

ICS 17.160
CCS J 04



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

GB/T 20485.1-2008

Replacing GB/T 13823.1-2005

**Methods for the calibration of vibration and shock transducers
-- Part 1: Basic concepts**

振动与冲击传感器校准方法 第1部分: 基本概念
(English Translation)

Issued on: March 3, 2008

Implemented on: August 1, 2008

Issued by: Standardization Administration of China

Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and definitions
4 Characteristic measurement
4.1 General
4.2 Direct Response
4.3 Spurious response
5 Calibration method
5.1 General
5.2 Absolute calibration method
5.3 Calibration by comparison
6 Expression of Uncertainty in Measurement
Appendix A (informative) Expression of Uncertainty in Measurement Calibration
References

Foreword

GB/T 20485 "vibration and shock sensor calibration method" is expected from the basic concept of the structure, the absolute calibration method, comparative method calibration and the environment Analog calibration and other categories as well as the following components.

- Part 1. Basic Concepts;
- Part 11. vibration calibration by laser interferometry;
- Part 12. Primary vibration calibration by reciprocity;
- Shock calibration by laser interferometry;. --- Part 13
- Part 15. Laser interferometry angular vibration calibration;
- Part 21. Vibration calibration by comparison;
- Part 22. Shock calibration by comparison.

This part of GB/T 20485 Part 1.

This part identical with ISO 16063-1:1998 "vibration and shock sensor calibration methods - Part 1. Basic Concepts" (in English).

This section is equivalent translation ISO 16063-1:1998.

For ease of use, this section made the following editorial changes.

--- "This International Standard" be replaced by "this section";

--- Delete foreword international standards;

--- Of ISO 16063-1:1998 and other international standards referenced, there was equated adopted as our standard, instead of using our standard Corresponding to international standards, it is not tantamount to the adoption of a standard for the direct reference to international standards;

--- 4.3.6 "magnetic sensitivity" in the introduction of notes, indicating that the corresponding national standards (GB/T 13823.4) using a rotating magnetic field direction Testing methods.

This Part replaces GB/T 13823.1-2005 "calibration of vibration and shock transducers - Part 1. Basic Concepts." Compared with GB/T 13823.1-2005, the main modifications are as follows.

--- Modify the "Preface" section;

--- A reference standard for the body to do the appropriate adjustments.

Appendix A of this section is an informative annex.

This part of the National mechanical vibration, shock and condition monitoring Standardization Technical Committee and centralized.

This section drafted by. China Institute of Metrology, Beijing Institute of Metrology detection.

Introduction

For shock and vibration or suffered various types of equipment for accurate measurement requirements of increasingly urgent, so the vibration and shock sensor Calibration has become particularly important. Calibration of these have been adopted or recommended a number of ways, this part of GB/T 20485 for some parties Method are described. Chapter 5 describes several methods that absolute calibration of vibration and shock sensor has proven to be Reliable.

This section contains two types of calibration of vibration and shock sensor used in common, the fact that according to the vibration measurement or impact measurement Distinguish sensor is unrealistic.

This section is limited to linear motion acceleration, velocity and displacement sensor

calibration; for does not involve force, pressure or strain measuring sensor is, of course, some of the sensor may be calibrated using a similar method. In addition, this section does not include transfer for measuring rotational vibration Sensors, because there is less number of such sensors, wire motion sensor hardware and its calibration method in this section relates also different.

This section contains definitions and describes as a basis for the absolute calibration method. In addition, the General also provides an overview describes the transfer of vibration and shock Various sensor calibration methods, as well as inter alia the sensitivity of the measurement characteristics calibration method. To achieve the accuracy of known calibration must be detailed Technical requirements and procedures prescribed fine instrument. The above information about the various calibration methods in more detail in GB/T 20485 in the subsequent sections Introduction.

The sensor itself can be used as a calibration unit, which may include connecting cables and/or an adapter device. The calibration system must Always be clearly stated.

This section includes a reference bibliography, references cited in the text in square brackets when the digital representation.

GB/T 20485.1-2008/ISO 16063-1:1998 Vibration and shock sensor calibration method Part 1. Basic Concepts

1 Scope

This section GB/T 20485 specifies the calibration of vibration and shock sensor, comprising measuring sensitivity and other characteristics method.

This section is recommended for an absolute calibration method using the method as a priority, but also introduces the comparative calibration of vibration and shock pick (See 5.3), a more detailed description see GB/T 13823 and GB/T 20485 relevant standards.

This section applies to the calibration of linear motion acceleration, velocity and displacement sensors continuously read out, and suggests methods of precedence, this approach has been shown to give reliable and reproducible results.

This part is not used to calibrate the rotary sensor.

2 Normative references

The following documents contain provisions which, through reference GB/T 20485 in this section constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 1182-1996 Geometrical tolerancing - Generalities, definitions, symbols, indications on drawings (eqv ISO 1101:1996) GB/T 13824-1992 vibration intensity meter requirements (eqv ISO 2954. 1987) ISO 2041:1990 Vibration and Shock term JJF1059-1999 Evaluation and Expression of Uncertainty in Measurement (BIPM/IEC/IFCC/ISO/OIML/IUPAC, 1995, IDT)

3 Terms and Definitions

ISO 2041:1990 and established the following terms and definitions apply to this section.

The measured mechanical movement (eg a given direction of acceleration), can be easily converted into the amount of measured or recorded means.

Note: The sensor may include auxiliary equipment, such as Conditioning, the necessary power supply, the necessary electronic components, output indicator or recorder or the like.

3.1.1

Sensor within the specified tolerance limits can be considered as frequency and amplitude of the linear range of the sensor.

3.1.2

Bidirectional electromechanical sensors. Than the force of the current sensor of this type is applied to its generation (in this case the sensor is constrained so that speed is zero) Equal to its speed and its applied voltage generated by the ratio (in this case the sensor is in an open state, so that current is zero).

For example. magnetic and piezoelectric sensors.

3.1.3

Strain gages as the sensing element of the sensor, the sensor is applied to such incentives do not produce significant mechanical response.

GB/T 20485.1-2008/ISO 16063-1:1998