

SLOVENSKI STANDARD

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Nadomešča:

SIST EN ISO 14978:2006

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Specifikacija geometrijskih veličin izdelka (GPS) - Osnove in zahteve za merilno opremo GPS (ISO 14978:2018)

Geometrical product specifications (GPS) - General concepts and requirements for GPS measuring equipment (ISO 14978:2018)

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Geometrische Produktspezifikation (GPS) - Allgemeine Begriffe und Anforderungen für GPS-Messeinrichtungen (ISO 14978:2018)

[SIST EN ISO 14978:2019](https://standards.itih.si/catalogue/products/sist/b856ff1-2d45-49a5-b61c-32f7a223b138/sist-en-iso-14978-2019)

Spécification géométrique des produits (GPS) - Concepts et exigences généraux pour les équipements de mesure GPS (ISO 14978:2018)

Ta slovenski standard je istoveten z: EN ISO 14978:2018

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17.040.40	Specifikacija geometrijskih veličin izdelka (GPS)	Geometrical Product Specification (GPS)

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EUROPEAN STANDARD

EN ISO 14978

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Geometrical product specifications (GPS) - General concepts and requirements for GPS measuring equipment (ISO 14978:2018)

Spécification géométrique des produits (GPS) -
Concepts et exigences généraux pour les équipements
de mesure GPS (ISO 14978:2018)

Geometrische Produktspezifikation (GPS) - Allgemeine
Begriffe und Anforderungen für GPS-
Messeinrichtungen (ISO 14978:2018)

This European Standard was approved by CEN on 1 October 2018.

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.

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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.

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European foreword

This document (EN ISO 14978:2018) 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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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

This document supersedes EN ISO 14978:2006.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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ISO
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Second edition
2018-11

**Geometrical product specifications
(GPS) — General concepts and
requirements for GPS measuring
equipment**

*Spécification géométrique des produits (GPS) — Concepts et exigences
généraux pour les équipements de mesure GPS*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee 213, *Dimensional and geometrical product specifications and verification*.

This second edition cancels and replaces the first edition (ISO 14978:2006), which has been technically revised. It also incorporates the Technical Corrigendum ISO 14978:2006/Cor. 1:2008.

The main changes compared to the previous edition are as follows:

- the terms and definitions have been updated relative to ISO/IEC Guide 99:2007;
- a number of design characteristics common in GPS measuring equipment have been added;
- an updated discussion of calibration and verification, including concepts from ISO 14253-5:2015, has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO 14638). It influences chain links F and G for measuring equipment and calibration in the general GPS matrix model (see [Annex E](#)).

The ISO/GPS matrix model given in ISO 14638 gives an overview of the ISO/GPS system of which this document is a part. The fundamental rules of ISO/GPS given in ISO 8015 apply to this document and the default decision rules given in ISO 14253-1 apply to specifications made in accordance with this document, unless otherwise indicated; see ISO/TR 14253-6 for additional information on the selection of alternative decision rules.

For more detailed information of the relation of this document to other standards and the GPS matrix model, see [Annex E](#).

This document contains guidance for writing the standards for specific GPS measuring equipment.

This document is intended to give the user a basic understanding of the use of ISO standards for GPS measuring equipment. This document presents and defines general concepts to be used in connection with GPS measuring equipment to avoid multiple repetitions in the ISO standards for specific GPS measuring equipment. This document is also intended as guidance for the manufacturer/supplier to evaluate and present specifications for characteristics for GPS measuring equipment.

This document is necessary when reading and using ISO standards for specific GPS measuring equipment.

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Geometrical product specifications (GPS) — General concepts and requirements for GPS measuring equipment

1 Scope

This document specifies the general requirements, calibration, terms and definitions of characteristics of GPS measuring equipment, for example micrometers, callipers, gauge blocks and rotary axis form measuring instruments. This document forms the basis for standards defining and describing the design characteristics and metrological characteristics for measuring equipment and gives guidance for the development and content of standards for GPS measuring equipment.

This document is intended to ease the communication between manufacturer/supplier and customer/user and to make the specification phase of GPS measuring equipment more accurate. This document is also intended as a tool to be used in companies in the process of defining and selecting relevant characteristics for measuring equipment.

This document includes terms which are frequently used in connection with the characterization of specific measuring equipment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 verifying conformity or nonconformity with specifications*

ISO 14253-5:2015, *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 5: Uncertainty in verification testing of indicating measuring instruments*

ISO/TR 14253-6, *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 6: Generalized decision rules for the acceptance and rejection of instruments and workpieces*

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

ISO/IEC Guide 98-4:2012, *Uncertainty of measurement — Part 4: Role of measurement uncertainty in conformity assessment*

ISO/IEC Guide 99:2007, *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/IEC Guide 99:2007, ISO/IEC Guide 98-4:2012, ISO 14253-1, ISO 14253-5:2015, ISO/TR 14253-6 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

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3.1 ISO/IEC Guide 99:2007 terms

For the terms shown in [Table 1](#), the definitions from ISO/IEC Guide 99:2007 specifically apply in the use of this document. This non-exhaustive list is included to avoid ambiguity with other possible terms and definitions.

Table 1 — ISO/IEC Guide 99:2007 terms applicable in the use of this document

Term	Terminological entry number
calibration	2.39
indicating measuring instrument	3.3
indication	4.1
material measure	3.6
maximum permissible measurement error maximum permissible error limit of error	4.26
measurand	2.3
measured quantity value measured value	2.10
measurement method	2.5
measurement repeatability repeatability	2.21
measurement result result of measurement	2.9
measurement standard	5.1
measurement uncertainty uncertainty of measurement uncertainty	2.26
measuring instrument	3.1
measuring system	3.2
quantity value value	1.19
rated operating condition	4.9
reference material	5.13
reference measurement standard reference standard	5.6
reference quantity value reference value	5.18
resolution	4.14
uncertainty budget	2.33
verification	2.44

3.2 Synonym terms to ISO/IEC Guide 99:2007 terms

The terms shown in [Table 2](#), as used in this document, are synonyms for the ISO/IEC Guide 99:2007 terms as shown in the table. These synonym terms are used for consistency with previous versions of this document.

Table 2 — Synonym terms to ISO/IEC Guide 99:2007 terms

Synonym term used in this document	Notes	ISO/IEC Guide 99:2007	
measuring range	See Figure 5	measuring interval	4.7
nominal range	See Figure 5	nominal indication interval	4.4
nominal span	See Figure 5	range of a nominal indication interval	4.5
error of indication indication error		measurement error error	2.16

3.3 ISO/IEC Guide 98-4:2012 terms

For the terms shown in [Table 3](#), the definitions from ISO/IEC Guide 98-4:2012 specifically apply in the use of this document. This non-exhaustive list is included to avoid ambiguity with other possible terms and definitions.

Table 3 — ISO/IEC Guide 98-4:2012 terms applicable in the use of this document

Term	Terminological entry number
decision rule	3.3.12
specified requirement	3.3.3
tolerance limit specification limit	3.3.4

3.4 ISO 14253-5:2015 terms (standards.iteh.ai)

For the terms shown in [Table 4](#), the definitions from ISO 14253-5:2015 specifically apply in the use of this document. This non-exhaustive list is included to avoid ambiguity with other possible terms and definitions.

Table 4 — ISO 14253-5:2015 terms applicable in the use of this document

Term	Terminological entry number
test measurand	3.4
test protocol	3.5
test value	3.8
test value uncertainty test uncertainty	3.9

3.5 Terms related to GPS measuring equipment

3.5.1

measuring equipment

indicating measuring instrument, material measure, software, measurement standard, reference material or auxiliary equipment used in a measurement

Note 1 to entry: This definition is necessarily wider than that of a measuring instrument since it includes all the devices used in a measurement.

Note 2 to entry: Measuring equipment should not be confused with a measuring system, which is a set of measuring equipment used together for a specific measurement.

Note 3 to entry: See [Figure 1](#).