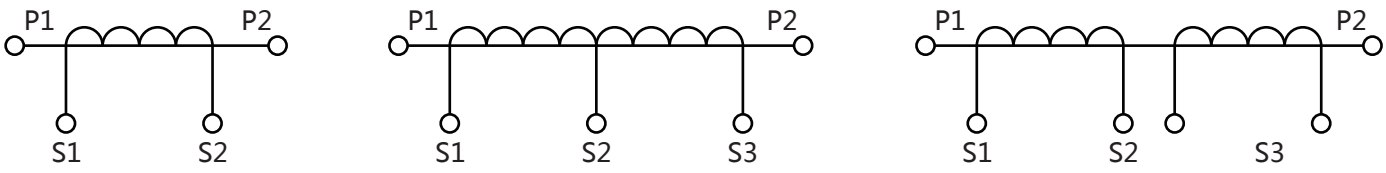
LZCK series split core current transformer is suitable for current measurement and microcomputer protection of electrical equipment in 10KV and 35KV AC power system. It is widely used in compact fully insulated ring network switchgears such as ABB-SafeRing/SafePlus...and cable distribution boxes.

The transformer can be directly installed at the inlet and outlet cables.The slice is imported silicon material. The semicircular ring core and secondary windings are vacuum poured by insulated resin.

Outline drawing



Wiring diagrams



Single winding | Secondary winding with tap | Double winding

P1, P2 is primary polarity terminal, S1, S2 is secondary polarity terminal.
P2, S2 is homonymous terminals (subtractive polarity).

LZCK310-10

SPLIT CORE CURRENT TRANSFORMER

Parameters

Technical parameters	
Standards	IEC60044-1; IEC 61869-2; NTC 2205; GB1208-2006
Rated primary current	300-600A
Rated load	≤10VA
Rated frequency	50Hz or 60Hz
Rated secondary current	5A or 1A
Rated short-time thermal current	40kA, 1S
Rated continuous thermal current	$120\%I_{1n}$
Secondary winding power-frequency voltage	3kV, 1min
Instrument security factor	FS ≤10
Mechanical parameters	
Dimensions (W×D×H) (mm)	ϕ50xϕ110x32
Weight (kg)	1
Operating conditions	
Operating temperature	-35°C to +55°C
Daily average temp	< +40°C
Altitude	<3500 meters
Condition	No existence of severely begrimed, erosive and radioactive gas in the air. Permission of long-term operation under rated current.

Technical data

Type	LZCK310-10			LZCK310-10		
Purpose	Measuring current transformer			Protection current transformer		
Ratio	Accuracy class and rated load(VA)			Accuracy class and rated load(VA)		
I_1/I_2	0.5	1	3	10P15	10P10	10P5
300/1	1.5	2.5	2.5		1.5	2.5
400/1	2.5	3.75	3.75		1.5	2.5
500/1	2.5	5	5	1.5	2.5	5
600/1	2.5	5	5	1.5	2.5	5
300/5	2.5	3.75	3.75		1	2.5
400/5	5	7.5	7.5		1.5	3.75
500/5	5	7.5	7.5		2.5	5
600/5	5	7.5	10		2.5	5

LZCK310-10

SPLIT CORE CURRENT TRANSFORMER

Selection guide

Model	Primary rated current	Rated load	Aperture (mm)	Description (mm)	Weight (kg)	Material	Water-proof
LMCK055-10	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)

Ordering information

Be sure to the type, current ratio, accuracy class, rated load and use of the products when you plan to make a order.
Special specifications could be customized.
All kinds of different specifications and parameters current transformers can be made according to your needs.

Option

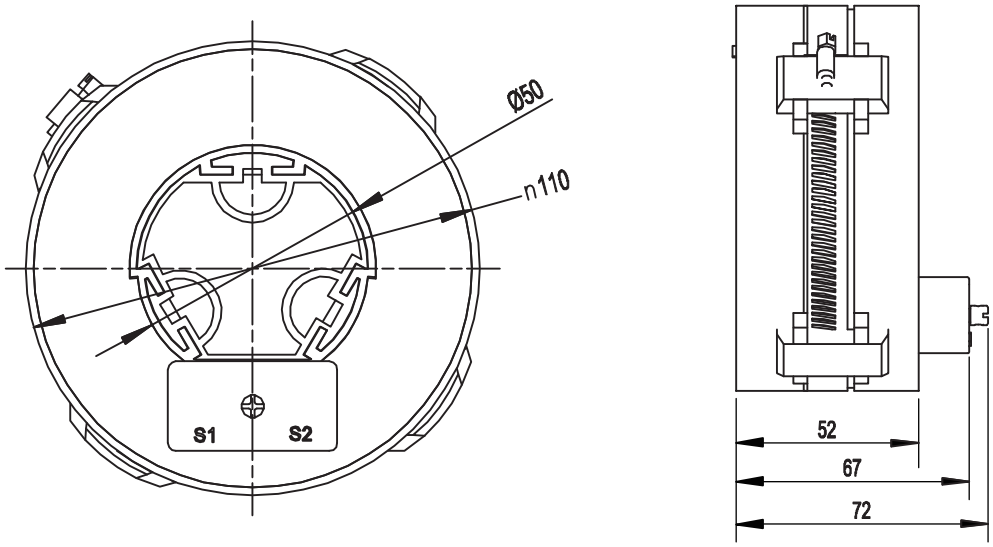
LZCK322-10

Split Core Current Transformer

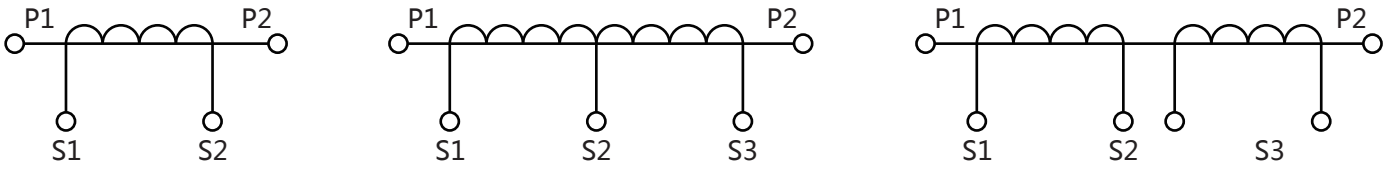
LZCK series split core current transformer is suitable for current measurement and microcomputer protection of electrical equipment in 10KV and 35KV AC power system. It is widely used in compact fully insulated ring network switchgears such as ABB-SafeRing/SafePlus...and cable distribution boxes.

The transformer can be directly installed at the inlet and outlet cables.The slice is imported silicon material. The semicircular ring core and secondary windings are vacuum poured by insulated resin.

Outline drawing



Wiring diagrams



Single winding | Secondary winding with tap | Double winding

P1, P2 is primary polarity terminal, S1, S2 is secondary polarity terminal.
P2, S2 is homonymous terminals (subtractive polarity).

LZCK322-10

SPLIT CORE CURRENT TRANSFORMER

Parameters

Technical parameters	
Standards	IEC60044-1; IEC 61869-2; NTC 2205; GB1208-2006
Rated primary current	30-600A
Rated load	≤10VA
Rated frequency	50Hz or 60Hz
Rated secondary current	5A or 1A
Rated short-time thermal current	40kA, 1S
Rated continuous thermal current	120%I_{1n}
Secondary winding power-frequency voltage	3kV, 1min
Instrument security factor	FS≤10
Mechanical parameters	
Dimensions (W×D×H) (mm)	ϕ50xϕ110x52
Weight (kg)	1.6
Operating conditions	
Operating temperature	-35°C to +55°C
Daily average temp	< +40°C
Altitude	<3500 meters
Condition	No existence of severely begrimed, erosive and radioactive gas in the air. Permission of long-term operation under rated current.

Technical data

Type	LZCK322-10			LZCK322-10		
Purpose	Measuring current transformer			Protection current transformer		
Ratio	Accuracy class and rated load(VA)			Accuracy class and rated load(VA)		
I_1/I_2	0.5	1	3	10P15	10P10	10P5
30/1		1	1.5			
50/1		1	2			1.25
75/1		1.5	2.5		1	2
100/1	2	2.5	3		1.5	2.5
200/1	2.5			1.25	2.5	
300/1	3.75			1.25	2.5	
400/1	7.5			1.25	2.5	
500/1	10			1.25	3	
600/1	10			1.5	3	

LZCK322-10

SPLIT CORE CURRENT TRANSFORMER

Type	LZCK322-10			LZCK322-10		
Purpose	Measuring current transformer			Protection current transformer		
Ratio	Accuracy class and rated load(VA)			Accuracy class and rated load(VA)		
50/5			2.5			
75/5			2.5			
100/5	2.5					
200/5	3.75					
300/5	5					
400/5	7.5				2.5	
500/5	7.5				2.5	
600/5	10				3.75	

Selection guide

Model	Primary rated current	Rated load	Aperture (mm)	Description (mm)	Weight (kg)	Material	Water-proof
LMCK055-10	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)

Ordering information

Be sure to the type, current ratio, accuracy class, rated load and use of the products when you plan to make a order.
Special specifications could be customized.
All kinds of different specifications and parameters current transformers can be made according to your needs.

Option

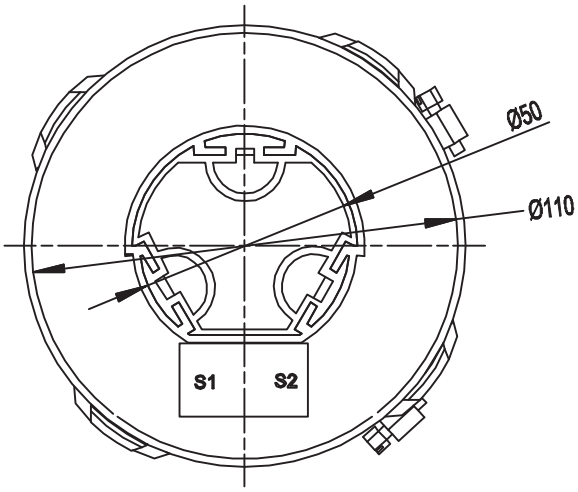
LZCK350-10

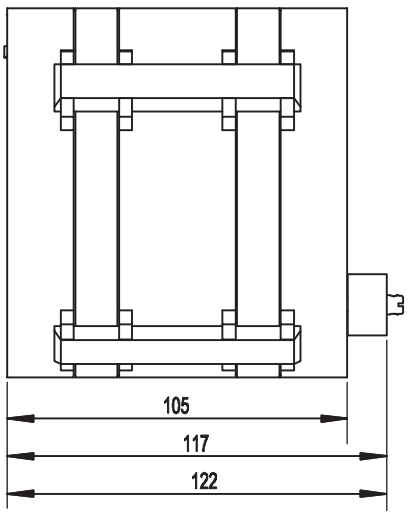
Split Core Current Transformer

LZCK series split core current transformer is suitable for current measurement and microcomputer protection of electrical equipment in 10KV and 35KV AC power system. It is widely used in compact fully insulated ring network switchgears such as ABB-SafeRing/SafePlus...and cable distribution boxes.

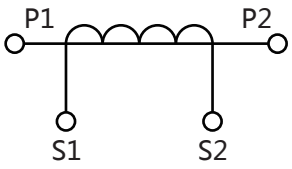
The transformer can be directly installed at the inlet and outlet cables.The slice is imported silicon material. The semicircular ring core and secondary windings are vacuum poured by insulated resin.

Outline drawing

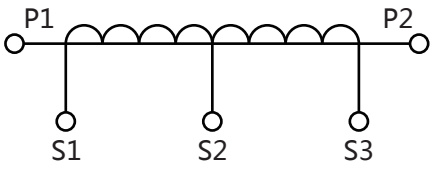




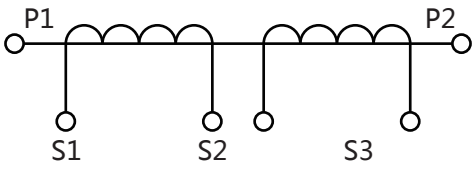
Wiring diagrams



Single winding



Secondary winding with tap



Double winding

P1, P2 is primary polarity terminal, S1, S2 is secondary polarity terminal.
P2, S2 is homonymous terminals (subtractive polarity).

LZCK350-10

SPLIT CORE CURRENT TRANSFORMER

Parameters

Technical parameters	
Standards	IEC60044-1; IEC 61869-2; NTC 2205; GB1208-2006
Rated primary current	20-600A
Rated load	≤25VA
Rated frequency	50Hz or 60Hz
Rated secondary current	5A or 1A
Rated short-time thermal current	40kA, 1S
Rated continuous thermal current	120%I_{1n}
Secondary winding power-frequency voltage	3kV, 1min
Instrument security factor	FS≤10
Mechanical parameters	
Dimensions (W×D×H) (mm)	ϕ50xϕ110x105
Weight (kg)	3.1
Operating conditions	
Operating temperature	-35°C to +55°C
Daily average temp	< +40°C
Altitude	<3500 meters
Condition	No existence of severely begrimed, erosive and radioactive gas in the air. Permission of long-term operation under rated current.

Technical data

Type	LZCK350-10			LZCK350-10			LZCK350-10			
Purpose	Measuring current transformer			Protection current transformer			Double winding current transformer			
Ratio	Accuracy class and rated burden(VA)			Accuracy class and rated load (VA)			Composite accuracy class and rated load (VA)			
I_1/I_2	0.5	1	3	10P15	10P10	10P5	0.5	1	10P10	10P5
20/1			0.5			0.75				
30/1		0.5	1.5		0.75	1.25				
50/1		1	2		1.25	2				
75/1	2	2.5	3.75	1.25	2	3		2	1	2
100/1	2.5	3.75	5	2	2.5	5	2	2.5	1.5	2.5
200/1	5			3	5	7.5	2.5		2	
300/1	10			3	5	7.5	3.75		2.5	
400/1	10			3	5	10	5		2.5	
500/1	25			3.75	6.25	10	5		2.5	
600/1	25			5	7.5	10	7.5		5	

LZCK350-10

SPLIT CORE CURRENT TRANSFORMER

Type	LZCK350-10			LZCK350-10			LZCK350-10			
Purpose	Measuring current transformer			Protection current transformer			Double winding current transformer			
Ratio	Accuracy class and rated burden(VA)			Accuracy class and rated load (VA)			Composite accuracy class and rated load (VA)			
600/1	25			5	7.5	10	7.5		5	
50/5			2.5			2				
75/5			2.5			3				
100/5	2.5		3.75			5		2.5		2.5
200/5	7.5						2.5	5		2.5
300/5	10						5		2	2.5
400/5	15						7.5		2.5	5
500/5	25						7.5		2.5	5
600/5	30						10		3	7.5

Selection guide

Model	Primary rated current	Rated load	Aperture (mm)	Description (mm)	Weight (kg)	Material	Water-proof
LMCK055-10	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)

Ordering information

Be sure to the type, current ratio, accuracy class, rated load and use of the products when you plan to make a order.
Special specifications could be customized.
All kinds of different specifications and parameters current transformers can be made according to your needs.

Option

FU120

Busbar Split Core Current Transformer

Split Core Current Transformer also called Split Core Current Transformer or Openable Current Transformer. It mainly applies for electric system renovation project with easy installation, no need to remove primary busbar, can also operate when power on without affect clients' normal electricity utilization. It can help clients renovate projects and improve efficiency to save human, material and financial resources. This series can apply with relay tester, measuring and metering devices.

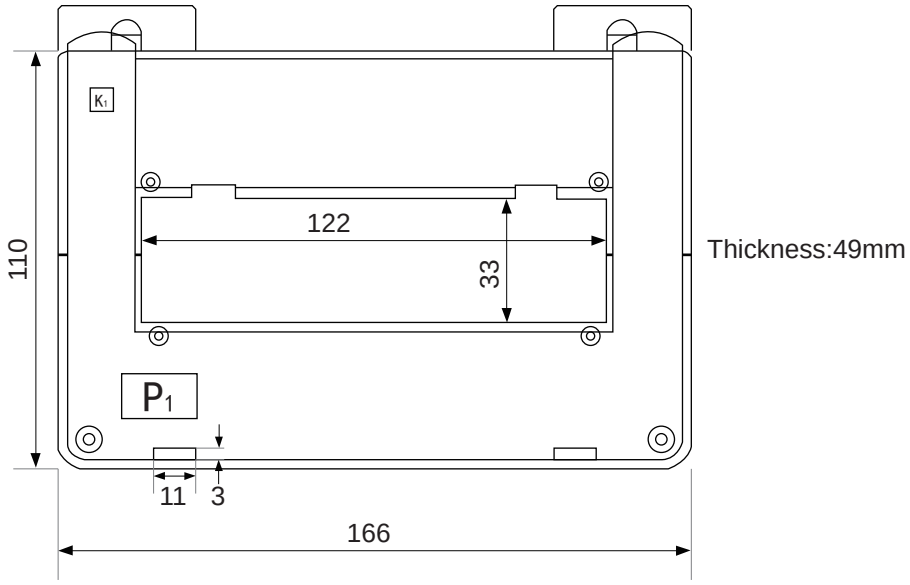
Features

1. Easy install or remove with power on
2. Stable and reliable
3. Ratio could be customized
4. Various size to meet different busbar installation
5. Can apply with relay tester, measuring and metering devices

Parameters

Electrical parameters	
Accuracy	0.2%, 0.5%
Primary current	1000A-3000A
Secondary current	5A
Characteristic and application	Available for copper platoon that under 3000A online measurement
Load capacity	0.1Ω(1A output), 2.5VA(5A output)
Installation	Bracket and Bus bar installation
Output mode	Terminal output
Mechanical parameters	
Width of the clamping copper platoon (mm)	120x30
Overall dimensions (mm)	166x110x49

Outline drawing



P: Primary
K: Secondary

Q8

High Performance Copper Wire Clamp-on Ac Current Sensor

The model Q8 copper wire clamp-on ac current sensor is suitable for 5A, 10A cable online measurement, the user friendly shape make It easily clamp onto cables.

Applications

Electric energy meter calibrator (on site)
Double clamp type ground resistance tester
Double clamp type phase volt-ampere meter
Digital multi-meter
Multi-function energy meter
Oscilloscope
Power quality analyzer
Matched instruments
Calibration instrument on site

Features

1. Measurement range of 1mA to 10A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.2%, 0.5%
Primary current	0 - 10A AC
Secondary current	0 - 10mA AC (customized)
Max. Cont. Input current	12 A
Load capacity	≤4Ω
Over voltage category	CAT III 600V
Output signal	10mA AC at nominal input current

Electrical parameters -- continued	
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	42.6×122.5×23
Weight (g)	225
Holding wire diameter (mm)	ϕ8
Max. jaw opening (mm)	8

Q8A1

High Precision Ac Measurement Clamp On Current Probe

The model Q8A1 current probe is based on AC transformer technology for use in measurement of AC current, it is suitable for 5A, 10A cable online measurement.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 10A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity≤ 4Ω
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.1%
Primary current	0 - 10A AC
Secondary current	0 - 10mA AC (customized)
Max. Cont. Input current	12A
Load capacity	≤4Ω
Over voltage category	CAT III 600V

Electrical parameters -- continued	
Output signal	10mA AC at nominal input current
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	42.6x122.5x23
Weight (g)	250
Holding wire diameter (mm)	ϕ8
Max. jaw opening (mm)	8

Q8A2

High Sensitivity Permalloy Core Ac Current Clamp

The model Q8A2 permalloy core current clamp with high accuracy up to 0.1% has been designed for use with multimeters, recorders, power analysers, safety testers etc.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 10A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy	0.1 %,0.2%
Primary current	0 - 10A AC
Secondary current	0 - 10mA AC (customized)
Max. Cont. Input current	12A
Over voltage category	CAT III 600V
Output signal	10mA AC at nominal input current

Electrical parameters -- continued	
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	45x158x25
Weight (g)	250
Holding wire diameter (mm)	ϕ8
Max. jaw opening (mm)	8

Q20A

High Accuracy Handheld Mini Current Clamp On Sensors

The model Q20A clamp on sensor is ideal for using with electronic meter or other device with AC current input, it is suitable for 200A cable online measurement.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 200A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.1%, 0.2%
Primary current	0 - 200A AC
Secondary current	0 - 200mA AC (customized)
Max. Cont. Input current	240A
Over voltage category	CAT III 600V
Output signal	200mA AC at nominal input current
Frequency range	40Hz-2000Hz

Electrical parameters - continued	
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	48 x 186 x 27
Weight (g)	300
Holding wire diameter (mm)	ϕ20
Max. jaw opening (mm)	20

Q20B

High Performance Openable Jaw Ac Current Clamp On Cts

The model Q20B openable jaw AC current clamp on cts are best-in-class devices for use with power meters, power analyzers and high performance oscilloscopes.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 200A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.1%, 0.2%, 0.5%
Primary current	0 - 200A AC
Secondary current	0 - 200mA AC (customized)
Max. Cont. Input current	240A
Over voltage category	CAT III 600V
Output signal	200mA AC at nominal input current
Frequency range	40Hz-2000Hz

Electrical parameters - continued	
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	56 x 168 x 27
Weight (g)	350
Holding wire diameter (mm)	ϕ20
Max. jaw opening (mm)	20

Q50A

Ratio Customised Wide Measuring Range Current Probe

The model Q50A current probe is designed for fast and easy measure the current in industrial and power environment, it has wide range of current measurement.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 1000A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω; When 1A output, it is 0.1Ω; When 5A output, it is 2.5VA.
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.1%, 0.2%, 0.5%
Primary current	0 - 1000A AC
Secondary current	0 - 5A AC (customized)
Max. Cont. Input current	1200A
Over voltage category	CAT III 600V
Output signal	500mA,1A,5A AC at nominal input current

Electrical parameters - continued	
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	101 x 219 x 26
Weight (g)	650
Holding wire diameter (mm)	ϕ50
Max. jaw opening (mm)	50

Q70

High Accuracy Oscilloscope Measuring Clamp On Current Probe

The model Q70 oscilloscope measuring clamp on current probe, it is suitable for 0-1000A current measurement, both cable and copper bus bar online measurement.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 1000A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω; When 1A output, it is 0.1Ω; When 5A output, it is 2.5VA.
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.1%, 0.2%, 0.5%
Primary current	0 - 1000A AC
Secondary current	0 - 5A AC (customized)
Max. Cont. Input current	1200A
Over voltage category	CAT III 600V
Output signal	200mA AC at nominal input current

Electrical parameters - continued	
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	122 x 275 x 35.5
Weight (g)	720
Holding wire diameter (mm)	ϕ60 x 70
Max. jaw opening (mm)	60

Q110

Square Jaw Opening Handheld Bus Bar Compact Current Clamp

The model Q110 current clamp is a high accuracy ct, the advanced design ensures enhanced linearity and the jaw opening system provides enhanced safety.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 1000A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω; When 1A output, it is 0.1Ω; When 5A output, it is 2.5VA.
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.2%, 0.5%
Primary current	0 - 1000A AC
Secondary current	0 - 5A AC (customized)
Output signal	500mA,1A,5A AC at nominal input current
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C

Electrical parameters - continued	
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	163 x 310 x 34
Weight (g)	900
Holding wire diameter (mm)	ϕ110
Max. jaw opening (mm)	110

Q125

High Accuracy Current Clamp On Measuring Instrument

The model Q125 current clamp on measuring instrument can be used for a current vector for the copper bar or the power aluminum bus bar on-line detection.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 3000A AC
2. Small, compact size; holding wire diameter 120mm×50mm
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω; When 1A output, it is 0.1Ω; When 5A output, it is 2.5VA.
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.2%, 0.5%
Primary current	0 - 3000A AC
Secondary current	0 - 5A AC (customized)
Max. Cont. Input current	3600A
Over voltage category	CAT III 600 V
Output signal	500mA,1A,5A AC at nominal input current

Electrical parameters - continued	
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	116 x 327 x 35
Weight (g)	1200
Holding wire diameter (mm)	ϕ120 x 50
Max. jaw opening (mm)	50

Q150

Bus Bar And Cable Measuring Square Jaw Opening Current Probe

The model Q150 current probe can be used in large current situation and cooperate to cable fault tester and cable identification device, used for cable test work.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 3000A AC
2. Small, compact size; holding wire diameter 150mm
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω; When 1A output, it is 0.1Ω; When 5A output, it is 2.5VA.
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.2%, 0.5%, 1%
Primary current	0 - 3000A AC
Secondary current	0 - 5A AC (customized)
Max. Cont. Input current	3600A
Over voltage category	CAT III 600 V
Output signal	500mA,1A,5A AC at nominal input current
Frequency range	40Hz-2000Hz

Electrical parameters - continued	
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	229x364x 44
Weight (g)	1700
Holding wire diameter (mm)	ϕ120 x 50
Max. jaw opening (mm)	150

XQ13

High Performance Handheld Clamp On Current Transducer

The model XQ13 handheld clamp on current transducer is suitable for 10A-100A cable online measurement, it belongs to high performance transducer field.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 100A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.1%, 0.2%
Primary current	0 - 100A AC
Secondary current	0 - 100mA AC (customized)
Max. Cont. Input current	120A
Over voltage category	CAT III 600V
Output signal	100mA AC at nominal input current
Frequency range	40Hz-2000Hz

Electrical parameters -- continued	
Dielectric strength	3KV 50Hz/60Hz at 1 minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	48 x 179 x 27
Weight (g)	280
Holding wire diameter (mm)	ϕ13
Max. jaw opening (mm)	13

XQ20

High Precision Standard Mini Clamp-on Current Sensor Ct

The model XQ20 clamp on current sensor is suitable for 200A cable online measurement, the user friendly shape make It easily clamp onto cables or bus bars.

Applications

1. Electric energy meter calibrator (on site)
2. Double clamp type ground resistance tester
3. Double clamp type phase volt-ampere meter
4. Digital multi-meter
5. Multi-function energy meter
6. Oscilloscope
7. Power quality analyzer
8. Matched instruments
9. Calibration instrument on site

Features

1. Measurement range of 1mA to 200A AC
2. Small, compact size
3. Improved ergonomic design and easy operation
4. Low phase shift for power measurement
5. With load capacity ≤4Ω
6. Output model: Lead output(2.5m)

Parameters

Electrical parameters	
Ratio	1000: 1 or 2000:1 (customized)
Accuracy class	0.1%, 0.2%
Primary current	0 - 200A AC
Secondary current	0 - 200mA AC (customized)
Max. Cont. Input current	240A
Load capacity	≤4Ω
Over voltage category	CAT III 600V
Output signal	200mA AC at nominal input current

Electrical parameters -- continued	
Frequency range	40Hz-2000Hz
Dielectric strength	3KV 50Hz/60Hz at 1minute
Temperature range	-20°C to +55°C
Output	2.5 meter cable with D01 connector
Max. voltage not insulated conductors	600 V
Standard	EN 61010-1, EN 61010-2-032, IEC60044-1
Installation	clamp type
Output mode	lead output(2.5m)
Mechanical parameters	
Dimensions (L x W x H) (mm)	52.5 x 137.5 x 28
Weight (g)	400
Holding wire diameter (mm)	ϕ20
Max. jaw opening (mm)	20

HQ15

AC Current Probe

The HQ15 AC Current Probe is designed for easy installed in tight spaces and without the need for dismantling the primary busbar or cables. The sensing head uses sliding push-fit clamp structure, safety isolation to avoid the user to contact with charged objects directly. It complies with CE standards and meets 300V CAT III safety class.

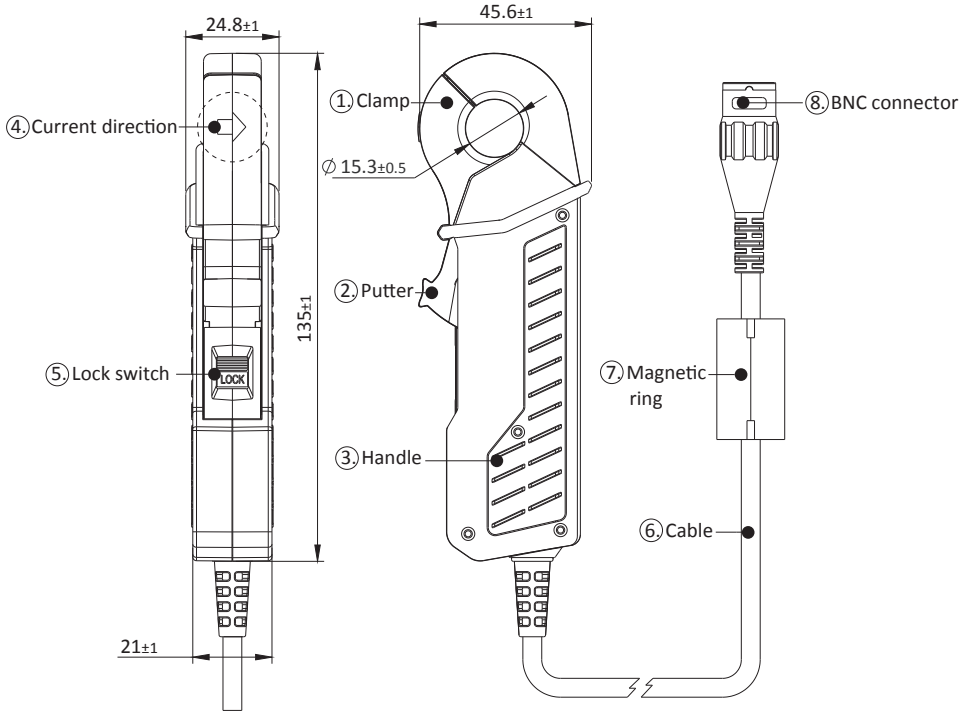
Applications

1. Power quality monitoring
2. CT secondary current detection
3. Smart logger
4. Distributed measurement systems

Features

1. Flexible and light weights, exquisite appearance
2. Easy &quick installation in tight spaces
3. Excellent linearity
4. Maximum measuring current up to 130A

Dimension



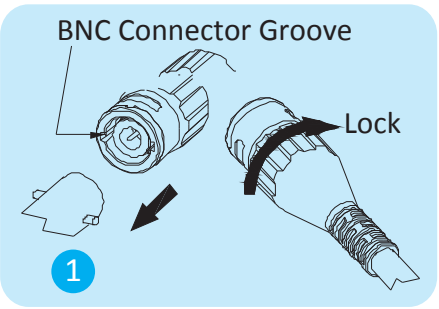
Parameters

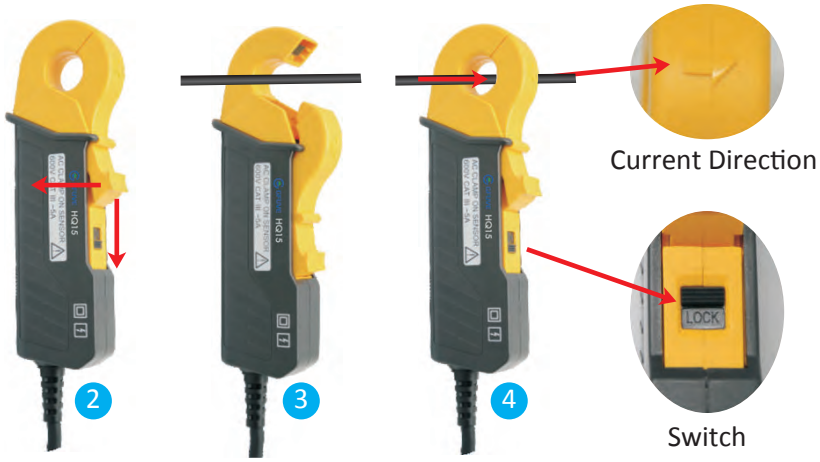
Electrical parameters		
Model	**HQ15-A5**	**HQ15-A100**
Rated primary current	5A AC	100A AC
Output Voltage	10 mV AC/A	1mV AC/A
Maximum input current	50A AC (Continuous)	130A AC (Continuous)
	(45-66Hz,Ambient temp.50°C)	
Amplitude accuracy	±0.3%RD±0.02%FS (10%-100%I1n), 45Hz- 66Hz)	
Phase accuracy	±2° (10%-100%I1n)(45Hz-5kHZ)	
The amplitude frequency characteristic	±0.1% (45Hz-5kHZ)(Deviation accuracy)	
Conductor impact	±0.5 (Off-center)	
The influence of external lectromagnetic fields	≤0.1A (In AC 400A / m electromagnetic fields)	
Temperature Coefficient	±0.02%/°C of the reading data	
Dielectric strength	3000 V AC rms/Continue 15 seconds(Circuits-iron core, iron core-shell)	
The maximum rated voltage	300V AC rms	
Applicable Standards	Safety: EN61010-2-032:2002,300V CAT III, Contamination II EMC: EN61326:1997+A1:1998+A2:2001+A3:2003(Class A)	
Mechanical parameters		
Measurable conductor diameter	Max.15mm	
Cable length	About 3 m	
Dimension (W x H x D)	About 46×135×21 (Excluding protruding parts)	
Weight	About 230g	
Environmental conditions		
Operating temperature	0 to 50°C (32-122°F)	
Operating humidity	≤80%RH(No condensate)	
Storage temperature	-10 to 60°C (14-140°F)	
Storage humidity	≤80%RH(No condensate)	
Operating environment	Indoor, altitude up to 2000 meters	

FS: Maximum display value or scale length

RD: Reading value (the value of the current being measured and displayed in the Measurement Products)

Usage Instruction





① Connect BNC plug to the device and tighten
② Pressing and pushing down the half head clamp
③ Open the clamp and snap the tested wire
④ Push up to close the clamp and then lock it

HQ46

AC Current Probe

The HQ46 AC Current Probe is designed for easy installed in tight spaces and without the need for dismantling the primary busbar or cables. The sensing head uses sliding push-fit clamp structure, safety isolation to avoid the user to contact with charged objects directly. It complies with CE standards and meets 600V CAT III safety class.

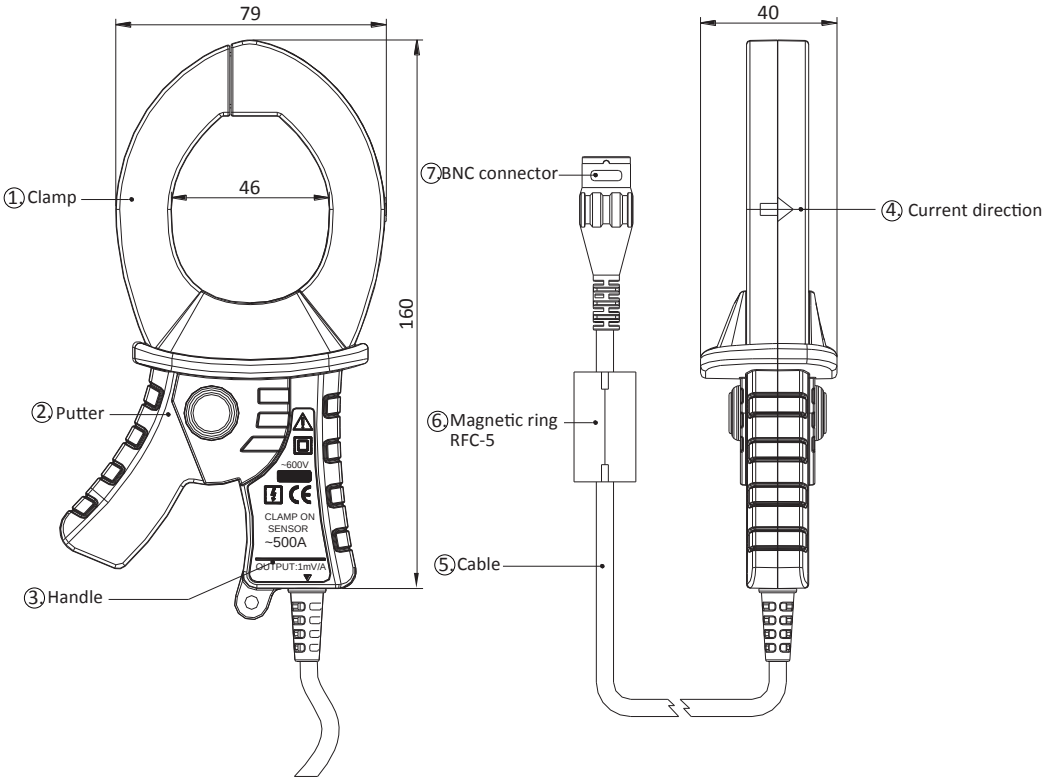
Applications

1. Power quality monitoring
2. Smart logger
3. Distributed measurement systems
4. Energy meter calibration

Features

1. Flexible and light weights, exquisite appearance
2. Easy &quick installation in tight spaces
3. Excellent linearity
4. Maximum measuring current up to 550A

Dimension



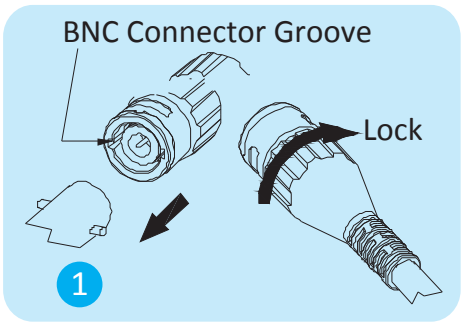
Parameters

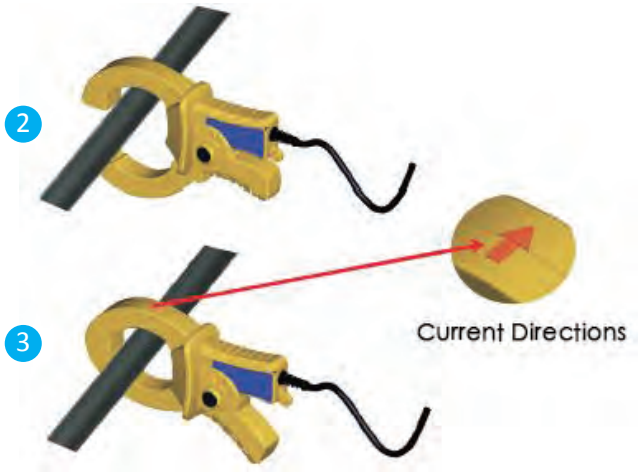
Electrical parameters	
Rated primary current	500A AC
Output Voltage	1 mV AC/A
Amplitude accuracy	± 0.3%RD ± 0.02%FS (10%~100%I1n), 45Hz- 66Hz|Wire centered
Phase accuracy	±0.5°(10%~100%I1n) (45Hz-5kHZ)
The amplitude frequency characteristic	±1% (45Hz-5kHZ) (Deviation accuracy)
Conductor impact	±0.5% (Off-center)
The influence of external lector magnetic fields	≤0.1A (In AC 400A/m electromagnetic fields)
Maximum input current	550A AC (Continuous) (45-66Hz, Ambient temperature 50°C)
Temperature Coefficient	±0.02%/°C of the reading data
Dielectric strength	5500 V AC rms/Continue 15 seconds (Circuits-iron core, iron core-shell)
The maximum rated voltage	600V AC rms
Applicable Standards	Safety: EN61010-2-032:2012,600V CAT III, Contamination II EMC: EN61326:1997+A1:1998+A2:2001+A3:2003 (Class A)
Mechanical parameters	
Measurable conductor diameter	Max.46mm
Cable length	About 3 m
Dimension (W x H x E)	About 96×160×40 (Excluding protruding parts)
Weight	About 395g
Environmental conditions	
Operating temperature	0 to 50°C (32-122°F)
Operating humidity	≤80%RH(No condensate)
Storage temperature	-10 to 60°C (14-140°F)
Storage humidity	≤80%RH(No condensate)
Operating environment	Indoor, altitude up to 2000 meters

FS: Maximum display value or scale length

RD: Reading value (the value of the current being measured and displayed in the Measurement Products)

Usage Instruction





① Connect BNC plug to the device and tighten
② Pressing and pushing down the half head clamp
③ Clamp snaped the tested wire then close

FQ-RCT01

Flexible AC Current Probe

The FQ-RCT01 Flexible AC current probe are designed for easy installed in tight spaces and without the need for dismantling the primary busbar or cables.

Applications

1. Power quality monitoring
2. Power meters
3. Smart logger
4. Energy sub-meters
5. Distributed measurement systems

Features

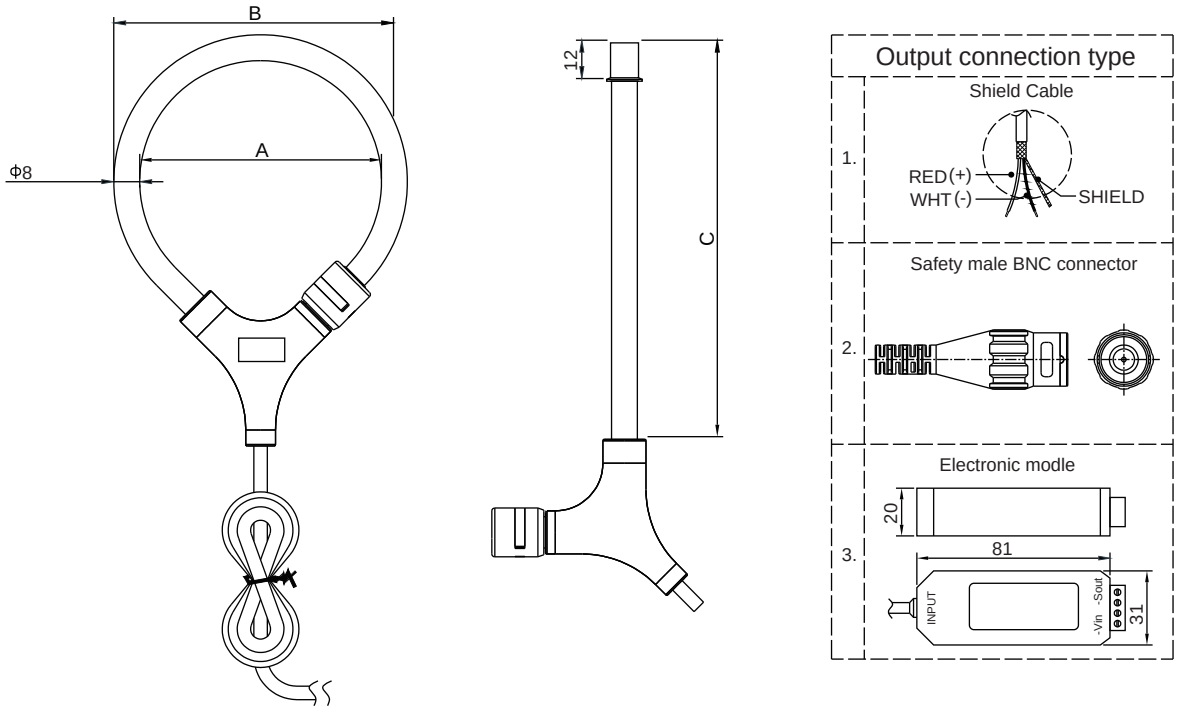
1. Flexible and lightweights
2. Easy & quick installation in tight spaces
3. No danger from open-circuited secondary
4. No core saturation or damage if overloaded
5. Excellent linearity
6. Multi-size are available

General Data

1. Ambient operating temperature: -20°C ~ +70°C
2. Ambient storage temperature: -25°C ~ +75°C
3. Standards Safety： IEC 61010-1:2001, 600 V CAT III

Dimension

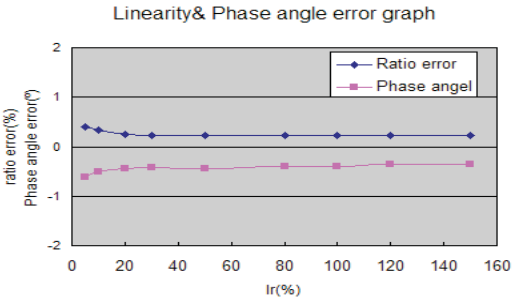
Dimensions(mm)	FQ-RCT01-55 FQ-RCTA01-55	FQ-RCT01-80 FQ-RCTA01-80	FQ-RCT01-105 FQ-RCTA01-105
Window A	55	80	105
Coil OD B	68.5	93.5	118.5
Coil Length C	200	300	380
Output connection	1. UL2586-ESB 2x24AWG L=150cm (as required)		
	2. Coax terminated with safety male BNC connector L=300cm (as required)		
	3. UL2586-ESB 2x24AWG L=150cm (as required) with integrator		



Parameter

Electrical parameters							
Model		**FQ-RCT01-55**	**FQ-RCT01-80**	**FQ-RCT01-105**	**FQ-RCTA01-55**	**FQ-RCTA01-80**	**FQ-RCTA01-105**
Current Range		10A~10kA			10A~6000A		
Frequency		25Hz~20kHz			45Hz~600Hz		
Output Voltage	Rated current	500A	1000A	2000A	250A, 500A 800A, 1000A	1000A, 1500A, 2000A, 2500A	1000A, 2000A, 2500A, 3000A
	50Hz	50mV AC	100mV AC	200mV AC	333mV		
					1mV/A		
Max output		/			3.0V AC max		
Accuracy		<1% @25°C (45-65Hz)			<1% @25°C (45-65Hz)		
Phase error		<60’ @25°C (45-65Hz)			<60’ @25°C (45-65Hz)		
Output sensitivity		±2% Max (No Calibration)			1%		
		±0.5% @25°C (With Calibration)					
Linearity error		±0.2% (10%-100%I1n)			±0.2%		
Position Sensitivity		±2%			±2%		
External Influence		±2% Max			±1.5% Max		
Power Supply		/			10-30VDC,30mA Max.		

Linearity & Phase Angle Error Graph



Current range 10~ 1000A @ 25°C

Position Sensitivity

	Bus bar Position		Window A of coil (Φmm)			Position error
			55	80	105	
	Φ (mm)	●	<12.5	<20	<35	<0.5%
	Angel (°)	●	90°~270°			<1%
	Radius(mm)	r	<10	<15	<25	<2%

Usage Instruction

FQ-RCT02

Flexible AC Current Probe

The FQ-RCT02 Flexible AC current probe are designed for easy installed in tight spaces and without the need for dismantling the primary busbar or cables.

Applications

1. Power quality monitoring
2. Power meters
3. Smart logger
4. Energy sub-meters
5. Distributed measurement systems

Features

1. Flexible and light weights
2. Easy & quick installation in tight spaces
3. No danger from open-circuited secondary
4. No core saturation or damage if overloaded
5. Excellent linearity
6. Multi-size are available

General Data

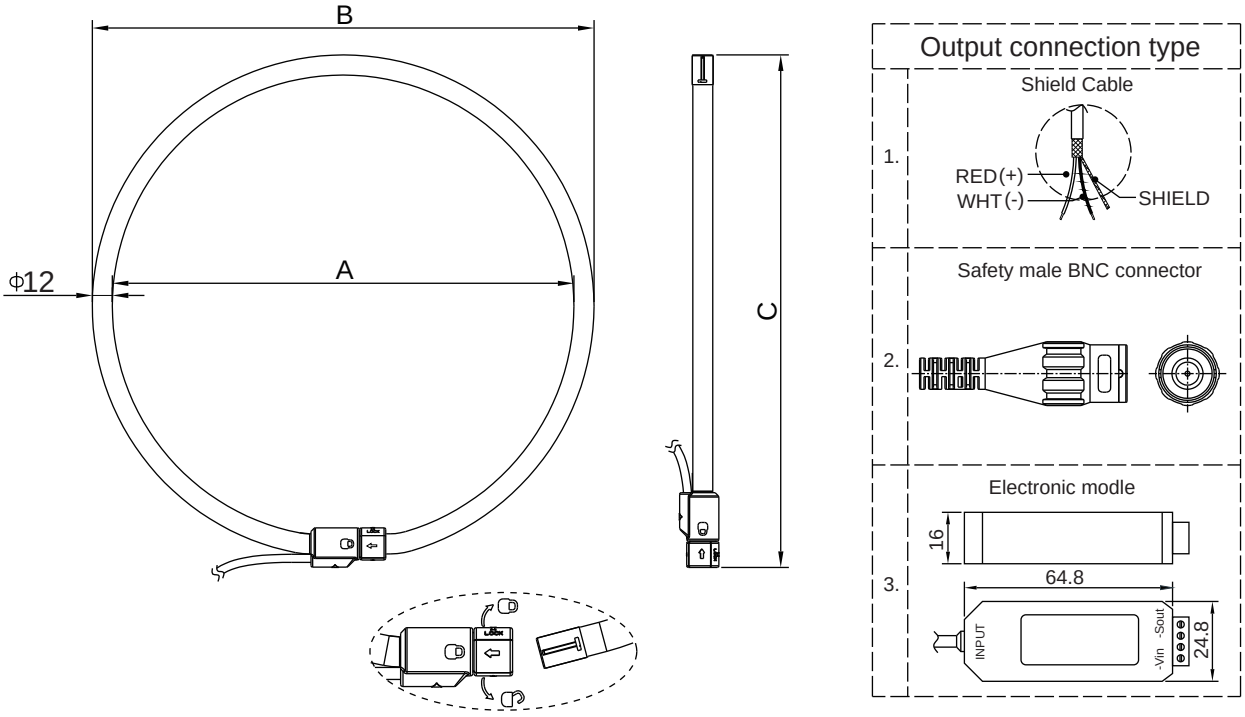
1. Ambient operating temperature: -20°C ~ +70°C
2. Ambient storage temperature: -25°C ~ +75°C
3. Standards Safety： IEC 61010-1:2001, 600 V CAT III

Dimension

Dimensions(mm)	FQ-RCT02-120 FQ-RCTA02-120	FQ-RCT02-190 FQ-RCTA02-190	FQ-RCT02-305 FQ-RCTA02-305
Window A	120	190	305
Coil OD B	145	205	335
Coil Length C	400	600	1000
Output connection	1. UL2586-ESB 2x24AWG L=150cm (as required)		
	2. Coax terminated with safety male BNC connector L=300cm (as required)		
	3. UL2586-ESB 2x24AWG L=150cm (as required) with integrator		

FQ-RCT02

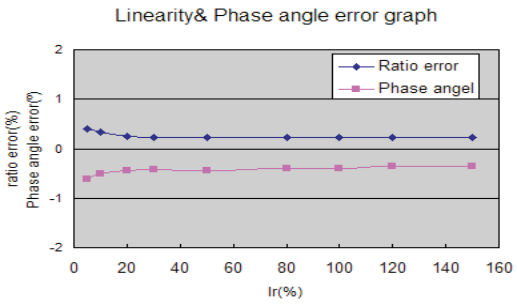
CURRENT PROBE



Parameter

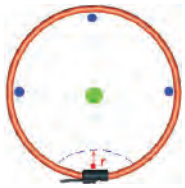
Electrical parameters							
Model		**FQ-RCT02-120**	**FQ-RCT02-190**	**FQ-RCT02-305**	**FQ-RCTA02-120**	**FQ-RCTA02-190**	**FQ-RCTA02-305**
Current Range		10A~30kA			10A~6000A		
Frequency		25Hz~20kHz			45Hz~600Hz		
Output Voltage	Rated current	1000A	2000A	3000A	1000A, 1500A 2000A, 3000A	2000A, 3000A, 5000A, 6000A	3000A, 4000A, 5000A, 6000A
	50Hz	100mV AC	200mV AC	300mV AC	333mV		
					1mV/A@1000-3000A(0.5mV/A@4000-6000A)		
Max output		/			3.0V AC max		
Accuracy		<1% @25°C (45-65Hz)			<1% @25°C (45-65Hz)		
Phase error		<60’ @25°C (45-65Hz)			<60’ @25°C (45-65Hz)		
Output sensitivity		±2% Max (No Calibration)			1%		
		±0.5% @25°C (With Calibration)					
Linearity error		±0.2% (10%-100%I1n)			±0.2%		
Position Sensitivity		±2%			±2%		
External Influence		±2% Max			±1.5% Max		
Power Supply		/			10-30VDC,30mA Max.		

Linearity & Phase Angle Error Graph



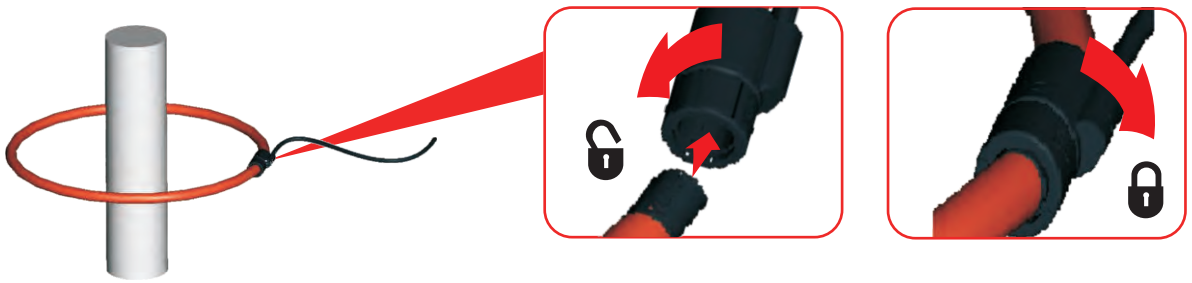
Current range 20~ 2000A @ 25°C

Position Sensitivity



Bus bar Position		Window A of coil (Φmm)			Position error
		120	190	305	
Φ (mm)	●	<12.5	<20	<35	<0.5%
Angel (°)	●	90°~270°			<1%
Radius(mm)	r	<12	<16	<20	<2%

Usage Instruction



FQ-RCTA03

Flexible AC Current Probe

The FQ-RCTA03 Flexible AC current probe is designed for easy installed in tight spaces and without the need for dismantling the primary busbar or cables. It includes a flexible Rogowski coil probe and electronic modules. The signal from the coil probe can be amplified by the electronic modules through the integration processing. The output signal can be directly used in oscilloscope, digital multimeter or data logger recording instrument.

Applications

1. Power quality monitoring
2. CT secondary current detection
3. Smart logger
4. Distributed measurement systems

Features

1. Flexible and light weights, exquisite appearance
2. Easy & quick installation in tight spaces
3. No danger from open-circuited secondary
4. No core saturation or damage if overloaded
5. Excellent linearity
6. Multi-size are available
7. Maximum measuring current up to 6000A

General Data

1. Operating temperature & humidity 0 to 50°C (32-122°F), ≤80%RH(No condensate)
2. Storage temperature & humidity: -10 to 60°C (14-140°F), ≤80%RH(No condensate)
3. Operating environment: Indoor, altitude up to 2000 meters
4. Standards Safety: IEC61010-1:2001, 600V CAT III

GFUVE

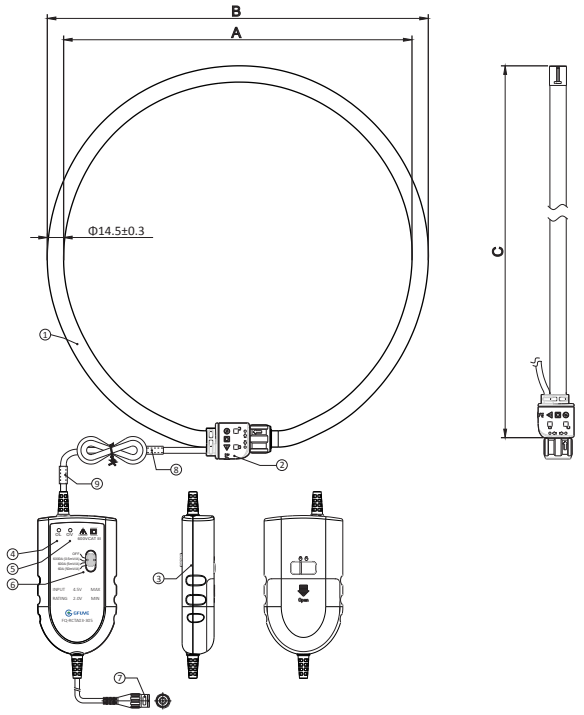
FQ-RCTA03

CURRENT PROBE

Dimension

Dimensions (mm)	FQ-RCTA03-305
Window A	305
Coil OD B	335
Coil Length C	1000

NO.	Module Name
①	Flexible coil body
②	Coil Interface lock
③	Electronic modules plastic shell
④	Power Indicator(Red)
⑤	Overload indicator(Yellow)
⑥	Shift switch
⑦	Public BNC connector
⑧	Company logo
⑨	Product Model Code



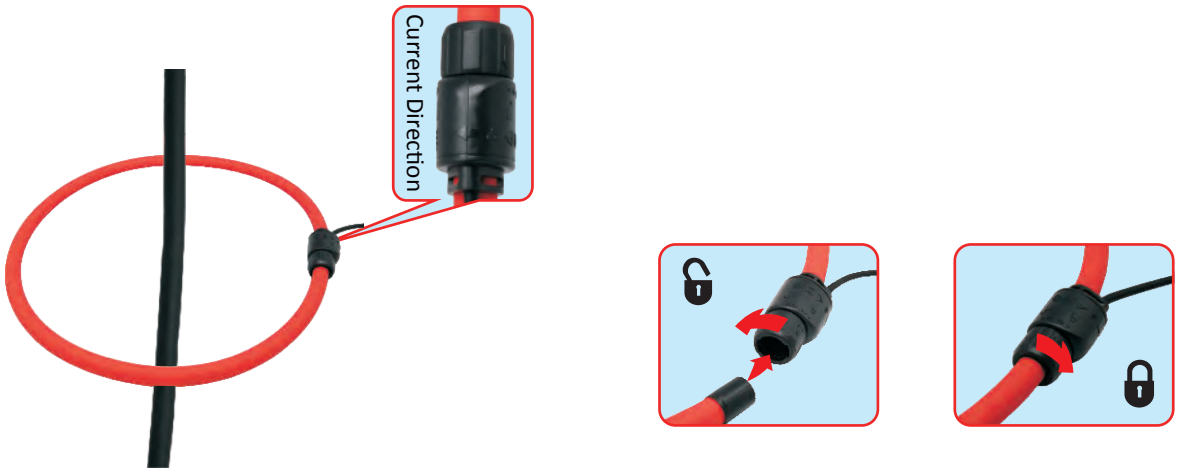
Parameters

The test environment for the accuracy: 23±5°C (73±9°C), ≤85%RH

Electrical parameters (FQ-RCTA03-305)	
Current Range	60A/600A/6000A (10%~100%In)
Output sensitivity	50mV/A, 5mV/A, 0.5mV/A
Accuracy	±1%(10%~100%In) @45-65Hz
Phase error	±1°(10%~100%In) @45-65Hz ±10°@ 20kHz
Linearity error	±0.2%(10%~100%In)
Position Sensitivity	±2%(The distance from the measured Cable to the junction is above 20mm)
External Influence	±1% Max(More than 200mm from the coil)
Noise	8mV rms(60A); 2 mV rms (60A)
Temperature Coefficient	±0.08%/°C of the reading data
Frequency Range	10Hz to 20Hz(-3dB)
Load Impedance	Min 100KΩ
Power Supply	2*AA|MN1500|LR6 Batter y(400 hrs) External Adapter :4.5V DC
Power LED Indicator	ON indication When normal power (Red light goes off after 3 seconds)
	Low batter y indication(Red is always on)

Electrical parameters (FQ-RCTA03-305) - continued	
Overload LED indicator	Overload above 120% of the range indication （Yellow）
Operating Voltage	600V AC RMS or DC
Security Level	IEC61010-1:2001,600V CAT III
Mechanical parameters	
Cable length	3m(Measuring head to the electronics module)
Output terminals	0.5m cable with Safety BNC plug
Weight	230g (Measuring head), 130g (Electronic modules)

Usage Instruction



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%

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 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
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

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
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

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

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)
Harmonic	2^{nd}-63^{st}
Test Current	
Range (direct connection)	20mA-20A
Error (direct connection)	±0.05% (100mA-20A) ±0.1% (20mA-100mA)
Range (Clamp CT)	10mA-3000A
Error (Clamp CT)	±0.2% (100mA-3000A) ±0.5% (10mA-100mA)
Harmonic	2^{nd}-63^{st}
Power measure error	
Active power (direct connection)	±0.05% (0.1A-20A) ±0.1% (0.02A-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% (0.02A-0.1A)
Reactive energy (direct connection)	±0.1% (0.1A-20A)
Phase angle	
Range	0°~360°
Resolution	0.01°
Error	±0.05°
Frequency	
Range	45Hz-65Hz
Resolution	0.001Hz
Accuracy	0.005Hz
Power factor	
Range	-1~0~1
Resolution	0.0001
Error	0. 0005
Pulse output	
Energy constant	180000imp/kWh, 1800imp/kWh, 18imp/kWh
Pulse ratio	1:1
Output level	5V

Electrical parameters - continued	
Pulse input	
Input channel	1
Input level	5-24V
Input frequency	Max. 2MHz
Display	
Resolution	6”TFT (640×480)
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%

GF312D

Handheld Three Phase Energy Meter Field Calibrator

GF312D handheld three phase energy meter field calibrator is a precision AC energy meter testing instrument, mainly used to test three phase energy meter error on site and measure 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. Store and display measured data;
15. Optional 5A, 20A, 100A, 500A, 1000A, 2000A, 3000A current clamp;
16. Measure CT variable ratio;
17. Measure the ratio or lag-angle of low-voltage transformer.
18. Adopt 32 bit ARM processor, multi-channel 16 bit precision A/D convertor, high resolution TFT color LCD;
19. 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.
20. 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	5-480V
Error	±0.05% (30V-480V)
	±0.1% (5V-30V)
Harmonic	2^{nd}-63^{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}-63^{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

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)	220×138×61
Instrument Weight (kg)	1.7
Carry case dimensions (W×H×D) (mm)	450×320×185
Carry case (kg)	8.5
Environmental conditions	
Ambient temperature	-10°C to 55°C
Relative humidity	15%-85%

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^{o}
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

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%

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)
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%

GF302

Portable Multifunction Instrument Calibrator

GF302 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, three-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. 6.4-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
AC Voltage output	
Range(U1,U2,U3)	50V, 100V, 200V, 400V, 600V
Adjusting range	(0-120)% RG
Adjust fineness	0.005% RG
Accuracy	0.05% RG
Stability	0.01% / 1 min
Load capacity	25VA
Output distortion degree	≤0.3% or (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%/1 min
Load capacity	25VA
Output distortion degree	≤0.3% or (linear load)
AC Power output	
Accuracy	0.05% RG
Stability	0.01%/1min
Frequency	
Frequency range	45.000 - 65.000 Hz
Resolution	0.001 Hz
Accuracy	0.002 Hz
Power factor output	
Adjusting range	-1 ~ 0 ~ 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	2-31st
Content	0-40%

Electrical parameters - continued	
Voltage/Current harmonic output - continued	
Phase	0-359.999 degree
Configuration error	(10% RD + 0.1%), RD refers to the configuration value of harmonic contents
DC Voltage output	
Range	75mV, 75V, 150V, 300V, 500V, 1000V
Adjusting range	(0-120)% RG
Adjust fineness	0.005% RG
Accuracy	0.05% RG
Stability	0.01%/1min
Load capacity	25VA
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	25VA
DC measurements	
DC voltage measurement range	0 to ±24V
DC current measurement range	0 to ±24mA
Measurement accuracy	0.01% RG
Watt-hour meter measuring the integrated error	
Active energy	0.05%
Reactive energy	0.1%
Mechanical parameters	
Dimensions (W×H×D) (mm)	460x430x185
Weight (kg)	20
Environmental conditions	
Working temperature	0°C to 40°C
Storage conditions	-30°C to 60°C
Relative humidity	≤85%

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	USB port
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%

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°
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
Mechanical parameters	
Dimensions (W×H×D) (mm)	460x430x185
Weight (kg)	20
Environmental conditions	
Working temperature	0°C to 40°C
Relative humidity	≤85%

GF3600

Three-Phase AC/DC Instrument Test Equipment

The device is composed of Program-Controlled Three-Phase standard power resource, DC standard power source, Three Phase Multifunction Reference standard meter, computer and management software. The technical index of the device is compliance with national industry related standards and verification regulation. It can be used at power Grid Company, power Supply Company and power plants for measuring and testing power institutions, also it can be applied at railway, petroleum, chemical industry and mining enterprises, etc.

Features

GF3600 can verify following instruments:

1. Transducer
2. Electric energy meter
3. Error of the ac sample
4. Normal indicating instrument
5. Power frequency and dc digital instrument
6. The meters it can the verify: AC/DC voltmeter, ammeter, single/three-phase active, reactive power meter, phase meter, for access to power, frequency meter, synchronous meter, etc
7. The transducers types it can verify, AC/DC voltage transducer, current transducer, single/three-phase active reactive power transducer, phase transducer, a power factor transducer, frequency transducers
8. The watt-hour meters types it can verify: electronic type and inductive single-phase and three-phase meritorious electric energy meter and reactive watt-hour meter
9. Can be set and measuring 2-31 times harmonic
10. Wide measuring range, high stability, high resolution, low distortion degree
11. Automatic data rounding, various forms of certificate format, inquires and print convenient
12. Under the computer control, it can realize the automatic verification for watt-hour meters and transducers semi-automatic verification for all kinds of instruction machine
13. Its block structure, convenient for inspection and it can be used independently
14. Automatic failure detection can avoid the damage of equipment which caused by wrong operation

Parameters

Electrical parameters	
Accuracy class	0.05%, 0.1%
Power supply	AC 220V ± 10% or AC 110V ± 10%, 50/60Hz
AC Voltage output and measurement	
U1, U2, U3 Range	10V, 20V, 50V, 100V, 200V, 400V, 800V
Output range	(0-120%)% RG
Adjustment resolution	0.01% RG
Output stability	0.01%/min
Measurement accuracy	0.05% RG
Output load capability	50VA
Measurement resolution	$\leq 5\times10^{-5}$ RG
AC Current output and measurement	
I1, I2, I3 Range	0.1A, 0.25A, 0.5A, 1A, 2.5A, 5A, 10A, 25A, 50A, 100A
Output range	(0-120)% RG
Adjustment resolution	0.01% RG
Output stability	0.01%/min
Measurement accuracy	0.05% RG
Output load capability	100VA
Measurement resolution	$\leq 5\times10^{-5}$ RG
Power output and measurement	
Output stability	0.01%/1min
Active accuracy	0.05% RD (0.01A-100A, 30V-600V, PF ≥ 0.5L or PF ≥0.8C)
Reactive accuracy	0.1% RD (0.01A-100A, 30V-600V, PF ≥0.5)
Measurement resolution	$\leq 5\times10^{-5}$ RG
Energy measurement	
Active accuracy	0.05% RD (0.01A-100A, 30V-600V, PF ≥0.5L or PF ≥0.8C), 0.1% RD (0.05A-100A, 30V-600V PF ≥0.5C)
Reactive accuracy	0.1% RD 0.05A-100A, 30V-600V PF ≥0.5
Setting range of test pulse No.	1-9999999
Max. frequency of receiving pulse	2MHz
Phase output and measurement	
Output range	0°-359.99°
Adjustment resolution	0.01°
Measurement accuracy	0.05°
Measurement resolution	0.001°
Power factor output and measurement	
Output range	-1 to 0 to +1
Measurement accuracy	0.0005

Electrical parameters - continued	
Power factor output and measurement - continued	
Measurement resolution	0.0001
Frequency output and measurement	
Output range	45-65Hz
Adjustment resolution	0.001Hz
Measurement accuracy	0.005Hz
Measurement resolution	0.001Hz
Harmonic	
Times	2 to 31
Resolution	0.1% (compared with fundamental wave)
Contents	0-30%
Phase	0°-359.99°
DC Voltage output	
Range	100mV, 300mV, 1V, 3V, 10V, 30V, 100V, 300V, 600V, 1000V
Setting range	0-1000V
Regulated step value	0.002% RG
Accuracy	0.03% RD + 0.02% RG
Stability	0.01%RG/1min
Output load capability	25VA
Ripple wave and noise	0.1-100KHz
Output ≤100 V	Ripple wave ≤2mVrms
Output > 100 V	Ripple wave ≤10mVrms
DC Current output	
Range	10μA, 30μA, 100μA, 300μA, 1mA, 3mA, 10mA, 30mA, 100mA, 300mA, 1 A, 3 A, 10 A, 30 A
Setting range	0-30A
Regulation resolution	≤0.02% RG
Accuracy	0.03% RD + 0.02% RG
Stability	0.01%RG/1min
Output load capability	30VA
Mechanical parameters	
Dimension (L×W×H) (mm)	1800x800x750
Weight (kg)	135
Environmental conditions	
Operating temperature	0°C to 40°C
Relative humidity	≤85%

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	±(0.03%RD+0.02%FS)
	Stability	≤0.01% FS /60s
Range 200mV-4000mV	Accuracy	±(0.3%RD+0.2%FS)
	Stability	≤0.04% FS /60s
Load capacity		20VA
Waveform distortion		≤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	±(0.03%RD+0.02%FS)
	Stability	≤0.01% FS /60s
Range 2mA-40mA	Accuracy	±(0.3%RD+0.2%FS)
	Stability	≤0.04% FS /60s
Load capacity		20VA
Waveform distortion		≤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·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		≤0.01% FS /60s (peak-peak value)
Accuracy		±(0.03%RD+0.02%FS)
Ripple wave		≤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		≤0.01% FS /60s (peak-peak value)
Accuracy		±(0.06%RD+0.04%FS)
Ripple wave		≤1% FS
Resistance box		
Range		0-200Ω, 200-400Ω, 0-2kΩ, 2kΩ-4kΩ, 0-20kΩ, 20kΩ-40kΩ, 0-200kΩ, 200kΩ-400kΩ, 0-2MΩ, 2MΩ-4MΩ
Fineness		0.02%
Range 0-2kΩ, 0-20kΩ, 0-200kΩ		
Range 0-2kΩ	Adjustable Range	0-100%FS
	Accuracy	±(0.12%RD+0.08%FS)
Range 0-200Ω,0-2MΩ	Adjustable Range	0-100% FS
	Accuracy	±(0.3%RD+0.2%FS)
Range 2kΩ-4kΩ, 20kΩ-40kΩ, 200kΩ-400kΩ		
Range 2kΩ-4kΩ	Adjustable Range	5%-100%FS
	Accuracy	±(0.12%RD+0.08%FS)
Range 200-400Ω, 2MΩ-4MΩ	Adjustable Range	5%-100% FS
	Accuracy	±(0.3%RD+0.2%FS)
Clamp meter range		
200A	Accuracy	±0.2%
600A	Accuracy	±0.5%
1000A	Accuracy	±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 (L×W×H) (mm)		440x360x160
Weight (kg)		12
Environmental conditions		
Operating temperature		20°C±10°C
Relative humidity		≤85%RH

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

GFUVE

TEST-630

RELAY TESTER

Test item

I. U/I test
II. DC test
III. Impedance characteristics
IV. Power direction test
V. I-T test
VII. Differential relay
VIII. Harmonic test
IX. Differential protection
X. Distance protection
XI. Zero sequence protection
XII. Setting group test
XIII. State sequence
XIV. Synchronization test
XV. Special test
XVI. Oscillation test
XVII. Metering instrument
XVIII. Hardware checkout
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
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-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			
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	
Mechanical characteristics		
Dimensions (W×D×H) (mm)	340×270×260	
Weight	18kg	
Mechanical parameters		
Temperature	-10°C to 40°C	
Relative humidity	<80%	

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.

Parameters

Electrical parameters	
Accuracy	±0.5%
Power Supply(AC)	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%
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
Mechanical parameters	
Dimensions (W×D×H) (mm)	430×260×260
Weight(kg)	28

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

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.

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%
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
Mechanical parameters	
Dimensions (W×D×H) (mm)	360×300×295
Weight (kg)	Host 35kg, External voltage regulator weight 15kg

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

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	remanence 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%

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

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

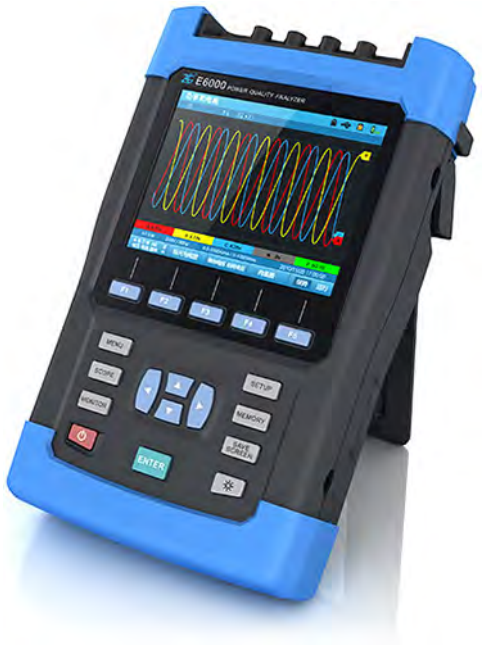
Electrical parameters - continued		
Accuracy		≤0.5% (0.2%RD+0.3%RG)
Secondary winding DC resistance measurement	Range	0.1-300Ω
	Accuracy	≤0.5% (0.2%RD+0.3%RG)
Secondary actual load measurement	Range	5VA-1000VA
	Accuracy	≤0.5% (0.2%RD+0.3%RG)±0.1VA
CT/PT phase error measurement	Accuracy	±4min
	Resolution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

E6000

Handheld Power Quality Analyzer

The E6000 Handheld Power Quality and Energy Analyzer offer the best in power quality analysis and introduce, for the first time ever, the ability to monetarily quantify energy losses.

The E6000 Handheld Power Quality and Energy Analyzer help locate, predict, prevent, and troubleshoot power quality problems in three-phase and single-phase power distribution systems. Additionally, the GFUVE-patented energy loss algorithm, Unified Power Measurement, measures and quantifies energy losses due to harmonics and unbalance issues, allowing the user to pinpoint the origin of energy waste within a system.



Features

1. 3s statistical interval, continuously record 120h
2. Support multi-brand current transformer
3. Up to 8G data storage space
4. Record up to 461 power energy parameters simultaneously
5. Up to 6500 Screenshots saved
6. Support periodic recording function
7. Up to 3.9M/s USB high-speed transfer
8. Customized international report generation

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. PowerWave data capture: E6000 analyzers capture fast RMS data, show half-cycle and waveforms to characterize electrical system dynamics (generator start-ups, UPS switching etc.).
4. Waveform capture: E6000 capture 50/60 cycles (50/60Hz) of each event that is detected in all modes, without set-up.
5. Automatic Transient E6000 analyzers capture 200 kHz waveform data on all phases simultaneously up to 1000V.
6. Fully Class-A compliant: E6000 analyzers conduct tests according to the stringent international IEC 61000-4-30 Class-A standard.
7. Mains signaling: E6000 analyzers 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

Electrical parameters	
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, 1-50 Harm, 1-50 InHarm, 1-35 HiHarm, 1-50
Voltage harmonic	THD, DC, 1-50 Harm, 0-49 InHarm, 1-35 HiHarm, 1-50 SubHarm
Current harmonic	THD, DC, 1-50 Harm
Harmonic power	Ia, Ib, Ic, ΣPtotal, ΣQtotal, ΣStotal, 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
P, Q, S name	
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/resolution	According to the range of the voltage and current
measuring accuracy	±0.5%
Arms	
Measurement mode	Calculated by the square root value of 10 cycle
Display mode	Effective current value of each channel
Measuring range/resolution	Current: according to the current clamps Option:5A/50A/100A/500A Current clamps: 1200A/3000A/6000A(Flexible Current Clamp)
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
Measurement accuracy	±0.001Hz

Electrical parameters - continued	
Vrms	
Measuring circuit	1P2W/ 2P3W /3P3W/ 3P4W
Basic frequency of the measuring circuit	50Hz
Input channels	4 phase voltage, 4 phase current
Measurement range	Voltage measurement range: standard: 120V, 230V, 400V, 1000V, Max 1000V instantaneous voltage Current measurement range: according to the current clamps, only support the v signal output current clamp
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
Measurement accuracy	±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
Measurement accuracy	Vfund >1%: Error<1% Vfund <1%: Error<0.05% Rated Voltage Afund >3%: Error<1% Afund <3%: Error<0.05% Current range
HiHarm Voltage, HiHarm current	
Measurement mode	Meet IEC61000-4-7, Analysis time window is ten cycles
Window points	5120 points every 10 cycles
Display mode	Form figure, trend charts, histograms
Numbers of measurement	1-35 groups
Measurement accuracy	Vfund >1%: Error<1% Vfund <1%: Error<0.05% rated voltage Afund >3%: Error<1%

Electrical parameters - continued	
Voltage SubHarm Current SubHarm	
Measurement mode	Meet IEC61000-4-7, analysis time window is ten cycles
Window points	5120 points every 10 cycles
Display mode	Form figure, trend charts, histograms
Numbers of measurement	1-50 groups
Measurement accuracy	Vfund >1%: Error<1% Vfund <1%: Error<0.05% Rated Voltage Afund >3%: Error<1%
Voltage/current Unbal (pos, neg)	
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: ±0.2% Current unbal: ±0.5%
Voltage fluctuation	
Measurement mode	Calculate by the quadratic mean of half wave.
Display mode	Form figure, trend charts
Measurement accuracy	±1%
IEC Flickering	
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	±5%
Surge current	
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 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%

Electrical parameters - continued	
Power supply	
Voltage input	110V-240V
Adapter output	15V, 3A
Battery	Rechargeable nickel metal hydride, 4500mAh
Battery working time	4h
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/m2 (Typ), brightness is adjustable
Contrast	500:1 (Typ)
Visual angle	70/70/50/70 (Typ.) (CR ≥10) (Left/ Right/ UP/Down)
Store	
Type	TF card (inbuilt)
Size	8G
Standards	
Measurement method	IEC 61000-4-30
Measurement performance	IEC 61000-4-30 A LVL
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 1000V/CAT IV 600V
Mechanical parameters	
Dimensions (W×D×H) (mm)	263x168x65
Weight (kg)	2
Environmental conditions	
Working environment	0°C to +45°C, humidity below 90rh%
Storing environment	-20°C to +50°C, humidity below 95rh% (non-condensing)

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	100mVk/A	100mV/kA
Accuracy	±0.3%rdg	±0.3%rdg	±0.3%rdg	±1%rdg	±1%rdg

GF334

Three Phase Power Analyzer

It is suitable for power companies and technical stupervision 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 ±Umax x Imax	0.01W	0.5%	0.2%	5 bit display
Reactive power	0 to ±Umax x Imax	0.01Var	1%	0.5%	5 bit display
Apparent power	0 to ±Umax x Imax	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°	±0.05°	±0.02°	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	≤20ppm/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	≤25ppm/°C (U/I), ≤50ppm/°C (others)

GF335

Three Phase Power Analyzer

GF335 Three Phase Power Analyzer is suitable for Power Company, technical supervision departments, Industrial, mining, petroleum as well as chemicals, home appliances and manufacturing enterprises.

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(2)
Frequency	45-65Hz	0.001Hz	0.01Hz	0.002Hz	5 bit display
Active power	0 to ±Umax x Imax	0.01W	0.5%	0.2%	5 bit display
Reactive power	0 to ±Umax x Imax	0.01Var	1%	0.5%	5 bit display
Apparent power	0 to ±Umax x Imax	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°	±0.05°	±0.02°	6 bit display

(1) Directly test

(2) 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	≤20ppm/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	≤25ppm/°C (U/I), ≤50ppm/°C (others)

GF211

Double Clamp Phase Volt-ampere Meter

GF211 double clamp phase volt-ampere meter is a multi-functional portable instrument. It can measure not only alternating voltage, but also alternating current. Its important function is to measure phase angle between two voltages, between two current or between voltage and current. The current signal is obtained by the clamp current transformer without cutting off current wire. It can discern inductive circuit and capacitive circuit; can directly read differential protection phase among every unit of CT; can check connection of transformer; measure three way voltage phase sequence; can check whether the meter connection is right or not; can evaluate the running speed of electric kWh meter. It has high resolution of current, so can be used as a leakage current meter. It is an ideal choice for electric power bureau, factories, mine, petroleum -chemistry enterprises, metallurgy factories and so on.

Parameters

Electrical parameters	
Accuracy class	1%, 2%
Power supply	Two 9V batteries
Scale	
Phase	0-360°
AC Voltage	500V
AC Current	200mA/2A/10A
Fundamental error (under standard operating environment)	
Temperature	23°C±5°C
Moisture	<65%
Wave form	Sine wave Distortion ≤1%
Frequency	50± 2Hz, 60± 2Hz
Wire position	Center of clamp
Phase measurement	Voltage: 100V± 25V Current: 1A±0.2A
Phase accuracy	1.0% FS

Electrical parameters - continued	
Fundamental error (under standard operating environment) - contiued	
Voltage accuracy	
200V	1.0FS, Resolution: 0.1V
500V	1.0FS, Resolution: 1V
Voltage accuracy	
10A	2.0FS, Resolution: 10mA
2A	2.0FS, Resolution: 1mA
200mA	2.0FS, Resolution: 0.1mA
Input impedance	
When measure voltage	1MΩ
Input voltage impedance	>120KΩ when measure phase
Phase measurement	
Voltage accuracy	3V-500V
Current range	0.01A-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 100MΩ.
Mechanical parameters	
Dimensions (W×D×H) (mm)	185×167×35
Weight (kg)	0.5
Environmental conditions	
Working temperature	0°C±40°C
Humidity	≤80%
Accessory	
Double clamp phase volt-ampere meter	1 piece
Clamps 10A	2 pieces
Clamp wire	2 pieces
Voltage wire	2 pieces
User's manual	1 piece

Accessory - continued	
Certification of quality	1 piece
Box	1 piece

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. Hhigh 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 ≤ 1%
Frequency	50±2Hz, 60±2Hz
Wire position	Center of clamp
Phase measurement	Voltage: 100V±25V Current: 1A±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	1MΩ
Input voltage impedance	> 120KΩ 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 100MΩ.
Mechanical parameters	
Dimensions (W×D×H) (mm)	185×85×41
Weight (kg)	0.26
Environmental conditions	
Working temperature	0°C±40°C
Humidity	≤ 80%

Accessory	
Multi-function double clamp digital phase angle meter	1
Clamps 10A	2
Clamp wire	2
Voltage wire	2
User's manual	1
Certification of quality	1
Box	1

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%
Reactive power measurement	
Accuracy	1%
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

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%

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	
AC Voltage output - 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	0.10%	0-264V	0-6A	12KG	
3030605	0.05%	0-264V	0-6A	12KG	
3031201	0.10%	0-420V	0-12A	13.5KG	
3031205	0.05%	0-420V	0-12A	13.5KG	
3032001	0.10%	0-420V	0-20A	18KG	
3032005	0.05%	0-420V	0-20A	18KG	
303H0601	0.10%	0-300V	0-6A	15KG	XP system
303H0605	0.05%	0-300V	0-6A	15KG	XP system
303H1201	0.10%	0-420V	0-12A	18KG	XP system
303H1205	0.05%	0-420V	0-12A	18KG	XP system
303H2001	0.10%	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%

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. Seting 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	40-65 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
303D1201	0.10%	0-500V	0-120A	27KG
303D12005	0.05%	0-500V	0-120A	27KG
303D1201	0.10%	0-380V	0-12A	18KG
303D1205	0.05%	0-380V	0-12A	18KG
303D2401	0.10%	0-500V	0-24A	20KG
303D2405	0.05%	0-500V	0-24A	20KG

GF303P

EMC Test Power Source

GF303P is designed as the power source for EMC (electromagnetic compatibility) test. Adopts advanced technology to be anti-interference. Good stability, high degree of automation, easy to carry.

Application:

Electrical measurement in Power system, thermal, remote, scheduling and so on;

Inspection for high precision standard source power institute and company;

Supply standard input for EMC test for Metrology Institute, Electric Power Academy of Sciences;

Standard source in EMC lab;

EMC test to inspect meter accuracy;

Also can work with other instrument in EMC lab like surge generator, group of pulse generator, frequency drop generator, electrostatic generator etc.

Features

1. The use of special technology and process, the power supply output anti-interference ability, suitable for various electromagnetic compatible immunity test
2. Voltage, current and phase, power factor, frequency, etc will set up and take load regulation
3. It can be set up 2~50 harmonics amplitude and phase, and it can be added to the fundamental wave in every harmonic output
4. Frequency points phase adjustable (U1U2 and U3 phase)
5. Voltage and current output range wide, big power, high stability, waveform distortion small
6. Strong loading ability, and it can take capacity, sensibility, impedance load or composite type load, and the load regulation RG is higher than 0.01%
7. The 32 bit MPU + DSP + FPGA, powerful agile
8. Hardware PID, fast response, load change will not cause output fluctuations
9. Power frequency weekly wave is as high as 50000 points of waveform kneading, signal output without filtering, waveform output precision, harmonic output precision, harmonic distortion small
10. Range automatic switching; Software calibration, simple operation, stable and reliable
11. The large screen 320 x 240 liquid crystal display (LCD), English interface, simple operation
12. Perfect over-current, over-voltage, overheating, short circuit, open circuit, overload protection, automatic fault detection
13. With RS232 interface, it can connect with PC
14. With PC software, it can control standard source output via programmed

Parameters

Electrical parameters	
Power supply	AC 220V±10%, frequency 50/60 Hz
AC voltage output	
Range (U1, U2, U3 phase)	0-120 V; range switch automatically
Adjust fineness	0.01% RG
Accuracy	0.1% RG
Stability	0.03% RG/200s
Distortion degree	<0.1% (not capacitive load)
Output power	300VA
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)	0-10A; range switch automatically
Adjust fineness	0.01% RG
Accuracy	0.1% RG
Stability	0.03% RG/200s
Distortion degree	<0.1% (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
Power output	
Accuracy	0.1% RG
Stability	0.03% RG/120s
Phase angle	
Adjusting range	0°-359.99°
Resolution	0.001°
Accuracy	0.1°
Frequency	
Adjusting range	40-65 Hz
Resolution	0.002 Hz
Accuracy	0.005 Hz
Temperature drift	±0.5 PPM/°C
Long-term stability	±4 PPM/year

Electrical parameters - continued	
Power factor	
Adjusting range	-1 ~ 0 ~ +1
Resolution	0.0001
Accuracy	0.0005
Harmonic accuracy	
Harmonic times	2-50st
Harmonic phase	0-359.99°
Harmonic phase accuracy	<0.01°
Harmonic set accuracy	0.1% (relative to the base wave ratings)
With capacitive load capacity	
0-120 V	1uF
Mechanical parameters	
Dimensions (W×D×H) (mm)	500x600x180
Weight (kg)	About 50
Environmental conditions	
Working temperature	0°C to 40°C
Storage condition	-30°C to -60°C
Relative humidity	≤85%

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%

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)
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%

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 and16 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%

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%

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%

GF4600

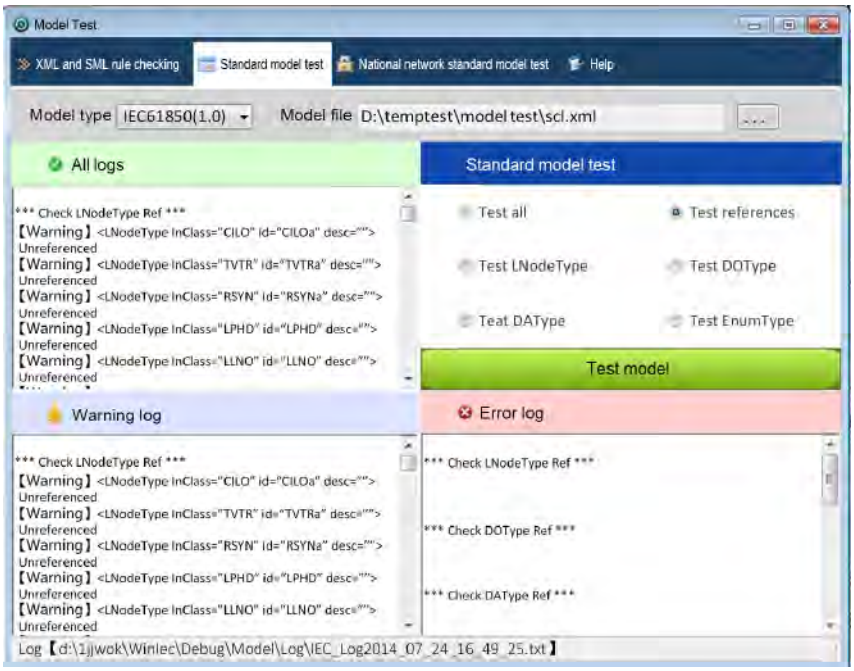
IEC61850 Test Software

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. his 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.

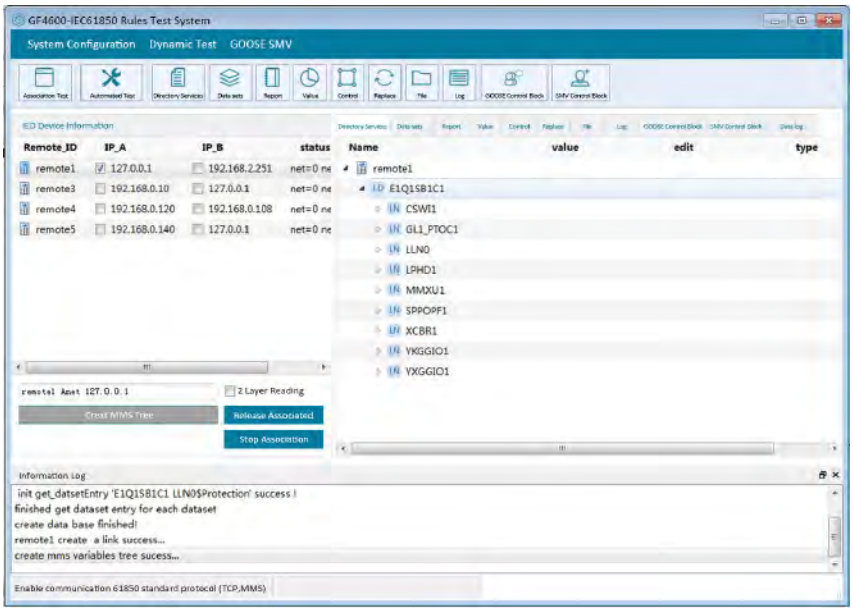
According to 61850-10 rules, this software is to confirm whether the tested product meet the standards on consistency requirements.



MODULE 2 - IEC61850MMS CLIENT SIMULATION

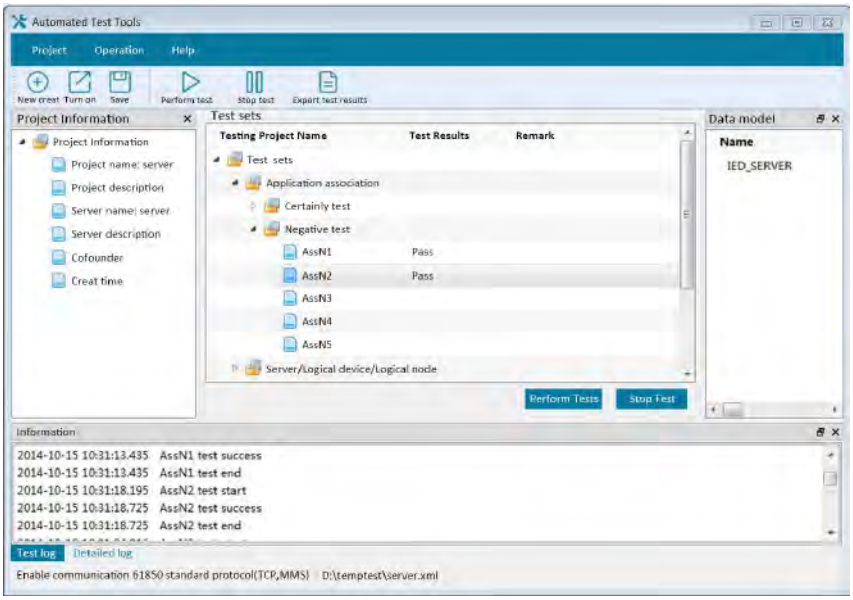
Simulated client IEC61850, testing intelligent electronic devices IED (the control unit, the protection unit etc.).

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.



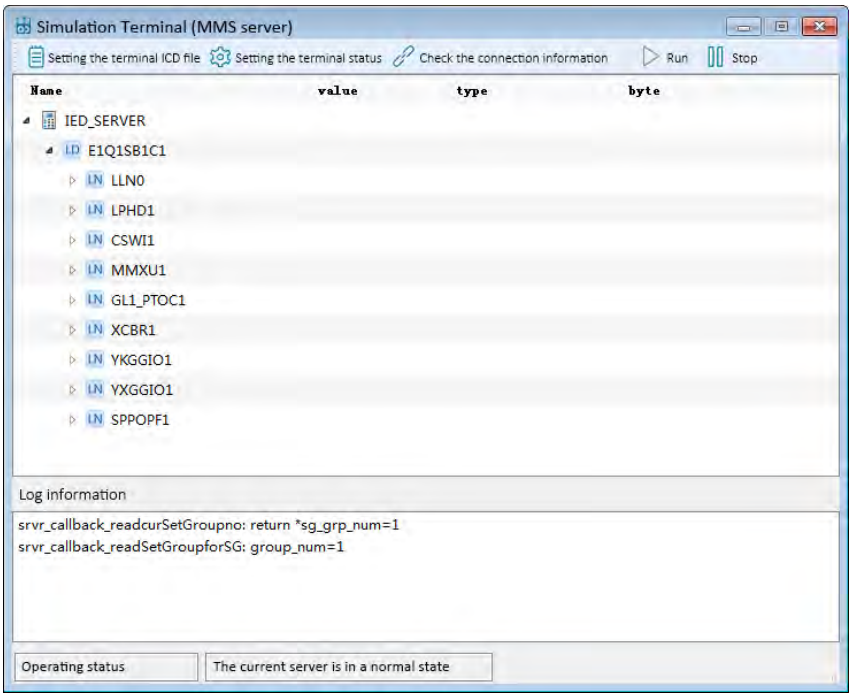
MODULE 3 - IEC61850MMS AUTOMATED TESTING

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.



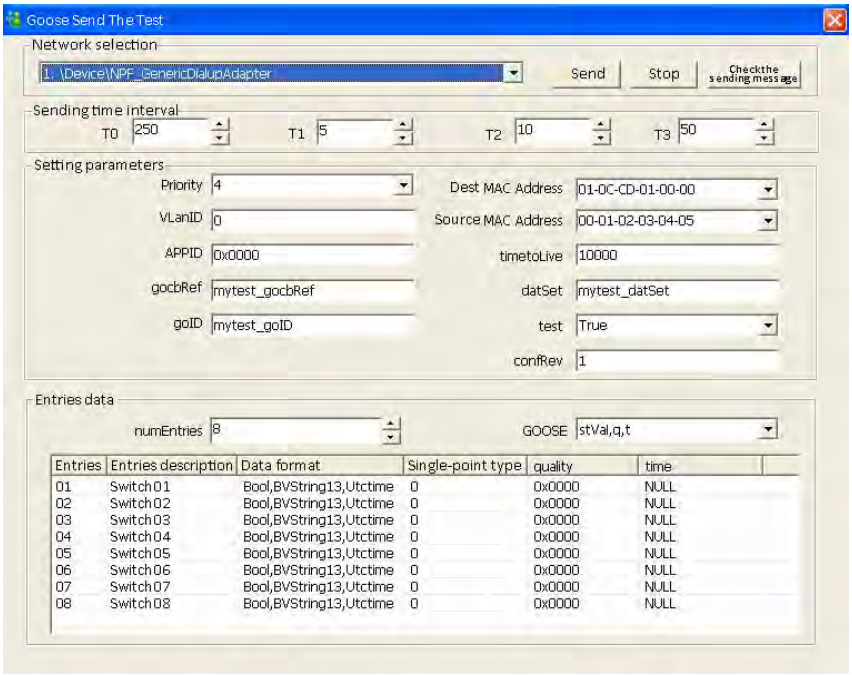
MODULE 4 - SIMULATION TERMINAL (MMS SERVER) EMULATION SOFTWARE

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

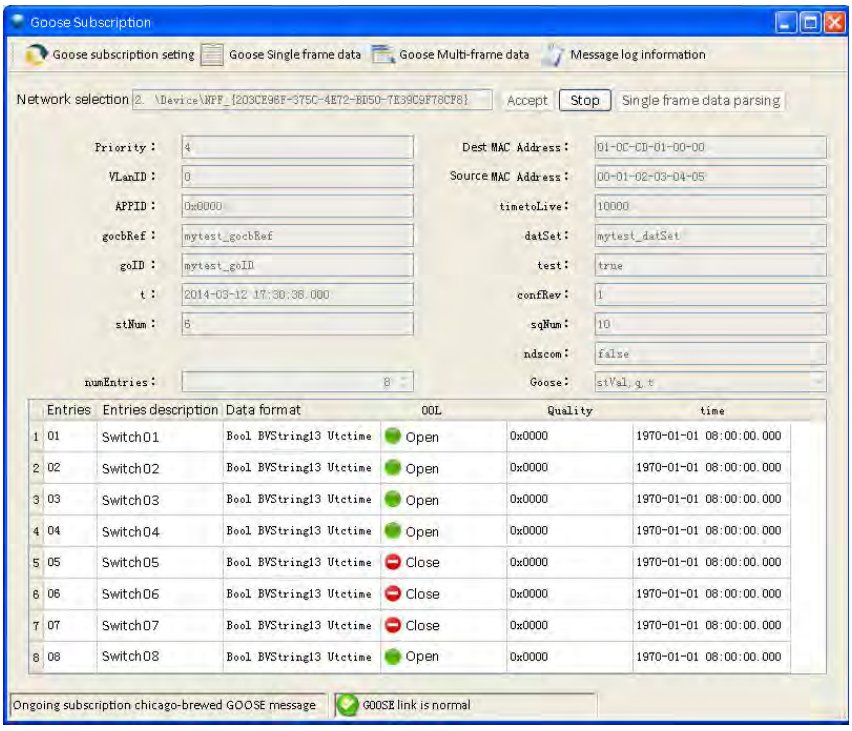
Simulation issue event message IEC61850-GOOSE, testing if the operation of the IED is correct. You can configure Priority, Dest MAC Address, VLanID, Source MAC Address, APPID, timetoLive, gocbRef, datSet, goID, test, confRev, numEntries, GOOSE data formats and other parameters.



MODULE 6 - GOOSE SUBSCRIPTION SIMULATION

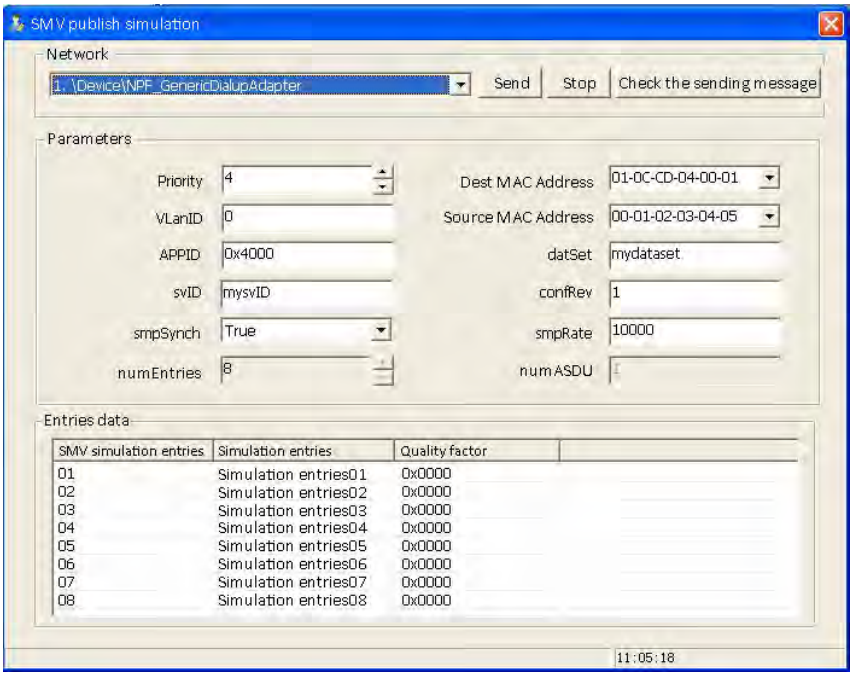
Simulation receive event message IEC61850-GOOSE, testing if the issued GOOSE of the digital device IED is correct.

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



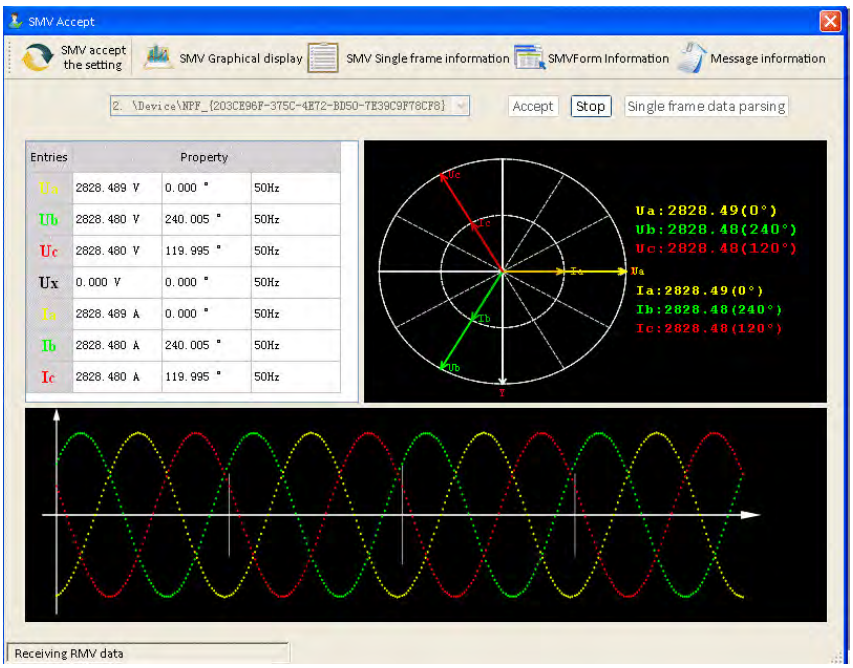
MODULE 7 - SMV PUBLISH SIMULATION

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.



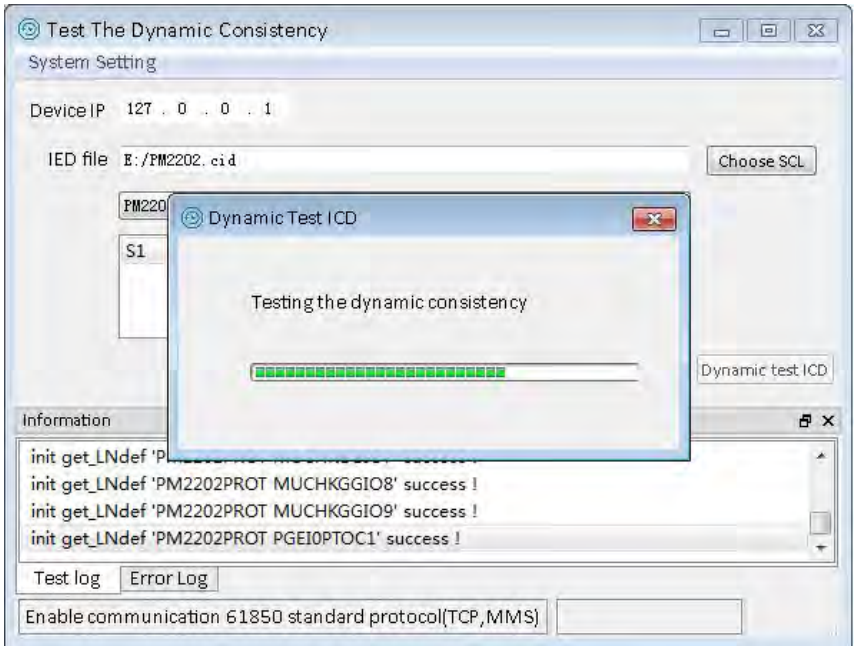
MODULE 9 - MOTION TESTING SOFTWARE MODEL

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

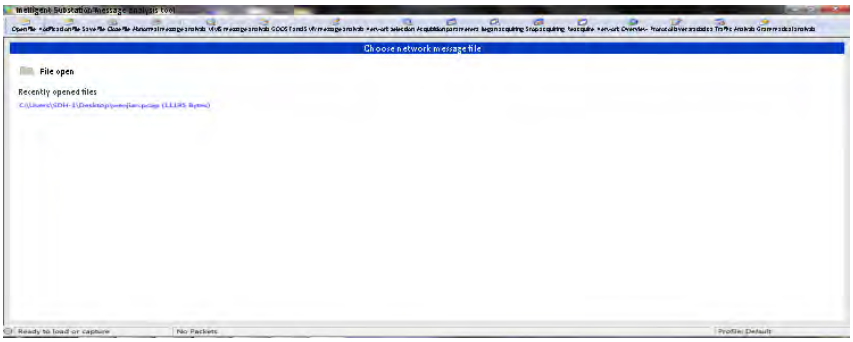
3) Compared the information from 1) and 2), you can check if the CID / ICD files and intelligent substation IED device implementation model is consistent.



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.