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NATIONAL METROLOGY TECHNICAL SPECIFICATION OF THE PEOPLE'S REPUBLIC OF CHINA

JJF 1756-2019

Calibration Specification for Low-frequency Phase Meters

低频相位计校准规范

(English Translation)

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7 Recalibration time interval (5)

Appendix A Original Record Format (6)

Appendix B. Internal page format of the calibration certificate (9)

Appendix C Examples of Uncertainty Evaluation of Calibration Results of Main Items (10)

Introduction

This specification is based on JJF 1071-2010 "Rules for Compiling National Measurement and Calibration Specifications" and JJF 1059.1-2012 Compilation of "Measurement Uncertainty Evaluation and Representation".

This specification is a revision of JJG381-1986 "BX-21 Low Frequency Digital Phase Meter Verification Regulations".

Compared with JJG381-1986, the main changes are.

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---JJG381-1986 is only applicable to BX-21 low frequency digital phase meter, this specification is for 5Hz~1MHz the low frequency phase meter is universal;

---The maximum allowable phase error is ± (0.1°~0.3°), (10Hz~100kHz, 100mV~100V) Change to ± (0.02°~0.1°), (5Hz~100kHz, 100mV~100V);

--- Increased the evaluation example of uncertainty.

The previous releases of this specification are.

---JJG381-1986.

Low frequency phase meter calibration specifications

1 Scope

This specification applies to the calibration of low frequency phase meters from 5Hz to 1MHz.

2 Overview

The low-frequency phase meter widely used at present is a direct-reading digital phase meter, which is composed of a shaper, a phase discriminator and an indicator to make. Its working principle is based on the time interval measurement method, through the phase-time converter, the two signals with phase difference no. (referred to as the reference signal and the measured signal) are converted into start and stop pulses at a certain time interval, or Bit-frequency converter, convert the phase difference of two signals into frequency, and then use an electronic counter to measure its time interval or frequency Rate, the corresponding phase is obtained from the time interval or frequency.

The low frequency phase meter is mainly used to measure the phase difference of two sinusoidal signals of the same frequency.

3 Measurement characteristics

3.1 Phase measurement Phase range. 0°~360°;

Maximum allowable phase error. ±(0.02°~0.1°), (5Hz~100kHz, 100mV~100V);

±(0.1°~3°), (100kHz~1MHz, 100mV~5V).

3.2 Amplitude and phase error Maximum allowable phase error. ±(0.02°~0.1°), (5Hz~100kHz, 100mV~100V);

±(0.1°~3°), (100kHz~1MHz, 100mV~5V).

4 Calibration conditions

4.1 Environmental conditions

a) Ambient temperature. 23°C±5°C;

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b) Relative humidity. <=80%;

c) Power requirements. (220±11)V, (50±1)Hz;

d) Others. There are no mechanical vibrations and electromagnetic interference that affect the normal operation of the calibration.

4.2 Measurement standards and other equipment

4.2.1 Standard phase generator Phase range. 0°~360°;

The maximum allowable phase error. ±(0.007°~0.03°), (5Hz~100kHz, 100mV~100V);

Maximum amplitude error. ±2% (5Hz~100kHz, 100mV~100V).

4.2.2 Function signal generator Frequency range. 5Hz~1MHz;

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