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SIST EN 196403:2001

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Blank Detail Specification: Push button switches - Assessment level Y

Blank Detail Specification: Push button switches - Assessment level Y

Vordruck für Bauartspezifikation: Drucktastenschalter - Gütebestätigungsstufe Y

Spécification particulière cadre: Interrupteurs à bouton-poussoir - Niveau d'assurance de qualité Y

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Ta slovenski standard je istoveten z: **EN 196403:1998**

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31.220.20 Stikala Switches

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EUROPEAN STANDARD

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EN 196403

March 1998

Descriptors: Quality, electronic components, switches

English version

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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

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Foreword

This European Standard was prepared by CENELEC/TC CECC/SC 23 JX, Switches and sensors.

The text of the draft based on document CECC(Secretariat)3167 was submitted to the formal vote; together with the voting report, circulated as document CECC(Secretariat)3361, it was approved as EN 196403 on 1993-06-14.

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) 1998-10-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-04-01

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

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The preparation of Detail Specifications

General instructions

Detail specifications for push-button switches shall be prepared by completing the following pro-forma as indicated by the guide lines given below and in accordance with EN 196000:1992. The layout given shall be adhered to as closely as is practicable.

Each detail specification shall relate to only one type of push-button switch as defined in 2.2.3 a) of EN 196000:1992 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 push-button switches, "style" and "variant" have meanings as defined below.

The **style** of a push-button switch of a given type is determined by the following parameters:

- current and voltage ratings
- 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 EN 196000:1992.

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

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- method of mounting, mounting hole;
- form (of actuator and of case);

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- number of contacts, contact arrangement;
- latching or momentary switch, mechanical system;
- sealing;
- operating force;
- terminations;
- illumination (with or without);
- colour (if applicable);
- number of cells and their interlocking arrangements.

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The detail specification shall contain all the necessary information to identify the particular type, style(s) and variant(s) of push-button switches 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 EN 196000:1992 unless more severe values are to be prescribed.

2) Proof voltage shall be determined as stated in 4.3.4.1 b) 3) or 4) of EN 196000:1992.

b) Detailed dimensions including mounting.

c) Number of contacts.

d) Latching or momentary switch.

e) Operating force.

f) Terminations.

g) Sealed or non-sealed.

h) Illumination.

i) Colour.

j) Assessment level.

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Terminology

The terminology used shall be in accordance with 2.2 of EN 196000:1992. The following additional definitions relate specifically to push-button switches. Any further special terms which are found necessary shall be defined in the detail specification.

1 push-button switch with momentary mechanical system, single pressure non-latching mechanical system (momentary push-button switch)

A push-button switch with a mechanical system such that a button attains a position when a force is applied and returns to its original position on the removal of the applied force. In this type the contacts follow the position of the button.

2 push-button switch with single pressure maintained mechanical system (latching push-button switch)

A push-button switch with a mechanical system such that a button attains a position when a force is applied and returns to its original position on the removal of the applied force, leaving the internal mechanism and contacts in the operated condition. Repeating the applied force on the button releases the mechanical system and contacts to their original position.

3 push-button (latching, momentary) with a locking system actuated by a key (locked push-button switch)

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A push-button switch with a locking system actuated by a key, such that the button can actuate the contacts only when the system is unlocked.

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Detailed instructions for completion of a detail specification

A completed detail specification shall be prepared in accordance with the following instructions.

a) **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 8. The numbers between [...] brackets on page 8 refer to details which shall be inserted in accordance with items [1] to [9] below:

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

[2] The CECC symbol and the number allocated by the CECC General Secretariat.

[3] The number and issue of the CECC generic and sectional specification; also national reference if different.

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

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[5] A statement of the class and sub-class (where applicable) of switch, as listed in 1.2 of EN 196000:1992.

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

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

[7] An outline drawing and 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 appendix. Dimensions shall be given in millimetres. A general sketch must appear on the first page.

[8] Level of quality assessment, in accordance with c) 1) below and with 3.4 of EN 196000:1992.

[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.

b) **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 8 to 12 in accordance with the instructions given on those pages.

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c) **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. An assessment level "Y" for military purposes and for similar requirements has been provided for these rotary switches.

It is not permitted to delete inspection and test requirements from those laid down by the tables for quality conformance inspection and/or for qualifications approval, unless these are indicated as "if applicable". More severe requirements than those of level "Y" may be introduced if necessary. When such an enhanced level is created, this shall be indicated in box 8 of page 8 by inserting "Y+".

2) The pro-forma test schedules for quality conformance inspection are given in tables 1A and 1B. The table shall be completed with conditions of test and performance requirements as specified in 4.3 of EN 196000:1992 for each test, and in accordance with the instructions given in the table.

3) When the fixed sample size procedure is adopted for obtaining qualification approval in accordance with 3.3.3 of EN 196000:1992, table 2 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 tables 1A and 1B.

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4) When it is intended to reduce the number of contact sets tested, as permitted by 4.2 of EN 196000:1992, the following shall be stated in the test schedule for each relevant sub-group:

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- number of samples to have all their contact sets tested (minimum permitted = 25 % of the samples);

- total number of contact sets to be tested (minimum permitted = 2 x specified number of samples).

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 EN 196000:1992 or, where the test is not defined by EN 196000:1992, by stating in full the test method to be applied.

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Recommended layout for detail specifications for push-button switches of assessed quality, assessment level Y.

[1]	CECC 96 403-... [2] Issue 1 month, year Page ../...
ELECTRONIC COMPONENTS OF ASSESSED QUALITY: Detail specification in accordance with EN 196000:1992 CECC 96 400:1988 EN 196403:1998 .. [3]	[4]
Outline and dimensions (mm) (First angle projection) [7]	PUSH-BUTTON SWITCH [5] Principal constructional features [6]
	Level Y [8]
For dimensions and mass (weight) See annex A NOTE: Other shapes are permitted within the dimensions given	

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PRINCIPAL RATINGS AND CHARACTERISTICS
[9]

See the current CECC 00 200 for availability of components qualified under this detail specification.

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1 Basic information

1.1 General

(A statement of the principal usage features of the device; for example "panel mounting, high current".)

1.2 Range and variants

The switches cover the following range of variants:

Electrical contacts	Shorting or non-shorting
Contact material	....
Method of switch operation	Latching or momentary switch
	Key operated

Illumination

- shielded or unshielded
- all non-switching conductive parts shall be connected to a common termination (if applicable).

2 Ratings and characteristics (values according to 2.3 of EN 196000:1992)

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2.1 Electrical ratings

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2.1.1 Maximum switched voltage	... V a.c. or d.c. (resistive load)
	... V a.c. (inductive load, max. ... mH)
2.1.2 Minimum switched voltage	... V a.c.
2.1.3 Rated voltage	... V a.c. and/or d.c. at ... mA a.c. and/or d.c.
2.1.4 Minimum switched current	... mA
2.1.5 Maximum switched current	... mA
2.1.6 Maximum switched power	... W d.c. or ... VA a.c.
2.1.7 Maximum carrying current	... A a.c. and/or d.c.

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2.2 Environmental characteristics

2.2.1 Climatic category (40/85/56 or 55/125/56)	../../../
2.2.2 Shock severity	... m/s^2; ... ms; half-sine pulse; ... shocks in each of the three main axes in positive and negative direction
or	
2.2.3 Bump severity	... m/s^2; ... bumps; duration of each bump 6 ms
2.2.4 Vibration	10 Hz to ... Hz; displacement 0,75 mm; acceleration 98 m/s^2 (10 g); duration ... h
2.2.5 Low air pressure	... kPa (... mbar)
2.2.6 Sealing	... kPa (... mbar) (Conditions to be stated according to section 4.3.14 of EN 196000:1992)
2.2.7 Flammability	Conditions according to IEC 512-9, Test 20a, flammability, needle-flame test
2.2.8 Mould growth	Conditions according to IEC 68-2-10, Test J
2.2.9 Corrosion	Conditions to be stated according to IEC 68-2-42, Test Kc and IEC 68-2-43, Test Kd
2.2.10 Sand and dust	Conditions according to IEC 1020-1, section 4.12.6

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2.3 Mechanical characteristics

2.3.1 Operating force ... Nm min.; ... Nm max.

2.3.2 Latching and de-latching force (if applicable) ... Nm min.; ... N max. latching
... Nm min.; ... N max. de-latching

2.3.3 Total travel ... mm min.; ... mm max.

2.3.4 Mechanical endurance ... cycles of operation without load

2.3.5 Constant load force on actuator ... N max.

2.4 Electrical characteristics

2.4.1 Electrical endurance at
- room temperature min ... cycles with resistive load
- upper category temperature min ... cycles with resistive load
- lower category temperature min ... cycles with resistive load

(according to 2.1.6 of this specification, maximum switched power applied)

2.4.2 Maximum initial contact resistance ... m Ohm

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2.4.3 Maximum final contact resistance (after endurance test) ... m Ohm

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2.4.4 Minimum initial insulation resistance between all contacts and between contacts and mounting/case (if applicable) ... M Ohm, measured at (500 ± 50) V d.c.

2.4.5 Minimum final insulation resistance between all contacts and between contacts and mounting/case (if applicable) (after climatic sequence) ... M Ohm, measured at (500 ± 50) V d.c.

2.4.6 Voltage proof
- between all contacts ... V rms
- between contacts and mounting/case (if applicable) ... V rms