

Geometrical product specifications (GPS) - Dimensional measuring instruments - Micrometers for external measurements; Design and metrological characteristics

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 3611:2010 sisaldab Euroopa standardi EN ISO 3611:2010 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.11.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.11.2010.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN ISO 3611:2010 consists of the English text of the European standard EN ISO 3611:2010.

This standard is ratified with the order of Estonian Centre for Standardisation dated 30.11.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 01.11.2010.

The standard is available from Estonian standardisation organisation.

ICS 17.040.30

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: 605 5050; E-mail: info@evs.ee

English Version

Geometrical product specifications (GPS) - Dimensional
measuring equipment: Micrometers for external measurements -
Design and metrological characteristics (ISO 3611:2010)

Spécification géométrique des produits (GPS) -
Équipement de mesure dimensionnel: Micromètres
d'extérieur - Caractéristiques de conception et
caractéristiques métrologiques (ISO 3611:2010)

Geometrische Produktspezifikation (GPS) -
Längenmessgeräte: Bügelmessschrauben -
Konstruktionsmerkmale und messtechnische Merkmale
(ISO 3611:2010)

This European Standard was approved by CEN on 11 September 2010.

CEN members are bound to comply with the CEN-CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 3611:2010) 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 AFNOR.

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 May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 3611:2010 has been approved by CEN as a EN ISO 3611:2010 without any modification.

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope.....	1
2 Normative references	1
3 Terms and definitions	1
4 Design characteristics	2
4.1 General design and nomenclature	2
4.2 Main dimensions	3
4.3 Types of indicating devices	3
4.3.1 General	3
4.3.2 Analogue indicating devices	4
4.3.3 Digital indicating devices, with mechanical digital display	5
4.3.4 Digital indicating devices with electronic digital display	6
4.4 Protection for field use	6
4.5 Frame	7
4.6 Measuring faces	7
4.7 Measuring force limiting device.....	7
4.8 Adjustment devices.....	7
4.9 Design characteristics (manufacturer's specification).....	7
5 Metrological characteristics	8
5.1 General	8
5.2 Effect of spindle clamp	8
5.3 Maximum permissible error of indication (limited by MPE).....	8
5.3.1 General	8
5.3.2 Full surface contact error, J (limited by MPE_J)	8
5.3.3 Repeatability, R (limited by MPE_R).....	8
5.3.4 Partial surface contact error, E (limited by MPE_E).....	8
5.4 Measuring forces (limited by MPL)	8
5.5 Instrument specification sheet	8
6 Proof of conformance with specifications.....	9
7 Marking.....	9
Annex A (informative) Example of an error-of-indication curve	10
Annex B (informative) Example of data sheet for micrometers for external measurements	11
Annex C (informative) Calibration of metrological characteristics.....	12
Annex D (informative) Error tests.....	13
Annex E (informative) Notes on use	15
Annex F (informative) Relation to the GPS matrix model	16
Bibliography.....	18

Introduction

This International Standard is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO/TR 14638). It influences the chain link 5 of the chain of standards on size in the general GPS matrix.

For more detailed information on the relation between this International Standard, other standards and the GPS matrix model, see Annex F.

Geometrical product specifications (GPS) — Dimensional measuring equipment: Micrometers for external measurements — Design and metrological characteristics

1 Scope

This International Standard specifies the most important design and metrological characteristics of micrometers for external measurements:

- with analogue indication;
- with digital indication: mechanical or electronic digital display.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 14253-2, *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 2: Guidance for the estimation of uncertainty in GPS measurement, in calibration of measuring equipment and in product verification*

ISO 14978:2006, *Geometrical product specifications (GPS) — General concepts and requirements for GPS measuring equipment*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14978, ISO/IEC Guide 99 and the following apply.