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SOUTH CHINA NATIONAL CENTER OF METROLOGY
GUANGDONG INSTITUTE OF METROLOGY

TEST REPORT

No. DBN202310004

Name of Sample: Multifunction Power Meter (Electricity Energy Meter)

Model / Type: QNG33 3×220/380V 3×5(6)A 50Hz

Sample Number: 2212170003

Applicant: DFUN(ZHUHAI)CO.,LTD.

Manufacturer: DFUN(ZHUHAI)CO.,LTD.

Test Type: Commission

Date Issued: 2023-01-04



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(1) Basic Information

Name of Sample	Multifunction Power Meter (Electricity Energy Meter)	Trade Mark	----
Model / Type	QNG33 3×220/380V 3×5(6)A 50Hz	Class	Active Energy Class0.5S
Sample No.	2212170003	Sample quantity	1
Applicant	DFUN(ZHUHAI)CO.,LTD.		
Address	Second floor,Building D3,Southern Software Park,No.1 Software Road,Tangjia,Zhuhai		
Manufacturer	DFUN(ZHUHAI)CO.,LTD.		
Test Site	Electricity Energy Meter Lab of GuangZhou Branch		
Test Conditions	Temperature: (21~25) °C Humidity: (45~55) %RH		
Date Received	Jan. 03, 2023	Commission No.	WT20220606
Test Date	Jan. 03, 2023 to Jan. 04, 2023	Test Type	Commission
Test Item	1 Initial start-up of the meter 2 Test of no-load condition 3 Starting current test 4 Limits of error due to variation of the current 5 Voltage variation 6 Frequency variation		
Test Standard	IEC 62052-11:2020 Electricity metering equipment – General requirements, tests and test conditions –Part 11: Metering equipment; IEC 62053-22:2020 Electricity metering equipment-Particular requirements-Part 22: Static meters for AC active energy(classes 0,1S, 0,2S and 0,5S)		
Conclusion	PASS		
Remarks	----		



Tested by: 黄京

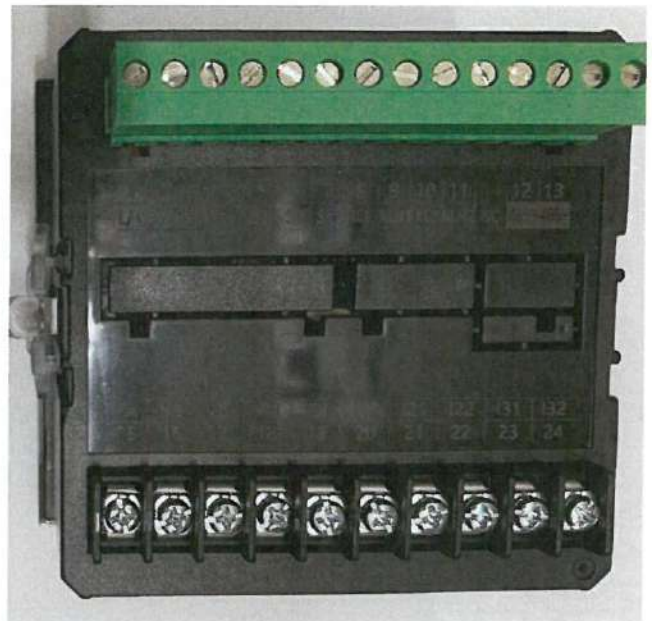
Checked by: 何建新

Approved by: 戴律

(2) Test Results Summary

No.	Test Item	Sample No.	Pass (P)	Fail (F)
1	Initial start-up of the meter	2212170003	P	
2	Test of no-load condition		P	
3	Starting current test		P	
4	Limits of error due to variation of the current		P	
5	Voltage variation		P	
6	Frequency variation		P	

(3) Sample Photo



(4) Main Metrology Instrument and Test Equipment

No.	Name of Instrument/Model	Serial No.	Certificate No. /Due Date	Technical Characteristic
1	Verification Equipment for Three-phase Electrical / YC-1398G	5321004	DBN202200136 /2023-03-17	±0.05%
2	Three-phase Reference Meters for Electrical / SZ-03A-K6	15220003F	DBN202260333 /2023-03-16	±0.05%

(5) Test Result

1 Initial start-up of the meter

1. Technical requirement: IEC 62052-11:2020 item 7.5
2. Test method: IEC 62052-11:2020 item 7.5
3. Test equipment: YC-1398G、SZ-03A-K6
4. Test result:

Test condition	Technical requirement	Test result
		2212170003
100% U_n	The meter shall be functional within 10 s after the reference voltage is applied to the meter terminals.	Pass

5. Conclusion: Pass.

2 Test of no-load condition

1. Technical requirement: IEC 62052-11:2020 item 7.6
2. Test method: IEC 62052-11:2020 item 7.6
3. Test equipment: YC-1398G、SZ-03A-K6
4. Test result:

Test condition	Technical requirement	Test result
		2212170003
110% of U_n , No current flowing in the current circuit.	When the voltage is applied to the voltage circuits and if present, to the auxiliary power supply circuit, with no current flowing in the current circuits, the test output of the meter shall not produce more than one pulse.The test time is18.37min.	Pass

5. Conclusion: Pass.

3 Starting current test

1. Technical requirement: IEC 62052-11:2020 item 7.7
2. Test method: IEC 62052-11:2020 item 7.7
3. Test equipment: YC-1398G、SZ-03A-K6
4. Test result:

Test condition		Technical requirement	Test result
I_{st}	Power Factor	The meter shall start and continue to register. the starting current test shall be applied with energy flowing in each direction.	2212170003
$0,001I_n$	1		Pass

5. Conclusion: Pass.

4 Limits of error due to variation of the current

1. Technical requirement: IEC 62053-22:2020 item 7.9
2. Test method: IEC 62053-22:2020 item 7.9
3. Test equipment: YC-1398G、SZ-03A-K6
4. Test result:

Active energy

Test conditions: with balanced loads

Power factor	Current	Limits Error (%)	Relative error (%) 2212170003
			Active energy of import
1	I_{min}	$\pm 1,0$	-0,05
	$0,05I_n$	$\pm 0,5$	-0,05
	$0,5I_n$	$\pm 0,5$	-0,05
	I_n	$\pm 0,5$	-0,05
	I_{max}	$\pm 0,5$	-0,05
0,5L	$0,02I_n$	$\pm 1,0$	+0,10
	$0,1I_n$	$\pm 0,6$	+0,10
	$0,5I_n$	$\pm 0,6$	+0,10
	I_n	$\pm 0,6$	+0,05
	I_{max}	$\pm 0,6$	+0,05
0,8C	$0,02I_n$	$\pm 1,0$	-0,10
	$0,1I_n$	$\pm 0,6$	-0,10
	$0,5I_n$	$\pm 0,6$	-0,10
	I_n	$\pm 0,6$	-0,10
	I_{max}	$\pm 0,6$	-0,10

Active energy Test conditions: Carrying a single-phase load but with balanced voltages

Power factor	Current	Limits Error (%)	Relative error (%) 2212170003		
			Active energy of import		
			A	B	C
1	I_{min}	$\pm 1,0$	-0,10	-0,05	-0,10
	$0,05I_n$	$\pm 0,5$	-0,05	-0,05	-0,05
	$0,5I_n$	$\pm 0,5$	-0,05	-0,05	-0,05
	I_n	$\pm 0,5$	-0,05	-0,05	-0,05
	I_{max}	$\pm 0,5$	-0,10	-0,05	-0,05
0,5L	$0,02I_n$	$\pm 1,0$	+0,15	+0,10	+0,05
	$0,1I_n$	$\pm 0,6$	+0,20	+0,10	+0,05
	$0,5I_n$	$\pm 0,6$	+0,15	+0,05	+0,05
	I_n	$\pm 0,6$	+0,10	0,00	0,00
	I_{max}	$\pm 0,6$	+0,10	0,00	0,00
0,8C	$0,02I_n$	$\pm 1,0$	-0,20	-0,10	-0,10
	$0,1I_n$	$\pm 0,6$	-0,20	-0,05	-0,05
	$0,5I_n$	$\pm 0,6$	-0,15	-0,05	-0,05
	I_n	$\pm 0,6$	-0,15	-0,05	-0,05
	I_{max}	$\pm 0,6$	-0,15	-0,05	-0,05

5. Expanded uncertainty of measuring results: $U_{rel}=0.09\%$, $k=2$

6. Conclusion: Pass.

5 Voltage variation

1. Technical requirement: IEC 62053-22:2020 item 7.10
2. Test method: IEC 62052-11:2020 item 9.4.3
3. Test equipment: YC-1398G、SZ-03A-K6
4. Test result:

Power factor	Current	Voltage	Limits of variation in error(%)	Relative error change(%)
				2212170003
1	I_{min}	$0,9U_n$	$\pm 0,25$	0,01
	I_{min}	$1,1U_n$		0,00
	I_n	$0,9U_n$		0,00
	I_n	$1,1U_n$		0,01
	I_{max}	$0,9U_n$		0,00
	I_{max}	$1,1U_n$		0,01

0,5L	$0,05I_n$	$0,9U_n$	$\pm 0,5$	0,00
	$0,05I_n$	$1,1U_n$		0,01
	I_n	$0,9U_n$		-0,01
	I_n	$1,1U_n$		0,00
	I_{max}	$0,9U_n$		0,00
	I_{max}	$1,1U_n$		0,01
1	I_{min}	$0,8U_n$	$\pm 0,75$	0,01
	I_{min}	$1,15U_n$		0,00
	I_n	$0,8U_n$		0,00
	I_n	$1,15U_n$		0,00
	I_{max}	$0,8U_n$		0,00
	I_{max}	$1,15U_n$		0,00
0,5L	$0,05I_n$	$0,8U_n$	$\pm 1,5$	0,00
	$0,05I_n$	$1,15U_n$		0,01
	I_n	$0,8U_n$		-0,01
	I_n	$1,15U_n$		0,00
	I_{max}	$0,8U_n$		0,00
	I_{max}	$1,15U_n$		0,00
1	I_n	$0,7U_n$	$+10\sim-100$	0,00
		$0,6U_n$		0,00
		$0,5U_n$		-0,01
		$0,4U_n$		0,00
		$0,3U_n$		-0,01
		$0,2U_n$		-0,01
		$0,1U_n$		-0,01

5. Expanded uncertainty of measuring results: $U_{rel}=0.06\%$, $k=2$

6. Conclusion: Pass.

6 Frequency variation

1. Technical requirement: IEC 62053-22:2020 item 7.10
2. Test method: IEC 62052-11:2020 item 9.4.6
3. Test equipment: YC-1398G、SZ-03A-K6

4. Test result:

Power factor	Current	Frequency	Limits of variation in error(%)	Relative error change(%)
				2212170003
1	I_{min}	$0,98f_n$	$\pm 0,2$	0,00
	I_{min}	$1,02f_n$		0,02
	I_n	$0,98f_n$		0,00
	I_n	$1,02f_n$		0,01
	I_{max}	$0,98f_n$		0,01
	I_{max}	$1,02f_n$		0,00
0,5L	$0,05I_n$	$0,98f_n$	$\pm 0,2$	0,01
	$0,05I_n$	$1,02f_n$		0,00
	I_n	$0,98f_n$		0,00
	I_n	$1,02f_n$		-0,01
	I_{max}	$0,98f_n$		0,00
	I_{max}	$1,02f_n$		-0,01

5. Expanded uncertainty of measuring results: $U_{rel}=0.06\%$, $k=2$

6. Conclusion: Pass.

