

Specification for

Rotary (manual) switches of assessed quality: generic data and methods of test; general rules for the preparation of detail specifications

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- Electricity Supply Industry in England and Wales
- Electronic Components Industry Federation*
- Institution of Electronic and Radio Engineers
- Ministry of Defence
- National Supervising Inspectorate
- Post Office*
- Society of British Aerospace Companies Limited*
- Telecommunication Engineering and Manufacturing Association (TEMA)

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- Association of Control Manufacturers (Tacma) (BEAMA)
- Electronic Engineering Association

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Foreword

This revision of this British Standard, which has been prepared under the direction of the Electronic Components Standards Committee, is the generic specification for rotary (manual) switches in the system of standards for electronic components of assessed quality.

When references to IEC Publications are given in parentheses, the recommendations are usually identical in technical content, apart from minor deviations, with the British Standard quoted or with this specification.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. Principles and mandatory procedures

1.1 General matters

1.1.1 Scope

This standard specifies requirements and methods of test for manually operated rotary switches of assessed quality for use primarily in equipment for telecommunication and in electronic devices employing similar techniques, including switches necessary for connecting to the supply mains.

Switches covered by this specification have a rated voltage not exceeding 500 V (a.c., r.m.s. or d.c.) or a rated current not exceeding 25 A.

Switches are subdivided depending upon:

- a) assessment level (see 1.3 10) of BS 9000-1);
- b) classification, as defined in 1.1.12.1.

1.1.2 Related documents

BS 308, *Engineering drawing practice*.

BS 415, (IEC 65) *Safety requirements for mains-operated household sound and vision equipment*.

BS 1991, *Letter symbols, signs and abbreviations — Part 6: Electrical science and engineering*.

BS 2011, (IEC 68) *Basic environmental testing procedures*.

BS 3763, *The International System of units (SI)*.

BS 3939, *Graphical symbols for electrical power, telecommunications and electronics diagrams*.

BS 4000, *Sizes of papers and boards*.

BS 6000, *Guide to the use of BS 6001. Sampling procedures and tables for inspection by attributes*.

BS 6001, *Sampling procedures and tables for inspection by attributes*.

BS 9000, *General requirements for electronic components of assessed quality*.

BS 9003, *Requirements for the manufacture of electronic components of assessed quality intended for long life applications*.

PD 9002, *BS 9000 component selection guide*.

NOTE The attention of users is drawn to the need to comply with safety requirements given in equipment specifications, e.g. BS 415.

1.1.3 Terminology

For the purposes of this British Standard the following terms and their definitions are applicable:

1.1.3.1

rotary (manual) switch

a switch that is actuated manually by a rotary motion

1.1.3.2 style

switches having similar design features

1.1.3.3 pattern

a specified assembly, within a style, covered by a single detail specification

1.1.3.4 termination

that part of the switch intended for the connection of external circuits

1.1.3.5 rotor terminations

common terminations that can be connected internally to other terminations in turn by operation of the switch

1.1.3.6 stator terminations

terminations to which the rotor terminations can be connected during operation of the switch

1.1.3.7 dummy terminations

terminations carried by the stator which do not contact the rotor

1.1.3.8 insulated terminations

terminations insulated from other terminations at the same position but on the opposite side of the wafer

1.1.3.9 position

a setting of the rotor with respect to the stator which results in a particular circuit condition. This setting may be held for as long as the operating force is applied or maintained after the operating force is removed

1.1.3.10 electrical ratings

the electrical ratings of a switch are given for specified circuits by the combinations of voltage and current under which the switch shall operate satisfactorily at standard atmospheric conditions for testing

1.1.3.11 rated voltage and rated current

the voltage and current specified in the detail specification

1.1.3.12**minimum voltage and minimum current**

the minimum values of voltage and current at which the switch will meet the requirements specified in the detail specification

1.1.3.13**maximum voltage and maximum current**

the maximum values of voltage and current at which the switch will meet the requirements specified in the detail specification

1.1.3.14**contact resistance**

the total resistance through the switch measured between two terminations whose internal contacts complete a circuit

1.1.3.15**panel seal (or seals)**

a seal (or seals) incorporated in a switch which permits the switch to be mounted and operated on the panel of a sealed enclosure without impairing the sealing of the enclosure

1.1.3.16**solvent seal**

a seal incorporated in a switch to prevent the ingress of solvents

1.1.3.17**hermetically sealed switch**

a switch which is completely protected in itself against the ingress of moisture or gases

1.1.3.18**non-sealed switch**

a switch having no seal against the ingress of moisture or gases

1.1.3.19**cycle of operation**

this consists of movement of the rotor from one extreme position through all other positions and then returning in the reverse direction to the same starting position

1.1.3.20**wafer**

a switch element consisting of a fixed disc (stator) and a rotating disc (rotor), capable of connecting terminations together in determined combinations

1.1.3.21**rotor contacts**

metallic segments carried by the rotor designed to engage with the contacts of the stator as required

1.1.3.22**indexing mechanism**

mechanical device to locate and to maintain each position of the rotor

1.1.3.23**shorting type contacts**

the connection where one contact is maintained until after the connection with the next contact is made, i.e. "make before break"

1.1.3.24**non-shorting type contacts**

the connection where one contact is completely opened before the connection with the next contact is made, i.e. "break before make"

1.1.3.25**end stop**

a device to prevent the spindle from rotating beyond a certain limit

1.1.4 Letter symbols, signs and abbreviations

The letter symbols, signs and abbreviations shall be in accordance with BS 1991 where applicable.

1.1.5 Graphical symbols

The graphical symbols shall be in accordance with BS 3939 where applicable.

1.1.6 Marking of the component and package

Wherever practicable, each switch shall be clearly and indelibly marked with the following information in this order of preference:

- a) the number of the detail specification;
- b) the manufacturer's identity;
- b) the date code;
- d) identification of terminations.

The package shall be marked with the above information, the lot identification and with any special marking invoked in the detail specification.

When called for in the contract, the switch and/or the package may be marked with additional information, e.g. customer's reference number.

1.1.7 Eligibility for qualification approval

To qualify for eligibility a manufacturer shall ensure that the final assembly of individual piece parts and/or part assemblies to produce the complete switch assembly is carried out under the direct surveillance of an approved chief inspector.