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

GB/T 20485.41-2015

**Methods for the calibration of vibration and shock transducers
-- Part 41: Calibration of laser vibrometers**

振动与冲击传感器校准方法 第41部分：激光测振仪校准

(English Translation)

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Foreword

GB/T 20485 "vibration and shock sensor calibration method" is mainly composed of the following categories.

- Category 1. Basic Concepts;
- Category 2. absolute calibration method (such as vibration calibration by laser interferometry, laser interferometry impact absolute calibration);
- Class 3. calibration by comparison (such as vibration calibration by comparison, the impact of comparison calibration);
- Category 4. analog calibration environment (such as a magnetic sensitivity, sound sensitivity, the base strain sensitivity, transverse vibration sensitivity, etc.);

--- Class 5. other.

This part of GB/T 20485 Class 4 in Part 1.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section uses the translation method identical with ISO 16063-41:2011 "vibration and shock sensor calibration methods - Part 41. Laser measure Vibration Calibration. "

Consistency correspondence between this part of international documents and normative references of our files are as follows.

--- GB/T 20485.21-2007 vibration and shock sensor calibration methods - Part 21. Vibration calibration by comparison (ISO 16063-21:2003, IDT).

This part of the National mechanical vibration, shock and condition monitoring Standardization Technical Committee (SAC/TC53) and focal points.

This section is drafted. Guangzhou Institute of Measurement and testing, China Aviation Industry Corporation Beijing Great Wall Measurement and Testing Technology Research the Suzhou CEPREI Calibration Technology Services Ltd., China Institute of Metrology, Quality Inspection Center of Qingdao National Marine Equipment Co., Ltd., Yu blink Group Limited.

1 Scope

This section GB/T 20485 specifies the usually within 0.4Hz ~ 50kHz frequency range of linear motion absolute laser vibrometer Instruments and procedural law and comparative law used for calibration. This section not only provides for the recognition or non-accredited calibration laboratory laser vibrometer or machine Mechanical vibration transducer calibration required for standard laser vibrometer, and specifically the use of standard laser vibrometer laser vibrometer be absolutely Calibration methods and procedures, or by using a laser interferometer calibrated reference sensor laser vibrometer to compare calibration.

If the laser vibrometer designed to detect rectilinear motion (displacement or velocity), and converts it to a certain percentage (time-domain-related) Telecommunications Laser optical sensor outputs, regardless of whether they contain instructions instrument can be calibrated in accordance with this section. Standard laser vibrometer pass Often digital output signal, typically a laser vibrometer output analog signals. Laser vibrometer output signal or amplitude readings can sometimes pack Exercise-containing (including acceleration) phase shift. This section clearly defines the complex sensitivity calibration mode (phase calibration see Appendix D).

Note: The laser vibrometer can measure the frequency range in megahertz level, vibration level gigahertz. So far, no vibration generating apparatus can produce such high Frequency of. Under the premise of satisfying the following conditions, this type of laser vibrometer calibration can be calibrated electrical signal processing subsystem approach to assessing, letter Enter the

appropriate signal processing subsystem synthetic Doppler signals.

--- Laser vibrometer be corrected optical subsystems meet the requirements given in 5.5.3;

--- Synthetic Doppler signal equivalent alternative output signal of the photodetector.

The method (see reference [25]) does not belong to a more detailed description of this section.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 20485.1-2008 vibration and shock sensor calibration methods - Part 1. Basic Concepts (ISO 16063-1:1998, IDT) GB/T 20485.11-2006 vibration and shock sensor calibration methods - Part 11. vibration calibration by laser interferometry (ISO 16063-11:1999, IDT) Calibration Methods section ISO 16063-21 vibration and shock sensor 21. Vibration calibration by comparison
(Methods for the calibration of vibration and shock transducers-Part 21. Vibration calibration by comparison to a reference transducer) ISO 266 Acoustics preferred frequency (Acoustics-Preferred frequencies) ISO 5348 Mechanical vibration and shock - Mechanical mounting of accelerometers (Mechanical vibration and shock-Mechanical mounting of accelerometers) ISO/IEC Guide 99 International Metrology Vocabulary of Basic and General Concepts and Associated Terms [Guide 99, International vocabulary of metrology-Basic and general concepts and associated terms (VIM)]