SLOVENSKI STANDARD

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Workmanship requirements for soldered electronic assemblies - Part 3: Through-hole mount assemblies

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EUROPEAN STANDARD **EN 61192-3**

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English version

Workmanship requirements for soldered electronic assemblies Part 3: Through-hole mount assemblies

(IEC 61192-3:2002)

Exigences relatives à la qualité d'exécution des assemblages électroniques brasés
Partie 3: Assemblage au moyen de trous transversants
(CEI 61192-3:2002)

Anforderungen an die Ausführungsqualität von Lötbaugruppen
Teil 3: Baugruppen in Durchsteckmontage
(IEC 61192-3:2002)

This European Standard was approved by CENELEC on 2003-02-01. 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 61192-3:2003 E

Foreword

The text of document 91/334/FDIS, future edition 1 of IEC 61192-3, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61192-3 on 2003-02-01.

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)	2003-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2006-02-01

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 1: General
Part 2: Surface-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 61192-3:2002 was approved by CENELEC as a European Standard without any modification.

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 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)]
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 61192-1	- [1)]	Workmanship requirements for soldered electronic assemblies Part 1: General	EN 61192-1	- [3)]
IEC 61192-2	- [1)]	Part 2: Surface-mount assemblies	EN 61192-2	- [3)]
IEC 61192-4	- [1)]	Part 4: Terminal assemblies	EN 61192-4	- [3)]

1) Undated reference.

2) Valid edition at date of issue.

3) To be published.

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

Partie 3: Assemblage au moyen de trous traversants

Workmanship requirements for soldered electronic assemblies –

Part 3: Through-hole mount assemblies

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Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

WORKMANSHIP REQUIREMENTS FOR SOLDERED ELECTRONIC ASSEMBLIES –

Part 3: Through-hole mount assemblies

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 61192-3 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
91/334/FDIS	91/351/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 1: General

Part 2: Surface-mount assemblies

Part 4: Terminal assemblies

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

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

INTRODUCTION

This part of IEC 61192, combined with IEC 61192-1, is used to meet the end-product requirements defined in IEC 61191-1 and IEC 61191-3.

This standard may be used to enable the suppliers and users of through-hole electronic assemblies to specify good manufacturing practices as part of a contract.

The respective requirements and guidelines for surface-mount and terminal assemblies are included in separate but related standard.

WORKMANSHIP REQUIREMENTS FOR SOLDERED ELECTRONIC ASSEMBLIES –

Part 3: Through-hole mount assemblies

1 Scope

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

It applies to assemblies that are totally through-hole or mixed assemblies that include surface-mounting or other related assembly technologies, for example, terminals, wires.

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 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 mount soldered assemblies*

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

IEC 61192-1, *Workmanship requirements for soldered electronic assemblies – Part 1: General*

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

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

3 Terms and definitions

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

4 General requirements

The requirements of IEC 61192-1 are mandatory for this standard.

4.1 Classification

The classification of assemblies is divided into three levels, that is, levels A, B, and C. Definitions of the classification categories and the status of product for each level are given in IEC 61192-1. In general, status is divided into three workmanship conditions, as follows:

a) target;

b) acceptable;

c) nonconforming.

4.2 Conflict

Accept and/or reject decisions shall be based on applicable documentation such as contracts, drawings, specifications and reference documents.

In the event of conflict, the following order of precedence shall apply:

a) procurement documents as agreed between user and supplier;

b) master assembly drawing;

c) IEC 61191-1 and IEC 61192-1;

d) this standard;

e) other documents to the extent that they are specified in this standard.

4.3 Inspection techniques

For visual inspection, individual specifications may call for magnification aids for examining printed-board assemblies.

Binocular vision should be used, and may be accomplished with a single large field magnifier. Magnification of at least 3× shall be used for conventional inserted printed-board assemblies. Magnification higher than 10× will not be found practicable for routine high speed scanning inspection, but will be needed sometimes for detailed diagnosis or referee purposes.

4.4 Interpretation of requirements

Unless otherwise specified by the user , the word "shall" signifies that the requirement is mandatory. Deviation from any "shall" requirement requires written acceptance by the user, for example, via assembly drawing, specification or contract provision.

The words "should" and "may" reflect recommendations and guidance, respectively, and are used whenever it is intended to express non-mandatory provisions.