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

GB/T 24635.1-2020

**Geometrical product specifications (GPS). Coordinate measuring
machines (CMM): Technique for determining the uncertainty of
measurement - Part 1: Overview and metrological characteristics**

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Foreword

GB/T 24635 "Geometric Technical Specification for Products (GPS) Coordinate Measuring Machine (CMM) Technology for Determining Measurement Uncertainty" is divided into five

Parts:

---Part 1: Summary and measurement characteristics;

---Part 2: Apply multiple measurement strategies;

---Part 3: Application of calibrated workpieces or standard parts;

---Part 4: Application of simulation technology to evaluate the measurement uncertainty of a specific task;

---Part 5: Application of expert judgment:

This part is Part 1 of GB/T 24635:

This section was drafted in accordance with the rules given in GB/T 1:1-2009:

This part uses the redrafting method to modify and adopt ISO /T S15530-1:2013 "Geometrical Technical Specifications for Products (GPS) Coordinate Measuring Machines" (CMM) Techniques for Determining Measurement Uncertainty Part 1: Summary and Metrological Characteristics:

The technical differences between this part and ISO /T S15530-1:2013 and the reasons are as follows:

---Regarding normative reference documents, this section has made adjustments with technical differences to adapt to my country's technical conditions and adjustments:

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows:

* Replace ISO 10360-1 with GB/T 16857:1 equivalent to the international standard (see Chapter 3);

* Replace ISO 14253-1 (see Chapter 3) with GB/T 18779:1, which is equivalent to the international standard;

* Replace ISO 14253-2 with GB/T 18779:2, which is equivalent to the international standard (see Chapter 3);

* Replace ISO 14978 with GB/T 24634 equivalent to the international standard (see Chapter 3);

* Use JJF1001-2011 instead of ISO /IEC Guide 99:2007 (see Chapter 3);

* Use JJF1059:1-2012 instead of ISO /IEC Guide 98-3:2008 (see Chapter 3, 6:1):

This section has made the following editorial changes:

---According to the requirements of GB/T 1:1-2009, in the "Scope" chapter, "This section applies to the evaluation of special features when using coordinate measuring machines:"

Uncertainty of measurement for a given task":

This part is proposed and managed by the National Standardization Technical Committee

for Product Geometric Technical Specifications (SAC/TC240):

Drafting organizations of this section: China Institute of Metrology, Chongqing Institute of Metrology and Quality Inspection, Shandong University of Technology, China Machinery Productivity Promotion

Advancement Center, Shanghai Institute of Metrology and Testing Technology, Shaanxi Institute of Metrology, Carl Zeiss (Shanghai) Management Co., Ltd:

Introduction

This part of GB/T 24635 is a general GPS standard: In the GPS general standard matrix, this part affects the links of the standard chain:

G size, distance, shape, direction, position and runout:

This part is part of the GB/T 20308 system: Unless otherwise specified, the GPS basic rules given in GB/T 4249 apply to this

Part, the default rules given in GB/T 18779:1 apply to the specifications made in accordance with this part:

This series of standards aims to provide professional terminology, technology and guidance for the evaluation of measurement uncertainty for specific tasks when using coordinate measuring machines:

south: These technologies allow the assessment of sources of uncertainty that affect specific tasks, including coordinate measurement systems, sampling strategies, environmental effects, operator

Factors and other factors that affect the actual measurement results:

The coordinate measuring machine is a complex GPS measuring device: It is sometimes necessary to apply the

More advanced technology mentioned in GB/T 18779:2: The technologies mentioned in the GB/T 24635 series are the same as those in GB/T 18779:2 and JJF1059:2

The technologies mentioned are the same: This technology is specially developed for coordinate measuring machines, but it can also be applied to other GPS measuring equipment:

The coordinate measuring machine carries out the acceptance test in accordance with the provisions of the GB/T 16857 series, which mainly includes measuring the length (such as the use of gauge blocks or step distances)

Space test) or shape (for example, probing test using a standard ball): However, it should be realized that although these tests can determine some characteristics

The uncertainty of measurement of a given length or shape: Without further analysis and testing, these measurements are insufficient to determine most specific

The measurement uncertainty of the measurement task:

The purpose of determining measurement uncertainty can be achieved in many ways: However, all methods need to be consistent with GUM:

To the combined standard uncertainty: The expanded uncertainty is related to the composite standard uncertainty through the inclusion factor, and the size of the inclusion factor depends on

The size of the confidence interval: The default value of the inclusion factor $k=2$ means that if the uncertainty follows the Gaussian distribution, the confidence interval is about 95%:

The content of this standard aims to provide a recognized technical guide for determining the uncertainty of coordinate measuring machines:

Product Geometric Technical Specification (GPS)

Coordinate Measuring Machine (CMM)

Techniques for determining measurement uncertainty

Part 1: Summary and measurement characteristics

1 Scope

This part of GB/T 24635 is an overview of the GB/T 24635 series, which specifies the metrological characteristics and specific tasks of coordinate measuring machines (CMM):

The source of uncertainty for the service, gives the relationship between the GB/T 16857 series of standards and the GB/T 24635 series of standards (see Appendix A):

This section is suitable for evaluating the measurement uncertainty of a specific task when using a coordinate measuring machine:

2 Normative references

The following documents are indispensable for the application of this document: For dated reference documents, only the dated version applies to this article

Pieces: For undated references, the latest version (including all amendments) applies to this document:

GB/T 16857:1 Technical Specification for Product Geometrical Quantities (GPS)

Acceptance Testing and Re-inspection Testing of Coordinate Measuring Machines Part 1: Words

Exchange (GB/T 16857:1-2002, eqvISO 10360-1:2000)