



SLOVENSKI STANDARD
SIST EN 196500:2003

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**Sectional Specification: Membrane switches including Blank Detail Specification
EN 196501**

Sectional Specification: Membrane switches including Blank Detail Specification EN
196501

Rahmenspezifikation: Folienschalter einschließlich des Vordrucks für Bauartspezifikation
EN 196501

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Spécification intermédiaire: Claviers membranes incluant la Spécification particulière
cadre EN 196501

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 Membrane switches including Blank Detail Specification
 EN 196501

Spécification intermédiaire:

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Particulière

Cadre EN 196501

Rahmenspezifikation:

Folienschalter einschließlich des Vordrucks für
Bauartspezifikation EN 196501

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 This European Standard was approved by CENELEC Electronic Components Committee (CECC) on 30 April 1993. 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. [SIST EN 196500:2003](https://standards.iteh.ai/catalog/standards/sist/4374e319-66b2-472d-936e-051978cd20/sist-en-196500-2003)

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, W-6000 Frankfurt/Main 70

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 European Standard was prepared by CECC WG 24, 'Switches and sensors'.

The text of the draft based on document CECC 96500 Issue 1 : 1992 was submitted to the formal vote for conversion to a European Standard; together with the voting report, circulated as document CECC (Secretariat) 3329. It was approved by CECC as EN 196500 on 30 April 1993.

The following dates were fixed:

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- latest date of publication of an identical national standard* (dop) 1994-02-08
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* National Standard (excluding National implementation of IECQ Specifications)

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FOREWORD

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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 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 MEMBRANE SWITCHES. 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.

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PREFACE

This sectional specification/blank detail specification, including capability approval procedures, was prepared by CECC WG 24: Switches and sensors.

It is based, wherever possible, on the Publications of the International Electrotechnical Commission.

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

Document	Date of voting	Report on the voting
CECC (Secretariat)2132	January 1988	CECC (Secretariat)2423
CECC (Secretariat)2462	December 1989	CECC (Secretariat)2722

Note: This specification is published in English and German initially. The French text will follow as soon as it has been prepared.

This specification does not fully comply with the requirements of CECC 00 400.

SECTION 1 - GENERAL AND GUIDANCE ON DETAIL SPECIFICATIONS

1.1 General

1.1.1 Scope

This sectional specification applies to membrane switches of assessed quality. It contains detailed instructions for the preparation of detail specifications and describes the capability approval procedures for membrane switches and panels.

This sectional specification includes the blank detail specification CECC 96 501.

1.1.2 General instructions

Detail specifications (DS) for membrane switches shall be prepared by completing the following pro-forma as indicated by the guide lines given below and in accordance with CECC 96 000. The layout given shall be adhered to as closely as is practicable.

Each DS shall relate to only one type of membrane switch as defined in 2.2.3(a) of CECC 96 000 and to one assessment level but may if found convenient, cover more than one style of that type and/or number of variants within each style. For membrane switches, 'style' and 'variant' have meanings as defined below.

The style of a membrane switch of a given type is determined by the following parameters:

- current and voltage ratings
- type of substrate
- climatic category

Switches for which it is wished to claim structural similarity shall be of the same type and style, in accordance with 3.2 of CECC 96 000.

The variants within a style of membrane switch are determined, for example, by the following parameters:

- method of mounting
- no. and position of individual switches
- graphics - colour, size, type face etc.
- overall size
- sealing
- surface texture
- operating force
- terminations
- illumination
- no. of, and position and size of windows or holes for mounting other components
- tactile or non-tactile response

The DS shall contain all the necessary information to identify the particular type, style(s) and variant(s) of membrane switch which it covers. This information shall include at least the following:

- a) Ratings and characteristics.
 - 1) Ratings and characteristics shall be taken from the preferred list given in 2.3 of CECC 96 000 unless more severe values are to be prescribed
 - 2) Proof voltage shall be determined as stated in 4.3.4.1 of CECC 96 000
- b) Detailed dimensions including mounting method
- c) Mechanical operating characteristics
- d) Terminations
- e) Sealed or non-sealed
- f) Indication and/or illumination
- g) Assessment level.

1.1.3 Terminology

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The terminology used in preparing the DS shall be in accordance with 2.2 of CECC 96 000. Any further special terms which are found necessary shall be defined in the DS.

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1.2 Detailed instructions for completion of a detail specification

A completed detail specification shall consist of:

- a) a front page identifying the specification and the component;
- b) one or more pages of technical information;
- c) a test schedule.

These shall be prepared in accordance with the following instructions.

1.2.1 Front page

The front page is intended to formally identify the specification and to provide sufficient technical information for the user to identify the general features of the switch and its principal characteristics. Its layout shall be as shown on page 9. The numbers between square brackets on page 9 refer to details which shall be inserted in accordance with items [1] to [9] below:

[1] The name of the National Standards Organizations under whose authority the DS is published, followed by the manufacturer's name and address if appropriate.

[2] The CECC symbol and the number allotted to the DS by the CECC General Secretariat.

[3] The number and issue number of the CECC generic specification.

[4] If different from the CECC number, the national number of the DS, date of issue and any further information required by the national system, together with any amendment numbers.

[5] A statement of the class and sub-class (where applicable) of switch, as listed in 1.2 of CECC 96 000.

[6] Information on principal features of construction, such as provision of sealing; special mounting or termination facilities. shall be stated if the switch is suitable for printed wiring applications.

For [5] and [6] the text given in the DS shall be suitable for an entry in CECC 00 200 (QPL) and CECC 00 300 (Library List).

[7] An outline drawing with main dimensions which are of importance for interchangeability and/or reference to the appropriate national or international document for outlines. Alternatively, this drawing may be given in an annex. Dimensions shall be given in millimetres

[8] Level of quality assessment, in accordance with 3.1 below and with 3.4 of CECC 96 000.

[9] The principal ratings and characteristics of the switch. Those parameters which are not subject to lot-by-lot or periodic inspection shall be clearly identified as such.

1.2.2 Technical information

This section shall provide full technical details and performance characteristics of the switch, together with any other information required by the user. It shall be prepared by completing pages 9, 10 and 11 in accordance with the instructions given on those pages within square brackets.

1.2.3 Test schedule

(1) This section shall fully identify the schedule of tests to which the component is subjected for quality conformance inspection and for qualification approval. Two alternative assessment levels, Level D and Level R, are provided for switches and are detailed in tables 1 and 2 respectively; one of these levels shall be selected for preparation of the DS depending upon the nature of the switch and its intended application. It is not permitted to delete inspection and test requirements from those laid down by the relevant table unless these are indicated as "if applicable", but assessment levels intermediate between Levels R and D, or more severe than Level D, may be created by the introduction of additional tests and/or by tightened inspection levels. When such enhanced assessment levels are created, this shall be indicated in box [8] of page 9 by inserting "D+" or "R+" as appropriate.

(2) The pro-forma test schedules for quality conformance inspection are given in tables 1 and 2 for Levels D and R respectively. The appropriate table shall be completed with conditions of test and performance requirements as specified in 4.3 of CECC 96 000 for each test and in accordance with the instructions given in the table in square brackets.

(3) When the fixed sample size procedure is adopted for obtaining qualification approval in accordance with 3.3.3 of CECC 96 000, table 3 (Level D) or table 4 (Level R) shall be completed and used as appropriate. The conditions of test and the performance requirements shall be identical to those prescribed for quality conformance inspection in the completed table 1 or table 2.

Tables 3 and 4 are not required to be published as part of the detail specification.

(4) When it is intended to reduce the number of contact sets tested, as permitted by 4.2 of CECC 96 000, the following shall be stated in the test schedules for each relevant Sub-Group:

- total number of contact sets to be tested (minimum permitted = 25 %).

(5) When it is intended to apply tests additional to those specified by the following tables, the test methods shall be clearly detailed, either by reference to the relevant test number in 4.3 of CECC 96 000 or, where the test is not defined by CECC 96 000, by stating in full the test method to be applied.

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Recommended layout for detail specifications for switches of assessed quality

[1]	Page of	[2]
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH [3]	[4]	
OUTLINE AND DIMENSIONS (mm) First angle projection [7]		MEMBRANE SWITCH [5]
		PRINCIPAL CONSTRUCTIONAL FEATURES [6]
		ASSESSMENT LEVEL(S) [8]
PRINCIPAL RATINGS AND CHARACTERISTICS [9]		
Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200 Qualified Products List.		

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1.2.4 Basic information

(1) General

A statement of the principal usage features of the device; for example panel mounted, multiple station.

(2) Range and variants available

To include such details as contact arrangements, illumination and terminations; for example operating force, non-tactile, sealed.

1.2.5 Ratings and characteristics

Additional parameters may be stated where relevant. Values for all parameters shall be selected as prescribed in 2.3 of CECC 96 000. Ratings and characteristics are required to be stated only if called up by the test schedule for the relevant assessment level.

(1) Electrical ratings

Maximum and minimum switched --- V [a.c. and/or d.c.]
voltage

Rated voltage --- V [a.c. and/or d.c.]

Maximum switched current --- A [a.c. and/or d.c.]

Maximum switched power --- VA [a.c. and/or d.c.]

Maximum carrying current --- A [a.c. and/or d.c.]

(2) Environmental ratings

Climatic category ---/---/---

Shock severity --- m/s^2 ; ---ms; --- shocks in each plane

or

Bump severity --- m/s^2 ; --- bumps; duration of each bump
6 ms

Vibration 10 Hz to --- Hz; displacement 0,75 mm;
acceleration 98 m/s^2 (10 g); duration ---

Low air pressure --- kPa (--- mbar)

Sealing --- kPa (--- mbar) [conditions to be stated
in accordance with 4.3.14 of CECC 96 000]

(3) Mechanical characteristics

Operating force	--- N (min.), --- N (max.)
Contact bounce	--- ms (max.)
Mechanical endurance	--- operations without load
Robustness of membrane tails (external conducting leads)	--- No. of times specimen shall be bent if greater than 20

(4) Electrical characteristics

Electrical endurance	--- cycles [conditions to be stated]
Maximum initial contact resistance ¹⁾	--- m Ω
Maximum final contact resistance ¹⁾	--- m Ω [conditions to be stated]
Minimum initial insulation resistance	--- M Ω [conditions to be stated]
Minimum final insulation resistance	--- M Ω [conditions to be stated]
Voltage proof	--- Vac r.m.s. [in accordance with 4.3.4 of CECC 96 000]
Capacitance	--- pF [conditions to be stated]

1.2.6 Marking information

[In accordance with 2.4 of CECC 96 000]

1) Measured between output terminals and includes resistance of tracks.