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SIST EN 61191-4:2001

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61191-4**

October 1998

ICS 31.240

English version

**Printed board assemblies  
Part 4: Sectional specification  
Requirements for terminal soldered assemblies  
(IEC 61191-4:1998)**

Ensembles de cartes imprimées  
Partie 4: Spécification intermédiaire  
Exigences relatives à l'assemblage de  
bornes par brasage  
(CEI 61191-4:1998)

Elektronikaufbauten auf Leiterplatten  
Teil 4: Rahmenspezifikation  
Anforderungen an gelötete Baugruppen  
mit Lötstützpunkten  
(IEC 61191-4:1998)

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This European Standard was approved by CENELEC on 1998-10-01. 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, 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 document 91/135/FDIS, future edition 1 of IEC 61191-4, prepared by IEC TC 91, Surface mounting technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61191-4 on 1998-10-01.

This EN 61191-4 is to be used in conjunction with EN 61191-1:1998.

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) 1999-07-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2001-07-01

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

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The text of the International Standard IEC 61191-4:1998 was approved by CENELEC as a European Standard without any modification.  
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**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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61191-1	1998	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

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**NORME  
INTERNATIONALE  
INTERNATIONAL  
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**61191-4**

Première édition  
First edition  
1998-08

**Ensembles de cartes imprimées –**

**Partie 4:  
Spécification intermédiaire –  
Exigences relatives à l'assemblage de bornes  
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**Part 4:**

**Sectional specification –  
Requirements for terminal soldered assemblies**

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International Electrotechnical Commission  
Telefax: +41 22 919 0300

3, rue de Varembé Geneva, Switzerland  
e-mail: [inmail@iec.ch](mailto:inmail@iec.ch) IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

**Q**

*Pour prix, voir catalogue en vigueur  
For price, see current catalogue*

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## PRINTED BOARD ASSEMBLIES –

Part 4: Sectional specification –  
Requirements for terminal soldered 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 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 61191-4 has been prepared by IEC technical committee 91: Surface mounting technology.

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

FDIS	Report on voting
91/135/FDIS	91/147/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.

IEC 61191 consists of the following parts, under the general title *Printed board assemblies*:

*Part 1: Generic specification – Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies*

*Part 2: Sectional specification – Requirements for surface mount soldered assemblies*

*Part 3: Sectional specification – Requirements for through-hole mount soldered assemblies*

*Part 4: Sectional specification – Requirements for terminal soldered assemblies*

This standard is to be read in conjunction with IEC 61191-1.

## PRINTED BOARD ASSEMBLIES –

### Part 4: Sectional specification – Requirements for terminal soldered assemblies

#### 1 General

##### 1.1 Scope

This standard prescribes requirements for terminal soldered assemblies. The requirements pertain to those assemblies that are totally terminal/wire interconnecting structures or to the terminal/wire portions of those assemblies that include other related technologies (i.e. surface mounting, through-hole mounting, chip mounting).

##### 1.2 Classification

This specification recognizes that electrical and electronic assemblies are subject to classifications by intended end-item use. Three general end-product levels have been established to reflect differences in producibility, complexity, functional performance requirements, and verification (inspection/test) frequency. These are the following:

Level A: General electronic products

Level B: Dedicated service electronic products

Level C: High-performance electronic products

The user of the assemblies is responsible for determining the level to which his product belongs. The contract shall specify the level required and indicate any exceptions or additional requirements to the parameters, where appropriate. It should be recognized that there may be overlaps of equipment between level where appropriate (see clause 4 in IEC 61191-1).

#### 2 Normative references

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of IEC 61191. At the time of publication, the edition indicated was valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61191 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 61191-1:1998, *Printed board assemblies – Part 1: Generic specification – Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies*

#### 3 General requirements

Requirements of IEC 61191-1 are a mandatory part of this specification.

## 4 General terminal and part mounting requirements

The following requirements are applicable to part mounting in all types of assemblies.

### 4.1 Wire and cable preparation

Sufficient insulation cover shall be stripped from the wire or leads to provide for insulation clearances as specified. Chemical stripping agents shall be used for solid wire only and shall be neutralized or removed prior to soldering. In stripping insulation, care should be taken to avoid nicking or otherwise damaging the wire or the remaining insulation. For level A or B assemblies, the number of nicked or broken strands in a single wire shall not exceed the limits given in table 1. For wires used at a potential of 6 kV or greater, or for level C assemblies, there shall be no broken strands. The number of nicked strands shall be in accordance with table 1. Insulation discolouration resulting from thermal stripping is permissible.

Table 1 – Nicked or broken strand limits

Number of strands	Maximum allowable nicked or broken strands	
	Level A and B	Level C
Less than 7	0	0
7 – 15	1	0
16 – 18	2	0
19 – 25	3	0
26 – 36	4	0
37 – 40	5	0
41 or more	6	0

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#### 4.1.1 Tinning of stranded wire

Portions of stranded wire which will be soldered shall be tinned prior to mounting. The solder shall penetrate to the inner strands of the wire and shall wet the tinned portion of the wire. Wicking of solder under the insulation shall be minimized.

### 4.2 Terminal installation

The detailed requirements for installation of solder terminals are defined in the following paragraphs.

#### 4.2.1 Terminal mounting (mechanical)

Terminals not connected to printed wiring or ground planes shall be of the rolled flange configuration (see figure 1). A printed foil land may be used as a seating surface for a rolled flange provided that the land is isolated and not connected to active printed wiring or ground plane.