
Harmonized system of quality assessment for electronic components: Generic specification: Dry reed make contact units

Système harmonisé d'assurance de la qualité des composants électroniques
Spécification générique: Contacts de travail secs en enceinte scellée

Harmonisiertes Gütebestätigungssystem für Bauelemente der Elektronik
Fachgrundspezifikation: Trockene Reedkontakt-Einheiten mit Arbeitskontakt

National foreword

This British Standard has been prepared under the direction of the Electronic Components Standards Committee. It is identical with CENELEC Electronic Components Committee CECC 19000 'Harmonized system of quality assessment for electronic components: Generic specification: Dry reed make contact units'.

This standard, which serves both as a generic and sectional specification, gives the terminology, quality assessment procedures, test and measurement procedures, preferred values and the rules for writing detail specifications in respect of dry reed make contact units.

Any blank detail specification dealing with a particular sub-family of dry reed make contact units required to be used in conjunction with this standard will select those tests which are considered appropriate to the sub-family and may also give more detailed information relative to the sub-family. The test schedules and grouping of the tests to be prescribed in the blank detail specification are to be written in accordance with the requirements of clause 7 of this standard.

This standard is a harmonized specification within the CECC system. The existing non-harmonized British Standard BS 9200 'Reed contact units of assessed quality: generic data and methods of test' is of wider scope than this standard. Eventually it will be amended to be aligned with the requirements of this standard, but for a period both standards will remain in force because of current approvals to BS 9200.

Terminology and conventions. The text of the CECC specification has been approved as suitable for publication, without deviation, as a British Standard. Some terminology and certain conventions are not identical with those used in British Standards; attention is especially drawn to the following.

The comma has been used throughout as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Cross-references. The British Standard harmonized with CECC 00 100 is BS E9000 'Harmonized systems for general requirements for electronic components of assessed quality'. IEC 117 substantially agrees in technical content with BS 3939 'Graphical symbols for electrical power, telecommunications and electronics diagrams'.

There is as yet no equivalent British Standard for IEC 255 and IEC 255-0-20. The committee responsible for this standard has studied these, and confirms that, for the purposes of this standard, their technical requirements are acceptable.

International standard	Corresponding British Standard
ISO 1000-1973	BS 5555 : 1976 SI units and recommendations for the use of their multiples and of certain other units (Identical)
IEC 50 (Chapter 446) : 1977	BS 4727 Glossary of electrotechnical, power, telecommunications, electronics, lighting and colour terms Part 1 : Group 03 : 1971 Relay terminology (Technically equivalent)
IEC 68 : 1977	BS 2011 Basic environmental testing procedures (Identical)
IEC 410 : 1973	BS 6001 : 1972 Sampling procedures and tables for inspection by attributes (Technically equivalent)
CECC 00 006 : 1973	BS E9006 : 1976 Harmonized system of quality assessment for electronic components. Basic specification: Environmental test procedures (Identical)
CECC 00 007 : 1973	BS E9007 : 1975 Harmonized system of quality assessment for electronic components. Basic specification: Sampling plans for inspection by attributes (Identical)

The technical committee has reviewed the provisions of IEC 27-1 to which reference is made in subclause 2.1 and subclause 2.2.1, and has decided that they are acceptable for use in conjunction with this standard.

In 4.5.1 and 4.11.1, Procedure 2 (3), the symbol 'At/ms' denotes ampere-turns per millisecond.

In 6.8 (3) and (4) where acceleration values are quoted as multiples of the standard acceleration due to gravity, the preferred symbol is ' g_n ' rather than 'g'.

In 6.8 (4) the pressure is given in millibars. $1 \text{ mbar} = 10^2 \text{ N/m}^2 = 0.1 \text{ kPa}$.



Amendment No. 1
published and effective from 26 February 1982
to BS CECC 19000 : 1979

Harmonized system of quality assessment for
electronic components: Generic specification:
Dry reed make contact units

NOTE. This Amendment implements the 1st Amendment to CECC 19000, Issue 1 (1980).
Because of the difference in pagination between BS CECC 19000 and the CECC specification,
the instructions for replacement of pages differ from those given in the CECC amendment.
An additional sentence to the national foreword has also been included in this Amendment.

Revised text

AMD 3918
February 1982

National foreword

At the end of paragraph 1 insert the following:

'The 1st Amendment to CECC 19000 was implemented as Amendment No. 1 to this
British Standard.'

Instructions for the insertion of new and revised pages

AMD 3918
February 1982

Remove pages 3 and 4 and insert revised page 3 and unchanged page 4.

Remove pages 35 and 36 and insert revised page 35 and new page 35a.

Insert new pages 35b and 35c, pages 35d and 35e, pages 35f and 35g,
page 35h and unchanged 36.

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 DRY REED MAKE CONTACT UNITS. It should be read in conjunction with document CECC 00 100 : Basic Rules (1974).

At the date of printing of this document the member countries of the CECC are Belgium, Denmark, Germany, France, Ireland, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and copies of it can be obtained from the addressees shown on the inside cover.

PREFACE

This generic specification was prepared by CECC Working Group 19 : "Reed contact devices".

In accordance with the requirements of document CECC 00 100 it is based, wherever possible, on the Recommendations of the International Electrotechnical Commission.

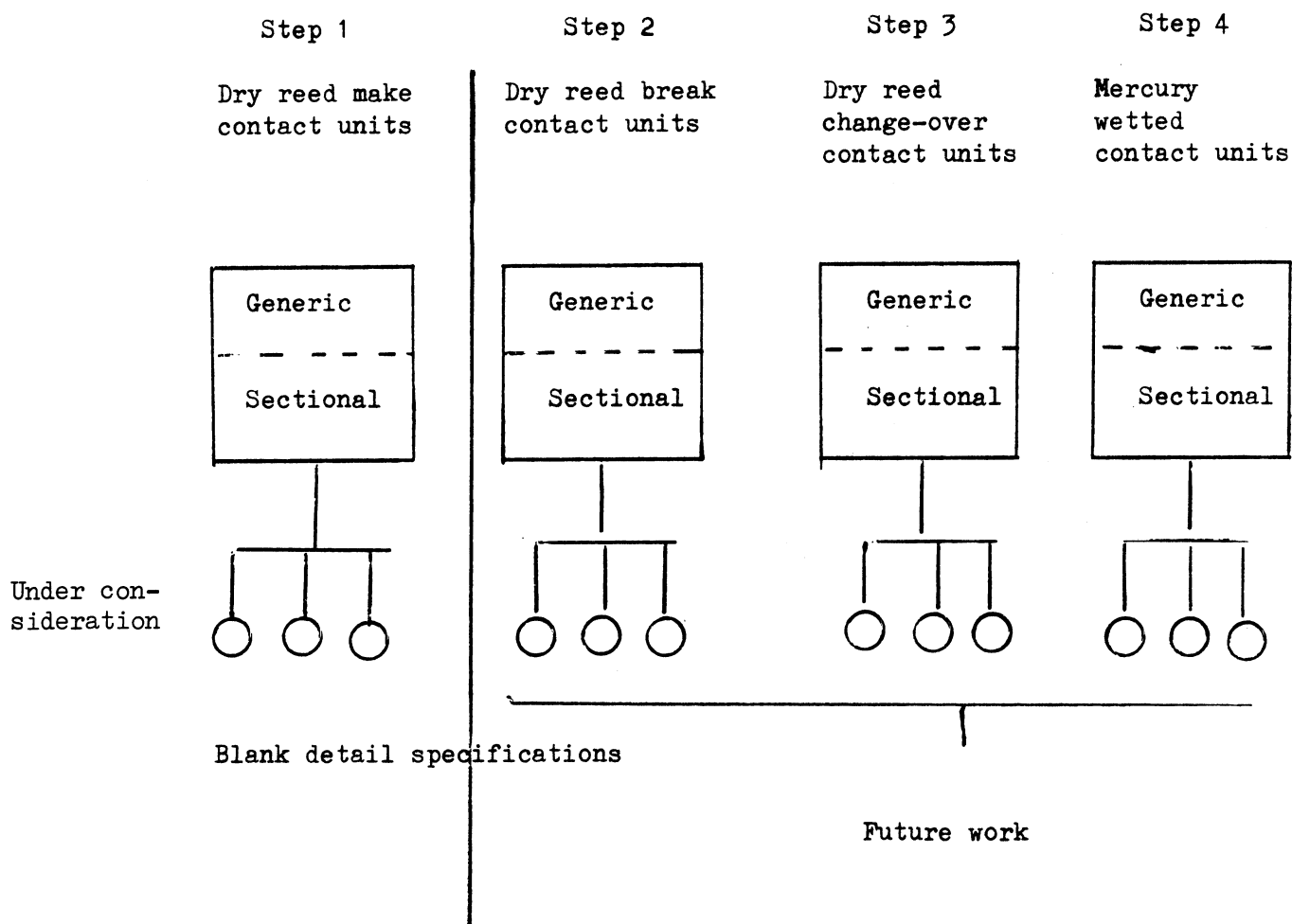
The text of this specification was circulated to the CECC for voting in document CECC(Secretariat)567 in January 1977, and following ratification of the Report on the Voting in CECC(Secretariat)628 in June 1977, was approved by the CECC Management Committee for printing as a CECC Specification.

Endurance tests were omitted from Issue 1 (1978) and are now included in Amendment 1 to Issue 1, the text of which was circulated to the CECC for voting in the documents listed below and was approved by the CECC Management Committee.

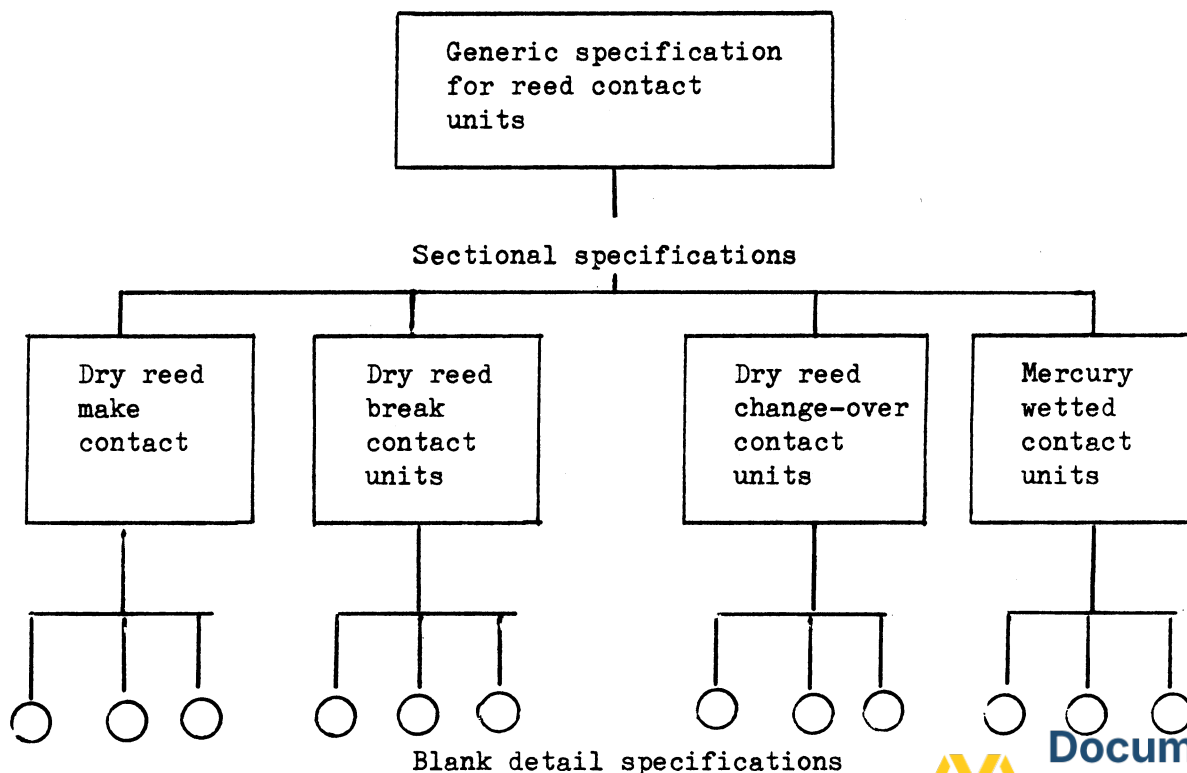
<u>Document</u>	<u>Voting date</u>	<u>Report on the Voting</u>
CECC(Secretariat)650	10 October 1977	CECC(Secretariat)726
CECC(Secretariat)650A	10 October 1977	CECC(Secretariat)726
CECC(Secretariat)745	21 August 1978	CECC(Secretariat)776

The preparation of separate blank detail specifications is under consideration. Test schedules and grouping of the tests to be prescribed in the blank detail specification, shall be written in accordance with the requirements of SECTION 7 of this specification.

The present scheme is as follows :



After completion of the different steps, the specifications will be reworked as follows :



4.21.2 Requirements

Immediately following the acceleration test, the reed contact unit shall meet the requirements of the following tests as prescribed in the detail specification :

- (1) Visual inspection (4.4)
- (2) Functional test (4.5)
- (3) Sealing (4.22)

4.21.3 Information to be stated in the detail specification

- (1) Those required by Test Ga of IEC 68-2-7
- (2) Mounting jig
- (3) Identification of the plane of movement of the contacts
- (4) Permissible changes of functional characteristics
- (5) Test method Qk or Ql of IEC 68-2-17 and leakage rate

4.22 Sealing

4.22.1 Procedure

The reed contact units shall be subjected to Test Qk or Ql of IEC 68-2-17.

4.22.2 Requirements

The leakage rate shall not exceed the rate prescribed by the detail specification.

4.22.3 Information to be stated in the detail specification

- (1) Test Qk or Ql
- (2) Leakage rate

4.23 Electrical endurance test

4.23.1 Types of electrical endurance test

- (1) standard electrical endurance test
- (2) application simulation endurance test

Application simulation tests are electrical endurance tests performed under specified conditions related to a well-defined application. Due to the diversity and numerous possible applications, these endurance tests cannot be specified in an harmonized specification.

4.23.2 Standard electrical endurance tests

These tests are standardized as far as possible to allow comparison of several products and give information on reliability and assessed quality under standardized conditions.

4.23.3 General test arrangements

Most of the endurance testing equipments are built corresponding to the following block diagram:

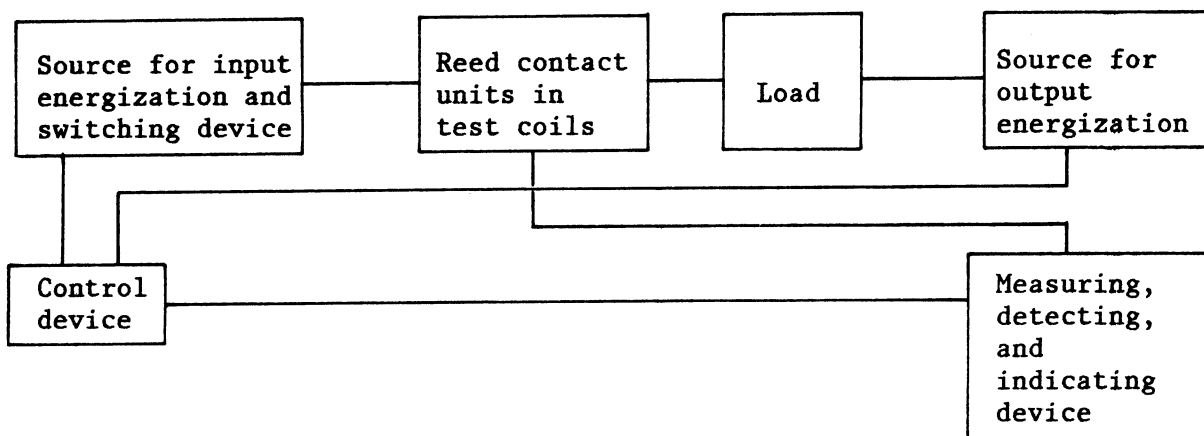


Fig 4

The input energization source incorporates a power supply unit complete with the stabilization circuitry consistent with the given energization and impedance limits, and the corresponding over-current protection. The switching device provides a pulse pattern of the desired frequency, duty cycle and waveform to operate the reed contact via the test coil.

The control device provides signals for operating the switching device and controls, starts, measurement stops, etc..

The reed contact units shall be mounted in test coils according to Appendix A (of CECC 19 000). The load shall be a component, a cable or a combination of several components and/or cables. The source for output energization shall supply the voltages or currents for energizing the load and may provide voltages or currents necessary for the measurements. Together the load and the source for output energization define the load conditions. The load conditions shall be

selected from the standard loads as prescribed in the blank detail specification or in the detail specification.

The measuring and indication device shall be capable of performing the specified measurements. It shall also indicate which type of failure was detected in which reed contact and indicate when this occurred. Other functions which this device may provide are the indication of date and time, limiting and mean values of measurements and tests, failures of the test equipment; and the provision of commands to the control device to de-energize reed contact units which have failed.

The electrical endurance testing equipment shall be capable of performing standard electrical endurance tests as specified in this clause or application simulation endurance tests as specified in a detail specification. Application simulation tests shall be so written that the test equipment capable of performing the standard electrical endurance tests will be equally suitable for the simulation tests.

4.23.4 Procedure

The tests shall be performed under standard atmospheric conditions. The operate energization of the test coils shall be 150 % of the must-operate value of the reed contacts to be tested. The release energization shall be zero, unless otherwise prescribed in the detail specification. The frequency of operation shall be selected from: 10; 12,5; 16; 20; 25; 50 and 60 operations per second.

The pulse pattern shall be of a rectangular waveform with a duty cycle of 50 % unless otherwise prescribed in the detail specification.

The source for input energization should be a voltage source with low internal impedance.

The test coils in which the reed contact units are mounted shall be energized individually or in parallel, with precautions against interactions. When coil suppression (electrical components to suppress or reduce unwanted transients) is used it shall be prescribed in the detail specification.

Each reed contact shall be connected to a separate load without additional circuit protection.

Each reed contact shall be tested for failure to make and failure to break at each operation. This test may be done by measuring the voltage drop across the contact under normal load conditions.

The measuring period τ_1 , for failure to make, starts at a time t_1 after the start of the coil energization.

The measuring period τ_2 , for failure to break, starts at a time t_2 after the end of the coil energization.

The times t_1 , t_2 , τ_1 and τ_2 shall be given in the detail specification. At intervals¹ prescribed in the detail specification, the contact circuit resistance of each reed contact unit shall be measured according to the method in 4.7, excepting that the measuring period shall start at time t_3 and shall last τ_3 , as given in the detail specification and the³ energization shall be 150 % of the must-operate energization value.

The integration times of the measuring device shall be shorter than τ_1 , τ_2 , and τ_3 respectively.

The integration time is the time required by the monitoring device to register the mean value of a signal. In the case of an input step voltage at the failure criteria level, it is the time required to register a failure.

The load shall be switched on and off by the reed contact unit under test. The wiring to the loads shall be as short as possible.

The wiring of the control, the measuring and indicating devices shall not effectively influence the current through and the voltage across the reed contact unit during operation. For example, in Fig.5, the test point may be switchable for this purpose.

If the source for output energization is a voltage source it shall be connected with one terminal to earth. The voltage source shall have an internal resistance R_i and surge impedance Z_s such that $R_i < 0,02 \times$ resistance of dc load and $Z_s < 0,02 Z$ of the load up to 1¹ MHz (see 4.3).

If several loads are connected in parallel via the respective reed contact unit under test to the same voltage source the combined load shall be taken into account.

The tolerance on the voltage source shall be a maximum $\pm 10 \%$ on 30 mV and a maximum $\pm 2 \%$ for the other values.

If the reed contact unit is an unsymmetrical type having a preferred switching polarity, this should be stated in the detail specification.

Standard load conditions

The standard electrical endurance test load conditions shall be selected from the loads in sections (1) and (2) on page 35d.

(1) Resistive loads

TABLE A
RESISTIVE LOADS

Type of voltage	Voltage of output source (V)	Current through closed contacts (mA)
d.c.	<u>0,03</u>	<u>1</u>
d.c.	<u>0,03</u>	<u>10</u>
d.c.	<u>0,10</u>	<u>1</u>
d.c.	<u>5</u>	<u>5</u>
d.c.	<u>5</u>	<u>10</u>
d.c.	<u>10</u>	<u>100</u>
d.c.	<u>12</u>	<u>2</u>
d.c.	<u>12</u>	<u>10</u>
d.c.	<u>24</u>	<u>50</u>
d.c.	<u>50</u>	<u>10</u>
d.c.	<u>50</u>	<u>100</u>
d.c.	<u>60</u>	<u>10</u>
d.c.	<u>60</u>	<u>100</u>
d.c.	<u>100</u>	<u>50</u>
d.c.	<u>120</u>	<u>50</u>
d.c.	<u>200</u>	<u>100</u>
a.c.	<u>0,03</u>	<u>10</u>
a.c.	<u>0,1</u>	<u>1</u>
a.c.	<u>220</u>	<u>100</u>
a.c.	<u>220</u>	<u>500</u>
a.c.	<u>220</u>	<u>1000</u>

Note : Preferred loads are underlined.

The load, including the connection wires, shall have a maximum rise time of $0,1 \mu\text{s}$, an inductance $< 10^{-4}$ Henry and a capacitance $< 50 \text{ pF}$. (Overshoot under consideration).

If more stringent test conditions are required, these shall be prescribed in the blank detail specification.

The test point of the measuring and indicating device should be connected to the reed contact unit under test via a resistor $\geq 50 \text{ k}\Omega$.

(2) Combined loads (e.g. for telephony applications)

The source for output energization shall supply a d.c. voltage. The load shall consist of a cable and a resistor connected as shown in Figure 5. The cable shall fulfill the requirements of the relevant IEC publication. The resistor and the connection wires shall fulfill the requirements under (1) above.

Resistive load combined with cable discharge

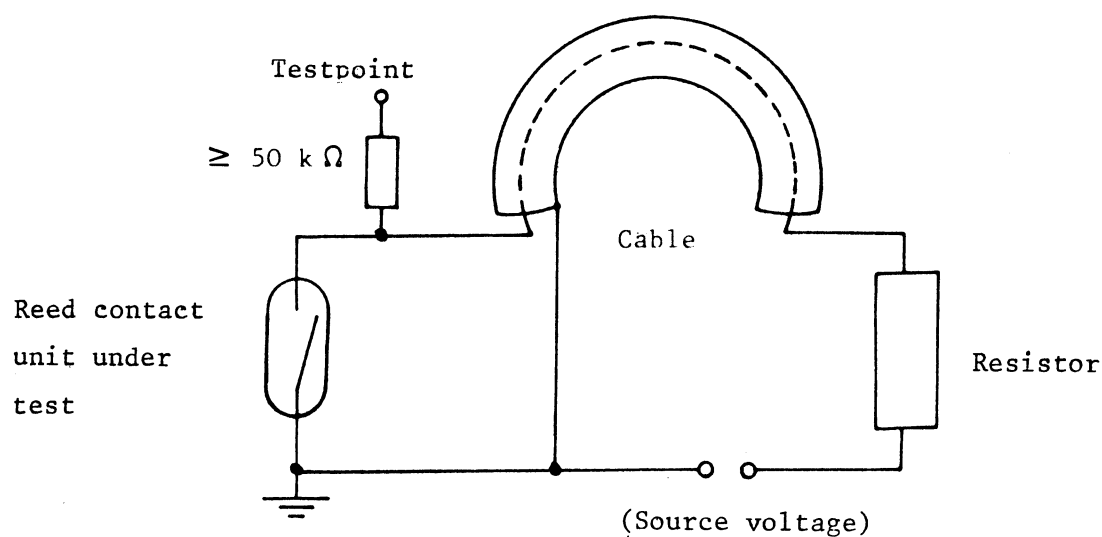


Fig 5 Resistive load combined with cable discharge

Combined loads of this section are derived from Table B in conjunction with cables chosen from Table C on page 35f.

TABLE B
LOADS

Voltage of output source (d.c. only) (V)	Current through closed contacts (mA)
<u>12</u>	<u>10</u>
<u>24</u>	<u>50</u>
50	50
<u>50</u>	<u>100</u>
<u>60</u>	<u>50</u>
100	50

Note : Preferred loads are underlined.

TABLE C
CABLES

Cable n°	Cable type	IEC Publication 96 Designation	Z_{Ω^c}	Lengths (m)
1	Coaxial	50-3-1	50	1 3 10 100
<u>2</u>	Coaxial	75-4-4	<u>75</u>	<u>1</u> 3 <u>10</u> <u>100</u>
3	Coaxial	100-4-1	100	1 3 10 100
<u>4</u>	Shielded	---	<u>140</u>	<u>1</u> 3 <u>10</u> <u>100</u>

Note : 1) Preferred cables and cable lengths are underlined.

2) The introduction of extra inductance should be avoided by, for example, the use of bifilar winding.

4.23.5 Requirements

Any single reed contact unit shall be considered to have failed (become a 'defective') when a definitive failure occurs during the specified number of operations. Thus for the purpose of the endurance test, the end of life of a reed contact unit (a 'defective') occurs when a definitive failure has been assessed whether or not the number of operations specified for that test has been completed.

A definitive failure occurs in one single reed contact unit when the number of failures registered is equal to or greater than a specified number. These failures may be specified in each of the following categories :

- (1) Failure to make
 - (2) Failure to break
 - (3) Failure to meet the contact circuit resistance requirements
 - (4) Any combination of (1), (2) and (3),
- as prescribed in the detail specification.

For the purposes of the endurance test, the end of life of a reed contact unit occurs when a definitive failure has been assessed before the completion of the number of operations specified for that test.

4.23.6 Information to be stated in the detail specification

(1) Energization conditions

- Test coil number selected from the list given in Appendix A; coil suppression.
- Frequency of operation.
- Duty cycle if other than 50 %.
- Polarity, when applicable.

(2) Load conditions

- For resistive loads: voltage and current selected from Table A.
- For resistive loads combined with cable discharge: voltage and current selected from Table B; cable selected from Table C together with the preferred cable length.

(3) Failure criteria

- The total number of operations required.
- Monitoring during test
 - Limits for: failure to make: ohms
failure to break: ohms
 - Monitoring times: t_1, τ_1, t_2, τ_2 .
 - The number of failures in one single reed contact unit making a definitive failure of that reed contact unit in the test.
- Periodic measurements
 - Number of operations at which contact resistance measurements shall be done.
 - Monitoring times: t_3, τ_3 .
 - Failure limit for contact resistance and number of contact resistance failures of a single reed contact unit, making a definitive failure of that reed contact unit in the test.

- Measurements before and after endurance test:

Maximum permissible change in contact circuit resistance ($m\Omega$) and in functional values (A_t) or limiting values of contact resistance and functional values as prescribed in the detail specification, making a definitive failure of that reed contact unit in the test.

NOTE: Defective reed contact unit:

A defective reed contact unit for this endurance test is a unit which has at least one definitive failure in the different modes of measurement: monitoring during test, periodic measurements, measurements before and after endurance test.

SECTION 5 - ADDITIONAL PROCEDURAL REQUIREMENTS

The following procedural requirements shall be included in national harmonized specifications in accordance with the text given.

5.1 Quantities and units

Any units, letter symbols, signs and abbreviations which are employed shall be in conformity with ISO 1000 and IEC 27-1 as appropriate, or shall be derived in accordance with the principles of those standards.

5.2 Graphical symbols

Any graphical symbols employed shall be in conformity with IEC 117 or shall be derived in accordance with the principles of that standard.

5.3 Marking

5.3.1 Each package of reed contact unit shall be marked with the following information :

- (1) Date code
- (2) Number of the detail specification
- (3) Manufacturer's factory identification code
- (4) Additional marking as required by the detail specification

5.3.2 The information listed in 5.3.1 shall be marked on the reed contact unit as prescribed in the detail specification.

SECTION 6 - PREFERRED VALUES

The following preferred values shall be used, unless otherwise stated in the detail specification.

6.1 Frequency of operation

1, 2, 5, 8, 10, 12,5, 16, 20, 25, 30, 50, 60, 100, 500 operations per second.

6.2 Duty cycle

50 %

6.3 Open circuit voltage across contacts

- (1) 0,01, 0,1, 5, 12, 24, 50, 110, 127, 150, 220, 250, 380, 500 V a.c. (r.m.s.)
- (2) 0,01, 0,03, 0,05, 0,1, 1, 1,5, 4,5, 5, 6, 6,3, 10, 12, 15, 17, 20, 24, 30, 36, 48, 50, 60, 80, 100, 110, 150, 175, 200, 250, 440, 500, 600, 800, 1200, 1500 V d.c.



Amendment No. 2
published and effective from 31 July 1984
to BS CECC 19000 : 1979

Harmonized system of quality assessment
for electronic components : Generic specification :
Dry reed make contact units

NOTE. This Amendment implements the 2nd Amendment to CECC 19000, Issue 1 (1983). The national foreword has been amended accordingly. Because of the differences in pagination between BS CECC 19000 and the CECC specification, the instructions for replacement of pages differ from those given in the CECC amendment.

Revised text

AMD 4621
July 1984

National foreword (as amended by Amendment No. 1)

Delete the last sentence of paragraph 1 and substitute the following.

'The 1st and 2nd Amendments to CECC 19000 were implemented as Amendment No. 1 and Amendment No. 2 respectively to this British Standard.'

AMD 4621
July 1984

Contents (page 1)

After the reference to 4.23 insert the following.

'4.24 Voltage surge test 35i'.

AMD 4621
July 1984

Clause 4.23.6 Information to be stated in the detail specification
 (as inserted by Amendment No. 1)

In (3) on page 35h, in lines 1 and 11, delete 'before and after endurance test' and substitute 'at the beginning and end of the endurance test'.

AMD 4621
July 1984

Clause 6.3 Open circuit voltage across contacts

In (1) after '0,01' insert '0,03'.

In (2) after '110' insert '120'.

Instructions for the insertion of new and revised pages

AMD 4621
July 1984

Delete page 3 and insert new page 3 (retain page 4 on back)

Remove pages 21 and 22 and insert new pages 21 and 22.

Delete page 26 and insert new page 26 (retain page 25 on front).

Insert new pages 35i and 35j.

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 DRY REED MAKE CONTACT UNITS. It should be read in conjunction with document CECC 00 100 : Basic Rules (1974).

At the date of printing of this document the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom. Copies of it can be obtained from the addresses shown on the inside cover.

PREFACE

This generic specification was prepared by CECC Working Group 19 : "Reed contact devices".

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Endurance tests were omitted from Issue 1 (1978) and are included in Amendment 1 to Issue 1, the text of which was circulated to the CECC for voting in the documents listed below and was approved by the CECC Management Committee.

<u>Document</u>	<u>Voting date</u>	<u>Report on the Voting</u>
CECC(Secretariat)650	10 October 1977	CECC(Secretariat)726
CECC(Secretariat)650A	10 October 1977	CECC(Secretariat)726
CECC(Secretariat)745	21 August 1978	CECC(Secretariat)776

The text of Amendment 2 to Issue 1 was circulated to the CECC for voting in the document indicated below, and was ratified by the President of the CECC for printing:

<u>Document</u>	<u>Voting date</u>	<u>Report on the Voting</u>
CECC(Secretariat)1091	November 1981	CECC(Secretariat)1187

Test schedules and grouping of the tests to be prescribed in the blank detail specification, shall be written in accordance with the requirements of SECTION 7 of this specification.

4.10 Operate, release and bounce times

4.10.1 Procedure

Note : The result of the time measurements upon dry reed contact units made in a test coil depend not only upon the reed contact unit itself but also upon the test coil, and the impedances of the total circuit in the open and closed positions.

The test circuit shown in Fig. 4 shall be used, voltage V_B shall not exceed 6 V unless otherwise prescribed by the detail specification.

The test coil shall be energized from an adjustable d.c. supply via a bounce-free (e.g. mercury-wetted) switch (S_{BF}) with a high open circuit impedance and without any damping circuit.

The fixed resistor (R_F) shall be prescribed by the detail specification.

In order to show a continuous trace on the oscilloscope, the switch S_{BF} should be worked at a rate of about 10 operations per second.

Note : For very short bounce times an electronic measuring device other than an oscilloscope may be preferred.

Operate time

The zero energization shall be maintained for a minimum period of 10 ms.

The d.c. supply voltage V_S shall be set to provide a steady current equivalent to 150% of the must-operate value. This shall be applied to the test coil and the operate time of the reed contact unit shall be measured.

Bounce time (operate)

The bounce time (operate) shall be measured, under the same condition as the operate time. Discontinuities of less than 10 μ s shall be ignored, unless otherwise prescribed.

Release time

The d.c. supply shall be set to 150 % of the must-operate value and maintained for a minimum period of 10 ms prior to disconnection of the coil energization, and the release time of the reed contact unit shall be measured.

Bounce time (release)

The bounce time (release) shall be measured, under the same conditions as the release time. Discontinuities of less than 10 μ s shall be ignored.

4.10.2 Requirements

The time(s) shall not exceed that (those) prescribed by the detail specification.

4.10.3 Information to be stated in the detail specification

- (1) Test coil number (see Appendix A)
- (2) Value of the resistance R_F
- (3) Must-operate value
- (4) Operate time, maximum
- (5) Release time, maximum
- (6) Operate bounce time, maximum (where specified)
- (7) Release bounce time, maximum (where specified)
- (8) Test circuit potentials and resistances
- (9) Repetition rate, duty cycle and number of operations

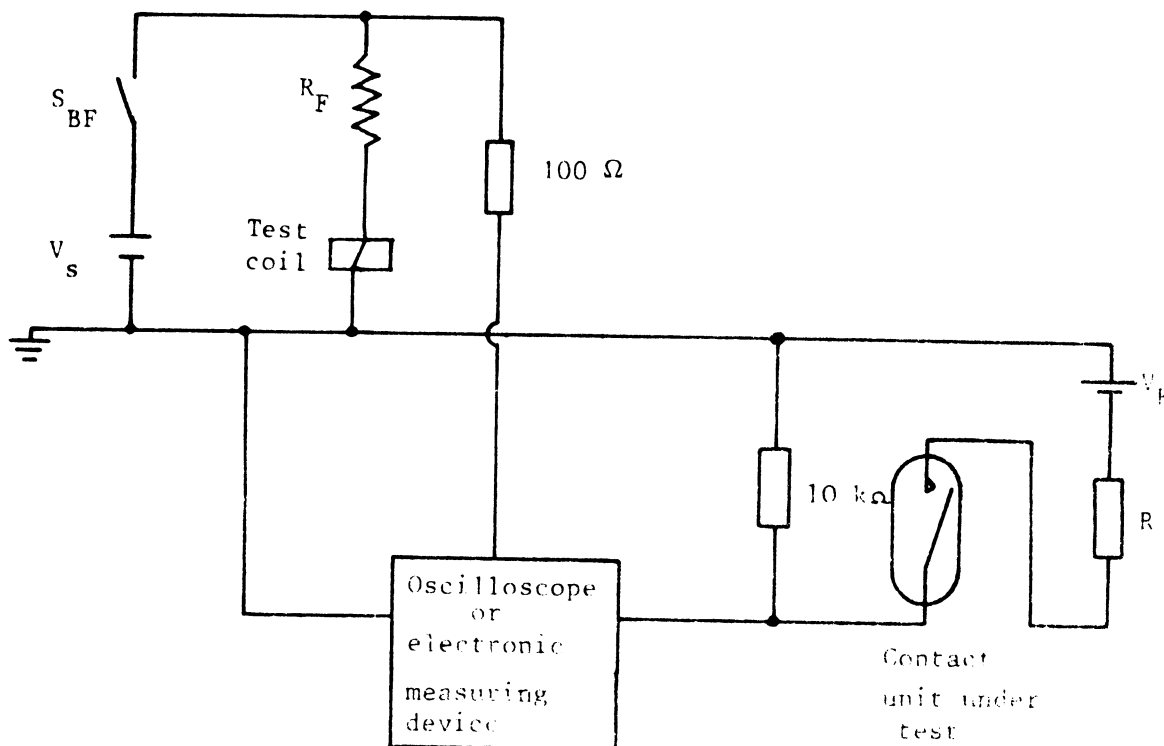


FIG. 4 : Test circuit for the measurement of operate, release and bounce time.

4.12 Robustness of terminations

4.12.1 Procedure

The reed contact unit shall be subjected to the procedure of Tests U of IEC 68-2-21.

4.12.2 Requirements

The terminations and seals shall not show any visible damage.

The reed contact unit shall meet the requirements of 4.22 Sealing. The leakage rate shall not exceed the rate prescribed by the detail specification.

The changes in the functional characteristics, shall not exceed the value prescribed by the detail specification.

4.12.3 Information to be stated in the detail specification

- (1) Applicable Tests U
- (2) Information required by the tests chosen from IEC 68-2-21
- (3) Permissible changes of functional characteristics
- (4) Information as indicated in 4.22.3.

4.13 Soldering (Solderability and resistance to soldering heat)

4.13.1 Procedure

(1) Solderability

Prior to the test, the reed contact unit shall be subjected to an accelerated ageing procedure by exposing it to steam for 1 h, if so required by the detail specification.

The reed contact unit shall be subjected to one of the procedures for solderability of Test T of IEC 68-2-20.

(2) Resistance to soldering heat

The reed contact unit shall be subjected to one of the procedures for resistance to soldering heat of test Tb of IEC 68-2-20A.

4.13.2 Requirements

The requirements for solderability and resistance to soldering heat shall be prescribed in the detail specification.

4.13.3 Information to be stated in detail specification

- (1) Method
- (2) Information required by the methods chosen from IEC 68-2-20 and 68-2-20A.