

ICS 91.140.60

CCS P 40



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 32224-2015

**Heat meters
(English Translation)**

Issued on: December 10, 2015

Implemented on: November 1, 2016

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of PRC**

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1 Scope

This standard specifies the terms and definitions, technical characteristics, requirements, test methods, inspection rules, marking, packaging, transportation, storage of heat meters.

This standard applies to the production and inspection of heat meters which use water as medium.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 191 Packaging - Pictorial marking for handling of goods

GB/T 2423.1 Environmental testing for electric and electronic products - Part 2. Test methods - Tests A. Cold

GB/T 2423.2 Environmental testing for electric and electronic products - Part

2. Test methods - Tests B. Dry heat

GB/T 2423.4 Environmental testing for electric and electronic products - Part

2. Test method - Test Db. Damp heat, cyclic (12h + 12h cycle)

GB/T 26831.1 Society energy metering for reading system specification -

Part 1.Data exchange

GB/T 26831.2 Society energy metering for reading system specification -

Part 2.Physical and link layer

GB/T 26831.3 Society energy metering for reading system specification -

Part 3.Dedicated application layer

GB 4208-2008 Degrees of protection provided by enclosure (IP code)

GB 4706.1-2005 Household and similar electrical appliances - Safety - Part

1.General requirements

GB/T 9113 Integral steel pipe flange

GB/T 17241.6 Integral cast iron flanges

GB/T 17626.2 Electromagnetic compatibility - Testing and measurement techniques -
Electrostatic discharge immunity test

GB/T 17626.3 Electromagnetic compatibility - Testing and measurement techniques -
Radiated, radio-frequency, electromagnetic field immunity test

GB/T 17626.4 Electromagnetic compatibility - Testing and measurement techniques -
Electrical fast transient/burst immunity test

GB/T 17626.5 Electromagnetic compatibility - Testing and measurement techniques - Surge
immunity test

GB/T 17626.8 Electromagnetic compatibility (EMC) - Part 4-8.Testing and measurement
techniques - Power frequency magnetic field immunity test

GB/T 17626.9 Electromagnetic compatibility - Testing and measurement techniques - Pulse
magnetic field immunity test

GB/T 17626.11 Electromagnetic compatibility - Testing and measurement techniques -
Voltage dips, short interruptions and voltage variations immunity tests

GB/T 17626.29 Electromagnetic compatibility (EMC) - Testing and measurement
techniques - Voltage dips short interruptions and voltage variations on D.C. input power port
immunity tests

CJJ 34 Design code for city heating network

JB/T 8622-1997 Technical specification and reference table for industrial platinum thermal
resistance

JB/T 9329 Basic environmental conditions and testing methods for instruments
transportation and storage in the transportation

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Heat meter

A meter which is used to measure and display the released or absorbed temperature of water supply and water return of the heat exchange system.

3.9

Calculator

A component that receives signals from the flow sensor and the temperature sensor pair for heat calculation, storage, display of heat values as exchanged by the system.

3.10

Temperature difference

The difference between the temperature of water supply and water return of the heat exchange system.

3.11

Minimum temperature difference

The lower limit of the temperature difference, under which the accuracy of the heat meter shall not exceed the error limit.

3.12

Maximum temperature difference

The upper limit of the temperature difference, under which the accuracy of the heat meter shall not exceed the error limit.

3.13

Minimum flowrate

Under the condition that the accuracy of the heat meter does not exceed the error limit, the lower limit of flowrate of the water when it flows through the heat meter.

3.14

The permanent flowrate

Under the condition that the accuracy of the heat meter does not exceed the error limit, the upper limit of flowrate when the heat meter is continuously operated for a long time.

3.15

4.1.1 Method of heat measurement

The heat may be measured by the enthalpy difference method or the thermal coefficient method.

4.1.2 Enthalpy difference method

When water flows through an complete heat meter or a combined heat meter which is installed in a heat exchange system, according to the flowrate as given by the flow sensor and the temperature signal of water supply and return as given by the temperature sensor pair as well as the time the water flows, the calculator is used to calculate and display the released or absorbed heat of this system. The released or absorbed heat of this system is calculated according to formula (1).

Where.

Q - The heat released or absorbed by the system, in Joule (J);

qm - The mass flowrate of water which flows through the heat meter, in kilograms per hour (kg/h);

qv - The volume flowrate of water which flows through the heat meter, in cubic meters per hour (m³/h);

rho - The density of water which flows through the heat meter, in kilograms per cubic meter (kg/m³);

deltah - The difference in enthalpy of water at the temperature of water supply and water return in the heat exchange system, in Joule per kilogram (J/kg);

tau - Time, in hours (h).

4.1.3 Thermal coefficient method

When water flows through an complete heat meter or a combined heat meter which is installed in a heat exchange system, according to the signal of temperature difference of water supply and water return as given by the temperature sensor pair as well as the total volume (the volume) of water as given by the flow sensor, the calculator is used to calculate and display the

5.2.1.3 The visible height of the displayed number shall not be less than 4 mm.

The fractional part of the displayed value shall be clearly distinguishable from the rest of the value. When using display by multiple pages, the value as displayed on each page shall be complete.