

INTERNATIONAL STANDARD

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Building construction — Measuring instruments — Procedures for determining accuracy in use —

Part 3: Optical levelling instruments

*Construction immobilière — Instruments de mesure — Procédures de détermination
de l'exactitude d'utilisation —*

Partie 3: Instruments optiques de nivellement



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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8322-3 was prepared by Technical Committee ISO/TC 59, *Building construction*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Building construction — Measuring instruments — Procedures for determining accuracy in use —

Part 3: Optical levelling instruments

0 Introduction

This International Standard consists of a series of parts specifying test procedures to be adopted when determining and assessing the accuracy in use of measuring instruments in building construction. The first part gives the theory; subsequent parts give the procedures for determining the accuracy in use of measuring instruments for measurements. The complete series will consist of the following parts:

- Part 1: Theory.
- Part 2: Measuring tapes.
- Part 3: Optical levelling instruments.
- Part 4: Theodolites.
- Part 5: Optical plumbing instruments.
- Part 6: Laser instruments.
- Part 7: Instruments when used for setting out.
- Part 8: Electronic distance-measuring instruments.

Other International Standards for testing measuring instruments for land surveying purposes, and for measuring procedures in ordnance survey, are in preparation.

1 Scope

This part of ISO 8322 specifies test procedures to be adopted when determining and assessing the accuracy in use of optical levelling instruments for measurement purposes.

2 Field of application

The procedures given in this part of ISO 8322 apply when these optical levelling instruments are used in building construction for surveying, check and compliance measurements, and also when obtaining accuracy data.

3 References

ISO 3534, *Statistics — Vocabulary and symbols*.

ISO 4463-1, *Measurement methods for building — Setting-out and measurement — Part 1: Planning and organization, measuring procedures, acceptance criteria*.

ISO 7077, *Measuring methods for building — General principles and procedures for the verification of dimensional compliance*.

ISO 7078, *Building construction — Procedures for setting out, measurement and surveying — Vocabulary and guidance notes*.

ISO 8322-1, *Building construction — Measuring instruments — Procedures for determining accuracy in use — Part 1: Theory*.

4 General

4.1 Before commencing surveying, check and compliance measurements, when obtaining accuracy data or setting out, it is important that the operator investigates that the accuracy in use of the measuring equipment is appropriate to the intended measuring task. This International Standard recommends that the operator carries out test measurements under field conditions to establish the accuracy achieved when he uses a particular measuring instrument and its ancillary equipment.

To ensure that the assessment takes account of various environmental influences, two series of measurements need to be carried out under different conditions. The particular conditions to be taken into account may vary depending on where the tasks are to be undertaken. These conditions will include variations in air temperature, wind speed, cloud cover and visibility. Note should also be made of the actual weather conditions at the time of measurement and the type of surface over which the measurements are made. The sets of conditions chosen for the tests should match those expected when the intended measuring task is actually carried out. See ISO 7077 and ISO 7078.

The procedures are designed so that the systematic errors are largely eliminated and assume that the particular instruments are in known and acceptable states of user adjustment according to methods detailed in the manufacturer's handbooks.

Accuracy in use procedures require tests to be made with the same instrumentation and the same observer, within a short interval of time. These are "repeatability conditions" as defined in ISO 3534.