
Sectional Specification: Electromechanical all-or-nothing heavy load relays of assessed quality (rated from 5 A and above)

Sectional Specification: Electromechanical all-or-nothing heavy load relays of assessed quality (rated from 5A and above)

Rahmenspezifikation: Gütebestätigte elektromechanische Schaltrelais hoher Belastbarkeit (für Stromstärken ab 5 A)

Spécification intermédiaire: Relais électromécaniques de tout-ou-rien soumis au régime d'assurance de la qualité, haute limite de charge (intensité du courant à partir de 5 A)

<https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002>

Ta slovenski standard je istoveten z: EN 116300:1993

ICS:

29.120.70 Releji Relays

SIST EN 116300:2002 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 116300:2002

<https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 116300

August 1993

UDC

Descriptors: Quality, electronic components, relays

English version

Sectional Specification:
Electromechanical All-Or-Nothing Heavy Load Relays of
Assessed Quality
(Rated from 5 A and above)

Spécification intermédiaire:

Relais électromécaniques de tout-ou-rien
soumis au régime d'assurance de la qualité,
haute limite de charge (intensité du courant à
partir de 5 A)

Rahmenspezifikation:

Gütebestätigte elektromechanische
Schalt-relais hoher Belastbarkeit (für
Stromstärken ab 5 A)

(standards.iteh.ai)

SIST EN 116300:2002

This European Standard was approved by 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 General Secretariat of the CECC 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 CECC General 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

CENELEC Electronic Components Committee
Comité des Composants Electrotechnique de CENELEC
CENELEC Komitee für Bauelemente der Elektronik

Central Secretariat: Gartenstr. 179, D- 60596 Frankfurt am Main

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 grant 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) 2826 was submitted to the formal vote; together with the voting report, circulated as document CECC (Secretariat) 3143, it was approved by CECC as EN 116300 on 10 August 1992.

The following dates were fixed:

iTeh STANDARD PREVIEW
(standards.iteh.ai)

- latest date of announcement of the EN at national level (doa) 1993-05-01 [SIST EN 116300:2002](https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002)
- latest date of publication of an identical national standard (dop) 1993-11-01 <https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002>
- latest date of declaration of national standards obsolescence 1993-11-01
- latest date of withdrawal of conflicting national standards (dow) 2003-05-01

Contents

	Page
Foreword	2
Preface	2
Section 1 - Scope	4
Section 2 - General	4
2.1 Related documents	4
Section 3 - Quality assessment procedures	4
3.1 Primary stage of manufacture	4
3.2 Structurally similar relays	4
3.3 Subcontracting	4
3.4 Qualification approval procedures	4
3.5 Quality conformance inspection	5
3.6 Test schedule	5
3.7 Order of tests	5
Section 4 - Preparation of blank detail and detail specifications	6
Section 5 - Test schedules	8
5.1 Table 1	8
5.2 Table 2A	13
5.3 Table 2B	15
Section 6 - Marking	17
6.1 Relays	17
6.2 Package	17

iTech STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002>

Section 1 Scope

This sectional specification applies to electromechanical all-or-nothing heavy load relays of assessed quality, rated from 5 A and above.

It selects from the generic specification EN 116 000-1 : 1992 (CECC 16 000/1, 1990) and other sources the appropriate methods of tests to be used in detail specifications derived from this specification, and contains basic test schedules to be used in the preparation of such specifications. Detailed test schedules are contained in the blank detail specifications supplementary to this specification.

Section 2 General

2.1 Related documents

CECC 00 114/II (1991)	Quality Assessment Procedures. Part II: Qualification approval for electronic components
EN 116 000-1 : 1992 (originally CECC 16 000, Part I, 1990)	Generic Specification: Electromechanical all-or-nothing relays. Part I: General
IEC 410 (1973)	Sampling plans and procedures for inspection by attributes

Section 3 Quality assessment procedures

3.1 Primary stage of manufacture

The primary stage of manufacture is the assembly of the electromotive part of the relay to the electric switching part of the relay.

3.2 Structurally similar relays

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

- (1) coil wire diameter, number of windings and coil suppression devices
- (2) types and numbers of contacts
- (3) rated coil and/or contact voltage(s)
- (4) mounting and terminal variants

3.3 Subcontracting

Preliminaries for subcontracting are as in CECC 00 114 Part II § 1.2

3.4 Qualification approval procedures

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.

The number of specimens for each sub-group is to be specified in the blank detail specification. The qualification test schedule shall indicate those considered to be destructive or non-destructive tests.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 116300:2002](https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002)

<https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002>

3.5 Quality conformance inspection

3.5.1 Formation of inspection lots

Inspection lots submitted to group A acceptance tests shall be formed in accordance with section 3.1 of CECC 00 114/II and with the sampling plans and procedures given in IEC Publication 410, except where production is too infrequent or too small for sampling plans to apply; in these cases inspection shall be 100 %, or as agreed between the manufacturer, the ONS and when known, the ultimate user.

When sampling is carried out in accordance with IEC Publication 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 relays in proportion to their respective quantities in the lot. Exceptions from proportionality may become necessary and shall be stated in the detail specification. Specimens shall be as representative as possible of the production.

3.5.2 Periodic inspection

Fixed samples for group C and D inspection shall be taken from a lot (or lots) which has (have) passed group A inspection during, or at the end of the specified reference period. In both cases the inspection lot (or lots) shall not be less than the average of production lots during the reference period for each group.

3.6 Test schedule

3.6.1 Test sequence

A test sequence shall consist of all tests listed in the detail specification. Where appropriate, the reference numbers of the tests are those of EN 116 000-1 : 1992 (CECC 16 000/1, 1990) Generic Specification, Electromechanical all-or-nothing relays.

3.6.2 Group A

The Inspection Level (IL) notation applies to all tests in one sub-group. A corresponding value/range of values of the Acceptable Quality Level (AQL) shall be given in the blank detail specification, and the authority preparing detail specifications shall choose the appropriate value, which then applies to all tests in one sub-group.

Any given IL - AQL notations shall be interpreted such that the number of defectives allowable for acceptance is applicable to each test within a sub-group separately. However, the blank detail specification may prescribe this same IL for relays submitted to cumulative tests of the same sub-group.

3.6.3 Groups C and D

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

- (1) Periodicity of each sub-group.
- (2) The minimum sample size for each test (or group of tests) performed with the same relays and acceptable number of defectives.

3.7 Order of tests

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

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 blank detail specification:

- Sub-group A 0 and screening (if applicable) shall always precede any other test.
- The remaining tests shall be performed as given in the detail specification.
- Destructive (D) tests may be preceded by one or more ND or D tests, provided that the effects of the preceding tests are not considered liable to invalidate the results of the later tests.
- The order of tests in each sub-group is mandatory.

The following tests shall be carried out for screened and unscreened relays.

Assessment level	E	Y
screened/unscreened	unscreened	screened
Test groups/ sub-groups	A1 and A2	A0 Screening
		A3
		C1 to C6
		D1 and D2

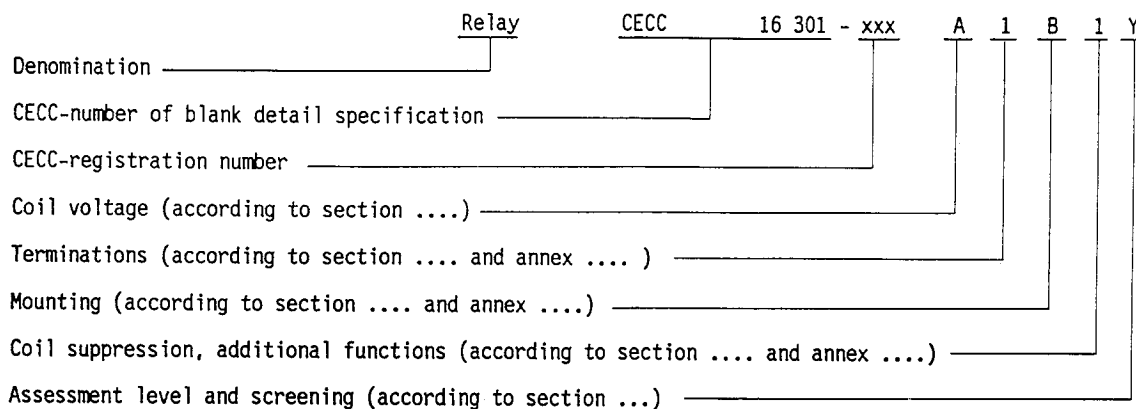
Section 4 Preparation of blank detail and detail specifications

4.1 Blank detail specifications shall conform to the test schedules given in section 5 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 relay and information on its applications.
Identification shall be provided by such properties as switching power, size, sealing, whether monostable or bistable, polarised or not, or other characteristics required for identification, contact operating range and temperature range.
- (3) Outline drawings of the relay and key dimensions. Variants, such as for terminations, may be given in an appendix to the detail specification.
- (4) Reference data of the relay
 - a) A limited number of characteristic values is required on the front page to describe the overall performance of the relay.
 - b) Full information in conformance with IEC-Publication, 255-1-00 shall be added on one of the subsequent pages. Rated values should preferably be those listed therein. 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 CECC 16 000 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 the minimum requirements for test schedules. If necessary, further tests may be added and/or more severe requirements may be applied. For denomination of assessment levels see section 3.7.
- (7) Periodicity of tests in groups C and D
- (8) Formation of inspection lots, if predictable in the sense of section 3.5.1
- (9) Order of the tests, if deviating from section 3.7
- (10) General test conditions, if deviating from section 5.5 of CECC 16 000
- (11) Tables 2A and 2B of this specification contain the minimum requirements for qualification approval test schedules. If necessary, further tests may be added and/or more severe requirements be applied.
- (12) Quality conformance test schedule
Remarks for (11) and (12): For each group of tests, the final measurements and post-test requirements specified in each of them may be summarized and stated at the end of the sub-group. It shall be stated that samples subjected to destructive tests (D) shall not be released for delivery.

- (13) Specification of IL-numbers (group A) and sample sizes (groups C and D)
 (14) Specification of AQL-numbers (group A) and acceptable number of defectives (groups C and D)
 (15) Marking of relays and/or its package beyond that listed in this specification, if necessary
 (16) Coded ordering information, for example:



- 4.3 Additional information such as curves and drawings may be given in an annex of the detail specification. Such information is not required to be verified for test purposes.
- 4.4 When preparing blank detail specifications the degree of protection against dust and water as well as the application category of the contacts shall be considered. The test schedules for lot-by-lot and periodic tests are given in section 5, table 1. In this table requirements for different application categories of contacts are layed down.

The test schedules for the qualification approval are given in tables 2A and 2B.

Table 2A is to be used for contacts with currents up to 25 A. Table 2B is applicable for contacts with currents from 25 to 1000 A.

The following blank detail specifications are proposed:

Degree of protection according to section 3.2 of EN 116 000-1 : 1992 (CECC 16 000/1, 1990)	Application category of contacts	
	CA 4 5 A to 25 A	CA 5 > 25 A to 1000 A
RT I Dust protected relays		
RT III Wash tight relays		
RT IV Sealed relays		
RT V Hermetically sealed relays	EN 116 303 : 1993	

4.5 Contact application for heavy load relays

CA 4 Relays with contacts of class 4: 30 mV to 270 V / 5 A to 25 A

CA 5 Relays with contacts of class 5: 5 to 270 V / > 25 A to 1000 A

4.6 For preparation of a detail specification the appropriate blank detail specification shall be used.

As far as necessary further tests may be added, either those from EN 116 000-1 : 1992 (CECC 16 000/1, 1990) or, if necessary, from other sources.

Section 5 Test schedules

Notes

The following notes refer to tables 1, 2A and 2B.

1. Combination of electrical and mechanical endurance is allowed if the required number of operations for one of the electrical endurance tests is at least equal to the number of operations required for mechanical endurance.
2. Abbreviations:
 - (D) Destructive test
 - (ND) Non-destructive test

Table 1. Lot-by-lot and periodic tests

Test group A 0

These tests shall be executed as final production tests.

For all cumulative tests in this group: 100 % test (individual tests), discard all rejects.

Test according to CECC EN 116 000-1 : 1992 (CECC 16 000/1, 1990)	Remarks
5.6.4 Visual inspection (ND)	
5.9 Dielectric test (ND)	
5.11 Insulation resistance (ND)	
5.8.1 Coil resistance (ND)	For d.c. relays only
5.8.3 Coil impedance (ND)	For a.c. relays only
5.8.4 Coil transient suppression (ND)	For relays with transient suppression device only
5.12 Static contact voltage drop (ND)	SIST EN 116300:2002
5.13 Functional tests (ND)	https://standards.iteh.ai/catalog/standards/sist/0b78b505-9b25-4c0b-a339-7a5c92b1c124/sist-en-116300-2002
5.14 Timing tests (ND)	
5.59 Immersion (ND)	For relays with degree of protection RT III or IV
5.20.2 Sealing (ND)	For relays with degree of protection RT V
5.20.3 Sand and dust	For relays with degree of protection RT I or RT III

Test group screening

See EN 116 000-1 : 1992 (CECC 16 000/1, 1990), section 4.13

Only for assessment level Y according to section 3.7.

This combination of tests is intended to remove unsatisfactory items, or those likely to exhibit early failure.

For all cumulative tests in this group: 100 % test (individual tests), discard all rejects.

The lot shall be rejected in case of failure rate of more than 10 % cumulative.

Test according to EN 116 000-1 : 1992 (CECC 16 000/1, 1990)	Remarks
5.28 Vibration (sinusoidal) (ND) limited duration	one cycle only
5.19 Rapid change of temperature (ND)	3 cycles
5.15.2 Dry heat (ND)	
5.15.4 Cold (ND)	
5.21 Internal moisture (ND)	Method 1 and method 2 For relays with degree of protection RT V only
Final measurements	All tests according to group A 0

Test group A (lot-by-lot inspection)

Sub-group A 1

Only for assessment level E according to section 3.7

For all cumulative tests in this sub-group IL : S 4
AQL: 4,0

Test according to EN 116 000-1 : 1992 (CECC 16 000/1, 1990)	Remarks
5.6.4 Visual inspection (ND)	

Sub-group A 2

Only for assessment level E according to section 3.7

For all cumulative tests in this sub-group IL : S 4
AQL: 1,0

Test according to EN 116 000-1 : 1992 (CECC 16 000/1, 1990)	Remarks
5.9 Dielectric test (ND)	
5.11 Insulation resistance (ND)	
5.8.1 Coil resistance (ND)	For dc-relays only
5.8.3 Coil impedance (ND)	For ac-relays only
5.8.4 Coil transient suppression (ND)	For relays with transient suppression device only
5.12 Static contact voltage drop (ND)	
5.13 Functional tests (ND)	
5.14 Timing tests (ND)	
5.59 Immersion (ND)	For relays with degree of protection RT III or RT IV
5.20.2 Sealing (ND)	For relays with degree of protection RT V
5.20.3 Sand and dust (ND)	For relays with degree of protection RT I or RT III

Sub-group A 3

For all cumulative tests in this sub-group IL : S 4
AQL: 4,0

Test according to EN 116 000-1 : 1992 (CECC 16 000/1, 1990)	Remarks
5.6.1 Dimensions (ND)	
5.7 Mass / Weight (ND)	
5.25 Solderability (ND)	Test 1, ageing method 3 For relays with solder terminals only. Solder pins have to be cleaned before delivery.