SLOVENSKI STANDARD

SIST EN 61192-1:2003

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Workmanship requirements for soldered electronic assemblies - Part 1: General

ICS 31.190

Referenčna številka
SIST EN 61192-1:2003(en)

EUROPEAN STANDARD **EN 61192-1**

NORME EUROPÉENNE

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ICS 31.190

English version

Workmanship requirements for soldered electronic assemblies
Part 1: General
(IEC 61192-1:2003)

Exigences relatives à la qualité d'exécution des assemblages électroniques brasés
Partie 1: Généralités
(CEI 61192-1:2003)

Anforderungen an die Ausführungsqualität von Lötbaugruppen
Teil 1: Allgemeines
(IEC 61192-1:2003)

This European Standard was approved by CENELEC on 2003-03-01. 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.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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

Ref. No. EN 61192-1:2003 E

Foreword

The text of document 91/345/FDIS, future edition 1 of IEC 61192-1, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61192-1 on 2003-03-01.

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) 2003-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-03-01

This standard should be used in conjunction with the following parts of EN 61192, under the general title *Workmanship requirements for soldered electronic assemblies*:

Part 2: Surface-mount assemblies
Part 3: Through-hole mount assemblies
Part 4: Terminal assemblies

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61192-1:2003 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 60068-2-58	NOTE	Harmonized as EN 60068-2-58:1999 (not modified).
IEC 60326	NOTE	Related but not equivalent to EN 123600:1996, EN 123700:1996 and EN 123800:1996.
IEC 61188-5-1	NOTE	Harmonized as EN 61188-5-1:2002 (not modified).
IEC 61189-2	NOTE	Harmonized as EN 61189-2:1997 (not modified).
IEC 61190-1-2	NOTE	Harmonized as EN 61190-1-2:2002 (not modified).
IEC 61190-1-3	NOTE	Harmonized as EN 61190-1-3:2002 (not modified).
ISO 9001	NOTE	Harmonized as EN ISO 9001:2000 (not modified).
ISO 9453	NOTE	Harmonized as EN ISO 29453:1993 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding 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 (including amendments).

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

Publication	Year	Title	EN/HD	Year
IEC 60194	- [1)]	Printed board design, manufacture and assembly - Terms and definitions	-	-
IEC 61188-1-1	- [1)]	Printed boards and printed board assemblies - Design and use Part 1-1: Generic requirements - Flatness considerations for electronic assemblies	EN 61188-1-1	1997 [2)]
IEC 61188-5-2	- [3)]	Part 5-2: Attachment (land/joint) considerations - Discrete components	-	-
IEC 61189-3	- [1)]	Test methods for electrical materials, interconnection structures and assemblies Part 3: Test methods for interconnection structures (printed boards)	EN 61189-3	1997 [2)]
IEC 61190-1-1	- [1)]	Attachment materials for electronic assembly Part 1-1: Requirements for soldering fluxes for high-quality interconnections in electronics assembly	EN 61190-1-1	2002 [2)]
IEC 61191-1	- [1)]	Printed board assemblies Part 1: Generic specification - Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies	EN 61191-1	1998 [2)]

1) Undated reference.

2) Valid edition at date of issue.

3) To be published.

Publication	Year	Title	EN/HD	Year
IEC 61191-2	- [1]	Part 2: Sectional specification - Requirements for surface mount soldered assemblies	EN 61191-2	1998 [2]
IEC 61191-3	- [1]	Part 3: Sectional specification - Requirements for through-hole mount soldered assemblies	EN 61191-3	1998 [2]
IEC 61191-4	- [1]	Part 4: Sectional specification - Requirements for terminal soldered assemblies	EN 61191-4	1998 [2]
IEC 61192-2	- [3]	Workmanship requirements for soldered electronic assemblies Part 2: Surface-mount assemblies	-	-
IEC 61192-3	- [1]	Part 3: Through-hole mount assemblies	EN 61192-3	2003 [2]
IEC 61192-4	- [1]	Part 4: Terminal assemblies	EN 61192-4	2003 [2]
IEC 61249-8	Series	Materials for interconnection structures Part 8: Sectional specification set for non-conductive films and coatings	EN 61249-8	Series
IEC 61340-5-1	- [1]	Electrostatics Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements	EN 61340-5-1 + corr. April 2001	2001 [2]
IEC 61340-5-2	- [1]	Part 5-2: Protection of electronic devices from electrostatic phenomena - User guide	EN 61340-5-2 + corr. August 2001	2001 [2]
IEC 61760-2	- [1]	Surface mounting technology Part 2: Transportation and storage conditions of surface mounting devices (SMD) - Application guide	EN 61760-2	1998 [2]
ISO 9002	- [1]	Quality systems - Model for quality assurance in production, installation and servicing	EN ISO 9002	1994 [2]

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61192-1

Première édition
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2003-02

Exigences relatives à la qualité d'exécution des assemblages électroniques brasés –

Partie 1: Généralités

Workmanship requirements for soldered electronic assemblies –

Part 1: General

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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WORKMANSHIP REQUIREMENTS FOR SOLDERED ELECTRONIC ASSEMBLIES –

Part 1: General

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 co-operation 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 express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, 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.

5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61192-1 has been prepared by IEC technical committee 91: Electronics assembly technology.

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

FDIS	Report on voting
91/345/FDIS	91/367/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.

This standard should be used in conjunction with the following parts of IEC 61192, under the general title *Workmanship requirements for soldered electronic assemblies*:

Part 2: Surface-mount assemblies

Part 3: Through-hole mount assemblies

Part 4: Terminal assemblies

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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

INTRODUCTION

This part of IEC 61192 covers general workmanship requirements for the manufacture of soldered electronic assemblies that can enable the requirements of IEC 61191-1 and its related sectional standards to be met.

The requirements for surface-mount assemblies as well as through-hole mount assemblies and terminal assemblies are given in IEC 61192-2, IEC 61192-3 and IEC 61192-4, which are separate but related standards.

WORKMANSHIP REQUIREMENTS FOR SOLDERED ELECTRONIC ASSEMBLIES –

Part 1: General

1 Scope and object

This part of IEC 61192 specifies general requirements for workmanship in soldered electronic assemblies on printed boards and on similar laminates attached to the surface(s) of organic substrates.

This standard does not include hybrid circuits in which the conductor metallization is deposited directly on a ceramic substrate or onto a ceramic-coated metal substrate. It includes multichip modules assembled on organic substrates but excludes them when they are assembled on inorganic substrate surfaces such as ceramic or silicon.

The purpose of this standards is:

a) to define requirements and guidelines for good workmanship and practice in the preparation, soldering, inspection and testing of electronic and electrical assemblies;

b) to enable achievement of high yields and high product quality through process control in production:

c) to enable the suppliers and users of electronic assemblies to specify good manufacturing practice as part of a contract.

2 Normative references

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.

IEC 60194, *Printed board design, manufacture and assembly – Terms and definitions*

IEC 61188-1-1, *Printed boards and printed board assemblies – Design and use – Part 1-1: Generic requirements – Flatness considerations for electronic assemblies*

IEC 61188-5-2, *Printed boards and printed board assemblies – Design and use – Part 5-2: Attachment (land/joint) considerations – Discrete components* [1)]

IEC 61189-3, *Test methods for electrical materials, interconnection structures and assemblies – Part 3: Test methods for interconnection structures (printed boards)*

IEC 61190-1-1, *Attachment materials for electronic assembly – Part 1-1: Requirements for soldering fluxes for high-quality interconnections in electronics assembly*

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1) To be published.

IEC 61191-1, *Printed board assemblies – Part 1: Generic specification – Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies*

IEC 61191-2, *Printed board assemblies – Part 2: Sectional specification – Requirements for surface mount soldered assemblies*

IEC 61191-3, *Printed board assemblies – Part 3: Sectional specification – Requirements for through-hole soldered assemblies*

IEC 61191-4, *Printed board assemblies – Part 4: Sectional specification – Requirements for terminal soldered assemblies*

IEC 61192-2, *Workmanship requirements for soldered electronic assemblies – Part 2: Surface-mount assemblies*

IEC 61192-3, *Workmanship requirements for soldered electronic assemblies – Part 3: Through-hole mount assemblies*

IEC 61192-4, *Workmanship requirements for soldered electronic assemblies – Part 4: Terminal assemblies*

IEC 61249-8 *(all parts), Materials for interconnection structures – Part 8: Sectional specification set for non-conductive films and coatings*

IEC 61340-5-1, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

IEC 61340-5-2, *Electrostatics – Part 5-2: Protection of electronic devices from electrostatic phenomena – User guide*

IEC 61760-2, *Surface mounting technology – Part 2: Transportation and storage conditions of surface mounting devices (SMD) – Application guide*

ISO 9002, *Quality systems – Model for quality assurance in production, installation and servicing*

3 Terms and definitions

For the purposes of this part of IEC 61192, the definitions in IEC 60194 and the following apply.

3.1
new design
design that has not previously been assembled by the manufacturer

4 General requirements

4.1 Order of precedence

Unless the user specifies compliance with all of the requirements (or with specific items) in this standard, for example, as part of a supply contract, the relevant mandatory clauses and subclauses herein may be interpreted as guidance.