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CNAS L2865

Security Code
ID code: 23cfcg

TEST REPORT

Report No. DNW-20230250005

Name of Product Smart Power Sensor

Client Zhejiang Chint loT Technology Co., Ltd.

Tested Company Zhejiang Chint loT Technology Co., Ltd.

Type of Test Entrust Test

Zhejiang Institute of Metrology

Approval Date

2023 / 02 / 15

Year / Month / Date

浙江省计量 检验检

Zhejiang Institute of Metrology
TEST REPORT

Meter Under Test	**Sample Name**	Meter Smart Power Sensor
	Type	DDSU666-IX
	Specification	240V, 5(63)A, 50Hz
	Accuracy Class	Cl. 0.5
	Serial Number	202302080165
	Manufacturer	Zhejiang Chint loT Technology Co., Ltd.
Client	Zhejiang Chint loT Technology Co., Ltd.	
Test Standard	**IEC62052-11:2020** *Electricity metering equipment-General requirements, tests and test conditions- Part 11: Metering equipment* **IEC62053-21:2020** *Electricity metering equipment-Particular requirements-Part 21: Static meters for active energy(classes 0.5,1 and 2)*	
Test Items	Refer to "test content"	
Date of Sample Received	Feb. 9th, 2023	
Test period	Feb. 9th, 2023～Feb. 13th, 2023	
Date issued	Feb. 15th, 2023	
Summary	For the request of the customer, the samples are tested according to the standard **IEC 62052-11:2020**, **IEC62053-21:2020**. All the test results are complied with the requirements of the standards. （盖检验检测专用章） （Quality Inspection Seal）	
Note	1. The №1 in the report are corresponding to meter of 202302080165 2. The tests are performed using the first current channel in the first power module.	

Approved by: 周振国 Checked by: 郑石中 Compiled by: 陈婧

TEST CONTENTS

1. Accuracy requirements

1.1. Meter constant

Test condition: Voltage: U_n, current: I_{max}, frequency: f_n, room temperature: 22.6℃, relative humidity: 50%

Test result:

Requirements of standard	Test result
	№1
The relation between the test output and the indication in the display shall comply with the marking on the name-plate	Pass

Conclusion: Pass

1.2. Initial start-up of the meter

Test condition: The meter is performed with only I_{max} in the current circuit at start and then energized with nominal voltages U_n, the start-up time of the meter is measured from the moment of energizing the voltage circuits until the moment the test output produces the first pulse. Voltage: U_n, frequency: f_n, temperature: 22.6℃, relative humidity: 50%

Test result:

Requirements of standard	Test result
	№1
The meter shall be functional within 10s	Pass

Conclusion: Pass

1.3. Test of no-load condition

Test condition: The voltage is applied to the voltage circuits with no current flowing in the current circuits, the test time is calculated according to the standard.
Frequency: f_n, room temperature: 23.0℃, relative humidity: 50%

Test result:

Voltage	Current	Requirements of standard	Test result
			№1
$1.1U_n$	Open circuit	The test output shall not produce more than 1 pulse	Pass

Conclusion: Pass

1.4. Starting current test

Test condition: The voltage is applied to the voltage circuits with starting current flowing in the current circuits, the test time is calculated according to the standard;
Voltage: U_n, frequency: f_n, room temperature: 23.0℃， relative humidity: 48%

Test result:

cosφ	Current	Requirements of standard	Test result
			№1
1	$0.004I_n$	The meter shall start and continue to register at the starting current	Pass

Conclusion: Pass

1.5. Limit of error due to variation of the current

Test condition: The test is performed using comparison test methods with the pulse output of the meter under reference conditions.
Voltage: U_n, frequency: f_n, room temperature: 22.6℃, relative humidity: 50%

Test result:

Positive:

cosφ	Current	Limit of error (%)	Relative error(%)
			№1
1.0	$0.05I_n$	±1.0	0.01
	$0.1I_n$	±0.5	0.00
	$0.5I_n$		-0.04
	I_n		-0.06
	$I_{max}/2$		-0.05
	I_{max}		-0.02
0.5L	$0.1I_n$	±1.0	0.32
	$0.2I_n$	±0.6	0.26
	$0.5I_n$		0.13
	I_n		-0.01
	$I_{max}/2$		-0.39
	I_{max}		-0.42
0.8C	$0.1I_n$	±1.0	-0.12
	$0.2I_n$	±0.6	-0.11
	$0.5I_n$		-0.07
	I_n		-0.03
	$I_{max}/2$		0.07
	I_{max}		0.05

Negative:

cosφ	Current	Limit of error (%)	Relative error(%)
			№1
1.0	$0.05I_n$	±1.0	0.01
	$0.1I_n$	±0.5	0.00
	$0.5I_n$		-0.04
	I_n		-0.06
	$I_{max}/2$		-0.05
	I_{max}		-0.03
0.5L	$0.1I_n$	±1.0	0.26
	$0.2I_n$	±0.6	0.18
	$0.5I_n$		0.04
	I_n		-0.11
	$I_{max}/2$		-0.27
	I_{max}		-0.23
0.8C	$0.1I_n$	±1.0	-0.12
	$0.2I_n$	±0.6	-0.11
	$0.5I_n$		-0.07
	I_n		-0.03
	$I_{max}/2$		0.11
	I_{max}		0.09

Conclusion: Pass

2、External static magnetic fields

Test condition: The voltage is applied to the voltage circuits with current flowing in the current circuits.
For electromagnet induction: magneto-motive force is 1000At (ampere-turns);
Voltage: U_n, frequency: f_n, room temperature: 22.7℃, relative humidity: 51%

Test result:

Static magnetic field	Meter surface	Requirements of standard	Test result
			№1
1000At	Front	Criteria A	Pass
	Back		Pass
	Top		Pass
	Left		Pass
	Right		Pass

Meter measurement characteristic during the test:

Voltage	Current	cosφ	Static magnetic field	Meter surface	Variation limits of error (%)	Maximum variation of error (%)
						№1
U_n	I_n	1	1000At	Front	±2.0	0.04
				Back		0.05
				Top		0.07
				Left		0.05
				Right		0.06

Conclusion: Pass

3、Tests of immunity to other influence quantities

3.1. Frequency variation

Test condition: The error variation is measured compared to the error at f_n.
Voltage: U_n, room temperature: 22.6℃, relative humidity: 50%

Test result:

Frequency	cosφ	Current	Variation limits of error(%)	Variation of relative error(%)
				№1
0.98f_n	1	0.05I_n	±0.2	0.01
		I_n		-0.01
		I_{max}		-0.01
	0.5L	0.1I_n		0.03
		I_n		0.00
		I_{max}		0.19
1.02f_n	1	0.05I_n		0.03
		I_n		0.01
		I_{max}		0.01
	0.5L	0.1I_n		0.04
		I_n		0.00
		I_{max}		0.07

Conclusion: Pass

3.2. Ambient temperature variation

Test condition: The temperature coefficient is determined for the specified operating temperature. The specified operating temperature is divided into sub-ranges between 15 K and 23 K.
The meter is placed in the climate chamber at the test temperature for more than 2h to get a stable state before error test.
Voltage: U_n, frequency: f_n, room temperature: 22.1℃, relative humidity: 50%

Test result:

Temperature range	cosφ	Current	Limit of mean temperature coefficient(%/K)	Mean temperature coefficient(%/K)
				№1
-10℃~5℃	1	$0.1I_n$	±0.03	-0.008
		I_n		-0.003
		I_{max}		-0.009
	0.5L	$0.2I_n$	±0.05	-0.038
		I_n		-0.006
		I_{max}		-0.025
5℃~23℃	1	$0.1I_n$	±0.03	-0.007
		I_n		-0.004
		I_{max}		-0.008
	0.5L	$0.2I_n$	±0.05	-0.023
		I_n		-0.010
		I_{max}		0.017
23℃~40℃	1	$0.1I_n$	±0.03	-0.005
		I_n		-0.005
		I_{max}		-0.003
	0.5L	$0.2I_n$	±0.05	-0.013
		I_n		-0.009
		I_{max}		-0.049
40℃~55℃	1	$0.1I_n$	±0.03	-0.003
		I_n		-0.003
		I_{max}		-0.003
	0.5L	$0.2I_n$	±0.05	-0.004
		I_n		-0.003
		I_{max}		-0.018

Conclusion: Pass

3.3. Voltage variation

Test condition: The error variation is measured compared to the error at U_n.
Frequency: f_n, room temperature: 22.6℃, relative humidity: 50%

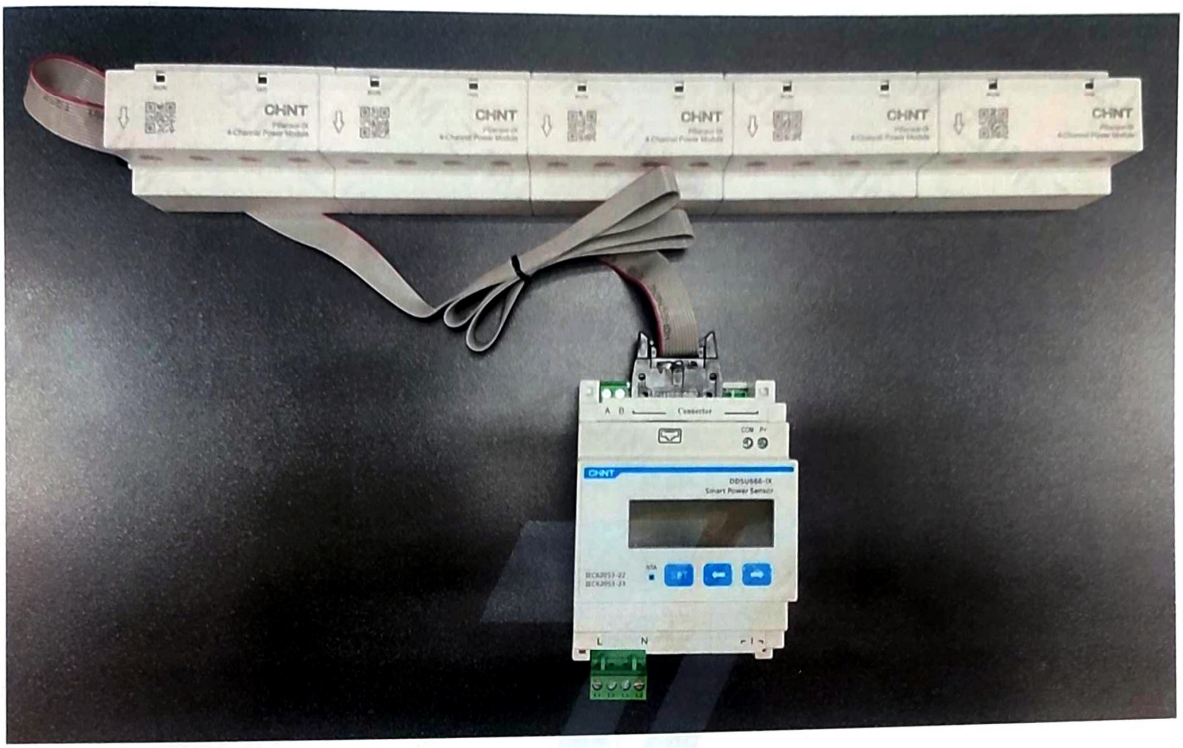
Test result:

Voltage	cosφ	Current	Variation Limit of error(%)	Variation of relative error(%)
				№1
$0.8U_n$	1.0	$0.05I_n$	±0.25	0.01
		I_n		0.00
		I_{max}		0.00
	0.5L	$0.1I_n$	±0.5	0.00
		I_n		0.00
		I_{max}		0.09
$0.9U_n$	1.0	$0.01I_n$	±0.25	0.00
		I_n		0.00
		I_{max}		0.01
	0.5L	$0.1I_n$	±0.5	0.01
		I_n		0.00
		I_{max}		0.01
$1.1U_n$	1.0	$0.01I_n$	±0.25	0.00
		I_n		0.00
		I_{max}		0.01
	0.5L	$0.1I_n$	±0.5	0.02
		I_n		0.00
		I_{max}		-0.05
$1.15U_n$	1.0	$0.01I_n$	±0.25	0.00
		I_n		0.00
		I_{max}		0.01
	0.5L	$0.1I_n$	±0.5	0.03
		I_n		0.01
		I_{max}		-0.08

Voltage	cosφ	Current	Limit of error(%)	Variation of relative error(%)
				№1
$0.7U_n$	1.0	I_n	-100~10	-0.01
$0.6U_n$				-0.01
$0.5U_n$				-0.01
$0.4U_n$				-0.02
$0.3U_n$				-0.05
$0.2U_n$				-0.13
$0.1U_n$				-100

Conclusion: Pass

Annex A Appearance



Front view

Annex B Symbols in this report

Symbol	Designation	Value
U_n	Nominal voltage	240V
f_n	Nominal frequency	50Hz
I_n	Nominal current	5A
I_{max}	Maximum current	63A

Annex C Main test equipments

Device name	Type	Serial number
Three phase electricity meter test device	PTC-8320H	1404137
DC continuous magnet induction test device	MFDC1000	20130001
Climatic test chamber	C7-340	54260000000010
Three phase electricity meter test device	PTC-8320M	1404138

End of report

Statement of this Organization

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2、The organization is responsible only for the full report with "检验检测专用章"（quality inspection seal）.

3、Incomplete copy of the contents of this report is invalid unless written approved by the organization.

4、The altered test report is invalid.

5、Please put forward timely if there is disagreement of this report.

6、This test result is only valid for the test samples.

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