

First edition  
2010-07-01

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

Part 602:

### **Nominal characteristics of non-contact (confocal chromatic probe) instruments**

*Spécification géométrique des produits (GPS) — État de surface:  
Surfacique —*

*Partie 602: Caractéristiques nominales des instruments sans contact (à  
capteur confocal chromatique)*



Reference number  
ISO 25178-602:2010(E)

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Published in Switzerland

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 25178-602 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

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

- *Part 2: Terms, definitions and surface texture parameters*
- *Part 3: Specification operators*
- *Part 6: Classification of methods for measuring surface texture*
- *Part 7: 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 701: Calibration and measurement standards for contact (stylus) instruments*

The following parts are under preparation:

- *Part 604: Nominal characteristics of non-contact (coherence scanning interferometry) instruments*
- *Part 605: Nominal characteristics of non-contact (point autofocusing) instruments*

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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 chain link 5 of the chain of standards on roughness profile, waviness profile and primary profile and areal surface texture.

For more detailed information on the relationship of this standard to the GPS matrix model, see Annex D.

The confocal chromatic optical principle can be implemented in various set-ups. The configuration described in this document comprises three basic elements: an optoelectronic controller, a linking fibre optic cable and a chromatic objective (sometimes called "optical pen").

Several techniques are possible to create the axial chromatic dispersion or to extract the height information from the reflected light. In addition to implementations as point sensors, chromatic dispersion may be integrated into line sensors and field sensors. Annex B describes in detail confocal chromatic imaging and its implementation into distance measurement probes.

This type of instrument is mainly designed for areal measurements, but it is also able to perform profile measurements.

This part of ISO 25178 describes the metrological characteristics of an optical profiler using a confocal chromatic probe based on axial chromatic dispersion of white light, designed for the measurement of areal surface texture.

For more detailed information on the chromatic probe instrument technique, see Annex B. Reading this annex before the main body may lead to a better understanding of this part of ISO 25178.