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**Specifikacija geometrijskih veličin izdelka (GPS) - Tekstura površine: ploskovna - 605. del: Konstrukcije in značilnosti brezkontaktnih (točka avtofokusne sonde) instrumentov (ISO/DIS 25178-605:2023)**

Geometrical product specifications (GPS) - Surface texture: Areal - Part 605: Design and characteristics of non-contact (point autofocus probe) instruments (ISO/DIS 25178-605:2023)

Geometrische Produktspezifikation (GPS) - Oberflächenbeschaffenheit: Flächenhaft - Teil 605: Aufbau und Merkmale von berührungslos messenden Geräten (Punkt-Autofokus-Sensor) (ISO/DIS 25178-605:2023)

Spécification géométrique des produits (GPS) - État de surface: Surfacique - Partie 605: Conception et caractéristiques des instruments sans contact (capteur autofocus à point) (ISO/DIS 25178-605:2023)

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**Ta slovenski standard je istoveten z: prEN ISO 25178-605**

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**oSIST prEN ISO 25178-605:2023**

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

Part 605:

### Design and characteristics of non-contact (point autofocus probe) instruments

ICS: 17.040.20

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## ISO/DIS 25178-605:2023(E)

### Foreword

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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](http://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](http://www.iso.org/patents)).

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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](http://www.iso.org/iso/foreword.html).

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

This second edition cancels and replaces the first edition (ISO 25178-605:2014), which has been technically revised.

A list of all parts in the ISO 25178 series can be found on the ISO website.

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](http://www.iso.org/members.html).

## 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 link F of the chains of standards on profile 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 part of ISO 25178 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 C.

This document includes normative terms and definitions relevant to the point autofocus probe instruments for the measurement of areal surface topography. The informative Annex A briefly summarizes point autofocus probe instruments and methods to clarify the normative definitions and to provide a foundation for informative Annex B, which describes common sources of uncertainty and their relation to the metrological characteristics of point autofocus probe.

**NOTE** Portions of this document, particularly the informative sections, describe patented systems and methods. This information is provided only to assist users in understanding the operating principles of point autofocus instruments. This document is not intended to establish priority for any intellectual property, nor does it imply a license to proprietary technologies described herein.

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

## Part 605:

# Design and characteristics of non-contact (point autofocus probe) instruments

## 1 Scope

This document describes the design and characteristics of point autofocus probe instruments for areal measurement of surface topography. Because surface profiles can be extracted from areal surface topography data, the methods described in this document can be applied to profiling measurements as well.

## 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 25178-600:2019, *Geometrical product specifications (GPS) — Surface texture: Areal — Part 600: Metrological characteristics for areal topography measuring methods*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 25178-600 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 <https://www.electropedia.org/>

### 3.1

#### probing system

<point autofocus probe> component of the instrument consisting of an autofocus optical system, an autofocus mechanism, and an electronic controller

### 3.2

#### point autofocus probe

##### PAP

device that converts the height of a point on a surface into a signal during measurement using the autofocus function

### 3.3

#### point autofocus profiling

surface topography measurement method whereby the local surface height is measured by automatically centring a focused light beam reflected from the sample on a position sensitive detector as a function of surface height

[SOURCE: ISO 25178-6:2010, 3.3.11]

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### 3.4

#### **objective**

objective lens that focuses the light source image on the workpiece surface

### 3.5

#### **autofocus sensor**

optical sensor that detects a focal position using the light reflected from the workpiece surface

### 3.6

#### **autofocus mechanism**

autofocus driving mechanism that positions optical elements or the whole optical system

### 3.7

#### **z position sensor**

sensor that measures the vertical position of the measured point

### 3.8

#### **working distance**

<point autofocus probe> distance along the optical axis between the element closest to the surface and the focus point on the surface

Note 1 to entry: Maximum measurable step height is related to working distance.

### 3.9

#### **spot size**

$W_{\text{SPOT}}$

<point autofocus probe> size of the light source image focused on the workpiece surface

Note 1 to entry: See Annex B.2.

### 3.10

#### **focus range**

range of z heights, within which it is possible to achieve adequate focus

### 3.11

#### **vertical range**

$R_{\text{VERT}}$

<point autofocus probe> measuring range of the autofocus probe in z heights within which it is possible to output reliable data

### 3.12

#### **measurable minimum reflection ratio**

$M_{\text{REF}}$

minimum ratio of the reflected light intensity to the incident light intensity for a measurable workpiece surface

### 3.13

#### **autofocus repeatability**

$R_{\text{AF}}$

measurement repeatability of the autofocus function, excluding the effect of environmental noise

### 3.14

#### **speckle noise**

$N_{\text{SPC}}$

noise due to non-uniform intensity of reflected light generated by irregular micro-scale geometry of the workpiece surface within the spot size

Note 1 to entry: Refer to Reference<sup>[5]</sup>.