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BS EN ISO 25178-603:2013



BSI Standards Publication

Geometrical product specifications (GPS) — Surface texture: Areal

Part 603: Nominal characteristics of non-contact (phase-shifting interferometric microscopy) instruments

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The UK participation in its preparation was entrusted to Technical Committee TDW/4, Technical Product Realization.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Geometrical product specifications (GPS) - Surface texture:
Areal - Part 603: Nominal characteristics of non-contact (phase-
shifting interferometric microscopy) instruments (ISO 25178-
603:2013)

Spécification géométrique des produits (GPS) - État de
surface: Surfacique - Partie 603: Caractéristiques
nominales des instruments sans contact (microscopes
interférométriques à glissement de franges) (ISO 25178-
603:2013)

Geometrische Produktspezifikation (GPS) -
Oberflächenbeschaffenheit: Flächenhaft - Teil 603:
Merkmale von berührungslos messenden Geräten
(phasenschiebende interferometrische Mikroskopie) (ISO
25178-603:2013)

This European Standard was approved by CEN on 19 August 2013.

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Foreword

This document (EN ISO 25178-603:2013) 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of an identical text or by endorsement, at the latest by April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

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

Endorsement notice

The text of ISO 25178-603:2013 has been approved by CEN as EN ISO 25178-603:2013 without any modification.

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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. www.iso.org/directives

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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 verification*.

ISO 25178 consists of the following parts, under the general title *Geometrical product specification (GPS)* — *Surface texture: Areal*:

- *Part 1: Areal surface texture drawing indication*
- *Part 2: Terms, definitions and surface texture parameters*
- *Part 3: Specification operators*
- *Part 6: Classification of methods for measuring surface texture*
- *Part 70: Material measures*
- *Part 71: Software measurement standards*
- *Part 601: Nominal characteristics of contact (stylus) instruments*
- *Part 602: Nominal characteristics of non-contact (confocal chromatic probe) instruments*
- *Part 603: Nominal characteristics of non-contact (phase-shifting interferometric microscopy) instruments*
- *Part 604: Nominal characteristics of non-contact (coherence scanning interferometric microscopy) instruments*
- *Part 605: Nominal characteristics of non-contact (point autofocus probe) instruments*
- *Part 606: Nominal characteristics of non-contact (focus variation microscopy) instruments*
- *Part 701: Calibration and measurement standards for contact (stylus) instruments*
- *Part 702 Calibration of non-contact (confocal chromatic probe) instruments*

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— *Part 703: Calibration and measurement standards for non-contact (interferometric) instruments*

The following part is under preparation: *Part 72: XML file format x3p*

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Introduction

This part of ISO 25178 is a Geometrical Product Specification 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 areal surface texture.

This part of ISO 25178 describes the metrological characteristics of phase-shifting interferometric (PSI) profile and areal surface texture measuring microscopes, designed for the measurement of surface topography maps. For more detailed information on the phase-shifting interferometry technique, see [Annex A](#) and [Annex B](#).

The ISO/GPS Masterplan given in ISO /TR 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.

NOTE Portions of this document, particularly the informative clauses, may describe patented systems and methods. This information is provided only to assist users in understanding the operating principles of phase-shifting interferometry. This document is not intended to establish priority for any intellectual property, nor does it imply a license to any proprietary technologies that may be described herein.

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Geometrical product specifications (GPS) — Surface texture: Areal —

Part 603: Nominal characteristics of non-contact (phase-shifting interferometric microscopy) instruments

1 Scope

This part of ISO 25178 describes the metrological characteristics of phase-shifting interferometric (PSI) profile and areal surface texture measuring microscopes.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1 Terms and definitions related to all areal surface texture measurement methods

2.1.1

areal reference

component of the instrument that generates a reference surface with respect to which the surface topography is measured

2.1.2

coordinate system of the instrument

right hand orthonormal system of axes (x, y, z) where

- (x, y) is the plane established by the areal reference of the instrument (note that there are optical instruments that do not possess a physical areal guide);
- z -axis is mounted parallel to the optical axis and is perpendicular to the (x, y) plane for an optical instrument; the z -axis is in the plane of the stylus trajectory and is perpendicular to the (x, y) plane for a stylus instrument

Note 1 to entry: Normally, the x -axis is the tracing axis and the y -axis is the stepping axis. (This note is valid for instruments that scan in the horizontal plane.)

Note 2 to entry: See also "specification coordinate system" [ISO 25178-2:2012, 3.1.2] and "measurement coordinate system" [ISO 25178-6:2010, 3.1.1].

SEE: [Figure 1](#).