

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

JJF 1171-2024

**Calibration Specification for Temperature and Humidity Itinerant
Detecting Instruments
(English Translation)**

Issued on: June 14, 2024

Implemented on: December 14, 2024

Issued by: State Administration for Market Regulation

Table of Contents

Introduction (II)	
1 Scope(1)	
2 References(1)	
3 Terminology (1)	
4 Overview(1)	
5 Metering characteristics (2)	
5.1 Temperature indication error (2)	
5.2 Relative humidity indication error (2)	
5.3 Consistency of temperature indications (2)	
5.4 Humidity indication consistency (2)	
6 Calibration conditions(2)	
6.1 Environmental conditions(2)	
6.2 Measurement standards and other equipment (2)	
7 Calibration items and calibration methods (4)	
7.1 Calibration Items(4)	
7.2 Temperature calibration(4)	
7.3 Humidity calibration(6)	
8 Expression of calibration results (7)	
9 Recalibration interval (7)	
Appendix A Temperature and humidity circuit detector calibration record reference format (8)	
Appendix B Reference format for the inner page of the calibration certificate for temperature and humidity circuit detectors (11)	
Appendix C Example 1 of the evaluation of the measurement uncertainty of the temperature indication error of the temperature and humidity circuit detector (the standard instrument is the standard	

9 Recalibration interval (7)

Appendix A Temperature and humidity circuit detector calibration record reference format (8)

Appendix B Reference format for the inner page of the calibration certificate for temperature and humidity circuit detectors (11)

Appendix C Example 1 of the evaluation of the measurement uncertainty of the temperature indication error of the temperature and humidity circuit detector (the standard instrument is the standard

Platinum resistance thermometer) (12) Appendix D Example 2 for the evaluation of the measurement uncertainty of the temperature indication error of the temperature and humidity circuit detector (the standard instrument is the standard PtRh 10-Pt thermocouple) (16) Appendix E Example 3 of the measurement uncertainty evaluation of humidity indication error of temperature and humidity circuit detector (the standard instrument is a precision Dew point meter) (21)

Introduction

JJF 1001-2011 "General metrological terms and definitions", JJF 1071-2010 "National metrological calibration specifications" Rules", JJF 1059.1-2012 "Evaluation and Expression of Uncertainty in Measurement" and JJF 1007-2007 "Thermometer "Quantitative Terms and Definitions" together constitute the basic series of specifications for the revision of this specification.

This specification is a revision of JJF 1171-2007 "Calibration Specification for Temperature Circuit Detectors" and is consistent with JJF 1171-Compared with 2007, in addition to editorial changes, the main changes are as follows.

- Added the introduction;
- The scope of application has changed, the temperature range has been expanded, and the humidity parameter has been added;
- Deleted the functional inspection items;
- Added temperature standard;
- Modified the technical requirements for constant temperature equipment;
- Added humidity standard and supporting equipment;
- Added humidity parameter calibration method;
- The original record format is added in the appendix;
- The appendix adds uncertainty assessment examples for temperature indication error and humidity indication error calibration.

The previous versions of this specification are as follows.

- JJF 1171-2007;
- JJG718-1991.

Calibration specification for temperature and humidity circuit detector

1 Scope

This specification applies to the temperature measurement range of $(-80\sim 1200)^{\circ}\text{C}$ and the relative humidity measurement range of $(5\sim 40)^{\circ}\text{C}$ 5%~95% of the temperature and humidity circuit detectors are equipped with electrical parameter sensors.

Calibration of the instrument (hereinafter referred to as the inspection instrument).

Other types of temperature and humidity monitoring instruments can also refer to this specification.

2 References

This specification references the following documents.

JJF 1007-2007 Temperature measurement terms and definitions JJF 1076-2020 Digital Thermometer and Hygrometer Calibration Specification JJF 1262-2010 Armored Thermocouple Calibration Specification JJF 1366-2012 Temperature Data Acquisition Instrument Calibration Specification for any referenced document with a date, only the version with the date is applicable to this specification; for any referenced document without a date, the latest version (including all amendments) shall apply to this specification.

3 Terminology

The terms and definitions defined in JJF 1007-2007 and the following apply to this specification.

An instrument equipped with multiple temperature and humidity sensors that can periodically measure temperature and humidity parameters.

At the same temperature, the difference between the maximum and minimum temperature indications of each channel of the inspection instrument.

The difference between the maximum and minimum humidity indications of each channel of the inspection instrument under the same humidity.

The time required for the inspection instrument to complete a single working cycle under specified working conditions.

4 Overview

The inspection instrument consists of a temperature/humidity sensor, a control and data processing unit, a human-computer interaction system, and a storage unit.

The typical structure is shown in Figure 1. The output electrical signal (voltage, resistance, current, etc.) of the temperature/humidity sensor changes with temperature/the electrical signal changes with the change of humidity. The electrical signal is selected by the multi-channel automatic switch one by one, and after sampling, quantization, coding and necessary auxiliary the analog quantity is converted into digital quantity by auxiliary

calculation method, and then output to the display and recording mechanism after being processed by the corresponding circuit.

Periodically measure multiple points of temperature and humidity. According to the different sensors configured, it can be divided into temperature patrol detector, humidity patrol detector, Circuit detectors and temperature and humidity circuit detectors can be used to measure the temperature of internal spaces such as environmental test equipment and rooms.

Humidity parameters.