

GF312D1

Handheld Three Phase Energy Meter Calibrator

The model GF312D1 is a precision 0.05% AC energy meter accuracy testing instrument with 12A/600V and 120A/600V range, mainly used to test single phase and three phase energy meter error on site, measure all various of AC parameters and CT ratio & phase error, it is also as three phase reference energy meter in the laboratory. Mainly using test single phase or three phase electricity meter error on site. GF312D1 handheld energy meter calibrator is an ideal test tool for the metrological service of electricity power utilities.

Functions

1. CT PT burden test.
2. CT ratio and phase testing;
3. Measure frequency of power line;
4. Measure 2-64th times harmonics and content;
5. Testing comprehensive error of measuring device;
6. Measure I(current) of three phase or single phase;
7. Measure U(voltage) of three phase or single phase;
8. Measure active power of three phase or single phase;
9. Measure power factor of three phase or single phase;
10. Measure reactive power of three phase or single phase;
11. Measure apparent power of three phase or single phase;
12. Measure phase angle between U & I, U1 & U2 & U3, I1 & I2 & I3;
13. Testing all kinds of mechanical and electronic energy meter error;
14. Calibrate three phase, single phase, and active or reactive meter error;
15. As one three phase active or reactive electricity reference energy meter;




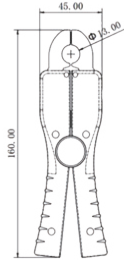
Features

1. Voltage and current synchronous sampling technology;
2. Measure the ratio or lag-angle of low-voltage transformer;
3. Calibration of two energy meters error in the same load circuit;
4. With PC management software, download excel file test report;
5. Optional 5A, 20A, 100A, 200A, 500A, 1000A, 2000A, 3000A current clamp;
6. Adopt 32 bit ARM processor, multi-channel 16 bit precision A/D convertor
7. 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;
8. Low consumption circuit design, high energy Li batter supply, intellectual power management software, which make the instrument can continuously work up to 10 hours.

- 9. Handheld designed;
- 10. Display vector diagram;
- 11. Measure CT ratio & phase;
- 12. Display waveform of U and I;
- 13. Store and display measured data;
- 14. Measure 2-64th harmonic of U, I;
- 15. High resolution 6 inch TFT color LCD;
- 16. High precision measurement, min current 1mA;
- 17. Analyze and display content of harmonic of U and I;

Parameters

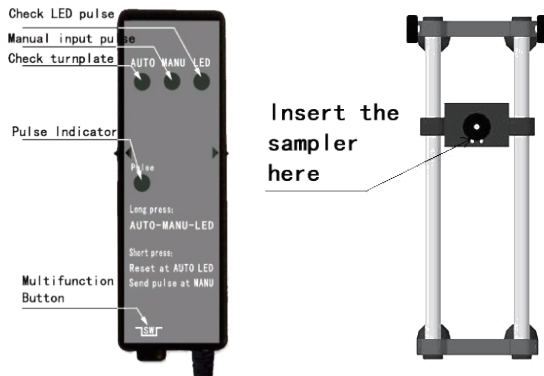
1. Electrical parameters

Accuracy class	0.05%, 0.1%
Display	6" TFT (640x480)
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 or USB
Test voltage	
Range	Phase to Neutral 0-600V (Phase to Phase 0-830V)
Error	±0.05% (30V-600V) ±0.1% (5V-30V)
Voltage measurement temperature drift	< 8 x 10 E-6/K
Voltage measurement relative humidity drift	< 8 x 10 E-6/RH
Voltage measurement stability	< 50 x10 E-6
Voltage measurement long term stability	< 80 x 10 E-6/Year
Harmonic	2 nd -64 th
Test current	
Range (direct connection)	0-12A
Error (direct connection)	±0.05% (10mA-12A) ±0.1% (1mA-10mA)
Range (clamp CT)	10mA-120A
Clamp CT	  <p>Model: Q13 Test range: 1mA-120A Accuracy: 0.1% Ratio: 1000:1 Internal diameter: 13mm External diameter: 33mm Lead cable: 2.5m</p>

Clamp CT Optional	5A, 20A, 100A, 200A, 500A, 1000A, 2000A, 3000A
Three phase color label	L1=Red,L2=Yellow,L3=Blue
Error (camp CT)	±0.1% (100mA-120A)
Current measurement temperature drift	< 8 x 10 E-6/K @ 10mA-120A
Current measurement relative humidity drift	< 8 x 10 E-6/RH@ 10mA-120A
Current measurement stability	< 50 x10 E-6
Current measurement long term stability	< 80 x 10 E-6/Year
Harmonic	2 nd -64 th
Power & Energy measure error	
Active power (direct connection)	±0.05% (0.1A-12A) ±0.1% (0.01A-0.1A)
Reactive power (direct connection)	±0.1% (0.1A-12A)
Energy measure error	
Active energy (direct connection)	±0.05% (0.1A-12A) ±0.1% (0.01A-0.1A)
Reactive energy (direct connection)	±0.1% (0.1A-12A)
Power/energy measurement temperature drift	< 15 x 10 E-6/K
Power/energy measurement relative humidity drift	< 12 x 10 E-6/RH@ 10mA-120A
Power/energy measurement stability	< 100 x10 E-6
Power/energy measurement long term stability	< 160 x 10 E-6/Year
Error display	5 digits with minimum three decimal places XX.XXX%
Phase angle	
Range	0°-360.000°
Resolution	0.01°
Error	±0.02°
Frequency	
Range	40.000-70.000Hz
Resolution	0.001Hz
Error	0.002Hz
Pulse input	
Input channel	2
Input level	5-24V
Input frequency	Max. 2MHz
Pulse output	
Energy constant	180000imp/kWh, 1800imp/kWh, 180imp/kWh
Pulse ratio	1:1
Output level	5V
Pulse frequency	Standard 400Hz-2.5KHz, customized max 10KHz

1. Electrical parameters - continued

Scanning head



The sampler is equipped with a bracket which can clip/install on the tested electronic and electromechanical meters, and the sampler can insert to the 'orifice/slot' in the center of the bracket. There are 3 status LED indicator:

- [AUTO] – scan the turn-plate of the energy meter
- [MANU] – Manual input pulse
- [LED] – Receive the LED energy pulse

Function	Sensitivity can be intelligently adjusted according to ambient light intensity to ensure accuracy measurement.
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Function

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

2. Cable and Accessories

Test Cable	Voltage test cable 1SET Cable Length:2m (R,Y,B,Black) Current test calbe 1SET Cable Length:2m (R,Y,B,Black)
Plug	Pin type 1SET (4black,2Red,2Yellow,2Green) 'U' type 1SET (4black,2Red,2Yellow,2Green) 'Q' type 1SET (4black,2Red,2Yellow,2Green) Crocodile type 1SET (1Black,1Red,1Yellow,1Green)
Accessories Bag	Yes

3. 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

4. Environmental conditions

Ambient temperature	-10°C to 55°C
Relative humidity	15%-95%
Environmental protection level	IP53

5. Standard

Isolation protection	IEC 61010-1:2001
Energy measurement	IEC 60736; IR46
Reference standard	IEC 62052-11 IEC62053-21 IEC62053-22 & IEC62053-23 IEC61010-1:2001

6. Calibration and maintenance

Warranty	3 years
Calibration	Lifelong free calibration service
Recommended calibration interval	Every two years