INTERNATIONAL STANDARD

ISO 12858-1

Second edition
2014-08-01

Optics and optical instruments — Ancillary devices for geodetic instruments —

Part 1: Invar levelling staffs

Optique et instruments d'optique — Equipements annexes pour les instruments géodésiques —

Partie 1: Mires de nivellement en invar

Reference number
ISO 12858-1:2014(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.

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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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 172, *Optics and photonics*, Subcommittee SC 6, *Geodetic and surveying instruments*.

This second edition cancels and replaces the first edition (ISO 12858-1:1999), which has been technically revised.

ISO 12858 consists of the following parts, under the general title *Optics and optical instruments — Ancillary devices for geodetic instruments*:

— *Part 1: Invar levelling staffs*

— *Part 2: Tripods*

— *Part 3: Tribrachs*

Annex A of this part of ISO 12858 is for information only.

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Introduction

The ISO 12858 series consists of several parts which detail specifications for ancillary devices to be used with geodetic instruments in surveying. This part of ISO 12858 specifies requirements for Invar levelling staffs.

Additional parts, covering other ancillary devices, may be added to ISO 12858 as the need arises.

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Optics and optical instruments — Ancillary devices for geodetic instruments —

Part 1: Invar levelling staffs

1 Scope

This part of ISO 12858 specifies the most important requirements of Invar levelling staffs used in geodesy and industry for precise measurement of heights in combination with either an optical-mechanical level equipped with a parallel plate micrometre, or a digital level of comparable precision.

It is applicable to

— classical staffs with graduation lines and numbering;

— staffs used in digital levelling with code patterns.

NOTE The measurement uncertainty of the height differences depends on a multitude of influencing factors of the whole measuring system including the levelling instruments.

This part of ISO 12858 is not applicable to the detailed design and construction of Invar levelling staffs (e.g. materials, handles, fixing points for the struts, fixing of the Invar strip and of the circular level), which may be selected by the manufacturer as appropriate.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9849, *Optics and optical instruments — Geodetic and surveying instruments — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9849 apply.

4 Design

Invar levelling staffs are normally manufactured in nominal lengths of 2 m or 3 m. However, other alternative lengths may be adopted.

The detailed design and construction are left to the manufacturer.

Examples of Invar levelling staffs are shown in Annex A.

5 Invar scale strip

The Invar strip carrying the scale is classified in Table 1.

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