

**Geometrical Product Specifications (GPS) -  
Acceptance and reverification tests for  
coordinate measuring machines (CMM) - Part 4:  
CMMs used in scanning measuring mode**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 10360-4:2000 sisaldab Euroopa standardi EN ISO 10360-4:2000+AC:2002 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 12.09.2000 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN ISO 10360-4:2000 consists of the English text of the European standard EN ISO 10360-4:2000+AC:2002.

This standard is ratified with the order of Estonian Centre for Standardisation dated 12.09.2000 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

The standard is available from Estonian standardisation organisation.

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English version

**Geometrical Product Specifications (GPS) - Acceptance and  
reverification tests for coordinate measuring machines (CMM) -  
Part 4: CMMs used in scanning measuring mode (ISO 10360-  
4:2000)**

Spécification géométrique des produits (GPS) - Essais de  
réception et de vérification périodique des machines à  
mesurer tridimensionnelles (MMT) - Partie 4: MMT utilisées  
en mode de mesure par scanning (ISO 10360-4:2000)

Geometrische Produktspezifikation (GPS) -  
Annahmeprüfung und Bestätigungsprüfung für  
Koordinatenmessgeräte (KMG) - Teil 4: KMG in  
Scanningmodus (ISO 10360-4:2000)

This European Standard was approved by CEN on 15 March 2000.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## Foreword

The text of the International Standard ISO 10360-4:2000 has been prepared by Technical Committee ISO/TC 213 "Dimensional and geometrical product specifications and verification" in collaboration with Technical Committee CEN/TC 290 "Dimensional and geometrical product specification and verification", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

**NOTE FROM CEN/CS:** The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

### Endorsement notice

The text of the International Standard ISO 10360-4:2000 was approved by CEN as a European Standard without any modification.

**NOTE:** Normative references to International Standards are listed in annex ZA (normative).

CORRECTED 2000-06-14

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**Annex ZA** (normative)  
**Normative references to international publications  
with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 14253-1	1998	Geometrical Product Specifications (GPS) - Inspection by measurement of workpieces and measuring equipment - Part 1: Decision rules for proving conformance or non-conformance with specifications	EN ISO 14253-1	1998

English version  
Version Française  
Deutsche Fassung

Geometrical Product Specifications (GPS) - Acceptance and  
reverification tests for coordinate measuring machines  
(CMM) - Part 4: CMMs used in scanning measuring mode  
(ISO 10360-4:2000/Cor.1:2002)

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Geometrische Produktspezifikation (GPS) - Annahmeprüfung  
und Bestätigungsprüfung für Koordinatenmessgeräte (KMG) -  
Teil 4: KMG in Scanningmodus (ISO 10360-4:2000/Cor.1:2002)

This corrigendum becomes effective on 18 December 2002 for incorporation in the three official language versions of the EN.

Ce corrigendum prendra effet le 18 décembre 2002 pour incorporation dans les trois versions linguistiques officielles de l'EN.

Die Berichtigung tritt am 18. Dezember 2002 zur Einarbeitung in die drei offiziellen Sprachfassungen der EN in Kraft.



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**English version**

**Endorsement notice**

The text of ISO 10360-4:2000/Cor.1:2002 has been approved by CEN as a European Corrigendum without any modifications.

**Version française**

**Notice d'entérinement**

Le texte de l'ISO 10360-4:2000/Cor.1:2002 a été approuvé par le CEN comme Corrigendum européen sans aucune modification.

**Deutsche Fassung**

**Anerkennungsnotiz**

Der Text von ISO 10360-4:2000/Cor.1:2002 wurde vom CEN als Europäisches Corrigendum ohne irgendeine Abänderung genehmigt.



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(GPS) — Acceptance and reverification  
tests for coordinate measuring machines  
(CMM) —**

**Part 4:  
CMMs used in scanning measuring mode**

*Spécification géométrique des produits (GPS) — Essais de réception et de  
vérification périodique des machines à mesurer tridimensionnelles  
(MMT) —*

*Partie 4: MMT utilisées en mode de mesure par scanning*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 10360 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 10360-4 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

ISO 10360 consists of the following parts, under the general title *Geometrical Product Specifications (GPS) — Acceptance and reverification tests for coordinate measuring machines (CMM)*:

- *Part 1: Vocabulary*
- *Part 2: CMMs used for measuring linear dimensions*
- *Part 3: CMMs with the axis of a rotary table as the fourth axis*
- *Part 4: CMMs used in scanning measuring mode*
- *Part 5: CMMs using multiple stylus probing systems*
- *Part 6: Estimation of errors in computing Gaussian associated features*

Annexes A, B and C of this part of ISO 10360 are for information only.

## Introduction

This part of ISO 10360 is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO/TR 14638). It influences link 5 of the chains of standards on size, distance, radius, angle, form, orientation, location, run-out and datums.

For more detailed information on the relationship of this part of ISO 10360 to other standards and the GPS matrix model, see annex C.

The acceptance test and reverification test of this part of ISO 10360 are applicable only to a CMM that is capable of being used in a scanning measuring mode and may be used to determine the form of a surface or the parameters of an associated feature.

The tests specified in this part of ISO 10360 are performed in addition to the size measuring test according to ISO 10360-2, which are conducted without the use of scanning, and are designed to assess the performance of a CMM used in a scanning measuring mode. It is normally not useful to isolate the scanning probing errors from other sources of machine error.



# Geometrical Product Specifications (GPS) — Acceptance and reverification tests for coordinate measuring machines (CMM) —

## Part 4: CMMs used in scanning measuring mode

### 1 Scope

This part of ISO 10360 specifies the acceptance test which verifies that the performance of a CMM used in scanning measuring mode is as stated by the manufacturer. It also specifies the reverification test which enables the user to periodically reverify the performance of a CMM used in scanning measuring mode.

The acceptance test and reverification test described in this part of ISO 10360 are applicable only to CMMs capable of performing scanings using any type of contacting probing system(s).

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10360. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10360 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 10360-1:—<sup>1)</sup>, *Geometrical Product Specifications (GPS) — Acceptance and reverification tests for coordinate measuring machines (CMM) — Part 1: Vocabulary*.

ISO 14253-1:1998, *Geometrical Product Specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 1: Decision rules for proving conformance or non-conformance with specifications*.

*International Vocabulary of Basic and General Terms in Metrology (VIM)*. BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML, 2nd edition, 1993.

### 3 Terms and definitions

For the purposes of this part of ISO 10360, the terms and definitions given in ISO 10360-1, ISO 14253-1 and VIM apply.

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1) To be published.