SLOVENSKI STANDARD
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Blank Detail Specification: Rotary switches - Assessment level Y

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Vordruck für Bauartspezifikation: Drehschalter - Gütebestätigungsstufe Y

Spécification particulière cadre: Commutateurs rotatifs - Niveau d'assurance de qualité Y

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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.

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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)3166 was submitted to the formal vote; together with the voting report, circulated as document CECC(Secretariat)3360, it was approved as EN 196103 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- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-04-01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.

The preparation of detail specifications

General instructions

Detail specifications for rotary and thumbwheel switches shall be prepared by completing the following pro-forma as indicated by the guidelines 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 rotary 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 rotary switches, "style" and "variant" have meanings as defined below.

The **style** of a rotary 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 rotary switch are determined, for example, by the following parameters:

- spindle end form;
- method of mounting;
- number of wafers, their contact arrangements (such as: shorting, non-shorting, number of poles, etc.) and indexing angles;
- end stop arrangements;
- operating force or torque;
- terminations;
- sealing;
- indexing.

The detail specification shall contain all the necessary information to identify the particular type, style(s) and variant(s) of rotary and thumbwheel 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) spindle end form;

d) number of wafers and

1) their position in the switch;

2) their contact arrangement (shorting, non-shorting, number of poles etc.);

3) their indexing angles;

e) end stop arrangements;

f) operating force or torque;

g) terminations;

h) sealed or non-sealed;

i) indication and/or illumination;

j) indexing;

k) assessment level.

Terminology

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

1 rotary terminations: Common terminations of a rotary switch which can be connected internally to other terminations in turn by operation of the switch.

2 stator terminations: Terminations of a rotary switch to which the rotor terminations can be connected during operation of the switch.

3 dummy terminations: Terminations carried out by the stator of a rotary switch which cannot make connection with other rotary contacts.

4 insulated terminations: Terminations of a rotary switch insulated from other terminations which are at the same position but on the opposite side of the wafer.

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 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.

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

/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.

For /5/ and /6/, the text shall be suitable for an entry in CECC 00 200 and CECC 00 300.

/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.

/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 11 in accordance with the instructions given on those pages.

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 qualification approval, unless these are indicated as "if applicable". More severe requirements than those of level "Y" may be introduced if necessary. When such 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.

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 schedules for each relevant sub-group:

- 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 × 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.

Recommended layout for detail specifications for rotary switches of assessed quality, assessment level Y

/1/	**CECC 96 103- ...** /2/ Issue 1 month, year Page ../...
ELECTRONIC COMPONENTS OF ASSESSED QUALITY: Detail specification in accordance with EN 196000:1992 CECC 96 100:1988 EN 196103:1998... /3/	/4/
Outline and dimensions (mm) (First angle projection) /7/ For dimensions and mass (weight) see annex A. NOTE: Other shapes are permitted within the dimensions given.	ROTARY SWITCH Wafer (manual) /5/ Principal constructional features /6/ Level Y /8/
PRINCIPAL RATINGS AND CHARACTERISTICS /9/	
See the current CECC 00 200 for availability of components qualified under this detail specification.	

1 Basic information

1.1 General

This specification relates to manually operated rotary wafer switches with a nominal panel dimension of .. mm. Connection is made by solder lugs or printed circuit terminations around the periphery. The switches are designed for severe requirements.

1.2 Range and variants

The switches cover the following range of variants:

Number of wafers	.....
Electrical contacts	Shorting or non-shorting
Number of poles	.....
Contact material	.....
Indexing or spring return	Biased/Non-biased
Switch positions at indexing angles	..... (see annex ...)
Operating torque	.....
and variants (if applicable)	

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

2.1 Electrical ratings

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

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 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 4.12.6 of IEC 1020-1

2.3 Mechanical characteristics

2.3.1 Operating torque	... Nm min.; ... Nm max.
2.3.2 Indexing mechanism	...
2.3.3 Mechanical endurance	... cycles of operation without load
2.3.4 End stop torque	... Nm max.
2.3.5 Mounting nut tightening torque	... Nm 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 Ω
2.4.3 Maximum final contact resistance (after endurance test)	... m Ω