
Specifikacija geometrijskih veličin izdelka (GPS) - Tekstura površine: ploskovna - 700. del: Umerjanje, nastavitev in preverjanje merilnih instrumentov za površinsko topografijo (ISO 25178-700:2022)

Geometrical product specifications (GPS) - Surface texture: Areal - Part 700: Calibration, adjustment and verification of areal topography measuring instruments (ISO 25178-700:2022)

Geometrische Produktspezifikation (GPS) - Oberflächenbeschaffenheit: Fläche - Teil 700: Kalibrierung, Justierung und Verifizierung von flächenhaften Topographiemessgeräten (ISO 25178-700:2022)

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Spécification géométrique des produits (GPS) - État de surface: Surfacique - Partie 700: Étalonnage, ajustage et vérification d'instruments de mesure de la topographie des surfaces (ISO 25178-700:2022)

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| Contents | Page |
|------------------------|------|
| European foreword..... | 3 |

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European foreword

This document (EN ISO 25178-700:2023) 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of an identical text or by endorsement, at the latest by July 2023, and conflicting national standards shall be withdrawn at the latest by July 2023.

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mesure de la topographie des surfaces*

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Contents

Page

| | |
|--|----------|
| Foreword..... | v |
| Introduction..... | vi |
| 1 Scope..... | 1 |
| 2 Normative references..... | 1 |
| 3 Terms and definitions..... | 1 |
| 4 Symbols and abbreviated terms..... | 2 |
| 5 Calibration, adjustment and verification of an instrument..... | 3 |
| 5.1 General..... | 3 |
| 5.2 Methods for calibration, adjustment and verification..... | 3 |
| 5.3 Instrument calibration procedure..... | 4 |
| 5.3.1 Calibration by measurement standards..... | 4 |
| 5.3.2 Handling of defects on material measures..... | 4 |
| 5.3.3 Measurement procedures for calibration with measurement standards..... | 4 |
| 5.3.4 Calibration conditions..... | 4 |
| 6 Determination of the metrological characteristics of the instrument..... | 5 |
| 6.1 General..... | 5 |
| 6.2 Reporting of the measurement conditions..... | 5 |
| 6.3 Handling of non-measured points..... | 5 |
| 6.4 Handling of spurious data and outliers..... | 5 |
| 6.5 Metrological characteristic: measurement noise, N_M , and instrument noise, N_I | 5 |
| 6.5.1 General..... | 5 |
| 6.5.2 Determination of measurement and instrument noise: application of filters or operators..... | 6 |
| 6.5.3 Determination of measurement and instrument noise: material measures for instrument and measurement noise estimation..... | 6 |
| 6.5.4 Determination of measurement and instrument noise: procedure for the determination of measurement noise..... | 6 |
| 6.6 Determination of flatness deviation..... | 10 |
| 6.6.1 General..... | 10 |
| 6.6.2 Material measure for determination of flatness deviation..... | 10 |
| 6.6.3 Procedure for determination of flatness deviation..... | 10 |
| 6.6.4 Improvement of flatness deviation estimation..... | 10 |
| 6.6.5 Application of filters and operators..... | 11 |
| 6.6.6 Calibration of flatness deviation..... | 11 |
| 6.7 Determination of the amplification coefficient α_z for the z-axis..... | 11 |
| 6.7.1 General..... | 11 |
| 6.7.2 Determination of the amplification coefficient α_z for the z-axis: material measures..... | 11 |
| 6.7.3 Procedure for determination of amplification coefficient α_z for the instrument z-axis..... | 12 |
| 6.7.4 Type PGR (profile-groove-rectangular): groove, straight (rectangular or trapezoidal) measurement areas..... | 12 |
| 6.7.5 Other material measures for the instrument z-axis calibration..... | 14 |
| 6.7.6 Procedure for determination of amplification coefficient α_z for the instrument z-axis: range and distance of measurement positions for the calibration of the z-scale of the instrument..... | 15 |
| 6.7.7 Range and distance of measurement position for the calibration of a reduced z-scale of the instrument..... | 15 |
| 6.8 Determination of z-linearity deviation l_z | 15 |
| 6.8.1 General..... | 15 |
| 6.8.2 Determination of the complete and local z-linearity deviation l_z : z-scan range..... | 15 |

ISO 25178-700:2022(E)

| | | |
|---|---|----|
| 6.8.3 | Determination of z-linearity deviation l_z | 15 |
| 6.8.4 | Determination of z-linearity deviation l_z : sizes of step heights to be measured..... | 16 |
| 6.8.5 | Determination of z-linearity deviation l_z : positions within the instrument z-range..... | 17 |
| 6.8.6 | Determination of z-linearity deviation l_z : Non-default methods..... | 17 |
| 6.9 | Determination of the amplification coefficients α_x and α_y in x- and y-direction and mapping deviation $\Delta_x(x,y)$ and $\Delta_y(x,y)$ | 17 |
| 6.9.1 | General..... | 17 |
| 6.9.2 | Determination of the amplification coefficient α_x and α_y in x- and y-direction and mapping deviation $\Delta_x(x,y)$ and $\Delta_y(x,y)$: material measures..... | 18 |
| 6.9.3 | Determination of the amplification coefficient α_x and α_y in x- and y-direction and mapping deviation $\Delta_x(x,y)$ and $\Delta_y(x,y)$: assessed measurement volume..... | 19 |
| 6.9.4 | Procedure for the determination of the amplification coefficient α_x and α_y and mapping deviation $\Delta_x(x,y)$ and $\Delta_y(x,y)$ of the x- and y-axes..... | 20 |
| 6.10 | Perpendicularity of the instrument z-axis with respect to the x-y areal reference..... | 20 |
| 6.11 | Topographic spatial resolution W_R | 20 |
| 6.11.1 | General..... | 20 |
| 6.11.2 | Material measures for topographic spatial resolution..... | 20 |
| 6.11.3 | Instrument transfer function (ITF) curve f_{ITF} | 21 |
| 6.11.4 | Lateral period limit D_{LIM} | 21 |
| 6.11.5 | Use of optical lateral resolution parameters..... | 21 |
| 6.12 | Topography fidelity T_{FI} | 21 |
| 6.12.1 | General..... | 21 |
| 6.12.2 | Determination of the topography fidelity T_{FI} using reference metrology..... | 21 |
| 6.12.3 | Determination of the small-scale fidelity limit T_{FIL} | 22 |
| 6.12.4 | Slope-dependent effects..... | 22 |
| 7 | General information..... | 22 |
| Annex A (informative) Relation to the GPS matrix model 8-700:2023..... | | 23 |
| Bibliography /standards.iteh.ai/catalog/standards/sist/6ad8effd-fdc0-46dc-b313-4a342e058370/sist-en-iso-25178-700-2023 | | 24 |

Foreword

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This document was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 290, *Dimensional and geometrical product specification and verification*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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ISO 25178-700:2022(E)

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 E, F and G of the chains of standards on profile surface texture and areal surface texture.

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 the specifications made in accordance with this document, unless otherwise indicated.

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

In the GPS concept, the design values of geometric parameters on workpieces and their tolerances are compared with the measurement of those parameters on the corresponding manufactured workpieces and their associated measurement uncertainties. For a reliable result it is therefore necessary to calibrate the measurement instrument involved in this process.

This document specifies default procedures for the calibration, adjustment and verification of surface topography measuring instruments, using material measures traceable to the meter through a national metrology institute or qualified laboratory, see ISO/IEC Guide 99:2007, 2.41. Default methods are recommended when no other calibration procedures have been clearly defined.

This document describes the calibration (see ISO/IEC Guide 99:2007, 2.39), adjustment (see ISO/IEC Guide 99:2007, 3.11) and verification (see ISO/IEC Guide 99:2007, 2.44) in general for topography measuring instruments.

The calibration of an instrument's metrological characteristics enables the verification of the instrument's specifications when the specifications are based on these metrological characteristics. This also enables the comparison of systems of different manufacturers that may be based on different measurement principles.

The metrological characteristics capture all of the factors that can influence a measurement result (influence quantities) and can be propagated appropriately through a specific measurement model to estimate measurement uncertainty.

Calibration is a part of the determination of the overall uncertainty of measurement. The complete evaluation of measurement uncertainty may include other factors such as operator variability, changing environmental influences, the effects of thermal and mechanical stresses on the sample part and other factors that are not accounted for in the instrument calibrations.

Alternative calibration techniques to the defaults given here are equally acceptable, depending on the capabilities of the instrumentation and provided those alternatives have clear traceability paths. Example techniques include those based on an independent realization of the meter using a natural emission wavelength, the value for which has been established with a known uncertainty.