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

JJF 1409-2013

Replacing JJF 364-1994

**Calibration Specification for the Surface Thermometers
(English Translation)**

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Table of Contents

Introduction (II)	
1 Scope (1)	
2. References (1)	
3 Overview (1)	
4 Metrological characteristics (1)	
4.1 Appearance (1)	
4.2 Indication error (1)	
5 Calibration conditions (1)	
5.1 Environmental conditions (1)	
5.2 And other standard measuring equipment (1)	
6 Calibration items and calibration methods (2)	
6.1 Calibration items (2)	
6.2 Calibration Method (2)	
7 Calibration Results The expression (3)	
8 Recalibration interval (4)	
Appendix A Surface thermometer calibration records reference format (5)	
Appendix B Calibration certificate reference page format (6)	
Appendix C Surface thermometer indication error measurement results Uncertainty Evaluation Example (7)	
Appendix D Surface temperature of the source temperature stability and temperature uniformity measurement method (11)	

5.1 Environmental conditions (1)

5.2 and other standard measuring equipment (1)

8 Recalibration interval (4)

Appendix A surface thermometer calibration records reference format (5)

Appendix B calibration certificate reference page format (6)

Appendix C surface thermometer indication error measurement results Uncertainty Evaluation Example (7)

Appendix D surface temperature of the source temperature stability and temperature

uniformity measurement method (11)

Introduction

This specification based JJF 1071-2010 "National Calibration Specifications writing rules", JJF 1001-2011 "Tong Metering terms and definitions ", JJF 1059.1-2012" Evaluation and Expression of Uncertainty in Measurement "Writing.

This specification instead of JJG364-1994 "surface thermometer." Compared with JJG364-1994, in addition to editorial changes in addition, this specification The main technical changes are as follows.

--- In accordance with the requirements of the specification JJF 1071-2010 format has been modified.

--- Remove surface thermometer pointer with relevant content.

--- In the metrological characteristics inclined to remove the impact resistance and insulation requirements.

--- Remove the surface thermometer permissible error Technical indicators change in the form of a diagram showing the error.

--- Modify the calibration environmental conditions.

--- Revised standards and other technical requirements for measuring devices. Provisions of the platinum resistance thermometer and measuring instrument supporting

Table overall calibration, the expanded uncertainty U ($k = 2$), should be less than the maximum tolerance for surface thermometer school

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--- Modify the temperature source technology requirements.

--- Remove according to new manufacturing, use, repair the situation after the selection of different test items were only surface temperature Meter indication error of calibration.

--- Modify the selection test points. Temperature calibration point should be selected or entire Baidu entire ten points across the entire measurement range.

In measuring range of not less than three points.

--- Modified the method of operation indication error of calibration.

--- Modify the formula shown value error.

--- Add data to rounding requirements.

--- Modify the inner surface of the reference thermometer calibration record format and page reference calibration certificate in Annex A, B in format.

--- Added Appendix C surface thermometer indication error of measurement uncertainty evaluation examples.

--- Added Appendix D surface temperature of the source temperature stability and temperature uniformity measurement method.

The previous versions of the release JJG364-1994 case.

--- JJG364-1984 "surface thermometer." Surface thermometer calibration specifications

1 Scope

This specification is applicable to thermocouple temperature sensing element surface thermometer at room temperature to a temperature range of calibration 400 °C.

Other types of surface thermometer calibration can refer to this specification.

2. References

JJG617-1996 Digital Temperature Indicators and Controllers GB/T 13639 industrial process measurement and control systems using analog input digital indicator for dated references, only the dated edition applies to this specification; undated reference documents Member, the latest edition (including any amendments) applies to this specification.

3 Overview

Surface thermometer is used to measure the surface temperature of solid instruments, by the temperature sensor and digital temperature indicator instrument composition. Its surface temperature measurement principle is the thermometer temperature sensor temperature sensing element tightly pressed against the surface of the object to be measured, Indicating instrument shows the surface temperature of the object to be measured. Surface thermocouple temperature sensing element, indicating instrument typically has a heater Thermocouple reference junction temperature automatic compensation.

4 Metrological characteristics

4.1 Appearance

4.1.1 shape structure surface thermometer should be intact and should not affect the measurement accuracy of the defect.

4.1.2 Plug-polar temperature sensor should be correct, the contact should be good, plug material should be a material with temperature-sensitive element the same.

4.1.3 turning surface thermometer power, indicating instrument should be normal.

4.2 Indication error Surface thermometer shows the temperature difference between the actual value and the indication error surface thermometer.

5 calibration conditions

5.1 Environmental conditions

5.1.1 Ambient temperature. (23 ± 5) °C, relative humidity less than 85%. Or in compliance with the provisions of calibration equipment Environmental conditions.

5.1.2 During calibration, temperature fluctuations should not exceed 0.5 °C. Should not affect the measurement of internal calibration laboratory the result of environmental factors.

5.2 standards and other measuring equipment