

JJG

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

JJG 229-2010

Industry Platinum and Copper Resistance Thermometers (English Translation)

Issued on: September 6, 2010

Implemented on: March 6, 2011

Issued by: General Administration of Quality Supervision, Inspection and
Quarantine This Regulation was approved by the G

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1 Scope

This Regulation is applicable to the initial verification, subsequent verification and in- use inspection of industry platinum thermal resistance in the whole or part temperature range of $-200^{\circ}\text{C}\sim+850^{\circ}\text{C}$ and with the nominal value α of temperature coefficient of

$3.851\times 10^{-3}^{\circ}\text{C}^{-1}$; as well as the industry copper thermal resistance (hereinafter referred to as thermal resistance) in the whole or part temperature range of $-200^{\circ}\text{C}\sim+850^{\circ}\text{C}$ and with the nominal value α of temperature coefficient of $4.280\times 10^{-3}^{\circ}\text{C}^{-1}$.

2 References

The following references are cited in this Regulation.

IEC 60751 (2008) Industrial Platinum Resistance Thermometers and Platinum Temperature Sensors

JB/T 8623-1997 Technical Specification and Reference Table for Industrial Copper Thermal Resistance

When citing, pay attention to using the currently valid version of the above cited references.

3.1 Resistance thermometer

A temperature measuring instrument composed of one or more temperature-sensing resistance elements with lead wires, protective tubes and wiring terminals.

3.2 Nominal resistance R_0

The expected resistance value of the thermal resistance (or temperature sensing element) at 0°C. The resistance values are usually. 10ohm, 50ohm, 100ohm, 500ohm, 1000ohm, which are declared by the manufacturer and marked on the thermal resistance.

Temperature sensing element is often characterized by its nominal resistance value.

For example, a Pt100 temperature sensing element has a nominal resistance value of 100ohm; Cu50 temperature sensing element has a nominal resistance value of 50ohm.

3.4 Relative resistance $W_S t$

The ratio of the resistance value R_t of the standard platinum resistance thermometer at temperature t to the resistance value R_{tp} at the triple point of water.

4.1 Composition

Industry platinum and copper thermal resistances are composed of one or more platinum and copper thermal resistance temperature sensing elements installed in a protective sleeve, including internal connecting wires and external terminals used to connect electrical measuring instruments (excluding measurement and display devices). It can contain device and junction boxes for installation and fixing, but does not contain a detachable protective tube or installation sleeve.

5.1 Tolerance

The tolerance level corresponds to the effective temperature range. Within the effective temperature range, the maximum deviation between the temperature t calculated by the division table and the real temperature of the resistance value of the thermal resistance shall not exceed the tolerance value given in Table 1.T

5.2 Stability

After the platinum thermal resistance has worked at the maximum working temperature for 672h, the change in its R_0 value shall not be greater than the absolute value of the 0°C tolerance specified in Table 1 after being converted into temperature.

6.1 Appearance

6.1.1

All parts of the thermal resistance shall be assembled correctly, reliably, and without missing parts; the outer coating shall be firm; the protective tube shall be intact; and there shall be no dents, scratches and significant corrosion;

6.1.2

The temperature sensing element must not be broken, and there must be no obvious bending;

6.2 Insulation resistance

The insulation resistance between the temperature sensing element and the housing, and each temperature sensing element shall meet the following requirements.

7 Control of Metrologic Instrument

The control of Metrologic instrument includes initial verification, subsequent verification and in-use inspection.

7.2 Verification items

The verification items for the initial verification, subsequent verification and in-use inspection are shown in Table 4.

7.3.1 Visual inspection

According to the requirements of 6.1.1 ~ 6.1.4, check the outside of the protective sleeve for the thermal resistance and the temperature sensing element; and there shall be no visible damage to the naked eye. At the same time, according to the requirements of 6.1.4,

check the markings and verification mark, etc. to determine whether the thermal resistance meets the management requirements.

7.3.4.3 Verification of R₀

Measure the resistance value of the thermal resistance in a freezing point tank (or a thermostat tank with 0°C, the deviation does not exceed $\pm 0.2^\circ\text{C}$), and compare it with the temperature of the freezing point tank measured by a standard measuring device, and calculate the deviation Δt_{00} at 0°C.

7.4 Processing of verification results

According to the requirements of this Regulation, the qualified thermal resistance shall be issued with a certificate of qualification of the corresponding level; if the verification is unqualified, the notice on verification results shall be issued, indicating the unqualified items.

7.5 Verification period

The verification period of thermal resistance can be determined according to the conditions of use, frequency and importance, and the longest period shall not exceed

1 year.

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