



SLOVENSKI STANDARD
SIST EN 61206:2002

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Ultrasonics - Continuous-wave Doppler systems - Test procedures (IEC 61206:1993)

Ultrasonics - Continuous-wave Doppler systems - Test procedures

Ultraschall - Dauerschall Doppler System - Prüfverfahren

Ultrasons - Ensembles à effet Doppler à ondes entretenues - Méthodes d'essai

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Ta slovenski standard je istoveten z: EN 61206:1995

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ICS:

11.040.50	Radiografska oprema	Radiographic equipment
17.140.50	Elektroakustika	Electroacoustics

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EUROPEAN STANDARD

EN 61206

NORME EUROPÉENNE

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February 1995

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English version

Ultrasonics
Continuous-wave Doppler systems
Test procedures
(IEC 1206:1993)

Ultrasons
 Ensembles à effet Doppler à ondes
 entretenues
 Méthodes d'essai
 (CEI 1206:1993)

Ultraschall
 Dauerschall Doppler System
 Prüfverfahren
 (IEC 1206:1993)

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This European Standard was approved by CENELEC on 1994-12-06. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
 Comité Européen de Normalisation Electrotechnique
 Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 1206:1995, prepared by IEC TC 87, Ultrasonics, was submitted to the formal vote and was approved by CENELEC as EN 61206 on 1994-12-06 without any modification.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1995-12-15
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1995-12-15

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annexes A, B and C are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 1206:1993 was approved by CENELEC as a European Standard without any modification.

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ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
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1102	1991	Measurement and characterisation of ultrasonic fields using hydrophones in the frequency range 0,5 MHz to 15 MHz	EN 61102	1993

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REPORT

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Première édition
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Ultrasons –
Ensembles à effet Doppler à ondes entretenues –
Méthodes d'essai

iTeh STANDARD PREVIEW

Ultrasonics –
Continuous-wave Doppler systems –
Test procedures

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ULTRASONICS –
CONTINUOUS-WAVE DOPPLER SYSTEMS –
TEST PROCEDURES**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

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The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

Technical reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

IEC 1206, which is a technical report of type 2, has been prepared by IEC technical committee 87: Ultrasonics.

The text of this technical report is based on the following documents:

Committee draft	Report on Voting
87(SEC)35	87(SEC)47

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This document is issued in the type 2 technical report series of publications (according to G.4.2.2 of part 1 of the IEC/ISO Directives) as a "prospective standard for provisional application" in the field of ultrasonics because there is an urgent requirement for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an "International Standard". It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the IEC Central Office.

A review of this type 2 technical report will be carried out not later than three years after its publication, with the options of either extension for a further three years or conversion to an International Standard or withdrawal.

Annexes A, B and C are for information only.

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INTRODUCTION

Continuous-wave ultrasonic Doppler flowmeters, velocimeters, or foetal heart detectors are widely used in clinical practice. This type of medical ultrasonic equipment measures the Doppler-shift frequency which is the change in frequency of an ultrasound scattered wave caused by relative motion between a scatterer and the ultrasonic transducer. This frequency is proportional to the observed velocity, which is the component of the velocity of a scatterer that is directed towards or away from the transducer.

This technical report describes a range of test methods that may be applied to determine various performance parameters for continuous-wave Doppler ultrasound systems. They may also be applied to pulsed Doppler systems although additional tests would also be required. The test methods are based on the use of a number of specialised devices such as string, band, disk, piston and flow Doppler test objects. These test methods may be considered as falling into one of the following three categories. The first is routine quality control tests that can be carried out by a clinician or a technologist to ensure that the system is working adequately or has adequate sensitivity. The second is more elaborate test methods, conducted less frequently, such as when the system is suspected of not working properly. The third represents tests that would be done by a manufacturer on complete systems, as the basis of type specification of performance.

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ULTRASONICS – CONTINUOUS-WAVE DOPPLER SYSTEMS – TEST PROCEDURES

SECTION 1: GENERAL

1.1 Scope

This technical report describes:

- test methods for measuring the performance of continuous-wave ultrasonic Doppler flowmeters, velocimeters, or foetal heart detectors;
- special Doppler test objects for determining various performance properties of Doppler ultrasound systems.

This technical report applies to:

- tests made on an overall Doppler ultrasound system; a system which is not disassembled or disconnected;
- tests made on continuous-wave Doppler ultrasound systems. The same tests can be applied to Doppler ultrasound systems which measure position as well as velocity, such as pulsed and frequency-modulated Doppler systems, although additional tests may then be required.

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Electrical safety and acoustic output are not covered in this technical report

1.2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this technical report. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this technical report are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 1102: 1991, *Measurement and characterisation of ultrasonic fields using hydrophones in the frequency range 0,5 MHz to 15 MHz*

1.3 Definitions

For the purposes of this technical report, the following definitions apply:

1.3.1 **direction sensing; directional:** Descriptor of a type of Doppler ultrasound system which indicates whether scatterers are approaching or receding from the ultrasonic transducer.