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

GB/T 16857.2-2017

Replacing GB/T 16857.2-2006

**Geometrical product specifications (GPS) -- Acceptance and
reverification tests for coordinate measuring machines (CMM) --
Part 2: CMMs used for measuring linear dimensions**

产品几何技术规范 (GPS) 坐标测量机的验收检测和复检检测 第2部分: 用于测量
线性尺寸的坐标测量机

(English Translation)

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Foreword

GB/T 16857 "Geometrical Product Specifications (GPS) Coordinate Measuring Machine acceptance testing and re-inspection" is divided into the following 10 sections.

- Part 1. Vocabulary;
- Part 2. Coordinate measuring machine for measuring linear dimensions;
- Part 3. Configure the axis of the turntable as a coordinate measuring machine for the fourth axis;
- Part 4. Coordinate measuring machines used in scanning mode;
- Part 5. Coordinate measuring machine using single or multi-probe contact detection system;
- Part 6. Calculation of Gaussian fitting elements of the error assessment;
- Part 7. Coordinate measuring machines using visual detection system 1);
- Part 8. Coordinate measuring machines using optical distance sensors 1);
- Part 9. Coordinate measuring machines with multiple detection systems 1);
- Part 10. Laser tracker for measuring point-to-point distance 1).

This section GB/T 16857 Part 2.

This section is in accordance with the rules given GB/T 1.1-2009 drafting.

This Part replaces GB/T 16857.2-2006 "Geometrical Product Specifications (CMM) CMM acceptance testing and re-inspection Part 2. Coordinate measuring machine for measuring dimensions ", compared with GB/T 16857.2-2006, the main technical changes are as follows.

- Modify the standard name;
- Increase the length of the probe when the bias is 150mm measurement error E150;

- Increased length measurement error repeatability R0;
- Canceled the shortest block length of not more than 30mm requirements;
- Details of the use of laser interferometer method;
- Increase the low expansion coefficient standard than the measurement requirements;
- Unfavorable retest times reduced from 10 to 3 times;
- The detection error is transferred to GB/T 16857.5.

This section uses the translation method identical with ISO 10360-2.:2009 "Product Geometrical Specifications (GPS) Coordinate Measuring Machine (CMM) Acceptance testing and retesting testing - Part 2. Coordinate measuring machines for measuring linear dimensions ".

The documents of our country that are consistent with the corresponding international documents that are normative references in this section are as follows.

--- GB/T 16857.1-2002 Product Geometrical Product Specifications (GPS) Coordinate Measuring Machine Acceptance Inspection and Re-inspection Part. Glossary (eqvISO 10360-1.2000) Geometrical product specifications (GPS) - Tests for the determination of parts and measuring equipment - Part 1.

According to the norms of test pass or fail judgment rules (eqvISO 14253-1.1998) Please note that some of this document may be patentable. The issuing agencies of this document do not bear the responsibility of identifying these patents.

This part of the National Product Geometrical Specifications Standardization Technical Committee (SAC/TC240) and focal point.

This part of the drafting unit. Hexagon Measurement Technology (Qingdao) Co., Ltd., machine productivity promotion center, Suzhou Tianzhun precision instruments have Limited, Putian City, Fujian Zhi Zhou High-tech Industrial Park Co., Ltd., Shanghai University, Ningbo Institute of Technology.

1 Scope

GB/T 16857 provisions of this part of the coordinate measuring machine for measuring linear dimensions, in accordance with the manufacturer given the performance indicators Acceptance test verification method. At the same time, also provides the user to the measuring machine periodic re-examination of the verification method.

This part of the acceptance testing and re-inspection detection method is only applicable to discrete point detection mode contact detection system Cartesian Coordinate Measuring Machine.

This section does not explicitly apply to.

--- non-Cartesian coordinate measuring machine coordinate; with the consent of the parties, this section can also be used for non-Cartesian coordinate measuring Machine.

--- coordinate measuring machine using optical probe; with the consent of the parties, this section can also be used for optical measuring head coordinate measuring machine.

This section specifies the manufacturers or users specify the CMM characteristic indicators of acceptance testing or re-examination of the detection methods and inspection the rules of consistency.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 16857.5-2013 Geometrical Product Specifications (GPS) Coordinate Measuring Machine acceptance testing and retesting Part 5 Coordinate measuring machines using single-probe or multi-probe contact detection systems (ISO 10360-5:2010, IDT) GB/T 18780.1-2002 Geometrical product specifications (GPS) geometric features - Part 1. Basic terms and definitions (idt ISO 14660-1:1999, IDT) GB/T 34881-2017 Geometrical Product Specifications (GPS) Coordinate Measuring Machine Testing Uncertainty Evaluation Guide (ISO/T S23165.2006, IDT) Geometrical product specifications (GPS) - Acceptance, testing and retesting of coordinate measuring machines - Part 1.

Glossary [GeometricalProductsSpecifications (GPS)

-Acceptanceandverificationtestsforcoordinate measuringmachines (CMM) -Part 1: Vocabulary] Geometrical Product Specifications (GPS) - Measurement of work piece and measuring equipment - Part 1. Specification Inspection rules of pass or fail [GeometricalProductsSpecifications (GPS) -Inspectionbymeasurement ofworkpiecesandmeasuringequipment-Part 1:

Decisionrulesforprovingconformanceornon-con-formancewithspecifications] ISO/IEC Guide99 International metrology vocabulary basic and common concepts and terms [Internationalvocabularyofme-trology-Basic and general criteria and associated devices (VIM)]

3 Terms and definitions

ISO 10360-1, ISO 14253-1, GB/T 18780.1, ISO/IEC Guide 99 and GB/T 34881 as well as the following