



NSAI
Standards

Irish Standard
I.S. EN 61788-14:2010

Superconductivity -- Part 14:
Superconducting power devices -
General requirements for characteristic
tests of current leads designed for
powering superconducting devices (IEC
61788-14:2010 (EQV))

I.S. EN 61788-14:2010

Incorporating amendments/corrigenda issued since publication:

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EUROPEAN STANDARD

EN 61788-14

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EUROPÄISCHE NORM

July 2010

ICS 29.050

English version

**Superconductivity -
Part 14: Superconducting power devices -
General requirements for characteristic tests of current leads designed
for powering superconducting devices
(IEC 61788-14:2010)**

Supraconductivité –
Partie 14 : Dispositifs de puissance
supraconducteurs -
Exigences générales concernant
les essais caractéristiques des broches
de courant conçus pour l'alimentation
des dispositifs supraconducteurs
(CEI 61788-14:2010)

Supraleitfähigkeit –
Teil 14: Supraleitende Betriebsmittel –
Allgemeine Anforderungen
an charakteristische Prüfverfahren
für Stromzuführungen für die Versorgung
supraleitender Geräte
(IEC 61788-14:2010)

This European Standard was approved by CENELEC on 2010-07-01. 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.

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 90/244/FDIS, future edition 1 of IEC 61788-14, prepared by IEC TC 90, Superconductivity, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61788-14 on 2010-07-01.

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

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) 2011-04-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2013-07-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61788-14:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

- IEC 61788-3:2006 NOTE Harmonized as EN 61788-3:2006 (not modified).
 - IEC 61788-10:2006 NOTE Harmonized as EN 61788-10:2006 (not modified).
-

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-815	2000	International Electrotechnical Vocabulary (IEV) - Part 815: Superconductivity	-	-
IEC 60071-1	-	Insulation co-ordination - Part 1: Definitions, principles and rules	EN 60071-1	-
IEC 60137	-	Insulated bushings for alternating voltages above 1 000 V	EN 60137	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SUPERCONDUCTIVITY –

**Part 14: Superconducting power devices –
General requirements for characteristic tests of current
leads designed for powering superconducting devices**

FOREWORD

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International Standard IEC 61788-14 has been prepared by IEC technical committee 90: Superconductivity.

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

FDIS	Report on voting
90/244/FDIS	90/250/RVD

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

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

A list of all parts of 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 publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

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

INTRODUCTION

Current leads are indispensable components of superconducting devices in practical uses such as MRI diagnostic equipment, NMR spectrometers, single crystal growth devices, SMES, particle accelerators such as Tevatron, HERA, RHIC and LHC, experimental test instruments for nuclear fusion reactors, such as ToreSupra, TRIAM, LHD, EAST, KSTAR, W7-X, JT-60SA and ITER, etc., and of advanced superconducting devices in the near future in practical uses such as magnetic levitated trains, superconducting fault current limiters, superconducting transformers, etc.

The major functions of current leads are to power high currents into superconducting devices and to minimize the overall heat load, including heat leakage from room temperature to cryogenic temperature and Joule heating through current leads. For this purpose, current leads are dramatically effective for lowering the overall heat load to use the high temperature superconducting component as a part of the current leads.

On the other hand, the current lead technologies applied to superconducting devices depend on each application, as well as on the manufacturer's experience and accumulated know-how. Due to their use as component parts, it is difficult to judge the compatibility, flexibility between devices, convenience, overall economical efficiency, etc of current leads. This may impede progress in the growth and development of superconducting equipment technology and its application to commercial activities, which is a cause for concern.

Consequently, it is judged industrially effective to clarify the definition of current leads to be applied to superconducting devices and to standardize the common characteristic test methods in a series of general rules.

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