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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electromechanical elementary relays of assessed quality – Part 11: Blank detail specification – Relays for industrial application

Relais électromécaniques élémentaires sous assurance de la qualité – Partie 11: Spécification particulière cadre – Relais pour application industrielle

IEC 61811-11:2002-11(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMECHANICAL ELEMENTARY RELAYS OF ASSESSED QUALITY –

Part 11: Blank detail specification – Relays for industrial application

FOREWORD

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International Standard IEC 61811-11 has been prepared by IEC technical committee 94: All-or-nothing electrical relays.

This bilingual version (2014-05) corresponds to the English version, published in 2002-11.

This standard cancels and replaces IEC 60255-19-1 (1983).

The text of this standard is based on the following documents:

FDIS	Report on voting
94/169/FDIS	94/173/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

ELECTROMECHANICAL ELEMENTARY RELAYS OF ASSESSED QUALITY –

Part 11: Blank detail specification – Relays for industrial application

1 General

1.1 Scope

This part of IEC 61811 is a blank detail specification applicable to electromechanical elementary (non-specified time all-or-nothing) relays of assessed quality for industrial application.

It is based on the generic specification IEC 61811-1 and the sectional specification IEC 61811-10 and selects from IEC 61810-7 the appropriate test and measurement procedures to be used in detail specifications derived from this specification. Moreover it contains a basic test schedule to be used in the preparation of such specifications.

1.2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60062:1992, *Marking codes for resistors and capacitors*

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60068-2-10:1988, *Basic environmental testing procedures – Part 2: Tests – Test J and guidance: mould growth*

IEC 60068-2-21:1999, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-47:1999, *Environmental testing – Part 2-47: Test methods – Mounting of components, equipment and other articles for vibration, impact and similar dynamic tests*

IEC 60255-23:1996, *Electrical relays – Part 23: Contact performance*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-2-12, *Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability test method for materials*

IEC 61810-1:1998, *Electromechanical non-specified time all-or-nothing relays – Part 1: General requirements*

IEC 61810-5:1998, *Electromechanical non-specified time all-or-nothing relays – Part 5: Insulation coordination*

IEC 61810-7:1997, *Electromechanical all-or-nothing relays – Part 7: Test and measurement procedures*

IEC 61811-1:1999, *Electromechanical non-specified time all-or-nothing relays of assessed quality – Part 1: Generic specification*

IEC 61811-10:2002, *Electromechanical elementary relays of assessed quality – Part 10: Sectional specification – Relays for industrial application*

IEC QC 001002, *Rules of procedure for the IEC Quality Assessment System for Electronic Components (IECQ)*

IEC QC 001005, *Register of firms, products and services approved under the IECQ System, including ISO 9000*

1.3 Front page of detail specification

The layout of the front page of detail specification is as follows:

<table>
<tr><td>[1]</td><td>QC xxxxx [2]

Edition: .....
Page 1 of .....</td></tr>
<tr><td>Electronic components of assessed quality [3]
in accordance with:
IEC 61810-7:1997
IEC 61811-1:1999
IEC 61811-10:2002</td><td>[4]</td></tr>
<tr><td colspan="2">Detail specification for electromechanical non-specified time all-or-nothing relays for industrial application

Type: [5]

Construction: [6]</td></tr>
<tr><td>Outline drawing [7]

Dimensions in mm</td><td>Application [8]</td></tr>
<tr><td colspan="2">Coil data [9]
- Rated voltage: .....
- Rated power: .....</td></tr>
<tr><td colspan="2">Contact data [10]</td></tr>
<tr><td colspan="2">Temperature range [11]

- Operating temperature: .....
- Storage temperature: .....</td></tr>
<tr><td colspan="2">Information about manufacturers who have components qualified to this detail specification is available in the current QC 001005.</td></tr>
</table>

Key to front page:

The numbers between square brackets on the front page correspond to the following indications which should be given in the appropriate boxes.

Identification of the detail specification

[1] The name of the National Standards Organization under whose authority the detail specification is published and, if applicable, the organization from whom the detail specification is available.

[2] The IECQ symbol and the number allotted to the completed detail specification by the IECQ Secretariat.

[3] The number and the year of availability of the IEC generic and/or sectional specification and the IEC standard concerning test and measurement procedures; also national reference, if different.

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

Identification of the relay

[5] A brief description of the relay or range of relays.

[6] Information on typical construction.

[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 by given in an annex to the detail specification, but [7] should always contain an illustration of the general outer appearance of the relay.

[8] Typical field of application and assessment level (if applicable).

[9] Available nominal coil voltages and rated power.

[10] Available contact arrangements and contact current and voltage.

[11] Temperature range and climatic category according to IEC 60068-1 (if applicable).

2 Characteristic values of the relay

These shall be in accordance with IEC 61810-1 as applicable.

2.1 General data

Contact application category: CA ...

Contact arrangement: ...

Mass: ... g max.

Finish of the relay housing: ...

Finish of the terminals: ...

Insulation resistance: ... MΩ min.

Dielectric strength: ... V min.

Table 1 – Dielectric test voltages

	Test voltage V a.c. min.	**Impulse voltage** **... / ... µs** V min.
Open contacts		
Between adjacent contacts		
Contacts to case		
Coil to contacts		
Coil to case		

2.2 Construction of IECQ type designation (ordering information)

Relay IECQ - XXXX A B C Z

Denomination ↑
IECQ detail specification number ↑
Coil voltage (according to Table 2) ↑
Terminals (according to 2.5 and Annex B) ↑
Mounting (according to 2.6 and Annex A) ↑
Special attributes (e.g. suppression diode, additional functions according to 2.3) ↑

The reference to monostable or bistable, polarized or non-polarized, number and kind of contacts and general coil additives shall be given in the title of the specification. Only if one (or more) of these attributes is optional, shall the respective code(s) be given. There shall be no special marks or open space for non applicable criteria.

2.3 Coil data

Table 2 – Coil data

Code letter	**Coil voltage d.c./a.c.**		**Coil resistance and / or impedance**	**Must operate voltage d.c./a.c.**		**Must release voltage d.c./a.c.**				**Must not release voltage d.c./a.c.**	**Rated power/ burden**	**Suppres-sion or special function code or letter** [1]
	V rated	V max.	at 23 °C Ω ± ... %	V_{max} at 23 °C		V_{max} at 23 °C		V_{min} at 23 °C		V_{min} at 23 °C	W/VA	

[1] Configuration of coil suppression or special function, if applicable (details may be given in an annex).

2.4 Contact data

2.4.1 Contact number, contact configuration and application categories

To be given in the detail specification.

2.4.2 Contact load, electrical endurance and switching frequency

Maximum contact voltage: ... V
Minimum contact voltage: ... V
Maximum contact current: ... A
Minimum contact current: ... A

Table 3 – Loads, operating cycles and frequencies for endurance tests

Loads	at V d.c.	at V a.c. / Hz	Number of operating cycles min.	Switching frequencies in cycles per s max.
Resistive				
Low level				

For inductive load the maximum induction relating to the load shall be specified. For relays with contact application category CA 0, the lower values for switching voltage and current shall be specified.

2.4.3 Static contact resistance

... mΩ max. initial resistance

... mΩ max. after electrical endurance test.

(Relays with long leads to be measured at a prescribed distance from the relay body.)

2.4.4 Dynamic contact resistance

... mΩ max. for the respective nominal load (according to 2.4.2).

... mΩ max. for dry circuit switching.

(For relays with long leads the test point shall be specified according to 2.4.3.)

2.4.5 Mechanical endurance

... operating cycles

2.4.6 Timing (over the whole temperature range)

Operate time max. ... ms
Bounce time max. ... ms
Stabilization time max. ... ms
Release time max. ... ms
Release time max. ... ms (with suppression device)

2.5 Terminals

The type of terminals with their respective finish shall be stated together with the identifying code letter.

If the terminals are specified in Annex B of the detail specification, reference shall be made to the annex.

Table 4 – Terminals

Code letter	Terminals	Finish

The robustness of terminals (if specified) shall be indicated according to IEC 60068-2-21, in case of quick-connect terminals according to Annex A of IEC 61810-1.

2.6 Mounting

The mounting variants and the respective code letters shall be specified. Details and drawings shall be included in Annex A of the detail specification.

2.7 Environmental data

The relays shall withstand at least the following environmental stresses:

Shock: ... m/s^2, half sine pulse

Bump: ... m/s^2, ... ms duration

Vibration (sinusoidal): amplitude ... mm or acceleration ... m/s^2, ... Hz to ... Hz

(random): ... g^2/Hz, ... Hz to ... Hz

Climatic category: ...

Further requirements may be indicated in this subclause as applicable, in particular regarding the enclosure (e.g. sealing), or resistance against acoustic noise, mould growth, corrosive atmospheres, etc.

3 Qualification approval procedures

– As stated in clause 3 of QC 001002-3, fixed sample.

– In accordance with the provisions stated in 2.2 of IEC 61811-1 and 4.2 of IEC 61810-1.

– Sampling and test schedule are specified in Table 6.

– The tests specified and their order are mandatory, unless otherwise stated.

4 Quality conformance inspection

Quality conformance inspection contains the tests stated in Table 5:

– Groups A and B: lot-by-lot tests;

– Group C: periodic tests.

Unless otherwise stated (R = recommended test) in this blank detail specification, all tests of Table 5 are mandatory. Where a subgroup contains cumulative tests, the order of the tests is mandatory. Additional tests (e.g. internal moisture, overload, explosion proof, etc.) may be added in the relevant detail specification, as applicable. Samples subjected to tests denoted as destructive (D) shall not be released for delivery.