BRITISH STANDARD

BS EN
147100:1995

Harmonized system of quality assessment for electronic components

Sectional specification: Relay sockets of assessed quality

The European Standard EN 147100:1993 has the status of a British Standard

Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Standard was prepared, comprises the national committees of the following countries:

Austria	Italy
Belgium	Luxembourg
Denmark	Netherlands
Finland	Norway
France	Portugal
Germany	Spain
Greece	Sweden
Iceland	Switzerland
Ireland	United Kingdom

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 January 1995

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Contents

	Page
Cooperating organizations	Inside front cover
National foreword	ii
Foreword	2
Text of EN 147100	3
National annex NA (informative) Committees responsible	Inside back cover
National annex NB (informative) Cross-references	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Electrotechnical Sector Board and is the English language version of EN 147100:1993 *Sectional specification: Relay sockets of assessed quality,* published by the European Committee for Electrotechnical Standardization (CENELEC) Electronic Components Committee (CECC).

The foreword of EN 147100 makes reference to the "date of withdrawal" of the conflicting national standard. In this case there is no existing conflicting national standard.

The British Standard which implements the CECC Rules of Procedure is BS 9000-2:1991 *General requirements for a system for electronic components of assessed quality — Part 2. Specification for the national implementation of the CECC system*.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 147100

December 1993

UDC

Descriptors: Quality, electronic components, sockets

English version

Sectional specification: Relay sockets of assessed quality

Spécification intermédiaire:
Supports pour relais sous assurance de la qualité

Rahmenspezifikation:
Gütebestätigte Relaisfassungen

This European Standard was the approved by the CENELEC Electronic Components Committee (CECC) on 10 August 1992. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. The membership of the CECC is identical, with the exception of the national electrotechnical committees of Greece, Iceland and Luxembourg.

CECC

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 CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the granting of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This specification was prepared by CECC WG 16 Relays.

The text of the draft based on document CECC (Secretariat)2781 was submitted to the formal vote; together with the voting report, circulated as document CECC(Secretariat)3141, it was approved by CECC as EN 147100 on 10 August 1992.

The following dates were fixed:

- latest date of announcement of the EN at national level (doa) 1993-02-11
- latest date of publication of an identical national standard (dop) 1993-08-11
- latest date of declaration of national standards obsolescence 1993-08-11
- latest date of withdrawal of conflicting national standards (dow) 2003-02-11

Contents

		Page
Foreword		2
1	Scope	3
2	General	3
2.1	Related documents	3
3	Quality assessment procedures	3
3.1	Primary stage of manufacture	3
3.2	Structurally similar sockets	3
3.3	Qualification approval test	3
3.4	Quality conformance inspection	3
3.5	Test schedule	3
3.6	Order of tests	3
4	Writing of blank detail and detail specifications	4
5	Marking	4
5.1	Socket	4
5.2	Package	4
Table 1 — Tests for quality conformance inspection		5
Table 2 — Tests for qualification approval		7

1 Scope

This sectional specification applies to relay sockets of assessed quality. It selects from the generic specification EN 147000:1993 and other sources the appropriate methods of test to be used in detail specifications derived from this specification, and contains basic test schedules to be used in the preparation of such specifications.

2 General

2.1 Related documents

EN 147000:1993	*Generic specification: Relay sockets*
CECC 00114-II (1992)	*Quality assessment procedures — Part II: Qualification approval of electronic components*
IEC 62 (1992)	*Marking codes for resistors and capacitors*
IEC 255-1-00 (1975)	*All-or-nothing electrical relays*
IEC 410 (1973)	*Sampling plans and procedures for inspection by attributes*

3 Quality assessment procedures

3.1 Primary stage of manufacture

The primary stage of manufacture is the molding of insulation body as well as assembly of parts other than contact and removable hardware.

3.2 Structurally similar sockets

Sockets are considered structurally similar if having no other differences in design than in:

1) Insulating material

2) Type, number and material of contacts

3) Rated current of continuous service

4) Mounting and terminal variants within limits prescribed in the detail specifications

3.3 Qualification approval tests

Qualification approval tests shall include all the tests prescribed in the detail specification, and shall be performed by a schedule specifically prescribed in the detail specification (§ 1.4, method 1, of CECC 00114-II).

As a general rule, a minimum of five specimens are required for each group of test. Samples submitted to non-destructive tests may be used for subsequent destructive tests.

3.4 Quality conformance inspection

3.4.1 *Formation of inspection lots*

Inspection lots submitted to group A and B acceptance tests, shall be formed in accordance with § 3 of CECC 00114-II and with the sampling plans and procedures given in IEC 410, except where production is too infrequent or too small for sampling plans to apply; in these cases inspection shall be 100 %.

When sampling is carried out in accordance with IEC 410, the percent defective concept only shall be used. Stratified or representative sampling shall always be used to include all production lines and structurally similar sockets in proportion to their respective quantities in the lot.

3.4.2 *Periodic inspection*

Fixed samples for group C inspection shall be taken from a lot (or lots) which have passed group A inspection during, or at the end of, the specified reference period.

3.5 Test schedule

3.5.1 *Test sequence*

A test sequence shall consist of all tests listed in the detail specification in prescribed order.

Where appropriate, the reference numbers of the tests are those of EN 147000:1993 *Generic specification*. Additional testing may be called for by the detail specification.

3.5.2 *Group A and B*

The Inspection Level (IL) notation applies for all tests in one sub-group.

Any given IL and/or AQL notations shall be interpreted such that the number of defectives allowable for acceptance is applicable to each test within a sub-group separately.

3.5.3 *Group C*

The blank detail specification shall prescribe for each sub-group:

1) Periodicity of each sub-group. If the same periodicity is applicable to all sub-groups, it shall be given at the beginning of the group test details.

2) The minimum sample size for each test (or group of tests).

3) The permitted number of defective samples.

3.6 Order of tests

3.6.1 Quality conformance inspection is divided into two parts: that carried out lot-by-lot on which the release of the individual lots is based, and that carried out on a periodic basis which contains the time-consuming and more expensive tests.

According to § 2.3 of CECC 00114-II, A and B groups contain lot-by-lot tests, while periodic tests required for the maintenance of qualification approval are contained in group C.

3.6.2 When several tests are subsequently to be carried out on any one specimen or number of specimens, the following order shall apply, unless otherwise prescribed in the detail specification.

1) Group A: tests shall always precede any other non destructive (ND) or destructive (D) tests.

2) ND tests shall be conducted in a suitable sequence provided that the effects of the preceding tests are not considered liable to invalidate the results of the later tests.

3) Destructive tests may be preceded by one or more ND tests, provided that the effects of the preceding tests are not considered liable to invalidate the results of the later tests.

4 Writing of blank detail and detail specifications

4.1 Blank detail specifications shall conform with the test schedules given in Table 1 of this specification and the related explanations.

4.2 Blank detail specifications shall give the following information or call for its inclusion into the detail specification:

1) Identification of the detail specification

2) Identification of the socket and information on its applications

Identification shall be provided by such properties as reference to one relay, size and number of contacts, all other information necessary for identification.

3) Outline drawing of the socket and key dimensions

Variants, such as for terminations, may be given in an appendix to the detail specification.

4) Reference data

A limited number of values are required on the front page, so as to describe the overall performance of the socket. Full information in conformance with IEC 255-1-00 shall be added on one of the subsequent pages. Rated values should preferably be those listed in IEC 255-1-00 where applicable. Where tests refer to rated values, they shall be indicated with each test. Where tests are to be performed at other than rated values, the test values shall be indicated and clearly distinguished from the rated values.

5) Related documents

Reference shall be made to EN 147000:1993 and this sectional specification. When reference to further documents is necessary, such documents shall be listed with their full titles, year of edition and, unless common knowledge, the source from which they can be obtained.

6) Level of assessment

Table 1 of this specification contains one test schedule.

7) Periodicity of tests for group C

8) Formation of inspection lots, if predictable in the sense of **3.4.1**

9) Order of tests, if deviating from **3.6**

10) General test conditions, if deviating from sub-clause **5.5** of EN 147000:1993

11) Qualification approval test schedule

12) Quality conformance test schedule

Note to items 11 and 12:

For each group of tests, the final measurements specified in each of them shall be summed up and stated at the end of the sub-group.

13) Specification of inspection level numbers (groups A and B) and sample sizes (group C)

14) Specification of AQL-numbers (groups A and B) and permitted number of defectives (group C)

15) Marking of package and/or sockets beyond that listed in this specification, if necessary

16) Ordering information.

5 Marking

Sockets and their package supplied in accordance with detail specifications covered by this specification, shall be marked as follows (minimum information):

5.1 Socket

— Manufacturer's name, logo or trade mark

— Socket type and variant code

— Coded date of manufacture, in accordance with IEC 62

— CECC logo.

5.2 Package

— Manufacturer's name, logo or trade mark

— Detail specification reference

— Socket type and variant code

— Code date of manufacture, in accordance with IEC 62

— Quantity.

Table 1 — Tests for quality conformance inspection

Test Group A

Sub-group A1

Test No.	Test conditions according to sub-clauses of EN 147000:1993	Remarks
1	**5.6.4** Visual inspection	Items 2 to 4
2	**5.6.4** Marking	Item 1
3	**5.9** Mounting and fixture	
4	**5.8** Insertion and withdrawal force	
5	**5.11** Contact retention into insulator body	
6	**5.10** Retention force of the socket contact	
7	**5.14** Dielectric strength test	All terminals defined in **5.14.2**
8	**5.15** Insulation resistance test	

Sub-group A2

9	**5.7** Weighing	
10	**5.6.1** Dimensions	

Test Group B

Sub-group B1

11	**5.13** Wiring of crimping contacts (D)	
12	**5.23** Soldering	
13	**5.12** Replacement of removable contacts (D)	
14	**5.16** Contact circuit resistance	

Table 1 — Tests for quality conformance inspection

Test Group C

Sub-group C1 *12 months*

Test No.	Test conditions according to sub-clauses of EN 147000:1993	Remarks
15	**5.28** Mechanical endurance (D)	

Sub-group C2 *12 months*

16	**5.20** Climatic sequence	
17	**5.22** Salt spray (D)	
18	**5.17** Shock	
19	**5.19** Vibration (D)	
20	**5.18** Bump	
21	Final measurements	

Sub-group C3 *24 months*

22	**5.24** Resistance to cleaning solvents	

Table 2 — Tests for qualification approval

Sample size: 20 + 3

Variants of samples: Test group 1 shall apply to all possible variants

Group 0 = all samples

Test	Test conditions and requirements according to Table 1				No. of samples	Allowed defectives
	Test as per EN 147000	Test sequence	Test No.	Sub-group		
Visual inspection	**5.6.4**		1	A1	all	
Marking	**5.6.4**		2	A1	all	
Weighing	**5.7**		9	A2	5	
Dimensions	**5.6.1**		10	A2	5	
Mounting and fixture	**5.9**		3	A1	5	
Retention force of the socket contact	**5.10**		6	A1	all	
Contact retention into insulator body	**5.11**	1	5	A1	all	
Insertion and withdrawal force	**5.8**		4	A1	all	
Dielectric strength test	**5.14**		7	A1	all	
Insulation resistance test	**5.15**		8	A1	all	
Contact circuit resistance	**5.16**		14	B1	all	
Group 1 = 6 + 1 samples						
Replacement of removable contacts (D)	**5.12**	1-5	13	B1		
Wiring of crimping contacts (D)	**5.13**		11	B1		
Soldering	**5.23**		12	B1	6	
Shock	**5.17**		18	C2	3	1
Bump	**5.18**	1-4-5	20	C2	3	
Vibration (D)	**5.19**	1-4-5	19	C2	3	
Group 2 = 8 + 1 samples						
Climatic sequence	**5.20**	1-8-14	16	C2	2	
Salt spray (D)	**5.22**	1-8	17	C2	2	
Resistance to cleaning solvents	**5.24**	1-10-4-13-8	21	C3	2	1
Fluid contamination	**5.25**	1-10-4-13-7-8			2	
Group 3 = 6 + 1 samples						
Rapid change of temperature	**5.21**	1-14			2	
Flammability test (D)	**5.26**				1	
Thermal endurance	**5.27**	8-14			1	1
Mechanical endurance (D)	**5.28**	1-6-4-14	15	C1	2	

blank

National annex NA (informative)
Committees responsible

The United Kingdom participation in the preparation of this European Standard was entrusted by the Electrotechnical Sector Board to Technical Committee ECL/1, upon which the following bodies were represented:

Federation of the Electronics Industry

Ministry of Defence

National Supervising Inspectorate (BSI Quality Assurance)

National annex NB (informative)
Cross-references

Publication referred to	Corresponding British Standard
EN 147000:1993	BS EN 147000:1995 *Harmonized system of quality assessment. Generic specification: Sockets for use with electrical relays*
CECC 00114-II:1992	BS CECC 00114 *Rule of Procedure 14. Quality assessment procedures* Part 2:1993 *Qualification approval of electronic components*
IEC 62	BS EN 60062:1994 *Marking codes for resistors and capacitors*
IEC 255-1-00:1975	BS 5992 *Electrical relays* Part 2:1980 *Specification for all-or-nothing electrical relays*

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