SLOVENSKI STANDARD
SIST EN 61788-22-1:2018

01-januar-2018

Superprevodnost - 22-1. del: Superprevodne elektronske naprave - Splošna specifikacija za senzorje in javljalnike (IEC 61788-22-1:2017)

Superconductivity - Part 22-1: Superconducting electronic devices - Generic specification for sensors and detectors (IEC 61788-22-1:2017)

Ta slovenski standard je istoveten z: EN 61788-22-1:2017

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
29.050	Superprevodnost in prevodni materiali	Superconductivity and conducting materials

SIST EN 61788-22-1:2018 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61788-22-1

November 2017

ICS 17.220; 29.050

English Version

Superconductivity - Part 22-1: Superconducting electronic devices - Generic specification for sensors and detectors (IEC 61788-22-1:2017)

Supraconductivité - Partie 22-1:Composants électroniques supraconducteurs - Spécification générique pour capteurs et détecteurs
(IEC 61788-22-1:2017)

Supraleitung - Teil 22-1: Supraleitende Elektronik - Generische Spezifikationen für Sensoren und Detektoren
(IEC 61788-22-1:2017)

This European Standard was approved by CENELEC on 2017-08-31. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 61788-22-1:2017 E

European foreword

The text of document 90/388/FDIS, future edition 1 of IEC 61788-22-1, prepared by IEC/TC 90 "Superconductivity" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61788-22-1:2017.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-05-31
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-08-31

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61788-22-1:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

ISO/TS 80004-2:2015	NOTE	Harmonized as CEN ISO/TS 80004-2:2017 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60027	Series	Letter symbols to be used in electrical technology	EN 60027	Series
IEC 60050-815	-	International Electrotechnical Vocabulary - Part 815: Superconductivity	-	-
IEC 60417-DB	-	Graphical symbols for use on equipment	-	-
IEC 60617-DB	-	Graphical symbols for diagrams	-	-
ISO 1000 [1]	-	SI units and recommendations for the use of their multiples and of certain other units	-	-
ISO 7000	-	Graphical symbols for use on equipment - Registered symbols	-	-

[1] Superseded by ISO 80000-1.

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INTERNATIONAL STANDARD

Superconductivity – Part 22-1: Superconducting electronic devices – Generic specification for sensors and detectors

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SUPERCONDUCTIVITY –

**Part 22-1: Superconducting electronic devices –
Generic specification for sensors and detectors**

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61788-22-1 has been prepared by IEC technical committee 90: Superconductivity.

The text of this standard is based on the following documents:

FDIS	Report on voting
90/388/FDIS	90/391/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61788 series, published under the general title *Superconductivity*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

Superconductivity offers various possibilities for the realization of sensing and detection of a variety of measurands. Several sensors and detectors have been developed, exploiting features like superconducting energy gaps, sharp normal-superconducting transition, nonlinear I–V characteristics, superconducting coherent states, and quantization of magnetic flux. All these properties can be influenced by the interaction with electromagnetic fields, photons, ions, etc. Superconducting sensors and detectors have extremely high performance for energy resolution, time response, and low noise, most of which cannot be realized by any other phenomena.

The word "sensor" is normally used for measuring stationary or slowly changing electromagnetic fields, physical quantities such as current and temperature. On the other hand, the word "detector" is normally used for single quanta such as photons from infrared to γ-rays and individual particles. However, the boundary between "sensor" and "detector" is ambiguous. In this document, therefore, both "sensor" and "detector" are used. Additionally, a detector using a sensor is possible, for example, X-ray detector using transition edge sensor (TES) that measures temperature rise due to the deposition of measurand energy. In this document, for example, the terminology "transition edge sensor X-ray detector" is used for X-ray detection using TES.

Superconducting sensors and detectors have been applied to a variety of fields including medical diagnosis, telecommunications, mineral exploration, astronomical instruments, quantum information processing, and analytical instruments. For users, IEC standardization is necessary because there is confusing terminology, there are no graphical symbols for diagrams, and no test methods.