
**Microscopes — Confocal microscopes
— Optical data of fluorescence confocal
microscopes for biological imaging**

*Microscopes — Microscopes confocaux — Données optiques des
microscopes confocaux à fluorescence pour l'imagerie biologique*



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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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).

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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.

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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.

Introduction

This document is intended to provide comparable specifications of confocal microscopes by microscope manufacturers and to allow users to compare and monitor the imaging performance of their confocal microscopes.

A confocal laser scanning microscope in this document comprises a laser illumination light source, a scanning unit to deflect the excitation laser light, an objective and a detection unit consisting of a detection pinhole and a photo detector.

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1 Scope

This document specifies commonly used quantities regarding image performance in confocal laser scanning microscopy used for imaging of fluorescent biological specimens.

This document applies only to confocal single point scanners using single photon excitation.

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 10934-1, *Optics and optical instruments — Vocabulary for microscopy — Part 1: Light microscopy*

ISO 10934-2, *Optics and optical instruments — Vocabulary for microscopy — Part 2: Advanced techniques in light microscopy*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10934-1, ISO 10934-2 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 <http://www.electropedia.org/>

3.1

excitation wavelength

specific wavelength of light required to excite a fluorescent molecule, such as a fluorescent antibody or fluorescent protein, to emit light at emission wavelengths

3.2

detection wavelength band

specific wavelength range of light collected by the photo detector

3.3

Airy unit

AU

diameter of the theoretical first minimum of the detection PSF in the low numerical aperture approximation