



SLOVENSKI STANDARD

SIST EN 117000:2002

01-december-2002

Generic Specification: Solid state all-or-nothing relays of assessed quality - Generic data and methods of test

Generic Specification: Solid state all-or-nothing relays of assessed quality - Generic data
and methods of test

Fachgrundspezifikation: Gütebestätigte Halbleiterrelais - Allgemeine Daten und
Prüfverfahren

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Spécification générique: Relais statiques de tout-ou-rien de qualité assurée - Généralités
et méthodes d'essai

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EUROPEAN STANDARD
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EUROPÄISCHE NORM

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Generic Specification:

**Solid state all-or-nothing relays of assessed quality.
 Generic data and methods of test**

Spécification Générique:
 Relais statiques de tout-ou-rien de
 qualité assurée.
 Généralités et méthodes d'essai

Fachgrundspezifikation
 Gütebestätigte Halbleiterrelais
 Allgemeine Daten und
 Prüfverfahren

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This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 14 October 1991. The text of this standard consists of the text of CECC 17 000 Issue 2 1990 of the corresponding CECC Specification. CENELEC members are bound to comply with 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 Electroniques du CENELEC
 CENELEC Komitee für Bauelemente der Elektronik
 General Secretariat: Gartenstr. 179, D- 6000 Frankfurt/Main 70

Systeme Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION GENERIQUE:

RELAIS STATIQUES DE TOUT-OU-RIEN
DE QUALITE ASSUREE
GENERALITES ET METHODES D'ESSAI



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Harmonized System of Quality Assessment for
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GENERIC SPECIFICATION:

SOLID STATE ALL-OR-NOTHING RELAYS
OF ASSESSED QUALITY
GENERIC DATA AND METHODS OF TEST

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

FACHGRUNDSPEZIFIKATION:

GÜTEBESTÄTIGTE HALBLEITERRELAIS
ALLGEMEINE DATEN UND
PRÜFVERFAHREN

2

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or from the National Authorized Institutions
of the participating countries listed
who can supply copies of:

- 1 The Internal Regulations of the FEN e.V.
- 2 The Rules of Procedure of the System
- 3 CECC Specifications of the FEN and National Specifications for the System
- 4 CECC 00 200: Qualified Products List (QPL)
- 5 CECC 00 300: CECC Publications and their related national documents
- 6 Other CECC Publications and publicity documents

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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 accepted by all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for **Solid state all-or-nothing relays of assessed quality. Generic data and methods of test.** It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification, the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom, and copies of it can be obtained from the addresses shown on the blue fly sheet.

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PREFACE

This specification was prepared by CECC WG 16: Relays. It is based, wherever possible, ~~on the Publications of the International Electrotechnical Commission~~ <http://standards.iteh.ai/catalog/standards/sist/07660d90-5151-49c0-afdd-5476d367a39a/sist-en-117000-2002>

The text of this specification was circulated to the CECC for voting in the document indicated below and was ratified by the President of the CECC for printing as a CECC Specification.

<u>Document</u>	<u>Voting Date</u>	<u>Report on the voting</u>
CECC (Secretariat) 2326	January 1989	CECC (Secretariat) 2574

Note:

This Issue 2 of CECC 17 000 is the first specification related to solid state relays. Issue 1 of CECC 17 000 was titled 'Mercury wetted make contact units' and has been withdrawn in connection with the revision of the specifications for reed contact units. The latter will in future be covered by the generic specification CECC 19 000. These decisions were made during the meeting of CECC WG 16 on 3rd to 5th October 1990 in Great Malvern (GB).

Issue 2 is published initially in English and German only; the French text will follow as soon as it has been prepared.

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SECTION 1 - SCOPE

This generic specification lists the test and measurement procedures which may be selected for use in detail specifications for solid state relays of assessed quality. It also specifies the quality assurance procedures to be followed.

Relays covered by this specification have d.c. control circuits and output ratings not exceeding 100 A.

Note: d.c. output devices are under consideration.

SECTION 2 - GENERAL2.1 Order of Precedence

Where any discrepancies occur for any reason, the documents shall rank in the following order of authority :-

1. The detail specification
2. The sectional specification
3. The generic specification
4. The Internal Regulations of the FEN e.V. (Association for the Promotion of Electrotechnical Standardization)
5. Any other international documents (for example IEC) to which reference is made.

The same order of precedence shall apply to equivalent national documents.

2.2 Related Documents

ISO 1000 (1973)	SI units and recommendations for the use of their multiples and of certain other units.
ISO 8601 (1988)	Data Elements and Interchange Formats
IEC 27-1 (1976)	Letter symbols to be used in electrical technology. General.
IEC 50 -	International Electrotechnical Vocabulary
IEC 68 -	Basic environmental testing procedures. The following points are referenced :
IEC 68-1 (1982)	General and guidance
*IEC 68-2-1 (1983)	Test A, Cold
*IEC 68-2-2 (1976)	Test B, Dry Heat
IEC 68-2-3 (1969)	Test Ca, Damp heat, steady state
*IEC 68-2-6 (1983)	Test Fc, Vibration (sinusoidal)
IEC 68-2-7 (1983)	Test Ga, Acceleration, steady state
*IEC 68-2-10 (1972)	Test J, Mould growth
IEC 68-2-11 (1981)	Test Ka, Salt mist
IEC 68-2-13 (1983)	Test M, Low air pressure

IEC 68-2-14 (1984)	Test N, Change of temperature
IEC 68-2-17 (1978)	Test Q, Sealing
IEC 68-2-20 (1979)	Test T, Soldering
IEC 68-2-21 (1983)	Test U, Robustness of terminations and integral mounting devices.
*IEC 68-2-27 (1983)	Test Ea, Shock
*IEC 68-2-29 (1983)	Test Eb, Bump
IEC 68-2-30 (1980)	Test Db, Damp heat cyclic (12 + 12 hour cycle)
IEC 68-2-45 (1980)	Test XA, Immersion in cleaning solvents
*Including all amendments or supplements issued to the year indicated.	
IEC 144 (1963)	Degrees of protection of enclosures for low-voltage switchgear and control gear.
IEC 147-5 (1977)	Essential ratings and characteristics of semiconductor devices, Part 5, Test methods.
IEC 748 (1984)	Letter symbols for semiconductor devices and integrated microcircuits.
IEC 255 -	Electrical relays. The following parts are referenced :
IEC 255-1-00 (1975)	All-or-nothing relays
IEC 255-5 (1977)	Insulation tests for electrical relays
IEC 410 (1973)	Sampling plans and procedures for inspection by attributes (see CECC 00 007)
IEC 443 (1974)	Stabilised supply apparatus for measurement
IEC 617 -	Graphical symbols for diagrams
IEC 695 -	Fire hazard testing The following parts are referenced :
IEC 695-2-1 (1980)	Glow wire test
IEC 695-2-2 (1980)	Needle-flame test
CECC 00 007 (1973)	Basic specification : Sampling plans and procedures for inspection by attributes.
./ (1986)	The Internal regulations of the FEN e.V.
CECC 00 107 (1977)	Rule of procedure 7: Quality assessment procedures (with amdt 1 to RP7)

CECC 00 109 (1974)	Rule of procedure 9: Certified test records
CECC 16 000 (1979)	Generic specification : Electromechanical All-or-Nothing relays
CECC 19 000 (1978)	Generic specification : Dry reed make contact units
CECC 50 000 (1980)	Generic specification : Discrete semiconductor devices.

2.3 Units, symbols and terminology

Units, graphical symbols, letter symbols and terminology shall, whenever possible, be taken from the following documents :-

ISO 1000 (1973)	SI units and recommendation for the use of their multiples and of certain other units.
IEC 27-1 (1976)	Letter symbols to be used in electrical technology, Part 1 : General
IEC 50 -	International Electrotechnical Vocabulary
IEC 748-1 (1984)	Letter symbols for semiconductor devices and integrated microcircuits.
IEC 617 (1983)	Graphical symbols for diagrams

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2.4 Preferred Values

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Preferred values shall be stated in the sectional specifications. They shall, as far as possible, adopt the relevant standard values of the IEC 255.

2.5 Marking

The sectional or detail specifications shall indicate the identification criteria and other information to be shown on the relay or packing. The letter or colour code shall be described in full or reference made to the appropriate specifications. The order of priority for marking small relays shall be specified.

The marking shall, as a minimum, consist of

- The trade mark or manufacturer's name
- Rated input and output values
- Terminal or circuit diagram
- Coded date of manufacture, in accordance with ISO 8601
- Relay type and variant code
- CECC Mark of Conformity

SECTION 3 - TERMS AND DEFINITIONS

The following paragraphs contain specific additional terminology applicable to solid state relays and shall be included in each national harmonized specification

3.1 Construction**3.1.1 Enclosure types**

Relays having one of the following types of enclosure :-

- (1) Unenclosed
- (2) Enclosed or dust protected
- (3) Encapsulated
- (4) Hermetically sealed

3.1.2 Pattern

Relays of one enclosure type having a switching capacity of up to 100 A.

3.1.3 Style

Relays of one enclosure type and pattern having, for example one of the following terminations:

- (1) Solderable
- (2) Plug-in
- (3) Screw
- (4) Push-on

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3.2 Types of Relays**3.2.1 Electrical relay (IEC 50-446)**

A device designed to produce sudden, predetermined changes in one or more electrical output circuits after the appearance of certain conditions in the electrical input circuits controlling the device.

3.2.2 Solid State Relay (SSR) (Static relay)

A relay with isolated input and output whose functions are achieved by means of electronic, electromagnetic and/or electro-optic components and without the use of moving parts.

3.2.3 Zero-voltage turn-on relay (a.c. only)

A relay with isolated input and output in which added control circuitry delays the output turn-on until a zero voltage transition of the a.c. sine wave is detected.

3.2.4 Zero-current turn-off relay (a.c. only)

A relay with isolated input and output in which added control circuitry delays the output turn-off until a zero current transition of the a.c. sine wave is detected.

3.2.5. Instantaneous turn-on relay

A relay with isolated input and output which turns on when the control circuit is energised.

3.3 General terms

3.3.1 Rated isolation voltage (IEC 255-5)

The value of voltage which conventionally designates a relay circuit and to which dielectric tests, clearances and creepage distances are referred (Normally measured between inputs and outputs, input and case output and case, and output and output when applicable).

3.3.2 Thyristor (IEV 521-04-38)

A bistable semiconductor device comprising three or more junctions which can be switched from the off-state to the on-state or vice versa.

3.3.3 Bidirectional triode thyristor (triac) (IEV 521-04-44)

A three-terminal thyristor having substantially the same switching behaviour in the first and third quadrants of the current voltage characteristics.

3.3.4 Derate

To reduce the rating of a relay due to change in operating conditions, such as reducing output current due to elevated ambient temperature.