GF3000-G

EMC ANTI-INTERFERENCE METERING TEST SYSTEM

GF3000-G EMC anti-interference metering test system is a high-end equipment designed for electricity meter electromagnetic compatibility (EMC) test developed and produced by GFUVE GROUP. The products are equipped with EMC filter purification device, GF303G three-phase AC power source, GF333G three-phase AC reference meter, multi-channel digital information transmission server, Beidou precision time base source system and PC software test platform developed and produced by our company, which are controlled and managed by computer. The device can simulate the complex electromagnetic interference environment of electrostatic discharge (ESD), Electrical Fast Transient (EFT), RF field conduction/radiation immunity, lightning surge and other complex electromagnetic interference environments, and comprehensively verify the anti-interference ability and stability of electricity meters under strict working conditions, in line with the latest applicable IEC standards and corresponding reasonable standards. It is strictly in accordance with IEC60736, IR46 and ANSI C12.20 standard, meeting ISO17025 laboratory standards!

Functions

1. Timing error test.
2. Creeping and starting test.
3. Standard deviation, 24 hour variation test.
4. Equipped with RS232 communication port.
5. With PC auto test energy meter accuracy software.
6. Calibration and verification of energy meter constant.
7. Influencing quantity test of voltage, frequency, harmonic.
8. Able to check the same type meters with different constants.
9. Full automatic, semi automatic and manual operation available.
10. Supporting bar code input, which increase the efficiency of input.
11. Able to print out all kinds of test reports with the standard forms.
12. Testing energy registers (dial test) and maximum demand indicator.
13. Forward and reverse active energy / forward and reverse reactive energy error test.
14. Able to calibrate all kinds of electronic and inductive three phase kWh meter in EMC laboratory.
15. Able to perform automatic measurement like shunting, basic errors, standard deviation, and etc.
16. Able to test voltage, current, active/reactive/apparent power, phase, power factor, frequency, and etc.
17. Able to display waveform of voltage and current able to set 2nd-63st harmonic of voltage and current, measure the waveform distortion and harmonic content, and display harmonic chart.

Features

1. Operate automatically or manually;
2. With GPS BEIDOU Precision time server;
3. High resolution of voltage, current and power;
4. Large LCD display and simple interface for operation;
5. Power source have DIP and interrupts setting;
6. Three phase reference meter and three phase power source with touch TFT color LCD;
7. High accuracy, 6-digit display the energy relative errors are no more than 0.05% within the measuring range;
8. High stability of power source which is up to 0.01%/100s and low distortion which is no more than 0.3%;
9. Wide current measuring range from 1mA to 120A which can be automatically switched;
10. Self-check and perfect protection function of overload, short voltage circuit and open current circuit;
11. Equipped with three phase multifunction reference meter and program-conrolled three phase power source which can be separately used and are convenient for testing;

Parameters

Electrical parameters	
Accuracy	0.02%, 0.05%, 0.1%
Power Supply	AC 180-265V, or 3×220/380V±15%, frequency 50/60Hz.
Three Phase Reference Meter	
Voltage measurement	
Range(U1, U2, U3)	0.00-600V
Resolution	0.001V
Error	±0.02% (30V-600V) ±0.05% (0.1V-30V)
Harmonic	2^{nd}-63^{rd}
Current measurement	
Range(I1,I2,I3)	1mA-120A
Resolution	0.1mA
Error	±0.02% (10mA-120A) ±0.05% (1mA-10mA)
Harmonic	2^{nd}-63^{rd}
Power measure error	
Active power (direct connection)	±0.02% (0.01A-120A) or ±0.05% (0.01A-120A) ±0.05% (0.001A-0.01A) or ±0.1% (0.001A-0.01A)
Reactive power (direct connection)	±0.05% (0.1A-120A) or ±0.1% (0.1A-120A)

Electrical parameters - continued	
Phase angle measurement	
Range	0°-360°
Resolution	0.005°
Error	±0.015°
Frequency Measurement	
Range	40-70Hz
Resolution	0.0005Hz
Error	0.001Hz
Power factor measurement	
Range	-1.0 ~ 0 ~ +1.0
Resolution	0.0001
Error	0.0005
Three Phase Power Source	
AC Voltage Output	
Range(U1, U2, U3)	57.7V, 100V, 220V, 380V (max 480V)
Adjustment range	(0-120)%RG(1)
Adjustment fineness	0.01%RG, 0.1%RG, 1%RG, 10%RG as optional.
Stability	0.01%/120s
Distortion	0.08% (Non-capacitive load)
Output load	1200VA/Phase
Measuring accuracy	0.02%RG or 0.05% RG
AC Current Output	
Range(I1,I2,I3)	0.01A, 0.05A, 0.1A, 0.5A, 1A, 5A, 10A, 50A, 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	≤0.08% (Non-capacitive load)
Output load	2400VA/Phase
Accuracy	0.02%RG or 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	0.02%RG or 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	0.02° or 0.05°

Electrical parameters - continued	
Power Factor	
Adjustment range	-1 ~ 0 ~ 1
Resolution	0.0001
Measurement accuracy	0. 0005
Frequency Output	
Adjustment range	40Hz-70Hz
Output adjustment fineness	5Hz, 1Hz, 0.1Hz, 0.01Hz as optional.
Resolution	0.001Hz
Accuracy	0.002Hz
Voltage /Current/Harmonic Setting	
Harmonic number	2-63 times
Harmonic content	0-40%
Harmonic phase	0-359.99
Harmonic setting accuracy	(10%±0.1%)RD[(2)]
Power Energy Measurement Error	
Active power energy	0.02%RG or 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
Pulse output frequency	Max 50kHz
Power Pulse Input	
Pulse constant set range	(1--599999999)/kwh
Energy pulse type	support active and reactive pulse, the highest frequency power pulse input is 200KHz.
Meter Position	
Position	one meter
Standard	
Standard	IEC 62053-21,22, 23; IEC 60736; ANSI C12.20-2002; JJG 597-2005; JJG596-2012; JJG 1085-2013; JJF 68-2019; DL/T 826-2002; DL/T 1478-2015; DL/T 448-2016; EN 50470-1, EN 50470-2, EN-50470-3; IEC 61010;
Safety	
Isolation protection	IEC 61010-1:2001
Measurement Category	300 V CAT III, 600 V CAT II
Degree of protection	IP20
Declaration of conformity	CE & CNAS certified
Mechanical parameters	
Dimensions (mm)	Cabinet size: 800 * 600 * 1850mm (L * W * H).
Weight (kg)	About 500

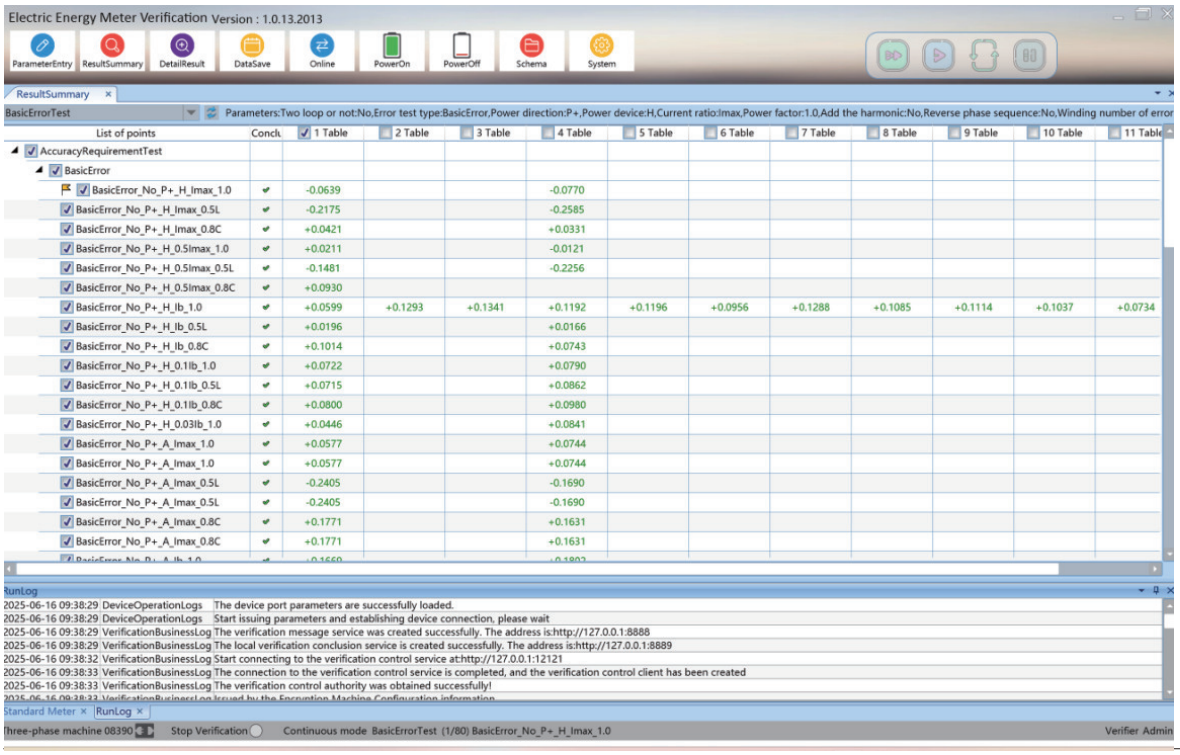
Environmental conditions	
Ambient temperature	0°C to +40°C
Relative humidity	35%-85%

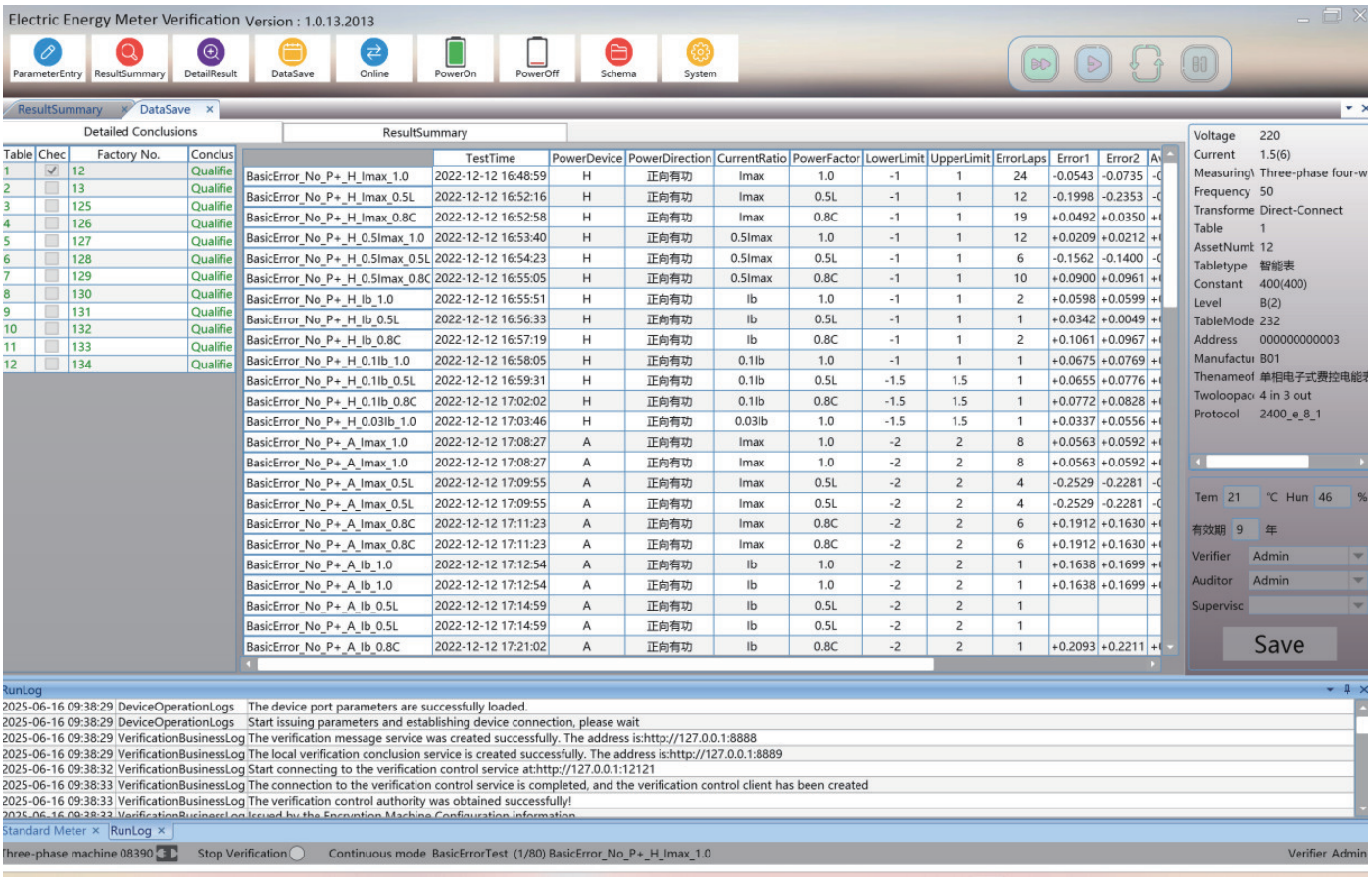
(1) RG means range, the same as below;
(2) RD means the setted harmonic content, harmonic can be a single output, also multiple output.

GF3000-20 Posion Packing List

Item	Name	QTY
1	GF333G three phase reference meter	1PC
2	GF303G three phase power source	1PC
3	BEIDOU precision time base source	1PC
4	EMC filter purification device	1PC
5	Scanning head	1PC
6	Energy pulse cable(input)	1PC
7	Auxiliary test cable 10m	1SET
8	PC computer with automatic testing software	1PC
9	Opreration Manual	1PC
10	Factory test certificate	1PC

PC automatic Testing Software (Optional)




Electric Energy Meter Verification Version : 1.0.13.2013
ParameterEntry
ResultSummary
DetailResult
DataSave
Online
PowerOn
PowerOff
Schema
System
Detailed Conclusions
ResultSummary
Table Chec Factory No. Conclus
1 12 Qualifie
2 13 Qualifie
3 125 Qualifie
4 126 Qualifie
5 127 Qualifie
6 128 Qualifie
7 129 Qualifie
8 130 Qualifie
9 131 Qualifie
10 132 Qualifie
11 133 Qualifie
12 134 Qualifie
TestTime PowerDevice PowerDirection CurrentRatio PowerFactor LowerLimit UpperLimit ErrorLaps Error1 Error2
BasicError_No_P+_H_Imax_1.0 2022-12-12 16:48:59 H 正向有功 Imax 1.0 -1 1 24 -0.0543 -0.0735
BasicError_No_P+_H_Imax_0.5L 2022-12-12 16:52:16 H 正向有功 Imax 0.5L -1 1 12 -0.1998 -0.2353
BasicError_No_P+_H_Imax_0.8C 2022-12-12 16:52:58 H 正向有功 Imax 0.8C -1 1 19 +0.0492 +0.0350
BasicError_No_P+_H_0.5Imax_1.0 2022-12-12 16:53:40 H 正向有功 0.5Imax 1.0 -1 1 12 +0.0209 +0.0212
BasicError_No_P+_H_0.5Imax_0.5L 2022-12-12 16:54:23 H 正向有功 0.5Imax 0.5L -1 1 6 -0.1562 -0.1400
BasicError_No_P+_H_0.5Imax_0.8C 2022-12-12 16:55:05 H 正向有功 0.5Imax 0.8C -1 1 10 +0.0900 +0.0961
BasicError_No_P+_H_Ib_1.0 2022-12-12 16:55:51 H 正向有功 Ib 1.0 -1 1 2 +0.0598 +0.0599
BasicError_No_P+_H_Ib_0.5L 2022-12-12 16:56:33 H 正向有功 Ib 0.5L -1 1 1 +0.0342 +0.0049
BasicError_No_P+_H_Ib_0.8C 2022-12-12 16:57:19 H 正向有功 Ib 0.8C -1 1 2 +0.1061 +0.0967
BasicError_No_P+_H_0.1Ib_1.0 2022-12-12 16:58:05 H 正向有功 0.1Ib 1.0 -1 1 1 +0.0675 +0.0769
BasicError_No_P+_H_0.1Ib_0.5L 2022-12-12 16:59:31 H 正向有功 0.1Ib 0.5L -1.5 1.5 1 +0.0655 +0.0776
BasicError_No_P+_H_0.1Ib_0.8C 2022-12-12 17:02:02 H 正向有功 0.1Ib 0.8C -1.5 1.5 1 +0.0772 +0.0828
BasicError_No_P+_H_0.03Ib_1.0 2022-12-12 17:03:46 H 正向有功 0.03Ib 1.0 -1.5 1.5 1 +0.0337 +0.0556
BasicError_No_P+_A_Imax_1.0 2022-12-12 17:08:27 A 正向有功 Imax 1.0 -2 2 8 +0.0563 +0.0592
BasicError_No_P+_A_Imax_1.0 2022-12-12 17:08:27 A 正向有功 Imax 1.0 -2 2 8 +0.0563 +0.0592
BasicError_No_P+_A_Imax_0.5L 2022-12-12 17:09:55 A 正向有功 Imax 0.5L -2 2 4 -0.2529 -0.2281
BasicError_No_P+_A_Imax_0.5L 2022-12-12 17:09:55 A 正向有功 Imax 0.5L -2 2 4 -0.2529 -0.2281
BasicError_No_P+_A_Imax_0.8C 2022-12-12 17:11:23 A 正向有功 Imax 0.8C -2 2 6 +0.1912 +0.1630
BasicError_No_P+_A_Imax_0.8C 2022-12-12 17:11:23 A 正向有功 Imax 0.8C -2 2 6 +0.1912 +0.1630
BasicError_No_P+_A_Ib_1.0 2022-12-12 17:12:54 A 正向有功 Ib 1.0 -2 2 1 +0.1638 +0.1699
BasicError_No_P+_A_Ib_1.0 2022-12-12 17:12:54 A 正向有功 Ib 1.0 -2 2 1 +0.1638 +0.1699
BasicError_No_P+_A_Ib_0.5L 2022-12-12 17:14:59 A 正向有功 Ib 0.5L -2 2 1
BasicError_No_P+_A_Ib_0.5L 2022-12-12 17:14:59 A 正向有功 Ib 0.5L -2 2 1
BasicError_No_P+_A_Ib_0.8C 2022-12-12 17:21:02 A 正向有功 Ib 0.8C -2 2 1 +0.2093 +0.2211
Voltage 220
Current 1.5(6)
Frequency 50
Table 1
Constant 400(400)
Level B(2)
TableMode 232
Address 000000000003
Tem 21 ℃ Hun 46 %
有效期 9 年
Verifier Admin
Auditor Admin
Save
RunLog
2025-06-16 09:38:29 DeviceOperationLogs The device port parameters are successfully loaded.
2025-06-16 09:38:29 DeviceOperationLogs Start issuing parameters and establishing device connection, please wait
2025-06-16 09:38:29 VerificationBusinessLog The verification message service was created successfully. The address is:http://127.0.0.1:8888
2025-06-16 09:38:29 VerificationBusinessLog The local verification conclusion service is created successfully. The address is:http://127.0.0.1:8889
2025-06-16 09:38:32 VerificationBusinessLog Start connecting to the verification control service at:http://127.0.0.1:12121
2025-06-16 09:38:33 VerificationBusinessLog The connection to the verification control service is completed, and the verification control client has been created
2025-06-16 09:38:33 VerificationBusinessLog The verification control authority was obtained successfully!
Standard Meter
RunLog
Three-phase machine 08390
Stop Verification
Continuous mode BasicErrorTest (1/80) BasicError_No_P+_H_Imax_1.0
Verifier Admin