SLOVENSKI STANDARD
kSIST FprEN ISO 14253-5:2015

01-junij-2015

Specifikacija geometrijskih veličin izdelka (GPS) - Preverjanje z merjenjem obdelovancev in merilne opreme - 5. del: Negotovost pri preskušanju merilnih instrumentov

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

Geometrische Produktspezifikation (GPS) - Prüfung von Werkstücken und Messgeräten durch Messen - Teil 5: Unsicherheit bei der Verifizierungsprüfung von anzeigenden Messgeräten (ISO/FDIS 14253-5:2015)

Spécification géométrique des produits (GPS) - Vérification par la mesure des pièces et des équipements de mesure - Partie 5: Incertitude dans les essais des instruments de mesure d'indication (ISO/FDIS 14253-5:2015)

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Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment —

Part 5:
Uncertainty in testing indicating measuring instruments

Spécification géométrique des produits (GPS) — Vérification par la mesure des pièces et des équipements de mesure —

Partie 5: Incertitude liée aux essais de vérification des instruments de mesure indicateurs

Please see the administrative notes on page iii

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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ISO/CEN PARALLEL PROCESSING

This final draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement. The final draft was established on the basis of comments received during a parallel enquiry on the draft.

This final draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel two-month approval vote in ISO and formal vote in CEN.

Positive votes shall not be accompanied by comments.

Negative votes shall be accompanied by the relevant technical reasons.

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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 213, *Dimensional and geometrical product specifications and verifications*.

ISO 14253 consists of the following parts, under the general title *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment*:

— *Part 1: Decision rules for proving conformity or nonconformity with specifications*

— *Part 2: Guide to the estimation of uncertainty in GPS measurement, in calibration of measuring equipment and in product verification*

— *Part 3: Guidelines for achieving agreements on measurement uncertainty statements*

— *Part 4: Background on functional limits and specification limits in decision rules*

— *Part 5: Uncertainty in verification testing of indicating measuring instruments*

— *Part 6: Generalized decision rules for the acceptance and rejection of instruments and workpieces*

Introduction

This part of ISO 14253 belongs to the general geometrical product specification (GPS) series of documents (see ISO 14638). It influences chain link F of the chains of standards on size, distance, form, orientation and run-out in the general GPS matrix.

The ISO/GPS matrix model given in ISO 14638 gives an overview of the ISO/GPS system of which this international standard is a part. The fundamental rules of ISO/GPS given in ISO 8015 apply to this part of ISO 14253 and the default decision rules given in ISO 14253-1 apply to specifications made in accordance with this part of ISO 14253, unless otherwise indicated.

For more detailed information about the relationship of this part of ISO 14253 to other standards and to the GPS matrix model, see Annex B.

Decision rules for deciding conformity or non-conformity to specifications are based on the measurement uncertainty incurred while testing.

Usual practice in measurement familiarizes metrologists and practitioners with measurement uncertainty. Any possible effect that may affect the measurement result is considered and quantified as an uncertainty component and is eventually included in the combined uncertainty. The purpose of the measurement is to gather quantitative information on a given measurand, and the uncertainty statement expresses how reliable that information is.

In the case of tests of indicating measuring instruments, the purpose of the measurement is to investigate one or more metrological characteristics of the indicating measuring instrument rather than to measure characteristics of features of a workpiece. The uncertainty being evaluated in this case, the test value uncertainty, quantifies the accuracy of the test value. The test detects the quality of the indicating measuring instrument, reported through the test values and not through the test value uncertainty.

The test value uncertainty for indicating measuring instruments is not conceptually trivial to evaluate, and careful consideration is necessary to determine which uncertainty components should and which should not be accounted for.

Some tests of indicating measuring instruments may be relative to quantities other than instrument indications, or a single test may investigate both the instrument indication(s) and other metrological characteristics. An example is a test of a micrometer investigating the indication error (subject to an MPE) as well as the measuring force (subject to an MPL). For tests, or portions of them, relative to metrological characteristics other than instrument indications, this part of ISO 14253 is not applicable: they are about quantities for which the application of the ISO/IEC Guide 98-3 (GUM) and of the ISO 14253-2 is conceptually straightforward, with no need of further guidance in this part of ISO 14253.

A rigorous definition of the test value uncertainty when testing indicating measuring instruments is given. Application of conventional uncertainty evaluation based on this definition and according to the ISO/IEC Guide 98-3 (GUM) and the ISO 14253-2 determines which uncertainty components to account for.

